



Florida Department of Transportation

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M E M O R A N D U M

DATE: April 27, 2016

TO: Specification Review Distribution List

FROM: Dan Hurtado, P.E., State Specifications Engineer

SUBJECT: Proposed Specification: **9670000 Rail Elements for Guardrail.**

In accordance with Specification Development Procedures, we are sending you a copy of a proposed specification change.

The changes are proposed by Richard Stepp of the State Roadway Design Office to separate the material requirements previously included throughout Design Standards Index 400 and Specification Section 536.

Please share this proposal with others within your responsibility. Review comments are due within four weeks and should be sent to Mail Station 75 or online at

<http://www2.dot.state.fl.us/ProgramManagement/Development/IndustryReview.aspx> .

Comments received after **May 25, 2016**, may not be considered. Your input is encouraged.

DH/ot
Attachment

RAIL ELEMENTS FOR GUARDRAIL.

(REV ~~3-24294-4256-16~~)

SECTION 967 is deleted and the following substituted:

SECTION 967
RAIL ELEMENTS COMPONENTS FOR GUARDRAIL

967-1 Description Steel Guardrail.

This Section covers the material and fabrication requirements for Guardrail components as shown in the Design Standards, Index 400 Series and the Approved Products List (APL) as applicable.

967-2 Materials.

Obtain All components supplied under this Specification shall be from producers currently on the list of Producers with Accepted Quality Control Programs. Producers seeking inclusion on the list of Producers with Accepted Quality Control Programs must meet the requirements of Section 105.

967-2.1 Timber: *Use Timber products must have with a minimum stress grade of 1200 psi and meeting the material requirements of Section- 954. Timber is to be dressed on four sides (S4S) and Treated in accordance with the post requirements in Section- 955. Dress on four sides (S4S).*

967-2.2 Steel: *Use S Steel guardrail materials must shall meeting the requirements of AASHTO M180, (except as specified below), and for either Class shown. Type 2 zinc coating will be required component fabrication requirements below in 967-3.*

Where specified, weld components must be welded in accordance with the American Welding Society Structural Welding Code ANSI/AWS D1.1 (current edition) using material conforming to E60XX. Nondestructive testing of welds is not required.

967-3 Fabrication.

Fabricate components in accordance with the Plans, the Design Standards, and the APL Drawings as applicable.

967-3.1 Posts: *Furnish p Posts shall not varying more than 1- inch from the specified length shown in the Design Standards.*

967-3.1.1 Timber Posts: *Posts shall be shaped and drilled Shape and drill posts prior to wood treatment.*

967-3.1.2 Steel Posts: *Use Provide p Post materials in accordance with must conforming to the requirements of ASTM- A6 and ASTM- A36. Drill or punch the steel posts prior to galvanizing in accordance with ASTM A123. Use s Steel guardrail p Posts must be fabricated from rolled sections with cross-sections defined in the American Institute of Steel Construction (AISC) Manual of Steel Construction as called for in the Design Standards. Posts must be drilled or punched prior to galvanizing in accordance with ASTM A123.*

967-3.2 Special Steel Posts: *Posts and Use p plate materials in accordance with must meet the requirements of ASTM- A6 and ASTM- A36. Use post material meeting the above requirements for Steel Posts. Posts and plates must be drilled, punched, and/or welded prior to*

~~galvanizing in accordance with ASTM- A123. Drill, punch, and/or weld the steel posts and plates prior to galvanizing in accordance with ASTM A123.~~

967-3.3 Offset Blocks: ~~Furnish Offset Bblocks that do~~ must not vary more than 0.25 -inch from the specified dimensions in the Design Standards.

967-3.3.1 Steel Offset Blocks: Blocks must ~~M~~meet the ~~above~~ requirements for ~~Ssteel P~~posts.

967-3.3.2 Timber Offset Blocks: Blocks must ~~M~~meet the ~~above~~ requirements for ~~Ttimber P~~posts.

967-3.3.3 Composite Offset Blocks: ~~Furnish Composite Ooffset Bblocks as~~ must be listed on the APL. Manufacturers seeking evaluation of their product for approval must submit an application in accordance with Section- 6 and include the following:

~~1. A detailed drawing of the product, with the product name and specifications suitable for posting on the APL.~~

~~21. Independent T~~Test reports from an independent laboratory ~~that indicate~~ showing the product meets all crash test requirements of the National Cooperative Highway Research Program, Report 350 (NCHRP- 350) or the Manual for Assessing Safety Hardware 2009 (MASH-09).

~~32. Test reports from an independent laboratory showing Independent test reports indicating that~~ the composite material meets the following physical requirements:

<i>Composite Block</i>	<i>Test Method</i>	<i>Requirement</i>
<i>Durometer Hardness</i>	<i>ASTM D2240 Shore D</i>	<i>Minimum 50</i>
<i>Durometer Hardness after UV exposure</i>	<i>ASTM D5870</i>	<i>< 15 points change from initial after exposure per ASTM D4329, 1000 hours, cycle C, type UVB-313 lamps</i>

967-3.4 Steel Panels: ~~Furnish W-Bbeam, Thrie-Bbeam, Thrie-Bbeam T~~transitions, ~~T~~terminal ~~C~~connectors, ~~E~~end ~~S~~shoes, ~~E~~end ~~U~~units, and all compatible paneling must meet the ~~in accordance with~~ requirements of ~~As an exception to the requirements of~~ AASHTO M180, ~~with the exception of the requirements below. with the exception of the following:~~

~~U~~except use 1. Type- II zinc coating is required for all classes of panels (i.e. beams or rails)

~~and meet the requirements of~~ 2. ASTM- A123 must be followed ~~regarding the for~~ coating properties, sampling, test methods, inspection, and certifications related to ~~galvanization~~the coating properties, sampling, test methods, inspection, and certification related to galvanizing regardless of the method of galvanization of the rail elements shall meet the requirements of ASTM A123.

~~3. Galvanization must occur after fabrication, including treatment of slots and holes.~~

967-3.5 Bolts: ~~Furnish Hex Head Bolts and Bbutton Hhead Bbolts~~All supports, fastenings and other accessories, including bolts, nuts, washers, and other accessories etc., ~~per~~ must meet the material requirements of AASHTO- M180, except bolts must be ~~(and including the steel trailing end anchorage rods required to be used with aluminum guardrail)~~ shall be galvanized ~~d~~ in accordance with ~~as specified in~~ ASTM A153.

967-3.6 Barrier Delineators: ~~Furnish Barrier Delineators in accordance with~~ must meet the requirements of Sections- 705 and 993 and ~~as~~ be listed on the APL.

967-3.7 End Delineators: Retroreflective sheeting is to be ~~Use~~ yellow, Type IV or greater ~~Retroreflective Sheeting in accordance with Section- 994 and as~~ listed on the APL.

967-3.8 Steel Plates: ~~Furnish s~~ Steel plates ~~in accordance with~~ must meet the requirements of ASTM -A36. Drill holes prior to galvanizing in accordance with ASTM- A123.

967-3.9 Pipe Rail: ~~Use~~ Pipe is to be Schedule ~~No.- 40~~ Pipe in accordance with ASTM A53 and, ~~- if applicable, W~~welded ~~, if applicable,~~ prior to galvanizing.

967-3.10 Rub Rail: ~~Use~~ Rail materials ~~in accordance with~~ must meet the requirements of ASTM- A36. Drill, punch, and ~~or~~ weld the panels prior to galvanizing ~~per~~ in accordance with ASTM- A123.

967-3.11 Steel Tube Foundations: ~~Furnish Steel Tube F~~foundations must ~~meeting~~ the requirements of ASTM- A500, Grade B. After all punching, drilling, stamping, and ~~or~~ welding is complete, steel tube foundations are to be galvanized in accordance with ASTM- A123.

~~Use b~~ Brackets and fixtures must meet the requirements of ~~in accordance with~~ ASTM- A36. ~~Drill or punch the f~~Foundations must be drilled or punched prior to galvanizing in accordance with ASTM- A123.

967-3.12 Approach Terminal Assemblies: ~~Furnish Approach T~~erminals ~~as listed~~ must be listed on the APL. ~~The APL number must be permanently marked on each assembly at a readily visible location using lettering of at least 3/4 inches in height.~~

Manufacturers seeking evaluation of their product for approval must submit:

1. A completed ~~an~~ application in accordance with Section 6, ~~and~~ including a product drawing meeting the dimensions of Design Standards, Index No. 400 and that is signed and sealed by a registered Florida P.E.

2. Independent test reports indicating that the product meets all crash test requirements of MASH-09 or NCHRP 350 as applicable ~~must submit~~

3. ~~d~~Documentation showing the ~~Approach Terminal A~~sssembly is deemed eligible by the Federal Highway Administration for federal funding on the National Highway System (NHS). ~~A completed application must be submitted in accordance with Section 6 including a product drawings showing that the product meets meeting the requirements of this Section, and the Design Standards and that is signed and sealed by a registered Florida P.E., and Product approval is contingent on the FDOT's evaluation of independent test reports, submitted by the manufacturer, that indicatinge that the product meets all crash test requirements of the NCHRP 350 or MASH-09.~~ — Acceptance of steel guardrail materials shall

be based on manufacturer's certified mill analysis of test results meeting the specification limits of the ASTM or AASHTO designation as stated above. Certification of these test values, representing each shipment of guardrail materials, shall be provided to the Engineer for each project.