SECTION 13: RAILINGS

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13.1 Scope

Bridge railing design shall be consistent with AASHTO LRFD Specifications Section 13. The design engineer is encouraged to use ADOT Bridge Group structure detail drawings wherever appropriate. Bridge Group website maintains the latest versions of these standard drawings.

13.4 General

Bridge railing design for new bridges should be based on the current AASHTO LRFD Bridge Design Specifications for the selected Test Level.

All new bridge railings without a sidewalk shall have a minimum of TL-4 rating and an overall minimum height of 38 inches measured from the top of the roadway. For bridges with a sidewalk, the minimum bridge railing rating shall be TL-4 and the overall minimum height of the bridge railing shall be 42 inches measured from the top of the sidewalk.

All bridge railings in a system freeway-to-freeway interchange where ramps cross traffic lanes or highly occupied areas shall have a minimum of TL-5 rating and an overall minimum height of 42 inches measured from the top of the roadway. In this instance, the TL-5 bridge barrier shall continue at a minimum to the end of the approach slab or anchor slab if included in the design or retaining wall, whichever is longer.

Bridges requiring railings for pedestrians, multi-use paths or paths designated for bicyclists shall utilize railings with a minimum overall height of 42 inches measured from the top of the roadway.

Bridges requiring pedestrian sidewalks and are posted for 45 mph or less shall utilize the Combination Pedestrian-Traffic Bridge Railing. The fencing addition to the Combination Pedestrian-Traffic Bridge Railing shall only be utilized when the bridge crosses a roadway, pedestrian facility and/or a railroad. Bridges crossing railroads without pedestrian access shall utilize chain-link fencing as required by the railroad agencies guidelines for grade separation structures.

Median barriers on two-way ramp bridges or parallel bridges with closed medians shall use, at a minimum, 42 inch high barriers to address glare from opposite directional traffic.

For barrier replacements, the new barrier shall meet the requirements of AASHTO LRFD Section 13 and these guidelines. For older bridges not designed to the AASHTO LRFD Design Specifications, effects on existing decks and superstructures shall be evaluated based on the AASHTO Standard Specifications for Highway Bridges, 17th Edition.

When sound walls are needed on a bridge, they should be placed behind bridge railings to maintain the intent of the design and to ensure that the railings will perform according to their crash test levels. A minimum gap of 2 inches should be maintained between the railings and the sound walls.

Concrete Barriers required adjacent to cast-in-place retaining walls, MSE walls or other drop offs not meeting roadway barrier and guardrail details shall utilize the applicable barrier on moment slab (footing) shown on the available standard drawings.

The following is a list of ADOT's railings structure detail drawings, method of measurement, and bid item numbers:

Structure Detail Drawing		Method of measurement	Bid Item Number
SD 1.10: 38 inch Single Slope Concrete Bridge Barrier and Transition (TL-4)		Linear Foot	6011150
SD 1.11: 42 inch Single Slope Concrete Bridge Barrier and Transition (TL-5)		Linear Foot	6011151
SD 1.12: Combination Pedestrian-Traffic Concrete Bridge Railing (TL-4)		Linear Foot	6011132
SD 1.13: Pedestrian Fence for Bridge Railing SD 1.12		Linear Foot	6011132
SD 1.30: Barrier Junction Box	Type I	Each	7320475
	Type II	Each	7320476

Structure Detail Drawings are available on the Bridge Group website.

Bridge concrete barriers shall not be constructed using slip forms. Painting the inside of bridge barriers shall not be allowed due to long-term maintenance concerns.

Rustication on the exterior of bridge barriers shall be limited to a thickness of 2 inches. Rustication may extend the full height of the barrier.

13.7.3 Railing Design

For bridge railing design parameters please refer to Section 9.8 of these guidelines.