COM*check* Software Version 4.0.2.7

Envelope Compliance Certificate

Section 1: Project Information

Energy Code: **2009 IECC**
Project Title: Portland, ME. Retirement Residence
Project Type: New Construction

Construction Site:
802 Ocean Ave.
Portland, ME 04103

Owner/Agent:
Eric Mulligan
Colson & Colson Construction
2260 McGilchrist St. S.E.
Salem, OR 97302
503-586-7401
emulligan@colson-colson.com

Designer/Contractor:
Bob Hazleton
Lenity Architecture
3150 Kettle Court, SE
Salem, OR 97301
503-399-1090
bobh@lenityarchitecture.com

Building Location (for weather data): Portland, Maine
Climate Zone: 6a
Vertical Glazing / Wall Area Pct.: **18%**

Building Use: Activity Type(s)	Floor Area
1-Main Dining (Dining: Family) : Nonresidential	6106
2-Hotel : Nonresidential	109367
3-Office : Nonresidential	755
4-Religious Building : Nonresidential	373
5-Motion Picture Theater : Nonresidential	870
6-Gymnasium : Nonresidential	724

Section 2: Envelope Assemblies and Requirements Checklist

Envelope PASSES: Design 0.3% better than code.

Envelope Assemblies:

Component Name/Description	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor(a)
Orientation: NORTH					
Exterior Wall 1: Wood-Framed, 16" o.c., [Bldg. Use 2 - Hotel]	14336	21.0	0.0	0.062	0.051
Window 1: Vinyl/Fiberglass Frame, Perf. Specs.: Product ID NA, SHGC 0.30, [Bldg. Use 2 - Hotel] (b)	2761	---	---	0.270	0.350
Door 1: Glass (> 50% glazing):Nonmetal Frame, Perf. Specs.: Product ID NA, SHGC 0.30, [Bldg. Use 2 - Hotel] (b)	86	---	---	0.270	0.350
Door 2: Insulated Metal, Swinging, [Bldg. Use 2 - Hotel]	540	---	---	0.700	0.700
Office-N: Wood-Framed, 16" o.c., [Bldg. Use 3 - Office]	153	21.0	0.0	0.062	0.051
DR-N: Wood-Framed, 16" o.c., [Bldg. Use 1 - Main Dining]	318	21.0	0.0	0.062	0.051
Theater-N: Wood-Framed, 16" o.c., [Bldg. Use 5 - Motion Picture Theater]	51	21.0	0.0	0.062	0.051
Gym-N: Wood-Framed, 16" o.c., [Bldg. Use 6 - Gymnasium]	243	21.0	0.0	0.062	0.051
Orientation: EAST					
Exterior Wall 2: Wood-Framed, 16" o.c., [Bldg. Use 2 - Hotel]	14886	21.0	0.0	0.062	0.051
Window 2: Vinyl/Fiberglass Frame, Perf. Specs.: Product ID NA, SHGC 0.30, [Bldg. Use 2 - Hotel] (b)	3023	---	---	0.270	0.350
Door 3: Insulated Metal, Swinging, [Bldg. Use 2 - Hotel]	460	---	---	0.700	0.700
Office-E: Wood-Framed, 16" o.c., [Bldg. Use 3 - Office]	212	21.0	0.0	0.062	0.051
DR-E: Wood-Framed, 16" o.c., [Bldg. Use 1 - Main Dining]	275	21.0	0.0	0.062	0.051
Religious-E: Wood-Framed, 16" o.c., [Bldg. Use 4 - Religious Building]	175	21.0	0.0	0.062	0.051

Orientation: SOUTH					
Exterior Wall 3: Wood-Framed, 16" o.c., [Bldg. Use 2 - Hotel]	14560	21.0	0.0	0.062	0.051
Window 3: Vinyl/Fiberglass Frame, Perf. Specs.: Product ID NA, SHGC 0.30, [Bldg. Use 2 - Hotel] (b)	2508	---	---	0.270	0.350
Door 4: Insulated Metal, Swinging, [Bldg. Use 2 - Hotel]	820	---	---	0.700	0.700
DR-S: Wood-Framed, 16" o.c., [Bldg. Use 1 - Main Dining]	328	21.0	0.0	0.062	0.051
Gym-S: Wood-Framed, 16" o.c., [Bldg. Use 6 - Gymnasium]	243	21.0	0.0	0.062	0.051
Religious-S: Wood-Framed, 16" o.c., [Bldg. Use 4 - Religious Building]	249	21.0	0.0	0.062	0.051
Orientation: WEST					
Exterior Wall 4: Wood-Framed, 16" o.c., [Bldg. Use 2 - Hotel]	14761	21.0	0.0	0.062	0.051
Window 4: Vinyl/Fiberglass Frame, Perf. Specs.: Product ID NA, SHGC 0.30, [Bldg. Use 2 - Hotel] (b)	2980	---	---	0.270	0.350
Door 5: Insulated Metal, Swinging, [Bldg. Use 2 - Hotel]	800	---	---	0.700	0.700
Theater-W: Wood-Framed, 16" o.c., [Bldg. Use 5 - Motion Picture Theater]	370	21.0	0.0	0.062	0.051
Gym-W: Wood-Framed, 16" o.c., [Bldg. Use 6 - Gymnasium]	243	21.0	0.0	0.062	0.051
Orientation: UNSPECIFIED ORIENTATION					
Roof 1: All-Wood Joist/Rafter/Truss, [Bldg. Use 2 - Hotel] Comments: Roofs with attics spaces	32186	21.0	19.0	0.025	0.027
Roof 2: All-Wood Joist/Rafter/Truss, [Bldg. Use 2 - Hotel]	5925	30.0	0.0	0.034	0.027
Floor 1: Slab-On-Grade:Unheated, Horizontal without vertical 1 ft., [Bldg. Use 2 - Hotel]	1617	---	5.0	---	---

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

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

Air Leakage, Component Certification, and Vapor Retarder Requirements:

- [X] 1. All joints and penetrations are caulked, gasketed or covered with a moisture vapor-permeable wrapping material installed in accordance with the manufacturer's installation instructions.
- [X] 2. Windows, doors, and skylights certified as meeting leakage requirements.
- [X] 3. Component R-values & U-factors labeled as certified.
- [X] 4. No roof insulation is installed on a suspended ceiling with removable ceiling panels.
- [ ] 5. 'Other' components have supporting documentation for proposed U-Factors.
- [X] 6. Insulation installed according to manufacturer's instructions, in substantial contact with the surface being insulated, and in a manner that achieves the rated R-value without compressing the insulation.
- [X] 7. Stair, elevator shaft vents, and other outdoor air intake and exhaust openings in the building envelope are equipped with motorized dampers.
- [X] 8. Cargo doors and loading dock doors are weather sealed.
- [X] 9. Recessed lighting fixtures installed in the building envelope are Type IC rated as meeting ASTM E283, are sealed with gasket or caulk.
- [X] 10. Building entrance doors have a vestibule equipped with self-closing devices.

Exceptions:

- [ ] Building entrances with revolving doors.
- [ ] Doors not intended to be used as a building entrance.
- [ ] Doors that open directly from a space less than 3000 sq. ft. in area.
- [ ] Doors used primarily to facilitate vehicular movement or materials handling and adjacent personnel doors.
- [ ] Doors opening directly from a sleeping/dwelling unit.

Section 3: 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 2009 IECC requirements in COM*check* Version 4.0.2.7 and to comply with the mandatory requirements in the Requirements Checklist.

Bob Hazleton, PE — Name - Title

Signature

3-24-16 — Date

STATE OF MAINE Robert J Hazleton 10527 LICENSED PROFESSIONAL ENGINEER

COM*check* Software Version 4.0.2.7

Interior Lighting Compliance Certificate

Section 1: Project Information

Energy Code: **2009 IECC**
Project Title: Portland, ME. Retirement Residence
Project Type: New Construction

Construction Site:
802 Ocean Ave.
Portland, ME 04103

Owner/Agent:
Eric Mulligan
Colson & Colson Construction
2260 McGilchrist St. S.E.
Salem, OR 97302
503-586-7401
emulligan@colson-colson.com

Designer/Contractor:
Bob Hazleton
Lenity Architecture
3150 Kettle Court, SE
Salem, OR 97301
503-399-1090
bobh@lenityarchitecture.com

Section 2: Interior Lighting and Power Calculation

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B x C)
Main Dining (Dining: Family)	6106	1.6	9770
Hotel	109367	1	109367
Office	755	1	755
Religious Building	373	1.3	485
Motion Picture Theater	870	1.2	1044
Gymnasium	724	1.1	796
		Total Allowed Watts =	122217

Section 3: Interior Lighting Fixture Schedule

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Main Dining (Dining: Family 6106 sq.ft.)				
LED: U5: LED Can: Other: Standard:	1	11	101	1111
LED: U4: LED Can: Other: Standard:	1	11	64	704
T8 / T12 Fluorescent 13: L1: Surface Fluor.: 24" T8 17W: Electronic:	1	126	20	2520
Linear Fluorescent 15: C4: Surface Flourescent: 48" T8 28W (Super T8): Electronic:	4	2	112	224
Linear Fluorescent: C: Surface Fluorescent: 48" T8 28W (Super T8): Electronic:	2	50	60	3000
Linear Fluorescent: C5: Surface Fluorescent: 48" T8 25W (Super T8): Electronic:	3	5	120	600
Incandescent 1: K: Chandelier: Incandescent 40W:	8	10	300	3000
Incandescent: S2: Wall Sconce: Incandescent 20W:	3	8	120	960
Compact Fluorescent: U2: Recessed Flour: Quad 2-pin 26W: Electronic:	2	4	84	336
Compact Fluorescent: U3: Recessed Fluor: Spiral 13W: Electronic:	1	36	23	828
Compact Fluorescent: U7: Recessed Fluor: Twin Tube 13W: Electronic:	1	4	50	200
Compact Fluorescent: U9: Recessed Fluor: Spiral 13W: Electronic:	1	10	13	130
Compact Fluorescent: Q1: Surface Fluor: Twin Tube 13W: Electronic:	2	124	56	6944
Hotel (109367 sq.ft.)				
T8 / T12 Fluorescent 10: A: Surface Fluor.: 48" T8 28W (Super T8): Electronic:	2	125	60	7500
Linear Fluorescent: C3: Surface Fluorescent: 48" T8 25W (Super T8): Electronic:	2	4	60	240
Linear Fluorescent: C3: Surface Fluorescent: 48" T8 25W (Super T8): Electronic:	2	6	60	360
Linear Fluorescent: V: Surface Fluorescent: 48" T8 25W (Super T8): Electronic:	2	14	56	784
Linear Fluorescent: J4: Surface Fluorescent: 48" T8 25W (Super T8): Electronic:	2	2	30	60
T8 / T12 Fluorescent: C4: Surface Fluor.: 48" T8 32W: Electronic:	4	55	120	6600
HID: Z: Wall Up light: Metal Halide: Pulse start:	1	2	125	250

Compact Fluorescent: U3: Recessed Fluor: Spiral 23W: Electronic:	1	13	25	325
Compact Fluorescent: Q: Surface Fluorescent: Spiral 23W: Electronic:	2	11	69	759
Compact Fluorescent: K4: Chandelier: Spiral 13W: Electronic:	3	2	39	78
Compact Fluorescent: D2: Step Light: Quad 2-pin 13W: Electronic:	1	40	15	600
Compact Fluorescent: Q2: Surface Fluor.: Other: Electronic:	2	2	26	52
Compact Fluorescent: O2: Surface Fluor: Spiral 13W: Electronic:	1	3	13	39
Compact Fluorescent: S3: Wall Sconce: Quad 2-pin 13W: Electronic:	2	4	26	104
Compact Fluorescent: U8: Recessed Fluor: Spiral 13W: Electronic:	1	18	13	234
Compact Fluorescent: Q3: Surface Fluor: Spiral 23W: Electronic:	3	17	69	1173
Compact Fluorescent: S: Surface Fluor: Twin Tube 13W: Electronic:	3	141	39	5499
Compact Fluorescent: O1: Surface Fluor: Twin Tube 13W: Electronic:	1	2	13	26
Compact Fluorescent: O: Surface Fluor: Twin Tube 13W: Electronic:	1	2	13	26
Compact Fluorescent: HL: Surface Fluor: Twin Tube 13W: Electronic:	1	140	14	1960
Office (755 sq.ft.)				
T8 / T12 Fluorescent: A: Surface Fluor.: 48" T8 32W: Electronic:	2	6	60	360
Compact Fluorescent: Q1: Surface Fluor.: Other: Electronic:	2	1	13	13
Compact Fluorescent: Q2: Surface Fluor: Twin Tube 13W: Electronic:	2	483	13	6279
Compact Fluorescent: S1: Wall Sconce: Spiral 13W: Electronic:	2	1	26	26
Religious Building (373 sq.ft.)				
Compact Fluorescent: S1: Wall Sconce: Spiral 13W: Electronic:	2	1	26	26
Compact Fluorescent: U: Surface: Spiral 23W: Electronic:	1	2	23	46
Compact Fluorescent: K1: Chandelier: Spiral 13W: Electronic:	3	2	39	78
Motion Picture Theater (870 sq.ft.)				
Linear Fluorescent: J1: Surface Fluorescent: 48" T8 25W (Super T8): Electronic:	2	2	60	120
Incandescent: S2: Wall Sconce: Incandescent 20W:	3	4	120	480
Incandescent: U7: Recessed Can: Incandescent 50W:	1	4	50	200
Linear Fluorescent: J4: Surface Fluorescent: 48" T8 25W (Super T8): Electronic:	2	2	60	120
Incandescent 5: U6: Recessed Can: Incandescent 50W:	1	25	50	1250
Gymnasium (724 sq.ft.)				
Compact Fluorescent: CF-1: Surface Fluor: Spiral 23W: Electronic:	2	2	23	46
Compact Fluorescent: O2: Surface Fluor: Twin Tube 13W: Electronic:	2	6	26	156
			Total Proposed Watts =	56426

Section 4: Requirements Checklist

Interior Lighting PASSES: Design 54% better than code.

Lighting Wattage:

☒ 1. Total proposed watts must be less than or equal to total allowed watts.

Allowed Watts	Proposed Watts	Complies
122217	56426	YES

Controls, Switching, and Wiring:

☒ 2. Daylight zones under skylights more than 15 feet from the perimeter have lighting controls separate from daylight zones adjacent to vertical fenestration.

☒ 3. Daylight zones have individual lighting controls independent from that of the general area lighting.

Exceptions:

☒ Contiguous daylight zones spanning no more than two orientations are allowed to be controlled by a single controlling device.

☒ Daylight spaces enclosed by walls or ceiling height partitions and containing two or fewer light fixtures are not required to have a separate switch for general area lighting.

☒ 4. Independent controls for each space (switch/occupancy sensor).

Exceptions:

☒ Areas designated as security or emergency areas that must be continuously illuminated.

☒ Lighting in stairways or corridors that are elements of the means of egress.

☐ 5. Master switch at entry to hotel/motel guest room.

☐ 6. Individual dwelling units separately metered.

☐ 7. Medical task lighting or art/history display lighting claimed to be exempt from compliance has a control device independent of the control of the nonexempt lighting.

☐ 8. Each space required to have a manual control also allows for reducing the connected lighting load by at least 50 percent by either controlling all luminaires, dual switching of alternate rows of luminaires, alternate luminaires, or alternate lamps, switching the middle lamp luminaires independently of other lamps, or switching each luminaire or each lamp.

Exceptions:

☒ Only one luminaire in space.

☒ An occupant-sensing device controls the area.

☒ The area is a corridor, storeroom, restroom, public lobby or sleeping unit.

☐ Areas that use less than 0.6 Watts/sq.ft.

☐ 9. Automatic lighting shutoff control in buildings larger than 5,000 sq.ft.

Exceptions:

☐ Sleeping units, patient care areas; and spaces where automatic shutoff would endanger safety or security.

☒ 10. Photocell/astronomical time switch on exterior lights.

Exceptions:

☐ Lighting intended for 24 hour use.

☐ 11. Tandem wired one-lamp and three-lamp ballasted luminaires (No single-lamp ballasts).

Exceptions:

☒ Electronic high-frequency ballasts; Luminaires on emergency circuits or with no available pair.

Section 5: Compliance Statement

Compliance Statement: The proposed lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed lighting system has been designed to meet the 2009 IECC requirements in COM*check* Version 4.0.2.7 and to comply with the mandatory requirements in the Requirements Checklist.

Bob Hazleton, PE		
Name - Title	Signature	Date

COMcheck Software Version 4.0.2.7

Exterior Lighting Compliance Certificate

Section 1: Project Information

Energy Code: **2009 IECC**
Project Title: Portland, ME. Retirement Residence
Project Type: New Construction
Exterior Lighting Zone: 2 (Neighborhood business district)

Construction Site:
802 Ocean Ave.
Portland, ME 04103

Owner/Agent:
Eric Mulligan
Colson & Colson Construction
2260 McGilchrist St. S.E.
Salem, OR 97302
503-586-7401
emulligan@colson-colson.com

Designer/Contractor:
Bob Hazleton
Lenity Architecture
3150 Kettle Court, SE
Salem, OR 97301
503-399-1090
bobh@lenityarchitecture.com

Section 2: Exterior Lighting Area/Surface Power Calculation

A Exterior Area/Surface	B Quantity	C Allowed Watts / Unit	D Tradable Wattage	E Allowed Watts (B x C)	F Proposed Watts
Parking area	19214 ft2	0.06	Yes	1153	700
Walkway < 10 feet wide	3309 ft of walkway length	0.7	Yes	2316	1554
Driveway	44927 ft2	0.06	Yes	2696	3150
Entry canopy	1450 ft2	0.25	Yes	363	592
Main entry	12 ft of door width	20	Yes	240	246
Other door (not main entry)	48 ft of door width	20	Yes	960	1338
Building Sign (Special feature area)	40 ft2	0.14	Yes	6	200
			Total Tradable Watts* =	7733	7780
			Total Allowed Watts =	7733	
			Total Allowed Supplemental Watts** =	600	

* Wattage tradeoffs are only allowed between tradable areas/surfaces.
** A supplemental allowance equal to 600 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Section 3: Exterior Lighting Fixture Schedule

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Parking area (19214 ft2): Tradable Wattage				
HID 1: T1: Parking Lot Pole Light: Metal Halide: Pulse start:	1	4	175	700
Walkway < 10 feet wide (3309 ft of walkway length): Tradable Wattage				
Compact Fluorescent: G1: Walkway Light: Triple 4-pin 26W: Magnetic:	1	12	23	276
HID 1: G3: Pathway-Wall-Mount: Metal Halide: Pulse start:	1	4	90	360
Compact Fluorescent: W: Walkway Light: Quad 2-pin 13W: Magnetic:	1	30	16	480
Linear Fluorescent: V: Surface Fluorescent: 48" T8 28W (Super T8): Premium efficiency:	2	1	60	60
Compact Fluorescent: W4: Walkway Light-Pole Mounted: Triple 4-pin 42W: Magnetic:	1	9	42	378
Driveway (44927 ft2): Tradable Wattage				
HID 1: T1: Parking Lot Pole Light: Metal Halide: Pulse start:	1	5	175	875
HID 1: T2: Parking lot Pole Light: Metal Halide: Pulse start:	1	4	175	700
HID 9: T3: Parking lot Pole Light: Metal Halide: Pulse start:	1	9	175	1575
Entry canopy (1450 ft2): Tradable Wattage				
Compact Fluorescent: G4: Wall-Mount: Spiral 23W: Magnetic:	1	4	23	92

HID 3: M: Canopy Light: Metal Halide: Pulse start:	1	2	175	350
HID 3: W3: Canopy Light: Metal Halide: Pulse start:	1	2	75	150
Main entry (12 ft of door width): Tradable Wattage				
Compact Fluorescent: G1: Wall-Mount: Spiral 23W: Electronic:	1	2	23	46
HID 4: N1: Can Light: Metal Halide: Pulse start:	1	2	100	200
Other door (not main entry) (48 ft of door width): Tradable Wattage				
HID 5: G: Metal Halide: Pulse start:	1	10	80	800
HID 4: N1: Can Light: Metal Halide: Pulse start:	1	2	100	200
Compact Fluorescent: Q2: Ceiling Mount: Quad 2-pin 13W: Magnetic:	2	13	26	338
Building Sign (Special feature area 40 ft2): Tradable Wattage				
HID 8: W1: Sign: Metal Halide: Pulse start:	1	2	60	120
HID 8: W2: Flag Pole: Metal Halide: Pulse start:	1	1	80	80
			Total Tradable Proposed Watts =	7780

Section 4: Requirements Checklist

Lighting Wattage:

☒ 1. Within each non-tradable area/surface, total proposed watts must be less than or equal to total allowed watts. Across all tradable areas/surfaces, total proposed watts must be less than or equal to total allowed watts.

Compliance: Passes using supplemental allowance watts.

Controls, Switching, and Wiring:

☐ 2. All exemption claims are associated with fixtures that have a control device independent of the control of the nonexempt lighting.

☒ 3. Lighting not designated for dusk-to-dawn operation is controlled by either a a photosensor (with time switch), or an astronomical time switch.

☒ 4. Lighting designated for dusk-to-dawn operation is controlled by an astronomical time switch or photosensor.

☒ 5. All time switches are capable of retaining programming and the time setting during loss of power for a period of at least 10 hours.

Exterior Lighting Efficacy:

☒ 6. All exterior building grounds luminaires that operate at greater than 100W have minimum efficacy of 60 lumen/watt.

Exceptions:

☐ Lighting that has been claimed as exempt and is identified as such in Section 3 table above.

☐ Lighting that is specifically designated as required by a health or life safety statue, ordinance, or regulation.

☐ Emergency lighting that is automatically off during normal building operation.

☐ Lighting that is controlled by motion sensor.

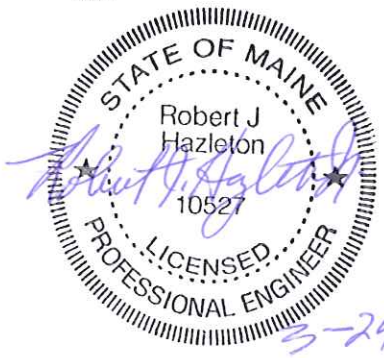
Section 5: Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed lighting system has been designed to meet the 2009 IECC requirements in COM*check* Version 4.0.2.7 and to comply with the mandatory requirements in the Requirements Checklist.

Bob Hazleton, PE — Name - Title

Bob Hazleton — Signature

3-24-16 — Date



3-24-16

COMcheck Software Version 4.0.2.7

Mechanical Compliance Certificate

Section 1: Project Information

Energy Code: **2009 IECC**
Project Title: Portland, ME. Retirement Residence
Project Type: New Construction

Construction Site:
802 Ocean Ave.
Portland, ME 04103

Owner/Agent:
Eric Mulligan
Colson & Colson Construction
2260 McGilchrist St. S.E.
Salem, OR 97302
503-586-7401
emulligan@colson-colson.com

Designer/Contractor:
Bob Hazleton
Lenity Architecture
3150 Kettle Court, SE
Salem, OR 97301
503-399-1090
bobh@lenityarchitecture.com

Section 2: General Information

Building Location (for weather data):	Portland, Maine
Climate Zone:	6a

Section 3: Mechanical Systems List

Quantity	System Type & Description
1	AC-1 (Single Zone) : Heating: 1 each - Central Furnace, Gas, Capacity = 180 kBtu/h Proposed Efficiency = 80.00% Et, Required Efficiency = 80.00% Et Cooling: 1 each - Single Package DX Unit, Capacity = 117 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 11.00 EER, Required Efficiency = 11.00 EER
148	PTAC-1 (Single Zone) : Packaged Terminal Heat Pump Heating Mode: Capacity = 11 kBtu/h, Proposed Efficiency = 3.40 COP, Required Efficiency = 2.91 COP Cooling Mode: Capacity = 11 kBtu/h, , Unknown Economizer Proposed Efficiency = 11.50 EER, Required Efficiency = 9.96 EER SYSTEM COMPLIANCE FAILS: Economizer requirements have not been met.
28	PTAC-2 (Single Zone) : Packaged Terminal Heat Pump Heating Mode: Capacity = 13 kBtu/h, Proposed Efficiency = 3.40 COP, Required Efficiency = 2.86 COP Cooling Mode: Capacity = 13 kBtu/h, , Unknown Economizer Proposed Efficiency = 10.00 EER, Required Efficiency = 9.53 EER SYSTEM COMPLIANCE FAILS: Economizer requirements have not been met.
1	AC-2 (Single Zone) : Heating: 1 each - Central Furnace, Gas, Capacity = 150 kBtu/h Proposed Efficiency = 80.00% Et, Required Efficiency = 80.00% Et Cooling: 1 each - Single Package DX Unit, Capacity = 72 kBtu/h, Air-Cooled Condenser, Unknown Economizer Proposed Efficiency = 11.00 EER, Required Efficiency = 11.00 EER SYSTEM COMPLIANCE FAILS: Economizer requirements have not been met.
1	AC-3 (Single Zone) : Heating: 1 each - Central Furnace, Gas, Capacity = 224 kBtu/h Proposed Efficiency = 80.00% Et, Required Efficiency = 80.00% Et Cooling: 1 each - Single Package DX Unit, Capacity = 117 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 13.00 EER, Required Efficiency = 11.00 EER
1	MAU-1 (Single Zone) : Heating: 1 each - Duct Furnace, Gas, Capacity = 224 kBtu/h Proposed Efficiency = 82.00% Ec, Required Efficiency = 80.00% Ec Cooling: 1 each - Single Package DX Unit, Capacity = 93 kBtu/h, Air-Cooled Condenser, Unknown Economizer Proposed Efficiency = 11.00 EER, Required Efficiency = 11.00 EER

SYSTEM COMPLIANCE FAILS: Economizer requirements have not been met.

1 F1 & CU1 (Single Zone) :
Heating: 1 each - Central Furnace, Gas, Capacity = 72 kBtu/h
Proposed Efficiency = 92.00% Et, Required Efficiency = 80.00% Et
Cooling: 1 each - Split System, Capacity = 58 kBtu/h, Air-Cooled Condenser, Unknown Economizer
Proposed Efficiency = 13.00 SEER, Required Efficiency = 13.00 SEER
SYSTEM COMPLIANCE FAILS: Economizer requirements have not been met.

1 SF-2 & CU-4 (Single Zone) : Split System Heat Pump
Heating Mode: Capacity = 47 kBtu/h,
Proposed Efficiency = 8.30 HSPF, Required Efficiency = 7.70 HSPF
Cooling Mode: Capacity = 48 kBtu/h, , Unknown Economizer
Proposed Efficiency = 13.00 SEER, Required Efficiency = 13.00 SEER
SYSTEM COMPLIANCE FAILS: Economizer requirements have not been met.

1 SF-3 & CU-5 (Single Zone) : Split System Heat Pump
Heating Mode: Capacity = 47 kBtu/h,
Proposed Efficiency = 8.30 HSPF, Required Efficiency = 7.70 HSPF
Cooling Mode: Capacity = 48 kBtu/h, , Unknown Economizer
Proposed Efficiency = 13.00 SEER, Required Efficiency = 13.00 SEER
SYSTEM COMPLIANCE FAILS: Economizer requirements have not been met.

2 F-2&2A/CU-2&2A (Single Zone) :
Heating: 1 each - Central Furnace, Gas, Capacity = 72 kBtu/h
Proposed Efficiency = 92.00% Et, Required Efficiency = 80.00% Et
Cooling: 1 each - Split System, Capacity = 36 kBtu/h, Air-Cooled Condenser, Unknown Economizer
Proposed Efficiency = 13.00 SEER, Required Efficiency = 13.00 SEER
SYSTEM COMPLIANCE FAILS: Economizer requirements have not been met.

1 F-3/CU-3 (Single Zone) :
Heating: 1 each - Central Furnace, Gas, Capacity = 72 kBtu/h
Proposed Efficiency = 92.00% Et, Required Efficiency = 80.00% Et
Cooling: 1 each - Split System, Capacity = 36 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 13.00 SEER, Required Efficiency = 13.00 SEER

3 Water Heating 1:
Gas Unknown, Capacity: 100 gallons, Input Rating: 75 Btu/h w/ Circulation Pump
No minimum efficiency requirement applies

Section 4: Requirements Checklist

Requirements Specific To: AC-1 :

- ☐ 1. Equipment minimum efficiency: Central Furnace (Gas): 80.00 % Et (or 78% AFUE)
- ☐ 2. Equipment minimum efficiency: Single Package Unit: 11.00 EER
- ☐ 3. Integrated economizer is required for this location and system.
- ☐ 4. Cooling system provides a means to relieve excess outdoor air during economizer operation.
- ☐ 5. Hot gas bypass prohibited unless system has multiple steps of unloading or continuous capacity modulation
- ☐ 6. Hot gas bypass limited to 50% of total cooling capacity

Requirements Specific To: PTAC-1 :

- ☐ 1. Equipment minimum efficiency: Heat Pump: 2.91 COP 9.96 EER

Requirements Specific To: PTAC-2 :

- ☐ 1. Equipment minimum efficiency: Heat Pump: 2.86 COP 9.53 EER

Requirements Specific To: AC-2 :

- ☐ 1. Equipment minimum efficiency: Central Furnace (Gas): 80.00 % Et (or 78% AFUE)
- ☐ 2. Equipment minimum efficiency: Single Package Unit: 11.00 EER

Requirements Specific To: AC-3 :

- ☐ 1. Equipment minimum efficiency: Central Furnace (Gas): 80.00 % Et (or 78% AFUE)
- ☐ 2. Equipment minimum efficiency: Single Package Unit: 11.00 EER
- ☐ 3. Integrated economizer is required for this location and system.
- ☐ 4. Cooling system provides a means to relieve excess outdoor air during economizer operation.
- ☐ 5. Hot gas bypass prohibited unless system has multiple steps of unloading or continuous capacity modulation
- ☐ 6. Hot gas bypass limited to 50% of total cooling capacity

Requirements Specific To: MAU-1 :

☒ 1. Equipment minimum efficiency: Duct Furnace (Gas): 80.00 % Ec
☒ 2. Equipment minimum efficiency: Single Package Unit: 11.00 EER
☒ 3. Hot gas bypass prohibited unless system has multiple steps of unloading or continuous capacity modulation
☒ 4. Hot gas bypass limited to 50% of total cooling capacity

Requirements Specific To: F1 & CU1 :

☒ 1. Equipment minimum efficiency: Central Furnace (Gas): 80.00 % Et (or 78% AFUE)
☒ 2. Equipment minimum efficiency: Split System: 13.00 SEER

Requirements Specific To: SF-2 & CU-4 :

☒ 1. Equipment minimum efficiency: Heat Pump: 7.70 HSPF 13.00 SEER

Requirements Specific To: SF-3 & CU-5 :

☒ 1. Equipment minimum efficiency: Heat Pump: 7.70 HSPF 13.00 SEER

Requirements Specific To: F-2&2A/CU-2&2A :

☒ 1. Equipment minimum efficiency: Central Furnace (Gas): 80.00 % Et (or 78% AFUE)
☒ 2. Equipment minimum efficiency: Split System: 13.00 SEER

Requirements Specific To: F-3/CU-3 :

☒ 1. Equipment minimum efficiency: Central Furnace (Gas): 80.00 % Et (or 78% AFUE)
☒ 2. Equipment minimum efficiency: Split System: 13.00 SEER
☒ 3. Integrated economizer is required for this location and system.
☒ 4. Cooling system provides a means to relieve excess outdoor air during economizer operation.

Requirements Specific To: Water Heating 1 :

☒ 1. Water heating equipment meets minimum efficiency requirements: Unknown hot water system type. Efficiency requirements can not be determined.
☒ 2. All piping in circulating system insulated
☒ 3. Automatic time control of heat tapes and recirculating systems present
☐ 4. Controls will shut off operation of circulating pump between water heater/boiler and storage tanks within 5 minutes after end of heating cycle

Generic Requirements: Must be met by all systems to which the requirement is applicable:

☒ 1. Plant equipment and system capacity no greater than needed to meet loads
Exception(s):

- ☐ Standby equipment automatically off when primary system is operating
- ☐ Multiple units controlled to sequence operation as a function of load

☒ 2. Minimum one temperature control device per system
☒ 3. Minimum one humidity control device per installed humidification/dehumidification system
☒ 4. Load calculations per ASHRAE/ACCA Standard 183.
☒ 5. Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2-hour occupant override, 10-hour backup
Exception(s):

- ☒ Continuously operating zones

☒ 6. Outside-air source for ventilation; system capable of reducing OSA to required minimum
☒ 7. R-5 supply and return air duct insulation in unconditioned spaces
R-8 supply and return air duct insulation outside the building
R-8 insulation between ducts and the building exterior when ducts are part of a building assembly
Exception(s):

- ☐ Ducts located within equipment
- ☐ Ducts with interior and exterior temperature difference not exceeding 15°F.

☒ 8. Mechanical fasteners and sealants used to connect ducts and air distribution equipment
☒ 9. Ducts sealed - longitudinal seams on rigid ducts; transverse seams on all ducts; UL 181A or 181B tapes and mastics
☒ 10. Hot water pipe insulation: 1.5 in. for pipes <=1.5 in. and 2 in. for pipes >1.5 in.
Chilled water/refrigerant/brine pipe insulation: 1.5 in. for pipes <=1.5 in. and 1.5 in. for pipes >1.5 in.
Steam pipe insulation: 1.5 in. for pipes <=1.5 in. and 3 in. for pipes >1.5 in.
Exception(s):

- ☐ Piping within HVAC equipment.
- ☒ Fluid temperatures between 55 and 105°F.
- ☐ Fluid not heated or cooled with renewable energy.
- ☐ Piping within room fan-coil (with AHRI440 rating) and unit ventilators (with AHRI840 rating).

- ☐ Runouts <4 ft in length.

☒ 11. Operation and maintenance manual provided to building owner

☒ 12. Thermostatic controls have 5°F deadband

Exception(s):

- ☐ Thermostats requiring manual changeover between heating and cooling
- ☐ Special occupancy or special applications where wide temperature ranges are not acceptable and are approved by the authority having jurisdiction.

☒ 13. Balancing devices provided in accordance with IMC 603.17

☒ 14. Demand control ventilation (DCV) present for high design occupancy areas (>40 person/1000 ft2 in spaces >500 ft2) and served by systems with any one of 1) an air-side economizer, 2) automatic modulating control of the outdoor air damper, or 3) a design outdoor airflow greater than 3000 cfm.

Exception(s):

- ☐ Systems with heat recovery.
- ☐ Multiple-zone systems without DDC of individual zones communicating with a central control panel.
- ☐ Systems with a design outdoor airflow less than 1200 cfm.
- ☐ Spaces where the supply airflow rate minus any makeup or outgoing transfer air requirement is less than 1200 cfm.

☒ 15. Total cooling capacity without economizers must be less than 480 kBtu/h. This project lists 2383 kBtu/h capacity without economizers.

☒ 16. Motorized, automatic shutoff dampers required on exhaust and outdoor air supply openings

Exception(s):

- ☒ Gravity dampers acceptable in buildings <3 stories

☒ 17. Automatic controls for freeze protection systems present

☐ 18. Exhaust air heat recovery included for systems 5,000 cfm or greater with more than 70% outside air fraction or specifically exempted

Exception(s):

- ☐ Hazardous exhaust systems, commercial kitchen and clothes dryer exhaust systems that the International Mechanical Code prohibits the use of energy recovery systems.
- ☐ Systems serving spaces that are heated and not cooled to less than 60°F.
- ☐ Where more than 60 percent of the outdoor heating energy is provided from site-recovered or site solar energy.
- ☐ Heating systems in climates with less than 3600 HDD.
- ☐ Cooling systems in climates with a 1 percent cooling design wet-bulb temperature less than 64°F.
- ☐ Systems requiring dehumidification that employ energy recovery in series with the cooling coil.
- ☐ Laboratory fume hood exhaust systems that have either a variable air volume system capable of reducing exhaust and makeup air volume to 50 percent or less of design values or, a separate make up air supply meeting the following makeup air requirements: a) at least 75 percent of exhaust flow rate, b) heated to no more than 2°F below room setpoint temperature, c) cooled to no lower than 3°F above room setpoint temperature, d) no humidification added, e) no simultaneous heating and cooling.

Section 5: Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the requirements in COM*check* Version 4.0.2.7 and to comply with the mandatory requirements in the Requirements Checklist.

Bob Hazleton, PE	Bob Hazleton	3/24/16
Name - Title	Signature	Date

STATE OF MAINE Robert J Hazleton 10527 LICENSED PROFESSIONAL ENGINEER

3-24-16

Section 6: Post Construction Compliance Statement

- ☐ HVAC record drawings of the actual installation, system capacities, calibration information, and performance data for each equipment provided to the owner.
- ☐ HVAC O&M documents for all mechanical equipment and system provided to the owner by the mechanical contractor.
- ☐ Written HVAC balancing and operations report provided to the owner.

The above post construction requirements have been completed.

Principal Mechanical Designer-Name	Signature	Date