

Project Description for CVFPB Permit

For the purposes of the Central Valley Flood Protection Board (CVFPB) Permit Application, this project description is limited to the work performed within CVFPB's jurisdictional limits, with brief reference to the overall project. The limits are defined as the project area between the west levee of the Feather River in Yuba City and the east levee in Marysville, and extending 10 feet landward from the levee toe.

Project Introduction

The City of Yuba City, in cooperation with the City of Marysville and the California Department of Transportation (Caltrans), proposes to replace the Fifth Street Bridge (Bridge Number 18C-0012), also known as the Twin Cities Memorial Bridge, over the Feather River and improve approach roadways to the bridge. The City has obtained authorization for replacement and has initiated project development with Caltrans Local Assistance oversight.

The existing facility connects Bridge Street in Yuba City to Fifth Street in Marysville. Project limits in the City of Marysville span from Fifth and J Street intersection and portions of J Street between Fourth and Fifth Streets, portions of Riverfront Park in the west and continuing over the Feather River into the City of Yuba City limits. Project limits within the City of Yuba City include the roadway along Second Street, small portions of Sutter, Yolo and Boyd Streets in the south and the western expanse of Bridge Street at the intersection with Second Street and terminating just past the intersection at Shasta Street.

The proposed design for the bridge replacement project balances considerations for connections to existing facilities, current National and State regulations for flood control clearance, bike and pedestrian facilities, structural standards and safety, as well as local considerations for speed, lane and shoulder widths, traffic patterns and connectivity.

Bridge

The proposed bridge cross section includes four 12' travel lanes, shoulders, a median barrier, and a 10' Class I multi-use path on the north side for a total bridge width of 76.5'. Fifth Street Bridge will be a 10-span cast-in-place (CIP) post-tensioned concrete box girder bridge with a total length of 1868 feet, comprised of three frames of lengths, 563', 600', and 705'. The typical span lengths are 200', while the end spans are 135' at Abutment 1 and Abutment 11, and 198' at span 2. The structure depth is 8'-0" for nine spans and it varies linearly from 8' to 4' in Span 10 to accommodate freeboard requirements at the Marysville levee (see attached Bridge Plans for details).

Columns

A curved horizontal alignment was used to separate the new bridge from the existing structure, to maintain traffic flow during construction, while still utilizing the same touchdown locations in each city. The piers are designed perpendicular to the bridge centerline, with the exception of pier 2 where the pier is skewed 20 degrees to better align with the natural channel and levee toe. The bearing of each pier varies. Each pier will include three 7' square columns, with architectural detailing, supported on 10' diameter cast-in-drilled-hole (CIDH) piles.

Abutments and Levees

Consistent with the existing condition, the abutments are located on the levees. Abutment 1 will be aligned with the levee contours, rather than perpendicular with the bridge centerline alignment. This will facilitate a constant flow path for the river at high water events and reduce fill on the levee and impacts to the levee structure. Each abutment will be supported on vertical and battered piles driven through the levee and protected from scour with rock slope protection (RSP) consistent with the current RSP design. These have been coordinated with the levee slurry wall projects to avoid any interference. The existing stop log foundations on the east levee will be replaced with flood walls attached to Abutment 11. Structure backfill and required levee fill material will be used to return the levees to preconstruction condition.

On the Yuba City approach, Fifth Street continues from the Bridge over Feather River to the Second Street Undercrossing before touching down at grade. Abutment 2 of the Second Street Undercrossing structure is located on the landside of the west levee. Similar to Fifth Street Bridge over Feather River, the abutment will be supported on vertical and battered piles driven through the levee. Due to the span length and geometric consideration of Second Street, slope paving will be used to allow a steeper than 2:1 fill slope, similar to the existing Second Street abutment. The staircase from the Class I path on the existing bridge down to Second Street along the landside slope of the levee will be replaced with a new staircase adjacent to the north side of Abutment 2 and connecting with the new Class I path. Additional details of the Second Street Undercrossing Abutment 2 are included with the attached Bridge Plans.

Utilities

In Bridge

The new bridge will contain conduits for bridge lighting, future signal interconnectivity, communications, including the relocated AT&T, VAST (formerly CVIN), and Comcast facilities, and future uses. Comcast's facilities will relocate from their overhead attachment on the adjacent railroad bridge to conduits in the new Fifth Street Bridge. The new bridge will contain a City water line connecting the two independent city systems for use in emergency situations. The water line in the bridge will be owned by Yuba City and operated by the Public Works Department Utilities Division. Storm runoff on the bridge will be collected in a deck drainage system and conducted to outlets at Abutment 1, Piers 6, 7, 8 and Abutment 11.

PG&E in Riverfront Park

The PG&E poles and electrical lines in Riverfront Park in conflict with the bridge will be relocated. Relocation includes removal of 3 standard wood poles, replaced with 4 wood poles to provide better alignment and spacing over the soccer fields in Riverfront Park (see Utility Plans).

No PG&E natural gas facilities will be relocated within the CVFPB jurisdictional limits.

Other Utilities

Minor underground relocations will be required for electrical service to park lighting, as well as relocation of irrigation lines in the park that conflict with bridge foundations.

Bike Trails and Levee Access

Existing bike trails on both levees will be impacted by the bridge replacement. On the west levee, the patrol road/bike trail under the existing bridge will be realigned under the new bridge and trail connections from the top of levee to the new bridge will be reconstructed. The existing

landside levee access ramp will be removed, as it conflicts with the new Second Street Undercrossing Abutment 2. A 6' wide unpaved path from Second Street to the top of levee will be graded on the landside for pedestrian access, to mimic existing uses (see Layout Plans). A new landside access ramp will be constructed at the Teegarden Avenue access location, to provide levee maintenance crews access from the toe to the top in a southbound direction.

On the east levee, the trail beneath the bridge will be replaced due to anticipated excavation for abutment construction. Improved trail connections on the landward side of the levee will serve dual purposes. An ADA compliant 6' wide path will switchback along the levee slope and connect to the 10' Class I Path in Marysville. Between the end of bridge and the UPR undercrossing, a steeper segment of Class I Path will also provide vehicular access from Fifth Street to the top of levee for maintenance purposes.

A removable barrier segment will be used in the median of Fifth Street, and at the pedestrian and exterior barriers, where the top of levee aligns with the roadway at both east and west levees. To accommodate flood fight access to the levee, the barrier segments will be removable and lockable to prevent unauthorized tampering. The bike and pedestrian paths adjacent to the roadway will be blocked from unauthorized vehicular access with a locking pipe gate.

Construction

Construction Impacts to Environmental Resources

A temporary trestle would be built in order to construct the pier columns in the active channel river bed and support falsework during bridge superstructure construction. Dewatering and/or stream diversion may also be required.

Construction over Riverfront Park would necessitate a temporary closure of a portion of the park in the immediate vicinity of the existing Fifth Street Bridge and new bridge footprint. Construction activities would be contained to an area approximately 150 feet wide along the existing bridge alignment.

Major construction by season is as follows:

Construction Season 1 (April 16-Oct 31, typical):

- Construct temporary trestle over the river channel
- Construct CIDH piles and Columns for Stage 1 (Frame 1, Frame 2 and north half of Frame 3)
- Construct Abutment 1 and north half of Abutment 11
- Construct north half of Abutment 2 of Second Street Undercrossing
- Construct temporary staircase connecting existing bike path to existing bridge pedestrian walkway adjacent to Abutment 1
- Install falsework for Frame 2

Winter Season 1 (Nov 1-April 15, typical):

- Leave temporary staircase and falsework for Frame 2 in place
- Construct Frame 2 superstructure

Construction Season 2:

- Install falsework and construct Frame 1 and north half of Frame 3 superstructure (complete Stage 1)

- Construct north half of Second Street Undercrossing superstructure
- Remove all falsework and temporary staircase
- Shift traffic from existing Fifth Street Bridge onto completed portion of new bridge

Winter Season 2:

- No construction or obstructions

Construction Season 3:

- Remove existing Fifth Street Bridge
- Construct south half of Abutment 11
- Construct south half of Abutment 2 of Second Street Undercrossing
- Construct south half of Frame 3(Stage 2)
- Construct south half of Second Street Undercrossing superstructure
- Complete construction in river channel

Most of the staging areas are included in the proposed construction footprint of the new Fifth Street Bridge over Riverfront Park. However, additional staging areas within CVFPB limits located in the two paved parking areas north and south of the bridge in Riverfront Park may be used, as necessary, for project construction. Both of these areas are included in the environmental project study area.

Description of Permitted Work

Description of work to be done within Central Valley Flood Protection Board jurisdiction includes:

- Construction of a new four-lane bridge over the Feather River;
- Construction of a new four-lane overcrossing over Second Street;
- Construction of approach roadway connections;
- Construction of a Class I Path on the bridge, with links to levee trails and sidewalks;
- Reconstruction of Second Street from the westbound ramp intersection to the Bridge Street intersection, including sidewalks;
- Construction of a retaining wall on the west levee to support the Class I Path connection to top of levee from the Fifth Street Bridge
- Removal of stop logs on the top of the Marysville levee and construction of 3' to 4' tall floodwall extensions from the new bridge;
- Relocation of PG&E power poles, anchors and electrical lines in Riverfront Park;
- Relocation of underground electrical lines in Riverfront Park;
- Relocation of permanent irrigation system in Riverfront Park;
- Construction of an expanded parking lot in Riverfront Park, beneath the new bridge structure;
- Replacement of damaged existing facilities, such as fences, berms, lighting, bike trail, and driveway to parking lots beneath the new and removed bridge structures;
- Removal and revegetation of riparian habitat along the banks of Feather River;
- Construction of temporary irrigation system to water revegetation;
- Removal of existing bridge and foundations in river channel, to a depth of 3' below existing ground; and
- Construction of temporary pedestrian connections to the top of the west levee, during construction of Abutment 1 and Frame 1.

Addendum No. 2 to the CVFPB Encroachment Permit No. 19111BD

Purpose of this Addendum No. 2

The primary purpose of this addendum is to request revisions to the CVFPB Permit 19111 BD for the 5th Street Bridge Project and to provide revised pile plans for Abutments 1 and 11 of the 5th Street Bridge. We believe the US Army Corp of Engineers (USACE) will prefer the revised pile plans to those included in the original permit request. We have also included the details for Retaining wall No 35E, which supports the Class I bike path and access ramp from the roadway elevation at 5th Street down to the top of levee.

Fifth Street Bridge Abutment Foundations

This addendum replaces the vertical and battered driven concrete piles described on page 2 of the project description with vertical Cast-In-Drilled-Hole (CIDH) piles that will be drilled through the levee instead of driven. The CIDH piles will have a permanent casing for the top 20 feet of the pile. The largest challenge to the change in pile design was supporting the lateral abutment loads without battered piles. Lateral support in the design has been accomplished, through collaboration between the structure design and geotechnical engineers, by increasing the size and number of CIDH piles. A complete set of plans for the 5th Street Bridge have been included as Attachment B for use by the USACE.

Updated Contour Grading Detail sheets, GD-1 to GD-4, are included in the package as Attachment A depicting the planned limits of RSP at both levees.

Retaining Wall No. 35E Revisions

Please find a complete set of plans for Retaining Wall No 35E, Attachment B (sheets 22 to 24), provided for use by the USACE. As this retaining wall sits in the top of the west levee, we wanted to provide the USACE with full plans for this wall and more detail than that provided in the original application. The layout of the wall has been revised from the original layout to shift the wall alignment east to avoid direct conflicts with the internal levee cut-off wall.

This 160 foot long wall is cast-in-place concrete with heights ranging from 12 feet at the 5th Street Bridge Abutment No. 1 to 4 feet near the top of levee. The entire length of this wall will be supported on spread footings.

The purpose of this wall is to support an access ramp from the top of levee up to roadway elevation of the 5th Street Bridge. Without the wall, the waterside slope grading would conflict with the lower patrol road under the bridge, which provides maintenance access during milder storm events. Yuba City and LD-1 find this ramp essential to circulation for flood fighting operations as well as bike and pedestrian circulation. The bridge has been designed so that in a flood fight, where other patrol roads are inaccessible, equipment will be able to proceed up the

ramp, cross 5th Street utilizing removable barriers, and go down the opposite ramp to the top of levee. Currently, this level of access is not possible.

Summary

We believe the changes described in this Addendum 2 are design revisions that improve the proposed facilities while striving to meet USACE and CVFPB standards within the given constrained conditions.

As always, the City and Dokken Engineering are available to meet with CVFPB and USACE any time if it would be helpful with your reviews.

Prepared by:



Matt Griggs, PE
Project Manager
DOKKEN ENGINEERING

Date

ATTACHMENTS:

- A. Contour Grading Details at Levees
- B. Full Plans for 5th Street Bridge, including Retaining Wall No. 35E

Project Description for CVFPB Permit - Teegarden Avenue Access Ramp

Revised October 6, 2016

The purpose of this permit is to construct a new land-side levee access ramp in the southbound direction from Teegarden Avenue up to the top of the levee. The ramp will be 15 feet wide and paved with 3 inches of asphalt concrete over 6 inches class 2 aggregate base. Construction will include removing existing fencing, retaining wall and debris piles as well as removal coordination for 3 PG&E overhead electric poles.

Through discussions with Levee District No. 1, Yuba City believes that public pedestrians, cyclists, and flood fighting agencies would be well served by constructing this new levee access ramp, as there are no other southbound facing ramps on this reach of the river between 10th Street (SR-20) and B Street (two blocks south of Bridge Street). This application has been prepared in response to Condition No. 7 of the May 2, 2016 Levee District No. 1 Endorsement for the Fifth Street Bridge Replacement Project.

Teegarden Avenue Access Ramp

During coordination with Levee District No. 1 for design modifications of the existing levee we found that there are three ramps that provide access in the northerly direction, but none that provide access in a south facing direction. This proposed new ramp is shown on Attachment A, and provides the following benefits to public pedestrians and cyclists, as well as all the flood fighting agencies:

- A) Vehicles that want to go south on the patrol road can go up the new ramp from Teegarden Avenue and proceed directly south. Whereas currently they must go up the northern ramp from Teegarden and make a u-turn on top of the levee.
- B) This provides one northbound oriented ramp and one southbound oriented ramp at a safe access point to Teegarden Avenue.
- C) Teegarden Avenue is the designated bike route to connect downtown Yuba City and downtown Marysville. This access provides the necessary direct link in the bike plan.

The new landside access ramp will provide levee maintenance crews, pedestrians, and cyclists access from the toe to the top in a southbound direction. This will be the only levee access ramp from toe to top facing southbound on this reach of the river.

Description of Permitted Work

Description of work to be done within Central Valley Flood Protection Board jurisdiction includes:

- Removal of three PG&E power poles, anchors and electrical lines along the base of the levee
- Removal of wood debris piles along the base of the levee
- Removal and replacement of 40 feet of chain link fence along the base of the levee
- Removal of 83 feet of retaining wall along the base of the levee

- Construction of a new paved 15 foot wide levee access ramp from Teegarden Avenue to the top of levee. The ramp will be approximately 260 feet in length and be surfaced with 3 inches of asphalt concrete over 6 inches of aggregate base.
- Construction of bike friendly bollards near the base of the new ramp to restrict use by motor vehicles
- Construction of guard railing to prevent motor vehicles from entering the levee around the bollards
- Construction of a 15 foot access road for 120 feet along the landside base of the levee
- Signage improvements
- 80 feet of pavement resurfacing at the base of the ramp at Teegarden Avenue.

Access Ramp Grade Variance

The City has prepared the design of the Teegarden Avenue south to top of levee access ramp. The layout uses a 12% slope for the access ramp. The existing ramp slope near the Second Street Undercrossing varies to as much as 17%, is only 7.5 feet wide (at the narrowest point) and is a gravel surface. The new ramp is 15 feet wide and will have a paved surface at a uniform slope. The landside levee grading will meet and exceed standards for 2:1 slope.

According to Section 130 (c)(9)(A) of California Code of Regulations Title 23, “Typical plans for each type of approach ramp with restrictions and requirements are shown on Figures 8.08 and 8.09. Slope of ramp to be minimum 5 percent and a maximum grade of 10 percent.” Please see the attached Variance Request Letter, for approval to exceed the standard ramp grade.

The reason for requesting a variance to the grade of the access ramp is that the 12% ramp will be paved with 3 inches of asphalt concrete, thus mitigating maintenance concerns that a gravel ramp over 10% would create.

Utilities

An existing PG&E pole line along the landside toe of the levee carries overhead lines for electricity. It is anticipated that 3 poles will be removed and put underground within Sutter Street during this project to accommodate the levee ramp construction.

AT&T communication is also on the poles with PG&E.

Hydraulics

The proposed ramp is work is entirely on the landside of the levee and will have no impact on the hydraulics of the Feather River. Therefore, no hydraulic analysis is included with this permit application.

Geotechnical

The proposed ramp is entirely outside the existing levee prism. The imported material to be placed on the outside of the levee will meet ACOE requirements for levee material. Because this work is an additional buildup to the existing levee prism on the landside, no geotechnical analysis is provided. The ramp material should merely serve as additional buttress material to the levee at this location.

Maintenance Responsibilities

The City of Yuba City will be responsible for the maintenance of the southbound Teegarden Avenue levee access ramp surface, striping and bollards.

Levee District 1 will be responsible for maintenance of the guard rails, gates and toe access road.

Construction

Construction will be limited to the landside of the levee from Teegarden Avenue south approximately 300 feet. Construction will be contained within Levee District 1 right of way.

The existing bike trail on top of the levee will be temporarily impacted during construction by the grading for the new ramp construction. As the new landside ramp grading nears the top of levee to connect to the patrol road/bike trail, some temporary closure of the bike trail will be necessary. The project team will provide advance public notification of the temporary closure of the trail.

Construction is anticipated to be completed in one season (likely 2018) as follows:

Construction Season (April 16-Oct 31, 2017 or 2018):

- Remove debris, retaining wall and relocate fencing
- Construct land-side fill for access ramp and access road
- Place and compact aggregate base for ramp and road
- Construct guard rails, bollards and gate
- Pave access ramp and section of Teegarden Avenue
- Install erosion control materials

Winter Season 1 (Nov 1-April 15, 2018, 2019):

- Maintain erosion control features
- Coordinate approval of improvements by LD-1 and CVFPB
- Punch list work and cleanup