KANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION TO THE
STANDARD SPECIFICATIONS, EDITION OF 1990

SECTION 812

PAVEMENT PATCHING

Page 591, Section 812. Delete the Section and replace with this:

812.1 DESCRIPTION.

Patch the existing pavement according to the details in the Contract Documents.

BID ITEM	UNIT
Bituminous Pavement Patching	Ton (megagram)
PCCP Patching (*) (**)	Square Yard (square meter)
PCCP Edge Joint Patching (***)	Square Yard (square meter)
PCCP Joint Patching (Full Depth)	Square Yard (square meter)
PCCP Joint and Crack Patching (***)	Square Yard (square meter)
Extra Work Saw Cuts (Set Price)	Linear Foot (meter)

*Thickness
**Sound or Unsound
***Partial Depth or Full Depth

812.2 MATERIALS.

Provide plant mix bituminous mixture–commercial grade for bituminous pavement patching that complies with the requirements of **Section 605** (**Special Provision 90P/M-125**, latest revision).

Provide either SS-1H or CSS-1H emulsified asphalt for bituminous tack and concrete curing that complies with the requirements of **Section 1200**.

Provide air-entrained concrete for PCCP patching that complies with the requirements of **Section 402** (**Special Provision 90P/M -156**, latest revision) and these requirements:

Component	Requirement
Aggregate:	Use any concrete pavement aggregate that complies with the requirements of **Subsection 1102** (**Special Provision 90P/M-266**, latest revision). Crushed limestone or dolomite for use in unsound pavement patching need not comply with the requirements for durable Class I or Class II aggregates.
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Cement:	• For concrete with a minimum cure of 24 hours, use a minimum of 750 lbs./cu. yd. (445 kg/m³) of either Type I or Type II cement that complies with the requirements of **Section 2000** (**Special Provision 90P/M-212**, latest revision). • For concrete with an accelerated cure[1], use a minimum of 658 lbs./cu. yd. (390 kg/m³) of Type III cement that complies with the requirements of **Section 2000** (**Special Provision 90P/M-212**, latest revision).
Calcium Chloride:	For concrete with an accelerated cure[1], use Grade 2 calcium chloride that complies with the requirement of **Section 1700**. Add the calcium chloride by solution (the solution is considered part of the mixing water). • For a minimum cure of 4 hours at 60°F(15°C) or above, use 2 percent (by dry weight (mass) of cement) calcium chloride. • For a minimum cure of 6 hours at 60°F (15°C) or above, use 1 percent (by dry weight (mass) of cement) calcium chloride.
Air-entraining Admixture:	Use air-entraining admixture that complies with the requirements of **Section 1400**.
Water:	Use water for concrete that complies with the requirements of **Section 2400**.
Slump	The maximum slump at the time of placement is 2½ inches (62 mm).

[1]For concrete with an accelerated cure, the Contractor has the option to use a rapid-set concrete patching material that complies with the requirements of **Section 1700** (**Special Provision 90P/M-252**, latest revision).

Provide concrete curing materials that comply with the requirements of **Section 1400** (**Special Provision 90P/M-251**, latest revision).

Provide hot type joint sealing compound that complies with the requirements of **Section 1500** (**Special Provision 90P/M-192**, latest revision).

Provide steel for concrete reinforcement (of the type, size, and dimensions shown in the Contract Documents) that complies with the requirements of **Section 1600**.

Provide either a cementitious grout or an epoxy-resin-base bonding system (Type IV, Grade 3, Class B/C) to grout new reinforcing steel into existing concrete pavement. Provide material that complies with the requirements of **Section 1700** (either **Special Provision 90P/M-206** or **90P/M-102**, latest revision, respectively).

Provide concrete grout for bonding the freshly mixed concrete to existing concrete. Provide a concrete grout consisting of 1 part portland cement and 3 parts water by weight (mass). The Engineer will accept the grout based on visual inspection for compliance with specified requirements.

812.3 CONSTRUCTION REQUIREMENTS.

a. General. Unless otherwise provided in the Contract Documents, restrict the pavement patching operations to 1 traffic lane at all times.

Schedule the patching operations so that the areas prepared for patching are patched the same day the deteriorated pavement is removed. If unavoidable delays prevent the excavated areas from being patched the same day, fill the excavated areas with a temporary bituminous mixture and compact the temporary material before nightfall.

If shown in the Contract Documents, delineate the limits of the patch by sawing the existing pavement to the depth indicated before removing the deteriorated pavement. Use a saw that will produce a smooth cut for the required depth. Coordinate the

pavement sawing and the patching operations so that the sawed areas are patched within 3 working days.

Prepare the areas for patching by removing the deteriorated pavement to the limits designated in the Contract Documents, or as directed by the Engineer. If the removal of the deteriorated pavement to the designated limits reveals further deterioration in the existing pavement, extend the limits of the patch to include the exposed deficient pavement.

Prepare the areas for patching according to the details in the Contract Documents.

When removing the deteriorated pavement, do not damage the pavement that remains in place. Do not disturb the subgrade while preparing the areas for patching. Remove all waste materials the same day they are excavated.

If necessary to accommodate the thickness of pavement patching indicated in the Contract Documents, adjust and re-compact the subgrade to the required lines and grades.

b. Bituminous Pavement Patching. After the deteriorated pavement is removed, clean the exposed edges of the existing pavement. Before placing the bituminous patch, apply a thin tack coat of emulsified asphalt to the clean edges of the existing pavement.

Place the bituminous mixture in uniform layers of 3 inches (75 mm) or less in thickness. Compact each layer until no further consolidation is observed. Make sure the surface of the preceding layer of compacted bituminous material is clean before the succeeding layer of bituminous material is placed.

c. Concrete Pavement Patching. Before the deteriorated pavement is removed, reference the location of the joints in the existing concrete pavement. During the patching operations, establish new joints at the same locations as the original joints.

If required, drill holes and grout the specified steel reinforcement into the existing concrete pavement according to the requirements of **Section 830**.

Place the specified concrete in the areas prepared for patching, consolidate the concrete, strike-off the concrete flush with surface of the existing pavement, and finish the surface with a wooden float or another method approved by the Engineer.

Do not place concrete patches if the ambient air temperature is below 40ºF (5ºC). If the ambient air temperature is below 60°F (15°C) when the concrete patches are placed, the Engineer may require additional curing time. If the ambient air temperature is above 90ºF (32ºC) when the concrete patches are placed, place the concrete, finish the surface, and apply the curing materials before the undue loss of moisture from the concrete occurs.

Unless the Engineer directs otherwise, cure the concrete patches by applying liquid membrane-forming compound (at the rate of 1 gallon (L) per 150 square feet (square meter)) to the finished patch. If the existing concrete pavement will be overlayed with bituminous material in the near future, the Engineer may require that concrete patches are cured with emulsified asphalt.

Either form (using joint forming backer board) or saw transverse and longitudinal joints. Unless shown otherwise in the Contract Documents, form or saw the joints a minimum of ¼ inch (6 mm) wide and ⅝ inch (16 mm) deep. After removing the backer board from formed joints or flushing sawed joints with water, sand blast the vertical faces

of the joint. Clean the sand blasted joints with compressed air and seal the joints according to the details in the Contract Documents.

(1) Full Depth Patches. Saw the limits of full depth patches the full depth of the existing concrete pavement. If the existing concrete pavement will receive an overlay the same construction season, a rock saw is allowed for the sawing.

The minimum size for full depth patches is 6 feet (2 m) longitudinally. Make full depth patches the full lane width wide.

(2) Partial Depth Patches. The minimum patch size for partial depth patches is 4 inches (100 mm) by 10 inches (250 mm). Delineate the limits of partial depth patches at least 2 inches (50 mm) beyond the area of deteriorated pavement. If areas defined for partial depth patches are less than 12 inches (300 mm) apart, include the areas into a single patch.

Unless shown otherwise in the Contract Documents, saw the limits of partial depth patches to a depth of 2 inches (50 mm).

Use jackhammers (15 lbs. (7 kg) maximum size) or self-propelled milling machines (such as CAT RP-50 or BARCOMILL 100) to remove the deteriorated pavement to the depth shown in the Contract Documents. Cut out or chip away the connecting edges below the sawed portion to as near true lines with vertical faces as possible.

After the deteriorated pavement is removed to the saw or mill depth, use a steel-faced hammer or steel chain drag to check for unsound concrete below this depth. If unsound concrete is detected, use jackhammers (15 lbs. (7 kg) maximum size) to remove the deteriorated pavement below the saw or mill depth.

If the unsound concrete encountered is more than 4 inches (100 mm) deep and constitutes more than 50 percent of the surface area of the patch, the Engineer will determine if it is necessary to make the patch a full depth patch.

Note: If the pavement patch is started according to the details for Joint and Crack Patching (Partial Depth) and the Engineer changes the patch to a full depth patch, construct the full depth patch according to the details for Joint and Crack Patching (Full Depth).

If the pavement patch is started according to the details for Edge Joint Patching (Partial Depth) and the Engineer changes the patch to a full depth patch, construct the full depth patch according to the details for Joint and Crack Patching (Special).

Clean the partial depth patches using compressed air or a stiff rotary broom. Sandblast the cavities of the partial depth patches to expose aggregate and mortar.

Before concrete is placed in the partial depth patch, apply a concrete grout to the prepared surfaces of the patch. If the grout dries before the concrete is placed, remove the dried grout by sandblasting and re-apply fresh grout.

812.4 MEASUREMENT AND PAYMENT.

The Engineer will measure the completed bituminous pavement patching by the ton (meagagram) of bituminous mixture placed and accepted.

The Engineer will measure the completed and accepted various types of concrete pavement patching by the square yard (square meter).

If the Contractors chooses to use a milling machine to remove the deteriorated pavement, and the area removed is greater than the area originally defined for the partial depth patch, the Engineer will base the measurements of the partial depth patch on the dimensions originally defined for the patch.

The Engineer will measure a patch started as partial depth patch, but completed as a full depth patch, as a full depth patch.

Note: A patch started according to the details for Joint and Crack Patching (Partial Depth) and completed as a full depth patch is measured and paid as "Joint and Crack Patching (Full Depth)".
A patch started according to the details for Edge Joint Patching (Partial Depth) and completed as a full depth patch is measured and paid as "Joint and Crack Patching (Full Depth).

If additional saw cuts are required to expand a patch, or to change a partial depth patch to a full depth patch, the Engineer will measure the additional saw cuts by the linear foot (meter).

Payment for "Bituminous Pavement Patching" and the various types of "PCCP Patching" at the Contract unit prices, and "Extra Work Saw Cuts" at the Contract set unit price is full compensation for the specified work.

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