

Contract unit price for one or more of the items listed below as specified in the Contract Documents. The payment will be full compensation for saw cuts, furnishing, hauling, placing of all materials, removal and disposal of old concrete, grout, drilled holes, chairs, all tie devices, reinforcement, epoxy coating, steel plates, emergency filler, joint sealing, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

Steel plates and emergency filler shall remain the property of the Contractor at the completion of the project.

**522.04.01** Plain Portland Cement Concrete Pavement Type I Repairs per square yard.

**522.04.02** Plain Portland Cement Concrete Pavement Type II Repairs per square yard.

**522.04.03** Conventionally Reinforced Portland Cement Concrete Pavement Type I Repairs per square yard.

**522.04.04** Conventionally Reinforced Portland Cement Concrete Pavement Type II Repairs per square yard.

**522.04.05** Continuously Reinforced Portland Cement Concrete Pavement Type I Repairs per square yard.

**522.04.06** Continuously Reinforced Portland Cement Concrete Pavement Type II Repairs per square yard.

**522.04.07** Removal of Unsuitable Material and Refill per cubic yard. The payment will also include excavation and disposal of unsuitable material, backfilling with aggregate, and compaction.

**522.04.08** Subgrade Drains will be measured and paid for as specified in the applicable portions of Section 306.

**522.04.09** Shoulder Repairs per square yard. Repairs to existing shoulders necessitated by the placement of forms are also included.

## **SECTION 523 — JOINT SEALING OF PORTLAND CEMENT CONCRETE PAVEMENTS**

**523.01 DESCRIPTION.** This work shall consist of cleaning and sealing portland cement concrete pavement joints as specified in the Contract Documents or as directed by the Engineer.

**523.02 MATERIALS.**

Joint Sealers	911.01
Preformed Joint Fillers	911.02

**Backer Rod.** Backer rod used with joint sealer shall be flexible, compressible, nonshrinkable, have a surface that will prohibit bond with the joint sealer, and be capable of uniformly containing the joint sealer within the desired shape factor. Hard rubber and materials that deform at sealer application temperatures or swell when wet are prohibited.

**523.03 CONSTRUCTION.** Joints shall be sealed the same day they are shaped and prepared, and shall be completed prior to opening the roadway to traffic, unless otherwise directed by the Engineer. Joints not sealed the same working day shall be recleaned and dried as specified in 523.03.02.

**523.03.01 Joint Construction.** Joint construction shall be as specified in 520.03.14. When the joint is tooled, preformed joint fillers are prohibited.

**523.03.02 Joint Preparation.** Joints shall be cleaned by one of the following methods as approved by the Engineer:

- (a) High pressure water blasting.
- (b) Abrasive blasting.
- (c) Oil free air blowing at a minimum of 90 psi.

All joint walls and surfaces to which the joint material is to adhere shall be dry prior to installing the joint filler.

All prepared joints will be inspected and approved by the Engineer prior to sealing.

**523.03.03 Sealing.** Preformed joint filler shall be installed in conformance with the manufacturer's recommendations and the Contract Documents. The Contractor shall insert the backer rod as specified in the Contract Documents.

Silicone sealer shall be installed in conformance with the manufacturer's recommendations.

Backer rods are not required in longitudinal joints.

The ambient air and pavement temperatures shall both be a minimum of 45 F and rising at the time of sealer application.

Sealer that is hot applied shall be heated as specified in the manufacturer's recommendations in a kettle or other equipment acceptable to the Engineer. The kettle shall have a mechanically operated agitator, recirculation pumps, and a positive thermostatic temperature control. The applicator wand and all connecting hoses shall be insulated. Overheating or direct heating of the sealer is prohibited.

Sealer that has been overheated, subjected to heating for more than four hours, or any amount that remains in the applicator wand at the end of the day's operation shall be withdrawn and disposed of. Prior to the start of each day's operation, the Contractor shall withdraw and dispose of a minimum of 1 gal of sealer drawn from the container through the applicator wand.

All joints shall be filled with sufficient material that will result in the final surface of the sealer being recessed 1/4 in. below the surface of the pavement. Any joint with the sealer recessed more than 5/16 in. below the surface of the pavement two hours after sealing shall be resealed.

Silicone sealer shall be tooled so that the final surface of the sealer will have a parabolic shape in the surface cross sectional area. The deepest point at the center of the joint shall be 5/16 in. below the pavement surface. The Contractor shall use a tool approved by the Engineer that is capable of obtaining the parabolic shape at the surface of the sealer.

Curing time for silicone material varies with temperature and humidity and therefore may delay opening the pavement to traffic. The Contractor is advised to consult the manufacturer's recommendations for curing time.

The Contractor shall remove any excess sealer from the surface of the pavement.

All traffic shall be kept off the pavement surface until the sealer has cured.

Any sealer that pulls loose from the joints or shows excessive bubbling within one week after opening the pavement to traffic shall be replaced by the Contractor at no additional cost to the Administration.

**523.04 MEASUREMENT AND PAYMENT.** Joint Sealing of Portland Cement Concrete Pavement will be measured and paid for at the Contract unit price per linear foot of joint unless otherwise specified in the Contract Documents. The payment will be full compensation for cleaning existing joints, furnishing, hauling, placing all materials including preformed joint filler, joint sealer, backer rod, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

Joint construction and sealing will not be measured but the cost will be incidental to the Contract unit price for the pertinent Portland Cement Concrete Pavement item.

## **SECTION 524 THRU 548 — RESERVED**

### **SECTION 549 — PERMANENT PAVEMENT MARKINGS**

**549.01 DESCRIPTION.** This work shall consist of furnishing and applying permanent pavement markings to various surfaces at locations and patterns as specified in the Contract Documents or as directed by the Engineer. This includes line markings, letters, numbers, arrows, and symbols.

#### **549.02 MATERIALS.**

Permanent Pavement Markings                      Refer to Contract Documents

All pavement marking material shall be evaluated on the National Transportation Product Evaluation Program (NTPEP) North Regional Facility test deck. The Contractor shall provide the Engineer with a printed copy of the manufacturer's recommendations for use and installation of pavement markings. All pertinent material safety data sheets (MSDS) shall also be included with the manufacturer's information sheets.

#### **549.03 CONSTRUCTION.**

**549.03.01 Quality Assurance/Quality Control.** The Contractor shall submit in writing, a proposed Quality Control Plan, conforming to the Quality Control Plan requirements. This plan shall be submitted to the Engineer for approval before the prestripping meeting and at least two weeks prior to the start of work. The plan shall contain procedures for random sampling as specified in MSMT 729, and shall show how the Contractor proposes to control the equipment and material to ensure conformance with the Specifications. The plan shall contain personnel certifications, inspection, and record keeping procedures, and minimum frequencies of sampling and testing as specified in MSMT 729. The plan shall also detail when and how corrective action will be taken for unsatisfactory construction practices and deviations from the Specifications. Any deviation from the Quality Control Plan shall be cause for immediate suspension of the marking operation and a meeting