

GENERAL

- Changes to these contract drawings may be made only by an authorized representative of the engineer or architect. The architect or engineer shall not be held responsible or liable for any claims arising directly or indirectly from changes made without written authorization by an authorized representative.
- Omissions or conflicts between the contract drawings and/or specifications shall be brought to the attention of the architect/engineer before proceeding with any work involved. In case of conflict, follow the most stringent requirement as directed by the architect/engineer at no additional cost to the owner.
- 2.Omissions or conflicts between the contract drawings and/or specifications shall be brought to the attention of the architect/engineer before proceeding with any work involved. In case of conflict, follow the most stringent requirement as directed by the architect/engineer at no additional cost to the owner.
- The contractor shall be responsible for means, methods, techniques, sequences, and procedures in order to comply with the contract drawings and specifications. The contractor shall provide adequate shoring and bracing as required for the chosen method of erection. Shoring and bracing shall remain in place until final connections for the permanent members are completed. The building shall not be considered stable until all connections are completed. Walls shall not be considered self-supporting and shall be braced until the floor/roof system is completed.
- The contractor shall coordinate with all trades any items that are to be integrated into the structural system such as openings, penetrations, mechanical and electrical equipment, etc. Sizes and locations of mechanical and other equipment that differs from those shown on the contract drawings shall be reported to the architect/engineer.
- The contractor shall submit a written request to the architect/engineer before proceeding with any changes, substitutions, or modifications. Any work done by the contractor before receiving written approval will be at the contractor's risk.
- The contractor shall verify all site conditions and dimensions. If actual conditions differ from those shown in the contract drawings, the contractor shall immediately notify the architect/engineer before proceeding with the fabrication or construction of any affected elements.
- The structural notes are intended to complement the project specifications. Specific notes and details in the drawings shall govern over the structural notes and typical details.
- Typical details and sections shall apply where specific details are not shown.
- Detailing and shop drawing production for structural elements will require information (including dimensions) contained in the architectural, structural and/or other consultants' drawings. The structural drawings shall be used in conjunction with the architectural and other consultants' drawings. Most dimensions and most non-structural elements such as elevations, depressions, slopes, mechanical housekeeping pads, etc. are not shown in the structural drawings. See the Architectural Drawings for dimensions, doors, windows, non-bearing interior and exterior walls, elevations, slopes, stairs, curbs, drains, recesses, depressions, railings, waterproofing, finishes, chamfers, kerfs, etc.
- Shop drawings made from reproductions of the drawings will be rejected unless the contractor signs a release agreement prior to the shop drawings being reviewed.
- Review of shop drawing submittals by the engineer is for general compliance only and is not intended for approval. The shop drawing review shall not relieve the contractor from the responsibility of completing the project according to the contract documents.
- All work shall be done in accordance with OSHA requirements. Potential conflicts between these documents and OSHA requirements shall be brought to the attention of the structural engineer before proceeding with the work.
- Site observations by the engineer and or architect shall not be construed as approval of construction, the procedures, nor special inspection.
- The terms "Engineer" and "Engineer of Record" (EOR) are meant to refer to an authorized representative of M J Structural Engineers.

BASIS FOR DESIGN

- Governing Building Code International Building Code 2012
- Risk Category II
- Floor Live Loads
  - 3.1 Uniformly Distributed Loads 40 psf
- Roof Live Load\* 20 psf
- \*(Not concurrent with Roof Snow Load)
- Roof Snow Load
  - 5.1 Ground Snow Load  $P/g = 274$  psf
  - 5.2 Flat Roof Snow Load  $P/f = 211$  psf
  - 5.3 Snow Exposure Factor  $C/e = 1.0$
  - 5.4 Thermal Factor  $C/t = 1.1$
  - 5.5 Snow Load Importance Factor  $I/Snow = 1.0$
- Wind Load
  - 6.1 Basic Wind Speed (3 Second Gust) 115 mph
  - 6.2 Wind Exposure C
  - 6.3 Internal Pressure Coefficient  $\pm 0.18$
- Seismic Design Criteria
  - 7.1 Mapped Spectral Response Accelerations
    - 7.1.1 Short Period Acceleration  $S/S = .825$  g
    - 7.1.2 1-Second Acceleration  $S/1 = .274$  g
  - 7.2 Site Class (Soil Profile) B
  - 7.3 Spectral Response Coefficients
    - 7.3.1 Short Period Acceleration  $S/D5 = .550$  g
    - 7.3.2 1-Second Acceleration  $S/D1 = .183$  g
  - 7.4 Seismic Importance Factor  $I/Seismic = 1.0$
  - 7.5 Seismic Design Category D
  - 7.6 Effective Structural Seismic Weight W
  - 7.7 Basic Seismic Force Resisting System Special Reinforced Concrete ShearWalls
    - 7.7.1 Response Modification Coefficient  $R = 5.0$
    - 7.7.2 System Over-Strength Factor  $\Omega/0 = 2.5$
    - 7.7.3 Deflection Amplification Factor  $C/D = 5.0$
    - 7.7.4 Design Base Shear  $V = C/S*W = 0.1100W$
  - 7.8 Analysis Procedure Equivalent Lateral Force

FOUNDATION

- Soils Report by: IGES
- Dated: August 11, 2015
- Soil Bearing Pressure: 5000psf, on Bedrock
- Frost Protection: 42 inches minimum
- Lateral Soil Pressure Fluid Equivalent Density:
  - 4.1. Active 35 pcf (retaining walls)
  - 4.2. At Rest 55 pcf (rigid foundation walls)
  - 4.3. Passive 320 pcf
- Coefficient of Friction 0.45
- The soils engineer shall review all excavations and fill placement prior to placing concrete.

EARTHWORK

- Clearing: The entire building area, including 3 feet beyond the building perimeter, shall be scraped to the depth necessary (4" minimum) to remove all vegetation, topsoil, loose/disturbed surficial soils, debris, undocumented fills, and any other deleterious materials.
- Proof Rolling: The natural undisturbed soil below all footings shall be proof rolled prior to placing concrete to check for the presence of unsuitable fills, soft spots, or other undesirable materials or conditions. Remove sub-grade materials that are unsuitable and replace with compacted structural fill.
- Compacted Structural Fill: All fill material shall be a well-graded granular material with a maximum size less than 4" and with not more than 10% passing a #200 sieve. It shall be compacted to 95% of the maximum laboratory density as determined by ASTM D 1557. All fill shall be tested. Compacted structural fill shall be placed in lifts not exceeding 8" in uncompacted thickness.
- Floor slabs thicknesses shall be as indicated in the drawings and underlain by a granular layer (of thickness indicated in the drawings) (at least 4" thick). The granular fill shall be free-draining fill such as "pea" gravel or three-quarters- to one-inch minus clean gap-graded gravel with not more than 5% passing a #200 sieve and shall be compacted to at least 90% of the maximum laboratory density as determined by ASTM D 1557.
- Consult the project specifications and soils report for further earthwork requirements. The soils engineer shall review all excavations and fill placement prior to placing concrete.

CONCRETE

- Materials unless noted otherwise:
  - 1.1. Normal Weight Aggregates ASTM C 33
  - 1.2. Light Weight Aggregates ASTM C 330
    - Light Weight Concrete shall not exceed 110 pcf (+ 3 pcf)
  - 1.3. Fly Ash, Class F Pozzolan ASTM C618
  - 1.4. Reinforcing Steel
    - General ASTM 615 Grade 60 (60 ksi)
    - Frame Members, Shearwall Boundaries ASTM A706 (60 ksi)
  - ASTM A615 is permitted if mill certifications are submitted showing that actual yield strength does not exceed the specified strength by more than 18000 psi and the ratio of tensile to yield strength is greater than 1.25.
  - 1.5. Deformed Bar Anchors (DBA) ASTM A496
  - 1.6. Headed Stud Anchors (HSA) ASTM A108
  - 1.7. Anchor Bolts: See steel and/or wood section(s) of general notes.
  - 1.8. Admixtures: Air-entraining admixtures shall comply with ASTM C 490 (when used). Calcium chloride shall not be added to the concrete mix. Unreinforced concrete slabs on grade may have calcium chloride not exceeding one percent.
  - 1.9. Cement complying with ASTM C-150 shall be used for all concrete. See table of concrete properties for cement type.
  - 1.10. No aluminum conduit or product containing aluminum or any other material injurious to concrete shall be embedded in concrete.
- | CONCRETE USE                             | EXPOSURE CLASSIFICATIONS |    |    |    | CEMENT TYPE | (MIN) F <sub>c</sub> (psi) | (MAX) w/ cm RATIO | (MAX) FLAYASH PERCENT | (MAX) AIR CONTENT PERCENT | (MAX) AGG SIZE | (MAX) SLUMP |
|--|--------------------------|----|----|----|-------------|----------------------------|-------------------|-----------------------|---------------------------|----------------|-------------|
|  | F0                       | S0 | P0 | CO |             |                            |                   |                       |                           |                |             |
| Interior Footings                        | F0                       | S0 | P0 | CO | I/II        | 3000                       | 0.50              | 30                    | 2                         | 1"             | 5.00"       |
| Exterior Footings                        | F2                       | S0 | P0 | CL | I/II        | 3000                       | 0.50              | 30                    | 6                         | 1"             | 5.00"       |
| Interior Slabs on Grade                  | F0                       | S0 | P0 | CO | I/II        | 3500                       | 0.50              | 30                    | 2                         | 3/4"           | 5.00"       |
| Interior Walls                           | F0                       | S0 | P0 | CO | I/II        | 3000                       | 0.50              | 30                    | 2                         | 3/4"           | 5.00"       |
| Exterior Walls above Grade               | F1                       | S0 | P0 | CL | I/II        | 4000                       | 0.45              | 30                    | 5                         | 3/4"           | 5.00"       |
| Exterior Walls below Grade               | F2                       | S0 | P0 | CL | I/II        | 4000                       | 0.45              | 30                    | 6                         | 3/4"           | 5.00"       |
| Interior Columns                         | F0                       | S0 | P0 | CO | I/II        | 4000                       | 0.50              | 30                    | 2                         | 3/4"           | 5.00"       |
| Exterior Columns                         | F1                       | S0 | P0 | CL | I/II        | 4000                       | 0.45              | 30                    | 5                         | 3/4"           | 5.00"       |
| Interior Piers                           | F0                       | S0 | P0 | CO | I/II        | 3000                       | 0.50              | 30                    | 2                         | 3/4"           | 5.00"       |
| Exterior Piers                           | F2                       | S0 | P0 | CL | I/II        | 3000                       | 0.45              | 30                    | 6                         | 3/4"           | 5.00"       |
| Joints, Beams and Suspended Slabs (Int.) | F0                       | S0 | P0 | CO | I/II        | 4500                       | 0.50              | 30                    | 2                         | 3/4"           | 5.00"       |
| Joints, Beams and Suspended Slabs (Ext.) | F1                       | S0 | P0 | CL | I/II        | 4500                       | 0.45              | 30                    | 5                         | 3/4"           | 5.00"       |

- Reinforce composite slabs over metal deck with 6" x 6" - W2.1/W2.1 welded wire reinforcement minimum, unless noted otherwise. Welded wire reinforcement shall be placed 1" to 1 1/2" below the top of the slab. Welded wire reinforcement may be substituted with "Fibermesh Fibers" manufactured by Propex Concrete Systems Corporation, as approved by ICC-ER-4811. The rate of fiber application shall be based on ICC-ER-4811. Other substitutions may be permitted if an ICC Evaluation report is submitted to and approved by the Structural Engineer.
- The contractor shall be responsible for the design, detailing, care, placement and removal of all formwork and shores.
  - 4.1. Supporting forms and shoring shall not be removed until structural members have acquired sufficient strength to safely support their own weight and any construction load to which they may be subjected. In no case, however, shall forms and shoring be removed in less than 24 hours after concrete placement.
  - 4.2. Suspended slabs shall be re-supported after form removal until concrete reaches its 28-day specified compressive strength.
- Reinforcement shall have the following concrete cover: Clear Cover:
  - 5.1. Cast-in-place Concrete
    - Cast against and permanently exposed to earth 3"
    - Formed concrete exposed to earth or weather: #6 thru #18 bars 2" #5 and smaller bars 1 1/2"
    - Concrete not exposed to weather or in contact with ground: Slabs, Walls, Joints; #11 Bars and Smaller 3/4" Beams, Columns; Primary Reinforcement, Ties, Stirrups, Spirals 1 1/2"
- Construction Joints and Control Joints:
  - 6.1. All horizontal and vertical construction joints, including between top of footing and foundation walls, shall be intentionally roughened to a full amplitude of approximately 1/4".
  - 6.2. Install construction or control joints in slabs on grade at a spacing not to exceed 30 times the slab thickness in any direction, unless noted otherwise. Control joints shall be installed in slabs on grade so the length to width ratio of the slab is no more than 1.25:1. Control joints shall be completed within 12 hours of concrete placement. Control joints may be installed by either:
    - Saw cut with depth of 1/4 the thickness of the slab
    - Tooled joints with depth of 1/4 the thickness of the slab
  - 6.3. Construction joints shall not exceed a distance of 125'-0" on center in any direction.
- Construction
  - 7.1. Use chairs or other support devices recommended by the CRSI to support bar and tie reinforcement bars and WWF prior to placing concrete. WWF shall be continuously supported at 36" on center maximum. Reinforcing steel for slabs on grade shall be adequately supported on precast concrete units. Lifting the reinforcing off the grade during placement of concrete is not permitted.
  - 7.2. Contractor shall coordinate placement of all openings, curbs, dowels, sleeves, conduits, bolts, inserts and other embedded items prior to concrete placement.
  - 7.3. All embeds and dowels shall be securely tied to formwork or to adjacent reinforcing prior to the placement of concrete.
  - 7.4. No pipes, ducts, sleeves, etc. shall be placed in structural concrete unless specifically detailed or approved by the structural engineer. Penetrations through walls when approved shall be built into the wall prior to concrete placement. Penetrations will not be allowed in footings or grade beams unless detailed. Piping shall be routed around these elements and footings stepped to avoid piping.
  - 7.5. Reinforcing bars shall not be welded unless specifically shown on drawings. In such cases, use only AWS standards. Do not substitute reinforcing bars for DBAs or HSAs.
  - 7.6. Top of concrete columns shall be flush ( $\pm 1/4"$ ) with bottom of supported cast-in-place members.
- Detailing
  - 8.1. Lap splice lengths shall be detailed to comply with the "Reinforcing Bar Lap Splice Schedule" contained within the contract drawings.
    - Do not splice stirrups and ties. Do not splice vertical bars in retaining walls unless specifically shown.
    - At shearwall boundary elements and at moment frame beams to columns, lap lengths shall be increased by 25%.
  - Splices may be made with mechanical splices capable of 125% tension capacity of the bar being spliced. Mechanical splices shall be the positive connecting type coupler and shall meet all AISC requirements. Use "Cadweld", "Lenton" Standard Couplers, "Bar-Lock" or equal with internal protector. If mechanical splices are used, splices or couplers on adjacent bars shall be staggered a minimum of 24" apart along the longitudinal axis of the reinforcing bars.
  - 8.2. At joints provide reinforcing dowels to match the member reinforcing, unless noted otherwise.
  - 8.3. At all discontinuous control or construction slab on grade joints, provide (2) #4 x 48".
  - 8.4. Provide corner bars at intersecting wall corners using the same bar size and spacing as the horizontal wall reinforcing.
  - 8.5. All vertical reinforcing shall be dowelled to footings, or to the structure below with the same size and spacing as the vertical reinforcing for the element above. Dowels extending from footings shall terminate with a 90° standard hook and shall extend to within 4" of the bottom of the footing. Footing dowels (#8 bars and smaller) with hooks need not extend more than 20" into footings.
  - 8.6. In concrete shearwalls, the horizontal wall reinforcing shall terminate at ends of walls and openings into the far end of the jamb column with a 90° standard hook plus a 6 bar diameter extension. Horizontal wall reinforcing shall be continuous through construction and control joints.
  - 8.7. See details for reinforcing around miscellaneous openings (8" to 36" wide). For openings wider than 36", contact the engineer. All recesses that interrupt reinforcing shall be reinforced the same as an opening.

STRUCTURAL STEEL

- Codes and Standards: Fabrication and Installation shall comply with the latest edition of the following:
  - 1.1. American Institute of Steel Construction (AISC), "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings," with "Commentary".
  - 1.2. AISC "Code of Standard Practice" excluding sections 3.4, 4.4 and 4.4.1.
  - 1.3. AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts"
  - 1.4. AISC "Seismic Provisions for Structural Steel Buildings."
  - 1.5. American Welding Society (AWS), Structural Welding Codes D1.1, D1.3, D1.4, and D1.8, except as modified by the "Steel Construction Manual".
- Material:
  - 2.1. Wide Flange Sections ASTM A992 (50 ksi)
  - 2.2. Plate
    - Typical ASTM A36
    - Braced/Moment Frames ASTM A572 Grade 50
  - 2.3. Notch-toughness requirements apply for Group 3, 4, and 5 shapes with flange thickness greater than 1 1/2" and plate 2" and thicker which are a part of the Seismic Load Resisting System (SLRS). Minimum Charpy V-Notch requirements are 20 ft-lbs at 70°F.
  - 2.4. Pipe ASTM A53 Grade B Type E/S
  - 2.5. Hollow Structural Shapes
    - Rectangular ASTM A500 Grade B (46 ksi)
    - Round ASTM A500 Grade B (42 ksi)
  - 2.6. Base Plates
    - Less than 4 inches thick ASTM A36
    - Over 4 inches to 6 inches thick ASTM A572 Grade 42
  - 2.7. Other Structural Shapes (M, C, etc) ASTM A36
  - 2.8. Bolted Connections ASTM A325
  - 2.9. Anchor Bolts
    - All Columns unless noted otherwise: ASTM F1554 Grade 36 with ASTM A563 heavy hex nuts with Grade A hardened washers.
    - Braced Frame/Moment Frame Columns unless noted otherwise: ASTM F1554 Grade 55 (equiv to A572 Grade 55) ASTM F1554 Grade 105 (equiv to A193 Grade B7) with ASTM A563 heavy hex nuts with ASTM F436 minimum 5/16" thick washers.
  - 2.10. Weld Filler Metal
    - Shielded Metal Arc Welding AWS A5.1, low-hydrogen only
    - Low-hydrogen restrictions do not apply when welding sheet steels in accordance with AWS D1.3, including attaching these steels to structural members.
    - Gas-Metal & Metal-Cored Arc Welding AWS A5.18
    - Flux-Cored Arc Welding AWS A5.20
      - EXXT-4 or EXXT-11 electrodes are not permitted.
    - Intermixing of welds made from self-shielded welding electrodes with gas-shielded electrodes is not allowed in seismic critical welds, unless tested in accordance with AWS D1.8, annex B. The Field Erection Contractor is responsible for verifying intermixing of self-shielded and gas-shielded welding will not occur, or alternatively, the welding procedure is qualified by testing.
    - Use E70 class electrodes only, unless noted otherwise. E60 class electrodes may be used for welding steel floor and roof decks. All electrodes to be low hydrogen.
  - 2.11. Non-Shrink Grout ASTM C1107 Grade B
    - Non-shrink grout shall be prepackaged, non-metallic and non-gaseous.
    - Furnish certified independent test data to Structural Engineer.
    - Fluid Consistency (flow cone) = 20 to 30 seconds
    - Compressive Strength in 28 days = 7,500 psi
- Structural Detailing
  - 3.1. Provide full depth web stiffener plates at each side of all beams at all bearing points. Stiffener plates shall be the thickness called out below unless noted otherwise. Stiffeners shall be welded on both sides of the plate-to-flange and plate-to-web interfaces. Do not weld into the web-to-flange fillet region of the member.

FLANGE WIDTH	STIFFENER THICKNESS	WELD SIZE
Less than 8 1/4"	1/4"	3/16"
8 1/4" to 12 1/4"	3/8"	1/4"
12 1/4" to 16 1/2"	1/2"	5/16"
16 1/2" to 20 3/4"	5/8"	3/8"
  - 3.2. Bolting and Fasteners
    - Ordinary steel-to-steel connections, simple span framing, and beam/girder-to-bearing plates are the standard connection used throughout the design drawings, unless noted otherwise:
      - Use A325N bolts or tension-controlled bolts.
      - Tighten these fasteners to a "snug tight" condition.
    - Where a steel-to-steel connection is not shown, provide a standard AISC framed connection of one half the total uniform load capacity of the beam for the span and steel specified.
    - Pretensioned connections are shown on the structural design drawings. They join steel-to-steel connections, unless noted otherwise:
      - Use A325N or A325X bolts or tension-controlled bolts.
      - Pretension these fasteners as required by AISC "Specification for Structural Joints Using ASTM A325 or a A490 bolts."
      - Slip Critical connections (SC) are shown on the structural design drawings. They join steel-to-steel connections in Seismic Load-Resisting Systems (SLRS).
    - Fasteners and washers shall not be reused. Scrap dirty, rusted, or water-contaminated bolt assemblies.
  - 3.3. Welding
    - All intersecting steel shapes which are not bolted shall be connected by a fillet weld all around, unless noted otherwise. Where fillet weld sizes are not shown, they shall be 1/16" less than the thinnest of the connected parts for thicknesses 1/4" and larger. Fillet welds on plates less than 1/4" shall be of the same size as the thinnest of the connected part.
    - Field weld symbols indicate welds that may be performed in the field. The general contractor shall coordinate shop and field welds between the fabricator and erector.
  - 3.4. Reduced Beam Sections
    - Fabrication of the reduced flange sections of beams used in SLRS is restricted to mechanically guided thermal cutting processes. Freehand cutting is not permitted.
    - Flange cuts shall meet the requirements of AISC 358.
    - Repair of gouges, notches, mill imperfections, shall conform to the requirements of the AISC and AWS provisions.
  - 3.5. Weld Access Holes and Temporary Attachments
    - Fabricate beam copes and weld access holes using the geometry described in AISC 360 Section J1.6.
    - Runoff tabs are to be removed unless noted otherwise.
  - 3.6. Backup Bars: Remove backup bars from all beam bottom flange connections in demand critical welds, unless noted otherwise. Backgouge the root and weld to sound metal. Reweld the gouged area and add a 5/16" reinforcing fillet weld.
  - 3.7. Protected Zones: No connections, other than those on the design drawings, shall be made within the protected zone of the SLRS as identified in AISC 341.
    - Locate headed studs, welds, miscellaneous metal, etc outside of the protected zone.
    - Paint the protected zones with bright paint before and after fire coating operations to identify them.
- Welding of Reinforcing Steel or Bolts
  - 4.1. Reinforcing Bars: Do not weld rebar except as specifically detailed in the drawings. In such cases, use only AWS standards. Do not substitute reinforcing bars for deformed bar anchors, structural bolts, or headed stud anchors.
  - 4.2. Do not weld anchor bolts, including "back" welds.
  - 4.3. Headed Stud Anchor welding and Deformed Bar Anchor welding shall conform to the manufacturer's specifications.

POST-INSTALLED ANCHORS

- Follow all ICC Evaluation Report and manufacturers' requirements and recommendations for post-installed anchor installation. Where conflicts may exist, the most stringent requirement applies.
- All holes in hollow, brick, or stone masonry shall be performed in the "rotary-only" mode with the hammer function off.
- Follow manufacturer and ICC evaluation report requirements for installation temperature of adhesive anchors. Adhesive anchors shall not be installed or cured outside of approved temperature ranges.
  - 3.1. Adhesive anchors in concrete shall be
    - HIT RE-500 SD by Hilti (ESR-2322) - normal weight concrete only
    - SET-XP by Simpson (ESR-2508)
    - PE1000+ by Powers Fasteners (ESR-2583) - 1/2" to 7/8" diameter only
  - 3.2. Adhesive anchors in grouted masonry shall be
    - HIT HY-150 MAX by Hilti (ESR-1967)
    - SET by Simpson (ESR-1772)
  - 3.3. Adhesive anchors in brick or stone masonry shall be
    - HIT HY-20 by Hilti (ESR-4815)
    - SET by Simpson (ESR-1772)
    - CIA-GEL 7000 Epoxy by USP (ESR-1702)
- Mechanical (Expansion) anchors
  - 4.1. Mechanical anchors in concrete shall be
    - Kwik Bolt TZ by Hilti (ESR-1917)
    - Strong-Bolt by Simpson (ESR 1771)
    - Trubolt+ by ITW Redhead (ESR-2427)
  - 4.2. Mechanical anchors in grouted masonry shall be
    - Kwik Bolt 3 by Hilti (ESR-1385)
- The Contractor may submit, for review and approval, the manufacturer's ICC evaluation report of alternate anchor systems. The alternate method shall provide minimum capacities equal to or greater than those in the above noted anchors. The alternate method shall be approved by the engineer of record prior to the substitution.
- Special Inspection and Testing
  - 6.1. Special inspection shall be performed according to the requirements of the ICC evaluation report, per section 1704.13 of the IBC.
  - 6.2. Testing shall be done according to the more stringent requirements of the ICC evaluation report and the values listed below.
    - Adhesive Anchors in Concrete or Solid Grouted Masonry: 50% of anchors in non-redundant elements (e.g. column, brace connections, boundary steel, hold-downs) and 10% of anchors in redundant elements shall be tension tested at the following load(s):

ISSUE DATA	
ISSUE DATE:	07/22/2016
ISSUE TYPE:	90% REVIEW SET
DRAWN BY:	SDB
DESIGNED BY:	J8
CHECKED BY:	
NUSE PROJECT #:	16062

SEAL

DATE

07/22/2016

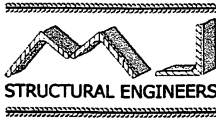
REVISIONS

-/-/-

SHEET TITLE  
GENERAL  
STRUCTURAL  
NOTES

SHEET NO.

S101



STRUCTURAL ENGINEERS

5673 S Redwood Rd.  
Salt Lake City, UT 84123  
Office: 801-905-1097  
mjstructuralengineers.com

THIS DRAWING IS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF MJ STRUCTURAL ENGINEERS, AND SHALL NOT BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE PERMISSION OF AN AUTHORIZED REPRESENTATIVE OF MJ STRUCTURAL ENGINEERS. UNAUTHORIZED USE WILL BE PROSECUTED TO THE FULLEST EXTENT OF THE LAW. Copyright © 2016 by MJ STRUCTURAL ENGINEERS.

GENERAL STRUCTURAL NOTES

WOOD

1. Materials
- 1.1. Dimension Lumber and Timbers (Sawn Lumber)
- All dimensioned lumber shall comply with USDOC PS20.
  - Visually graded dimension lumber shall be Douglas Fir-Larch #2 or better.
  - Visually graded timbers (5" x 5" and larger) shall be Douglas Fir-Larch #1 or better.
  - Machine stress rated (MSR) lumber shall be 1600F-1.6E or better.
  - End jointed lumber may be used interchangeably with solid sawn members of the same species and grade with written approval from the Engineer.
- 1.2. Wood Structural Panel Sheathing
- Wood sheathing shall be APA rated sheathing Exposure 1 unless noted otherwise and shall conform to the requirements for its type in USDOC PS1 or USDOC PS2. The panels must be identified by the trademarks of the approving testing and inspection agency.
  - Wood sheathing minimum thicknesses, span ratings, and nailing requirements shall be as indicated in the Roof and Floor Sheathing Schedule, unless noted otherw
  - Wood sheathing shall have the following minimum thicknesses and span ratings, unless noted otherwise:

Roof	19/32"(40/20)
Floor	23/32"(48/24)
Wall	15/32"(32/16), 7/16"(24/16)
  - Nails or other approved fasteners used to connect sheathing to the structure shall be driven such that their head or crown is flush with the surface of the sheathing. Do not overdrive fasteners.
- 1.3. Prefabricated Wood I-Joists
- I-joists shall
  - All prefabricated wood joists shall be as called out on plan and manufactured by the following:

BCI:	Manufactured by Boise Cascade.
TJI:	Manufactured by i-Level (Weyerhaeuser).
LPI:	Manufactured by LP Building Products (Louisiana-Pacific Corporation).
  - I-joists of equal design properties as those called for on plan, including depth, stiffness and flange width may be substituted with written approval from the Engineer.
  - Handle, store and install all wood I-joists per the manufacturer's guidelines.
  - DO NOT cut or notch flanges.
  - Holes cut in the webs of the I-joists shall be per the manufacturer's guidelines.
- 1.4. Structural Glued Laminated Timber (GLB)
- Structural glued laminated timber shall be manufactured and identified as required in ANSI A190.1 and ASTM D3737.
  - Glulam beams shall be the following species and combination number:
    - Simple-Span Glulam Beams: Douglas-fir 24F-V4 1.8E
    - Continuous-Span and Cantilevered Glulam Beams: Douglas-fir 24F-V8 1.8E
  - Hybrid combination glulams with equivalent design properties may also be used with written approval from the Engineer.
  - Appearance of members shall be Framing or Industrial appearance.
  - Camber: unless otherwise noted on the drawings, all stock glulam beams shall be cambered to industry standard 3500'-0" radius.
- Stock beams with zero camber are acceptable where available.
- 1.5. Laminated Veneer Lumber (LVL), Laminated Strand Lumber (LSL), and Rim Board
- LVL, LSL, and Rim Board shall comply with ASTM D5456.
  - All LVL shall be a minimum of 13/4" thick have the following minimum properties, U.N.O.:

Fb = 2600 psi; E = 1.9x10 <sup>6</sup> psi; Fv = 285 psi; Ft = 1555 psi; Fcl = 2510 psi; Fc <sub>L</sub> = 750 psi
--
  - All LSL shall be a minimum of 1 1/4" thick and shall have the following minimum properties, U.N.O.:

Fb = 1700 psi; E = 1.3x10 <sup>6</sup> psi; Fv = 400 psi; Ft = 1075 psi; Fcl = 1400 psi; Fc <sub>L</sub> = 680 psi
--
  - All Rim Boards shall be a minimum of 1 1/4" thick and shall have the following minimum properties, U.N.O.:

Fb = 1130 psi; E = 0.8x10 <sup>6</sup> psi; Fv = 355 psi; Fc <sub>L</sub> = 1415 psi
--
  - Handle, store and install all LVL, LSL, and Rim Boards per the manufacturer's guidelines.
  - Connect multiple members together per the manufacturer's guidelines and as shown in the details.
  - Where discrepancies exist between the manufacturer's guidelines and the details shown in these plans, use the more stringent of the requirements.
- 1.6. Nails
- All Nails shall conform with the tolerances specified in ASTM F1667, "Standard Specification of Driven Fasteners: Nails, Spikes and Staples."
  - All nails shall be common nails with the following properties:

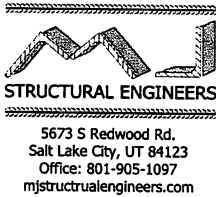
Nail Size	Shank Diameter	Min. Penetration into Support Member
6d	0.113"	1.25"
8d	0.131"	1.50"
10d	0.148"	1.63"
12d	0.148"	1.63"
16d	0.162"	1.75"
  - Nails with properties less than those listed above shall not be used without prior written approval from the Engineer.
  - Nails shall have round (full) heads. Nails with "T", brad, finish or casing heads are not permitted.
  - Deformed shank nails shall have either a helical (screw) or an annular (ring) shank.
- 1.7. Bolts
- Anchor Bolts: ASTM F1554 Grade 36 (or A307 Grade A/C or A36)
    - All anchor bolts connecting the sill plate to the concrete foundation shall have a PL1/4"x3"x3" washer between the sill plate and the nut and have a minimum 7" embedment into concrete.
  - Connection Bolts: ASTM A307 Grade A/C/ or A36
    - All bolted connections shall have a standard cut or larger washer on both sides of the connection (between the head and the wood member and between the nut and the wood member).
    - Bolt holes shall be a minimum of 1/32" to a maximum of 1/16" larger than the bolt diameter. Holes shall be accurately aligned in main members and side plates or side members. Bolts shall not be forcibly driven.
    - All bolted connections shall have a standard cut or larger washer on both sides of the connection
2. Connection Hardware
- 2.1. All connection hardware shown shall be supplied by Simpson Strong-Tie Incorporated or USP structural connectors.
- 2.2. Install all hardware per the manufacturer's guidelines.
- 2.3. Connection hardware of equal design properties by other manufacturers may be substituted with written approval from the Engineer.
3. All fasteners in contact with pressure-treated or fire-treated wood shall be hot-dipped zinc-coated galvanized or stainless steel.
4. All wood in contact with concrete, masonry or soil shall be pressure treated or redwood.
5. General framing and carpentry shall be connected as per "THE MINIMUM NAILING SCHEDULE" unless noted otherwise.
6. Provide rim board or solid blocking at all joist, rafter, and truss bearing points U.N.O. Where blocking is used, it shall be at least 2" (nominal) thick full depth of joist and shaped to match slope of blocked member.
- 6.1. Rim board or blocking between joists shall be nailed to the wood plate at the top of the wall with one Simpson "A35" framing anchor per each piece of blocking. Fill all holes in the framing anchors with 6d x 1 1/2" nails (12 nails per A35), unless shown otherwise on the drawings.
7. Provide approved bridging at 8'-0" on center maximum between joist or rafter and supports where both the top and bottom chord of the member are not braced with sheathing or wall board.
8. Provide up beams of 2x members shall be connected together as shown in the details.
- 8.1. Where a built-up beam connection is not shown in the details, built-up beams shall be connected as follows:
  - Members 12" or less in depth shall be spiked together with not less than 16d spikes at 12" on center, staggered.
  - Members more than 12" shall be connected together with 1/2" diameter bolts at 24" on center, staggered. Bolts shall be placed one-quarter of the depth of the member from the top and bottom of the member.
9. All bearing and shear walls shall have a minimum of 2 top plates. Splices in top plates shall be made as shown in the top-plate splice schedule.
- 9.1. Where a top-plate splice is not shown in the details, top plate splices shall be staggered a minimum of 4'-0" from the nearest splice in adjoining top plate and spiked together with a minimum of (20) 16d nails between splices unless noted otherwise.
10. Provide a double joist under parallel partitions.
11. Do not cut or notch any wood stud greater than 25% of its width. Do not bore a hole in any wood stud greater in diameter than 40% of its width. Bored holes shall be centered in the stud whenever possible. In no case shall the edge of any bored hole be nearer than 1" to the edge of the stud. Bored holes shall not be located at the same section of stud as a cut or notch.
- 11.1.1. Bored holes up to 60% of the stud width are allowed provided that an additional stud is placed adjacent to the stud to be bored, that the bored hole is centered in the stud, and no more than two successive sets of studs are so bored.

PREFABRICATED WOOD TRUSSES

1. Prefabricated metal plate wood trusses shall be designed, signed, and sealed by a Professional Engineer registered in the same state as the project location. They shall be designed to support the concentrated and uniform loads shown on the plans, unbalanced and sliding snow loads, and the following uniform loads:
- |                                |  |
|--------------------------------|--|
| Dead Load (Top Chord):         | 10 psf   |
| Dead Load (Bottom Chord):      | 10 psf   |
| Live or Snow Load (Top Chord): | 211 psf  |
| Live Load (Bottom Chord):      | 10 psf – Does not occur concurrently with top chord live load. |
| Max Total Load:                | 231 psf  |
- Loads listed above do not include drifting, unbalanced, or sliding snow. Designs shall include an additional 9 psf Dead Load at all overbuild framing locations. A dead load no greater than 8 psf shall be assumed for the design of trusses and attachments for wind uplift.
- Coordinate the truss design with mechanical equipment, fire sprinkling systems and hanging walls supported by the trusses. Provide additional trusses as necessary.
2. The deflection of all prefabricated wood trusses shall be limited to the following values:
- |                 |          |
|-----------------|----------|
| 2.1. Live Load  | Span/360 |
| 2.2. Total Load | Span/240 |
3. No stress increase is allowed for snow loads.
4. All truss-to-truss connections shall be designed and provided by the truss manufacturer.
5. Design, handling, erection, stability, and permanent bracing of metal plate connected wood trusses shall be in accordance with ANSI/TPI-1, National Design Standard for Metal Plated Connected Wood Truss Construction and the Truss Plate Institute publications entitled "Commentary and Recommendations for Bracing Wood Trusses" and "Commentary and Recommendations for Handling and Erecting Wood Trusses."
6. Steel Connector Plates: All steel gusset plates shall be galvanized and shall have a current ICBO approval. Values established by the approved ICBO report must be indicated o
- 6.1. The minimum size for any connector shall be 8 in<sup>2</sup>.
- 6.2. All steel gusset plates shall be located on the joint as the stresses require and shall provide a minimum bite of 2.5" on all tension members.
- 6.3. Plates shall be pressed or rolled into member to obtain full penetration without crushing the outer surfaces of wood.
- 6.4. All steel plate dimensions shall be increased by 10% above that required by analysis. Duration of load stress increases for steel connector plate design are not allowed.
- 6.5. Submit a copy of the ICBO report for the connector plate used.
7. No wane, knots, skips, or other defects shall occur in the plated contact area or scarfed area of web members. Plates shall be centered with one required each side of wood truss.
8. The truss shall be handled and stored in a manner to prevent moisture from being absorbed by the wood.
9. Shop Drawings: Complete calculations and shop drawings indicating all member forces, stresses, duration factors, lumber grades, dimensions, truss-to-truss connections, metal plate sizes and locations, and applied loads shall be submitted and reviewed by the engineer before fabrication. Each connector shall be dimensioned on the shop drawings as to its exact size and location at the joi

LEGEND OF MARKS AND ABBREVIATIONS

ALT	Alternate	JST	Joist
ARCH	Architect	JSTs	Joists
BLDG	Building	K	Kip(S) ≈ 1000 Pounds
BLK	Blocking	klf	Kips Per Lineal Foot
BN	Boundary Nail	ksf	Kips Per Square Foot
BOTT	Bottom	LB	Pounds (#)
BRG	Bearing	LSL	Laminated Strand Lumber
BTWN	Between	LVL	Laminated Veneer Lumber
BYND	Beyond		
CANT	Cantilever	MAS	Masonry
CGS	Center of Gravity of Strand	(MAX)	Maximum
C J	Control Joint	MECH	Mechanical
CJP	Complete Joint Penetration	MEZZ	Mezzanine
CL	Center Line	MFR	Manufacturer
CLR	Clear	(MIN)	Minimum
CMU	Concrete Masonry Unit	MISC	Miscellaneous
COL	Column	MTL	Metal
CONC	Concrete		
CONT	Continuous	(N)	New
CS	Coil Strap		
DB	Deck Bearing	OC	On Center
DBA	Deformed Bar Anchor	OPNG	Opening
DBL	Double	OPP	Opposite
DIM	Dimension	OSB	Orientated Strand Board
DWG	Drawing	PCF	Pounds per Cubic Foot
(E)	Existing	PERP	Perpendicular
EA	Each	PL	Plate
ELEC	Electrical	p/f	Pounds per Lineal Foot
EMBED	Embedment	PRE-FAB	Prefabricated
EN	Edge Nail	psf	Pounds per Square Foot
EQ	Equal	psi	Pounds per Square Inch
EQUIP	Equipment	PT	Post Tension
EXT	Exterior	PT/DF	Pressure Treated Douglas Fir
FD	Floor Drain	RD	Roof Drain
FND	Foundation	REINF	Reinforce/Reinforcement/Reinforcing
FLR	Floor	REQD	Required/Requirements/Requiring
FTG	Footing	RTU	Roof Top Unit
FRT	Fire Retardant Treatment	SCHED	Schedule
ga	Gage	SCW	Seismic Critical Weld
GALV	Galvanized	SIM	Similar
GLB	Glued Laminated Beam	STD	Standard
GSN	General Structural Notes	STIFF	Stiffener
		STL	Steel
		STRUCT	Structural
HD	Hold-down		
HDR	Header	T&G	Tongue and Groove
HORIZ	Horizontal	TEMP	Temperature
HSA	Headed Stud Anchor	TYP	Typical
HSS	Hollow Structural Section		
		U.N.O.	Unless Noted Otherwise
ICBO	International Conference of Building Officials		
IBC	International Building Code	VERT	Vertical
INT	Interior		
		w/	with
		WWR	Welded Wire Reinforcement
		WP	Working Point



Lloyd Architects

573 EAST 600 SOUTH  
SALT LAKE CITY, UT 84102  
801/328.3245

6211 ROOSEVELT WAY NE  
SEATTLE, WA 98115

LLOYD-ARCH.COM

ROSENTHAL CABIN

ISSUE DATA

ISSUE DATE: 07/22/2016  
ISSUE TYPE: 90% REVIEW SET  
DRAWN BY: SDB  
DESIGNED BY: JB  
CHECKED BY:  
MISE PROJECT #: 16062

SEAL

DATE

07/22/2016

REVISIONS

---/---

SHEET TITLE

GENERAL  
STRUCTURAL  
NOTES

SHEET NO.

S102

IF THIS SHEET IS LESS THAN 40"X57" IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.  
This drawing is an instrument of professional service, is the property of MJ STRUCTURAL ENGINEERS and shall not be used, in whole or in part, for any other project without the permission of an authorized representative of MJ STRUCTURAL ENGINEERS. Unauthorized use will be prosecuted to the fullest extent of the law. Copyright © 2016 by MJ STRUCTURAL ENGINEERS.

## ISSUE DATA

ISSUE DATE: 07/22/2016  
ISSUE TYPE: 90% REVIEW SET  
DRAWN BY: SOB  
DESIGNED BY: JB  
CHECKED BY: 16062

SEAL

DATE

07/22/2016

REVISIONS

-

SHEET TITLE

FOOTING AND  
FOUNDATION  
PLAN

SHEET NO.

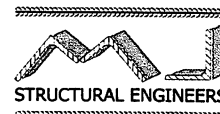
S201

FOOTING AND FOUNDATION  
PLAN NOTES

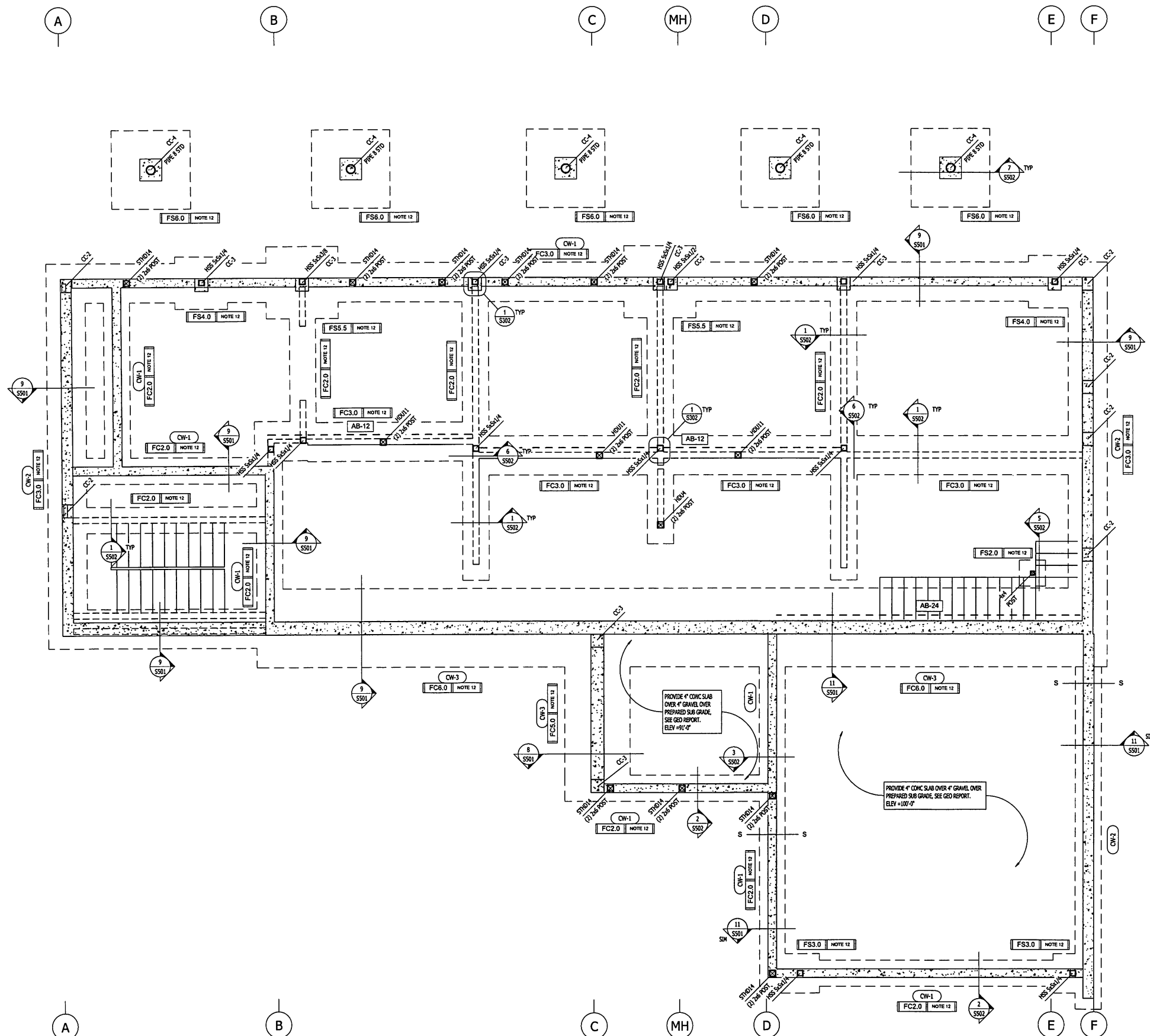
- SEE ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS.
- COORDINATE LOCATION OF DERESSED SLABS, SLOPED SLABS, AND FLOOR DRAINS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
- SEE ARCHITECTURAL DRAWINGS AND CIVIL DRAWINGS FOR EXTERIOR CONCRETE WORK AT DOORS, SIDEWALKS, ETC.
- SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS TO ALL STEEL COLUMN COORDINATE DIMENSIONS SHOWN WITH ARCHITECTURAL DRAWINGS.
- SEE FOOTING AND FOUNDATION DETAILS FOR BURIED PIPES RUNNING PARALLEL AND PERPENDICULAR TO FOOTINGS.
- SEE GENERAL STRUCTURAL NOTES AND FOOTING AND FOUNDATION DETAILS FOR TYPICAL CONSTRUCTION AND CONTROL JOINTS IN FLOOR SLAB.
- SEE GENERAL STRUCTURAL NOTES AND FOOTING AND FOUNDATION DETAILS FOR LOCATIONS WHERE CONTROL JOINTS ARE DISCONTINUOUS.
- SEE FOOTING AND FOUNDATION DETAILS FOR REINFORCING AROUND MISCELLANEOUS OPENINGS IN CONCRETE WALLS.
- SEE FOOTING AND FOUNDATION DETAILS FOR TERMINATION OF HORIZONTAL WALL REINFORCING AT CORNERS.
- CENTER ALL SPOT FOOTINGS UNDER COLUMNS AS SHOWN ON PLAN, TYPICAL UNLESS NOTED OTHERWISE.
- SEE GENERAL STRUCTURAL NOTES AND FOOTING AND FOUNDATION DETAILS FOR FILL BENEATH FOOTINGS.
- FOOTING IS TO BE PLACED DIRECTLY ON BEDROCK. PROVIDE EXCAVATION TO BEDROCK AND EXTEND FOUNDATION / FOOTING TO APPROPRIATE DEPTH. REFER TO SOIL REPORT AND GEO TECH ENGINEER TO PROVIDE SITE VISIT PRIOR TO CONCRETE AND STEEL PLACEMENT. ALSO IF BEDROCK EXCAVATION PROVIDES TO TIMELY AND IS NOT COST EFFECTIVE CONTACT GEO TECH ENGINEER FOR ALTERNATE OPTIONS. FROST DEPTH IS 42". VERIFY FOOTING ELEVATION W/ STRUCTURAL ENGINEER.
- PLACE ALL ANCHOR BOLTS AT 32"x6" U.N.O. SEE (45303) FOR SIZE, EMBED, LOCATION, ETC.

## MARKS AND SYMBOL LEGEND

	SECTION MARK
	SHEET NUMBER
	FTG DESIGNATION
	TOP OF FOOTING ELEVATIONS
	CONC WALL, SEE SCHED
	DEPRESSED FWD WALL, POUR SLAB OVER, SEE FTG AND FWD DETS ON (S201)
	WOOD COLUMN
	FTG STEP, SEE FTG AND FWD DETS ON (S201)
	WALL ABOVE
	CONC WALL, SEE SCHED
	SPOT FTG, SEE SCHED
	CONT. FTG, SEE SCHED
	CONTROL JOINT, SEE FTG AND FWD DETS ON (S201)
	HOLD-DOWN TYPE, SEE GSN AND SCHED'S
	ANCHOR BOLT SPACING, SEE GSN AND SCHED'S
	HOLD-DOWN TYPE, SEE GSN AND SCHED'S



5673 S Redwood Rd.  
Salt Lake City, UT 84123  
Office: 801-905-1097  
mjstructuralengineers.com



## ROSENTHAL CABIN

## ISSUE DATA

ISSUE DATE: 07/22/2016  
ISSUE TYPE: 90% REVIEW SET  
DRAWN BY: Author  
DESIGNED BY: Designer  
CHECKED BY: Checker  
MUSE PROJECT #: 16062

SEAL

DATE

07/22/2016

REVISIONS

-/-/-

SHEET TITLE

LOWER FLOOR  
FRAMING PLAN

SHEET NO.

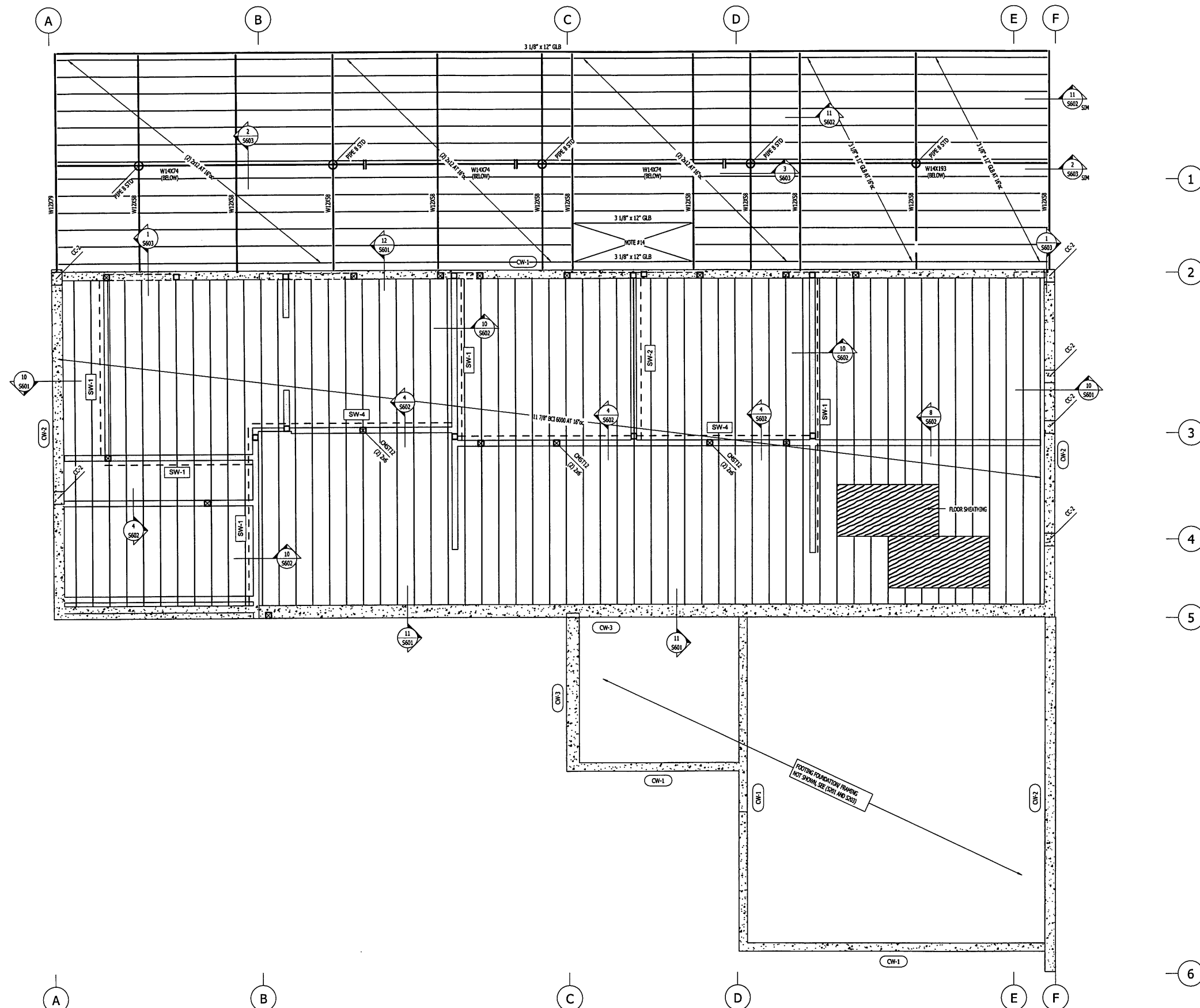
S202

## FLOOR FRAMING PLAN NOTES

- SEE ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS.
- VERIFY ALL FLOOR OPENINGS FOR MECHANICAL SHAFTS, STAIRS, ETC. WITH ARCHITECTURAL DRAWINGS.
- SEE FLOOR FRAMING DETAILS FOR FRAMING AROUND ALL OPENINGS.
- ALL SHEATHING SHALL HAVE STRENGTH AXIS (FACE GRAIN) PERPENDICULAR TO FRAMING MEMBERS UNLESS NOTED OTHERWISE. REFER TO SCHEDULE FOR SHEATHING TYPE AND NAILING REQUIREMENTS.
- SEE THE MINIMUM NAILING SCHEDULE FOR CONNECTIONS NOT SPECIFICALLY DETAILED.
- SEE SCHEDULES FOR PIPE PENETRATIONS THROUGH WOOD WALL TOP PLATES.
- FOR BUILT UP BEAMS AND COLUMNS, SEE FRAMING DETAILS.
- IF THE DOWN POST AND RAIL HEIGHT BEARING POST OCCUR AT THE SAME LOCATION, USE LARGER OF POSTS SPECIFIED.
- SEE FRAMING DETAILS FOR TYPICAL BEARING STUDS AND KING STUDS AT WALL OPENINGS.
- SEE SHEARWALL SCHEDULES FOR TOP PLATE SPLICING REQUIREMENTS FOR WOOD SHEARWALL.
- ALL EXTERIOR WALLS ARE (SW-1) UNLESS NOTED OTHERWISE, SEE SHEAR WALL SHEATHING SCHEDULE.
- CONTRACTOR SHALL BE RESPONSIBLE TO PROPERLY BRACE WALLS, BEAMS, TRUSSES, ETC. AS NECESSARY DURING CONSTRUCTION. PROVIDE FULL DEPTH BRAG AT SHEARWALL ABOVE.
- STAIR, SEE ARCHITECTURAL.
- AT TRANSITION FROM LIVING TO BALCONY SEE DETAIL (R5602)

## MARKS AND SYMBOL LEGEND

	SECTION MARK
	SHEET NUMBER
	FLOOR SHEATHING ORIENTATION, SEE SHEATHING SCHEDULE FOR THICKNESS, SPAN RATING AND NAILING REQUIREMENTS
	WOOD COLUMN
	STEEL COLUMN, SEE SCHED ON (S301)
	WALL ABOVE
	WALL INSULATION, SEE ARCH
	CONC WALL, SEE SCHED
	WOOD NON-BEARING WALL
	WOOD BRG WALL, SEE SCHED
	WOOD SHEARWALL, DASHED LINE INDICATES SIDE OF WALL TO RECEIVE SHEATHING, SEE SCHED
	CONC COL, SEE SCHED
	CONC BEAM, SEE SCHED
	WOOD SHEAR WALL TAG, SEE SCHED
	INDICATES NUMBER OF TRIMMER STUDS
	INDICATES NUMBER OF KING STUDS



1 LOWER FLOOR FRAMING PLAN  
1/4" = 1'-0"



5673 S Redwood Rd.  
Salt Lake City, UT 84123  
Office: 801-905-1097  
mjstructuralengineers.com

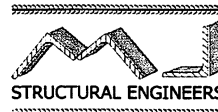
IF THIS SHEET IS LESS THAN A4000 IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.  
THIS DRAWING IS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF MJ STRUCTURAL ENGINEERS AND SHALL NOT BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE PERMISSION OF AN AUTHORIZED REPRESENTATIVE OF MJ STRUCTURAL ENGINEERS. UNAUTHORIZED USE WILL BE PROSECUTED TO THE FULLEST EXTENT OF THE LAW. Copyright © 2016 BY MJ STRUCTURAL ENGINEERS.

FLOOR FRAMING PLAN NOTES

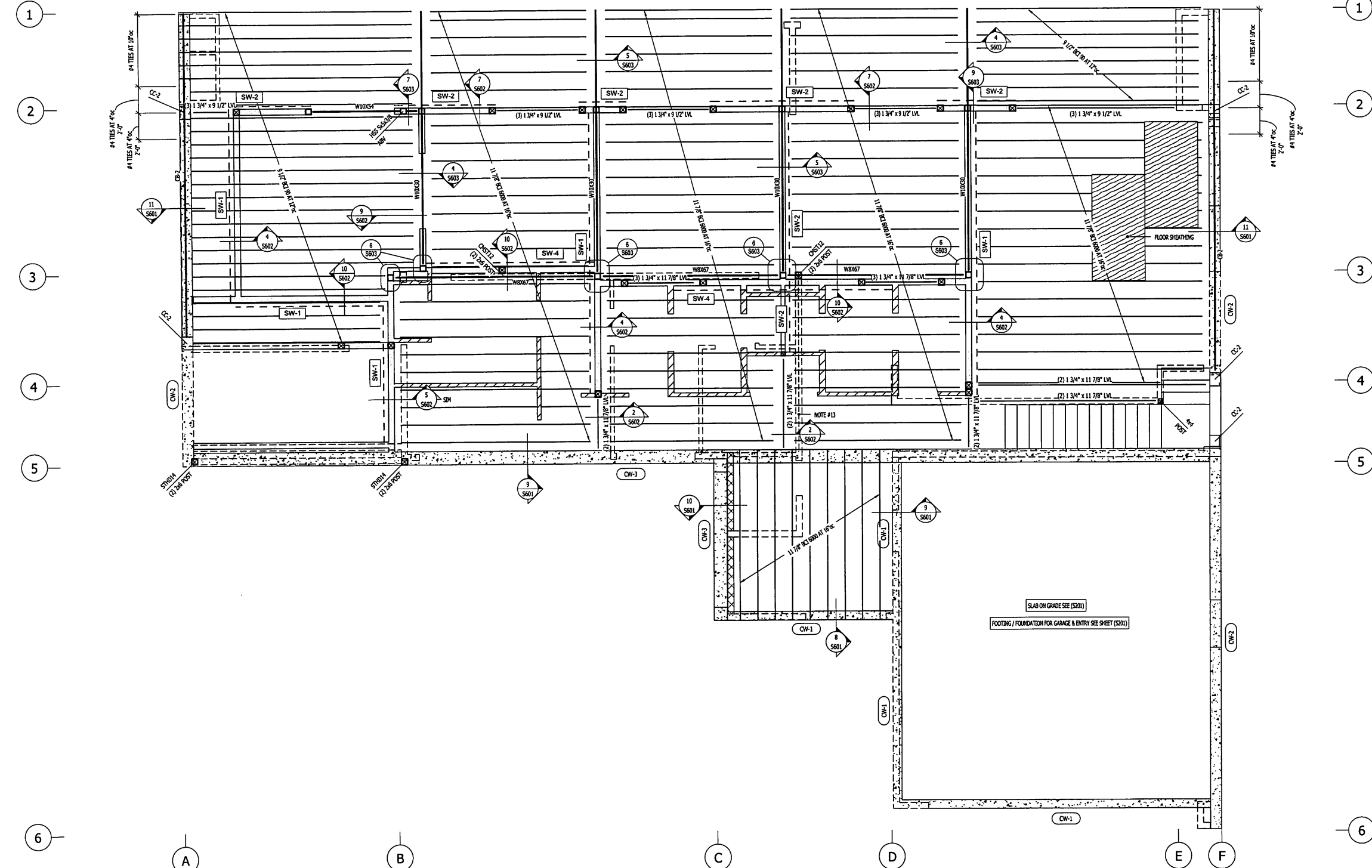
1. SEE ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS.
2. VERIFY ALL FLOOR OPENINGS FOR MECHANICAL SHAFTS, STAIRS, ETC. WITH ARCHITECTURAL DRAWINGS.
3. SEE FLOOR FRAMING DETAILS FOR FRAMING AROUND ALL OPENINGS.
4. ALL SHEATHING SHALL HAVE STRENGTH AXIS (FACE GRAIN) PERPENDICULAR TO FRAMING MEMBERS UNLESS NOTED OTHERWISE. REFER TO SCHEDULE FOR SHEATHING TYPE AND NAILING REQUIREMENTS.
5. SEE THE MINIMUM NAILING SCHEDULE FOR CONNECTIONS NOT SPECIFICALLY DETAILED.
6. SEE SCHEDULES FOR PIPE PENETRATIONS THROUGH WOOD WALL TOP PLATES.
7. FOR BUILT UP BEAMS AND COLUMNS, SEE FRAMING DETAILS.
8. IF TIE DOWN POST AND FULL HEIGHT BEARING POST OCCUR AT THE SAME LOCATION, USE LARGER OF POSTS SPECIFIED.
9. SEE FRAMING DETAILS FOR TYPICAL BEARING STUDS AND KING STUDS AT WALL OPENINGS.
10. SEE SHEARWALL SCHEDULE FOR TOP PLATE SPLICING REQUIREMENTS FOR WOOD SHEARWALL.
11. ALL EXTERIOR WALLS ARE (SW-4) UNLESS NOTED OTHERWISE, SEE SHEAR WALL SHEATHING SCHEDULE.
12. CONTRACTOR SHALL BE RESPONSIBLE TO PROPERLY BRACE WALLS, BEAMS, TRUSSES, ETC. AS NECESSARY DURING CONSTRUCTION.
13. PROVIDE FULL DEPTH BLUG AT SHEARWALL ABOVE.
14. STAIR, SEE ARCHITECTURAL.
15. AT TRANSITION FROM LIVING TO BALCONY SEE DETAIL (H5602)

MARKS AND SYMBOL LEGEND

- SECTION MARK  
SHEET NUMBER
- FLOOR SHEATHING ORIENTATION, SEE SHEATHING SCHEDULE FOR THICKNESS, SPACING AND NAILING REQUIREMENTS
- WOOD COLUMN
- STEEL COLUMN, SEE SCHED ON (S301)
- WALL ABOVE
- WALL INSULATION, SEE ARCH
- CONC WALL, SEE SCHED
- WOOD NON-BEARING WALL
- WOOD BRG WALL, SEE SCHED
- WOOD SHEARWALL, DASHED LINE INDICATES SIDE OF WALL TO RECEIVE SHEATHING, SEE SCHED
- CONC COL, SEE SCHED
- CONC BEAM, SEE SCHED
- WOOD SHEAR WALL TAG, SEE SCHED
- INDICATES NUMBER OF TRIMMER STUDS
- INDICATES NUMBER OF KING STUDS



5673 S Redwood Rd.  
Salt Lake City, UT 84123  
Office: 801-905-1097  
mjstructuralengineers.com



1 MAIN FLOOR FRAMING PLAN  
1/4" = 1'-0"

## ISSUE DATA

ISSUE DATE: 07/22/2016  
ISSUE TYPE: 90% REVIEW SET  
DRAWN BY: SDB  
DESIGNED BY: JB  
CHECKED BY:  
MUSE PROJECT #: 16062

SEAL

DATE

07/22/2016

REVISIONS

-/-/-

SHEET TITLE

ROOF FRAMING PLAN

SHEET NO.

S204

## ROOF FRAMING PLAN NOTES

- SEE ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS
- VERIFY ROOF SLOPES, DRAINS, AND DECK BEARING ELEVATIONS WITH ARCHITECTURAL DRAWINGS. SEE ROOF FRAMING DETAILS
- REFER TO ARCHITECTURAL DRAWINGS FOR ALL CEILING ELEVATIONS AND SOFFIT ELEVATIONS AND DETAILS
- ALL ROOF SHEATHING SHALL HAVE STRENGTH AXIS (FACE GRAIN) PERPENDICULAR TO FRAMING MEMBERS, UNLESS NOTED OTHERWISE. REFER TO SCHEDULE FOR SHEATHING TYPE AND NAILING SCHEDULE ON SHEET (S303).
- WEIGHTS AND LOCATIONS OF MECHANICAL EQUIPMENT SHALL BE SUBMITTED TO ARCHITECT IN WRITING FOR REVIEW PRIOR TO PLACEMENT OF ROOF FRAMING.
- REFER TO GENERAL STRUCTURAL NOTES ON SHEET (S101) FOR DESIGN LOADS OF ROOF TRUSSES.
- ALL TRUSS DETAILS, AND TRUSSES TO GIRDER TRUSS DETAILS SHALL BE PROVIDED BY THE TRUSS MANUFACTURER.
- TRUSS MANUFACTURER SHALL VERIFY ALL CEILING ELEVATIONS AND SPECIAL CONDITIONS PRIOR TO FABRICATION.
- ALL GIRDER TRUSS BEARING LOCATIONS SHALL BE MULTIPLE STUDS, OR POSTS, AND SHALL BE OF CONTINUOUS FRAMING TO THE FOUNDATION LEVEL. SEE PLANS AND SCHEDULE.
- CONTRACTOR SHALL BE RESPONSIBLE TO PROPERLY BRACE, WALLS, BEAMS, TRUSSES, ETC. AS REQUIRED DURING CONSTRUCTION. SEE THE MINIMUM NAILING SCHEDULE FOR CONNECTIONS NOT SPECIFICALLY DETAILED.
- SEE SCHEDULE FOR PIPE PENETRATIONS THROUGH WOOD WALL TOP PLATES.
- FOR BUILT UP BEAMS AND COLUMNS, SEE FRAMING DETAILS.
- IF THE DOWN POST AND FULL HEIGHT BEARING POST OCCUR AT THE SAME LOCATION, USE LARGER OF POSTS SPECIFIED.
- SEE FRAMING DETAILS FOR TYPICAL BEARING STUDS AND KING STUDS AT WALL OPENINGS.
- ALL EXTERIOR WALLS, ARE (SW-1) UNLESS NOTED OTHERWISE. SEE SHEAR WALL SHEATHING SCHEDULE.
- PROVIDE SCOP-2 SHEATHING REQUIREMENTS, SEE (S303) FOR DIMENSION NOTED AND TRUSS GIRDERS 1-5.
- PROVIDE SIMPSON CHSTC16 STRAP w/ 3/4" PLAT BLKG. PROVIDE SIMPSON LIT208 HOLDOWN AT CONNECTION TO WALL. SEE DETAIL.
- PROVIDE CONTINUOUS GLB OVER POST. (2-SPAN CONDITION)
- PROVIDE ADDITIONAL DRAG TRUSS AT SHEARWALL LOCATIONS.

## MARKS AND SYMBOL LEGEND

	FLOOR SHEATHING ORIENTATION, SEE SHEATHING SCHEDULE FOR THICKNESS, SPAN RATING AND NAILING REQUIREMENTS
	SECTION MARK
	WOOD COLUMN
	STEEL COLUMN, SEE SCHED ON (S301)
	WALL ABOVE
	2x6 DR #2
	WOOD BRG WALL, SEE SCHED
	WOOD NON-BEARING WALL
	WALL INSULATION, SEE ARCH
	WOOD SHEARWALL, DASHED LINE INDICATES SIDE OF WALL TO RECEIVE SHEATHING, SEE SCHED
	WOOD SHEAR WALL TAG, SEE SCHED
	CONC CO., SEE SCHED
	CONC BEAM, SEE SCHED
	INDICATES NUMBER OF TRIMMER STUDS
	INDICATES NUMBER OF KING STUDS

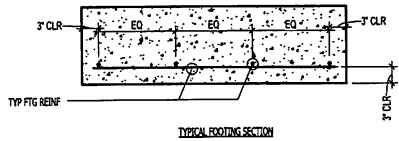


STRUCTURAL ENGINEERS

5673 S Redwood Rd.  
Salt Lake City, UT 84123  
Office: 801-905-1097  
mjstructuralengineers.com

CONCRETE FOOTING SCHEDULE												
MARK	WIDTH	LENGTH	DEPTH	REINFORCING CROSSWISE				REINFORCING LENGTHWISE				COMMENTS
				NO	SIZE	LENGTH	SPACING	NO	SIZE	LENGTH	SPACING	
FC2.0	2'-0"	CONT	12"	—	—	—	—	3	#4	CONT	EQ	
FC3.0	3'-0"	CONT	12"	—	#5	2'-6"	14"	3	#5	CONT	EQ	
FC4.0	4'-0"	CONT	12"	—	#5	3'-6"	14"	4	#5	CONT	EQ	
FC5.0	5'-0"	CONT	14"	—	#5	4'-6"	14"	5	#6	CONT	EQ	
FC6.0	6'-0"	CONT	14"	—	#6	5'-6"	14"	6	#6	CONT	EQ	
FS3.0	3'-0"	3'-0"	12"	3	#5	2'-6"	EQ	3	#5	2'-6"	EQ	
FS3.5	3'-6"	3'-6"	12"	3	#5	3'-0"	EQ	3	#5	3'-0"	EQ	
FS4.0	4'-0"	4'-0"	12"	4	#5	3'-6"	EQ	4	#5	3'-6"	EQ	
FS4.5	4'-6"	4'-6"	13"	5	#5	4'-0"	EQ	5	#5	4'-0"	EQ	
FS5.0	5'-0"	5'-0"	14"	6	#5	4'-6"	EQ	6	#5	4'-6"	EQ	
FS5.5	5'-6"	5'-6"	15"	5	#6	5'-0"	EQ	5	#6	5'-0"	EQ	
FS6.0	6'-0"	6'-0"	15"	6	#6	5'-6"	EQ	6	#6	5'-6"	EQ	

C300-55000



CONCRETE FOOTING NOTES:

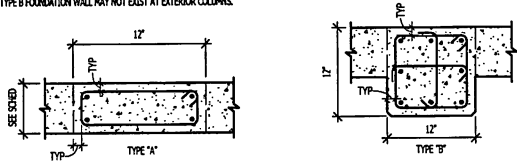
1. PLACE ALL FOOTING REINFORCING IN BOTTOM OF FOOTING WITH 3" CLEAR CONCRETE COVER, UNLESS NOTED OTHERWISE.
2. TOP REINFORCING, WHERE SPECIFIED, SHALL BE PLACED IN THE TOP OF THE FOOTING WITH 2" MINIMUM CONCRETE COVER.
3. IF FOOTINGS ARE EARTH FORMED, FOOTING WIDTH AND LENGTH SHALL BE 6" WIDER AND LONGER THAN SCHEDULED.
4. SEE GENERAL STRUCTURAL NOTES FOR ALL OTHER REQUIREMENTS.
5. NOT ALL FOOTINGS ARE USED, SEE FOUNDATION PLAN FOR FOOTING MARKS.
6. RUN CONTINUOUS BARS IN FC FOOTING THROUGH INTERSECTED FS FOOTINGS.

1 CONCRETE FOOTING SCHEDULE  
S301 NO SCALE.

MARK	PIER SIZE	REINFORCING		TIES	COMMENTS
		VERTICAL	TIES		
CC-1	8" x 12"	(4) #5	#3 AT 8" OC	A	
CC-2	10" x 12"	(4) #5	#3 AT 8" OC	A	
CC-3	12" x 12"	(8) #5	#3 AT 8" OC	A,B	
CC-4	20" x 20"	(8) #6	#4 AT 8" OC	B	

CONCRETE PIER NOTES:

1. INSTALL (2) SETS OF TIES AT 3' OC AT TOP OF ALL COLUMNS (UNO).
2. ALTERNATE POSITION OF HOOKS IN PLACING SUCCESSIVE SETS OF TIES.
3. USE TYPE B AT STEEL COLUMN LOCATIONS, SEE PLAN.
4. TYPE B FOUNDATION WALL MAY NOT EXIST AT EXTERIOR COLUMNS.



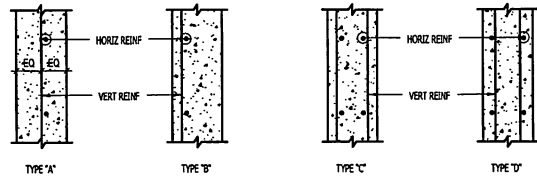
4 CONCRETE PIER SCHEDULE  
S301 NO SCALE.

CONCRETE WALL						
MARK	THICKNESS	REINFORCING			WALL TYPE	COMMENTS
		VERTICAL	HORIZONTAL	TOP AND BOTTOM		
CW-1	8"	(1) #5 AT16"oc	(1) #5 AT16"oc	(1) #5	A	—
CW-2	10"	(2) #5 AT16"oc	(2) #5 AT16"oc	(2) #5	C	—
CW-3	12"	(2) #5 AT12"oc	(2) #5 AT11"oc	(2) #5	C	—

CONCRETE WALL NOTES:

1. SEE GENERAL STRUCTURAL NOTES FOR COVER AND OTHER REQUIREMENTS NOT NOTED IN SCHEDULE.
2. PLACE STEEL IN THE CENTER OF THE WALL (EXCEPT TYPE 'B' AND RETAINING WALLS THICKER THAN 10" SHALL HAVE TWO CLUSTERS OF REINFORCEMENT (PLACED NEAR EA FACE OF THE WALL), UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS.

WALL REINFORCEMENT PLACEMENT TYPES:

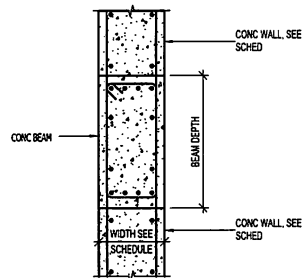


2 CONCRETE WALL SCHEDULE  
S301 NO SCALE.

MARK	THICKNESS	DEPTH	REINFORCING		REMARKS
			TOP AND BOTTOM	TIES	
CB-1	10"	2'-0"	(2) #6	#4 AT 12" OC	NOTE 5
CB-2	10"	2'-0"	(2) #7	#4 AT 8" OC	NOTE 5
CB-3	12"	2'-6"	(8) #7 TOP (4) #7 BOTT	#4 AT 8" OC	NOTE 5

CONCRETE BEAM NOTES:

1. LINTEL WIDTH AND MATERIAL TYPE SHALL BE THE SAME AS THE WALL IN WHICH THE LINTEL IS CONSTRUCTED.
2. TOP BARS MAY BE SPLICED AT THE MID-SPAN OF LINTELS ONLY.
3. BOTTOM BARS MAY BE SPLICED OVER SUPPORTS OF LINTELS ONLY.
4. TIES AND STIRRUPS MAY NOT BE SPLICED.
5. FOR ADDITIONAL TIE SPACING AND LOCATION SEE PLAN VIEW SHEETS (S202 & S203)
6. CANTILEVER WALL REINFORCING/COLUMN REINFORCING THRU BEAM.



5 CONCRETE LINTEL SCHEDULE  
S301 NO SCALE.

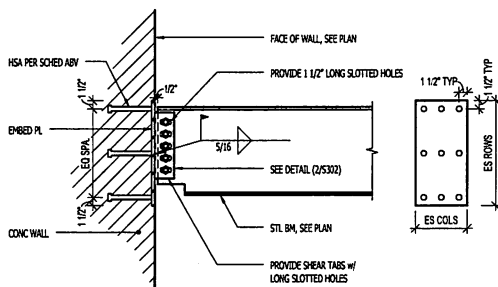
BAR SIZE	F <sub>c</sub> = 3000 PSI				F <sub>c</sub> = 4000 PSI				F <sub>c</sub> = 4500 PSI				F <sub>c</sub> = 5000 PSI			
	REGULAR		TOP		REGULAR		TOP		REGULAR		TOP		REGULAR		TOP	
	CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
#3	17"	22"	22"	28"	15"	19"	19"	25"	14"	18"	18"	23"	13"	17"	17"	22"
#4	22"	29"	29"	38"	19"	25"	25"	33"	18"	24"	24"	31"	17"	23"	23"	29"
#5	28"	36"	36"	47"	24"	31"	31"	41"	23"	30"	30"	38"	22"	28"	28"	36"
#6	33"	43"	43"	56"	29"	37"	37"	49"	27"	35"	35"	46"	26"	34"	34"	43"
#7	48"	63"	63"	81"	42"	54"	54"	71"	40"	51"	51"	67"	38"	49"	49"	63"
#8	55"	72"	72"	93"	48"	62"	62"	81"	45"	59"	59"	78"	43"	56"	56"	72"
#9	62"	81"	81"	105"	54"	70"	70"	91"	51"	66"	66"	86"	48"	63"	63"	81"
#10	70"	91"	91"	118"	61"	79"	79"	102"	57"	74"	74"	96"	54"	71"	71"	92"
#11	78"	101"	101"	131"	67"	87"	87"	114"	64"	82"	82"	107"	60"	78"	78"	102"

CONCRETE REINFORCING BAR LAP SPlice NOTES:

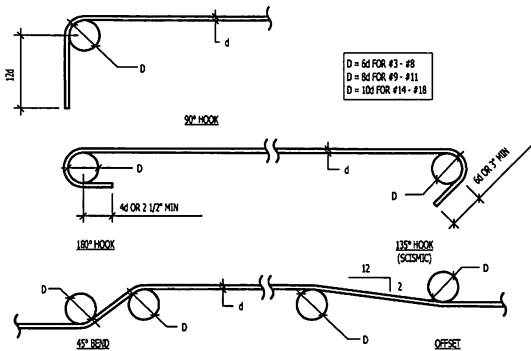
1. THIS SCHEDULE SHALL BE USED FOR ALL SPLICES, UNLESS NOTED OTHERWISE.
2. HORIZONTAL BARS ARE CLASSIFIED AS TOP BARS WHERE 12" OR MORE OF FRESH CONCRETE IS CAST BELOW THE REINFORCING BARS.
3. CLASS 'B' SPLICES SHALL BE USED FOR ALL SPLICES UNLESS NOTED OTHERWISE.
4. TIES AND STIRRUPS SHALL NOT BE SPLICED.
5. FOR ALL LIGHTWEIGHT CONCRETE, LAP LENGTHS SHALL BE MULTIPLIED BY 1.3.
6. FOR ALL EPOXY COATED BARS, LAP LENGTHS SHALL BE MULTIPLIED BY 1.3 FOR TOP BARS AND 1.5 FOR REGULAR BARS.
7. LAP LENGTHS SHALL BE MULTIPLIED BY 1.25 AT SHEARWALL BOUNDARY ELEMENTS.
8. DEVELOPMENT LENGTH 'L<sub>d</sub>' IS EQUAL TO CLASS 'A' SPLICE.

3 CONCRETE REINFORCING BAR LAP SPlice SCHEDULE / BAR BENDING DIAGRAMS  
S301 NO SCALE.

BEAM DEPTH	BEAM PLATE	ANCHORS
W8, W10, W12	1/2"x10"x12" (HIGH)	(2) HORIZ ROWS (2) 3/4"Ø x 5" HSA (4) TOTAL
W14, W16	1/2"x10"x16" (HIGH)	(3) HORIZ ROWS (2) 3/4"Ø x 5" HSA (6) TOTAL
W18, W21	1/2"x12"x20" (HIGH)	(4) HORIZ ROWS (2) 3/4"Ø x 5" HSA (12) TOTAL
W24, W27	1/2"x14"x26" (HIGH)	(5) HORIZ ROWS (4) 3/4"Ø x 5" HSA (20) TOTAL



6 CONCRETE LINTEL SCHEDULE  
S301 NO SCALE.





STEEL COLUMN SCHEDULE				
MARK	SIZE	STEEL BASE PLATE	STEEL CAP PLATE THICKNESS	COMMENTS
SC-1	HSS5x5x1/4"	3/4" (SRP - 1)	3/4" (SCP - 1)	AT END COND USE (SCP-2)
SC-2	HSS5x5x3/8"	3/4" (SRP - 1)	3/4" (SCP - 1)	AT END COND USE (SCP-3)
SC-3	HSS5x5x1/2"	3/4" (SRP - 1)	3/4" (SCP - 1)	AT END COND USE (SCP-3)
SC-4	PIPE 8 STD	3/4" (SRP - 1)	3/4" (SCP - 1)	

STEEL COLUMN NOTES:

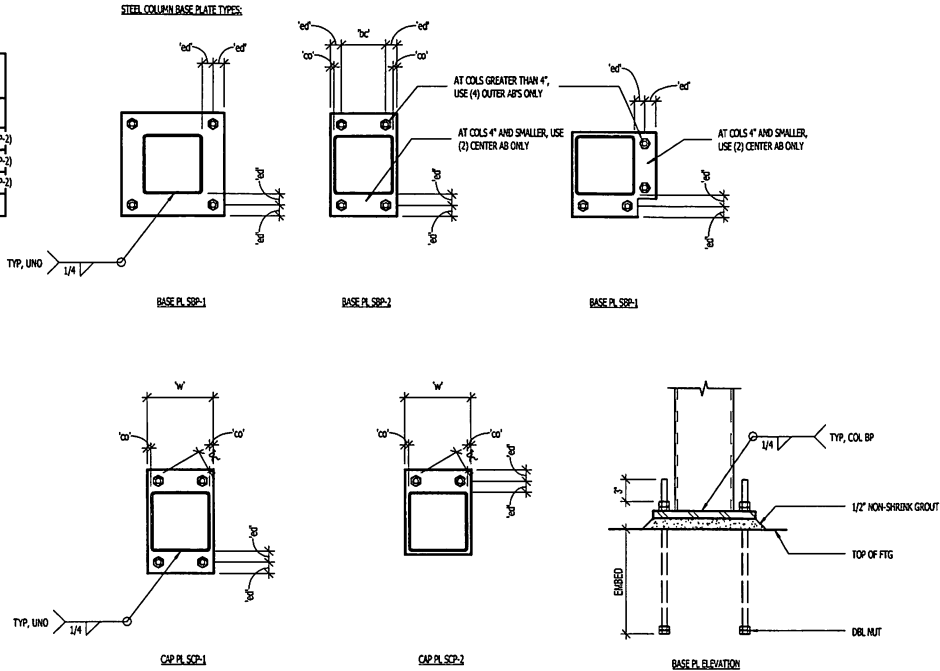
- UNLESS NOTED OTHERWISE, ALL COLUMNS SHALL BE INSTALLED WITH 3/4"Ø HEADED (OR DOUBLE NUT) ANCHOR BOLTS, PROJECT ANCHOR BOLTS 3" MINIMUM ABOVE THE TOP OF THE BASE PLATE. ERECTION SHALL BE 9" MINIMUM. ALL BOLTS SHALL BE INSTALLED WITH HARDENED WASHERS BENEATH THE NUT. ANY BOLT HOLES LARGER THAN THE BOLT DIAMETER PLUS 5/16" SHALL HAVE A PLATE WASHERS INSTALLED BENEATH THE HARDENED WASHERS.
- ANCHOR BOLTS SHALL NOT BE WELDED (INCLUDING TACK WELDS).
- IF DESIRED, SPlice LOCATIONS DIFFER FROM THOSE LEVELS SHOWN ON PLAN, NOTIFY STRUCTURAL ENGINEER PRIOR TO FABRICATION. WRITTEN APPROVAL REQUIRED.
- ALL CAP PLATE BOLTS SHALL BE 3/4"Ø A325N BOLTS, TYPICAL UNLESS NOTED OTHERWISE.
- SEE GENERAL STRUCTURAL NOTES FOR OTHER REQUIREMENTS.
- ERECTION AIDS TO BE REMOVED AFTER COLUMN SPLICING.

BASE PL LEGEND:

'w' = 1/2" MINIMUM  
'w' = 1 1/2" MINIMUM  
'w' = 3" MINIMUM

CAP PL LEGEND:

'w' = 1/2" MINIMUM  
'w' = 1 1/2" MINIMUM  
'w' = BEAM OR GIRDER GAGE  
'w' = BEAM OR GIRDER GAGE + 3"  
OR  
BEAM OR GIRDER FLANGE  
WIDTH + 1"  
OR  
COLUMN WIDTH + 1"  
WHICHEVER IS GREATER



1 STEEL COLUMN SCHEDULE  
S302 NO SCALE

A-325N BOLT SCHEDULE		
MAXIMUM BEAM SIZE IN EACH BEAM DEPTH GROUP	A-325N BOLTS	
	No. PER BEAM	SIZE
W10	2	7/8"
W12	3	7/8"
W18	5	7/8"
W24	7	7/8"

1 BEAM WEB CONNECTION PLATES. THICKNESS EQUALS THE BEAM WEB THICKNESS PLUS 1/8" (1/2" MIN).

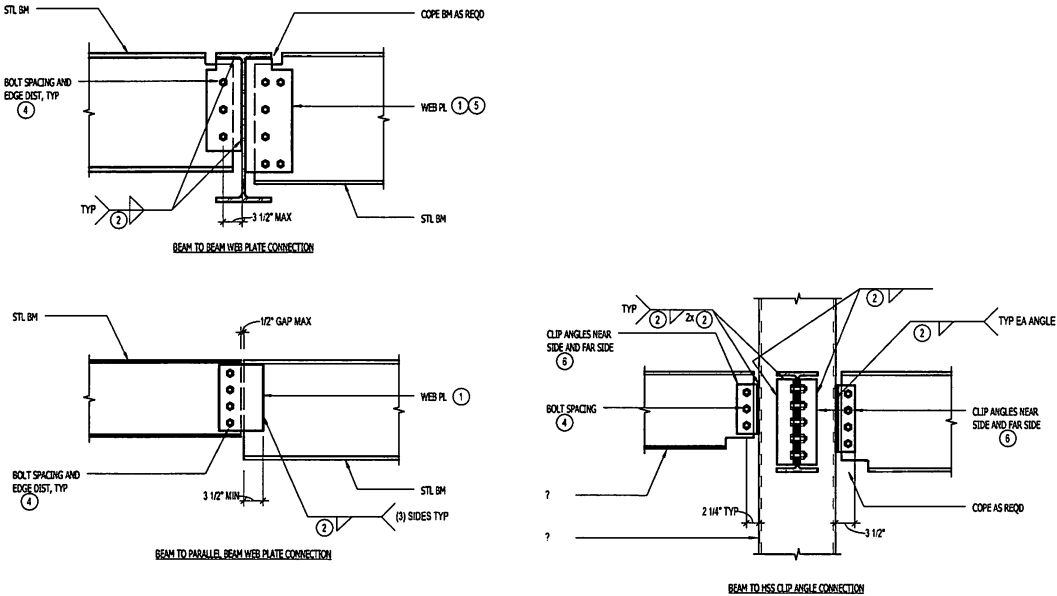
2 FILLET WELDS SHALL BE AS FOLLOWS:  
ONE SIDE: PLATE THICKNESS MINUS 1/16" (1/4" MINIMUM)  
TWO SIDES: 1/2 PLATE THICKNESS PLUS 1/16" (1/4" MINIMUM) OR SIDE.

3 THICKNESS EQUALS BEAM FLANGE THICKNESS OF BEAM FRAMING INTO COLUMN WEB (3/8" MINIMUM).

4 BOLT EDGE DISTANCE SHALL BE 1 1/2" MINIMUM AT ALL EDGES. BOLT SPACING SHALL BE AT 3". BOLT SPACING MAY BE REDUCED TO 3x THE BOLT DIAMETER IF IT IS REQUIRED FOR A SINGLE ROW OF BOLTS. A SINGLE ROW OF BOLTS IS PREFERRED.

5 WHEN MORE THAN ONE COLUMN OF BOLTS IS NEEDED, THE FIRST COLUMN SHALL BE COMPLETE WITH THE REMAINDER OF THE BOLTS PLACED IN THE SECOND COLUMN.

6 CLIP ANGLES: 1x3 1/2. THICKNESS SHALL BE EQUAL TO ONE HALF THE BEAM WEB THICKNESS PLUS 1/16" (1/4" MIN). FOR TWO ROWS OF BOLTS OR SKEWER CONNECTIONS, USE RENT PLATES. WHERE COLUMN WIDTH IS SMALLER THAN THE CONNECTING CLIP ANGLES, ANGLE LESS MAY BE REDUCED TO MATCH WIDTH OF COLUMN.



2 TYPICAL BOLTED WEB PLATE CONNECTIONS WITH BOLT SCHEDULE (SINGLE SHEAR)  
S302 NO SCALE



## ISSUE DATA

ISSUE DATE: 07/22/2016  
 ISSUE TYPE: 90% REVIEW SET  
 DRAWN BY: SDB  
 DESIGNED BY: JB  
 CHECKED BY:  
 MUSE PROJECT #: 16062

SEAL

DATE

07/22/2016

REVISIONS

-/-/-

SHEET TITLE

SCHEDULES

SHEET NO.

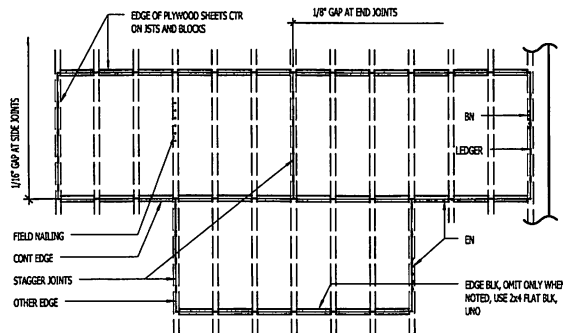
S303

## SHEATHING SCHEDULE

LOCATION	WOOD SHEATHING THICKNESS	NAIL SIZE	EDGE NAIL		FIELD NAIL	BOUNDARY NAIL	EDGE BLOCK
			CONT. EDGE	OTHER EDGE			
ROOF-1	5/8"	10d	6"oc	6"oc	12"oc	4"oc	YES
ROOF-2	5/8"	10d	4"oc	4"oc	12"oc	2-1/2"oc	YES
FLOOR	3/4" TAG	10d	6"oc	6"oc	12"oc	4"oc	YES

## PLYWOOD SHEATHING NOTES:

1. MINIMUM NAIL PENETRATION INTO FRAMING 8d-1 1/2", 10d-1 5/8".
2. USE SCREW SHANK NAILS AT FLOOR PLYWOOD.
3. USE COMMON NAILS (8d DIAMETER = 0.131", 10d DIAMETER = 0.148").
4. GLUE AND NAIL FLOOR SHEATHING TO SUPPORTS.



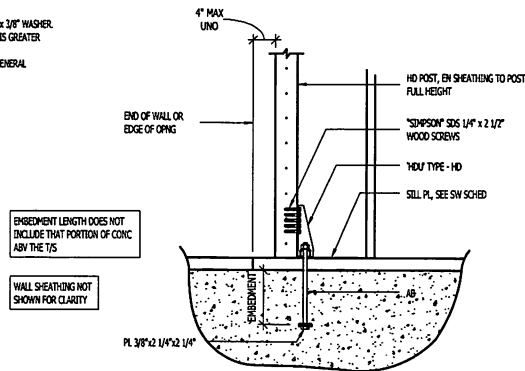
1 SHEATHING SCHEDULE AT ROOF AND FLOOR  
 S303 NO SCALE

## 'HDU' TYPE HOLDDOWN SCHEDULE

MARK	HOLDDOWN POST	WOOD SCREWS "SIMPSON" SDS 1/4" x 2 1/2"	ANCHOR BOLT Ø	EMBED DEPTH
HDU4	(2) 2x	(10)	5/8"	0' - 9"
HDU5	(2) 2x	(14)	5/8"	0' - 9"
HDU8	(2) 2x	(20)	7/8"	1' - 0"
HDU11	(2) 2x	(30)	1"	1' - 2"

## '2ND' TYPE HOLDDOWN NOTES:

1. ANCHOR BOLTS SHALL INCLUDE A DOUBLE NUT AND 2 1/4 x 2 1/4 x 3/8 WASHER.
2. INCREASE FOOTING DEPTH WHERE EMBEDMENT LENGTH PLUS 2" IS GREATER THAN FOOTING DEPTH SPECIFIED.
3. ALL HOLDDOWNS SPECIFIED ARE "SIMPSON - STRONG TIE", SEE GENERAL STRUCTURAL NOTES FOR SUBSTITUTIONS.
4. LAG SCREWS SHALL NOT BE USED.



2 'HDU' TYPE HOLDDOWN SCHEDULE  
 S303 NO SCALE

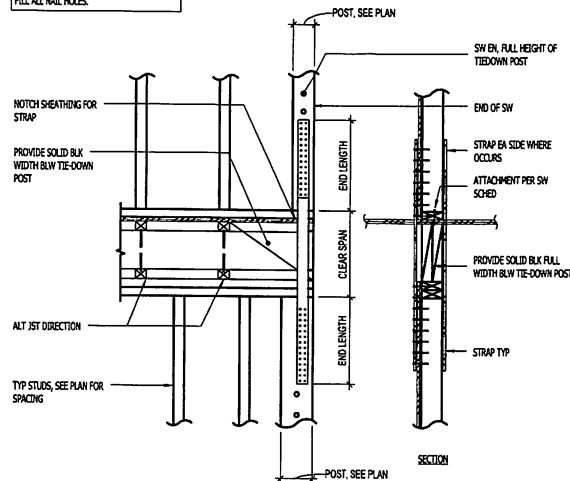
## COIL STRAP TIEDOWN SCHEDULE

MARK	END LENGTH	GAUGE	TOTAL FASTENERS
CMSTC16	20"	16	(50) 16d

## NOTES:

1. CUT STRAP TO TWICE END LENGTH PLUS CLEAR SPAN.

WALL SHEATHING NOT SHOWN HERE FOR CLARITY. PLACE STRAP ON TOP OF PLYWOOD. FILL ALL NAIL HOLES.



3 COIL STRAP TIEDOWN SCHEDULE  
 S303 NO SCALE

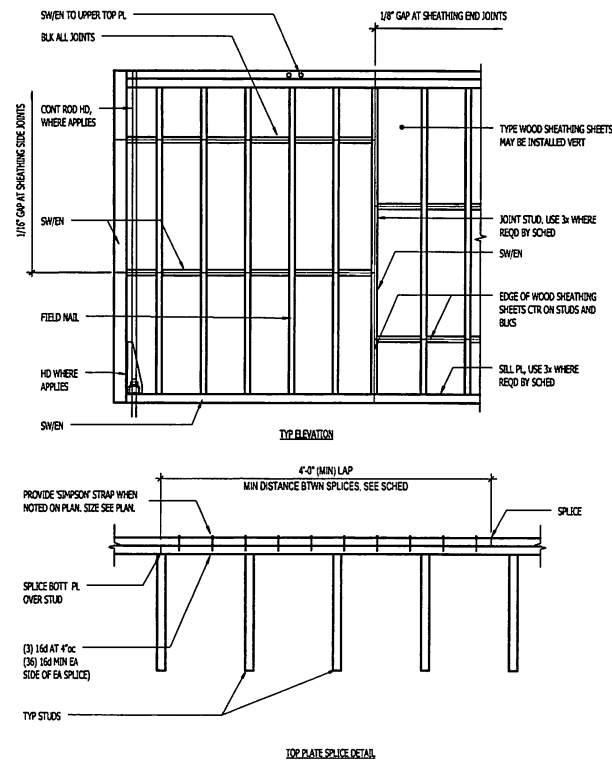
## WOOD SHEATHING SHEARWALL SCHEDULE

MARK	WOOD SHEATHING THICKNESS	SHEATHING BOTH SIDES	NAIL SIZE	EDGE NAIL	FIELD NAIL	JOINT STUD, BLKG, SILL	SILL NAILING TO WOOD	SILL BOLTING TO WOOD
SW-1	7/16"	No	8d	6"oc	12"oc	2x	16d AT 10"oc	5/8"Ø AT 32"oc
SW-2	7/16"	No	8d	4"oc	12"oc	2x	16d AT 8"oc	5/8"Ø AT 32"oc
SW-3	7/16"	No	8d	3"oc	12"oc	2x	16d AT 6"oc	5/8"Ø AT 24"oc
SW-4	7/16"	Yes	8d	3"oc	12"oc	3x	16d AT 3"oc	5/8"Ø AT 12"oc

## NOTES:

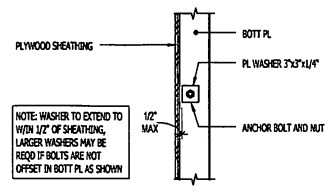
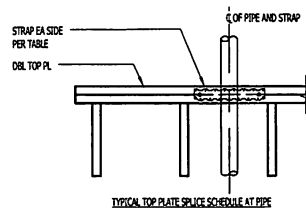
1. MINIMUM NAIL PENETRATION INTO FRAMING, 8d = 1 1/2", 10d = 1 5/8".
2. USE COMMON NAILS (8d DIAMETER = 0.131", 10d DIAMETER = 0.148").
3. STAGGER SHEATHING JOINTS ON ODD-SIDED WALLS (SW-5 THRU SW-8) SO THAT JOINTS IN EA SIDE OF WALL DO NOT OCCUR AT SAME STUD.
4. ALL ANCHOR BOLTS SHALL HAVE A 3"x2"x1/4" PLATE WASHER.
5. SEE DETAIL 1052-0 FOR ABUTTING WALLS AT SHEARWALL.
6. STRAP ALL OPENING PER THIS DETAIL.
7. ALL ANCHOR BOLTS SHALL HAVE A MINIMUM EMBEDMENT DEPTH OF 7".
8. WHERE (2) 2x SILL PLATES ARE USED, THE 1ST PLATE SHALL BE NAILED TO THE FLOOR BELOW. THEN THE SECOND, PLATE w/ EA PLATE HAVING SPECIFIED NAILING. WHERE 3x PLATES ARE USED FASTEN w/ 16d NAILS 4 1/4" MIN. OR USE 1/4" x 4 1/2" SDS SCREWS AT 6"oc.

PL SIZE	(MIN) DISTANCE BTWN SPLICES	REQD NAILS EA SIDE OF SPLICE
2x4	4'-0"	(22) 16d NAILS
2x6	6'-0"	3 ROWS OF (18) 16d NAILS



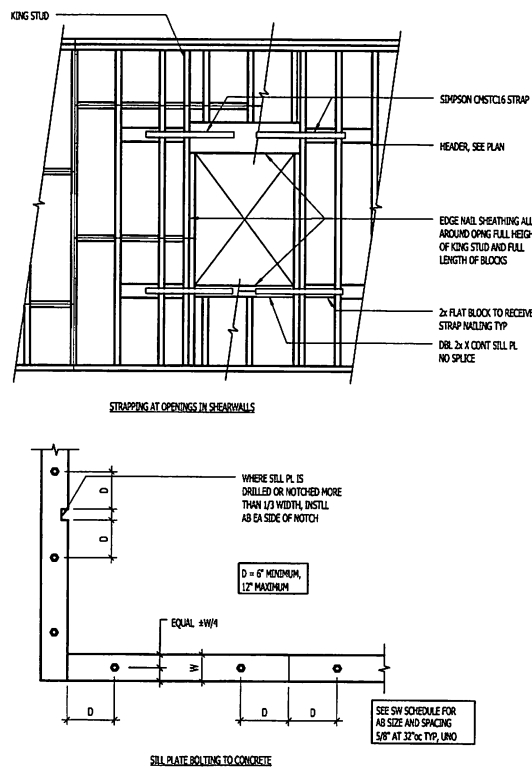
## TOP PLATE SPLICE SCHEDULE

HOLE SIZE	STRAPS
LESS THAN 1/3 STUD WIDTH	NONE REQUIRED
LESS THAN 2/3 STUD WIDTH	ST2122 WITH (4) 16d EA END
OVER 2/3 STUD WIDTH	ST2215 WITH (6) 16d EA END



PLAN VIEW

4 WOOD SHEATHING SHEARWALL SCHEDULE AND TYPICAL DETAILS  
 S303 NO SCALE



SILL PLATE BOLTING TO CONCRETE

'SIMPSON' COIL STRAP	STRAP LENGTH 'L' BEYOND EA SIDE OF OPENING	NAIL SIZE
2x4	4'-0"	16d

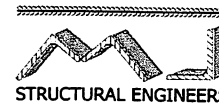
## MINIMUM NAILING SCHEDULE

CONNECTION	NAILING
SOE PL TO JST OR BLK, FACE NAIL	16d AT 1'-4"oc
BROG TO JST, TOE NAIL EA END	(2) 8d
BLK BTWN JST OR RAFTERS TO TOP PL, TOE NAIL	8d AT 0'-6"oc
R/W JST TO TOP PL, TOE NAIL	(2) 16d
TOP PL TO STUD, END NAIL	(2) 16d
STUD TO SOLE PL, END NAIL	(2) 16d
DBL STUDS, FACE NAIL	16d AT 2'-0"oc
DBL TOP PL, FACE NAIL	16d AT 1'-4"oc
TOP PL, LAPS AT WALL INTERSECTION, FACE NAIL	(2) 16d
CONT HEADER, TWO PIECES	16d AT 1'-4"oc ALONG EA EDGE
CEILING JST TO PL, TOE NAIL	(3) 8d
CONT HEADER TO STUD, TOE NAIL	(4) 8d
CEILING JST TO PARALLEL RAFTERS, FACE NAIL	(3) 16d
RAFTER TO PL, TOE NAIL	(3) 16d
1" BRUCE TO EA STUD AND PL, FACE NAIL	(3) 8d
BUILT-UP CORNER STUDS	(2) 8d
BUILT-UP GORER AND BM	16d AT 2'-0"oc
COLLAR TIE TO RAFTER, FACE NAIL	20d AT 32"oc AT TOP AND BOT
JACK RAFTER TO R/W, TOE NAIL	AND STAGGERED, (2) 20d AT
TOE NAIL	ENDS AND AT EA SPLICE
FACE NAIL	(3) 10d
PLYWOOD AND PARTICLEBOARD:	(3) 10d
SUBFLOOR, ROOF AND WALL SHEATHING (TO FRAMING)	(2) 16d
1/2" AND LESS	(2) 16d
19/32" - 1"	(3) 16d
1 1/8" - 1 1/4"	8d
COMBINATION SUB FLOOR - UNDERLAYMENT (TO FRAMING)	8d OR 10d
3/4" AND LESS	10d
7/8" - 1"	8d
1 1/8" - 1 1/4"	8d OR 10d
	10d

## MINIMUM NAILING NOTES:

1. NAILING SCHEDULE IS PER TABLE OF THE I.B.C. 2010.
2. NAILING REQUIREMENTS SHOWN HERE DO NOT REPLACE HARDWARE ON THE PLANS OR DETAILS.
3. ALL NAILS USED ARE COMMON NAILS.

NAILS SPACED AT 6 INCHES ON CENTER AT EDGES, 12 INCHES AT INTERMEDIATE SUPPORTS, EXCEPT 6" INCHES AT ALL SUPPORTS WHERE SPANS ARE 40 INCHES OR MORE. FOR NAILING OF DIAPHRAGMS AND SHEAR WALLS, REFER TO THE APPROPRIATE SCHEDULE.



5673 S Redwood Rd.  
 Salt Lake City, UT 84123  
 Office: 801-905-1097  
 mjstructuralengineers.com

IF THIS SHEET IS LESS THAN A 24"X36" IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.  
 This drawing is an instrument of professional service, is the property of MJ STRUCTURAL ENGINEERS and shall not be used, in whole or in part, for any other project without the permission of an authorized representative of MJ STRUCTURAL ENGINEERS. Unauthorized use will be prosecuted to the fullest extent of the law. Copyright © 2016 by MJ STRUCTURAL ENGINEERS.

## ROSENTHAL CABIN

## ISSUE DATA

ISSUE DATE: 07/22/2016  
ISSUE TYPE: 90% REVIEW SET  
DRAWN BY: SDB  
DESIGNED BY: JB  
CHECKED BY:  
MUSE PROJECT #: 16062

SEAL

DATE

07/22/2016

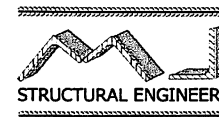
REVISIONS

-/-/-

SHEET TITLE  
FOOTING  
FOUNDATION  
DETAILS

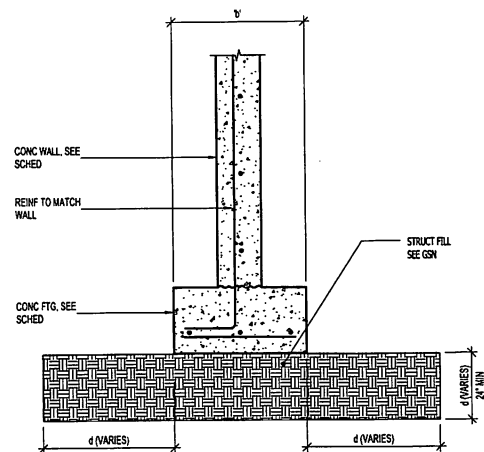
SHEET NO.

S501



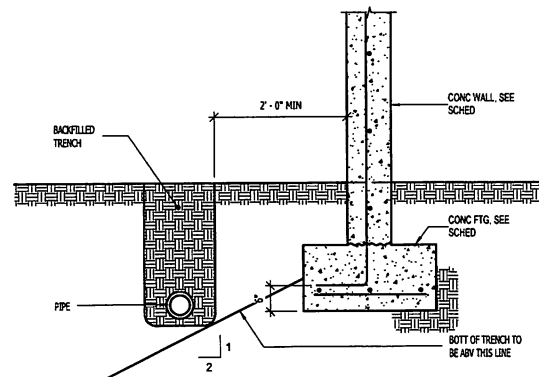
5673 S Redwood Rd.  
Salt Lake City, UT 84123  
Office: 801-905-1097  
mjstructuralengineers.com

This drawing is an instrument of professional service, is the property of MJ STRUCTURAL ENGINEERS and shall not be used, in whole or in part, for any other project without the permission of an authorized representative of MJ STRUCTURAL ENGINEERS. Unauthorized use will be prosecuted to the fullest extent of the law. Copyright © 2016 by MJ STRUCTURAL ENGINEERS. IF THIS SHEET IS LESS THAN 4" X 6" IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.



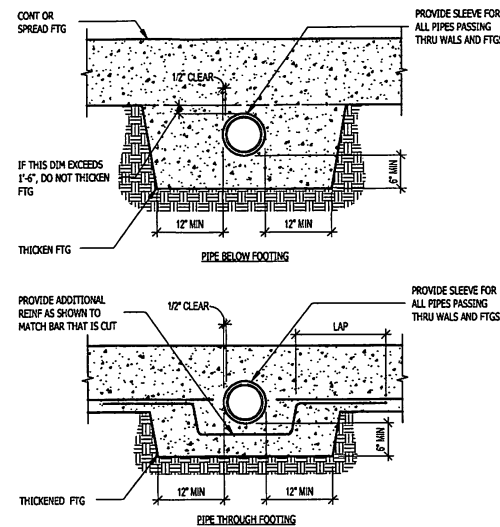
1 TYPICAL COMPACTED STRUCTURAL FILL (IF REQUIRED)

S501 NO SCALE



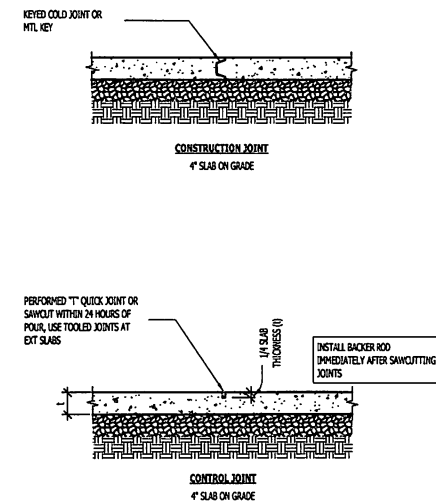
2 TYPICAL PIPE PARALLEL TO FOOTING

S501 NO SCALE



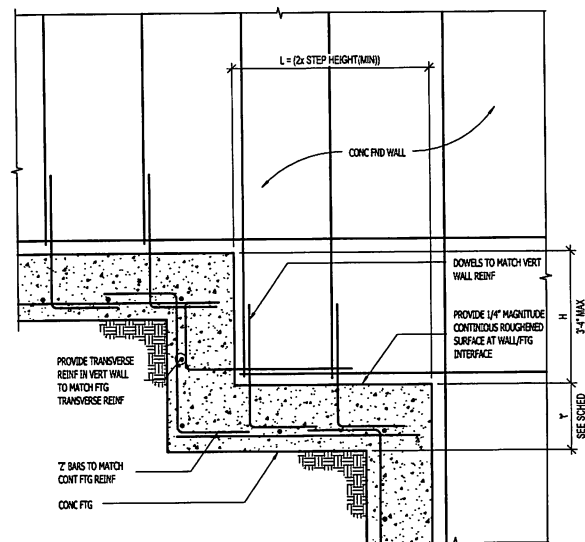
3 TYPICAL PIPE PERPENDICULAR TO CONTINUOUS FOOTING

S501 NO SCALE



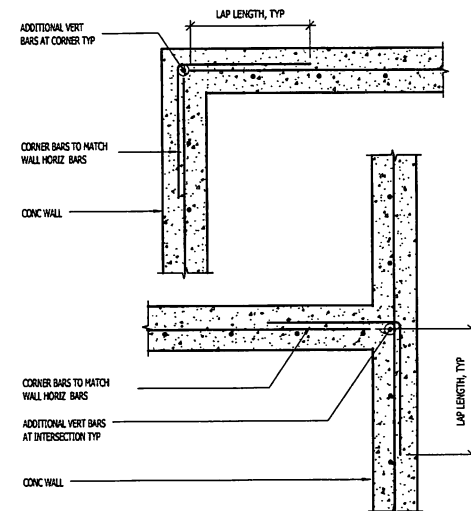
4 TYPICAL SLAB ON GRADE JOINT

S501 NO SCALE



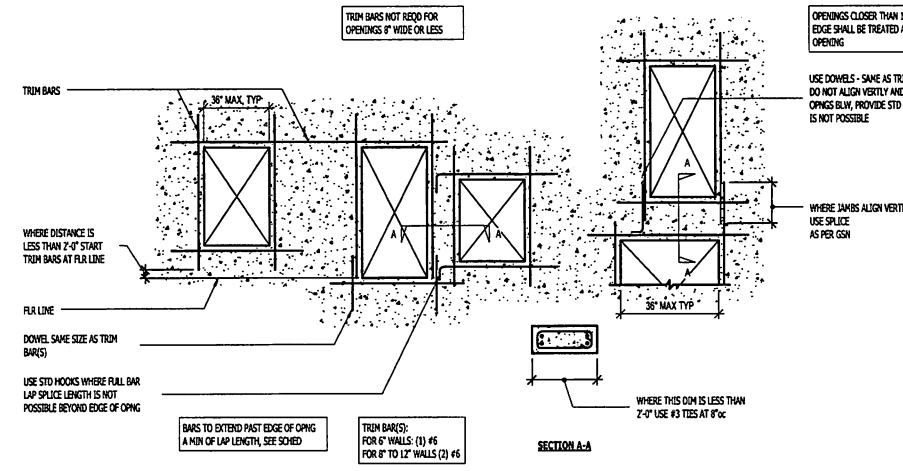
5 TYPICAL FOOTING STEP AT CONCRETE FOUNDATION WALL

S501 NO SCALE



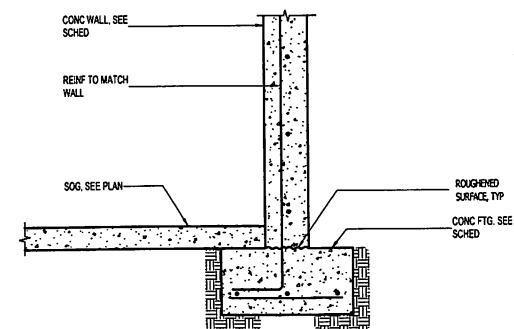
6 TYPICAL CORNER WALL REINFORCING FOR SINGLE REINFORCED CONCRETE WALLS (PLAN VIEW)

S501 NO SCALE



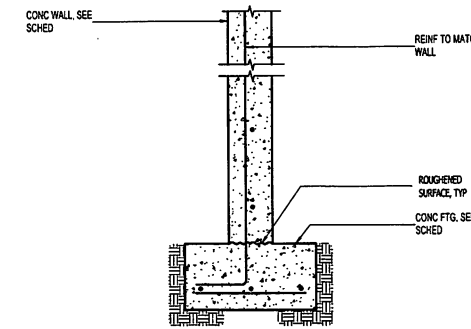
7 TYPICAL TRIM BARS AROUND MISCELLANEOUS CONCRETE WALL OPENINGS UNLESS NOTED OTHERWISE

S501 NO SCALE



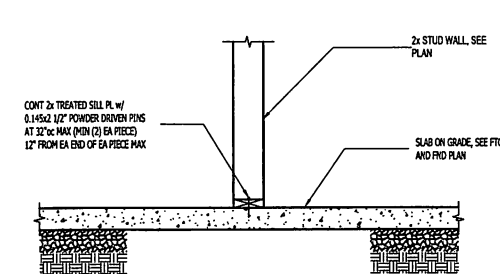
8 FOUNDATION WALL W/ SLAB ON GRADE AT BASEMENT

S501 NO SCALE



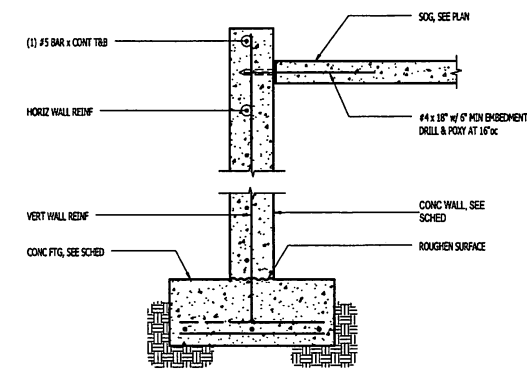
9 FOUNDATION WALL W/ SLAB ON GRADE

S501 NO SCALE



10 NON-BEARING STUD WALL DETAIL

S501 NO SCALE



11 TYPICAL EXTERIOR FOUNDATION WALL

S501 NO SCALE

## ISSUE DATA

ISSUE DATE: 07/22/2016  
ISSUE TYPE: 90% REVIEW SET  
DRAWN BY: SDB  
DESIGNED BY: JB  
CHECKED BY:  
MISE PROJECT #: 16062

SEAL

DATE

07/22/2016

REVISIONS

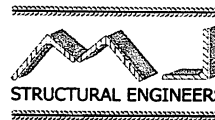
-/-/-

SHEET TITLE

FOOTING  
FOUNDATION  
DETAILS

SHEET NO.

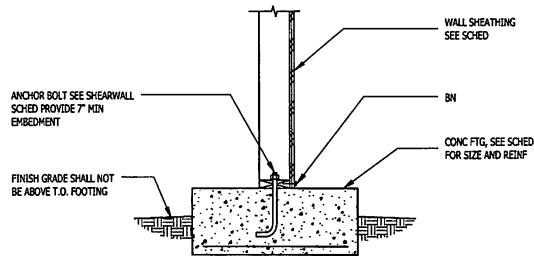
S502



STRUCTURAL ENGINEERS

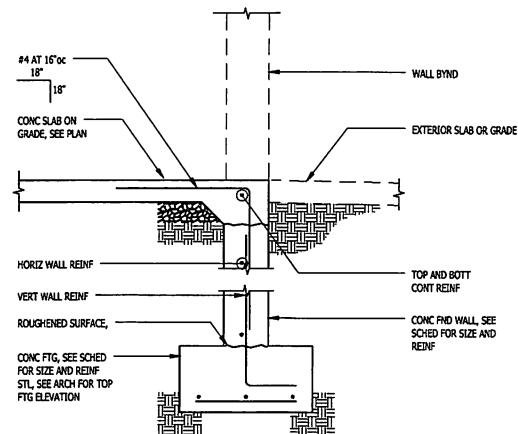
5673 S Redwood Rd.  
Salt Lake City, UT 84123  
Office: 801-905-1097  
mjstructuralengineers.com

This drawing is an instrument of professional service, is the property of MJ STRUCTURAL ENGINEERS and shall not be used, in whole or in part, for any other project without the permission of an authorized representative of MJ STRUCTURAL ENGINEERS. Unauthorized use will be prosecuted to the fullest extent of the law. Copyright © 2016 by MJ STRUCTURAL ENGINEERS. IF THIS SHEET IS LESS THAN 24" X 36" IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.



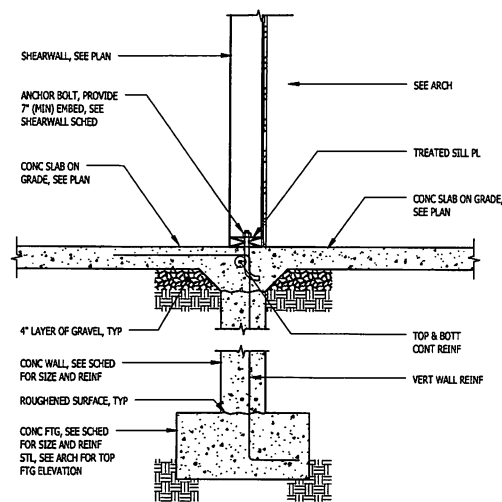
1 WOOD SHEARWALL TO FOOTING

S502 NO SCALE



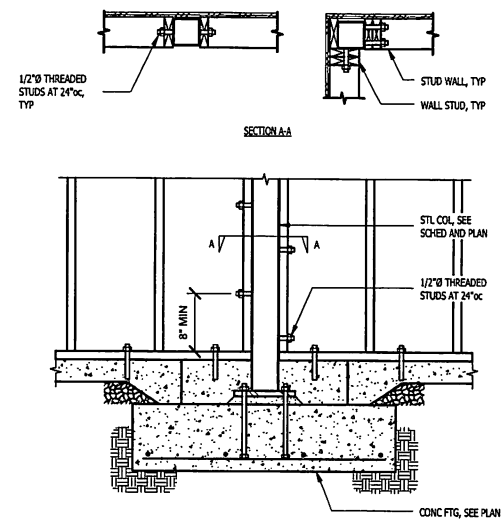
2 FOUNDATION WALL OPENING AT DOOR

S502 NO SCALE



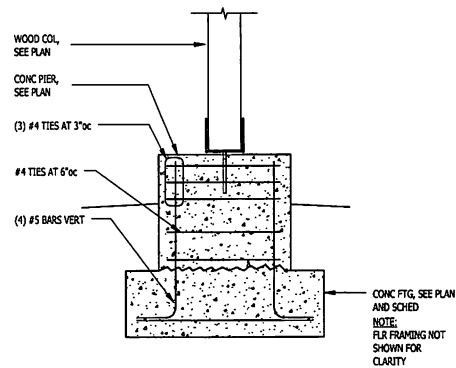
3 TYPICAL LOW FOUNDATION WALL AT SLAB ON GRADE

S502 NO SCALE



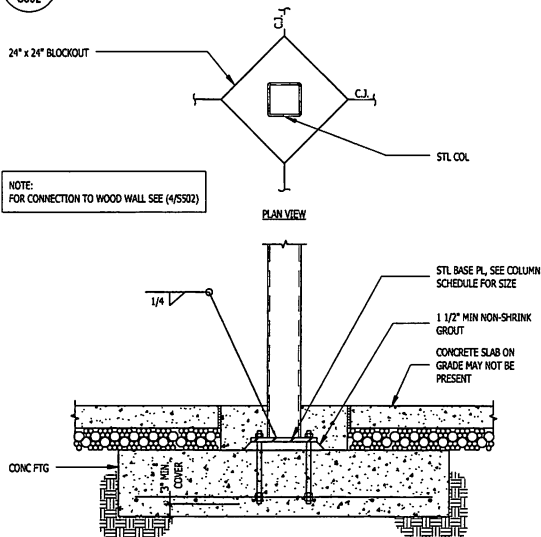
4 STEEL COLUMN IN WOOD WALL

S502 NO SCALE



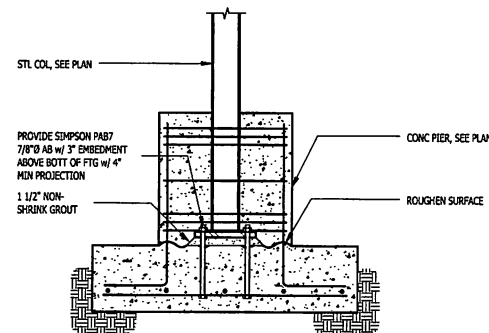
5 WOOD COLUMN TO CONCRETE FOOTING

S502 NO SCALE



6 TYPICAL COLUMN AT CONCRETE FOOTING

S502 NO SCALE



7 COLUMN AT CONCRETE PIER DETAIL

S502 NO SCALE

ISSUE DATA  
 ISSUE DATE: 07/22/2016  
 ISSUE TYPE: 90% REVIEW SET  
 DRAWN BY: SDB  
 DESIGNED BY: JB  
 CHECKED BY:  
 MUSE PROJECT #: 16062

SEAL

DATE  
 07/22/2016

REVISIONS

-/-/-

SHEET TITLE

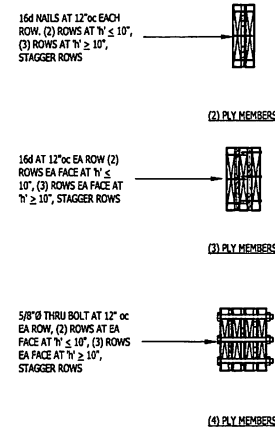
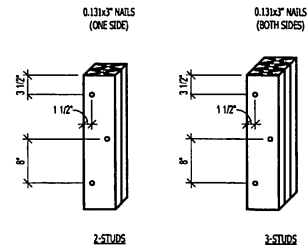
FLOOR FRAMING  
DETAILS

SHEET NO.

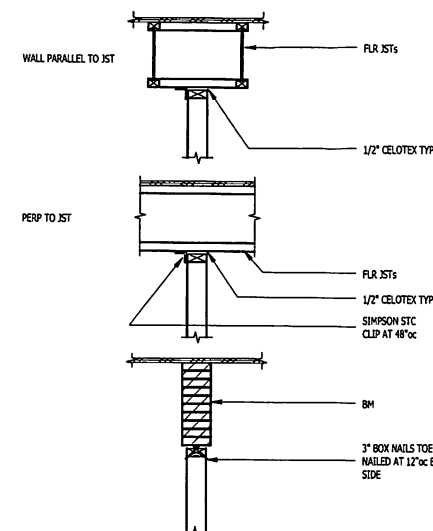
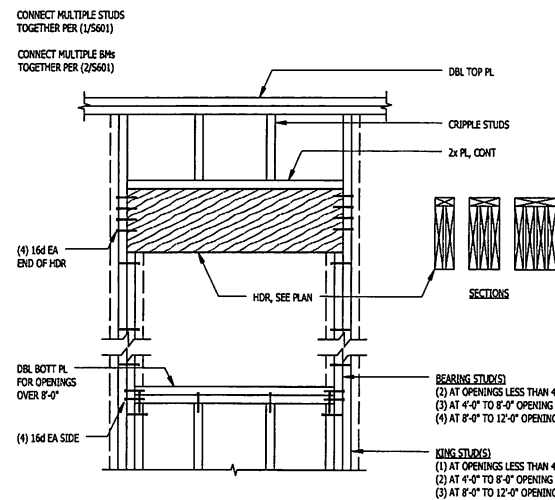
S601

IF THIS SHEET IS LESS THAN 24" X 36" IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.

This drawing is an instrument of professional service, is the property of MUSE STRUCTURAL ENGINEERS and shall not be used, in whole or in part, for any other project without the permission of an authorized representative of MUSE STRUCTURAL ENGINEERS. Unauthorized use will be prosecuted to the fullest extent of the law. Copyright © 2016 by MUSE STRUCTURAL ENGINEERS.

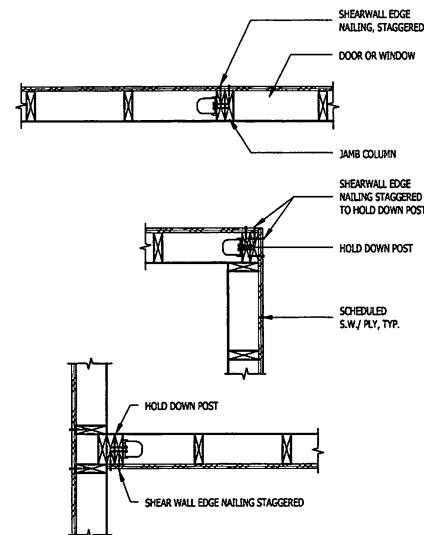


CONNECTION REFS ARE TYP  
 UNLESS IN PLANS OR DETAILS



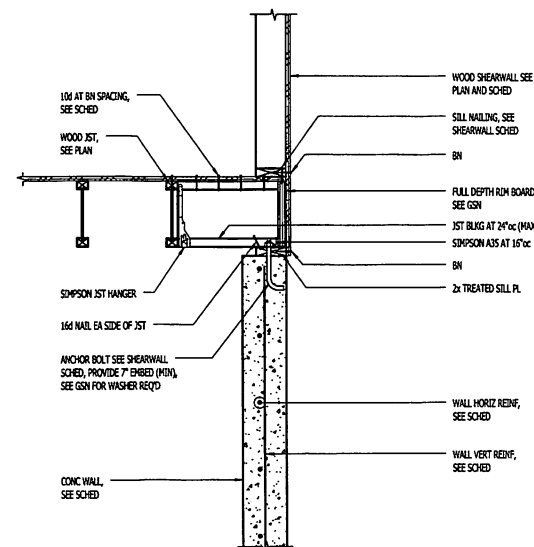
1 TYPICAL WOOD COLUMN CONNECTION

S601 NO SCALE



5 TYPICAL HOLDOWNS AT ENDS OF SHEARWALLS

S601 NO SCALE

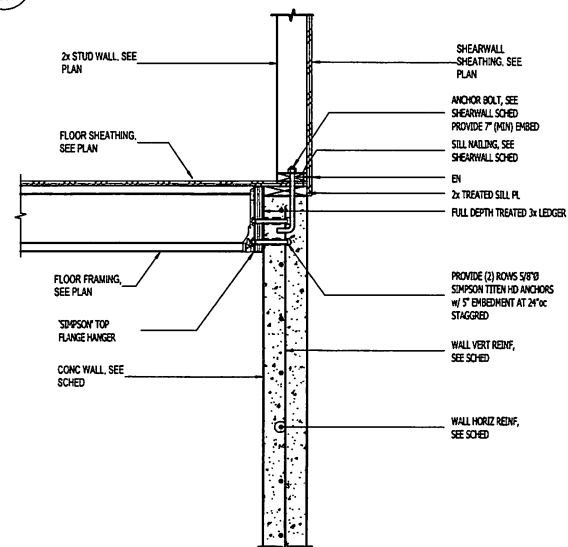


9 WOOD SHEARWALL AT JOIST PARALLEL TO WALL

S601 NO SCALE

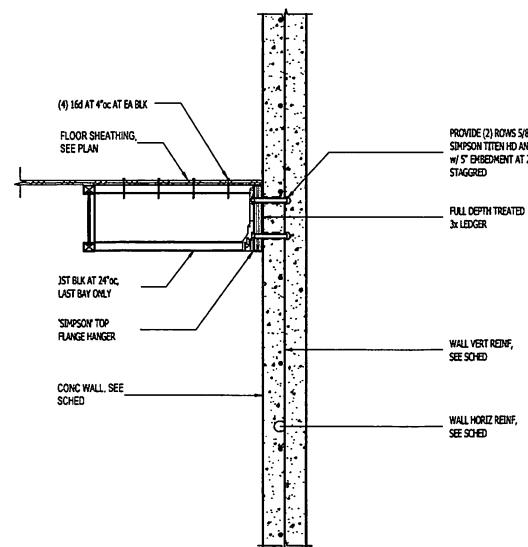
2 TYPICAL MULTIPLE BEAM CONNECTION

S601 NO SCALE



6 TYPICAL FLOOR JOIST PERP TO FOUNDATION WALL

S601 NO SCALE

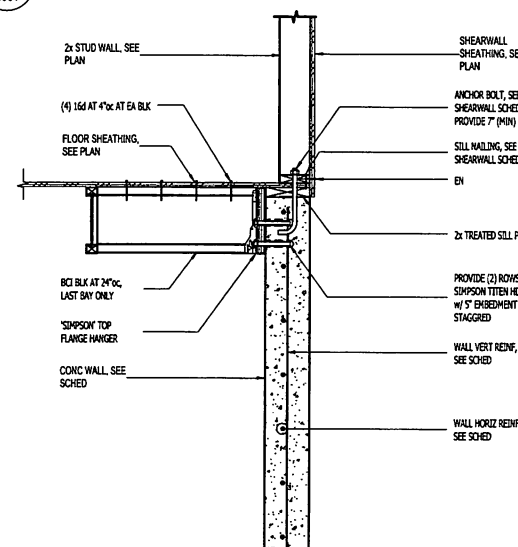


10 TYPICAL FLOOR JOIST PARALLEL TO FOUNDATION WALL

S601 NO SCALE

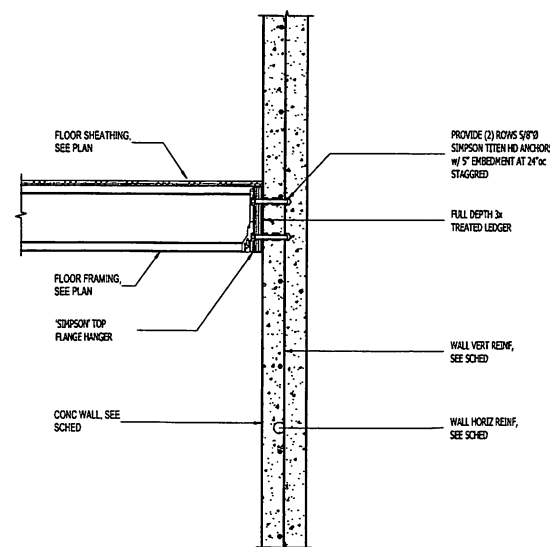
3 TYPICAL HEADER BEAM CONNECTION

S601 NO SCALE



7 TYPICAL FLOOR JOIST PARALLEL TO FOUNDATION WALL

S601 NO SCALE

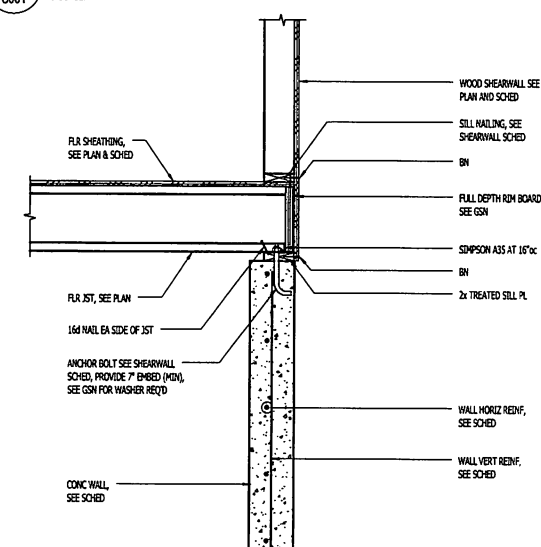


11 TYPICAL FLOOR JOIST PREP TO FOUNDATION WALL

S601 NO SCALE

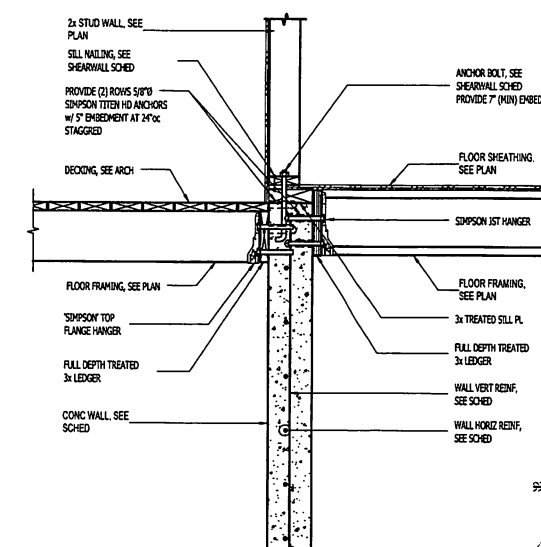
4 TYPICAL NON-BEARING WALL TO FLOOR JOIST

S601 NO SCALE



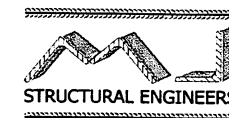
8 WOOD SHEARWALL AND FLOOR JOIST AT EXTERIOR CONCRETE WALL

S601 NO SCALE



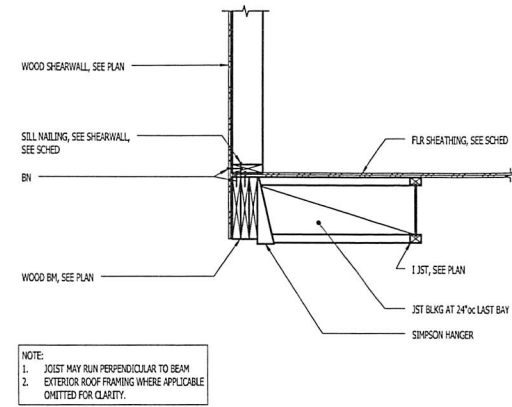
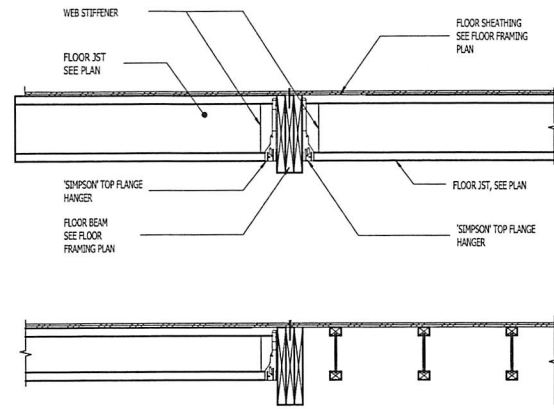
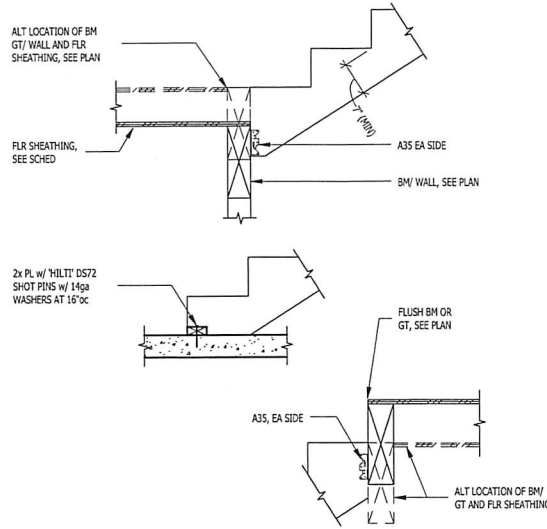
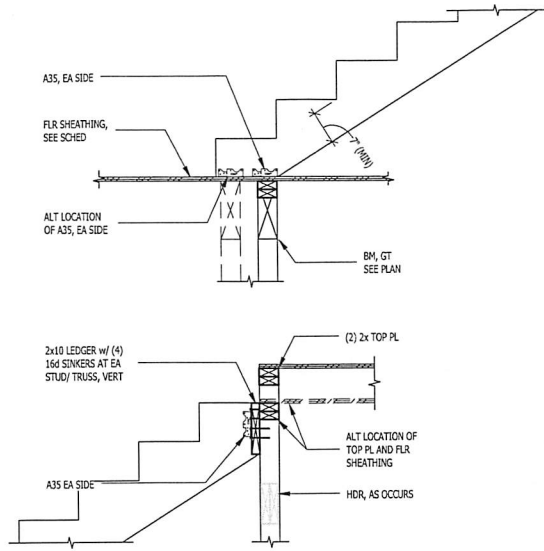
12 TYPICAL FLOOR JOIST PREP TO FOUNDATION WALL AT DECK LOCATION

S601 NO SCALE



STRUCTURAL ENGINEERS

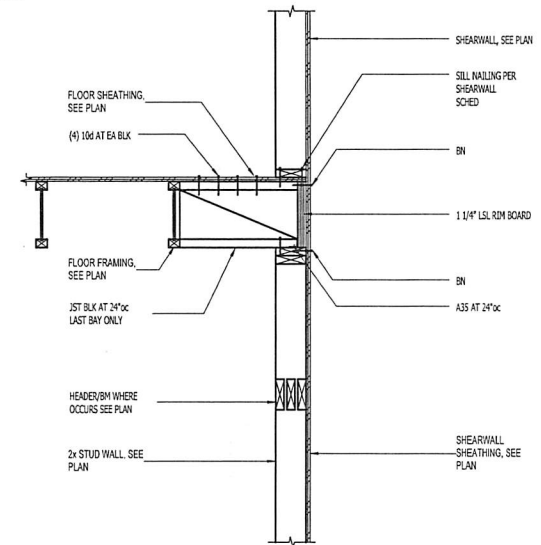
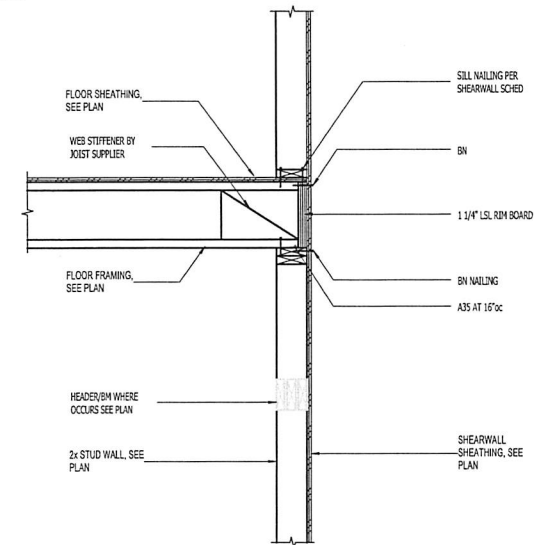
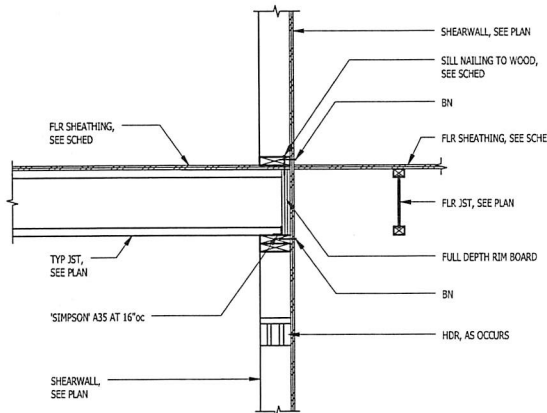
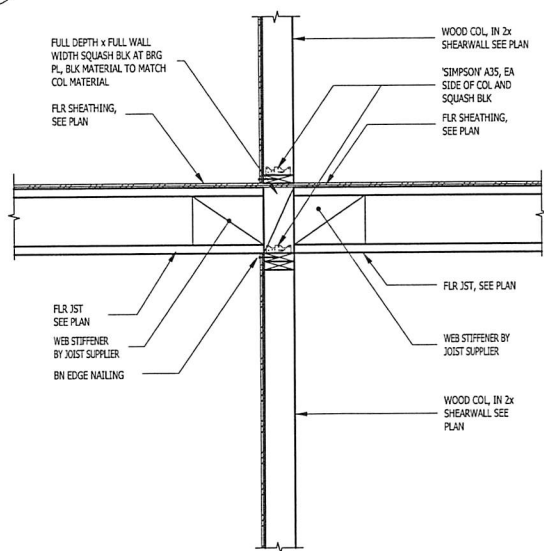
5673 S Redwood Rd.  
 Salt Lake City, UT 84123  
 Office: 801-905-1097  
 mjstructuralengineers.com



1 TYPICAL STAIR DETAILS  
S602 NO SCALE:

2 JOIST TO FLOOR BEAM DETAIL  
S602 NO SCALE:

3 TYPICAL FLOOR JOIST AT FLUSH BEAM  
S602 NO SCALE:

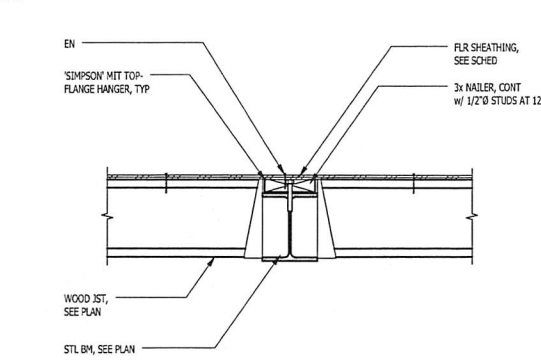
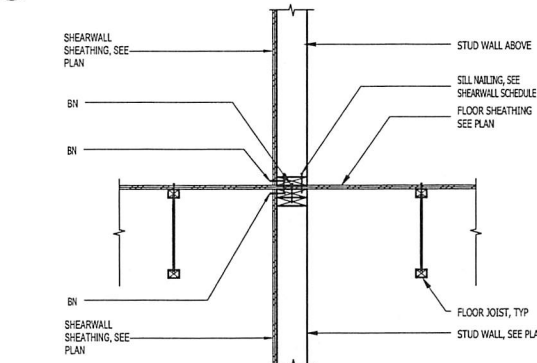
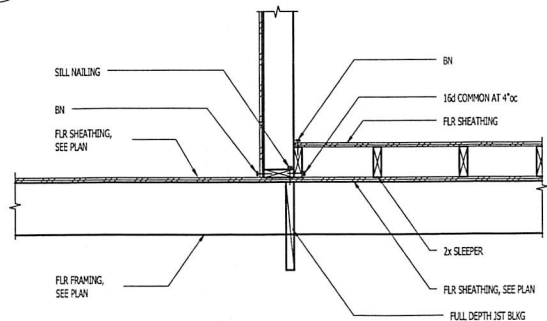
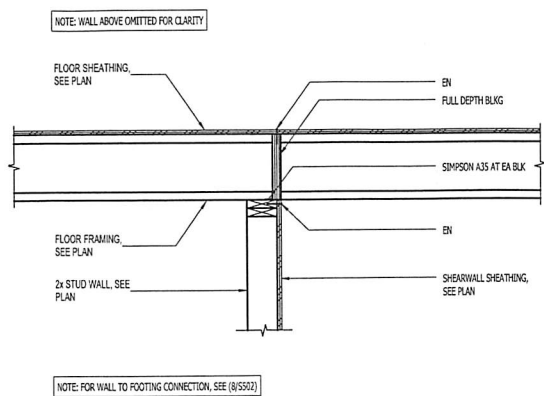


4 TYPICAL WOOD COLUMN AT WOOD WALL  
S602 NO SCALE:

5 TYPICAL INTERIOR BEARING WALL  
S602 NO SCALE:

6 WOOD JOIST AT EXTERIOR WALL (PERPINDICULAR)  
S602 NO SCALE:

7 WOOD JOIST AT EXTERIOR WALL (PARALLEL)  
S602 NO SCALE:

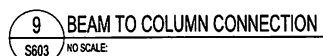
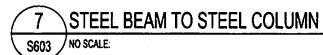
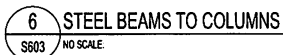
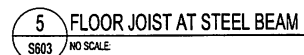
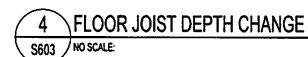
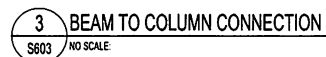
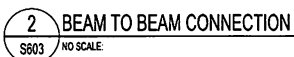


8 WOOD SHEARWALL AND FLOOR JOIST AT EXTERIOR CONCRETE WALL  
S602 NO SCALE:

9 FLOOR FRAMING WITH SLEEPERS  
S602 NO SCALE:

10 FLOOR FRAMING DETAIL  
S602 NO SCALE:

11 JOIST TO STEEL BEAM  
S602 NO SCALE:



## ISSUE DATA

ISSUE DATE: 07/22/2016  
ISSUE TYPE: 90% REVIEW SET  
DRAWN BY: SDB  
DESIGNED BY: JB  
CHECKED BY:  
MUSE PROJECT #: 16062

SEAL

DATE

07/22/2016

REVISIONS

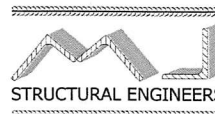
-/-/-

SHEET TITLE

ROOF FRAMING  
DETAILS

SHEET NO.

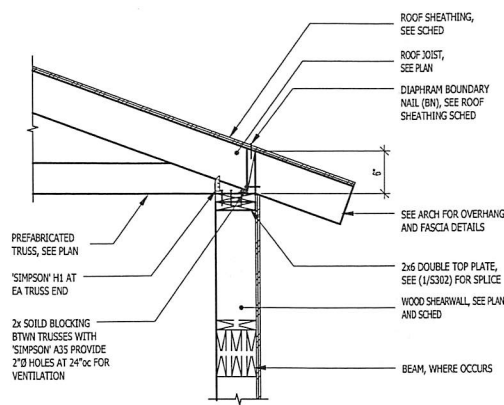
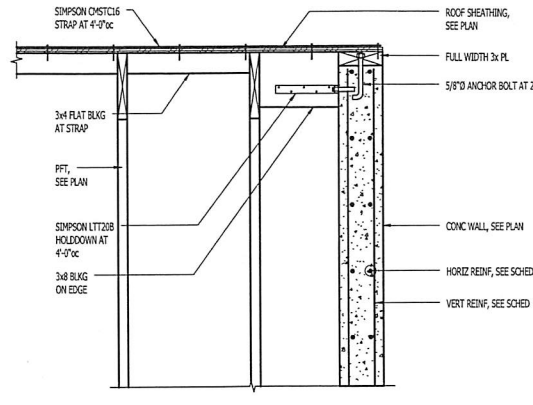
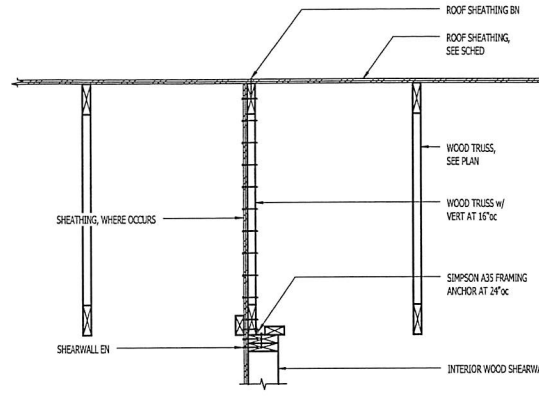
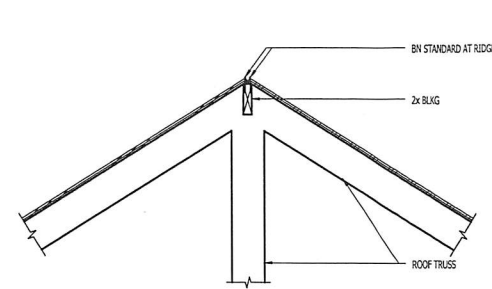
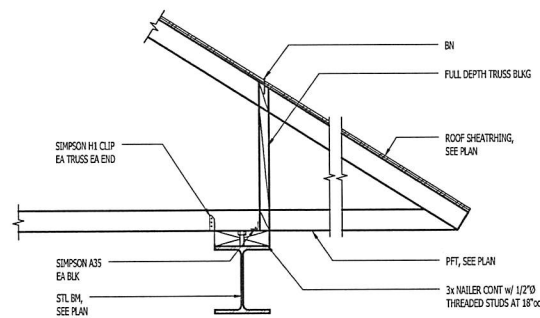
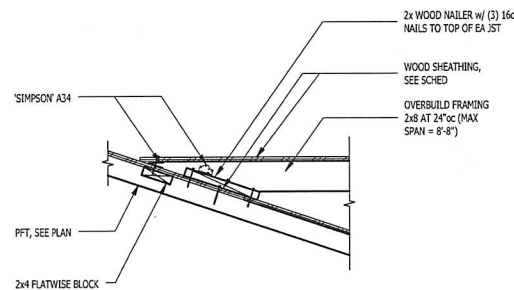
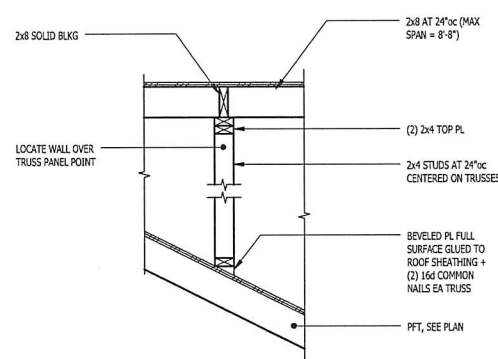
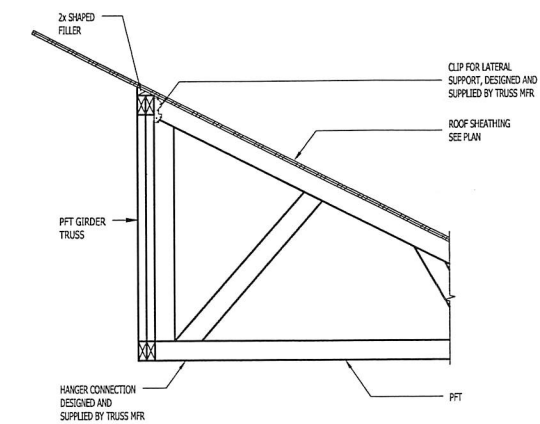
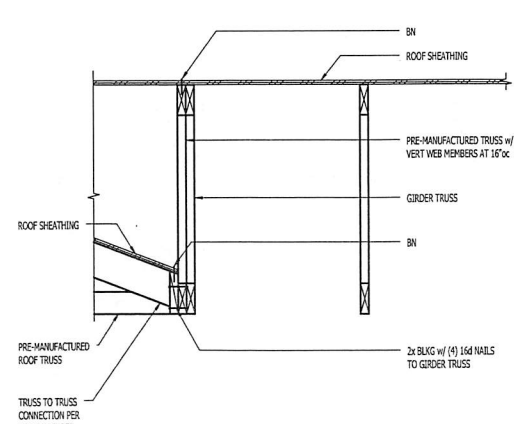
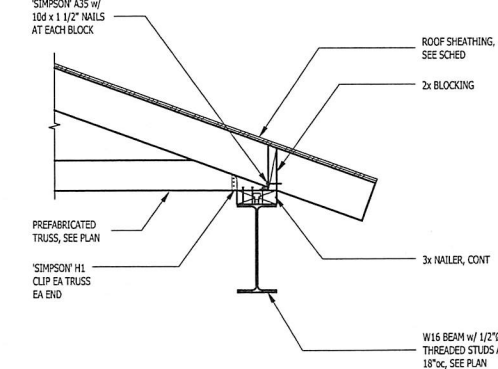
S701



STRUCTURAL ENGINEERS

5673 S Redwood Rd.  
Salt Lake City, UT 84123  
Office: 801-905-1097  
mjstructuralengineers.com

This drawing is an instrument of professional service, is the property of MJ STRUCTURAL ENGINEERS and shall not be used, in whole or in part, for any other project without the permission of an authorized representative of MJ STRUCTURAL ENGINEERS. Unauthorized use will be prosecuted to the fullest extent of the law. Copyright © 2016 by MJ STRUCTURAL ENGINEERS. IF THIS SHEET IS LESS THAN 4"X11" IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.

1 TRUSS PERPENDICULAR TO WALL  
S701 NO SCALE2 ROOF FRAMING PARALLEL TO WALL  
S701 NO SCALE3 INTERIOR SHEARWALL PARALLEL TO ROOF TRUSSES  
S701 NO SCALE4 TYPICAL WOOD BEAM CAP SEAT AT STEEL COLUMN  
S701 NO SCALE5 TRUSS AT EXTERIOR WALL (BEAM)  
S701 NO SCALE6 OVERBUILD DETAIL  
S701 NO SCALE7 SHEARWALL TRANSFER PERPENDICULAR TO TRUSS  
S701 NO SCALE8 TYPICAL TRUSS CONNECTION DETAIL  
S701 NO SCALE9 TRUSS TO TRUSS CONNECTION  
S701 NO SCALE10 CANOPY FRAMING  
S701 NO SCALE



Lloyd Architects

573 EAST 200 SOUTH  
SALT LAKE CITY, UT 84102  
801.628.3245  
6211 ROOSEVELT WAY NE  
SEATTLE, WA 98115  
LLOYD-ARCH.COM

ROSENTHAL CABIN

ISSUE DATA  
ISSUE DATE: 07/22/2016  
ISSUE TYPE: 90% REVIEW SET  
DRAWN BY: SDB  
DESIGNED BY: JB  
CHECKED BY:  
MOSE PROJECT #: 16062

SEAL


DATE  
07/22/2016

REVISIONS  
-/-

SHEET TITLE  
ROOF FRAMING  
PLAN

SHEET NO.

X



STRUCTURAL ENGINEERS

5673 S Redwood Rd.  
Salt Lake City, UT 84123  
Office: 801-905-1097  
mjstructuralengineers.com

This drawing is an instrument of professional service, is the property of MJ STRUCTURAL ENGINEERS and shall not be used, in whole or in part, for any other project without the permission of an authorized representative of MJ STRUCTURAL ENGINEERS. Unauthorized use will be prosecuted to the fullest extent of the law. Copyright © 2016 by MJ STRUCTURAL ENGINEERS. IF THIS SHEET IS LESS THAN 8 1/2" X 11" IT IS A REDUCED PRINT. SCALE INDICATED ACCORDINGLY.