Reviewed for Code Compliance
Inspections Division
Approved as Noted
Date: 02/02/17

GENERAL STRUCTURAL NOTES

New Two-Family Dwelling
Danforth St.
Portland, ME.

SI Job#: 16-0117

DESIGN LIVE LOADS: 2009 IBC, MUEBC
* Snow 60 psf (P_g)
* Wind 100 mph, exp B, 3 second gust
* Floor 40 psf

FOUNDATION:
* Refer to soils report # 16067, dated April 27, 2016, by Summit Geoengineering Services. Soils engineer shall verify soil conditions and types during excavation and prior to concrete placement.
* Footings shall be placed on crushed stone, undisturbed natural soil or compacted fill tested and approved by soils engineer.
* Allowable bearing pressure = 4,000 psf. Bear on soil approved by the Soils Engineer. –typ
* Existing foundation walls are assumed acceptable for existing soil retainage and new building loads

FOUNDATION WALLS:
* Design lateral soil pressure (equivalent fluid pressure):
  Walls: 50 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.

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
  Foundation Walls: 4,000 psi w/4-6% air entrainment
  Interior Slabs: 3,500 psi w/fibermesh
  Exterior 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 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 #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 50 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.

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
  SPF 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 Microllams (ML) by Ilevel/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: 7/16" plywood or OSB
  Roof sheathing: 19/32" plywood or OSB
* Nail wall sheathing with 10d commons at 4" 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.
  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 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.

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
  -pre-engineered wood trusses
  -engineered lumber joist
  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.
* The contractor, in the proper sequence, shall provide proper shoring and bracing as may be required to achieve the final completed structure.
* 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.

* 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	MASY	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			SOG	Slab on Grade
BC	Bottom of Concrete	EXC	Excavate	MO	Masonry Opening	SP	Spaces
BL	Brick Ledge	EXP	Expansion	MTL	Metal	SPEC	Specifications
BLK	Block	EXT	Exterior	NF	Near Face	SQ	Square
BLKG	Blocking	FND	Foundation	NIC	Not In Contract	ST	Snug Tight
BM	Beam	FF	Far Face, Finished Floor	NS	Near Side	STD	Standard
BOT	Bottom	F-F	Face to Face	N-S	North to South	STIFF	Stiffener
BRG	Bearing	FIG	Figure	NTS	Not to Scale	STL	Steel
BW	Bottom of Wall	FL	Flush	OCJ	OSHA Column Joist	STRUCT	Structure, -al
CB	Counterbore	FLG	Flange	OD	Outside Diameter	SUPT	Support
CF	Cubic Foot	FLR	Floor	OF	Outside Face	SY	Square Yard
CG	Center of Gravity	FO	Face of	OH	Opposite Hand	SYM	Symmetrical
CIP	Cast in Place	FP	Full Penetration	OPNG	Opening	T&B	Top and Bottom
CJ	Construction Joint (Control Joint)	FS	Far Side	OPP	Opposite	T&G	Tongue and Groove
		FTG	Footing	OSB	Oriented Strand Board	TB	Top of Beam
CLG	Ceiling	GA	Gage (Gauge)	PAF	Powder Actuated Fast'nr	TC	Top of Concrete
CLR	Clear	GALV	Galvanized	PC	Precast	TD	Top of Deck
CM	Construction Manager (Management)	GC	General Contractor	PCF	Pounds Per Cubic Foot	THD	Thread
		GEN	General	PEN	Penetration	THK	Thick, -ness
CMU	Concrete Masonry Unit	GL	Glue laminated (Glulam)	PERP	Perpendicular	TJ	Top of Joist
COL	Column	GND	Ground	PL	Property Line	TL	Total Load
COM	Common	GR	Grade	PLF	Pounds per Linear Foot	TPG	Topping
COMB	Combination	GT	Girder Truss	PNL	Panel	TRANS	Transverse
CONC	Concrete	GYP BD	Gypsum Board	PP	Panel Point	TW	Top of Wall
CONN	Connection	HAS	Headed Anchor Stud	PS	Prestressed	TYP	Typical
CONT	Continue (Continuous)	HORIZ	Horizontal	PSF	Pounds per Square Foot	ULT	Ultimate
COORD	Coordinate, -tion	HT	Height	PSI	Pounds per Square Inch	UNO	Unless Noted Otherwise
CS	Countersink	ID	Inside Diameter	PSL	Parallel Strand Lumber (generic term)	VERT	Vertical
CTR	Center	IF	Inside Face			VIF	Verify in Field
CY	Cubic Yard	INT	Interior (Intermediate)	PT (1)	Post Tensioned	VWA	Verify with Architect
DAB	Deformed Anchor Bar	JB	Joist Bearing	PT (2)	Pressure Treated	WA	Wedge Anchor
DET	Detail	JST	Joist	PTN	Partition	WP	Work Point
DEV	Develop	JT	Joint	PWD	Plywood	WT	Weight
DIAG	Diagonal	K	Kip (1,000 lbs.)	QTY	Quantity	WWR	Welded Wire Reinforc.
DIM	Dimension	LD	Load	R	Radius	XS	Extra Strong
DL	Dead Load	LL	Live Load	RE	Reference (refer to)	XSECT	Cross-section
DN	Down	LLH	Long Leg Horizontal	RECT	Rectangle	XXS	Double Extra Strong
DP	Drilled Pier	LLV	Long Leg Vertical	REINF	Reinforce, -ed, -ing	(E)	Existing
DT	Double Tee	LOC	Location	REQ	Required	(N)	New
DWG	Drawing	LSL	Laminated Strand Lumber (generic term)	REQMT	Requirement	(R)	Remove
DWL	Dowel			RET	Retaining		
EA	Each	LT	Light	RM	Room		
ECC	Eccentric	LVL	Laminated Veneer Lumber (generic term)	RMO	Rough Masonry Opening		
E-E	End to End			RO	Rough Opening		

Structural Drawing Index

S-1.0	General Notes, Etc.
S-1.1	Foundation Plan
S-1.2	First Floor Framing Plan
S-1.3	Second Floor/ Low Roof Framing Plan
S-1.4	Roof Framing Plan
S-2.1	Details
S-2.2	Details

TYPICAL JOINTS AT INTERIOR SLAB-ON-GRADE

TYPICAL CONCRETE WALL INTERSECTIONS

TYPICAL REINFORCING AT STEPS AND OPENINGS
NO SCALE

KAPLAN THOMPSON ARCHITECTS
102 EXCHANGE STREET
PORTLAND, ME 04101
207-842-2888
KAPLANTHOMPSON.COM

PROJECT:
NEW TWO-FAMILY DWELLING

380 DANFORTH
PORTLAND ME 04101

STRUCTURAL :

Structural Integrity Consulting Engineers
77 Oak Street
Portland, ME, 04101
p. 207-774-4614
f. 866-793-7835
www.structuralinteg.com

BUILD WITH CONFIDENCE
© 2016 Structural Integrity Consulting Engineers, Inc.

STATE OF MAINE
AARON C. JONES
No. 10968
LICENSED PROFESSIONAL ENGINEER
11-29-16

PROJECT NO:	16-0117
DATE:	11/29/16
DRAWN BY:	JCS
PHASE:	

GENERAL NOTES, ETC.

S-1.0