

DIVISION 3 - CONCRETE

Section 03310 - Structural Concrete

Introduction

Drawings shall be coordinated between the various other sub consultants to avoid field problems with openings, shear walls and structural slabs. Drawings shall show special reinforcement required at openings. Drawings shall show location of construction, expansion and contraction joints.

Part 1 - General

- ACI references shall be comprehensive to cover the requirements needed.
- For special or critically flat floor slabs- use FF & FL numbering system set forth in ACI117 & ASTM E1155 for floor flatness/levelness.
- Concrete testing
 - Less than 50 cu yds - by Contractor
 - Greater than 50 cu yds - by U of A with a retesting charge for concrete not meeting specification.
- Mock-up should be provided for any structural concrete that is to receive a finish treatment such as a sandblasted, exposed aggregate or bush hammered finish. Any special finish treatment should be specified in Section 03330 Architectural Concrete. Mock-up shall not be incorporated into the final work.

Part 2 - Products

- Form materials. Metal or wood should be specified.
 - Wood forms: Specify grade and thickness of plywood form material. Limit reuse to 3 times
Exposed concrete - Use HDO plyform.
Unexposed concrete - Use AC plywood.
 - Column forms: Specify metal, fiberglass or sonotube (lined or unlined). These types are not equal.
Seam placement should be considered to insure workmanship-like patch if in finished area.
 - Pan forms. Specify specific type (steel, glass-fiber or reinforced plastic). These types are not equal and provide different finishes. Although discouraged, if underside is to be left exposed, pans are to be in "like new" condition.
 - Fiberglass grip form ties shall not be allowed.
- Rebar - if required to be welded, the appropriate type should be specified.
- To alleviate flooring material concerns associated with moisture transmission and emission through concrete slabs on grade the following preventive measures shall be prescribed.
 - A minimum 10 mil under slab vapor barrier shall be specified and detailed directly under the concrete slab and on top of any subgrade or sand grading material to minimize moisture transmission through the slab. Vapor barriers shall meet the requirements ASTM E-1745 Class "C".
 - A low water to cement ratio, low slump concrete should be specified for all interior slabs where flooring is anticipated to minimize the amount of free water in the concrete. Sufficient time should be allowed with the project to allow the emission of any free moisture to evaporate from the slab.
 - Surface sealers may be considered for re-flooring applications on existing slabs.
- Curing compounds and form release agents shall be non-staining and be compatible with the wall and floor finishes specified. Once selected for a project, they shall be used for the entire project.

- Sealers on exposed interior concrete floors shall be compatible with Johnson Wax Carefree and High Mileage. Refer to Section 09000 for additional discussion and considerations.
 - Penetrating sealers (silicon, epoxy, etc.) shall not be used when a custodial effort is intended to maintain the finish of the floor.
 - Sealer or finish should be applied immediately after the dissipation of the curing compound in order to protect floors during construction and then cleaned and reapplied prior to final acceptance.
- Minimum concrete compressive strength shall be 3000 psi for interior slabs on grade. Exterior sidewalks and slabs can utilize 2500 psi concrete. All concrete shall be specified by architect or engineer. Provide a detailed concrete mix schedule if more than one strength or type is required for the project.

Part 3 - Execution

- Column penetrations through slabs shall initially be blocked out in a diamond shape and infilled afterwards.
- Sandblasted or exposed aggregate finishes should be specified in Architectural Concrete. To achieve a uniform sandblast finish, special concrete mixes and forming practices are required, i.e., water tight forms.
- Slabs shall be depressed (dished) 1/2" deep around all floor drains.
- Provide 1 inch high dam at floor sleeves in wet walls and in wet locations above ground level.
- Provide visible post tensioned stamp in concrete at electrical and mechanical rooms located at post tensioned concrete slabs.
- Specify concrete testing for concrete at "point of placement" per ACI Section 301-20 Execution 4.3.2 and conforming to the requirements of ASTM C 94.

End of Section 03310