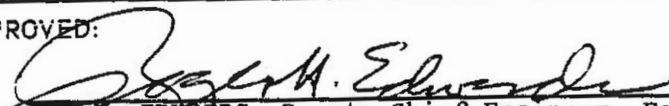


TO: SUPERSEDED BY EI 93-037 EFFECTIVE 12/7/93	ENGINEERING INSTRUCTION NEW YORK STATE DEPARTMENT OF TRANSPORTATION			
Distribution: <table style="margin-left: 100px;"> <tr> <td>30 Main Office</td> <td>32 Regions</td> <td>34 Special</td> </tr> </table>	30 Main Office	32 Regions	34 Special	Code: <u>EI 83-13</u> Date: <u>3/15/83</u>
30 Main Office	32 Regions	34 Special		
APPROVED:  R. H. EDWARDS, Deputy Chief Engineer, Facilities Design	Supersedes:			

Raised Reflectorized Pavement Markers have been installed experimentally at special locations throughout the State to determine their effectiveness and durability. At this time, the research is complete to the point where it indicates that these markers may be expected to last 4 to 6 years. However, the early indications are that they will be cost effective only at specific sites which exhibit large numbers of wet pavement, nighttime encroachment type accidents correctable through improved lane delineation. These would include head-on, sideswipe, and run-off-the-road accidents not attributable to slippery conditions.

The attached specifications 18685.0302 - 18685.0304, Raised Reflectorized Pavement Markers are approved for use on projects, in addition to normal markings, when the Regional Design Engineer has satisfied himself that the raised markers will be cost effective. In making this determination, he should examine printouts of accident data to see if there are a high number of wet night encroachment accidents of a type correctable by improving lane delineation.

The colors used should be consistent with the MUTCD. Spacing should be 80 feet on tangents and long radius curves, 40 feet on curves sharper than 40° and 20 feet for marking gores and islands. The designer should remember that markers used on lighted highways will tend to get lost in the background and normally should not be used. He should also remember that markers installed where they are susceptible to being hit from the side by snowplows are very likely to be damaged and not last the expected 4 to 6 years.

This instruction takes effect with the letting of July 21, 1983.

Attachment

ITEM NO. 18685.03

RAISED REFLECTORIZED PAVEMENT MARKERS

DESCRIPTION. Under this work, the contractor shall furnish and install snowplowable reflectORIZED pavement markers at the locations, and in accordance with the patterns indicated on the plans, or as directed by the Engineer, and in accordance with these specifications.

Snowplowable markers shall be designed as single units, consisting of a reflector(s) enclosed in a durable snowplow resistant casing. To minimize reflector damage, the marker shall be designed to allow a plow blade to ride up and over its casing or to depress the reflector into its casing. The casing shall be recessed in, and adhered to new and existing bituminous and portland cement concrete pavements in such a manner as to provide for a continuous useable degree of wet night visibility.

MATERIALS. Snowplowable reflectORIZED pavement markers shall be approved by the Materials Bureau. Detailed requirements and procedures for the approval of reflectORIZED markers are available from the Materials Bureau.

Approval of markers will be based on engineering analysis and field testing prior to their use on a Department project. If the proposed marker passes the requirements for engineering analysis and initial field tests and is considered acceptable by the Director, Materials Bureau, the product will first be placed on the Department's "Approved List" of materials for use on a restricted basis. Restricted use will require prior approval by the Materials Bureau for installation of the marker on any project. The snowplowable marker must be installed and perform successfully on a project before un-restricted approval will be given.

Product acceptance will be based on the appearance of the marker on the Department's approved list of snowplowable reflectORIZED pavement markers, and in the case of a marker approved for restricted use, the approval of the Director, Materials Bureau.

CONSTRUCTION DETAILS

1. General. All pavement markers and marking patterns shall be placed as shown on the plans and in accordance with the New York State Manual of Uniform Traffic Control Devices.

Pavement marker reflectors shall be one-way or two-way, and of the color(s) designated.

The application of pavement markers shall be done in the general direction of traffic.

Before any pavement marking work is begun, a schedule of operations shall be submitted for the approval of the Regional Director or his authorized representative.

When pavement markers are installed under traffic, the contractor shall provide all necessary flags, signs, etc. to maintain and protect traffic; and to protect marking operations and the markers until thoroughly serviceable.

The contractor shall be responsible for removing, and if applicable, repairing damaged pavement surfaces resulting from the installation of pavement markers in unauthorized areas. Removal and repair work shall be done as directed by and to the satisfaction of the Engineer, at no cost to the State.

When necessary, the contractor shall establish marking line points throughout the length of pavement and at the intervals directed by the Engineer.

2. Installation of Snowplowable Reflectorized Pavement Markers.

All snowplowable reflectorized pavement markers shall be installed in accordance with the manufacturer's written instructions for installation, and as directed by the Engineer. All requirements regarding the manufacturer's recommendations for atmospheric conditions; pavement cleaning; miscellaneous materials (i.e. adhesives, etc.); installation procedures for the satisfactory placement and performance of the reflectorized markers shall be strictly adhered to.

METHOD OF MEASUREMENT. Snowplowable reflectorized pavement markers will be measured as the number of complete marker units satisfactorily furnished and installed.

BASIS OF PAYMENT. The accepted quantities of snowplowable reflectorized pavement markers will be paid for at the contract unit price, which shall include the cost of furnishing all labor, materials and equipment to satisfactorily complete the work. The cost for maintaining and protecting traffic during the installation operations shall be included in the price bid.

Payment will be made under:

<u>Item No.</u>	<u>Item</u>	<u>Pay Unit</u>
18685.0302	Raised Reflectorized Pavement Marker (one-way yellow)	Each
18685.0303	Raised Reflectorized Pavement Marker (One-way white)	Each
18685.0304	Raised Reflectorized Pavement Marker (Two-Way Yellow)	Each