



CLIENT:
RICHARD RENNER ARCHITECTS
35 PLEASANT AVE.
PORTLAND, MAINE

REDMAN RESIDENCE : STUDIO ADDITION
PORTLAND, MAINE
480 CAPISIC STREET
BUILDING ADDITION

ISSUED

No.	DR.	CHKD.	DATE	DESCRIPTION
A	BY	BT	6-22-15	ISSUED FOR PERMIT
	PR	PR		

SHEET TITLE:
STRUCTURAL NOTES

DESIGNED: PR
DRAWN: PR
DATE: 3-24-15
PROJECT NUMBER: 15-048

S0.0

GENERAL NOTES:

- REFERENCE ARCHITECTURAL PLANS FOR DIMENSIONS NOT SHOWN. REFERENCE MECHANICAL, ELECTRICAL, AND ARCHITECTURAL PLANS FOR SIZES AND LOCATIONS OF WALL AND SLAB OPENINGS, DUCTS, PIPING, CURBS, AND EQUIPMENT PADS. IN THE EVENT OF A CONFLICT BETWEEN THE DRAWINGS, SPECIFICATIONS, OR NOTES ON THE DRAWINGS, THE ENGINEER SHALL BE NOTIFIED PRIOR TO CONSTRUCTION.
- EXISTING DIMENSIONS AND CONDITIONS ARE FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY ALL EXISTING CONSTRUCTION AND DIMENSIONS IN THE FIELD PRIOR TO CONSTRUCTION OR FABRICATION. ALL DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER PRIOR TO COMMENCING WORK.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF DEVIATIONS OR CHANGES ARE REQUIRED TO THE CONTRACT DOCUMENTS OR APPROVED SHOP DRAWINGS DUE TO INTERFERENCES, FABRICATION ERRORS, OR OTHER CAUSES.
- THE STRUCTURE IS SELF-SUPPORTING AND STABLE AFTER THE ENTIRE BUILDING IS COMPLETELY CONSTRUCTED. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ERECTION PROCEDURES AND SEQUENCING DURING CONSTRUCTION AND ERECTION TO PROVIDE AND ENSURE LOCAL AND OVERALL STABILITY OF THE BUILDING AND ITS COMPONENTS DURING CONSTRUCTION AND ERECTION. THE CONTRACTOR SHALL RETAIN A LICENSED STRUCTURAL ENGINEER TO DESIGN TEMPORARY BRACING/SHORING AND DETERMINE WHERE THE TEMPORARY BRACING/SHORING IS NEEDED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ERECTION PROCEDURES, SEQUENCING AND FOR COMPLYING WITH ALL APPLICABLE SAFETY REGULATIONS DURING THE WORK.

DESIGN CRITERIA:

- BUILDING CODES:**
INTERNATIONAL BUILDING CODE (IBC), 2009 EDITION
ASCE 7-05 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES
- LIVE LOADS:**
FIRST FLOOR LIVING AREAS = 40 PSF
- SNOW LOADS:**
GROUND SNOW LOAD (Pg) = 60 PSF
SNOW EXPOSURE FACTOR (Ce) = 1.0
SNOW LOAD IMPORTANCE FACTOR (Is) = 1.0
THERMAL FACTOR (ct) = 1.1
FLAT ROOF SNOW LOAD (Pf) = 47 PSF + DRIFT
- WIND LOADS:**
BASIC WIND SPEED = 100 MPH
IMPORTANCE FACTOR (Iw) = 1.0
WIND EXPOSURE B
MAIN WINDFORCE-RESISTING SYSTEM (INCLUDES WINDWARD + LEeward) = 20 PSF COMPONENTS & CLADDING - PER ASCE 7-05
- SEISMIC CRITERIA:**
BASED ON EQUIVALENT LATERAL FORCE PROCEDURE
OCCUPANCY CATEGORY II
SOIL SITE CLASSIFICATION = D
SEISMIC IMPORTANCE FACTOR (Ie) = 1.0
DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETER:
Sds = .37
Sd1 = .16
SEISMIC DESIGN CATEGORY C
RESPONSE MODIFICATION COEFFICIENT (R) = 6.5 (WOOD FRAMED SHEAR WALLS)
SEISMIC RESPONSE COEFFICIENT (Cs) = 0.057

FOUNDATION NOTES:

- FOUNDATIONS HAVE BEEN DESIGNED USING A PRESUMED ALLOWABLE BEARING PRESSURE PER TABLE 1806.2 OF THE INTERNATIONAL BUILDING CODE BASED ON TYPICAL SOILS FOUND IN THIS AREA. IF CLAY, MUD, ORGANIC SILT, PEAT OR UNPREPARED FILL IS FOUND DURING CONSTRUCTION, NOTIFY ENGINEER IMMEDIATELY, AS THE ALLOWABLE LOADS USED IN DESIGN WILL NEED TO BE VERIFIED BY A GEOTECHNICAL ENGINEER. CASCO BAY ENGINEERING RECOMMENDS PROCURING A GEOTECHNICAL ENGINEER TO VERIFY EXISTING SOIL CONDITIONS.
- ALLOWABLE SOIL BEARING CAPACITY USED IN DESIGN = 2,000 PSF
- MINIMUM FROST DEPTH COVER = 4"-6" FOR EXTERIOR FOOTINGS BELOW FINAL EXTERIOR GRADE.
- EXCAVATION, BACKFILL, COMPACTION, GRADATION REQUIREMENTS, FOUNDATION DRAINAGE AND PERMANENT DEWATERING REQUIREMENTS SHALL BE PROVIDED BY A GEOTECHNICAL ENGINEER.
- CONCRETE SLABS ON GRADE SHALL BE CONSTRUCTED ON A MINIMUM 12" THICK LAYER OF PROPERLY COMPACTED STRUCTURAL FILL, UNLESS OTHERWISE DIRECTED BY A GEOTECHNICAL ENGINEER.
- FOUNDATIONS SHALL BEAR ON UNDISTURBED NATIVE SOIL, UNLESS NOTED OTHERWISE. THE CONTRACTOR SHALL NOTIFY THE GEOTECHNICAL AND STRUCTURAL ENGINEER IF ANY UNSUITABLE SOILS ARE ENCOUNTERED PRIOR TO PLACING FOUNDATIONS.
- FOUNDATION WALLS AND SLAB-ON-GRADES SHALL REACH 75% OF THE 28 DAY COMPRESSIVE STRENGTH PRIOR TO BACKFILLING. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING/BRACING FOR WALLS WHEN BACKFILL IS PLACED PRIOR TO CONCRETE ACHIEVING ITS 75% OF ITS 28 DAY STRENGTH. CONTRACTOR SHALL PROVIDE TEMPORARY SHORING/BRACING FOR WALLS AND OTHER STRUCTURAL ELEMENTS PRIOR TO INSTALLATION OF PERMANENT BRACING/FLOOR/STRUCTURE.
- PROTECT FOUNDATIONS FROM FROST AND KEEP BOTTOM OF TRENCH DRY DURING CONSTRUCTION. IF GROUNDWATER IS ENCOUNTERED NEAR OR ABOVE THE BASE OF THE FOOTINGS, EXCAVATIONS SHALL BE DEWATERED DURING CONSTRUCTION. SURFACE WATER SHALL BE DIVERTED AWAY FROM EXCAVATIONS.
- DO NOT UNDERMINE EXISTING FOUNDATIONS OF ADJACENT STRUCTURES. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SHORING, BRACING AND UNDERPINNING OF EXISTING STRUCTURES DURING EXCAVATION, BACKFILLING, AND CONSTRUCTION. CONTRACTOR SHALL SLOPE EXCAVATIONS TO ACHIEVE SOIL STABILITY.

CONCRETE NOTES:

- ALL WORK SHALL CONFORM TO IBC 2009 REFERENCED EDITIONS OF "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318) AND "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS" (ACI 301).
- REQUIRED CONCRETE PARAMETERS ARE AS FOLLOWS:

LOCATION	MAX W/C RATIO	f'c	AIR-ENTRAIMENT
INT. WALLS/ELEV. SLABS	.52	3,000 PSI	2% ± 1/2%
FOUNDATIONS, FOOTINGS, & FOUNDATION WALLS	.45	4,500 PSI	6% ± 1/2%
INT. SLAB-ON-GRADE	.45	4,500 PSI	2% ± 1/2%
EXT. SLAB-ON-GRADE	.45	4,500 PSI	6% ± 1/2%

WHERE: W/C = WATER TO CEMENT RATIO AND
f'c = COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS

USE PORTLAND CEMENT TYPE II, IN CONFORMANCE WITH ASTM 150
AIR ENTRAINING ADMIXTURES SHALL CONFORM TO ASTM C 260
ADMIXTURES SHALL CONFORM TO ASTM C 494
FLY ASH USED AS ADMIXTURES SHALL CONFORM TO ASTM C 618

- MAXIMUM AGGREGATE SIZE SHALL BE 3/4", IN CONFORMANCE WITH ASTM C33.
- CALCIUM CHLORIDE OR ADMIXTURES CONTAINING CALCIUM CHLORIDE IS NOT PERMITTED.
- MAXIMUM SLUMP AFTER THE ADDITION OF A WATER-REDUCING ADMIXTURE IS 6 INCHES.
- CONTRACTOR SHALL NOT PLACE CONCRETE ON FROZEN GROUND OR IN WATER. ADEQUATE EQUIPMENT SHALL BE PROVIDED FOR HEATING CONCRETE MATERIALS AND PROTECTING CONCRETE DURING NEAR-FREEZING OR FREEZING WEATHER. REFERENCE ACI 308, AS NOTED ABOVE, FOR RECOMMENDATIONS FOR COLD WEATHER CONCRETING.
- VERTICAL CONSTRUCTION JOINTS IN WALLS SHALL NOT EXCEED A SPACING OF 40 FEET, U.N.O.
- ANCHOR BOLTS SHALL BE HEADED RODS AND CONFORM TO ASTM F1554, GRADE 36 KSI WELDABLE STEEL, U.N.O. ON DRAWINGS. PROVIDE GALVANIZED ANCHOR BOLTS WHERE IN CONTACT WITH PRESSURE TREATED LUMBER.
- REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60, DEFORMED BARS.
- WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185 AND BE PROVIDED IN FLAT SHEETS. PROVIDE ADEQUATE SUPPORT FOR WWF TO ENSURE PROPER LOCATION WITHIN SLAB DURING CONCRETE PLACEMENT.
- MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE AS FOLLOWS:
A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3 INCHES
B. FORMED CONCRETE IN CONTACT WITH EARTH OR EXPOSED TO WEATHER 2 INCHES
C. CONCRETE NOT EXPOSED TO EARTH OR WEATHER IN SLABS & WALLS 1 1/2 INCHES
- WELDING OF REINFORCEMENT IS NOT PERMITTED.
- PROVIDE NON-SHRINK GROUT BENEATH LEVELING PLATES & BEARING PLATES w/ MINIMUM COMPRESSIVE STRENGTH OF 7,000 PSI AT 28 DAYS.
- PROVIDE CONTINUOUS REINFORCEMENT AT ALL CORNERS AND INTERSECTIONS, SEE TYPICAL FOUNDATION WALL DETAILS ON FOUNDATION DETAILS SHEET.
- REINFORCING BARS AND ALL EMBEDDED ITEMS, INCLUDING ANCHOR BOLTS, MUST BE ACCURATELY PLACED AND ADEQUATELY SECURED BEFORE CONCRETE IS PLACED. "WET SETTING" OF EMBEDDED ITEMS INTO CONCRETE IS STRICTLY PROHIBITED.
- UNLESS NOTED ON DRAWINGS, FOLLOW ACI STANDARDS FOR LAP SPICE LENGTHS OF REINFORCING BARS.

REBAR LAP SPICE TABLE

BAR SIZE	#3	#4	#5	#6	#7	#8	#9
3000 PSI CONCRETE	18"	24"	30"	36"	48"	56"	64"
4500 PSI CONCRETE	16"	20"	24"	30"	40"	48"	54"

WOOD NOTES:

- ALL TIMBER FRAMING SHALL BE IN ACCORDANCE WITH IBC 2009 REFERENCED EDITIONS OF THE AITC TIMBER CONSTRUCTION MANUAL AND AF&PA NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (NDS).
- ALL FRAMING SHALL BE SPRUCE-PINE-FIR, No.2 OR BETTER U.N.O. AND HAVE A MAXIMUM MOISTURE CONTENT OF 19%.
- ALL WOOD IN CONTACT WITH MASONRY OR CONCRETE OR EXPOSED TO WEATHER SHALL BE PRESSURE TREATED (PT) SOUTHERN YELLOW PINE.
- WHERE "LVL" IS NOTED ON DRAWINGS, PROVIDE LAMINATED VENEER LUMBER, WHICH HAS THE FOLLOWING MINIMUM ALLOWABLE STRESSES:
Fb = 2600 PSI Fc = 2510 PSI (PARALLEL TO GRAIN)
Fv = 285 PSI Fc = 750 PSI (PERPENDICULAR TO GRAIN)
Ft = 1555 PSI E = 2,000,000 PSI
- WHERE "PSL" IS NOTED ON DRAWINGS, PROVIDE PARALLAM STRAND LUMBER, WHICH HAS THE FOLLOWING MINIMUM ALLOWABLE STRESSES:
Fb = 2900 PSI Fc = 2900 PSI (PARALLEL TO GRAIN)
Fv = 290 PSI Fc = 750 PSI (PERPENDICULAR TO GRAIN)
Ft = 2025 PSI E = 2,000,000 PSI
- ALL ENGINEERED LUMBER THAT IS EXPOSED TO WEATHER SHALL BE WOLMANIZED.
- ALL FLOOR SHEATHING SHALL BE 3/4" TONGUE AND GROOVE, GLUED AND NAILED TO FLOOR FRAMING WITH 8d RINK SHANK NAILS AT 6" o.c. AT SUPPORTED PANEL EDGES, 12" o.c. AT INTERMEDIATE SUPPORTS UNLESS NOTED OTHERWISE ON DRAWINGS.
- ALL ROOF SHEATHING (5/8") AND WALL SHEATHING (1/2") SHALL BE APA PERFORMANCE-RATED. ATTACH TO SUPPORTED PANEL EDGES WITH 8d NAILS AT 6" o.c. AND AT INTERMEDIATE SUPPORTS WITH 8d NAILS AT 12" o.c. U.N.O. SEE DRAWINGS FOR MORE STRINGENT NAILING REQUIREMENTS AT WOOD SHEAR WALLS.
- SHEATHING SHALL BE ORIENTED WITH LONG DIMENSION PERPENDICULAR TO THE SUPPORTS AND BE CONTINUOUS OVER TWO OR MORE SUPPORTS. STAGGER ALL JOINTS & PROVIDE ADEQUATE JOINT SPACING (1/8" TYP) AS RECOMMENDED BY MANUFACTURER.
- PROVIDE FULL DEPTH BLOCKING AT ENDS AND INTERIOR SUPPORTS OF ALL JOISTS AND RAFTERS WHERE JOISTS AND RAFTERS FRAME OVER SUPPORTS. PROVIDE 1x3 DIAGONAL BRIDGING OR FULL DEPTH SOLID BLOCKING FOR EACH 8'-0" OF SPAN FOR ALL JOISTS AND RAFTERS.
- WHERE BEAMS ARE LABELED ON PLAN, DO NOT SPLICE BEAM NOR ANY PLY OF BEAM BETWEEN SUPPORTS.
- ALL CONNECTION HARDWARE SHALL BE BY SIMPSON STONG-TIE (OR APPROVED EQUIVALENT) AND SHALL BE HOP-DIPPED GALVANIZED. HARDWARE IN CONTACT WITH PRESSURE TREATED (PT) LUMBER SHALL BE GALVANIZED G185 (ZMAX). REFER TO MANUFACTURERS LITERATURE FOR PROPER INSTALLATION GUIDELINES.
- FASTENERS USED IN CONTACT WITH PRESSURE TREATED (PT) LUMBER SHALL BE HOT-DIPPED GALVANIZED, STAINLESS STEEL, OR OTHER FINISH APPROVED BY ENGINEER.
- ALIGN COLUMNS SUCH THAT COLUMNS BEAR CONTINUOUSLY TO FOUNDATION SUPPORT. INSTALL ADDITIONAL SOLID BLOCKING WITHIN FLOOR PACKAGE TO PROVIDE CONTINUITY OF LOAD PATH.
- PROVIDE HORIZONTAL BLOCKING FOR ALL LOAD BEARING WALLS AT 4'-0" O.C. VERTICAL, MAXIMUM.
- SUBMIT SHOP DRAWINGS FOR ALL PREFABRICATED WOOD JOISTS AND WALL PANELS TO ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.

ABBREVIATION:

AB	ANCHOR BOLT	L	ANGLE
ADDL	ADDITIONAL	LL	DOUBLE ANGLE
ARCH	ARCHITECT	LB	FOUND
&	AND	LF	LINEAR FOOT
		LLH	LONG LEG HORIZONTAL
		LLV	LONG LEG VERTICAL
B/FTG, BOF	BOTTOM OF FOOTING	MAX	MAXIMUM
BLDG	BUILDING	MECH	MECHANICAL
BM	BEAM	MFR	MANUFACTURER
BOT	BOTTOM	MIN	MINIMUM
BRG	BEARING	MISC	MISCELLANEOUS
BWTN	BETWEEN	NF	NEAR FACE
		NO	NUMBER
C	STRUCTURAL STEEL CHANNEL	NS	NEAR SIDE
CANT	CANTILEVER	NTS	NOT TO SCALE
CI	CAST-IN-PLACE CONCRETE		
CJ	CONTROL JOINT		
CL	CENTERLINE		
CLR	CLEAR		
CMU	CONCRETE MASONRY UNIT	OC	ON CENTER
CNJ	CONSTRUCTION JOINT	OPNG	OUTSIDE FACE
COL	COLUMN	OPP	OPENING
CONC	CONCRETE		OPPOSITE
CONN	CONNECTION		
CONT	CONTINUOUS	P	PIER DESIGNATION
CONTR	CONTRACTOR	PL	PLATE
CP	COMPLETE PENETRATION WELD	PP	PARTIAL PENETRATION WELD
CY	CUBIC YARD	PREFAB	PREFABRICATED
		PSF	POUNDS PER SQUARE FOOT
		PSI	POUNDS PER SQUARE INCH
DIA	DIAMETER	REINF	REINFORCING STEEL
DIM	DIMENSION	REQ, REQD	REQUIRED
DISCONT	DISCONTINUOUS	RD	ROOF DRAIN
DWG	DRAWING		
(E), EX, EXIST	EXISTING	SC	SLIP CRITICAL
EA	EACH	SECT	SECTION
EF	EACH FACE	SHEATH	SHEATHING
EL, ELEV	ELEVATION	SIM	SIMILAR
EQ	EQUAL	SOG	SLAB-ON-GRADE
EQUIP	EQUIPMENT	SPAC	SPACING
ES	EACH SIDE	SPECS	SPECIFICATIONS
EW	EACH WAY	SS	STAINLESS STEEL
EXP	EXPANSION	STD	STANDARD
EXT	EXTERIOR	STIFF	STIFFENER
		STL	STEEL
F	FOOTING DESIGNATION	STR	STRAIGHT
FDN	FOUNDATION	STRUCT	STRUCTURAL
FF	FINISH FLOOR		
FLG	FLANGE	T	TOP
FLR	FLOOR	T&B	TOP AND BOTTOM
FT	FOOT	TOC, T/CONC	TOP OF CONCRETE
FTG	FOOTING	T/FTG, TOP	TOP OF FOOTING
FV	FIELD VERIFY	TEMP	TEMPERATURE
		T/SHELF	TOP OF SHELF
G	GAGE	T/SLAB	TOP OF SLAB
GALV	GALVANIZED	T/STL	TOP OF STEEL
		T/WALL	TOP OF WALL
HOR, HORIZ	HORIZONTAL	TS	STRUCTURAL TUBING
HSS	HOLLOW STRUCTURAL SHAPE	TYP	TYPICAL
HT	HEIGHT		
		UNO	UNLESS NOTED OTHERWISE
IF	INSIDE FACE		
IN	INCH	VER, VERT	VERTICAL
INFO	INFORMATION	VF	VERIFY IN FIELD
JT	JOINT		
		W	STRUCTURAL STEEL WIDE FLANGE
K	KIP (1 KIP = 1,000 LBS)	W/O	WITHOUT
KSI	KIPS PER SQUARE INCH	WP	WORK POINT
		WT	WEIGHT
		WWF	WELDED WIRE FABRIC

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