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Compliance Certificate

Project Title: Gemini Opal 467.001

Energy Code:	**2009 IECC**
Location:	**Carroll County, New Hampshire**
Construction Type:	**Single Family**
Building Orientation:	**Bldg. orientation unspecified**
Glazing Area Percentage:	**18%**
Heating Degree Days:	**8499**
Climate Zone:	**6**

Construction Site:
96 Cushing Corner Road
Freedom, New Hampshire 03836

Owner/Agent:
Ann Quinton

Designer/Contractor:

Compliance: **Passes using UA trade-off**

Compliance: **8.6% Better Than Code** Maximum UA: **479** Your UA: **438**

The % Better or Worse Than Code index reflects how close to compliance the house is based on code trade-off rules.
It DOES NOT provide an estimate of energy use or cost relative to a minimum-code home.

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Glazing or Door U-Factor	UA
Floor: All-Wood Joist/Truss Over Uncond. Space	1433	30.0	1.2		44
Ceiling: Flat or Scissor Truss	1433	38.5	1.2		42
Front Elev. Wall: Wood Frame, 16in. o.c. Orientation: Front	943	21.0	8.0		31
Door: Glass SHGC: 0.00 Orientation: Front	28			0.320	9
Window: Vinyl Frame, 2 Pane w/ Low-E SHGC: 0.00 Orientation: Front	103			0.300	31
Left Elev. Wall: Wood Frame, 16in. o.c. Orientation: Left Side	591	21.0	8.0		22
Window: Vinyl Frame, 2 Pane w/ Low-E SHGC: 0.00 Orientation: Left Side	18			0.300	5
Rear Elev. Wall: Wood Frame, 16in. o.c. Orientation: Back	991	21.0	8.0		23
Door: Glass SHGC: 0.00 Orientation: Back	170			0.320	54
Window: Vinyl Frame, 2 Pane w/ Low-E SHGC: 0.00 Orientation: Back	225			0.300	68
Right Elev. Wall: Wood Frame, 16in. o.c. Orientation: Right Side	650	21.0	8.0		18
Door: Solid Orientation: Right Side	170			0.500	85
Window: Vinyl Frame, 2 Pane w/ Low-E SHGC: 0.00 Orientation: Right Side	19			0.300	6

Compliance Statement: The proposed building design described here is consistent with the building plans, specifications, and other calculations submitted with the permit application. The proposed building has been designed to meet the 2009 IECC requirements in RES*check-Web* and to comply with the mandatory requirements listed in the RES*check* Inspection Checklist.

Name - Title	Signature	Date

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Inspection Checklist

Energy Code: **2009 IECC**
Location: **Carroll County, New Hampshire**
Construction Type: **Single Family**
Building Orientation: **Bldg. orientation unspecified**
Glazing Area Percentage: **18%**
Heating Degree Days: **8499**
Climate Zone: **6**

Ceilings:

❑ Ceiling: Flat or Scissor Truss, R-38.5 cavity + R-1.2 continuous insulation
Comments: ______________________________

Above-Grade Walls:

❑ Front Elev. Wall: Wood Frame, 16in. o.c., R-21.0 cavity + R-8.0 continuous insulation
Continuous insulation specified for this above-grade wall has consistent R-value rating across full area of the wall.
Comments: ______________________________

❑ Left Elev. Wall: Wood Frame, 16in. o.c., R-21.0 cavity + R-8.0 continuous insulation
Continuous insulation specified for this above-grade wall has consistent R-value rating across full area of the wall.
Comments: ______________________________

❑ Rear Elev. Wall: Wood Frame, 16in. o.c., R-21.0 cavity + R-8.0 continuous insulation
Continuous insulation specified for this above-grade wall has consistent R-value rating across full area of the wall.
Comments: ______________________________

❑ Right Elev. Wall: Wood Frame, 16in. o.c., R-21.0 cavity + R-8.0 continuous insulation
Continuous insulation specified for this above-grade wall has consistent R-value rating across full area of the wall.
Comments: ______________________________

Windows:

❑ Window: Vinyl Frame, 2 Pane w/ Low-E, U-factor: 0.300
For windows without labeled U-factors, describe features:
#Panes _____ Frame Type ________________ Thermal Break? _____ Yes _____ No
Comments: ______________________________

❑ Window: Vinyl Frame, 2 Pane w/ Low-E, U-factor: 0.300
For windows without labeled U-factors, describe features:
#Panes _____ Frame Type ________________ Thermal Break? _____ Yes _____ No
Comments: ______________________________

❑ Window: Vinyl Frame, 2 Pane w/ Low-E, U-factor: 0.300
For windows without labeled U-factors, describe features:
#Panes _____ Frame Type ________________ Thermal Break? _____ Yes _____ No
Comments: ______________________________

❑ Window: Vinyl Frame, 2 Pane w/ Low-E, U-factor: 0.300
For windows without labeled U-factors, describe features:
#Panes _____ Frame Type ________________ Thermal Break? _____ Yes _____ No
Comments: ______________________________

Doors:

❑ Door: Glass, U-factor: 0.320
Comments: ______________________________

❑ Door: Glass, U-factor: 0.320

Comments: _____

❑ Door: Solid, U-factor: 0.500

Comments: _____

Up to 40 sq.ft. of this door is exempt from the U-factor requirement.

Floors:

❑ Floor: All-Wood Joist/Truss Over Uncond. Space, R-30.0 cavity + R-1.2 continuous insulation

Comments: _____

Floor insulation is installed in permanent contact with the underside of the subfloor decking.

Air Leakage:

❑ Joints (including rim joist junctions), attic access openings, penetrations, and all other such openings in the building envelope that are sources of air leakage are sealed with caulk, gasketed, weatherstripped or otherwise sealed with an air barrier material, suitable film or solid material.

❑ Air barrier and sealing exists on common walls between dwelling units, on exterior walls behind tubs/showers, and in openings between window/door jambs and framing.

❑ Recessed lights in the building thermal envelope are 1) type IC rated and ASTM E283 labeled and 2) sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.

❑ Access doors separating conditioned from unconditioned space are weather-stripped and insulated (without insulation compression or damage) to at least the level of insulation on the surrounding surfaces. Where loose fill insulation exists, a baffle or retainer is installed to maintain insulation application.

❑ Wood-burning fireplaces have gasketed doors and outdoor combustion air.

❑ Automatic or gravity dampers are installed on all outdoor air intakes and exhausts.

Air Sealing and Insulation:

❑ Building envelope air tightness and insulation installation complies by either 1) a post rough-in blower door test result of less than 7 ACH at 50 pascals OR 2) the following items have been satisfied:

(a) Air barriers and thermal barrier: Installed on outside of air-permeable insulation and breaks or joints in the air barrier are filled or repaired.

(b) Ceiling/attic: Air barrier in any dropped ceiling/soffit is substantially aligned with insulation and any gaps are sealed.

(c) Above-grade walls: Insulation is installed in substantial contact and continuous alignment with the building envelope air barrier.

(d) Floors: Air barrier is installed at any exposed edge of insulation.

(e) Plumbing and wiring: Insulation is placed between outside and pipes. Batt insulation is cut to fit around wiring and plumbing, or sprayed/blown insulation extends behind piping and wiring.

(f) Corners, headers, narrow framing cavities, and rim joists are insulated.

(g) Shower/tub on exterior wall: Insulation exists between showers/tubs and exterior wall.

Sunrooms:

❑ Sunrooms that are thermally isolated from the building envelope have a maximum fenestration U-factor of 0.50 and the maximum skylight U-factor of 0.75. New windows and doors separating the sunroom from conditioned space meet the building thermal envelope requirements.

Materials Identification and Installation:

❑ Materials and equipment are installed in accordance with the manufacturer's installation instructions.

❑ Materials and equipment are identified so that compliance can be determined.

❑ Manufacturer manuals for all installed heating and cooling equipment and service water heating equipment have been provided.

❑ Insulation R-values and glazing U-factors are clearly marked on the building plans or specifications.

Duct Insulation:

❑ Supply ducts in attics are insulated to a minimum of R-8. All other ducts in unconditioned spaces or outside the building envelope are insulated to at least R-6.

Duct Construction and Testing:

❑ Building framing cavities are not used as supply ducts.

❑ All joints and seams of air ducts, air handlers, filter boxes, and building cavities used as return ducts are substantially airtight by means of tapes, mastics, liquid sealants, gasketing or other approved closure systems. Tapes, mastics, and fasteners are rated UL 181A or UL 181B and are labeled according to the duct construction. Metal duct connections with equipment and/or fittings are mechanically fastened. Crimp joints for round metal ducts have a contact lap of at least 1 1/2 inches and are fastened with a minimum of three equally spaced sheet-metal screws.
Exceptions:

Joint and seams covered with spray polyurethane foam.

Where a partially inaccessible duct connection exists, mechanical fasteners can be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.

Continuously welded and locking-type longitudinal joints and seams on ducts operating at less than 2 in. w.g. (500 Pa).

❑ Duct tightness test has been performed and meets one of the following test criteria:

(1) Postconstruction leakage to outdoors test: Less than or equal to 200.2 cfm (8 cfm per 100 ft2 of conditioned floor area).

(2) Postconstruction total leakage test (including air handler enclosure): Less than or equal to 300.2 cfm (12 cfm per 100 ft2 of conditioned floor area).

(3) Rough-in total leakage test with air handler installed: Less than or equal to 150.1 cfm (6 cfm per 100 ft2 of conditioned floor area).

(4) Rough-in total leakage test without air handler installed: Less than or equal to 100.1 cfm (4 cfm per 100 ft2 of conditioned floor area).

Temperature Controls:

❑ Where the primary heating system is a forced air-furnace, at least one programmable thermostat is installed to control the primary heating system and has set-points initialized at 70 degree F for the heating cycle and 78 degree F for the cooling cycle.

❑ Heat pumps having supplementary electric-resistance heat have controls that prevent supplemental heat operation when the compressor can meet the heating load.

Heating and Cooling Equipment Sizing:

❑ Additional requirements for equipment sizing are included by an inspection for compliance with the International Residential Code.

❑ For systems serving multiple dwelling units documentation has been submitted demonstrating compliance with 2009 IECC Commercial Building Mechanical and/or Service Water Heating (Sections 503 and 504).

Circulating Service Hot Water Systems:

❑ Circulating service hot water pipes are insulated to R-2.

❑ Circulating service hot water systems include an automatic or accessible manual switch to turn off the circulating pump when the system is not in use.

Heating and Cooling Piping Insulation:

❑ HVAC piping conveying fluids above 105 degrees F or chilled fluids below 55 degrees F are insulated to R-3.

Swimming Pools:

❑ Heated swimming pools have an on/off heater switch.

❑ Pool heaters operating on natural gas or LPG have an electronic pilot light.

❑ Timer switches on pool heaters and pumps are present.
Exceptions:

Where public health standards require continuous pump operation.

Where pumps operate within solar- and/or waste-heat-recovery systems.

❑ Heated swimming pools have a cover on or at the water surface. For pools heated over 90 degrees F (32 degrees C) the cover has a minimum insulation value of R-12.
Exceptions:

Covers are not required when 60% of the heating energy is from site-recovered energy or solar energy source.

Lighting Requirements:

❑ A minimum of 50 percent of the lamps in permanently installed lighting fixtures can be categorized as one of the following:

(a) Compact fluorescent

(b) T-8 or smaller diameter linear fluorescent

(c) 40 lumens per watt for lamp wattage <= 15

(d) 50 lumens per watt for lamp wattage > 15 and <= 40

(e) 60 lumens per watt for lamp wattage > 40

Other Requirements:

❑ Snow- and ice-melting systems with energy supplied from the service to a building shall include automatic controls capable of shutting off the system when a) the pavement temperature is above 50 degrees F, b) no precipitation is falling, and c) the outdoor temperature is above 40 degrees F (a manual shutoff control is also permitted to satisfy requirement 'c').

Certificate:

❑ A permanent certificate is provided on or in the electrical distribution panel listing the predominant insulation R-values; window U-factors; type and efficiency of space-conditioning and water heating equipment. The certificate does not cover or obstruct the visibility of the circuit directory label, service disconnect label or other required labels.

NOTES TO FIELD: (Building Department Use Only)

2009 IECC Energy Efficiency Certificate

Insulation Rating	R-Value
Ceiling / Roof	39.70
Wall	29.00
Floor / Foundation	31.20
Ductwork (unconditioned spaces):	_____

Glass & Door Rating	U-Factor	SHGC
Window	0.30	
Door	0.32	NA

Heating & Cooling Equipment	Efficiency
Heating System:_____	_____
Cooling System:_____	_____
Water Heater:_____	_____

Name: _____ Date: _____

Comments: