

## SECTION S690 - PAVEMENT PATTERNING

### S690-1 DESCRIPTION

Work consists of patterning of asphalt pavement as required in Contract Documents and as directed by Project Manager.

For purposes of this specification, all references are in accordance with *NYS DOT Standard Specifications (US Customary Units dated May 1, 2008)* edition, including any addenda.

### S690-2 MATERIALS

#### S690-2.01 General

Pattern, colors and materials to be used for patterning asphalt pavement will be as required in Contract Documents.

Individual components used to form completed system used to pattern asphalt pavement are to be congruous, supplied by same manufacturer, and designed to withstand AASHTO HS-20-44 Wheel Loading.

#### S690-2.02 Pavement Patterning

##### A. Inlay Method

Inlay pavement patterning system is used for imprinting or stamping decorative colored pattern outline into asphalt pavement.

Stamping template is to be 125 mils thick metal template, designed and constructed in required pattern, and must be created in machine shop using CNC or equivalent equipment to ensure quality and consistency of template shape and size.

Thermoplastic material is to be retro-reflective, provided in sheets with standard thickness of 90 mils, pre-cut by die or other pattern cutting machine into required pattern. Thermoplastic material is to consist of homogeneously mixed pigments, fillers, resins, fibers, and glass beads for retro-reflectivity. Pigments and fillers are to be uniformly dispersed in resin. Thermoplastic material is to be free from dirt and foreign objects.

Typical properties of thermoplastic material:

Characteristic	Test Specification	Minimum Results
Water Absorption	ASTM D570	0.27%
Binder Content	AASHTO T250	20.01% with d.o. beads
Softening Point	ASTM D36	240°F
Low Temperature Resistance @ 15°F	AASHTO T250	no visual cracks
Specific Gravity	ASTM D792	2.00
Indentation Resistance @ 110°F for 15 seconds	ASTM D2240 (after flaming)	43 (shore A)
Impact Resistance	ASTM D256 Method A	4.9+ N-m
Flash Point	ASTM D92	500°F

## B. Overlay Method

Overlay pavement patterning system is used for constructing decorative colored pattern outline onto asphalt pavement surface.

Stamping template is to be 375 mils thick metal template, manufactured from flexible woven wire rope cut, welded and pre-shaped into required pattern.

Thermoplastic material is to be aggregate reinforced, retro-reflective, provided in sheets with standard thickness of 180 mils, and specifically designed to adhere to asphalt pavement surfaces. Thermoplastic material is to be highly durable, crack, fade, skid and slip resistant.

Post-stamping template is to be 250 mils thick metal template, manufactured from flexible woven wire rope cut, welded and pre-shaped into required pattern.

## S690-2.03 Pavement Texturing and Patterning

### A. Inlay Method

Inlay pavement texturing and patterning system is used for imprinting or stamping decorative pattern into asphalt pavement, and for texturing pavement area with colored asphalt pavement coating material.

Stamping template is to be 375 mils thick metal template, manufactured from flexible woven wire rope cut, welded and pre-shaped into required pattern.

Coating material for use in texturing pavement area is to be designed for use with asphalt pavement, provide durable, long lasting color and texture of asphalt pavement, must be environmentally safe, and meet EPA requirements for Volatile Organic Compounds (VOC).

Minimum performance properties of coating material:

<b>Characteristic</b>	<b>Test Specification</b>	<b>Minimum Results</b>
Durability: Taber Abrasion Resistance	ASTM D-4060 1 day cure, H-10 wheel: cycles (dry)	< 1.5 g/1000
Water Sensitivity	ASTM D570 Water absorption after 9 days Remaining absorption after 1 hour of recovery	< 10% < 1.0%
Color Stability	ASTM G-155 QUV 2,000 hours (CIE units)	brick color $\Delta E < 1.5$
Flexibility: Mandrel Bend	ASTM D522-93A Flexibility as measured by Mandrel bend	0.5mm thick sample passes 10 mm at 21°C 0.5mm thick sample passes 125 mm at -18°C
Chemical Resistance	ASTM D-2486 Modified MEK scrubs 16 dry mils, number of scrubs until 50% substrate exposed	> 5000
Adhesion to Asphalt	ASTM D-4541	substrate failure
Friction - Wet	ASTM E-303 British Pendulum Tester	> 55
Environmental Sensitivity	EPA 24 ASTM D3960-05 Volatile Organic Compounds	VOC < 150

## B. Overlay Method

Overlay pavement texturing and patterning system is used constructing decorative pattern onto asphalt pavement surface, and for texturing pavement area with colored asphalt pavement coating material.

Overlay material for use in texturing pavement area is to be hot applied colored modified synthetic asphalt compound with standard thickness of 750 mils, and imprinted with template in required pattern. Asphalt compound is to be waterproof, consisting of graded sand and granite aggregates, and reinforced with two types of fibers.

### **S690-2.04 Logo/Symbol Pavement Patterning and Bike Markings – Overlay Method**

Overlay logo/symbol pavement patterning and bike marking system is used for constructing decorative logos/symbols onto asphalt or concrete pavement surface.

Thermoplastic material is to be aggregate reinforced, retro-reflective, provided in sheets with standard thickness of 180 mils, and specifically designed to adhere to asphalt or concrete pavement surface. Thermoplastic material is to be highly durable, crack, fade, skid and slip resistant.

### **S690-3 CONSTRUCTION DETAILS**

Preparation of pavement surface, equipment, materials, and method of application of patterning system, and repair of pavement texturing coating, will be as required by manufacturer.

### **S690-4 METHOD OF MEASUREMENT**

#### **S690-4.01 Pavement Patterning; Pavement Texturing and Patterning**

Quantity to be measured for payment will be number of square feet of pavement area patterned, or textured and patterned, constructed or repaired.

#### **S690-4.02 Logo/Symbol Pavement Patterning**

Quantity to be measured for payment will be number of each logo/symbol constructed.

#### **S690-4.03 Bike Markings**

Quantity to be measured for payment will be number of each individual bike chevron, marking or symbol constructed. Bike markings will consist of bicycle arrow, bike chevron, bicycle symbol, bike symbol and bike yield markings.

### **S690-5 BASIS OF PAYMENT**

#### **S690-5.01 General All Items**

Unit price bid for all items includes cost of: preparation of pavement; laying out pattern; furnishing and installing pavement patterning system materials; repairing damaged or improperly installed pavement patterning system materials; protecting completed work from traffic; site cleanup; and furnishing all labor, material and equipment necessary to complete work.

Restoration of adjacent areas, and adjustment of all existing or new appurtenances will be paid for under separate bid items.

#### **S690-5.02 Repair Existing Pavement Patterning Coating**

Unit price bid also includes cost of: removing damaged materials.

Payment will be made under:

<b>ITEM NO.</b>	<b>ITEM</b>	<b>PAY UNIT</b>
S690.1001	Pavement Patterning – Inlay Method	Square Foot
S690.1002	Pavement Patterning – Overlay Method	Square Foot
S690.1101	Pavement Texturing and Patterning – Inlay Method	Square Foot
S690.1102	Pavement Texturing and Patterning – Overlay Method	Square Foot
S690.1301	Logo/Symbol Pavement Patterning – Overlay Method	Each
S690.15	Repair Existing Pavement Patterning Coating	Square Foot
S690.16	Bike Markings	Each

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