COM*check* Software Version 4.0.7.1 **Mechanical Compliance Certificate**

Project Information

2016 New York City Energy Conservation Code Energy Code: 170-11 Douglass Avenue Project Title:

Location: New York, null Climate Zone: Project Type: New Construction

Construction Site: Owner/Agent: Designer/Contractor: Douglass Avenue Michael Tobias New York Engineers Queens, NY 11433 275 West, 39th Street **Additional Efficiency Package** 2nd Floor

10018 212.575.5300 ny-engineers.com

Reduced interior lighting power. Requirements are implicitly enforced within interior lighting allowance calculations.

Mechanical Systems List

Quantity System Type & Description

1 ACCU-1 (Single Zone): VRF, Air Cooled Heat Pump Heating Mode: Capacity = 135 kBtu/h, Proposed Efficiency = 3.71 COP, Required Efficiency = 3.30 COP Cooling Mode: Capacity = 120 kBtu/h,

Proposed Efficiency = 13.20 EER, Required Efficiency: 11.00 EER + 14.6 IEER Fan System: None

Cooling: 1 each - Split System, Capacity = 9 kBtu/h, Air-Cooled Condenser, No Economizer, Economizer exception: None Proposed Efficiency = 20.00 SEER, Required Efficiency: 13.00 SEER Fan System: None

1 ACCU-3 (Single Zone): VRF, Air Cooled Heat Pump

Proposed Efficiency = 10.50 HSPF, Required Efficiency = 7.70 HSPF Cooling Mode: Capacity = 36 kBtu/h, Proposed Efficiency = 15.60 SEER, Required Efficiency: 13.00 SEER Fan System: None

Heating Mode: Capacity = 42 kBtu/h,

15 PTAC-1 (Single Zone): Heating: 1 each - Central Furnace, Gas, Capacity = 12 kBtu/h

Proposed Efficiency = 87.00% Et, Required Efficiency = 80.00% Et Cooling: 1 each - Packaged Terminal Unit, Capacity = 7 kBtu/h, Air-Cooled Condenser, No Economizer, Economizer exception: None Proposed Efficiency = 12.00 EER, Required Efficiency: 11.84 EER Fan System: None

5 VTAC-1 (Single Zone): Single Package Vertical Unit Heat Pump Heating Mode: Capacity = 9 kBtu/h, Proposed Efficiency = 3.00 COP, Required Efficiency = 3.00 COP Cooling Mode: Capacity = 9 kBtu/h, Proposed Efficiency = 10.00 EER, Required Efficiency: 9.00 EER Fan System: None

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2 HWHT-1 & 2: Gas Storage Water Heater, Capacity: 120 gallons, Input Rating: 125 kBtu/h w/ Circulation Pump Proposed Efficiency: 96.00 % Et, Required Efficiency: 80.00 % Et

1 HWHT-3:

Name - Title

Electric Instantaneous Water Heater, Capacity: 7 gallons No minimum efficiency requirement applies

Mechanical Compliance Statement

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Plumbing Rough-In Inspection Complies?

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2016 New York City Energy Conservation Code requirements in COM*check* Version 4.0.7.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

MICHAEL TOBIAS



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Comments/Assumptions

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COM*check* Software Version 4.0.7.1

Inspection Checklist

Energy Code: 2016 New York City Energy Conservation Code

Requirements: 100.0% were addressed directly in the COMcheck software Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR2] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C103.2 [PR3] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the service water heating systems and equipment and document where exceptions to the standard are claimed. Hot water system sized per manufacturer's sizing guide.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
C406 [PR9] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

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Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
C403.2.4. 5, C403.2.4. 6 [FO9] ³	Snow/ice melting system sensors for future connection to controls. Freeze protection systems have automatic controls installed.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.

Additional Comments/Assumptions:

# & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer #8 Under Domestic Water Piping on Sheet P-001
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer #8 Under Domestic Water Piping on Sheet P-001
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐Complies ☐Does Not ☐Not Observable ■Not Applicable	Exception: Requirement does not apply.

# & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer #7 Under Domestic Wa Piping on Sheet P-001
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer #7 Under Domestic Wa Piping on Sheet P-001
C404.7 [PL8] ³	Water distribution system that pumps water from a heated-water supply pipe back to the heated-water source through a cold-water supply pipe is a demand recirculation water system. Pumps within this system have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C404.7 [PL8] ³	Water distribution system that pumps water from a heated-water supply pipe back to the heated-water source through a cold-water supply pipe is a demand recirculation water system. Pumps within this system have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C404.7 [PL8] ³	Water distribution system that pumps water from a heated-water supply pipe back to the heated-water source through a cold-water supply pipe is a demand recirculation water system. Pumps within this system have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C404.7 [PL8] ³	Water distribution system that pumps water from a heated-water supply pipe back to the heated-water source through a cold-water supply pipe is a demand recirculation water system. Pumps within this system have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.

EN DRAWING LIST

ENERGY ANALYSIS (1 OF 3)

ENERGY ANALYSIS (2 OF 3)

ENERGY ANALYSIS (3 OF 3)

EN-001.00

EN-002.00

EN-003.00

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water from a heated-water supply pipe back to the heated-water source through a cold-water supply pipe is a demand recirculation water system. Pumps within this system have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F. C404.7 [PL8] ³ Water distribution system that pumps water from a heated-water supply pipe back to the heated-water source through a cold-water supply pipe is a
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Pumps within this system have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.

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Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2.6 [ME41] ³	Thermally ineffective panel surfaces of sensible heating panels have	□Complies □Does Not	Exception: Requirement does not apply.
	insulation >= R-3.5.	□Not Observable ■Not Applicable	
C403.2.12 .1 [ME65] ³	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan	□Complies □Does Not	Exception: Requirement does not apply.
[[11203]	system bhp.	□Not Observable ■Not Applicable	
.1	HVAC fan systems at design conditions do not exceed allowable	□Complies □Does Not	Exception: Requirement does not apply.
[ME65] ³	fan system motor nameplate hp or fan system bhp.	□Not Observable ■Not Applicable	
.1	HVAC fan systems at design conditions do not exceed allowable	□Complies □Does Not	Exception: Requirement does not apply.
[ME65] ³	fan system motor nameplate hp or fan system bhp.	□Not Observable ■Not Applicable	
.1	HVAC fan systems at design conditions do not exceed allowable	□Complies □Does Not	Exception: Requirement does not apply.
[ME65] ³	fan system motor nameplate hp or fan system bhp.	□Not Observable ■Not Applicable	
.1	HVAC fan systems at design conditions do not exceed allowable	□Complies □Does Not	Exception: Requirement does not apply.
[ME65] ³	fan system motor nameplate hp or fan system bhp.	□Not Observable ■Not Applicable	
C403.2.12 .3	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at	□Complies □Does Not	Exception: Fans integral to equipment listed under Section C403.2.3.
[ME117] ²	the design point of operation <= 15% of maximum total efficiency of the fan.	□Not Observable ■Not Applicable	
.3	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at	□Complies □Does Not	Exception: Fans integral to equipment listed under Section C403.2.3.
[ME117] ²	the design point of operation <= 15% of maximum total efficiency of the fan.	□Not Observable ■Not Applicable	
C403.2.12 .3	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at	□Complies □Does Not	Exception: Fans integral to equipment listed under Section C403.2.3.
[ME117] ²	the design point of operation <= 15% of maximum total efficiency of the fan.	□Not Observable ■Not Applicable	
.3	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at	□Complies □Does Not	Exception: Fans integral to equipment listed under Section C403.2.3.
[ME117] ²	the design point of operation <= 15% of maximum total efficiency of the fan.	□Not Observable ■Not Applicable	
.3	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at	□Complies □Does Not	Exception: Fans integral to equipment listed under Section C403.2.3.
[ME117] ²	the design point of operation <= 15% of maximum total efficiency of the fan.	□Not Observable ■Not Applicable	
C403.2.13 [ME71] ²	Unenclosed spaces that are heated use only radiant heat.	□Complies □Does Not	Exception: Requirement does not apply.
		□Not Observable ■Not Applicable	

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Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.2.3 ME55] ²	HVAC equipment efficiency verified.	■Complies □Does Not	REFER OUTDOOR UNITS SCHEDULE ON SHEET M-601
		□Not Observable □Not Applicable	
C403.2.6. L ME59] ¹	Demand control ventilation provided for spaces >500 ft2 and >25 people/1000 ft2 occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 cfm.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C403.2.6. 2 ME115] ³	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.	□Complies □Does Not □Not Observable	Exception: Requirement does not apply.
C403.2.7 ME57] ¹	Exhaust air energy recovery on systems meeting Table C403.2.7(1) and C403.2.7(2).	□ Not Applicable □ Complies □ Does Not □ Not Observable ■ Not Applicable	Exception: Requirement does not apply. Location on plans/spec: Refer Note #18 Under NYC Building Department Notes On sheet M-001
C403.2.8 ME116] ³	Kitchen exhaust systems comply with replacement air and conditioned supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
403.2.9 МЕ60] ²	HVAC ducts and plenums insulated. Where ducts or plenums are installed in or under a slab, verification may need to occur during Foundation Inspection.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer #1.3 A Under Section 23071. On Sheet M-004.00
C403.2.9 ME10] ²	Ducts and plenums sealed based on static pressure and location.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer #1.1 (F) and 1.2 (F), (G) Under Section 233113 on Sheet M-005
403.2.9. .3 ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C403.2.9. 1.3 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C403.2.9. 1.3 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C403.2.9. 1.3 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C403.2.9. 1.3 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.

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Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.4.2. 3.2.1 [ME121] ³	Closed-circuit cooling tower within heat pump loop have either automatic bypass valve or lower leakage positive closure dampers. Open-circuit tower within heat pump loop have automatic valve to bypass all heat pump water flow around the tower. Open- or closed-circuit cooling towers used in conjunction with a separate heat exchanger have heat loss by shutting down the circulation pump on the cooling tower loop.	\square Not Observable	Exception: Requirement does not apply.
C403.4.2. 3.2.1 [ME121] ³	Closed-circult cooling tower within heat pump loop have either automatic bypass valve or lower leakage positive closure dampers. Open-circuit tower within heat pump loop have automatic valve to bypass all heat pump water flow around the tower. Open- or closed-circuit cooling towers used in conjunction with a separate heat exchanger have heat loss by shutting down the circulation pump on the cooling tower loop.	□Not Observable	Exception: Requirement does not apply.
C403.4.2. 3.2.1 [ME121] ³	Closed-circuit cooling tower within heat pump loop have either automatic bypass valve or lower leakage positive closure dampers. Open-circuit tower within heat pump loop have automatic valve to bypass all heat pump water flow around the tower. Open- or closed-circuit cooling towers used in conjunction with a separate heat exchanger have heat loss by shutting down the circulation pump on the cooling tower loop.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C403.4.4. 6 [ME110] ³	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply
C403.4.4. 6 [ME110] ³	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C403.4.4. 6 [ME110] ³	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply
C403.4.4. 6 [ME110] ³	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Exception: Requirement does not apply.
C403.4.4. 6 [ME110] ³	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.	□Complies □Does Not □Not Observable ■Not Applicable	Exception: Requirement does not apply.
C408.2.2. 1 [ME53] ³	Air outlets and zone terminal devices have means for air balancing.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. Location on plans/spec: Refer Section #230593 on She 004 and Mechanical Floor Plans on Sheet M-100 to M-104
	1 High Impact (Tier 1)	2 Medium Impa	act (Tier 2) 3 Low Impact (Tier 3)

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Additional Com	ments/Assumptions:			
	1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact	(Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5. 3 [FI8] ³	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. REFER #1.4 EQUIPMENT OPERATING INSTRUCTION UNDER SECTION #0102 REQUIRED DOCUMENTS ON SHEET M-004
C403.2.2 [FI27] ³	HVAC systems and equipment capacity does not exceed calculated loads.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer Mechanical Schedule On Sheet M-601
C403.2.4. 1 [FI47] ³	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer Mechanical Floor Plans On Sheet M-100 to M-104 for Thermostat Locations Dehumidificaton Not Apllicable
C403.2.4. 1 [FI47] ³	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer Mechanical Floor Plans On Sheet M-100 to M-104 for Thermostat Locations Dehumidificaton Not Apllicable
C403.2.4. 1 [FI47] ³	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer Mechanical Floor Plans On Sheet M-100 to M-104 for Thermostat Locations Dehumidificaton Not Apllicable
C403.2.4. 1 [FI47] ³	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer Mechanical Floor Plans On Sheet M-100 to M-104 for Thermostat Locations Dehumidificaton Not Apllicable
C403.2.4. 1 [FI47] ³	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer Mechanical Floor Plans On Sheet M-100 to M-104 for Thermostat Locations Dehumidificaton Not Apllicable
C403.2.4. 1.1 [FI42] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer #C Heat Pump Supplementry heat Under # Sequence of operation On sheet M-005
C403.2.4. 1.1 [FI42] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer #C Heat Pump Supplementry heat Under # Sequence of operation On sheet M-005
C403.2.4. 1.1 [FI42] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer #C Heat Pump Supplementry heat Under # Sequence of operation On sheet M-005
C403.2.4. 1.2 [FI38] ³	Thermostatic controls have a 5 °F deadband.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer #D Deadband Under # Sequence of operation On sheet M-005

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Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C403.2.4. 1.3 [FI20] ³	Temperature controls have setpoint overlap restrictions.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer #B Setpoint Overlap Restriction Under # Sequence of operation On sheet M-005
C403.2.4. 2 [FI39] ³	Each zone equipped with setback controls using automatic time clock or programmable control system.		Exception: Requirement does not apply.
Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2- hour occupant override, 10-hour backup C403.2.4.	Exception: Requirement does not apply.		
C408.2.1 [FI28] ¹	Commissioning plan developed by approved agency. Lighting controls shall be commissioned in accordance with C408.3.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer Note #18 Under NYC Buildin Department Notes On sheet M-001
C408.2.3. 1 [FI31] ¹	HVAC equipment has been tested to ensure proper operation.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer Section #230593 on Sheet I 004
C408.2.3. 2 [FI10] ¹	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer Section #230593 on Sheet I 004
C408.2.5. 1 [FI7] ³	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. REFER #1.3 RECORD DRAWINGS UNDER SECTION #0102 REQUIRED DOCUMENTS ON SHEET M-004
C408.2.5. 3 [FI43] ¹	An air and/or hydronic system balancing report is provided for HVAC systems.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer Section #230593 on Sheet I 004
C408.2.5. 4 [FI30] ¹	Final commissioning report due to building owner within 30 months (for new buildings > 500,000 ft2) or 18 months (for R-2 and all other buildings) of receipt of certificate of occupancy.	■Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. Location on plans/spec: Refer Note #18 Under NYC Buildir Department Notes On sheet M-001

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SYSTEMS REQUIRING COMMISSIONING											
SYSTEM	SUB-SYSTEM	<u>QTY</u>	CAPACITY (MBH) COOLING	CAPACITY (MBH) HEATING	TOTAL CAPACITY (MBH) COOLING	TOTAL CAPACITY (MBH) HEATING	REQUIRED COMMISSIONING				
	HEAT PUMP HEATING AND COOLING-10 TON	1	120	135	120	135					
	HEAT PUMP HEATING AND COOLING-3 TON	1	36	42	36	42	X				
	CONDENSER COOLING-0.75 TON	1	9	-	9	_					
	DUCT HEATER EDH-1 & 2 (HEATING ONLY) 5 KW	2	_	17.06	1	34.12					
	DUCT HEATER EDH-3 (HEATING ONLY) 10 KW	1	_	34.12	-	34.12					
	UNIT HEATERS (HEATING ONLY) — 3 KW	1	_	10.23	-	10.23					
	UNIT HEATERS (HEATING ONLY) — 1.5 KW	7	_	5.11	_	35.77					
	HWHT-1 & 2 (WATER HEATING) - 125 MBH	2	_	125	ı	250					
	HWHT-3 (WATER HEATING) - 1.44 KW	1	_	4.91	-	4.91					
	PTAC-1 (HEATING & COOLING) - 1 TON	15	7.2	12	108	180					
	VTAC-1 (HEATING & COOLING) - 0.8 TON	5	8.9	8.53	44.5	42.65					
	AIR CURTAIN HEATER — 5 KW	2	_	17.06		34.12					
	ELECTRIC BASEBOARD HEATERS 1KW	4	_	3.41	1	13.64	HEATING (>600 MBH) YES				
	TOTAL				317.5	816.46	COOLING (<480 MBH) NO				

SYSTEMS REQUIRING COMMISSIONING 1 — HEATING, COOLING, AIR HANDLING AND DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEMS, AND THEIR RELATED AIR QUALITY MONITORING SYSTEMS. 2 — AIR, WATER, AND OTHER ENERGY RECOVERY SYSTEMS. 3 — MANUAL OR AUTOMATIC CONTROLS, WHETHER LOCAL OR REMOTE, ON ENERGY USING SYSTEMS INCLUDING BUT NOT LIMITED TO TEMPERATURE CONTROLS, SETBACK SEQUENCES,

- 3- MANUAL OR AUTOMATIC CONTROLS, WHETHER LOCAL OR REMOTE, ON ENERGY USING SYSTEMS INCLUDING BUT NOT LIMITED TO TEMPERATURE CONTROLS, SETBACK SEQUENCES, AND OCCUPANCY BASED CONTROL, INCLUDING ENERGY MANAGEMENT FUNCTIONS OF THE BUILDING MANAGEMENT SYSTEM.
- 4- PLUMBING, INCLUDING INSULATION OF PIPING AND ASSOCIATED VALVES, DOMESTIC AND PROCESS WATER PUMPING, AND MIXING SYSTEMS.
- 5- MECHANICAL HEATING SYSTEMS AND SERVICE WATER HEATING SYSTEMS.

SYSTEMS COMMISSIONING PURSUANT TO SECTION 408.2, NYCECC-2016

6— OTHER SYSTEMS, EQUIPMENT AND COMPONENTS THAT ARE USED FOR HEATING, COOLING OR VENTILATION AND THAT AFFECT ENERGY USE.

ENERGY ANALYSIS - COMMERCIAL BUILDING MECHANICAL SYSTEMS

1 RCNY \$5000-1, CHAPTER 5000

2016 ECCNYC, CH. 4 CLIMATE ZONE 4A

ITEM DESCRIPTION	CODE PRESCRIPTIVE VALUES AND REQUIREME	<u>NTS</u>	PROPOSED DESIGN VALUES AND OR PROCEDURES	SUPPORTING DOCUMENTS
CALCULATION OF SPACE THERMAL LOADS	C403.2.1: DESIGN LOADS SHALL BE DETERMINED IN ACCORDANCE WITH THE PROCEDURES DESCRIBED IN THE ASHRAE/ACCA 183. HEATING AND COOLING LOADS SHALL BE ADJUSTED TO ACCOUNT FOR LOAD REDUCTIONS THAT ARE ACHIEVED WHEN ENERGY RECOVERY SYSTEMS AUTILIZED IN THE HVAC SYSTEM IN ACCORDANCE WITH ASHRAE HVAC SYSTEMS AND EQUIPMENT HANDBOOK. ALTERNATIVELY, DESIGN LOADS SHALBE DETERMINED BY AN APPROVED EQUIVALENT COMPUTATION PROCEDURE, USING THE DESIGN PARAMETERS SPECIFIED IN CHAPTER 3.	RE	C403.2.1:DESIGN LOADS HAVE BEEN DETERMINED IN ACCORDANCE WITH THE PROCEDURES DESCRIBED IN ANSI/ASHRAE/ACCA STANDARD 183. THE DESIGN LOADS ACCOUNT FOR THE BUILDING ENVELOPE, LIGHTING, VENTILATION AND OCCUPANCY LOADS BASED ON THE PROJECT DESIGN.	#19 UNDER NYC DEPARTMENT BUILDING NOTES ON SHEET M-001.00
THERMOSTATIC CONTROLS	403.2.4.1:AT LEAST ONE THERMOSTAT SHALL BE PROVIDED FOR EACH SEPARATE HEATING AND COOLING SYSTEM.		THERMOSTATS CONTROLLING HEATING AND COOLING PROVIDED PER ZONE AS REQUIRED	MECHANICAL FLOOR PLANS ON SHEET M-100 TO M-104 FOR T-STAT LOCATIONS & REFER THERMOSTATIC CONTROLS ON SHEETM-005.00
SHUTOFF DAMPERS	403.2.4.3:OUTDOOR AIR INTAKES AND EXHAUSTS BE PROVIDED WITH CLASS I MOTORIZED DAMPER CLOSE WHEN THE VENTILATION SYSTEM IS NOT OPERATING.		EACH OUTDOOR SUPPLY AIR AND EXHAUST AIR DUCTS ARE PROVIDED WITH MOTORIZED DAMPERS TO SHUT OFF WHEN NOT IN USE	REFER MECHANICAL FLOOR PLANS ON SHEET M-100 TO M-104.00
DUCT AND PLENUM INSULATION AND SEALING	C403.2.9: ALL SUPPLY AND RETURN AIR DUCTS PLENUMS SHALL BE INSULATED WITH A MINIMUM INSULATION WHEN LOCATED IN UNCONDITIONED EXCEPTIONS: 2. WHEN THE DESIGN TEMPERATURE DIFFEREN BETWEEN THE INTERIOR AND EXTERIOR OF THE PLENUM DOES NOT EXCEED 15°F (8°C). ALL OUTDOOR RETURN AND SUPPLY DUCTWORK PLENUMS SHALL BE INSULATED WITH A MINIMUM INSULATION.	N OF R-6 SPACES. NCE DUCT OR AND	ALL SUPPLY AIR DUCTS AND PLENUMS LOCATED WITHIN THE CONDITIONED SPACE ARE DESIGNED TO HAVE A MINIMAL INSTALLED THERMAL RESISTANCE OF R-6. DESIGN TEMPERATURE DIFFERENCE BETWEEN THE INTERIOR SPACE AND INTERIOR OF RETURN AIR DUCTS AND PLENUMS LOCATED WITHIN THE THE CONDITIONED SPACE DO NOT EXCEED 15°F (8°C).	REFER SECTION #230713 DUCT INSULATION AND #233113 METAL DUCTS AND ON SHEET M-004.00 & M-005.00 RESPECTIVELY.
MINIMUM MECHANICAL VENTILATION	C403.2.6: VENTILATION, EITHER NATURAL OR MEC BE PROVIDED IN ACCORDANCE WITH CHAPTER 4 YORK CITY MECHANICAL CODE. WHERE MECHANIC IS PROVIDED, THE SYSTEM SHALL BE CONFIGURE NO GREATER THAN 150 PERCENT OF THE MINIMI AIR REQUIRED BY CHAPTER 4 OF THE INTERNATI MECHANICAL CODE OR OTHER APPLICABLE CODE WHICHEVER IS GREATER.	VENTILATION SYSTEM PROVIDED AS PER REQUIREMENTS.	REFER MECHANICAL FLOOR PLANS ON SHEET M-100.00 TO M-104.00	
PIPING INSULATION	403.2.10: ALL PIPING SERVING AS PART OF A HECOOLING SYSTEM SHALL BE THERMALLY INSULATION ACCORDANCE WITH TABLE 403.2.8. TABLE C403.2.8: NOMINAL PIPE DIAM. FLUID <=1.5" >1.5 REFRIGERANT PIPING 1½" 1½"	ED IN	ALL HVAC PIPING TO BE INSULATED AS PER TABLE C403.2.10	REFER #7 PIPING INSULATION ON SHEET M-003.00
HVAC EQUIPMENT PERFORMANCE REQUIREMENTS	C403.2.3: EQUIPMENT SHALL MEET THE MINIMUM REQUIREMENTS OF TABLES C403.2.3(1), C403.2. C403.2.3(3), C403.2.3(4), C403.2.3(5), C403.2.3(7), C403.2.3(8) C403.2.3(9), C403.2.3(10), C403.2.3(11) AND CWHEN TESTED AND RATED IN ACCORDANCE WITH APPLICABLE TEST PROCEDURE	3(2), 3(6), 403.2.3(12)	ALL SELECTED UNITS ARE MEETING REQUIRED MINIMUM EFFICIENCY NUMBERS.	MECHANICAL SCHEDULES ON SHEET M-601.00
LOW-PRESSURE DUCT SYSTEMS	C403.2.3: ALL LOW PRESSURE DUCT SHALL BE PROPERLY SEALED AS PER REQUIREMENTS.	ALL LOW PRESSURE DUCTS,OPERATING AT STATIC PRESSURE 2" W.G OR LESS SHALL BE PROPERLY SEALED WITH APPROVED METHODS.	REFER SECTION #233113 METAL DUCTS ON SHEET M-005.00	
MANUALS	C408.2.5.2:OPERATING AND MAINTENANCE MANUAREQUIREMENTS. PROFESSIONAL KNOWLEDGE AND JUDGEMENT, TH	SHALL BE PROVIDED BY MECHANICAL CONTRACTOR AND SPECIFIED IN CONSTRUCTION DOCUMENTS.	REFER #1.4 UNDER SECTION #0102 REQUIRED DOCUMENTS ON SHEET M-004.00	

1. TO THE BEST OF MY PROFESSIONAL KNOWLEDGE AND JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK CITY 2016.

DOB STAMP