GENERAL STRUCTURAL NOTES

McCAIN RESIDENCE
45 SUMMER STREET
Portland, ME

DESIGN LIVE LOADS: 2009 IBC/IRC, MUEBC

Snow	60 psf (Pg)
Wind	100 mph, exp B, 3 second gust
Floor	40 psf
Deck	60 psf

CONCRETE AND REINFORCEMENT:

- Concrete shall conform to applicable provisions of ACI-301 and 318.
- Minimum 28 day compressive strength (F'c) as follows:
  - •• Interior Slabs: 4,000 psi w/ fibermesh
  - •• WALLS AND FOOTINGS: 4,000 psi w/ 4-6% air entrainment
- Cement Type: I/II
- Deformed reinforcement: ASTM A615 grade 60, except bars specified to be field_bent, stirrups, and ties which shall be grade 40.
- Fibermesh: 100% virgin polypropylene, fibrillated fibers as manufactured by Fibermesh Co. per ASTM C-1116 type 111 4.1.3 and ASTM C-1116 performance level one, 1.5 lb. per cubic yard.
- Welded Wire Fabric (WWF): ASTM A185. See also plan.
- Typical minimum foundation reinforcing: 2 #5 top and bottom, (except as noted) continuous at corners and steps.
- Reinforcement shall be fabricated and placed per ACI Manual of Standard Practice (ACI_315). At splices, lap bars 50 diameters unless noted otherwise.
- Minimum 2 #5 around all four sides of all openings, extend min. 2'_0 beyond openings.
- Concrete cover over reinforcing: 11/2" for concrete placed against forms; 3" for concrete placed against earth. See also drawings.
- In continuous members, splice top bars at mid span and bottom bars over supports.
- Keep reinforcement clean and free of dirt, oil, and scale. Oil forms prior to placing reinforcement.

STRUCTURAL STEEL:

- Angles, misc.: ASTM A36
- Anchor Bolts: ASTM A307 or A36.
- Connector bolts: ASTM A307
- Expansion Anchors shall be NER approved, installed in accordance with manufacturers specifications.
  In concrete: Wedge Type
  In solid masonry: Sleeve Type
- Non-shrink grout beneath column base and beam bearing plates shall be non-metallic with minimum compressive strength 5000psi.
- All structural steel shall be fabricated and erected per the current edition of AISC Steel Construction Manual.
- Welding by qualified welders. E70XX electrodes.
- Except as noted, framed beam connections shall be detailed to develop 0.6 x Allowable Uniform Load values tabulated in the 9th Edition AISC Manual, Pp. 2-27 and following.
- All beams shall have fitted web stiffeners welded to each side of webs above and below columns. (¼" plate or as noted)
- Attach wood nailer plates to beams with 1/2" diameter machine or carriage bolts at maximum 32" o.c., or 3/8" diameter bolts at 32" with glued contact face, or 5/32" diameter powder actuated drive pins at 24" o.c., U.O.N.

WOOD FRAMING:

- Dimension Lumber is designed and shall be supplied using BASE VALUES Design Criteria.
- SPF #2 and better (Maximum Moisture Content 19%) U.O.N.
- Plates: Sill plates: Pressure Treated SPF or Southern Pine:
- **"Pressure treated lumber"** shall be framing material of the specified species which has been pressure treated with a decay and insect resistant solution, meeting all current standards for wood in contact with concrete or earth.
- Sill plates in contact with masonry or concrete foundations, footings or slabs may be treated Timber Strand LSL (zinc borate treatment). Sodium borate treatment may also be acceptable for sill plate applications when protected from weather.
- Acceptable treatment mediums for wood in contact with earth or in exterior applications include ACQ-C and ACQ-D (Alkaline Copper Quaternary) and copper azole (CBA-A and CBA-B).
- DO NOT USE WOODS WHICH HAVE BEEN TREATED WITH AMMONIA BASED CARRIERS.
- All connectors shall meet the recommendations of the pressure treated wood manufacturer, but shall be not less than Hot Dipped Galvanized meeting requirements of ASTM A653, such as Simpson ZMAX. (G185). All screws, nails and bolts shall match hangers and other connectors, and shall meet ASTM A123 for individual connectors, and ASTM A153 for fasteners.
- For durability, it is our recommendation that connectors used in exposed conditions with treated lumber be stainless steel.
- Do not mix galvanized and stainless products.
- Do not allow aluminum to contact treated wood.
- Top and Bottom Plates: S.P.F.
- SIPS Panels Per Plans
- S.P.F. Studs U.O.N: 2 x 4 and 2 x 6 to 8'-0: stud grade
  - •• 2 x 4 over 8'-0: standard and better
  - •• 2 x 6 over 8'-0: No. 2 and better
- Floor Joists: SEE PLAN
- Rafters: SEE PLAN
- Laminated Veneer Lumber (LVL): Manufactured 1 3/4" wide Microllams (ML) by Trus Joist or equivalent.
  Fb=2,600 psi, E=1,900,000 psi, Fv=285 psi, depth noted on plans.
- LSL Rim Joists = 1-1/4" x depth indicated laminated strand lumber by Trus Joist. No substitutions.
- All plywood and oriented strand board (OSB) sheathing shall be engineered grades with APA grade stamp indicating appropriate maximum spacing of supports.
- Floor sheathing: nominal 3/4", APA Sturd-i-floor @ 24 inch o.c. tongue & groove glued and nailed.
- Roof sheathing: minimum 5/8" CDX plywood, or 19/32" OSB, APA 40/20, nailed. or SIPS See plans
- Wall sheathing: 1/2" CDX plywood or 7/16" OSB, APA 24/16, blocked and nailed. or SIPS See plans

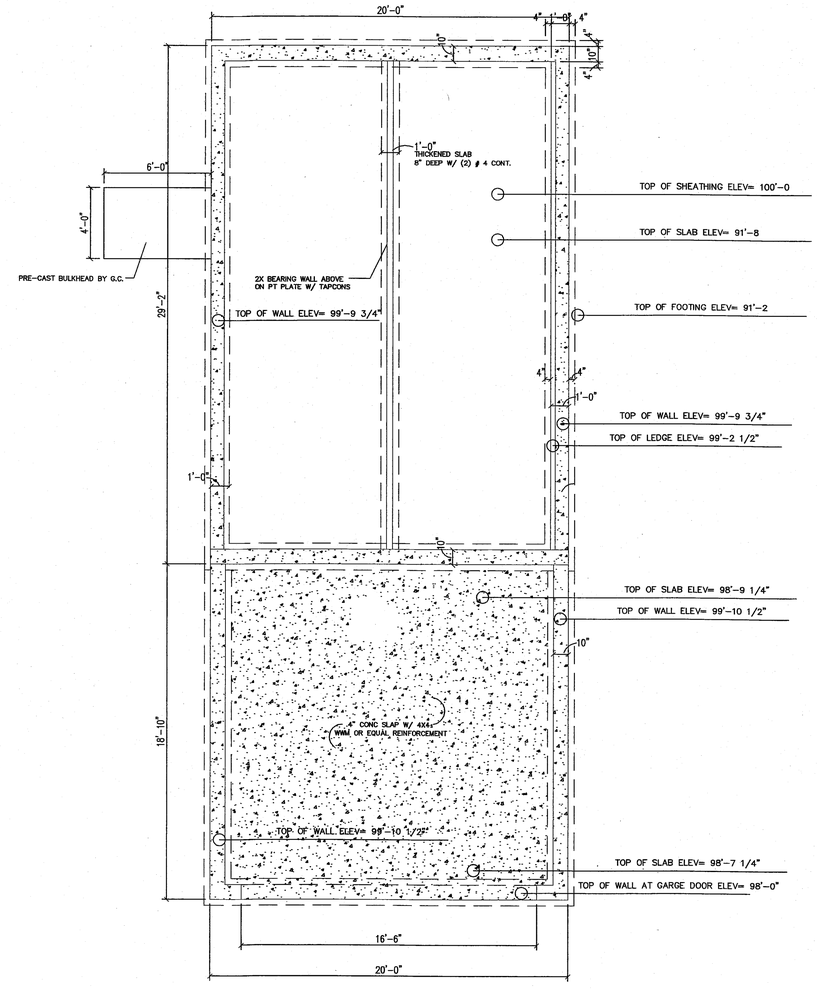
- Nail wall sheathing with 8d commons at 6" o.c. at panel edges, and 12" o.c. intermediate framing U.N.O. BLOCK AND NAIL ALL EDGES BETWEEN STUDS . Sheathing shall be continuous from bottom plate to top plate. Cut in "L" and "T" shapes around openings. Lap sheathing over rim joists min. 4" at all floors to tie upper and lower stud walls together. Minimum height of sheathing panels shall be 16" to assure that plates are tied to studs. Use minimum 3-8d per stud and nail plates with edge nail spacing.
- Sole plate at all perimeter walls and at designated shear walls shall be nailed as for braced panels with 3-16d x 3 1/2" long box nails (coated or deformed shank) per 16". 12d nails are not acceptable.

Minimum nailing shall comply with IBC Table 2304.9.1 except where more or larger nailing shown on drawings.

- All roof rafters, joists, trusses, beams shall be anchored to supports with metal framing anchors. Truss to truss connections specified by truss supplier, unless specifically noted on the drawings.
- Double joists under partitions where joists are parallel to partitions.
- Provide continuous wall studs each side of wall openings equal to one half or greater of number of studs interrupted by openings.
- All wall studs shall be continuous from floor to floor or from floor to roof.
- Cross bridge all dimension lumber roof and floor joists at midspan and provide solid blocking or rim joists at all joist supports and joist ends. Truss supplier shall specify all roof truss bracing and bridging. See prefabricated I-joist recommendations for blocking.
- Solid block between trusses at bearings.
- All prefabricated plywood Web I-type joists shall be installed per the manufacturer's recommendations. Do not cut or notch chords in any manner. Holes in webs shall not exceed manufacturer's published limit criteria.
- Metal connectors: Simpson Strong Tie unless otherwise noted, installed with number and type of nails to achieve maximum rated capacity. Note that heavy duty and skewed hangers may require special order.
- All beams shall be braced against rotation at points of bearing.
- Drypack grout all beam pockets full after beams are set.
- Unless otherwise indicated, install two lengths of solid blocking x joist depth x 12 inches long in floor framing under column loads. Columns must have a continuous load path to foundation.
- Lead holes for lag bolts shall be 60% to 70% of lag shank diameter in compliance with AITC criteria.

STRUCTURAL ERECTION AND BRACING REQUIREMENTS

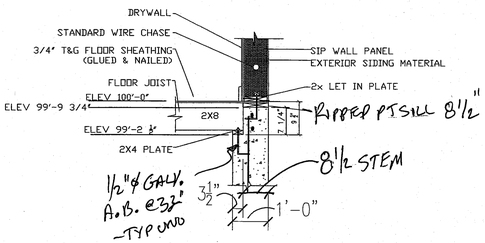
- The structural drawings illustrate the completed structure with all elements in their final positions, properly supported and braced. The contractor, in the proper sequence, shall provide proper shoring and bracing as may be required to achieve the final completed structure.
- These plans have been engineered for construction at one specific building site. Builder assumes ALL responsibility for use of these plans at Any Other building site. Plans shall not be used for construction at any other building site without specific review by the engineer.
- Observations of foundation reinforcing or framing required by the owner, lender, insurer, building department or any other party will be accomplished by the engineer at the owner's expense. At least 24 hours advance notice is requested.
- All slabs on grade shall be separated from adjacent structural and finish elements to allow free movement of the slab, unless specifically shown and noted otherwise.

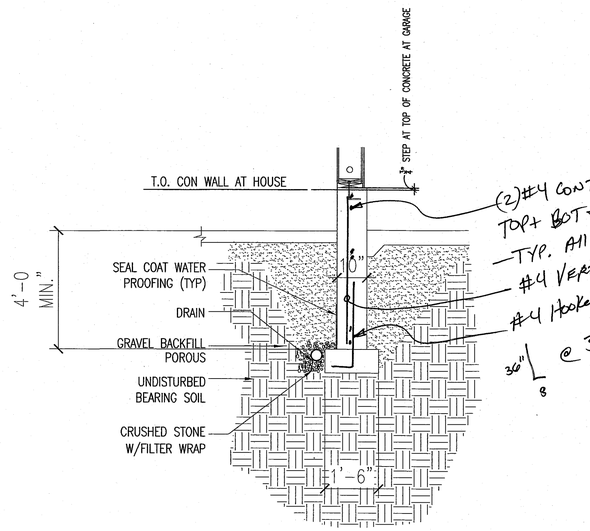


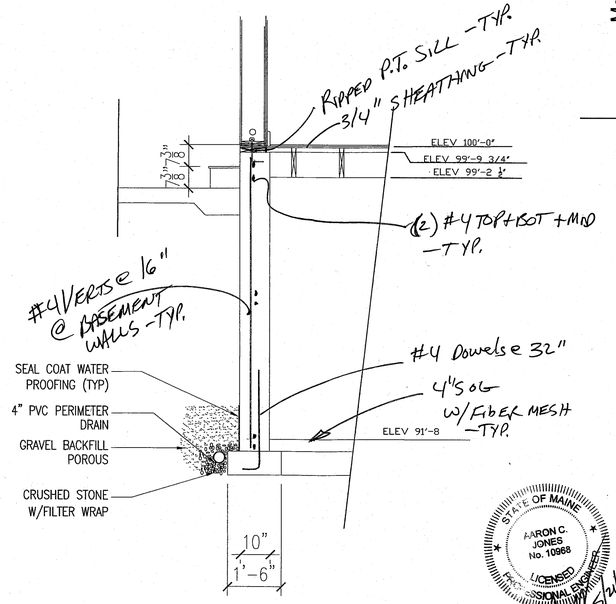
FOUNDATION PLAN

1/4"=1'-0"

0' 1' 5' 10'







TYPICAL SECTIONS

1/2"=1'-0"

0' 1' 5' 10'

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5/24/13

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