## STRUCTURAL GENERAL NOTES

**DESIGN LOADS**: International Building Code; IBC 2009 Edition, except as noted

Occupancy Category, Table 1604.5 — II — Standard

Roofs:

| | | | | |
|---|---|---|---|---|
| Ground Snow, | Pg | | 60 psf | (used for drifting calculations) |
| Uniform Snow low, | Pf | | 34 psf | |
| Snow Exposure Factor | Ce | Table 1608.3.1 | 1.0 | |
| Snow importance Factor, | Is | Table 1604.5 | 1.0 | |
| Snow Thermal Factor, | Ct | Table 1608.3.2 | 1.0 | |

Floors:

| | |
|---|---|
| Office floor | 50 psf. |
| Corridors & Public Spaces | 100 psf. |
| Corridors above first floor | 80 psf |
| Storage Areas | 125 psf |

Lateral:

| | | | |
|---|---|---|---|
| Wind | IBC 1603.1.4, ASCE 7-05 | Analytic Method | |
| | 3 Second Gust Velocity | 100 mph | |
| | Importance Factor | 1.00 | |
| | Building Category and Internal Pressure Coefficient | | |
| | IBC 1609.2, ASCE Figure 6-5 | Enclosed | GCpi=0.18 |
| | Exposure | B | |
| | Components and Cladding Pressures | 70 psf at parapets and overhangs<br>45 psf at all other zones, uno. | |

**REINFORCED CONCRETE**:

Design is based on "Building Code Requirements for Reinforced Concrete"(ACI 318). Concrete work shall conform to "Standard Specifications for Structural Concrete" (ACI 301).

Structural concrete shall have the following properties: ***THE USE OF FLY ASH/ BLAST FURNACE SLAG TO REDUCE CEMENT CONTENT IS ENCOURAGED.***

| Intended Use | f'c, psi 28day | Max W/C Ratio | Maximum Aggregate | Slump inches | Entrained Air Percent ±1.5% | Cement Type | Admixtures, Comments |
|---|---|---|---|---|---|---|---|
| Topping slab | 4,000 | .5 | ¾" Stone | 4 | --- | I/II | 6x6 – W1.4XW1.4 W.W.F. + fibermesh |
| interior slabs on grade | 3,500 | .5 | ¾" Stone | 4 | --- | I/II | Fibermesh |

Detailing, fabrication, and placement of reinforcing steel shall be in accordance with the Manual of Standard Practice for Detailing Reinforced Concrete Structures (ACI 315-99).

Welded wire fabric shall conform to ASTM A185.

Reinforcing bars shall conform to ASTM A615,
Grade 60,
except ties or bars shown to be field-bent, which shall be Grade 40.

Epoxy coated reinforcing bars shall conform to ASTM 775.

Zinc coated (galvanized) reinforcing bars shall conform to ASTM 767.

Bars to be welded shall conform to ASTM 706.

At splices, lap bars 50 diameters unless noted otherwise.

At corners and intersections, make horizontal bars continuous or provide matching corner bars.

Around openings in walls and slabs, provide 2-#5, extending 2'-0 beyond edge of opening.

In continuous members, splice top bars at mid-span and splice bottom bars over supports.

Provide intermittent shear keys at all construction joints and elsewhere as shown on the drawings.

Except as noted on the drawings, concrete protection for reinforcement in cast-in-place concrete shall be as follows:

a. Cast against and permanently exposed to earth — 3"
b. Exposed to earth or weather:
#6 through #18 bars — 2"
#5 bar, W31 or D31 wire, and smaller — 1-1/2"
c. Not exposed to weather or in contact with ground:
Slabs, walls, joists: #11 bar and smaller — 3/4"
Beams, columns:
Primary reinforcement — 1-1/2"
Stirrups, ties, spirals — 1-1/2"

Fibremesh admixture shall be 100% virgin polypropylene, fibrillated fibers as manufactured by Fibremesh Co. per ASTM C-1116 type 111 4.1.3 and ASTM C-1116 performance level one, 1.5 lbs per cubic yard of concrete.

Anchor bolts and rods for beam and column-bearing plates shall be placed with setting templates.

Permanent corrugated steel forms for concrete floor slabs shall be manufactured and erected according to the "Specifications and Code of Standard Practice" of the Steel Deck Institute.

All concrete work is subject to inspection by a qualified special inspector employed by the owner in accordance with IBC Section 1704.4.

**STRUCTURAL STEEL**:

Structural steel shall be detailed, fabricated, and erected in accordance with the latest AISC Specifications, and Code of Standard Practice.

Structural steel wide flange beams shall conform to ASTM A992.

Except as noted, framed beam connections shall be bearing-type with 3/4" diameter, snug tight, A325-N bolts, detailed in conformance with Part 4, Tables II and III, for 0.6 times the allowable uniform loads tabulated in Part 2 of the AISC Manual, 9th Edition. Install bolts in accordance with AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts", 1985.

All beams shall have full depth web stiffeners each side of webs above and below columns

Anchor rods shall conform to ASTM F1554, high strength Gr 55, with weldability supplement S1.

Headed anchor studs (HAS) shall be attached to structural steel with equipment approved by the stud manufacturer according to the stud manufacturer's recommendations.

Welding shall be done by a certified welder in accordance with AISC and AWS specifications and recommendations using E70-electrodes. Where not specifically noted, minimum weld shall be 3/16" fillet by length of contact edge.

All post-installed anchors shall have current ICC-ES Report, and shall be installed in accordance with the manufacturer's requirements.

Expansion anchors shall be approved "wedge" type unless specifically noted to be "sleeve" type.

Chemical anchors shall be approved epoxy or similar adhesive type and shall have current ICC-ES Report. Where base material is not solid, approved screen tubes shall be used.

Grout beneath column base and beam-bearing plates shall be
minimum 28-day compressive strength of 7,500 psi,
approved pre-bagged, non-metallic, non-gaseous, bleed free,
non-shrink, when tested in accordance with ASTM C1107
Grade B or C at a flow cone fluid consistency of 20 to 30 seconds

**LIGHT GAUGE STRUCTURAL STEEL FRAMING**:

Member forming shall conform to AISI Cold-Formed Steel Specifications.

All structural framing (studs, joists, track, runners, bracing, and bridging) shall be galvanized sheet steel conforming to ASTM A525, G-60.
Studs and joists 43 mils (18 gauge) and heavier shall be 50 ksi yield.
33 mils (20 gauge) and lighter shall be, 33 ksi yield.

Subcontractor shall provide bridging and blocking at a maximum of 6 foot spacing or as required for stability and stiffness of the final assembly wherever sheathing does not provide adequate bracing.

Supplier shall design required lintels and headers at openings where not specifically detailed.

Member sizes noted on drawings are in the new SSMA standard nomenclature:
(##d)(sd)(##w)-(##t)
(##d) Member Depth (inches.hundredths)
(sd) Style Designation (see Style Designation in table below)
(##w) Flange Width (inches.hundredths)
(##t) Material Thickness (mils) (see Mils vs equivalent Gauge in table below)

| (sd) Style Designation | Member Type | (##t) Mils Thickness | Equivalent Gauge |
|---|---|---|---|
| S | Punched C-Section | 18 | 25 |
| J | Unpunched C-Section | 27 | 22 |
| T | Track | 30 | 20 – Drywall |
| U | Channel | 33 | 20 – Structural |
| F | Furring Channel | 43 | 18 |
| | | 54 | 16 |
| | | 68 | 14 |
| | | 97 | 12 |

**SHOP DRAWINGS**:

Construction Documents are copyrighted and shall not be copied for use as erection plans or shop details.

Use of SI Inc.'s electronic files as base for shop drawings requires prior approval by SI Inc, signed release of liability by subcontractor, payment of an administration fee of $100 per drawing sheet to SI Inc, and deletion of SI Inc's name and Logo from all sheets so used.

The General Contractor and his subcontractors shall submit in writing any requests to modify the plans or specifications.

All shop and erection drawings shall be checked and stamped by the General Contractor prior to submission for Engineer's review.

Unchecked submittals will be returned without review.

Furnish one (1) reproducible and two (2) prints of shop and erection drawings to the Structural Engineer for review prior to fabrication for reinforcing steel, structural steel, light gauge steel framing, steel stair framing and misc metals.

Submit in a timely manner to permit ten (10) working days for review.

Shop drawings submitted for review do not constitute "in writing" unless specific suggested changes are clearly marked. In any event, such changes by means of the shop drawing submittal process become the responsibility of the one initiating such change.

**VERIFICATION OF FIELD CONDITIONS**:

Contractor shall thoroughly inspect and survey to verify conditions that affect the work shown on the drawings.

Contractor shall report any variations or discrepancies to the Architect before proceeding.

**STRUCTURAL ERECTION AND BRACING REQUIREMENTS**:

The structural drawings illustrate the completed structure with elements in their final positions, properly supported and braced.

These construction documents contain typical and representative details to assist the contractor.

Details shown apply at all similar conditions unless otherwise indicated.

Although due diligence has been applied to make the drawings as complete as possible, not every detail is illustrated, nor is every exceptional condition addressed.

All proprietary connections shall be installed in accordance with the manufacturers' recommendations.

All work shall be accomplished in a workmanlike manner and in accordance with the applicable code and local ordinances.

The general contractor is responsible for coordination of all work, including layout and dimension verification, materials coordination, shop drawing review, and the work of subcontractors.

Any discrepancies or omissions discovered in the course of the work shall be immediately reported to the architect for resolution. Continuation of work without notification of discrepancies relieves the architect and engineer from all consequences.

Unless otherwise specifically indicated, the drawings do not describe methods of construction.

The contractor, in the proper sequence, shall perform or supervise all work necessary to achieve the final completed structure, and to protect the structure, workmen, and others during construction.

Such work shall include, but not be limited to, bracing, shoring for construction equipment, shoring for excavation, formwork, scaffolding, safety devices and programs of all kinds, support and bracing for cranes and other erection equipment.

Do not backfill against basement or retaining walls until supporting slabs and floor framing are in place and securely anchored, unless adequate bracing is provided.

Temporary bracing shall remain in place until all floors, walls, roofs and any other supporting elements are in place.

The architect and engineer bear no responsibility for the above items, and observation visits to the site do not in any way include inspection of them.

**LETTERS OF CONSTRUCTION COMPLIANCE**:

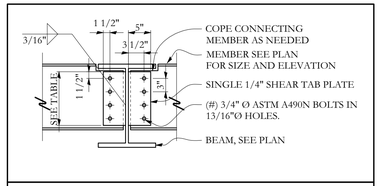
The General Contractor shall determine from the local building official at the time the building permit is obtained whether any letters of construction compliance will be requested from the Structural Engineer.

The Contractor shall notify the engineer about all such requirements in writing before the start of construction.

One-day advance notice shall be given when requesting site visits necessary as the basis for the compliance letter.

## ABBREVIATIONS KEY

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| AB | Anchor Rod (Bolt) | EF | Each Face | MACH | Machine | SC | Slip Critical |
| ADDL | Additional | EJ | Expansion Joint | MASY | Masonry | SCH | Schedule |
| ADJ | Adjustable | ELEV | Elevation | MATL | Material | SDST | Self Drilling Self Tapping |
| AFF | Above Finished Floor | ELEC | Electric (Electrical) | MAX | Maximum | SECT | Section |
| ALT | Alternate | ENGR | Engineer | MB | Machine bolt | SF | Square Feet |
| AMT | Amount | EQ | Equal | MECH | Mechanical | SHT | Sheet |
| ANCH | Anchor, Anchorage | EQUIP | Equipment | MEZZ | Mezzanine | SHTG | Sheathing |
| APPROX | Approximate | EQUIV | Equivalent | MFR | Manufacture, -er, -ed | SIM | Similar |
| ARCH | Architect, -ural | ES | Each Side | MIN | Minimum | SLH | Short Leg Horizontal |
| ATR | All Thread Rod | EST | Estimate | ML | Microllam (Trus-joist brand LVL) | SLV | Short Leg Vertical |
| AVG | Average | E-W | East to West | | | SOG | Slab on Grade |
| BC | Bottom of Concrete | EXC | Excavate | MO | Masonry Opening | SP | Spaces |
| BL | Brick Ledge | EXP | Expansion | MTL | Metal | SPEC | Specifications |
| BLK | Block | EXT | Exterior | NF | Near Face | SQ | Square |
| BLKG | Blocking | FND | Foundation | NIC | Not In Contract | ST | Snug Tight |
| BM | Beam | FF | Far Face, Finished Floor | NS | Near Side | STD | Standard |
| BOT | Bottom | F-F | Face to Face | N-S | North to South | STIFF | Stiffener |
| BRG | Bearing | FIG | Figure | NTS | Not to Scale | STL | Steel |
| BW | Bottom of Wall | FL | Flush | OCJ | OSHA Column Joist | STRUCT | Structure, -al |
| CB | Counterbore | FLG | Flange | OD | Outside Diameter | SUPT | Support |
| CF | Cubic Foot | FLR | Floor | OF | Outside Face | SY | Square Yard |
| CG | Center of Gravity | FO | Face of | OH | Opposite Hand | SYM | Symmetrical |
| CIP | Cast in Place | FP | Full Penetration | OPNG | Opening | T&B | Top and Bottom |
| CJ | Construction Joint (Control Joint) | FS | Far Side | OPP | Opposite | T&G | Tongue and Groove |
| | | FTG | Footing | OSB | Oriented Strand Board | TB | Top of Beam |
| CLG | Ceiling | GA | Gage (Gauge) | PAF | Powder Actuated Fast'nr | TC | Top of Concrete |
| CLR | Clear | GALV | Galvanized | PC | Precast | TD | Top of Deck |
| CM | Construction Manager (Management) | GC | General Contractor | PCF | Pounds Per Cubic Foot | THD | Thread |
| | | GEN | General | PEN | Penetration | THK | Thick, -ness |
| CMU | Concrete Masonry Unit | GL | Glue laminated (Glulam) | PERP | Perpendicular | TJ | Top of Joist |
| COL | Column | GND | Ground | PL | Property Line | TL | Total Load |
| COM | Common | GR | Grade | PLF | Pounds per Linear Foot | TPG | Topping |
| COMB | Combination | GT | Girder Truss | PNL | Panel | TRANS | Transverse |
| CONC | Concrete | GYP BD | Gypsum Board | PP | Panel Point | TW | Top of Wall |
| CONN | Connection | HAS | Headed Anchor Stud | PS | Prestressed | TYP | Typical |
| CONT | Continue (Continuous) | HORIZ | Horizontal | PSF | Pounds per Square Foot | ULT | Ultimate |
| COORD | Coordinate, -tion | HT | Height | PSI | Pounds per Square Inch | UNO | Unless Noted Otherwise |
| CS | Countersink | ID | Inside Diameter | PSL | Parallel Strand Lumber (generic term) | VERT | Vertical |
| CTR | Center | IF | Inside Face | | | VIF | Verify in Field |
| CY | Cubic Yard | INT | Interior (Intermediate) | PT (1) | Post Tensioned | WA | Wedge Anchor |
| DAB | Deformed Anchor Bar | JB | Joist Bearing | PT (2) | Pressure Treated | WP | Work Point |
| DET | Detail | JST | Joist | PTN | Partition | WT | Weight |
| DEV | Develop | JT | Joint | PWD | Plywood | WWF | Welded Wire Fabric |
| DIAG | Diagonal | K | Kip (1,000 lbs.) | QTY | Quantity | XS | Extra Strong |
| DIM | Dimension | LD | Load | R | Radius | XSECT | Cross-section |
| DL | Dead Load | LL | Live Load | RE | Reference (refer to) | XXS | Double Extra Strong |
| DN | Down | LLH | Long Leg Horizontal | RECT | Rectangle | | |
| DP | Drilled Pier | LLV | Long Leg Vertical | REINF | Reinforce, -ed, -ing | (E) | Existing |
| DT | Double Tee | LOC | Location | REQ | Required | (N) | New |
| DWG | Drawing | LSL | Laminated Strand Lumber (generic term) | REQMT | Requirement | (R) | Remove |
| DWL | Dowel | | | RET | Retaining | | |
| EA | Each | LT | Light | RM | Room | | |
| ECC | Eccentric | LVL | Laminated Veneer Lumber (generic term) | RMO | Rough Masonry Opening | | |
| E-E | End to End | | | RO | Rough Opening | | |




## SINGLE-PLATE SHEAR CONNECTION SCHEDULE

| CONN. BM. SIZE | # OF 3/4"Ø BOLTS | L (in.) | CONN CAP. (kips) |
|---|---|---|---|
| C8, C10, W8, W10 | 2 | 6 | 8 |
| C12, C14, W12, W14 | 3 | 9 | 16 |
| C16, W16 | 4 | 12 | 26 |

*ALL BOLTS TO BE ASTM A490 -TYP UNO

## Structural Drawing Index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GENERAL NOTES ETC.

S1.0