

South Kortright School 2009 Capital Improvements

South Kortright, New York

Application Engineering by Randy Langille

Engineer/Architect SWBR Architects



Mechanical Contractor A. Treffeisen & Son

Job Number P7790

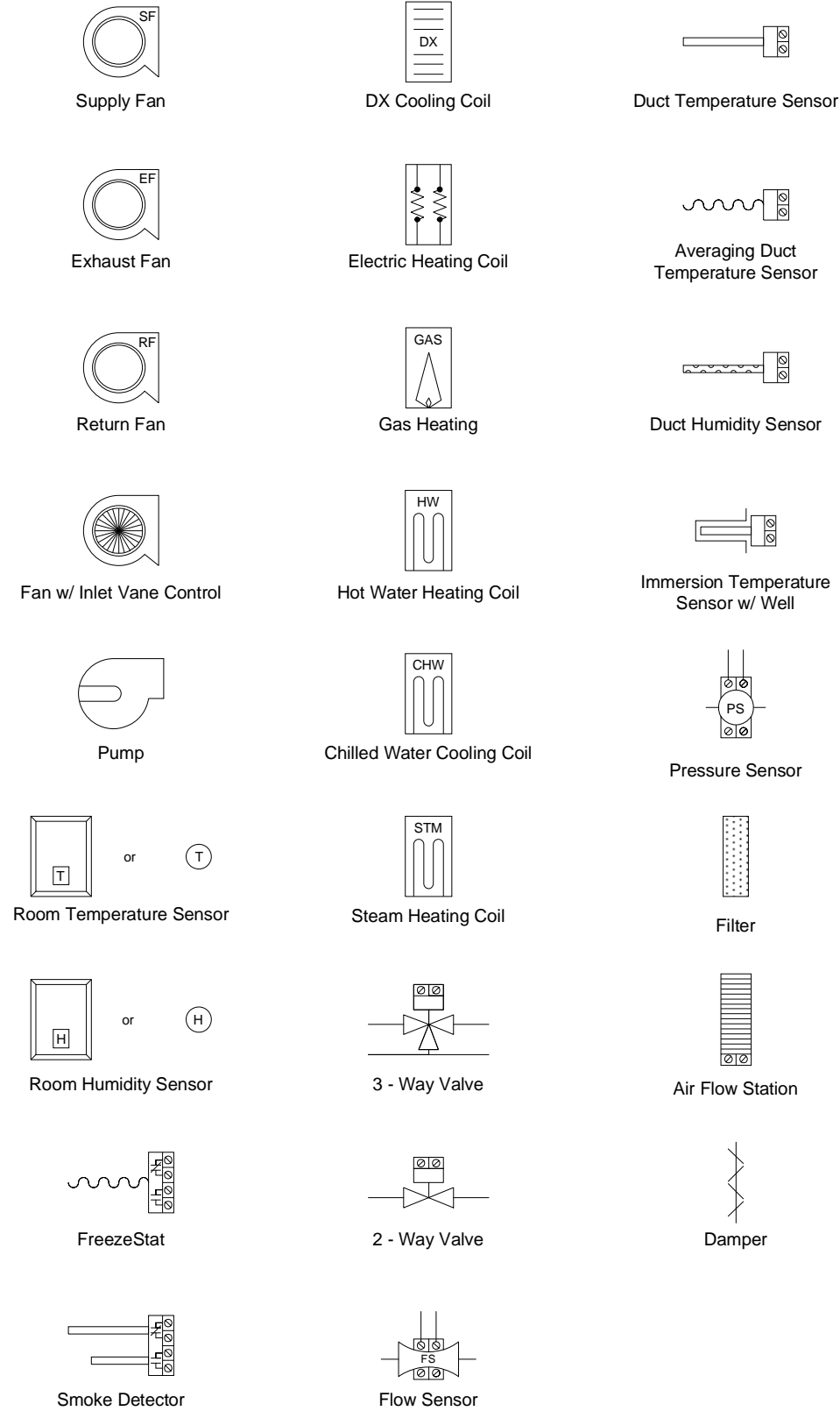
AUTOMATEDLOGIC[®]
CORPORATION

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South Kortright School 2009 Capital Improvements			
South Kortright, New York			
 AIR TEMP HEATING & AIR CONDITIONING, INC. <small>A LINC SERVICE ® CONTRACTOR</small>			
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REV: 1	As-Built	11/30/2008	JOB NO: P7790
			CHECK BY: RSL
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Symbol Legend

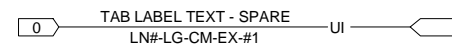


Common Abbreviations:

AC - Air Conditioning	EVAP - Evaporator	SA - Supply Air
ACU - Air Conditioning Unit	F - Fahrenheit	SF - Supply Fan
AHU - Air Handling Unit	FCU - Fan Coil Unit	SP - Static Pressure
AI - Analog Input	HOA - Hand / Off / Auto	TEMP - Temperature
AO - Analog Output	HP - Heat Pump	UH - Unit Heater
AUTO - Automatic	HRU - Heat Recovery Unit	UV - Unit Ventilator
AUX - Auxiliary	HTEX - Heat Exchanger	VAV - Variable Air Volume
C - Common	HW - Hot Water	VVTU - Variable Volume Terminal Unit
CHW - Chilled Water	HWP - Hot Water Pump	W/ - with
CHWP - Chilled Water Pump	HWR - Hot Water Return	W/O - without
CHWR - Chilled Water Return	HWS - Hot Water Supply	WSHP - Water-Source Heat Pump
CHWS - Chilled Water Supply	MAX - Maximum	
COND - Condenser	MIN - Minimum	
CW - Condenser Water	MISC - Miscellaneous	
CWP - Condenser Water Pump	NC - Normally Closed	
CWR - Condenser Water Return	NO - Normally Open	
CWS - Condenser Water Supply	OA - Outdoor Air	
DA - Discharge Air	PIU - Powered Induction Unit	
DI - Digital Input	RA - Return Air	
DO - Digital Output	RF - Return Fan	
EA - Exhaust Air	RH - Relative Humidity	
EF - Exhaust Fan	RTU - Roof-top Unit	

General Notes:

1. All control modules are drawn using standard ALC module representations.
2. Electrical points are identified by a tagged method (LN# - LG - CM - EX - Z0):



- LN# - The line number (optional).
- LG - The gateway number (optional).
- CM - The control module address.
- EX - The expander module number.
- #1 - The channel number.

These tags include wiring for all AI's, DI's, AO's and DO's. Points using pneumatic tubing follow the same convention.

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AIR TEMP HEATING & AIR CONDITIONING, INC.
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Symbol Legend

REV: 1	As-Built	11/30/2008	JOB NO: P7790
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	CHECK BY: RSL
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Summary Bill of Materials

Summary Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
CS-E	CURRENT SWITCH, 5-200 AMP SOLID CORE GO/NO GO	VERUS IND.	H-800	28 ea
DA-AA	SR OPEN/CLOSE 60 IN-LB 24V AUX SWITCH	BELIMO	NF24-S ALC	1 ea
DA-AC	NSR PROPORTIONAL 35 IN-LB 24 V	BELIMO	LM24-SR ALC	89 ea
DID				1 ea
DPS-B	DIFF PRESSURE SWITCH 0-5 IN. WET	UNITED ELECTRIC	24-013	4 ea
DPT-A	SERIES 600 LOW DRY PRESS	AUTOTRAN	600 D 5IN. WC 12D 20	22 ea
DPT-AE	DIFF PRESSURE TRANSDUCER 0-5 IN. MA	MAMAC	PR-282-4-(0-5IN.)-B-1-2-A	1 ea
DTS-D	DUCT 10K THERMISTOR PROBE 8 IN.	BAPI	ALC/10K-2-D-8	58 ea
E-AD	RET NEMA 1 18X12X7	KELE & ASSOC.	RET 1812	2 ea
LSBASE	LOGISTAT 10K ROOM SENSOR WITH COMM	BAPI	LSBASE	8 ea
LSPLUS	LOGISTAT 10K ROOM SENSOR W/ SETP ADJ. TLO, COMM	BAPI	LSPLUS	49 ea
MELGR25	ME-LGR25	AUTOMATED LOGIC	ME-LGR25	1 ea
OAC-A	OA TEMPERATURE/HUMIDITY COMBO SENSOR	BAPI	ALC/10K-2-H220-O	1 ea
RBXKF	CURRENT SENSOR	RIB	RBXKF	4 ea
REL-BC	PILOT RELAY 24 VAC DPDT W/ LED	OMRON	LY2N-24V	28 ea
RIBU1C	RELAY 24 V	RIB	RIBU1C	7 ea
RIBXKF	.25 TO 150 CURRENT SENSOR	FUNCTIONAL DEVICES	RIBXKF	56 ea
RS	ROOM SENSOR	AUTOMATED LOGIC	RS	7 ea
RTS-AC	10K ROOM THERMISTOR SS WALL PLATE	BAPI	BA/10K-2-93-631	1 ea
RTS-F	10K ROOM THERMISTOR RS	BAPI	ALC/10K-2-RS	1 ea
SE6104	SE6104	AUTOMATED LOGIC	SE6104	1 ea
TR-A	TRANSFORMER, 120/24VAC, 50VA	CORE COMPONENTS	LE-117	7 ea
TR-AE	TRANSFORMER, 120/24VAC, 40VA	CORE COMPONENTS	LE-112	6 ea
TR-AF	TRANSFORMER, 120-24VAC W/BREAKER	KELE & ASSOC.	691-K0A	17 ea
TR-AG	TRANSFORMER, 120/24VAC 150VA W/CCT BREAKER	CORE COMPONENTS	LE-124	1 ea
W-A	TWP PART SS WELL 4IN.	BAPI	BA/4IN.	2 ea
WS-A	10K IMMERSION THERMISTOR	BAPI	ALC/10K-2-I-4	2 ea
ZN220	ZN220	AUTOMATED LOGIC	ZN220	28 ea
ZN253	ZN253	AUTOMATED LOGIC	ZN253	60 ea
ZN551	ZN551	AUTOMATED LOGIC	ZN551	2 ea

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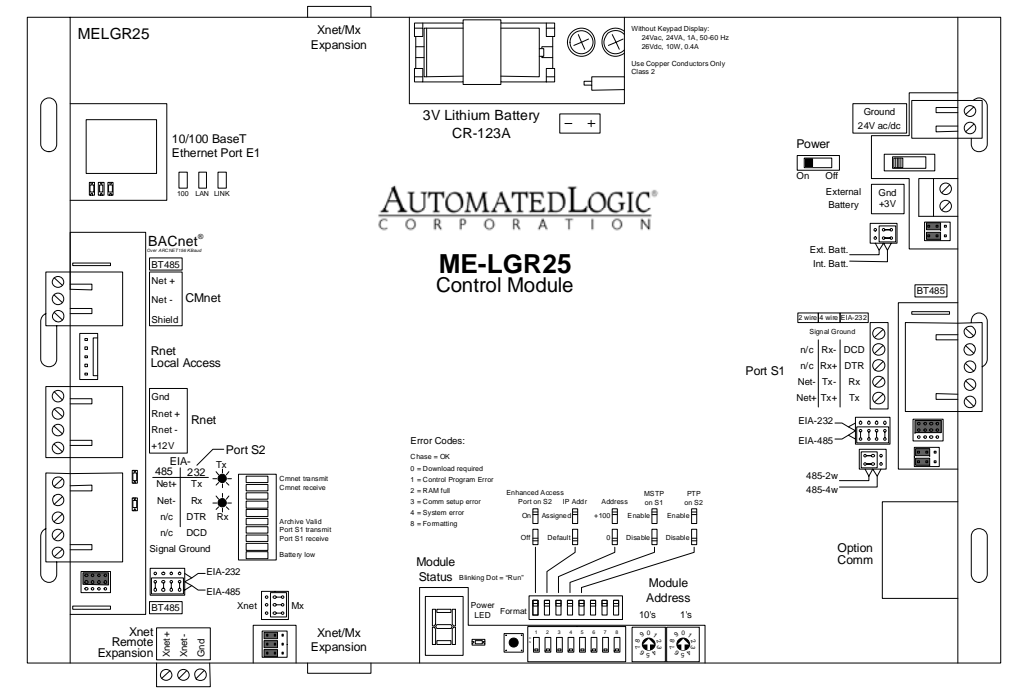
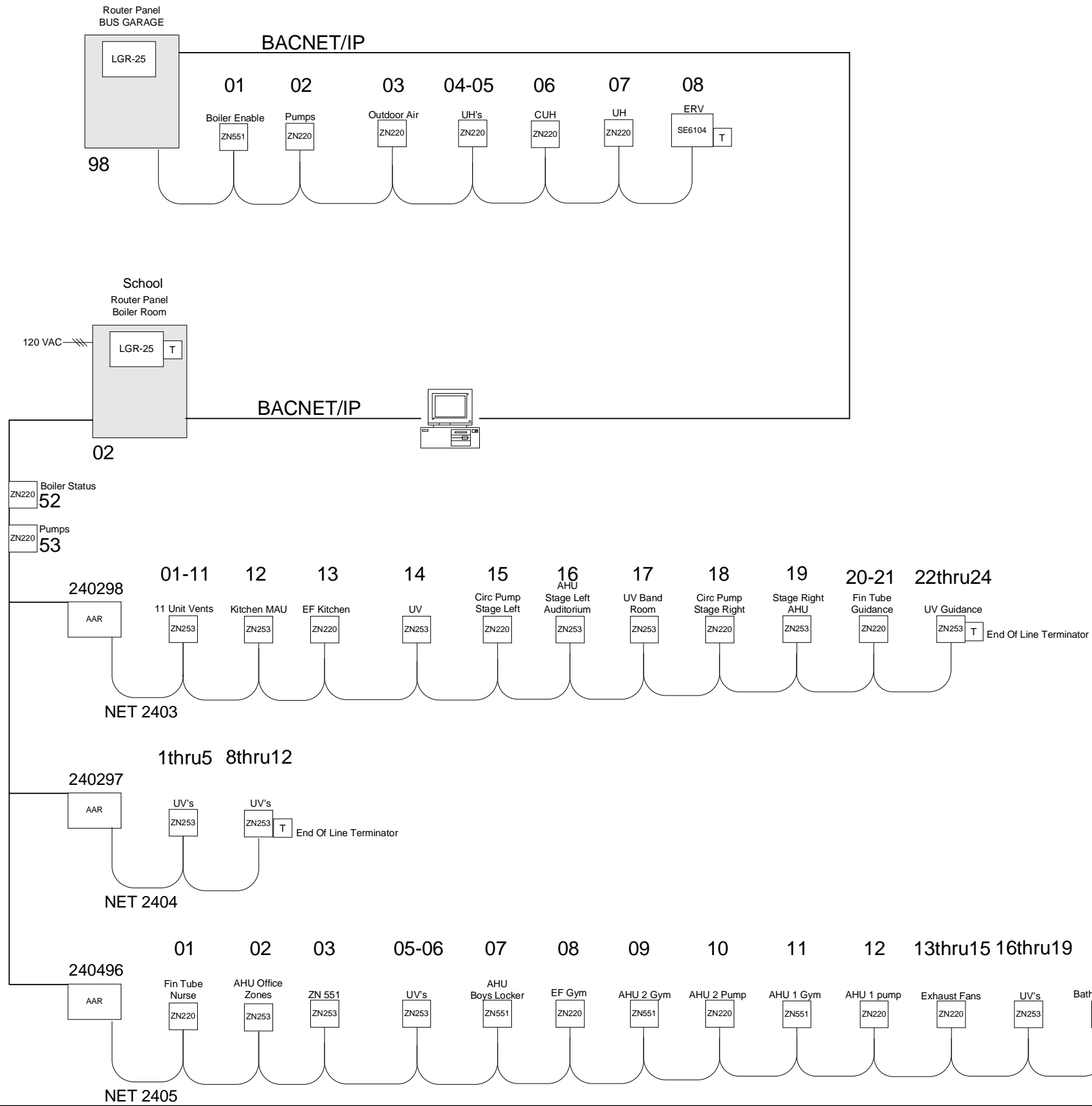
Summary Bill of Materials

REV: 1	As-Built	11/30/2008	JOB NO: P7790
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Riser

Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
MELGR25	ME-LGR25	AUTOMATED LOGIC	ME-LGR25	1 ea



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Riser

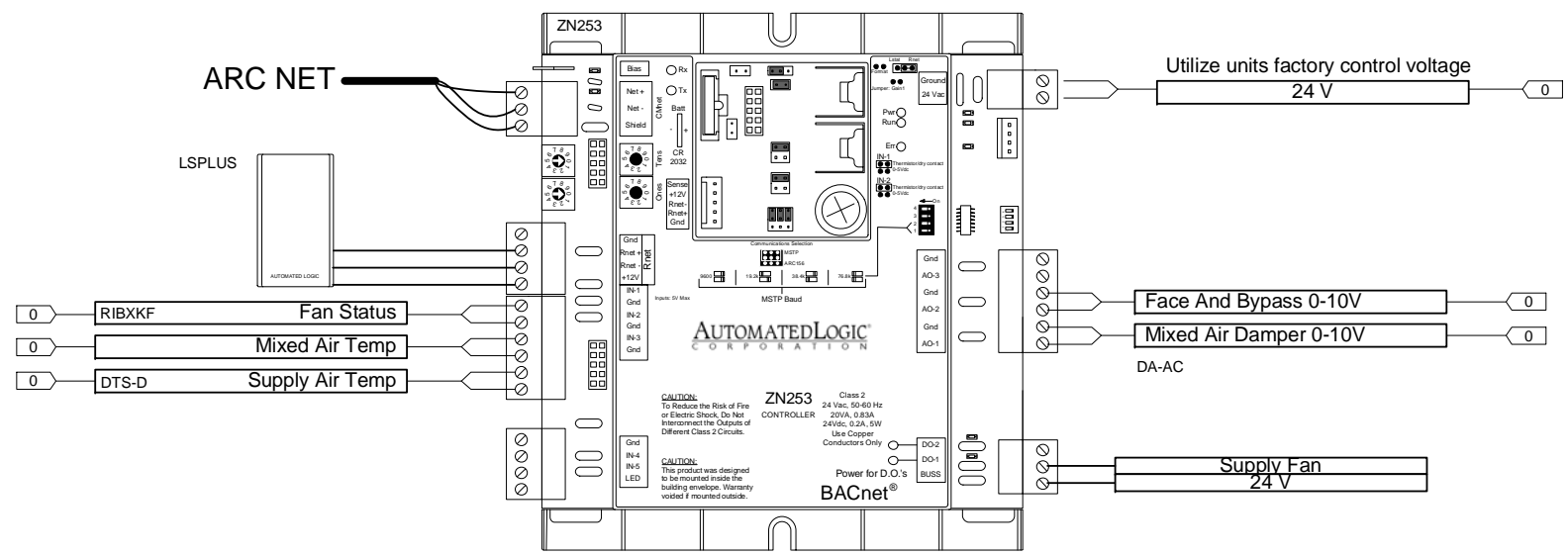
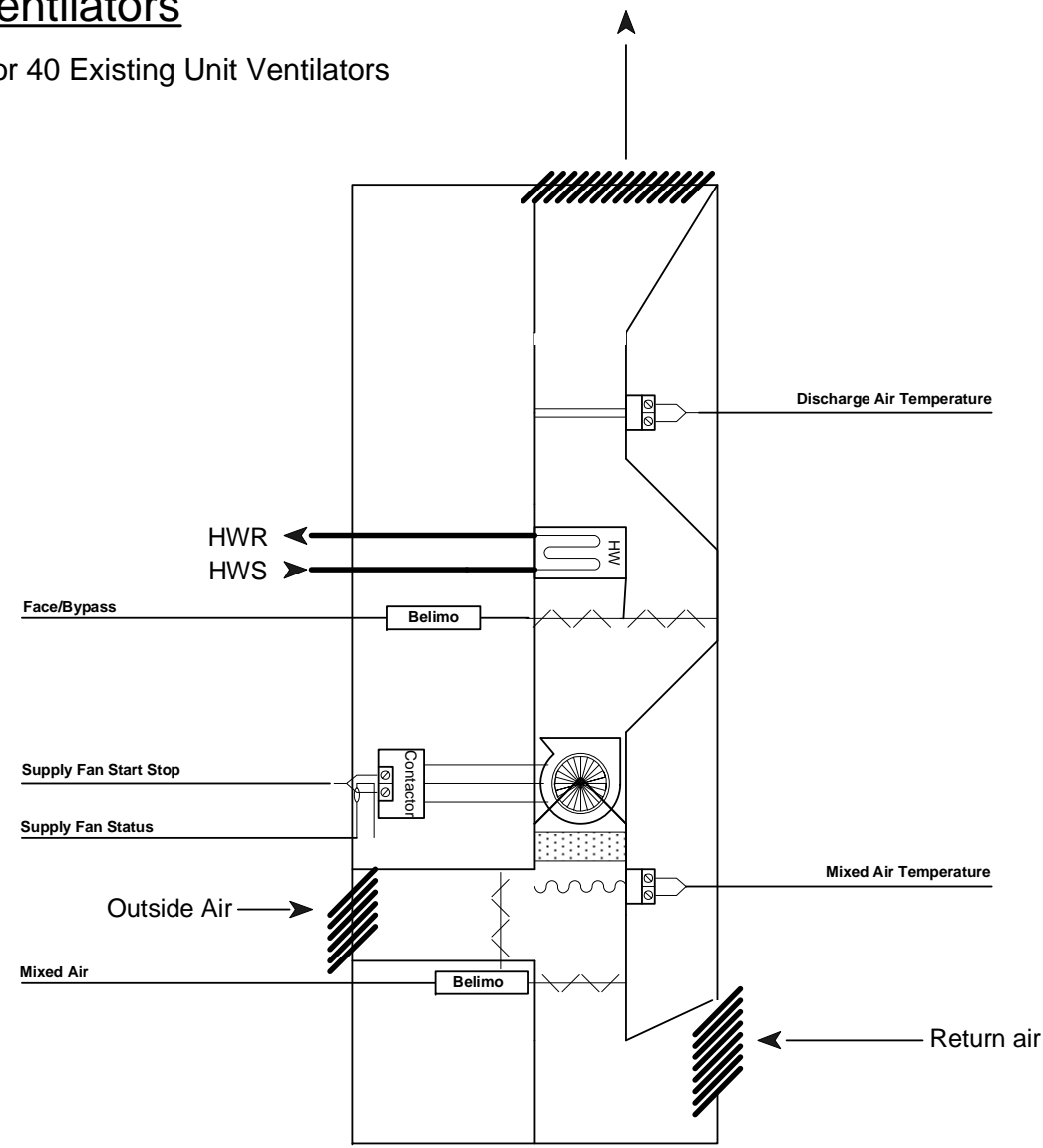
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Unit Ventilators

Typical For 40 Existing Unit Ventilators



Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
DA-AC	NSR PROPORTIONAL 35 IN-LB 24 V	BELIMO	LM24-SR ALC	80 ea
DTS-D	DUCT 10K THERMISTOR PROBE 8 IN.	BAPI	ALC/10K-2-D-8	40 ea
LSPLUS	LOGISTAT 10K ROOM SENSOR W/ SETP ADJ, TLO, COMM	BAPI	LSPLUS	40 ea
RIBXKF	.25 TO 150 CURRENT SENSOR	FUNCTIONAL DEVICES	RIBXKF	40 ea
ZN253	ZN253	AUTOMATED LOGIC	ZN253	40 ea

Unit Ventilators

- Provide a unitary controller with electronic outputs for both the face and bypass damper and the outside and return air damper control with the DDC system. Provide electronic mixed air sensor and discharge air sensor to replace existing pneumatic sensors.
- The DDC system shall provide occupied/unoccupied scheduling of the unit ventilators.
- During occupied hours, the fan shall run continuously. The space temperature sensor will modulate the outside air and the return air dampers, subject to a 55° F discharge air low limit, in sequence with the face and bypass damper to maintain its setting according to ASHRAE Cycle #2. At the coil, the air high limit set at 125° F shall stop the fan, close the outside air damper and open the return air damper. During scheduled unoccupied hours, the space sensor will intermittently start and stop the fan, and position the face and bypass damper to full face with the outside air damper fully closed.
- Provide interface with respective relief air damper actuator. Open relief air damper during occupied cycle and close during unoccupied cycle.
- Display:
 - DDC system graphic.
 - DDC system on-off indication.
 - DDC system occupied/unoccupied mode.
 - Room temperature indication.
 - Room temperature set point.
 - Mixed air temperature.
 - Discharge air temperature.
 - Damper positions

discharge air low limit set at 35° F shall stop the fan, close the outside air damper and open the return air damper.

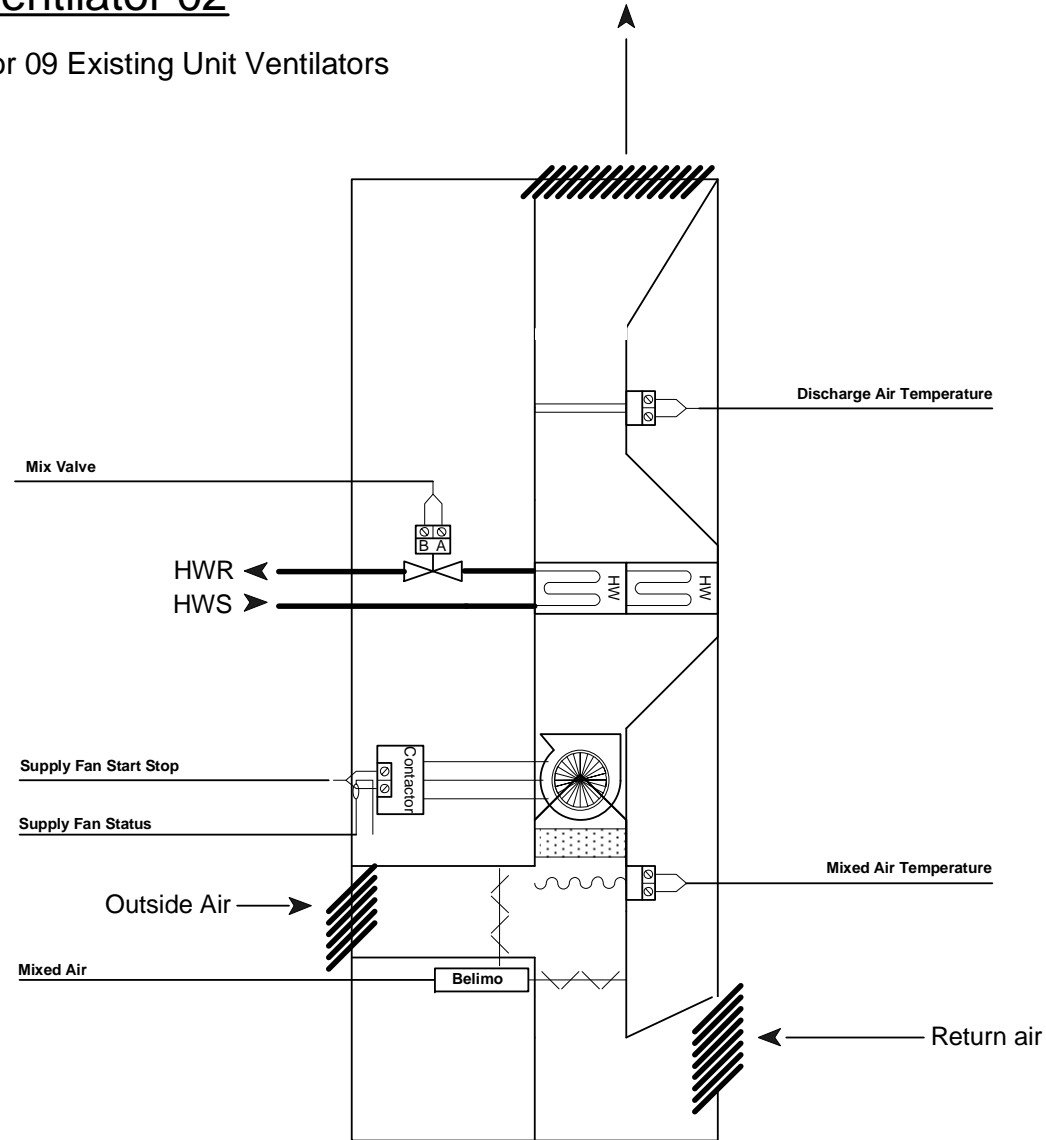
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Unit Ventilators

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Unit Ventilator 02

Typical For 09 Existing Unit Ventilators

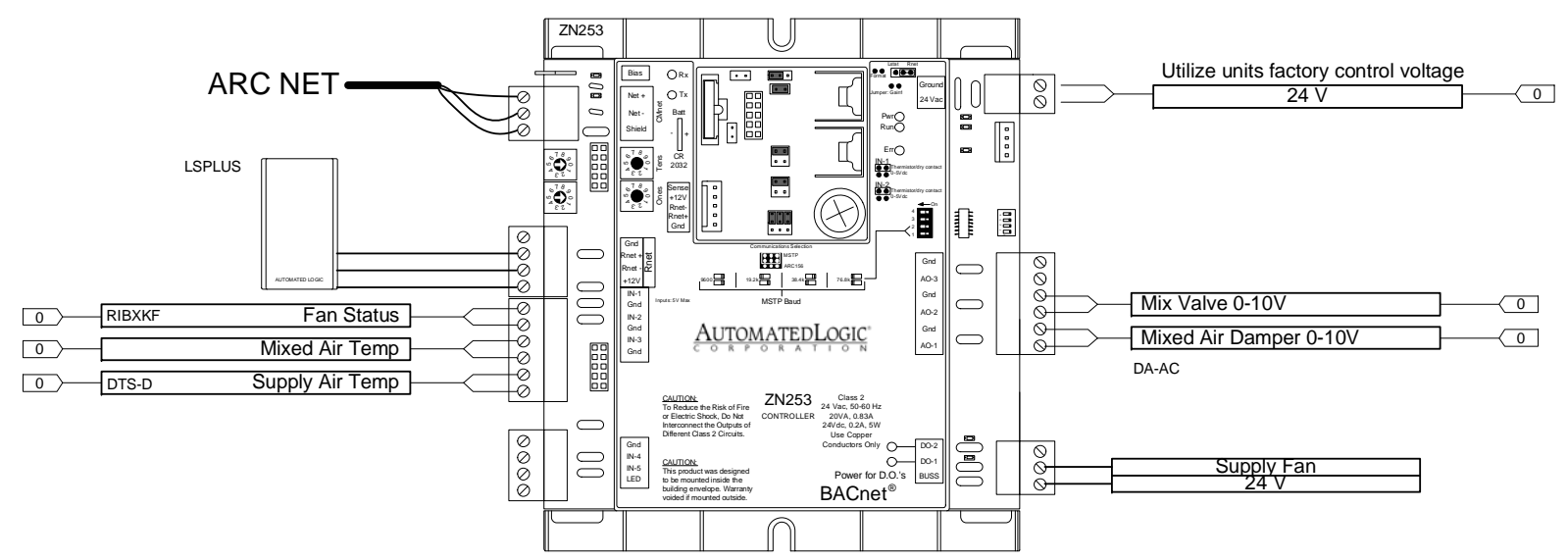


Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
DA-AC	NSR PROPORTIONAL 35 IN-LB 24 V	BELIMO	LM24-SR ALC	9 ea
DTS-D	DUCT 10K THERMISTOR PROBE 8 IN.	BAPI	ALC/10K-2-D-8	9 ea
LSPLUS	LOGISTAT 10K ROOM SENSOR W/ SETP ADJ, TLO, COMM	BAPI	LSPLUS	9 ea
RIBXKF	.25 TO 150 CURRENT SENSOR	FUNCTIONAL DEVICES	RIBXKF	9 ea
ZN253	ZN253	AUTOMATED LOGIC	ZN253	9 ea

Unit Ventilators

1. Provide a unitary controller with electronic outputs for both the face and bypass damper and the outside and return air damper control with the DDC system. Provide electronic mixed air sensor and discharge air sensor to replace existing pneumatic sensors.
2. The DDC system shall provide occupied/unoccupied scheduling of the unit ventilators.
3. During occupied hours, the fan shall run continuously. The space temperature sensor will modulate the outside air and the return air dampers, subject to a 55° F discharge air low limit, in sequence with the mix valve to maintain its setting according to ASHRAE Cycle #2. At the coil, the discharge air high limit set at 125° F shall stop the fan, close the outside air damper and open the return air damper. During scheduled unoccupied hours, the space sensor will intermittently start and stop the fan, and position the mix valve to full open with the outside air damper fully closed.
4. Provide interface with respective relief air damper actuator. Open relief air damper during occupied cycle and close during unoccupied cycle.
5. Display:
 - a. DDC system graphic.
 - b. DDC system on-off indication.
 - c. DDC system occupied/unoccupied mode.
 - d. Room temperature indication.
 - e. Room temperature set point.
 - f. Mixed air temperature.
 - g. Discharge air temperature.
 - h. Damper positions

discharge air low limit set at 35° F shall stop the fan, close the outside air damper and open the return air damper.



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Unit Ventilator 02

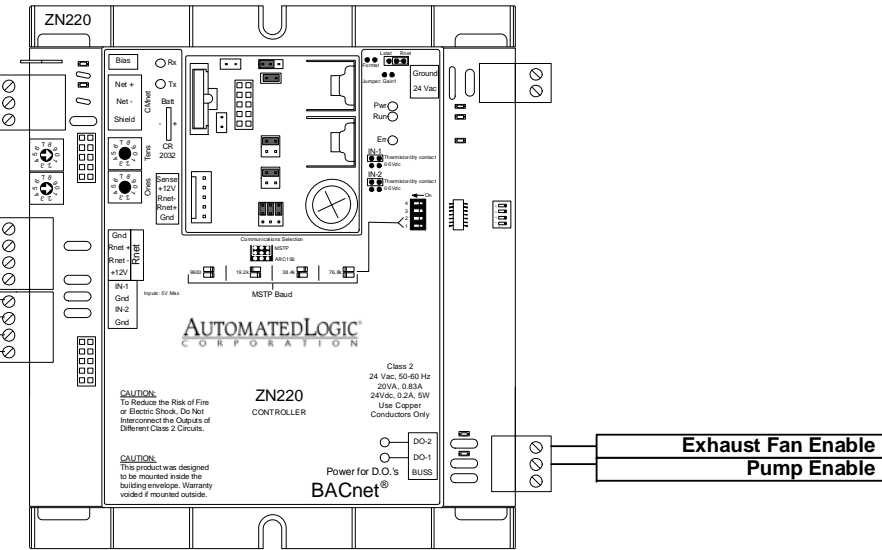
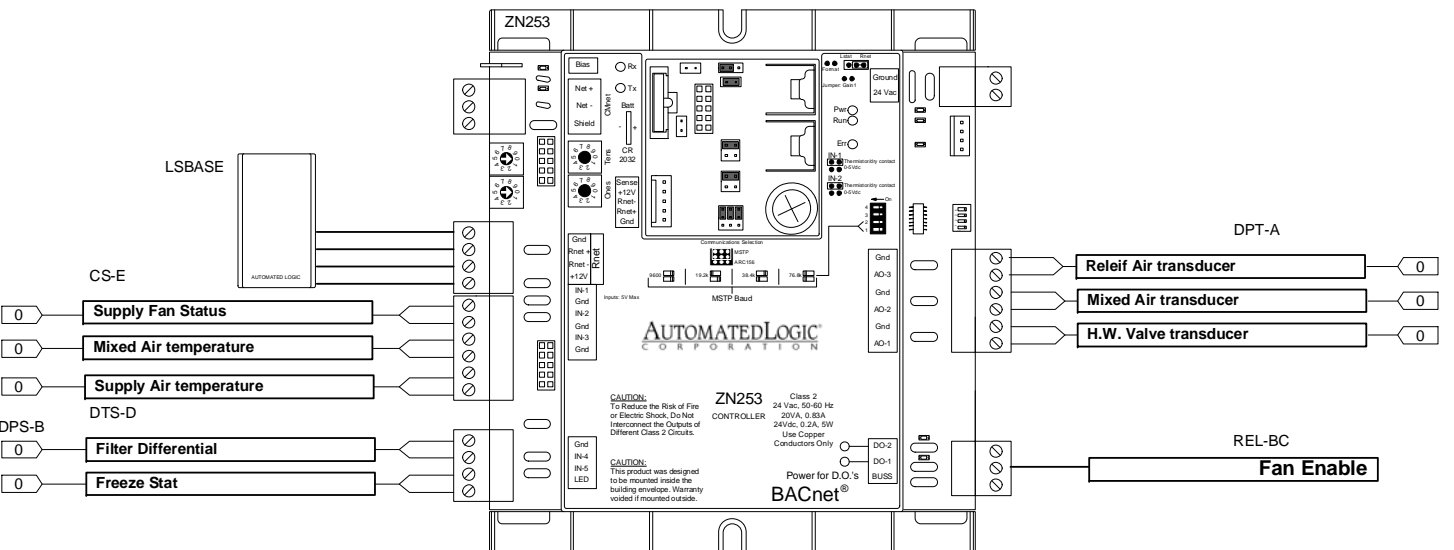
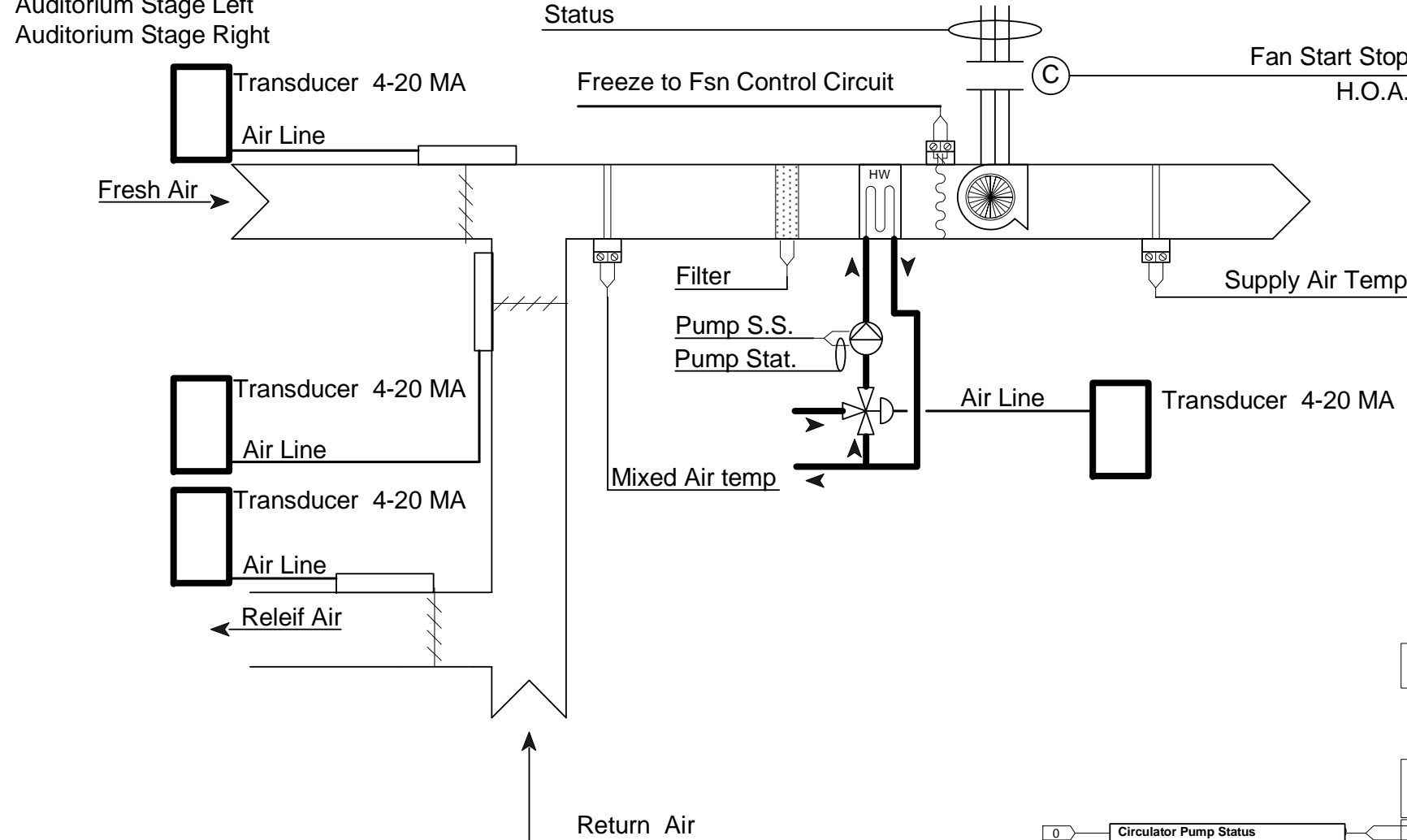
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Fan Coil Mix Valve

Gymnasium East
Gymnasium West
Auditorium Stage Left
Auditorium Stage Right



Bill of Materials

DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
CS-E	CURRENT SWITCH .5-200 AMP SOLID CORE GO/NO GO	VERUS IND.	H-800	7 ea
DPS-B	DIFF PRESSURE SWITCH 0-5 IN. WET	UNITED ELECTRIC	24-013	4 ea
DPT-A	SERIES 600 LOW DRY PRESS	AUTOTRAN	600 D 5IN. WC 12D 20	12 ea
DTS-D	DUCT 10K THERMISTOR PROBE 8 IN.	BAPI	ALC/10K-2-D-8	8 ea
LSBASE	LOGISTAT 10K ROOM SENSOR WITH COMM	BAPI	LSBASE	4 ea
REL-BC	PILOT RELAY 24 VAC DPDT W/ LED	OMRON	LY2N-24V	2 ea
ZN220	ZN220	AUTOMATED LOGIC	ZN220	1 ea
ZN253	ZN253	AUTOMATED LOGIC	ZN253	4 ea

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Fan Coil Mix Valve

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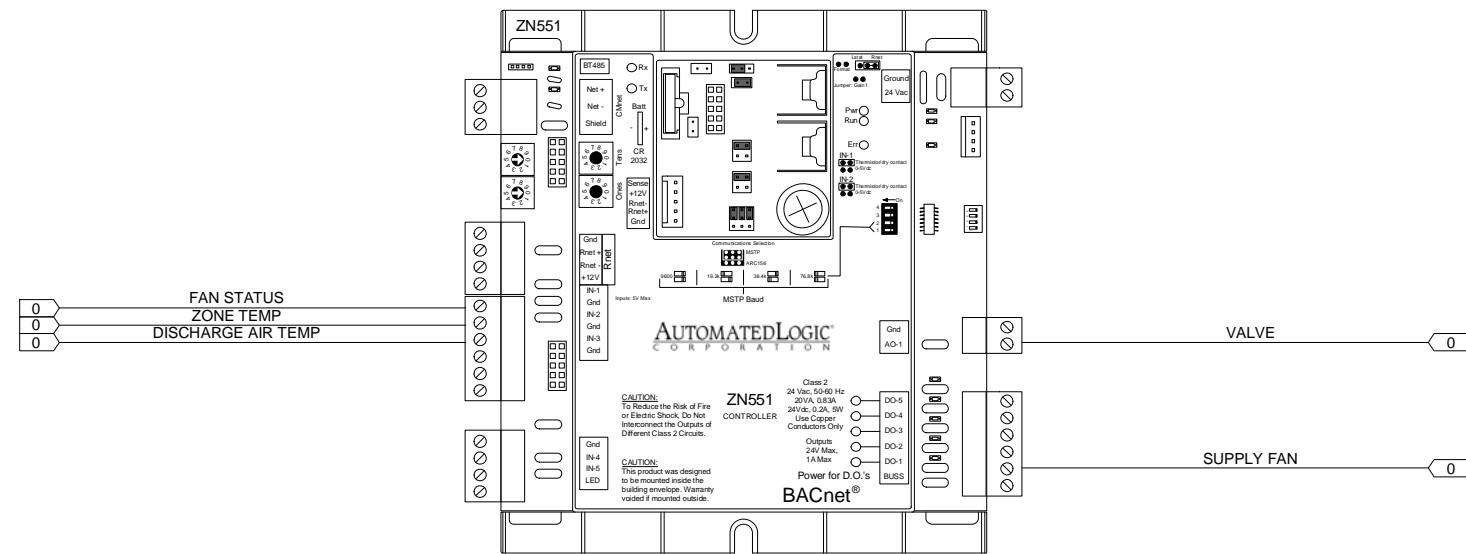
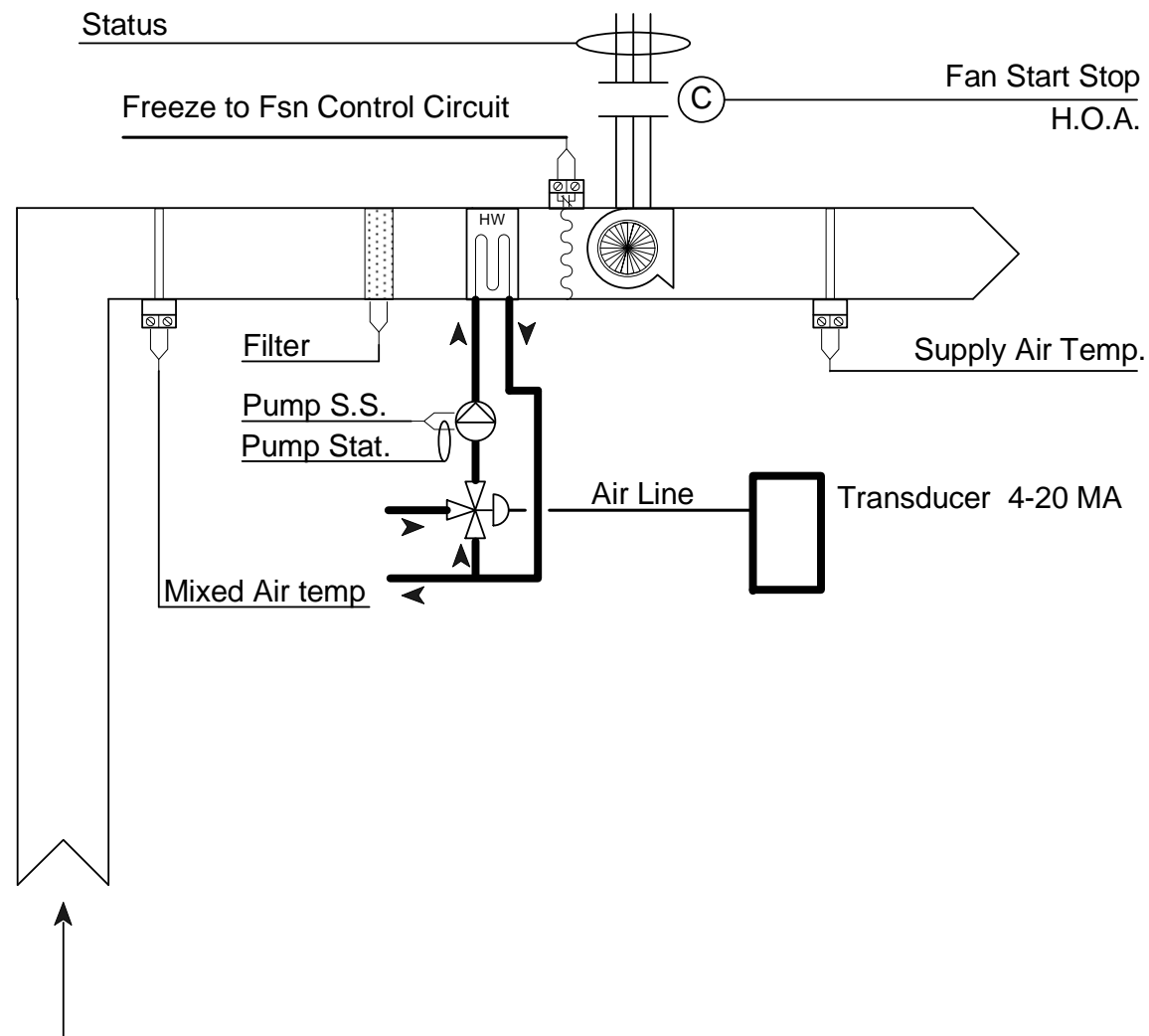
F.C. Mix Valve Sequence01

FAN COIL WITH MIXING VALVE SEQUENCE

1. Maintain space temperature by modulating outside air and return air dampers in sequence with heating coil mixing valve.
2. Start and stop supply fan.
- A. Enable freeze protection
1. Input Device: Existing duct mounted element thermostat mounted before supply fan.
2. Output Device: Hard wired through motor starter.
3. Action: Allow start if duct temperature is above 37 degrees, signal alarm if fan fails to start.
- B. Enable High Temperature protection.
1. Input Device: Duct mounted thermostat located in supply air.
2. Allow start if duct temperature is below 125 degrees.
- C. Initiate unoccupied time schedule.
1. Input Device: D.D.C. system time schedule.
2. Output Device: Digital output to motor relay to motor starter.
3. Action: Energize fan.
- D. Display
1. Supply fan on off indication via motion graphic
2. Mixed Air Control.
- E. Occupied Time Schedule.
1. Input Device: D.D.C. system time schedule
2. Output device: D.D.C. system output.
3. Action: Enable control.
- F. Minimum Position.
4. Input Device: D.D.C. system time schedule
5. Output device: Analog output to transducer.
6. Action: Open outdoor damper to minimum position.
- G. Mixed Air Temperature.
7. Input Device: Electronic temperature sensor.
8. Output device: Analog output to transducer.
9. Action: Modulate outdoor and return air dampers to maintain minimum air temp of 55 degrees.
- H. Unoccupied Time Schedule.
10. Input Device: D.D.C. system time schedule.
11. Output device: Analog output to transducer.
12. Action: Position outdoor damper closed, and return air damper open.
- A. Display.
 1. Mixed air temperature indication.
 2. Mixed air temperature set point.
 3. Action: Mixed air damper position.
- B. Occupied Time Schedule
4. Input Device: D.D.C. system time schedule
5. Output Device: D.D.C. system output.
6. Action: Enable control
- C. Differential Pressure
7. Input Device: Differential pressure switch.
8. Output Device: D.D.C. system alarm.
9. Action: signal alarm on high pressure differential condiditons.
- D. Display.
10. Filter condition
- E. Hydronic Heating Coil/Occupied Time Schedule
11. Input Device: D.D.C. system time schedule.
12. Output device: Binary output.
13. Action: Enable control.
- F. Supply Air Temperature.
14. Input Device: Electronic temperature sensor
15. Output device: Normally open to coil, three way control valve.
16. Action: Maintain supply air temperature at supply air temperature set point.
- G. Temperature Reset.
17. Input Device: Room thermostat.
18. Output device: D.D.C. system
19. Action: Reset supply air temperature based on heating and cooling demand.
- H. Unoccupied Time Schedule.
20. Input Device: D.D.C. system time schedule.
21. Output device: Room thermostat cycling fan.
22. Action: full heat with full return air to maintain unoccupied set point.

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F.C. Mix Valve Sequence01			
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Locker Room AHU's



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Locker Room AHU's

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Locker Rooms AHU's Sequence

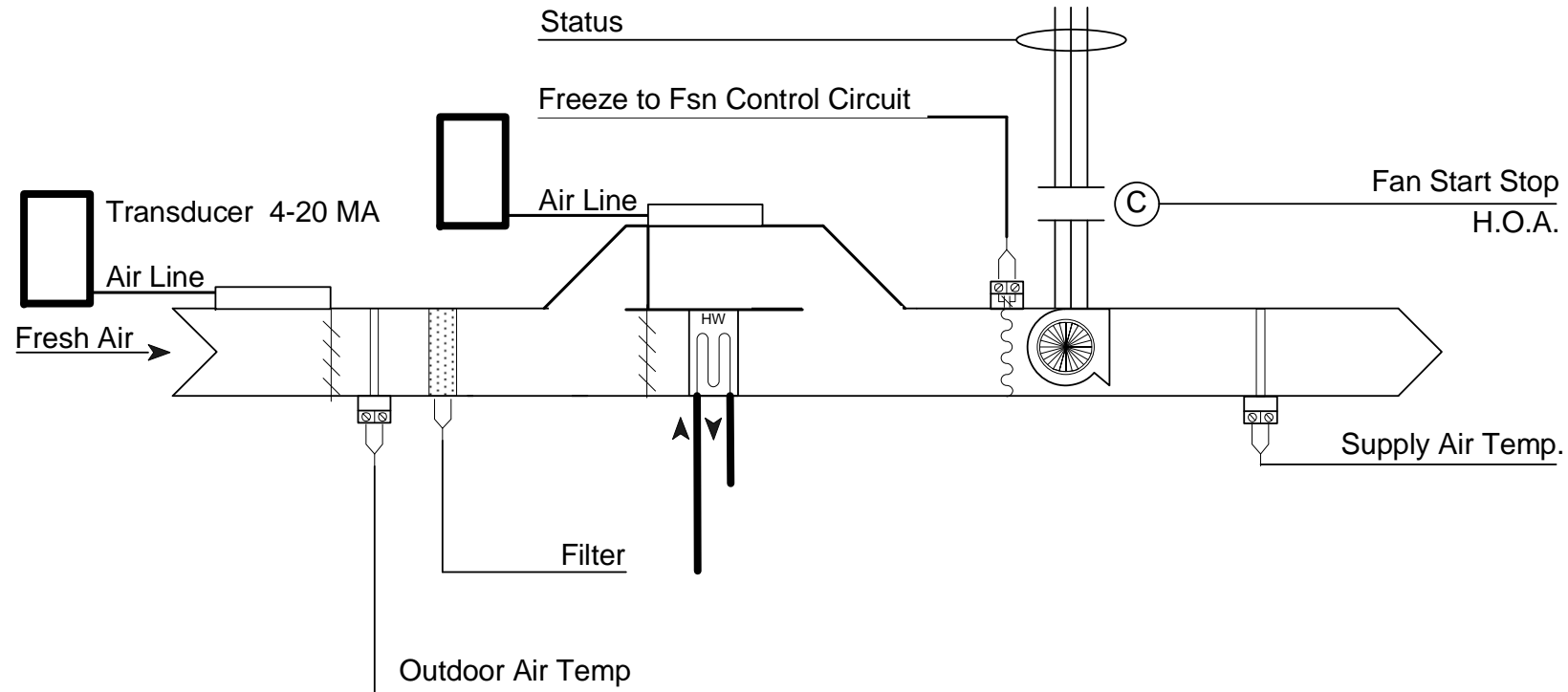
Locker Rooms AHU

- 1. Maintain space temperature by modulating heating coil face and bypass damper.
- 2. Start and stop supply fan.
- A. Enable High Temperature protection.
 - 1. Input Device: Duct mounted thermostat located in supply air.
 - 2. Allow start if duct temperature is below 125 degrees.
 - B. Initiate unoccupied time schedule.
 - 1. Input Device: D.D.C. system time schedule.
 - 2. Output Device: Digital output to motor relay to motor starter.
 - 3. Action: Energize fan.
 - C. Display
 - 1. Supply fan on off indication via motion graphic
- D. Occupied Time Schedule.
 - 1. Input Device: D.D.C. system time schedule
 - 2. Output device: D.D.C. system output.
 - 3. Action: Enable control.
 - E. Unoccupied Time Schedule.
 - 4. Input Device: D.D.C. system time schedule.
 - 5. Output device: Analog output to transducer.
 - 6. Action: Position outdoor damper closed
 - F. Differential Pressure
 - 7. Input Device: Differential pressure switch.
 - 8. Output Device: D.D.C. system alarm.
 - 9. Action: signal alarm on high pressure differential condiditons.
 - G. Display.
 - 10. Filter condition
- H. Hydronic Heating Coil/Occupied Time Schedule
 - 11. Input Device: D.D.C. system time schedule.
 - 12. Output device: Binary output.
 - 13. Action: Enable control.
 - I. Supply Air Temperature.
 - 14. Input Device: Electronic temperature sensor
 - 15. Output device: Normally Open 3 way Mixing Valve.
 - 16. Action: Maintain supply air temperature at supply air temperature of 70 degrees.

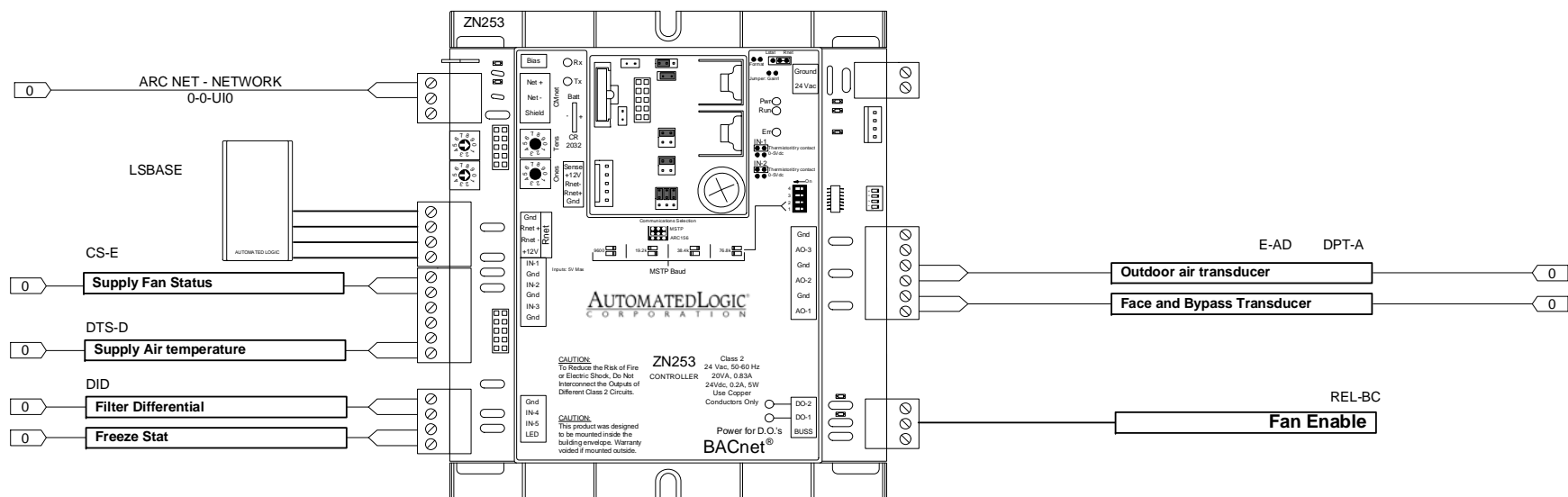
- A. Temperature Reset.
 - 1. Input Device: Room thermostat.
 - 2. Output device: D.D.C. system
 - 3. Action: Reset supply air temperature based on heating and cooling demand.
 - B. Unoccupied Time Schedule.
 - 4. Input Device: D.D.C. system time schedule.
 - 5. Output device: Room thermostat cycling fan.
 - 6. Action: full heat with full return air to maintain unoccupied set point.

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Locker Rooms AHU's Sequence			
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Kitchen MAU



Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
DID				1 ea
DPT-A	SERIES 600 LOW DRY PRESS	AUTOTRAN	600 D 5IN. WC 12D 20	1 ea
DTS-D	DUCT 10K THERMISTOR PROBE 8 IN.	BAPI	ALC/10K-2-D-8	1 ea
E-AD	RET NEMA 1 18X12X7	KELE & ASSOC.	RET 1812	1 ea
LSBASE	LOGISTAT 10K ROOM SENSOR WITH COMM	BAPI	LSBASE	1 ea
REL-BC	PILOT RELAY 24 VAC DPDT W/ LED	OMRON	LY2N-24V	1 ea
ZN253	ZN253	AUTOMATED LOGIC	ZN253	1 ea



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Kitchen MAU

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Kitchen MAU Sequence

Kitchen Make up Air

1. Maintain space temperature by modulating heating coil face and bypass damper.

2. Start and stop supply fan.

A. Enable freeze protection

1. Input Device: Existing duct mounted element thermostat mounted before supply fan.

2. Output Device: Hard wired through motor starter.

3. Action: Allow start if duct temperature is above 37 degrees, signal alarm if fan fails to start.

B. Enable High Temperature protection.

1. Input Device: Duct mounted thermostat located in supply air.

2. Allow start if duct temperature is below 125 degrees.

C. Initiate unoccupied time schedule.

1. Input Device: D.D.C. system time schedule.

2. Output Device: Digital output to motor relay to motor starter.

3. Action: Energize fan.

D. Display

1. Supply fan on off indication via motion graphic

E. Occupied Time Schedule.

1. Input Device: D.D.C. system time schedule

2. Output device: D.D.C. system output.

3. Action: Enable control.

F. Unoccupied Time Schedule.

4. Input Device: D.D.C. system time schedule.

5. Output device: Analog output to transducer.

6. Action: Position outdoor damper closed

G. Differential Pressure

7. Input Device: Differential pressure switch.

8. Output Device: D.D.C. system alarm.

9. Action: signal alarm on high pressure differential conditons.

A. Display.

1. Filter condition

B. Hydronic Heating Coil/Occupied Time Schedule

2. Input Device: D.D.C. system time schedule.

3. Output device: Binary output.

4. Action: Enable control.

C. Supply Air Temperature.

5. Input Device: Electronic temperature sensor

6. Output device: Normally closed face/bypass damper.

7. Action: Maintain supply air temperature at supply air temperature of 70 degrees.

D. Temperature Reset.

8. Input Device: Room thermostat.

9. Output device: D.D.C. system

10. Action: Reset supply air temperature based on heating and cooling demand.

E. Unoccupied Time Schedule.

11. Input Device: D.D.C. system time schedule.

12. Output device: Room thermostat cycling fan.

13. Action: full heat with full return air to maintain unoccupied set point.

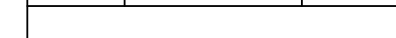
South Kortright School 2009 Capital Improvements

South Kortright, New York

 AIR TEMP HEATING & AIR CONDITIONING, INC.
A LINC SERVICE @ CONTRACTOR

Kitchen MAU Sequence

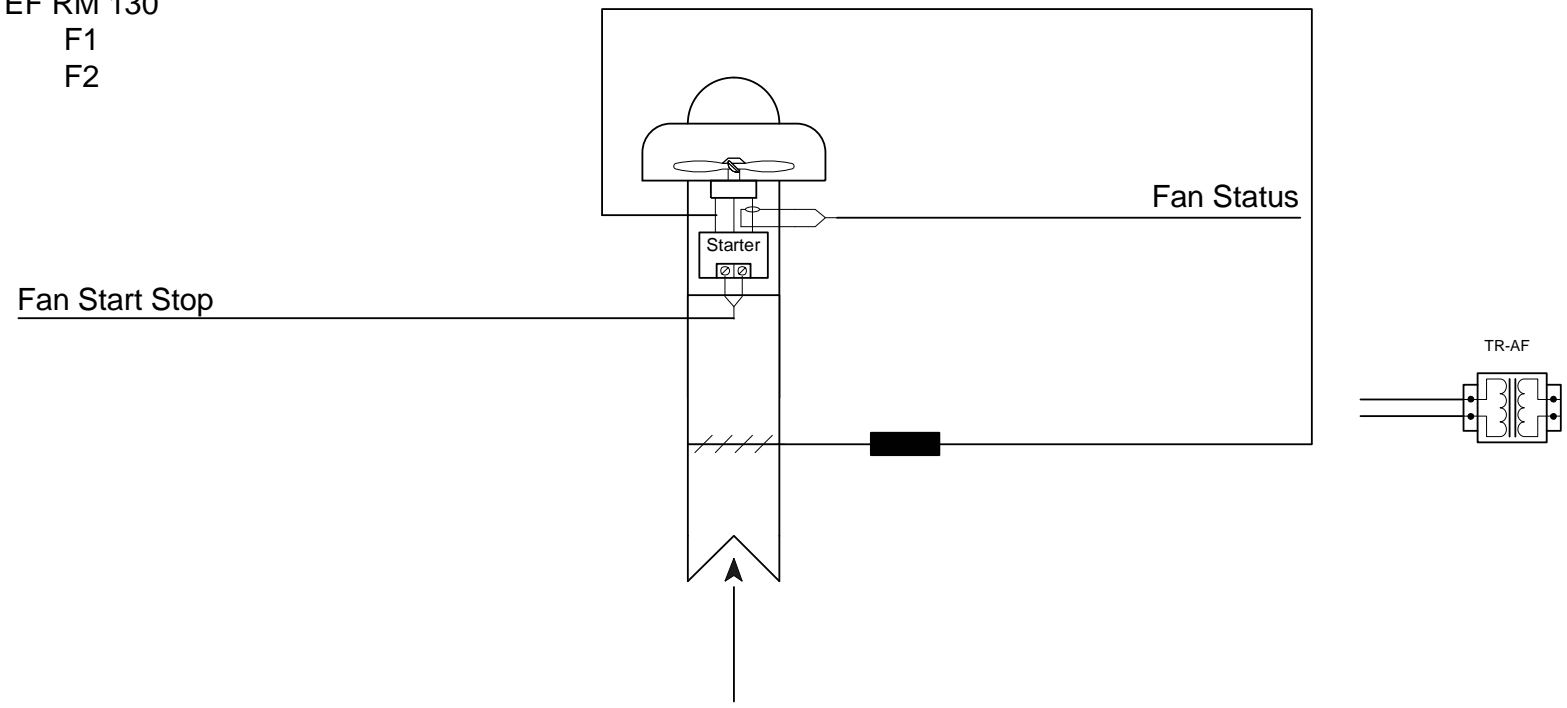
REV: 1	As-Built	11/30/2008	JOB NO: P7790
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			CHECK BY: RSL
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			DSCODE: 07112.00
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Exhaust Interlocked

- EF RM 137
- EF RM 139
- EF RM 141
- EF RM 143
- EF RM 147
- EF RM 142
- EF RM 158
- EF RM 130
- F1
- F2



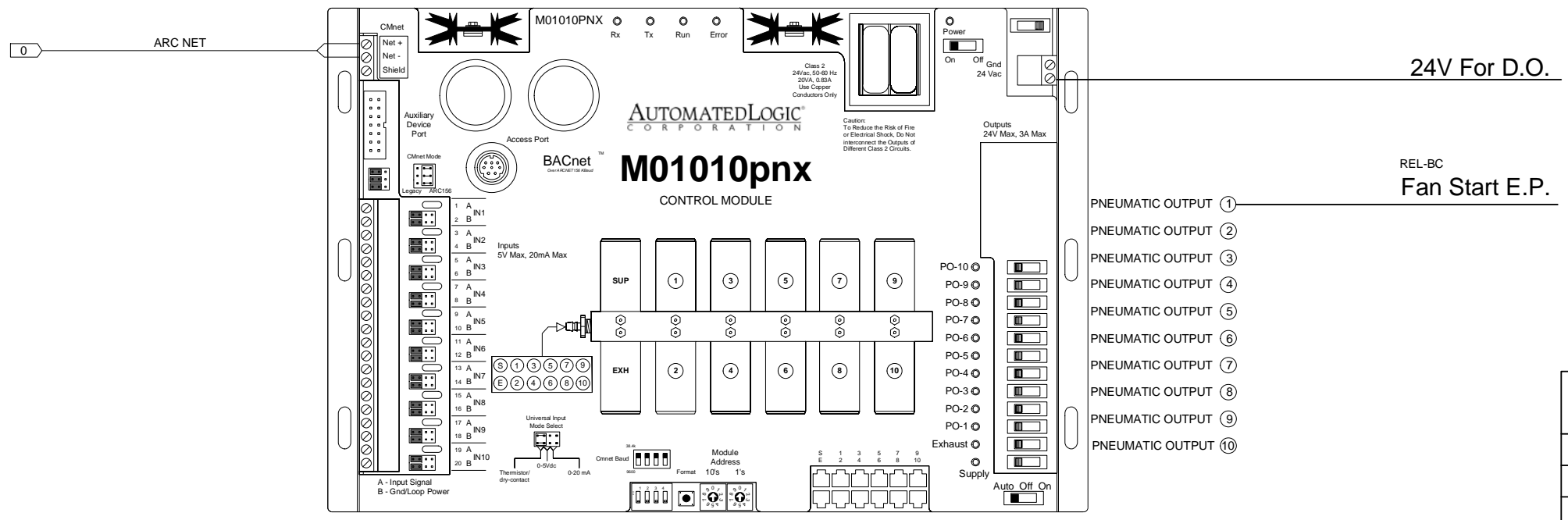
Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
CS-E	CURRENT SWITCH .5-200 AMP SOLID CORE GO/NO GO	VERUS IND.	H-800	8 ea
REL-BC	PILOT RELAY 24 VAC DPDT W/ LED	OMRON	LY2N-24V	8 ea
TR-AF	TRANSFORMER, 120-24VAC W/BREAKER	KELE & ASSOC.	691-K0A	8 ea
ZN220	ZN220	AUTOMATED LOGIC	ZN220	8 ea

EXHAUST FAN CONTROL

- fan shall be energized by BAS during occupied mode, and off during unoccupied mode. This fan is to be interlocked through logic with the space unit ventilator
- Automatic damper shall open when fan is energized and close when fan is off

EXHAUST FAN SAFETY

- Fan shall be shut down and damper closed when D.D.C. system receives a global fire alarm signal.



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A LINC SERVICE @ CONTRACTOR

Exhaust Interlocked

REV: 1	As-Built	11/30/2008	JOB NO: P7790
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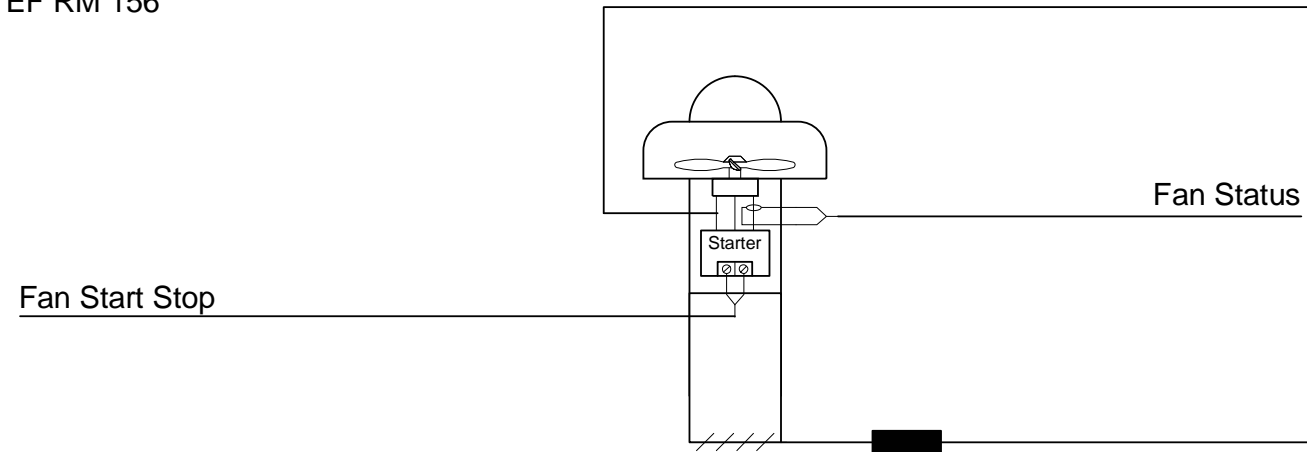
CHECK BY: RSL

AUTOMATED LOGIC
CORPORATION

DSCODE: 07112.00

Exhaust general

- EF RM 138
- EF RM 155
- EF RM 148
- EF RM 162
- EF RM 150
- EF RM 154
- EF RM 156



Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
CS-E	CURRENT SWITCH .5-200 AMP SOLID CORE GO/NO GO	VERUS IND.	H-800	7 ea
REL-BC	PILOT RELAY 24 VAC DPDT W/ LED	OMRON	LY2N-24V	7 ea
TR-AF	TRANSFORMER, 120-24VAC W/BREAKER	KELE & ASSOC.	691-K0A	7 ea
ZN220	ZN220	AUTOMATED LOGIC	ZN220	7 ea

EXHAUST FAN CONTROL

1. fan shall be energized by BAS during occupied mode, and off during unoccupied mode.

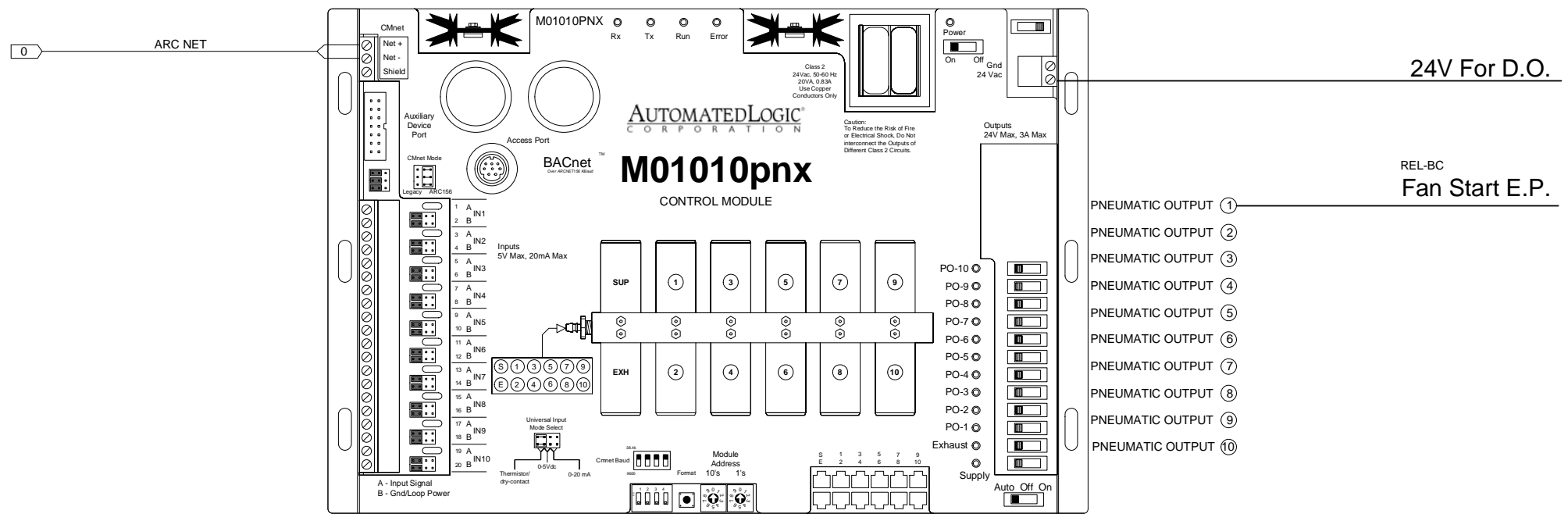
24V For D.O.

2. Automatic damper shall open when fan is energized and close when fan is off

REL-BC

EXHAUST FAN Fan Start E.P.

1. Fan shall be shut down and damper closed when D.D.C. system receives a global fire alarm signal.



South Kortright School 2009 Capital Improvements

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AIR TEMP HEATING & AIR CONDITIONING, INC.
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Exhaust general

REV: 1	As-Built	11/30/2008	JOB NO: P7790
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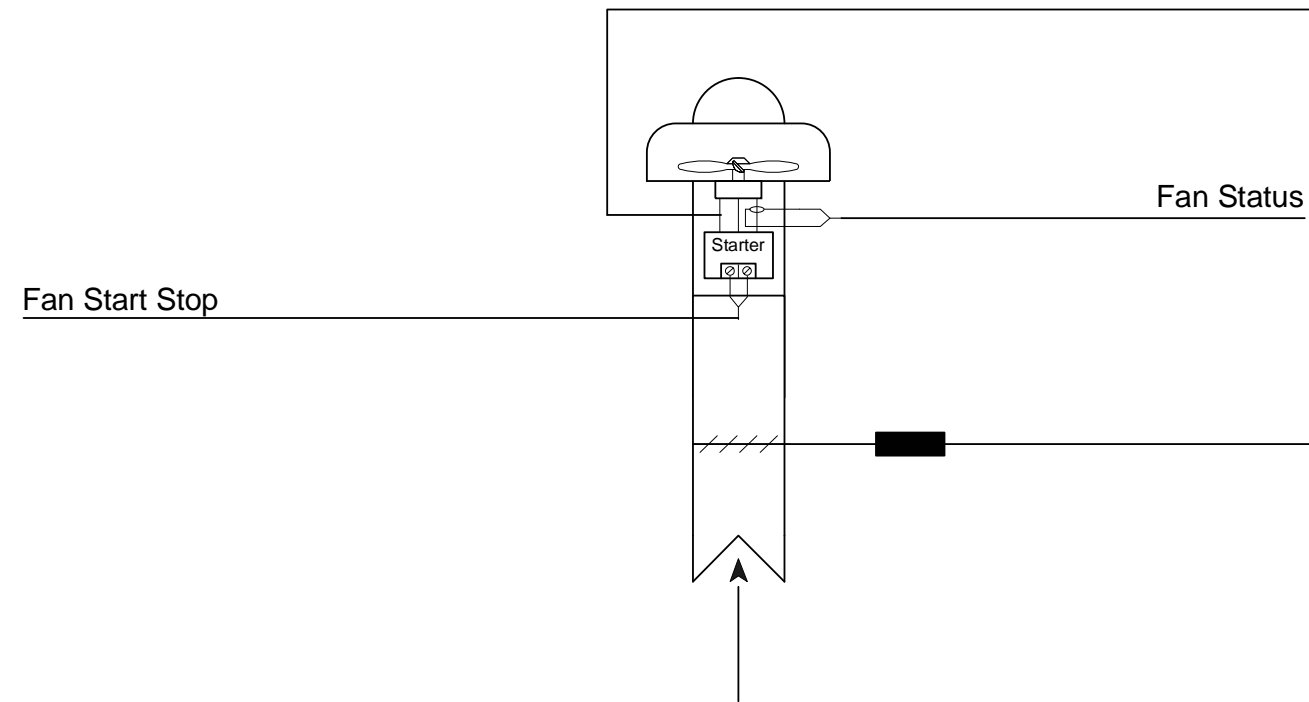
CHECK BY: RSL

DSCODE: 07112.00

Exhaust Bathroom

EF RM 140A
EF RM 158C

Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
CS-E	CURRENT SWITCH .5-200 AMP SOLID CORE GO/NO GO	VERUS IND.	H-800	2 ea
REL-BC	PILOT RELAY 24 VAC DPDT W/ LED	OMRON	LY2N-24V	2 ea
TR-AF	TRANSFORMER, 120-24VAC W/BREAKER	KELE & ASSOC.	691-K0A	2 ea
ZN220	ZN220	AUTOMATED LOGIC	ZN220	2 ea

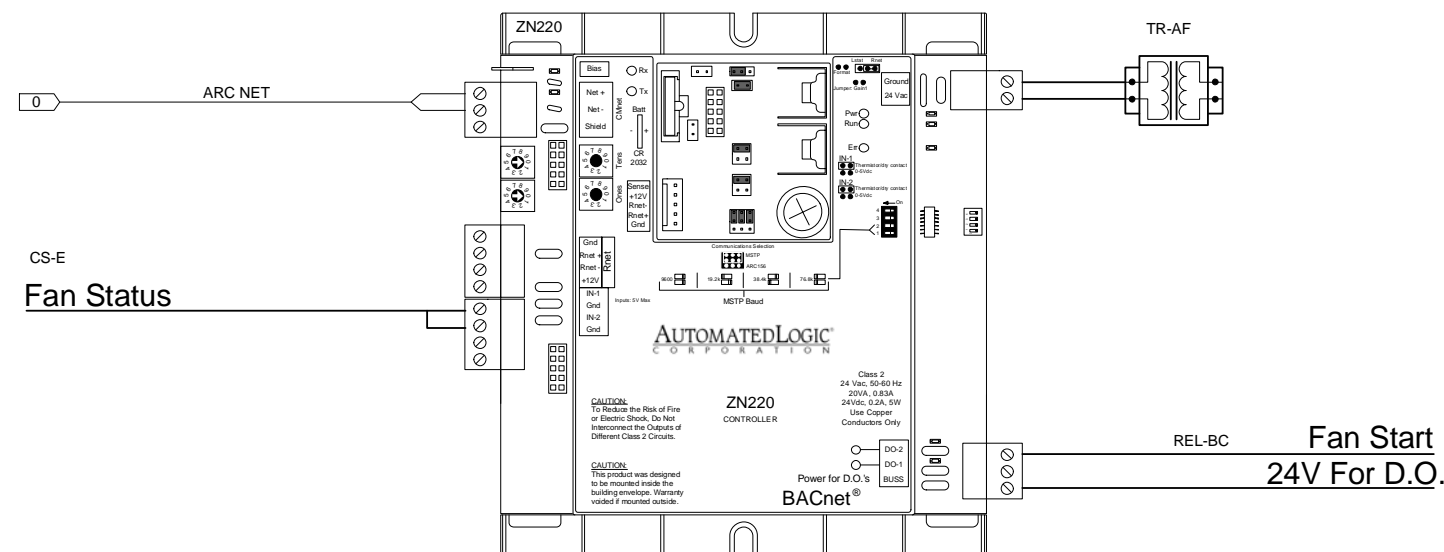


EXHAUST FAN CONTROL

- fan shall be energized by BAS during occupied mode, and off during unoccupied mode.
- Automatic damper shall open when fan is energized and close when fan is off

EXHAUST FAN SAFETY

- Fan shall be shut down and damper closed when D.D.C. system receives a global fire alarm signal.



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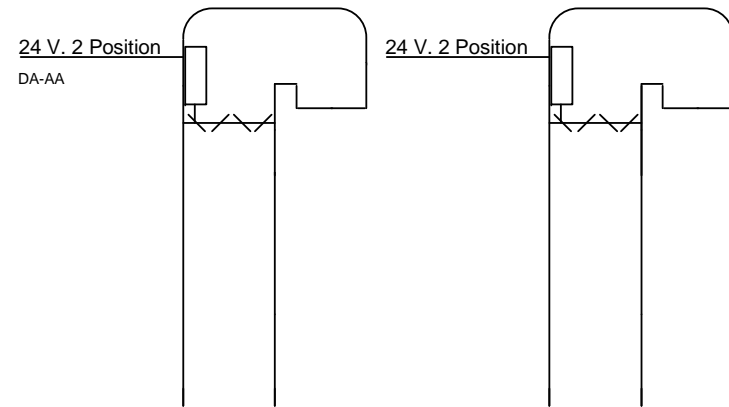
Exhaust Bathroom

REV: 1	As-Built	11/30/2008	JOB NO: P7790
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	CHECK BY: RSL
	DSCODE: 07112.00

RV Interlocks

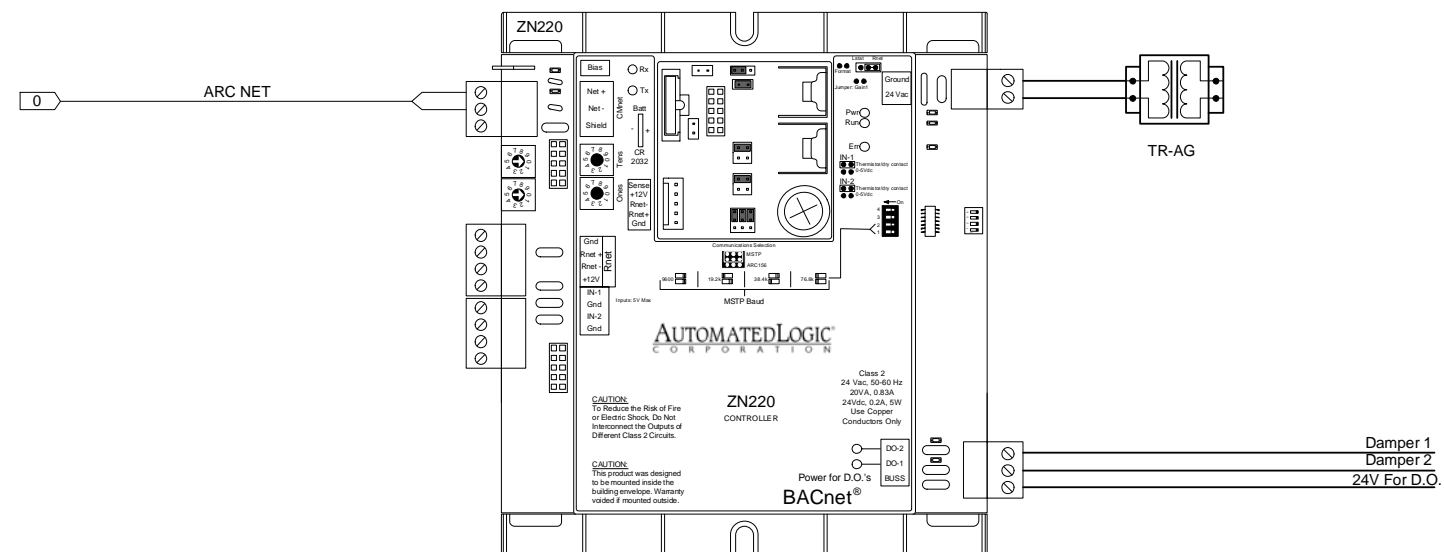
Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
DA-AA	SR OPEN/CLOSE 60 IN-LB 24V AUX SWITCH	BELIMO	NF24-S ALC	1 ea
TR-AG	TRANSFORMER, 120/24VAC 150VA W/CCT BREAKER	CORE COMPONENTS	LE-124	1 ea
ZN220	ZN220	AUTOMATED LOGIC	ZN220	1 ea



RV CONTROL

- RV shall be energized by BAS during occupied mode, and off during unoccupied mode. This RV is to be interlocked through logic with the space FCU

Network interlock with existing FCU's



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South Kortright, New York

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A LINC SERVICE @ CONTRACTOR

RV Interlocks

REV: 1	As-Built	11/30/2008	JOB NO: P7790
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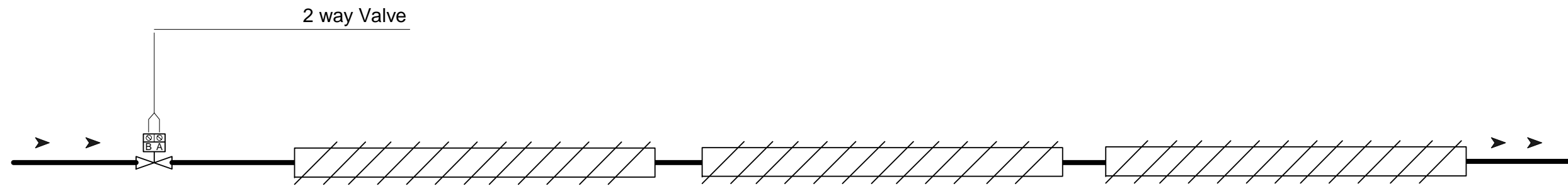
AUTOMATED LOGIC CORPORATION

CHECK BY: RSL

DSCODE: 07112.00

Fin Tube Guidance A

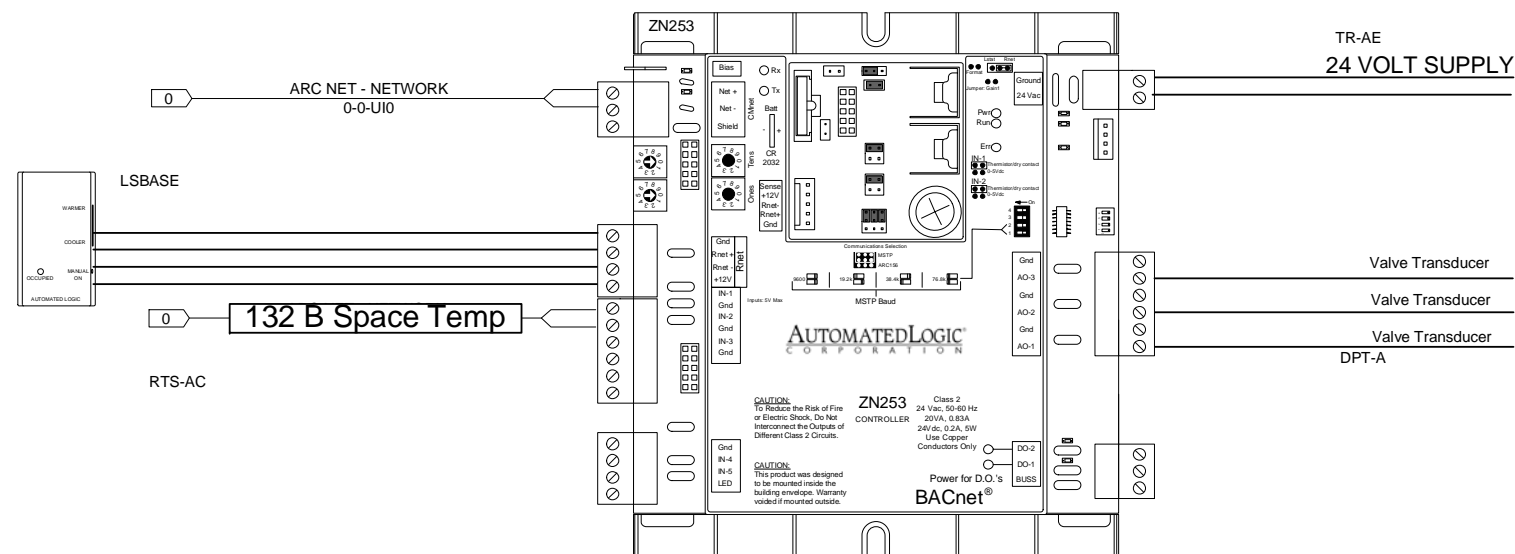
Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
DPT-A	SERIES 600 LOW DRY PRESS	AUTOTRAN	600 D 5IN. WC 12D 20	5 ea
LSBASE	LOGISTAT 10K ROOM SENSOR WITH COMM	BAPI	LSBASE	1 ea
RTS-AC	10K ROOM THERMISTOR SS WALL PLATE	BAPI	BA/10K-2-93-631	1 ea
TR-AE	TRANSFORMER, 120/24VAC, 40VA	CORE COMPONENTS	LE-112	1 ea
ZN253	ZN253	AUTOMATED LOGIC	ZN253	2 ea



FTR CONTROL

A. Sequence Occupied

1. Scheduling shall be accomplished by the D.D.C. system
2. Existing pneumatic control valve shall modulate to maintain space temperature.
3. Provide wall mounted thermostat and interface with D.D.C. control system
4. Display
 - A. Room temperature indication
 - B. Room temperature set point occupied.
 - C. Room temperature set point unoccupied.
 - D. Control valve position as percent open.

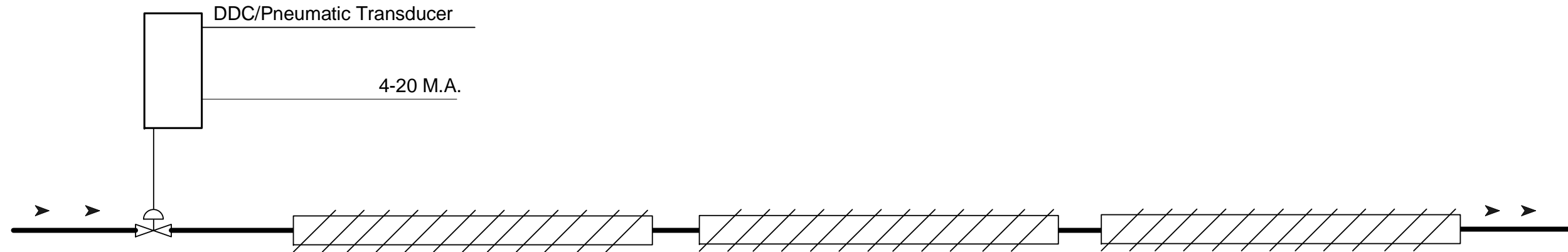


South Kortright School 2009 Capital Improvements			
South Kortright, New York			
 A LINC SERVICE @ CONTRACTOR			
Fin Tube Guidance A			
REV: 1	As-Built	11/30/2008	JOB NO: P7790
			CHECK BY: RSL
			DSCODE: 07112.00
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Fin Tube Guidance B

Rooms
132D
132C

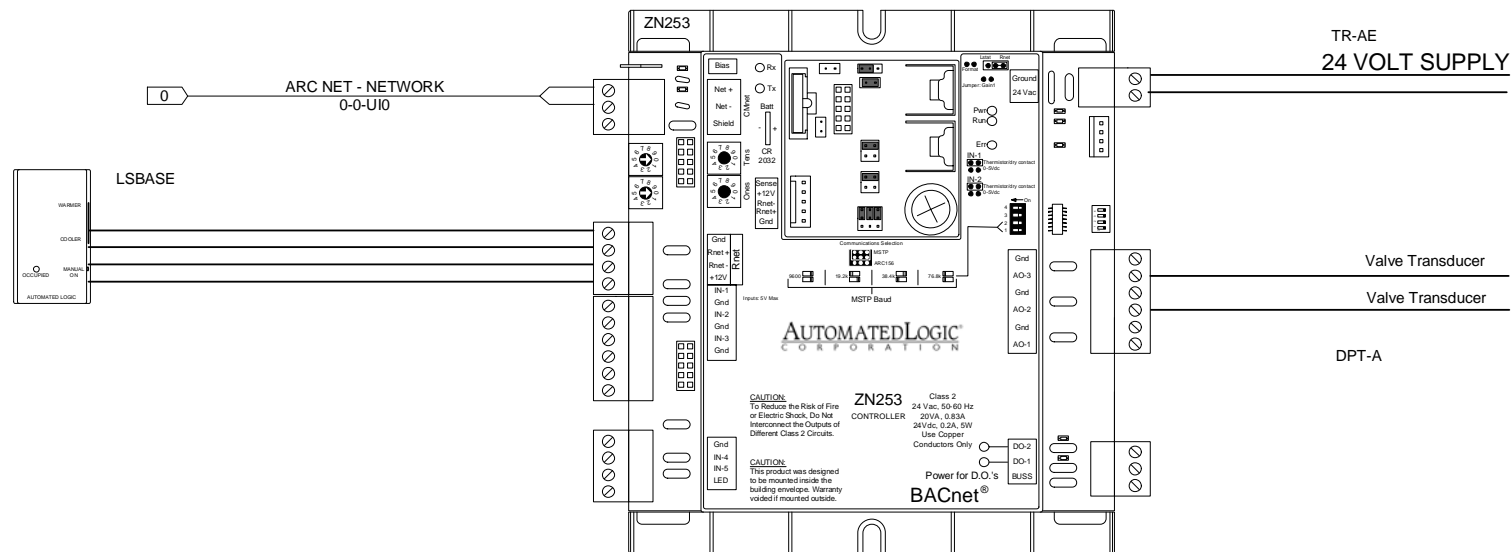
Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
DPT-A	SERIES 600 LOW DRY PRESS	AUTOTRAN	600 D 5IN. WC 12D 20	2 ea
LSBASE	LOGISTAT 10K ROOM SENSOR WITH COMM	BAPI	LSBASE	1 ea
TR-AE	TRANSFORMER, 120/24VAC, 40VA	CORE COMPONENTS	LE-112	1 ea
ZN253	ZN253	AUTOMATED LOGIC	ZN253	2 ea



FTR CONTROL

A. Sequence Occupied

1. Scheduling shall be accomplished by the D.D.C. system
2. Existing pneumatic control valve shall modulate to maintain space temperature.
3. Provide wall mounted thermostat and interface with D.D.C. control system
4. Display
 - A. Room temperature indication
 - B. Room temperature set point occupied.
 - C. Room temperature set point unoccupied.
 - D. Control valve position as percent open.



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Fin Tube Guidance B

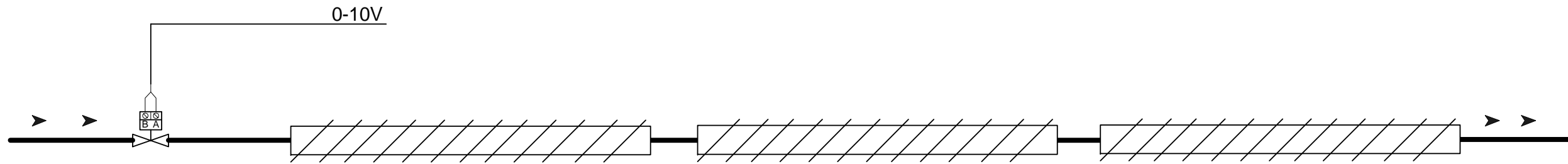
REV: 1	As-Built	11/30/2008	JOB NO: P7790
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	CHECK BY: RSL
	DSCODE: 07112.00

Fin Tube Nurse

Rooms
Nurse Office
Exam 1
Exam 2

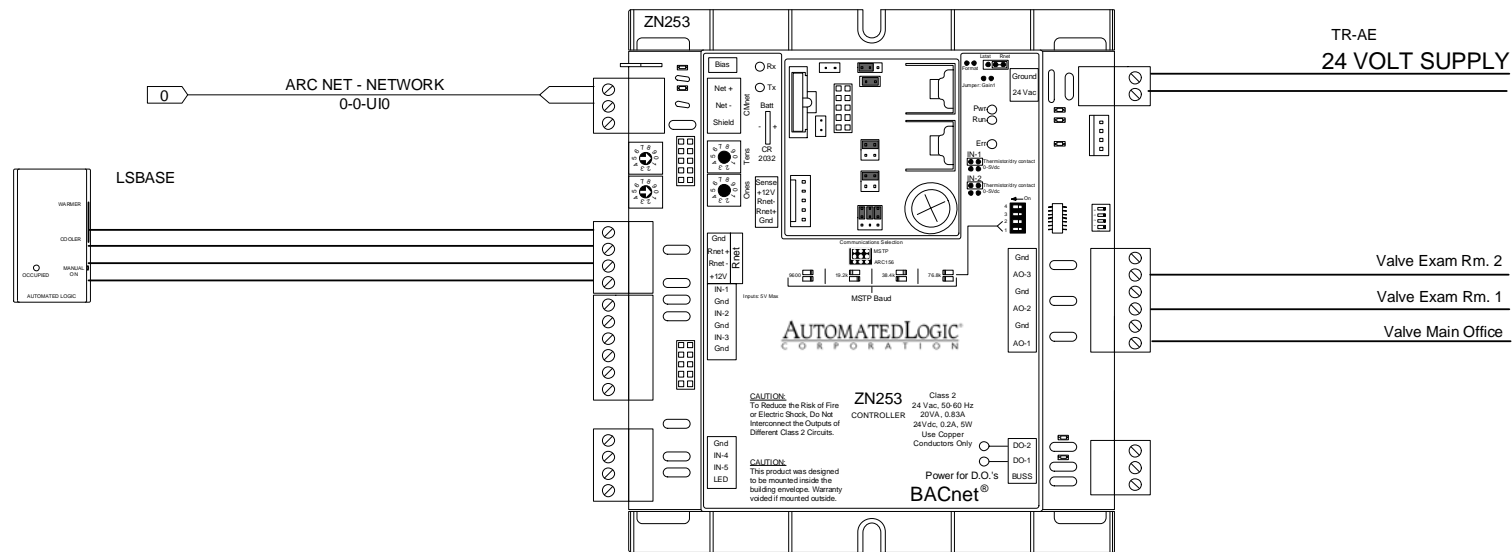
Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
DPT-A	SERIES 600 LOW DRY PRESS	AUTOTRAN	600 D 5IN. WC 12D 20	2 ea
LSBASE	LOGISTAT 10K ROOM SENSOR WITH COMM	BAPI	LSBASE	1 ea
TR-AE	TRANSFORMER, 120/24VAC, 40VA	CORE COMPONENTS	LE-112	1 ea
ZN253	ZN253	AUTOMATED LOGIC	ZN253	2 ea



FTR CONTROL

A. Sequence Occupied

1. Scheduling shall be accomplished by the D.D.C. system
2. Existing pneumatic control valve shall modulate to maintain space temperature.
3. Provide wall mounted thermostat and interface with D.D.C. control system
4. Display
 - A. Room temperature indication
 - B. Room temperature set point occupied.
 - C. Room temperature set point unoccupied.
 - D. Control valve position as percent open.



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Fin Tube Nurse

REV: 1 | As-Built | 11/30/2008 | JOB NO: P7790

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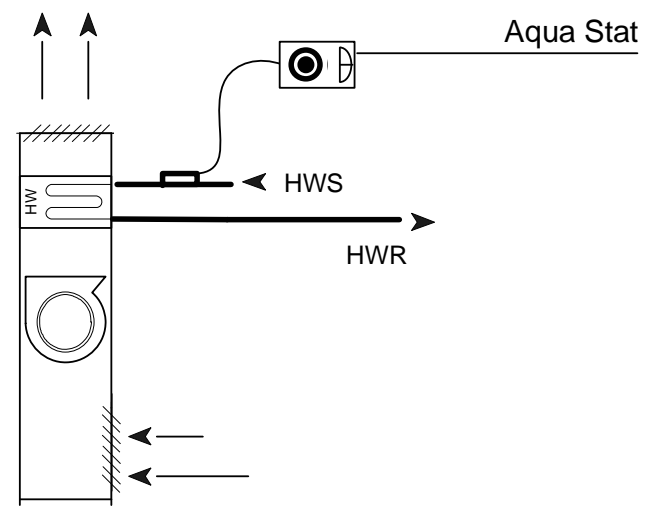
AUTOMATED LOGIC
CORPORATION

DSCODE: 07112.00

CUH

1st Floor Hall

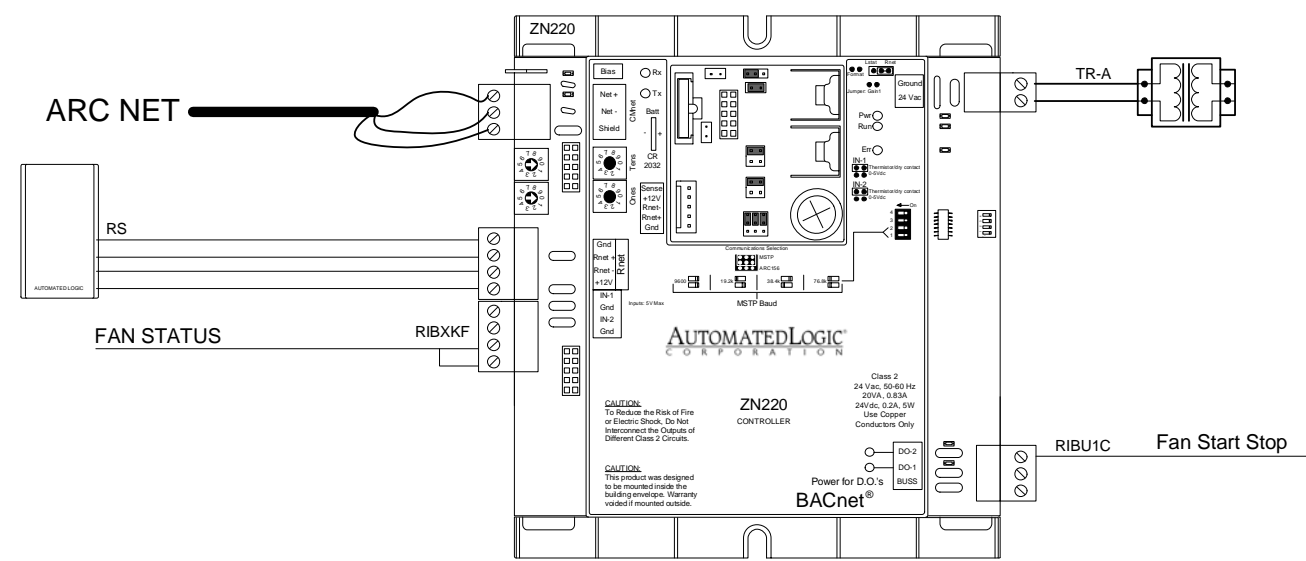
Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
RIBU1C	RELAY 24 V	RIB	RIBU1C	1 ea
RIBXKF	CURRENT SENSOR	RIB	RIBXKF	1 ea
RS	ROOM SENSOR	AUTOMATED LOGIC	RS	1 ea
TR-A	TRANSFORMER, 120/24VAC, 50VA	CORE COMPONENTS	LE-117	1 ea
ZN220	ZN220	AUTOMATED LOGIC	ZN220	1 ea



CABINET HEATER

CABINET UNIT HEATER

1. Hot water shall circulate through the coil continuously.
2. Fan shall cycle to maintain space temperature as sensed by wall mounted thermostat.
3. Provide wall mounted thermostat and interface with D.D.C.
4. Display
 - A. Room temp
 - B. Room temp S.P.



South Kortright School 2009 Capital Improvements

South Kortright, New York

AIR TEMP HEATING & AIR CONDITIONING, INC.
A LINC SERVICE @ CONTRACTOR

CUH

REV: 1	As-Built	11/30/2008	JOB NO: P7790
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CHECK BY: RSL

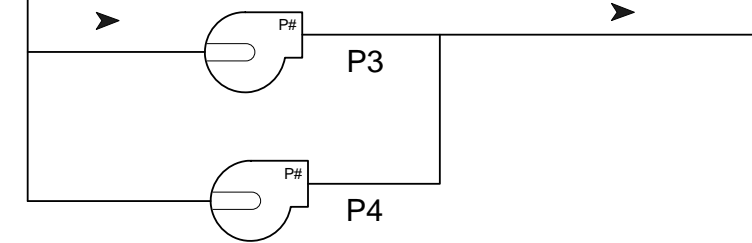
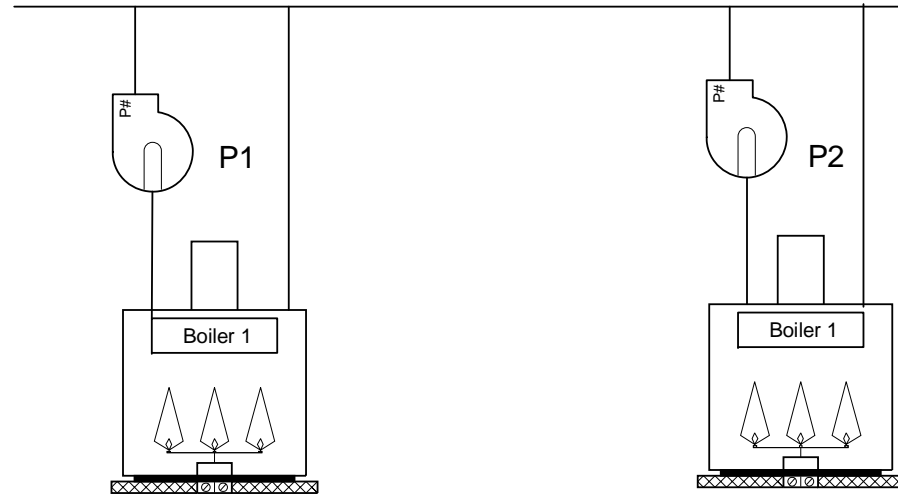
DSCODE: 07112.00

Boiler Plant Main School

Existing wiring and hardware
 Existing Logic
 Update graphics to new Automated
 Logic Graphics

Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
ZN220	ZN220	AUTOMATED LOGIC	ZN220	1 ea
ZN551	ZN551	AUTOMATED LOGIC	ZN551	1 ea

P 2, and P3 are out of service. Logic is written for single pumps



1. Boiler Control

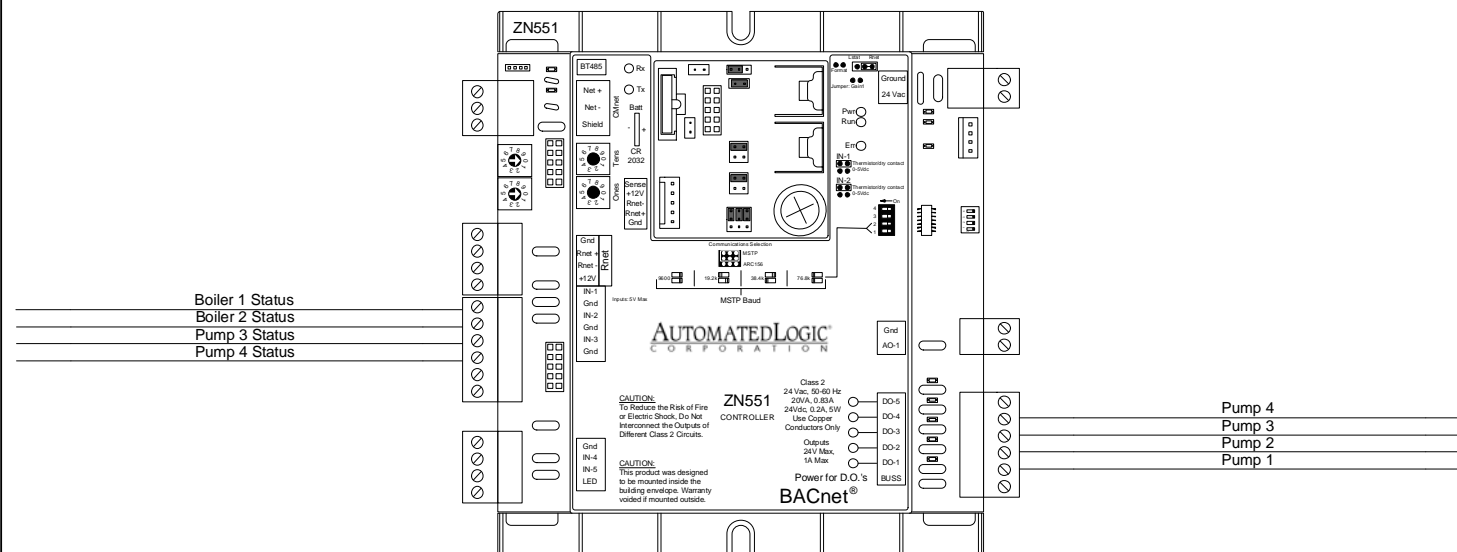
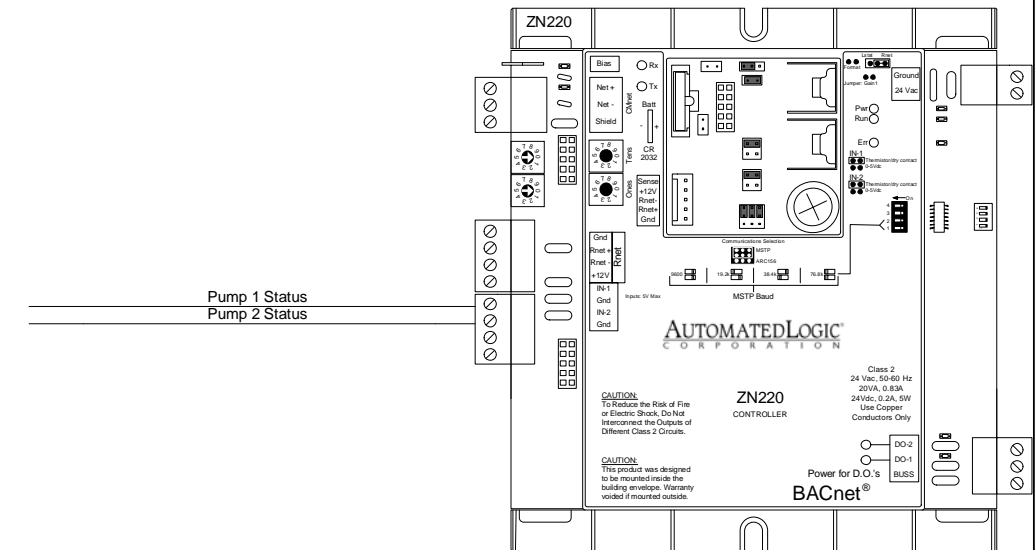
a. Interface to existing Barber Colman MN800 controller.

NOTE Existing Barber Colman MN 800 is only controlling Pumps, monitoring boiler status, and switching pneumatic day/night.

2. Pump Control.

A. Pump 1&2 energized based on user defined outdoor air temperature set point.

B. Pump 3&4 energized based on user defined outdoor air temperature set point.



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Boiler Plant Main School

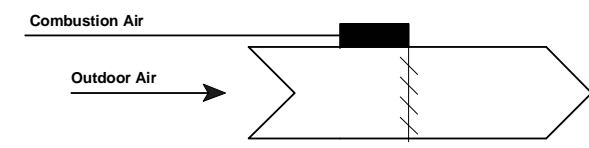
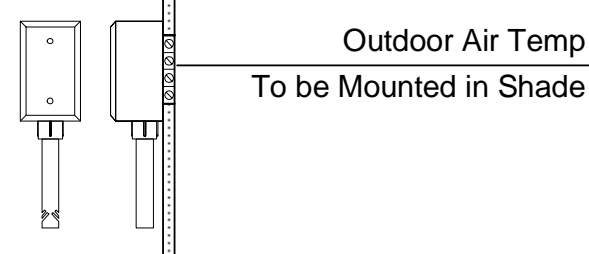
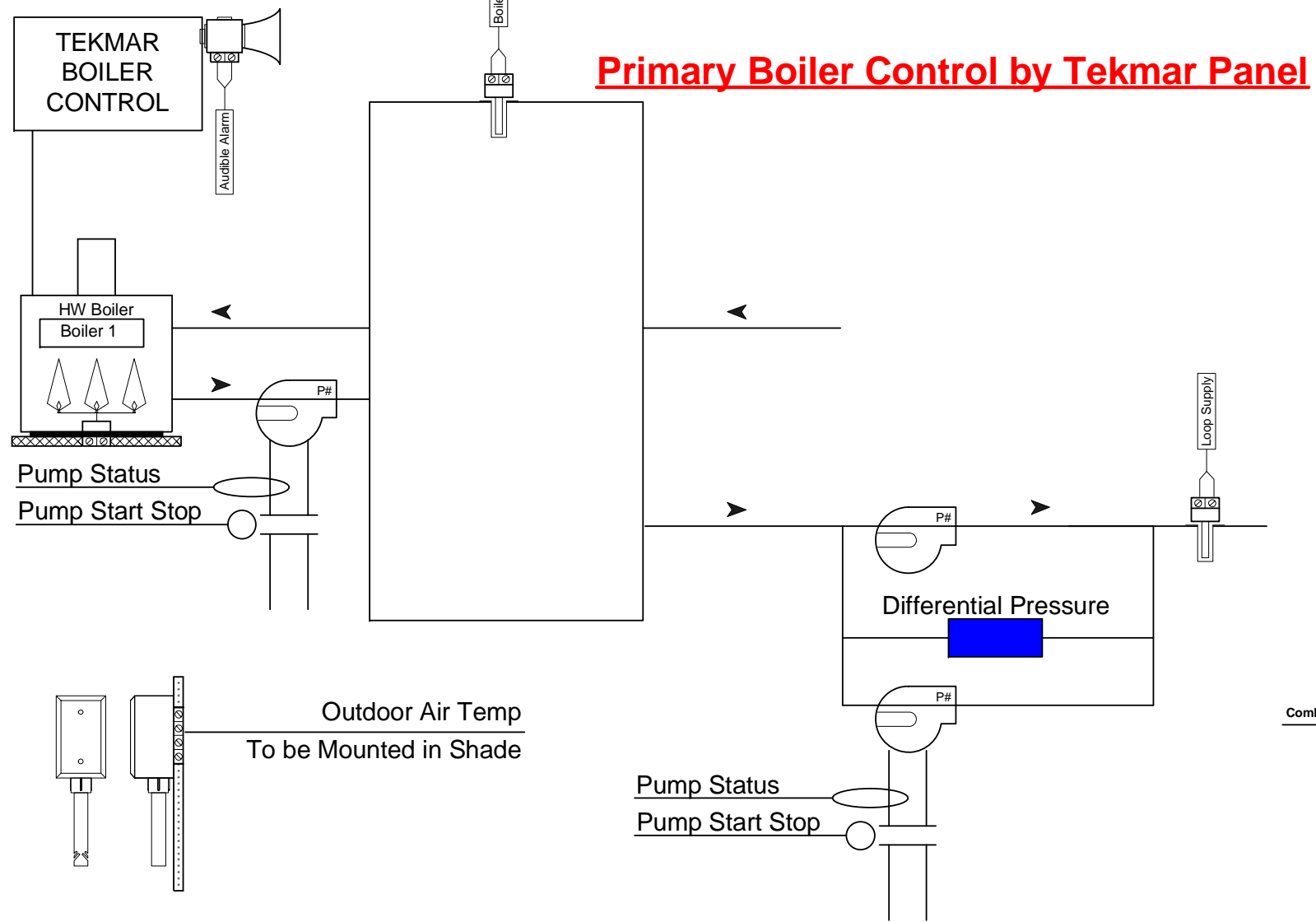
REV: 1 As-Built 11/30/2008 JOB NO: P7790

AUTOMATED LOGIC
 CORPORATION

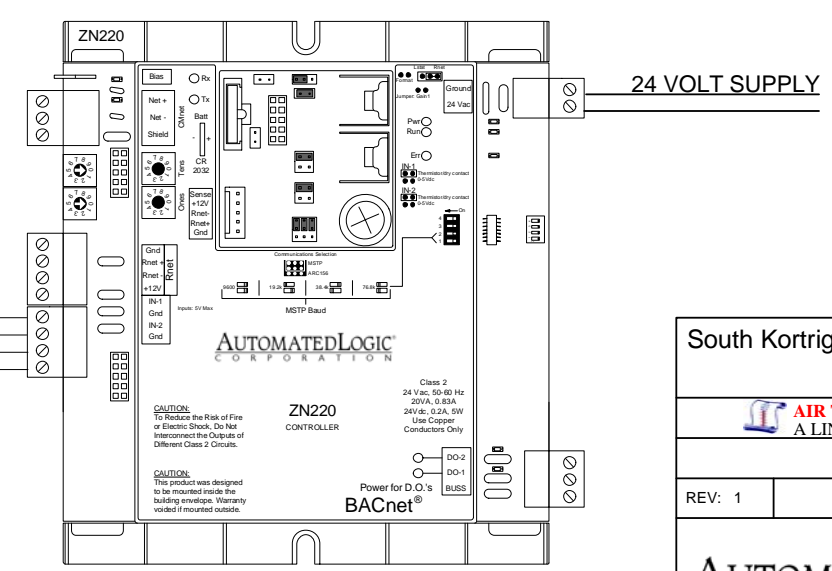
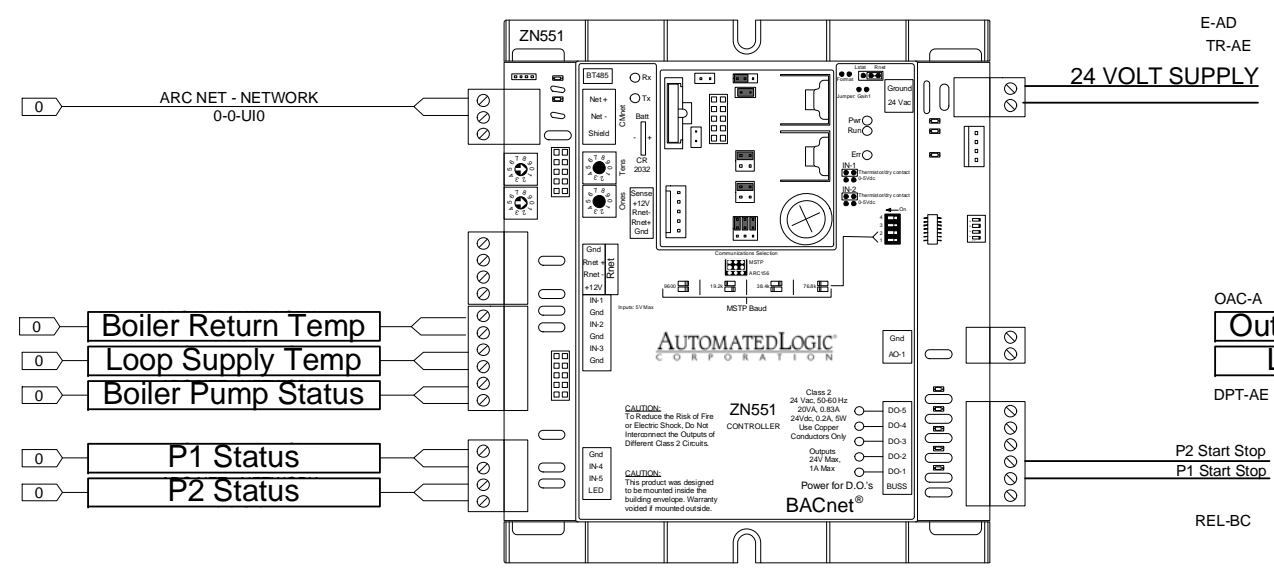
CHECK BY: RSL

DSCODE: 07112.00

Boiler Plant BG



Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
CS-E	CURRENT SWITCH .5-200 AMP SOLID CORE GO/NO GO	VERUS IND.	H-800	4 ea
DPT-AE	DIFF PRESSURE TRANSDUCER 0-5 IN. MA	MAMAC	PR-282-4-(0-5IN.)-B-1-2-A	1 ea
E-AD	RET NEMA 1 18X12X7	KELE & ASSOC.	RET 1812	1 ea
OAC-A	OA TEMPERATURE/HUMIDITY COMBO SENSOR	BAPI	ALC/10K-2-H220-O	1 ea
REL-BC	PILOT RELAY 24 VAC DPTD W/ LED	OMRON	LY2N-24V	4 ea
TR-AE	TRANSFORMER, 120/24VAC, 40VA	CORE COMPONENTS	LE-112	1 ea
W-A	TWP PART SS WELL 4IN.	BAPI	BA/4IN.	2 ea
WS-A	10K IMMERSION THERMISTOR	BAPI	ALC/10K-2-I-4	2 ea
ZN220	ZN220	AUTOMATED LOGIC	ZN220	1 ea
ZN551	ZN551	AUTOMATED LOGIC	ZN551	1 ea



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AIR TEMP HEATING & AIR CONDITIONING, INC.
 A LINC SERVICE @ CONTRACTOR

Boiler Plant BG			
REV: 1	As-Built	11/30/2008	JOB NO: P7790
AUTOMATED LOGIC CORPORATION			CHECK BY: RSL
			DSCODE: 07112.00
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Boiler Plant BG Sequence01

SYSTEM ENABLE

The heating system shall automatically start when the outside air temperature falls below the system enable set point while the system enable is on. When the outside air temperature rises above this set point or the system enable is off the heating system shall be disabled.

BOILER CONTROL



The system consists of one discrete boiler with packaged controls from the boiler manufacturer. The boiler shall cycle to maintain supply water temperature to set point as reset by outside air temperature. The boiler shall be staged on and off as required to maintain control. The combustion air damper will be commanded open prior to starting the boiler and kept open until the boiler is commanded off.

HOT WATER PUMP CONTROL

when enabled, the pump associated with the boiler will be started. If the pump status does not match the command an alarm will be generated and the boiler will be stopped. Upon loss of status the pump will restart after the system restart is activated. After the boiler has been commanded off the pump will continue to run for a short time to dissipate the heat.

SECONDARY LOOP PUMPING.

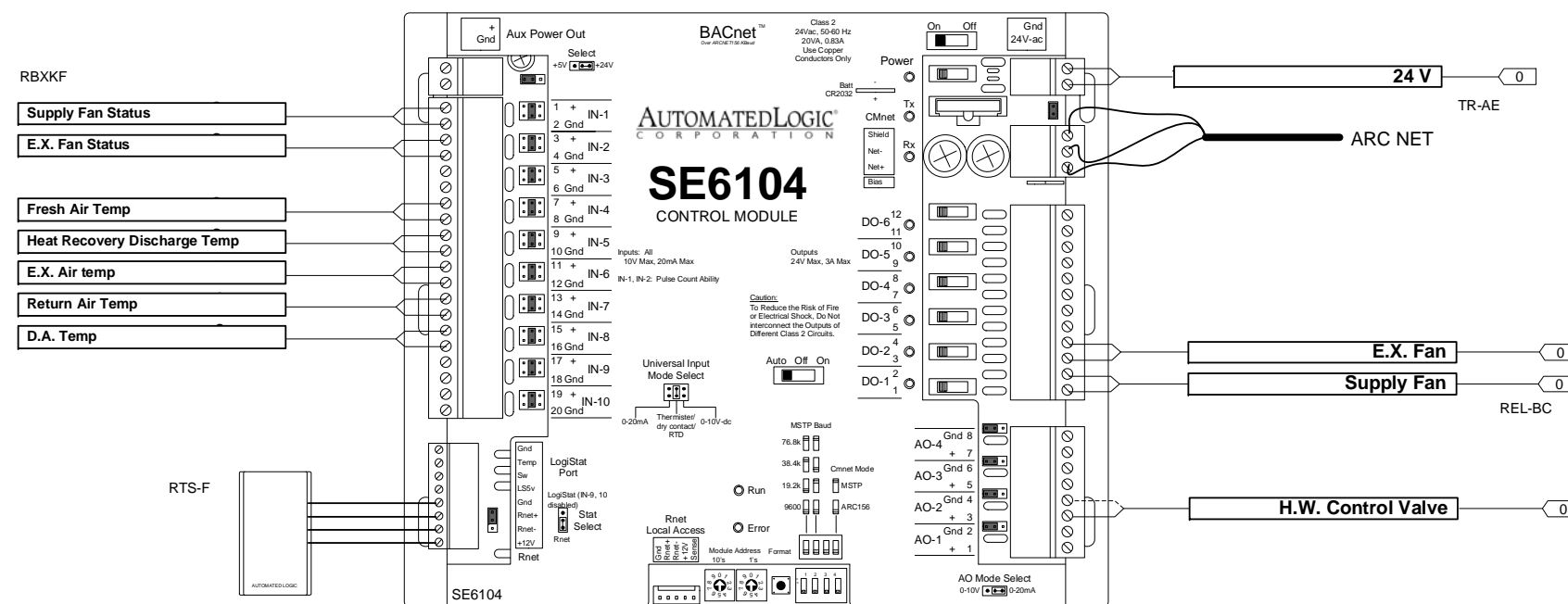
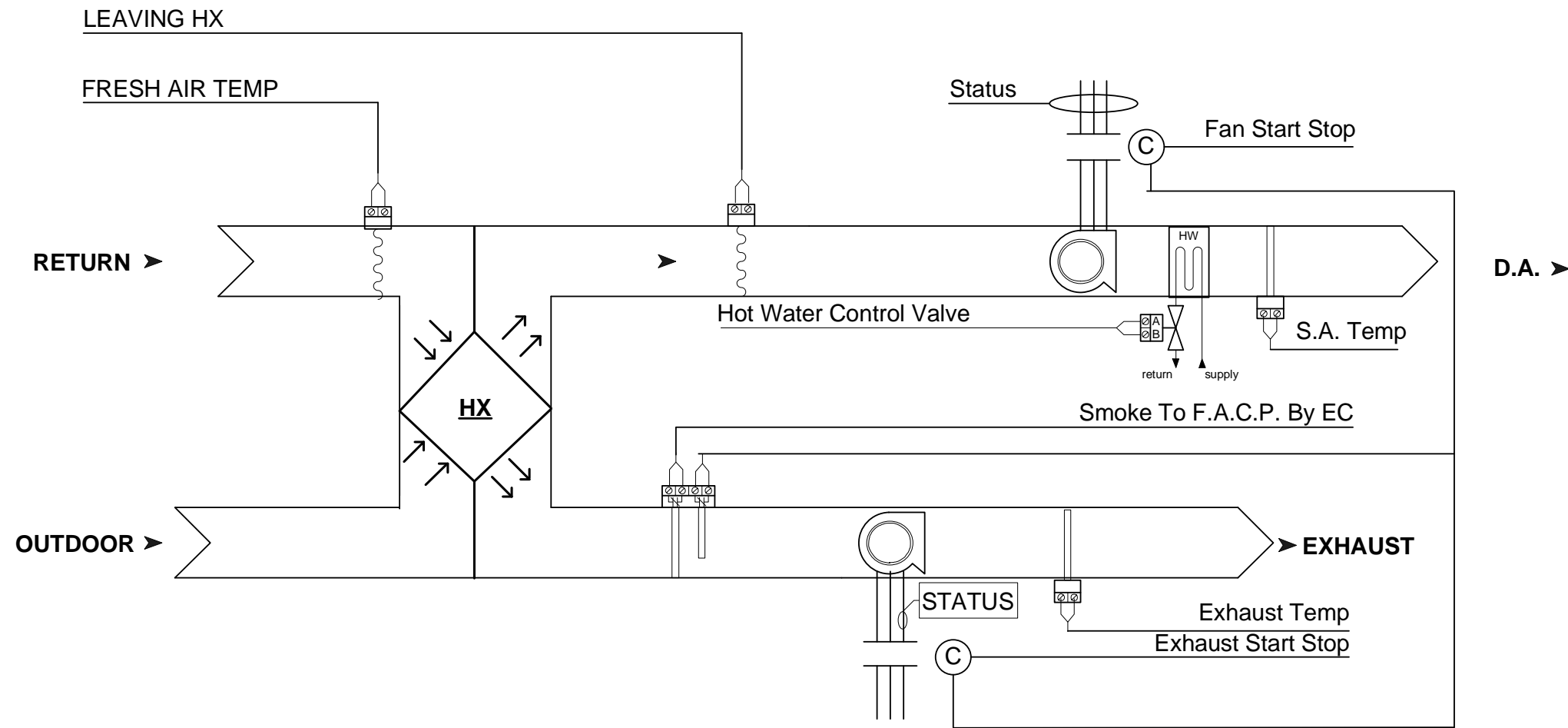
The lead secondary pump will be started when the system is enabled. Additional pumps will be started as required to maintain the differential pressure in the secondary loop. When additional pump is required, the pump with the lowest run time total shall be enabled to run. If the pump status does not match the command and alarm will be generated and the pump will be stopped. Upon loss of status the pump will restart after the system reset is generated.

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South Kortright, New York			
 AIR TEMP HEATING & AIR CONDITIONING, INC. A LINC SERVICE @ CONTRACTOR			
Boiler Plant BG Sequence01			
REV: 1	As-Built	11/30/2008	JOB NO: P7790
			CHECK BY: RSL
			DSCODE: 07112.00
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ERV BG

Bill of Materials

DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
RBXKF	CURRENT SENSOR	RIB	RBXKF	4 ea
REL-BC	PILOT RELAY 24 VAC DPDT W/ LED	OMRON	LY2N-24V	4 ea
RTS-F	10K ROOM THERMISTOR RS	BAPI	ALC/10K-2-RS	1 ea
SE6104	SE6104	AUTOMATED LOGIC	SE6104	1 ea
TR-AE	TRANSFORMER, 120/24VAC, 40VA	CORE COMPONENTS	LE-112	2 ea



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ERV BG

REV: 1 | As-Built | 11/30/2008 | JOB NO: P7790

CHECK BY: RSL

AUTOMATED LOGIC
CORPORATION

DSCODE: 07112.00

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ERV BG Sequence

RUN CONDITIONS-SCHEDULED

The unit shall run to a user definable time schedule in the following modes.

Occupied: The unit shall maintain a 70 deg. F. adjustable heat set point.

Unoccupied: The unit shall maintain a 55 deg. Adjustable heat set point.

ALARMS SHALL BE PROVIDED AS FOLLOWS

Low Zone Temp: If the zone temperature is less than the heating set point by a user definable amount.

SUPPLY FAN

The supply fan shall run any time the unit is commanded to run. The supply fan shall have a user definable minimum run time, unless shut down on safeties.

ALARMS SHALL BE PROVIDED AS FOLLOWS



Supply fan failure.

EXHAUST FAN

The exhaust fan shall run whenever supply fan runs, unless shut down on safeties.

ALARM SHALL BE PROVIDED AS FOLLOWS

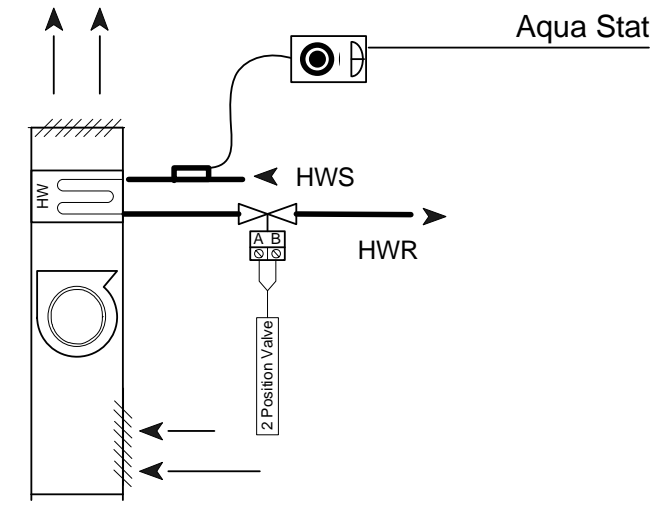
Exhaust fan failure

South Kortright School 2009 Capital Improvements			
South Kortright, New York			
 AIR TEMP HEATING & AIR CONDITIONING, INC. A LINC SERVICE ® CONTRACTOR			
ERV BG Sequence			
REV: 1	As-Built	11/30/2008	JOB NO: P7790
			CHECK BY: RSL
			DSCODE: 07112.00
			26 of 34

CUH BG

Entry 101

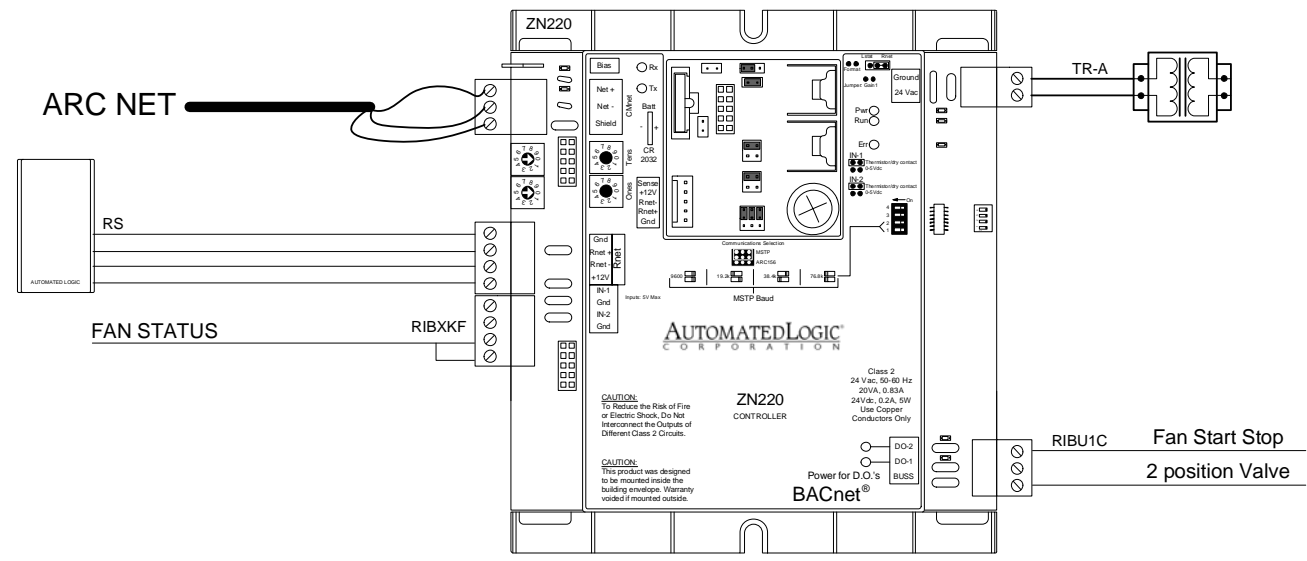
Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
RIBU1C	RELAY 24 V	RIB	RIBU1C	1 ea
RIBXKF	CURRENT SENSOR	RIB	RIBXKF	1 ea
RS	ROOM SENSOR	AUTOMATED LOGIC	RS	1 ea
TR-A	TRANSFORMER, 120/24VAC, 50VA	CORE COMPONENTS	LE-117	1 ea
ZN220	ZN220	AUTOMATED LOGIC	ZN220	1 ea



CABINET HEATER

CABINET UNIT HEATER

1. Hot water shall circulate through the coil continuously.
2. Fan shall cycle to maintain space temperature as sensed by wall mounted thermostat.
3. Provide wall mounted thermostat and interface with D.D.C.
4. Display
 - A. Room temp
 - B. Room temp S.P.



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AIR TEMP HEATING & AIR CONDITIONING, INC.
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CUH BG

REV: 1	As-Built	11/30/2008	JOB NO: P7790
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AUTOMATED LOGIC
CORPORATION

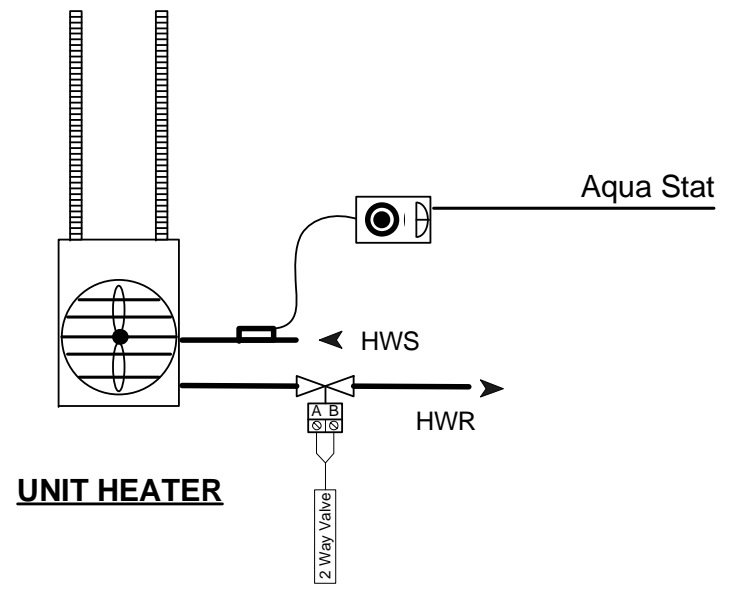
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DSCODE: 07112.00

Unit Heater B.G.

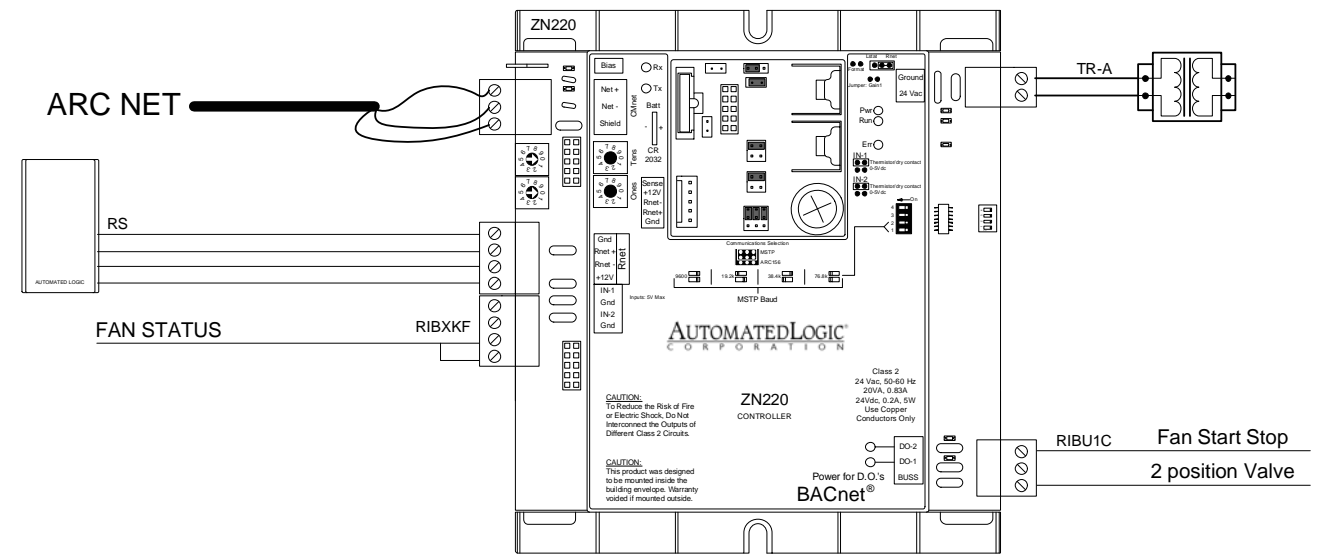
Existing UH 66
76
36
UH-1

Bill of Materials				
DID	DESCRIPTION	MANUFACTURER	PART NUMBER	QTY
RIBU1C	RELAY 24 V	RIB	RIBU1C	5 ea
RIBXKF	CURRENT SENSOR	RIB	RIBXKF	5 ea
RS	ROOM SENSOR	AUTOMATED LOGIC	RS	5 ea
TR-A	TRANSFORMER, 120/24VAC, 50VA	CORE COMPONENTS	LE-117	5 ea
ZN220	ZN220	AUTOMATED LOGIC	ZN220	5 ea



CABINET UNIT HEATER

- Hot water shall circulate through the coil continuously.
- Fan shall cycle to maintain space temperature as sensed by wall mounted thermostat.
- Provide wall mounted thermostat and interface with D.D.C.
- Display
 - A. Room temp
 - B. Room temp S.P.



South Kortright School 2009 Capital Improvements

South Kortright, New York

AIR TEMP HEATING & AIR CONDITIONING, INC.
A LINC SERVICE @ CONTRACTOR

Unit Heater B.G.

REV: 1	As-Built	11/30/2008	JOB NO: P7790
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CHECK BY: RSL

DSCODE: 07112.00

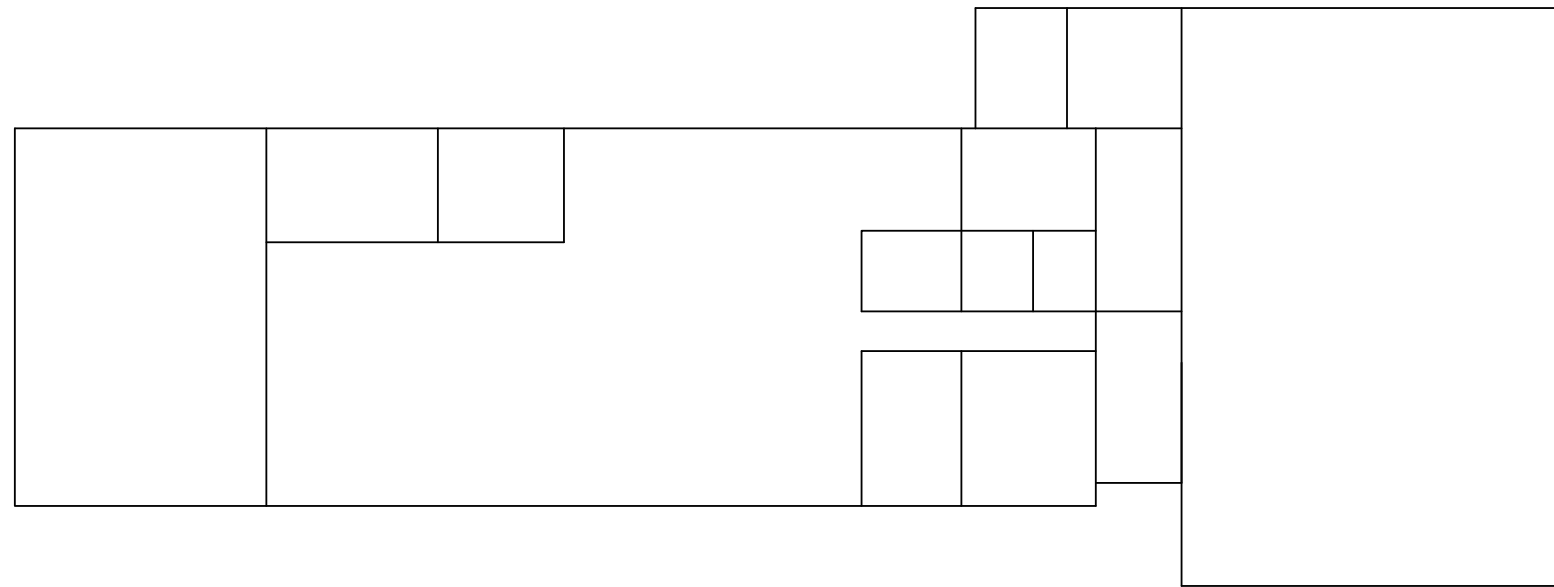
Valve Schedule



Pos	Re-Order #	Qty	Tag	Datasheet	Valve Pattern	Pipe Size	Flow	DP	Req. Cv	Body Size	Valve Cv	Actual DP		Valve Part Nr.	Actuator Part Nr.	Set Up
1	V2A2S3+LF24-S US	4	UH 2	B2_VS_LF24.pdf	2W	3/4"	1.9	0.95	1.95	1/2"	2	0.9		B213VS	LF24-S US	NO/FO
2	Siemens	9	UV E	24300210	2W	1/2"	exist	exist	1	1/2"	1	exist		243-00210	siemens	NO/FO
3	V2A1S3+LF24-S US	1	CUH	B2_VS_LF24.pdf	2W	1/2"	1.8	6.9	0.69	1/2"	1	3.2		B212VS	LF24-S US	NO/FO
4	G2FAB3+AF24-SR US	1	ERV1	G2_AF24_SR.pdf	2W	2"	35.6	0.8	39.8	2"	40	0.8		G250	AF24-SR US	NO/FO

South Kortright School 2009 Capital Improvements			
South Kortright, New York			
 AIR TEMP HEATING & AIR CONDITIONING, INC. A LINC SERVICE @ CONTRACTOR			
Valve Schedule			
REV: 1	As-Built	11/30/2008	JOB NO: P7790
		CHECK BY: RSL	
		DSCODE: 07112.00	
29 of 34			

BUS GARAGE



South Kortright School 2009 Capital Improvements

South Kortright, New York

 **AIR TEMP HEATING & AIR CONDITIONING, INC.**
A LINC SERVICE ® CONTRACTOR

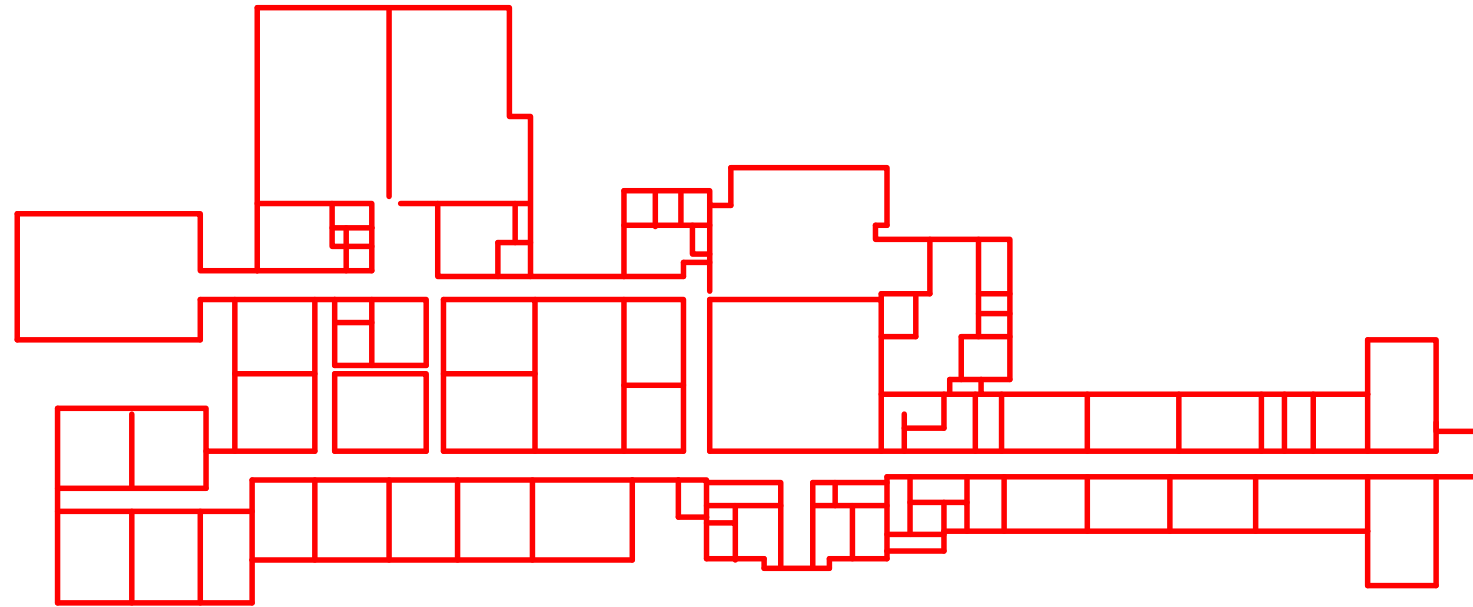
Page-30

REV: 1	As-Built	11/30/2008	JOB NO: P7790
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			CHECK BY: RSL
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			DSCODE: 07112.00
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MAIN SCHOOL 1st FLOOR



South Kortright School 2009 Capital Improvements

South Kortright, New York

 AIR TEMP HEATING & AIR CONDITIONING, INC.
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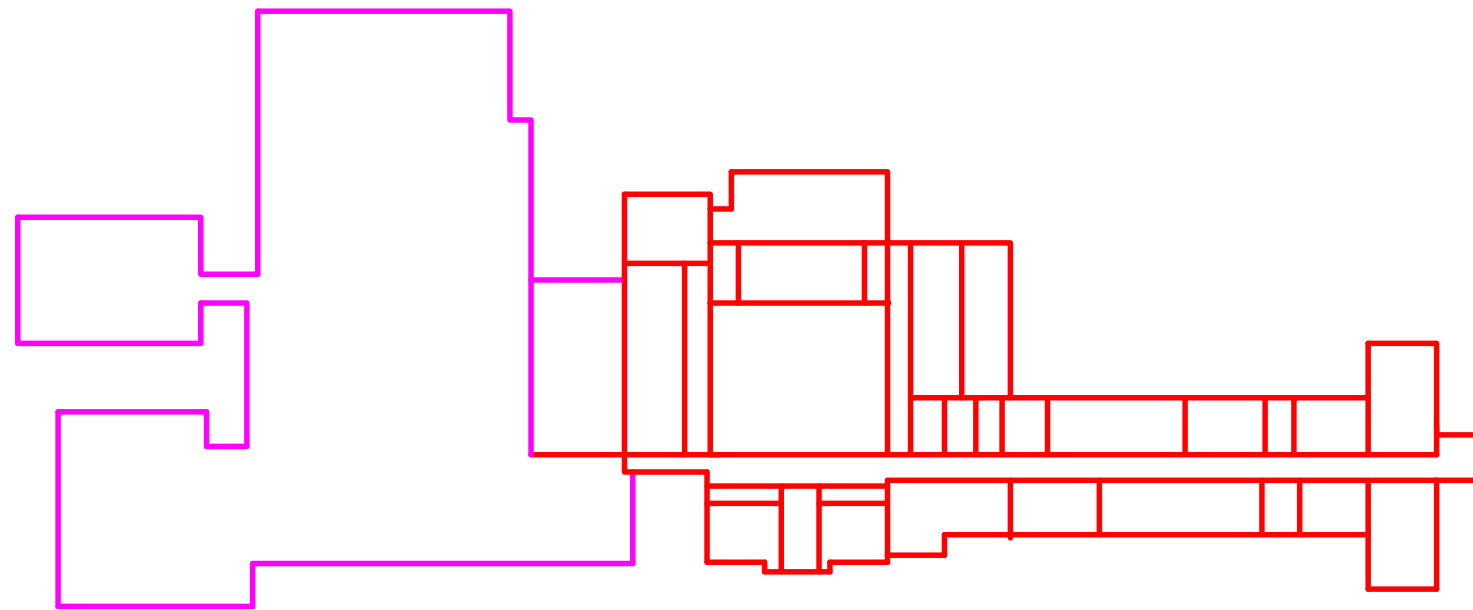
Page-31

REV: 1	As-Built	11/30/2008	JOB NO: P7790
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			CHECK BY: RSL
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			DSCODE: 07112.00
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MAIN SCHOOL BASEMENT



South Kortright School 2009 Capital Improvements

South Kortright, New York

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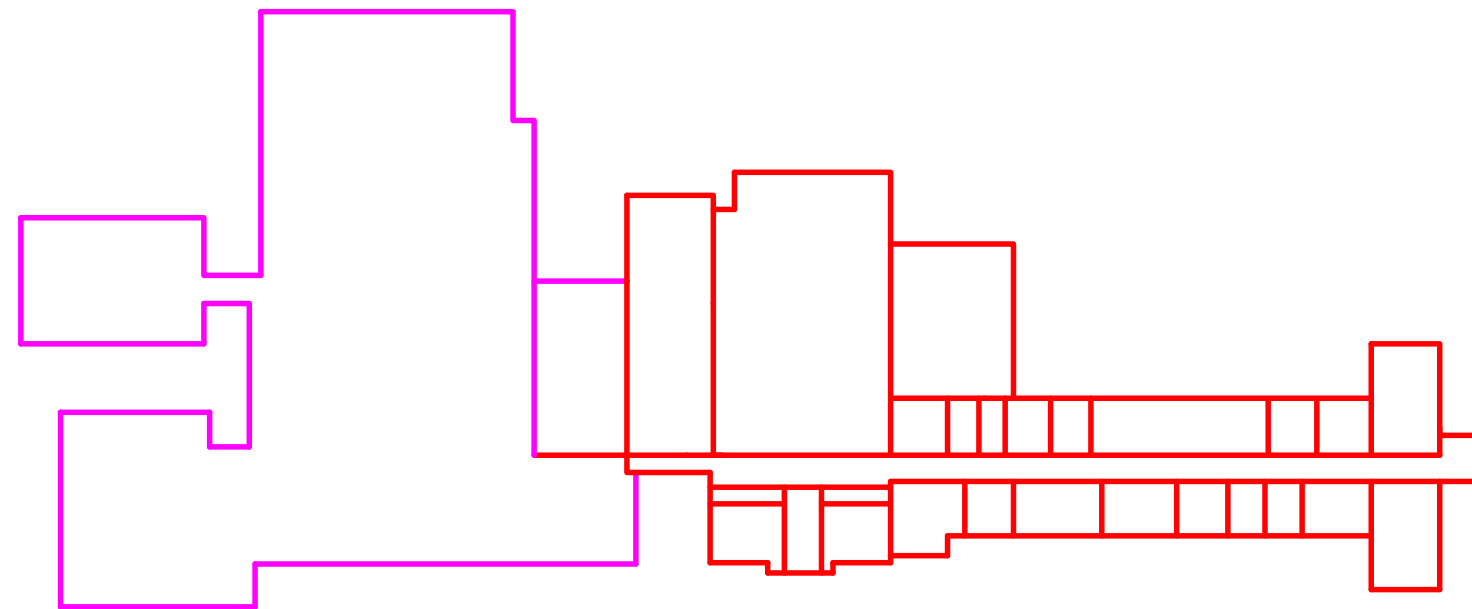
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REV: 1	As-Built	11/30/2008	JOB NO: P7790
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			CHECK BY: RSL
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			DSCODE: 07112.00
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MAIN SCHOOL 2nd FLOOR



South Kortright School 2009 Capital Improvements

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 AIR TEMP HEATING & AIR CONDITIONING, INC.
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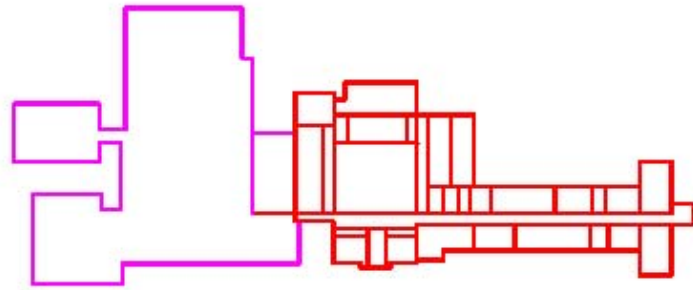
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REV: 1	As-Built	11/30/2008	JOB NO: P7790
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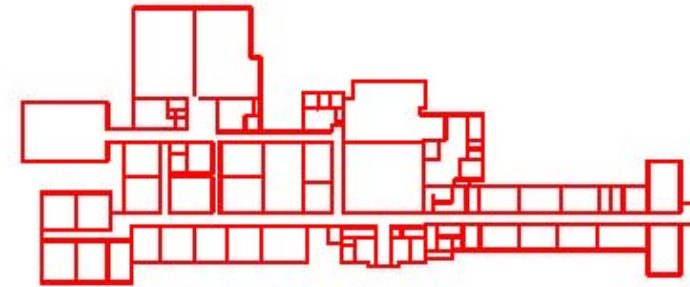
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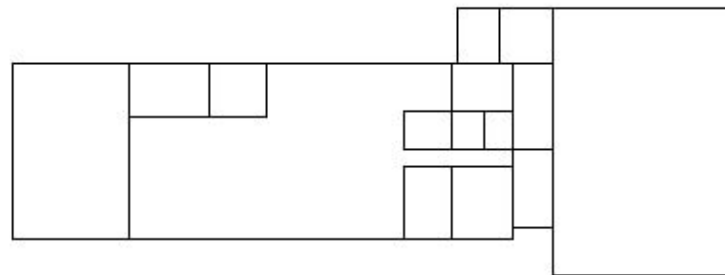
Main School Basement



Main School 1st Floor



Bus Garage



Main School 2nd Floor

