



**SPECIAL PROVISIONS
FOR
COLORED CONCRETE**

**Pottawattamie County
IM-NHS-029-3(102)48--03-78**

**Effective Date
December 16, 2014**

THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

120234.01 DESCRIPTION.

A. Summary.

Specification includes 4 inch, 6 inch, and 9 inch colored concrete.

B. Action Submittals.

1. **Product Data:** For each concrete admixtures, concrete curing compound and sealers, joint sealants, and joint filler.
2. **Concrete Mix Design** submittal will include the following:
 - a. A list of each mix prepared with the anticipated use for each. Each different combination of admixtures is to be identified as a separate mix.
 - b. Justification for concrete strength. Submit laboratory strength tests or field experience data for each mix in accordance with ACI 301.
3. **Mock Ups.**
Provide one 8 foot long by 2 foot wide section of 4 inch red concrete paving with alternating finishes in 2 foot by 2 foot pattern as shown on contract documents for inspection and approval by Engineer prior to proceeding.

120234.02 MATERIALS.

- A.** Item will include construction of colored concrete as detailed on the contract documents. Concrete will meet the following requirements:
- Concrete Class A or B
 - Minimum 28 day Compressive Strength (field) 4,000 psi
 - Minimum Cementitious Materials Contents 610 lb/C.Y.

- Air Content 5-8%
- Maximum Water/Cement Ratio 0.45
- Maximum Slump (hand placement) 4 inches
- Coarse Aggregate, Maximum Coarse Aggregate Size: 1 inch
- Coarse Aggregate (Maximum % of Total Aggregate), 30%
- Fine Aggregate, NDOR 47B (Maximum % of Total Aggregate), 90%
- Total percent of fly ash allowable by weight of cement plus fly ash, 20%.

- B.** Color concrete admixture color will match “Brick Red” as manufactured by Davis Colors (a division of Rockwood Pigments N.A. Tel: 188.356.4848). Color admixture will be manufactured by Davis Colors, L.M. Scofield, or Solomon Colors.
- C.** Cement: Type II, conforming to ASTM C150. Use only one brand and type for entire job.
- D.** Fly Ash: Class C or Class F only.
- E.** Aggregate will conform to ASTM C33. Aggregates will consist of clean, natural washed sand, well shaped, hard, durable particles. Aggregates will be 10% - 30% Coarse Aggregate and 70% - 90% Fine Aggregate conforming to the gradations listed below:

Fine Aggregate:

Sieve Size Percent Passing:

#16	45 – 70
#50	15 – 30
#100	3 – 8

Coarse Aggregate:

Sieve Size Percent Passing:

1”	100
3/4”	95 – 100
3/8”	40 – 50
No. 4	0 – 5

- F.** Water: Fresh, clean, potable concrete mixing water free of injurious amount of salts, oils, acids, alkalis, organic materials or other deleterious matter.
- G.** Air Entrainment: ASTM C260, Master Builders “MB-VR” or approved equal manufactured by BASF or Larsen Building Products.
- H.** Release Agent: Bomanite Release Agent, to be applied to all exposed surfaces, manufactured by Bomanite Corporation, Madera, CA; 559/673-2411 or equal manufactured by Advanced Surfaces Inc. or Bon Tool Co.
- I.** Curing Compound: Bomanite Color Cure, color: “Brick Red” manufactured by Bomanite Corporation, Madera, CA, 559/673-2411 or equal manufactured by L.M. Scofield Co, or Davis Colors.
- J.** Sealer: Bomanite Con-Shield manufactured by Bomanite Corporation, Madera, CA; 559/673-2411 or equal manufactured by Davis Colors or L.M. Scofield.
- K.** Reinforcing Bars: ASTM A615 Grade 40 or 60 deformed billet-steel bars, clean and free from rust, scale or coating that will reduce bonding.
- L.** Tie Wires: 18 gauge Minimum black annealed.

- M. Polypropylene Fiber Reinforcement: 100% virgin polypropylene fibrillated fibers containing no olofin materials.
- N. Pre-molded Joint Filler: ASTM D3575, resilient Polyethylene closed-cell backing for use in expansion joints in traffic-bearing substrates, compatible with sealant. Water absorption: .015% maximum. Material: Sonolastic Expansion Joint Filler as manufactured by Sonneborn or approved equal manufactured by Tremco, or Sika Corp.
- O. Joint Sealant will be colored polyurethane-base, one component elastomeric sealant complying with ASTM C 920 and Fed. Spec. TT-S-00230C, Class A Type II. Materials and Color: Sonneborn NP-1, "Redwood Tan" or equal manufactured by Tremco or Sika Corp.

120234.03 CONSTRUCTION.

- A. Subbase for Concrete paving will be installed per contract documents.
- B. Forms will be of wood, metal, or other suitable material, and will extend for the full depth of the concrete. All forms will be straight, free from warp and of sufficient strength to resist the pressure of the concrete without springing. Bracing and staking of forms will be such that the forms remain in both horizontal and vertical alignment until their removal. A satisfactory slip-form method may be used. Use a strong flexible form edge on all curves so that concrete edges are smooth and continuous.
- C. Protections: Protect all adjacent curbs, structures and paving from contact with the color concrete through the use of tape and polyethylene sheet covers. Maintain these protections until all concrete has been sealed.
- D. Placing Concrete. The subbase will be moistened immediately prior to the placing of the concrete. The proportioning, mixing and placing of the concrete will be in accordance with the requirements for the class of concrete specified.
- E. Joints. Expansion joints will be sized and placed per Contract documents and placed at paving intersections, angled joints, and at intervals of not more than 30 feet and will be filled with full depth, preformed expansion joint filler and finished with 1/2 inch deep colored self leveling polyurethane sealant. The concrete paving will be divided into sections by control joints formed by a hand jointing tool. Control joints will be typically perpendicular to the outside edge of paving and spaced at intervals as shown on the contract documents.
- F. Pavement Finishing. The surface will be floated with a wooden or magnesium float. Alternate a smooth trowel finish with a medium texture broom finish for each 2 foot by 2 foot panel. No plastering of the surface will be permitted. All outside edges of the slab and all joints will be edged with a 1/4 inch radius edging tool unless otherwise noted on the contract documents.
- G. Expansion joints will be formed around all appurtenances such as manholes, utility poles, etc., extending into and through the paving and where new concrete meets existing curbs and paving. All expansion joints will be finished with 1/2 inch deep colored self-leveling polyurethane sealant.
- H. **Tolerances.**
 1. All concrete pavement will slope to drain a minimum of 1/8 inch per horizontal foot or 1%.
 2. Vertical alignment will not vary more than 1/4 inch in 10 horizontal feet from that shown on the contract documents.
 3. Horizontal alignment: edges will be straight and true, curved edges will be smooth and

continuous with no wavering or angled intersections of curves and tangents. Horizontal alignment and edges will not vary more than 1 inch from that shown on contract documents with no angles or indentations in edges and edges aligned at all joints.

4. No patching will be accepted to correct inconsistencies in poured in-place concrete.
 5. No surface depressions greater than 1/16 inch in depth will be accepted. Honeycombing with holes greater than 3/8 inch in diameter will not be accepted.
 6. Finish concrete surface elevation will not vary from proposed finish grade by more than 1/8 inch.
- I. Curing. Immediately upon completion of the finishing, color concrete will be cured by the use of specified curing compound. The method and details of curing will be subject to the approval of the Engineer. During the curing period all traffic, both pedestrian and vehicular, will be excluded.
 - J. Sealing: Apply specified surface sealer according to manufacturer's recommendations to all colored concrete pavement closely following manufacturer's recommendations. Do not over apply. Thoroughly soak concrete but do not allow sealer to "pond". Protect all adjacent curbs, pavement, lawns and planting areas during sealant application by covering with polyethylene film.

120234.04 METHOD OF MEASUREMENT.

Measurement for Red Concrete will be at the contract unit price for each thickness required, per square foot of colored concrete supplied and installed.

120234.05 BASIS OF PAYMENT.

Payment for Red Concrete, of the thickness specified, will be made according to the contract unit price and will constitute full compensation for all base preparation, formwork, jointing and reinforcement, placement, finishing, curing, and sealing red concrete paving.