

STRUCTURAL STEEL

- G1. All structural steel work shall conform to the recommendations and requirements contained in the "Manual of Steel Construction, Allowable Stress Design" (AISC Ninth Edition, including Supplement #1, 2001), and "Structural Welding Code - Steel" (AWS D1.1, latest edition). Steel fabricator shall be AISC certified and submit evidence to the satisfaction of the structural engineer that AISC and AWS requirements for procedures, quality control, and maintenance of records are strictly adhered to.
- G2. All welding to existing steel shall be performed using MG-600 electrodes in accordance with the welding procedure prepared by Quality Assurance labs for this project.
- G3. Structural steel rolled shapes, plates, and bars shall conform to the following ASTM designations:  
 ASTM A-992 ..... All wide flange sections ("W Shapes"),  $f_y = 50$  ksi.  
 ASTM A-36 ..... Other rolled shapes, plates and bars unless otherwise noted.  $f_y = 36$  ksi.  
 ASTM A-500, Grade B ..... Steel tubes.  $f_y = 46$  ksi.  
 ASTM A-53, Grade B ..... Steel pipe.  $f_y = 35$  ksi.  
 ASTM A-325, Type SC or N ..... All bolts for connecting structural members, unless otherwise noted.  
 ASTM A-307 ..... All anchor bolts, unless otherwise noted.  
 ASTM A-36 ..... Threaded rods, unless otherwise noted.  
 ASTM 1554 .....  $f_y = 105$  ksi. High strength threaded rod where noted.
- G4. Note: A325 and A490 bolts shall be limited to 3/4" and 1" diameter (UON), with two bolts (minimum) at each connection. A325 bolts shall be fully-prestressed "TC Bolts" (Tension Control).
- G5. All steel and steel connection material exposed to weather shall be hot-dip galvanized.
- G6. No change in size or position of the structural elements shall be made without prior written approval of the Structural Engineer.
- G7. Nonshrink grout shall be 5000 psi (min.) compressive strength.
- G8. Temporary erection bracing shall be provided to hold structural steel securely in position. Remove temporary bracing and connections only after permanent members are in place and final connections are in place.
- G9. Shop connections unless otherwise noted, shall be made by welding. Prestensioned and slip critical high strength bolts shall be Tension-Control type bolts (Twist-off TC bolts or approved equal). Bolted connections shall be "slip critical" type at moment connections (where indicated), and fully prestensioned "shear/bearing" type connections at bracing bays, and elsewhere (UON).
- G10. All shop and field welds shall be made by certified welders, and shall conform to the American Welding Society Code, AWS D1.1, latest edition. Carefully control welding technique to avoid distortion, including clamping prior to welding.
- G11. Except for welding to existing steel, electrodes for all field and shop welding shall conform to AWS E70-XX. \*  
 All field welding shall be inspected by qualified welding inspectors.
- All structural steel shall be shop primed except (a) structural steel to be fireproofed shall not be primed (see architectural drawings for locations); and (b) top flanges of beams to which metal deck is welded shall not be primed.
- Connections shown on these drawings are generally schematic. They are intended to define the spatial relationship of the framed members and show a feasible method of making the connection. Where partial information is given on these drawings, it shall be the minimum requirement for the connection. Where bolts are shown but no number is given, the connection has not been completely detailed. Any connection that is not shown or is not completely detailed on the structural drawings shall be designed by a professional engineer registered in the State of Maine retained by the fabricator. Completely detailed means the following information is shown on the shop detail drawings:
- G12. All plate dimensions and grades.
- G13. All weld sizes, pitches, and returns.
- G14. All hole sizes and spacings.
- G15. Number and types of bolts.
- G16. Painting / Galvanizing requirements.
- G17. Members and connections that are part of SLRS shall be clearly identified.
- G18. Gusset plates at bracing bays (or other SLRS) shall be drawn to scale.
- G19. Locations of Demand Critical Welds shall be clearly identified.
- G15. Design calculations for beam connections (including beams within bracing bays) and stairs shall be submitted to the Structural Engineer for review and written approval prior to fabrication. Calculations shall be stamped by a structural engineer retained by the fabricator and licensed in the state of Maine. Double angles shall be used to connect beams to W-flange columns. Single plate shear tabs (3/8" thick, minimum) are permitted at beam to beam connections and beam to HSS columns only (fabricator's engineer shall verify connection capacity).
- G16. Substantial alterations of schematic connection details may impact architectural concept and shall not be made without prior written approval of the Structural Engineer.
- G17. Minimum connection plate thickness and stiffener plate thickness shall be 1/4 inch (UON). \*
- G18. Cuts, holes, coping, etc., required for work of other trades shall be shown on the shop drawings and made in the shop. Cuts or burning of holes in structural steel members in the field will not be permitted, unless approved in writing by the Structural Engineer.
- G19. All beams and columns encased in masonry (or concrete) or below finish grade shall be covered with a coal tar epoxy coating, 1/8" thick, or shall be galvanized.
- G20. STAIRS
- a. Channel stringers for stairs shall be C12x20.7, typical.
- b. Stairs shall be designed for dead load plus the worst case of 100 psf uniform live load, 100 psf non-uniform live load, or 300 lbs. concentrated live load at any location. Provide additional support members not shown on design documents to support loads at no additional cost to the owner.
- c. Contractor shall submit shop drawings for stairs showing all field connection requirements including weld sizes and bolts.
- d. Hangers for stair landings shall be HSS 3x3x1/4 (minimum).
- G21. Camber shall be by cold-form process conforming with the AISC specifications and tolerance.
- G22. Provide stiffeners "finished to bear" at locations where members frame over columns, underneath load concentrations on supporting members, and where shown on drawings.
- G23. Ends of columns at bearing connections and at column splices shall be "finished to bear" to ensure uniform bearing.
- G24. Holes in structural steel webs shall not exceed 2" diameter and holes in structural steel flanges shall not exceed 3/4" diameter without written approval from the structural engineer. Penetrations shall be drilled.
- G25. Place nonshrink grout under all column base plates before adding any vertical loads (UON).

STRUCTURAL STEEL (CONT.)

- G26. Metal deck shall conform to the following (UON):
- a. All work and materials pertaining to metal deck shall conform to Steel Deck Institute (SDI) codes, specifications, and recommendations.
- b. Metal roof deck shall be galvanized.
- c. Metal roof deck shall be 1 1/2" thick, wide rib (Type B),  $f_y = 33$  ksi (min.), 20 gage, 3 span minimum.
- d. Metal roof deck shall be fastened as follows unless noted otherwise:
- At all end supports, intermediate supports, and sides of deck adjacent to walls: 5/8" diameter puddle welds at 6' o.c. (36/7 pattern)
  - At sidelaps: (3) #10 tek screw sidelap fasteners per span.
- e. Metal form deck shall be 1" deep, 22 gage non-composite form deck, 3 span minimum with 3" concrete topping (total slab depth = 4"). Concrete topping shall contain 6x6 - W2.9 x W2.9 welded wire fabric. Install chairs such that WWF is halfway between top of slab and top of deck.
- f. Metal floor deck shall be fastened unless noted otherwise:
- At all end and intermediate supports: 5/8" diameter puddle welds at 11' o.c. (33/4 pattern)
  - At sidelaps: #10 tek screws at equal spaces between supports at 24" o.c.
- g. Pour stops and girder fillers shall conform to SDI Publication No. 29 (UON).
- h. Metal deck supporting exterior slabs shall be galvanized with G90 coating. \*
- G27. Open web steel bar joists shall conform to the following (UON):
- a. All work and materials pertaining to open web steel joists shall conform to Steel Joist Institute "Standard Specifications for Open Web Steel Joists" and "Recommended Code of Standard Practice for Steel Joists and Joist Girders."
- b. Items attached to steel joists shall be attached to panel points of joists only, or an additional diagonal web member shall be added to the joist from the location of the concentrated load to a panel point (see typical details).
- c. Provide bridging at the first panel point of roof joists to accommodate wind uplift loads. Provide additional bridging in accordance with SJI requirements for steel bar joists. Joist manufacturer shall verify all bridging sizes, types, and locations for gravity and uplift loads. All required joist bridging shall be specified and provided by the joist fabricator.
- d. All bridging and bridging anchors shall be completely installed before construction loads are placed on the joists. Bridging shall support the top chord against lateral movement during the construction period and shall hold the joist in approximate location as shown on the plans.
- e. Steel joists shall be shop primed per specifications.
- f. Bottom chords of all joists shall be designed to support a service load of 10 psf or an equivalent concentrated load, one per panel, located at any point along bottom chord panels.
- g. Bar joists with slopes exceeding 2:12 shall have 5 1/2" seats at bearing center line.
- h. Joists 40' or longer shall have a minimum of one line of bridging installed prior to the joist being released from crane cables. Provide additional temporary support as necessary.
- G28. Twist-off tension control bolt assemblies shall conform to ASTM F1852. All bolts shall be lubricated.
- G29. Structural Steel Erector shall notify the owner's special inspector in a timely manner so that scheduling of independent continuous inspection can be performed during the placement of slip-critical bolts, field fillet welds larger than 5/16 inch, and multi-pass field welds of any type (per IBC table 1704.3).
- G30. Structural steel exposed to weather shall be blast cleaned to SSPC-SP6 finish and painted as follows:
- Tnemec 90-97 primer (SSPC-SP6): 2.5-3.5 mils DFT
  - Tnemec Series 27 Epoxy second coat: 4.0-6.0 mils DFT
  - Tnemec Enduroshield: 2.0-3.0 mils DFT
- G31. Show locations of all field-installed 1-inch diameter bolts and A490 bolts on erection plans.

COLD-FORMED METAL FRAMING

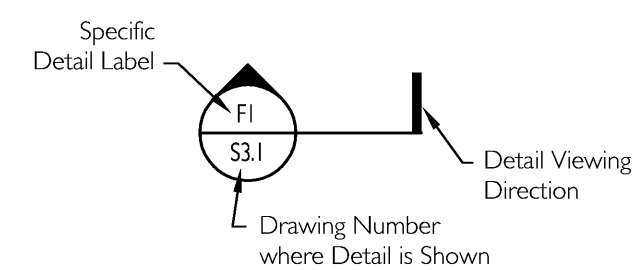
- H1. Contractor shall submit erection drawings for exterior cold-formed framing based on architectural drawings, specifications, and these notes (uon). Submittal shall indicate all field connection details showing size / quantity of fasteners, size/gauge/location of clip angles, blocking, framing sizes/gages, tracks, and other pertinent information.
- H2. All stud walls connected to bottom flanges of beams shall have slip tracks at top which permit vertical beam deflection of span/240 at floor framing and span/180 at roof framing.
- H3. Splices in exterior or axially loaded studs shall not be permitted. Exterior wall studs shall be 18 ga. minimum.
- H4. Contractor shall submit stamped calculations for cold-formed framing including exterior walls, interior walls, and miscellaneous framing (see architectural drawings). Structural engineer shall be currently registered in Maine. Maximum horizontal deflection of wall studs shall not exceed 1/360 of wall height at EFS (or metal) wall panels or 1/600 of wall height at walls with masonry veneer.
- H5. The structural engineer retained by the cold form contractor shall perform at least one site visit to observe installation of engineered cold form framing. The cold form engineer shall document the site visit by sending a brief letter to the architect stating that the installed cold-form framing appears to be in general conformance with the approved cold form submittal and that observed items needing correction have been corrected.
- H6. All studs shall be formed from steel having a minimum G-60 galvanized coating, in conformance with the requirements of ASTM A-525.
- H7. All galvanized studs 12, 14, and 16 gage shall be formed from steel that corresponds to the minimum requirements of ASTM A-446, Grade D with a minimum yield of 50,000 psi. All galvanized 18 gage studs, all galvanized track, bridging end closures, and accessories shall be formed from steel that corresponds to the requirements of ASTM A-446, Grade A with a minimum of 33,000 psi.
- H8. All work shall meet the requirements of the latest edition of the following standards:
- a. American Iron and Steel Institute (AISI) Specification for the Design of Cold-Formed Steel Structural Members.
- b. American Welding Society (AWS) D1.3 Structural Welding Code - Sheet Steel.
- c. American Society for Testing and Materials (ASTM).
- d. All pertinent federal, state, and local codes.
- H9. All fasteners connecting light gage members and accessories shall be a minimum of No. 12 size screws spaced not closer than 0.75 inch on center. Number of fasteners shall be as shown on details. All fasteners shall be galvanized or cadmium plated.
- H10. All studs shall be seated squarely in tracks and have full bearing against inside track web (top and bottom) prior to stud and track attachment. Tracks shall be attached to a common structural element.
- H11. Minimum 10" unpunched steel is required at both ends of joists and studs. When field cutting reduces this minimum 10" unpunched steel, web stiffener shall be installed.
- H12. Anchorage of cold-formed metal framing to adjacent structural components, including foundations, shall be included in cold-formed engineering calculations and clearly detailed on cold-formed metal framing shop drawings.
- H13. Exterior wall studs shall not be installed until concrete slabs have been placed.

DESIGN LOADS

- J1. Snow Load
- a.  $P_s = 35$  psf (see Details for drift loads).
- b.  $C_e = 1.0$ .
- c.  $I_s = 1.0$ .
- d.  $C_t = 1.0$ .
- J2. Wind Load
- a. Basic Wind Speed = 100 mph.
- b.  $K_z = 1.0$ .
- c. Exposure = "C".
- d. Components & Cladding = 52 psf (max.) within 14' of building corners and 22 psf elsewhere.
- J3. Seismic
- a.  $I_E = 1.0$ .
- b. Spectral Response Accelerations:  
 $S_s = .32$   
 $S_1 = 0.78$
- c. Spectral Response Coefficients:  
 $SDS = .214$   
 $SDI = .052$
- d. Seismic Design Category = "B."
- e. Seismic Force Resisting Systems:  
 Unreinforced masonry shear walls
- f. Design Base Shear:  
 $C_s (NS) = .075$   
 $C_s (EW) = .075$
- g.  $R (NS) = 1.5$   
 $R (EW) = 1.5$
- h. Design Overturn = "Equivalent Lateral Force."  
 Soil Site Class = "B."

LIST OF ABBREVIATIONS

&	And
At	At
ADDL	Additional
ALT	Alternate
ALUM	Aluminum
AB	Anchor Bolt
ARCH	Architectural
BCX	Bottom Chord Extension
BOT	Bottom
BO	Bottom of
BOF	Bottom of Footing
BOS	Bottom of Steel
BM	Beam
BRG	Bearing
BPL	Bearing Plate
BS	Both Sides
BTWN	Between
CIP	Cast in Place Concrete
CL	Center Line
CLR	Clear
COL	Column
CONC	Concrete
CJ	Control Joint
CMU	Concrete Masonry Unit
COORD	Coordinate
CONT	Continuous
DBA	Deformed Bar Anchor
DET	Detail
DIA	Diameter
DIM	Dimension
DWGS	Drawings
EA	Each
EXPANSION	Expansion
EF	Each Face
EL	Elevation
EMBT	Embedment
EQ	Equally Spaced
EW	Each Way
EXG	Existing
FD	Floor Drain
FDN	Foundation
FF	Far Face
FG	Final Grade
FIN FLR	Finish Floor
FEE	Finish Floor Elevation
FT	Foot
FTG	Footing
GA	Gauge
GALV	Galvanized
GC	General Contractor
HDG	Hot Dip Galvanized
HOR	Horizontal
HP	High Point
HSS	Hollow Structural Sections
HVAC	Heating, Ventilating, or Air Conditioning
ID	Inside Diameter
IF	Inside Face
JS	Joist Substitute
JT	Joint
KIP	Kilopound (1000 pounds)
L	Angle
LB	Pound
LG	Long
LLH	Long Leg Horizontal
LLV	Long Leg Vertical
LOCNS	Locations
LP	Low Point
MAS	Masonry
MAX	Maximum
MIDOT	Maine Dept. of Transportation
MECH	Mechanical
MFR	Manufacturer
MIN	Minimum
MISC	Miscellaneous
N&W	Nut & Washer
NF	Near Face
NIC	Not in Contract
NTS	Not to Scale
OC	On Center
OD	Outside Diameter
OF	Outside Face
OH	Opposite Hand
OPNG	Opening
PAF	Powder Activated Fastener
PCF	Pounds per Cubic Foot
PJF	Preformed Joint Filler
PLY	Plywood
PROJ	Projection
PSF	Pounds per Square Foot
PSI	Pounds per Square Inch
PVC	Polyvinyl Chloride
RAD	Radius
RD	Roof Drain
REINF	Reinforcement
REQD	Required
SCHED	Schedule
SECT	Section
SF	Square Foot
SIM	Similar
SP	Spaces
SPEC	Specification
SQ	Square
SS	Stainless Steel
STD	Standard
STL	Steel
T&B	Top and Bottom
TCS	Top Chord Extension
TEMP	Temperature
THD	Threaded
TJ	Tie Joist
TO	Top of
TOC	Top of Concrete
TOF	Top of Footing
TOG	Top of Grout
TOP	Top of Pier
TOW	Top of Wall
TYP	Typical
UON	Unless Otherwise Noted
VERT	Vertical
VIF	Verify in Field
W/	With
W/O	Without
W/P	Working Point
WWF	Welded Wire Fabric



\* INDICATES ADDENDUM #1 REVISION

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 CWS/IFC DRAWINGS/1.DWG

ISSUED FOR CONSTRUCTION JULY 21, 2009

Owner: **BAYSIDE MAINE LLC**  
 477 CONGRESS ST.  
 SUITE 1012  
 PORTLAND, MAINE, 04101

Development Consultant: **SHINBERG CONSULTING, LLC**

**RENOVATIONS TO 645 CONGRESS ST.**

PORTLAND, ME 04101

Scale: As Noted  
 Date: 5/14/09

Revisions:

Drawing Title: **GENERAL STRUCTURAL NOTES**

Drawing Number: **S1.1**

\* INDICATES ADDENDUM #1 REVISION