STRUCTURAL GENERAL NOTES

Tipo Pergola
182 Ocean Ave. Portland, ME
SI #: 17-0080

DESIGN LOADS: International Building Code; IBC 2009, except as noted
Occupancy Category, Table 1604.5 II Standard

Roof:
Ground Snow, (Pg) 60 psf (used for drifting calculations)

FOUNDATION DESIGN:
" Foundations are designed without an engineer's soil investigation. Foundation design criteria was assumed for purposes of foundation design and shall be confirmed by a soils engineer, at owner's expense, prior to construction. (This procedure may require revisions to foundation design, at additional expense to the owner, if soils engineer determines that such design criteria are inappropriate for this building site.)
* Footings shall be placed on undisturbed natural soil or compacted fill tested and approved by soils engineer.
* Maximum design soil pressure: 1,500 psf

REINFORCED CONCRETE:
We encourage the use of blast furnace slag in mix designs.
Design is based on "Building Code Requirements for Reinforced Concrete"(ACI 318). Concrete work shall conform to "Standard Specifications for Structural Concrete" (ACI 301).
Structural concrete shall have the following properties:

Intended Use	f'c, psi 28day	Max W/C Ratio	Maximum Aggregate	Slump inches	Entrained Air Percent ±1.5%	Cement Type	Admixtures, Comments
Footings	3,000	.6	¾" Stone	4	--	I/II	

Detailing, fabrication, and placement of reinforcing steel shall be in accordance with the Manual of Standard Practice for Detailing Reinforced Concrete Structures (ACI 315).
Welded wire fabric shall conform to ASTM A185.
Reinforcing bars shall conform to ASTM A615,
Grade 60,
except ties or bars shown to be field-bent, which shall be Grade 40.
Epoxy coated reinforcing bars shall conform to ASTM 775.
Zinc coated (galvanized) reinforcing bars shall conform to ASTM 767.
Bars to be welded shall conform to ASTM 706.
At splices, lap bars 50 diameters unless noted otherwise.
At corners and intersections, make horizontal bars continuous or provide matching corner bars.
Around openings in walls and slabs, provide 2-#5, extending 2'-0 beyond edge of opening.
In continuous members, splice top bars at mid-span and splice bottom bars over supports.
Provide intermittent shear keys at all construction joints and elsewhere as shown on the drawings.
Except as noted on the drawings, concrete protection for reinforcement in cast-in-place concrete shall be as follows:
a. Cast against and permanently exposed to earth 3"
b. Exposed to earth or weather:
#6 through #18 bars 2"
#5 bar, W31 or D31 wire, and smaller 1-1/2"
c. Not exposed to weather or in contact with ground:
Slabs, walls, joists: #11 bar and smaller 3/4"
Beams, columns:
Primary reinforcement 1-1/2"
Stirrups, ties, spirals 1-1/2"
Fibremesh admixture shall be 100% virgin polypropylene, fibrillated fibers as manufactured by Fibremesh Co. or equal per ASTM C-1116 type 111 4.1.3 and ASTM C-1116 performance level one, 1.5 lbs per cubic yard of concrete.
Anchor bolts and rods for beam and column-bearing plates shall be placed with setting templates.
Permanent corrugated steel forms for concrete floor slabs shall be manufactured and erected according to the "Specifications and Code of Standard Practice" of the Steel Deck Institute.
All concrete work is subject to inspection by a qualified special inspector employed by the owner in accordance with IBC Section 1704.4.

STRUCTURAL STEEL:
Structural steel shall be detailed, fabricated, and erected in accordance with AISC Specifications, 1989, and Code of Standard Practice, 2000.
· Structural Beams: ASTM A992
· Angles, misc.: ASTM A36
· Anchor Bolts: ASTM A307 or A36.
· Standard pipe columns: ASTM A 53, Grade B.
· Tube Columns: ASTM A500, Grade B, 46 ksi
· Connector bolts: ASTM A307
· Adjustable pipe columns:
3" diameter, 11 (eleven) gage, shall be certified by the manufacturer for a safe load capacity of 13,500 lbs. at 7'-6"
3" diameter "Heavy Duty" schedule 40 (3.5" O.D.) Columns shall be certified for 28,000 lbs. at 7'-6".
Maximum screw extension 2".
· 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

STRUCTURAL WOOD FRAMING:
In-Grade Base Values have been used for design.
2x framing shall be Spruce-Pine-Fir S4S No. 2 and better unless noted.
All lumber shall be 19% maximum moisture content, unless noted.
Solid timber beams and posts shall be Douglas Fir-Larch No. 1.
Studs shall be Spruce-Pine-Fir S4S No. 2 and better.
Top and bottom plates shall be Spruce-Pine-Fir S4S No. 2 and better.
Wood in contact with concrete shall be pressure-treated Spruce-Pine-Fir S4S No. 2 or Southern Yellow Pine.
Conventional light framing shall comply with IBC Section 2308.
Except as noted otherwise, minimum nailing shall be provided as specified in IBC Table 2304.9.1 "Fastening Schedule."
Plywood and oriented strand board (OSB) floor and roof sheathing shall be APA graded with panel identification index, thickness, and nailing as noted on the drawings.
Nail wall sheathing with 8d commons at 4" o.c. at panel edges, and 12" o.c. at intermediate framing except as noted.
SHEATH ALL EXTERIOR WALLS. SHEATH INTERIOR WALLS AS SHOWN ON THE DRAWINGS. 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.
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.
Provide solid blocking between joists under jamb studs of openings.
Pre-engineered, prefabricated trusses shall be designed for the fabricator by a Professional Engineer Registered in the State of construction, and shall comply with Code Requirements.
Truss to truss connections specified shall be by truss supplier, unless specifically noted on the drawings.
Lower chord of gable end trusses shall be anchored to wall plate with framing anchors at 4'-0 spacing and laterally braced to roof framing at 8'-0 spacing.
Truss supplier shall specify all floor and roof truss bracing and bridging.
All roof rafters, joists, trusses, and beams shall be anchored to supports with metal framing anchors.
Light gage framing anchors shown or required, shall be Simpson "Strong Tie" and installed with the number and type of nails recommended by the manufacturer to develop the rated capacity.
Note that heavy-duty hangers and skewed hangers may not be stocked locally and require special order from the factory.
All beams and trusses shall be braced against rotation at points of bearing.
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 screws shall be drilled in accordance with Table 6.23 of the AITC Timber Construction Manual, 3rd edition.

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.

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	WA	Wedge Anchor
DAB	Deformed Anchor Bar	JB	Joist Bearing	PT (2)	Pressure Treated	WP	Work Point
DET	Detail	JST	Joist	PTN	Partition	WT	Weight
DEV	Develop	JT	Joint	PWD	Plywood	WWF	Welded Wire Fabric
DIAG	Diagonal	K	Kip (1,000 lbs.)	QTY	Quantity	XS	Extra Strong
DIM	Dimension	LD	Load	R	Radius	XSECT	Cross-section
DL	Dead Load	LL	Live Load	RE	Reference (refer to)	XXS	Double Extra Strong
DN	Down	LLH	Long Leg Horizontal	RECT	Rectangle		
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

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April 27th, 2017

Reviewed for Code Compliance
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TIPO - PATIO RENOVATION

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SCALE:	AS NOTED

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S1-0