

CRACK SEALING

REV. 1/2024

CONTRACT AWARD

AWARDED BY TDOT REGION FOR EACH TYPE OF APPLICATION (TDOT-applied vs Contractor-applied; 8 potential crack seal contracts) – Region locations are in the Description field in the line items – *ensure that you are only bidding on the region(s) you are interested in providing services to. All lines for the region you are bidding should have a response. For informational purposes, district locations assigned to each region are included in an attachment.*

DEFINITIONS:

ADT – Average Daily Traffic

TDOT – Tennessee Department of Transportation

QPL – Qualified Products List found at <https://www.tn.gov/tdot/materials-and-tests/research---product-evaluation-and-qualified-products-list.html>

TDOT APPLICATION

- A.) MATERIAL MEETING THE ATTACHED MINIMUM SPECIFICATIONS AND APPROVED BY TDOT MATERIALS & TEST QUALIFIED PRODUCTS LIST AS DESCRIBED IN “SPECIFICATION FOR TDOT CRACK SEALER (TDOT APPLIED).” PRICE PER POUND (MINIMUM ORDER OF 4,800 LBS)

- B.) EQUIPMENT RENTAL TO APPLY PRODUCT LISTED IN “SPECIFICATION FOR TDOT CRACK SEALER (TDOT APPLIED).” UNIT MUST MEET THE MINIMUM SPECIFICATIONS AND BE COMPATIBLE WITH PRODUCT LISTED IN SPECIFICATION. PRICE PER MONTH (ANY TIME USED OVER 30 DAYS WILL BE PRO-RATED AT MONTHLY RATE DIVIDED BY 30 TO EQUATE TO A DAILY RATE) NOTE: ANY DOWNTIME FROM MACHINE WILL BE DEDUCTED FROM MONTHLY RATE ON A DAY BY DAY BASIS.

CONTRACTOR APPLICATION

NOTE: TDOT engineer will determine the most cost-effective method of repair per job site.

SPECIAL NOTE: Job sites may consist of state routes and interstate lane miles. Working hours for application of Crack Sealing listed below:

Roadway Classification	Roadway ADT	Working Hours
Interstate and Access Controlled Highways	All	8:00 PM – 6:00 AM
Multi-lane Highways (# of lanes >2)	ADT ≥ 25,000	8:00 PM – 6:00 AM
	10,000 ≤ ADT < 25,000	8:00 PM – 6:00 AM
		9:00 AM – 3:00 PM
	ADT < 10,000	No Working Restrictions
Two Lane Highways (One lane in each direction)	ADT ≥ 25,000	8:00 PM – 6:00 AM
	5,000 ≤ ADT < 25,000	8:00 PM – 6:00 AM
		9:00 AM – 3:00 PM
	ADT < 5,000	No Working Restrictions

In addition, high volume traffic areas during rush hour or special events will require coordination at the direction of the TDOT Engineer.

- A.) CONTRACTOR INSTALLED SEALING/PATCHING MATERIALS AS PER MINIMUM SPECIFICATIONS IDENTIFIED IN "SPECIFICATIONS FOR TDOT CRACK SEALER (CONTRACTOR APPLIED)." TO BE PAID ON A PER POUND PRICE. (MINIMUM CALL OUT PER JOB TO BE 4,800 LBS & 35 LANE MILES) APPROVED BY TDOT MATERIALS & TEST QUALIFIED PRODUCTS LIST AS NOTED IN THE SPECIFICATION.
- B.) MOBILIZATION PER CALL OUT (LUMP SUM PER PURCHASE ORDER)
- C.) TRAFFIC CONTROL PER CALL OUT (PER DAY) NOTE: TDOT RESERVES THE RIGHT TO PROVIDE TRAFFIC CONTROL PER JOB.

SPECIFICATION FOR TDOT CRACK SEALER (TDOT APPLIED)

ITEM IDs: 1000157134, 1000157135, 1000157136, 1000157137, 1000157138, 1000157139, 1000157140, 1000157141

Description: Crack-seal equipment supplied with material for “do-it-yourself application”. This work shall consist of cleaning and filling existing longitudinal and transverse cracks having a width of **3/16 inch or greater in flexible pavements and shoulders.**

Materials

The sealant shall be a **Hot-Poured Elastic Type Joint Sealer, Type I** listed on the Department’s **Qualified Products List 5. Section C. Hot Pour Joint Sealers.**

Storage, heating, application instructions and cautions shall be supplied with each shipment. The sealant shall be able to be reheated to application temperature at least once after the initial heat up without degradation of sealant specifications. The joint sealer shall be a mixture of virgin synthetic rubber or reclaimed rubber or a combination of the 2 with asphalt and plasticizers and tackifiers. Ground cured rubber scrap shall not be used. The sealer shall be free of foreign materials, and when melted shall be free of lumps. The material will be kept within the temperature range recommended by the Manufacturer. The Contractor shall furnish the Engineer with a certified statement from the Manufacturer of the sealant showing compliance with this specification together with a certified copy of the test report.

Rental Equipment

The crack-seal machine provided will be a heated hose applicator with an oil-jacketed melter. The machine shall be all diesel powered for safety and the burner and engine shall be powered by diesel fuel only. For efficiency, the engine shall be a minimum of 33.5 horsepower. The unit shall be equipped with 125 CFM air compressor for cleaning cracks prior to sealing. The unit shall be computer controlled to keep temperatures within specified ranges and minimize danger and shall be equipped with a burner system with auto shut off capability. The capacity of the machine shall be 125 gallons minimum with a BTU input of 372,000 BTU. The unit shall have a flow regulator with the ability to adjust the flow of material as well as the speed of agitation within the melter.

The provider of the applicator shall maintain in working order at least one machine per region where they maintain the contract. In the event of machine failure, the provider shall maintain a contractual relationship for repair within the Region Contract location qualified to repair the melter/applicator.

The provider of the equipment shall have training staff from the manufacturer to provide training, as needed, for the TDOT crew utilizing the equipment. The training shall be at no additional cost and retraining as necessary will be provided. Training will include 6 people per region for a maximum two-hour training as needed.

Price Methodology, Minimum Order, and Delivery

The price shall be per pound of material to include delivery and be inclusive of the requirements indicated in the "Materials" Section of this specification. There shall be a 4,800 lb. minimum material order to secure equipment and place an order. Materials shall be delivered on pallets to the designated TDOT district.

The price shall be per month for equipment rental to include delivery of equipment to the designated TDOT district and be inclusive of requirements indicated in the "Rental Equipment" section of this specification.

SPECIFICATIONS FOR TDOT CRACK SEALER (CONTRACTOR APPLIED)

**ITEM IDs: 1000157143, 1000157146, 1000157147, 1000157301, 1000157148,
1000157151, 1000157152, 1000157303, 1000157153, 1000157156,
1000157157, 1000157305, 1000157158, 1000157161, 1000157162,
1000157307**

Description In-place hot-pour crack sealing material applied by the Contractor. This work shall consist of cleaning and filling existing longitudinal and transverse cracks having a width of **3/16 inch or greater in flexible pavements and shoulders.**

Materials

The sealant shall be a **Hot-Poured Elastic Type Joint Sealer, Type I** listed on the Department's **Qualified Products List 5. Section C. Hot Pour Joint Sealers.**

Method of Application

All cracks shall be thoroughly cleaned with high pressure, dry compressed air removing all vegetation, debris, moisture, and foreign materials, as directed by the Engineer. The sealant shall be applied to the crack with a pressure feed wand system immediately after cleaning at a temperature within the range recommended by the Manufacturer of the sealant. The sealant shall be applied using the flush fill method. The crack shall be filled level with the asphalt surface. Immediately after placement of the sealant, a V-shaped rubber squeegee shall be used to level all excess material above the asphalt surface. Any sealant above the asphalt surface must be feathered out as directed by the Engineer. The crack filling will only be allowed when both the air and pavement temperatures are within the tolerances recommended by the Manufacturer of the material.

Storage, heating, application instructions and cautions shall be supplied with each shipment. The sealant shall be able to be reheated to application temperature at least once after the initial heat up without degradation of sealant specifications. The joint sealer shall be a mixture of virgin synthetic rubber or reclaimed rubber or a combination of the 2 with asphalt and plasticizers and tacifiers. Ground cured rubber scrap shall not be used. The sealer shall be free of foreign materials, and when melted shall be free of lumps. The material will be kept within the temperature range recommended by the Manufacturer. The Contractor shall

furnish the Engineer with a certified statement from the Manufacturer of the sealant showing compliance with this specification together with a certified copy of the test report.

Equipment for Application

The melter-applicator shall be an oil jacketed double boiler type, equipped with an agitator and separate thermometers for both the oil bath and the melting vat. All equipment necessary for the satisfactory performance of this operation shall be on the job and approved by the Engineer before work will be permitted to begin.

Method of Measurement for Payment

Sealant for random cracks will be measured by the pound. At the beginning of each workday, the Engineer, or his appointed representative, shall document the amount of material in the heater-melter unit and log all additional material added during the day and measure the amount of material remaining in the heater melter at the end of each day to determine the total poundage used. Payment will be made by the pound for random cracks to include but not limited to 3/16" or greater longitudinal joint at centerline to shoulder. Also, any transverse cracks having a width of 3/16" or greater. **IMPROPER APPLICATION SUCH AS OVER APPLICATION WILL NOT BE ACCEPTED, DOES NOT MEET SPECIFICATIONS AND RESULT IN NON-PAYMENT OF SERVICES ON AREAS OF IMPROPER APPLICATION.**

NOTE: CONTRACT IS DESIGNED FOR LONGITUDINAL & TRANSVERSE CRACKS, JOINTS, AND BLOCK CRACKING. CONTRACT IS NOT DESIGNED FOR ALLIGATOR/SPIDER CRACKS THAT APPLY EXCESSIVE AMOUNTS TO THE ROADWAY. OVERBANDING WILL NOT BE TOLERATED. TDOT ENGINEER WILL PROVIDE SITE SPECIFIC INSTRUCTIONS AND GUIDANCE.

There shall be a 4,800 lbs. minimum order and specific site location to place an order.

There shall be a 35 linear mile minimum order and specific location to place an order.

Traffic Control

All traffic control shall be in accordance with the Manual on Uniform Traffic Control Devices and TDOT Standard Drawing T-WZ-11, T-WZ-13, and T-WZ-15. All traffic control devices for lane closures (construction signs, portable arrow boards, cones, etc.) lane closures shall be of sufficient length to accomplish significant work.

Where raised pavement markers exist, the contractor shall protect the markers during the cleaning and sealing process.

The contractor shall be required to place temporary painted pavement markings where crack filling materials obliterate the existing markings. Cost of temporary markings are to be included in "installation" line-item price.

PATCHING

REV. 1/2024

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TDOT APPLICATION

- A.) MATERIAL MEETING THE ATTACHED MINIMUM SPECIFICATIONS AND APPROVED BY TDOT MATERIALS & TEST QUALIFIED PRODUCTS LIST AS DESCRIBED IN “SPECIFICATIONS FOR TDOT ASPHALT and CONCRETE PATCHING (TDOT APPLIED).” PRICE PER POUND (MINIMUM ORDER OF 4,800 LBS)

- B.) EQUIPMENT RENTAL TO APPLY PRODUCT LISTED IN “SPECIFICATIONS FOR TDOT ASPHALT and CONCRETE PATCHING (TDOT APPLIED).” UNIT MUST MEET THE MINIMUM SPECIFICATIONS AND BE COMPATIBLE WITH PRODUCT LISTED IN SPECIFICATION. PRICE PER MONTH (ANY TIME USED OVER 30 DAYS WILL BE PRO-RATED AT MONTHLY RATE DIVIDED BY 30 TO EQUATE TO A DAILY RATE) NOTE: ANY DOWNTIME FROM MACHINE WILL BE DEDUCTED FROM MONTHLY RATE ON A DAY BY DAY BASIS.

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In addition, high volume traffic areas during rush hour or special events will require coordination at the direction of the TDOT Engineer.

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B.) MOBILIZATION PER CALL OUT (LUMP SUM PER PURCHASE ORDER)

C.) TRAFFIC CONTROL PER CALL OUT (PER DAY) NOTE: TDOT RESERVES THE RIGHT TO PROVIDE TRAFFIC CONTROL PER JOB.

SPECIFICATIONS FOR TDOT ASPHALT and CONCRETE PATCHING (TDOT APPLIED)

ASPHALT

ITEM IDs: 1000173523, 1000173524, 1000173525, 1000173526, 1000173527,
1000173528, 1000173529, 1000173530

CONCRETE

ITEM IDs: 1000203139, 1000203140, 1000203141, 1000203142, 1000203143,
1000203144, 1000203145, 1000203146

Description: Patching equipment supplied with material for “do-it-yourself application” of patching and sealing of cracks and joints of widths between $\frac{3}{4}$ of an inch to 12 inches and depths of no more than 4 inches.

Definitions

For the purposes of this specification, the following definitions apply:

- **Binder** - the thermal setting material that is the basis of the patching material, and to which any fillers, fibers, or other components are added.
- **Patching material** - the binder and other additives, mixed together, and in the form that will be applied to the patch, and shall not include bulking aggregate or final surface aggregate.
- **Bulking aggregate** - additional aggregate applied to the patch after the patching material has been applied for patches greater than 1 inch deep and shall not include final surface aggregate.
- **Final Surface Aggregate** - aggregate applied to the surface of the patch to provide friction and protection

Materials

The Patching material shall be a hot-applied polymer material containing graded aggregates. The material shall be listed on the **Department's QPL 13. Section A. Patching Materials (Asphalt) QPL 13.002 Elastomeric Patching Materials Hot Applied AC** or **13. Section B. Patching Materials (Concrete) QPL 13.010 Elastomeric Patching Materials Hot Applied AC**.

Bulking Aggregate

Provide single sized bulking aggregate consisting of a crushed, double washed, and dried granite. The size shall be from 5/8 to 7/8 inches determined through sieve analysis and shall not include any final surface aggregate.

Final Surface Aggregate

Final surface aggregate shall be crushed; double washed, and dried granite or Bauxite. The size shall meet the following gradation:

No. 4 Sieve Size 100% Passing

No. 16 Sieve Size 5% max Passing

Storage, heating, application instructions and cautions shall be supplied with each shipment. The Patching material shall be able to be reheated to application temperature at least once after the initial heat up without degradation of Patching material specifications. The Patching material shall be free of foreign materials, and when melted shall be free of lumps. The material will be kept within the temperature range recommended by the Manufacturer. The Contractor shall furnish the Engineer with a certified statement from the Manufacturer of the Patching material showing compliance with this specification together with a certified copy of the test report.

Rental Equipment

The Patching material machine provided will be a heated hose applicator with an oil-jacketed melter. The machine shall be all diesel powered for safety and the burner and engine shall be powered by diesel fuel only. For efficiency, the engine shall be a minimum of 33.5 horsepower. The unit shall be equipped with 125 CFM air compressor for cleaning cracks prior to sealing. The unit shall be computer

controlled to keep temperatures within specified ranges and minimize danger and shall be equipped with a burner system with auto shut off capability. The capacity of the machine shall be 125 gallons minimum with a BTU input of 372,000 BTU. The unit shall have a flow regulator with the ability to adjust the flow of material as well as the speed of agitation within the melter.

The provider of the applicator shall maintain in working order at least one machine per region where they maintain the contract. In the event of machine failure, the provider shall maintain a contractual relationship for repair within the Region Contract location qualified to repair the melter/applicator.

The provider of the equipment shall have training staff from the manufacturer to provide training, as needed, for the TDOT crew utilizing the equipment. The training shall be at no additional cost and retraining as necessary will be provided. Training will include 6 people per region for maximum of two-hour training as needed.

Price Methodology, Minimum Order and Delivery

The price shall be per pound of material to include delivery and be inclusive of the requirements indicated in the "Materials" Section of this specification. There shall be a 4,800 lb minimum material order to secure equipment and place an order. Material shall be delivered on pallets to the designated TDOT district.

The price shall be per month for equipment rental to include delivery of equipment to the designated TDOT district and be inclusive of requirements indicated in the "Rental Equipment" section of this specification.

SPECIFICATIONS FOR TDOT ASPHALT and CONCRETE PATCHING (CONTRACTOR APPLIED)

ASPHALT

ITEM IDs: 1000173515, 1000173516, 1000203879, 1000173517, 1000173518, 1000203880, 1000173519, 1000173520, 1000203881, 1000173521, 1000173522, 1000203882

CONCRETE

ITEM IDs: 1000203147, 1000203883, 1000203884, 1000203148, 1000203885, 1000203886, 1000203149, 1000203887, 1000203888, 1000203150, 1000203889, 1000203890

Description In-place hot-pour patching material applied by the Contractor. This work shall consist of cleaning and filling existing longitudinal and transverse cracks having widths between $\frac{3}{4}$ of an inch to 12 inches and depths of no more than 4 inches.

Definitions

For the purposes of this specification, the following definitions apply:

- **Binder** - the thermal setting material that is the basis of the patching material, and to which any fillers, fibers, or other components are added.
- **Patching material** - the binder and other additives, mixed together, and in the form that will be applied to the patch, and shall not include bulking aggregate or final surface aggregate.
- **Bulking aggregate** - additional aggregate applied to the patch after the patching material has been applied for patches greater than 1 inch deep and shall not include final surface aggregate.
- **Final Surface Aggregate** - aggregate applied to the surface of the patch to provide friction and protection.

Materials

The Patching material shall be a hot-applied polymer material containing graded aggregates. The material shall be listed on the **Department's QPL 13. Section A. Patching Materials (Asphalt) QPL 13.002 Elastomeric Patching Materials Hot Applied AC** or **13. Section B. Patching Materials (Concrete) QPL 13.010 Elastomeric Patching Materials Hot Applied AC**.

Provide a hot applied patching material consisting of a combination of resin binder, polymers, graded fillers, aggregates, fibers, and rubber that once heated provides an impermeable, void less solid mass at ambient temperatures. Formulate the patching material according to climatic conditions to provide a durable pavement repair with good fluidity at process temperature, low temperature flexibility, and ambient temperature flow resistance.

Bulking Aggregate

Provide single sized bulking aggregate consisting of a crushed, double washed, and dried granite. The size shall be from 5/8 to 7/8 inches determined through sieve analysis and shall not include any final surface aggregate.

Final Surface Aggregate

Final surface aggregate shall be crushed; double washed, and dried granite or Bauxite. The size shall meet the following gradation:

No. 4 Sieve Size 100% Passing

No. 16 Sieve Size 5% max Passing

Method of Application

Contractor shall install the patching material to encompass the damaged or spalled areas as shown on the plans, or as directed by the engineer, with adjustments to the depth and width of the repairs as directed.

Saw cut around or mill the repair area and remove all loose and damaged pavements.

Remove material from the repair area to a depth and width which will allow proper seating of the patching material. (Minimum $\frac{3}{4}$ inch depth)

Remove all loose and damaged material from the repair area, either by saw cutting around the area and using a jackhammer to remove material, or by using a milling machine, as directed.

Remove material from the repair area to a depth and width necessary to provide sound pavement that will allow proper seating of the patching material.

If using a jackhammer, use an approved jackhammer capable of performing the required removal of the existing material without further damaging the surrounding pavement. Use a jackhammer no larger than 30 pounds unless approved by the Engineer.

Thoroughly clean and dry substrate faces using a hot-compressed air lance.

Prime the area using a primer determined by the manufacturer.

Allow the primer to completely dry before applying patching materials.

Mix and heat the patching material to 300°F – 360°F on site in a mixing unit equipped with electronically controlled thermostats in accordance with the manufacture's requirements.

Heat the bulking and final surface aggregates to ensure no moisture is present using a wheelbarrow or other approved container that will withstand the heat applied.

Apply the patching material to the repair area. If the repair area is deeper than 1 in., add bulking aggregate at a rate of 20%–40% by volume after placing the patching material.

Install additional patching material and bulking aggregate in 1 – 2 1/2-inch lifts until the repair is 1/2 inch or less below the existing pavement.

The final lift shall be $\frac{3}{4}$ to 1 inch depending on the manufacture's requirements. Apply a final coat of the heated patching material to level the repair area.

Dress the surface of the patch with heated final surface aggregate. Perform this operation while the patch is still hot.

Sweep the area and remove all debris from the site.

Do not allow traffic over the material until after it has cooled to the point that it does not permanently deform under pressure, as recommended by the manufacturer, or as directed.

For depths greater than 2" use manufacturer recommended "bulking" or "structural" stone for added stability with these cracks in this section.

Storage, heating, application instructions and cautions shall be supplied with each shipment. The sealant shall be able to be reheated to application temperature at least once after the initial heat up without degradation of sealant specifications. The sealer shall be free of foreign materials, and when melted shall be free of lumps. The material will be kept within the temperature range recommended by the Manufacturer. The Contractor shall furnish the Engineer with a certified statement from the Manufacturer of the sealant showing compliance with this specification together with a certified copy of the test report.

Equipment for Application

The melter-applicator shall be an oil jacketed double boiler type, equipped with agitator and separate thermometers for both the oil bath and the melting vat and shall be computer controlled to keep temperatures within specified ranges and minimize danger and shall be equipped with a burner system with auto shut off capability. All equipment necessary for the satisfactory performance of this operation shall be on the job and approved by the Engineer before work will be permitted to begin.

Method of Measurement

The Department will measure hot applied fiber reinforced polymer patching material by the pound of resin binder used, including primer, resin binder, bulking aggregate, and final surface aggregate.

Basis of Payment

The Department will pay for accepted quantities, complete in place, at the contract price as follows:

Item No.	Description	Unit
502-3.05	HOT APPLIED FIBER-POLYMER PATCHING MATERIAL	POUND

There shall be a 4,800 lbs. minimum order and specific site location to place an order.

There shall be a 35 linear mile minimum order and specific location to place an order.

Such payment for the pound measurement of resin binder used shall be full compensation for primer, resin binder, bulking aggregate, final surface aggregate, labor, equipment, saw cutting, milling, removal and disposal of existing pavement material, and all incidental work and material. **IMPROPER APPLICATION SUCH AS OVER APPLICATION WILL NOT BE ACCEPTED, DOES NOT MEET SPECIFICATIONS AND RESULT IN NON-PAYMENT OF SERVICES ON AREAS OF IMPROPER APPLICATION.**

Traffic Control

All traffic control shall be in accordance with the Manual on Uniform Traffic Control Devices and TDOT Standard Drawing T-WZ-11, T-WZ-13, and T-WZ-15. All traffic control devices for lane closures (construction signs, portable arrow boards, cones, etc.) lane closures shall be of sufficient length to accomplish significant work.

Where raised pavement markers exist, the contractor shall protect the markers during the cleaning and sealing process.

The contractor shall be required to place temporary painted pavement markings where crack filling materials obliterate the existing markings. Cost of temporary markings are to be included in "installation" line item price.