

TO:		ENGINEERING INSTRUCTION	
		NEW YORK STATE DEPARTMENT OF TRANSPORTATION	
SUPERSEDED BY <u>EB 06-004</u> EFFECTIVE 9/7/06		SUBJECT: SHORT-TERM PAVEMENT MARKINGS Subject Code: 7.27-1-619.1501	
Distribution: 30 Main Office. 32 Regions 34 Special		Code: EI 89-23 Date: 8/4/89 Supersedes: EI 88-33 Item 619.15	
APPROVED: <i>J R Lambert</i> J.R. LAMBERT, Deputy Chief Engr., Fac. Design Div. 405-5			

The requirements for Pavement Delineation, Item 619.15, as described in Addendum No. 2 and modified by EI 88-33, have been replaced by Item 619.1501 Short-Term Pavement Markings. The requirements for short-term pavement markings (STPM) are described in the attached shelf-note specification, and are based on the Policy for Construction Zone Pavement Markings, transmitted under EI 89-15.

Definitions:

STPM - Described below.

Temporary markings - Described below. Previously "interim" markings.

Final Pavement Markings - Either paint or durables on top course in final configuration.

Durable markings - Thermoplastic, epoxy, or preformed tape. Lasts 3 to 5 yrs. (Paint lasts only 6 to 12 months).

The following paragraphs summarize the provisions of STPM and inform designers how to use this item.

1. STPM shall conform to MUTCD requirements for center lines and lane lines, except that broken lines may be as short as four (4) feet with 36 foot gaps. Edge lines are not required under STPM.
2. STPM shall be applied before opening new or reconstructed pavements to vehicular traffic. Resurfaced pavements on which traffic is being maintained must have STPM applied before nightfall.
3. Within fourteen (14) days after a pavement is open to traffic, if the succeeding pavement course or project's final markings are not installed then the STPM will have to be supplemented with "temporary pavement markings". "Temporary pavement markings" replicate the project's final pavement markings and include ten (10) foot broken lines, edge lines, stop bars, cross walks and arrows. If the reason for installing temporary pavement markings is due to Contractor inefficiency, their installation will be at the Contractor's expense.

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4. If, at the time of installation, it is known that STPM will have to be removed for any reason, only removable tape or raised pavement markers shall be used.
5. On contracts where the limits of passing/no-passing zones can't be determined prior to construction, contract provisions allow the State one week after the placement of binder or top course to determine these limits. If the designer believes the State will be unable to do this, Item 15634.30 Determination of No-Passing Zones and Pavement Coding can be included in the contract. It requires the Contractor to determine these limits himself. These provisions are included in the attached shelf-note "Pavement Coding" to be inserted in all contracts which contain Item 619.1501 and all pavement marking pay items.
6. Material used for STPM and Temporary Pavement Markings include traffic paint, non-removable tape, removable tape, and raised pavement markers (RPM). The following table describes the conditions under which each marking material is permissible.

KEY		DURABLES IN CONTRACT		DURABLES NOT IN CONTRACT	
P = Paint R = Removable Tape or RPM NT = Nonremovable Tape DC = Contractor applied thermoplastic, epoxy, or preformed tape		Marking Pattern Known	Marking Pattern Unknown	Marking Pattern Known	Marking Pattern Unknown
Top Course	Solid Line	R,DC	R	P	R
	Broken Line	R,DC	R	P	R
Underlying Courses	Solid Line	P,R	P,R	P,R	P,R
	Broken Line	P,R,NT	P,R,NT	P,R,NT	P,R,NT

7. Paint is not allowed on top courses on contracts to be durably marked or in locations where the exact passing zone limits are not known prior to paving. There are two reasons for these paint prohibitions. First, durable markings won't adhere to conventional traffic paints and secondly, to avoid scarring the brand new pavement by the paint removal operation. Non removable tapes aren't permitted for solid marks on courses to be overlaid because the overlying course of pavement won't adhere to the top of these tapes. Removable tapes and raised pavement markers are permitted on any course but on tops must be offset from the final marks because the residue remaining on the pavement after their removal would interfere with adhesion of the final markings.

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8. The designer is alerted to the fact that the quantity estimated for STPM cannot necessarily be derived from the quantity for the final mark since passing may be prohibited during the construction phase where passing would be permitted afterwards.
9. For a planned staged construction requiring an underlying pavement course to be open to traffic for more than two weeks, the appropriate pay items for pavement marking paints should be included, and the paint should be applied according to the time schedule for short-term and temporary markings.
10. STPM are estimated to cost \$0.30 to \$0.50 per foot when paint may be used, and from \$1.30 to \$1.75 per foot when removables must be used. If traffic paint is to be applied before nightfall under a 640 pay item, the estimated unit price would be similar to that for STPM.
11. The designer is encouraged to show the limits of passing/no-passing zones, if known, and any desired markings not normally required under STPM, such as edge lines, stop bars, crosswalks, etc.
12. The attached specification for STPM has been implemented in the following manner:
 - A. The Construction Division has processed (and still is) orders-on-contract for on-going projects.
 - B. The Design Division has and will process amendments for projects let between 7/13/89 and 8/3/89.
 - C. The Design Division had included in proposals of projects starting with the letting of 8/24/89.

SHORT-TERM PAVEMENT MARKINGS

Subsection 291.3 of the New York State MUTCD, Pavement Delineation, shall no longer be used on State construction contracts. Pavement delineation has been replaced by Short-Term Pavement Markings.

Make the following *changes* to the Standard Specification of January 2, 1985.

Pages 46 & 47 of Addendum No. 1

Under §619-3.06 Pavement Delineation, *delete* all the material.

Under §619-5.12 Other Work, *delete* all the material.

Page 37 of Addendum No. 2

Under §619-1.06 Pavement Delineation *delete* the subsection entirely and *replace* with the following:

"619-1.06 Short-Term Pavement Markings. The Contractor shall furnish, apply and when so ordered, remove short-term pavement markings where shown on the plans, or directed by the Engineer, in accordance with these specifications."

Page 39 of Addendum No. 2

Under §619-2.03 Delineators, Temporary Box Beam Barrier, Temporary Concrete Barrier, Construction Barricades, Lighting for Construction Barricades and Pavement Delineation, *delete* the title and the first paragraph and *replace* with the following:

"619-2.03 Delineators, Temporary Box Beam Barrier, Temporary Concrete Barrier, Construction Barricades, Lighting for Construction Barricades and Short-Term Pavement Markings. Delineators, barricades, lighting for construction barricades, short-term pavement markings, tubular markers and similar materials shall meet the requirements of these specifications and shall be in accordance with the plans, applicable standard sheets and the M.U.T.C.D. No materials or methods which will cause damage to any pavement or paving course that will be retained shall be employed in the removal of pavement markings."

Delete tenth paragraph of this subsection and *replace* with the following:

"Short-term pavement markings shall consist of reflectorized pavement marking paints, removable reflectorized pavement marking tape, non-removable reflectorized pavement marking tape, or removable raised reflectorized pavement markers. Removable reflectorized pavement marking tape and raised reflectorized pavement markers shall be selected from the Department's Approved List of 'Removable Reflectorized Pavement Markings'. Pavement marking paints shall meet the material requirements of Section 640-Reflectorized Pavement Marking Paints. Non-removable pavement marking tape shall be specifically designed for use as a pavement marking and shall be approved by the Engineer prior to application. All line segments shall not be less than four nor greater than six inches in width and the colors shall be as specified in the M.U.T.C.D."

Page 45 of Addendum No. 2

Under §619-3.06 Pavement Delineation *delete* entire Subsection and *replace* with the following:

"619-3.06 Short Term Pavement Markings. The Contractor shall furnish, apply, maintain, and when so ordered, remove short-term pavement markings, where shown in the contract documents or where directed by the Engineer. Any pavement upon which traffic will be maintained shall be properly marked before nightfall or the end of the working day, whichever comes sooner, in accordance with this subsection.

Short-term pavement markings shall be installed and maintained in accordance with the patterns and colors indicated for pavement marking, Parts 260 to 263 of the M.U.T.C.D., or as directed by the Engineer. The following pavement marking patterns shall be installed as short-term pavement markings:

1. Yellow broken lines, partial barrier lines and full barrier lines used to separate opposing traffic flows on two-way roadways.
2. White broken lane lines to separate traffic flows in the same direction on multi-lane highways.

Stop bars, hatch lines and edge lines will not normally be required under short-term pavement markings but may be ordered by the Engineer. Broken lines may be as short as four (4) feet. Short-term pavement markings as described above, will be considered acceptable as the only pavement markings in place for periods not longer than fourteen (14) days.

SHORT-TERM PAVEMENT MARKINGS

Within 14 days after paving, if the Contractor fails to install either the succeeding pavement course, or the final pavement markings on contracts with pay items for such, the short-term pavement markings shall be supplemented (at no additional expense to the State) with edge lines, ten foot broken lines, stop bars, cross walks and arrows. In the event the project is to remain uncompleted over the winter, other than for staged construction when indicated, the short-term pavement markings shall be supplemented (at no additional expense to the State) by full pavement markings in accordance with the pattern indicated in the plans. If no full pavement marking pattern is given in the plans, the short-term pavement markings shall be supplemented as directed by the Engineer. The pavement markings used to supplement the minimum short-term pavement markings shall be designated as "Temporary Pavement Markings" and use the materials as described below.

Removable tape and raised markers can be used as short-term pavement markings for solid and broken lines on any pavement course. However, on the final pavement surface, these shall be offset, if possible, from the location of the final mark in order to prevent interference with the adhesion of the final mark.

Pavement marking paint can be used as short-term pavement markings for solid and broken lines on all underlying pavement courses (ie base, binder, leveling and shim). On top course, or final pavement surface, paint may only be used if the final marking pattern is known prior to paving, and the contract does not contain durable markings (ie thermoplastic or epoxy marks). Where paint is used on the final pavement surface, it shall be applied in the final location.

Non-removable tape may be used as short-term pavement markings only for broken lines on underlying pavement courses. Non-removable tape will not be allowed to mark barrier lines on any pavement course.

If paint is used for short-term pavement markings, it shall be applied in accordance with the requirements of Section 640, ReflectORIZED Pavement Marking Paints. If tape is used, it shall be applied to a clean, dry pavement in accordance with the manufacturer's recommendations. Tape shall conform to the shape of, and adhere to the surface upon which it is applied. If raised marker units are used, they shall be of a color in accordance with the M.U.T.C.D. A raised marker unit spaced every five feet may be used as a substitute for a solid line. Three raised marker units, evenly spaced 24 inches apart, may be used as a substitute for a four foot long broken line. Four raised marker units, evenly spaced 40 inches apart, may be used as a substitute for a ten foot long broken line.

Any markings, including raised markers, that fail to adhere to the pavement, become abraded, dislodged by snowplowing, or in the opinion of the Engineer become ineffective in any manner during the 'period of use' shall be replaced by the Contractor at no additional expense to the State. The 'period of use' shall be defined as the time from when the short-term pavement markings are first applied to the time when the markings are either paved over, the project's final markings are applied, or contract acceptance, whichever is first. After their period of use, short-term pavement markings, and temporary markings added to supplement short-term pavement markings shall be removed from the pavement by the Contractor, if ordered by the Engineer, as described in Section 635 Cleaning and Preparation of Pavement Surfaces.

In the event of sudden, unforeseen precipitation or other extraordinary situation, Do Not Pass signs may be used in lieu of short-term pavement markings for up to three consecutive calendar days on two or three lane, two-way, roadways under the following conditions:

1. The signs meet the requirements of Section 214.2 of the NYSDOT MUTCD and spaced not more than 1,000 feet apart.
2. The signs shall be supplemented with delineators and/or plastic drums spaced as directed by the Engineer, but not more than 200 feet apart and meeting the requirements of Section 291.2 of the NYSDOT MUTCD and §619-3.01G. of the Standard Specifications, respectively.
3. No payment will be made for the installation of Do Not Pass signs, delineators and plastic drums when necessitated by the Contractor's failure to place short-term pavement markings."

SHORT-TERM PAVEMENT MARKINGS

Page 48 of Addendum No. 2

Under §619-4.08 Pavement Delineation *delete* the subsection and *replace* with the following:

"619-4.08 Short-Term Pavement Markings. Short-term pavement markings will be measured in linear feet along the center line of the pavement stripe and shall be based on a 4 inch wide stripe. Measurement for striping with a plan width greater than the basic 4 inches, as shown on the plans or as directed by the Engineer, will be made by the following method:

$$\frac{\text{Plan Width of Striping (inches)} \times \text{Linear Feet}}{4 \text{ (inches)}}$$

No payment will be made for the number of linear feet of skips in the broken line.

If raised marker units are used, reimbursement will be made as if the substituted line were in place. For example, for 3 raised marker units substituted for a 4 foot long broken line, reimbursement will be made for 4 linear feet."

Page 49 of Addendum No. 2

Under §619-5 Basis of Payment, General *delete* the phrase "pavement delineation" in the first and fourth paragraphs and *replace* with "short-term pavement markings".

Page 51 of Addendum No. 2

Under §619-5.08 Pavement Delineation. *Delete* the subsection and *replace* with the following:

"619-5.08 Short-Term Pavement Markings. The unit price bid shall include the cost of furnishing all labor, material and equipment necessary to apply, maintain and remove short-term pavement markings when so ordered. A separate payment will be made each time short-term pavement markings are first applied on a pavement course in accordance with the contract requirements. No payment will be made for the application, maintenance and removal of 'temporary pavement markings' required after 14 days or the remainder of the winter.

No payment will be made for the installation of Do Not Pass signs, delineators and plastic drums when necessitated by the Contractor's failure to place short-term pavement markings."

Page 52 of Addendum No. 2

Under §619-5.12 Other Work. In the second paragraph *delete* the second sentence.

Under *Payment will be made under: delete*

"619.15 Pavement Delineation Linear Foot" and *replace* with

"619.1501 Short-term Pavement Markings Linear Foot"

PAVEMENT CODING

Where the limits of passing and no-passing zones have not been determined prior to construction, the Contractor shall allow the Engineer one week after the placement of binder or top course to determine these limits. If the Engineer codes these limits right on the pavement surface, this coding shall be preserved, by the Contractor, offset from the roadway.

Alternately, if Item 15634.30--Determination of No-Passing Zones and Pavement Coding--is included in the contract, this determination shall be made by the Contractor either on binder course or immediately after paving top course so that the full center line markings can be in place before opening the roadway to traffic.