

Project: Patrons Oxford Insurance Office Building
Date Prepared: 1/11/2016

Structural Statement of Special Inspections

Project: *Patrons Oxford Insurance Office Building*

Location: *Portland, ME*

Owner: *Patrons Oxford Insurance Co.*

This *Statement of Special Inspections* encompass the following discipline: **Structural**

This *Statement of Special Inspections* is submitted as a condition for permit issuance in accordance with the Special Inspection and Structural Testing requirements of the Building Code. It includes a schedule of Special Inspection services applicable to this project as well as the name of the Structural Special Inspection Coordinator (SSIC) and the identity of other approved agencies to be retained for conducting these inspections and tests.

The Structural Special Inspection Coordinator shall keep records of all Structural inspections and shall furnish inspection reports to the Building Code Official (BCO) and the Structural Registered Design Professional in Responsible Charge (SRDP). Discovered discrepancies shall be brought to the immediate attention of the Contractor for correction. If such discrepancies are not corrected, the discrepancies shall be brought to the attention of the Building Official and the Structural Registered Design Professional in Responsible Charge. The Special Inspection program does not relieve the Contractor of his or her responsibilities.

Interim reports shall be submitted to the Building Official and the Structural Registered Design Professional in Responsible Charge at an interval determined by the SSIC and the BCO.

A *Final Report of Special Inspections* documenting completion of all required Special Inspections, testing and correction of any discrepancies noted in the inspections shall be submitted to the BCO prior to issuance of a Certificate of Use and Occupancy.

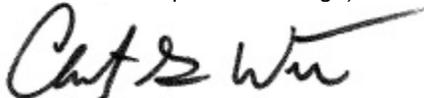
Job site safety and means and methods of construction are solely the responsibility of the Contractor.

Interim Report Frequency: *Upon request of Building Official* _____ or per attached schedule.

Prepared by:

Christopher G. Williams, P.E., S.E.

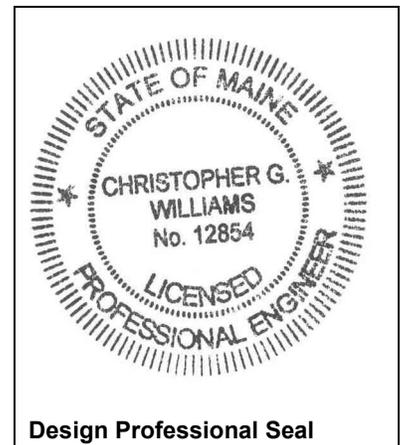
(type or print name of the Structural Registered Design Professional in Responsible Charge)



Signature

1/11/2016

Date



Owner's Authorization:

Building Code Official's Acceptance:

Signature

Date

Signature

Date

Structural Statement of Special Inspections (Continued)

List of Agents

Project: *Patrons Oxford Insurance Office Building*

Location: *Portland, ME*

Owner: *Patrons Oxford Insurance Co.*

This *Statement of Special Inspections* encompass the following discipline: **Structural**

(Note: *Statement of Special Inspections for other disciplines may be included under a separate cover*)

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

- Soils and Foundations
- Cast-in-Place Concrete
- Precast Concrete System
- Structural Masonry Systems
- Structural Steel
- Wood Construction
- Special Cases

Special Inspection Agencies	Firm	Address, Telephone, e-mail
1. STRUCTURAL Special Inspections Coordinator (SSIC)	<i>Becker Structural Engineers, Inc.</i>	<i>75 York St. Portland, ME 04101 207-879-1838</i>
2. Special Inspector (SI 1)	<i>Becker Structural Engineers, Inc.</i>	<i>75 York St. Portland, ME 04101 207-879-1838</i>
3. Special Inspector (SI 2)	<i>R.W. Gillespie & Associates, Inc.</i>	<i>86 Industrial Park Rd., Ste. 4 Saco, ME 04072 207-286-8008</i>
4. Testing Agency (TA 1)	<i>T.B.D.</i>	<i>T.B.D.</i>
5. Testing Agency (TA 2)		
6. Other (O1)		

Note: 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.

Project: Patrons Oxford Insurance Office Building
Date Prepared: 1/11/2016

Structural Statement of Special Inspections (Continued)

Final Report of Special Inspections (SSIC/SI 1)

[To be completed by the Structural Special Inspections Coordinator (SSIC/SI 1). Note that all Agent's Final Reports must be received prior to issuance.]

Project: *Patrons Oxford Insurance Office Building*

Location: *Portland, ME*

Owner: *Patrons Oxford Insurance Co.*

Owner's Address: *P.O. Box 1960*
Auburn, ME 04211

Architect of Record: *Scott Simons* *Scott Simons Architects*
(name) *(firm)*

Structural Registered Design

Professional in Responsible Charge: *Christopher G. Williams, P.E., S.E.* *Becker Structural Engineers, Inc.*
(name) *(firm)*

To the best of my information, knowledge and belief, the Special Inspections required for this project, and itemized in the *Statement of Special Inspections* submitted for permit, have been performed and all discovered discrepancies have been reported and resolved.

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,
Structural Special Inspection Coordinator

Christopher G. Williams, P.E., S.E.

(Type or print name)

Becker Structural Engineers, Inc.

(Firm Name)

Signature

Date

Licensed Professional Seal

Project: Patrons Oxford Insurance Office Building
Date Prepared: 1/11/2016

Structural Statement of Special Inspections (Continued)

Special Inspector's/Agent's Final Report

Project: *Patrons Oxford Insurance Office Building*

Special Inspector or
Agent:

(name)

(firm)

Designation:

SI2

To the best of my information, knowledge and belief, the Special Inspections or testing required for this project, and designated for this Inspector/Agent in the *Statement of Special Inspections* submitted for permit, have been performed and all discovered discrepancies have been reported and resolved.

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 or Agent:

(Type or print name)

Signature

Date

***Licensed Professional Seal or
Certification Number***

Project: Patrons Oxford Insurance Office Building
Date Prepared: 1/11/2016

Structural Statement of Special Inspections (Continued)

Special Inspector's/Agent's Final Report

Project: *Patrons Oxford Insurance Office Building*

Special Inspector or
Agent:

(name)

(firm)

Designation:

TA1

To the best of my information, knowledge and belief, the Special Inspections or testing required for this project, and designated for this Inspector/Agent in the *Statement of Special Inspections* submitted for permit, have been performed and all discovered discrepancies have been reported and resolved.

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 or Agent:

(Type or print name)

Signature

Date

SEAL NOT REQUIRED
FOR TESTING AGENCY

***Licensed Professional Seal or
Certification Number***

Structural Schedule of Special Inspections

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 to the Special Inspector for their records. *NOTE VERIFICATION THAT QUALIFIED INDIVIDUALS ARE AVAILABLE TO PERFORM STIPULATED TESTING AND/OR INSPECTION SHOULD BE PROVIDED PRIOR TO SUBMITTING STATEMENT. AGENT QUALIFICATIONS IN SCHEDULE ARE SUGGESTIONS ONLY; FINAL QUALIFICATIONS ARE SUBJECT TO THE DISCRETION OF THE REGISTERED DESIGN PROFESSIONAL PREPARING THE SCHEDULE.*

Key for Minimum Qualifications of Inspection Agents:

When the Registered Design Professional in Responsible Charge or Special Inspector of Record deems it appropriate that the individual performing a stipulated test or inspection have a specific certification, license or experience as indicated below, such requirement shall be listed below and shall be clearly identified within the schedule under the Agent Qualification Designation.

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

Experienced Testing Technician

ETT	Experienced Testing Technician – An Experienced Testing Technician with a minimum 5 years experience with the stipulated test or inspection
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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/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

Other

Structural Schedule of Special Inspections

SOILS & FOUNDATION CONSTRUCTION

VERIFICATION AND INSPECTION	REQD	EXTENT: CONTINUOUS, PERIODIC, SUBMITTAL, OR NONE	COMMENTS	AGENT	AGENT QUALIFICATION	TASK COMPLETED
	Y/N					
IBC Section 1704.7, 1704.8, 1704.9						
1. Required Verification and Inspection of Soils:						
a. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	Y	P	IBC 1704.7	SI2	PE/GE, EIT or ETT	
b. Verify excavations are extended to proper depth and have reached proper material.	Y	P	IBC 1704.7	SI2	PE/GE, EIT or ETT	
c. Perform classification and testing of compacted fill and engineered fill materials.	Y	P	IBC 1704.7	TA1	PE/GE, EIT or ETT	
d. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill and/or engineered fill.	Y	C	IBC 1704.7	TA1	PE/GE, EIT or ETT	
e. Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly.	Y	P	IBC 1704.7	SI2	PE/GE, EIT or ETT	
2. Required Verification and Inspection of Driven Deep Foundation Elements:						
a. Verify element materials, sizes and lengths comply with the requirements.	N	C	IBC 1704.8	TA1	PE/GE, EIT or ETT	
b. Determine capacities of test elements and conduct additional load tests, as required.	N	C	IBC 1704.8	SI2	PE/GE, EIT or ETT	
c. Observe driving operations and maintain complete and accurate records for each element.	N	C	IBC 1704.8	TA1	PE/GE, EIT or ETT	
d. Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element.	N	C	IBC 1704.8	TA1	PE/GE, EIT or ETT	
3. Required Verification and Inspection of Cast-in-Place Deep Foundation Elements:						
a. Observe drilling operations and maintain complete and accurate records for each element.	N	C	IBC 1704.9	TA1	PE/GE, EIT or ETT	
b. Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end bearing strata capacity. Record concrete or grout volumes.	N	C	IBC 1704.9	TA1	PE/GE, EIT or ETT	

See Concrete, Masonry, and/or Steel Schedules for additional material inspections for deep foundation elements as applicable.

Structural Schedule of Special Inspections
CONCRETE CONSTRUCTION

VERIFICATION AND INSPECTION	REQD	EXTENT: CONTINUOUS, PERIODIC, SUBMITTAL, OR NONE	COMMENTS	AGENT	AGENT QUALIFICATION	TASK COMPLETED
	Y/N					
IBC Section 1704.4						
1. Inspection of reinforcing steel, including prestressing tendons, and placement	Y	P	ACI 318: 3.5, 7.1-7.7	SII	PE/SE or EIT	
2. Inspection of reinforcing steel welding in accordance with Table 1704.3, Item 5B	N	-	Not applicable. Welding of Reinf Not Allowed	-	-	
3. Inspect bolts to be installed in concrete prior to and during placement of concrete where allowable loads have been increased or where strength design is used.	Y	C	IBC 1911.5	SII	PE/SE or EIT	
4. Inspection of anchors installed in hardened concrete.	Y	P	IBC 1212.1	SII	PE/SE or EIT	
5. Verifying use of required design mix	Y	P	ACI 318: Ch 4, 5.2-5.4	TA1	ACI-CFTT or ACI-STT	
6. At time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests and determine the temperature of the concrete.	Y	C	ASTM C 172 ASTM C 31 ACI 318: 5.6, 5.8	TA1	ACI-CFTT or ACI-STT	
7. Inspection of concrete and shotcrete placement for proper application techniques	Y	C	ACI 318: 5.9, 5.10	TA1	ACI-CFTT or ACI-STT	
8. Inspection for maintenance of specified curing temperature and techniques	Y	P	ACI 318: 5.11-5.13	SII	PE/SE or EIT	
9. Inspection of Prestressed Concrete						
a. Application of prestressing force.	N	C	ACI 318: 18.20	TA2	PE/SE or EIT	
b. Grouting of bonded prestressing tendons in seismic force resisting system	N	C	ACI 318: 18.18.4	TA1	ACI-CFTT or ACI-STT	
10. Erection of precast concrete members.	N	P	ACI 318: Ch 16	SII	PE/SE or EIT	
11. Verification of in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	N	P	ACI 318: 6.2	TA1	ACI-CFTT or ACI-STT	
12. Inspect formwork for shape, location and dimensions of the concrete member being formed.	Y	P	Limitations apply. See below	SII	PE/SE or EIT	

Limitations of item 12: Special inspection includes periodic review of formwork shape, general location, and formwork dimensions that can be readily measured with conventional tape measure. Verification of building layout, building location, foundation extents, column grids, and foundation elevations is excluded.

Structural Schedule of Special Inspections - STEEL CONSTRUCTION

VERIFICATION AND INSPECTION	REQD Y/N	EXTENT: CONTINUOUS, PERIODIC, SUBMITTAL, OR NONE	COMMENTS	AGENT	AGENT QUALIFICATION	TASK COMPLETED
IBC Section 1704.3						
1. Material verification of high-strength bolts, nuts and washers:						
a. Identification markings to conform to ASTM standards specified in the approved construction documents.	Y	P	Applicable ASTM material standards, AISC 360, A3.3	TA1	AWS/AISC-SSI	
b. Manufacturer's certificate of compliance required.	Y	S		SII	PE/SE or EIT	
2. Inspection of high-strength bolting						
a. Snug-tight joints.	Y	P		TA1	AWS/AISC-SSI	
b. Pretensioned and slip-critical joints using turn-of-nut with matchmaking, twist-off bolt or direct tension indicator methods of installation.	Y	P	AISC LRFD Section M2.5	TA1	AWS/AISC-SSI	
c. Pretensioned and slip-critical joints using turn-of-nut without matchmaking or calibrated wrench methods of installation.	Y	C	IBC Sect 1704.3.3	TA1	AWS/AISC-SSI	
3. Material verification of structural steel and cold-formed steel deck:						
a. For structural steel, identification markings to conform to AISC 360.	Y	P	AISC 360, M5.5	SII	PE/SE or EIT	
b. For other steel, identification markings to conform to ASTM standards specified in the approved construction documents.	Y	P	Applicable ASTM material standards	SII	PE/SE or EIT	
c. Manufacturer's certified test reports.	Y	S		SII	PE/SE or EIT	
4. Material verification of weld filler materials:						
a. Identification markings to conform to AWS specification in the approved construction documents.	Y	P	AISC 360, M5.5	TA1	AWS/AISC-SSI	
b. Manufacturer's certificate of compliance required.	Y	S		SII	PE/SE or EIT	
5. Submit current AWS D1.1 welder certificate for all field welders who will be welding on this project.	Y	S	AWS D1.1	SII	PE/SE or EIT	
6. Inspection of welding (IBC 1704.3.1):						
a. Structural steel and cold-formed deck:						
1) Complete and partial joint penetration groove welds.	N	C	AWS D1.1	TA1	AWS-CWI	
2) Multipass fillet welds.	N	C		TA1	AWS-CWI	
3) Single-pass fillet welds > 5/16"	N	C		TA1	AWS-CWI	
4) Plug and slot welds	N	C		TA1	AWS-CWI	
5) Single-pass fillet welds ≤ 5/16"	Y	P		TA1	AWS-CWI	
6) Floor and deck welds.	N	P	AWS D1.3	TA1	AWS-CWI	
b. Reinforcing steel:						
1) Verification of weldability of reinforcing steel other than ASTM A706.	N	-	Not applicable.	-	-	
2) Reinforcing steel-resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special structural walls of concrete and shear reinforcement.	N	C	AWS D1.4 ACI 318: 3.5.2	TA1	AWS-CWI	
3) Shear reinforcement.	N	C		TA1	AWS-CWI	
4) Other reinforcing steel.	N	P		TA1	AWS-CWI	
7. Inspection of steel frame joint details for compliance (IBC Sect 1704.3.2) with approved construction documents:						
a. Details such as bracing and stiffening.	Y	P	IBC 1704.3.2	SII	PE/SE or EIT	
b. Member locations.	Y	P		SII	PE/SE or EIT	
c. Application of joint details at each connection.	Y	P		SII	PE/SE or EIT	

Structural Schedule of Special Inspection Services
FABRICATION AND IMPLEMENTATION PROCEDURES – STRUCTURAL STEEL

VERIFICATION AND INSPECTION IBC Section 1704.2	REQD	EXTENT: CONTINUOUS, PERIODIC, SUBMITTAL, OR NONE	COMMENTS	AGENT	AGENT QUALIFICATION	TASK COMPLETED
	Y/N					
1. Fabrications Procedures: Review of fabricator’s written procedural and quality control manuals and periodic auditing of fabrication practices by an approved special inspection agency. At the completion of fabrication, the approved fabricator shall submit a certificate of compliance to the building code official stating that the work was performed in accordance with the approved construction documents. -OR- 2. AISC Certification	Y	S	Fabricator shall submit one of the two qualifications	SII	PE/SE or EIT	
3. At completion of fabrication, the approved fabricator shall submit a certificate of compliance to the building code official stating that the work was performed in accordance with the approved construction documents.	Y	S	IBC 1704.2.2	SII	PE/SE or EIT	

Structural Schedule of Special Inspection Services
FABRICATION AND IMPLEMENTATION PROCEDURES – WOOD TRUSSES

VERIFICATION AND INSPECTION IBC Section 1704.2	REQD Y/N	EXTENT: CONTINUOUS, PERIODIC, SUBMITTAL, OR NONE	COMMENTS	AGENT	AGENT QUALIFICATION	TASK COMPLETED
1. Fabrications Procedures: Review of fabricator's written procedural and quality control manuals and periodic auditing of fabrication practices by an approved special inspection agency. At the completion of fabrication, the approved fabricator shall submit a certificate of compliance to the building code official stating that the work was performed in accordance with the approved construction documents. -OR- 2. TPI Inspection Program: Fabricator shall participate in the TPI Quality Assurance Inspection Program, and maintain a copy of the Quality Assurance Procedures Manual, QAP-90. Submit copy of certificate. All trusses shall bear the TPI Registered Mark.	Y	S	Fabricator shall submit one of the two qualifications	SII	PE/SE or EIT	
3. At completion of fabrication, the approved fabricator shall submit a certificate of compliance to the building code official stating that the work was performed in accordance with the approved construction documents	Y	S	IBC 1704.2.2	SII	PE/SE or EIT	

Structural Schedule of Special Inspections
WOOD CONSTRUCTION

VERIFICATION AND INSPECTION IBC Section 1704.6	REQD Y/N	EXTENT: CONTINUOUS, PERIODIC, SUBMITTAL, OR NONE	COMMENTS	AGENT	AGENT QUALIFICATION	TASK COMPLETED
1. Fabrication of high-load diaphragms						
a. Verify wood structural panel sheathing for grade and thickness	Y	P	IBC 1704.6	SII	PE/SE or EIT	
b. Verify the nominal size of framing members at adjoining panel edges	Y	P	IBC 1704.6	SII	PE/SE or EIT	
b. Verify the nail or staple diameter and length	Y	P	IBC 1704.6	SII	PE/SE or EIT	
b. Verify the number of fastener lines	Y	P	IBC 1704.6	SII	PE/SE or EIT	
b. Verify the spacing between fasteners in each line and at edge margins	Y	P	IBC 1704.6	SII	PE/SE or EIT	
2. Load Tests for Joist Hangers: Provide evidence of manufacturer's load test in accordance with ASTM D1761 including the vertical load bearing capacity, torsional moment capacity, and deflection characteristics when there is no calculated procedure recognized by the code.	N	S	IBC 1716 [submit ICBO reports]	SII	PE/SE or EIT	
3. Metal-plate-connected wood trusses spanning 60 feet or greater:						
a. Verify the temporary installation restraint / bracing and the permanent individual truss member restraint / bracing is installed per the approved truss submittal package.	N	P	IBC 1704.6.2.	SII	PE/SE or EIT	

Structural Schedule of Special Inspections
SEISMIC RESISTANCE - STRUCTURAL

VERIFICATION AND INSPECTION	REQD Y/N	EXTENT: CONTINUOUS, PERIODIC, SUBMITTAL, OR NONE	COMMENTS	AGENT	AGENT QUALIFICATION	TASK COMPLETE D
IBC Section 1707						
1. Special inspections for seismic resistance. Special inspection as specified in this section is required for the following:						
a. The seismic-force-resisting systems in structures assigned to Seismic Design Category C, D, E or F	Y	P	IBC 1707.1	SII	PE/SE or EIT	
b. Designated seismic systems in structures assigned to Seismic Design Category D, E, or F.	N	P	IBC 1707.1	SII	PE/SE or EIT	
2. Structural steel: Continuous special inspection for structural welding in accordance with AISC 341.	N	C	IBC 1707.2	TA1	AWS-CWI	
3. Structural wood:						
a. Continuous special inspection during field gluing operations of elements of the seismic-force-resisting system.	N	C	IBC 1707.3	SII	PE/SE or EIT	
b. Periodic special inspections for nailing, bolting, anchoring and other fastening of components within the seismic-force-resisting system (where spacing is 4" o.c., or less) including drag struts, braces and hold-downs	Y	P	IBC 1707.3	SII	PE/SE or EIT	
4. Cold-formed steel framing: Periodic special inspections during welding operations of elements of the seismic-force-resisting system. Periodic special inspections for screw attachment, bolting, anchoring and other fastening of components within the seismic-force-resisting system (where spacing is 4" o.c., or less), including struts, braces, and hold-downs	N	-	CFSF for this project not part of the primary seismic-force resisting system.	-	-	
5. Seismic isolation system. Provide periodic special inspection during the fabrication and installation of isolator units and energy dissipation devices if used as part of the seismic isolation system	N	-	Seismic isolators not used.	-	-	

SEISMIC RESISTANCE CHECK LIST [IBC 1705.3]

Seismic Design Category C

<input checked="" type="checkbox"/> FOR SEISMIC DESIGN CATEGORY C OR HIGHER:
Structural:
<input checked="" type="checkbox"/> The seismic-force-resisting systems
<input checked="" type="checkbox"/> Steel Braced Frames and associated connections/anchorage (Not required for SDC C, R=3)
<input type="checkbox"/> Steel Moment Frames and associated connections (Not required for SDC C, R=3)
<input checked="" type="checkbox"/> Shear walls: <input type="checkbox"/> CMU <input checked="" type="checkbox"/> Wood <input type="checkbox"/> Concrete
<input checked="" type="checkbox"/> Diaphragms: <input checked="" type="checkbox"/> Floor <input checked="" type="checkbox"/> Roof
<input type="checkbox"/> Other:

WIND RESISTANCE CHECK LIST [IBC 1705.4]

Wind Exposure Category B

REQUIRED	NOT REQUIRED	NOT APPLICABLE	WIND RESISTANCE REQUIREMENTS
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	In wind exposure Category B, where the 3-second-gust basic wind speed is 120 miles per hour (mph) (52.8 m/sec) or greater.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	In wind exposure Categories C and D, where the 3-second-gust basic wind speed is 110 mph (49 m/sec) or greater.

Contractor's Statement of Responsibility

Each contractor responsible for the construction or fabrication of a system or component designated in the Quality Assurance Plan must submit a Statement of Responsibility. The Statement of Responsibility is required for Seismic Design Category C or higher. Make additional copies of this form as required.

Project: Patrons Oxford Insurance Office Building

Contractor's Name:

Address:

License No.:

Description of designated building systems and components included in the Statement of Responsibility:

Contractor's Acknowledgment of Special Requirements

I hereby acknowledge that I have received, read, and understand the Quality Assurance Plan and Special Inspection program.

I hereby acknowledge that control will be exercised to obtain conformance with the construction documents approved by the Building Official.

Signature

Date

Contractor's Provisions for Quality Control

Procedures for exercising control within the contractor's organization, the method and frequency of reporting and the distribution of reports is attached to this Statement.

Identification and qualifications of the person(s) exercising such control and their position(s) in the organization are attached to this Statement.

Fabricator's Certificate of Compliance

Each approved fabricator that is exempt from Special Inspection of shop fabrication and implementation procedures per section 1704.2 of the International Building Code must submit a *Fabricator's Certificate of Compliance* at the completion of fabrication.

Project: Patrons Oxford Insurance Office Building

Fabricator's Name:

Address:

Certification or Approval Agency:

Certification Number:

Date of Last Audit or Approval:

Description of structural members and assemblies that have been fabricated:

I hereby certify that items described above were fabricated in strict accordance with the approved construction documents.

Signature

Date

Title

Attach copies of fabricator's certification or building code evaluation service report and fabricator's quality control manual

Project: Patrons Oxford Insurance Office Building
Date Prepared: 1/11/2016

End of Structural Statement of Special Inspections

October 27, 2015

Ms. Jeanie Bourke
Code Enforcement Officer/Plan Reviewer
Planning & Urban Development Dept.
City of Portland, Maine
389 Congress St., Room 315
Portland, ME 04101

Dear Ms. Bourke,

This letter is in regards to the proposed construction of a new office building for Patrons Oxford Insurance Company located in the Portland Technology Park on Rand Road in Portland, Maine. Our intent is to identify a seismic force resisting system and associated design criteria for the building. The system has been carefully selected based on our research of similar systems in other buildings, our correspondence with experts from professional organizations, and our wide range of experience with seismic design of buildings. However, the proposed system is not currently identified in the adopted building codes, and thus we ask for your approval as the Authority Having Jurisdiction (AHJ) to implement this system into the building's design and construction.

The office building, which is currently in the design phase, consists of a heavy timber beam and column system for support of gravity loads. Lateral loads are intended to be resisted by a combination of plywood-sheathed shearwalls and frames constructed from steel rod cross braces. Our design is based on the International Building Code (IBC), 2009 edition, and the American Society of Civil Engineers Standard 7: Minimum Design Loads for Buildings and other Structures (ASCE-7), 2005 edition.

Mass timber serving as the primary structure for commercial buildings is uncommon where compared to steel and concrete. The building codes do not provide many options for classifying seismic force resisting systems for heavy timber buildings. Table 12.2-1 from the ASCE-7 standard is used to establish seismic design criteria based on the seismic force resisting system that is chosen. Specific to this project, the criteria provided in the table is described below:

- "R" – Response Factor – This factor is used to appropriately reduce the applied seismic forces on a system based on its inherent levels of ductility, toughness and energy dissipation.
- " Ω_0 " – Overstrength Factor – This factor is used to increase the design force on a specific element in a seismic force resisting system in order to eliminate a certain type of failure.

ASCE-7 Table 12.2-1 recognizes plywood-sheathed shearwalls in building frame systems, and thus provides approved criteria for their design. However, the table does not provide criteria for steel braces connected to timber beams and columns, and thus values for "R" and " Ω_0 " cannot be established. Becker Structural Engineers (BSE) has performed research on buildings constructed in U.S. and Canada with similar types of construction to the Patrons Oxford project. BSE also contacted members of the American Wood Council (AWC) in order to consult their expertise in seismic design of heavy timber buildings. Below is a summarized list of our research and findings:

- Critical to the performance of a system resisting seismic loads is its ductility. Ductility is a measure of a system's ability to resist load and undergo deformations after its initial failure

mechanism has been developed. Ductile systems offer increased energy dissipation compared to brittle systems and allow for the engineer to better predict where failure mechanisms will occur. These characteristics are ideal for seismic design of buildings.

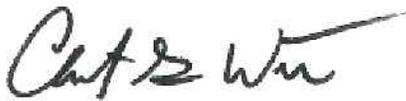
- Heavy timber structures are far more prevalent in Canada than the U.S. The Canadian Building Code recognizes the use of timber frames in seismic design and has established criteria for these systems. The Canadian Codes offers values for the resistance factor "R" that range from 2.25 for limited-ductility systems to 3.0 for moderate-ductility systems.
- IBC and ASCE-7 do not provide criteria for timber braced frames. Similar braced frames composed entirely of structural steel and without special seismic detailing (ideal for low and moderate risk seismic designs) provide values for "R" equal to 3.0. Our proposed office building is considered by ASCE-7 to be moderate seismic risk.
- The Simpson Strong-Tie Materials Laboratory at California Polytechnic State University is an example of a timber braced frame building that has been constructed in the U.S. This building, constructed in a high seismic risk area, was designed utilizing a value of R equal to 3.0. The design achieved yielding of the bolted fasteners as the primary failure mode, which is a ductile mechanism consistent with R=3.0 buildings. The ductility was achieved by applying an overstrength factor to the design of the timber brace, eliminating a brittle failure mode in the brace and ensuring a ductile failure mode in the fasteners.
- Steel rod braces connected to timber beams and columns can be designed in a similar fashion. In this configuration, it is ideal to provide the ductile failure mechanism in the steel brace by applying the overstrength factors to the timber elements and their connections. BSE consulted timber engineering experts from AWC, who confirmed that this approach is acceptable and consistent with ductile designs in R=3.0 buildings.

Based on our studies and research, we believe the seismic force resisting system utilizing steel rod braces connected to timber beams and columns is acceptable for use in this project. The lateral system will be designed using a response factor "R" equal to 3.0. Additionally, braced frame connections and all timber elements will be designed using an overstrength factor " Ω_0 " equal to 3.0. This will ensure a ductile mechanism is developed in the steel brace.

As the AHJ for this project, under IBC section 104.11 "Alternate materials, design and methods of construction," you have the authority to approve the implementation of the lateral force resisting system described herein. Should you agree with the information provided in this letter, we would appreciate your signature below, approving the use of the proposed lateral force resisting system for this project. If you have any questions or need further clarification, please do not hesitate to contact us.

Sincerely,

BECKER STRUCTURAL ENGINEERS, Inc.

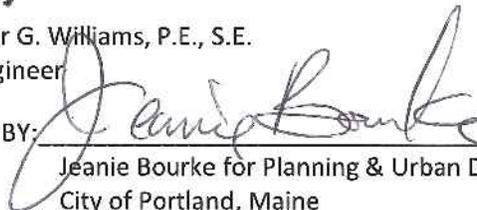


Christopher G. Williams, P.E., S.E.
Project Engineer



Paul B. Becker, P.E.
President

ACCEPTED BY:



Jeanie Bourke for Planning & Urban Development Dept.
City of Portland, Maine

DATE: 10/30/15

