



SCOPE DOCUMENTS
The Contract Documents issued for Conceptual Design, Schematic Design, Design Development, Partial Construction Documents or Other Issuance up to Issued for Construction are intended to be at that level of development and as such, may be neither complete nor coordinated. The [Contract Manager, Contractor, Design/Builder] is responsible for complete and coordinated pricing [and execution] of the Work, and shall include items necessary for the proper execution and completion of the Work, as shown, specified, reasonably inferred or required for a complete Project. For Work of obligated design, systems, assemblies, components and materials shall comply with national, state and local code requirements. The [Contract Manager, Contractor, Design/Builder] shall inform the Owner and Architect in timely fashion of any discovered omissions, inconsistencies or errors in the Contract Documents.

ISSUANCES

No.	Drawing Issue Description	Date
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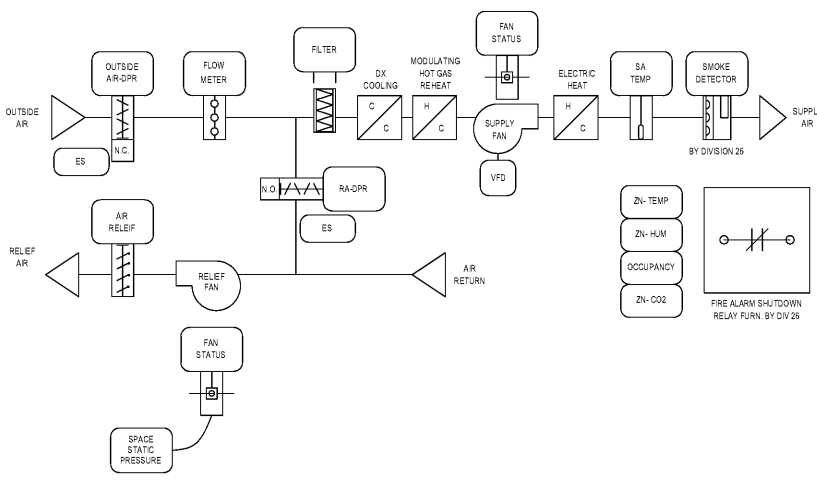
CONTROL SEQUENCES - SZAV ROOF TOP UNITS

ROOFTOP UNIT: RTU15A & RTU15B
The rooftop unit is a single-zone variable volume unit packaged air handler with direct expansion cooling, electric heating and hot gas reheat. The unit is controlled by the DDC system using electric actuation and is scheduled for automatic operation on a time of day basis. Occupied, Unoccupied and Safety modes are as follows:

- A. Occupied:
 - a. SUPPLY FAN CONTROL: The supply fan variable frequency drive (VFD) slowly ramps the fan to speed for continuous fan operation. Supply air fan speed shall be modulated via variable frequency drive between minimum and maximum airflows as scheduled based on space temperature as sensed by the space temperature sensor.
 - b. SUPPLY TEMPERATURE CONTROL: Unit compressors shall be staged and modulated as required to maintain a supply air temperature of 55°F (cooling, adjustable) and 69°F (heating, adjustable).
 - c. EXHAUST/RELIEF FAN CONTROL: The exhaust/relief air fan speed shall be modulated based on economizer mode.
 - d. OUTSIDE AIR CONTROL: During supply air fan operation, the return air damper shall open, and the outside air damper shall modulate based on the following:
 - To maintain minimum scheduled outside airflow.
 - Upon a rise in carbon dioxide concentration as sensed by the space CO2 sensor above the setpoint of 700ppm (adjustable) relative to the air concentration, the outside valve shall modulate open.
 - An airflow measurement station shall be provided for feedback to control the outside airflow between minimum and maximum airflows.
 - e. DEHUMIDIFICATION MODE: If room humidity increases above 60% relative humidity (adjustable) and the space temperature set point is satisfied, RTU unit controller starts first stage cooling and modulates the hot gas reheat coil until space humidity is reduced to the set point.
 - f. ECONOMIZER MODE: The DDC system enables economizer operation for free cooling when the outside temperature is greater than 55°F (supply air) or (adjustable) and outside air temperature is below 69°F (adjustable). The relief air fan shall modulate to the minimum air damper position.
- B. Unoccupied:
 - a. The RTU unit remains off during unoccupied periods until the override occupancy switch is active. Then the RTU unit shall operate in unoccupied mode for 1 hour (adjustable).
 - b. The outside air intake and exhaust/relief air dampers shall be closed when the RTU is off.
- C. Safety:
 - a. Supply air fan(s) are de-energized upon activation of the fire alarm system or activation of a smoke detector in the supply duct. All dampers position to their normal position after the fan(s) are de-energized. A current return shall be provided to the supply fan station(s) for confirmation of alarming of the fan operating status. Minimum compressor run-off time and stage de-energizing is programmed in the unit controller per the manufacturer.
 - b. RTU unit shall be provided with a fire alarm shutdown (interlock, not interlocking) and a fire alarm system to shut down upon activation. Extending from the connection to the fire alarm control panel, the fire alarm system shall be connected to the fire alarm contractor.
 - c. Activation of the Emergency Fan Stop switch shall stop all HVAC supply fans, Rooftop Units, split-systems, wall-hung units and exhaust fans.

SINGLE ZONE VAV ROOFTOP UNIT POINTS LIST

INPUT/OUTPUT SUMMARY	OUTPUTS				INPUTS				SOFTWARE				NOTES												
	DIGITAL		ANALOG		DIGITAL		ANALOG		ALARM		ENERGY MANAGEMENT														
	START/STOP	OPEN/CLOSE	ENABLE/DISABLE	OCCUPIED/UNOCCUPIED	DIR. MODULATION	SETPOINT ADJUST	DIFF. PRESS. SWITCH	CURRENT SWITCH	ON/OFF	MANUAL OVERRIDE	CO2 LEVEL (PPM)	STATIC PRESSURE		TEMPERATURE	HUMIDITY	POWER (AMPS/KW/VA/WH)	MOTOR CURRENT	HIGH LIMIT	STATUS ALARM	OPTIMUM START	TEMPERATURE CONTROL	TIME SCHEDULE/SETBACK	RUN TIME	TREND LOGGING	OVERRIDE PROGRAM
SZAV ROOFTOP UNIT		X																	X		X				
SPACE TEMPERATURE SENSOR													X									X	X		
SPACE HUMIDITY SENSOR													X										X		
SPACE CO2 SENSOR											X														
SPACE STATIC PRESSURE SENSOR											X												X		
SUPPLY AIR TEMPERATURE												X						X		X		X			
OCCUPIED/UNOCCUPIED			X																						
SUPPLY AIR FAN (VFD)	X			X																					
SUPPLY AIR FAN STATUS	X								X									X							
RELIEF AIR FAN	X			X																					
RELIEF AIR FAN STATUS								X																	
COMPRESSOR STAGING (WIRSES)	X																								
ELECTRIC HEAT				X																					
DEHUMIDIFICATION CYCLE (HOT GAS)			X	X																					
OSA AIRFLOW											X														



2 SINGLE ZONE VAV ROOFTOP UNIT CONTROL SCHEMATIC
SCALE: NO SCALE

MISCELLANEOUS HVAC EQUIPMENT AND BUILDING POINTS LIST

	OUTPUTS				INPUTS				SOFTWARE				NOTES												
	DIGITAL		ANALOG		DIGITAL		ANALOG		ALARM		ENERGY MANAGEMENT														
	START/STOP	OPEN/CLOSE	ENABLE/DISABLE	OCCUPIED/UNOCCUPIED	DIR. MODULATION	SETPOINT ADJUST	DIFF. PRESS. SWITCH	CURRENT SWITCH	ON/OFF	MANUAL OVERRIDE	CO2 LEVEL (PPM)	STATIC PRESSURE		TEMPERATURE	HUMIDITY	POWER (AMPS/KW/VA/WH)	MOTOR CURRENT	HIGH LIMIT	STATUS ALARM	OPTIMUM START	TEMPERATURE CONTROL	TIME SCHEDULE/SETBACK	RUN TIME	TREND LOGGING	OVERRIDE PROGRAM
DX SPLIT SYSTEM	X																					X	X		
UNIT ALARM									X									X							
TEMPERATURE												X						X					X	X	
EXHAUST FANS (EF)	X								X										X			X			
WATER HEATER	X											X										X			
DOMESTIC HOT WATER CRC PUMP	X																					X			
FIRE ALARM									X									X							
FIRE ALARM POWER LOSS									X									X							
HVAC EMERGENCY FAN STOP SWITCH									X									X							
POWER FAILURE									X									X					X		
EXTERIOR LIGHTING																									
INTERIOR LIGHTING ZONE CONTROLLER																									
BUILDING POWER KWH																		X					X		
BUILDING POWER DEMAND KW																		X					X		
DOMESTIC WATER GPM												X											X		
OUTSIDE TEMPERATURE												X											X		
OUTSIDE HUMIDITY													X										X		
OUTSIDE CO2														X									X		

CONTROL SEQUENCES - SCHEDULES & MISC.

- A. BUILDING OCCUPANCY SCHEDULES:
 - a. Provide occupancy schedules for each zone and the associated equipment.
 - BAS shall transition from scheduled unoccupied to occupied mode (heating warm-up) with scheduled unit start-up to reach occupied setpoint at the start of occupied time, based on historical period data, in a minimal amount of time, and stagger start-up to prevent line load supply temperature.
 - b. Fan equipment operation see ZONE SEQUENCES below and see each equipment type section.
- B. DX SPLIT SYSTEM UNIT CONTROLS: Units shall operate under independent controls. BAS temperature sensors shall monitor space temperature and initiate a BAS alarm if the space temperature exceed 89°F (adjustable). DSSAC shall be set to maintain a room temperature of 72°F.
- C. EXHAUST FAN CONTROLS:
 - a. Exhaust and/or transfer fans serving electrical rooms for temperature control shall be controlled by a wall-mounted DDC temperature sensor, with space temperature alarm at 90°F (adjustable). Provide current sensor in fan motor; if sensor indicates failure when room is calling for fan operation, DDC shall disable fan and activate fan failure alarm.
 - b. All exhaust fans serving multiple user restrooms shall operate during occupied hours. Provide control relay and NEMA 1 enclosure in power wiring to fan. Provide current sensor in fan motor; if sensor indicates failure when room is calling for fan operation, DDC shall disable fan and activate fan failure alarm.
 - c. All exhaust fans serving single user restrooms shall be interlocked with light switch in corresponding room.
- D. EXTERIOR LIGHTING CONTROLS: See Division 26.
- E. DOMESTIC WATER HEATER CONTROLS: Hot water recirculating pumps at heaters shall be started and stopped according to a day/night schedule provided by the Owner and by the demand control program. A temperature sensor located in the hot water supply pipe of each water heater and in the hot water storage tank shall provide an analog float signal to the control module to provide temperature indication only.
- F. EMERGENCY FAN SHUT-DOWN: Activation of the Emergency Fan Stop switch shall stop all HVAC supply fans, Rooftop Units, split-systems, wall-hung units and exhaust fans.
- G. VRF SYSTEM: New VRF units shall follow the existing VRF control sequence.

Order Plans @ www.edilinc.com

PROJECT NUMBER: CC-201715-JSA#19-543 PROJECT NAME: BARACK & MICHELLE OBAMA ACADEMY
SHEET NUMBER: M6-01 - HVAC POINTS LIST CONTROL SEQUENCES
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FTE - 450
EXISTING IU - 38
PROPOSED IU - 33

BARACK & MICHELLE OBAMA
ACADEMY



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ATLANTA PUBLIC SCHOOLS

HVAC POINTS LIST CONTROL
SEQUENCES



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THW	Principal Charge	CC #201715 - JSA # 19J543
SPB	Project Mgr	03/16/20
SPB	Project Manager	Date
SPB	Drawn By	

M6-01