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2.	23.10.24	ISSUED FOR 100% DD
1.	23.08.30	ISSUED FOR DRAFT SD REVIEW
No.	Date	Issue/Revision

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No.	Date	Issue/Revision
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Robarts 5th Floor MDL
Renovation

Title: MECHANICAL DRAWING
LIST, LEGENDS AND
STANDARD DETAILS

Project No. 08086.009.MEAVD	Scale AS NOTED
Drawing No.	

M-000

Pneumatic Wireless Thermostats

BILL OF MATERIALS			
Designation	Qty	Part Number	Description
1 BACnet Gateway	1	040-00000000	BACnet Gateway
4 Wireless Thermostats	4	040-00000000	Wireless Thermostat
100 Wireless Repeaters	100	040-00000000	Wireless Repeater
100 Wireless Repeaters	100	040-00000000	Wireless Repeater
100 Wireless Repeaters	100	040-00000000	Wireless Repeater
100 Wireless Repeaters	100	040-00000000	Wireless Repeater

FLOOR	# OF TSTATS	# OF DDC TSTAT	# OF REPEATERS	# BACNET ROUTER
14	11	0	11	1
15	18	0	6	1
17	17	0	6	1
11	17	0	6	1
10	17	0	6	1
9	18	0	6	1
8	28	0	6	1
7	18	0	7	1
6	28	0	7	1
5	13	0	6	1
4	18	0	6	1
3	13	0	6	1
2	22	0	7	1
1	10	0	9	1
B1	8	0	4	1
B2	8	0	4	1
TOTAL	254	14	110	18

4.21 SPACE THERMOSTATS - MAIN LIBRARY

4.21.1 Space temperature will be replaced with new wireless to pneumatic local thermostats and will control re-heat coils valves as before. Wireless communication signals will be done through the Cypress "green box" to adjust setpoint, read current temperature and pneumatic position. Refer to points list for more detail.

Designation	Qty	Part Number	Description
1 BACnet Gateway	1	040-00000000	BACnet Gateway
4 Wireless Thermostats	4	040-00000000	Wireless Thermostat
100 Wireless Repeaters	100	040-00000000	Wireless Repeater
100 Wireless Repeaters	100	040-00000000	Wireless Repeater
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8	28	0	6	1
7	18	0	7	1
6	28	0	7	1
5	13	0	6	1
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B1	8	0	4	1
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TOTAL	254	14	110	18

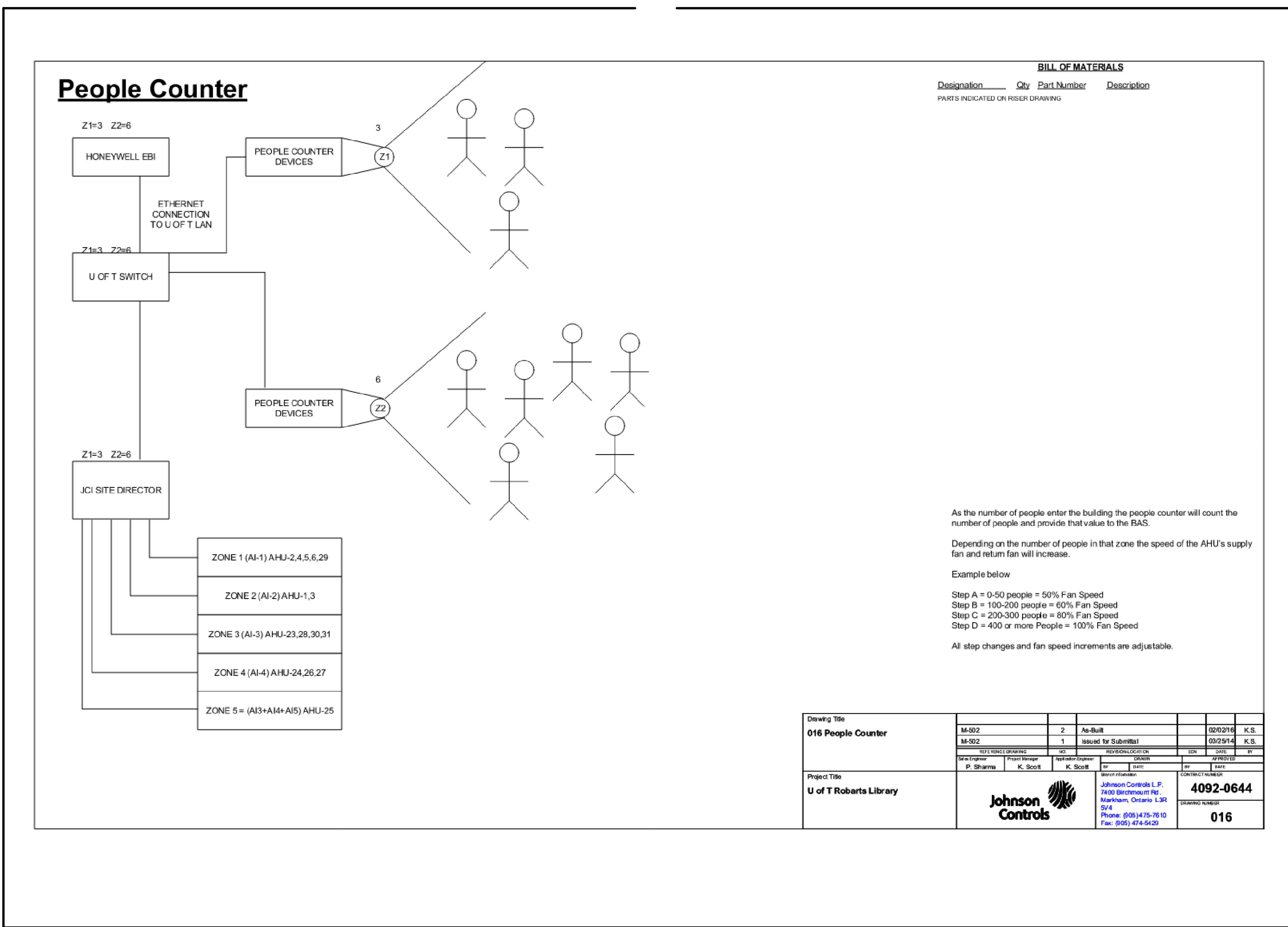
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4.21.1 Space temperature will be replaced with new wireless to pneumatic local thermostats and will control re-heat coils valves as before. Wireless communication signals will be done through the Cypress "green box" to adjust setpoint, read current temperature and pneumatic position. Refer to points list for more detail.

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10	17	0	6	1
9	18	0	6	1
8	28	0	6	1
7	18	0	7	1
6	28	0	7	

7 WIRELESS THERMOSTATS (EXISTING - FOR INFORMATION ONLY)



<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> </div>		
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AHU-1.3.4.5.7.23.24.25.26.27.28.30.31 Flow Drawing & Sequence

AHU-1.3.4.5.7.23.24.25.26.27.28.30.31 Flow Drawing & Sequence

4.3 FHE in MAIN LIBRARY

4.3.1 Unit off

4.3.1.1 This unit is initiated by loss of supply or return fan status or by time schedule from BAS.

4.3.1.2 Outdoor air and exhaust dampers are closed, recirculation air damper is open. Supply and return fans are off.

4.3.1.3 Unit stop

4.3.1.4 Unit stop

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4.3.2.99 Unit on

4.3.2.100 Unit on

4.3.3 Temperature Control

4.3.3.1 Outdoor air and exhaust dampers between preset minimum and fully open positions, and the recirculation air damper is closed position based on completion of return air and outdoor air temperature and air supply air temperature set point (air side feedback).

4.3.3.2 When the supply air temperature is above set point and the outdoor air damper is in preset minimum position, the cooling coil fan speed will be enabled and modulated to maintain set point.

4.3.4 FHE in MAIN LIBRARY

4.3.4.1 Unit off

4.3.4.1.1 This unit is initiated by loss of supply or return fan status or by time schedule from BAS.

4.3.4.1.2 Outdoor air and exhaust dampers are closed, recirculation air damper is open. Supply and return fans are off.

4.3.4.1.3 Unit stop

4.3.4.1.4 Unit stop

4.3.4.1.5 Unit stop

4.3.4.1.6 Unit stop

4.3.4.1.7 Unit stop

4.3.4.1.8 Unit stop

4.3.4.1.9 Unit stop

4.3.4.1.10 Unit stop

4.3.4.1.11 Unit stop

4.3.4.1.12 Unit stop

4.3.4.1.13 Unit stop</

4
10.001

AIR HANDLING UNITS (EXISTING - FOR INFORMATION ONLY)

[illegible]

Floors 2 to 6 Network Riser

Floor 5

To U of T Ethernet switch

CYPRRESS GREEN BOX
#172,26,136,05
DN 255,25,255,128
OR 172,26,136,1

CYPRRESS REPEATER
(QTY 6)

CYPRRESS WIRELESS THERMISTAT
#172,26,136,04
QTY 10

Floor 4

3 COND 22 AWG THREADED SHIELDING CABLE

3 COND 22 AWG THREADED SHIELDING CABLE

ROBARTS NETWORK4
#172,26,136,06
QTY 10

FE0201
NETP ADDR 1
NUMBERS 12345

FE0202
NETP ADDR 2
NUMBERS 12345

FE0203
NETP ADDR 3
NUMBERS 12345

FE0204
NETP ADDR 4
NUMBERS 12345

FE0205
NETP ADDR 5
NUMBERS 12345

FE0206
NETP ADDR 6
NUMBERS 12345

FE0207
NETP ADDR 7
NUMBERS 12345

Floor 3

3 COND 22 AWG THREADED SHIELDING CABLE

FE0201
NETP ADDR 1
NUMBERS 12345

FE0202
NETP ADDR 2
NUMBERS 12345

FE0203
NETP ADDR 3
NUMBERS 12345

FE0204
NETP ADDR 4
NUMBERS 12345

FE0205
NETP ADDR 5
NUMBERS 12345

FE0206
NETP ADDR 6
NUMBERS 12345

FE0207
NETP ADDR 7
NUMBERS 12345

Floor 2

CYPRRESS GREEN BOX
#172,26,136,05
DN 255,25,255,128
OR 172,26,136,1

CYPRRESS REPEATER
(QTY 6)

CYPRRESS WIRELESS THERMISTAT
#172,26,136,04
QTY 10

TO BASEMENT HCU

Quantity

991 Roberts Network Riser 2 to 5

U of T Roberts Library

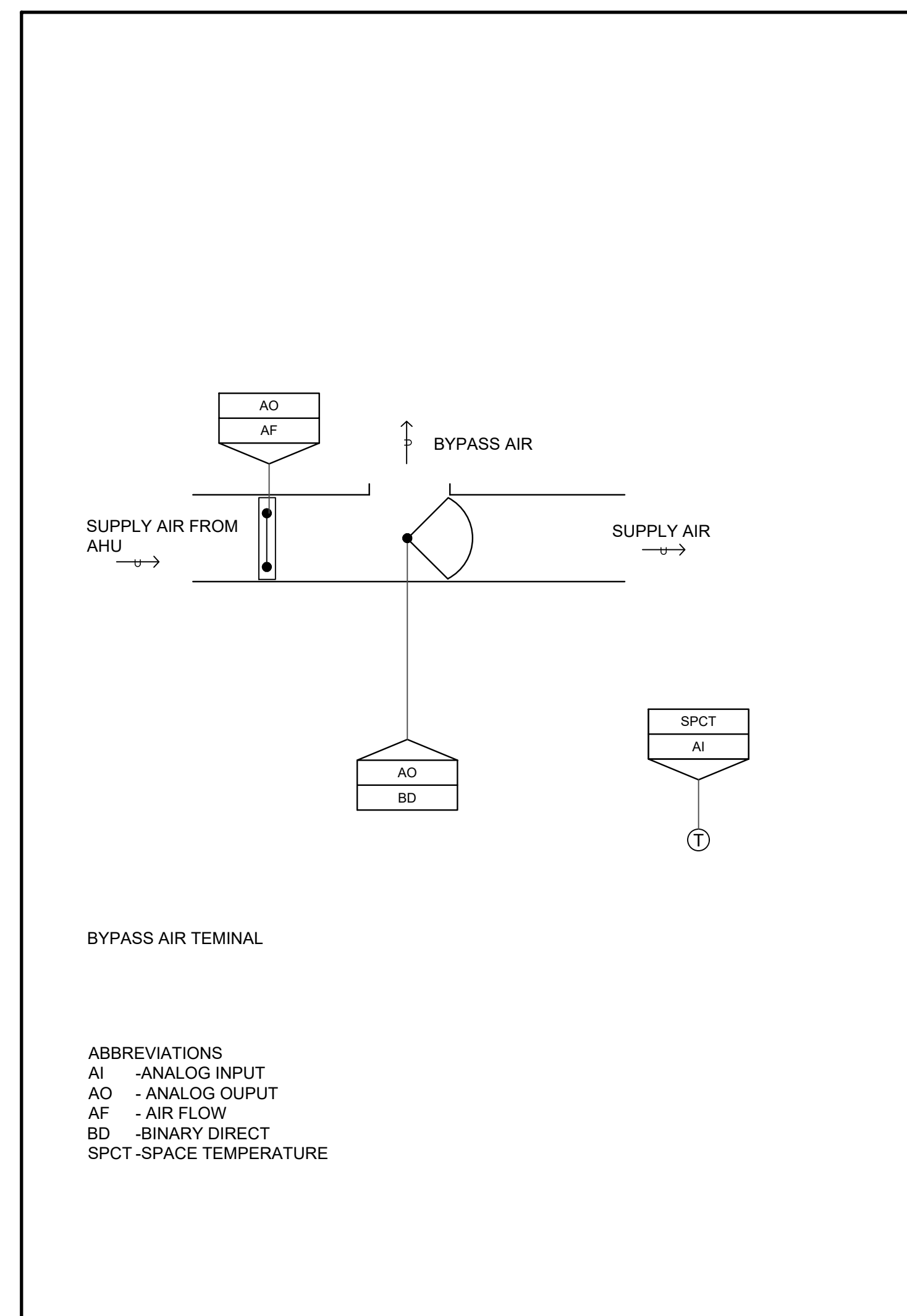
Johnson Controls

4092-0644

901

6
1000

NETWORK RISER (EXISTING - FOR INFORMATION ONLY)



1
14-001 BY PASS VAV TERMINAL

BAS SCHEMATIC DIAGRAM

Legend:

- SPACE TEMPERATURE SET POINT
- SPACE TEMPERATURE PRESENT TEMPERATURE
- DAMPER COMMAND
- DAMPER FEED BACK
- HIGH SPACE TEMPERATURE ALARM
- LOW SPACE TEMPERATURE ALARM
- UPS OPERATING ON BATTERY ALARM
- UPS LOW BATTERY ALARMS

Diagram Details:

- Top Section:** Four B-ASC units connected in a vertical chain.
- Left Section:** NETWORK SWITCH connected to CAT6 ETHERNET, which is connected to a NEMA 4 ENCLOSURE. The enclosure is labeled "5TH FLOOR UTILITY ROOM # 5057A".
- Center Section:** BCU 24V connected to BACNET MSTP. A UPS is also connected to the BACNET MSTP.
- Right Section:** A 120V UPS connected to a central control unit. The control unit is connected to BLAI, DI, and DI. The DI units are labeled "BST1".
- Bottom Section:** A 5TH FLR unit connected to the BACNET MSTP.

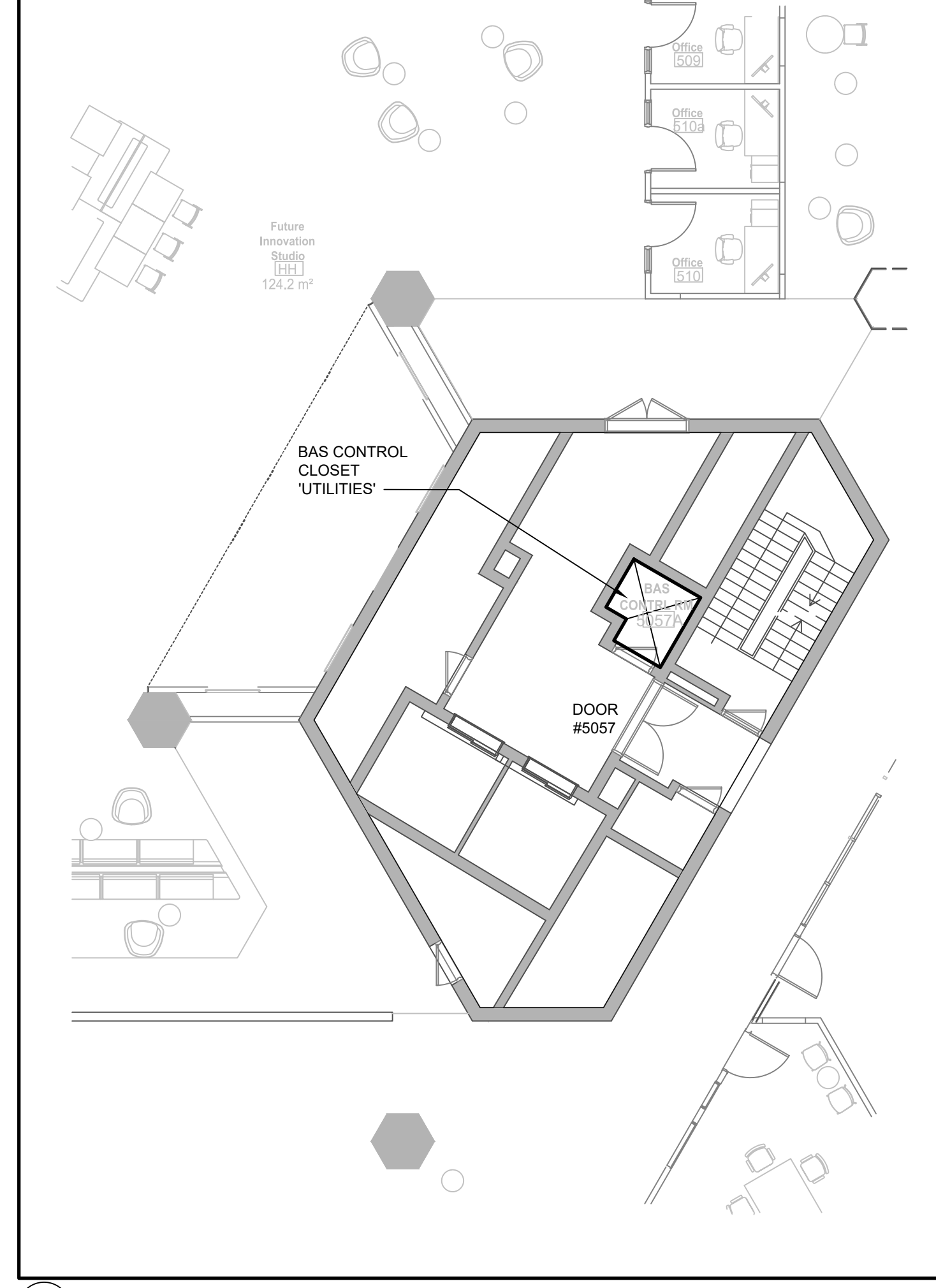
Notes:

- REFER TO NOTE # 2
- REFER TO NOTE # 3
- REFER TO NOTE # 5

DRAWING NOTES:

1. PROVIDE NEW BACNET BUILDING CONTROLLER.
2. PROVIDE NEW LOCAL EQUIPMENT CONTROLLERS (QUANTITY TO BE DETERMINED BY BAS CONTRACTOR TO SUIT INSTALLATION AND SEQUENCE OF OPERATION REQUIREMENTS)
3. PROVIDE NEW BACNET MSTP COMMUNICATIONS CABLE AND ASSOCIATED CONDUIT BETWEEN CONTROLLER AND NETWORK CONTROLLER.
4. PROVIDE NEW CAT6 CABLE AND ASSOCIATED CONDUIT FROM NETWORK CONTROLLER TO EXISTING FAS SWITCH. LABEL BOTH ENDS INDICATED FAS SWITCH LOCATION. FAS TERMINATION MUST BE MODULAR FEMALE.
5. PROVIDE NEW UPS FOR NEW NETWORK CONTROLLER
6. CONTROL CONTRACTOR TO PROVIDE PHOTOGRAPHS OF INSTALLATION TO FAS IT GROUP PER U OF T BAS STANDARD.

***ISSUED FOR REFERENCE ONLY**



3
M-001

5TH FLOOR BAS NET WORK CABINET ROOM LOCATION

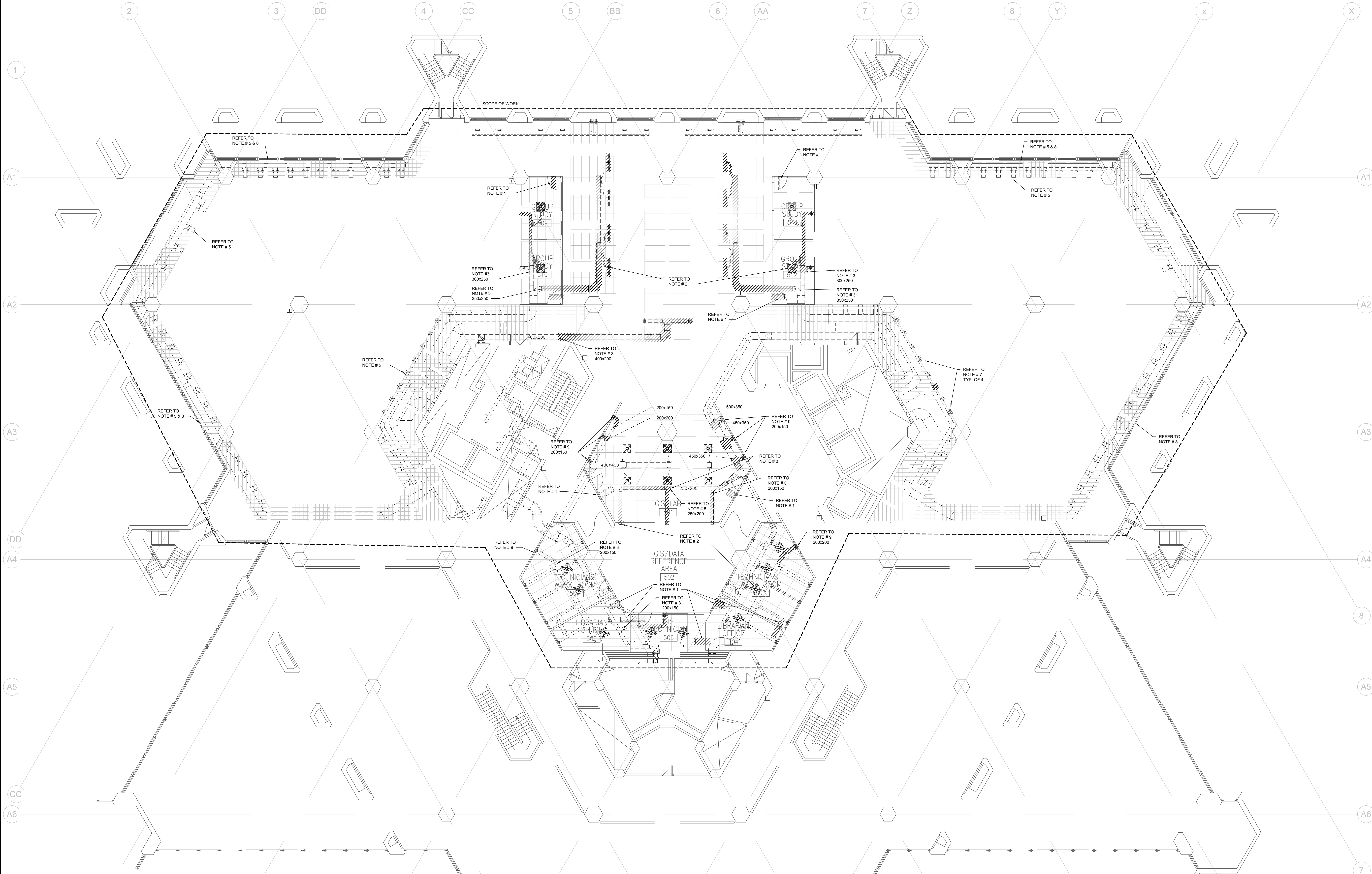
superk"l

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<h1>Robarts 5th Floor MDL Renovation</h1>	
<p>Title:</p> <h2>BAS CONTROL SCHEMATICS</h2>	
Project No. 08086.009/MEAVD	Scale AS NOTED
Drawing No.	

M-001



- GENERAL NOTES:**

 - DO NOT SCALE DRAWINGS. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR SPECIFIED THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE. DETERMINE THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS BASED ON THE SITE CONDITIONS. REVIEW ALL REVISIONS WITH THE CONSULTANT.
 - READ FLOOR PLANS IN CONJUNCTION WITH SCHEMATICS. ASSUME INFORMATION SHOWN ON FLOOR PLANS TO BE APPLICABLE TO THE RELATED SYSTEM SCHEMATIC AND VICE-VERSA TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.
 - REFER TO STANDARD DETAIL SHEETS AND STANDARD DETAILS FOR ADDITIONAL INFORMATION.
- DEMOLITION NOTES:**

 - REMOVE EXISTING ACoustically LINED TRANSFER AIR DUCTS IN APPROXIMATE LOCATIONS SHOWN. CONTRACTOR TO ALLOW FOR AND ADDITION THREE (3) TRANSFER DUCT NOT SHOWN ON DRAWINGS. (TYPICAL).
 - REMOVE EXISTING DIFFUSERS AS INDICATED. REMOVE ALL EXISTING FLEXIBLE OR ROUND RIGID DUCTWORK WHERE DIFFUSERS ARE EITHER REMOVED OR RELOCATED. PROVIDE AND INSTALL NEW FLEXIBLE DUCTS TO RELOCATED DIFFUSERS. (TYPICAL).
 - DISCONNECT EXISTING DUCTWORK AND REMOVE COMPLETE WITH ALL ASSOCIATED HANGERS AND SUPPORTS. REMOVE DUCTWORK FROM SITE. SIZE OF EXISTING DUCTWORK SHALL BE AS INDICATED ON THE DRAWING. ENSURE EXISTING TO REMAIN DUCTWORK IS SECURED IN PLACE. PROVIDE NEW HANGERS AS REQUIRED. (TYPICAL).
 - CONTRACTOR TO MODIFY EXISTING DUCTWORK AND WALL GRILLES. EXISTING WALL GRILLES LOCATIONS ALIGN WITH CENTER LINE OF NEW GLAZING PANELS AND WALL SECTIONS. REFER TO DRAWING M-302 FOR APPROXIMATE LOCATIONS.
 - PRIOR TO CONSTRUCTION, AIR BALANCING CONTRACTOR SHALL RECORD AIR FLOW VALUES SUPPLIED BY ALL ASSOCIATED DIFFUSERS.
 - CAP (PATCH) EXISTING DUCT AND SEAL AIR TIGHT.
 - REMOVE EXISTING SUPPLY AIR TAKE OFF, DUCT AND GRILLE. PATCH AND SEAL DUCTWORK AS REQUIRED. REFER TO DRAWING M-302 FOR NEW DUCTWORK REQUIREMENTS.
 - EXISTING PERIMETER INDUCTION UNITS TO REMAIN. PROVIDE PROTECTION DURING CONSTRUCTION. PRIOR TO CONSTRUCTION RECORD THE POSITION OF THE PRIMARY AIR DAMPER AND CLOSE ALL DAMPER IN AREA OF CONSTRUCTION. COVER UNIT COILS WITH FILTER MEDIA TO PROTECT FROM DUST AND DEBRIS AND RECOVER ALL UNITS WITH PLASTIC SHEETING. TIGHTLY FIT AND TAPED TO PROTECT AGAINST THE INTRUSION OF DUST.
 - EXISTING DUCTWORK AND GRILLES TO BE RELOCATED. REFER TO DRAWING M-302 FOR NEW GRILLE LOCATIONS. REUSE OR PROVIDE NEW DUCTWORK AS REQUIRED.

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416 487 8151 / 416 487 8108 smithandandersen.com

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Robarts 5th Floor MDL Renovation

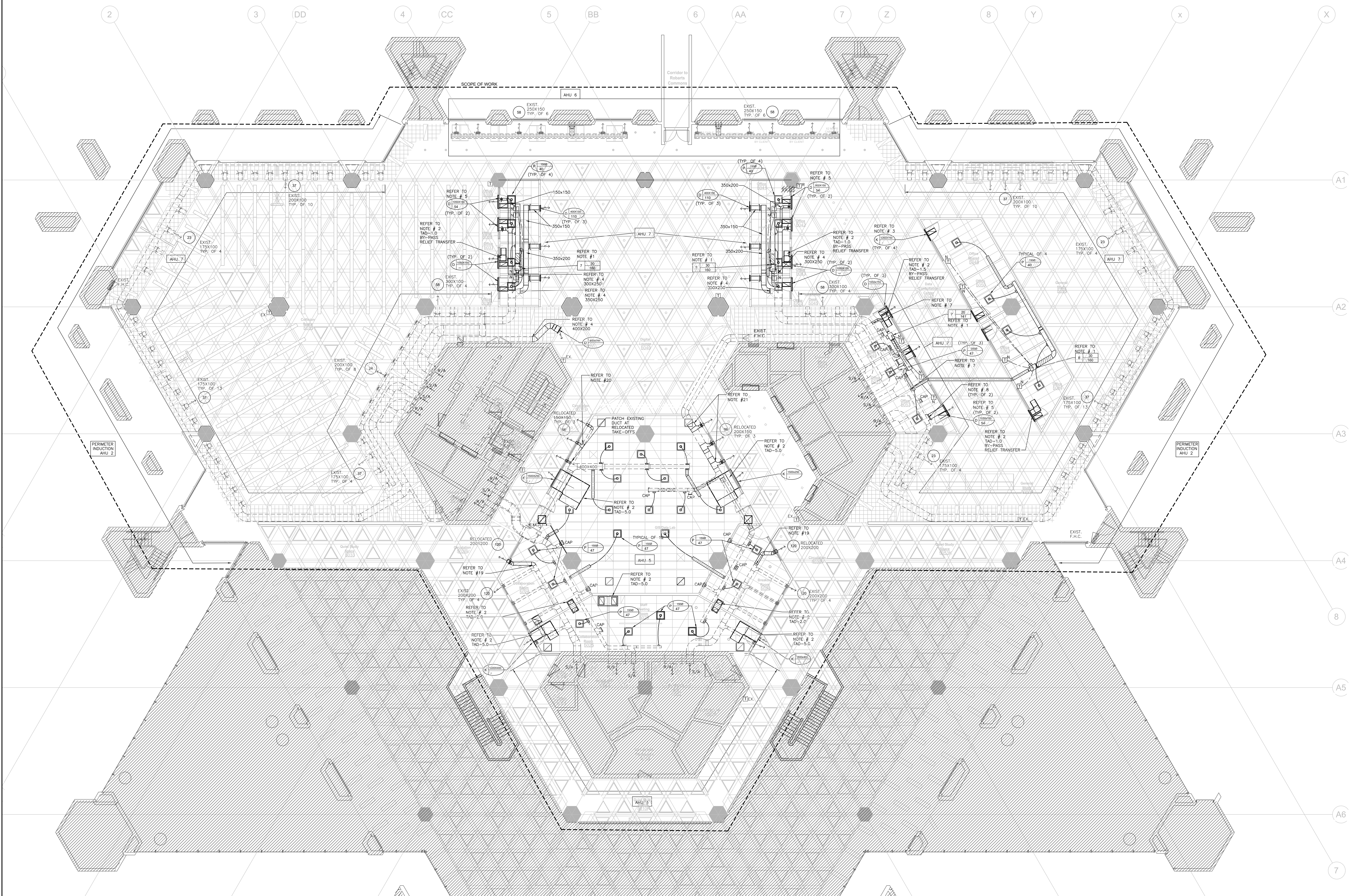
Title:

**5TH FLOOR
H.V.A.C. DEMOLITION
LAYOUT**

Project No.08086.009 MEAVD | Scale 1:100

Drawing No.

M-301



GENERAL NOTES:

- DO NOT SCALE DRAWINGS. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR SPECIFIED THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE. DETERMINE THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS BASED ON THE SITE CONDITIONS. REVIEW ALL REVISIONS WITH THE CONSULTANT.
- READ FLOOR PLANS IN CONJUNCTION WITH SCHEMATICS. ASSUME INFORMATION SHOWN ON FLOOR PLANS TO BE APPLICABLE TO THE RELATED SYSTEM SCHEMATIC AND VICE-VERSA TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.
- REFER TO STANDARD DETAIL SHEETS AND STANDARD DETAILS FOR ADDITIONAL INFORMATION.

DRAWING NOTES:

- NEW BY-PASS VAN BOX COMPLETE WITH HANGERS, SUPPORTS, RIGID DUCT, FLEXIBLE DUCT, DIFFUSERS, COILS, CONTROLS, TO PROVIDE A COMPLETE AND OPERATIONAL INSTALLATION. REFER TO DRAWING FOR INLET SIZE.
- PROVIDE ACoustically LINED TRANSFER AIR DUCT IN LOCATION SHOWN. DUCT TO MATCH GRILLE SIZE UNLESS NOTED OTHERWISE OR FREE AREA INDICATED. SPACE LOCATION, QUANTITY AND SIZE TO SUIT CEILING SPACE AND SITE CONDITIONS. REFER TO STANDARD DETAIL#S/M-000. (TYPICAL)
TAD-0.5 PROVIDE A TOTAL OF 0.05 SQ.M (0.5 SQ.FT)
TAD-1.0 PROVIDE A TOTAL OF 0.11 SQ.M (1.0 SQ.FT)
TAD-1.5 PROVIDE A TOTAL OF 0.14 SQ.M (1.5 SQ.FT)
TAD-2.0 PROVIDE A TOTAL OF 0.19 SQ.M (2.0 SQ.FT)
TAD-5.0 PROVIDE A TOTAL OF 0.46 SQ.M (5.0 SQ.FT)
- PROVIDE 600X300X400 HIGH ACoustically LINED TRANSFER AIR PLENUM OVER +/- 600X300 (LENGTH OF GRILLE TO SUITE AVAILABLE SPACE BETWEEN T-BARS). RETURN AIR GRILLE AT CEILING AND PROVIDE 600X150 ACoustically DUCT TO WALL GRILLE AS INDICATED. (TYPICAL)
- CONNECT NEW DUCT TO EXISTING DUCT OF EQUAL SIZE. AND EXTEND AS INDICATED. REFER TO DRAWING EXISTING NEW DUCT SIZES. (TYPICAL)
- CONNECT NEW SUPPLY AIR DUCT AND TRANSFER/RETURN AIR DUCT TO COMMON GRILLE AS INDICATED. DUCT SIZES SHALL BE AS NOTED. AIR QUANTITY NOTED TO BE TOTAL FOR ACTIVE SECTION OF GRILLE ONLY AND SHALL NOT BE MEASURED ACROSS ENTIRE FACE OF GRILLE. (TYPICAL)
- COORDINATE WALL GRILLES SIZES AND LOCATIONS WITH ARCHITECTURAL DRAWINGS. UNCOORDINATED INSTALLATION WILL NEED TO BE ALTERED TO SUITE ARCHITECTURAL. AT NO ADDITIONAL COST. ALL GRILLES TO BE WHITE FINISH UNLESS NOTED OTHERWISE. PROVIDE MATT BLACK BLANK OFF PLATES OF DIFFUSER FOR NON-ACTIVE SECTIONS OF GRILLES.
- CONNECT NEW 200X BY-PASS VAN BOX INLET DUCT TO EXISTING SUPPLY AIR DUCT IN CEILING TO NEW WALL GRILLE.
- CONNECT NEW 400X150 SUPPLY AIR DUCT TO EXISTING SUPPLY AIR DUCT IN CEILING AND EXTEND TO NEW WALL GRILLE.
- PROVIDE ALL DUCTWORK DOWNSTREAM OF TERMINAL EQUIPMENT (I.E. FAN COILS, HEAT PUMPS, V.A.V. BOXES AND FAN POWERED BOXES) EQUAL TO THE EQUIPMENT OUTLET SIZE (MINIMUM) OR LARGER AS INDICATED. WHERE OUTLET SIZES ARE ODD SIZES, INCREASE THE DUCT SIZE UP TO THE NEAREST EVEN SIZE (I.E. PROVIDE 350X350 FOR 318X318 OR 320X320 OUTLET). PROVIDE TRANSITION DUCTS AS REQUIRED.
- PROVIDE DIFFUSER DUCT RUN-OUT THE SAME SIZE AS THE DIFFUSER INLET UNLESS INDICATED OTHERWISE.
- PROVIDE 600X300 RETURN AIR GRILLES UNLESS NOTED OTHERWISE.
- REMOVE AND RELOCATE EXISTING DIFFUSERS AS INDICATED. REMOVE ALL EXISTING FLEXIBLE DUCTWORK WHERE DIFFUSERS ARE EITHER REMOVED OR RELOCATED. PROVIDE AND INSTALL NEW FLEXIBLE DUCTS TO RELOCATED DIFFUSERS.
- TEMPERATURE SENSORS ARE LOCATED TO AID IN PRICING ONLY AND ALL REQUIRED SENSORS MAY NOT BE SHOWN (REFER TO SPECIFICATIONS). COORDINATE FINAL LOCATION WITH THE INTERIOR DESIGNER WITHIN 1000mm OF LOCATION SHOWN. ALL RELOCATIONS OUTSIDE OF THIS RANGE SHALL BE REVIEWED WITH THE CONSULTANT.
- INSTALL TEMPERATURE SENSORS AT NOMINALLY 1200mm A.F.F. ABOVE THE FINISHED FLOOR UNLESS INDICATED OTHERWISE.
- BALANCE THE AIR FLOW RATES EQUALLY BETWEEN ALL INTERIOR DIFFUSERS BASED ON THE MAXIMUM AIR FLOW RATE SHOWN FOR THE ASSOCIATED BY-PASS VAN BOX. (TYPICAL)
- CLEAN PERIMETER INDUCTION UNITS AT THE COMPLETION OF CONSTRUCTION. CLEANING INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:
1. REMOVE THE COVERS.
2. VACUUM AND WIRE CLEAN ASSOCIATED COILS AND LINT SCREENS AS REQUIRED.
3. CLEAN SUPPLY AIR NOZZLES WITH HIGH PRESSURE AIR AND STEAM.
4. SET PRIMARY AIR VALVE BACK TO ORIGINAL LOCATION AND VERIFY AIR BALANCE.
5. WASH INDUCTION UNIT COVERS AND INSTALL IN ORIGINAL LOCATION.
- INSPECT AND VERIFY THE OPERATION OF CONTROL VALVES AND THERMOSTAT/TEMPERATURE SENSORS FOR PERIMETER INDUCTION UNITS. PROVIDE A WRITTEN REPORT IDENTIFYING ALL INOPERATIONAL OR DAMAGED CONTROL DEVICES AND PROVIDE AN ITEMIZED COST ASSOCIATED WITH REPAIR OR REPLACEMENT AS REQUIRED.
- REFER TO DRAWING FOR ASSOCIATED AHU'S (AIR HANDLING UNITS) SERVING THE 5TH FLOOR:
AHU-2 PERIMETER INDUCTION UNITS
AHU-3 INTERIOR SOUTH CORE OPEN AREA BALCONY
AHU-5 INTERIOR CENTER GIS/DATA LAB
AHU-6 INTERIOR/PERIMETER ALONG LINK TO ROBART'S COMMONS
AHU-7 INTERIOR, MAJORITY OF OPEN AREAS, NEW OFFICES AND COLLAB'S 507 AND 509
- MODIFY EXISTING 200X200 DUCTWORK AS REQUIRED TO CENTER 200X200 DIFFUSERS IN DRYWALL BULKHEAD ABOVE GLAZING PANELS AS SHOWN.
- MODIFY EXISTING 200X150 DUCTWORK AS REQUIRED TO CENTER 200X150 DIFFUSERS IN DRYWALL BULKHEAD ABOVE GLAZING PANELS AS SHOWN.

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9. 24.11.29 ISSUED FOR CONSTRUCTION
8. 24.09.27 ISSUED FOR TENDER
7. 24.08.16 ISSUED FOR PERMIT
6. 24.08.02 ISSUED FOR 100% CD COSTING
5. 24.04.29 ISSUED FOR 80% CD COSTING
4. 23.12.08 ISSUED FOR DD REVIEW
3. 23.11.17 ISSUED FOR DD COSTING
2. 23.10.24 ISSUED FOR 100% DD
1. 23.08.30 ISSUED FOR DRAFT SD REVIEW

No.	Date	Issue/Revision
9.	24.11.29	ISSUED FOR CONSTRUCTION
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THIS DRAWING SHALL BE READ IN CONJUNCTION WITH MECHANICAL SPECIFICATION SUBMITTED FOR THIS PROJECT.

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No. Date Issue/Revision

Robarts 5th Floor MDL Renovation

Title:
5TH FLOOR NEW H.V.A.C. LAYOUT

Project No.08086.009 MEAVD | Scale AS NOTED

Drawing No.

M-302

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