Method of pavement repair. Coordinate with Maintenance Section and Pavement Engineer.

1. Slot-Stitching, Item SPV.0060.##

A Description

This special provision describes providing slot-stitching at the locations the plans show. The purpose of slot-stitching is to provide positive mechanical interconnection between two existing concrete slabs. Slot-stitching includes installing tie bars across longitudinal joints or cracks.

B Materials

Use No. 6 deformed tie bars.

Use concrete patch material tested as Rapid Set Concrete Patching Materials that conforms to ASTM C928 with the following deletion or addition: Delete sections 1.1.1, 1.1.2, and 1.3. Only use material that: (1) provides an opening to traffic compressive strength of 3000 psi in three hours per ASTM C39; (2) exhibits expansion of less than 0.10 percent per ASTM C531; Section 1.3 of the ASTM C531 should be modified to say this test method is limited to materials with aggregate size of 3/8 inch or less; and (3) has a calculated durability factor of 90.0 percent minimum at the end of 300 freeze-thaw cycles per ASTM C666, procedure A (water shall contain 5% sodium chloride by mass). Before use, provide a certification of compliance with the above requirements as prescribed by standard spec 106.3.3. Patching material shall be extended with a clean natural aggregate. Aggregate extender shall conform to the requirements prescribed in standard spec 501.2.5.4 except that the size requirements are as follows:

Minimum of 95% passing the 3/8-inch sieve

Maximum of 25% passing the No. 4 sieve

Use acceptable caulking filler for sealing the existing joints or cracks at the bottom and sides of the slot. Acceptable caulking filler includes any commercial caulk designed as a concrete sealant that is compatible with the patch material being used.

Use chairs made of non-metallic non-organic material. Chairs shall be designed to fit snugly in the saw cut, and shall hold the bar in the lateral center of the slot. Before use, submit sample chairs to the engineer for approval.

Provide a concrete curing agent that is a resin of 100 percent poly-alpha-methylstyrene type curing compound meeting ASTM C309, Type 2, Class B specifications and conforming to all requirements listed in the following table:

|  |  |  |
| --- | --- | --- |
| Properties | Minimum | Maximum |
| Total Solids, % by weight of compound | 42 |  |
| Reflectance in 72 hours (ASTM E1347) | 65 |  |
| Loss of Water, kg/m2 in 24 hours (ASTM C156) |  | 0.15 |
| Loss of Water, kg/m2 in 72 hours (ASTM C156) |  | 0.40 |
| Settling Test, ml/100 ml in 72 hours*[1]* |  | 2 |
| V.O.C. Content, g/L |  | 350 |
| Infrared Spectrum, Vehicle*[2]* | 100% alpha-methylstryrene |

*[1]*Test Method on file at the department’s Materials Testing Lab.

*[2]*The infrared scan for the dried vehicle from the curing compound shall match the infrared scan on file at the department’s Materials Testing Lab.

Shelf life of the product shall be 6 months from date of manufacture. The product may be re-tested by the department’s Materials Testing Lab and re-approved, if the physical and chemical properties have not changed, for an additional six months. However, the maximum shelf life shall not exceed one year from manufacture date.

C Construction

Install the tie bars in the existing concrete pavement as shown in the plan details and according to the following specifications.

C.1 Slots

Cut slots in the pavement.

Traffic may run on sawed slots for a maximum of two weeks.

C.2 Removing Concrete

Remove concrete from the slot area with a jackhammer no larger than the 30-pound class.

Before installing the tie bar, sandblast all exposed surfaces and cracks in the slot, and clean all exposed surfaces and cracks of saw slurry and loose material. Properly dispose of all loose material off the highway right-of-way.

C.3 Placing Tie Bars

Place tie bars across the longitudinal joint or crack as shown in the plan details. Chairs shall hold the tie bar securely in place during the placement of the patch mix. Before the placement of the patch mix, obtain approval from the engineer for the placement of the tie bars. If the tie bar shifts during the placement of the patch mix, the work shall be rejected and repair the work at no expense to the department.

C.4 Placing Patch Mix

Immediately before placing the patch mix, moisten existing concrete surfaces in the slot or prepare the existing concrete surfaces as recommended by the manufacturer, or both. Before patching material is placed, remove all excess water in the slot.

With a portable or mobile mixer, mix patching material according to the manufacturer’s recommendations.

Place the patching material into the slot and vibrate the patching material to ensure that the tie bar is completely encased. The diameter of the vibrator head shall not exceed 1 1/4-inches.

When the ambient temperature is below 50 degrees F, placement of patching material will require prior approval by the engineer.

If the pavement is not going to be diamond ground, strike-off the surface of the filled area flush with the adjacent concrete. If the pavement is to be diamond ground after completion of the slot-stitching operation, it is acceptable to leave the slot slightly overfilled.

Before placing any vehicle load on the slot-stitched longitudinal joint or crack, cure patching material by the impervious coating method for a minimum of three hours. The coverage rate for the curing agent will be at a rate of 100 square feet per gallon. During this three-hour initial curing period, covering may be needed to prevent excess thermal stress in the patch material.

When the ambient temperature is below 50 degrees F, the engineer may postpone opening to vehicular loads or require covering during the initial curing period, or both.

C.5 Damage During Construction

At no cost to the department, repair any damage to the pavement caused by the contractor’s operations.

D Measurement

The department will measure Slot-Stitching by each tie bar installed and accepted.

E Payment

The department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER DESCRIPTION UNIT

SPV.0060.## Slot-Stitching EACH

Payment is full compensation for furnishing all materials including tie bars; for sawing slots; for removing concrete; for installing tie bars; for furnishing and installing patching material; for curing patch material; for sawing the joints; and for furnishing and applying water.

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