GENERAL STRUCTURAL NOTES

DESIGN LIVE LOADS: 2009 IBC/ME BEC, U.O.N.
- Snow: 60 psf (Pg)
- Wind: 100 mph, exp B, 3 second gust
- Floor: 40 psf
- Elevated Parking Slab: 100 psf

FOUNDATION:
- Footings shall be placed on undisturbed natural soil or compacted fill tested and approved by soils engineer.
  - Maximum design soil pressure: 2,000 psf

BASEMENT WALLS:
- Design lateral soil pressure (equivalent fluid pressure)
  - Basement Walls: 45 pcf
- Backfill all retaining walls with free draining granular material except the top two feet.
- Provide perimeter drain system with invert minimum of 6" below bottom of basement slab. Extend perimeter drain to daylight or to sump.
- Slope perimeter grade away from building.
- Place concrete continuously without horizontal cold joints.
- Basement slab must be in place prior to backfilling, or provide adequate shoring and bracing.

CONCRETE AND REINFORCEMENT:
- Concrete shall conform to applicable provisions of ACI-301 and 318. Minimum 28 day compressive strength (F'c) as follows:
  - Footings: 3,000 psi
  - Walls: 4,000 psi w/4-6% air entrainment
  - Slabs: 4,000 psi w/4-6% air entrainment and fiber mesh
- 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 III 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 #4 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 30 diameters unless noted otherwise.
- Minimum 2 #4 around all four sides of all openings, extend min. 2'-0 beyond openings.
- Concrete cover over reinforcing: 1 1/2" 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.

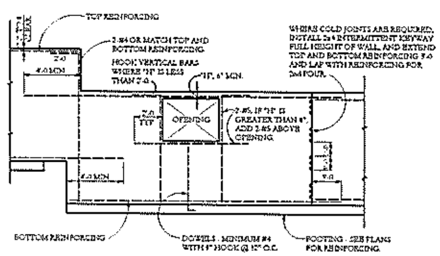
STRUCTURAL STEEL:
- Angles, misc.: ASTM A36
- W shapes: ASTM A992
- HSS: ASTM A500 GRADE B
- Anchor Bolts: ASTM A36
- Expansion Anchors shall be ICC-ES approved, installed in accordance with manufacturers specifications.
  - In concrete: Wedge Type

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: SPF No 2 and better
  - Hem Fir 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
    - 2x 6 over 8'-0: No. 2 and better
- Laminated Veneer Lumber (LVL): Manufactured 1 3/4" wide Microllam (ML) by Boise/Trus Joist or equivalent. Fb=2,600 psi, E=1,900,000 psi, Fv=285 psi, depth noted on plans.
- 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" tongue & groove glued and nailed.
  - Wall sheathing: 1/2" Gypsum nailed or screwed (interior). 7/16" OSB nail base insulated panel (exterior walls)
  - Roof sheathing: 19/32" OSB base insulated panel, fastened w/ #10x4" wood screw @ 12" OR 16ds at 4" max
- Nail wall sheathing with 10d common 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 at for braced panels with 3-16d x 3 1/2" long box nails (round or deformed shank) per 16". 12d nails are not acceptable.
  SHEATH ALL EXTERIOR WALLS.
- Minimum nailing shall comply with IBC Table 2304.9.1 except where more or larger nailing shown on drawings.
- All roof rafters, joists, beams shall be anchored to supports with metal framing anchors.
- 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.
- 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 nailing.
- 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.

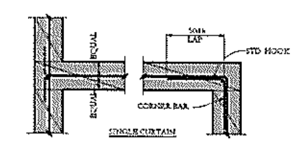
STRUCTURAL ERECTION AND BRACING REQUIREMENTS
- The structural drawings illustrate the completed structure with all elements in their final positions, properly supported and braced. The contractor, in the proper sequence, shall provide proper shoring and bracing as may be required to achieve the final 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.

ABBREVIATIONS KEY

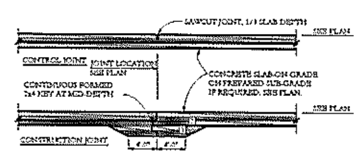
AB	Anchor Rod (Bolt)	EF	Each Face	MACH	Machine	SC	Slip Critical
ADDL	Additional	EJ	Expansion Joint	MATY	Masonry	SCH	Schedule
ADJ	Adjustable	ELEV	Elevation	MATL	Material	SDST	Self Drilling Self Tapping
AFF	Above Finished Floor	ELEC	Electric (Electrical)	MAX	Maximum	SECT	Section
ALT	Alternate	ENGR	Engineer	MB	Machine Bolt	SF	Square Feet
AMT	Amount	EQ	Equal	MECH	Mechanical	SHT	Sheet
ANCH	Anchor, Anchorage	EQUIP	Equipment	MEZZ	Mezzanine	SHTG	Sheathing
APPROX	Approximate	EQUIV	Equivalent	MFR	Manufacture, -er, -ed	SIM	Similar
ARCH	Architect, -ural	ES	Each Side	MIN	Minimum	SLH	Short Leg Horizontal
ATR	All Thread Rod	EST	Estimate	ML	Microllam (Trus Joist brand LVL)	SLV	Short Leg Vertical
AVG	Average	E-W	East to West	MO	Masonry Opening	SOG	Slab on Grade
BC	Bottom of Concrete	EXC	Excavate	MTL	Metal	SP	Spaces
BL	Brick Ledge	EXP	Expansion	NF	Near Face	SPEC	Specifications
BLK	Block	EXT	Exterior	NIC	Not In Contract	SQ	Square
BLKG	Blocking	FND	Foundation	NS	Near Side	ST	Steel Tube
BM	Beam	FF	Far Face, Finished Floor	N-S	North to South	STD	Standard
BOT	Bottom	F-F	Face to Face	NTS	Not to Scale	STIFF	Stiffener
BRG	Bearing	FIG	Figure	OCJ	OSHA Column Joist	STL	Steel
BW	Bottom of Wall	FL	Flush	OD	Outside Diameter	STRUCT	Structure, -al
CB	Counterbore	FLG	Flange	OF	Outside Face	SUPT	Support
CF	Cubic Foot	FLR	Floor	OH	Opposite Hand	SY	Square Yard
CG	Center of Gravity	FO	Face of	OPNG	Opening	SYM	Symmetrical
CIP	Cast in Place	FP	Full Penetration	OPP	Opposite	T&B	Top and Bottom
CJ	Construction Joint Control (saw)	FS	Far Side	OSB	Oriented Strand Board	T&G	Tongue and Groove
CLG	Ceiling	FTG	Footing	PAF	Powder Actuated Fastener	TB	Top of Beam
CLR	Clear	GA	Gage (Gauge)	PC	Precast	TC	Top of Concrete
CM	Construction Manager (Management)	GALV	Galvanized	PCF	Pounds Per Cubic Foot	TD	Top of Deck
CMU	Concrete Masonry Unit	GC	General Contractor	PEN	Penetration	THD	Thread
COL	Column	GEN	General	PERP	Perpendicular	THK	Thick, -ness
COM	Common	GL	Glue Laminated (Glulam)	PL	Property Line	TJ	Top of Joist
COMB	Combination	GND	Ground	PLF	Pounds per Linear Foot	TL	Total Load
CONC	Concrete	GR	Grade	PNL	Panel	TPG	Topping
CONN	Connection	GT	Girder Truss	PP	Panel Point	TRANS	Transverse
CONT	Continue (Continuous)	GYP BD	Gypsum Board	PS	Prestressed	TW	Top of Wall
COORD	Coordinate, -tion	HAS	Headed Anchor Stud	PSF	Pounds per Square Foot	TYP	Typical
CS	Countersink	HORIZ	Horizontal	PSI	Pounds per Square Inch	ULT	Ultimate
CTR	Center	HT	Height	PSL	Parallel Strand Lumber (generic term)	UNO	Unless Noted Otherwise
CY	Cubic Yard	ID	Inside Diameter	PT (1)	Post Tensioned	VERT	Vertical
DAB	Deformed Anchor Bar	IF	Inside Face	PT (2)	Pressure Treated	VIF	Verify in Field
DET	Detail	INT	Interior (Intermediate)	PTN	Partition	WA	Wedge Anchor
DEV	Deviation	JB	Joist Bearing	PWD	Plywood	WP	Work Point
DIAG	Diagonal	JST	Joist	QTY	Quantity	WT	Weight
DIM	Dimension	JT	Joint	R	Radius	WWF	Welded Wire Fabric
DL	Dead Load	K	Kip (1,000 lbs)	RB	Reference (refer to)	XS	Extra Strong
DN	Down	LD	Load	RECT	Rectangle	XSECT	Cross-section
DP	Drilled Pier	LL	Live Load	REINF	Reinforce, -ed, -ing	XXS	Double Extra Strong
DT	Double Tee	LLH	Long Leg Horizontal	REQ	Required		
DWG	Drawing	LLV	Long Leg Vertical	REQMT	Requirement	(E)	Existing
DWL	Dowel	LOC	Location	RET	Retaining	(N)	New
EA	Each	LSL	Laminated Strand Lumber (generic term)	RM	Room	(R)	Remove
ECC	Eccentric	LT	Light	RMO	Rough Masonry Opening		
[illegible]	[illegible]	LVL	Laminated Veneer Lumber (generic term)	RO	Rough Opening		



TYPICAL REINFORCING AT STEPS AND OPENINGS
NO SCALE



TYPICAL CONCRETE WALL INTERSECTIONS



TYPICAL JOINTS AT INTERIOR SLAB ON GRADE
NO SCALE

Structural Drawing Index

S1-0	General Notes, Etc.
S1-1	Foundation Plan
S1-2	Roof Framing Plan
S2-1	Sections

PROGRESS ONLY
NOT FOR CONSTRUCTION

PROJECT NO. 14-0066
PROJECT NAME 218 Washington Ave Found. Portland, Maine
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SHEET TITLE GENERAL NOTES
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S1-0

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