



ADDENDUM NO. 1

Date: March 6, 2020

Project: IA DAS – Eldora STS
Decentralization Electrical Package Re-Bid
DAS RFB 898201-02
DAS Project 8982.01

SPECIFICATIONS ITEMS:

1. **26 2923 – Variable-Frequency Motor Controllers**
 - a. **ADD** this section in its entirety – attached.

DRAWING ITEMS:

1. DRAWINGS

a. SHEET - 02-M5.00 - COTTAGES 3 & 4 MECHANICAL DETAILS & CONTROLS

- i. **REVISE** - RTU INTEGRATION SCHEMATIC – delete references to VFD speed and fault on the exhaust fan. The exhaust fan is constant speed on/off. Provide status and start/stop integration only.

b. SHEET 02-M6.00 – COTTAGE 3 & 4 MECHANICAL SCHEDULES

- i. **REVISE** - Design Basis on “AIR COOLED CONDENSING UNITS” from XC20 to XC16S and SEER to “14.5”.
- ii. **REVISE** - Design Basis on “FURNACE – GAS SCHEDULE” from EL296UH070XV36B to EL296UH070XE36B.
- iii. **ADD** – On “FURNACE – GAS SCHEDULE” column for “MODEL” under “COOLING COIL DATA”. Model on GF3-1 shall say “CX35-30/36B”

c. SHEET – 02-E2.01 COTTAGES 3&4 POWER GRUND FLOOR

- i. **REVISE** – Wire and conduit for ACCU3-1 from 2#10 & 1#10GND, 1”C. to 3#10 & 1#10GND , 1”C
- ii. **REVISE** – C/B for ACCU3-1 from 30 to 25.

d. SHEET – 02-E2.03 COTTAGES 3&4 POWER SECOND FLOOR AND ROOF

- i. **REVISE** – BREAKER for ACCU3-1 from 30 to 25.

e. SHEET - 03-M5.01 - COTTAGES 5 & RECEIVING MECHANICAL CONTROLS

- i. **REVISE** RTU INTEGRATION SCHEMATIC – delete references to VFD speed and fault on the exhaust fan. The exhaust fan is constant speed on/off. Provide status and start/stop integration only.

f. SHEET – 03-M6.00 – COTTAGE 5 & RECEIVING MECHANICAL SCHEDULES

- i. **REVISE** - Design Basis on “AIR COOLED CONDENSING UNITS” from XC20 to XC16S.
- ii. **REVISE** - Design Basis for GF5-1 and GF6-1 on “FURNACE – GAS SCHEDULE” from EL296UH070XV36B to EL296UH070XE36B.
- iii. **REVISE** - Design Basis for GF5-2 on “FURNACE – GAS SCHEDULE” from EL296UH090XV36B to EL296UH090XE36B.
- iv. **REVISE** - Cooling Coil Model for GF5-1 and GF6-1 on “FURNACE – GAS SCHEDULE” from CX35-30B to CX35-36B.
- v. **REVISE** - Cooling Coil Model for GF5-2 on “FURNACE – GAS SCHEDULE” from CX35-48C to CX35-49C.

g. SHEET – 03-E2.01 COTTAGES 5 & RECEIVING POWER GRUND FLOOR

- i. **REVISE** – Wire and conduit for ACCU5-1 from 2#10 & 1#10GND, 1”C. to 3#10 & 1#10GND , 1”C
- ii. **REVISE** – C/B for ACCU5-2 from 25 to 30.
- iii. **REVISE** – Wire and conduit for ACCU6-1 from 2#10 & 1#10GND, 1”C. to 3#10 & 1#10GND , 1”C

h. SHEET – 03-E2.03 COTTAGES 5 & RECEIVING POWER SECOND FLOOR AND ROOF

- i. **REVISE** – BREAKER for ACCU5-2 from 25A/3P to 30A/2P.

i. SHEET - 04-M5.00 - COTTAGES 7 & 8 MECHANICAL DETAILS

- i. **REVISE** RTU INTEGRATION SCHEMATIC – delete references to VFD speed and fault on the exhaust fan. The exhaust fan is constant speed on/off. Provide status and start/stop integration only.

j. SHEET – 04-M6.00 – COTTAGE 7 & 8 MECHANICAL SCHEDULES

- i. **REVISE** - Design Basis on “AIR COOLED CONDENSING UNITS” from XC20 to XC16S.
- ii. **REVISE** - Design Basis for GF7-1 and GF8-1 on “FURNACE – GAS SCHEDULE” from EL296UH070XV36B to EL296UH070XE36B.
- iii. **REVISE** - Design Basis for GF7-2 on “FURNACE – GAS SCHEDULE” from EL296UH090XV36B to EL296UH090XE36B.

- iv. **REVISE - Cooling Coil Model** for GF7-1 and GF8-1 on “FURNACE – GAS SCHEDULE” from CX35-30B to CX35-36B.
- v. **REVISE - Cooling Coil Model** for GF7-2 on “FURNACE – GAS SCHEDULE” from CX35-48C to CX35-49C.

k. SHEET – 04-E2.01 COTTAGES 7 & 8 POWER GRUND FLOOR

- i. **REVISE – C/B** for ACCU7-2 from 25 to 30.

l. SHEET – 04-E2.03 COTTAGES 7 & 8 POWER SECOND FLOOR AND ROOF

- i. **REVISE – BREAKER** for ACCU5-2 from 25A/3P to 30A/2P.

m. SHEET – 19-M6.00 VOCATIONAL MECHANICAL SCHEDULES

- i. **REVISE – Design Basis** on “FURNACE – GAS SCHEDULE” from EL296UH090XV48C to EL296UH090XE48C.
- ii. **REVISE - Design Basis** on “AIR COOLED CONDENSING UNITS” from XC20 to XC16S and SEER to “15.5”.
- iii. **REVISE - Cooling Coil Model** to “FURNACE – GAS SCHEDULE” from CX35-48C to CX35-49C.

n. SHEET – 019-E2.01 VOCATIONAL POWER GROUND FLOOR

- i. **REVISE – BREAKER** for ACCU-1 from 25A/3P to 25A/2P.

2. APPROVED SUBSTITUTIONS

SPECIFICATION SECTION	PRODUCT	APPROVED SUBSTITUTION
23 5216	Steel Water Tube Boilers	Lochinvar
23 7414	Semi-Custom Package Rooftop	LG
23 8200	Hydronic Finned Tube	Sigma
23 8200	Hydronic Unit Heater	Sigma
23 8200	Cabinet Unit Heater	Sigma
23 8200	Electronic Baseboard	Markel
23 8300	Electronic Cabinet Heater	Markel

ATTACHMENTS:

1. Specification Section 26 2923
2. 01-M6.00
3. 02-M5.00
4. 02-P6.00
5. 02-PD.01
6. 03-M5.01
7. 04-M5.01
8. 08-M6.00
9. 11-M1.01
10. 11-M1.02
11. 11-M5.02
12. 11-M6.00
13. 19-MD.01

END OF ADDENDUM

SECTION 23 6213

PACKAGED AIR-COOLED REFRIGERANT COMPRESSOR AND CONDENSER UNITS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Condensing unit package.
- B. Charge of refrigerant and oil.
- C. Controls and control connections.
- D. Refrigerant piping connections.
- E. Motor starters.
- F. Electrical power connections.

1.2 RELATED REQUIREMENTS

- A. Section 23 0513 - Common Motor Requirements for HVAC Equipment.
- B. Section 23 0548 - Vibration and Seismic Controls for HVAC: Placement of vibration isolators.
- C. Section 23 0993 - Sequence of Operations for HVAC Controls.
- D. Section 23 2300 - Refrigerant Piping.
- E. Section 23 5400 - Furnaces.

1.3 REFERENCE STANDARDS

- A. AHRI 210/240 - Standard for Performance Rating of Unitary Air-Conditioning and Air-Source Heat Pump Equipment; 2008, Including All Addenda.
- B. ASHRAE Std 15 - Safety Standard for Refrigeration Systems; 2013.
- C. ASHRAE Std 23.1 - Methods of Testing for Rating the Performance of Positive Displacement Refrigerant Compressors and Condensing Units that Operate at Subcritical Temperatures of the Refrigerant; 2010.
- D. ASHRAE Std 90.1 I-P - Energy Standard for Buildings Except Low-Rise Residential Buildings; 2013, Including All Amendments and Errata.
- E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2014.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide rated capacities, weights specialties and accessories, electrical nameplate data, and wiring diagrams. Include equipment served by condensing units in submittal, or submit at same time, to ensure capacities are complementary.
- C. Design Data: Indicate pipe and equipment sizing.
- D. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. See Section 01 6000 - Product Requirements, for additional provisions.

1.5 QUALITY ASSURANCE

A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's installation instructions for rigging, unloading, and transporting units.

1.7 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Provide a five year warranty to include coverage for refrigerant compressors.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Carrier, a part of UTC Building and Industrial Systems, a unit of United Technologies Corp: www.carrier.com/#sle.

B. Trane, a brand of Ingersoll Rand: www.trane.com/#sle.

C. York International Corporation/Johnson Controls, Inc: www.york.com/#sle.

D. Lennox.

E. Substitutions: See Section 01 6000 - Product Requirements.

2.2 MANUFACTURED UNITS

A. Units: Self-contained, packaged, factory assembled and pre-wired units suitable for outdoor use consisting of cabinet, compressors, condensing coil and fans, integral sub-cooling coil, controls, liquid receiver, wind deflector, and screens.

B. Construction and Ratings: In accordance with AHRI 210/240. Test in accordance with ASHRAE Std 23.1.

C. Performance Ratings: Energy Efficiency Rating (EER) and Coefficient of Performance (COP) not less than prescribed by ASHRAE Std 90.1 I-P.

2.3 CASING

A. House components in welded steel frame with galvanized steel panels with weather resistant, baked enamel finish.

B. Mount starters, disconnects, and controls in weatherproof panel provided with full opening access doors. Provide mechanical interlock to disconnect power when door is opened.

C. Provide removable access doors or panels with quick fasteners and piano hinges.

2.4 CONDENSER COILS

- A. Coils: Aluminum fins mechanically bonded to seamless copper tubing. Provide sub-cooling circuits. Air test under water to 425 psig, and vacuum dehydrate. Seal with holding charge of nitrogen.
- B. Coil Guard: Expanded metal with lint screens.

2.5 FANS AND MOTORS

- A. Vertical discharge direct driven propeller type condenser fans with fan guard on discharge.
- B. Weatherproof motors suitable for outdoor use, single phase permanent split capacitor or 3 phase, with permanent lubricated ball bearings and built in current and thermal overload protection.

2.6 COMPRESSORS

- A. Compressor: Hermetic scroll type.
- B. Mounting: Statically and dynamically balance rotating parts and mount on rubber-in-shear vibration isolators.
 - 1. Internally isolate hermetic units on springs.
- C. Lubrication System: Reversible, positive displacement oil pump with oil charging valve, oil level sight glass, and magnetic plug or strainer.
- D. Motor: Constant speed 1800 rpm suction gas cooled with electronic sensor and winding over temperature protection, designed for across-the-line starting. Furnish with starter.
- E. Capacity Reduction Equipment: Two-stage compressor.
- F. Sump Oil Heater: Evaporates refrigerant returning to sump during shut down. Energize heater thermostatically when compressor is not operating.

2.7 REFRIGERANT CIRCUIT

- A. Provide each unit with one refrigerant circuit, factory supplied and piped. Refer to Section 23 2300.
- B. For each refrigerant circuit, provide manufacturer's recommended accessories.

2.8 CONTROLS

- A. On unit, mount weatherproof steel control panel, NEMA 250, containing power and control wiring, molded case disconnect switch, factory wired with single point power connection.
- B. For each compressor, provide across-the-line starter, non-recycling compressor overload, starter relay, and control power transformer or terminal for controls power. Provide manual reset current overload protection. For each condenser fan, provide across-the-line starter with starter relay.
- C. Provide safety controls arranged so any one will shut down machine:

**PACKAGED AIR-COOLED
REFRIGERANT COMPRESSOR
AND CONDENSER UNITS**

1. High discharge pressure switch (manual reset) for each compressor.
 2. Low suction pressure switch (automatic reset) for each compressor.
 3. Oil Pressure switch (manual reset).
- D. Provide the following operating controls:
1. Refer to Section 23 0993 and drawings for sequence of operation.
- E. Gauges: Prepiped for suction and discharge refrigerant pressures and oil pressure for each compressor.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's installation instructions.
- B. Complete structural, mechanical, and electrical connections in accordance with manufacturer's installation instructions.
- C. Install units on vibration isolation. Refer to Section 23 0548.
- D. Provide connection to refrigeration piping system and evaporators. Refer to Section 23 2300. Comply with ASHRAE Std 15.

3.2 SYSTEM STARTUP

- A. Supply initial charge of refrigerant and oil for each refrigeration system. Replace losses of oil or refrigerant prior to end of correction period.
- B. Charge system with refrigerant and test entire system for leaks after completion of installation. Repair leaks, put system into operation, and test equipment performance.

END OF SECTION

EQUIVALENT PRODUCTS BY MANUFACTURERS WHICH ARE NOT LISTED IN SCHEDULES OR IN SPECIFICATIONS MAY BE USED WITH PRE-APPROVAL FROM ENGINEER. SEE SPECIFICATIONS FOR SUBSTITUTION REQUEST INSTRUCTIONS.

FAN SCHEDULE					
REMARKS:					
1. PROVIDE NEW MOTOR. EXISTING FAN ASSEMBLY TO REMAIN.					
2. COORDINATE CONNECTION TO VFD AND DISCONNECT WITH ELECTRICAL CONTRACTOR.					
3. REBALANCE TO 30,000 CFM FAN AT FULL SPEED.					
MARK	HP	VOLTS	PHASE	DESIGN BASIS	REMARKS
SF-5	25	208	3	TRANE	1,2

AIR SEPARATOR SCHEDULE							
MARK	SYSTEM SERVED	SIZE (IN)	CAPACITY (GPM)	STRAINER (Y/N)	MAX PD (FT)	DESIGN BASIS	REMARKS
AS-1	HWS	6"	700	Y	3	BELL AND GOSSETT R-6F	
AS-2	PPG HWS	4"	300	Y	2	BELL AND GOSSETT R-4F	

GLYCOL FEED SYSTEM SCHEDULE										
NOTES:										
1. PROVIDE WITH PRE-MIXED 50% PROPYLENE GLYCOL SOLUTION. NO FIELD MIXING SHALL BE ALLOWED. SEE SPEC.										
2. FURNISH AND INSTALL ALL PUMP CONTROLS AND WIRING.										
3. SYSTEM VOLUME APPROXIMATELY 150 GALLONS.										
MARK	SYSTEM SERVED	TANK CAPACITY (GAL)	GPM @ 100 PSI	CUT IN RANGE (PSI)	CUT OUT RANGE (PSI)	MOTOR DATA			DESIGN BASIS	REMARKS
GFS-1	HEATING WATER	50	1.5	10-40	20-60	1/3	115	1	JL WINGERT GL50	ELECTRICAL TO PROVIDE DUPLEX RECEPTACLE

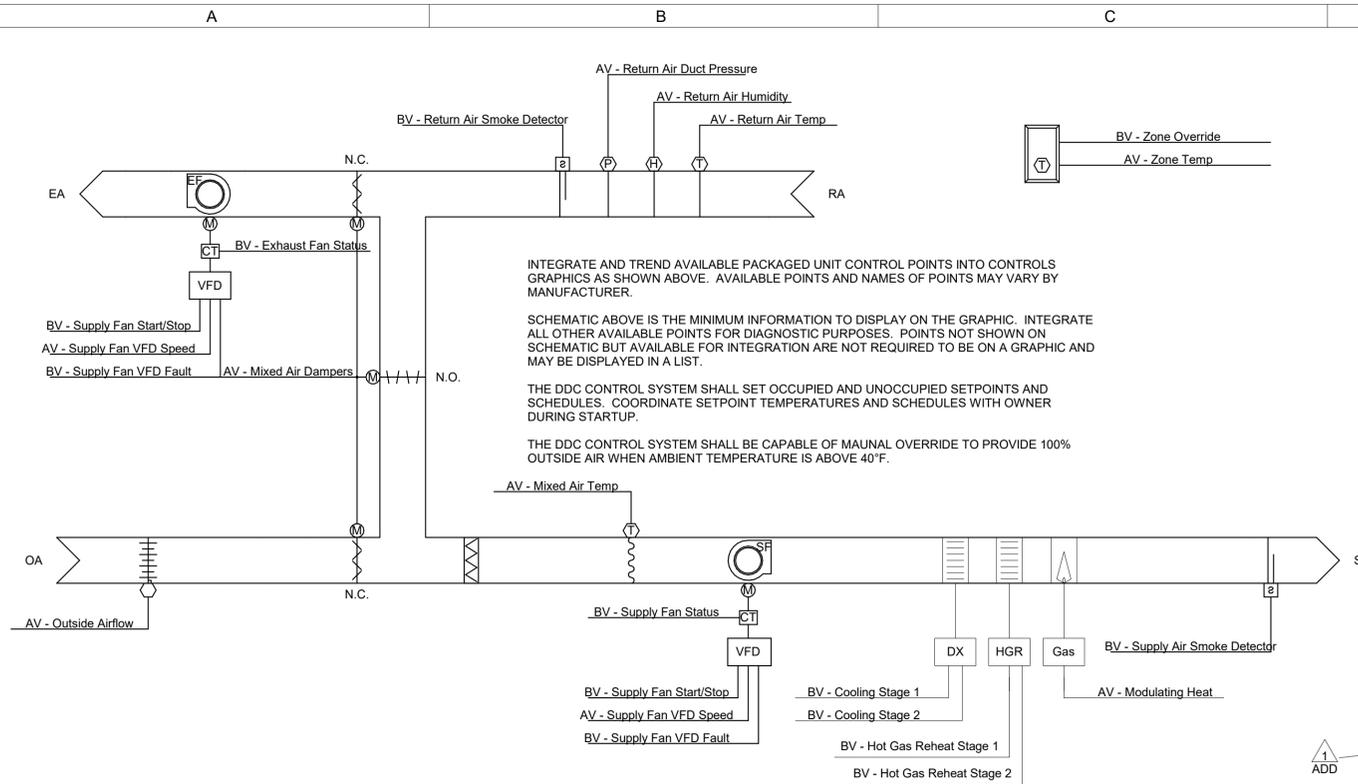
MECHANICAL PIPING EXPANSION TANK SCHEDULE								
MARK	SYSTEM SERVED	TYPE	TANK CAPACITY (GAL)	ACCEPTANCE CAPACITY (GAL)	RELIEF VALVE		DESIGN BASIS	REMARKS
					RELIEF AT (PSI)	FILL AT (PSI)		
ET-1	HEATING WATER	DIAPHRAGM	68.0	34.0	125.00	12.00	B&G D-120V	EXISTING
ET-2	HEATING WATER	DIAPHRAGM	21.7	11.3	125.00	12.00	B&G D-40V	

MECHANICAL PUMP SCHEDULE												
NOTES:												
1. VARIABLE FREQUENCY DRIVE AND DISCONNECT TO BE PROVIDED BY ELECTRICAL CONTRACTOR.												
2. PERFORMANCE BASED ON 50% PROPYLENE GLYCOL.												
3. PUMPS P-1, P-2, & P-3 SELECTED TO OPERATE WITH TWO PUMPS IN PARALLEL AND THE THIRD PUMP IN STAND-BY TO DELIVER A TOTAL OF 530 GPM AT 46 FEET OF HEAD PRESSURE.												
4. PUMPS P-4 & P-5 SELECTED TO OPERATE WITH TWO PUMPS IN PARALLEL TO DELIVER A TOTAL OF 215 GPM AT 62 FEET OF HEAD PRESSURE.												
MARK	SYSTEM SERVED	TYPE	GPM	HEAD (FT)	SHUTOFF HEAD (FT)	BHP	HP	VOLTS	PHASE	RPM	DESIGN BASIS	REMARKS
P-1	HWS	END SUCTION	265	46.00	79.40	4.84	7.5	208	3	1800	B&G e1510 2BD	1,3
P-2	HWS	END SUCTION	265	46.00	79.40	4.84	7.5	208	3	1800	B&G e1510 2BD	1,3
P-3	HWS	END SUCTION	265	46.00	79.40	4.84	7.5	208	3	1800	B&G e1510 2BD	1,3
P-4	MUA HWS	INLINE	110	62.00	68.10	2.2	3	208	3	3600	B&G e-90 2AAC	1,2,4
P-5	MUA HWS	INLINE	110	62.00	68.10	2.2	3	208	3	3600	B&G e-90 2AAC	1,2,4

AIR HANDLING UNIT REPLACEMENT HEATING COIL - HOT WATER															
NOTES:															
1. INSTALLED AS A COIL BANK IN EXISTING AHU'S.															
2. PERFORMANCE BASED ON 45% PROPYLENE GLYCOL.															
MARK	HEATING CFM	ROWS	FINS PER INCH	MBH	GPM	WPD (FT)	EWT (°F)	LWT (°F)	EAT (°F)	LAT (°F)	VELOCITY (FPM)	APD (IN)	SIZE (INXIN)	DESIGN BASIS	REMARKS
HC-5A	10000	4	7.33	1084	58.33	10.74	160	119	-10	90	480	0.23	24 X 126	TRANE	1,2
HC-5B	10000	4	7.33	1084	58.33	10.74	160	119	-10	90	480	0.23	24 X 126	TRANE	1,2
HC-5C	10000	4	7.33	1084	58.33	10.74	160	119	-10	90	480	0.23	24 X 126	TRANE	1,2
HC-6	2700	4	7.4	283.4	20.00	1.44	160	130	-10	90	460	0.24	23 X 36	TRANE UW	2
HC-7	2700	4	7.4	283.4	20.00	1.44	160	130	-10	90	460	0.24	23 X 36	TRANE UW	2

HEAT EXCHANGER - PLATE AND FRAME SCHEDULE												
REMARKS:												
1. PERFORMANCE BASED ON 50% PROPYLENE GLYCOL ON COLD SIDE.												
2. PROVIDE 135 GALLON BUFFER TANK ON THE HOT SIDE HX-2.												
MARK	SYSTEM SERVED	GPM	MAX PD (PSI)	EWT (°F)	LWT (°F)	GPM	MAX PD (PSI)	EWT (°F)	LWT (°F)	HEATING SURFACES (SQ. FT.)	DESIGN BASIS	REMARKS
HX-1	MAKEUP AIR HEATING	190	6.84	180	138	215	9.89	120	160	214.7	SPX APV	1
HX-2	DOMESTIC HOT WATER	27	6.00	180	108	22	4.00	40	140	33.9	AERCO SPDW23	2

BOILER SCHEDULE - HOT WATER																		
MARK	INPUT (MBH)	OUTPUT (MBH)	MIN GAS PRESSURE REQUIRED (IN)	EFFICIENCY	EWT (°F)	LWT (°F)	GPM	MAX PD (FT)	FUEL TYPE	INLET FUEL PRESSURE	TURNDOWN RATIO	ELECTRICAL DATA				DESIGN BASIS	REMARKS	
												VOLTS	PHASE	FLA	MCA	MOCP		
B-1	2500	2175	4	87	160	180	350	7.00	NATURAL GAS	4.00	1:15	208	3	10	13	20	AERCO BMK 2500	
B-2	2500	2175	4	87	160	180	350	7.00	NATURAL GAS	4.00	1:15	208	3	10	13	20	AERCO BMK 2500	
B-3	2500	2175	4	87	160	180	350	7.00	NATURAL GAS	4.00	1:15	208	3	10	13	20	AERCO BMK 2500	
B-4	2500	2175	4	87	160	180	350	7.00	NATURAL GAS	4.00	1:15	208	3	10	13	20	AERCO BMK 2500	



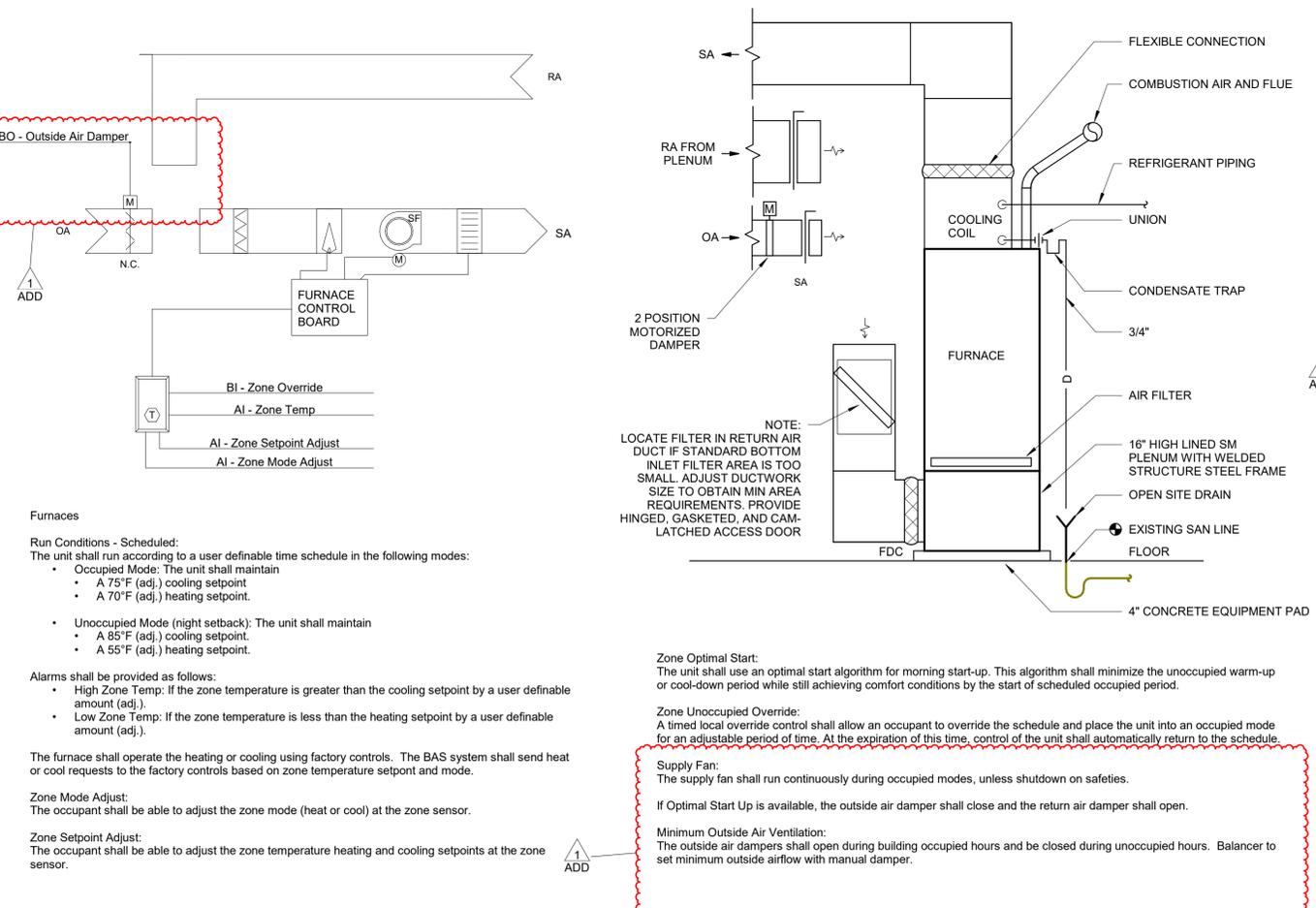
A4 RTU INTEGRATION SCHEMATIC (TYPICAL)
NOT TO SCALE

INTEGRATE AND TREND AVAILABLE PACKAGED UNIT CONTROL POINTS INTO CONTROLS GRAPHICS AS SHOWN ABOVE. AVAILABLE POINTS AND NAMES OF POINTS MAY VARY BY MANUFACTURER.

SCHEMATIC ABOVE IS THE MINIMUM INFORMATION TO DISPLAY ON THE GRAPHIC. INTEGRATE ALL OTHER AVAILABLE POINTS FOR DIAGNOSTIC PURPOSES. POINTS NOT SHOWN ON SCHEMATIC BUT AVAILABLE FOR INTEGRATION ARE NOT REQUIRED TO BE ON A GRAPHIC AND MAY BE DISPLAYED IN A LIST.

THE DDC CONTROL SYSTEM SHALL SET OCCUPIED AND UNOCCUPIED SETPOINTS AND SCHEDULES. COORDINATE SETPOINT TEMPERATURES AND SCHEDULES WITH OWNER DURING STARTUP.

THE DDC CONTROL SYSTEM SHALL BE CAPABLE OF MAUNAL OVERRIDE TO PROVIDE 100% OUTSIDE AIR WHEN AMBIENT TEMPERATURE IS ABOVE 40°F.



B1 TYPICAL FURNACE INSTALLATION SCHEMATIC AND CONTROLS
NOT TO SCALE

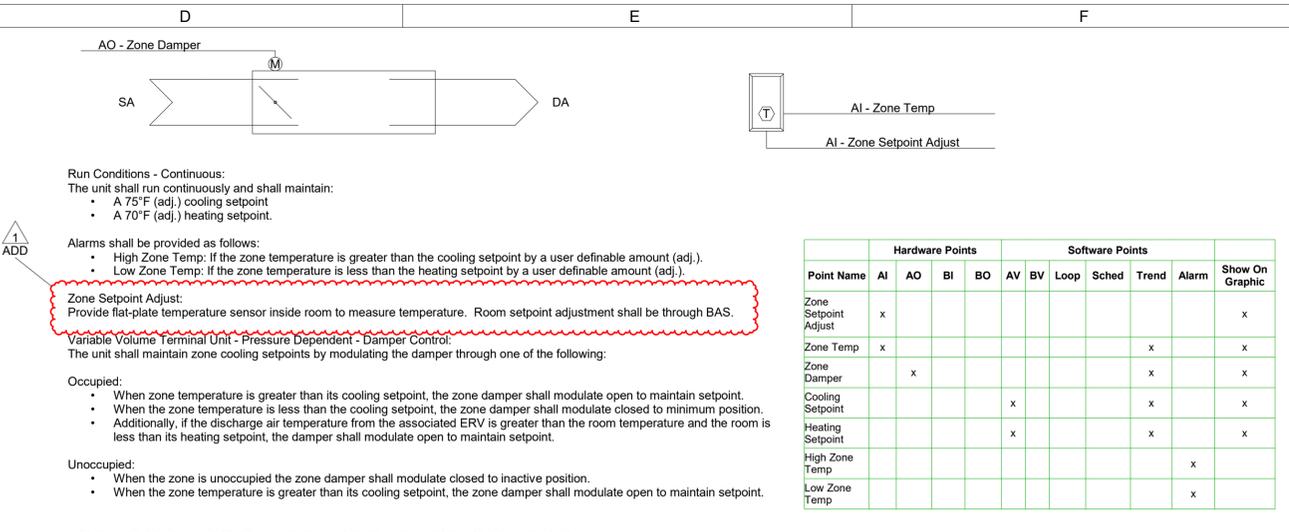
Zone Optimal Start:
The unit shall use an optimal start algorithm for morning start-up. This algorithm shall minimize the unoccupied warm-up or cool-down period while still achieving comfort conditions by the start of scheduled occupied period.

Zone Unoccupied Override:
A timed local override control shall allow an occupant to override the schedule and place the unit into an occupied mode for an adjustable period of time. At the expiration of this time, control of the unit shall automatically return to the schedule.

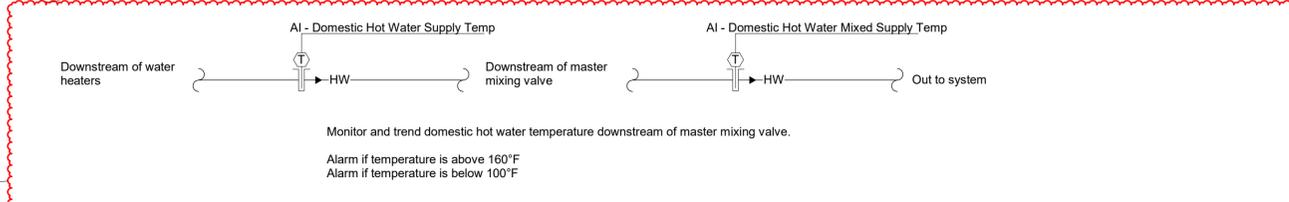
Supply Fan:
The supply fan shall run continuously during occupied modes, unless shutdown on safeties.

If Optimal Start Up is available, the outside air damper shall close and the return air damper shall open.

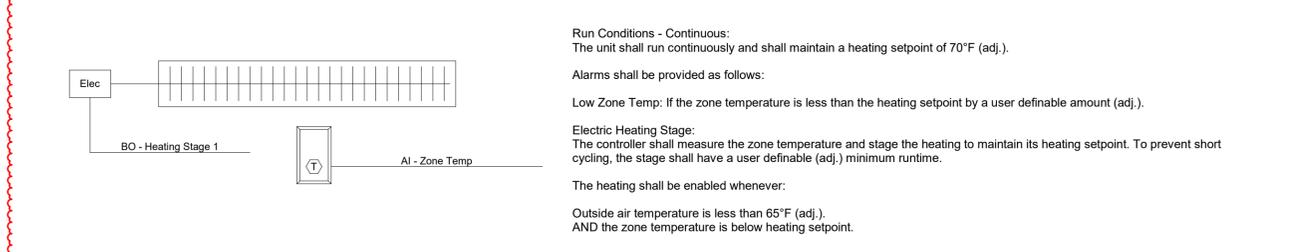
Minimum Outside Air Ventilation:
The outside air dampers shall open during building occupied hours and be closed during unoccupied hours. Balancer to set minimum outside airflow with manual damper.



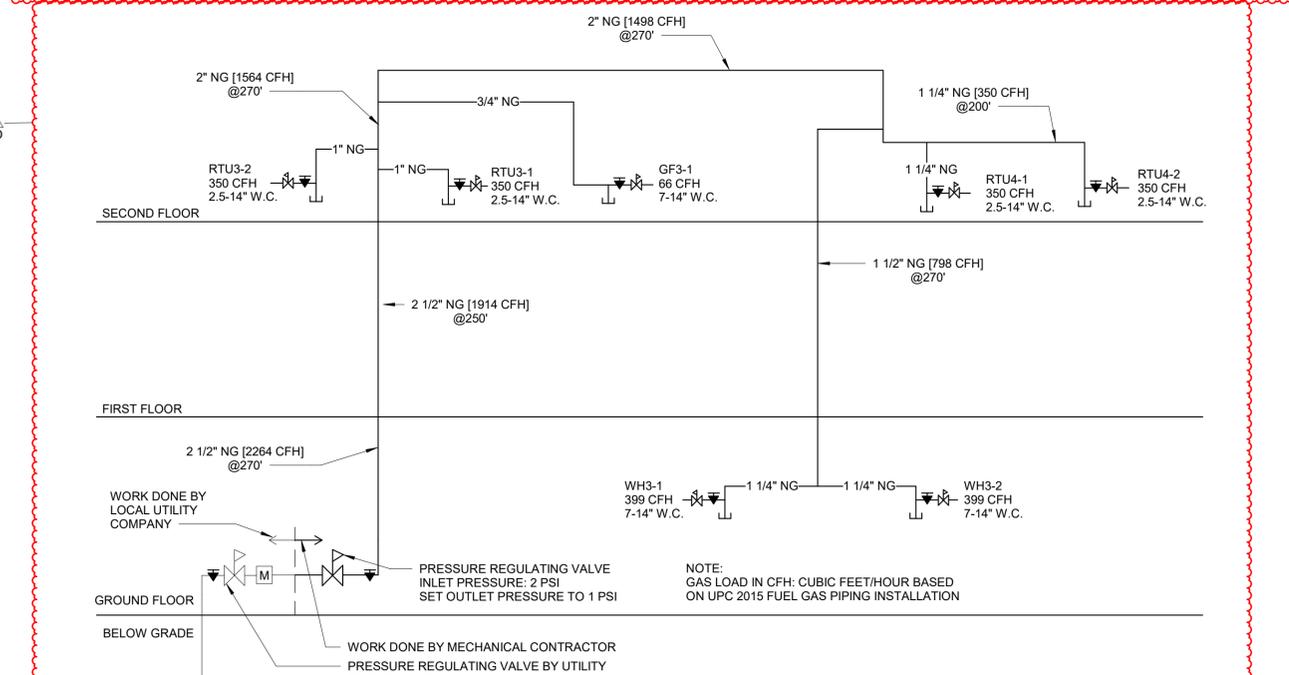
C5 SENSORY ROOM TEMPERATURE CONTROL
NOT TO SCALE



C4a DOMESTIC HOT WATER TEMPERATURE MONITORING
NOT TO SCALE



C3 ELECTRIC UNIT HEATER CONTROL
NOT TO SCALE



C1 GAS PIPING SCHEMATIC
NOT TO SCALE

Point Name	Hardware Points				Software Points				Show On Graphic		
	AI	AO	BI	BO	AV	BV	Loop	Sched		Trend	Alarm
Zone Setpoint Adjust	x										x
Zone Temp	x								x		x
Zone Damper		x							x		x
Cooling Setpoint					x				x		x
Heating Setpoint					x				x		x
High Zone Temp										x	
Low Zone Temp											x

Run Conditions - Continuous:
The unit shall run continuously and shall maintain a heating setpoint of 70°F (adj.).

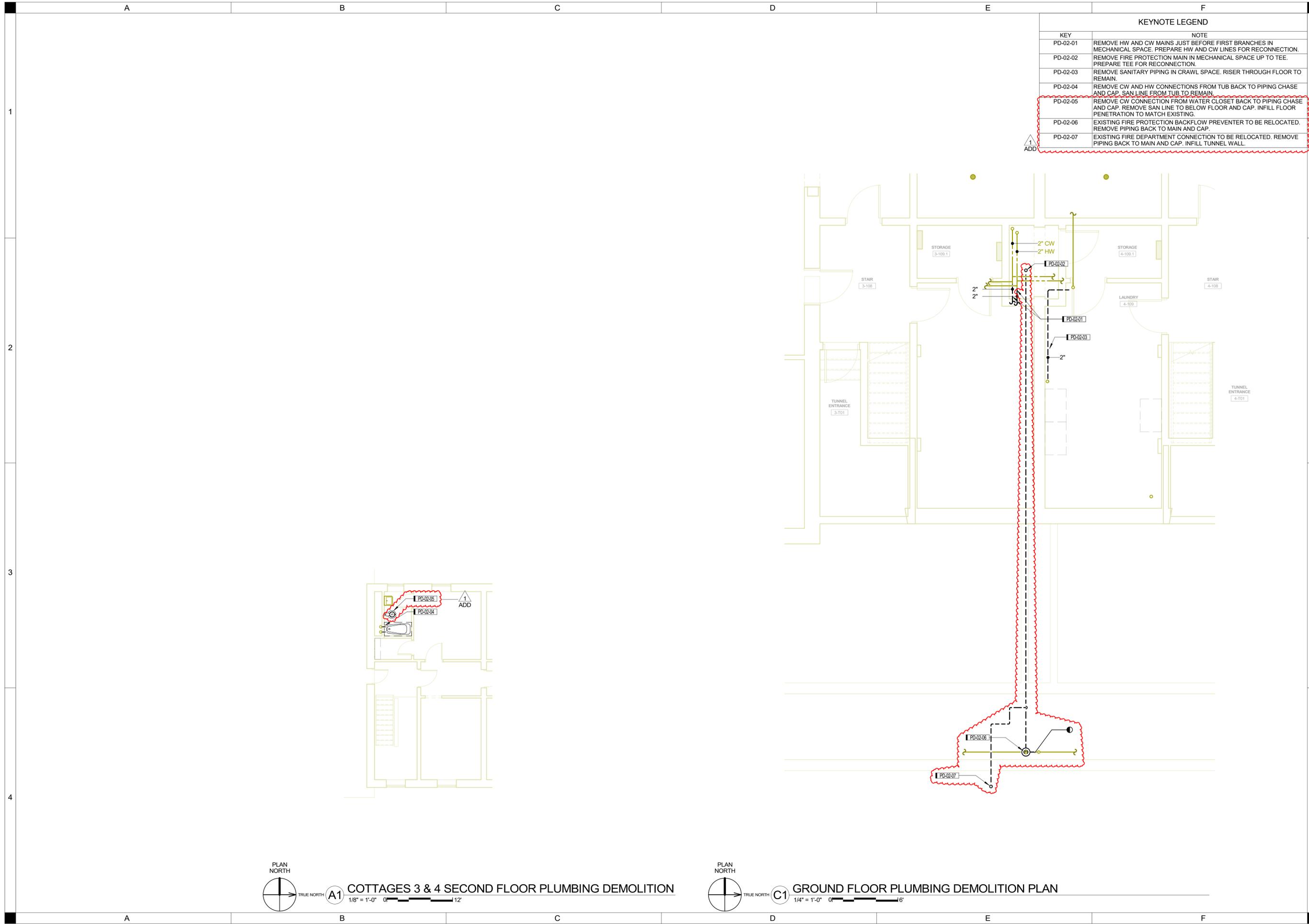
Alarms shall be provided as follows:
Low Zone Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).

Electric Heating Stage:
The controller shall measure the zone temperature and stage the heating to maintain its heating setpoint. To prevent short cycling, the stage shall have a user definable (adj.) minimum runtime.

The heating shall be enabled whenever:
Outside air temperature is less than 65°F (adj.).
AND the zone temperature is below heating setpoint.

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KEYNOTE LEGEND	
KEY	NOTE
PD-02-01	REMOVE HW AND CW MAINS JUST BEFORE FIRST BRANCHES IN MECHANICAL SPACE. PREPARE HW AND CW LINES FOR RECONNECTION.
PD-02-02	REMOVE FIRE PROTECTION MAIN IN MECHANICAL SPACE UP TO TEE. PREPARE TEE FOR RECONNECTION.
PD-02-03	REMOVE SANITARY PIPING IN CRAWL SPACE. RISER THROUGH FLOOR TO REMAIN.
PD-02-04	REMOVE CW AND HW CONNECTIONS FROM TUB BACK TO PIPING CHASE AND CAP. SAN LINE FROM TUB TO REMAIN.
PD-02-05	REMOVE CW CONNECTION FROM WATER CLOSET BACK TO PIPING CHASE AND CAP. REMOVE SAN LINE TO BELOW FLOOR AND CAP. INFILL FLOOR PENETRATION TO MATCH EXISTING.
PD-02-06	EXISTING FIRE PROTECTION BACKFLOW PREVENTER TO BE RELOCATED. REMOVE PIPING BACK TO MAIN AND CAP.
PD-02-07	EXISTING FIRE DEPARTMENT CONNECTION TO BE RELOCATED. REMOVE PIPING BACK TO MAIN AND CAP. INFILL TUNNEL WALL.



A1 COTTAGES 3 & 4 SECOND FLOOR PLUMBING DEMOLITION
1/8" = 1'-0" 0 12



C1 GROUND FLOOR PLUMBING DEMOLITION PLAN
1/4" = 1'-0" 0 16

SHIVEHATTERY
ARCHITECTURE + ENGINEERING
4125 Westown Pkwy, Suite 100 | West Des Moines, IA 50266
515.223.8104 | www.shivehattery.com
Iowa | Illinois | Indiana

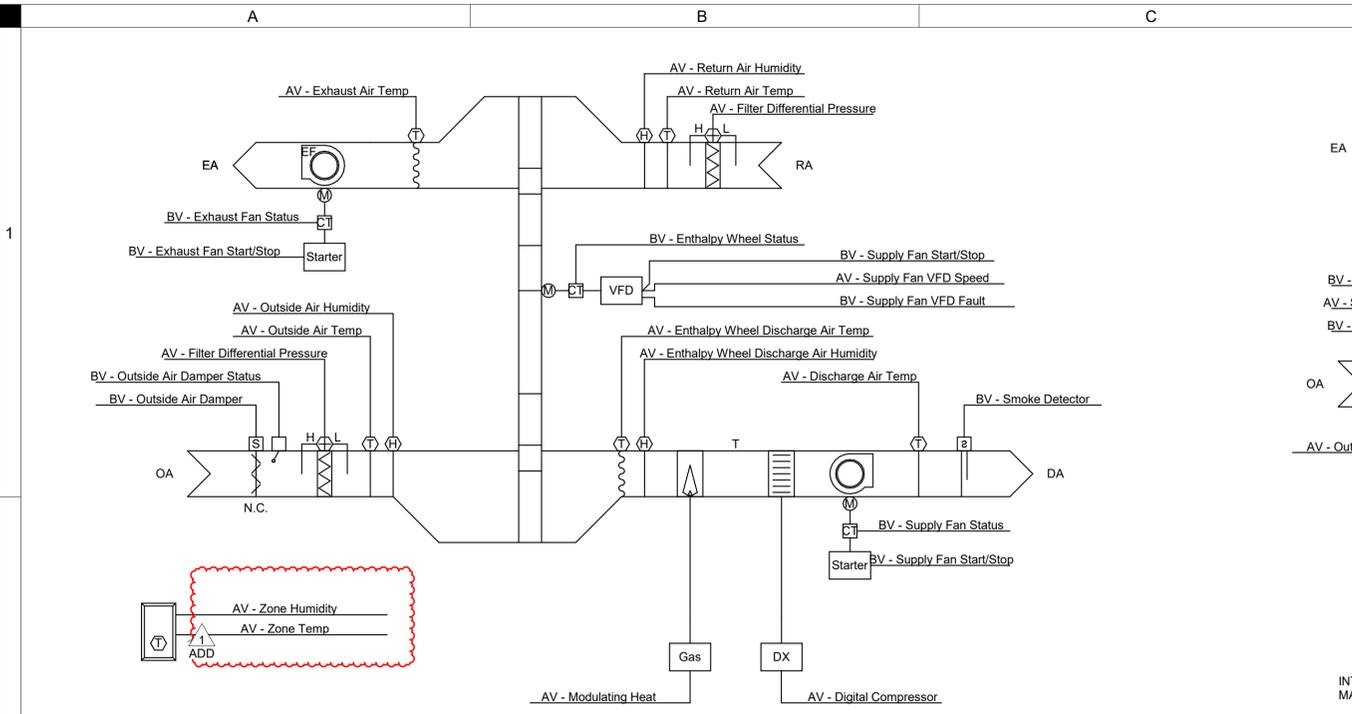
**ELDORA STS DECENTRALIZATION
BUILDING PACKAGE
COTTAGES 3 & 4**
IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES
3211 EDGINGTON AVE. ELDORA, IA 50627

ADD_1 02-06-2020 ADDENDUM.01

DRAWN: MDP
APPROVED: TJS
ISSUED FOR: CONSTRUCTION DOCUMENTS
DATE: 01/06/2020
PROJECT NO: 4175681
CLIENT NO: #6982.01

**COTTAGES 3 & 4
PLUMBING
DEMOLITION
PLAN**

02-PD.01

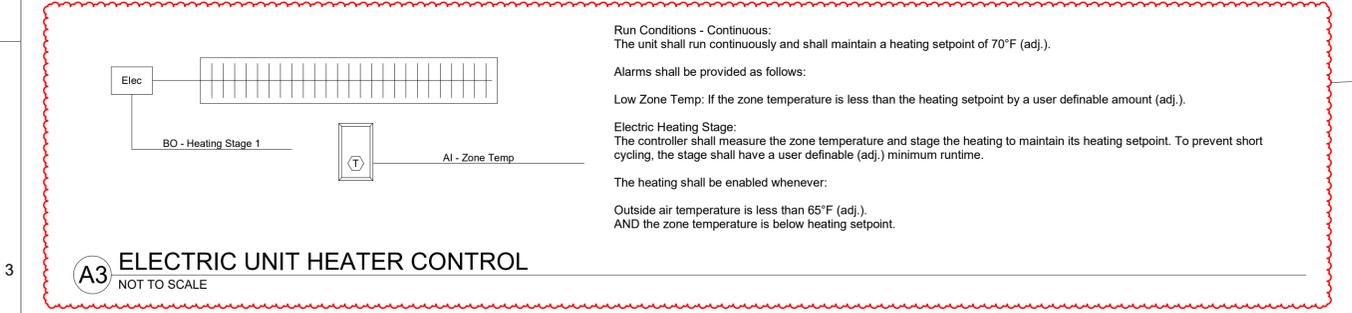


A4 ERV INTEGRATION SCHEMATIC
NOT TO SCALE

INTEGRATE AND TREND AVAILABLE PACKAGED UNIT CONTROL POINTS INTO CONTROLS GRAPHICS AS SHOWN ABOVE. AVAILABLE POINTS AND NAMES OF POINTS MAY VARY BY MANUFACTURER.

SCHEMATIC ABOVE IS THE MINIMUM INFORMATION TO DISPLAY ON THE GRAPHIC. INTEGRATE ALL OTHER AVAILABLE POINTS FOR DIAGNOSTIC PURPOSES. POINTS NOT SHOWN ON SCHEMATIC BUT AVAILABLE FOR INTEGRATION ARE NOT REQUIRED TO BE ON A GRAPHIC AND MAY BE DISPLAYED IN A LIST.

THE DDC CONTROL SYSTEM SHALL SET OCCUPIED AND UNOCCUPIED SETPOINTS AND SCHEDULES. COORDINATE SETPOINT TEMPERATURES AND SCHEDULES WITH OWNER DURING STARTUP.



A3 ELECTRIC UNIT HEATER CONTROL
NOT TO SCALE

Furnaces

Run Conditions - Scheduled:
The unit shall run according to a user definable time schedule in the following modes:

- Occupied Mode: The unit shall maintain
 - A 75°F (adj.) cooling setpoint
 - A 70°F (adj.) heating setpoint.
- Unoccupied Mode (night setback): The unit shall maintain
 - A 85°F (adj.) cooling setpoint.
 - A 55°F (adj.) heating setpoint.

Alarms shall be provided as follows:

- High Zone Temp: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).
- Low Zone Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).

The furnace shall operate the heating or cooling using factory controls. The BAS system shall send heat or cool requests to the factory controls based on zone temperature setpoint and mode.

Zone Mode Adjust:
The occupant shall be able to adjust the zone mode (heat or cool) at the zone sensor.

Zone Setpoint Adjust:
The occupant shall be able to adjust the zone temperature heating and cooling setpoints at the zone sensor.

Zone Optimal Start:
The unit shall use an optimal start algorithm for morning start-up. This algorithm shall minimize the unoccupied warm-up or cool-down period while still achieving comfort conditions by the start of scheduled occupied period.

Zone Unoccupied Override:
A timed local override control shall allow an occupant to override the schedule and place the unit into an occupied mode for an adjustable period of time. At the expiration of this time, control of the unit shall automatically return to the schedule.

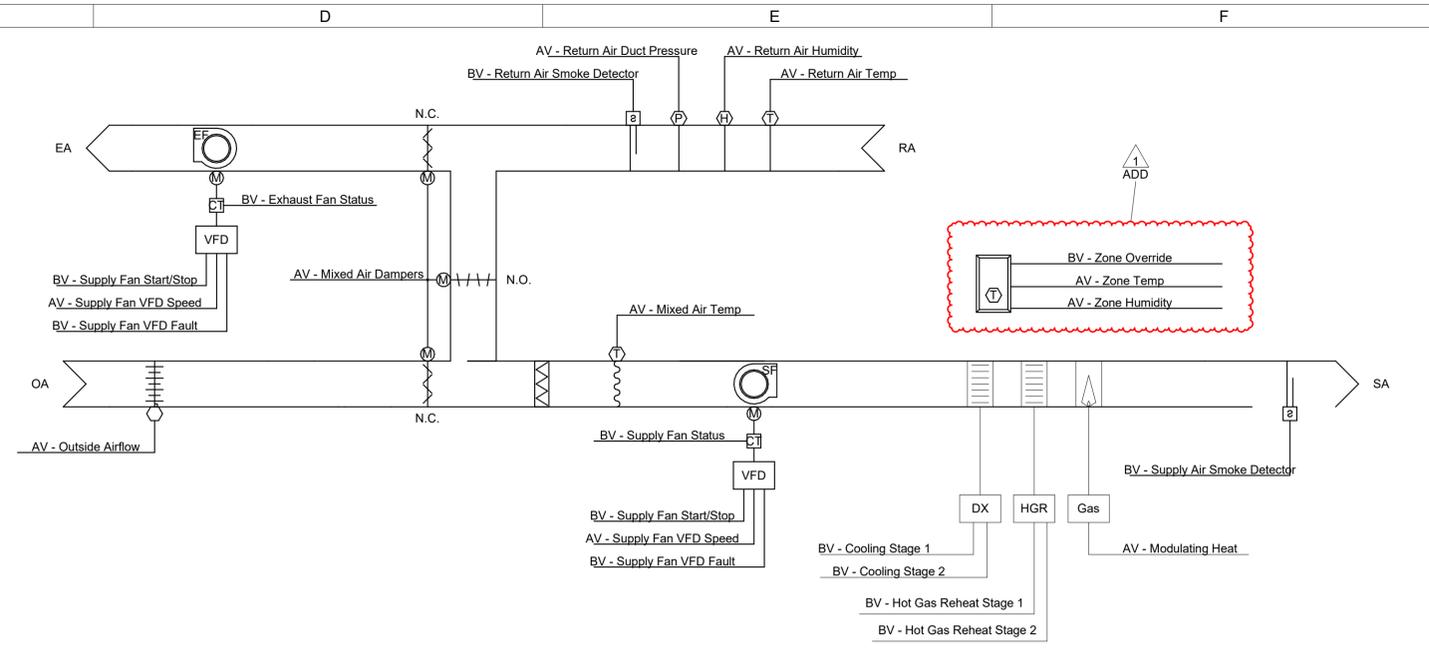
Supply Fan:
The supply fan shall run continuously during occupied modes, unless shutdown on safeties.

If Optimal Start Up is available, the outside air damper shall close and the return air damper shall open.

Minimum Outside Air Ventilation:
The outside air dampers shall open during building occupied hours and be closed during unoccupied hours. Balancer to set minimum outside airflow with manual damper.

A1a TYPICAL FURNACE CONTROL SCHEMATIC & SEQUENCE
NOT TO SCALE

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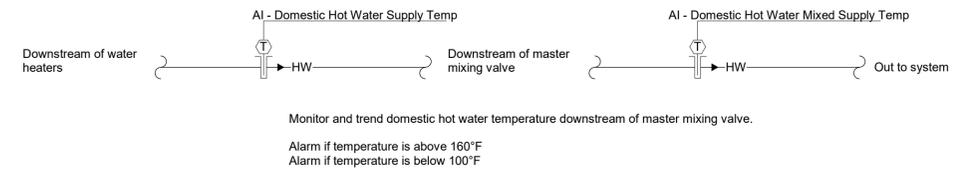
C4 RTU INTEGRATION SCHEMATIC
NOT TO SCALE

INTEGRATE AND TREND AVAILABLE PACKAGED UNIT CONTROL POINTS INTO CONTROLS GRAPHICS AS SHOWN ABOVE. AVAILABLE POINTS AND NAMES OF POINTS MAY VARY BY MANUFACTURER.

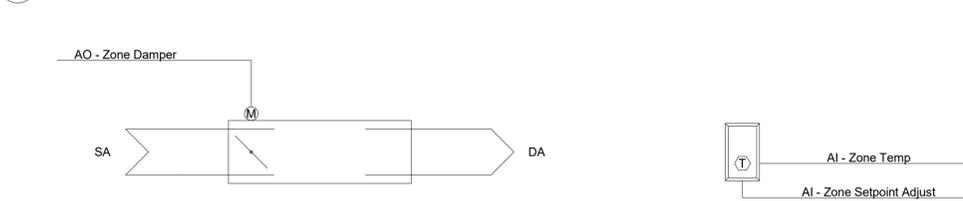
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THE DDC CONTROL SYSTEM SHALL SET OCCUPIED AND UNOCCUPIED SETPOINTS AND SCHEDULES. COORDINATE SETPOINT TEMPERATURES AND SCHEDULES WITH OWNER DURING STARTUP.

THE DDC CONTROL SYSTEM SHALL BE CAPABLE OF MAUNAL OVERRIDE TO PROVIDE 100% OUTSIDE AIR WHEN AMBIENT TEMPERATURE IS ABOVE 40°F.



C2 DOMESTIC HOT WATER TEMPERATURE MONITORING
NOT TO SCALE



C1 SENSORY ROOM TEMPERATURE CONTROL
NOT TO SCALE

Run Conditions - Continuous:
The unit shall run continuously and shall maintain:

- A 75°F (adj.) cooling setpoint
- A 70°F (adj.) heating setpoint.

Alarms shall be provided as follows:

- High Zone Temp: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).
- Low Zone Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).

Zone Setpoint Adjust:
Provide flat-plate temperature sensor inside room to measure temperature. Room setpoint adjustment shall be through BAS.

Variable Volume Terminal Unit - Pressure Dependent - Damper Control:
The unit shall maintain zone cooling setpoints by modulating the damper through one of the following:

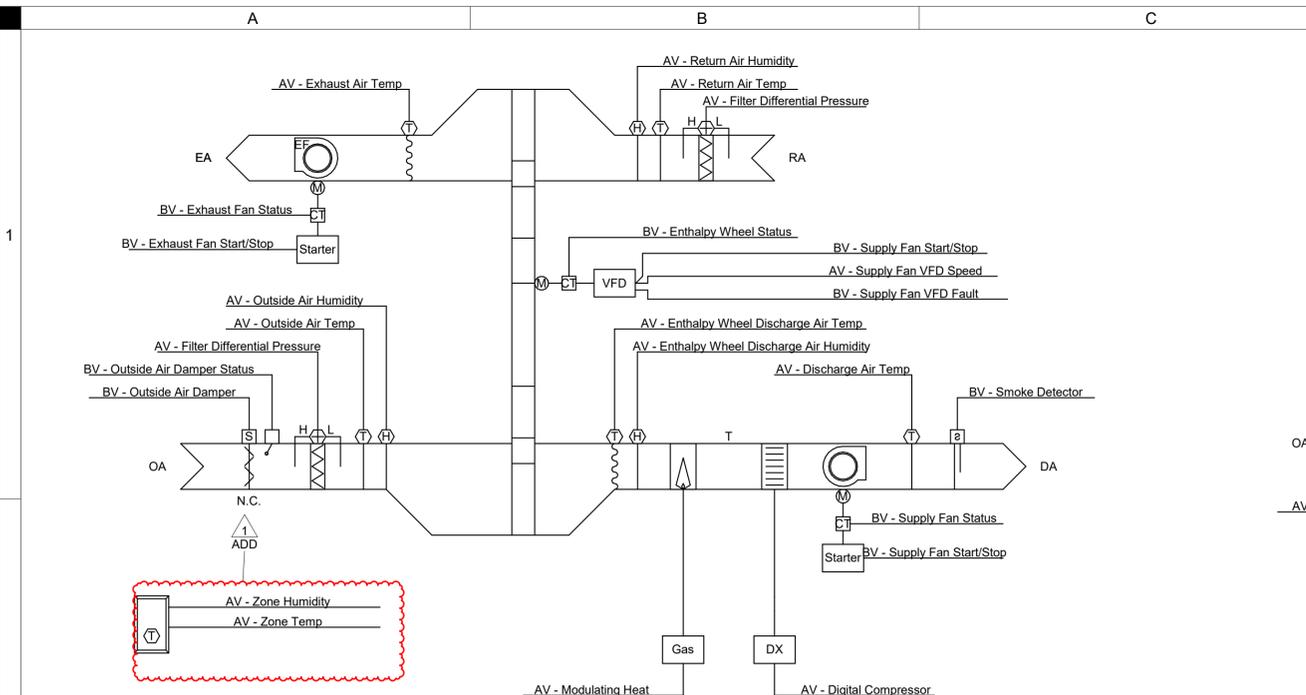
Occupied:

- When the zone temperature is greater than its cooling setpoint, the zone damper shall modulate open to maintain setpoint.
- When the zone temperature is less than the cooling setpoint, the zone damper shall modulate closed to minimum position.
- Additionally, if the discharge air temperature from the associated ERV is greater than the room temperature and the room is less than its heating setpoint, the damper shall modulate open to maintain setpoint.

Unoccupied:

- When the zone is unoccupied the zone damper shall modulate closed to inactive position.
- When the zone temperature is greater than its cooling setpoint, the zone damper shall modulate open to maintain setpoint.

Point Name	Hardware Points						Software Points			
	AI	AO	BI	BO	AV	Loop	Sched	Trend	Alarm	Show On Graphic
Zone Setpoint Adjust	x									x
Zone Temp	x							x		x
Zone Damper		x						x		x
Cooling Setpoint					x			x		x
Heating Setpoint				x				x		x
High Zone Temp									x	
Low Zone Temp									x	

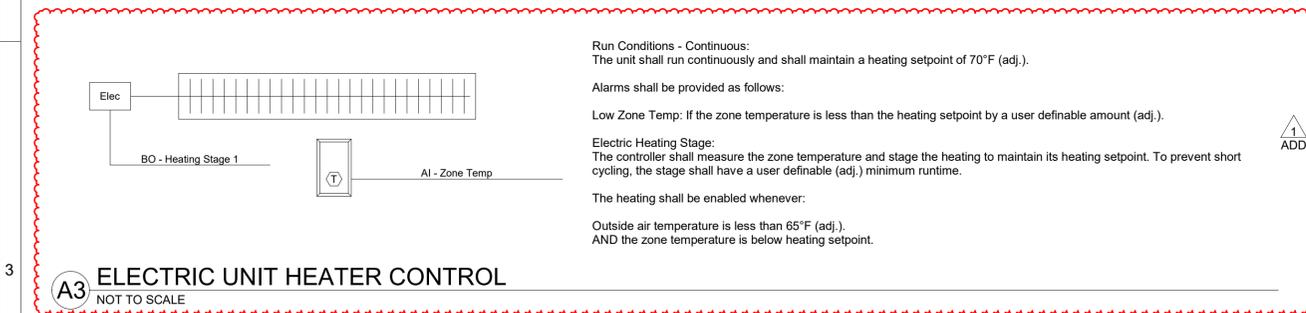


INTEGRATE AND TREND AVAILABLE PACKAGED UNIT CONTROL POINTS INTO CONTROLS GRAPHICS AS SHOWN ABOVE. AVAILABLE POINTS AND NAMES OF POINTS MAY VARY BY MANUFACTURER.

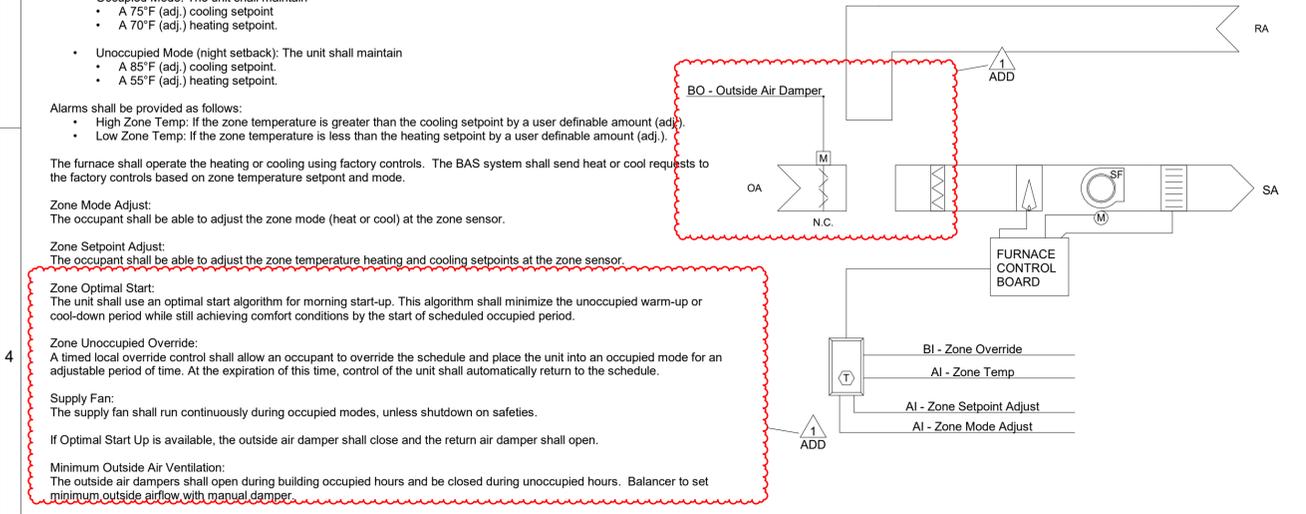
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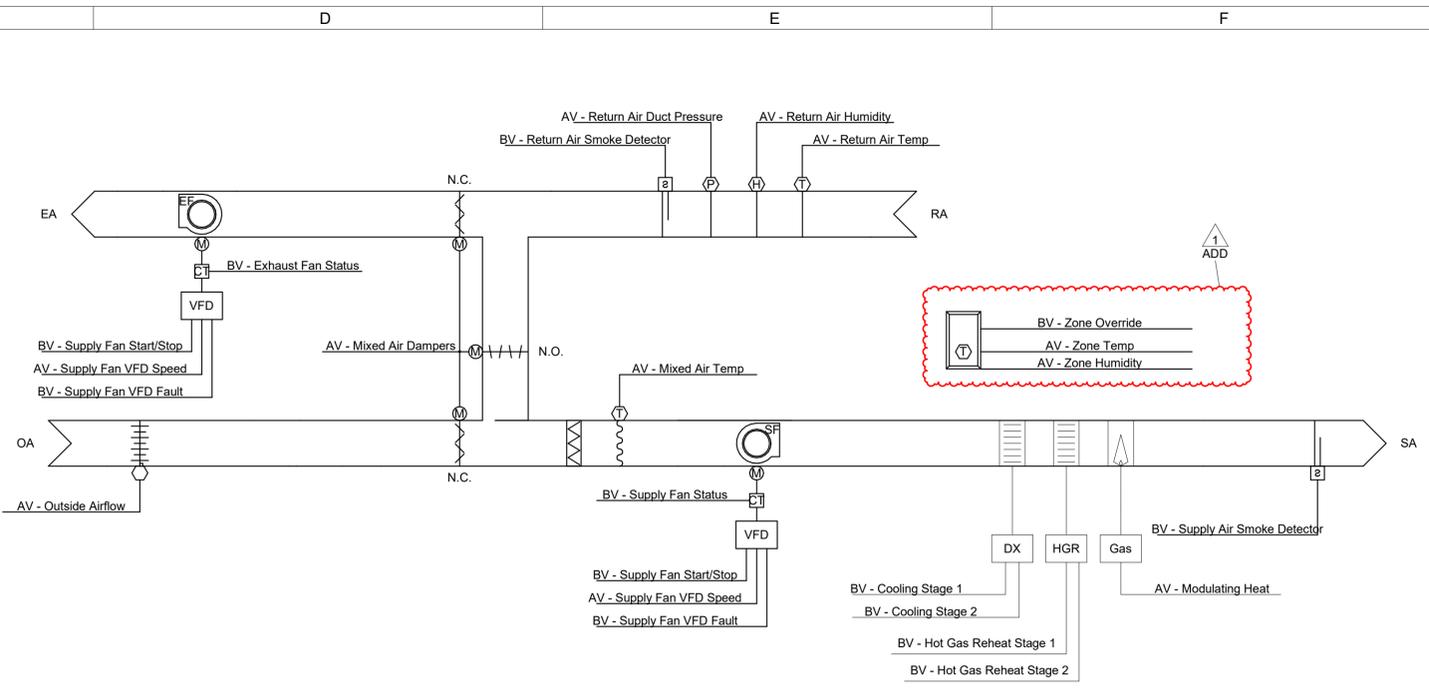
A4 ERV INTEGRATION SCHEMATIC
 NOT TO SCALE



A3 ELECTRIC UNIT HEATER CONTROL
 NOT TO SCALE



A1a TYPICAL FURNACE CONTROL SCHEMATIC & SEQUENCE
 NOT TO SCALE



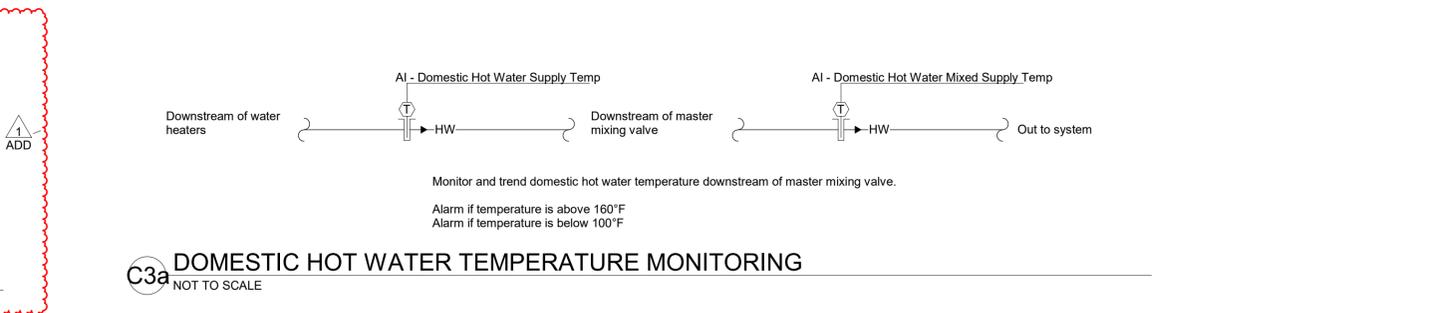
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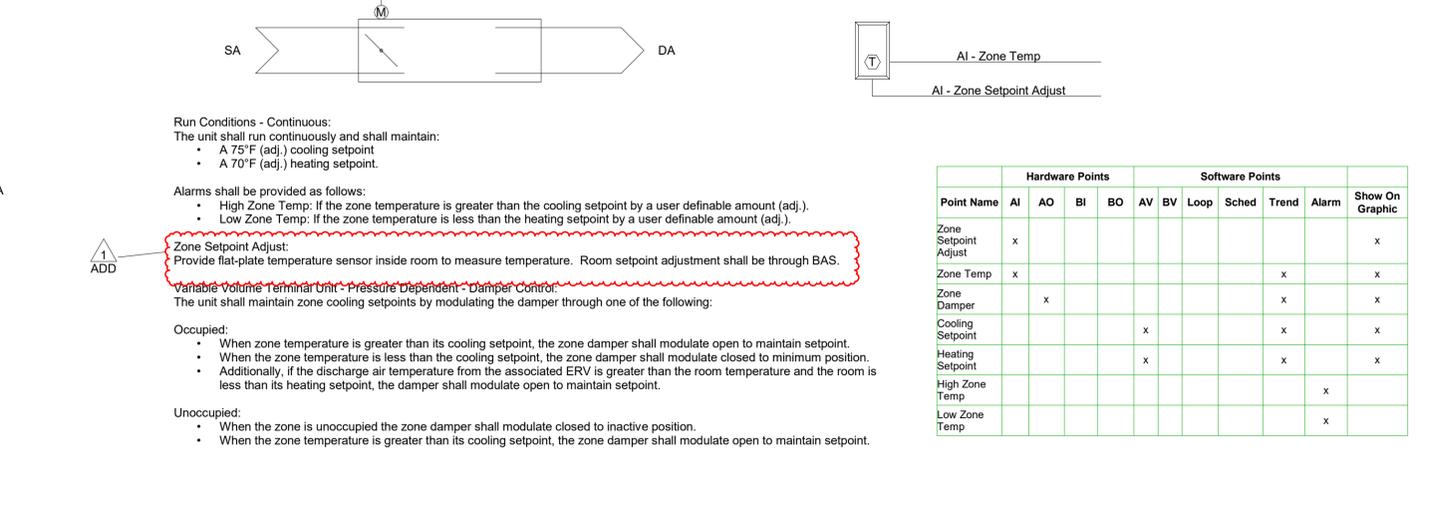
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C4 RTU INTEGRATION SCHEMATICS
 NOT TO SCALE



C3a DOMESTIC HOT WATER TEMPERATURE MONITORING
 NOT TO SCALE



C1 SENSORY ROOM TEMPERATURE CONTROL
 NOT TO SCALE

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NOTE: EQUIVALENT PRODUCTS BY MANUFACTURERS WHICH ARE NOT LISTED IN SCHEDULES OR IN SPECIFICATIONS MAY BE USED WITH PRE-APPROVAL FROM ENGINEER. SEE SPECIFICATIONS FOR SUBSTITUTION REQUEST INSTRUCTIONS.

VACUUM CONDENSATE PUMP											
MARK	SYSTEM SERVED	TYPE	RATING AT 5-1/2" HG VACUUM AT 160°F SIMULTANEOUS			MOTOR DATA				DESIGN BASIS	REMARKS
			GPM	AIR CFM	HEAD (FT)	HP	VOLTS	PHASE	RPM		
VCP-1	CONDENSATE RETURN	VACUUM	7	3	46.00	1	120	1	3500	SHIPCO 5 LRV2-20-171	

FEEDWATER PUMP SCHEDULE										
NOTES: 1. FEEDWATER PUMP ASSEMBLY SHALL HAVE SINGLE POINT POWER CONNECTION WITH CONTROL PANEL. 2. UNIT SHALL BE SIZED WITH ONE STANDBY PUMP. 3. INTERLOCK PUMP OPERATION WITH BOILER LOW WATER FEED CONTROL.										
MARK	TANK VOLUME	GPM (PER PUMP)	HEAD (PSI)	NUMBER OF PUMPS	PUMP HP (EACH)	ELECTRICAL DATA		MOCP	DESIGN BASIS	REMARKS
						VOLTS	PHASE			
FWP-1	71	3	20.00	4	1/3	208	1	20	SHIPCO QUADRUPLEX CS-B	

LOUVER SCHEDULE										
MARK	AIR FLOW (CFM)	DIMENSIONS			MAX FREE AREA (%)	FREE AREA VELOCITY (FPM)	PRESSURE DROP (WG)	DESIGN BASIS	REMARKS	
		HEIGHT (IN.)	WIDTH (IN.)	DEPTH (IN.)						
L-1	1050	48	48	4"	44	150	0.01	GREENHECK FDS-402		

BOILER SCHEDULE - STEAM												
NOTES: 1. MANUFACTURER SHALL PROVIDE PRESSURE SAFETY VALVE FOR BOILER. CONTRACTOR SHALL ROUTE AND TERMINATE RELIEF PIPING PER MANUFACTURER'S REQUIREMENTS. 2. PROVIDE COMMUNICATIONS BRIDGE TO BACNET. PROVIDE DISPLAY ON DDC SYSTEM WHICH SHOWS BOILER ENABLE/DISABLE, STEAM SUPPLY PRESSURE SET POINT AND SUMMARY ALARM FOR EACH BOILER. 3. INTERLOCK BOILER OPERATION WITH MOTORIZED DAMPER AT COMBUSTION AIR INTAKE LOUVER.												
MARK	FUEL	GAS PRESSURE MIN. (IN. WC.)	GAS PRESSURE MAX. (IN. WC.)	INPUT (MBH)	GROSS OUTPUT (MBH)	EFFICIENCY	OPERATING PRESSURE	ELECTRICAL DATA		TURNDOWN RATIO	BOILER DESIGN BASIS	REMARKS
								VOLTS	PHASE			
B-1	NATURAL GAS	4	14	350	280	80	14.5	120	1	10:1	BRYAN DR350S	
B-2	NATURAL GAS	4	14	350	280	80	14.5	120	1	10:1	BRYAN DR350S	
B-3	NATURAL GAS	4	14	350	280	80	14.5	120	1	10:1	BRYAN DR350S	

UNIT HEATER SCHEDULE - STEAM													
NOTES: 1. DISCONNECT TO BE PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.													
MARK	CFM	EAT (°F)	LAT (°F)	MBH	STEAM PRESSURE (PSI)	STEAM LBS/HR	MOUNTING HEIGHT (FT)	ORIENTATION	ELECTRICAL DATA			DESIGN BASIS	REMARKS
									FLA	VOLTS	PHASE		
SUH-1	860	-5	95	89	15.00	67	6' - 0"	HORIZONTAL	1.2	115	1	REZNOR WS 44/62	

MOTOR OPERATED DAMPER SCHEDULE											
NOTES: 1. PROVIDE WITH DAMPER END SWITCH. MOTORIZED DAMPER SHALL BE INTERLOCKED WITH BOILER OPERATION. BOILERS SHALL NOT OPERATE UNTIL DAMPER END SWITCH IS PROVIDED. 2. CONTROLS CONTRACTOR TO PROVIDE AND INSTALL 120V TO 24V TRANSFORMER. COORDINATE 120V POWER WITH ELECTRICAL CONTRACTOR.											
MARK	EQUIPMENT SERVED	CFM	APD (IN)	DIMENSIONS		INSULATED BLADE	BLADE ORIENTATION	ACTUATOR		POWER FAILURE POSITION	REMARKS
				H	W			BY	VOLTS		
MD-1	BOILER COMBUSTION AIR	1050	0.01	48	48	YES	HORIZONTAL	CONTROLS CONTRACTOR	24	OPEN	1

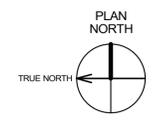
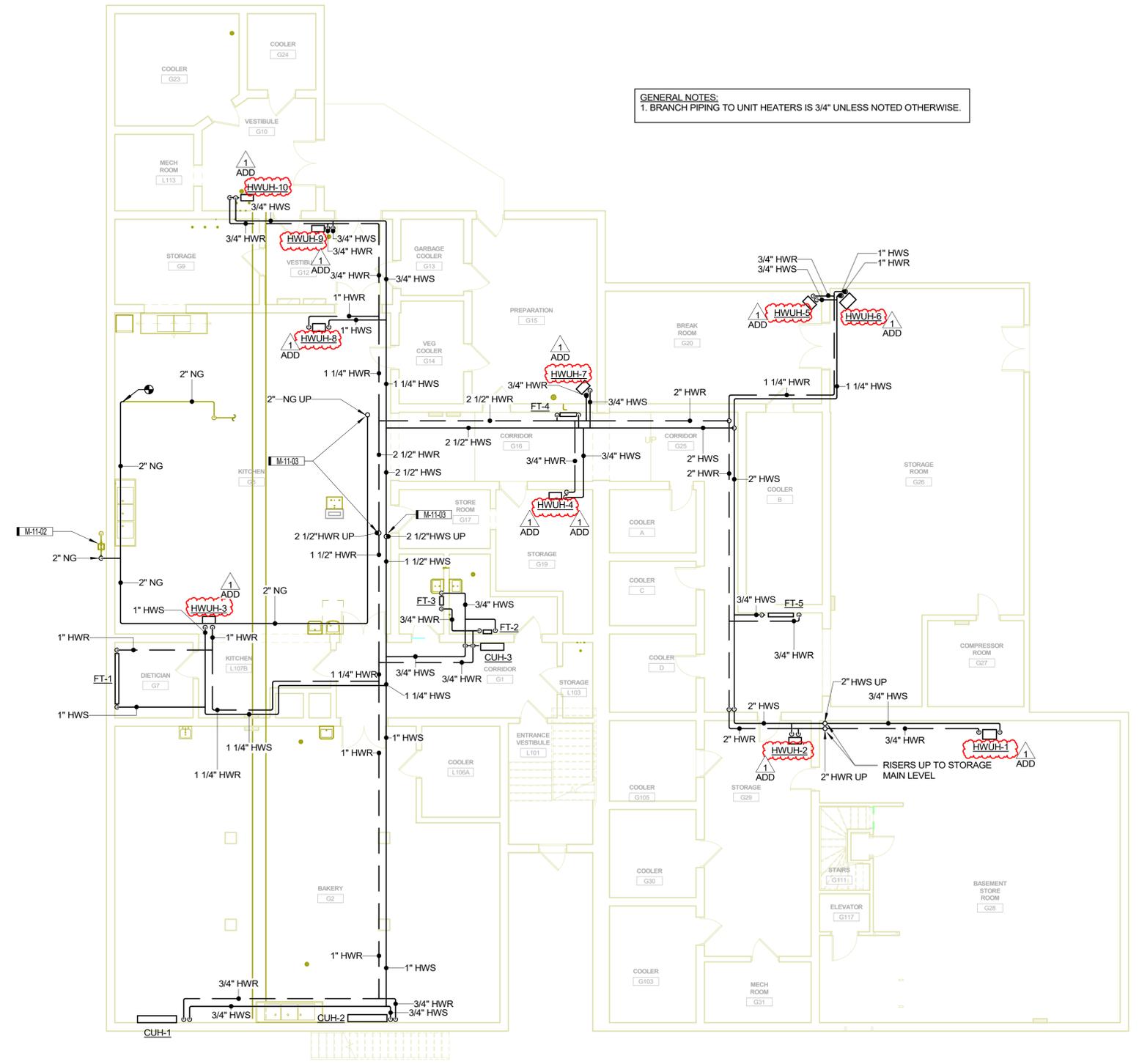
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KEY	NOTE
M-11-02	NEW NATURAL GAS METER PROVIDED AND INSTALLED BY LOCAL UTILITY COMPANY. ALL WORK DOWNSTREAM OF METER BY MECHANICAL CONTRACTOR.
M-11-03	ROUTE HEATING WATER RETURN, HEATING WATER SUPPLY, AND NATURAL GAS UP TO CEILING AND THROUGH WALL INTO MECHANICAL ROOM.

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**ELDORA STS DECENTRALIZATION
 BUILDING PACKAGE
 KITCHEN**
 IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES
 3211 EDGINGTON AVE. ELDORA, IA 50627

GENERAL NOTES:
 1. BRANCH PIPING TO UNIT HEATERS IS 3/4" UNLESS NOTED OTHERWISE.



B1 KITCHEN GROUND FLOOR PIPING PLAN
 1/8" = 1'-0" 0' 12'

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ADD_1 02-06-2020 ADDENDUM.01

DRAWN: JDB
 APPROVED: TJS
 ISSUED FOR: CONSTRUCTION DOCUMENTS
 DATE: 01/06/2020
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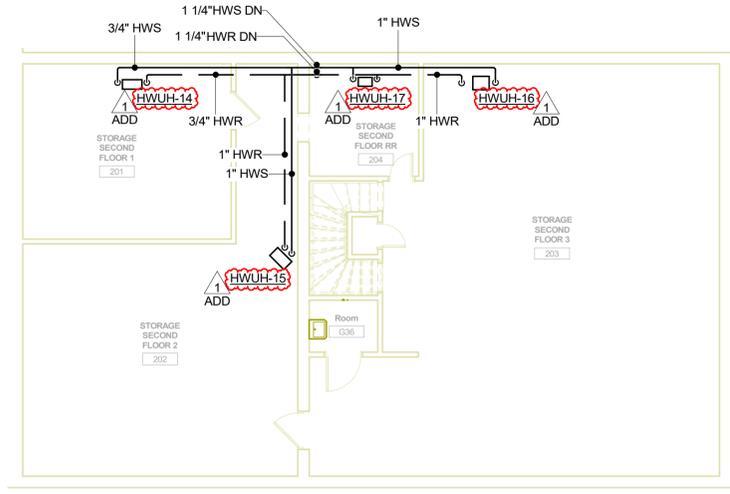
**KITCHEN &
 STORAGE
 MECHANICAL
 PLAN GROUND
 FLOOR**

11-M1.01

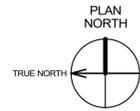
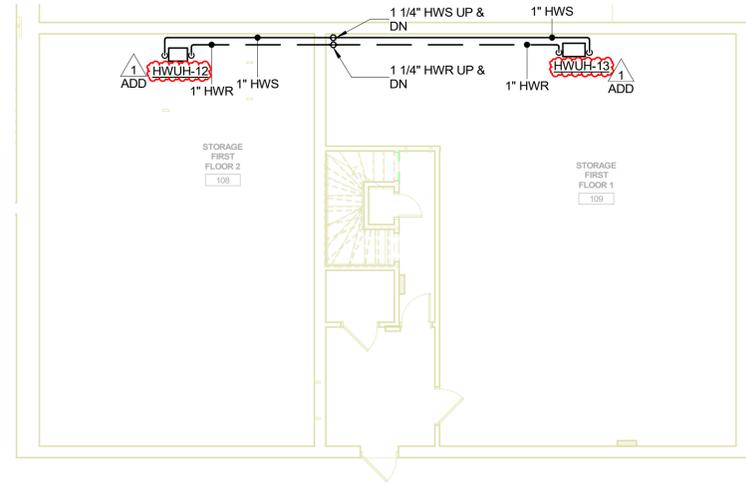
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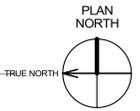
KEY	NOTE
M-11-01	ROUTE HEATING WATER SUPPLY AND RETURN THROUGH WALL AND UNDER KITCHEN ROOF.



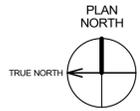
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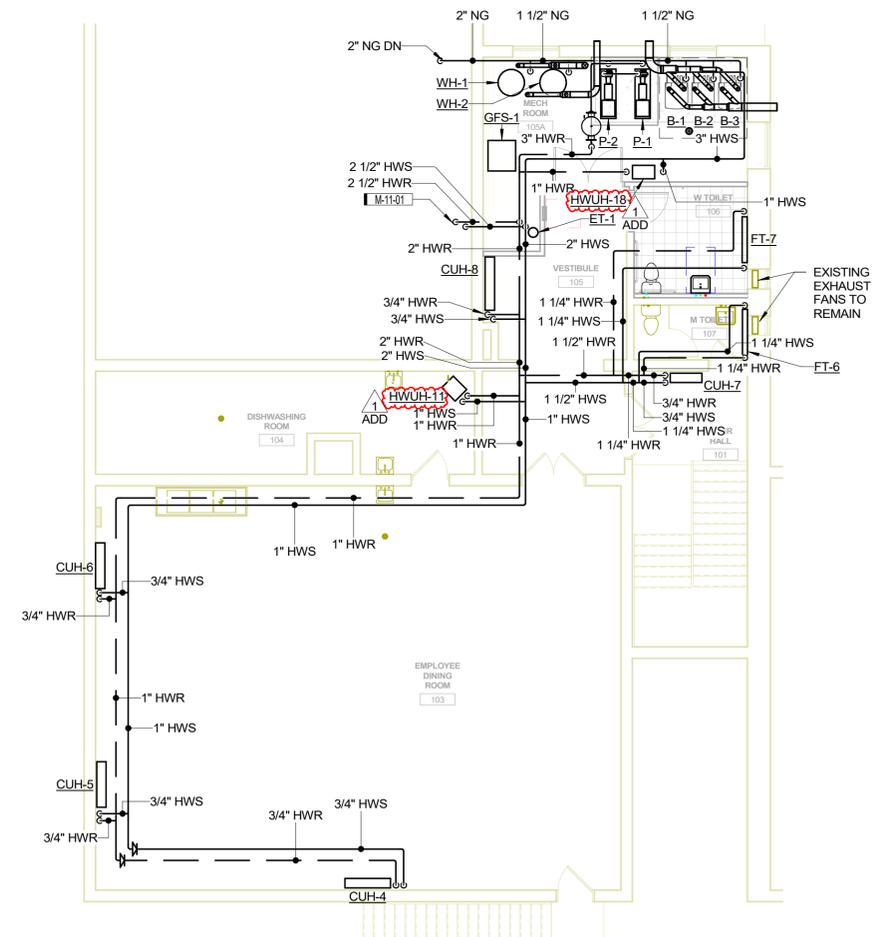
A4 STORAGE UPPER LEVEL PIPING PLAN
1/8" = 1'-0" 0" 12"



C4 STORAGE FIRST FLOOR PIPING PLAN
1/8" = 1'-0" 0" 12"

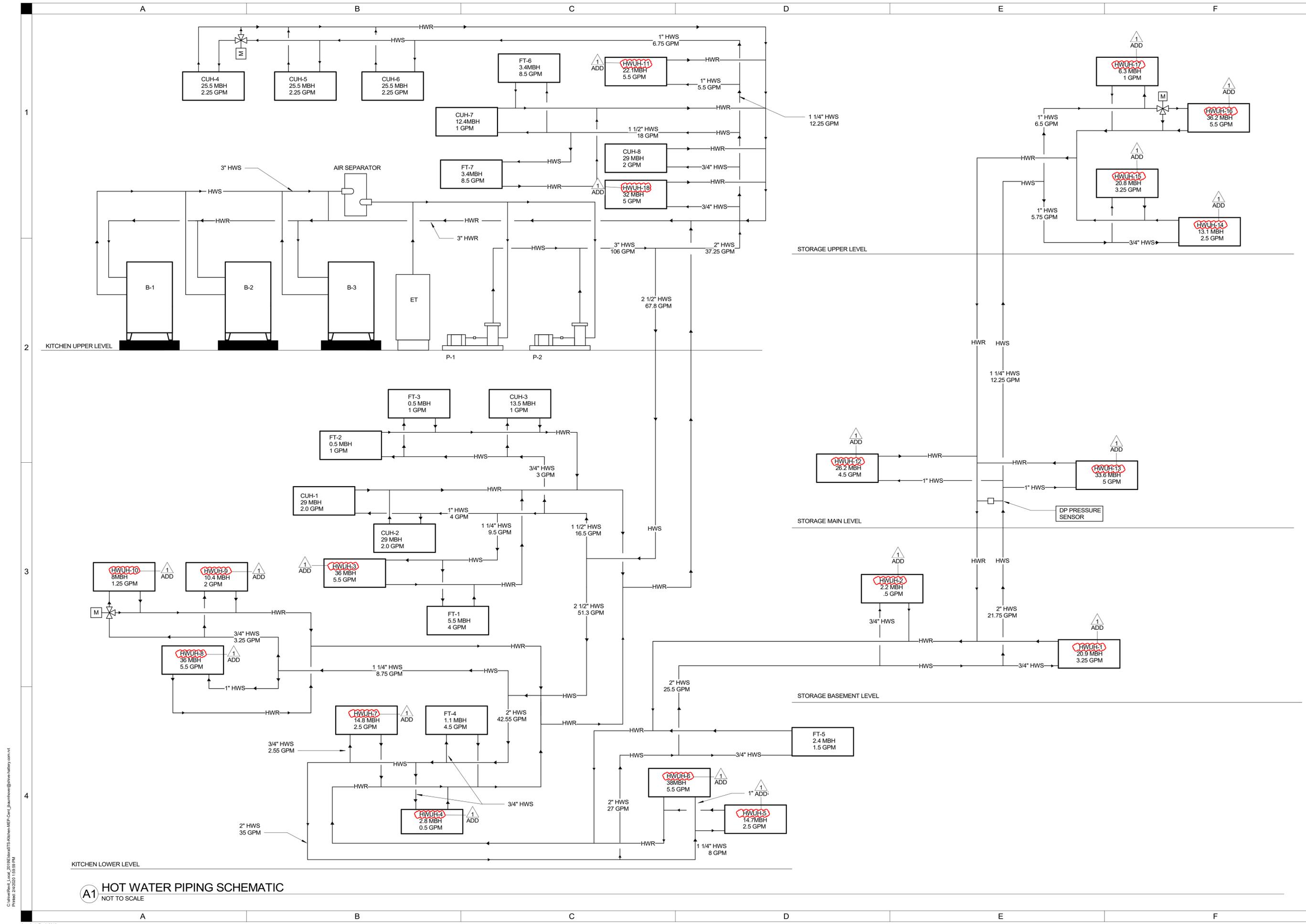


B2 KITCHEN ROOF PLAN
1/8" = 1'-0" 0" 12"



C1 KITCHEN FIRST FLOOR PIPING PLAN
1/8" = 1'-0" 0" 12"

A B C D E F



A1 HOT WATER PIPING SCHEMATIC
NOT TO SCALE

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DRAWN:	JDB
APPROVED:	TLS
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MECHANICAL PIPING EXPANSION TANK SCHEDULE							
MARK	SYSTEM SERVED	TYPE	TANK CAPACITY (GAL)	ACCEPTANCE CAPACITY (GAL)	RELIEF VALVE		DESIGN BASIS
					RELIEF AT (PSI)	FILL AT (PSI)	
ET-1	HEATING WATER	BLADDER	10.0	10.0	125.00	12.00	B&G B-35LA

GLYCOL FEED SYSTEM SCHEDULE

NOTES:
 1. PROVIDE WITH PRE-MIXED 30% PROPYLENE GLYCOL SOLUTION. NO FIELD MIXING SHALL BE ALLOWED. SEE SPEC.
 2. FURNISH AND INSTALL ALL PUMP CONTROLS AND WIRING.
 3. SYSTEM VOLUME APPROXIMATELY 150 GALLONS.

MARK	SYSTEM SERVED	TANK CAPACITY (GAL)	GPM @ 100 PSI	CUT IN RANGE (PSI)	CUT OUT RANGE (PSI)	MOTOR DATA			DESIGN BASIS	REMARKS
						HP	VOLTS	PHASE		
GFS-1	HEATING WATER	50	1.5	10-40	20-60	1/3	120	1	JL WINGERT GL50	ELECTRICAL TO PROVIDE DUPLEX RECEPTACLE

MECHANICAL PUMP SCHEDULE

NOTES:
 1. VARIABLE FREQUENCY DRIVE AND DISCONNECT TO BE PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.
 2. PUMPS SELECTED FOR ONE PUMP TO BE LEAD AND ONE PUMP TO BE IN STAND-BY.
 3. PUMPS SELECTED AT 30% PROPYLENE GLYCOL.

MARK	SYSTEM SERVED	TYPE	GPM	HEAD (FT)	SHUTOFF HEAD (FT)	MOTOR DATA				DESIGN BASIS	REMARKS
						BHP	HP	VOLTS	PHASE		
P-1	HWS	END SUCTION	72	37.00	42.00	1.04	1.5	208	3	1800	B&G E1510 1.25AD-es
P-2	HWS	END SUCTION	72	37.00	42.00	1.04	1.5	208	3	1800	B&G E1510 1.25AD-es

CABINET UNIT HEATER SCHEDULE - HOT WATER

NOTES:
 1. PERFORMANCE BASED ON 30% PROPYLENE GLYCOL.
 2. MANUFACTURER SHALL PROVIDE FACTORY MOUNTED DISCONNECT.

MARK	AREA SERVED	CFM	EWT (°F)	LWT (°F)	EAT (°F)	LAT (°F)	MBH	GPM	MAX PD (FT)	MOUNTING HEIGHT (FT)	ORIENTATION	FAN MOTOR DATA		DESIGN BASIS	REMARKS
												VOLTS	PHASE		
CUH-1	BAKERY	479	140	110	60	115	29	2.00	4	0' - 0"	VERTICAL	120	1	TRANE FFBB080	
CUH-2	BAKERY	479	140	110	60	115	29	2.00	4	0' - 0"	VERTICAL	120	1	TRANE FFBB080	
CUH-3	CORRIDOR L102	256	140	107	60	109	13.5	1.00	4	0' - 0"	VERTICAL	120	1	TRANE FFBB030	
CUH-4	DINING U103	541	140	114	60	103	25.5	2.25	4	0' - 0"	VERTICAL	120	1	TRANE FFBB060	
CUH-5	DINING U103	541	140	114	60	103	25.5	2.25	4	0' - 0"	VERTICAL	120	1	TRANE FFBB060	
CUH-6	DINING U103	541	140	114	60	103	25.5	2.25	4	0' - 0"	VERTICAL	120	1	TRANE FFBB060	
CUH-7	VESTIBULE U102	277	140	111	60	101	12.4	1.00	4	0' - 0"	VERTICAL	120	1	TRANE FFBB030	
CUH-8	LOUNGE U105	479	140	110	60	115	29	2.00	4	0' - 0"	VERTICAL	120	1	TRANE FFBB080	

FIN TUBE RADIATION SCHEDULE - HYDRONIC

NOTES:
 1. PERFORMANCE BASED ON 30% PROPYLENE GLYCOL.

MARK	CAPACITY (BTU/FT)	EWT (°F)	GPM	TUBE SIZE (IN)	NUMBER OF TUBES OR ROWS	ELEMENT LENGTH (FT)	EAT (°F)	HEATING COIL FIN DATA			ENCLOSURE			DESIGN BASIS	REMARKS
								FIN HEIGHT (IN)	FIN WIDTH (IN)	FINS PER FOOT	LENGTH (IN)	DEPTH (IN)	HEIGHT (IN)		
FT-1	904	140	4.0	1.25	3	6' - 0"	60	4 1/4"	4 1/4"	50	72"	5 5/16"	24"	STERLING JVB-FT24	
FT-2	533	140	1.0	0.75	1	1' - 0"	60	4 1/4"	4 1/4"	40	12"	5 5/16"	14"	STERLING JVB-FT14	
FT-3	533	140	1.0	0.75	1	1' - 0"	60	4 1/4"	4 1/4"	40	12"	5 5/16"	14"	STERLING JVB-FT14	
FT-4	566	140	4.5	0.75	1	2' - 0"	60	4 1/4"	4 1/4"	40	24"	5 5/16"	14"	STERLING JVB-FT14	
FT-5	791	140	1.5	0.75	3	3' - 0"	60	4 1/4"	4 1/4"	32	36"	5 5/16"	24"	STERLING JVB-FT24	
FT-6	855	140	8.5	1	3	4' - 0"	60	4 1/4"	4 1/4"	32	48"	5 5/16"	24"	STERLING JVB-FT24	
FT-7	855	140	8.5	1	3	4' - 0"	60	4 1/4"	4 1/4"	32	48"	5 5/16"	24"	STERLING JVB-FT24	

UNIT HEATER SCHEDULE - HOT WATER

NOTES:
 1. PERFORMANCE BASED ON 30% PROPYLENE GLYCOL.
 2. MANUFACTURER SHALL PROVIDE FACTORY MOUNTED DISCONNECT.

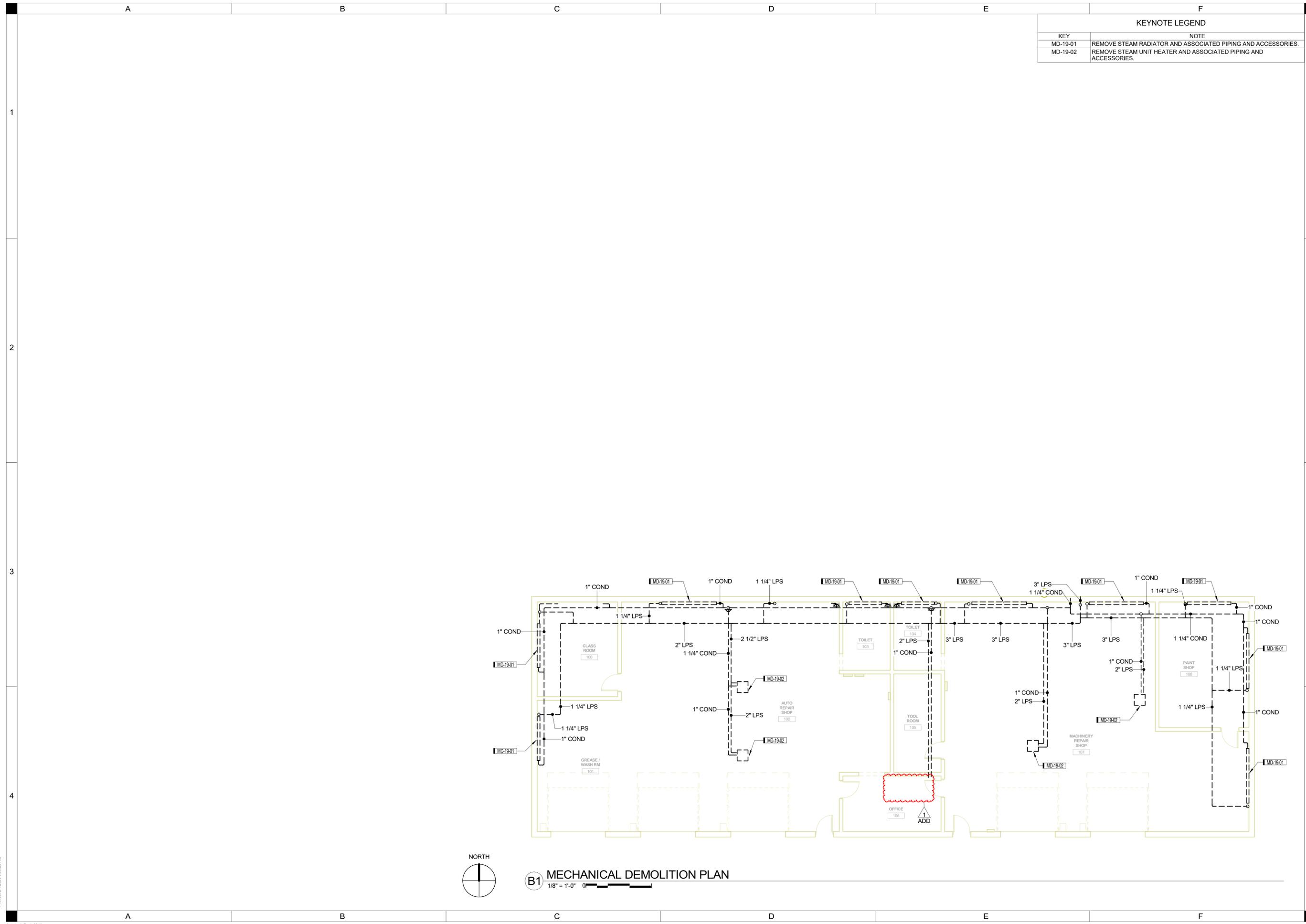
MARK	AREA SERVED	CFM	EWT (°F)	LWT (°F)	LAT (°F)	MBH	GPM	MAX PD (FT)	MOUNTING HEIGHT (FT)	ORIENTATION	FAN MOTOR DATA			DESIGN BASIS
											HP	VOLTS	PHASE	
HWUH-1	STORAGE BASEMENT	900	140 °F	110 °F	112 °F	20.9	3.25	1	8' - 0"	HORIZONTAL	1/20	120	1	REZNOR S-60
HWUH-2	STORAGE BASEMENT	245	140 °F	110 °F	91 °F	2.2	0.50	1	8' - 0"	HORIZONTAL	-	120	1	REZNOR S-A08
HWUH-3	KITCHEN L107	1800	140 °F	110 °F	103 °F	36	5.50	1	10' - 0"	HORIZONTAL	-	120	1	REZNOR S-108
HWUH-4	STORAGE L109	245	140 °F	110 °F	91 °F	2.8	0.50	1	8' - 0"	HORIZONTAL	-	120	1	REZNOR S-A08
HWUH-5	BREAKROOM G113	750	140 °F	110 °F	111 °F	14.7	2.50	1	8' - 0"	HORIZONTAL	1/20	120	1	REZNOR S-48
HWUH-6	STORAGE G115	1800	140 °F	110 °F	103 °F	38	5.50	1	8' - 0"	HORIZONTAL	-	120	1	REZNOR S-108
HWUH-7	PREPARATION L117	750	140 °F	110 °F	111 °F	14.8	2.50	1	8' - 0"	HORIZONTAL	1/20	120	1	REZNOR S-48
HWUH-8	KITCHEN L107	1800	140 °F	110 °F	103 °F	36	5.50	1	10' - 0"	HORIZONTAL	-	120	1	REZNOR S-108
HWUH-9	BACK VESTIBULE L111	550	140 °F	110 °F	103 °F	10.44	2.00	1	8' - 0"	HORIZONTAL	-	120	1	REZNOR S-36
HWUH-10	VESTIBULE L116	500	140 °F	110 °F	96 °F	8	1.25	1	8' - 0"	HORIZONTAL	-	120	1	REZNOR S-A18
HWUH-11	DISHWASHING ROOM U104	1100	140 °F	110 °F	106 °F	22.1	5.50	1	8' - 0"	HORIZONTAL	1/20	120	1	REZNOR S-72
HWUH-12	DRY STORAGE 107	1400	140 °F	110 °F	106 °F	26.2	4.50	1	8' - 0"	HORIZONTAL	-	120	1	REZNOR S-84
HWUH-13	STORAGE 109	1400	140 °F	110 °F	113 °F	33.6	5.00	1	8' - 0"	HORIZONTAL	-	120	1	REZNOR S-96
HWUH-14	STORAGE 201	750	140 °F	110 °F	111 °F	13.1	2.50	1	8' - 0"	HORIZONTAL	1/20	120	1	REZNOR S-48
HWUH-15	STORAGE 202	900	140 °F	110 °F	112 °F	20.8	3.25	1	8' - 0"	HORIZONTAL	1/20	120	1	REZNOR S-60
HWUH-16	STORAGE 203	1800	140 °F	110 °F	103 °F	36.2	5.50	1	8' - 0"	HORIZONTAL	-	120	1	REZNOR S-108
HWUH-17	STORAGE 204	395	140 °F	110 °F	99 °F	6.3	1.00	1	8' - 0"	HORIZONTAL	-	120	1	REZNOR S-18
HWUH-18	MECH ROOM	1400	140 °F	110 °F	113 °F	32	5.00	1	8' - 0"	HORIZONTAL	-	120	1	REZNOR S-96

BOILER SCHEDULE - HOT WATER

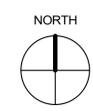
NOTES:
 1. PERFORMANCE BASED ON OPERATING CONDITIONS.

MARK	AREA SERVED	INPUT (MBH)	OUTPUT (MBH)	MIN GAS PRESSURE REQUIRED (IN)	EFFICIENCY	EWT (°F)	LWT (°F)	GPM	MAX PD (FT)	FUEL TYPE	TURNDOWN RATIO	ELECTRICAL DATA				DESIGN BASIS	REMARKS
												PHASE	FLA	MCA	MOC		
B-1	KITCHEN	399	363	3	91	110	140	40	6.10	NATURAL GAS	8:1	120	1	3	3	20	AERCO AM399
B-2	KITCHEN	399	363	3	91	110	140	40	6.10	NATURAL GAS	8:1	120	1	3	3	20	AERCO AM399
B-3	KITCHEN	399	363	3	91	110	140	40	6.10	NATURAL GAS	8:1	120	1	3	3	20	AERCO AM399

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KEYNOTE LEGEND	
KEY	NOTE
MD-19-01	REMOVE STEAM RADIATOR AND ASSOCIATED PIPING AND ACCESSORIES.
MD-19-02	REMOVE STEAM UNIT HEATER AND ASSOCIATED PIPING AND ACCESSORIES.



B1 MECHANICAL DEMOLITION PLAN
1/8" = 1'-0"

SHIVE-HATTERY
ARCHITECTURE + ENGINEERING
4125 Westown Pkwy, Suite 100 | West Des Moines, IA 50266
515.223.8104 | www.shive-hattery.com
Iowa | Illinois | Indiana

**ELDORA STS DECENTRALIZATION
BUILDING PACKAGE
VOCATIONAL**
IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES
3211 EDGINGTON AVE. ELDORA, IA 50627

ADD. 1 02-06-2020 ADDENDUM.01

DRAWN: JDB
APPROVED: TJS
ISSUED FOR: CONSTRUCTION DOCUMENTS
DATE: 01/06/2020
PROJECT NO: 4175681
CLIENT NO: #6982.01

VOCATIONAL
MECHANICAL
DEMOLITION
PLAN

19-MD.01