

Chapter 29

Structural Supports for Signs, Luminaires, and Traffic Signals

The following are changes, additions or deletions to the January 2013, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

29.1 General

Add the following paragraphs

For projects that involve the re-use of existing miscellaneous structures, the provisions of Section 25.4.26 applies, even if the project is not a RRR.

During the design process, the Design Consultant should coordinate with FTE Maintenance to secure structure numbers for overhead cantilever and span sign structures. These structure numbers should be used in the Signing and Pavement Markings plan set.

Miscellaneous Structures (sign structures, mast arms, etc.) shall use a galvanized coating per the applicable Standards. Do not paint or otherwise coat these structures without consent of FTE. Coordinate with the Turnpike Project Manager as necessary.

Typically if a drilled shaft supporting a sign structure is deemed unacceptable in construction, a replacement shaft can be constructed nearby. The Consultant shall identify any sign structure foundation locations that are critical (cannot be moved nearby), and follow the construction requirements of gantry drilled shafts in the General Toll Requirements for those foundations

29.2.4 Standard Overhead Span Sign Structures

29.2.5 Standard Overhead Cantilever Sign Structures

Add the following paragraphs

All overhead sign structures including those carrying DMS, shall be designed to accommodate 25% extra sign area than what is called for in the plans. Sign structures shall be designed for a minimum sign panel weight of 5 lbs/sf for conventional sign panels and 25% extra dead load for DMS. The requirements for minimum and future sign panels in Structures Manual Volume 9 also apply. If 125% of the proposed panel area is less than the Volume 9 minimum area, the Volume 9 minimum area should be used. If signs are not present over lanes, the Volume 9 minimum area should be used. Refer to TPPPH Section 2.10 for the requirements of minimum vertical clearance.

Minimum vertical clearance requirements are measured to the proposed plan sign panel.

The designer is responsible to determine the dimensions of the 125% panel that will create the worst case loading scenario. For historical documentation, a note shall be added to each sign structure cross-section and to the structural Table of Variable notes that the design accounts for the 25% increase in area.

Application of the 25% extra area and weight is not required when analyzing existing sign structures for re-use.

The designer should verify that the sign panel size conforms to the FDOT Standard Index drawings with regards to vertical hangers, wind beams and luminaire arms. If not, special design and details should be provided in the S&PM plans.

At the time of editing the 2013 edition, FDOT Structures Design Office was beta testing a MathCad version of a sign structure design spreadsheet. When used, the 125% area and dead load increases can be ignored, however the maximum acceptable CSR shall be set to 0.80 (rather than 1.00) for all components in the spreadsheet.

29.2.6 Custom Designs

Add the following paragraph

For bridge mounted sign structures, connection to the traffic railing barrier should be avoided where possible. If it is absolutely necessary to connect to the barrier, the point of connection should be no more than one (1) foot above the top of deck.

29.2.7 Dynamic Message Sign (DMS) Structures

Add the following paragraph

For projects that involve the re-use of existing sign structures carrying DMS signs, at a minimum, existing U-bolts which connect the truss chords to the upright shall be replaced with high-strength U-bolts. Also refer to 29.2.4 and 29.2.5 for additional TPPPH requirements.

29.4.2 Mast Arm Signal Structures

Add the following paragraph

Adjust the mast arm length in the plans data table, using variable FAA, such that the mast arm extends no more than four (4) feet beyond the last signal/sign, or the future signal/sign. As per the Index instructions, adjust the tip diameter, using variable FBA, based on the adjusted arm length.