

# STRUCTURAL NOTES

**BASIS OF DESIGN:**

**A. GRAVITY LOADS**

- 1. ROOF DEAD LOADS: 25 PSF
- 2. ROOF LIVE LOADS: 20 PSF
- 3. 2<sup>ND</sup> FLOOR DEAD LOAD: 45 PSF
- 4. 2<sup>ND</sup> FLOOR LIVE LOADS: 100 PSF

**B. SNOW LOADS (REFERENCE: ASCE 7-10)**

BASIC SNOW LOAD,  $P_g = 5$  PSF (TABLE 7-2)  
ADJUSTED SNOW LOAD,  $P_s = 0.50$  (TERRAIN CATEGORY C) (FIGURE 7-1)  
 $C_t = 1.0$  (TABLE 7-3)  
 $I = 1.1$  (BUILDING CAT. III) (TABLE 7-4)

**C. WIND LOADS (REFERENCE: ASCE 7-10)**

BASIC WIND SPEED (3 SECOND GUST),  $V = 148$  MPH (FIGURE 26.5-1C)  
NOMINAL WIND SPEED:  $V_{nom} = 115$  MPH  
RISK CATEGORY = III (TABLE 1.5-1)  
EXPOSURE CATEGORY = C (SECTION 26.7)  
INTERNAL PRESSURE COEFFICIENTS: +0.18, -0.18 (TABLE 26.11-1) (ENCLOSED BUILDING TYPE)

THIS PROJECT IS NOT LOCATED IN A WIND-BORNE DEBRIS REGION.

**D. SEISMIC LOADS (REFERENCE: ASCE 7-10)**

RISK CATEGORY III (TABLE 1.5-1)  
0.2 SEC SPECTRAL RESPONSE ACCELERATION:  $S_s = 0.30$   
1.0 SEC SPECTRAL RESPONSE ACCELERATION:  $S_1 = 0.19$   
SPECTRAL RESPONSE ACCELERATION:  $S_{d1} = 0.31$   
SPECTRAL RESPONSE ACCELERATION:  $S_{d1} = 0.18$

BASIC SEISMIC FORCE-RESISTING SYSTEM LONGITUDINAL: SHEAR WALLS  
TRANSVERSE: SHEAR WALLS  
SEISMIC DESIGN CATEGORY = 1 (SECTION 11.8)  
SEISMIC IMPORTANCE FACTOR = 1.25 (TABLE 1.5-2)  
ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE (SECTION 12.8)

**GENERAL:**

- DO NOT SCALE DRAWINGS. FOLLOW DIMENSIONS SHOWN ON PLAN OR OBTAIN ADDITIONAL INFORMATION.
- CONTRACTOR SHALL COORDINATE AND VERIFY ALL DIMENSIONS AND ELEVATIONS SHOWN HEREIN WITH ARCHITECTURAL PLANS, SECTIONS, AND DETAILS PRIOR TO CONSTRUCTION OR MATERIAL PURCHASE. CONTRACTOR SHALL NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES NOTED. REFER TO ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS AND ELEVATIONS NOT SHOWN HEREIN.
- WHERE DETAIL OR SECTION IS SHOWN FOR ONE CONDITION, IT SHALL APPLY TO ALL LIKE OR SIMILAR LOCATIONS.
- CONTRACTORS SHALL VISIT THE SITE PRIOR TO BID TO ASCERTAIN CONDITIONS WHICH MAY AVERSELY AFFECT THE WORK OR COST THEREOF AND SHALL NOTIFY THE ARCHITECT IN WRITING PRIOR TO SUBMITTING BIDS.
- REFERENCE TO STANDARD SPECIFICATIONS OF ANY MECHANICAL SOCIETY, ORGANIZATION, OR ASSOCIATION OR TO CODES OF LOCAL OR STATE AUTHORITIES, SHALL MEAN THE LATEST STANDARD, CODE, SPECIFICATION, OR TENTATIVE SPECIFICATION ADOPTED AT THE DATE OF TAKING BIDS, UNLESS SPECIFICALLY STATED OTHERWISE.
- COORDINATE FLOOR SLAB LAYOUT WITH ARCHITECTURAL DRAWINGS FOR EXACT LIMITS AND DEPRESSIONS FOR AREAS TO RECEIVE ARCHITECTURAL FLOOR FINISHES. COORDINATE FLOOR JOINTS AT DOORS WITH ARCHITECTURAL DOOR DETAILS. LIMITS SHOWN ON STRUCTURAL DRAWINGS ARE SCHEMATIC.
- REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION AND DETAILS OF ALL EXTERIOR WALKS, CANOPIES, RAMPS, RAMP WALLS, AND ENTRANCE SLABS NOT DETAILED HEREIN.
- CHANGE IN SIZE OR DIMENSION OF ANY STRUCTURAL MEMBER SHALL BE MADE WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER OF RECORD. NO OPENING SHALL BE MADE IN ANY STRUCTURAL MEMBER WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER OF RECORD UNLESS SPECIFICALLY DETAILLED ON THE CONTRACT DRAWINGS.
- STRUCTURAL DRAWINGS ARE INTENDED TO BE USED WITH ARCHITECTURAL AND MECHANICAL DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING SUCH REQUIREMENTS INTO THE SHOP DRAWINGS AND CONSTRUCTION ACTIVITIES.
- THE USE OF REPRODUCTIONS OF CONTRACT DRAWINGS BY ANY CONTRACTOR, SUBCONTRACTOR, ERECTOR, FABRICATOR, OR MATERIAL SUPPLIER, IN LIEU OF PREPARATION OF SHOP DRAWINGS SIGNIFIES HIS ACCEPTANCE OF ALL INFORMATION SHOWN HEREON AS CORRECT AND OBLIGATES HIMSELF TO ANY JOB EXPENSE, REAL OR IMPLIED, ARISING FROM OR AS A RESULT OF ANY ERRORS THAT MAY OCCUR HEREON.
- CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL SAFETY PRECAUTIONS AND REGULATIONS DURING THE WORK. THE ENGINEER WILL NOT ADVISE ON NOR ISSUE DIRECTION AS TO SAFETY PRECAUTIONS AND PROGRAMS.
- CONTRACTOR HAS THE SOLE RESPONSIBILITY FOR MEANS, METHODS, SAFETY, TECHNIQUES, SEQUENCES, AND PROCEDURES OF ALL CONSTRUCTION SHOWN HEREIN. CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION, UTILITY, ANALYSIS, AND ERECTION PROCEDURES, INCLUDING DESIGN AND ERECTION OF FALSE WORK, TEMPORARY BRACING, ETC. CONTRACTOR HAS THE SOLE RESPONSIBILITY TO COMPLY WITH ALL OSHA REGULATIONS.
- THE STRUCTURE IS STABLE ONLY IN ITS COMPLETED FORM. TEMPORARY SUPPORTS REQUIRED FOR STABILITY DURING ALL INTERMEDIATE STAGES OF CONSTRUCTION SHALL BE DESIGNED, FURNISHED, AND INSTALLED BY THE CONTRACTOR.

**FOUNDATIONS:**

- FOUNDATION DESIGN IS BASED ON A MAXIMUM ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF BASED ON THE RECOMMENDATIONS INCLUDED IN GEOTECHNICAL REPORT PREPARED BY ECH GEOTECHNICAL, INC. ON 02/03/08 DATED 03/14/10. THE STRUCTURAL ENGINEER IS NOT RESPONSIBLE FOR SUBSURFACE CONDITIONS ENCOUNTERED IN THE FIELD DIFFERENT FROM THOSE ASSUMED OR DESIGNED.
- ALLOWABLE BEARING PRESSURE SHALL BE VERIFIED BY FIELD TESTING IN ACCORDANCE WITH REQUIREMENTS OF THE PROJECT SPECIFICATIONS. IN THE ABSENCE OF SPECIFICATION REQUIREMENTS, A DYNAMIC CONE PENETROMETER TEST (ASTM D1586) SHALL BE PROVIDED AT EACH COLUMN FOOTING EXCAVATION AND MAXIMUM 75' O.C. IN WALL FOOTINGS AND THICKENED SLABS TO VERIFY AVAILABILITY OF THE DESIGN PRESSURE INDICATED.
- ALL FOOTINGS AND SLABS SHALL BEAR ON SUBGRADE COMPACTED TO A MINIMUM 98% ASTM D-1587 UNLESS MORE STRINGENT REQUIREMENTS ARE INDICATED IN PROJECT SPECIFICATIONS. UNLESS OTHERWISE SPECIFIED, PROVIDE ONE COMPACTION TEST AT EACH COLUMN FOOTING EXCAVATION AND EVERY 50 FEET ON CENTER IN WALL FOOTINGS TO VERIFY COMPACTION HAS BEEN OBTAINED. NO FOOTINGS SHALL BEAR ON UNSATURATED ROCK A MINIMUM OF 2 FEET BELOW BOTTOM OF FOOTING AND REPLACE WITH STRUCTURAL FILL IN ACCORDANCE WITH PROJECT SPECIFICATION REQUIREMENTS.
- ALL WATER SOFTENED SOILS IN FOUNDATION EXCAVATIONS SHALL BE REMOVED PRIOR TO POURING CONCRETE. FILL OVER-EXCAVATED LIMITS WITH COMPACTED STRUCTURAL FILL OR ADDITIONAL CONCRETE.
- ALL BOTTOM REINFORCING IN FOOTINGS AND THICKENED SLABS SHALL BE SUPPORTED WITH WHOLE CONCRETE BRICKS OR PREFABRICATED ALL PLASTIC CHAIR SUPPORT AT MAXIMUM 48" O.C. BAR SUPPORTS SHALL BE POSITIONED TO MAINTAIN NO LESS THAN 2" CLEAR TO BOTTOM OF LOWEST REINFORCING BAR.
- ALL FOOTING, PIER AND OTHER FOUNDATION TYPE REINFORCING SHALL BE TIED IN PLACE PRIOR TO POURING CONCRETE.
- WHERE PLUMBING LINES OCCUR BELOW TOP OF WALL FOOTINGS TO A DEPTH OF 2 FT. BELOW BOTTOM OF WALL FOOTINGS, STEP WALL FOOTINGS DOWN TO THE CLEARANCES INDICATED ON TYPICAL DETAIL HEREIN UNLESS OTHERWISE SPECIFIED. COORDINATE LOCATIONS, SIZES, AND INVERTS WITH PLUMBING DRAWINGS.
- PROVIDE 1/4" PREMIXED EXPANSION JOINT FILLER AND PERIMETER OF SLABS WHERE THEY ABUT VERTICAL WALL SURFACES AND ALL SOLID SOILS AT JOINTS AS DETAILED.
- WHERE VERTICAL STEPS IN WALL FOOTINGS SHOWN ON FOUNDATION PLAN SHALL BE A MAXIMUM 2'-0" HIGH SPACED WITH MORE THAN 4" O.C.
- CONSTRUCTION JOINTS IN WALL FOOTINGS SHALL BE PREPARED BY KEYING WITH MINIMUM 2'-0" LAD HORIZONTAL REINFORCING.
- WHERE FINISHED GRADES DIFFER, PROVIDE STEPS OR SLOPE SEPARATION WALLS. PROVIDE TEMPORARY BRACING AND INVERTS TO PREVENT LATERAL MOVEMENT UNTIL ALL ADJACENT FILLING, CONSTRUCTION OF FLOOR SLABS, WALLS, AND FRAMING AT NEXT LEVEL IS COMPLETED.

**CONCRETE:**

- UNLESS OTHERWISE NOTED, THE CENTERLINES OF ALL PIERS AND COLUMN FOOTINGS SHALL BE USED AS COLUMN CENTERLINES OVER.
- UNLESS SPECIFIED OTHERWISE, CONCRETE COVER OVER REINFORCEMENT SHALL CONFORM TO THE FOLLOWING:
  - ALL FOOTINGS AND OTHER CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"
  - FORMED CONCRETE EXPOSED TO WEATHER: 1"
  - EXPOSED TO WEATHER: 1"
  - CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND: 1"

**FLOOR DECKS:**

- 3" (MIN.) LIGHTWEIGHT CONCRETE FILL (4000 PSI) OVER 9/16" X 28 GA. GALVANIZED STEEL FORM DECK, REINFORCED WITH 6X6X8/8 W/F. MINIMUM 3 CONT. SPANS.

**ROOF DECKS:**

**TYPE RD1:**

1/2" X 22 GA. GALVANIZED STEEL DECK EQUAL TO STEEL DECK INSTITUTE TYPE W22; MINIMUM 3 CONTINUOUS SPANS. SECURE TO SUPPORTS PER DETAIL SHOWN ON SHEET 54.2.

**TYPE RD2:**

1/2" X 20 GA. GALVANIZED STEEL DECK EQUAL TO STEEL DECK INSTITUTE TYPE W22; MINIMUM 3 CONTINUOUS SPANS. SECURE TO SUPPORTS PER DETAIL SHOWN ON SHEET 54.2.

- ALL CONCRETE WORK SHALL CONFORM TO ACI 318 AND CRSI STANDARDS. UNLESS SPECIFICALLY DETAILED, EXCEED 1/3 SLAB TO WALL THICKNESS UNLESS SPECIFICALLY DETAILED. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATION OF SLEEVES, ACCESSORIES, ETC.
- REFER TO ARCHITECTURAL DRAWINGS FOR MOLDS, GROOVES, ORNAMENTS, CLIPS, OR OTHER INSERTS REQUIRED TO BE ENCASED IN CONCRETE AND FOR EXACT LOCATIONS OF FLOOR FINISHES AND SLAB DEPRESSIONS.
- CONSTRUCTION JOINT LOCATIONS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER. NO HORIZONTAL CONSTRUCTION JOINTS ARE PERMITTED EXCEPT THOSE SHOWN ON THE STRUCTURAL DRAWINGS.
- DEFECTIVE AREAS IN CONCRETE WORK INCLUDING, BUT NOT LIMITED TO, HONEYCOMBING, SPALLS, AND CRACKS WITH WIDTHS EXCEEDING 0.10" SHALL BE REPAIRED BY THE CONTRACTOR. THE EXTENT OF THE DEFECTIVE AREA SHALL BE DETERMINED BY THE STRUCTURAL ENGINEER.
- NO REINFORCING SHALL BE CUT IN FIELD. ADDITIONAL REINFORCING AND THAT QUANTITY OF REINFORCING OCCURRING AT OPENINGS SHALL BE PLACED EQUALLY EACH SIDE OF OPENING AS DETAILED.
- UNLESS NOTED OTHERWISE, DETAILING AND FABRICATION OF REINFORCING STEEL SHALL FOLLOW ACI STANDARD OF STANDARD PRACTICE FOR DETAILING OF REINFORCED CONCRETE STRUCTURES (ACI 318).
- REINFORCING SHALL BE SUPPORTED IN FORMS AND SPACED WITH WIRE BAR SUPPORTS ACCORDING TO CRSI PLACING REINFORCING BARS, UNLESS NOTED OTHERWISE.

**STEEL FRAMING:**

- ALL WIDE FLANGE STEEL SHAPES INCLUDING WTS SHALL BE FABRICATED USING ASTM A992 GRADE 50 STRUCTURAL STEEL MATERIAL. ALL OTHER SHAPES, PLATES, BARS, ETC., SHALL BE ASTM A36 OR AS INDICATED IN DRAWINGS.
- ALL BOLTED CONNECTIONS SHALL BE MADE WITH 3/4" DIAMETER (MIN.) ASTM A325X HIGH STRENGTH BOLTS WITH LOAD INDICATOR WASHERS OR LOAD INDICATOR BOLTS INSTALLED PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
- STEEL FRAMING, INCLUDING BOLTED AND WELDED CONNECTIONS, BRACING, AND ANCHORS SHALL BE COMPLETE AND PLUMB PRIOR TO PLACEMENT OF DECKS.
- TOP OF STEEL ELEVATIONS SHOWN ON FRAMING PLANS ARE MEASURED FROM FINISHED FIRST FLOOR UNLESS NOTED.
- ALL STRUCTURAL STEEL CONSTRUCTION SHALL CONFORM TO SPECIFICATION FOR STRUCTURAL STEEL CONSTRUCTION - ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN OF AISC 14<sup>TH</sup> EDITION.
- ALL FABRICATIONS SHALL COMPLY WITH CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES, LATEST EDITIONS, AS PUBLISHED BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION.
- THE STRUCTURAL DRAWINGS ARE NOT INTENDED TO REPRESENT ALL STEEL REQUIRED ON THIS PROJECT. CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL MISCELLANEOUS STRUCTURAL STEEL FRAMING NOT SHOWN ON STRUCTURAL DRAWINGS INCLUDING MISCELLANEOUS ANGLE BRACING, BRACING, ETC.
- ALL STRUCTURAL STEEL EXPOSED TO WEATHERING JOINT REPAIRING AT CONTROL JOINTS SHALL BE OTHERWISE DIRECTED BY THE ARCHITECT. WHERE WELDING IS USED ON HOT-DIP GALVANIZED FRAMING MEMBERS, WELDS AND ADJACENT AREAS SHALL BE COATED WITH A COLD GALVANIZING COMPOUND PRIOR TO SUBMIT DATA SHEET OF MATERIAL TO BE USED FOR ARCHITECT'S REVIEW.
- DO NOT FIELD CUT ANY STRUCTURAL STEEL WITHOUT PRIOR REVIEW AND ACCEPTANCE OF THE ARCHITECT/ENGINEER.
- CONTRACTOR SHALL COORDINATE LOCATIONS, SIZE AND NUMBER OF ALL ROOF FRAMES FOR MECHANICAL ROOF AND FLOOR PENETRATIONS WITH MECHANICAL DRAWINGS AND EQUIPMENT FURNISHED. LOCATIONS AND SIZES OF FRAME OPENINGS SHOWN ON STRUCTURAL DRAWINGS ARE SCHEMATIC ONLY.
- NO SHOP SPICE OR OTHER CONNECTION WILL BE PERMITTED UNLESS SHOP SPICE OR CONNECTION IS SHOWN ON THE SHOP DRAWINGS AND REVIEWED BY THE ENGINEER.
- ALL FASTENERS SHALL CONSIST OF ONE BOLT, ONE LOAD INDICATOR WASHER, ONE HARDENED WASHER, AND ONE NUT. NO SLOTTED HOLES OR ARE ALLOWED UNLESS INDICATED ON SECTIONS AND DETAILS.
- AFTER ALL FIELD WELDING IS COMPLETED, WELDS SHALL BE CLEANED OF ALL WELDING SPOOLS AND RE-PRIMED. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS. PROOF OF CERTIFICATION FOR EACH WELDER PERFORMING FIELD WELDING SHALL BE AVAILABLE AT THE JOB SITE. ALL WELDERS SHALL HAVE BEEN CERTIFIED WITHIN THE PREVIOUS 12 MONTHS IN ACCORDANCE WITH SPECIFICATION REQUIREMENTS.

**STEEL COLUMNS:**

- STEEL COLUMN BASES ARE DESIGNED AS UN-RESTRAINED; THEREFORE COLUMNS MUST BE KEPT BRACED UNTIL ALL HORIZONTAL FRAMING HAS BEEN INSTALLED.
- STEEL COLUMN ANCHOR RODS SHALL BE INSTALLED AND TIED IN PLACE PRIOR TO POURING CONCRETE. ANCHOR RODS SHALL NOT BE REPAIRED, REPLACED, OR MODIFIED BY THE CONTRACTOR WITHOUT THE APPROVAL OF THE STRUCTURAL ENGINEER.
- WHERE JOISTS ARE SHOWN AT COLUMN LINES, JOISTS BETWEEN COLUMN LINES SHALL BE EQUALLY SPACED UNLESS NOTED OTHERWISE.
- UNLESS NOTED OTHERWISE, IF A BEAM IS DISCONTINUOUS AT A COLUMN, BEAM SHALL BE CONNECTED TO THE FACE OF THE COLUMN RATHER THAN ON TOP OF THE COLUMN.
- UNLESS NOTED OTHERWISE, WHERE BEAMS ARE NOT CONTINUOUS OVER TUBE OR PIPE COLUMNS PROVIDE 3/4" THICK DUCT PLATE ON TOP OF TUBE OR PIPE.
- UNLESS NOTED OTHERWISE, AT CONNECTION OF BEAMS TO TUBE COLUMNS, PROVIDE PLATE KNIFE THROUGH THE COLUMN AND/OR CONNECT WITH PIECE OF WT MEMBER.

**STEEL JOISTS:**

- ALL STEEL JOISTS, BRIDGING, AND THEIR CONNECTIONS SHALL BE DESIGNED, FABRICATED, AND ERECTED, ACCORDING TO THE SPECIFICATIONS OF THE STEEL JOIST INSTITUTE, LATEST EDITION. ALL JOISTS SHALL BE DESIGNED BY THE JOIST MANUFACTURER TO SUPPORT THE TOTAL LOAD-CARRYING CAPACITY SHOWN IN THE STEEL JOIST INSTITUTE TABLES FOR THE JOIST DEPTH, CHORD DESIGNS, SPANS, AND SPAN LENGTH INDICATED ON THE CONTRACT DRAWINGS.
- ALL STEEL ROOF JOISTS AND BRIDGING SHALL BE DESIGNED FOR A NET UNIFORM WIND UPLIFT LOAD SHOWN ON WIND PRESSURE DIAGRAM.
- MASONRY CONSTRUCTION SHALL NOT BE PERMITTED FOR WIND LOAD CONNECTIONS. STEEL JOIST MANUFACTURER TO PROVIDE ADDITIONAL BRIDGING AT JOIST BAR JOIST AS REQUIRED FOR WIND UPLIFT LOAD COMBINATIONS. JOIST SIZES SHALL NOT INCLUDE ANY CONTRIBUTIONS FROM WIND EFFECTS.
- NUMBER AND LOCATION OF BRIDGING LINES SHALL BE SHOWN IN DRAWINGS IS MINIMUM. STEEL JOIST MANUFACTURER SHALL PROVIDE ADDITIONAL BRIDGING ROWS AS REQUIRED TO MEET STEEL JOIST INSTITUTE REQUIREMENTS OF LATEST OSHA REGULATIONS.
- STEEL JOIST MANUFACTURER SHALL HAVE SOLE RESPONSIBILITY FOR FABRICATION, AND DETAIL OF ALL STEEL JOIST FABRICATIONS TO COMPLY WITH ALL OSHA REQUIREMENTS.
- THE JOIST MANUFACTURER SHALL BE RESPONSIBLE FOR PROVIDING ALL SPECIAL JOIST CALL-OUTS SUCH AS BEARING SIZES AND DATED SEAL OF THE PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE JOISTS ARE MANUFACTURED.
- ALL JOISTS SHALL BEAR DESIGN LOAD WITH A 1/4" WIDE FLANGE. JOISTS SHALL BE DESIGN TO CARRY DESIGN LOAD WITH A BEARING OF 1 7/8". JOISTS TO BE SHOWN ALL-AROUND APPLIED TO EACH OTHER WHEN MINIMUM BEARING OF 1 7/8" IS MET.
- STEEL JOISTS SHALL NOT BE MODIFIED WITHOUT THE APPROVAL OF THE STRUCTURAL ENGINEER.
- NO VENTS, DUCTS, CONDUITS OR ANY OTHER MECHANICAL OR ELECTRICAL COMPONENT SHALL BE SUSPENDED FROM JOIST BRIDGING.
- STEEL JOISTS WHICH ARE SCHEDULED TO RECEIVE SPRAYED-ON FIREPROOFING SHALL BE UNPAINTED AND MEET THE REQUIREMENTS FOR MINIMUM CHORD AND WEB MEMBERS REQUIRED BY THE U.S. DESIGN NUMBER REQUIREMENTS SPECIFIED BY THE ARCHITECT.
- SEE MECHANICAL FOR DUCTS TO BE ROUTED THRU (PERPENDICULAR TO) JOISTS. JOIST MANUFACTURER SHALL FABRICATE ALL JOIST WEB MEMBERS TO ALLOW SUCH THAT DUCTS CAN PASS THRU JOIST ON CONTINUOUS STRAIGHT RUN WHERE INDICATED IN MECHANICAL DRAWINGS. COORDINATE DUCT NUMBER, SIZE, & LOCATION WITH MECH. NOTE THAT THE DUCT SIZES INDICATED ON PLAN ARE NOMINAL DESIGN SIZE AND DO NOT INCLUDE INSULATION. COORDINATE TOTAL OUT-TO-OUT DUCT SIZE AND MINIMUM THICKNESS OF INSULATION WITH MECHANICAL TO DETERMINE THE OVERALL REQUIRED DUCT CLEARANCE THRU JOISTS. INDICATE REQUIRED OVERALL DUCT SIZES AND LOCATIONS IN JOIST SHOP DRAWINGS.
- SEE MECHANICAL FOR IN BETWEEN AND PARALLEL TO JOISTS WITH DUCTS RUNNING ABOVE THE BOTTOM CHORD ELEVATION WITHIN THE PLANE OF THE JOIST. WHERE BOLTED DIAGONAL BRIDGING IS REQUIRED FOR THE JOIST, JOIST MFR SHALL DESIGN AND DETAIL TEMPORARY REMOVAL DIAGONAL BRIDGING IN ADDITION TO INSTALLING PERMANENT HORIZONTAL BRIDGING IN THOSE INSTANCES. AFTER ROOF DECK IS INSTALLED AND SECURED TO JOISTS REMOVE TEMPORARY DIAGONAL BRIDGING AND LEAVE PERMANENT HORIZONTAL BRIDGING IN PLACE. INDICATE IN JOIST SHOP DRAWINGS. COORDINATE WITH MECHANICAL FOR ALL REQUIRED DUCT LOCATIONS, ETC.

**FLOOR DECKS:**

- 3" (MIN.) LIGHTWEIGHT CONCRETE FILL (4000 PSI) OVER 9/16" X 28 GA. GALVANIZED STEEL FORM DECK, REINFORCED WITH 6X6X8/8 W/F. MINIMUM 3 CONT. SPANS.

**ROOF DECKS:**

**TYPE RD1:**

1/2" X 22 GA. GALVANIZED STEEL DECK EQUAL TO STEEL DECK INSTITUTE TYPE W22; MINIMUM 3 CONTINUOUS SPANS. SECURE TO SUPPORTS PER DETAIL SHOWN ON SHEET 54.2.

**TYPE RD2:**

1/2" X 20 GA. GALVANIZED STEEL DECK EQUAL TO STEEL DECK INSTITUTE TYPE W22; MINIMUM 3 CONTINUOUS SPANS. SECURE TO SUPPORTS PER DETAIL SHOWN ON SHEET 54.2.

**ROOF OPENINGS:**

- GENERAL:
  - OPENINGS OVER 8": ADD 20 GA. GALVANIZED SHEET 12" LARGER THAN OPENING. ATTACH WITH STAINLESS STEEL SHEET METAL SCREWS MAX. 6" O.C. ON FOUR SIDES.
  - OPENINGS OVER 8": SEE TYPICAL DETAIL.
- ROOF DRAINAGE TYPICAL DETAIL.
- ARRANGEMENT, NUMBERING, AND LOCATION OF MECHANICAL OPENINGS ARE APPROX. AND SCHEMATIC AND SHALL BE COORDINATED WITH MECHANICAL AND PLUMBING DRAWINGS TO OBTAIN EXACT CONFIGURATIONS, SIZES, AND LOCATIONS.

**CONCRETE MASONRY:**

- REINFORCED WALLS, PIERS, AND PLASTER, SHALL BE FILLED IN MAXIMUM 8'-0" LIFTS. FILL SHALL BE MECHANICALLY MIXED (ASTM C476) GROUT WITH MAXIMUM 3/4" DIA. AGGREGATE AND SHALL DEVELOP NOT LESS THAN 2500 PSI MINIMUM 28 DAY COMPRESSIVE STRENGTH.
- MINIMUM COMPRESSIVE STRENGTH OF CONCRETE MASONRY SHALL BE  $f_m = 1500$  PSI.
- ALL REINFORCING SHALL BE TIED IN CMU CELLS IN THE LOCATION INDICATED ON THE STRUCTURAL DETAILS AS REQUIRED TO PREVENT DISPLACEMENT OF REINFORCING DURING PLACEMENT OF GROUT.
- VERTICAL REINFORCING SHALL BE LAPPED AT DOWELS AND SPLICES A MINIMUM OF 48 DIAMETERS BUT NOT LESS THAN 2'-6".
- PROVIDE A 4"x4" CLEAN-OUT OPENING AT THE BOTTOM COURSE OF EACH VERTICAL LIFT AT ALL REINFORCED CELLS EXCEPT WHERE OPENING CANNOT BE CONCEALED BY BRICK OR OTHER WALL VENEERS OR FINISHES. PRIOR TO FILLING CELLS WITH GROUT, CMU REINFORCED CELLS SHALL BE THOROUGHLY FLUSHED TO REMOVE ALL DEBRIS AND MORTAR PROJECTIONS. SEAL OPENING PRIOR TO FILLING CELL WITH GROUT.
- WHERE REINFORCED PIERS (TYPES P1, P2, P3, ETC.) ARE INDICATED ON FOUNDATION PLAN, THEY SHALL BE DISCONTINUOUS ABOVE BEARING OF LINTEL EXCEPT AS FOLLOWS:
  - TOP OF STEEL ELEVATIONS SHALL SHOW FRAMING PLANS ARE MEASURED FROM FINISHED FIRST FLOOR UNLESS NOTED.
  - CONTINUE JAMB REINFORCING 24" ABOVE OPENING OPENINGS OVER 8'-0".
  - CONTINUE JAMB REINFORCING TO TOP OF WALL.
- MASONRY CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE SPECIFICATION FOR MASONRY STRUCTURES (ACI 530-1-99) PUBLISHED BY THE AMERICAN CONCRETE INSTITUTE.
- REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM A615, GRADE 60. SHOP FABRICATED REINFORCING BARS WHICH ARE SHOWN TO BE HOOKED OR BENT. ALL REINFORCING DOWELS FROM FOUNDATIONS SHALL MATCH VERTICAL REINFORCING, SIZE AND SPACING INDICATED FOR CONSTRUCTION OF WALL OVER. ALL DOWELS SHALL BE STANDARD 90 HOOKS (MINIMUM 6").
- UNLESS INDICATED OTHERWISE IN SPECIFICATIONS OR ON ARCHITECTURAL DRAWINGS, PROVIDE 8" GA. HORIZONTAL TRUSS TYPE JOINT REINFORCING AT 16' O.C. AT WALLS. DISCONTINUE JOINT REINFORCING AT CONTROL JOINTS.
- PROVIDE CMU CONTROL JOINTS WHERE INDICATED ON ARCHITECTURAL DRAWINGS WITH ADDITIONAL JOINTS SUCH THAT THE SPACING BETWEEN JOINTS DOES NOT EXCEED 16' (MAXIMUM SPACING OF 3 TIMES THE WALL HEIGHT (0'-0" MAX.)) WHERE BEAMS OR LINTELS BEAR AT CMU CONTROL JOINTS, OFFSET JOINT AND LAP THE VERTICAL REINFORCING AS INDICATED.

**SPECIAL STRUCTURAL INSPECTIONS:**

- SPECIAL INSPECTIONS:
  - SPECIAL STRUCTURAL TESTS AND INSPECTIONS SHALL BE PERFORMED ON THIS PROJECT IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 17 OF THE 2012 IBC BUILDING CODE.
  - SPECIAL STRUCTURAL TESTS AND INSPECTIONS SHALL BE PERFORMED BY AN AGENCY SELECTED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER OF RECORD (EOR) WHICH MEETS ALL OF THE REQUIREMENTS FOR AGENCIES INDICATED IN IBC 2012 SECTION 1704. SPECIAL INSPECTORS SHALL QUALIFIED PERSONS WHO SHALL DEMONSTRATE COMPETENCE IN THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTIONS OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION EQUIPMENT SPECIAL INSPECTION.
  - CONTRACTOR SHALL COORDINATE THE INSPECTION SERVICES IN ACCORDANCE WITH THE PROGRESS OF THE WORK. THE CONTRACTOR SHALL PROVIDE SUFFICIENT NOTICE TO THE ENGINEER TO ALLOW PROPER PARTICIPATION OF THE SPECIAL INSPECTORS. COSTS SHALL BE PAID FOR BY THE OWNER. COSTS OF INSPECTION SERVICES SHALL BE EXEMPTED UNDER ARTICLE 17 AND SPECIFICATIONS SHALL BE IDENTIFIED IN THE REPORT AND THE COSTS OF THE SPECIAL INSPECTORS SHALL BE IDENTIFIED IN THE REPORT.
  - SPECIAL INSPECTORS SHALL KEEP A RECORD OF ALL INSPECTIONS PERFORMED. COPIES OF ALL INSPECTIONS SHALL BE PROVIDED TO THE BUILDING OFFICIAL, ARCHITECT, AND THE EOR WITHIN 48 HOURS OF THE COMPLETION OF EACH INSPECTION.
  - REPORTS SHALL INDICATE THAT THE WORK WAS PERFORMED AND CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. WORK WHICH DOES NOT COMPLY WITH THE CONTRACT DOCUMENTS SHALL BE IDENTIFIED IN THE REPORT AND SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR.
  - A FINAL REPORT OF INSPECTIONS DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED TO THE BUILDING OFFICIAL, THE ARCHITECT, AND THE EOR PRIOR TO COMPLETION OF THE STRUCTURAL SYSTEMS BUT AT A FREQUENCY NOT TO EXCEED 60 DAYS.
- REQUIRED SPECIAL INSPECTIONS

IBC SECTION	DESCRIPTION OF WORK	SPECIAL INSPECTION REQUIRED	YES	NO	REMARKS
1704.2.5	INSPECTION OF FABRICATIONS	X		1	
1705.2	STEEL CONSTRUCTION	X		2	
1705.3	CONCRETE CONSTRUCTION	X		3	
1705.4	MASONRY CONSTRUCTION	X		4	
1705.5	WOOD CONSTRUCTION	X		5	
1705.6	SOILS	X		5	
1705.7	DRIVEN DEEP FOUNDATION	X			
1705.8	CAST-IN-PLACE DEEP FOUNDATIONS	X			
1705.9	HELICAL PILE FOUNDATIONS	X			
1705.10	WIND RESISTANCE	X			
1705.11	SEISMIC RESISTANCE	X			
1705.12	TESTING AND QUALIFICATIONS FOR TESTING	X			
1705.13	SEISMIC RESISTANCE	X			
1705.14	SPRAYED FIRE-RESISTANT MATERIALS	X			
1705.15	MASTIC AND INTUMESCENT COATINGS	X			
1705.16	EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS)	X			

REMARKS:

- WHERE FABRICATION OF STRUCTURAL LOAD BEARING ELEMENTS (I.E. JOISTS) ARE BEING PERFORMED ON THE PREMISES OF A FABRICATOR'S SHOP, SPECIAL INSPECTIONS ARE REQUIRED.
- STEEL SPECIAL INSPECTION: CONTINUOUS AND PERIODIC INSPECTIONS, AS DEFINED BY SECTION 202 OF THE IBC 2012 BUILDING CODE, SHALL BE PERFORMED BY THE SPECIAL INSPECTION AGENCY IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 1705.2 AND TABLE 1704.2.
- CONCRETE SPECIAL INSPECTION: CONTINUOUS AND PERIODIC INSPECTIONS, AS DEFINED BY SECTION 202 OF THE IBC 2012 BUILDING CODE, SHALL BE PERFORMED BY THE SPECIAL INSPECTION AGENCY IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 1705.4 AND TABLE 1704.2.
- MASONRY SPECIAL INSPECTION: CONTINUOUS AND PERIODIC INSPECTIONS, AS DEFINED BY SECTION 202 OF THE IBC 2012 BUILDING CODE, SHALL BE PERFORMED BY THE SPECIAL INSPECTION AGENCY IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 1705.4 AND QUALITY ASSURANCE PROGRAM REQUIREMENTS OF AC308/AC308.5 INCLUDING THICKNESS OF INSULATION WITH MECHANICAL TO DETERMINE THE OVERALL REQUIRED DUCT CLEARANCE THRU JOISTS. INDICATE REQUIRED OVERALL DUCT SIZES AND LOCATIONS IN JOIST SHOP DRAWINGS.
- SEE MECHANICAL FOR IN BETWEEN AND PARALLEL TO JOISTS WITH DUCTS RUNNING ABOVE THE BOTTOM CHORD ELEVATION WITHIN THE PLANE OF THE JOIST. WHERE BOLTED DIAGONAL BRIDGING IS REQUIRED FOR THE JOIST, JOIST MFR SHALL DESIGN AND DETAIL TEMPORARY REMOVAL DIAGONAL BRIDGING IN ADDITION TO INSTALLING PERMANENT HORIZONTAL BRIDGING IN THOSE INSTANCES. AFTER ROOF DECK IS INSTALLED AND SECURED TO JOISTS REMOVE TEMPORARY DIAGONAL BRIDGING AND LEAVE PERMANENT HORIZONTAL BRIDGING IN PLACE. INDICATE IN JOIST SHOP DRAWINGS. COORDINATE WITH MECHANICAL FOR ALL REQUIRED DUCT LOCATIONS, ETC.

IBC SECTION	DESCRIPTION OF WORK	SPECIAL INSPECTION REQUIRED	YES	NO	REMARKS
1705.3	CONCRETE CONSTRUCTION	X		3	
1705.4	MASONRY CONSTRUCTION	X		4	
1705.5	WOOD CONSTRUCTION	X		5	
1705.6	SOILS	X		5	
1705.7	DRIVEN DEEP FOUNDATION	X			
1705.8	CAST-IN-PLACE DEEP FOUNDATIONS	X			
1705.9	HELICAL PILE FOUNDATIONS	X			
1705.10	WIND RESISTANCE	X			
1705.11	SEISMIC RESISTANCE	X			
1705.12	TESTING AND QUALIFICATIONS FOR TESTING	X			
1705.13	SEISMIC RESISTANCE	X			
1705.14	SPRAYED FIRE-RESISTANT MATERIALS	X			
1705.15	MASTIC AND INTUMESCENT COATINGS	X			
1705.16	EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS)	X			

## STRUCTURAL LEGEND

**SYMBOLS**


---	FOOTING
	UNREINFORCED CONCRETE MASONRY
----	REINFORCED CONCRETE MASONRY
----	CONCRETE
----	BOND BEAM
---	REIN. MASONRY PIERS
----	DROP SLAB TO RECEIVE FLOOR FINISH
----	THICKENED SLAB
----	FLOOR JOINT
----	WALL FLOOR JOINT
----	SAWM JOINT
---	1" DEEP TOOLED JOINT
----	CONCRETE SLAB TURNDOWN
----	SLOPE (DIRECTION AND DROP)
----	VERTICAL STEP IN WALL FOOTING
----	TOP OF STEEL ELEVATION
----	TOP OF FOOTING ELEVATION
----	ADD #4@2' IN CENTERLINE OF SLAB
----	HIGH STRENGTH BOLT

**ABBREVIATIONS**

W	WITH
DBL	DOUBLE
FT	FOOT
FT	FEET
J	JOINT
TL	TRUSS
L	LONG
U.L.	UNLESS NOTED
F.A.	FIRE AS
GA	GAUGE
E.W.	EACH WAY
O.C.	ON CENTER
CL	CLEARANCE
FD	FLOOR DRAIN
LV	LONG LEG VERTICAL
SLV	SHORT LEG VERTICAL
EJ	EXPANSION JOINT
MBM	METAL BUILDING MANUFACTURER
MSP	METAL BUILDING PURLINS
D.H.	OPPOSITE HAND
MB	MICROMAN BEAM
R	ROUGH SAW
P.T.	PRESSURE TREATED
P.E.	PROF. ENGINEER

## STRUCTURAL SHEET INDEX

- S0.1 STRUCTURAL NOTES
- S0.2 WIND PRESSURE DIAGRAMS
- S1.1 FOUNDATION AND SECOND FLOOR FRAMING PLANS
- S1.2 SECTIONS
- S2.1 ROOF FRAMING PLAN
- S2.2 SECTIONS
- S3.1 COLUMN & FOUNDATION SCHEDULE
- S4.1 COLUMN DETAILS
- S4.2 TYPICAL DETAILS




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