MASONRY NOTES

1. ALL MASONRY DESIGN & CONSTRUCTION, REINFORCED AND UNREINFORCED, SHALL COMPLY WITH THE REQUIREMENTS OF THE "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES", (TMS 402), AND THE "SPECIFICATION FOR MASONRY STRUCTURES," (TMS 602).

2. MASONRY UNITS SHALL BE MEDIUM WEIGHT HOLLOW CONCRETE UNITS CONFORMING TO THE REQUIREMENTS OF ASTM C90. CONCRETE MASONRY UNITS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2800PSI TO OBTAIN A MASONRY NET AREA COMPRESSIVE STRENGTH (F'm) OF 2000PSI AT 28 DAYS. UNITS SHALL NOT BE INSTALLED PRIOR TO ATTAINING THE REQUIRED 28 DAY STRENGTH.

3. MORTAR SHALL CONFORM TO ASTM C270, TYPE M OR S. ALL PORTLAND CEMENT SHALL CONFORM TO ASTM C150, TYPE I. LIME SHALL CONFORM TO ASTM C207 AND MASONRY CEMENT SHALL CONFORM TO ASTM C91.

4. GROUT SHALL CONFORM TO ASTM C476 AND SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI. SLUMP OF GROUT SHALL BE 8 TO 10 INCHES AND THE MAXIMUM AGGREGATE SIZE SHALL BE 3/8" (AGGREGATE GRADED TO PRODUCE FINE GROUT IN CONFORMANCE WITH ASTM C476 AND C404).

5. HORIZONTAL JOINT REINFORCING: ASTM A82; 9-GAGE TRUSS-TYPE, GALVANIZED.

6. DEFORMED BAR REINFORCEMENT SHALL CONFORM TO ASTM A615, GRADE 60 AND SHALL BE FULL HEIGHT OF WALLS UNLESS OTHERWISE NOTED. PROVIDE BAR SPACERS AND POSITIONERS AS REQUIRED TO PROPERLY LOCATE AND STABILIZE REINFORCING DURING GROUTING OPERATIONS. GROUT ALL REINFORCED CELLS SOLID WITH GROUT.

7. SPLICES OF REINFORCING STEEL SHALL BE MADE ONLY AT THOSE LOCATIONS WHERE SPLICES ARE SHOWN ON THE STRUCTURAL DRAWINGS AND AT THOSE LOCATIONS WHERE SPLICES HAVE BEEN DETAILED ON THE REINFORCING STEEL PLACEMENT DRAWINGS THAT HAVE BEEN REVIEWED AND APPROVED BY THE ENGINEER OF RECORD.

8. PROVIDE VERTICAL MASONRY CONTROL JOINTS AT MAXIMUM 25'-0" ON CENTER UNLESS DETAILED ON ARCHITECTURAL DRAWINGS, COORDINATE LOCATIONS WITH ARCHITECT.

9. BOND BEAMS SHALL BE PROVIDED AT THE TOPS OF ALL CMU WALLS AND AT HORIZONTAL INTERVALS NOT TO EXCEED 10FT O.C. VERTICALLY. UNLESS INDICATED ON DRAWINGS,

10. VERTICAL CONTROL JOINTS SHALL BE PLACED SUCH THAT THE RATIO OF JOINT SPACING (L) DIVIDED BY WALL HEIGHT (H) DOES NOT EXCEED 3.0. IN NO CASE SHALL SPACING EXCEED 50 FT. CONTROL JOINTS SHALL BE CONSTRUCTED USING SASH BLOCKS AND DUR-O-WAL PREFORMED REGUUR RAPID CONTROL JOINT (OR EQUAL OF EXTRUDED RUBBER.) WALL REINFORCING SHALL BE DISCONTINUOUS AT JOINTS. VERTICAL JOINTS SHALL BE LOCATED AS FOLLOWS:

    A. CHANGES IN WALL HEIGHT OR THICKNESS.
    B. AT CONSTRUCTION/BUILDING EXPANSION JOINTS IN FOUNDATION, IN ROOF, AND IN FLOORS.

11. CONCRETE MASONRY UNITS SHALL BE LAID IN RUNNING BOND UNLESS INDICATED BY THE ARCHITECTURAL DRAWINGS. PROVIDE FULL BED AND HEAD JOINTS.

12. INSTALL FLASHING AT ALL CONDITIONS SUCH AS LINTELS AND SHELF ANGLES, WHERE THE DOWNWARD FLOW OF WATER WITHIN THE MASONRY WILL BE INTERRUPTED.

13. HOLLOW CONCRETE UNITS BELOW GRADE SHALL BE HAVE ALL CELLS GROUTED SOLID.

14. REINFORCE ALL BOND BEAMS WITH A MINIMUM 2 CONTINUOUS #5 BARS WITH MINIMUM 3000 PSI SMALL AGGREGATE CONCRETE (NOTE: MORTAR MIX DOES NOT CONSTITUTE GROUT). PROVIDE WALL ANCHORS TO ALL BUILDING COLUMNS AT MAXIMUM 48" VERTICAL AND AT ALL BOND BEAMS.

15. BOND BEAM UNITS SHALL BE OPEN CELL UNITS THAT PERMIT VERTICAL REINFORCING TO PASS THROUGH. WHERE BOND BEAMS COURSES STEP DUE TO SLOPING CONDITIONS, LAP REINFORCING A MINIMUM OF 4 FEET. PROVIDE MINIMUM BOND BEAM REINFORCING AS FOLLOWS, UNLESS NOTED OTHERWISE:

    A. EXTERIOR WALLS: (2) #4 x CONT. BELOW EACH FRAMING LEVEL.
    B. PARAPETS: (2) #4 x CONT. BELOW EACH FRAMING LEVEL.
    C. INTERIOR BEARING WALLS: (1) #5 x CONT. BELOW EACH FRAMING LEVEL.
    D. INTERIOR NON-LOAD BEARING WALLS: (2) #4 x CONT. BELOW EACH FRAMING LEVEL.

17. PROVIDE AND INSTALL TEMPORARY BRACING REQUIRED INSURING STABILITY OF ALL WALLS DURING CONSTRUCTION AND UNTIL ERECTION OF ATTACHED STRUCTURAL FRAMING IS COMPLETED.

18. PROVIDE GALVANIZED HORIZONTAL JOINT REINFORCEMENT IN ALL WALLS AND PARTITIONS AT 16" O.C. UNLESS OTHERWISE SHOWN OR NOTED. PROVIDE ONE (1) PIECE PREFABRICATED UNITS AT 8" O.C. AT ALL WALL CORNERS AND INTERSECTIONS.

19. ALL MORTAR JOINTS ON EXPOSED WALLS SHALL BE STRUCK TO PRODUCE A DENSE, SLIGHTLY CONCAVE SURFACE WELL BONDED TO THE SURFACE OF THE MASONRY UNIT.

20. REINFORCEMENT SHALL BE PLACED ACCURATELY AND SECURED AT INTERVALS NOT TO EXCEED 72 INCHES. MINIMUM SPACING BETWEEN BARS OR MASONRY SURFACES SHALL BE ONE BAR DIAMETER. LAPPED SPLICES SHALL BE A MINIMUM OF 48 BAR DIAMETERS. PROVIDE LAP-JOINT TIE FOR EACH SPLICE.

21. ALLOW GROUT IN REINFORCED CMU WALLS TO CURE A MINIMUM OF 48 HOURS BEFORE IMPOSING CONCENTRATED OR OTHER LOADS FROM ABOVE.

22. PROVIDE MASONRY ANCHORS AT 16" O.C. SET ON COURSING AND ATTACHED TO ALL BEAMS, COLUMNS, PARTITIONS, AND WALLS ABUTTING OR EMBEDDED IN MASONRY UNLESS NOTED OTHERWISE ON ARCHITECTURAL AND STRUCTURAL DRAWINGS.

23. NO AIR-ENTRAINING ADMIXTURES OR ANTIFREEZE COMPOUNDS, SUCH AS CALCIUM CHLORIDE SHALL BE ADDED TO MORTAR.

24. ALL WALLS OR PILASTERS SUPPORTING STEEL AT BEARING PUTES SHALL BE GROUTED SOLID FOR FOUR COURSES IN DEPTH FOR A WIDTH OF 32".

25. DO NOT BACKFILL AGAINST FOUNDATION WALLS UNTIL MORTAR HAS ATTAINED MAXIMUM STRENGTH. WHERE BACKFILL IS PLACED AGAINST FOUNDATION WALLS BEFORE FLOOR CONSTRUCTION IS IN PLACE, PROVIDE TEMPORARY BRACING.

26. ALL MASONRY PIERS AND PARTITIONS SHALL BE TOOTHED TO ADJACENT MASONRY WALLS. PROVIDE TIES TO ADJACENT FLOOR AND ROOF CONSTRUCTION IN ACCORDANCE WITH DETAILS ON DRAWINGS.

27. THE CONTRACTOR SHALL VERIFY ALL OPENINGS BELOW LINTELS INDICATED ARE ADEQUATE TO ACCEPT DOORFRAMES, LOUVERS, ETC. AS SHOWN ON THE ARCHITECTURAL AND MECHANICAL DRAWINGS. NOTIFY THE ARCHITECT AND STRUCTURAL ENGINEER OF ANY DISCREPANCIES PRIOR TO LINTEL INSTALLATION.

28. PROVIDE ANCHORAGE TO ADJACENT STRUCTURAL STEEL FRAMING AT EACH FLOOR LEVEL AND ALONG EACH COLUMN. PROVIDE HOHMANN 4 BARNARD #359 AND VBT WALL TIES AT A MAXIMUM OF 24 INCHES ON CENTER HORIZONTALLY AND VERTICALLY.

29. CAVITIES CONTAINING REINFORCING OR BELOW BEARING PLATES SHALL BE GROUTED BY MEANS OF LOW-LIFT TECHNIQUES. HIGH-LIFT GROUTING MAY BE USED ONLY WITH PRIOR APPROVAL. FOLLOW ACI SPECIFICATIONS FOR MASONRY GROUTING.

30. ALL MASONRY WALLS SHALL BE ADEQUATELY BRACED DURING CONSTRUCTION TO RESIST WIND LOADS OF 25 PSF. NOTE THAT FLOOR AND ROOF DIAPHRAGMS WILL PROVIDE ULTIMATE STABILITY FOR WALLS. MASONRY WALLS SHALL NOT BE BUILT HIGHER THAN 10 TIMES THEIR THICKNESS WITHOUT BRACING.

31. ALL WALL SECTIONS AND PIERS LESS THAN TWO SQUARE FEET IN CROSS-SECTIONAL AREA SHALL BE FULLY GROUTED.

32. IMPLEMENT COLD WEATHER CONSTRUCTION PROCEDURES IN ACCORDANCE WITH TMS 402 WHEN AMBIENT TEMPERATURE FALLS BELOW 40 DEGREES F OR THE TEMPERATURE OF MASONRY UNITS IS BELOW 40 DEGREES F. WET OR FROZEN UNITS SHALL NOT BE LAID. THE TEMPERATURE OF THE NEWLY LAID MASONRY OR NEWLY GROUTED MASONRY SHALL BE MAINTAINED ABOVE 32 DEGREES F FOR A MINIMUM OF 24 HOURS USING THE METHODS DESCRIBED IN TMS 402.

33. IMPLEMENT HOT WEATHER CONSTRUCTION PROCEDURES IN ACCORDANCE WITH TMS 402 WHEN AMBIENT TEMPERATURE EXCEEDS 100°F, OR EXCEEDS 90°F WITH A WIND VELOCITY GREATER THAN 8 MPH.

34. GROUT PLACEMENT SHALL NOT START UNTIL THE PLACEMENT OF REINFORCING HAS BEEN APPROVED BY THE INSPECTION AGENCY.

35. SUBMIT PUBLISHED DATA FROM MANUFACTURERS OF PRODUCTS AND ACCESSORIES SPECIFIED, INDICATING COMPLIANCE WITH REQUIREMENTS.

36. PROVIDE MIX DESIGN AND TEST REPORTS FOR PRE-BLENDED MORTAR AND CONVENTIONAL GROUT INDICATING TYPES AND PROPORTIONS OF MATERIALS.

37. THE OWNER WILL ENGAGE A QUALIFIED INDEPENDENT TESTING AND INSPECTING AGENCY TO PERFORM FIELD TESTS AND INSPECTIONS AND PREPARE TEST REPORTS.

38. THE TESTING AND INSPECTION AGENCY SHALL MONITOR THE PROPORTIONING, MIXING, AND CONSISTENCY OF MORTAR AND GROUT; THE PLACEMENT OF MORTAR, GROUT, AND MASONRY UNITS; AND THE PLACEMENT OF REINFORCING STEEL FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS.

39. CONFORM TO EARTHQUAKE REQUIREMENTS OF TMS 402, SPECIFICALLY APPENDIX A - SPECIAL PROVISIONS FOR SEISMIC DESIGN AS FOLLOWS: A.3 - SPECIAL PROVISIONS FOR SEISMIC PERFORMANCE CATEGORY C AS FOLLOWS:

    A. MASONRY WALLS SHALL BE ANCHORED TO ALL FLOORS AND ROOFS WHICH PROVIDE LATERAL SUPPORT FOR THE WALLS. SUCH AN ANCHORAGE SHALL PROVIDE DIRECT CONNECTION CAPABLE OF RESISTING HORIZONTAL FORCES REQUIRED OR A MINIMUM OF 200 LB PER LINEAL FOOT OF WALL, WHICHEVER IS GREATER. WALLS SHALL RESIST BENDING BETWEEN ANCHORS WHERE ANCHOR SPACING EXCEEDS 4 FT. ANCHORS IN MASONRY WALLS SHALL BE EMBEDDED IN REINFORCED BOND BEAMS OR REINFORCED VERTICAL CELLS.

    B. VERTICAL REINFORCEMENT OF AT LEAST 0.20 SQUARE INCHES ((1) #4 REBAR) IN CROSS-SECTIONAL AREA SHALL BE PROVIDED CONTINUOUSLY FROM SUPPORT TO SUPPORT AT EACH CORNER, AT EACH SIDE OF EACH OPENING AND AT THE END OF WALLS. HORIZONTAL REINFORCEMENT NOT LESS THAN 0.2 SQUARE INCHES ((1) #4 REBAR) IN CROSS SECTION AREA SHALL BE PROVIDED: (1) AT THE BOTTOM AND TOP OF WALL OPENINGS AND SHALL EXTEND NOT LESS THAN 24 IN. NOR LESS THAN 40 BAR DIAMETERS PAST THE OPENING, (2) CONTINUOUSLY AT STRUCTURALLY CONNECTED ROOF AND FLOOR LEVELS AND AT THE TOP OF WALLS, (3) AT THE BOTTOM OF THE WALL OR IN THE TOP OF THE FOUNDATIONS WHEN DOWELED TO THE WALL, (4) AT MAXIMUM SPACING OF 10 FT UNLESS UNIFORMLY DISTRIBUTED JOINT REINFORCEMENT IS PROVIDED.

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

5. 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.

6. WELDERS SHALL HAVE CURRENT EVIDENCE OF PASSING THE APPROPRIATE AWS QUALIFICATION TESTS. THE ENGINEER MAY REQUEST SUCH EVIDENCE AT ANY TIME DURING THE PROJECT.

7. 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.

8. WELDING TO THE EXISTING STEEL WILL NOT BE ALLOWED AND THE CONTRACTOR SHALL ANTICIPATE USING FIELD BOLTED CONNECTIONS TO THE EXISTING STEEL.

9. 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.

10. 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.

11. 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.

12. 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.

13. 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.

14. 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.

15. 100% OF FULL PENETRATION WELDS SHALL HAVE ULTRASONIC INSPECTION, COMPLYING WITH ASTM E164.

16. 100% OF WELDS IN BEAM AND COLUMN MOMENT CONNECTIONS SHALL HAVE ULTRASONIC INSPECTION, COMPLYING WITH ASTM E164.

17. 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.

STEEL BAR JOISTS

1. DESIGN OF STEEL BAR JOISTS SHALL BE IN ACCORDANCE LATEST STEEL JOIST INSTITUTE (SJI) SPECIFICATIONS. DESIGN OF JOISTS SHALL BE COMPLETED BY LICENSED ENGINEER REGISTERED IN THE PROJECT'S JURISDICTION IN CONJUNCTION WITH THE DESIGNATED LOADING CONDITIONS NOTED WITHIN THESE DOCUMENTS. ALL SUBMISSIONS SHALL BEAR THIS ENGINEER'S SEAL AND SIGNATURE.

2. OPEN WEB JOISTS SHALL CONFORM TO THE "STANDARD SPECIFICATION AND LOAD TABLES FOR OPEN WEB STEEL JOISTS" OF THE STEEL JOIST INSTITUTE.

3. SPECIAL JOISTS (SP, KCS), WHERE INDICATED ON PLANS HAVE SPECIAL DESIGN REQUIREMENTS. REFERENCE FRAMING PLANS FOR LOCATION OF SPECIAL JOISTS AND APPROPRIATE JOIST DIAGRAMS FOR DESIGN LOADS AND OTHER SPECIFICATIONS.

4. JOISTS ALONG COLUMN LINES SHALL BE INSTALLED WITH ERECTION BOLTS AND WELD AFTER COMPLETION OF PLUMBING AND ALIGNMENT. ALL OTHER BAR JOISTS TO STRUCTURAL STEEL CONNECTIONS SHALL BE WELDED. PROVIDE BOTTOM CHORD EXTENSIONS OF JOISTS FRAMING ALONG COLUMNS AND TO BRACE TRUSS GIRDERS AS REQUIRED BY OSHA.

5. JOIST BRIDGING SHALL BE INSTALLED IN ACCORDANCE WITH LATEST STEEL JOISTS INSTITUTE SPECIFICATION. BRIDGING SHOWN WITHIN DRAWINGS SHALL BE CONSIDERED AS THE MINIMUM REQUIREMENTS. JOIST MANUFACTURER COMPLY WITH OSHA REQUIREMENTS AND SUPPLY ADDITIONAL BRIDGING AS REQUIRED.

6. BRIDGING SHALL BE WELDED OR BOLTED AND ANCHORED AT END WALLS OR BEAMS. ALL BRIDGING, BRIDGING ANCHORS, AND JOIST CONNECTIONS SHALL BE COMPLETELY INSTALLED PRIOR TO THE APPLICATION OF ANY CONSTRUCTION LOADS.

7. ROOF JOISTS SHALL BE DESIGNED TO RESIST NET WIND UPLIFT LOADS. PROVIDE BRIDGING AT THE FIRST PANEL POINT FROM SUPPORTS AND ADDITIONAL BRIDGING AS REQUIRED BY THE BAR JOIST ENGINEER'S DESIGN.

8. LOADS EXCEEDING 100 LBS SHALL NOT BE HUNG FROM THE JOISTS UNLESS THE LOAD IS APPLIED WITHIN 6 INCHES FROM A PANEL POINT OR THE JOIST IS PROPERLY STRENGTHENED. REINFORCEMENT OF STEEL BAR JOIST FOR LOCATIONS GREATER THEN 6" AWAY FROM PANEL POINTS SHALL BE COMPLETED IN ACCORDANCE WITH SJI STANDARDS.

9. OPEN WEB STEEL JOISTS AND BRIDGING FOR JOISTS SHALL CONFORM, TO THE STEEL JOIST INSTITUTE "STANDARD SPECIFICATION FOR OPEN WEB JOISTS", ADOPTED 11/4/85 REVISED 9/1/94 EDITION. TOP CHORDS SHALL BE ANGLES OR TEES. BRIDGING SHALL BE CONTINUOUS THROUGH OPEN WEB STEEL JOISTS AND BE ANCHORED TO SPANDREL MEMBERS. JOISTS SHALL BE WELDED TO SUPPORTING STEEL MEMBERS. WHERE COLUMNS ARE NOT FRAMED IN AT LEAST TWO DIRECTIONS WITH STEEL BEAMS, THE JOISTS AT THE COLUMN LINE SHALL BE BOLTED TO SUPPORTING MEMBERS DURING ERECTION.

10. THE OPEN WEB STEEL JOIST MANUFACTURER SHALL BE AN SJI APPROVED FABRICATOR. AS MAY BE REQUIRED BY THE BUILDING OFFICIAL, TESTING AND INSPECTION OF THE OPEN WEB JOISTS SHALL BE PERFORMED BY AN APPROVED AGENCY.

METAL DECK

1. GAUGE METAL DECKING SHALL BE DESIGNED AND DETAILED IN ACCORDANCE WITH "DESIGN MANUAL FOR FLOOR DECKS AND ROOF DECKS", STEEL DECK INSTITUTE (SDI). ALL COMPOSITE STEEL FLOOR DECK SHALL BE IN CONFORMANCE WITH THE "SPECIFICATIONS FOR COMPOSITE STEEL FLOOR DECK" OF THE STEEL DECK INSTITUTE, LATEST EDITION.

2. DECK PROPERTIES ARE BASED ON PRODUCTS MANUFACTURED BY VULCRAFT STEEL ROOF & FLOOR DECK, ISSUED 2008. DECKS BY OTHER MANUFACTURER'S MAY BE SUPPLIED PROVIDED LOAD CARRYING CAPACITY BASED ON MANUFACTURER'S STANDARD LOAD TABLES, DEFLECTION CHARACTERISTICS, AND UL FIRE RATINGS EQUAL OR EXCEED THOSE OF MATERIALS SPECIFIED AND IF APPROVED BY THE ARCHITECT AND STRUCTURAL ENGINEER.

3. COMPOSITE, NON-COMPOSITE AND ROOF DECKING SHALL CONFORMING TO ASTM A 611 GRADE C AND D OR A 653 OR HIGHER SPECIFICATIONS WITH A MINIMUM YIELD STRENGTH OF 33 KSI.

4. INSTALL METAL DECK IN ACCORDANCE WITH SDI SUGGESTED SPECIFICATIONS UNLESS NOTED OTHERWISE ON THE DRAWINGS. INDIVIDUAL DECK SHEETS SHALL EXTEND OVER AT LEAST (3) SPANS, WITH STANDARD DECKS LAPS TO BE PLACED OVER SUPPORTS.

5. WHERE PARTIAL PANELS MAY BE REQUIRED TO COMPLETE DECK INSTALLATION AT PERIMETER OF STRUCTURE, PROVIDE WELDS IN EACH FLUTE TO STRUCTURAL MEMBERS. INSTALL DECK IN THREE CONTINUOUS SPAN LENGTHS.

6. NON-COMPOSITE AND ROOF DECKING SHALL BE WELDED TO STEEL SUPPORTS, INCLUDING THE EDGE SUPPORT PARALLEL TO THE DECK SPAN WITH 5/8" DIAMETER (EFFECTIVE FUSION DIAMETER) PLUG WELDS. FASTEN SIDE LAPS WITH #10 SELF-TAPPING SCREWS.

7. DECK SUPPLIER SHALL PROVIDE ALL ADDITIONAL FRAMING, CLOSURE ANGLES AND PLATES, POUR STOPS, SCREED ANGLES, AND ROOF SUMP PANS AS REQUIRED AT THE EDGES OF ALL OPENINGS AND AT ALL SLAB DEPRESSIONS, OR CHANGES OF DECK DIRECTION, INCLUDING THOSE WHICH HAVE NOT BEEN DETAILED.

8. ATTACH SHEETS TO STEEL SUPPORT MEMBERS AS INDICATED AND IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION. WHEN DECK IS SCHEDULED TO BE EXPOSED, DE-SLAG, CLEAN AND TOUCH UP WELDS WITH A ZINC-RICH PRIMER.

9. LAP ROOF AND FLOOR DECK ENDS MINIMUM OF 2 INCHES. WHEN FASTENING DECK TO SUPPORT MEMBERS PROVIDE WELDING MATERIALS INSTALLATION PROCEDURES TO PREVENT BURNING OF HOLES IN DECK.

10. PROVIDE SIX INCH CLOSURE STRIP WHERE CHANGES IN DECK DIRECTION OCCUR. CLOSURE TO BE SAME GAGE AS DECK.

11. AT PERIMETER OF DECK, SECURE DECK TO STRUCTURAL MEMBERS WITH SAME ATTACHMENT AND SPACING SUPPORT ATTACHMENT AS INDICATED ON PLANS.

12. ALL STEEL FLOOR DECK SHALL BE WELDED TO ALL SUPPORTING STEEL ELEMENTS. WELDING WASHERS SHALL BE USED AS REQUIRED BY THE DECK MANUFACTURER.

13. STEEL DECK SUPPLIER SHALL SUBMIT SHOP DRAWINGS INDICATING THE SHEAR STUD PLACEMENT.

14. PRIOR TO AND DURING CONCRETE PLACEMENT, THE FLOOR DECK SHALL BE PLANKED TO PREVENT DAMAGE TO THE DECK. CONCENTRATED AND IMPACT LOADS SHALL BE AVOIDED.

15. SHEAR CONNECTORS SHALL BE HEADED STUDS CONFORMING TO ASTM A108, GRADES 1010, 1015, 1017, OR 1020. SHEAR CONNECTORS SHALL BE MACHINE WELDED TO STEEL.

16. SHEAR CONNECTORS SHALL BE EQUALLY SPACED OVER THE LENGTH OF THE BEAM UNLESS NOTED OTHERWISE. WHERE THE NUMBER OF STEEL DECK CORRUGATIONS AVAILABLE IS LESS THAN THE NUMBER OF SHEAR CONNECTORS REQUIRED, USE PAIRS OF SHEAR CONNECTORS STARTING FROM EACH END OF THE BEAM AND CONTINUING TOWARD THE CENTER UNTIL IT IS POSSIBLE TO RETURN TO A SINGLE SHEAR CONNECTOR IN EACH CORRUGATION.

17. NO MECHANICAL OR ELECTRICAL PIPING, FIXTURES, UNITS OR SYSTEMS MAY BE HUNG DIRECTLY FROM THE ROOF DECK.

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REVISIONS:

Mk	DATE:	REMARKS
	12/26/23	ISSUED FOR PERMIT

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

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