SUPERSEDED BY EI 04-035 EFFECTIVE 1/13/05		*New York State Department of Transportation* ENGINEERING INSTRUCTION	EI 96-014

Title: **SECTION 645 - SIGNS**

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Approved:

P. J. Clark, Deputy Chief Engineer, Design Division — Date: 3/19/96

Administrative Information: This Engineering Instruction becomes effective with the letting of August 15, 1996.

Transmitted Materials. This EI transmits a note that will be inserted into all metric contracts that include signing work under Section 645.

Purpose: The purpose of this Engineering Instruction is to simplify the design procedure for traffic signs on Type A Sign Posts, and to equitably pay contractors their actual costs for fabricating and installing traffic signs on Type A Sign Posts. These changes effect only metric contracts. Sign specifications on non-metric contracts will not change by this EI.

Background: The 1990 Standard Specifications requires 23 pages to assign a separate item number (measured by "each") for every size, shape and combination of traffic signs. The 1995 Metric Standard Specifications replaced the numerous traffic sign items with a single panel item (measured by square meter) and three separate post items (defined by moment capacity). These revisions were thought to equitably pay contractors for their actual fabrication and installation costs, and enable contractors to select the most efficient post system.

However, designers objected because they do not have enough site data to compute an appropriate moment class for the post systems. Fabricators objected because the labor cost involved in fabricating small sign panels is more per square meter than for larger panels, so one bid price will not correspond to actual fabrication costs. Contractors objected because the post classes, based on moment capacity, do not correspond to installed cost either. In most cases, it is the **number** of posts, not post strength, that determines the final installed cost. There is very little difference in installed cost between a 3, 3.7, or 4.5 $^{kg}/_{m}$ (2, 2½, or 3 $^{lb}/_{ft}$) post.

General Designer Information: In order to simplify the design of traffic signs on Type A Sign Posts, and to equitably pay contractors their actual fabrication and installation costs, Section 645 - SIGNS is being revised as follows in the 1995 Metric Standard Specifications:

1) The single pay item for Ground Mounted Sign Panel, MUTCD Codes R,P,W & M, will continue to be measured by square meter, but is being divided into four (4) separate pay items, based on sign panel width. The selected widths were chosen for the following reasons:

   A Panels up to 460 mm wide require only 1 post but no Z-bar stiffeners.
   B Panels up to 762 mm wide require Z-bar stiffeners and usually only 1 post.
   C Panels from 763 to 1625 mm wide require Z-bar stiffeners and 2 posts, except the 762 X 762 mm diamond and the 914 mm wide "YIELD" panel require only 1 post.
   D Panels wider than 1625 mm require Z-bar stiffeners and possibly 3 posts. See the Materials Details for Type "A" Sign Supports, distributed by EB 95-046.

2) The three Type A Sign Support System pay items are being reduced to a single pay item, 645.81 M Type A Sign Post. In addition, two wind zone loadings are being established for Type "A" Sign Posts, and the wind zones for Type "B" Sign Posts are being revised. Therefore, the TYPE "A" SIGN SUPPORT TABLE, distributed by EB 95-023, will no longer be applicable.

   Under these new specifications, the designer will estimate the number of posts required to support each panel or combination of panels at a given site using the width criteria above, or appropriate Materials

Details, and show that number on the Sign Data Sheet. Once the project is under construction and the exact sign locations have been established in the field, the contractor will either utilize the design tables on the Materials Details, or compute the bending moments, in order to verify the number of posts required to support each sign at that location. Any changes to the number of posts required will be based on actual site conditions and automatically implemented at the time of installation, so no new items or negotiations will be necessary, just change-orders for minor quantity adjustments. The number of posts counted for payment will be the number of posts **required**, which is the greater of either:

1) the number of posts required based on the **width** of the sign; or,

2) the number of posts of standard strength (2800 N•m) required to resist the moment due to wind load, as shown on the design table in the Materials Details for a 4.46 kg/m, Grade 80-SP post.

The Contractor may use posts of different moment capacity than the 2800 N•m standard for Type A post, but only if shown to be adequate to support the sign at that location according to the Materials Details. The number of posts measured for payment need not be the same as the number of posts actually installed.

The Standard Sheet on Typical Route Marker Assemblies may be used as a guide to determine the number of posts required for route marker assemblies, or the designer may compute the approximate required moment capacity if the necessary data is available.

Items 645.71 M, 645.8101 M, 645.8102 M, and 645.8103 M will be disapproved as of the effective date of this EI, and replaced by the following items:

Item No.	Item	Pay Unit
645.71XX M	Ground Mounted Sign Panel MUTCD Codes R, P, W and M	Square Meter

XX	Class	Panel Width
01	1	Up to 460 mm
02	2	461 to 762 mm
03	3	763 to 1625 mm
04	4	Greater than 1625 mm

645.81 M	Type A Sign Post	Each

Questions may be addressed to Richard Stempel at (518) 457-5440.

SMALL SIGNS

Make the following ***changes*** to the Standard Specifications of January 2, 1995:

Page 6-144, line 27 thru 31 ***replace*** with the following:

"A. Unless otherwise stated in the contract documents, ground mounted signs on Type A Sign Posts shall be constructed with sign and structure able to withstand a 97 km/h wind loading in Regions 1, 2, 6, 8 and 9. This corresponds to a wind pressure of 690 N/m^2 when the panel centroid is 4.27 m or less above the surrounding terrain. When the panel centroid is more than 4.27 m above the surrounding terrain, the corresponding wind pressure is 919 N/m^2. In Regions 3, 4, 5, 7, 10 and 11, ground mounted signs on Type A Sign Posts shall be constructed with sign and structure able to withstand a 113 km/h wind loading. This corresponds to a wind pressure of 977 N/m^2 when the panel centroid is 4.27 m or less above the surrounding terrain. When the panel centroid is more than 4.27 m above the surrounding terrain, the corresponding wind pressure is 1207 N/m^2 ."

Page 6-144, ***delete*** lines 37 to 41, and ***insert*** the following:

" 129 km/h (1609 N/m^2 at 4.27 m to 8.84 m height of centroid) Regions 3, 4, 5, 7, 10 and 11.

113 km/h (1207 N/m^2 at 4.27 m to 8.84 m height of centroid) All other regions unless otherwise noted."

Page 6-144, below line 18, ***insert*** the following:

"645-2.07 Type A Sign Posts. Type A Sign Posts shall be selected from the Department's Approved List of Type A Sign Supports. The standard strength (ie. moment capacity) of a Type A Sign Post shall be 2800 N•m, although weaker or stronger posts may be substituted as described in §645-3.11."

Page 6-146, ***replace*** **lines 15, through 32** with the following:

"645-3.11 Type A and Type B Sign Posts

"A. Type A Sign Posts. Subject to the conditions indicated below, Type A Sign Posts shall be used individually or in groups such that the number of posts acting together can resist the moment required. They shall be installed in accordance with the Materials Details.

The number of Type A Sign Posts indicated on the plans is based on the information available prior to the time of letting. The actual number and strength of Type A Sign Posts to be installed shall be based on conditions at the final sign location which shall be determined or approved by the Engineer. The Contractor shall either compute the bending moment to be resisted by the Type A Sign Post(s) due to the wind loads indicated in §645-3.02, or use the design tables given on the Materials Details, to propose an appropriate number and strength of Type A Sign Posts subject to the criteria given below and the approval of the Engineer. The Contractor shall submit the approved Materials Details, and any computations, to the Engineer, and supply and install the required number of Type A sign posts subject to the following criteria:

1. For signs wider than 762 mm, at least two posts are required, except the nominal 750 X 750 mm diamond panel and the nominal 900 mm wide "YIELD" panel require only one post.
2. The maximum number of posts installed within a 2.13 m path, as described on the approved Materials Details, must be complied with.

3. For single flanged channel post installations only, the calculated bending moment to be resisted by the post shall be augmented by 25% to adjust for torsional shear. *The Materials Details includes this adjustment."*

Page 6-149, *delete* lines 11 thru 18 entirely and *replace* with the following:

"645-4.02 Type A Sign Posts. The quantity of Type A Sign Posts will be measured as the number of posts required, which is the greater of either:

1) the number of posts required based on the width of the sign; or,

2) the number of posts of standard strength (2800 N•m moment capacity) required to resist the moment due to wind load.

Page 6-150, lines 8 through 12, *replace* with the following:

"645-5.05 Type A and Type B Sign Posts . The unit price bid for each Type A Sign Post and each Type B Sign Post shall include the cost of furnishing all labor, materials, and equipment necessary to install the sign posts, including the posts, breakaway base and hinge assemblies, and footings installed in place. Breakaway posts provided in lieu of non-breakaway posts at the Contractor's option shall be paid for at the bid price for non-breakaway posts."

Page 6-150, line 19, *delete* this line entirely and *replace* with the following:

"645.71XX M Ground Mounted Sign Panel — Square Meter
MUTCD Codes R, P, W, and M

XX	Class	Panel Width
01	1	Up to 460 mm
02	2	461 to 762 mm
03	3	763 to 1625 mm
04	4	Greater than 1625 mm"

Page 6-150, *delete* lines 26 thru 30 entirely, and *replace* with the following:

"645.81 Type A Sign Posts — Each"