

402 PORTLAND CEMENT CONCRETE PAVEMENT REPAIRS

Rehabilitation of Portland cement concrete pavement to comply with safety standards and extend the durability and life of an existing pavement may involve several types of repairs. It is essential that the Resident Engineer and Inspectors become familiar with the applicable methods and specifications for materials.

402-2 Spall Repairs

Spall repair shall be performed prior to any required pavement grinding or grooving and shall include removing all loose material and temporary bituminous patch material from potholes, damaged joints, and spalled areas of concrete. Cleanliness and the removal of loose material are of the utmost importance.

The Resident Engineer should ensure that the accelerated strength Portland cement concrete patch material is in accordance with the specifications when required, or rapid setting patch material meeting his or her approval is being used. The Arizona Transportation Research Center maintains the [Approved Products List](#) which contains approved patch materials.

When rapid setting patching materials are used, check to ensure that the Contractor has a qualified manufacturer's representative at the site who can inspect the preparation work and oversee the mixing, placing, and finishing of the patching material.

Heavy-duty jackhammers should not be used for patch repair, or against existing concrete in full depth repairs. These hammers impart too much energy and can micro-crack the existing concrete.

The Resident Engineer or authorized representative will mark those areas designated as spall areas. These areas will then be saw cut, removed to the minimum depths called for in the specifications or the project plans, and patched material applied accordingly.

When load transfer dowel bars are used, their alignment and orientation is critical to the success of the joint and the repair. The bars must be aligned and well greased so that they can slip when the pavement expands and contracts at the joint.

402-3 Full Depth Slab Repairs

The Resident Engineer will designate which areas require full depth replacement. These areas will be shown on the project plans and marked on the slab. Repair work must be completed before any specified pavement grinding or grooving.

Prior to construction, the Resident Engineer or Project Supervisor should thoroughly investigate the existing Portland cement concrete pavement in order to determine what portion of pavement slabs require replacement and whether this will be a complete replacement or partial only. The specifications provide details to determine the amount of replacement necessary.

The Inspector must ensure that care is taken in the removal of slabs to avoid disturbing granular subbase and concrete which is to remain in place. Any damage to the subbase or concrete which is to remain in place shall be corrected by the Contractor at no expense to the Department.

For areas where the roadway will be opened immediately to traffic, the specifications require that the patching material for this work be an accelerated strength Portland cement concrete mixture which includes Type III Portland cement and an accelerator. The resulting mix should attain a compressive strength of 2000 psi (15 MPa) in 6 hours. When the areas to be repaired will be closed to traffic to allow normal Portland cement concrete pavement placement and cure conditions, the patch material may conform to Class P concrete, and shall be placed and cured accordingly.

402-4 Pavement Grinding

Before grinding, spalled areas and areas requiring full depth slab replacement shall have been repaired to the satisfaction of the Resident Engineer. Grinding shall be performed prior to any specified sawing and sealing of transverse and longitudinal joints. The Resident Engineer should be satisfied that the equipment used by the Contractor will provide the specified surface texture. This will require that a test section be set up at the beginning of the operation, to demonstrate to the Resident Engineer that the resulting surface will be in conformance with plans and specifications.

The Resident Engineer and Inspectors should thoroughly review the method and equipment proposed by the Contractor to remove residue and excess water from the roadway. Consideration should be given to ensure the Contractor has several methods available to control this operation in the event changes are necessary once construction starts.

The Resident Engineer should check that all equipment conforms to the specifications and will not damage the existing pavement. This equipment must be capable of providing a uniform surface without requiring overlapping of previous passes. Pavement surface shall be ground longitudinally.

402-5 Pavement Grooving

Prior to grooving, spalled areas and areas requiring full depth slab replacement shall have been repaired to the satisfaction of the Resident Engineer. Grooving shall be performed prior to any specified sawing and sealing. The Resident Engineer should be satisfied that the equipment used by the Contractor will provide the specified pattern and depth of groove.

Project personnel should thoroughly review the methods and equipment proposed by the Contractor to remove residue and excess water from the roadway. The Contractor should be prepared with an alternate plan in the event changes must be made during construction.

The Resident Engineer should check that all equipment conforms to the specifications and will not damage existing pavement. This equipment must be capable of providing a uniform pattern at the depth specified. A test section should be established at the beginning of work in order to demonstrate that the specifications can be met.

Pavement surfaces shall be grooved longitudinally

402-6 Joint and Crack Repair

The Resident Engineer should thoroughly inventory the project under construction in order to designate those areas requiring repair. These areas must be cleaned of all loose material and prepared in accordance with the plans or specifications. The materials used must be applied in accordance with the manufacturer's recommendations and must be acceptable to the Department.

When load transfer dowels are used for joint repair, the alignment and orientation of the dowels is critical to the success of the joint.