UNIVERSITY OF SOUTHERN CALIFORNIA
HEALTH SCIENCES CAMPUS
NORRIS HEALTHCARE CENTER
LOS ANGELES, CALIFORNIA

SECTION 03 3130

LIGHTWEIGHT STRUCTURAL CONCRETE

PART ONE - GENERAL

1.1 DESCRIPTION

A. Furnish all labor, tools, materials and equipment necessary for lightweight concrete pads and slabs where shown on the Contract Drawings and as specified herein and as needed for a complete and proper installation. Materials used shall preferably be of 25% post consumer recycle content and fabricated or assembled within a 500 mile radius of the project site and including the following:

B. Related Work:

1. Work of this Section shall comply with the Contract Documents including, but not necessarily limited to, General Conditions and the General Requirements.
2. Cast-In-Place Concrete in Section 03 3000.
3. Metal Fabrications in Section 05 5000.
4. Plumbing and Mechanical in Division 15.
5. Electrical in Division 16.

1.2 QUALITY ASSURANCE

A. Contractor's Qualifications: Use adequate number of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Standards: Comply with "Specifications for Lightweight Structural Concrete" ASTM C330, except as may be modified hereinafter.

C. Inspection: Provide access for and cooperate with the Inspector and Testing Laboratory described in Section 01453 of the GENERAL CONDITIONS of these Specifications.

D. Mix Design: Do not commence placement of lightweight structural concrete until the mix design(s) has been reviewed and approved by the Engineer and all governmental agencies having jurisdiction and until copies of the approved mix design(s) are at the job-site and at the batch plant.

E. Codes and Regulations: Perform all work in strict accordance with applicable Codes and Regulations, especially meeting all Safety Standards and Regulations of CAL/OSHA, County and the California Building Code with the Los Angeles City Amendments. Provide additional measures, added materials and devices as may be needed as directed by the Engineer at no added cost to the City.

1.3 SUBMITTALS

A. General: Comply with conditions in the SHOP DRAWINGS/SUBMITTALS SECTION ~~01330~~ in DIVISION 1 - GENERAL REQUIREMENTS of these Specifications.

B. Mix Design:

1. Submit mix design to the Engineer for review and approval.
2. Distribute approved mix design(s) to the Testing Laboratory, batch plant, job-site and governmental agencies having jurisdiction.

1.4 PROJECT CONDITIONS

A. Protection: Exercise care to protect all finished concrete surfaces from stain, abrasions and any other damage during all construction operations until receipt of other H.V.A.C. equipment and/or until final acceptance by the City. Said protection shall include but not be limited to protection of existing adjacent concrete and roofing surfaces. Cover such surfaces with polyethylene sheet material during pouring of concrete and leave in place until concrete has set.

PART TWO - PRODUCTS

2.1 CONCRETE

A. Cement: Portland Cement, ASTM C-150, Type I or II, low alkali type, in accordance with the Uniform Building Code with the Los Angeles City 2002 Amendments. Total amount of sodium or potassium shall not exceed 0.6 percent.

B. Aggregates: Lightweight aggregates conforming to the California Building Code with the Los Angeles City Amendments and ASTM C330. Maximum size of aggregate one third (1/3) the slab depth.

C. Water: Use only water which is clean and free from deterious amounts of acid, alkali, salt and organic materials.

2.2 REINFORCEMENT

A. Refer to section 03 2000 Concrete Reinforcement.

2.3 OTHER MATERIALS

Provide other materials, not specifically described herein, but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

PART THREE - EXECUTION

3.1 SURFACE CONDITIONS

Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until detrimental conditions are corrected.

3.2 EMBEDDED ITEMS

Set anchor bolts, inserts and other required items of other trades in place accurately secured in the precise location needed or indicated so they will not be displaced prior to placement of the concrete.

3.3 MIXING CONCRETE

A. Transit mix the concrete in accordance with provisions of ASTM C94.

B. Mixing Water:

1. At the batch plant, withhold 2-1/2 gal. of water per cu. yd. of concrete.
2. Upon arrival at the job-site, add all or part of the withheld water (as required for proper slump) before the concrete is discharged from the mixer.
3. Mix not less than five minutes after the withheld water has been added, and not less than one minute of that time immediately prior to discharge of the batch.
4. Unless otherwise directed, provide 15 minutes total mixing time per batch after first addition of water.

C. Do not use concrete that has stood for over 30 minutes after leaving the mixer, or concrete that is not placed within 60 minutes after water is first introduced into the mix.

3.4 REINFORCEMENT (As Applicable)

Reinforcement shall be unrolled and placed so that the long dimension is perpendicular with the corrugation in the steel forms. Location of reinforcement shall be approximately in the center of the lower one-third of the slab in which it is placed; however, minimum cover for reinforcement shall be 3/4-inch.

3.5 PLACING CONCRETE

A. Preparation: (As Applicable)

1. Existing concrete surfaces to receive new concrete slab to be roughened, wetted and coated with neat cement grout.
2. Remove foreign matter accumulated within the formed areas.
3. Rigidly close openings left in the form work.
4. Wet wood forms sufficiently to tighten up cracks. Wet other material sufficiently to maintain workability of the concrete.
5. Use only clean tools.

B. Conveying:

1. Perform concrete placing at such a rate that concrete which is being integrated with fresh concrete is still plastic.
2. Deposit concrete as nearly as practicable in its final location so as to avoid separation due to re-handling and flowing.
3. Do not use concrete which becomes non-plastic and unworkable, or does not meet required quality control limits, or has been contaminated by foreign materials.
4. Remove rejected concrete from the job-site.

C. Placing Concrete in Forms: (As Applicable)

1. Deposit concrete in horizontal layers not deeper than 24", and avoid inclined construction joints.

2. Remove temporary spreaders in forms when concrete has reached the elevation of the spreaders.

D. Placing Concrete Slabs:

1. Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.
2. Bring slab surfaces to the correct level with a straightedge, and then strike off.
3. Use bullfloats or darbies to smooth the surface, leaving the surface free from bumps and hollows.
4. Do not sprinkle water on the plastic surface. Do not disturb the slab surface prior to start of finishing operations.

3.6 CONSOLIDATION

A. General:

1. Consolidate each layer of concrete immediately after placing, by use of internal concrete vibrators supplemented by hand spading, rodding, or tamping.
2. Do not vibrate forms or reinforcement.
3. Do not use vibrators to transport concrete inside the forms.

3.7 JOINTS

A. Construction Joints: (As Applicable)

1. Do not use horizontal construction joints except as may be shown on the Contract Drawings.
2. If additional construction joints found to be required, secure the Engineer's approval of joint design and locations prior to start of concrete placement.

B. Expansion Joints: (As Applicable)

1. Do not permit reinforcement or other embedded metal items that are being bonded with concrete (except dowels in floors bonded on only one side of the joints) to extend continuously through any expansion joint.
2. Fill expansion joints full depth with expansion joint material approved by the Engineer.

3.8 CONCRETE FINISHING

A. Except as may be shown otherwise on the Contract Drawings, provide the following finishes at the indicated locations.

1. Scratch Finish: Apply to monolithic slab surfaces that are to receive concrete floor topping or mortar setting bed.

2. Float Finish:

a. Apply to monolithic slab surfaces that are to receive trowel finish and other finishes specified hereinafter and to slab surfaces which are to be covered with insulation.
b. Apply to monolithic slab surfaces to receive cap-sheet roofing and finish free

of ridges, fins and pockets.

3. Trowel Finish: Apply to monolithic slab or pad surfaces that are to be exposed to view, unless otherwise shown and to slab surfaces to be covered with resilient flooring or mechanical (HVAC) equipment or other covering material.
4. Non-Slip Broom Finish: Apply to all walking surfaces.

3.9 REMEDIAL WORK

A. General: Repair or replace deficient work as directed by the Engineer at no added cost to the City.

END OF SECTION 03 3130

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