

**REVISION OF SECTION 202
REMOVAL OF CONCRETE PAVEMENT**

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Subsection 202.01 shall include the following:

The work includes removal of existing concrete pavement as well as preparation of subgrade and reestablishing of the original grade in the area of pavement removal prior to placement of concrete pavement.

Subsection 202.02 shall include the following:

Prior to start of work, the contractor shall submit a plan for approval by the Engineer identifying the methods to be used for concrete pavement removal. The work plan shall include the method of handling traffic during construction.

If aggregate base is used in re-establishing the original grade, the base shall have a minimum R-value of 70.

The work will require construction surveying to establish the lines and grades from the original pavement.

The areas of pavement adjacent to the sections to be removed shall be sawed full depth in order to sever tie bars and dowels, and provide a clean joint after pavement removal.

All removed concrete pavement shall be disposed of by the contractor.

Work shall be scheduled so that two lanes of traffic in each direction shall remain open from 2:00 PM Friday until midnight Sunday.

Subsection 202.11 shall include the following:

Removal of concrete pavement will be measured by the area in square yards, completed to the required depth, and accepted.

Subsection 202.12 shall include the following:

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Removal of Concrete Pavement	Square Yard

Payment will be full compensation for all work and materials necessary to remove and dispose of the concrete slabs, establish elevations, and prepare the subgrade for placement of concrete pavement.

REVISION OF SECTION 202 GRINDING AND TEXTURING CONCRETE PAVEMENT

Section 202 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work consists of uniformly grinding 3/16 inch from the surface of existing concrete pavement to the lines, grades, and limits shown on the plans or as directed by the Engineer.

MATERIALS

The LA Abrasion of the coarse aggregate in the existing pavement is approximately 25 as measured by AASHTO T96.

Smoothness for this project shall be measured and paid according to Table 105-5 (Percent Improvement), except that incentives/disincentives shall be calculated after grinding of bumps. The contractor shall be responsible for measurement of smoothness both before and after construction in accordance with Sections 105, 202, 401, 405, 406, and 412, Roadway Smoothness.

The Contractor shall grind driving and auxiliary lane pavement surfaces and other areas within designated limits as shown on the plans. The finished grinding shall maintain the existing cross slope of the roadway in the driving and passing lanes as well as those areas on the shoulder which are ground.

The Contractor shall submit a detailed plan for accomplishing the grinding and texturing to the Engineer for approval prior to beginning work on the project. The plan shall include a sequence for grinding and texturing which produces the desired surface ride qualities with a minimum grinding depth throughout the project. Grinding and texturing shall be performed in the longitudinal direction. The entire surface width of the driving and passing lane pavement shall be ground until the pavement surfaces on both sides of all transverse joints and random cracks are in the same plane and meet the smoothness requirements specified herein. Shoulders shall also be ground as shown in the plans and directed by the Engineer. Grinding shall begin and end at lines normal to the pavement centerline at the project limits.

The Contractor's grinding and texturing plan shall also address grinding around manhole covers, bridge expansion joints, and pavement edge drains and auxiliary lanes.

No adverse drainage conditions shall be caused by the grinding operations.

CONSTRUCTION REQUIREMENTS

Grinding shall be conducted utilizing diamond blades mounted on a self-propelled machine that has been designed for grinding and texturing concrete pavements. Each grinding head shall be at least 36 inches wide.

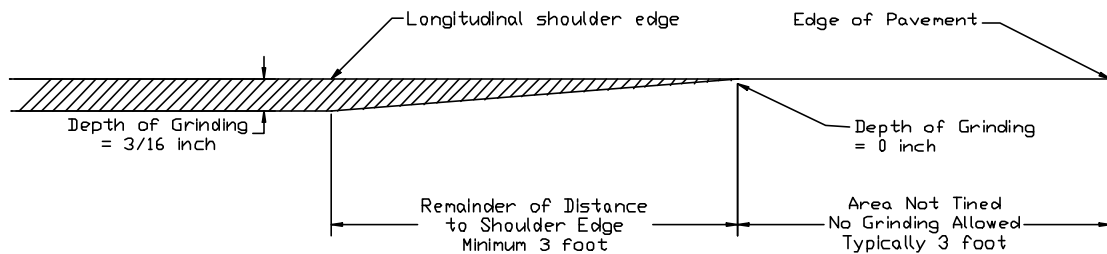
All grinding shall be parallel to the longitudinal joints. All longitudinal joints shall be straddled by a minimum of 2 inches. Adjacent passes shall be overlapped by a maximum of 2 inches.

REVISION OF SECTION 202 GRINDING AND TEXTURING CONCRETE PAVEMENT

The equipment shall not cause strain or damage to the concrete pavement. Grinding and texturing equipment which causes excessive raveling, aggregate fracturing, spalling, or disturbance of the transverse and/or longitudinal joints will not be permitted.

Ground and textured areas on pavement surfaces shall be neat, rectangular areas with a uniform surface appearance. Additional grinding shall be performed as necessary to extend the area ground in each lateral direction so that the lateral limits of grinding are at a constant offset distance from, and parallel to, the nearest longitudinal joint. In most areas, the outside shoulder contains a 3 foot wide longitudinal section where no transverse tining was constructed (outside edge of pavement). This three foot wide longitudinal section shall not be ground. On the outside shoulder, the grinding shall be tapered to zero depth in a single full width pass to the edge of the longitudinal tining.

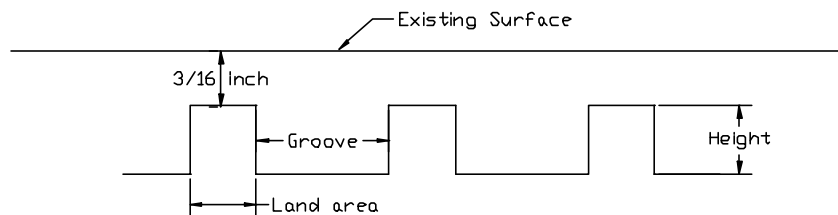
Shoulder Treatment



(Drawing not to scale)

Ground mainline pavement surfaces shall have a skid resistant texture consisting of grooves between 3/32 inch and 1/8 inch wide, spaced 5/64 inch to 1/8 inch apart. The depth of the grooves shall be

Dimensions of Grinding Texture



Grooves	3/32 - 1/8 inch
Land Area	1/16 - 1/8 inch
Height	1/16 inch

(drawing not to scale)

**REVISION OF SECTION 202
GRINDING AND TEXTURING CONCRETE PAVEMENT**

approximately 1/16 inch below the peaks of the adjacent ridges. Removal of slurry and residue, including joint sealant, resulting from the grinding operation shall be continuous and immediate, and pavement shall be left in a clean condition. Grinding slurry and residue shall be disposed of in accordance with Section 250. In no case shall the slurry be dumped on the project, or allowed to enter any stream. It shall be the contractor's responsibility to locate a suitable disposal site for the grinding slurry and residue.

METHOD OF MEASUREMENT

Grinding and Texturing Concrete Pavement will be measured by the square yard of pavement surface ground.

BASIS OF PAYMENT

Grinding and Texturing Concrete Pavement will be paid for at the contract unit bid price per square yard. Payment will be considered full compensation for all labor, materials, tools, equipment and incidentals necessary for completing the work as specified.

Payment will be made under:

Pay Item

Pay Unit

Grinding and Texturing Concrete Pavement

Square Yard

REVISION OF SECTION 412 PARTIAL DEPTH REPAIR OF CONCRETE PAVEMENT

Section 412 of the Standard Specifications is hereby revised for this project as follows:

Subsection 412.01 shall include the following:

This work includes the removal of deteriorated concrete pavement, cleaning the patch area, and placing and curing the patch material. If the area is adjacent to a joint, it also includes reforming the joint system.

Prior to starting this work, the Contractor shall submit to the Engineer for approval, a plan for partial depth repair of concrete pavement. The plan shall identify the materials to be used for patching and shall include the method of removal, cleaning, mixing and curing of the patching material.

Subsection 412.02 shall include the following:

Patching material for partial depth repair of concrete pavement shall be an approved grout or fast track concrete mix. The material shall have minimum compressive strength of 2500 psi as measured by ASTM C 109 at 77° F, and shall be capable of being opened to traffic within 6 hours of placement.

Subsection 412.16 shall include the following:

Old concrete pavement, residue, and other material resulting from sawing, chipping, and cleaning of the areas to be patched shall be collected by the Contractor and disposed of in accordance with Section 250. Collection shall be continuous, immediate, and the pavement shall be left in a clean condition.

The deteriorated areas to be patched shall be removed by sawing and chipping. Saw cuts shall be made around the deteriorated areas, and the area inside the saw cuts removed by chipping with hammers. Saw cuts shall be between 1 and 3 inches in depth. The removal of deteriorated concrete shall be accomplished with 10 to 15 pound hammers and shall continue to a depth which exposes sound and clean concrete along the bottom of the area to be patched.

Prior to placement of the patching material, the exposed faces of the concrete shall be thoroughly cleaned by abrasive blasting, such as sand-blasting, to remove loose particles, oil, dust, and joint sealant materials. These and any other contaminants that interfere with bonding between the repair material and the existing concrete shall be removed.

The cleaning and preparation of areas to be patched shall be approved by the Engineer, prior to placement of the patching material.

Partial depth patches that cross or abut a working joint or crack require a compressible insert (for example, expansion joint material) to keep the adjacent concrete from bearing directly on the new patch. The insert shall be installed as shown on the detail in order to maintain a working joint. The insert width shall match the width of the existing joint or crack. It shall also be sized to extend approximately one inch below and 3 inches beyond each end of the patch area.

The minimum size of patch shall be one square foot.

**REVISION OF SECTION 412
PARTIAL DEPTH REPAIR OF CONCRETE PAVEMENT**

Subsection 412.23 shall include the following:

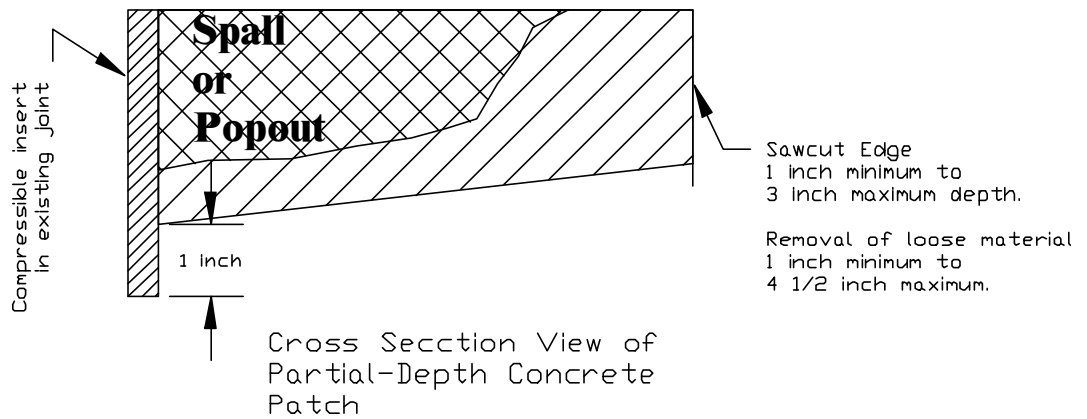
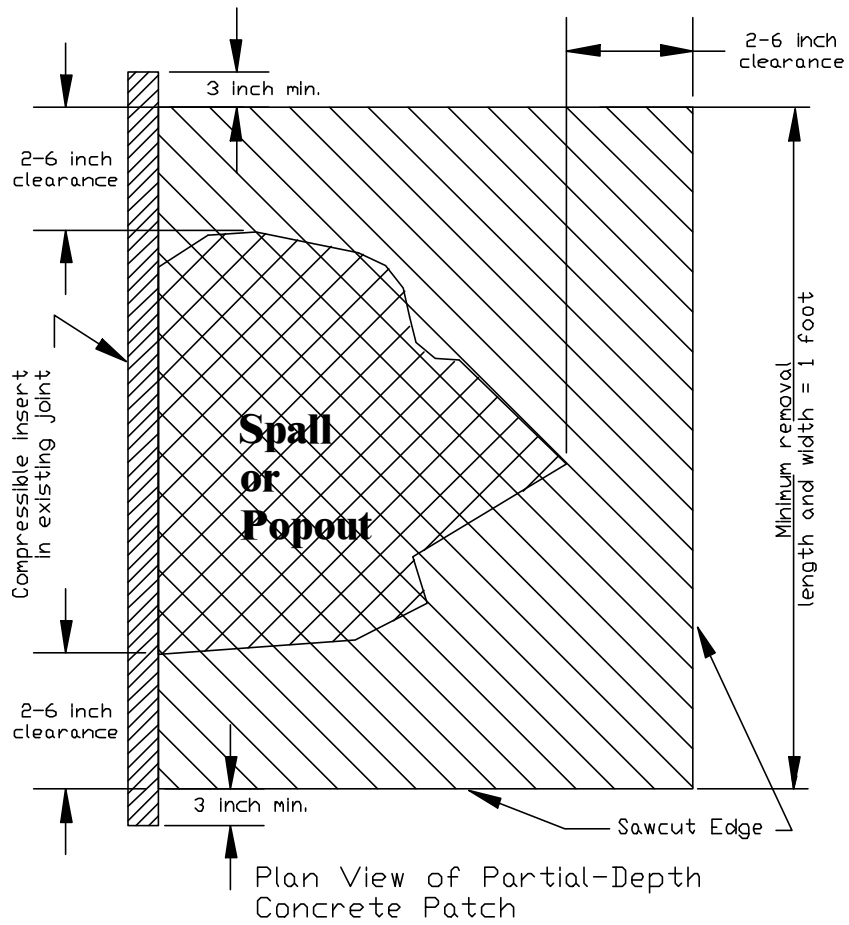
Partial Depth Repair of Concrete Pavement will be measured by the square feet of repair completed and accepted.

Subsection 412.24 shall include the following:

The accepted quantities for partial depth repair of concrete pavement will be paid at the contract unit price per square foot completed and accepted. Payment will be full compensation for sawing and removing deteriorated material, cleaning, patching material, expansion joint material, and all labor required to complete the work.

Payment will be made under:

Pay Item:	Pay Unit
Partial Depth Repair of Concrete Pavement	Square Foot.



**REVISION OF SECTION 412
FAST TRACK PORTLAND CEMENT CONCRETE PAVEMENT**

Section 412 of the Standard Specifications is hereby revised for this project as follows:

Subsection 412.03 shall include the following:

For this project all concrete pavement shall be Fast Track Portland Cement Pavement.

Where Concrete Pavement (Fast Track) is specified in the Contract, the concrete shall be Concrete Class P (Fast Track) and shall conform to the requirements for Concrete Class P as described in Section 601. Substitution of other classes of concrete will not be allowed.

In subsection 412.04, second paragraph, delete the first sentence and replace with the following:

The Contractor shall include Class F fly ash in every class of concrete shown in this Section, except that the addition of 20 percent Class F fly ash is not required for Concrete Class P (Fast Track).

Subsection 412.04 shall include the following:

Type III cement will be permitted for Concrete Class P (Fast Track).

For Concrete Class P (Fast Track), the Contractor shall develop maturity relationships in accordance with ASTM C 1074 with the following additions or modifications:

(1)The cylinders used to establish the compressive strength vs. maturity relationship shall be cast and cured in the field in conditions similar to the project.

(2)These cylinders shall be tested in pairs. The Contractor shall time these tests such that three sets of cylinders shall yield compressive strengths at or below 2500 psi, and one set shall yield a compressive strength above 2500 psi.

(3)Testing to determine datum temperature or activation energy will not be required.

The development of the maturity relationship and maturity determination of the test slab is part of the trial mix and will thus be documented as part of the mix information submitted for mix approval.

The Contractor shall provide a multi-channel maturity meter and all necessary wire and connectors. The Contractor shall be responsible for the placement and maintenance of the maturity meter and wire. Placement shall be as directed by the Engineer

Calcium chloride will not be allowed.

Admixtures which conform to AASHTO M 194 Type F (water reducing, high range) and Type G (water reducing, high range and retarding) will be permitted for Concrete Class P (Fast Track).

**REVISION OF SECTION 412
FAST TRACK PORTLAND CEMENT CONCRETE PAVEMENT**

Subsection 412.13 shall include the following:

All transverse and longitudinal joints shall be constructed in accordance with M-Standard M-412-1. This shall include incorporation of dowels and tie bars in the new pavement as well as drilling and epoxying tie bars and dowels into the existing pavement to establish dowel and tie bar connections between the old and new pavement.

All replaced pavement sections that contained a station number shall be re-stamped with the original number. The style and depth of stamping shall match the existing station stamping.

Subsection 412.14 shall include the following:

For Concrete Pavement (Fast Track) curing blankets with a minimum R- Value of 0.5 shall be provided, in addition to the membrane curing, and shall be placed as soon as they can be placed without marring the surface

Subsection 412.22 shall include the following:

Work shall be scheduled so that two lanes of traffic in each direction shall be remain open for weekends, from 2:00 PM Friday until midnight Sunday.

Prior to start of work, the Contractor shall submit a plan for approval by the Engineer identifying the methods to be used for placement of Fast Track Portland Cement Pavement, as well as the method handling of traffic during construction.

The Concrete Pavement (Fast Track) shall not be opened to traffic until the maturity value of the last concrete placed, determined by the Contractor in accordance with ASTM C 1074 as modified in subsection 412.04, indicates that 2500 psi minimum field compressive strength has been achieved.

For Concrete Class P (Fast Track) a field compressive strength of 2500 psi shall be achieved within 12 hours after placement.

Subsection 412.24 shall include the following:

Pay Item	Pay Unit
Concrete Pavement (Fast Track)(10")	Square Yard

Furnishing, calibrating and use of the maturity meter, wire, and other appurtenances including the molding, curing and breaking of cylinders for calibration, and placement of the slab will not be measured and paid for separately, but shall be included in the work.

**REVISION OF SECTION 412
SAWING AND SEALING OF CONCRETE PAVEMENT
JOINTS AND CRACKS**

Section 412 of the Standard Specifications is hereby revised for this project as follows:

Subsection 412.01 shall include the following:

This work includes removing existing joint sealant, sawing, cleaning and resealing existing concrete pavement joints, and sawing or routing, cleaning, sealing or resealing random cracks in accordance with this specification and the details shown on the plans.

The existing joints are approximately 3/8 inch wide, and may need to be widened by 1/16 inch or less in order to facilitate cleaning and there are also joints wider than 3/8 inch, which may require wider backer rod. The quantity of joints wider than 3/8 inch is noted in the plans. Wider joints shall be paid for at the same unit price as 3/8 inch wide joints.

Old joint sealant, residue, and other material resulting from sawing and sealing of concrete joints and cracks shall be collected by the Contractor and disposed of in accordance with Section 250. Collection shall be continuous and immediate and pavement shall be left in a clean condition.

Subsection 412.02 shall include the following:

The joint sealant material for sealing existing joints and the random cracks shall be a one part, low modulus silicone sealant designed for use in highway joints sealing. The product must be on CDOT's approved product list and both the sealant and backer rod shall conform to Section 705.01. The closed-cell, polyethylene backer rod diameter shall be 1/8" larger than the final saw cut width of the configuration shown in the plan detail.

Subsection 412.13 shall include the following:

d) Reseal Existing Joints and Seal Random Cracks

The contractor shall remove all of the existing sealant and backer rod from the sealed joints with a plow, saw, or other equipment necessary so as not to cause spalling or other damage to the concrete pavement surface beyond the limits of the joint width.

The transverse joints, longitudinal joints and expansion joints shall be sawed. Random cracks shall be sawed or routed to the widths and depths shown on the plans or as directed by the Engineer. Sawing will be done with a power-driven saw equipped with diamond blades. Any damage to the concrete pavement, such as spalling or overcutting, shall be repaired by the Contractor as directed by the Engineer and at the Contractor's expense.

The Contractor shall thoroughly clean each sawed joint and sawed or routed random crack and the adjacent pavement surface immediately after sawing by flushing with a water wash of sufficient pressure and volume so as to remove all of the cement dust and debris from the joints. Following the initial cleaning of the joints and random cracks with water, no more water shall be used to clean or prepare the joints for sealing.

REVISION OF SECTION 412
SAWING AND SEALING OF CONCRETE PAVEMENT JOINTS AND CRACKS

Prior to placing joint sealant, the sawed joints and random cracks shall be sandblasted and thoroughly cleaned with oil-free compressed air. The sawed joints and random cracks shall be completely free of dirt, dust, moisture or other foreign materials that might prevent bonding of the joint sealant materials. No joint sealing will be allowed until the prepared sawed joints and random cracks have been inspected and approved by the Engineer.

Joints and random cracks which are recontaminated as a result of the sawing operations shall be re-cleaned at the Contractor's expense in accordance with these specifications. No backer rod or joint sealant will be allowed to be placed until the re-cleaning of the joints and random cracks has been approved by the Engineer.

Joint sealing shall be accomplished only when the ambient and pavement temperature is 50° F or higher and the weather conditions are dry.

The backer rod shall be placed in the joints and random cracks to the depths shown in the M-Standard. At transverse and longitudinal joint intersections, one of the backer rods shall be cut and butted up against the intersection backer rod in order to maintain the proper depth of sealant material. Care shall be taken not to let the cut backer rod be displaced prior to or during sealing.

The joint sealant materials shall be applied and tooled in strict conformance with the manufacturer's recommended procedures.

Subsection 412.23 shall include the following:

Resealing of transverse joints, resealing longitudinal joints, and sealing or resealing random cracks will be measured by the linear foot of pavement joint and random crack sealed.

Subsection 412.24 shall include the following:

The accepted quantities for resealing transverse and longitudinal joints and sealing or resealing random cracks will be paid for at the contract unit price per linear foot completed and accepted. Payment will be full compensation for removing and disposing of existing sealant, sawing and cleaning the existing joints and random cracks, furnishing, applying and tooling new sealant, and all other incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Sawing and Sealing Concrete Pavement Joints	Linear Foot
Routing and Sealing Concrete Pavement Cracks	Linear Foot