Los Medanos College
2700 East Leland Ave
Pittsburg, CA 94565

CommAir

1001 Shary Circle
Concord, CA 94518
(925) 686-1500

Andover Controls

Job Number:

Engineer: CommAir Mechanical Services

Science Building

Submittal

3/7/2006

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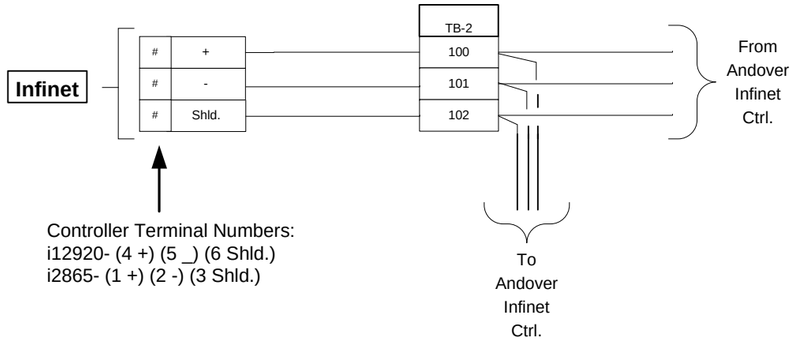
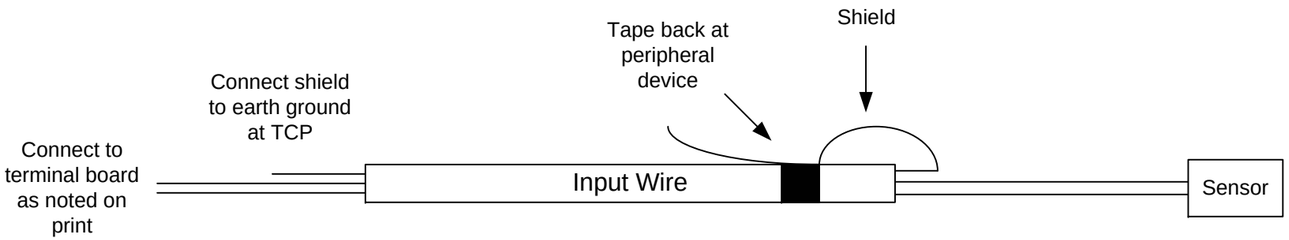


Detail A



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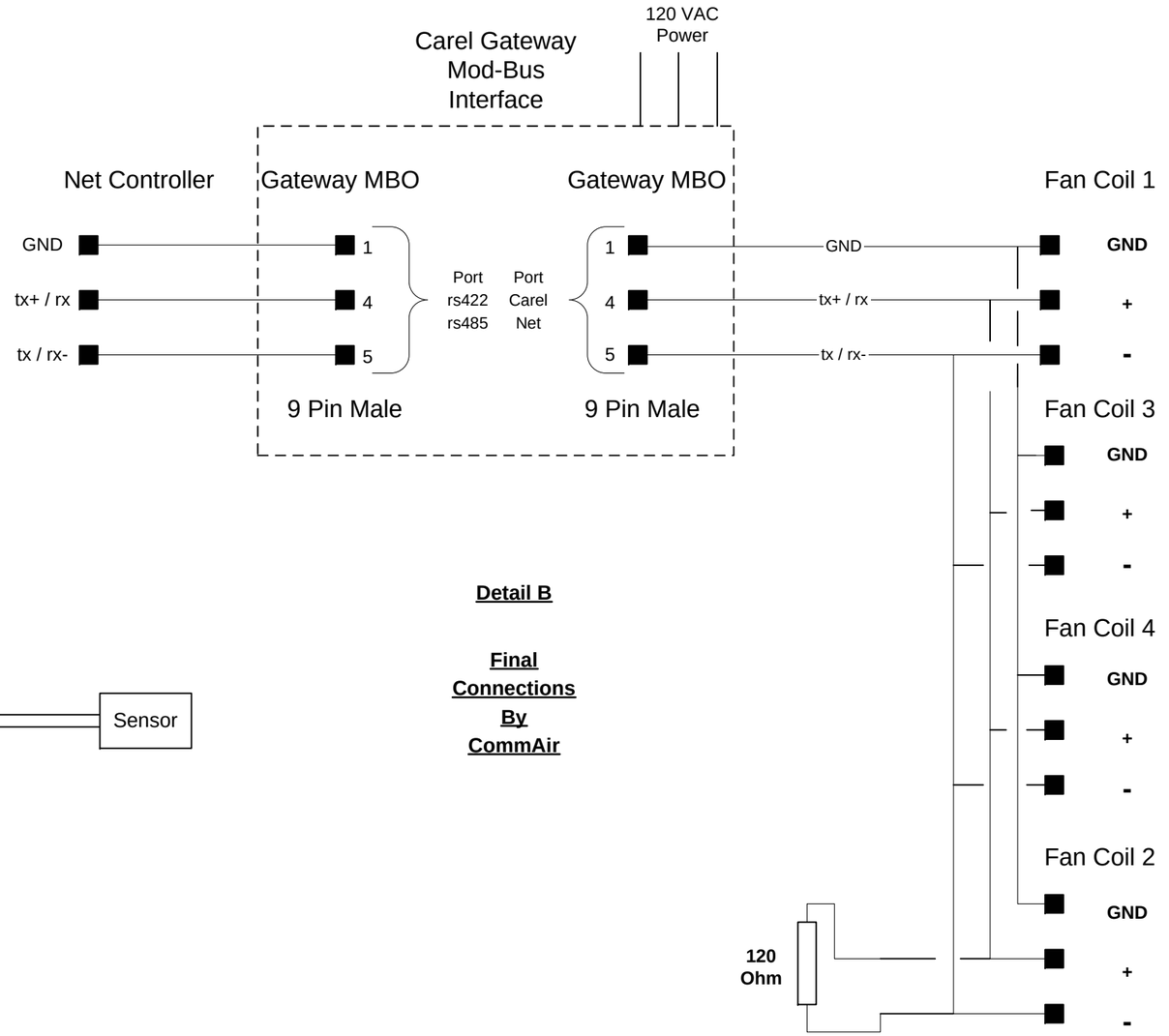

Detail B

Final Connections By CommAir

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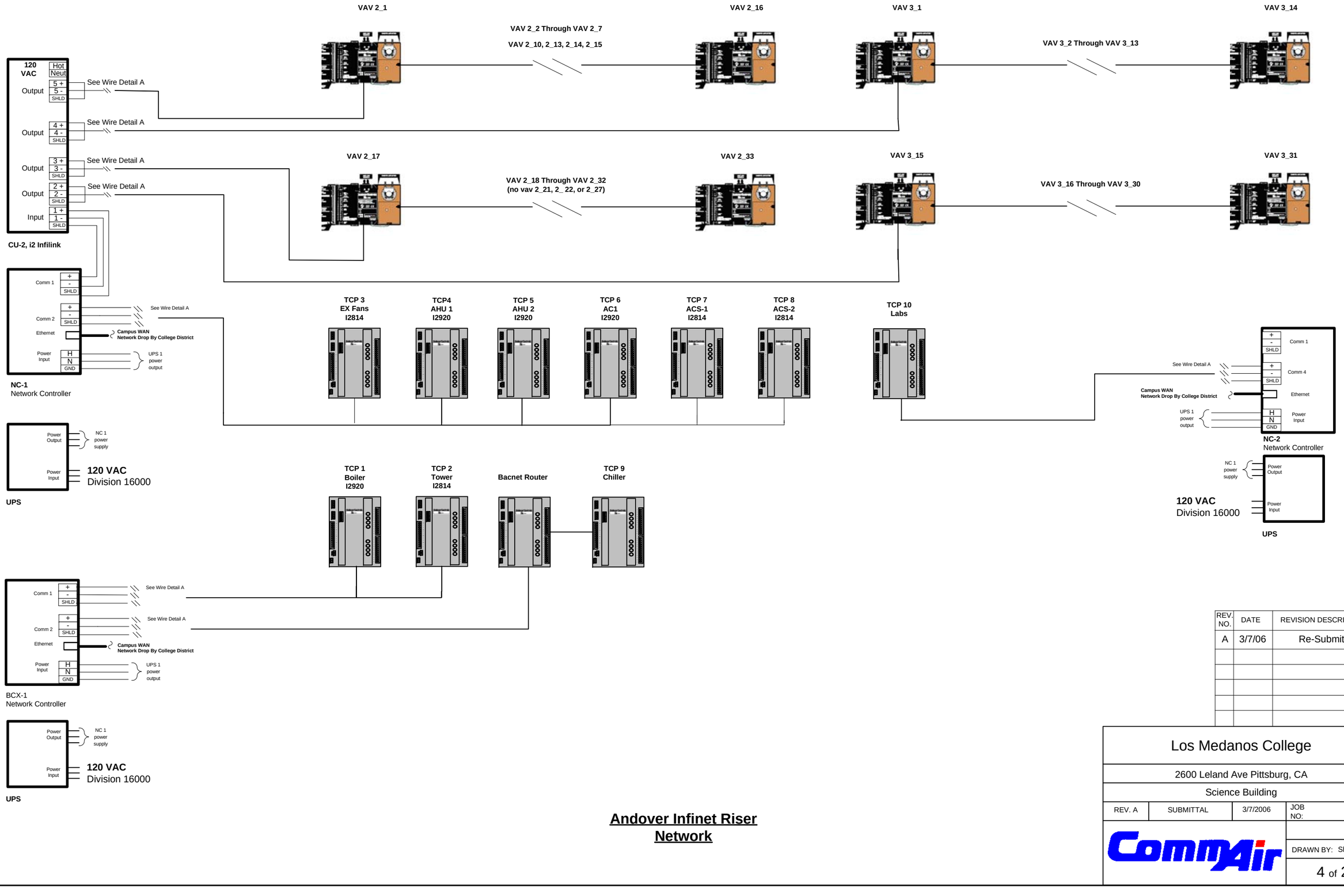

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Andover Infinet Riser Network

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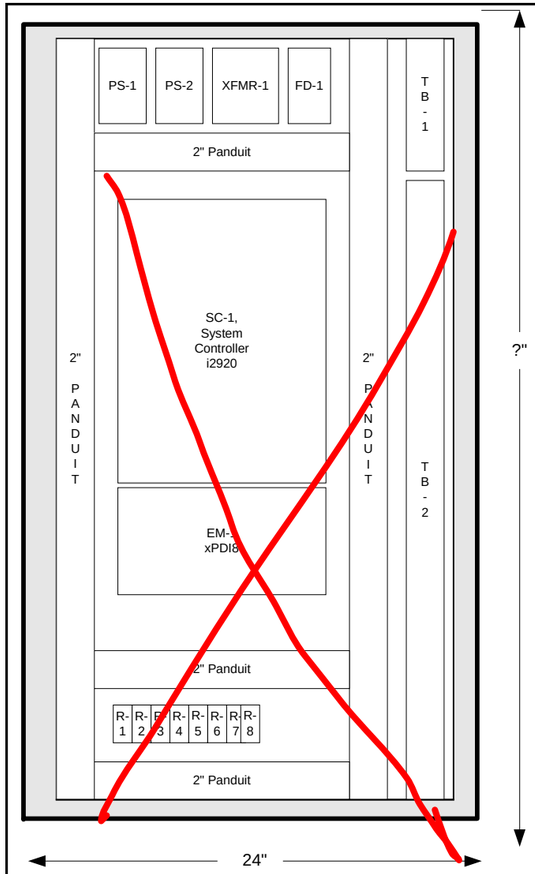
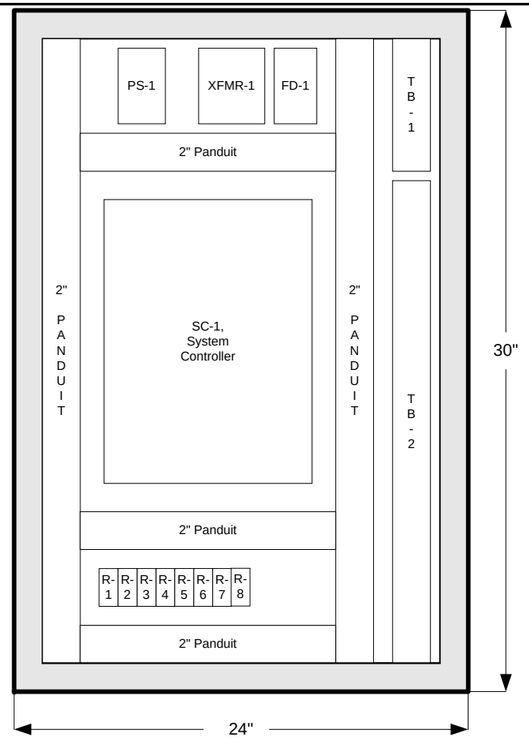
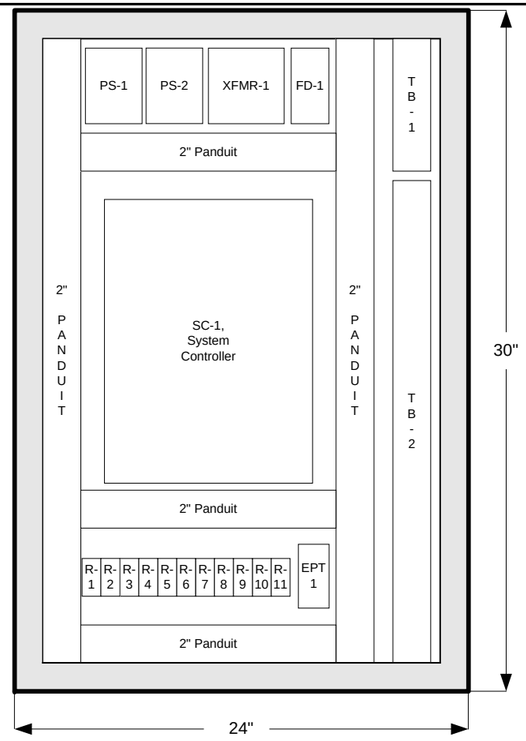


TCP 1 Boiler Panel Device Layout

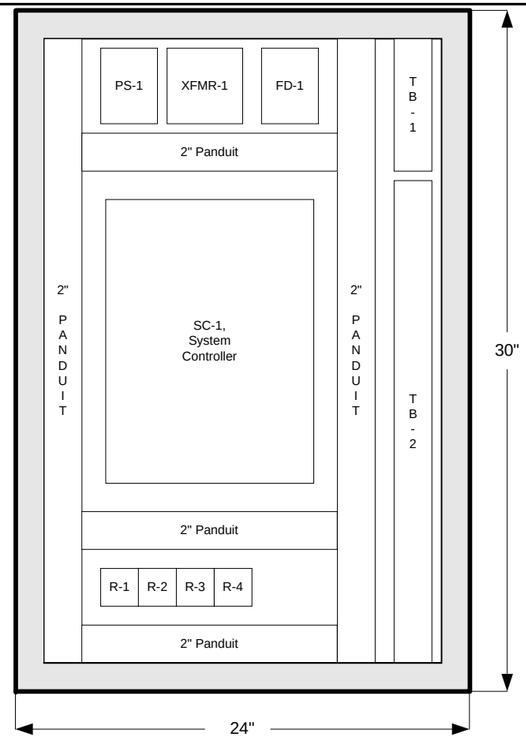
NOT IN CONTRACT



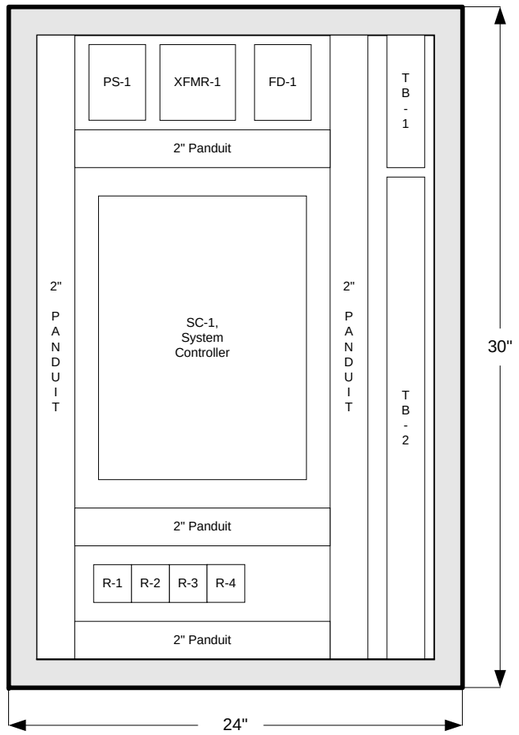
TCP 4 chiller room **Device Layout**



TCP 5 **EX Fan Panel Device Layout**



TCP 4 AHU1 Panel Device Layout



TCP 5 AHU2 Panel Device Layout

Sheet Note:

1. These drawings are not to scale.
2. The panel builder is to determine panel and panduit size.
3. Device location is to be red-line after the panels are completed. These drawings will be returned to the controls engineer for as-built drawings.

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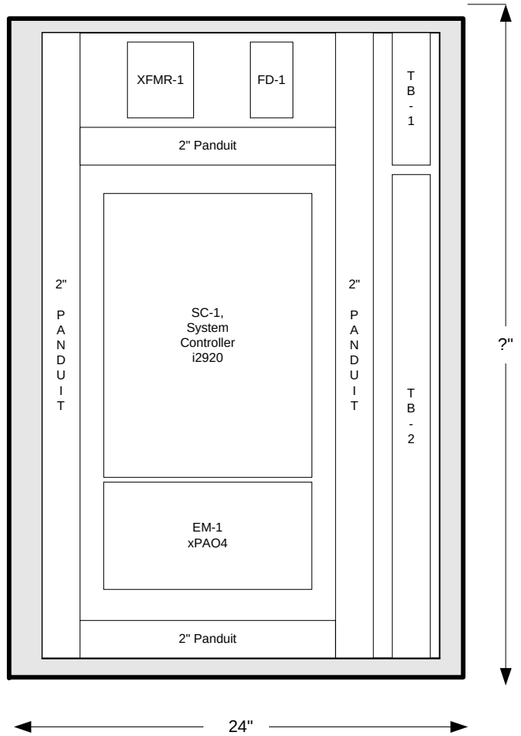
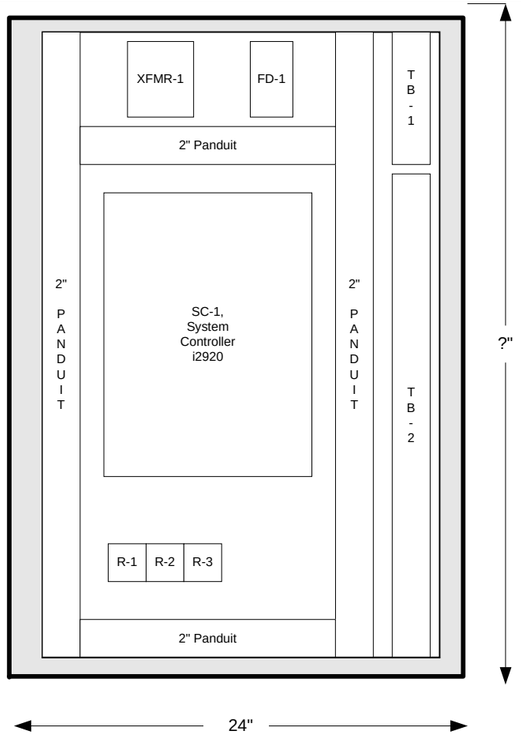
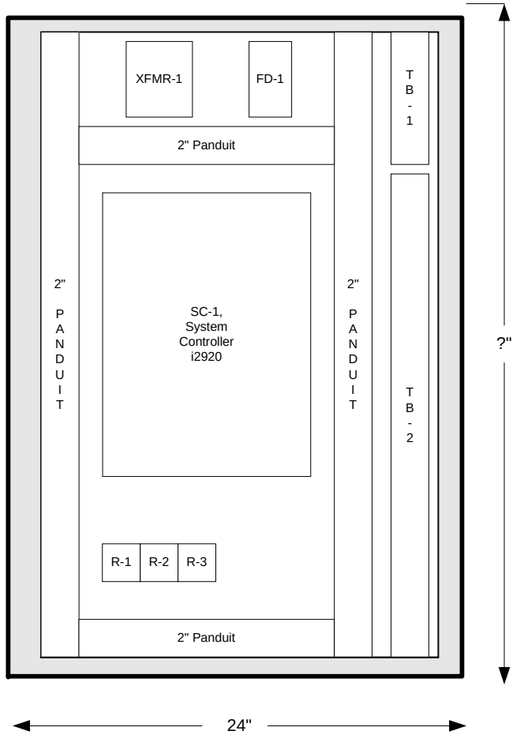


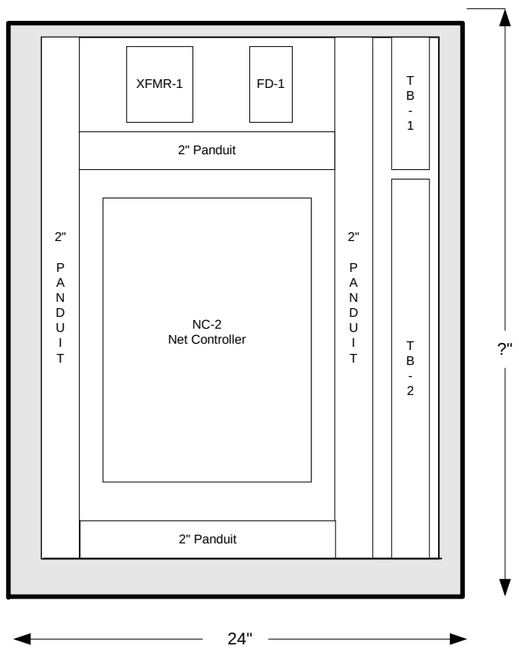
TCP 6 AC1 Panel Device Layout



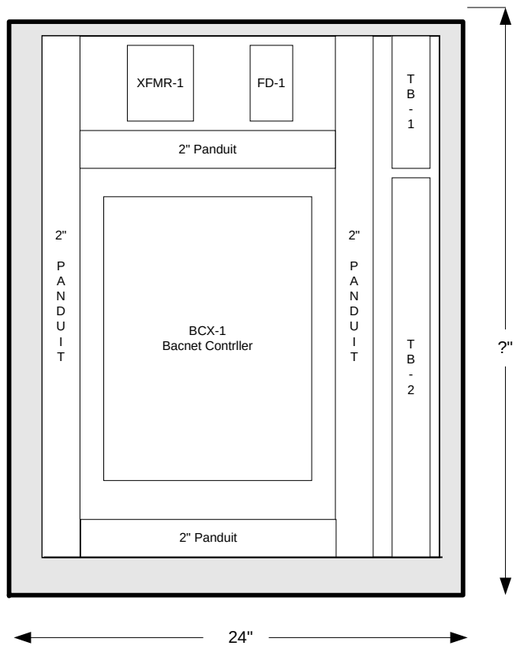
TCP 7 ACS-1 Panel Layout



TCP 8 ACS-2 Panel Layout



TCP 10 Lab System Panel Layout



TCP 9 Chiller Panel Device Layout

Sheet Note:

1. These drawings are not to scale.
2. The panel builder is to determine panel and panduit size.
3. Device location is to be red-line after the panels are completed. These drawings will be returned to the controls engineer for as-built drawings.

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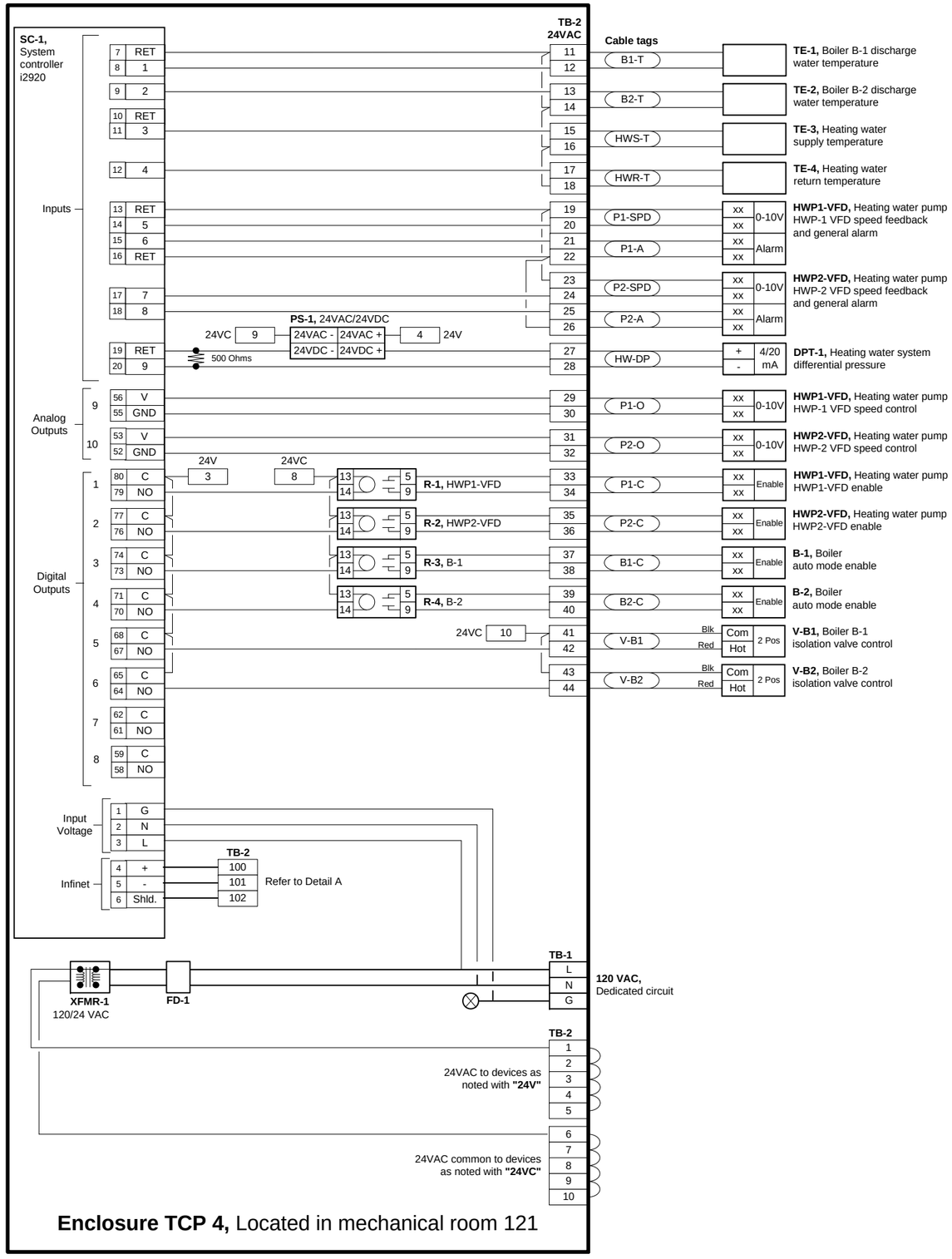

TCP-4	1	TBD	Enclosure Backplate, TBD" xTBD"	Hoffman
TCP-4	1	A-L12AR	Cylinder Lock	Hoffman
FD-1	1	PRK-FS	Fused Disconnect, Duplex Service Receptacle	Kele
PS-1	1	DCP-1.5-W	Pow er Supply, 24VAC/24VDC, 1.5 Amp	Kele
R-1 to 4	4	RH2B-UAC24-L	Control Relay, 24VAC, 2PDT, Light	Idec
R-1 to 4	4	SH2B-05	Relay Base, 2PDT	Idec
SC-1	1	i2920	System Controller	Andover Controls
XFMR-1	1	694-M1	Transformer, 120/24VAC, 75VA, Foot Mount	Kele

No Work in Boiler Plant for this Project

TCP 1

Hot Water System Controller Wiring

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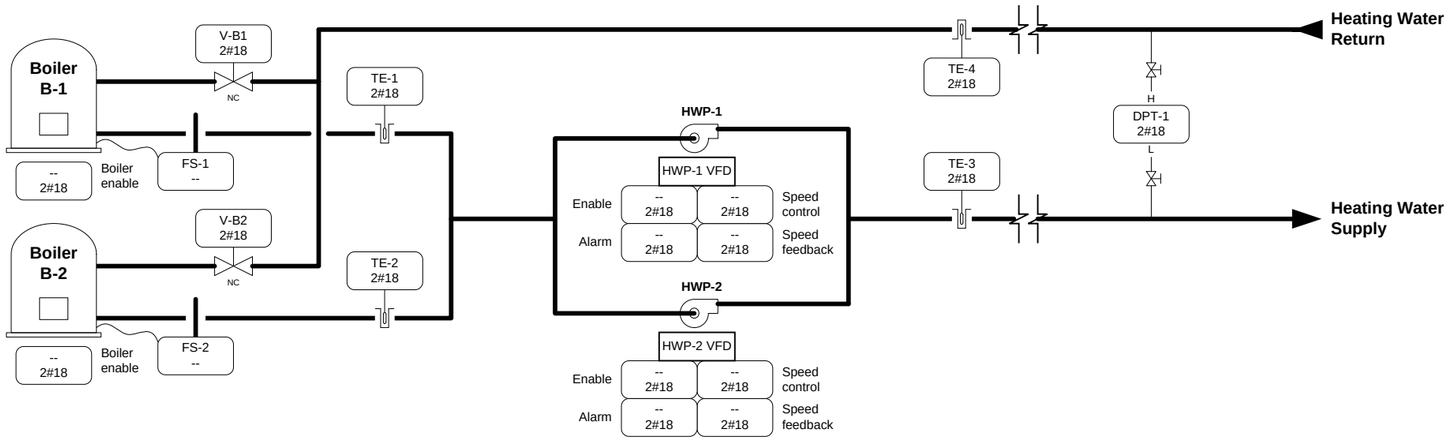

Heating Water System Flow Diagram

Heating Water System Sequence of Operation

A. Overview
The heating water system is controlled and monitored by Andover system controller SC-1. All points may be accessed via the Andover Infinity network system workstation (OWS). Refer to the architectural layout drawing for more details.

B. Heating Water Pumps HWP-1 and HWP-2
The heating water system pump VFD's alternate on a lead/standby basis. The lead pump is rotated at the beginning of each month. If the lead pump is operating and an alarm is detected, the lead pump will be shut down and the standby pump will start.

The lead pump will start on a time schedule or an operator override from the OWS. The pump VFD will modulate to maintain the desired heating water system differential pressure setpoint.

C. Boilers B-1 and B-2
During the occupied mode, both boilers will be enabled from the BMS. The boilers will be controlled by their factory supplied temperature control system. During the unoccupied mode, the boilers will operate on a lead/standby basis. The lead boiler is rotated at the beginning of each month. If during the unoccupied mode, the operating boiler discharge water temperature falls below a low limit setpoint, the standby boiler will start and the operating boiler will shutdown.

Prior to a boiler starting, it's isolation valve will open. The boiler will be allowed to operate when heating water flow is proven by the respective boiler flow switch.

Heating Water System Field Devices Bill of Materials

Item	Qty	Code No.	Description	Manufacturer
DPT-1	1	PR282-4-2-B-1-2-B	Differential Pressure Transmitter, 0/30PSID = 4/20mA	Mamac
FS-1, 2	1	--	Liquid Line Flow Switch, SPDT	c/w Boiler
TE-1 to 4	4	TT-I-4-1	Temperature Element, Immersion	Andover Controls
TE-1 to 4	4	W-B-4-1/2-1	Brass Well Assembly, 1/2"	Andover Controls
V-B1, B2	2	---	Control Valve, Refer Valve Schedule	---

Heating Water Systems Control Notes:

1. All devices are located in mechanical room 121 (refer M3.04).
2. Refer to control enclosure TCP-4 for all wiring details.
3. 120 VAC to enclosure TCP-4 by division 16 (refer E3.01N).
4. Heating water system differential pressure transmitter DPT-1 location to be confirmed by Engineer.
5. Refer to the architectural layout drawing for controller communication detail

Heating Water System Sequence of Operation

A. Overview
The heating water system serves office air handling unit AHU-1, lab air handling unit AHU-2 and the terminal unit reheat coils and is controlled and monitored by standalone DDC controller DX-4. All points may be accessed (monitored, adjusted or overridden) via the Metasys operator workstation (OWS). Refer to the architectural layout drawing for more details. Refer to mechanical drawing M8.4 for a detailed sequence of operation.

B. Start/Stop
Upon a start command from the OWS the heating water system will be enabled. The lead pump VFD will start and ramp up to minimum speed. The boiler flow switch will allow the boiler to start upon proof of flow. The factory controls will maintain the heating water supply temperature setpoint.

Metasys will alternate the lead and standby heating water pumps to maintain equal run time. Upon an alarm from the lead pump VFD or a motor failure as detected by the current sensing relay, the standby pump VFD will start and an alarm will be set at the OWS.

C. Differential Pressure Control
The operating VFD speed will be controlled to maintain the heating water system differential pressure setpoint.

D. Metasys Monitoring
Metasys will monitor the pump VFD's via the N2 bus. Pump run time will be monitored at the OWS via current sensing relays. A low water supply temperature alarm will be set at the OWS when the heating water temperature falls below the alarm limits when the heating water system is energized.

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Heating Water System Flow Diagram and Sequence of Operation

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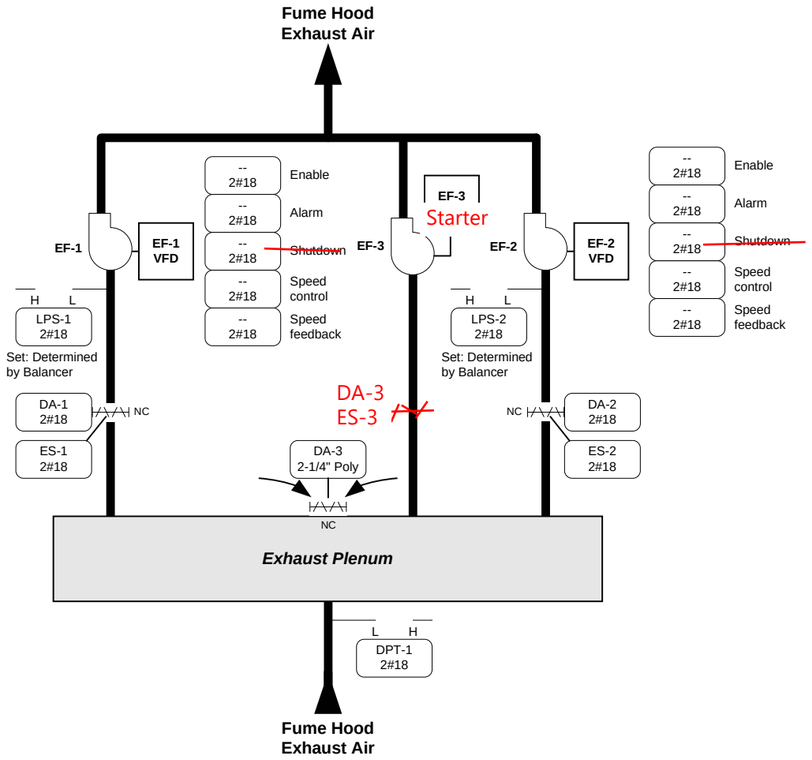
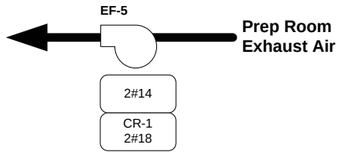
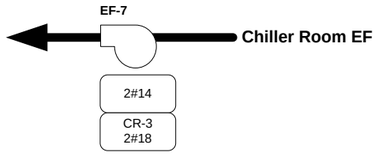


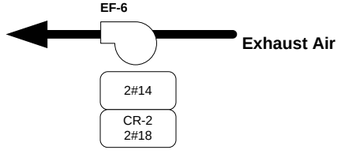
Fume Hood Exhaust System Flow Diagram



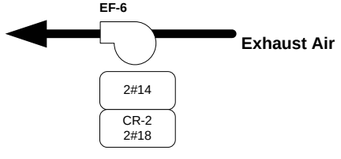
Prep Room Exhaust Fan EF-5 Flow Diagram



Chiller Room Exhaust Fan EF-7 Flow Diagram



Exhaust Fan EF-6 Flow Diagram



Exhaust Fan EF-8 Flow Diagram

Exhaust Fans Field Devices Bill of Materials

Item	Qty	Code No.	Description	Manufacturer
CR-1 to 3	3	H-900	Current Sensing Relay, SPDT	Veris
DA-1, 2	2	NF24	Damper Actuator, Spring Return, 24 VAC	Belimo
DA-3	1	D-3153-1	Damper Actuator, Fail Safe, Pilot Positioner	Johnson Controls
DPT-1	1	PR-275-R3-mA	Differential Pressure Transmitter, 0/5.0 in.w g = 4/20mA	Mamac
ES-1, 2	2	TS-470	Endsw itch, SPDT	Kele
LPS-1, 2	2	AFS-460	Pressure Limit Sw itch, Manual Reset	Cleveland Controls

Exhaust Systems Sequence of Operation

A. Fume Hood and Laboratory Exhaust Fans EF-1, 2, 3 Overview
Exhaust fans EF-1 and EF-2 serve the fume hoods. The exhaust fan system is controlled and monitored by Andover system controller SC-1. All points may be accessed via the Andover Infinity network system workstation (OWS). Refer to the architectural layout drawing for more details.

1. Occupied Mode
During the occupied mode, the exhaust fans will operate in parallel. The VFD's speed will be controlled to maintain the exhaust system suction pressure setpoint. When the VFD is at maximum speed and the suction pressure remains below setpoint, the outside air bypass damper will modulate open. The setpoint will be determined by the Balancer to maintain the CFM necessary for minimum flow requirements.

2. Unoccupied Mode
During the unoccupied mode the exhaust fans will operate in a lead/standby arrangement. The lead unit will be rotated at the beginning of each month. If the lead fan fails, the standby fan will start and an alarm will be set at the OWS. The VFD's and outside air damper will be controlled as per the occupied mode.

3. Start/Stop (typical of 2)
Upon a start command the discharge air isolation damper will open. When the damper is proven open by it's endswitch, the VFD and the control system will be enabled.

B. Miscellaneous Exhaust Fans EF-4, 5, 6, 7, 8 (typical of 5)
The exhaust fan will operate continuously. When the fan is off as monitored by it's current sensing relay, an alarm will be set at the OWS.

Exhaust Systems Control Notes:

1. All devices are located on the roof (refer drawing M2.03).
2. All control devices located on roof are to be protected from the environment.
3. All devices report to enclosure TCP-3 located in the penthouse (refer M2.03).
4. Refer to control enclosure TCP-3 for all wiring details.
5. Refer to the architectural layout drawing for controller communication details.

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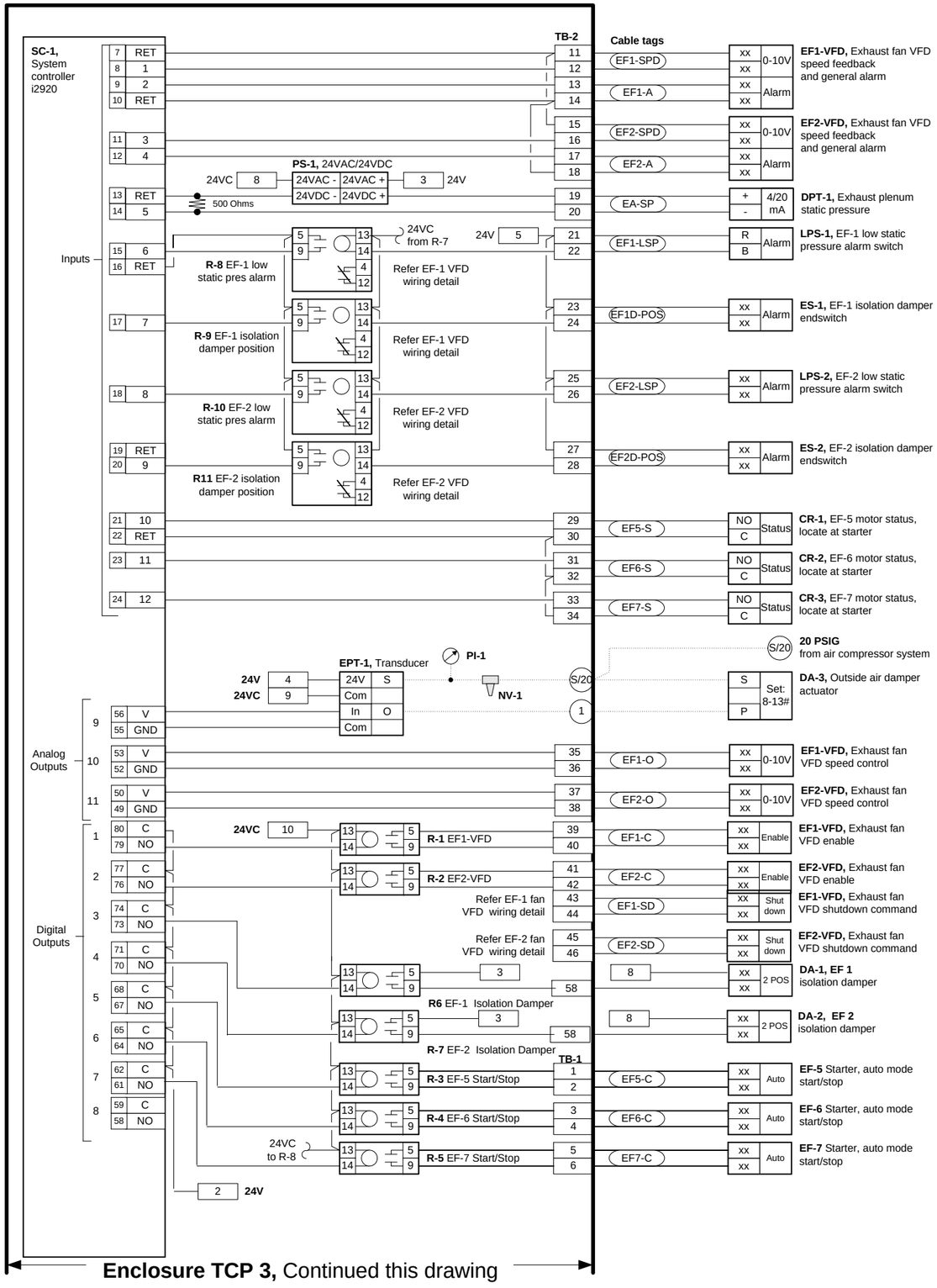
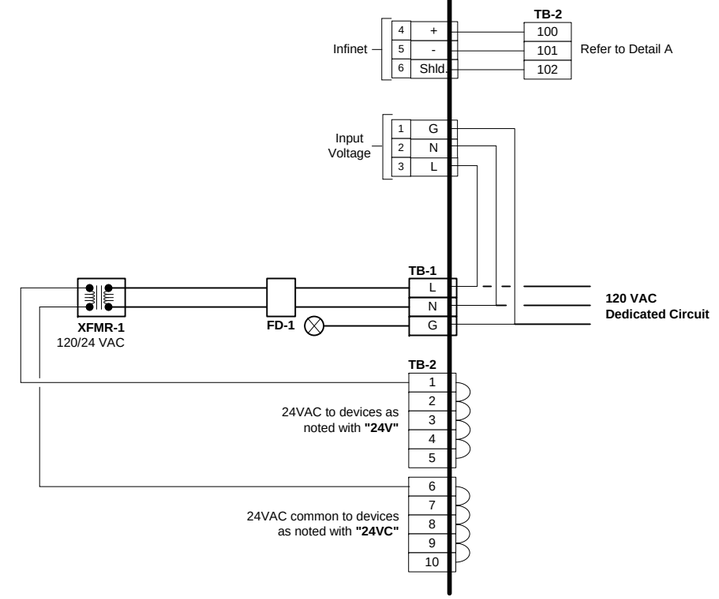


Enclosure TCP 3, Continued this drawing



Enclosure TCP 3 Continued this drawing

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TCP 3

EF -1, 2, 3, 5, 6, 7 Controller Wiring

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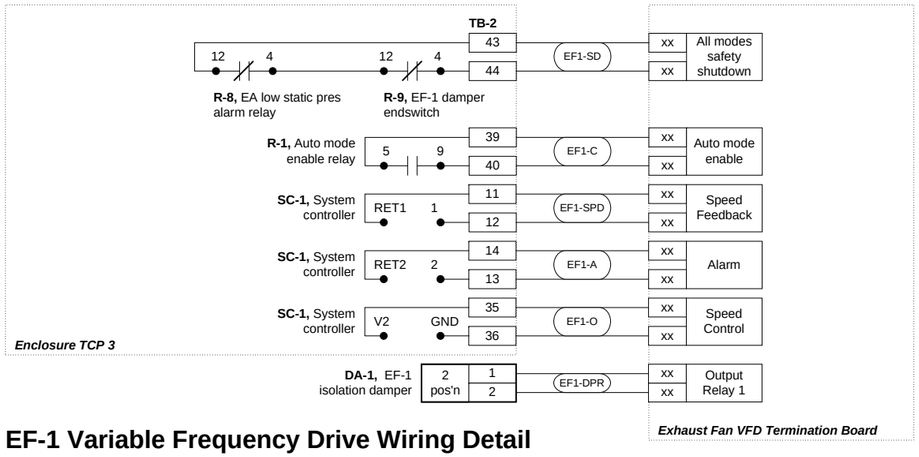
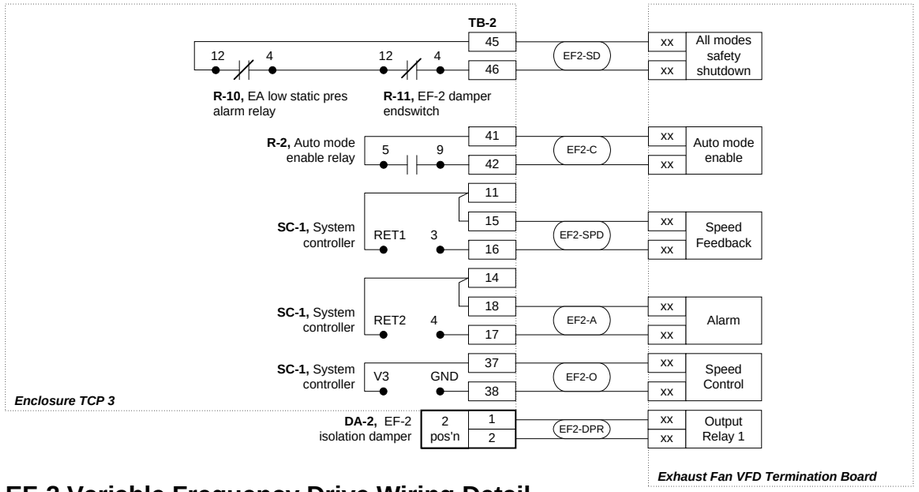
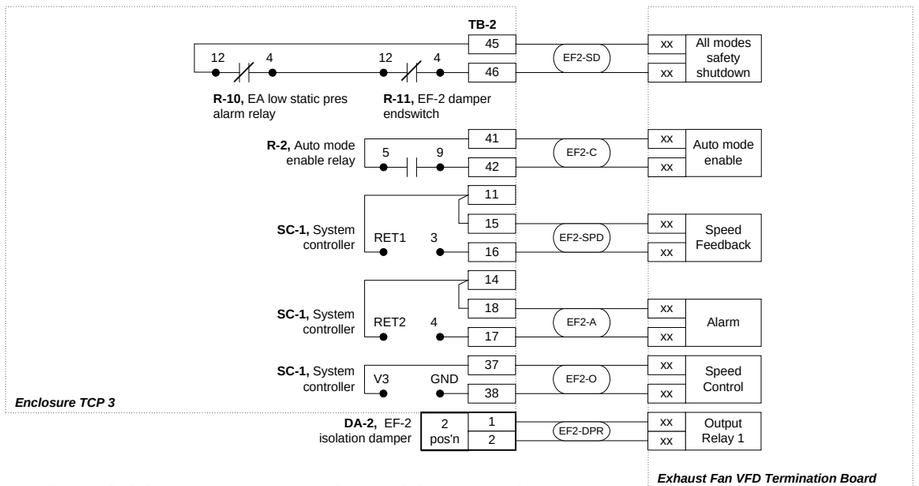


EF-1 Variable Frequency Drive Wiring Detail



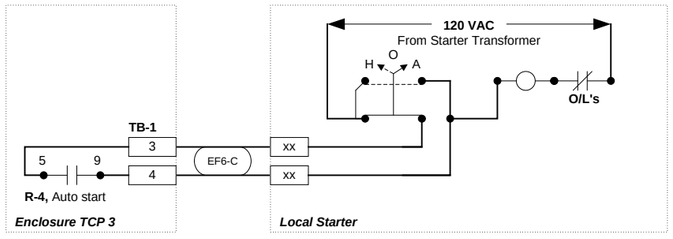
EF-2 Variable Frequency Drive Wiring Detail



EF-3 Variable Frequency Drive Wiring Detail

Exhaust Fans Enclosure TCP-3 Devices Bill of Materials

Item	Qty	Code No.	Description	Manufacturer
TCP-3	1	TBD	Enclosure, Nema 1, TBD" x TBD" x 8.62"	Hoffman
TCP-3	1	TBD	Enclosure Backplate, TBD" xTBD"	Hoffman
TCP-3	1	A-L12AR	Cylinder Lock	Hoffman
EPT-1	1	EP-313020	Elec. to Pres. Transducer, 0/10V = 0/20 PSIG	Mamac
FD-1	1	PRK-FS	Fused Disconnect, Duplex Service Receptacle	Kele
NV-1	1	F-1000-93	Needle Valve, 1/4"	Johnson Controls
PI-1	1	G-2010-5	Pressure Indicator, 0-30 PSIG, 1-1/2"	Johnson Controls
PI-1	1	F-700-80	Eared Tee, 1/4" x 1/4" x 1/8"	Johnson Controls
PS-1	2	DCP-1.5-W	Pow er Supply, 24VAC/24VDC, 1.5 Amp	Kele
R-8 to 11	4	RH3B-UAC24-L	Control Relay, 24VAC, 3PDT, Light	Idec
R-8 to 11	4	SH3B-05	Relay Base, 3PDT	Idec
SC-1	1	i2920	System Controller	Andover Controls
XFMR-1	1	694-M1	Transformer, 120/24VAC, 75VA, Foot Mount	Kele
R-1 to 7	7	RH2B-UAC24-L	Control Relay, 24VAC, 2PDT, Light	
R-1 to 7	7	SH2B-05	Relay Base, 2PDT	



Exhaust Fan 4

Exhaust Fans EF- 4-9 Wiring Details and TCP-3 Bill of Materials

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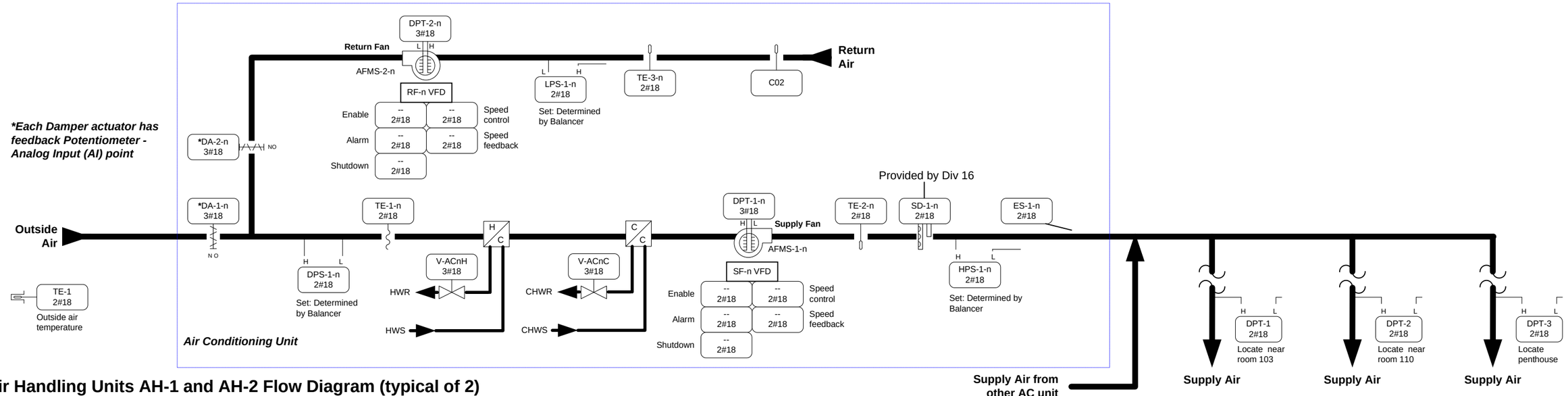

Air Handling Units AH-1 and AH-2 Flow Diagram (typical of 2)
Sequence of Operation

1. Overview
The air conditioning units are ducted in parallel and serve the building VAV boxes and the laboratory air valves. The air conditioning units are controlled and monitored by their individual Andover system controller SC-1. All points may be accessed via the Andover Infinity network system workstation (OWS). Refer to the architectural layout drawing for more details.

2. Unoccupied Mode
During all off periods the outside air temperature shall be monitored. When the outside air temperature is below 34 degrees the outside air dmapers shall close 100% and the chilled water pump will circulate until the temperature rises above 36 degrees to prevent the chilled water coils from freezing.

3. Morning Warm-up Mode
When the system transitions from the unoccupied mode to the occupied mode, the morning warm-up routine will be activated if the return air temperature is 3 degf lower than setpoint. The unoccupied mode operating AC unit will shutdown. Then both AC unit supply fan VFD's will be commanded to start. The VFD's will operate in parallel to maintain the supply air static pressure setpoint per the occupied mode. The heating water valve will modulate to maintain the warm-up mode supply air temperature setpoint. The economizer dampers will be positioned to a minimum outside air position. The return fan VFD will remain off.

4. Occupied Mode
At the start of the occupied mode the AC units will shutdown if the morning warm-up mode was not activated. Then both AC units will be commanded to start and operate as follows:

5. Start/Stop (typical of 2)
Upon a start command the discharge air isolation damper will open. When the damper is proven open by it's endswitch, the VFD and the control sytem will be enabled. The supply fan and return fan variable frequency drives (VFD's) will start and ramp up to minimum speed.

6. Safety Shutdown (typical of 2)
The supply and return fan VFD's will shutdown when the supply air smoke detector, return air smoke detector, high discharge pressure switch or the low return pressure switch are in alarm. The pressure switches must be manually reset to allow the system to restart.

Sequence of Operation (continued)

7. Supply Fan VFD Speed Control (typical of 2)
The supply fan VFD will be controlled to maintain the supply air static pressure setpoint. The 2 first floor supply air static pressure sensors will be averaged for feedback.

8. Return Fan VFD Speed Control (typical of 2)
The return fan VFD will be controlled to maintain the return air volume setpoint. The volume setpoint will be determined from the differential between the sum of the supply VAV boxes and Phoenix laboratory air valves, less the fixed exhaust less 5%. The setpoint will be confirmed by the Air Balancer.

9. Economizer Dampers (typical of 2)
When the air handling unit is in the unoccupied mode or the air handling unit is shutdown due to a safety alarm, the dampers will fail-safe to the 100% outside air position. During the occupied mode the dampers will modulate from a minimum outside air position to 100% outside air to maintain the mixed air temperature setpoint. The mixed air temperature setpoint is 2 Deg F lower than the discharge air temperature setpoint. When the outside air temperature exceeds the return air temperature, the dampers will be set to a minimum outside air position for ventilation purposes.

10. Heating Coil (typical of 2)
The heating valve shall modulate to maintain the discharge air temperature at the supply setpoint. The heating valve shall be closed if the outdoor air damper is open past its' minimum position or if the cooling valve is open. the hydronic heating valve and the cooling valve shall be fully open if the supply fan is off and the outdoor temperature drops below the low limit temperature setpoint of 34 degrees F (1).

11. Cooling Coil (typical of 2)
The cooling coil valve shall modulate to maintain the discharge air temperature at the supply air setpoint. If the economizer function is enabled and the outdoor air damper is not fully opened, the cooling valve shall be closed if the heating valve is open or if the supply fan is off.

Item	Qty	Code No.	Description	Manufacturer
AFMS-1, 2-n	4	FE-2000	Airflow Measurement Station, Pitot Tube	Paragon
DA-1, 2-n	4	AF24-SR	Damper Actuator, Spring Return, 0/10VDC	Delta
DPS-1-n	2	P32AC-2C	Pressure Switch, SPDT	Johnson Controls
DPT-1 to 3	3	PR-275-R3-mA	Differential Pressure Transmitter, 0/5.0 in.w g = 4/20mA	Mamac
DPT-1, 2-n	4	PR-275-R2-mA	Differential Pressure Transmitter, 0/1.0 in.w g = 4/20mA	Mamac
ES-1-n	2	TS-470	Endswitch, SPDT	Kele
HPS-1-n	2	AFS-460	Pressure Limit Switch, Manual Reset	Cleveland Controls
LPS-1-n	2	AFS-460	Pressure Limit Switch, Manual Reset	Cleveland Controls
SD-1, 2-n	2	---	Duct Smoke Detector	By Others
TE-1	1	TT-D-4-1	Temperature Sensor, Insert, Type III Thermistor	Andover Controls
TE-1-n	2	01-6013-039	Temperature Sensor, 12' Averaging, Type III Thermistor	Andover Controls
TE-2, 3-n	4	TT-D-6-1	Temperature Sensor, Insert, Type III Thermistor	Andover Controls
V-ACx	4	---	Control Valve, Refer Valve Schedule	---
C02	1	CDLSXXX	C02 Sensor	Kele

Air Handling Units AH-1 and AH-2 Control Notes:

1. AH-1 and AC-2 located on the roof (refer M2.03).
2. All points for AC-1 and the static pressure sensors report to TCP-1.
3. All points for AC-2 report to TCP-2.
4. Enclosures TCP-1 and TCP-2 located in penthouse (refer M2.03).
5. Smoke detectors supplied by division 16 and installed by DDC.
6. All control devices located on roof are to be protected from the environment.
7. Refer to the architectural layout drawing for controller communication detail

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Air Handling Units AH-2 and AH-3

Flow Diagram and

Sequence of Operation

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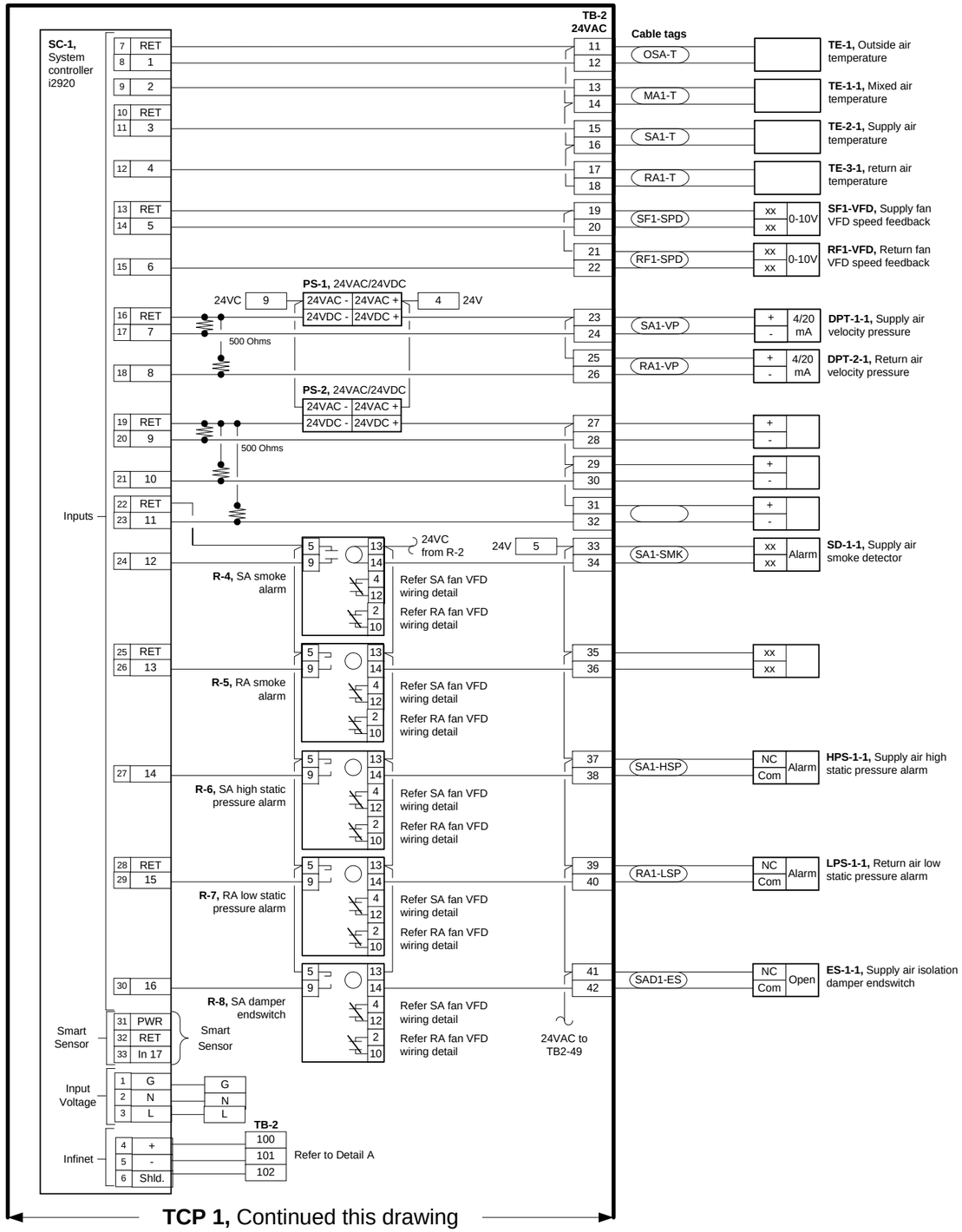
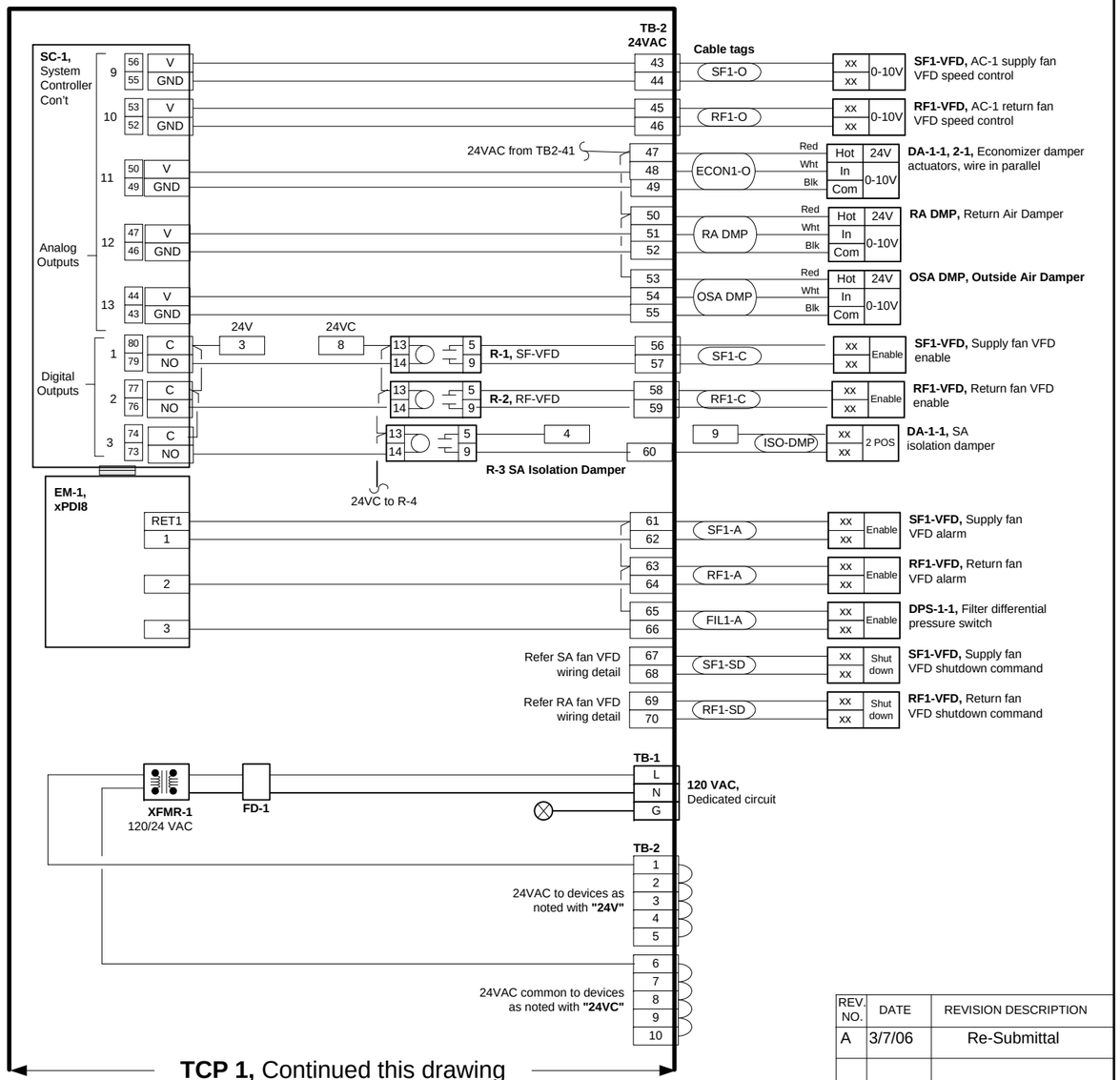


TCP 1, Continued this drawing



TCP 1, Continued this drawing

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TCP 4

AC 1 Controller Wiring

(typical of 2)

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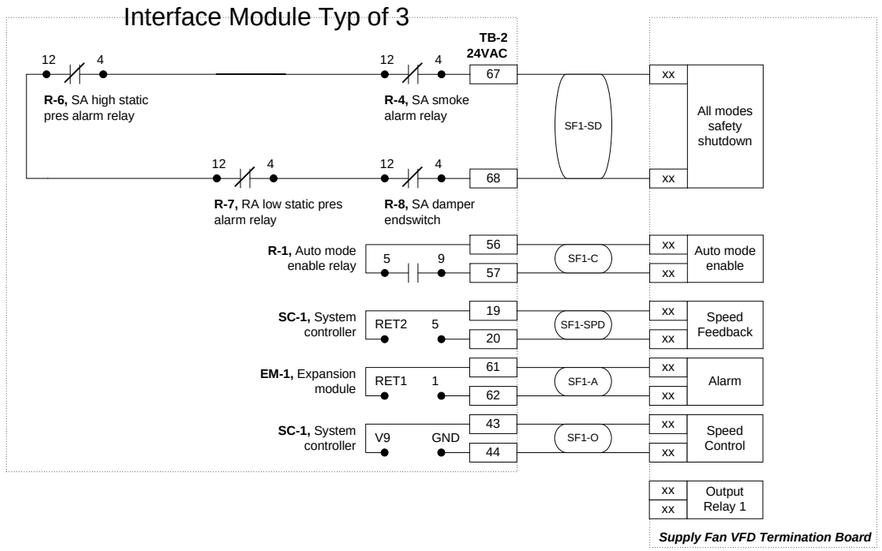
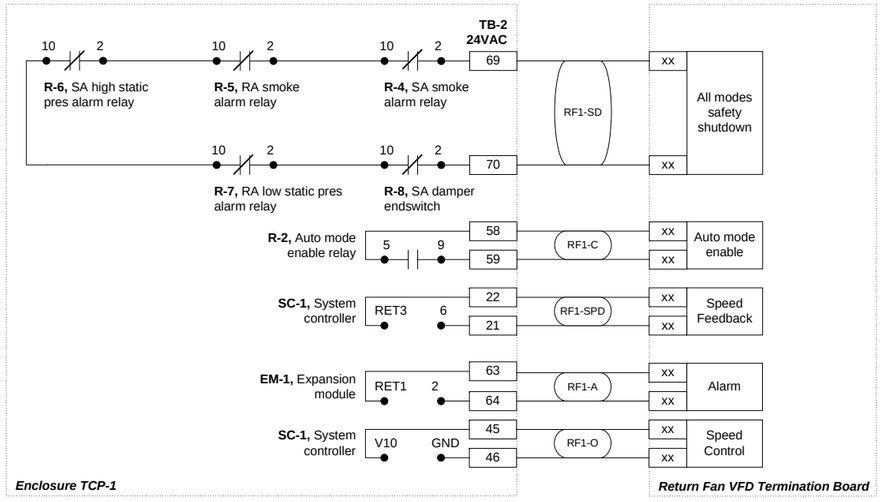


AH-1 Supply Air Fan Variable Frequency Drive Wiring Detail



AC-1 Return Air Fan Variable Frequency Drive Wiring Detail

Item	Qty	Code No.	Description	Manufacturer
TCP-1	1	TBD	Enclosure, Nema 1, TBD" x TBD" x 8.62"	Hoffman
TCP-1	1	TBD	Enclosure Backplate, TBD" xTBD"	Hoffman
TCP-1	1	A-L12AR	Cylinder Lock	Hoffman
EM-1	1	xPDI8	Expansion Module, 8 DI	Andover Controls
FD-1	1	PRK-FS	Fused Disconnect, Duplex Service Receptacle	Kele
PS-1, 2	2	DCP-1.5-W	Pow er Supply, 24VAC/24VDC, 1.5 Amp	Kele
R-4 to 8	5	RH3B-UAC24-L	Control Relay, 24VAC, 3PDT, Light	Idec
R-4 to 8	5	SH3B-05	Relay Base, 3PDT	Idec
SC-1	1	i2920	System Controller	Andover Controls
R-1 to 3	3	RH2B-UAC24-L	Control Relay, 24VAC, 2PDT, Light	Idec
R-1 to 3	3	SH2B-05	Relay Base, 2PDT	Idec

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Office Area
Air Handling Unit AHU-1
Bill of Materials, Wiring Details and Enclosure TCP-1

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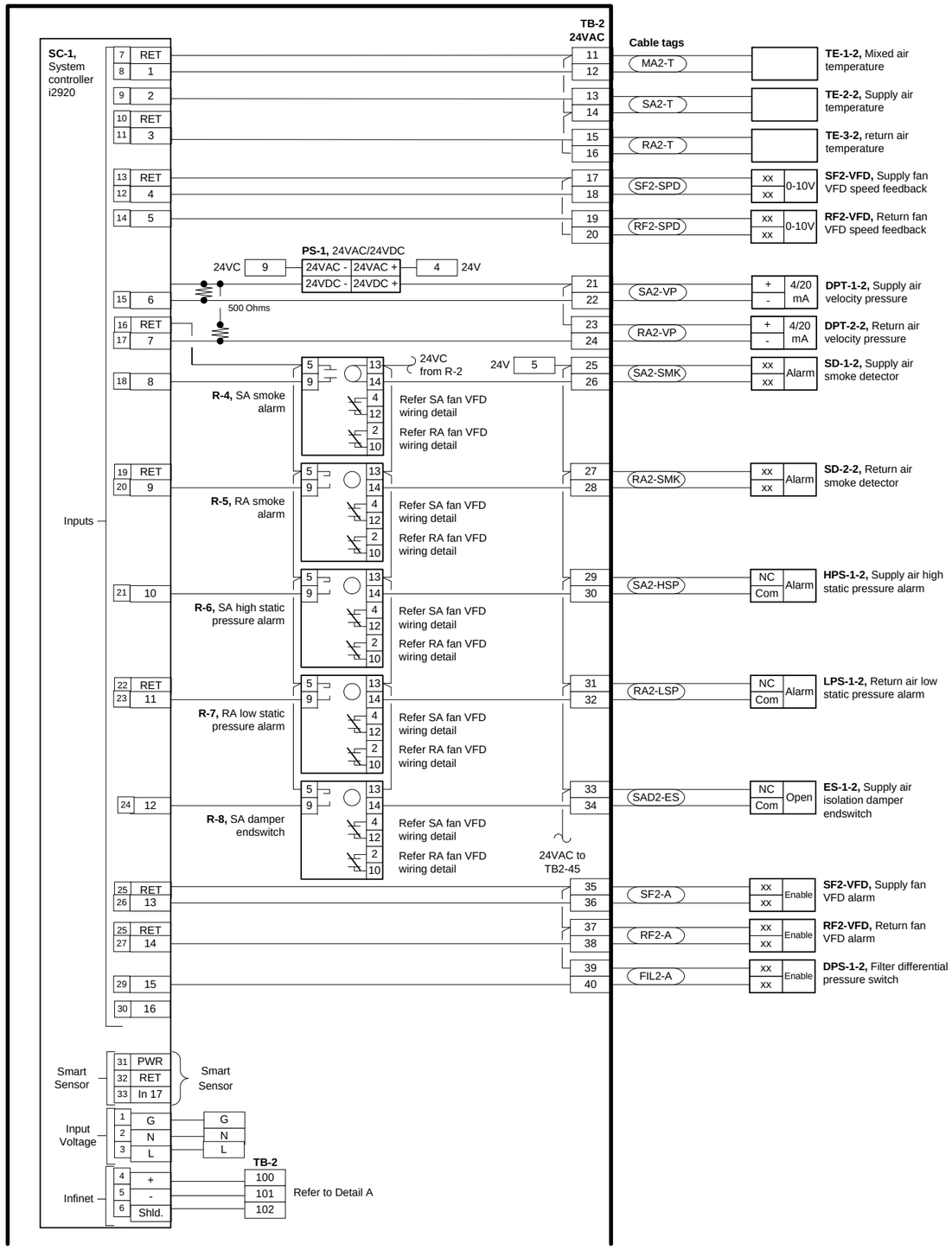

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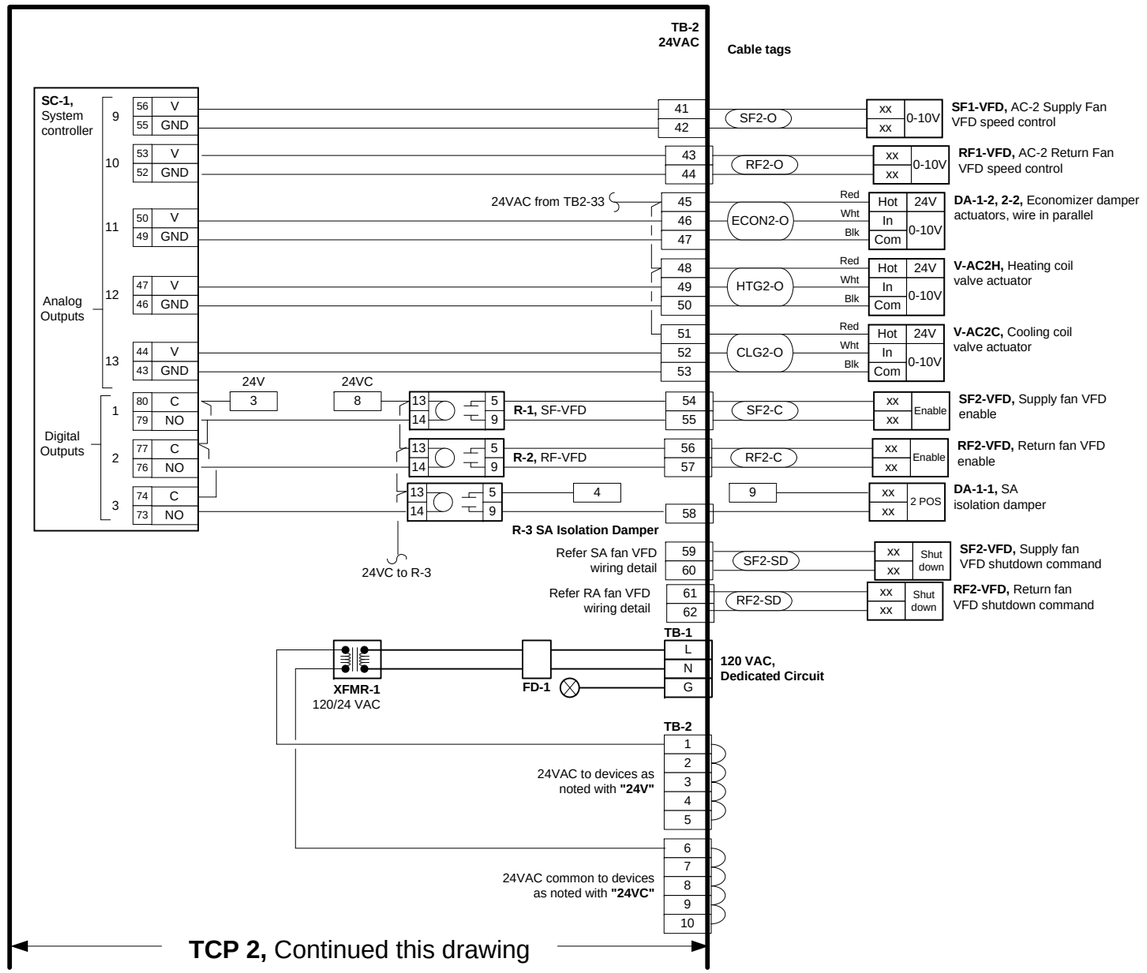

TCP 2, Continued this drawing

TCP 6

AC 1 Controller Wiring

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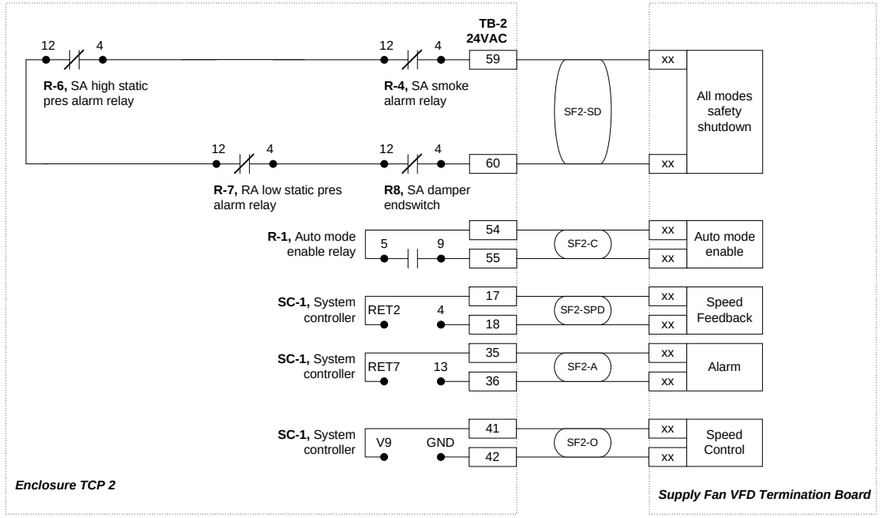
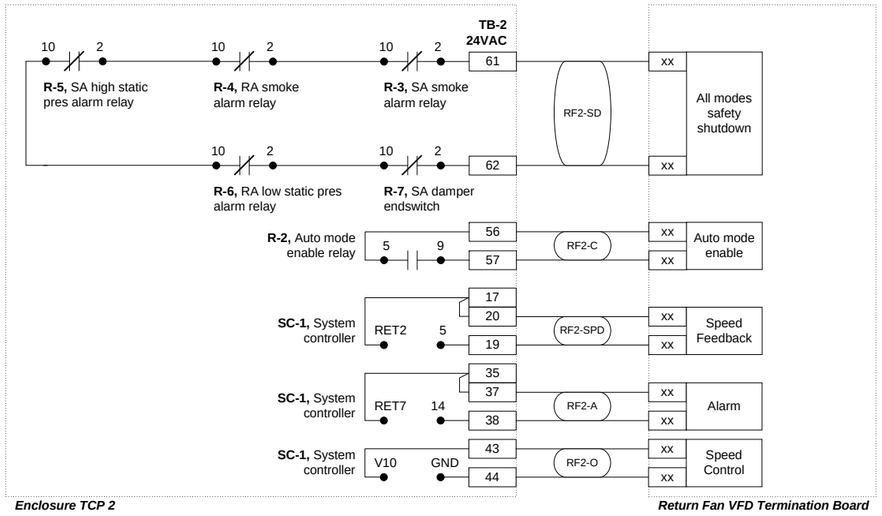


AC-2 Supply Air Fan Variable Frequency Drive Wiring Detail



AC-2 Return Air Fan Variable Frequency Drive Wiring Detail

Item	Qty	Code No.	Description	Manufacturer
TCP-2	1	TBD	Enclosure, Nema 1, TBD" x TBD" x 8.62"	Hoffman
TCP-2	1	TBD	Enclosure Backplate, TBD" xTBD"	Hoffman
TCP-2	1	A-L12AR	Cylinder Lock	Hoffman
FD-1	1	PRK-FS	Fused Disconnect, Duplex Service Receptacle	Kele
PS-1	1	DCP-1.5-W	Power Supply, 24VAC/24VDC, 1.5 Amp	Kele
R-4 to 8	5	RH3B-UAC24-L	Control Relay, 24VAC, 3PDT, Light	Idec
R-4 to 8	5	SH3B-05	Relay Base, 3PDT	Idec
SC-1	1	i2920	System Controller	Andover Controls
XFMR-1	1	694-M1	Transformer, 120/24VAC, 75VA, Foot Mount	Kele
R-1 to 3	3	RH2B-UAC24-L	Control Relay, 24VAC, 2PDT, Light	Idec
R-1 to 3	3	SH2B-05	Relay Base, 2PDT	Idec

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Enclosure TCP-2
Layout, Bill of Materials and
AC-2 Wiring Details

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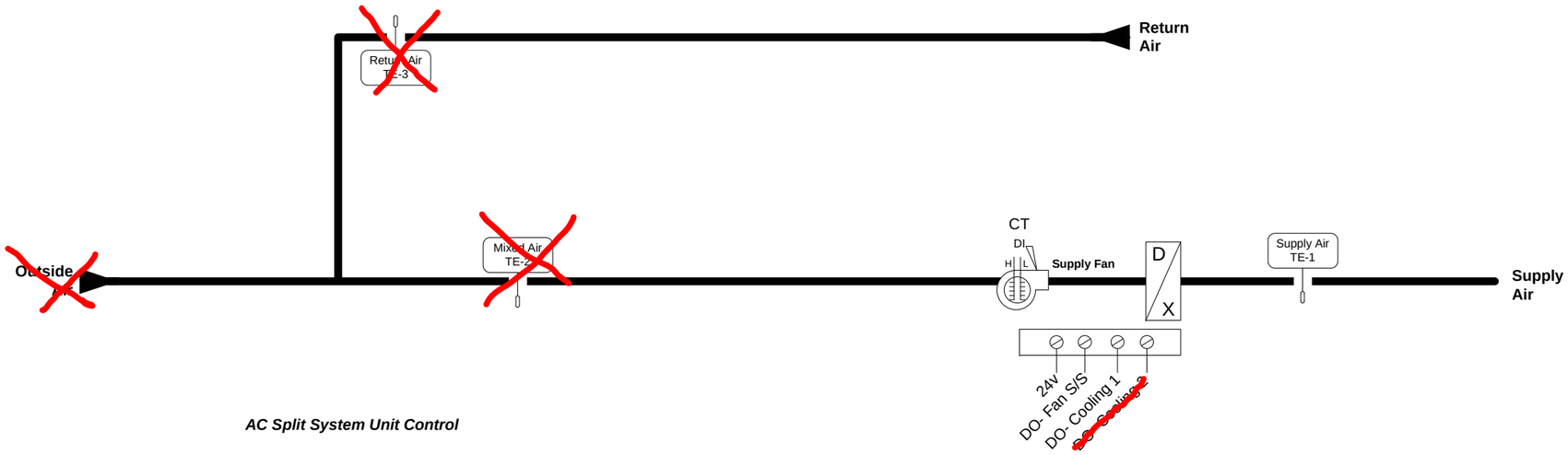

AC Split System Unit Control

AC Split System Units ACS-1 and ACS2 Flow Diagram (typical of 2) Sequence of Operation

1. Overview
The air conditioning units are ducted in parallel and serve the building VAV boxes and the laboratory air valves. The air conditioning units are controlled and monitored by their individual Andover system controller SC-1. All points may be accessed via the Andover Infinity network system workstation (OWS). Refer to the architectural layout drawing for more details.

2. Occupied/ Unoccupied Mode
The fan shall be turned on when the unit is scheduled on. If the unit is scheduled off, the fan shall be turned off. After the fan is turned off, a five minut delay must elapse before the fans can be turned back on.

3. Cooling Control
When the fan is on and the fan has proof of airflow and the zone temperature is above it's set point plus two (+2) degrees and the supply air temperature is above 62 degrees then the first stage of cooling shall be turned on. If the supply air temperature is above 62 degrees for five minutes, the second stage of cooling shall be turned on. If the zone temperature falls below it's set point or fan status is off or the fan is off then the cooling shall be turned off. If the supply air temperature should fall below the low limit lockout set point of 44 degrees, one stage of cooling shall be turned off for a five minute delay.

4. Economizer Control
When the fan is on and the outside air temperature is below the outside air lockout set point of 68 degrees minus 2 (-2) degrees and the outside air temperature is below the return air temperature minus 2 (-2) degrees, the outside air dampers shall modulate dto maintain a mixed air set point. If the outside air temperature rises above the returen air set point or the heating is on the dampers shall modulate to their minimum position of 20%. The dampers shall close when the fan is off. The mixed air set point schedule is as follows:

Max Zone Diff	MA Set Point
0	70
0.5	62.5
1	55

5. Alarms
A daily runtime alarm is being calculated for this unit. Once the runtime alarm exceeds a 24 hour limit and alarm is logged and sent to the alarm view window. Once the unit is shut down, the daily runtime will reset to zero.
If both stages of cooling are on and the supply air temperature is above 60 deg. For more than 15 minutes a cooling alarm shall be generated.
If the zone is occupied and the zone temperature is =/- 5 degrees from set point for 15 minutes an aout fo range temperature alarm shall be active.

AH-1 and AH-2 Field Devices Bill of Materials

Item	Qty	Code No.	Description	Manufacturer
AFMS-1, 2-n	4	FE-2000	Airflow Measurement Station, Pitot Tube	Paragon
DA-1, 2-n	4	AF24-SR	Damper Actuator, Spring Return, 0/10VDC	Delta
TE-1-n	2	01-6013-039	Temperature Sensor, 12' Averaging, Type III Thermistor	Andover Controls
TE-2, 3-n	3	TT-D-6-1	Temperature Sensor, Insert, Type III Thermistor	Andover Controls

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AC Units ACS-1 and ACS-2

Flow Diagram and

Sequence of Operation

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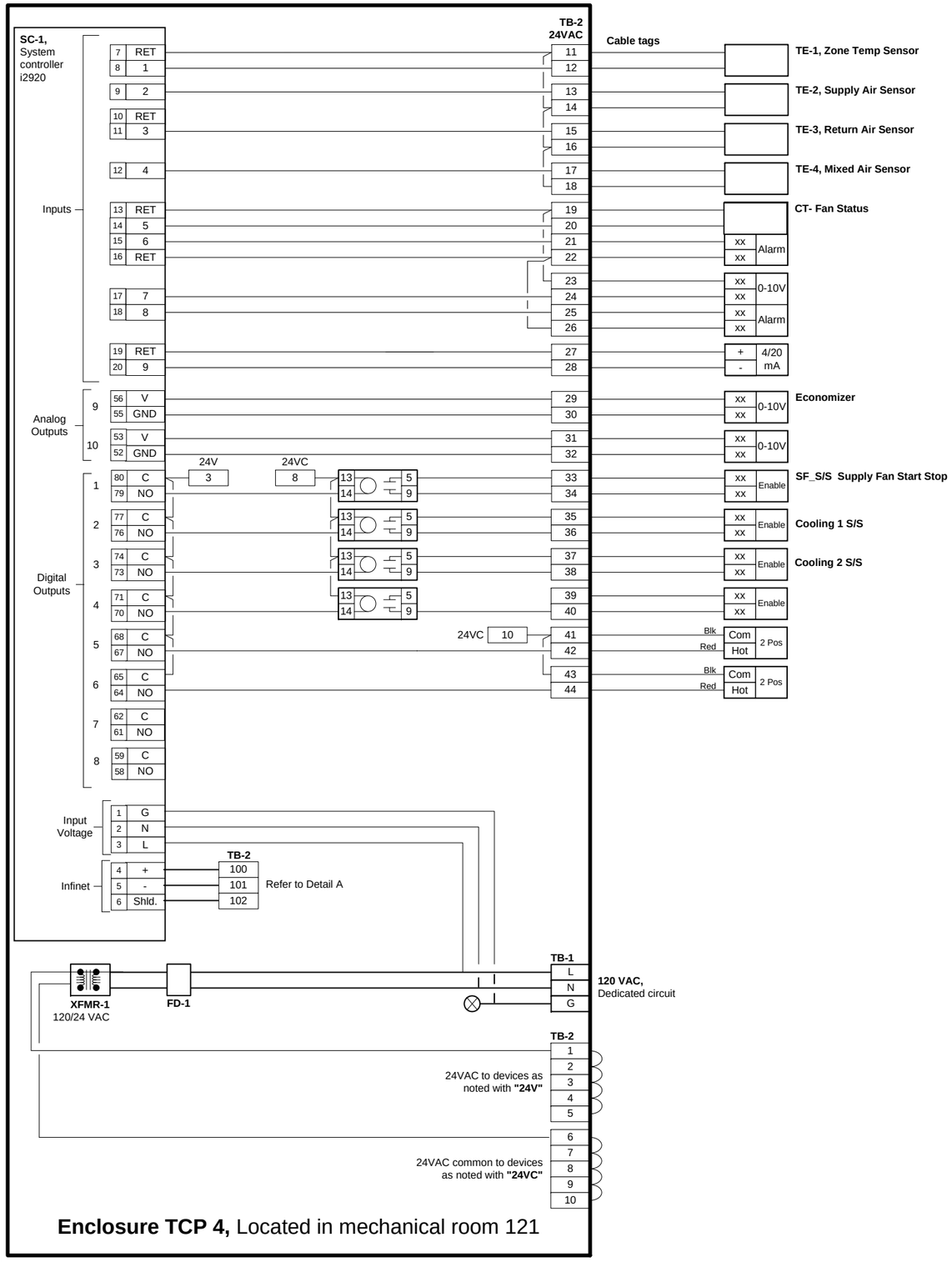

TCP-4	1	TBD	Enclosure Backplate, TBD" xTBD"	Hoffman
TCP-4	1	A-L12AR	Cylinder Lock	Hoffman
FD-1	1	PRK-FS	Fused Disconnect, Duplex Service Receptacle	Kele
PS-1	1	DCP-1.5-W	Pow er Supply, 24VAC/24VDC, 1.5 Amp	Kele
R-1 to 4	3	RH2B-UAC24-L	Control Relay, 24VAC, 2PDT, Light	Idec
R-1 to 4	3	SH2B-05	Relay Base, 2PDT	Idec
SC-1	1	i2814	System Controller	Andover Controls
XFMR-1	1	694-M1	Transformer, 120/24VAC, 75VA, Foot Mount	Kele

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~~TCP 1~~

~~Hot Water System Controller Wiring~~

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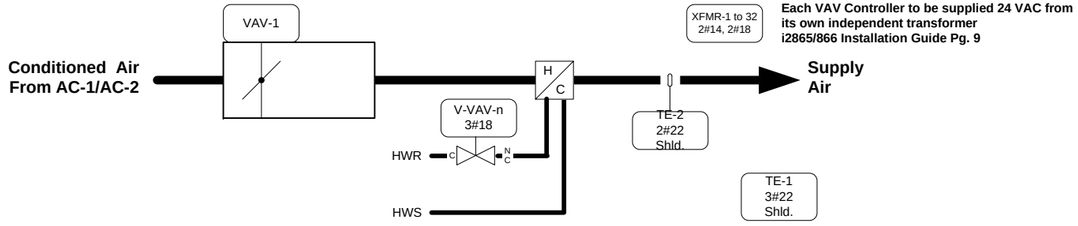
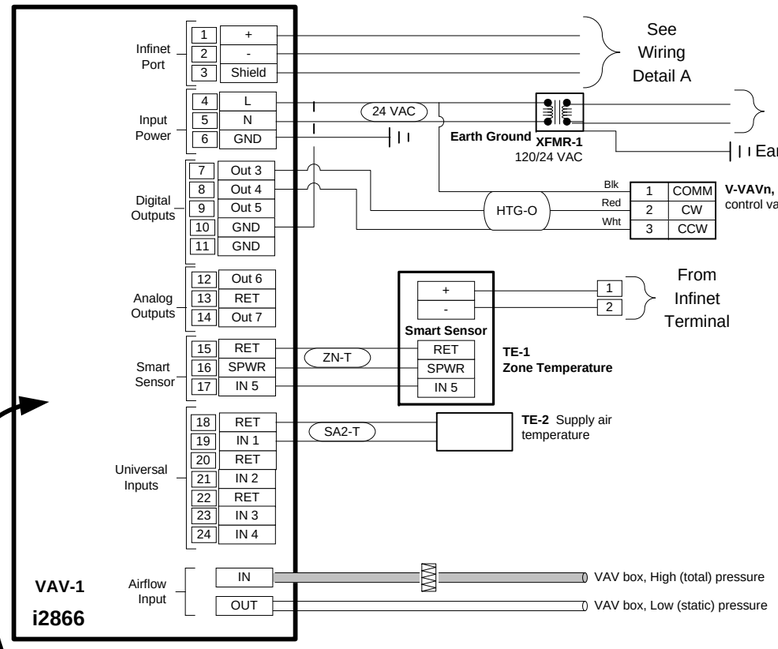


VAV Box Flow Diagram (typical of 58)

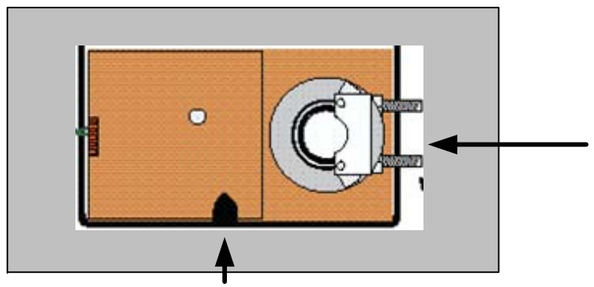
VAV Boxes Bill of Materials

Item	Qty	Code No.	Description	Manufacturer
TE-1	32	TTS-S-1	Zone Temperature Sensor, Type III Thermistor	Andover Controls
TE-2	32	TT-D-4-1	Duct Temperature Sensor, Type III Thermistor	Andover Controls
VAV-1	32	i2865	VAV Controller with Built-in Actuator	Andover Controls
V-VAV-n	29	---	Heating Water Control Valve, Refer Valve Schedule	---
XFMR-1 to 11	32	694-M2	Transformer, 120/24 VAC, 40VA, Foot Mount	Kele
RH-Valve	42		Valve, 2-way 0-10V	Delta



VAV Box Controller Wiring Detail (typical of 32)

On-board VAV Actuator



U-bolt
Affix to Damper Shaft

Manual Override Button

Sequence of Operation

1. Overview
The variable air volume boxes are controlled and monitored by individual Andover system controllers VAV-1. All points may be accessed via the Andover Infinity network system workstation (OWS). Refer to the architectural layout drawing for more details.

2. Variable Air Volume Box Control (Typical of 58)
When the zone temperature is below setpoint, the VAV box damper actuator will modulate towards the minimum volume setpoint. If the zone temperature remains below setpoint, the reheat control valve will modulate open. If the zone temperature continues to remain below setpoint, the VAV box damper will modulate towards the maximum volume setpoint.

When the zone temperature is above setpoint, the VAV box damper actuator will modulate towards the maximum volume setpoint. The reheat valve will be closed.

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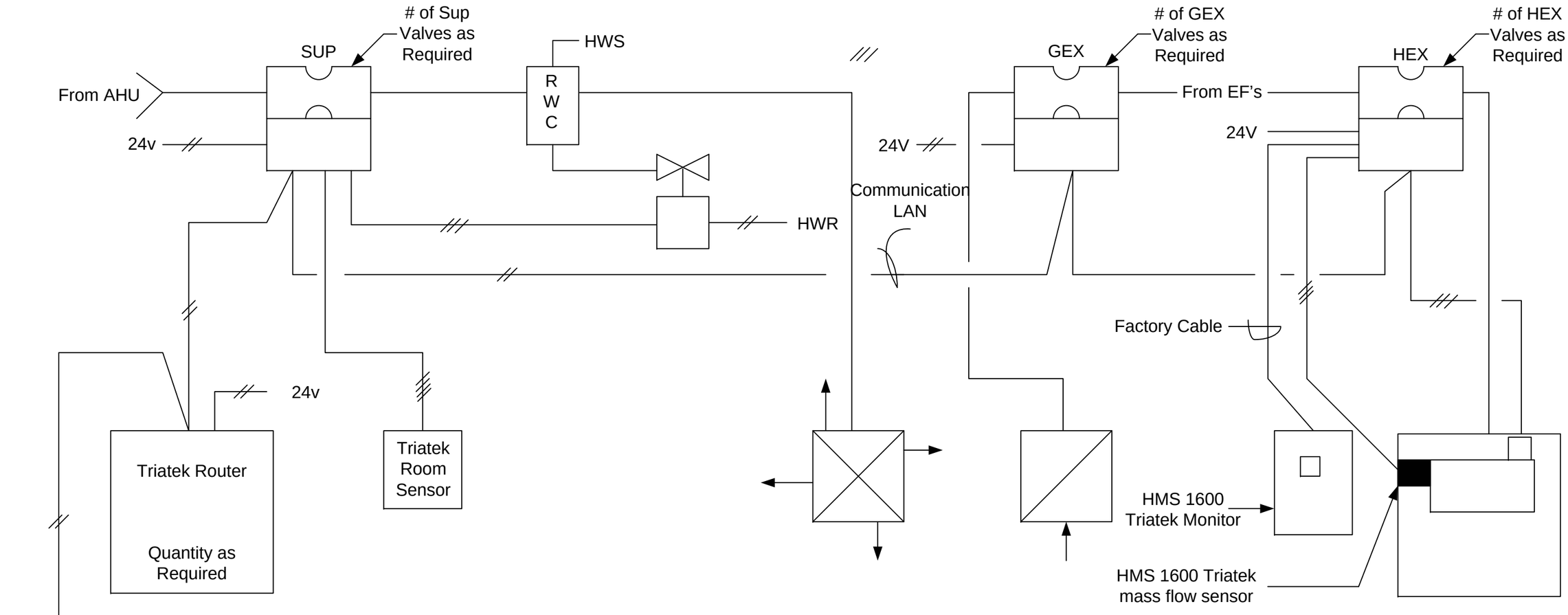
Note: Each SUP and GEX valves to have spare AI and SO points for future use in lab space.



Note: All lab components and power supplies shall be UL or ETL listed.

See Triatek control drawings

Lab Control Wiring Detail

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