



Ragone Architecture & Design, PLLC  
145A Souterway Road, Charlotte, NC 28208  
T: 704.372.0118 www.rad-arch.com



Fitzpatrick  
ENGINEERING  
CONSULTING  
STRUCTURAL  
ENGINEERS

1820 W. Columbia Ave.  
Suite 311  
Carrboro, NC  
27510  
P: 919.487.9114  
F: 919.487.9115  
www.fitzpatrick-eng.com



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KEY PLAN

Revisions		
#	Date	Description

Project Number: 18021  
Issued for: CONSTRUCTION  
Issue Date: 06/07/19

DRAWING TITLE  
**GENERAL NOTES**

SHEET NUMBER  
**S-301**

**SHOP DRAWINGS**

- ALL SHOP DRAWINGS MUST BE REVIEWED AND STAMPED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTAL.
- THE GENERAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO ENGINEER FOR REVIEW OF THE FOLLOWING APPLICABLE ITEMS:
  - ALL STRUCTURAL STEEL, INCLUDING MISCELLANEOUS EMBEDMENTS. STEEL FABRICATION SHOP DRAWINGS ARE TO BE SUBMITTED TO STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO FABRICATION. THE STRUCTURAL ENGINEER IS TO REVIEW DRAWINGS FOR COMPLIANCE WITH DESIGN DOCUMENTS. ENGINEER IS TO REVIEW TYPE OF MATERIAL, MEMBER SIZES, AND CONNECTIONS AND RETURN DRAWINGS TO THE STEEL FABRICATOR NOTING ANY DISCREPANCIES. THE STEEL FABRICATOR IS RESPONSIBLE FOR ALL FABRICATION DIMENSIONS.
  - STRUCTURAL STEEL FRAMING CONNECTIONS.
  - OPEN WEB STEEL JOIST CALCULATIONS.
  - REINFORCING STEEL.
  - STEEL STAIRS.
  - STRUCTURAL STEEL DECK.
  - CONCRETE FINISHES.
  - PROTECTION JOINT LOCATIONS ON STRUCTURAL FLOORS.
  - COLD-FORMED METAL STUD, JAMBS, AND HEADERS AND/OR TRUSSES WITH CALCULATIONS.
  - WOOD TRUSSES WITH CALCULATIONS.
  - PRECAST CMU UNITS, PANELS, JOISTS, SLABS, ETC.
  - ANCHOR BOLT SUBMITTAL.
  - MECHANICAL EQUIPMENT REQUIRING STRUCTURAL SUPPORT.
  - ELEVATOR SHOP DRAWINGS.
  - DOCK LEVELER SHOP DRAWINGS.
  - CONCRETE CURING MATERIALS.
  - MECHANICAL ANCHOR SUBSTITUTIONS.
  - ARCHITECTURAL AND STRUCTURAL PRECAST ELEMENTS.
  - HAUPEN OR OTHER PRE-FABRICATED UNITS.
  - ROOF TRUSSES.
  - PRE-ENGINEERED METAL BUILDING MATERIALS.
  - UNISTRUT DRAWINGS.
  - MASONRY BLOCK.
  - GULCHAM AND HEAVY TRUSS CONNECTIONS.
  - FALL PROTECTION ANCHORAGE SYSTEM.
  - CURTAIN WALL ANCHORAGE SYSTEM.
- ITEMS MARKED (C) SHALL HAVE SHOP DRAWINGS SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF THE PROJECT LOCATION.

**STEEL STAIRS**

- THE ENGINEERING OF THE ALL STEEL STAIR FRAMING, INCLUDING THEIR CONNECTIONS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
- STEEL STAIRS AND PLATFORMS SHALL BE DESIGNED FOR A MINIMUM UNIFORM LIVE LOAD OF 100 PSF OR A CONCENTRATED LOAD OF 300 POUNDS ON A 4 SQUARE INCH AREA, WHICHEVER PRODUCES THE GREATEST STRESS. MAXIMUM LIVE LOAD DEFLECTION SHALL BE LIMITED TO L/360, OR 1/4", WHICHEVER IS LESS.
- SHOP DRAWINGS AND SAMPLE CALCULATIONS SHALL BE REVIEWED AND SEALED BY A REGISTERED ENGINEER IN THE LOCAL JURISDICTION SHALL BE SUBMITTED FOR REVIEW.
- SIZES INDICATED ON THE CONTRACT DRAWINGS ARE THE MINIMUM ACCEPTED SIZES ONLY, AND THE STAIR SUPPLIERS USE OF THEM DOES NOT RELIEVE HIM OF THE RESPONSIBILITY FOR THEIR DESIGN.

**STEEL**

- GENERAL SPECIFICATIONS (FABRICATION AND ERECTION):
  - STRUCTURAL STEEL SHALL BE DESIGNED, DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIGDES.
  - MATERIALS SHALL CONFORM TO THE FOLLOWING UNLESS NOTED OTHERWISE:
    - W AND WT SHAPES: ASTM A992 GRADE 50
    - CHANNELS, ANGLES, PLATES: ASTM A36
    - PIPES: ASTM A53, GRADE B
    - STEEL TUBES: ASTM A500, GRADE C, 46 ksi
    - STEEL TUBES: HEAVY RECTANGULAR/SQUARE: ASTM A500, GRADE C, 50 ksi
    - ANCHOR BOLTS: ASTM F1554, GRADE 36
    - SHEAR STUD CONNECTORS: ASTM A108, F436 KS1
    - BOLTS: ASTM A325 OR A490, 3/4" DIAMETER (MIN)
    - ALL WELDING ELECTRODES SHALL BE E70XX.
  - GENERAL CONTRACTOR TO PROVIDE TEMPORARY BRACINGS AND PRECAUTIONS NECESSARY TO WITHSTAND ALL CONSTRUCTION AND OR WIND LOADS UNTIL ALL FIELD CONNECTIONS ARE COMPLETED AND SHEAR WALLS ARE IN PLACE.
  - SPlicing OF THE STRUCTURAL STEEL IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE STRUCTURAL ENGINEER AS TO THE LOCATION AND TYPE OF THE SPlice TO BE MADE.
  - STEEL FABRICATOR IS TO BE CERTIFIED BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) FOR CONVENTIONAL STEEL BUILDING STRUCTURES. ERECTOR IS TO BE CERTIFIED BY AISC AS A CERTIFIED STEEL ERECTOR.
  - WHERE NEW STEEL FRAMES INTO EXISTING STEEL, SIZE AND ELEVATION OF EXISTING STEEL SHALL BE FIELD VERIFIED PRIOR TO FABRICATION OF NEW STEEL.
  - CONNECTIONS NOT DETAILED IN THE CONSTRUCTION DOCUMENTS SHALL BE DESIGNED BY FABRICATOR OR DETAILER. ALL CONNECTIONS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL REGISTERED ENGINEER.
  - STEEL STAIR SHALL BE DESIGNED BY A PROFESSIONAL REGISTERED ENGINEER UNLESS OTHERWISE NOTED. SHOP DRAWINGS INCLUDING PLANS, SECTIONS AND ATTACHMENTS TO STRUCTURE SHALL BE PROVIDED FOR REVIEW. MINIMUM LIVE LOAD 100 PSF OR 300 ROUND CONCENTRATED LOAD ON A 4 SQUARE INCH AREA WHICHEVER PRODUCES A GREATER STRESS. LIMIT DEFLECTION TO L/360.
  - ALL GAMBER TO BE ORIENTATED UPWARD. ALL STEEL USED IN PARALLEL WITH JOIST SHALL HAVE SAME GAMBER AS JOIST.
  - ALL ALUMINUM AND STEEL MEMBERS TO BE TREATED OR PROPERLY SEPARATED TO PREVENT GALVANIC AND CORROSIIVE EFFECTS.
  - INDICATES MOMENT CONNECTION.
  - STEEL SHOP DRAWINGS SHALL SHOW AND NOTE ALL MATERIALS REQUIRED WITH RELATIVE LOCATIONS AND SUFFICIENT DETAILS FOR PROPER FABRICATION AND ERECTION IN ACCORDANCE WITH ALL CONTRACT DRAWINGS AND DOCUMENTS.
- BOLTED CONNECTIONS:
  - ALL BOLTED CONNECTIONS SHALL BE DETAILED FOR REACTIONS IN KIPS (K) INDICATED ON PLAN. FOR LOADS NOT INDICATED ON PLAN OR SPECIFIED IN SHEET NOTES, PROVIDE A SHEAR CONNECTION WITH A MINIMUM 10 KIPS FOR LRFD AND 6 KIPS FOR ASD OR 60% OF MAXIMUM TOTAL UNIFORM LOAD SHOWN IN THE AISC MANUAL, WHICHEVER IS GREATER. PROVIDE A MINIMUM NUMBER ROWS OF BOLTS AS INDICATED BELOW FOR THE CORRESPONDING BEAM SIZES.
 

W8 AND W10	2 BOLTS
W12 AND W14	3 BOLTS
W16 AND W18	4 BOLTS
W20 AND W24	6 BOLTS
W27 AND W30	7 BOLTS
  - BOLTS TO BE INSTALLED IN PROPERLY ALIGNED HOLES, TIGHTENED TO THE SNUG TIGHT CONDITION I.N.O. THE SNUG TIGHT CONDITION IS DEFINED AS THE TIGHTNESS THAT EXISTS WHEN ALL PILES IN A JOINT ARE IN FIRM CONTACT. THIS MAY BE ATTAINED BY A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF A MAN USING AN ORDINARY SPUD WRENCH.
  - SLIP CRITICAL BOLTED CONNECTIONS SHALL CONFORM TO AISC SPECIFICATIONS FOR STRUCTURAL JOINTS USING HIGH STRENGTH BOLTS. 2009 EDITION. SLIP CRITICAL BOLTED CONNECTIONS TO USE LOAD INDICATOR WASHERS.
    - WHERE DIRECT TENSION INDICATORS ARE USED TESTING SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.
    - WHERE BOLTING IS BY TURN-OF-NUT OR CALIBRATED WRENCH, THE INSPECTOR SHALL BE PRESENT TO OBSERVE PROCEEDINGS AND CHECK WRENCH CALIBRATION EACH DAY THAT BOLTING IS BEING PERFORMED. HE WILL ALSO OBSERVE THAT BOLT SIZE, TYPE AND CONDITION OF LUBRICANT AND LUBRICANT FOR BOLTS BEING INSTALLED IS CONSISTENT WITH THE BOLTS USED FOR CALIBRATING THE WRENCHES THAT DAY.
    - FOR BOLTED BRACE FRAMES UNLESS SHOWN OTHERWISE IN DETAILS PROVIDED IN CONSTRUCTION DOCUMENTS.
  - HOLE TYPES AND WASHER REQUIREMENTS
    - STANDARD HOLES - STANDARD HOLES SHALL BE PROVIDED IN ALL STEEL MEMBERS. CONNECTIONS UNLESS OTHERWISE SHOWN OR SPECIFIED AS SHORT-SLOTTED, OR OVERSIZED HOLES ARE CALLED FOR ON DESIGN DRAWINGS.
    - OVERSIZED HOLES - OVERSIZED HOLES ARE PERMITTED IN ANY OR ALL PLATES OF SLIP CRITICAL CONNECTIONS, BUT SHALL NOT BE PERMITTED IN BEAMS. THE CONNECTIONS, HARDENED WASHERS SHALL BE INSTALLED AS SHOWN ON DETAILS.
      - SHORT-SLOTTED HOLES - SHORT-SLOTTED HOLES ARE PERMITTED IN ALL PLATES OF SLIP CRITICAL OR BEARING-TYPE CONNECTIONS. THESE HOLES ARE PERMITTED WITHOUT REGARD TO DIRECTION OF LOADING IN SLIP CRITICAL CONNECTIONS, BUT THE LENGTH SHALL BE NORMAL TO THE DIRECTION OF THE LOAD IN BEARING TYPE CONNECTIONS. HARDENED WASHERS SHALL BE INSTALLED OVER SHORT-SLOTTED HOLES IN AN OUTER PLY, WHILE A325 OR A490 BOLTS ARE USED. WASHERS SHALL BE HARDENED AND CONFORM TO ASTM F436.
      - LONG-SLOTTED HOLES - LONG-SLOTTED HOLES ARE PERMITTED IN ONLY ONE OF THE CONNECTED PARTS OF EITHER A SLIP CRITICAL OR BEARING-TYPE CONNECTION AT AN END JOINT. FRAMING SURFACE LONG-SLOTTED HOLES ARE PERMITTED WITHOUT REGARD TO DIRECTION OF LOADING IN SLIP CRITICAL CONNECTIONS, BUT THE LENGTH SHALL BE NORMAL TO THE DIRECTION OF THE LOAD IN BEARING TYPE CONNECTIONS. WHERE LONG-SLOTTED HOLES ARE USED IN AN OUTER PLY, PLATE WASHERS OR A CONTINUOUS BAR WITH STANDARD HOLES, HAVING A SIZE SUFFICIENT TO COMPLETELY COVER THE SLOT AFTER INSTALLATION, SHALL BE PROVIDED. IN HIGH-STRENGTH BOLTED CONNECTIONS, SUCH PLATE WASHERS OR CONTINUOUS BARS SHALL BE NOT LESS THAN 5/16" THICK AND SHALL BE OF STRUCTURAL GRADE MATERIAL, BUT NEED NOT BE HARDENED. FOR A307 BOLTS GREATER THAN 1/2" IN DIAMETER, A 5/16" MINIMUM THICKNESS HARDENED WASHER CONFORMING TO ASTM F436 SHALL BE USED UNDER BOTH THE HEAD AND THE NUT IN AN OVERSIZED HOLE OR IN AN OUTER PLY OF SLOTTED HOLES. MULTIPLE HARDENED WASHERS WITH A COMBINED THICKNESS EQUAL TO OR GREATER THAN 5/16" DO NOT SATISFY THIS REQUIREMENT.
      - WHERE THE OUTER FACE OF THE BOLTED PARTS HAS A SLOPE GREATER THAN 1/20 WITH RESPECT TO A PLANE NORMAL TO THE BOLT AXIS, A HARDENED BEVELLED WASHER SHALL BE USED TO COMPENSATE FOR THE LACK OF PARALLELISM.

**SPECIAL NOTES**

- NO SCALE

**WELDED CONNECTIONS:**

- WELDED CONNECTIONS TO CONFORM TO A.W.S. D1 STRUCTURAL WELDING CODE - STEEL.
- WELDS IS TO BE PERFORMED BY A WELDER QUALIFIED TO PERFORM THE SPECIFIED WELDS.
- QUALIFICATION OF THE WELDER SHALL BE DETERMINED BY TESTS AS PRESCRIBED IN SECTION 4, PART C, OF THE AMERICAN WELDING SOCIETY - STRUCTURAL WELDING CODE - STEEL, A.W.S. D1.
- WELD INSPECTION:
  - WELDS ARE TO BE INSPECTED BY A QUALIFIED INSPECTOR. A QUALIFIED INSPECTOR SHALL MAINTAIN CURRENT CERTIFICATION AS AN AMERICAN WELDING SOCIETY (AWS) CERTIFIED WELDING INSPECTOR (CWI) IN ACCORDANCE WITH A.W.S. D01, STANDARD AND GUIDE FOR QUALIFICATION AND CERTIFICATION OF WELDING INSPECTORS.
  - VISUAL INSPECTION:
    - FOR ACCEPTABLE QUALIFICATION, WELDS SHALL MEET THE FOLLOWING:
      - THE WELD SHALL BE FREE OF CRACKS.
      - ALL CRATERS SHALL BE FILLED TO THE FULL CROSS SECTION OF THE WELD.
      - THE FACE OF THE WELD SHALL BE FLUSH WITH THE SURFACE OF THE BASE METAL, AND THE WELD SHALL MERGE SMOOTHLY WITH THE BASE METAL. UNDERCUT SHALL NOT EXCEED 1/32" (1 mm). WELD REINFORCEMENT SHALL NOT EXCEED 1/8" (3 mm).
      - THE ROOT OF THE WELD SHALL BE INSPECTED, AND THERE SHALL BE NO EVIDENCE OF CRACKS, INCOMPLETE FUSION, OR INADEQUATE JOINT PENETRATION. A CONCAVE ROOT SURFACE IS PERMITTED WITHIN THE LIMITS SHOWN BELOW. PROVIDED THE TOTAL WELD THICKNESS IS EQUAL TO OR GREATER THAN THAT OF THE BASE METAL.
      - THE MAXIMUM ROOT SURFACE CONCAVITY SHALL BE 1/8" (3 mm) AND THE MAXIMUM MELT THROUGH SHALL BE 1/8" (3 mm) FOR TUBULAR T, Y, AND X CONNECTIONS. MELT THROUGH AT THE ROOT IS CONSIDERED DETRIMENTAL AND SHALL NOT BE CAUSE FOR REJECTION.
    - AMOUNT OF WELDS TO BE INSPECTED IS AS FOLLOWS:
      - Fillet welds
      - 100% OF ALL SHOP WELDS
      - 100% OF ALL FIELD WELDS
    - PULL AND PARTIAL PENETRATION WELDS
    - 100% OF ALL SHOP AND FIELD WELDS
    - MINIMUM WELDS TO BE BY AISC AND/OR AWS, BUT NOT LESS THAN 3/16" E70XX CONTINUOUS FILLET WELDS, OTHERWISE NOTED.
    - WHERE FIELD WELDING IS REQUIRED, WELD AREAS SHALL BE STRIPPED OF PAINT AND RUST. ALL EXPOSED METAL SHALL BE PAINTED AFTER WELDING.
- PAINTING:
  - ALL STRUCTURAL STEEL AND MISCELLANEOUS STEEL IS TO HAVE ONE SHOP COAT OF GRAY PRIMER PAINT. STEEL IN CONTACT WITH CONCRETE, AT TOP OF FLANGE OF COMPOSITE BEAMS, AND BEAMS TO RECEIVE FIRE PROOFING CEMENTITIOUS SPRAY SHALL NOT BE PAINTED.
  - HOT DIP GALVANIZE ALL STRUCTURAL STEEL ELEMENTS AND CONNECTIONS WHICH SHALL BE EXPOSED TO EXTERIOR CONDITIONS - WHETHER PROTECTED ON THE WINDS OR NOT - AFTER FABRICATION. ITEMS SHALL INCLUDE BUT NOT BE LIMITED TO:
    - SHELF ANGLES OR PLATES AND UNITS, ANGLES OR PLATES
    - ATTACH DECK TO SUPPORT BEAMS, JOISTS OR PLATES WITH 5/8" PULVIE WELDS AT 8" O.C.
    - SIDELAPS TO BE ATTACHED W/ 810 TEK SCREWS AT 12" O.C.
  - ALL FIELD WELDING OF DECK SHALL BE IN ACCORDANCE WITH AWS/AWS D13 STRUCTURAL WELDING CODE - SHEET STEEL.
  - WELD METAL SHALL PENETRATE ALL LAYERS OF DECK MATERIAL AND SHALL HAVE GOOD FUSION TO THE SUPPORTING MEMBERS. CARE SHALL BE EXERCISED IN THE SELECTION OF ELECTRODES AND AMPERAGE TO PROVIDE POSITIVE WELD AND PREVENT HIGH AMPERAGE BLOW HOLES.
  - ALL BLOW HOLES ARE TO BE REPAIRED BY DECK INSTALLER PRIOR TO INSTALLING ROOFING MATERIAL.
  - WELDS WASHERS SHALL BE USED ON ALL STEEL UNITS WITH A STEEL WELDER SHALL BE 1/2" O.D. (2.0 INCHES (2.0 GAGE)) WELDING WASHERS SHALL BE A MINIMUM THICKNESS OF 0.055 INCHES (1.6 GAGE), AND HAVE A NOMINAL 3/8" DIAMETER HOLE.
  - PROVIDE A MINIMUM EXTERIOR BEARING LENGTH 2" AND MINIMUM INTERIOR BEARING LENGTH 4" OVER SUPPORTS.
  - END LAPS OF SHEETS SHALL BE A MINIMUM OF TWO INCHES AND SHALL OCCUR OVER SUPPORTS. ROOF SHALL BE ERECTED BEGINNINGS AT THE LOW SIDE TO ENSURE THAT END LAPS ARE SHINGLE FASHION. PROVIDE 1/4" BENT PLATE AT ALL HPS, SKEWED BEAMS, ETC.
- COMPOSITE FLOOR DECK:
  - COMPOSITE STEEL DECK SHALL BE DESIGNED TO REQUIRE NO TEMPORARY SHORING FOR CONSTRUCTION LOADS (WET CONCRETE + 20 PSF) EXCEPT AT SINGLE SPAN CONDITIONS. ALLOWABLE CONSTRUCTION LOADS SHALL BE SHOWN ON STEEL DECK SHOP AND ERECTION DRAWINGS.
  - FASTEN COMPOSITE FLOOR DECK UNITS TO SUPPORTING STEEL MEMBERS BY NOT LESS THAN 3/4" DIAMETER WELDS OR ELONGATED WELDS OF EQUAL PERIMETER SPACED NOT MORE THAN 12" O.C. WITH A MINIMUM OF 2 WELDS PER UNIT AT EACH SUPPORT. FASTEN PERIMETER EDGES OF DECK AT 6" ON CENTER. SIDE LAPS TO BE ATTACHED WITH 810 TEK SCREWS AT 8" ON CENTER. MAXIMUM OF FOUR (4) SCREWS PER SPAN WHICHEVER DISTANCE IS SMALLER UNLESS NOTED OTHERWISE ON PLANS.
  - SHEAR CAPACITY OF HEADED STUDS VARIES WITH THE PROPERTIES OF THE COMPOSITE DECK. THE DECK SUPPLIER SHALL PROVIDE DECK WITH A CONFIGURATION THAT DOES NOT REDUCE STUD CAPACITY PER AISC REQUIREMENTS.
  - THE COMPOSITE FLOOR SLAB IS NOT DESIGNED TO CARRY MASONRY WALLS UNLESS A BEAM OCCURS DIRECTLY UNDER THE WALL OR THE CENTERLINE OF THE WALL IS WITHIN THE DISTANCE THE CENTERLINE OF THE BEAM NOT GREATER THAN THE DEPTH OF THE SLAB AND THE DECK CAPACITY AND PROPERTIES SHALL BE CLEARLY INDICATED ON THE SHOP DRAWINGS. ADDITIONAL REINFORCEMENT REQUIRED BY THE DECK SUPPLIER OR THE STRUCTURAL ENGINEER TO ACCOMMODATE THAT PARTICULAR SUPPORTS DECK SHALL BE DESIGNED, DETAILED, AND PROVIDED BY THAT DECK SUPPLIER AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR SLAB REPAIRS.
  - MANUFACTURER SHALL PROVIDE VALUES FOR ADDITIONAL CONCRETE VOLUME EXPECTED FROM DEFLECTION OF HIS DECK BASED ON THE SPANS REQUIRED AND CONTRACTOR SHALL FURNISH THE ADDITIONAL CONCRETE REQUIRED.
  - POWDER ACTUATED DECK FASTENERS MAY BE USED IN L.I.O.F. WALL CONNECTIONS PROVIDED DOCUMENTATION IN THE FORM OF TEST DATA, DESIGN CALCULATIONS, LOAD TESTS CHARTS ARE PROVIDED TO THE ENGINEER FOR APPROVAL.
  - ROOF AND FLOOR OPENINGS NOT SHOWN ON PLANS SHALL BE LAYED WITH 12" X 18" X 1/4" ANGLE. DO NOT HANG MECHANICAL PLUMBING, HVAC, FIRE SPRINKLERS, OR OTHER SERVICES TO METAL DECK OR METAL DECK WITH CONCRETE. CONTRACTOR TO PROVIDE SUPPORT BEAM FOR HANGERS.

**PAINTING**

- ALL STRUCTURAL STEEL AND MISCELLANEOUS STEEL IS TO HAVE ONE SHOP COAT OF GRAY PRIMER PAINT. STEEL IN CONTACT WITH CONCRETE, AT TOP OF FLANGE OF COMPOSITE BEAMS, AND BEAMS TO RECEIVE FIRE PROOFING CEMENTITIOUS SPRAY SHALL NOT BE PAINTED.
- HOT DIP GALVANIZE ALL STRUCTURAL STEEL ELEMENTS AND CONNECTIONS WHICH SHALL BE EXPOSED TO EXTERIOR CONDITIONS - WHETHER PROTECTED ON THE WINDS OR NOT - AFTER FABRICATION. ITEMS SHALL INCLUDE BUT NOT BE LIMITED TO:
  - SHELF ANGLES OR PLATES AND UNITS, ANGLES OR PLATES
  - ATTACH DECK TO SUPPORT BEAMS, JOISTS OR PLATES WITH 5/8" PULVIE WELDS AT 8" O.C.
  - SIDELAPS TO BE ATTACHED W/ 810 TEK SCREWS AT 12" O.C.
- ALL FIELD WELDING OF DECK SHALL BE IN ACCORDANCE WITH AWS/AWS D13 STRUCTURAL WELDING CODE - SHEET STEEL.
- WELD METAL SHALL PENETRATE ALL LAYERS OF DECK MATERIAL AND SHALL HAVE GOOD FUSION TO THE SUPPORTING MEMBERS. CARE SHALL BE EXERCISED IN THE SELECTION OF ELECTRODES AND AMPERAGE TO PROVIDE POSITIVE WELD AND PREVENT HIGH AMPERAGE BLOW HOLES.
- ALL BLOW HOLES ARE TO BE REPAIRED BY DECK INSTALLER PRIOR TO INSTALLING ROOFING MATERIAL.
- WELDS WASHERS SHALL BE USED ON ALL STEEL UNITS WITH A STEEL WELDER SHALL BE 1/2" O.D. (2.0 INCHES (2.0 GAGE)) WELDING WASHERS SHALL BE A MINIMUM THICKNESS OF 0.055 INCHES (1.6 GAGE), AND HAVE A NOMINAL 3/8" DIAMETER HOLE.
- PROVIDE A MINIMUM EXTERIOR BEARING LENGTH 2" AND MINIMUM INTERIOR BEARING LENGTH 4" OVER SUPPORTS.
- END LAPS OF SHEETS SHALL BE A MINIMUM OF TWO INCHES AND SHALL OCCUR OVER SUPPORTS. ROOF SHALL BE ERECTED BEGINNINGS AT THE LOW SIDE TO ENSURE THAT END LAPS ARE SHINGLE FASHION. PROVIDE 1/4" BENT PLATE AT ALL HPS, SKEWED BEAMS, ETC.

**COMPOSITE FLOOR DECK:**

- COMPOSITE STEEL DECK SHALL BE DESIGNED TO REQUIRE NO TEMPORARY SHORING FOR CONSTRUCTION LOADS (WET CONCRETE + 20 PSF) EXCEPT AT SINGLE SPAN CONDITIONS. ALLOWABLE CONSTRUCTION LOADS SHALL BE SHOWN ON STEEL DECK SHOP AND ERECTION DRAWINGS.
- FASTEN COMPOSITE FLOOR DECK UNITS TO SUPPORTING STEEL MEMBERS BY NOT LESS THAN 3/4" DIAMETER WELDS OR ELONGATED WELDS OF EQUAL PERIMETER SPACED NOT MORE THAN 12" O.C. WITH A MINIMUM OF 2 WELDS PER UNIT AT EACH SUPPORT. FASTEN PERIMETER EDGES OF DECK AT 6" ON CENTER. SIDE LAPS TO BE ATTACHED WITH 810 TEK SCREWS AT 8" ON CENTER. MAXIMUM OF FOUR (4) SCREWS PER SPAN WHICHEVER DISTANCE IS SMALLER UNLESS NOTED OTHERWISE ON PLANS.
- SHEAR CAPACITY OF HEADED STUDS VARIES WITH THE PROPERTIES OF THE COMPOSITE DECK. THE DECK SUPPLIER SHALL PROVIDE DECK WITH A CONFIGURATION THAT DOES NOT REDUCE STUD CAPACITY PER AISC REQUIREMENTS.
- THE COMPOSITE FLOOR SLAB IS NOT DESIGNED TO CARRY MASONRY WALLS UNLESS A BEAM OCCURS DIRECTLY UNDER THE WALL OR THE CENTERLINE OF THE WALL IS WITHIN THE DISTANCE THE CENTERLINE OF THE BEAM NOT GREATER THAN THE DEPTH OF THE SLAB AND THE DECK CAPACITY AND PROPERTIES SHALL BE CLEARLY INDICATED ON THE SHOP DRAWINGS. ADDITIONAL REINFORCEMENT REQUIRED BY THE DECK SUPPLIER OR THE STRUCTURAL ENGINEER TO ACCOMMODATE THAT PARTICULAR SUPPORTS DECK SHALL BE DESIGNED, DETAILED, AND PROVIDED BY THAT DECK SUPPLIER AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR SLAB REPAIRS.
- MANUFACTURER SHALL PROVIDE VALUES FOR ADDITIONAL CONCRETE VOLUME EXPECTED FROM DEFLECTION OF HIS DECK BASED ON THE SPANS REQUIRED AND CONTRACTOR SHALL FURNISH THE ADDITIONAL CONCRETE REQUIRED.
- POWDER ACTUATED DECK FASTENERS MAY BE USED IN L.I.O.F. WALL CONNECTIONS PROVIDED DOCUMENTATION IN THE FORM OF TEST DATA, DESIGN CALCULATIONS, LOAD TESTS CHARTS ARE PROVIDED TO THE ENGINEER FOR APPROVAL.
- ROOF AND FLOOR OPENINGS NOT SHOWN ON PLANS SHALL BE LAYED WITH 12" X 18" X 1/4" ANGLE. DO NOT HANG MECHANICAL PLUMBING, HVAC, FIRE SPRINKLERS, OR OTHER SERVICES TO METAL DECK OR METAL DECK WITH CONCRETE. CONTRACTOR TO PROVIDE SUPPORT BEAM FOR HANGERS.

MINIMUM METAL DECK PROPERTIES

DECK TYPE	DECK DEPTH (INCHES)	DECK USABE	W (lb/ft)	S <sub>p</sub> (lb/ft)	S <sub>m</sub> (lb/ft)
2VL	20	33	0.409	0.341	0.346
1L	15	33	0.920	0.534	0.551
3	15	33	0.195	0.196	0.192
3	3	33	0.659	0.392	0.433

MINIMUM UNSHORED CLEAR SPAN FOR COMPOSITE METAL DECK

DECK TYPE	CONCRETE ABOVE DECK (IN)	CONCRETE TYPE (UNIT WEIGHT)	1-SPAN	2-SPAN	3-SPAN
2VL-20	3.25	LIGHTWEIGHT (95 PCF)	8'-5"	10'-7"	10'-11"
3VL-20	4.5	NORMAL WEIGHT (145 PCF)	6'-11"	8'-5"	9'-0"

SOI MAXIMUM CONSTRUCTION CLEAR SPAN FOR ROOF DECK

DECK TYPE - GAGE	1-SPAN	2-SPAN	3-SPAN
158-22	5-7	6'-11"	8'-11"
33N-22	7'-7"	9'-8"	10'-8"

- METAL DECK NOTES:
- INSTALL DECK OVER 4 SUPPORTS (3 SPAN CONTINUOUS) WHERE POSSIBLE.
  - METAL DECK SPECIFIED IS MANUFACTURED BY VULCAN. ALTERNATE METAL DECK MAY BE SUPPLIED PROVIDED MINIMUM DECK PROPERTIES AND SOI MAXIMUM UNSHORED CLEAR SPAN SATISFIED.

**COLD FORMED METAL STUD FRAMING**

- STUD DESIGN IS NOT PART OF THE SCOPE OF WORK INCLUDED IN THESE DOCUMENTS. STUDS INDICATED ON THESE DRAWINGS ARE FOR DESIGN INTENT ONLY. ALL COLD FORMED METAL FRAMING IS TO BE DESIGNED BY A REGISTERED ENGINEER, TYPICALLY ENGAGED BY THE STUD FRAMING CONTRACTOR. STUDS SHALL BE DESIGNED FOR LOADS AND DEFLECTION CRITERIA CONSISTENT WITH THE LOAD DATA ON THESE DRAWINGS AND INDUSTRY STANDARDS. COLD FORMED FRAMING ERECTION DRAWINGS SHALL CLEARLY SHOW LAYOUT SPANNESS, SIZES, THICKNESSES, FASTENINGS, ANCHORAGES AND CONNECTION DETAILS AT A MINIMUM.
- STUDS AND JOISTS OF 54, 66 AND 81 ML SHALL BE FORMED FROM STEEL THAT CONFORMS TO ASTM A953, GRADE 50 WITH A MINIMUM YIELD STRENGTH OF 50,000 PSI. ALL 33 AND 43 ML STUDS AND JOISTS, AND ALL TRACK BRIGINGS AND ACCESSORIES SHALL BE FORMED FROM STEEL THAT CONFORMS TO THE REQUIREMENTS OF ASTM A953, GRADE 33 WITH A MINIMUM YIELD STRENGTH OF 33,000 PSI (UNLESS NOTED OTHERWISE).
- ALL STUDS, JOISTS AND ACCESSORIES SHALL BE FORMED FROM STEEL HAVING A G-60 GALVANIZED COATING.
- STUDS SHALL BE STANDARD C-SHAPED STEEL STUDS, OF WEB DEPTHS AND THICKNESSES INDICATED, PUNCHED WITH STREPPED FLANGES. STEEL TRACK SHALL BE STANDARD U-SHAPED STEEL TRACK, OF WEB DEPTHS AND THICKNESSES INDICATED, UNPUNCHED WITH STRAIGHT FLANGES.
- PROVIDE UNIFORM AND LEVEL BEARING SURFACES FOR TRACKS.
- AT TRACK BUTT JOINTS, ABUTTING PIECES OF TRACK SHALL BE BUTT WELDED OR SPLICED TOGETHER.
- STUDS SHALL BE PLUMBED, ALIGNED AND SECURELY ATTACHED TO THE FLANGES OR WEBS OF THE TRACKS. THE ENDS OF THE STUDS MUST BEAR AGAINST THE WEB OR BOTH UPPER AND LOWER TRACKS. PROVIDE SPHRE AND OR WELD AS REQUIRED TO PROVIDE FULL BEARING.
- SPICES IN AXIALLY LOADED STUDS SHALL NOT BE PERMITTED.
- WALL STUD BRIDGING SHALL BE INSTALLED IN A MANNER TO PROVIDE RESISTANCE TO BOTH MAJOR AXIS BENDING AND ROTATION. BRIDGING ROWS SHALL BE EQUALLY SPACED NOT TO EXCEED 4'-0" O.C. VERTICALLY.
- SIZES AND GAGES OF STUDS SHOWN ARE MINIMUM REQUIREMENTS. AS A MINIMUM, PROVIDE MULTIPLE STUDS AT EACH SIDE OF OPENINGS EQUAL TO ONE-HALF OPENING WIDTH DIVIDED BY STUD BRACING HEADERS AND JAMBS NOT SHOWN ON PLAN SHALL BE PROVIDED BY METAL STUD ENGINEER BRACING OF HEADERS TO BE SHOWN ON METAL STUD DRAWINGS.
- METAL STUD FRAMING FROM SLAB ON GRADE TO STEEL FLOOR OR ROOF SHALL BE DESIGNED TO ACCOMMODATE VERTICAL DEFLECTION OF 1/800 OF BEAM SPAN WITHOUT LOADING. THE STUDS BRACING BETWEEN FRAMED FLOORS SHALL BE DESIGNED FOR VERTICAL MOVEMENT OF 1/540 OF BEAM SPAN.
- ALL DESIGN, CONNECTIONS, ETC., SHALL CONFORM TO AISC CURRENT EDITIONS.
- ALTERNATES TO ANCHORS, STRAPS, CONNECTIONS, ETC., SHALL BE SUBMITTED WITH CALCULATIONS FOR REVIEW.

**GEOPIER FOUNDATIONS**

- ALL MAIN LOAD BEARING FOUNDATIONS (SUCH AS THE FOUNDATIONS OF COLUMNS, MULTI-STORY WALLS AND RETAINING WALLS) WERE ANTICIPATED TO BE CONSTRUCTED ON SUBGRADE SOILS WHICH HAVE BEEN APPROVED BY THE INSTALLATION OF A RAMPED AGGREGATE PIER FOUNDATION SYSTEM AT THE TIME OF DESIGN AND WERE DESIGNED TO BEAR ON STRATA CAPABLE OF SUSTAINING A MINIMUM BEARING PRESSURE OF 4000 PSF IN ACCORDANCE WITH THE RECOMMENDATIONS OF GEOPIERS. THE RAMPED AGGREGATE PIER SYSTEM IS TO BE DESIGNED TO LIMIT THE TOTAL SETTLEMENT OF FOUNDATION ELEMENTS BETWEEN COLUMN GRIDS TO A MAXIMUM OF 1/2".
- BEFORE SUBMITTAL OF BOB, THE RAMPED AGGREGATE PIERS DESIGNER/INSTALLER SHALL REVIEW THE FOUNDATIONS LOADS AND FOUNDATION SIZES NOTED ON THE CONTRACT DOCUMENTS. ANY LOCATIONS WHERE THE DESIGNER/INSTALLER REQUIRES LARGER FOUNDATIONS THAN THOSE NOTED IN THE CONTRACT DOCUMENTS TO ACCOMMODATE THE REQUIRED NUMBER OF GEOPIERS SHALL BE NOTED IN THE BID SUBMITTAL. THE GENERAL CONTRACTORS BID SUBMITTAL SHALL INCLUDE THE COST OF THE LARGER FOUNDATIONS REQUESTED BY THE RAMPED AGGREGATE PIER DESIGNER/SUPPLIER.
- THE DESIGN AND INSTALLATION OF THE RAMPED AGGREGATE PIER SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 31.60.00 RAMPED AGGREGATE PIER SYSTEMS OF THE PROJECT SPECIFICATIONS.
- THE RAMPED AGGREGATE PIERS DESIGNER/INSTALLER SHALL PROVIDE THE GENERAL CONTRACTOR WITH A DESIGN SUBMITTAL THAT INCLUDES RAMPED AGGREGATE PIERS DESIGN CALCULATIONS AND CONSTRUCTION DRAWINGS. SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE JURISDICTION AT LEAST THREE (3) WEEKS PRIOR TO THE START OF CONSTRUCTION. THE GENERAL CONTRACTOR WITH A DESIGN SUBMITTAL THAT INCLUDES RAMPED AGGREGATE PIERS DESIGN CALCULATIONS AND CONSTRUCTION DRAWINGS. SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE JURISDICTION AT LEAST THREE (3) WEEKS PRIOR TO THE START OF CONSTRUCTION.
- PRIOR TO ANY EXCAVATIONS AFTER THE RAMPED AGGREGATE PIERS HAVE BEEN INSTALLED, THE CONTRACTOR SHALL CHECK THE PROXIMITY OF THE EXCAVATIONS TO ANY OTHER ELEMENTS AND MAKE SURE THE INTEGRITY OF THOSE ELEMENTS IS MAINTAINED. THE CONTRACTOR SHALL LOCATE AND ADVISE THE RAMPED AGGREGATE PIER INSTALLER/DESIGNER OF ANY AND ALL POTENTIAL CONFLICTS WITH EXISTING AND/OR NEW UTILITIES.

**WOOD**

- ALL STRUCTURAL WOOD MEMBERS AND CONNECTIONS AS "DRY-USE" MOISTURE CONTENT MUST BE 19% OR LESS. STORE WOOD FRAMING IN A DRY AREA WITH PROPER AIR CIRCULATION.
- ALL LUMBER SHALL BE SOUTHERN PINE, SPECIES BY GRADE OR APPROVED EQUAL. ALLOWABLE DESIGN STRESS SHALL BE LOW NATIONAL DESIGN SPECIFICATION (NDS) AND INTERNATIONAL BUILDING CODE (IBC).
- ALL WOOD SHALL BE SURE TREATED LUMBER IN ACCORDANCE WITH AWPA STANDARDS TO A MINIMUM END USE CATEGORY 4. WHERE LUMBER IS IN CONTACT WITH CONCRETE / MASONRY OR OUTSIDE OF BUILDING, END USE CATEGORY 5.
- ALL STRUCTURAL WOOD MEMBERS SHALL BE PROTECTED BY A LASER TAPERS WITH PROPER AIR CIRCULATION.
- ALL LUMBER SHALL BE SOUTHERN PINE, SPECIES BY GRADE OR APPROVED EQUAL. ALLOWABLE DESIGN STRESS SHALL BE LOW NATIONAL DESIGN SPECIFICATION (NDS) AND INTERNATIONAL BUILDING CODE (IBC).
- ALL WOOD SHALL BE SURE TREATED LUMBER IN ACCORDANCE WITH AWPA STANDARDS TO A MINIMUM END USE CATEGORY 4. WHERE LUMBER IS IN CONTACT WITH CONCRETE / MASONRY OR OUTSIDE OF BUILDING, END USE CATEGORY 5.
- ALL STRUCTURAL WOOD MEMBERS SHALL BE PROTECTED BY A LASER TAPERS WITH PROPER AIR CIRCULATION.



**SPECIAL NOTES**  
NO SCALE