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**SUPERSEDED BY CONCURRENT EIs 96-029 & 96-030 EFFECTIVE 8/15/96**

# ENGINEERING INSTRUCTION

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

SUBJECT: SPECIFICATIONS FOR HIGHWAY REHAB. ITEMS 18203.9904 & 18502.7590

Subject Code: 7.27-1-203; 7.27-1-502

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APPROVED: J. R. Lambert

J. R. LAMBERT, Deputy Chief Engr., Fac. Design Div.

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Supersedes: MODIFIES EIs 88-021 & 90-009

This EI transmits the following revised special specifications:

Item 18203.9904 - Cracking and Seating Existing Concrete Pavement

Item 18502.7590 - Rubblizing Existing Portland Cement Concrete Pavement

Warrants and guidelines for the use of these specifications are contained in EI 90-9, Controlling Reflective Cracks in Asphalt Concrete Overlays and EI 88-21, Pavement Restoration Techniques, 1988.

Previous versions of these specifications are rescinded and the new specifications may be utilized immediately. The rescinded specifications include Item 18203.9903 and Item 18502.7589.

These specifications are assigned by PIN only in accordance with the provisions of EI 88-21. Insertion of the specifications into proposals will be done by the Region.

Technical questions concerning these specifications should be directed to Bill McCarty or Dick Obuchowski of the Materials Bureau at 518-457-5956. Administrative questions should be directed to Ray Hennessy (518-457-4092) or Bruce Zeh (518-457-4090) of the Final Plan Review Bureau.

Revisions to the Rubblizing specification are editorial and minor.

Revisions to the Cracking and Seating specification evolved as a result of extensive use of the procedure on a number of rehabilitation contracts that have been completed since the specification was written in 1986. These refinements will improve the current specification without having an effect on the bid price of the item. Major changes consist of the following:

1. Cracking equipment is restircted to guillotine type breakers. Other types are inefficient in comparison and are not being used.

2. The concrete is to be cracked in the direction of travel except in unusual circumstances. This is safer from the standpoint of maintenance and protection of traffic.

3. The specification requires that the striking head of cracking equipment avoid transverse joints. This prevents over-breaking and/or undue joint spalling, thus, reducing the amount of patching needed to repair needless spalls.

4. Any underdrain is to be installed prior to cracking except in unusual circumstances. Experience has shown that plastic underdrain is not affected by the cracking operation. Furthermore, any excessive subbase moisture can be drained, thereby stabilizing the existing pavement prior to overlay placement.

5. The entire pavement surface is to be seated with a minimum of two roller passes. The previous specification apparently was not clear on this aspect and was open to interpretation.

6. The specification requires that seating be done within a week of cracking. This will provide a safer surface for traffic prior to overlay placement and prevent the contractor from delaying the seating operation even though he may receive permission to postpone resurfacing beyond the two week limit specified.

## ITEM 18203.9904 CRACKING AND SEATING EXISTING CONCRETE PAVEMENT

### DESCRIPTION

Under this item, the Contractor shall crack and seat the existing concrete pavement within the payment limits shown on the plans or within revised payment limits established by the Engineer in writing prior to the placement of a bituminous overlay.

### MATERIALS

None Specified.

### CONSTRUCTION DETAILS

The cracking equipment shall be a self-propelled, self-contained unit equipped with a guillotine type drop weight weighing between 12,000 and 13,000 pounds. The dimensions of the striking surface of the drop weight shall be 65 to 70 inches in width and 6 inches to 7 inches in depth (thickness).

Before cracking and seating operations begin, the Engineer will designate a test section. The Contractor shall crack the pavement in the test section using varying impact energies until full depth cracking is established with minimum surface spalling to the satisfaction of the Engineer. This impact energy, and the striking pattern later described, will then be used for the remainder of the project. The Department of Transportation will obtain cores within the test section, to verify that cracks are being established full depth. The Contractor shall apply water to the surface in a fine spray to accentuate the cracks as ordered by the Engineer.

The Contractor shall crack the pavement transversely such that adjacent cracks do not exceed 3 feet in the longitudinal direction. One pass of the breaker down the center of the lane is acceptable, provided cracking is produced across the entire lane width. Pavement cracks radiating from the ends of the drop weight to the pavement edge are acceptable. The drop height shall be adjusted to produce full depth cracking with minimum surface spalling.

Cracking concrete slabs shall be done in the direction of travel unless otherwise approved by the Engineer. The contractor shall take necessary precautions to insure that the head of the cracking equipment does not strike within 18 inches of transverse joints to avoid overbreaking and/or undue spalling at these joints.

Installation of underdrain, when required, shall be accomplished before the cracking and seating operation is begun unless otherwise approved by the Engineer. Cracking concrete pavement will not be permitted over existing drainage facilities (with the exception of newly installed underdrains), and/or utility lines (gas, water, etc.). Provisions shall be made to protect passing traffic from flying debris during the cracking operation.

## ITEM 18203.9904 CRACKING AND SEATING EXISTING CONCRETE PAVEMENT

Following cracking but prior to asphalt patching and overlaying, the entire pavement surface shall be seated with all areas receiving a minimum of two passes of a roller conforming to the requirements of Section 203-3.13B and weighing fifty tons gross weight. Seating shall be accomplished within one week of cracking regardless of when the first bituminous course is placed. If the pavement is opened to traffic after the cracking and seating operations but prior to placement of the first bituminous course, the Contractor shall maintain the pavement by sweeping and asphalt patching to the satisfaction of the Engineer.

The sequence of operations in conjunction with this item shall be performed in the following order: installation of any underdrains, cracking, seating, patching with asphalt concrete, remaining joint cleaning and filling, tack coat, overlaying. Work shall be sequenced so that the cracking and seating of the concrete pavement is completed prior to the construction of shoulders.

The Contractor shall schedule operations so that a minimum of 3 1/2 inches of asphalt concrete are placed over the cracked and seated pavement before paving ceases for the winter. Asphalt concrete shall be placed within two weeks of the completion of the cracking and seating operations. If approved by the Engineer, the Contractor can delay placement of the overlay (in the cracked and seated sections) beyond this two week limit if the Contractor demonstrates that traffic is maintained safely over the cracked and seated pavement by sweeping and/or patching.

### METHOD OF MEASUREMENT

The quantity shall be the number of lane miles computed from the payment lines shown on the plans or from revised payment limits established by the Engineer in writing prior to performing the work.

### BASIS OF PAYMENT

The unit price bid per lane mile shall include the cost of furnishing all labor, materials, and equipment necessary to crack and seat the existing concrete pavement. Underdrain, asphalt patching, joint cleaning and filling, tack coat, overlay courses and maintenance and protection of traffic shall be paid for under their respective items.

## ITEM 18502.7590 RUBBLIZING EXISTING PORTLAND CEMENT CONCRETE PAVEMENT

### DESCRIPTION

Under this item, the Contractor shall rubblize and compact existing Portland cement concrete pavement within the payment limits shown on the plans or within revised payment limits established by the Engineer in writing prior to the placement of a bituminous overlay.

### MATERIALS

Coarse Aggregate, Type CA1 or CA2 (Table 501-2) . . . . . 703-02
Subbase Course, Type 2 . . . . . 304.03

### CONSTRUCTION DETAILS

Existing bituminous overlays or patches shall be completely removed from the surface and the site prior to rubblizing.

All loose joint fillers, expansion material or other similar debris shall be removed from the site and shall become the property of the Contractor.

When the area to be rubblized abuts concrete pavement which is to remain in place and unbroken, the longitudinal joint in between shall be saw cut to sever longitudinal joint ties.

Equipment - The existing pavement shall be rubblized with a self contained, self propelled resonant frequency pavement breaking unit capable of producing low amplitude, 2000 foot-pound blows at a rate of 44 per second. The unit shall be equipped with a water system to suppress dust generated by the rubblizing operation. The operating speed of the unit shall be such that the existing pavement is rubblized, full depth, into particles ranging in size from sand to pieces not exceeding six inches in largest dimension, the majority being one to two inches in size at the surface. The desired breaking effort shall generally be accomplished in one pass of the breaking shoe.

Drainage - Prior to rubblizing the pavement, any required underdrain systems shall be completely installed and functioning.

Shoulders - The rubblizing operation shall not begin until any pavement widening or shoulder work is completed up to the elevation of the existing pavement.

Breaking Pattern - The breaking pattern shall proceed in a longitudinal direction, beginning at a free edge (shoulder or previously broken edge) and progressing toward the opposite shoulder.

ITEM 18502.7590 RUBBLIZING EXISTING PORTLAND CEMENT CONCRETE PAVEMENT

If only a portion of the total pavement width is being rubblized and overlaid, rubblizing shall continue six inches beyond the anticipated overlay width.

Rubblizing shall continue in the next unbroken lane, at the edge of the unbroken pavement, and continue progressing toward the opposite shoulder. The rubblizing shall continue in this direction until the opposite shoulder is reached.

Prior to reaching the opposite shoulder, the remaining thin unsupported strip of concrete may begin to break up into blocks. As a result more than one pass with the rubblizing equipment may be required to reduce the size of these pieces to the dimensions specified herein. If pieces larger than that specified remain after additional passes of the rubblizing equipment, these pieces shall be removed and replaced with Type CA1 or CA2 Coarse Aggregate or Type 2 Subbase Course.

Reinforcing Mesh - Welded wire mesh reinforcement or bar reinforcement in rubblized pavement shall remain in place. However, any reinforcement exposed at the surface as a result of rubblizing and/or compaction operations shall be cut off flush with the surface and removed from the site.

Compaction - Prior to placing the initial asphalt overlay course, the rubblized pavement shall be compacted with a steel wheel vibratory roller in accordance with the requirements of Section 203-3.12 Compaction, subsection B. 2. Vibratory Drum Compactors.

One inch or deeper depressions, that are present after rubblizing and/or compaction, shall be filled with Type CA1 or CA2 Coarse Aggregate, or Type 2 Subbase Course. Filled depressions shall be compacted with the same roller and compactive effort previously described.

Traffic Protection - Traffic shall not be allowed on the rubblized pavement before the initial asphalt overlay course is in place. In no instance shall more than 48 hours elapse between rubblizing the existing pavement and placing the initial asphalt concrete overlay course. However, in the event rain occurs between these operations, this time limitation may be waived to allow sufficient time for the rubblized pavement to dry out to the satisfaction of the Engineer. Crossover and/or access points shall be maintained as ordered by the Engineer, until the initial asphalt concrete overlay course is placed.



5/1/86
Rev. 2/2/89
Rev. 8/20/90

## ITEM 18502.7590 RUBBLIZING EXISTING PORTLAND CEMENT CONCRETE PAVEMENT

### METHOD OF MEASUREMENT

The quantity to be measured under this item shall be the actual number of square yards of existing Portland cement concrete pavement rubblized. In no case will a deduction in area be made for minor non-rubblized areas due to catch basins, manholes, water valves, etc. from the measured surface area that has been rubblized.

### BASIS OF PAYMENT

The unit price bid per square yard shall include the cost of furnishing all labor, materials and equipment necessary to rubblize, suppress dust, fill depressions, remove exposed mesh and loose joint fillers or expansion material, compact and maintain the compacted condition of the existing pavement before the initial asphalt concrete overlay course is placed.

Bituminous overlay and patch removal shall be paid for under its respective item. Sawing longitudinal joint ties will also be paid for under its respective item. Coarse aggregate or subbase course used for pavement widening or shoulders will be paid for under their respective items. Underdrain will be paid for under its respective item.



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