

Final Report of Structural Special Inspections

Project: *New 3-Unit Building*
Location: *62 Cumberland Street; Portland Maine*
Owner: *Eco Capital, LLC*
Structural Design Professional in
Responsible Charge: *David A. Price, PE / Price Structural Engineers, Inc.*
Date: *July 19, 2011*

To whom it may concern:

To the best of my information, knowledge and belief, the *Structural Special Inspections* required for this project have been performed and discovered discrepancies have been reported and resolved. Copies of statements, field reports, tests and inspections are included with this report.

Comments:

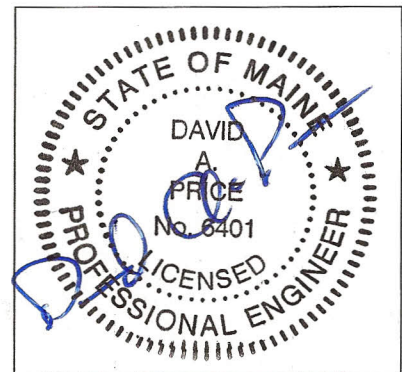
Interim reports submitted prior to this final report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,
Special Inspector

David A. Price, PE
Price Structural Engineers, Inc.

David A. Price
Signature

July 19, 2011
Date



Schedule of Structural Inspection and Testing Agencies

This Statement of Special Inspections / Quality Assurance Plan includes the following building systems:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Soils and Foundations
<input checked="" type="checkbox"/> Cast-in-Place Concrete
<input type="checkbox"/> Precast Concrete
<input type="checkbox"/> Masonry
<input checked="" type="checkbox"/> Structural Steel
<input type="checkbox"/> Cold-Formed Steel Framing | <input type="checkbox"/> Spray Fire Resistant Material
<input checked="" type="checkbox"/> Wood Construction
<input type="checkbox"/> Exterior Insulation and Finish System
<input type="checkbox"/> Mechanical & Electrical Systems
<input type="checkbox"/> Architectural Systems
<input type="checkbox"/> Special Cases |
|--|---|

Special Inspection Agency #	Firm	Address, Telephone, e-mail
1. Structural Special Inspector	<i>Price Structural Engineers, Inc. David Price, PE</i>	<i>75 Farms Edge Road North Yarmouth, ME 04097 Tel: (207) 846-0099 Cell: (207) 232-3854 Email: pricestructural@maine.rr.com</i>
2. Soils Inspection / Testing	<i>Stephen A. Down, PE</i>	<i>P.O. Box 152, 46 Giles Road Readfield, ME 04355 Tel: (207) 685-3637 Email: stevedown123@gmail.com</i>
3. Concrete Inspection / Testing	<i>Summit Environmental Bill Walsh, PE</i>	<i>1 Industrial Way Portland, ME 04103 Tel: (207) 221-6360 Cell: (207) 576-5021 Email: mwalsh@summitenv.com</i>

Notes:

1. The inspectors and testing agencies shall be engaged by the Owner or the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official, prior to commencing work.
2. Written site visit reports (electronic pdf is acceptable) shall be sent to the contractor, special inspector and owner as soon as possible after site visit. Reports shall identify items observed, noted deficiencies and when observed deficiencies have been corrected.
3. Deficiencies identified during the site visit shall be brought to the attention of the contractor's superintendent, or his designated representative, at the conclusion of the site visit. Deficiencies identified after the site visit shall be brought to the attention of the contractor's superintendent, or his designated representative, as soon as possible after they are discovered.

Quality Assurance Plan

Quality Assurance for Seismic Resistance

Seismic Design Category	C
Quality Assurance Plan Required (Y/N)	Yes

Description of seismic force resisting system and designated seismic systems:

Structure is braced using light frame shear walls at wood framed areas and masonry / concrete shear walls at the parking garage area. Shear walls occur in each orthogonal direction and are located as indicated on Structural Framing Drawings S4.0 to S4.3. Loads are distributed to shear walls by the floor sheathing diaphragms at wood framed areas and by the composite slab at the garage area.

Inspections and tests for the seismic resisting components are as indicated within the attached schedule and summarized as follows:

1. *Test compaction of foundation backfill adjacent to shearwalls.*
2. *Visually inspect reinforcement and test concrete at concrete shear walls.*
3. *Visually inspect structural steel member sizes and bolting at garage floor system.*
4. *Visually inspect floor sheathing, fastener spacing and sheathing edge support at wood framed floor sheathing diaphragms.*
5. *Visually inspect shear wall fastener spacing and sheathing edge support at wood framed shear walls.*
6. *Visually inspect hold- down anchors at wood framed shear walls.*

Quality Assurance for Wind Requirements

Basic Wind Speed (3 second gust)	100 mph
Wind Exposure Category	B
Quality Assurance Plan Required (Y/N)	Yes

Description of wind force resisting system and designated wind resisting components:

Structure is braced using light frame shear walls at wood framed areas and masonry / concrete shear walls at the parking garage area. Shear walls occur in each orthogonal direction and are located as indicated on Structural Framing Drawings S4.0 to S4.3. Loads are distributed to shear walls by the floor sheathing diaphragms at wood framed areas and by the composite slab at the garage area.

Inspections and tests for the wind resisting components are as indicated within the attached schedule and summarized as follows:

1. *Test compaction of foundation backfill adjacent to shearwalls.*
2. *Visually inspect reinforcement and test concrete at concrete shear walls.*
3. *Visually inspect shear studs, structural steel member sizes and bolting at garage floor system.*
4. *Visually inspect floor sheathing fastener spacing and sheathing edge support at wood framed floor sheathing diaphragms.*
5. *Visually inspect shear wall fastener spacing, and sheathing edge support at wood framed shear walls.*
6. *Visually inspect hold- down anchors at wood framed shear walls.*

Qualifications of Inspectors and Testing Technicians

The qualifications of all personnel performing Special Inspection and testing activities are subject to the approval of the Building Official. The credentials of all Inspectors and testing technicians shall be provided if requested.

Key for Minimum Qualifications of Inspection Agents:

When the Registered Design Professional in Responsible Charge deems it appropriate that the individual performing a stipulated test or inspection have a specific certification or license as indicated below, such designation shall appear below the *Agency Number* on the Schedule.

PE/SE	Structural Engineer – a licensed SE or PE specializing in the design of building structures
PE/GE	Geotechnical Engineer – a licensed PE specializing in soil mechanics and foundations
EIT	Engineer-In-Training – a graduate engineer who has passed the Fundamentals of Engineering examination

American Concrete Institute (ACI) Certification

ACI-CFTT	Concrete Field Testing Technician – Grade 1
ACI-CCI	Concrete Construction Inspector
ACI-LTT	Laboratory Testing Technician – Grade 1&2
ACI-STT	Strength Testing Technician

American Welding Society (AWS) Certification

AWS-CWI	Certified Welding Inspector
AWS – ACWI	Associate Certified Welding Inspector
AWS/AISC-SSI	Certified Structural Steel Inspector

American Society of Non-Destructive Testing (ASNT) Certification

ASNT	Non-Destructive Testing Technician – Level II or III.
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International Code Council (ICC) Certification

ICC-SMSI	Structural Masonry Special Inspector
ICC-SWSI	Structural Steel and Welding Special Inspector
ICC-SFSI	Spray-Applied Fireproofing Special Inspector
ICC-PCSI	Prestressed Concrete Special Inspector
ICC-RCSI	Reinforced Concrete Special Inspector

National Institute for Certification in Engineering Technologies (NICET)

NICET-CT	Concrete Technician – Levels I, II, III & IV
NICET-ST	Soils Technician - Levels I, II, III & IV
NICET-GET	Geotechnical Engineering Technician - Levels I, II, III & IV

Soils and Foundations

Note: Where "periodic inspections" are performed and deficient items are located, additional inspections shall be performed so that extent of deficient areas can be determined and corrected.

Item	Agency # (Qualif.)	Scope
1. Shallow Foundations	Agency #2 (PE/GE or Qualified Technician supervised by PE/GE)	<p><i>Inspect soils below footings for adequate bearing capacity and consistency with geotechnical report.</i></p> <p><i>Inspect removal of unsuitable material and preparation of subgrade prior to placement of controlled fill</i></p>
2. Structural Fill	Agency #2 (PE/GE or Qualified Technician supervised by PE/GE)	<p><i>Verify material properties of crushed stone and structural fill adjacent to foundations and below footings</i></p> <p><i>Inspect placement, lift thickness and compaction of structural fill below footings and adjacent to foundations.</i></p> <p><i>Test density at lifts of fill below footings by nuclear methods (ASTM D2922) and elsewhere deemed necessary by Agent #2.</i></p> <p><i>Perform sieve tests (ASTM D422 & D1140) and modified Proctor tests (ASTM D1557 at fill below footings and elsewhere deemed necessary by Agent #2.</i></p>

Cast-in-Place Concrete

Note: Where "periodic inspections" are performed and deficient items are located, additional inspections shall be performed so that extent of deficient areas can be determined and corrected.

Item	Agency # (Qualif.)	Scope
1. (a) Concrete Mix Submittal (shaded items indicate submittal required for review, typ.) (b) Reinforcement Submittal	Agency #1 (PE/SE)	Review cement certificate of compliance as part of mix design submittal review. Review steel reinforcement submittal
2. Concrete Mix – During Construction	Agency #3 (ACI-CCI)	Review concrete batch tickets and verify compliance with approved mix design. Verify that water added at the site does not exceed amount allowed by the mix design.
3. Reinforcement Installation	Agency #1 and Agency #3 (ACI- CCI)	Inspect size, spacing, cover, positioning and grade of reinforcing steel, including dowels connecting walls. Reinforcement shall conform to stamped structural drawings in addition to what is indicated on reinforcement shop drawings. Verify that reinforcing bars are free of form oil or other deleterious materials. Inspect bar laps and mechanical splices. Verify that bars are adequately tied and supported on chairs or bolsters
4. Formwork	Agency #3 (ACI- CCI)	Inspect formwork dimensions for compliance with foundation drawings. Verify that formwork does not contain debris or ice. Verify foundation wall control joint bondouts conform to G2/S3.0
5. Anchor Rods & Anchor Bolts	Agency #3 (ACI- CCI)	Inspect size, positioning and embedment of anchor rods/bolts Inspect concrete placement and consolidation around anchors.
6. Concrete Placement	Agency #1 Or Agency #3 (ACI- CCI)	Inspect placement of concrete. Verify that concrete conveyance and depositing avoids segregation or contamination. Verify that concrete is properly consolidated.
7. Sampling and Testing of Concrete	Agency #3 (ACI- CFTT)	Test concrete compressive strength (ASTM C31 & C39), slump (ASTM C143), air-content (ASTM C231 or C173) and temperature (ASTM C1064). One set of tests required for each day of concrete placement when concrete placement exceeds 5 yards.
8. Curing and Protection	Agency #3 (ACI- CCI)	Inspect curing, cold weather protection and hot weather protection procedures.

Structural Steel

Note: Where "periodic inspections" are performed and deficient items are located, additional inspections shall be performed so that extent of deficient areas can be determined and corrected.

Item	Agency # (Qualif.)	Scope
1. Fabricator Certification/ Quality Control Procedures (shaded items indicate submittal required for review, typ.)	Agency #1	<p><i>Review shop fabrication and quality control procedures unless fabricator is an AISC certified plant.</i></p> <p><i>Review fabricator's written procedures and quality control manuals or provide documentation that fabricator is an AISC certified plant.</i></p>
2. Structural Steel submittal and Steel Material Certification	Agency #1 (PE/SE)	<p><i>Review sizes and grades of steel members and fasteners. Review certificates of compliance as part of structural steel submittal.</i></p>
3. Leveling Plates below columns	Agency #1	<p><i>Verify that Leveling plates have been grouted as specified prior to placing beams or columns</i></p>
4. Anchor Rods and Bolts	Agency #1	<p><i>Verify that washers are in place as specified and that nuts are tight at anchor bolts.</i></p>
5. Structural Steel components	Agency #1	<p><i>Verify sizes of beams and columns and that they have been placed at correct locations based on identification markings and beam depth (or column depth) dimensions.</i></p>
6. Bolting	Agency #1	<p><i>Inspect high strength bolt material markings for correct bolt type, diameter, storage in lubricated containers and installation / tightening of high-strength bolt.</i></p> <p><i>Verify that splines have separated from tension control bolts. Periodically verify proper tightening sequence.</i></p>

Rough Carpentry

Note: Where "periodic inspections" are performed and deficient items are located, additional inspections shall be performed so that extent of deficient areas can be determined and corrected.

Item	Agency # (Qualif.)	Scope
1. Column Sizes and Built-up column requirements	Agency #1 (PE/SE)	<i>Periodic Structural Observations</i>
2. Column Bearing – solid blocking at floor cavities and anchorage at column bases	Agency #1 (PE/SE)	<i>Periodic Structural Observations</i>
3. Stud size, spacing, alignment with truss centerlines, grade	Agency #1 (PE/SE)	<i>Periodic Structural Observations</i>
4. Beam sizes and bearing	Agency #1 (PE/SE)	<i>Periodic Structural Observations</i>
5. Simpson Hangers- gap distance at hangers, nails (diameter, quantity), ZMAX finish at PT members,	Agency #1 (PE/SE)	<i>Periodic Structural Observations</i>
6. Porch /Deck Framing Details	Agency #1 (PE/SE)	<i>Periodic Structural Observation</i>
7. Shear wall Details <ul style="list-style-type: none"> • Hold-Down Anchors • Sheathing thickness • Fastener Size / Spacing • Framing @ Sheathing Edges • Stud Spacing • Sheathing material 	Agency #1 (PE/SE)	<i>Periodic Structural Observations</i>
8. Floor Diaphragm Details <ul style="list-style-type: none"> • Sheathing thickness • Fastener Size / Spacing • Framing @ Sheathing Edges • Diaphragm Chords 	Agency #1 (PE/SE)	<i>Periodic Structural Observations</i>

Rough Carpentry (cont.)

Note: Where "periodic inspections" are performed and deficient items are located, additional inspections shall be performed so that extent of deficient areas can be determined and corrected.

10. Stair Framing Details <ul style="list-style-type: none">• Stringer / Landing Framing• Connections	<i>Agency #1 (PE/SE)</i>	<i>Periodic Structural Observations</i>
11. Lintels <ul style="list-style-type: none">• Lintel Sizes• Framing @ Jambs	<i>Agency #1 (PE/SE)</i>	<i>Periodic Structural Observations</i>
12. Misc. Framing Details	<i>Agency #1 (PE/SE)</i>	<i>Periodic Structural Observations</i>