Section B – Bridge Concrete Barriers

Concrete Barrier Type 732SW

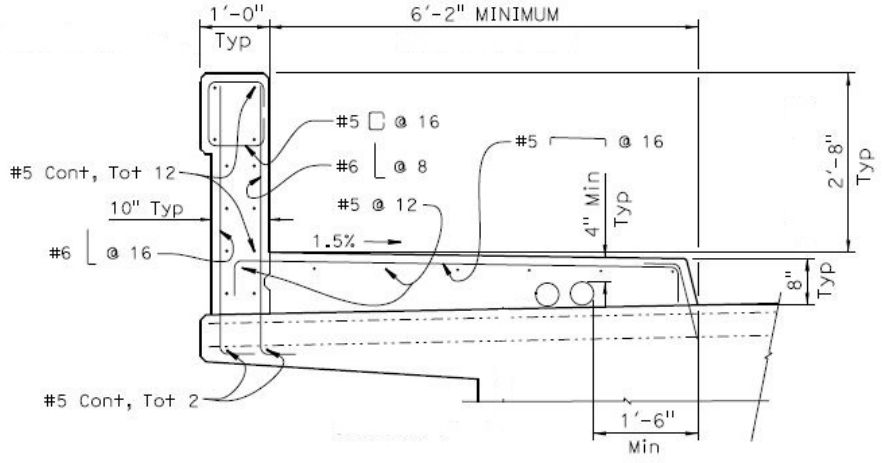
Standard Plan Numbers

B11-58 & B11-59

Implementation

New Standard Plans for the 2010 & 2015 Construction Contract Standards were published on January 20, 2017

Description of Component



Replaces Concrete Barrier Type 26

MASH compliant, per FHWA Letter of Eligibility B-259

Combination railing (vehicular/pedestrian) approved for TL-2 low-speed locations only (speeds less than or equal to 45 mph)

Concrete barrier with sidewalk, connected to bridge deck or wingwall.

Height is 2 feet – 8 inches above the sidewalk

Tubular Hand Railing or Chain Link Railing required to meet 42 inch minimum height requirement for pedestrians

Aesthetic treatment can be applied to vertical parapet

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Standard Drawing Features

Both Standard Plans sheets must be included in the contract plans:

B11-58 Details No. 1

- Typical Section, Elevation View and Plan View.

B11-59 Details No. 2

- Sections, Pedestal Details, Wing Wall connection and Approach Slab

Design/General Notes

Design Criteria:

AASHTO LRFD Bridge Design Specifications 6th edition:

$$f'_c = 3.6\ ksi$$

$$Fy = 60\ ksi\ \ (ASTM\ A706/706M)$$

Test Level 4 design loads

Supporting elements, such as the deck or overhang, must be designed to:

Case 1: Extreme Event II (transverse and longitudinal force)

Case 2: Extreme Event II (vertical forces)

Case 3: Strength I

The clearance to reinforcement in the sidewalk and parapet is 2 inches, as noted on the plans. (Concrete Barrier Type 26 has 1 inch clearance).

For projects located in a corrosive environment, refer to the AASHTO LRFD Bridge Design Specification Section 5.12 for using epoxy coated rebar and Standard Specifications 2015 section 52-2.

Sidewalk Design:

Per Highway Design Manual, 208.4 Bridge Sidewalks:

“Sidewalks on bridges should be provided wherever there are sidewalks or other pedestrian facilities that follow the highway. The minimum width of a bridge sidewalk shall be 6 feet. The recommended width should be 8 feet for pedestrian comfort. Bridge

sidewalks in area types (see Index 81.2) with high levels of pedestrian activity may need to be greater than 8 feet."

Crashworthiness:

Refer to the Division of Research, Innovation and System Information for crash test videos, Compliance Crash Testing of the Type 732SW Bridge Rail, Final Report, FHWA Letter of Eligibility B-259 and other general information.

Fixed objects, such as lighting standards or bridge mounted signs, must be placed on a corbel on the back side of the concrete barrier. Typical details are shown on the plans. For special situations, contact the Signs and Overhead Structure Technical Specialist.

Pedestrian Accessibility:

Concrete Barrier Type 732SW complies with the pedestrian accessibility guidelines in Design Information Bulletin 82 (DIB 82).

Bridge deck joints shall continue through the barrier and must be armored to comply with the requirements in DIB 82 for allowable change in horizontal and vertical elevations in pedestrian walkways. See, "Joint Armor for Pedestrian Walkways" detail on Bridge Standard Details, XS8-050 sheet.

If the Maximum Movement Rating is more than 2 inches, contact the Bridge Joint Seals and Bearings Specialist.

Utilities and Future Overlays:

Provide two- 4 inch conduits for future use as shown on the plans. Designers shall consider cross-slope, super elevation and other factors to ensure that there is adequate cover over planned or future conduits.

If an overlay is planned for a bridge deck with an existing Concrete Barrier Type 732SW, the deck surface should be removed to an equivalent depth of the overlay thickness for the height above Finish Grade to remain the same.

Additional Drawings Needed to Complete PS&E

Bridge Standard Details, XS8-050, Joint Armor for Pedestrian Walkway details.

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Contract Specifications

Caltrans Standard Specifications: Section 51 Concrete Structures, Section 52 Reinforcement, Section 55 Steel Structures, Section 75 Miscellaneous Metal, Section 83 Railings and Barriers, Section 83-1.021 Chain Link Railing

Restrictions on Use of Standard Drawings

Sound walls cannot be mounted on top of Concrete Barrier Type 732SW.

Concrete Barrier Type 732SW cannot be used in locations where the posted speed limit is more than 45 mph.

Special Considerations

Aesthetics:

The tubular hand rail requires a galvanized coating. There are no restrictions on choice of coating color. Common choices are: dull grey (unpainted), the chrome grey (unpainted), Natina Stain [rusty brown or mottled rusty brown] or green/ black/ or Golden Gate orange paint.

All project-specific modifications to Concrete Barrier Type 732SW must be reviewed by the Bridge Railing Technical Specialist in the Caltrans/Division of Engineering Services/Office of Design and Technical Services. Contact the Bridge Railing Technical Specialist by email.