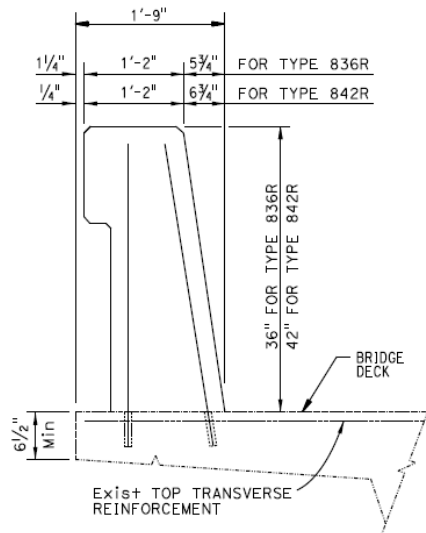




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Bridge Standard Detail Sheet (XS) Number
xs16-045

Description of Component

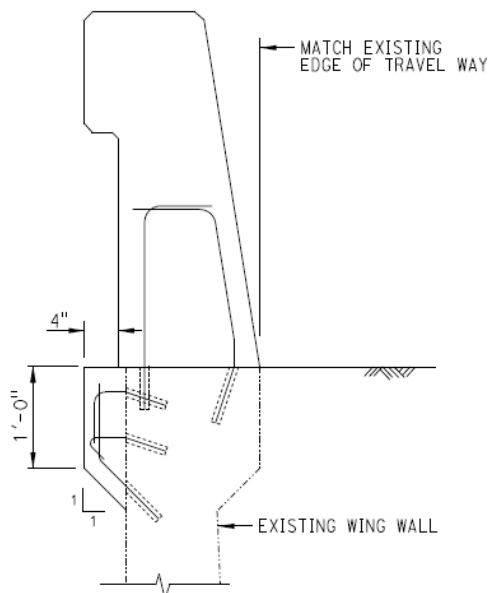


TL-4 rating, applicable for high speed locations, greater than 45 mph.

Height = 36 inch for Type 836R and 42 inch for Type 842R

Box Girder Bridge Deck Overhang Shown, Slab Bridge Deck Similar.

Type 836R or 842R on overhang



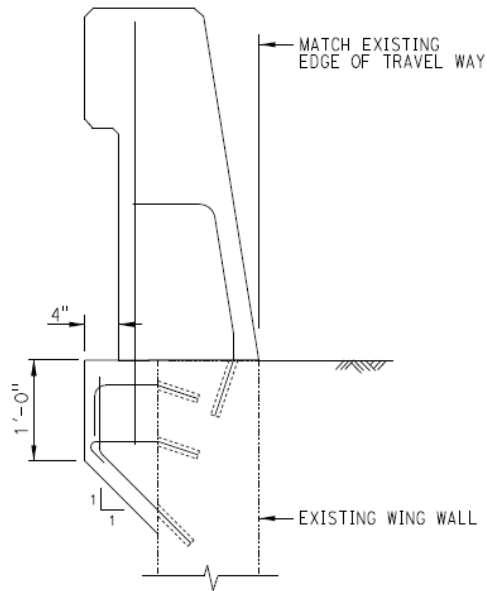
Concrete Barrier Type 842AR Retrofit on existing wingwall OPTION 1 is shown, Concrete Barrier Type 836AR Retrofit on existing wingwall OPTION 1 is similar.

Note: Edge of Travel Way is shown, Edge of Shoulder (ES) is similar.

Type 842AR – Option 1



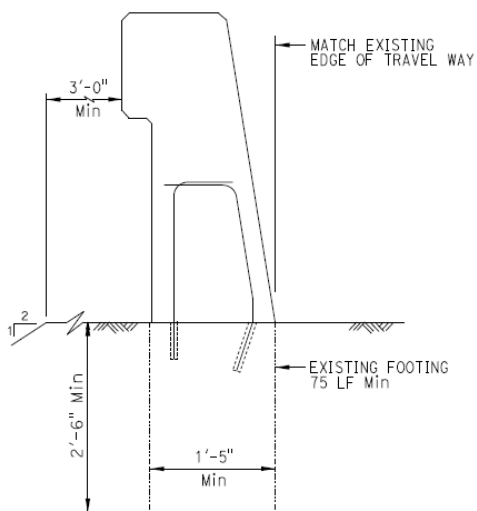
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Type 842AR – Option 2

Concrete Barrier Type 842AR Retrofit on existing wingwall OPTION 2 is shown, Concrete Barrier Type 836AR Retrofit on existing wingwall OPTION 2 is similar.

Note: Edge of Travel Way is shown, Edge of Shoulder (ES) is similar.



Type 842BR

Type 842BR Retrofit on trench footing is shown, Type 836BR Retrofit on trench footing is similar.

Note: Edge of Travel Way is shown, Edge of Shoulder (ES) is similar.



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Standard Drawing Features

- Notes
- Type 842R
- Type 842AR, Option 1
- Type 842AR, Option 2
- Type 842BR
- Pedestal Elevation

Design Notes / Plan Sheet Details

Design Tools for Designers:

AASHTO LRFD Bridge Design Specifications, 8th Edition with California Amendments. 54kip maximum traffic impact distributed over $L_t = 3.5$ feet at the top of the barrier, which results in the following values for L_c at the deck overhang condition as shown in Table 1 below.

Table 1 - Critical Length of Yield Line Failure Pattern L_c

Barrier Type	L_c Interior Segment *	L_c Near Joint Segment**
Type 836	15.0 feet	6.7 feet
Type 842	15.7 feet	6.9 feet

Load Combinations and L_c on the plan sheet are given for barrier attachments to existing bridge overhang only.

* Interior segment at least L_c away from deck joint,

** Near joint segment within L_c from deck joint.

Reinforced Concrete Strengths for New and Existing Concrete

New Concrete	Existing Concrete
$f'_c = 3.6$ ksi $f_y = 60$ ksi	$f'_{ce} = 4.0$ ksi $f_y =$ See As-Builts

Designer must verify the following:

1. Designers must ensure that any supporting structures, such as the bridge deck, overhang, wingwall, and /or trench footing meet the requirements in the AASHTO LRFD Bridge Design Specifications and Section 13, Railings, and Appendix A13 and as amended by Caltrans' California Amendments.



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Concrete Barrier Type 836/842 Retrofit

There are three overhang design cases per AASHTO LRFD Bridge Design Specifications Appendix A13:

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

Case 2: Extreme Event II (vertical forces)

Case 3: Strength I

2. Strength of existing wingwall with barrier attachment and L_c at wingwall must be verified separately.
3. Minimum dimensions shown on the plans for deck overhang, trench footing depth, trench footing width, and minimum length of trench footing must be met. Designer must replace minimum dimensions by actual dimensions.

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.

Additional Drawings Needed to Complete PS&E

1. For details not shown, see RSP B11-79, RSP B11-80, RSP B11-81 & RSP B11-82.
Dimensions may vary with roadway cross slope and with certain thicknesses of surfacing, See Roadway Plans.
2. For electroliner mounting details, see RSP B11-81, RSP B11-82, ES-6A and ES-6B.
3. If Chain Link Railing (CLR) is required or desired, it will be permissible to be attached to Concrete Barrier Type 836/842 Retrofit per Standard Plan B11-7.
4. Connection of concrete transition end block to guardrail transitions at approach and departure ends: Standard Plans A78F1 & A78F2 for Three Beam Barrier or Standard Plans A77U1 & A77U2 for Midwest Guardrail System (MGS).

If the bridge rail concrete transition end blocks for a project are going to connect to something other than the guardrail transition Standard Plans for either Three Beam Barrier guardrail or Midwest Guardrail System, then special designed details will be required.



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Contract Specifications

Caltrans Standard Specifications: Section 51 Concrete Structures, Section 52 Reinforcement, Section 56 Overhead Sign Structures, Standards, and Poles, Section 75 Miscellaneous Metal, Section 83 Railings and Barriers, and Section 59 Painting.

Restrictions on Use of Standard Drawings

Sound wall cannot be mounted on Concrete Barrier Type 836/842 Retrofit.
A TL-4 rated bridge rail can be used in a high speed (greater than 45mph) or low speed location (45mph or less).

Special Considerations

Future overlays:

The height above Finish Grade for bridge railing at completion of construction contract cannot be less than the heights shown on the Revised Standard Plan sheets for Concrete Barrier Type 836/842. For example: 42-inch height above concrete deck with no overlay, or 42-inch height above the Finish Grade of a polyester concrete overlay.

If an overlay is planned for a bridge deck with an existing retrofitted Concrete Barrier Type 836/842 Bridge Rail, the deck surface should be removed to an equivalent depth of the overlay thickness in order for the height above Finish Grade to remain the same. The other option is for the planned deck overlay to taper down and end 3 feet away from the toe of the traffic-side of the bridge rail.

All project-specific modifications to Bridge Standard Details Sheet, XS 16-045, Concrete Barrier Type 836/842 Retrofit must be reviewed by the Bridge Railing Technical Specialist in the Caltrans/Division of Engineering Services/Office of Design and Technical Services. Please contact the [Office of Design and Technical Services](#).