Section 033000
Site Concrete

PART 1 - GENERAL

1.01 General Requirements

A. The requirements set forth in the General Conditions shall be in addition to the standards provided herein.

B. The requirements set forth in the Supplemental Conditions shall be in addition to the standards provided herein.

C. The standards set forth in the City of Roseville Design and Construction Standards and the City of Roseville Parks Construction Standards, latest editions, shall be in addition to the standards provided herein.

1.02 Description

A. Furnish all labor, materials and equipment for the complete installation of all concrete work, flatwork and poured-in-place, including, but not limited to _____, as shown in the Plans and as specified herein.

1.03 References

A. CalTrans' Standard Specifications, latest edition.

B. Uniform Building Code (UBC) and California Administrative Code (Title 24), latest editions.

1.04 Quality Assurance

A. For all flatwork, the Contractor shall pour a six-foot by six-foot (6' x 6') sample of each type of finish specified for review and accepted by the Project Manager prior to pouring any concrete. The accepted samples shall remain on-site and intact until all concrete work has been completed. The quality of the concrete work shall be measured by the accepted samples.

B. During the course of construction, a qualified testing laboratory shall obtain samples as determined by the Inspector and conforming to federal and state codes and standards. Such costs shall be paid for by the City. Re-tests and removal of below acceptable strength concrete shall be borne by the Contractor. The Contractor shall cooperate with the testing during the course of obtaining such samples.

C. Variances in surface grades of more than 1/8", as measured by a straight edge ten feet (10') long, shall be corrected to the satisfaction of the Inspector. Remove all areas where standing water occurs, including any surface irregularities.

1.05 Handling and Storage

A. Comply with ATSM C-94, "Specifications for Ready Mix Concrete" for the batch, mix and transport of concrete.

B. Mix and deliver only the amount that will be poured immediately.

1.06 Record Drawings

A. The Contractor shall keep an accurate record of the as-built conditions of the site concrete. These records shall be updated daily and kept at the construction site. At any time, the Inspector may examine the conditions of the "as-builts" to ensure compliance of the above.

PART 2 - PRODUCTS

2.01 Mix

A. Mix shall be six (6) sack, Class A, a minimum of 3,000 psi with a twenty-eight (28) day comprehensive strength when tested in accordance with ASTM C-39. Submit concrete analysis for review and acceptance prior to placement of concrete.

2.02 Fiberglass Reinforcement

A. Include fibermesh in all concrete, except where noted. Polypropylene collated fibrillated fibers from Fibermesh Co., 4019 Industry Drive, Chattanooga, TN; or accepted equal.

2.03 Expansion Joints (Non-paved areas where vertical surfaces meet horizontal Surfaces).

A. Fiber expansion joint shall conform to ASTM -731 and shall be a non-extruding resilient filler. Filler shall have preserve attributes and high quality bituminous materials.

B. Apply elastomeric sealant, or accepted equal, over all expansion joints.

2.04 Concrete Forms

A. All forms shall be new at the start of the project and shall be construction grade Douglas Fir. Minimum size lumber shall be 2 x 6.

B. Radius bends shall be formed by spring steel forms or laminated boards, as required.

C. Plywood shall be 5/8", Class I, exterior grade as outlined in APA "Guide to Plywood Grades". Omit mill oiling treatment.

2.05 Coloring Agents

A. (Insert amount and color)

B. All colored concrete admixtures shall be intragrel.

2.06 Seeded Aggregate

A. Aggregate shall be clean, washed aggregate as selected. Provide samples of rock mixture.

PART 3 - EXECUTION

3.01 Poured-In-Place Concrete Forms

A. Concrete for hardscape or flatwork shall be placed on subgrade compacted to 95% relative compaction. Prior to placement of concrete, a soils compaction test must be performed by an accepted soils testing professional on a representative number of locations along the flatwork area. The City or project owner shall provide the initial test. The results of these tests must be available and meet acceptable levels prior to pouring. Re-tests and re-work of any area, as directed by the soils professional, shall be the responsibility of the Contractor.

B. Construct forms to conform to the shapes, dimensions and details shown on the Plans. All forms shall be true to lines, plumb, level and square.

C. Forms shall not leak, spread, shift or settle when concrete is placed.

D. All forms shall carry dead and live loads and shall not deflect more than 1/8" between supports after placement of concrete.

E. All forms shall be thoroughly soaked a minimum of twelve (12) hours prior to pouring of concrete. Forms shall be treated per manufacturer's recommendations.

F. Reuse of forms may be allowed at the discretion of the Inspector. Reused forms shall be cleaned and free of defects that would affect the final concrete finish.

G. Concrete footings shall be formed only when excavations slump or cave in. Over-excavate the trench or footing diameter to accommodate the forms' installation and removal. Apply water to moisten soil. Do not allow water to create mud or ponding.

3.02 Fiberglass Reinforcement

A. Install per manufacturer's instructions. Apply at the batch plant prior to delivery. Thoroughly mix fiber material to avoid "clumping".

3.03 Expansion and Score Joints (Non-paved areas where vertical elements meet horizontal paving)

A. Expansion joints shall be placed a maximum of twenty feet (20') on center alternating with score joints, unless otherwise noted on the Plans. This shall include vertical expansion joints on buildings, walls and/or planters. The corners of the paving shall be tooled at the expansion joints. Trim exposed fibers which protrude above or beyond the finish surface of paving or the finish surface of the wall.

B. Score joints shall be placed twenty feet (20') on center, alternating with the expansion joints, unless otherwise shown on the Plans. Score joints shall be one half inch (1/2") deep, straight and finished with rounded edges. Score joints shall not be wider than one quarter inch (1/4").

3.04 Control Joints for Concrete Paving

A. Control joints shall be one inch (1") deep, straight and finished with rounded edges. Control joints shall be placed (on-center) a distance equal to the width of the concrete walkway, unless otherwise shown on the Plans. For example a ten-foot wide walkway shall have control joint placed ten feet on center.

3.05 Admixtures

A. (Insert, if used)

3.06 Coloring Agent

A. (Insert, if used)

3.07 Placement of Concrete

A. Do not pour concrete in weather below 40 degrees F. or when temperatures are predicted to fall below freezing within 24 hours, except with prior authorization.

B. Concrete shall be transit mixed according to ASTM C-94. Limit the quantity of water to the required strength. Concrete shall be of a consistency that it flows slowly into the forms.

C. Mixing of concrete shall be continuous commencing from the time water is added to the mix until such time that the concrete is poured. All concrete shall be placed within an hour of the time when water is first added.

D. Concrete shall be deposited up to the finished height of the forms and up to the adjacent joint. No partial pours will be allowed. Excess material shall be dumped on-site and later removed by the Contractor.

E. Thoroughly compact the concrete manually spading and tamping concrete into all corners of the forms and by utilizing a high-speed mechanical vibrator. Retain a standby vibrator on-site during the course of concrete work. When utilizing the vibrator, take precautions to avoid impact on the forms.

F. After obtaining uniform compaction, screen tamper all flatwork surfaces, screed and bull float to ensure that large aggregates are pushed below the surface. When it is practical to work on the surface, wood float, steel trowel paving to a uniform surface.

G. Concrete elements shall not exceed the following tolerances:
   1. Linear: 1/8”
   2. Slab deviation: 1/8” in 10’

3.08 Finishes

A. Finishes shall be as shown on the Plans and shall be consistent in quality throughout the project. Medium broom finished concrete shall have clean, deep score joints spaced appropriately. No visible cracks or discoloration will be accepted. Finishes on vertical surfaces shall be consistent throughout. Vertical expansion joints are spaced as identified on the plans and are smooth with the finish surfaces. All edges for flatwork and vertical surfaces shall be eased at a consistent radius.

B. Upon completion of float finishing, provide the final finish as follows:
   1. Medium Broom Finish: shall be accomplished by pulling a stiff bristle broom across a floated surface. The direction of the broom shall be perpendicular to the path of travel, unless otherwise shown on the Plans.
   2. Seeded Aggregate Finish: shall be accomplished by evenly distributing selected aggregate over the floated surface. Surface voids shall be minimum. Thoroughly embed aggregates just beneath the finished surface using a hand float. When the concrete has firmly set, brush and hose the surface with water to expose the aggregate to a uniform surface. Aggregate shall not be exposed more than 1/16", shall not be dislodged and shall not be unevenly exposed. Use of a pressurized nozzle for this work shall be prohibited.
   3. Acid Washed Finish: shall be accomplished after the slab has cured and no sooner than two (2) weeks after the concrete had been placed. Remove the cement film from the surface of the aggregate by an acid wash. Delaying the acid wash additional time is permissible. The slab shall be saturated with water, brushed free of standing water and washed with 5% to 10% solution muriatic acid. Several flushings with clear water should follow until the surface matches the accepted sample panel.
   4. Rock Salt Finish: shall be accomplished by (Insert, if used).
   5. Medium Sandblast Finish: shall be accomplished by (Insert, if used)
   6. Other (Insert, if used)

3.09 Removal of Forms

A. Forms shall remain in place as follows:
   1. For mass concrete work: 5 days.
   2. For other flatwork and other concrete work: 3 days.

B. Remove all bolts, nails, ties, wires, etc. a minimum of one inch (1") below the surface of the concrete. Remove imprints, irregularities or other such defects and patch as directed by the Inspector.

3.10 Curing and Protection

A. Allow adequate time for the concrete to cure. In temperatures above 75 degrees F., ensure that the concrete surface remains wet for a period of seven (7) days minimum.

B. Protect all concrete from damage during the curing period. This shall include damage from sun, rain, flowing water, frost, mechanical injury, tire tracks, footprints, oil stains, etc. Should such damage occur, Contractor shall take immediate action to repair damage to the satisfaction of the City.

3.11 Clean-Up

A. During the course of this work, the area shall be kept clear and free of debris as realistically possible. Upon completion of concrete work, completely remove from the site all used forms, hardware, spillage, rejected work and other materials.

B. Remove from site furnishing posts all concrete “slobber”. Re-touch posts as necessary for a clean finish.

END OF SECTION