**Design Standards Letter**

**Letter Number: S-2017-02**

**Letter Date: 02/09/2017**

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**Section/Plan No.: 613, 620, 1048, 1081**

**Subject: Revised Supplement to the 2016 Standard Specifications**

**Body**

**TO:** All Central and District Offices

**FROM:** Llans Taylor

**SUBJECT:** Engineering Policy

 Standard Specifications Letter No. 2, 2017

 Revisions Supplement to the 2016 Standard Specifications

The Supplemental Revisions to the *2016 Missouri Standard Specifications for Highway Construction*, effective April 1, 2017 are now available on MoDOT’s website.

Questions regarding the Supplemental Revisions to the Missouri Standard Specification should be directed to Ivan Schmidt, Central Office, Engineering Policy Group, at 573-751-0269 or myself at 573-751-7412.

**MINOR REVISIONS:**

**SECTION 620 PAVEMENT MARKING**

*Sec 620.60.3.1.2* Removed requirement for Type 2 Temporary RPM’s shall be used as shown on the plans.

**SECTION 1048 PAVEMENT MARKING MATERIAL**

*Sec 1048.50.3* Removed material requirement for Type 2 Temporary Raised Pavement Markers.

**MAJOR REVISIONS:**

**SECTION 613 PAVEMENT REPAIR**

*Sec 613.1* Revised the order of the listing of pavement repairs.

*Sec 613.3.1* Added to specification “such as edge spalling”.

*Sec 613.3.2* Removed the requirement that “removed concrete or bituminous material and any excavated subgrade material shall be recycled to the extent possible, either through incorporation into the active project or through stockpiling and future use, per the reclamation plan provided by the contractor to the engineer” from specification.

*Sec 613.10.2.1* Revised the requirement that full depth pavement repair shall be saw cut full depth around the perimeter prior to removal, except that cuts along the shoulder line may be waived when pavement can be removed without damage to the shoulder. Rock saw shall not be used for perimeter cut, but may be used for interior portion of the patch for stress relief.

*Sec 613.10.2.2* Revised the requirement that tie bars shall be epoxy coated.

*Sec 613.10.2.3* Revised the requirement that “concrete may contain Type III cement, calcium chloride, an accelerator or other admixtures approved by the engineer.” Removed from specification “Gradation D or E may be substituted for Grade F when Grade F is specified. The contractor shall provide a trial mix to determine the approximate cure time needed to achieve the required compressive strength. Compressive specimens shall be prepared in accordance with current MoDOT methods and cured to simulate actual field conditions. Testing of compressive specimens shall be performed by methods and at facilities acceptable to the engineer. A new trial mix may be required if the engineer determines the field conditions vary substantially from trial mix conditions.”

 *Sec 613.10.2.3.1* Removed specification in its entirety for when repair is to be made and opened to traffic after 24 hours.

*Sec 613.10.2.3.2* Removed specification in its entirety for when repair is to be made and opened to traffic in less than 24 hours.

*Sec 613.10.2.3.2.1* Removed specification in its entirety for concrete may contain Type III cement, calcium chloride, an accelerator or other admixtures.

*Sec 613.10.2.4* Added specification construction of full depth repairs shall be in accordance with Sec 502, except as follows.

*Sec 613.10.2.4.1* Added specification that concrete shall have a minimum 28-day strength of 4000 psi. Added strength shall be verified by compressive strength testing of cylinders. Added QC & QA testing requirements.

*Sec 613.10.2.4.2* Added specification that concrete shall have a minimum air content of 4 percent and air content shall be measured once for every day’s production.

*Sec 613.10.2.4.3* Added specification that concrete opening strength to all traffic shall be 2000 psi. The opening strength shall be verified by either compressive strength testing of cylinders in accordance with Sec 613.10.2.4.1 or the maturity method in accordance with Sec 507. *Renumber subsequent sections accordingly*.

*Sec 613.10.2.7* Removed this previously numbered specification in its entirety that “Pavement repair areas shall not be opened to traffic until the minimum cure time, as determined from an approved trial mix in accordance with Sec 613.10.2.3, has elapsed and the minimum compressive strength specified for that cure time has been attained.”

*Sec 613.10.2.8* Added this specification that sawing of internal transverse and longitudinal joints and mitigation of uncontrolled cracking shall be in accordance with Sec 502.5.3.

*Sec 613.10.3.1* Added “transverse” for better clarification of internal saw cuts.

*Sec 613.10.3.3* Removed “and steel welded wire reinforcement, if applicable” from specification for measurement of furnishing and placing Portland cement concrete.

*Sec 613.20.1.1* Replaced “joint forming” with “compressible” and replaced “concrete” with “Portland cement concrete, elastomeric concrete or epoxy mortar” in specification.

*Sec 613.20.2.1 thru 613.20.2.2* Removed in its entirety for whenroadway will be opened to traffic within four hours, 24 hours and the corresponding concrete requirements.

*Sec 613.20.2.1* Added specification that concrete coarse aggregate for Portland cement concrete shall be Gradation E or Grade F in accordance with Sec 1005 or an optimized aggregate gradation approved by the engineer. The optimized aggregate gradation shall have 100 percent passing the 3/4 inch sieve. Portland cement concrete mix shall have a minimum of 4 percent air content.

*Sec 613.20.2.2* Added specification that elastomeric concrete components shall be in accordance with manufacturer recommendations. The Construction and Materials Division shall be consulted for product approval.

*Sec 613.20.2.3* Changed existing specification 613.20.1.2.3 to 613.20.2.3 and renumbered subsequent section accordingly.

*Sec 613.20.2.5 Previously numbered as 613.20.2.4* Revised to clarify concrete to be Portland cement concrete and added “Elastomeric concrete and epoxy mortar patch materials shall be cured in accordance with manufacturer recommendations” to specification.

*Sec 613.20.3.1* Revised the repair limits on concrete removals to one to two inches beyond delaminated or spalled area. Added “The minimum depth of removal shall be 2 inches for Portland cement concrete and according to manufacturer’s recommendations for elastomeric concrete and epoxy mortar” to specification.

*Sec 613.20.3.1.1* Removed the requirements for damage to reinforcement from specification.

*Sec 613.20.3.2* Revised the requirements to eliminate high pressure water blasting and added shotblasting to specification.

*Sec 613.20.3.3.1* Revised the requirements to reduce the extended compressible insert a minimum of one inch beyond each end of the prepared repair boundaries from 3 inches.

*Sec 613.20.3.3.4* Revised to clarify that sawing to reestablish the joint or crack will not be permitted.

*Sec 613.20.3.4.1* Revised to replace concrete with Portland concrete and added requirements for when grout is used.

*Sec 613.20.3.4.1.2* Requirement for when grout is used was moved to Sec 613.20.3.4.1. Added requirement for elastomeric concrete shall be in accordance with manufacturer recommendations.

*Sec 613.20.3.4.2* Revised to replace concrete with Portland cement concrete and added that Elastomeric concrete shall be handled, prepared and mixed in accordance with manufacturer recommendations.

*Sec 613.20.3.4.3* Revised that if patch material can not fully penetrate the run-outs, then an approved low viscosity epoxy shall be used to fill the saw cut run-outs.

*Sec 613.20.3.4.4* Clarified that the sealing and curing specification is for Portland cement concrete patch material. Added that “Elastomeric concrete shall be cured in accordance with manufacturer recommendations.”

*Sec 613.20.3.5* Removed resealing joints and cracks specification and renumbered subsequent sections accordingly.

*Sec 613.20.3.5* Previously number specification 613.20.3.6 revised to remove requirement for determining cure time form approved trial mix.

*Sec 613.30.2* Added “Tack material shall be in accordance with Sec 407.2” to specification for Class B partial depth pavement repairs.

*Sec 613.30.3.1.1* Removed specification for providing roughened face by sandblasting or high pressure water blasting and replaced with or other means approved by the engineer.

*Sec 613.30.3.2* Added to allow shotblasting for providing a clean and roughened surface.

*Sec 613.30.3.5* Added to “Payment for tack liquid is incidental to the pay item for furnishing and placing bituminous material” to Basis of Payment.

*Sec 613.35.1* Changed “pavements” to “composite pavements.”

*Sec 613.35.5* Added to “Payment for tack liquid is incidental to the pay item for furnishing and placing bituminous material” to Basis of Payment.

*Sec 613.40.2.1* Changed the approval for us of rapid set concrete patching material to the engineer from Construction and Materials and added the maximum aggregate size in the gradation shall be ½ inch.

*Sec 613.40.2.4* Updated a reference for compressible insert to Sec 613.20.2.4.

*Sec 613.40.2.4* Revised the dowel bar slot to 2 ½ inches wide from 4 inches wide. Removed the requirement that pneumatic hammers larger than 15 pounds can not be used. Clarified to discontinue the use of pneumatic hammers or other equipment that causes damage to pavement that is to stay-in-place until contractor has taken corrective measures. Changed “blasting” to “sandblasting.” Clarified that the point of curvature of saw cuts for dowel bars shall extend ½ inch beyond the dowel bars end.

*Sec 613.40.3.1.2* Clarified that multiple saw cuts are allowed with in the slot for removal of material.

*Sec 613.40.3.1.3* Changed “an approved caulking sealant” with “a silicone sealant” in specification for sealing slots, joints and cracks.

*Sec 613.40.3.2.1* Clarified that a minimum ¼ inch gap shall be maintained in the expansion caps for dowel bars.

*Sec 613.40.3.2.4* Revised that the joint insert shall extend from the bottom of the slot to the surface of the pavement.

*Sec 613.40.3.3* Removed the resealing cracks requirements and renumber subsequent sections accordingly.

**SECTION 1081 COATING OF STRUCTURAL STEEL**

*Sec 1081.4.3.3.1* Revised that contractor shall submit a Notification of Regulated Waste Activity form to MDNR instead of submitting a request to the Design Division. Changed that Hazardous waste shall not be shipped offsite until the EPA identification number has been received. Added that the contractor will file the quarterly and annual hazardous waste reports and deactivate the EPA identification number upon contract completion instead of Design Division. Added that the contractor shall submit all hazardous waste manifests and quarterly/annual reports to MoDOT’s Environmental Section.

LET/IWS