

Design Standards Letter

Letter Number: **G-1991-20**

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Effective Date: **12/04/1991**

Section/Plan No.: **None**

Subject: **Special Provision, MRSP-91-11, Portland Cement Concrete for Early Open Pavement**

Body

The attached Special Provision MRSP-91-11 shall be used as needed to expedite paving work. The use of MRSP-91-11 will allow opening to light traffic in two days and to full traffic within three days.

Do not include MRSP-90-14B "Portland Cement Concrete for Fast Track Paving" in any contract as an allowable contractor option. MRSP-90-14B is to be limited to specific use and used only upon specific request.

The use of MRSP-91-11 is effective immediately.

vji/kd

To view the Special Provision, press PF1

PORTLAND CEMENT CONCRETE FOR EARLY OPEN PAVEMENT MRSP-91-11

1.0 DESCRIPTION OF MRSP-91-11. At the contractor's option in order to expedite operations, pavement concrete may be furnished as modified by this specification.

1.1 Unless otherwise stated, specification section references are from the version, in effect at the time of this contract, of the Missouri Standard Specifications for Highway Construction and its supplements.

1.2 The mix design, materials, and curing operation herein described are to provide for opening to all traffic when the concrete is 72 hours old, provided the concrete strength is at least 3500 psi. If this option is chosen, all

requirements herein described shall be followed.

2.0 MATERIALS. All materials shall conform to Division 1000, Materials Details unless otherwise noted.

2.1 A water reducer shall be used, except that Type F or G water reducers will not be allowed.

2.2 Type I, II, or III cement may be used. Flyash may be used.

2.3 A non-chloride accelerating admixture may be used.

3.0 CONCRETE MIX DESIGN. Concrete shall comply with the requirements for pavement concrete in Sec 501, except as modified herein.

3.1 The proposed mix design shall be submitted, by the contractor, in writing to the engineer for approval at least 45 days prior to use of the mix.

3.1.1 The design shall include type and source, physical characteristics, proportions, and scale weights of all materials. It shall also include actual laboratory test results indicating mix proportions, slump, air content, strength, (in pounds per square inch, psi), and age (from molding to testing) of 6" X 12" cylinders made from concrete produced in accordance with the proposed mix design.

3.1.2 Molding, testing, and curing should replicate field anticipated conditions. Minimum cylinder testing shall be two cylinders, each, for 24, 48, and 72 hours of age. The 72 hour test cylinders shall exceed 3500 psi.

3.2 Type III cement may be used with no change in the required cement factor. If Type I or II cement is used, the cement requirement shall be increased by one sack per cubic yard.

3.3 The water/cement ratio of pounds of water to pounds of cement shall not exceed 0.40 for design or during operations.

3.4 The design percent air in the mortar shall be 9.0, plus or minus 1.0 percent, at the specified air content.

4.0 CONSTRUCTION. All requirements of Sec 502 shall apply except as modified herein.

4.1 Curing. The concrete shall be cured until the minimum strength and age requirements have been met. Cylinder test specimens shall be cured in the same manner as the pavement.

4.1.1 Immediately after the surface has been textured, the concrete shall be cured using a white-pigmented curing compound, applied to the surface and exposed edges at the rate of 1 gallon for each 100 square feet.

4.1.2 The contractor is advised that the rate of strength gain is directly related to the amount of heat retained in the concrete during the curing process. If a cover material is used to accelerate the strength gain, the cover material shall be uniform, impermeable to moisture, and sufficiently durable to remain intact until the end of the curing time. Cover material that will not remain intact or that is otherwise perforated shall not be used.

4.2 Joints. All joints shall be sawed as soon as possible without causing excessive ravelling, but before uncontrolled shrinkage cracking occurs.

4.3 Opening to Traffic. The concrete pavement shall not be opened to light traffic until the concrete is at least 48 hours old and has attained a minimum compressive strength of 3000 psi. The pavement shall not be opened to all types of traffic until the concrete is at least 72 hours old and has attained a minimum of 3500 psi. In addition, all joints in the new slab shall be sawed, cleaned, and sealed in accordance with the details shown on the plans.