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ENGINEERING INSTRUCTION

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

SUBJECT: TRAFFIC SIGNAL POLE DESIGN

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APPROVED:

R. H. EDWARDS, Deputy Chief Engineer, Facilities Design Div.

It is apparent from comments received from designers, engineers in charge, and pole manufacturers that there may be some misunderstandings concerning traffic signal pole design. To clarify our requirements, we are making several changes to the standard specifications which are contained in the attached note. Additionally, another Engineering Instruction, "83-38 Method for Calculating the Loads Applied to Span Wire Traffic Signal Poles," is being issued to supersede EI 76-43, Method for Calculating the Loads Applied to Type A Traffic Signal Poles Carrying Suspended Cables. Engineering Instruction 83-38 is basically the same as EI 76-43, but, contains revisions to the calculation method that was issued in EI 79-37.

Span wire poles are to be designed by the pole manufacturer for the load and pole length specified in the pole item number using the design procedures and allowable stresses given in AASHTO, "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals". The pole load shall be calculated by the designer using the method in EI 83-38 based on the windspeed, span length, mounting height, number of signals and signs, required for the intersection. The load calculated in accordance with EI 83-38 is the actual Group II or III load as specified in Sec. 1.2.6 of the AASHTO specification and not the "Minimum Load Capacity at Yield" previously used by the 1978 Standard Specifications. The pole load shall be specified in the item number by rounding the calculated load up to the next larger 1000 lbs.; and the pole length shall be specified in even two foot increments allowing 1'-6" from the span wire mounting point to the top of the pole. This permits manufacturers to reduce the number of different pole sizes.

Mast arm, post top, and bracket mount poles are to be designed by the pole manufacturer using the AASHTO specifications based on the pole lengths; mounting heights; signal and sign locations, wind speeds, weights and projected areas shown in the contract documents. It is the designer's responsibility to ensure that this information is included.

Designers should also note that the instructions on Traffic Signal Poles given in EI 79-37 are still in effect, except that EI 83-38 should be used for span wire load calculations.

This EI becomes effective with the letting of January 12, 1984.

TRAFFIC SIGNAL POLES

Make the following changes to the Standard Specifications of January 2, 1981.

Page 6-139

Delete the note at the bottom of the page in its entirety and substitute the following:

"*Mast arm mounting heights, and span wire pole length and load, are as defined on the "Standard Traffic Signal Poles" standard sheets and in §724-03, Traffic Signal Poles. The nominal luminaire mounting height and span shall be as indicated on the plans."

Page 7-175

Delete C. Design Load, in its entirety and substitute the following:

"C. Vacant"

Page 7-177

Under c. Pole Shape, delete the second sentence.

Page 7-178

Delete 2.a. Design Load, in its entirety and substitute the following:

"a. Design Load

The design load for span wire poles shall be the Group II or III load per AASHTO 'Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals' Sec. 1.2.6, given in the contract documents and applied at a point 1'-6" below the top of the pole. Allowable unit stresses shall be as specified in the above AASHTO specification."

Page 7-179

Delete 3.a. Design Loads, in its entirety and substitute the following:

"a. Design Load

Each part of the structure shall be proportioned for the combination of loads producing the maximum effect, using unit stresses increased for the material and group loads as described in Section 1.2.6 of the 'Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals'. The wind speed, locations, dimensions, weights, and projected areas of the signals, signs, and supports shall be as specified in the Contract Documents."

Also, under 3.c. Mast Arm Shapes, delete the second sentence.

Delete the paragraph under 4, Post Top Mount Traffic Signal Poles, in its entirety and substitute the following:

"These poles shall be proportioned for the combination of loads producing the maximum effect, using unit stresses increased as indicated for the material and group loads as described in Section 1.2.6 of 'Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals'. The wind speed, location, weights, dimensions and projected areas shall be as given in the Contract Documents."

Also, delete the first paragraph under 5, Bracket Mount Traffic Signal Poles, in its entirety and substitute the following:

"These poles shall be proportioned for the combination of loads producing the maximum effect, using unit stresses increased as indicated for the material and group loads as described in Section 1.2.6 of 'Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals". The wind speed, location, weights, dimensions and project areas shall be as given in the Contract Documents."