



**SPECIAL PROVISIONS  
FOR  
COLORED CONCRETE**

**Johnson County  
RT-C052(105)--9H-52  
NRT-C052(111)--9G-52**

**Effective Date  
October 17, 2017**

**THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.**

**PART 1 – GENERAL**

**1.1 Description**

Contractor shall furnish and install colored concrete paving at locations shown on the plans with either:

- Type 1 treatment: integrally colored Portland cement concrete paving
- Type 2 treatment: integrally colored, color surface hardener, texture and release agent color.

Concrete color and pattern shall be as noted in this specification. Follow Section 2511 of the Standard Specifications for construction and materials. Certified plant inspection is required for this bid item.

The work includes finishing and constructing color concrete paving (flatwork) including layout, subgrade preparation, granular base, forming, color concrete with pattern finish, color hardener release agent color, specialty animal print patterns, expansion joints, control joints, expansion joint material, color joint sealer, and all other incidental materials and labor required for color paving at the locations and grades on the construction drawings and as specified herein.

**1.2 References**

**A. American Concrete Institute (ACI):**

1. ACI 301 "Specification for Structural Concrete for Buildings."
2. ACI 302 IR "Recommended Practice for Concrete Floor and Slab Construction."
3. ACI 303.1 "Standard Specification for Cast-In-Place Architectural Concrete."
4. ACI 304 "Recommended Practice for Measuring, Mixing, Transporting and Placing of Concrete."

5. ACI 305R "Recommended Practice for Hot Weather Concreting."
  6. ACI 306R "Recommended Practice for Cold Weather Concreting."
- B.** American Society for Testing Materials (ASTM):
1. ASTM C309 "Liquid Membrane-Forming Compounds for Curing Concrete."
  2. ASTM C494 "Standard Specification for Chemical Admixtures for Concrete."
  3. ASTM C979 "Standard Specification for Pigments for Integrally Colored Concrete."
- C.** American Association of State Highway and Transportation Officials (AASHTO):
1. AASHTO M194 "Chemical Admixtures."
- D.** Iowa DOT Standard Specifications for Highway and Bridge Construction (current edition):
1. Article 2301.04, Portland Cement Concrete Pavement.
  2. Section 2511, Removal and Construction of Sidewalks and Recreational Trails.
  3. Section 2111 Granular Subbase
  4. Section 2109 Natural Subgrade

### **1.3 Submittals**

- A.** Product Data: Submit manufacturer's complete technical data sheets for the following:
1. Colored admixture.
  2. Color Hardener
  3. Powder antiquing release agent.
  4. Seamless texture mat
  5. Specialty Imprinting/Texturing tool stamps.
  6. Granular Base
- B.** Design Mixes: For each type of integrally colored concrete.
- C.** Samples for Initial Selection: Manufacturer's color charts showing full range of colors available.
- D.** Qualification Data: For firms indicated in "Quality Assurance" Article, including list of completed projects.

### **1.4 Quality Assurance.**

- A.** Manufacturer Qualifications: Manufacturer with 10 years experience in production of specified products.
- B.** Installer Qualifications: An installer with 5 years' experience with work of similar scope and equality.
- C.** Comply with the requirements of ACI 301.
- D.** Obtain each specified material from same source and maintain high degree of consistency in workmanship throughout Project.
- E.** Notification of manufacturer's authorized representative shall be given at least 1 week before start of Work.
- F.** Colored Concrete Field Samples:

1. At location on project shown on plans.
2. For accurate color, the quantity of concrete mixed to produce the sample should not be less than 3 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.
3. Construct sample panel using processes and techniques intended for use on permanent work, including curing procedures. 30 days will be needed for determination of final color of field sample. Include samples of control, construction, and expansion joints in sample panels. Field sample shall be produced by the individual workers who will perform the work for the project.
4. Retain samples of cements, sands, aggregates and color additives used in mockup for comparison with materials used in remaining work.
5. Accepted field sample provides visual standard for work of section.
6. Field sample shall remain through completion of the work for use as a quality standard for finished work.
7. Remove field sample when directed.
8. Comply with Sections 2111 and 2109 of the Standard Specifications.

G. Comply with Section 4122 of the Standard Specifications for granular base.

#### **1.5 Delivery, Storage and Handling.**

- A. All colored concrete materials: Comply with manufacturer's instructions. Deliver colored concrete products in original, unopened packaging. Store in dry conditions.
- B. Granular Base: Comply with Article 2111.03 of the Standard Specifications.

#### **1.6 Project Conditions.**

- A. 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.
- B. Schedule delivery of concrete to provide consistent mix times from batching until discharge. Mix times shall meet manufacturer's written recommendations.

#### **1.7 Pre-Job Conference.**

- A. One week prior to placement of integrally colored concrete, a meeting shall be held to discuss the Project and application methods.
- B. It is suggested that the Engineer, General Contractor, Construction Manager, Subcontractor, Ready-Mix Concrete Representative, and a Manufacturer's Representative be present.

### **PART 2 –PRODUCTS.**

#### **2.1 Acceptable Manufacturers:**

- A. L.M. SCOFIELD COMPANY, Local contact: Central Division Office phone: (630)377-5959.

- B. BRICK FORM, A DIVISION OF SOLOMON COLORS, INC., P. O. Box 8288, Springfield, IL 62791 phone (800)624-0261.
- C. BUTTERFIELD COLOR, 625 W. Illinois Ave., Aurora, IL phone: (800)282-3388.

## 2.2 Materials.

- A. Colored Admixture for Integrally Colored Concrete:
  - 1. Admixture shall be a colored, water-reducing, admixture containing no calcium chloride with coloring agents that are lime proof and UV resistant.
  - 2. Colored admixture shall conform to the requirements of ACI 303.1, ASTM C979, ASTM C494, and AASHTO M194.
  - 3. Admixture shall be non-fading finely-ground synthetic mineral-oxide coloring pigment and water reducing wetting agent.
  - 4. Color: "Autumn Oak" (Perma-cast Uni-mix) as produced by Butterfield Color, Aurora, Illinois, or approved equivalent.
- B. Colored Dry-Shake Hardener: Factory packaged dry combination of Portland Cement, graded quartz aggregate, coloring pigments, and plasticizing admixture conforming to: ASTM C979 for color stability.
  - 1. Color: "Autumn Oak" (Perma-cast Uni-mix) as produced by Butterfield Color, Aurora, Illinois, or approved equivalent.
- C. Texture Mat: Textured skin mats to be semi-rigid polyurethane with projected texture and ridged underside capable of imprinting texture to plastic concrete.
  - 1. Pattern: "Italian Slate" By Butterfield, Aurora, Illinois or approved equivalent.
  - 2. Specialty Paving Patterns: "Coyote Paw" Set of Four; "Deer Hoof" (Set of Four); "Gray Wolf Paw Print" (Set of Two).
- D. Powder Antiquing Release Agent:
  - 1. Release agent to be non-fading finely ground, streak free, colored powder that facilitates release of stamps and imparts an accent color.
  - 2. Powder antiquing release agent shall be compatible with integral color additives.
  - 3. Color: "Walnut" By Butterfield, Aurora, Illinois or approved equivalent.
- E. SUBSTITUTIONS: The use of products other than those specified will be considered providing the Contractor requests its use in writing within 14-days prior to bid date. This request shall be accompanied by the following:
  - 1. A certificate of compliance from the material manufacturer stating that proposed products meet or exceed requirements of this Section, including standards ACI 303.1, ASTM C979, ASTM C494 and AASHTO M194.
  - 2. Documented proof that proposed materials have a 10 year proven record of performance for staining concrete substrates, confirmed by at least five local projects that Engineer can examine.

## 2.3 Colors and Patterns.

- A. Cement: Color shall be gray.
- B. Sand: Color shall be locally available natural sand.
- C. Aggregate: Concrete producer's standard aggregate complying with specifications.

- D. Colored Admixture: "Autumn Oak" provided by Butterfield, Aurora, Illinois or by another acceptable manufacturer with matching color.
- E. Stencil Pattern: "Italian Slate" as provided by Butterfield or pattern to match by another acceptable manufacturer.
- F. Powder Antiquing Release Agent: "Walnut" as provided by Butterfield, Aurora, Illinois or by another acceptable manufacturer.

#### **2.4 Concrete Mix Design.**

- A. Minimum Cement Content: 6 sacks per cubic yard of concrete.
- B. Slump of concrete shall be consistent throughout project at 4 inches or less. At no time shall slump exceed 5 inches. Do not add calcium chloride to mix.
- D. Supplemental admixtures shall not be used unless approved by manufacturer.
- E. Do not add water to the mix in the field.
- F. Add colored admixture to the mix according to manufacturer's written instructions in premeasured bags, not by weight of cement content.

### **PART 3 EXECUTION.**

#### **3.1 Installation.**

- A. Prepare subgrade according to Section 2109 of the Standard Specifications.
- B. Examine subgrade and sub base for compliance. Notify Engineer if conditions are non-compliant.
- C. Construct granular base according to Section 2111 of the Standard Specifications.
- B. Do not add water to the mix in the field.
- C. Formwork shall be laid in straight sections except for curved paving areas, which will be smooth curves as shown on the plans.
- D. Surfaces shall be finished uniformly with the following finish:
  - 1. Apply color release agent as a bond breaker between the stamp mats and the perma-cast shake-on color hardener in accordance with manufacturer's recommendations.
  - 2. Stamped/Imprinted: Apply pattern according to tool manufacturer's instructions. While concrete is plastic, accurately align mats in sequence and uniformly press into concrete to produce imprint pattern, texture, and depth of imprint as recommended by manufacturer. Touch-up pattern and finish edges with hand tools as necessary.
  - 3. Remove excess/un-embedded color release agent in accordance with manufacturer's recommendations.
  - 4. Saw-cut joints (within 12 hours of placement) and install expansion joints where shown on the plans. Remove irregularities from outer edges of concrete (adjacent to forms), but do not round.

#### **3.2 Tolerances.**

- A. Minor variations in appearance of colored concrete, which are similar to natural variations in color and appearance of uncolored concrete, are acceptable.

- B. Finish surface of color concrete will be as shown on the plans within 1/8 inch.
- C. Granular Subbase: Comply with Section 2111 of the Standard Specifications.

**3.3 Repairs and Protection.**

- A. Protect color concrete from damage until date of Substantial Completion.
- B. Repair damaged color concrete in accordance with manufacturer's instructions.

**PART 4 METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

- 4.1** Method of Measurement shall be made based upon the number of square yards of Type 1 – Colored, and Type 2 Colored and Textured Concrete Pavement furnished and installed.
- 4.2** Basis of Payment shall be at the unit price per square yard for the colored pavement areas constructed. Work connected with construction of subgrade for pavement and granular base will not be measured for payment. It is incidental to Type 1 Integrally Colored PCC Paving and Type 2 Integrally Colored and Textured PCC Paving.