

Florida Building Code, 8th Edition (2023) - Energy Conservation

EnergyGauge Summit® Fla/Com-2023, Effective Date: Dec 31, 2023

C401.2.1: ASHRAE Energy Cost Budget Option

Compliance applying ASHRAE Section 11

Check List

Applications for compliance with the Florida Building Code, Energy Conservation shall include:

- ☐ The full compliance report generated by the software that contains the project summary, compliance summary, certifications and detailed component compliance reports.
- ☐ The compliance report must include the full input report generated by the software as contiguous part of the compliance report.
- ☐ Boxes appropriately checked in the Mandatory Section of the compliance report.

PROJECT SUMMARY

Short Desc: Ft White WT Ofc

Description: Ft White Wastewater Treatment

Owner: City of Ft White

Address1: Ft White Wastewater Treatment

City: Ft White

Address2: Enter Address here

State: Florida

Zip: 32038

Type: Office

Class: New Finished building

Jurisdiction: COLUMBIA COUNTY, COLUMBIA COUNTY, FL (221000)

Conditioned Area: 264 SF

Conditioned & UnConditioned Area: 264 SF

No of Stories: 1

Area entered from Plans 264 SF

Permit No: 0

Max Tonnage 1

If different, write in: _____

Compliance Summary			
Component	Design	Criteria	Result
Gross Energy Cost (in \$)	170.00	178.00	PASSED
LIGHTING CONTROLS			PASSES
EXTERNAL LIGHTING			No Entry
HVAC SYSTEM			PASSES
PLANT			No Entry
WATER HEATING SYSTEMS			PASSES
PIPING SYSTEMS			No Entry
Met all required compliance from Check List?			Yes/No/NA
IMPORTANT MESSAGE Info 5009 -- -- -- An input report of this design building must be submitted along with this Compliance Report			

CERTIFICATIONS

I hereby certify that the plans and specifications covered by this calculation are in compliance with the Florida Energy Code

Prepared By: John PirkI

Building _____
Official: _____

Date: _____

Date: _____

I certify that this building is in compliance with the FLorida Energy Efficiency Code

Owner Agent: City of Ft White

Date: _____

If Required by Florida law, I hereby certify (*) that the system design is in compliance with the Florida Energy Efficiency Code

Architect: Robert Phillip Bishop, JR

Reg No: 38546 Signature _____

Electrical Designer: Robert Phillip Bishop, JR

Reg No: 38546 Signature _____

Lighting Designer: Robert Phillip Bishop, JR

Reg No: 38546 Signature _____

Mechanical Designer: Stellar Services of North Florida, LLC

Reg No: _____ Signature _____

Plumbing Designer: Robert Phillip Bishop, JR

Reg No: 38546 Signature _____

(*) Signature is required where Florida Law requires design to be performed by registered design professionals per C103.1.1.1.2

Project: Ft White WT Ofc
Title: Ft White Wastewater Treatment
Type: Office
(WEA File: FL_JACKSONVILLE_INTL_ARPT.tm3)

Building End Uses

	1) Proposed	2) Baseline
Total	10.90	11.45
	\$170	\$178
ELECTRICITY(MBtu/kWh/\$)	10.90	11.45
	3211	3345
	\$170	\$178
AREA LIGHTS	1.70	1.70
	505	495
	\$27	\$26
MISC EQUIPMT	3.50	3.50
	1023	1023
	\$54	\$54
PUMPS & MISC	0.10	0.10
	39	41
	\$2	\$2
SPACE COOL	1.60	2.25
	477	661
	\$25	\$35
SPACE HEAT	0.90	0.58
	268	161
	\$14	\$9
VENT FANS	3.10	3.33
	899	964
	\$48	\$51

Credits Applied: None

Passing Criteria = 178

Design (including any credits) = 170

Passing requires Proposed Building cost to be at most 100% of
Baseline cost. This Proposed Building is at 95.6%

PASSES

External Lighting Compliance						
Description	Category	Tradable?	Allowance (W/Unit)	Area or Length or No. of Units (Sqft or ft)	ELPA (W)	CLP (W)
					None	

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Lighting Controls Compliance

Acronym	ID	Description	Area (sq.ft)	Compliance
<u>Ofc/Lab</u>	16	<u>Ofc/Lab (Office - Open Plan)</u>	228	COMPLIANCE: PASSES REQUIRED: All of 1 4 ; one of 2 3 ; one of 8 9 CONTROLS IN SPACE: 1-Manual (Local Control) 2-Occupancy Sensor - Manual ON only 3-Occupant Sensor (50%) 4-Light Reduction (30%-70%) 5-Daylight Responsive (Sidelighting) 6-Daylight Responsive (Toplighting) 7-Occupant Sensor Auto OFF (Full or Partial) 8-Occupant Sensor Auto Full OFF 9-Time-Switch: Auto Full Off or Scheduled Off
<u>Bathrm</u>	6	<u>Bathrm (Toilet and Washroom)</u>	36	COMPLIANCE: PASSES REQUIRED: All of 8 CONTROLS IN SPACE: 1-Manual (Local Control) 2-Occupancy Sensor - Manual ON only 3-Occupant Sensor (50%) 4-Light Reduction (30%-70%) 5-Daylight Responsive (Sidelighting) 6-Daylight Responsive (Toplighting) 7-Occupant Sensor Auto OFF (Full or Partial) 8-Occupant Sensor Auto Full OFF 9-Time-Switch: Auto Full Off or Scheduled Off
				PASSES

Project: Ft White WT Ofc
Title: Ft White Wastewater Treatment
Type: Office
(WEA File: FL JACKSONVILLE INTL ARPT.tm3)

System Report Compliance	
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1 Ton Mini Split	1 Ton Mini Split	Constant Volume Air Cooled Split System < 65000 Btu/hr	No. of Units 1
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1 Ton Mini Split	1 Ton Mini Split	Constant Volume Air Cooled Split System < 65000 Btu/hr	No. of Units 1
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Component	Category	Capacity	Eff Design	Eff Criteria	Integrated Eff-Design	Integrated Eff-Criteria	Compliance
Cooling System	Air Conditioners Air Cooled Split System < 45000 Btu/h Cooling Capacity	12000	20.00	14.30	8.00		PASSES
Heating System	Heat Pumps Air Cooled (Heating Mode) Split System < 65000 Btu/h Cooling Capacity	12200	10.00	7.50			PASSES
Air Handling System -Supply	Air Handler (Supply) - Constant Volume	400	0.32	0.82			PASSES
Air Handling System - Return	Air Handler (Return) - Constant Volume	400	0.32	0.82			PASSES
Air Distribution System (Sup)	Not in Check list - Compliance Ignored		6.00	6.00			N/A
Air Distribution System (Ret)	Not in Check list - Compliance Ignored		6.00	6.00			N/A

PASSES

Plant Compliance

Description	Installed No	Size	Design Eff	Min Eff	Design IPLV	Min IPLV	Category	Compliance
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None

Project: Ft White WT Ofc Title: Ft White Wastewater Treatment Type: Office (WEA File: FL_JACKSONVILLE_INTL_ARPT.tm3)							
Water Heater Compliance							
Description	Type	Category	Design Eff	Min Eff	Design Loss	Max Loss	Compliance
Water Heater 1	Electric Storage water heater	> 12 [kW]			0.95	11.10	PASSES
						PASSES	

Piping System Compliance							
Category	Pipe Dia [inches]	Is Runout?	Operating Temp [F]	Ins Cond [Btu-in/hr .SF.F]	Ins Thick [in]	Req Ins Thick [in]	Compliance
						None	

Mandatory Requirements (as applicable)

Requirements compiled by US Department of Energy and Pacific Northwest National Laboratory. Adopted for FBC with permission. Not all may be applicable

Topic	Section	Component	Description	Yes	N/A	Exempt
1. To be checked by Designer or Engineer						
5140 Controls	10.4.3	Mechanical	Elevators are designed with the proper lighting, ventilation power, and standby mode. []- Exception 1:10.4.3: Requirement does not apply.	☐	☐	☐
5012 Insulation	5.5.3.5	Envelope	Slab edge insulation depth/length shall be per Tables 5.5-0 through 5.5-8.	☐	☐	☐
5027 Fenestration	5.5.3.6	Envelope	U-factor of opaque doors associated with the building thermal envelope meets requirements.	☐	☐	☐
5021 Fenestration	5.5.4.3a	Envelope	Vertical fenestration shall have a U-factor $\leq$ the values specified in Tables 5.5-0 through 5.5-8.	☐	☐	☐
5022 Fenestration	5.5.4.3b	Envelope	Skylight shall have a U-factor $\leq$ the values specified in Tables 5.5-0 through 5.5-8.	☐	☐	☐
5023 Fenestration	5.5.4.4.1	Envelope	Vertical fenestration SHGC value.	☐	☐	☐
5024 Fenestration	5.5.4.4.2	Envelope	Skylight SHGC value.	☐	☐	☐
5014 Insulation	5.8.1.7.3	Envelope	Insulation in contact with the ground has $\leq 0.3\%$ water absorption rate per ASTM C272.	☐	☐	☐
5016 Insulation	6.4.4.1.5	Envelope	Bottom surface of floor structures incorporating radiant heating insulated to $\geq R-3.5$. []- Exception 1:6.4.4.1.5: Requirement does not apply.	☐	☐	☐

5045 HVAC	6.5.1, 6.5.1.1, 6.5.1.3, 6.5.1.4	Mechanical	Air economizers provided where required (and not exempted), meet the requirements for design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation. []- Exception 1:6.5.1_6.5.1.1_6.5.1.3_6.5.1.4: High-efficiency cooling equipment has been installed. The qualifying minimum equipment efficiency has been computed and is represented above. []- Exception 2:6.5.1_6.5.1.1_6.5.1.3_6.5.1.4: Air/evap condenser serving space with open-case refrigeration. []- Exception 3:6.5.1_6.5.1.1_6.5.1.3_6.5.1.4: Filtration requirements applicable to the conditioned area would be compromised per Section 6.2.1 in Standard 62.1. []- Exception 4:6.5.1_6.5.1.1_6.5.1.3_6.5.1.4: Medical facility where 75% of design air is to be humidified above 35°F, other buildings more than 25% of design air designed is it to be humidified above 35°F dew-point temperature (not applicable to computer rooms). []- Exception 5:6.5.1_6.5.1.1_6.5.1.3_6.5.1.4: Systems that will be operated < 20 hours per week. []- Exception 6:6.5.1_6.5.1.1_6.5.1.3_6.5.1.4: Systems serving residential spaces with system capacity < 675 kBtu/h. []- Exception 7:6.5.1_6.5.1.1_6.5.1.3_6.5.1.4: System has condenser heat recovery serving service water heat. []- Exception 8:6.5.1_6.5.1.1_6.5.1.3_6.5.1.4: System serves computer room that have total design cooling load < 3,000 kBut/h and building not served by centralized chilled water plant, or room design load < 600 kBtu/hr and is served by centralized chilled water plant, or cooling towers are not permit []- Exception 9:6.5.1_6.5.1.1_6.5.1.3_6.5.1.4Exception9: Transmission and infiltration losses at outdoor temp = 60°F are > sensible design cooling loads (net of losses).	☐	☐	☐
5046 HVAC	6.5.1, 6.5.1.2, 6.5.1.2.1, 6.5.1.3	Mechanical	Water economizers provided where required , meet the requirements for design capacity, maximum pressure drop and integrated economizer control. Capable if providing 100% of the expected system cooling load when outdoor air <= 50F. []- Exception 1:6.5.1_6.5.1.2_6.5.1.2.1_6.5.1.3: Requirement does not apply.	☐	☐	☐
5047 HVAC	6.5.1.5	Mechanical	Economizer operation will not increase heating energy use during normal operation. []- Exception 1:6.5.1.5: Economizers on VAV systems that raise zone heating due to a reduction in supply air temperature.	☐	☐	☐
5058 HVAC	6.5.1.5	Mechanical	Water economizer specified on hydronic cooling and humidification systems designed to maintain inside humidity at >35 °F dewpoint if an economizer is required.	☐	☐	☐

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5053 HVAC	6.5.2.2.3	Mechanical	Hydronic heat pump systems connected to a common water loop meet heat rejection and heat addition requirements. []- Exception 1:6.5.2.2.3: A deadband of less than 20°F is allowed where a temperature optimization controller is used.	☐ ☐ ☐
5167 HVAC	6.5.2.6	Mechanical	Units that provide ventilation air to multiple zones and operate in conjunction with zone heating and cooling systems are prevented from using heating or heat recovery to warm supply air above 60°F when representative building loads or outdoor air temperature indicate that most zones demand cooling. []- Exception 1:6.5.2.6: Requirement does not apply.	☐ ☐ ☐
5059 HVAC	6.5.3.1.1	Mechanical	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system bhp. []- Exception 1:6.5.3.1.1: Hospital and laboratory systems that utilize flow control devices on exhaust and/or return. []- Exception 2:6.5.3.1.1: Individual exhaust fans with motor nameplate horsepower of 1 hp or less. []- Exception 3:6.5.3.1.1: Fans exhausting air from fume hoods.	☐ ☐ ☐
5060 HVAC	6.5.3.1.2	Mechanical	For each HVAC fan less than 6 bhp, the selected fan motor shall be no larger than the first available motor with a nameplate rating greater than 1.5 times the bhp and For each HVAC fan 6 bhp and larger, the selected fan motor shall be no larger than the first available motor with a nameplate rating greater than 1.3 times the bhp. []- Exception 1:6.5.3.1.2: Motors equipped with electronic speed control devices to vary the fan airflow as a function of load. []- Exception 2:6.5.3.1.2: Systems complying with Section 6.5.3.1.1, Option 1. []- Exception 3:6.5.3.1.2: Fans with motor nameplate horsepower of less than 1 hp. []- Exception 4:6.5.3.1.2: Fans with a fan nameplate electrical input power of less than 0.89 kW.	☐ ☐ ☐
5166 HVAC	6.5.3.2.4	Mechanical	Return and relief fans used to meet Section 6.5.1.1.5 have relief air rate controlled to maintain building pressure through differential supply-return airflow tracking. Systems with supply fans allowed to control the relief system based on outdoor air damper position. Fans have variable speed control or other devices for managing total return/relief fan system demand per section threshold. []- Exception 1:6.5.3.2.4: Return or relief fans with total motor size <= 0.5 hp. []- Exception 2:6.5.3.2.4: Staged relief fans with >= 4 stages. []- Exception 3:6.5.3.2.4: Requirement does not apply.	☐ ☐ ☐

5169 HVAC	6.5.3.4	Mechanical	Parallel-flow fan-powered VAV air terminals have automatic controls to a) turn off the terminal fan except when space heating is required or if required for ventilation; b) turn on the terminal fan as the first stage of heating before the heating coil is activated; and c) during heating for warmup or setback temperature control, either operate the terminal fan and heating coil without primary air or reverse the terminal damper logic and provide heating from the central air handler through primary air. []- Exception 1:6.5.3.4: Requirement does not apply.	☐	☐	☐
5062 HVAC	6.5.3.6	Mechanical	Motors for fans $\geq 1/12$ hp and < 1 hp are electronically-commutated motors or have a minimum motor efficiency of 70%. These motors are also speed adjustable for either balancing or remote control. []- Exception 1:6.5.3.6: Motors in the airstream within fan-coils and termina units that operate only when providing heat. []- Exception 2:6.5.3.6: Motors installed in space conditioning equipment certified under Section 6.4.1. []- Exception 3:6.5.3.6: Motors covered by Table 10.8-4 or 10.8-5. []- Exception 4:6.5.3.6: Requirement does not apply.	☐	☐	☐
5170 HVAC	6.5.3.7	Mechanical	Required minimum outdoor air rate is the larger of minimum outdoor air rate or minimum exhaust air rate required by Standard 62.1, Standard 170, or applicable codes or accreditation standards. Outdoor air ventilation systems shall comply with one of the following: a) design minimum system outdoor air provided $< 135\%$ of the required minimum outdoor air rate, b) dampers, ductwork, and controls allow the system to supply $\geq$ the required minimum outdoor air rate with a single set-point adjustment., or c) system includes exhaust air energy recovery complying with Section 6.5.6.1. []- Exception 1:6.5.3.7: Requirement does not apply.	☐	☐	☐

5168 HVAC	6.5.4.7	Mechanical	Chilled-water cooling coils provide a 15°F or higher temperature difference between leaving and entering water temperatures and a minimum of 57°F leaving water temperature at design conditions []- Exception 1:6.5.4.7: Chilled-water cooling coils that have an air-side pressure drop exceeding 0.70 in. of water when rated at 500 fpm face velocity and dry conditions. []- Exception 2:6.5.4.7: Individual fan-cooling units with a design supply airflow rate 5000 cfm and less. []- Exception 3:6.5.4.7: Constant-air-volume systems. []- Exception 4:6.5.4.7: Coils selected at the maximum temperature difference allowed by the chiller. []- Exception 5:6.5.4.7: Passive coils (no mechanically supplied airflow). []- Exception 6:6.5.4.7: Coils with design entering chilled-water temperatures of 50°F and higher. []- Exception 7:6.5.4.7: Coils with design entering air dry-bulb temperatures of 65°F and lower. []- Exception 8:6.5.4.7: Requirement does not apply.	☐	☐	☐
5077 HVAC	6.5.5.2.3	Mechanical	None	☐	☐	☐
5078 HVAC	6.5.6.1	Mechanical	Exhaust air energy recovery on systems meeting Tables 6.5.6.1.2-1, and 6.5.6.1.2-2. []- Exception 1:6.5.6.1: Laboratory fume hood systems with a total exhaust rate <= 5000 cfm. []- Exception 2:6.5.6.1: Systems serving spaces that are not cooled and heated to <60°F. []- Exception 3:6.5.6.1: Systems with more than 60% of the outdoor heating energy is provided from site-recovered or site solar energy. []- Exception 4:6.5.6.1: Systems requiring dehumidification with cooling coil energy recovery in series with the cooling coil. []- Exception 5:6.5.6.1: Where the largest exhaust source is less than 75% of the design outdoor airflow. []- Exception 6:6.5.6.1: Enthalpy energy recovery ratio requirements at heating design condition in Climate Zones 0, 1, and 2. []- Exception 7:6.5.6.1: Enthalpy recovery ratio requirements at cooling design condition in Climate Zones 3C, 4C, 5B, 5C, 6B, 7, and 8. []- Exception 8:6.5.6.1: Operating < 20 hours per week at the outdoor air percentage covered by Table 6.5.6.1.2-1. []- Exception 9:6.5.6.1Exception9: Requirement does not apply.	☐	☐	☐

5130 HVAC	6.7.3.3	Mechanical	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls.	☐	☐	☐
5171 HVAC	6.8.1-13 or 6.8.1-14	Mechanical	Electrically operated DX-DOAS units meet requirements per Tables 6.8.1-13 or 6.8.1-14. []- Exception 1:6.8.1-13_6.8.1-14: Requirement does not apply.	☐	☐	☐
5090 HVAC	7.4.2	Mechanical	Service water heating equipment meets efficiency requirements. []- Exception 1:7.4.2: Water heating equipment >140 gallon capacity is not required to meet standby loss requirements when insulated, no pilot light, and flue damper or fan-assisted combustion. []- Exception 2:7.4.2: Storage water heater capacity <20 gallons.	☐	☐	☐
5092 HVAC	7.5.2	Mechanical	Service water heating equipment used for space heating complies with the service water heating equipment requirements.	☐	☐	☐
5156 HVAC	7.5.3	Mechanical	Gas-fired water-heating equipment installed in new buildings: where a singular piece of water-heating equipment $\geq 1,000$ kBtu/h serves the entire building, thermal efficiency must be ≥ 90 Et. Where multiple pieces of water-heating equipment serve the building with combined rating is $\geq 1,000$ kBtu/h, the combined input-capacity-weighted-average thermal efficiency, thermal efficiency must be ≥ 90 Et. Exclude input rating of equipment in individual dwelling units and equipment ≥ 100 kBtu/h. []- Exception 1:7.5.3: 25 percent of the annual service water heating requirement is provided by site-solar or site-recovered energy. []- Exception 2:7.5.3: Requirement does not apply.	☐	☐	☐
2. To be checked by Plan Reviewer						
5100 Other Equipment	10.4.1	Mechanical	Electric motors meet requirements where applicable.	☐	☐	☐
5001 Plan Review	4.2.2, 5.4.3.1.1, 5.7	Envelope	Plans and/or specifications provide all information with which compliance can be determined for the building envelope and document where exceptions to the standard are claimed.	☐	☐	☐
5002 Plan Review	4.2.2, 6.4.4.2.1, 6.7.2	Mechanical	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.	☐	☐	☐
5003 Plan Review	4.2.2, 7.7.1, 10.4.2	Mechanical	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.	☐	☐	☐

5004 Plan Review	4.2.2, 8.4.1.1, 8.4.1.2, 8.7	Project	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the electrical systems and equipment and document where exceptions are claimed. Feeder connectors sized in accordance with approved plans and branch circuits sized for maximum drop of 3%.	☐	☐	☐
5005 Plan Review	4.2.2, 9.4.3, 9.7	Interior Lighting	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐	☐	☐
5019 Air Leakage	5.4.3.3	Envelope	Vestibules are installed where building entrances separate conditioned space from the exterior, and meet exterior envelope requirements. Doors have self-closing devices, and are ≥ 7 ft apart (≤ 16 ft apart for adjoining floor area ≤ 40000 sq.ft.). Vestibule floor area ≤ 50 sq.ft. or 2 percent of the adjoining conditioned floor area. []- Exception 1:5.4.3.3: Building entrances with revolving doors. []- Exception 2:5.4.3.3: Doors not intended to be used as a building entrance. []- Exception 3:5.4.3.3: Doors opening directly from a dwelling unit. []- Exception 4:5.4.3.3: Building entrances in buildings located in Climate Zone 1 or 2. []- Exception 5:5.4.3.3: Doors opening into semiheated spaces. []- Exception 6:5.4.3.3: Enclosed elevator lobbies for building entrances directly from parking garages. []- Exception 7:5.4.3.3: Building entrances in buildings that are located in Climate Zone 3, where the building is less than four stories above grade and less than 10,000 ft² in gross conditioned floor area. []- Exception 8:5.4.3.3: Building entrances in buildings that are located in Climate Zone 0, 4, 5, 6, 7, or 8, where the building is less than 1000 ft² in gross conditioned floor area. []- Exception 9:5.4.3.3: Doors that open directly from a space ≤ 3000 ft² and separated from the building entrance. []- Exception 10:5.4.3.3: Self-closing doors in buildings in Climate Zones 0, 3, and 4 that have an air curtain complying with Section 10.4.5. []- Exception 11:5.4.3.3: Self-closing doors in buildings 15 stories or less in Climate Zones 5 through 8 that have an air curtain complying with Section 10.4.5. []- Exception 12:5.4.3.3: Requirement does not apply.	☐	☐	☐

5020 Plan Review	5.5.4.2.3	Envelope	In buildings > 2,500 ft², any enclosed spaces directly under a roof with ceiling heights > 15 ft. and used as an office, lobby, atrium, concourse, corridor, storage (including nonrefrigerated warehouse), gymnasium, fitness/exercise area, playing area, gymnasium seating area, convention exhibit/event space, courtroom, automotive service, fire station engine room, manufacturing corridor/transition and bay areas, retail, library reading and stack areas, distribution/sorting area, transportation baggage and seating areas, or workshop, the following requirements apply: The daylight zone under skylights is $\geq$ half the floor area and (a) the skylight area to daylight zone is $\geq$ 3 percent with a skylight VT $\geq$ 0.40 or (b) the minimum skylight effective aperture $\geq$ 1 percent. The skylights have a measured haze value > 90 percent. []- Exception 1:5.5.4.2.3: Enclosed spaces in Climate Zones 6 through 8. []- Exception 2:5.5.4.2.3: Areas with obstructions that block direct beam sunlight on $\geq$ 1/2 of the roof over the enclosed area for more than 1,500 daytime hours per year between 8 am and 4 pm. []- Exception 3:5.5.4.2.3: Spaces where the daylight zone under rooftop monitors is > 50 percent of the enclosed space floor area. []- Exception 4:5.5.4.2.3: Enclosed spaces where 90 percent of the skylight area is shaded on June 21 at noon by permanent architectural features of the building (documentation required). []- Exception 5:5.5.4.2.3: Enclosed spaces where the total area minus the primary and secondary sidelighted area(s) is less than 2500 ft² and where the lighting is controlled according to sidelighting requirements described in Section 9.4.1.1(e). []- Exception 6:5.5.4.2.3: Requirement does not apply.	☐ ☐ ☐
5063 HVAC	6.4.3.10	Mechanical	DDC system installed and capable of and configured to provide control logic including monitoring zone and system demand for fan pressure, pump pressure, heating, and cooling; transferring zone and system demand information from zones to air distribution system controllers and from air distribution systems to heating and cooling plant controllers; automatically detecting and alerting system operator when zones and systems excessively drive the reset logic; allow operator removal of zone(s) from the reset algorithm; AND capable of trending and graphically displaying input and output points. []- Exception 1:6.4.3.10: DDC is not required for systems using the simplified approach to compliance in accordance with Section 6.3 []- Exception 2:6.4.3.10: Requirement does not apply.	☐ ☐ ☐

5121 HVAC	6.4.3.3.2	Mechanical	Setback controls allow automatic restart and temporary operation as required for maintenance. ☐- Exception 1:6.4.3.3.2: Radiant floor and ceiling heating systems with heat setback $\geq$ 4F below occupied heating setpoint. ☐- Exception 2:6.4.3.3.2: Systems designed for continuous operation. ☐- Exception 3:6.4.3.3.2: Systems with capacity <15,000 Btu/h and with manual controls.	☐	☐	☐
5122 HVAC	6.4.3.3.3	Mechanical	Systems with setback controls and DDC include optimum start controls. Optimum start algorithm considers mass radiant slab floor temperature. ☐- Exception 1:6.4.3.3.3: Systems designed for continuous operation. ☐- Exception 2:6.4.3.3.3: Systems with capacity <15,000 Btu/h and with manual controls.	☐	☐	☐
5123 HVAC	6.4.3.3.4	Mechanical	Zone isolation devices and controls. ☐- Exception 1:6.4.3.3.4: Exhaust and outdoor air connections having fan systems 5000 cfm or smaller. ☐- Exception 2:6.4.3.3.4: Exhaust airflow less than 10% of design. ☐- Exception 3:6.4.3.3.4: Zones and systems intended to operate continuously or are inoperative when all other zones are inoperative. ☐- Exception 4:6.4.3.3.4: Systems with capacity <15,000 Btu/h and with manual controls.	☐	☐	☐
5165 Controls	6.4.3.3.5	Mechanical	Hotels/motel w/ > 50 guest rooms have automatic controls for the HVAC equipment serving each room configured per Section 6.4.3.3.5 subsections 1-3. ☐- Exception 1:6.4.3.3.5: Requirement does not apply.	☐	☐	☐
5036 HVAC	6.4.3.4.4	Mechanical	Ventilation fans > 0.75 hp have automatic controls to shut off fan when not required. ☐- Exception 1:6.4.3.4.4: HVAC systems intended to operate continuously.	☐	☐	☐

5037 HVAC	6.4.3.8	Mechanical	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. []- Exception 1:6.4.3.8: Systems with heat recovery. []- Exception 2:6.4.3.8: Multiple-zone systems without DDC of individual zones communicating with a central control panel. []- Exception 3:6.4.3.8: Systems with a design outdoor airflow less than 750 cfm. []- Exception 4:6.4.3.8: Spaces where 75 percent of the supply outdoor airflow is required for makeup air that is exhausted from the space or transfer air required for makeup air that is exhausted from the space(s). []- Exception 5:6.4.3.8: Space is one of following occupancy type: Correctional cells, daycare sickrooms, science labs, laboratories, beauty and nail salons, and bowling alley seating.	☐	☐	☐
5054 HVAC	6.5.2.3	Mechanical	Dehumidification controls provided to prevent reheating, recooling, mixing of hot and cold airstreams or concurrent heating and cooling of the same airstream. []- Exception 1:6.5.2.3: Capability of first reducing supply air volume 50% or less of the design rate or minimum outdoor air ventilation, or per regulatory standard, whichever is larger, before combined heating/cooling occurs. []- Exception 2:6.5.2.3: Cooling capacity <65 kBtu/h and capability to unload cooling equipment. []- Exception 3:6.5.2.3: Cooling capacity <40 kBtu/h. []- Exception 4:6.5.2.3: Rigid humidity requirements. []- Exception 5:6.5.2.3: Site-recovered or site-solar energy sources or. []- Exception 6:6.5.2.3: Use of a desiccant systems.	☐	☐	☐

5061 HVAC	6.5.3.1.3	Mechanical	Fan have a fan energy index (FEI) ≥ 1.00 and a variable-air-volume system that meets the requirements of Section 6.5.3.2.1 shall have an FEI ≥ 0.95 at the design point of operation. []- Exception 1:6.5.3.1.3: Embedded fans with a motor nameplate horsepower of less than 1.0 hp or with a fan nameplate electrical input power of less than 0.89 kW. []- Exception 2:6.5.3.1.3: Individual fans with motor nameplate horsepower of ≤ 5 hp. []- Exception 3:6.5.3.1.3: Multiple fans in series or parallel have a combined motor nameplate horsepower of ≤ 5 hp and are operated functionally as a single fan. []- Exception 4:6.5.3.1.3: Fans integral to equipment listed under Section 6.4.1.1. []- Exception 5:6.5.3.1.3: Ceiling fans. []- Exception 6:6.5.3.1.3: Fans included in equipment having certified seal for air or energy performance of the equipment package. []- Exception 7:6.5.3.1.3: Powered wall/roof ventilators (PRV). []- Exception 8:6.5.3.1.3: Fans not covered by AMCA 205. []- Exception 9:6.5.3.1.3: Fans operate during emergency conditions.	☐	☐	☐
5038 HVAC	6.5.3.2.1	Mechanical	DX cooling systems ≥ 65 kBtu/h and chilled-water and evaporative cooling fan motor hp $\geq \frac{1}{4}$ designed to vary supply fan airflow as a function of load and comply with operational requirements. []- Exception 1:6.5.3.2.1: Chilled-water and evaporative cooling units with < 1 hp fan motors not used to provide ventilation air and the indoor fan cycles with the load. []- Exception 2:6.5.3.2.1: Minimum speed requirements of Standard 62.1 will be applied. []- Exception 3:6.5.3.2.1: Requirement does not apply.	☐	☐	☐
5065 HVAC	6.5.3.2.3	Mechanical	Reset static pressure setpoint for DDC controlled VAV boxes reporting to central controller based on the zones requiring the most pressure. Controls provide: zone damper monitoring or indicator of static pressure need; autodetection, alarm, and operator override of zones excessively triggering reset logic.	☐	☐	☐

5066 HVAC	6.5.3.3	Mechanical	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls. []- Exception 1:6.5.3.3: VAV systems that recirculate air from other zones without directly mixing it with outdoor air or dual-duct dual-fan VAV systems, or VAV systems with fan-powered terminal units. []- Exception 2:6.5.3.3: Systems where the design exhaust airflow is more than 70% of design outdoor air intake flow. []- Exception 3:6.5.3.3: Requirement does not apply.	☐	☐	☐
5067 HVAC	6.5.3.5	Mechanical	Multiple zone HVAC systems have supply air temperature reset controls. []- Exception 1:6.5.3.5: Systems that do not reheat, recool, or mix heated and cooled supply air. []- Exception 2:6.5.3.5: Systems that use site recovered or site solar energy for at least 75% of the energy for reheating (on an annual basis). []- Exception 3:6.5.3.5: Requirement does not apply. []- Exception 4:6.5.3.5: Systems in Climate Zones 0A, 1A, and 3A with less than 3000 cfm of design outdoor air. []- Exception 5:6.5.3.5: Systems in Climate Zone 2A with less than 10,000 cfm of design outdoor air. []- Exception 6:6.5.3.5: Systems in Climate Zones 0A, 1A, 2A, and 3A with at least 80% outdoor air and employing exhaust air energy recovery complying with Section 6.5.6.1.	☐	☐	☐
5068 HVAC	6.5.4.1	Mechanical	System turndown requirement met through multiple single-input boilers, one or more modulating boilers, or a combination of single-input and modulating boilers. Boiler input between 1.0 MBtu/h and 5 MBtu/h has 3:1 turndown ratio, boiler input between 5.0 MBtu/h and 10 MBtu/h has 4:1 turndown ratio, boiler input > 10.0 MBtu/h has 5:1 turndown ratio.	☐	☐	☐

5069 HVAC	6.5.4.2	Mechanical	HVAC pumping systems with ≥ 3 control valves designed for variable fluid flow (see section details). []- Exception 1:6.5.4.2: Differential pressure set-point reset is not required where valve position is used to comply with Section 6.5.4.4. []- Exception 2:6.5.4.2: Variable-pump flow control not required on heating-water pumps where more than 50% of annual heat is generated by an electric boiler. []- Exception 3:6.5.4.2: Variable flow not required for primary pumps in a primary/secondary system. []- Exception 4:6.5.4.2: Variable flow not required for a coil pump provided for freeze protection. []- Exception 5:6.5.4.2: Variable flow not required for heat recovery coil runaround loops. []- Exception 6:6.5.4.2: Requirement does not apply.	☐	☐	☐
5070 HVAC	6.5.4.3, 6.5.4.3.1, 6.5.4.3.2	Mechanical	Fluid flow shutdown in pumping systems to multiple chillers or boilers when systems are shut down. []- Exception 1:6.5.4.3_6.5.4.3.1_6.5.4.3.2: with Section 6.5.4.4.	☐	☐	☐
5071 HVAC	6.5.4.4	Mechanical	Temperature reset by representative building loads for chiller and boiler systems design capacity $>300,000$ Btu/h. []- Exception 1:6.5.4.4: Where chilled-water supply is already cold, such as chilled water supplied from a district cooling or thermal energy storage system, such that blending would be required to achieve the reset chilled-water supply temperature. []- Exception 2:6.5.4.4: Where a specific temperature is required for a process application. []- Exception 3:6.5.4.4: Water temperature reset is not required where valve position is used to comply with Section 6.5.4.2.	☐	☐	☐
5072 HVAC	6.5.4.5.1	Mechanical	Two-position automatic valve interlocked to shut off water flow when the compressor is off. []- Exception 1:6.5.4.5.1: Units employing a fluid economizer.	☐	☐	☐
5073 HVAC	6.5.4.5.2	Mechanical	Hydronic heat pumps and water-cooled unitary air conditioners with pump systems >5 hp have controls or devices to reduce pump motor demand. []- Exception 1:6.5.4.5.2: Requirement does not apply.	☐	☐	☐

5075 HVAC	6.5.5.2.1	Mechanical	Fan systems with motors or array of motors (including the motor service factor) with connected power totaling ≥ 5 hp associated with heat rejection equipment to have controls and/or devices that result in fanmotor demand of $\leq 30\%$ of design wattage at 50% of design airflow and automatically modulates fan speed to control the leaving fluid temperature or condensing temp/pressure of heat rejection device. []- Exception 1:6.5.5.2.1: Condenser fans serving multiple refrigerant or fluid cooling circuits. []- Exception 2:6.5.5.2.1: Condenser fans serving flooded condensers.	☐	☐	☐
5076 HVAC	6.5.5.2.2	Mechanical	Multicell heat rejection equipment with variable-speed fan drives installed that operate the maximum number of fans allowed that comply with manufacturers specs and control all fans to the same fan speed required for the instantaneous cooling duty.	☐	☐	☐
5080 HVAC	6.5.7.1	Mechanical	Conditioned supply air to space with mechanical exhaust $\leq$ the greater of criteria of supply flow, required ventilation rate, exhaust flow minus the available transfer air (see section details). []- Exception 1:6.5.7.1: Biosafety level ≥ 3. []- Exception 2:6.5.7.1: Vivarium spaces. []- Exception 3:6.5.7.1: Spaces with regulated positive pressure air flows. []- Exception 4:6.5.7.1: Requirement does not apply.	☐	☐	☐
5081 HVAC	6.5.7.2.1	Mechanical	Replacement air introduced directly into the hood cavity of kitchen exhaust hoods shall not exceed 10% of the hood exhaust airflow rate []- Exception 1:6.5.7.2.1: Where hoods are used to exhaust ventilation air that would otherwise exfiltrate or be exhausted by other fan systems. []- Exception 2:6.5.7.2.1: Certified grease extractor hoods that require a face velocity no greater than 60 fpm. []- Exception 3:6.5.7.2.1: Requirement does not apply.	☐	☐	☐
5082 HVAC	6.5.7.2.2	Mechanical	Kitchen hoods with a total exhaust airflow rate > 5000 cfm meet replacement air, ventilation system, or energy recovery requirements shown in Table 6.5.7.2.2. []- Exception 1:6.5.7.2.2: Systems where transfer air that would otherwise be exhausted is used for at least 75% of all the replacement air. []- Exception 2:6.5.7.2.2: Requirement does not apply.	☐	☐	☐
5083 HVAC	6.5.7.2.3	Mechanical	Kitchen hoods with a total exhaust airflow rate > 5000 cfm meet replacement air, ventilation system, or energy recovery requirements. []- Exception 1:6.5.7.2.3: Requirement does not apply.	☐	☐	☐
5085 HVAC	6.5.7.3	Mechanical	Fume hoods exhaust systems $\geq 5,000$ cfm have VAV hood exhaust and supply systems, direct make-up air or heat recovery. []- Exception 1:6.5.7.2: Requirement does not apply.	☐	☐	☐

5086 HVAC	6.5.8.1	Mechanical	Unenclosed spaces that are heated use only radiant heat. []- Exception 1:6.5.8.1: Loading docks with air curtains. []- Exception 2:6.5.8.1: Requirement does not apply.	☐ ☐ ☐
5164 Other Equipment	6.8.1-14	Mechanical	Vapor compression based indoor pool dehumidifiers (single package (indoor air/water cooled or w/out air-cooled condenser) or split system indoor air-cooled) must meet the minimum efficiency rating. []- Exception 1:6.8.1-14: Requirement does not apply.	☐ ☐ ☐
5091 HVAC	7.5.1	Mechanical	Combined space and water heating system not allowed unless standby loss less than calculated maximum. AHJ has approved or combined connected load <150 kBtu/h.	☐ ☐ ☐
5159 Controls	9.4.1.2a	Interior Lighting	Parking garage lighting is equipped with automatic shutoff controls per Section 9.4.1.1(i). []- Exception 1:9.4.1.2a: Requirement does not apply.	☐ ☐ ☐
5160 Controls	9.4.1.2b	Interior Lighting	Parking garage luminarie power is automatically reduced by at least 50% when zone < 3600 ft2 has no occupancy after 10 minutes. []- Exception 1:9.4.1.2b: Requirement does not apply.	☐ ☐ ☐
5161 Controls	9.4.1.2c	Interior Lighting	Parking garage luminaires in or around covered entrances/exits between building and garage automatically reduced no more than the general light level from sunset to sunrise. []- Exception 1:9.4.1.2c: Requirement does not apply.	☐ ☐ ☐
5162 Controls	9.4.1.2d	Interior Lighting	Parking garage power to any luminaire within 20 ft of perimeter wall openings totaling at least 24 ft2 shall be automatically reduced through continuous dimming in response to available daylight. []- Exception 1:9.4.1.2d: Lighting in non-parking daylight transition areas. []- Exception 2:9.4.1.2d: Requirement does not apply.	☐ ☐ ☐
5158 Controls	9.4.1.4d	Exterior Lighting	Outdoor parking area luminaires > 78W and <= 24 ft height controlled to reduce wattage by 50% when area unoccupied over 15 minutes. Controlled power limited to <= 1500W. []- Exception 1:9.4.1.4d: Covered vehicle entrance/exit areas requiring lighting for safety, security and eye adaptation. []- Exception 2:9.4.1.4d: Manufacturer installed luminaires integral to signage. []- Exception 3:9.4.1.4d: Requirement does not apply.	☐ ☐ ☐
5157 Wattage	9.4.3	Interior Lighting	At least 75% of all permanently installed lighting fixtures in dwelling units have >= 55 lm/W efficacy or a >= 45 lm/W total luminaire efficacy.	☐ ☐ ☐

5006 Plan Review	9.7	Exterior Lighting	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the exterior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include exterior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐	☐	☐
3. To be checked by Inspector						
5008 Insulation	4.2.4	Envelope	Installed below-grade wall insulation type and R-value consistent with insulation specifications reported in plans.	☐	☐	☐
5010 Insulation	4.2.4	Envelope	Installed slab-on-grade insulation type and R-value consistent with insulation specifications reported in plans.	☐	☐	☐
5102 Insulation	4.2.4	Envelope	Installed roof insulation type and R-value consistent with insulation specifications reported in plans. For some ceiling systems, verification may need to occur during Framing Inspection.	☐	☐	☐
5104 Insulation	4.2.4	Envelope	Installed above-grade wall insulation type and R-value consistent with insulation specifications reported in plans.	☐	☐	☐
5106 Insulation	4.2.4	Envelope	Installed floor insulation type and R-value consistent with insulation specifications reported in plans.	☐	☐	☐
5017 Air Leakage	5.4.3.1	Envelope	Continuous air barrier is wrapped, sealed, caulked, gasketed, and/or taped in an approved manner, except in semiheated spaces in climate zones 1-6. []- Exception 1:5.4.3.1: Single wythe concrete masonry buildings in climate zone 2B. []- Exception 2:5.4.3.1: Requirement does not apply.	☐	☐	☐
5116 Air Leakage	5.4.3.2	Envelope	Weatherseals installed on all loading dock cargo doors in Climate Zones 4-8. []- Exception 1:5.4.3.3: Requirement does not apply.	☐	☐	☐
5108 Insulation	5.8.1.1	Envelope	Building envelope insulation is labeled with R-value or insulation certificate has been provided listing R-value and other relevant data.	☐	☐	☐
5009 Insulation	5.8.1.2	Envelope	Below-grade wall insulation installed per manufacturer's instructions.	☐	☐	☐
5011 Insulation	5.8.1.2	Envelope	Slab edge insulation installed per manufacturer's instructions.	☐	☐	☐
5105 Insulation	5.8.1.2	Envelope	Above-grade wall insulation installed per manufacturer's instructions.	☐	☐	☐
5107 Insulation	5.8.1.2	Envelope	Floor insulation installed per manufacturer's instructions.	☐	☐	☐
5103 Insulation	5.8.1.2, 5.8.1.3	Envelope	Roof insulation installed per manufacturer's instructions. Blown or poured loose-fill insulation is installed only where the ceiling slope is > 3:12.	☐	☐	☐

5110 Insulation	5.8.1.4	Envelope	Eaves are baffled to deflect air to above the insulation.	☐	☐	☐
5111 Insulation	5.8.1.5	Envelope	Insulation is installed in substantial contact with the inside surface separating conditioned space from unconditional space. []- Exception 1:5.8.1.5: Insulation materials rely on air spaces adjacent to reflective surfaces in order to achieve rated performance.	☐	☐	☐
5112 Insulation	5.8.1.6	Envelope	Recessed equipment installed in building envelope assemblies does not compress the adjacent insulation.	☐	☐	☐
5013 Insulation	5.8.1.7	Envelope	Exterior insulation protected against damage, sunlight, moisture, wind, landscaping and equipment maintenance activities.	☐	☐	☐
5113 Insulation	5.8.1.7.1	Envelope	Attics and mechanical rooms have insulation protected where adjacent to attic or equipment access.	☐	☐	☐
5114 Insulation	5.8.1.7.2	Envelope	Foundation vents do not interfere with insulation.	☐	☐	☐
5115 Insulation	5.8.1.8	Envelope	Insulation intended to meet the roof insulation requirements cannot be installed on top of a suspended ceiling. Mark this requirement compliant if insulation is installed accordingly.	☐	☐	☐
5109 Insulation	5.8.1.9	Envelope	Building envelope insulation extends over the full area of the component at the proposed rated R or U value.	☐	☐	☐
5025 Fenestration	5.8.2.1, 5.8.2.3, 5.8.2.4, 5.8.2.5	Envelope	Fenestration products rated (U-factor, SHGC, and VT) in accordance with NFRC or energy code defaults are used.	☐	☐	☐
5026 Fenestration	5.8.2.2	Envelope	Fenestration and door products are labeled, or a signed and dated certificate listing the U-factor, SHGC, VT, and air leakage rate has been provided by the manufacturer.	☐	☐	☐
5018 Air Leakage	5.8.3.2	Envelope	Factory-built and site-assembled fenestration and doors are labeled or certified as meeting air leakage requirements. []- Exception 1:5.8.3.2: Field fabricated. []- Exception 2:5.8.3.2: Metal coiling doors in semiheated spaces in zones 1-6 when leakage is <= 1.0 CFM/ft2. []- Exception 3:5.8.3.2: Building complies with whole building air leakage rate of 0.4 cfm/sq.ft.	☐	☐	☐
5146 SYSTEM_SPECIF	6.4.1.1, 6.8.1-7a	Mechanical	Heat Rejection Equipment - Propeller or Axial Fan Open-Circuit Cooling Tower: Minimum Efficiency Requirement >=40.2 gpm/hp .	☐	☐	☐
5147 SYSTEM_SPECIF	6.4.1.1, 6.8.1-7a	Mechanical	Heat Rejection Equipment - Centrifugal Fan Open-Circuit Cooling Tower: Minimum Efficiency Requirement >=20.0 gpm/hp.	☐	☐	☐
5148 SYSTEM_SPECIF	6.4.1.1, 6.8.1-7b	Mechanical	Heat Rejection Equipment - Propeller or Axial Fan Closed-Circuit Cooling Tower: Minimum Efficiency Requirement >=16.1 gpm/hp.	☐	☐	☐

5149 SYSTEM_SPECIF	6.4.1.1, 6.8.1-7b	Mechanical	Heat Rejection Equipment - Centrifugal Fan Closed-Circuit Cooling Tower: Minimum Efficiency Requirement ≥ 7.0 gpm/hp	☐	☐	☐
5173 SYSTEM_SPECIF	6.4.1.1, 6.8.1-7c	Mechanical	Heat Rejection Equipment - Propeller or Axial Fan Dry Coolers (air-cooled fluid coolers): Minimum Efficiency Requirement ≥ 4.5 gpm/hp	☐	☐	☐
5151 SYSTEM_SPECIF	6.4.1.1, 6.8.1-7g	Mechanical	Heat Rejection Equipment - Air-Cooled Condensers: Minimum Efficiency Requirement ≥ 176 kBtu/h-hp	☐	☐	☐
5152 SYSTEM_SPECIF	6.4.1.1, 6.8.1-7g	Mechanical	Heat Rejection Equipment - Propeller or Axial Evaporative Condenser: Minimum Efficiency Requirement ≥ 160 kBtu/h-hp w/ R-448A test fluid.	☐	☐	☐
5153 SYSTEM_SPECIF	6.4.1.1, 6.8.1-7g	Mechanical	Heat Rejection Equipment - Propeller or Axial Evaporative Condenser: Minimum Efficiency Requirement ≥ 134 kBtu/h-hp w/ Ammonia test fluid.	☐	☐	☐
5154 SYSTEM_SPECIF	6.4.1.1, 6.8.1-7g	Mechanical	Heat Rejection Equipment - Centrifugal Evaporative Condenser: Minimum Efficiency Requirement ≥ 137 kBtu/h-hp w/ R-448A test fluid.	☐	☐	☐
5155 SYSTEM_SPECIF	6.4.1.1, 6.8.1-7g	Mechanical	Heat Rejection Equipment - Centrifugal Evaporative Condenser: Minimum Efficiency Requirement ≥ 110 kBtu/h-hp w/ Ammonia test fluid.	☐	☐	☐
5031 HVAC	6.4.1.4, 6.4.1.5	Mechanical	HVAC equipment efficiency verified. Non-NAECA HVAC equipment labeled as meeting 90.1.	☐	☐	☐
5144 SYSTEM_SPECIF	6.4.1.4, 6.4.1.5	Mechanical	Equipment minimum efficiency:	☐	☐	☐
5145 SYSTEM_SPECIF	6.4.1.4, 6.4.1.5	Mechanical	Equipment minimum efficiency:	☐	☐	☐
5032 HVAC	6.4.1.6.2	Mechanical	PTAC and PTHP with sleeves 16 in. by 42 in. labeled for replacement only. []- Exception 1:6.4.1.5.2: Requirement does not apply.	☐	☐	☐
5117 HVAC	6.4.3.1.1	Mechanical	Heating and cooling to each zone is controlled by a thermostat control. []- Exception 1:6.4.3.1.1: Perimeter systems with one control for each exposure and with the thermostat located within the zones served.	☐	☐	☐
5118 HVAC	6.4.3.1.2	Mechanical	Thermostatic controls have a 5 °F deadband. []- Exception 1:6.4.3.1.2: Thermostats requiring manual changeover between heating and cooling. []- Exception 2:6.4.3.1.2: Where wide temperature ranges are not acceptable and are approved by the authority having jurisdiction. []- Exception 3:6.4.3.1.2: Requirement does not apply.	☐	☐	☐
5050 HVAC	6.4.3.11.1	Mechanical	Electric motor driven chilled-water plants have measurement devices installed and measure the electricity use and efficiency []- Exception 1:6.4.3.11.1: Requirement does not apply.	☐	☐	☐

5051 HVAC	6.4.3.11.2	Mechanical	Electricity use and efficiency are trended every 15 minutes and graphically displayed, including hourly, daily, monthly, and annual data. Data are preserved for 36 months or more. []- Exception 1:6.4.3.11.2: Requirement does not apply.	☐ ☐ ☐
5125 HVAC	6.4.3.12	Mechanical	Air economizer has a fault detection and diagnostics (FDD) system (see details for configuration and operational requirements). []- Exception 1:6.4.3.12: Requirement does not apply.	☐ ☐ ☐
5119 HVAC	6.4.3.2	Mechanical	Temperature controls have setpoint overlap restrictions. []- Exception 1:9.4.3: Lighting is controlled by dimmers or automatic control devices. []- Exception 2:9.4.3: Hotel/motel guest rooms.	☐ ☐ ☐
5120 HVAC	6.4.3.3.1	Mechanical	HVAC systems equipped with at least one automatic shutdown control. []- Exception 1:6.4.3.3.1: Controls for residential occupancies may start and stop the system under two schedules per week. []- Exception 2:6.4.3.3.1: Systems designed for continuous operation. []- Exception 3:6.4.3.3.1: Systems with capacity <15,000 Btu/h and with manual controls.	☐ ☐ ☐
5033 HVAC	6.4.3.4.1	Mechanical	Stair and elevator shaft vents have motorized dampers that automatically close. []- Exception 1:6.4.3.4.1: Requirement does not apply.	☐ ☐ ☐
5034 HVAC	6.4.3.4.2, 6.4.3.4.3	Mechanical	Outdoor air and exhaust systems have motorized dampers that automatically shut when not in use and meet maximum leakage rates. Check gravity dampers where allowed. []- Exception 1:6.4.3.4.2_6.4.3.4.3: Ventilation systems serving unconditioned spaces. []- Exception 2:6.4.3.4.2_6.4.3.4.3: Gravity dampers acceptable in buildings <3 stories. []- Exception 3:6.4.3.4.2_6.4.3.4.3: Outdoor air intakes and exhaust and relief dampers in buildings of any height located in Climate Zones 0, 1, 2, and 3. []- Exception 4:6.4.3.4.2_6.4.3.4.3: Gravity dampers acceptable in systems with outside or exhaust air flow rates less than 300 cfm where dampers are interlocked with fan. []- Exception 5:6.4.3.4.2_6.4.3.4.3: Exhaust systems serving Type 1 kitchen exhaust hoods []- Exception 6:6.4.3.4.2_6.4.3.4.3: Systems intended to operate continuously	☐ ☐ ☐

5035 HVAC	6.4.3.4.5	Mechanical	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity. []- Exception 1:6.4.3.4.5: Garages with no mechanical cooling or heating that have an area of less than 30,000 ft2. []- Exception 2:6.4.3.4.5: Garages with no mechanical cooling or heating that have a ratio of garage area to ventilation system motor nameplate hp greater than 1500 ft2/hp. []- Exception 3:6.4.3.4.5: Where the authority having jurisdiction does not allow this requirement. []- Exception 4:6.4.3.4.5: Requirement does not apply.	☐	☐	☐
5124 HVAC	6.4.3.5	Mechanical	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed. []- Exception 1:6.4.3.5: Heat pumps regulated by and meeting NAECA requirements and using internal electric resistance heating.	☐	☐	☐
5126 HVAC	6.4.3.6	Mechanical	When humidification and dehumidification are provided to a zone, simultaneous operation is prohibited. Humidity control prohibits the use of fossil fuel or electricity to produce RH > 30% in the warmest zone humidified and RH < 60% in the coldest zone dehumidified. []- Exception 1:6.4.3.6: Zones served by desiccant systems. []- Exception 2:6.4.3.6: Systems in zones requiring specific humidity levels as approval by AHJ.	☐	☐	☐
5015 HVAC	6.4.3.7	Mechanical	Freeze protection and snow/ice melting system sensors for future connection to controls. []- Exception 1:6.4.3.7: Requirement does not apply.	☐	☐	☐
5088 HVAC	6.4.3.9	Mechanical	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 45°F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint ≤ 60°F and cooling setpoint ≥ 80°F. []- Exception 1:6.4.3.9: Heating/cooling provided by site-recovered energy or with transfer air that would otherwise be exhausted. []- Exception 2:6.4.3.9: Requirement does not apply.	☐	☐	☐
5039 HVAC	6.4.4.1.1	Mechanical	Insulation exposed to weather protected from damage. Insulation outside of the conditioned space and associated with cooling systems is vapor retardant.	☐	☐	☐

5040 HVAC	6.4.4.1.2	Mechanical	HVAC ducts and plenums insulated per Table 6.8.2. Where ducts or plenums are installed in or under a slab, verification may need to occur during Foundation Inspection. []- Exception 1:6.4.4.1.2: Factory-installed as part of HVAC equipment. []- Exception 2:6.4.4.1.2: Ducts/plenums located in heated, semi-heated, or cooled spaces. []- Exception 3:6.4.4.1.2: R-3.5 for runouts <10 ft to air terminals/outlets. []- Exception 4:6.4.4.1.2: Backs of air outlets or outlet plenums to unconditioned or indirectly condition spaces.	☐	☐	☐
5041 HVAC	6.4.4.1.3	Mechanical	HVAC piping insulation thickness. Where piping is installed in or under a slab, verification may need to occur during Foundation Inspection. []- Exception 1:6.4.4.1.3: Piping within HVAC equipment. []- Exception 2:6.4.4.1.3: Fluid temperatures between 60 and 105°F. []- Exception 3:6.4.4.1.3: Fluid not heated or cooled. []- Exception 4:6.4.4.1.3: Runouts <4 ft in length. []- Exception 5:6.4.4.1.3: Pipe unions in heating systems. []- Exception 6:6.4.4.1.3: Requirement does not apply.	☐	☐	☐
5042 HVAC	6.4.4.1.4	Mechanical	Thermally ineffective panel surfaces of sensible heating panels have insulation $\geq$ R-3.5. []- Exception 1:6.4.4.1.4: Requirement does not apply.	☐	☐	☐
5043 HVAC	6.4.4.2.1	Mechanical	Ducts and plenums having pressure class ratings are Seal Class A construction. []- Exception 1:6.4.4.2.1: Requirement does not apply.	☐	☐	☐
5044 HVAC	6.4.4.2.2	Mechanical	Ductwork operating >3 in. water column requires air leakage testing. []- Exception 1:6.4.4.2.2: Requirement does not apply.	☐	☐	☐
5089 Controls	6.5.10	Mechanical	Doors separating conditioned space from the outdoors have controls that disable/reset heating and cooling system when open. []- Exception 1:6.5.10: Building entrances have automatic closing devices. []- Exception 2:6.5.10: Space has no thermostat. []- Exception 3:6.5.10: Alteration project to existing building. []- Exception 4:6.5.10: Loading dock.	☐	☐	☐

5048 HVAC	6.5.2.1	Mechanical	Zone controls can limit reheating, recooling, simultaneous heating and cooling and sequence heating and cooling to each zone. []- Exception 1:6.5.2.1: Zones for which the volume of air that is reheated, recooled, or mixed is no greater than required to meet Standard 62.1; 20% of the zone design peak supply for systems with DDC and 30% for other systems; air flow rate approved by the AHJ; OR airflow rate []- Exception 2:6.5.2.1: Zones with DDC include: larger of <=20% zone peak flow, flow required per Standard 62.1, higher rate approved by AHJ for outlying conditions, OR airflow rate that complies with applicable codes/accreditation standards; air flow reheated/recooled/mixed <= []- Exception 3:6.5.2.1: 75% of the energy is provided from site-recovered or site-solar energy. []- Exception 4:6.5.2.1: Laboratory exhaust systems compliant with Section 6.5.7.3. []- Exception 5:6.5.2.1: Requirement does not apply.	☐	☐	☐
5049 HVAC	6.5.2.2.1	Mechanical	Three-pipe hydronic systems using a common return for hot and chilled water are not used.	☐	☐	☐
5052 HVAC	6.5.2.2.2	Mechanical	Two-pipe hydronic systems using a common distribution system have controls to allow a deadband >=15 °F, allow operation in one mode for at least 4 hrs before changeover, and have reset controls to limit heating and cooling supply temperature to <=30 °F.	☐	☐	☐
5055 HVAC	6.5.2.4.1	Mechanical	Humidifiers with airstream mounted preheating jackets have preheat auto-shutoff value set to activate when humidification is not required. []- Exception 1:6.5.2.4.1: Requirement does not apply.	☐	☐	☐
5056 HVAC	6.5.2.4.2	Mechanical	Humidification system dispersion tube hot surfaces in the airstreams of ducts or air-handling units insulated >= R-0.5. []- Exception 1:6.5.2.4.2: Mechanical cooling (including economizer operation) does not occur simultaneously with humidification. []- Exception 2:6.5.2.4.2: Requirement does not apply.	☐	☐	☐
5057 HVAC	6.5.2.5	Mechanical	Preheat coils controlled to stop heat output whenever mechanical cooling, including economizer operation, is active.	☐	☐	☐
5064 HVAC	6.5.3.2.2	Mechanical	VAV fans have static pressure sensors positioned so setpoint <=1.2 in. w.c. design pressure. []- Exception 1:6.5.3.2.2: Systems with DDC of individual boxes reporting to the central control panel and reset of static pressure setpoint based on the zone requiring the most pressure.	☐	☐	☐

5074 HVAC	6.5.4.6	Mechanical	Chilled-water and condenser water piping sized according to design flow rate and total annual hours of operation (Table 6.5.4.6). []- Exception 1:6.5.4.6: Design flow rates exceeding the values in Table 6.5.4.6 are allowed in specific sections of piping if the piping in question is not in the critical circuit at design conditions and is not predicted to be in the critical circuit during more than 30% of ope []- Exception 2:6.5.4.6: Piping systems that have equivalent or lower total pressure drop than the same system constructed with standard weight steel pipe with piping and fittings sized per Table 6.5.4.6.	☐	☐	☐
5150 SYSTEM_SPECIF	6.5.5.3	Mechanical	Centrifugal fan open-circuit cooling towers having combined rated capacity >= 1100 gpm meets minimum efficiency requirement: >=40.2 gpm/hp. []- Exception 1:6.5.5.3: Centrifugal open-circuit cooling towers with external sound attenuation or that have ducted inlet or discharge.	☐	☐	☐
5079 HVAC	6.5.6.2	Mechanical	Condenser heat recovery system that can heat water to 85 °F or provide 60% of peak heat rejection is installed for preheating of service hot water. []- Exception 1:6.5.6.2: Facility operates < 24/7. []- Exception 2:6.5.6.2: Total installed heat capacity of water cooled systems <= 6 MMBtu/h of heat rejection. []- Exception 3:6.5.6.2: Design SWH load <= 1 MMBtu/h. []- Exception 4:6.5.6.2: Facilities using condenser heat recovery for space heating with heat recovery exceeding 30% of the peak water-cooled condenser load. []- Exception 5:6.5.6.2: Facilities providing 60% of their service water heating from site-solar, site-recovered, or other energy sources.	☐	☐	☐
5084 HVAC	6.5.7.2.4	Mechanical	Approved field test used to evaluate design air flow rates and demonstrate proper capture and containment of kitchen exhaust systems. []- Exception 1:6.5.7.2.4: Requirement does not apply.	☐	☐	☐
5087 HVAC	6.5.9	Mechanical	Hot gas bypass limited to: <=240 kBtu/h – 15% ; > 240 kBtu/h – 10%	☐	☐	☐
5141 HVAC	7.4.3	Mechanical	All piping in recirculating system insulated []- Exception 1:7.4.3: Requirement does not apply.	☐	☐	☐
5142 HVAC	7.4.3	Mechanical	First 8 ft of outlet piping in nonrecirculating storage system, or branch piping connected to recirculated, heat traced, or impedance heated piping is insulated. []- Exception 1:7.4.3: Requirement does not apply.	☐	☐	☐
5143 HVAC	7.4.3	Mechanical	All heat traced or externally heated piping insulated []- Exception 1:7.4.3: Requirement does not apply.	☐	☐	☐

5028 HVAC	7.4.4.1	Mechanical	Temperature controls installed on service water heating systems ($\leq 120^{\circ}\text{F}$ to maximum temperature for intended use). []- Exception 1:7.4.4.1: Manufacturer's instructions specify a higher minimum setting.	☐	☐	☐
5029 HVAC	7.4.4.2	Mechanical	Automatic time switches installed to automatically switch off the recirculating hot-water system or heat trace when hot water is not required.	☐	☐	☐
5131 HVAC	7.4.4.3	Mechanical	Public lavatory faucet water temperature $\leq 110^{\circ}\text{F}$.	☐	☐	☐
5132 HVAC	7.4.4.4	Mechanical	Controls are installed that limit the operation of a recirculation pump installed to maintain temperature of a storage tank.	☐	☐	☐
5133 HVAC	7.4.5.1	Mechanical	Pool heaters are equipped with on/off switch and no continuously burning pilot light. []- Exception 1:7.4.5.1: Requirement does not apply.	☐	☐	☐
5134 HVAC	7.4.5.2	Mechanical	Pool covers are provided for heated pools and pools heated to $>90^{\circ}\text{F}$ have a cover $\geq R-12$. []- Exception 1:7.4.5.2: Pools deriving $>60\%$ of the energy for heating from site-recovered. []- Exception 2:7.4.5.2: Requirement does not apply.	☐	☐	☐
5135 HVAC	7.4.5.3	Mechanical	Time switches are installed on all pool heaters and pumps. []- Exception 1:7.4.5.3: Where 24-hr pump operation required for public health. []- Exception 2:7.4.5.3: Solar and waste heat recovery pool heating require pumps. []- Exception 3:7.4.5.3: Requirement does not apply.	☐	☐	☐
5030 HVAC	7.4.6	Mechanical	Heat traps installed on non-circulating storage water tanks.	☐	☐	☐
5093 Controls	8.4.2	Project	At least 50% of all 125 volt 15- and 20-Amp receptacles are controlled by an automatic control device. []- Exception 1:8.4.2: Receptacles intended for 24 hour operation of equipment. []- Exception 2:8.4.2: Spaces where safety or security concerns prohibit automatic shutoff. []- Exception 3:8.4.2: Space type is not private office, open office, conference room, Copy/Print room, break room, or classroom []- Exception 4:8.4.2: Requirement does not apply.	☐	☐	☐

5163 Controls	8.4.3	Project	New buildings have electrical energy use measurement devices installed. Where tenant spaces exist, each tenant is monitored separately. In buildings with a digital control system the energy use is transmitted to to control system and displayed graphically. []- Exception 1:8.4.3: Buildings less than 25,000 ft2. []- Exception 2:8.4.3: Individual tenant spaces less than 10,000 ft2. []- Exception 3:8.4.3: Dwelling units. []- Exception 4:8.4.3: Residential buildings with less than 10,000 ft2 of common area. []- Exception 5:8.4.3: Critical and Equipment branches of NEC Article 517. []- Exception 6:8.4.3: Requirement does not apply.	☐	☐	☐
5138 Wattage	9.2.2.3	Interior Lighting	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐	☐	☐
5094 Controls	9.4.1.1	Interior Lighting	Automatic control requirements prescribed in Table 9.6.1, for the appropriate space type, are installed. Mandatory lighting controls (labeled as 'REQ') and optional choice controls (labeled as 'ADD1' and 'ADD2') are implemented.	☐	☐	☐
5095 Controls	9.4.1.1	Interior Lighting	Independent lighting controls installed per approved lighting plans and all manual controls readily accessible and visible to occupants. []- Exception 1:9.4.1.1: Remote locations permitted for safety or security if used with a clearly labeled indicator pilot light.	☐	☐	☐
5096 Controls	9.4.1.1f	Interior Lighting	Daylight areas under skylights and roof monitors that have more than 150 W combined input power for general lighting are controlled by photocontrols. []- Exception 1:9.4.1.1f: Daylighted areas under skylights existing adjacent structures or natural objects block direct beam sunlight for more than 1500 daytime hours per year between 8 a.m. and 4 p.m. []- Exception 2:9.4.1.1f: Daylighted areas where the skylight VT is less than 0.006. []- Exception 3:9.4.1.1f: Buildings in climate zone 8 where the input power of the general lighting is less than 200W. []- Exception 4:9.4.1.1f: Requirement does not apply.	☐	☐	☐

5172 Controls	9.4.1.1g	Interior Lighting	Automatic partial OFF (full OFF complies) control requirements prescribed in Table 9.6.1, for the appropriate space type, are installed. Mandatory lighting controls (labeled as 'REQ') and optional choice controls (labeled as 'ADD1' and 'ADD2') are implemented. []- Exception 1:9.4.1.1g: The space has an installed LPD of no more than 0.80 W/ft2 []- Exception 2:9.4.1.1g: The space is lighted by HID lamp []- Exception 3:9.4.1.1g: The general lighting power in the space is automatically reduced by at least 30% within 20 minutes of all occupants leaving the space []- Exception 4:9.4.1.1g: Lighting load does not exceed 0.02 W/ft2 multiplied by the gross lighted floor area of the building []- Exception 5:9.4.1.1g: Requirement does not apply.	☐	☐	☐
5098 Controls	9.4.1.3	Interior Lighting	Separate lighting control devices for specific uses installed per approved lighting plans.	☐	☐	☐
5097 Controls	9.4.1.4	Exterior Lighting	Automatic lighting controls for exterior lighting installed. []- Exception 1:9.4.1.4: Covered vehicle entrance/exit areas requiring lighting for safety, security and eye adaptation.	☐	☐	☐
5139 Wattage	9.4.2	Exterior Lighting	Exterior lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐	☐	☐
5099 Wattage	9.6.2	Interior Lighting	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐	☐	☐
5101 Wattage	9.6.4	Interior Lighting	Where space LPD requirements are adjusted based on room cavity ratios, dimensions are consistent with approved plans. []- Exception 1:9.6.4: Requirement does not apply.	☐	☐	☐
4. To be checked by Inspector at Project Completion and Prior to Issuance of Certificate of Occupancy						

5007 Plan Review	4.2.5.2	Mechanical	Commissioning shall be performed as stated in Sections 5.9.2, 6.9.2, 7.9.2, 8.9.2, 9.9.2, 10.9.2, 11.2(d), and G1.2.1(c). Commissioning must utilize ASHRAE/IES Standard 202 or other generally accepted engineering standards acceptable to the building official. FPT and verification requirements for commissioning are as stated in Section 4.2.5.1. Commissioning shall document compliance of the building systems, controls, and building envelope with required provisions of this standard. Commissioning requirements shall be incorporated into the construction documents. []- Exception 1:4.2.5.2: Buildings, additions, or alterations with less than 10,000 ft² of conditioned space and combined heating, cooling, and service water heating equipment totaling less than 960,000 Btu/h in capacity. []- Exception 2:4.2.5.2: Buildings or portions of buildings that use the Simplified Approach Option for HVAC Systems in Section 6.3. []- Exception 3:4.2.5.2: Dwelling units. []- Exception 4:4.2.5.2: Nonrefrigerated warehouses.	☐	☐	☐
5127 Post Construction	6.7.3.1	Mechanical	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	☐	☐	☐
5128 Post Construction	6.7.3.2	Mechanical	Furnished operation and maintenance manuals for HVAC systems within 90 days of system acceptance.	☐	☐	☐
5129 Post Construction	6.7.3.3	Mechanical	An air and/or hydronic system balancing report is provided for HVAC systems serving zones >5,000 ft² of conditioned area. []- Exception 1:6.7.3.3: Pumps with pump motors of less than or equal to 10 hp []- Exception 2:6.7.3.3: when throttling results in no greater than 5% of the nameplate horsepower draw, or 3 hp, whichever is greater, above that required if the impeller was trimmed []- Exception 3:6.7.3.3: Requirement does not apply.	☐	☐	☐
5136 Post Construction	8.7.1	Interior Lighting	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	☐	☐	☐
5137 Post Construction	8.7.3	Interior Lighting	Furnished operation and maintenance instructions for systems and equipment to the building owner or designated representative.	☐	☐	☐