

Measurement of Portland Cement Concrete Pavement For Ramps will include ramps acceleration and deceleration lanes, tapers, widened areas and other configurations, other than the normal width of the through lanes, necessary for the interchange of traffic.

Adjacent to bridge ends, over trenches and at other places where the Engineer authorizes the thickness to be other than that shown on the typical cross-section, the volume of concrete pavement authorized by the Engineer and actually placed and accepted shall be converted into equivalent square yards of the typical pavement as shown on the plans.

Wire mesh, bar mat reinforcement, tie bars, dowels, load transfer devices, joint sealant, other materials, and labor necessary to complete the pavement in accordance with the plans will not be measured separately. No direct payment will be made for those items.

**501.34 Basis of Payment.** The quantity, measured as provided above, will be paid for at the contract unit price for Portland Cement Concrete Pavement, or Portland Cement Concrete Pavement for Ramps, of the thickness specified, which price and payment shall be full compensation for furnishing all materials, equipment, tools, labor, and incidentals necessary to satisfactorily complete the work.

The bid price shall include joint construction and sealing and the furnishing and placing of wire mesh, bar mat reinforcement, tie bars, load transfer devices, dowels and all materials, labor and equipment necessary to complete the work.

Pavement that is deficient in thickness, but is permitted to be left in place, will be paid for at the reduced unit price or deducted as provided in Subsection **501.32**. Reductions for deficient thickness may be entered on any estimate after the information becomes available.

No compensation will be allowed for the materials or labor involved in the removal of the defective slabs.

Payment for each item includes all direct and indirect costs and expenses required to complete the work.

Payment will be made under:

Item No.	Pay Item	Pay Unit
5011XXX	Portland Cement Concrete Pavement - <i>(thickness)</i> " Uniform	Square Yard
5012XXX	Portland Cement Concrete Pavement for Ramps - <i>(thickness)</i> " Uniform	Square Yard

## SECTION 502

### CONCRETE PAVEMENT PATCHING

**502.01 Description.** This work shall consist of replacing full depth pavement slabs on a prepared subgrade or base course in accordance with the plans and in accordance with the applicable requirements of the special provisions and Sections **501**, **701**, and **702**. The pavement replacement slabs will be placed where the distressed concrete has been removed and shall range in size from 12 feet wide by a minimum of 6 feet long up to the full slab length for jointed concrete pavements, while patches of continuously reinforced concrete pavements shall have a minimum dimension of 6 feet in length and width. The depth shall be the depth of the existing pavement. See the plans for details.

The Engineer will locate and establish the areas to be replaced by marking on the surface of the existing pavement the boundaries of the area to be patched. The boundaries of the patch area will be of sufficient width and length to assure that all of the distressed concrete is removed. Transverse boundaries do not have to be perpendicular to the shoulder in

all cases, but shall be at least 18 inches away from transverse cracks in the good concrete.

#### **502.02 Materials.**

**A. General.** The materials shall meet the requirements of Sections **302, 501, 701, and 703.**

**B. Portland Cement Concrete.** Portland cement shall be Type I or Type III from an approved source and shall be used at a rate of 800 lbs. per cubic yard. The mix shall have a water cement ratio not exceeding 0.38. Water cement ratio shall be maintained by using normal or high range water reducing materials Type F or G. Non-chloride accelerators shall be used to achieve the specified compressive strength and time of set. Coarse aggregates shall be No. 56, 57, or 67. Provide an air content of 4 1/2%  $\pm$  1 1/2%.

At least forty-five (45) days before the beginning of placement of concrete in the roadway, the contractor shall submit a proposed mix design to the Department's Research and Materials Laboratory. The Research and Materials Laboratory may either require materials to be provided to the Department's Central Laboratory or to the ready mix plant in order to prepare trial batches. The Contractor may propose to use a previously approved mix design. A previously approved mix design shall not relieve the Contractor of the forty-five (45) day notification requirement and the department may require re-testing of the mix design at its option. Mix designs are project specific, and approval is non-transferable without written approval from the Research and Materials Engineer.

The mix design shall produce a minimum compressive strength of 2000 psi within 6 hours after addition of accelerating admixtures. The Contractor shall provide a representative to be present at the Research and Materials Laboratory or ready mix plant while the proposed mix design is produced. He shall be authorized to make any changes

to the Contractor's proposed mix design in the event that the mix does not meet time and strength requirements. An approved mix design will be furnished to the Contractor.

**C Reinforcing Steel.** Bar mat reinforcing steel, wire mesh, and dowel bars size and placement shall be as specified in the patching detail included in the plans, special provisions, and Section **703.**

**D. Epoxy System.** Epoxy system used to anchor dowel bars, tie bars shall be moisture insensitive, and the manufacturer shall furnish a certification indicating the material meets ASTM C 881, Type 4, Grade 3, Class B and/or Class C. A certification by the manufacturer shall be furnished for each lot number received at the job site. If requested by the Engineer, the proposed epoxy system shall be re-verified by using the epoxy with a No. 4 tie bar system in a scrap section of pavement slab. Equipment to test the pullout strength shall be provided by the Contractor and shall bear labels indicating up-to-date calibration by an independent calibration service. The proposed epoxy system shall demonstrate that the pullout strength is approximately 12,000 pounds.

**E. Maintenance Stone.** Where maintenance stone is required, aggregate shall meet the requirements of Aggregate No. CR-14 as specified in Subsection **302.02.** All aggregates shall be obtained from SCDOT approved sources.

#### **CONSTRUCTION REQUIREMENTS**

**502.03 General.** The full depth concrete pavement patching work shall be conducted in one lane at a time and in a manner that offers minimum inconvenience to the traveling public. A written Traffic Control Plan prepared by the Contractor shall be approved by the Engineer in advance of starting any work that will interrupt the normal flow of traffic. The inside (passing) lane shall be completed before the outside (travel) lane work begins. No concrete shall be placed when the air temperature is 40°F or below.

**502.04 Removal of Existing Pavement.** The Engineer will locate and establish the areas to be replaced by marking on the surface of the existing pavement the boundaries of the area to be patched. Existing pavement slab shall be removed by sawing the pavement full depth with a diamond tipped blade and leaving vertical concrete edges. A carbide tipped wheel saw will be permitted to within 3 inches of the transverse limits of the patch. The deteriorated pavement slab shall be prepared for removal by either of the following procedures:

1. Make a 1/4 inch wide sawcut the full depth of the pavement in the shoulder-pavement longitudinal joint. The shoulder must not be damaged when removing the adjacent pavement slab.
2. Make sawcut in the shoulder at a distance of 12 inches parallel to the pavement/shoulder longitudinal joint. The length of the sawcut shall be the length of the required pavement patch plus enough distance to accommodate formwork.

Procedure 1 will only be allowed on patches 6 feet to 12 feet in length where the shoulder is not damaged. If the vertical edge of the shoulder is undamaged, the new concrete for the pavement slab may be placed against the undisturbed shoulder.

After Procedure 2, the shoulder material shall be removed and a form set for a new shoulder pavement joint. When the form is removed and longitudinal drains are to be placed at a later date, the shoulder area will be repaired with temporary material that shall consist of thoroughly compacted Aggregate No. CR-14, conforming to the requirements of Subsection **302.02**, and topped with an asphalt surface course selected by the Engineer. If no drains are required, the shoulder area shall be repaired as specified in Subsection **502.11**.

Care shall be taken during the removal of the deteriorated pavement and the placement of new concrete to prevent dam-

age to the vertical sawcut in the existing pavement or to the base material.

The Contractor shall be responsible for the proper disposal of the concrete pavement that has been removed.

**502.05 Base Preparation.** After the deteriorated pavement has been removed, the base shall be prepared and compacted to the depth of the existing pavement. This may require removing some of the existing base material. In the event that poor materials are encountered, additional material shall be removed and a new grade depth established as directed by the Engineer. Aggregate No. CR-14 or portland cement concrete of the same composition used for the pavement patching, as directed by the Engineer, will be used to backfill to the bottom of the existing pavement. All materials on which the concrete pavement is to be placed shall be thoroughly compacted using vibratory compactors. The saw-water from the pavement removal operations may deteriorate compacted base material in the replacement area. The deterioration of the base shall be corrected before placing the new concrete.

When it is necessary to repair continuously reinforced concrete (CRC) pavement in the areas at or near terminal ends, it will not be necessary to remove the terminal end to its full depth. The pavement may be removed to the normal depth of the pavement, taking care to leave the shear steel. If the shear steel is inadvertently removed or damaged, it shall be re-established by means of drilling into the terminal end, and grouting or epoxying new shear steel equivalent in area to the old shear steel.

**502.06 Faces of Existing Pavement.** Before placing concrete, the faces of the existing pavement shall be thoroughly cleaned and prepared to receive the concrete. Featheredge spalls shall be removed by sawing a new face on the existing pavement.

**502.07 Placing of Reinforcement.** After removing the deteriorated concrete, new dowels and tie bars shall be estab-

lished in the vertical faces of the remaining pavement slab by drilling and grouting with quick setting, non-shrink mortar or epoxy. Dowel and tie bars shall be established in pavement at a spacing of 12 inches on center or in between the longitudinal reinforcement (where present) in accordance with the details shown in the plans.

Bar mat reinforcing steel or wire mesh shall be installed as specified on the plans or in the special provisions. Reinforcement shall be securely anchored and held in place to avoid movement during concrete placement.

The smooth dowel bars extending into the patch opening shall be thoroughly and uniformly greased to allow the patch concrete to expand and contract. Care shall be taken to ensure that the top and bottom surfaces of the bars are coated with grease.

**502.08 Concrete Finishing.** The replacement concrete surface shall be given a fine broom texture finish to establish a surface similar to the existing pavement (no time marks required) and sprayed with curing compound as specified in Subsection **702.04**.

**502.09 Curing.** Freshly poured surfaces shall be covered with insulated curing blankets during the curing period, regardless of ambient air temperature. The curing time shall be provided as part of the approved mix design. The curing system shall be approved by the Engineer before commencement of work.

**502.10 Joints.** Joints shall be sealed in accordance with the plans and the requirements of Section **504**.

**502.11 Shoulders.** Where it is necessary to place side forms adjacent to the shoulder, the damaged shoulder shall be repaired using the following based on type of shoulder in place.

**A. Asphalt Shoulder.** Repair damaged shoulder with Aggregate No. CR-14 and Hot Mix Asphalt Surface Course - (Type 1) overlay as directed by the Engineer.

**B. Portland Cement Concrete Shoulder.** Repair PCC shoulder with same mix as used in the mainline patching. Coat the surface of the set concrete with a moisture insensitive high modulus epoxy recommended by the manufacturer for the purpose of bonding fresh concrete to old concrete certified to meet ASTM C 881, Type V, Grade 1 or 2, Class B or Class C. Deposit concrete in the shoulder area to be patched after the epoxy coating becomes tacky and before it dries.

**502.12 Opening Pavement to Traffic.** The patched pavement shall not be opened to traffic (public or otherwise) until the strength of 2000 psi has been verified by early break cylinders unless otherwise instructed by the Engineer. The Contractor shall furnish a calibrated compressive test machine in a well-protected area for testing the concrete cylinders at the job site.

After the first patches are made and opened to traffic, they shall be evaluated by traveling over them in normal traffic flow pattern at the allowable speed limit. In the event the patches exhibit noticeable impact or steering indication to the vehicle, the finishing techniques on remaining patches shall be adjusted to provide patch surfaces that do not affect the vehicle as it passes over the patch.

**502.13 Method of Measurement.** The quantity measured for payment under this section shall be the number of square yards of full depth concrete pavement patching, completed and accepted, and measured in place along the surface of the pavement and ramps. Patches constructed outside the area designated to be patched shall be disregarded in computing the number of square yards.

Adjacent to bridge ends, over trenches, and at other places where the Engineer authorizes the thickness to be other than that specified in the plans, the volume of concrete pavement authorized by the Engineer and actually placed and accepted shall be converted into equivalent square yards of depth of patching as shown on the plans.

The lean concrete used for replacing base course, cement stabilized subbase, and/or subgrade removed as outlined above, shall be measured to the nearest 0.1 cubic yard for Portland Cement Concrete (Special Use) placed and accepted. If Aggregate No. CR-14 is used for this purpose, it will be measured by the ton of Aggregate No. CR-14 placed and accepted.

Unless a separate bid item is included in the contract for temporary or permanent repairs in bituminous shoulders, work and materials for temporary or permanent repairs in bituminous shoulders shall not be measured for payment, but will be considered as an incidental part of the work for this item.

Wire mesh, bar mat reinforcement, dowels, tie bars, load transfer devices, and other materials necessary to complete the patching in accordance with the plans will not be measured separately. Work or material used to anchor reinforcement and ties will not be measured for payment. No direct payment will be made for these items, and they will be considered as part of the pavement patching work.

**502.14 Basis of Payment.** Payment for the concrete pavement patch area measured in Subsection **503.13** will be made at the contract unit price for Full Depth Concrete Pavement Patching, which price and payment shall be full compensation for furnishing all materials, equipment, tools, labor, supplies, and incidentals necessary to complete the work. It shall include sawing, removal, and disposal of the existing deteriorated pavement, work and materials used for temporary and permanent repairs to shoulders, joint construction and sealing, wire mesh, bar mat reinforcement, dowels, tie bars, load transfer devices, restoration of terminal ends in continuously reinforced pavement, drilling and grouting reinforcement, epoxy system for reinforcement anchorage and concrete bonding, preparation of subbase, furnishing, placing, finishing, curing, and testing concrete necessary to satisfactorily complete the work.

Payment for Aggregate No. CR-14 or Portland Cement Concrete (Special) used to repair the base under the removed slab as required in these specifications or as directed by the Engineer will be paid at the contract unit price for the respective item.

Payment for each item includes all direct and indirect costs and expenses required to complete the work.

Payment will be made under:

Item No.	Pay Item	Pay Unit
3022000	Aggregate No. CR-14	Ton
50210XX	Full Depth Concrete Pavement Patch - <i>(thickness)</i> "	Square Yard
5029000	Portland Cement Concrete (Special Use)	Cubic Yard

## SECTION 503

### GRINDING AND TEXTURING EXISTING CONCRETE PAVEMENT

**503.01 Description.** This work shall consist of grinding and texturing the existing portland cement concrete pavement longitudinally as shown on the plans or as specified herein.

## CONSTRUCTION REQUIREMENTS

**503.02 Grinding and Texturing.** Grinding and texturing shall be performed on the entire surface area of the lanes specified in the plans or as directed by the Engineer. The surface on each side of the transverse joint shall be uniformly ground and textured until the surface on both sides of the transverse joints and all cracks are in the same plane and meet the smoothness required in the contract. This may require additional passes of the equipment to texture both sides of a faulted joint.

The finished surface shall have a parallel corduroy type texture consisting of grooves between 0.090 and 0.150 inch wide. The land area between the grooves shall be between 0.060 inch and 0.125 inch wide. The peaks of the ridges shall be 1/16 inch higher than the bottom of the grooves. The surface shall have a high skid number and shall not produce an excessive noise level under traffic.

The grinding and texturing machine shall be self-propelled with diamond blades, mounted on a multi-blade arbor with a minimum cutting-head width of 36 inches. The equipment shall not cause strain or damage to the underlying surface of the pavement. Equipment that causes excessive ravels, aggregate fractures, spalls, or disturbance of the transverse or longitudinal joints shall be repaired or replaced.

Upon beginning of the grinding and texturing, the Contractor shall perform a demonstration section for inspection and approval by the Engineer. Upon approval of the demonstrated texture by the Engineer, the remaining work shall be performed as approved.

The finished work shall provide satisfactory riding qualities, as determined by the Engineer. Residue from the grinding and texturing operation shall be removed from the roadway and shall not be permitted to flow across shoulders or lanes occupied by traffic or flow into gutters or other drainage structures. Solid residue shall be removed from the pavement surface before such material is blown by the action of traffic or wind. The pavement shall receive a final sweeping with power equipment before opening to traffic.

After completion of grinding and texturing, the pavement surface will be tested by the Department for smoothness and rideability. The pavement shall meet the requirements for smoothness and rideability of new pavement specified in Subsection **501.28**.

**503.03 Method of Measurement.** The quantity measured for payment under this section shall be the number of square yards of grinding and texturing completed and accepted, and measured in place along the surface of the road and ramps. Grinding and texturing performed outside the areas designated shall be disregarded in computing the number of square yards.

**503.04 Basis of Payment.** The area measured as provided in Subsection **503.03** will be paid for at the contract unit price for Grinding and Texturing Existing Concrete Pavement, which price and payment shall be full compensation for furnishing all materials, equipment, tools, labor, and incidentals necessary to satisfactorily complete the work including satisfactory disposal of waste materials.

Payment for this item includes all direct and indirect costs and expenses required to complete the work.

Payment will be made under:

Item No.	Pay Item	Pay Unit
5031000	Grinding and Texturing Existing Concrete Pavement	Square Yard

## SECTION 504

### CLEANING AND RESEALING OF JOINTS IN PORTLAND CEMENT CONCRETE PAVEMENT

**504.01 Description.** This work shall consist of the rehabilitation of joints and cracks in portland cement concrete pavements by cleaning, preparing for and placing the specified sealant.

#### MATERIALS

**504.02 Materials.** Materials used in this work shall meet the requirements of Section 501. Selection of the sealant material shall be in accordance with the following table:

APPLICATION:	ASTM D 3405 Sealant	Silicone Sealants	
		Non-Sag	Self-Level
Old Concrete Pavement w/ transverse and lane longitudinal joints <sup>1</sup> , uniform joint widths - no overlay		§	§
Old Concrete Pavement w/ transverse and lane longitudinal joints <sup>1</sup> , non-uniform joint widths - no overlay		§	
Old Concrete Pavement w/ transverse and lane longitudinal joints <sup>1</sup> , to be overlaid with hot mix asphalt	§		
Concrete Shoulders (with Concrete Pavement) w/ transverse and longitudinal joints, uniform joint widths - no overlay		§	§
Concrete Shoulders (with Concrete Pavement) w/ transverse and longitudinal joints, non-uniform joint widths - no overlay		§	
Concrete Shoulders (with Concrete Pavement) w/ transverse and longitudinal joints, to be overlaid with hot mix asphalt	§		
New HMA Shoulders (with Concrete Pavement) w/ longitudinal joints	§ <sup>2</sup>		§
Old HMA Shoulders (with Concrete Pavement) w/ longitudinal joints	§ <sup>2</sup>		

§ Denotes acceptable sealant for indicated application

Notes:

- 1 Not constructed with the plastic strip.
- 2 A bond breaker is not required.

## CONSTRUCTION REQUIREMENTS

**504.03 Preparation of Joints.** Joints shall be prepared by removing all joint material to include sealants, inserts, and any material that may have infiltrated the joint. The existing sealant shall be removed from the joint using a vertical edge-cutting tool. A power driven concrete saw with diamond or abrasive blades may be used to remove all old sealant from the joint faces and to expose clean concrete. If required, the faces of the joint shall be cut using a concrete saw with diamond or abrasive blades. The joints shall be cut to the depth and width necessary to provide for the specified dimensions of new joint sealant.

Immediately following the sawing operations, the joints shall be thoroughly flushed with a high-pressure water jet to remove the slurry and any loose material from the joint faces. Joint washing shall be performed in one direction to prevent recontamination of the joint.

Once the joint is dry and before final cleaning begins, the joint shall be sandblasted to remove contaminants. Sandblasting shall be performed in two passes, one for each face, with the nozzle held at an angle to the joint face and within 1 to 2 inches of the pavement. Additional sandblasting passes may be required if necessary to remove all traces of old sealant or other irregularities that may interfere with the bonding of the new sealant. Sandblasting shall be performed the same day as the sealing operation and shall be repeated if rain showers occur between initial sandblasting and sealing.

The blast material as well as dust and dirt deposited by wind and traffic shall be blown out of the joint and away from the surrounding area using a high-pressure air blast. The air compressor shall produce at least 90 psi and shall be equipped with traps capable of removing moisture and oil from the compressed air. As with the water jet, the air blast shall proceed in one direction to prevent recontamination of the joint.

Joints shall be inspected for proper width, depth, alignment, and preparation, and shall be approved by the Engineer before installation of sealant. All joints to be sealed must be sound, clean, dry, and frost free. Joints found to contain dust or that have become dirty or contaminated shall be re-cleaned.

**504.04 Installation of Sealant.** After cleaning has been completed, the bond breaker (bond breaker tape or backer rod) shall be placed at the proper depth to form the bottom of the seal. The bond breaker shall be compatible with the sealant. Installation methods and equipment shall be in accordance with the manufacturer's recommendations. Backer rods shall then be made leak proof where required by caulking with a silicone product compatible with the sealant to be used. This may be applied from tubes with a caulking gun device.

The sealant shall then be placed in the joint in accordance with the plan configuration by means of an appropriate pump equipped with a nozzle that is narrow enough to place the material from the bottom up in the joint. The material shall be placed to establish a surface profile in the desired depth below the surface of the pavement. All equipment for placing the seal and methods of placement shall be in accordance with the sealant manufacturer's recommendations.

Final cleaning, placing of the bond breaker, and placing of the sealant shall be performed in a continuous operation. Once the final cleaning and sealing operation has begun on a section of pavement, no traffic, construction vehicles, or other equipment will be allowed on the section of pavement for a minimum of 2 hours or until the seal material has cured.

As determined by the Engineer, joints not properly sealed shall have the sealant removed for the full sealant depth, be thoroughly cleaned, resealed in accordance with this specification, and all at no expense to the Department.

Any material spilled on the pavement shall be immediately removed. Solvents shall not be used to remove spills, because they generally carry the materials further into the porous concrete or spread them on the surface.

**504.05 Hot Poured Sealants.** When hot poured sealant, as specified in Subsection **501.07D** is used, it shall be handled and applied as follows:

**A. Heating.** During the sealing operation, the melter shall be operated as follows:

1. The initial charging of the melter shall be 1/2 the vat capacity with the other 1/2 being charged after the initial 1/2 charge has liquefied.
2. Continuous agitation shall be maintained once the sealant is liquefied.
3. Circulation pumping shall begin after the sealant has been initially liquefied.
4. Fresh unheated sealant shall be added in a way that the temperature of the heated sealant in the vat does not fall below the recommended application temperature range while the sealant is being applied.
5. The melter system shall be thoroughly clean at the start of work and the pump and sealing hose shall be flushed out at the end of each day or work period. Material may be left in the vat overnight and used the next day provided it has not exceeded the maximum heating time during the previous heating period.

6. Sealing will not begin until the liquefied sealant in the melter is at the approximate mid point of the recommended application temperature range and has been above the minimum side of the working temperature range for 1/2 hour or more.

7. The recorder shall be operated at all times when the melter is being used. The permanent record chart shall be dated and given to the Engineer each day or chart timing period as proper. The Engineer may waive the requirement for continuous temperature recording on new technology pump systems that reasonably assure low temperature material cannot be applied.

**B. Application.** During the sealing operation, the hot poured sealant material shall be handled and used as follows:

1. The ambient temperature and groove wall surface temperature shall be 45°F and rising before application begins.
2. The material shall not be heated beyond its safe heating temperature as recommended by the sealant manufacturer.
3. The sealant material shall not be applied when cooler or hotter than the recommended application temperature range.
4. The plastic wrap on the material, as shipped, may be dumped into the vat with the material.
5. The sealant material shall be continuously agitated and circulated once it is liquefied in the melter.

6. The sealant material shall not be stored in direct sunlight or in an ambient temperature over 100°F, such as under a tarp. It should be stored under cover or roof with adequate ventilation.

7. The wand tip shall be such that it will fit into the groove and the material will be placed from the bottom to the top of the groove. The tip shall be equipped with a depth gage to prevent the wand from traveling in the bottom of the groove.

8. The first gallon of material to flow out of the applicator wand at the beginning of the day shall be considered spoil, discharged into a container, and discarded.

9. Re-heating or prolonged heating at or above the safe heating temperature will cause the sealant to gel in the application equipment. A rapid increase in viscosity and stringiness of the material indicates the approach of gelation. When these conditions occur, sealing shall stop, and the remaining material shall be rapidly pumped from the kettle and discarded from the work.

10. The applicator wand shall be returned to the machine, and the material re-circulated immediately upon the completion of each joint sealing.

11. The joints shall not be overfilled. Overfilled joints shall be cleaned and resealed as directed by the Engineer. The correct level for the top of the seal is 1/4 inch below the lower top of joint surface.

**504.06. Silicone Sealant.** When silicone sealant is used, it shall conform to the requirements of Subsection **501.07B** and shall be handled and applied in accordance with Subsection **501.27**.

**504.07 Method of Measurement.** The quantity measured for payment under this section shall be to the nearest 0.1 linear foot of joint cleaning and resealing, complete and measured in place along the surface of the roadway, and accepted by the Engineer.

**504.08 Basis of Payment.** The length, measured as provided in Subsection **504.07**, will be paid for the contract unit price for the items as listed below, which price and payment shall be full compensation for cleaning and resealing of joints, satisfactory disposal of waste materials, and including all materials, equipment, tools, labor, and incidentals necessary to satisfactorily complete the work.

Payment for each item includes all direct and indirect costs and expenses required to complete the work.

Payment will be made under:

Item No.	Pay Item	Pay Unit
5041100	Clean and Seal Longitudinal Joints	Linear Foot
5041200	Clean and Seal Longitudinal Shoulder Joints	Linear Foot
5041300	Clean and Seal Transverse Joints	Linear Foot
5041400	Clean and Seal Transverse Joints at Bridge	Linear Foot

## SECTION 505

### ROUTING, CLEANING, AND SEALING OF RANDOM CRACKS IN PORTLAND CEMENT CONCRETE PAVEMENTS

**505.01 Description.** This work shall consist of routing, cleaning, and sealing cracks with silicone sealant in existing portland cement concrete pavement. These cracks are random cracks other than the standard crack patterns in continuously reinforced concrete pavement or transverse cracks in jointed concrete pavement. In general, these cracks are usually open 1/8 inch or more and are greater than 10 feet in length. Cracks to be rehabilitated shall be identified and marked by the Engineer.

#### MATERIALS

**505.02 Materials.** Materials used in this work shall meet the requirements of Section 501.

#### CONSTRUCTION REQUIREMENTS

##### 505.03 Construction Requirements.

**A. General.** Cracks shall be prepared by removing any existing sealant, re-facing and cleaning the crack, installing blocking medium as needed, and sealing the crack.

**B. Equipment.** Sealing equipment shall be in accordance with the requirements of Section 501. A concrete saw with a pivotal small diameter blade that follows the crack shall be used to provide a joint reservoir.

**C. Preparation of Cracks.** Removal of old sealant, re-facing, and cleaning of the cracks shall be in accordance with the applicable requirements in Subsection 504.03. The cracks shall be widened to the widths and depths shown in the plans or as directed by the Engineer.

**D. Blocking Medium.** For cracks 3/8 inch or greater in width, a backer rod meeting the requirements of Subsection 501.07C shall be installed in the crack at a uniform depth to prevent entrance of the sealant below the depth specified. The rod shall be compatible with the sealant, installed using the sealant manufacturer's recommendation and not be stretched during installation.

For cracks less than 3/8 inch wide, the use of a blocking medium shall be optional as long as the seals produced are satisfactory. Should the seals prove to be unsatisfactory, the Engineer may require subsequent crack rehabilitation to include installation of blocking media.

**E. Installation of Sealant.** Sealant shall be installed in accordance with Subsection 504.04.

**505.04 Method of Measurement.** Routing, cleaning, and sealing of random cracks will be measured to the nearest 0.1 linear foot of rehabilitated cracks, complete, measured in place along the surface of the roadway, and accepted by the Engineer.

**505.05 Basis of Payment.** The length, measured as provide above, will be paid for at the contract unit price for Rout, Clean, and Seal Cracks, which price and payment shall be full compensation for routing, cleaning, and sealing of cracks, satisfactory disposal of waste materials, and includes all materials, equipment, tools, labor, and incidentals necessary to satisfactorily complete the work.

Payment for this item includes all direct and indirect costs and expenses required to complete the work.

Payment will be made under:

Item No.	Pay Item	Pay Unit
5051000	Rout, Clean, and Seal Cracks	Linear Foot

## DIVISION 600

### TRAFFIC CONTROL

#### SECTION 601

##### WORK ZONE TRAFFIC CONTROL

**601.01 Description.** The Contractor, Subcontractor, or anyone working within the highway right of way shall provide a Traffic Control Plan for the maintenance and control of traffic during work within the highway right of way. The Traffic Control Plan shall set forth procedures and guidelines for providing for the safe passage of traffic through and around the project area with a minimum of inconvenience. The Traffic Control Plan shall conform to the requirements of these standard specifications, the plans, the *Standard Drawings For Road Construction*, the special provisions, all supplemental specifications, the manufacturer's requirements and specifications, the *South Carolina Manual on Uniform Traffic Control Devices for Streets and Highways*, hereinafter referred to as *SCMUTCD*, and the Engineer.

The current *SCMUTCD*, in effect at the time of the contract award, shall provide the minimum requirements for installation, operation, and maintenance of all traffic control devices.

These sections shall specify fabrication, provision, installation, maintenance, performance, relocation, and removal requirements of all traffic control devices, methods, and procedures as required by the plans, the *Standard Drawings For Road Construction*, the special provisions, all supplemental specifications, the manufacturer's requirements and specifications, the *SCMUTCD*, and the Engineer.