

SECTION 03 35 00

CONCRETE FINISHES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. The work in this Section shall be performed in accordance with the Drawings and the Provisions of Bid and Contract Documents, and with the applicable provisions of SSDPWSF, Section 800 - Portland Cement Concrete and Related Materials and Work, and as amended by the following Special Provision.

1.02 DESCRIPTION

- A. Work Included: Provide all material, labor, equipment and services necessary for the finishing concrete work at various locations indicated to match surrounding, as shown on the Drawings and as specified herein. The work includes but is not limited to:
 - 1. Placement and finishing of concrete.
 - 2. Concrete curing.
 - 3. Patching and repair.
 - 4. Provide and execute with surrounding materials and coloring
 - 5. Provide a minimum 36" sq. mock up for each finish type, see related sections

1.03 RELATED SECTIONS

- A. Section 32 13 13 - Concrete Paving

1.03 QUALITY ASSURANCE

- A. Allowable Tolerance: All work shall be of the exact size, dimensions locations and lines shown on the Plans unless otherwise specified or shown on the Drawings, permissible deviations shall be those shown in ACI 347.
 - 1. Maximum variation above or below a true plane shall be as follows, as determined by a 10 foot straightedge placed anywhere on the plane surface, in any direction:
 - a. Light Broom Finish Concrete: 1/8 inch in 10 feet.
 - 2. All concrete - pavement and steps shall be free of depressions; puddling will not be allowed to occur.
- B. Installers Qualifications: Qualified and competent workmen with a minimum five years work experience of same paving type installation, and placement of colored concrete shall work on the job.

- C. Manufacturers Qualifications: The Product Manufacturer and Concrete Batch Production Manager shall have a minimum of five years experience in the production and mixing of integral concrete color admixture systems.
- D. The Contractor shall provide the services of an experienced and authorized representative from the manufacturer of the integral concrete color admixture system. The Representative shall visit the batching plant and site of the Work to inspect, check and make recommendations as needed, to the Project Engineer through the City Representative. In each case the Contractor shall arrange to have the representative revisit the job site as often as necessary until any and all problems are corrected.

1.04 REFERENCE STANDARDS:

- A. American Concrete Institute, (ACI)
 - 1. ACI 347 - "Recommended Practice for Concrete Form work"
 - 2. ACI 305R - "Hot Weather and ACI306R - "Cold Weather"
- B. Portland Cement Association (PCA)
 - 1. PCA publication, "Color, Texture in Architectural Concrete", published in 1980. Library of Congress catalog # 80-56340.
- C. American Society of Testing Materials (ASTM)
 - 1. ASTM - 156 "Standard Test Method for Water Retention by Concrete Curing Materials."
 - 2. ASTM - C979 "Standard Specification for Pigments for Integrally Colored Concrete."
 - 3. ASTM - C494 "Specification for Chemical Admixture for Concrete."

1.05 SUBMITTALS

- A. General: Submittals to be in accordance with the requirements of Section 01300-Submittals.
- B. Samples:
 - 1. General: Samples shall provide a full range of workmanship, color, and texture proposed for the job to include: same type of materials, retarders, curing compounds, and other curing/finishing methods. Sample panels shall be prepared as many times as required to obtain approval and acceptance from the City Representative. Submit the following items.
 - 2. Sidewalk Pavement: Submit two concrete panels. Each panel shall be 3 feet-0 inch square.
Color = Match existing
Finish texture = light broom

3. Curbs, Gutters and Curb Ramps: Submit two concrete panels. Each panel shall be 1 foot-6 inch square.

Color = CCSF Standard or per specs.
Finish texture = trowel finish
 4. Aggregates to match existing paving:
- D. Product Data: Submit six (6) copies of manufacturer's literature, specifications, applications, and installation instructions for:
1. Joint materials and systems.
 2. Admixtures - integral color systems
 3. Slip sheets
 4. Curing compounds
 5. Other materials that are integral to the final color, texture and finish of exposed concrete work.
- E. Test Reports: Submit six (6) copies of laboratory and certification report for the integral concrete color admixture system. Report to certify that product (s) conforms to ASTM testing. All testing laboratories are subject to approval by Project Engineer through the City Representative.
- F. Certification Reports: Submit six (6) copies of the certification report prepared by the manufacturer of the integral concrete color admixture system. Report to confirm that the mixing, packaging, of the color admixture and that the batching and placement are in accordance with manufactures recommendations.

1.07 MOCK-UP

- A. General: Contractor to construct at full scale "mock-ups" of concrete work, as specified herein. The "mock-ups" shall be representative of all work necessary to complete the job, including cleaning and curing agents, and will be reviewed at the end of specified curing time for all concrete work.
- B. Sidewalk paving mock -up: The mock-up is to be no less than 36 square inches and the installation is to include, but is not limited to the following:
1. Concrete depths per Roadway Drawings
 2. Joints: control, - score lines, - expansion, - keyed per Details
 3. Aggregates and Sparkle grain finishers.
 4. Color: per approved and accepted sample.
 5. Finish: Light broom finish, per approved and accepted sample.
 6. Curb ramp: one at full size
 7. Curbs, concrete and granite, 3 linear feet at width specified.
- C. The "mock-ups" shall be prepared as many as three (3) times as necessary each to obtain approval from the City Representative.

- D. The "mock-ups", as reviewed and accepted by the City Representative, will remain on site until the entire Contract is complete, and will become the standards to which the remainder of material furnished on the job shall conform.

1.08 MAINTENANCE

- A. The Contractor shall provide the following:
 - 1. Concrete design mix indicating proportions of aggregate, sand, water, reinforcing and efflorescent reducing admixtures, and integral color admixtures.
 - 2. Product number and manufacturer's address and phone number for all concrete admixtures.

1.09 JOB CONDITIONS

- A. Hot weather: Comply with the recommended practice of ACI 305R and the requirements specified herein.
- B. Cold Weather: Comply with the recommended practice of ACI 306R and the requirements specified herein.

1.10 WARRANTY

- A. The Contractor shall furnish a one year Warranty for all work covered by this Section per the requirements of Section 01 78 36.

PART 2 - PRODUCTS

2.01 PRODUCTS

- A. Integral Color and Curing Compounds:
- B. Match existing. Provide mockup to match surrounding existing paving.
 - 1. Furnish proprietary materials in unopened manufacturer's standard containers with original labels showing: quantity, analysis where applicable, and name of manufacturer. Color admixture shall comply with the requirements of ASTM C-979-82. Calcium chloride shall not be permitted in the mix.
 - 2. Integral color shall be pure, concentrated color pigments containing no fillers, adulterants or admixtures. Colors are manufactured by L.M. Scofield Company (800) 800-9900 or equal:

- a. Concrete Paving: Color to match existing paving.
- 3. Curing compound shall be Color Seal II as manufactured by Davis Color (800)356-4848 or approved equal.
- C. Curing Compounds for non colored concrete:
 - 1. Type 1, clear water based resin type, free of wax, grease or other substances deleterious to materials applied to concrete in accordance with ASTM C309.
 - 2. Curing compound shall not discolor concrete or effect bonding or other finishes applied thereof.
 - 3. Curing compound shall restrict loss of water to not more than 0.500 grams per sq. cm. of surface when tested per ASTM C156.
- D. Expansion Joint Filler:
 - 1. Pre-molded bituminous material, non-extruding, conforming to ASTM D 944: thickness as shown on the Drawings.
 - 2. Color and type as selected and approved by City Representative.
 - 3. As manufactured by S.R. Meadows, Inc.; National Expansion Joint Co.; Celotex Corporation; or equal.
- E. Backer Rod:
 - 1. Extruded closed cell polyethylene foam rod.
 - 2. ICEL backer rod as manufactured by Industrial Systems Dept., Plastic Products Group of Hercules Inc., Middletown, Delaware; Ethafoma SB or as manufactured by Dow Chemical Co. or equal.
- F. Elastomeric Joint Sealant:
 - 1. Non-sag 1 part polyurethane
 - 2. Color of sealant to match color of the joint mortar.
 - 3. Lithoseal Trafficalk 3G as manufactured by L.M. Scolfield, (415) 255-2728 or Sikaflex 1a as manufactured by Sika Chemical Co. Lyndhurst, NJ or equal.

PART 3 - EXECUTION

3.01 CONCRETE MIX

- A. General: In accordance with Sections 204.01 and 800 of SSDPWSF.
- B. Integral Color: In accordance to manufacturer's recommendations.

3.02 FINISHING CONCRETE

- A. All exposed concrete surfaces shall have Class 1 Surface Finish in accordance with SSDPWSF SECTION 210.06, 204.06, 411.10, and 411.11 similar with exceptions as noted herein:
 - 1. Slope. All exposed surfaces shall be sloped for drainage.

3.03 FINISHES

- A. General: Contractor is to produce finishes in accordance with Drawings, and as specified herein:
- B. Match existing. Provide mockup to match surrounding existing paving.

3.04 JOINTS AND EDGES

- A. General:
 - 1. Construct joints in accordance with Drawings and approved shop drawings. See SSDPWSF SECTION 210.07, for reference only. Joint character shall match that of approved Mock-up.
 - 2. Joints shall be made complete as shown; crossing joints shall physically intersect, and joints extending to vertical surfaces shall be fully made. If portions of joints cannot be completely executed with use of customary tools, set strips of metal or sealed wood into plastic concrete, and carefully remove after concrete has hardened. Align manually made joints carefully with those portions made by inserts.
- B. Expansion Joints and Edging: Provide expansion joints at the location and intervals as shown on the approved shop Drawings, and at all locations where paving abuts any vertical surface such as: buildings, walls, and other structures.
 - 1. Place approved joint material with top edge 1/4 inch below the paved surface, and secure in place to prevent movement.
 - 2. Form joint and other edges in the fresh concrete using an edging tool to provide a smooth uniform impression.
 - 3. Strike all edges before and after finishing.

4. After the curing period, clean expansion joints carefully and fill with approved joint compound, flush with the paved surface in such a manner as to avoid spilling onto paved surfaces.

C. Control Joints and Score Lines:

1. Construct for paved surfaces as shown on drawings and as herein specified.
2. Tooled Joints: Form joints in fresh concrete by grooving top portion with recommended cutting tool and finishing edges with a jointer.

3.05 CURING AND PROTECTION

- A. In accordance with SSDPWSF SECTION 800.16 - PROTECTING AND CURING CONCRETE with exceptions noted herein. See product section - curing compound.

3.06 DEFECTIVE CONCRETE AND REPAIRS

- A. General: In accordance with SSDPWSF SECTION 800.18 - REPAIRING IMPERFECT CONCRETE. Concrete shall be considered defective for the following reasons:
1. Failure of finished concrete profiles, and dimensional tolerances, to conform to the requirements and the allowable tolerances in this Section.
 2. Concrete showing cracks, rock pockets, voids, graffiti, spalls, or other visual defects.
 3. Failure of concrete finishes to match approved samples, as determined by the City Representative.
- B. All defective concrete shall be subject to removal and replacement by the Contractor, at his expense, unless it is determined by the CITY REPRESENTATIVE that it can be patched as specified below or that the location of this defective concrete is not detrimental to the function and the appearance of the project.
- C. Repairing and Patching: Immediately after removing forms, inspect all concrete surfaces and patch any pour joints, voids, rock pockets, toe holes, and other imperfections at once, but not until surfaces have first been examined by the CITY REPRESENTATIVE. Chip away defective areas to a depth of about one inch with the edges perpendicular to the surface. Use binding agent as required to ensure that patch will bond completely and permanently to concrete surface.

- D. Repair exterior exposed- formed concrete surfaces that contain defects, which adversely affect the appearance of the finish. Repaired surfaces must match adjacent concrete in form, texture, and color. Prepare test samples prior to repairing concrete for City Representative's approval. Remove and replace the concrete having defective surfaces if the defects cannot be repaired to the satisfaction of the City Representative. Surface defects, as such include: color and texture irregularities, cracks, spalls, graffiti, air bubbles, honey comb, rock pockets and holes left by tie rods and bolts, fins and other discoloration's that cannot be removed by cleaning.

3.07 CLEANUP

Clean up shall be performed as each portion of the work progresses. Refuse, excess dirt and sand shall be removed from the site, all walks and paving shall be broomed or washed down, and any damage sustained to the work of others shall be repaired and returned to its original new condition.

END OF SECTION