STRUCTURAL STEEL NOTES

1. ALL DESIGN, DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS", THE STEEL CONSTRUCTION MANUAL, 15th EDITION, BY AISC.

2. ALL STRUCTURAL STEEL FABRICATORS, DETAILERS AND ERECTORS SHALL BE AISC CERTIFIED, AND SHALL EMPLOY AND MAINTAIN ON-STAFF A REGISTERED PROFESSIONAL ENGINEER IN CIVIL/STRUCTURAL ENGINEERING.

3. THE STEEL ERECTOR SHALL BE A QUALIFIED INSTALLER WHO PARTICIPATES IN THE AISC CERTIFICATION PROGRAM AND IS DESIGNATED AN AISC CERTIFIED ERECTOR, CATEGORY CERTIFIED STEEL ERECTOR (CSE).

4. CONTRACTOR SHALL SUBMIT THE FOLLOWING ITEMS PRIOR TO START OF STEEL FABRICATION TO THE ENGINEER FOR APPROVAL:

   A. ERECTIONS PLANS

   B. SHOP FABRICATION DRAWINGS PER STRUCTURAL MEMBER

   C. PIECE PART NUMBERS

   D. DIMENSIONS

   E. BILL OF MATERIALS

   F. CONNECTION DETAILS AND CALCULATIONS FOR ALL CONNECTIONS

   G. FABRICATOR & ERECTOR'S QUALITY CONTROL MANUAL AND INSPECTION PROCEDURES

   H. DEMONSTRATION TEST RESULTS AND/OR QUALIFICATION PAPERS FOR EACH WELDER WHO WILL PERFORM ANY SHOP OR FIELD WELDING

5. SHOP DRAWINGS WILL BE REVIEWED BY THE ENGINEER FOR GENERAL ARRANGEMENT AND DESIGN INTENT ONLY. THIS REVIEW SHALL IN NO WAY RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY FOR CORRECT DIMENSIONS, QUANTITIES, DESIGN, FABRICATION AND PROPER FUNCTIONING OF MATERIALS AND EQUIPMENT, NOR IN ANY WAY ALTER THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE ENGINEER SHALL BE ALLOWED A MINIMUM OF ONE WORKING WEEK TO REVIEW AND APPROVE SHOP DRAWING SUBMITTALS.

6. FABRICATION SHALL NOT BE STARTED UNTIL THE SUBMITTED SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED BY THE ENGINEER. ENGINEER APPROVAL IS DEFINED BY APPLIED VENDOR REVIEW STAMP MARKED AS EITHER "NO EXCEPTIONS TAKEN" OR "IMPLEMENT EXCEPTIONS TAKEN".

7. MATERIALS SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS:

W AND WT SHAPES	ASTM A992 OR A572, GRADE 50
M, S, C, MC, AND L SHAPES	ASTM A36
PLATES AND BARS	ASTM A36
PIPES	ASTM A53 GRADE B, F_y = 35 KSI
RECTANGULAR HSS	ASTM A500 GRADE B, F_y = 46 KSI
ROUND HSS	ASTM A500 GRADE B, F_y = 42 KSI
STRUCTURAL BOLTS	ASTM A325 OR A490
NUTS	ASTM A563
DTI WASHERS	ASTM F959
WASHERS	ASTM F436
CHECKERED FLOOR PLATE	ASTM A786 (3/8" RAISED PATTERN)
GRATING	1 1/4" x 3/16", BEARING BARS SPACED AT 1 3/16" CENTERS, CROSS BARS AT 4" CENTERS
GUARDRAIL	POSTS, TOP AND INTERMEDIATE RAILING SHALL BE 1 1/4" NOMINAL DIAMETER STANDARD STEEL PIPE (ASTM A53) WITH 1/4" x 4" TOE PLATE

8. ALL WELDING SHALL BE IN ACCORDANCE WITH AWS D1.1 "STRUCTURAL WELDING CODE", LATEST EDITION. ALL WELDING SHALL BE MADE WITH E70XX ELECTRODES AND SHALL BE PERFORMED BY CERTIFIED WELDERS. USE PREQUALIFIED JOINTS IN ACCORDANCE WITH AWS D1.1.

9. ALL WELDS SHALL BE VISUALLY INSPECTED BY THE AWS INSPECTOR. WHERE WELDS DO NOT MEET THE ACCEPTANCE CRITERIA OF AWS D1.1, SECTION 6, PART C, TABLE 6.1, THE FABRICATOR SHALL CORRECT DEFICIENCIES AT THEIR OWN EXPENSE. WHERE VISUAL INSPECTION INDICATES AN UNSATISFACTORY STANDARD OF WELDING OR MORE THAN 2% OF WELD INSPECTIONS BEING REJECTED, NON-DESTRUCTIVE TESTING OF WELDS SELECTED BY THE AWS INSPECTOR SHALL BE PERFORMED.

STRUCTURAL STEEL (CONT.)

10. ALL HIGH STRENGTH BOLT LOTS SHALL BE SHIPPED WITH COPIES OF THE LOT INSPECTION TEST REPORT AND MATERIAL CERTIFICATIONS VERIFYING THE BOLTS ARE IN ACCORDANCE WITH ASTM A325 OR A490.

11. INSTALLATION AND INSPECTION OF HIGH STRENGTH BOLTS SHALL BE IN ACCORDANCE WITH RCSC SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS, SECTIONS 8 AND 9 USING DIRECT-TENSION-INDICATOR PRE-TENSIONING. SPECIAL WASHER REQUIREMENTS GIVEN IN RCSC SPECIFICATION SECTION 6 SHALL BE USED FOR SPECIAL CONDITIONS SUCH AS THOSE RELATED TO SLOTTED HOLES. PRE-INSTALLATION VERIFICATION OF FASTENER ASSEMBLIES SHALL BE IN ACCORDANCE WITH RCSC SPECIFICATION, SECTION 7.

12. A REPRESENTATIVE SAMPLE OF NOT FEWER THAN THREE COMPLETE FASTENER ASSEMBLIES OF EACH COMBINATION OF DIAMETER, LENGTH, GRADE AND LOT TO BE USED IN THE WORK SHALL BE CHECKED AT THE JOBSITE IN A TENSION CALIBRATOR SUCH AS A SKIDMORE WILHELM CALIBRATOR TO VERIFY THAT THE PRE-TENSIONING METHOD SELECTED DEVELOPS A PRETENSION THAT IS EQUAL TO OR GREATER THAN 1.05 TIMES THAT SPECIFIED FOR INSTALLATION AND INSPECTION GIVEN IN RCSC SPECIFICATION, TABLE 8.1.

13. CONNECTIONS SHALL CONFORM TO THE FOLLOWING:

   A. SHOP CONNECTIONS MAY BE WELDED OR BOLTED. FIELD CONNECTIONS SHALL BE BOLTED UNLESS NOTED. CONNECTION DESIGN SHALL BE IN ACCORDANCE WITH THE AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS.

   B. ALL BOLTS SHALL BE 3/4 INCH DIAMETER OR 1 INCH DIAMETER GALVANIZED A325 OR BLACK (PLAIN) A490 HIGH STRENGTH BOLTS UNLESS NOTED.

   C. ALL BOLTED CONNECTIONS SHALL BE BEARING TYPE, WITH THREADS IN THE SHEAR PLANE UNLESS NOTED. ALL A325 AND A490 HIGH STRENGTH BOLTS SHALL BE FULLY PRETENSIONED.

   D. ALL BEAM, COLUMN SPLICE, VERTICAL BRACING AND HORIZONTAL BRACING BOLTED CONNECTIONS SHALL BE FULLY PRE-TENSIONED AND INCLUDE SQUIRTER TYPE DIRECT TENSION INDICATOR (DTI) WASHERS.

   E. ALL FRAMED BEAM CONNECTIONS, SHOP OR FIELD ASSEMBLED, SHALL BE DESIGNED FOR AN END REACTION EQUAL TO ONE-HALF OF THE MAXIMUM TOTAL UNIFORM LOAD FOUND IN THE AISC BEAM TABLES (15TH EDITION, TABLE 3-6) FOR THE GIVEN SPAN UNLESS NOTED, CONSIDERING BOLT, BEAM WEB AND CLIP ANGLE CAPACITIES PER THE AISC SPECIFICATIONS. HOWEVER CONNECTIONS SHALL HAVE NO FEWER ROWS OF BOLTS THAN AS FOLLOWS:

NOMINAL BEAM SIZE	MINIMUM BOLT ROWS	NOMINAL BEAM SIZE	MINIMUM BOLT ROWS
W8 & W10	2	W21 & W24	6
W12 & W14	3	W27	7
W16	4	W30 & W33	8
W18	5	W36	10

   F. GRATING SHALL BE ATTACHED TO THE SUPPORTING STEEL WITH GALVANIZED SADDLE CLIPS (MINIMUM OF 2 PER SUPPORT BEAM AND 4 PER PANEL UNLESS NOTED).

   G. CHECKERED PLATE SHALL BE WELDED IN ACCORDANCE WITH THE TYPICAL DETAILS PROVIDED.

   H. ALL BRACING CONNECTIONS SHALL BE DESIGNED FOR THE FORCES SHOWN ON THE CONSTRUCTION ISSUE OF THE DRAWINGS. FORCES INDICATED AS (+/- k) ARE FACTORED ACCORDING TO ALLOWABLE STRENGTH DESIGN (ASD). FORCES INDICATED AS PLUS (+) ARE AXIAL TENSION FORCES AND AS MINUS (-) ARE AXIAL COMPRESSION FORCES. FORCES ARE GIVEN IN UNITS OF KIPS (1 KIP =1000 LBS.), UNLESS NOTED. IF LOADS ARE NOT SHOWN, +/-15 KIP IS TO BE USED AS A MINIMUM.

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14. BEARING TYPE CONNECTIONS:

   A. OVERSIZED HOLES OR SLOTTED HOLES WITH THE SLOTS PARALLEL TO THE LOAD DIRECTION ARE NOT PERMITTED. SHORT SLOTTED HOLES WITH THE SLOTS PERPENDICULAR TO THE DIRECTION OF THE LOAD ARE PERMITTED IN MEMBERS WHICH CARRY ONLY SHEAR OR ONLY AXIAL LOAD.

   B. LONG SLOTTED HOLES SHALL ONLY BE USED WHERE NOTED ON THE DRAWINGS AND ONLY WHEN THE SLOTS ARE PERPENDICULAR TO THE DIRECTION OF THE LOADS.

   C. THE NOMINAL STRESSES SHALL BE AS PERMITTED BY THE 2016 AISC SPECIFICATION (CHAPTER J) FOR BOLTS WITH THREADS IN THE SHEAR PLANE.

15. ALL CONNECTIONS ON THE DRAWINGS SHALL BE DESIGNED BY A STRUCTURAL ENGINEER, REGISTERED IN THE STATE OF FLORIDA, HIRED BY THE FABRICATOR. SHOP DRAWINGS AND CALCULATIONS OF THESE CONNECTIONS SHALL BE SUBMITTED AND SHALL BEAR THE STAMP AND SIGNATURE OF THE STRUCTURAL ENGINEER. REVIEW OF SHOP DRAWINGS BY THE ENGINEER WILL NOT RELIEVE THE FABRICATOR OF THIS RESPONSIBILITY.

16. UNLESS INDICATED OTHERWISE, BRACING CONNECTIONS SHALL BE DESIGNED AND DETAILED SO THAT ALL FORCE COMPONENTS ARE TRANSFERRED DIRECTLY TO THE CENTERLINES OF THE INTERSECTING MEMBERS. WHERE THIS IS NOT POSSIBLE, CONNECTIONS SHALL BE DESIGNED FOR ALL RESULTING ECCENTRICITIES.

17. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT ACCIDENTAL FIRE DURING FIELD WELDING IN AND AROUND EXISTING CONSTRUCTION. PRECAUTIONS MAY INCLUDE, BUT NOT BE LIMITED TO, THE USE OF FIRE RESISTANT BLANKETS (WELDER'S BLANKETS), POSTING A WORKMAN WITH FIRE EXTINGUISHER, OR ANY OTHER METHOD OR COMBINATION OF METHODS USED TO PREVENT FIRE.

18. USE CAUTION WHEN FIELD WELDING TO EXISTING (LOADED) STEEL MEMBERS. FIELD WELDING TO EXISTING MEMBERS SHALL BE PERFORMED WHEN NO LIVE, WIND OR SNOW LOAD IS PRESENT. DO NOT WELD MORE THAN A 2 INCH LENGTH PERPENDICULAR TO THE LONGITUDINAL DIRECTION OF THE MEMBER AT ANY ONE TIME UNLESS THE EXISTING MEMBER IS TEMPORARILY SUPPORTED ON EACH SIDE OF THE WELD LOCATION PRIOR TO WELDING.

19. THE SURFACES OF STRUCTURAL STEEL MEMBERS WHICH ARE TO RECEIVE FIELD WELDED CONNECTIONS SHALL BE STRIPPED TO BARE METAL, FREE OF PAINT, RUST, SCALE, GALVANIZING MATERIAL, FIREPROOFING, ETC. WITHIN 2 INCHES OF THE WELD. AFTER WELDING IS COMPLETE, SURFACES THAT WERE PAINTED SHALL BE PRIMED AND FINISH PAINTED TO MATCH EXISTING AND SURFACES THAT WERE GALVANIZED SHALL BE COATED WITH GALVANIZING REPAIR PAINT.

20. SPLICING OF STRUCTURAL MEMBERS, WHERE NOT DETAILED ON THE DRAWINGS, IS PROHIBITED WITHOUT THE PRIOR APPROVAL OF THE STRUCTURAL ENGINEER AS TO THE LOCATION, TYPE AND CONNECTION TO BE MADE.

21. NO FIELD CUTS, HOLES OR OTHER OPENINGS SHALL BE MADE IN MEMBERS UNLESS SHOWN ON THE DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER.

22. THE CONTRACTOR / ERECTOR SHALL PROVIDE ADEQUATE TEMPORARY SUPPORTS AND/OR BRACING AS REQUIRED TO ENSURE LATERAL STABILITY OF THE STRUCTURE DURING CONSTRUCTION.

23. KICK PLATE AROUND EQUIPMENT / DUCTWORK OPENINGS TO BE INSTALLED AFTER EQUIPMENT IS IN PLACE.

24. REINFORCING OF EXISTING STEEL BEAMS SHALL ONLY BE EXECUTED WHEN THE EXISTING EQUIPMENT DUCTS HAVE BEEN REMOVED AND PRIOR TO INSTALLATION OF NEW EQUIPMENT.

ISOMER PROJECT GROUP
115 WELBORN ST. SUITE A
GREENVILLE, SC 29601
www.isomer.group

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