2. ALL MATERIALS USED IN THE STRUCTURAL STEEL CONSTRUCTION SHALL BE NEW. ALL STRUCTURAL STEEL MEMBERS AND COVER PLATES, IF ANY, SHALL BE CONTINUOUS BETWEEN SPLICES OR BETWEEN THE SUPPORTS. LOCATION OF ALL SPLICES SHALL BE PER PLANS OR AS APPROVED BY THE ARCHITECT. RUSTED STRUCTURAL STEEL AND RECYCLED MATERIALS (EXCEPT MEMBERS AS ALLOWED IN THE SPECIFICATIONS) SHALL NOT BE USED IN THE CONSTRUCTION. ALL REJECTED MATERIALS SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER OR HIS AGENTS.

3. UNLESS OTHERWISE SHOWN, BOLTED CONNECTIONS SHALL BE FRICTION-TYPE CONNECTIONS USING F1852 (A325TC) TENSION CONTROL BOLTING SYSTEM; TWIST-OFF SPLINE TYPE.

4. SHOP CONNECTIONS, UNLESS OTHERWISE SHOWN, MAY BE EITHER BOLTED OR WELDED. ALL FIELD CONNECTIONS SHALL BE BOLTED UNLESS SHOWN OTHERWISE ON THE STRUCTURAL DRAWINGS.

5. CONNECTIONS NOT SHOWN SHALL BE SIMILAR TO "SUGGESTED DETAILS" OF PART 4 OF AISC MANUAL AND DESIGNED BY THE STEEL SUPPLIER IN ACCORDANCE WITH THE AISC "MANUAL OF STEEL CONSTRUCTION". SIMPLE SPAN CONNECTIONS SHALL BE DESIGNED FOR ONE-HALF THE BEAM LOAD CAPACITY AS GIVEN IN THE AISC TABLES UNDER SECTION 2 TITLED "ALLOWABLE UNIFORM LOADS IN KIPS FOR BEAMS LATERALLY SUPPORTED".

6. LENGTH OF CONNECTION ANGLES FOR BEAM-TO-COLUMN CONNECTIONS SHALL BE THE LARGEST STANDARD LENGTH "L" WHICH IS NOT LESS THAN (T-3") AND NOT MORE THAN THE "T" DIMENSION OF THE BEAM. STANDARD LENGTHS OF CONNECTION ANGLES ARE FOUND IN "A.I.S.C. MANUAL OF STEEL CONSTRUCTION", NINTH EDITION, FRAMED BEAM CONNECTIONS, TABLE II.

7. STRUCTURAL STEEL MEMBER SIZES, SPACINGS, CONNECTIONS, ETC. SHALL BE DETAILED AND PROVIDED AS SHOWN ON CONTRACT DOCUMENTS. IN THE EVENT THAT THE STRUCTURAL STEEL FABRICATOR/SUPPLIER CHOOSES TO REQUEST CHANGES FROM THE CONTRACT DOCUMENTS, SUCH CHANGES SHALL BE PRESENTED ON DETAILED SHOP DRAWINGS HIGHLIGHTING THE PROPOSED CHANGES. THESE SHOP DRAWINGS, ALONG WITH SUPPORTING CALCULATIONS, MUST BEAR THE STAMP, SIGNATURE & DATE OF A LICENSED STRUCTURAL ENGINEER LICENSED AND PRACTICING IN KENTUCKY. CERTIFICATE OF PROFESSIONAL LIABILITY INSURANCE, IN THE AMOUNT OF $1,000,000.00, SHALL ALSO BE INCLUDED WITH SUCH SUBMITTALS. SHOP DRAWING SUBMITTALS, THAT VARY FROM THE ORIGINAL DESIGN INTENT, THAT ARE NOT INCLUSIVE OF BOTH OF THE ABOVE REQUIREMENTS SHALL BE REJECTED AND RETURNED WITHOUT FURTHER REVIEW. ADDITIONALLY, ALL COSTS INCURRED BY THE ENGINEER OF RECORD FOR REVIEW OF SUCH SUBMITTED CALCULATIONS AND SHOP DRAWING WILL BE BACK-CHARGED TO THE GENERAL CONTRACTOR.

8. UNLESS SHOWN OTHERWISE, ALL COLUMNS SHALL HAVE A BASE PLATE AND A CAP PLATE. BASE PLATES SHALL HAVE A MINIMUM THICKNESS OF 3/4" AND HAVE FOUR BOLT HOLES FOR 3/4" DIAMETER ANCHOR BOLTS. ALL CAP PLATES SHALL HAVE A MINIMUM OF 5/8" THICKNESS AND HAVE TWO 13/16" DIAMETER BOLT HOLES PER BEAM SEATED ON THE COLUMN CAP.

9. PROVIDE VERTICAL WEB STIFFENERS ON EACH SIDE OF WEB OF BEAM AT ALL POINTS SUBJECTED TO CONCENTRATED LOADS SUCH AS COLUMN RESTING ON BEAM, CONTINUOUS BEAM FRAMING OVER COLUMN OR WALL SUPPORT AND BEAM FRAMING INTO A BEAM. THE STIFFENERS SHALL EXTEND TO FULL DEPTH OF BEAM AND THE BOUNDARY OF FLANGE WITH MINIMUM THICKNESS OF 1/2".

10. ANY CAMBER EXISTING IN BEAMS SHALL BE TURNED POSITIVE UPWARD.

11. BURNING OR CUTTING OF HOLES IN STRUCTURAL STEEL IS NOT PERMITTED WITHOUT PRIOR APPROVAL OF THE ARCHITECT.

12. PROVIDE AN AMOUNT OF STEEL FOR CONTINGENCIES, EQUAL TO THE FOLLOWING, TO BE FABRICATED AND ERECTED AS DIRECTED BY THE ARCHITECT.

L3-1/2 x 3-1/2 x 5/16 – 200 LINEAR FEET (ASTM A-36)

W8 x 24 – 200 LINEAR FEET (ASTM A-992)

GENERAL CONTRACTOR SHALL MAINTAIN AN UP-TO-DATE CONTINGENCY LOG SHEET AND PROVIDE SUCH LOG SHEET TO THE ARCHITECT, AT THE ARCHITECT'S REQUESTS FOR SUCH. GENERAL CONTRACTOR SHALL ALSO PROVIDE A PER POUND UNIT PRICE VALUE FOR THE FABRICATED, ERECTED CONTINGENCY STRUCTURAL STEEL; AND ABIDE BY THIS PRICE FOR THE DURATION OF THE PROJECT.

FULL CREDIT FOR UNUSED QUANTITIES SHALL BE GIVEN TO THE OWNER.

13. THE LATERAL LOADS ON THIS BUILDING ARE RESISTED BY MOMENT FRAMES, WHICH MAY NOT BE BUILT OR AVAILABLE DURING ERECTION OF STRUCTURAL STEEL TO RESIST ANY LATERAL LOADS DURING CONSTRUCTION. THE ERECTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY BRACING OR GUYING DURING ERECTION FOR STABILIZING THE STEEL FRAMING. BRACING SHALL REMAIN IN PLACE UNTIL THE MOMENT FRAMES ARE IN PLACE.

14. BEAMS AND LINTELS BEARING ON MASONRY SHALL HAVE SPECIAL SLIP CONNECTIONS ON BOTH ENDS OF THE BEAMS. REFER TO THE TYPICAL DETAILS FOR BEAM BEARING ON MASONRY.

15. UNLESS NOTED OTHERWISE, PROVIDE FOR AND INSTALL ALL ELEVATOR HOISTWAY BEAMS, SILL ANGLES, GUIDE RAILS, AND ALL OTHER ITEMS NECESSARY FOR THE INSTALLATION AND COMMISSIONING OF THE ELEVATORS. THE ELEVATOR SUPPLIER IS RESPONSIBLE FOR ADEQUATELY SIZING, DETAILING AND LOCATING ALL SUCH ITEMS. COORDINATE WITH ELEVATOR SPEC. AND OTHER DISCIPLINES.

16. CONNECTION DETAILS NOT COMPLETELY DETAILED ON THE DRAWING INCLUDING MATERIAL GRADE AND SIZES, WELD SIZES AND NUMBER OF BOLTS SHALL BE DESIGNED BY THE CONTRACTOR PER THE SPECIFICATIONS. SEE TYPICAL DETAILS FOR CONNECTION DETAILS EXPECTED.

17. ALL BEAMS FRAMING INTO WALLS, CONCRETE COLUMNS AND PIERS, ETC., SHALL BE DETAILED TO ACCOUNT FOR TOLERANCES OF CONCRETE WALL CONSTRUCTION. SEE SPECIFICATIONS FOR ALIGNMENT/ PLUMB TOLERANCES OF CONCRETE WORK.

18. ALL FILLET WELDS SHALL BE A MINIMUM OF 1/4 INCH.

19. SHOP AND FIELD TESTING OF WELDS, INCLUDING THOSE OF PROPRIETARY SYSTEMS (EG: SIDEPLATE) AND BOLTS SHALL BE AS FOLLOWS:

A. ALL WELDS SHALL BE VISUALLY INSPECTED.

B. FILLET WELDS FOR BEAM SHEAR-CONNECTION PLATES (10% AT RANDOM) SHALL BE CHECKED BY MAGENTIC PARTICLE METHOD (ASTM 109) FOR FINAL PASS ONLY.

C. ULTRASONICALLY TEST 100% OF ALL FULL PENETRATION WELDS.

D. ULTRASONICALLY TEST 25% OF ALL PARTIAL PENETRATION COLUMN SPLICE WELDS.

E. VISUALLY INSPECT ALL SHEAR-STUDS ON BEAMS AND EMBED PLATES ACCORDING TO AWS STANDARDS

F. TEST ONE OUT OF EVERY 20 SHEAR-STUDS ON BEAMS AND EMBEDDED PLATES BY BENDING THE STUD 30 DEGREES, ACCORDING TO AWS STANDARDS. WELD TEST FOR FAILURE PER C, ABOVE.

G. THE OWNER'S TESTING AGENCY SHALL PERFORM ALL SHOP AND FIELD INSPECTION AND TESTING. THE STRUCTURAL STEEL FABRICATOR AND ERECTOR SHALL SCHEDULE ALL WORK TO ALLOW THE ABOVE TESTING REQUIREMENTS TO BE COMPLETED.

20. COORDINATE ALL CONSTRUCTION SEQUENCES RELATED TO STEEL WORK AND SET ALL CLEARANCES AND ERECTION PROCEDURES. ALL ADDITIONAL STEEL REQUIRED TO MAINTAIN PLUMB AND LEVELS TO REQUIRED TOLERANCES SHALL BE PROVIDED AT NO ADDITIONAL COST.

21. AFTER FABRICATION, ALL STEEL SHALL BE CLEANED OF ALL RUST, LOOSE MILL SCALE AND OTHER FOREIGN MATTER.

22. PRIOR TO APPLICATION OF SPRAYED-ON FIREPROOFING, REMOVE, IN THE FIELD, ALL LOOSE MILL SCALE, RUST AND OTHER FOREIGN MATTER.

23. NO PAINTING IS REQUIRED FOR STRUCTURAL STEEL TO RECEIVE SPARY-ON FIREPROOFING.

24. WHERE COMPOSITE STEEL BEAMS ARE SPECIFIED, USE 3/4 INCH DIAMETER BY 4 1/2 INCH HEADED STUDS.

25. QUANTITY OF SHEAR STUDS AND ITS WELD IS BASED ON FULL AISC STUD VALUE FOR 4,000 PSI STONE CONCRETE.

26. MOMENT CONNECTIONS:

A. THE STEEL-FRAMED MOMENT-CONNECTION DETAILS SHOWN IN THESE PLANS ARE BASED ON THE DESIGNS OF A PARTICULAR MANUFACTURER. EQUIVALENT CONNECTIONS OFFERED BY OTHER FABRICATORS, TO CONFORM WITH THE INTENT OF THOSE SHOWN IN THE PLANS, ARE ACCEPTABLE, PROVIDING THE DUCTILITY OF THE CONNECTION, FLEXIBILITY, LOAD PATH, AND MOMENT-RESISTING FRAME PHILOSOPHY, AND ITS BEHAVIOR, ARE EQUIVALENT TO THE SYSTEM SHOWN IN THE PLANS. TO PRESERVE THE INTEGRITY OF THE LOAD PATH, THE LOCATION OF THE MOMENT CONNECTIONS SHALL REMAIN THE SAME AS THAT SHOWN ON THE PLANS.

B. ALL MOMENT CONNECTION DESIGN SHALL BE PERFORMED BY A STRUCTURAL ENGINEER LICENSED IN KENTUCKY. THIS ENGINEER SHALL BE REFERRED TO AS THE SPECIALTY STRUCTURAL ENGINEER (SSE). THE SSE SHALL HAVE PROFESSIONAL LIABILITY INSURANCE TO COVER ERRORS AND OMISSIONS. THE LIABILTY LIMIT SHALL BE NO LESS THAN $1,000,000 PER OCCURRENCE, WITH $2,000,000 MINIMUM AGGREGATE COVERAGE. SUBMIT A CERTIFICATE OF INSURANCE, WITH THE STRUCTURAL ENGINEER OF RECORD (SER) SHOWN AS A CERTIFICATE HOLDER, ATTACHED TO THE CALCULATIONS AND DETAILS FOR THE CONNECTION(S).

C. CONNECTION DESIGN SHALL CONFORM TO THE CURRENT PROVISIONS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) ANSI/AISC 341-02, TITLED 'SEISMIC PROVISIONS', INCLUDING ITS UPDATES, TO DATE. MOMENT-CONNECTION DETAILS THAT DIFFER FROM THOSE SHOWN IN THE PLANS WILL LIKELY AFFECT DETAILS OF OTHER CONNECTIONS AT THE SAME LOCATION. THE SSE IS RESPONSIBLE FOR REDESIGNING AND/OR MODIFYING THOSE DETAILS AFFECTED, AS APPROPRIATE.

D. SUBMIT ALL CALCULATIONS AND ALL CONNECTION DETAIL DRAWINGS TO THE SER FOR REVIEW. ALL CALCULATIONS, AND THE CONNECTION DESIGN DRAWINGS, SHALL BE SIGNED AND SEALED BY THE SSE. FOR FULL SUBMITTAL ENDORSEMENT REQUIREMENTS SEE THE GENERAL PROVISIONS, ARTICLE 1.4.3.

5.2 STEEL JOIST NOTES

1. STEEL JOIST CONSTRUCTION SHALL CONFORM TO THE STEEL JOIST INSTITUTE'S STANDARDS LISTED UNDER DESIGN NOTES AND "RECOMMENDED CODE OF STANDARD PRACTICE FOR STEEL JOISTS AND JOIST GIRDERS", 2005, UNLESS NOTED OTHERWISE.

2. THE MAXIMUM SPACING OF STEEL JOISTS SHALL BE AS SHOWN ON THE STRUCTURAL PLANS. PROVIDE HEADERS AND DOUBLE JOISTS TO FRAME AROUND OPENINGS, WHETHER SHOWN IN THE STRUCTURAL PLANS OR NOT. THE WORK SHALL BE FULLY COORDINATED WITH ALL OTHER TRADES AND DESIGNED TO WITHSTAND THE DESIGN LOADS SHOWN HEREIN IN ADDITION TO CONCENTRATED LOADS FROM EQUIPMENT.

3. ENDS OF STEEL JOISTS SHALL BE ANCHORED TO THE SUPPORTS BY WELDING OR BOLTING, PER S.J.I. AND O.H.S.A. RECOMMENDATIONS AND REQUIREMENTS.

4. PROVIDE JOIST SUBSTITUTES CAPABLE OF CARRYING ALLOWABLE TOTAL SAFE LOADS IN POUNDS PER LINEAR FOOT AS CALLED FOR ON DRAWINGS.

5. EXTEND BOTTOM CHORD OF ALL JOISTS ON COLUMN LINE AND WELD OR BOLT TO COLUMN, AFTER APPLICATION OF DEAD LOADS.

6. BRIDGINGS, WHERE NOT SHOWN ON PLANS, SHALL BE FURNISHED AND INSTALLED TO STABILIZE THE STEEL JOISTS AT THE SPECIFIED DESIGN LOADS.

7. PROVIDE AN ADDITIONAL ROW OF CROSS BRIDGING AT LINE OF SUPPORT FOR ALL JOISTS BEARING AT BOTTOM CHORD.

8. FURNISH AND INSTALL BOTTOM AND TOP CHORD LATERAL BRACING AS REQUIRED FOR STRENGTH AND STABILITY OF JOISTS GIRDERS.

9. TYPICALLY, LOCATE HANGERS AND APPLIED LOADS ONLY AT JOIST PANEL POINTS. UNLESS SPECIFICALLY APPROVED OR DESIGNED BY THE JOIST MANUFACTURER, PROVIDE (2) ADDITIONAL L2-1/2 x 2-1/2 x 1/4 WEB REINFORCEMENTS AT ALL POINTS WHERE SUCH LOADS ARE APPLIED TO THE CHORDS OF THE JOISTS. CONTRACTOR SHALL COORDINATE REQUIREMENTS WITH JOIST SUPPLIER FOR ALL SUCH CONDITIONS.

10. THE JOISTS CARRYING CONCENTRATED LOADS DESIGNATED IN PLANS AS "SP" ARE SPECIAL JOISTS HAVING EQUIVALENT CONFIGURATION OF JOISTS NOTED IN PLAN. THESE SPECIAL JOISTS SHALL BE DESIGNED BY THE MANUFACTURER TO CARRY THE DESIGN LOADS SPECIFIED HEREIN IN ADDITION TO THE CONCENTRATED LOADS. THE FINAL OPERATING LOADS, LOCATION AND METHODS OF ATTACHMENT SHALL BE COORDINATED WITH THE CONTRACTOR BEFORE SUBMITTING THE SHOP DRAWINGS. SUBMIT CALCULATIONS FOR ALL "SP" JOISTS.

11. STEEL JOISTS SIZES, SPACINGS, CONNECTIONS, ETC. SHALL BE DETAILED AND PROVIDED AS SHOWN ON CONTRACT DOCUMENTS. IN THE EVENT THAT THE STEEL JOIST FABRICATOR/SUPPLIER CHOOSES TO REQUEST CHANGES FROM THE CONTRACT DOCUMENTS, SUCH CHANGES SHALL BE PRESENTED ON DETAILED SHOP DRAWINGS HIGHLIGHTING THE PROPOSED CHANGES. THESE SHOP DRAWINGS, ALONG WITH SUPPORTING CALCULATIONS, MUST BEAR THE STAMP, SIGNATURE & DATE OF A LICENSED STRUCTURAL ENGINEER LICENSED AND PRACTICING IN KENTUCKY. CERTIFICATE OF PROFESSIONAL LIABILITY INSURANCE, IN THE AMOUNT OF $1,000,000.00, SHALL ALSO BE INCLUDED WITH SUCH SUBMITTALS. SHOP DRAWING SUBMITTALS, THAT VARY FROM THE ORIGINAL DESIGN INTENT, THAT ARE NOT INCLUSIVE OF BOTH OF THE ABOVE REQUIREMENTS SHALL BE REJECTED AND RETURNED WITHOUT FURTHER REVIEW. ADDITIONALLY, ALL COSTS INCURRED BY THE ENGINEER OF RECORD FOR REVIEW OF SUCH SUBMITTED CALCULATIONS AND SHOP DRAWINGS WILL BE BACK-CHARGED TO THE GENERAL CONTRACTOR.

12. SHOP DRAWINGS SHALL CLEARLY SHOW LOCATION AND ELEVATION OF ALL JOIST SEATS INCLUDING THE LAYOUT NECESSARY FOR CONTRACTOR TO INSTALL JOISTS IN CURVED OR ANGLED SITUATIONS.

5.3 STEEL DECK NOTES

1. THE TYPICAL STEEL ROOF DECK SHALL BE TYPE F36, 1-1/2" DEEP, 22 GAGE GALVANIZED DECK (1.5F36-22) AS MANUFACTURED BY WHEELING OR APPROVED EQUIVALENT. PROVIDE 1-1/2" DEEP, 22 GAGE GALVANIZED ACOUSTICAL DECK (NON-CELLULAR) AS MANUFACTURED BY WHEELING OR APPROVED EQUIVALENT OVER AREAS AS INDICATED BY THE ARCHITECT. COORDINATE ANY/ALL OF THESE SUCH AREAS WITH THE ARCHITECT. SEE SPECIFICATIONS FOR REQUIRED FIRE RATING CERTIFICATION.

2. STEEL FLOOR DECK SHALL BE TENSILFORM TYPE TF, 20 GAGE, 3" NOMINAL DEPTH, GALVANIZED AS MANUFACTURED BY WHEELING OR APPROVED EQUIVALENT. DECKING SUPPLIER SHALL PROVIDE ALL CONCRETE STOPS, FLUTE CLOSURES, TRIM PIECES, SHEET MATERIAL AROUND COLUMNS, ETC. SO AS TO CONSTITUTE A COMPLETE SYSTEM.

3. STEEL DECK CONSTRUCTION SHALL CONFORM TO THE STEEL DECK INSTITUTE'S DESIGN MANUAL FOR COMPOSITE DECKS, FORM DECKS AND ROOF DECKS – PUBLICATION NO. 31, CURRENT EDITION.

4. ALL DECKS SHALL BE THREE OR MORE SPANS CONTINUOUS WHERE POSSIBLE.

5. SEE THE SPECIFICATIONS AND TYPICAL DETAILS FOR MINIMUM REQUIREMENTS FOR FASTENING THE DECK TO ITS SUPPORTS.

6. ALL OPENINGS THROUGH FLOOR OR ROOF DECKS NOT SHOWN ON THE STRUCTURAL PLANS SHALL BE FRAMED FOUR SIDES WITH ANGLE FRAMING SUPPORTED BY THE JOIST, UNLESS NOTED OTHERWISE. OPENINGS 4 FEET WIDE OR LESS PERPENDICULAR TO THE SPAN OF THE DECK SHALL BE FRAMED WITH L4 x 4 x 5/16. OPENINGS GREATER THAN 4 FEET WIDE PERPENDICULAR TO THE SPAN OF THE DECK SHALL BE FRAMED WITH MEMBERS DESIGNED TO CARRY THE SPECIFIED DESIGN LIVE AND DEAD LOADS. OPENINGS THROUGH FLOOR OR ROOF DECKS THAT ARE 6" DIAMETER OR LESS; OR 30 SQUARE INCHES OR LESS; ARE NOT REQUIRED TO BE FRAMED AS NOTED ABOVE.

7. UNLESS NOTED OTHERWISE, PROVIDE L3 x 3 x 1/4 AT UNSUPPORTED DECK BOUNDARIES PARALLEL TO DECK SPAN, AND AT EDGES OF DECKS THAT ARE CUT DIAGONALLY AT SKEWED WALLS AND ALONG BOTH SIDES OF ALL ROOF HIPS AND VALLEYS, ETC.

8. THE STEEL DECK SYSTEM IS DESIGNED AS A WIND FORCE RESISTING DIAPHRAGM. REFER TO GENERAL PROVISION SECTION 5.7 FOR FURTHER REQUIREMENTS.

9. ALL METAL DECKS SHALL BE COMPOSITE DECK DESIGNED FOR THE CONDITIONS SHOWN IN THE DRAWINGS.

10. ASSUME A SUITABLE CONSTRUCTION LIVE LOAD WHICH WILL CONSIDER THE PARTICULAR METHOD OF CONCRETE PLACEMENT. THE ASSUMED CONSTRUCTION LIVE LOAD SHALL NOT BE LESS THAN 20 PSF. THE CONCRETE CONTRACTOR SHALL NOT EXCEED THE CONSTRUCTION LIVE LOADS ASSUMED IN DESIGN WITHOUT TAKING PROPER SAFETY PRECAUTIONS, SUCH AS SHORING.

11. SHEAR-STUDS SHALL BE WELDED THROUGH THE METAL DECK BY PREQUALIFIED METHODS.

12. THE NON-CELLULAR METAL DECK SHALL HAVE WIDE RIBS SUITABLE FOR SHEAR-STUD PLACEMENT. THE CONFIGURATION OF THE METAL DECK SHALL BE SUCH AS TO DEVELOP THE SHEAR VALUE OF THE STUD FOR PARTICULAR WEIGHTS OF THE CONCRETE, AS LISTED IN THE AISC SPECIFICATION, LATEST EDITION.

13. ALL DECK DESIGN IS TO BE ON A NON-SHORED BASIS UNLESS REQUIRED FOR THE DEAD LOAD AND CONSTRUCTION LOAD. THE METAL DECK CONTRACTOR SHALL SPECIFY WHERE SHORING IS NECESSARY IN HIS BID.

14. PROVIDE STRAP ANCHORS, IF REQUIRED, FOR CONTROL OF CANTILEVER DEFLECTION AT EDGE OF FLOOR SLAB.

5.4 STRUCTURAL COLD-FORMED, LIGHT GAGE STEEL FRAMING

1. DESIGN, FABRICATION AND USE:

A. COLD-FORMED STEEL DESIGN MANUAL BY AMERICAN IRON AND STEEL INSTITUTE, CURRENT EDITION, INCLUDING COMMENTARY AND "SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS", CURRENT EDITION.

B. LIGHTWEIGHT STEEL FRAMING SYSTEMS MANUAL BY METAL LATH/STEEL FRAMING ASSOCIATES, CURRENT EDITION.

2. ALL EXTERIOR WALL FRAMING EXPOSED TO RESIST WIND FORCES SHALL BE TREATED AS STRUCTURAL LIGHT GAGE STEEL FRAMING.

3. ALL STRUCTURAL LIGHT GAGE FRAMING SHALL BE FACTORY PUNCHED PER THE MANUFACTURER. FIELD PENETRATIONS WILL NOT BE PERMITTED.

4. SHOP DRAWINGS: SUBMIT SHOP DRAWINGS FOR ALL STRUCTURAL LIGHT GAGE FRAMING. SHOW CONNECTIONS TO STRUCTURAL STEEL FRAMING, INCLUDING PROVISIONS FOR DEFLECTION OF STEEL FRAME.

5. DESIGN CRITERIA: LIVE LOAD = 25 PSF HORIZONTAL LOAD APPLIED AGAINST WALLS.; DEFLECTION LIMIT FOR FLOOR FRAMING: L/360 WHERE L = SPAN OF FLOOR FRAMING. FOR STUD WALLS PROVIDING LATERAL SUPPORT FOR MASONRY WALLS, DEFLECTION LIMIT SHALL BE L/480 WHERE L = UNSUPPORTED HEIGHT OF STUD. FOR LINTELS SUPPORTING MASONRY WALLS, DEFLECTION LIMIT SHALL BE L/600 WHERE L = SPAN OF THE LINTEL.

6. CONNECTION DESIGN: ALL FIXED CONNECTIONS SHALL BE WELDED CONNECTIONS (20 GA. MEMBERS MAY BE SCREWED) DESIGNED TO DEVELOP FULL AXIAL TENSILE CAPACITY OF MEMBERS. SHOW ALL CONNECTION DETAILS, BETWEEN LIGHT GAGE FRAMING AS WELL AS TO OTHER STRUCTURAL ELEMENTS ON THE SHOP DRAWINGS.

7. PROVIDE STRUCTURAL STEEL TUBE REINFORCEMENTS AT OPENINGS IF LIGHT GAGE FRAMING IS NOT FEASIBLE.

8. STRUCTURAL LIGHT GAGE STEEL FRAMING SHOWN IN THESE PLANS IS BASED ON THE PRODUCTS OF A PARTICULAR MANUFACTURER AND IS SHOWN TO ILLUSTRATE THE CONCEPT AND METHODS BEHIND THE SYSTEM. THE DESIGNS ARE BY NO MEANS EXPLICIT AND ALL PANELS AND CONNECTIONS NECESSARY TO CONSTRUCT A SYSTEM WHICH IS CAPABLE OF CARRYING THE LOADS PRESCRIBED BY THE LOCAL BUILDING CODES IS NOT SHOWN. THE FRAMING CONTRACTOR IS RESPONSIBLE FOR DESIGNING AND DETAILING ALL CONNECTIONS AND PANELS REQUIRED TO COMPLETE THE EXTERIOR WALL FRAMING PER LOCAL BUILDING CODE REQUIREMENTS.

9. ALL DESIGNS SHALL BE PERFORMED BY A REGISTERED ENGINEER LICENSED TO PRACTICE IN THE STATE OF KENTUCKY. STRUCTURAL ENGINEER SHALL CARRY PROFESSIONAL LIABILITY INSURANCE FOR $1,000,000.00 MIN. SUBMIT INSURANCE CERTIFICATE, DESIGN CALCULATIONS AND SHOP DRAWINGS STAMPED BY THE ENGINEER FOR REVIEW BY THE ARCHITECT. SUBMITTALS, NOT ACCOMPANIED WITH CERTIFICATE OF PROFESSIONAL LIABILITY INSURANCE, WILL BE RETURNED WITHOUT FURTHER REVIEW.

5.5 STEEL LINTELS NOTES (U.N.O)

1. STEEL LINTELS SCHEDULE:
8" MIN. BEARING EACH END.
L.L.V. – LONG LEG VERTICAL.

OPENING WIDTH	NUMBERS OF MEMBERS PER THICKNESS OF MSRY.	MIN. MEMBER SZ.
LESS THAN 3'-4"	1 PER 4" THICK	L3-1/2 x 3-1/2 x 3/8
3'-4" BUT LESS THAN 5'-6"	1 PER 4" THICK	L5 x 3-1/2 x 3/8 (L.L.V.)
5'-6" BUT LESS THAN 8'-6"	1 PER 4" THICK	L6 x 3-1/2 x 3/8 (L.L.V.)
8'-6" BUT LESS THAN 10'-6"	1 PER OPENING	W8 x 21 + 3/8" PLATE @ BOT. FLG. FOR 6" CMU W8 x 28 + 3/8" PLATE @ BOT. FLG. FOR 8" CMU W8 x 35 + 3/8" PLATE @ BOT. FLG. FOR 12" CMU

SEE THE TYPICAL DETAILS FOR STEEL LINTEL VARIATIONS, OPTIONS, BEARINGS, ETC.

5.6 WELD NOTES

1. E70XX ELECTRODES SHALL BE USED FOR ALL WELDS.

2. FIELD WELDING OF STRUCTURAL STEEL, JOISTS AND DECKING SHALL ONLY BE UNDERTAKEN BY APPROVED, CERTIFIED WELDERS. SUBMIT WELDING CERTIFICATES TO THE ARCHITECT FOR REVIEW.

3. WELDING OF WET CONTACT SURFACES IS NOT PERMITTED. STEPS SHALL BE TAKEN TO PRE-DRY THE CONTACT SURFACES UNDER SUCH CONDITIONS. WELDING OF SURFACES EXPOSED TO PRECIPITATION IS ALSO NOT PERMITTED UNLESS TEMPORARY ENCLOSURES ARE PROVIDED TO BLOCK THE PRECIPITATION. SUCH ENCLOSURES, AT CONTRACTOR'S OPTION, SHALL BE PROVIDED AT NO ADDITIONAL COSTS TO THE OWNER OR THE OWNER'S AGENTS.

4. STEEL CONTACT SURFACES MUST BE A MINIMUM OF 40 DEGREES FAHRENHEIT FOR WELDING OPERATIONS TO TAKE PLACE. PRE-HEATING OF CONTACT SURFACES MAY BE UNDERTAKEN, AT THE CONTRACTOR'S OPTION. THE CONTRACTOR IS REQUIRED TO PROVIDE PROPER INSTRUMENTS, SUCH AS MAGNETIC THERMOMETERS, THAT ARE DESIGNED FOR MEASURING THE STEEL TEMPERATURE WITH NO INFLUENCES FROM THE SURROUNDING AIR TEMPERATURES. TEMPERATURE MEASUREMENTS SHALL BE REQUIRED AT NO LESS THAN 25% OF THE WELDED CONNECTIONS WHEN THE AIR TEMPERATURE HAS FALLEN BELOW 45 DEGREES FAHRENHEIT WITHIN THE PAST 24 HOURS; AND AT 100% OF THE WELDED CONNECTIONS WHEN THE AIR TEMPERATURE HAS FALLEN BELOW 40 DEGREES FAHRENHEIT WITHIN THE PAST 24 HOURS. TEMPERATURE MEASUREMENTS SHALL BE TAKEN WITHIN SIX INCHES OF THE PROPOSED WELDED CONNECTIONS.

5. PRE-HEATING OF STEEL THAT HAS FALLEN UNDER 40 DEGREES FAHRENHEIT SHALL COMPLY WITH THE RECOMMENDATIONS OF THE A.I.S.C. AND THE A.W.S. THE CONTRACTOR IS REQUIRED TO MONITOR THE TEMPERATURE OF EACH PRE-HEATED AREA USING EITHER STEEL TEMPERATURE MEASURING DEVICES THAT ARE DESIGNED FOR SUCH READINGS; OR BY THE USE OF A TEMPSTICK CRAYON DESIGNED TO MELT AT THE TEMPERATURE OF AT LEAST 100 DEGREES FAHRENHEIT. ABSOLUTELY NO PRE-HEATING OR WELDING OF STEEL SHALL TAKE PLACE WHEN THE SURROUNDING AIR TEMPERATURE HAS FALLEN BELOW ZERO DEGREES FAHRENHEIT WITHIN THE PAST 24 HOURS.

5.7 ROOF DIAPHRAGM

1. THE ROOF DECK IN THIS BUILDING IS DESIGNED AS A STRUCTURAL DIAPHRAGM TO RESIST THE HORIZONTAL SHEAR FROM WIND AND SEISMIC LOADS TO THE SHEAR WALLS.

2. THE ROOF DECK SHALL BE MADE CONTINUOUS AT ALL RIDGES, HIPS AND VALLEYS USING A 16 GAGE (0.0598") THICK MINIMUM BENT PLATE AND SCREWING OR WELDING THE BENT PLATE TO THE ROOF DECK ON BOTH SIDES OF THE RIDGE, HIP OR VALLEY. LEGS OF BENT PLATE SHALL BE 6" MINIMUM AND AS NECESSARY TO FACILITATE PROPER LAP BETWEEN THE LEG AND METAL DECK. WELDING OR SCREWING (FASTENINGS) SHALL MEET THE MINIMUM FASTENER SPECIFICATIONS SPECIFIED HEREIN UNLESS MORE STRINGENT REQUIREMENTS ARE SPECIFIED ELSEWHERE.

3. THE MINIMUM ALLOWABLE SHEAR CAPACITY OF THE DIAPHRAGM AND CONNECTION SHALL BE 600 POUNDS PER LINEAR FOOT. THE FACTOR OF SAFETY FOR WELDED DIAPHRAGM SHALL BE 2.75 AND THAT FOR MECHANICALLY FASTENED SHALL BE 2.35. ULTIMATE SHEAR CAPACITY OF THE DIAPHRAGM SHALL BE THE ALLOWABLE SHEAR CAPACITY MULTIPLIED BY THE FACTOR OF SAFETY.

4. FOR WELDED DIAPHRAGM, MINIMUM WELDING REQUIREMENT IS AS FOLLOWS: THE SUPPORT FASTENERS SHALL BE 3/4" PUDDLE WELD SPACED AT 6" ON CENTERS AND THE SIDE LAP FASTENERS SHALL BE EITHER 5/8" PUDDLE WELD OR A 3/8" X 1 1/4" ARC SEAM WELD SPACED AT 12" MAXIMUM ON CENTERS OR MINIMUM FIVE WELDS BETWEEN THE SUPPORTS; WHICHEVER IS MORE STRINGENT.

5. FOR MECHANICALLY FASTENED DIAPHRAGM, MINIMUM FASTENING REQUIREMENT IS AS FOLLOWS: THE SUPPORT FASTENERS SHALL BE HILTI ENP2K & HSN SERIES FASTENERS SPACED AT 6" ON CENTERS AND THE SIDE LAP FASTENERS SHALL BE #10 TEK SCREWS SPACED AT 7 1/2" MAXIMUM ON CENTERS OR MINIMUM EIGHT FASTENERS BETWEEN THE SUPPORTS; WHICHEVER IS MORE STRINGENT. FOR ATTACHMENT TO STRUCTURAL STEEL SECTIONS USE HILTI ENP2 FASTENERS.

6. THE DECK SHEAR SHALL BE TRANSFERRED TO THE SHEAR WALLS THROUGH BENT COLLECTOR PLATES OF 14 GAGE (0.0747") INSTALLED BETWEEN THE TRUSSES/JOISTS AND FASTENED TO THE ROOF DECK AS PER THE MINIMUM FASTENING SPECIFIED HEREIN. THE BENT PLATES SHALL BE WELDED TO THE EMBEDDED ANGLE OVER THE TOP OF THE WALL USING 1/8" FILLET WELD X 2" LONG SPACED AT 12" ALTERNATELY. THIS CONDITION IS TYPICAL OVER THE ENTIRE LENGTH OF THE OUTER BOUNDARY WALLS AS WELL AS INTERIOR SHEAR WALLS. IF TRUSSES ARE LOCATED OVER AND PARALLEL TO THE INTERIOR SHEAR WALLS AND CONNECTED TO THE SHEAR WALLS ALONG THE LENGTH OF THE TRUSS, BENT PLATES ARE NOT NECESSARY OVER THESE INTERIOR WALLS.

7. ROOF DECKING CONTRACTOR IS RESPONSIBLE FOR FURNISHING THE NECESSARY BENT PLATES AT ALL PLANE BREAKS, 14 GAGE BENT COLLECTOR PLATES, SUPPORT EDGE ANGLES AND FASTENERS AS WELL AS NECESSARY LABOR TO INSTALL A COMPLETE DIAPHRAGM SYSTEM AS DESCRIBED HEREIN.

8. THE DIAPHRAGM CONTRACTOR SHALL HAVE MINIMUM FIVE YEARS EXPERIENCE IN INSTALLING STEEL DECK DIAPHRAGMS SIMILAR TO THOSE SHOWN IN THE PLANS. SUBMIT AT LEAST FIVE SIMILAR PROJECTS COMPLETED IN THE PAST FIVE YEARS WITH THE PROJECT, LOCATION, OWNER, ARCHITECT AND STRUCTURAL ENGINEER ALONG WITH THEIR ADDRESSES AND TELEPHONE NUMBERS. SEISMIC DESIGN CATEGORY OF THE PROJECTS SUBMITTED SHALL BE "D" AS PER KENTUCKY BUILDING CODE, CURRENT EDITION.

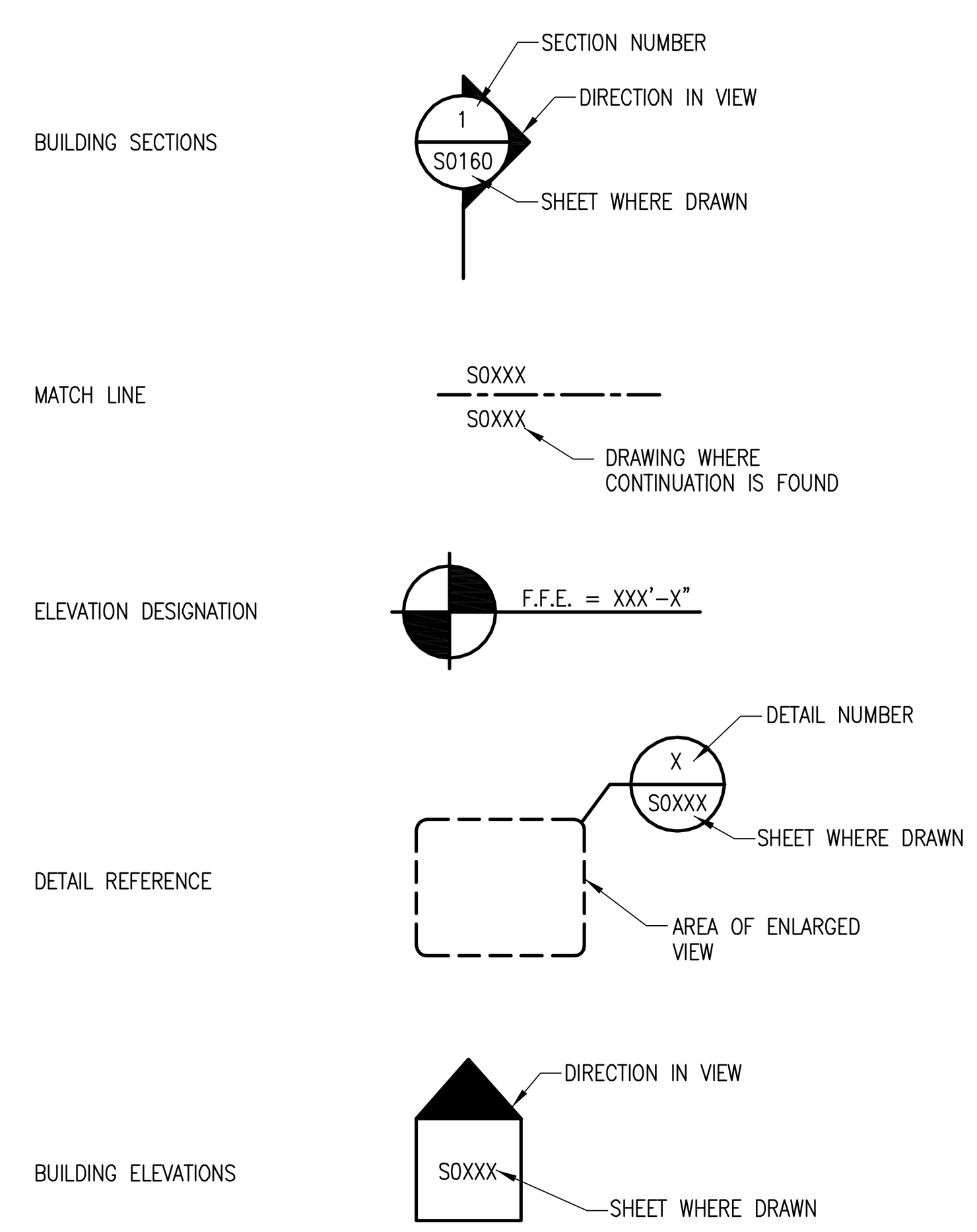
9. THE DIAPHRAGM DESIGN IS BASED ON FASTENERS FROM A SPECIFIC MANUFACTURER. ALTERNATE DESIGNS BASED ON FASTENERS MANUFACTURED BY OTHER MANUFACTURERS MAY BE CONSIDERED PROVIDED THE DESIGN IS CERTIFIED BY A STRUCTURAL ENGINEER LOCATED AND LICENSED IN THE STATE OF KENTUCKY AND THE DIAPHRAGM DESIGN VALUES ARE JUSTIFIED BY ICBO EVALUATION REPORTS. STRUCTURAL ENGINEER SHALL CARRY PROFESSIONAL LIABILITY INSURANCE FOR $1,000,000.00 MIN. SUBMIT INSURANCE CERTIFICATE, DESIGN CALCULATIONS AND SHOP DRAWINGS STAMPED BY THE ENGINEER FOR REVIEW BY THE ARCHITECT. SUBMITTALS, NOT ACCOMPANIED WITH CERTIFICATE OF PROFESSIONAL LIABILITY INSURANCE, WILL BE RETURNED WITHOUT FURTHER REVIEW.

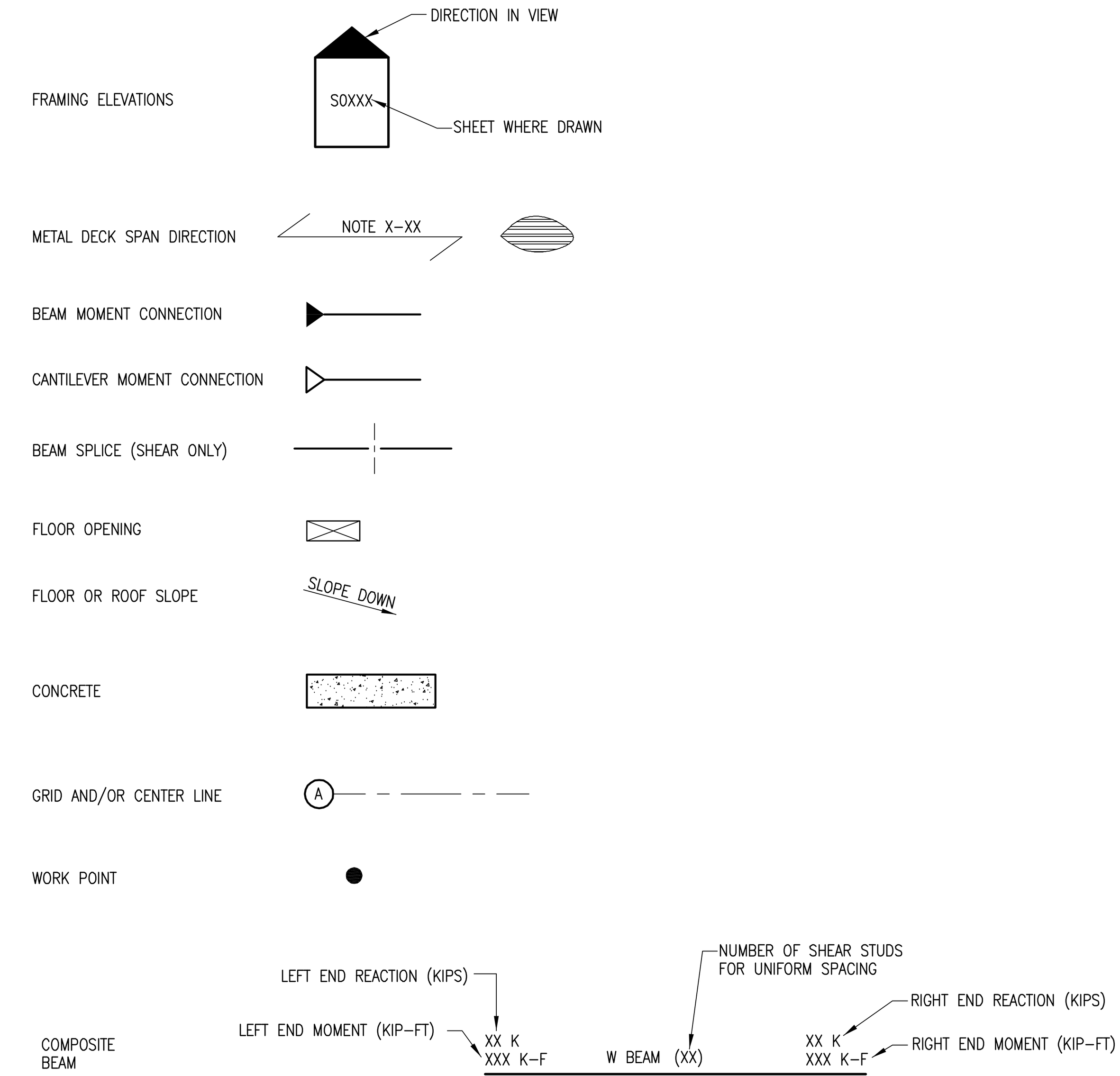
6.1 ABBREVIATIONS

ABBREVIATIONS			
A.B.	– ANCHOR BOLT	IN.	– INCH/INCHES
ADD'L.	– ADDITIONAL	INV.	– INVERT
A.F.F.	– ABOVE FINISHED FLOOR		
ALT.	– ALTERNATE/ ALTERNATIVE	JNT.	– JOINT
		JST.	– JOIST
ALUM.	– ALUMINUM	J.B.E	– JOIST BEARING ELEVATION
APPROX.	– APPROXIMATE		
ARCH.	– ARCHITECT/ ARCHITECTURAL	L.L.V.	– LONG LEG VERTICAL
		~~L.L.H.~~	~~– LONG LEG HORIZONTAL~~
@	– AT	L.S.H.	– LONG SIDE HORIZONTAL
		~~LONGIT.~~	~~– LONGITUDINAL~~
B./BOTT./BOT.	– BOTTOM	L.P.	– LOW POINT
B.F.F.	– BELOW FINISHED FLOOR	LYR.	– LAYER/LAYERS
BLDG.	– BUILDING		
BM.	– BEAM	MAX.	– MAXIMUM
B.O.	– BOTTOM OF	MACH.	– MACHINE/MACHINERY
B.O.S.	– BOTTOM OF STEEL	M.C.	– MECHANICAL CONTRACTOR
BRDG.	– BRIDGING	MCJ	– MASONRY CONTROL JOINT
B.S.	– BRICK SHELF	MECH.	– MECHANICAL
~~BRG.~~	~~– BEARING~~	MFGR.	– MANUFACTURER/ MANUFACTURING
B/W	– BETWEEN		
		MAT'L.	– MATERIAL
C/C, c/c	– CENTER TO CENTER (IN INCHES U.N.O.)	MID.	– MIDDLE/ MID-POINT
		MIN.	– MINIMUM
CANT.	– CANTILEVER	MSRY.	– MASONRY
C.I.P.	– CAST IN PLACE	MTL.	– METAL
C.J.	– CONTROL JOINT		
℄	– CENTER LINE	NEC.	– NECESSARY
CLR. , CL.	– CLEAR	N.F.	– NEAR FACE
CMU	– CONCRETE MASONRY UNIT	N.T.S.	– NOT TO SCALE
COL.	– COLUMN	O.D.	– OUTSIDE DIAMETER
CONC.	– CONCRETE	O.F.	– OUTSIDE FACE
CONSTR.	– CONSTRUCTION	OPNG.	– OPENING
CONN.	– CONNECTION	OPP.	– OPPOSITE
CONT.	– CONTINUOUS	OR EQ.	– OR EQUAL/EQUIVALENT (SEE NOTE BELOW)
CORP.	– CORPORATION		
CTR.	– CENTER	o.c. OR O/C	– ON CENTERS
DET.	– DETAIL	PERIM.	– PERIMETER
DIA. OR ø	– DIAMETER	PL	– PLATE
DIM.	– DIMENSION	PRO.	– PROPOSED
DN.	– DOWN	P.R.V.	– PRESSURE RELIEF VALVE
DO.	– DITTO	PT.	– POINT
DP.	– DEEP		
DWG.	– DRAWING	R.C.	– REINFORCED CONCRETE
DWL.	– DOWEL	REINF.	– REINFORCED/ REINFORCEMENT
EA.	– EACH	REQ'D.	– REQUIRED
EL., ELEV.	– ELEVATION	REQ'T.	– REQUIREMENT
E.F.	– EACH FACE	SIM.	– SIMILAR
E.J.	– EXPANSION JOINT	SEC.	– SECTION
ELEC.	– ELECTRIC/ELECTRICAL	S.C.J.	– SAWN CONTROL JOINT
EMB./EMBED.	– EMBEDMENT		
EQ.	– EQUAL/EQUIVALENT	S.J.I.	– STEEL JOIST INSTITUTE
E.W.	– EACH WAY	SP.	– SPACE/SPACES
EXP.	– EXPANSION	SPEC.	– SPECIFY/SPECIFICATIONS
EXTG.	– EXISTING	SQ. OR ⌷	– SQUARE
		S.S.	– STAINLESS STEEL
F.D.	– FLOOR DRAIN	STAG.	– STAGGER/STAGGERED
F.F.	– FAR FACE	STIFF.	– STIFFENER
FIN.	– FINISH/FINISHED	STD.	– STANDARD
FLG.	– FLANGE	STIRR.	– STIRRUP
FLR.	– FLOOR	STL.	– STEEL
FND.	– FOUNDATION	STR.	– STRAIGHT
FT.	– FOOT/FEET		
FTG.	– FOOTING	T.	– TOP
F.F.E.	– FINISHED FLOOR ELEVATION	TH., THK.	– THICK/THICKNESS
		THRU	– THROUGH
		T.O.	– TOP OF
GA.	– GAGE	T.O.S.	– TOP OF STEEL
G.C.	– GENERAL CONTRACTOR	TRANS.	– TRANSVERSE
		TYP.	– TYPICAL/TYPICALLY
GR.	– GRADE/GROUND	T.O.F. / T/F	– TOP OF FOOTING
GRTG.	– GRATING	T/W	– TOP OF WALL
H.	– HORIZONTAL REINFORCING	U.N.O.	– UNLESS NOTED OTHERWISE
HK.	– HOOK	V., VERT.	– VERTICAL
HORIZ.	– HORIZONTAL	V.I.F.	– VERIFY IN FIELD
H.P.	– HIGH POINT	V.W.A.	– VERIFY WITH ARCHITECT
HR.	– HANDRAIL		
HT.	– HIGH/HEIGHT	w/	– WITH
		WD.	– WIDE/WIDTH
I.D.	– INSIDE DIAMETER	W.P.	– WORK POINT
I.F.	– INSIDE FACE	W.S.	– WATERSTOP

NOTE: "OR EQUAL" MEANS EQUIVALENT IN THE OPINION OF THE ENGINEER.
"PROVIDE FOR" MEANS FURNISH AND INSTALL INCLUDING COORDINATION WITH MATERIAL AND EQUIPMENT SUPPLIERS' REQUIREMENTS.

7.1 SYMBOLS AND NOTATIONS





END OF GENERAL PROVISIONS

DISCLAIMER NOTE:
THIS SET OF CONSTRUCTION DRAWINGS HAS BEEN UPDATED TO INCLUDE ANY CHANGES ISSUED THROUGH ADDENDUM OR OTHER MEANS. EVERY EFFORT HAS BEEN TAKEN TO INCLUDE ALL CHANGES TO DATE. THE CONTRACTOR IS STILL RESPONSIBLE FOR PROVIDING ANY ITEMS THAT WERE SHOWN AS PART OF THE ORIGINAL BID SET THAT MAY HAVE BEEN OVERLOOKED AND NOT INCLUDED IN THIS SET.

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CANNONDESIGN

UNIVERSITY OF LOUISVILLE

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