

**SECTION 03100
CONCRETE FORMWORK**

PART 1 - GENERAL

1.1 SUMMARY:

Section Includes:

1. Formwork for cast-in-place concrete.
2. Form accessories.

B. Related Sections:

1. Section 03200 - Concrete Reinforcement.
2. Section 03300 - Cast-in-Place Concrete.
3. Section 03450 - Architectural Precast Concrete.

NOTE: THIS SECTION IS
INTENDED FOR USE WITH
CONCRETE THAT WILL BE
EXPOSED TO VIEW.

1.2 REFERENCES:

- A. ACI 301: Specifications for Structural Concrete for Buildings.
- B. ACI 303: Guide to Cast-in-Place Architectural Concrete Practice.
- C. ACI 347: Recommended Practice for Concrete Formwork.
- D. PS 1: Construction and Industrial Plywood.

1.3 SUBMITTALS:

A. Shop Drawings:

1. Submit shop drawings for concrete formwork for architectural cast-in-place concrete. Include construction joints, sizes, shapes, materials, gauging information, architectural detailing, openings, clean outs, ties, and other elements affecting appearance. Review will be for general design and appearance factors only.

REQUIRE SHOP DRAWINGS WHERE
APPEARANCE IS OF CONCERN.

LEED MRc7: Certified Wood

Demonstrate that all wood products came from "FSC Certified Wood" sources certified by the Forest Stewardship Council. Provide Certification and chain of

custody documentation.

1.1 QUALITY ASSURANCE:

A. Field Samples:

1. Field samples under provisions of Section 01300 and coordinate with Section 03300.

FIELD SAMPLES ONLY REQUIRED AT LARGE ARCHITECTURAL CONCRETE INSTALLATIONS OR AT CONSPICUOUS LOCATIONS.

2. Sample formwork panel for architectural concrete surfaces.

- a. Special treatment or finish as result of formwork.
- b. Vertical and horizontal form joints.
- c. Typical rustication joints.

3. Provide forms for field mock-ups and samples specified in Section 03300.

PART 2 - PRODUCTS

2.1 FORM MATERIALS:

A. Plywood:

1. Douglas Fir species; select sheathing-tight face grade; sound, undamaged sheets with straight edges.
2. "B-B Medium Density Overlaid Concrete Form", Class I as defined by PS-1.
3. Use new plywood for the project for exposed surfaces. Do not reuse plywood more than four times. Do not use patched forms or plywood previously used on another job for exposed concrete.

LEED MRc7: Certified Wood

Plywood shall come from sources certified by the Forest Stewardship Council (FSC).

- #### B. Glass Fiber Fabric Reinforced Plastic Forms:
- Matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to structural tolerances and appearance of finished concrete surface.

- #### C. Tubular Column:
- Round, of spirally wound, seamless, laminated fiber type; surface treated with release agent.

2.2 FORMWORK ACCESSORIES:

- A. Form Ties: Snap-off metal of fixed length; gang form through-bolt, tapered ties -- cone type; 1-1/2 inch break back dimension; free of defects that will leave holes no larger than 1 inch diameter in concrete surface, with waterproofing washer. Gang form through-bolt or tapered tie type, free of defects that will leave holes no larger than 1 inch diameter in concrete surface.
- B. Fillets for Chamfered Corners: Wood strips or rigid plastic, 45 degrees, 3/4 inch wing size; maximum possible lengths.
- C. Dovetail Anchor Slots: Galvanized steel at brick, concrete block and stone work; 24 gage; foam filled; release tape sealed slots; bent tab anchors; securable to concrete formwork.
- D. Flashing Reglets: Galvanized steel; 24 gage; longest possible lengths; release tape sealed slots; with alignment splines for joints; securable to concrete formwork.
- E. Form Liners: Fabricated from fiberglass, elastomeric material, or urethane.

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Construct formwork to maintain tolerances in accordance with ACI 301. Use Class B formwork tolerances for concrete exposed to view and Class C tolerances for unexposed concrete.
- B. Chamfer Strips (ACI 301 4.2.4): Install 45 degree chamfer strips at exposed outside corners, beams, joists and columns.
- C. Forms for Exposed Concrete:

1. Drill forms to suit ties used and to prevent leakage of concrete mortar around tie holes. Do not splinter forms by driving ties through improperly prepared holes.

<p>ADD ANY SPECIAL REQUIREMENTS TO SUIT PROJECT.</p>

2. Do not use metal cover plates for patching holes or defects in forms.
3. Use extra studs, walers and bracing to prevent bowing of forms between studs and to avoid bowed appearance in concrete. Do not use narrow strips of form material which will produce bow.
4. Assemble forms so they may be readily removed without damage to exposed concrete surfaces.

5. Form molding shapes, recesses and projections with smooth-finish materials, and install in forms with sealed joints to prevent displacement.

3.2 TOLERANCES:

- A. Finished concrete surfaces and corners must conform to Table 4.3.1, ACI 301 and ACI 117.

1. Cumulative tolerances will not be acceptable where other materials or elements related to concrete dimensions or positions will have their tolerances or normal adjustments exceeded in a manner affecting their appearance or performance.

REVIEW TOLERANCES CAREFULLY AND TIGHTEN WHERE NECESSARY DUE TO JOB NEEDS AND WHERE ADDED COST IS JUSTIFIED. FURTHER DEFINE SPECIFIC CUMULATIVE TOLERANCES LIMITS NECESSARY FOR JOB. BEWARE THAT SPRAYED COATINGS, THINSET TILE, PAINT, ETC. REQUIRE NEAR PERFECT SURFACES FOR GOOD APPEARANCE. GRINDING AND FILLING MAY BE MORE FEASIBLE.

- B. In addition, architectural concrete surfaces and surfaces to receive thinset tile or other thin finishes are limited to ± 0.125 " in 10', with no abrupt offsets or changes in plane or other defects that would prevent the proper installation of other materials or adversely affect the finished appearance of the concrete or applied finishes.

END OF SECTION 03100