Florida Department of Transportation

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TO: District Directors of Operations, District Directors of Production, District Design Engineers, District Structures and Facilities Engineers, District Maintenance Engineers, District Construction Engineers, District Structures Design Engineers,

FROM: William N. Nickas, State Structures Design Engineer
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SUBJECT: Temporary Design Bulletin C06-05
Roadway Design Bulletin 06-04
Policy for Miscellaneous Attachments to Traffic Railings / Barriers

REQUIREMENTS(2)

Delete Chapter 4, Table 4.3.1 of the January 1, 2006 PPM Volume I and replace it with the following:

Table 4.3.1 Minimum Offset of Barriers
(Measured from the face of the barrier)

BARRIER TYPE	OFFSET (ft)
W-Beam with Post Spacing @ 6'-3"	4.0
W-Beam with Post Spacing @ 3'-1 1/2"	3.0
Thrie-Beam with Post Spacing @ 6'-3"	3.3
Thrie-Beam with Post Spacing @ 3'-1 1/2"	2.6
Barrier Wall	0*
Double W-Beams (Nested) with Post Spacing @ 3'-1 1/2"	2.6
Double W-Beams (Nested) with Post Spacing @ 1'-6 3/4"	2.3

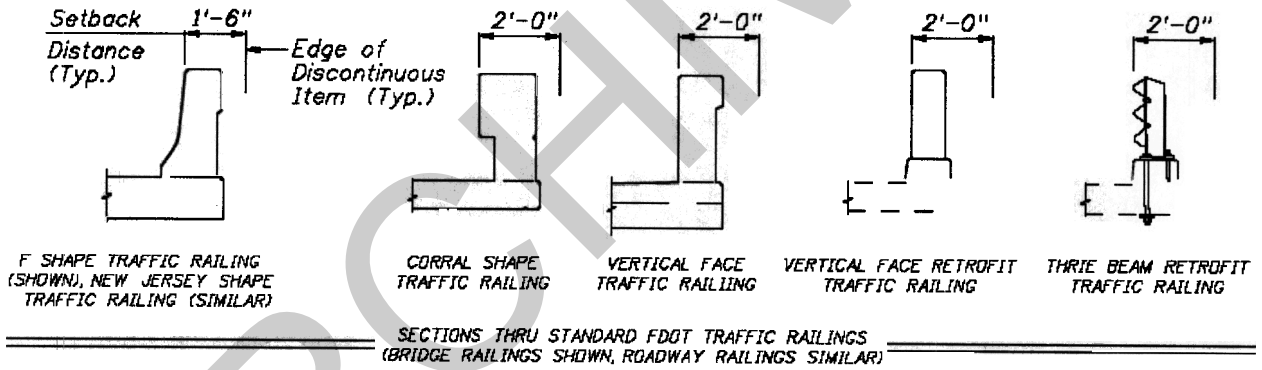
* Except where specifically provided for in the Design Standards, hazards that extend above the top of a barrier wall shall be offset a minimum 1.5' from the face of the top edge of F-shape barrier, and a minimum 2.0' from the face of vertical shape barrier.

Delete Section 6.7.8 of the January 2006 SDG and replace it with the following:

6.7.8 Miscellaneous Attachments to Traffic Railings:

A. Outside Shoulder Traffic Railings

Provide setback distances as shown below to non-crash tested discontinuous items, e.g. light poles, sign supports, traffic signal controller boxes, flood gauges, etc., that are attached to or located behind outside shoulder traffic railings. Discontinuous items located within these setback distances must be crash tested to, or accepted at, ***NCHRP Report 350*** Test Level 3 minimum as attachments to traffic railings.



Fender access ladders are exempt from this requirement. Sign panels may be placed within the given setback distances, however the setback to the sign support may have to be increased to assure sign panels do not extend past the top inside face of the traffic railing. Motorist aid call boxes may be placed within the setback distances to allow for proper access and to meet ADA requirements, however the call box must not extend past the top inside face of the traffic railing.

Provide a setback distance of 5'-0" minimum from the face of outside shoulder traffic railings at deck or roadway level to non-crash tested continuous items, e.g. sound barriers, glare screens, fences, etc., that are attached to or located behind the railings. Sound barrier / traffic railing combinations located within this setback distance must be crash tested to, or accepted at, ***NCHRP Report 350*** Test Level 4. Other continuous items located within this setback distance must be crash tested to, or accepted at, ***NCHRP Report 350*** Test Level 3 minimum as attachments to traffic railings.

B. Median Traffic Railings

Do not place sign supports on median traffic railings unless AASHTO or FDOT standard design requirements for sign visibility cannot be met by placing the sign supports on the outside shoulder of the roadway or outside shoulder bridge or roadway traffic railing as described above. If sign supports must be attached to or placed within a median traffic railing, utilize a standard FDOT or other crashworthy detail specifically developed for that item as an attachment to a traffic railing. Discontinuous items located on median traffic railings for which no FDOT standard detail or design is available for must be crash tested to, or accepted at, ***NCHRP Report 350*** Test Level 3 minimum as attachments to traffic railings.

Continuous items, e.g. glare screens and fences, located on median traffic railings must be crash tested to, or accepted at, ***NCHRP Report 350*** Test Level 3 minimum as attachments to traffic railings.

These requirements also apply to back-to-back outside shoulder traffic railings that are located so close together that the required setback distances as defined in paragraph "A" cannot be provided for both railings. See also the requirements stated in ***PPM*** Vol. 1, Table 2.11.2.

C. Existing Attachments to Traffic Railings

Evaluate existing attachments to traffic railings on existing facilities on a case by case basis as the facility is incorporated into a project. Evaluate the type of attachment and any crash history at a given location, number of attachments on the structure, ease of relocation, etc. to determine if the attachment needs to be removed or relocated. Large sign support structures should be relocated if possible.

COMMENTARY

These criteria are intended to improve crashworthiness of traffic railings and the miscellaneous attachments that are made to them while still meeting minimum standards for accessibility and roadway signing and lighting. No specific guidance on this issue is provided in ***LRFD*** or ***NCHRP Report 350***. These criteria are based on findings and recommendations from ongoing research that began as a result of this lack of guidance.

These criteria are subject to being changed and or supplemented as further studies are completed.

BACKGROUND

The new criteria stated herein is an extension of existing FDOT requirements for traffic railing mounted sound barriers.

FHWA policy requires that all roadside appurtenances such as traffic railings, light poles and sign supports used on the National Highway System within the clear zone meet the performance criteria contained in ***NCHRP Report 350. LRFD*** also references ***NCHRP Report 350*** and requires traffic railings to be structurally and geometrically crashworthy. Although ***NCHRP Report 350*** offers guidance for the safety performance evaluation of traffic railings, light poles and sign supports as individual items, it offers no guidance toward the evaluation of combinations of these items, e.g. light poles placed on or near traffic railings.

To address this shortfall, ongoing research is being conducted to identify safety related issues associated with attaching miscellaneous items to traffic railings. The research findings to date indicate that items attached to the tops of or placed directly behind traffic railings are subject to being struck by impacting vehicles, potentially creating hazards to the impacting vehicles as well as the potential for hazardous debris generation.

A probabilistic risk analysis for determining the design requirements for making attachments to traffic railings has yet to be conducted. The results of such a risk analysis, combined with the research completed to date, have the potential to eventually be included in ***LRFD*** or successors to ***NCHRP Report 350***.

Until such time, the Department has determined that the given set back distances are appropriate for all continuous and discontinuous attachments to FDOT standard outside shoulder traffic railings. Attachments to median traffic railings should be avoided if possible unless a crashworthy design is utilized. This is because the given set back distances for the traffic on opposite sides of the standard width median traffic railing overlap, thus allowing for no place to make an attachment to the median railing that is not within the set back distance of one side or the other.

Sign supports, light poles, etc. that have been successfully crash tested in ground mounted configurations may not necessarily be acceptable for use as traffic railing mounted items. This is due to the different ways and locations that impacting vehicles contact ground mounted items versus traffic railing mounted items. Thus the requirement to have these items crash tested or evaluated specifically as traffic railing mounted items is imposed. Slip base and breakaway supports are not recommended for attachments to median traffic railings or outside shoulder traffic railings if the attachment is placed over an intersecting roadway below.

The following Design Standards for traffic railing attachments comply with the above requirements and are suitable for continued use:

Index No. 810 Bridge Fencing (Vertical) – Test Level 3
Index No. 812 Bridge Fencing (Enclosed) – Test Level 3
Index No. 5210 Traffic Railing / Sound Barriers - Test Level 4
Index No. 21200 Light Pole Pilaster – Setback distance compliant

The following Design Standards are currently being evaluated and will be updated, revised or replaced to incorporate these requirements. Continue to use the latest available versions of these standards until replacements are issued:

Index No. 410 Concrete Barrier Wall, Sheet 4 of 22, Light Pole Mounting in Median Barrier Wall
Index No. 461 Opaque Visual Barrier
Index No. 821 Aluminum Pedestrian / Bicycle Bullet Railing for Traffic Railing (32" F Shape) w/ details from Index No. 822
Index No. 17302 Typical Sections for Placement of Single and Multi-Column Signs

Specific details and standards will be developed as time allows and based upon the priority list as determined with input from the Districts.

IMPLEMENTATION

These requirements are effective immediately on all projects that have not yet begun design, and are to be incorporated to the extent practical on all projects currently in design where it can be done so without impact to production schedules and budgets.

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