**Design Standards Letter**

**Letter Number: S-2021-02**

**Letter Date: 02/24/2021**

**Effective Date: 04/01/2021**

**Section: 109, 402, 403, 617, 701, 702, 712, 902, 1036, 1039, 1071, 1092**

**Subject: Revised Supplement to the 2020 Standard Specifications**

**TO:** All Central and District Offices

**FROM:** Sarah Kleinschmit

**DATE:** February 24, 2021

**SUBJECT:** Standard Specifications Letter No. 2, 2021

The Supplemental Revisions to the *2020 Missouri Standard Specifications for Highway Construction*, effective April 1, 2021 are now available on MoDOT’s website.

Questions regarding the Supplemental Revisions to the Missouri Standard Specification should be directed to Tim Oligschlaeger, Central Office, Engineering Policy Services, at 573-751-3813 or myself at 573-751-7412.

**MINOR REVISIONS:**

**SECTION 109 MEASUREMENT AND PAYMENT**

*Sec 109.15.1.1* Added reference to Sec 402 in the third sentence. The percentage of virgin PG asphalt binder as shown in the job mix formula shall be in accordance with Sec 402.

**SECTION 402 PLANT MIX BITUMINOUS SURFACE LEVELING**

*Sec 402.2.3 Reclaimed Asphalt.* Deleted entire section and replaced with, “Recycled asphalt materials may be used and shall be in accordance with Sec 401.2.2”.

*Sec 402.2.3.1 Reclaimed Asphalt Pavement.* Deleted entire section.

*Sec 402.2.3.2 Reclaimed Asphalt Shingles.* Deleted entire section.

*Sec 402.5 Gradation and Deleterious Content Control.* Revised the gradation and binder content if production exceeds 100 tons per day. Gradation and asphalt content of RAP shall be determined once every 10,000 tons of production. Also under (e) changed that the final mixture shall not vary more than -0.3 to +0.5, previously this was at ±0.3.

*Sec 402.6 Sample Location.* In the first sentence removed, “or from hot bins or combined hot aggregate flow on continuous mixing plants” and added, “or from aggregate residue from the ignition over during production” to the end of the sentence.

**SECTION 403 ASPALTIC CONCRETE PAVEMENT**

*Sec 403.2.6 Reclaimed Asphalt.* In the last sentence removed “to use in lieu of Gsb” and replaced with “to which a 0.98 correction factor will be applied to obtain the Gsb”. The following formula was also added, “RAP Gsb = RAP Gse X 0.98”.

**SECTION 617 CONCRETE TRAFFIC BARRIER**

*Sec 617.10.1 Description.* In the last sentence, added Type E as another type of permanent concrete traffic barrier.

*Sec 617.20.2.1.* Added the following sentence. Reference the *Missouri Quality Standard for Temporary Traffic Control Devices* for evaluation criteria on serviceable condition.

**SECTION 701 DRILLED SHAFTS**

*Sec 701.3.2.6 Welding.* In the fourth sentence, removed “MoDOT certified field welder” and replaced with “certified welder in accordance with Sec 712.6 field welding requirements”.

**SECTION 702 LOAD-BEARING PILES**

*Sec 702.4.5.5* In the first sentence, removed “MoDOT certified field welder” and replaced with “certified welder in accordance with Sec 712.6 field welding requirements”.

*Sec 702.4.6 Splices.* In the second sentence, removed “MoDOT certified field welder” and replaced with “certified welder in accordance with Sec 712.6 field welding requirements”.

**SECTION 712 STRUCTURAL STEEL CONSTRUCTION**

*Sec 712.6.3 Welding Procedures.* In the first sentence, added “using flux cored arc welding (FCAW)” for welding procedures that should be submitted electronically to the Bridge Division, changed “bridges” to “any bridge”, end the first sentence after bridge and added the following language as the beginning of the second sentence, “All welding procedures using shielded metal arc welding (SMAW or commonly known as stick welding) shall be submitted electronically to [Bridge Division](mailto:Fabrication@modot.mo.gov) for acceptance prior to welding on bridges”.

*Sec 712.6.4 Shear Connector.* Added as new specification, see below.

**712.6.4 Shear Connector.** Shear connector production control shall be in accordance with applicable codes of Sec 1080.3.3.4, AWS D1.5 Clause 7.7 code by MoDOT field personnel. In addition to this code, the engineer will sound 25 percent of the shear connectors to confirm an adequate weld to the girder/beam. A random five percent of all shear connectors will be bent to an approximately 30 degree from the original axes to verify the integrity and welding of the shear connector. The field engineer will sound 25 percent of the shear connector used on the expansion device whether shop or field installed. The contractor shall complete repairs and replace any failed shear connectors at the contractor’s expense.

**SECTION 1036 REINFORCING STEEL FOR CONCRETE**

*Sec 1036.3.3.* Changed “AASHTO M 55 or AASHTO M 221” to AASHTO M 336”.

**SECTION 1039 POLYMER PRODUCTS**

*Sec 1039.40.2 General Requirements.* Added the following sentence, “Epoxy bonding agents are not approved for sustained tension loads”.

*Sec 1039.40.3 Pull Test.* In the second sentence changed, “MoDOT Test Method TM 74” to “ASTM E 488” and added with installed per manufacturer’s recommendation to the end of the sentence. Removed the last sentence, “When tested in accordance with ASTM E 488 the minimum embedment for each size anchor shall be determined and the minimum ultimate pullout loads shall be in accordance with the following table:” and replaced with, “Resin Anchor Systems shall also have a minimum strength of 9,000 lbs when tested in accordance with MoDOT Test Method TM-74. TM-74 testing will not be required if the Resin Anchor System has a current International Code Council Evaluation Service (ICC-ES) evaluation indicating the material complies with the latest edition of the International Building Code”.

*Sec 1039.40.4 Manufacturer and Brand name Approval.* Added the following sentence, “A copy of the current ICC-ES evaluation for the material shall be submitted to waive TM-74 testing.”.

**SECTION 1071 ASPHALT RELEASE AGENTS, FIBER ADDITIVES AND**

**LIQUID ANTI-STRIP ADDITIVES**

*Sec 1071.4 Bituminous Mixture Fiber Additives.* Removed, “AASHTO MP8, Table 3 for cellulose fibers, or Table 4” and replaced with “AASHTO M 325”.

**MAJOR REVISIONS:**

**SECTION 902 TRAFFIC SIGNALS**

*Sec 902.6 Pedestrian.* Added specification as new section.

*Sec 902.6.1 Accessible Pedestrian Signal (APS).* Added as new specification, see below.

**902.6.1 Accessible Pedestrian Signal (APS).** This work shall consist of furnishing, installing and placing into operation an APS that assist the pedestrian who has visual or physical disabilities in activating the pedestrian phase. APS shall be installed as part of a pushbutton assembly and shall have both audible and vibrotactile walk indications. APS shall be installed per the manufacturer’s recommendations and specifications. Cable runs shall be continuous and unspliced.

*Sec 902.6.1.1 Vibrotactile.* Added as new specification, see below.

**902.6.1.1 Vibrotactile.** The vibrotactile walk indications shall be provided by a tactile arrow on the pushbutton that vibrates during the walk interval and shall be aligned parallel to the direction of travel on the associated crosswalk.

*Sec 902.6.1.2 Audible.* Added as new specification, see below.

**902.6.1.2 Audible.** The audible walk indication shall be audible from the beginning of the associated crosswalk.

*Sec 902.6.1.2.1 Audible Locator Tone.* Added as new specification, see below.

**902.6.1.2.1 Audible Locator Tone**. Locator tone tells the pedestrian that the intersection is equipped with APS and where it is. Pushbutton locator tones shall have duration of 0.15 seconds or less and shall repeat at 1-second intervals. Pushbutton locator tones shall be intensity responsive to ambient sound and be audible 6 to 12 feet from the pushbutton, or to the building line, whichever is less. The locator tone shall operate during the DON'T WALK and flashing DON'T WALK intervals only and shall be deactivated when the pedestrian signal is not operative.

*Sec 902.6.1.2.2 Wait Message.* Added as new specification, see below.

**902.6.1.2.2 Wait Message**. Acknowledge tone tells the pedestrian they have placed a call and informational message tells the pedestrian to “Wait”. If the accessible pedestrian signals are within 10 feet of each other the verbal wait message “Wait to cross” street name at intersecting street name shall be used.

*Sec 902.6.1.2.3 Walk Message.* Added as new specification, see below.

**902.6.1.2.3 Walk Message**. The verbal messages shall provide a clear message that the walk interval is in effect. If the accessible pedestrian signals are within 10 feet of each other, the audio tone feature shall not be used. The verbal message is provided at regular intervals throughout the timing of the walk interval shall be the term “walk sign,” which will be followed by the name of the street to be crossed.

*Sec 902.6.1.2.4 Volume.* Added as new specification, see below. Renumbered subsequent sections accordingly.

**902.6.1.2.4 Volume**. Automatic volume adjustment in response to ambient traffic sound level will be provided up to a maximum volume of 100 dB. The units shall be responsive to ambient noise level changes up to no more than 5 dB louder than ambient sound.

*Sec 902.24.2.* Changed section number to 902.25.2. Added, “Accessible Pedestrian Signals, which includes the pushbutton and control unit in addition to all specified items” as another item that the Method of Measurement will be made per each. Renumbered subsequent sections accordingly.

*Sec 902.26.25.* Added as new specification, see below.

**902.26.25** Accepted Accessible Pedestrian Signals will be paid for at the contract unit price. Payment will be considered full compensation for all labor, equipment and material to complete the described work. Payment for signing will be included in the contract unit price for Accessible Pedestrian Signals.

**SECTION 1092 SIGNAL EQUIPMENT**

*Sec 1092.4.7.2 Pedestrian Push Button.* In the second sentence, added “aluminum” as what the pedestrian push button housing should be made of.

*Sec 1092.4.7.2.1 Accessible Pedestrian Signal (APS).* Added as new specification, see below.

**1092.4.7.2.1 Accessible Pedestrian Signal (APS).** APS pushbutton detectors shall be in accordance with Sec 1092.4.7.2, except a maximum force of 3.5 pounds shall be required to activate the switch. APS pushbutton detectors shall include tactile arrows and actuators made of brass or corrosion-resistant metal alloy or non-metallic material. Tactile arrows shall be located on the pushbuttons, raised, with high visual contrast (light on dark or dark on light).

SKK/TMO