DIVISON 03 – CONCRETE

03300 CAST-IN-PLACE CONCRETE

A. Design Considerations

1. Testing and inspection will be required for cast-in-place concrete work. For Class I buildings, as defined by the New Jersey Uniform Construction Code, some or all of the testing and inspection is required by the "Structural Tests and Special Inspections" provisions of the Building Code. All testing and inspection of concrete work will be contracted for and paid for directly by the University, regardless of building class. The A/E must specify all testing and inspection of concrete work in the concrete section, in accordance with requirements in Division 1. Concrete testing shall comply with applicable ASTM standards.

2. Floors shall be specified to achieve flatness and levelness using the "F" number system, according to ACI 302.1R, and tested according to ASTM E1155, "Standard Test Methods for Determining Floor Flatness and Levelness Using the F Number System". A/E shall specify both SOV (Specified Overall Value) and MLV (Minimum Local Value) for flatness and levelness.

B. Special Documentation Requirements

1. Drawings shall show locations and details of all contraction, isolation and construction joints.

2. Floor plan drawings shall note and indicate graphically all equipment housekeeping pads, coordinated with locations shown on mechanical floor plans.

C. Materials and Methods of Construction

1. To increase resistance to freeze-thaw damage and scaling, improve workability and otherwise improve performance, air-entrained concrete shall be used wherever concrete will be exposed to freeze/thaw cycles and/or de-icing agents.

2. Newly placed concrete for walks, plazas, pads and other surfaces shall be secured and protected to ensure that concrete will be free of graffiti or other defacement at time of acceptance. Freshly placed concrete with graffiti (or otherwise defaced) shall be replaced by the Contractor at no additional cost to the Owner.

3. Concrete floors which are to be exposed within the finished building, and which are not scheduled to receive an applied finish, shall be sealed. Membrane-forming curing and sealing compounds shall not be used where slabs are to receive liquid floor hardener or other coatings or finish materials, as incompatibility issues can lead to failures of the finish systems or materials. Wet curing is required where resilient flooring is to be applied directly to the concrete slab. Curing compounds, when approved by the University Architect, must be completely removed from the surface of the concrete prior to installation of resilient flooring. (See Section 09650.)

4. The use of concrete admixtures requires careful consideration and knowledge of their potential negative effects, as well as their contributions to workability, durability and adjustment of set time. Where required, concrete admixtures shall not contain chloride ions in amounts that would cause the total chloride content of the concrete to exceed the limits prescribed by ACI 318, and they shall be so certified by the Contractor. Manufacturer shall also provide long-term test data establishing non-corrosive performance of the admixture.

03520 LIGHTWEIGHT CONCRETE ROOF INSULATION

A. Design Considerations

1. Lightweight concrete roof insulation systems shall incorporate embedded expanded polystyrene board (EPS), containing holes and/or slots.

2. Lightweight concrete roof insulation systems shall be designed to provide 1/4" (min.) slope to drain in all directions. For new construction, the slope of the structural substrate should be known by the A/E and the thickness of lightweight concrete shall be designed accordingly to achieve required slope. For existing construction, it is the responsibility of the A/E to determine the slope, if any, of the existing structural substrate, and design the thickness of lightweight concrete as appropriate to achieve the desired finish slope.

3. Lightweight concrete roof insulation systems are to be considered as one component of a total roof system assembly, and must be included in a "total system" warranty/guaranty issued by the roofing system manufacturer. In addition, the lightweight concrete

system must be specifically listed as a component of a Factory Mutual tested and approved roof system assembly in the latest edition of the FM Approval Guide for Building Materials or other written approval or acceptance from Factory Mutual.

B. Special Documentation Requirements

1. Drawings shall accurately illustrate the configuration of tapered lightweight concrete roof insulation, including all ridges, hips and valleys. The drawings shall indicate the thickness of lightweight concrete at all high and low points in inches, and shall indicate the surface slope in inches/foot. The A/E must determine, based on the project design, whether high and low point thickness, or surface slope governs the installation, and indicate accordingly.

2. For roof replacement projects, with existing deck construction, the drawings must also indicate the slope and taper pattern of the existing substrate, if any, in addition to the slope and taper pattern of the new lightweight concrete roof insulation.

C. Materials and Methods of Construction

1. There shall be no ponding or "birdbaths", retaining water longer than twenty-four (24) hours after precipitation, on the finished surface of the concrete or roof system.

2. Where unacceptable ponding or "birdbaths" occur, the lightweight concrete must be removed and replaced as required to alleviate the unacceptable condition. In no case is "feathering" of concrete or patching compounds acceptable over existing (already placed) areas of concrete. Where patching/replacement is required, concrete in the affected area must be saw-cut and removed to a depth not less than the top of the embedded insulation board.