

GENERAL

- STRUCTURAL NOTES ARE NOT INTENDED TO REPLACE SPECIFICATIONS. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. FOR INCONSISTENCIES STANDARD PRACTICE, THE STRICTER REQUIREMENT SHALL APPLY, AND THE ENGINEER SHALL BE NOTIFIED PRIOR TO PROCEEDING WITH THE AFFECTED PORTION OF THE WORK.
- STRUCTURAL CONSTRUCTION DOCUMENTS SHALL BE USED WITH OTHER CONSTRUCTION DOCUMENTS, INCLUDING ARCHITECTURAL, MECH. AND SITE DOCUMENTS. COORDINATE WITH THESE DOCUMENTS FOR LOCATIONS AND DIMENSIONS OF OPENINGS, CHASES, INSERTS, REGLETS, SLEEVES, DEPRESSIONS, ETC., NOT INDICATED ON THE STRUCTURAL DOCUMENTS. ALL DIMENSIONS AND CONDITIONS, EXISTING OR NEW, SHALL BE FIELD VERIFIED. THE ENGINEER SHALL BE NOTIFIED OF DISCREPANCIES PRIOR TO PROCEEDING WITH THE AFFECTED PORTION OF WORK.
- THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AFTER THE BUILDING IS COMPLETE. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE ERECTION PROCEDURES AND SEQUENCE TO ENSURE STABILITY AND SAFETY DURING CONSTRUCTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF SHEETING, SHORING, TEMPORARY BRACING, GUYS, AND TIEDOWNS. THE CONTRACTOR SHALL PROVIDE SHORING AND BRACING NECESSARY TO PROTECT EXISTING AND ADJACENT STRUCTURES.
- SECTIONS AND DETAILS SHOWN ON ANY STRUCTURAL DOCUMENTS SHALL BE CONSIDERED TYPICAL FOR SIMILAR CONDITIONS THAT DO NOT HAVE A SPECIFIC SECTION INDICATED, AND SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
- APPLICABLE FEDERAL, STATE AND MUNICIPAL REGULATIONS SHALL BE FOLLOWED, INCLUDING THE FEDERAL DEPARTMENT OF LABOR OSHA.
- THE CONTRACTOR IS RESPONSIBLE FOR LIMITING THE AMOUNT OF CONSTRUCTION LOAD IMPOSED ON THE STRUCTURE. CONSTRUCTION LOADS SHALL NOT EXCEED THE SPECIFIED DESIGN LIVE LOADS. CONCRETE SLABS AND TOPPING SHALL NOT BE LOADED UNTIL THE CONCRETE HAS REACHED AT LEAST 75% OF THE SPECIFIED DESIGN COMPRESSIVE STRENGTH.
- THE CONTRACTORS CONSTRUCTION SEQUENCES SHALL ALLOW FOR THE EFFECTS OF THERMAL MOVEMENTS DURING THE CONSTRUCTION PERIOD, PRIOR TO THE BUILDING BEING ENCLOSED AND TEMPERATURE CONTROLLED. NEGATIVE EFFECTS OF SUCH THERMAL MOVEMENTS, SUCH AS MATERIAL CRACKING, FROST HEAVE, ETC., SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- IN THE ABSENCE OF SPECIFIC INSTRUCTIONS TO THE CONTRARY IN THE CONTRACT DOCUMENTS, THE TRADE PRACTICES THAT ARE DEFINED IN ANY CODE OF STANDARD PRACTICE SHALL GOVERN.
- DO NOT SCALE DRAWINGS TO DETERMINE DIMENSIONS, LOCATIONS, OR SIZES OF ANY ELEMENT.

STRUCTURAL DESIGN CRITERIA

- DESIGN LOADS ARE IN ACCORDANCE WITH THE 2018 EDITION OF THE INTERNATIONAL BUILDING CODE (IBC) INCLUDING LOCAL CODES, WHERE APPLICABLE, AND THE FOLLOWING STANDARDS REFERENCED IN IBC 2018:
ACI 318 - BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
ACI 530.1 - BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES
ACI 530.1 - SPECIFICATIONS FOR MASONRY STRUCTURES
AFPA NDS - NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION
ASCE 560 - SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS
ASCE 7 - MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
- IBC BUILDING OCCUPANCY CATEGORY: IV
- LIVE LOADS ARE AS FOLLOWS. LIVE LOAD REDUCTIONS HAVE BEEN TAKEN WHERE APPLICABLE, UNO.
ROOF LIVE LOAD 30 PSF (UNREDUCIBLE)
ASSEMBLY AREAS 100 PSF
OFFICE 100 PSF
FIRST FLOOR CORRIDORS 100 PSF
LOBBIES 100 PSF
MECHANICAL ROOMS 150 PSF
STAIRS 100 PSF
- SNOW LOADING IS BASED ON THE FOLLOWING: DRIFTING AND SLIDING SNOW LOADS HAVE BEEN CONSIDERED WHERE APPROPRIATE.
RAIN ON SNOW SURCHARGE NA (Pg. 20 PSF)
GROUND SNOW LOAD, P_g 25 PSF
FLAT ROOF SNOW LOAD 21 PSF
SNOW EXPOSURE FACTOR, C_e 1.0
SNOW THERMAL FACTOR, C_t 1.0
SNOW LOAD IMPORTANCE FACTOR, I 1.2
DESIGN SNOW LOAD 30 PSF
- WIND LOADING IS BASED ON THE FOLLOWING:
BASIC WIND SPEED (3 SEC GUST) 128 MPH
EXPOSURE CATEGORY C
BUILDING CATEGORY: SIMPLE DIAPHRAGM, LOW-RISE, ENCLOSED, RIGID INTERNAL PRESSURE COEFF. ±0.18

WALLS	10 SF	20 SF	50 SF	100 SF
WALLS	25.6, -27.7	24.5, -26.6	23.0, -25.1	21.8, -24.0
WALL CORNERS	25.6, -34.1	24.5, -31.9	23.0, -28.9	21.8, -26.6
ROOF ZONE 1 (27 TO 45)	16.0, -44.6	16.0, -41.6	16.0, -37.7	16.0, -34.8
ROOF ZONE 2 (27 TO 45)	16.0, -35.8	16.0, -35.0	16.0, -30.0	16.0, -26.2
ROOF ZONE 3 (27 TO 45)	16.0, -30.1	16.0, -27.6	16.0, -22.6	16.0, -25.0

- SEISMIC LOADING IS BASED ON THE FOLLOWING:
SEISMIC IMPORTANCE FACTOR 1.5
SEISMIC SITE CLASS D
SPECTRAL RESPONSE COEFF. (S_s) 0.181g
SPECTRAL RESPONSE COEFF. (S₁) 0.047g
SPECTRAL RESPONSE COEFF. (S_m) 0.193g
SPECTRAL RESPONSE COEFF. (S_w) 0.079g
LONG PERIOD TRANSITION (T_g) 6
SEISMIC DESIGN CATEGORY B
ANALYSIS PROCEDURE EQUIVALENT LATERAL FORCE
BASIC STRUCTURAL SYSTEM ORDINARY STEEL MOMENT FRAMES
SEISMIC FLOOR RESISTING SYSTEM
- LATERAL EARTH PRESSURES ON RETAINING AND BASEMENT WALLS ARE BASED ON THE FOLLOWING PRESUMPTIVE LOADING:
EQUIVALENT AT-REST FLUID PRESSURE (BASEMENT) 60 PSF
EQUIVALENT ACTIVE FLUID PRESSURE (CANTILEVERED) 45 PSF
EQUIVALENT PASSIVE FLUID PRESSURE 300 PSF
COEFFICIENT OF FRICTION 0.30
COHESION NA
- DESIGN REACTIONS AND SUPPORT DETAILS FOR ELEVATOR, ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING EQUIPMENT ARE BASED UPON AVAILABLE MANUFACTURER INFORMATION. SUPPORT CONDITIONS MAY NEED TO BE REVISED BASED UPON ACTUAL SUPPLIED EQUIPMENT AND SUPPORT DETAILS.

IBC SPECIAL INSPECTIONS

- STRUCTURAL TESTS AND SPECIAL INSPECTIONS ARE REQUIRED BY THE INTERNATIONAL BUILDING CODE AND SHALL BE PERFORMED ON THIS PROJECT IN ACCORDANCE WITH REQUIREMENTS OF IBC CHAPTER 17, "STRUCTURAL TESTS AND SPECIAL INSPECTIONS."
- AS REQUIRED BY IBC, THE STRUCTURAL TESTS AND SPECIAL INSPECTIONS SHALL BE PERFORMED BY AN INDEPENDENT, APPROVED AGENCY, EMPLOYED BY THE OWNER.
- COPIES OF ALL REPORTS DOCUMENTING THE SPECIAL INSPECTIONS AND TESTS PERFORMED BY THE INSPECTING AGENCY, ANY POTENTIAL IMPACT TO THE STRUCTURAL ENGINEER OF RECORD (BAKER, INGRAM & ASSOCIATES).
- SPECIAL INSPECTIONS SHALL INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
FABRICATOR INSPECTION: WHERE FABRICATION OF LOAD-BEARING MEMBERS AND ASSEMBLIES (SUCH AS STRUCTURAL STEEL, LIGHT-GAGE STEEL TRUSSES, ETC.) IS PERFORMED ON THE PREMISES OF A FABRICATORS SHOP, SPECIAL INSPECTION SHALL BE PROVIDED TO VERIFY FABRICATION AND QUALITY CONTROL PROCEDURES. IN ACCORDANCE WITH IBC SECTION 1704.2.5.
CONCRETE CONSTRUCTION: SPECIAL INSPECTIONS AND VERIFICATIONS SHALL CONFORM TO IBC SECTION 1705.3 AND TABLE 1705.3 REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION.
MASONRY CONSTRUCTION: SPECIAL INSPECTIONS AND EVALUATION SHALL CONFORM TO IBC SECTION 1705.4.
STEEL CONSTRUCTION: SPECIAL INSPECTIONS SHALL CONFORM TO IBC SECTION 1705.2, ASCE 560-10, SDI OARG AND TABLE 1705.2.3 REQUIRED SPECIAL INSPECTIONS OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS. STEEL CONSTRUCTION INCLUDES STRUCTURAL STEEL, STEEL JOISTS, STEEL FLOOR, ROOF DECK, AND COLD-FORMED STEEL FRAMING.
SOILS: SPECIAL INSPECTIONS AND EVALUATION SHALL CONFORM TO IBC SECTION 1705.6 AND TABLE 1705.6 REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOIL.

TYPICAL DETAILS

- TYPICAL DETAILS APPLY AT ALL APPROPRIATE LOCATIONS.
- TYPICAL DETAILS ARE GENERALLY NOT CUT ON THE PLANS.
- CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL TYPICAL DETAIL APPLICATIONS.

SUBMITTALS

- THE APPLICABLE CONTRACTOR SHALL SUBMIT THE FOLLOWING FOR APPROVAL:
CONCRETE MIX DESIGNS FOR EACH STRENGTH INDICATED
CONCRETE REINFORCING SHOP DRAWINGS, INCLUDING ELEVATIONS OF ALL WALLS
STRUCTURAL STEEL SHOP DRAWINGS, INCLUDING ELEVATIONS OF ALL WALLS
MASONRY REINFORCING SHOP DRAWINGS, INCLUDING ELEVATIONS OF ALL WALLS
MASONRY GROUT AND MORTAR MIX DESIGNS
PRODUCT DATA & MILL TEST FOR EACH APPLICABLE PRODUCT
STEEL JOIST SHOP DRAWINGS
METAL DECK SHOP DRAWINGS
COLD FORMED FRAMING SHOP DRAWINGS & CALCULATIONS W/ P.E. SEAL
STEEL STAIR FRAMING SHOP DRAWINGS & CALCUS W/ P.E. SEAL

FOUNDATIONS

- FOUNDATIONS HAVE BEEN DESIGNED BASED ON A PRESUMPTIVE BEARING CAPACITY OF 2 KSF. PRESUMPTIVE BEARING CAPACITY SHALL BE VERIFIED PRIOR TO PLACING FOUNDATIONS.
- SPREAD FOOTINGS SHALL BEAR ON UNDISTURBED SOIL OR COMPACTED STRUCTURAL FILL HAVING A MINIMUM SAFE BEARING CAPACITY OF 2 KSF.
- THE BOTTOMS OF EXTERIOR FOOTINGS SHALL BE 36" MINIMUM BELOW FINISH GRADE.
- EDGES OF FOOTINGS SHALL NOT BE PLACED AT A GREATER THAN 1' (VERTICAL) TO 2' (HORIZONTAL) SLOPE WITH RESPECT TO ANY ADJACENT FOOTING OR EXCAVATION.
- ADJACENT COLUMN FOOTINGS THAT ADJUT SHALL BE SEPARATED BY A PAPER JOINT. FOUNDATION CONCRETE SHALL BE NORMAL WEIGHT HAVING A MINIMUM 28 DAY DESIGN COMPRESSIVE STRENGTH AS FOLLOWS:
SPREAD FOOTINGS 4000 PSI
WALLS & PIERS 4000 PSI
SLAB-ON-GRADE (INTERIOR) 3500 PSI
SLAB-ON-GRADE (EXTERIOR) 5000 PSI (0.40 W/C MAX.)
- PROVIDE AIR-ENTRAINMENT IN ALL CONCRETE EXPOSED TO FREEZE-THAW CONDITIONS DURING THE CONSTRUCTION PERIOD AND/OR IN THE COMPLETED STRUCTURE.
- VERTICAL CRACK CONTROL/CONSTRUCTION JOINTS IN CONCRETE WALL SHALL BE PROVIDED AT 25 FT. O/C MAX.

FOUNDATION SUBGRADE PREPARATION REQUIREMENTS

- A GEOTECHNICAL ENGINEER, LICENSED IN THE JURISDICTION WHERE THE PROJECT IS LOCATED, SHALL OBSERVE, REVIEW, AND APPROVE ALL WORK RELATED TO EXCAVATION, BACKFILL, COMPACTON, SUBGRADE AND SUBBASE PREPARATION AND MATERIAL SELECTION.
- THE BUILDING SITE SHALL BE STRIPPED OF ANY TOPSOIL, ORGANIC MATTER, VEGETATION, FILL MATERIALS, AND OTHERWISE UNSUITABLE OR SOFT SUBGRADE MATERIALS.
- UNSTABLE MATERIALS SHALL BE EXCAVATED DOWN TO RESIDUAL SOIL ELEVATIONS.
- SOIL BEARING ELEVATIONS SHALL BE VERIFIED BY THE GEOTECHNICAL ENGINEER PRIOR TO BACKFILLING EXCAVATIONS OR CONSTRUCTING FOUNDATIONS.
- WHERE ROCK IS ENCOUNTERED WITHIN 12 INCHES OF FOUNDATION BEARING ELEVATION (SUBGRADE SHALL BE PROBED TO DETERMINE THIS), UNDERCUT ROCK BY 12 INCHES MIN. BELOW BEARING ELEVATION AND REPLACE WITH COMPACTED STRUCTURAL FILL.
- AT SLAB-ON-GRADE AREAS, FOLLOWING STRIPPING, THE SUBGRADES SHALL BE PRODFILLED WITH A LOADED TANDYMO AXLE DUMP TRUCK OR TENSION ROLLER UNDER OBSERVATION OF THE GEOTECHNICAL ENGINEER. AREAS WHICH EXHIBIT EXCESSIVE PUMPING OR WEAVING, AS DETERMINED BY THE GEOTECHNICAL ENGINEER, SHALL BE REMOVED AND REPLACED WITH NEW COMPACTED STRUCTURAL FILL.
- COMPACTED FILL SHALL BE USED TO RAISE EXISTING GRADES TO THE PROPOSED NEW ELEVATION WHERE REQUIRED.
- UNDER-SLAB DRAINS, CONSISTING OF A 4 INCH WASHED GRAVEL OR CRUSHED STONE DRAINAGE LAYER (CORRESPONDING TO PA DOT 2B), SHALL BE USED BENEATH THE CONCRETE SLAB-ON-GRADE.

CONCRETE SLABS ON GRADE

- GEOTECHNICAL ENGINEER SHALL OBSERVE AND APPROVE SUBGRADE BEFORE CONCRETE PLACEMENT.
- DO NOT PLACE CONCRETE SLABS ON FROZEN GROUND.
- CONTROL JOINTS ARE REQUIRED IN CONCRETE SLABS-ON-GRADE. REFER TO PLANS AND TYPICAL DETAILS FOR THE JOINT CONSTRUCTION, LOCATIONS, AND SPACING REQUIREMENTS.
- PROVIDE (2) #4 X 4'-0" LONG BARS DIAGONALLY AT ALL RE-ENTRANT CORNERS.
- COORDINATE LOCATION AND DIMENSIONS OF RECESSED SLABS.

DRILLED ANCHORS

- EXPANSION ANCHORS SHALL BE (UNO):
HILTI HMK BOLT 12 OR EQUIVALENT
3/4" DIAMETER
SUFFICIENT LENGTH TO PROVIDE 6 INCH MINIMUM EMBEDMENT
- CHEMICAL ADHESIVE ANCHORS SHALL BE (UNO):
HILTI HIT HY200 OR HILTI HIT HY270 AS APPLICABLE, OR EQUIVALENT
3/4" DIAMETER
SUFFICIENT LENGTH TO PROVIDE 6 INCH MINIMUM EMBEDMENT
- GROUT CMU COURSES AT ANCHORS FOR 8" MIN ABOVE AND BELOW ANCHOR LINES
- ANCHORS IN EXTERIOR APPLICATIONS SHALL BE HOT-DIPPED GALVANIZED.

STRUCTURAL NOTES:

SINKHOLES

- THE SITE IS LOCATED IN AN AREA PRONE TO SINKHOLE FORMATION. CONSTRUCTION METHODS SHALL BE USED THAT MINIMIZE THE POTENTIAL FORMATION OF SINKHOLES DURING CONSTRUCTION. THE APPROVED INSPECTION AGENCY SHALL REVIEW SITE CONDITIONS DURING CONSTRUCTION TO VERIFY THAT PROPER PROCEDURES ARE USED TO MITIGATE SINKHOLE FORMATION. ANY SINKHOLES THAT ARE DISCOVERED DURING CONSTRUCTION SHALL BE REPAIRED UNDER THE DIRECT SUPERVISION OF THE APPROVED INSPECTION AGENCY. ANY POTENTIAL IMPACT TO THE FOUNDATION DESIGN, SUCH AS THE REQUIREMENT FOR THE FOUNDATIONS TO SPAN A SINKHOLE, SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD.

CONCRETE REINFORCING

- REINFORCED CONCRETE CONSTRUCTION SHALL CONFORM TO ACI 318.
- CONCRETE REINFORCING SHALL CONFORM TO THE FOLLOWING DESIGNATIONS:
DEFORMED BARS ASTM A615, GRADE 60
DEFORMED BARS (WELDABLE) ASTM A706
WELDED WIRE FABRIC ASTM A1064
- LAP DEFORMED BARS 40 DIA., U.N.O. PROVIDE CORNER AND L BARS AT CORNERS AND INTERSECTIONS. REINFORCING INDICATED AS CONTINUOUS SHALL BE LAPPED. HOOKS SHALL BE STANDARD HOOKS, U.N.O. LAP WELDED WIRE FABRIC SUCH THAT THE OVERLAP OF THE OUTERMOST CROSS-WIRES OF EACH ADJOINING SHEET IS NOT LESS THAN THE SPACING OF THE CROSS-WIRES PLUS TWO IN. U.N.O.
PROVIDE CONTINUOUS REINFORCEMENT WHEREVER POSSIBLE, SPLICE ONLY AS SHOWN OR APPROVED. STAGGER SPLICES WHERE POSSIBLE. USE TENSION SPLICE CLASS 99 U.N.O. DOWNLAYS SHALL MATCH THE SIZE AND SPACING OF THE SPECIFIED REINFORCEMENT AND SHALL BE LAPPED WITH TENSION SPLICES.
- CONCRETE PROTECTION FOR REINFORCEMENT:
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3 IN.
CONCRETE EXPOSED TO EARTH OR WEATHER: #6 THROUGH #10 BARS 2 IN.
#5 BAR OR SMALLER 1 1/2 IN.
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
SLABS, WALLS, JOISTS #11 AND SMALLER 3/4"
BEAMS, COLUMNS, PIERS: 1 1/2"
- REINFORCING FOR SLABS ON GRADE, WHERE NOT OTHERWISE SPECIFIED, SHALL BE AS FOLLOWS:
REINFORCING BARS: SEE FOUNDATION AND TYPICAL DETAILS. AT SLAB BLOCKOUT AND RE-ENTRANT CORNERS, PROVIDE 2#4 X 4'-0" DIAGONALS.
WIRE MESH: 6X6 W/2.9Wx2.9 W/WF. REINFORCING SHALL BE SUPPORTED PRIOR TO THE POUR AT MID-DEPTH OF SLAB.
- REINFORCING FOR CONCRETE TOPPING, WHERE NOT OTHERWISE SPECIFIED, SHALL BE AS FOLLOWS:
REINFORCING BARS: SEE FRAMING AND TYPICAL DETAILS. AT OPENINGS AND RE-ENTRANT CORNERS, PROVIDE 2#4 X 4'-0" DIAGONALS.
6X6 W/2.9Wx2.9 W/WF. REINFORCING SHALL BE SUPPORTED 1' BELOW THE TOP OF SLAB PRIOR TO THE POUR.
- DETAILING OF CONCRETE REINFORCING AND ACCESSORIES SHALL CONFORM TO ACI DETAILING MANUAL MNL-66, AND WITH ACI 315, MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCING CONCRETE STRUCTURES.

CONCRETE SLABS ON METAL DECK

- CONCRETE SLABS ON METAL DECK SHALL BE NORMAL WEIGHT WITH A MINIMUM 28 DAY DESIGN COMPRESSIVE STRENGTH OF 3,500 PSI.
- CONCRETE SLABS ON METAL DECK SHALL BE FINISHED LEVEL, UNO, MAINTAINING SPECIFIED MINIMUM SLAB THICKNESS. CONTRACTOR SHALL ALLOW FOR ADDITIONAL CONCRETE OVER THE SPECIFIED MINIMUM TO ACCOUNT FOR METAL DECK AND STRUCTURE DEFLECTIONS.
- CONCRETE SLAB-ON-DECK CONSTRUCTION JOINT (CJ) LOCATION GUIDELINES:
A. DO NOT LOCATE CJ ON BEAM OR GIRDER CENTERLINES.
B. CJ PARALLEL TO FILLER BEAM: LOCATE MIDWAY BETWEEN ADJACENT FILLER BEAMS
C. CJ PARALLEL TO GIRDER: LOCATE 1/4 TO 1/3 THE DISTANCE TO ADJACENT GIRDER.
D. CJ PERPENDICULAR TO BEAMS AND GIRDERS: LOCATE AT 1/4 TO 1/3 THE MEMBER SPAN FROM BEAM OR GIRDER END.

CONCRETE MASONRY

- CONCRETE MASONRY CONSTRUCTION SHALL CONFORM TO ACI 530 AND 530.1
- MINIMUM COMPRESSIVE STRENGTH OF CONCRETE MASONRY SHALL BE 1500 PSI. (MIN. NET AREA COMPRESSIVE STRENGTH OF UNIT = 1900 PSI)
- CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C90.
- CONCRETE MASONRY REINFORCING SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.
- DEFORMED BAR ANCHORS (DBA) SHALL CONFORM TO ASTM A496, DBA SHALL BE WELDED BY AUTOMATIC EQUIPMENT TO THE PROPORTIONAL REQUIREMENTS OF ASTM C476.
- GROUT SHALL CONFORM TO THE PROPORTIONAL REQUIREMENTS OF ASTM C476. PROVIDE FINE AND COARSE GRIDS APPROPRIATE FOR THE SIZE OF VOID SPACE BEING FILLED. GROUT SHALL HAVE A MINIMUM SLUMP OF 8 INCHES ACHIEVED THROUGH SUFFICIENT WATER CONTENT - WATER REDUCING AND OTHER ADMIXTURES ARE NOT PERMITTED IN GROUT.
- GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI.
- MORTAR SHALL CONFORM TO ASTM C270, TYPE M OR S, FCL OR MORTAR CEMENT. THE USE OF MASONRY CEMENT IS NOT PERMITTED.
- REINFORCING VOIDS, AND NON-REINFORCING VOIDS SPECIFIED TO BE GROUTED, IN CONCRETE MASONRY SHALL BE FILLED WITH GROUT IN 5 FT. MAXIMUM LIFTS. STOP POURS 1 1/2 INCHES BELOW THE BED JOINT TO FORM A KEY AT FOUR JOINTS.
- USE SQUARE ENDED BLOCK TO ENSURE REINFORCED VOIDS ALIGN VERTICALLY.
- REINFORCING BARS SHALL BE TIED TO DOWNLAYS AND HELD IN THE PROPER POSITION BY MECHANICAL BAR POSITIONERS DESIGNED FOR THAT PURPOSE.
- REINFORCING SHALL NOT BE PLUNGED INTO WET GROUT.
- LAP UNCOATED, DEFORMED BARS 48 BAR DIAMETERS. INCREASE SPECIFIED LAP LENGTHS 50% FOR EPOXY COATED BARS.
- CONCRETE MASONRY SHALL BE LAID IN RUNNING BOND. UNO. PLASTERS SHALL BE BONDED, UNO.
- LOAD BEARING CMU SHALL HAVE FULL MORTAR BED JOINTS.
- PROVIDE LADDER-TYPE HORIZONTAL JOINT REINFORCEMENT AS FOLLOWS:
TYPICAL: 1 G IN. O/C MAX, UNO.
AT BELOW GRADE WALLS: PROVIDE AT 8' O/C
AT PARAPETS: PROVIDE AT 8' O/C
AT WALL OPENINGS: PROVIDE ADDL REINF. NOT MORE THAN 8 IN. ABOVE AND BELOW OPENING. TERMINATE 2 FT. BEYOND OPENING.
PROVIDE CONTINUITY AT INTERSECTIONS AND CORNERS USING PREFABRICATED T-SHAPED AND L-SHAPED UNITS, AND LAP ALL CONSECUTIVE SECTIONS OF TRUSS TYPE REINFORCING A MINIMUM OF 8 INCHES.
- PROVIDE VERTICAL CONTROL JOINTS IN WALLS AT 24 FT. O/C MAX, U.N.O.
- ALL CMU WALLS SHALL BE DOWNLAYS TO SUPPORTING SLABS WITH MINIMUM #4@48 HOOKED DOWNLAYS, UNO. ALL CMU WALLS SUPPORTED DIRECTLY ON STEEL MEMBERS SHALL BE ANCHORED WITH 1/2" DIAMETER X 4" STUD ANCHORS AT 32" O.C. OR WITH #4 X 2'-0" DBAS AT 48" O.C, UNO.
- THE TOPS OF ALL NON-LOAD BEARING CMU WALL SHALL BE BRACED ACCORDING TO SPECIFIC SECTIONS AND/OR TYPICAL DETAILS.
- PROVIDE BOND BEAMS FOR WALL THICKNESS AND HEIGHTS AS FOLLOWS:
BOND BEAM UNITS SHALL BE OPEN CELL UNITS THAT PERMIT VERTICAL REINFORCING TO PASS THROUGH
8" CMU: UP TO 12 FT.: 1#5
UP TO 16 FT.: 1#6
8" CMU: UP TO 16 FT.: 2#5
UP TO 24 FT.: 2#6
10" X 12" CMU UP TO 12 FT.: 2#5
UP TO 24 FT.: 2#6
UP TO 32 FT.: 2#7

MECHANICAL ROOFTOP LAPPT CURBS, OPENINGS & ROOF ACCESS

- PROVIDE FRAMING FOR ALL ROOFTOP EQUIPMENT CURBS AND OPENINGS, AND ROOF ACCESS, IN NEW AND EXISTING CONSTRUCTION ACCORDING TO TYPICAL DETAILS, UNO.
- COORDINATE SIZES AND LOCATIONS OF CURBS AND OPENINGS WITH MECHANICAL DRAWINGS AND MECHANICAL CONTRACTOR AND ROOF ACCESS OPENINGS WITH ARCHITECTURAL DRAWINGS. CURBS AND OPENINGS SHALL BE CENTERED BETWEEN AND ACROSS NEW AND EXISTING ROOF MEMBERS.
- ALL ROOF JOISTS AND TRUSSES (NEW AND EXISTING) SHALL BE REINFORCED FOR OFF-PANEL POINTS LOADS ACCORDING TO TYPICAL DETAIL.
- RE-USE EXISTING OPENINGS WHERE POSSIBLE.

STRUCTURAL STEEL

- STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING DESIGNATIONS:
STRUCTURAL STEEL WF SHAPES ASTM A992
OTHER STRUCTURAL STEEL SHAPES ASTM A36, UNO
STEEL BARS, ANGLES AND PLATES ASTM A36, UNO
STIFF PLATES IN MOMENT CONNECTIONS ASTM A572, UNO
ROUND PIPE ASTM A583, TYPE E OR S
SQUARE & RECTANGULAR HSS ASTM A500, GRADE C
- STRUCTURAL STEEL DESIGN IS AND SHALL BE BASED UPON AISC'S A50 METHOD.
- BOLTS SHALL BE MINIMUM 3/4 IN. DIA. AND SHALL CONFORM TO THE FOLLOWING DESIGNATIONS, UNO:
HIGH STRENGTH BOLTS ASTM A325
ANCHOR BOLTS ASTM F1554, GRADE 36
- BOLTED COIN SHALL CONFORM TO RCSC'S "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS".
- WELDING, WELDING ELECTRODES, AND FLUXES SHALL CONFORM TO AWS D1.1 "STRUCTURAL WELDING CODE - STEEL". ELECTRODES SHALL HAVE A MINIMUM TENSILE STRENGTH OF 70 KSI.
- GROUT UNDER STEEL COLUMNS OR POST BASEPLATES SHALL BE NON-METALLIC, SHRINKAGE RESISTANT GROUT CONFORMING TO ASTM C1107 AND HAVING A MINIMUM DESIGN COMPRESSIVE STRENGTH OF 5000 PSI. GROUT UNDER STEEL BEAM BEARING PLATES IN CONCRETE OR MASONRY WALLS SHALL CONFORM TO ASTM C476.
- HIGH STRENGTH BOLTED CONNECTIONS SHALL BE TIGHTENED TO THE SNUG-TIGHT CONDITION, UNO.
- HIGH STRENGTH BOLTS IN CONNECTIONS USED FOR KICKERS, BRACING MEMBERS OR MOMENT CONNECTIONS THAT ARE FABRICATED WITH SLOTTED HOLES SHALL BE SELF-CUTTING. IF STANDARD HOLES ARE USED, BOLTS SHALL BE FULLY PRE-TENSIONED.
- MINIMUM CAPACITY OF BEAM SHEAR CONNECTIONS: DESIGN CONNECTIONS USING THE "MAXIMUM TOTAL UNIFORM LOAD" TABLES IN THE AISC MANUAL. FOR NON-COMPOSITE BEAMS THE CONNECTION CAPACITY SHALL BE AT LEAST 50% OF THE MAXIMUM UNIFORM LOAD CAPACITY, UNO. FOR COMPOSITE BEAMS, THE CONNECTION CAPACITY SHALL BE AT LEAST 80% OF THE MAXIMUM TOTAL UNIFORM LOAD, UNO. REACTIONS NOTED ON DRAWINGS ARE BASED ON ASD.
- PROVIDE FULL DEPTH CONNECTIONS AT ALL BEAM OR GIRDER TO COLUMN CONNECTIONS.
11. PROVIDE COLUMN CAP PLATES AS FOLLOWS, UNO:
FOR DECK BEARING: 1/4" THICK (PROVIDE WHERE BEAMS DO NOT FRAME INTO BOTH SIDES OF COLUMN)
1/2" THICK AT 4 SEAM JOISTS
FOR JOIST BEARING: 1/2" THICK AT LH DLH JOISTS
3/4" THICK AT LH DLH JOISTS
FOR BEAM BEARING: SEE TYPICAL DETAILS, 3/4" MIN.
FOR MOMENT CONNECTIONS: SEE TYPICAL DETAILS
PROVIDE COLUMN CAP PLATES AT ALL HSS COLUMNS
- WEB STIFFENERS SHALL BE PROVIDED IN WF SHAPES AS FOLLOWS:
COLUMN WEBS: AT FULLY DEVELOPED MOMENT CONNECTIONS. STIFFENERS SHALL BE COMPLETE PENETRATION GROOVE WELDED, SAME THICKNESS AND GRADE AS BEAM FLANGES. WHERE MOMENT CONNECTIONS OCCUR ON COLUMN FLANGES AND COLUMN WEBS, STIFFENER THICKNESS SHALL EQUAL THE VECTOR SUMMATION OF THE RESPECTIVE BEAM FLANGE THICKNESSES.
BEAM WEBS: WHERE BEAM BEARS ON COLUMN, SAME THICKNESS AND STRENGTH AS COLUMN FLANGES.
BEAM WEBS: WHERE COLUMN BEARS ON BEAM, SAME THICKNESS AND STRENGTH AS COLUMN FLANGES.
- PRIOR TO DETAILING CONNECTIONS FOR STRUCTURAL STEEL, THE STEEL FABRICATOR SHALL SUBMIT FOR APPROVAL REPRESENTATIVE DETAILS FOR EACH TYPE OF PROPOSED STRUCTURAL CONNECTION. SUCH DETAILS SHALL INDICATE DESIGN CAPACITIES. AFTER APPROVAL, THE CONNECTIONS SHALL BE INCORPORATED INTO THE SHOP DRAWINGS.
- ALL EXTERIOR EXPOSED STRUCTURAL STEEL SHALL BE HOT-DIPPED GALVANIZED.

COMPOSITE BEAM CONSTRUCTION

- STEEL SHEAR STUD CONNECTORS SHALL CONFORM TO ASTM A106, GRADES 1010 THROUGH 1020 (60 KSI TENSILE STRENGTH), AND SHALL CONFORM TO THE REQUIREMENTS OF AWS D1.1 "STRUCTURAL WELDING CODE - STEEL". STUDS SHALL BE WELDED BY AUTOMATIC EQUIPMENT THROUGH METAL DECK, OR DIRECTLY TO THE STEEL MEMBER.
- SHEAR STUDS SHALL BE 3/4 INCH DIA. AND SHALL EXTEND A MINIMUM OF 1 1/2 INCHES ABOVE THE TOP OF THE STEEL MEMBER TO THE INSTALLATION. THE MINIMUM AMOUNT OF CONCRETE COVER ON TOP OF THE SHEAR STUD SHALL BE 1/2 INCH.
- THE MINIMUM SPACING OF SHEAR STUDS SHALL BE 4 INCHES O/C PARALLEL TO THE BEAM SPAN, AND 3 INCHES O/C TRANSVERSE TO THE BEAM SPAN. THE MAXIMUM SPACING SHALL NOT EXCEED 8 TIMES THE TOTAL SLAB THICKNESS.
- WHERE DECK FLUTES ARE PERPENDICULAR TO THE BEAM SPAN, LOCATE THE SHEAR STUD IN THE PORTION OF THE DECK RIB CLOSEST TO THE BEAM END.
- WHERE METAL DECK FLUTES ARE PARALLEL TO THE MEMBER SPAN, THE DECK SHALL BE SPLIT LONGITUDINALLY AND SEPARATED TO FORM A CONCRETE HAUNCH OVER THE MEMBER.

STEEL JOISTS

- STEEL JOISTS, JOIST GIRDERS, AND BRIDGING SHALL CONFORM TO SJI'S STANDARD SPECIFICATIONS[®] FOR K, KC3, V5, LH, DLH, AND S1H SERIES JOISTS AND S1J5 RECOMMENDED CODE OF STANDARD PRACTICE FOR STEEL JOISTS AND JOIST GIRDERS.
- PROVIDE AND ANCHOR BRIDGING LINES AND ACCORD TO S1J5 SPECIFICATIONS. BRIDGING INDICATED ON DRAWINGS IS SCHEMATIC, AND MAY NOT REFLECT THE S1J5 REQUIRED MINIMUM NUMBER OF LINES.
- JOIST AND JOIST GIRDER TO COLUMN CONNECTIONS SHALL HAVE BOTTOM CHORD EXTENSIONS. BOTTOM CHORD EXTENSIONS SHALL HAVE POSITIVE ATTACHMENT TO SUPPORT BY BOLTING OR BY WELDING. BOTTOM CHORD EXTENSIONS SHALL BE CONNECTED ONLY AFTER ALL DEAD LOADS ARE APPLIED.
- K-SERIES JOIST EXTENSIONS SHALL BE TYPE R-1, UNO.
- PROVIDE JOIST CAMBER ACCORDING TO S1J5 SPECIFICATION, UNO.
- REFER TO STRUCTURAL DESIGN CRITERIA FOR NET UPLIFT LOADING REQUIREMENTS FOR ROOF JOISTS AND JOIST GIRDERS. PROVIDE ADDITIONAL WIND UPLIFT BRIDGING LINES AT MEMBER ENDS.
- MECH/ELECTRICAL CONFLICTS WITH JOIST BRIDGING: ALL HORIZONTAL 4 DIAGONAL BRIDGING SHALL BE INSTALLED AND ANCHORED ACCORDING TO S1J5 REQUIREMENTS. AFTER DECK IS INSTALLED, BRIDGING MAY BE RE-WORKED AS FOLLOWS TO ACCOMMODATE INSTALLATION OF DUCTS, PIPING, CONDUIT, ETC.:
A. DIAGONAL BRIDGING MAY BE REPLACED WITH HORIZONTAL BRIDGING IN NON-ADJACENT JOIST BAYS. DO NOT REMOVE DIAGONAL BRIDGING IN MORE THAN ONE LOCATION AT A TIME BEFORE RE-INSTALLING HORIZONTAL BRIDGING.
B. HORIZONTAL BRIDGING MAY BE REMOVED ONLY IN NON-ADJACENT JOIST BAYS. DIAGONAL BRIDGING MUST BE INSTALLED IN BOTH ADJACENT JOIST BAYS, ALIGNED WITH THE LOCATIONS OF HORIZONTAL BRIDGING THAT IS TO BE REMOVED. DO NOT REMOVE HORIZONTAL BRIDGING BEFORE INSTALLING NEW DIAGONAL BRIDGING IN ADJACENT JOIST BAYS.
IF THE ABOVE LIMITATIONS CANNOT BE MET, THE JOIST MANUFACTURER SHALL BE CONTACTED FOR DIRECTION.

METAL DECKING

- METAL DECKING SHALL CONFORM TO THE FOLLOWING DESIGNATIONS:
COMPOSITE FLOOR DECK ASTM A653, GRADE 40
ROOF DECK ASTM A653, GRADE 33
- METAL DECK SHALL CONFORM TO AISI'S "SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS" TO S1015 "DESIGN MANUAL FOR FLOOR AND ROOF DECKS", AND TO S1015. MANUAL OF CONSTRUCTION WITH STEEL DECK.
- WELDING SHALL CONFORM TO AWS D1.3-90 "STRUCTURAL WELDING CODE - SHEET STEEL".
PROVIDE WELDING WASHERS FOR DECK LIGHTER THAN 24 GAGE.
- SPECIFIED ROOF DECK HAS BEEN DESIGNED TO BE CONTINUOUS OVER 3 SPANS MINIMUM. FOR ONE OR TWO SPAN CONDITIONS, PROVIDE HEAVIER GAGE DECK AS REQUIRED TO SUPPORT APPLICABLE LOADS.
- SPECIFIED COMPOSITE FLOOR DECK HAS BEEN DESIGNED FOR 3 SPAN UNSHORED CONSTRUCTION. FOR ONE OR TWO SPAN CONDITIONS, PROVIDE HEAVIER GAGE DECK OR SHORING AS REQUIRED TO SUPPORT APPLICABLE LOADS.
- FASTEN COMPOSITE FLOOR AND ROOF DECK PANELS TO SUPPORTING STEEL MEMBERS WITH S1015-015 "DESIGN MANUAL FOR FLOOR AND ROOF DECKS", UNO. FASTEN TO PERIMETER STEEL MEMBERS AT 12" O.C., UNO. MECHANICAL FASTENING METHODS ARE PERMITTED IN LIEU OF WELDING. CONTRACTOR SHALL PROVIDE SUBMITTAL TO INDICATE SPECIFIC FASTENING SYSTEM AND DATA TO INDICATE THAT MECHANICAL FASTENERS MEET OR EXCEED THE DIAPHRAGM CAPACITY ACHIEVED BY THE WELDING PATTERN DESCRIBED ABOVE, OR OTHER SPECIFIC REQUIREMENTS INDICATED.
- MECHANICALLY FASTEN COMPOSITE FLOOR AND ROOF DECK SIDE LAPS WITH SELF-DRILLING NO. 10 SCREWS AT MIDSPAN OR 36" MAX O.C., UNO.

COLD FORMED STEEL FRAMING

- ALL COLD FORMED STEEL FRAMING INDICATED ON THE DRAWINGS IS FOR DESIGN INTENT ONLY. THE COLD-FORMED FRAMING SUBCONTRACTOR SHALL RETAIN THE SERVICES OF A LICENSED PROFESSIONAL ENGINEER TO DESIGN ALL COLD FORMED FRAMING IN ACCORDANCE WITH THE SPECIFIED DESIGN CRITERIA. SIGNED AND SEALED SHOP DRAWINGS SHALL BE SUBMITTED. INDICATED COLD-FORMED FRAMING SIZES AND GAGES ARE MINIMUMS, AND SHALL NOT BE REDUCED WITHOUT APPROVAL OF THE ARCHITECT/ENGINEER. COLD-FORMED SUB-CONTRACTOR SHALL AT HIS EXPENSE DURING BIDDING PERFORM SUFFICIENT PRELIMINARY TO PRICE A JOB WITH ALL REQUIRED FRAMING SIZES, GAUGES, SPACINGS, FRAME OPENINGS, ACCESSORIES, ETC.
- THE DESIGN OF COLD FORMED STEEL FRAMING SHALL CONFORM TO AISI'S "SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS".
- COLD FORMED STEEL FRAMING SHALL CONFORM TO ASTM C555 AND C1107, AND TO THE FOLLOWING:
12, 14 AND 16 GAGE STUDS ASTM A653, SW, GRADE 50, CLASS 1
18 AND 20 GAGE STUDS ASTM A653, C2, GRADE 33
TRACK AND BRIDGING ASTM A653, CW, GRADE 33
- WELDING SHALL CONFORM TO AWS D1.3 - 18, "STRUCTURAL WELDING CODE - SHEET STEEL".
- COLD FORMED STEEL FRAMING PROPERTIES SHALL CONFORM TO MARINONWARE OR EQUIVALENT.
- PROVIDE BRIDGING AND BRACING AS SPECIFIED BY MANUFACTURER OR AS REQUIRED BY DESIGN.
- THE EXTENT OF WORK FOR COLD-FORMED FRAMING IS DETAILED ON THE ARCHITECTURAL DRAWINGS AND PARTIALLY ON THE STRUCTURAL DRAWINGS. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER.
- PROVIDE COLD-FORMED ACCESSORIES AS REQUIRED FOR A COMPLETE FRAMING SYSTEM, INCLUDING BUT NOT LIMITED TO, TRACKS, BLOCKING, CLIP ANGLES, SLIDE CLIPS, SHOES, RUNNERS, REINFORCEMENTS, COLD-FORMED TO COLD-FORMED FASTENERS, AND WELDS, AND COLD-FORMED TO STRUCTURE FASTENERS AND WELDS.
- TRACK SHALL BE SPLUGED WITH A SECTION OF STUD AND FASTENED TO DEVELOP THE TENSILE CAPACITY OF THE TRACK.
- BUILT-UP HEADERS SHALL HAVE WEB STIFFENERS AT BEARING POINTS.
- DO NOT BEAR OR CONNECT COLD-FORMED MEMBERS WITHIN 12 INCHES OF PUNCHED WEB OPENINGS UNLESS MEMBERS ARE REINFORCED WITH AN 18 IN. (MIN) LONG UNPUNCHED STUD OR TRACK AT THE PUNCH OPENING, SAME GAGE AS PUNCHED MEMBER. FASTEN REINFORCING MEMBER WITH A MIN. OF 8 SCREWS.
- PLACE STUDS AT UNIFORM SPACING INDICATED WITH FULL BEARING AGAINST THE INSIDE WEB OF RUNNERS. ALIGN WITH ALL FLANGES FACING SAME DIRECTION.
- LOCATE STUDS NOT MORE THAN 2 INCHES FROM ABUTTING WALLS.
- CONSTRUCT CORNERS USING MIN. 3 STUDS. PROVIDE DOUBLE STUDS AT WALL OPENINGS, AND AT WINDOW AND DOOR JAMBS, UNO.
- INSTALL INTERMEDIATE JACK STUDS (KRIPPLES) ABOVE AND BELOW OPENINGS TO MATCH WALL STUD SPACING.
- ALL CONNECTIONS SHALL BE SCREWED OR POWDER FASTENED, UNLESS WELDING IS INDICATED.
A. SCREWS- #10 (UNO) HEX HEAD SELF-DRILLING SCREWS, MIN. 1/2 IN.
B. LENGTH FOR COLD-FORMED TO COLD-FORMED CONNECTIONS, MIN 1 1/2 IN.
C. LENGTH FOR COLD-FORMED TO TIMBER CONNECTIONS, MIN SPACING AND EDGE DISTANCE SHALL BE 1/2 IN.
D. POWDER ACTUATED FASTENERS (PAF) IN CONCRETE: 0.145 IN (UNO), SHANK DIA. MIN. SPACING SHALL BE 4 IN. AND MIN. EDGE DISTANCE SHALL BE 3 IN.
E. POWDER ACTUATED FASTENERS (PAF) IN STEEL: 0.145 IN (UNO) KURLED SHANK DIA. MIN. SPACING SHALL BE 1 1/2 IN. AND MIN. EDGE DISTANCE SHALL BE 1/2 IN.
- PROVIDE A SUFFICIENT NUMBER OF STUDS TO ACHIEVE FULL BEARING WIDTH FOR ALL BEAMS, TRUSSES/GIRDERS, AND POINT LOADS. MULTIPLE STUDS SHALL BE LAMINATED TOGETHER.
- ANCHOR BOLTS SHALL BE SPACED AT 4'-0" O/C, UNO AND 4" TO 12" MAX FROM ENDS OF WALLS WITH 2 BOLTS PER TRACK, MIN.

MECHANICAL UNIT, DUCTWORK, AND PIPE SUPPORT FROM JOISTS

- THE FOLLOWING CRITERIA SHALL BE FOLLOWED FOR HANGING NEW MECHANICAL UNITS, DUCTWORK, AND PIPING (MECHANICAL AND PLUMBING) ON STEEL JOISTS IN NEW AND EXISTING CONSTRUCTION:
A. SUPPORTS FOR MECHANICAL UNITS AND DUCTWORK SHALL BE PROVIDED SUCH THAT HANGER LOADS ARE LIMITED TO 250 LBS., WITH A MAXIMUM OF 2 HANGERS PER JOIST.
B. SUPPORTS FOR MULTIPLE RUNS OF PIPING 4" TO 6" IN DIAMETER SHALL BE STAGGERED SUCH THAT ONE JOIST SUPPORTS NO MORE THAN TWO PIPES. SPACING OF PIPE SUPPORTS SHALL BE ACCORDING TO INDUSTRY STANDARDS, BUT NO MORE THAN 8 FT. O/C.
C. SUPPORTS FOR MULTIPLE RUNS OF PIPING 8" TO 10" IN DIAMETER SHALL BE STAGGERED SUCH THAT ONE JOIST SUPPORTS NO MORE THAN ONE PIPE. SPACING OF PIPE SUPPORTS SHALL BE ACCORDING TO INDUSTRY STANDARDS, BUT NO MORE THAN 6 FT. O/C.
D. FOR PIPING LARGER THAN 10" IN DIAMETER, OR FOR CASES WHERE THE ABOVE CRITERIA CANNOT BE MET, SUPPLEMENTARY FRAMING SHALL BE PROVIDED TO SUPPORT THE PIPES ON NEW OR EXISTING STEEL GIRDERS AND BEARING WALLS.
- MECHANICAL UNIT AND PIPING SUPPORTS SHALL NOT OCCUR ON THE SAME JOISTS.
- IN NO CASE SHALL THE TOTAL WEIGHT SUPPORTED BY A SINGLE JOIST EXCEED 500 LBS UNLESS THE JOIST IS SPECIFICALLY NOTED AND DESIGNED FOR HIGHER LOADS.
- ALL SUPPORT POINTS SHALL BE LOCALLY REINFORCED ACCORDING TO TYPICAL DETAIL.

WOOD

- STRUCTURAL LUMBER SHALL CONFORM TO AFPA'S NDS, "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION."
STRUCTURAL LUMBER SHALL BE NO. 1 / NO.2 S-P-F, VISUALLY GRADED, OR BETTER.
F_b = 875 PSI
E = 1,190,000 PSI
E =

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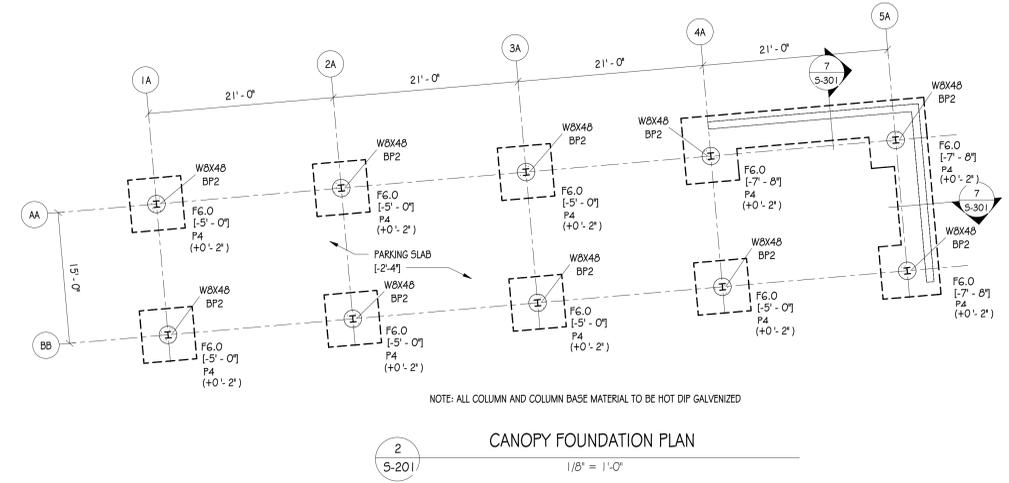
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Sheet Title:
FOUNDATION PLAN

Sheet Number:
S-201



2
CANOPY FOUNDATION PLAN
1/8" = 1'-0"



1
FOUNDATION PLAN
1/8" = 1'-0"

FOOTING SCHEDULE		
MARK	SIZE	REINFORCING (EACH WAY - BOT)
F4.0	4'-0" x 4'-0" x 1'-0"	#4#5
F5.0	5'-0" x 5'-0" x 1'-0"	#5#5
F6.0	6'-0" x 6'-0" x 1'-2"	#5#5
F6.0x8.0	6'-0" x 8'-0" x 1'-8"	#7@12"
F7.0	7'-0" x 7'-0" x 1'-6"	#6#6
F8.0	8'-0" x 8'-0" x 1'-8"	#7#7
F9.0	9'-0" x 9'-0" x 1'-10"	#7#7
F10.0	10'-0" x 10'-0" x 2'-0"	#7#7

- FOUNDATION / FIRST FLOOR PLAN NOTES**
- FIRST FLOOR REFERENCE ELEVATION = 0'-0" = DATUM ELEV. OF 212.55'
 - ELEVATIONS ARE NOTED FROM REF EL. 0'-0" AS FOLLOWS:
1'-4" #1 INDICATES TOP OF FOOTING
-1'-4" #1 INDICATES TOP OF PIER
 - FOUNDATION MEMBERS SHALL BE AT THE FOLLOWING ELEVATIONS, UNO:
PIERS TPIER (-0'-8")
FLOOR SLAB TSLAB (0'-0")
 - FOUNDATION MEMBERS ARE DESIGNATED AS FOLLOWS:
F# # FOOTING MARK - SEE SCHEDULE
P# # PIER MARK - SEE FOUNDATION DETAILS
BP# # COLUMN BASE PLATE - SEE FOUNDATION SECTIONS
 - SLAB-ON-GRADE TYPE S-1 SHALL BE A 4" SLAB ON GRADE REINF. W/ 6X6 - W2.9XW2.9 W/ 4" DRAINAGE FILL & VAPOR BARRIER.
 - COORDINATE WITH ARCH, MECH, ELEC, AND PLMB DRAWINGS FOR FLOOR SLOPES, DRAINS, OPENINGS, DEPRESSIONS, ETC., NOT SHOWN ON THIS PLAN, AT ALL TOILETS AND OTHER ROOMS.
 - REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT INDICATED.
 - UNDER SLAB PLUMBING SHOWN THUS -----, SEE TYP DETAILS FOR STEPPED FOOTINGS @ PLUMBING LINES.
 - PROVIDE (2) #4 X 4'-0" DIAGONAL BARS AT ALL RE-ENTRANT SLAB-ON-GRADE CORNERS.
 - REFER TO STRUCTURAL NOTES ON S-101.
 - REFER TO TYPICAL DETAILS ON S-6014 S-602.

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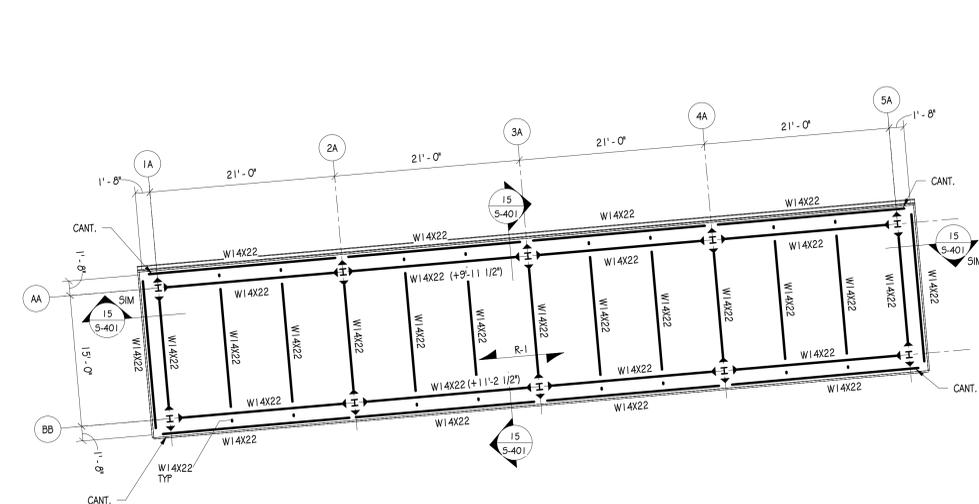
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Sheet Title:
**SECOND FLOOR
FRAMING/LOW
ROOF PLAN**

Sheet Number:

S-202



CANOPY FRAMING PLAN
1/8" = 1'-0"

- FLOOR FRAMING PLAN NOTES**
- FLOOR REFERENCE ELEVATION IS (0'-0").
 - ELEVATIONS ARE NOTED AS FOLLOWS, REFERENCED FROM THE REFERENCE ELEVATION:
(+ #) INDICATES TOP OF SLAB ELEVATION
 - FLOOR CONSTRUCTION TYPE F-1 SHALL BE 1/2" - 20 GA COMPOSITE METAL DECK WITH 3 1/2" NORMAL WEIGHT CONCRETE TOPPING AND 6x6-W2.1 WWF (5" TOTAL FLOOR THICKNESS). (#) INDICATES NUMBER OF UNIFORMLY SPACED 3/4" DIA. X 4" LONG SHEAR STUDS AT COMPOSITE BEAMS.
 - TICONGRETE SLAB = (+1'-3" 47) U.N.D.
 - STEEL FRAMED CONCRETE FLOORS SHALL BE POURED TO THEIR SPECIFIED LEVELS. ALLOW FOR ADDITIONAL CONCRETE DURING PLACEMENT TO ACCOUNT FOR THE DEFLECTION IN THE STEEL FRAMING.
 - ROLLED STEEL SHALL BE ASTM A992, UNO.
 - SYMBOL SHOWN THUS # INDICATES BEAM BEARING PLATE - SEE TYPICAL DETAIL.
 - EQUALLY SPACE FLOOR FRAMING MEMBERS, UNO, WITH QUANTITY SHOWN ON PLAN.
 - STEEL BEAMS SHOWN ON PLAN WITHOUT A SIZE DESIGNATION SHALL BE W12x14 UNO.
 - REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT INDICATED.
 - PROVIDE LINTELS ACCORDING TO STRUCTURAL NOTES AND LINTEL SCHEDULE.
 - SYMBOL SHOWN THUS ◀ INDICATES MOMENT CONN - SEE TYPICAL DETAILS.
 - REFER TO STRUCTURAL NOTES ON DRAWINGS S-101
 - REFER TO TYPICAL DETAILS ON DRAWING S-601, S-602 & S-603.

- ROOF FRAMING PLAN NOTES**
- ROOF REFERENCE ELEVATION IS (0'-0").
 - ELEVATIONS ARE NOTED AS FOLLOWS, REFERENCED FROM THE REFERENCE ELEVATION:
(#) INDICATES BOTTOM OF DECK ELEVATION
 - ROOF CONSTRUCTION TYPE R-1 SHALL BE 1/2" - 20 GA. TYPE B METAL ROOF DECK.
 - ROOF CONSTRUCTION TYPE R-2 SHALL BE 3" - 20 GA. TYPE N METAL ROOF DECK.
 - ROLLED STEEL SHALL BE ASTM A992, UNO.
 - SYMBOL SHOWN THUS # INDICATES BEAM BEARING PLATE - SEE TYPICAL DETAIL.
 - ROOF MEMBERS SHALL BE EQUALLY SPACED, UNO WITH QUANTITY AS SHOWN ON PLANS.
 - REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT INDICATED.
 - PROVIDE FRAMING AT ROOF EQUIPMENT CURBS AND OPENINGS PER TYPICAL DETAIL.
 - PROVIDE LINTELS ACCORDING TO STRUCTURAL NOTES AND LINTEL SCHEDULE.
 - SYMBOL SHOWN THUS ◀ INDICATES MOMENT CONN - SEE TYPICAL DETAILS.
 - REFER TO STRUCTURAL NOTES ON DRAWINGS S-101
 - REFER TO TYPICAL DETAILS ON DRAWING S-601, S-602 & S-603.

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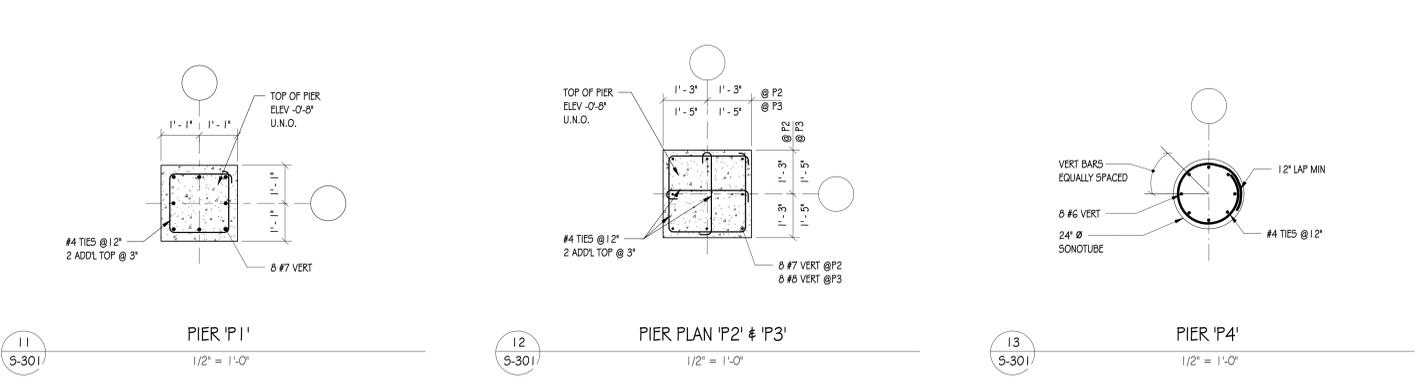
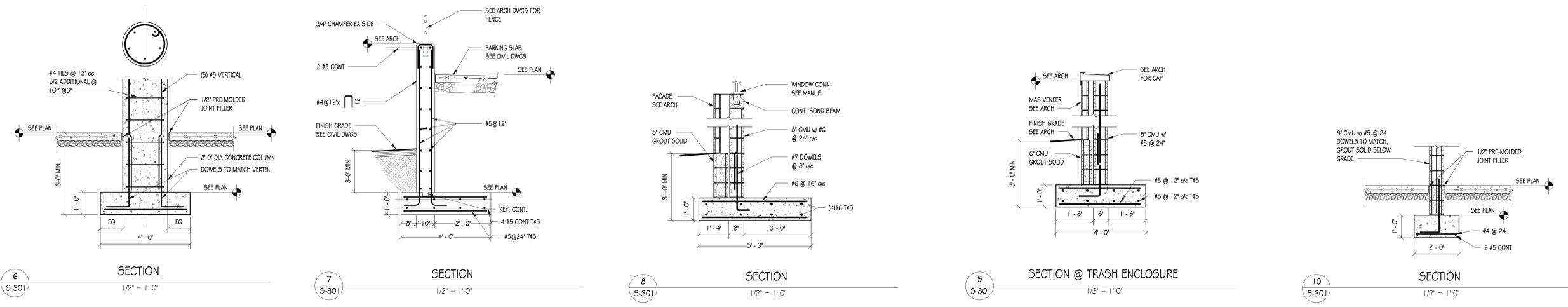
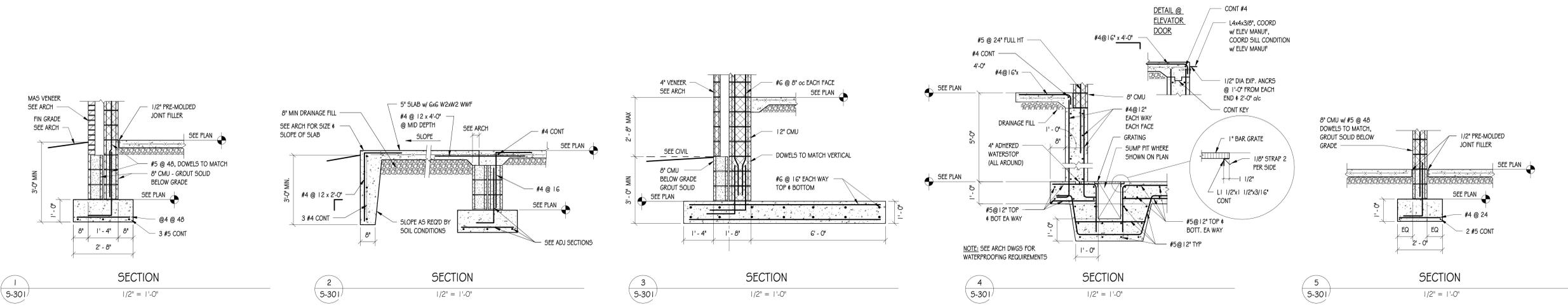
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Sheet Title:

**FOUNDATION
SECTIONS**

Sheet Number:

S-301



BASE PLATE DETAILING SCHEDULE

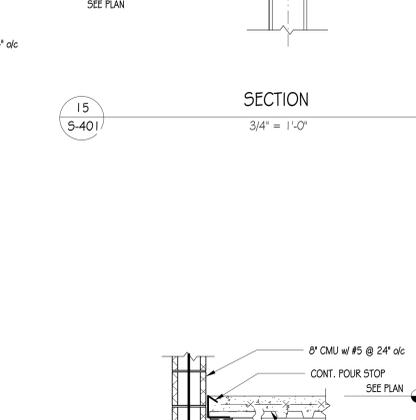
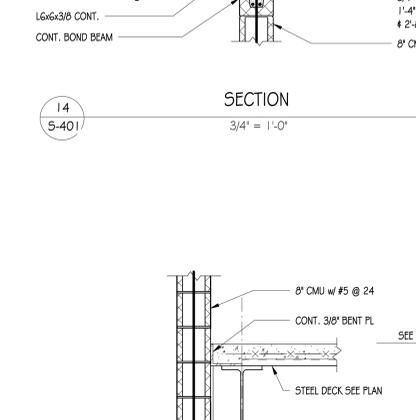
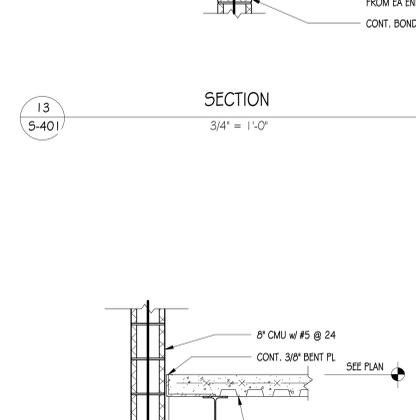
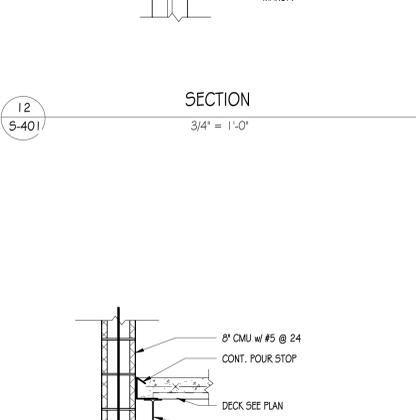
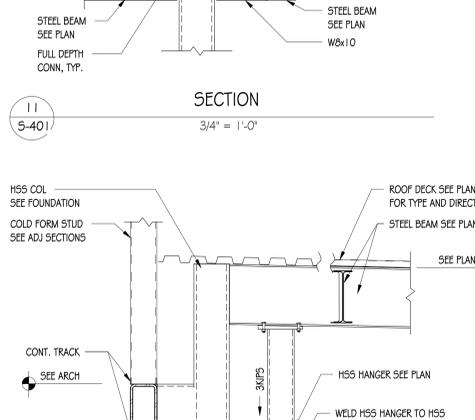
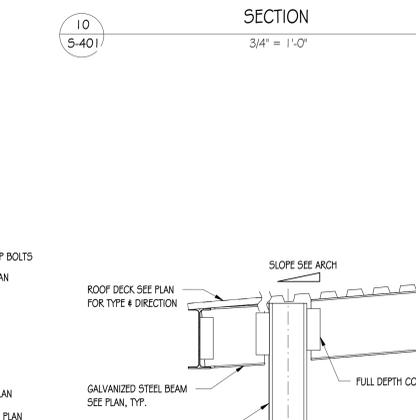
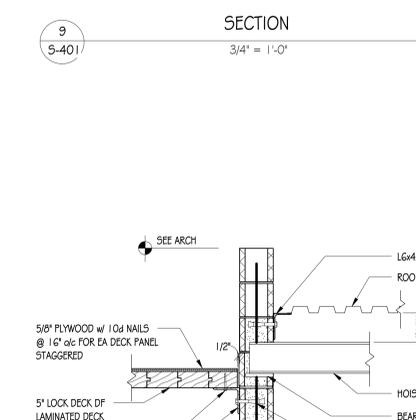
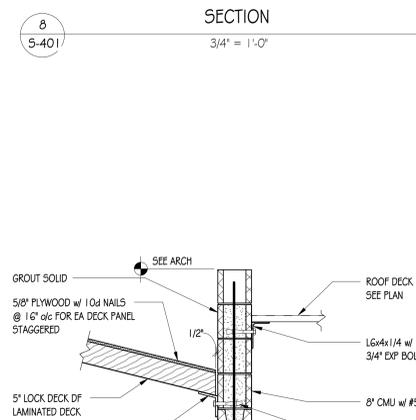
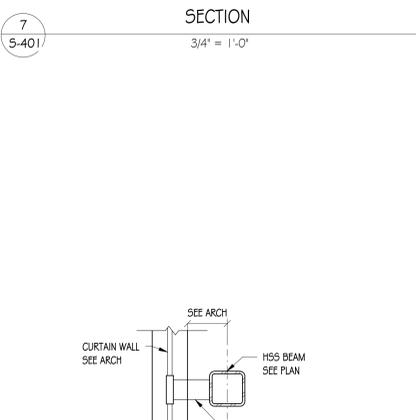
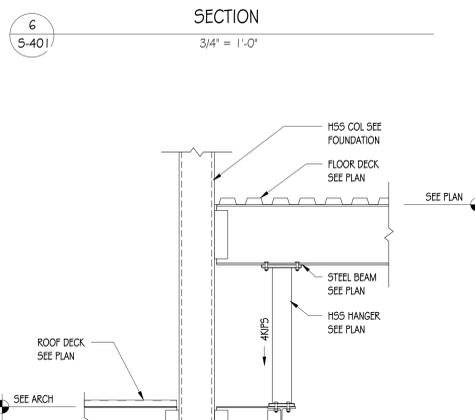
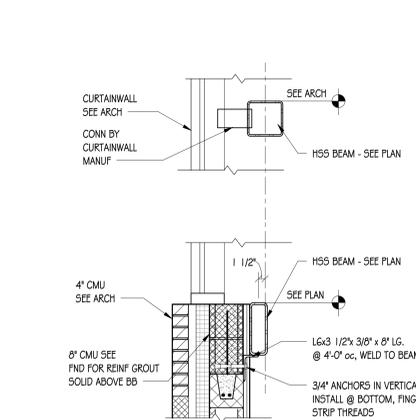
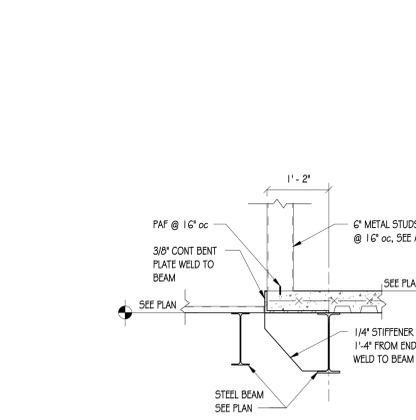
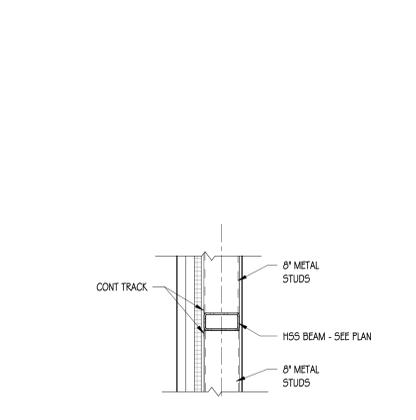
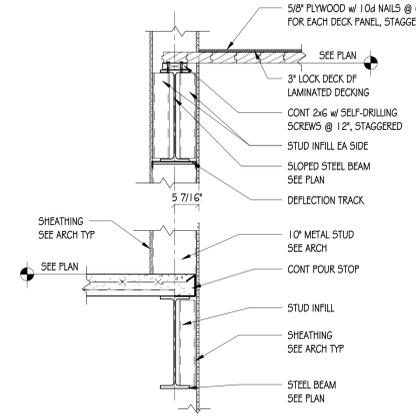
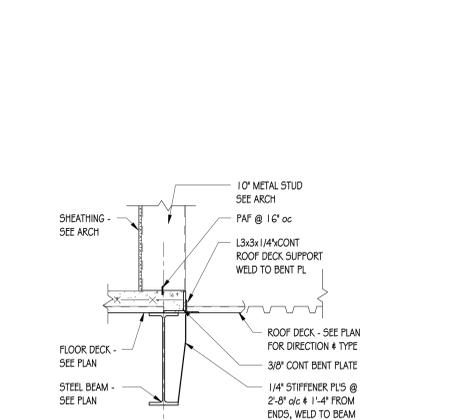
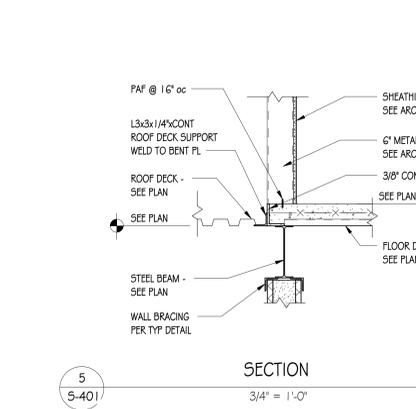
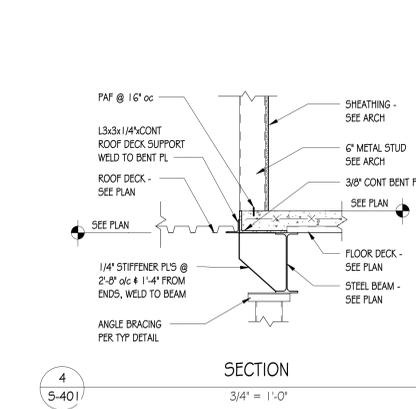
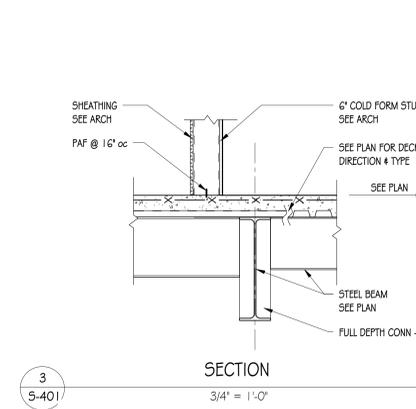
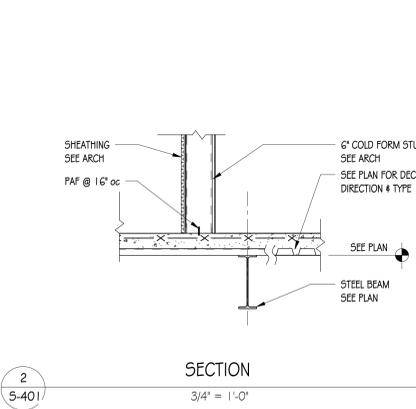
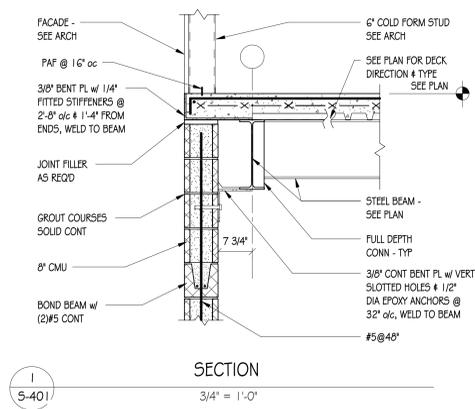
ANCR ROD DIA.	EMBEDMENT (GRADE 36)	BASE PL. HOLE DIA.	EDGE DISTANCE	PL WASHER DIA.	PL WASHER THICKNESS
3/4"	9"	1 5/16"	1 1/2"	2"	1/2"
1"	12"	1 13/16"	2"	2 5/8"	1/2"

NOTE: FOR HIGH STRENGTH ANCHOR RODS, INCREASE EMBEDMENT BY 50%.

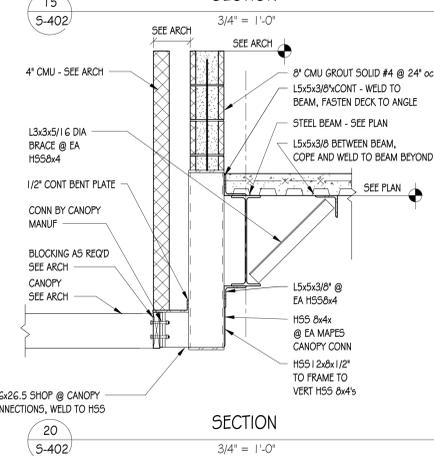
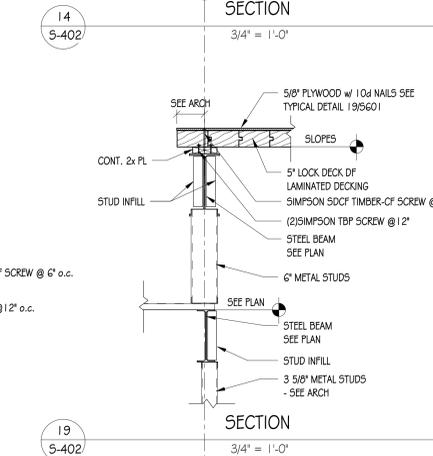
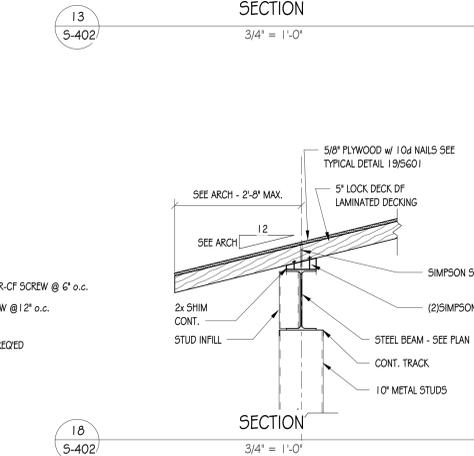
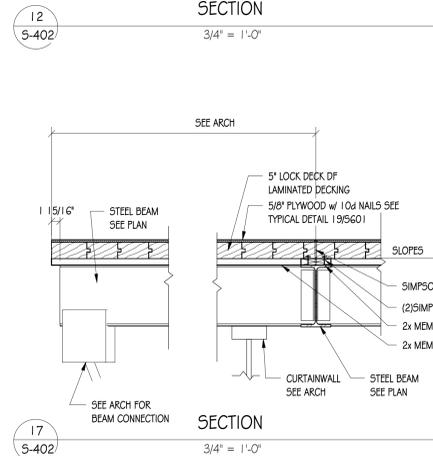
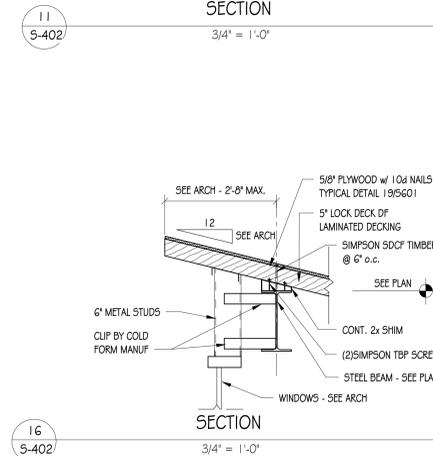
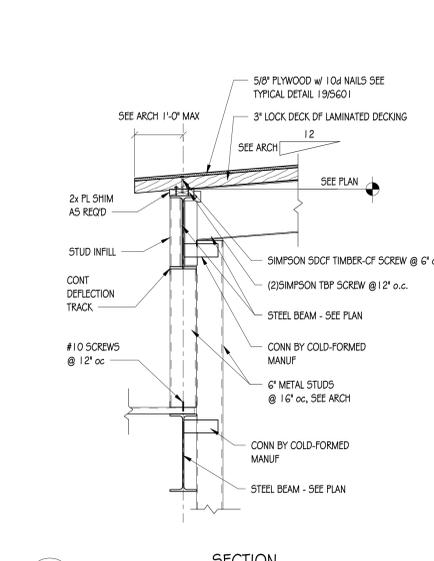
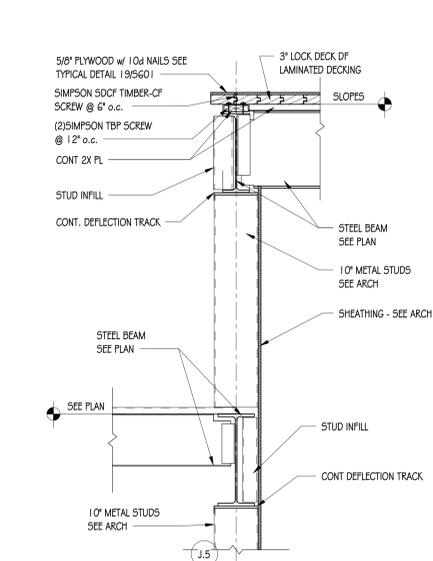
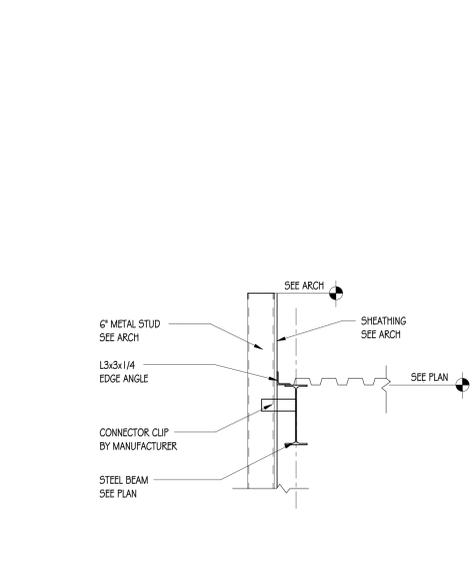
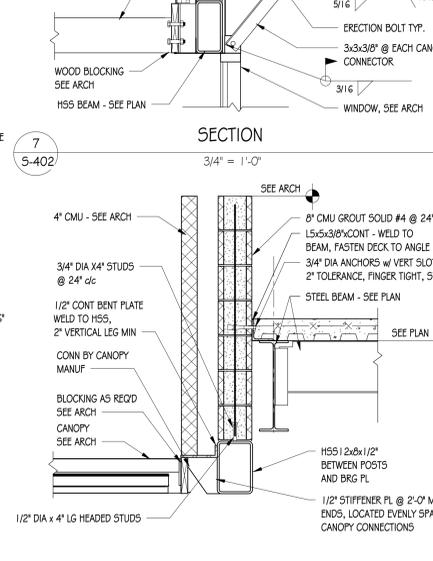
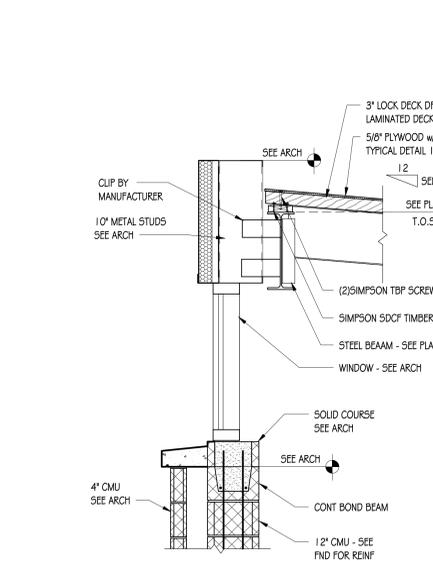
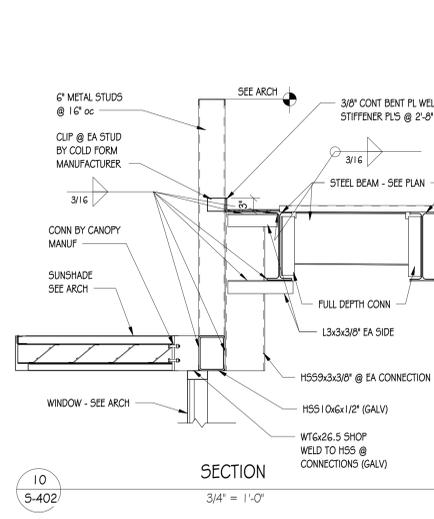
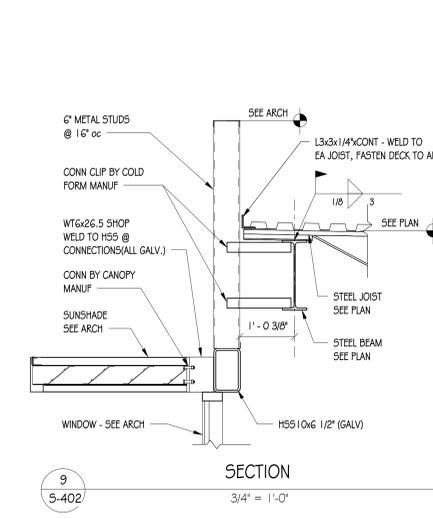
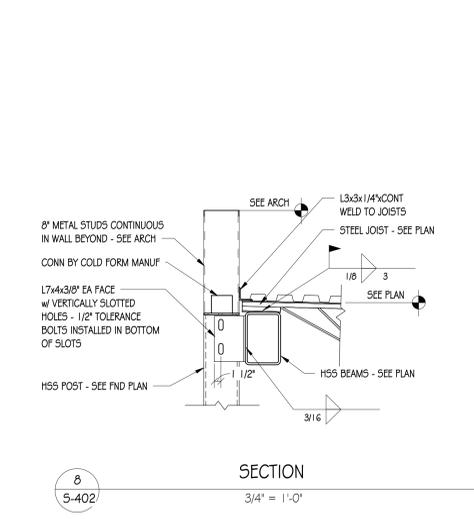
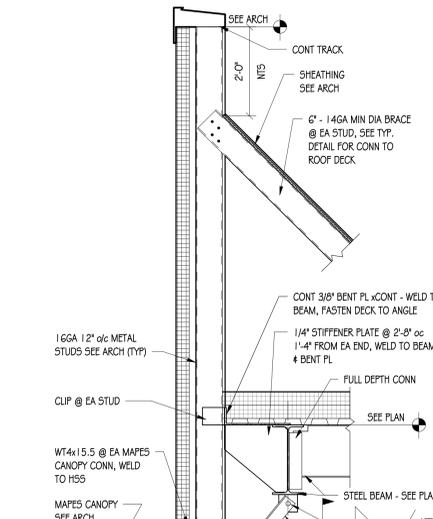
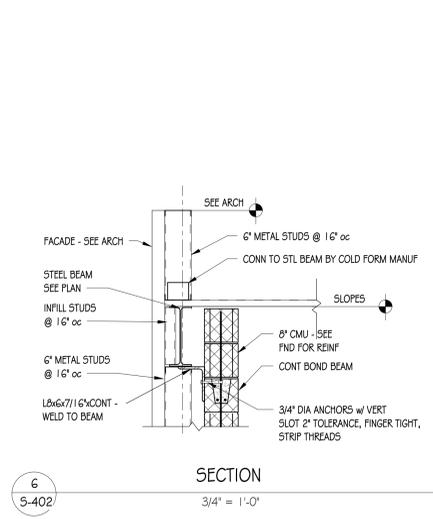
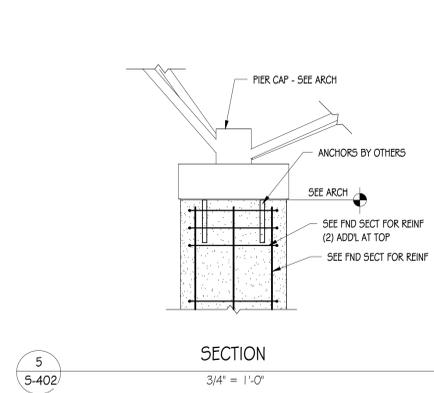
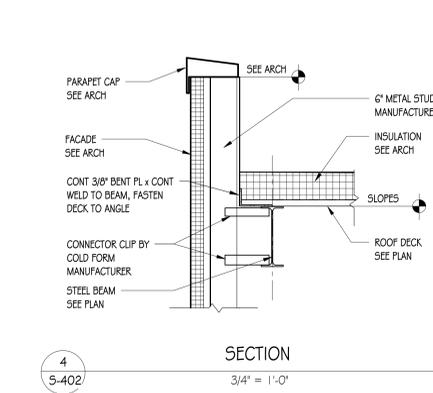
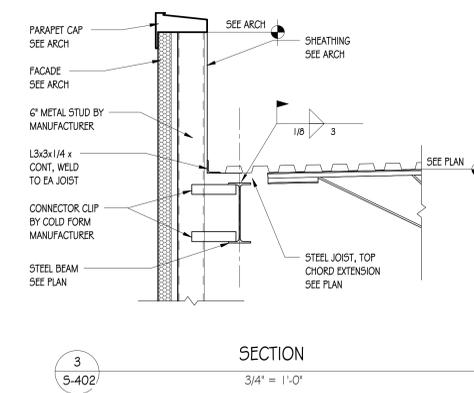
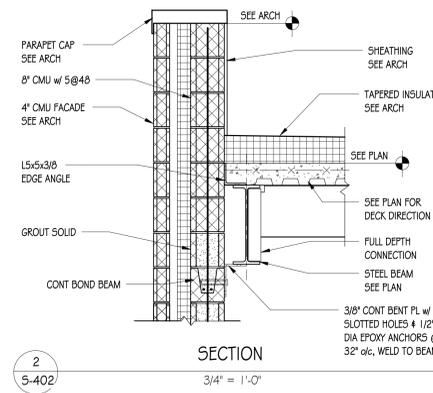
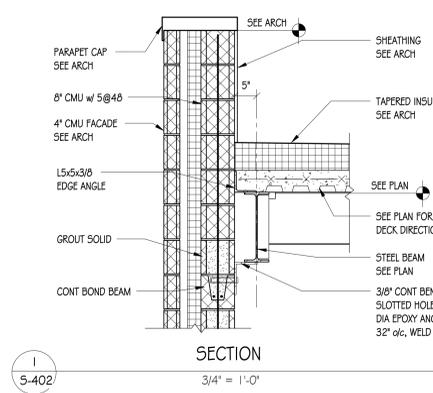
BASE PLATE SCHEDULE

MARK	SIZE	THICKNESS	ANCR ROD DIA.
BP1	14" x 14"	3/4"	3/4"
BP2	14" x 14"	1"	3/4"
BP3	16" x 16"	1 1/4"	1"

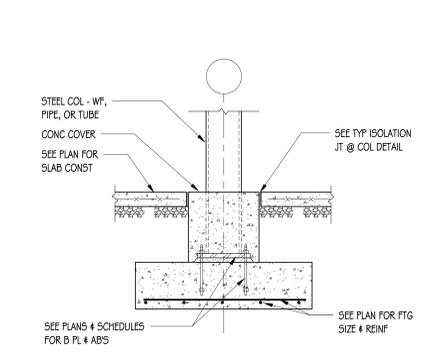
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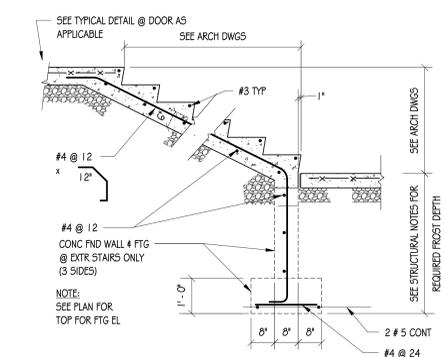
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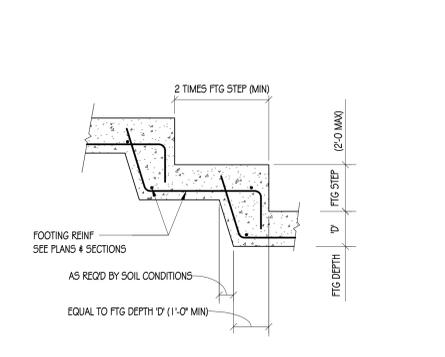
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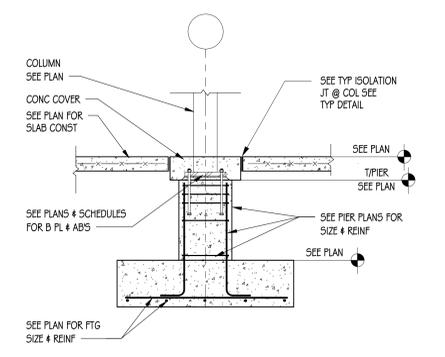
1
S-601
COL & BASE PL CONC COVER
1/2" = 1'-0"



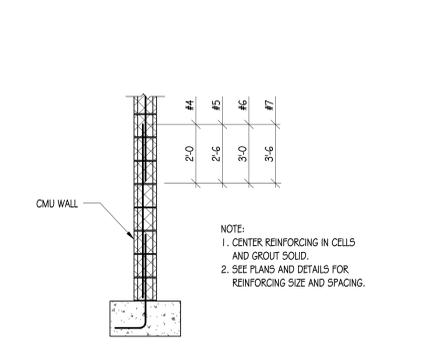
2
S-601
CONCRETE STAIR DETAIL
1/2" = 1'-0"



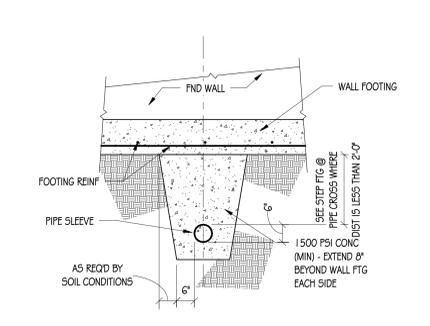
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S-601
FOOTING STEP DETAIL
1/2" = 1'-0"



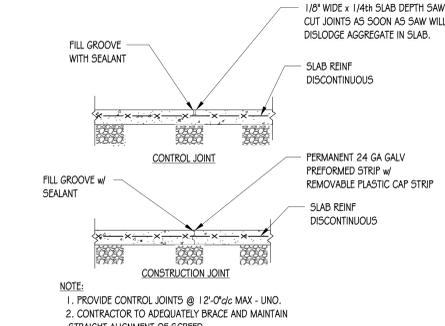
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S-601
PIER SECTION
1/2" = 1'-0"



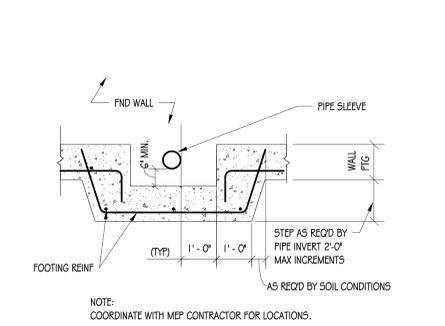
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S-601
REINF LAP SPICE DETAIL
1/2" = 1'-0"



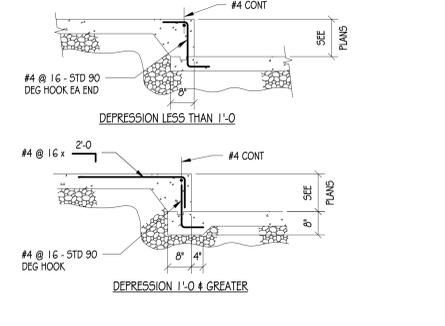
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S-601
PIPE CROSSING BELOW WALL FTG.
1/2" = 1'-0"



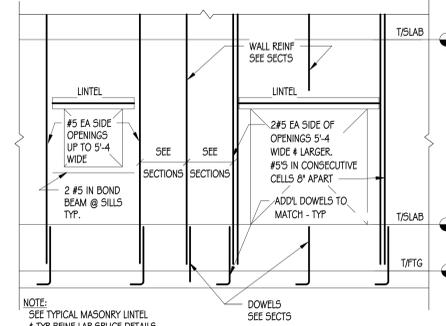
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S-601
SLAB CONST/CONTROL JOINT
1/2" = 1'-0"



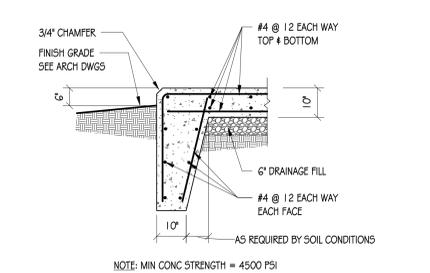
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S-601
STEP FTG @ PIPE CROSSING
1/2" = 1'-0"



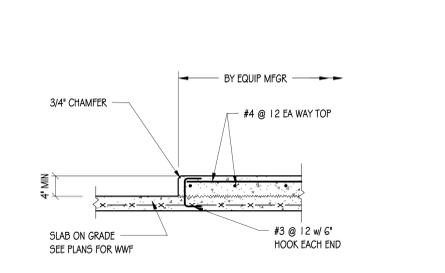
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S-601
SLAB DEPRESSION DETAILS
1/2" = 1'-0"



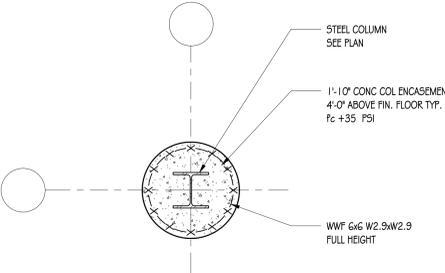
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S-601
REINF @ MASONRY OPNGS
3/4" = 1'-0"



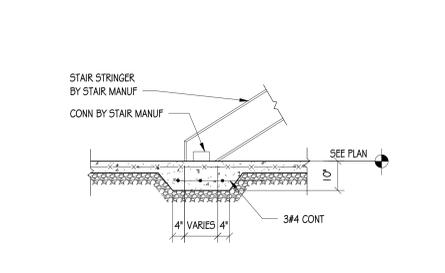
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S-601
EXTERIOR EQUIPMENT SLAB
1/2" = 1'-0"



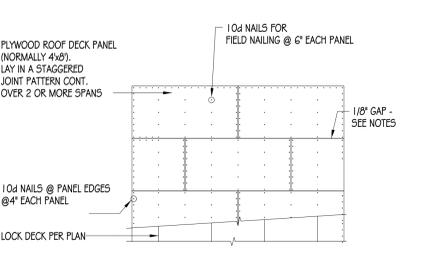
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S-601
EQUIPMENT PAD DETAIL
1/2" = 1'-0"



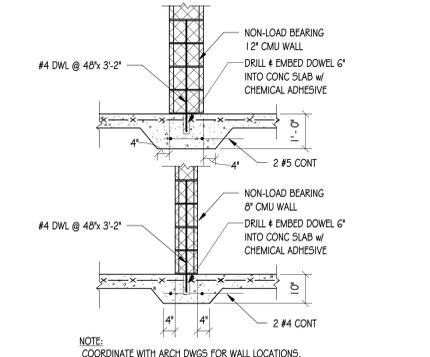
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S-601
CONCRETE COVER DETAIL
3/4" = 1'-0"



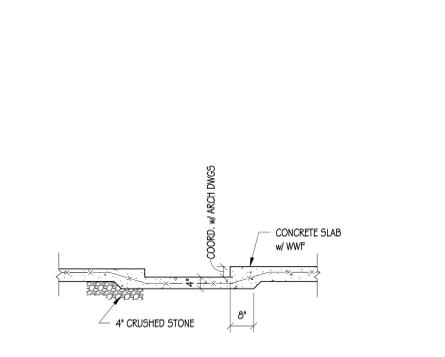
14
S-601
THICKENED SLAB @ STAIR DETAIL
1/2" = 1'-0"



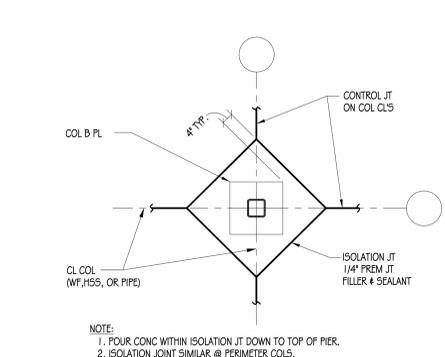
15
S-601
WOOD ROOF DIAPHRAGM DETAIL
3/4" = 1'-0"



16
S-601
THICKENED SLAB DETAIL w/ ADH ANCR
1/2" = 1'-0"



17
S-601
RECESSED SLAB ON GRADE DETAIL
1/2" = 1'-0"



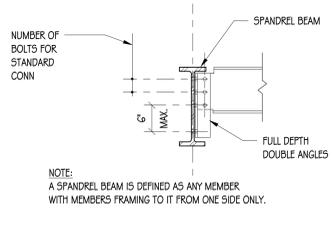
18
S-601
SLAB ISOLATION JT @ COLS
1/2" = 1'-0"

LINTEL SCHEDULE FOR NEW CONSTRUCTION					
SPAN	WIDTH	INTERIOR		EXTERIOR	
		8\"/>			
UP TO TO 4'-4"	(2)L 5x3 1/2x5/16	(2)L 5x3 1/2x5/16 + L6x4x5/16	(2)L 5x3 1/2x5/16 + L6x4x5/16	W8x21 + 3/8 PL	W8x31 + 3/8 PL
GRTR THAN 4'-4 TO 6'-8"	(2)L 6x3 1/2x3/8	(2)L 6x3 1/2x3/8 + L6x4x3/8	(2)L 6x3 1/2x3/8 + L6x4x3/8	W8x24 + 3/8 PL	W8x35 + 3/8 PL
GRTR THAN 6'-8 TO 12'-0"	W8x24	W8x35 + 3/8 PL	W8x28 + 3/8 PL	W8x28 + 3/8 PL	W8x48 + 3/8 PL
GRTR THAN 12'-0 TO 16'-0"	W8x28	N/A	W8x35 + 3/8 PL	W16x36 + 3/8 PL	W16x57 + 3/8 PL

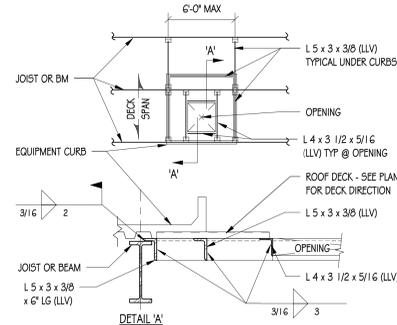
PRODUCT CONDITIONS:
 1. LINTELS ARE REQUIRED FOR ALL OPENINGS IN MASONRY WALLS (DOORS, WINDOWS, MEP OPENINGS, WALLS IN FRONT OF RECESSES, ETC)
 2. UNLESS SPECIFICALLY IDENTIFIED, LINTELS FOR OPENINGS IN MASONRY WALLS ARE NOT SHOWN ON PLANS. CONTRACTOR IS REQUIRED TO REFERENCE ARCHITECTURAL AND MEP DRAWINGS FOR ALL OPENINGS THAT REQUIRE LINTELS.
 3. CONTRACTOR IS RESPONSIBLE FOR LAYOUT AND COORDINATION OF LINTELS FOR ALL OPENINGS IN MASONRY WALL CONSTRUCTION.
 4. CONTRACTOR IS REQUIRED TO SUBMIT SHOP DRAWINGS TO SHOW LINTEL LAYOUT FOR ALL OPENINGS IN MASONRY WALL CONSTRUCTION.
 5. MINIMUM STRUCTURAL REQUIREMENTS FOR LINTELS ARE SHOWN IN THIS SCHEDULE. CONTRACTOR HAS THE OPTION TO PROVIDE ALTERNATE LINTEL CONFIGURATION TO ACCOMMODATE INSTALLATION OR EXISTING CONDITIONS. ALTERNATE CONFIGURATIONS ARE SUBJECT TO REVIEW AND APPROVAL.
FABRICATION AND INSTALLATION:
 1. SPAN LENGTH = MASONRY OPENING DIMENSION.
 2. HOT-DIP GALVANIZE ALL STEEL LINTELS. ANGLES & PLATES USED IN EXTERIOR WALLS.
 3. WELD BACK-TO-BACK DOUBLE ANGLES TOGETHER.
 4. INSTALL UNEQUAL LEG ANGLES WITH LONG LEG VERTICAL.
 5. PROVIDE 1/2\"/>

BEARING CONDITIONS (ON NEW OR EXISTING MASONRY):
 1. FOR SPANS UP TO 6'-8", GROUT MASONRY SOLID, 2 COURSES DEEP AND 16" WIDE, BELOW BEARING.
 2. FOR SPANS OVER 6'-8", GROUT MASONRY SOLID, FULL HEIGHT, BELOW BEARING.
 3. MINIMUM BEARING LENGTH EQUALS 8" FOR SPANS UP TO 12'-0".
 4. MINIMUM BEARING LENGTH EQUALS 12" FOR SPANS OVER 12'-0".
 5. PROVIDE BEARING PLATES AND ANCHOR BOLTS AT BEARING LOCATIONS IN ACCORDANCE WITH TYPICAL DETAILS.
 6. WHERE LINTELS BEAR LESS THAN 16" AWAY FROM STEEL COLUMNS, EXTEND AND CONNECT LINTEL TO STEEL COLUMN.

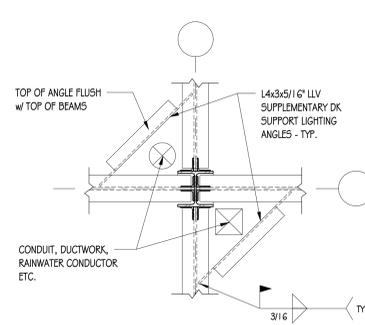
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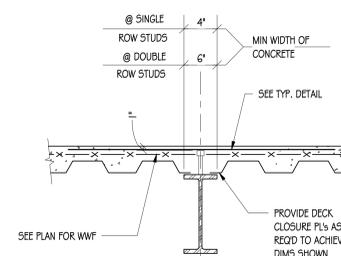
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5-602
FRAMING CONN @ SPANDREL BEAMS
3/4" = 1'-0"



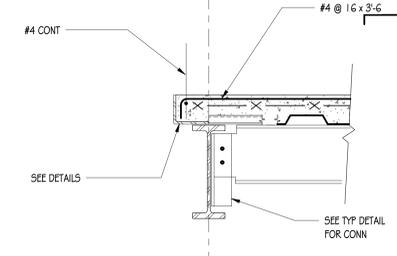
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5-602
FRMG @ ROOF EQUIP CURBS & OPNGS
3/4" = 1'-0"



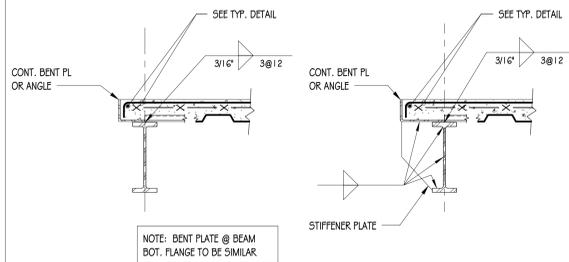
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5-602
LIGHTING ANGLES @ COLUMNS
3/4" = 1'-0"



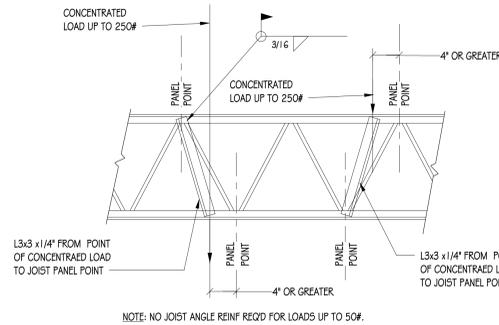
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5-602
SLAB DETAIL @ SHEAR STUDS
3/4" = 1'-0"



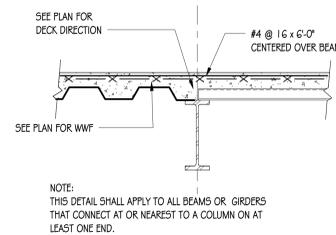
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5-602
SLAB REINF @ SPANDREL BEAMS
1" = 1'-0"



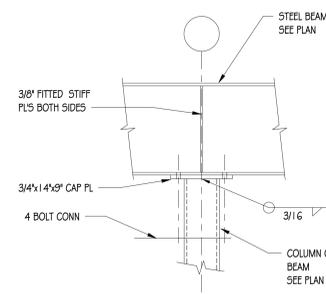
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5-602
BENT PLATE & ANGLE CONN TO STEEL BM @
SLAB EDGE
3/4" = 1'-0"



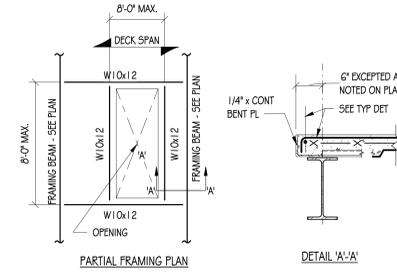
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5-602
POINT LOAD JOIST REINFORCING
3/4" = 1'-0"



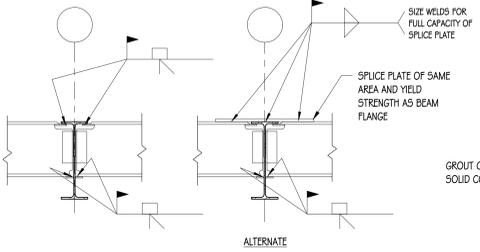
8
5-602
SLAB REINF OVER BMS & GIRDERS
3/4" = 1'-0"



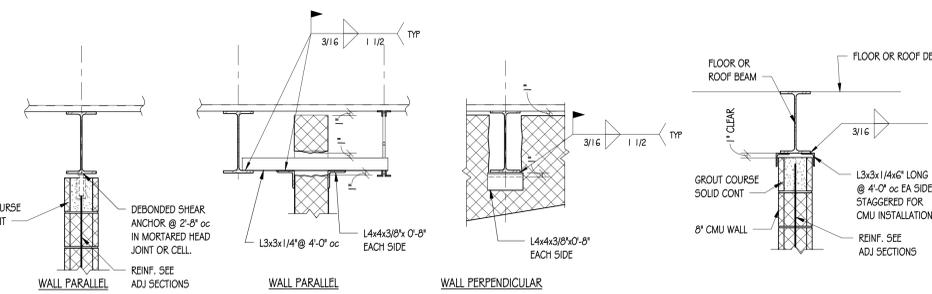
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5-602
STEEL BEAM CANTILEVER
3/4" = 1'-0"



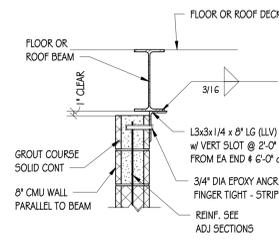
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5-602
TYP FRAMING @ SLAB OPENINGS
3/4" = 1'-0"



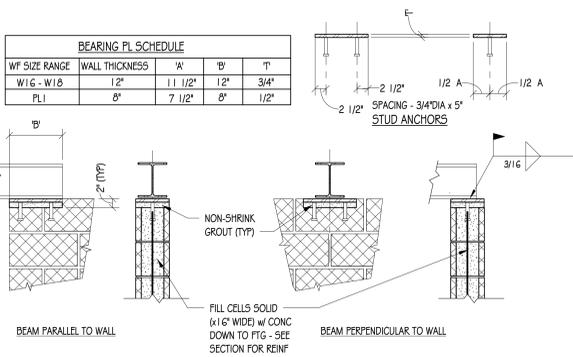
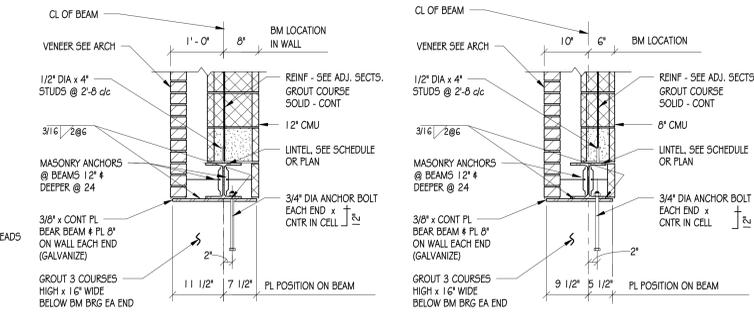
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5-602
TYPICAL CANTILEVER BEAM AT GIRDER
3/4" = 1'-0"



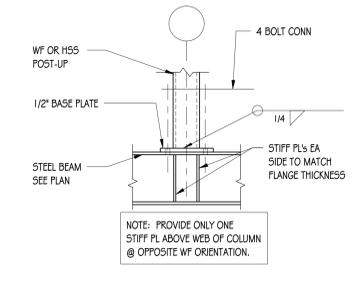
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5-602
NON-LOAD BEARING CMU WALL BRACING DETAILS
3/4" = 1'-0"



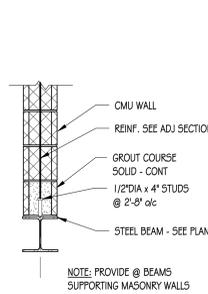
13
5-602
MASONRY LINTEL DETAILS
3/4" = 1'-0"



14
5-602
STEEL BEAM/CMU WALL BEARING DETAIL
3/4" = 1'-0"



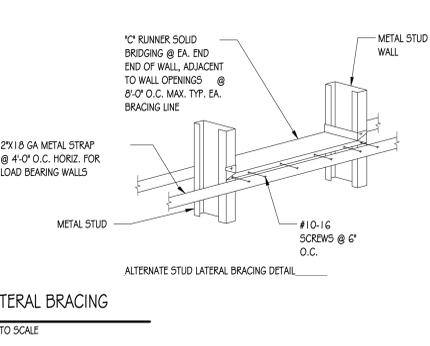
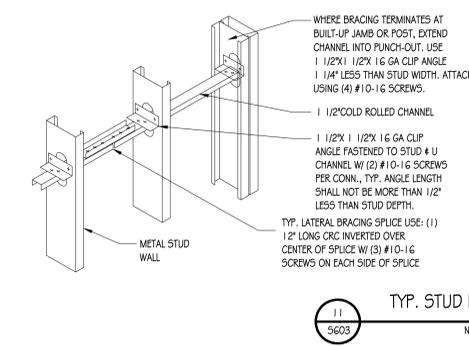
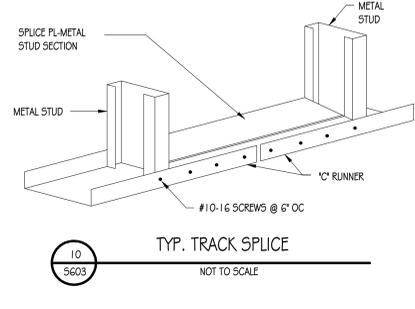
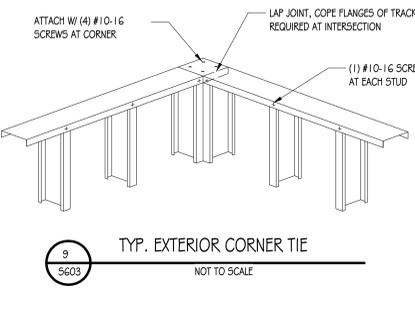
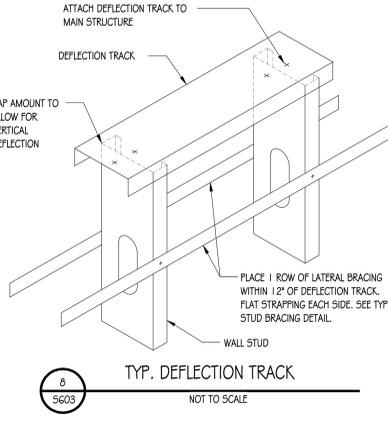
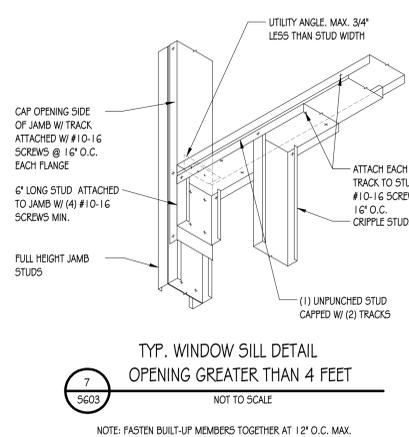
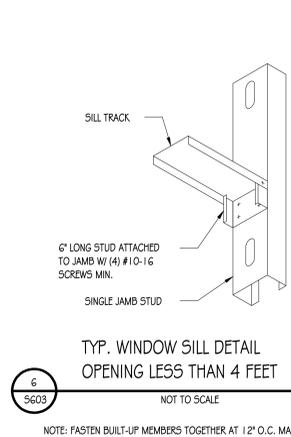
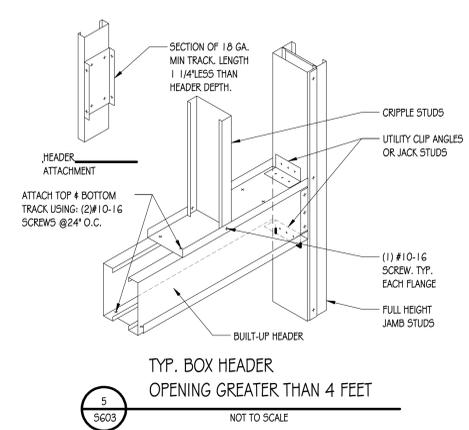
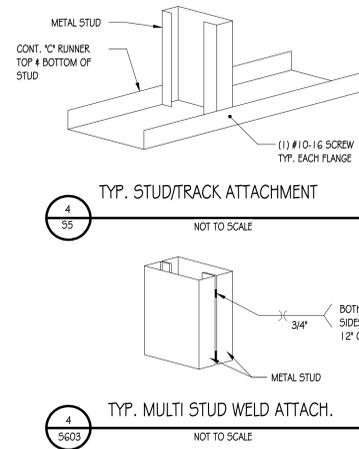
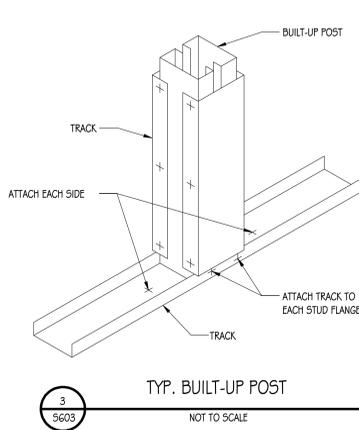
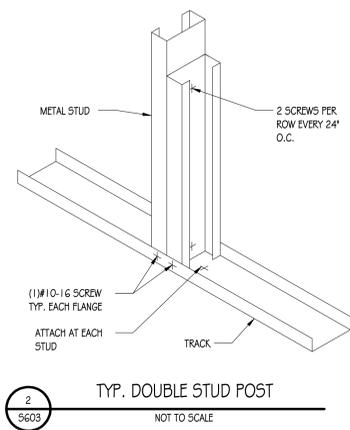
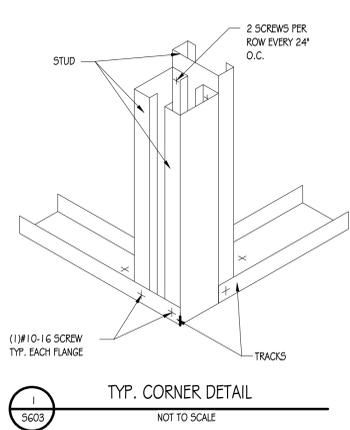
17
5-602
COLUMN POST DETAIL
3/4" = 1'-0"



15
5-602
STEEL BEAM/CMU WALL
3/4" = 1'-0"

- MOMENT CONNECTION NOTES**
- MOMENT CONNECTIONS SHALL DEVELOP THE FULL BEAM MOMENT CAPACITY UNLESS A LOWER MOMENT CAPACITY REQUIREMENT IS INDICATED ON PLAN.
 - C.P. INDICATES COMPLETE PENETRATION.
 - STIFFENER AND CAP PLATE REQUIREMENTS:
 - PROVIDE STIFFENERS OF SAME GRADE AND THICKNESS AS BEAM FLANGE, (3/8" MIN.)
 - WHERE MOMENT CONNECTIONS OCCUR IN BOTH DIRECTIONS, STIFFENER THICKNESS SHALL BE EQUAL TO THE SQUARE ROOT OF (T1² + T2²) WHERE T1 AND T2 EQUAL THE RESPECTIVE BEAM FLANGE THICKNESSES (3/8" MIN.).
 - STIFFENER PLATES SHALL BE C.P. GROOVE WELDED TO COLUMN FLANGES AND WEB.
 - CAP PLATES SHALL BE WELDED TO DEVELOP THE BEAM FLANGE TENSION CAPACITY.
 - REDUCED STIFFENER PLATE AND WELDING REQUIREMENTS MAY APPLY WHERE BEAM MOMENTS AND SHEARS ARE INDICATED ON PLAN.
 - STEEL FABRICATOR IS RESPONSIBLE FOR THE CONFIGURATION OF THE MOMENT CONNECTION. MOMENT CONNECTIONS MAY BE BOLTED/BOLTED, WELDED/BOLTED OR WELDED/WELDED AT THE FABRICATOR'S OPTION.
 - HIGH STRENGTH BOLTS IN MOMENT CONNECTIONS SHALL BE SLIP CRITICAL. BEARING BOLTS SHALL BE USED FOR SHEAR CONNECTIONS.
 - THE STEEL FABRICATOR SHALL BE RESPONSIBLE FOR THE DESIGN OF THE CONNECTIONS. SIGNED AND SEALED CALCULATIONS SHALL BE SUBMITTED FOR REVIEW.
 - TYPICAL MOMENT CONNECTIONS DETAILS INCLUDED ON THE DRAWINGS ARE REPRESENTATIVE ONLY. THE FABRICATOR MAY TAILOR THE DETAILS TO THEIR STANDARDS, PROVIDED THE FINAL DETAILS ARE SUPPORTED BY CALCULATIONS.

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5-602
TYPICAL MOMENT CONN DETAILS TO HSS COL AT TOP OF COL.
3/4" = 1'-0"



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