DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK

CITY OF PORTLAND

BUILDING PERMIT

This is to certify that POINT HEALTHCARE MARTIN'S

Located At 331 VERANDA

Job ID: 2011-05-933-ALTCOMM

CBL: 434 - - C - 010 - 001 - - - - -

has permission to Interior renovations

provided that the person or persons, firm or corporation accepting this permit shall comply with all of the provisions of the Statues of Maine and of the Ordinances of the City of Portland regulating the construction, maintenance and use of the buildings and structures, and of the application on file in the department.

Notification of inspection and written permission procured before this building or part thereof is lathed or otherwise closed-in. 48 HOUR NOTICE IS REQUIRED.	A final inspection must be completed by owner before this building or part thereof is occupied. If a certificate of occupancy is required, it must be

5/25/11

Fire Prevention Officer

Code Enforcement Officer / Plan Reviewer

THIS CARD MUST BE POSTED ON THE STREET SIDE OF THE PROPERTY
PENALTY FOR REMOVING THIS CARD

BUILDING PERMIT INSPECTION PROCEDURES

Please call 874-8703 or 874-8693 (ONLY)

or email: buildinginspections@portlandmaine.gov

With the issuance of this permit, the owner, builder or their designee is required to provide adequate notice to the city of Portland Inspections Services for the following inspections. Appointments must be requested 48 to 72 hours in advance of the required inspection. The inspection date will need to be confirmed by this office.

- **Please read the conditions of approval that is attached to this permit!! Contact this office if you have any questions.**
- **Permits expire in 6 months. If the project is not started or ceases for 6 months.**
- **If the inspection requirements are not followed as stated below additional fees may be incurred due to the issuance of a "Stop Work Order" and subsequent release to continue.**

1. Close-in inspection prior to insulating or drywalling.
2. Final inspection required upon completion of work.

The project cannot move to the next phase prior to the required inspection and approval to continue, REGARDLESS OF THE NOTICE OF CIRCUMSTANCES.

IF THE PERMIT REQUIRES A CERTIFICATE OF OCCUPANCY, IT MUST BE PAID FOR AND ISSUED TO THE OWNER OR DESIGNEE BEFORE THE SPACE MAY BE OCCU0PIED.

Director of Planning and Urban Development
Penny St. Louis

Job ID: 2011-05-933-ALTCOMM **Located At: 331 VERANDA** **CBL: 434 - - C - 010 - 001 - - - - -**

Conditions of Approval:

Fire
All construction shall comply with City Code Chapter 10.

This permit is being approved on the basis of the plans submitted. Any deviation from the plans would require amendments and approval.

The Fire alarm and Sprinkler systems shall be reviewed by a licensed contractor[s] for code compliance. Compliance letters are required.

A separate Fire Alarm Permit is required for new systems; or for work effecting more than 5 fire alarm devices; or replacement of a fire alarm panel with a different model

Fire Alarm system shall be maintained. If system is to be off line over 4 hours a fire watch shall be in place. Dispatch notification required 874-8576.

The fire alarm system shall comply with the City of Portland Standard for Signaling Systems for the Protection of Life and Property. All fire alarm installation and servicing companies shall have a Certificate of Fitness from the Fire Department.

A separate Suppression System Permit is required for all new suppression systems or sprinkler work effecting more than 20 heads.

Fire extinguishers are required. Installation per NFPA 10.

Any cutting and welding done will require a Hot Work Permit from Fire Department.

Emergency lights and exit signs are required. Emergency lights and exit signs are required to be labeled in relation to the panel and circuit and on the same circuit as the lighting for the area they serve.

Capt. Gautreau

Building
1. Separate permits are required for any electrical, plumbing, sprinkler, fire alarm HVAC systems, heating appliances, commercial hood exhaust systems and fuel tanks. Separate plans may need to be submitted for approval as a part of this process.
2. Application approval based upon information provided by applicant. Any deviation from approved plans requires separate review and approval prior to work.

3. All penetrations between dwelling units and dwelling units and common areas shall be protected with approved firestop materials, and recessed lighting/vent fixtures shall not reduce the required rating per Sec. 712 of IBC.
4. The design load spec sheets for any engineered beam(s) / Trusses must be submitted to this office.

City of Portland, Maine - Building or Use Permit Application

389 Congress Street, 04101 Tel: (207) 874-8703, FAX: (207) 8716

Job No:	Date Applied:	CBL:	
2011-05-933-ALTCOMM	**4/29/2011**	**434 - - C - 010 - 001 - - - - -**	
Location of Construction: **331 VERANDA ST**	Owner Name: **POINT HEALTH CARE MARTIN'S**	Owner Address: **331 VERANDA ST PORTLAND, ME - MAINE 04103**	Phone:
Business Name: **Martin's Point Health Care**	Contractor Name: **Pizzagalli Construction Company – Jared Ballard**	Contractor Address: **131 Presumpscot Street, Portland,. ME 04103**	Phone: **874-2323** **899-0575**
Lessee/Buyer's Name:	Phone:	Permit Type: **BLDG - Building**	Zone: **R-P**
Past Use: **Medical Clinic**	Proposed Use: **Same: Medical Clinic – Interior renovatations and envelope improvements**	Cost of Work: **$94,000.00**	CEO District:
		Fire Dept: ✓ Approved w/ Conditions ___ Denied ___ N/A Signature: CAPT. K. Gautreau	Inspection: Use Group: B Type: 2B IBC 2009 Signature:
Proposed Project Description: **331 Veranda St. – Interior renovations**		Pedestrian Activities District (P.A.D.)	
Permit Taken By: Gayle			

Zoning Approval

Special Zone or Reviews	Zoning Appeal	Historic Preservation
___ Shoreland	___ Variance	✓ Not in Dist or Landmark
___ Wetlands	___ Miscellaneous	___ Does not Require Review
___ Flood Zone	___ Conditional Use	___ Requires Review
___ Subdivision	___ Interpretation	___ Approved
___ Site Plan	___ Approved	___ Approved w/Conditions
___ Maj ___ Min ___ MM	___ Denied	___ Denied
Date: ok with conditions 5/3/11	Date:	Date:

1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.
2. Building Permits do not include plumbing, septic or electrial work.
3. Building permits are void if work is not started within six (6) months of the date of issuance. False informatin may invalidate a building permit and stop all work.

CERTIFICATION

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the appication is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

SIGNATURE OF APPLICANT ADDRESS DATE PHONE

Receive & PD&E (Entered & CI)

General Building Permit Application

If you or the property owner owes real estate or personal property taxes or user charges on any property within the City, payment arrangements must be made before permits of any kind are accepted.

Location/Address of Construction: 331 Veranda Street, Portland, ME 04103		
Total Square Footage of Proposed Structure/Area: 27,000 sf	Square Footage of Lot: N/A	
Tax Assessor's Chart, Block & Lot Chart# 434 Block# Lot# C10	Applicant *must be owner, Lessee or Buyer* Name Martin's Point Health Care Address 331 Veranda Street City, State & Zip Portland, ME 04103	Telephone: 207-791-3172
Lessee/DBA (If Applicable)	Owner (if different from Applicant) Name same Address City, State & Zip	Cost Of Work: $ $393,613 C of O Fee: $ Total Fee: $ $3,956

RECEIVED
APR 29 2011
Dept. of Building Inspections
City of Portland Maine

Total 3960.00

Current legal use (i.e. single family) Vacant
If vacant, what was the previous use? Medical Clinic
Proposed Specific use: Medical Clinic
Is property part of a subdivision? No If yes, please name
Project description: Interior renovation and envelope improvements to a former clinic building.

all floors

Cash 4.00
CK 3,956.

Contractor's name: Pizzagalli Construction Company
Address: 131 Presumpscot Street
City, State & Zip Portland, Maine 04103 Telephone: 874-2323
Who should we contact when the permit is ready: Jared Ballard Telephone: 899-0575
Mailing address: same as above

Please submit all of the information outlined on the applicable Checklist. Failure to do so will result in the automatic denial of your permit.

In order to be sure the City fully understands the full scope of the project, the Planning and Development Department may request additional information prior to the issuance of a permit. For further information or to download copies of this form and other applications visit the Inspections Division on-line at www.portlandmaine.gov, or stop by the Inspections Division office, room 315 City Hall or call 874-8703.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Code Official's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

Signature: Jared A Ballard Date: 4/29/2011

This is not a permit; you may not commence ANY work until the permit is issue

Certificate of Design Application

From Designer: PDT Architects

Date: April 26, 2011

Job Name: Martin's Point - Building 4 Shell and Core Retrofit

Address of Construction: 331 Veranda Street, Portland, ME 04103

2003 International Building Code

Construction project was designed to the building code criteria listed below:

Building Code & Year MUBEC, 2010 Use Group Classification (s) Business Group B

Type of Construction Type II B

Will the Structure have a Fire suppression system in Accordance with Section 903.3.1 of the 2003 IRC Fully Sprinklered (Supervised System Per NFPA13)

Is the Structure mixed use? No If yes, separated or non separated or non separated (section 302.3) _____

Supervisory alarm System? Yes Geotechnical/Soils report required? (See Section 1802.2) No

Structural Design Calculations

Please see attached letter from Paul B. Becker P.E. for an explanation of requested structural information relevant to this shell and core project.

Design Loads on Construction Documents (1603)

Uniformly distributed floor live loads (7603.11, 1807)

Floor Area Use	Loads Shown

Wind loads (1603.1.4, 1609)

_____ Design option utilized (1609.1.1, 1609.6)

_____ Basic wind speed (1809.3)

_____ Building category and wind importance Factor, I_w table 1604.5, 1609.5)

_____ Wind exposure category (1609.4)

_____ Internal pressure coefficient (ASCE 7)

_____ Component and cladding pressures (1609.1 1, 1609.6 2.2)

_____ Main force wind pressures (7603.1.1, 1609 6.2 1)

Earth design data (1603.1.5, 1614-1623)

_____ Design option utilized (1614.1)

_____ Seismic use group ("Category")

_____ Spectral response coefficients, SDs & SD1 (1615.1)

_____ Site class (1615.1.5)

_____ Live load reduction

_____ Roof *live* loads (1603.1.2, 1607.11)

_____ Roof snow loads (1603.7.3, 1608)

_____ Ground snow load, P_g (1608.2)

_____ If P_g > 10 psf, flat-roof snow load P_f

_____ If P_g > 10 psf, snow exposure factor, C_e

_____ If P_g > 10 psf, snow load importance factor, I_s

_____ Roof thermal factor, C_t (1608.4)

_____ Sloped roof snowload, P_s (1608.4)

_____ Seismic design category (1616.3)

_____ Basic seismic force resisting system (1617.6.2)

_____ Response modification coefficient, R_I and deflection amplification factor C_d (1617.6.2)

_____ Analysis procedure (1616.6, 1617.5)

_____ Design base shear (1617.4, 16175.5.1)

Flood loads (1803.1.6, 1612)

_____ Flood Hazard area (1612.3)

_____ Elevation of structure

Other loads

_____ Concentrated loads (1607.4)

_____ Partition loads (1607.5)

_____ Misc. loads (Table 1607.8, 1607.6.1, 1607.7, 1607.12, 1607.13, 1610, 1611, 2404

New Commercial
Permit Application Checklist

All of the following information is required and must be submitted. Checking off each item as you prepare your application package will ensure your package is complete and will help to expedite the permitting process.

One (1) complete Set of construction drawings must include:

Note: Construction documents for costs in excess of $50,000.00 must be prepared by a Design Professional and bear their seal.

This project involves an existing building and only drawings pertinent to the intended changes are provided.

- X Cross sections w/framing details
- X Detail of any new walls or permanent partitions
- X Floor plans and elevations
- X Window and door schedules
- NA ☐ Foundation plans with rebar specifications and required drainage and damp proofing (if applicable)
- NA ☐ Detail egress requirements and fire separations
- X Insulation R-factors of walls, ceilings, floors and U-factors of windows as per the IEEC 2003
- X Complete the Accessibility Certificate and The Certificate of Design
- X A statement of special inspections as required per the IBC 2003
- X Complete electrical and plumbing layout.
- X Mechanical drawings for any specialized equipment such as furnaces, chimneys, gas equipment, HVAC equipment (air handling) or other types of work that may require special review.
- X Reduced plans or electronic files in PDF format are required if originals are larger than 11" x 17".
- X Per State Fire Marshall, all new bathrooms must be ADA compliant.

Separate permits are required for internal & external plumbing, HVAC and electrical installations.

Nine (9) copies of the minor (< 10,000 sf) or major (> 10,000 sf) site plan application is required that includes:

NA

- ☐ A stamped boundary survey to scale showing north arrow, zoning district and setbacks to a scale of ≥ 1" = 20' on paper ≥ 11" x 17"
- ☐ The shape and dimension of the lot, footprint of the proposed structure and the distance from the actual property lines. Photocopies of the plat or hand draw footprints not to scale will not be accepted.
- ☐ Location and dimensions of parking areas and driveways, street spaces and building frontage
- ☐ Finish floor or sill elevation (based on mean sea level datum)
- ☐ Location and size of both existing utilities in the street and the proposed utilities serving the building
- ☐ Existing and proposed grade contours
- ☐ Silt fence (erosion control) locations

Note: Detail 3/A3 is a 1 HR shaft wall detail through an existing concrete floor slab supported on concrete columns. To carry the 1 HR rating across this floor slab, the slab has been determined to have the equivalent of a 1 HR rating based on thickness. To support this determination, several pages from ACI publication 216.1-97 have been included. Table 2.1 on page 4 indicates a worst-case scenario of a 3.5 inch Siliceous aggregate slab yielding a 1 HR rating. The existing slab thickness ranges from 3.5 inches to 4 inches and has been determined to have, at a minimum, the equivalent of a 1 HR rating. The full ACI publication "Standard Method for Determining Fire Resistance of Concrete and Masonry Construction Assemblies" can be found at web address http://www.bpesol.com/bachphuong/media/images/book/2161_97.pdf

Building Inspections Division • 389 Congress Street • Portland, Maine 04101 • (207) 874-8703 • FACSIMILE (207) 874-8716 • TTY (207) 874-8936

Fire Department requirements.

The following shall be submitted on a separate sheet:
Please see attached.

- ☐ Name, address and phone number of applicant **and** the project architect.
- ☐ Proposed use of structure (NFPA and IBC classification)
- ☐ Square footage of proposed structure (total and per story)
- ☐ Existing and proposed fire protection of structure.
- ☐ Separate plans shall be submitted for
    a) Suppression system
    b) Detection System (separate permit is required)
- ☐ A separate Life Safety Plan must include:
    a) Fire resistance ratings of all means of egress
    b) Travel distance from most remote point to exit discharge
    c) Location of any required fire extinguishers
    d) Location of emergency lighting
    e) Location of exit signs
    f) NFPA 101 code summary
- ☐ Elevators shall be sized to fit an 80" x 24" stretcher.

For questions on Fire Department requirements call the Fire Prevention Officer at (207) 874-8405.

Please submit all of the information outlined in this application checklist. If the application is incomplete, the application may be refused.

In order to be sure the City fully understands the full scope of the project, the Planning and Development Department may request additional information prior to the issuance of a permit. For further information or to download copies of this form and other applications visit the Inspections Division on-line at www.portlandmaine.gov, or stop by the Inspections Division office, room 315 City Hall or call 874-8703.

Permit Fee: $30.00 for the first $1000.00 construction cost, $10.00 per additional $1000.00 cost

This is not a Permit; you may not commence any work until the Permit is issued.

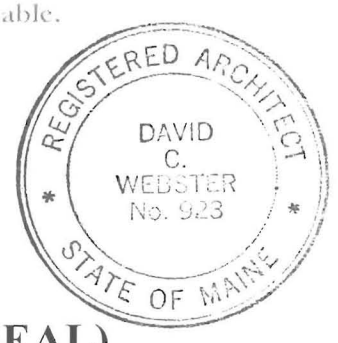
Accessibility Building Code Certificate

Designer: David Webster, PDT Architects

Address of Project: Martin's Point Health Care, 331 Veranda Street, Portland, ME 04103

Nature of Project: Interior renovation and envelope improvements to a former clinic building.

The technical submissions covering the proposed construction work as described above have been designed in compliance with applicable referenced standards found in the Maine Human Rights Law and Federal Americans with Disability Act. Residential Buildings with 4 units or more must conform to the Federal Fair Housing Accessibility Standards. Please provide proof of compliance if applicable.



(SEAL)

Signature:

Title: Principal

Firm: PDT Architects

Address: 49 Dartmouth Street

Portland, Maine 04101

Phone: 775-1059

For more information or to download this form and other permit applications visit the Inspections Division on our website at www.portlandmaine.gov

Certificate of Design

Date: April 26, 2011

From: David Webster, Principal, PDT Architects

These plans and / or specifications covering construction work on:

Martin's Point - Building 4 Shell and Core Retrofit

Have been designed and drawn up by the undersigned, a Maine registered Architect / Engineer according to the ***2003 International Building Code*** and local amendments.

REGISTERED ARCHITECT
DAVID C. WEBSTER
No. 923
STATE OF MAINE

(SEAL)

Signature:

Title: Principal

Firm: PDT Architects

Address: 49 Dartmouth Street

Portland, Maine 04101

Phone: 775-1059

For more information or to download this form and other permit applications visit the Inspections Division on our website at www.portlandmaine.gov

BECKER
STRUCTURAL ENGINEERS

April 27, 2011

Ms. Tammy Munson
Director of Inspections
Inspection Services Program
City of Portland
City Hall Room 315
389 Congress Street
Portland, Maine 04101

RE Martin's Point Health Care Clinic Building Renovation
Portland, ME

Dear Ms. Munson,

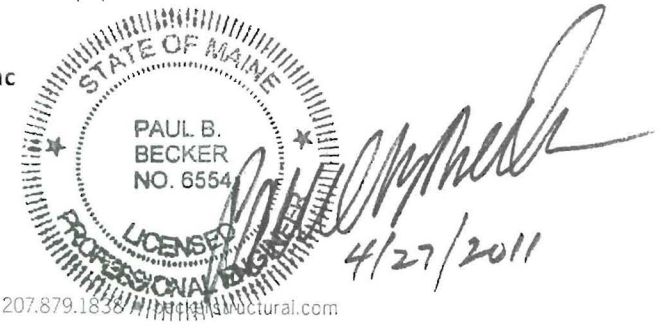
We are providing this letter to clarify our involvement in the above mentioned project. The project involves an interior renovation of an existing building to re-configure exiting work space and replace existing mechanical and electrical components. The building was built in phases with the original building being a concrete frame building circa 1929 and a later steel framed addition built circa 1990. Structural work was intended to be confined to a review of existing floor framing for support of new mechanical equipment and design of a temporary roof opening to allow removal of old equipment and installation of new equipment. We completed this design work in accordance with current (2009 IBC) code requirements.

During demolition of old finishes, it was discovered that steel bracing within the 1990 wing had been removed (torched) during a prior renovation. We were asked to evaluate the condition and offer solutions. Given that the building was constructed under previous code provisions, it is considered an existing building subject to repair. We have utilized the 2009 IEBC Code, Prescriptive Compliance Method, and Section 304.2 to evaluate the proper course of action. Our evaluation found that the damaged building, if repaired to its pre-damaged state, would comply with current code provisions for wind and seismic loads, using 75% of seismic forces prescribed by Section 1613 as permitted in subsection 304.2.1. The member stresses were also checked per ASCE 7-88 (used at time of original design) and found to be acceptable. Therefore, the repairs have been designed to restore the building to its pre-damaged state as permitted in subsection 304.2.2.

While the removed braces could not be installed in the original locations due to changes made during the previous renovation, braces were re-introduced in locations which provided for equivalent lateral load resistance, equivalent load distribution and equivalent performance to the original design. Given the building's location along the water's edge on an elevated exposure and the founding of the building on ledge, wind loads are the governing load case. In addition to the bracing repairs, we also provided guidance on framing required to provide chase openings through existing floors and in-filling existing floor openings with new floor framing.

I trust this information addresses your needs regarding the scope of structural work associated with this project. Please call me if you have any questions.

Sincerely,
Becker Structural Engineers, Inc



Paul B. Becker, P.E,
President

Project: Martin's Point-Building 4
Date Prepared: April 28, 2011

Structural Statement of Special Inspections

Project: *Martin's Point-Building 4*

Location: *Portland, Maine*

Owner: *Martin's Point Healthcare*

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.

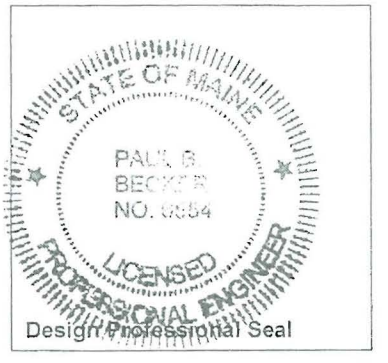
Interim Report Frequency: ☒ *Upon request of Building Official* _____ or ☐ per attached schedule.

Prepared by:

Paul B. Becker

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

Signature — Date: *4/28/11*



Design Professional Seal

Owner's Authorization:

Signature — Date: 4.29.11

Building Code Official's Acceptance:

Signature — Date

Structural Statement of Special Inspections (Continued)

List of Agents

Project: *Martin's Point- Building 4*

Location: *Portland, Maine*

Owner: *Martin's Point Healthcare*

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)**	*Becker Structural Engineers, Inc.*	*75 York Street* *Portland, ME 04101* *207-879-1838* *info@beckerstructural.com*
2. Special Inspector (SI 1)	*Becker Structural Engineers, Inc.*	*75 York Street* *Portland, ME 04101* *207-879-1838* *info@beckerstructural.co*
3. Special Inspector (SI 2)		
4. Testing Agency (TA 1)	*To be determined*	
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.

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: *Martin's Point-Building 4*

Location: *Portland, Maine*

Owner: *Martin's Point Healthcare*

Owner's Address: *331 Veranda Street*
Portland, ME 04103

Architect of Record: *David C. Webster, AIA* (name) *PDT Architects* (firm)

Structural Registered Design Professional in Responsible Charge: *Paul B. Becker* (name) *Becker Structural Engineers, Inc.* (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

(Type or print name)

(Firm Name)

Signature Date

Licensed Professional Seal

Structural Statement of Special Inspections (Continued)

Special Inspector's/Agent's Final Report

Project: *Martin's Point-Building 4*

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

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

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.

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

Project: Martin's Point-Building 4
Date Prepared: April 28, 2011

Structural Schedule of Special Inspections - STEEL CONSTRUCTION

VERIFICATION AND INSPECTION IBC Section 1704.3	REQD Y/N	EXTENT: CONTINUOUS, PERIODIC, SUBMITTAL, OR NONE	COMMENTS	AGENT	AGENT QUALIFICATION	TASK COMPLETED
1. Material verification of high-strength bolts, nuts and washers:						
a. Identification markings to conform to ASTM standards specified in the approved construction documents.	N	P	Applicable ASTM material standards, AISC 360, A3.3	TA1	AWS/AISC-SSI	
b. Manufacturer's certificate of compliance required.	N	S		SI1	PE/SE or EIT	
2. Inspection of high-strength bolting						
a. Snug-tight joints.	N	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.	N	P	AISC LRFD Section M2.5 IBC Sect 1704.3.3	TA1	AWS/AISC-SSI	
c. Pretensioned and slip-critical joints using turn-of-nut without matchmaking or calibrated wrench methods of installation.	N	C		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	SI1	PE/SE or EIT	
b. For other steel, identification markings to conform to ASTM standards specified in the approved construction documents.	N	P	Applicable ASTM material standards	SI1	PE/SE or EIT	
c. Manufacturer's certified test reports.	Y	S		SI1	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		SI1	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	SI1	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	Y	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	SI1	PE/SE or EIT	
b. Member locations.	Y	P		SI1	PE/SE or EIT	
c. Application of joint details at each connection.	Y	P		SI1	PE/SE or EIT	

Structural Schedule of Special Inspection Services

FABRICATION AND IMPLEMENTATION PROCEDURES – STRUCTURAL STEEL

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. AISC Certification	Y	S	Fabricator shall submit one of the two qualifications	SI1	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	SI1	PE/SE or EIT	

Project: Martin's Point-Building 4
Date Prepared: April 28, 2011

Structural Schedule of Special Inspections

SEISMIC RESISTANCE - STRUCTURAL

VERIFICATION AND INSPECTION IBC Section 1707	REQD Y/N	EXTENT: CONTINUOUS, PERIODIC, SUBMITTAL, OR NONE	COMMENTS	AGENT	AGENT QUALIFICATION	TASK COMPLETED
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	N	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	TAI	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	N	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 B

☐ FOR SEISMIC DESIGN CATEGORY C OR HIGHER:

Structural:

☐ The seismic-force-resisting systems

☐ Steel Braced Frames and associated connections/anchorage (Not required for SDC C, R=3)

☐ Steel Moment Frames and associated connections (Not required for SDC C, R=3)

☐ Shear walls: ☐ CMU ☐ Wood ☐ Concrete ☐ Diaphragms: ☐ Floor ☐ Roof

☐ Other:

WIND RESISTANCE CHECK LIST [IBC 1705.4]

Wind Exposure Category C

REQUIRED	NOT REQUIRED	NOT APPLICABLE	WIND RESISTANCE REQUIREMENTS
☐	☐	☒	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.
☐	☐	☒	In wind exposure Categories C and D, where the 3-second-gust basic wind speed is 110 mph (49 *m/sec)* or greater.

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:

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

End of Structural Statement of Special Inspections

Fire Department Information

Applicant:
Martin's Point Health Care
331 Veranda Street
Portland, Maine 04103
Phone: 207-791-3172

Project Architect:
PDT Architects
49 Dartmouth Street
Portland, Maine 04101
Phone: 207-775-1059

Proposed Use of Structure:
NFPA: Business Occupancy
IBC: Business Group B

Project Square Footage:
Ground Floor = 7,995 sf
First Floor = 7,995 sf
Second Floor = 7,995 sf
Mechanical Mezzanine = 3,015 sf
Total = 27,000 sf

Fire Protection of Structure
The existing structure is a shell only with no fire protection system. This project will install a fully sprinklered, supervised system per NFPA 13, including sprinkler mains and heads for a fully operational system. Final adjustments to sprinkler head locations will be made as required during fit-up. Sprinkler drawings will be by sprinkler sub during construction. This project will also install a supervisory alarm system, which will be upgraded as required to meet fit-up requirements.

This is a shell and core project only. The existing elevator will remain. A separate Life Safety Plan will be included with future fit-up work.

Standard Method for Determining Fire Resistance of Concrete and Masonry Construction Assemblies

Reported by ACI/TMS Committee 216

James P. Hurst
Chairman

Gene C. Abbate	Thomas F. Herrell	Mark A. Nunn
Stanley G. Barton	Mark Hogan	John Perry
Ronald G. Burg	Thomas H. Holm	Walter Prebis
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Richard G. Gewain	T. T. Lie	Jeffery F. Speck
Michael P. Gillen	Tung D. Lin	F. R. Vollert
Tibor Z. Harmathy	Howard R. May	

*Immediate past chairman

FOREWORD

Fire resistance of building elements is an important consideration in building design. While structural design considerations for concrete and masonry at ambient temperature conditions are addressed by ACI 318 and ACI 530/ASCE 5/TMS 402, respectively, these codes do not consider the impact of fire on concrete and masonry construction. The standard portion of this document contains such design and analytical procedures for determining the fire resistance of concrete and masonry members and building assemblies. Where differences occur in specific design requirements between this standard and the above referenced codes, as in the case of cover protection of steel reinforcement, the more stringent of the requirements shall apply.

Keywords: beams (supports); columns (supports); compressive strength; concrete slabs, fire ratings; fire endurance; fire resistance; fire tests; masonry walls; modulus of elasticity; prestressed concrete; prestressing steels; reinforced concrete; reinforcing steel; structural design; temperature distribution; thermal properties; walls.

CONTENTS

ACI 216.1-97 became effective September 1, 1997.

CHAPTER 1—GENERAL

1.1—Scope

This standard describes acceptable methods for determining the fire resistance of concrete and masonry assemblies and structural elements including walls, floor and roof slabs, beams, columns, lintels, and masonry fire protection for structural steel columns. These methods shall be used for design and analytical purposes and shall be based upon the fire exposure and applicable end-point criteria of ASTM E 119. This standard does not apply to composite metal deck floor or roof assemblies.

1.2—Alternative methods

Methods other than those presented in this standard shall be permitted for use in assessing the fire resistance of concrete and masonry building assemblies and structural elements, if the methods are based upon the fire exposure and applicable end-point criteria specified in ASTM E 119.

1.3—Definitions

The following definitions apply for this standard:

Approved—Approved by the Building Official responsible for enforcing the legally adopted building code of which this standard is a part, or approved by some other authority having jurisdiction.

Barrier element—A building member that performs as a barrier to the spread of fire (for example, walls, floors, and roofs).

Beam—A structural member subjected to axial loads and flexure, but primarily to flexure.

Building code—A legal document that establishes the minimum requirements necessary for building design and construction to provide for public health and safety.

Ceramic fiber blanket—Mineral wool insulating material made of alumina-silica fibers and having a density of 4 to 8 lb/ft^3

Cold-drawn wire reinforcement—Steel wire made from rods that have been rolled from billets, cold-drawn through a die for concrete reinforcement of diameters not less than 0.08 in. nor greater than 0.625 in.

Concrete, carbonate aggregate—Concrete made with coarse aggregate consisting mainly of calcium carbonate or a combination of calcium and magnesium carbonate (for example, limestone or dolomite).

Concrete, cellular—Nonstructural insulating concrete made by mixing a preformed foam with portland cement slurry. The dry unit weight is determined in accordance with ASTM C 796. Dry unit weights range from 25 to 110 lb/ft^3, depending on the application requirements. Dry unit weights greater than 75 lb/ft^3 require the addition of sand.

Concrete, lightweight aggregate—Concrete made with lightweight aggregates (expanded clay, shale, slag, or slate or sintered fly ash) having a 28-day air-dry unit weight of 85 to 105 lb/ft^3.

Concrete, normalweight—Concrete having a unit weight of approximately 150 lb/ft^3 made with normalweight aggregates.

Concrete, perlite—Nonstructural lightweight insulating concrete having a dry unit weight of approximately 30 lb/ft^3 made by mixing perlite concrete aggregate complying with ASTM C 332 with portland cement slurry. Note: Perlite concrete can be applied by spraying or other means.

Concrete, plain—Structural concrete with less reinforcement than required for reinforced concrete.

Concrete, reinforced—Concrete containing adequate reinforcement (prestressed or non-prestressed) and designed on the assumption that the two materials act together in resisting forces.

Concrete, semi-lightweight—Concrete made with a combination of lightweight aggregates (expanded clay, shale, slag or slate or sintered fly ash) and normalweight aggregates, having a 28-day air-dry unit weight of 105 to 120 lb/ft^3.

Concrete, siliceous aggregate—Concrete made with normalweight coarse aggregates having constituents composed mainly of silica and silicates.

Concrete, structural—All concrete used for structural purposes including plain and reinforced concrete.

Concrete, vermiculite—Concrete in which the aggregate consists of exfoliated vermiculite.

Critical temperature—Temperature of the steel in unrestrained flexural members during fire exposure at which the nominal flexural strength of the members is reduced to the moment due to service loads.

End-point criteria—Conditions of acceptance for an ASTM E 119 fire test.

Fire endurance—A measure of the elapsed time during which a material or assembly continues to exhibit fire resistance. As applied to elements of buildings with respect to this standard, it shall be measured by the methods and criteria contained in ASTM E 119.

Fire resistance—The characteristic of a material or assembly to withstand fire or provide protection from it. As applied to elements of buildings, it is characterized by the ability to confine fire or to continue to perform a given structural function, or both.

Fire resistance rating (sometimes called fire rating, fire resistance classification, or hourly rating)—A legal term defined in building codes, usually based on fire endurance; fire resistance ratings are assigned by building codes for various types of construction and occupancies and are usually given in half-hour or hourly increments.

Fire test—See Standard fire test.

Glass fiberboard—Fibrous glass insulation board complying with ASTM C 612.

Gypsum wallboard type "X"—Mill-fabricated product made of a gypsum core containing special minerals and encased in a smooth, finished paper on the face side and liner paper on the back, meeting ASTM C 36, Type X.

Heat transmission end point—An acceptance criterion of ASTM E 119 limiting the temperature rise of the unexposed surface to an average of 250 deg F for all measuring points or a maximum of 325 deg F at any one point.

High strength alloy steel bars—Bars used for post-tensioning conforming to the requirements of ASTM A 722.

Hot-rolled steel—Steel used for reinforcing bars or structural steel members.

Intumescent mastic—Spray-applied coating that reacts to heat at about 300 deg F by foaming to a multicellular structure having 10 to 15 times its initial thickness.

Integrity end point—An acceptance criterion of ASTM E 119 prohibiting the passage of flame or gases hot enough to ignite cotton waste before the end of the desired fire endurance period. The term also applies to the hose-stream test of a fire-exposed wall

Joist—A comparatively narrow beam, used in closely-spaced arrangements to support floor or roof slabs, as defined in ACI 116R.

Masonry, plain—Masonry without reinforcement or masonry reinforced only for either shrinkage or thermal change.

Masonry, reinforced—Unit masonry in which reinforcement is embedded in such a manner that the two materials act together in resisting forces.

Masonry unit, clay—Solid or hollow unit (brick or tile) composed of clay, shale, or similar naturally occurring earthen substances shaped into prismatic units and subjected to heat treatment at elevated temperature (firing), meeting requirements of ASTM C 34, C 56, C 62, C 126, C 212, C 216, C 652, or C1088.

Masonry unit, concrete—Hollow or solid unit made from cementitious materials, water, and aggregates, with or without the inclusion of other materials, meeting the requirements of ASTM C 55, C 73, C 90 or C 129.

Mineral board—Mineral fiber insulation board complying with ASTM C 726.

Sprayed mineral fiber—A blend of refined mineral fibers and inorganic binders. Water is added during the spraying operation, and the untamped unit weight is about 13 lb/ft^3.

Standard fire exposure—The time-temperature relationship defined by ASTM E 119.

Standard fire test—The test prescribed by ASTM E 119.

Steel temperature end point—An acceptance criterion of ASTM E 119 defining the limiting steel temperatures for unrestrained assembly classifications.

Strand—A prestressing tendon composed of a number of wires twisted about a center wire or core.

Structural end point—ASTM E 119 criteria that specify the conditions of acceptance for structural performance of a tested assembly.

Tendon—A steel element such as wire, cable, bar, rod, or strand, or a bundle of such elements, primarily used in tension to impart compressive stress to concrete.

Vermiculite cementitious material—A cementitious mill-mixed material to which water is added to form a mixture suitable for spraying. The mixture has a wet unit weight of about 55 to 60 lb/ft^3

1.4—Notation

a = depth of equivalent rectangular concrete compressive stress block at nominal flexural strength

A_1, A_2 and A_n = air factor for each continuous air space having a distance of $^1/_2$ in. to $3^1/_2$ in. between wythes

A_{ps} = cross-sectional area of prestressing strands or tendons

a_θ = depth of equivalent concrete rectangular stress block at elevated temperature

A_{st} = cross-sectional area of the steel column (Section 3.6)

A_s = cross-sectional area of non-prestressed reinforcement (Section 2.4.2)

b = width of concrete slab or beam

b_f = width of flange (Chapter 3)

D = density of masonry protection

d_{st} = column dimension, (see Fig. 3.3)

d_ℓ = thickness of fire-exposed concrete layer (Section 2.2.5.2)

d = effective depth, distance from centroid of the tension reinforcement to extreme compressive fiber (Section 2.4.2)

d_{ef} = distance from the centroid of tension reinforcement to the extreme concrete compressive fiber where the temperature does not exceed 1400 deg F (Section 2.4.2)

F = degrees Fahrenheit

f_c = measured compressive strength of concrete test cylinders at ambient temperature

f'_c = specified compressive strength of concrete

$f'_{c\theta}$ = reduced compressive strength of concrete at elevated temperature

f_{ps} = stress in prestressing steel at nominal strength

$f_{ps\theta}$ = reduced strength of prestressing steel at elevated temperature

f_{pu} = specified tensile strength of prestressing tendons

f_y = specified yield strength of non-prestressed reinforcing steel

$f_{y\theta}$ = reduced strength of non-prestressed reinforcing steel at elevated temperature

H = specified height of masonry unit

k = thermal conductivity at room temperature

L = specified length of masonry unit

ℓ = span length

M = moment due to full service load on the member

$M^+_{n\theta}$ = nominal positive moment flexural strength at section at elevated temperature

$M^-_{n\theta}$ = nominal negative moment flexural strength at section at elevated temperature

M_n = nominal flexural strength of member

$M_{n\theta}$ = nominal flexural strength at section at elevated temperature

M_{x1} = maximum value of the redistributed positive moment at some distance x_1

p = inner perimeter of concrete masonry protection

ps = heated perimeter of steel column

R = Fire resistance of assembly

R_1, R_2,.. R_n = fire resistance of layer 1, 2,...n, respectively

s = spacing of ribs or undulations

t = time in minutes

t_{min} = minimum thickness, in. (Section 2.2.4)

t_{tot} = total slab thickness (Section 2.2.5.2)

T_E = equivalent thickness of clay masonry unit

T_e = equivalent thickness of concrete masonry unit

t_e = equivalent thickness of a ribbed or undulating concrete section

T_{ea} = equivalent thickness of concrete masonry assembly

T_{ef} = equivalent thickness of finishes

t_w = thickness of web, (see Fig. 3.3)

u = average thickness of concrete between the center of main reinforcing steel and fire-exposed surface

u_{ef} = an adjusted value of u to accommodate beam geometry where fire exposure to concrete surfaces is from three sides (Chapter 2)

V_n = net volume of masonry unit

w = applied load (unfactored dead + live)

x_0 = distance from the inflection point after moment redistribution to the location of the first interior support (Chapter 2)

x_1 = distance at which the maximum value of the redistributed positive moment occurs measured from: (a) the outer support for continuity over one support; and (b) either support where conti-

nuity extends over two supports (Chapter 2)

x_2 = the distance between inflection points for a continuous span (Chapter 2)

ρ_g = ratio of total reinforcement area to cross sectional area of column

θ = subscript denoting changes of parameter due to elevated temperature

ρ = reinforcement ratio

ω_p = reinforcement index for concrete beam reinforced with prestressing steel

ω_θ = reinforcement index for concrete beam at elevated temperature

ω_t = reinforcement index for concrete beam reinforced with non prestressed steel

1.5—Fire resistance determinations

1.5.1 *Qualification by testing*—Materials and assemblies of materials of construction tested in accordance with the requirements set forth in ASTM E 119 shall be rated for fire resistance in accordance with the results and conditions of such tests.

1.5.2 *Calculated fire resistance*—The fire resistance associated with an element or assembly shall be deemed acceptable when established by the calculation procedures in this standard or when established in accordance with 1.2 .Alternative Methods.

1.5.3 *Approval through past performance*—The provisions of this standard are not intended to prevent the application of fire ratings to elements and assemblies that have been applied in the past and have been proven through performance.

1.5.4 *Engineered analysis*—The provisions of this standard are not intended to prevent the application of new and emerging technology for predicting the life safety and property protection implications of buildings and structures.

CHAPTER 2—CONCRETE

2.1—General

The fire resistance of concrete members and assemblies designed in accordance with ACI 318 for reinforced and plain structural concrete shall be determined based on the provisions of this chapter. Concrete walls, floors, and roofs shall meet minimum thickness requirements for purposes of barrier fire resistance. Concrete containing steel reinforcement shall additionally meet cover protection requirements in this chapter for purposes of maintaining structural fire resistance.

In some cases distinctions are made between normal weight concretes made with carbonate and siliceous aggregates. If the type of aggregate is not known, the value for the aggregate resulting in the greatest required member thickness or cover to the reinforcement shall be used.

2.2— Concrete walls, floors and roofs

Plain and reinforced concrete bearing or nonbearing walls and floor and roof slabs required to provide fire resistance ratings of 1 to 4 hr shall comply with the minimum equivalent thickness values in Table 2.1 For solid walls and slabs with flat surfaces, the equivalent thickness shall be determined in accordance with 2.2.1. The equivalent thickness of hollow-core walls or of walls or slabs, or of barrier elements with surfaces that are not flat shall be determined in accordance with 2.2.2 through 2.2.4. Provisions for cover protection of steel reinforcement are contained in 2.3.

Table 2.1—Fire resistance of singular layer concrete walls, floors and roofs

Aggregate type	Minimum equivalent thickness for fire resistance rating, in.				
	1 hr	1½ hr	2 hr	3 hr	4 hr
Siliceous	3.5	4.3	5.0	6.2	7.0
Carbonate	3.2	4.0	4.6	5.7	6.6
Semi-lightweight	2.7	3.3	3.8	4.6	5.4
Lightweight	2.5	3.1	3.6	4.4	5.1

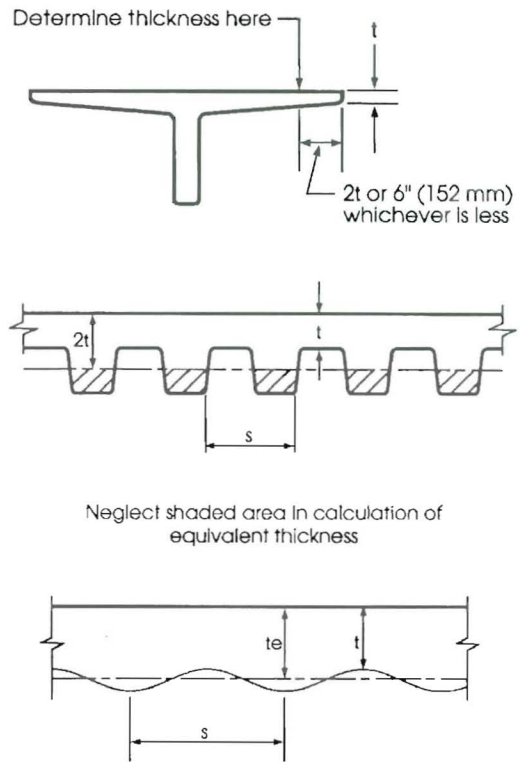


Fig. 2.0—Equivalent thickness of flanged, ribbed, and undulating panels

2.2.1 *Solid walls and slabs with flat surfaces*—For solid walls and slabs with flat surfaces, the actual thickness shall be the equivalent thickness.

2.2.2 *Hollow-core concrete walls and slabs*—For walls and slabs constructed with precast concrete hollow-core panels with constant core cross section throughout their length, calculate the equivalent thickness by dividing the net cross-sectional area by the panel width. Where all of the core spaces are filled with grout or loose fill material, such as perlite, vermiculite, sand or expanded clay, shale, slag or slate, the fire resistance of the wall or slab shall be the same as that of a solid wall or slab of the same type of concrete.

2.2.3 *Flanged panels*—For flanged walls, and floor and roof panels where the flanges taper, the equivalent thickness shall be determined at the location of the lesser distance of two times the minimum thickness, or 6 in. from the point of the minimum thickness of the flange (see Fig. 2.0).

2.2.4 *Ribbed or undulating panels*—Determine the equivalent thickness of elements consisting of panels with ribbed or undulating surfaces as follows:

A. Where the center-to-center spacing of ribs or undulations is not less than four times the minimum thickness, the equivalent thickness is the minimum thickness of the panel.

B. Where the center-to-center spacing of ribs or undulations is equal to or less than two times the minimum thickness, calculate the equivalent thickness by dividing the net cross-sectional area by the panel width. The maximum thickness used to calculate the net cross-sectional area shall not exceed two times the minimum thickness.

C. Where the center-to-center spacing of ribs or undulations exceeds two times the minimum thickness but is less than four times the minimum thickness, calculate the equivalent thickness from the following equation:

$$\text{Equivalent thickness} = t_{min}+[(4t_{min}/s)-1](t_e-t_{min}) \quad (2\text{-}1)$$

where:

s = spacing of ribs or undulations, in.

t_{min} = minimum thickness, in.

t_e = equivalent thickness, in., calculated in accordance with Item B in 2.2.4

2.2.5 *Multiple-layer walls, floors, and roofs*—For walls, floors, and roofs consisting of two or more layers of different types of concrete, masonry, or both, determine the fire resistance in accordance with the graphical or numerical solutions in 2.2.5.1, 2.2.5.2, or 2.2.5.3. The fire resistance of insulated concrete floors and roofs shall be determined in accordance with 2.2.6.

2.2.5.1 *Graphical and analytical solutions*—For solid walls, floors, and roofs consisting of two layers of different types of concrete, fire resistance shall be determined through the use of Fig. 2.1 or from Eq. (2-2) or (2-3). Perform separate fire resistance calculations assuming each side of the element is the fire-exposed side. The fire resistance shall be the lower of the two resulting calculations unless otherwise permitted by the building code. Exception: In the cases of floors and roofs, the bottom surface shall be assumed to be exposed to fire.

2.2.5.2 *Numerical solution*—For floor and roof slabs and walls made of one layer of normalweight concrete and one layer of semi-lightweight or lightweight concrete, where each layer is 1 in. or greater in thickness, the combined fire resistance of the assembly shall be permitted to be determined using the following expressions:

(a) When the fire-exposed layer is of normalweight concrete,

$$R = 0.057(2t_{tot}^2-d_f t_{tot}+6/t_{tot}) \quad (2\text{-}2)$$

(b) When the fire-exposed layer is of lightweight or semi-lightweight concrete,

$$R=0.063(t_{tot}^2+2d_f t_{tot}-d_f^2+4/t_{tot}) \quad (2\text{-}3)$$

where

R = fire resistance, hr

t_{tot} = total thickness of slab, in.

d_f = thickness of fire-exposed layer, in.

2.2.5.3 *Alternative numerical solution*—For walls, floors and roofs not meeting the criteria of 2.2.5.1, and consisting of two or more layers of different types of concrete, or of layers of concrete, concrete masonry and/or clay masonry, determine the fire resistance from Eq. (2-4):

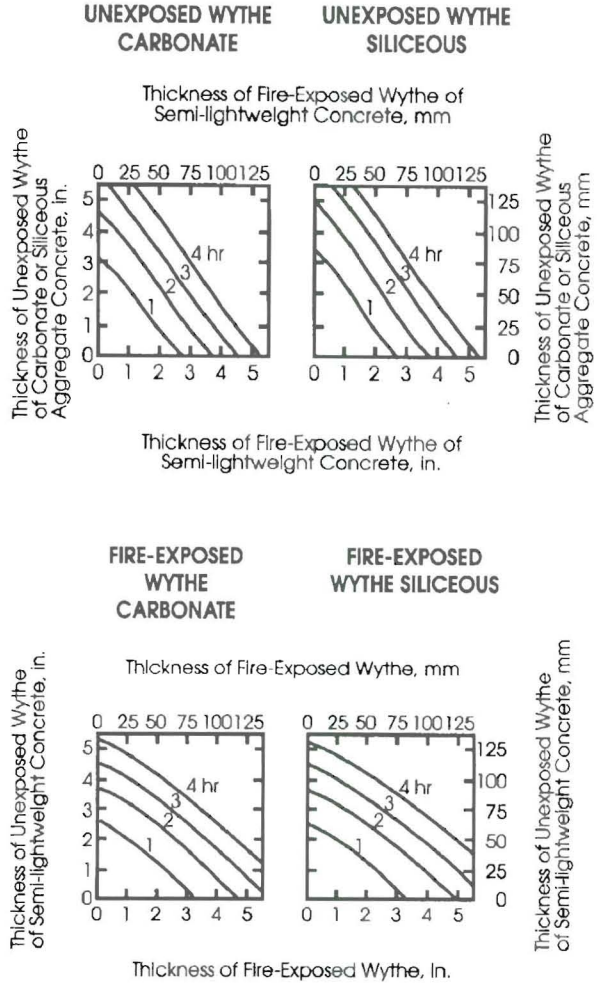


Fig 2.1—Fire resistance of two-layer concrete walls, floors and roofs

$$R = (R_1^{0.59}+R_2^{0.59}+...+R_n^{0.59}+A_1+A_2+...+A_n)^{1.7} \quad (2\text{-}4)$$

where

R = fire resistance of assembly, hr

R_1, R_2 and R_n = fire resistance of individual layers, hr

A_1, A_2 and A_n = 0.30; the air factor for each continuous air space having a distance of 1/2 in. to 3 1/2 in. between layers

Obtain values of R_n for individual layers for use in Eq. (2-4) from Table 2.1 or Fig. 2.2 for concrete materials, from Table 3.1 for concrete masonry, and Table 4.1 for clay masonry. Interpolation between values in the tables shall be permitted. Note: Eq. (2-4) does not consider which layer is being exposed to the fire.

2.2.5.4 *Sandwich panels*—Determine the fire resistance of precast concrete wall panels consisting of a layer of foam plastic sandwiched between two layers of concrete by using Eq. (2-4). For foam plastic with a thickness not less than 1 in., use $R_n^{0.59}$ = 0.22 hr in Eq. (2-4). For foam plastic with a total thickness less than 1 in., the fire resistance contribution

4/29/11

Job Summary Report
Job ID: 2011-05-933-ALTCOMM

Report generated on May 2, 2011 11:16:40 AM

Job Type:	Alter/Adds to Commercial	**Job Description:**	331 Veranda St.	**Job Year:**	2011
Building Job Status Code:	In Review	**Pin Value:**	1286	**Tenant Name:**	
Job Application Date:		**Public Building Flag:**	N	**Tenant Number:**	
Estimated Value:	394,000	**Square Footage:**			
Related Parties:		POINT HEALTH MARTIN'S	*Property Owner*		

Job Charges

Fee Code Description	Charge Amount	Permit Charge Adjustment	Net Charge Amount	Payment Date	Receipt Number	Payment Amount	Payment Adjustment Amount	Net Payment Amount	Outstanding Balance

Location ID: 44248

Location Details

Alternate Id	Parcel Number	Census Tract	GIS X	GIS Y	GIS Z	GIS Reference	Longitude	Latitude
902590	434 C 010 001		U				-70.245164	43.688605

Location Type	Subdivision Code	Subdivision Sub Code	Related Persons	Address(es)
1				331 VERANDA STREET WEST

Location Use Code	Variance Code	Use Zone Code	Fire Zone Code	Inside Outside Code	District Code	General Location Code	Inspection Area Code	Jurisdiction Code
MULTI-USE COMMERCIAL		NOT APPLICABLE					DISTRICT 5	EAST DEERING

Structure Details

Structure: Interior Demo

Occupancy Type Code:

Structure Type Code	Structure Status Type	Square Footage	Estimated Value	Address
Hospitals & Institutional Buildings	0			331 VERANDA STREET WEST

Longitude	Latitude	GIS X	GIS Y	GIS Z	GIS Reference

User Defined Property	Value

Structure: Medical clinic

Occupancy Type Code:

Structure Type Code	Structure Status Type	Square Footage	Estimated Value	Address
Hospitals & Institutional Buildings	0			331 VERANDA STREET WEST

C-6

Not in Historic in Q

BECKER
STRUCTURAL ENGINEERS

April 27, 2011

Ms. Tammy Munson
Director of Inspections
Inspection Services Program
City of Portland
City Hall Room 315
389 Congress Street
Portland, Maine 04101

RE Martin's Point Health Care Clinic Building Renovation
Portland, ME

Dear Ms. Munson,

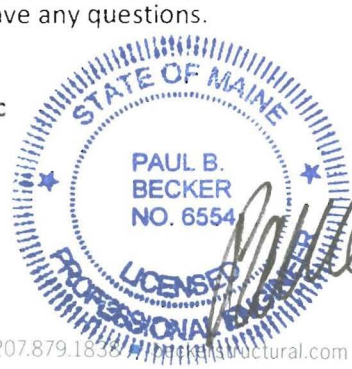
We are providing this letter to clarify our involvement in the above mentioned project. The project involves an interior renovation of an existing building to re-configure exiting work space and replace existing mechanical and electrical components. The building was built in phases with the original building being a concrete frame building circa 1929 and a later steel framed addition built circa 1990. Structural work was intended to be confined to a review of existing floor framing for support of new mechanical equipment and design of a temporary roof opening to allow removal of old equipment and installation of new equipment. We completed this design work in accordance with current (2009 IBC) code requirements.

During demolition of old finishes, it was discovered that steel bracing within the 1990 wing had been removed (torched) during a prior renovation. We were asked to evaluate the condition and offer solutions. Given that the building was constructed under previous code provisions, it is considered an existing building subject to repair. We have utilized the 2009 IEBC Code, Prescriptive Compliance Method, and Section 304.2 to evaluate the proper course of action. Our evaluation found that the damaged building, if repaired to its pre-damaged state, would comply with current code provisions for wind and seismic loads, using 75% of seismic forces prescribed by Section 1613 as permitted in subsection 304.2.1. The member stresses were also checked per ASCE 7-88 (used at time of original design) and found to be acceptable. Therefore, the repairs have been designed to restore the building to its pre-damaged state as permitted in subsection 304.2.2.

While the removed braces could not be installed in the original locations due to changes made during the previous renovation, braces were re-introduced in locations which provided for equivalent lateral load resistance, equivalent load distribution and equivalent performance to the original design. Given the building's location along the water's edge on an elevated exposure and the founding of the building on ledge, wind loads are the governing load case. In addition to the bracing repairs, we also provided guidance on framing required to provide chase openings through existing floors and in-filling existing floor openings with new floor framing.

I trust this information addresses your needs regarding the scope of structural work associated with this project. Please call me if you have any questions.

Sincerely,
Becker Structural Engineers, Inc



4/27/2011

Paul B. Becker, P.E,
President