## **GENERAL:**

- 1. Structural drawings shall be used in conjunction with the architectural, mechanical, electrical and shop drawings, and specifications.
- 2. Unless otherwise noted, sections, details, notes, materials, and methods shown on any drawings are to be considered typical for all similar conditions.
- 3. In the event of a conflict between plans, specifications, and details, the Structural Engineer shall be notified immediately for clarification.
- 4. All dimensions, elevations, 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 between these drawings and as-built conditions shall be brought to the attention of the Structural Engineer before proceeding with any work.
- 5. The structure has been designed to be self-supporting and stable after the work shown on these drawings has been completed. The Contractor shall be responsible for the stability of the structure prior to the completion of work including but not limited to, jobsite safety, all shoring, bracing, erection methods, erection sequence, and forms required during construction. Temporary supports required for stability during all intermediate stages of construction shall be designed, furnished, and installed by the Contractor.
- 6. The Contractor shall provide and maintain shoring and bracing supports as required to preserve stability and prevent movement, settlement, or collapse of adjacent construction to remain.
- 7. Shop drawings for reinforcing steel (including accessories), and wood framing shall be submitted to the Structural Engineer. Fabrication shall not proceed until a stamped review is received. Erection shall be executed from final reviewed shop drawings only.
- 8. Mechanical equipment weights used in the design of supporting elements are indicated on the drawings. The Contractor shall notify the Structural Engineer prior to installation of equipment if actual weight exceeds weight shown on drawings.
- 9. Loads, openings, and structure relating to other non-structural disciplines are shown for bidding purposes only. Refer to architectural and mechanical drawings for the full scope of work.
- 10. These plans were prepared under the supervision of a licensed professional engineer. TFMoran Inc. assumes no liability as a result of any changes or non-conformance with these plans except upon the written approval of the Engineer of Record.
- 11. TFMoran Inc. assumes no liability for work performed without an acceptable program of testing and inspection as approved by the Engineer of Record.
- 12. Reproduction of structural drawings for shop drawings is not permitted. Electronic drawing files will not be provided to the Contractor unless a transfer agreement has been completed between the Structural Engineer and the Contractor.
- 13. All work shall comply with the building codes referenced on these drawings.
- 14. Do not scale drawings. Contact the Architect or Structural Engineer for dimensions not specifically shown.

# CODE:

 Maine Uniform Building Code, which is the 2009 International Building Code, as amended altered, or deleted by the provisions of the 2015 Amendments.

## **DESIGN LIVE LOADS:**

1.	UNIFORM FLOOR LIVE LOADS:	
	Partitions:	20 psf
	Retail:	100 psf

2. CONCENTRATED FLOOR LOADS (distributed over an area of 2.5 square feet):

	General:	2,000 105
3.	ROOF SNOW LOAD:	
	Building Category:	11
	Ground Snow Load, Pg :	60 psf
	Snow Load Importance Factor, Is:	1.0
	Snow Exposure Factor, Ce:	1.0
	Thermal Factor, Ct:	1.0
	Flat Roof Snow Load, Pf:	42 psf
	Drifting, sliding, and unbalanced snow loads:	Per ASCE-7
	Rain loads:	Per ASCE-7

WIND DESIGN DATA:
Wind loads have been determined using ASCE-7 Method 1 Simplified Procedure.
Building Category:

20 psf MIN

Basic Wind Speed (3 second gust), V: 100 mph
Wind Importance Factor, Iw: 1.0
Wind Exposure Category: B
Internal Pressure Coefficient: +/-0.18
Components and Cladding Design Wind Pressure:
Zone Per ASCE-7 MAX Positive (20 sf) MAX

5. EARTHQUAKE DESIGN DATA:

Roof live load:

Building Category:	II
Seismic Use Group Category:	11
Seismic Importance Factor, le:	1.0
0.2s Mapped Spectral Response Acceleration, Ss:	0.313g
1.0s Mapped Spectral Response Acceleration, S1:	0.077g
0.2s Spectral Response Coefficient, Sds:	0.324g
1.0s Spectral Response Coefficient, Sd1:	0.123g
Site Class:	D
Seismic Design Category:	В

#### FOUNDATIONS:

- Foundations have been designed to consist of continuous and spread footings bearing on inorganic, undisturbed natural soil or compacted structural fill having an assumed allowable bearing pressure of 1500 pounds per square foot. The contractor is responsible for verifying these subsurface conditions.
- 2. 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

A soils testing lab shall test all material proposed for structural fill for classification according to ASTM D2487 and for laboratory compaction curve according to ASTM D1557. In addition, in-place soils shall be tested for compaction to a minimum 95% of its maximum density at or near antimum mainture.

- 3. Unless otherwise noted, foundations shall be centered under supported members.
- 4. The bottom of perimeter and exterior foundations not on solid rock shall be at least -5'-0" below finished grade
- 5. Keep foundation excavations free of water at all times. Protect all soil surrounding and under footings from freezing and frost action during the course of construction.
- 6. Bottom of excavations shall be reviewed by the Structural or Geotechnical Engineer prior to the placement of concrete.
- 7. Provide formwork for all footings, walls, and piers. Unless otherwise noted, earth formed foundations are not allowed.
- 8. Place backfill simultaneously on both sides of foundation walls to the grades indicated. Do not backfill or temporarily brace walls with uneven backfill until the floor slab at the top of the wall has been poured and/ or the concrete has attained 75% of its design compressive strength.
- 9. Provide 3/4" maximum aggregate within 12" of slabs on grade.
- 10. The bottom three (3) inches of footing excavations shall be finished by hand shovel.
- 11. Use lean concrete (f'c = 1,500 psi) or structural fill for over-excavation of footings.
- 12. Refer to site, plumbing, mechanical, and electrical drawings for location of pipes and underslab conduit. Provide pipe sleeves for all pipe penetrations at foundation walls.
- 13. Submittals to the Structural Engineer are required for structural fill material.

## CONCRETE:

- All concrete work shall conform to the requirements of ACI 301 "Specifications for Structural Concrete" and ACI 318 "Building Code Requirements for Structural Concrete".
- Concrete shall be a mix designed for ultimate strength in accordance with ACI 211.1 to achieve the following minimum 28-day compressive strengths:

Foundation Footings, and Walls: 3,000 psi, Normal Weight
Max Slump (without plant added water reducer) = 4" +/- 1"
Max Slump (with plant added water reducer) = 4" to 6"
Max W/C Ratio = 0.55

Air Entrainment = 6% +/- 1%

Interior Slabs on Grade:
3,500 psi, Normal Weight

Max Slump (without plant added water reducer) = 4"

Max Slump (with plant added water reducer) = 4" to 6"

Max W/C Ratio = 0.50

Concrete shall conform to the following:
Cement: Portland cement type I/II ASTM C150
Flyash: ASTM C618 Class C 20% to 35% or Class F 15% to 25%
Ground granulated blast-furnace slag: ASTM C989 50% maximum
Course aggregate: ASTM C33 3/4" for normal weight or ASTM C330 3/4" for light weight

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

Do not use air entrainment admixture

- Mechanically vibrate and consolidate freshly cast concrete around reinforcing bars and against form surfaced to prevent the formation of air or stone pockets, honeycombing, pitting, or planes of weakness. Do not over vibrate such that aggregate separation occurs.
- Cure and protect slabs for not less than seven (7) days with a curing compound conforming to ASTM C309 compatible with any intended floor overlay. Do not install finish flooring until the slab has adequately cured.
- 7. Top of foundation walls shall be smooth and level.
- 8. Protect concrete during periods of cold weather concrete as outlined in ACI 306.1 "Standard Specification for Cold Weather Concreting". Maintain concrete temperature during periods of hot weather below 90 degrees (F).
- Horizontal construction joints shall be as indicated on the drawings. Vertical construction joints shall be approved by the architect and shall align with masonry wall control joints. Space vertical control or construction joints at concrete walls no more than 30'-0" on center. Construction joints shall be formed with a key, and reinforcing shall be lapped to develop the full tension capacity of the (smaller) bar.
- Exposed concrete shall be rubbed immediately after removal of forms, see architectural drawings for finish type. Unless otherwise noted, interior finish slab surfaces shall have a Class A steel trowel finish.
- 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.
- 12. Column or pier dowels shall be set by template.
- 13. No pipe shall pass through concrete without permission from the Structural Engineer. Pipe sleeves shall be provided and spaced a minimum of three (3) diameters apart.
- 14. Unless otherwise noted, keys shall be 2"x4" with beveled sides.
- 15. Do not backfill foundation walls until the concrete has been in place for seven (7) days and attained 75% of its design compressive strength.
- 16. Submittals to the Structural Engineer are required for concrete mix designs including cementitious materials, aggregates, and admixtures.

#### REINFORCING STEEL:

Slab on grade:

- 1. Reinforcing steel shall be deformed bars, free from loose rust and scale, and conforming to ASTM A615. Grade 60.
- 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.
- 3. Welded wire fabric shall be supported on continuous steel wire chairs spaced at 24" o.c. on grade. Welded wire fabric shall be supported on elevated deck with continuous bolsters located
- over joists and beams.

Clear concrete cover over bars shall be as follows unless otherwise noted (see ACI 318 for conditions not noted):

 Footings:
 Walls and Piers (exposed to earth):
 Walls and Piers (interior):
 Elevated slabs:
 3 inches (bottom), 2 inches (top and side)
 2 inches (side)
 1 1/2 inches (side)

 I inch (top)

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

2 Inches (top)

- S. Lap reinforcing to develop the full tension capacity of the (smaller) bar.
- 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:

- Work shall be in accordance with the American Wood Council, ANSI/AF&PA, "National Design Specification for Wood Construction 2001 (NDS)" including "Design Values for Wood Construction", National Forest Products Association.
- 2. New wood for structural use shall have a moisture content as specified in the "National Design Specification for Wood Construction."
- 3. Wood construction shall conform to IBC 2003 Chapter 23 and Section 2308 "Conventional Light-frame Construction."
- 4. Framing for walls and joists shall be Spruce-Pine-Fir (SPF) No. 1/ No. 2 or better. Dimensioned lumber represents nominal sizes.
- 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 PRP-108 Performance Standards.
- 6. All wall sheathing panels shall be 1/2" thick 32/16 (minimum), APA Rated and all sheathing panel edges shall be blocked, unless otherwise noted. Fasten with 8d common nails spaced at 6"o.c. at panel perimeter supported edges and 12"o.c. at interior intermediate supports (field) with 1 3/8" min. fastener penetration, unless otherwise noted. Lay wall sheathing with long dimension perpendicular to support members.
- 7. All roof sheathing panels shall be 5/8" thick 40/20 (minimum), C-D Exterior grade, APA rated Exposure 1 meeting DOC PS1 or PS2, unless otherwise noted. Fasten with 8d common nails spaced at 6"o.c. at panel perimeter supported edges and 6"o.c. at interior intermediate supports (field) with 1 3/8" min. fastener penetration, unless otherwise noted. Lay roof sheathing with long dimension perpendicular to support members.
- 8. Wood to steel and wood 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" diameter bolts staggered at 2'-0" o.c. unless otherwise noted.
- 9. See "WOOD FASTENING SCHEDULE" this sheet for minimum fastening requirements.
- 10. Wood in Contact with concrete or masonry shall be pressure treated (P.T.). meeting AWPA U1 standard. All pressure treated lumber shall be Southern Yellow Pine No.1 or 2 treated with ACQ-D treatment for use category U3A or more server conditions.
- The lateral bracing system includes plywood wall and roof sheathing. Contractor shall provide temporary bracing as required to laterally support the structure during construction.
- 12. Laminated Veneer Lumber (LVL) members shall be 2.0E Trusjoist Microllam LVL as manufactured by Weyerhaeuser or approved equivalent. Minimum properties include:

  Modulus of Elasticity, E = 2.0e6 psi
  Flexural Stress, Fb = 2,600 psi
- Horizontal Shear, Fv = 285 psi

  B. Parallel Strand Lumber (PSL) members shall be 1.8E or 2.0E Trusjoist Parallam PSL as manufactured by Weyerhaeuser or approved equivalent. Minimum properties include:

  Modulus of Elasticity, E = 2.0e6 psi (Beam) 1.8e6 psi (Column)

= 2,900 psi (Beam)

2,400 psi (Column)

- Horizontal Shear, Fv = 290 psi (Beam) 190 psi (Column)

  14. Laminated Strand Lumber (LSL) members shall be 1.3E Trusjoist TimberStrand LSL as manufactured by Weverhauser or approved equivalent. Minimum properties include:
  - manufactured by Weyerhaeuser or approved equivalent. Minimum properties include:

    Modulus of Elasticity, E = 1.3e6 psi

    Flexural Stress, Fb = 2,325 psi

    Horizontal Shear, Fv = 425 psi

Flexural Stress, Fb

- 15. Provide lateral support at all bearing points and along compression edges at intervals of 24"o.c. or closer.
- 16. Minimum section width = 1 3/4". 3 1/2", 5 1/4", and 7" members may be combinations of 1 3/4" members. Follow manufacturers guidelines for Multiple Member Connections for side loaded beams.
- Wood Construction Connectors shall be manufactured by Simpson Strong-Tie Co., Inc. and installed in accordance with the manufacturers recommendations.
- 18. All wood fasteners and hangers in contact with P.T. framing are to be stainless steel or hot dipped galvanized (min 2.0 oz/ft^2).

#### TABLE OF CONTENTS # GENERAL STRUCTURAL NOTES S0.1 FOUNDATION PLAN S1.1 EXISTING ROOF FRAMING PLAN S1.2 NEW ROOF FRAMING PLAN S1.3 RAMING DETAILS S2.1 RAMING SECTIONS S2.2 RAMING SECTIONS S2.3

## PRE-ENGINEERED WOOD TRUSSES:

- All pre-engineered wood trusses shall conform to ANSI/TPI-1-2002 "National Design Standards for Metal Plate Connected Wood Truss Construction."
- 2. The manufacturer of the pre-engineered trusses shall be a Truss Plate Institute (TPI) certified plant. Proof of certification shall be submitted to the Engineer prior to fabrication of the wood
- 3. The contractor shall ensure proper handling, bracing, and lateral restraint in accordance with the manufacturer's recommendations. All temporary and permanent truss bracing (individual and overall) shall be designed by the truss manufacturer and installed by the contractor. All permanent truss bracing\lateral restraint requirements and locations shall be detailed and submitted prior to construction to the Engineer of Record by the truss manufacturer. Alternatively,
- 4. Roof trusses shall be designed for the following uniform loads with 5 1/2" or 3 1/2" max. bearing. Coordinate truss bearing with bearing wall framing width.:

the truss designer may design all trusses such that no permanent lateral restraint is required.

Top Chord Dead Load

Top Chord Live Load

Top Chord Snow Load

Top Chord Wind Load

See Framing Details Sheet

Bottom Chord Dead Load

See Framing Details Sheet

See Framing Details Sheet

Trusses shall be designed for any snow drift, unbalanced snow loading, or valley snow conditions, as well as, any wind loading as specified in the project building code (See Framing Details Sheet).

Design all roof trusses for the following deflection limits:

Live/ Snow/ Wind Load:

L/360 or 3/4" VERT.

3/8" HORIZ.

Total Load:

L/240 or 1 1/4" VERT

5. Pre-engineered roof trusses to be approved by the Structural Engineer. All truss submittals shall be in accordance with section 2303.4 of IBC 2003. Truss shop drawings shall be designed, stamped and submitted by a licensed professional engineer qualified to perform the work in the state where the project is located. Submittal shall include all loading combinations, a full report for each truss, and temporary/ permanent lateral truss restraint layouts and details.

1/2" HORIZ.

- 6. The contractor shall verify the location of all vents, stacks, risers, drains, etc. before trusses are fixed in place
- All trusses shall have hurricane clips installed at each end of each truss. See details for hurricane clip information.
- 8. All truss to truss connection designs are the responsibility of the truss manufacturer.
- All temporary and permanent truss bracing (individual and overall) is the responsibility of the truss designer, u.n.o.. Bracing and lateral truss restraint (including details) shall be shown on truss design drawings and truss erection drawings.

## STRUCTURAL STEEL:

- Fabricate and erect structural steel in accordance with the 2005 "Specification for Structural Steel for Buildings" and the "Code of Standard Practice" of AISC. Welding shall conform to the requirements of the "Structural Welding Code" of the American Welding Society.
- Structural steel wide flange shapes shall conform to ASTM A992. Structural steel channels shall conform to ASTM A36. Structural tube columns shall be ASTM A500, Grade B. Structural steel plates, and angles shall conform to ASTM A36, unless otherwise noted.
- B. Do not splice structural steel members without written approval of the Structural Engineer.
- Bolted connections shall be made with three-quarter inch diameter high strength, ASTM A325-N bolts, unless otherwise noted. Connections at moment frames, braced frames, column splices and hangers shall be made with three-quarters inch diameter A325-SC (Slip critical) bolts, unless otherwise noted.
- Anchor bolts shall be ASTM F1554 Gr. 36 headed bolts of the diameters and dimensions detailed, unless otherwise noted on the drawings. Anchor bolts shall be set by template. High strength (HS) anchor bolts shall be ASTM A449 Gr. 105 headed bolts.
- Welding electrodes shall conform to AWS A5.1 E70XX series with proper rod to produce optimum weld (low hydrogen).
- Unless otherwise noted, bolted connections with slotted holes shall be field-welded with one-quarter inch fillet welds after final field adjustment.
- 8. Provide 3/8" minimum fitted stiffener plates each side at beams' web framing over columns and at beams supporting columns above.

9. Provide 1/4" thick leveling plate under all column base plates unless otherwise noted. Leveling

- plates shall be set and grouted prior to erecting columns.

  10. Lintels for exterior masonry and structural steel exposed to weather shall be hot-dip galvanized
- according to ASTM A123.
  Steel Primer: Standard Alkyd Primer applied at 2.5 3.5 mil DFT shall be used as the standard of quality and performance. Color: grey
- 12. The Steel fabricator is responsible for the design and detailing of all connections including moment connections and beam and/or column stiffeners and doublers if required.

## STRUCTURAL TESTS AND INSPECTIONS:

- 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.
- Tests and Inspections shall be completed in accordance with IBC 2003, Section 1704 Special Inspections. Refer to Statement of Special Inspections/Quality Assurance Plan issued with final construction documents for the required program of special inspections for each building material/system.
- 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.
- 4. Structural Observations:

Notify engineer of progress of construction for coordination of site observations per section 1702 of the International Building Code. These observations are intended for review of general design intent and do not relieve the general contractor of their responsibility to perform quality control.

# **ABBREVIATIONS**

AB = ANCHOR BOLT
AFF = ABOVE FINISH FLOOR
ALUM. = ALUMINUM
ALT. = ALTERNATE
ARCH. = ARCHITECTURAL

B/ = BOTTOM OF ... BM. = BEAM B.O. = BOTTOM OF .. BOT. = BOTTOM BLDG. = BUILDING

CFS = COLD FORMED STEEL
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

EA. = EACH
EF = EACH FACE
EL. = ELEVATION
ELEV. = ELEVATOR
EMBED. = EMBEDMENT
E.O.D. = EDGE OF DECK
E.O.S. = EDGE OF SLAB
EQ. = EQUAL
EW = EACH WAY
EX. = EXISTING
EXP. = EXPANSION
EXT. = EXTERIOR

FFE = FINISHED FLOOR ELEVATION
FIN. = FINISHED
FLR. = FLOOR
FNDN. = FOUNDATION
FT = FEET
FTG = FOOTING

GC = GENERAL CONTRACTOR
GALV. = GALVANIZED

HDG = HOT DIPPED GALVANIZED

HORIZ. = HORIZONTAL

INT. = INTERIOR

GA. = GAUGE

HSS = HOLLOW STRUCTURAL SECTION

IF = INSIDE FACE
IN. = INCH

K = KIP

LB = POUND LGM = LIGHT GAUGE METAL LLH = LONG LEG HORIZONTAL LLV = LONG LEG VERTICAL

MAX. = MAXIMUM MIN. = MINIMUM MO = MASONRY OPENING MPH = MILES PER HOUR MTL. = METAL

#, No. = NUMBER

N.T.S. = NOT TO SCALE

o.c. = ON CENTER OF = OUTSIDE FACE 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 REINF. =REINFORCE(D)/ REINFORCING REQ'D = REQUIRED REV. = REVISION

RO = ROUGH OPENING

SCHD. = SCHEDULE SIM. = SIMILAR SF = SQUARE FEET SPEC. = SPECIFICATION STD. = STANDARD STIFF. = STIFFENER(S)/ STIFFENED STL. = STEEL

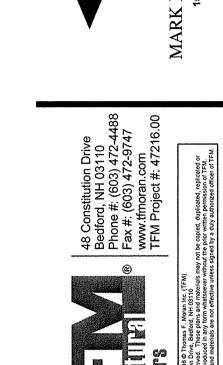
T/ = TOP OF ...
TH. = THICK
T.O. = TOP OF ...
TYP. = TYPICAL

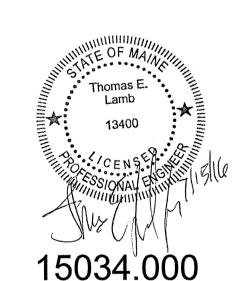
U.N.O. = UNLESS NOTED OTHERWISE

VB = VAPOR BARRIER VERT. = VERTICAL V.I.F. = VERIFY IN FIELD

W/ = WITH
W/O = WITHOUT
WS = WATERSTOP
WWF\WWM = WELDED WIRE FABRIC/ MESH

RK D. MCCLUGGAGE AIA, CC 1625 E. Douglas Wichita, KS 67211 Tel: (316) 265-5646





CONTRACT DATE: 07.15.2016
BUILDING TYPE: CONVERSION
PLAN VERSION: FEBRUARY 2015
SITE NUMBER: XXX-XXX

XXXXX

TACO BELL

STORE NUMBER:

1363 WASHINGTON AVE. PORTLAND, ME



CONVERSIO LIVE MAS - MEDIUM40

GENERAL STRUCTURAL NOTES

**SO** 

PLOT DATE

ΓDATE:

07/13