

GENERAL:

G-1 Structural drawings shall be used in conjunction with the architectural, shop drawings, and specifications.

G-2 All dimensions and conditions must be verified in the field by the Contractor. Any discrepancies shall be brought to the attention of the structural engineer before proceeding with the affected portion of the work. Any discrepancies before these drawings and as-built conditions shall be brought to the attention of the Architect before proceeding with any work.

G-3 Shop drawings for reinforcing steel (including accessories), structural steel, open web steel joists, and steel decking shall be submitted to the Architect. Fabrication shall not

proceed until a stamped review is received. Erection shall be executed from final reviewed shop drawings only.

G-4 Unless otherwise noted, details shown on any drawings are to be considered typical for all similar conditions.

G-5 In the event of a conflict between plans, specifications, and details, the engineer shall be notified immediately for clarification.

G-6 If conditions at the site are different than shown the engineer shall be notified prior to proceeding with the affected work.

G-7 The contractor shall be responsible for all shoring and bracing required during construction. Temporary supports required for stability during all intermediate stages of construction shall be designed, furnished, and installed by the Contractor.

CODE:

Elighth Massachusetts Stale Residential Code and the referenced standards included therein.

DESIGN LIVE LOADS:

D-1 UNIFORM FLOOR LIVE LOADS:

Residential Living Areas:	40 PSF
Residential sleeping Areas:	30 PSF
Residential storage Areas:	20 PSF

D-2 CONCENTREITED FLOOR LOADS: (distributed over an area of 2 1/2 square feet)

Stairways:	300 lbs.
Garage:	3000 lbs.

D-3 ROOF SNOW LOAD:

Ground Snow Load:	40 PSF
Snow Exposure Factor, Ce:	1.0
Snow Load Importance Factor, I:	1.0
Thermal Factor, Ct:	1.0
Flat Roof Snow Load, Ps:	20 PSF
Plus Drifting & Unbalanced snow Loads Per ASCE-7	

D-4 WIND LOADS:

Basic Wind Speed, (3 second gust) V:	100 mph
Wind Importance Factor, I:	1.0
Building Category:	II
Wind Exposure Category:	B
1609.6 Simplified Provision for Low Rise Buildings Components and Cladding Design Wind Pressure:	25 PSF (10 s.f.)

D-5 SEISMIC LOAD:

Site Class:	D
Seismic Design Category:	B Per Figure R301.2 (2)

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FOUNDATION:

F-1 Foundations consist of continuous and spread footings bearing on compacting structural fill placed on undisturbed natural soil having an allowable bearing pressure of 2 kips per square foot.

F-2 Unless otherwise noted, foundations shall be centered under supported members.

F-3 The bottom perimeter foundations shall be at least 4"-0" below finished grade.

F-4 The bottom 3 inches of footing excavations shall be finished by hand shovel.

F-5 Bottoms of excavations shall be inspected by the Engineer prior to the placement of concrete.

F-6 Place back-fill simultaneously on both sides of walls to the grades indicated.

F-7 For locations of pipes and underslab conduit, see Site, Plumbing, Mechanical, and Electrical drawings. Provide caulked steel sleeves for all pipe penetrations at the foundation wall.

F-8 Provide formwork for all footings, walls, and piers. Earth formed foundations are not allowed.

F-9 Structural fill shall be granular material meeting the following gradation requirements:

SIEVE SIZE	PERCENT PASSING BY WEIGHT
8"	100
6"	--
3"	70-100
2"	--
1 1/2"	--
1"	--
3/4"	45-95
No. 4	30-90
No. 10	25-80
No. 40	10-50
No. 200	0-12

F-11 Note: 3/4" maximum aggregate within 12" of slab on grade.

CONCRETE:

C-1 Concrete shall be a mix designed for ultimate strength in accordance with the ACI 211.1 to achieve the following 28-day compressive strengths:

C-2 Foundation walls, Column/Pier and Foundation Footings:3000 psi, Normal Weight Max Slump = 4" ± 1" (without plant added water reducer) 4" to 6" (with plant added water reducer)  
Air Entrainment = 6% ± 1%

C-3 Slab on grade:  
4000 psi, Normal Weight  
Max Slump = 4" (without plant added water reducer) 4" to 6" (with plant added water reducer)

C-4 Concrete shall not be cast in water or on frozen ground.

C-5 Top of foundation walls shall be smooth and level.

C-6 No pipe shall be pass through concrete without permission of the Structural Engineer. Steel pipe sleeves shall be provided and spaced a minimum of three diameters apart.

C-7 Keys shall be 2"x 4", with beveled sides, unless otherwise noted.

C-8 Horizontal construction joints shall be as indicated on the drawings. The Architect shall approve all vertical construction joints. Construction joints shall be formed with a key, and reinforcing shall be lapped to develop the full tension capacity of the (smaller) bar.

C-9 Concrete walls shall have contraction or construction joints spaced no more than 60'-0" on center. Foundation wall construction joints shall line up with masonry wall control joints, see Architectural drawing.

C-10 Column or pier dowels shall be set by template.

C-11 Exposed concrete shall be rubbed immediately after removal of forms.

C-12 Openings in concrete walls shall be located, sized and reinforced (with the exception of small openings and/or sleeves of a size that will not displace or interrupt the continuity of the reinforcing) as shown on respective details. Any alterations require approval of the Structural Engineer.

C-13 DO NOT BACKFILL FOUNDATION WALLS UNTIL THE CONCRETE HAS BEEN IN PLACE FOR SEVEN (7) DAYS AND ATTAINED 75% OF ITS DESIGN COMPRESSIVE STRENGHT.

REINFORCING STEEL:

RS-1 Reinforcing steel shall be deformed bar, free for loose rust and scale, and conforming to ASTM A615, Grade 60.

RS-2 Welded wire fabric shall conform to ASTM A185. Lap two squares at joints and tie at 3'-0" o. c. Furnish WWF in flat sheets.

RS-3 Welded wire fabric shall be supported on concrete bricks sp. at 24" o.c. each direction on grade. Welded wire fabric shall be supported on elevated deck with continuous bolsters located over joists and beams.

RS-4 Clear concrete cover over bars shall be as follows (see ACI 318 for conditions not noted):

Footings:	3 inches (bottom), 2 inches (top and side)
Walls and piers (exposed to earth):	2 inches (side)
Walls and piers (interior):	1 1/2" (side)
Slab on grade:	2 inches (top) U.O.N.

RS-5 Accessories shall have unturned legs and be plastic-dipped after fabrication. Accessories for reinforcing shall be in accordance with ACI current edition.

RS-6 Lap reinforcing to develop the full tension capacity of the (smaller) bar.

RS-7 No bars shall be cut or omitted in the field because of sleeves, duct openings or recesses. Bars may be moved aside without change in level with the prior approval of the Structural Engineer.

WOOD:

W-1 Work shall be in accordance with the American Wood Council, ANSI/APFA, "National Design Specification for Wood Construction 2005 (NDS)" including "Design Values for Wood Construction", National Forest Products Association.

W-2 New wood for structural use shall have a moisture content as specifies in the "National Design Specification for Wood Construction".

W-3 Wood construction shall conform to IBC 2009 Chapter 23 and Section 2308 "Conventional Light-Frame Construction".

W-4 Framing for walls and joists shall be Spruce-Pine-Fir No.1/No. 2 or better. Dimensioned lumber represents nominal sizes.

W-5 Sheathing panels shall be marked with the American Plywood Association (APA) trademark and shall meet the latest U.S. Product Standard PS 1 or APA FRP-103 Performance Standards.

W-6 All wall sheathing panels shall be 1/2" thick 32/16, APA rated (Block and edges) Fasten with 8d common nail spaced at 4" o.c. at panel perimeter supported ends and 12" o.c.at interior intermediate supports (field). 1 3/8" min. fastener penetration. Lay wall sheathing with long dimension perpendicular to support members.

W-7 All roof sheathing panels shall be 5/8" thick, G-D Exterior grade, APA -ted Exposure 1 meeting DOC PS1 or PS2. Fasten with 8d common nails spaced at 6" o.c. at panel perimeter supporter edges and 6" o.c. at interior intermediate supports (field). 13/8" min. fastener penetration. Lay roof sheathing with long dimension perpendicular to support members.

W-8 Wood to steel and to wood bolted connectors shall be made with ASTM A307 bolts with flat washers. Bolt holes in wood shall be 1/32" larger than the bolt. Wood nailers shall be fastened with 3/8 Ø bolts staggered at 2'-0" o.c. unless otherwise noted.

Fastening Schedule:	
Plate to Stud, Direct	2 - 16d
Stud to Plate, Toenail	4 - 8d

NOTE: SEE IBC 2009, TABLE 2304.9.1 "FASTENING SCHEDULE" FOR FASTENING/NAILING REQUIREMENTS NOT SHOWN.

W-10 Wood in contact with concrete or masonry shall be pressure treated (P.T.) or approve equal.

W-11 The lateral bracing system includes plywood wall and roof sheathing. Contractor shall provide temporary bracing as required to laterally support the structure during construction.

W-12 LVL's shall be 1.9E Trusjoist MicroIam as manufactured by Meyerhaeuser or approve equivalent. Minimum properties include:

Modulus of Elasticity, E = 1,966 psi
Flexural Stress, Fb = 2600 psi
Horizontal shear, Fv = 285 psi

W-13 Provide lateral support at all bearing points and along compression edges at intervals of 24" o.c. or closer.

W-14 Minimum section width = 1 3/4", 3 1/2", 5 1/4", and 7" members may be combinations of 1 1/2" members. Follow manufacturers guideline for Multiple Member Connections for side loaded beams.

W-15 Wood Construction Connectors shall be manufactured Simpson Strong-Tie Co., Inc. and installed in accordance with the manufacturers recommendations.

STRUCTURAL TESTS AND INSPECTIONS:

T-1 Structural tests, inspections, and Reports for concrete construction, steel construction, masonry construction, soils, pier foundations, and other applicable construction shall be promptly submitted in writing to the Structural Engineer and Contractor.

T-2 Tests and inspections shall be completed in accordance to IBC 2006, Section 1704 Special Inspections, Refer to Statement of Special Inspection/Quality Assurance Plan issued with final Construction documents for the required program of special inspections for each building material/system.

T-3 Remove and replace work where test results indicate that it does not comply with specified requirements. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

T-4 Concrete Testing: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

- Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. Yd., but less than 25 cu. Yd., plus one set for each additional 50 cu. Yd. or fraction thereof. When frequency of testing will provide fewer than five compressive - strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
- Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
- Air Content: ASTM C 231, pressure method, for normal - weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
- Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
- Compression Test Specimens: ASTM C 31.
  - Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
  - Cast and field cure two sets of two standard cylinder specimens for each composite sample.

N. Compressive - Strength Tests: ASTM C39; test one set of two laboratory - cured specimens at 7 days and one set of two specimens at 28 days. Test one set of two field cured specimens at 7 days and one set of two specimens at 28 days.

O. Test results shall be reported in writing to Architect and Engineer, Concrete Manufacturer, and Contractor within 48 hours of testing. Reports of compressive - strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7 - and 28 - day tests.

P. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Structural Engineer.

Q. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

R. Correct deficiencies in the work that test reports and inspections indicate does not comply with the Contract Documents.

ABBREVIATIONS:

± = PLUS OR MINUS  
@ = AT  
AB = ANCHOR BOLT  
AFF = ABOVE FINISH FLOOR  
ALUM = ALUMINUM  
ALT = ALTERNATE  
ARCH = ARCHITECTURAL  
BM = BEAM  
B.O.F. = BOTTOM OF FOOTING  
BOTT. = BOTTOM  
BLDG. = BUILDING  
CJ = CONTROL JOINT  
CL = CENTERLINE  
CLR = CLEAR  
CMU = CONCRETE MASONRY UNIT  
COL. = COLUMN  
CONC. = CONCRETE  
CONST. = CONSTRUCTION  
CONT. = CONTINUOUS  
COORD. = COORDINATE  
Ø, DIA. = DIAMETER  
DIM. = DIMENSION  
DIST. = DISTANCE  
DN = DOWN  
DWGS. = DRAWINGS  
(E), EXIST = EXISTING  
E.F. = EACH FACE  
EXI. = EACH WAY  
EXIST. = EXISTING  
EA. = EACH  
EQ. = EQUAL  
ELEV. = ELEVATION  
EMBED. = EMBEDMENT  
EXP. = EXPANSION  
EXT = EXTERIOR  
FFE = FINISHED FLOOR ELEVATION  
FIN. = FINISHED  
FLR. = FLOOR  
FNDN. = FOUNDATION  
FT = FEET  
FTG = FOOTING  
GA. = GAUGE  
GC = GENERAL CONTRACTOR  
GALV. = GALVANIZED  
HORIZ. = HORIZONTAL  
HSS = HOLLOW STRUCTURAL  
SECTION  
IN. = INCH  
INT. = INTERIOR  
K = KIP  
LB = POUND  
LLH = LONG LEG HORIZONTAL  
LLV = LONG LEG VERTICAL  
MAX. = MAXIMUM  
MIN. = MINIMUM  
M.O. = MASONRY OPENING  
MTL = METAL  
# NO. = NUMBER  
N.T.S. = NOT TO SCALE  
O.C. = ON CENTER  
OPNG. = OPENING  
PL = PLATE  
PLF = POUNDS PER LINEAR FOOT  
PSF = POUNDS PER SQUARE FOOT  
PSI = POUNDS PER SQUARE INCH  
P.T. = PRESSURE TREATED  
RAD. = RADIUS  
REC. = RECOMMENDATION  
REINF. =REINFORCE (D'INGS)  
REQ'D = REQUIRED  
REV. = REVISION  
RO = ROUGH OPENING  
SCHD. = SCHEDULE  
SIM = SIMILAR  
S.F. = SQUARE FEET  
SPEC. = SPECIFICATION  
STD. = STANDARD  
STIFF. = STIFFENERS  
STL. = STEEL  
TH. = THICK  
T.O.S. = TOP OF STEEL  
T.O.W. = TOP OF WALL  
T.O.B.S. = TOP OF BRICK SHELF  
TYP. = TYPICAL  
U.N.O. = UNLESS NOTED OTHERWISE  
VB = VAPOR BARRIER  
VERT. = VERTICAL  
V.I.F. = VERIFY IN FIELD  
W/ = WITH  
WO = WITHOUT  
WS = WATERSTOP  
WFWWM = WELDED WIRE FABRIC-MESH

Project :

Bedroom Rear  
Addition & Interior  
Modification

Address :

5 ASH STREET  
WAREHAM, MA

Client:

XXXXXXXX

Description :

Team :



George M. Atallah

Jose R. Melo Assoc. AIA

Professional Designer

Revision

# Date Description

Notes :

1. ALL DIMENSIONS AND CONDITIONS MUST BE CHECKED AND VERIFIED ON SITE BY THE CONTRACTOR AND SUB-CONTRACTORS. THE PROJECT MANAGER SHALL BE NOTIFIED IN WRITING OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH THE WORK.

Structural General  
Notes

Drawn by

Author

Date

4/10/2018

Scale

1/4" = 1'-0"

S-100