



# Envelope Compliance Certificate

## 90.1 (2007) Standard

### Section 1: Project Information

Project Type: **Addition**

Project Title : Maine Medical Center - Bean 2 Roof Addition

Construction Site:  
22 Bramhall St  
Portland, ME 04102

Owner/Agent:  
Maine Medical Center  
22 Bramhall St  
Portland, ME 04102

Designer/Contractor:  
Perkins+Will  
225 Franklin Street  
Suite 1100  
Boston, MA 02110

### Section 2: General Information

Building Location (for weather data): **Portland, Maine**  
Climate Zone: **6a**  
Building Space Conditioning Type(s): **Nonresidential**  
Vertical Glazing / Wall Area Pct.: **19%**

<b>Activity Type(s)</b>	<b>Floor Area</b>
Hospital:Operating Room	33728

### Section 3: Envelope Assemblies

**Envelope PASSES: Design 12% better than code.**

#### Climate-Specific Requirements:

Component Name/Description	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor <sup>(a)</sup>
Orientation: NORTH					
Solid Wall - North: Steel-Framed, 16" o.c. Comments: Shadow box detail at Curtain wall	4144	0.0	17.4	0.049	0.064
Curtain Wall - Vision - North: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: Viracon 1/4" Clear VE1-85 & 40% V175 #2; 5/8" airs, SHGC 0.40, VT 0.53 (b) Comments: Kawneer clear wall system	1056	---	---	0.245	0.550
Orientation: EAST					
Solid Wall - East: Steel-Framed, 16" o.c. Comments: Shadow box detail at Curtain wall	5652	0.0	17.4	0.049	0.064
Windows - Vision - East: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: Viracon 1/4" Clear VE1-85 & 40% V175 #2; 5/8" airs, SHGC 0.40, VT 0.53 (b) Comments: Kawneer clear wall system	2050	---	---	0.245	0.550
Areaway - East: Steel-Framed, 16" o.c.	2610	0.0	17.4	0.049	0.064
Door #1: Insulated Metal, Swinging Comments: Exterior Steel Door	28	---	---	0.250	0.700
Door #2: Insulated Metal, Swinging Comments: Exterior Steel Door	28	---	---	0.250	0.700
Areaway - South: Steel-Framed, 16" o.c.	425	0.0	17.4	0.049	0.064
Exterior Mech Open Well - East: Steel-Framed, 16" o.c.	286	0.0	17.4	0.049	0.064
Door #3: Insulated Metal, Swinging Comments: Exterior Steel Door	21	---	---	0.250	0.700

Exterior Mech Open Well - West: Steel-Framed, 16" o.c.	297	0.0	17.4	0.049	0.064
Exterior Mech Open Well - North: Steel-Framed, 16" o.c.	254	0.0	17.4	0.049	0.064
Exterior Mech Open Well - South: Steel-Framed, 16" o.c.	254	0.0	17.4	0.049	0.064
Orientation: SOUTH					
Solid Wall - South: Steel-Framed, 16" o.c.	4560	0.0	17.4	0.049	0.064
Windows - Vision - South: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: Viracon 1/4" Clear VE1-85 & 40% V175 #2; 5/8" airs, SHGC 0.40, VT 0.53 (b)	420	---	---	0.245	0.550
Comments: Kawneer clear wall system					
Orientation: UNSPECIFIED ORIENTATION					
Roof: Insulation Entirely Above Deck	18330	---	24.0	0.040	0.048
Comments: EPDM & TPO System on Rigid Insulation					

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.

(b) Fenestrations product performance must be certified in accordance with NFRC and requires supporting documentation.

## Section 4: Compliance Statement

*Compliance Statement:* The proposed envelope design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed envelope system has been designed to meet the 90.1 (2007) Standard requirements in COMcheck Version 3.9.3 and to comply with the mandatory requirements in the Requirements Checklist.

*DEBORAH KOSKOFF*  
Name - Title

*PRINCIPAL*

*[Signature]*  
Signature

*5/16/14*  
Date



COMcheck Software Version 3.9.3

# Inspection Checklist

Energy Code: 90.1 (2007) Standard

Requirements: 100.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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90.1 (2007) Standard	Plan Review	Complies?	Comments/Assumptions
4.2.2 [PR1] <sup>1</sup>	Plans and/or specifications provide all information with which compliance can be determined for the building envelope and document where exceptions to the standard are claimed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.

**Additional Comments/Assumptions:**

1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)
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Section # & Req.ID	Footing / Foundation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.5.3.3 [FO1] <sup>1</sup>	Below-grade wall insulation R-value.	R-_____	R-_____	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Envelope Assemblies table for values.
5.5.3.5 [FO3] <sup>1</sup>	Slab edge insulation R-value.	R-_____ <input type="checkbox"/> Unheated <input type="checkbox"/> Heated	R-_____ <input type="checkbox"/> Unheated <input type="checkbox"/> Heated	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Envelope Assemblies table for values.
5.5.3.5 [FO5] <sup>1</sup>	Slab edge insulation depth/length.	_____ ft	_____ ft	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Envelope Assemblies table for values.
5.8.1.7.3 [FO7] <sup>1</sup>	Insulation in contact with the ground has <=0.3% water absorption rate per ASTM C272.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.

**Additional Comments/Assumptions:**

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Section # & Req.ID	Framing / Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.4.3.2 [FR1] <sup>3</sup>	Factory-built fenestration and doors are labeled as meeting air leakage requirements.	Fenestration _____ Doors _____ cfm/ft <sup>2</sup>	Fenestration _____ Doors _____ cfm/ft <sup>2</sup>	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
5.4.3.4 [FR4] <sup>3</sup>	Vestibules are installed where building entrances separate conditioned space from the exterior, and meet exterior envelope requirements. Doors have self-closing devices, and are >=7 ft apart.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Doors not intended to be used as a building entrance.
5.5.4.3a [FR8] <sup>1</sup>	Vertical fenestration U-Factor.	U- _____	U- _____	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Envelope Assemblies table for values.
5.5.4.3b [FR9] <sup>1</sup>	Skylight fenestration U-Factor.	U- _____	U- _____	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Envelope Assemblies table for values.
5.5.4.4.1 [FR10] <sup>1</sup>	Vertical fenestration SHGC value.	SHGC: _____	SHGC: _____	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Envelope Assemblies table for values.
5.5.4.4.2 [FR11] <sup>1</sup>	Skylight SHGC value.	SHGC: _____	SHGC: _____	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Envelope Assemblies table for values.
5.8.2.1, 5.8.2.4 [FR12] <sup>2</sup>	Fenestration products rated in accordance with NFRC.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
5.8.2.2 [FR13] <sup>1</sup>	Fenestration products are certified as to performance labels or certificates provided.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
5.8.2.3, 5.5.3.6 [FR14] <sup>2</sup>	U-factor of opaque doors associated with the building thermal envelope meets requirements.	U- _____ <input type="checkbox"/> Swinging <input type="checkbox"/> Nonswinging	U- _____ <input type="checkbox"/> Swinging <input type="checkbox"/> Nonswinging	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Envelope Assemblies table for values.

**Additional Comments/Assumptions:**

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Section # & Req.ID	Insulation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.4.3.1 [IN1] <sup>1</sup>	All sources of air leakage in the building thermal envelope are sealed, caulked, gasketed, weather stripped or wrapped with moisture vapor-permeable wrapping material to minimize air leakage.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
5.5.3.1 [IN2] <sup>1</sup>	Roof R-value. For some ceiling systems, verification may need to occur during Framing Inspection.	R-____ <input type="checkbox"/> Above deck <input type="checkbox"/> Metal <input type="checkbox"/> Attic	R-____ <input type="checkbox"/> Above deck <input type="checkbox"/> Metal <input type="checkbox"/> Attic	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Envelope Assemblies table for values.
5.8.1.2, 5.8.1.3 [IN3] <sup>1</sup>	Roof insulation installed per manufacturer's instructions. Blown or poured loose-fill insulation is installed only where the roof slope is $\leq 3$ in 12.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
5.5.3.1.1 [IN5] <sup>3</sup>	High-albedo roofs meet solar reflectance of 0.70 and thermal emittance of 0.75 or SRI of 82.	SR:____ SRI:____	SR:____ SRI:____	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
5.5.3.2 [IN6] <sup>1</sup>	Above-grade wall insulation R-value.	R-____ <input type="checkbox"/> Mass <input type="checkbox"/> Metal <input type="checkbox"/> Steel <input type="checkbox"/> Wood	R-____ <input type="checkbox"/> Mass <input type="checkbox"/> Metal <input type="checkbox"/> Steel <input type="checkbox"/> Wood	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Envelope Assemblies table for values.
5.8.1.2 [IN7] <sup>1</sup>	Above-grade wall insulation installed per manufacturer's instructions.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
5.5.3.4 [IN8] <sup>1</sup>	Floor insulation R-value.	R-____ <input type="checkbox"/> Mass <input type="checkbox"/> Steel <input type="checkbox"/> Wood	R-____ <input type="checkbox"/> Mass <input type="checkbox"/> Steel <input type="checkbox"/> Wood	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Envelope Assemblies table for values.
5.8.1.1 [IN10] <sup>2</sup>	Building envelope insulation is labeled with R-value or insulation certificate providing R-value and other relevant data.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
5.8.1.4 [IN11] <sup>2</sup>	Eaves are baffled to deflect air to above the insulation.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
5.8.1.5 [IN12] <sup>2</sup>	Insulation is installed in substantial contact with the inside surface separating conditioned space from unconditional space.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
5.8.1.6 [IN13] <sup>2</sup>	Recessed equipment installed in building envelope assemblies does not compress the adjacent insulation.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.

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Section # & Req.ID	Insulation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.8.1.7 [IN14] <sup>2</sup>	Exterior insulation is protected from damage with a protective material. Verification for exposed foundation insulation may need to occur during Foundation Inspection.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
5.8.1.7.1 [IN15] <sup>2</sup>	Attics and mechanical rooms have insulation protected where adjacent to attic or equipment access.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
5.8.1.7.2 [IN16] <sup>2</sup>	Foundation vents do not interfere with insulation.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
5.8.1.8 [IN17] <sup>3</sup>	Insulation intended to meet the roof insulation requirements cannot be installed on top of a suspended ceiling. Mark this requirement compliant if insulation is installed accordingly.			<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.

**Additional Comments/Assumptions:**

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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90.1 (2007) Standard	Final Inspection	Complies?	Comments/Assumptions
5.4.3.3 [F1] <sup>1</sup>	Weatherseals installed on all loading dock cargo doors in Climate Zones 4-8.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.

**Additional Comments/Assumptions:**

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