

GENERAL STRUCTURAL NOTES

- A1. All work shall conform to the requirements of the International Building Code (2003 IBC) and other codes having jurisdiction.
- A2. The structural design of the building is based on the full interaction of all its connected parts including all reinforced concrete. No provisions have been made for any temporary conditions that may arise during construction prior to the completion of the structure. The contractor shall be responsible for adequate design and construction of all forms, shoring and temporary bracing during the progress of the project.
- A3. The information shown on the structural drawings is intended for this project only and shall not be used for any other purpose. Changes to structural documents (including notes, details, plans, and specifications) shall not be made without written approval from Price Structural Engineers, Inc. (PSE).
- A4. Contractor(s) shall provide experienced jobsite supervision to ensure that components are installed in accordance with the structural drawings and standards of quality workmanship.
- A5. The structural documents for this project (including notes, details, drawings, and specifications) are interdependent. Use of some but not all of the structural documents or changes to structural documents without the written approval of PSE is not permitted.
- A6. Principal openings through structural components are shown on these drawings. The Contractor shall examine the project drawings for the required openings, as he shall provide for all openings whether or not shown on the structural drawings, and shall verify size and location of all openings with other project requirements. Any deviation from the openings shown on the structural drawings shall be brought to PSE's attention for approval.
- A7. Alternate connection details may be used if such details are submitted to PSE for review and written acceptance is granted. However, PSE shall be the sole judge of acceptability and the contractor's bid shall anticipate the use of those specific details shown on the drawings. The contractor shall be responsible for the design of any alternate details which he proposes.
- A8. Work not indicated on a part of the drawing but reasonably implied to be similar to that shown at corresponding places, shall be included. Do not scale from drawings.
- A9. The contractor shall be completely responsible for the safety of adjacent structures, property, and the public. The contractor shall comply with all Federal, State, and Local Requirements.
- A10. All contractors are required to examine the drawings and specifications carefully, visit the site and fully inform themselves as to all existing conditions and limitations, prior to submitting their bid. Failure to visit the site and familiarize themselves with the existing conditions and limitations will in no way relieve the successful bidder from furnishing any materials or performing any work in accordance with drawings and specifications (with no additional cost to the Owner).
- A11. Except where noted on the structural drawings, see architectural drawings for dimensions and locations of new materials.
- A12. See drawing S1.1 for abbreviations. See project specifications for additional requirements.
- A13. Where conflicts exist between codes, specifications, or drawings, the more stringent requirements shall govern. Notify PSE immediately when such conflicts are discovered.
- A14. Fire code provisions are not contained on structural drawings. See other project documents for requirements.
- A15. Substitutions for specified manufactured materials shall not be made without written approval from PSE. Manufactured materials shall be installed in accordance with manufacturer's requirements and recommendations.
- A16. Submittals containing variations from the structural documents shall have such variations boldly labeled so that they may be specifically reviewed by PSE. Variations not labeled in this manner shall not be considered approved, regardless of the status indicated by the shop drawing submittal stamp.
- A17. Stored materials shall be stacked on pallets in a manner that prevents distortion or damage, above the ground, covered and kept in a dry condition. New materials shall be installed plumb, level and square, unless noted otherwise.
- A18. Include provision and installation of equipment support beams, support posts, seismic restraints, guide rails, embedments, inserts, and other materials required by equipment manufacturer as part of project bid and/or as part of a complete and fully functioning equipment installation. This requirement pertains to elevators, HVAC units and other project related equipment.
- A19. PSE has performed the structural design of the structural components only for this project, as designated by the structural drawings. Structural documents do not contain provisions for non-structural features including fire protection, ADA disability access, drainage, emergency egress requirements, fishing, finishes, ventilation, watertightness, soundproofing, or any other sitework, architectural, mechanical, electrical or environmental features.
- A20. See Architectural drawings for handrail and guardrail requirements at balconies, stairs, and exterior decks. Add structural reinforcement so that rats can support either a continuous load of 50 lb/ftL in any direction or a concentrated load of 200 lb. in any direction.
- A21. Structural steel inspectors shall be provided by the owner during construction as required by IBC 2003, Chapter 17. Refer to the Schedule of Special Inspectors for the required inspectors scope.

REINFORCING FOR CONCRETE

- D1. All concrete reinforcing bars shall conform to ASTM A615, Grade 60 except where noted. All reinforcing bars to be welded shall conform to ASTM A706.
- D2. All welded wire fabric (w.w.f.) shall conform to ASTM A-185. W.W.F. shall be provided in flat sheets.
- D3. Detailing of concrete reinforcement and accessories shall be in accordance with ACI 315, "Manual of Standard Practice for Detailing Reinforced Concrete Structures," latest edition.
- D4. Provide and schedule with the shop drawings, all necessary accessories to hook reinforcing securely in position. Reinforcement supports shall be spaced not more than 4'-9" on center and shall consist of pre-manufactured chairs.
- D5. All laps in W.W.F. shall be 1'-1/2" mesh spaces or 1'-0", whichever is larger, and shall be wired together.
- D6. Reinforcing bars may not be welded except where designated by the structural engineer.
- D7. Concrete protection for reinforcement shall be provided as follows (CON):
 - a. Surfaces cast against and permanently exposed to earth: 3 inches (clear)
 - b. Formed surfaces exposed to earth or weather #6 through #18 bars 2 inches #5 bars and smaller 1 1/2 inches
 - c. Formed surfaces not exposed to earth or weather Slabs, walls, posts: 3/4 inch Beams, columns (including stirrups and ties) 1 1/2 inches
 See ACI 318 for conditions not listed.
- D8. All hooks shown on drawings shall be standard hooks unless noted otherwise. Route hooks where necessary to provide adequate concrete cover.
- D9. Where continuous bars are called for, they shall run continuously around corners and lapped at necessary splices, or hooked at discontinuous ends. Lap lengths shall be as given in the splice and development table. Lap beam top bars at mid-span and beam bottom bars at supports, unless noted otherwise.
- D10. Show foundation wall control joints and construction joints on rebar shop drawings.
- D11. Notify owner's representative in a timely manner so that installed reinforcement can be inspected. Installation of reinforcement shall be completed 24 hours before scheduled concrete placement.
- D12. Reinforcement shop drawings shall be checked for potential reinforcement interferences and adequate concrete cover at all locations prior to being submitted for review.
- D13. Mechanical or welded splices may be used only if they develop 125% (min.) of bar yield strength and are approved by PSE in writing prior to fabrication of components.

FOUNDATIONS

- B1. Foundation design is based on the geotechnical report dated September 6, 2006, prepared by Sedago Technics for this project. Foundation details and suggested below foundations shall be in conformance with the recommendations contained within this document.
- B2. Blasting shall not proceed until a written blasting plan has been submitted by the contractor to the owner's geotechnical engineer and approval obtained. The contractor shall notify the geotechnical engineer in a timely manner so that onsite monitoring of the blasting by the geotechnical engineer can be scheduled.
- B3. No foundations shall be placed in water or on frozen ground.
- B4. All footing excavations are to be finished by hand. All finished foundation excavations shall be inspected by the project foreman before any concrete is placed. Bedrock surfaces shall be swept clean and loose debris removed prior to placement of footings on bedrock.
- B5. Structural fill below slabs, adjacent to foundation walls and fill below footings shall conform to:

SCREEN OR SIEVE SIZE	PERCENT FINER BY WEIGHT
3 inch	100%
No. 4	30% - 90%
No. 40	10% - 50%
No. 200	0% - 8%
- B6. Structural fill shall be compacted in 6" (max) lifts (loose measure) to 95% of its maximum dry density in accordance with ASTM D1557. Hand vibratory equipment shall be used to compact backfill at confined areas and adjacent to basement using 6" lifts (loose measure).
- B7. Crushed stone shall consist of clean angular fragments of quarried rock with uniform quality and conform to MDOT 703.22, Type C. Maximum stone size shall be 1".
- B8. Unless otherwise noted, all foundation units shall be centered under supported members.
- B9. Where foundation elements are to have fill on both sides, each side shall be filled and compacted simultaneously, maintaining a common elevation such that compacted fill on one side of the foundation does not exceed more than 12" above the compacted fill on the other side.
- B10. Contractor shall provide continuous drainage by mechanical methods to control surface and underground water as required during construction so that all excavations are dry. See geotechnical report.
- B11. Perforated underdrain shall be placed around entire building perimeter exterior at wall footings and also beneath slab on grade. (see detail F / S13). Underdrains shall have additional (2) #4 x 3/4" rebar on 4 sides of sleeves. Underdrains shall be schedule 35 PVC.
- B12. Holes for utilities in foundation walls shall have plastic sleeves. Coordinate size and locations of sleeves prior to placing concrete. Sleeves larger than 10" diameter shall have additional (2) #4 x 3/4" rebar on 4 sides of sleeves.
- B13. Basement foundation walls shall have high performance foundation waterproofing system applied to outside surface. See architectural drawings.
- B14. Shoring, bracing or sheeting used to provide lateral support of excavations shall remain in place until all permanent structural systems at and below ground level are complete.
- B15. Dean pipes shall not pass under or through wall footings. Lower footing by stepping to avoid interference (see typical stepped footing detail).
- B16. Sufficient bedrock shall be removed such that:
 - a. Bedrock surface is free draining (no subsurface ponding) at all areas beneath the building and building foundation.
 - b. Bedrock slope is not steeper than 1 horizontal to 1 vertical nor flatter than 100 horizontal to 1 vertical.
- B17. Bedrock elevation contours are approximated within the geotechnical report prepared for this project.
- B18. Bedrock shall be defined as: "Any material geologically classified as rock and required drilling and blasting to excavate." Boulders shall not be considered bedrock.
- B19. At locations where continuous wall footings transition from bedrock onto soil, a structural fill cushion at least one foot thick (compacted to 95%) shall underlie the footing in the transition zone. The transition zone should be a minimum of 10 feet long starting at the point of where soil support for the footing begins.
- B20. Unless otherwise noted, isolated spread footings shall bear either entirely on bedrock or entirely on crushed stone (minimum 6" thick) over structural fill compacted to 95%. Remove sufficient bedrock to accommodate this requirement. At locations where spread footing bear on crushed stone over compacted structural fill, extend stone and compacted fill a minimum of 2'-0" beyond all sides of the spread footing.

CONCRETE

- C1. All concrete work shall conform to the latest edition of the ACI Building Code (ACI 318). Specifications for Structural Concrete for Building (ACI 301) and to the 2003 IBC. In case of conflict, the more stringent requirements shall govern.
- C2. For locations listed below, concrete shall have 3/4" aggregate, 2'-4" slump, Type I or II ASTM C-150 Portland Cement and designated compressive strength (f'c) in 28 days as follows:

Location	f'c (psi)	Air Entrainment (%)	Polypropylene Fibers
Footing	3000	None	None
Foundation Walls, Piers	3000	4% - 7%	None
Retaining Walls	4000	4% - 7%	None
Interior Slabs on Grade	4000	None	1.5 lb / c.y.
Elevated Slabs	4000	None	None
Storage Shed & Exterior Slab on Grade	4000	4% - 7%	1.5 lb / c.y.

Contractor shall not proceed with concrete placement until concrete mix design submittal has been reviewed and approved by the structural engineer. Water shall not be added to the concrete mix at the jobsite.

- C3. A "foundation wall" shall be considered a "retaining wall" if final grade elevation on one side of wall is more than 15 inches above the final grade on the opposite side of wall.
- C4. All garage slabs and concrete permanently exposed to the weather shall contain 5% - 7% air entrainment admixture.
- C5. All footings shall be placed monolithically. See typical details for construction joint requirements.
- C6. Pipes or conduits placed in slabs on grade shall not be placed closer than 3 diameters on center and shall have an outside diameter less than 1/3 of the slab thickness.
- C7. All keys shall be 2" x 4" (nominal) unless otherwise shown on the drawings.
- C8. No concrete shall be cast until review and written approval of the reinforcing and embedded items have been obtained from the owner's representative.
- C9. All exposed edges of concrete members shall be chamfered 3/4" unless shown otherwise on drawings.
- C10. See architectural drawings for door and window openings, dips, washes, right concrete finishes, masonry anchors, and for requirements. See architectural drawings for doors, windows, egress, etc. Refer to mechanical, electrical, and site drawings for other embedment requirements.
- C11. See Architectural Drawings for top of slab elevations. See M / S30 for Typical Interior Slab on Grade Detail.
- C12. Calcium chloride, aluminum or copper components shall not be placed in concrete. No conduits shall be placed in slabs on metal deck.
- C13. All embedments in concrete, including anchor bolts, shall be firmly secured by the wire to prevent movement during concrete placement. Welding embedments is not permitted.
- C14. All concrete materials, reinforcement and forms shall be free from frost or debris.
- C15. Concrete shall be maintained above 50 degrees F, and in most condition for at least the first seven days after placement. Contractor shall provide blankets, heating and heat as necessary to ensure this condition exists. Contractor shall keep two operable concrete thermometers on site throughout concrete construction when temperatures are predicted to be less than 40 degrees F.
- C16. Consolidate all concrete with a vibrator or other means recommended by ACI 301. Honeycombed surfaces will not be permitted.
- C17. See architectural drawings for locations of floor drains. Slope slabs uniformly to drains (CON).
- C18. Control joints in slabs on grade are mandatory. See typical details. Control joints in foundation walls, basement walls, and retaining walls are mandatory. See typical details.
- C19. Coordinate concrete finish on floor slabs with owner's requirements and specifications.
- C20. See specifications for concrete testing requirements.
- C21. Concrete slabs, including those on steel deck, shall be placed so that slab thickness equals or exceeds thickness specified on drawings. This will require that slabs may not be dead level where supported by beams or trusses with camber.
- C22. Length of time to cure concrete slabs and material applied to slab surfaces shall be compatible with floor finishes.
- C23. Maximum freighl of wet concrete during placement shall not exceed 5'-0".
- C24. Slabs on grade shall contain ASTM C1116, Type III, 1/2" - 1 1/2" long polypropylene fibers at a rate of 1.5 pounds (min.) per cubic yard unless steel reinforcement is specified.
- C25. Surfaces of concrete construction joints, including exposed reinforcement, shall be cleaned and blower removed. New concrete shall not be placed against existing hardened concrete until existing hardened concrete surface has been moistened (without standing water).
- C26. All concrete slabs shall completely encase columns on all sides except where presented by designated slab openings.
- C27. Isolation joints in concrete slabs shall be 3/8" thick preformed, closed, cell foam joint material and top 1/2" of joint shall contain sealant with tooled joint surface.

Price Structural Engineers, Inc.

SMRT

This document does not supersede stamped structural documents.

PROJECT NORTH

MAINE TURNPIKE AUTHORITY ADMINISTRATION BUILDING
PORTLAND, MAINE

ISSUED FOR BIDDING / CONSTRUCTION
7-9-07

REV	DESCRIPTION	DATE
0	BIDDING/CONSTRUCTION	7-9-07

GRAPHIC SCALE: 0" = 1"

SCALE: ---

PROJECT MANAGER: SLB

JC/DRAWN BY: TOM/TDP

A/E OF RECORD: DMP

CAD FILE: MA/ST/07/116-06

PROJECT NO.: 06616

DATE: 7-9-07

SHEET TITLE: GENERAL STRUCTURAL NOTES

SHEET No. S1.0