

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.
 - An under slab vapor barrier should 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". Acceptable vapor barriers are "Stego Wrap" by Stego Industries and "Moistop Plus" by Forfiber Building Products Systems.

 - 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 such as "Para-Seal" by Parabond 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 Waxie "Floorstar".
 - 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. 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) ½" deep around all floor drains.

End of Section 03310

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Section 03330 - Architectural Concrete

Introduction

In general, all of the items included in Section 03310 - Structural Concrete, will apply. This section shall be included when concrete will be exposed and special finishes may require non-standard formwork, special design mixes (for color or texture) and services of a specialized consultant to assist the Contractor in providing the required design results.

All of the above items should be considered if special finishes are desired. Attempts to get them without the benefit of special attention and/or an expert in this field will result in poor quality, compromised design and possibly additional charges on the part of the Contractor in connection with efforts to provide what was not specified or detailed.

Drawings must be very specific concerning the detailing for Architectural Concrete. The special features should be noted in the specifications and on the drawings. Descriptions such as "glass like", "polished", "light sandblast" finishes are considered as being ambiguous unless adequately specified in this Section.

Part 1 - General

- Typical examples of work in this section include exposed aggregate surfaces (whether water washed or sand blasted), bush hammered, textured, colored, and specialized forming.
- Requirements for structural concrete work are not to be used for Architectural Concrete. Reference ACI Standards.
- Submittals shall be required as appropriate for color additives, aggregate, formwork details, special form ties, curing agents, retarders, form release agents and the like. These items will all effect the final appearance of the concrete.
- Mock-ups shall be required for approval before work is incorporated in the building. Size and configuration of the mock-up is important to fully evaluate all anticipated construction details. Mock-up shall not be incorporated into the final work.

Part 2 - Products

- Generally, architectural finish on concrete is associated with watertight formwork.

Part 3 - Execution

- Anticipate the fact that sandblasting is a very disruptive and messy activity that is not easily accomplished in many areas of campus. Compliance with Pima County air pollution standards will also be a requirement of the specification.

End of Section 03330