# GENERAL STRUCTURAL NOTES

## A. GENERAL

1. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE STRUCTURAL ENGINEERS IN THIS OR SIMILAR LOCALITIES. THEY ASSUME THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKMEN WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.

2. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, LAGGING, SHORING, BRACING, FORM-WORK, ETC. AS REQUIRED FOR THE PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. CONSTRUCTION MATERIALS SHALL BE UNIFORMLY SPREAD OUT SUCH THAT DESIGN LIVE LOAD PER SQUARE FOOT AS NOTED HEREIN IS NOT EXCEEDED.

3. DESIGN OF ITEMS NOT PART OF THE PRIMARY STRUCTURAL SYSTEM (SUCH AS STAIRS, RAILINGS, NON-STRUCTURAL WALLS) AND PREFABRICATED STRUCTURAL ITEMS (SUCH AS FLOOR, ROOF TRUSSES) SHALL BE PROVIDED BY OTHERS UNLESS SPECIFICALLY NOTED ON THESE DRAWINGS. REFER TO SUBMITTALS SECTION FOR ITEMS THAT MUST BE SUBMITTED FOR REVIEW AND FOR SUBMITTAL REQUIREMENTS.

4. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, CONDITIONS AND ELEVATIONS WITH ARCH'L. DRAWINGS AND RESOLVE ANY DISCREPANCIES WITH THE ARCHITECT PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR ARCH'L., MECH., PLUMBING AND ELECTRICAL WITH APPROPRIATE TRADES, DRAWINGS AND SUBCONTRACTORS PRIOR TO CONSTRUCTION.

5. TYPICAL DETAILS AND NOTES SHALL APPLY, THOUGH NOT NECESSARILY INDICATED AT A SPECIFIC LOCATION ON PLANS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT. DETAILS MAY SHOW ONLY ONE SIDE OF CONNECTION OR MAY OMIT INFORMATION FOR CLARITY.

6. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS.

7. STANDARDS AND CODE REFERENCES NOTED IN THESE CONSTRUCTION DOCUMENTS REFER TO THE EDITIONS ADOPTED BY THE BUILDING CODE SPECIFIED IN THE BASIS FOR DESIGN. REFERENCES NOT SPECIFICALLY ADOPTED BY SAID BUILDING CODE REFER TO THE LATEST EDITION.

8. ALL INSPECTIONS REQUIRED BY THE BUILDING CODES, JURISDICTION, OR THESE PLANS SHALL BE PROVIDED BY AN INDEPENDENT INSPECTION COMPANY OR THE BUILDING DEPARTMENT. SITE VISITS BY THE ENGINEER DO NOT CONSTITUTE AN INSPECTION.

## B. BASIS FOR DESIGN

| | | |
|---|---|---|
| 1. BUILDING CODE: | COUNTY OF LOS ANGELES BUILDING CODE 2017 | |
| 2. ROOF LOADS: | DEAD LOAD:<br>15 PSF | LIVE LOAD (REDUCIBLE):<br>20 PSF |
| 3. MEZZANINE LOADS: | DEAD LOAD:<br>19 PSF (INCLUDING INTERIOR NON-LOAD BEARING WALLS) | LIVE LOAD (NON-REDUCIBLE):<br>125 PSF LIGHT STORAGE |
| 4. WIND LOADS: | 110 MPH ULTIMATE WIND SPEED<br>EXPOSURE C<br>INTERNAL PRESSURE COEFFICIENT (GCpi) = 0.18 | COMPONENT AND CLADDING WIND PRESSURE PER ASCE7-10 |
| 5. SEISMIC LOADS: | SITE CLASS D<br>SEISMIC DESIGN CATEGORY D<br>R = 4.0<br>SS = 1.619<br>S1 = 0.513<br>SDS = 1.079<br>SD1 = 0.593 | SYSTEM: FLAT-STRAP BRACING<br>ANALYSIS: EQUIVALENT LATERAL FORCE PROCEDURE<br>BASE SHEAR, V = CsW = 0.193 W |
| 6. SNOW LOADS: | NONE | |
| 7. RISK CATEGORY: | RISK CATEGORY II<br>SEISMIC IMPORTANCE FACTOR = 1.0 | |

## C. FOUNDATION

1. FOUNDATIONS DESIGNED PER RECOMMENDATIONS BY COUNTY OF LOS ANGELES BUILDING CODE 2017

2. ALLOWABLE DEAD PLUS LIVE LOAD SOIL PRESSURE = 1500 PSF.

3. TRENCHES AND EXCAVATIONS UNDER OR ADJACENT TO FOUNDATIONS SHALL BE PROPERLY BACKFILLED AND COMPACTED.

4. WATER PROOFING AS MAY BE REQUIRED AT SOIL FACE OF WALLS BELOW GRADE SHALL BE BY OTHERS.

## D. CONCRETE

1. ALL CONCRETE CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH ACI 318 AND ACI 301, EXCEPT AS MODIFIED BY THE CONSTRUCTION DOCUMENTS.

2. DUE TO SEVERE/VERY SEVERE SULFATE CONTENT OF THE ON-SITE SOILS, MIN. 28 DAY COMPRESSIVE STRENGTH, f'c, SHALL BE 4500 PSI AND MAX. WATER/CEMENT RATIO SHALL BE 0.45 FOR ALL CONCRETE IN CONTACT WITH SOIL. (FOUNDATION DESIGN BASED ON 2500 PSI.)

| SULFATE EXPOSURE | MAX. WATER-CEMENT RATIO | MIN. 28 DAY COMPRESSIVE STRENGTH f'c (PSI) |
|---|---|---|
| NEGLIGIBLE | --- | 2500 |
| MODERATE | 0.50 | 4000 |
| SEVERE AND VERY SEVERE | 0.45 | 4500 |

3. CONCRETE MIXES SHALL BE DESIGNED BY A CERTIFIED LABORATORY, STAMPED BY AN APPROPRIATELY LICENSED SPECIALTY ENGINEER, AND APPROVED BY THE ENGINEER OF RECORD. MIX DESIGNS SHALL INCLUDE THE PROJECT NAME AND INDICATE THEIR USE WITHIN THE STRUCTURE. MIX DESIGNS SHALL BE PROPORTIONED TO MINIMIZE SHRINKAGE AND HAVE PROVEN SHRINKAGE CHARACTERISTICS OF 0. 05% OR LESS BASED ON TESTING PER ASTM C157.

4. IF USED, EARLY STRENGTH CONCRETE SHALL BE PROPORTIONED TO DEVELOP THE 28 DAY COMPRESSIVE STRENGTH AT THE AGE REQUIRED BY THE CONTRACTOR. CONTRACTOR SHALL SUBMIT TEST DATA FOR REVIEW BY THE STRUCTURAL ENGINEER TO SUBSTANTIATE THE CONCRETE STRENGTH AT THE REQUIRED AGE.

5. ALL CONCRETE SHALL BE NORMAL WEIGHT OF 145 POUNDS PER CUBIC FOOT USING HARD ROCK AGGREGATES CONFORMING TO ASTM C33 U.N.O. WHERE LIGHTWEIGHT CONCRETE IS SPECIFIED, CONCRETE SHALL BE 110 POUNDS PER CUBIC FOOT USING AGGREGATES CONFORMING TO ASTM C330. LARGEST NOMINAL AGGREGATE SIZE SHALL BE 1-1/2" OR GREATER FOR SLABS ON GRADE AND 3/4" OR LESS FOR ALL OTHER CONCRETE U.N.O.

6. MAX. SLUMP SHALL BE 5 INCHES (EXCEPTION: WHERE ADMIXTURES/PLASTICIZERS HAVE BEEN INCLUDED IN MIX DESIGN TO IMPROVE WORKABILITY, SLUMP LIMIT SHALL BE BASED ON ADMIXTURE MFR.'S RECOMMENDATIONS). MIX WATER SHALL BE CLEAN AND POTABLE.

7. PORTLAND CEMENT SHALL CONFORM TO ASTM C150. TYPE V CEMENT SHALL BE USED FOR CONCRETE IN CONTACT WITH EARTH. TYPE II CEMENT MAY BE USED ELSEWHERE. CEMENT SHALL BE TYPE V WITH POZZOLAN WHERE CONCRETE IS IN CONTACT WITH SOIL CONTAINING VERY SEVERE SULFATE EXPOSURE.

8. FLY ASH MAY BE USED IN CONCRETE, SUBJECT TO APPROVAL BY THE ARCHITECT, PROVIDED THE FOLLOWING CONDITIONS ARE MET:

8.1. FLY ASH SHALL COMPLY WITH ASTM C618.

8.2. CEMENT CONTENT SHALL BE REDUCED A MINIMUM OF 15 PERCENT UP TO A MAXIMUM OF 25 PERCENT WHEN COMPARED TO AN EQUIVALENT CONCRETE MIX DESIGN WITHOUT FLY ASH. FLY ASH CONTENT SHALL NOT COMPRISE MORE THAN 35 PERCENT OF THE TOTAL CEMENTITIOUS CONTENT. THE WATER-CEMENT RATIO SHALL BE CALCULATED BASED ON THE TOTAL CEMENTITIOUS MATERIAL IN THE MIX.

8.3. CLASS F FLY ASH SHALL BE USED IN SULFATE RESISTANT CONCRETE WITH f'c EQUAL TO OR GREATER THAN 4000 PSI. CLASS C FLY ASH MAY BE USED ELSEWHERE.

9. WATER SOLUBLE CHLORIDE ION CONCENTRATIONS IN CONCRETE SHALL BE LIMITED PER ACI 318, SECTION 19.3.2.1, EXPOSURE CLASS "C1".

10. TIME BETWEEN CONCRETE BATCHING AND PLACEMENT SHALL BE IN ACCORDANCE WITH ASTM C94.

11. CONCRETE MIXING, PLACEMENT AND QUALITY SHALL BE PER ACI 318. MECHANICALLY VIBRATE ALL CONCRETE WHEN PLACED. SLABS ON GRADE NEED BE VIBRATED ONLY AROUND AND UNDER FLOOR DUCTS OR SIMILAR ELEMENTS. REMOVE ALL DEBRIS FROM FORMS BEFORE PLACING CONCRETE. CONCRETE SHALL NOT BE DROPPED THROUGH REINFORCING STEEL SO AS TO CAUSE SEGREGATION OF AGGREGATES. UNCONFINED FALL OF CONCRETE SHALL NOT EXCEED 5 FEET.

## D. CONCRETE (CONT'D.)

12. PROTECT CONCRETE FROM DAMAGE OR REDUCED STRENGTH DUE TO COLD OR HOT WEATHER IN ACCORDANCE WITH ACI 305 AND 306. CONTRACTOR SHALL TAKE SPECIAL CURING PRECAUTIONS TO MINIMIZE SHRINKAGE CRACKING OF CONCRETE SLABS.

13. ALL ITEMS TO BE CAST IN CONCRETE SUCH AS REINFORCEMENT, DOWELS, BOLTS, ANCHORS, SLEEVES, ETC., SHALL BE SECURELY POSITIONED IN THE FORMS.

14. CONSTRUCTION JOINT SURFACES SHALL BE CLEANED AND LAITANCE REMOVED. HORIZONTAL JOINT SURFACES SHALL BE ROUGHENED TO 1/4" AMPLITUDE. THOROUGHLY WET ALL JOINT SURFACES AND REMOVE STANDING WATER IMMEDIATELY PRIOR TO NEW CONCRETE PLACEMENT.

15. CONCRETE SHALL BE CURED IN ACCORDANCE WITH ACI 318, SECTION 26.5.3.2, UNLESS ALTERNATE METHODS HAVE BEEN APPROVED BY THE ARCHITECT AND ENGINEER. WHERE CURING COMPOUNDS HAVE BEEN APPROVED FOR SLAB CURING, CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING COMPATIBILITY OF COMPOUNDS WITH ANTICIPATED FLOOR FINISH (e.g., RESILIENT TILE) PRIOR TO CURING COMPOUND APPLICATION.

## E. REINFORCING STEEL

1. REINFORCING STEEL SHALL BE DETAILED AND PLACED IN ACCORDANCE WITH ACI 318 AND CRSI'S MANUAL OF STANDARD PRACTICE.

2. REINFORCING STEEL SHALL CONFORM TO ASTM A615 OR ASTM A706 (A706 REQUIRED FOR ALL REINFORCING TO BE WELDED) AND SHALL BE GRADE 60 (fy = 60 KSI) DEFORMED BARS U.N.O. REINFORCING IN SLABS ON GRADE MAY BE GRADE 40 (fy = 40 KSI) DEFORMED BARS FOR ALL BARS #4 AND SMALLER U.N.O. ON PLANS OR DETAILS.

3. RECTANGULAR PLATE DOWELS AND SMOOTH ROUND DOWELS USED AT CONTROL AND CONSTRUCTION JOINTS IN SLABS ON GRADE SHALL CONFORM TO ASTM A36. REFER TO TYPICAL CONTROL JOINTS IN SLAB ON GRADE DETAIL FOR SIZE, PLACEMENT, SPACING, ETC. RECTANGULAR PLATE DOWELS SHALL BE BY PNA CONSTRUCTION TECHNOLOGIES (800-542-0214) OR OTHER MFR. APPROVED BY ENGINEER. INSTALL ALL PLATE DOWEL BASKET ASSEMBLIES PER MFR'S RECOMMENDATIONS.

4. ALL DIMENSIONS SHOWING THE LOCATION OF REINFORCING STEEL NOT NOTED AS "CLEAR" OR "CLR" ARE TO CENTER OF STEEL. CLEAR COVER FOR NON-PRESTRESSED CONCRETE REINFORCING SHALL BE AS NOTED BELOW, U.N.O. ON PLANS OR DETAILS. CLEAR COVER FOR PRESTRESSED CONCRETE AND FOR PRECAST CONCRETE MANUFACTURED UNDER PLANT CONTROL CONDITIONS SHALL BE PER ACI 318, SECTIONS 20.6.1.3.2 AND 20.6.1.3.3, RESPECTIVELY.

| EXPOSURE CONDITION: | COVER: |
|---|---|
| CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH | 3" |
| EXPOSED TO EARTH OR WEATHER (INCLUDING SLABS ON GRADE) | |
| NO. 5 AND SMALLER | 1 1/2" |
| NO. 6 AND LARGER | 2" |
| NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND | |
| STRUCTURAL SLABS, WALLS, JOISTS | |
| NO. 11 AND SMALLER | 3/4" |
| NO. 14 AND LARGER | 1 1/2" |
| BEAMS, COLUMNS (PRIMARY REINFORCEMENT, TIES, STIRRUPS, SPIRALS) | 1 1/2" |

5. LAP SPLICES OF REINFORCING STEEL SHALL CONFORM TO TYPICAL REBAR LAP SCHEDULE U.N.O. NO TACK WELDING OF REINFORCING BARS ALLOWED. LATEST ACI CODE AND DETAILING MANUAL APPLY. AT WALLS AND FOOTINGS, PROVIDE BENT CORNER BARS TO MATCH AND LAP WITH HORIZ. BARS AT ALL CORNERS AND INTERSECTIONS U.N.O. VERT. WALL BARS SHALL BE SPLICED AT OR NEAR FLOOR LINES. SPLICE TOP BARS AT CENTER LINE OF SPAN AND BOTTOM BARS AT THE SUPPORT IN SPANDRELS, BEAMS, GRADE BEAMS, ETC., U.N.O. ON PLANS OR DETAILS.

6. MECHANICAL SPLICE COUPLERS SHALL HAVE CURRENT ICC APPROVAL AND SHALL BE CAPABLE OF DEVELOPING 125% OF THE SPLICED BAR'S YIELD STRENGTH.

7. ALL REINFORCING SHALL BE BENT COLD. BARS SHALL NOT BE UN-BENT AND RE-BENT. FIELD BENDING OF REBAR SHALL NOT BE ALLOWED UNLESS SPECIFICALLY NOTED.

8. WELDING OF REINFORCING BARS, METAL INSERTS, AND CONNECTIONS SHALL BE MADE ONLY AT LOCATIONS SHOWN ON PLANS OR DETAILS. SEE WELDING SECTION OF G.S.N. FOR ADDITIONAL REQUIREMENTS.

9. REINFORCING BAR SPACINGS SHOWN ON PLANS ARE MAX. ON CENTER DIMENSIONS. DOWEL ALL VERT. REINFORCING TO FOUNDATION. SECURELY TIE ALL BARS IN LOCATION BEFORE PLACING CONCRETE. MIN. CLEAR SPACING BETWEEN PARALLEL REINFORCEMENT SHALL BE THE LARGER OF 1-1/2 TIMES NOMINAL BAR DIA. OR 1-1/3 TIMES MAX. AGGREGATE SIZE OR 1-1/2". CLEAR SPACING LIMITATION APPLIES ALSO TO CLEAR DISTANCE BETWEEN A CONTACT LAP SPLICE AND ADJACENT SPLICES OR BARS.

10. SHEAR REINFORCEMENT AT SLAB TO COLUMN CONNECTIONS, AS SHOWN ON THE PLANS AND DETAILS, SHALL BE STUDRAILS AS MANUFACTURED BY DECON PER ICC ESR-2494.

## F. COLD-FORMED STEEL

1. ALL COLD-FORMED STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH MFR'S RECOMMENDATIONS AND IN ACCORDANCE WITH THE LATEST EDITION OF "NORTH AMERICAN SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS" BY AISI.

2. STRUCTURAL DRAWINGS TYPICALLY SHOW ONLY THE PRIMARY STRUCTURAL FRAMING ELEMENTS OF THE SYSTEM. CONTRACTOR SHALL PROVIDE ALL ACCESSORIES INCLUDING TRACKS, WEB STIFFENERS, BLOCKING, LINTELS, CLIP ANGLES, REINFORCEMENTS, FASTENING DEVICES, BRACING, AND OTHER ACCESSORIES AS RECOMMENDED BY THE MFR. TO PROVIDE A COMPLETE FRAMING SYSTEM.

3. STEEL FOR 54, 68 AND 97 MILS THICK (16, 14 AND 12 GAGE) STUDS AND JOISTS SHALL HAVE A MIN. YIELD STRENGTH OF 50 KSI. STEEL FOR ALL THINNER STUDS AND JOISTS, ALL THICKNESSES OF TRACK, ALL DIAGONAL TENSION STRAPS AND BRACES, AND BRIDGING SHALL HAVE A MIN. YIELD STRENGTH OF 33 KSI. STEEL SHALL BE GALVANIZED OR THOROUGHLY COATED WITH RUST INHIBITIVE PAINT AT ALL LOCATIONS.

4. FASTENING OF COMPONENTS SHALL BE WITH SELF-TAPPING SCREWS OR WELDS. ALL WELDS OF GALVANIZED STEEL SHALL BE TOUCHED UP WITH ZINC-RICH PAINT. ALL WELDS OF CARBON SHEET STEEL SHALL BE TOUCHED UP WITH RUST INHIBITIVE PAINT.

5. SCREWS SHALL BE SELF-TAPPING PAN HEAD, HEX HEAD, OR WAFER HEAD SHEET METAL SCREWS. SCREWS WHICH ARE REMOVED SHALL BE REPLACED BY A SCREW OF A LARGER DIA. WHERE THE REPLACEMENT IS MADE INTO AN EXISTING HOLE. REPLACE ALL SCREWS WHICH STRIP OUT MATERIAL. SCREWS SHALL BE SPACED NO CLOSER THAN 5/8" o.c. AND WITH A MIN. FREE EDGE DISTANCE OF 1/2". CLIP ANGLES OR FLAT CLIPS USED FOR ATTACHMENTS SHALL BE 20 GAGE MIN., U.N.O. SIZE CLIP ANGLES AND FLAT CLIPS TO MAINTAIN MIN. SCREW SPACING AND EDGE DISTANCES NOTED ABOVE. ALL SCREWS #8 AND LARGER SHALL HAVE A MIN. HEAD SIZE OF 5/16".

6. ALL WELDING SHALL BE PERFORMED BY WELDERS EXPERIENCED IN COLD-FORMED STEEL FRAMING WORK. ALL WELDING SHALL USE E60 SERIES ELECTRODES (MIN. ROD DIA. = 1/8") AND SHALL CONFORM WITH THE LATEST AMERICAN WELDING SOCIETY STANDARDS.

## F. COLD-FORMED STEEL (CONT'D.)

7. ALL STUDS SHALL BE SECURELY SEATED FOR FULL END BEARING ON TOP AND BOTTOM TRACK. U.N.O., PROVIDE DOUBLE STUDS AT ALL JAMBS, CORNERS, INTERSECTIONS, AND BEAM BEARING.

8. WALL STUD BRIDGING AS RECOMMENDED BY THE STUD MFR. SHALL BE INSTALLED TO PREVENT BOTH WEAK AXIS BENDING AND STUD ROTATION AT 4'-0" MAX. INTERVALS. WALLS 8'-0" AND SHORTER SHALL HAVE A SINGLE ROW OF BRIDGING AT MID-HEIGHT. ADDITIONALLY, BRIDGING SHALL BE PROVIDED AT ROOF LINES AND WHERE NOTED ON THE DRAWINGS. SOLID BLOCKING SHALL BE INSTALLED IN LIEU OF BRIDGING WHERE NOTED ON THE DRAWINGS.

9. STUDS, JAMBS AND TRIMMERS SIZES WHERE NOT SPECIFICALLY NOTED ON DRAWINGS SHALL BE 350S162-33 MIN. TRACK SIZE WHERE NOT SPECIFICALLY NOTED SHALL BE 350T125-33 MIN.

10. JOISTS, STUDS, TRACK, ETC. SHALL HAVE STEEL THICKNESS AND EFFECTIVE SECTION PROPERTIES AS LISTED IN THE STEEL STUD MFR.'S ASSOCIATION PRODUCT TECHNICAL GUIDE, ICC ESR-3064P, OR EQUIVALENT.

## G. STRUCTURAL STEEL

1. STRUCTURAL STEEL MEMBERS SHALL CONFORM TO THE FOLLOWING STANDARDS AND MATERIAL PROPERTIES U.N.O:

| SHAPE: | STANDARD: | Fy: |
|---|---|---|
| ROLLED WIDE FLANGE SECTIONS | ASTM A992 | 50 KSI |
| OTHER STANDARD STEEL SHAPES AND ROLLED SECTIONS | ASTM A36 | 36 KSI |
| BARS AND PLATES | ASTM A36<br>OR | 36 KSI |
| | ASTM A572, GRADE 50 (WHERE NOTED) | 50 KSI |
| PIPES | ASTM A53, GRADE B | 35 KSI |
| HSS (RECT.) | ASTM A500, GRADE B OR ASTM A1085 | 46 KSI (MIN.) |
| HSS (ROUND) | ASTM A500, GRADE B OR ASTM A1085 | 42 KSI (MIN.) |

2. ASTM A6 HOT-ROLLED SHAPES WITH FLANGE THICKNESS EXCEEDING 2" SHALL BE SUPPLIED WITH CHARPY V-NOTCH TESTING IN ACCORDANCE WITH ASTM A6, SUPPLEMENTARY REQUIREMENT S30. IMPACT TESTS SHALL MEET A MINIMUM AVERAGE TOUGHNESS OF 20 FT-LB AT +70 °F. SPLICES, WELD ACCESS HOLES, COMPATIBLE WELDING PROCEDURES, WELDING PREHEAT REQUIREMENTS, AND THERMAL CUT SURFACE PREPARATION AND INSPECTION SHALL BE MADE IN ACCORDANCE WITH SECTIONS J1.5, J1.6, J2.6, AND M2.2 OF AISC 360. WELD TABS AND BACKING AT SPLICES SHALL BE REMOVED AND THE SURFACES GROUND SMOOTH.

3. ALL STRUCTURAL AND MISC. STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH AISC 303 AND SHALL BE COMPLETED BY AN "APPROVED STEEL FABRICATOR." SHOP DRAWINGS AND ERECTION DRAWINGS SHALL INCLUDE ALL ITEMS AS REQUIRED BY AISC 360, SECTION M1.

## H. STRUCTURAL STEEL WELDING

1. ALL WELDING OF STRUCTURAL STEEL SHALL CONFORM TO AISC 360, SECTION J2 AND FOLLOW THE PREQUALIFIED JOINT DETAILS INCLUDED THEREIN. WELDING OF JOINTS THAT INCLUDE REINFORCING STEEL SHALL CONFORM TO AWS D1.4.

2. WELDING SHALL BE PERFORMED BY WELDERS HOLDING VALID CERTIFICATES AND HAVING CURRENT EXPERIENCE IN THE TYPE OF WELD SHOWN ON THE DRAWINGS. CONTRACTOR MAY SHOP WELD OR FIELD WELD AT HIS DISCRETION. ALL COMPLETE-JOINT-PENETRATION (CJP) WELDS SHALL BE TESTED AND CERTIFIED BY AN INDEPENDENT TESTING LABORATORY.

3. ALL WELDING SHALL USE PREQUALIFIED MATCHING FILLER METALS PER AWS D1.1, TABLE 3.1, WITH A MIN. TENSILE STRENGTH OF 70 KSI U.N.O. WELDS BETWEEN REINFORCING BARS SHALL USE PREQUALIFIED MATCHING FILLER METALS PER AWS D1.4, TABLE 5.1, WITH A MIN. TENSILE STRENGTH OF 90 KSI U.N.O. (MIN. TENSILE STRENGTHS FOR FILLER METALS USED IN WELDS BETWEEN REINFORCING BARS AND STRUCTURAL STEEL MAY BE 70 KSI).

4. WELDING SHALL BE PERFORMED IN ACCORDANCE WITH A WELDING PROCEDURE SPECIFICATION (WPS) AS REQUIRED IN AWS D1.1. THE WPS VARIABLES SHALL BE WITHIN THE PARAMETERS ESTABLISHED BY THE FILLER METAL MANUFACTURER. THE WPS SHALL BE SUBMITTED TO THE OWNER'S TESTING AGENCY FOR REVIEW PRIOR TO FABRICATION AND ERECTION. COPIES OF THE WPS SHALL BE ON SITE AND AVAILABLE TO ALL WELDERS AND THE SPECIAL INSPECTOR.

5. WELD LENGTHS CALLED OUT ON PLANS OR DETAILS ARE MINIMUM NET EFFECTIVE LENGTHS U.N.O.

6. ALL MISC. FILLET WELDS NOT NOTED, INCLUDING THOSE FOR STIFFENERS, MISC. PLATES, ETC., SHALL BE PER AISC 360, TABLE J2.4.

7. WELDS SHALL BE SEQUENCED TO MINIMIZE RESIDUAL STRESS DUE TO WELD SHRINKAGE.

## I. STRUCTURAL STEEL BOLTS, ANCHORS, HEADED STUDS

1. STRUCTURAL STEEL BOLTS, ANCHORS, ETC., SHALL CONFORM TO THE FOLLOWING STANDARDS AND MATERIAL PROPERTIES U.N.O:

| COMPONENT: | STANDARD: | Fy: |
|---|---|---|
| BOLTS | ASTM A325 | --- |
| | OR ASTM A490 WHERE NOTED | --- |
| NUTS | ASTM A563 | --- |
| WASHERS | ASTM F436 | --- |
| ANCHOR RODS | ASTM F1554, GRADE 36 | 36 KSI |
| | OR GRADE 55 WHERE NOTED | 55 KSI |
| | OR GRADE 105 WHERE NOTED | 105 KSI |
| | (GRADE 55 AND 105 RODS SHALL COMPLY WITH WELDABILITY SUPPLEMENT S1) | |
| WASHERS (AT ANCHOR RODS) | ASTM A36 | 36 KSI |
| | OR ASTM F844 (USS STANDARD) | --- |
| | (F844 WASHERS PERMITTED ONLY FOR 3/4" DIA. RODS AT 1 1/16" MAX. DIA. PUNCHED HOLES IN BASE PLATE WHERE NO WELD REQ'D BETWEEN WASHER AND BASE PLATE) | |

2. ALL BOLTS SHALL BE INSTALLED AS SNUG-TIGHTENED JOINTS WITH THREADS EXCLUDED FROM SHEAR PLANE (TYPE "X" CONNECTION) U.N.O. HIGH-STRENGTH BOLT ASSEMBLIES SHALL BE IN ACCORDANCE WITH THE RCSC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS" AND SHALL BE SNUG TIGHTENED USING ANY AISC APPROVED METHOD U.N.O. ALL BOLTS IN SLOTTED OR OVERSIZED HOLES AND ALL HIGH-STRENGTH BOLTS SHALL BE INSTALLED WITH HARDENED WASHERS.

3. BOLTED CONNECTIONS INCLUDED IN THE SEISMIC LOAD RESISTING SYSTEM (SLRS) SHALL MEET THE REQUIREMENTS FOR CLASS "A", SLIP-CRITICAL FAYING SURFACES IN ACCORDANCE WITH AISC 360, SECTION J3.8 (EXCEPTION: FAYING SURFACES OF WELDED JOINTS WHOSE PARTS ARE JOINED INITIALLY BY ERECTION BOLTS NEED ONLY BE PREPARED SUCH THAT THEY ARE FREE FROM DIRT, BURRS, AND OTHER DEFECTS THAT WOULD PREVENT SOLID FIT-UP OF THE PARTS TO BE JOINED). BOLTS SHALL BE INSTALLED IN STANDARD HOLES U.N.O. AND PRETENSIONED PER ANY AISC APPROVED METHOD.

4. ALL CONNECTIONS INVOLVING WOOD MEMBERS, INCLUDING THOSE WITH THREADED ROD, THREADED STUDS, FOUNDATION ANCHOR BOLTS, THRU-BOLTS, ETC., SHALL USE ASTM A307 MATERIAL U.N.O. ALL BOLTS, ANCHOR BOLTS, EXPANSION BOLTS, ETC., SHALL BE INSTALLED WITH STEEL WASHERS AT FACE OF WOOD.

5. WHERE A SPECIFIC EXPANSION ANCHOR, SCREW ANCHOR, OR EPOXY PRODUCT IS SPECIFIED ON PLANS OR DETAILS, ONLY THE SPECIFIED PRODUCT SHALL BE USED AND NO SUBSTITUTIONS ARE ALLOWED. WHERE AN EXPANSION ANCHOR, SCREW ANCHOR, OR EPOXY PRODUCT IS SPECIFIED ON PLANS OR DETAILS BUT A SPECIFIC PRODUCT IS NOT STATED, ANY OF THE RESPECTIVE PRODUCTS LISTED BELOW ARE ACCEPTABLE. THE USE OF PRODUCTS NOT INCLUDED BELOW IS NOT ALLOWED. ALL PRODUCTS SHALL BE INSTALLED WITH SPECIAL INSPECTION.

6.1 EXPANSION ANCHORS IN CONCRETE SHALL BE HILTI KWIK BOLT TZ (ICC ESR-1917), SIMPSON STRONG-BOLT 2 (ICC ESR-3037), OR DEWALT POWER-STUD+ SD2 (ICC ESR-2502) U.N.O. EXPANSION ANCHORS IN MASONRY SHALL BE SIMPSON STRONG-BOLT 2 (IAPMO ER-0240), HILTI KWIK BOLT 3 (ICC ESR-1385) OR DEWALT POWER-STUD+ SD1 (ICC ESR-2966). EXPANSION ANCHORS SHALL BE INSTALLED WITH SPECIAL INSPECTION.

## I. STRUCTURAL STEEL BOLTS, ANCHORS, HEADED STUDS (CONT'D.)

6.2 SCREW ANCHORS SHALL BE DEWALT SCREW-BOLT+ PER ICC ESR-4042 FOR MASONRY AND ICC ESR-3889 FOR CONCRETE, SIMPSON TITEN HD PER ICC ESR-1056 FOR MASONRY AND ICC ESR-2713 FOR CONCRETE, HILTI KWIK HUS-EZ PER ICC ESR-3056 FOR MASONRY AND ICC ESR-3027 FOR CONCRETE. SCREW ANCHORS SHALL BE INSTALLED WITH SPECIAL INSPECTION.

6.3 EPOXY ANCHORS IN CONCRETE (ALL-THREAD, REBAR, ETC.) SHALL USE HILTI HIT-RE 500 V3 (ICC ESR-3814), SIMPSON SET-3G (ICC ESR-4057), OR DEWALT PURE110+ (ICC ESR-3298) U.N.O. ALL EPOXY ANCHORS IN MASONRY (ALL-THREAD, REBAR, ETC.) SHALL USE SIMPSON SET-XP (IAPMO ER-0265), HILTI HIT-HY 270 (ICC ESR-4143) OR DEWALT AC100+ GOLD (ICC ESR-3200) U.N.O. EPOXY ANCHORS SHALL BE INSTALLED WITH SPECIAL INSPECTION.

## J. WOOD

SAWN FRAMING LUMBER SHALL COMPLY WITH THE GRADING RULES OF THE WESTERN WOOD PRODUCTS ASSOCIATION OR THE WEST COAST LUMBER INSPECTION BUREAU. ALL SAWN LUMBER SHALL BE STAMPED WITH THE GRADE MARK OF AN APPROVED LUMBER GRADING AGENCY. SAWN LUMBER SHALL HAVE THE FOLLOWING MIN. GRADE, U.N.O.:

| USE: | MATERIAL: |
|---|---|
| 2x4 TOP PLATES | DOUGLAS FIR STANDARD GRADE |
| 2x4 STUDS (UP TO 10'-0"), BLOCKING | DOUGLAS FIR NO. 2 |
| 2x4 STUDS (OVER 10'-0") | DOUGLAS FIR NO. 2 |
| 2x6 TOP PLATES | DOUGLAS FIR NO. 2 |
| 2x6 STUDS (UP TO 10'-0"), BLOCKING | DOUGLAS FIR NO. 2 |
| 2x6 STUDS (OVER 10'-0") | DOUGLAS FIR NO. 2 |
| 2x BOTTOM PLATES | DOUGLAS FIR STANDARD GRADE |
| 6x BEAMS AND 6x POSTS | DOUGLAS FIR NO. 1 |
| JOISTS AND ALL OTHER SAWN LUMBER | DOUGLAS FIR NO. 2 |

2. DO NOT NOTCH OR DRILL JOISTS OR BEAMS U.N.O. WITHOUT PRIOR APPROVAL OF THE STRUCTURAL ENGINEER THROUGH THE ARCHITECT. DOUBLE UP FLOOR JOISTS AND BLOCKING UNDER WALLS THAT RUN PARALLEL TO THE JOISTS. PROVIDE 2" (NOMINAL) SOLID BLOCKING BETWEEN JOISTS AT SUPPORTS.

3. ALL BOLTS SHALL BE INSTALLED IN HOLES BORED WITH A BIT 1/16 INCH LARGER THAN THE DIA. OF THE BOLT. BOLTS AND NUTS SEATING ON WOOD SHALL HAVE CUT STEEL WASHERS UNDER HEADS AND NUTS. SPOIL THREADS TO PREVENT LOOSENING. LAG BOLTS SHALL BE INSTALLED IN PRE-DRILLED HOLES BY TURNING WITH A WRENCH.

4. ALL WOOD CONSTRUCTION CONNECTORS SHOWN ON PLANS OR DETAILS SHALL BE SIMPSON STRONG-TIE OR EQUAL U.N.O. HARDWARE BY OTHER MANUFACTURERS MAY BE SUBSTITUTED PROVIDED THEY ARE OF EQUIVALENT CAPACITY FOR THE INTENDED APPLICATION AND HAVE CURRENT ICC APPROVAL. SUCH SUBSTITUTIONS MUST BE APPROVED BY THE EOR. HARDWARE SHALL BE INSTALLED WITH ALL REQ'D. FASTENERS PER MFR'S. SPEC'S. STRAPS OF HEAVIER GAGE THAN SPECIFIED ON PLANS MAY BE USED w/ MIN. FASTENER REQUIREMENTS PER PLAN (e.g. CS16 w/ (26) 8d IN LIEU OF CS18 w/ (26) 8d).

5. SEE FOUNDATION PLAN FOR BOTTOM PLATE ANCHORAGE REQUIREMENTS.

6. ALL NAILS EXCEPT 16d NAILS SHALL BE COMMON NAILS U.N.O. 16d NAILS MAY BE 16d SINKER, 16d BOX, 10d-131 OR 12d COMMON U.N.O. (EXCEPTION: WOOD CONSTRUCTION CONNECTORS SHALL BE PER MFR'S. SPECIFICATIONS.) NAILS SHALL BE DRIVEN SO THAT HEADS ARE FLUSH WITH WOOD SURFACE. OVER- OR UNDER-DRIVEN SHEATHING NAILS AT SHEAR WALL, ROOF, AND FLOOR SHEATHING PANELS, WHERE THICKNESS IS MINIMAL, CAN RESULT IN REDUCED CAPACITY. IF NO MORE THAN 20% OF THE FASTENERS AROUND THE PERIMETER OF PANELS ARE OVERDRIVEN BY UP TO 1/8", THE PANEL IS ACCEPTABLE. IF MORE THAN 20% OF THE FASTENERS AROUND THE PERIMETER OF PANELS ARE OVERDRIVEN, OR IF ANY ARE OVERDRIVEN BY MORE THAN 1/8", ADDITIONAL FASTENERS SHALL BE DRIVEN. FOR EVERY TWO FASTENERS OVERDRIVEN, ONE ADDITIONAL FASTENER SHALL BE DRIVEN. ALL OTHER CONDITIONS WHERE 1-1/2" OR GREATER MEMBERS ARE FASTENED TOGETHER (GENERAL FRAMING), OVERDRIVEN FASTENERS DO NOT AFFECT THE CAPACITY OF THE CONNECTION.

| NAIL SIZE: | SHANK DIA: | LENGTH: | NAIL SIZE: | SHANK DIA.: | LENGTH: |
|---|---|---|---|---|---|
| 16d COMMON | .162" | 3 1/2" | 12d COMMON | .148" | 3 1/4" |
| 16d SINKER | .148" | 3 1/4" | 10d COMMON | .148" | 3" |
| 16d BOX | .135" | 3 1/2" | 8d COMMON | .131" | 2 1/2" |
| 10d-131 | .131" | 3" | | | |

7. ALL PLYWOOD SHALL BE LAID WITH FACE GRAIN PERPENDICULAR TO SUPPORTS, SHALL BE C-D OR C-C SHEATHING CONFORMING TO IBC 2303.1.5 AND SHALL CONFORM TO THE FOLLOWING NOMINAL THICKNESS, SPAN RATING AND NAILING PATTERN U.N.O.:

| THICKNESS: | SPAN RATING | EDGE NAILING: | FIELD NAILING: |
|---|---|---|---|
| 3/8" | 24/0 | 8d AT 6" o.c. | 8d AT 12" o.c. |
| 7/16" | 24/16 | 8d AT 6" o.c. | 8d AT 12" o.c. |
| 15/32" | 32/16 | 8d AT 6" o.c. | 8d AT 12" o.c. |
| 19/32" | 40/20 | 10d AT 6" o.c. | 10d AT 12" o.c. |
| 3/4" | 48/24 | 10d AT 6" o.c. | 10d AT 12" o.c. |
| 1" | 60/48 | 10d AT 6" o.c. | 10d AT 12" o.c. |
| 1 1/8" | 60/48 | 10d AT 6" o.c. | 10d AT 12" o.c. |

8. A.P.A. PERFORMANCE RATED SHEATHING (OSB) MAY BE USED AS AN ALTERNATE TO PLYWOOD. RATED SHEATHING SHALL COMPLY WITH PRP-108 OR USDOC-PS2, EXPOSURE 1, AND SHALL HAVE A SPAN RATING EQUIVALENT TO OR BETTER THAN THE PLYWOOD IT REPLACES. ATTACHMENT AND THICKNESS SHALL BE THE SAME AS THE PLYWOOD IT REPLACES. INSTALL PER MFR.'S RECOMMENDATIONS.

9. FOR PLYWOOD OR A.P.A. RATED SHEATHING: FULL WIDTH PANELS SHALL BE USED WHEREVER POSSIBLE. AT ROOF SHEATHING, PANELS 16" TO 24" WIDE SHALL HAVE EDGES SUPPORTED BY 2x BLOCKING OR (2) PSCL CLIPS BETWEEN EACH SUPPORTING MEMBER AND PANELS 12" TO 16" WIDE SHALL HAVE EDGES SUPPORTED BY 2x BLOCKING. PROVIDE EDGE NAILING AT ALL BLOCKED PANEL EDGES.

10. THE FOLLOWING IS A LIST OF ICC-ES OR IAPMO ES REPORTS NOT SPECIFIED ELSEWHERE:

| REPORT: | HARDWARE: |
|---|---|
| IAPMO-0112 | LTP4, A35, A34, 44, H2A, H2.5T, L, RBC |
| ESR-2236 | SDS SCREWS |
| ESR-2330 | DHU, PHD, HDQ8, HHDQ |
| ESR-2105 | ST, HST, MST, LSTA, MSTA, MSTC, MSTI, CS, CMST, CMSTC16 |
| ESR-2549 | LU, U, HU, HUC, LUS, MUS, HUS, HHUS, SUR/L, HGUS |
| ESR-2613 | H, LTS, MTS, HTS, SPH |
| ESR-1622 | AB, ABA, ABE, ABU |
| ESR-2604 | CC, ECC, CCQ, ECCQ, AC, EAC, LPC, PC, EPC |
| ESR-2553 | JB, LB, W, WNP, WNPU, HW, HWU, HUTF |
| ESR-2615 | GLTV, HGLTV, HHB, GB, HGB, HHBD, W, WP, WPU, WNP, WNPU, HW, HWU<br>GLT, HGLT, GLS, HGLS, GLST, HGLST, EG, MEG, LEG, MSC |
| ESR-2608 | SS, HSS, RPS |
| ESR-2551 | LSU, LSSU, LSSUI, THS, THAC, THAI, VPA |
| ESR-2552 | IUS, OUT, U, HU, HUS, HUS, HHUS, SUR/L, HSUR/L |
| ESR-2555 | MASA |

## K. INTERIOR ANCHOR BOLT SUBSTITUTIONS

1. INTERIOR ANCHOR BOLTS ARE DEFINED AS ANCHOR BOLTS LOCATED A MIN. OF 6" FROM SLAB EDGES, STEPS, TURN DOWNS, OPENINGS, OR SIMILAR DISCONTINUITIES, AND DO NOT INCLUDE ANCHORS FOR HOLDOWNS. INTERIOR ANCHOR BOLT SUBSTITUTIONS ARE PERMITTED AS LISTED IN THIS SECTION.

2. BOLT-TYPE SUBSTITUTIONS IN SHEAR WALLS SHALL BE INSTALLED w/ PLATE WASHERS PER SHEAR WALL SCHEDULE.

3. 1/2" AND 3/4" DIA. THREADED CONCRETE ANCHORS AT THE SAME SPACING MAY BE USED IN LIEU OF WET-SET ANCHOR BOLTS AT INTERIOR WALLS, INCLUDING SHEAR WALLS. MINIMUM EMBEDMENT SHALL BE 4" FOR 1/2" DIA. ANCHORS AND 6 1/4" FOR 3/4" DIA. ANCHORS. THREADED CONCRETE ANCHORS SHALL BE SIMPSON TITEN HD (ICC ESR-2713) WITH SPACING NOT CLOSER THAN 3" o.c.

4. INTERIOR NON-LOAD BEARING PARTITION WALLS MAY BE ANCHORED TO THE SLAB WITH MIN. 0.145 INCH DIAMETER SHOT PINS (AS NOTED BELOW) AT 24" o.c. MAX. SHOT PINS SHALL BE EITHER SIMPSON PDPWL-300MG OR PDPWLS-300MG (ESR-2138) OR HILTI X-CP 72 OR X-CR-L 72 (ESR-2379). INSTALL ALL FASTENERS PER ICC REPORT AND MFR'S RECOMMENDATIONS. EMBED 1 1/4" MIN. IF WOOD SPLITTING OCCURS, AN ALTERNATE ANCHORAGE PER G.S.N. SHALL BE USED.

## STANDARD ABBREVIATIONS

| | |
|---|---|
| A.B. | ANCHOR BOLT |
| ACI | AMERICAN CONCRETE INSTITUTE |
| A.C.S. | ALL COMMON SURFACES |
| AISC | AMERICAN INSTITUTE OF STEEL CONSTRUCTION |
| AISI | AMERICAN IRON AND STEEL INSTITUTE |
| ALT. | ALTERNATE |
| ANSI | AMERICAN NATIONAL STANDARDS INSTITUTE |
| A.R. | ANCHOR ROD |
| ARCH'L. | ARCHITECTURAL |
| ASTM | AMERICAN SOCIETY FOR TESTING AND MATERIALS |
| ATS | ANCHOR TIE-DOWN SYSTEM |
| AWS | AMERICAN WELDING SOCIETY |
| B.F. | BOUNDARY FASTENERS |
| B.F.F. | BELOW FINISH FLOOR |
| BOT. | BOTTOM |
| BRG. | BEARING |
| CANT. | CANTILEVERED |
| C.J. | CONTROL JOINT |
| C.J.P. | COMPLETE JOINT PENETRATION |
| ℄ | CENTER LINE |
| CLR. | CLEAR DIMENSION TO FACE OF REBAR |
| COL. | COLUMN |
| CONT. | CONTINUOUS |
| CRSI | CONCRETE REINFORCING STEEL INSTITUTE |
| DIA. | DIAMETER |
| DIAG. | DIAGONAL |
| DWG. | DRAWING |
| E.F. | EACH FACE |
| ELECT. | ELECTRICAL |
| ELEV. | ELEVATION |
| E.O.R. | ENGINEER OF RECORD |
| EQ. | EQUAL |
| EP | END POST |
| ES | END STUD(S) |
| ESR | EVALUATION SERVICE REPORT |
| E.W. | EACH WAY |
| F.F. | FINISH FLOOR |
| FLR. | FLOOR |
| FRTW | FIRE RETARDANT TREATED WOOD |
| FT. | FOOT |
| FTG. | FOOTING |
| GA. | GAUGE |
| GLB | GLULAM BEAM |
| G.S.N. | GENERAL STRUCTURAL NOTES |
| G.T. | GIRDER TRUSS |
| HORIZ. | HORIZONTAL |
| HSS | HOLLOW STRUCTURAL SECTION |
| IAMPO | INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS |
| IBC | INTERNATIONAL BUILDING CODE |
| ICC | INTERNATIONAL CODE COUNCIL |
| I.D. | INSIDE DIAMETER |
| INFO. | INFORMATION |
| JT. | JOINT |
| K | KIP (1,000 LBS) |
| K.O. | KNOCKOUT |
| KP | KING POST |
| KS | KING STUD(S) |
| KSI | KIPS PER SQUARE INCH |
| LLH | LONG LEG HORIZONTAL |
| LLV | LONG LEG VERTICAL |
| LSL | LAMINATED STRAND LUMBER |
| LVL | LAMINATED VENEER LUMBER |
| MFR. | MANUFACTURER |
| MAX. | MAXIMUM |
| MECH. | MECHANICAL |
| MIN. | MINIMUM |
| MISC. | MISCELLANEOUS |
| N.T.S. | NOT TO SCALE |
| o.c. | ON CENTER |
| O.D. | OUTSIDE DIAMETER |
| OPP. | OPPOSITE |
| P | POST |
| PL. | PLATE |
| PLF | POUNDS PER LINEAR FOOT |
| PLYWD. | PLYWOOD |
| PSF | POUNDS PER SQUARE FOOT |
| PSI | POUNDS PER SQUARE INCH |
| PSL | PARALLEL STRAND LUMBER |
| RCSC | RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS |
| REQ'D. | REQUIRED |
| SIM. | SIMILAR |
| SLRS | SEISMIC LOAD RESISTING SYSTEM |
| SPEC. | SPECIFICATION |
| STD. | STANDARD |
| STK | STACKED |
| SW | SHEAR WALL |
| T & B | TOP AND BOTTOM |
| T & G | TONGUE AND GROOVE |
| THRU | THROUGH |
| T.O. | TOP OF |
| T.O.D. | TOP OF DECK |
| T.O.F. | TOP OF FOOTING |
| T.O.L. | TOP OF LEDGER |
| T.O.S. | TOP OF STEEL |
| T.O.W. | TOP OF WALL |
| TP | TRIMMER POST |
| TS | TRIMMER STUD(S) |
| TYP. | TYPICAL |
| U.N.O. | UNLESS NOTED OTHERWISE |
| VERT. | VERTICAL |
| w/ | WITH |
| w/o | WITHOUT |
| WT. | WEIGHT |

## SHEET INDEX

- ● INDICATES PREVIOUSLY / CURRENTLY ISSUED SHEETS

| PLANCHECK SUBMITTAL | SHEET | TITLE |
|---|---|---|
| ● | S100 | General Structural Notes |
| ● | S101 | General Structural Notes (Cont'.d) |
| ● | S102 | Foundation Plan |
| ● | S103 | Mezzanine Floor Framing Plan |
| ● | S104 | Roof Framing Plan |
| ● | SD100 | Foundation Details |
| ● | SD101 | Typical Details |
| ● | SD102 | Framing Details |

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9/24/2018

**Issue For:**
Project Status

**Issue Date:**
9/24/2018

**Revisions:**

| NO. | REASON | DATE |
|---|---|---|
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**Sheet Title:**
GENERAL STRUCTURAL NOTES

**Sheet Number:**
S100

# GENERAL STRUCTURAL NOTES

## L. HOLDOWN ANCHORAGE

1. VERIFY LOCATION OF HOLDOWNS WITH ROUGH FRAMING TO ENSURE PROPER AND ACCURATE INSTALLATION.

2. EMBEDDED BOLT REQUIREMENTS FOR HOLDOWN ANCHORAGE SHALL BE AS FOLLOWS:

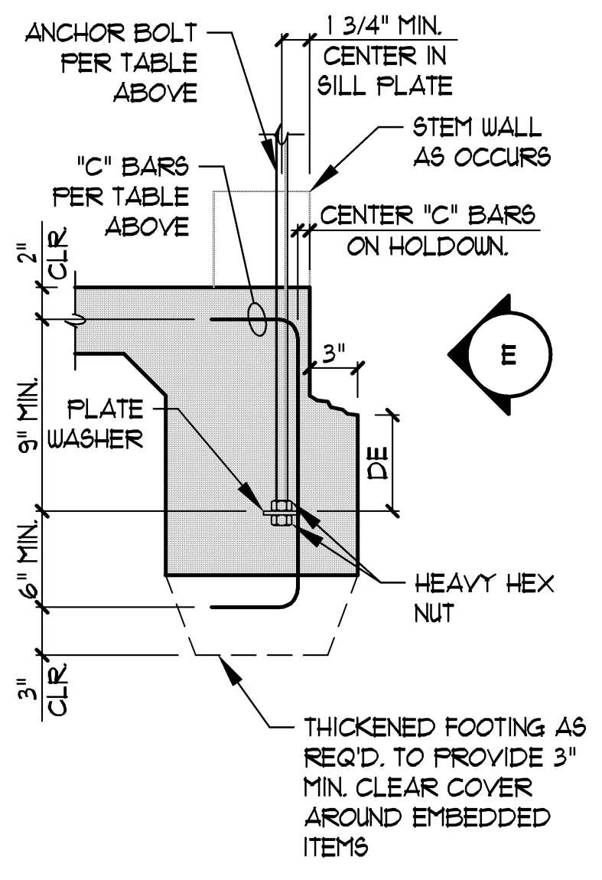
   ALL THREAD ANCHOR BOLT OPTION:

| SIMPSON HOLDOWN: | BOLT DIA.: | PLATE WASHER: | DE (MIN.): ② | DI (MIN.): ③ | NUMBER OF "C" BARS: ① |
|---|---|---|---|---|---|
| S/HDU4 | 5/8" | 1 1/2"x1 1/2"x3/8" | 6" | 11" | (2) #4 |

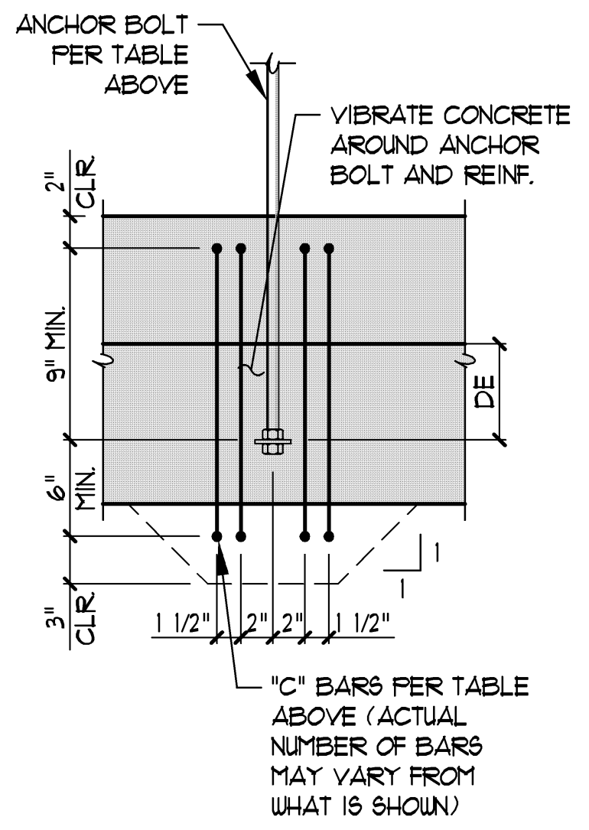
① AT CORNER CONDITIONS, HALF OF THE "C" BARS SHALL BE PLACED ON EACH SLAB EDGE

② EMBEDMENT DEPTH AT EXTERIOR OF SLAB.

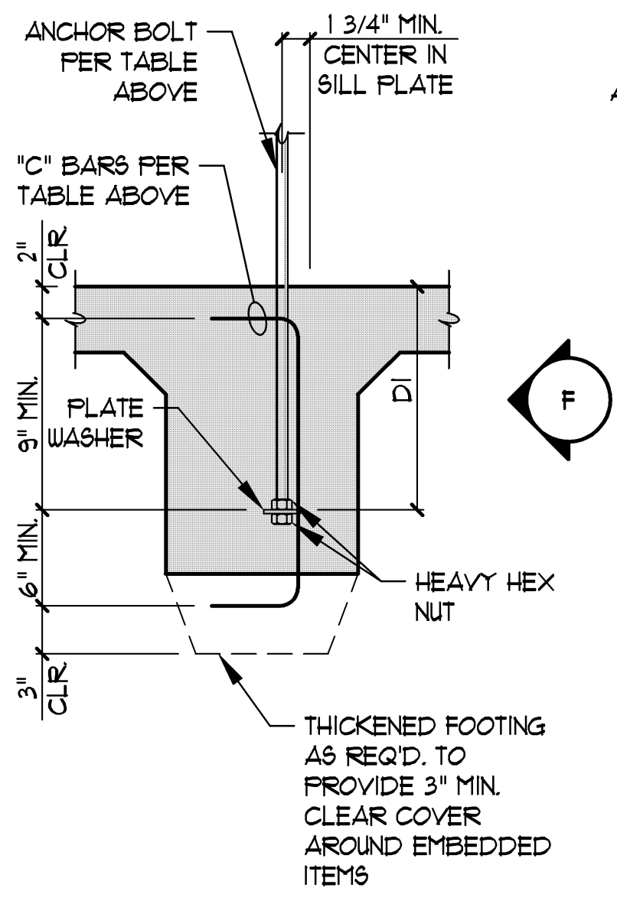
③ EMBEDMENT DEPTH AT INTERIOR OF SLAB. BOLTS MORE THAN 1'-0" FROM ANY SLAB EDGE OR STEP SHALL BE CONSIDERED INTERIOR. AT STEPS, EMBEDMENT SHALL BE MEASURED FROM LOWER SLAB.



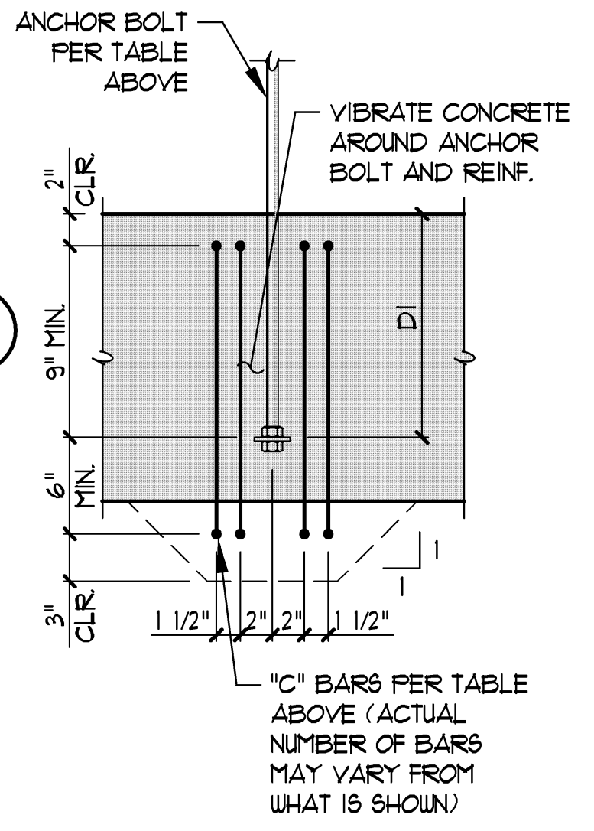
SECTION AT EDGE OF SLAB



E ELEVATION



SECTION AT INTERIOR OF SLAB



F ELEVATION

3. AS AN **ALTERNATE** TO THE ANCHORAGE REQUIREMENTS ABOVE, SSTB AND SB BOLTS CAN BE USED PER THE REQUIREMENTS BELOW:

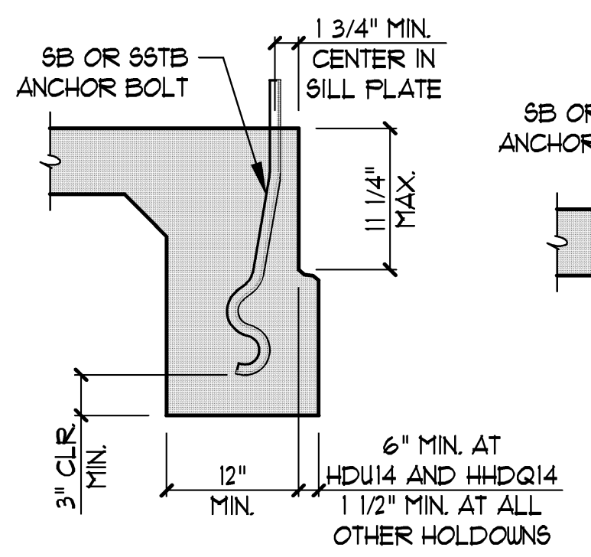
   SIMPSON ANCHOR BOLT OPTIONS (ESR-2611):

| | SSTB ANCHOR BOLT (SSTBL AT 3x AND 4x PLATE) ① | | SB ANCHOR BOLT ① | |
|---|---|---|---|---|
| SIMPSON HOLDOWN: | AT SLAB EDGE: | AT CURB: | AT SLAB EDGE: | AT CURB: |
| S/HDU4 | SSTB20 | - - - | SB5/8x24 | SB5/8x24 |

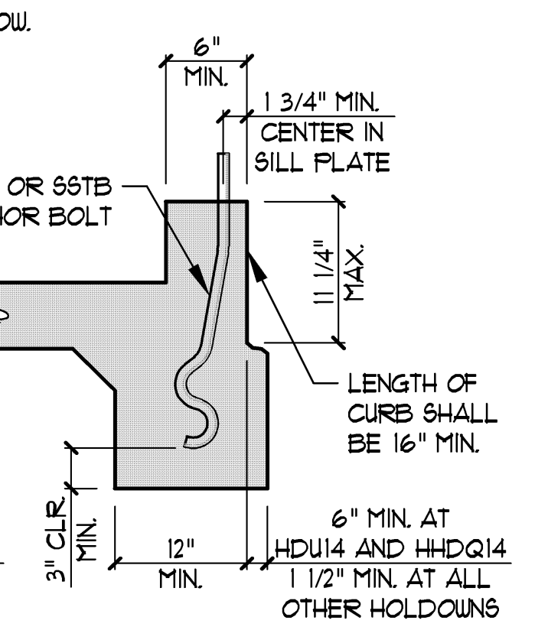
TABLE KEYNOTES (ONLY APPLY WHERE SPECIFICALLY NOTED IN TABLE ABOVE)

① ANY POUR JOINTS SHALL OCCUR AT LEAST 3" BELOW BOTTOM OF BOLT. IF POUR JOINT OCCURS ABOVE THIS POINT, ADD "C" BARS PER ALL THREAD ANCHOR BOLT OPTION TABLE ABOVE.

② 18" MIN. WIDE FOOTING. SEE DETAILS BELOW.



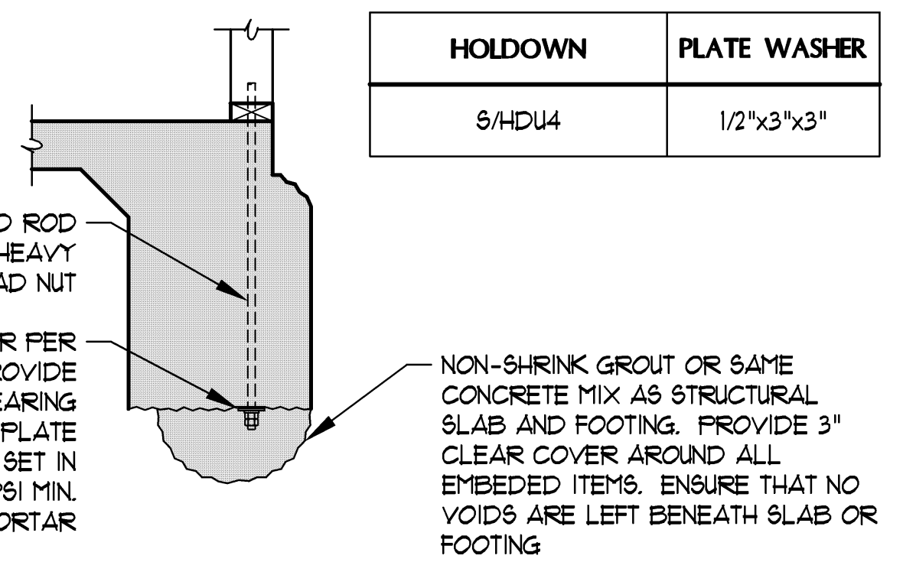
SLAB EDGE



CURB

4. HOLDOWN ANCHORS MAY BE RETROFIT AS FOLLOWS.

| HOLDOWN | PLATE WASHER |
|---|---|
| S/HDU4 | 1/2"x3"x3" |



## M. SPECIAL INSPECTION

1. IN ADDITION TO STANDARD INSPECTIONS BY THE BUILDING OFFICIAL REQUIRED PER IBC SECTION 110, THE OWNER SHALL EMPLOY ONE OR MORE SPECIAL INSPECTORS WHO SHALL PROVIDE INSPECTIONS DURING CONSTRUCTION FOR THE TYPES OF WORK LISTED IN THIS SECTION.

2. THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE SPECIAL INSPECTOR AT LEAST 24 HOURS NOTICE PRIOR TO PERFORMING ANY WORK REQUIRING SPECIAL INSPECTION.

4. THE SPECIAL INSPECTOR SHALL INSPECT THE WORK ASSIGNED FOR CONFORMANCE WITH THE APPROVED CONTRACT DRAWINGS AND SPEC'S. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, THE ENGINEER OF RECORD, AND OTHER DESIGNATED PERSONS. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, THEN, IF UNCORRECTED, TO THE ENGINEER AND THE BUILDING OFFICIAL. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT STATING WHETHER THE WORK REQUIRING SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTOR'S KNOWLEDGE, IN CONFORMANCE WITH THE APPROVED PLANS AND SPEC'S AND THE APPLICABLE CODE PROVISIONS.

5. INSPECTORS SHALL INSPECT FROM AN APPROVED SET OF CONTRACT DRAWINGS. SHOP DRAWINGS SHALL NOT BE USED IN LIEU OF THE APPROVED CONTRACT DRAWINGS FOR INSPECTION PURPOSES.

6. TYPES OF WORK TO BE INSPECTED BY THE SPECIAL INSPECTOR ARE AS FOLLOWS:

6.1. EPOXY ANCHORS IN CONCRETE - INSPECTION OF EPOXY ANCHORS IN CONCRETE SHALL BE PERIODIC, U.N.O. INSTALLATIONS SHALL BE PERFORMED BY QUALIFIED PERSONNEL TRAINED (BY MANUFACTURER) TO INSTALL ADHESIVE ANCHORS AND THEY SHALL FOLLOW THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII). AT THE TIME OF INSTALLATION, THE CONCRETE SHALL HAVE ACHIEVED A MINIMUM AGE OF 28 DAYS, BE DRY, AND BE BETWEEN 50 DEGREES F AND 104 DEGREES F. THE HOLES SHALL BE DRILLED WITH A HAMMER DRILL TO THE DIMENSIONS LISTED IN THE MPII AND SHALL BE CLEANED USING THE BLOW-BRUSH-BLOW TECHNIQUE REQUIRED IN THE MPII. WHERE ANCHORS ARE INSTALLED INTO LIGHTWEIGHT CONCRETE, IT IS ASSUMED THAT THE CONCRETE IS CLASSIFIED AS ALL-LIGHTWEIGHT CONCRETE AS DEFINED IN ACI 318. ANY ADHESIVE ANCHORS INSTALLED HORIZONTALLY (EXCEPT FOR ANCHORS IN A SLAB-ON-GRADE) OR UPWARDLY INCLINED SHALL BE INSTALLED BY PERSONNEL WITH THE ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM, OR EQUIVALENT AND SHALL BE INSTALLED WITH CONTINUOUS SPECIAL INSPECTION.

6.2. SCREW ANCHORS AND EXPANSION ANCHORS IN CONCRETE OR MASONRY - SCREW ANCHORS IN CONCRETE OR MASONRY SHALL BE INSTALLED WITH SPECIAL INSPECTION. ANCHORS IN CONCRETE MAY BE PERIODIC. INSTALLATIONS SHALL BE PERFORMED BY QUALIFIED PERSONNEL TRAINED (BY MANUFACTURER) TO INSTALL SCREW/EXPANSION ANCHORS AND THEY SHALL FOLLOW THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII).

6.3. CONCRETE CONSTRUCTION PER CBC SECTION 1705.3 AND TABLE 1705.3.
EXCEPTION: SPECIAL INSPECTIONS SHALL NOT BE REQ'D. FOR:
   1. ISOLATED SPREAD OR CONTINUOUS CONCRETE FOOTINGS SUPPORTING WALLS OF BUILDINGS (3) STORIES OR LESS IN HEIGHT WHOSE STRUCTURAL DESIGN IS BASED ON A 28 DAY DESIGN COMPRESSIVE STRENGTH, f'c, OF NO GREATER THAN 2500 PSI.
   2. POST-TENSIONED SLABS ON GRADE WHERE EFFECTIVE PRESTRESS IN THE CONCRETE IS LESS THAN 150 PSI.

6.4. STEEL CONSTRUCTION AND WELDING PER CBC SECTION 1705.2 AND TABLE 1705.2.3.

6.5. INSTALLATION OF SSTB AND SB ANCHOR BOLTS AS REQ'D. PER ICC REPORT.

7. CERTIFICATE OF APPROVAL REGARDING MATERIALS AND INSPECTION OF PREFABRICATED ITEMS SHALL BE PROVIDED IN ACCORDANCE WITH IBC SECTION 1704.

S101-181746-G

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9/24/2018

**Issue For:**
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**Sheet Title:**
GENERAL STRUCTURAL
NOTES (CONT'.D)

**Sheet Number:**
S101

## FOUNDATION PLAN NOTES

A. VERIFY ALL DIMENSIONS, ELEVATIONS, SLOPES, ETC., w/ ARCH'L. AND/OR CIVIL PRIOR TO CONSTRUCTION. RESOLVE DISCREPANCIES WITH ARCHITECT.

B. VERIFY LOCATION AND SIZE OF ALL INSERTS AND OPENINGS IN SLAB WITH ARCH'L., MECH., PLUMBING, AND ELECT. PRIOR TO CONSTRUCTION.

C. ALL FOOTINGS SHALL EXTEND 18 INCHES MIN. BELOW PAD GRADE. PAD GRADE IS DEFINED AS TOP OF SLAB FOR INTERIOR FOOTINGS, LOWEST ADJACENT COMPACTED SUBGRADE (PAD GRADE BEFORE LANDSCAPING) OR NATURAL GRADE WITHIN 5 FEET OF BUILDING FOR PERIMETER FOOTINGS, OR TOP OF EXTERIOR PAVING OR CONCRETE WHERE EXTERIOR PAVING OR CONCRETE IS PERMANENTLY LOCATED DIRECTLY ADJACENT TO BUILDING AND EXTENDS AT LEAST 5 FEET FROM BUILDING. FOOTING EXCAVATIONS SHALL BE CLEAN AND FREE FROM LOOSE DEBRIS, STANDING WATER, OR UNCOMPACTED MATERIAL AT TIME OF CONCRETE PLACEMENT. CONTRACTOR SHALL COORDINATE FOOTING EMBEDMENT WITH CIVIL GRADING PLANS TO ENSURE THAT MINIMUM EMBEDMENT SPECIFIED ABOVE IS MAINTAINED.

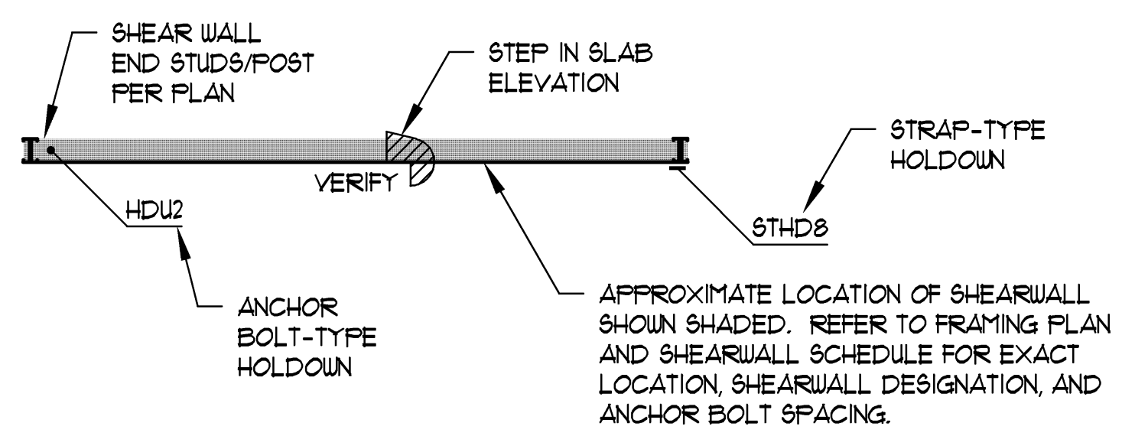
D. ▨ BW1, BW2, BW3 . . . DENOTES BRACED WALL PER SCHEDULE ON SHEET S103

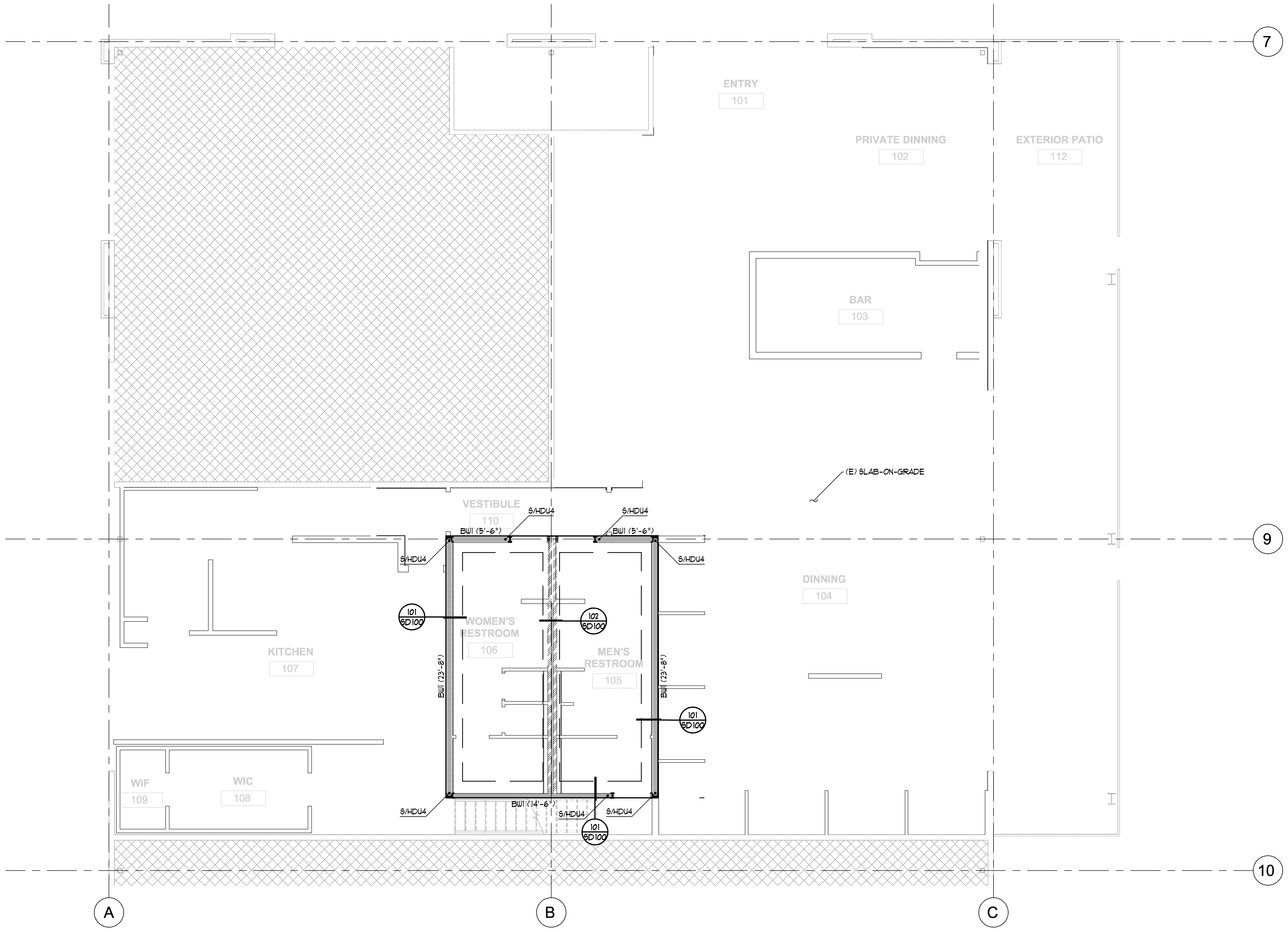
E. REFER TO DETAIL 103/SD101 FOR TYPICAL SLAB POUR-BACK DETAIL AS REQUIRED AT PLUMBING TRACKS

F. ANCHOR BOTTOM PLATE AT CONCRETE w/ 5/8" MIN. DIA. "J" BOLT w/ ROUND CUT WASHER AND NUT w/ 7" MIN. EMBEDMENT. AND 1-3/4" MIN. CLEAR FROM EXTERIOR EDGE OF SLAB PROVIDE MIN. (2) A.B. PER BOTTOM PLATE PIECE. LOCATE A.B. WITHIN 12" OF EACH END OF EACH PIECE. ANCHOR BOLT SHALL BE LOCATED 9 1/2" MIN. AND 12" MIN. FROM EDGE OF CONCRETE PERPENDICULAR TO THE LENGTH OF THE PLATE. A.B. SPACING SHALL NOT EXCEED 48" o.c. AT LOAD-BEARING WALLS AND 72" o.c. AT INTERIOR NONLOAD-BEARING WALLS. HOLDOWN ANCHORS DO NOT COUNT AS REPLACING ANCHOR BOLTS. SEE SHEAR WALL SCHEDULE ON FRAMING PLAN FOR ADD'L. ANCHORAGE REQUIREMENTS AT SHEAR WALLS.

G. SEE G.S.N. FOR ANCHOR BOLT SUBSTITUTIONS AND HOLDOWN ANCHORAGE.

## SYMBOL LEGEND





## FOUNDATION PLAN

SCALE: 3/16" = 1'-0"

NORTH

S102-181746-PS1

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STATE OF CALIFORNIA
9/24/2018

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**Project Number:**

**Sheet Title:**
FOUNDATION PLAN

**Sheet Number:**
S102

## BRACED WALL SCHEDULE

A. BWXX DESIGNATES TENSION BRACING PER SCHEDULE BELOW. LOCATE TENSION BRACING ON SIDE OF WALL. REFER TO DETAIL 204/SD102.

B. QUANTITY OF SCREWS INDICATES NUMBER OF SCREWS FROM DIAGONAL BRACE INTO EA. END STUD, INTO THE BOTTOM TRACK, AND THE TOP TRACK. SCREWS ARE NOT REQUIRED WHERE DIAGONAL BRACE IS WELDED.

C. WHERE STUD THICKNESS PER PLAN IS LESS THAN STRAP THICKNESS, THICKNESS OF STUDS AND TRACKS SHALL BE INSTALLED TO MATCH STRAP THICKNESS AT BRACE WALL.

D. DOUBLE END STUDS, IN ADDITION TO TYPICAL STUDS PER PLAN, SHALL BE INSTALLED AT EA. END OF BRACED WALL AS NOTED BELOW OR PER TYPICAL STUDS, WHICHEVER IS MORE STRINGENT.DOUBLE STUDS NOT REQUIRED AT STEEL COLUMS.

E. MINIMUM SCREW SPACING SHALL BE MAINTAINED AT 3x DIAMETER

F. BRACES SHALL USE 36KSI STEEL

| MARK | NOTES |
|---|---|
| BW1 | SEE DETAIL 204/SD102 FOR ELEVATION |

## MEZZANINE PLAN NOTES

A. VERIFY ALL DIMENSIONS, ELEVATIONS, SLOPES, ETC., w/ ARCH'L. PRIOR TO CONSTRUCTION. RESOLVE DISCREPANCIES WITH ARCHITECT.

B. ▒ BW1, BW2, BW3... DENOTES BRACED WALL PER SCHEDULE ON THIS SHEET

C. SEE TYPICAL DETAILS FOR FRAMING REQUIREMENTS AT OPENINGS IN FLOOR OR ROOF. ALL OPENINGS MAY NOT NECESSARILY BE SHOWN ON PLANS.

D. H1, H2, H3... DENOTES CFS BUILT-UP HEADER PER SCHEDULE ON THIS SHEET

E. MISC. ITEMS SUCH AS STAIRS, LANDINGS, RAILINGS, MECH. EQUIPMENT ATTACHMENT TO PRIMARY STRUCTURAL FRAMING, ETC., SHALL BE DESIGNED BY OTHERS AND SUBMITTED FOR REVIEW AS DEFERRED SUBMITTALS PRIOR TO CONSTRUCTION. SEE G.S.N. FOR DEFERRED SUBMITTAL REQUIREMENTS.

F. JS1, JS2, JS3... DENOTES CFS JAMB STUD PER SCHEDULE ON THIS SHEET

G. "C=", DENOTES REQ'D. UPWARD CAMBER AT MIDSPAN OF BEAM OR GIRDER

H. MEZZANINE SHEATHING AND FASTERNERS SHALL BE AS FOLLOWS U.N.O. ON PLAN:
  1. 3/4" T & G PLYWOOD PER GSN.
  2. #10 SCREWS AT 6" o.c. BOUNDARY FASTENERS (DIAPHRAGM BOUNDARIES, SHEAR PANEL BLOCKING, SOLID BLOCKING AND DRAG MEMBERS AS NOTED ON FRAMING DETAILS).
  3. #10 SCREWS AT 6" o.c. EDGE FASTENERS (AT SUPPORTED PANEL EDGES).
  4. #10 SCREWS AT 12" o.c. FIELD FASTENERS (ALONG INTERMEDIATE FRAMING MEMBERS).
  5. ▨ HATCHED AREA INDICATES BLOCKED DIAPHRAGM w/ #10 SCREWS AT 4" o.c. AT EDGES AND BOUNDARIES AND 12" o.c. FIELD U.N.O.

I. TYPICAL LOAD BEARING WALL WALL FRAMING SHALL BE 600200-54 (50 KSI) STEEL STUDS AT 16" o.c. U.N.O. REFER TO 205/SD102 AND 206/SD102 FOR TOP OF WALL TO (E) FRAMING ATTACHMENT

## MEZZANINE PLAN KEYNOTES

① TYPICAL MEZZANINE FRAMING SHALL BE 600S250-68 mil JOISTS AT 16" o.c.

## CFS BUILT-UP HEADER (H) SCHEDULE

A. REFER TO TYPICAL DETAIL 06/SD101 FOR TYPICAL BUILT-UP HEADER REQUIREMENTS. ALL HEADER MATERIAL SHALL BE 50 KSI, U.N.O.

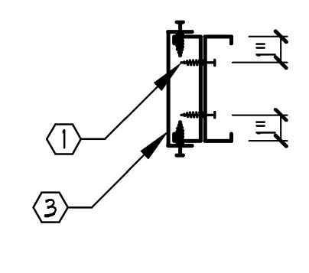
B. DO NOT PUNCH HEADER U.N.O. ON PLANS OR DETAIL.

C. WHERE NO JAMB IS NOTED ON PLAN OR SCHEDULE PROVIDE (1) STUD PER WALL SCHEDULE AT EACH END OF OPENING.

D. XXXT125-XX DENOTES HEADER TRACK. TRACK WIDTH TO MATCH STUD WALL WIDTH.

| HEADER MARK | BUILT-UP HEADER | HEADER TO JAMB CONNECTION | NOTES |
|---|---|---|---|
| H1 | (2) 600S200-54 mil<br>XXXT125-54 mil | (10) #10x1" SCREWS | · |
| H2 | (2) 1200S200-54 mil<br>XXXT125-54 mil | (12) #10x1" SCREWS | · |

## CFS JAMB STUD (JS) SCHEDULE

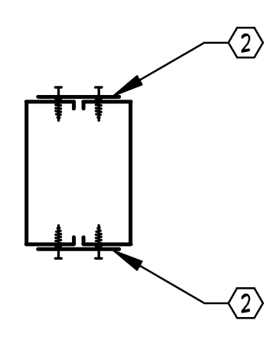


⟨1⟩ (2) ROWS #10 x 1/2" SCREWS AT 24" o.c.

⟨2⟩ 1" x 3" x 43 MIL (18 GA.) CLIP AT 24" o.c. w/ (1) #10x1/2 SCREW TO EACH STUD

⟨3⟩ CLOSURE TRACK AS OCCURS AT WALL OPENING

BACK – TO – BACK



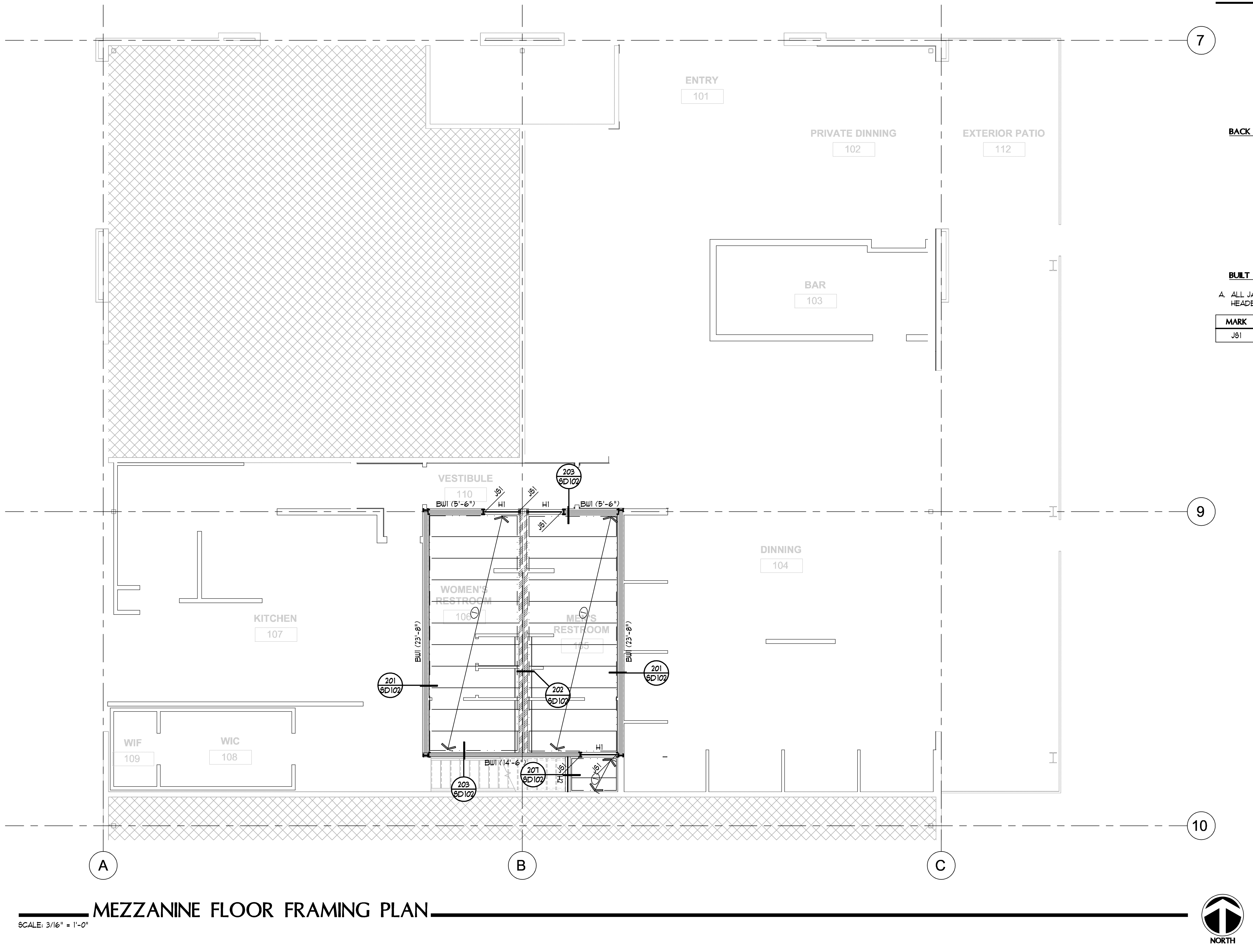
A. BULT-UP OPTION MAY NOT BE USED AT BOLTED HOLDOWNS

B. ALL JAMB MATERIAL SHALL BE 50 KSI, U.N.O.

BUILT – UP

A. ALL JAMB STUD MATERIAL SHALL BE 50 KSI, U.N.O. LOCATE JAMB STUDS EACH END OF HEADER.

| MARK | JAMB STUD(S) | NOTES |
|---|---|---|
| JS1 | (2) 600S200-54 | . |



## MEZZANINE FLOOR FRAMING PLAN

SCALE: 3/16" = 1'-0"

NORTH

S103-181746-PM1

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**Project Number:**

**Sheet Title:**

MEZZANINE FLOOR FRAMING PLAN

**Sheet Number:**

S103

## ROOF FRAMING PLAN NOTES

A. VERIFY ALL DIMENSIONS, ELEVATIONS, SLOPES, ETC., w/ ARCH'L. PRIOR TO CONSTRUCTION. RESOLVE DISCREPANCIES WITH ARCHITECT.

B. STRUCTURAL SCOPE OF WORK AT ROOF IS LIMITED TO THE FOLLOWING:
  B.1. SUPPORT OF (N) MECHANICAL UNIT
  B.2. SUPPORT OF (N) KITCHEN HOOD
  B.3. SUPPORT OF (N) MAKE-UP AIR UNIT
  B.4. SUPPORT OF (N) EXHAUST FANS

C. SEE TYPICAL DETAILS FOR FRAMING REQUIREMENTS AT OPENINGS IN FLOOR OR ROOF. ALL OPENINGS MAY NOT NECESSARILY BE SHOWN ON PLANS.

D. MISC. ITEMS SUCH AS STAIRS, LANDINGS, RAILINGS, MECH. EQUIPMENT ATTACHMENT TO PRIMARY STRUCTURAL FRAMING, ETC., SHALL BE DESIGNED BY OTHERS AND SUBMITTED FOR REVIEW AS DEFERRED SUBMITTALS PRIOR TO CONSTRUCTION. SEE G.S.N. FOR DEFERRED SUBMITTAL REQUIREMENTS.

## ROOF FRAMING KEYNOTES

① (N) MECHANICAL UNIT. REFER TO DETAIL 11/SD101. FOR FRAMING REQUIREMENTS UNDER UNIT. VERIFY LOCATION AND WEIGHT w/ MECHANICAL PLANS.

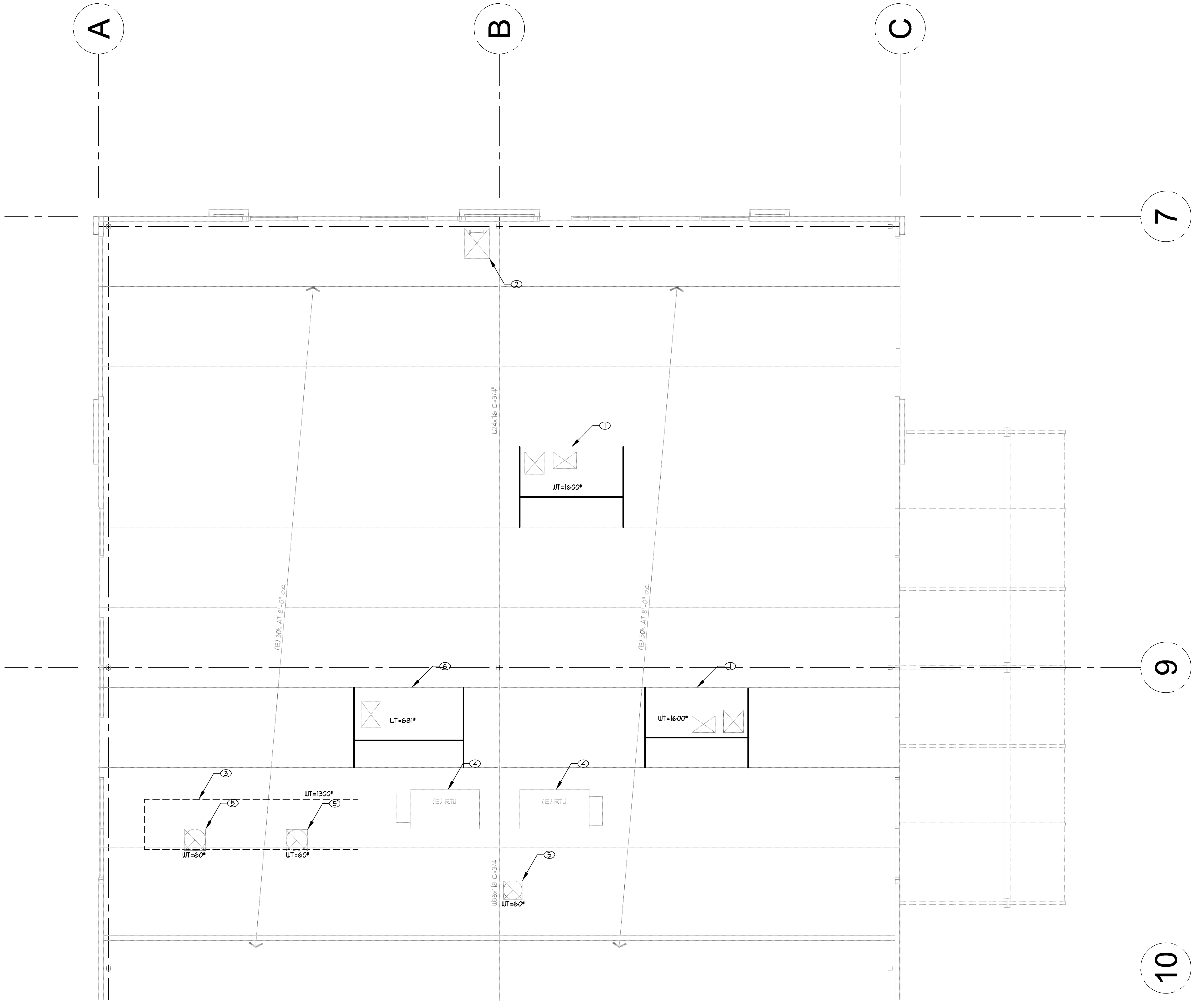
② (E) ROOF ACCESS

③ (N) KITCHEN HOOD BELOW PER KITCHEN PLANS. REFER TO DETAIL 14/SD101 FOR TYPICAL SUPPORT. (MAX WT = 1300#)

④ (E) RTU TO REMAIN

⑤ (N) EXHAUST FAN PER MECHANICAL PLANS. REFER TO DETAIL 12/SD101 FOR TYPICAL OPENING IN ROOF DECK.

⑥ (N) MAU PER MECHANICAL PLANS. REFER TO DETAIL 11/SD101 FOR FRAMING REQUIREMENTS UNDER UNIT. VERIFY LOCATION AND WEIGHT w/ MECHANICAL PLANS.



ROOF FRAMING PLAN

SCALE: 3/16" = 1'-0"

NORTH

S104-181746-PR

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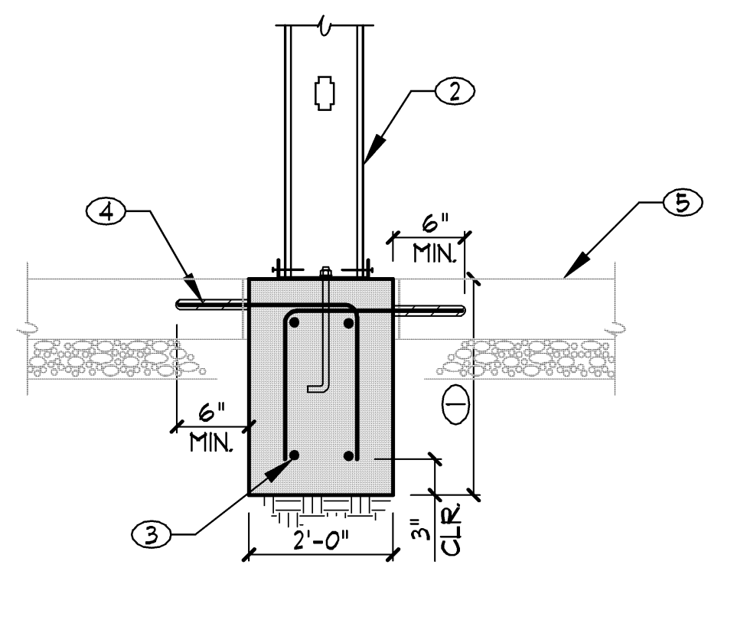
**Project Number:**

**Sheet Title:**
ROOF FRAMING PLAN

**Sheet Number:**
S104



① MINIMUM EMBEDMENT PER FOUNDATION PLAN NOTES

② (N) CFS STUD WALL PER PLAN

③ (2) #5 CONT. TOP & BOTTOM

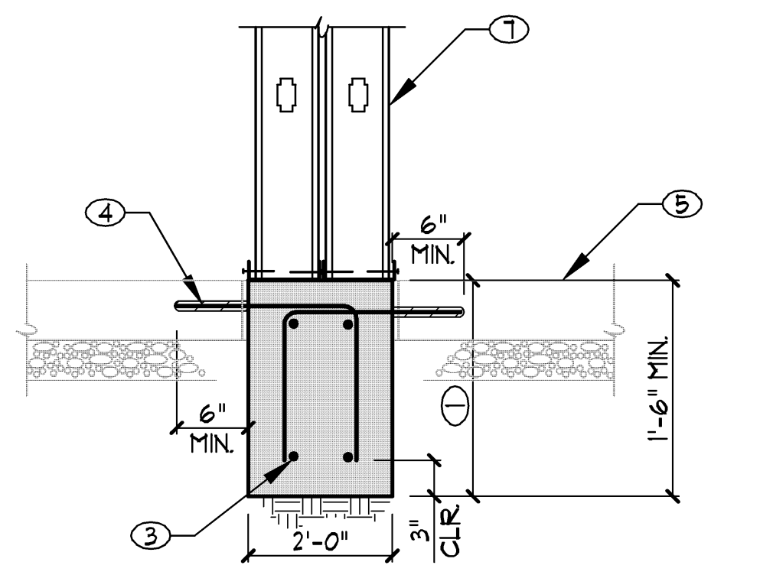
④ #4 EPOXY DOWEL AT 18" o.c. MAX. INTO (E) SLAB

⑤ (E) SLAB

## 101 INTERIOR STUD WALL AT FOOTING

101-181746

NO SCALE



① MINIMUM EMBEDMENT PER FOUNDATION PLAN NOTES

② (N) CFS STUD WALL

③ (2) #5 CONT. TOP & BOTTOM

④ #4 EPOXY DOWEL AT 18" o.c. MAX. INTO (E) SLAB

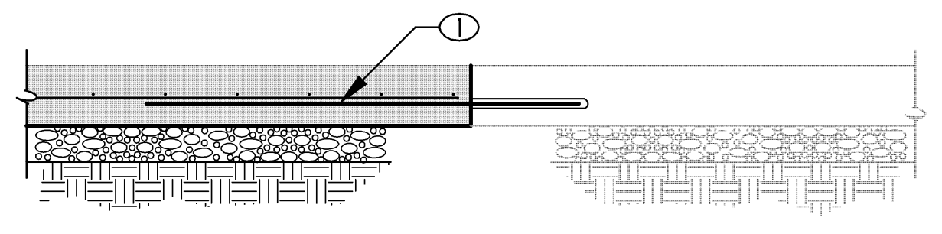
⑤ (E) SLAB

## 102 INTERIOR STUD WALL AT FOOTING

102-181746

NO SCALE

① #4 x 36" EPOXY DOWEL AT 18" o.c. w/ 9" EMBEDMENT



## 103 (N) CONCRETE SLAB AT EXISTING CONCRETE SLAB

RF01-19 180108

NO SCALE

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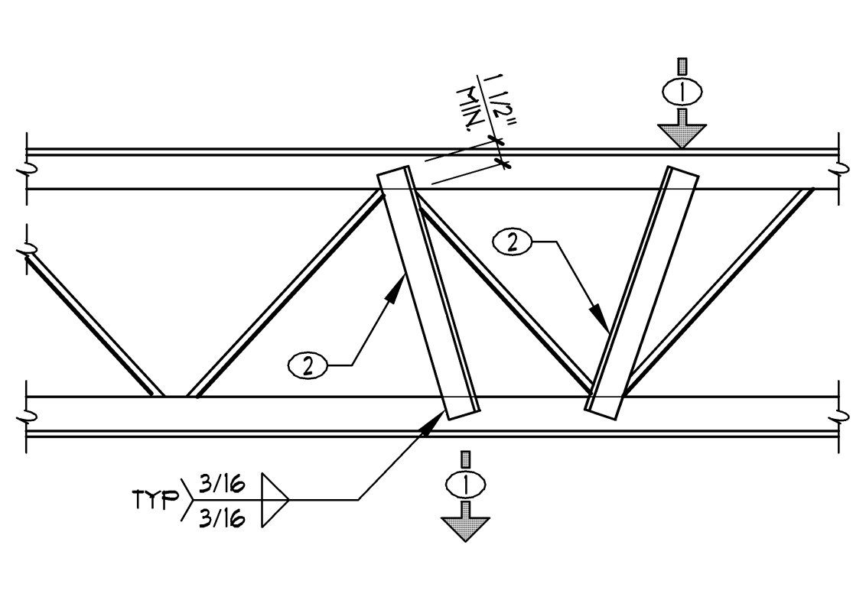
**Project Number:**

**Sheet Title:**
FOUNDATION DETAILS

**Sheet Number:**
SD100



① LOAD APPLIED AT TOP OR BOTTOM CHORD AWAY FROM JOIST PANEL POINT

② L2 1/2x2 1/2x3/16 EACH SIDE OF JOIST TO NEAREST OPPOSITE CHORD PANEL POINT

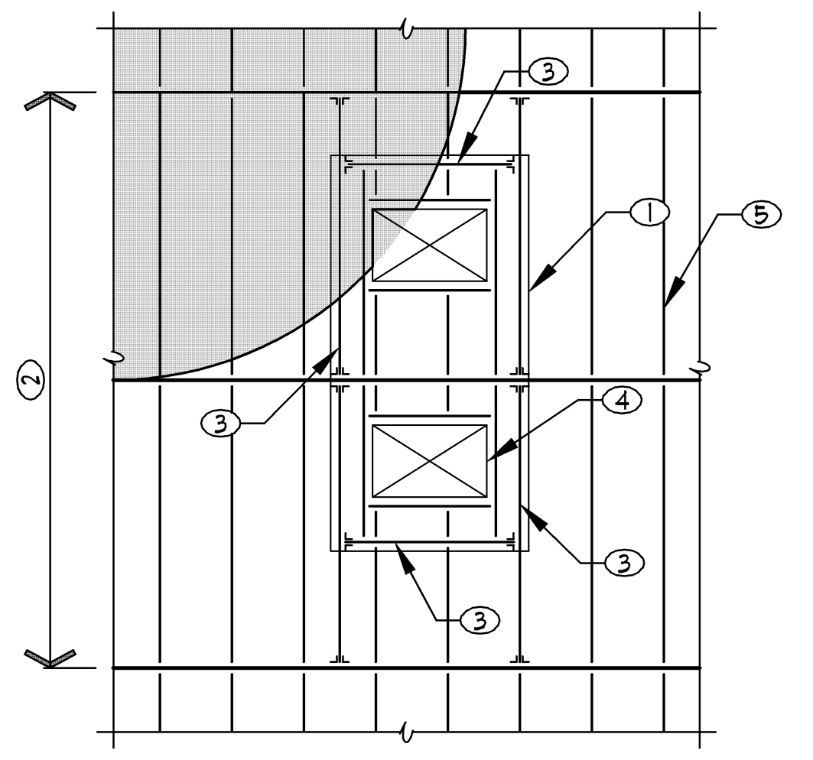
A. DETAIL NOT REQUIRED FOR LOAD LESS THAN 250 LBS. NOTIFY ENGINEER OF ANY LOAD NOT NOTED ON STRUCTURAL DRAWINGS THAT EXCEEDS 500 LBS.

B. DETAIL NOT REQUIRED FOR LOADS APPLIED AT PANEL POINT OR FOR WHICH THE JOIST HAS BEEN SPECIFICALLY DESIGNED TO SUPPORT

## 10 TYPICAL FIELD INSTALLED WEB MEMBER

S01-01 080430

NO SCALE



① OUTLINE OF MECH. UNIT

② PURLIN OR JOIST PER PLAN AT 8'-0" o.c. MAX.

③ 4x8 w/ SIMPSON B48 HANGER EACH END ALIGNED BENEATH SUPPORTING EDGE CURB OF MECH. UNIT ALL SIDES

④ OPENING AS OCCURS FOR MECH. DUCT PENETRATIONS. FRAME AROUND DECK OPENING PER TYPICAL DETAIL

⑤ TYPICAL SUBPURLIN FRAMING AT 24" o.c.

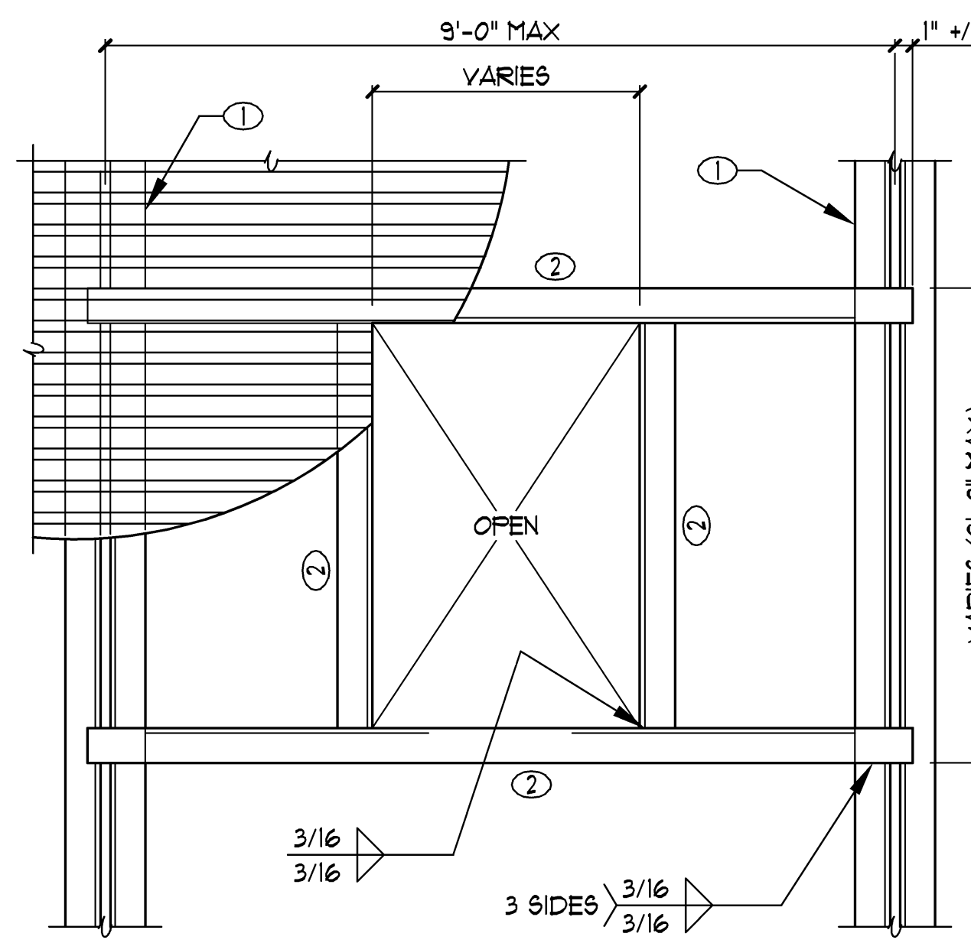
A. PURLIN OR JOIST MFR. SHALL DESIGN FOR MECH. LOAD AS NOTED ON MECH. AND STRUCTURAL DRAWINGS

B. AT STEEL JOISTS, INSTALL FIELD INSTALLED WEB MEMBER PER TYPICAL DETAIL AT 4x8 BEARING LOCATIONS

## 11 TYPICAL MECH. UNIT SUPPORT FRAMING

WA01-27 030715

PLAN VIEW NO SCALE



① STEEL JOIST PER PLAN

② STEEL ANGLE PER SCHEDULE BELOW. COPE VERTICAL LEG AT STEEL JOIST

| ANGLE LENGTH | ANGLE SIZE |
|---|---|
| UP TO 6'-0" | L3x3x1/4 |
| 6'-1" TO 8'-0" | L4x3x1/4 (L.L.V.) |
| 8'-1" TO 9'-4" | L5x3x1/4 (L.L.V.) |

A. VERIFY LOCATION AND SIZE OF OPENING w/ ARCH'L. AND MECH.

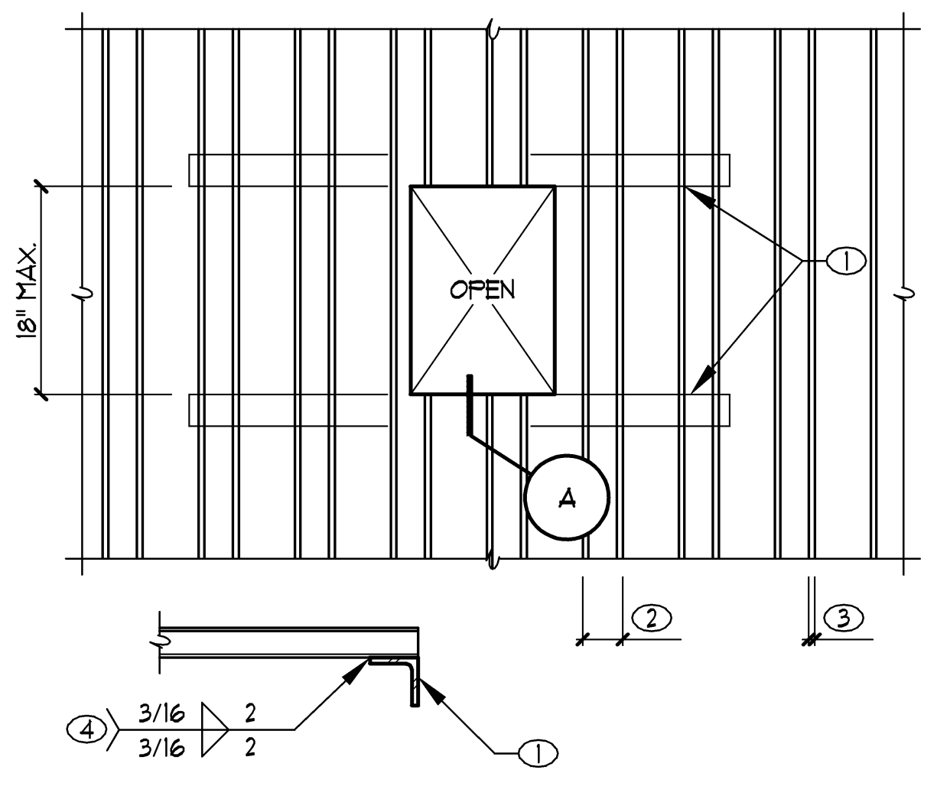
B. FOR SMALL OPENINGS, SEE TYPICAL SMALL OPENING IN ROOF DECK DETAIL

C. STEEL ANGLES MAY BE OMITTED WHEN SPECIALTY ENGINEER PROVIDES STRUCTURAL CURB CALCULATIONS AND DETAILS AS DEFFERED SUBMITTAL PER G.S.N.

## 12 TYPICAL OPENING IN ROOF

S01-03 070914

NO SCALE



A ANGLE AT EDGE OF OPENING

① L2x2x3/16 ANGLE AT EDGE OF OPENING. ORIENT PERPENDICULAR TO RIBS. EXTEND (2) FULL RIBS MIN. PAST EDGES OF OPENING TYP.

② RIB

③ WEB

④ EACH RIB. ALTERNATE: 1/8" DIA PUDDLE WELD EACH RIB

A. OPENINGS THAT CUT ONLY (1) WEB REQUIRE NO TRIM ANGLE

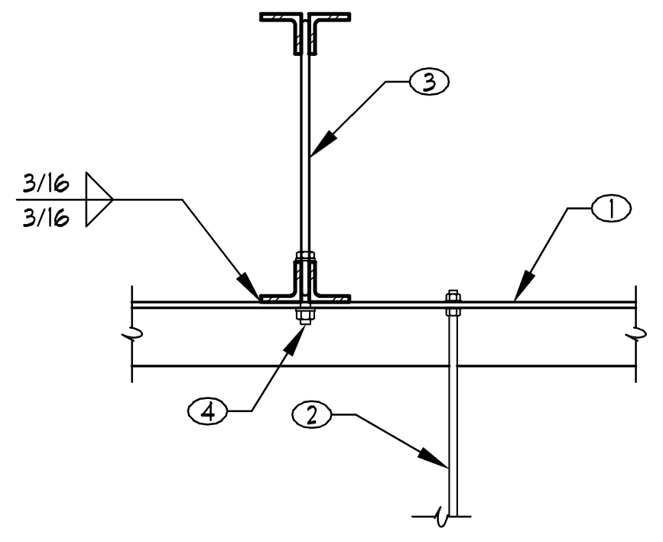
B. OPENING THAT CUT MORE THAN (3) WEBS REQUIRE FRAMING PER TYPICAL OPENING IN ROOF FRAMING DETAIL

C. ANGLE MAY BE PLACED ON TOP OF DECK WITH PRIOR APPROVAL OF ARCHITECT

## 13 TYPICAL SMALL OPENING IN ROOF DECK

S01-04 180323

NO SCALE



① P1000 UNISTRUT, EXTEND UNISTRUT (2) JOIST BAY MIN.

② 5/8" DIA. ROD AT 48" O.C. PER KITCHEN EQUIPMENT DRAWING

③ (E) STEEL JOIST PER PLAN

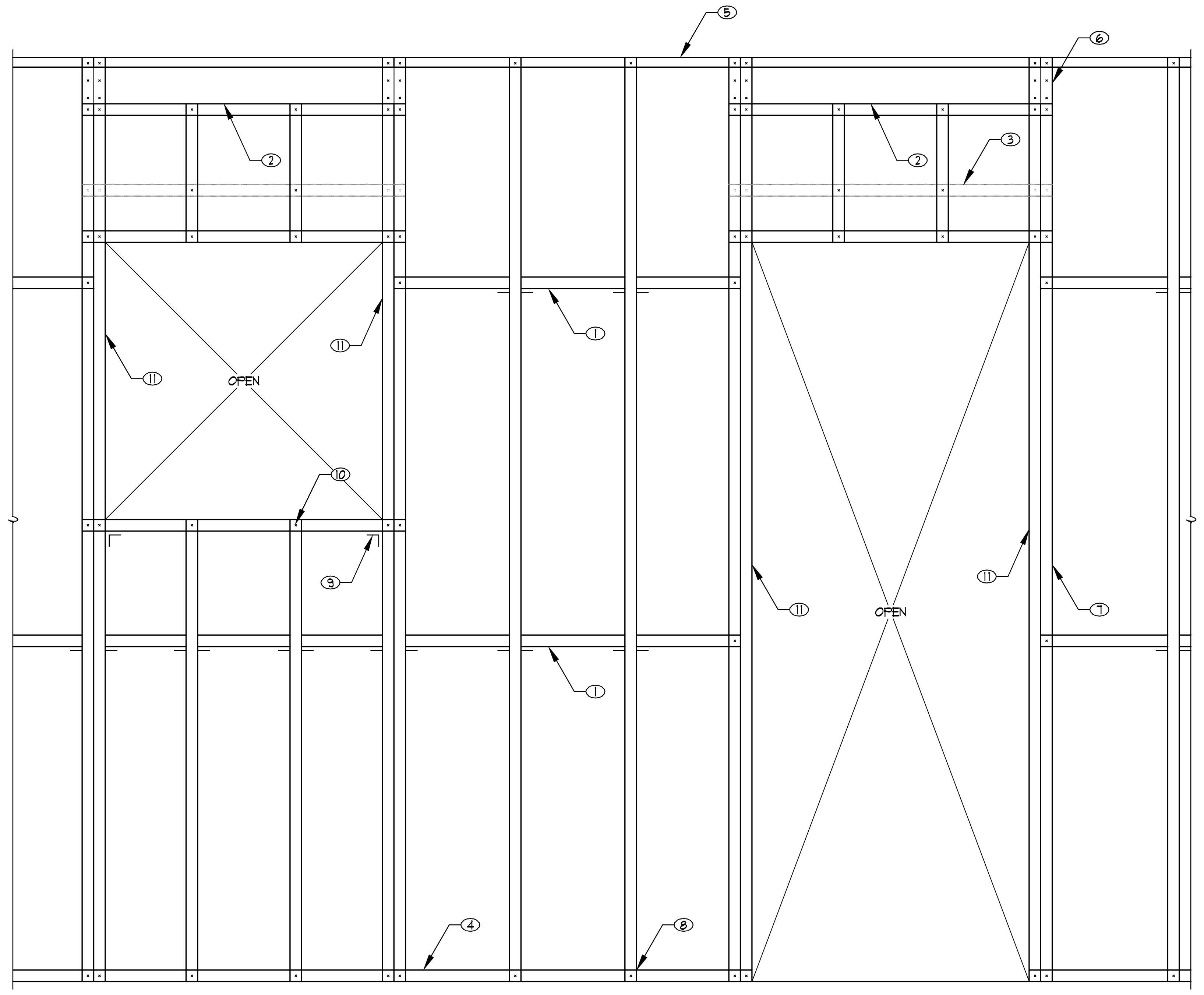
④ 1/2" DIA. THRU-BOLT AT EACH JOIST.

A. SEE TYPICAL FIELD INSTALLED WEB MEMBER DETAIL FOR JOIST REINFORCEMENT REQUIRED AT ANGLE BEARING AWAY FROM JOIST PANEL POINT

## 14 KITCHEN EXHAUST HOOD SUPPORT

14-181746

NO SCALE



① BRIDGING PER TYPICAL DETAIL U.N.O.

② HEADER PER PLAN OR SCHEDULE

③ ALTERNATE HEADER LOCATION AT SHEAR WALL WHERE NOTED ON PLAN OR DETAIL

④ BOTTOM TRACK PER PLAN

⑤ TOP TRACK PER PLAN

⑥ REFER TO TYPICAL HEADER ATTACHMENT DETAIL FOR CONNECTION

⑦ JAMB STUDS (JS) PER PLAN OR SCHEDULE

⑧ (2) #10 SCERWS TOP AND BOTTOM TRACK TO STUD, TYP.

⑨ 1 1/2" x 1 1/2" x 54 MIL (16 GA.) x 3 1/2 LONG CLIP w' (2) #10 SCREWS TO SILL TRACK AND STUD

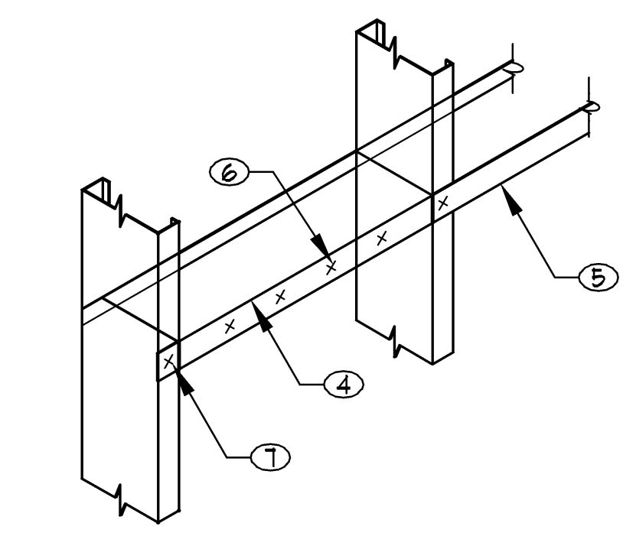
⑩ (2) #8 SCREWS SILL TRACK TO STUD

⑪ PROVIDE XXXT125-XX CAP TRACK TO MATCH WALL DEPTH AND GAUGE

## 05 TYPICAL CFS STUD WALL ELEVATION

05-181746

NO SCALE



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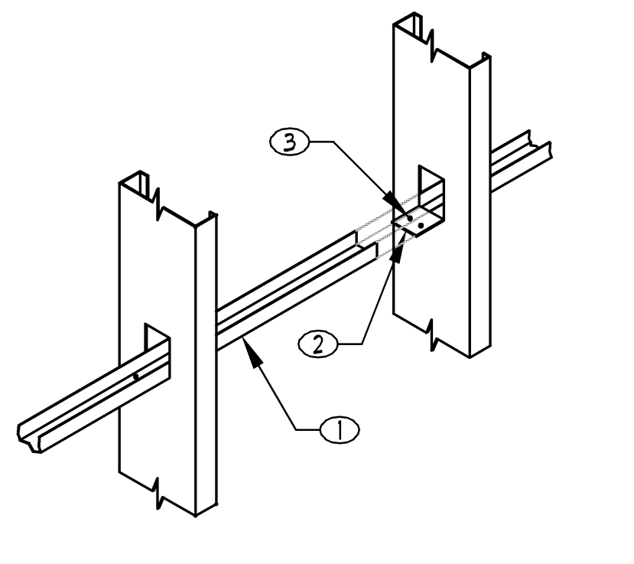


A BRIDGING

① 1 1/2" x 2 1/2" x CONT. COLD ROLLED CHANNEL (CRC) AT 4'-0" o.c.

② 1 3/4" x 3 PUNCH. IN STUD WEB. BEND FLAP TO ATTACH TO CRC

③ (2) #10x1/2" SCREWS AT EACH STUD FLAP

④ COPED XXXT150-43 AT EACH END OF WALL, AT 12'-0" o.c., ADJACENT TO WALL OPENINGS AND SHEAR WALL JAMB STUDS

⑤ CONT. 20 GA. x 2" HORIZONTAL STRAP, EACH SIDE OF WALL

⑥ (4) #10x1/2" SCREWS, STRAP TO BLOCK

⑦ (2) #10x1/2" SCREWS, STRAP TO STUD

## 08 CFS STUD WEB BRACING

08-181746

NO SCALE

A. STRAP NOT REQUIRED FOR HOLES LESS THAN 2" DIAMETER IN 4" WALL AND LESS THAN 3" DIAMETER IN 6" WALL.

B. HOLES MUST BE DRILLED. DO NOT TORCH OR PLASMA CUT STEEL TRACK.

C. DO NOT NOTCH OR COPE CFS TRACK FLANGE AT HOLE IN TRACK.

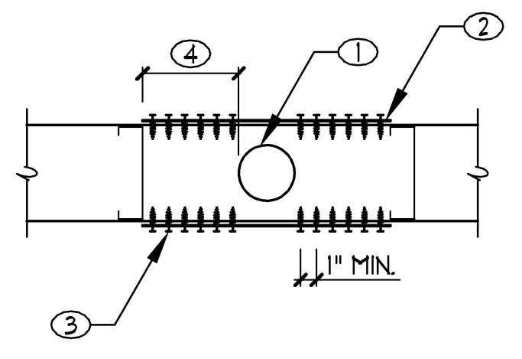
D. AT INTERIOR NON-LOAD BEARING, NON-SHEARWALLS TRACK MAY BE DISCOUNTINOUS.

① 3 1/2" MAX. DIAMETER HOLE AT 4" WALL. 5" MAX. DIAMETER HOLE AT 6" WALL. CENTER HOLE IN TRACK.

② 1 1/2" WIDE STRAP EACH SIDE. STRAP THICKNESS TO MATCH TRACK GAUGE

③ SCREWS EACH SIDE OF HOLE, EACH STRAP PER TABLE

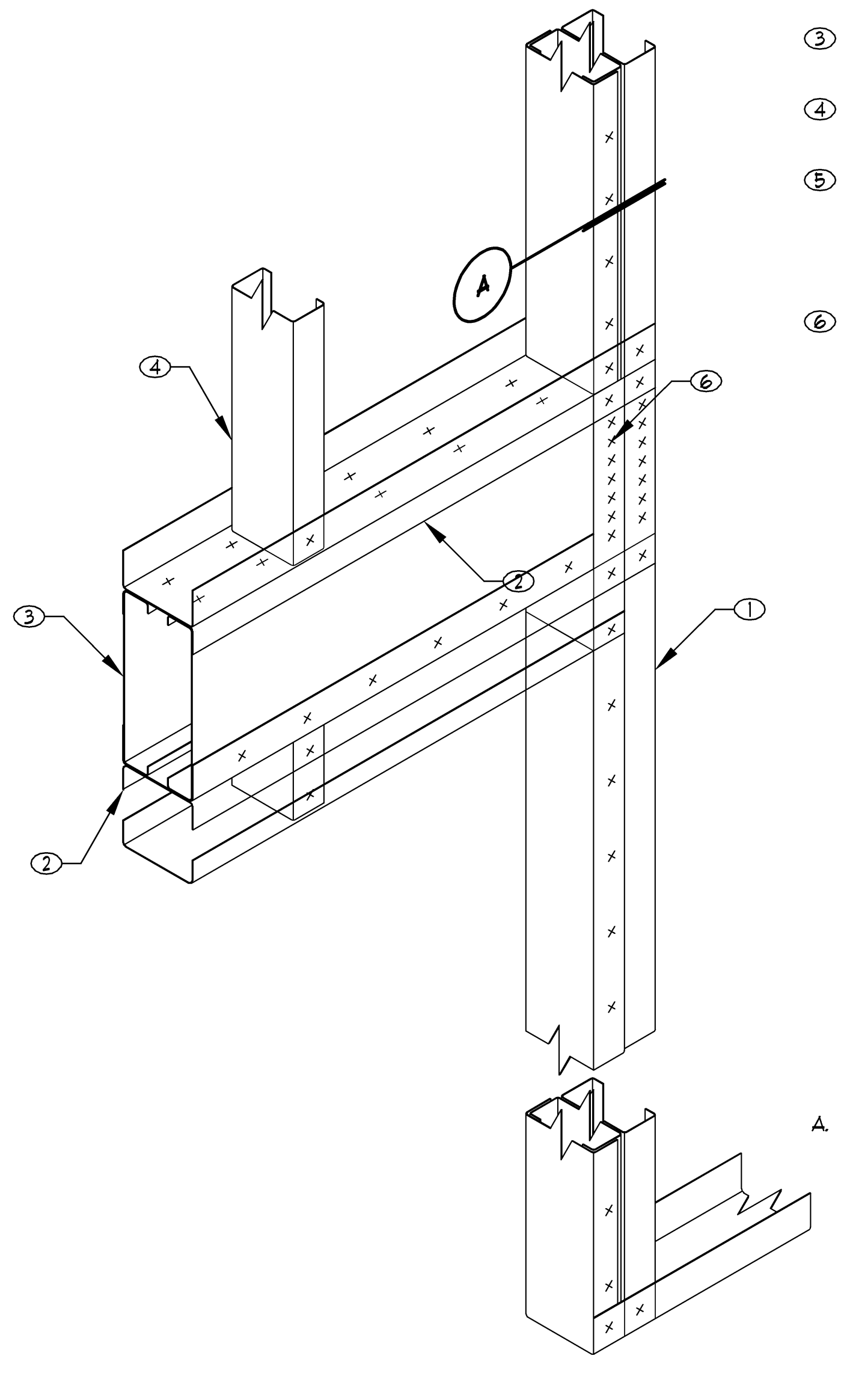
| TRACK SECT. | STRAP END LENGTH (IN.) ④ | SCREWS ③ |
|---|---|---|
| 350T125-XX | 4" | 3 |
| 400T125-XX | 4" | 3 |
| 550T125-XX | 8" | 6 |
| 600T125-XX | 10" | 8 |
| 800T125-XX | 14" | 12 |



## 09 TYPICAL HOLE IN CFS TOP TRACK

09-181746

NO SCALE



① JAMB STUDS PER PLAN OR SCHEDULE

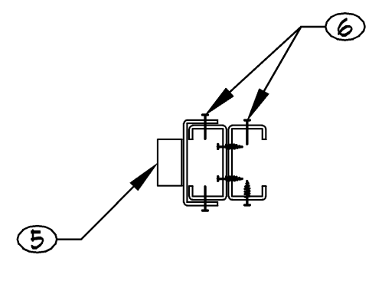
② TRACK PER HEADER SCHEDULE MAY BE REVERSED AT ALTERNATE HEADER LOCATION

③ CFS BUILT-UP HEADER PER PLAN OR SCHEDULE

④ CRIPPLE STUD AS OCCURS AT ALTERNATE HEADER LOCATION

⑤ 1 1/2" x 1 1/2" x 4" x 16 GA. ANGLE CLIP, TOP AND BOTTOM OF HEADER. ATTACH w/ (4) #10x1/2" AT HEADER AND (4) #10x1/2" AT JAMB STUD ((8) TOTAL)

⑥ FASTENERS PER CFS BUILT-UP HEADER SCHEDULE. FASTENERS SHALL BE EVENLY DISTRIBUTED TO EACH MEMBER OF BUILT-UP JAMB STUD



A PLAN VIEW

A. THE STEEL NETWORK STIFFCLIP HE MAY BE USED IN LIEU OF ⑥ AS SPECIFIED IN CFS BUILT-UP HEADER SCHEDULE.

## 06 TYPICAL CFS BUILT-UP HEADER AT CFS STUD WALL

06-181746

NO SCALE

| CONNECTION | FASTENERS |
|---|---|
| BOTTOM TRACK/TOP TRACK TO STUD | (2) #8x1/2" |
| TOP AND BOTTOM TRACK TO POST | (2) #8x1/2" SCREWS, EACH MEMBER |
| DOUBLE OR MULTIPLE BUILT-UP STUDS (POST) | SEE TYPICAL BUILT-UP JAMB STUD SCHEDULE |
| TOP TRACK, LAPS AND INTERSECTIONS | COPE INTERSECTING TRACK AND FASTEN w/ (2) #8 SCREWS |
| BUILT-UP CORNER STUDS | SEE TYPICAL DETAIL 03/SD101 |
| JAMB STUD TO HEADER | SEE CFS BUILT-UP HEADER SCHEDULE |

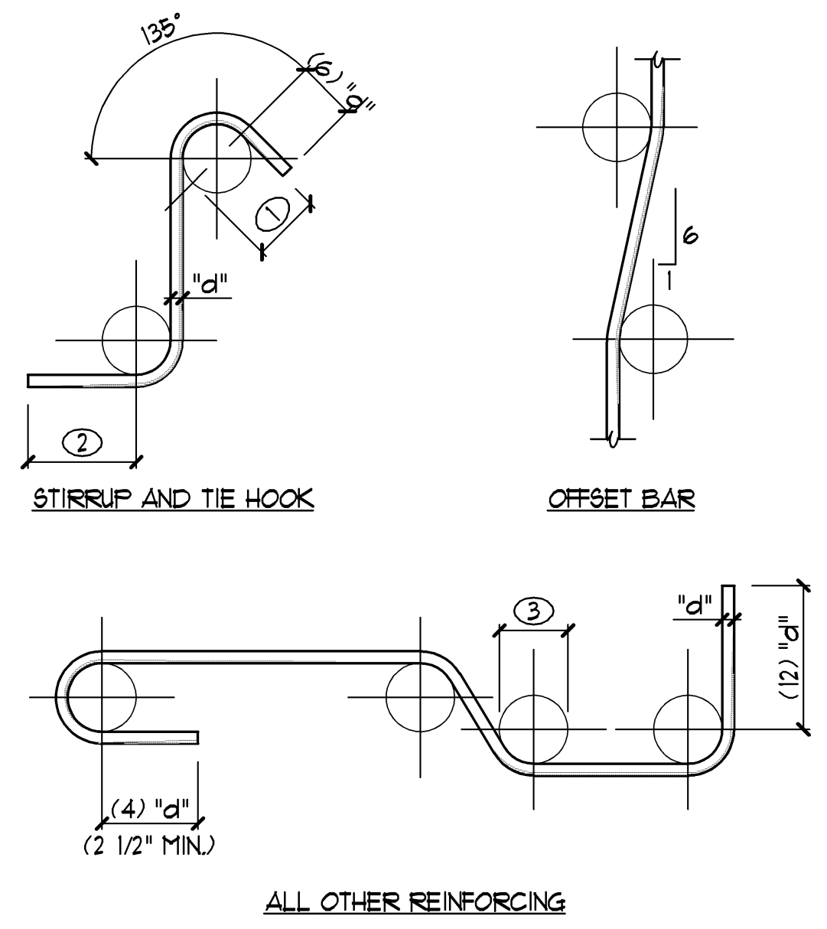
A. MINIMUM FASTENERS THIS SCHEDULE APPLIES U.N.O. ON PLANS AND DETAILS.

B. SEE PLAN OR G.S.N. FOR TOP TRACK SPLICE CONNECTION.

## 07 TYPICAL CFS FASTENER SCHEDULE

07-181746

NO SCALE



① MINIMUM FINISHED BEND DIA. FOR STIRRUPS AND TIES ONLY (4) "d" FOR #5 BAR AND SMALLER, (6) "d" FOR #6 THRU #8. TYPICAL

② (6) "d" FOR #5 AND SMALLER (12) "d" FOR #6 THRU #8

③ MINIMUM FINISHED BEND DIA. FOR ALL REINFORCING EXCEPT STIRRUPS AND TIES (6) "d" UP TO #8 BAR, (8) "d" FOR #9 THRU #11, (12) "d" FOR #14 AND #18.

A. "d" = BAR DIA.

B. ALL REINFORCEMENT SHALL BE BENT COLD UNLESS NOTED OTHERWISE ON PLANS OR DETAILS

C. REINFORCING PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT UNLESS SPECIFICALLY NOTED ON PLANS OR DETAILS

## 01 STANDARD REBAR BEND DETAILS

01-181746

NO SCALE

| BAR SIZE | MIN. CLR. COVER | MIN. CLR. SPACING | REBAR LAP LENGTH ① f'c = 2500 PSI TOP BARS | REBAR LAP LENGTH ① f'c = 2500 PSI OTHER BARS |
|---|---|---|---|---|
| #3 | 3/4 | 1 1/2 | 19 | 16 |
| #4 | 1 | 2 | 25 | 19 |
| #5 | 1 1/4 | 2 1/2 | 31 | 24 |
| #6 | 1 1/2 | 3 | 37 | 29 |
| #7 | 1 3/4 | 3 1/2 | 54 | 41 |
| #8 | 2 | 4 | 61 | 47 |
| #9 | 2 1/2 | 4 3/4 | 69 | 53 |

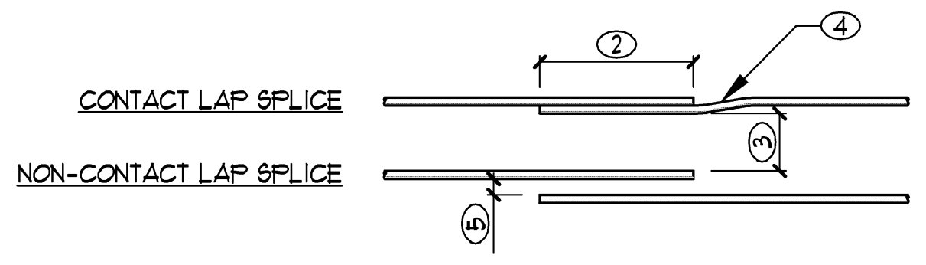
① TOP BARS ARE HORIZ. BARS PLACED SUCH THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN MEMBER BELOW SPLICE

② LAP SPLICE LENGTH PER SCHEDULE

③ CLR. DISTANCE BETWEEN ADJACENT BARS OR SPLICES

④ OPTIONAL OFFSET. SEE STANDARD REBAR BEND DETAILS FOR OFFSET REQUIREMENTS

⑤ FOR NON-CONTACT LAP SPLICES, MIN. CLR. DISTANCE BETWEEN SPLICED BARS SHALL BE PER G.S.N. MAX. CLR. DISTANCE SHALL BE 1/5 THE TABULATED LAP LENGTH OR (6" - "db"), WHICHEVER IS LESS, WHERE "db" = BAR DIA.



A TYPICAL LAP SPLICES

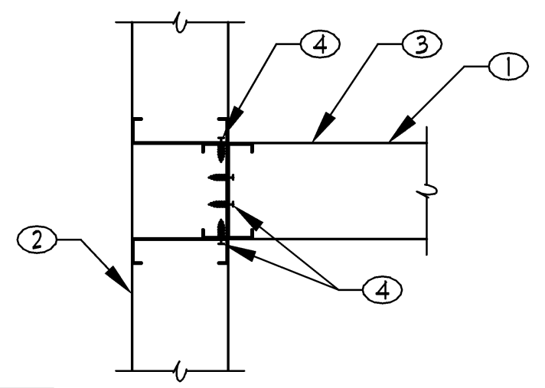
A. ALL TABULATED VALUES ARE IN UNITS OF INCHES U.N.O.

B. CONCRETE STRENGTH AND MIN. CLR. COVER / CLR. SPACING DISTANCES SHOWN ARE FOR SCHEDULING PURPOSES ONLY. SEE G.S.N. FOR ACTUAL CONCRETE SPECIFICATIONS AND MIN. CLR. COVER / CLR. SPACING REQUIREMENTS

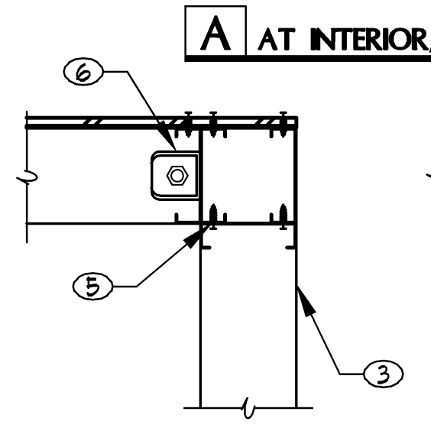
## 02 TYPICAL REBAR LAP SCHEDULE (CONCRETE)

02-181746

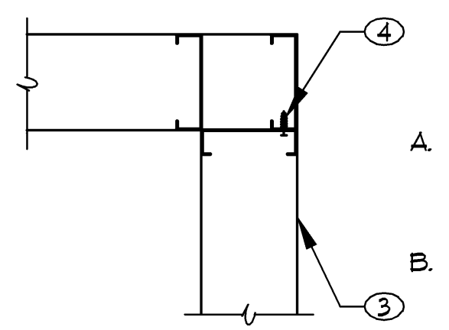
NO SCALE



A AT INTERIOR/EXTERIOR



C AT CORNER w/ HOLDOWN



B AT CORNER

① INTERIOR WALL

② EXTERIOR WALL

③ COPE WALL TOP TRACK FLANGE TO LAP EXTERIOR WALL TRACK AND FASTEN w/ (2) #10x1" SCREWS

④ (2) #10x1" SCREWS AT 24" o.c. TO FULL HEIGHT STUD(S)

⑤ DOUBLE JAMB STUD (JS) PER PLAN OR SCHEDULE

⑥ HOLDOWN PER PLAN

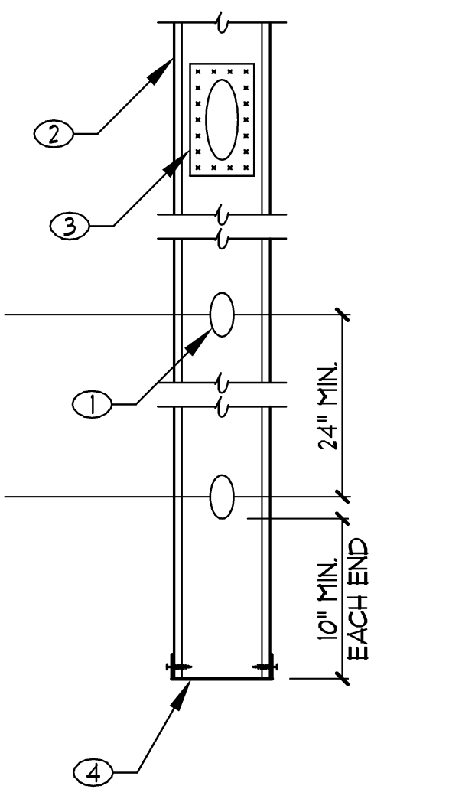
A. APPLICABLE AT ALL INTERIOR/EXTERIOR INTERSECTIONS U.N.O. ON PLANS.

B. ADDITIONAL STUD(S) AS REQUIRED AT THE ENDS OF SHEAR WALLS AND SHEATHING NOT SHOWN FOR SIMPLICITY.

## 03 TYPICAL CFS WALL INTERSECTION

03-181746

NO SCALE



① 1 1/2" x 4" MAX. HOLE IN STUD w/ SPACING REQUIREMENTS AS NOTED

② NOTCHING OR CUTTING OF STUD FLANGE NOT ALLOWED U.N.O.

③ WHERE HOLE EXCEEDS 1 1/2" x 4", PROVIDE SOLID STEEL PLATE TO MATCH STUD GAUGE w/ #10 SCREWS AT 1" o.c. AROUND HOLE

④ CONT. TRACK PER PLAN

A. MAX HOLE SHALL BE 2" x 5" IN 4" WIDE STUDS, AND 3" x 6" IN 6" WIDE STUDS.

B. NOTCHES TO STUDS ARE **NOT** PERMITTED.

## 04 TYPICAL CFS STUD HOLES

04-181746

NO SCALE

SD101-181746-D

**Architect:**

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**Project Owner:**

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DINE + DRINK

**Stamp:**

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THOMAS C. ALLEN
No.S5460
STRUCTURAL
STATE OF CALIFORNIA
9/24/2018

**Issue For:**
Project Status

**Issue Date:**
9/24/2018

**Revisions:**

| NO. | REASON | DATE |
|---|---|---|
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|  |  |  |
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|  |  |  |

PRINCIPAL IN CHARGE:
WE
PROJECT MANAGER:
SE
DRAWN BY:
STAFF

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3850 WORSHAM BOULEVARD
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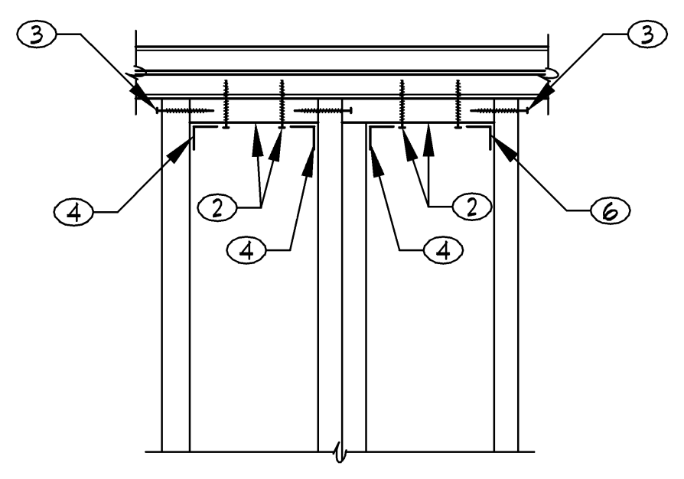
**Project Number:**

**Sheet Title:**
TYPICAL DETAILS

**Sheet Number:**
SD101



A PLAN VIEW

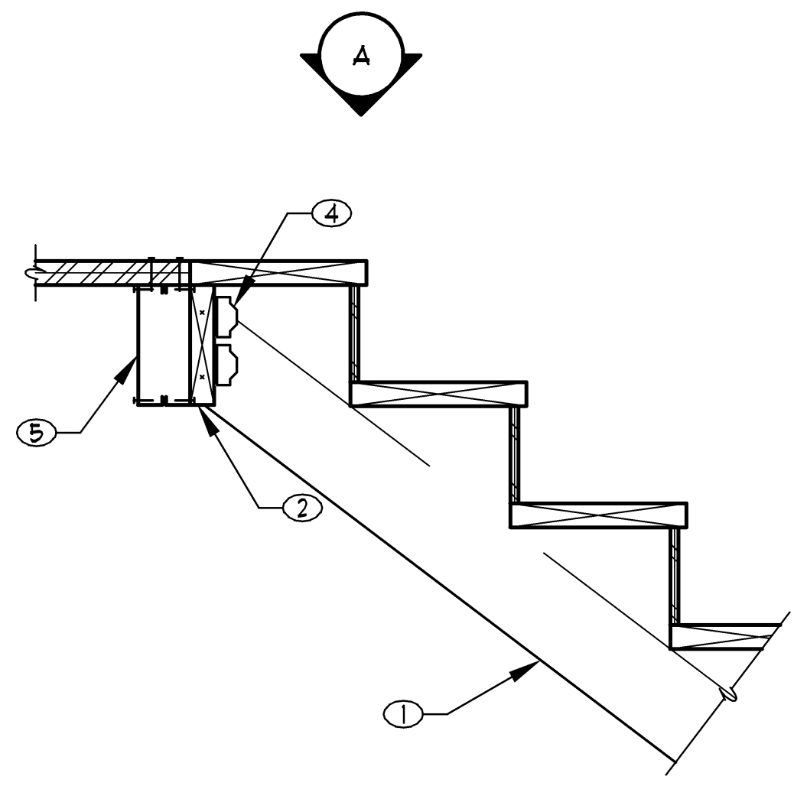
① WOOD STAIR PER ARCH'L

② 2x8 SOLID BLOCKING BETWEEN STRINGERS w/ (4) #12 SCREWS TO CFS HEADER

③ (2) SDS1/4x3 1/2" SCREWS STRINGER TO BLOCK (STAGGER AT MIDDLE STRINGER)

④ (2) A34 CLIPS w/ #8 x 3 1/2" WOOD SCREWS IN LIEU OF NAILS

⑤ CFS PER PLAN

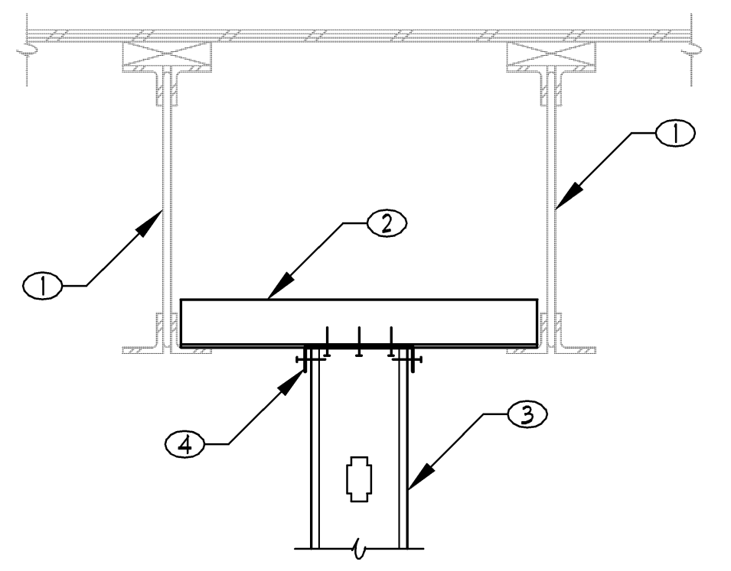


A. 4'-0" MAX. STAIR WIDTH

## 207 TYPICAL STAIR AT TOP SUPPORT (UP TO 8'-0")

207-181746

NO SCALE



① (E) STEEL JOIST

② P1000 UNISTRUT w/ BEAM CLAMP AT 48" o.c.

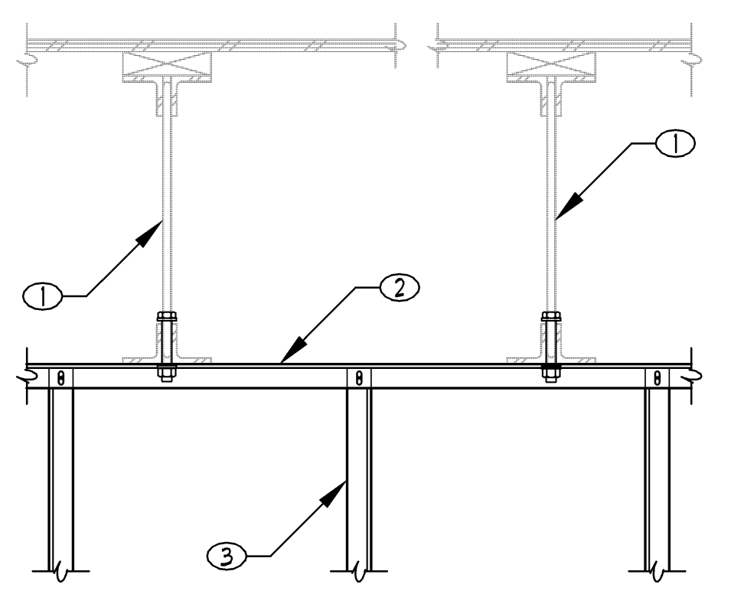
③ CFS STUD PER PLAN

④ CONT. SLIP TRACK w/ (2) 1/2" DIA. BOLT TO EACH UNISTRUT AND (2) #12 TO EACH STUD.

## 205 CFS WALL TO (E) FRAMING (PARALLEL STEEL JOIST)

205-181746

NO SCALE



① (E) STEEL JOIST

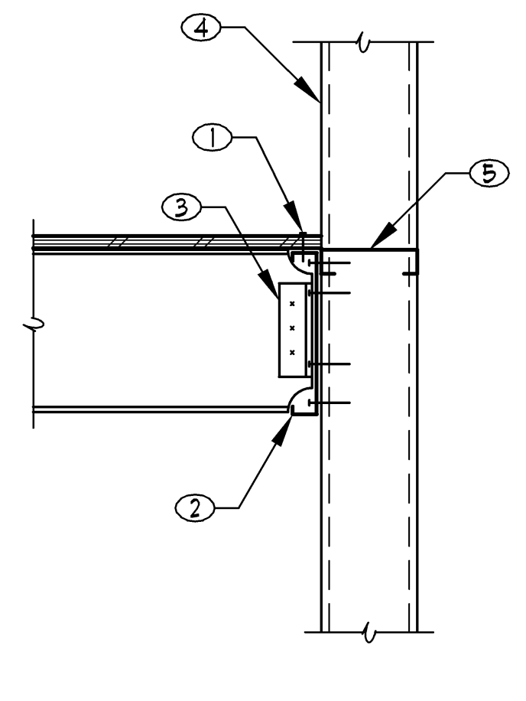
② CONT. SLIP TOP TRACK w/ 1/2" DIA. THRU BOLT TO EACH JOIST AND (2) #12 TO EACH STUD

③ CFS STUD PER PLAN

## 206 CFS WALL TO (E) FRAMING (PERPENDICULAR TO STEEL JOIST

206-181746

NO SCALE



① BOUNDARY FASTENERS

② 800S250-68MIL LEDGER w/ (3) #12 SCREWS TO EA. STUD AND (3) #12 SCREWS TO EA. BLOCK

③ 1 1/2" x 1 1/2" x 68MIL x 0'-6" CLIP w/ (4) #12 SCREWS TO JOIST AND LEDGER

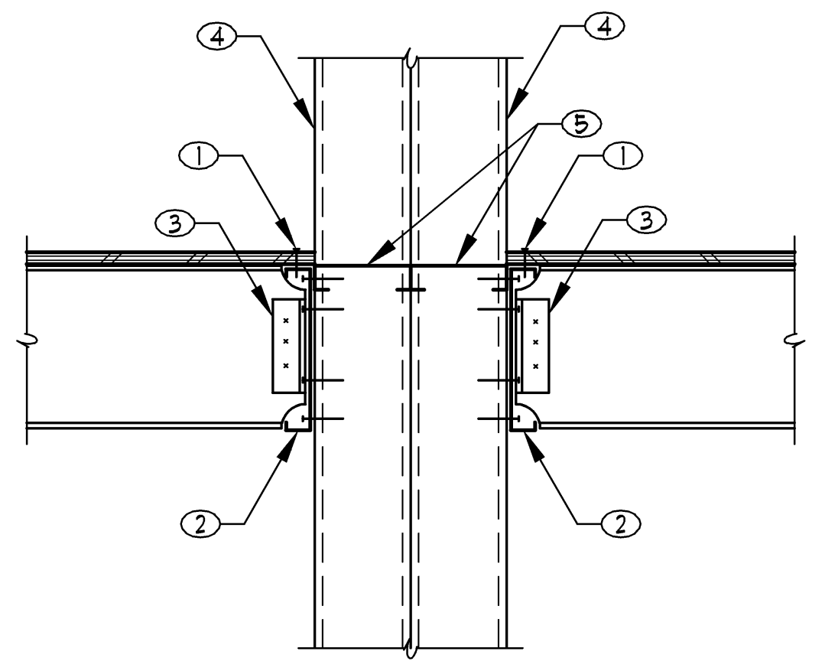
④ CFS STUD WALL PER PLAN

⑤ 600T125-43MIL BLOCKING

## 201 CFS JOIST AT CFS STUD WALL

201-181746

NO SCALE



① BOUNDARY FASTENERS

② 800S250-68MIL LEDGER w/ (3) #12 SCREWS TO EA. STUD AND (3) #12 SCREWS TO EA. BLOCK

③ 1 1/2" x 1 1/2" x 68MIL x 0'-6" CLIP w/ (4) #12 SCREWS TO JOIST AND LEDGER

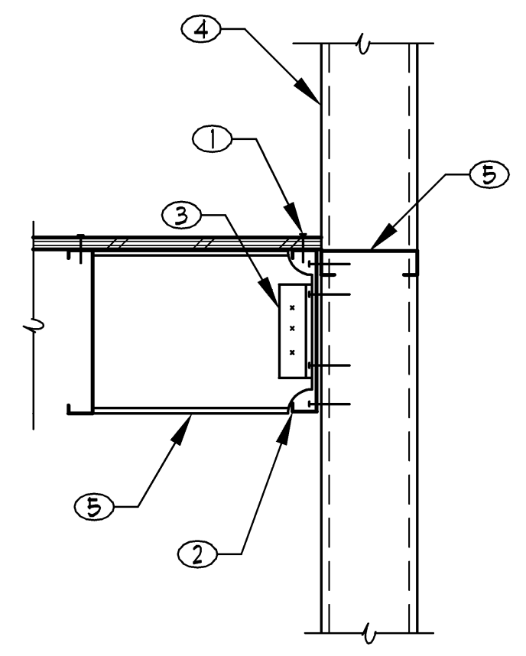
④ CFS STUD WALL PER PLAN

⑤ 600T125-43MIL BLOCKING

## 202 CFS JOIST AT CFS STUD WALL

202-181746

NO SCALE



① BOUNDARY FASTENERS

② 800S250-68MIL LEDGER w/ (3) #12 SCREWS TO EA. STUD AND (3) #12 SCREWS TO EA. BLOCK

③ 1 1/2" x 1 1/2" x 68MIL x 0'-6" CLIP w/ (4) #12 SCREWS TO JOIST AND LEDGER

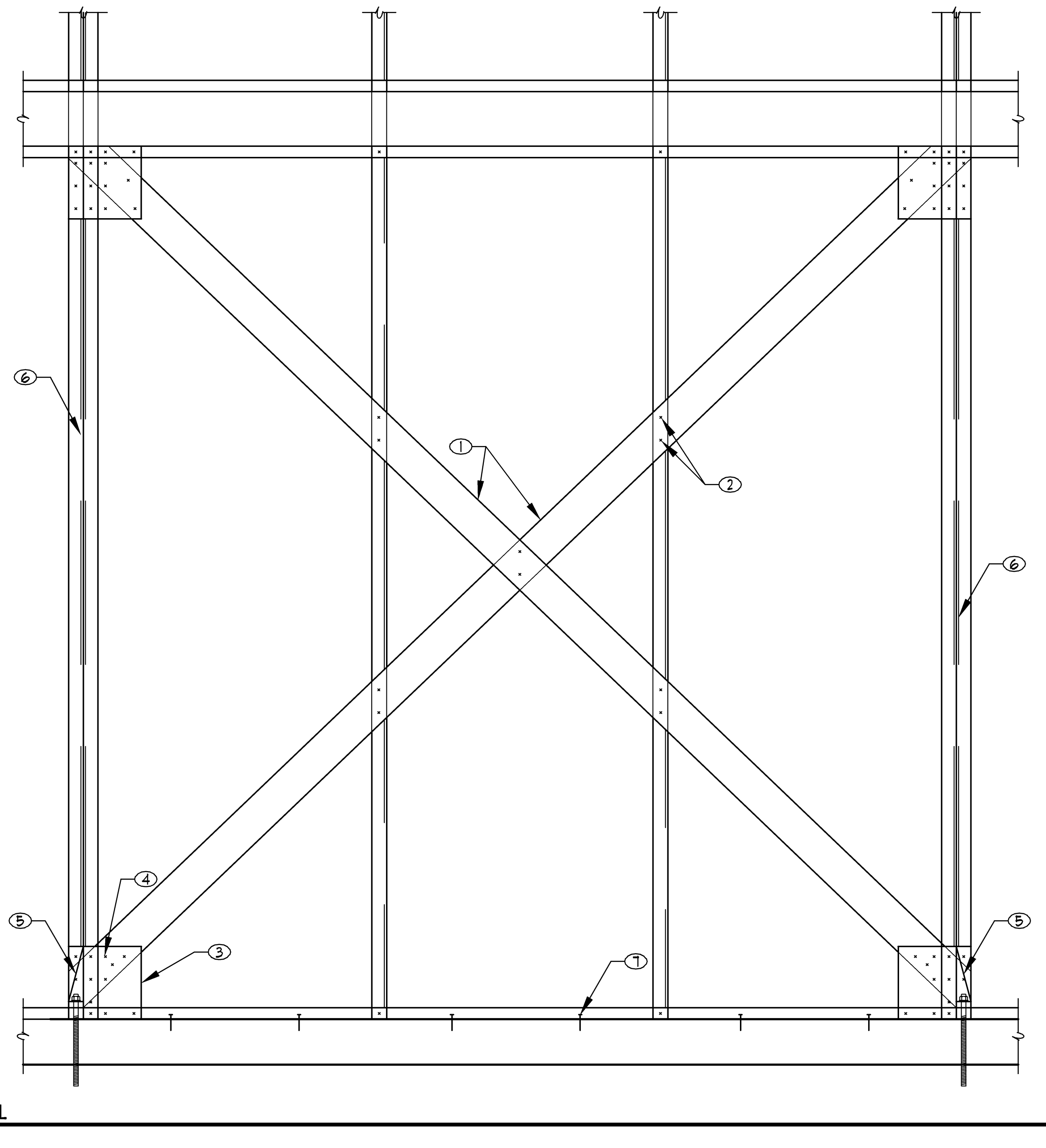
④ CFS STUD WALL PER PLAN

⑤ 800T125-43MIL BLOCKING AT 32" o.c. w/ 1 1/2" x 1 1/2" x 43 MIL x 0'-6" CLIP w/ (3) #12 SCREWS.

## 203 CFS JOIST AT CFS STUD WALL

203-181746

NO SCALE



① 4" x 54 MIL FLAT STRAP BRACING, EACH FACE OF WALL

② (2) #10 EACH STUD

③ 8" x 8" x 54 MIL PLATE w/ (4) #10 TO EACH STUD AND TRACK

④ (13) #10 STRAP TO PLATE

⑤ SIMPSON HOLD DOWN PER PLAN

⑥ JAMB STUD PER PLAN

⑥ 1/2" TITEN HD SCREW AT 12" o.c.

## 204 BRACED WALL

204-181746

NO SCALE

SD102-181746-D

**Architect:**

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STATE OF CALIFORNIA
9/24/2018

**Issue For:**
Project Status

**Issue Date:**
9/24/2018

**Revisions:**

| NO. | REASON | DATE |
|---|---|---|
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SE

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**Project Number:**

**Sheet Title:**

FRAMING DETAILS

**Sheet Number:**

SD102