

SECTION 513 – PORTLAND CEMENT CONCRETE

513.01 DESCRIPTION

Work consists of construction concrete structures, slabs, etc. including furnishing, transporting, mixing, placing, curing, and finishing of Portland cement concrete and protecting the work. This specification does not cover structural concrete.

513.02 REFERENCE STANDARDS

MSHA Specifications, Section 420,902,905,908,909,911,913, 917, and 921
ACI 318

513.03 DEFINITIONS

Not Applicable

513.04 MATERIALS

MSHA Standard Specifications for Construction and Materials, July 2008, as amended to date).

Concrete	902
Curing Materials	902.07
Curb	602
Sidewalk	603
Reinforcement Steel	908
Form Release Compound	902.08
Concrete Mixes	902.10
Mortar and Grout	902.11
Drains, Downspouts, Weepholes and Pipes	905
Reinforcement Steel	908
Anchor bolts	909.06
Steel Forms Which Remain In Place	909.11
Joint Sealer	911.01
Preformed Joint Fillers	911.02
Preformed Elastomeric Joint Seals	911.04
Waterproofing	913
Epoxy Protective Coatings	917.01
Water for Concrete Mixes	921.01
Epoxy Bonding Compound	921.04

513.05 SUBMITTALS

- A. Results from all testing.
- B. Product certifications with application rates should be submitted to the M-NCPPC Construction Manager for approval.

513.06 QUALITY ASSURANCE

Maryland Department of Transportation, State Highway Administration "Standard Specifications for Construction and Materials" July 2008, as amended to date. Section 602, 603, 902, 905, 908, 909, 911, 913, 917, and 921.

513.07 CONSTRUCTION

- A. After making sure that the base has been properly laid and compacted and approved by the M-NCPPC Construction Manager, the following specifications shall be followed for all cast-in-place concrete.
 - 1. Proper forms shall be laid providing the required depth for the concrete as shown on the plans. Forms shall be heavy and secured in place so as not to move during the construction process.
 - 2. Maximum slump for concrete at the time of placement shall be 2 to 5 inches.
 - 3. Ambient Air Temperature
 - a. Minimum ambient air temperature. Concrete placement shall begin only when the ambient air and surface temperature is at least 40° F and rising.
 - b. Maximum ambient air temperature. Concrete placement shall begin only when the ambient and surface temperature is a maximum of 90° F and falling.
- B. All concrete shall have a 28 day compressive strength based on the type of mix as specified in the plans and in accordance with MSHA Standards Section 902.10, and Table 902A. It shall be the Contractor's responsibility to arrange and pay for any testing required by the M-NCPPC Construction Manager including but not limited to slump, compressive strength, air entrainment, etc. All testing shall be accomplished by an approved testing agency with results forwarded to the M-NCPPC Construction Manager.
- C. The base on which concrete is to be poured shall be free of water, mud, debris, loose materials, oil, frost and ice and all deleterious materials. If water can't be removed, the Contractor will provide the M-NCPPC Construction Manager an alternate method for approval.
- D. The M-NCPPC Construction Manager shall be notified at least 24 hours in advance of a concrete pour. Form-work must be approved for lines and grades by the M-NCPPC

Construction Manager prior to pouring cement. Concrete shall be laid only in the presence of the M-NCPPC Construction Manager or Inspector.

- E. Concrete shall be placed from a truck which should be no more than 15 feet from the area being poured. Extension of chutes beyond 15 feet may be permitted by the M-NCPPC Construction Manager on request. Tubes or chutes, if used, shall have metal lining, and shall have ends lowered as close as possible to the newly poured concrete. Concrete shall not be dropped from more than 2 feet above the forms. Concrete shall be placed in a manner that there is no segregation of material or displacement of reinforcement. If this is not possible due to site constraints, other methods may be submitted to the M-NCPPC Construction Manager for possible approval.
- F. Concrete during and immediately after depositing shall be thoroughly consolidated by internal and external mechanical vibration, or as approved by the M-NCPPC Construction Manager.
- G. All excess concrete used for testing, the remaining in the truck, and miscellaneous equipment shall be properly disposed of in the concrete washout structure per MDE soil erosion sediment control manual detail number H-6.
- H. Expansion joints shall be placed as shown on the Site Plan and Details. Expansion joints will be 2" depth pre-molded expansion material conforming to MSHA Standard Section 911. Expansion material shall not extend above the surface of the finished slab. If a broom finish on the concrete surface is required, it shall be provided before the initial set. Maximum joint gaps shall not exceed ½".
- I. Curing of concrete shall be in accordance with MSHA Standard Specification Section 902. Spraying with liquid membrane is encouraged. Failure to cure concrete per specifications may result in removal of the poured concrete or non-payment.
- J. If any concrete is found to be defective, the Contractor will, at the direction of the M-NCPPC Construction Manager, remove and repair defective concrete at no cost to the Commission. Concrete shall be deemed defective if the surface is not finished properly to the satisfaction of the M-NCPPC Construction Manager, if it does not meet the strength requirements, or if it is not cured properly.
- K. Steel reinforcement shall be placed in accordance with the plans and details. Reinforcing shall be spliced in accordance with the latest ACI 318. Reinforcement shall be approved by the M-NCPPC Construction Manager. All reinforcement shall correspond to MSHA Standard, Section 908. All reinforcement shall conform to clearances shown on the plan.

513.08 MEASUREMENT AND PAYMENT

Payment will be full compensation for all material, labor, equipment, tools and incidental items

necessary to complete the work. Payment shall be made on a unit rate or lump sum basis as shown in the bid proposal; or shall be considered incidental to other bid items if not specifically listed on bid forms.