

SECTION 03300

CAST-IN-PLACE CONCRETE

A298 2007-10-30

PART 1 GENERAL

1.01 DIVISION OF RESPONSIBILITIES TERMINOLOGY: Where referenced in this Section, "Contractor" refers to the SAME entity as "Landlord Contractor". Refer to Section 01010-Summary of Work for additional "Division of Responsibilities Terminology" information (*Exhibit B*)

1.02 SUMMARY: Provide cast-in-place concrete, including formwork, reinforcement and special finishes where shown on the drawings, as specified in this Section, as needed for a complete installation.

1.03 RELATED WORK: Section 07210-Building Insulation; foundation insulation.

1.04 SUBMITTAL: No submittal is required for the work of this Section IF provided per the construction documents. (*minor concrete work, if applicable*)

1.04 SUBMITTAL:

A. The Contractor shall submit Concrete Mix Designs and Concrete Test Reports meeting ACI318-Chapter 5 standards and per Section 01340-Submittals

1. The Concrete Mix Designs and Concrete Test Reports Submittals may be sent to the Architect by fax, if the Architect is notified at least 24 hours in advance.
2. If this submittal is sent to the Project Architect by fax, then the hard copies of this submittal shall additionally be sent to the Architect per Section 01340-Submittals.

B. Submit Reinforcing Steel Shop Drawings and Concrete Accessories Product Data in sufficient detail to demonstrate compliance with the work of this Section.

1.05 QUALITY ASSURANCE:

A. The Contractor shall NOT commence placement of concrete until the Concrete Mix Designs and Concrete Test Reports Submittals have been reviewed by the Architect/ Engineer.

B. The Contractor shall provide access for and cooperate with the Testing/ Inspection Agency per Section 01410-Construction Quality Control Services.

C. Admixtures: When field service is requested for admixture use, a qualified concrete technician employed by the concrete manufacturer shall be available to assist in proportioning concrete materials, and to advise on proper use of admixture and adjustment of concrete mix proportions to meet jobsite and climatic conditions. The concrete mix shall meet ACI 318 standards.

PART 2 PRODUCTS

2.01 CONCRETE FORMWORK: The Contractor shall design, erect, support, brace, and maintain Concrete Formwork so it will safely support vertical and lateral loads that might be applied, until such loads can be supported safely by the concrete structure.

2.02 MOISTURE/ VAPOR BARRIER: Moisture/ Vapor Barrier shall be provided above 2 inches of approved granular fill (or as approved by the Building Shell Geotechnical Engineer), and under the subsequently placed concrete slab. The moisture/ vapor barrier shall be equal to Stego Wrap (15 mil) Vapor Barrier by Stego Industries LLC, Griffolyn Vaporguard by Reef Industries or preformed

membrane with PLASTMATIC CORE by W.R. Meadows. The vapor barrier shall conform to ASTM E1745, Class A or B. The membrane shall have a water-vapor permeance rate no greater than 0.012 perms when tested in accordance with ASTM E154, Section 7. Vapor Barrier shall be no less than 10 mil thick in accordance with ACI 302 1R-96.

2.03 REINFORCEMENT FOR CONCRETE SLAB ON GRADE:

- A. Reinforcing bars: ASTM A615, Grade 60, deformed bars for #3 and larger reinforcing.
- B. Welded Wire Fabric: ASTM A185.
- C. Reinforcing Bending: ACI 318.

2.04 CONCRETE:

- A. Comply with the following minimum requirements:
 - 1. Portland Cement: ASTM C150, Type I or II, low alkali.
 - 2. Aggregate, General: ASTM C33, uniformly graded and clean; Aggregate, Coarse: Crushed rock or washed gravel with minimum size between 3/4" and 1-1/2", maximum size, number 4; Aggregate, Fine: Natural washed sand of hard and durable particles varying from fine to particles passing a 3/8" screen, with 12% passing 50-mesh screen.
 - 3. Water: Clean and potable.
 - 4. Fly ash is NOT PERMITTED in the concrete mix.
- B. Provide concrete with the compressive strengths and limiting slumps as shown on the drawings. When such strengths and slumps are not shown on the drawings, provide the following minimum requirements:
 - 1. Concrete footings and piers: 3000 psi with 4" maximum slump.
 - 2. Slab on grade, Interior: 3000 psi, 4" maximum slump.
 - 3. Concrete walls, Exterior: 4000 psi, 4" maximum slump.
 - 4. Concrete walks, curbs, slabs on grade, site lighting exposed bases Exterior: 4000 psi, 4" maximum slump, air-entrained, in accordance with governing codes.

2.05 CONCRETE CURING/ CONCRETE FINISHES:

- A. Concrete Curing Compound:
 - 1. Provide at all new interior and exterior concrete slabs on grade.
 - 2. Provide concrete curing compound equal to "L&M Cure", water soluble, water-based, clear, sprayable non-residual concrete curing agent, by L&M Construction Chemicals Inc., Omaha NE (402-453-6600).
 - 3. Specification Standard: USDA approved and VOC compliant
- B. Concrete Sealer: Refer to Section 09910- Concrete Sealer.
- C. Detectable Warning Surface Finish:
 - 1. The Contractor shall provide a Detectable Warning concrete surface finish on handicap ramp surfaces and adjacent landing areas as shown on the drawings or as may be required by the local jurisdiction.
 - 2. Detectable Warning Surface: The Contractor shall provide a Coarse Broom Finish on the designated handicap ramp surfaces and adjacent landing areas unless the local jurisdiction requires an alternative finish. In the event that the local jurisdiction requires an alternative finish, the Contractor shall provide the alternative finish at no additional expense to PETCO

2.06 ADMIXTURES:

- A. Calcium chloride is NOT permitted
- B. Water reducing admixture may be used for better workability, shrinkage reduction, plasticity and adhesiveness of all concrete conformity to ASTM C494, Type D (water reducing and retarding) Acceptable manufacturers:
 - 1. Euclid Chemical Company, Cleveland OH (800-321-7628)
 - 2. Sonneborn/ Chemrex Inc., Shakeopee MN (800-433-9517).
 - 3. W.R. Meadows Inc./ SealTight Elgin IL (708-683-4500).
- C. Relative durability factor of 100% instead of 80% (as required by ASTM C494) shall be used. No admixture with rapid or excessive bleeding or which will require concrete to be reconsolidated, re-vibrated or re-tempered shall be used.
- D. Air Entrainment Admixture: ASTM C260.

2.07 FOUNDATION DAMPPROOFING: Per Section 02710-Foundation Dampproofing. FOUNDATION WATERPROOFING & DRAINAGE SYSTEM: Per Section 02720-Foundation Waterproofing & Drainage System.

2.08 OTHER MATERIALS, WHERE APPLICABLE:

- A. Grout: Provide non-shrink, non-staining water resistant grout meeting ASTM C1107-89 for package dry, hydraulic-cement grout (non-shrinkable). Acceptable products "EUCO N-S Grout", by Euclid Chemical Company; or "CG-86 Construction Grout", by W.R. Meadows Inc / SealTight.
- B. Bonding Agent: Provide polymer resin emulsion
- C. Patching Cement: Provide premixed compound with non-metallic aggregate, cement, water reducing and plasticizing agents equal to "Thorite" by Thoro Systems Products.
- D. Waterstop: Provide rubber or polyvinylchloride, 12 inches wide, with heat sealed joints.
- E. Construction Joint: Provide pre-manufactured keyed construction joints equal to 24 gauge galvanized steel "Key-Loc Joint" system, by Form-A-Key Products Division, Louisville KY.
- F. Expansion Joint: Provide expanded polyethylene, low-density closed cell foam expansion joint filler with zip strip.
- G. Form Release Agent: Provide colorless material that will not stain concrete, absorb moisture or impair natural bonding or color characteristics of coating intended for use on concrete.
- H. Interior Control Joint and Sawcut Joint Filler: Provide filler/sealant at all interior control joints and sawcut joints which are not covered with a subsequent finish floor, equal to:
 - 1. Everjoint polymer reinforced control joint filler, by L&M Construction Chemicals Inc.
 - 2. JointMaster EJC, hybrid epoxy-urethane elastomeric joint filler, by Polyamerica Inc., Carrollton GA (800-762-1678)
- I. Exterior Control Joint Sealers and Fillers: The Contractor shall provide one-component, moisture curing polyurethane sealant meeting Federal Spec. TT-S-00227E, ASTM C90, equal to "THC-901" sealant, by Tremco, Beachwood OH.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS: The Contractor shall examine the areas and conditions under which work of this Section will be provided; shall correct conditions detrimental to the timely and proper completion of the work; and shall NOT proceed until unsatisfactory conditions are corrected.

3.02 REINFORCING:

- A. Comply with the following, as well as the specified standards, for details and methods of reinforcing placements and supports.
1. Clean reinforcement and remove loose dust and mill scale, earth, and other materials that reduce bond with concrete.
 2. Position, support, and secure reinforcement against displacement by forms, construction, and the concrete placement operations.
 3. Place reinforcement to obtain the required coverage for concrete protection.
 4. Install welded wire fabric in as long lengths as practicable, lapping adjoining pieces one full mesh minimum. Welded wire fabric pieces wire tied per reference standard.
 5. Unless otherwise shown on the drawings, or required by governmental agencies having jurisdiction, lap bars 24 diameters minimum.

3.03 EMBEDDED ITEMS:

- A. Minimum Concrete Coverage: The Contractor shall provide a minimum of 2" concrete cover over the top of the embedded conduit. The conduit shall be located under the welded wire fabric, and the concrete depth shall be increased accordingly to accommodate the minimum clearances specified. The Contractor shall accurately locate bolts, inserts, and other required items in the concrete, secured so they will not be displaced. The Contractor shall provide sleeves or core-drill finished concrete to receive guardrails, handrails or fencing. Increase the thickness of the concrete and maintain minimum concrete coverage if the outside diameter of the conduit exceeds 30% of the concrete thickness.
- B. Structural Concrete: The Contractor shall NOT embed piping, other than electrical ducts and conduit, in structural concrete. Minimum coverage as specified must be maintained.

3.04 TRANSIT MIX CONCRETE: Transit mix concrete per ASTM C94.

3.05 PLACING CONCRETE: Do not permit concrete to free drop more than 6'-0". Deposit concrete in horizontal layers not deeper than 24", and avoid inclined construction joints. Provide a maximum variation of surface flatness for all slabs of 1/8" in 10 linear feet.

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

3.07 JOINTS:

- A. Construction Joints: Provide sawcut joints and keyed control joints.
- B. Expansion Joints: 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.

3.08 SCHEDULE OF CONCRETE FINISHES:

- A Interior concrete floor slab scheduled to receive Resilient Flooring, (Refer to Finish Schedule on Drawings): Floated, with hard steel troweled finish; curing compound; Grinding or acrylic vinyl flash patch, trowel applied, if required; control joint and sawcut joint sealer.
- B Interior concrete floor slab scheduled to receive Epoxy Finish: Broom finish; refer to Section 09670- Epoxy Finish on Concrete.
- C Interior concrete floor slab scheduled to receive Concrete Sealer: Refer to Section 09910- Concrete Sealer.
- D Exterior Stairs and Sidewalks: Light Broom Finish.
- E Exterior Slabs EXCEPT Exterior Stairs and Sidewalks: Medium Broom Finish.

END OF SECTION

