1. GENERAL INFORMATION

A. GOVERNING BUILDING CODE: 2015 INTERNATIONAL BUILDING CODE (IBC-2015).

B. BUILDING RISK CATEGORY: THE BUILDING RISK CATEGORY ACCORDING TO IBC-2015 TABLE 1604.5 AND ASCE 7-10 TABLE 1.5-1 IS CATEGORY II.

C. ELEVATIONS: REFERENCE FINISHED FLOOR ELEVATION OF 100'-0" TO MATCH THE ACTUAL EXISTING FINISH FLOOR ELEVATION.

D. CONTRACT DOCUMENTS:

1) THE CONTRACT DOCUMENTS CONSIST OF THE AGREEMENT BETWEEN THE OWNER AND CONTRACTOR, CONDITIONS OF THE CONTRACT, DRAWINGS, SPECIFICATIONS, ADDENDA ISSUED PRIOR TO EXECUTION OF THE CONTRACT, OTHER DOCUMENTS LISTED IN THE AGREEMENT AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT.

2) THE GENERAL CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND DISSEMINATING ALL CONTRACT DOCUMENTS AND LATEST ADDENDA TO ALL SUB-CONTRACTORS PRIOR TO DETAILING, FABRICATION OR INSTALLATION OF WORK.

3) CORRELATION OF THE CONTRACT DOCUMENTS: THE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ONE SHALL BE AS BINDING AS IF REQUIRED BY ALL. IF CONFLICTING REQUIREMENTS ARE FOUND BETWEEN THE DRAWINGS, SPECIFICATIONS AND/OR THESE GENERAL NOTES, THE MORE STRINGENT AND HIGHEST COST REQUIREMENT SHALL CONTROL UNLESS DIRECTED OTHERWISE IN WRITING BY THE OWNER'S REPRESENTATIVE.

4) THE GENERAL CONTRACTOR SHALL COMPARE THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR DISCREPANCIES BETWEEN EACH SET, AND WITHIN EACH SET OF DRAWINGS, AND REPORT DISCREPANCIES, IF ANY, TO THE OWNER'S REPRESENTATIVE PRIOR TO THE DETAILING, FABRICATION AND INSTALLATION OF AFFECTED WORK.

5) GENERAL CONTRACTOR SHALL COORDINATE SIZES AND LOCATIONS OF OPENINGS THROUGH FLOORS, ROOF, AND WALLS SHOWN ON ELECTRICAL, PLUMBING, AND FIRE SUPPRESSION SYSTEM DESIGN DOCUMENTS WITH ASSOCIATED SUBCONTRACTORS.

6) ALTHOUGH NOT NECESSARILY SPECIFICALLY REFERENCED IN THE CONTRACT DOCUMENTS, TYPICAL DETAILS AND GENERAL NOTES APPLY TO THE ENTIRE PROJECT WHEREVER CONDITIONS SIMILAR TO THOSE DETAILED OR NOTED EXIST.

7) THE USE OF ELECTRONIC FILES OR REPRODUCTION OF CONTRACT DOCUMENTS BY ANY TRADE OR MATERIAL SUPPLIER IN LIEU OF COMPLETELY INDEPENDENT PREPARATION OF SHOP DRAWINGS SIGNIFIES THE SUPPLIER'S CERTIFICATION THAT ALL INFORMATION SHOWN IN THE SHOP DRAWINGS IS CORRECT, AND ASSIGNS THEMSELVES TO RESPONSIBILITY FOR ANY JOB EXPENSE ARISING DUE TO ANY ERRORS OCCURRING THEREIN.

2. DESIGN LOADS

A. DEAD LOAD: SELF WEIGHT OF MATERIALS, UNLESS NOTED OTHERWISE

B. ROOF DEAD LOAD:
1) BUILT UP ROOFING SYSTEM.......................................6 PSF
2) RIGID INSULATION..2 PSF
3) METAL ROOF DECK...3 PSF
4) JOIST SELF-WEIGHT...2 PSF
5) CEILING SYSTEM..2 PSF
6) ROOF COLLATERAL (MEP, BRIDGING & MISC. FRAMING)...............5 PSF
7) TOTAL..20 PSF

C. UNIFORM LIVE LOADS:
1) ROOF LIVE LOAD (UNREDUCIBLE).................................20 PSF

D. CONCENTRATED LIVE LOADS:
1) ROOFS (ON AN AREA 2.5 FT. X 2.5 FT.)........................300 LBS

E. WIND LOADS:
1) GOVERNING CODE:...ASCE 7-10
2) RISK CATEGORY: II
3) EXPOSURE CATEGORY:...C
4) INTERNAL PRESSURE COEFFICIENT, GCPI:....... ....+/- 0.18
5) TOPOGRAPHIC FACTOR, KZT:.....................................1.0
6) DIRECTIONALITY FACTOR, KD:..................................0.85
7) ULTIMATE DESIGN WIND SPEED, Vult:..........................115 MPH
8) NOMINAL DESIGN WIND SPEED, Vasd:............................90 MPH

F. SNOW LOADS:
1) GOVERNING CODE:...ASCE 7-10
2) SNOW IMPORTANCE FACTOR, Is:..................................1.0
3) GROUND SNOW LOAD, Pg:.....................................10 PSF
4) EXPOSURE OF ROOF: ....PARTIALLY EXPOSED
5) EXPOSURE FACTOR, Ce:...1.0
6) THERMAL FACTOR, Ct:..1.0
7) ROOF SLOPE FACTOR, Cs:.......................................1.0
8) CALCULATED FLAT ROOF SNOW LOAD, Pf:.......................7.0 PSF
9) MINIMUM FLAT ROOF SNOW LOAD, I*Pg:.........................10 PSF
10) RAIN ON SNOW SURCHARGE LOAD:...............................5 PSF

G. RAIN LOADS:
1) GOVERNING CODE:...ASCE 7-10
2) DEPTH OF WATER ON THE UNDEFLECTED ROOF UP TO THE INLET OF THE SECONDARY DRAINAGE SYSTEM WHEN THE PRIMARY DRAINAGE SYSTEM IS BLOCKED (I.E., THE STATIC HEAD), ds....................4.0 INCHES
3) ADDITIONAL DEPTH OF WATER ON THE UNDEFLECTED ROOF ABOVE THE INLET OF THE SECONDARY DRAINAGE SYSTEM AT ITS DESIGN FLOW (I.E., THE HYDRAULIC HEAD), dh....................................2.0 INCHES

H. SEISMIC DESIGN CRITERIA:
1) GOVERNING CODE:...ASCE 7-10
2) RISK CATEGORY: II
3) SEISMIC IMPORTANCE FACTOR, Ie:..............................1.00
4) SOIL SITE CLASSIFICATION:......................................C
5) 0.2 SEC. MAPPED SPECTRAL ACCELERATION, Ss:..................0.275
6) 1.0 SEC. MAPPED SPECTRAL ACCELERATION, S1:..................0.079
7) SITE COEFFICIENT, 0.2 SEC. PERIOD, Fa:.......................1.20
8) SITE COEFFICIENT, 1.0 SEC. PERIOD, Fv:.......................1.70
9) 0.2 SEC. DESIGN SPECTRAL ACCELERATION, Sds:.................0.220
10) 1.0 SEC. DESIGN SPECTRAL ACCELERATION, Sd1:................0.089
11) SEISMIC DESIGN CATEGORY:......................................B
12) SEISMIC PARAMETERS FOR BUILDING:
   A) SEISMIC FORCE RESISTING SYSTEM: STEEL SYSTEMS NOT SPECIFICALLY DESIGNED FOR SEISMIC RESISTANCE
   B) RESPONSE MODIFICATION COEFFICIENT, R:.....................3.00
   C) SYSTEM OVERSTRENGTH FACTOR, O:............................2.50
   D) DEFLECTION AMPLIFICATION FACTOR, Cd:......................3.00
   E) ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE METHOD.
   F) SEISMIC RESPONSE COEFFICIENT, Cs:........................0.092
   G) TOTAL LATERAL BASE SHEAR, V:............................5 KIPS

3. MATERIAL DESIGN VALUES

A. CONCRETE (MIN. ULTIMATE COMPRESSIVE STRENGTH AT 28 DAYS, NORMAL WEIGHT U.N.O.)
1) FOUNDATIONS:...3,500 PSI
2) SLAB-ON-GRADE:...4,000 PSI
3) ALL OTHER STRUCTURAL CONCRETE, U.N.O:....................4,000 PSI

B. CONCRETE REINFORCEMENT (MINIMUM YIELD STRENGTH)
1) ALL PLAIN AND DEFORMED BARS (ASTM A615, GRADE 60)......FY = 60 KSI
2) WELDABLE REINFORCING BARS (ASTM A706) ....FY = 60 KSI

C. STRUCTURAL STEEL (MINIMUM YIELD STRENGTH)
1) ALL WIDE FLANGE SHAPES (ASTM A992).....................FY = 50 KSI
2) SQUARE AND RECTANGULAR HSS (ASTM A500, GRADE C)........FY = 50 KSI
3) ANCHOR RODS (ASTM F1554, GRADE 55).....................FY = 55 KSI
4) DEFORMED BAR ANCHORS (AWS D1.1 TYPE C, ASTM A496)......FY = 70 KSI
5) HEADED STUD ANCHORS (AWS D1.1 TYPE B, ASTM A29, GRADES 1010 THROUGH 1020)..FY = 51 KSI
6) ALL OTHER SHAPES AND PLATES UNLESS NOTED (ASTM A36)....FY = 36 KSI

D. COLD FORMED STEEL (MINIMUM YIELD STRENGTH)
1) ROOF DECK (ASTM A653, SS GRADE 33, G-60 GALVANIZED)....FY = 33 KSI
2) COLD FORMED METAL STUDS, 43 MIL AND LIGHTER (ASTM A1003/A, GRADE ST33H, G-60 GALVANIZED)...............................FY = 33 KSI
3) COLD FORMED METAL STUDS, 54 MIL AND HEAVIER (ASTM A1003/A, GRADE ST50H, G-60 GALVANIZED)...............................FY = 50 KSI
4) COLD FORMED METAL CLIPS (ASTM A653, SS GRADE 50,G-90 GALVANIZED)...FY = 50 KSI

4. CONSTRUCTION LOADS AND STABILITY

A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL TEMPORARY CONSTRUCTION LOADS CAN BE SAFELY SUPPORTED BY THE STRUCTURE DURING CONSTRUCTION.

B. THE STRUCTURAL FRAMING SYSTEM AND FOUNDATIONS HAVE BEEN DESIGNED AS A COMPLETE STRUCTURAL SYSTEM FOR SUPPORT OF THE LOADS INDICATED IN THE CONSTRUCTION DOCUMENTS. THE STRUCTURE HAS NOT BEEN DESIGNED OR CHECKED FOR TEMPORARY CONSTRUCTION LOADS NOR HAS IT BEEN DESIGNED OR CHECKED FOR ADEQUACY OR STABILITY AS A PARTIALLY ERECTED STRUCTURE.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING THE ABILITY OF THE PARTIALLY COMPLETED OR FULLY COMPLETED STRUCTURE TO RESIST ALL CONSTRUCTION LOADS INCLUDING BUT ARE NOT NECESSARILY LIMITED TO MATERIAL STAGING, PERSONNEL, AND EQUIPMENT.

D. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORES, GUYS, BRACES, AND OTHER SUPPORTS DURING CONSTRUCTION TO KEEP STRUCTURAL FRAMING COMPONENTS SECURE, PLUMB, AND IN ALIGNMENT AGAINST TEMPORARY CONSTRUCTION LOADS AND LOADS EQUAL IN INTENSITY TO DESIGN LOADS. THE TEMPORARY SUPPORTS SHALL BE SUFFICIENT TO SECURE THE PARTIALLY ERECTED STRUCTURE OR ANY PORTION THEREOF AGAINST LOADS THAT ARE LIKELY TO BE ENCOUNTERED DURING CONSTRUCTION, INCLUDING THOSE DUE TO WIND AND THOSE THAT RESULT FROM CONSTRUCTION OPERATIONS.

E. THE CONTRACTOR SHALL NOT REMOVE TEMPORARY SUPPORTS UNTIL THE INSTALLATION OF ALL STRUCTURAL ELEMENTS IS COMPLETE. FOR THE PURPOSES OF THIS PARAGRAPH, "ALL STRUCTURAL ELEMENTS" INCLUDES, BUT IS NOT NECESSARILY LIMITED TO, THE FOLLOWING STRUCTURAL ELEMENTS:
1) FOUNDATIONS
2) STEEL JOISTS INCLUDING JOIST BRIDGING
3) ROOF DECK

5. EXISTING CONSTRUCTION

A. ALL DIMENSIONS, PLUMBNESS, AND DETAILS FOR THE EXISTING STRUCTURE SHALL BE VERIFIED IN THE FIELD PRIOR TO PROCEEDING WITH ANY DEMOLITION OR INSTALLATION OF NEW WORK.

B. PRIOR TO DEMOLITION OR INSTALLATION OF NEW WORK, THE CONTRACTOR SHALL MAKE WRITTEN DOCUMENTATION IF UNFORESEEN CONDITIONS OCCUR IN THE EXISTING CONSTRUCTION. THESE UNFORESEEN CONDITIONS SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR REVIEW AND A WRITTEN RESPONSE BEFORE PROCEEDING WITH THE WORK.

C. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL SHORING, PROPS, AND GUYS REQUIRED FOR THE TEMPORARY SUPPORT OF THE EXISTING STRUCTURE, UTILITIES, ETC. AS MAY BE NECESSARY TO SAFELY COMPLETE DEMOLITION OR NEW WORK.

D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING EXISTING UTILITIES, BOTH CHARTED AND UNCHARTED BEFORE COMMENCING WITH ANY EXCAVATION OR DEMOLITION WORK. DEPTH OF CONCRETE SAW SHALL BE SET SO AS NOT TO CUT ANY LOCAL EMBEDDED OR UNDER-FLOOR PIPING OR WIRING WHICH IS TO REMAIN.

E. ALL DRILLING, CUTTING, DEMOLITION OR OTHER MODIFICATIONS TO EXISTING CONSTRUCTION SHALL BE PERFORMED IN A MANNER THAT WILL NOT REDUCE THE STABILITY OR STRUCTURAL INTEGRITY OF THE EXISTING CONSTRUCTION. WHEN SAW CUTTING, SPECIAL CARE SHALL BE TAKEN TO NOT OVER CUT INTO AN EXISTING AREA OF STRUCTURE THAT WILL REMAIN.

F. CORING FOR PIPING OR CONDUIT THROUGH EXISTING STRUCTURAL MEMBERS IS NOT ALLOWED UNLESS SPECIFICALLY SHOWN IN THE CONTRACT DOCUMENTS.

G. DAMAGE TO THE EXISTING STRUCTURE OR OTHER EXISTING BUILDING COMPONENTS CAUSED BY DEMOLITION OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR TO A LEVEL ACCEPTABLE TO THE OWNER'S REPRESENTATIVE.

H. THE PROJECT AREA SHALL BE MAINTAINED AS CLEAN AS POSSIBLE WITH DUST BEING LIMITED AS MUCH AS PRACTICAL.

6. FOUNDATION NOTES

A. GEOTECHNICAL REPORT: A PREVIOUSLY SUBMITTED GEOTECHNICAL ENGINEERING SERVICES REPORT HAS BEEN UTILIZED FOR THE NEW OFFICE ADDITION AT FAIRVIEW ELEMENTARY SCHOOL, IN OKLAHOMA CITY, OKLAHOMA. THE GEOTECHNICAL REPORT WAS PERFORMED BY PROFESSIONAL SERVICES, INC. (PSI), DATED DECEMBER 9, 2015 (PSI PROJECT NO. 0547965-4).

B. SITE SUB-GRADE PREPARATION:

1) STRIPPING: VEGETATION, CONCRETE, DELETERIOUS MATERIALS, AND SOFT AND LOOSE SOIL IN THE CONSTRUCTION AREAS, SHALL BE STRIPPED FROM THE SITE. THE DEPTH OF REMOVAL SHALL BE DETERMINED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION. UTILITIES SHALL BE LOCATED AND REROUTED AS NECESSARY.

2) UNDERCUTTING: AFTER STRIPPING AND AFTER MAKING ANY REQUIRED CUTS, THE BUILDING PAD SHALL BE UNDERCUT TO A MINIMUM OF 2 FEET AND REPLACED WITH LOW VOLUME CHANGE STRUCTURAL FILL AS OUTLINED BELOW.

3) PROOF-ROLLING: AFTER STRIPPING AND UNDERCUTTING, BUT BEFORE PLACING FILL, THE CONSTRUCTION AREA SHALL BE PROOF-ROLLED WITH A TANDEM AXLE DUMP TRUCK WEIGHING AT LEAST 9 TONS/AXLE. THE PROOFROLLING SHOULD INVOLVE OVERLAPPING PASSES IN MUTUALLY PERPENDICULAR DIRECTIONS AND SOILS WHICH ARE OBSERVED TO RUT OR DEFLECT EXCESSIVELY UNDER THE MOVING LOAD SHALL BE UNDERCUT AND RECOMPACTED IN PLACE OR REPLACED WITH PROPERLY COMPACTED ENGINEERED FILL. THE RECOMPACTED SOIL OR STRUCTURAL FILL SHALL BE MOISTURE CONDITIONED DURING PLACEMENT. THE PROOF-ROLLING AND UNDERCUTTING ACTIVITIES SHALL BE WITNESSED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER AND SHALL BE PERFORMED DURING A PERIOD OF DRY WEATHER.

4) SCARIFICATION: AFTER STRIPPING, UNDERCUTTING AND PROOF ROLLING, BUT BEFORE FILL PLACEMENT, THE EXPOSED SOILS SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 6 INCHES AND THEN PROCESSED AT A MOISTURE CONTENT AT LEAST 2 PERCENTAGE POINTS ABOVE ITS OPTIMUM VALUE AS DETERMINED BY THE STANDARD PROCTOR TEST. THE SUBGRADE SOILS SHALL BE RECOMPACTED TO AT LEAST 95 PERCENT OF ITS MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR TEST METHOD (ASTM D-698).

5) ACCEPTABLE FILL: STRUCTURAL FILL MATERIALS SHALL BE FREE OF ORGANIC OR OTHER DELETERIOUS MATERIAL, HAVE A MAXIMUM PARTICLE SIZE OF 3 INCHES, HAVE A LIQUID LIMIT NOT MORE THAN 35, A PLASTICITY INDEX IN THE RANGE OF 5 AND 18 AND FINE MATERIAL PASSING THE NO. 200 SEIVE NOT LESS THAN 60%.

6) FILL PLACEMENT: FILL SHALL BE PLACED IN MAXIMUM LIFTS OF 8 INCHES OF LOOSE MATERIAL AND SHALL BE COMPACTED WITHIN THE RANGE OF 2 PERCENTAGE POINTS BELOW AND 3 PERCENTAGE POINTS ABOVE THE OPTIMUM MOISTURE CONTENT. EACH LIFT OF COMPACTED ENGINEERED FILL SHALL BE TESTED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF SUBSEQUENT LIFTS. THE EDGES OF COMPACTED FILL SHALL EXTEND 5 FEET LATERALLY BEYOND THE BUILDING FOOTPRINT PRIOR TO SLOPING ON AS FLAT A GRADIENT AS PRACTICAL. STRUCTURAL FILL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF STANDARD PROCTOR MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698.

7) DEPTH OF FILL: THE FLOOR SLAB SHALL BE GRADE SUPPORTED ON 2'-0" OF PROPERLY COMPACTED STRUCTURAL FILL. THE SHALLOW FOUNDATIONS SHALL BEAR ON NATIVE SOILS OR PROPERLY COMPACTED STRUCTURAL FILL.

8) FILL PLACEMENT TESTING: EACH LIFT OF COMPACTED FILL SHALL BE TESTED BY A GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF SUBSEQUENT LIFTS. FIELD DENSITY TESTS SHALL BE TAKEN AT A MINIMUM OF ONE PER EVERY 2500 SF, BUT AT LEAST THREE SETS OF DENSITY TESTS SHALL BE TAKEN FOR EACH LIFT.

9) SITE DRAINAGE: GRADING OF THE SITE AROUND THE STRUCTURE'S PADS SHALL BE ACCOMPLISHED TO ENABLE POSITIVE DRAINAGE AWAY FROM THE PADS BY PROVIDING AN ADEQUATE GRADIENT. THE SURFACE GRADIENT PROVIDED WILL BE DEPENDENT ON THE LANDSCAPING TYPE AND VEGETATION. WATER INFILTRATION AND SEEPAGE INTO THE FOUNDATION SHALL BE REDUCED AS MUCH AS POSSIBLE. IF IT IS POSSIBLE FOR WATER TO COLLECT BENEATH THE FOUNDATION AND FOUNDATION AREAS, IT WILL BE NECESSARY TO USE INTERCEPTOR DRAINS TO REMOVE THE COLLECTED WATER.

10) MAINTENANCE OF SOIL MOISTURE: SOIL MOISTURE SHALL BE MAINTAINED UP UNTIL CONCRETE PLACEMENT TO PREVENT SHRINKAGE AND SUBSEQUENT POST-CONSTRUCTION SWELL OF SUBGRADE SOILS.

C. SHALLOW FOUNDATIONS:

1) FOOTING DESIGN PARAMETERS: THE PROPOSED BUILDING SHALL BE SUPPORTED ON CONVENTIONAL SHALLOW FOUNDATIONS BASED ON THE FOLLOWING DESIGN PARAMETERS:
   A) BEARING MATERIAL: NATIVE SOILS OR PROPERLY COMPACTED STRUCTURAL FILL AS OUTLINED ABOVE.
   B) ALLOWABLE BEARING PRESSURE: 3,000 PSF FOR SPREAD FOUNDATIONS AND 2,500 PSF FOR CONTINUOUS FOUNDATIONS.

2) OBSERVATION OF BEARING CONDITIONS: A GEOTECHNICAL ENGINEER SHALL OBSERVE THE FOUNDATION EXCAVATIONS PRIOR TO STEEL OR CONCRETE PLACEMENT TO DETERMINE FI THE FOUNDATION MATERIALS ARE CAPABLE OF SUPPORTING THE DESIGN LOADS AND ARE CONSISTENT WITH THE MATERIALS DISCUSSED ABOVE.

3) IMPROVEMENT OF BEARING CONDITIONS: SOFT OR LOOSE SOIL ZONES ENCOUTNRED AT THE BOTTOM OF THE FOOTING EXCAVATIONS SHALL BE REMOVED TO THE LEVEL OF STIFF OR DENSE SOIL AS DIRECTED BY THE GEOTECHNICAL ENGINEER. CAVITIES FORMED AS A RESULT OF EXCAVATION OF SOFT OR LOOSE SOIL ZONES SHALL BE BACKFILLED WITH ENGINEERED FILL, LEAN CONCRETE OR FLOWABLE FILL, AS DETERMINED BY THE GEOTECHNICAL ENGINEER. CARE SHALL BE TAKEN TO PREVENT WETTING OR DRYING OF THE BEARING MATERIALS DURING CONSTRUCTION. ANY EXTREMELY WET OR DRY MATERIAL, OR ANY LOOSE OR DISTURBED MATERIAL IN THE BOTTOM OF THE FOOTING EXCAVATIONS SHALL BE REMOVED PRIOR TO PLACING CONCRETE.

4) TRENCHED FOOTINGS: EARTH-FORMED TRENCHED FOOTINGS ARE PERMITTED, EXCEPT WHERE BRICK LEDGES OR EXPOSED SURFACES REQUIRE FORMING AND/OR WHERE SOIL SIDE WALLS SLOUGH INTO THE TRENCH. IN ORDER TO ACHIEVE 3" MINIMUM CONCRETE COVER OVER STEEL REINFORCING ON SIDEWALLS, EARTH FORMED TRENCHES SHALL BE A MINIMUM OF 2" WIDER THAT THE FORMED DIMENSIONS SHOWN IN ALL SECTIONS AND DETAILS.

5) PIPE PENETRATIONS: ALL HORIZONTAL PIPE OR SIMILAR PENETRATIONS OR SLEEVES THROUGH FOOTINGS SHALL OCCUR WITHIN THE MIDDLE 1/3 OF THE FOOTING DEPTH. AT PENETRATIONS, PROVIDE (4) #5 DIAGONAL BARS AT EACH FOOTING FACE (3" CLEAR BETWEEN BAR AND PENETRATION AND 3" CLEAR FROM FOOTING BEARING). IF PENETRATION OCCURS NEAR THE BOTTOM OF THE FOOTING, REFER TYPICAL DETAILS FOR STANDARD DETAIL TO TRANSITION AND THICKEN FOOTING TO ACCOMMODATE PENETRATION.

E. SLAB-ON-GRADE CONSTRUCTION

1) SLAB THICKNESS AND REINFORCING: SLABS-ON-GRADE SHALL BE 4" THICK CONCRETE REINFORCED WITH #3 BARS AT 15" ON CENTER EACH WAY. REINFORCING BARS SHALL BE PLACED 1½" CLEAR FROM TOP OF SLAB USING CHAIRS OR SLAB BOLSTERS COMPLYING WITH CRSI'S "MANUAL OF STANDARD PRACTICE".

2) SLAB SUBGRADE: THE FLOOR SLAB SHALL BE GRADE-SUPPORTED AS OUTLINED IN THE SITE SUB-GRADE PREPARATION NOTES SHOWN ABOVE.

3) CONSTRUCTION MONITORING: CONSTRUCTION ACTIVITY MAY CAUSE DAMAGE AND DETERIORATION TO THE PREPARED SUBGRADE. A FIELD REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHALL OBSERVE THE FINAL SUBGRADE PRIOR TO PLACEMENT OF THE SLAB ON GRADE, PERFORM FURTHER TESTING AS NECESSARY, AND DETERMINE IF ANY REMEDIAL MEASURES ARE NECESSARY PRIOR TO SLAB PLACEMENT.

4) AGGREGATE BASE COURSE: A 4-INCH THICK, FREE-DRAINING AGGREGATE BASE COURSE SHALL BE PLACED BENEATH THE FLOOR SLAB TO ENHANCE DRAINAGE AND PROVIDE INCREASED SUBGRADE STRENGTH. AT THE TIME OF THE SLAB PLACEMENT, THE AGGREGATE BASE SHALL BE MOIST, BUT FREE OF ANY STANDING OR SELF-DRAINING WATER. THE AGGREGATE BASE COURSE MATERIAL SHALL MEET THE OKLAHOMA DEPARTMENT OF TRANSPORTATIONS STANDARD SPECIFICATION 701.3 TYPE "A" CRITERIA.

5) VAPOR RETARDER: A 15 MIL VAPOR RETARDER SHALL BE PLACED IMMEDIATELY BELOW THE CONCRETE SLAB. VAPOR RETARDER SHALL BE SEALED AT ALL LAPS AND SEALED TO PREVIOUSLY PLACED CONCRETE AS RECOMMENDED BY VAPOR RETARDER MANUFACTURER. BEFORE PLACING CONCRETE, PATCH AND SEAL ANY RIPS, TEARS OR HOLES IN VAPOR RETARDER INCURRED DURING CONSTRUCTION.

6) MOIST CURING OF SLAB: SLABS-ON-GRADE SHALL BE WATER CURED FOR A MINIMUM OF 7 DAYS BY PONDING, SPRAYING, SPRINKLING OR BY USE OF SATURATED COVERINGS. CURING COMPOUNDS ARE EXPRESSLY PROHIBITED.

7) ISOLATION JOINTS: PROVIDE SLAB ISOLATION AROUND COLUMNS PENETRATING THE SLAB-ON-GRADE. PROVIDE 1/2 INCH PREMOLDED EXPANSION JOINT MATERIAL AROUND PERIMETER OF ISOLATION JOINTS. REFER TO TYPICAL DETAILS AND ADDITIONAL INFORMATION.

8) SLAB JOINTS: SLAB JOINTS SHALL BE PROVIDED AS SHOWN ON THE PLANS AND TYPICAL DETAILS. THE FOLLOWING JOINT TYPES ARE SHOWN ON THE DRAWINGS:
   A) CJ = CONSTRUCTION JOINT
   B) SJ = SAWED CONTRACTION JOINT

F. FOUNDATION MISCELLANEOUS

1) GROUNDWATER CONDITIONS: GROUNDWATER WAS NOT ENCOUNTERED IN THE BORINGS AT THE TIME OF DRILLING. HOWEVER, IT IS POSSIBLE THAT TRANSIENT OVER-SATURATED GROUND CONDITIONS COULD DEVELOP AT SHALLOWER DEPTHS AT A LATER TIME DUE TO PERIODS OF HEAVY PRECIPITATION, LANDSCAPE WATERING, LEAKING WATER LINES, OR OTHER UNFORESEEN CAUSES. THE CONTRACTOR SHALL DETERMINE THE ACTUAL GROUNDWATER LEVELS AT TIME OF CONSTRUCTION. IF GROUNDWATER ISSUES ARE ENCOUNTERED DURING CONSTRUCTION, THE GEOTECHNICAL ENGINEER SHALL BE CONTACTED.

2) DRAINAGE CONSIDERATIONS DURING CONSTRUCTION: DUE TO ADVERSE EFFECT ON STRUCTURES, WATER SHALL NOT BE ALLOWED TO COLLECT IN THE FOUNDATION EXCAVATION OR ON PREPARED SUBGRADE OF THE CONSTRUCTION AREA EITHER DURING OR AFTER CONSTRUCTION. UNDERCUT OR EXCAVATED AREAS SHALL BE SLOPED TOWARD ONE CORNER TO FACILITATE REMOVAL OF ANY COLLECTED RAINWATER, OR POSITIVE RUNOFF SHALL BE PROVIDED. THE CONTRACTOR SHALL EXERCISE CARE IN CREATING DRAINAGE PATHS FOR WATER DURING THE CONSTRUCTION PHASE OF THE PROJECT. TO REDUCE INFILTRATION OF SURFACE WATER AROUND THE PERIMETER OF THE BUILDING AND BENEATH THE FLOOR SLABS, POSITIVE DRAINAGE SHALL BE PROVIDED DURING ALL PHASES OF CONSTRUCTION.

3) FINAL SITE GRADING: PER SECTION 1804.4 OF IBC-2015, THE GROUND IMMEDIATELY ADJACENT TO THE FOUNDATION SHALL BE SLOPED AWAY FROM THE BUILDING AT A SLOPE OF NOT LESS THAN ONE UNIT VERTICAL IN 20 UNITS HORIZONTAL (5-PERCENT SLOPE) FOR A MINIMUM DISTANCE OF 10 FEET PERPENDICULAR TO THE FACE OF THE WALL. IF PHYSICAL OBSTRUCTIONS OR LOT LINES PROHIBIT 10 FEET OF HORIZONTAL DISTANCE, A 5-PERECNT SLOPE SHALL BE PROVIDED TO AN APPROVED ALTERNATIVE METHOD OF DIVERTING WATER AWAY FROM THE FOUNDATION. SWALES USED FOR THIS PURPOSE SHALL BE SLOPED A MINIMUM OF 2-PERECNT WHERE LOCATED WITHIN 10 FEET OF THE BUILDING FOUNDATION. IMPERVIOUS SURFACES WITHIN 10 FEET OF THE BUILDING SHALL BE SLOPED A MINIMUM OF 2-PERCENT AWAY FROM THE BUILDING.

4) EXCAVATION AND TEMPORARY SLOPES: THE CONTRACTOR, DESIGNATED AS "RESPONSIBLE PERSON" IN OSHA CONSTRUCTION STANDARDS FOR EXCAVATIONS, 29 CFR PART 1926, IS SOLELY RESPONSIBLE FOR PLANNING AND IMPLEMENTING ALL SAFETY PROCEDURES. ALL EXCAVATION HEIGHT, SLOPE, AND DEPTH MUST ADHERE TO ALL SPECIFICATIONS OUTLINED IN LOCAL, STATE, AND FEDERAL SAFETY REGULATIONS. THE STRUCTURAL ENGINEER DOES NOT ASSUME ANY RESPONSIBILITY FOR CONSTRUCTION SITE SAFETY OR ANY PARTY'S, INCLUDING THE CONTRACTOR'S, COMPLIANCE WITH THE APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY REGULATIONS OR ANY OTHER APPLICABLE REGULATIONS.

5) TRENCH BACKFILL: ALL REQUIRED TRENCH BACKFILL SHALL BE ACCEPTABLE FILL MATERIAL AS DEFINED ABOVE AND SHALL BE MECHANICALLY COMPACTED IN LAYERS TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698. SOME SETTLEMENT OF THE BACKFILL MAY BE EXPECTED AND ANY UTILITIES WITHIN THE TRENCHES SHALL BE CONSTRUCTED TO ALLOW THESE DIFFERENTIAL MOVEMENTS. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

6) CONSTRUCTION MONITORING: A GEOTECHNICAL ENGINEER SHALL BE RETAINED TO PROVIDE OBSERVATIONS AND TESTING OF SOILS EXPOSED DURING PROJECT CONSTRUCTION IN ORDER TO VERIFY THAT SOIL CONDITIONS ARE AS ANTICIPATED. CONSTRUCTION ACTIVITIES PERTAINING TO EARTHWORK AND OTHER RELATED ACTIVITIES SHALL ALSO BE OBSERVED BY THE GEOTECHNICAL ENGINEER AS OUTLINED ABOVE.

7. CONCRETE CONSTRUCTION NOTES

A. DESIGN CRITERIA: THE DESIGN OF CONCRETE IS GOVERNED BY "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-14) AND COMMENTARY (ACI 318R-14)."

B. CONCRETE CONSTRUCTION CRITERIA: ALL CONCRETE CONSTRUCTION SHALL COMPLY WITH THE PROVISIONS OF "SPECIFICATIONS FOR STRUCTURAL CONCRETE (ACI 301-16)."

C. TOLERANCES: TOLERANCES FOR CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH "SPECIFICATION FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS (ACI 117-10) AND COMMENTARY (ACI 117R-10)."

D. CONCRETE MIXTURES:

1) CEMENTITIOUS MATERIALS
   A) PORTLAND CEMENT: ASTM C150 TYPE I OR II UNLESS SPECIFICALLY NOTED OTHERWISE.
   B) FLY ASH: ASTM C618 CLASS F OR C. THE MAXIMUM PERCENTAGE OF FLY ASH SHALL NOT EXCEED 25 PERCENT OF THE TOTAL CEMENTITIOUS MATERIAL.

2) ALL CONCRETE MIXES SHALL BE COMPRISED OF NORMAL WEIGHT AGGREGATES CONFORMING TO ASTM C33, EXCEPT WHERE SPECIFICALLY INDICATED AS LIGHTWEIGHT, IN WHICH CASE AGGREGATES SHALL CONFORM TO ASTM C330.

3) MIXING WATER SHALL CONFORM TO ASTM C1062. MIXING WATER, INCLUDING THAT PORTION OF MIXING WATER CONTRIBUTED IN THE FORM OF FREE MOISTURE ON AGGREGATES, SHALL NOT CONTAIN DELETERIOUS AMOUNTS OF CHLORIDE IONS.

4) ADMIXTURES, IF USED, SHALL CONFORM TO THE FOLLOWING:
   A) WATER REDUCTION AND SETTING TIME MODIFICATION: ASTM C494.
   B) PRODUCING FLOWING CONCRETE: ASTM C1017.
   C) AIR ENTRAINMENT: ASTM C260.
   D) INHIBITING CHLORIDE INDUCED CORROSION: ASTM C1582.
   E) MOISTURE VAPOR REDUCING ADMIXTURE, MVRA: ASTM C494 & ASTM D5084

5) MIX DESIGNS SHALL BE PROPORTIONED BASED ON THE FOLLOWING MIX CHARACTERISTICS;

   A) FOUNDATIONS
      1) FREEZING AND THAWING EXPOSURE CATEGORY (F): CLASS F1
      2) SULFATE EXPOSURE CATEGORY (S): CLASS S0
      3) WATER EXPOSURE CATEGORY (W): CLASS W0
      4) CORROSION PROTECTION CATEGORY (C): CLASS C1
      5) 28-DAY COMPRESSIVE STRENGTH: 3,500 PSI
      6) MAXIMUM WATER/CEMENT RATIO: 0.55
      7) MAXIMUM AGGREGATE SIZE: 1 1/2 INCHES
      8) TARGET AIR CONTENT: 4.5 PERCENT PLUS OR MINUS 1.5 PERCENT
      9) MAXIMUM WATER-SOLUBLE CHLORIDE ION CONTENT IN CONCRETE, PERCENT BY WEIGHT OF CEMENT: 0.30

   B) SLABS-ON-GRADE
      1) FREEZING AND THAWING EXPOSURE CATEGORY (F): CLASS F0
      2) SULFATE EXPOSURE CATEGORY (S): CLASS S0
      3) WATER EXPOSURE CATEGORY (W): CLASS W0
      4) CORROSION PROTECTION CATEGORY (C): CLASS C0
      5) 28-DAY COMPRESSIVE STRENGTH: 4,000 PSI
      6) MAXIMUM WATER/CEMENT RATIO: 0.45
      7) MAXIMUM AGGREGATE SIZE: 1 1/2-INCHES
      8) TARGET AIR CONTENT: DO NOT ALLOW AIR CONTENT OF TROWEL-FINISHED FLOORS TO EXCEED 3 PERCENT
      9) MAXIMUM WATER-SOLUBLE CHLORIDE ION CONTENT IN CONCRETE, PERCENT BY WEIGHT OF CEMENT: 1.00
      10) MVRA REQUIRED IN ALL SLABS-ON-GRADE.

6) CONCRETE MIX PROPORTIONS SHALL BE ESTABLISHED IN ACCORDANCE WITH ARTICLE 4.2.3 OF "SPECIFICATIONS FOR STRUCTURAL CONCRETE (ACI 301)." SO THAT THE CONCRETE SATISFIES THE FOLLOWING THREE REQUIREMENTS:
   A) THE CONCRETE CAN BE PLACED READILY WITHOUT SEGREGATION INTO FORMS AND AROUND REINFORCEMENT UNDER ANTICIPATED PLACEMENT CONDITIONS. THE CONCRETE PRODUCER SHALL DETERMINE WHETHER ADMIXTURES ARE NECESSARY FOR WATER REDUCTION, SET TIME, OR SLUMP REQUIREMENTS.
   B) THE CONCRETE SHALL MEET REQUIREMENTS FOR THE ASSIGNED EXPOSURE CLASSES OUTLINED HEREIN.
   C) THE CONCRETE SHALL CONFORM TO STRENGTH TEST REQUIREMENTS FOR STANDARD-CURED SPECIMENS.

7) DOCUMENTATION OF CONCRETE MIXTURE CHARACTERISTICS SHALL BE SUBMITTED FOR REVIEW BEFORE THE MIXTURE IS USED. EVIDENCE OF THE ABILITY OF THE PROPOSED MIXTURE TO COMPLY WITH THE CONCRETE MIXTURE REQUIREMENTS IN THE CONSTRUCTION DOCUMENTS SHALL BE INCLUDED IN THE SUBMITTAL. THE EVIDENCE SHALL BE BASED ON FIELD TEST RECORDS OR LABORATORY TRIAL BATCHES.

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OCTOBER 2023
date

revisions

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E. CONCRETE REINFORCING:

1) ALL DETAILING, FABRICATION, AND PLACING OF REINFORCING STEEL, UNLESS OTHERWISE NOTED, SHALL FOLLOW ALL SECTIONS OF THE ACI "DETAILING MANUAL-2004" (SP-66 04), THE ACI "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318-14), AND ALL SECTIONS OF THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI) "MANUAL OF STANDARD PRACTICE."

2) UNLESS OTHERWISE NOTED, LAP SPLICES OF DEFORMED REINFORCING BARS SHALL CONFORM TO ACI REQUIREMENTS FOR CLASS B TENSION SPLICES. REFER TO LAP LENGTH SCHEDULES FOR TYPICAL LAP REQUIREMENTS.

3) PROVIDE CORNER BARS IN BOTH FACES OF ALL CONTINUOUS FOOTINGS. NUMBER, SIZE, AND SPACING OF CORNER BARS SHALL BE EQUAL TO NUMBER, SIZE AND SPACING OF HORIZONTAL REINFORCING WITH WHICH THEY LAP AND SHALL HAVE CLASS B TENSION LAP SPLICES IN EACH DIRECTION. REFER TO TYPICAL DETAILS FOR ADDITIONAL INFORMATION.

4) AT INTERSECTING FOUNDATIONS, EXTEND ALL HORIZONTAL REINFORCING OF THE INTERSECTING MEMBERS BEYOND THE POINT OF INTERSECTION TO THE OPPOSITE FACE. BEND TO A STANDARD 90 DEGREE HOOK OR PROVIDE BENT DOWELS OF EQUAL SIZE AND SPACING AND LAP AS REQUIRED FOR A CLASS B TENSION SPLICE (BUT NOT LESS THAN 12") IN EACH DIRECTION. REFER TO TYPICAL DETAILS FOR ADDITIONAL INFORMATION.

5) CONCRETE COVER OVER STEEL REINFORCING FOR CAST-IN-PLACE CONSTRUCTION SHALL CONFORM TO THE TABLE PROVIDED IN THE TYPICAL CONCRETE DETAILS.

F. OPENINGS IN CONCRETE STRUCTURES:

1) THE SIZE AND LOCATION OF ALL FLOOR PITS, TRENCH DRAINS, AND OPENINGS FOR ALL DUCTS AND PIPES THROUGH FLOORS, AND FOUNDATION WORK SHALL BE VERIFIED WITH THE MECHANICAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL CONTRACTOR'S REQUIREMENTS PRIOR TO THE START OF ANY CONCRETE WORK.

G. JOINTS IN CONCRETE CONSTRUCTION:

1) CONCRETE SLABS-ON-GRADE: REFER TO SLAB-ON-GRADE CONSTRUCTION NOTES ABOVE FOR INFORMATION REGARDING JOINTS.

2) CURING AT CONSTRUCTION JOINTS: CONCRETE POURS EITHER SIDE OF CONSTRUCTION JOINTS SHALL NOT BE CONCURRENT. CONCRETE SHALL BE ALLOWED TO CURE A MINIMUM OF 7 DAYS PRIOR TO PLACEMENT OF ADJACENT CONCRETE.

H. CONCRETE MISCELLANEOUS:

1) WATERSTOPS AND WATERPROOFING: ALL CONSTRUCTION JOINTS (VERTICAL AND HORIZONTAL) IN BELOW-GRADE CONCRETE WALLS, TRENCHES AND PITS SHALL BE KEYED AND HAVE BENTONITE WATERSTOPS INSTALLED UNLESS NOTED OTHERWISE. ALL BELOW-GRADE CONCRETE WALLS, PITS AND TRENCHES SHALL BE WATERPROOFED AS SHOWN IN ARCHITECTURAL DRAWINGS, UNLESS NOTED OTHERWISE.

2) EQUIPMENT PADS: PROVIDE CONCRETE EQUIPMENT PADS OF SIZE REQUIRED FOR EQUIPMENT FURNISHED. SEE MECHANICAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL DRAWINGS FOR NUMBER, SIZE, AND LOCATION OF SUCH PADS. UNLESS OTHERWISE SHOWN, MINIMUM PAD THICKNESS SHALL BE 4" AND SHALL EXTEND A MINIMUM OF 6" BEYOND THE FACE OF THE EQUIPMENT. MINIMUM REINFORCING SHALL BE #4 BARS AT 12" O.C. EACH WAY. TOOLED OR CHAMFERED EDGES SHALL BE PROVIDED AT ALL EQUIPMENT PADS. ANCHORAGE TO SUPPORTING SLAB SHALL BE MADE. REFER TO TYPICAL DETAILS.

3) CHAMFERED EDGES: UNLESS NOTED OTHERWISE ON ARCHITECTURAL DRAWINGS, PROVIDE 3/4" CHAMFER ON ALL EXPOSED CONCRETE EDGES.

4) SURFACE FINISH: ALL HORIZONTAL CONCRETE SURFACES SHALL HAVE A TROWELED FINISH UNLESS NOTED OTHERWISE IN ARCHITECTURAL DRAWINGS OR FLOORING SPECIFICATIONS.

5) MOIST CURING OF SLABS: SLABS-ON-GRADE AND SLABS-ON-DECK SHALL BE WATER CURED FOR A MINIMUM OF 7 DAYS BY PONDING, SPRAYING, SPRINKLING OR BY USE OF SATURATED COVERINGS. CURING COMPOUNDS ARE EXPRESSLY PROHIBITED.

8. POST-INSTALLED ANCHORS AND DOWELS

A. QUALIFICATION REQUIREMENTS FOR INSTALLERS

1) CONTRACTOR SHALL REQUEST, SCHEDULE AND FACILITATE THE ANCHOR AND/OR ADHESIVE MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL THE MANUFACTURER'S SPECIFIED ANCHORING PRODUCTS. THE ENGINEER MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S ANCHOR INSTALLATION PERSONNEL ARE TRAINED PRIOR TO COMMENCEMENT OF ANCHOR INSTALLATION OPERATIONS.

2) PER ACI 318-14 SECTION 17.8.2.2, INSTALLATION OF ADHESIVE ANCHORS HORIZONTALLY OR UPWARDLY INCLINED SHALL BE PERFORMED BY PERSONNEL CERTIFIED BY AN APPLICABLE CERTIFICATION PROGRAM. CERTIFICATION SHALL INCLUDE WRITTEN AND PERFORMANCE TESTS IN ACCORDANCE WITH THE ACI/CRSI ADHESIVE ANCHOR INSTALLER (AAI) CERTIFICATION PROGRAM, OR EQUIVALENT.

B. QUALIFICATION REQUIREMENTS FOR PRODUCTS

1) POST-INSTALLED EXPANSION AND UNDERCUT ANCHORS SHALL MEET THE ASSESSMENT CRITERIA OF ACI 355.2 "QUALIFICATION OF POST-INSTALLED MECHANICAL ANCHORS IN CONCRETE."

2) POST-INSTALLED ADHESIVE ANCHORS SHALL MEET THE ASSESSMENT CRITERIA OF ACI 355.4 "QUALIFICATION OF POST-INSTALLED ADHESIVE ANCHORS IN CONCRETE."

C. APPROVED ANCHORING PRODUCTS: THE ANCHORING SYSTEMS SHOWN BELOW HAVE BEEN USED IN THE ANCHOR DESIGNS SHOWN IN THE CONSTRUCTION DOCUMENTS. SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERFORMANCE VALUES OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY THEIR HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP, IN-SERVICE TEMPERATURE AND INSTALLATION TEMPERATURE.

1) ANCHORAGE TO CONCRETE

A) ADHESIVE ANCHORS:
(1) HILTI HIT-HY 200 SYSTEM WITH HILTI HIT-Z ROD OR HAS-E THREADED ROD [ICC ESR-3187].

B) MEDIUM DUTY MECHANICAL ANCHORS:
(1) HILTI KWIK BOLT 3 EXPANSION ANCHORS (UNCRACKED CONCRETE ONLY) [ICC ESR-2302]

2) REBAR DOWELING INTO CONCRETE

A) ADHESIVE ANCHORS:
(1) HILTI HIT-HY 200 SYSTEM WITH CONTINUOUSLY DEFORMED REBAR [ICC ESR-3187].

D. PREPARATION PRIOR TO INSTALLATION

1) CURING OF BASE MATERIAL: DO NOT DRILL OR CORE HOLES INTO SUPPORTING CONCRETE OR MASONRY MATERIALS UNTIL THE CONCRETE, MORTAR AND/OR GROUT HAVE BEEN ADEQUATELY CURED TO ACHIEVE FULL DESIGN STRENGTH.

2) AVOIDANCE OF EMBEDDED ITEMS: PRIOR TO DRILLING OR CORING OPERATIONS, THE CONTRACTOR SHALL LOCATE AND MARK ALL POTENTIALLY CONFLICTING REINFORCING BARS, UTILITIES AND OTHER EMBEDDED ITEMS BY INDUCTION SCANNING, GROUND PENETRATING RADAR, X-RAY, OR OTHER APPROVED NON-DESTRUCTIVE METHOD. CONTRACTOR SHALL AVOID DRILLING OR CORING HOLES THAT MAY DAMAGE THESE EMBEDDED ITEMS. NOTIFY THE ENGINEER IF CONFLICTING EMBEDDED ITEMS DO NOT ALLOW INSTALLATION OF POST-INSTALLED ANCHORS IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND/OR APPROVED SHOP DRAWINGS.

E. INSTALLATION

1) ALL DRILLING AND CORING EQUIPMENT AND ALL METHODS FOR INSTALLATION OF POST-INSTALLED ANCHORS AND DOWELS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII).

2) UNLESS SPECIFICALLY SHOWN OTHERWISE, ALL HOLES SHALL BE INSTALLED PERPENDICULAR TO THE CONCRETE OR MASONRY SURFACE.

3) ANCHOR CAPACITY IS DEPENDENT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGES OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS. ANCHOR SPACING AND EDGE DISTANCE VALUES SHALL NOT BE LESS THAN RECOMMENDED BY THE ANCHOR MANUFACTURER.

F. SPECIAL INSPECTION REQUIREMENTS

1) PER ACI 318-14 SECTION 17.8.2.4, ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS SHALL BE CONTINUOUSLY INSPECTED DURING INSTALLATION BY AN INSPECTOR SPECIFICALLY APPROVED FOR THAT PURPOSE BY THE BUILDING OFFICIAL. THE SPECIAL INSPECTOR SHALL FURNISH A REPORT TO THE ENGINEER AND BUILDING OFFICIAL THAT THE WORK COVERED BY THE REPORT HAS BEEN PERFORMED AND THAT THE MATERIALS AND INSTALLATION PROCEDURES USED CONFORM WITH THE APPROVED CONSTRUCTION DOCUMENTS AND THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII).

2) PERIODIC SPECIAL INSPECTIONS SHALL BE PROVIDED FOR ALL OTHER POST-INSTALLED ANCHORS NOT INCLUDED IN THE NOTE ABOVE.

A) PARAMETERS FOR EXPANSION AND UNDERCUT ANCHORS
B) PARAMETERS FOR ADHESIVE ANCHORS
C) PROOF LOADING OF ADHESIVE ANCHORS
D) CORROSION PROTECTION FOR EXPOSED ANCHORS INTENDED FOR ATTACHMENT WITH FUTURE WORK.

9. STEEL CONSTRUCTION NOTES

A. GOVERNING STANDARDS: ALL STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND AS SUPPLEMENTED BY THESE GENERAL NOTES AND THE PROJECT DRAWINGS AND SPECIFICATIONS.

1) ANSI/AISC 360-10 "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS" (JUNE 22, 2010).
2) AISC 303-10 "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" (APRIL 14, 2010).
3) ANSI/AWS "D1.1-STRUCTURAL WELDING CODE - STEEL", 2011 EDITION.
4) RCSC-2010 "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS" (DECEMBER 31, 2009).

B. CONNECTION DESIGN BY FABRICATOR:

1) THE FABRICATOR SHALL RETAIN A PROFESSIONAL ENGINEER WHO IS REGISTERED IN THE STATE IN WHICH THE PROJECT IS LOCATED, WHO SHALL DESIGN ALL CONNECTIONS AND SPLICE CONNECTIONS SHOWN, NOT SHOWN, OR ONLY PARTIALLY DETAILED IN THE DRAWINGS.

2) CONNECTIONS SHALL BE DESIGNED TO SUPPORT THE FACTORED END REACTIONS SHOWN ON THE DRAWINGS. WHERE END REACTIONS ARE NOT SHOWN OR OTHERWISE SPECIFIED, CONNECTIONS SHALL BE DESIGNED TO SUPPORT A FACTORED END SHEAR OF THE GREATER OF 10 KIPS OR 50% OF THE TOTAL FACTORED UNIFORM LOAD CAPACITY SHOWN IN THE MANUAL OF STEEL CONSTRUCTION FOR THE GIVEN SHAPE, SPAN AND THE SPECIFIED STEEL.

3) IF NOT FULLY DETAIELD ON THE DRAWINGS, DESIGN GIRT CONNECTION FOR MINIMUM CONCURRENT REACTIONS OF 10 KIP VERTICAL AND 10 KIP HORIZONTAL (I.E. OUT OF PLANE) UNLESS HIGHER REACTIONS ARE INDICATED ON DRAWINGS.

4) ALL CONNECTION PLATES, STIFFENERS AND BOLTS SHOWN ON THE DRAWINGS ARE SCHEMATIC ONLY. FABRICATOR SHALL DESIGN ALL CONNECTIONS, SPLICES, PLATES, GUSSET PLATES, STIFFENERS, BOLTS AND WELDS FOR FORCES INDICATED ON DRAWINGS IN ADDITION TO THE REQUIREMENTS OF THE AISC DESIGN SPECIFICATION (LRFD PROVISIONS). IN ALL CASES, A MINIMUM 3/8" PLATE AND A MINIMUM OF (2) 3/4" DIAMETER A325 BOLTS SHALL BE PROVIDED.

5) FULL-DEPTH STIFFENER PLATES IN COLUMNS OR BEAMS SHALL MATCH THE YIELD STRENGTH OF THE BASE MEMBER.

6) CONNECTIONS FOR FRAMING MEMBERS WITH BOTH GRAVITY LOADS (REACTIONS) AND AXIAL LOADS OR TRANSFER FORCES (TENSION OR COMPRESSION) SHALL BE DESIGNED FOR THE COMBINED EFFECT OF BOTH LOADS. NOTE THAT BOLTS IN CONNECTIONS WITH AXIAL LOADS SHALL BE EITHER BEARING TYPE IN STANDARD HOLES OR SLIP-CRITICAL TYPE IN SHORT-SLOTTED HOLES.

7) THE FABRICATOR SHALL SUBMIT IN A TIMELY MANNER REPRESENTATIVE SAMPLES OF SUBSTANTIATING CONNECTION INFORMATION TO THE OWNER'S REPRESENTATIVE. THE OWNER'S REPRESENTATIVE WILL REVIEW AND CONFIRM IN WRITING THAT THESE REPRESENTATIVE SAMPLES ARE CONSISTENT WITH THE REQUIREMENTS IN THE CONTRACT DOCUMENTS, OR SHALL ADVISE WHAT MODIFICATIONS ARE REQUIRED TO BRING THE REPRESENTATIVE SAMPLES INTO COMPLIANCE WITH THE REQUIREMENTS IN THE CONTRACT DOCUMENTS. THIS INITIAL SUBMITTAL AND REVIEW IS IN ADDITION TO AND SHALL PRECEDE THE SUBMISSION OF COMPLETE SUBSTANTIATING CONNECTION INFORMATION WITH THE SHOP AND ERECTION DRAWINGS.

8) COMPLETE SUBSTANTIATING CONNECTION INFORMATION SHALL BE SUBMITTED PRIOR TO OR CONCURRENTLY WITH THE SHOP AND ERECTION DRAWINGS.
A) THE LICENSED PROFESSIONAL ENGINEER IN RESPONSIBLE CHARGE OF THE CONNECTION DESIGN SHALL REVIEW AND CONFIRM IN WRITING AS PART OF THE SUBSTANTIATING CONNECTION INFORMATION, THAT THE SHOP AND ERECTION DRAWINGS PROPERLY INCORPORATE THE CONNECTION DESIGNS.
B) THE FABRICATOR SHALL PROVIDE A MEANS BY WHICH THE SUBSTANTIATING CONNECTION INFORMATION IS REFERENCED TO THE RELATED CONNECTIONS ON THE SHOP AND ERECTION DRAWINGS FOR THE PURPOSE OF REVIEW.
C) SUBMITTALS NOT COMPLYING WITH THESE REQUIREMENTS WILL BE RETURNED UNREVIEWED.
D) IF CONNECTION CALCULATIONS ARE SUBMITTED CONCURRENTLY WITH THE CORRESPONDING SHOP DRAWINGS, THE ENGINEER-OF-RECORD'S REVIEW TIME FOR THE COMBINED SUBMITTAL SHALL BE INCREASED TO THREE (3) WEEKS.

C. STRUCTURAL BOLTS, ANCHOR RODS & BASE PLATES:

1) STEEL CONTRACTOR SHALL FURNISH ERECTION BOLTS AS REQUIRED FOR FIELD CONNECTIONS.

2) ALL BOLTS SHALL BE 3/4 IN. DIAMETER ASTM A325 WITH SUITABLE WASHERS AND NUTS UNLESS OTHERWISE SHOWN IN THE CONSTRUCTION DOCUMENTS OR APPROVED IN WRITING BY THE OWNER'S REPRESENTATIVE.

3) ALL BOLTS SHALL BE TIGHTENED TO THE SNUG-TIGHTENED JOINT REQUIREMENTS OF RCSC-10 EXCEPT AT SLIP-CRITICAL JOINTS OR WHERE NOTED OTHERWISE IN CONSTRUCTION DOCUMENTS OR IN FABRICATOR'S CONNECTION DESIGN.

4) UNLESS OTHERWISE INDICATED IN THE DRAWINGS, ALL ANCHOR RODS SHALL CONFORM TO THE SPECIFIED MATERIAL GRADE SHALL BE A MINIMUM 3/4 INCH DIAMETER WITH A MINIMUM FOUNDATION EMBEDMENT AS INDICATED IN STRUCTURAL DETAILS. THE EMBEDDED END SHALL HAVE EITHER A STANDARD BOLT HEAD, A HEAVY HEX NUT WITH THE THREADS SPOILED ABOVE AND BELOW THE NUT, OR JAMMED DOUBLE NUTS.

5) PRIOR TO PLACING CONCRETE, STEEL PLATE TEMPLATES SHALL BE PROVIDED TO FACILITATE PLACEMENT OF ANCHOR RODS IN DETAILED PLAN POSITIONS AND ELEVATIONS.

6) BASE PLATES SHALL BE LEVELED WITH LEVELING NUTS AND OVERSIZED WASHER PLATES OR WITH SHIM PACKS AT THE ERECTOR'S OPTION.

7) AFTER FINAL BASE PLATE POSITIONING, ANCHOR ROD NUTS SHALL BE INSTALLED TO A SNUG-TIGHT CONDITION AND WASHER PLATES SHALL BE FIELD WELDED AS INDICATED IN THE CONSTRUCTION DOCUMENTS.

D. STEEL FABRICATION & FINISH:

1) SHOP DRAWINGS SHALL BE SUBMITTED TO AND REVIEWED BY THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCING FABRICATION. ANY FABRICATION INITIATED PRIOR TO APPROVAL OF SHOP DRAWINGS WILL BE AT THE SOLE RISK OF THE FABRICATOR.

2) ALL SHOP AND FIELD WELDS SHALL BE MADE IN ACCORDANCE WITH THE ANSI/AWS "D1.1-STRUCTURAL WELDING CODE - STEEL", 2011 EDITION. ALL WELDING SHALL USE LOW HYDROGEN PROCESSES.

3) ALL BEAMS THAT ARE REQUIRED TO HAVE CAMBER SHALL BE FABRICATED WITH CAMBER UPWARD. BEAMS WITHOUT SPECIFIED CAMBER SHALL BE FABRICATED SUCH THAT AFTER ERECTION, ANY NATURAL CAMBER DUE TO ROLLING OR SHOP FABRICATION IS UPWARD.

4) CUTS, HOLES, COPING, ETC. REQUIRED FOR WORK OF OTHER TRADES SHALL BE SHOWN ON THE SHOP DRAWINGS AND MADE IN THE SHOP. CUTS OR BURNING OF HOLES IN STRUCTURAL STEEL MEMBERS IN THE FIELD WILL NOT BE PERMITTED.

5) THE FABRICATOR SHALL BE RESPONSIBLE FOR ALL ERECTION AIDS. ANY SUCH ERECTION AIDS SHALL BE REMOVED FROM THE COMPLETED STRUCTURE IF DIRECTED BY THE OWNER'S REPRESENTATIVE.

6) ALL EXTENSION BARS, RUN-OFF PLATES, AND BACKING BARS USED IN WELDED CONNECTIONS SHALL BE REMOVED AND THE JOINTS SHALL BE GROUND SMOOTH WHERE SUCH CONNECTION IS PERMANENTLY EXPOSED TO VIEW OR IS DESIGNATED AS ARCHITECTURALLY EXPOSED STRUCTURAL STEEL.

7) HEADED STUDS AND DEFORMED BAR ANCHORS
A) ALL HEADED STUDS AND DEFORMED BAR ANCHORS SHALL BE INSTALLED USING AUTOMATIC END-WELDING EQUIPMENT RECOMMENDED BY THE STUD OR ANCHOR MANUFACTURER. MANUAL WELDING OF HEADED STUDS OR DEFORMED BAR ANCHORS WILL NOT BE ALLOWED.
B) IF A VISUAL INSPECTION REVEALS ANY STUD THAT DOES NOT SHOW A FULL 360-DEGREE FLASH OR ANY STUD THAT HAS BEEN REPAIRED BY MANUAL WELDING, SUCH STUD SHALL BE BENT TO AN ANGLE APPROXIMATELY 15-DEGREES FROM ITS ORIGINAL AXIS. THE DIRECTION OF BENDING FOR STUDS WITH LESS THAN A 360-DEGREE FLASH SHALL BE OPPOSITE TO THE MISSING PORTION OF THE FLASH.
C) HEADED STUDS AND DEFORMED BAR ANCHORS THAT HAVE SUCCESSFULLY PASSED THE BEND TEST WITHOUT SIGN OF FAILURE SHALL BE ACCEPTABLE FOR USE AND LEFT IN THE BENT POSITION UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
D) WELDED STUDS NOT CONFORMING TO THE REQUIREMENTS OF THE AWS D1.1 "STRUCTURAL WELDING CODE - STEEL" SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR. THE CONTRACTOR SHALL REVISE THE WELDING PROCEDURE AS NECESSARY TO ENSURE THAT SUBSEQUENT STUD WELDING WILL MEET AWS D1.1 REQUIREMENTS.

8) STEEL EMBEDMENTS IN CONCRETE: ALL STEEL COMPONENTS TO BE EMBEDDED IN CONCRETE SHALL HAVE COATINGS AS DEFINED IN THE TABLE BELOW.

COATINGS FOR STEEL EMBEDMENTS IN CONCRETE		
EXPOSURE	FIELD WELDING	FINISH
EXTERIOR	EITHER	GALVANIZED
INTERIOR	YES	UNPAINTED
	NO	GALVANIZED

FOOTNOTES:
ALL WELDING TO PREVIOUSLY GALVANIZED COMPONENTS WILL REQUIRE REMOVAL OF THE GALVANIZING WITH GRINDING FOR AT LEAST 3-IN. FROM EITHER SIDE OF THE INTENDED WELD AND ON BOTH SIDES OF THE WORKPIECE.

FIELD WELDED AREAS AND OTHER AREAS WITH REMOVAL OF, OR DAMAGE TO, THE GALVANIZED COATING SHALL HAVE THEIR COATING RESTORED IN ACCORDANCE TO ASTM A780, USING PAINT CONTAINING ZINC DUST OR SIMILAR PERMITTED PRODUCTS CAPABLE OF PROVIDING A MINIMUM ZINC-RICH COATING THICKNESS OF 2.0 MILS IN A SINGLE APPLICATION.

9) SHOP PRIMER
A) ALL STEEL EXPOSED TO EXTERIOR WEATHER OR AN UNCONTROLLED ENVIRONMENT SHALL BE BLAST CLEANED AND PRIMED WITH A SUBMITTED AND APPROVED ZINC-RICH PRIMER.
B) INTERIOR STEEL SHALL BE SHOP PRIMED WITH THE FABRICATORS STANDARD SHOP PRIMER.
C) SHOP PRIMER SHALL NOT BE APPLIED TO THE FOLLOWING AREAS:
i) SURFACES EMBEDDED IN CONCRETE OR MORTAR. EXTEND PRIMING OF PARTIALLY EMBEDDED MEMBERS TO A DEPTH OF 2 INCHES.
ii) SURFACES TO BE FIELD WELDED.
iii) SURFACES TO BE HIGH-STRENGTH BOLTED WITH SLIP-CRITICAL CONNECTIONS.
iv) SURFACES TO RECEIVE SPRAYED FIRE-RESISTIVE MATERIALS.
v) GALVANIZED SURFACES.

E. STEEL MISCELLANEOUS:

1) ALL EDGE ANGLES SUPPORTING ROOF OR FLOOR DECK SHALL BE SPLICED OVER SUPPORTS.

2) ALL ELEVATED MECHANICAL EQUIPMENT SHALL BE SUPPORTED BY STEEL FRAMING. IF SPECIFIC FRAMING SIZES ARE NOT PROVIDED ON THE FRAMING PLAN, REFER TYPICAL DETAILS FOR ROOF OPENING FRAME DETAIL.

3) SUBSTITUTION OF POST-INSTALLED ANCHORS FOR EMBEDDED ANCHORS SHOWN ON THE DRAWINGS WILL NOT BE PERMITTED UNLESS SPECIFICALLY APPROVED IN WRITING BY THE OWNER'S REPRESENTATIVE.

4) WHERE POST-INSTALLED ANCHORS ARE USED IN CONTINUOUS ANGLES, FABRICATE ANGLE WITH OPTIONAL HOLE LOCATIONS TO ALLOW REMEDIATION OF CASES WHERE ANCHORS FOUL WITH REBAR. AS AN EXAMPLE, FOR A CONTINUOUS ANGLE WITH ANCHORS AT 24" ON CENTER, PROVIDE HOLES AT 6" ON CENTER.

5) GALVANIZED LOOSE LEDGE ANGLES SHALL BE PROVIDED OVER ALL MASONRY VENEER OPENINGS OR RECESSES DEEPER THAN 1". LINTELS SHALL HAVE 1" OF BEARING AT EACH END FOR EVERY FOOT OF SPAN, WITH A MINIMUM OF 4" AND SIZED AS FOLLOWS UNLESS SHOWN OTHERWISE IN THE DRAWINGS.
A) UP TO 4'-0"........................L3-1/2 x 3-1/2 x 3/8
B) 4'-1" to 5'-0"......................L4 x 3-1/2 x 3/8 (LLV)
C) 5'-1" to 6'-6"......................L5 x 3-1/2 x 3/8 (LLV)
D) 6'-7" to 8'-0"......................L6 x 3-1/2 x 3/8 (LLV)

10. STEEL JOIST AND BRIDGING NOTES

A. COORDINATION BY GENERAL CONTRACTOR:

1) THE GENERAL CONTRACTOR SHALL CONFIRM OR REVISE MECHANICAL EQUIPMENT SIZE AND WEIGHT AND PROVIDE THE JOIST MANUFACTURER THE POINT LOADS FOR WHICH SPECIAL JOISTS ARE TO BE DESIGNED. PRELIMINARY ROOF TOP UNIT (RTU) WEIGHTS ARE SHOWN ON THE ROOF PLANS. SHOULD WEIGHTS EXCEED THOSE SHOWN, CONTRACTOR SHALL CONTACT THE OWNER'S REPRESENTATIVE FOR REVIEW.

B. JOIST DESIGN BY MANUFACTURER

1) AS A MINIMUM REQUIREMENT, THE JOIST MANUFACTURER SHALL DESIGN ALL JOISTS FOR THE DESIGN LOADS SPECIFIED IN THE STEEL JOIST INSTITUTE'S LOAD TABLES. IN ADDITION, JOISTS SHALL BE DESIGNED TO CARRY ANY OTHER LOADS INDICATED ON THE DRAWINGS.

2) UNLESS SHOWN OTHERWISE IN THE DRAWINGS, JOISTS SHALL BE DESIGNED BY THE JOIST MANUFACTURER FOR A NET UPLIFT OF 10 PSF IN THE FIELD OF THE ROOF AND 15 PSF WITHIN 10 FEET OF ROOF EDGES.

3) BETWEEN PANEL POINTS OF STEEL JOISTS THE CHORD MEMBERS SHALL BE DESIGNED TO SUPPORT 100 LBS VERTICAL LOAD WITHOUT REINFORCEMENT OF THE JOIST. TYPICALLY, UNDERHUNG LOADS SHALL BE SUPPORTED AT JOIST PANEL POINTS. OFF-PANEL POINT LOADING IN EXCESS OF 100 POUNDS WILL REQUIRE JOIST REINFORCING. REFER TYPICAL DETAILS FOR JOIST REINFORCING DETAIL.

4) JOISTS SEATS SHALL HAVE STANDARD JOIST SEAT DEPTHS UNLESS NOTED OTHERWISE. HOWEVER, FLAT BEARING SEATS SHALL BE PROVIDED FOR ALL JOISTS BY INCREASING THE DEPTH OF THE SEAT AT THE HIGH END OF SLOPED JOISTS. CONTRACTOR SHALL VERIFY FINAL SEAT DEPTHS PRIOR TO DETAILING SUPPORTING STRUCTURE. STANDARD JOIST SEAT DEPTHS ARE AS FOLLOWS:
A) K-SERIES: 2-1/2"

5) BOTTOM CHORDS ON ALL JOISTS SHALL BE EXTENDED TO RECEIVE CEILING OR POTENTIAL FUTURE CEILING.

6) IN STEEL FRAMES, WHERE COLUMNS ARE NOT FRAMED IN AT LEAST TWO DIRECTIONS WITH SOLID WEB STRUCTURAL STEEL MEMBERS, STEEL JOISTS SHALL BE FIELD-BOLTED TO THE COLUMNS TO PROVIDE LATERAL STABILITY TO THE COLUMNS DURING ERECTION AND BOTTOM CHORD STABILITY PLATES SHALL BE PROVIDED AS REQUIRED BY OSHA SAFETY STANDARDS.

C. JOIST BRIDGING

1) JOIST BRIDGING SHOWN ON FRAMING PLANS IS PRELIMINARY AND SHALL NOT BE USED AS THE BASIS FOR BID OR FOR ERECTION. ALL JOIST BRIDGING SHALL BE DESIGNED BY THE JOIST MANUFACTURER TO MEET OR EXCEED THE MINIMUM REQUIREMENTS OF THE SJI "STANDARD SPECIFICATION FOR K-SERIES, LH-SERIES, AND DLH SERIES OPEN WEB STEEL JOISTS AND FOR JOIST GIRDERS", AND ALL OSHA PROVISIONS REGARDING JOIST ERECTION.

2) ADDITIONAL BRIDGING LINES AT THE BOTTOM CHORD OUTSIDE PANEL POINT HAVE NOT BEEN SHOWN FOR CLARITY BUT ARE REQUIRED FOR THE SUPPORT OF UPLIFT LOADS. PROVIDE AS DESIGNED BY THE JOIST MANUFACTURER.

3) NO VERTICAL LOAD SHALL BE IMPOSED ON BRIDGING.

4) HORIZONTAL BRIDGING ANGLES FOR TOP AND BOTTOM CHORDS OF JOISTS ARE SHOWN ON FRAMING PLANS THUS: - - - - -

5) DIAGONAL BRIDGING IS SHOWN AS AN "X" ALONG A LINE OF HORIZONTAL BRIDGING. DIAGONAL BRIDGING SHALL BE PROVIDED WHERE SHOWN AND AT ANY DISCONTINUITIES IN THE ROW OF BRIDGING.

6) ALL BRIDGING LINES SHALL BE TERMINATED WITH AN "X" OR ANCHORED TO A STRUCTURAL WALL. REFER TYPICAL DETAILS FOR JOIST BRIDGING DETAILS.

D. JOIST ERECTION

1) ERECTION OF JOISTS SHALL FOLLOW THE STEEL JOIST INSTITUTE'S CODE OF STANDARD PRACTICE. JOISTS SHALL NOT BE FULLY LOADED UNTIL ALL BRIDGING LINES ARE SECURED AND METAL DECKING IS IN PLACE. THE JOIST MANUFACTURER AND ERECTOR SHALL PROVIDE ADDITIONAL BRIDGING DURING CONSTRUCTION SEQUENCING AS REQUIRED BY THE CURRENT SJI SPECIFICATIONS AND OSHA REQUIREMENTS.

2) NO LOAD APPLIED TO JOIST SHALL BE DONE IN A MANNER THAT EXCEEDS THE MOMENT OR SHEAR CAPACITY OF THE JOIST.

3) ANY HANGERS SUPPORTED FROM JOISTS SHALL BE CONNECTED WITHOUT FIELD WELDING OR DRILLING TO THE JOIST.

11. METAL DECK NOTES:

A. ROOF DECK:

1) BASIS OF DESIGN: VULCRAFT TYPE 1.5B WIDE RIB DECK WITH THE CHARACTERISTICS AND STRUCTURAL PROPERTIES OUTLINED BELOW. WIDE RIB DECKS OF OTHER MANUFACTURERS ARE ACCEPTABLE IF THEY PROVIDE SIMILAR LOAD-CARRYING CAPACITY FOR THE DECK SPANS APPLICABLE TO THIS PROJECT.
A) SDI DECK TYPE: WIDE RIB (WR)
B) DEPTH: 1-1/2 IN.
C) THICKNESS: 22 GAGE
D) FINISH: GALVANIZED
E) I = 0.155 IN4/FT
F) Sp = 0.186 IN3/FT
G) Sn = 0.192 IN3/FT
H) Fy = 33 KSI
I) SIDE LAPS: OVERLAPPED

2) SUPPORT FASTENERS: ROOF DECK SHALL BE CONNECTED TO SUPPORTS WITH #12 MECHANICAL FASTENERS AT 12" O.C. (36/4 PATTERN).

3) SIDE LAP FASTENERS: ROOF DECK SIDE LAPS SHALL BE FASTENED WITH #10 SIDE LAP FASTENERS AT 12" ON CENTER.

4) MINIMUM BEARING LENGTH: MINIMUM BEARING LENGTH ON SUPPORTS AT DISCONTINUOUS ENDS OF ROOF DECK IS 1.5 INCHES. MINIMUM BEARING LENGTH OF CONTINUOUS ROOF DECK OVER INTERIOR SUPPORTS IS 3.0 INCHES.

B. SUBSTITUTION OF WELDING OR PINS FOR MECHANICAL SCREW ANCHORS WILL NOT BE PERMITTED.

C. SUPPORTS FOR DECKING ARE DEFINED AS MEMBERS PROVIDING DIRECT TRANSVERSE SUPPORT AS WELL AS CONTINUOUS PARALLEL EDGE SUPPORT.

D. ALL DECKING SHALL BE PLACED PERPENDICULAR TO SUPPORTING ROOF OR FLOOR MEMBERS AND SHALL SPAN A MINIMUM OF 3 SPANS UNLESS SHOWN OTHERWISE IN STRUCTURAL DRAWINGS.

E. METAL DECKING SHALL NOT BE USED TO SUPPORT ANY HANGING LOADS INCLUDING, BUT NOT LIMITED TO, SUSPENDED MECHANICAL, ELECTRICAL, OR PLUMBING EQUIPMENT, CABLE TRAYS OR RACEWAYS, CEILING FINISHES OR CEILING FRAMING.

F. ALL DECK OPENINGS UP TO 8-IN. SHALL BE REINFORCED WITH A MINIMUM 16-GAGE PLATE AS SHOWN IN TYPICAL ROOF DECK REINFORCING DETAIL.

G. ALL DECK OPENINGS GREATER THAN 8-IN. SHALL BE SUPPORTED BY AN ANGLE FRAME. IF SPECIFIC FRAMING SIZES ARE NOT PROVIDED ON THE FRAMING PLAN, REFER TYPICAL DETAILS FOR ROOF OPENING FRAME DETAIL.

H. METAL ROOF DECK SHALL BE LAPPED A MINIMUM OF 2" OVER SUPPORTS. FASTENERS SHALL PENETRATE BOTH PLIES OF DECKING INTO SUPPORTING SUBSTRATE OR 2 LINES OF FASTENERS SHALL BE PROVIDED.

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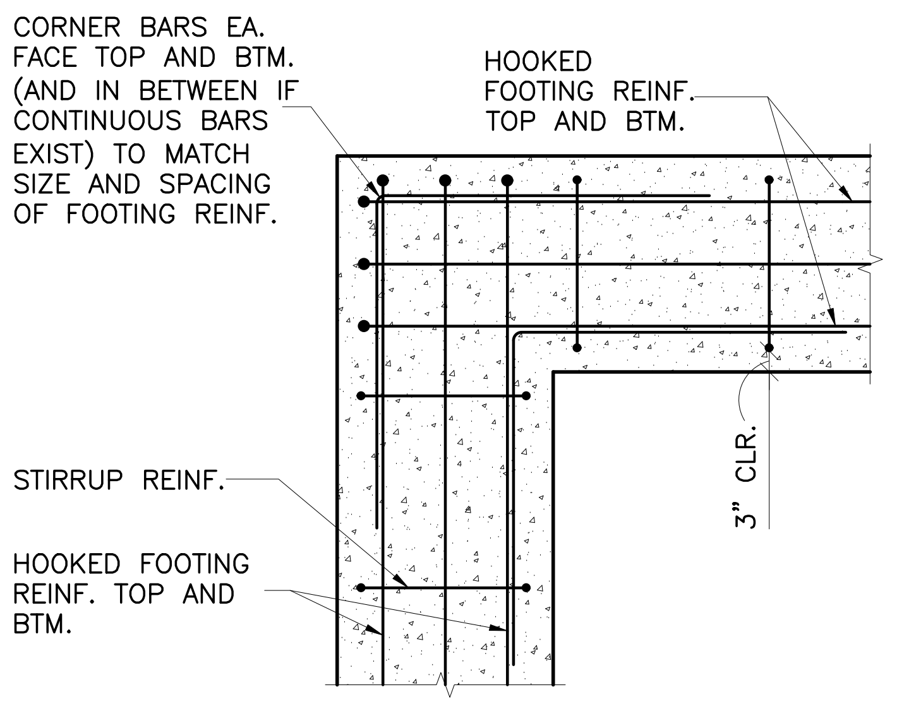
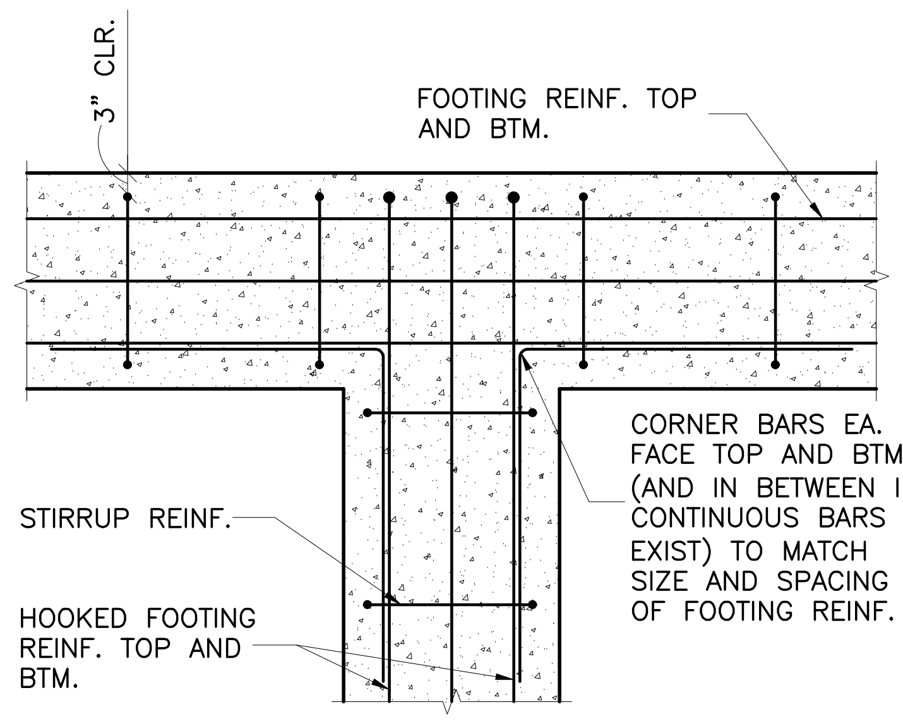


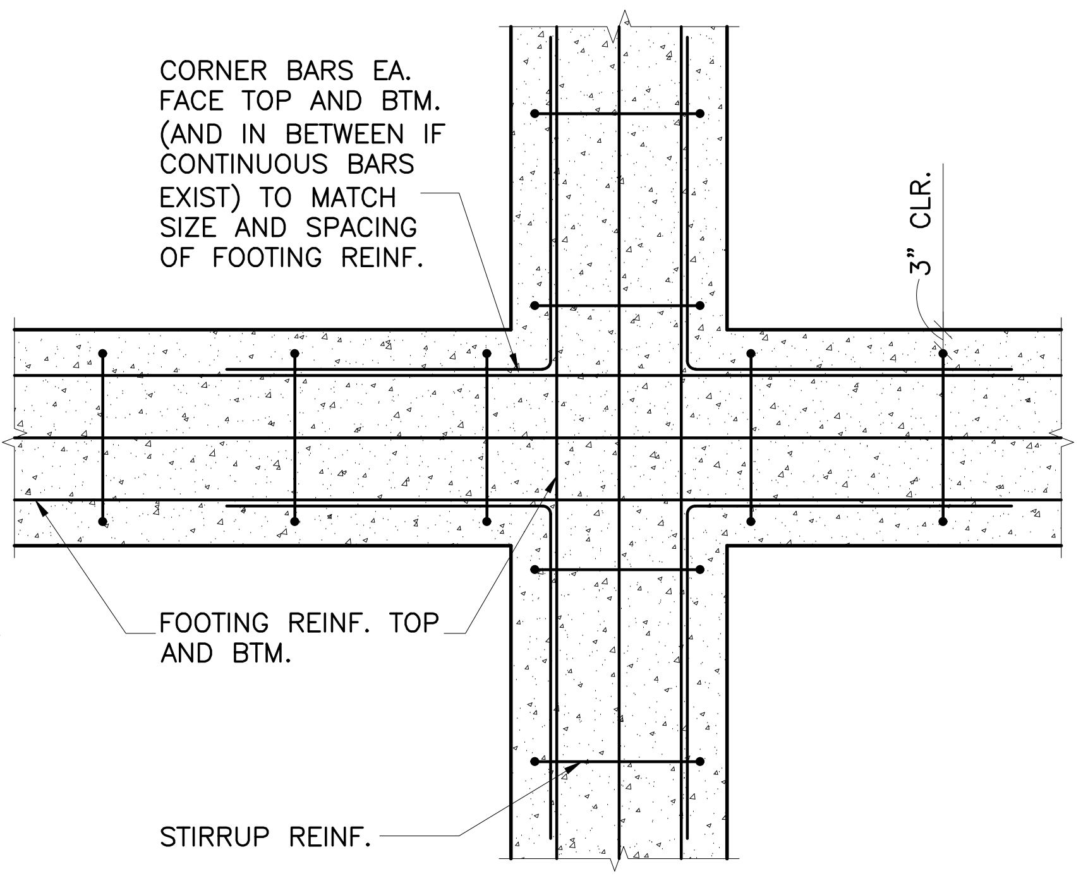
1 TYP. FOOTING CORNER REINF.

SCALE: NONE



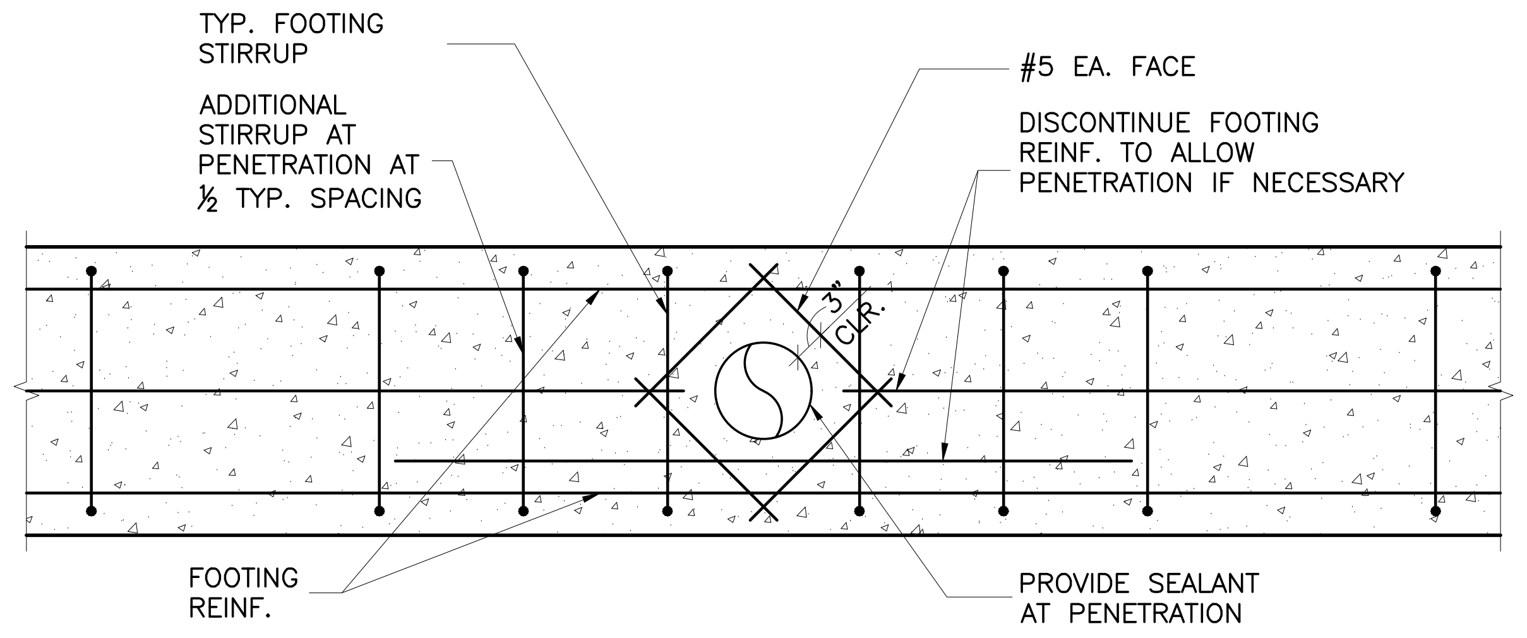
2 TYP. FOOTING TEE REINF.

SCALE: NONE



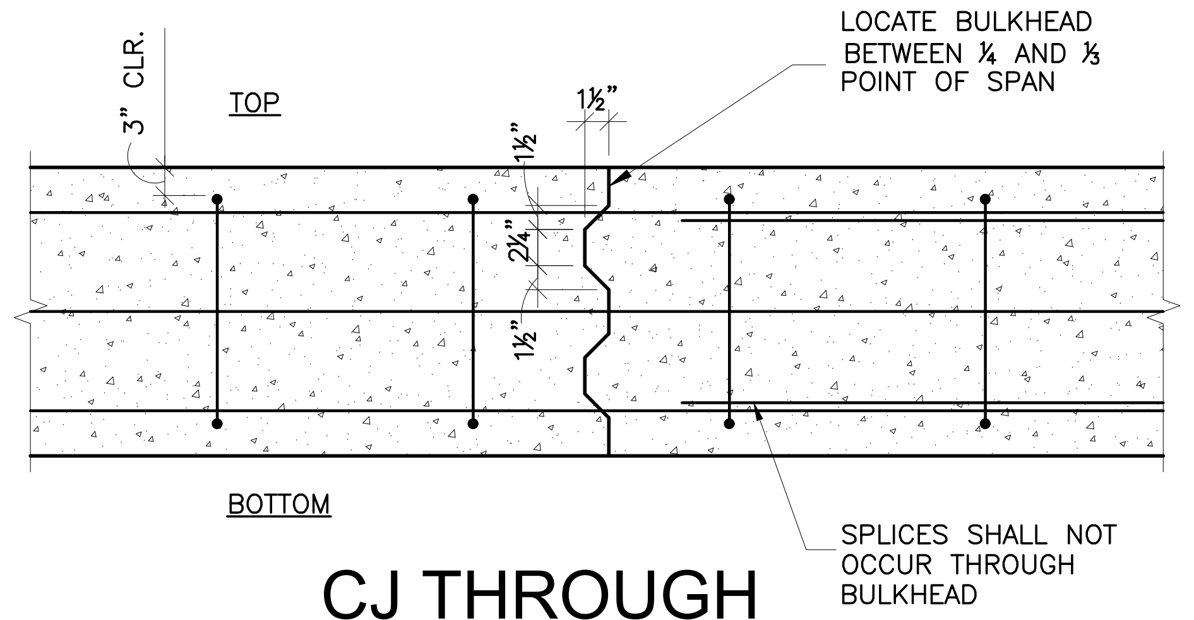
3 TYP. REINF. AT FOOTING INTERSECTION

SCALE: NONE



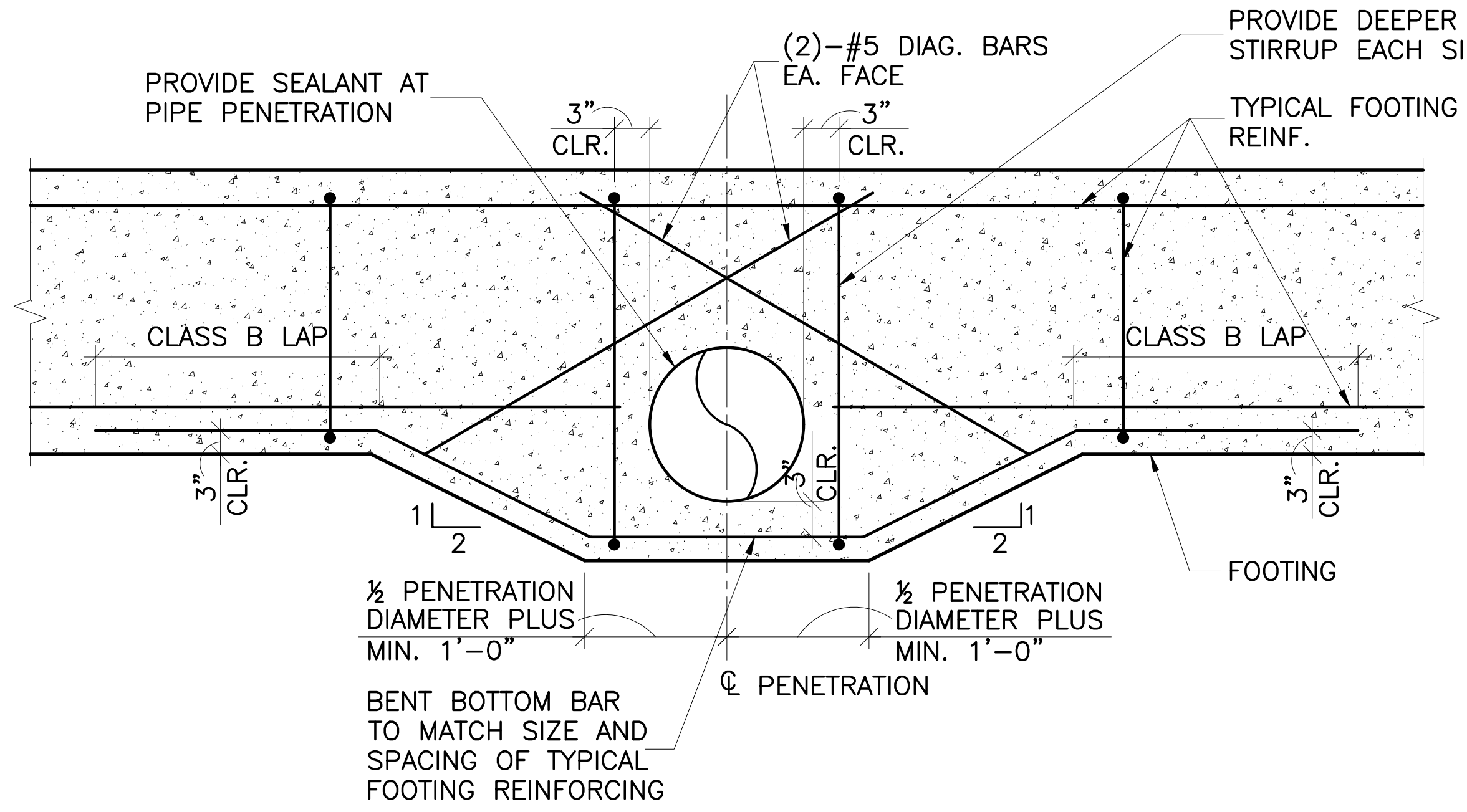
4 FOOTING PENETRATION

SCALE: NONE



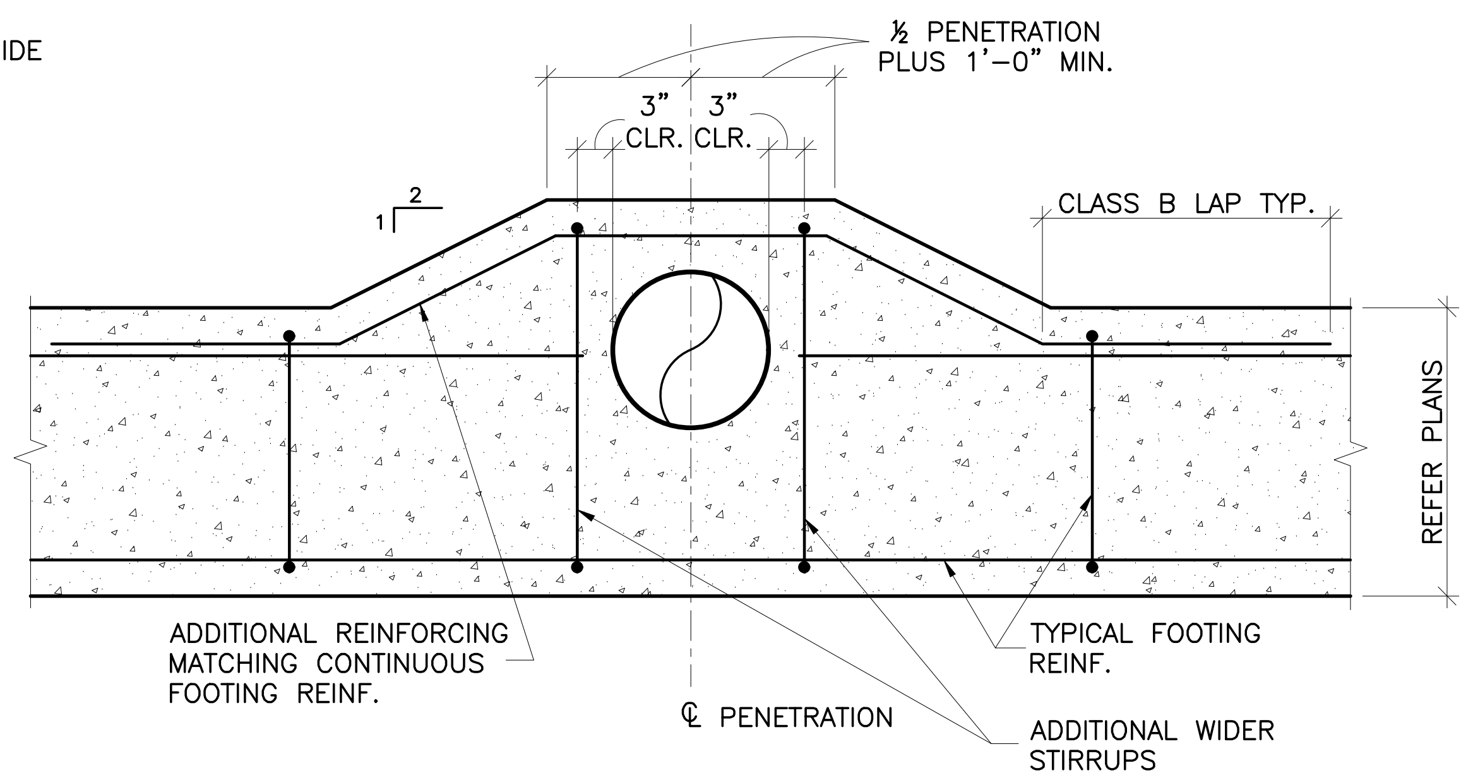
5 CJ THROUGH FOOTING

SCALE: NONE



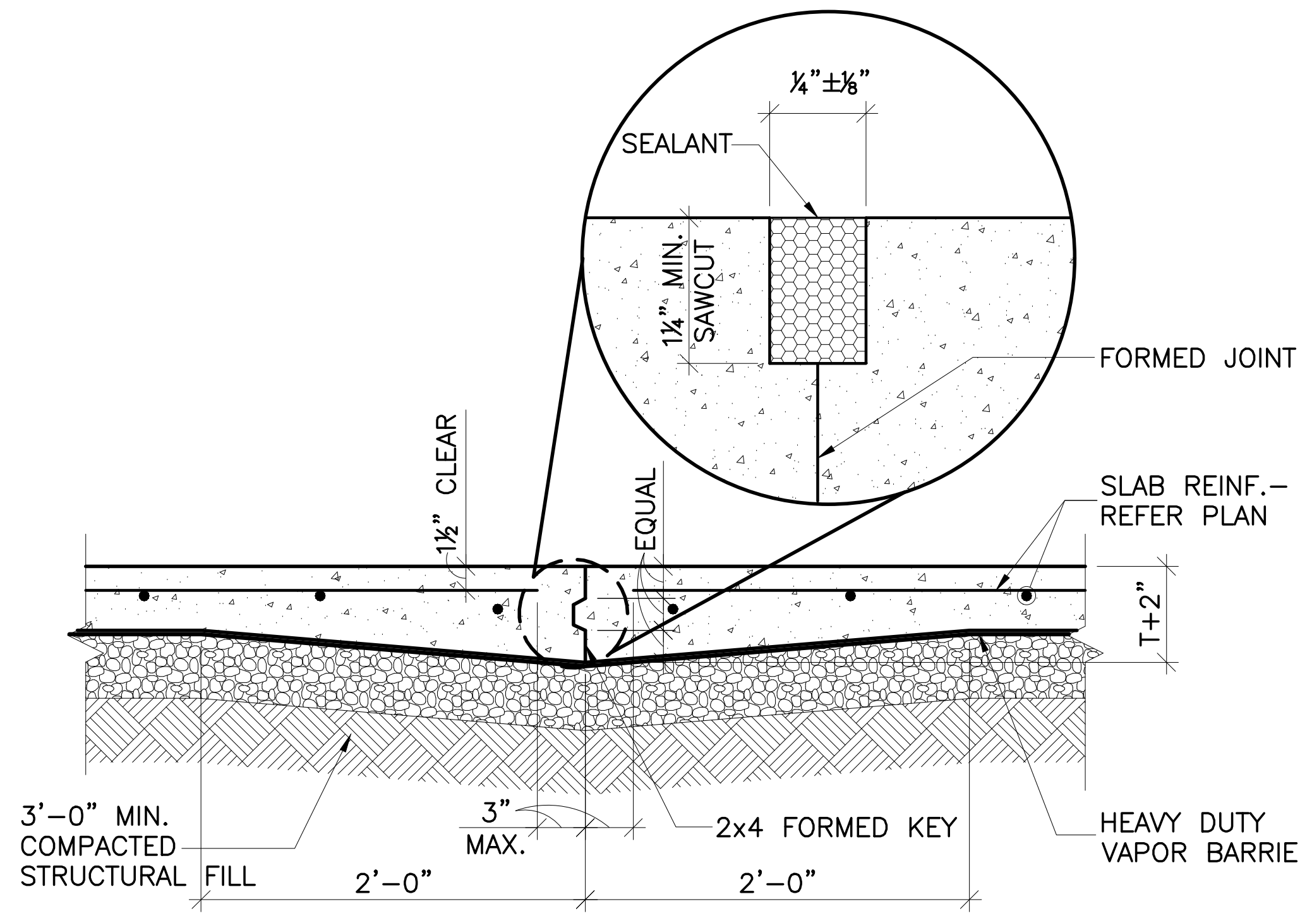
6 TYP. FOOTING PENETRATION

SCALE: NONE



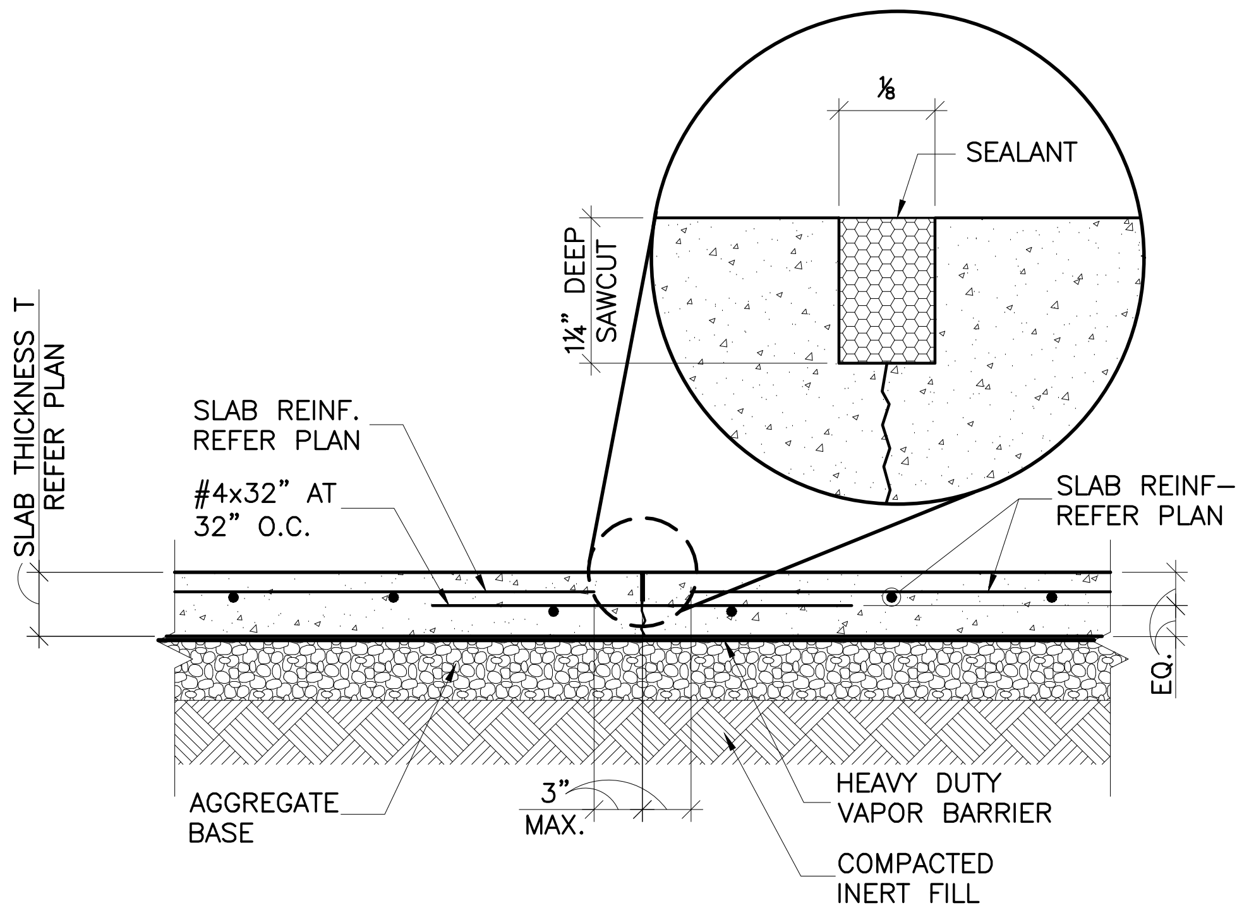
7 PLAN SECTION AT TYPICAL VERTICAL PENETRATION

SCALE: NONE



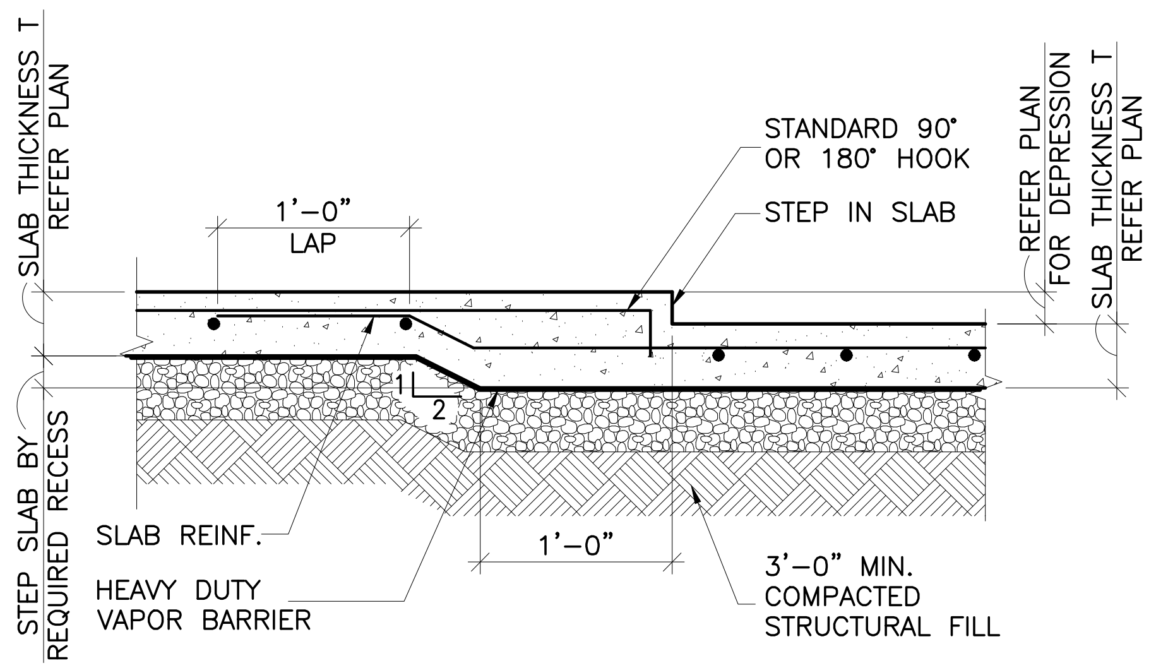
8 TYP. CONSTRUCTION JOINT (CJ)

SCALE: NONE



9 TYP. SAWED JOINT (SJ)

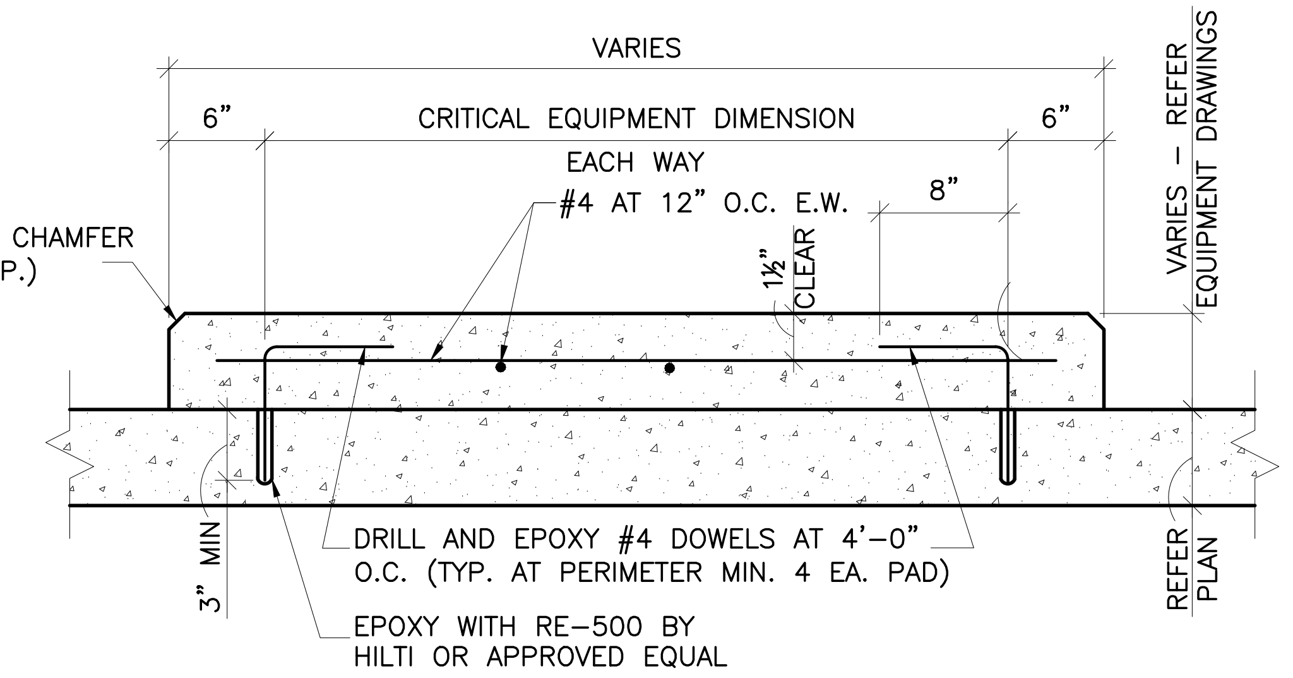
SCALE: NONE



10 TYP. SLAB STEP

SCALE: NONE

NOTES:
1. COORDINATE ANCHOR BOLT REQUIREMENTS FOR EQUIPMENT PRIOR TO INSTALLATION OF HOUSEKEEPING PAD.
2. ALLOW PROPER CURE TIME OF EPOXY PRIOR TO PLACEMENT OF CONCRETE.



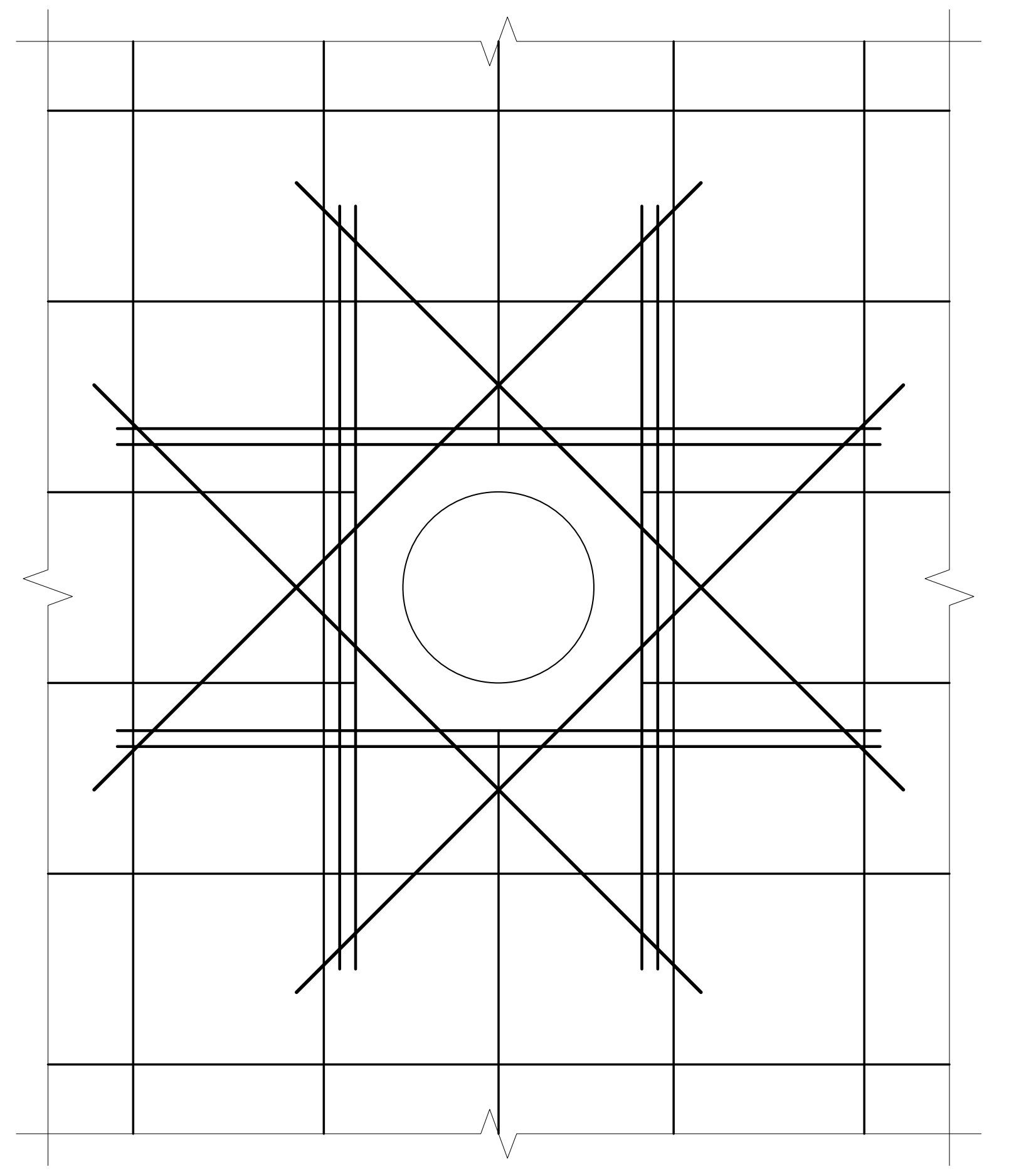
11 TYP. HOUSEKEEPING PAD

SCALE: NONE

CONCRETE EXPOSURE	MEMBER	REINFORCEMENTS	SPECIFIED COVER, IN.
CAST AGAINST AND PERMANENTLY IN CONTACT WITH GROUND	ALL	ALL	3
EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	ALL	NO. 6 THROUGH NO. 18 BAR	2
		NO. 5 BAR, W31 OR D31 WIRE, AND SMALLER	1–1/2
NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	SLAB,JOISTS, AND WALLS	NO. 14 AND NO. 18 AND SMALLER	1–1/2
		NO. 11 BAR AND SMALLER	3/4
	BEAMS, COLUMNS, PEDESTALS, AND TENSION TIES	PRIMARY REINFORCEMENT, STIRRUPS, TIES, SPIRALS, AND HOOPS	1–1/2

12 TYP. MIN. CONCRETE COVER

SCALE: NONE



REINF. BARS SPACED LESS THAN 12" O.C. TO BE SPREAD WITHOUT INTERRUPTION TO CLEAR PENETRATIONS LESS THAN 12" DIAM.
SIZE OF DIAGONAL AND EXTRA PARALLEL BARS TO EQUAL SIZE OF TYPICAL SLAB OR WALL REINFORCING BARS.
SEE DESIGN DRAWINGS FOR DIAMETER AND LOCATION OF PENETRATIONS NUMBER OF EXTRA PARALLEL BARS PLACED EACH WAY AROUND PENETRATION TO BE EQUAL TO NUMBER OF BARS INTERRUPTED. (TYPICAL FOR EACH FACE OF SLAB OR WALL). MINIMUM OF ONE BAR EACH WAY, EACH FACE OF SLAB OR WALL
FOR PENETRATIONS LESS THAN 12"ø, PROVIDE 4–#4x4'–0" DIAGONAL BARS EACH FACE.

13 TYP. PENETRATION THRU CONC. SLAB OR WALL

SCALE: NONE

TENSION DEVELOPMENT AND LAP–SPLICE LENGTHS FOR UNCOATED REINFORCING BARS

BAR SIZE	LAP CLASS	LAP LENGTH (IN.) PER SPACING AND COVER CASE			
		f'c=3500 psi (NORMAL WEIGHT)			
		TOP BARS		OTHER BARS	
		CASE 1	CASE 2	CASE 1	CASE 2
#3	A	22	32	17	25
	B	28	42	22	32
#4	A	29	43	22	33
	B	37	56	29	43
#5	A	36	54	28	41
	B	47	70	36	54
#6	A	43	64	33	50
	B	56	84	43	64
#7	A	63	94	48	72
	B	81	122	63	94
#8	A	72	107	55	82
	B	93	139	72	107
#9	A	81	121	62	93
	B	105	157	81	121
#10	A	91	136	70	105
	B	118	177	91	136
#11	A	101	151	78	116
	B	131	196	101	151
#14	N/A	121	181	93	139
#18	N/A	161	241	124	186

TENSION DEVELOPMENT AND LAP–SPLICE LENGTHS FOR UNCOATED REINFORCING BARS

BAR SIZE	LAP CLASS	LENGTHS (IN.) PER CONCRETE STRENGTH			
		f'c=4000 psi (NORMAL WEIGHT)			
		TOP BARS		OTHER BARS	
		CASE 1	CASE 2	CASE 1	CASE 2
#3	A	19	28	15	22
	B	24	36	19	28
#4	A	25	37	19	29
	B	32	48	25	37
#5	A	31	47	24	36
	B	40	60	31	47
#6	A	37	56	29	43
	B	48	72	37	56
#7	A	54	81	42	63
	B	70	106	54	81
#8	A	62	93	48	71
	B	80	121	62	93
#9	A	70	105	54	81
	B	91	136	70	105
#10	A	79	118	61	91
	B	102	153	79	118
#11	A	87	131	67	101
	B	113	170	87	131
#14	N/A	105	157	81	121
#18	N/A	139	209	107	161

14 REINFORCING LAP LENGTHS

SCALE: NONE

NOTES: 1 in.=25.4 mm.
1. TABULATED VALUES ARE BASED ON GRADE 60 REINFORCING BARS AND NORMAL WEIGHT CONCRETE. LENGTHS ARE IN INCHES.
2. TENSION DEVELOPMENT LENGTHS AND TENSION LAP–SPLICE LENGTHS ARE CALCULATED PER ACI 318, SECTIONS 25.4 AND 25.5, RESPECTIVELY. TABULATED VALUES FOR BEAMS OR COLUMNS ARE BASED ON TRANSVERSE REINFORCEMENT AND CONCRETE COVER MEETING MINIMUM CODE REQUIREMENTS.
3. CASES 1 AND 2, WHICH DEPEND ON THE TYPE OF STRUCTURAL ELEMENT, CONCRETE COVER, AND CENTER–TO–CENTER SPACING OF THE BARS, ARE DEFINED AS: BEAMS OR COLUMNS: CASE 1–COVER AT LEAST 1.0d_b AND CENTER–TO–CENTER SPACING AT LEAST 2.0d_b AND CASE 2–COVER LESS THAN 1.0d_b OR CENTER–TO–CENTER SPACING LESS THAN 2.0d_b. ALL OTHERS: CASE 1–COVER AT LEAST 1.0d_b AND CENTER–TO–CENTER SPACING AT LEAST 3.0d_b. CASE 2–COVER LESS THAN 1.0d_b OR CENTER–TO–CENTER SPACING LESS THAN 3.0d_b.
4. LAP SPLICE LENGTHS ARE MULTIPLES OF TENSION DEVELOPMENT LENGTHS; CLASS A=1.0l_d AND CLASS B=1.3l_d (ACI 318, SECTION 25.5.2).
5. ACI 318 DOES NOT ALLOW TENSION LAP SPLICES OF #14 OR #18 BARS. THE TABULATED VALUES FOR THOSE BAR SIZES ARE THE TENSION DEVELOPMENT LENGTHS.
6. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 in. OF CONCRETE CAST BELOW THE BARS.
7. FOR LIGHTWEIGHT–AGGREGATE CONCRETE, MULTIPLY THE TABULATED VALUES BY 1.3.

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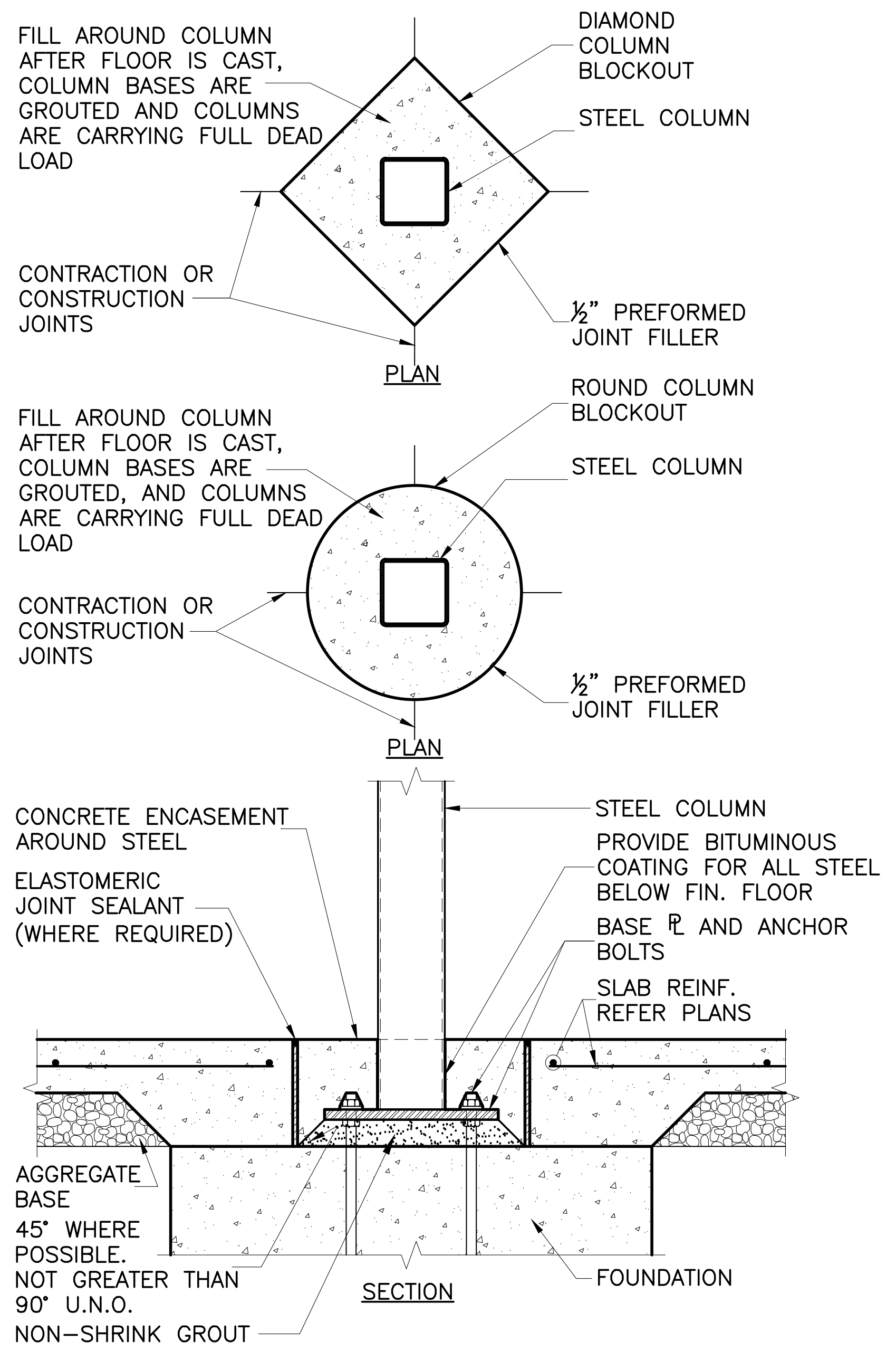
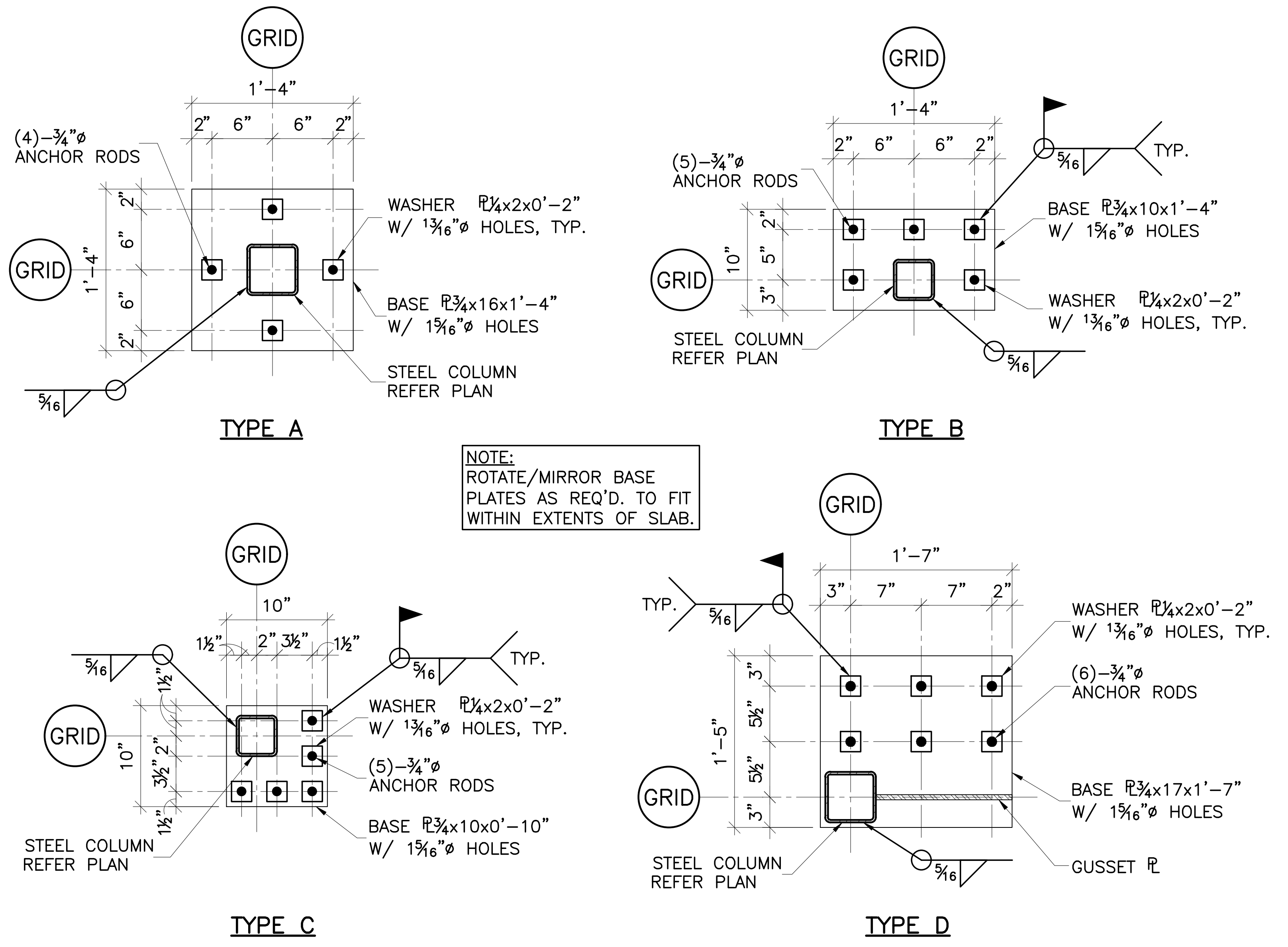
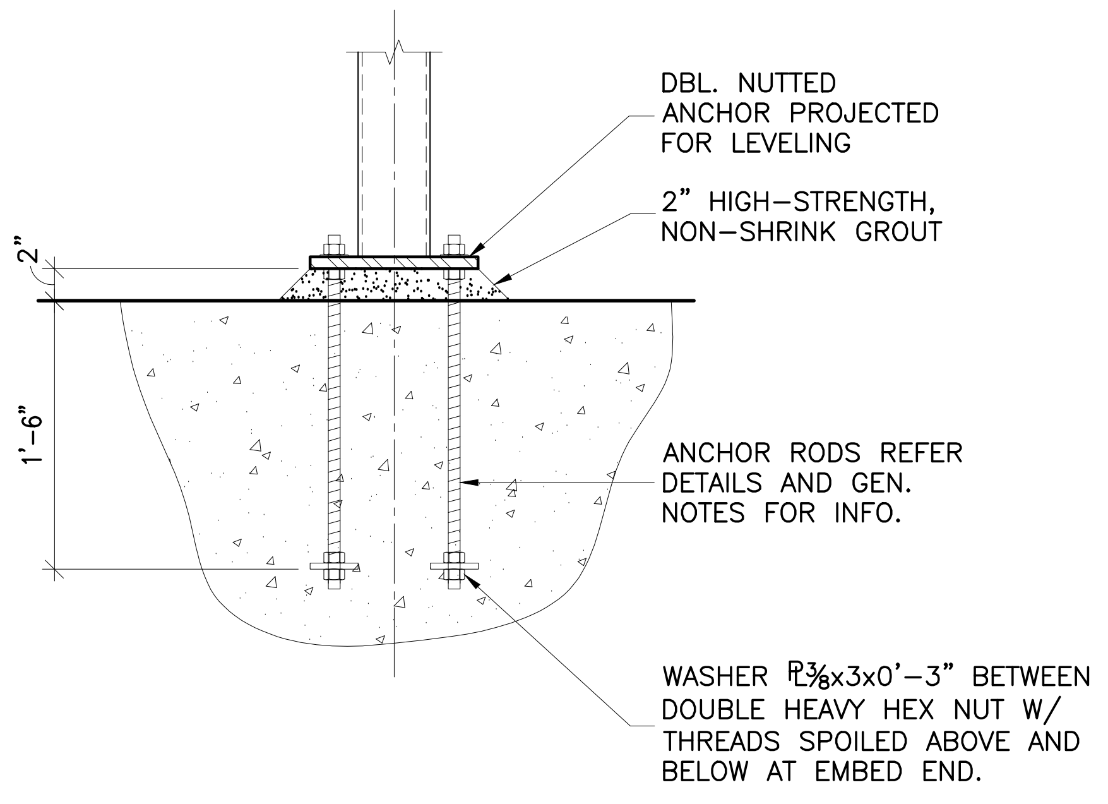


1 TYP. ISOLATION JOINT DETAILS
SCALE: NONE



2 BASE PLATE DETAILS
SCALE: NONE



¾"ø A325–N BOLT SCHEDULE FOR SINGLE PLATE SHEAR TAB CONNECTIONS (FACTORED LOADS)

END REACTION	NO. OF BOLTS
0 THRU 24.8 KIPS	2–¾ø
24.9 THRU 43.4 KIPS	3–¾ø
43.5 THRU 62.5 KIPS	4–¾ø
62.6 THRU 81.3 KIPS	5–¾ø
81.4 THRU 100 KIPS	6–¾ø
101 THRU 118 KIPS	7–¾ø
119 THRU 137 KIPS	8–¾ø

NOTES:

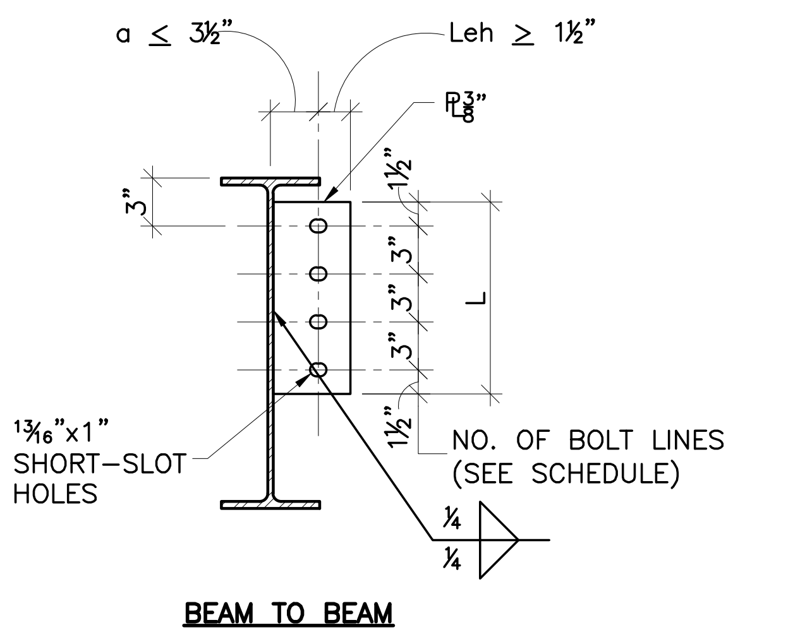
1. VALUES SHOWN ARE APPLICABLE FOR SINGLE PLATE SHEAR TAB CONNECTIONS
2. SEE PLAN FOR END REACTIONS
3. L = PLATE LENGTH ≥ T/2 OF CONNECTED BEAM.
4. AT HSS OR PIPE COLUMNS, A THROUGH–PLATE WITH EQUAL WELD ON THE BACK SIDE OF THE COLUMN IS REQUIRED UNDER EITHER OF THE FOLLOWING CIRCUMSTANCES:
   A. FOR SQUARE OR RECTANGULAR HSS:

   WHEN $\frac{B-2.79t}{0.93t} > 35.1$

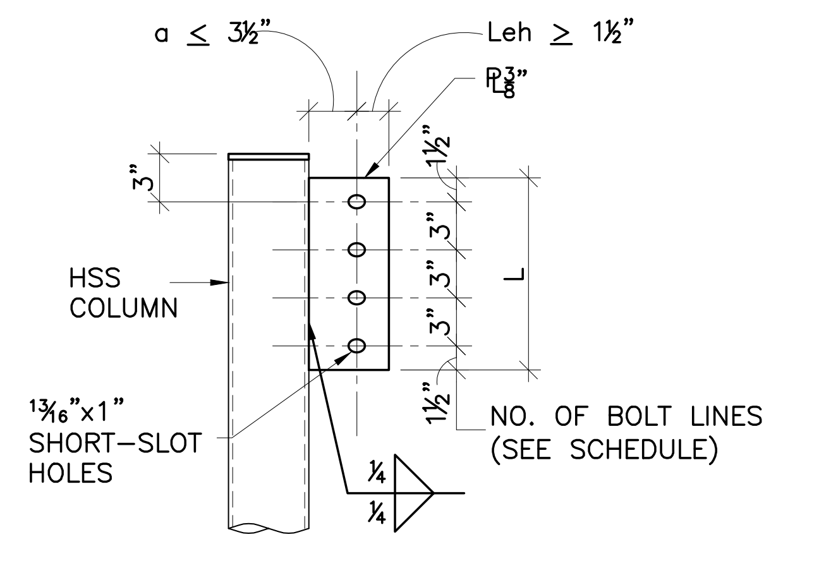
   B. FOR ROUND HSS OR PIPE:

   WHEN $\frac{D}{t} > \frac{3.190}{Fy}$

WHERE:
B = NOMINAL COLUMN WIDTH ACROSS THE COLUMN FACE WITH THE SINGLE PLATE CONNECTION, IN.
D = OUTSIDE DIAMETER OF ROUND HSS OR PIPE, IN.
t = NOMINAL THICKNESS OF COLUMN,IN.
Fy = YIELD STRENGTH OF COLUMN, KSI



BEAM TO BEAM



BEAM TO HSS COLUMN

3 SINGLE PLATE SHEAR TAB CONNECTIONS (LRFD-AISC 14TH EDITION MANUAL)
SCALE: NONE

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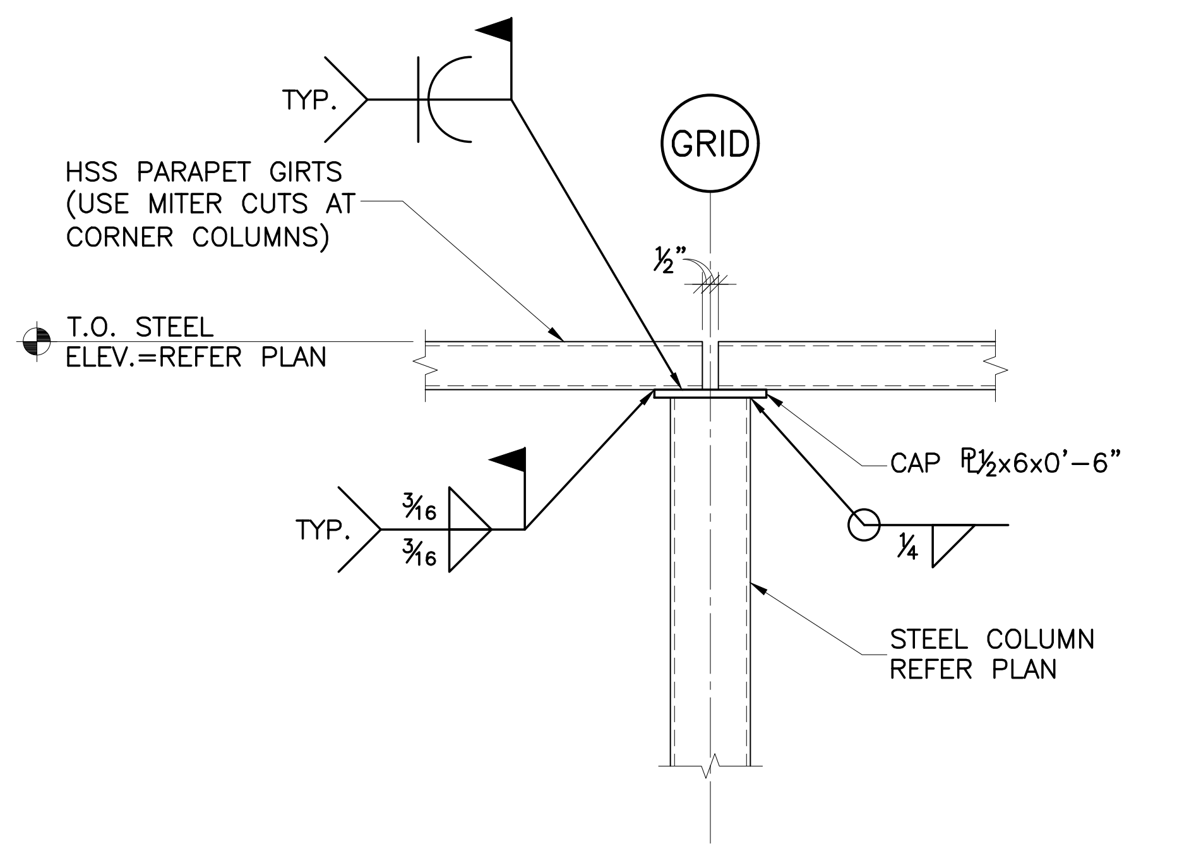
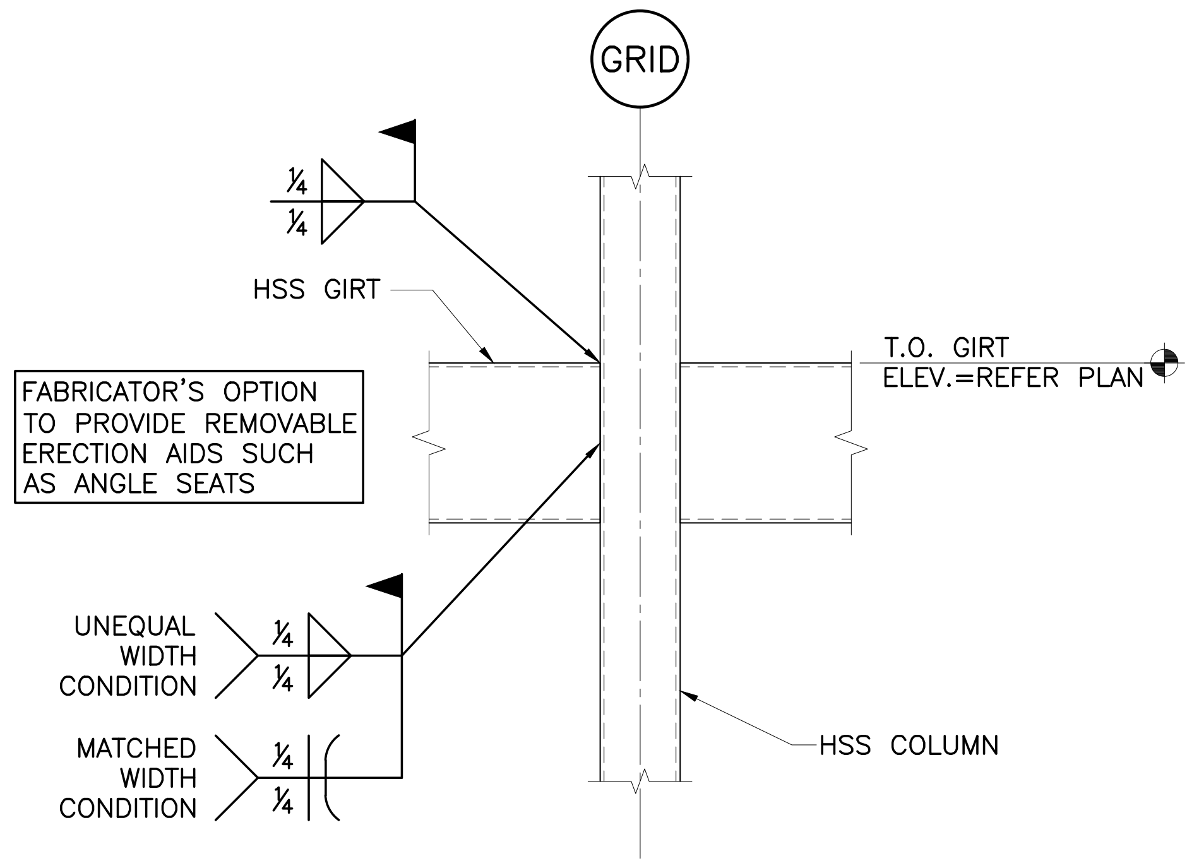
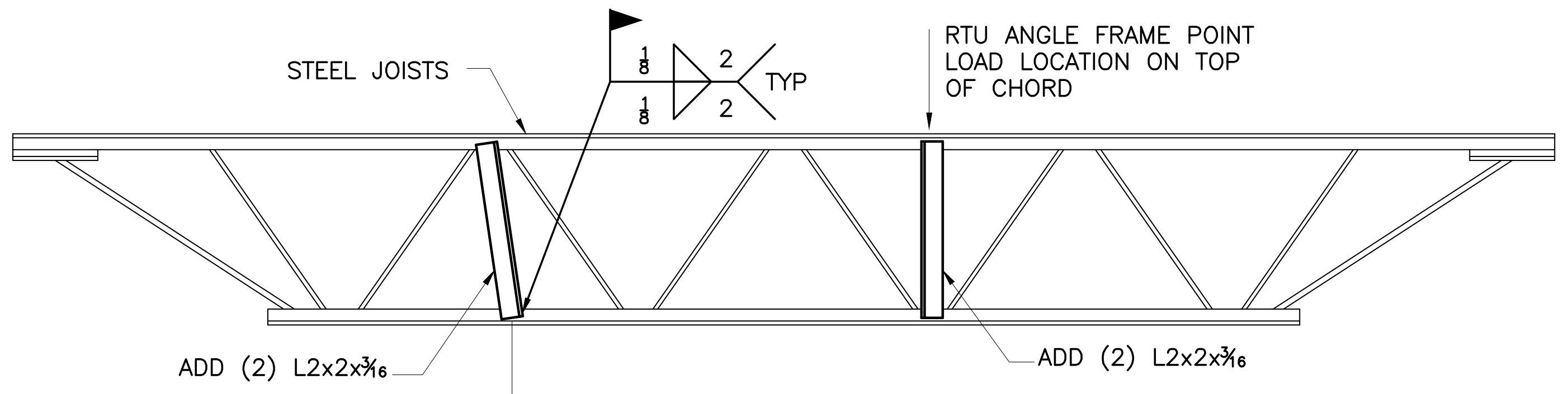


4 TYP. PARAPET GIRT TO COLUMN
SCALE: NONE



FABRICATOR'S OPTION TO PROVIDE REMOVABLE ERECTION AIDS SUCH AS ANGLE SEATS

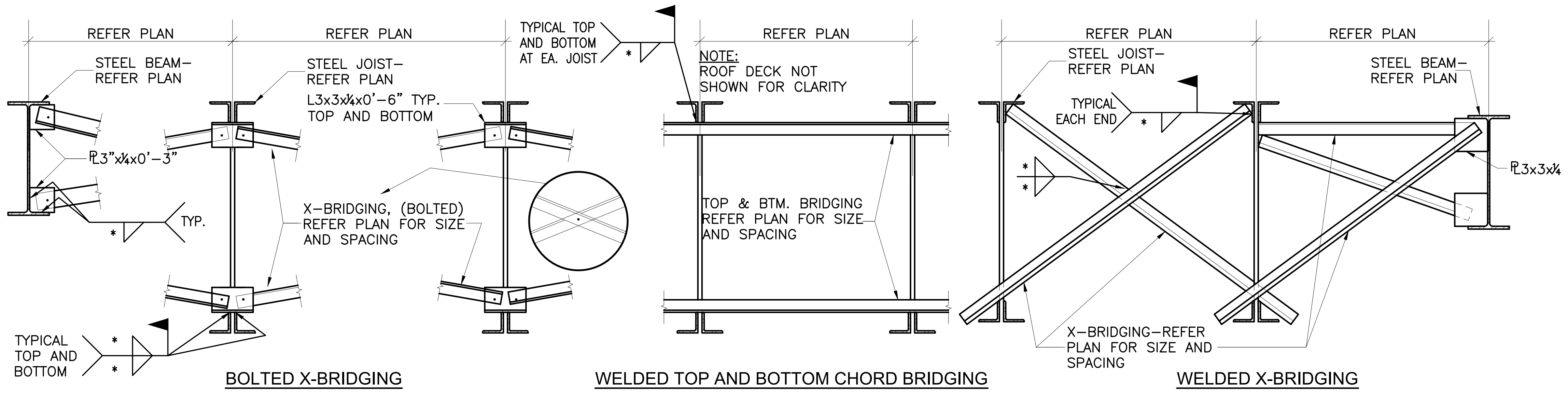
5 TYP. HSS GIRT TO HSS COLUMN CONNX.
SCALE: NONE



POINT LOAD LOCATION ON BOTTOM OF CHORD

NOTE: USE THIS DETAIL WHEN POINT LOAD EXCEEDS 50 LBS. AND THE JOIST MANUFACTURER HAS DESIGNED THE JOIST FOR THE FULL CONCENTRATED LOAD. ANGLES TO BE IN PLACE PRIOR TO APPLICATION OF LOAD. CONTRACTOR WILL COORDINATE ALL SUPERIMPOSED LOADS WITH THE JOIST MANUFACTURER & ENGINEER PRIOR TO APPLICATION OF LOAD.

6 BRACING DETAIL FOR STEEL JOISTS W/ POINT LOADS
SCALE: NONE



*WELD AS REQUIRED BY JOIST MANUFACTURER

7 TYP. BRIDGING DETAILS AT JOISTS
SCALE: NONE

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OWNERSHIP USE OF DOCUMENTS:

1. STATEMENT OF SPECIAL INSPECTIONS NOTES:

A. THIS STATEMENT OF SPECIAL INSPECTIONS IS INCLUDED AS REQUIRED BY CHAPTER 17 OF 2015 INTERNATIONAL BUILDING CODE AND AISC 360.

B. SPECIAL INSPECTIONS SHALL CONFORM TO CHAPTER 17 OF THIS SHEET, SPECIFICATIONS, AISC 360, AND 2015 INTERNATIONAL BUILDING CODE. GENERAL REQUIREMENTS ARE LISTED BELOW AND IN THE ATTACHED INSPECTION TABLES.

C. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL SPECIAL INSPECTION REQUIREMENTS. IF CONFLICTING REQUIREMENTS ARE FOUND BETWEEN STATEMENTS OF SPECIAL INSPECTIONS AND THE PROJECT SPECIFICATIONS, THE MORE STRINGENT PROVISION SHALL CONTROL UNLESS DIRECTED OTHERWISE IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD.

D. THE GENERAL CONTRACTOR SHALL EMPLOY ONE OR MORE SPECIAL INSPECTORS FOR THIS PROJECT. THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR THE INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.

E. THE SPECIAL INSPECTOR SHALL PROVIDE WRITTEN DOCUMENTATION TO THE BUILDING OFFICIAL DEMONSTRATING HIS OR HER COMPETENCE AND RELEVANT EXPERIENCE OR TRAINING. EXPERIENCE OR TRAINING SHALL BE CONSIDERED RELEVANT WHEN THE DOCUMENTED EXPERIENCE OR TRAINING IS RELATED IN COMPLEXITY TO THE SAME TYPE OF SPECIAL INSPECTION ACTIVITIES FOR PROJECTS OF SIMILAR COMPLEXITY AND MATERIAL QUALITIES.

F. THE SPECIAL INSPECTOR SHALL PROVIDE CONTINUOUS OR PERIODIC INSPECTIONS AS SHOWN IN THE ATTACHED INSPECTION TABLES

1) CONTINUOUS INSPECTION: THE SPECIAL INSPECTOR SHALL BE PRESENT AT ALL PROCEDURAL EVENTS.
2) PERIODIC INSPECTION: THE SPECIAL INSPECTOR SHALL BE PRESENT AT THE START OF THE WORK AND PERIODIC INSPECTION IS MADE TO VERIFY PROGRESS OF WORK IS IN COMPLIANCE.

G. INSPECTION OF FABRICATORS: WHERE FABRICATION OF STRUCTURAL LOADBEARING MEMBERS AND ASSEMBLIES IS BEING PERFORMED ON THE PREMISES OF A FABRICATOR'S SHOP, SPECIAL INSPECTION OF THE FABRICATED ITEMS SHALL BE REQUIRED BY SECTION 1704.2 OF THE 2009 INTERNATIONAL BUILDING CODE AND SECTION 1704.2.5 OF THE 2015 INTERNATIONAL BUILDING CODE AND AS REQUIRED ELSEWHERE IN THE CODE.

H. FABRICATOR APPROVAL: SPECIAL INSPECTIONS REQUIRED BY SECTION 1704 ARE NOT REQUIRED WHERE THE WORK IS DONE ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION. APPROVAL SHALL BE BASED UPON REVIEW OF THE FABRICATOR'S WRITTEN PROCEDURAL AND QUALITY CONTROL MANUALS AND PERIODIC AUDITING OF FABRICATION PRACTICES BY AN APPROVED SPECIAL INSPECTION AGENCY. AT COMPLETION OF FABRICATION, THE APPROVED FABRICATOR SHALL SUBMIT A CERTIFICATE OF COMPLIANCE TO THE BUILDING OFFICIAL STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.

I. REPORT REQUIREMENTS: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE PRIOR TO THE COMPLETION OF THAT PHASE OF THE WORK. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS AND CORRECTION OF ANY DISCREPANCIES NOTED IN THE INSPECTIONS SHALL BE SUBMITTED AT A POINT IN TIME AGREED UPON PRIOR TO THE START OF WORK BY THE APPLICANT AND THE BUILDING OFFICIAL.

J. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING REASONABLE NOTICE TO THE SPECIAL INSPECTOR(S) REGARDING WHEN ELEMENTS OF THE PROJECT WILL BE READY FOR EFFICIENT IMPLEMENTATION OF SPECIAL INSPECTIONS.

K. THE CONTRACTOR SHALL PROVIDE ACCESS TO THE LATEST VERSION OF ALL APPROVED PLANS AND SHOP DRAWINGS FOR THE SPECIAL INSPECTOR'S USE IN PERFORMING SPECIAL INSPECTIONS.

L. CONTRACTOR SHALL GRANT ACCESS TO OWNER'S SPECIAL INSPECTOR AS IS REASONABLY NECESSARY FOR THE PROPER PERFORMANCE OF SPECIAL INSPECTIONS.

M. SPECIAL INSPECTIONS DO NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY TO COMPLY WITH ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS. CONSTRUCTION MEANS AND METHODS AND JOBSITE SAFETY ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.

N. STEEL QUALITY INSPECTOR QUALIFICATIONS.

1) QUALITY CONTROL INSPECTOR OF ERECTOR/FABRICATOR SHALL BE QUALIFIED TO THE SATISFACTION OF THE ERECTOR/ FABRICATOR'S QC PROGRAM AND AISC 360 SECTION N.4.1 REQUIREMENTS.
2) QUALITY ASSURANCE INSPECTOR SHALL BE QUALIFIED BY A QA AGENCY AND AISC 360 SECTION N.4.2 REQUIREMENTS.
3) NON-DESTRUCTIVE TESTING PERSONNEL, OR OTHER THAN VISUAL, SHALL BE QUALIFIED IN ACCORDANCE W/ EMPLOYER'S WRITTEN PRACTICE MEETING OR EXCEEDING REQUIREMENTS OF AWS D1.1/D1.1M AND EITHER ANST SNT-TC-1A OR ANST CP-189 REQUIREMNTS.

REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION

VERIFICATION AND INSPECTION	FREQUENCY OF INSPECTION		REFERENCED STANDARD
	CONTINUOUS (inspect each joint/member)	PERIODIC (inspect random joint/members)	
1. Material verification of high-strength bolts, nuts and washers:			
a. Identification markings to conform to ASTM standards specified in the approved construction documents.	-	QC and QA	AISC 360, Section A3 .3 and applicable ASTM material standards
b. Manufacturer's certifications available for fastener materials.	QA	QC	AISC 360, Table N5.6-1
c. Fasteners marked in accordance with ASTM requirements.	-	QC and QA	
d. Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane).	-	QC and QA	
e. Proper bolting procedure selected for joint detail.	-	QC and QA	
f. Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements.	-	QC and QA	
g. Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used.	QC	QA	
h. Proper storage provided for bolts, nuts, washers and other fastener components.	-	QC and QA	
2. Inspection of high-strength bolting: • For bolts requiring pretensioning, the special inspector shall observe the preinstallation testing and calibration procedures; determine that all plies of connected materials have been drawn together and properly snugged prior to pretentioning and monitor the installation of bolts to verify that fasteners are pretensioned in accordance with the RCSC Specification, progressing systematically from the most rigid point to the free edges. • For joints required to be tightened only to the snug-tight condition, the special inspector need only verify that the connected materials have been drawn together and properly snugged.			
a. Snug-tight joints.	-	QC and QA	AISC 360, Section M2 .5
b. Pretensioned and slip-critical joints using turn-of-nut with matchmarking, twist-off bolt or direct tension indicator methods of installation.	-	QC and QA	
c. Pretensioned and slip-critical joints using turn-of-nut without matchmarking or calibrated wrench methods of installation.	QC and QA	-	
d. Fastener assemblies, of suitable condition, placed in all holes and washers (if required) are positioned as required.	-	QC and QA	AISC 360, Table N5.6-2
e. Fastener component not turned by the wrench prevented from rotating.	-	QC and QA	
f. Document acceptance or rejection of bolted connections.	QC and QA	-	AISC 360, Table N5.6-3
3. Material verification of structural steel and cold-formed steel deck U.N.O.:			
a. For structural steel, identification markings to conform to AISC 360.	-	QC and QA	AISC 360, Section M1
b. For other steel, identification markings to conform to ASTM standards specified in the approved construction documents.	-	QC and QA	Applicable ASTM material standards
4. Inspection prior to welding:			
a. Verify identification markings of weld filler materials conform to AWS specification in the approved construction documents.	-	QC and QA	AISC 360, Section A3 .5 and applicable AWS AS documents
b. Welding procedure specifications are available.	QC and QA	-	AISC 360, Table N5.4-1
c. Manufacturer certifications for welding consumables available.	QC and QA	-	
d. Material identification (type/grade) and welded identification system.	-	QC and QA	
e. Fit-up of welds including but not limited to joint preparation, dimensions, cleanliness, tacking, and backing type/fit as applicable.	-	QC and QA	
f. Configuration and finish of access holes	-	QC and QA	
g. Check welding equipment.	-	QC	

REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION

VERIFICATION AND INSPECTION	FREQUENCY OF INSPECTION		REFERENCED STANDARD
	CONTINUOUS (inspect each joint/member)	PERIODIC (inspect random joint/members)	
5. Inspection of welding:			
a. AISC 360 requirements for welding structural steel			
1) Use of qualified welders	-	QC and QA	AISC 360, Table N5.4-2 During Welding
2) Packaging and exposure control and handling of welding consumables.	-	QC and QA	
3) Welding over cracked tack welds	-	QC and QA	
4) Environmental conditions including but not limited to precipitation, temperature and wind.	-	QC and QA	
5) Verify settings on equipment, travel speeds, elected materials, shielding gas type/floow rate, preheating interpass temperatures and proper position meets WPS standards.	-	QC and QA	
6) Verify welding techniques for interpass, final cleaning, profile limitations, and quality requirements.	-	QC and QA	
7) Welds are cleaned and painted where required.	-	QC and QA	AISC 360, Table N5.4-2 After Welding
8) Verify size, length and locations of welds.	QC and QA	-	
9) Visually verify welds for crack prohibition, weld/base-metal fusion, crater cross section, weld profiles, weld size, undercutting, and porosity.	QC and QA	-	
10) Arc strikes, k-area cracks within 3” of weld, removal of backing, and repair activities as applicable.	QC and QA	-	
11) Documentation of acceptance or rejection of welded joint or member.	QC and QA	-	
b. American Welding Society requirements for structural steel and cold-formed steel deck:			
1) Complete and partial joint penetration groove welds.	X	-	AWS D1.1
2) Multipass fillet welds.	X	-	
3) Single-pass fillet welds > 5/ 16"	X	-	
4) Plug and slot welds.	X	-	
5) Single-pass fillet welds ≤ 5/ 16"	-	X	
6) Floor and roof deck welds.	-	X	AWS D1.3
7) Welded studs & deformed bar anchors (DBA’s).	-	X	AWS D1.1
8) Welded sheet steel for cold-formed steel members	-	X	AWS D1.3
9) Welding of stairs & railing systems	-	X	AWS D1.1
c. Reinforcing steel:			AWS D1.4, ACI 318: Section 3.5 .2
1) Verification of weldability of reinforcing steel other than ASTM A 706.	-	X	
2) Reinforcing steel resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special structural walls of concrete and shear reinforcement.	X	-	
3) Shear reinforcement.	X	-	
4) Other reinforcing steel.	-	X	
6. Inspection of steel elements of composite construction prior to concrete placement:			
a. Placement and installation of steel deck.	QC and QA	-	AISC 360, Table N6.1
b. Placement and installation of steel HSA.	QC and QA	-	AISC 360, Table N6.1
c. Documentation of acceptance or rejection of steel elements.	QC and QA	-	AISC 360, Table N6.1

TABLE 1705.3
REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD	IBC REFERENCE
1) Inspect reinforcement, including prestressing tendon, and verify placement.	-	X	ACI 318 Ch. 20, 25.2, 25.3, 26.6.1-26.6.3	1908.4
2) Reinforcing bar welding:			AWS D1.4 ACI 318: 26.5.4	-
a) Verify weldability of reinforcing bars other than ASTM A706;	-	X		
b) Inspect single-pass fillet welds, maximum 5/16”; and	-	X		
c) Inspect all other welds.	X	-		
3) Inspect anchors cast in concrete.	-	X	ACI 318:17.8.2	-
4) Inspect size, embedment, and installation of post-installed anchors.	X	-	Manuf. Requirements	
5) Verify use of required design mix.	-	X	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
6) Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	-	ASTM C 172 ASTM C 31 ACI 318: 26.4, 26.12	1908.10
7) Inspect concrete and shotcrete placement for proper application techniques.	X	-	ACI 318: 26.5	1908.6, 1908.7, 1908.8
8) Verify maintenance of specified curing temperature and techniques.	-	X	ACI 318: 26.5.3-26.5.5	1908.9
9) Inspect prestressed concrete for:			ACI 318: 26.10	-
a) Application of prestressing forces; and	X	-		
b) Grouting of bonded prestressing tendons.	X	-		
10) Inspect erection of precast concrete members.	-	X	ACI 318: Ch. 26.8	-
11) Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	-	X	ACI 318: 26.11.2	-
12) Inspect formwork for shape, location and dimensions of the concrete member being formed.	-	X	ACI 318: 26.11.1.2(b)	-

TABLE 1705.6
REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	-	X
2. Verify excavations are extended to proper depth and have reached proper material.	-	X
3. Perform classification and testing of compacted fill materials.	-	X
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	X	-
5. Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.	-	X

TABLE 1705.2.3
REQUIRED SPECIAL INSPECTIONS OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD
1. Installation of open-web steel joists and joist girders.			
a. End connections – welding or bolted.	-	X	SJI specification listed in Section 2207.1
b. Bridging – horizontal or diagonal.			
1. Standard bridging.	-	X	SJI specification listed in Section 2207.1
2. Bridging that differs from SJI specifications listed in Section 2207.1	-	X	

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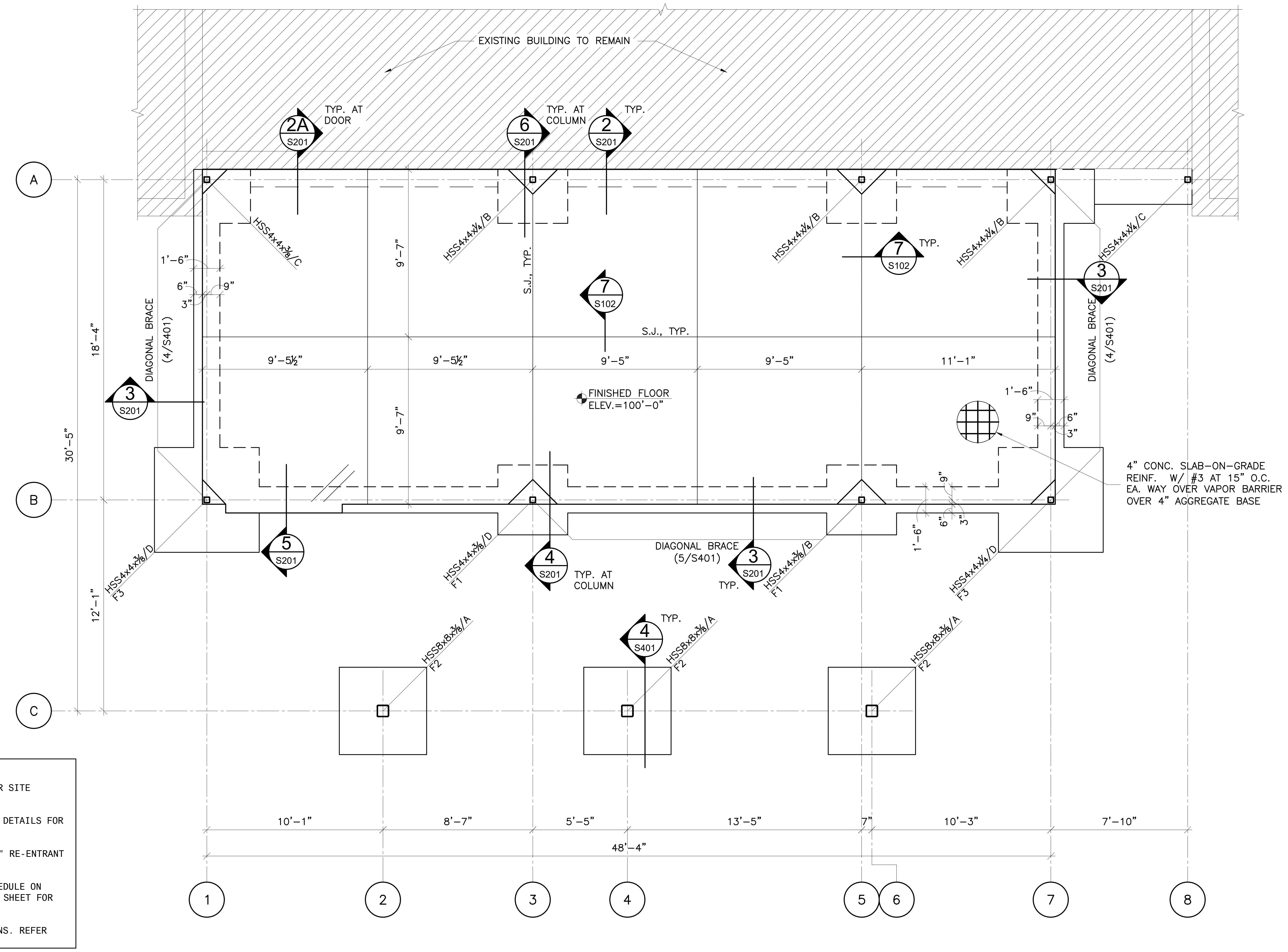


FOUNDATION PLAN NOTES:

1. REFER TO GENERAL NOTES FOR SITE SUBGRADE PREPARATION.
2. REFER TO TYPICAL CONCRETE DETAILS FOR ADDITIONAL INFORMATION.
3. // REPRESENTS (2) #4x4'-0" RE-ENTRANT CORNER REINFORCING BARS.
4. REFER REINFORCING LAP SCHEDULE ON TYPICAL FOUNDATION DETAIL SHEET FOR LAP LENGTHS.
5. F.D. INDICATES FLOOR DRAINS. REFER PLUMBING DRAWINGS.

NORTH

1 FOUNDATION PLAN

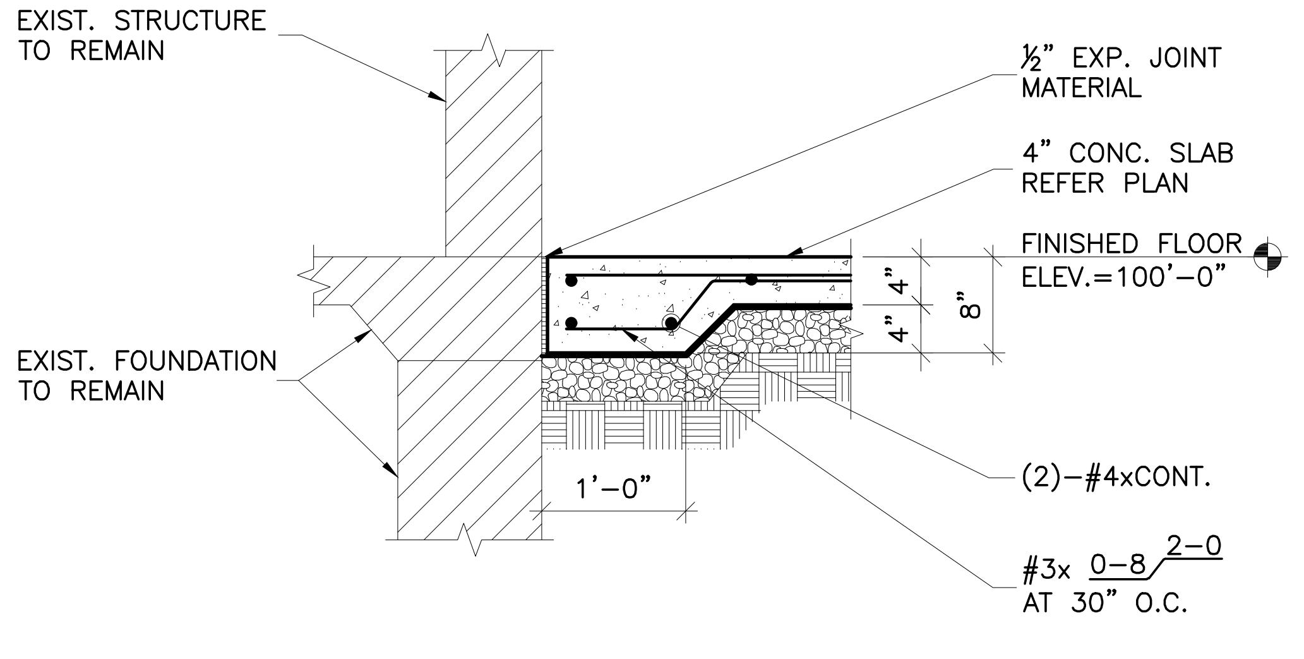
S201 SCALE: 1/4"=1'-0"

FOUNDATION PLAN LEGEND:

COLUMN SIZE — HSS4x4x¼/A — BASE ℞ TYPE REFER S103

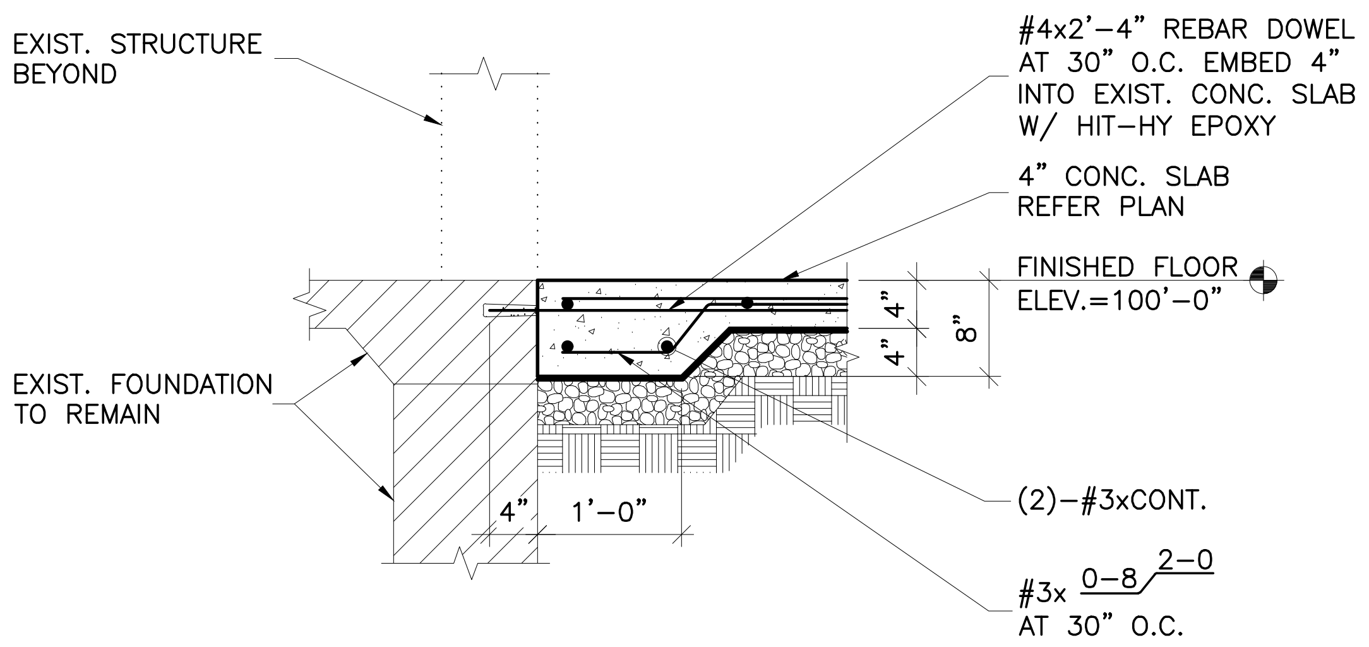
F1 — SPOT FOOTING SIZE, REFER SCHEDULE. IF NO MARK IS SHOWN, REFER PLAN AND SECTIONS FOR INFORMATION

SPOT FOOTING SCHEDULE				
MARK	SIZE			REINFORCEMENT
	WIDTH	LENGTH	DEPTH	
F1	4'-0"	4'-0"	2'-0"	(5)-#5 TOP AND BOTTOM EA. WAY
F2	5'-0"	5'-0"	2'-0"	(6)-#5 TOP AND BOTTOM EA. WAY
F3	6'-0"	6'-0"	2'-0"	(7)-#5 TOP AND BOTTOM EA. WAY



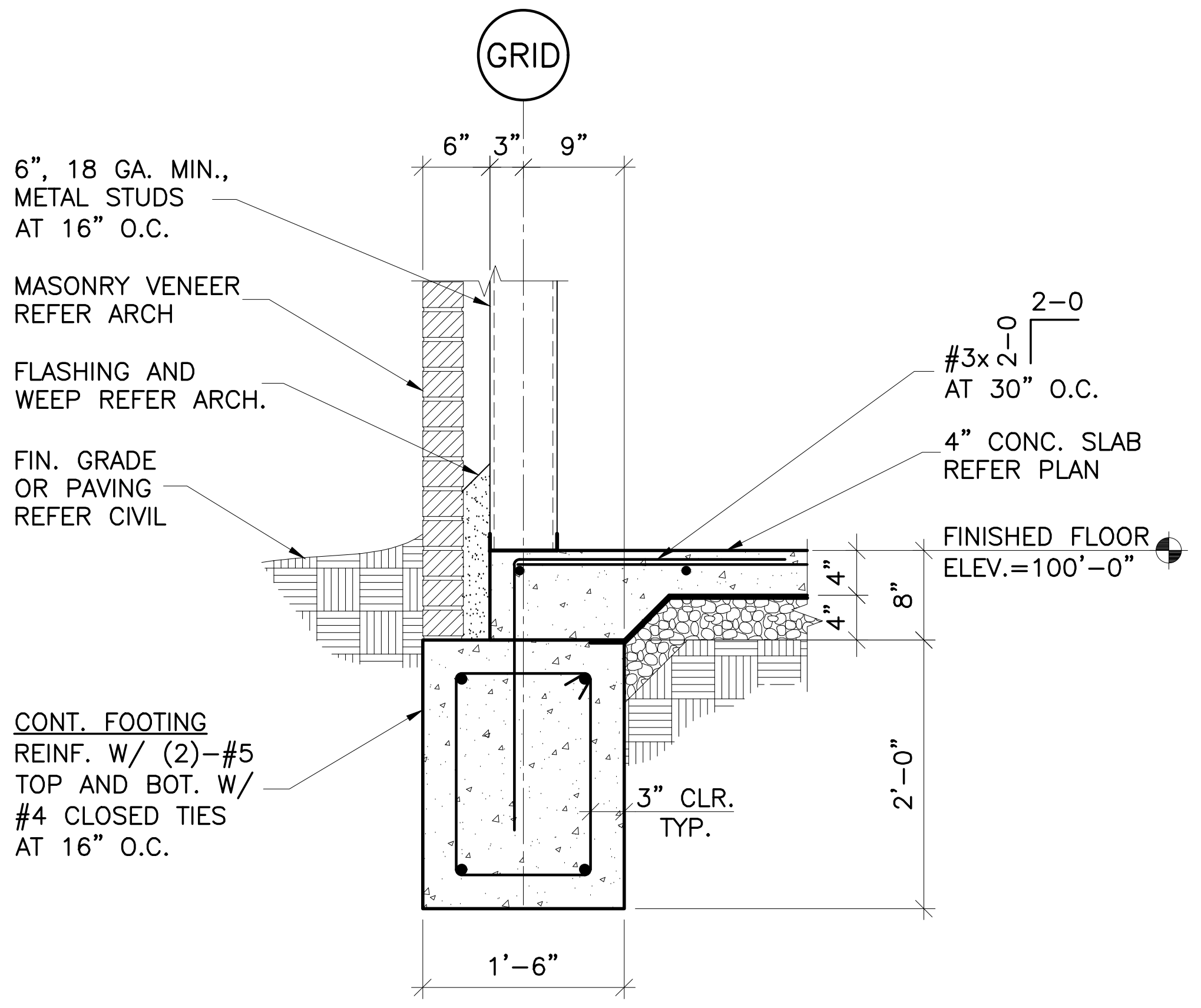
2 SECTION

S201 SCALE: 3/4"=1'-0"



2A SECTION

S201 SCALE: 3/4"=1'-0"



3 SECTION

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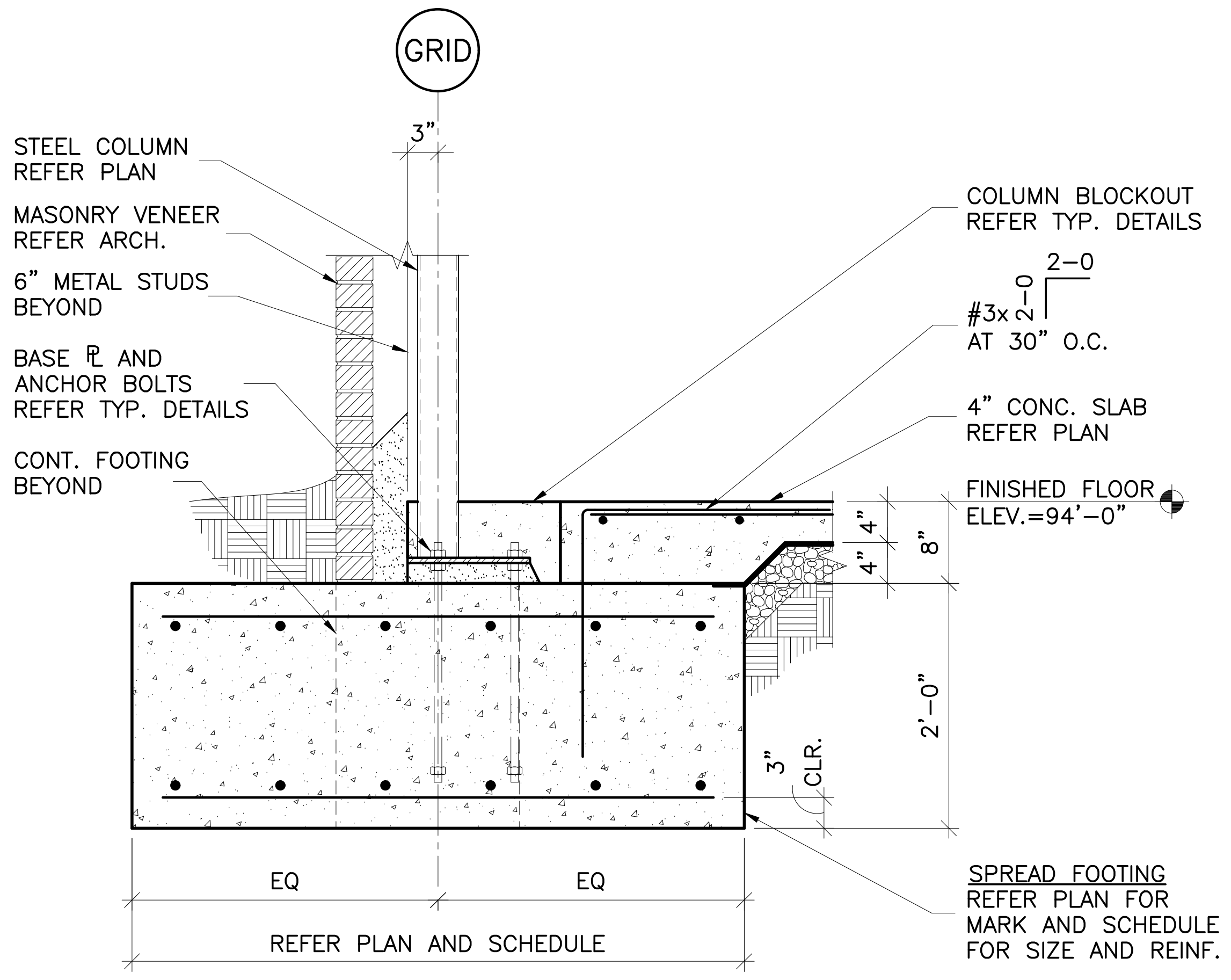
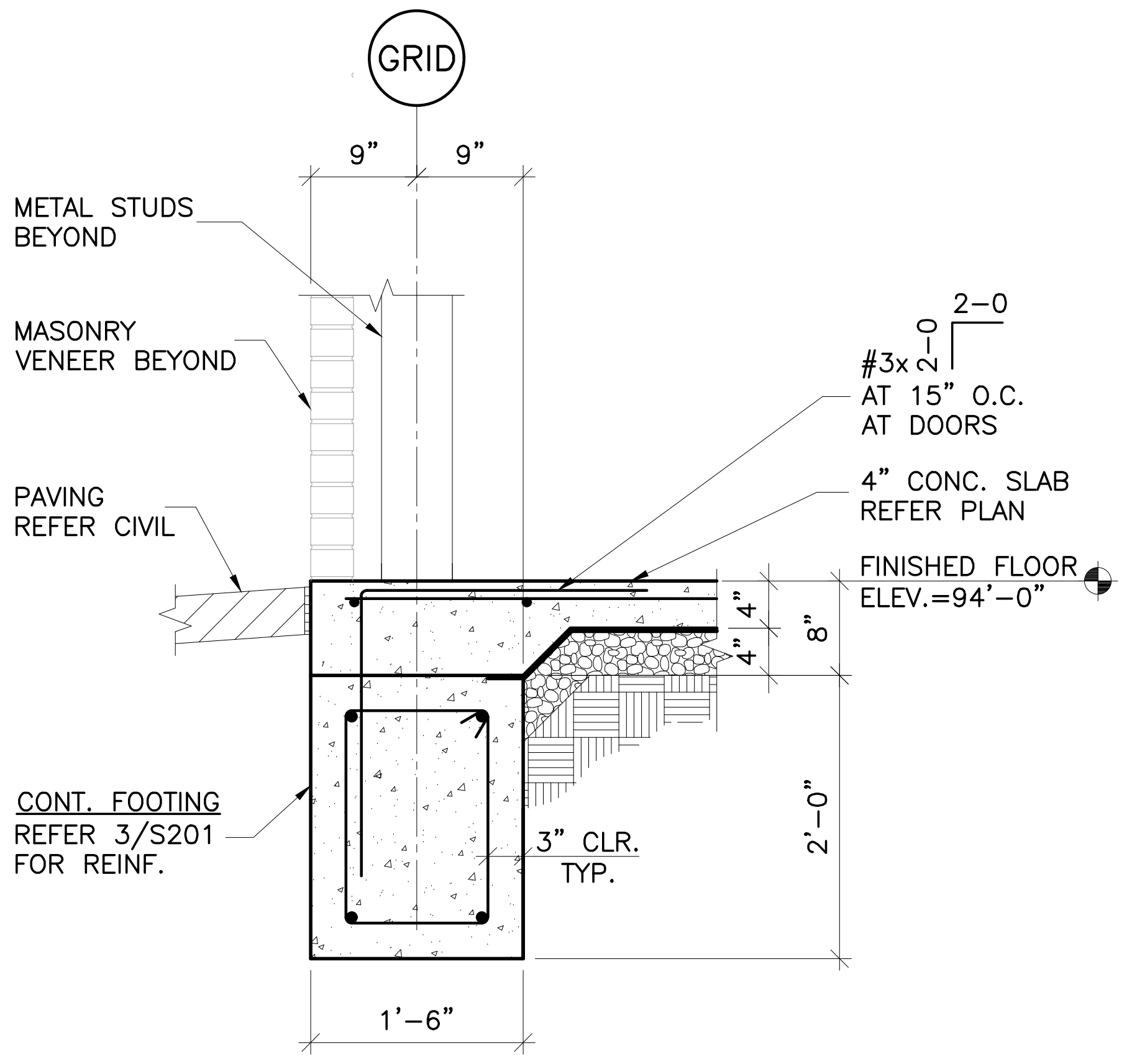


4 SECTION

S201 SCALE: 3/4"=1'-0"



5 SECTION

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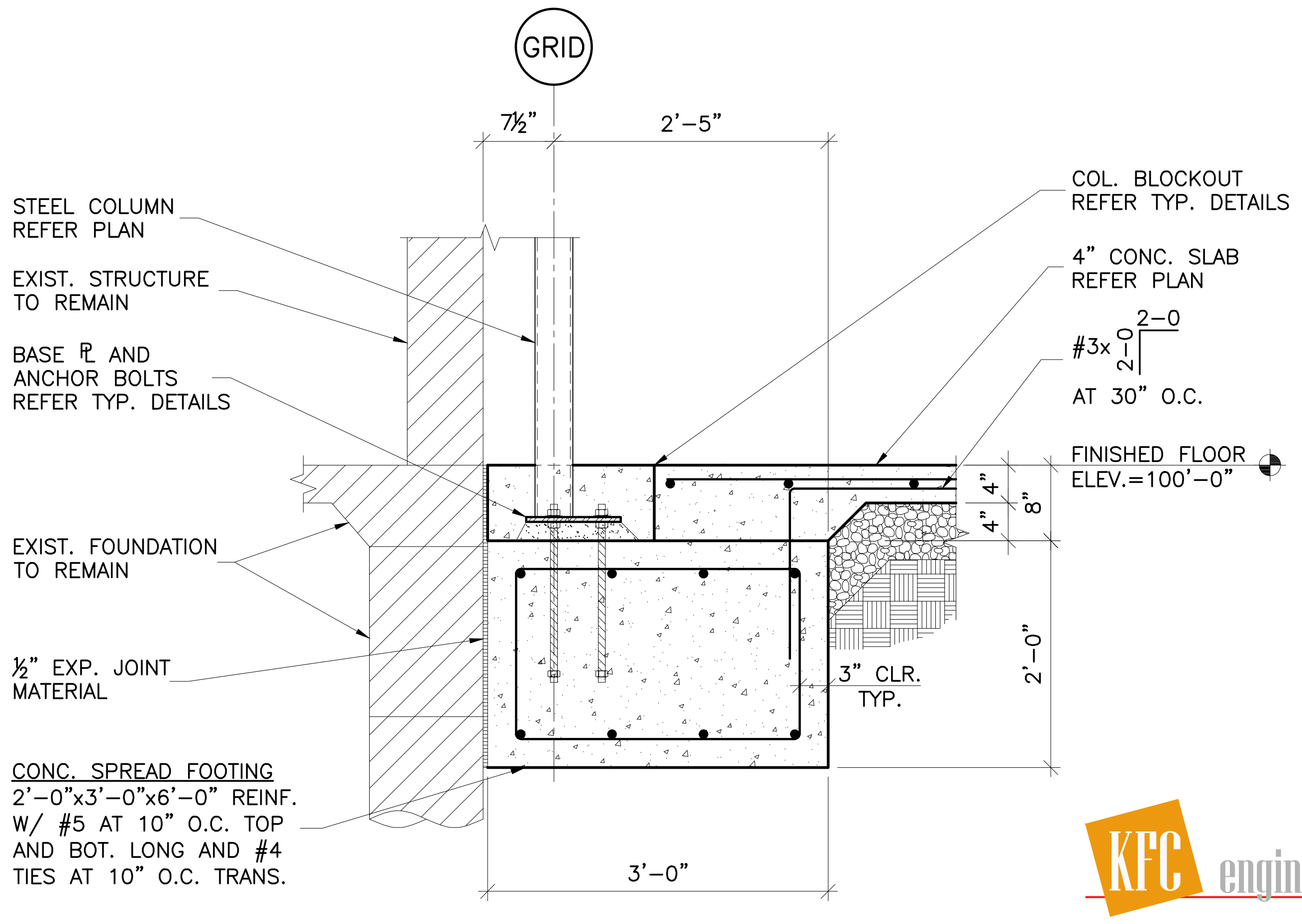

6 SECTION

S201 SCALE: 3/4"=1'-0"

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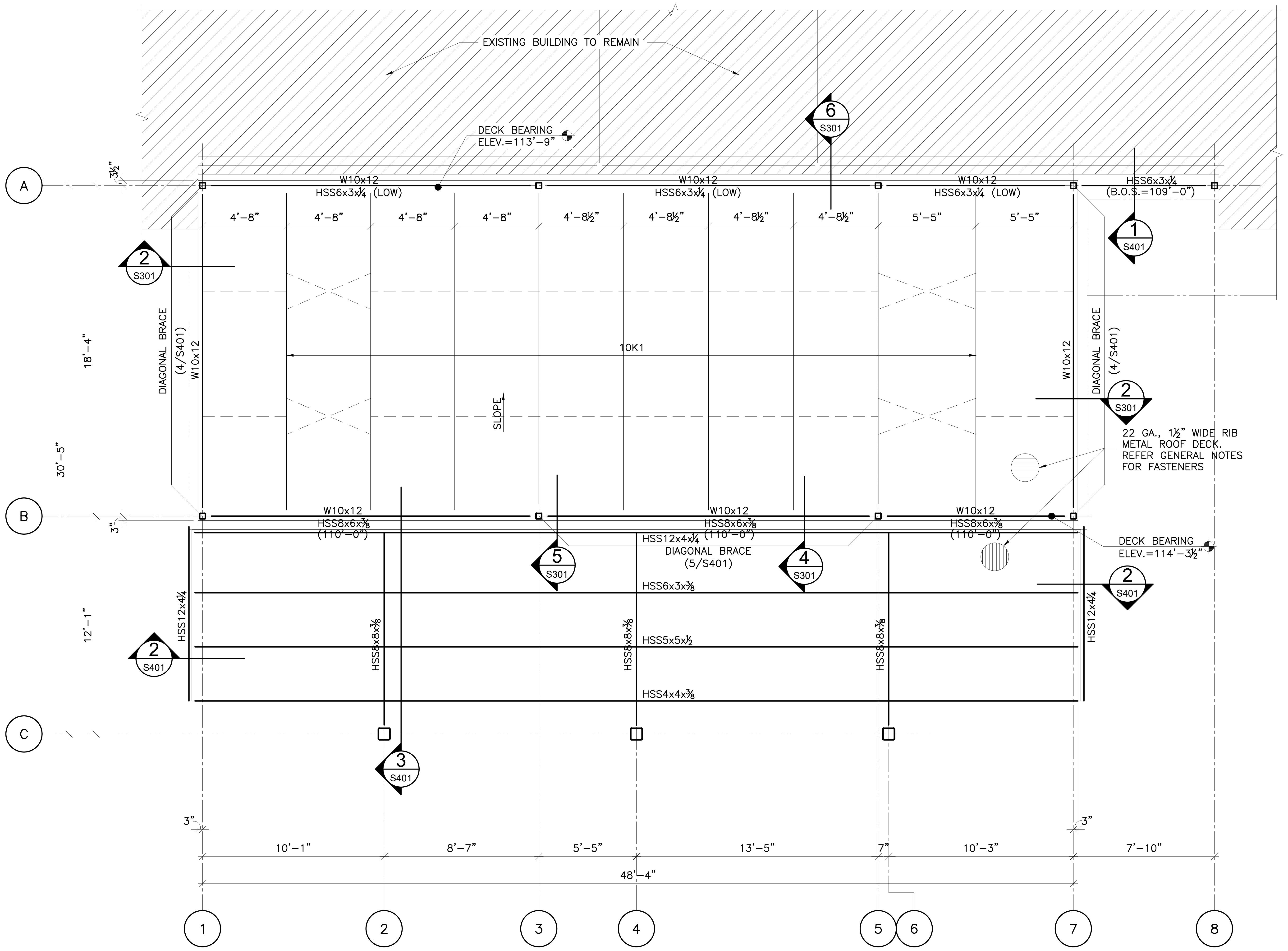


NORTH

1 ROOF FRAMING PLAN

S301 SCALE: 1/4"=1'-0"

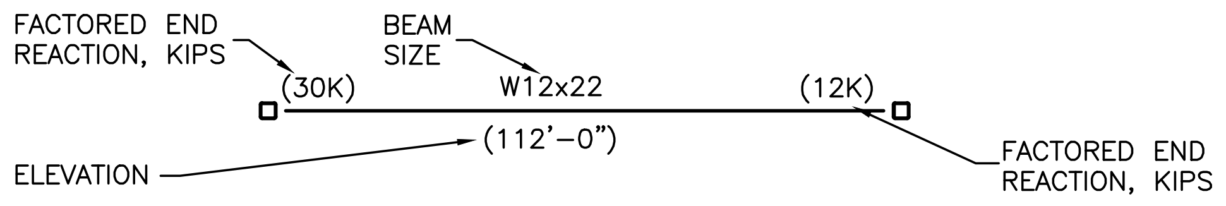
ROOF FRAMING NOTES:

1. REFER TO GENERAL NOTES FOR INFORMATION REGARDING STEEL BEAMS, STEEL JOISTS AND METAL DECKING.
2. ALL TOP OF STEEL, JOIST OR DECK NOTATIONS ARE WITH REFERENCE TO THE FINISH FLOOR ELEVATIONS SPECIFIED ON THE FOUNDATION PLAN, U.N.O.
3. THE ROOF DECK SHALL CONSIST OF A MODIFIED BIT ROOF OVER 1½", 22 GA., GALV. WIDE RIB DECKING. REFER TO METAL DECK NOTES FOR ATTACHMENT.
4. REFER TYPICAL JOIST AND STEEL DETAILS FOR ADDITIONAL INFORMATION.

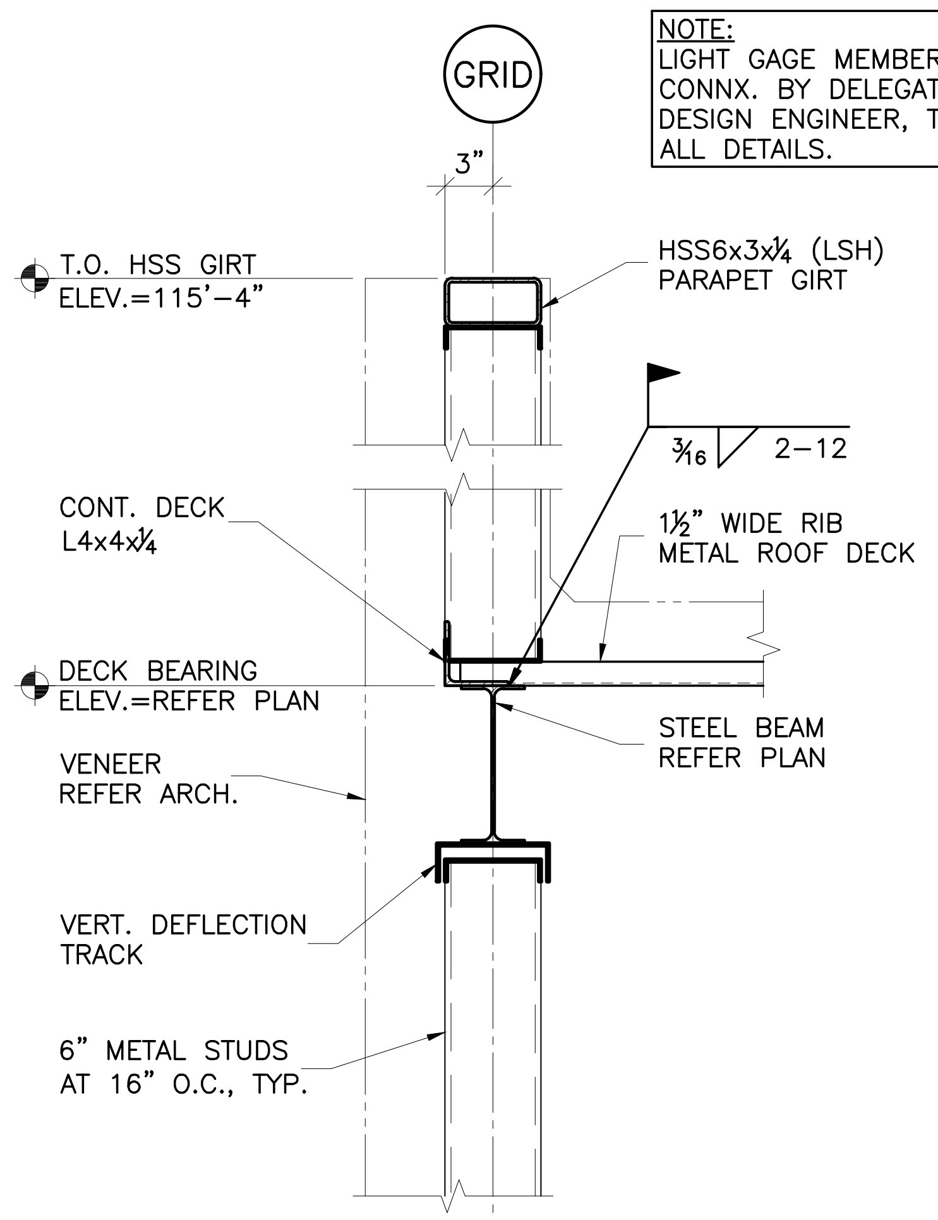
FRAMING PLAN LEGEND:

— — — = L1¼x1¼x7/64 MIN. HORIZONTAL JOIST BRIDGING BY JOIST MANUFACTURER

✕ = L1¼x1¼x7/64 MIN. JOIST X-BRIDGING BY JOIST MANUFACTURER



NOTE:
LIGHT GAGE MEMBERS AND CONNX. BY DELEGATED DESIGN ENGINEER, TYP. ALL DETAILS.



2 SECTION

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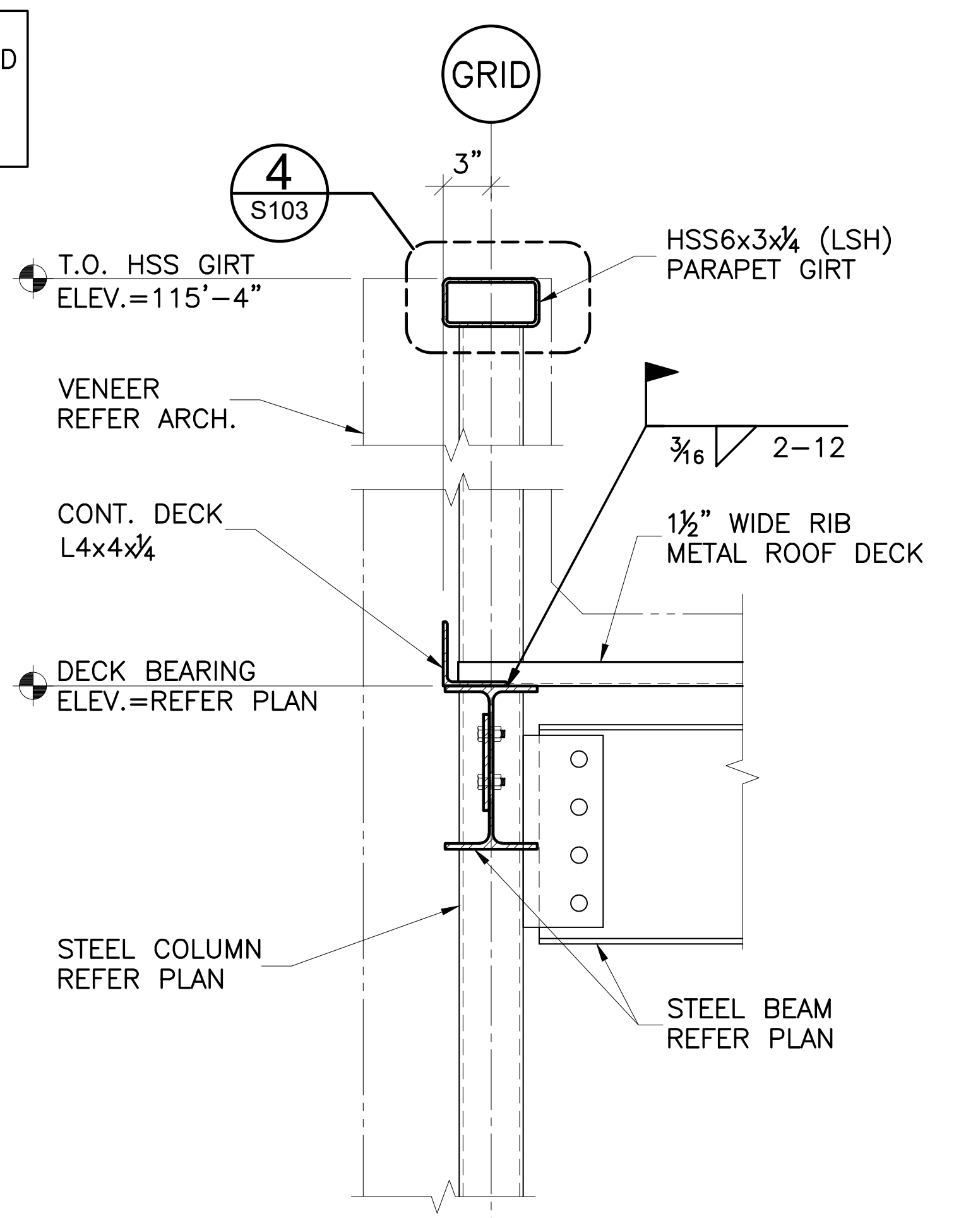

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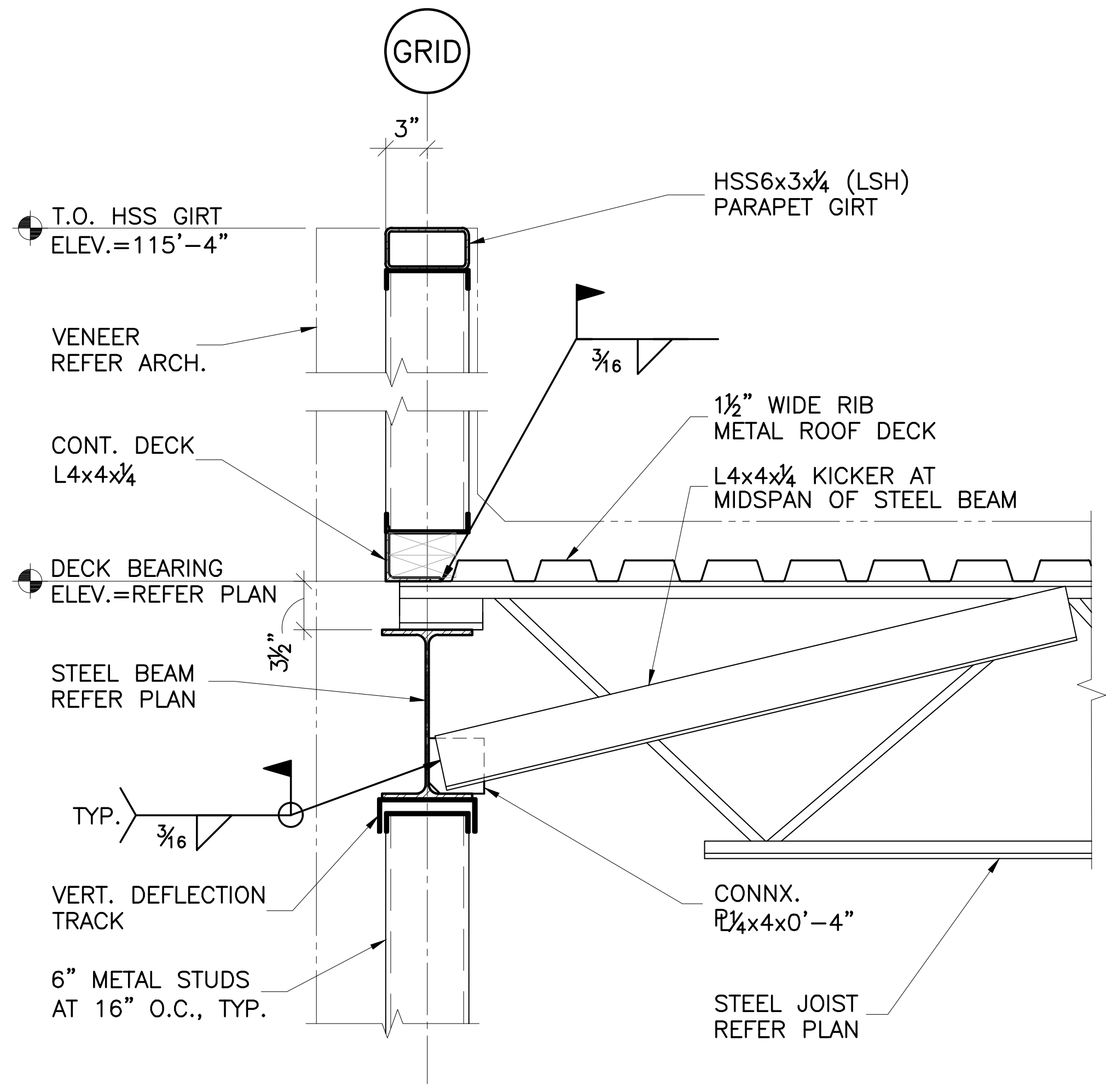

4 SECTION

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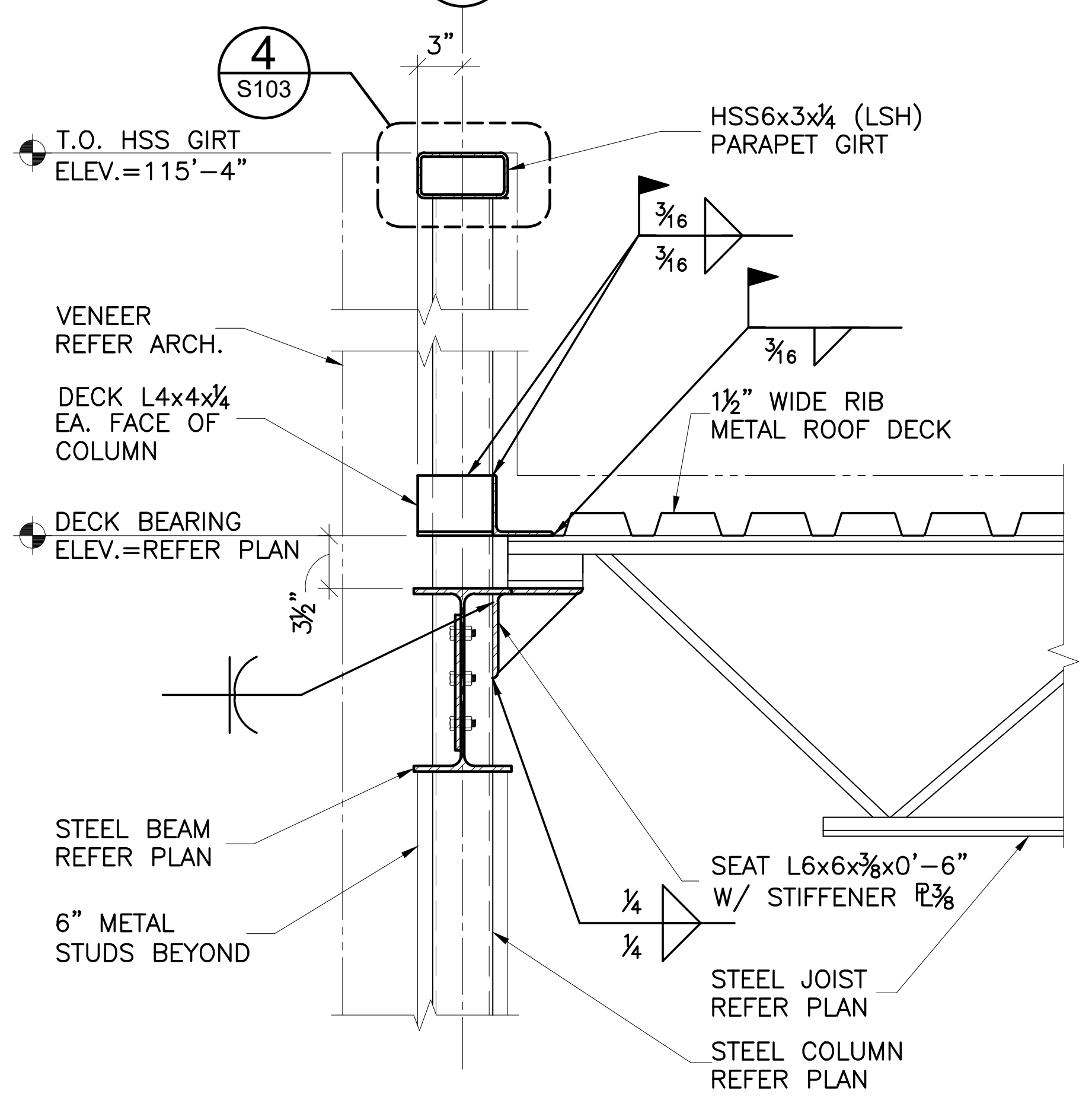

5 SECTION

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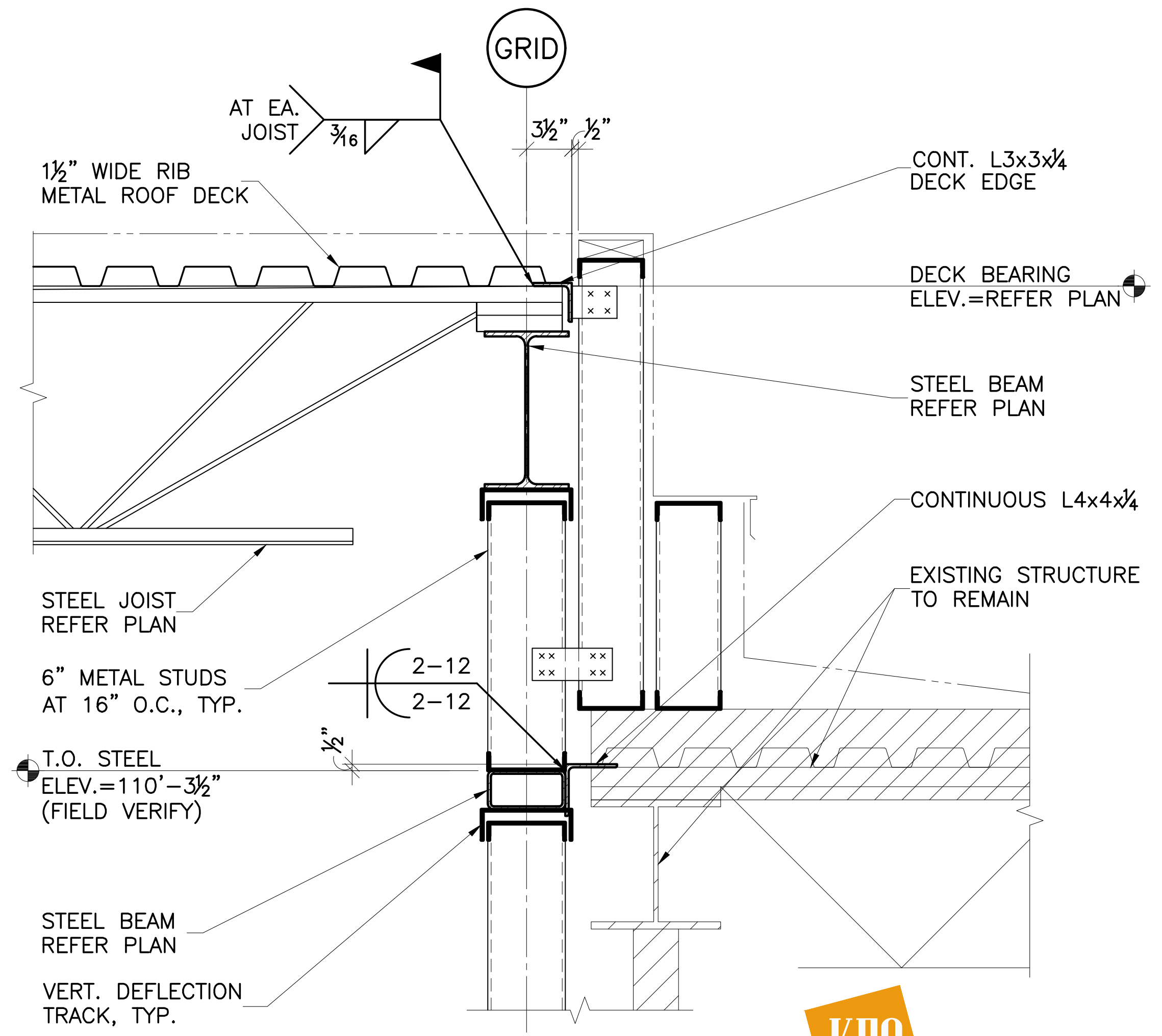

6 SECTION

S301 SCALE: 1"=1'-0"

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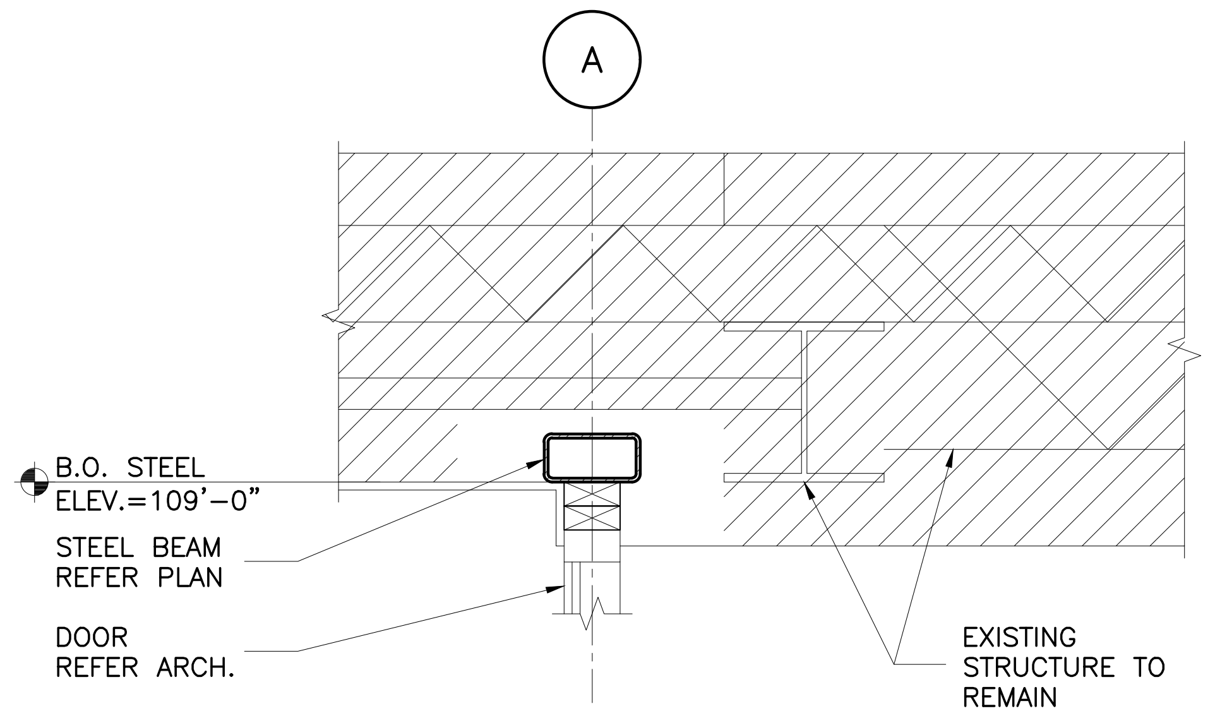
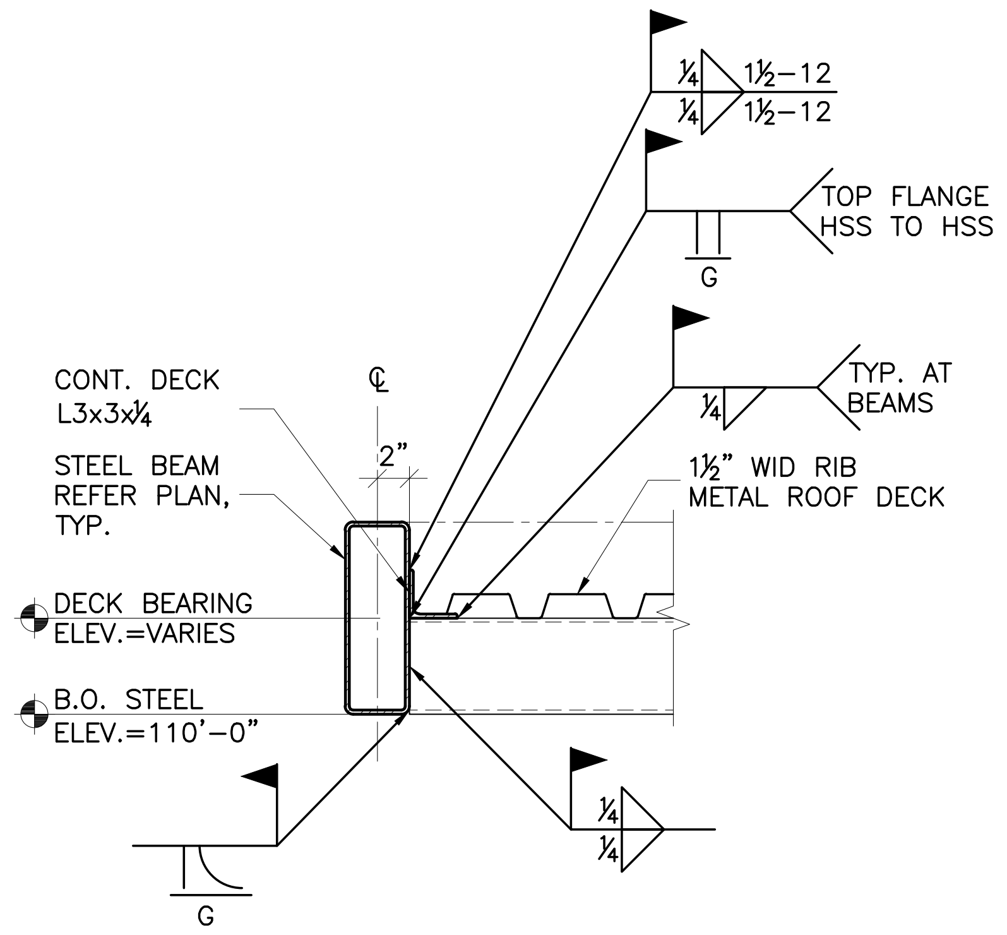
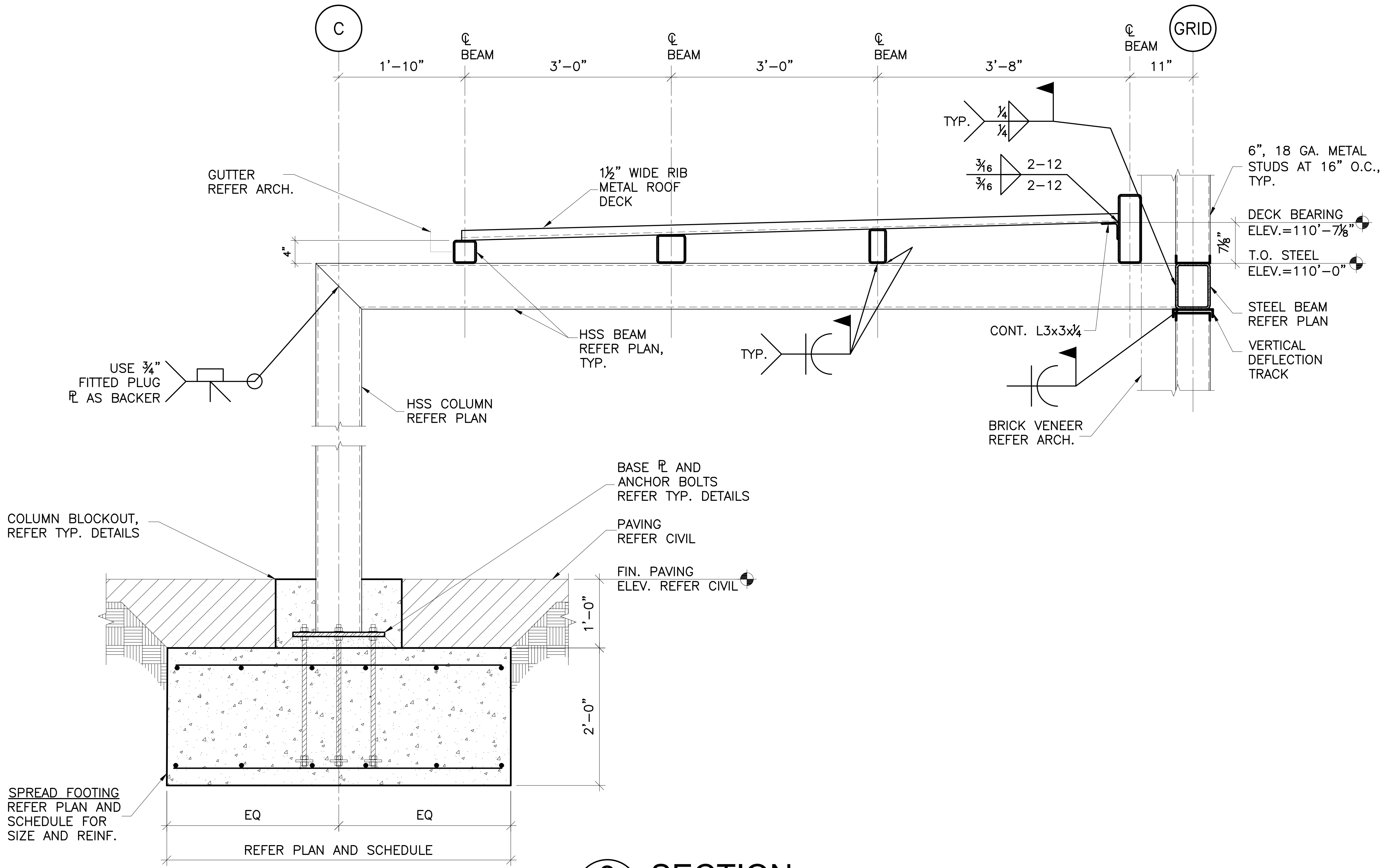


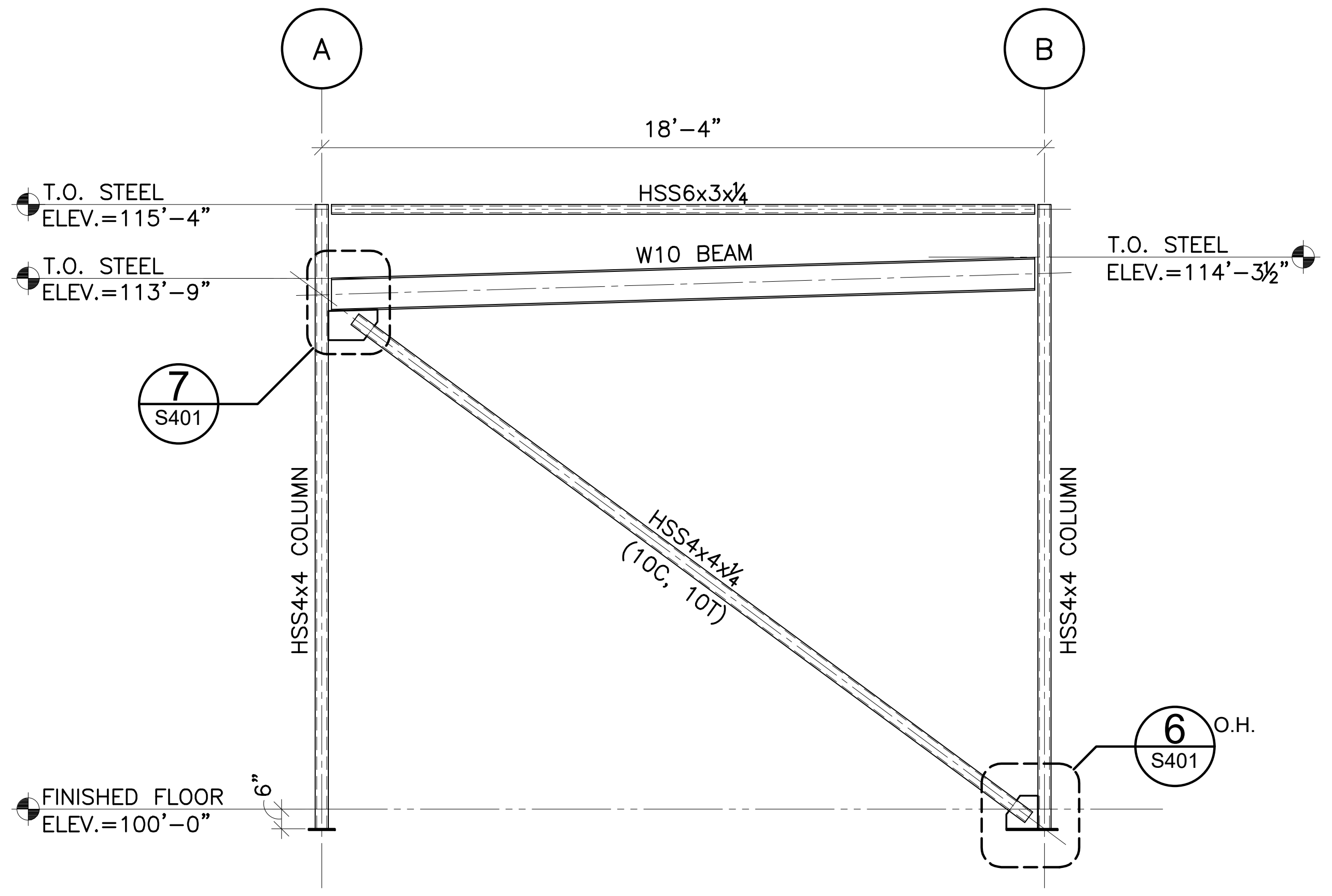
1 SECTION
S401 SCALE: 1"=1'-0"



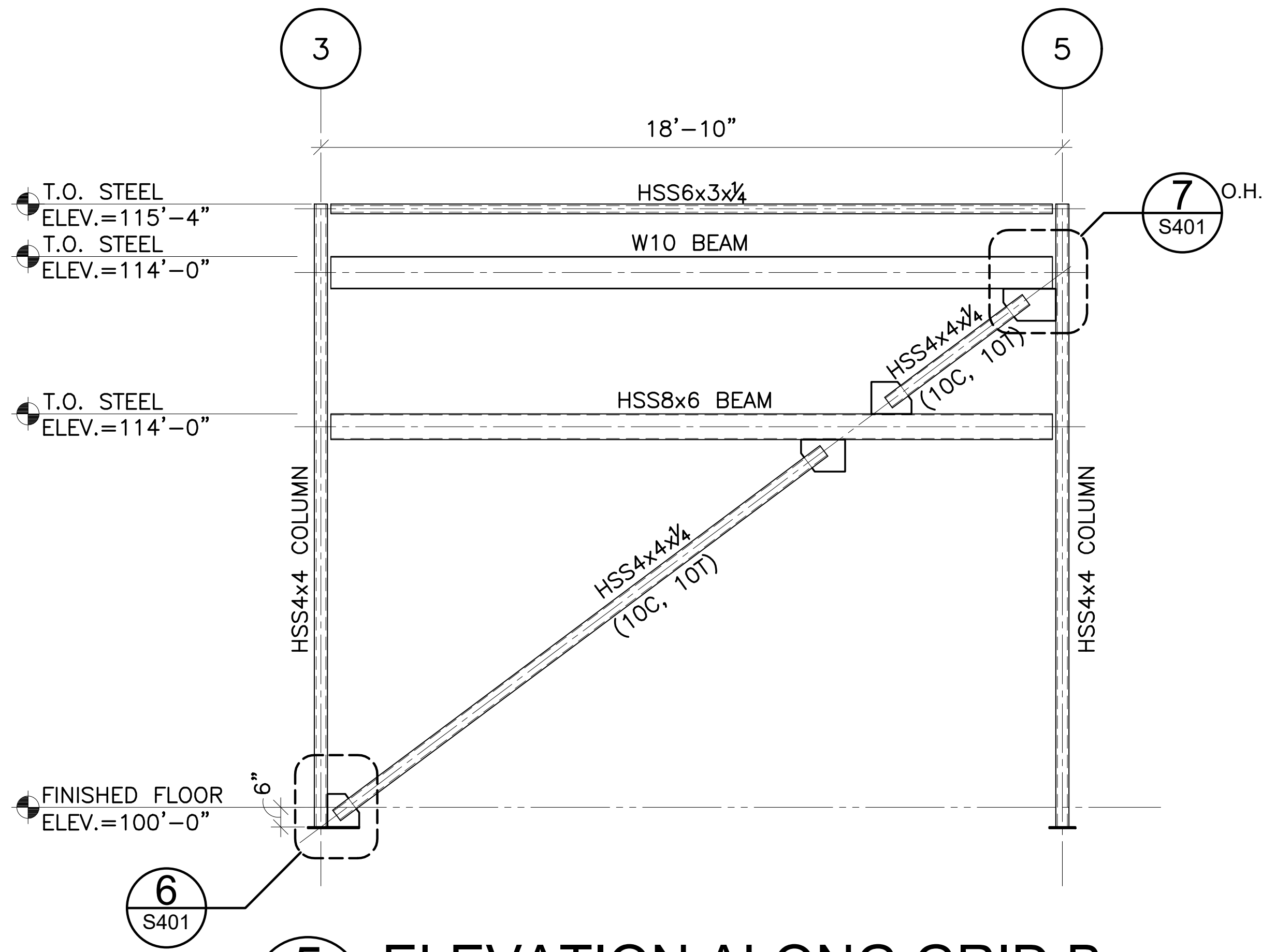
2 SECTION
S401 SCALE: 1"=1'-0"



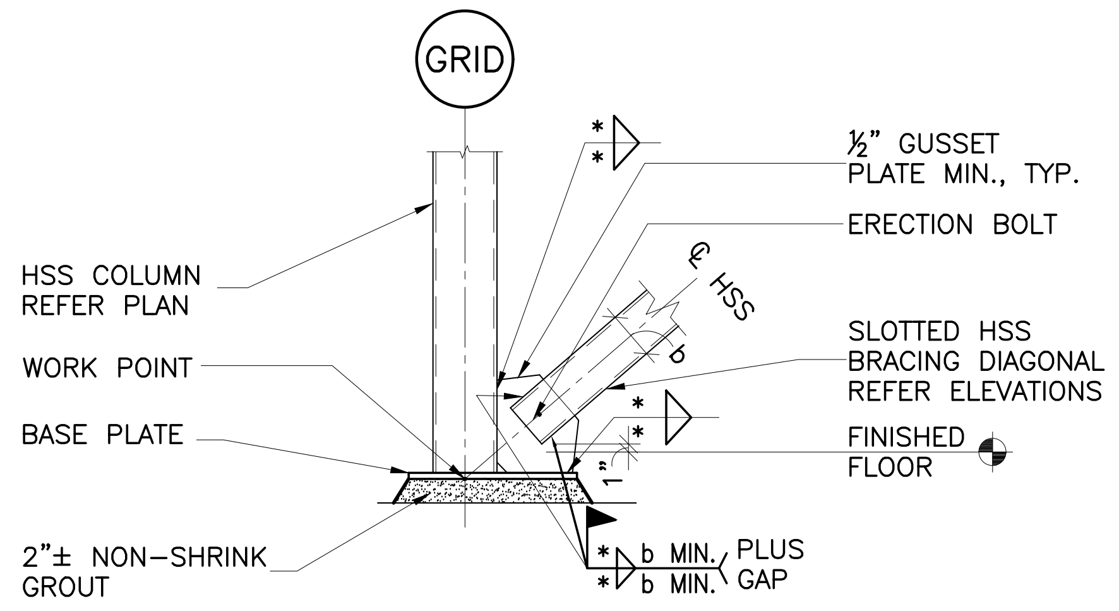
3 SECTION
S401 SCALE: 3/4"=1'-0"



4 ELEVATION ALONG GRID 1 & 7
S401 SCALE: 1/4"=1'-0"

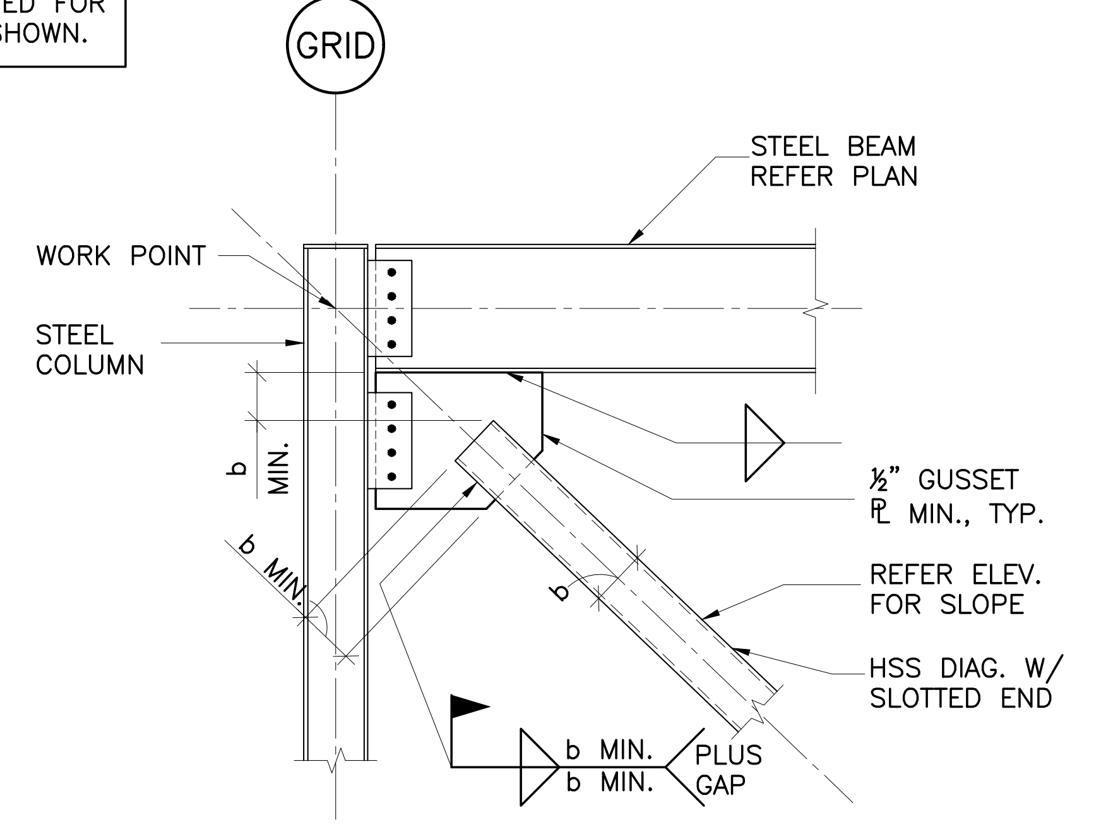


5 ELEVATION ALONG GRID B
S401 SCALE: 1/4"=1'-0"



6 DETAIL
S401 SCALE: 1/2"=1'-0"

NOTE:
* WELD AND
CONNECTION SIZED FOR
AXIAL FORCES SHOWN.



7 DETAIL
S401 SCALE: 1/2"=1'-0"

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OCTOBER 2023
date

revisions

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