STRUCTURAL GENERAL NOTES

City of Portland Department Headquarters
212 Canco Rd.
Portland, ME

DESIGN LIVE LOADS: 2015 IBC/MUEBC, U.O.N.
Occupancy Category, Table 1604.5 II Standard

* Floors:
Office 50 psf
Light Storage 100 psf

CONCRETE AND REINFORCEMENT:

* Concrete shall conform to applicable provisions of ACI-301 and 318.
Minimum 28 day compressive strength ($f'c$) as follows:
Walls/Grade Beams: 4,000 psi w/4-6% air entrainment
Slabs: 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.
* Fibremesh: 100% virgin polypropylene, fibrillated fibers as manufactured by Fibremesh 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 #6 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 #6 around all four sides of all openings, extend min. 2'-0 beyond openings.
* Concrete cover over reinforcing: 1½" 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:

* Structural Beams: ASTM A992
* Angles, misc: ASTM A36
* Anchor Bolts: ASTM A307 or A36.
* Expansion Anchors shall be ICC-ES 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. 3/16" fillet welds, unless noted otherwise.
* 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 full depth web stiffeners each side of webs above and below columns. (3" or as noted)
* Attach wood nailer plates to beams with 1/2" diameter machine or carriage bolts at maximum 16" o.c., or 3/8" diameter bolts at 16" with glued contact face, or 5/32" diameter powder actuated drive pins at 12" o.c., U.O.N.

STRUCTURAL MASONRY:

Design is based on Unit Strength Method
MSJC, Section SC-1.4 B.2.
Compressive strength of masonry assembly used for design is 1500 psi, based on net-bedded area.
Hollow load-bearing concrete masonry (CMU) shall be medium-weight units conforming to ASTM C90,
Grade N1, minimum compressive strength 1,900 psi based on average net area.
Mortar shall be Type S conforming to ASTM C270.
Masonry cement shall not be used.
Provide full shoved mortar in all head and bed joints.
Admixtures shall not be added for any reason unless approved by the Architect.
Except for lintels, bond beam units shall be produced from standard vertically voided units with pre-cut knockout cross walls.
Grout used in masonry walls and block cells shall be:
coarse grout, as defined by ASTM C476, with a minimum cube strength = 2,000 psi.
3000 psi concrete using 3/8" dia. aggregate placed by vibrating unless an approved self consolidating mix is used
Lifts shall not exceed five feet in height
If grout pour height exceeds 5 feet, clean-out holes shall be provided.
Space continuous horizontal joint reinforcing at 16" maximum in all CMU walls.
Joint reinforcing shall be welded type with 9 gage side-wires and 9 gage trussed or ladder cross wires.
Reinforcing bars shall be as for reinforced concrete except as noted.
At splices, lap bars 48 diameters.
Provide reinforced grouted vertical cells
at corners, ends of walls, jambs of openings, each side of vertical control joints, and
at spacing shown on drawings.
Reinforcement shall be secured against displacement prior to grouting
by wire bar locators or other suitable devices at intervals not exceeding 200 bar diameters or 10 feet.
Where noted on the drawings,
provide clearance between masonry and structural elements, or
wrap steel with polyethylene film.
Provide vertical control joints in all masonry walls
as located on architectural drawings and
at 25'-0 maximum spacing.
at both jambs of openings wider than six feet.
Submit for review
Certificates for materials used in masonry construction indicating compliance with the contract documents
Special Inspection is required by design. See Special Inspection Notes.
MSJC **Level 2** Quality Assurance, MSJC Table 1.14.2
Prism and grout tests will be required prior to the start of masonry work shall consist of five (5) masonry prisms.
Test specimens shall be made by the masons, at the direction of the owner's representative,
with materials and techniques currently being used in the wall.
Specimens shall be protected and field cured for 48 hours before being transported to a testing agency.
The testing agent will be hired by the owner and shall be responsible for laboratory care and curing of specimens, testing, and reporting results to the owner, contractor, architect, and engineer in accordance with ASTM E447-92

LOOSE LINTELS:

Unless noted otherwise, provide loose lintels as follows: (One angle for each 4" of wall thickness to bear 6" minimum each end).
Openings to 4'-0: Angle 3-1/2 x 3-1/2 x 1/4
Openings 4'-1 to 5'-4: Angle 5 x 3-1/2 x 1/4
Openings 5'-5 to 6'-6: Angle 6 x 3-1/2 x 5/16

LIGHT GAUGE STRUCTURAL STEEL FRAMING:

Member forming shall conform to AISI Cold-Formed Steel Specifications.
All structural framing (studs, joists, track, runners, bracing, and bridging) shall be galvanized sheet steel conforming to ASTM A525, G-60.
Studs and joists 54 mils (16 gauge) and heavier shall be 50 ksi yield.
43 mils (18 gauge) and lighter shall be, 33 ksi yield.
Subcontractor shall provide bridging and blocking at a maximum of 6 foot spacing or as required for stability and stiffness of the final assembly wherever sheathing does not provide adequate bracing.
Supplier shall design required lintels and headers at openings where not specifically detailed.
Member sizes noted on drawings are in the SSMA standard nomenclature:
(##d)(sd)(##w)-(##t)
(##d) Member Depth (inches.hundredths)
(sd) Style Designation (see Style Designation in table below)
(##w) Flange Width (inches.hundredths)
(##t) Material Thickness (mils) (see Mils vs equivalent Gauge in table below)

(sd) Style Designation	Member Type		(##t) Mils Thickness	Equivalent Gauge
S	Punched C-Section		18	25
J	Unpunched C-Section		27	22
T	Track		30	20 – Drywall
U	Channel		33	20 – Structural
F	Furring Channel		43	18
			54	16
			68	14
			97	12

WOOD FRAMING:

* Dimension Lumber is designed and shall be supplied using BASE VALUES Design Criteria.
* Hem-Fir #2 and better (Maximum Moisture Content 19%) U.O.N.
* Plates: Sill plates: Pressure Treated Hem Fir 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.
* 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 (Coordinate with architectural).
* Roof sheathing: minimum 5/8" CDX plywood, or 19/32" OSB, APA 40/20, nailed (Coordinate with architectural).
* Wall sheathing: 1/2" CDX plywood or 7/16" OSB, APA 24/16, blocked and nailed (Coordinate with architectural).

* 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 "I" 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.

SHEATH ALL EXTERIOR WALLS. SHEATH INTERIOR WALLS AS SHOWN ON THE DRAWINGS.

* 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.

SHOP DRAWINGS:

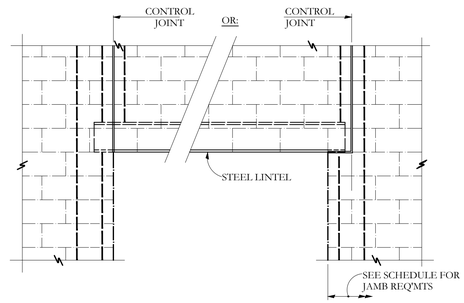
Construction Documents are copyrighted and shall not be copied for use as erection plans or shop details.
Use of SI Inc.'s electronic files as base for shop drawings requires prior approval by SI Inc,
signed release of liability by subcontractor,
payment of an administration fee of $100 per drawing sheet to SI Inc, and
deletion of SI Inc's name and Logo from all sheets so used.
The General Contractor and his subcontractors shall submit in writing any requests to modify the plans or specifications.
All shop and erection drawings shall be checked and stamped by the General Contractor prior to submission for Engineer's review.
Unchecked submittals will be returned without review.
Furnish one (1) reproducible and two (2) prints of shop and erection drawings to the Structural Engineer for review prior to fabrication for reinforcing steel, structural steel, steel trusses and decking, precast concrete, reinforced concrete, and masonry construction
Submit in a timely manner to permit ten (10) working days for review.
Shop drawings submitted for review do not constitute "in writing" unless specific suggested changes are clearly marked.
In any event, such changes by means of the shop drawing submittal process become the responsibility of the one initiating such change.

FIELD VERIFICATION OF EXISTING CONDITIONS:

Contractor shall thoroughly inspect and survey existing structure to verify conditions that affect the work shown on the drawings.
Contractor shall report any variations or discrepancies to the Architect before proceeding.

STRUCTURAL ERECTION AND BRACING REQUIREMENTS:

The structural drawings illustrate the completed structure with elements in their final positions, properly supported and braced.
These construction documents contain typical and representative details to assist the contractor.
Details shown apply at all similar conditions unless otherwise indicated.
Although due diligence has been applied to make the drawings as complete as possible, not every detail is illustrated, nor is every exceptional condition addressed.
All proprietary connections shall be installed in accordance with the manufacturers' recommendations.
All work shall be accomplished in a workmanlike manner and in accordance with the applicable code and local ordinances.
The general contractor is responsible for coordination of all work, including layout and dimension verification, materials coordination, shop drawing review, and the work of subcontractors.
Any discrepancies or omissions discovered in the course of the work shall be immediately reported to the architect for resolution.
Continuation of work without notification of discrepancies relieves the architect and engineer from all consequences.
Unless otherwise specifically indicated, the drawings do not describe methods of construction.
The contractor, in the proper sequence, shall perform or supervise all work necessary to achieve the final completed structure, and to protect the structure, workmen, and others during construction.
Such work shall include, but not be limited to, bracing, shoring for construction equipment, shoring for excavation, formwork, scaffolding, safety devices and programs of all kinds, support and bracing for cranes and other erection equipment.
Do not backfill against basement or retaining walls until supporting slabs and floor framing are in place and securely anchored, unless adequate bracing is provided.
Temporary bracing shall remain in place until all floors, walls, roofs and any other supporting elements are in place.
The architect and engineer bear no responsibility for the above items, and observation visits to the site do not in any way include inspection of them.



OPENING SIZE	LINTEL SIZE	GROUTED JAMB WIDTH
LESS THAN 4'-0	L 3-1/2" x 3-1/2" x 1/4"	8"
4'-0" TO 5'-4"	L 5" x 3-1/2" x 1/4"	8"
5'-5" TO 6'-6"	L 6" x 3-1/2" x 5/16"	1'-4"

* MINIMUM LINTEL EXCEPT AS NOTED, ONE ANGLE FOR EACH 4" OF WALL THICKNESS TO BEAR 6" EACH END

TYPICAL LOOSE LINTEL INSTALLATION
NO SCALE

PRICING SET -
NOT FOR CONSTRUCTION

Structural Integrity
Consulting Engineers, Inc.
46 Forest Ave.
Portland, ME, 04101
p. 207-774-6414
f. 866-793-7835
www.structuralitymg.com

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City of Portland Department Headquarters
212 Canco Rd. Portland, ME

Document Title

Sheet Title
General Notes, Etc.

Scale: AS NOTED

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Revisions

Sheet
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