

STRUCTURAL GENERAL NOTES

1.0. CODES AND STANDARDS:

- 1.1. INTERNATIONAL BUILDING CODE 2012 EDITION INCLUDING ALL SUBSEQUENT SUPPLEMENTS AND AMENDMENTS THERETO.
- 1.2. "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES", AMERICAN SOCIETY OF CIVIL ENGINEERS, ASCE 7-10.
- 1.3. "SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS", PUBLICATION 360-10 BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, AND AS AMENDED IN SPECIFICATIONS.
- 1.4. "STRUCTURAL WELDING CODE - STEEL (AWS D1.1-04)" AND "STRUCTURAL WELDING CODE REINFORCING STEEL (AWS D1.4-98)", AMERICAN WELDING SOCIETY.
- 1.5. "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-11)", AMERICAN CONCRETE INSTITUTE AND ALL SUCCEEDING REVISIONS.
- 1.6. "MANUAL OF STANDARD PRACTICE", CONCRETE REINFORCING STEEL INSTITUTE, LATEST EDITION.

2.0. STRUCTURAL STEEL:

- 2.1. ALL STRUCTURAL STEEL SHALL BE OF THE GRADES INDICATED BELOW, UNLESS NOTED OTHERWISE ON PLANS OR DETAILS:
 - A. WIDE FLANGE SHAPES ASTM A992 GR50.
 - B. OTHER ROLLED SHAPES ASTM A36 TYPICALLY, U.N.O.
 - C. ANCHOR BOLTS ASTM F1554 GR36 U.N.O.
 - D. STRUCTURAL TUBING (SQUARE AND RECTANGULAR) ASTM A500, GRADE B, FY=46 KSI.
 - E. STRUCTURAL TUBING (ROUND) ASTM A500, GRADE B, FY=42 KSI.
 - F. PLATES AND BARS ASTM A36 U.N.O.
 - G. MISCELLANEOUS ASTM A36 U.N.O.
- 2.2. ALL STRUCTURAL STEEL SHALL BE DETAILED AND, FABRICATED IN ACCORDANCE WITH THE AISC CODE OF STANDARD PRACTICE AS MODIFIED IN THESE NOTES AND THE PROJECT SPECIFICATIONS.
- 2.3. SUBMIT SHOP DRAWINGS FOR DETAILS, FABRICATION, AND ERECTION OF STRUCTURAL STEEL. COMPLY WITH AISC "STEEL CONSTRUCTION MANUAL", AISC "DETAILING FOR STEEL CONSTRUCTION", AND AISC "ENGINEERING FOR STEEL CONSTRUCTION" PUBLICATIONS.
- 2.4. SHOP DRAWINGS SHALL BE REVIEWED BY THE CONTRACTOR PRIOR TO SUBMISSION. DRAWINGS SHALL BEAR THE CONTRACTOR'S APPROVAL STAMP ACCEPTING RESPONSIBILITY FOR DIMENSIONS, QUANTITIES AND COORDINATION WITH THE OTHER TRADES.
- 2.5. SUBMIT THREE (3) 24" X 36" PRINTS OF EACH SHOP DRAWING FOR REVIEW. SEE PROJECT SPECIFICATIONS FOR SPECIFIC REQUIREMENTS.
- 2.6. CONTRACTOR SHALL PROVIDE IN HIS SCHEDULE FOR A SHOP DRAWING REVIEW AND RETURN TIME OF A MINIMUM OF FIFTEEN (15) WORKING DAYS IN THE STRUCTURAL ENGINEER'S OFFICE.
- 2.7. CONNECTION DESIGN: SEE SPECIFICATIONS FOR SPECIFIC REQUIREMENTS.

- F. FABRICATOR IS RESPONSIBLE FOR THE DESIGN OF CONNECTIONS NOT DESIGNED ON THE STRUCTURAL DRAWINGS.
- G. ALL CONNECTIONS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED. SHOP DRAWING CONTAINING CONNECTION DESIGNS SHALL BE SIGNED AND SEALED. A NOTE INDICATING "CONNECTION DESIGN ONLY" SHOULD ACCOMPANY THE SEAL. FABRICATOR SHALL SUBMIT SIGNED AND SEALED CALCULATIONS FOR ALL CONNECTIONS DESIGNED AS PART OF HIS WORK AND APPEARING ON HIS SHOP DRAWINGS.
- H. GENERALLY, CONNECTIONS SHOWN ON THE DRAWINGS ARE SCHEMATIC AND ARE INTENDED TO SHOW THE RELATIONSHIP OF THE MEMBERS.
- I. CONNECTIONS SHALL BE DESIGNED FOR ONE-HALF (1/2) THE MAXIMUM TOTAL UNIFORM LOAD ON THE MEMBER, AS DEFINED IN TABLE 3-6, "MAXIMUM TOTAL UNIFORM LOAD" IN THE AISC "SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS", PUBLICATION 360-05 OR FOR THE REACTIONS AS SHOWN ON THE DRAWINGS OR A MINIMUM OF 10 KIPS, WHICHEVER IS GREATEST.
- J. MEMBER FORCES AND REACTIONS HAVE BEEN REDUCED IN CONFORMANCE TO CODE PROVISIONS RELATED TO COMBINATIONS OF LOADS THAT INCLUDE WIND AND SEISMIC FORCES. NO FURTHER REDUCTIONS IN FORCES OR INCREASES IN ALLOWABLE STRESSES ARE PERMITTED.
- K. CONNECTIONS SHOWN ON DRAWINGS ARE ULTIMATE (LRFD) LOAD REACTIONS.
- L. CONNECTIONS MAY BE BOLTED OR WELDED, U.N.O. ON THE DRAWINGS:

2.8. BOLTED CONNECTIONS:

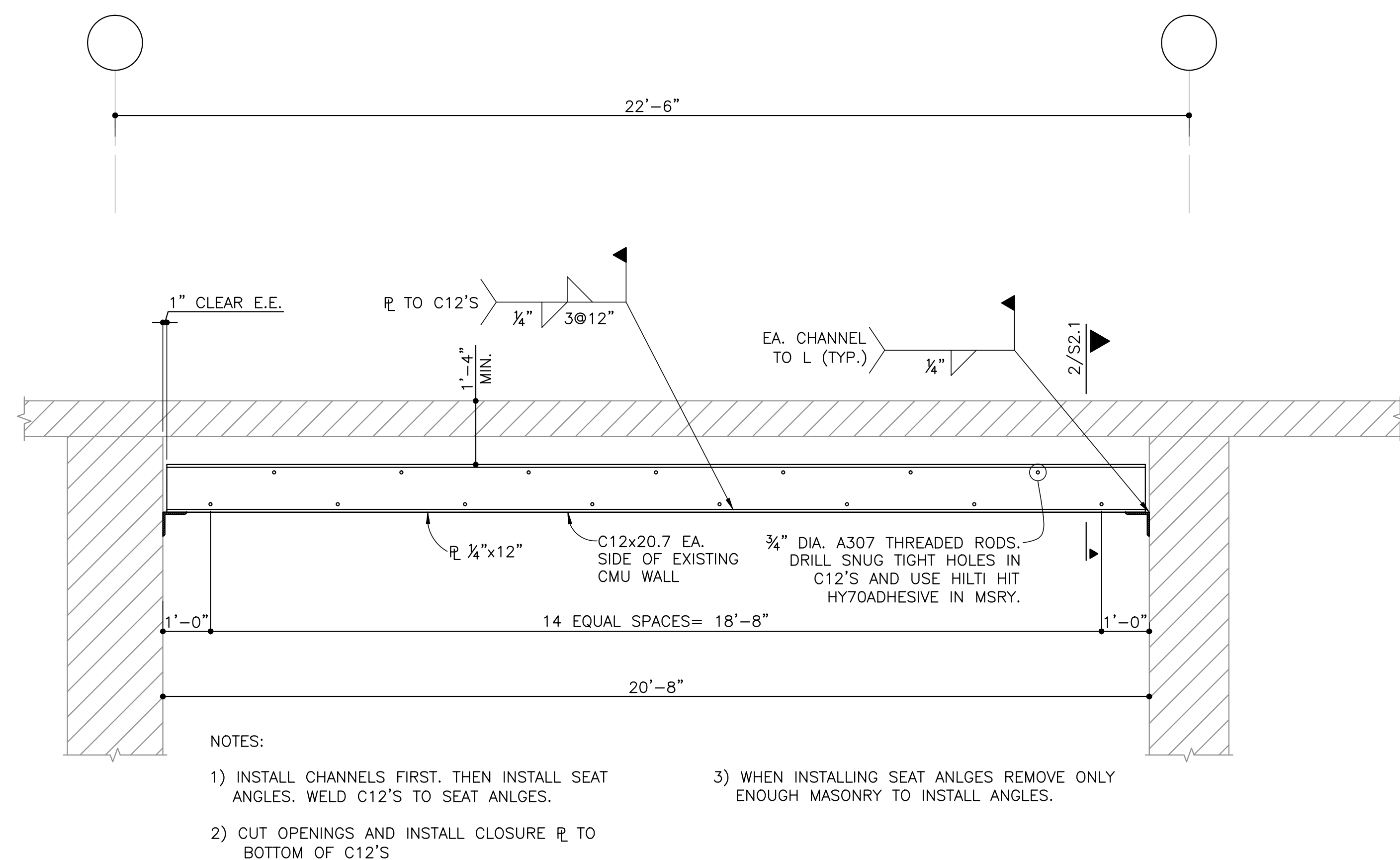
- A. SLIP CRITICAL CONNECTIONS WITH A325SC OR A490SC BOLTS SHALL BE USED IN ALL BOLTED MOMENT PLATE CONNECTIONS. OVERSIZED OR LONG-SLOTTED HOLES ARE PERMITTED.
- B. BEARING-TYPE CONNECTIONS WITH A325N OR A490N BOLTS SHALL BE USED FOR ALL OTHER BOLTED CONNECTIONS. OVERSIZED AND LONG-SLOTTED HOLES ARE NOT PERMITTED U.N.O. IN SINGLE TAB PLATE CONNECTIONS ONLY BEARING-TYPE FASTENERS ARE PERMITTED, FASTENERS SHALL NOT BE TORQUED, AND SHORT SLOTTED HOLES ARE REQUIRED.
- C. ANCHOR BOLTS OR OTHER BOLTS, WHERE INDICATED, SHALL CONFORM TO ASTM F1554 GR36 U.N.O.
- D. PROTRUDING BOLT HEADS, SHAFTS OR NUTS SHALL NOT EXTEND NOR PROHIBIT THE APPLICATION OF ARCHITECTURAL FINISHES OR PLACEMENT OF STEEL DECK AT ITS CORRECT LOCATION AND ELEVATION.
- E. CONNECTION DESIGNER IS RESPONSIBLE FOR VERIFYING THE AXIAL CAPACITY AFTER A SECTION IS REDUCED FOR BOLT HOLES. MEMBER SIZE MAY BE INCREASED OR PLATES ADDED TO MAINTAIN REQUIRED CAPACITY.
- F. SHOP DRAWINGS SHALL INDICATE THE TYPE OF BOLT USED IN EACH CONNECTION, ALLOWABLE VALUES FOR THE VARIOUS BOLT TYPES AND CAPACITY OF EACH CONNECTION SHOWN.
- G. DOMESTIC FASTENERS ARE REQUIRED IN ALL STRUCTURAL STEEL WORK ON THIS PROJECT. IMPORTED FASTENERS ARE PROHIBITED.

2.9. WELDED CONNECTIONS:

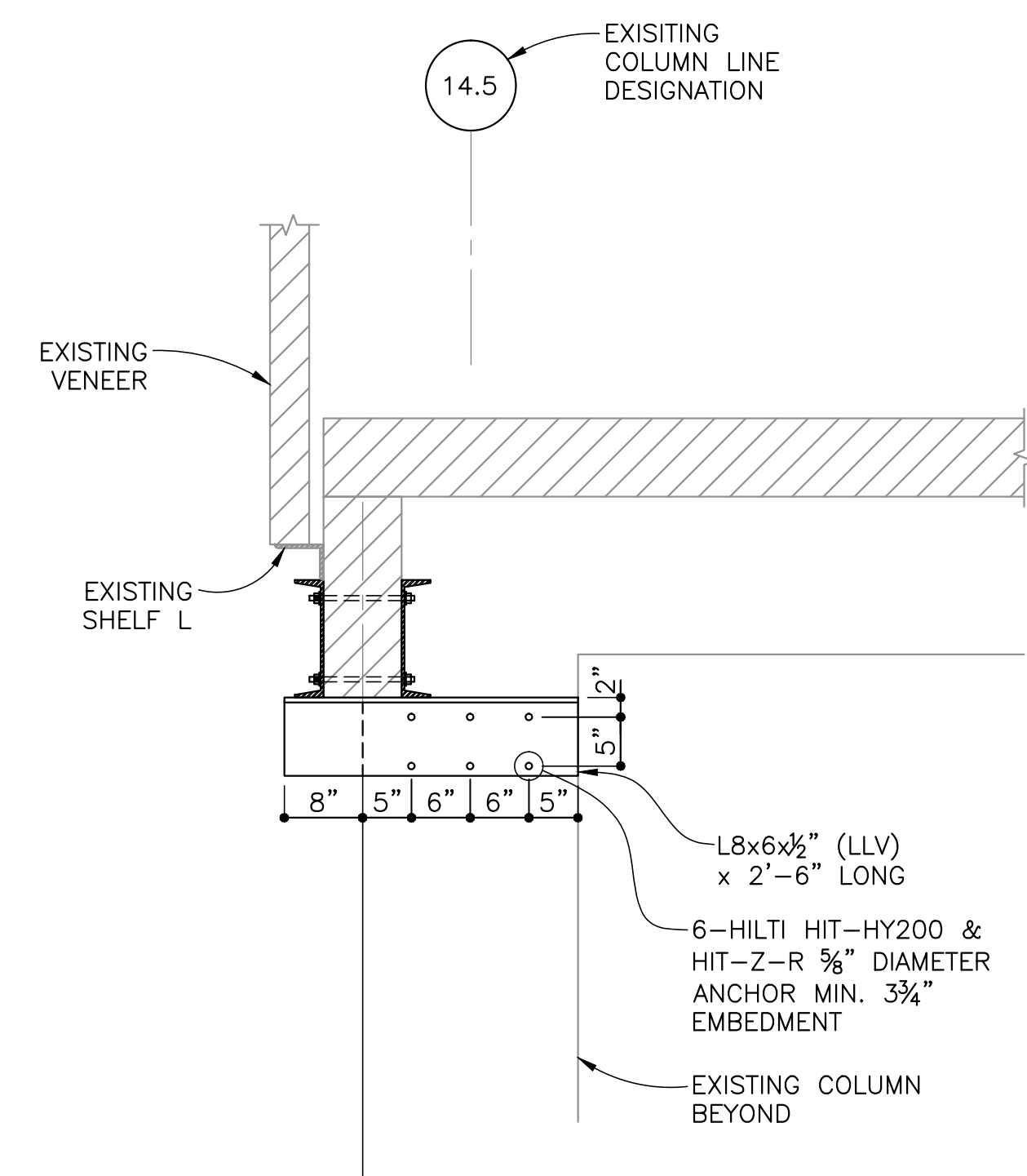
- A. ALL WELDING SHALL BE IN ACCORDANCE WITH THE "STRUCTURAL WELDING CODE – STEEL" (AWS D1.1) OF THE AMERICAN WELDING SOCIETY.
 - B. ELECTRODES FOR WELDING SHALL COMPLY WITH THE REQUIREMENTS OF AWS D1.1 TABLE 4.1.1.
 - C. SHOP DRAWINGS SHALL INDICATE WELD TYPE, REQUIRED ELECTRODES AND CAPACITY FOR EACH CONNECTION DETAILED ON THE SHOP DRAWINGS.
- 2.10. WHERE CANTILEVER BEAMS OCCUR ON PLAN AND THE SIZE IS NOTED ONLY FOR THE BACK-SPAN, THE CANTILEVER IS INTENDED TO BE THE SAME SIZE AS THE BACK-SPAN.
- 2.11. SPLICING OF STEEL MEMBERS, UNLESS SHOWN ON THE DRAWINGS, IS PROHIBITED WITHOUT WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER.
- 2.12. NO CHANGE IN SIZE OR POSITION OF ANY STRUCTURAL ELEMENT NOR HOLES, SLOTS, CUTS, ETC. SHALL BE MADE UNLESS DETAILED AND NOTED AS A PROPOSED CHANGE ON THE SHOP DRAWINGS AND REVIEWED AND ACCEPTED BY THE STRUCTURAL ENGINEER.
- 2.13. NO FINAL BOLTING OR WELDING SHALL BE PERFORMED UNTIL AS MUCH OF THE STRUCTURE AS WILL BE STIFFENED THEREBY HAS BEEN PROPERLY ALIGNED.
- 2.14. FABRICATE ALL BEAMS WITH MILL CAMBERS UP.
- 2.15. MINIMUM PLATE THICKNESS SHALL BE 3/8" U.N.O.; MINIMUM BOLT DIAMETER SHALL BE 3/4" U.N.O.; MINIMUM SHOP WELD SHALL BE 3/16" AND MINIMUM FIELD WELD SHALL BE 1/4" U.N.O.
- 2.16. ALL RE-ENTRANT CORNERS (SUCH AS COPEES AND BLOCKS) SHALL BE CUT AND SHAPED NOTCH FREE WITH A RADIUS OF AT LEAST 1/2".
- 2.17. FIELD USE OF GAS CUTTING TORCHES IS PROHIBITED FOR CORRECTING FABRICATION ERRORS IN PRIMARY STRUCTURAL FRAMING.
- 2.18. PARAGRAPH 4.4.1 OF THE AISC CODE OF STANDARD PRACTICE SHALL BE SUPERSEDED BY THE FOLLOWING: INDICATION OF COMPLIANCE BY THE OWNER OF SHOP DRAWINGS PREPARED BY THE FABRICATOR INDICATES THAT THE FABRICATOR HAS CORRECTLY INTERPRETED THE CONTRACT REQUIREMENTS. SUCH INDICATION DOES NOT RELIEVE THE FABRICATOR OF THE RESPONSIBILITY ASSIGNED TO HIM FOR THE DESIGN AND DETAILING OF CONNECTIONS ASSIGNED TO HIM, NOR FOR THE ACCURACY OF DIMENSIONS ON THE SHOP DRAWINGS, NOR FOR GENERAL FIT UP OF PARTS TO BE ASSEMBLED IN FIELD.
- 2.19. PARAGRAPHS 2.2 THROUGH 2.6 OF THE AISC CODE OF STANDARD PRACTICE SHALL BE SUPERSEDED AS FOLLOWS: ALL REFERENCES TO "OWNER" SHALL BE REPLACED WITH REFERENCES TO "CONTRACTOR".
- 2.20. EXPANSION BOLTS SHALL PROVIDE A MINIMUM SAFETY FACTOR OF FOUR (4) TIMES THE FOLLOWING MINIMUM SERVICE LOAD CAPACITIES, U.N.O.

SLEEVE ANCHORS (2000 PSI MASONRY)			WEDGE ANCHORS (3000 PSI CONCRETE)		
DIA.	SHEAR	TENSION	DIA.	SHEAR	TENSION
1/4"	270 LB.	300 LB.	1/2"	1950 LB.	1250 LB.
1/2"	930 LB.	600 LB.	3/4"	3750 LB.	2250 LB.

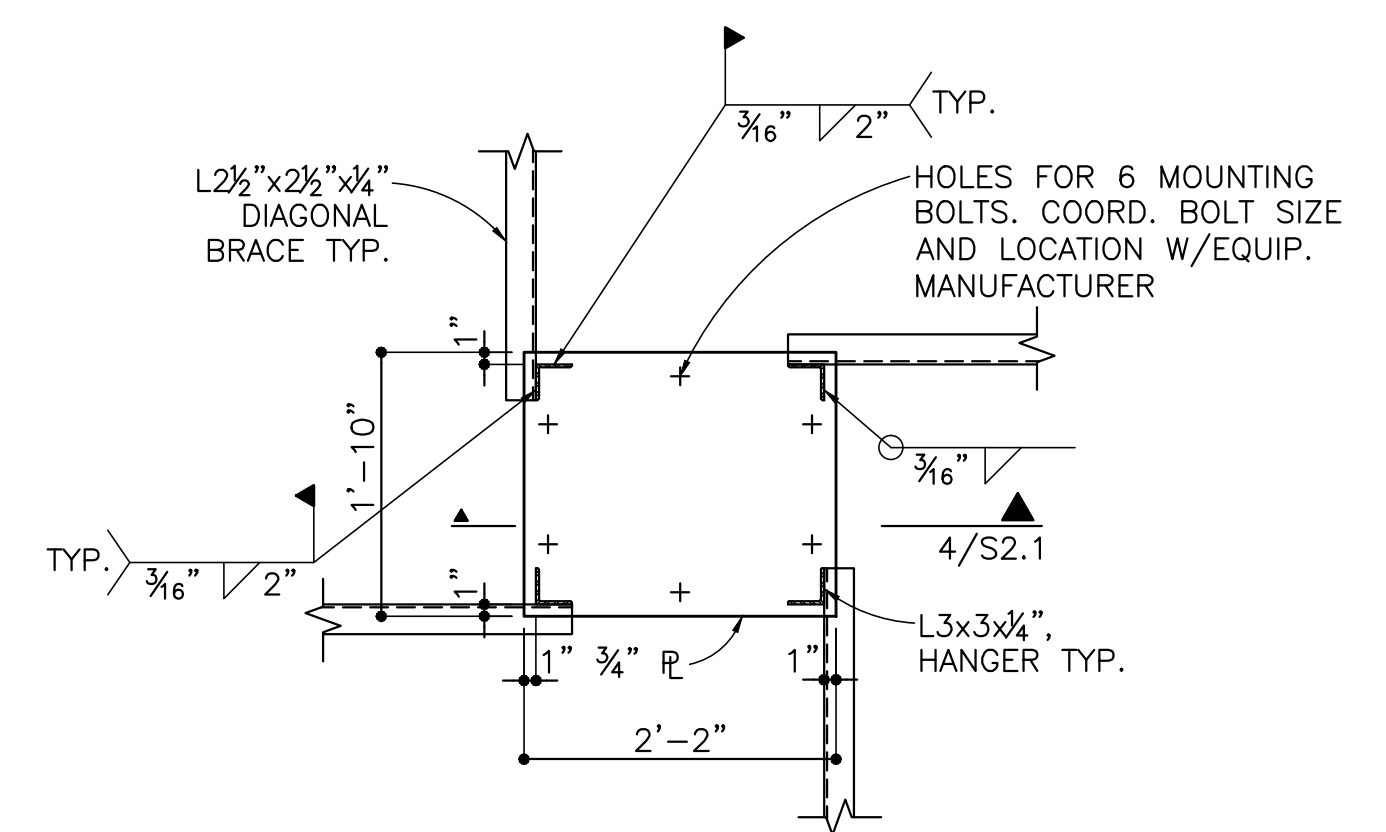
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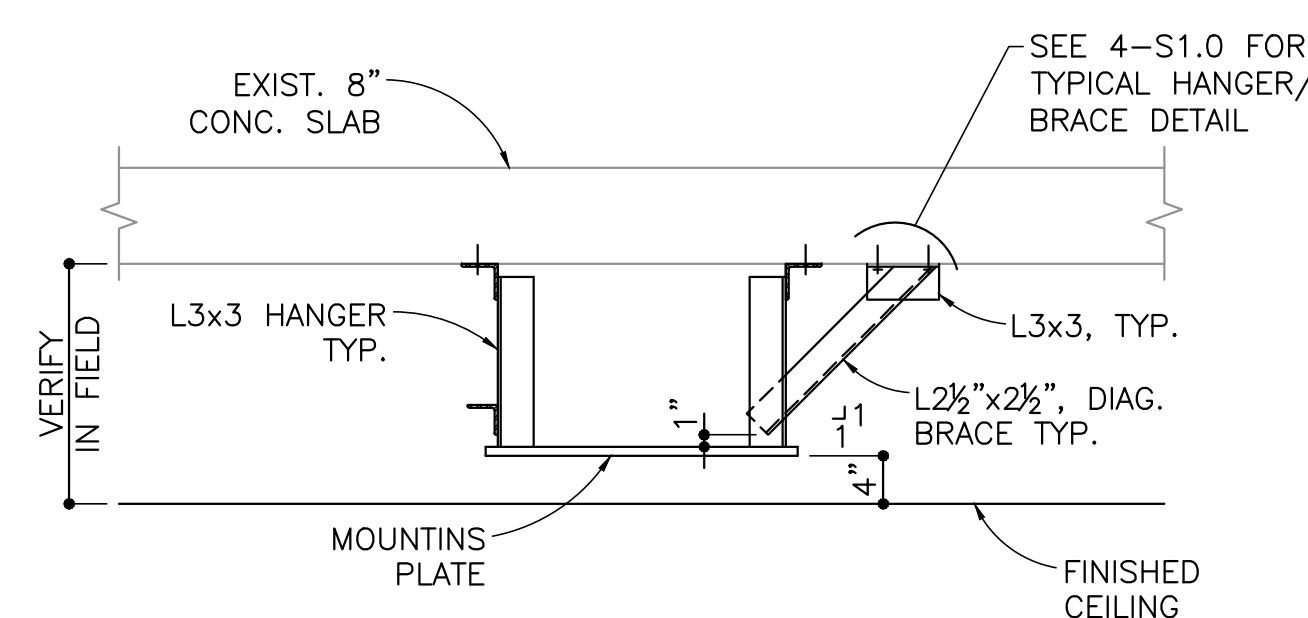
1 ELEVATION @ LOUVER @ MECHANICAL ROOM



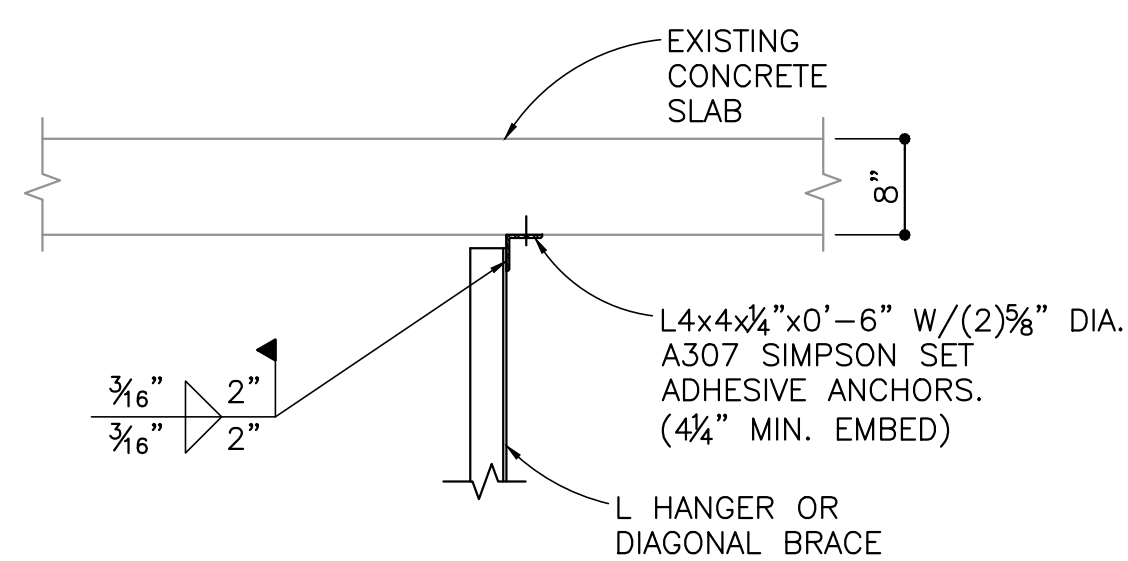
2 SECTION
3/4"=1'-0"



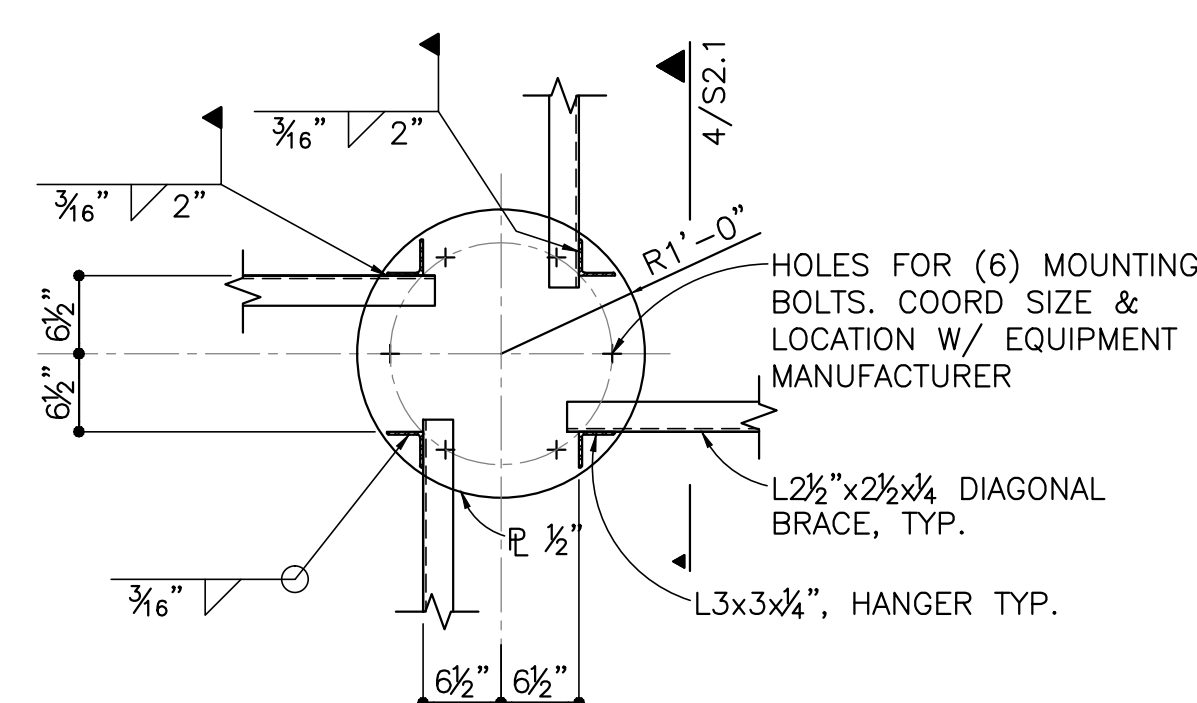
3 TANDEM BOOM SUPPORT DETAIL



4 **DETAL**
 $3/4" = 1' - 0"$



5 **DETAIL**
 $3/4" = 1' - 0"$



6 DUAL ARM SUPPORT DETAIL

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