



Florida Department of Transportation



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TO: District Directors of Production, District Construction Engineers, District Design Engineers, District Structures Design Engineers

FROM:  Robert Robertson, P. E., State Structures Design Engineer
 Brian Blanchard, P.E., Director, Office of Construction

COPIES: Lora Hollingsworth, Timothy Lattner, David O'Hagan, David Sadler, Jon Henri Mayer, Andre Pavlov, Jeffrey Ger (FHWA)

SUBJECT: Temporary Design Bulletin C07-05
DCE Memorandum No. 10-07
Shop Drawing Approval of Pedestrian/Bicycle Picket Railing Anchor Bolts
(Design Standards Index Nos. 850 & 860)

REQUIREMENT

Shop drawings for Pedestrian/Bicycle Picket Railings must clearly indicate the length of anchor bolts that will be provided for each section of railing by either explicitly showing the anchor bolt length and embedment length, or the installation case referenced in the Index 850 and 860 "Anchor Bolt Table" (Case I, Case IIa or Case IIb). The length of the anchor bolt and embedment is dependent on the foundation structure, and must meet the minimum lengths shown in the "Anchor Bolt Table" on these Indexes.

The Engineer responsible for approval of the shop drawings shall verify the correct anchor bolt embedment length is indicated for each section of railing on the shop drawings.

The CEI inspector shall verify the anchors provided for installation of these railings meet the length requirements of the appropriate Index.

The only approved exception to the lengths shown on Index 850 and 860, will be for 42" Pedestrian Picket Railings on gravity walls with post spacings not exceeding 5'-0", which may use a reduced 9" anchor bolt embedment (11" bolt length) due to the reduced loading at each post. No anchor bolt embedment length reductions will be permitted on other foundation types for this reduced post spacing. The 54" Bicycle Picket Railings will still require the full 1'-0" embedment on gravity wall installations, regardless of post spacing.

COMMENTARY

Vendor originated shop drawings are being approved by EOR's with incorrect anchor bolt lengths. These shop drawings are often generic and show the anchor bolt length to be 11", which will only provide 9" embedment length, regardless of the application. There are usually multiple foundation types upon which the railings will be mounted within a single project, which may have different embedment requirements in accordance with Index 850 or 860. Once these shop drawings are reviewed and approved, it is often interpreted by the Contractor that the reduced embedment length for gravity wall installations has been specifically approved on the shop drawings and supersedes the "Anchor Bolt Table" requirements on the Indexes.

BACKGROUND

Anchor Bolt embedment is a function of many different factors including edge clearances, bolt spacing, concrete strength, foundation reinforcing and design loads. The minimum embedments shown in Index 850 & 860 were determined based on all these parameters within the limits of maximum post spacing, minimum edge distances, standard concrete strengths and reinforcing requirements shown on the Indexes. An individual analysis of every possible variation of installation will not be approved by the State Structures Design Office. However, the Department can perceive the benefit of a uniform bolt embedment length of 9" for all applications of the 42" Pedestrian Picket Railing when the post spacing is reduced, and therefore provides approval for this exception.

The anchor bolt embedment length on Index 870 and 880 (Aluminum & Steel Pipe Guiderail) are only 6" because of the smaller design load on these railings.

IMPLEMENTATION

This policy is effective for all projects immediately. The 2008 Design Standards Index No. 850 and 860 will be modified to clarify these requirements in the Shop Drawings note and the Anchor Bolt Table.

CONTACT

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