SP-236052
(New)

SPECIAL PROVISIONS
FOR
COLORED, STAMPED CONCRETE SIDEWALK

Scott County
HDP-4252(606)--71-82

Effective Date
January 21, 2026

THE STANDARD SPECIFICATIONS, SERIES 2023, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

236052.01 DESCRIPTION.

A. Summary.
Section includes cast-in-place 4 inch Portland cement concrete decorative sidewalk, including mixing, placing, finishing, and coring.

B. Action Submittals.

1. **Product Data.**
   For each type of product indicated.

2. **Steel Reinforcement Shop Drawings.**
   Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

3. **Construction Joint Layout.**
   Indicate proposed construction joints required to construct the sidewalk. Location of construction joints is subject to approval of the Engineer.

C. Informational Submittals.

1. **Qualification Data.**
   For Installer manufacturer testing agency.

2. **Material Certificates.**
   For each of the following, signed by manufacturers:
   - **a.** Cementitious materials.
   - **b.** Admixtures.
   - **c.** Form materials and form-release agents.
   - **d.** Bonding agents.

e. Adhesives.
f. Repair materials.
g. Concrete stamp pattern.

D. Quality Assurance.

1. Installer Qualifications.
A qualified installer who employs on project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

2. Manufacturer Qualifications.
A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

3. Source Limitations.
Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

4. Concrete Testing Service.
Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

5. Preinstallation Conference.
Conduct conference at project site.
a. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
1) Contractor's superintendent.
2) Independent testing agency responsible for concrete design mixtures.
3) Ready-mix concrete manufacturer.
4) Concrete Contractor.
b. Review special inspection and testing and inspecting agency procedures for field quality control, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, vapor-retarder installation, steel reinforcement installation, and concrete protection.

E. Delivery, Storage, And Handling.
Deliver, store, and handle steel reinforcement to prevent bending and damage.

236052.02 MATERIALS.

A. Form-Facing Materials.

1. Smooth-Formed Finished Concrete.
a. Form-facing panels that will provide continuous, true, and smooth concrete surfaces.
b. Furnish in largest practicable sizes to minimize number of joints.
c. Plywood, metal, or other approved panel materials.

2. Rough-Formed Finished Concrete.
a. Plywood, lumber, metal, or another approved material.
b. Provide lumber dressed on at least two edges and one side for tight fit.

3. Chamfer Strips.
Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

4. Form-Release Agent.
a. Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

b. Formulate form-release agent with rust inhibitor for steel form-facing materials.

5. Form Ties.
a. Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
b. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.

B. Steel Reinforcement

1. Recycled Content of Steel Products.
Postconsumer recycled content plus one-half of pre- consumer recycled content not less than 60%.

2. Reinforcing Bars.
ASTM A 615/A 615M, Grade 60, deformed.

3. Low-Alloy-Steel Reinforcing Bars.
ASTM A 706/A 706M, deformed.

4. Plain-Steel Wire.
ASTM A 82/A 82M, as drawn.

5. Welded Wire Reinforcement.
ASTM A 1064/A 1064M-18a, plain, fabricated from as-drawn steel wire into flat sheets.

C. Reinforcement Accessories

1. Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

2. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

3. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

D. Concrete Materials.

1. Cementitious Material.
Use the following cementitious materials, of the same type, brand, and source, throughout Project:
- **Portland Cement:** ASTM C 150, Type I/II, gray.
- **Fly Ash:** ASTM C 618, Class F or C.
- **Ground Granulated Blast-Furnace Slag:** ASTM C 989, Grade 100 or 120.

2. Normal-Weight Aggregates.
ASTM C 33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
a. Maximum Coarse Aggregate Size: 3/4 inch nominal.
b. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

3. Water.
ASTM C 94/C 94M and potable.

E. Admixtures.

1. **Air-Entraining Admixture.**
   ASTM C 260.

2. **Chemical Admixtures.**
   Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

   a. **Water-Reducing Admixture:** ASTM C 494/C 494M, Type A.
   b. **Retarding Admixture:** ASTM C 494/C 494M, Type B.
   c. **Water-Reducing and Retarding Admixture:** ASTM C 494/C 494M, Type D.
   d. **High-Range, Water-Reducing Admixture:** ASTM C 494/C 494M, Type F.
   e. **High-Range, Water-Reducing and Retarding Admixture:** ASTM C 494/C 494M, Type G.
   f. **Plasticizing and Retarding Admixture:** ASTM C 1017/C 1017M, Type II.

3. **Color.**
   a. Add color concrete admixture (Sika Chromix 6 or equal) at batch plant; minimum concrete batch size: 3 cubic yards in 1 cubic yard increments. (Pecan integral colored concrete with Walnut colored release; Ashlar cut stone pattern)
   b. Thoroughly clean mixer drum to assure absence of contaminants which may affect consistency of color.
   c. For colored stamped concrete, use an antique release agent hardener and color wash sealer (Proline or equal).

F. Curing Materials.

1. Protect fresh concrete from premature drying and excessively hot or cold temperatures; maintain minimal moisture loss at a relatively constant temperature above 55º F for a total of 7 days.

2. Protect concrete from excessive changes in temperature during curing period and at termination of curing process.

3. During periods of high temperatures (above 80º F), low humidity and high winds Contractor shall provide protection to prevent excessive drying of concrete during placement and curing in accordance with ACI 305R.

4. During finishing operation evaporation-retarding agent may be applied in accordance with manufacturer's recommendations to prevent plastic shrinkage cracking; depending on condition, application of evaporation-retarding agent may be required more than one more time during concrete finishing operation.

5. Mask or protect adjacent surfaces from over spray, spills, tracking and equipment contact; work area must be roped off and sections closed to traffic; surface should be divided into work sections using walls, joint lines or other stationary features as natural stopping points.

G. Related Materials.

1. **Bonding Agent.**
   ASTM C 1059/C 1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2. **Epoxy Bonding Adhesive.**
   ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows: Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

H. Concrete Mixtures, General.

1. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301. Use a qualified

independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

2. Cementitious Materials.
   Limit percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:
   a. **Fly Ash:** 25%.
   b. **Combined Fly Ash and Pozzolan:** 25%.
   c. **Ground Granulated Blast-Furnace Slag:** 35%.
   d. **Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag:** 60% Portland cement minimum, with fly ash or pozzolan not exceeding 25%.

3. Limit water-soluble, chloride-ion content in hardened concrete to 0.30% by weight of cement.

4. **Admixtures.**
   a. Use admixtures according to manufacturer's written instructions.
   b. Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
   c. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
   d. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

I. Concrete Mixtures for Building Elements.

Proportion normal-weight concrete mixture as follows:

- **Minimum Compressive Strength:** 4500 psi at 28 days.
- **Slump Limit:** 5 inches, ±1 inch.
- **Air Content**: 6%, ±1.5% at point of delivery for 3/4 inch nominal maximum aggregate size.

J. Concrete Mixing/Placing/Finishing.

1. All concrete admixtures to be incorporated into concrete at ready mix plant; water in excess of mix design requirements not permitted.

2. Concrete not placed within 90 minutes of initial mix will be rejected.

3. Protect existing concrete work exposed to view and other finishing materials from damage and staining resulting from concreting operations; handle concrete carefully to avoid dripping and spillage.

4. Place concrete as continuously as possible until pour is complete so no concrete is placed against concrete that has attained its initial set, except at authorized joints.

5. Place concrete as near as possible to its final position to prevent segregation; do not use vibrators to transport concrete.

6. Screed to uniform lines; finish surface with wood or cork float.

7. Use steel shod open grid roller drum to bring mortar to surface prior to imprinting concrete.

8. Apply color hardener at minimum rate of 60 pounds per 100 square feet; apply evenly in two applications from different directions as per manufacturer’s specifications; float after each application.

9. Apply release agent before imprinting tools are applied to concrete surface; apply release agent in accordance with manufacturer’s specifications.

10. Apply imprint patterns to surface of concrete while concrete is in plastic state; lay out to proper alignment and imprint to consistent depth; hand tool in areas where large stamping tools use is impractical; comply with tool manufacturer's recommendations.

11. Remove excess release agent with water prior to jointing.

12. Apply two coats of sealer 28 days after placement at rate of 300 to 400 square yards per gallon; apply second coat 4 to 24 hours after application of first coat.

13. Install control joints as directed by Engineer or shown on plan drawings. For this project the contractor is responsible for following Iowa DOT jointing standards for the stamped colored concrete area.

14. Upon completion of project, hand deliver imprint stamp to City for future use.

236052.03 CONSTRUCTION.

A. Formwork.

1. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

2. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows: Class A, 1/8 inch for smooth-formed finished surfaces.
- **a.** Class B, 1/4 inch for rough-formed finished surfaces.
- **b.** Class D, 1 inch for footings.
- **c.** Construct forms tight enough to prevent loss of concrete mortar.

3. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
- **a.** Install keyways, reglets, recesses, and the like, for easy removal.
- **b.** Do not use rust-stained steel form-facing material.

4. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

B. Embedded Items.

1. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

2. Install anchor rods, and embedded plates accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

C. Removing and Reusing Forms.

1. General.
Formwork for sides of beams, walls, columns, and similar parts of the work that does not support weight of concrete may be removed after cumulatively curing at not less than 50°F for 24 hours after placing concrete. Concrete must be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.

2. Clean and repair surfaces of forms to be reused in the work. Split, frayed, delaminated, or

otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

3. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Engineer.

D. Steel Reinforcement.

1. General.
   a. Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
   b. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

2. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

3. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.

4. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

5. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

E. Joints.

1. **General.**
   Construct joints true to line with faces perpendicular to surface plane of concrete.

2. **Construction Joints.**
   Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer.
   a. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Retain first subparagraph below if keyed joints are used. Keyed joints are used in walls and floors and between walls and slabs or footings. ACI 302.1R recommends limiting keyed joints to lightly trafficked floors because keys may fail and lips may chip after concrete shrinks.
   b. Form keyed joints as indicated. Embed keys at least 1 1/2 inches into concrete.
   c. Space vertical joints in walls at no more than 60 feet on center. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
   d. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
   e. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

3. **Doweled Joints.**
   Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

F. Concrete Placement.

1. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

2. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301 and with approval of the Engineer. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

3. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
   - **a.** Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
   - **b.** Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
   - **c.** Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

4. Deposit and consolidate concrete for slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
   - **a.** Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
   - **b.** Maintain reinforcement in position on chairs during concrete placement.
   - **c.** Screed slab surfaces with a straightedge and strike off to correct elevations.
   - **d.** Slope surfaces uniformly to drains where required.
   - **e.** Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

5. **Cold-Weather Placement.**
   Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
   - **a.** When average high and low temperature is expected to fall below 40°F for 3 successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
   - **b.** Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
   - **c.** Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

6. **Hot-Weather Placement.**
   Comply with ACI 301 and as follows:
   - **a.** Maintain concrete temperature below 90°F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
   - **b.** Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

G. Concrete Surface Repairs.

1. **Defective Concrete**
   Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.

2. **Patching Mortar.**
   Mix dry-pack patching mortar, consisting of one part Portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

3. **Repairing Formed Surfaces.**
   Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs,

rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

a. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

b. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.

c. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Engineer.

4. Repairing Unformed Surfaces.

Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

a. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.

b. After concrete has cured at least 14 days, correct high areas by grinding.

c. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.

d. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.

e. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.

f. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4 inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

g. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

5. Perform structural repairs of concrete, subject to Engineer's approval, using epoxy adhesive and patching mortar.

6. Repair materials and installation not specified above may be used, subject to Engineer's approval.

H. Field Quality Control.

1. **Testing and Inspecting.**
   Engineer will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

2. **Inspections.**
   - **a.** Steel reinforcement placement.
   - **b.** Verification of use of required design mixture.
   - **c.** Concrete placement, including conveying and depositing.
   - **d.** Curing procedures and maintenance of curing temperature.
   - **e.** Verification of concrete strength before removal of shores and forms from beams and slabs.

3. **Concrete Tests.**
   Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
   - **a. Testing Frequency.**
     Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cubic yards, but less than 25 cubic yards, plus one set for each additional 50 cubic yards or fraction thereof.
   - **b. Testing Frequency.**
     Obtain at least one composite sample for each 100 cubic yards or fraction thereof of each concrete mixture placed each day. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
   - **c. Slump.**
     ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
   - **d. Air Content.**
     ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
   - **e. Concrete Temperature.**
     ASTM C 1064/C 1064M; one test hourly when air temperature is 40°F and below and when 80°F and above, and one test for each composite sample.
   - **f. Compression Test Specimens.**
     ASTM C 31/C 31M. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
   - **g. Compressive-Strength Tests.**
     ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
     - **1)** Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
     - **2)** A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
   - **h.** When strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
   - **i.** Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
   - **j.** Test results shall be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7 and 28 day tests.

k. Nondestructive Testing.
Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.

l. Additional Tests.
Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Engineer.

m. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

n. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the contract documents.

236052.04 METHOD OF MEASUREMENT.
Payment will be for the measured quantity at the contract unit price for the area completed and accepted.

236052.05 BASIS OF PAYMENT.
Payment will be made at the unit bid price per square yard of Colored, Stamped Concrete Sidewalk as shown on the plans. This payment shall be full compensation for, fabrication, furnishing material, labor, equipment necessary, and installation of items.