To:		New York State Department of Transportation ENGINEERING INSTRUCTION	EI 98-020

SUPERSEDED BY EB 99-066
EFFECTIVE 11/4/99

Title: **Revisions to Standard Specification Section 401-3.13 B, Longitudinal Joints**

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Approved:

5-29-98
Date

James F. Tynan,
Acting Deputy Chief Engineer,
Construction

PURPOSE: This Engineering Instruction revises Section 401-3.13 B of the Standard Specifications by updating the compaction methods and allowing the use of the tapered wedge joint technique.

EFFECTIVE DATE: This Engineering Instruction is effective on Department contracts let on or after October 22, 1998. Contracts let before this date can use these revisions at no change in unit bid prices. No order-on-contract is required. A copy of this instruction shall be made part of the project records on any project where the revisions are implemented, in accordance with the Department's Contract Administration Manual, Section 104-03 I.4.

TRANSMITTED MATERIALS:
- Standard Specification Section 401-3.13 B (revised version)
- Example Special Notes - allow or not allow longitudinal pavement joint in excess of 30 meters at the end of the working day.
- Schematic Diagram - Tapered Wedge Joint

BACKGROUND: The first signs of distress in a hot mix asphalt pavement occur at the weakest point in the pavement, usually the longitudinal joint. Construction of durable longitudinal joints is critical to a pavement's service life. New construction techniques have been developed recently to improve the performance of the longitudinal joint.

In 1995 a small number of Department contracts utilized the tapered wedge joint technique to construct the longitudinal paving joints. Since then the technique has been used more and has gained popularity with the Department and contracting industry. Recently the contracting industry requested that the tapered wedge joint technique be allowed as an option for all paving. The Department agreed to this request and will include the option in Section 401-3.13 B of the Standard Specifications.

In addition, the compaction requirements of Section 401-3.13 B are not the industry standard and require updating. Nationwide studies suggest improved methods of longitudinal joint compaction that are included in this revision as follows:

- The first pass of the compaction equipment is made on the hot mat with 150-200mm of the roller drum on the cold mat.
- Compaction of the joint is performed with rollers in vibratory mode.

ACTIONS BY OTHERS: The designer must include a special note in the project proposal that indicates if the longitudinal pavement joint can be left exposed to traffic overnight or not. This requirement will help the contractor bid the contract accordingly. Example special notes are attached to this EI for designer use. Also attached to this EI is a schematic diagram of the tapered wedge joint which must be included in the proposal.

If the designer anticipates the longitudinal pavement joint can be left exposed to traffic overnight they should include maintenance and protection of traffic requirements to provide adequate, advanced warning to motorists. As a minimum, W8-39, 'UNEVEN LANES' signs should be posted on both sides of the roadway at a maximum 300 meter spacing. Consideration should be given to include R4-10, 'STAY IN LANE' signs. The Regional Traffic and Safety Unit should be consulted. An exposed longitudinal pavement joint should not be allowed if it is expected that traffic will frequently change lanes. Under no circumstances can traffic be exposed to a longitudinal pavement joint constructed as a butt joint (option A). Minimizing damage to the shape of the joint(urban vs. rural projects) and the safety of the motoring public must be considered in the decision to allow an exposed longitudinal pavement joint.

COST: No direct cost increases or decreases are anticipated with these changes. Improved longitudinal joint performance and productivity may be realized by the contractor.

CONTACT PERSONS: Questions regarding this Engineering Instruction should be directed to Tom Wohlscheid of the Materials Bureau at 518-457-3240 or Pete Melas of Region One Construction at 518-486-1179.

Make the following changes to the Standard Specifications of January 2, 1995, Section 401 - Plant Mix Pavements - General:

Page 4-24,
Under Section 401-3.13 Joints, ***delete*** section *B. Longitudinal* and replace with the following:

B. Longitudinal Placement of the surface course shall be carefully planned to ensure that the longitudinal joints in the surface course will correspond with the edges of the proposed traffic lanes. Other joint arrangements will require approval of the Engineer. When traffic is maintained on the roadway during paving operations the mixture shall be laid such that no more than 30 meters of the longitudinal pavement joint will be exposed at the end of the working day unless a greater length is permitted in the contract documents. If an exposed joint in excess of 30 meters is allowed overnight, it shall not pose a safety hazard to the motoring public, as determined by the Engineer, and warning signs shall be provided at a maximum spacing of 300 meters to alert drivers of the uneven edge. Approval to leave an exposed edge must be requested in writing, in advance of paving operations. If approval is granted to leave a longitudinal pavement joint exposed to traffic the paving operation shall be planned so the edge is only exposed to traffic for one night and is not exposed over weekends or holidays.

When paving adjoining lanes the Contractor shall use the following options:

Option A - Butt Joint. Under this option the asphalt concrete shall be laid such that it uniformly overlaps the adjacent cold mat 50 to 75 mm. The thickness of the overlap material shall be approximately 1/4 the compacted thickness of the course, so as to result in a smooth and well compacted joint after rolling. The overlapped material shall be broomed or raked back onto the adjacent hot lane so that the roller operator can crowd the small excess into the hot side of the joint. Broadcasting of the overlap material onto the lane is not allowed. If the overlap is excessive, the excess material shall be trimmed off so that the material along the joint is uniform. The coarse particles of aggregate in the overlap material shall be removed and wasted if deemed necessary by the Engineer.

Option B - Tapered Wedge Joint. Under this option the asphalt concrete placed for the first mat shall be laid with an attachment to the paver to provide a sloping wedge with a vertical stepdown at the longitudinal pavement joint. A wedge of material shall extend from the bottom of the stepdown to the existing surface at a slope of 1 on 8 or flatter. Compaction of the first mat shall be done such that the roller compacts up to but does not extend past the stepdown. The vertical stepdown shall be 12.5 mm, minimum, after compaction of the mat. The second mat shall be placed such that it uniformly overlaps the adjacent cold mat 25 to 40 mm. The thickness of the overlap material shall be approximately 1/4 the compacted thickness of the course, so as to result in a smooth and well compacted joint after rolling. The overlapped material shall be broomed or raked back onto the adjacent hot lane so that the roller operator can crowd the small excess into the hot side of the joint. Broadcasting of the overlap material onto the lane is not allowed. If the overlap is excessive, the excess material shall be trimmed off so that the material along the joint is uniform. The coarse particles of aggregate in the overlap material shall be removed and wasted if deemed necessary by the Engineer.

If permission is granted to expose a longitudinal pavement joint overnight and the joint becomes damaged or provides an unsafe condition for motorists the approval to expose the longitudinal pavement joint will be rescinded by the Engineer and no more than 30 meters of the longitudinal pavement joint can be exposed at the end of the workday.

If a dual drum vibratory roller is used to compact the longitudinal joint constructed using Option A or Option B it shall be operated in vibratory mode and as close to the paver as practicable. The first pass shall be made with the roller traveling toward the paver and operating on the hot mat with 150 to 200 mm of the roller drum protruding onto the cold mat. The roller shall apply a second pass to the joint as it travels back away from the paver. If a single drum vibratory roller with pneumatic drive wheels is used, the roller shall be operated in vibratory mode and the same procedure shall be followed except that the roller shall be aligned on the joint so that the pneumatic drive wheels travel on the joint. All turning movements of the roller shall be done on previously compacted material. After applying two roller passes on the longitudinal joint, the roller shall then proceed to the low side of the lane and compact as described in Section 401-3.12 Compaction.

EXAMPLE SPECIAL NOTES

SPECIAL NOTE
LONGITUDINAL PAVING JOINT REQUIREMENTS

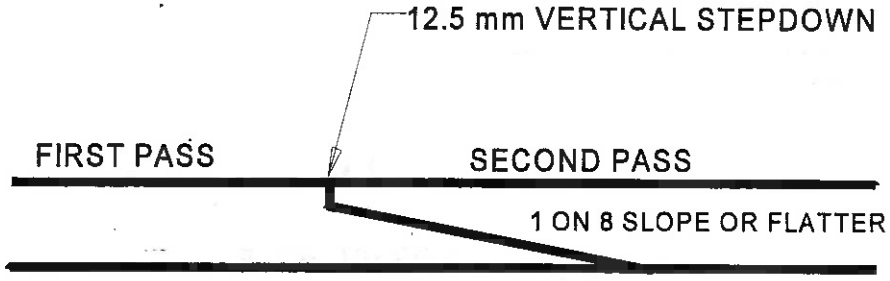
During paving operations on this contract a longitudinal pavement joint in excess of 30 meters at the end of the working day is prohibited.

OR

SPECIAL NOTE
LONGITUDINAL PAVING JOINT REQUIREMENTS

Prior to paving operations on this contract the contractor may request approval, in writing, to leave exposed a longitudinal pavement joint in excess of 30 meters at the end of the working day. Approval is contingent upon the use of Option B - Tapered Wedge Joint of Section 401-3.13 Joints, of the Standard Specifications. Maintenance and protection of traffic requirements to provide adequate, advanced warning to motorists must be provided as detailed in these contract documents. As a minimum W8-39, 'UNEVEN LANES' signs must be posted on both sides of the roadway at a maximum 300 meter spacing. Paving operations must be planned so the edge is only exposed to traffic for one night and is not exposed over weekends or holidays.

If the exposed edge becomes damaged or provides an unsafe condition for motorists the approval to expose a longitudinal pavement joint in excess of 30 meters at the end of the working day will be rescinded.



TAPERED WEDGE JOINT