STRUCTURAL STEEL

1. FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO AISC 360 "STEEL CONSTRUCTION MANUAL" (LRFD), FIFTEENTH EDITION, 2016, INCLUDING SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS, SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS, AND AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS.
2. STRUCTURAL STEEL SHAPES SHALL MEET THE FOLLOWING MINIMUM SPECIFICATIONS:
   A. FLANGE SHAPES..ASTM A992 OR A572, GRADE 50
   B. STRUCTURAL SHAPES & PLATES..................ASTM A36, A572 OR A992
   C. STEEL PIPE...ASTM A53, GRADE B
   D. STEEL TUBING (SQUARE OR RECT.)........... ASTM A500, GRADE C
   E. (ROUND)...ASTM A501, GRADE B
3. GALVANIZED STRUCTURAL STEEL:
   A. STRUCTURAL SHAPES AND RODS.............ASTM A123.
   B. BOLTS, FASTENERS AND HARDWARE......ASTM A153.
4. RAISED PATTERN FLOOR PLATE: ASTM A786.
5. ANCHOR RODS SHALL CONFORM TO ASTM F1554, GRADE 36 UNLESS NOTED OTHERWISE.
6. STEEL MEMBERS SHOWN ON PLAN SHALL BE EQUALLY SPACED UNLESS NOTED OTHERWISE.
7. THE STEEL STRUCTURE IS A NON-SELF-SUPPORTING STEEL FRAME AND IS DEPENDENT UPON DIAPHRAGM ACTION OF THE METAL (ROOF/FLOOR) DECK AND ATTACHMENT TO THE MASONRY WALLS FOR STABILITY AND FOR RESISTANCE TO WIND AND SEISMIC FORCES. PROVIDE ALL TEMPORARY SUPPORTS REQUIRED FOR STABILITY AND FOR RESISTANCE TO WIND AND SEISMIC FORCES UNTIL THESE ELEMENTS ARE COMPLETE AND ARE CAPABLE OF PROVIDING THIS SUPPORT.
8. CUTS, HOLES, COPING, ETC. REQUIRED FOR OTHER TRADES OR FIELD CONDITIONS SHALL BE SHOWN ON THE SHOP DRAWINGS AND MADE IN THE SHOP. CUTTING OR BURNING OF MAIN STRUCTURAL MEMBERS IN THE FIELD WILL NOT BE PERMITTED.
9. THE GENERAL CONTRACTOR AND STEEL ERECTOR SHALL NOTIFY THE STRUCTURAL ENGINEER OF ANY FABRICATION OR ERECTION ERRORS OR DEVIATIONS AND RECEIVE WRITTEN APPROVAL BEFORE ANY FIELD CORRECTIONS ARE MADE.
10. BEAMS AND GIRDERS SHALL HAVE BEAM WEB HOLES AS INDICATED ON THE STRUCTURAL DRAWINGS. ALL HOLES SHALL BE CENTERED AT MID-DEPTH OF THE BEAM UNLESS OTHERWISE NOTED. ALL RECTANGULAR WEB HOLES SHALL HAVE A MINIMUM CORNER RADIUS OF 5/8" OR TWICE THE THICKNESS OF THE BEAM WEB, WHICHEVER IS GREATER. ALL WEB OPENINGS SHALL BE MACHINE OXYGEN CUT. MANUAL CUTTING OR BURNING IS NOT PERMITTED. COORDINATE LOCATION AND SIZE OF HOLE WITH MECHANICAL CONTRACTOR PRIOR TO REVIEW BY THE STRUCTURAL ENGINEER.
11. STEEL SHOP DRAWINGS SHALL BE COORDINATED WITH STAIR DETAILS. IF HANGER RODS ARE USED, PROVIDE FITTED WELDED STIFFENER PUTE 1/4" THICK MIN. ALONGSIDE HANGER LOCATION.
12. SPANDRELS AND COLUMNS ADJACENT TO MASONRY SHALL HAVE ADJUSTABLE MASONRY TIES.
13. SPLICING OF STRUCTURAL STEEL MEMBERS WHERE NOT DETAILED ON THE CONTRACT DOCUMENTS IS PROHIBITED WITHOUT PRIOR WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER AS TO LOCATION, TYPE OF SPLICE AND CONNECTION TO BE MADE.
14. BEAMS SHALL BE CAMBERED UPWARD WHERE SHOWN ON THE CONTRACT DOCUMENTS. WHERE NO UPWARD CAMBER IS INDICATED, ANY MILL CAMBER SHALL BE DETAILED UPWARD IN THE BEAMS. CAMBER INDICATED ON PLAN IS AFTER FINAL ERECTION INCLUDING MILL TOLERANCES.
15. HEADED CONCRETE ANCHORS SHALL BE NELSON HEADED CONCRETE ANCHORS (OR APPROVED EQUAL), AND SHALL CONFORM TO ASTM A108. ANCHORS SHALL BE AUTOMATICALLY END WELDED WITH SUITABLE STUD WELDING EQUIPMENT IN THE SHOP OR IN THE FIELD. WELDING SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE NELSON STUD WELDING COMPANY OR THE KSM WELDING SYSTEMS COMPANY. LENGTH OF STUDS SHALL BE HEIGHT OF METAL DECK + 1-1/2". STUD HEIGHT SHALL BE FINAL STUD HEIGHT AFTER MELT OFF.
16. DEFORMED BAR ANCHORS (D.B.A.) SHALL BE NELSON DEFORMED BAR ANCHORS (OR APPROVED EQUAL), AND SHALL BE MADE FROM COLD-DRAWN WIRE CONFORMING TO ASTM A1064. ANCHORS SHALL BE AUTOMATICALLY END WELDED WITH SUITABLE WELDING EQUIPMENT IN THE SHOP OR IN THE FIELD. WELDING SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE NELSON STUD WELDING COMPANY OR THE KSM WELDING SYSTEMS COMPANY.
17. PROVIDE WELDED STIFFENER PLATES ON BOTH SIDES OF THE WEB OF BEAMS AT POINTS OF CONCENTRATED LOADS INCLUDING BEAMS SUPPORTING COLUMNS OR RUNNING OVER THE TOPS OF COLUMNS, OR OTHER BEAMS. MINIMUM STIFFENER PLATE THICKNESS SHALL BE 3/8" OR FLANGE THICKNESS OF COLUMN ABOVE OR BELOW OR BEAM WEB THICKNESS ABOVE OR BELOW, WHICHEVER IS GREATER.
18. FIELD WELDED SURFACES WITHIN FOUR (4) INCHES OF WELD SHALL BE CLEANED AND GROUND SMOOTH. AFTER WELDING COAT THE EXPOSED AREA WITH APPROPRIATE PRIMER/PAINTS AS SPECIFIED.
   A. IF STEEL IS GALVANIZED, COAT THE EXPOSED AREA WITH GALVANIZING REPAIR PAINT. GALVANIZING REPAIR PAINT SHALL BE A HIGH ZINC DUST CONTENT PAINT COMPLYING WITH FEDERAL SPECIFICATIONS DOD-P-21035A OR SSPC-PAINT-20, COLD GALVANIZING COMPOUND BY ZRC PRODUCTS CO. OR EQUAL.
19. REFER TO ARCHITECTURAL DRAWINGS FOR FIREPROOFING REQUIREMENTS. DELETE PAINT ON ALL STEEL TO RECEIVE SPRAYED-ON FIREPROOFING OR CONCRETE ENCASEMENT.
20. ALL DISSIMILAR METALS SHALL BE TREATED OR PROPERLY SEPARATED TO PREVENT GALVANIC AND/OR CORROSIVE EFFECTS.
21. ALL STEEL SHALL BE PAINTED WITH SHOP STANDARD PRIMER UNLESS NOTED OTHERWISE.
22. STEEL ANGLES AND PLATES ALONG WITH BOLTS AND WASHERS, IN DIRECT CONTACT WITH EXTERIOR FINISH MASONRY, AND ALL EXTERIOR EXPOSED STRUCTURAL STEEL SHALL BE PAINTED WITH INORGANIC ZINC PRIMER
23. ALL EXPOSED STEEL (INCLUDING BUT NOT LIMITED TO DUNNAGE FRAMING, SCREEN WALL FRAMING, CANOPY FRAMING, ETC.) SHALL BE HOT DIP GALVANIZED. ANY POINTS OF WELDING SHALL BE TOUCHED UP IN THE FIELD WITH A ZINC-RICH PAINT BY THE STEEL ERECTOR.
24. ALL STEEL BELOW SLABS ON GRADE SHALL RECEIVE TWO (2) COATS OF BITUMINOUS PAINT - OR 3" MINIMUM CONCRETE COVER.
25. ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY APPLYING AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH THE REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL CONTAIN 95% ZINC BY WEIGHT. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NO LESS THAN THE COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
26. ALL STRUCTURAL STEEL INCLUDING BOLTS AND OTHER HARDWARE THAT IS SUBJECT TO WETTING WITH SALT-LADEN WATER OR OTHER MILD CHEMICAL ATTACK (SUCH AS INDOOR SWIMMING POOL AREAS) SHALL BE COMMERCIAL BLAST CLEANED AND PAINTED WITH THREE COATS OF EPOXY PAINT IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL PAINTING SYSTEM SPECIFICATION NO. 13.01. A URETHANE TOPCOAT SHALL BE PROVIDED FOR ALL STEEL EXPOSED TO VIEW.

STEEL CONNECTIONS (BOLTING / WELDING)

1. CONNECTION BOLTS FOR STRUCTURAL STEEL MEMBERS SHALL MEET OR EXCEED THE REQUIREMENTS OF ASTM A325. BOLTS SHALL BE DESIGNED AS BEARING TYPE BOLTS, EXCEPT AS NOTED HEREIN OR ON PLAN. BEARING BOLTS SHALL BE INSTALLED IN ACCORDANCE WITH THE "SNUG TIGHT" CONDITION AS OUTLINED IN THE AISC SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS, AS COVERED IN ASTM F3125. BOLTS IN BRACING CONNECTIONS, MOMENT CONNECTIONS OR OTHER CONNECTIONS NOTED ON THE DRAWINGS ARE CONSIDERED TO BE SLIP-CRITICAL BOLTS AND SHALL BE TIGHTENED BY THE TURN-OF-NUT METHOD OR SHALL UTILIZE LOAD INDICATOR TYPE BOLTS, INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER. CONNECTION BOLTS SHALL HAVE HARDENED WASHER PLACED UNDER THE ELEMENT TO BE TIGHTENED.
2. THE FABRICATOR IS RESPONSIBLE FOR THE SELECTION, DESIGN AND DETAILING OF ALL CONNECTIONS NOT FULLY DETAILED IN THE CONTRACT DOCUMENTS. TYPICAL CONNECTION DETAILS ARE INDICATED ON THE DRAWINGS FOR DESIGN INTENT ONLY. THE FABRICATOR SHALL HAVE A REGISTERED PROFESSIONAL ENGINEER PREPARE THE CONNECTION DESIGNS, AND SUCH DESIGNS SHALL BE SUBMITTED FOR REVIEW WITH THE SHOP DRAWINGS. CONNECTIONS SHALL BE DESIGNED AND DETAILED IN ACCORDANCE WITH THE AISC "MANUAL OF STEEL CONSTRUCTION". THE END REACTION OF THE CONNECTIONED BEAM SHALL BE DETERMINED AS SPECIFIED IN NOTE 3. ALL BEAM TO COLUMN CONNECTIONS SHALL BE DESIGNED FOR THE MINIMUM SHEAR REACTION INDICATED ABOVE, IN ADDITION TO A NON-CONCURRENT AXIAL FORCE THAT IS THE GREATER OF: 10 KIPS, 2/3 SHEAR REACTION, OR 2% OF COLUMN LOAD (ACTING IN BOTH TENSION AND COMPRESSION).
3. STEEL CONNECTIONS IN HIGH-RISE CONSTRUCTION AS DEFINED BY THE INTERNATIONAL BUILDING CODE SHALL BE DESIGN FOR THE MINIMUM SHEAR REACTIONS INDICATED IN NOTE 2, IN ADDITION TO A NON-CONCURRENT AXIAL FORCE THAT IS THE GREATER OF:
   - 10 KIPS
   - 2% OF COLUMN LOAD (ACTING IN BOTH TENSION AND COMPRESSION)
   - 2/3 SHEAR REACTION
4. BEAM SHEAR CONNECTIONS SHALL BE DESIGNED TO SUPPORT THE LRFD (FACTORED) LOAD LEVEL SHEAR REACTIONS INDICATED ON DRAWINGS. DETAILER / FABRICATOR SHALL CONTACT E.O.R. FOR ANY BEAM REACTIONS NOT SPECIFICALLY DESIGNATED ON PLAN. BEAM WEB SHEAR CONNECTIONS SHALL BE DETAILED SO THAT THE LENGTHS OF THE CONNECTION PLATES OR ANGLES ARE NO LESS THAN ONE-HALF OF THE "T" DIMENSION OF THE SUPPORTED BEAMS. WHERE REACTIONS ARE NOT SHOWN, CONNECTIONS SHALL BE DETAILED TO SUPPORT THE FACTORED-LOAD LEVEL REACTIONS INDICATED IN THE TABLE BELOW:

BEAM SIZE	R_u
W8, W10, W12	30k
W14	35k
W16	45k
W18	65k
W21	85k
W24	95k

BEAM SIZE	R_u
W27	105k
W30	115k
W33	125k
W36	150k
W40	165k

CONNECTION DESIGN RESPONSIBILITY SHALL INCLUDE CALCULATION OF MEMBER STRENGTH AT CONNECTIONS CONSIDERING THE EFFECTS OF COPES, BOLT HOLES CONNECTION ECCENTRICITY AND CONNECTION GEOMETRY AND SHALL CONSIDER ALL LIMIT STATES INCLUDING BUT NOT LIMITED TO REVIEW OF GROSS SHEAR,NET SHEAR, BLOCK SHEAR, WEB TEAR-OUT, BEARING, FLEXURAL STRENGTH, LOCAL BUCKLING,TENSILE STRENGTH THROUGH BOTH THE NET AND GROSS SECTIONS, COMPRESSIVE STRENGTH AND DUCTILITY. DESIGN OF CONNECTIONS SHALL BE IN ACCORDANCE WITH RECOGNIZED PUBLISHED METHODS SUCH AS THOSE PUBLISHED IN THE AISC "ENGINEERING JOURNAL", THE AISC STEEL CONSTRUCTION MANUAL AND THE AISC STEEL CONSTRUCTION MANUAL DESIGN EXAMPLES. CONNECTION DESIGN SHALL CONSIDER TRANSFER FORCES THROUGH CONNECTED AND CONNECTING MEMBERS. CONNECTION DESIGN RESPONSIBILITY SHALL INCLUDE ANALYSIS AND DESIGN OF PLATES, BRACKETS, STRUTS, STIFFENER PLATES, GUSSET PLATES AND OTHER ELEMENTS TO TRANSFER FORCES INTO AND BETWEEN MEMBERS. MANUAL CALCULATIONS SHALL BE SUBMITTED FOR EACH CONNECTION TYPE TO VERIFY THAT CONNECTIONS DESIGNED USING COMPUTER SOFTWARE CONSIDER ALL LIMIT STATES AND PRODUCE RESULTS IDENTICAL TO THE MANUAL CALCULATIONS.

5. WELDERS SHALL HAVE CURRENT EVIDENCE OF PASSING THE APPROPRIATE AWS QUALIFICATION TESTS. THE ENGINEER MAY REQUEST SUCH EVIDENCE AT ANY TIME DURING THE PROJECT.
6. WELDING SHALL CONFORM TO THE LATEST AMERICAN WELDING SOCIETY STANDARD D1.1. I-80 ELECTRODES FOR SHOP AND FIELD WELDS SHALL CONFORM TO AWS A5.1 OR AWS A5.5 CLASS E70XX, LOW HYDROGEN. MINIMUM WELD SIZE SHALL BE 3/16" UNLESS NOTED OTHERWISE.
7. WELDING TO THE EXISTING STEEL WILL NOT BE ALLOWED AND THE CONTRACTOR SHALL ANTICIPATE USING FIELD BOLTED CONNECTIONS TO THE EXISTING STEEL.
8. ALL BRACING OR TRUSS CONNECTIONS, WHICH HAVE NOT BEEN SPECIFICALLY DETAILED, SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROJECT'S JURISDICTION FOR THE FORCES NOTED ON THE ELEVATIONS AND DETAILS. THIS SHALL INCLUDE ALL GUSSET PLATES, FILLER PLATES, ANGLES, STIFFENERS, BOLTS OR WELDS, OR OTHER MATERIAL REQUIRED FOR THE CONNECTION. STAMPED CALCULATIONS FOR THE CONNECTION DESIGN SHALL BE SUBMITTED ALONG WITH THE SHOP DRAWINGS FOR REVIEW BY THE ENGINEER.
9. GUSSET PLATE CONNECTIONS SHALL BE SIZED FOR 100% OF THE AXIAL FORCES INDICATED ON THE ELEVATIONS. DESIGN ALL GUSSET PLATES AND CONNECTORS AS REQUIRED FOR COMPLIANCE WITH AISC. PROVIDE STIFFENER PLATES AS REQUIRED AT THE GUSSET PLATE CONNECTIONS.
10. THE NET AREA (REFER TO AISC SECTION B2 AND B3) AT THE CONNECTION OF ANY BRACING MEMBER SHALL NOT BE LESS THAN 85 PERCENT OF THE GROSS CROSS SECTIONAL AREA OF THE MEMBER. ADDITIONAL PLATES SHALL BE ADDED AS NECESSARY TO MAINTAIN THE MINIMUM NET CROSS SECTIONAL AREA. SUCH PLATES SHALL EXTEND A MINIMUM DISTANCE EQUAL TO THE DEPTH OF THE MEMBER PAST THE LAST ROW OF BOLTS.
11. ALL CONNECTIONS SHALL BE SYMMETRICAL ABOUT THE AXIS OF THE MEMBER CONNECTED. PROVIDE ONLY ONE GRADE OF BOLT FOR EACH BOLT DIAMETER TO BE USED IN THE CONNECTIONS. DO NOT MIX GRADE OF BOLTS.
12. PRIOR TO DETAILING CONNECTIONS FOR STRUCTURAL STEEL, THE STEEL FABRICATOR SHALL SUBMIT FOR REVIEW REPRESENTATIVE DETAILS AND CALCULATIONS FOR EACH TYPE OF STRUCTURAL STEEL CONNECTION TO BE UTILIZED. AFTER REVIEW, THE CONNECTIONS MAY BE INCORPORATED INTO SHOP DRAWINGS, ALONG WITH A TABLE OF DESIGN CAPACITIES FOR THE RANGE OF CONNECTIONS TO BE USED.
13. VISUALLY INSPECT ALL FILLET WELDS. 10% OF ALL FIELD FILLET WELDS IN PRIMARY CONNECTIONS AND MULTI-PASS WELDS SHALL BE TESTED BY THE MAGNETIC PARTICLE METHOD, COMPLYING WITH ASTM E709, PERFORMED ON THE ROOT PASS AND ON THE FINISHED WELD.
14. 100% OF FULL PENETRATION WELDS SHALL HAVE ULTRASONIC INSPECTION, COMPLYING WITH ASTM E164.
15. 100% OF WELDS IN BEAM AND COLUMN MOMENT CONNECTIONS SHALL HAVE ULTRASONIC INSPECTION, COMPLYING WITH ASTM E164.
16. REPORTS OF EACH TEST SHALL BE GIVEN TO THE STRUCTURAL ENGINEER. NO FAILED WELD SHALL BE PERMITTED TO REMAIN IN SERVICE. IT IS THE RESPONSIBILITY OF THE TESTING UBORATORY TO PROVIDE TIMELY NOTICE OF FAILED TESTS TO THE CONTRACTOR.

WOOD CONSTRUCTION

1. WOOD FRAMING HAS BEEN DESIGNED AND DETAILED IN ACCORDANCE WITH THE "NATIONAL DESIGN SPECIFICATIONS FOR WOOD CONSTRUCTION" (NDS 2018) AND SHALL BE CONSTRUCTED ACCORDING TO GENERALLY ACCEPTED WOOD FRAMED CONSTRUCTION PRACTICES IN ACCORDANCE WITH WOOD FRAMED CONSTRUCTION MANUAL (WFCM 2018).
2. ALL HEAVY TIMBER CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH AMERICAN WOOD COUNCIL "GUIDE SPECIFICATIONS FOR STRUCTURAL TIMBER FRAMING" (WCD5 2004, TFEC 2018).
3. WOOD FRAMING SHALL BE GRADED BY A RECOGNIZED AGENCY WITH RULES AND SERVICE COMPLYING WITH REQUIREMENTS OF AMERICAN LUMBER STANDARDS COMMITTEE AND PS 20. GRADING RULES FOR SPECIES OF TIMBER SHALL BE AS FOLLOWS:
   SPIB - SOUTHERN PINE INSPECTION BUREAU
   WCLIB - WEST COAST LUMBER INSPECTION BUREAU
   WWPA - WESTERN WOOD PRODUCTS ASSOCIATION
4. DELIVERY OF CONSTRUCTION MATERIALS SHALL BE COORDINATED WITH INSTALLATION OF WOOD FRAMING TO AVOID EXTENDED ON-SITE STORAGE. ALL STRUCTURAL WOOD FRAMING SHALL BE PROTECTED DURING DELIVERY, STORAGE, HANDLING AND ERECTION. DO NOT STORE IN AREAS OF EITHER EXCESSIVELY HIGH OR EXCESSIVELY LOW HUMIDITY.
5. ALL GRADES OF SOLID (SAWN) LUMBER SHALL MEET THE FOLLOWING MINIMUM SPECIFICATIONS FOR SPECIES, STRESS RATINGS, MOISTURE CONTENT AND OTHER PROVISIONS AS SHOWN AND SPECIFIED:
6. ENGINEERED LUMBER PRODUCTS SHALL BE OF WIDTH AND DEPTH AS SPECIFIED ON DRAWINGS. MULTIPLE PLY MEMBERS SHALL BE ASSEMBLED IN ACCORDANCE WITH THE MANUFACTURERS ASSEMBLY DETAILS. THE FOLLOWING MINIMUM STRUCTURAL PROPERTIES SHALL APPLY:

WOOD PROPERTIES

NAME	F_b (PSI)	F_v (PSI)	$F_{c\perp}$ (PSI)	F_t (PSI)	$F_{c//}$ (PSI)	E (KSI)
CONVENTIONAL 2x FRAMING						
HEM-FIR (NO 2.) (1)(2)	850	150	525	405	1,300	1,300
DOUGLAS-FIR LARCH (NO 2.) (1)(2)	850	180	525	520	1,350	1,200
SOUTHERN PINE (NO 2.) (1)(2)(3)	1,500	175	825	565	1,650	1,600
ENGINEERING LUMBER						
PSL PARALLAM 2.0E) (BEAM)	2,900	290	625	2,025	2,900	2,000
PSL PARALLAM 1.8E) (POST)	2,400	190	545	1,755	2,500	1,800
LVL (MICROLAM 2.0E)	2,600	285	750	1,895	2,510	2,000
LSL (TIMBERSTRAND 1.3E) (BEAM/POST)	1,700	425	710	1,075	1,835	1,300
ANTHONY BOWER BEAM (APB300Fb)	3,000	300	805	1,850	1,350	2,100

NOTES:
1. EXCEPT AS OTHERWISE INDICATED, SAWN LUMBER SHALL BE DRIED TO MAXIMUM MOISTURE CONTENT OF 19%, AND INCLUDE "S-DRY" OR SIMILAR INDICATION IN CERTIFICATION OF GRADE.
2. SAWN LUMBER SHALL BE DRESSED ON 4 SIDES (S4S) AT MILL, PRIOR TO GRADING. COMPLY WITH GRADE SIZES.
3. WOOD SPECIES TO BE USED FOR PRESSURE TREATED LUMBER

7. WALL, FLOOR & ROOF SHEATHING SHALL BE APA RATED SHEATHING MEETING THE FOLLOWING MINIMUM SPECIFICATIONS, UNLESS OTHERWISE NOTED WITHIN CONSTRUCTION DOCUMENTS:

   EXTERIOR WALL SHEATHING
   EXPOSURE 1, 7/16" (1/2" NOMINAL). WALL SHEATHING SHALL BE FASTENED TO SUPPORTING MEMBERS WITH 10D COMMON WIRE NAILS AT 6" O.C (EDGES) & 12" O.C. (INTERMEDIATE SUPPORTS).

   SHEAR WALL SHEATHING
   EXPOSURE 1, 7/16" (1/2" NOMINAL) OSB SHEATHING. SHEAR WALL SHEATHING SHALL BE FASTENED WITH NAILING PATTERN INDICATED ON DRAWINGS.

   FLOOR SHEATHING (JOISTS AT 16" O.C.)
   3/4" TONGUE & GROOVE PLYWOOD GLUED AND SCREWED TO WOOD FRAMED FLOOR STRUCTURE. FLOOR SHEATHING SHALL BE FASTENED TO SUPPORTING MEMBERS WITH #8 WOOD SCREWS A 6" O.C. (EDGES) & 12" O.C. (INTERMEDIATE SUPPORTS)

   ROOF SHEATHING
   EXPOSURE 1, 19/32" (5/8" NOMINAL). ROOF SHEATHING SHALL BE FASTENED TO SUPPORTING MEMBERS WITH 8d COMMON WIRE NAILS AT 4" O.C. (EDGES) & 12" O.C. (INTERMEDIATE SUPPORTS).
8. ALL EXTERIOR SHEATHING SHALL BE VISUALLY INSPECTED FOR WARPING AND OTHER DEFECTS DUE TO WATER ABSORPTION PRIOR TO THE INSTALLATION OF ARCHITECTURAL FINISHES. IF DEFECTS DO OCCCUR, SHEATHING MUST BE REMOVED AND REPLACED.
9. ALL WOOD IN CONTACT WITH CONCRETE OR MASONRY AND/OR EXPOSED TO WEATHER (I.E. DECK JOISTS, GIRDERS, LEDGER BOARDS, POSTS, AND ANY OTHER EXPOSED FRAMING) SHALL BE PRESSURE TREATED.
10. PRESSURE TREATED WOOD MEMBERS HALL BE TREATED WITH WATERBORNE PRESERVATIVES IN ACCORDANCE WITH AWPA STANDARD U1 TO THE USE CATEGEORY BELOW. THE USE CATEGORY INDICATED IS THE MINIMUM REQUIRED AND A USE CATEGROY GREATER THAN UC4A IS NOT PERMITTED UNLESS GIVEN APPROVAL BY E.O.R.

    SILL PLATE & INTERIOR LEDGERS = UC2
    DECK BOARDS = UC3B
    JOSITS, RAFTERS, BEAMS, POSTS, & EXTERIOR LEDGERS = UC4A
11. PRESSURE TREATED PRESERVATIES MUST BE ABLE TO MEET THE REQUIRED AWPA USE CATEGORY LISTED ABOVE WITHOUT INCISING THE MEMBER.
12. JOIST BRIDGING EXCEEDING A NOMINAL 2 INCHES BY 12 INCHES SHALL BE SUPPORTED LATERALLY BY SOLID BLOCKING, DIAGONAL BRIDGING (WOOD OR METAL), OR A CONTINUOUS 1-INCH-BY-3-INCH GAUGE METAL STRAP, PERPENDICULAR TO JOISTS, NAILED ACROSS THE BOTTOM OF THE JOISTS AT INTERVALS NOT EXCEEDING 8 FEET.
13. NAILED CONNECTIONS FOR WOOD FRAMING SAWN LUMBER MEMBERS SHALL BE IN ACCORDANCE WITH THE WOOD FRAME CONSTRUCTION MANUAL FOR ONE-AND-TWO FAMILY DWELLINGS (WFCM 2018); NAILED / SCREWED CONNECTIONS FOR BUILT-UP MICROLLAM LVL BEAMS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. REFERENCE TYPICAL DETAILS.
14. MINIMUM BEARING AT THE ENDS OF WOOD FRAMING SHALL MEET THE FOLLOWING MINIMUM SPECIFICATIONS UNLESS NOTED OTHERWISE ON PLAN
    A. JOISTS: 1-1/2" ON WOOD OR STEEL
    B. BEAMS / GIRDERS: 3" ON WOOD OR STEEL
    C. BEARING LENGTH AS PER THE SPECIFIED JOIST HANGER FOR ASSOCIATED MEMBER BASED ON HANGER SCHEDULES
15. HOLES / PENETRATIONS WITHIN SOLID SAWN LUMBER AND ENGINEERED I-JOISTS / LUMBER SHALL MEET THE SPECIFICATIONS PROVIDED MANUFACTURERS. GENERAL CONTRACTOR SHALL CONTACT ENGINEER OF RECORD FOR HOLES / PENETRATIONS NOT CONFORMING WITH MANUFACTURERS SPECIFICATIONS.
16. ALL POSTS SHALL BE SQUASH BLOCKED AT EACH FLOOR LEVEL AND CONTINUOUS THROUGH BUILDING UNLESS TERMINATED OVER A HEADER OR TRANSFER BEAM AS INDICATED ON PLAN. WHERE NOTED ON PLAN, PSL POSTS SHALL HAVE SILL PLATES AND TOP PLATES OMITTED AND BE CONTINUED FROM SUB-FLOOR TO SUB-FLOOR (TO MITIGATE CRUSHING OF PLATE).
17. ALL POSTS SHALL BE SQUASH BLOCKED AT EACH FLOOR LEVEL AND CONTINUOUS THROUGH BUILDING UNLESS TERMINATED OVER A HEADER OR TRANSFER BEAM AS INDICATED ON PLAN. WHERE NOTED ON PLAN, PSL POSTS SHALL HAVE SILL PLATES AND TOP PLATES OMITED AND BE CONTINUED FROM SUB-FLOOR TO SUB-FLOOR (TO MITIGATE CRUSHING OF PLATE).
18. ALL SPECIFIED GAUGE METAL HANGERS, HOLD-DOWNS, AND OTHER CONNECTORS SHALL BE PROVIDED BY SIMPSON STRONG-TIE AND INSTALLED PER THE MANUFACTURERS SPECIFICATIONS (UNLESS NOTED OTHERWISE). IF ALTERNATE HARDWARE IS PROVIDED IT MUST BE AN APPROVED EQUAL PRODUCT AND THE CONTRACTOR MUST SUBMIT THE PRODUCTS SPECIFICATION TO THE ENGINEER ON RECORD.
19. ALL GAUGE METAL HARDWARE THAT WILL BE EXPOSED TO WEATHER SHALL HAVE "ZMAX" HOT DIP GALVANIZED COATING. IN ADDITION, ALL CONNECTING SCREWS AND NAILS SHALL ALSO BE HOT DIPPED GALVANIZED.
20. BOLT HEADS AND NUTS BEARING ON WOOD SHALL BE PROVIDED WITH STANDARD CUT WASHERS
21. ALL WOOD IN CONTACT WITH CONCRETE OR MASONRY AND/ OR EXPOSED TO WEATHER (I.E. DECK JOISTS, LEDGER BOARDS) SHALL BE PRESSURE TREATED.
22. ALL STEEL BEAMS SHALL HAVE TOP FLANGE / WEB HOLES FOR CONNECTION OF WOOD PLATES & PACK-OUT MATERIAL. CONTRACTOR SHALL REVIEW AND COORDINATE ALL FLANGE PLATES AND WEB PACK-OUT. MINIMUM CONNECTIONS SHALL BE AS FOLLOWS:
    A. BEAM TOP FLANGE: 1/2" DIA. BOLTS (9/16" DIA. HOLE) AT 48" O.C. (STAGGER HOLES)
    B. BEAM WEB: 1/2" DIA. BOLTS (9/16" DIA. HOLE) AT 24" O.C. (STAGGER HOLES)

    IN LIEU BOLTED TOP PLATE, CONTRACTOR MAY INSTALL WOOD PLATE VIA. POWDER-ACTUATED FASTENERS OR SIMPSON "TB-SCREWS". REFERENCE "TYPICAL STEEL BEAM BRACING DETAIL" FOR ADDITIONAL INFORMATION. BEAMS WITH FLANGES GREATER THAN 5/16" THICKNESS ONLY ALLOW FOR THE USE OF THRU-BOLTS CONNECTING THE WOOD PLATE TO THE TOP OF THE FLANGE OF THE BEAM.

PREFABRICATED WOOD TRUSSES

1. WOOD TRUSSES SHALL BE FABRICATED BY AN AUTHORIZED TRUSS MANUFACTURER. ENGINEERING DRAWINGS CONFORMING WITH THE DESIGN LOAD AND DEFLECTION CRITERIA SHALL BE SUBMITTED FOR APPROVAL BEFORE FABRICATION. THEY SHALL BEAR THE SEAL OF A REGISTERED PROFESSIONAL ENGINEER.
2. DESIGN STANDARDS SHALL CONFORM WITH THE APPLICABLE PROVISION OF THE "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION", PUBLISHED BY THE NATIONAL FOREST PRODUCTS ASSOCIATION, AND "THE DESIGN SPECIFICATIONS FOR THE METAL PLATE CONNECTED WOOD TRUSSES", PUBLISHED BY THE TRUSSES PLATE INSTITUTE.
3. ALL CONNECTOR PLATES SHALL BE A MINIMUM THICKNESS OF 0.036" AND SHALL BE MANUFACTURED FROM STEEL MEETING THE REQUIREMENTS OF ASTM A446 GRADE A, AND SHALL BE HOT DIP GALVANIZED ACCORDING TO ASTM A525.
4. LUMBER DEFECTS SUCH AS WANE AND KNOTS OCCURRING ON THE CONNECTOR PLATE AREA MUST NOT AFFECT MORE THAN TEN PERCENT OF REQUIRED PLATE AREA OR NUMBER OF EFFECTIVE TEETH REQUIRED FOR EACH TRUSS MEMBER. CONNECTOR PLATES SHALL BE APPLIED TO BOTH FACES OF TRUSS AT EACH JOINT, AND SHALL PROVIDE FIRM EVEN CONTACT BETWEEN THE PLATE AND THE WOOD. ALL WOOD MEMBERS SHALL BE ACCURATELY CUT AND FABRICATED SO THAT ALL MEMBERS HAVE GOOD BEARING AND ALL COMPLETED TRUSS UNITS ARE UNIFORM. REFER TO TRUSS PLATE INSTITUTE QUALITY CONTROL MANUAL QCM 77 FOR TOLERANCES AND OTHER SPECIAL REQUIREMENTS.
5. ALL TRUSSES MUST BE SECURELY BRACED BOTH DURING ERECTION AND AFTER PERMANENT INSTALLATION IN A BUILDING IN ACCORDANCE WITH "BCSI GUIDE TO GOOD PRACTICE FOR HANDLING, INSTALLING, AND BRACING OF METAL CONNECTED WOOD TRUSSES". ERECTION BRACING SHALL HOLD TRUSSES STRAIGHT AND PLUMB AND IN SAFE CONDITION UNTIL DECKING AND PERMANENT BRACING HAS BEEN FASTENED FORMING A STRUCTURALLY SOUND ROOF FRAMING SYSTEM. ALL ERECTION AND PERMANENT BRACING SHALL BE INSTALLED AND ALL TRUSSES PERMANENTLY FASTENED BEFORE APPLICATION OF ANY LOADS. PERMANENT STRUCTURAL CROSS BRACING TO ENSURE OVERALL RIGIDITY OF THE ROOF SYSTEM SHALL BE IN ACCORDANCE WITH ARCHITECTURAL/ENGINEERING PLANS FOR THE BUILDING STRUCTURE.
6. WHERE CONVENTIONAL FRAMING AND/OR TRUSSES FRAME INTO ONE ANOTHER, PROVIDE STEEL HANGERS, CLIPS, ETC. TO PROVIDE FULL LATERAL AND VERTICAL SUPPORT. REFERENCE BEAM HANGER SCHEDULE IN TYPICAL DETAIL.
7. TRUSS MANUFACTURER SHALL DESIGN ROOF TRUSSES TO SUPPORT ADDITIONAL SNOW LOADS AS REQUIRED DUE TO UNBALANCED LOADING AND DRIFTING SNOW IN ACCORDANCE WITH ASCE 7.
8. TRUSS CAMBER MUST NOT EXCEED THE DEAD LOAD DEFLECTION OF THE TRUSS.
9. MECHANICAL DUCT CHASES THROUGH TRUSSES SHALL BE COORDINATED WITH MEP DRAWINGS. REFERENCE DUCT OPENING ELEVATION AND SCHEDULES FOR SIZE REQUIREMENTS
10. TRUSSES TO BE INSTALLED WITH A MIN 2x6 RIBBON BOARD (CONT.) U.N.O.
11. TRUSSES TO BE ATTACHED TO WOOD TOP PLATES PER TYPICAL WOOD FASTENING SCHEDULE U.N.O.
12. ALL TRUSSES TO HAVE A MINIMUM BEARING LENGTH OF 2-1/4".
13. ALL FIELD MODIFICATIONS TO TRUSSES MUST BE REVIEWED BY THE TRUSS MANUFACTURER AND DESIGNER PRIOR TO MODIFICATIONS
14. TRUSS MANUFACTURER IS RESPONSIBLE FOR THE CONNECTION OF PIGGY BACK TRUSSES.
15. ALL UPLIFT CONNECTIONS ARE DESIGNED BASED ON DOUG-FIR WOOD TRUSSES.
16. THE BOTTOM CHORD OF ALL TRUSSSES TO BE BRACED BY EITHER A GYPSUM CEILING, OR 2x6 BRACING AT 10' O.C.
17. PROVIDE FULL DEPTH BLOCKING BENEATH WOOD POST ABOVE.
18. TOP CHORD OF TRUSSES TO BE DESIGNED FOR DEAD AND LIVE LOAD INDICATED IN THE DESIGN LOAD SCHEDULE. THE BOTTOM CHORD OF ROOF TRUSSES SHALL BE DESIGNED FOR AN ADDITIONAL DEAD LOAD OF 7 PSF AND LIVE LOAD OF 10 PSF. ROOF TRUSSES WITH A MINIMUM CLEARANCE BETWEEN CHORDS OF 42" AND A BOTTOM CHORD SLOPE LESS THAN 3:12 SHALL BE DESIGNED FOR AN INCREASED BOTTOM CHORD LIVE LOAD OF 20PSF.
19. ALL FLOOR TRUSSES TO BE DESIGNED FOR PARTITION LOADING UNLESS THE FOLLOWING CRITERIA IS MET:
    A. TRUSS SPACING IS LESS THAN OR EQUAL TO 24" O.C.
    B. ALL TOP CHORD PANEL LENGTHS OF SUPPORTING TRUSSES ARE LESS THAN OR EQUAL TO 30" WHEN THE LUMBER IS ORIENTED IN THE FLAT DIRECTION
    C. DESIGN LIVE LOAD OF SUPPORTING TRUSSES RESULTS FROM A RESIDENTIAL OCCUPANCY IS AND IS NOT LESS THAN 40 PSF
    D. PARTITION WALL WEIGHT IS LESS THAN 60 LBS/FT. (SEE TABLE BELOW)
       a. ALTERNATIVELY, WEIGHT OF PARTITION LOADS CAN BE OMITTED IF THE TRUSSES ARE DESIGNED FOR THE WEIGHT OF EACH INDIVIDUAL WALL.

PARTITION WALL HEIGHT

SHEATHING	2x4 HEIGHT	2x6 HEIGHT
(1) 1/2" GYPSUM LAYER (EACH SIDE)	11'-4"	10'-2"
(1) 5/8" GYPSUM LAYER (EACH SIDE)	9'-6"	9'-0"

20. ALL TRUSSES SHALL MEET THE FOLLOWING DEFLECTION CRITERIA.
    D. TOTAL DEFLECTION = L/240
    E. LIVE LOAD DEFLECTION (ROOF) = L/360
    F. LIVE LOAD DEFLECTION (STANDARD - CARPET/ HARDWOOD/ LVT) = L/480
    G. LIVE LOAD DEFLECTION (BRITTLE FINISHES - TILE/ STONE) = L/600
21. THE DIFFERENTIAL DEFLECTION OF ADJACENT FLOOR TRUSSES MUST NOT EXCEED VALUE LISTED IN TABLE BELOW

MAX. DIFFERENTIAL DEFLECTION

DEFLECTION LIMIT	TRUSS SPACING			
	12" O.C.	16" O.C.	19.2" O.C.	24" O.C.
L/240	0.1"	0.13"	0.16"	0.2"
L/360	0.07"	0.09"	0.11"	0.13"
L/480	0.05"	0.07"	0.08"	0.1"
L/600	0.04"	0.05"	0.06"	0.08"

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Mk	DATE:	REMARKS
1	12/08/23	ISSUED FOR PERMIT

PROJECT:
Proposed Building
Okeechobee (Shul)
FL-78 & Access Road
Okeechobee, Florida, 34978

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