# STRUCTURAL STEEL NOTES

1. DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE LATEST AISC SPECIFICATION PERMITTED BY THE NEW YORK STATE BUILDING CODE. ALL STEEL SHALL CONFORM TO:

   A. STRUCTURAL STEEL SHAPES: ASTM A 992 STEEL (GR50) FY = 50 KSI
   B. STEEL PIPE COLUMNS: ASTM A501 FY = 36 KSI
   C. STRUCTURAL TUBES: ASTM A500 GRADE B FY = 46 KS
      (SEE NOTE 24 FOR GALVANIZING)I
   D. STEEL ANGLES, PLATES & CHANNELS: ASTM A36 FY = 36 KSI
   E. THREADED RODS: STAINLESS STEEL AISI TYPE 316. FY = 64 KSI

   A.I.S.C. SPECIFICATIONS FOR DESIGN FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS SHALL APPLY, OR ANY MORE RESTRICTIVE REQUIREMENTS OF THE NEW YORK STATE BUILDING CODE.

2. CONTRACTOR SHALL PROVIDE CERTIFIED MILL REPORTS AND FABRICATOR SHALL FILE AN AFFIDAVIT OF THE PRODUCER OF THE STEEL CERTIFYING THAT THE PROVISIONS OF THE BUILDING CODE ARE MET. SUBMIT ABOVE FOR REVIEW TO STRUCTURAL ENGINEER PRIOR TO FABRICATION AND ORDERING OF MATERIALS.

3. ALL STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE AISC CODE OF STANDARD PRACTICE, EXCEPT AS MODIFIED IN THESE NOTES AND THE PROJECT SPECIFICATIONS. (LATEST EDITION).

4. THE CONTRACTOR SHALL COORDINATE ALL DIMENSIONS SHOWN ON THE PLANS WITH THE VARIOUS TRADES BEFORE DETAILING AND FABRICATING STEEL. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL STRUCTURAL WORK NOT SHOWN ON THE STRUCTURAL DRAWINGS.

5. ALL DETAILING FABRICATION AND ERECTION SHALL CONFORM TO AISC "LOAD AND RESISTANCE FACTOR DESIGN SPECIFICATIONS FOR STRUCTURAL STEEL BUILDING" OR "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN," AND AISC "CODE OF STANDARD PRACTICE," LATEST EDITION.

6. PRIOR TO SUBMITTING ANY SHOP DRAWINGS, THE CONTRACTOR SHALL SUBMIT A SHOP DRAWING SCHEDULE TO THE ENGINEER-OF-RECORD FOR APPROVAL. THE SCHEDULE SHOULD INCLUDE THE DATES, WHEN THE DRAWINGS ARE TO BE SUBMITTED, THE NUMBER OF DRAWINGS AND TYPE OF DETAILS (ERECTION PLANS, SCHEDULES, BEAMS, COLUMNS, ETC.).

7. THE FABRICATOR SHALL SUBMIT TO THE ENGINEER, FOR REVIEW AND APPROVAL, ENGINEERED AND CHECKED DRAWINGS SHOWING SHOP FABRICATION DETAILS. ERECTION PLANS, JOB STANDARDS, SCHEDULES, ETC. PRIOR TO THE START OF PIECE DETAILING.

8. THE FABRICATOR IS RESPONSIBLE FOR THE DESIGN OF ALL CONNECTIONS. CONNECTIONS SHOWN ON THE STRUCTURAL DRAWING ARE SCHEMATIC AND ARE ONLY INTENDED TO SHOW THE RELATIONSHIP OF MEMBERS CONNECTED. CONNECTION DETAILS INDICATED ON THE DRAWINGS SHALL BE INCORPORATED INTO FABRICATOR'S CONNECTION DESIGN. SEE SPECIFICATIONS. CALCULATIONS AND SHOP DRAWINGS SHALL BE SIGNED AND SEALED BY THE FABRICATOR'S PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THE STRUCTURE IS LOCATED. ENGINEER'S SEAL MAY BE QUALIFIED "FOR DESIGN OF CONNECTIONS ONLY."

   ENGINEER-OF-RECORD'S REVIEW OF THE SHOP DRAWINGS IS ONLY FOR THE LIMITED PURPOSE OF CHECKING FOR CONFORMANCE WITH THE DESIGN INTENT AND INFORMATION EXPRESSED IN THE CONTRACT DRAWINGS.

9. ALL COMPOSITE BEAM CONNECTIONS TO DEVELOP MINIMUM ONE-HALF OF THE TOTAL LOAD CAPACITY TABULATED IN THE AISC STEEL HANDBOOK (LATEST EDITION) TIMES 1.5 FOR THE GIVEN SHAPE AND SPAN OF THE BEAM OR THE REACTION SHOWN ON THE DRAWINGS, OR THE SCHEDULE SHOWN HEREIN, WHICHEVER IS GREATER.

   ALL BEAM CONNECTIONS TO DEVELOP MINIMUM ONE-HALF OF THE TOTAL LOAD CAPACITY TABULATED IN THE AISC STEEL HANDBOOK (LATEST EDITION) FOR THE GIVEN SHAPE AND SPAN OF THE BEAM, OR THE REACTION SHOWN ON THE DRAWING, OR THE SCHEDULE SHOWN BELOW, WHICHEVER IS GREATER.

10. FOR FRAMED BEAM CONNECTIONS, INCLUDING SINGLE PLATE CONNECTIONS, PROVIDE THE MINIMUM NUMBER OF HORIZONTAL BOLT ROWS AS SHOWN BELOW, BASED ON 3" C/C UNLESS NOTED OTHERWISE.

| SHAPE | REACTION (K) | MINIMUM NUMBER OF FASTENERS |
|---|---|---|
| W8, C8 | 20 | 2 |
| W10, C10 | 28 | 2 |
| W12, C12 | 35 | 3 |
| W14 | 35 | 3 |
| W16 | 50 | 4 |
| W18 | 65 | 4 |
| W21 | 85 | 5 |
| W24 | 100 | 6 |
| W27 | 100 | 6 |
| W30 | 120 | 7 |
| W33 | 160 | 8 |
| W36 | 220 | 9 |
| W40 | 240 | 11 |
| W44 | 260 | 11 |

PROVIDE REINFORCING AT CONNECTIONS WHERE CUTS OR COPES REDUCE THE SHEAR OR MOMENT CAPACITY BELOW THAT REQUIRED TO SUSTAIN THE REACTION. REFER TO PLAN FOR REACTIONS LARGER THAN SHOWN HERE.

11. DETAILS OF CONNECTIONS SHALL CONFORM TO AISC STANDARDS AND THE MANUAL OF STEEL CONSTRUCTION (LATEST EDITION), AND NEW YORK STATE BUILDING CODE..

   A. TYPICALLY, ALL BEAM TO COLUMN CONNECTIONS SHALL BE FRAMED BEAM CONNECTIONS.

   B. TYPICALLY, BEAM TO BEAM CONNECTIONS SHALL BE FRAMED BEAM CONNECTIONS.

   C. IF A ONE-SIDED CONNECTION IS USED FOR BEAMS 18" DEEP AND UNDER, THE CONNECTION SHALL BE DESIGNED IN ACCORDANCE WITH THE AISC MANUAL (LATEST EDITION), AND SHALL HAVE A MINIMUM OF TWO LINES OF BOLTS IN EACH LEG OF THE ONE-SIDED CONNECTION ANGLE.

   D. WHEN THE TABULATED AISC FRAMED CONNECTION TABLES CANNOT BE USED OR WHERE THEY ARE UNABLE TO CARRY THE REQUIRED REACTIONS, SPECIAL CONNECTIONS OF ADEQUATE STRENGTH SHALL BE PROVIDED.

   E. SHOP CONNECTIONS SHALL BE HIGH-STRENGTH BOLTED, OR WELDED.

   F. FIELD CONNECTIONS SHALL BE HIGH-STRENGTH BOLTED, EXCEPT WHERE WELDED CONNECTIONS ARE SHOWN ON DRAWINGS.

   G. ALL BEAMS CARRYING OR OVER COLUMNS, AND MOMENT SPLICES SHALL BE HIGH STRENGTH BOLTED.

12. BOLTED CONNECTIONS

   A. ALL BOLTS SHALL BE HIGH-STRENGTH CONFORMING TO ASTM A325 N. (A325 SLIP CRITICAL, CLASS A, FULLY TENSIONED TO COMPLY WITH AISC TABLE J 3.7).

   B. ALL BOLTS SHALL BE 3/4" MINIMUM DIAMETER WITH HARDENED WASHERS UNDER THE TURNING ELEMENT (INCLUDING TURN OF THE NUT METHOD), UNLESS OTHERWISE NOTED.

   C. HIGH-STRENGTH BOLTED CONNECTIONS TYPE N SHALL BE INSTALLED AND CONFORM TO AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS.," APPROVED NOV. 13, 1985 AND ADOPTED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS OF THE ENGINEERING FOUNDATION.

   D. ALL CONTACT SURFACES, INCLUDING SURFACES ADJACENT TO THE BOLT HEAD AND NUT, SHALL BE FREE OF SCALE, OIL, PAINT, LACQUER, AND OTHER FOREIGN MATERIAL. BURRS THAT WOULD PREVENT SOLID SEATING OF THE CONNECTED PARTS SHALL BE REMOVED. CONTACT SURFACES THAT ARE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 AND ROUGHENED BY MEANS OF HAND WIRE BRUSHING (POWER BRUSHING IS PROHIBITED) WILL BE PERMITTED.

   E. ALL BOLTED CONNECTIONS SHALL MEET STRUCTURAL INTEGRITY REQUIREMENTS.

   F. PROVIDE TWO BOLTS PER CONNECTION. MINIMUM CONNECTION STRENGTH SHALL BE 6 KIPS.

   G. ALL HOLES SHALL BE DRILLED OR PUNCHED. NO BURNED IN HOLES SHALL BE ACCEPTABLE.

13. WELDED CONNECTIONS

   A. WELDING OPERATIONS AND DESIGN SHALL BE IN ACCORDANCE WITH THE NEW YORK STATE BUILDING CODE AND AISC SPECIFICATIONS, INCLUDING:
      1. AISC SPECIFICATION, J2.
      2. STRUCTURAL WELDING CODE, AWS D1.1, AS MODIFIED BY AISC SPECIFICATION SECTION J2.

   B. WELDING SHALL BE PERFORMED BY LICENSED WELDERS AND MEET THE REQUIREMENTS OF THE NEW YORK STATE BUILDING CODE AND AWS.

   C. AWS CLASS E7OXX SERIES LOW HYDROGEN ELECTRODES SHALL BE USED FOR WELDING NEW STRUCTURAL STEEL.

   D. ALL CONTACT SURFACES AND AREAS WITHIN TWO INCHES OF WELD DURING WELDING SHALL BE FREE OF SCALE, OIL, PAINT LACQUER, GALVANIZING, AND ANY OTHER FOREIGN MATERIAL.

   E. BUTT WELDS SHALL BE 100% PENETRATION WELDS AND FILLET WELDS A MINIMUM OF 1/4" UNLESS OTHERWISE NOTED.

   F. ALL WELDED CONNECTIONS SHALL MEET STRUCTURAL INTEGRITY REQUIREMENTS OF THE NEW YORK STATE BUILDING CODE.

   G. WELDING SHALL NOT BE PERMITTED WHEN: THE AMBIENT TEMPERATURE IS BELOW 15F; SURFACES ARE WET, EXPOSED TO RAIN, SNOW OR HIGH WIND, WELDERS ARE EXPOSED TO INCLEMENT CONDITIONS. CONTRACTOR SHALL COORDINATE WITH OWNER TO PROVIDE FOR THE SHUT-OFF OF FIRE ALARMS, FIREWATCH, AND NOTIFICATION TO THE FIRE DEPARTMENT DURING WELDING OPERATIONS.

   H. ALL FILLER METAL SHALL HAVE A MINIMUM CVN (CHARPY V-NOTCH) TOUGHNESS OF 20 FT.-LBS. AT MINUS 20F.

14. CONTRACTOR SHALL SUBMIT WRITTEN WELDING PROCEDURE SPECIFICATIONS (WPS) FOR ALL WELDING ON THE JOB, INCLUDING PREQUALIFIED PROCEDURES.

15. THE CONTRACTOR MUST HAVE WPS THAT COVER EVERY WELD TO BE MADE ON THE JOB INCLUDING THOSE OF THE eRECTOR. WPS MUST BE AVAILABLE FOR TESTING LABORATORY INSPECTOR OR ENGINEER.

16. WPS MUST INCLUDE: WELDING PROCESS, BASE METAL THICKNESS AND STEEL GRADE OF BASE METAL AND BACKUP MATERIAL, JOINT TYPE, WELD TYPE, JOINT DESIGN DETAIL, BACKLOGGING, ELECTRODE DIAMETER, NUMBER AND POSITION OF WELD PASSES, VOLTAGE, POLARITY, PREHEAT, AND INSPECTION REQUIREMENTS, APPROVED WRITTEN WELDING PROCEDURES IN CLOSE PROXIMITY TO AN USED BY THE WELDERS. THE WPS MUST BE PROPERLY FOLLOWED, AND THE WELDER MUST USE THE RIGHT TOOLS (THE CORRECT TEMPERATURE AND INDICATING CRAYON). MAINTAIN THE MINIMUM SPECIFIED PREHEAT TEMPERATURE, WELD SIZE, MAXIMUM INTERPASS TEMPERATURE EXCEEDED, ELECTRODE, TRAVEL SPEED.

17. CONTRACTOR SHALL TAKE SPECIAL PRECAUTIONS DURING STEEL ERECTION TO INSURE STABILITY UNTIL STRUCTURE IS COMPLETE. ALL STRUCTURAL STEEL SHALL BE ADEQUATELY BRACED ALONG ITS MAJOR AND MINOR AXIS DURING ERECTION.

18. SHORING OF FLOOR MEMBERS TO CONTROL SLAB THICKNESS, FLOOR LEVEL TOLERANCES, AND CONCRETE PONDING IS THE CONTRACTOR'S OPTION. FLOORS TO BE POURED SO AS TO MAINTAIN UNIFORM SLAB THICKNESS ACROSS TOP OF STEEL MEMBERS.

19. STRUCTURAL STEEL CONTRACTOR TO PROVIDE DECK SUPPORT ANGLES AS REQUIRED.

20. BOLTS, NUTS AND WASHERS FOR STEEL PERMANENTLY EXPOSED TO WEATHER SHALL BE GALVANIZED.

21. STEEL, NUTS, BOLTS AND WASHERS TO BE PROVIDED BY A SINGLE DOMESTIC SOURCE.

22. ALL CUTS, HOLES, COPES REQUIRED FOR CONSTRUCTION BY OTHER TRADES, SHALL BE SHOWN ON APPROVED SHOP DRAWINGS AND MADE IN THE SHOP. FIELD BURNINGS OF CUTS OR HOLES IN THE STEEL MEMBERS WILL NOT BE PERMITTED.

23. ALL STEEL EXPOSED TO THE WEATHER SHALL BE HOT DIPPED GALVANIZED. LINTEL ANGLES, BRACING MEMBERS OR STEEL EMBEDDED IN MASONRY SHALL RECEIVE TWO SHOP COATS OF PAINT. ALL OTHER STEEL SHALL BE LEFT UNPAINTED. NOTE: OMIT PAINT AND GALVANIZATION FROM STEEL AREAS WHICH ARE TO BE WELDED. TOUCH UP ALL AREAS WHERE THE GALVANIZING HAS BEEN REMOVED OR DAMAGED.

   NOTE: STRUCTURAL STEEL TUBING WHICH IS EXPOSED TO THE WEATHER SHOULD BE GALVANIZED AND HAVE A RADIUS EQUAL TO THREE (3) TIMES ITS THICKNESS AS PER ASTM A143/A143M.

24. FITTED STIFFENERS SHALL BE PROVIDED IN BEAMS OVER AND UNDER ALL COLUMNS EQUAL TO COLUMNS FLANGE THICKNESS.

25. ANCHOR BOLTS TO BE ASTM F1554 (WELDABLE) FY = 55 KSI.

26. ALL GROUT UNDER BILLETS SHALL BE NON-SHRINK, PRE-MIX TYPE AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5,000 P.S.I.

27. PROVIDE ADDITIONAL WIRE-MESH REINFORCEMENT, 4 X 4 -W 4 X 4 WWF X 5'-0" LONG IN TOP OF SLAB CONTINUOUSLY OVER ALL BEAMS WHICH RUN PARALLEL TO THE METAL DECK DIRECTION.

28. ALL STAIR STRUCTURES AND MISCELLANEOUS STEEL SHALL BE DESIGNED AND DETAILED BY THE FABRICATOR. DRAWINGS AND CALCULATIONS SHALL BEAR THE SEAL AND SIGNATURE OF A NEW YORK STATE REGISTERED PROFESSIONAL ENGINEER HIRED BY THE CONTRACTOR.

29. IF FIELD BEAM SPLICE IS REQUIRED, IT SHALL DEVELOP THE FULL PLASTIC MOMENT CAPACITY OF THE MEMBER. COMPLETE DETAILS SHALL BE SUBMITTED ON THE SHOP DRAWINGS

30. SHOP AND FIELD TESTING OF WELDS AND BOLTS SHALL BE AS FOLLOWS:

   A. ALL WELDS SHALL BE VISUALLY INSPECTED AND SHALL BE ACCEPTABLE IF THE CRITERIA OR AWS D1.1 TABLE 6.1 ARE SATISFIED.

   B. FILLET WELDS FOR BEAM AND GIRDER SHEAR CONNECTION PLATES (15 PERCENT AT RANDOM) SHALL BE CHECKED BY MAGNETIC PARTICLE FOR FINAL PASS ONLY.

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

   D. CHECK BY CALIBRATED TORQUE WRENCH 25 PERCENT OF BOLTS IN EACH SHEAR CONNECTION, BUT NOT LESS tHAN TWO (2) BOLTS PER CONNECTION.

   E. THE TESTING AGENCY SHALL PERFORM ALL SHOP AND FIELD INSPECTION AND TESTING AS OUTLINED ABOVE.

   F. THE STRUCTURAL STEEL FABRICATOR AND ERECTOR SHALL SCHEDULE ALL WORK TO ALLOW THE ABOVE TESTING REQUIREMENTS TO BE COMPLETED.

31. AFTER FABRICATION AND IN THE FIELD PRIOR TO THE APPLICATION OF SPRAY-ON OR TROWELED ON FIREPROOFING, ALL STEEL SHALL BE CLEANED OF ALL RUST, LOOSE MILL SCALE AND OTHER FOREIGN MATERIALS. SEE ARCHITECTURAL DRAWING FOR FIREPROOFING REQUIREMENTS.

32. NO FIELD CUTTING OF STEEL MEMBERS FOR THE WORK OF OTHER TRADES WITHOUT APPROVAL OF ENGINEER-OF-RECORD.

33. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TEMPORARY BRACING, GUYING, ETC. REQUIRED TO ERECT AND HOLD THE FRAME IN ORDER TO MAINTAIN CORRECT ALIGNMENT AND RESIST POSSIBLE COMBINATIONS OF DEAD, CONSTRUCTION, ERECTION, WIND, SEISMIC AND OTHER LATERAL LOAD COMBINATIONS.

34. PROVIDE EXISTING CONNECTION REINFORCING AT LOCATIONS SHOWN ON PLAN S101. CONTRACTOR SHALL HIRE A NYSPE TO DESIGN CONNECTION REINFORCING, CONTRACTOR SHALL SUBMIT THESECALCULATIONS FOR REVIEW TO EOR.

# STEEL JOISTS NOTES

1. ALL STEEL TRUSS GIRDERS/JOISTS, CONSTRUCTION, BRIDGING, ANCHORAGE, ETC., SHALL BE DESIGNED, DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST STEEL JOIST INSTITUTE STANDARD SPECIFICATIONS.

2. STEEL JOISTS SHALL BE STRUCTURAL STEEL HAVING A MINIMUM YIELD POINT OF Fy=50,000 PSI FOR CHORD SECTIONS AND A MINIMUM YIELD POINT OF Fy=36,000 PSI FOR WEB MEMBERS.

3. THE STEEL JOIST FABRICATOR SHALL SUBMIT AN AFFIDAVIT STATING COMPLIANCE WITH AISC, SJI AND AISI REQUIREMENTS. THE STEEL JOIST SUPPLIER SHALL BE A MEMBER OF SJI APPROVED FOR THE SPECIFIC JOIST SERIES. STEEL JOIST FABRICATOR SHALL PROVIDE AN AFFIDAVIT BY A LICENSED PROFESSIONAL ENGINEER THAT ALL WELDS HAVE BEEN MADE TO SUSTAIN AND TRANSFER THE DESIGN STRESSES TO THE JOIST MEMBERS.

4. STEEL JOIST MANUFACTURER SHALL DESIGN AND FURNISH JOISTS AND BOTTOM CHORD BRACES AND BRIDGING FOR A NET UPLIFT OF 17 PSF MINIMUM. PROVIDE POSITIVE ANCHORAGE AT END OF THE BRIDGING LINE OR TO STRUCTURAL STEEL BEAMS. CONSTRUCTION LOADS MUST NOT BE APPLIED TO JOISTS UNTIL ALL BRIDGING IS ATTACHED TO THE JOISTS AND ANCHORED AT ITS ENDS. CROSS BRIDGING REQUIRED AT END BAYS OF JOISTS.

5. TOP AND BOTTOM CHORDS SHALL BE STRUCTURAL ANGLES.

6. JOIST SHALL BE BRIDGED WITH CONTINUOUS HORIZONTAL ANGLE BRIDGING TOP AND BOTTOM. PROVIDE X-BRIDGING IN LAST PANEL, OR WHERE CONTINUOUS BRIDGING STOPS. ALL BRIDGING AND BRIDGING ANCHORS SHALL BE COMPLETELY INSTALLED BEFORE CONSTRUCTION LOADS ARE PLACED ON JOISTS

7. INDIVIDUAL JOIST MEMBERS SHALL BE CONNECTED DIRECTLY TO ONE ANOTHER BY WELDING IN ACCORDANCE WITH THE LATEST AWS CODE. ALL WELDERS SHALL BE CERTIFIED WELDERS AND LICENSED.

8. FOR ALL JOISTS FORTY(40) FEET AND LONGER STRICTLY FOLLOW MANUFACTURER'S INSTRUCTIONS REGARDING ERECTION.

9. JOISTS SHALL HAVE MINIMUM 4" BEARING ON MASONRY OR CONCRETE, AND 2-1/2" ON STEEL.

10. ALL STEEL JOISTS SHALL BE THOROUGHLY INSPECTED BEFORE SHIPMENT TO INSURE COMPLIANCE IN MATERIALS AND WORKMANSHIP.

11. ALL JOISTS TO RECEIVE ONE SHOP COAT OF APPROVED PAINT.

12. DESIGN OF JOISTS SHALL BE BY MANUFACTURER'S ENGINEER REGISTERED IN THE STATE OF NEW YORK FOR ALL LOADING CONDITIONS. SHOP DRAWINGS SHALL BEAR THE ENGINEERS SEAL AND SIGNATURE. SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO FABRICATION.

13. JOIST CONTRACTOR SHALL COORDINATE WITH ALL TRADES IN ORDER TO PROVIDE ALL ROOF OPENINGS WHERE REQUIRED.

14. WHEN HORIZONTAL BRIDGING INTERFERES WITH MECHANICAL PENETRATIONS THROUGH THE JOIST SYSTEM, THEN INSTALL TWO (2) ADJACENT BAYS OF BOLTED OR WELDED X-BRIDGING EACH SIDE OF THE PENETRATION. METAL DECKING SHALL BE SECURED IN PLACE AND BRIDGING INSTALLED PRIOR TO CUTTING AND REMOVING HORIZONTAL BRIDGING.

15. ALL CONCENTRATED LOADS SUCH AS FROM ROOFTOP UNITS, PIPING, SUSPENDED EQUIPMENT, ETC. SHALL BE SUPPORTED AT PANEL POINTS OF THE JOIST. IF LOADS NEED TO BE SUPPORTED BETWEEN PANEL POINTS PROVIDE ADDITIONAL REINFORCEMENT (SEE TYPICAL DETAILS).

16. PROVIDE CEILING EXTENSIONS WHERE REQUIRED BY ARCHITECTURAL DRAWINGS OR SPECIFICATIONS.

17. BRIDGING SHALL BE CONNECTED TO THE JOISTS WITH 1/8-INCH FILLET WELD 1-INCH LONG (MINIMUM) OR EQUIVALENT. HORIZONTAL BRIDGING SHALL HAVE A STANDARD 3-INCH LAP AND BE WELDED WITH 2-1/8 INCH FILLET WELDS 1-INCH LONG OR EQUIVALENT.

18. DEFLECTION DUE TO DESIGN LIVE LOAD SHALL NOT EXCEED 1/360 OF SPAN.

19. PROVIDE UPLIFT BRIDGING AT JOIST ENDS AT ALL ROOF JOISTS.

# METAL DECKING

1. STEEL DECKING SHALL BE CORRUGATED STEEL SHEETS, AND SHALL CONFORM TO THE STEEL DECK INSTITUTE SPECIFICATIONS, AND MEET THE REQUIREMENTS SPECIFIED HEREIN. SEE DRAWINGS FOR SIZE, GAGE AND TYPE. STEEL SHALL MEET ASTM A-653, GRADE 33, MINIMUM YIELD OF 33 KSI. GALVANIZING SHALL CONFORM TO REQUIREMENTS OF ASTM A-653 COATING CLASS G90. STEEL FOR PAINTED METAL DECK SHALL CONFORM TO ASTM A1008 GRADE.

2. INSTALLATION:
   A. GENERAL: DECKING SHALL BE COMPLETE, INCLUDING ALL SHAPING, CUTTING, FITTING, DRILLING,WELDING, FASTENINGS, COLUMN CLOSURES, RIDGE AND VALLEY PLATES, SUMP AND CANT STRIPS AND ALL OTHER ACCESSORIES AND MISCELLANEOUS PIECES NECESSARY FOR PROPER EDGING INSTALLATION. CLOSURE ELEMENTS FOR CONTAINMENT OF CONCRETE DURING POUR DECKING SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. END LAPS SHALL BE TWO INCHES MINIMUM, SHALL OCCUR OVER SUPPORTS, AND SHALL BE CENTERED THEREON. ADJACENT ROWS SHALL BE SIDE LAP ONE CORRUGATION WITH PREVIOUSLY PLACED ROW.
   B. WELDING: SHALL CONFORM TO APPLICABLE REQUIREMENTS OF AMERICAN IRON AND STEEL INSTITUTE'S "SPECIFICATION FOR THE DESIGN OF LIGHT GAGE COLD-FORMED STEEL STRUCTURAL MEMBERS." WORK SHALL BE PERFORMED BY QUALIFIED WELDERS, SHEETS SHALL BE WELDED TO SUPPORTS IMMEDIATELY AFTER ALIGNMENT, AND ALL SHEETS SHALL BE WELDED BEFORE END OF WORKING DAY. WELDING SHALL MEET FOLLOWING MINIMUM REQUIREMENTS. USE ELECTRODE AWS DI.3 AND WELD TO ALL SUPPORTING MEMBERS IN ACCORDANCE WITH AWS REQUIREMENTS.
      1) A MINIMUM VISIBLE 3/4" DIAMETER ARC PUDDLE WELD SHALL BE USED. WELD METAL SHALL PENETRATE ALL LAYERS OF DECK MATERIAL, AND SHALL HAVE GOOD FUSION TO SUPPORTING MEMBERS.
      2) EXCEPT AS NOTED, DECK SHALL BE FASTENED BY 3/4" DIAMETER FUSION WELDS AT 12" O.C. AT ENDS AND INTERIOR SUPPORTS PERPENDICULAR TO DECK SPAN AND AT EDGE AND INTERIOR SUPPORTS PARALLEL TO THE DECK SPAN.
      3) SIDE LAPS TO BE WELDED OR SCREWED WITH #12 SELF DRILLING SCREWS WITH MAXIMUM SPACING AT 3'-0" O.C.

3. METAL DECK TO BE INSTALLED CONTINUOUSLY OVER SUPPORTING MEMBERS WITH A MINIMUM OF THREE CONTINUOUS SPANS AND SHALL BEAR AT LEAST TWO INCHES MINIMUM BEARING AT FLOOR DECK SUPPORTS AND THREE INCH MINIMUM BEARING AT ROOF DECK SUPPORTS.

4. SHEAR STUDS SHALL BE CONSIDERED TO REPLACE WELDS.

5. FOR ONE OR TWO SPAN CONDITIONS, THE CONTRACTOR SHALL PROVIDE SHORING AS REQUIRED OR FURNISH HIGHER GAGE AS REQUIRED TO SUPPORT ALL APPLICABLE LOADS.

6. THE CONTRACTOR SHALL DEPOSIT ALL CONCRETE DURING PLACING IN SUCH A MANNER AS NOT TO OVERLOAD THE METAL DECK.

7. THE CONTRACTOR SHALL CALCULATE AND INCLUDE ALL ADDITIONAL CONCRETE THAT MAY BE REQUIRED DURING PLACING DUE TO DEFLECTION OF STRUCTURE.

8. USE ELECTRODE AWS D1.3 AND WELD TO ALL SUPPORTING MEMBERS IN ACCORDANCE WITH AWS REQUIREMENTS. ALL WELDING SHALL BE PERFORMED BY LICENSED WELDERS AND MEET THE REQUIREMENTS OF THE AWS AND THE LOCAL BUILDING CODE. WELDING SHALL NOT BE PERFORMED AT TEMPERATURES BELOW 32 DEGREES F.

9. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS WHICH INDICATE ALL INFORMATION NECESSARY FOR A COMPLETE FABRICATION AND ERECTION OF THE METAL WORK. DRAWINGS SHALL INCLUDE ALL SHAPING, CUTTING, FITTING, DRILLING, WELDING, CLOSURE STRIPS, CLOSURE PLATES, SUMP PANS, FILLERS, FASTENINGS, METAL LATH COLUMN CLOSURES AND ALL OTHER ACCESSORIES AND MISCELLANEOUS PIECES NECESSARY FOR PROPER INSTALLATION. TYPE, NUMBER OF WELDS, LOCATION AND METHOD OF WELDING SHALL BE INDICATED ON SHOP DRAWINGS.

10. STANDARD CLOSURES AND EDGE ANGLE POUR STOPS (SCREED ANGLES) SHALL BE GALVANIZED AND CONFORM TO ASTM A653, CLASS G60, AND PROVIDED AS REQUIRED.

11. BOTTOM OF METAL DECK MUST BE FREE OF DUST, LOOSE SCALE AND OIL PRIOR TO APPLYING ANY CEMENTITIOUS MIXTURE.

12. FLOOR DECK SHALL BE COMPOSITE TYPE AND MANUFACTURED WITH INTEGRAL HANGER TABS FOR VENTING PURPOSES ONLY.

13. PROVIDE ADDITIONAL ANGLE SUPPORTS UNDER DECK AT ALL COLUMNS.

14. NO LOADS SUCH AS MECHANICAL EQUIPMENT, PIPING, DUCTS, LIGHTING, ETC., SHALL BE HUNG DIRECTLY FROM METAL DECK. HANGERS FOR DUCTWORK, PIPING, ETC. SHALL BE HUNG DIRECTLY FROM STRUCTURAL STEEL MEMBER OR SUPPLEMENTARY MEMBERS OR ANCHORS EMBEDDED IN CONCRETE. SUBMIT HANGER LOAD DETAILS FOR REVIEW.

15. DECK CONTRACTOR SHALL COORDINATE OPENING SIZES AND LOCATIONS IN FLOORS AND ROOF FROM ARCHITECTURAL AND MECHANICAL DRAWINGS. HE SHALL PROVIDE ANY HEADER MEMBERS OR REINFORCEMENT AS REQUIRED EVEN IF NOT SHOWN ON PLANS.

16. CONSTRUCTION JOINTS FOR SLABS ON METAL DECK SHALL BE LOCATED MIDWAY BETWEEN BEAMS WHERE THE JOINT IS PARALLEL TO THE BEAM SPAN. WHERE THE JOINT IS PERPENDICULAR TO THE BEAM SPAN THE JOINTS SHALL BE LOCATED WITHIN THE MIDDLE THIRD OF SPAN.


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NOTES

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