

NYCECC Citation	Provision	Item Description	Proposed Design Value	Code Prescriptive Value (ECC)	Supporting Documentation	Additional Notes
R401.3	Certificate (Mandatory)	Permanent certificate posted on the electrical distribution panel.	Sample Text: Certificate provided as per code requirements.	A permanent certificate shall be completed by the builder or registered design professional and posted on the wall in the space where the furnace is located, a utility room or an approved location inside the building. The certificate shall state insulation R-values, U-factors and the solar heat gain coefficient (SHGC) of fenestration, results from any required duct system and building envelope air leakage testing done on the building, and equipment efficiencies. When located on an electrical panel the certificate shall not cover or obstruct the visibility of any required labels.	Sample Text: See architectural plans, A-XXX, A-XXX and specifications drawing A-XXX	
R401.4, Appendix RB	Solar-ready requirements (Mandatory)	Solar-ready requirements	Sample Text: Solar-ready requirements comply with R401.4.	Detached one- and two-family dwelling and multiple single-family dwellings (townhouses) shall meet the requirements of Appendix RB of this code.	Sample Text: See architectural plans, A-XXX, A-XXX and specifications drawing A-XXX	
R402.1.2, Table R402.1.2	Insulation and fenestration criteria	Sample Text: Above-grade wood-framed wall 2x4 framing, 16" o.c. Mass basement wall with wood furring	Sample Text: Fenestration U-factor = 0.32 Skylight U-Factor= N/A Glazed fenestration SHGC= 0.40 Ceiling R-value= 49 Wood Frame Wall R-value= 13+10 Mass wall value= N/A Floor R-value= 30 Basement wall R-value= R-19 in wood-frame Slab R-value & depth= R-10, 4 ft. Crawl space wall R-value= N/A	Sample Text: Fenestration U-factor = 0.32 Skylight U-factor= 0.55 Glazed fenestration SHGC= 0.40 Ceiling R-value= 49 Wood Frame Wall R-value= 13+10 Mass wall value= 15/20 Floor R-value= 30 Basement wall R-value= 15/19 Slab R-value & depth= R-10, 4 ft. Crawl space wall R-value= 15/19	Sample Text: Vertical fenestration: A-XX1-XX2 (Building Elevations) A-XY1 (Schedules)	
R402.1.3, Table R402.1.2	R-value computation	Sample Text: Exterior wood-framed wall 2x4 framing, 16" o.c.	Sample Text: R-13 batt cavity insulation and R-10 rigid insulation (R-5/inch).	Sample Text: R-13 + R-10ci	Sample Text: Exterior Wall Type 1: A-XX0 (1st Floor Plan) 2/A-XXX (Wall Details)	Where there is more than one layer of insulation, the R-values are summed. Although other products and features, such as finish materials, air films and airspaces, may contribute to overall energy efficiency, when determining the R-value in the code, these additional items are not considered and do not contribute to the nominal R-value.
R402.1.4, Table R402.1.2, Table R402.1.4	U-factor alternative	Sample Text: Exterior 8" block wall with R-10ci and R-13 batt in metal furring	Sample Text: U-factor calculated using ASHRAE 90.1-2013 Appendix A Ru - 2.07 (Table A3.1-3, 8" block, 115#) R - 10.5 (Table A3.1-4, 10ci) R - 4.7 (Table A3.1-4, R-13 in 3.5 metal stud) U = 1/(2.07 + 10.5 + 4.7) = 0.058	Sample Text: Mass wall U = 0.060	Sample Text: Exterior Wall Type 1: A-XX0 (1st Floor Plan) 2/A-XXX (Wall Details)	
R402.2.1, R402.1.2, R402.1.4, R402.1.5	Ceilings with attic spaces	Insulation in ceiling with attic space	Sample Text: Insulation extends over wall top plate at eaves, so R-38 has been used.	R-38 installed over 100 percent of the ceiling area; the full height of uncompressed R-38 insulation extends over the wall top plate at the eaves.	Sample Text: A-XXX (Roof Plan) A-XXX (Wall Section) A-XXX (Wall Details)	
R402.2.3	Eave baffle	Sample Text: Eave baffles	Sample Text: Baffle is greater than the size of the vent it is installed adjacent to and extends over the top of the attic insulation.	For air-permeable insulations in vented attics, a baffle shall be installed adjacent to soffit and eave vents. Baffles shall maintain an opening equal or greater than the size of the vent, extend over the top of the attic insulation, and may be any solid material.	Sample Text: A-XXX (Roof Plan) A-XXX (Wall Section) A-XXX (Wall Details)	

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R402.2.4	Access hatches and doors	Attic access hatch	Sample Text: Access door to uninsulated attic is weather-stripped and insulated to R-49	Access doors from conditioned spaces to unconditioned spaces (e.g., attics and crawl spaces) shall be weatherstripped and insulated to a level equivalent to the insulation on the surrounding surfaces. Access shall be provided to all equipment which prevents damaging or compressing the insulation. A wood framed or equivalent baffle or retainer is required to be provided when loose fill insulation is installed, the purpose of which is to prevent the loose fill insulation from spilling into the living space when the attic access is opened, and to provide a permanent means of maintaining the installed R-value of the loose fill insulation.	Sample Text: A-XXX (Roof Plan) A-XXX (Building Section)	
R402.2.6, Table R402.2.6, Table R402.1.4	Steel-frame ceilings, walls and floors	Steel frame walls	Sample Text: Steel frame walls insulated to R-13 + R-15ci	Sample Text: Code minimum R-13 + R-12.7ci	Sample Text: A-XXX (Wall Section) A-XXX (Wall Details)	
R402.2.8	Floors	Subfloor insulation installation	Sample Text: XPS adhered to underside of subfloor assembly and fastened to maintain permanent contact with subfloor decking.	Floor framing-cavity insulation shall be installed to maintain permanent contact with the underside of the subfloor decking.	Sample Text: Note provided in general notes as well as on ground floor or foundation plan.	
R402.2.9, Sections R402.1.2 and R402.2.8	Basement walls	Basement walls	Sample Text: R-19 batt insulation in wood-framing	R-19 batt in wood-framing	Sample Text: A-XXX (Wall Section) A-XXX (Wall Details)	
R402.2.10	Slab-on-grade floors	Slab on grade floor insulation and location	Sample Text: R-10ci, located as per code requirements.	R-10 minimum installed 4 feet	Sample Text: A-XXX (Floor Plan) A-XXX (Wall Section) A-XXX (Wall Details)	
R402.2.11	Crawl space walls	Unvented crawl space insulation	Sample Text: R-15ci on the interior walls	Minimum R-15ci on the interior walls. Crawl space wall insulation shall be permanently fastened to the wall and extend downward from the floor to the finished grade level and then vertically and/or horizontally for at least an additional 24 inches (610 mm).	Sample Text: A-XXX (Floor Plan) A-XXX (Wall Section) A-XXX (Wall Details)	
R402.2.13, R402.3.5 and Table R402.1.2	Sunroom insulation & fenestration	Sunroom (400 SF) thermally isolated from home	Sample Text: Walls: R-13 Ceiling: R-19 Fenestration: U-0.40	Sample Text: For thermally isolated sunrooms, Walls: R-13 Ceiling: R-19 Fenestration: U-0.45	Sample Text: A-XXX (Floor Plan) A-XXX (Wall Section) A-XXX (Wall Details)	
R402.3.1	U-Factor	Fenestration U-Factor	Sample Text: Window A, U = 0.30	Sample Text: Window A, U maximum = U-0.32	Sample Text: Vertical fenestration: A-301-302 (Building Elevations) A-501 (Schedules)	
R402.3.2	Glazed fenestration SHGC	Fenestration SHGC	Sample Text: Window A, SHGC = 0.4	Sample Text: Window A, SHGC maximum = U-0.40		
R402.3.3	Glazed fenestration exemption	Glazing U-factor requirement exemption	Sample Text: Window X, Stained Glass window, U-0.8 (8 ft ² exempt from U-factor requirements)	Up to 15 SF (1.4 m ²) of glazed fenestration per dwelling unit shall be permitted to be exempt from U-factor and SHGC requirements in Section R402.1.2.	Sample Text: Vertical fenestration: A-301-302 (Building Elevations) A-501 (Schedules)	
R402.3.4	Opaque door exemption	Door U-factor requirement exemption	Sample Text: Door A, U-1.5 (22 ft ² door exempt from U-factor requirements)	One side-hinged opaque door assembly up to 24 square feet (2.22 m ²) in area is exempted from the U-factor requirement in Section R402.1.4.	Sample Text: Vertical fenestration: A-XXX-XXY (Building Elevations) A-XXX (Schedules)	

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R402.4, R402.4.1.2, R402.4.1.3	Air leakage (Mandatory)	Air leakage testing statement	Sample Text: Building thermal envelope to be tested to no more than 3 ACH @ 50 PA and witnessed by the Progress Inspector as indicated on TR-8 inspection IA7.	Less than 3 ACH. A written report of the test results shall be prepared and signed by the party conducting the test and provided to the code official and shall include the items listed in R402.4.1.2.	Sample Text: EN-XXX notes	
R402.4.1, R402.4.1.1, Table R402.4.1.	Building thermal envelope	Air sealing details	Sample Text: Building thermal envelope sealed as per code requirements. See air sealing details.	The building thermal envelope shall be durably sealed to limit infiltration. The sealing methods shall be in accordance with Table R402.4.1.1.	Sample Text: A-XXX (Floor Plan) A-XXX (Wall Section) A-XXX (Wall Details)	
R402.4.2	Fireplaces	Fireplaces	Sample Text: Tight-fitting doors used on a masonry fireplace are listed and labeled in accordance with UL 907.	New wood-burning fireplaces and fireplace units that are designed to allow an open burn shall have tight-fitting flue dampers or tight-fitting doors. Tight-fitting doors used on a factory built fireplace listed and labeled in accordance with UL 127 or on a factory-built fireplace unit listed and labeled in accordance with UL 127 shall be tested and listed. Tight-fitting doors used on a masonry fireplace shall be listed and labeled in accordance with UL 907. New wood-burning fireplaces and fireplace units that are designed to allow an open burn shall be provided with a source of outdoor combustion air as required by the fireplace construction provisions of the NYC Building Code.	Sample Text: A-XXX (Schedule) A-XXX (Floor Plan) A-XXX (Specifications)	
R402.4.3	Fenestration air leakage	Window infiltration rates	Sample Text: All fenestration rated at 0.25 cfm/ft ² All doors rated at 0.4 cfm/ft ²	Windows, skylights and sliding glass doors shall have an air infiltration rate of no more than 0.3 cfm/ft ² swinging doors no more than 0.5 cfm/ft ²	Sample Text: Fenestration Schedule: A-XXX-XXY (Building Elevations) A-XXX (Schedules)	
R402.4.4	Rooms containing fuel-burning appliances	Rooms containing fuel-burning appliances and their insulation requirements	Sample Text: Boiler B-1 is direct vent SWH-1 is direct vent	Sample Text: Direct vent appliances are exempt from the requirement.	Sample Text: A-XXX (Floor Plan) A-XXX (Wall Section) A-XXX (Wall Details)	
R402.4.5	Recessed lighting	Recessed lighting sealing	Sample Text: Sealing at exterior lights provided as per code requirements.	Recessed luminaires installed in the building thermal envelope are sealed per requirements.	Sample Text: A-XXX (Floor Plan) A-XXX (Wall Section) A-XXX (Wall Details)	
R402.4.6	Tenant separation walls (Mandatory)	Tenant separation walls	Sample Text: Fire separation between multifamily units has minimum of R-10.	Fire separations between dwelling units in two-family dwellings and multiple single-family dwellings (townhouses) shall be insulated to no less than R-10 and the walls shall be air sealed according to Section R402.4.	Sample Text: A-XXX (Floor Plan) A-XXX (Wall Section) A-XXX (Schedules)	
R403.1.1	Programmable thermostat	Thermostats	Sample Text: (1) programmable thermostat for Mini-split unit	The thermostat controlling the primary heating or cooling system of the dwelling unit shall be capable of controlling the heating and cooling system on a daily schedule to maintain different temperature set points at different times of the day. Thermostat shall have ability to setback temperatures down to 55°F (13°C), or up to 85°F (29°C). Initial set point to be no higher than 70°F (21°C) in heating and 78°F (26°C) in cooling.	Sample Text: M-XXX (Details), M-XXX (Schedule)	
R403.1.2	Heat pump supplementary heat (Mandatory)	Sample Text: Split heat pumpsystem, HP-1	Sample Text: Electric heat shall be enabled only when the heat pump cannot meet load.	Except during defrost, supplementary electric heat to be prevented from coming on when heat pump compressor can meet load.	Sample Text: M-XXX (Details), M-XXX (Schedule)	

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R403.2	Hot water boiler outdoor temperature setback	<i>Sample Text: Hot water boiler, B-1</i>	<i>Sample Text: Boiler equipped with outdoor temperature setback control.</i>	Hot water boilers that supply heat to the building through one- or two-pipe heating systems shall have an outdoor setback control that lowers the boiler water temperature based on the outdoor temperature.	<i>Sample Text: M-XXX (Details), M-XXX (Schedule)</i>	
R403.3.1, R402.4.4	Insulation (Prescriptive)	<i>Duct insulation minimums</i>	<i>Sample Text: Supply ducts in attics R-8, Combustion air duct R-8, R-6 minimum in all other locations.</i>	Supply and return ducts in attics: Minimum R-8 where 3" (76 mm) in diameter or greater; R-6 where less than 3" (76 mm) in diameter. Other portions of building minimum R-6 where 3" (76 mm) in diameter or greater; R-4.2 where less than 3" (76 mm) in diameter. Combustion air ducts shall be R-8 minimum.	<i>Sample Text: M-XXX (Details), M-XXX (Schedule)</i>	
R403.3.2	Sealing (Mandatory)	<i>Duct sealing</i>	<i>Sample Text: Sealing requirements per code requirements, see notes.</i>	Ducts, air handlers and filter boxes shall be sealed. Joints and seams shall comply with the NYC Mechanical Codes.	<i>Sample Text: M-XXX (Details), M-XXX (Schedule)</i>	
R403.3.2.1	Sealed air handler	<i>Air handler sealing</i>	<i>Sample Text: 2% maximum air leakage on air handler</i>	Air handlers shall have a manufacturer's designation for an air leakage of no more than 2% of the design air flow rate when tested in accordance with ASHRAE 193.	<i>Sample Text: M-XXX (Details), M-XXX (Schedule)</i>	
R403.3.3	Duct testing (Mandatory)	<i>Duct testing</i>	<i>Sample Text: All ducts and air handlers located within thermal envelope</i>	A duct air leakage test shall not be required where the ducts and air handlers are located entirely within the building thermal envelope.	<i>Sample Text: M-XXX (Details), M-XXX (Schedule)</i>	
R403.3.5	Building cavities (Mandatory)	<i>Prohibition on use of framing cavities as supply ducts</i>	<i>Sample Text: Ductwork supplied to all spaces.</i>	Building framing cavities shall not be used as ducts or plenums.	<i>Sample Text: M-XXX (Details), M-XXX (Schedule)</i>	
R403.4	Mechanical system piping insulation (Mandatory)	<i>Boiler piping insulation</i>	<i>Sample Text: Piping insulated to R-3</i>	Piping carrying fluids above 105°F or below 55°F shall be insulated to a minimum of R-3.	<i>Sample Text: M-XXX (Details), M-XXX (Schedule)</i>	
R403.4.1	Protection of piping insulation	<i>Protection of Boiler piping insulation</i>	<i>Sample Text: Piping insulation located within thermal envelope</i>	Not required when piping insulation located within thermal envelope	<i>Sample Text: M-XXX (Details), M-XXX (Schedule)</i>	
R403.5.1	Heated water circulation and temperature maintenance systems (Mandatory)	<i>Heated water circulation and temperature maintenance systems (Mandatory)</i>	<i>Sample Text: Circulation pump based on demand control</i>	Heated water circulation systems shall be provided with a circulation pump based on the identification of a demand for hot water within the occupancy. The controls shall automatically turn off the pump when the water in the circulation loop is at the desired temperature and when there is no demand for hot water.	<i>Sample Text: M-XXX (Details), M-XXX (Schedule)</i>	
R403.5.1.1	Circulation systems	<i>Domestic hot water circulation pump</i>	<i>Sample Text: The controls automatically turn off the pump when the water in the circulation loop is at the desired temperature and when there is no demand for hot water.</i>	Heated water circulation systems shall be provided with a circulation pump. The system return pipe must be a dedicated return pipe or a cold water supply pipe. Gravity and thermo-syphon circulation systems shall be prohibited. Controls for circulating hot water system pumps shall start the pump based on the identification of a demand for hot water within the occupancy. The controls shall automatically turn off the pump when the water in the circulation loop is at the desired temperature and when there is no demand for hot water.	<i>Sample Text: M-XXX (Details), M-XXX (Schedule)</i>	
R403.5.1.2	Heat trace systems	<i>Heat trace systems</i>	<i>Sample Text: None</i>	Electric heat trace systems shall comply with IEEE 515.1 or UL 515. Controls shall automatically adjust the energy input to the heat tracing to maintain the desired water temperature in the piping in accordance with the times when heated water is used in the occupancy.	<i>Sample Text: M-XXX (Details), M-XXX (Schedule)</i>	

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R403.5.2	Demand recirculation systems	Domestic hot water circulation pump	Sample Text: Controls provided per requirements	A water distribution system having one or more recirculation pumps that pump water from a heated water supply pipe back to the heated water source through a cold water supply pipe shall be a demand recirculation water system. Pumps shall have controls where the control shall start the pump upon receiving a signal from the action of a user of a fixture or appliance, sensing the presence of a user of a fixture or sensing the flow of hot or tempered water to a fixture fitting or appliance and the control shall limit the temperature of the water entering the cold water piping to 104°F (40°C).	Sample Text: M-XXX (Details), M-XXX (Schedule)	
R403.5.3	Hot water pipe insulation (Prescriptive)	Domestic hot water pipe insulation	Sample Text: R-3	Sample Text: R-3	Sample Text: M-XXX (Details), M-XXX (Schedule)	
R403.5.4	Drain water heat recovery units	Drain water heat recovery (Master Bathroom shower)	Sample Text: Tested in accordance with CSA B55.1, designed per code requirements.	Drain water heat recovery units shall comply with CSA B55.2. Drain water heat recovery units shall be tested in accordance with CSA B55.1. Potable water-side pressure loss of drain water heat recovery units shall be less than 3 psi (20.7 kPa) for individual units connected to one or two showers. Potable water-side pressure loss of drain water heat recovery units shall be less than 2 psi (13.8 kPa) for individual units connected to three or more showers.	Sample Text: M-XXX (Details), M-XXX (Schedule)	
R403.6	Mechanical ventilation (Mandatory)	Sample Text: Whole house Mechanical ventilation	Sample Text: Continuous ventilation air @ 60 cfm	The building shall be provided with ventilation that meets the requirements of the NYC Mechanical Code, as applicable, or with other approved means of ventilation.	Sample Text: M-XXX (Details), M-XXX (Schedule)	
R403.6	Mechanical ventilation (Mandatory)	Sample Text: Gravity dampers	Sample Text: Each toilet exhaust and outdoor air intake supplied with gravity dampers.	Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not in operation.	Sample Text: M-XXX (Details), M-XXX (Schedule)	
R403.6.1 and Table R403.6.1	Whole-house mechanical ventilation system fan efficacy	Whole-house mechanical ventilation system fan efficacy	Sample Text: Bathroom fan (60cfm) rated @ 1.8 cfm/watt Kitchen hood rated @ 3.0 cfm/watt	Sample Text: Bathroom fan(60 cfm) > 1.4 cfm/watt Range hood > 2.8 cfm/watt	Sample Text: M-XXX (Details), M-XXX (Schedule)	
R403.7	Equipment sizing and efficiency rating (Mandatory)	Sample Text: Split heat pump system, HP-1	Sample Text: Heating and cooling loads were calculated in accordance with Manual J and systems sized per Manual S. Efficiency rating - 15 SEER, 7.0 HSPF	Heating and cooling equipment sizing shall be per ACCA Manual S based on loads calculated in accordance with ACCA Manual J. New or replacement heating and cooling equipment shall have an efficiency rating equal to or greater than the minimum required by federal law for the installed location.	Sample Text: M-XXX (Details), M-XXX (Schedule)	
R403.8	Systems serving multiple dwelling units (Mandatory)	Sample Text: Hot water boiler serves 3 dwelling units	Sample Text: Hot water boiler complies with C403 requirements.	Systems serving 3 or more dwelling units shall comply with Sections C403 and C404 of this code in lieu of Section R403.	Sample Text: M-XXX (Details), M-XXX (Schedule)	
R403.9	Snow melt and ice system controls (Mandatory)	Snow melt automatic control limits	Sample Text: Automatic snow melt controls as required by code.	Snow- and ice- melting systems, supplied through energy service to the building, shall include automatic controls capable of shutting off the system when pavement temperature is above 50°F, and no precipitation is falling and an automatic or manual control that will allow shutoff when the outdoor temperature is above 40°F.	Sample Text: M-XXX (Details), M-XXX (Schedule)	

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R403.10.1	Heaters	<i>Sample Text: Pool heater controls</i>	<i>Sample Text: Pool heater controls provided to comply with code requirements.</i>	<i>The electric power to heaters shall be controlled by an on-off switch on or mounted within 3 ft of the heater. Operation of the heater shall not change the setting of the heater thermostat. There shall be a circuit breaker for the power to the heater. Gas-fired heaters shall not be equipped with continuously burning ignition pilots.</i>	<i>Sample Text: M-XXX (Details), M-XXX (Schedule)</i>	
R403.10.2	Time switches	<i>Sample Text: Pools heater time switches</i>	<i>Sample Text: Time switches provided to comply with code requirements.</i>	<i>Automatic timers shall turn on and off pool heaters and pumps based on preset schedule. Heaters and pump motors that have built-in time switches shall be in compliance with this section unless public health requires 24-hour pump operation and/or the pumps operate solar- and waste-heat-recovery pool heating systems.</i>	<i>Sample Text: M-XXX (Details), M-XXX (Schedule)</i>	
R403.10.3	Covers	<i>Sample Text: Covers for pool</i>	<i>Sample Text: R-12 vapor retardant pool cover provided</i>	<i>Outdoor heated pools and outdoor permanent spas shall be equipped with a vapor-retardant pool cover or other approved vapor-retardant means. Outdoor heated pools and outdoor heated permanent spas heated to more than 90°F shall have a pool cover with a minimum insulation of R-12.</i>	<i>Sample Text: M-XXX (Details), M-XXX (Schedule)</i>	
R403.11	Portable spas (Mandatory)	<i>Portable spas</i>	<i>Sample Text: Portable spas in accordance with APSP-14.</i>	<i>The energy consumption of electric-powered portable spas shall be controlled by the requirements of APSP-14.</i>	<i>Sample Text: M-XXX (Details), M-XXX (Schedule)</i>	
R403.12	Residential pools and permanent residential spas	<i>Residential pools and permanent residential spas</i>	<i>Sample Text: Residential pools in accordance with APSP-15a.</i>	<i>Residential swimming pools and permanent residential spas that are accessory to detached one- and two-family dwellings and townhouses three stories or less in height above grade plane and that are available only to the household and its guests shall be in accordance with APSP-15a.</i>	<i>Sample Text: M-XXX (Details), M-XXX (Schedule)</i>	
R404.1	Lighting equipment (Mandatory)	<i>Interior lighting equipment</i>	<i>Sample Text: 75% of the lamps installed lighting fixtures contain only high-efficacy lamps.</i>	<i>Not less than 75% of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps or not less than 75% of the permanently installed lighting fixtures shall contain only high-efficacy lamps, except for low-voltage lighting.</i>	<i>Sample Text: A-XXX (RCP & lighting schedule)</i>	
R404.1.1	Lighting equipment (Mandatory)	<i>Gas lighting equipment</i>	<i>Sample Text: Fuel gas lighting system does not have continuously burning pilot lights.</i>	<i>Fuel gas lighting systems shall not have continuously burning pilot lights.</i>	<i>Sample Text: A-XXX (RCP & lighting schedule)</i>	
R404.2	Electrical energy consumption (Mandatory)	<i>Electric meters for individual dwelling units</i>	<i>Sample Text: Electric meter provided for each dwelling unit.</i>	<i>In all buildings having individual dwelling units, provisions shall be made to determine the electrical energy consumed by each unit by separately metering individual dwelling units.</i>	<i>Sample Text: EN-XXX</i>	

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C402.1.3, C402.2, Tables C402.1.3, C402.1.4	Roof Assembly - Insulation entirely above roof deck	<i>Sample Text: New steel-deck roof</i>	<i>Sample Text: Roof Type 1: 6" XPS (R-30) continuous insulation above deck</i>	<i>Minimum R-30ci</i>	<i>Sample Text: Roof Type 1: A-XXX (Roof Plan) A-XXX (Wall Sections) X-Y/A-XXY (Roof Details)</i>
Tables C402.1.3, Table C402.1.4, Section C402.2	Roof assembly - metal buildings	<i>Sample Text: New roof on metal building</i>	<i>Sample Text: Roof Type 1: R-19 fiberglass batt cavity insulation plus 3" EPS (R-12) linear system (LS) with continuous insulation (ci) installed below the purlins</i>	<i>Sample Text: Minimum R-19 + R-11 LS</i>	<i>Sample Text: Roof Type 1: A-XXX (Roof Plan) A-XXX (Wall Sections) X-Y/A-XXY (Roof Details)</i>
Tables C402.1.3, C402.1.4 or Section C402.2	Roof assembly - attic and other	<i>Sample Text: New attic</i>	<i>Sample Text: Roof Type 1: R -38</i>	<i>Sample Text: Minimum R-38</i>	<i>Sample Text: Roof Type 1: A-XXX (Roof Plan) A-XXX (Wall Sections) X-Y/A-XXY (Roof Details)</i>
Tables C402.1.3, C402.1.4 or Section C402.2	Walls, above-grade: Mass	<i>Sample Text: 8" CMU wall with continuous rigid insulation and brick veneer.</i>	<i>Sample Text: 3" Extruded polystyrene (XPS) = R-15 ci</i>	<i>Sample Text: Minimum R-11.4ci</i>	<i>Sample Text: Exterior Wall Type X: A-XXX (1st Floor Plan) 2/A-XXX (Wall Details)</i>
Tables C402.1.3, C402.1.4 or Section C402.2	Walls, above-grade: Metal framed	<i>Sample Text: Steel-framed wall, 2x4 framing 16" O.C</i>	<i>Sample Text: R-13 batt insulation installed between framing + R-10 ci installed on the exterior of the building</i>	<i>Sample Text: Minimum R-13 + R-7.5ci</i>	<i>Sample Text: Exterior Wall Type X: A-XXX (1st Floor Plan) 2/A-XXX (Wall Details)</i>
Tables C402.1.3, C402.1.4 or Section C402.2	Walls, above-grade: Wood framed & other	<i>Sample Text: Above-grade wood-framed wall 2x4 framing, 16" o.c.</i>	<i>Sample Text: Exterior Wall Type 1: R-13 fiberglass batt cavity insulation + 2" EPS (R-8) ci</i>	<i>Sample Text: Minimum R-13 + R-3.8ci or R-20</i>	<i>Sample Text: Exterior Wall Type X: A-XXX (1st Floor Plan) 2/A-XXX (Wall Details)</i>
Tables C402.1.3, C402.1.4 or Section C402.2	Below-grade walls	<i>Sample Text: Thermal insulation on the interior of new basement wall.</i>	<i>Sample Text: 2" Extruded Polystyrene (XPS) = R-10</i>	<i>Sample Text: Minimum R-7.5ci</i>	<i>Sample Text: Exterior Wall Type X: A-XXX (Basement Floor Plan) 2/A-XXX (Foundation Details)</i>
Tables C402.1.3, C402.1.4 or Section C402.2	Floors: Mass	<i>Sample Text: Thermal insulation at new concrete floor over garage.</i>	<i>Sample Text: 3" Extruded Polystyrene (XPS) = R-15 ci</i>	<i>Sample Text: Minimum R-10.4ci</i>	<i>Sample Text: Exterior Wall Type X: A-XXX (Basement Floor Plan) 2/A-XXX (Foundation Details)</i>
Tables C402.1.3, C402.1.4 or Section C402.2	Floors: Joist/framing	<i>Sample Text: Thermal insulation at new steel-joist floor over unconditioned space.</i>	<i>Sample Text: Exterior Wall Type 1: R-49 fiberglass batt cavity insulation</i>	<i>Sample Text: Minimum R-30</i>	<i>Sample Text: Exterior Wall Type X: A-XXX (Basement Floor Plan) 2/A-XXX (Foundation Details)</i>
Tables C402.1.3, C402.1.4 or Section C402.2	Slab-on-grade floors: Heated slabs	<i>Sample Text: Slab-on-grade with radiant heating.</i>	<i>Sample Text: R-5ci under full slab, R-15 extending from the top of the footing to 24" below</i>	<i>Sample Text: Minimum R-15 for 24"below</i>	<i>Sample Text: Exterior Wall Type X: A-XXX (Basement Floor Plan) 2/A-XXX (Foundation Details)</i>
Tables C402.1.3, C402.1.4 or Section C402.2	Opaque doors, Nonswinging	<i>Sample Text: Insulated metal roll-up garage door.</i>	<i>Sample Text: R-5</i>	<i>Sample Text: Minimum R-4.75</i>	<i>Insulated Metal Roll-up Door: A-301-302 (Elevations) A-501 (Schedules)</i>

NYCECC Citation	Provision	Item Description	Proposed Design Value	Code Prescriptive Value (ECC)	Supporting Documentation
C402.1.1	Low-energy buildings	<i>Sample Text: Low-energy building thermal envelope exemption</i>	<i>Sample Text: 10,000 SF Garage, Total heating capacity = 30,000 BTU/h Total cooling capacity = none Peak design rate = 3.0 BTU/h • ft²</i>	<i>The following shall be exempt from the building thermal envelope provisions of Section C402: peak design rate of energy usage less than 3.4 Btu/h • ft² for space conditioning purposes.</i>	<i>Sample Text: A-XXX, A-XX1-XX2 (Building Elevations) A-5XX (Schedules) A-6XX (Section details)</i>
C402.1.4 Tables C402.1.3, C402.1.4	Assembly U-factor, C-factor or F-factor-based method	<i>Sample Text: 8" block wall with R-13 batt insulation in metal studs and R-10 continuous exterior insulation</i>	<i>Sample Text: U-factor calculated using ASHRAE 90.1-2013 Appendix A Ru - 2.07 (Table A3.1-3, 8" block, 115#) R - 10.5 (Table A3.1-4, 10ci) R - 4.7 (Table A3.1-4, R-13 in 3.5 metal stud) U = 1/(2.07 + 10.5 + 4.7) = 0.058</i>	<i>Sample Text: Mass wall U = 0.090</i>	<i>Sample Text: A-XXX, A-XX1-XX2 (Building Elevations) A-5XX (Schedules) A-6XX (Section details)</i>
C402.2.1	Multiple layers of continuous insulation	<i>Sample Text: Installation of multiple layers of continuous insulation.</i>	<i>Sample Text: Stagger the edge joints between each layer of continuous insulation boards.</i>	<i>Two or more insulation boards in construction assemblies shall be in accordance with Section C303.2. If the manufacturer does not call for multiple layers the edge joints between each layer of continuous insulation boards shall be staggered.</i>	<i>Sample Text: A-XX1-XX2 (Building Elevations) A-5XX (Schedules) A-6XX (Section details)</i>
C402.2.7	Fireplaces	<i>Sample Text: Factory built gas-fired fireplace</i>	<i>Sample Text: Factory built fireplace listed/labeled UL 127 with tight-fitting doors</i>	<i>New fireplaces shall be listed and labeled with tight-fitting doors</i>	<i>Sample Text: A-XXX, specs</i>
C402.4, Table C402.4	Fenestration (Prescriptive)	<i>Sample Text: Fenestration requirements</i>	<i>Sample Text: W-1 (fixed) U-0.38 SHGC - 0.40 W-2 (operable) U-0.40 SHGC - 0.40</i>	<i>Sample Text: U_{max}-0.38 (fixed) U_{max}-0.40 (operable) SHGC_{max} - 0.40</i>	<i>Sample Text: A-XXX (daylight zone controls), E-XXX</i>
C402.4.1	Maximum area	<i>Sample Text: Window to wall Ratio</i>	<i>Sample Text: 25%</i>	<i>Sample Text: 30% Maximum</i>	<i>Sample Text: A-XX1-XX2 (Building Elevations) Gross wall area and gross window area.</i>

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C402.4.1.1	Increased vertical fenestration area with daylight responsive controls	<i>Sample Text: Increased Window to wall Ratio with daylighting controls</i>	<i>Sample Text: WWR = 35%, 60% of conditioned floor area is in daylight zone, automatic daylight controls installed, VT>0.35</i>	<i>Sample Text: 40% Maximum, >50% of conditioned floor area is in daylight zone.</i>	<i>Sample Text: A-XX1-XX2 (Building Elevations) Gross wall area and gross window area. A-XXX (daylight zone calculation). A-XX (window schedule showing VT). E-XXX (Lighting fixture schedules)</i>
C402.4.1.2	Increased skylight area with daylight responsive controls	<i>Sample Text: Roof area to skylight ratio</i>	<i>Sample Text: 2.2%</i>	<i>Sample Text: 5% Maximum</i>	<i>Sample Text: Horizontal fenestration: A-1XX (Roof Plan) A-5XX (Schedules) A-6XX (Section details)</i>
C402.4.2	Minimum skylight fenestration area	<i>Minimum skylight requirements</i>	<i>Sample Text: Skylights provided on FL-12 above corridors and offices Haze factor 92% for all skylights.</i>	<i>Sample Text: Total daylight zone under skylights shall be not less than half the floor area. Skylights in office, storage, automotive service, manufacturing, nonrefrigerated warehouse, retail store and distribution/sorting area: Haze factor greater than 90%.</i>	<i>Sample Text: A-XXX (daylight zone calculation)</i>
C402.5	Air leakage-thermal envelope (Mandatory)	<i>Sample Text: Air leakage-thermal envelope</i>	<i>Sample Text: Building thermal envelope to be tested to no more than 0.4 cfm/ft2 of envelope area @ 75 PA and witnessed by the Progress Inspector as indicated on TR-8 inspection IIA7.</i>	<i>The thermal envelope of the building must comply with Sections C402.5.1 through C402.5.8. Pressure differential of 0.3 inch water gauge. Air leakage rate 0.40 cfm/ft² maximum. Must comply with Sections C402.5.5, C402.5.6, and C402.5.7.</i>	<i>Sample Text: Notes (A-XXX) Specs (A-XXX)</i>
C402.5.1	Air barriers	<i>Sample Text: Air barrier material</i>	<i>Sample Text: Continuous air barrier - 1/2 inch XPS with all joints sealed according to mfg's instructions.</i>	<i>A continuous air barrier for the opaque buildings envelope shall comply with Section C402.5.1.2.1 or C402.5.1.2.2.</i>	<i>Sample Text: Air sealing notes (A-XXX)</i>
C402.5.1.2.1	Materials	<i>Sample Text: Materials</i>	<i>Sample Text: Plywood with a thickness of not less than 3/8 inch meet the requirements of Section C402.5.1.2.1.</i>	<i>Items 1 through 16 listed in this section must comply with the requirements of this section.</i>	<i>Sample Text: Notes (A-XXX) Specs (A-XXX)</i>

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C402.5.1.2.2	Assemblies	<i>Sample Text: Assemblies</i>	<i>Sample Text: Concrete masonry walls coated with either one application of block filler or two applications of a sealer coating meet the requirements of C402.5.1.2.2, provided joints are sealed and the requirements of Section C402.5.1.1 are met.</i>	Items 1 through 3 listed in this section must comply with the requirements of this section.	<i>Sample Text: Notes (A-XXX) Specs (A-XXX)</i>
C402.5.1.3	Air barrier testing	<i>Sample Text: Air barrier testing</i>	<i>Sample Text: All air barrier testing to be in accordance with ASTM E 779.</i>	New buildings 25,000 to 50,000 square feet, and less than or equal to 75 feet in height must show compliance through testing.	<i>Sample Text: Air testing notes (A-XXX)</i>
C402.5.2, Table C402.5.2	Air leakage of fenestration-	<i>Sample Text: Replace curtainwall and glazed entrance doors, Floor 1.</i>	<i>Sample Text: Curtain walls and storefront glazing = 0.06 cfm/sf Commercial glazed swinging entrance doors and revolving doors = 1.0 cfm/sf of door area</i>	Max Air Leakage Rates: Curtain walls and storefront glazing = 0.06 cfm/sf Commercial glazed swinging entrance doors and revolving doors = 1.0 cfm/sf of door area	<i>Sample Text: Vertical fenestration: A-XX1-XX2 (Building Elevations) A-5XX (Schedules) A-6XX (Section details)</i>
C402.5.3, Tables C402.1.3, C402.1.4	Rooms containing fuel-burning appliances	<i>Sample Text: Rooms containing fuel-burning appliances</i>	<i>Sample Text: Boiler B-1 is direct vent SWH-1 is direct vent</i>	<i>Sample Text: Direct vent appliances are exempt from the requirement.</i>	<i>Sample Text: Vertical fenestration: A-XX1-XX2 (Building Elevations) A-5XX (Schedules) A-6XX (Section details)</i>
C402.5.4	Doors and access openings to shafts, chutes, stairways, and elevator lobbies	<i>Sample Text: Doors from corridor to stairwell A & stairwell B</i>	<i>Sample Text: All doors from corridor to stairway to be gasketed, weatherstripped or sealed.</i>	Access openings from conditioned space to shafts, chutes, stairways and elevator lobbies shall meet C402.5.2 or be gasketed, weatherstripped, or sealed.	<i>Sample Text: See note in general notes (A-XX1).</i>
C402.5.5	Air intakes, exhaust openings, stairways and shafts	<i>Sample Text: Air intakes, exhaust openings, stairways and shafts requirements for dampers</i>	<i>Sample Text: Stairway enclosure dampers as required.</i>	Dampers must be provided in accordance with Section C403.2.4.3.	<i>Sample Text: A-XXX Plans, M-XXX Mechanical plans</i>
C402.5.6	Loading dock weatherseals	<i>Provide weatherseals at loading dock.</i>	<i>Sample Text: weatherseals provided at loading dock door.</i>	Cargo doors and loading dock doors shall be equipped with weatherseals to restrict infiltration when vehicles are parked in doorway.	<i>Sample Text: See note in general notes (A-XX1).</i>

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C402.5.7	Vestibules	<i>Sample Text: Building Entrance vestibule</i>	<i>Sample Text: New 10' deep vestibule @ building entrance. Two sets of swinging doors with self-closers.</i>	<i>Vestibule provided at door separating conditioned space from the exterior.</i>	<i>Sample Text: A-XXX (1st Floor Plan) A-5XX (Schedules) Incl. door closer notes in Comments column of Door Schedule).</i>
C402.5.8	Recessed lighting	<i>Sample Text: Recessed luminaires in the thermal envelope to be weather sealed.</i>	<i>Sample Text: Recessed luminaires in the roof ceiling assembly sealed to 1 cfm air movement.</i>	<i>Sample Text: Recessed luminaires installed in the building thermal envelope shall be sealed to maximum air leakage 2 cfm.</i>	<i>Sample Text: A-XXX (Reflected ceiling plan) A-5XX (Schedules) Sealant notes in Comments column of Luminaire schedule.</i>

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C403.2.1	Calculation of heating and cooling loads	<i>Load calculations for HVAC systems</i>	<i>Sample Text: Design loads are determined in accordance with the procedures described in the ANSI/ASHRAE/ACCA Standard 183.</i>	<i>Sample Text: Determined in accordance with ANSI/ASHRAE/ACCA Standard 183 HVAC Systems and Equipment Handbook</i>	<i>Signed and sealed statement from Engineer certifying compliance with Energy Code</i>
C403.2.2	Equipment sizing	<i>HVAC systems sizing based on load calculations</i>	<i>Sample Text: Specified equipment sized within load calculation limits</i>	<i>Heating and cooling equipment shall not exceed calculated loads</i>	<i>Signed and sealed statement from Engineer certifying compliance with Energy Code</i>
Table C403.2.3(1)	Minimum efficiency requirements: electrically operated unitary air conditioners and condensing units	<i>Sample Text: Split System 7.5 ton air cooled AC unit, AC-1</i>	<i>Sample Text: 12.0 EER</i>	<i>Sample Text: 11.2 EER</i>	<i>Sample Text: Split System AC units schedule, drawing M-XXX</i>
Table C403.2.3(3)	Minimum efficiency requirements: electrically operated PTACs, PTHPs, Single-package vertical AC, Single-package vertical HP, Room AC, and Room AC-HPs	<i>Sample Text: PTAC (Cooling Mode) New construction, 12,000 BTU/h, PTAC-1</i>	<i>Sample Text: 10.5 EER</i>	<i>Sample Text: 14.0 - (0.300 x Cap/1000) = 10.4 EER</i>	<i>Sample Text: PTAC AC units schedule, drawing M-XXX</i>
Table C403.2.3(3)	Minimum efficiency requirements: electrically operated PTACs, PTHPs, Single-package vertical AC, Single-package vertical HP, Room AC, and Room AC-HPs	<i>Sample Text: Room AC w/ louvered slides, 8,000 BTU/h, RAC-1</i>	<i>Sample Text: 10.9 CEER</i>	<i>Sample Text: 10.9 CEER</i>	<i>Sample Text: Room AC units schedule, drawing M-XXX</i>
Table C403.2.3(4)	Warm-air furnaces and combination warm-air furnaces/air-conditioning units, warm-air duct furnaces and unit heaters, minimum efficiency requirements	<i>Sample Text: new warm-air furnace, gas fired 250,000 BTU/h, RTU-1</i>	<i>Sample Text: 81% Et</i>	<i>Sample Text: 80% Et</i>	<i>Sample Text: Furnace units schedule, drawing M-XXX</i>
Table C403.2.3(5)	Minimum efficiency requirements: gas- and oil-fired boilers	<i>Sample Text: Gas fired, hot-water boiler 500,000 Btu/h input, B-1</i>	<i>Sample Text: 83% Et</i>	<i>Sample Text: 83% Et</i>	<i>Sample Text: Boiler schedule, drawing M-XXX</i>
Table C403.2.3(6)	Minimum efficiency requirements: condensing units, electrically operated	<i>Sample Text: new air cooled condensing unit, 150,000 Btu/h</i>	<i>Sample Text: 10.1 EER, 11.2 IPLV</i>	<i>Sample Text: 10.1 EER, 11.2 IPLV</i>	<i>Sample Text: Condensing units schedule, drawing M-XXX</i>
Table C403.2.3(7)	Water chilling packages - efficiency requirements	<i>Sample Text: new air cooled chiller, 200 ton</i>	<i>Sample Text: 10.1 EER, 13 IPLV</i>	<i>Sample Text: 9.562 EER @ Full load, 12.500 IPLV</i>	<i>Sample Text: Chiller schedule, drawing M-XXX</i>
Table C403.2.3(8)	Minimum efficiency requirements: heat rejection equipment	<i>Sample Text: new axial fan open circuit cooling tower, 200 tons</i>	<i>Sample Text: 40.2 gpm/hp</i>	<i>Sample Text: 40.2 gpm/hp</i>	<i>Sample Text: Chiller schedule, drawing M-XXX</i>
Table C403.2.3(10)	Heat Transfer Equipment	<i>Sample Text: Liquid-to-liquid heat exchanger</i>	<i>Sample Text: minimum efficiency not required</i>	<i>Sample Text: minimum efficiency not required</i>	<i>Samples Text: Equipment schedule, drawing M-XXX</i>
Table C403.2.3(11)	Minimum efficiency requirements: electrically operated variable-refrigerant-flow air conditioners	<i>Sample Text: VRF air cooled air conditioner, 60,000 Btu/h</i>	<i>Sample Text: 11.2 SEER, 13.1 IEER</i>	<i>Sample Text: 11.2 SEER, 13.1 IEER</i>	<i>Samples Text: AC schedule, drawing M-XXX</i>
Table C403.2(12)	Minimum efficiency requirements: electrically operated variable-refrigerant-flow air-to-air and applied heat pumps	<i>Sample Text: VRF water source, 65,000 Btu/h</i>	<i>Sample Text: 12.0 EER</i>	<i>Sample Text: 12.0 EER</i>	<i>Samples Text: Equipment schedule, drawing M-XXX</i>
C403.2.4.1	Thermostatic controls	<i>Sample Text: Thermostats/humidistats for mechanical zones</i>	<i>Sample Text: One thermostat is provided for each zone</i>	<i>Minimum one thermostat/humidistat required per zone</i>	<i>Sample Text: Thermostats shown on mechanical plans, M-XX1, M-XX2, M-XX3.</i>
C403.2.4.1.1	Heat pump supplementary heat	<i>Sample Text: 3 ton packaged heat pump with electrical heat, HP-1</i>	<i>Sample Text: Electric heat shall be enable only when the heat pump cannot meet load.</i>	<i>Except during defrost, supplementary electric heat to be prevented from coming on when heat pump can meet load</i>	<i>Sample Text: See mechanical control sequences, drawing M-XXX.</i>
C403.2.4.1.3 and C403.2.4.1.2	Set point overlap restriction	<i>Sample Text: Heat pump, split unit thermostats</i>	<i>Sample Text: Each thermostat will be programmed as required</i>	<i>Zone thermostat operation shall have minimum 5 °F dead band between heating and cooling</i>	<i>Sample Text: See mechanical control sequences, drawing M-XXX.</i>

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C403.2.4.2	Off-hour controls	<i>Sample Text: All zones</i>	<i>Sample Text: Each thermostat will be programmable to meet requirements</i>	All zone thermostat shall be operated via thermostatic setback controls operated via an automatic time clock or a programmable control system	<i>Sample Text: See mechanical control sequences, drawing M-XXX.</i>
C403.2.4.2.1	Thermostatic setback capabilities	<i>Sample Text: All zones</i>	<i>Sample Text: Each thermostat will be programmable to meet requirements</i>	Controls shall have ability to setback temperatures down to 55 °F (13°C) , or up to 85 °F	<i>Sample Text: See mechanical control sequences, drawing M-XXX.</i>
C403.2.4.2.2	Automatic setback and shutdown capabilities	<i>Sample Text: All zones</i>	<i>Sample Text: Each thermostat will be programmable to meet requirements</i>	Controls shall be capable of automatically starting and stopping the systems for seven different daily schedules per week, capable of having settings saved in memory for 10 hours during a loss of power, and a manual system "on" override for up to two hours, or an occupancy sensor	<i>Sample Text: See mechanical control sequences, drawing M-XXX.</i>
C403.2.4.2.3	Automatic start capabilities	<i>Sample Text: All zones</i>	<i>Sample Text: Each thermostat will be programmable to meet requirements</i>	Controls shall be provided for each HVAC system and automatically adjusting the daily start time of the HVAC in order to bring each space to the desired temperature.	<i>Sample Text: See mechanical control sequences, drawing M-XXX.</i>
C403.2.4.3	Shutoff dampers	<i>Sample Text: Outdoor air intake, exhaust openings, stairway and shaft vents</i>	<i>Sample Text: Class I motorized damper with a maximum air leakage rate of 4cfm/ft² of damper surface area at 1.0 inch water gauge</i>	Each outdoor supply air and exhaust air ducts shall be provided with motorized dampers to shut off or open as required by this section. Class I motorized damper with a maximum air leakage rate of 4cfm/ft ² of damper surface area at 1.0 inch water gauge. Gravity nonmotorized dampers air leakage rate 20cfm/ft ² where 24" minimum in either dimension and 40cfm/ft ² where 24" maximum in either dimension with air leakage of 1.0 inch water gauge.	<i>Sample Text: See mechanical plans, M-XX1, M-XX2, M-XX3, mechanical control sequences, drawing M-4XX</i>
C403.2.4.4 and C403.2.4.2.2	Zone isolation	<i>Sample Text: Zone isolation</i>	<i>Sample Text: There are independent controls for each open floor office as specified as Zone 1 and Zone 2</i>	HVAC systems serving zones that are over 25,000 ft ² in floor area or that span more than one floor and are designed to operate or be occupied nonsimultaneously shall be controlled independently and divided into isolation areas where each area has isolation devices and controls configured to automatically shut off the supply of conditioned and outdoor air to and exhaust air from the isolation area.	<i>Sample Text: See mechanical plans, M-XX1, M-XX2, M-XX3, mechanical control sequences, drawing M-4XX</i>
C403.2.4.5	Snow- and ice-melt system controls	<i>Sample Text: Snow- and ice-melt system at carport</i>	<i>Sample Text: Snow-and ice-melt system programmable to meet requirements</i>	Automatic controls shall shutoff snowmelt systems when pavement temperature is above 50°F and no precipitation is falling and automatic or manual control to shutoff the system when the outdoor temperature is above 40°F	<i>Sample Text: See mechanical plans, M-XX1, M-XX2, M-XX3, mechanical control sequences, drawing M-4XX</i>
C403.2.4.6	Freeze protection system controls	<i>Sample Text: Heat tracing of outdoor piping</i>	<i>Sample Text: Heat tracing of outdoor piping shall include automatic controls that shut off the systems when outdoor temperatures are above 40°F or when the conditions of the protected fluid will prevent freezing</i>	Freeze protection systems shall include automatic controls shall shut off the systems when outdoor air temperatures are above 40°F or when the conditions of the protected fluid will prevent freezing	<i>Sample Text: See mechanical plans, M-XX1, M-XX2, M-XX3, mechanical control sequences, drawing M-4XX</i>

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C403.2.4.7	Economizer fault detection and diagnostics (FDD)	<i>Sample Text: RTU-1, Economizer fault detection and diagnostics</i>	<i>Sample Text: RTU-1 includes economizer with FDD controls, per requirements</i>	Air-cooled unitary direct-expansion units and VRF units which have an economizer must include a FDD system which complies with items 1-7 listed in Section C403.2.4.7	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.2.5	Hot water boiler outdoor temperature setback control	<i>Sample Text: B-1, boiler outdoor temperature setback controls</i>	<i>Sample Text: HW boiler controls provided as per requirements</i>	Hot water boilers that supply heat to the building through one- or two-pipe heating systems shall have an outdoor setback control that lowers the boiler water temperature based on the outdoor temperature	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.2.6	Ventilation	<i>Sample Text: Outdoorair control</i>	<i>Sample Text: Motorized dampers shall have ability to operate at minimum required ventilation rates, per requirements</i>	Where mechanical ventilation is provided, systems shall be capable of reducing outdoor air to the minimum requirements from Chapter 4 of the NYC MC	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.2.6.1	Demand controlled ventilation	<i>Sample Text: RTU-1, DCV system in auditorium</i>	<i>Sample Text: RTU-1 includes a DCV system provided as per requirements</i>	Required in spaces greater than 500 square feet and occupant density of 25 people per 1000 square feet or greater	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.2.6.2	Enclosed parking garage ventilation controls	<i>Sample Text: Enclosed parking garage ventilation control requirements</i>	<i>Sample Text: Enclosed parking garage fan equipped with VFD controls as per requirements</i>	Shall have contamination-sensing devices and automatic controls configured to stage fans or modulate fan average airflow rates to 50% or less of design capacity, or intermittently operate fans less than 20% of the occupied time or as required to maintain acceptable contaminant levels in accordance with NYC MC	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.2.7, Tables C403.2.7(1) and C403.2.7(2)	Energy recovery ventilation systems	<i>Sample Text: MAU-1, energy recovery wheel</i>	<i>Sample Text: Energy recovery wheel provided with 65% efficacy</i>	Required in systems with design air capacity and (%) outdoor air at full design flow rate shown in Tables C403.2.7(1) and C403.2.7(2). Minimum 50% total effectiveness.	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.2.8 and Table C403.2.8	Kitchen exhaust systems	<i>Sample Text: Kitchen exhaust systems</i>	<i>Sample Text: Kitchen exhaust system provided as per requirements</i>	Replacement air introduced directly into the hood cavity of kitchen exhaust hoods shall not exceed 10% of the hood exhaust airflow rate. Conditioned supply air delivered to any space shall not exceed the greater of the items listed in this section of this code--	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.2.9	Duct and plenum insulation and sealing	<i>Sample Text: All ductwork</i>	<i>Sample Text: Unconditioned spaces: R-6 Conditioned spaces: None, exterior wall insulated >R-8</i>	Supply and return ducts and plenums in shall have a minimum of R-6 where located in unconditioned spaces and R-8 minimum where located outside the building. Where located within a building envelope assembly, the duct or plenum shall be separated from the building exterior or unconditioned or exempt spaces by a minimum of R-8.	<i>Sample Text: See mechanical drawing M-XXX</i>
C403.2.9.1	Duct Construction	<i>Sample Text: Ductwork</i>	<i>Sample Text: Ductwork must be constructed and erected in accordance with the NYCMC</i>	Shall be constructed and erected in accordance with the NYCMC	<i>Sample Text: See mechanical drawing M-XXX</i>
C403.2.9.1.1	Low-Pressure Duct Systems	<i>Sample Text: Low Pressure Ductwork</i>	<i>Sample Text: All low pressure ducts properly sealed as per requirements</i>	All low pressure ducts, operating at 2" of W.G. or less shall be properly sealed with approved methods	<i>Sample Text: See mechanical drawing M-XXX</i>

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C403.2.9.1.2	Medium-Pressure Duct Systems	<i>Sample Text: Medium Pressure Ductwork</i>	<i>Sample Text: all medium pressure ducts sealed as per requirements and insulated to R-XX</i>	<i>Ducts operating between 2" and 3" W.G. shall be insulated and sealed per C403.2.9 and must be clearly indicated on the construction documents in accordance with NYCMC</i>	<i>Sample Text: See mechanical drawing M-XXX</i>
C403.2.9.3	High Pressure Duct Systems	<i>Sample Text: High Pressure Ductwork</i>	<i>Sample Text: all high pressureducts sealed as per requirements and insulated to R-XX</i>	<i>Ducts operating in excess of 3" W.G. shall be insulated and sealed per C403.2.9 and leak tested per code requirements with a rate of air leakage (CL) less than or equal to 4.0</i>	<i>Sample Text: See mechanical drawing M-XXX</i>
Table C403.2.10	Minimum Piping Insulation Thickness	<i>Sample Text: Steam Heating System Piping Insulation - 250F fluid operating temp</i>	<i>Sample Text: 2.5" insulation provided for all pipe carrying steam @250F</i>	<i>Sample Text: Must be thermally insulated in accordance with Table C403.2.10</i>	<i>Sample Text: See mechanical drawing M-XXX</i>
C403.2.10.1	Protection of piping insulation	<i>Sample Text: Piping located outdoors</i>	<i>Sample Text: All outdoor piping insulation is protected from damage by using (XXXX - type of material).</i>	<i>All piping insulation is protected from damage, including that due to sunlight, moisture, equipment maintenance and wind. Adhesive tape is not permitted.</i>	<i>Sample Text: See mechanical drawing M-XXX</i>
C403.2.11	Mechanical systems commissioning and completion requirements	<i>Sample Text: Commissioning</i>	<i>Sample Text: Total building heating capacity = 750,000 BTU/h Total cooling capacity = 620,000 BTU/h Commissioning is required for this project per requirements</i>	<i>Mechanical systems shall be commissioned and completed in accordance with Section C408</i>	<i>Sample Text: See mechanical drawing M-XXX</i>
C403.2.12.1, Table C403.2.12.1(1), Table C403.2.12.1(2)	Allowable Fan Motor Horsepower	<i>Sample Text: Exhaust Fans, TX-1 through TX-5, KX-1 through KX-5</i>	<i>Sample Text: Total Fan power = XXX bhp</i>	<i>Total system fan hp shall not exceed limits in table C403.2.12.1(1)</i>	<i>Sample Text: See mechanical details, drawing M-XXX</i>
C403.2.12.3	Fan Efficiency	<i>Sample Text: Fan efficiency for AHU-1, 2, 3</i>	<i>Sample Text: Minimum FEG = 70</i>	<i>Minimum FEG = 67</i>	<i>Sample Text: See mechanical details, drawing M-XXX</i>
C403.2.13	Heating Outside a Building	<i>Sample Text: Parking Garage heating</i>	<i>Sample Text: Radiant heat system provided as per requirements</i>	<i>All heating systems installed outdoors shall be of the radiant type, with an occupancy switch or timer switch.</i>	<i>Sample Text: See mechanical details, drawing M-XXX, mechanical plans, M-1XX, M-1XX, M-1XX, mechanical control sequences, drawing M-XXX</i>
C403.2.14 through C403.2.17, Tables C403.2.14(1) and C403.2.14(2)	Refrigeration equipment performance	<i>Sample Text: Minimum efficiency requirements for commercial refrigeration and commercial refrigerators and freezers</i>	<i>Sample Text: Commercial refrigerators provided as per requirements</i>	<i>Refrigeration equipment shall have an energy use in kWh/day not greater than the values of Tables C403.2.14(1) and C403.2.14(2)</i>	<i>Sample Text: See mechanical details, drawing M-XXX, mechanical plans, M-1XX, M-1XX, M-1XX, mechanical control sequences, drawing M-XXX</i>
C403.2.18	Automatic control of HVAC in hotel/motel guest rooms	<i>Sample Text: HVAC control in All hotel rooms</i>	<i>Sample Text: Guest rooms provided with Captive key card system as per requirements.</i>	<i>In hotels and motels with greater than 50 guest rooms, automatic control for the HVAC equipment serving each guest room shall be configured according to the requirements in Section C403.2.18.1 or C403.2.18.2.</i>	<i>Sample Text: See mechanical details, drawing M-XXX, mechanical plans, M-1XX, M-1XX, M-1XX, mechanical control sequences, drawing M-XXX</i>
C403.3	Economizers (Prescriptive)	<i>Sample Text: Economizers on RTU-1, RTU-2</i>	<i>Sample Text: air-side Economizer provided, as per requirements</i>	<i>Air Economizer required for all cooling systems, unless an exception is met</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.3.1	Integrated economizer control	<i>Sample Text: Economizer control on RTU-1, RTU-2</i>	<i>Sample Text: Economizers systems are integrated with the mechanical cooling system and capable of providing partial cooling, per control sequence</i>	<i>Economizer systems shall be integrated with the mechanical cooling system and be capable of providing partial cooling even where additional mechanical cooling is required to provide the remainder of the cooling load. Controls shall not be capable of creating a false load in the mechanical cooling systems by limiting or disabling the economizer or any other means, except at the lowest stage of mechanical cooling.</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>

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C403.3.2	Economizer heating system impact	<i>Sample Text: Economizer heating system impact</i>	<i>Sample Text: Economizer operation does not increase building heating energy use during normal operation</i>	<i>Economizer operation does not increase building heating energy use during normal operation</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.3.3	Air economizers	<i>Sample Text: Air economizers, RTU-1</i>	<i>Sample Text: Air economizer system controls, As per requirements</i>	<i>Air economizers shall comply with Sections C403.3.3.1 - C403.3.3.5</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.3.4	Water-side economizers	<i>Sample Text: Water-side economizer, CT-1</i>	<i>Sample Text: Water economizer systems controls provided as per requirements.</i>	<i>Water-side economizers shall comply with Sections C403.3.4.1 and C403.3.4.2.</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.1.1	Fan Airflow control	<i>Sample Text: Fan controls for single-zone DX cooling system 135kBTU/h</i>	<i>Sample Text: Variable speed fan controls provided per requirements</i>	<i>Supply fans controlled by variable speed drives and configured to requirements in C403.4.1.1.</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.1.2	Static pressure sensor location	<i>Sample Text: VAV fans</i>	<i>Sample Text: Static sensor used to control VAV fans shall be as required</i>	<i>Static pressure sensors used to control VAV fans shall be located such that the controller set point is not greater than 1.2 inches w.c.. Where this results in one or more sensors being located downstream of major duct splits, not less than one sensor shall be located on each major branch to ensure that static pressure can be maintained in each branch.</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.1.3	Set points for direct digital control	<i>Sample Text: VAV box Control set points</i>	<i>SampleText: reset based on zone XXX</i>	<i>Systems with DDC (direct digital control) controlled VAV boxes shall reset based on zone requiring greatest pressure</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.2	Hydronic Systems Controls	<i>Sample Text: Boilers B-1, B-2</i>	<i>Sample Text: Multistaged boilers provided as per requirements</i>	<i>Heating systems consisting of multiple packaged boilers delivering conditioned water or steam into a common distribution system shall have automatic controls capable of sequencing boilers. Systems comprised of a single boiler and greater than 500,000 Btu/h input design capacity shall include either a multistaged or modulating burner.</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.2.1	Three Pipe System	<i>Sample Text: Three Pipe Systems</i>	<i>Sample Text: Not applicable</i>	<i>Hydronic systems using a common return for both hot water and chilled water are prohibited</i>	<i>Sample Text: These systems are not used</i>
C403.4.2.2	Two-pipe Changeover System	<i>Sample Text: Two Pipe Changeover</i>	<i>SampleText: Dead band controls as per requirements</i>	<i>Dead band for change-over is a minimum of 15 degrees F based on O.A., minimum operation in one mode for 4 hours before changeover, heating and cooling supply temperature no more than 30 degrees F apart at change-over point.</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.2.3	Hydronic (Water Loop) Heat Pump Systems	<i>Sample Text: Water loop heat pump system controls</i>	<i>SampleText: Heat pump system controls as per requirements</i>	<i>Hydronic heat pump systems shall comply with Sections C403.4.2.3.1 through C403.4.2.3.2. Minimum 20 degree F dead band between initiation of heat injection or heat rejection to water loop</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.2.3.1	Temperature dead band	<i>Sample Text: Temperature dead band</i>	<i>SampleText: 20 F deadband specified Dead band controls as per requirements</i>	<i>Minimum 20 F dead band between initiation of heat injection or heat rejection to water loop</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>

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C403.4.2.3.2	Heat Rejection	<i>Sample Text: CT-1, CT-2</i>	<i>Sample Text: Open-circuit tower is used directly in the heat pump loop and an automatic valve shall be installed to bypass all heat pump water flow around the tower.</i>	Heat rejection equipment shall comply with Sections C403.4.2.3.2.1 and C403.4.2.3.2.2.	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.2.3.3	Two-position valve	<i>Sample Text: Two-position valve for WSHP 1,2</i>	<i>Sample Text: WSHP 1,2 controls provided as per requirements</i>	Each hydronic heat pump on the hydronic system having a total pump system power exceeding 10 hp shall have a two-position valve.	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.2.4	Temperature Reset controls	<i>Sample Text: Boilers B-1, B-2 reset controls</i>	<i>Sample Text: Boiler controls provided as per requirements</i>	Hydronic systems greater than or equal to 500,000 Btu/h in design output capacity supplying heated or chilled water to comfort conditioning systems shall include controls that have the capability to do all of the items 1 to 3 listed in this section.	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.2.4	Hydronic Variable Flow Systems	<i>Sample Text: Hydronic pump controls</i>	<i>Sample Text: Hydronic controls provided on hot water system as per requirements</i>	Hydronic system pumping power greater than or equal to 10hp have variable flow systems and meet the requirements of this section	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.2.5	Boiler turndown	<i>Sample Text: Boilers B-1, B-2 turndown controls</i>	<i>Sample Text: Boiler B-1, B2 each have 7 to 1 turndown ratio</i>	Boiler systems with design input greater than 1,000,000 Btu/h shall comply with the turndown ratio specified in Table C403.4.2.5.	<i>Sample Text: See mechanical plans, M-1XX, M-1XX, mechanical control sequences, drawing M-XXX, and mechanical details M-XXX</i>
C403.4.2.6	Pump isolation	<i>Sample Text: Pumps CW-1, HW-1</i>	<i>Sample Text: Pumps CW-1, HW-1 equipped with VFD controls as per requirements</i>	Chilled water plants including more than one chiller shall have the capability to reduce flow automatically through the chiller plant when a chiller is shut down. Chillers piped in series for the purpose of increased temperature differential shall be considered as one chiller. Boiler plants including more than one boiler shall have the capability to reduce flow automatically through the boiler plant when a boiler is shut down.	<i>Sample Text: See mechanical plans, M-1XX, M-1XX, mechanical control sequences, drawing M-XXX, and mechanical details M-XXX</i>
C403.4.3	Heat rejection equipment fan speed controls	<i>Sample Text: Cooling Towers, CT-1, CT-2</i>	<i>Sample Text: Fans on CT-1, CT-2 equipped with VFD controls per requirements</i>	Fans shall be able to operate at 2/3 speed or less, and have controls to adjust fan speed based on demand	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.4	Requirements for complex mechanical systems serving multiple zones	<i>Sample Text: VAV system serving zones 1 through 4</i>	<i>Sample Text: control sequences provided as required</i>	VAV system with multiple zone, primary air to each zone shall be reduced to a minimum requirements before reheating, recooling, or mixing takes place.	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.4.1	Single-duct VAV system, terminal devices	<i>Sample Text: single duct VAV system in zone XX</i>	<i>Sample Text: control sequences provided as required</i>	Terminal devices shall be capable of reducing primary supply air before reheating or recooling takes place	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.4.2	Dual-duct and mixing VAV systems, terminal devices	<i>Sample Text: dual duct mixing VAV system in zone XX</i>	<i>Sample Text: control sequences provided as required</i>	Terminal devices shall be capable of reducing air from one duct to a minimum before mixing takes place	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.4.3	Single-fan dual-duct and mixing VAV systems, economizers	<i>Sample Text: dual duct mixing VAV system in zone XX</i>	<i>Sample Text: economizer not provided as per requirements</i>	Individual dual duct or mixing heating and cooling systems with a single fan and capacities greater than 90,000 Btu/h shall not be equipped with air economizers	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>

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C403.4.4.4	Fractional hp fan motors	<i>Sample Text: Fractional hp fan motors</i>	<i>Sample Text: Motor fan 1 hp and efficiency 70%</i>	<i>Motor fans 1/12 hp to 1 hp shall be electronically commutated motors or have a minimum efficiency of 70% and must have the means to adjust motor speed for either balancing or remote control. The use of belt-driven fans to sheave adjustments for airflow balancing instead of varying motor speed are permitted.</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.4.5	Supply-air temperature reset controls	<i>Sample Text: HVAC system serving zones 5-XX</i>	<i>Sample Text: control sequences provided as required</i>	<i>Control system shall automatically reset supply-air temperature in response to building load or outdoor air temperature. The controls shall be capable of resetting the supply air temperature not less than 25% of the difference between the design supply-air temperature and the design room air temperature.</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.4.6	Multiple zone VAV system ventilation optimization control	<i>Sample Text: Multi zone systems with DDC of zone boxes</i>	<i>Sample Text: control sequences provided as required</i>	<i>Control system shall have automatic controls configured to reduce OA intake flow below design rates in response to changes in system ventilation efficiency</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.5	Heat Recovery for Service Water Heating	<i>Sample Text: Chiller plant = 2 million BTU/h</i>	<i>Sample Text: not applicable</i>	<i>Provide condenser water heat recovery, required for 24 hr/day operations, with water cooled systems over 6 million btu/h</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.4.6, table C403.4.6	Hot Gas Bypass Limitation	<i>Sample Text: 75kbtu/h unitary package</i>	<i>Sample Text: exempt as per exception</i>	<i>Hot gas bypass is allowed only on systems with multiple steps of unloading or continuous capacity modulation. Allowed Bypass capacity per table C403.4.6.</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>
C403.5	Refrigeration systems	<i>Sample Text: Refrigeration systems</i>	<i>Sample Text: Refrigeration systems provided as required</i>	<i>Refrigerated display cases, walk-in coolers or walk-in freezers that are served by remote compressors and remote condensers not located in a condensing unit, shall comply with Sections C403.5.1 and C403.5.2.</i>	<i>Sample Text: See mechanical schedule, M-4XX, mechanical control sequences, drawing M-XXX</i>

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C404.2 Table C404.2	Service water-heating Equipment Performance Efficiency	<i>Sample Text: Domestic Water Heater, DWH-1,-2</i>	<i>Sample Text: 92% Et, Gas-fired, (2) 500,000 Btu/h</i>	<i>Shall meet efficiency requirements of table C404.2. If capacity is 1 MBH or greater, 90% Et or greater is required in Section C404.2.1</i>	<i>Sample Text: See plumbing schedules, drawing P-XXX</i>
C404.3	Heat traps	<i>Sample Text: Heat traps</i>	<i>Sample Text: Brand XXX water heating equipment supplied with integral heating traps</i>	<i>Water-heating equipment shall be provided with heat traps on the supply and discharge piping if not integrated with the equipment.</i>	<i>Sample Text: See plumbing schedules, drawing P-XXX</i>
C404.4	Insulation of piping	<i>Sample Text: DHW Pipe Insulation</i>	<i>Sample Text: 1.5" insulation shall be used on all hot water service piping</i>	<i>Service water piping shall be insulated according to Table C403.2.10</i>	<i>Sample Text: See plumbing schedules, drawing P-XXX</i>
C404.5	Efficient heated water supply piping	<i>Sample Text: DHW max flowrate</i>	<i>Sample Text: T DHW piping - 3/8 inch piping with max 1.5 gpm.</i>	<i>The flow rate through 1/4 inch piping shall not be greater than 0.5 gpm. The flow rate through 5/16 inch piping shall not be greater than 1 gpm. The flow rate through 3/8 inch piping shall not be greater than 1.5 gpm.</i>	<i>Sample Text: See plumbing specification drawings, P-XXX</i>
C404.5.1 Table C404.5.1	Maximum allowable pipe length method	<i>Sample Text: DHW 1/2" piping</i>	<i>Sample Text: Maximum distance from DHW supply to residential lavatory is 30 ft</i>	<i>Sample Text: Maximum allowable piping length from nearest source of heated water to the termination of the fixture supply shall not exceed the requirements of Table C404.5.1.</i>	<i>Sample Text: See plumbing specification drawings, P-XXX</i>
C404.5.2 Table C404.5.1	Maximum allowable pipe volume method	<i>Sample Text: DHW 1/2" piping</i>	<i>Sample Text: Maximum volume of water from DHW supply to residential lavatory is 0.4 gallons</i>	<i>Sample text: Maximum allowable piping volume from nearest source of heated water to the termination of the fixture supply shall not exceed 2 ounces for public lavatory faucet and 0.5 gallons for all other fixtures.</i>	<i>Sample Text: See plumbing specification drawings, P-XXX</i>
C404.6	Heated-water circulating and temperature maintenance systems	<i>Hot water circulation pumps and heat trace</i>	<i>Sample Text: DHW circulation pump controls provided as required</i>	<i>The system return pipe shall be a dedicated return pipe or cold water supply pipe. Controls for circulating hot water system pumps shall start the pump based on the identification of a demand for hot water within the occupancy. The controls shall automatically turn off the pump when the water in the circulation loop is at the desired temperature and when there is no demand for hot water. Gravity and thermo-syphon circulation systems shall be prohibited. Heat trace shall be arranged to be turned off automatically when there is no hot water demand.</i>	<i>Sample Text: See plumbing specification drawings, P-XXX</i>

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C404.7	Demand recirculation controls	<i>Demand recirculation controls</i>	<i>Sample Text: Demand recirculation controls provided per requirements</i>	<i>The control shall start the pump upon receiving a signal from the action of a user of a fixture or appliance, sensing the presence of a user of a fixture or sensing the flow of hot or tempered water to a fixture fitting or appliance. The control shall limit the temperature of the water entering the cold-water piping to 104 degrees F (40 degrees C).</i>	<i>Sample Text: See plumbing specification drawings, P-XXX</i>
C404.8	Drain water heat recovery units	<i>Drain water heat recovery units</i>	<i>Sample Text: Drain water heat recovery provided on all shower drains</i>	<i>Potable waterside pressure loss shall be less than 10 psi at maximum design flow. For Group R occupancies, the efficiency of drain water heat recovery unit efficiency shall be in accordance with CSA B55.1.</i>	<i>Sample Text: See plumbing specification drawings, P-XXX</i>
C404.9	Energy consumption of pools and permanent spas (Mandatory)	<i>Sample Text: Pool and Permanent Spa Controls</i>	<i>Sample Text: Pool heaters and pump motors provided with controls as per requirements.</i>	<i>Shall be controlled by the requirements in Sections C404.9.1 through C404.9.3.</i>	<i>Sample Text: See plumbing specification drawings, P-XXX</i>
C404.9.3	Covers	<i>Sample Text: Pool Covers for outdoor heated pool</i>	<i>Sample Text: Outdoor heated pools equipped with a vapor-retardant cover</i>	<i>Outdoor heated pools and outdoor permanent spas shall be provided with a vapor-retardant cover or other approved vapor-retardant means.</i>	<i>Sample Text: See plumbing specification drawings, P-XXX</i>
C404.10	Energy consumption of portable spas (Mandatory)	<i>Sample Text: Energy consumption of portable spas</i>	<i>Sample Text: The energy consumption of electric-powered portable spas shall be controlled by the requirements of APSP 14.</i>	<i>The energy consumption of electric-powered portable spas shall be controlled by the requirements of APSP 14.</i>	<i>Sample Text: See plumbing specification drawings, P-XXX</i>
C404.11	Service water-heating system commissioning and completion requirements	<i>Sample Text: Service water-heating system commissioning and completion requirements</i>	<i>Sample Text: Total heating capacity (including Service Water) = 750,000 BTU/h Commissioning will be performed per requirements.</i>	<i>Service water-heating systems, swimming pool water-heating systems, spa water-heating systems and the controls for those systems shall be commissioned and completed in accordance with Section C408.2.</i>	<i>Sample Text: See plumbing specification drawings, P-XXX</i>

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C405.1	Dwelling Unit Lighting	<i>Sample Text: Dwelling unit lighting fixtures</i>	<i>Sample Text: All lighting fixtures contain high efficacy lamps.</i>	75 percent of the lamps in permanently installed lighting fixtures, or not less than 75 percent of the permanently installed lighting fixture, other than low voltage lighting, shall be high-efficacy lamps.	<i>Sample Text: see drawing E-XXX (Lighting fixture schedules)</i>
C405.2	Lighting controls (Mandatory)	<i>Sample Text: interior lighting controls include occupancy sensors, daylight responsive controls, bi-level controls, and automatic shut-off</i>	<i>Sample Text: Occupancy sensors in restrooms, conference rooms, open offices; daylight responsive controls in all offices; bi-level controls in stairwells; automatic shut-off via BMS for all lighting</i>	Lighting systems shall be provided with controls as specified in Sections C405.2.1, C405.2.2, C405.2.3, C405.2.4 and C405.2.5. Exceptions: Lighting controls are not required for the following: 1. Areas designated as security or emergency areas that are required to be continuously lighted. 2. Interior exit stairways, interior exit ramps and exit passageways. 3. Emergency egress lighting that is normally off.	<i>Sample Text: see drawing EN-XXX (Lighting fixture schedule & narratives)</i>
C405.2.1	Occupant sensor controls	<i>Sample Text: Occupant sensor controls are provided in each conference room, restroom, storage area, stairwell and open plan office</i>	<i>Sample Text: Occupancy & vacancy sensors provided with 20 minute shut off limit</i>	Occupant sensor controls in spaces other than warehouses specified in Section C405.2.1 shall comply with the following: 1. Automatically turn off lights within 20 minutes of all occupants leaving the space. 2. Be manual on or controlled to automatically turn the lighting on to not more than 50 percent power. Exceptions: 1. Full automatic-on controls shall be permitted to control lighting in open plan offices, public corridors, stairways, restrooms, primary building entrance areas and lobbies, and areas where manual-on operation would endanger the safety or security of the room or building occupants. 2. Manual-on controls shall be required for classrooms (not including shop classrooms, laboratory classrooms, and preschool classrooms), conference/meeting rooms, employee lunch and break rooms, and offices smaller than 200 square feet (18.5 m ²) in area. Such sensors and controls shall not have an override switch that converts from manual-on to automatic-on functionality, and may have a grace period of up to 30 seconds to turn on the lighting automatically after the sensor has turned off the lighting if occupancy is detected. 3. Shall incorporate a manual control to allow occupants to turn lights off.	<i>Sample Text: see drawing E-XXX (lighting fixture schedule & narratives)</i>
C405.2.2,	Time-switch controls	<i>Sample Text: Time-switch controls at room XX-X</i>	<i>Sample Text: Time-switch controls have been provided.</i>	Each area of the building that is not provided with occupant sensor controls complying with Section C405.2.1.1 shall be provided with time switch controls complying with Section C405.2.2.1. Exception: Where a manual control provides light reduction in accordance with Section C405.2.2.2, automatic controls shall not be required for the following: 1. Sleeping units. 2. Spaces where patient care is directly provided. 3. Spaces where an automatic shutoff would endanger occupant safety or security. 4. Lighting intended for continuous operation. 5. Shop and laboratory classrooms.	<i>Sample Text: see drawing E-XXX (Lighting fixture schedules & narratives)</i>

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C405.2.2.1	Time-switch control function	<i>Sample Text: Time-switch controls</i>	<i>Sample Text: Time-switch controls provided as required.</i>	Each space provided with time-switch controls shall also be provided with a manual control for light reduction in accordance with section C405.2.2.2. Time-switch controls shall include an override switching device that complies with the following: 1. Have a minimum 7-day clock. 2. Be capable of being set for seven different day types per week. 3. Incorporate an automatic holiday "shutoff" feature, which turns off all controlled lighting loads for at least 24 hours and then resumes normally scheduled operations. 4. Have program backup capabilities, which prevent the loss of program and time settings for at least 10 hours, if power is interrupted. 5. Include an override switch that complies with the following: 5.1. The override switch shall be a manual control. 5.2. The override switch, when initiated, shall permit the controlled lighting to remain on for not more than 2 hours. 5.3. Any individual override switch shall control the lighting for an area not larger than 5,000 square feet (465m ²). Exceptions as per this code section.	<i>Sample Text: see drawing E-XXX (Lighting fixture schedules & narratives)</i>
C405.2.2.2	Light-reduction controls	<i>Sample Text: Light-reduction controls</i>	<i>Sample Text: Light-reduction controls provided in open space on 5th floor.</i>	Spaces required to have light-reduction controls shall have a manual control that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern by at least 50 percent.	<i>Sample Text: see drawing E-XXX (Lighting fixture schedules & narratives)</i>
C405.2.2.3	Manual controls	<i>Sample Text: Manual controls at rooms XX-X through XX-X</i>	<i>Sample Text: Manual controls provided as required</i>	Manual controls for lights shall comply with the following: 1. Shall be readily accessible to occupants. 2. Shall be located where the controlled lights are visible, or shall identify the area served by the lights and indicate their status.	<i>Sample Text: see drawing E-XXX (Lighting fixture schedules) and A-XXX (reflected ceiling plan).</i>
C405.2.3	Daylight-responsive controls	<i>Sample Text: Daylight-responsive controls.</i>	<i>Sample Text: N/A Daylight responsive controls are not required for the following: Dwelling units and sleeping units. (Exception #2)</i>	Daylight responsive controls complying with Section C405.2.3.1 shall be provided to control the electric lights within daylight zones in the following spaces: 1. Spaces with a total of more than 150 watts of general lighting within sidelight daylight zones complying with Section C405.2.3.2. General lighting does not include lighting that is required to have specific application control in accordance with Section C405.2.4. 2. Spaces with a total of more than 150 watts of general lighting within toplight daylight zones complying with Section C405.2.3.3.	<i>See drawing EN-XXX</i>
C405.2.3.1	Daylight-responsive control function	<i>Sample Text: Daylight-responsive controls</i>	<i>Sample Text: Daylight-responsive controls shall be provided as per C405.2.3.1.</i>	Where required, daylight-responsive controls shall be provided within each space for control of lights in that space and shall comply with requirements of C405.2.3.1.	<i>See drawing EN-XXX</i>
C405.2.3.2	Sidelight daylight zone	<i>Sample Text: Sidelight daylight zones, Floors 2-10</i>	<i>Sample Text: Sidelight daylight zones provided as per C405.2.3.2.</i>	The sidelight daylight zone is the floor area adjacent to vertical fenestration which complies with C405.2.3.2	<i>See drawing EN-XXX</i>

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C405.2.3.3	Toplight daylight zone	<i>Sample Text: Toplight daylight zone, Floor 10</i>	<i>Sample Text: Toplight daylight zone on 5th floor complies with C405.2.3.3.</i>	<i>The toplight daylight zone is the floor area underneath a roof fenestration assembly which complies with C405.2.3.3.</i>	<i>See drawing EN-XXX</i>
C405.2.4	Specific application controls.	<i>Sample Text: Retail display case lighting</i>	<i>Sample Text: Display and accent light D4 to D9 shall be controlled by a dedicated control that is independent of the controls for other lighting within the room or space.</i>	<i>Specific application controls shall be provided for the following: 1. Display and accent light shall be controlled by a dedicated control that is independent of the controls for other lighting within the room or space. 2. Lighting in cases used for display case purposes shall be controlled by a dedicated control that is independent of the controls for other lighting within the room or space. 3. Hotel and motel sleeping units and guest suites shall have a master control device that is capable of automatically switching off all installed luminaires and switched receptacles within 20 minutes after all occupants leave the room.</i>	<i>Sample Text: see drawing EN-XXX</i>
C405.2.5	Exterior lighting controls	<i>Sample Text: Exterior lighting controls</i>	<i>Sample Text: Lighting on the north building facade shall have controls that automatically shut off the lighting as a function of dawn/dusk and a set opening and closing time. See lighting Plan.</i>	<i>Lighting for exterior applications other than emergency lighting that is intended to be automatically off during building operation, lighting specifically required to meet health and life safety requirements or decorative gas lighting systems shall comply with the requirements of C405.2.5.</i>	<i>See drawing EN-XXX</i>
C405.3	Exit Signs	<i>Sample Text: Two new LED exit signs to be provided</i>	<i>Sample Text: 5W per side</i>	<i>Internally illuminated exit signs shall not exceed 5 watts per side.</i>	<i>Sample Text: see drawing E-XXX (Lighting fixture schedules)</i>
C405.4	Interior lighting power requirements	<i>Sample Text: Interior lighting power requirements</i>	<i>Sample Text: Open Office: 0.88 W/SF Conf Rm: 0.92 W/SF Stairwell: 0.43 W/SF Restroom: 0.60 W/SF LPD value for building is less than the interior lighting power calculated under Section C405.4.2. See drawing EN-XXX.</i>	<i>Sample text: Open Office: 0.90 W/SF Conf Rm: 1.23 W/SF Stairwell: 0.69 W/SF Restroom: 0.98 W/SF The total connected interior lighting power shall be determined in accordance with Equation 4-9.</i>	<i>Sample Text: see drawing EN-XXX (Lighting fixture schedules)</i>
C405.5	Exterior lighting (Mandatory).	<i>Sample Text: Total connected load of proposed exterior lighting for lighting zone 3</i>	<i>Sample Text: 7.66 kW The total exterior lighting power is less than the exterior lighting power calculated under Section C405.5. See drawing EN-XXX.</i>	<i>Sample text: 10.21 kW The exterior lighting power allowance shall be determined in accordance with Section C405.5.1.</i>	<i>Sample Text: A-XXX drawings (Reflected Ceiling Plans for all floors) E-XXX drawings (Reflected Ceiling Plans for all floors) E-XXX - XXX (Fixture schedule, control narrative, and details)</i>

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C405.6	Electrical energy consumption (Mandatory)	<i>Sample Text: Separate electrical meters have been provided for each dwelling unit.</i>	<i>Sample Text: meter at unit XXX through XXX</i>	<i>Each dwelling unit located in a Group R-2 building shall have a separate electrical meter.</i>	<i>Sample Text: See note in general notes (EN-XXX).</i>
C405.7	Electrical transformers (Mandatory)	<i>Sample Text: Electrical transformers</i>	<i>Sample Text: Impedance transformers are exempted as per Exception # 8.</i>	<i>Electric transformers shall meet the minimum efficiency requirements of Table C405.7</i>	<i>Sample Text: See drawing EN-XXX for notes.</i>
C405.8	Electrical motors (Mandatory)	<i>Sample Text: Electrical motors</i>	<i>Sample Text: Electric motors are in compliance as per C405.8. See motor manufacturer data on drawing E-XXX.</i>	<i>Electric motors shall meet the minimum efficiency requirements of Tables C405.8(l) through C405.8(4) when tested and rated in accordance with the DOE 10 CFR 431. The efficiency shall be verified through certification under an approved certification program or, where a certification program does not exist, the equipment efficiency ratings shall be supported by data furnished by the motor manufacturer.</i>	<i>Sample Text: See drawing EN-XXX.</i>
C405.9	Vertical and horizontal transportation systems and equipment	<i>Sample Text: Escalators</i>	<i>Sample Text: Regenerative drives and occupancy sensors provided</i>	<i>Vertical and horizontal transportation systems and equipment shall comply with this section.</i>	<i>Sample Text: See drawing EN-XXX.</i>

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C406.1	Requirements (for ADDITIONAL EFFICIENCY PACKAGE OPTIONS)	Sample Text: Choose one of six additional efficiency options	Sample Text: Reduced lighting power density system in accordance with Section C406.3.	Buildings shall comply with at least one of the following: 1. More efficient HVAC performance in accordance with Section C406.2. 2. Reduced lighting power density system in accordance with Section C406.3. 3. Enhanced lighting controls in accordance with Section C406.4. 4. On-site supply of renewable energy in accordance with Section C406.5. 5. Provision of a dedicated outdoor air system for certain HV AC equipment in accordance with Section C406.6. 6. High-efficiency service water heating in accordance with Section C406.7.	Sample Text: See note on EN-XXX
C406.2	More efficient HVAC equipment performance	More efficient HVAC equipment performance	Sample Text: 1000 MBH gas-fired, hot water boiler @ 96% Et, 300 ton air-cooled chiller @ 12 EER, 16 IPLV	Sample text: Equipment exceeds code min. by 10%: 1 MBTU/hr gas-fired, hot water boiler @ 88% Et, 300 ton air-cooled chiller @ 10.1 EER, 14 IPLV	Sample Text: See Mechanical schedule, drawing M-XXX
C406.3	Reduced lighting power density	Reduced lighting power density	Sample Text: Building Area Method Office: 0.50 W/SF	Sample text: Lighting exceeds code min. by 10%: Building Area Method Office: 0.74 W/SF	Sample Text: See RCPs, Lighting Schedule, LPD calculation, drawing A-XXX, EN-XXX
C406.4	Enhanced digital lighting controls	Enhanced digital lighting controls	Sample Text: Office and lobby lighting provided as per requirements	Interior lighting in the building shall have enhanced lighting controls that shall be located, scheduled and operated in accordance with Section C405.2.2 & C406.4	Sample Text: See RCPs, Lighting Schedule, LPD calculation, drawing A-XXX, EN-XXX
C406.5	On-site renewable energy	On-site renewable energy	Sample Text: 5 kW PV array installed on roof of 10,000 SF building	Total minimum ratings of on-site renewable energy systems shall comply with one of the following: 1. Provide not less than 0.50 watts per square foot (5.4 W/m ²) of conditioned floor area. 2. Provide not less than 3 percent of the energy used within the building for building mechanical and service water heating equipment and lighting regulated in Chapter C4.	Sample Text: See A-XXX, EN-XXX
C406.6	Dedicated outdoor air system	Dedicated outdoor air system	Sample Text: MAU-1 provides 100% outside air provided to all occupied spaces.	Buildings covered by Section C403.4 shall be equipped with an independent ventilation system designed to provide not less than the minimum 100 percent outdoor air to each individual occupied space, as specified by the New York City Mechanical Code.	Sample Text: See Mechanical schedule, drawing M-XXX

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C406.7	Reduced energy use in service water heating	Reduced energy use in service water heating	<p>Sample Text: 75% of DHW load provided by waste-heat from Cogeneration system *As a motel, Group R-1 building, this project complies to use this method.</p>	<p>At least 60% of the domestic hot water is provided by waste-heat recovery. Buildings shall be of the following types to use this compliance method:</p> <ol style="list-style-type: none"> 1. Group R-1: Boarding houses, hotels or motels. 2. Group 1-2: Hospitals, psychiatric hospitals and nursing homes. 3. Group A-2: Restaurants and banquet halls or buildings containing food preparation areas. 4. Group F: Laundries. 5. Group R-2: Buildings with residential occupancies. 6. Group A-3: Health clubs and spas. 	<p>Sample Text: See Mechanical schedule, drawing M-XXX, EN-XXX</p>
C408.2	Mechanical renewable energy, and service water heating systems commissioning and completion requirements	Mechanical System Commissioning	<p>Sample Text: Commissioning will be performed on all HVAC systems Total building heating capacity: 1,585 MBH Total building cooling capacity: 1,400 MBH</p>	Commissioning required on HVAC systems	<p>Sample Text: See total heating & cooling capacity calculation M-XXX, commissioning requirement note on EN-XXX</p>