



Preliminary Set  
10/5/2020

CONTROL DIAGRAMS FOR:

Seattle Hill Elementary School

51st Avenue, SE  
Everett, WA 98208

Architect:

Consulting Engineer:

Prime Contractor:

(Contract With)

Snohomish School District

Rebecca Sheppard

360-563-7261

Controls Contractor

ATS Automation Inc.

PM: Tyson Woods

ENGINEER: Kevin Marroquin

TECHNICIAN: TBD

425-251-9680

Seattle Hill Elementary School		JOB# 1520248
SALESMAN: SR	DRAWN BY: KM	DATE: 10/5/2020
ENGINEER: KM	APPROVED BY: TW	REV: Preliminary Set
ATS Automation Inc. 450 Stattuck Ave South Renton, WA 98057 425-251-9680		
Title Sheet		SHT#: 1.000

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# Project History

Job #	Description
1113089	Base Project. Rick Ensey
9023	Totem Falls Elementary (IBEX)
1193013	Cathcart Elementary (IBEX)
1193039	Central Primary Elementary (IBEX)
1101031	Dutch Hill Elementary (IBEX)
1106043	Little Cedars Elementary (BacTalk)
1106119	Glacier Peak High School (BacTalk)
1110094	Centennial Middle School (BacTalk)
1507054	Emerson Elementary (BacTalk)
1111033	Valley View (Bac Talk)



## Installation Guidelines

### Installation Notes and Guidelines:

- Thermostat installation:
  - Verify thermostat location and height as specified on most recent set of mechanical plans, ARCH standard details and specifications, typically DIV23, Verify thermostat height before any work begins.
  - Use rough-in box in lieu of mud ring.
  - For thermostat located on exterior walls, or on interior columns/walls subject to infiltration, verify/add insulation behind sensor. Install and insulate wire mold 2347 shallow device box single gang as required for thermostat sub-base.
  - On new construction or TI. Work locate thermostat as per most current mechanical drawing set. See mechanical on job site. For retrofit – use existing as-built control drawings as guide.
  - Contact ATS Automation with any height and/or location conflict. No field changes to be made without proper approval.
- Outdoor temperature sensor installation:
  - Install outdoor housing on north side of building. Mount housing so unit can be serviced with a 6' ladder. Locate housing away from exhaust louvers or objects that can influence outdoor temperature.
  - Contact ATS with any height and/or location conflict. No field changes to be made without proper approval.
- Outdoor immersion well installation:









Use Silicon Seal as required and drill drain holes in bottom of sensor housing.
- Photocell installation:

Locate photocell on roof in face up position. Use Silicon Seal as required and drill drain holes in bottom of photocell housing.
- Outdoor static reference:
  - Evaluate the building with ATS project manager and determine if approval from architect is required for outdoor housing location.
    - Use A-306 for outdoor reference when using same or near level indoor reference. Mount at 45 deg. See 1.31 Installation Guidelines.dwg
    - Install outdoor housing and seal outdoor tubing wall penetration.
    - Mount A-306 housing so unit can be serviced with a 6' ladder. Locate housing as per control drawings. Contact ATS with any height and/or location conflict. No field changes to be made without proper approval.
  - For projects requiring Air Monitor Static Outside Air Probe (SOAP), locate SOAP away from all structures and obstacles of sufficient size that create a wind induced pressure envelope. Typical locations are on an elevated position in an outdoor parking lot, in a below ground recess (landscape or lawn area), away from buildings, in a below ground location like a parking garage with non-forced ventilation, or on a rooftop mounted pole sufficiently elevated to be outside any anticipated wind induced pressure envelope. See 1.31 Installation Guidelines.dwg
- Indoor static reference:
  - Use Housing supplied by ATS; RPS, RPS-W, microtouch housing or Leviton louver plate for wall mount installations. See 1.31 Installation Guidelines.dwg.
  - Locate reference as per control drawings. Contact ATS with any location conflict. No field changes to be made without proper approval.
- Under floor cable runs:

Support wire as required to guard against movement from supply fan air flow.
- Mount the control panels. Assemble and wire the control panels internal components.

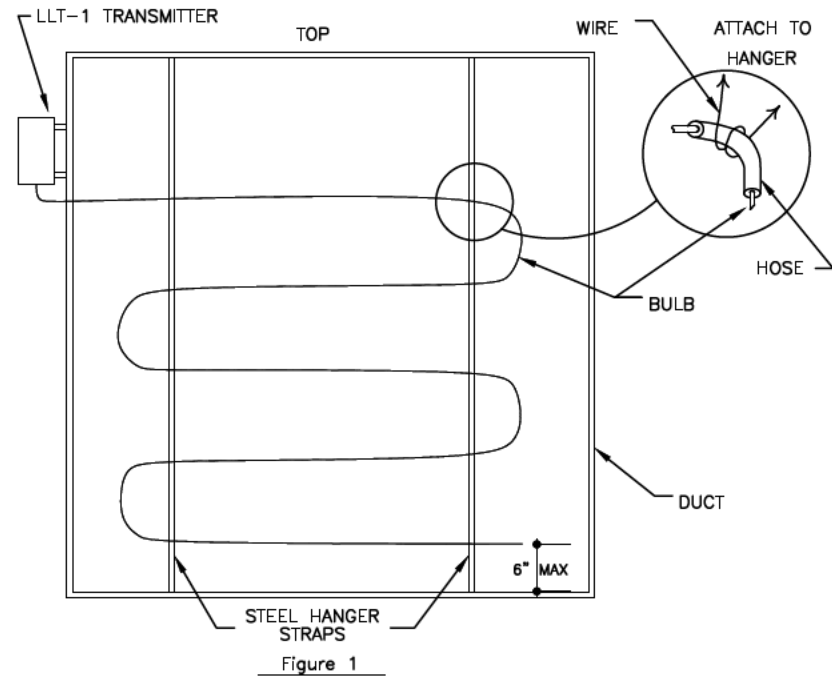
- Mount the transformer panels. Assemble and wire the transformer panels internal components.
- Provide a 6"x6" horizontal or vertical gutter adjacent to the control panels in mechanical/electrical rooms, where applicable. This is to facilitate the use of panel knockouts in the control panel and to provide a space for spare wires and service loop.
- Provide all wire, cable, electrical hardware: conduit, fittings, boxes etc.
- Tube VAV box airflow sensors to individual controller. 1/4" Fire Rated tubing is required.
- Permanently label all cables at both ends (not required on terminal units).
- Dedicated 120vac power required for control circuits. Provide 24vac power to trunk devices except where factory mounted transformers are provided.
- Dedicated 24vac circuit required for each global controller. Global controller panel requires a solid earth ground.
- Wiring shall be installed in conduit when routed through inaccessible areas or in mechanical/electrical spaces as per national and local electrical codes. Use plenum rated cable when conduit is not required. Use cable rated for wet location in all underground race way. When pulling 10 Base T (twisted pair) CAT 5 wire, ensure that pull boxes are placed every 100 feet or where (2) 90 degree bends have been placed. This requirement is to ensure that no more than 25 lbs of pulling force is used when pulling wire.
- Terminate the MS/TP trunk communication shield wire to the same earth ground as the global controller. As the cable is pulled from controller to controller, tie the shields together – Do Not Ground Communication Shields at the controller! The continuous shield wire should only be connected at the ground lug at the Global Controller panel. Input shields must be grounded only at the Controller.
- Keep polarity consistent on all 24VAC power circuits.
  - 24VAC power runs for controllers: Black wire to (+), white wire to (-). The white wire is grounded only at the transformer location.
  - 24VAC power with-in control panels: Black wire to (+), white wire to (-).
  - Cables to field devices with whips such as Belimo actuators or valves that designate red wire as (24VAC +) and black wire as (24VAC -). Field install per:
    - Field cable black wire to connect with field device black wire (24VAC -). Field cable black wire to tie back into the panel transformer (24VAC -) circuit through a terminal strip or an approved connector at the transformer location. Note there will be an intentional wire color change at the panel terminal strip/approved connector as the wire color on the panel side will transition to white for (24VAC -).
    - Field cable red wire to connect with field device red wire (24VAC +). Field cable red wire to tie back into the panel transformer (24VAC +) circuit through a terminal strip or an approved connector at the transformer location. Note there will be an intentional wire color change at the panel terminal strip/approved connector as the wire color on the panel side will transition to black for (24VAC +).
- No "star" configurations for communication wiring. Use "daisy chain" method of wiring from one controller to another.
- No splices in communications trunk/segment wiring.
- No splices in other wiring without prior approval from ATS.
- Run all cable with building lines and adequately supported as per national and local electrical codes. All wiring and panel installations to be installed in a neat and workmanlike manner.

- All Ethernet wiring 100BASE-TX [CAT-5E], and 10Base2 [Coaxial] must be installed in its own conduit. MS/TP and Modbus are allowed in the same conduit with Ethernet.
  - No exceptions for spaces that are completely installed in conduit.
  - Exception is on the case of a 6 foot or Less conduit stub up from controller enclosure to open ceiling wiring or a wall stub through.
  - All communication conduit will cross high voltage (220 VAC or Greater) conduit at 90° when possible.
- Make sure no wires carrying ac voltage are run in the same raceway (conduits, trays, panels, J-boxes, gutters, etc.) with Ethernet. Make sure no AC voltages greater than 30VAC share the same conduit with MS/TP or Modbus.
- No wiring or devices from other trades to share the same raceway (conduits, trays, panels, J-boxes, gutters, etc.) with ATS devices or ATS control wiring.
- Bactalk Wiring Limits: Max distance between VLC: 1250 feet. Total length of MS/TP max 4000 feet without repeater. Maximum distance between Global's:
  - 10 Base T (twisted pair) CAT 6: 328 feet.
- ibex Wiring Limits: Max distance between Tux: 1000 feet, sensors: 125 feet.
- Poly tubing of pressure sensors and Copper tubing of differential pressure switches are to be in the scope of ATS Automation subcontractors work.
- Terminate input cable shield wire to ground only at the controller location, not at the sensor end. Do not ground shield physically on the controller, use earth or equipment ground at the controller location.
- Terminate the MS/TP trunk communication shield wire to the same earth ground as the global controller. As the cable is pulled from controller to controller, tie the shields together – Do Not Ground Communication Shields at the controller! The continuous shield wire should only be connected at the ground lug at the Global Controller panel. Input shields must be grounded only at the Controller. As the cable is pulled from controller to controller, leave the red wires long and tie them together at each controller. Terminate the red wire only at the Global Controller Gnd terminal, cap the red wire off at the other end of line.
- Terminate the MS/TP trunk communication shield wire to the same earth ground as the global controller. As the cable is pulled from controller to controller, tie the shields together – Do Not Ground Communication Shields at the controller! The continuous shield wire should only be connected at the ground lug at the Global Controller panel. Input shields must be grounded only at the Controller. As the cable is pulled from controller to controller, terminate the red wires to each vfd requiring the ground reference, if the vfd does not have a ground reference then tie the red wires together at each controller. Terminate the red wire only at the Global Controller Gnd terminal, cap the red wire off at the other end of line.
- For installations on or with-in other manufactures equipment – the installer shall follow the manufacturers installation instructions.
- The installer shall install per all project plans and specifications. Bring discrepancies and conflicts to the attention of the ATS Project Manager.

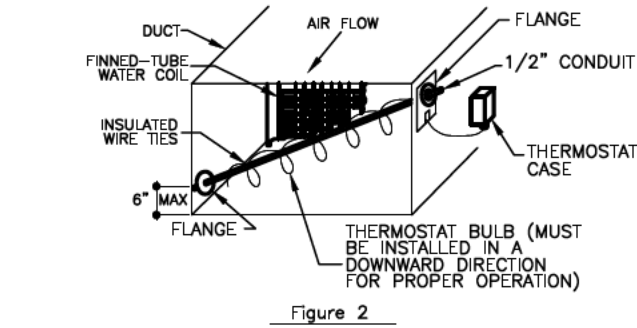
The following schedule lists wire tagging used on these drawings to indicate the type of cable to be installed and terminated on BACTalk Projects:									
Wire Tag	AWG	Conductors	Shield	NEC Type	UL Type	Typical Applications	MFG or supplier & P/N	Jacket Color	Shield Notes
2C	18 16,or 14	2	No	Article 725 Class 3 Plenum Cable	CL3P or CMP	24vac Power Runs, Remote Relay coils. Select Minimum Gauge to Insure 24vac at Device Served by Cable.	Connect Air W181P-2051 for 18GA, Connect Air W161P-2062 for 16GA, Connect Air W141P-2013 for 14GA, or Equivalent.	Any Color other than Light Purple or Yellow	
2CS	18	2	Yes	Article 725 Class 3 Plenum Cable	CL3P or CMP	Thermistors, digital Inputs, Analog Inputs, 2-wire devices.	Connect Air W181P-2040, or Equivalent.	Any Color other than Light Purple or Yellow	
3C	18	3	No	Article 725 Class 3 Plenum Cable	CL3P or CMP	Low Voltage Damper Motors, Valves, or Theris Exhaust Valves.	Connect Air W183-2052, or Equivalent.	Any Color other than Light Purple or Yellow	
3CS	18	3	Yes	Article 725 Class 3 Plenum Cable	CL3P or CMP	BACTalk Microset Wire, 250' Max. Theris DAT Sensors, Pressure Transducers	Connect Air W183C-2058BLRB or Equivalent.	Blue	
4CS	18	4	Yes	Article 725 Class 3 Plenum Cable	CL3P or CMP	Remote Relay and CT Combo, Damper Motors or Valves with Feedback.	Connect Air W184C-2059, or Equivalent.	Any Color other than Light Purple or Yellow	
8CS	18	8	Yes	Article 725 Class 3 Plenum Cable	CL3P or CMP	Rooftop Interlock Wiring. Theris Exhaust Valve or Room Sensor.	Connect Air W188C-2030, or Equivalent.	Any Color other than Light Purple or Yellow	
MS/TP	22	2	Yes	Article 800 Class 2 Plenum Cable	CMP	Low Capacitance BACTalk MS/TP Lan Connection Between Global Controller and BACTalk Addressable Devices.	Connect Air W221P-2544LAN, use unless specified otherwise.	Light Purple	
PX-MS/TP	22	3	Yes	Article 800 Class 2 Plenum Cable	FPLP or CMP	Low Capacitance Theris MS/TP Lan Connection Between Global Controller and Phoenix Theris Addressable Devices.	Connect Air W223C-2060YPC, use unless specified otherwise.	Yellow	
VFD/MSTP	22	3	Yes	Article 800 Class 2 Plenum Cable	FPLP or CMP	MSTP wiring between VFD's	Connect Air W223C-2561, use unless specified otherwise.	Tan	
NET	24	8	No	Article 800 Class 2 Plenum Cable	CMP	CAT 6, 10Base T BACTalk Lan Connection Between Global Controller and BACTalk Switch.	Connect Air W244P-2274, or Equivalent.	Any Color other than Light Purple or Yellow	
U-MS/TP	22	2 TWISTED PAIRS	Yes	Outdoor, Wet Locations, and Direct Burial	CM	Low Capacitance BACTalk MS/TP Lan Connection for direct burial between buildings.	Connect Air W222P-1005LT, use unless specified otherwise.	Black	

- LLT-1 Mounting and Installation General (Figure 1)
1. Install the device per the manufacturer's installation instructions using the following guidelines:
  2. Locate the sensing element on the downstream side of the heating coil. If no heating coil is present, locate the sensing element on the downstream side of the cooling coil.
  3. Locate the case and bellows where the ambient temperature will always be warmer than the set point.
  4. Install the thermostat so that the reset button is readily accessible and the element bellows points down.
  5. Install as much of the bulb as possible in a horizontal plane. If too much of the bulb is vertical, it will not operate properly.
  6. Caution — Mount bulb securely so it is not damaged by vibration. Make sure screws will not penetrate coil fins or tubing!

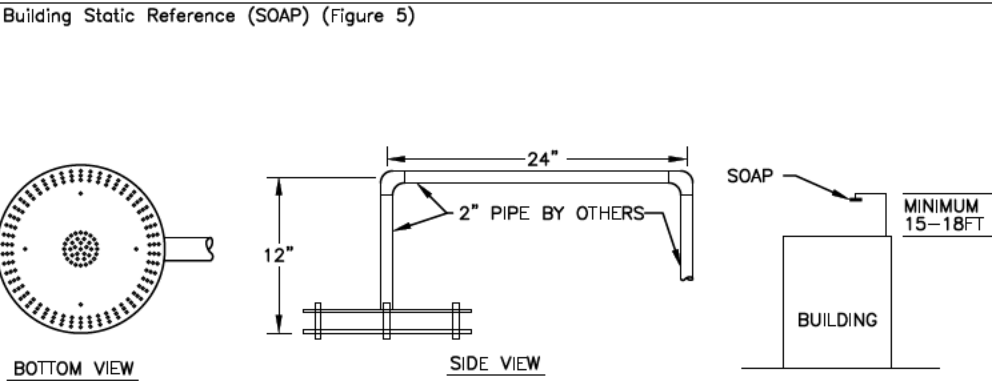
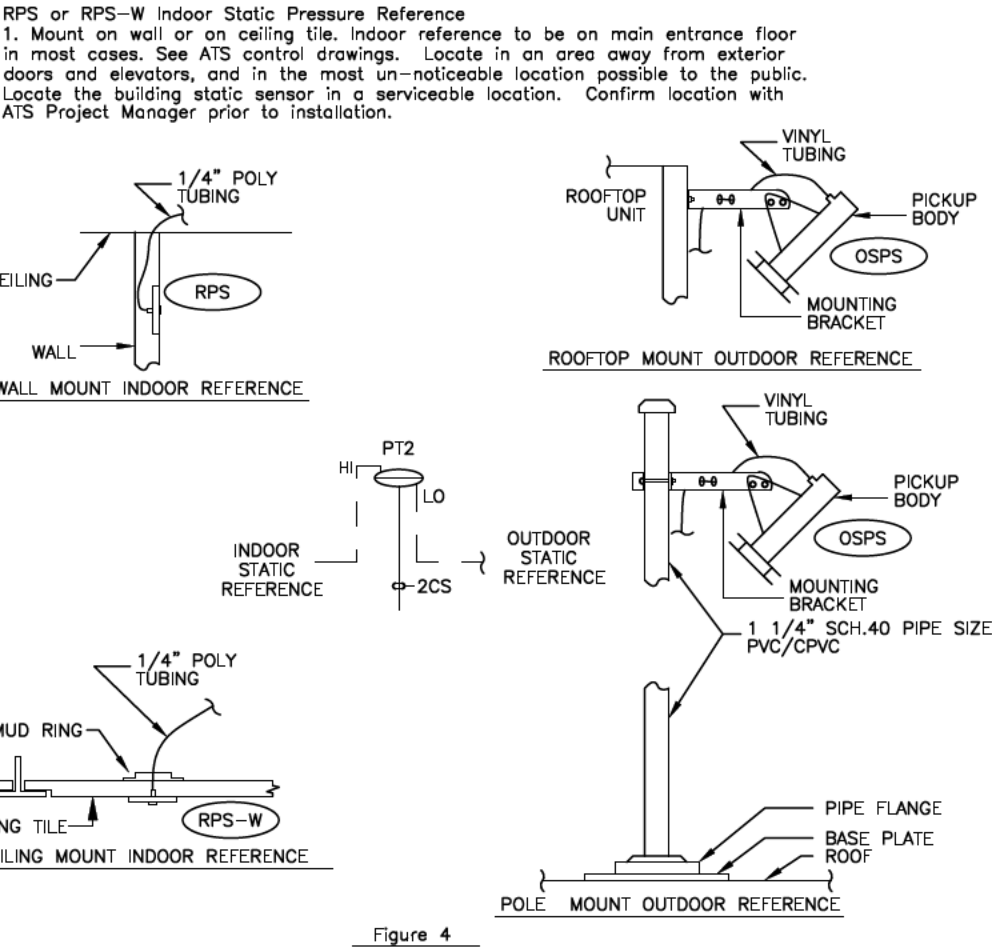
- Large Walk in Ducts (Figure 1):
1. Drill a hole in the side of the duct. Install grommet to protect bulb. With the bulb still coiled, thread the bulb through the hole using a rotary movement.
  2. Mount the thermostat case per guidelines #2-#4 above.
  3. Mount perforated steel strap hangers, if used, inside the duct with the wide part of the hanger strap parallel to the air flow.
  4. Mount the bulb in a horizontal, serpentine manner, attaching the bulb to the strap as shown on figure 1 of Installation Guideline Drawing 1.031. Note: for an alternate method of mounting, use coil clips, capillary clips or wire ties with screw eyes.



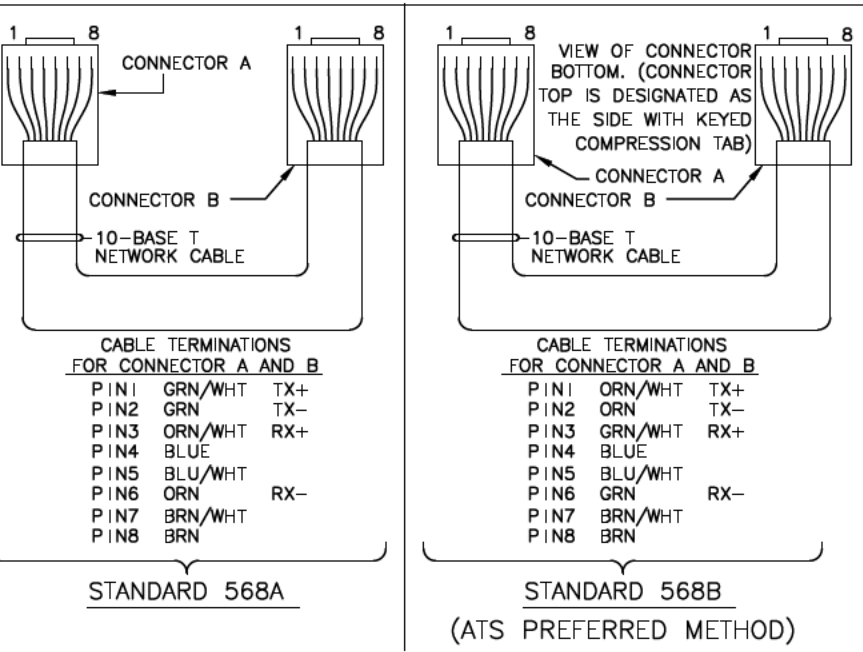
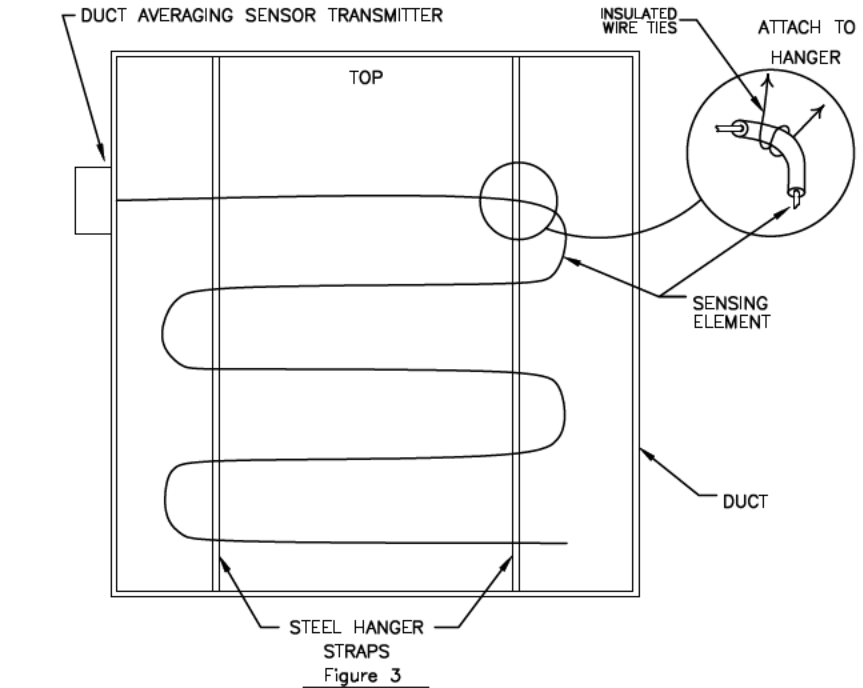
- Limited access ducts (Figure 2)
1. Attach a mounting flange on the opposite side of the duct (near the bottom) from where the thermostat case will be mounted.
  2. Cut access hole and mount a second flange on the duct diagonally across from the first flange. Drill a hole in the second flange for the bulb. Install grommet to protect bulb.
  3. Cut a length of conduit to fit diagonally across the duct. Stretch out the bulb and wrap it around the conduit. Use wire ties to secure bulb to conduit. See figure 2.
  4. Insert the conduit and bulb through the access hole into the opposite flange. Fasten second flange to the duct.
  5. Mount the thermostat on the outside of duct.
  6. Seal all openings with appropriate compound.



- Building Static Reference (Figure 4)
- A-306 Outdoor Static Pressure Reference
1. Install the device per the manufacturers installation instructions using the following guidelines:
  2. Select a mounting location as free as possible from rooftop or building obstructions, trees, chimneys, signs or other sources of turbulence. Location should also consider routing of pneumatic tubing into the building to minimize tubing run on the roof or outdoors.
  3. If available, an existing structure such as a radio or TV antenna mast can be used to mount the sensor. Alternately, the bracket can be attached directly to any rooftop.
  4. Assemble and mount the sensor as shown in Figure 4.
  5. Connect the clear 1/8\"/>



- Duct averaging sensors (Figure 3)
- Drill a 3/8\"/>



WIRE TERMINATIONS FOR STRAIGHT THROUGH CABLE,  
STANDARD 568A AND 568B

GLOBAL MAC Address Table

BCM Ethernet Module				BAS Router			
Mac		Mac		Mac			
0		57		0			
1		58		1			
2		59		2			
3		60		3			
4		61		4			
5		62		5			
6		63		6			
7		64		7			
8		65		8			
9		66		9			
10		67		10			
11		68		11			
12		69		12			
13		70		13			
14		71		14			
15		72		15			
16		73		16			
17		74		17			
18		75		18			
19		76		19			
20		77		20			
21		78		21			
22		79		22			
23		80		23			
24		81		24			
25		82		25			
26		83		26			
27		84		27			
28		85		28			
29		86		29			
30		87		30			
31		88		31			
32		89		32			
33		90					
34		91					
35		92					
36		93					
37		94					
38		95					
39		96					
40		97					
41		98					
42		99	Global				
43		127					
44		ADDITIONAL NOTES:			ADDITIONAL NOTES:		
45							
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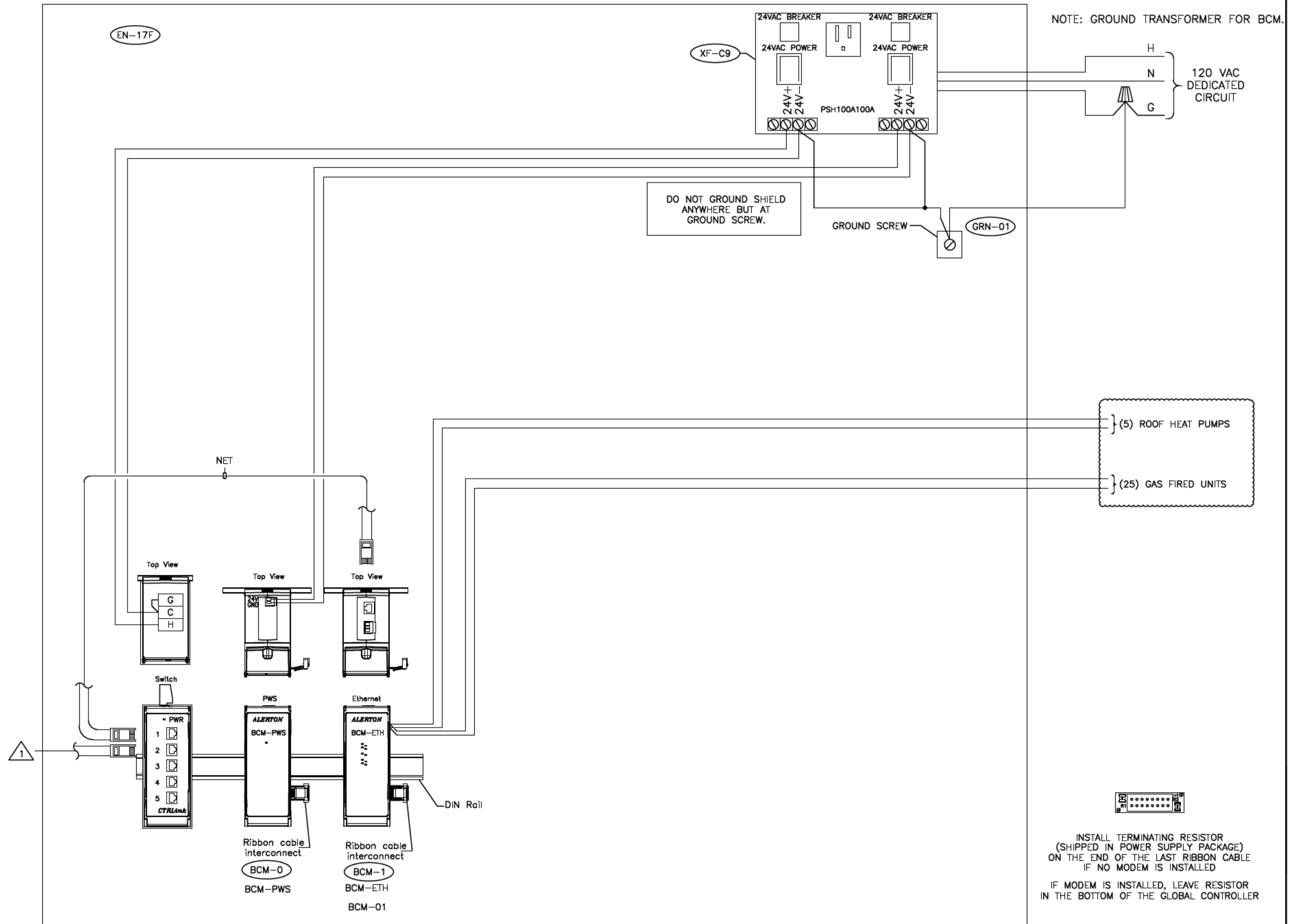
## GLOBAL CONTROLLER LIST

[illegible]

BDT Table

VNET 1234	Building	<div></div>							
BBMD 1	Centennial Middle School								
BBMD 2	RSC Central Plant								
BBMD 3	Little Cedars Elementary								
BBMD 4	Machias Elementary								
BBMD 5	Riverview Elementary								
BBMD 6	Emerson Elementary								
BBMD 7	Glacier Peak HS								
BBMD 8	Snohomish HS BCM-A								
BBMD 9	Snohomish HS PAC								
BBMD 10	Snohomish HS Gym								
BBMD 11	Snohomish HS Bldg. A								
BBMD 12	Snohomish HS Media								
BBMD 13	WEBtalk								
BBMD 14	Valley View Middle School								
BBMD 15	Dutch Hill Elementary								
BBMD 16	Central Primary Elementary								
BBMD 17	Totem Falls Elementary								
BBMD 18	Cathcart Elementary								
BBMD 19	Cascade View Elementary								
BBMD 20	Seattle Hill Elementary								
BBMD 21	Little Cedars Elementary								
BBMD 22	Snohomish HS Stadium Heating								
BBMD 23	O&M Building								
BBMD 24	Aquatic Center								
BBMD 25	Snohomish HS Bldg. C								
BBMD 26									
BBMD 27									
BBMD 28									
BBMD 29									
BBMD 30									
BBMD 31									
BBMD 32									





NOTES:

1 TO DISTRICT NETWORK

Seattle Hill Elementary School

ATS Automation Inc.

DRAWN BY: KM

DATE: 10/5/2020

REV: Preliminary Set

JOB#

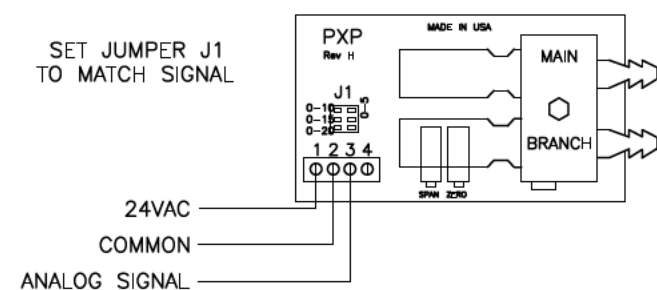
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SEATTLE HILL ELEMENTARY  
BCM WIRING DETAIL

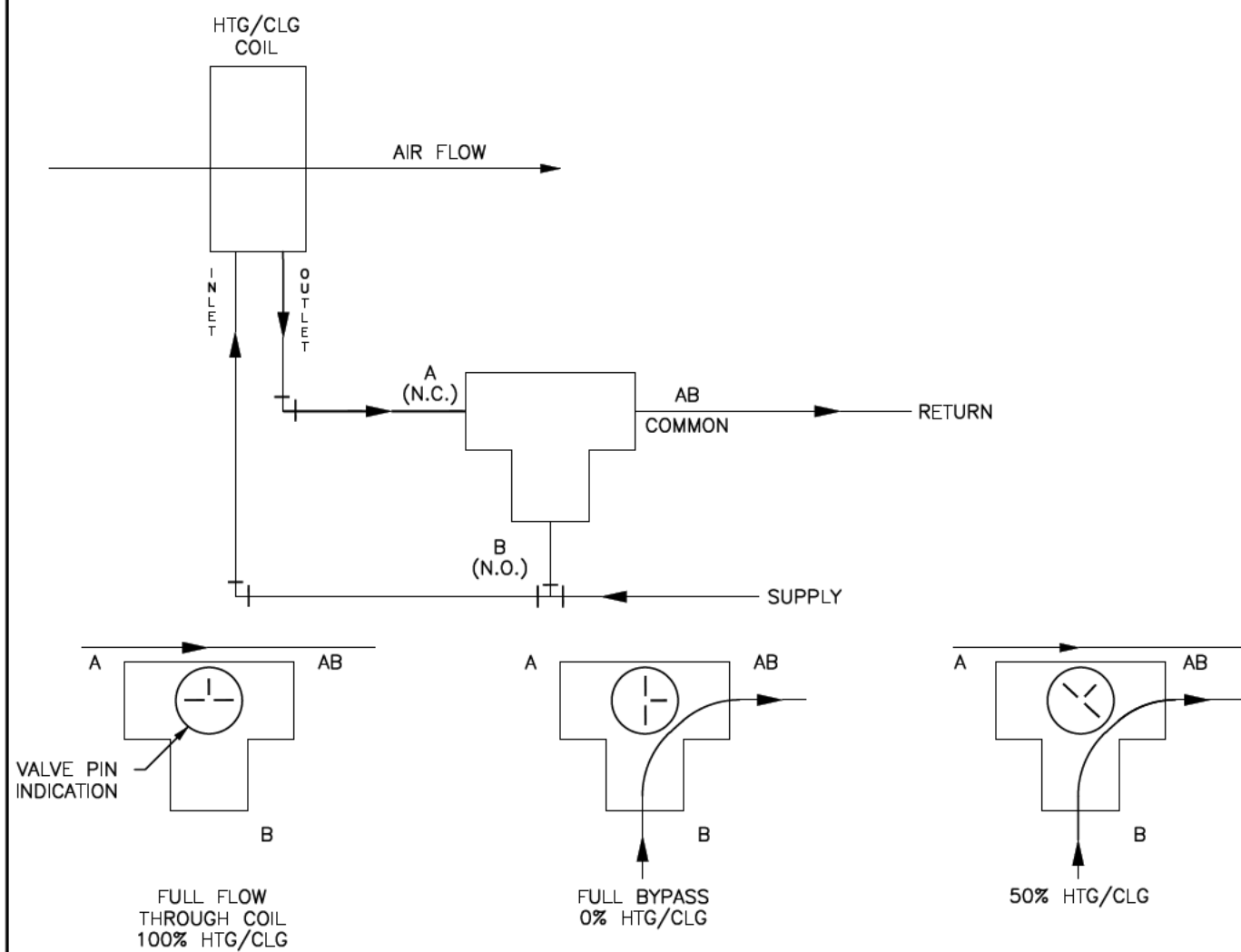
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4.007 BCM Wiring Detail Seattle Hill Snohomish SD 1520248.dwg

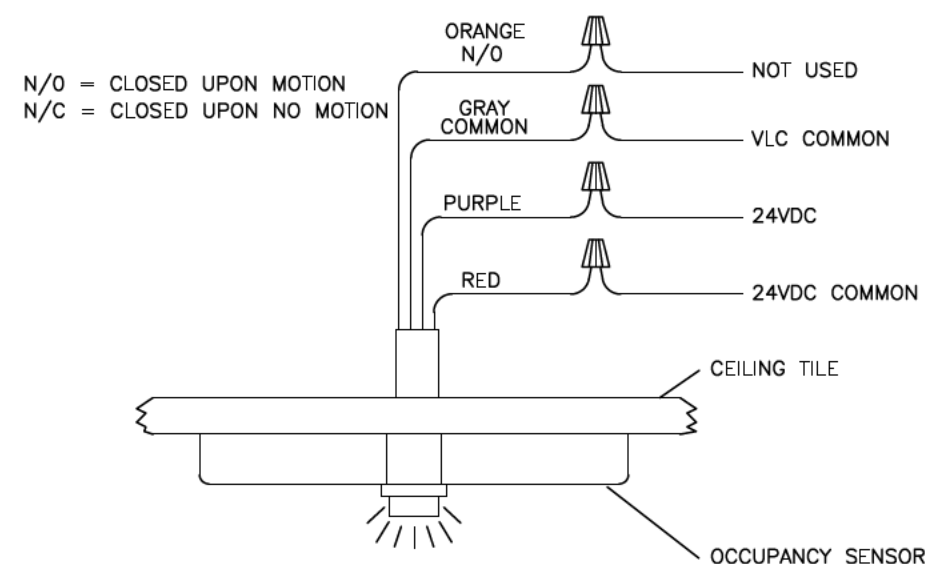
Miscellaneous Details



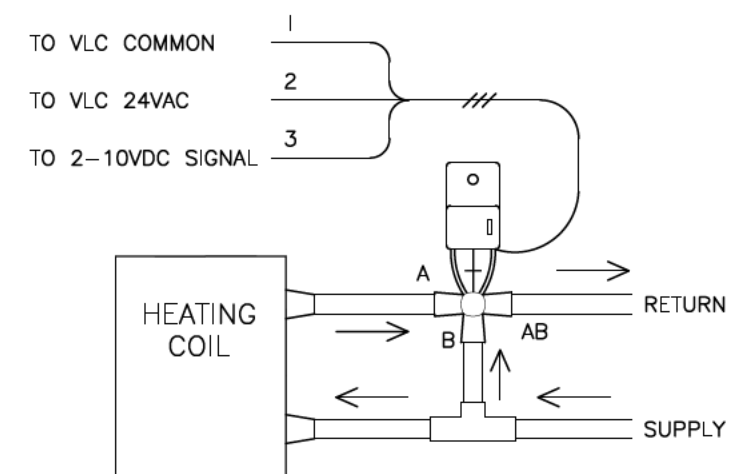
**A**  
4.014  
*PXP*  
*ELECTRIC TO PNEUMATIC TRANSDUCER*



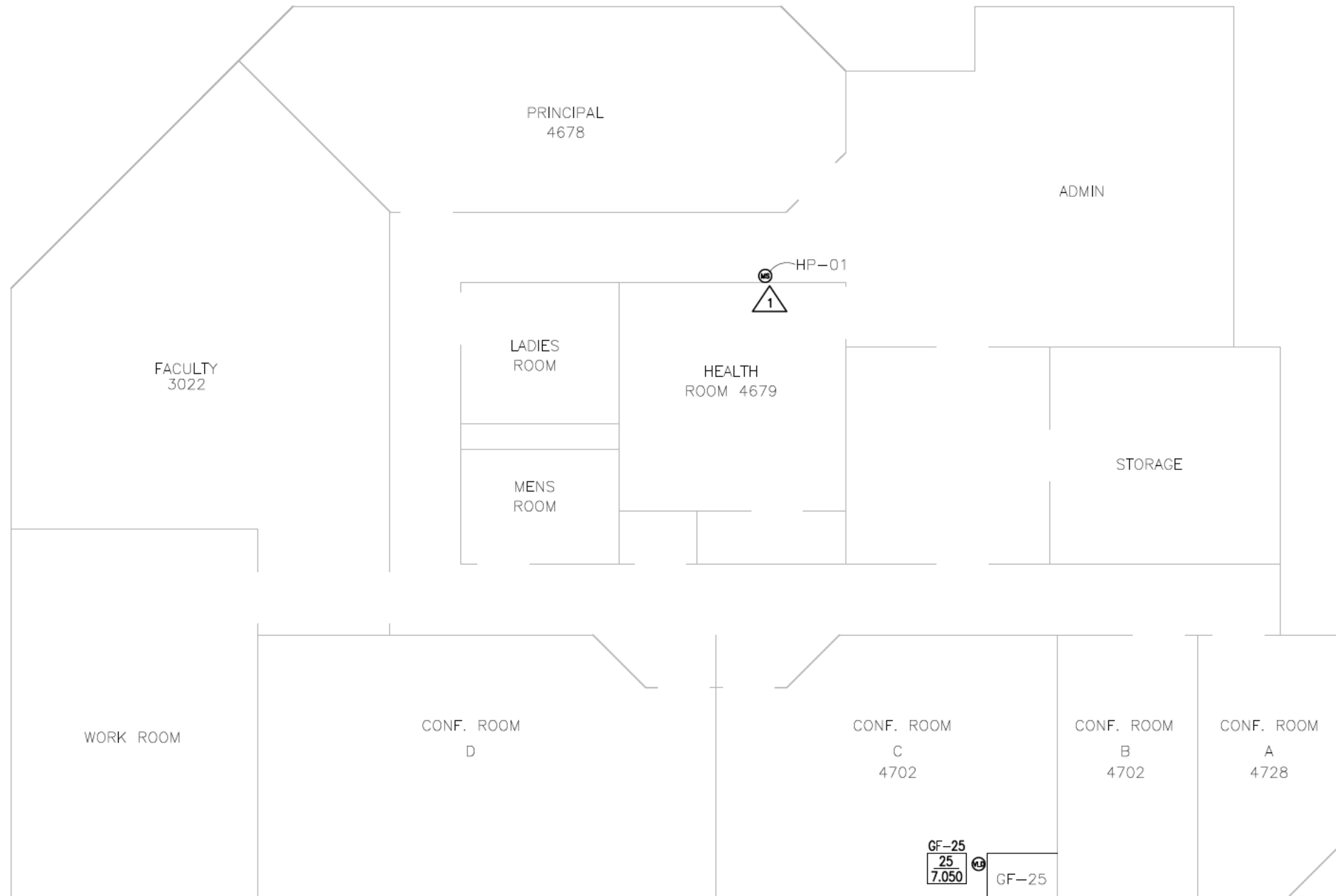
**C**  
4.014  
*BALL VALVE*  
*MIXING PIPING CONFIGURATION*



**B**  
4.014  
*OCCUPANCY SENSOR DIAGRAM*

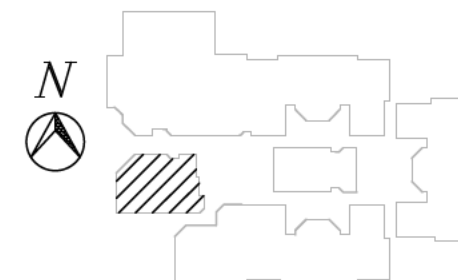


**D**  
4.014  
*GLOBE VALVE*  
*MIXING CONFIGURATION DETAIL*



NOTES:

1 ROOFTOP HP UNIT STAT LOCATION, FINAL LOCATION TO BE DETERMINED AND AS BUILT



Seattle Hill Elementary School

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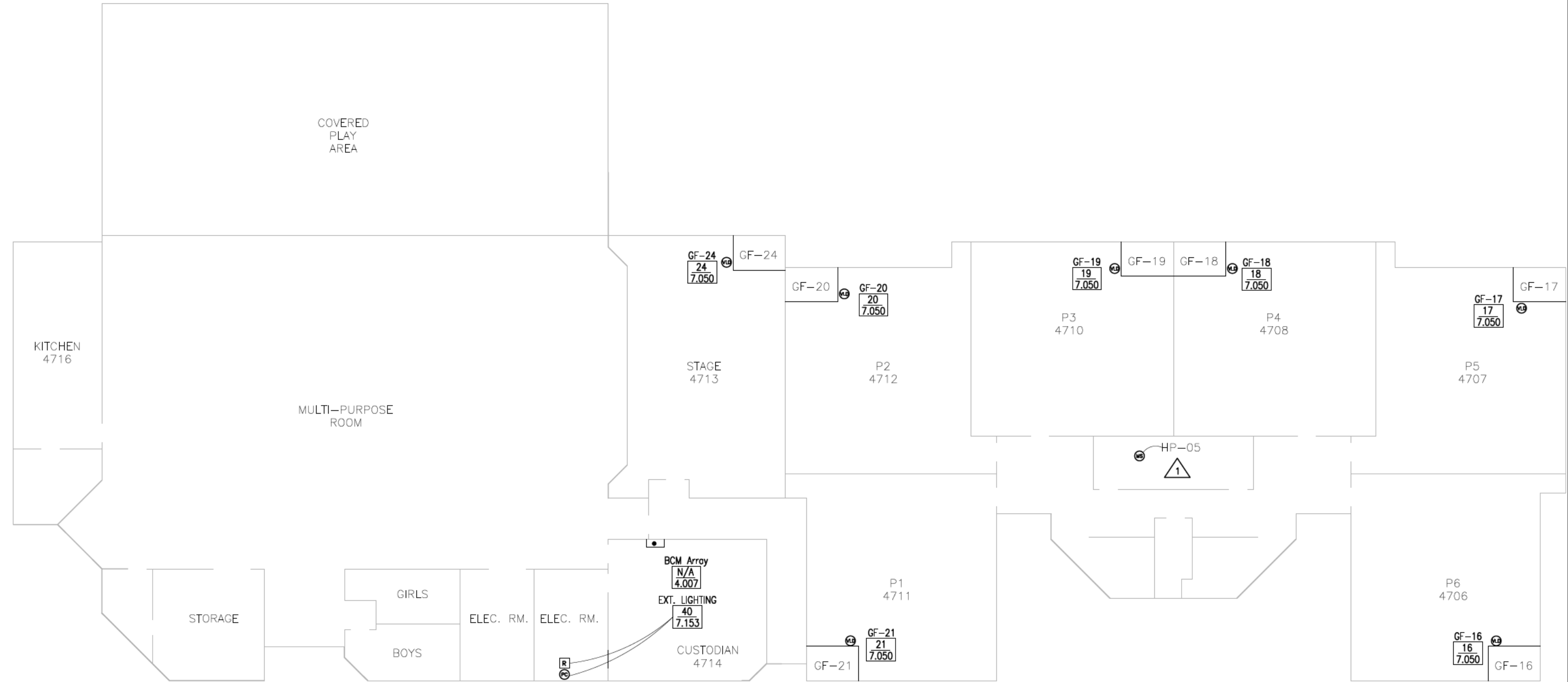
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
SEATTLE HILL ELEMENTARY  
FLOOR PLAN A

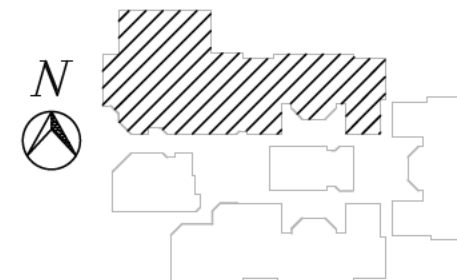
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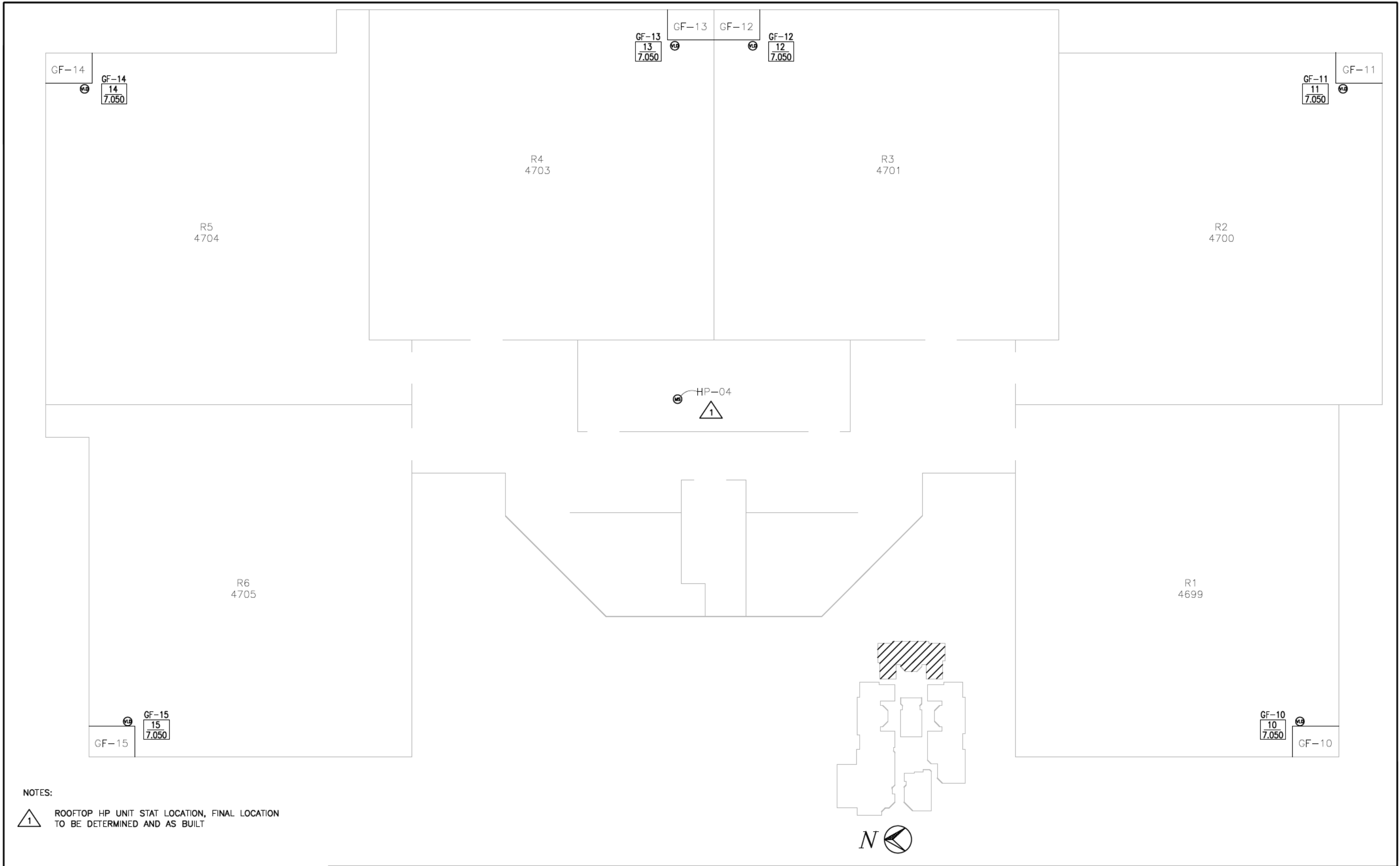
6.040 Floor Plans Seattle Hill Snohomish SD 1520248.dwg




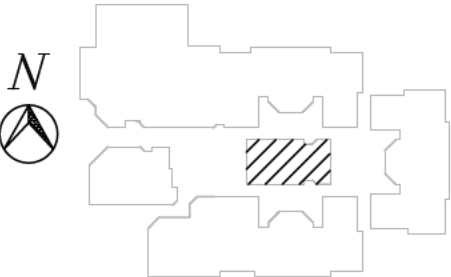
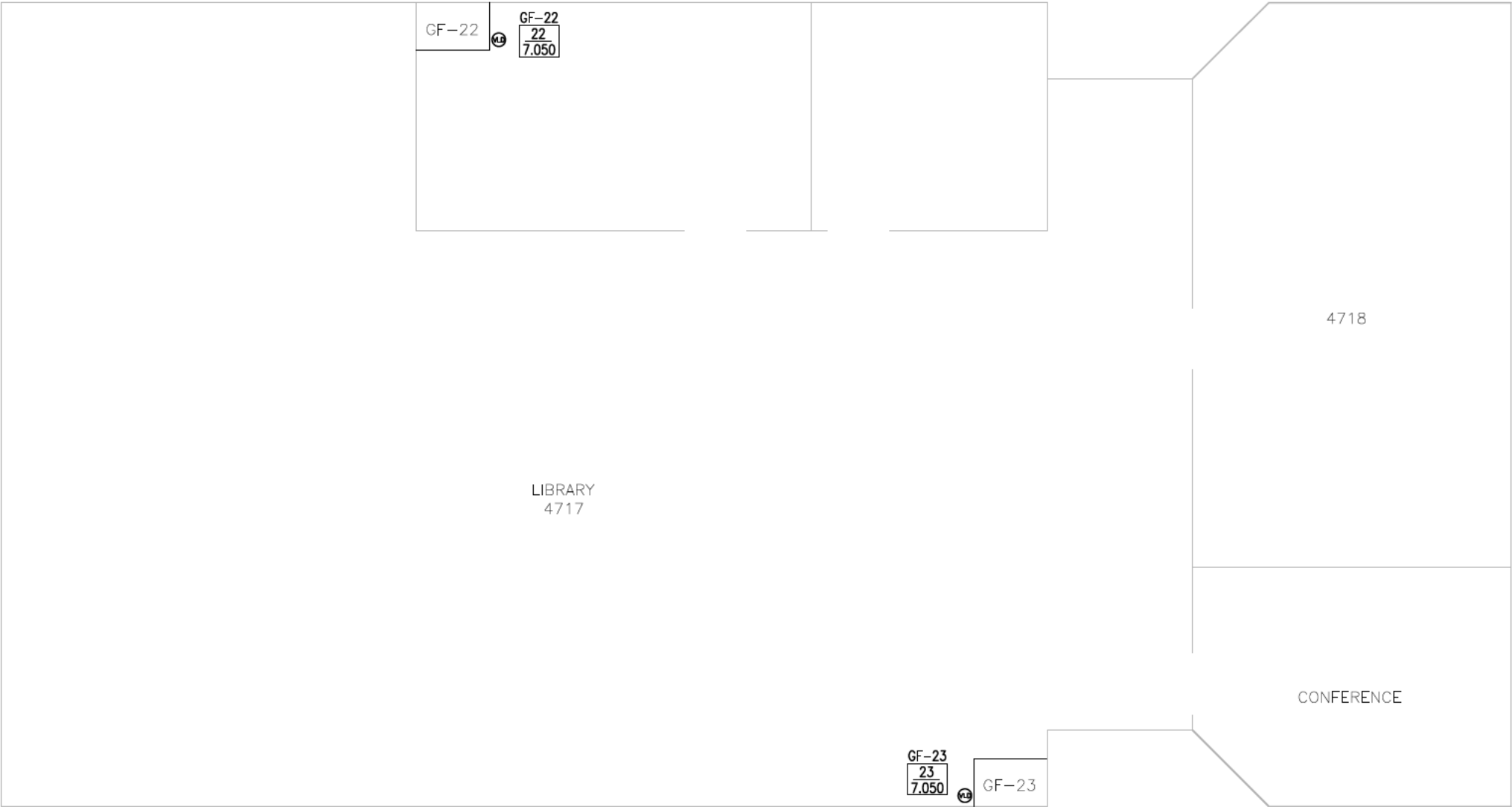
NOTES:

 ROOFTOP HP UNIT STAT LOCATION, FINAL LOCATION TO BE DETERMINED AND AS BUILT




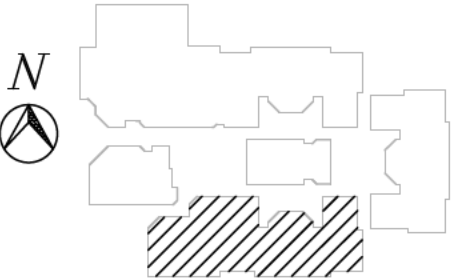


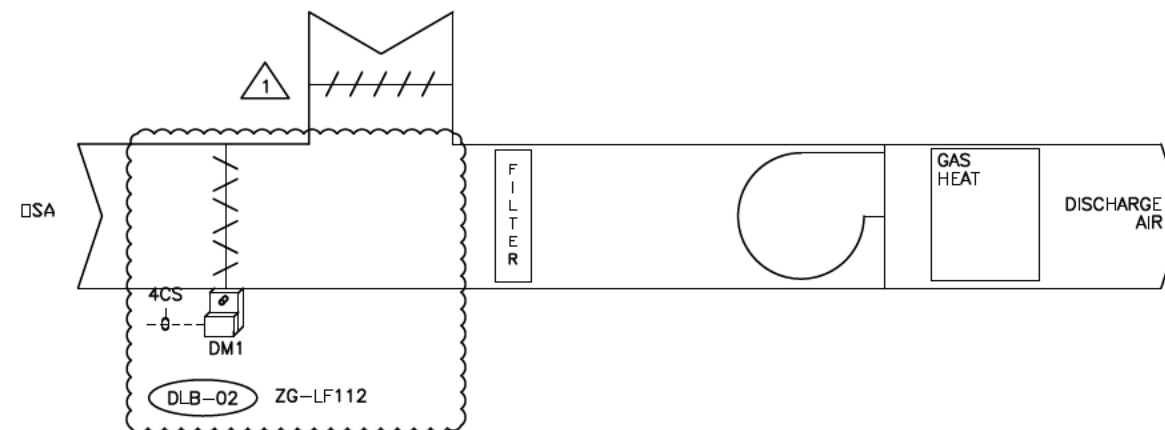
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 TO BE DETERMINED AND AS BUILT



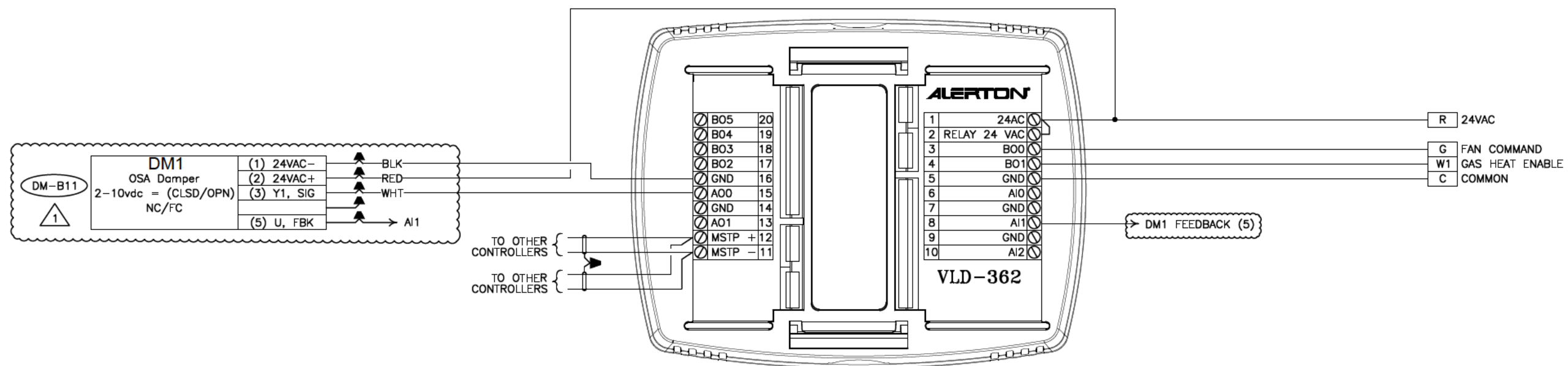


NOTES:  
 ROOFTOP HP UNIT STAT LOCATION, FINAL LOCATION TO BE DETERMINED AND AS BUILT





GAS FIRED SCHEMATIC



GAS FIRED UNIT VLD

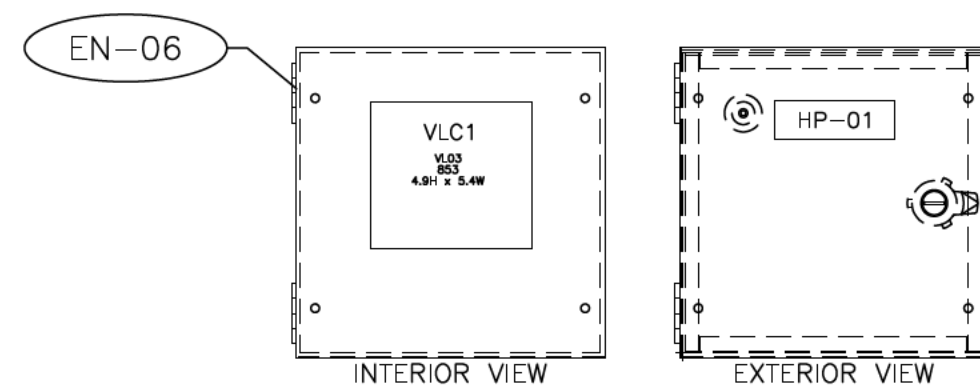
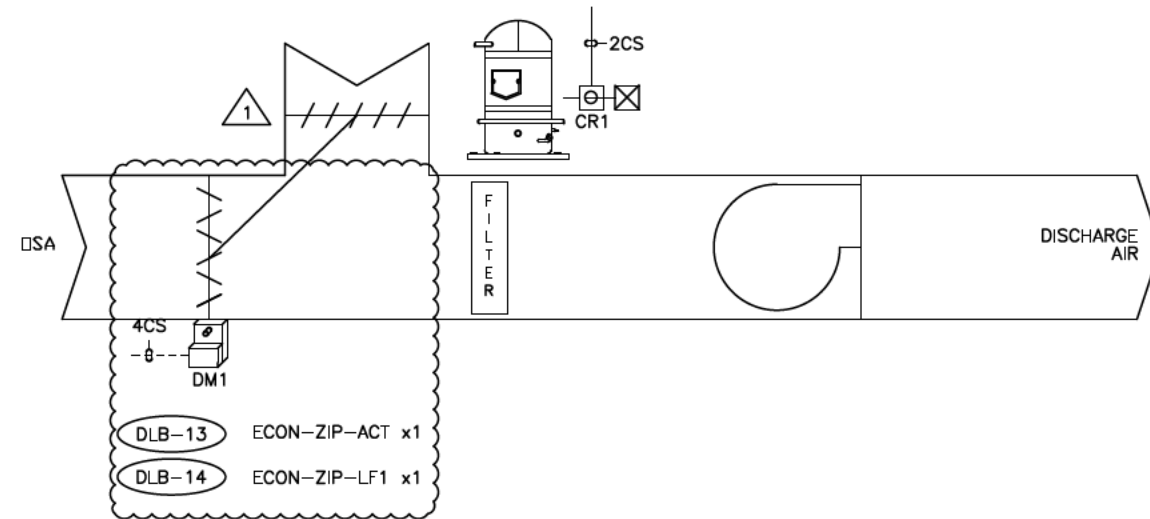
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NOTES:

1 EXISTING VLD AND STAT REMOVED AND REPLACED WITH VLC AND MS4 TSTAT WITH CO2 SENSOR



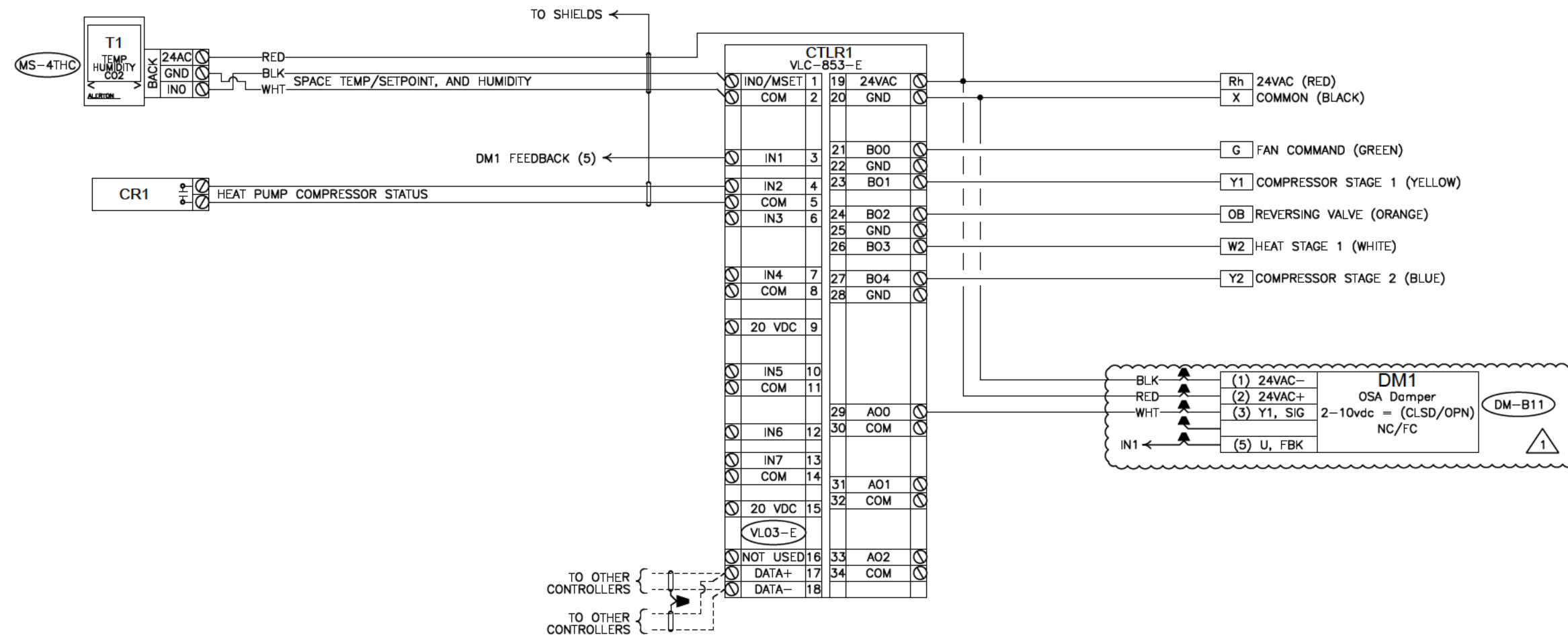
BILL OF MATERIAL								
TYPICAL QTY	# SYSTEMS	DRAWING TAG	ATS ID #	TOTAL QTY	MANUFACTURE OR SUPPLIER	DESCRIPTION	MODEL NUMBER	VA EACH
1	25	DLB-02	DLB-02	25	Belimo	Crank Arm Adaptor Kit Package	ZG-LF112	
1	25	DM1	DM-B11	25	Belimo	35 in-lb, spring, 2-10vdc, 2.5W, 8 sq ft	LF24-SR	2.5



HOFFMAN NEM1 1 ENCLOSURE EN-06,  
A-HE10X10X4, 10"Hx10"Wx4"D

LOCATED IN CEILING

VLC PANEL



ROOF HEAT PUMP VLC

TYP OF 4

NOTES:

- 1 ATS TO CONFIRM IF DAMPERS ARE MECHANICALLY BINDED
- 2 EXISTING VLD AND STAT REMOVED AND REPLACED WITH VLC AND MS4 TSTAT WITH CO2 SENSOR
- 3 VLC TO BE INSTALLED IN ROOM CEILING ABOVE PANELS

Seattle Hill Elementary School

ATS Automation Inc.

DRAWN BY: KM

DATE: 10/5/2020

REV: Preliminary Set

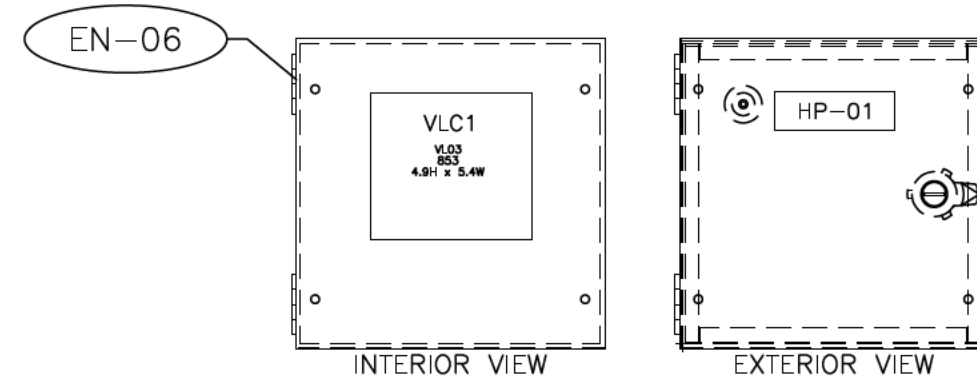
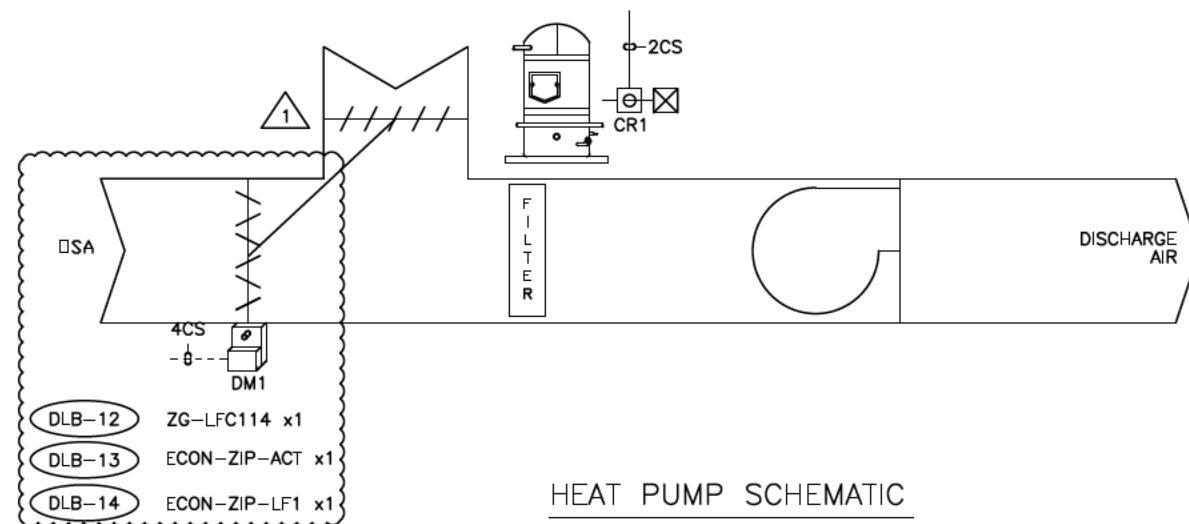
JOB# 1520248

SEATTLE HILL ELEMENTARY  
HEAT PUMP WIRING DIAGRAM

7.052

7.052 Roof Heat Pump VLC Wiring Diagram Seattle Hill Snohomish SD 1520248.dwg

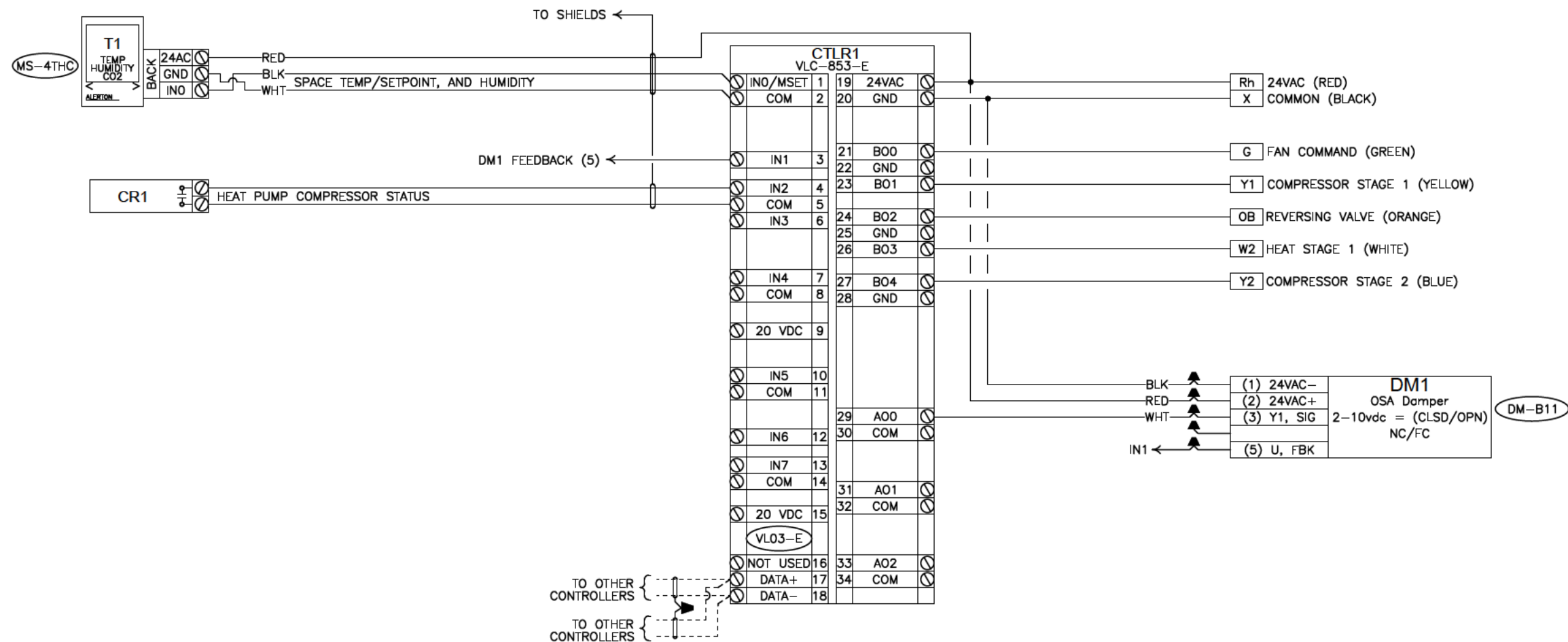
BILL OF MATERIAL								
TYPICAL QTY	# SYSTEMS	DRAWING TAG	ATS ID #	TOTAL QTY	MANUFACTURE OR SUPPLIER	DESCRIPTION	MODEL NUMBER	VA EACH
1	4	DLB-13	DLB-13	4	Belimo	ZIP Economizer Shaft Adapter Kit	ECON-ZIP-ACT	
1	4	DLB-14	DLB-14	4	Belimo	ZIP Economizer Shaft Adapter Kit for LF	ECON-ZIP-LF1	
1	4	DM1	DM-B11	4	Belimo	35 in-lb, spring, 2-10vdc, 2.5W, 8 sq ft	LF24-SR	2.5
1	4	SF-01, SF-02 PANEL	EN-06	4	Hoffman	10X10X4 Small Enclosure, Hinge, No Backplate, (sm ctrl)	A-HE10X10X4	
0.04	0	T1	MS-4FOAM	0	Alerton Technologies	Microset 4 Back Foam, 25-Pack	MS4-FOAM	
1	4	T1	MS-4THC	4	Alerton Technologies	Microset 4 BACnet Digital Temp (H AND CO2 option) Sensor	MS4-THC	3
1	4	CTLR1	VL03-E	4	Alerton Technologies	VLC 853-E Programmable Controllerr with 8 univ in, 5 Hot Switched BO,3 AO, 15va (maximum 97va with loads), 20VDC AT 100MA	VLC-853-E	28



HOFFMAN NEM1 1 ENCLOSURE EN-06,  
A-HE10X10X4, 10"Hx10"Wx4"D

LOCATED IN CEILING

VLC PANEL



# NOTES:

1. ATS TO CONFIRM IF DAMPERS ARE MECHANICALLY BINDED
2. EXISTING VLD AND STAT REMOVED AND REPLACED WITH VLC AND MS4 TSTAT WITH CO2 SENSOR
3. VLC TO BE INSTALLED INSIDE HEAT PUMP UNIT ENCLOSURE

Seattle Hill Elementary School

ATS Automation Inc.

DRAWN BY: KM

DATE: 10/5/2020

REV: Preliminary Set

JOB#

1520248

SEATTLE HILL ELEMENTARY  
Main Office HP Wiring Diagram

7.054

7.054 Main Office Heat Pump VLC Wiring Diagram Seattle Hill Snohomish SD 1520248.dwg

BILL OF MATERIAL								
TYPICAL QTY	# SYSTEMS	DRAWING TAG	ATS ID #	TOTAL QTY	MANUFACTURE OR SUPPLIER	DESCRIPTION	MODEL NUMBER	VA EACH
1	1	DLB-12	DLB-12	1	Belimo	LF Trane Voyager retrofit Kit	ZG-LFC114	
1	1	DLB-13	DLB-13	1	Belimo	ZIP Economizer Shaft Adapter Kit	ECON-ZIP-ACT	
1	1	DLB-14	DLB-14	1	Belimo	ZIP Economizer Shaft Adapter Kit for LF	ECON-ZIP-LF1	
1	1	DM1	DM-B11	1	Belimo	35 in-lb, spring, 2-10vdc, 2.5W, 8 sq ft	LF24-SR	2.5
1	1	SF-01, SF-02 PANEL	EN-06	1	Hoffman	10X10X4 Small Enclosure, Hinge, No Backplate, (sm ctrlr)	A-HE10X10X4	
0.04	1	T1	MS-4FOAM	0.04	Alerton Technologies	Microset 4 Back Foam, 25-Pack	MS4-FOAM	
1	1	T1	MS-4THC	1	Alerton Technologies	Microset 4 BACnet Digital Temp (H AND CO2 option) Sensor	MS4-THC	3
1	1	CTLR1	VL03-E	1	Alerton Technologies	VLC 853-E Programmable Controllerr with 8 univ in, 5 Hot Switched BO,3 AO, 15va (maximum 97va with loads), 20VDC AT 100MA	VLC-853-E	28