



**SPECIAL PROVISIONS
FOR
COLORED, TOOLED PORTLAND CEMENT CONCRETE**

Black Hawk County

Project No.
ESL-8155(709)--7S-07

Effective Date
December 15, 2009

THE STANDARD SPECIFICATIONS, SERIES 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

097001.01 DESCRIPTION

- 1.01 Summary: This work includes the construction of colored, tooled PCC pavement to the lines and grades shown on the plans, including reinforcement bar systems. The work shall include all labor, materials, equipment, and transportation required to install the colored and tooled PCC pavement.
- 1.02 Quality Assurance:
- A. Design Criteria: The concrete mix used with pigment added shall be Class C-4, Class 3 aggregate meeting the requirements of the Standard Specifications. The aggregate, cement, and integral color shall be from the same source identical throughout the entire project. The material sources and mix proportions for this project shall be accurately recorded and furnished to the Engineer at the completion of the project.
 - B. Job Mock-Up: Construct on the job-site a mock-up of 10-foot by 10-foot concrete slab. Mock-up shall represent the final work in material, finish and texture. A separate mock-up shall be constructed for each color planned for the project. Leave the accepted mock-up in place until all pavement work is completed and accepted. For accurate color, the quantity of concrete mixed to produce the sample should not be less than 2 cubic yards (or not less than 1/3 the capacity of the mixing drum on the ready-mix truck) and should always be in full cubic yard increments. Excess material shall be discarded according to local regulations. Contractor may, at his own risk, use the planned overlooks as the job mock-up. If mock-up is not acceptable, it shall be removed at the contractor's expense.
 - C. Construct mock-up using processes and techniques intended for use on permanent work, including curing procedures. Include samples of control, construction, and expansion joints in sample panels. Mock-up shall be produced by the individual workers who will perform the work for the Project.

- D. Samples: Submit samples of color to the Engineer for approval prior to building a mock-up section.
- E. Test Reports: Submit certified test reports of pigment showing compliance with ACI 303.1, ASTM C 979, ASTM C494 and AASHTO M194. Color pigments shall be light fast, wettable, weather resistant, ultra-violet resistant, alkali resistant, and free of deleterious fillers and extenders.
- F. Manufacturer Qualifications: Manufacturer shall have minimum 5 years experience in the production of specified products.
- G. Installer Qualifications: An installer shall have minimum 5 years experience with work of similar scope and quality, and shall be able to provide list of 3 projects similar in scope to this project which have been completed within the local area to prove qualifications.

097001.02 MATERIAL

- 2.01 Integral Color: The integral color shall be Tan and Dark Gray by L.M. Scofield Company, Solomon Grind-Chem Service, Inc., Chem Masters Chemtint, or approved equal. The integral color admixture shall be added to the concrete mix at the batch plant as per manufacturer's recommendation. Exact color determination will be from manufacturer's standard color palate and from Job Mock-Up.
- 2.02 Sealant: Sealant shall comply with ASTM C 309 as a non-yellowing, curing membrane in accordance with the manufacturer's recommendations.

097001.03 CONSTRUCTION

- 3.01 A pre-pour conference shall be scheduled a minimum of 14 days prior to first Colored Concrete Pavement placement. Conference shall be conducted by Contractor. Contractor shall insure representatives of the Paving Contractor, Concrete Supplier, Aggregate Supplier, Admixture Supplier, City of Waterloo and AECOM are present at meeting.

Purpose of meeting is to:

- Discuss concrete mix proportions to insure compliance with specifications and admixture supplier requirements.
- Discuss contractor's paving sequence and operations
- Discuss finishing work, including jointing, surface texturing, release agent and sealing operations.
- Discuss any other issues needing resolution prior to paving to insure the quality of the final pavement product.

- 3.02 Construction and Installation:

- A. Concrete placement shall be in accordance with Section 2301 of the Standard Specifications and manufacturer's recommendations.
- B. Integrally Colored Concrete Environmental Requirements:
 - 1. Schedule placement to minimize exposure to wind and hot sun before curing materials are applied.
 - 2. Avoid placing concrete if rain, snow, or frost is forecast within 24-hours. Protect fresh concrete from moisture and freezing.
 - 3. Comply with professional practices described in ACI 305R and ACI 306R.

- C. Schedule delivery of concrete to provide consistent mix times from batching until discharge. Mix times shall meet manufacturer's written recommendations.
- D. Do not add water to concrete mix in field.
- E. Admixture: The Engineer must approve the use of admixtures. Calcium chloride admixture is not allowed.
- F. Integral Mix: Mix color pigment into the designated mix at the rate recommended by the manufacturer to produce the specified color.
- G. Slump shall be maintained at 3 to 4 inches. Addition of a super-plasticizer is acceptable to improve the placing and finishing of concrete. While concrete is still in the plastic stage of set, tooling and finishing shall be done to make the desired surface.
- H. Tooled joints: Joints shall be made with a 1/2 inch deep parting tool to produce straight lines of uniform depth in the patterns as detailed in the plans.
- I. Surface finish: The entire surface of the colored, tooled concrete shall be textured using a system of pattern-matched tools to provide a 'fractured slate' appearance. The surface texturing shall be done in such a manner as to provide a uniform appearance over the entire paved area. All work shall be done in accordance with manufacturer's guidelines. The use of a release agent prior to texturing the concrete is recommended. Excess release material shall be removed in accordance with the manufacturer's instructions.
- J. Cleaning: Prior to sealing, the entire surface of the pavement shall be thoroughly cleaned to insure no foreign material is sealed with the pavement. This may require the use of hand tools, detergent, power-washing and/or other tools as needed to insure the surface is clear of all debris, effervescence, concrete dust, and all other materials.
- K. Curing: The use of white-pigmented cure compounds, burlap, plastic sheeting, or fogging with water is not allowed. Sealant shall be specifically recommended by manufacturer of integral color admixture for use with their product. Sealant shall be applied in a fine spray to form a continuous, uniform film on the surface as soon as the free water has appreciably disappeared. Surface shall be protected from construction damage, dirt, debris, oil, etc. by covering with waterproof paper for a period of 24 hours. A second sealant application shall then be made and protected from foot traffic for a minimum of 8 hours and vehicular traffic for a minimum of 7 days.
- L. The Contractor shall patch and repair all defects in the surface.

097001.04 MEASUREMENT AND PAYMENT

- 4.01 Method of Measurement: The quantity of colored, tooled PCC pavement constructed will be computed in square yards by the Engineer from measurements of the finished surface. Deductions will not be made for fixtures having an area of 1 square yard or less. Initial mock-up areas will be measured and included for payment. If planned overlooks are used as job mock-up areas, these areas will only be measured once.
- 4.02 Basis of Payment: For the area of colored, tooled PCC pavement measured, the Contractor will be paid the contract unit price per square yard. This payment shall be full compensation for all equipment, tools, labor and materials necessary to construct colored, tooled PCC pavement as specified in the contract documents. Removal of mock-up will not be measured or paid for separately, but shall be considered incidental to this bid item.