1.01 - CONCRETE FORMWORK

A. General

1.1. All horizontal and vertical dimensions for cast-in-place concrete systems shall be shown on the contract documents.

1.2. The A/E shall specify the special architectural concrete finishes. The A/E shall require that the contractor erect a job mock-up of sample formwork panel for architectural concrete surfaces receiving special treatment or finish as a result of formwork.

1.3. Tolerances: The A/E shall specify allowable formwork tolerances. Application of Form Release Agent: Form release agents shall be applied prior to placing reinforcing steel, anchoring devices and embedded items.

1.4. Execution: Design and erect forms as outlined in ACI Standard, “Guide to Formwork for Concrete.”

1.02 - CONCRETE REINFORCEMENT

A. Coating: The A/E shall consider the corrosive nature of the environment on the reinforcement, support and exposed architectural conditions. The A/E shall specify coatings as appropriate.

B. Execution: Perform concrete reinforcement work in accordance with the ACI Manual of Standards Practice and the Concrete Reinforcing Steel Institute’s recommended practices.

1.03 - CAST-IN-PLACE CONCRETE

A. Concrete Materials: The A/E shall specify material requirements and special aggregate or color if required.

B. Concrete Mixes: Throughout each project, the same brand of Portland cement shall be used for exposed concrete.

1.1. The A/E shall specify critical mix requirements. The A/E shall approve the concrete mixes, including items such as high early strength cement admixtures and other special materials.

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C. Construction Joints: The A/E shall design construction joint detail and review construction joint locations.

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D. Concrete Accessories: Ensure compatibility of all accessories, and install in accordance with the manufacturer's specifications and technical data.

E. Waterproofing Elements and Considerations for Concrete Construction

1.1. Concrete mud slabs or development slabs that are installed below structural floor slab in conjunction with below-floor waterproofing shall be 4 inches thick minimum, 4,000-psi minimum and bull-floated smooth. The mud slab might have to extend beyond the edge of the structural floor slab depending on the nature of the floor-to-wall tie-in. In all cases, the mud slab shall be designed by A/E for design conditions.

1.2. Concrete protection slabs shall be 2 or 3-inches thick minimum if there is a bentonite component in the system, and 4,000-psi minimum.

1.3. All concrete surfaces to receive waterproofing shall be formed smooth in true plane, and without honeycombs, voids or sharp protrusions.

1.4. All below grade concrete construction joints (vertical and horizontal) shall have bentonite-type waterstops that have a 75 percent minimum bentonite content.

1.5. Bevel all concrete edges that are wrapped with waterproofing.

1.6. Do not install a liquid cure membrane or sealer to concrete surfaces that are to receive a bonded waterproofing unless the cure or sealer is completely removed first by grinding, sandblasting or other appropriate means.

1.7. Where duct banks penetrate a waterproofed wall, flash the waterproofing around the individual conduits or pipes before encasing them in concrete rather than flashing to the outside of the concrete duct bank. Also, maintain a minimum 10-inch clearance between each conduit and pipe.

1.8. At below grade horizontal surfaces to be waterproofed, design a sloped structural top, a tapered structural top or a flat structural top with a tapered concrete topping. This procedure will help facilitate subsurface drainage at the waterproofing membrane level.

1.9. Where a pipe, conduit or sleeve is cast into a concrete wall, roof or floor, a bentonite waterstop must be installed around the outside of either the pipe, conduit or of the sleeve.

1.10. Install a 3-inch minimum concrete topping over the horizontal pre-cast concrete plank to be waterproofed, even if the pre-cast concrete plank keyways are grouted.

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1.11. Maintain adequate working clearance between concrete surfaces to be waterproofed and other walls, caissons and piers.

1.12 Design A/E shall provide adequate coverage for conduit, floor boxes, inserts etc. to minimize cracking in conc. Topping.

G. Cold and Hot Weather Requirements: The A/E shall specify applicable cold and hot weather procedures.

H. Special Finishes

1.1. The contract documents shall specify concrete finish surfaces, critical tolerances, flatness and levelness. Specify appropriate reference standards.

1.2. Exposed concrete stair treads and ramps shall have a uniform non-slip finish that meets the American with Disabilities Act requirements.

I. Curing: Curing compound shall not be used on floor slabs to receive topping or setting beds for tile flooring. Compounds used for other slabs shall be compatible with floor sealer or adhesives used for finishing floors. Concrete curing shall be done in accordance with ACI standards.

J. Floor Hardener: Interior exposed concrete floors shall be cleaned of dust, dirt, oil, plaster, paint and stains. After cleaning, the floor shall be treated with two coats of colorless chemical hardener in accordance with the manufacturer's instructions.

K. Execution: The A/E shall specify placement, finishing and curing requirements.

L. Concrete Sidewalks: Standard concrete sidewalks to be 8 ft. wide and cannot exceed 1:20 slope at any point along it's length. Concrete for sidewalks shall be 6 inch thick, 3,000 PSI. with ¾ bag of fiber per C.Y. of concrete. Saw cut joints shall be placed @ 8'-0" O.C. or width of the sidewalk. Joints are 1 ½" deep x 1/8" wide. Joints can be tooled in wet or saw cut within 18 hours of concrete placement. All sidewalks shall slope 1/16" per ft. and be surfaced with a broom finish. Provide ASTM compliant expansion joints with pourable sealant where indicated or at 100 ft. max. Remove 12 inches of existing subgrade and provide compacted, suitable subgrade to meet required elevations before laying the sidewalk.

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