

#### GENERAL NOTE:

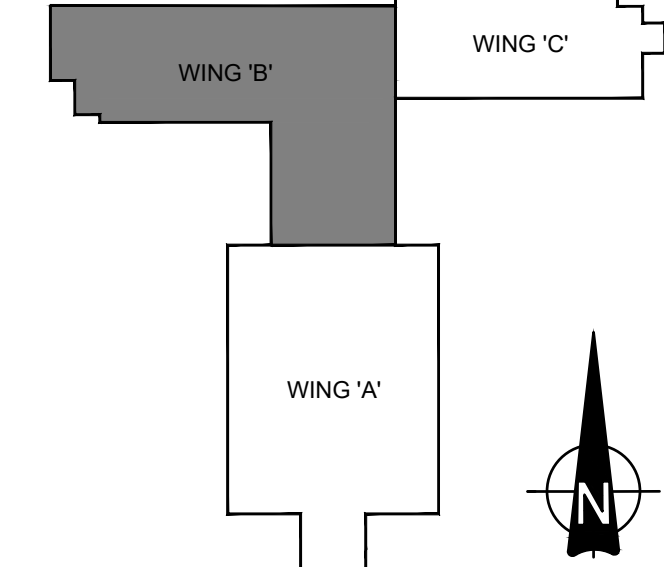
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#### DRAWINGS NOTES:

- ALL FIXTURES TO BE REMOVED UNLESS INDICATED TO OTHERWISE, REFER TO ARCHITECTURAL FOR EXACT QUANTITY AND LOCATIONS OF ALL FIXTURES.
- ALL SUPPLY PIPING TO FIXTURES TO BE DEMOLISHED.
- BREAK CONCRETE FLOOR, CUT AND CAP ALL SANITARY PIPING BELOW FINISHED FLOOR.
- DEMOLISH ALL VENTING PIPING THAT WILL BECOME OBSOLETE BY THE DEMOLITION OF THE DRAINAGE PIPING.
- REPAIR FLOOR WITH LIKE MATERIALS AND CONSTRUCTION.
- FINISH FLOOR AS PER ARCHITECTURAL ROOM SCHEDULES.

#### LEGEND

PLUMBING & DRAINAGE	
—	SANITARY DRAINAGE ABOVE FLOOR
—	SANITARY DRAINAGE BELOW FLOOR
—	CONTAMINATED SEWAGE
—	STORM DRAINAGE ABOVE FLOOR
—	STORM DRAINAGE BELOW FLOOR
—	ACID DRAIN LINE
—	COLD WATER
—	HOT WATER
—	HOT WATER RECIRCULATING
—	FIRE MAIN
—	GAS
—	COMPRESSED AIR
—	REFRIGERANT LIQUID
—	REFRIGERANT SUCTION
—	VENT
—	CAUSTIC
—	DISTILLED WATER
—	VACUUM
—	GAS OUTLET
—	COMPRESSED AIR OUTLET
—	NOT IN CONTRACT
—	SHUT-OFF VALVE
—	ROUGH-IN-ONLY
—	EXPANSION JOINT WITH GUIDES
—	GATE VALVE
—	GLOBE VALVE
—	FIRE HOSE CABINET
—	VACUUM FITTING



#### Key Plan

#### DO NOT SCALE DRAWINGS:

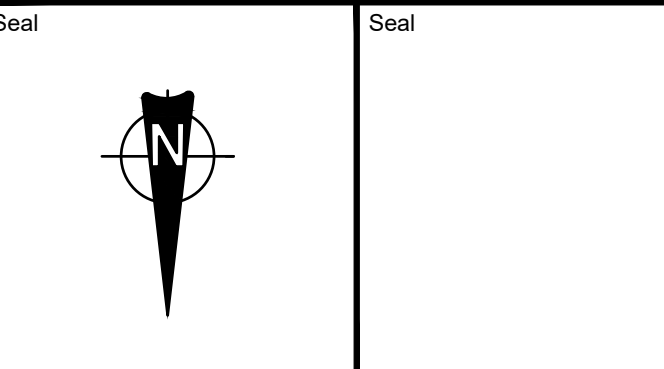
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#### UNEXPECTED DISCOVERY OF ASBESTOS:

Where a friable material is discovered during construction, renovations and/or demolition, and it is suspected to contain asbestos, the Contractor must stop all work that may disturb the material. The Contractor shall advise the Owner of the discovery and await instructions from the owner.

A = Detail number  
B = Drawing number where detailed

1	ISSUED FOR CONVENIENCE	TA	APR 12, 2019
0	ISSUED FOR PERMIT & TENDER	TA	NOV 2, 2018
NO.	ISSUED	BY	DATE



**UNIVERSITY OF GUELPH**  
Design, Engineering & Construction  
Physical Resources  
Guelph, Ontario. N1G 2W1

Consultant: [www.jrichards.ca](http://www.jrichards.ca)



Project  
**BUILDING #046 RENOVATIONS**

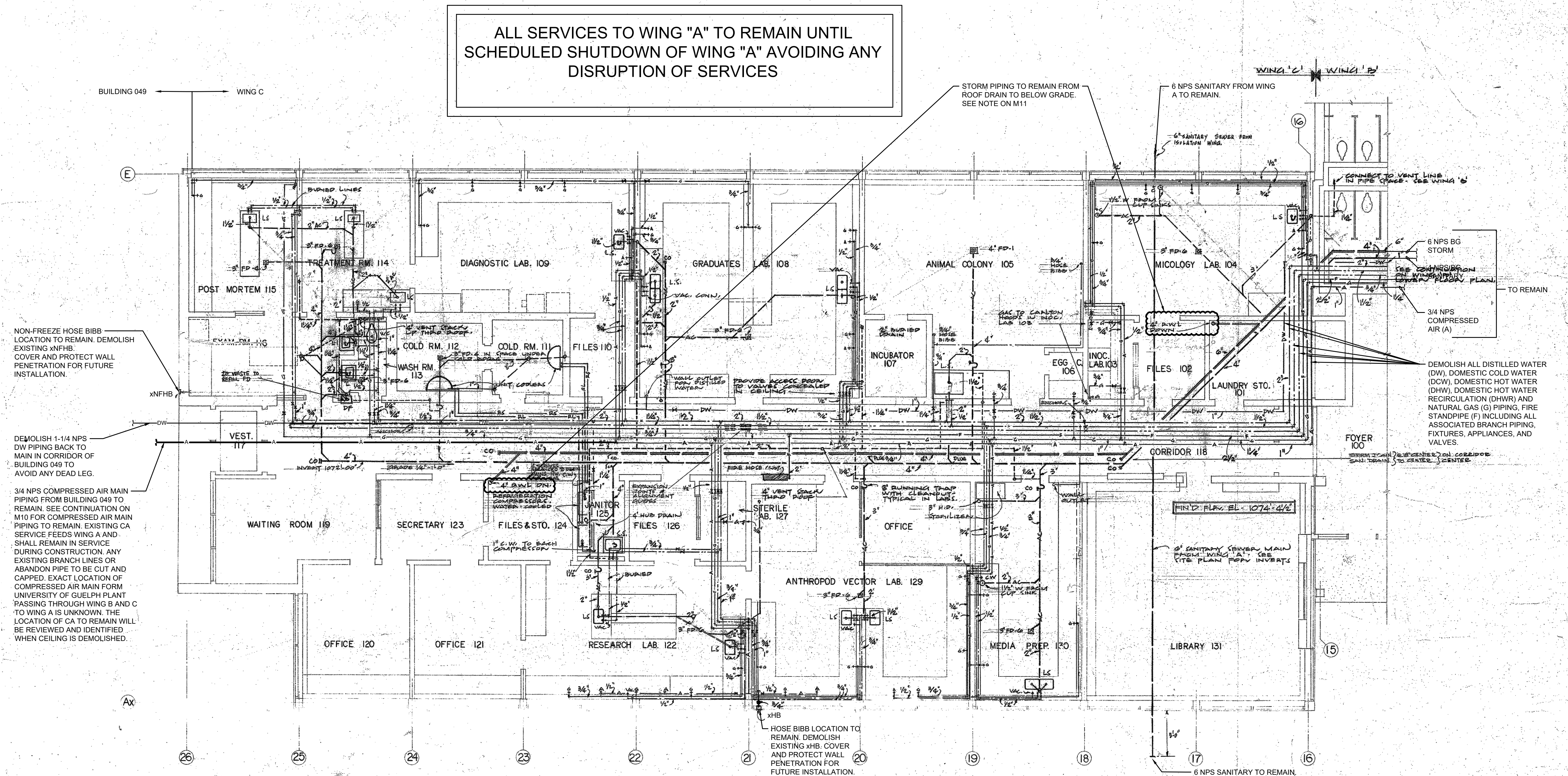
Drawing Title  
**MECHANICAL DEMOLITION PLUMBING WING B LEVEL 2**  
Project No.  
**504034**

Location  
**UNIVERSITY OF GUELPH BUILDING #46**

Scale NTS	Date APR 12, 2019
Drawn by HW	Drawing No.
Checked By NC	
Approved By KT	
JLR # 27915	
Card File No. ----	

**DM11**





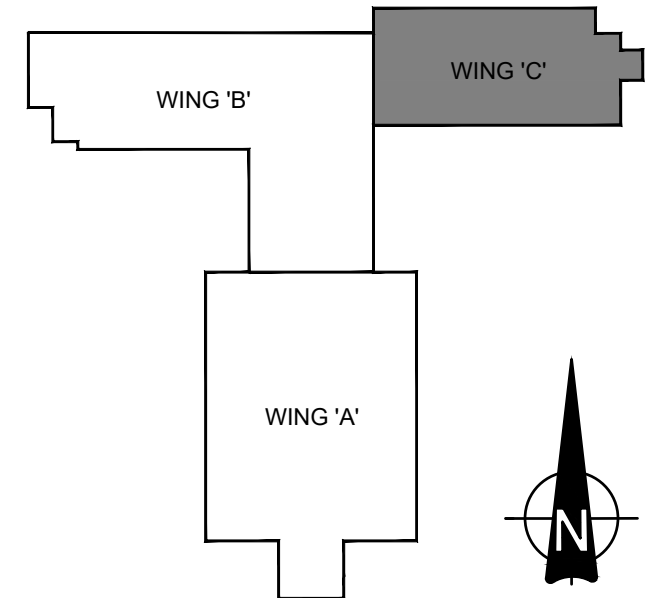
1 DEMOLITION PLUMBING WING C  
DM12 SCALE: 1/75

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Key Plan

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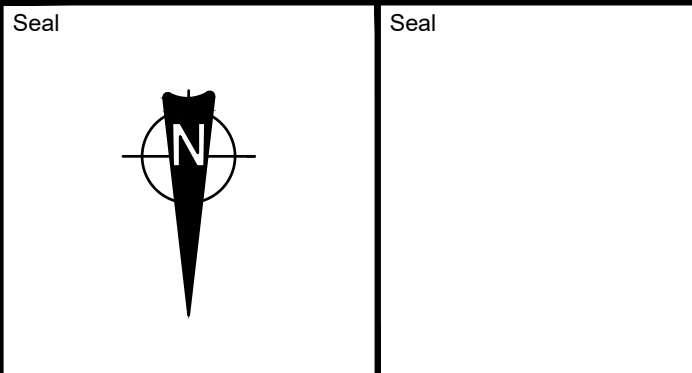
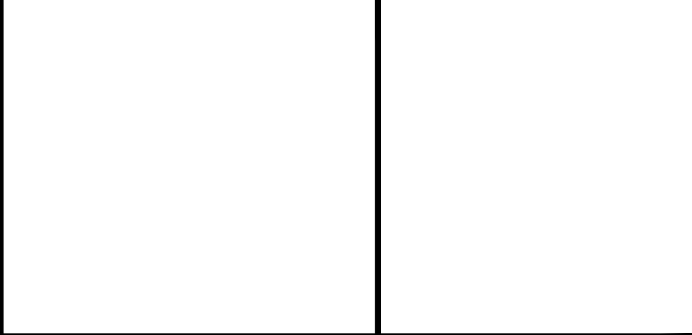
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Orientation



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Physical Resources  
Guelph, Ontario. N1G 2W1

Consultant

www.jrichards.ca

JR J.L. Richards  
ENGINEERS - ARCHITECTS - PLANNERS

Project

BUILDING #046  
RENOVATIONS

Drawing Title

MECHANICAL  
DEMOLITION PLUMBING  
WING C LEVEL 1

Project No.

504034

Location

UNIVERSITY OF GUELPH  
BUILDING #46

Scale

NTS

Date

APR 12, 2019

Drawn by

HW

Drawing No.

Checked By

NC

Approved By

KT

JLR #

27915

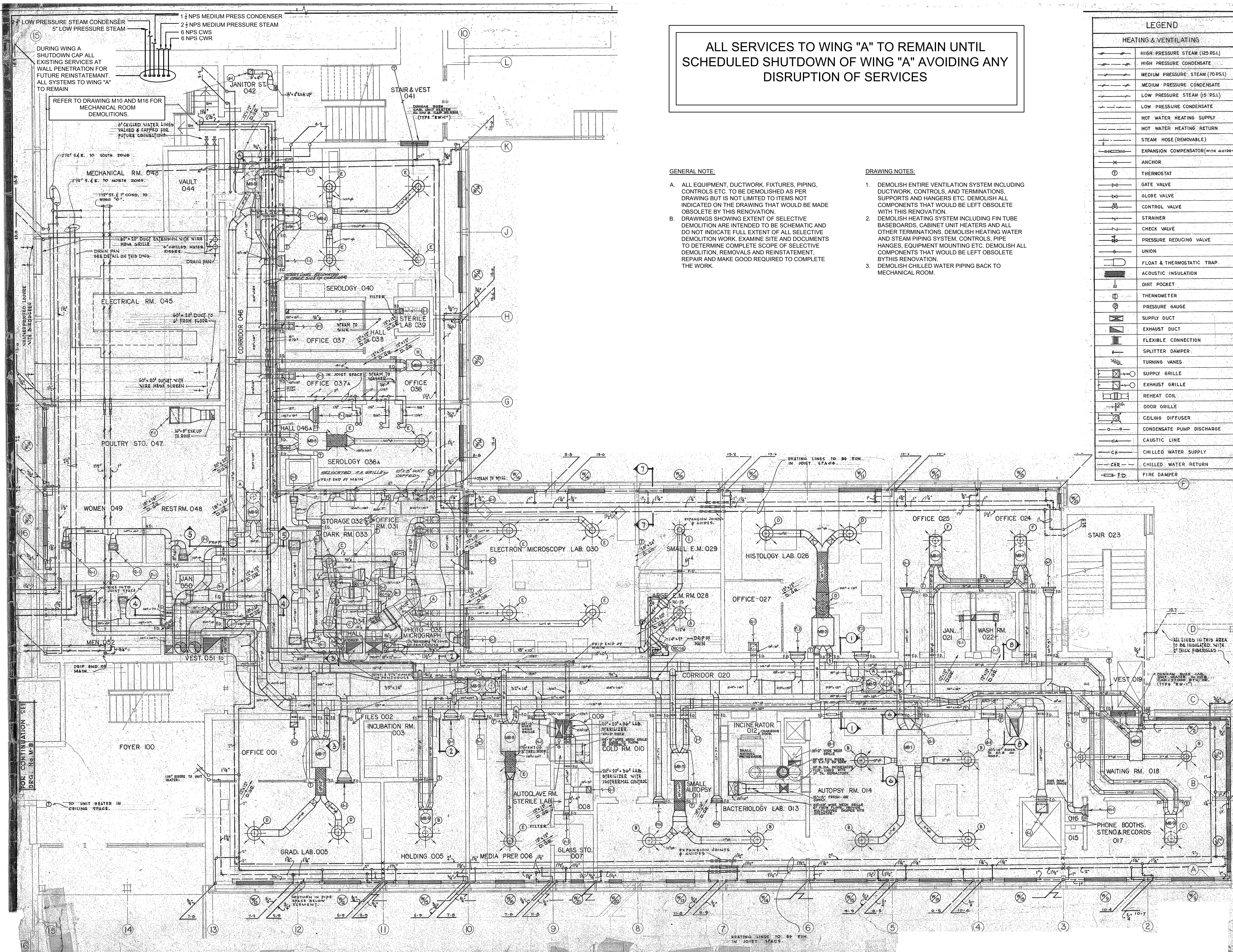
Cad File No.

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DM12



SEE M15 FOR WING C HVAC DEMOLITION



1  
DM13

DEMOLITION VENTILATION B WING L1  
SCALE: 1/8" = 1'-0"

ALL SERVICES TO WING "A" TO REMAIN UNTIL  
SCHEDULED SHUTDOWN OF WING "A" AVOIDING ANY  
DISRUPTION OF SERVICES

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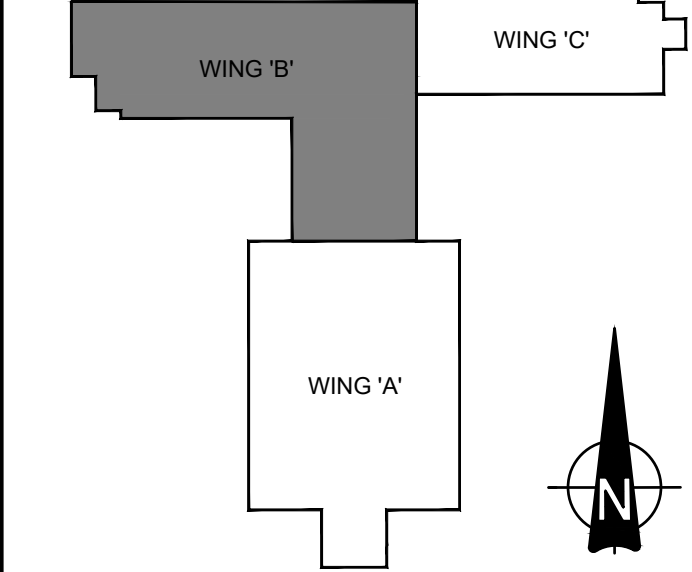
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- DEMOLISH CHILLED WATER PIPING BACK TO MECHANICAL ROOM.

LEGEND

HEATING & VENTILATING

---	HIGH PRESSURE STEAM (125 PSIG)
---	HIGH PRESSURE CONDENSATE
---	MEDIUM PRESSURE STEAM (70 PSIG)
---	MEDIUM PRESSURE CONDENSATE
---	LOW PRESSURE STEAM (15 PSIG)
---	LOW PRESSURE CONDENSATE
---	HOT WATER HEATING SUPPLY
---	HOT WATER HEATING RETURN
---	STEAM HOSE (REMOVABLE)
---	EXPANSION COMPENSATOR (WITH GUIDES)
---	ANCHOR
---	THERMOSTAT
---	GATE VALVE
---	GLOBE VALVE
---	CONTROL VALVE
---	STRAINER
---	CHECK VALVE
---	PRESSURE REDUCING VALVE
---	UNION
---	FLOAT & THERMOSTATIC TRAP
---	ACOUSTIC INSULATION
---	DIRT POCKET
---	THERMOMETER
---	PRESSURE GAUGE
---	SUPPLY DUCT
---	EXHAUST DUCT
---	FLEXIBLE CONNECTION
---	SPLITTER DAMPER
---	TURNING VANES
---	SUPPLY GRILLE
---	EXHAUST GRILLE
---	REHEAT COIL
---	DOOR GRILLE
---	CEILING DIFFUSER
---	CONDENSATE PUMP DISCHARGE
---	CAUSTIC LINE
---	CHILLED WATER SUPPLY
---	CHILLED WATER RETURN
---	FIRE DAMPER



Key Plan

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Orientation	
Seal	Seal

UNIVERSITY  
of GUELPH

Design, Engineering & Construction  
Physical Resources  
Guelph, Ontario, N1G 2W1

Consultant

J.R. J.L. Richards  
ENGINEERS - ARCHITECTS - PLANNERS

Project  
BUILDING #046  
RENOVATIONS

Drawing Title

DEMOLITION HVAC WING B  
LEVEL 1  
Project No.  
504034

Location  
UNIVERSITY OF GUELPH  
BUILDING #46

Scale

Date  
APR 12, 2019

Drawn by

Drawing No.

Checked By

Approved By

JLR #

27915

Cad File No. ----

DM13





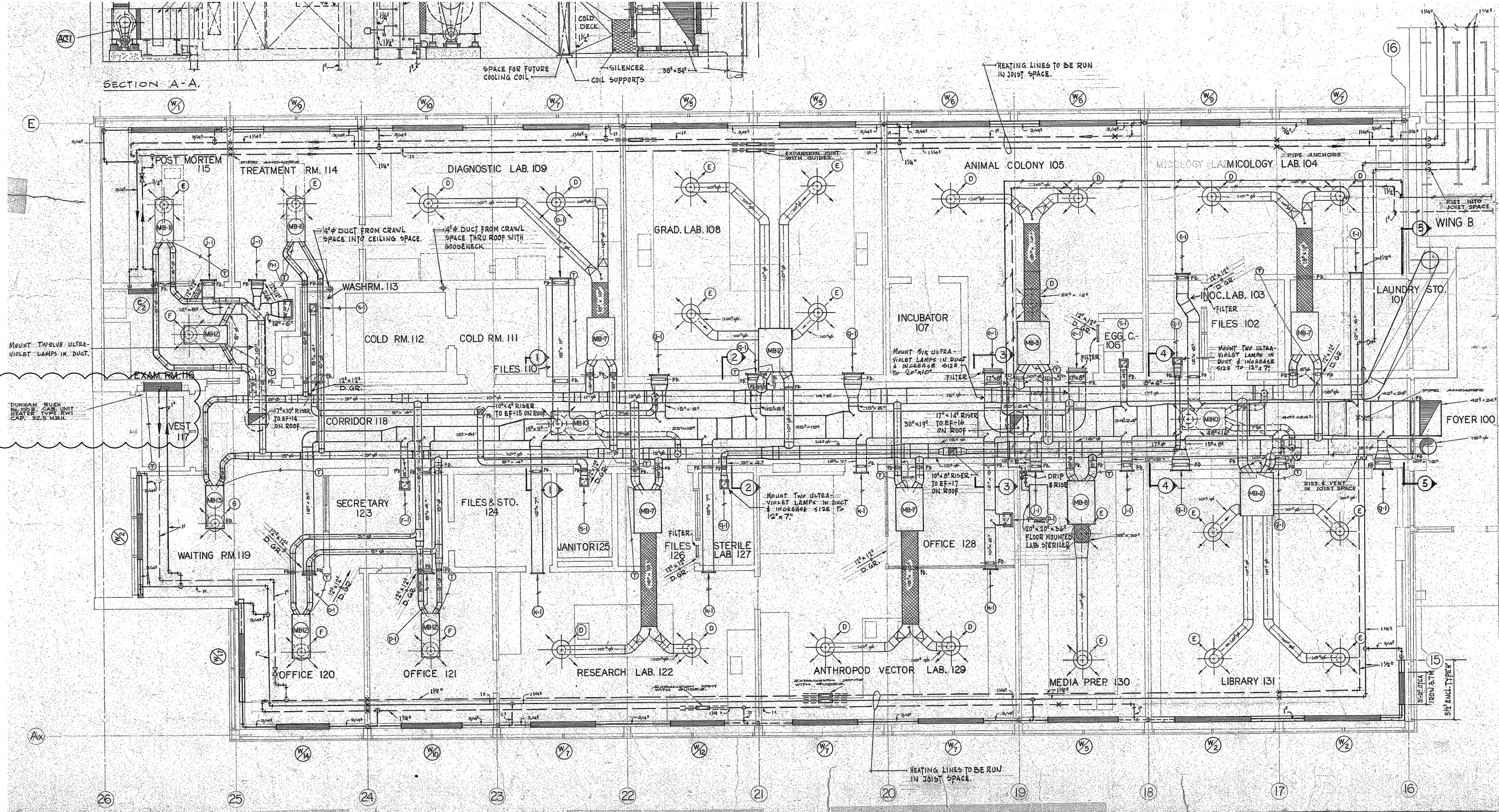
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3. DEMOLISH CHILLED WATER PIPING BACK TO MECHANICAL ROOM.



# DM14





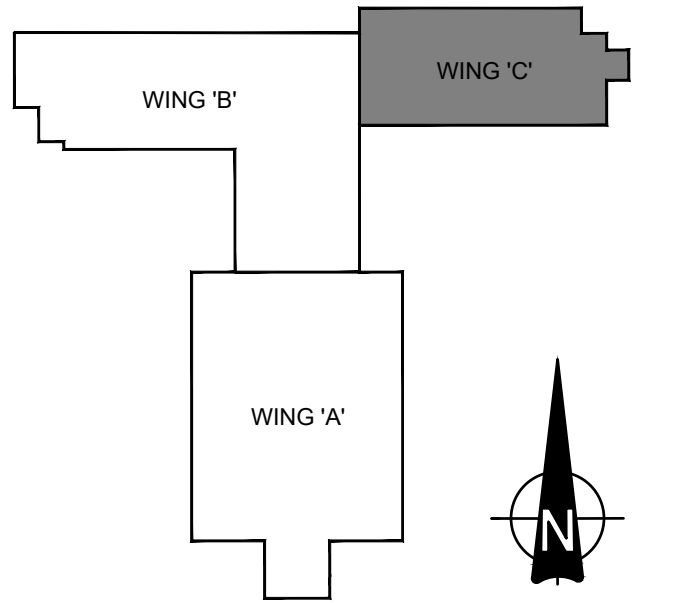
1 DEMOLITION VENTILATION C WING  
DM15 SCALE: 1:75

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**JR J.L. Richards**  
ENGINEERS - ARCHITECTS - PLANNERS

Project  
**BUILDING #046  
RENOVATIONS**

Drawing Title  
**DEMOLITION HVAC WING C  
LEVEL 1**

Project No.  
**504034**

Location  
**UNIVERSITY OF GUELPH  
BUILDING #46**

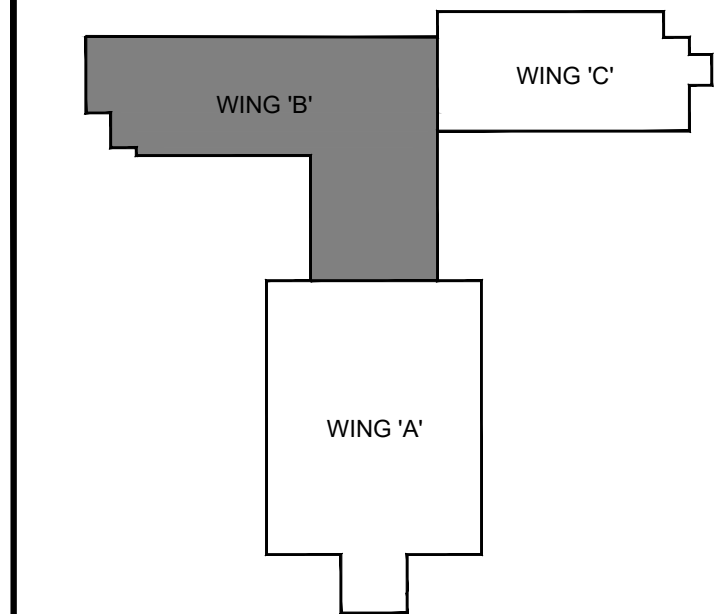
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Drawn by	Drawing No.
Checked By	
Approved By	
JLR # 27915	
Cad File No. ----	

DM15





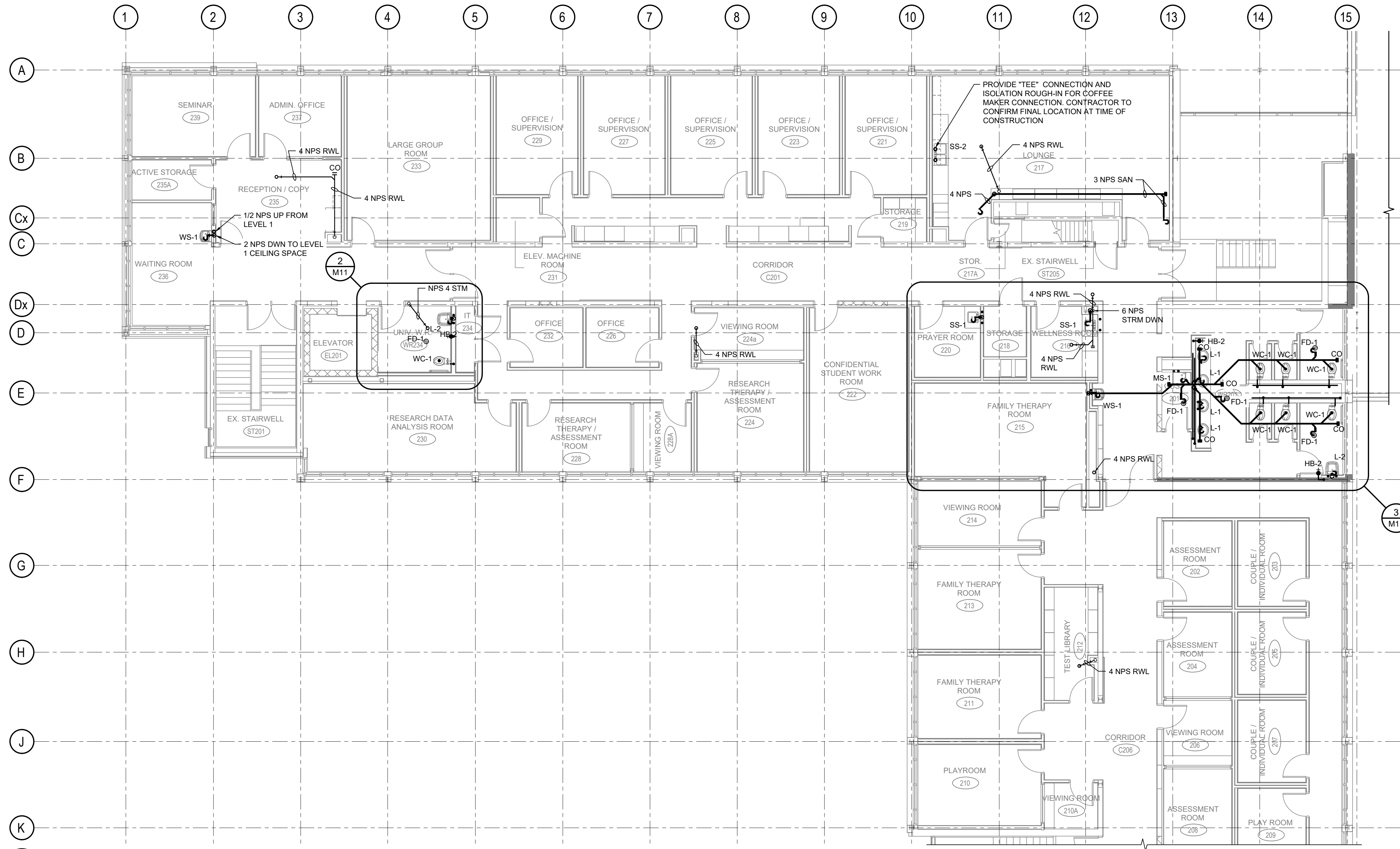




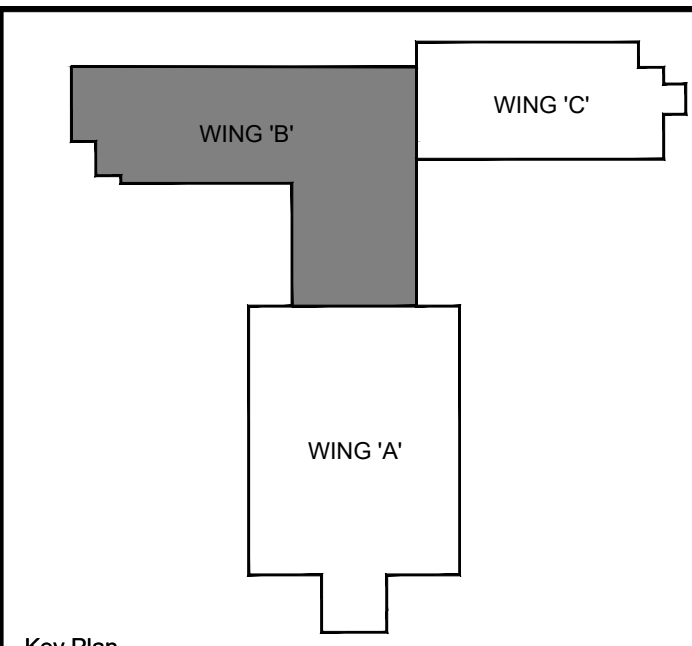
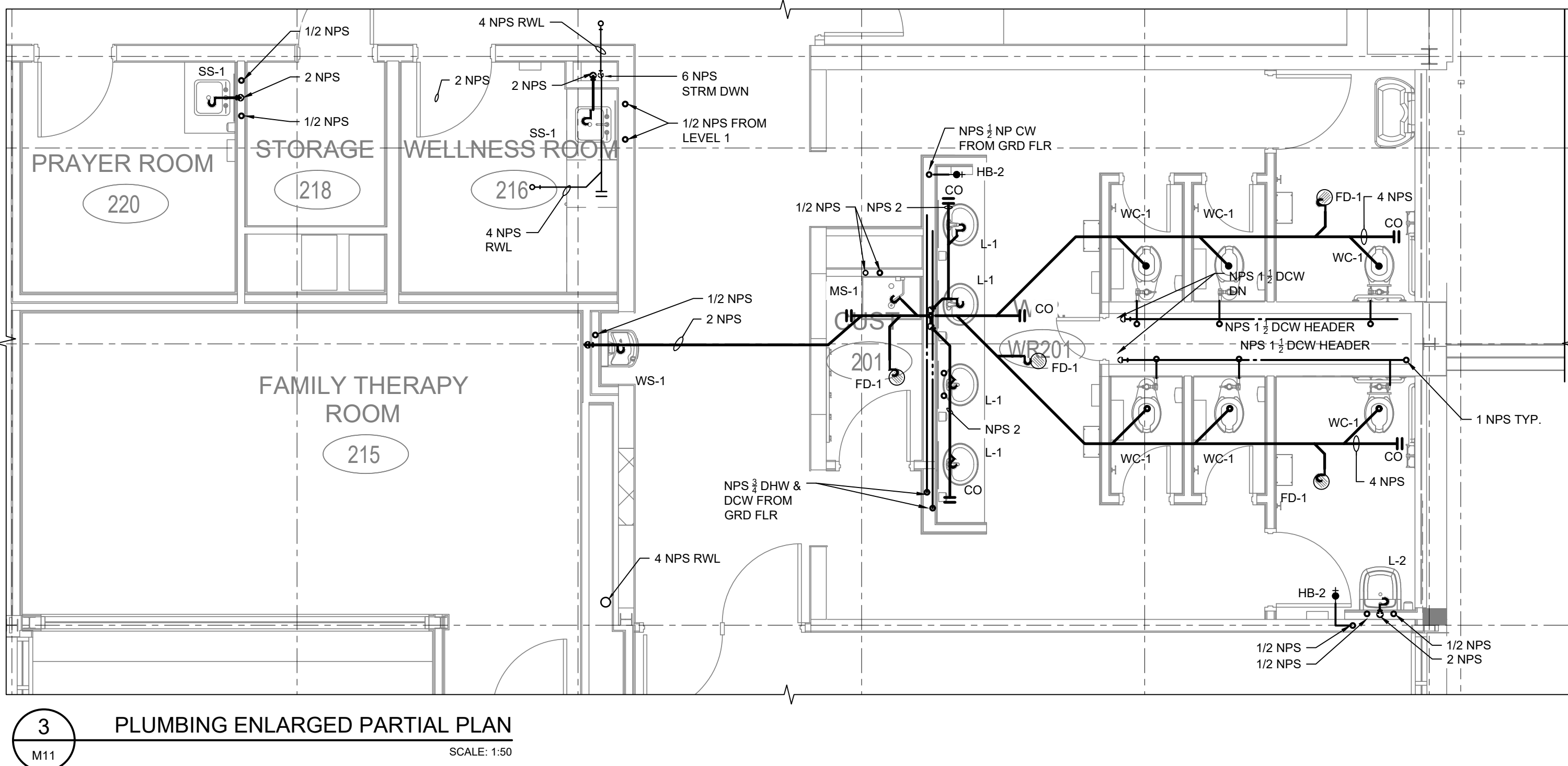
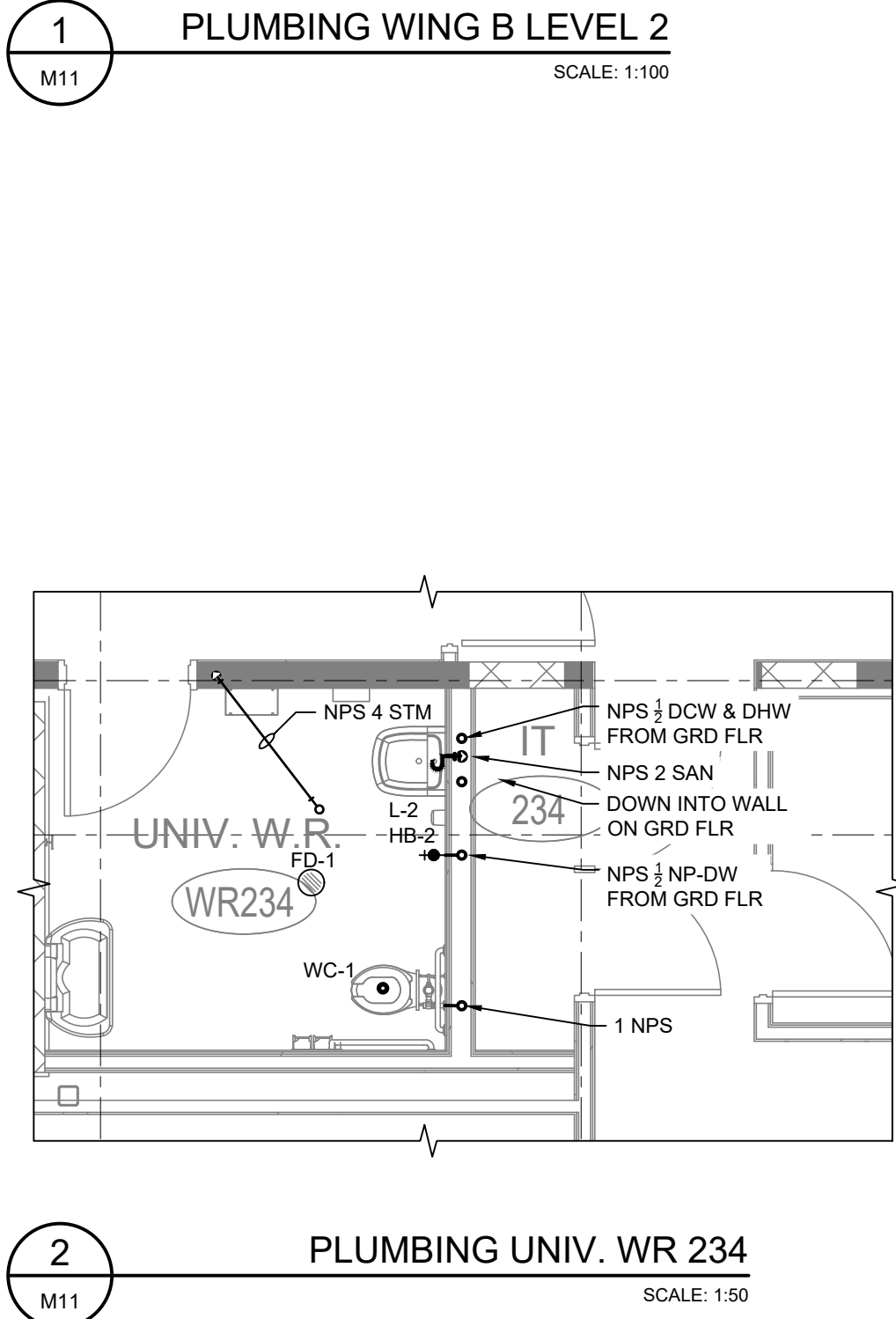
Seal

Cad File No. ----





- GENERAL NOTES:
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  2. PROVIDE ALL FIRE RATED WALL PENETRATIONS WITH APPROPRIATE FIRE CAULK, OR COLLAR INSTALLATION TO MAINTAIN FIRE SEPARATIONS.
  3. PROVIDE ISOLATION FOR ALL MAIN TAKEOFFS ALL BRANCH PIPING AND AT EACH FIXTURE FOR MAINTENANCE PURPOSES IN AN ACCESSIBLE LOCATION. PROVIDE ACCESS DOORS, COORDINATE WITH ARCHITECTURAL.
  4. PROVIDE INSULATION ON ALL PIPING AS PER SPECIFICATIONS. STORM PIPING TO BE INSULATED 3000mm FROM ROOF DRAIN.
  5. PROVIDE TRAP SEAL PRIMER FOR ALL FLOOR DRAIN LOCATIONS.
  6. PROVIDE WATER HAMMER ARRESTORS AT ALL WASHROOM FEEDS AND AS REQUIRED.
  7. VENT PIPING NOT SHOWN. PROVIDE SANITARY VENT PIPING AS REQUIRED TO MEET O.B.C. AND TERMINATE ABOVE ROOF. LOCATE MINIMUM OF 3000 mm FROM MECHANICAL O/A INTAKES.
  8. TRAP SEAL PRIMERS NOT SHOWN. PROVIDE FOR ALL FLOOR DRAINS.
  9. UNLESS OTHERWISE INDICATED SLOPE ALL 4 NPS SANITARY DRAINAGE PIPING 1% MINIMUM AND SLOPE ALL 3 NPS SANITARY DRAINAGE PIPING 2% MINIMUM.
  10. COORDINATE WITH STRUCTURAL TO PROVIDE PIPE SLEEVE FOR ALL FLOOR PENETRATIONS.
  11. COORDINATE WITH ARCHITECTURAL TO PROVIDE FIRE STOPPING FOR ALL FLOOR PENETRATIONS.
  12. PROVIDE ALL REQUIRED ACCESS DOORS FOR SERVICE AND MAINTENANCE.



Key Plan

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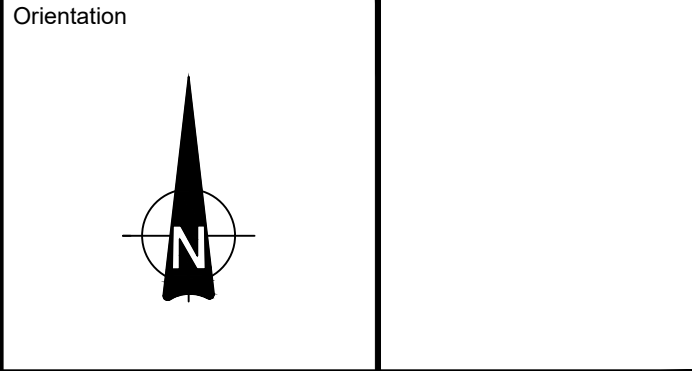
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Project  
**BUILDING #046  
RENOVATIONS**

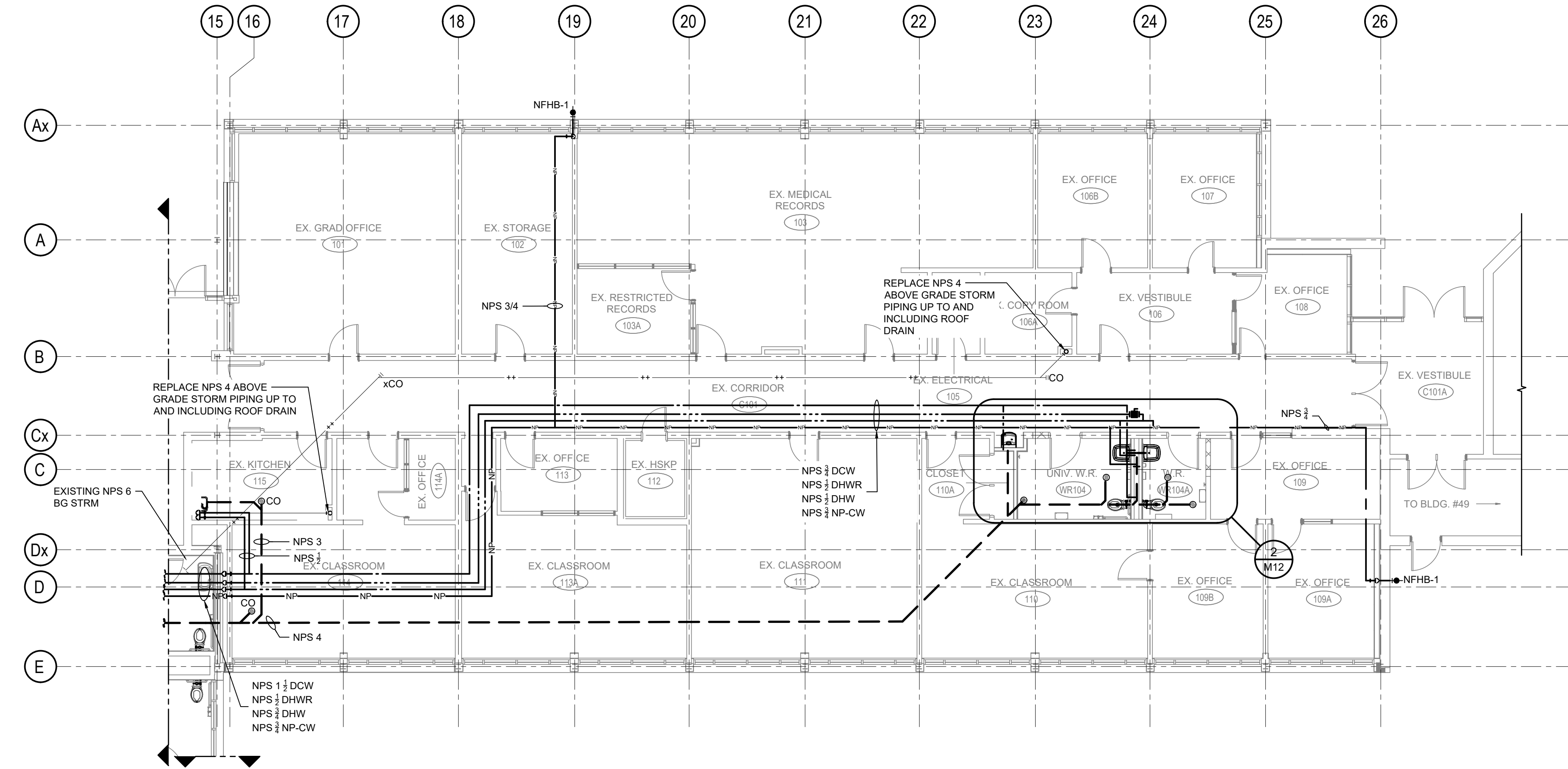
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**PLUMBING WING B LEVEL 2**

Project No.  
**504034**

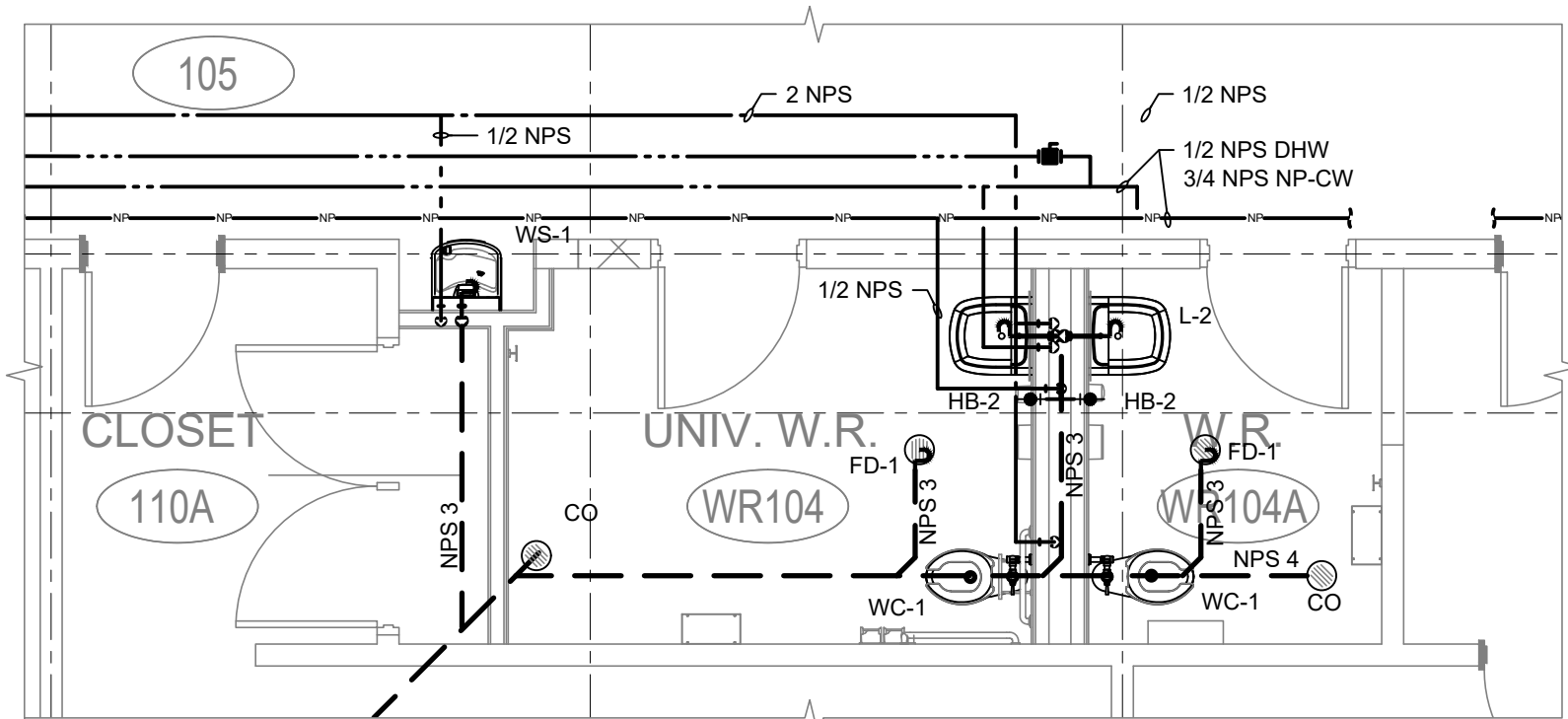
Location  
**UNIVERSITY OF GUELPH  
BUILDING #46**

Scale AS NOTED	Date APR 12, 2019
Drawn by HW	Drawing No.
Checked By NC	<b>M11</b>
Approved By KDT	
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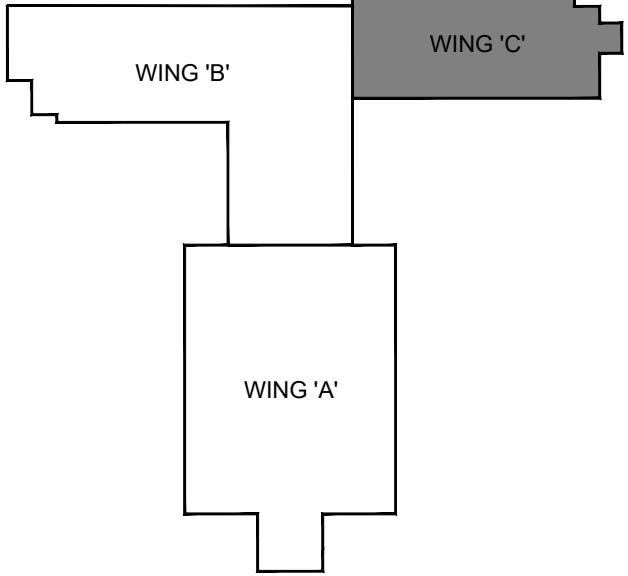
1 PLUMBING WING C LEVEL 1  
SCALE: 1:100  
M12



2 WR 104 & 104A  
SCALE: 1:50  
M12

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Seal

Seal

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ENGINEERS - ARCHITECTS - PLANNERS

Project  
**BUILDING #046  
RENOVATIONS**

Drawing Title

**PLUMBING WING C LEVEL 1**

Project No.  
**504034**

Location  
**UNIVERSITY OF GUELPH  
BUILDING #46**

Scale  
AS NOTED

Date  
APR 12, 2019

Drawn by

Drawing No.

Checked By

NC

Approved By

KDT

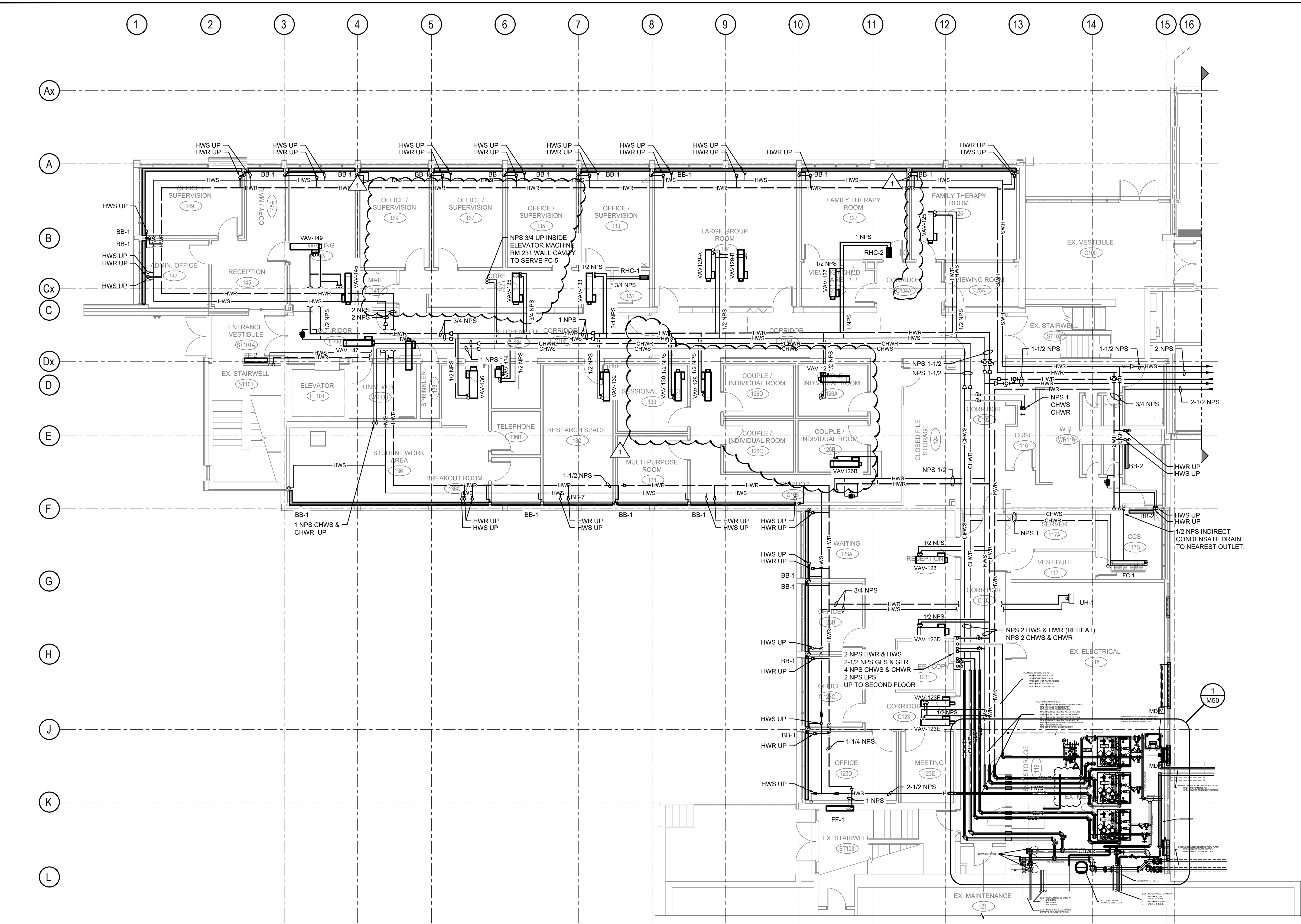
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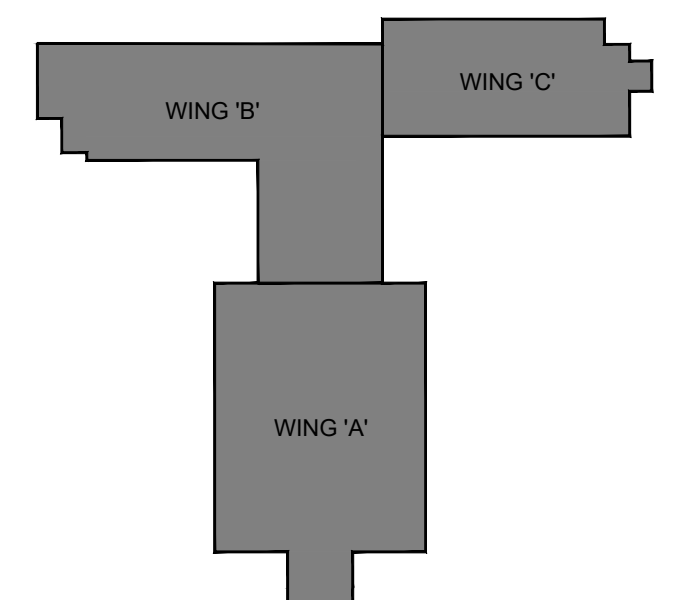




1 HEATING WING B LEVEL 1  
M20 SCALE: 1:100

- GENERAL NOTES:
1. PROVIDE CONTINUOUS INSULATION FOR ALL HEATING AND CHILLER PIPING.
  2. ALL PIPING IN PUBLIC SPACES, AND OFFICES AND STUDENT AREAS TO BE RAN IN PIPE CHASE, BULKHEADS OR CEILING SPACES, NO EXPOSED PIPING IN THESE AREAS.
  3. ALL PIPING THAT IS IN AREAS SUCH AS IT ROOMS, CUSTODIAN CLOSETS, HOUSEKEEPING ETC. TO BE INSULATED AND PROVIDED WITH PCV JACKETING.
  4. PROVIDE INSULATED CONDENSATE DRAIN PIPING FOR ALL DRAIN PANS. CONDENSATE TO HAVE 25mm AIR GAP FOR INDIRECT DRAIN TO NEAREST DRAINAGE PIPING.
  5. PROVIDE DRAINS AT ALL LOW POINTS AND AIR VENTS AT ALL HIGH POINT IN THE SYSTEM.

HEATING/COOLING	
—HWS—	HEATING WATER SUPPLY
—HWR—	HEATING WATER RETURN
—TW—	TEMPERED WATER
—GLS—	GLYCOL SUPPLY
—GLR—	GLYCOL RETURN
—CHWS—	CHILLED WATER SUPPLY
—CHWR—	CHILLED WATER RETURN
—CWS—	CONDENSER WATER SUPPLY
—CWR—	CONDENSER WATER RETURN
—RL—	REFRIGERANT LIQUID
—RS—	REFRIGERANT SUCTON
—COND—	CONDENSATE
—HGB—	REFRIGERANT HOT GAS BYPASS
—HPS—	HIGH PRESSURE STEAM
—LPS—	LOW PRESSURE STEAM
—HPC—	HIGH PRESSURE CONDENSATE
—LPC—	LOW PRESSURE CONDENSATE
—ST—	STEAM TRAP
PIPING & VALVES	
—	PIPE BREAK
—	FLOW ARROW
—	PIPE TEE DOWN
—	PIPE TEE UP
—	PIPE TEE
—	PIPE ELBOW
—	PIPE ANCHOR
—	PIPE CAP
—	PIPE RISE
—	PIPE DROP
—	PIPE REDUCER
—	PIPE UNION
—	FLEXIBLE PIPE CONNECTION
—	BALL VALVE
—	BUTTERFLY VALVE
—	GATE VALVE
—	GLOBE VALVE
—	PLUG VALVE
—	CHECK VALVE
—	TRIPLE DUTY VALVE
—	PRESSURE REDUCING VALVE
—	PRESSURE RELIEF VALVE
—	THREE WAY VALVE
—	CIRCUIT BALANCING VALVE
—	STRAINER
—	VACUUM BREAKER
—	AUTOMATIC AIR VENT
—	THERMOMETER
—	PRESSURE GAUGE
—	PUMP



Key Plan

DO NOT SCALE DRAWINGS:

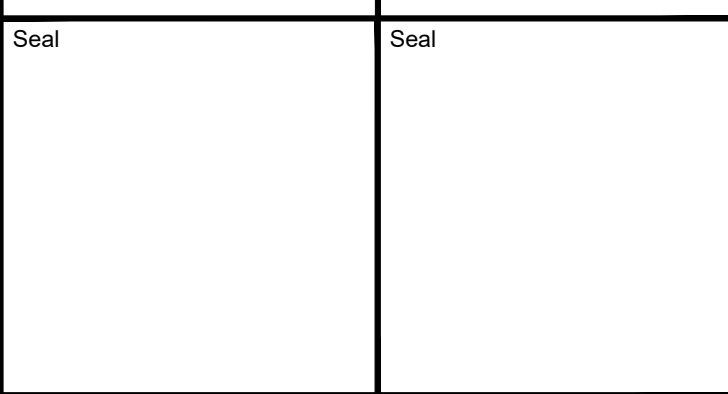
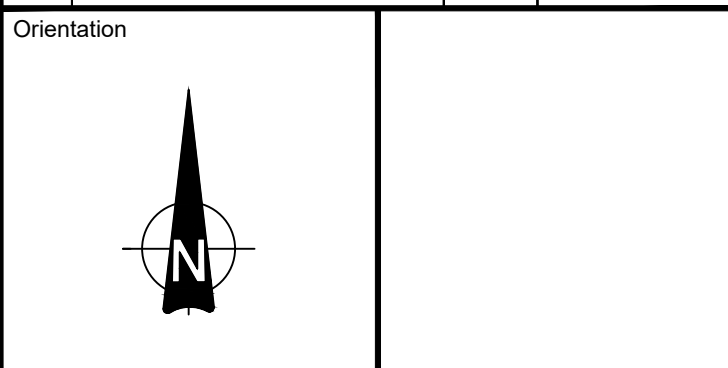
Contractors must check and verify all site conditions. Notify the Owner's Representative in writing before proceeding with the work if discrepancies are evident between the drawings and the site condition. No extras to the contract will be allowed if discrepancies were evident prior to start of work.

UNEXPECTED DISCOVERY OF ASBESTOS:

Where a friable material is discovered during construction, renovations and/or demolition, and it is suspected to contain asbestos, the Contractor must stop all work that may disturb the material. The Contractor shall advise the Owner of the discovery and await instructions from the owner.

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0	ISSUED FOR PERMIT & TENDER	TA	NOV 2, 2018
NO.	ISSUED	BY	DATE



UNIVERSITY OF GUELPH

Design, Engineering & Construction  
Physical Resources  
Guelph, Ontario. N1G 2W1

Consultant

J.R. J.L. Richards  
ENGINEERS - ARCHITECTS - PLANNERS

Project

BUILDING #046  
RENOVATIONS

Drawing Title

HEATING WING B LEVEL 1

Project No.

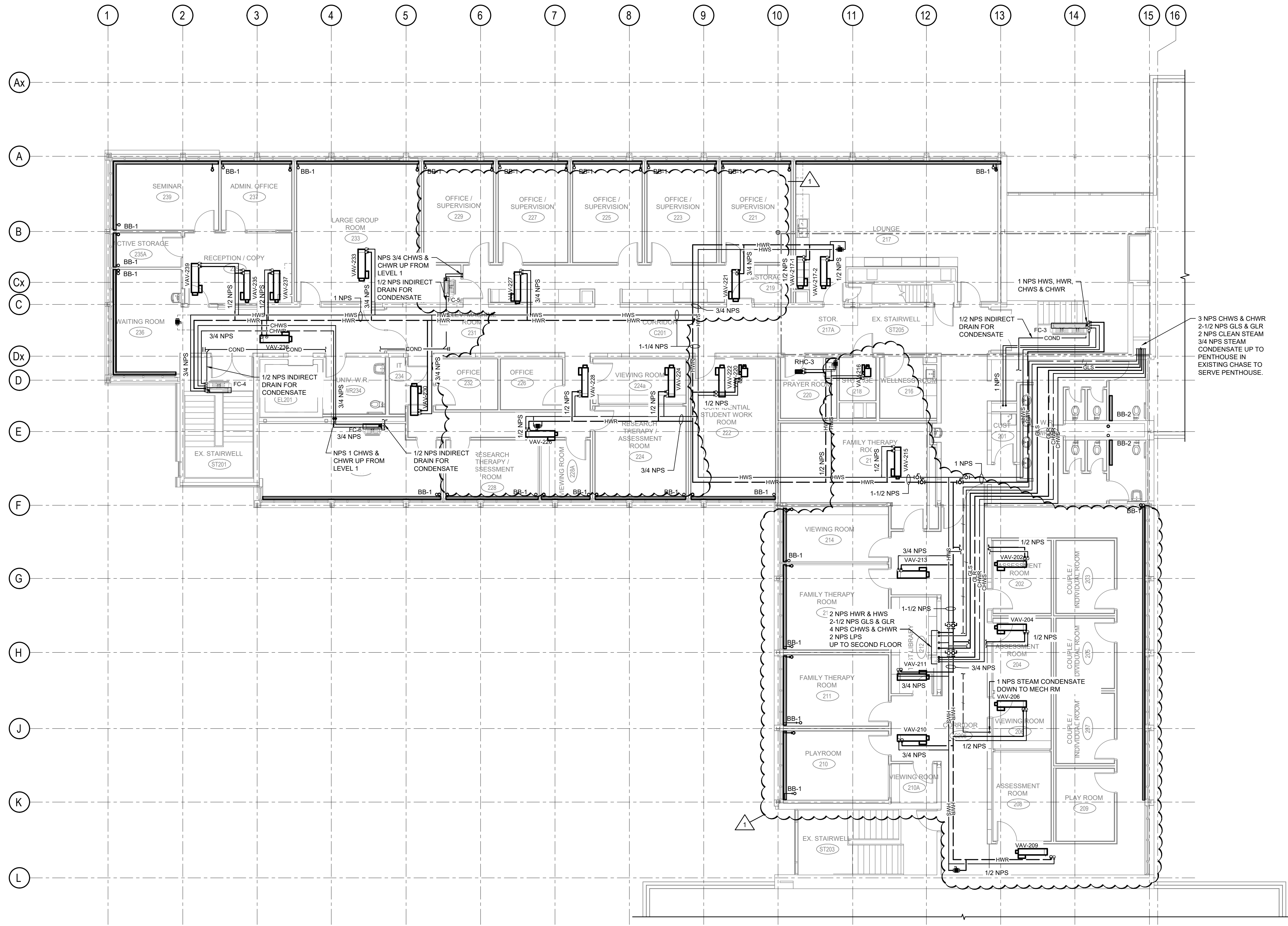
504034

Location

UNIVERSITY OF GUELPH  
BUILDING #46

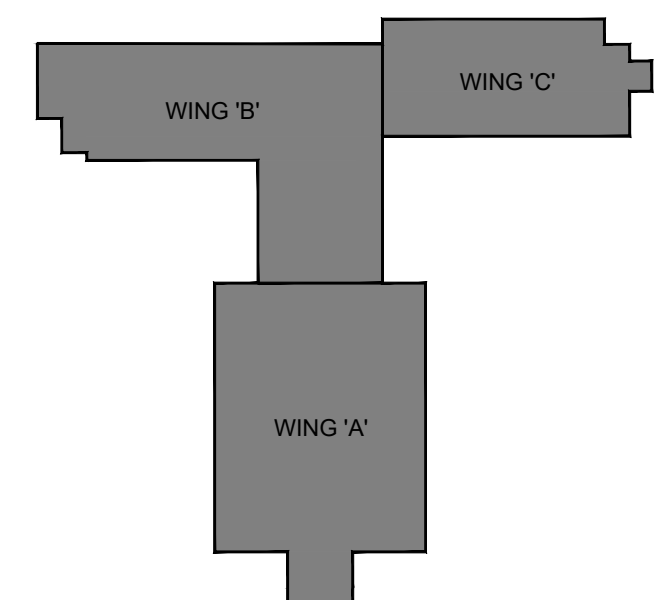
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Drawn by	HW	Drawing No.	M20
Checked By	NC		
Approved By	KT		
JLR #	27915		
Cad File No.	----		





1 HEATING WING B LEVEL 2  
M21 SCALE: 1:100

- GENERAL NOTES:
1. PROVIDE CONTINUOUS INSULATION FOR ALL HEATING AND CHILLER PIPING.
  2. ALL PIPING IN PUBLIC SPACES, AND OFFICES AND STUDENT AREAS TO BE RAN IN PIPE CHASE, BULKHEADS OR CEILING SPACES. NO EXPOSED PIPING IN THESE AREAS.
  3. ALL PIPING THAT IS IN AREAS SUCH AS IT ROOMS, CUSTODIAN CLOSETS, HOUSEKEEPING ETC. TO BE INSULATED AND PROVIDED WITH PCV JACKETING.
  4. PROVIDE INSULATED CONDENSATE DRAIN PIPING FOR ALL DRAIN PANS. CONDENSATE TO HAVE 25mm AIR GAP FOR INDIRECT DRAIN TO NEAREST DRAINAGE PIPING.
  5. PROVIDE DRAINS AT ALL LOW POINTS AND AIR VENTS AT ALL HIGH POINT IN THE SYSTEM.



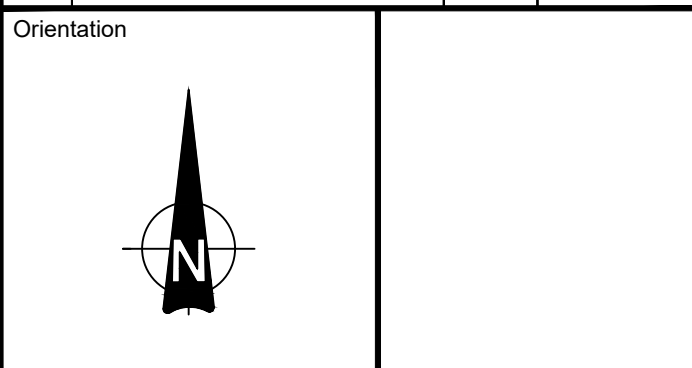
Key Plan

DO NOT SCALE DRAWINGS:  
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Guelph, Ontario. N1G 2W1

Consultant www.jrichards.ca

JR J.L.Richards  
ENGINEERS - ARCHITECTS - PLANNERS

Project  
BUILDING #046  
RENOVATIONS

Drawing Title  
HEATING WING B LEVEL 2

Project No.  
504034

Location  
UNIVERSITY OF GUELPH  
BUILDING #46

Scale AS NOTED	Date APR 12, 2019
Drawn by HW	Drawing No.
Checked By NC	M21
Approved By KDT	
JLR # 27915	
Cad File No. ----	





1. PROVIDE CONTINUOUS INSULATION FOR ALL HEATING AND CHILLER PIPING.
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4. PROVIDE INSULATED CONDENSATE DRAIN PIPING FOR ALL DRAIN PANS.  
 4.1. TEMPERATURE TO HAVE 25mm AIR GAP FOR INDIRECT DRAIN TO NEAREST DRAINAGE PIPING.
5. PROVIDE DRAINS AT ALL LOW POINTS AND AIR VENTS AT ALL HIGH POINT IN THE SYSTEM.

Se:

Cad File No. ----

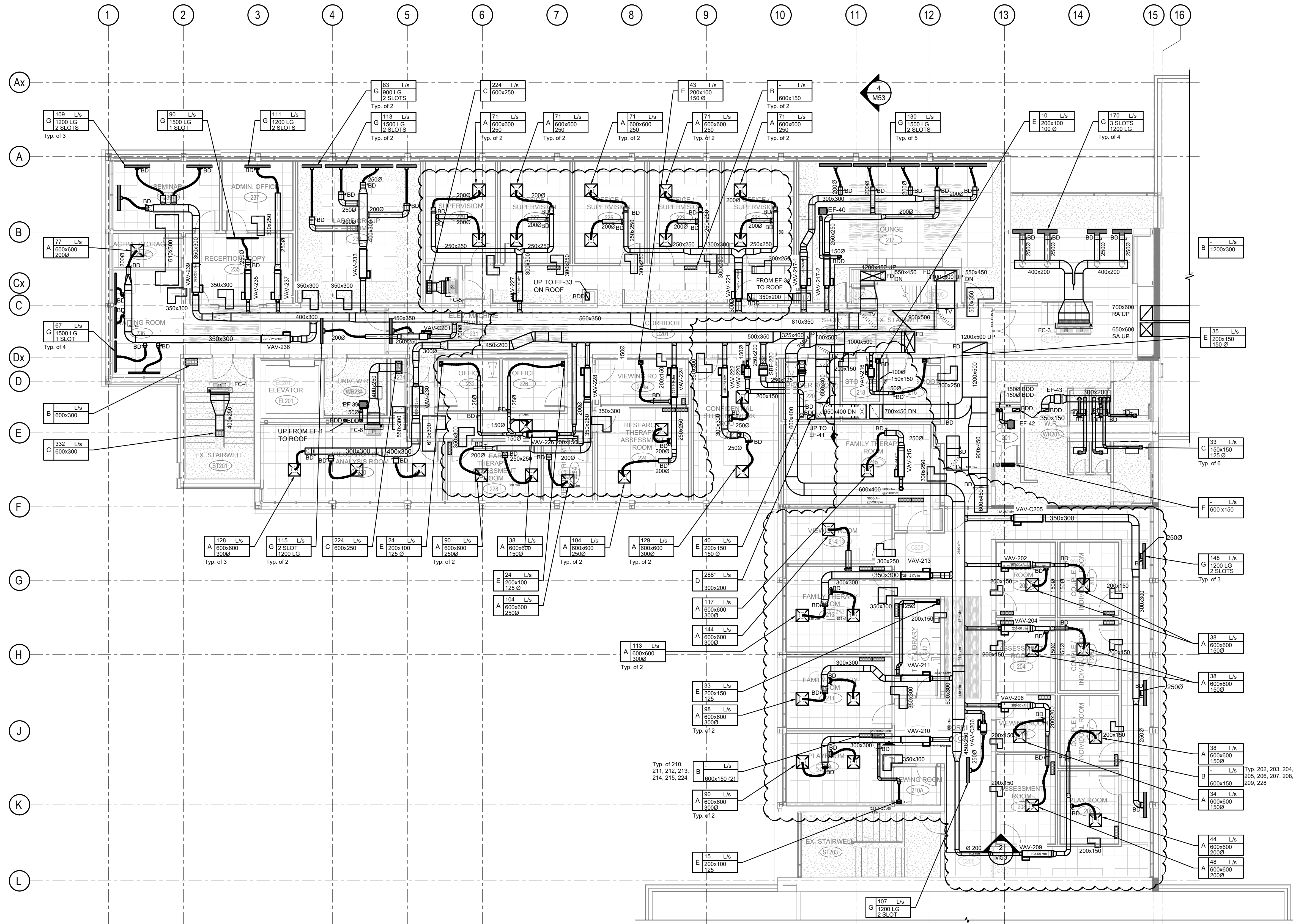
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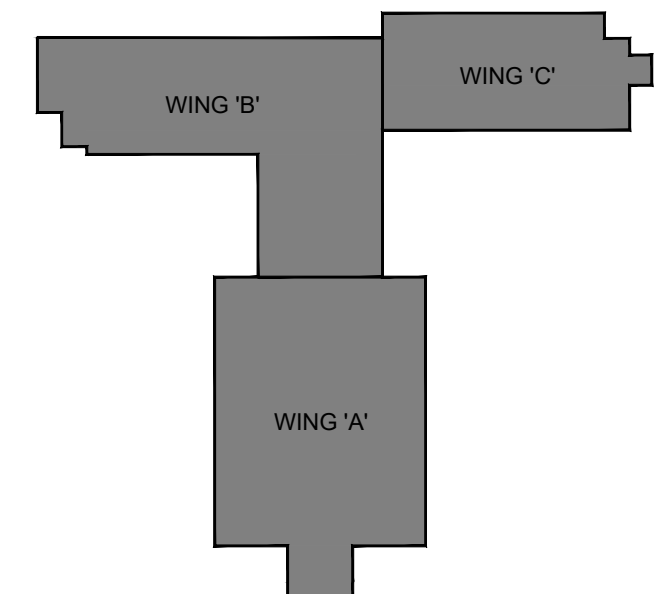
DO NOT SCALE DRAWINGS:





**1 VENTILATION WING B LEVEL 2(2)**  
M31 SCALE: 1:100

- GENERAL NOTES:
1. ALL DIMENSIONS SHOWN ON DRAWINGS ARE CLEAR INSIDE DUCT DIMENSIONS.
  2. ALL SUPPLY DUCT TO BE INSULATED.
  3. ALL FIRE DAMPERS TO BE DYNAMIC, "TYPE B" INSTALLATION WITH BLADE STACK OUTSIDE OF AIR STREAM.
  4. ALL EXHAUST DUCT TO BE INSULATED 3000 mm MINIMUM FROM TERMINATION POINT.
  5. BACK DRAFT DAMPERS TO BE INSTALLED FOR ALL EXHAUST WHERE MOTORIZED DAMPER IS NOT. INSTALL BACK DRAFT DAMPER AS NEAR TO TERMINATION POINT AS POSSIBLE.
  6. PROVIDE BALANCING DAMPERS ON ALL SUPPLY, RETURN AND EXHAUST DUCT BRANCHES.
  7. ALL TRANSFER DUCTS TO BE ACOUSTICALLY LINED.
  8. PROVIDE INDIRECT DRAIN FOR ALL FAN COIL UNITS, INSULATE MINIMUM OF 3000mm FROM UNIT WHERE APPLICABLE.
  9. VAV BOXES TO BE INSTALLED BETWEEN OWSJ WITH CLEARANCE ON THE CONTROLS AND HEATING COIL SIDE. COORDINATE CONTROLS AND COIL CONNECTIONS ON SIDE THAT BEST SUITS MAINTENANCE.
  10. PROVIDE UNISTRUT DUCT SUPPORT AT ALL WOOD FEATURE CEILINGS WITH A MAXIMUM OF 1200mm SPACING.



Key Plan

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Guelph, Ontario. N1G 2W1

Consultant **J.R. J.L. Richards**  
ENGINEERS - ARCHITECTS - PLANNERS

Project  
**BUILDING #046 RENOVATIONS**

Drawing Title  
**VENTILATION WING B LEVEL 2**  
Project No.  
**504034**

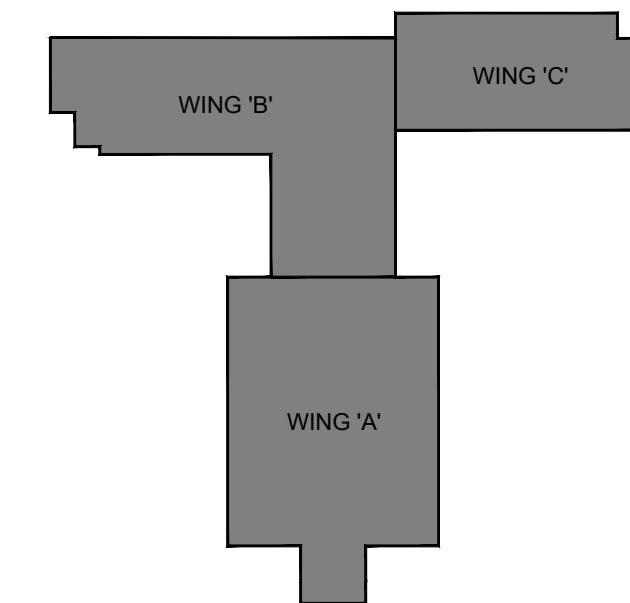
Location  
**UNIVERSITY OF GUELPH BUILDING #46**

Scale AS NOTED	Date APR 12, 2019
Drawn by HW	Drawing No.
Checked By NC	<b>M31</b>
Approved By KT	
JLR # 27915	
Cad File No. ----	



2 SECTION A-A(2)  
M32 SCALE: 1:100

1. ALL DIMENSIONS SHOWN ON DRAWINGS ARE CLEAR INSIDE DUCT DIMENSIONS.
2. ALL SUPPLY DUCT TO BE INSULATED.
3. ALL FIRE DAMPERS TO BE DYNAMIC, "TYPE-B" INSTALLATION WITH BLADE STICK OUTSIDE OF AIR STREAM.
4. EXHAUST DUCT TO BE INSULATED 3000 mm MINIMUM FROM TERMINATION POINT.
5. BACK DRAFT DAMPERS TO BE INSTALLED FOR ALL EXHAUST WHERE MOTORIZED DAMPER IS NOT. INSTALL BACK DRAFT DAMPER AS NEAR TO TERMINATION POINT AS POSSIBLE.
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7. ALL TRANSFER DUCTS TO BE ACOUSTICALLY LINED.
8. PROVIDE INDIRECT DRAIN FOR ALL FAN COIL UNITS. INSULATE MINIMUM OF 300mm from UNIT WHERE APPLICABLE.
9. VAV BOXES TO BE INSTALLED BETWEEN DOWNS, WITH CLEARANCE ON THE CONTROLS AND HEATING COIL. SIDE COORDINATE CONTROLS AND COIL CONNECTIONS ON SIDE THAT BEST SUITS MAINTENANCE.




### Key Plan

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NO.	ISSUED	BY	DATE

Orientation	
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Seal

Seal

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of GUELPH

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Physical Resources  
Guelph, Ontario. N1G 2W1

Consultant

[www.jlrichards.ca](http://www.jlrichards.ca)



Project

## BUILDING #046 RENOVATIONS

Drawing Title

VENTILATION WING C  
LEVEL 1

Project No.  
**504034**

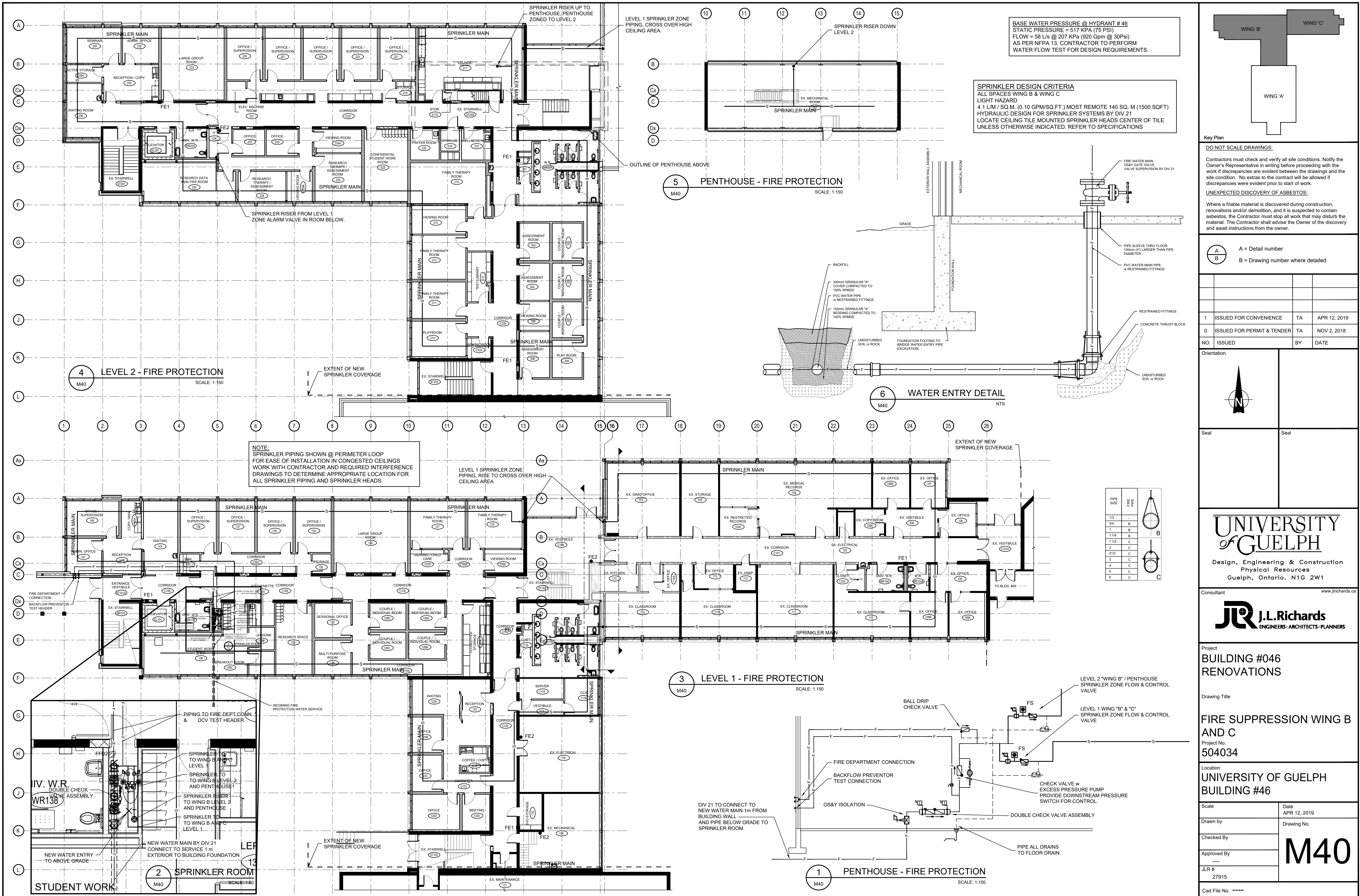
Location  
UNIVERSITY OF GUELPH  
BUILDING #46

Scale AS NOTED	Date APR 12, 2019
Drawn by HW	Drawing No.  <div style="font-size: 48pt; font-weight: bold; text-align: center;">M</div>
Checked By NC	
Approved By KDT	
JLR # 27915	

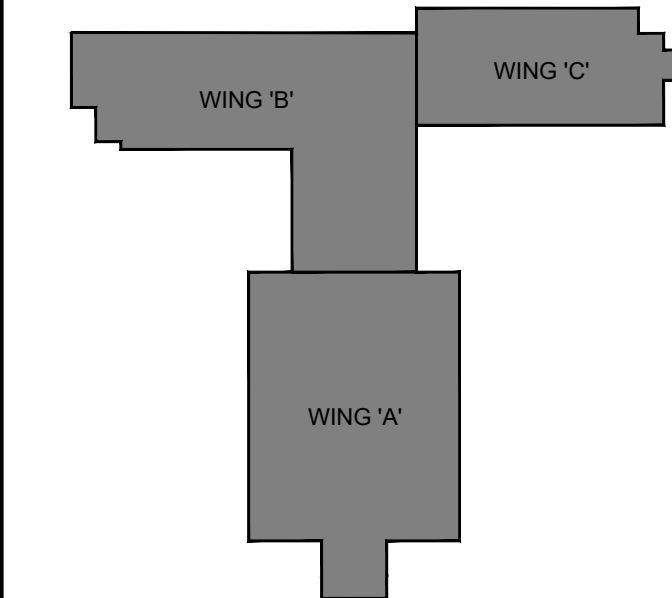
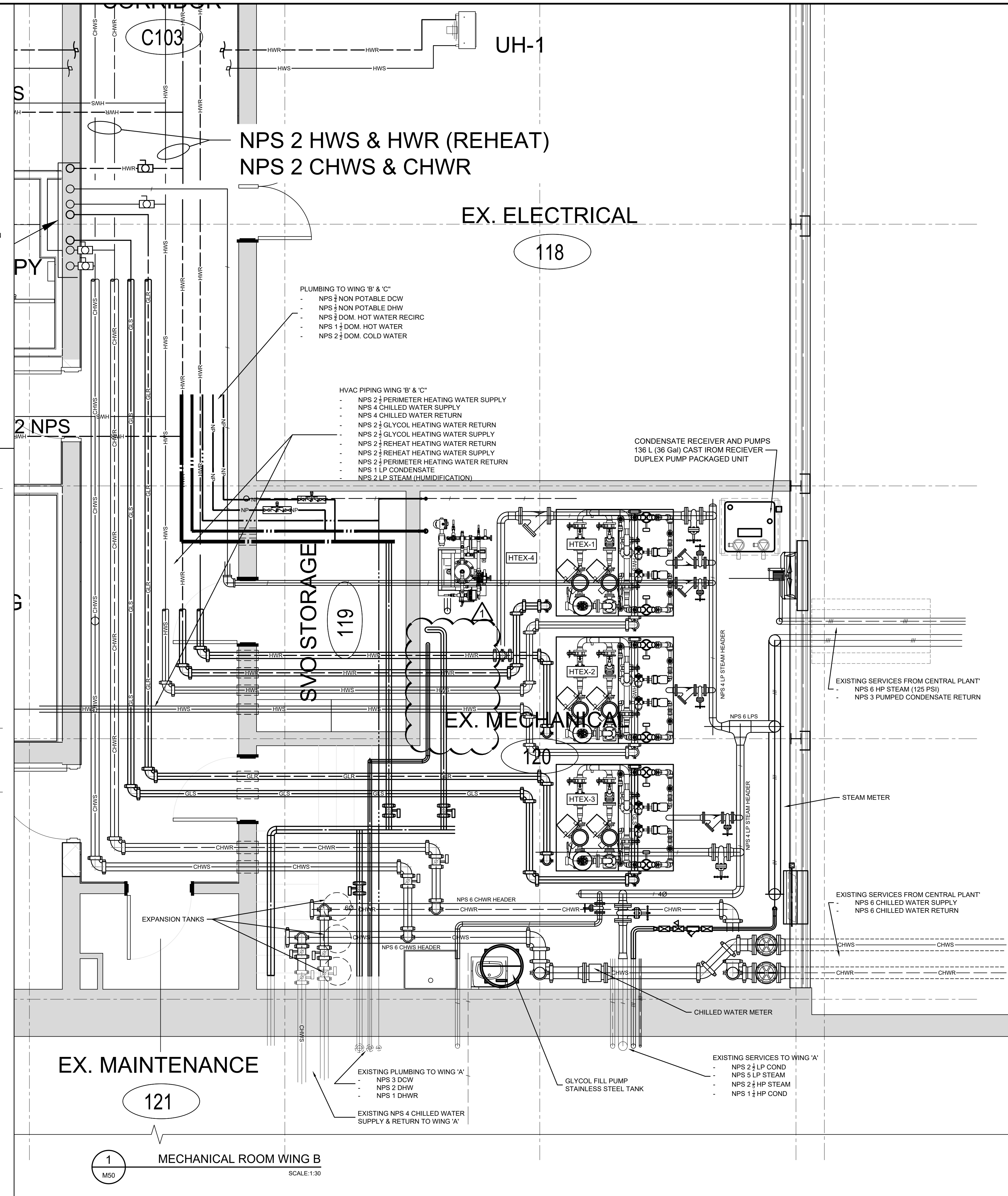
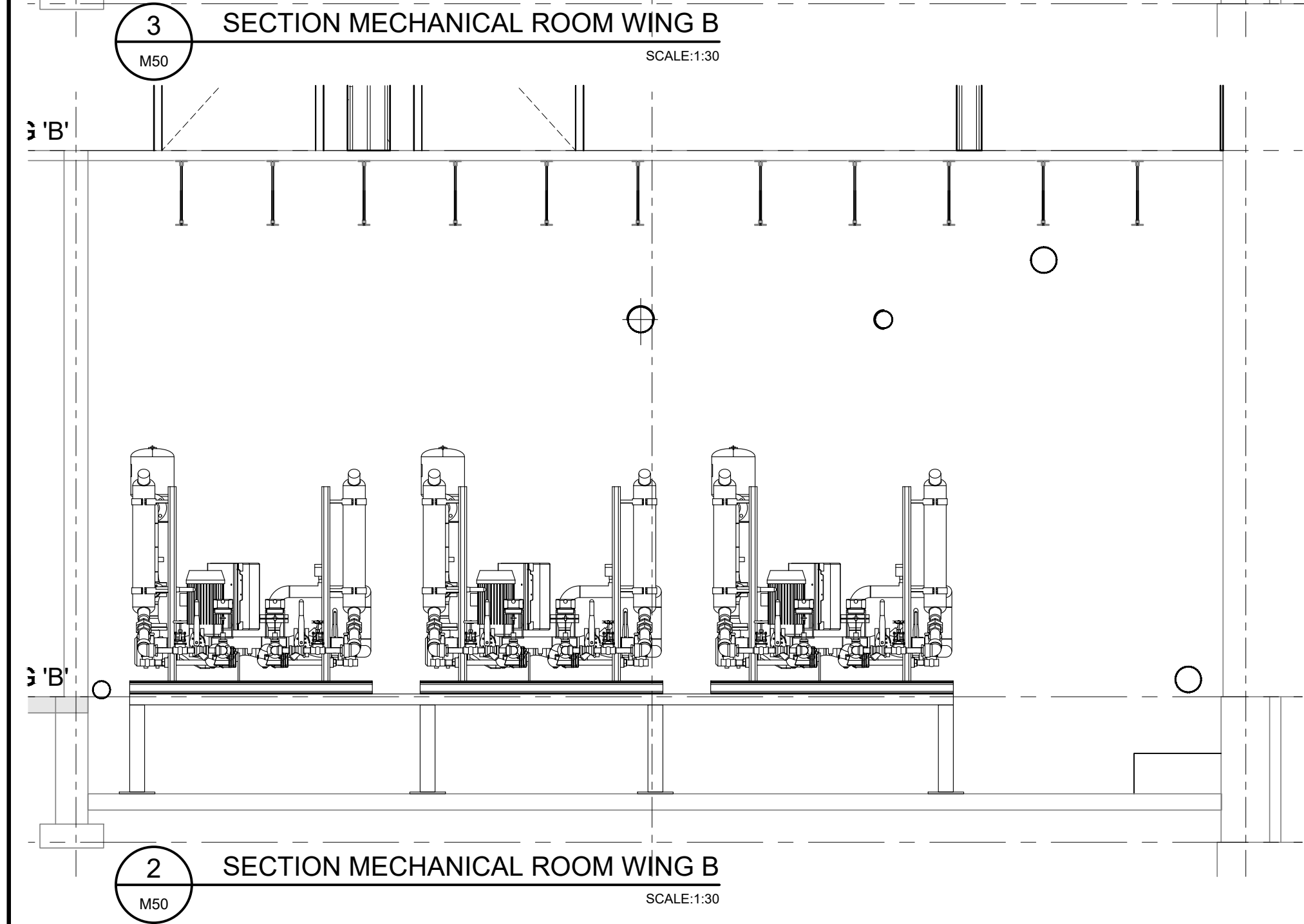
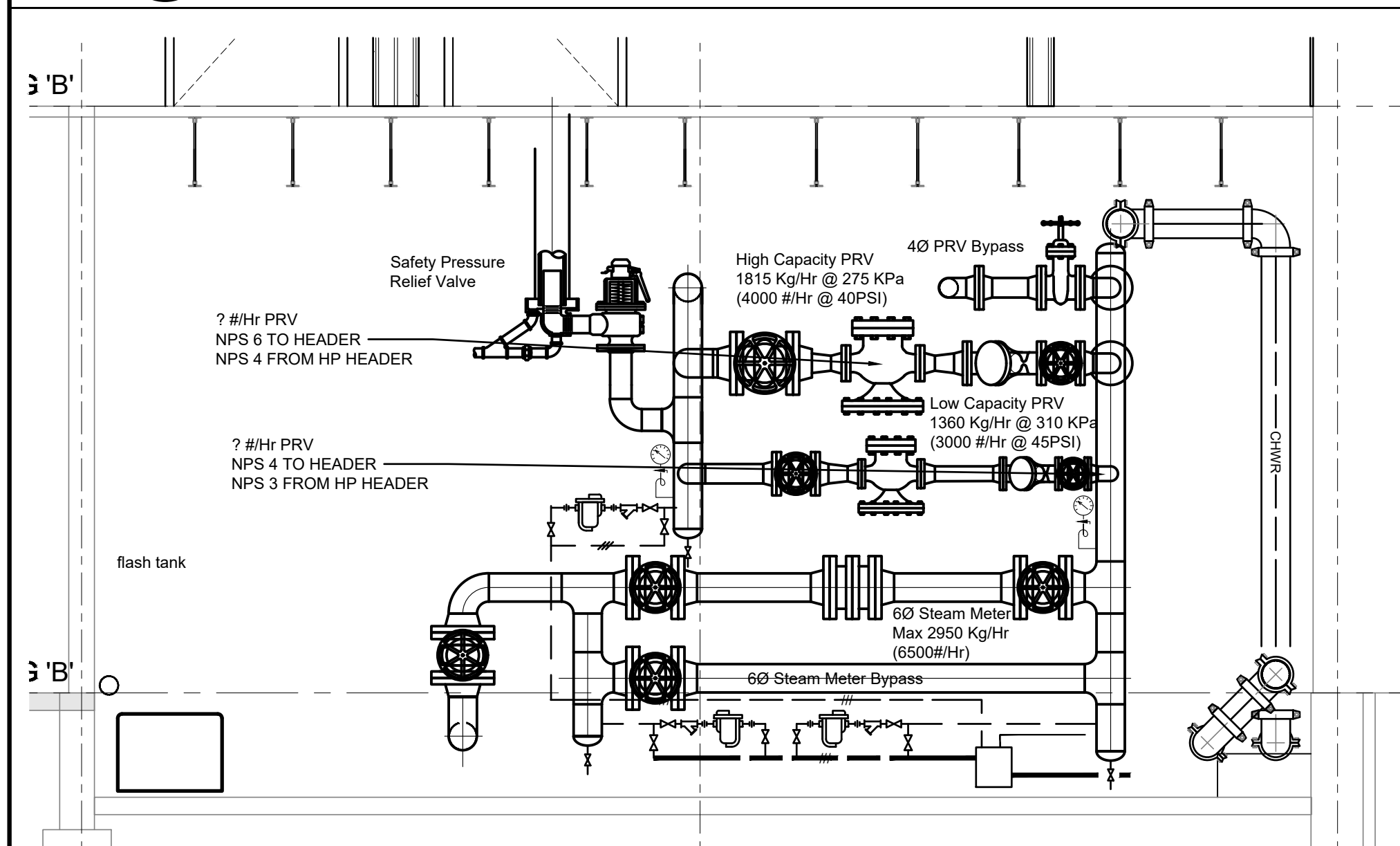
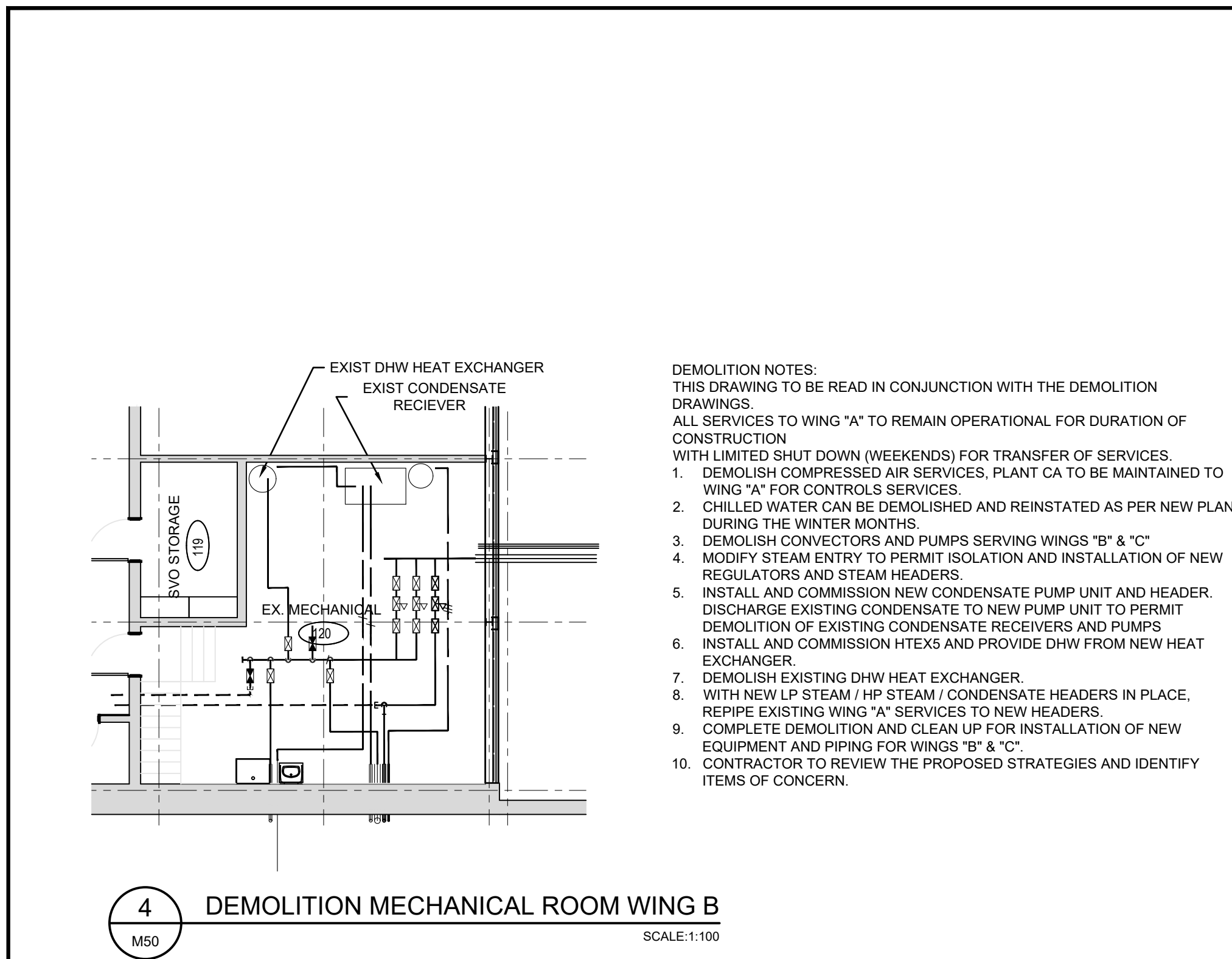
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Cad File No. ----









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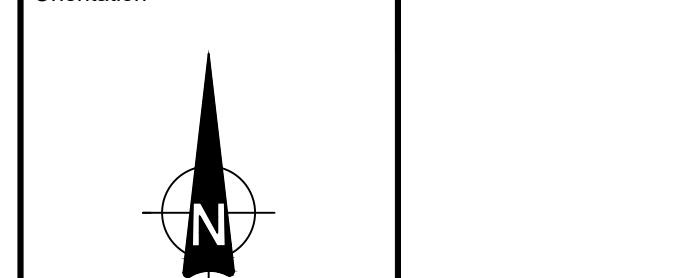
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Orientation



Seal

Seal

**UNIVERSITY OF GUELPH**  
Design, Engineering & Construction  
Physical Resources  
Guelph, Ontario. N1G 2W1

Consultant  
**J.R. J.L. Richards**  
ENGINEERS - ARCHITECTS - PLANNERS

Project  
**BUILDING #046 RENOVATIONS**

Drawing Title  
**MECHANICAL ROOM WING B**

Project No.  
**504034**

Location  
**UNIVERSITY OF GUELPH BUILDING #46**

Scale  
Date  
APR 12, 2019

Drawn by  
Drawing No.

Checked By

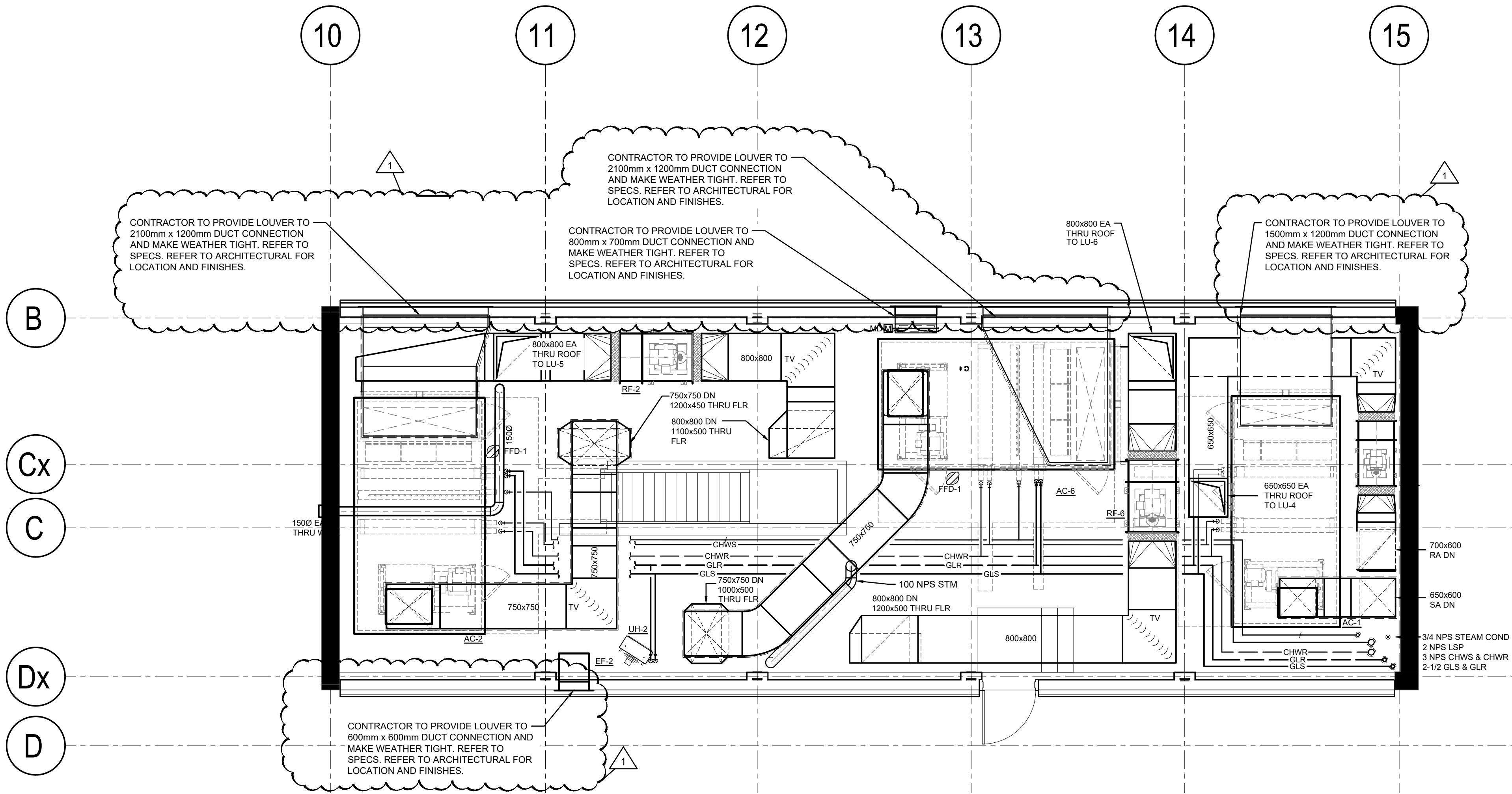
Approved By

JLR #  
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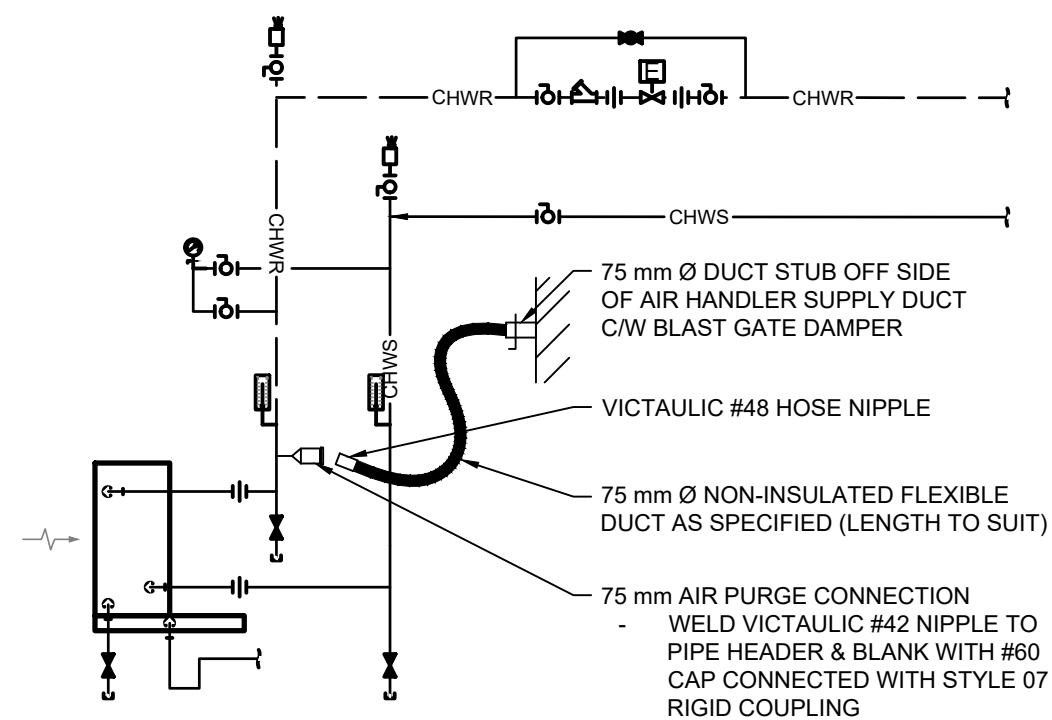
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**M50**



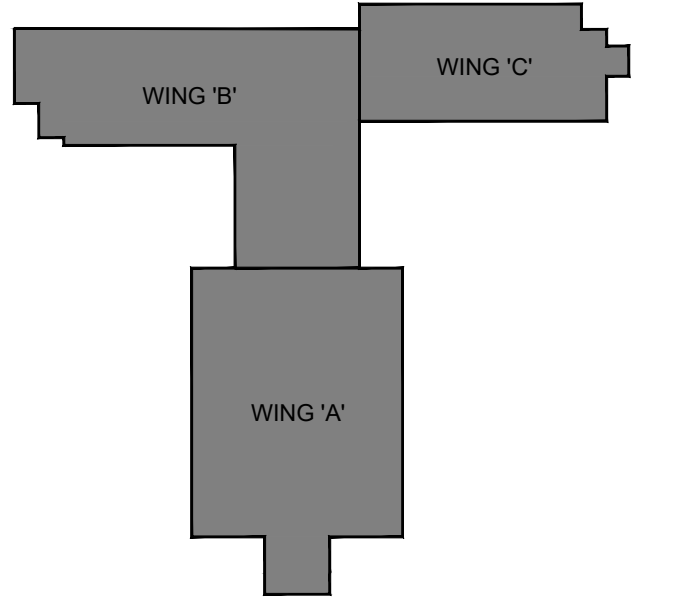


1 PENTHOUSE WING B  
SCALE: 1:50



2 CHILLED WATER BLOW DOWN  
SCALE: NTS

- GENERAL NOTES:
1. INSTALLATION OF DUCT WORK TO BE TIGHT TO U/S OF OWSJ.
  2. INSTALLATION OF DUCTWORK TO BE AS TIGHT TO U/S OF DUCT WORK AS POSSIBLE.
  3. PROVIDE FREE STANDING EQUIPMENT CONTROLS STANDS FOR ALL CABINETS REQUIRED.



Key Plan

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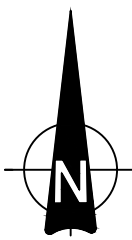
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Orientation



Seal

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**JR J.L.Richards**  
ENGINEERS - ARCHITECTS - PLANNERS

Project  
**BUILDING #046  
RENOVATIONS**

Drawing Title  
**PENTHOUSE WING B**

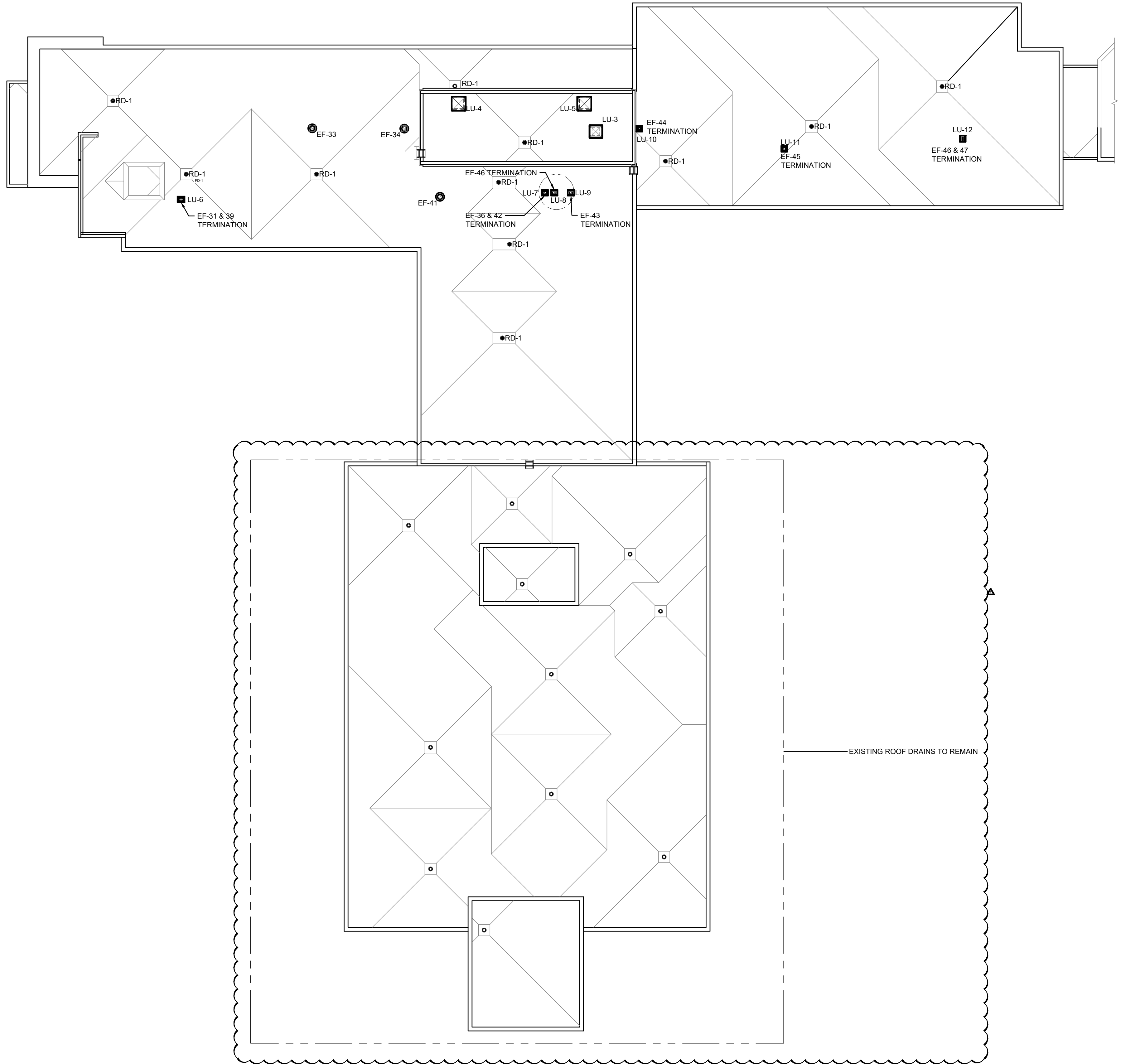
Project No.  
**504034**

Location  
**UNIVERSITY OF GUELPH  
BUILDING #46**

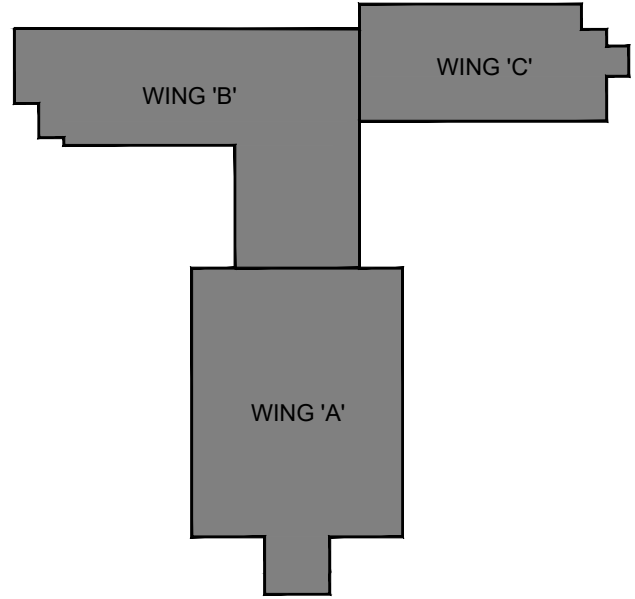
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Drawn by HW	Drawing No. <b>M51</b>
Checked By NC	
Approved By KDT	
JLR # 27915	

Cad File No. ----





1 ROOF PLAN  
M52 SCALE: 1:200



Key Plan

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Orientation

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Consultant

**J.L. Richards**  
ENGINEERS - ARCHITECTS - PLANNERS

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Project  
**BUILDING #046  
RENOVATIONS**

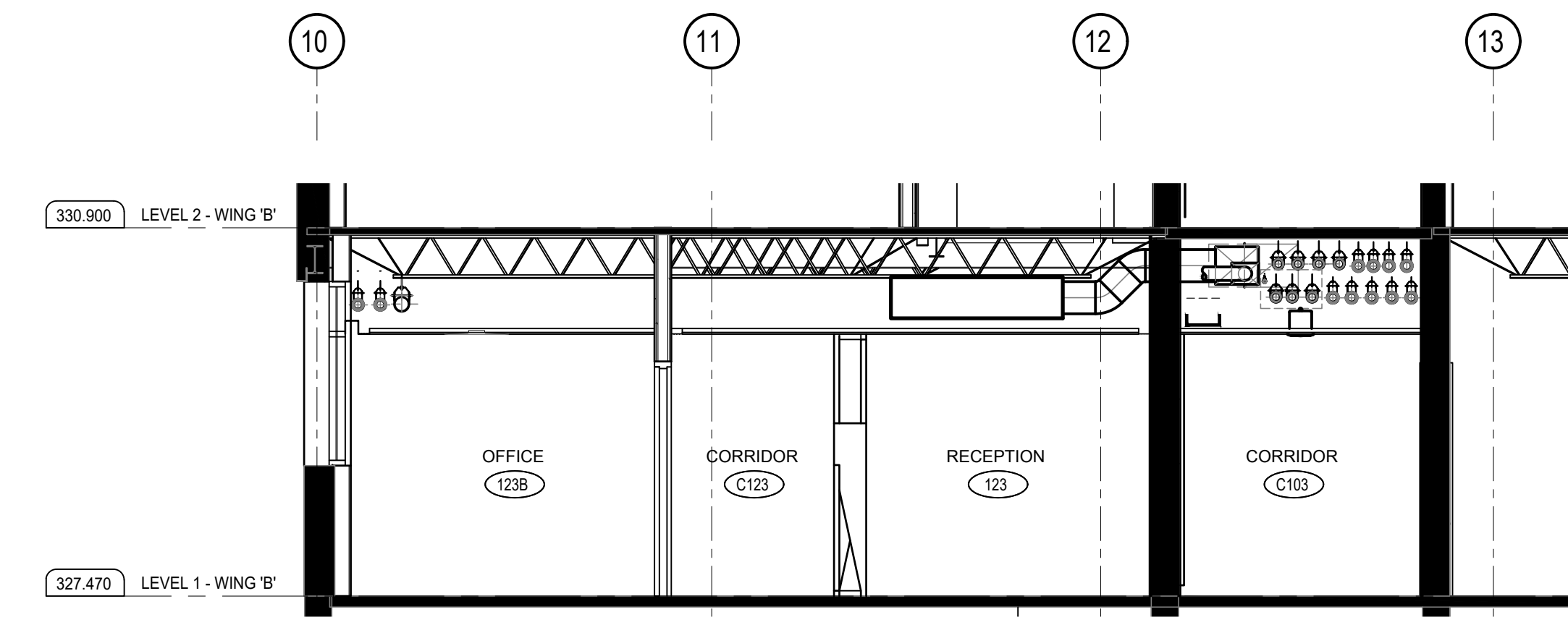
Drawing Title  
**ROOF PLAN**

Project No.  
**504034**

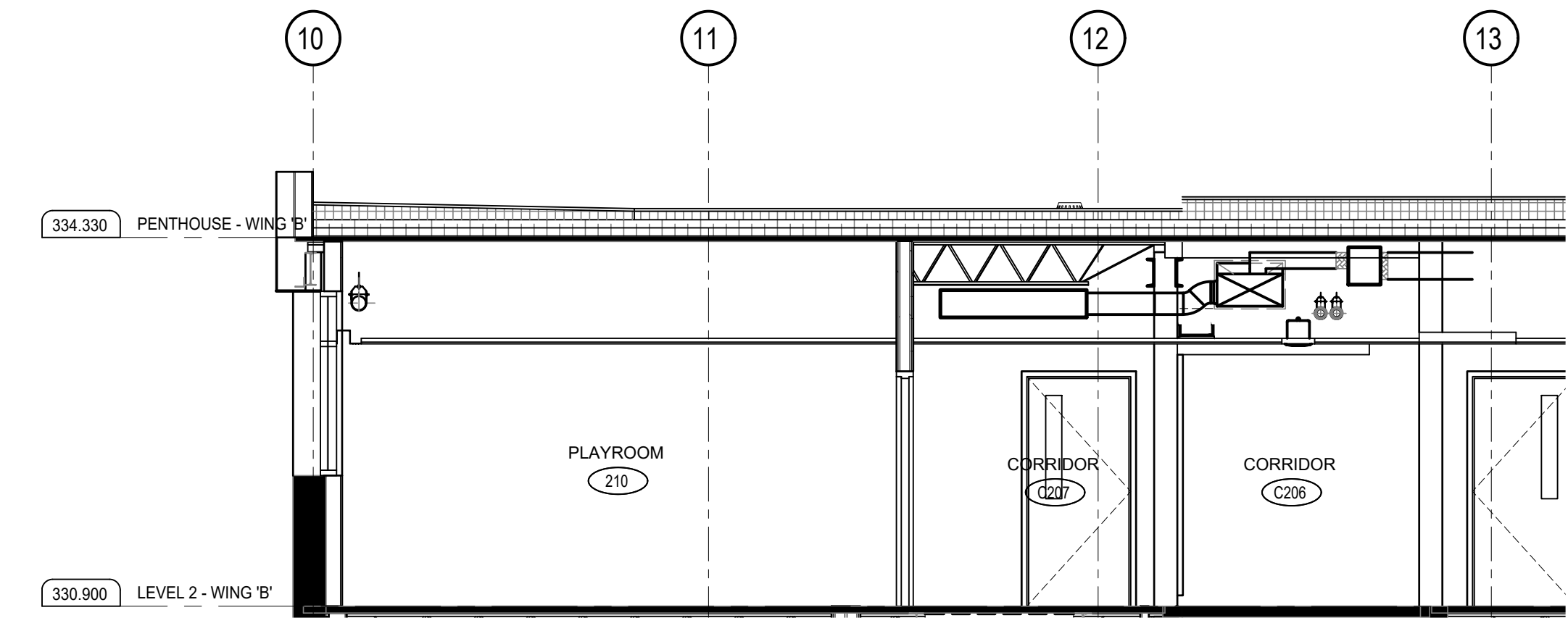
Location  
**UNIVERSITY OF GUELPH  
BUILDING #46**

Scale	Date APR 12, 2019
Drawn by	Drawing No.
Checked By	<b>M52</b>
Approved By	
JLR # 27915	
Cad File No. ----	

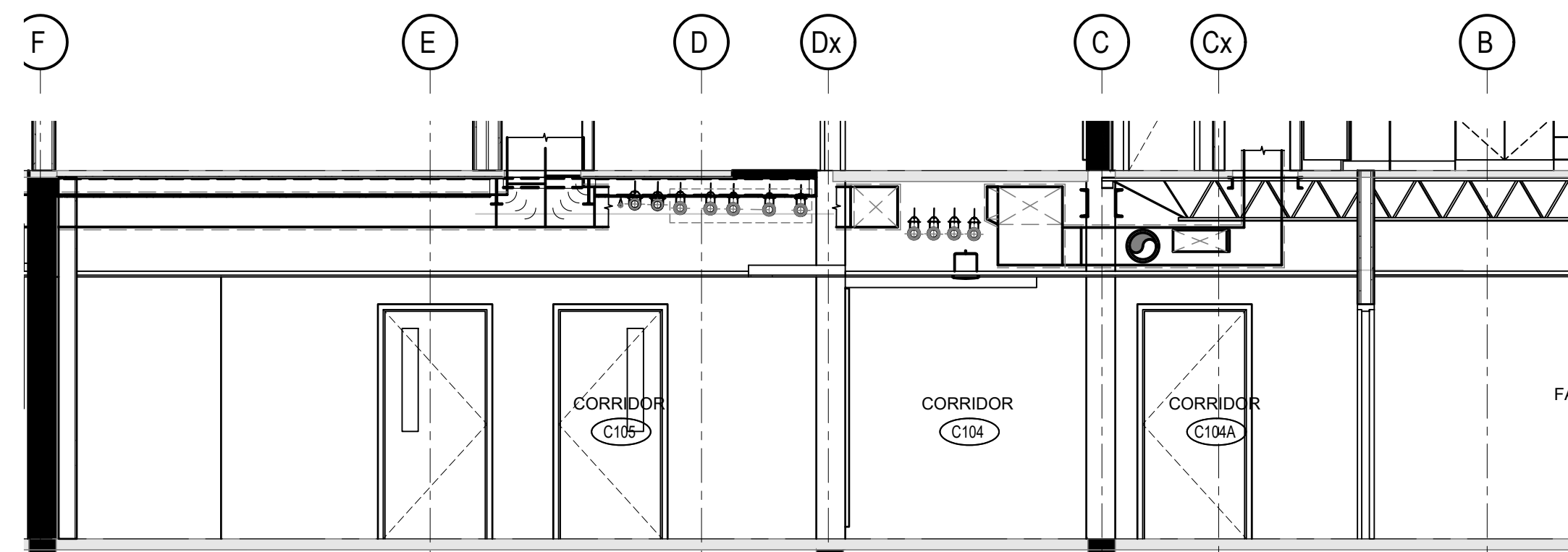




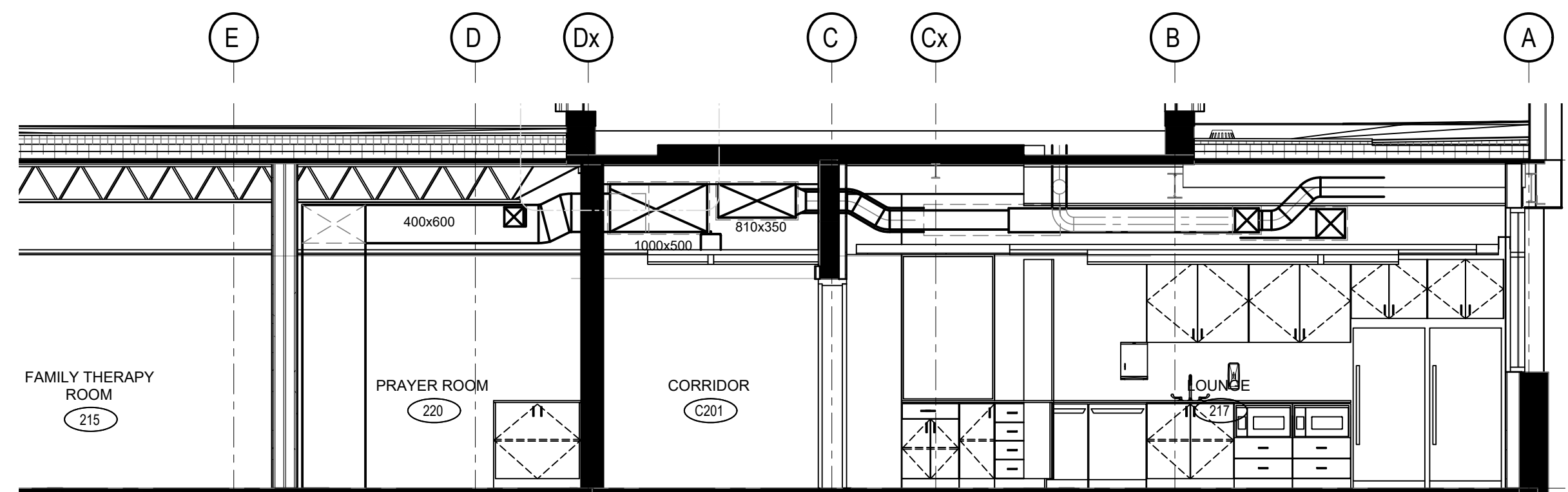
**1** MECHANICAL SECTION 1  
M53 SCALE: 1:50



**2** MECHANICAL SECTION 2  
M53 SCALE: 1:50



**3** MECHANICAL SECTION 3  
M53 SCALE: 1:50



**4** MECHANICAL SECTION 4  
M53 SCALE: 1:50

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Orientation	
Seal	Seal

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**JLR J.L. Richards**  
ENGINEERS - ARCHITECTS - PLANNERS

Project  
**BUILDING #046  
RENOVATIONS**

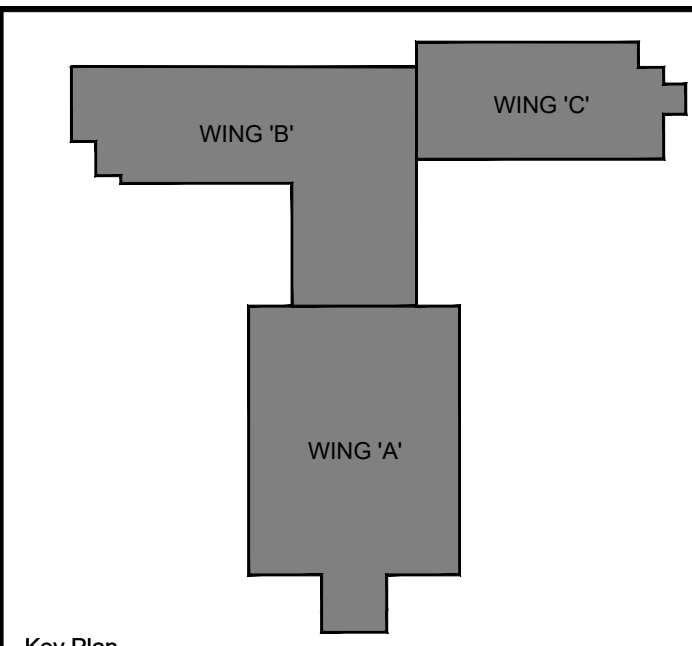
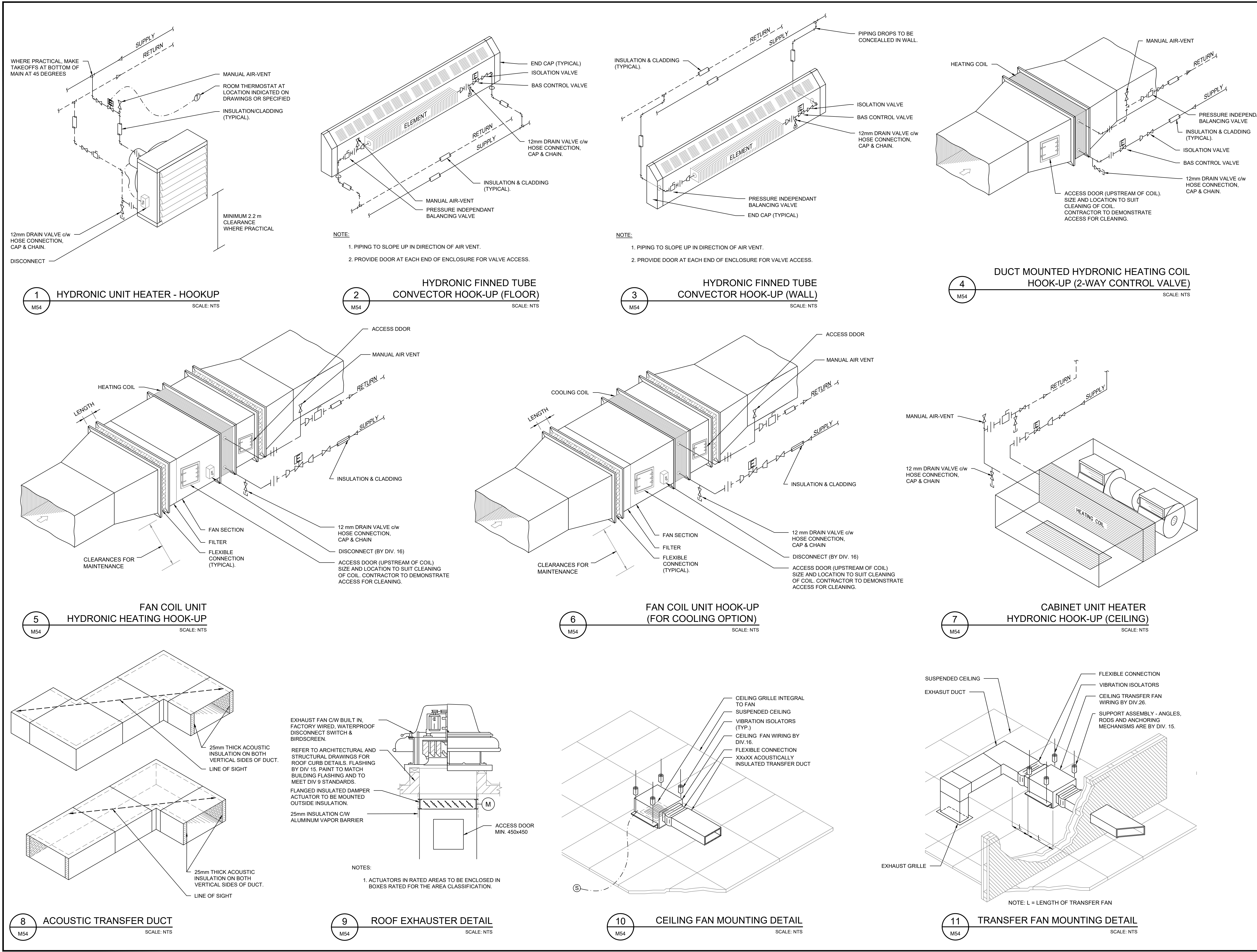
Drawing Title  
**MECHANICAL SECTIONS**

Project No.  
**504034**

Location  
**UNIVERSITY OF GUELPH  
BUILDING #46**

Scale	Date APR 12, 2019
Drawn by	Drawing No.
Checked By	M53
Approved By	
LR # 27915	
Cad File No. ----	





**Key Plan**

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1	ISSUED FOR CONVENIENCE	TA	APR 12, 2019
0	ISSUED FOR PERMIT & TENDER	TA	NOV 2, 2018
NO.	ISSUED	BY	DATE

Orientation

Seal

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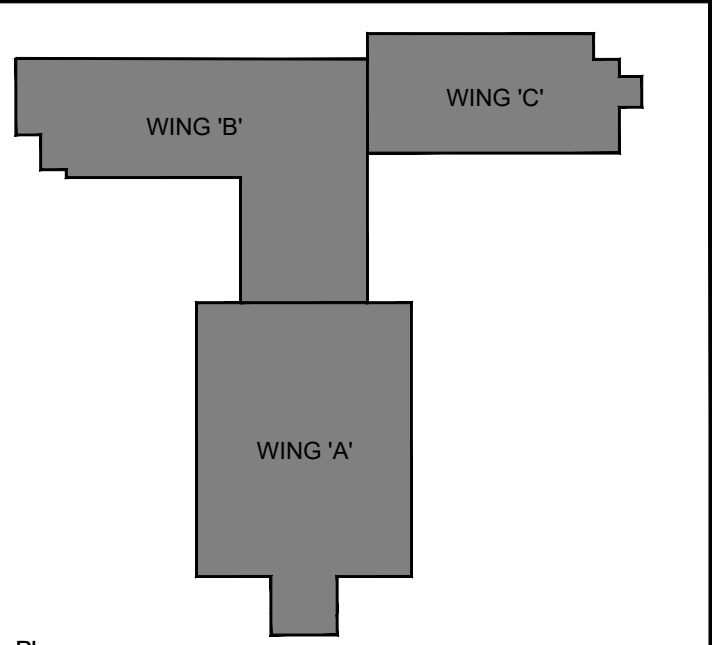
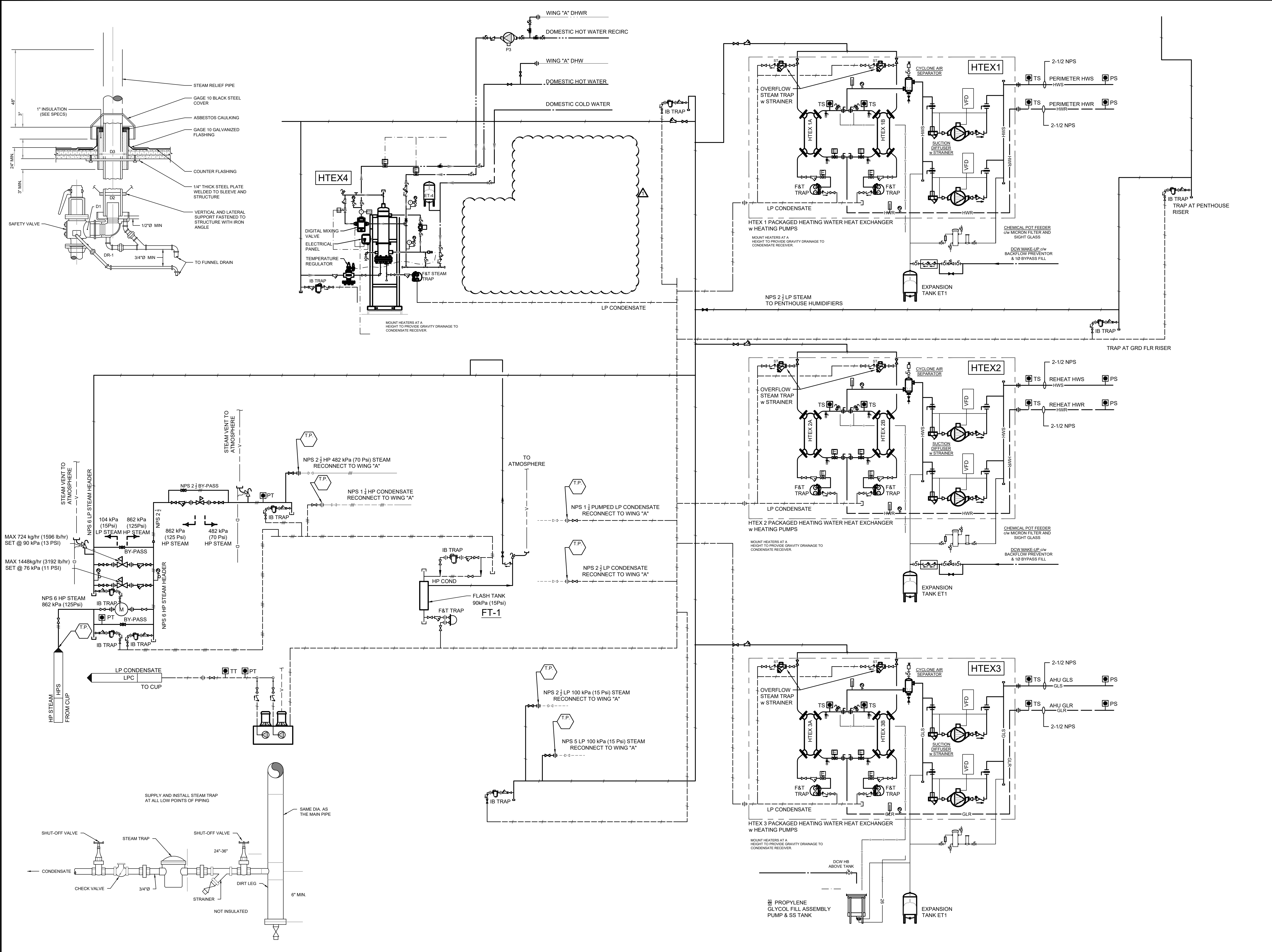
Project  
**BUILDING #046  
RENOVATIONS**

Drawing Title  
**MECHANICAL STANDARD  
DETAILS**  
Project No.  
**504034**

Location  
**UNIVERSITY OF GUELPH  
BUILDING #46**

Scale NTS	Date APR 12, 2019
Drawn by HW	Drawing No.
Checked By KT	M54
Approved By JE	
JLR # 27915	
Cad File No. ----	





**Key Plan**

**DO NOT SCALE DRAWINGS:**

Contractors must check and verify all site conditions. Notify the Owner's Representative in writing before proceeding with the work if discrepancies are evident between the drawings and the site condition. No extras to the contract will be allowed if discrepancies were evident prior to start of work.

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2	ISSUED FOR CONVENIENCE	TA	APR 12, 2019
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0	ISSUED FOR PERMIT & TENDER	TA	NOV 2, 2018
NO.	ISSUED	BY	DATE

Orientation

Seal

Seal

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Project

**BUILDING #046 RENOVATIONS**

Drawing Title

**STEAM DISTRIBUTION SCHEMATIC**

Project No.

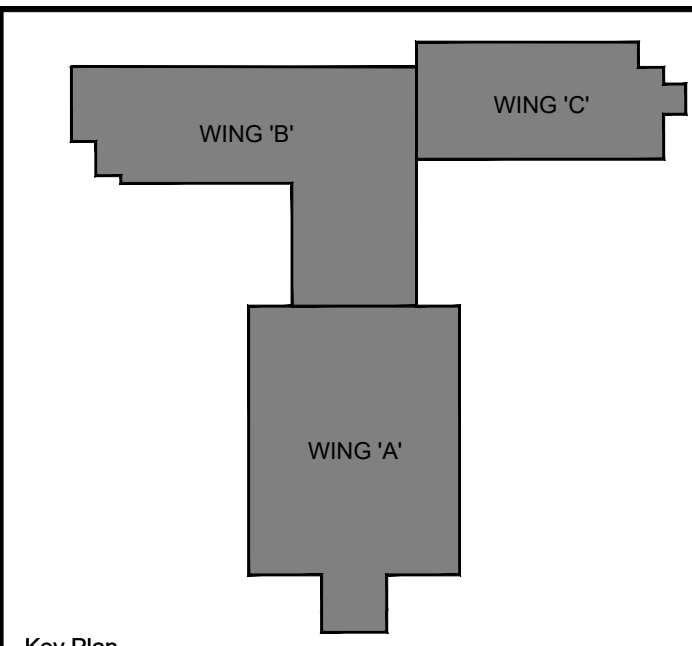
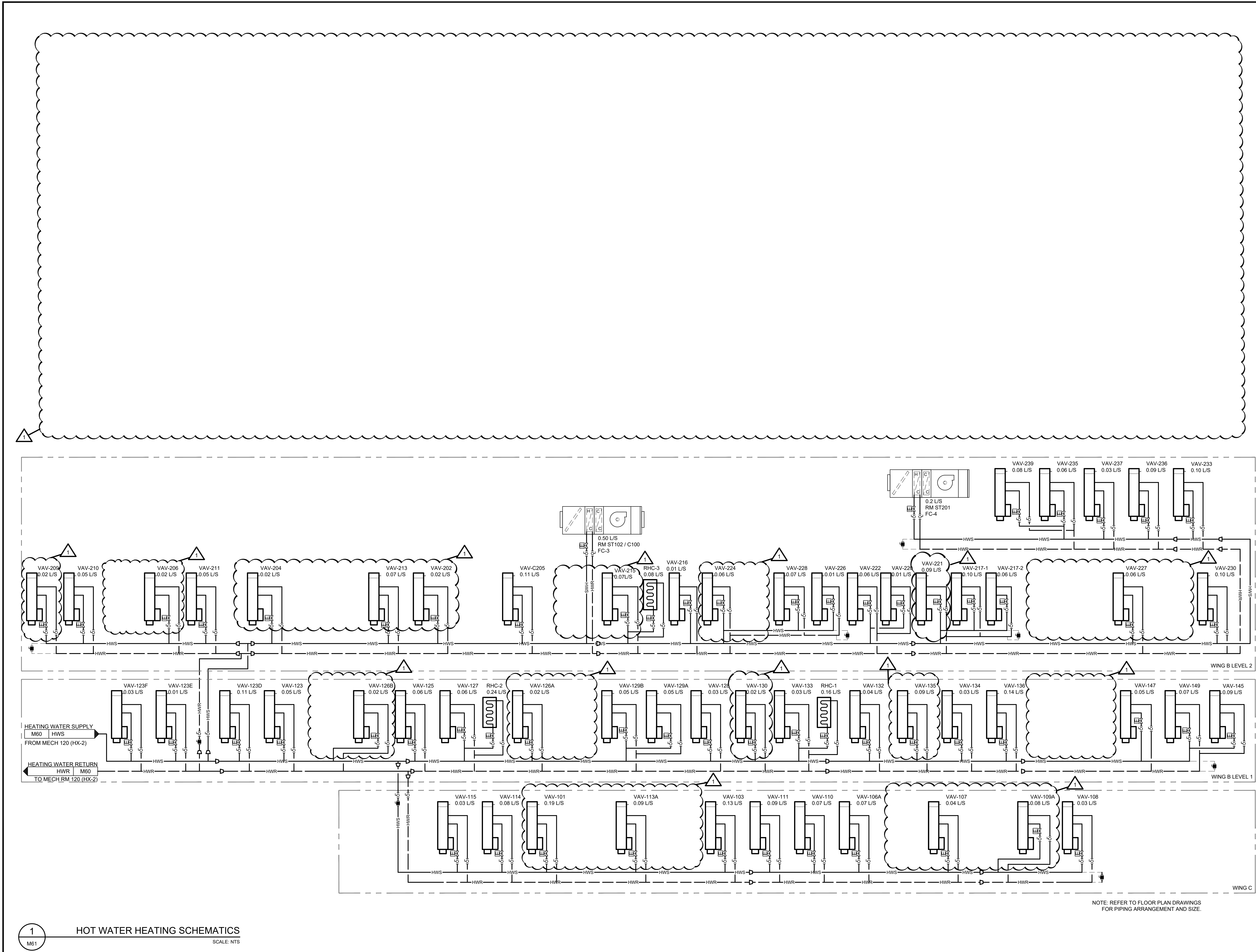
**504034**

Location

**UNIVERSITY OF GUELPH BUILDING #46**

Scale	NTS	Date	APR 12, 2019
Drawn by	HDW	Drawing No.	M60
Checked By	NC		
Approved By	KDT		
JLR #	27915		
Cad File No.	----		





**Key Plan**

DO NOT SCALE DRAWINGS:

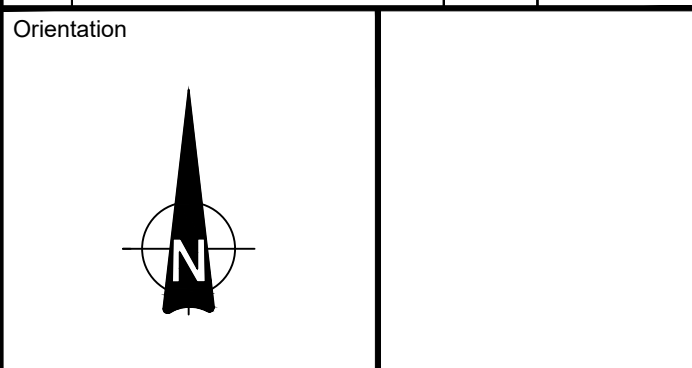
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Seal

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Project  
**BUILDING #046 RENOVATIONS**

Drawing Title

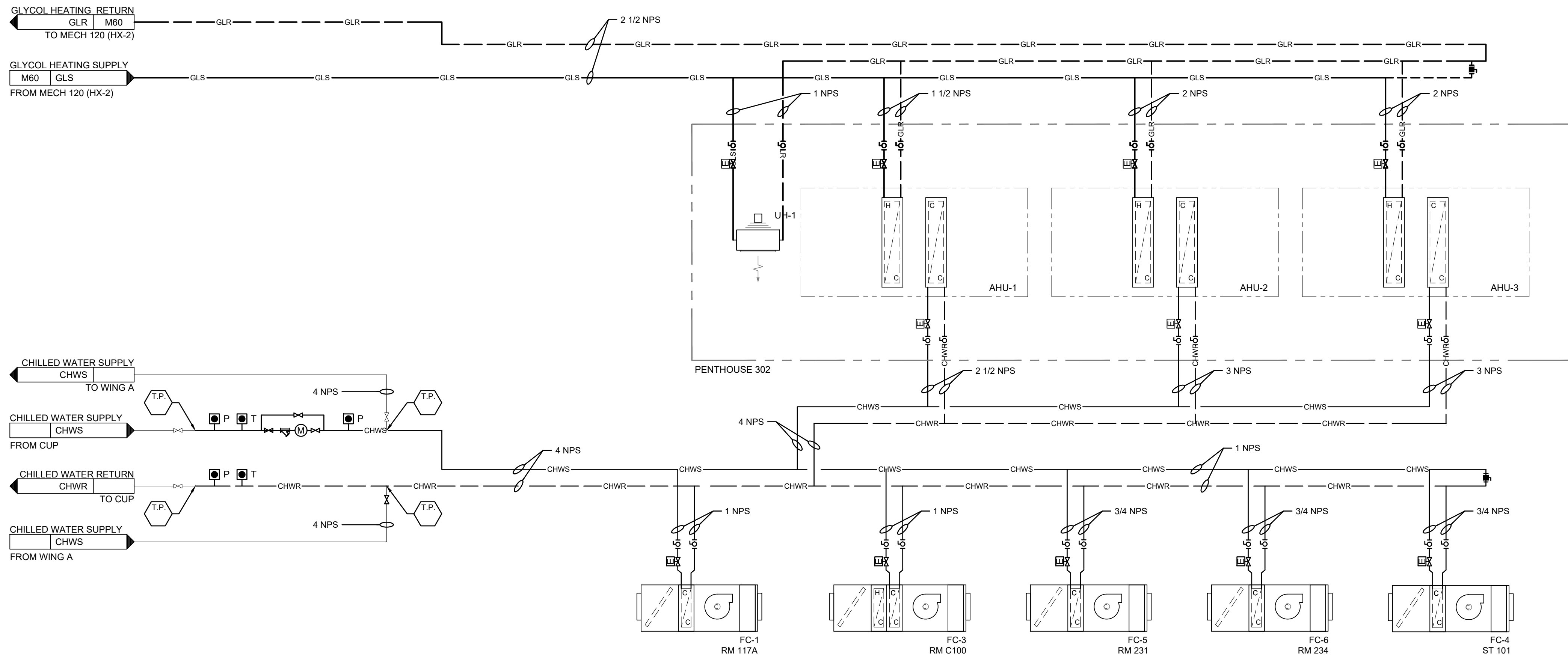
**HOT WATER HEATING SCHEMATICS**

Project No.  
**504034**

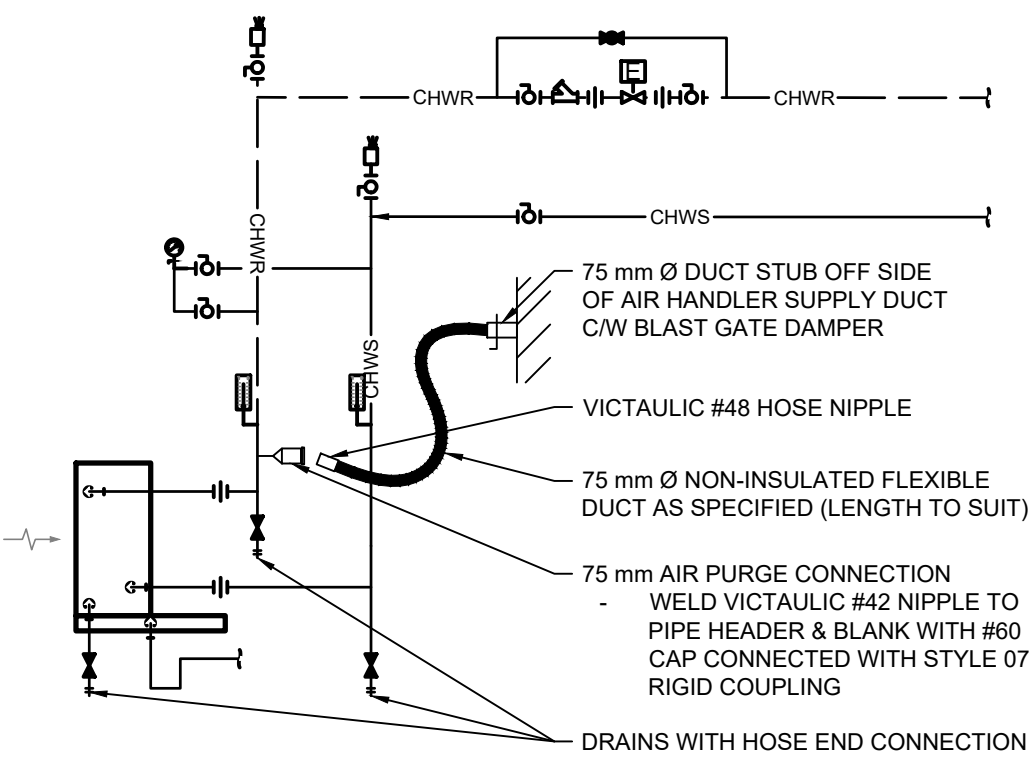
Location  
**UNIVERSITY OF GUELPH BUILDING #46**

Scale NTS	Date APR 12, 2019
Drawn by HW	Drawing No.  <b>M61</b>
Checked By NC	
Approved By KDT	
JLR # 27915	
Cad File No. ----	

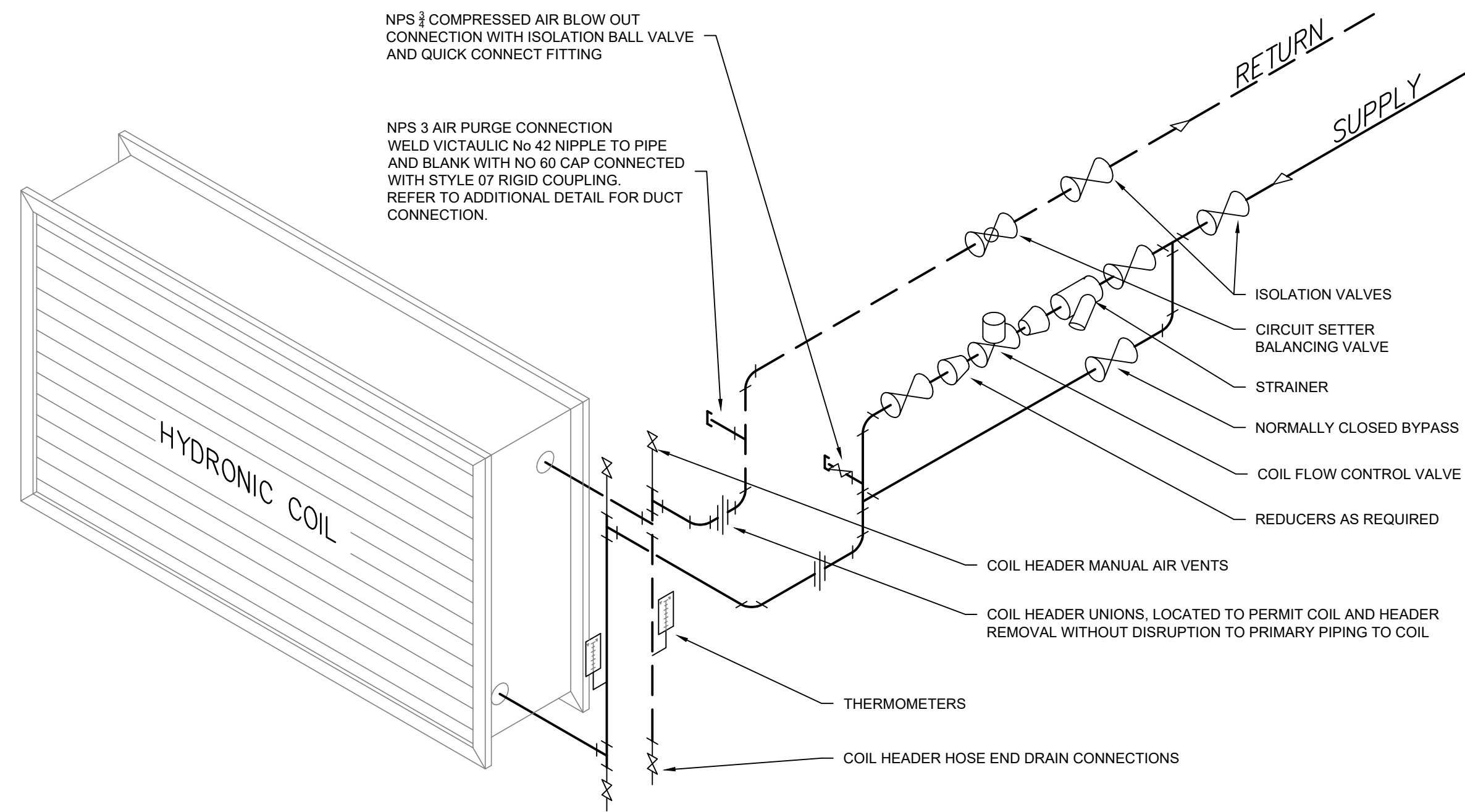




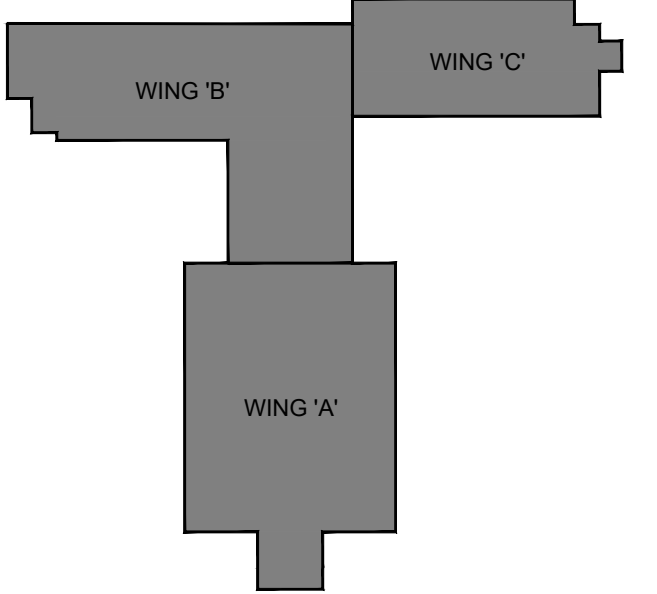
1 CHILLED WATER SCHEMATIC  
SCALE: NTS



2 CHILLED WATER COIL PURGE BLOWDOWN DETAIL  
SCALE: NTS



3 AHU COIL DETAIL  
SCALE: NTS



Key Plan

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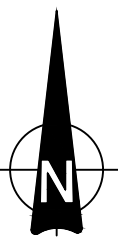
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Orientation



Seal

Seal

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Project  
**BUILDING #046  
RENOVATIONS**

Drawing Title

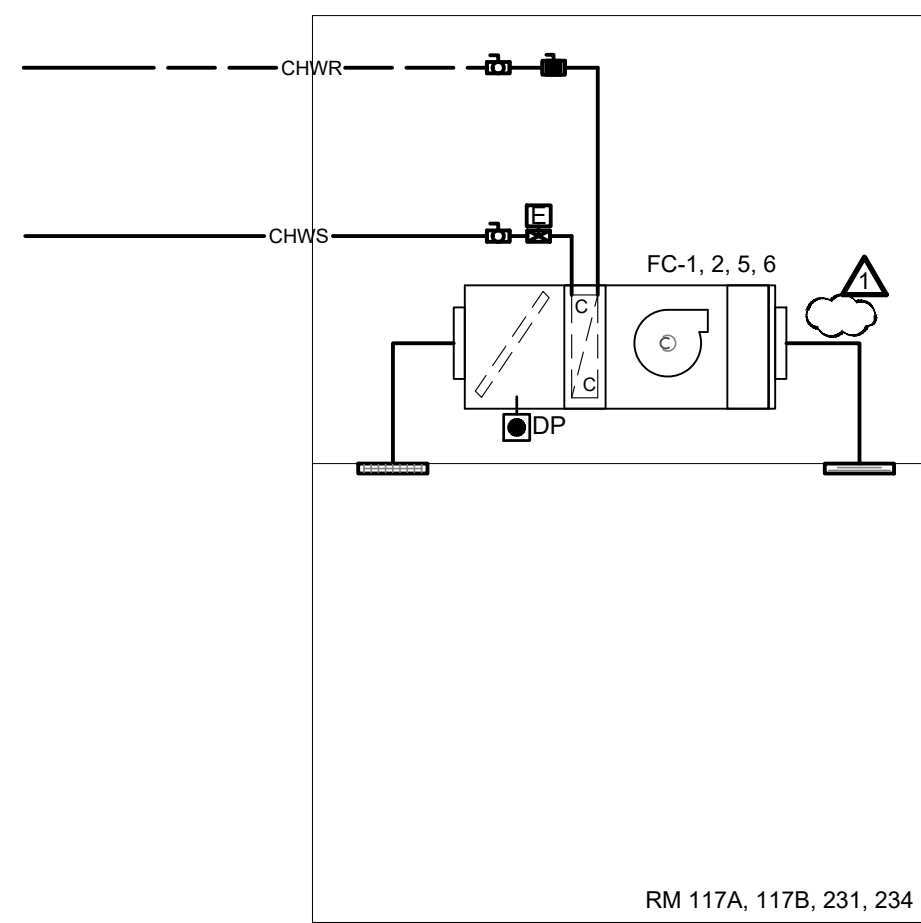
**CHILLED WATER AND  
GLYCOL SCHEMATIC**  
Project No.  
**504034**

Location  
**UNIVERSITY OF GUELPH  
BUILDING #46**

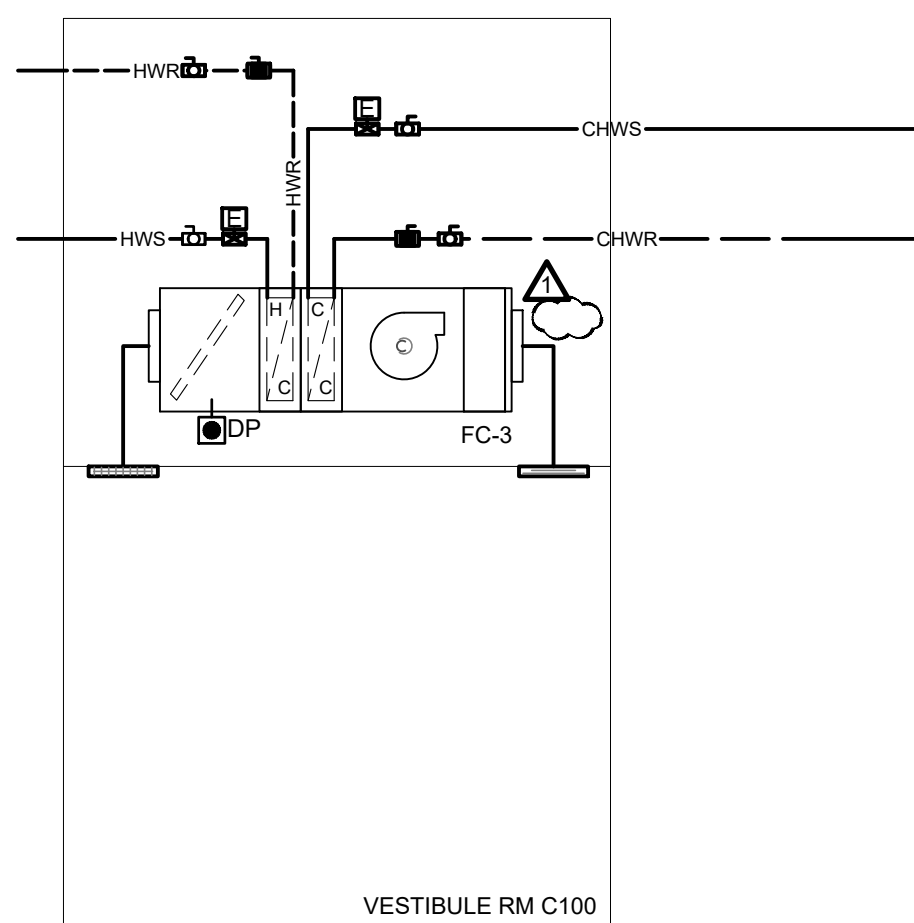
Scale NTS	Date APR 12, 2019
Drawn by HW	Drawing No.
Checked By NC	<b>M62</b>
Approved By KDT	
JLR # 27915	

Cad File No. ----

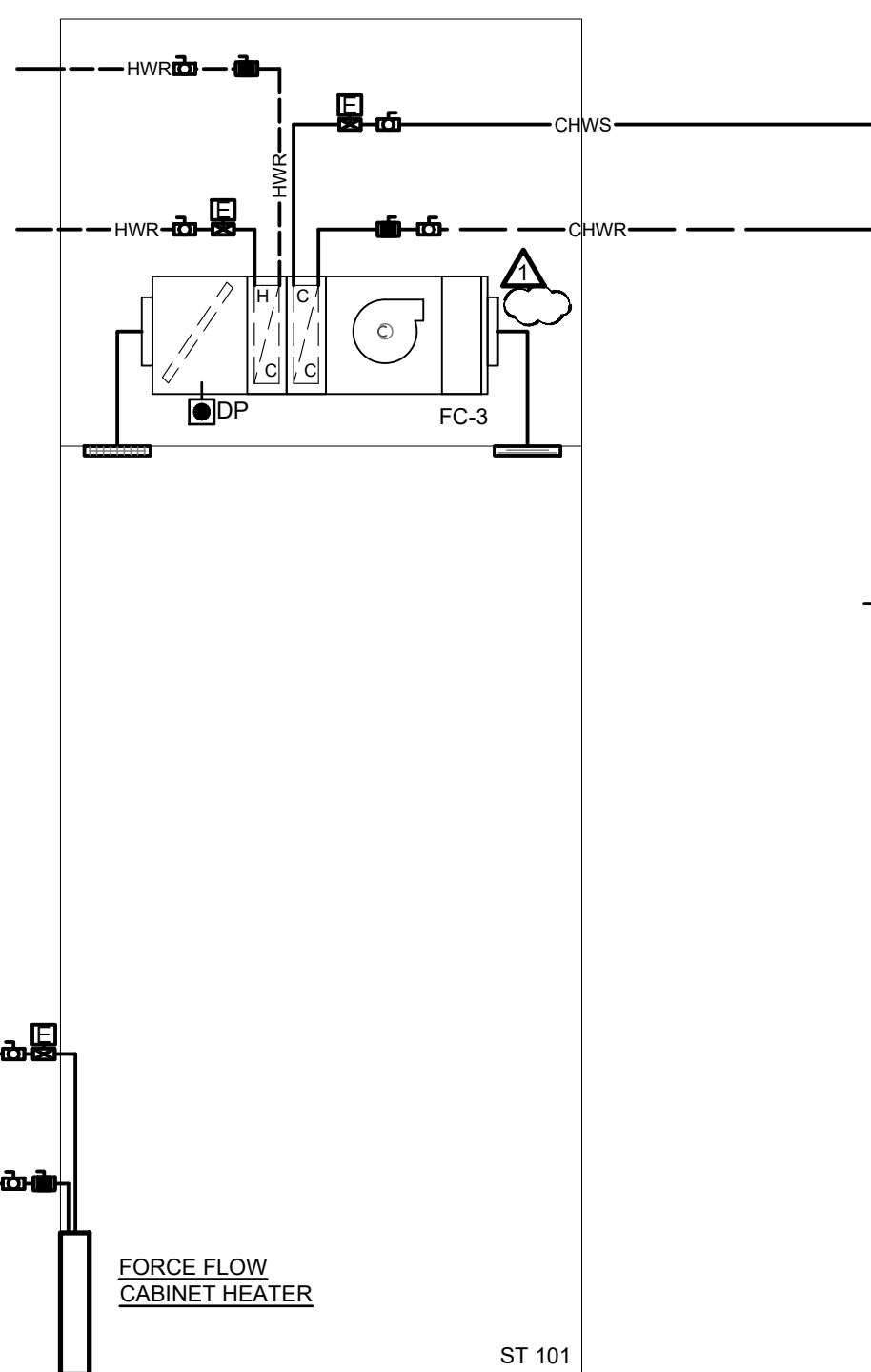




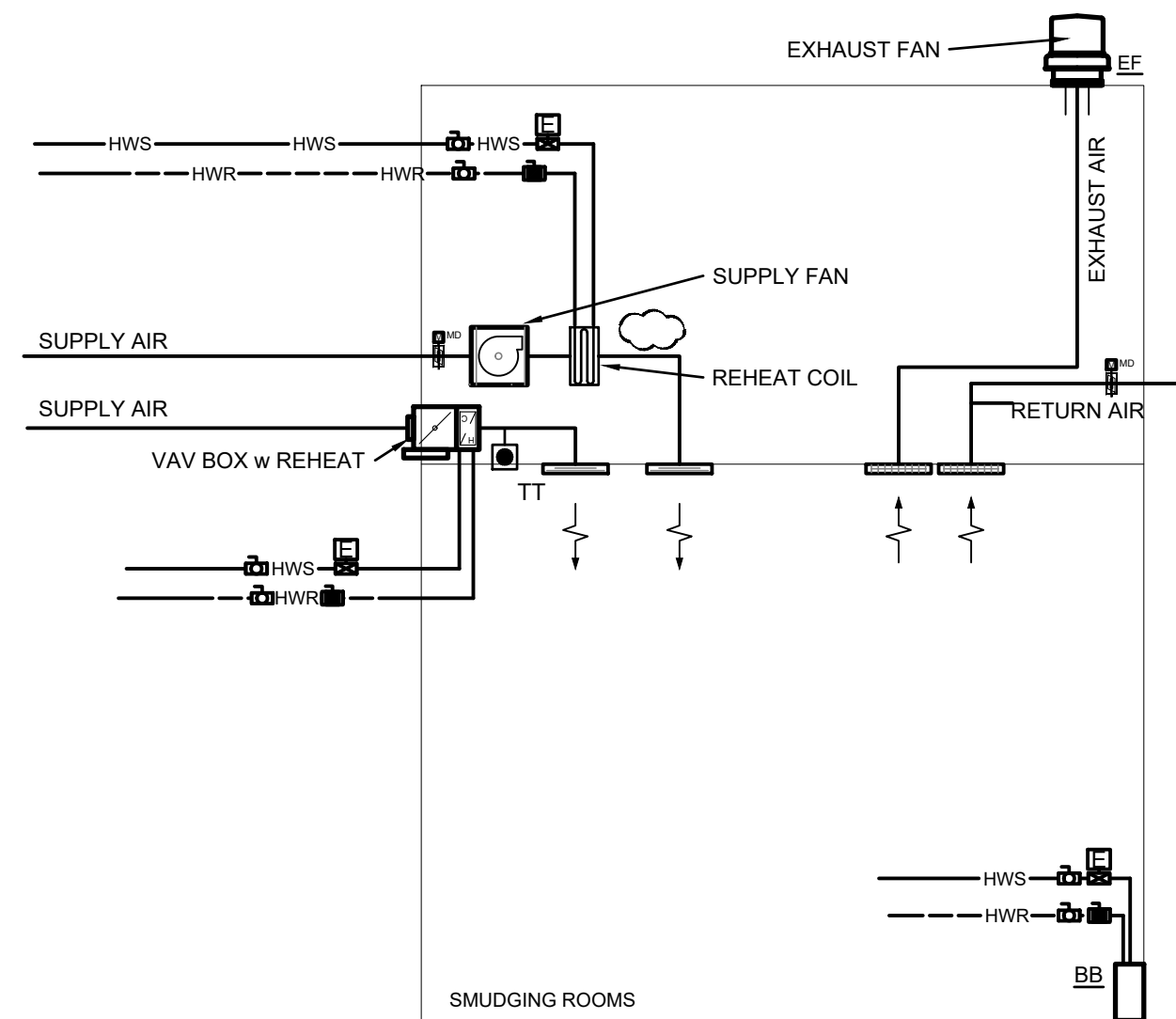
2 TYPICAL COOLING ONLY FAN COIL  
SCALE: NTS



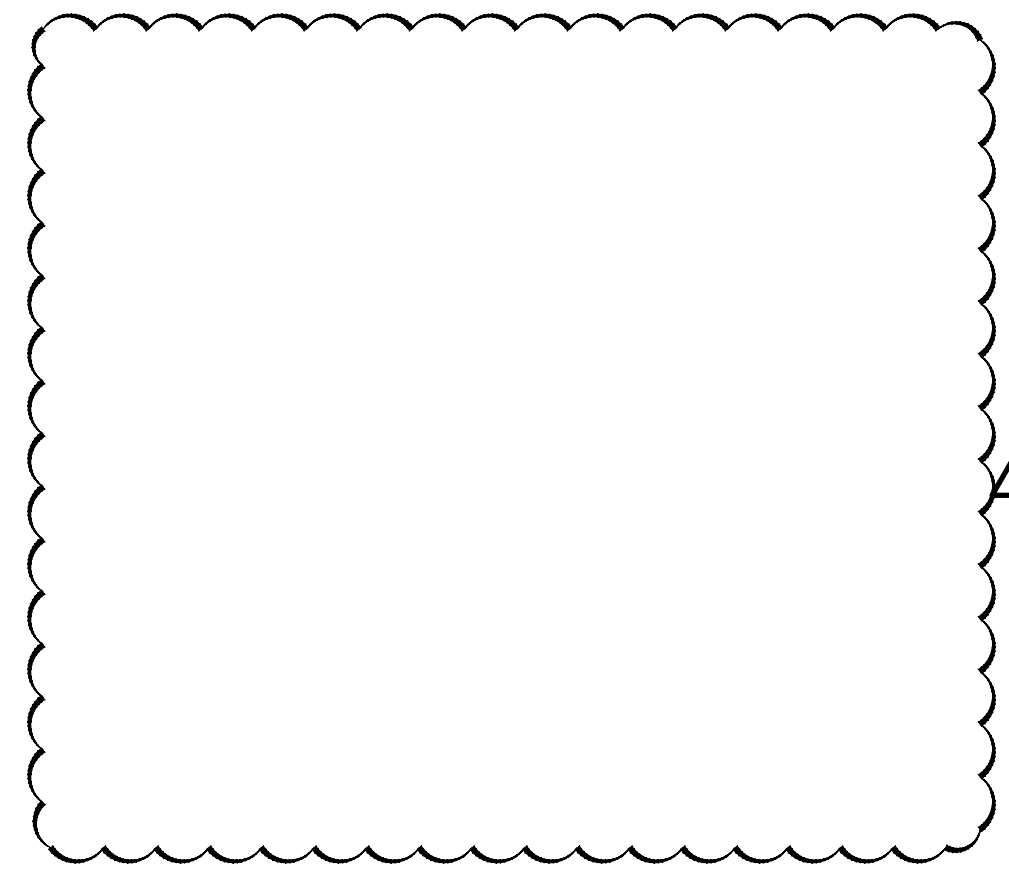
3 TYPICAL COOLING / HEATING FAN COIL  
SCALE: NTS



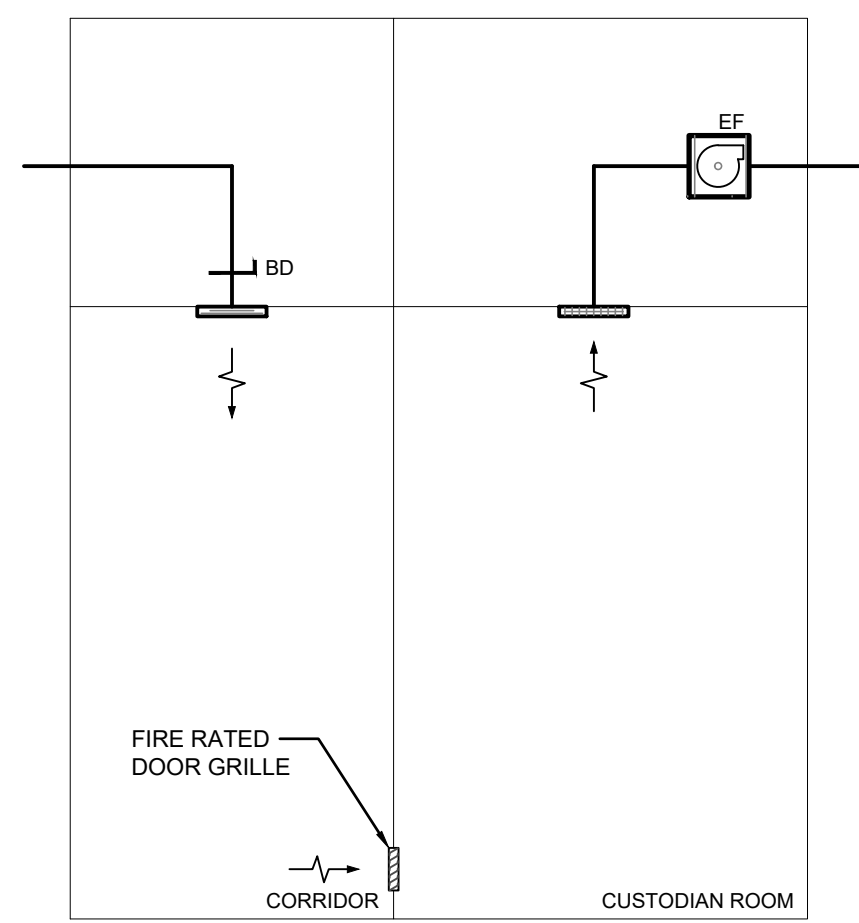
4 STAIR 101 COOLING / HEATING  
SCALE: NTS



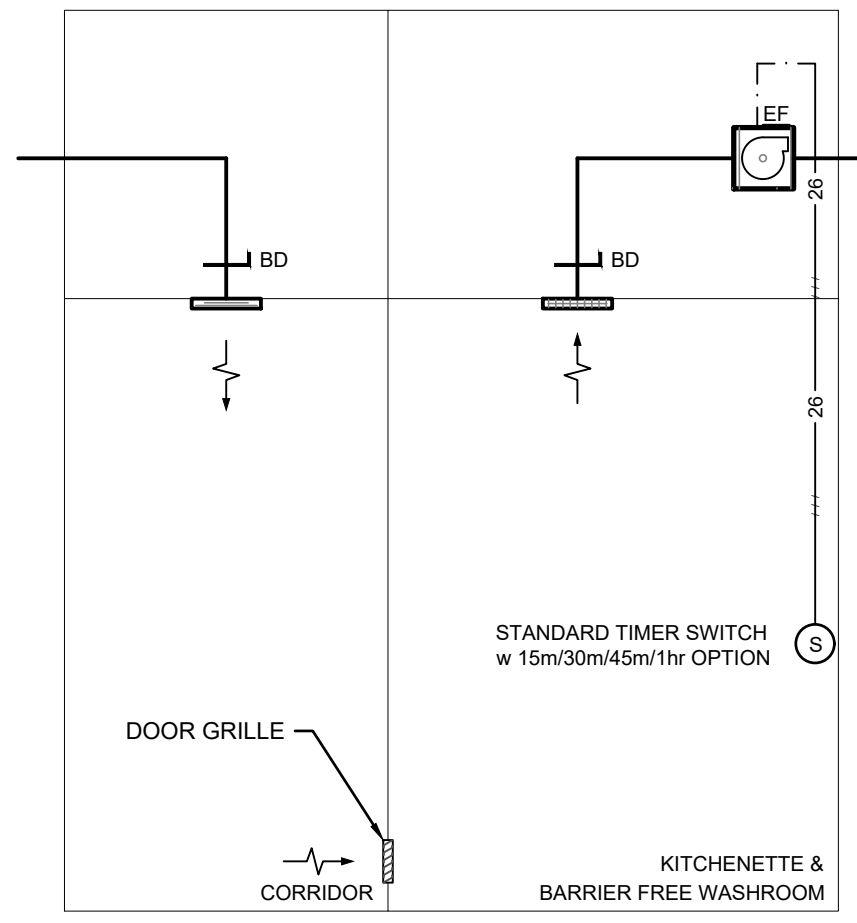
5 SMUDGING ROOM VENTILATION  
SCALE: NTS



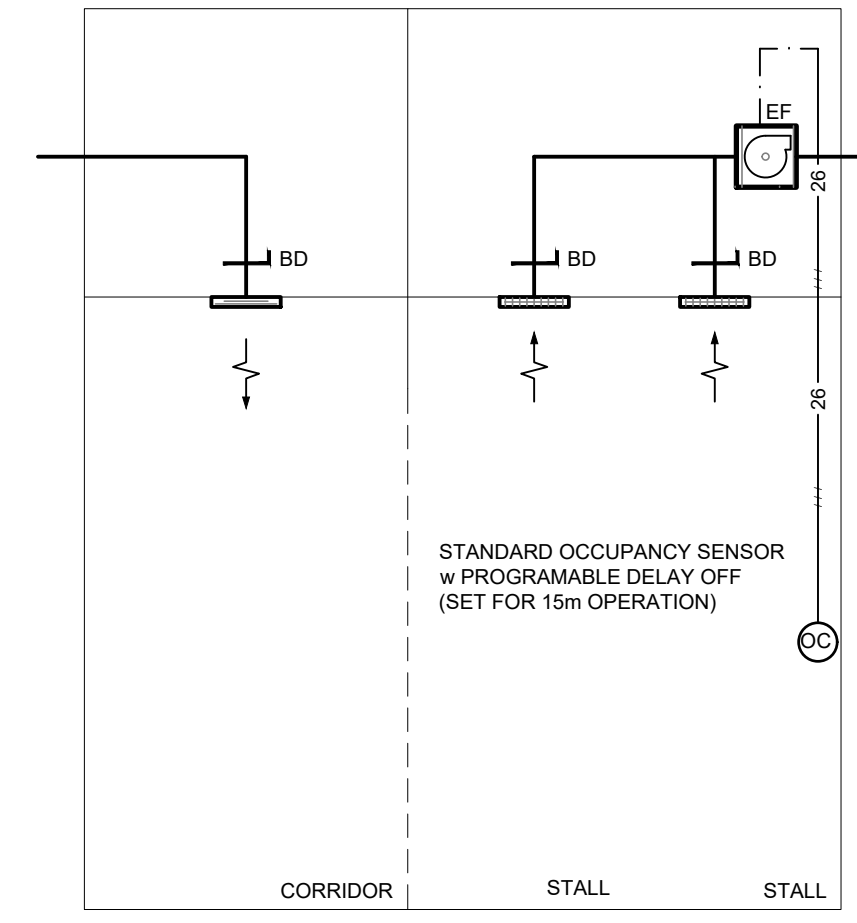
6 NOT USED  
SCALE: NTS



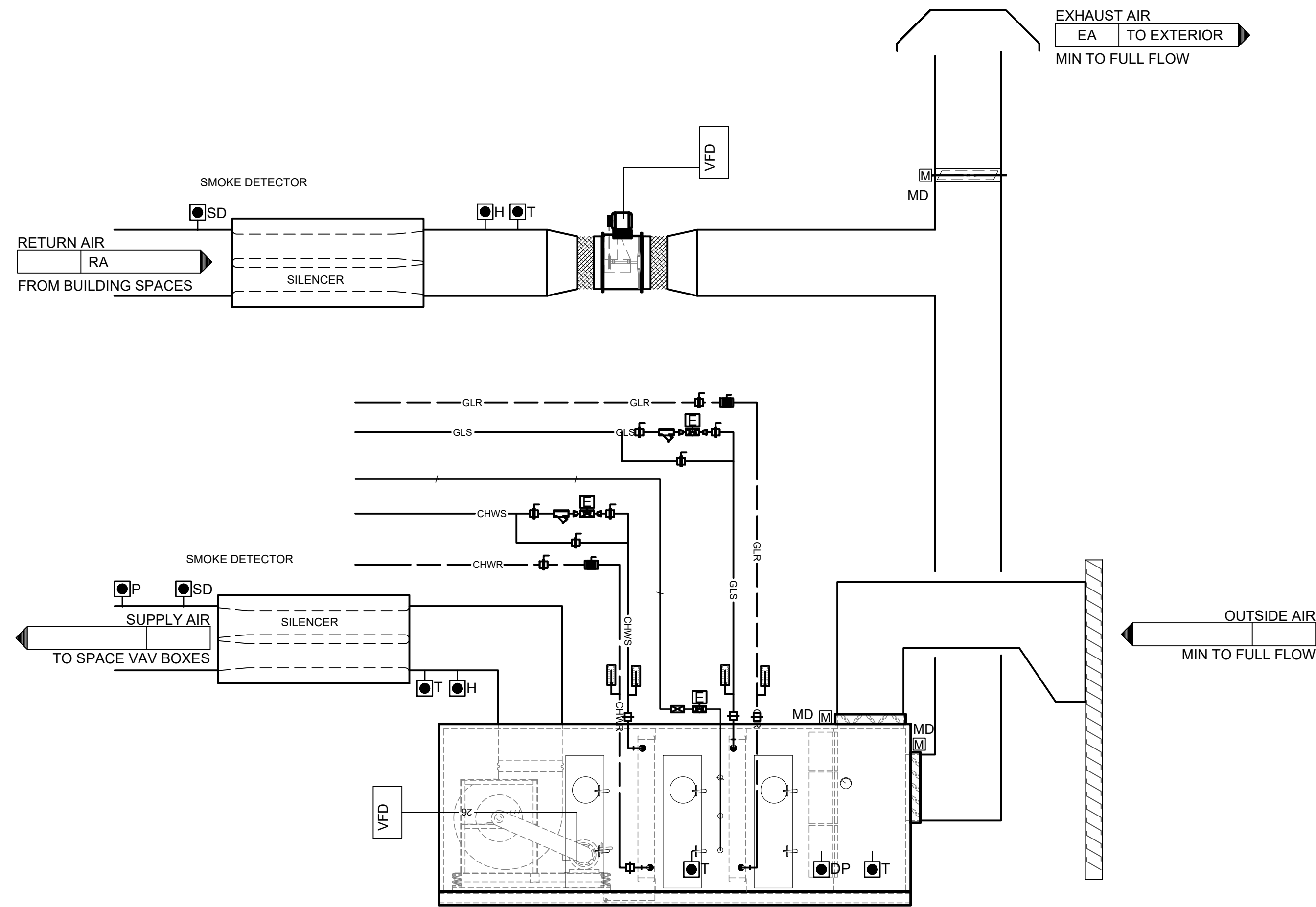
8 CUSTODIAN ROOM VENT  
SCALE: NTS



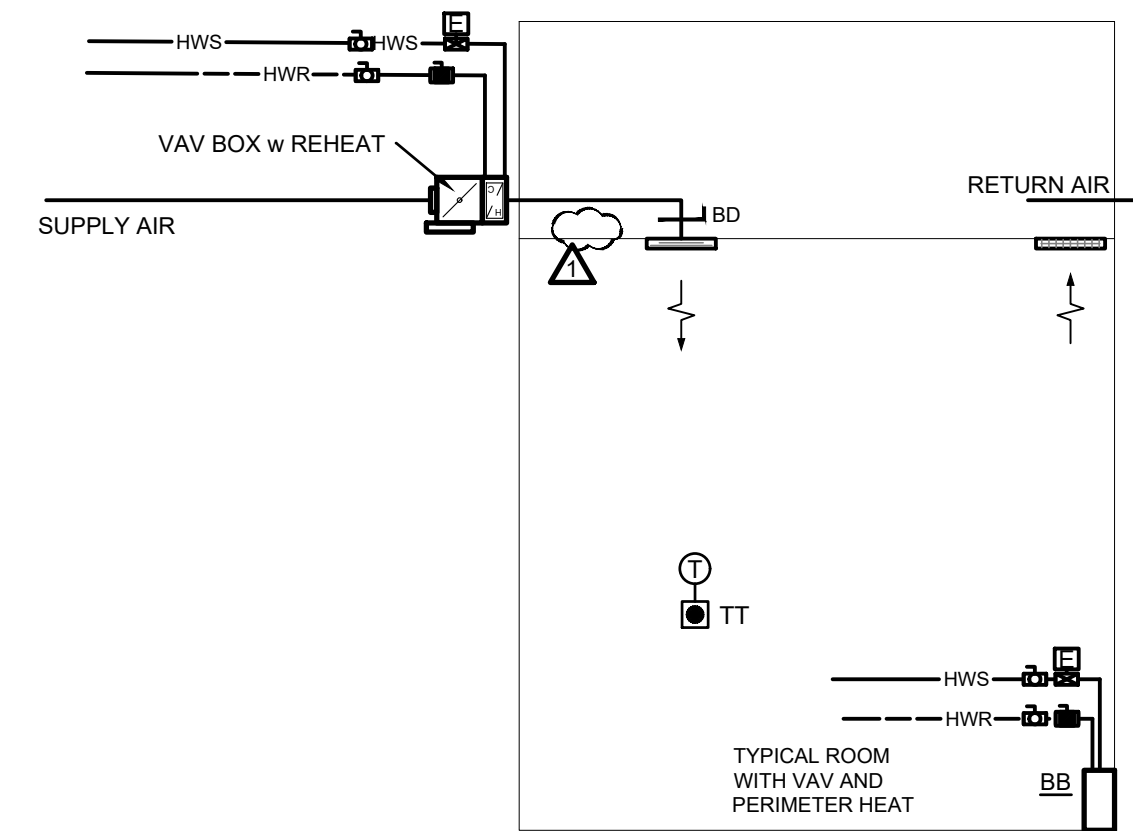
9 KITCHENETTE VENTILATION  
SCALE: NTS



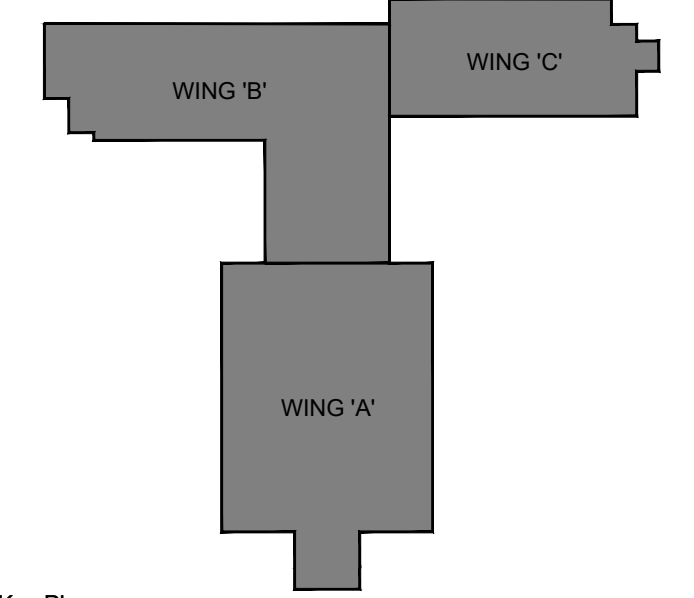
10 WASHROOM VENTILATION  
SCALE: NTS



1 (X3) TYPICAL AIR HANDLING UNIT  
SCALE: NTS



7 TYPICAL VAV BOX CONTROL  
SCALE: NTS



Key Plan

DO NOT SCALE DRAWINGS:

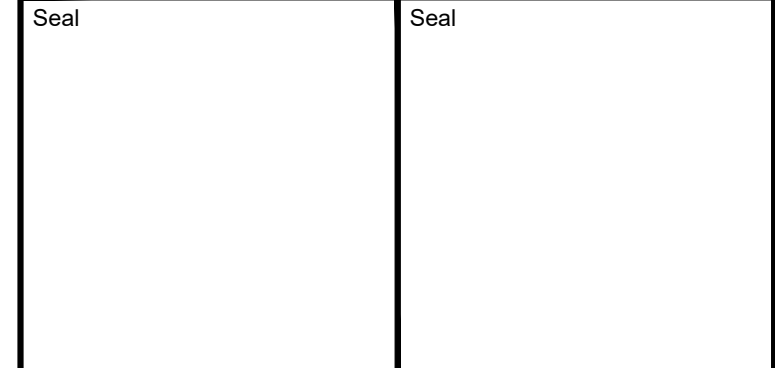
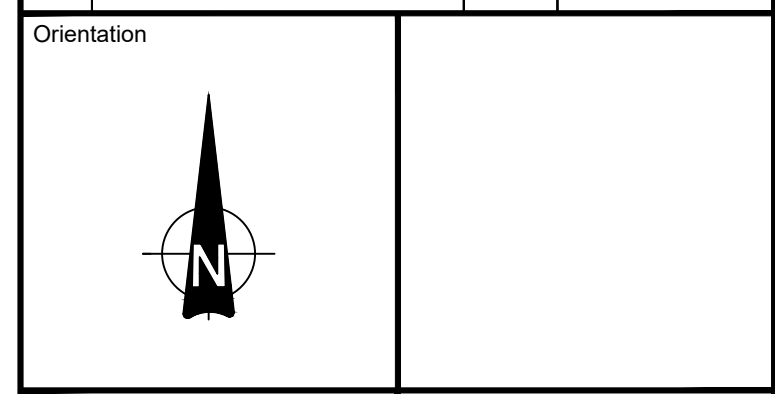
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Project  
**BUILDING #046 RENOVATIONS**

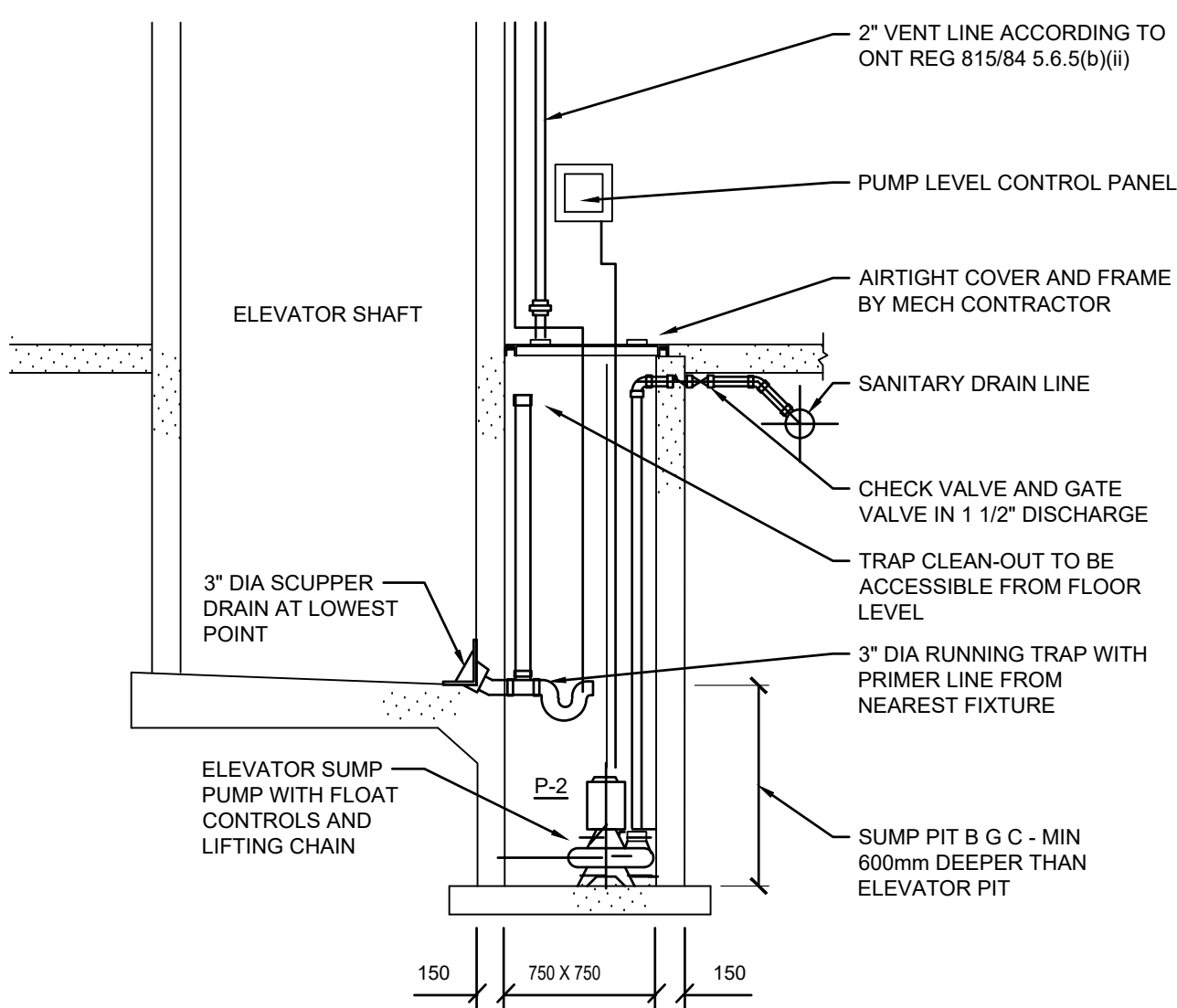
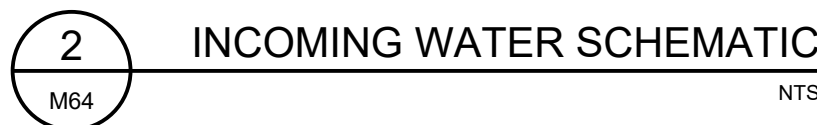
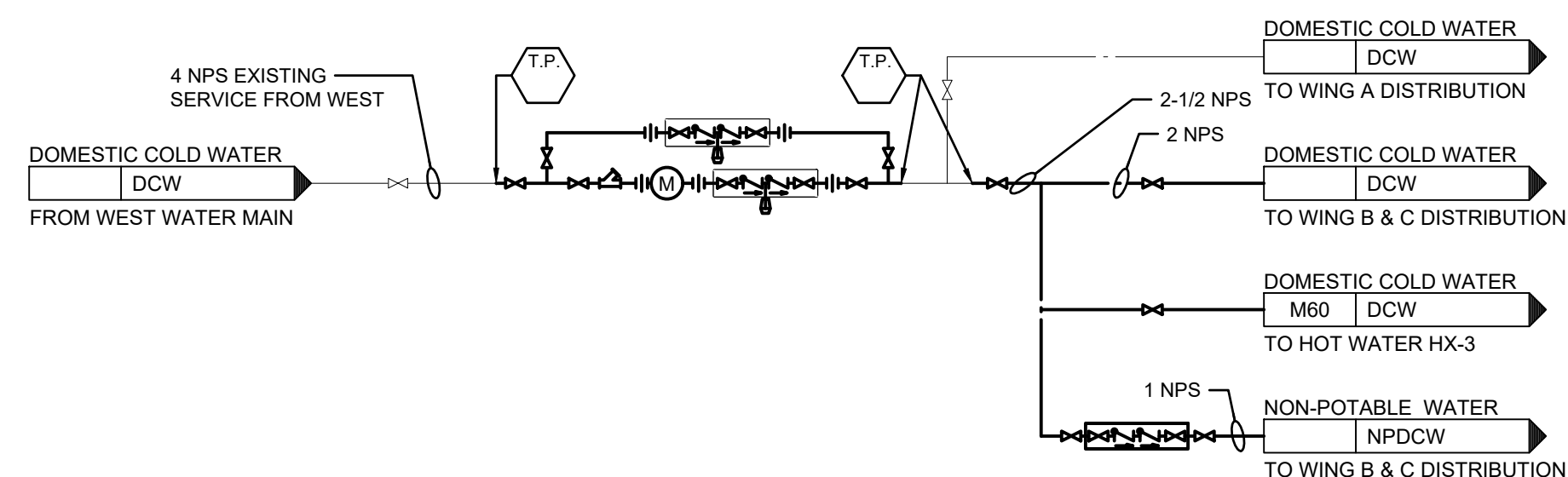
Drawing Title  
**VENTILATION SCHEMATICS**

Project No.  
**504034**

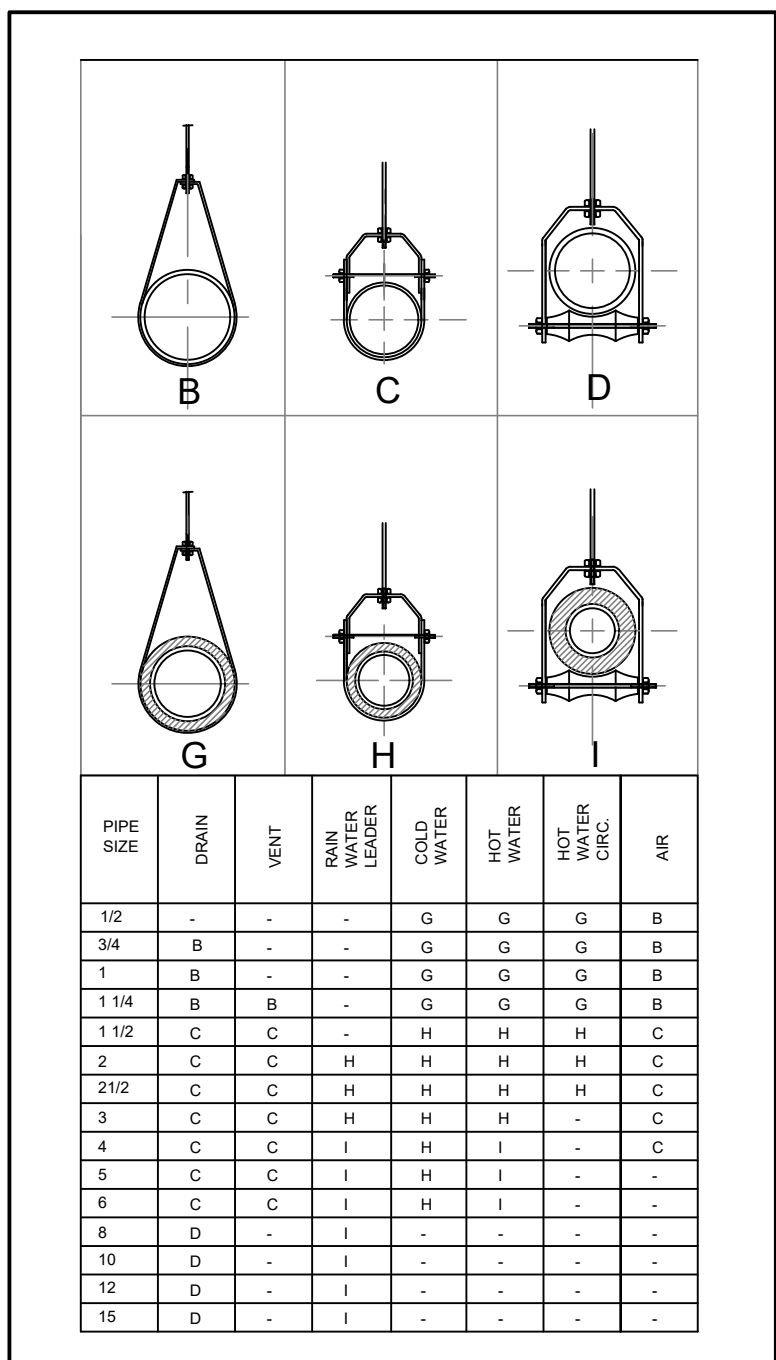
Location  
**UNIVERSITY OF GUELPH BUILDING #46**

Scale NTS	Date APR 12, 2019
Drawn by HW	Drawing No.
Checked By NC	<b>M63</b>
Approved By KDT	
JLR # 27915	
Cad File No. -----	





I.D.	DESCRIPTION	MANUF./MODEL	CONNECTION SIZE					ACCESSORIES		COMMENTS
			SAN	VENT	DCW	DHW	TEMP. WATER	TRAP	TRIM	
			NPS	NPS	NPS	NPS	°C			
WC-1	FLOOR MOUNT BOTTOM OUT, ELONGATED, 1-1/2 NPS TOP SPUD MANUAL FLUSH VALVE, B.F. 419mm	AMERICAN STANDARD/ MADERA FLOWISE 34 61001	3	2-1/2	1	-	-	INTEGRAL	DELTA/ 81T201 MANUAL FV, B.F. 4.8 Lpf	C/W HEAVY DUTY ELONGATED SEAT OPEN FRONT - LESS COVER
L-1	UNDERMOUNT, B.F. SINK HOLE, GLAZED UNDERSIDE W/ SENSOR TRIM	AMERICAN STANDARD/ OVALYN 0495.300	1-1/4	2	1/2	1/2		P-TRAP	DELTA/DEMID-111LF-NS W/ 060879A REMOTE CONTROL AND 1.9 Lpm	C/W MOUNTING KIT, TMV: BRADLEY NAVIGATOR SS9-4016 and SENSOR HARD WIRE CONVERSION KIT
	WALL HUNG, BARRIER FREE, SINGLE HOLE, KNEE SHROUD & SENSOR TRIM	AMERICAN STANDARD/ MURRO 0955 001EC & 0059 0202C	1-1/4	2	1/2	1/2		P-TRAP	DELTA/ DECKMOUNT HL-RISE W/ SENSOR S90T150 W/ 1.9 L/min LAMINAR OUTLET	C/W WALL CARRIER, KNEE SHROUD, TMV: BRADLEY NAVIGATOR SS9-4016 & SENSOR HARDWARE CONVERSION KIT
L-3	WALL HUNG , 4"DC, DECK MOUNT TRIM W/ VACUUM BREAKER	AMERICAN STANDARD/ LUCERNE 0355.027	1-1/4	2	1/2	1/2		P-TRAP	DELTA / W6720-9 WITH BLADE HANDLES	INSULATE AND COVER P-TRAP
SS-1	SINGLE BOWL UNDERMOUNT, SS (460x508x200DP)	FRANKE / UCS808P-1	1-1/2	2	1/2	1/2	-	P-TRAP	DELTA/ 101LF-HDF	
SS-2	DOUBLE BOWL UNDERMOUNT, SS (663x784x200DP)	FRANKE / UCD6408P-1	1-1/2	2	1/2	1/2	-	P-TRAP	DELTA/ 101LF-HDF	
WS-1	WATER STATION - REFRIGERATED WITH BOTTLE FILLER, SS FINISH, BF	ELKAY / EZS8WS(V)RSK	1-1/4	2	1/2	-	-	P-TRAP		BARRIER FREE INSTALLATION
MS-1	SS MOP SINK WITH WALL GUARDS	FRANKE / FSS222210/316-1	2	2	1/2	1/2	-	P-TRAP	DELTA / 280BLH WALL MOUNT FAUCET W/ PAUL HOOK AND VACUUM BREAKER	SS WALL GUARDS TO EXTEND 600mm BEYOND MOP SINK EDGE and 600mm ABOVE TOP EDGE
HB-1	INTERIOR HOSE BIBB W/ VACUUM BREAKER	WATTS / SC8-5	-	-	1/2	-	-	-	-	-
HB-2	INTERIOR HOSE BIBB W/ VACUUM BREAKER AND LOCKABLE COVER	WATTS / HY-330	-	-	3/4	-	-	-	-	-
NFHB-1	NON-FREEZE HOSE BIBB W/ VACUUM BREAKER AND LOCKABLE COVER	WATTS / HY-725	-	-	3/4	-	-	-	-	-
FD-1	FLOOR DRAIN	WATTS/ FD-100-C	3	2	-	-	-	P-TRAP	-	C/W TRAP SEAL PRIMER CONNECTION
FFD-1	FUNNEL FLOOR DRAIN	WATTS/ FD-100C-EG	3	2	-	-	-	P-TRAP	-	C/W TRAP SEAL PRIMER CONNECTION
FFD-2	FUNNEL FLOOR DRAIN	WATTS/ FD-100C-EG	4	-	-	-	-	P-TRAP	-	C/W TRAP SEAL PRIMER CONNECTION
PD-1	PIT DRAIN - ELEVATOR	WATTS/ BV-600	3	2	-	-	-	P-TRAP	-	C/W BACK WATER VALVE
TSP-1	ELECTRONIC TRAP SEAL PRIMER	PPP / MP-500-115V	-	-	1/2	-	-	-	-	PROVIDE 1-4 DISTRIBUTION AS NEEDED, C/W CABINET
RD-1	ROOF DRAIN	WATTS / RD -100	-	-	-	-	-	-	-	SIZE AS INDICATED ON DRAWING COORDINATE INSTALLATION AND REQUIREMENTS IWTH THE ROOFING CONTRACTOR
EW-1	SINK-MOUNT EYE / FACE WASH	HAWS/7610	-	-	1/2	1/2	-	-	-	C/W THERMOSTATIC MIXING VALVE AXION 9201EFE



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Orientation	
Seal	Seal

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# Project

## BUILDING #046

### RENOVATIONS

Drawing Title

## PLUMBING SCHEDULE AND SCHEMATICS

Project No.  
504034

UNIVERSITY OF GUELPH  
BUILDING #46

Scale

Drawn by

Checked By

Approved By \_\_\_\_\_

RD#	IR #
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Cad File No. ----

Date  
APR 12, 2019

Drawing No.

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M

## IV

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# M64







# AIR HANDLING UNIT SCHEDULE

I.D.	DESCRIPTION	LOCATION	MANUF. /MODEL	MIN O/A		FAN DATA										COOLING COIL DATA										HEATING COIL DATA										FILTERS	SOUND POWER @ UNIT OUTLET (db)						UNIT PHYSICAL DIMENSIONS & WEIGHT				COMMENTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
						SUPPLY	RETURN	AIR FLOW	EXT. S.P.	RPM	MOTOR				FAN TYPE	TOTAL COOLING	SENSIBLE COOLING	ENTERING AIR			FLOW	Tent.	Tlwg.	P.D.	FLUID	AIR			FLUID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
											DB	WB	P.D.	°C				°C	°C	°C						°C	°C	°C	°C	°C	°C	°C	°C	°C	°C								°C	°C	°C	°C		°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C

# FAN COIL UNITS

I.D.	DESCRIPTION	LOCATION	MANUF./MODEL	COOLING COIL DATA										HEATING COIL DATA										FILTERS	SOUND POWER @ UNIT OUTLET								WEIGHT	LENGTH	HEIGHT	WIDTH	COMMENTS					
				AIR FLOW	EXT. S.P.	MOTOR			MCA	MOCP	TOTAL COOLING	SENSIBLE COOLING	ENTERING AIR		FLOW	Tent	Tlvg.	P.D	FLUID	TOTAL HEATING	AIR		FLUID																			
													DB	WB							EATdb	LATdb	FLOW															Tent	Tlvg	P.D.	FLUID	
				L/s	Pa	KW	VOLT	PH	A	A	KW	KW	°C	°C	°C	KPa		KW	°C	°C	°C	°C	KPa			MERV	125	250	500	1K	2K	4K	LwA	KG	mm	mm	mm					
FC-1	COOLING UNIT	CCS (117 B)	DAIKIN FCHH212	567	125	0.79	115	1	8.5	15	6	8.2	23.9	17.3	0.5	7.3	12.8	50.81	WATER	-	-	-	-	-	-	-	8	59	61	62	61	57	50	-	43	514	252	1194	BAS CONTROLLED, & DISCONNECT SWITCH			
FC-2				REMOVED																																						
FC-3	COOLING/ HEATING UNIT	ENTRANCE (C100/ST102)	DAIKIN FCHH212	567	125	0.79	115	1	8.5	15	6	8.2	23.9	17.3	0.5	7.3	12.8	50.81	WATER	24	2	32	0.5	82.3	71.8	18	WATER	8	68	67	67	66	63	57	-	71	514	252	1842	BAS CONTROLLED, & DISCONNECT SWITCH		
FC-4	COOLING UNIT	MAIN ENTRANCE (ST201)	DAIKIN FCHH206	285	125	0.44	115	1	4.7	15	5.3	4.5	23.9	17.3	0.26	7.3	12.8	20.50	WATER	5	2	32	0.2	82.3	71.8	23	WATER	8	59	61	62	61	57	50	-	43	514	252	1194	BAS CONTROLLED, & DISCONNECT SWITCH		
FC-5	COOLING UNIT	ELEVATOR CONTROL ROOM (231)	DAIKIN FCHH204	189	125	0.28	115	1	2.9	15	3.6	3.0	23.9	17.3	0.13	7.3	12.8	8.69	WATER	-	-	-	-	-	-	-	8	57	58	55	53	48	39	-	35	514	252	915	BAS CONTROLLED, & DISCONNECT SWITCH			
FC-6	COOLING UNIT	SERVER ROOM (234)	DAIKIN FCHH204	189	63	0.28	115	1	2.9	15	3.6	3.0	23.9	17.3	0.13	7.3	12.8	8.69	WATER	-	-	-	-	-	-	-	8	57	58	55	53	48	39	-	35	514	252	915	BAS CONTROLLED, & DISCONNECT SWITCH			

# FAN SCHEDULE

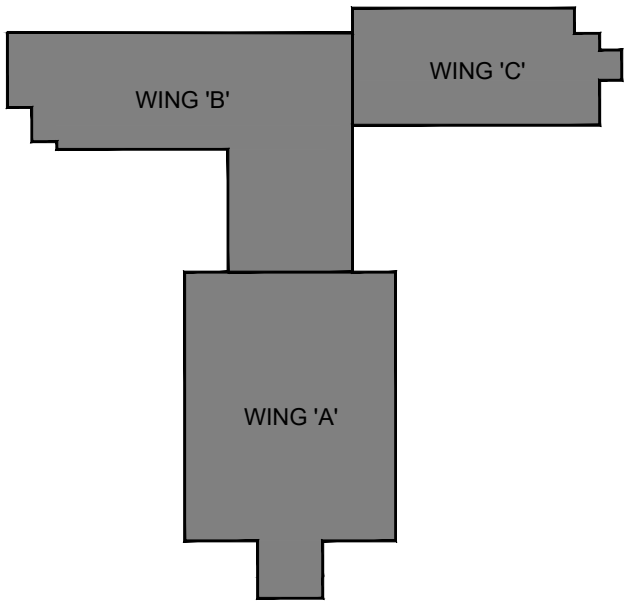
I.D.	DESCRIPTION	LOCATION SERVED	MANUF./MODEL	TYPE	OPERATING POINT 'A'		SOUND	DRIVE	MOTOR				CONTROLS	COMMENTS
					AIR FLOW	S.P.			Hp	VOLT	Ph	RPM		
EF-31	WASHROOM EXHAUST	UNIV. WR 138	COOK/ GC-146 (OR APPROVED ALTERNATE)	CABINET	43 (90)	63 (0.25)	1.3	DIRECT	½ <sub>0</sub>	115	1	900	REFER TO M80 MOTORS STARTER AND CONTROLS DRAWING	C/W SPEED CONTROLLER, BACKDRAFT DAMPER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH - PENTHOUSE LOUVER TERMINATION
EF-32	GENERAL EXHAUST	MECHANICAL PENTHOUSE	COOK/ 14XWH32D132 (OR APPROVED ALTERNATE)	WALL PROP	567 (1200)	63 (0.25)	8.9	DIRECT	¾	115	1	1300		C/W SPEED CONTROLLER, WALL MOUNTING COLLAR, GUARD, MOTORIZED DAMPER, BIRD SCREEN, WEATHERPROOF LOUVER AND DISCONNECT SWITCH.
EF-33	PURGE EXHAUST	OFFICE 133	COOK/100R0R80 (OR APPROVED ALTERNATE)	ROOF MOUNTED UPBLAST	288 (610)	126 (0.5)	11.1	BELT	¾	115	1	1725		C/W BACKDRAFT DAMPER, BIRD SCREEN, 24" ROOF CURB, AND DISCONNECT SWITCH
SBF-133	SUPPLY BOOST		COOK/ GN-642 (OR APPROVED ALTERNATE)	INLINE	260 (548)	63 (0.25)	4.5	DIRECT	¾	115	1	1500		C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH
EF-34	PURGE EXHAUST	FAMILY 127	COOK/ 120R38 (OR APPROVED ALTERNATE)	ROOF MOUNTED UPBLAST	472 (1000)	126 (0.5)	10.2	BELT	¾	115	1	1725		C/W BACKDRAFT DAMPER, BIRD SCREEN, 24" ROOF CURB, AND DISCONNECT SWITCH
SBF-127	SUPPLY BOOST		COOK/ GN-822 (OR APPROVED ALTERNATE)	INLINE	427 (904)	63 (0.25)	4.0	DIRECT	½ <sub>0</sub>	115	1	910		C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH
EF-35	WASHROOM EXHAUST	WR116	COOK/ GN-622 (OR APPROVED ALTERNATE)	INLINE	218 (461)	63 (0.25)	3.0	DIRECT	½ <sub>0</sub>	115	1	1400		C/W SPEED CONTROLLER, BACKDRAFT DAMPER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH - PENTHOUSE LOUVER TERMINATION
EF-36	CUSTODIAN EXHAUST	CUST. 116	COOK/ GC-128 (OR APPROVED ALTERNATE)	CABINET	30 (63)	63 (0.25)	1.1	DIRECT	½ <sub>0</sub>	115	1	750		C/W SPEED CONTROLLER, BACKDRAFT DAMPER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH - PENTHOUSE LOUVER TERMINATION
EF-37	GENERAL EXHAUST	ELECT. 118	COOK/24XWH28D102 (OR APPROVED ALTERNATE)	WALL PROP	1888 (4000)	63 (0.25)	15.4	DIRECT	¾	115	1	1080		C/W SPEED CONTROLLER, WALL MOUNTING COLLAR, GUARD, MOTORIZED DAMPER, BIRD SCREEN, WEATHERPROOF LOUVER AND DISCONNECT SWITCH
EF-38	GENERAL EXHAUST	MECH. 120	COOK/14XWH32D132 (OR APPROVED ALTERNATE)	WALL PROP	567 (1200)	63 (0.25)	8.9	DIRECT	¾	115	1	1300		C/W SPEED CONTROLLER, WALL MOUNTING COLLAR, GUARD, MOTORIZED DAMPER, BIRD SCREEN, WEATHERPROOF LOUVER AND DISCONNECT SWITCH
EF-39	WASHROOM EXHAUST	UNIV. WR 234	COOK/ GC-146 (OR APPROVED ALTERNATE)	CABINET	43 (90)	63 (0.25)	1.3	DIRECT	½ <sub>0</sub>	115	1	900		C/W SPEED CONTROLLER, BACKDRAFT DAMPER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH - PENTHOUSE LOUVER TERMINATION
EF-40	GENERAL EXHAUST	LOUNGE 217	COOK/ GC-148 (OR APPROVED ALTERNATE)	CABINET	63 (132)	63 (0.25)	2.5	DIRECT	½ <sub>6</sub>	115	1	1075		C/W SPEED CONTROLLER, BACKDRAFT DAMPER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH - PENTHOUSE LOUVER TERMINATION
EF-41	PURGE EXHAUST	PRAYER 220	COOK/100R0R70 (OR APPROVED ALTERNATE)	ROOF MOUNTED UPBLAST	152 (320)	126 (0.5)	12.9	BELT	¾	115	1	1725		C/W BACKDRAFT DAMPER, BIRD SCREEN, 24" ROOF CURB, AND DISCONNECT SWITCH
SF-220	SUPPLY BOOST		COOK/ GN-622 (OR APPROVED ALTERNATE)	INLINE	133 (282)	63 (0.25)	4.0	DIRECT	¾	115	1	1500		C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH
EF-42	CUSTODIAN EXHAUST	CUST. 201	COOK/ GC-128 (OR APPROVED ALTERNATE)	CABINET	30 (63)	63 (0.25)	1.1	DIRECT	½ <sub>0</sub>	115	1	750		C/W SPEED CONTROLLER, BACKDRAFT DAMPER, GOOSE NECK W BIRD SCREEN, HANGING ISOLATOR KIT AND DISCONNECT SWITCH
EF-43	WASHROOM EXHAUST	WR 201	COOK/ GN-622 (OR APPROVED ALTERNATE)	INLINE	218 (461)	63 (0.25)	3.0	DIRECT	¾	115	1	1400		C/W SPEED CONTROLLER, BACKDRAFT DAMPER, GOOSE NECK W BIRD SCREEN, HANGING ISOLATOR KIT AND DISCONNECT SWITCH
EF-44	GENERAL EXHAUST	KITCHENETTE 115	COOK/ GC-148 (OR APPROVED ALTERNATE)	CABINET	63 (132)	63 (0.25)	2.5	DIRECT	½ <sub>6</sub>	115	1	1075		C/W SPEED CONTROLLER, BACKDRAFT DAMPER, GOOSE NECK W BIRD SCREEN, HANGING ISOLATOR KIT AND DISCONNECT SWITCH
EF-45	GENERAL EXHAUST	HSKP 112	COOK/ GC-128 (OR APPROVD ALTERNATE)	CABINET	30 (63)	63 (0.25)	1.1	DIRECT	½ <sub>0</sub>	115	1	750		C/W SPEED CONTROLLER, BACKDRAFT DAMPER, GOOSE NECK W BIRD SCREEN, HANGING ISOLATOR KIT AND DISCONNECT SWITCH
EF-46	WASHROOM EXHAUST	UNIV. WR 104	COOK/ GC-146 (OR APPROVED ALTERNATE)	CABINET	43 (90)	63 (0.25)	1.3	DIRECT	½ <sub>0</sub>	115	1	900		C/W SPEED CONTROLLER, BACKDRAFT DAMPER, GOOSE NECK W BIRD SCREEN, HANGING ISOLATOR KIT AND DISCONNECT SWITCH
EF-47	WASHROOM EXHAUST	W/C 104A	COOK/ GC-146 (OR APPROVED ALTERNATE)	CABINET	43 (90)	63 (0.25)	1.3	DIRECT	½ <sub>0</sub>	115	1	900		C/W SPEED CONTROLLER, BACKDRAFT DAMPER, GOOSE NECK W BIRD SCREEN, HANGING ISOLATOR KIT AND DISCONNECT SWITCH
SBF-125	NOT USED													C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH
SBF-126D	NOT USED													C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH
SBF-126A	NOT USED													C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH
SBF-126C	NOT USED													C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH
SBF-126B	NOT USED													C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH
SBF-228	NOT USED													C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH
SBF-224	NOT USED													C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH
SBF-216	NOT USED												C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH	
SBF-215	NOT USED												C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH	
SBF-213	NOT USED												C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH	
SBF-211	NOT USED												C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH	
SBF-210	NOT USED												C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH	
SBF-202	NOT USED												C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH	
SBF-203	NOT USED												C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH	
SBF-204	NOT USED												C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH	
SBF-205	NOT USED												C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH	
SBF-207	SUPPLY BOOST	CP/IND 207	COOK/ GN-622 (OR APPROVED ALTERNATE)	INLINE	218 (461)	63 (0.25)	3.0	DIRECT	¾	115	1	1400	C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH	
SBF-208	NOT USED												C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH	
SBF-209	NOT USED												C/W SPEED CONTROLLER, HANGING ISOLATOR KIT AND DISCONNECT SWITCH	



SINGLE DUCT VARIABLE A VOLUME TERMINAL UNIT SCHEDULE											
I.D.	MANUF./MODEL	DESCRIPTION	SERVING ROOM(S)	MAXIMUM AIR FLOW L/s (cfm)	MINIMUM AIR FLOW L/s (cfm)	INLET DUCT SIZE mm (inches) Ø	MAX S.P. Pa	NC	CONTROL	HEATING COIL KW (MBH)	COMMENTS
VAV-101	METALAIRE / TH512 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	101& 102	798 (1690)	198 (419)	300 (12)	63	<17	BAS	4.6 (15.7)	
VAV-102	NOT USED										
VAV-103	METALAIRE / TH512 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	103 & 103A	510 (1080)	153 (324)	300 (12)	63	<17	BAS	3.0 (10.1)	
VAV-106	METALAIRE / TH506 ( OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	106, 106A	170 (360)	51 (108)	150 (6)	63	<20	BAS	1.0 (3.4)	
VAV106B	NOT USED										
VAV-107	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	107 & 106B	308 (652)	93 (197)	200 (8)	63	<20	BAS	1.7 (5.9)	
VAV-108	METALAIRE / TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	108	127 (267)	38 (80)	150 (6)	63	<17	BAS	0.7 (2.5)	
VAV-109A	METALAIRE / TH510 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	109, 109A & 109B	331 (701)	100 (212)	250 (10)	63	15	BAS	1.9 (6.5)	
VAV-109	NOT USED										
VAV-110	METALAIRE / TH510 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	110	294 (622)	89 (187)	250 (10)	63	15	BAS	1.7 (5.8)	
VAV-111	METALAIRE / TH510 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	111	361 (764)	109 (229)	250 (10)	63	15	BAS	2.1 (7.1)	
VAV-113	NOT USED										
VAV-113A	METALAIRE / TH510 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	113 & 113A	331 (701)	102 (216)	250 (10)	63	15	BAS	1.9 (6.7)	
VAV-114	METALAIRE / TH510 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	114 & 114A	334 (6708)	100 (212)	250 (10)	63	15	BAS	1.9 (6.7)	
VAV-115	METALAIRE / TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	115	107 (225)	32 (68)	150 (6)	63	<17	BAS	0.6 (2.1)	
VAV-C101	METALAIRE/ TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	C101	134 (282)	40 (85)	150 (6)	63	17	BAS	0.8 (2.6)	
VAV-147	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	147	212 (448)	64 (134)	200 (8)	63	<15	BAS	1.2 (4.2)	
VAV-149	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	149	279 (590)	84 (177)	200 (8)	63	<15	BAS	1.6 (5.5)	
VAV-145	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	143,145,145A	376 (795)	113 (239)	200 (8)	63	19	BAS	2.2 (7.4)	
VAV-139	NOT USED										
VAV-137	NOT USED										
VAV-135	METALAIRE / TH510 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	135	391 (828)	120 (249)	250 (10)	63	15	BAS	2.4 (9.6)	
VAV-133	METALAIRE / TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	133	132 (278)	40 (83)	150 (6)	63	<17	BAS	0.8 (2.6)	
VAV-129A	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	129	204 (432)	62 (130)	200 (8)	63	<15	BAS	1.2 (4.0)	
VAV-129B	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT		204 (432)	62 (130)	200 (8)	63	<15	BAS	1.2 (4.0)	
VAV-127	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	127 & 127A	238 (503)	72 (151)	200 (8)	63	<15	BAS	1.4 (4.7)	
VAV-125	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	125 & 125A	232 (490)	70 (147)	200 (8)	63	<15	BAS	1.3 (4.6)	
VAV-C106	NOT USED										
VAV-C107	METALAIRE / TH505 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	C107	40 (85)	40 (85)	125 (5)	63	<15	BAS	NONE	
VAV-236	METALAIRE / TH510 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	236 & 235A	344 (728)	104 (218)	250 (10)	63	15	BAS	2.0 (6.8)	
VAV-239	METALAIRE / TH510 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	239	327 (692)	98 (208)	250 (10)	63	15	BAS	1.9 (6.5)	
VAV-237	METALAIRE / TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	237	130 (275)	39 (83)	150 (6)	63	17	BAS	0.8 (2.6)	
VAV-235	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	235	227 (480)	68 (144)	200 (8)	63	<15	BAS	1.3 (4.5)	
VAV-233	METALAIRE / TH510 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	233	392 (830)	118 (249)	250 (10)	63	16	BAS	2.3 (7.7)	
VAV-229	NOT USED										
VAV-227	METALAIRE / TH508 OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	227 & 229	280(592)	84 (178)	200 (8)	63	17	BAS	1.6 (5.6)	
VAV-225	NOT USED										
VAV-223	NOT USED										
VAV-221	METALAIRE / TH510 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	221, 223 & 225	520 (1100)	126 (267)	250 (10)	63	17	BAS	2.4 (8.4)	
VAV-217-1	METALAIRE / TH510 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	217	390 (825)	117 (248)	250 (10)	63	16	BAS	2.3 (7.7)	
VAV-217-2	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	217	260 (550)	78 (165)	200 (8)	63	<15	BAS	1.5 (5.1)	

SINGLE DUCT VARIABLE A VOLUME TERMINAL UNIT SCHEDULE											
I.D.	MANUF./MODEL	DESCRIPTION	SERVING ROOM(S)	MAXIMUM AIR FLOW L/s (cfm)	MINIMUM AIR FLOW L/s (cfm)	INLET DUCT SIZE mm (inches) Ø	MAX S.P. Pa	NC	CONTROL	HEATING COIL KW (MBH)	COMMENTS
VAV-136	METALAIRE / TH512 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	136 & 136C	581 (1230)	175 (369)	300 (12)	63	17	BAS	3.4 (11.5)	
VAV-134	METALAIRE / TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	134 & 136B	107 (225)	32 (68)	150 (6)	63	17	BAS	0.6 (2.1)	
VAV-132	METALAIRE/ TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	132	178 (377)	54 (113)	200 (8)	63	<15	BAS	1.0 (3.5)	
VAV-130	METALAIRE / TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	130	103 (218)	30 (63)	150 (6)	63	<15	BAS	0.3 (0.9)	
VAV-128	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	128	138 (292)	42 (88)	200 (8)	63	<15	BAS	0.8 (2.7)	
VAV-126D	NOT USED										
VAV-126A	METALAIRE / TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	126A & 126D	60 (124)	18 (38)	150 (6)	63	<15	BAS	0.4 (1.2)	
VAV-126C	NOT USED										
VAV-126B	METALAIRE / TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	126B & 126C	60 (124)	18 (38)	150 (6)	63	<15	BAS	0.4 (1.2)	
VAV-123	METALAIRE / TH510 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	123 & 123A	192 (405)	58 (122)	250 (10)	63	<15	BAS	1.1 (3.7)	
VAV-123D	METALAIRE / TH512 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	123C, 123D, 123B	448 (949)	135 (285)	300 (12)	63	17	BAS	2.6 (8.9)	
VAV-123F	METALAIRE / TH505 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	C123 & 123F	121 (256)	37 (77)	125 (5)	63	<15	BAS	0.7 (2.4)	
VAV-123E	METALAIRE / TH505 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	123E	44 (93)	14 (28)	125 (5)	63	<15	BAS	0.3 (0.9)	
VAV-C102	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	C102	235 (500)	235 (500)	200 (8)	63	<15	BAS	NONE	
VAV-C201	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	C201	230 (490)	230 (490)	200 (8)	63	<15	BAS	NONE	
VAV-230	METALAIRE / TH510 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	230	384 (813)	116 (244)	250 (10)	63	16	BAS	2.2 (7.6)	
VAV-226	METALAIRE / TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	226 & 232	86 (180)	27 (54)	150 (6)	63	<15	BAS	0.4 (1.2)	
VAV-228	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	228 & 228A	284 (600)	85 (180)	200 (8)	63	<15	BAS	1.6 (5.6)	
VAV-224A	NOT USED										
VAV-224	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	224 & 224A	252 (531)	77 (160)	200 (8)	63	<15	BAS	1.5 (5.0)	
VAV-222	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	222	258 (545)	78 (164)	200 (8)	63	<15	BAS	1.5 (5.1)	
VAV-220	METALAIRE / TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	220	46 (97)	14 (29)	150 (6)	63	<15	BAS	0.3 (0.9)	
VAV-216	METALAIRE / TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	216 & 218	45 (94)	14 (28)	150 (6)	63	<15	BAS	0.3 (0.9)	
VAV-215	METALAIRE / TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	215	117 (246)	35 (74)	150 (6)	63	<15	BAS	0.7 (2.3)	
VAV-214	NOT USED										
VAV-213	METALAIRE / TH510 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	213 & 214	370 (781)	112 (234)	250 (10)	63	<15	BAS	2.1 (7.3)	
VAV-212	NOT USED										
VAV-211	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	211 & 212	229 (484)	69 (146)	200 (8)	63	<15	BAS	1.3 (4.5)	
VAV-210	METALAIRE / TH508 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	210 & 210A	194 (411)	59 (123)	200 (8)	63	<15	BAS	1.1 (3.8)	
VAV-202	METALAIRE / TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	202 & 203	76 (160)	24 (48)	150 (6)	63	<15	BAS	0.4 (1.2)	
VAV-203	NOT USED										
VAV-204	METALAIRE / TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	204 & 205	76 (160)	24 (48)	150 (6)	63	<15	BAS	0.4 (1.2)	
VAV-205	NOT USED										
VAV-206	METALAIRE / TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	206 & 208	82 (172)	24 (52)	150 (6)	63	<15	BAS	0.2 (0.6)	
VAV-207	NOT USED										
VAV-209	METALAIRE / TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	207 & 209	52 (173)	26 (52)	150 (6)	63	<15	BAS	0.5 (1.5)	
VAV-C205	METALAIRE / TH510 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	C205	444 (940)	134 (282)	250 (10)	63	16	BAS	NONE	
VAV-C206	METALAIRE / TH506 (OR APPROVED ALTERNATE)	SINGLE DUCT TERMINAL UNIT	C206 & C204	107 (225)	32 (68)	150 (6)	64	<15	BAS	NONE	
VAV-C25I	NOT USED										

CONTRACTOR TO COORDINATE VAV BOX CONTROLS AND COIL ACCESS PRIOR TO ORDERING FOR EASE OF CONNECTION AND MAINTENANCE PUPROSES.



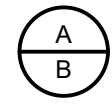
Key Plan

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A = Detail number  
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2	ISSUED FOR CONVENIENCE	TA	APR 12, 2019
1	POST-TENDER ADDENDUM NO.1	TA	FEB 26, 2019
0	ISSUED FOR PERMIT & TENDER	TA	NOV 2, 2018
NO.	ISSUED	BY	DATE

Orientation



Seal

Seal

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Design, Engineering & Construction  
Physical Resources  
Guelph, Ontario. N1G 2W1

Consultant

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Project

**BUILDING #046  
RENOVATIONS**

Drawing Title

**VENTILATION SCHEDULES  
2 OF 2**  
Project No.  
**504034**

Location

**UNIVERSITY OF GUELPH  
BUILDING #46**

Scale

AS NOTED

Date

APR 12, 2019

Drawn by

HW

Drawing No.

Checked By

NC

Approved By

KDT

JLR #

27915

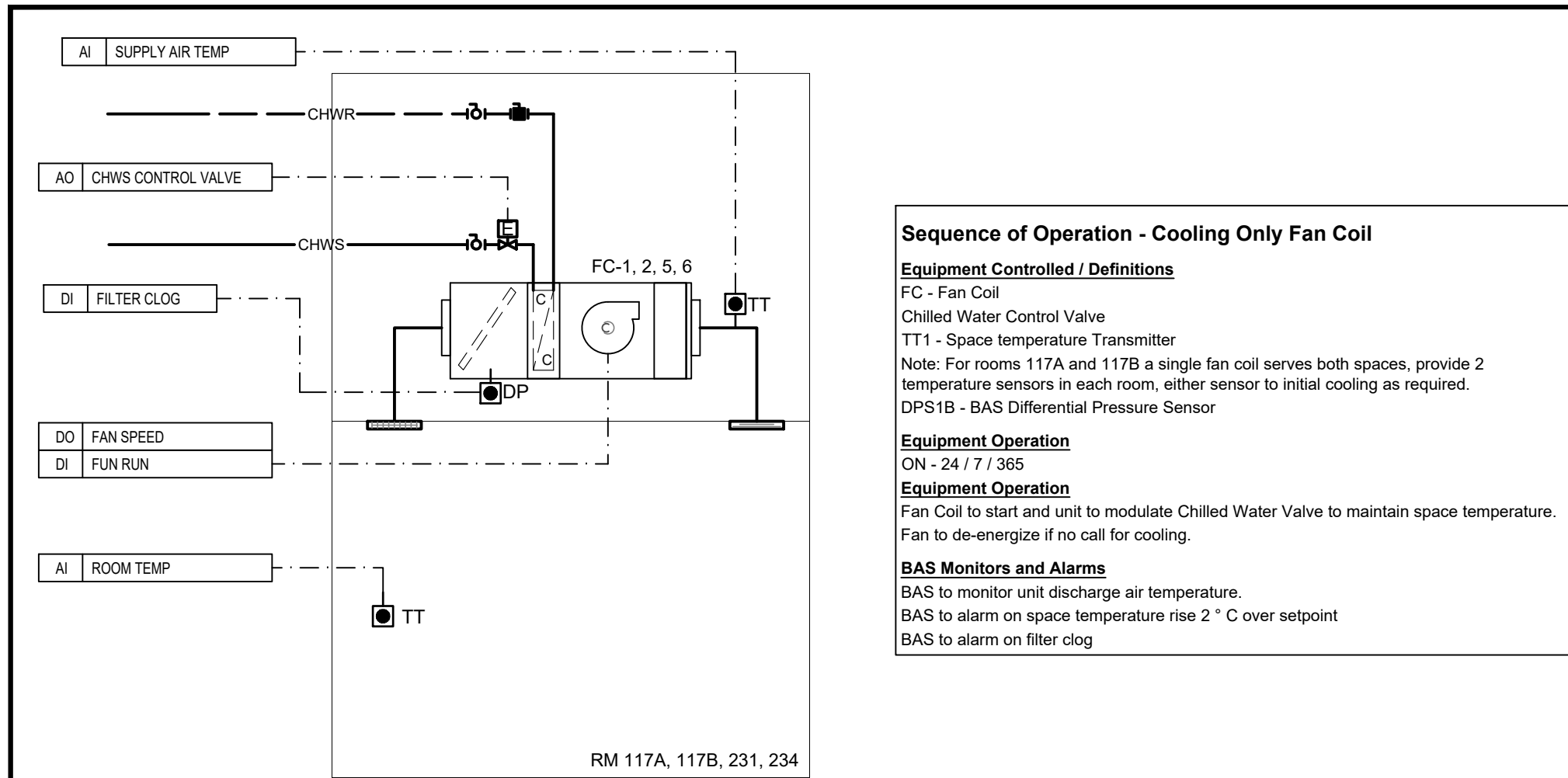
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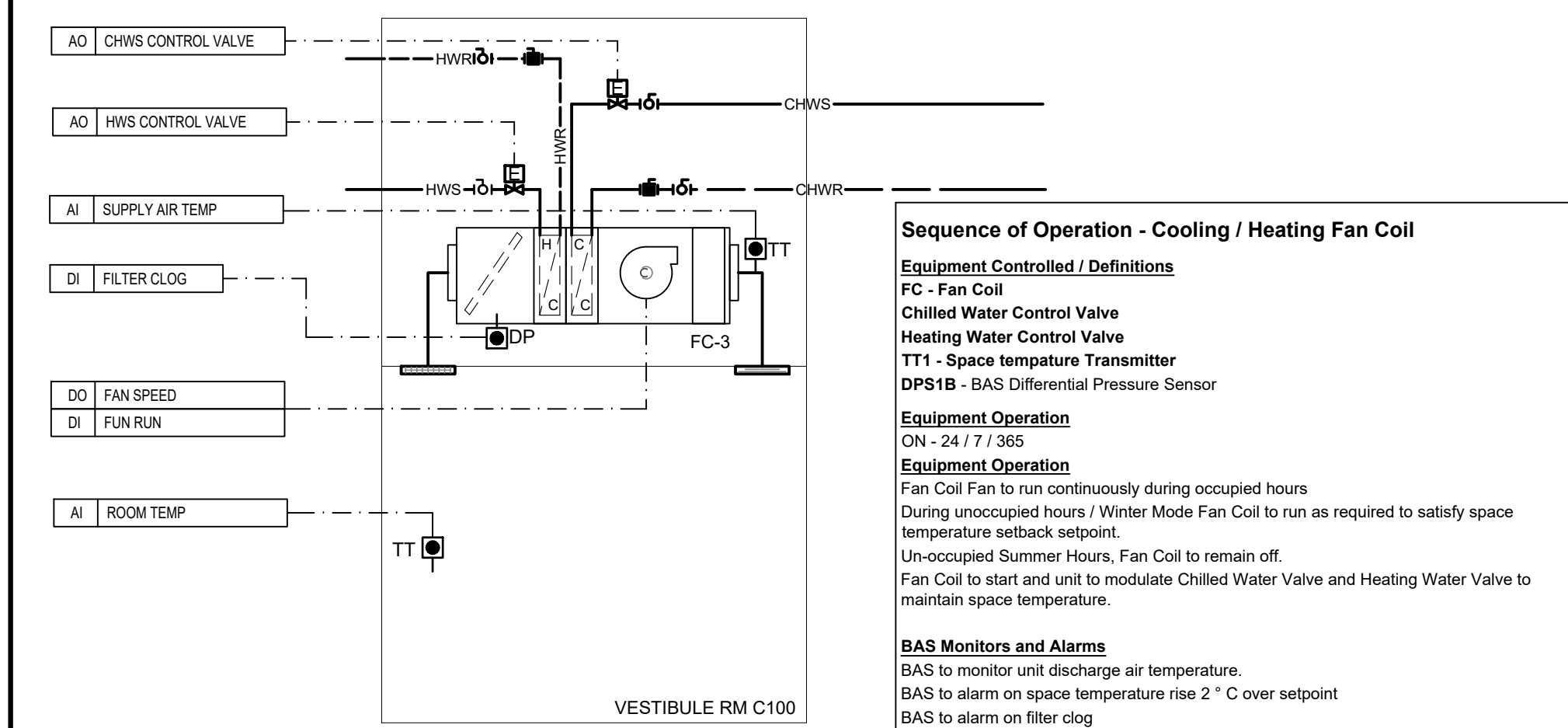


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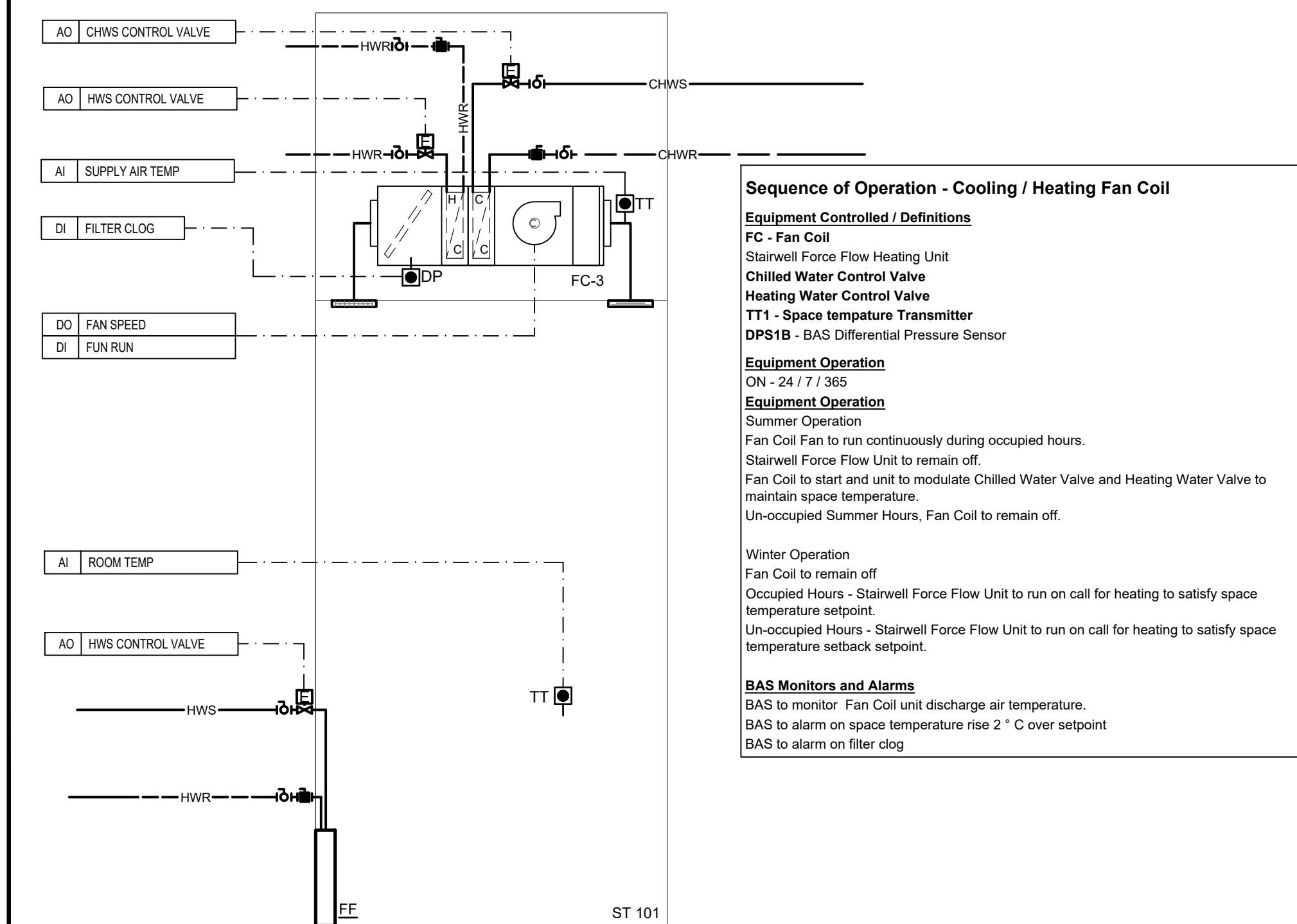




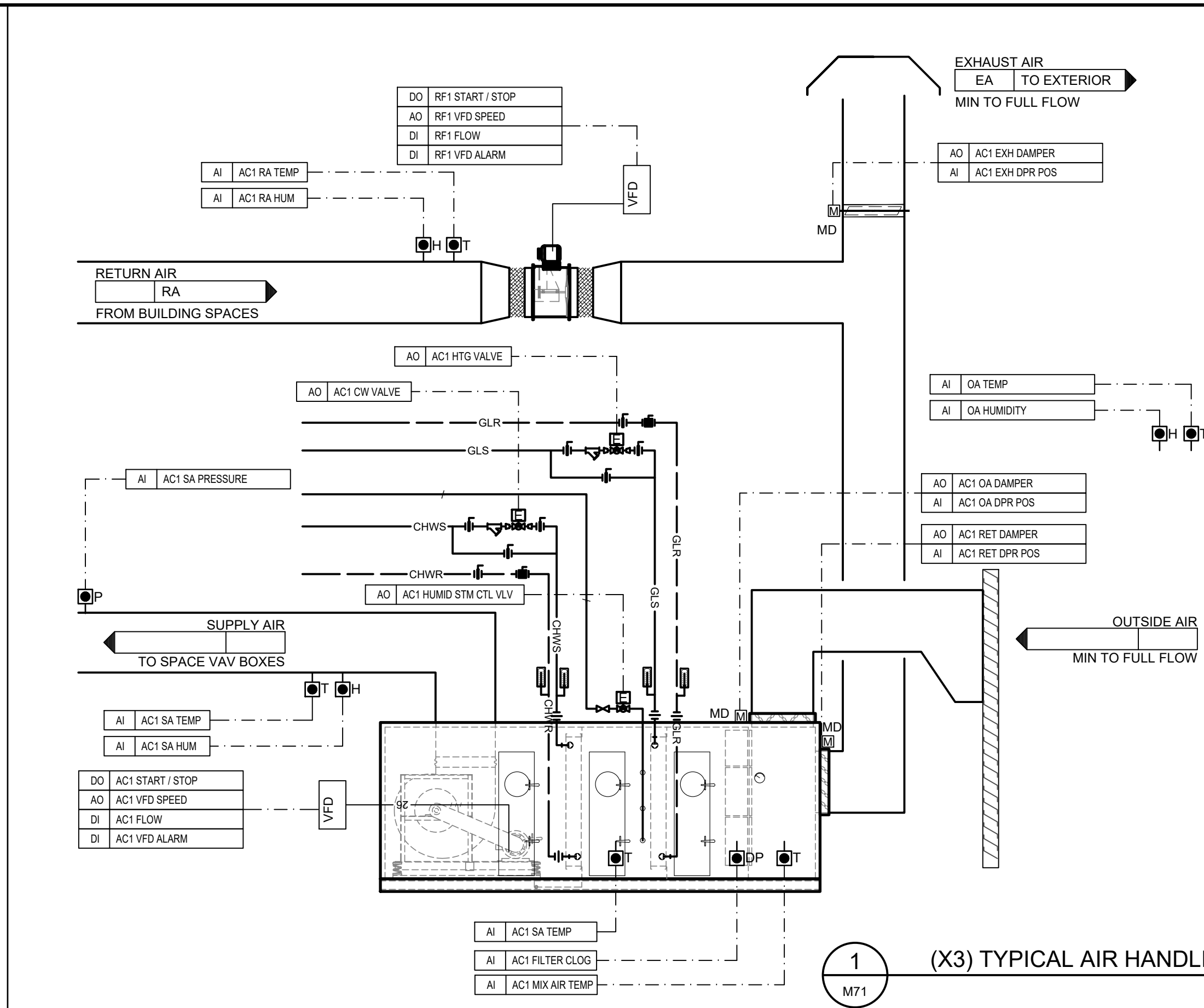
2 TYPICAL COOLING ONLY FAN COIL CONTROL  
M71 SCALE: NTS



3 TYPICAL COOLING / HEATING FAN COIL CONTROL  
M71 SCALE: NTS



4 STAIR 101 COOLING / HEATING CONTROL  
M71 SCALE: NTS



**Sequence of Operation - Exist Perimeter Supply Ventilation System**

**Equipment Controlled / Definitions**  
 AC1 w VFD - AHU Supply Fan / Location Penthouse  
 RF1 w VFD - Return Fan / Location Penthouse  
 Chilled Water Control Valve  
 Heating Water Control Valve  
 Humidification Steam Control Valve  
 OA Damper / Exhaust Damper / Return Damper  
 DPS1 - Duct Pressure Sensor (located ½ way down duct)  
 TT1 - Outside Air Temp Sensor  
 TT2 - Supply Air Temp Sensor  
 TT3 - Return Air Temp Sensor  
 HS1 - Outside Air Humidity Sensor  
 HS2 - Supply Air Humidity Sensor  
 HS3 - Return Air Humidity Sensor  
 DPS1B - New Main Filter Pressure Gauge and BAS Differential Pressure Sensor

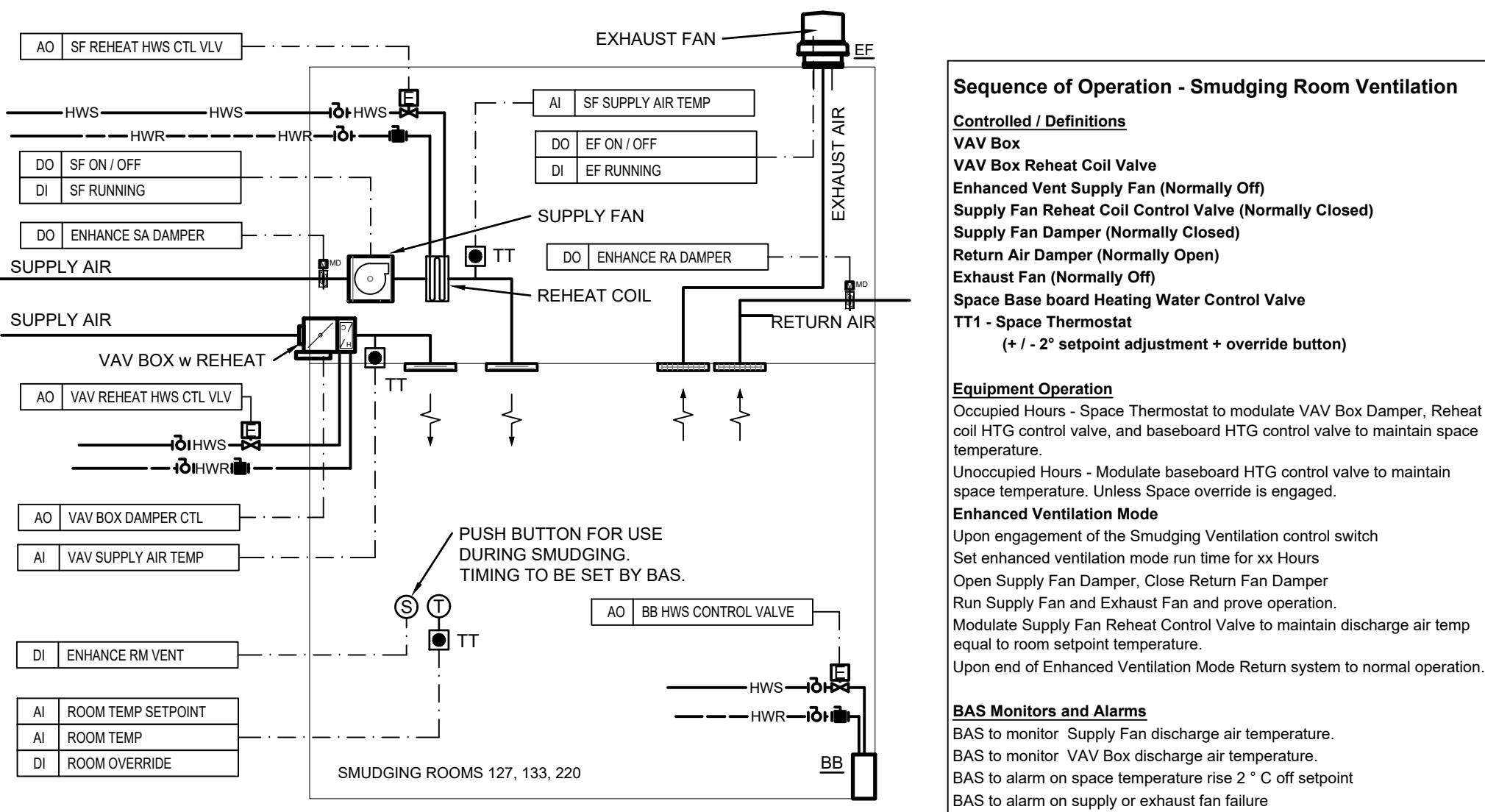
**Equipment Operation**  
 ON - Occupied Periods as Scheduled, or when space override is active  
 Fans are Variable Volume VFD

**Equipment Operation**  
 Upon call for scheduled operation (or space occupied override);  
 Unit conditions: Valves Closed, OA and EA Damper Closed, RA Damper Open  
 Upon call for Unit Start  
 Start AC1 and RF1 at low flow, Wait 10 Min, Open OA Damper to min position. Maintain Discharge Air Temp via modulation of Heating and Chilled Water Valves. If exterior conditions permit modulate OA / RA / EA Dampers for economizer operation and free cooling.  
 Utilize Duct Pressure setpoint and modulate Supply and Return Fan Speed to maintain Duct Pressure setpoint.  
 Return fan VFD to track with supply fan speed setpoint  
 Note: TAB contractor to provide volume setpoints for various AC1 Fan and RF1 Fan operations (40%, 50%, 60%, 70%, 80%, 90%) for proper tracking of RF and SF speeds to maintain OA volume control.  
 BAS to monitor return air humidity and provide humidifier with signal to control discharge humidity capacity, to maintain return air humidity setpoint.  
 Setpoint to be variable based upon outside air temperature. (-25°C = 25%RH, 10°C = 50% RH)

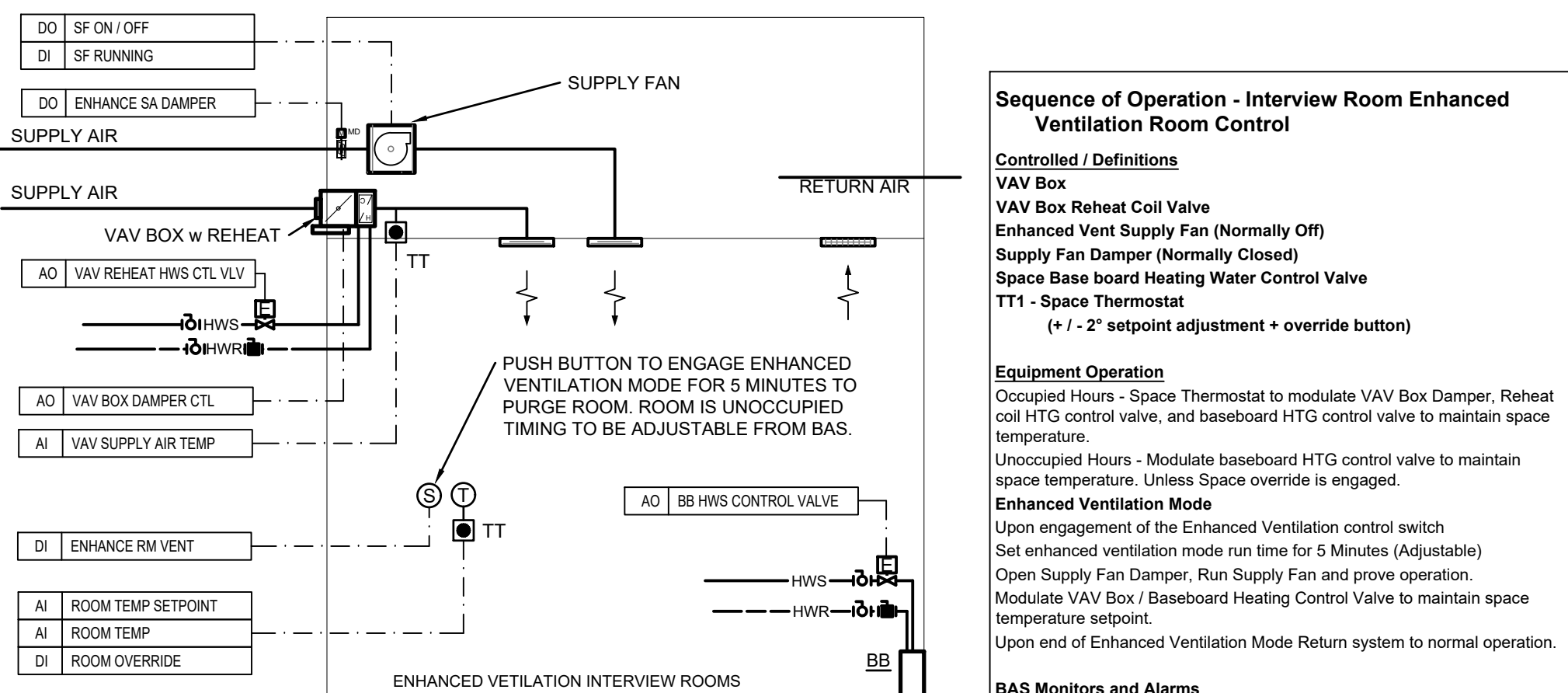
**Economizer Operation:**  
 If OA Temperature permits Economizer Operation; Modulate OA / RA / EA Dampers to maintain discharge air temperature.  
 If Economizer Damper operation cannot maintain duct supply air temperature return unit to coil control. Return OA Damper to min position.

**BAS Monitors and Alarms**  
 BAS to monitor AC1 / RF1 fan status and alarm on failure.  
 BAS to monitor freeze stat temperature monitor on heating coil discharge and shut down SF1 unit if temperature > 4.4 ° C (40°F). P3 to continue to run. Initiate alarm to Monitor.  
 BAS to monitor Supply and Return Air Temperatures  
 BAS to monitor Supply and Return Air Humidity

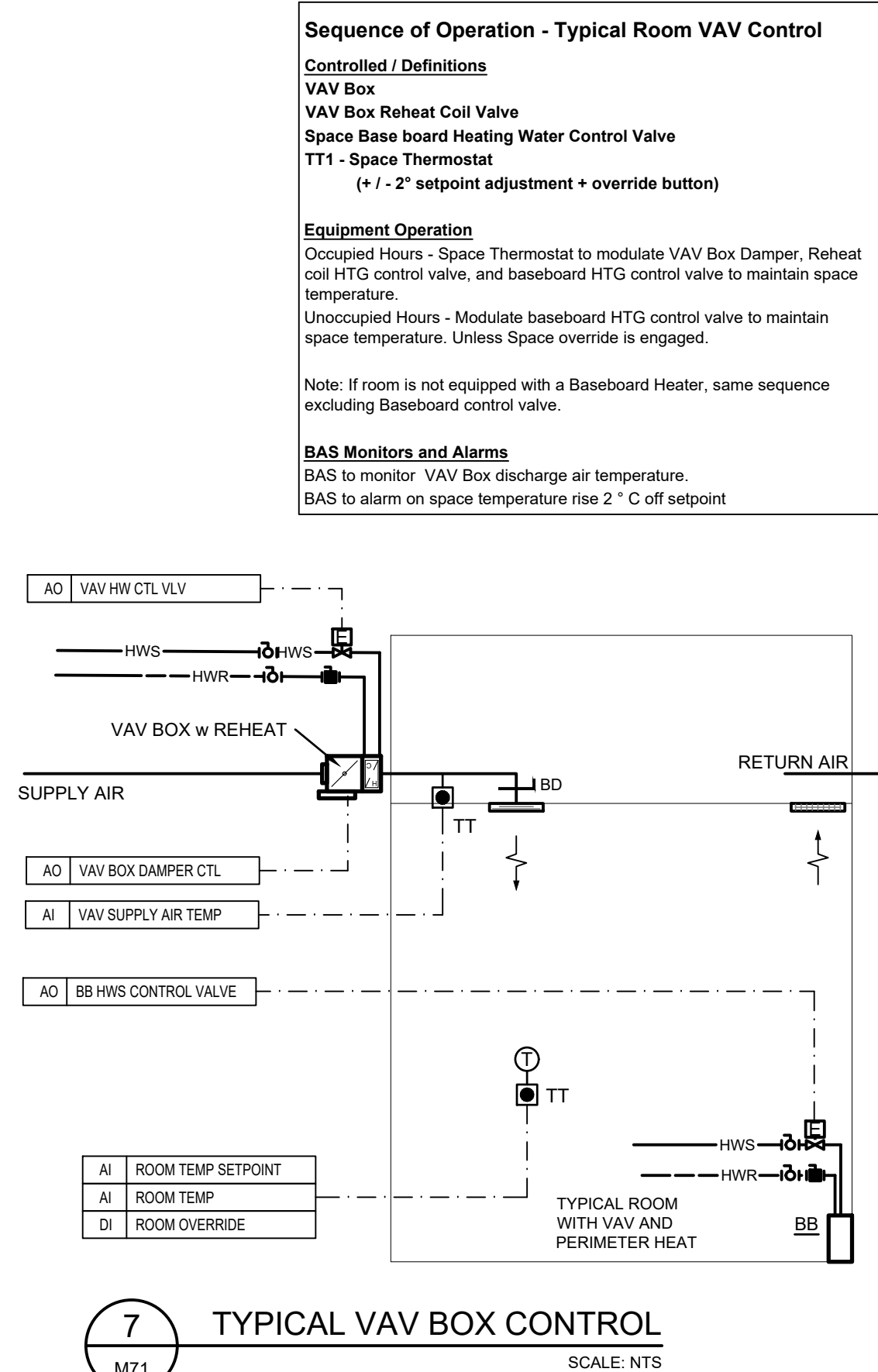
1 (X3) TYPICAL AIR HANDLING UNIT CONTROL  
M71 SCALE: NTS



5 SMUDGING ROOM VENTILATION CONTROL  
M71 SCALE: NTS



6 INTERVIEW ROOM VENTILATION CONTROL  
M71 SCALE: NTS



7 TYPICAL VAV BOX CONTROL  
M71 SCALE: NTS

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1	ISSUED FOR CONVENIENCE	TA	APR 12, 2019
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NO.	ISSUED	BY	DATE

Orientation	
Seal	Seal

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Consultant **J.R. J.L. Richards**  
 ENGINEERS - ARCHITECTS - PLANNERS

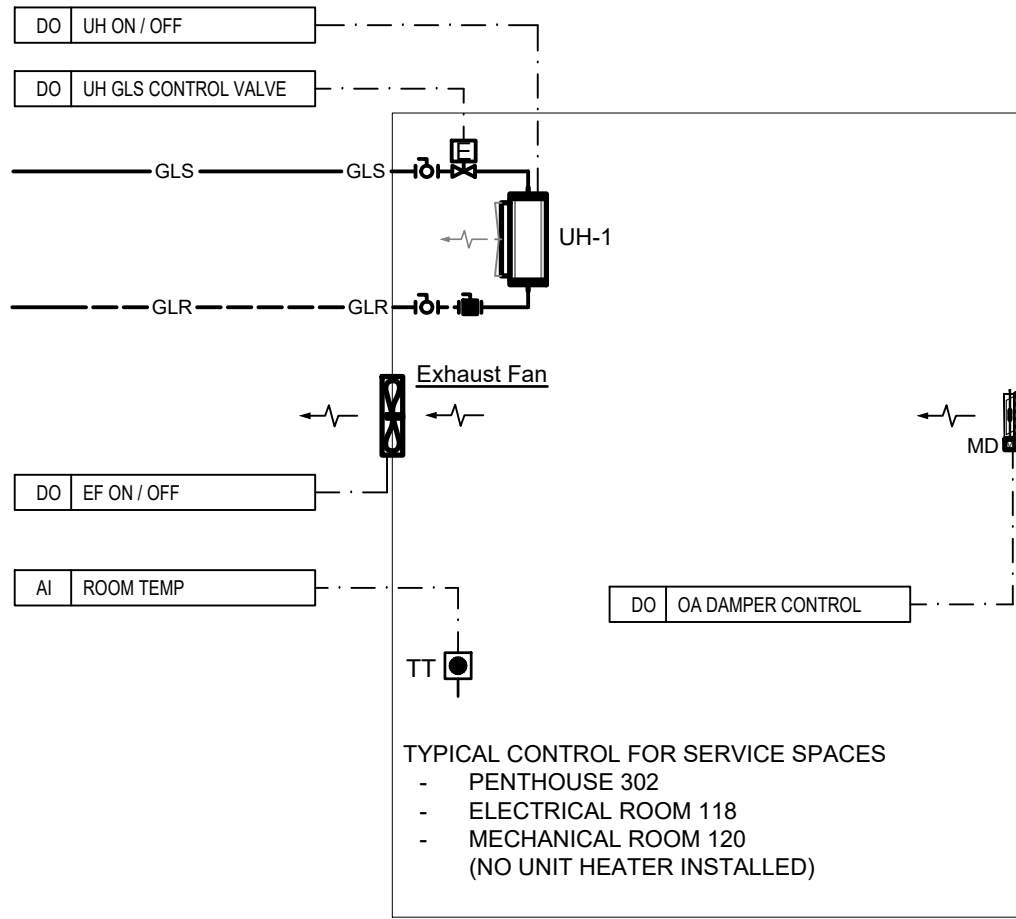
Project  
**BUILDING #046 RENOVATIONS**

Drawing Title  
**CONTROLS SCHEMATIC 2 OF 3**  
 Project No.  
**504034**

Location  
**UNIVERSITY OF GUELPH BUILDING #46**

Scale NTS	Date APR 12, 2019
Drawn by TJ	Drawing No.
Checked By NC	
Approved By KT	
JLR # 27915	<b>M71</b>
Cad File No. ----	





**Sequence of Operation - Penthouse Space Temp**

**Equipment Controlled / Definitions**  
UH - Unit Heater Fan  
UH Heating Water Control Valve (Normally Open)  
Space Exhaust Fan w Backdraft Damper (Normally Off)  
Outside Air Intake Damper (Normally Closed)  
TT - Space temperature Transmitter

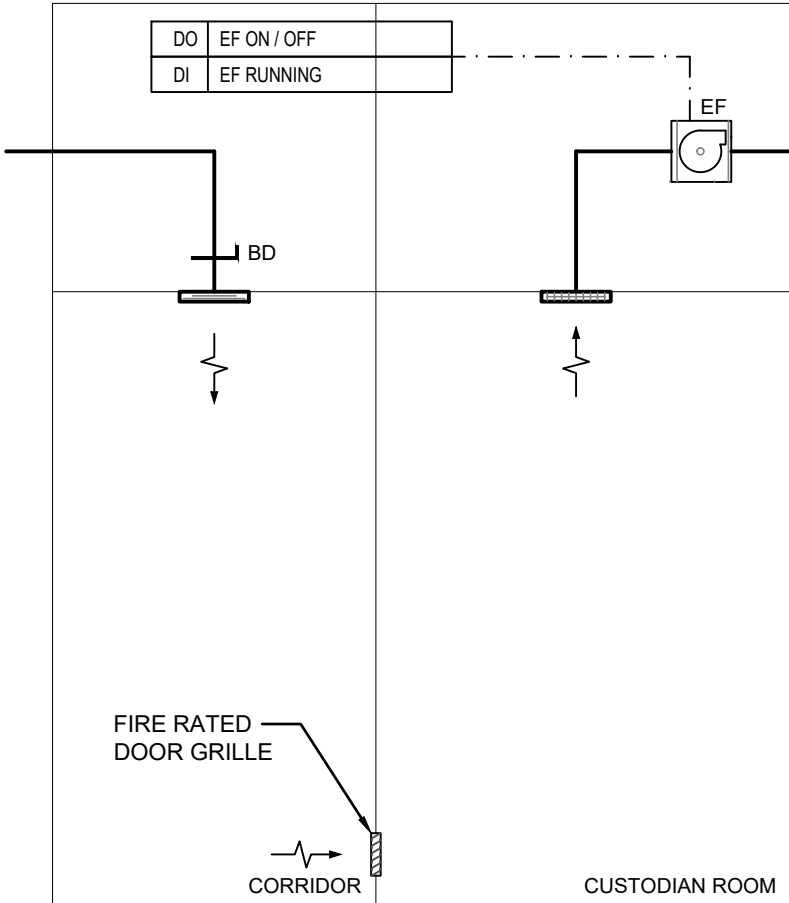
**Equipment Operation**  
ON - 24 / 7 / 365

**Equipment Operation**  
BAS to maintain space temperature control.  
Upon drop in space temperature start Unit Heater and Open Htg Control Valve to meet setpoint.  
Upon rise in temperature open outside air damper, to meet setpoint.  
Upon further rise in temperature (+ 2°C from setpoint) start exhaust fan to meet setpoint.

**BAS Monitors and Alarms**  
BAS to alarm on space temperature below 10 ° C.

TYPICAL CONTROL FOR SERVICE SPACES  
- PENTHOUSE 302  
- ELECTRICAL ROOM 118  
- MECHANICAL ROOM 120  
(NO UNIT HEATER INSTALLED)

1 SERVICE SPACE TEMPERATURE CONTROL  
M72 SCALE: NTS



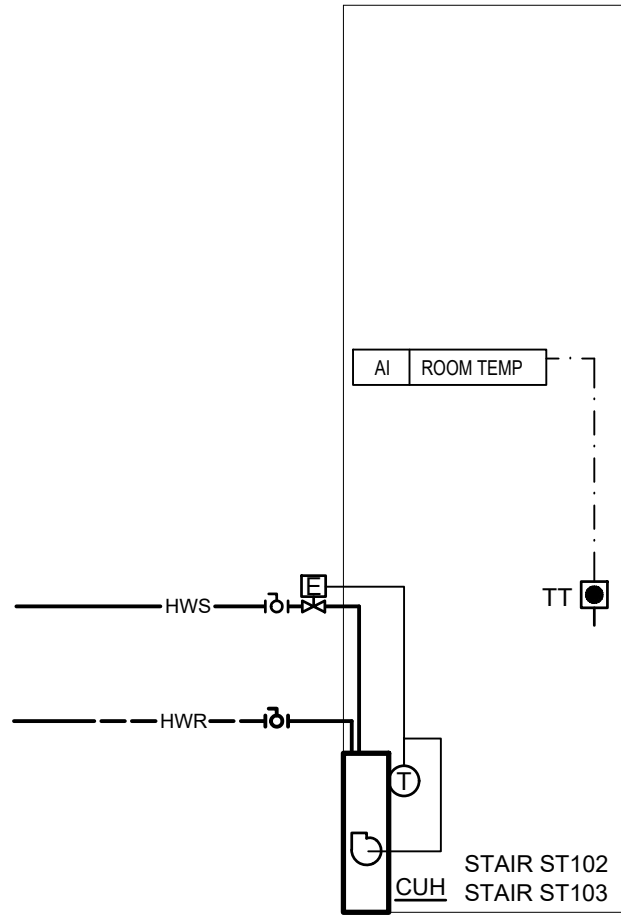
**Sequence of Operation - Janitor / Custodian Room Vent**

**Equipment Controlled / Definitions**  
EF - Exhaust Fan

**Equipment Operation**  
BAS run fan on U of G independent run schedule for custodian rooms.

**BAS Monitors and Alarms**  
BAS to alarm on fan failure.

2 CUSTODIAN ROOM VENT CONTROL  
M72 SCALE: NTS



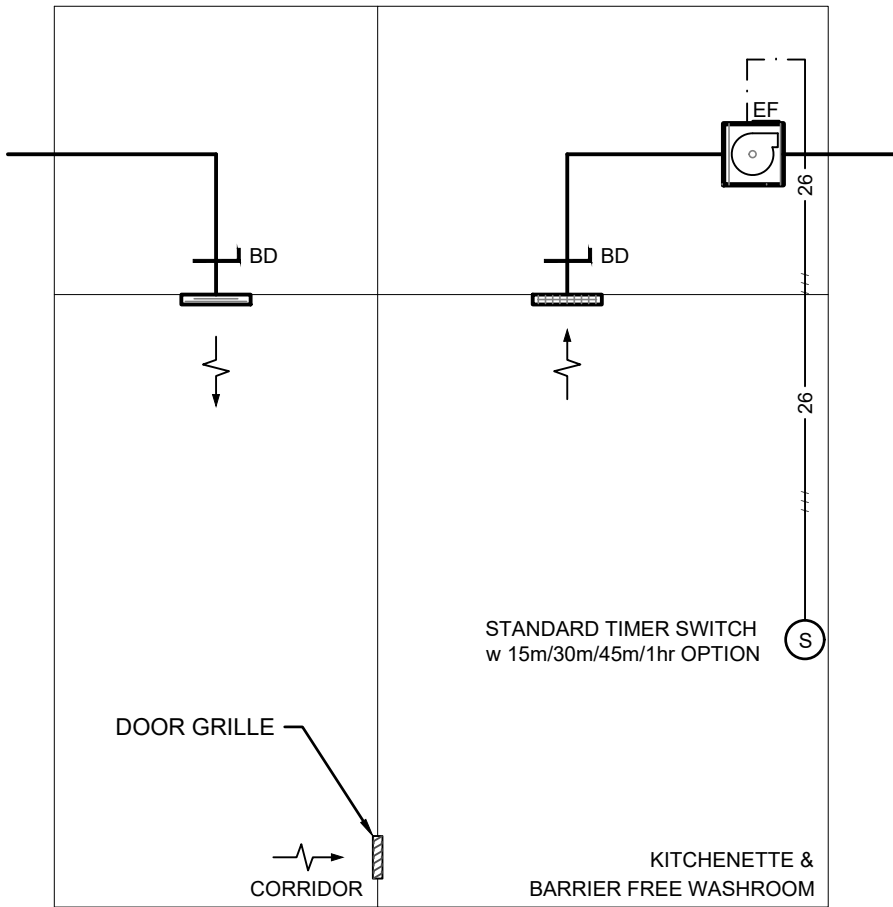
**Sequence of Operation - Stairwell Heating**

**Equipment Controlled / Definitions**  
CUH - Cabinet Unit Heater

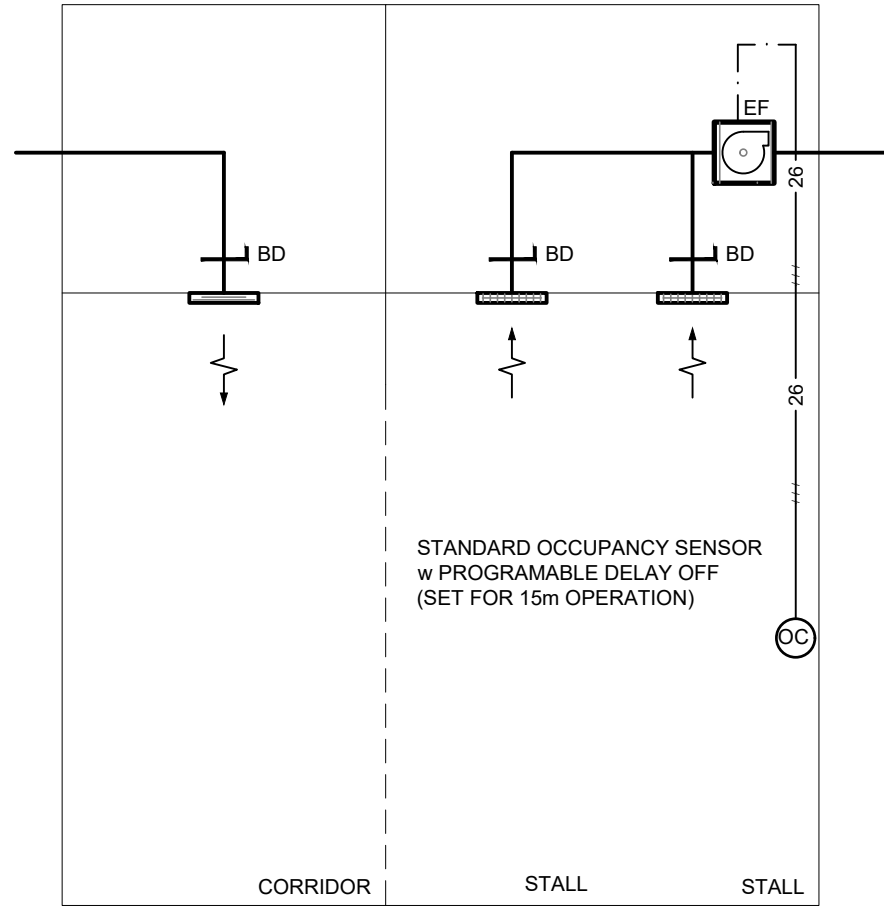
**Equipment Operation**  
Equipment integral 120V thermostat to open heating valve and run cabinet fan to maintain space temperature.

**BAS Monitors and Alarms**  
BAS to monitor stairwell space temperature and alarm if temperature is < 10°.

3 STAIRWELL TEMPATURE CONTROL  
M72 SCALE: NTS



4 INDEPENDANT CONTROL ROOMS  
M72 SCALE: NTS



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Orientation	
Seal	Seal

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Project  
**BUILDING #046  
RENOVATIONS**

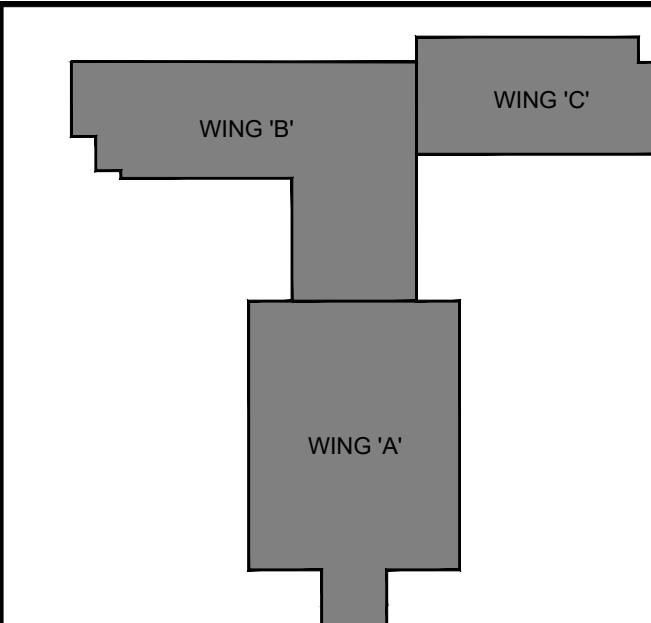
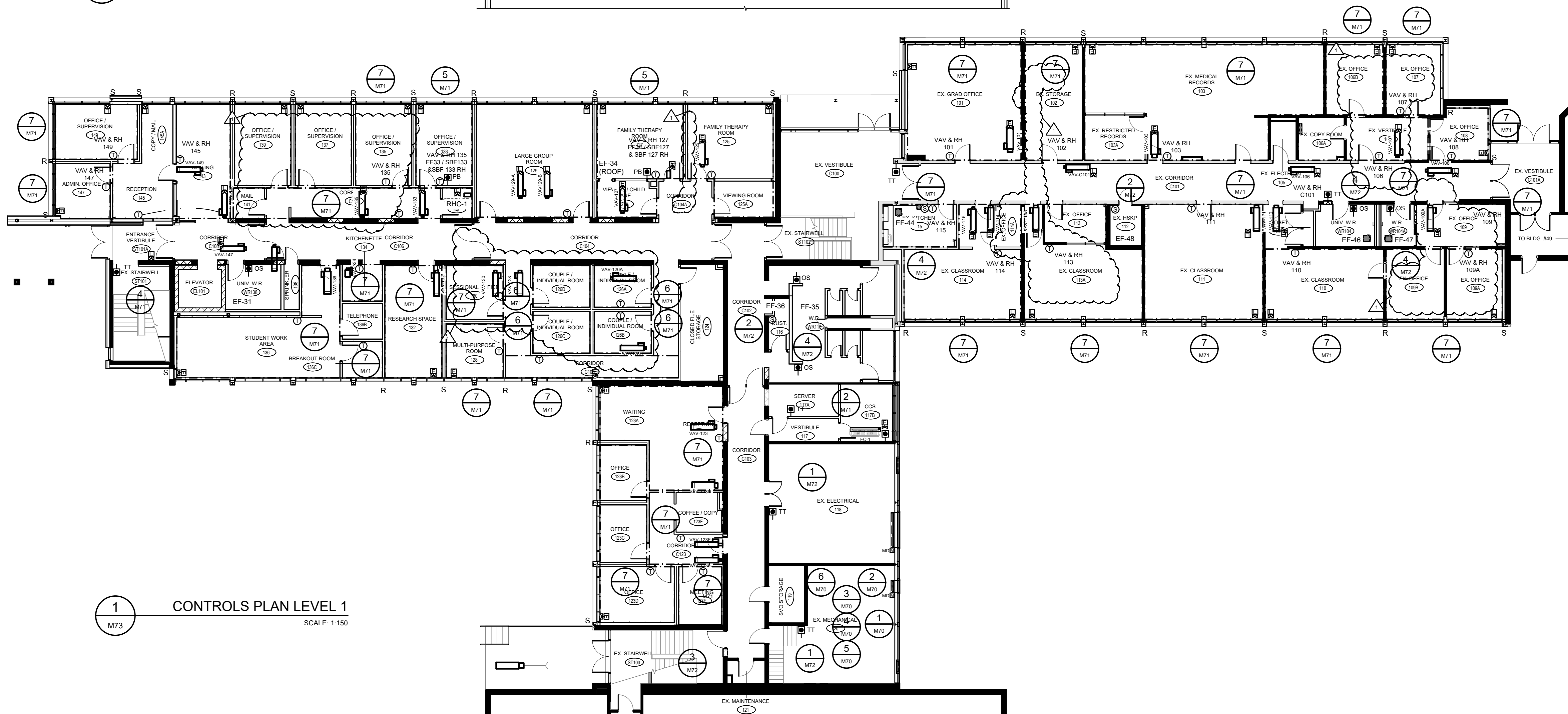
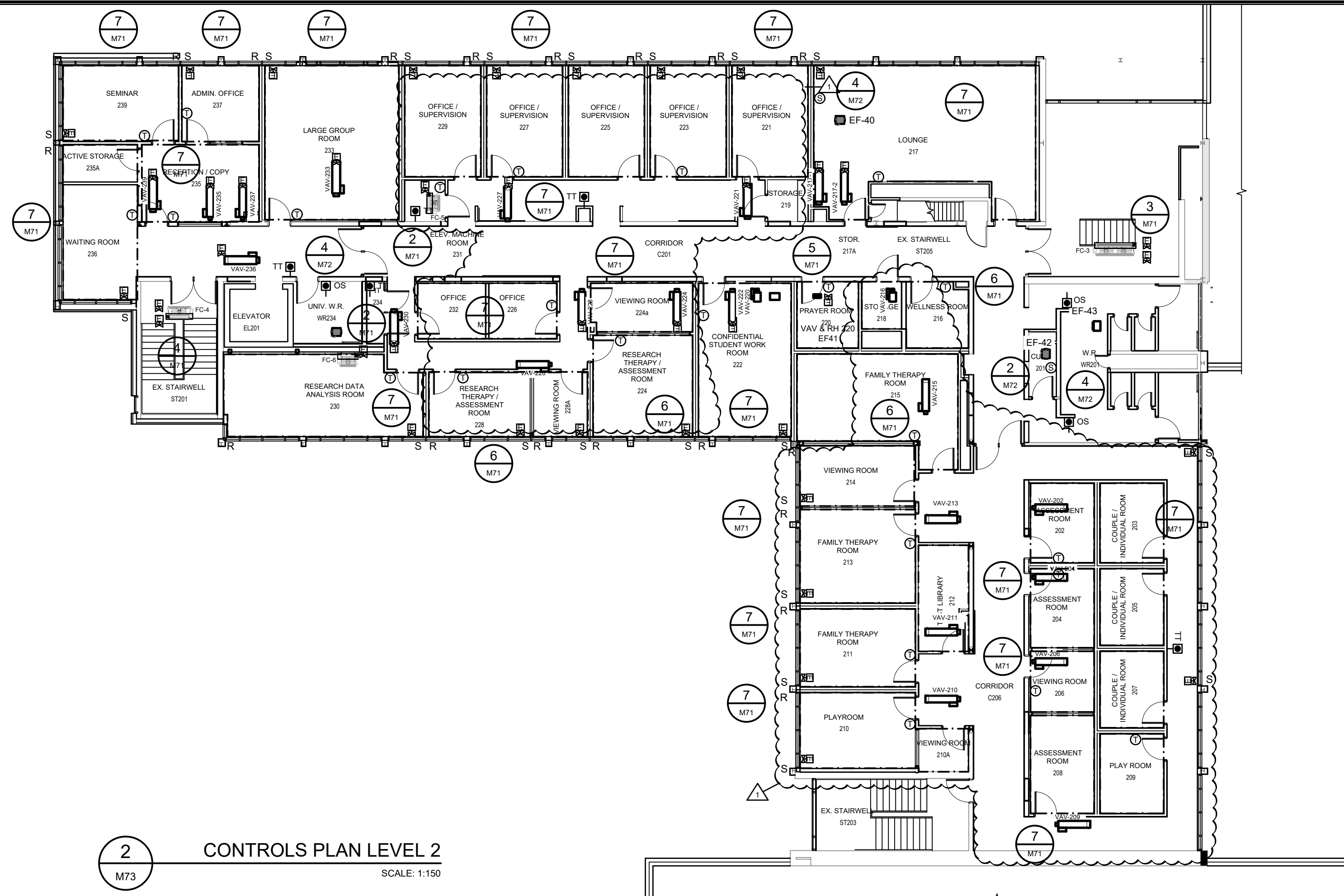
Drawing Title  
**CONTROLS SCHEMATICS 3  
OF 3**  
Project No.  
**504034**

Location  
**UNIVERSITY OF GUELPH  
BUILDING #46**

Scale NTS	Date APR 12, 2019
Drawn by JT	Drawing No. <b>M72</b>
Checked By NC	
Approved By NC	
JLR # 27915	

Cad File No. ----





#### Key Plan

#### DO NOT SCALE DRAWINGS:

Contractors must check and verify all site conditions. Notify the Owner's Representative in writing before proceeding with the work if discrepancies are evident between the drawings and the site condition. No extras to the contract will be allowed if discrepancies were evident prior to start of work.

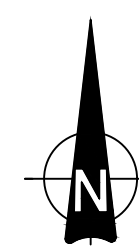
#### UNEXPECTED DISCOVERY OF ASBESTOS:

Where a friable material is discovered during construction, renovations and/or demolition, and it is suspected to contain asbestos, the Contractor must stop all work that may disturb the material. The Contractor shall advise the Owner of the discovery and await instructions from the owner.

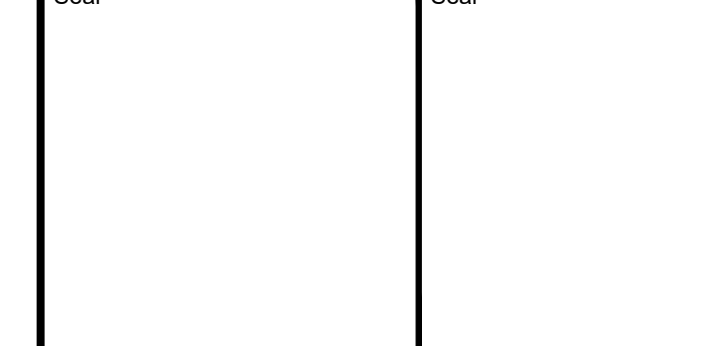
A = Detail number  
B = Drawing number where detailed

2	ISSUED FOR CONVENIENCE	TA	APR 12, 2019
1	POST-TENDER ADDENDUM NO.1	TA	FEB 26, 2019
0	ISSUED FOR PERMIT & TENDER	TA	NOV 2, 2018
NO.	ISSUED	BY	DATE

#### Orientation



Seal



**UNIVERSITY of GUELPH**  
Design, Engineering & Construction  
Physical Resources  
Guelph, Ontario. N1G 2W1

Consultant www.jrichards.ca

**JR J.L.Richards**  
ENGINEERS - ARCHITECTS - PLANNERS

Project  
**BUILDING #046 RENOVATIONS**

Drawing Title

**CONTROLS PLAN**

Project No.  
**504034**

Location  
**UNIVERSITY OF GUELPH BUILDING #46**

Scale

Date  
APR 12, 2019

Drawn by

Drawing No.

Checked By

Approved By

JLR # 27915

Cad File No. ----

**M73**

