PART 1 - GENERAL

1.1 SUMMARY

A. Section includes cast-in-place [perlite aggregate] [vermiculite aggregate] [cellular] lightweight insulating concrete.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Include plans, sections, and details showing roof slopes, lightweight insulating concrete thicknesses, embedded insulation board, roof penetrations, roof perimeter terminations and curbs, control and expansion joints, and roof drains.

C. Design mixtures.

1.3 INFORMATIONAL SUBMITTALS

A. Product certificates.

B. Material test reports.

C. Research/evaluation reports.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An Installer who employs and retains, throughout the project, supervisors who are trained and approved by manufacturer.

B. Fire-Resistance Ratings: Where indicated, provide lightweight insulating concrete identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency.

C. FM Approvals Listing: Provide lightweight insulating concrete evaluated by FM Approvals as part of a roof assembly and listed in FM Approvals' "RoofNav" for Class 1 or noncombustible construction, as applicable.

D. Provide vermiculite aggregates containing no detectable asbestos as determined by method specified in 40 CFR 763, Subpart E, Appendix E, Section 1, "Polarized Light Microscopy."

E. Preinstallation Conference: Conduct conference at Project site.
PART 2 - PRODUCTS

2.1 MATERIALS

A. Cementitious Material: Portland cement, ASTM C 150, Type I/II or Type III. Supplement with fly ash, ASTM C 618, Class C or F.

B. Lightweight Mineral Aggregate: ASTM C 332, Group I, vermiculite or perlite.

C. Foaming Agent: ASTM C 869.

D. Water: Clean, potable.


F. Joint Filler: ASTM C 612, Class 2, glass-fiber type; compressing to one-half thickness under a load of 25 psi.

G. Steel Wire Mesh: Cold-drawn steel wire, galvanized, 0.041-inch diameter, woven into 2-inch hexagonal mesh, and reinforced with a longitudinal 0.062-inch-diameter wire spaced 3 inches apart.

H. Galvanized Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, 2 by 2 inches, W0.5 by W0.5, fabricated from galvanized steel wire into flat sheets.

I. Molded-Polystyrene Insulation Board: ASTM C 578, Type I, 0.90-lb/cu. ft. minimum density.
   1. Provide units with manufacturer's standard keying slots of approximately 3 percent of board's gross surface area.

2.2 AGGREGATE LIGHTWEIGHT INSULATING CONCRETE

A. Produce lightweight insulating concrete using the minimum amount of water necessary to produce a workable mix.
   1. Do not exceed maximum air content recommended by aggregate manufacturer.

B. Perlite Aggregate Mix: Lightweight insulating concrete produced from cementitious materials, water, air-entraining admixture, and perlite mineral aggregates.
   1. As-Cast Unit Weight: 38 to 44 lb/cu. ft. at point of placement, when tested according to ASTM C 138/C 138M.
   2. Oven-Dry Unit Weight: 24 to 30 lb/cu. ft., when tested according to ASTM C 495.
   3. Compressive Strength: Minimum 125 psi, when tested according to ASTM C 495.
C. Vermiculite Aggregate Mix: Lightweight insulating concrete produced from cementitious materials, water, air-entraining admixture, and vermiculite mineral aggregates.

1. As-Cast Unit Weight: 45 to 49 lb/cu. ft. at point of placement, when tested according to ASTM C 138/C 138M.
2. Oven-Dry Unit Weight: 23 to 26 lb/cu. ft., when tested according to ASTM C 495.
3. Compressive Strength: Minimum 140 psi, when tested according to ASTM C 495.

2.3 CELLULAR LIGHTWEIGHT INSULATING CONCRETE

A. Produce cellular lightweight insulating concrete with the following minimum physical properties using cementitious materials, air-producing liquid-foaming agents, and the minimum amount of water necessary to produce a workable mix.

1. Manufacturers: Subject to compliance with requirements, **provide products by one of the following:**
   a. Celcore Incorporated.
   b. Cellular Concrete LLC, Mearlcrete Division.
   c. Elastizell Corporation of America.
   d. Lite-Crete Inc.
   e. Siplast.
   f. <Insert manufacturer's name>.

2. As-Cast Unit Weight: 34 to 42 lb/cu. ft. at point of placement, when tested according to ASTM C 138/C 138M.
3. Oven-Dry Unit Weight: 26 to 32 lb/cu. ft., when tested according to ASTM C 495.
4. Compressive Strength: Minimum 190 psi, when tested according to ASTM C 495.

PART 3 - EXECUTION

3.1 PREPARATION

A. Control Joints: Install control joints at perimeter of roof deck and at junctures with vertical surfaces, including curbs, walls, and vents, for full depth of lightweight insulating concrete. Fill control joints with joint filler.

B. Wire Mesh: Place steel wire mesh with longest dimension perpendicular to steel deck ribs. Cut mesh to fit around roof openings and projections. Terminate mesh at control joints. Lap sides and ends of mesh at least 6 inches.

C. Welded Wire Reinforcement: Place steel welded wire reinforcement with longest dimension perpendicular to steel deck ribs. Cut reinforcement to fit around roof
openings and projections. Terminate reinforcement at control joints. Lap sides and ends of reinforcement at least 6 inches.

3.2 MIXING AND PLACING

A. Mix and place lightweight insulating concrete according to manufacturer's written instructions, using equipment and procedures to avoid segregation of mixture and loss of air content.

B. Install insulation board according to lightweight insulating concrete manufacturer's written instructions.

C. Deposit and screed lightweight insulating concrete in a continuous operation until an entire panel or section of roof area is completed. Do not vibrate or work mix except for screeding or floating. Place to depths and slopes indicated.

D. Finish top surface smooth, free of ridges and depressions, and maintain surface in condition to receive subsequent roofing system.

E. Begin curing operations immediately after placement, and air cure for not less than three days, according to manufacturer's written instructions.

F. If ambient temperature falls below 32 deg F, protect lightweight insulating concrete from freezing and maintain temperature recommended by manufacturer for 72 hours after placement.

END OF SECTION 035216