

TYPICAL NOTES:

The contractor shall verify all dimensions and existing conditions in the field that affect construction prior to commencing work on the affected element or shop drawing submittals. Resolve any discrepancies with the architect prior to construction.

The contract structural drawings and specifications represent the completed structure. The contractor is responsible for bracing and shoring (without overstressing) all structural elements as necessary at any stage of construction until completion of the project. The Structural Engineer is not responsible for the contractor's means, methods, sequences or procedures of construction.

MATERIAL PROPERTIES:

Reinforcing Steel (Fy):

Typical 60,000 psi ATSM A615 Grade 60

Cast-in-Place Concrete (f'c) at 28 days, u.n.o.:

Footings 3,000 psi

Concrete Masonry Assemblages – Minimum Prism Strength (f'm, tested in accordance with ASTM C140):

Typical Units: 2,000 psi

Structural Steel (Fy):

Wide Flanges: 50,000 psi ASTM A992
Angles, Channels, Plates, and Bars 36,000 psi ASTM A36
Grade B Rectangular HSS 46,000 psi ASTM A500

Structural Fasteners:

Typical High-Strength Bolts 92,000 psi ASTM A325
Threaded Rods 36,000 psi ASTM A36

Cold-formed Light Gauge Metal Framing (Fy):

Studs, Joists, Braces, Tracks- 50,000 psi ASTM A653

Glue Laminated Timber Beams:

Fb 2,400 psi
Douglas Fir- Larch 24F-V8 Fv 165 psi
E 1,800,000 psi

CONVENTIONAL FOOTINGS:

Footings are designed for an assumed soil bearing pressure of 1500 pounds per square foot.

REINFORCED CONCRETE:

The detailing, fabrication and erection of all reinforcing shall be done in accordance with the latest edition of ACI-315, "Manual of Standard Practice for Detailing Reinforced Concrete Structures and ACI-318, "Building Code Requirements for Structural Concrete."

All reinforcing bars are deformed and continuous, unless noted otherwise. Refer to drawings for reinforcing lap length schedule.

Provide suitable wire spacers, chairs, etc. for support of reinforcing steel in proper position while placing concrete. All bars shall be tied to prevent displacement while placing concrete.

Refer to drawings and ACI 318 Chapter 6 for placement guidelines of embedded pipes, sleeves, and conduits. Conduits are not permitted in slabs 3 inches or less in thickness.

Calcium chloride is not permitted as a concrete additive.

Concrete Cover on Reinforcing:

Slab on Grade: upper third of slab

Footings and Caissons: 3" clear bottom and sides
2" clear top

REINFORCED MASONRY:

Mortar to be type 'S' using the property method per ASTM C270. Minimum strength of mortar to be 1800 psi at 28 days. Provide aggregates for mortar conforming to ASTM C404.

Grout to have a minimum 28 day strength of 2000 PSI tested in accordance with ASTM C 1019.

Provide concrete masonry units (CMU) of normal weight (125 PCF minimum). Grade N, Type 1 or 2, conforming to the latest edition of ASTM C 90.

Masonry walls shall receive temporary bracing. Temporary bracing shall not be removed until wall is permanently braced by roof or floors.

EXPANSION AND ADHESIVE ANCHORS:

Anchors in concrete or concrete masonry when not exposed to earth, weather, or corrosive environment shall be as noted below:

Threaded anchor rod for adhesive anchors in concrete shall be ASTM A193 Grade B7, or ASTM A36, as noted in the drawings. The adhesive used for anchors shall be a structural grade, two part epoxy or acrylic material that meets the requirement of ASTM C-881 Types I, II, IV, and V, Grade 3, Classes B and C as noted on plans.

Holes shall be drilled with a bit and cleaned using a method that complies with the manufacturer's guidelines, and specifications.

The following anchors are the approved post-installed epoxy anchors that shall be installed into hardened concrete in accordance with Appendix D of ACI 318:

| Base Material | Epoxy Fastener Product | I.C.B.O. Number |
|---------------|---------------------------|-----------------|
| Concrete | HILTI HIT-RE 500-SD | ESR-2322 |
| Concrete | ITW EPCON G5 | ESR-1137 |
| Concrete | SIMPSON STRONG-TIE SET XP | ESR-2508 |
| Masonry | HILTI HIT HY-150 | ESR-2678 |
| Masonry | SIMPSON STRONG-TIE SET | ESR-1172 |
| Masonry | POWERS POWER-FAST EPOXY | ESR-1531 |
| Masonry | POWERS STANDARD-SET EPOXY | ESR-1617 |

Anchors in concrete or concrete masonry when exposed to earth, weather, or corrosive environment shall be manufactured from AISI 304/316 Stainless Steel.

STRUCTURAL STEEL:

Structural steel shall be detailed, fabricated and erected in compliance with AISC Specification for the design, fabrication, erection of structural steel for building, and Code of standard practice, and OSHA steel erection standards.

Provide grout for base plates that is non-shrink, non-metallic with a minimum 28 day compressive strength of 10,000 psi.

Unless otherwise noted, bolts to be A325N for steel-to-steel connections and A307 for anchor bolts and connections with wood. Provide standard plate washers under all bolt heads and nuts in contact with wood.

All beam web copes must be made to a 1 inch minimum radius.

Welded connections shall be made in accordance with ANSI/AWS D1.1 Structural Welding Code using E70XX electrodes unless noted otherwise. Weld sizes not shown or controlled by the required forces shall be AWS code minimum size. Welds shall be visually inspected for compliance with the AWS code visual inspection criteria. Welders shall be qualified in accordance with ANSI/AWS D1.1 and shall be experienced in weld in structural steel.

STEEL JOISTS AND JOIST GIRDERS:

Manufacturer shall be a current member of the Steel Joist Institute (SJI).

Detail, fabricate and erect steel joists, joist girders and bridging in accordance with SJI Specifications, AISC Specifications and Codes, and OSHA steel erection standards.

The manufacturer shall submit certified structural calculations by a qualified structural engineer licensed in the state in which the project is located for all joists that support concentrated or varying uniform loads, or non-standard loads as indicated on the drawings. See plans and details for special joist loads.

Welded connections shall be made in accordance with AWS D1.1 using E70XX electrodes unless noted otherwise. Welders shall be qualified in accordance with ANSI/AWS D1.1.

In addition to the loads indicated on the drawings design joist to support a 250 pound concentrated load at any point on the top and bottom chords.

General contractor verify if special joist panel point alignment or bridging configuration is required to accommodate the location of sprinkler lines, duct work, etc. As necessary align all joist web members throughout a bay and align similarly for each bay.

When beams have joists bearing from one side only, bear joist on full beam flange.

All bridging, bridging anchors and building structure that resist the bridging loads, shall be completely installed before construction loads are placed on the joists.

LIGHT GAUGE METAL FRAMING:

The design and connection detailing of all light gage material including, but not limited to exterior studs, bearing studs, headers, jamps, joists, rafters and anchorage shall be by the Light Gauge Supplier. The design for systems other than bearing framing shall meet the following criteria:

At all openings in exterior and bearing walls provide a minimum two studs full wall height each side of opening and a minimum one additional stud each side for lintel bearing.

Anchor bottom track to concrete or masonry with minimum 5/32" x 1 1/4" power driven fasteners at 16" o.c.

Top and bottom tracks shall be cold rolled or break formed steel, galvanized U shaped and minimum 16 gauge and as noted on the drawings.

Light gauge metal framing fasteners shall be minimum #10 self-drilling sheet metal screws, 16 threads per inch, with low profile head. Provide a minimum of two screws per connection unless noted otherwise.

All light gauge designations are in accordance with the Steel Stud Manufacturers Association (SSMA).

Temporary bracing shall be furnished by the light gauge supplier and framing installer and maintained until permanent systems providing lateral stability are in place.

Welding shall conform to the American Welding Society (AWS) "Structural Welding Code – Sheet Steel, D1.3 – Current Edition." Welders shall be qualified in accordance with AWS D1.3 and shall be experienced in light gauge welding.

All light gauge material to be welded must be nominal 16 gauge or thicker.

Touch up all light gauge material at welds with zinc-rich paint.

Align load bearing wall studs with floor or roof joists.

Splices in studs, joists, and headers, are not permitted, unless approved in writing by the structural engineer.

Framing components may be pre-assembled into panels prior to erecting. Prefabricated panels shall be square, with components attached in a manner that prevents racking.

GLUED LAMINATED TIMBER:

Glued laminated members shall be fabricated in conformance with ANSI Standard A190.1, American National Standard for Structural Glued Laminated Timber, or other code-approved design, manufacturing and/or quality assurance procedures.

Adhesive shall be wet-use exterior waterproof glue.

One coat of end sealer shall be applied immediately after trimming in either shop or field.

Do not drill, cut or notch members unless approved by the engineer or the glued laminated member manufacturer.

Glue laminated members that are treated with wood preservative shall comply with AITC 109.

WOOD STRUCTURAL PANELS:

Wood structural panels shall conform to the requirement of "U.S. Product Standard PS 1 for Construction and industrial Plywood", "U.S. Product Standard PS 2 Performance Standard for Wood-Based Structural-Use Panels, or "APA PRP-108 Performance Standards." Panels shall be APA Rated Sheathing, Exposure 1, of the thickness and Span Rating shown on the drawings.

All roof sheathing and sub-flooring shall be installed with face grain perpendicular to supports, except as indicated on the drawings.