MECHANICAL LEGEND & DRAWING LIST

PLUMBING AND PIPING

- FCO — FLOOR CLEANOUT
- CO — CLEANOUT
- RUNNING TRAP
- DRAIN – FLOOR/AREA
- DRAIN – ROOF
- METER
- HB — HOSE BIBB – C/W ISOLATION VALVE
- PLUMBING FIXTURE TAG
- BACKWATER VALVE
- SAN — SANITARY SEWER – ABOVE GRADE
- SAN — SANITARY SEWER – BELOW GRADE
- V — SANITARY SEWER – VENT
- ST — STORM SEWER – ABOVE GRADE
- ST — STORM SEWER – BELOW GRADE
- DCW — DOMESTIC COLD WATER
- DHW — DOMESTIC HOT WATER
- DHWR — DOMESTIC HOT WATER RECIRC.
- C — CONDENSATE DRAIN
- DOMESTIC WATER TEMPERED
- HEAT TRACE

LABORATORY PIPING AND SYSTEMS

- LCA — LAB COMPRESSED AIR
- LV — LAB VACUUM
- AD — ACID DRAIN PIPING, ABOVE SLAB
- AD — ACID DRAIN PIPING, BELOW SLAB
- AV — ACID DRAIN VENT PIPING
- IA — INSTRUMENT AIR PIPING
- IA — INSTRUMENT AIR OUTLET

PIPE VALVES AND FITTINGS

- PIPE DROP
- PIPE RISE
- ISOLATION VALVE
- BALANCING VALVE
- CHECK VALVE
- PRESSURE REDUCING VALVE
- STRAINER
- BACKFLOW PREVENTOR
- PUMP (SCHEMATIC)
- SHUT OFF VALVE
- UNION

LIQUID HEAT TRANSFER

- HWS — HEATING WATER SUPPLY
- HWR — HEATING WATER RETURN
- GLCHWS — CHILLED GLYCOL SUPPLY
- GLCHWR — CHILLED GLYCOL RETURN
- CHWS — CHILLED WATER SUPPLY
- CHWR — CHILLED WATER RETURN
- CWS — CONDENSER WATER SUPPLY
- CWR — CONDENSER WATER RETURN
- RADIATION/RADIANT PANEL TAG
  - RP–1 — TYPE SUPPLY
  - 48 — LENGTH PANEL OR CABINET
  - 2.3 — CAPACITY (MBH)
  - 2 CIRCUITS

AIR DISTRIBUTION

- SUPPLY AIR DUCT
- RETURN AIR DUCT
- EXHAUST AIR DUCT
- RELIEF AIR DUCT
- OUTSIDE AIR DUCT
- BALANCING DAMPER
- BDD — BACK DRAFT DAMPER
- M — MOTORIZED DAMPER
- FIRE DAMPER
- SMOKE DAMPER
- FSF — FIRE STOP FLAP
- TURNING VANES
- ACOUSTIC LINED DUCTWORK
- FLEX CONNECTION

AIR OUTLET TAG

S–1	TYPE	SUPPLY TYPE S
300#	SIZE	RETURN TYPE R
200	FLOW (L/S)	EXHAUST TYPE E
60		

- RTU–1 — EQUIPMENT TAG
- U/C — DOOR UNDERCUT
- DOOR GRILLE (SIZE NOTED)
- DIRECTION OF AIR FLOW

DUCT DIMENSIONING
(CLEAR INSIDE DUCT DIMENSION)

- 300# — ROUND DUCT
- 300/200 OV — OVAL DUCT (WHERE 300 IS THE VISIBLE DIM.)
- 300x200 — RECTANGULAR DUCT (WHERE 300 IS THE VISIBLE DIM.)
- 300X200 — SINGLE LINE DUCT REPRESENTATION

CONTROLS AND INSTRUMENTATION

- T — THERMOSTAT
- T/R — REVERSE ACTING THERMOSTAT
- T/Z — ZONE THERMOSTAT
- T/NC — RE–HEAT COIL THERMOSTAT
- CONTROL WIRING/PNEUMATIC
- TWO–WAY CONTROL VALVE

FIRE PROTECTION

- UPRIGHT HEAD – NEW
- PENDANT HEAD – NEW
- CONCEALED HEAD – NEW
- PENDANT HEAD – DEMOLISHED

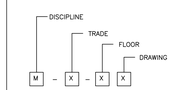
RENOVATION/DEMO.

- EXISTING TO REMAIN
- EXISTING TO BE DEMOLISHED
- NEW
- SPRINKLER HEAD – EXISTING
- SPRINKLER HEAD – NEW
- SPRINKLER HEAD – DEMOLISHED

ABBREVIATIONS

ABBV	FULL NAME
AC	AIR CONDITIONER
AF	AIR FILTER
AFF	ABOVE FINISHED FLOOR
AL	ALUMINIUM
AS	AIR SYSTEM
B	BOILER
BDD	BACK DRAFT DAMPER
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BTUH	BRITISH THERMAL UNIT
CC	COIL – COOLING
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHGLYR	CHILLED GLYCOL RETURN
CHGLYS	CHILLED GLYCOL SUPPLY
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
COMP	AIR COMPRESSOR
CR	CONDENSATE RECEIVER
CT	COOLING TOWER
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DC	DRY COOLER
DCW	DOMESTIC COLD WATER
DF	DRINKING FOUNTAIN
DFU	DUCT FURNACE
DHWR	DOMESTIC HOT WATER RECIRC.
DIFF	DIFFUSER
DN	DOWN
DHW	DOMESTIC WATER HEATER
E/A	EXHAUST AIR
EC	ELECTRICAL CONTRACTOR
EF	FAN – EXHAUST
ELEV	ELEVATION
ESP	EXTERNAL STATIC PRESSURE
EV	EXHAUST AIR VALVE
FD	FLOOR DRAIN
FF	FORCE FLOW
FFD	FUNNEL FLOOR DRAIN
FLA	FULL LOAD AMPS
FU	FURNACE
GC	COIL – GLYCOL
GNC	GENERAL CONTRACTOR
GPM	US GALLONS PER MINUTE
HB	HOSE BIBB
HBDR	HUB DRAIN
HC	COIL – HEATING
HC	COIL – HEATING
HE	HEAT EXCHANGER
HP	HORSEPOWER
HUM	HUMIDIFIER
ID	INSIDE DIMENSION
IND	INDUCTION UNIT
JS	JANITOR'S SINK
L/S	LITRES PER SECOND
LAV	LAVATORY
MAX	MAXIMUM
MIN	MINIMUM
MUA	MAKE UP AIR
NOM	NOMINAL
O/A	OUTSIDE AIR
TO/A	TREATED OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
PHC	COIL – PREHEAT
R/A	RETURN AIR
RD	DRAIN – ROOF AREA
REL/A	RELIEF AIR
RF	FAN – RETURN AIR
RHC	COIL – REHEAT
RTU	ROOF TOP UNIT
RWL	RAIN WATER LEADER
S/A	SUPPLY AIR
SF	FAN – SUPPLY AIR
SK	SINK
SL	SILENCER
SV	SUPPLY AIR VALVE
ESP	EXTERNAL STATIC PRESSURE
UR	URINAL
WC	WATER CLOSET
CTE	CONNECT TO EXISTING

MECHANICAL LEGEND



MECHANICAL DRAWING LIST

SHEET #	BUILDING	TITLE			
M0.01		MECHANICAL LEGEND & DRAWING LIST			
M1.00	HYDRAULICS WING	RESERVED			
M1.01		LAB H158	GROUND FLOOR	PLUMBING PLAN	DEMOLITION
M1.02		LAB H158	GROUND FLOOR	HVAC & HVAC PIPING PLAN	DEMOLITION
M1.03		LAB H158	ROOF	HVAC PLAN	DEMOLITION
M1.04		RESERVED			
M1.05		RESERVED			
M1.06		RESERVED			
M1.07		AHU–43	MEZZANINE	HVAC & HVAC PIPING PLAN	DEMOLITION
M1.08		RESERVED			
M1.09		RESERVED			
M1.10	A&L BUILDING	EXHAUST UPGRADE	FOURTH FLOOR	HVAC & PLUMBING PLAN	DEMOLITION
M1.11		LAB L527 & L530	FIFTH FLOOR	PLUMBING PLAN	DEMOLITION
M1.12		LAB L527 & L530	FIFTH FLOOR	HVAC PLAN	DEMOLITION
M1.13		EXHAUST UPGRADE	SIXTH FLOOR	HVAC & PLUMBING PLAN	DEMOLITION
M1.14		EXHAUST UPGRADE	SEVENTH FLOOR	HVAC & PLUMBING PLAN	DEMOLITION
M1.15		EXHAUST UPGRADE	PENTHOUSE/ROOF	HVAC PLAN	DEMOLITION
M1.16		RESERVED			
M1.17		RESERVED			
M1.18		RESERVED			
M1.19		RESERVED			
M1.20	R&D BUILDING	EVIDENCE ROOMS AND LABS	GROUND FLOOR	HVAC PLAN	DEMOLITION
M1.21		AHU–1, 3, & 5	PENTHOUSE	HVAC PLAN	DEMOLITION
M1.22		RESERVED			
M1.23		RESERVED			
M1.24		RESERVED			
M1.25		RESERVED			
M1.26		RESERVED			
M1.27		RESERVED			
M1.28		RESERVED			
M1.29		RESERVED			
M1.30	WTC BUILDING	HEATING SYSTEM	SERVICE TUNNEL AND BASEMENT	MECHANICAL PLAN	DEMOLITION
M1.31		RESERVED			
M1.32		HEATING SYSTEM	SECOND FLOOR	MECHANICAL PLAN	DEMOLITION
M1.33		HEATING SYSTEM	PENTHOUSE	MECHANICAL PLAN	DEMOLITION
M1.34		RESERVED			
M1.35		RESERVED			
M1.36		RESERVED			
M1.37		RESERVED			
M1.38		RESERVED			
M1.39		RESERVED			
M2.00	HYDRAULICS WING	RESERVED			
M2.01		LAB H158	GROUND FLOOR	PLUMBING PLAN	
M2.02		LAB H158	GROUND FLOOR	HVAC & HVAC PIPING PLAN	
M2.03		LAB H158	ROOF	HVAC PLAN	
M2.04		TRACE METALS STAGING & STORAGE ROOM	GROUND FLOOR	PLUMBING PLAN	
M2.05		TRACE METALS STAGING & STORAGE ROOM	GROUND FLOOR	HVAC PLAN	
M2.06		TRACE METALS STAGING & STORAGE ROOM	GROUND FLOOR	FIRE PROTECTION PLAN	
M2.07		AHU–43	MEZZANINE	HVAC & HVAC PIPING PLAN	
M2.08		RESERVED			
M2.09		RESERVED			
M2.10	A&L BUILDING	EXHAUST UPGRADE	FOURTH FLOOR	HVAC & PLUMBING PLAN	
M2.11		LAB L527 & L530	FIFTH FLOOR	PLUMBING PLAN	
M2.12		LAB L527 & L530	FIFTH FLOOR	HVAC PLAN	
M2.13		EXHAUST UPGRADE	SIXTH FLOOR	HVAC & PLUMBING PLAN	
M2.14		EXHAUST UPGRADE	SEVENTH FLOOR	HVAC & PLUMBING PLAN	
M2.15		EXHAUST UPGRADE	PENTHOUSE/ROOF	HVAC PLAN	
M2.16		RESERVED			
M2.17		RESERVED			
M2.18		RESERVED			
M2.19		RESERVED			
M2.20	R & D BUILDING	EVIDENCE ROOMS AND LABS	GROUND FLOOR	HVAC PLAN	
M2.21		AHU–1, 3, & 5	PENTHOUSE	HVAC PLAN	
M2.22		RESERVED			
M2.23		RESERVED			
M2.24		RESERVED			
M2.25		RESERVED			
M2.26		RESERVED			
M2.27		RESERVED			
M2.28		RESERVED			
M2.29		RESERVED			
M2.30	WTC BUILDING	HEATING SYSTEM	SERVICE TUNNEL AND BASEMENT	MECHANICAL PLAN	
M2.31		RESERVED			
M2.32		HEATING SYSTEM	SECOND FLOOR	MECHANICAL PLAN	
M2.33		HEATING SYSTEM	PENTHOUSE	MECHANICAL PLAN	
M2.34		HEATING SYSTEM	ROOF	MECHANICAL PLAN	
M2.35		RESERVED			
M2.36		RESERVED			
M2.37		RESERVED			
M2.38		RESERVED			
M2.39		RESERVED			
M4.00		MECHANICAL SCHEMATICS – WTC BUILDING – HEATING SYSTEM – DEMOLITION			
M4.01		MECHANICAL SCHEMATICS – WTC BUILDING – HEATING SYSTEM			
M4.02		MECHANICAL SCHEMATICS – GENERAL			
M5.01		MECHANICAL DETAILS – SHEET 1			
M5.02		MECHANICAL DETAILS – SHEET 2			
M5.03		MECHANICAL DETAILS – SHEET 3			
M6.01		CONTROLS SCHEMATICS – SHEET 1			
M6.02		CONTROLS SCHEMATICS – SHEET 2			
M6.03		CONTROLS SCHEMATICS – SHEET 3			
M6.04		CONTROLS SCHEMATICS – SHEET 4			
M7.01		MECHANICAL SCHEDULES – SHEET 1			
M7.02		MECHANICAL SCHEDULES – SHEET 2			

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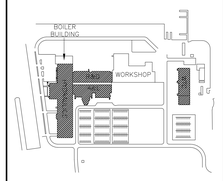
Travaux publics et Services gouvernementaux Canada

DIALOG

Stamp



KEY PLAN
N.T.S.

revision	issue	date
1	ISSUED FOR BID	04/11/2015

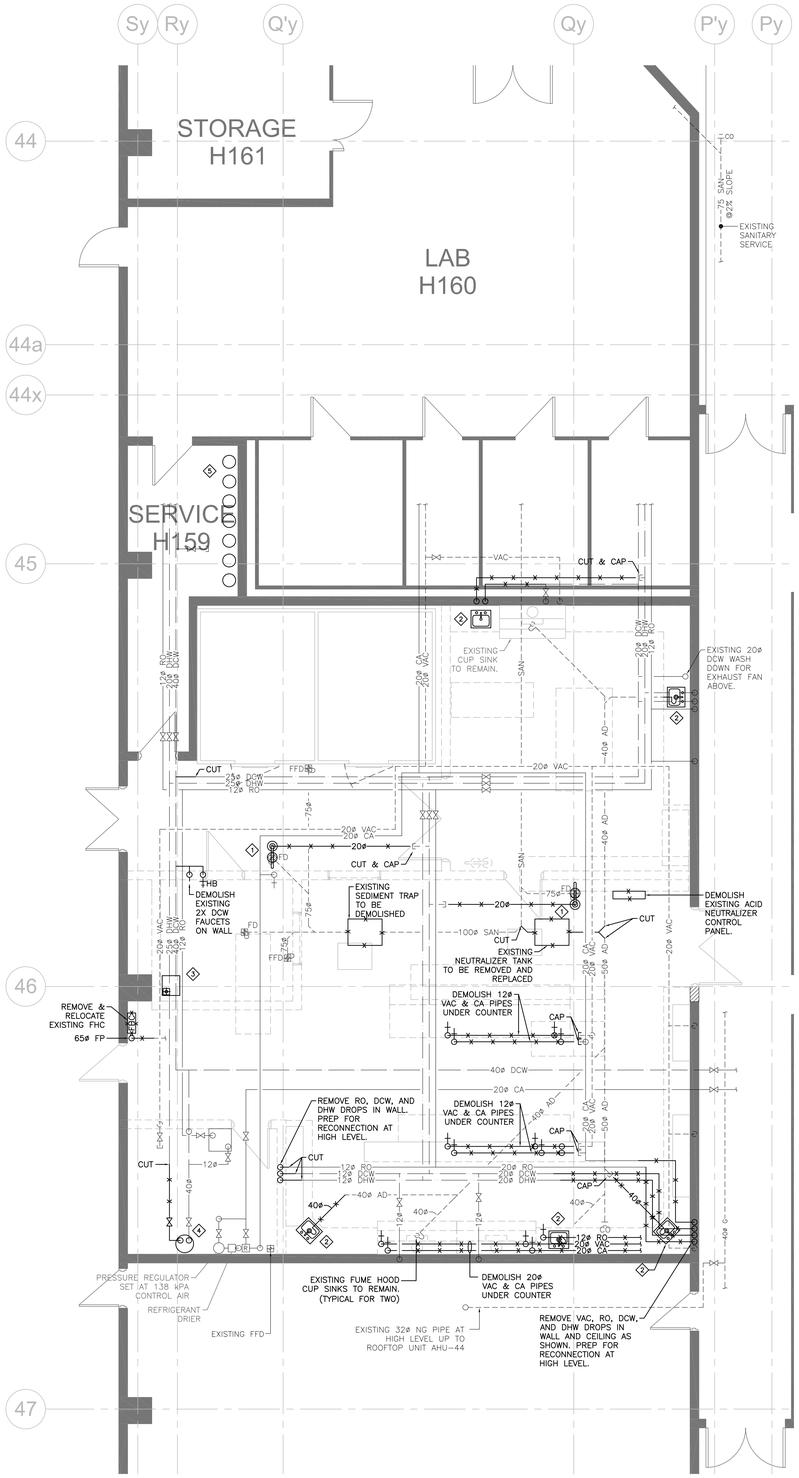
Do not scale drawings.
Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

A/BC
A — Detail No. / No. du détail
B — drawing no. – where detail required / dessin no. – où détail exigé
C — drawing no. – where detailed / dessin no. – où détaillé

project title / titre du projet
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
MECHANICAL LEGEND & DRAWING LIST

drawn by / dessine par: MM
designed by / conc par: RD
approved by / approuve par: RD
bid / offre: KC — project manager / administrateur de projets
project date / date du projet: 2015–7–13
project no. / no. du projet: DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.: M0.01



1 M1.01 GROUND FLOOR LAB H158 PLUMBING DEMOLITION PLAN
SCALE: 1:50

GENERAL NOTES

1. DEMOLISH EXISTING SINKS AND DISCONNECT ALL ASSOCIATED DCW, DHW, SANITARY & VENT PIPING. CAP ALL EXISTING SERVICES FOR NEW FIXTURE INSTALLATION
2. CONTRACTOR TO SITE VERIFY ROUTING & SIZE OF EXISTING DW, SANITARY AND VENT PIPING
3. REMOVE ALL RUBBISH & DEBRIS ONCE JOB IS COMPLETE
4. COORDINATE ANY SHUTDOWN OF SERVICES WITH DEPARTMENT REPRESENTATIVE PRIOR TO COMMENCING WORK.
5. COMPRESSED AIR SYSTEM TO BE MAINTAINED FOR FUTURE USE. PROTECT COMPRESSOR, DRYER, ASSOCIATED EQUIPMENT AND PIPING FROM DAMAGE DURING CONSTRUCTION.
6. CONTRACTOR TO SCAN SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING

KEYNOTES

1. DEMOLISH EXISTING EWS. CUT BACK & CAP ASSOCIATED PIPING BACK TO RESPECTIVE MAINS.
2. EXISTING SINK TO BE DEMOLISHED COMPLETE WITH ASSOCIATED PIPING. PREP FOR INSTALLATION OF NEW FIXTURES.
3. DEMOLISH EXISTING JANITOR'S SINK. CUT BACK & CAP ASSOCIATED PIPING BACK TO RESPECTIVE MAINS.
4. DEMOLISH EXISTING HOT WATER HEATER. CUT BACK & CAP ASSOCIATED PIPING BACK AND PREP FOR INSTALLATION OF NEW WATER HEATER.
5. DEMOLISH EXISTING WATER COOLED COMPRESSORS. CUT BACK AND CAP ASSOCIATED PIPING AT MAIN. (TYPICAL FOR SEVEN)

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DIALOG

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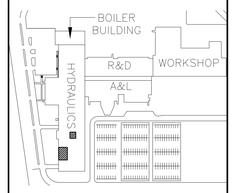

KEY PLAN
N.T.S.

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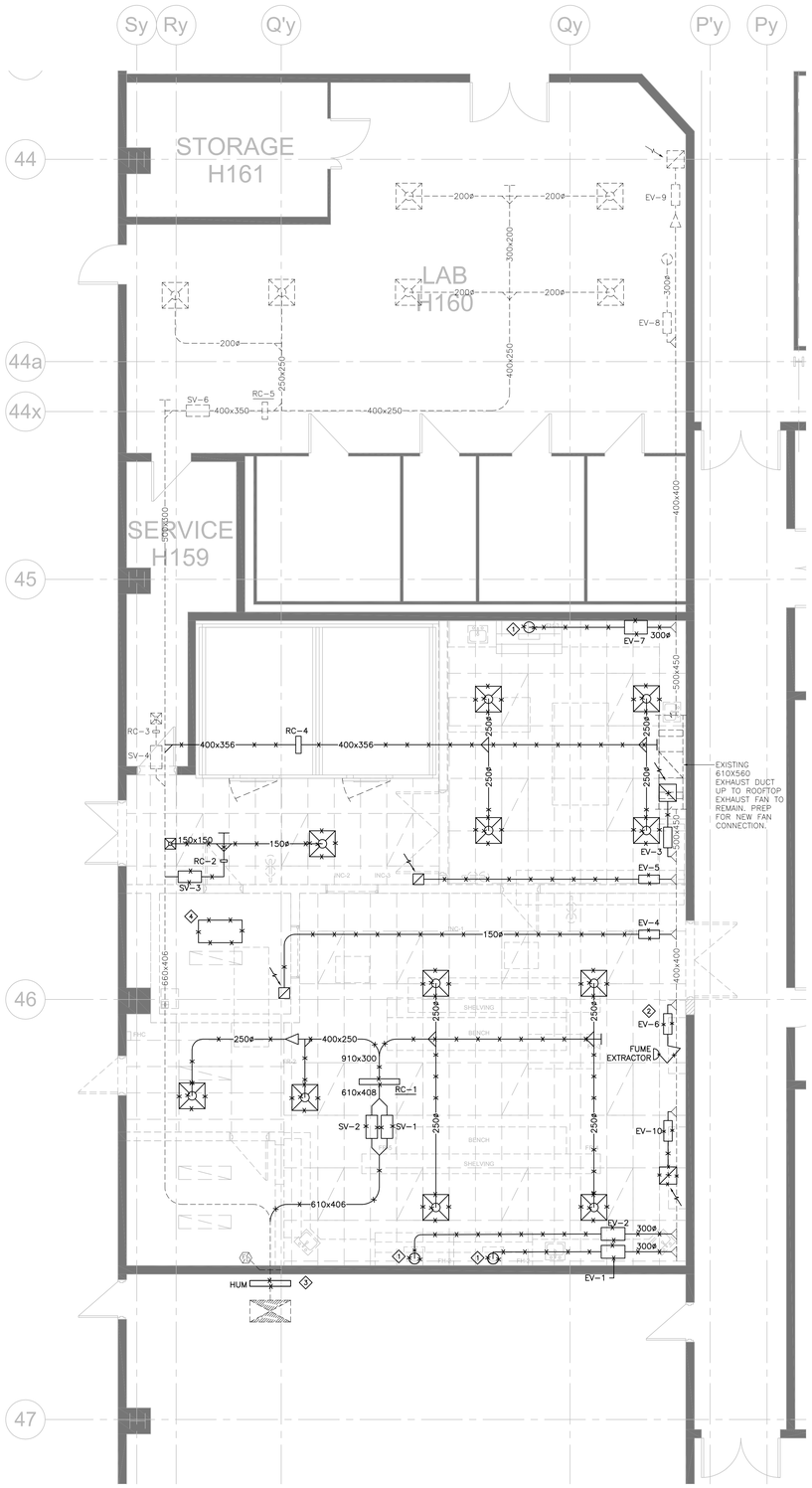
C drawing no. – where detailed dessin no. – où détaillé

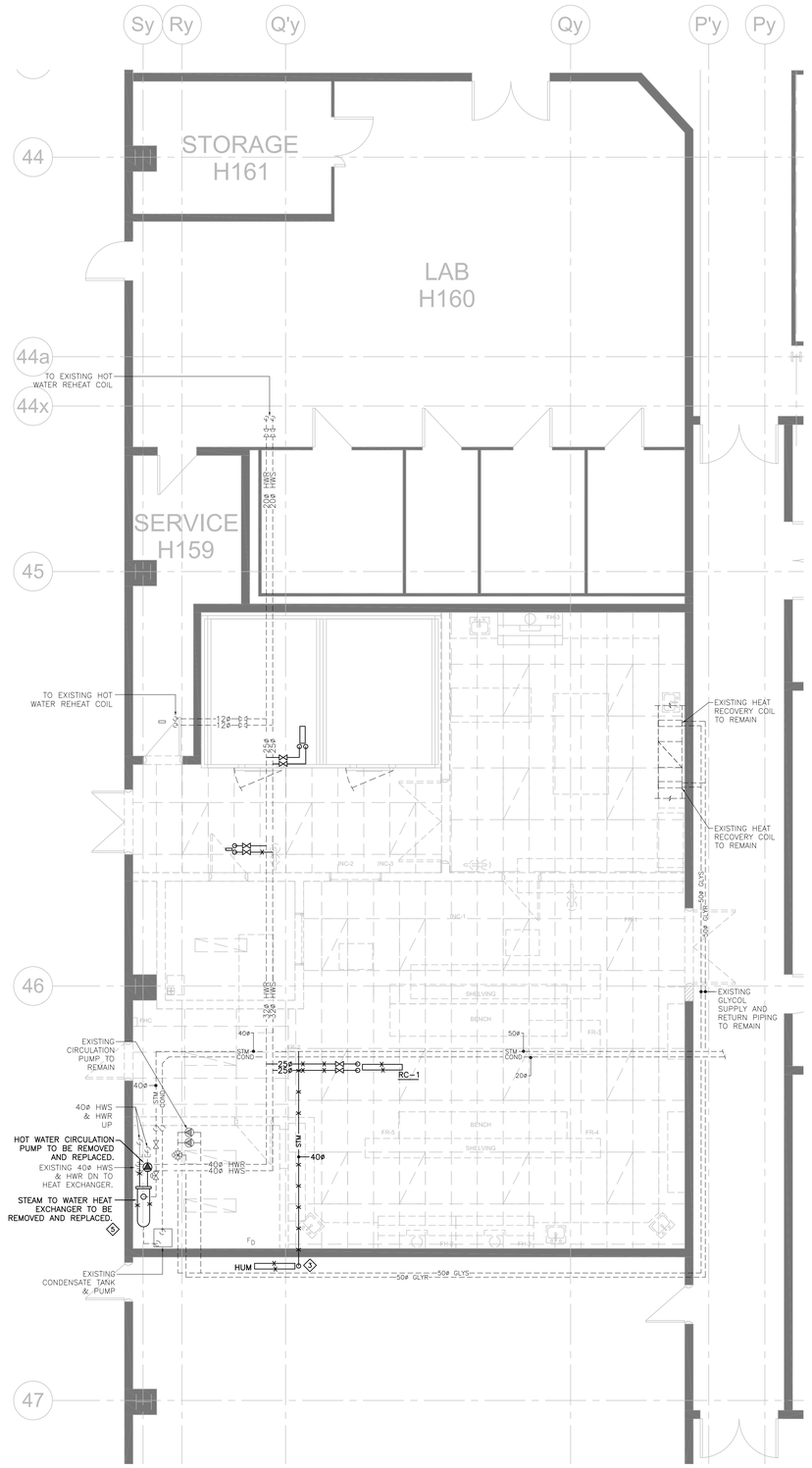
project title / titre du projet
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
HYDRAULICS WING
LAB H158
GROUND FLOOR
PLUMBING PLAN – DEMOLITION

drawn by / dessine par	MM
designed by / conc par	RD
approved by / approuve par	RD
bid / offre	KC
project manager / administrateur de projets	
project date / date du projet	2015-7-13
project no. / no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.	M1.01



1 GROUND FLOOR LAB H158
HVAC DEMOLITION PLAN
M1.02 SCALE: 1:50



2 GROUND FLOOR LAB H158
HVAC PIPING DEMOLITION PLAN
M1.02 SCALE: 1:50

DEMOLITION GENERAL NOTES

1. DEMOLISH EXISTING DIFFUSERS, GRILLES, DUCTWORK, DUCT FITTINGS, CONTROLS, TERMINAL BOXES AS SHOWN.
2. CONTRACTOR IS TO REVIEW THE SITE DUCT ROUTING AND SITE CONDITION AND IDENTIFY AREAS OF POTENTIAL INTERFERENCE. CONTRACTOR IS TO PROVIDE CLEARLY LABELLED SKETCHES TO DEPARTMENT REPRESENTATIVE THAT IDENTIFIES INTERFERENCES WITH NEW WORK. SUBMIT PRIOR TO ANY NEW CONSTRUCTION.
3. REMOVE ALL DEBRIS AND RUBBISH AT EVERY SCHEDULED CLEAN UP.
4. ALL DEMOLISHED BRANCH DUCTWORK NOT USED FOR RECONNECTION SHALL BE CUT-BACK AND CAPPED AT MAIN AIRTIGHT.
5. COORDINATE SHUTDOWN OF SERVICES WITH THE DEPARTMENT REPRESENTATIVE PRIOR TO COMMENCING WORK.
6. HWS & HWR PIPING SERVING HOT WATER REHEAT COILS TO BE CUT BACK AND TEMPORARILY CAPPED PRIOR TO REPLACING REHEAT COILS.
7. REMOVE CONTROL AND ELECTRICAL PROVISIONS ASSOCIATED WITH DEMOLISHED SUPPLY AND EXHAUST AIR VALVES.
8. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

KEYNOTES

1. DEMOLISH FUME HOOD EXHAUST DUCTWORK. FUME HOOD TO BE REMOVED AND REUSED. PREP HOOD FOR RECONNECTION TO NEW DUCTWORK.
2. FUME EXTRACTION NOZZLE TO BE DEMOLISHED. CAP DUCTWORK AT MAIN.
3. EXISTING HUMIDIFIER TO BE DEMOLISHED. STEAM PIPING TO BE CUT BACK AND CAPPED AT MAIN.
4. DEMOLISH EXISTING CEILING MOUNTED AC UNIT, ASSOCIATED CONTROLS & WIRING. DEMOLISH REFRIGERANT PIPING BACK TO COMPRESSORS SHOWN ON M1.01
5. DEMOLISH EXISTING STEAM TO WATER HEAT EXCHANGER AND ASSOCIATED PUMP. CUT BACK & CAP ASSOCIATED PIPING BACK TO RESPECTIVE MAINS.

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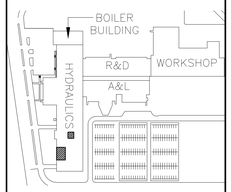
DIALOG

Stamp



KEY PLAN
N.T.S.

revision	issue	date
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project title
titre du projet

CANADA CENTRE FOR INLAND WATERS

867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6

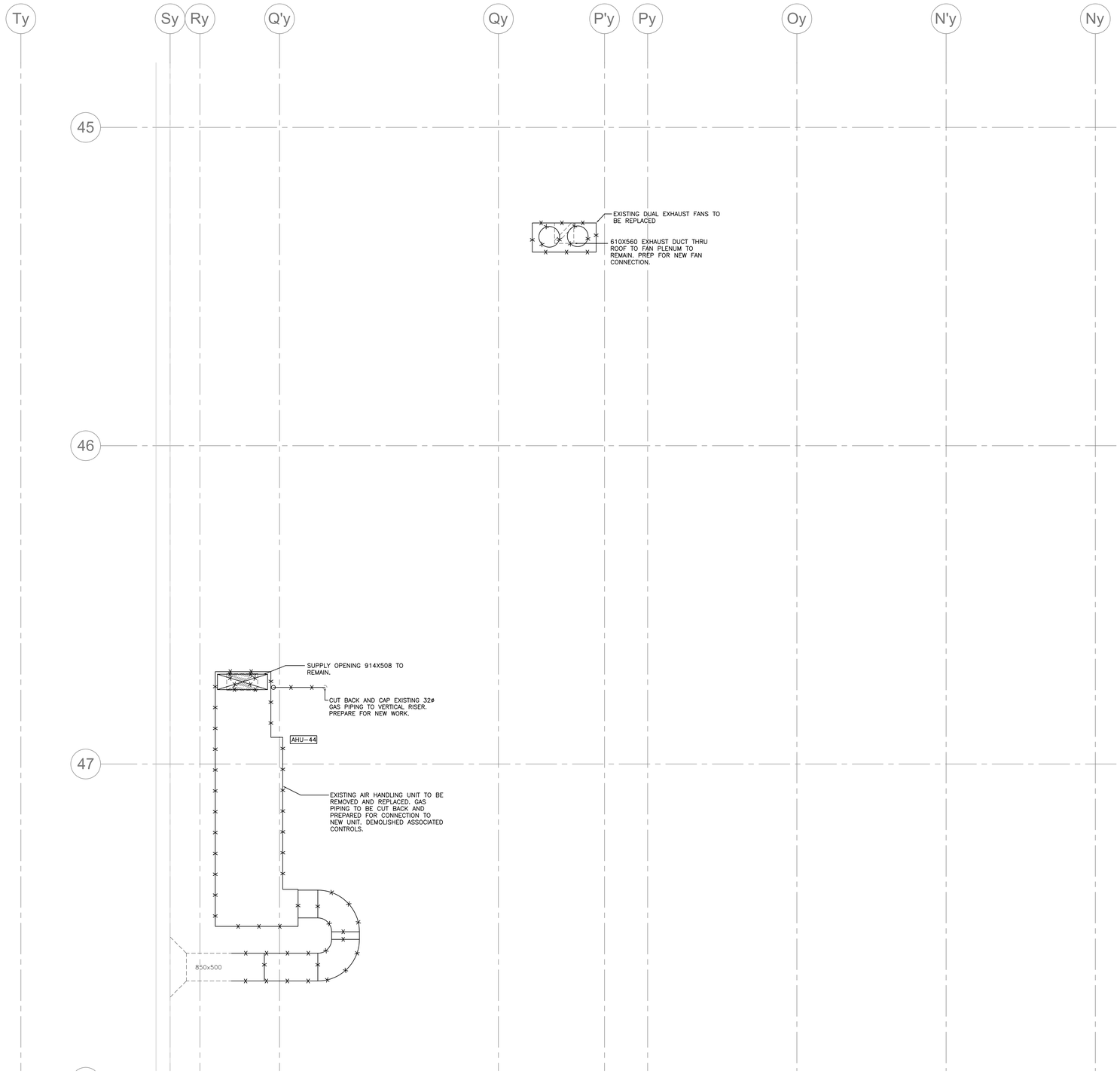
LABS, AHUs, AND HEATING UPGRADE

drawing title
titre du dessin

HYDRAULICS WING
LAB H158
GROUND FLOOR

HVAC & PIPING PLAN–DEMOLITION

drawn by dessiné par	MM
designed by conc par	RD
approved by approuvé par	RD
bid offre	KC
project manager administrateur de projets	
project date date du projet	2015-7-13
project no. no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. dessine no.	M1.02



1 M1.03 ROOF LAB H158 DEMOLITION PLAN
SCALE: 1:50

DEMOLITION GENERAL NOTES

1. DEMOLISH EXISTING EQUIPMENT, DUCTWORK, DUCT FITTINGS, CONTROLS, AND PIPING AS SHOWN.
2. COORDINATE ANY SHUTDOWN OF SERVICES WITH DEPARTMENTAL REPRESENTATIVE PRIOR TO COMMENCING WORK.
3. REMOVE ALL DEBRIS AND RUBBISH AT EVERY SCHEDULED CLEAN UP.
4. DEMOLISH CONTROLS AND ELECTRICAL PROVISIONS FOR REMOVED EQUIPMENT. PREP FOR INSTALLATION OF NEW EQUIPMENT AS INDICATED ON MECHANICAL DRAWINGS.

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

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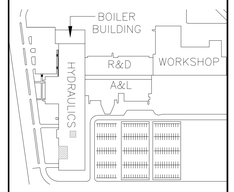

KEY PLAN
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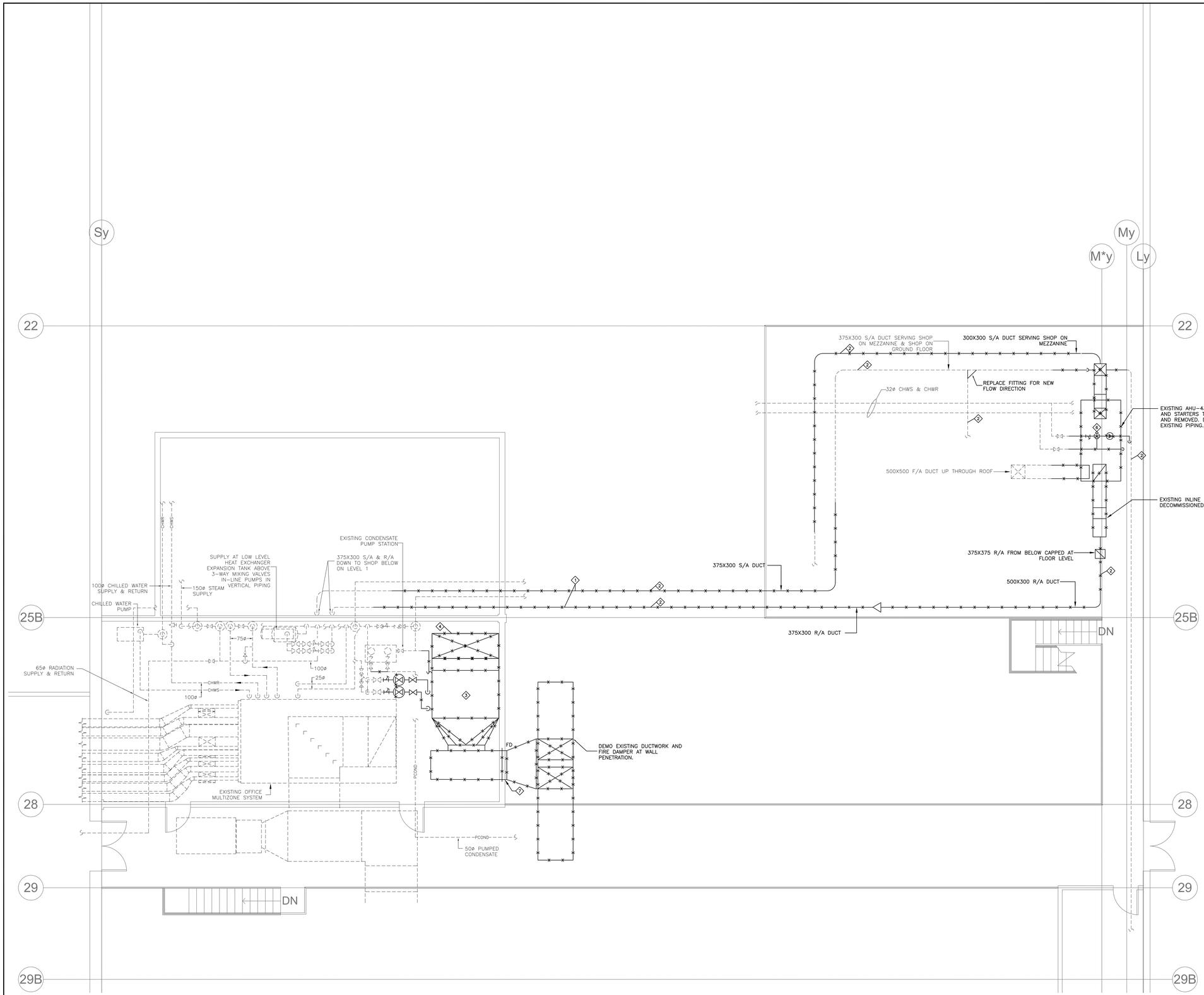
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
HYDRAULICS WING
LAB H158
ROOF
HVAC PLAN – DEMOLITION

drawn by / dessine par	MM
designed by / conc par	RD
approved by / approuve par	RD
bid / offre	KC (project manager / administrateur de projets)
project date / date du projet	2015-7-13
project no. / no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.	M1.03



1 M1.07 MEZZANINE AHU 43 & MECH. ROOM
HVAC & HVAC PIPING DEMOLITION PLAN
SCALE: 1:50

GENERAL NOTES

1. THE DRAWING INDICATES THE INTENT OF DESIGN ONLY. CONTRACTOR TO PRESUME FULL RESPONSIBILITY TO INVESTIGATE EXISTING MECHANICAL LAYOUT AND REPORT TO DEPARTMENTAL REPRESENTATIVE ON ANY DISCREPANCIES BETWEEN RECORD DRAWING AND SITE CONDITION. PERFORM SITE VERIFICATION AT THE OUTSET OF THE PROJECT PRIOR TO ORDERING MATERIALS AND COMMENCING WORK. PROVIDE HAND DRAWN "AS-BUILT" SKETCHES AS REQUIRED AND/OR REQUESTED BY THE DEPARTMENTAL REPRESENTATIVE.
2. DEMOLISH ALL DUCTWORK, PIPING, EQUIPMENT, CONTROLS, AND ACCESSORIES AS INDICATED AND AS REQUIRED.
3. REMOVE ALL DEBRIS AND RUBBISH DAILY AND ONCE WORK IS COMPLETE.
4. COORDINATE WORK WITH ALL TRADES.
5. CONTRACTOR TO SURVEY AND DEMOLISH ALL EXISTING OBSOLETE DUCTWORK.
6. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

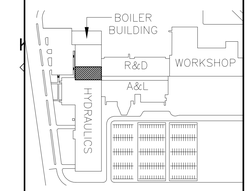
KEY NOTES

1. S/A & R/A DUCT RUNNING AT HIGH LEVEL
2. PRIOR TO DEMOLITION CONTRACTOR TO MEASURE EXISTING AIR FLOW (TRAVERSE READING) AT THIS POINT.
3. EXISTING DECOMMISSIONED PLANT SUPPLY FAN S-2 TO BE REMOVED. CAP AND DISCONNECT ASSOCIATED DUCTWORK & PIPING. REMOVE INERTIA BASE AND HOUSEKEEPING PAD.
4. EXISTING 4900X900 O/A DUCT AND DOG HOUSE ABOVE. CLEAN EXISTING LOUVRES AND PREP FOR NEW CONNECTION TO NEW AHU.
5. EXISTING DECOMMISSIONED AHU-43 TO BE REMOVED. CAP AND DISCONNECT ASSOCIATED DUCTWORK & PIPING.
6. REMOVE & CAP EXISTING CHILLED WATER PIPING, REMOVE EXISTING 3-WAY VALVE & PUMP.
7. EXISTING WALL PENETRATION TO BE ENLARGED TO FACILITATE INSTALLATION OF NEW AHU-43. REFER TO ARCHITECTURAL DRAWINGS FOR WALL OPENING AND ELECTRICAL DRAWINGS FOR CONDUIT RELOCATION. PROVIDE NEW STEEL LINTEL ANGELS TO FRAME AROUND OPENING. REFER TO TYPICAL STRUCTURAL DETAIL M07.

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

Stamp



KEY PLAN
N.T.S.

revision	issue	date
1	ISSUED FOR BID	04/11/2015

Do not scale drawings.
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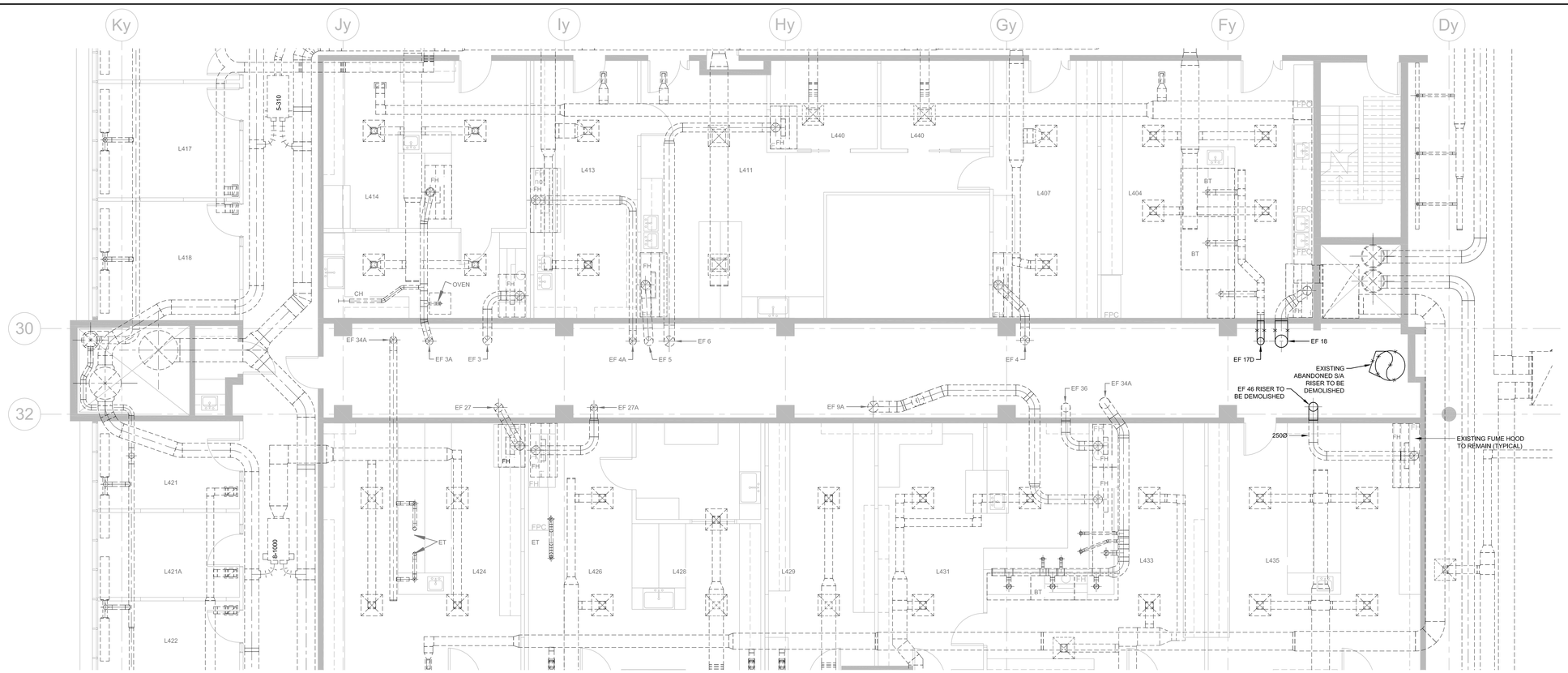
A Detail No. No. du détail
B drawing no. – where detail required dessin no. – où détail exigé
C drawing no. – where detailed dessin no. – où détaillé

project title / titre du projet
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
HYDRAULICS WING
AHU-43
MEZZANINE
HVAC & PIPING PLAN-DEMOLITION

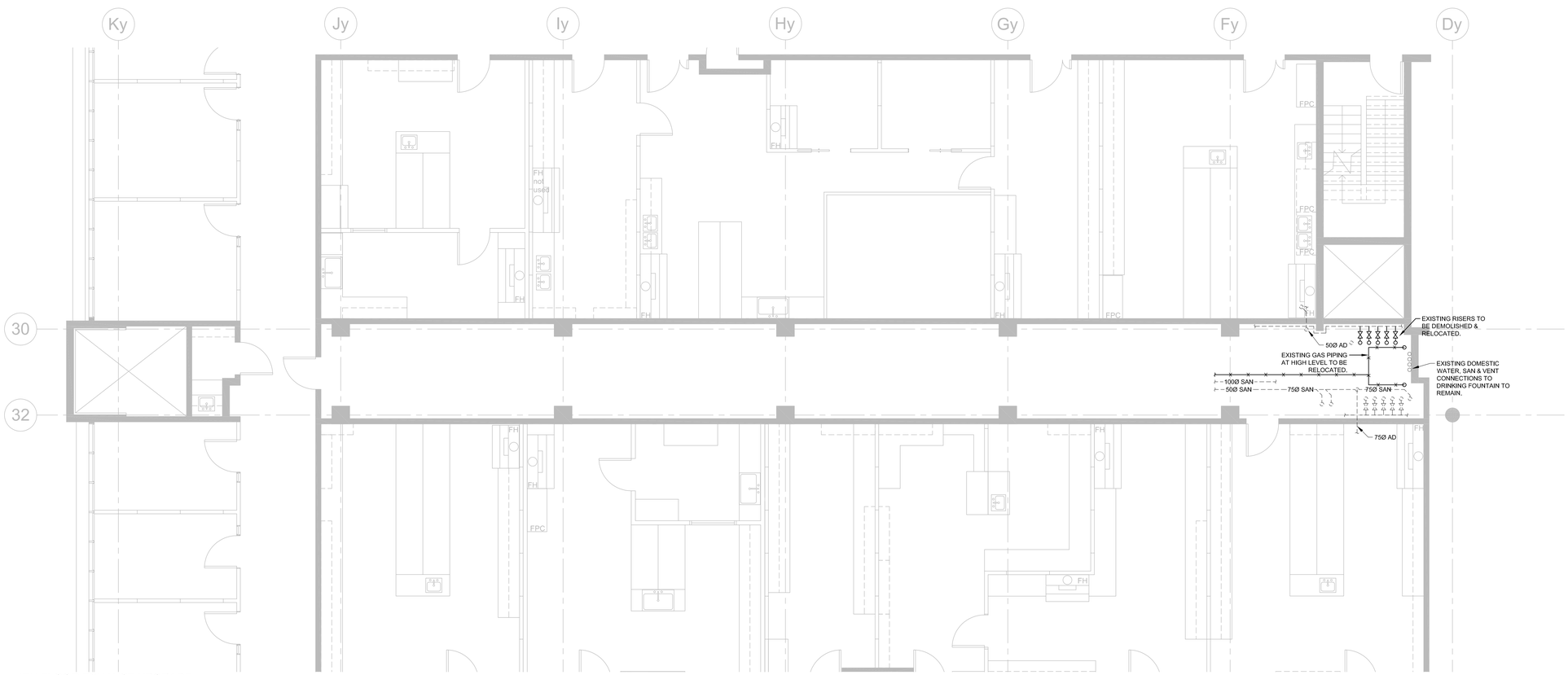
drawn by / dessiné par	MM
designed by / conc par	RD
approved by / approuvé par	RD
bid / offre	project manager / administrateur de projets: KC
project date / date du projet	2015-7-13
project no. / no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.	M1.07



1 M1.10 4TH FLOOR EXHAUST UPGRADE HVAC DEMOLITION PLAN
SCALE: 1:50

DEMOLITION GENERAL NOTES

1. COORDINATE SHUTDOWN OF SERVICES WITH THE DEPARTMENTAL REPRESENTATIVE PRIOR TO COMMENCING WORK.
2. REMOVE ALL DEBRIS AND RUBBISH AT THE END OF EACH DAY AND ONCE JOB IS COMPLETE.
3. CONTRACTOR TO REVIEW DUCT ROUTING & SITE CONDITIONS TO IDENTIFY AREAS OF POTENTIAL INTERFERENCE. CONTRACTOR SHALL PROVIDE CLEARLY LABELLED RED LINE SKETCHES TO THE DEPARTMENTAL REPRESENTATIVE WHICH IDENTIFY INTERFERENCES WITH NEW WORK. SUBMIT SKETCHES FOR REVIEW PRIOR TO COMMENCING ANY NEW WORK.
4. FUME HOOD EXHAUST RISERS AND ASSOCIATED DUCTWORK TO BE DEMOLISHED AS INDICATED. PREPARE REMAINING DUCTWORK FOR RECONNECTION TO NEW WORK WITHIN THE SERVICE CORRIDOR.
5. CONTRACTOR SHALL SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.



2 M1.10 4TH FLOOR EXHAUST UPGRADE PLUMBING DEMOLITION PLAN
SCALE: 1:50
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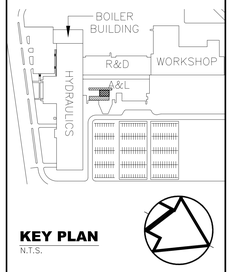
DEMOLITION GENERAL NOTES

1. COORDINATE SHUTDOWN OF SERVICES WITH THE OWNER PRIOR TO COMMENCING WORK.
2. REMOVE ALL DEBRIS AND RUBBISH AT THE END OF EACH DAY AND ONCE JOB IS COMPLETE.
3. CONTRACTOR TO REVIEW PIPE AND DUCT ROUTING & SITE CONDITIONS TO IDENTIFY AREAS OF POTENTIAL INTERFERENCE. CONTRACTOR SHALL PROVIDE CLEARLY LABELLED RED LINE SKETCHES TO THE DEPARTMENTAL REPRESENTATIVE WHICH IDENTIFY INTERFERENCES WITH NEW WORK. SUBMIT SKETCHES FOR REVIEW PRIOR TO COMMENCING ANY NEW WORK.
4. CONTRACTOR SHALL SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

Stamp



KEY PLAN
N.T.S.

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titre du projet

CANADA CENTRE FOR INLAND WATERS

867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6

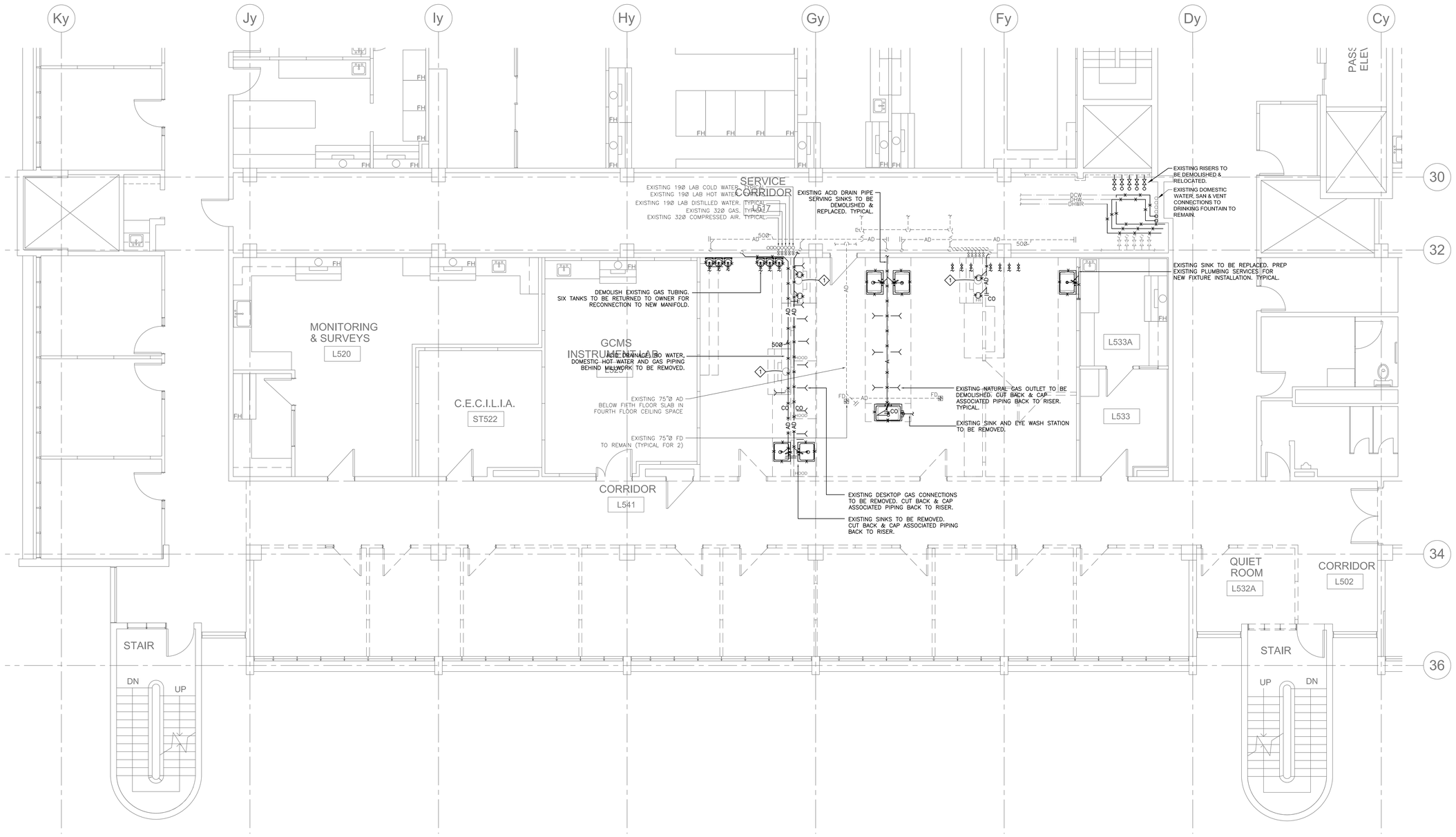
LABS, AHUs, AND HEATING UPGRADE

drawing title
titre du dessin

A&L BUILDING
EXHAUST UPGRADE
FOURTH FLOOR

HVAC & PLUMBING PLAN–DEMOLITION

drawn by dessine par	MN
designed by conc par	DM
approved by approuve par	RD
bid offre	project manager administrateur de projets: KC
project date date du projet	2015–7–13
project no. no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. dessine no.	M1.10



1 M1.11 FIFTH FLOOR LAB L527/530
PLUMBING DEMOLITION PLAN
SCALE: 1:50

GENERAL NOTES

1. DEMOLISH EXISTING FIXTURES & OUTLETS AND DISCONNECT ALL ASSOCIATED DCW, GAS, DHW, ACID DRAINAGE, SANITARY & VENT PIPING. CAP EXISTING SERVICES FOR NEW FIXTURE INSTALLATION AS NOTED.
2. CONTRACTOR TO SITE VERIFY ROUTING & SIZE OF EXISTING GAS, DW, ACID DRAINAGE, SANITARY AND VENT PIPING.
3. REMOVE ALL RUBBISH & DEBRIS ONCE JOB IS COMPLETE.
4. COORDINATE ANY SHUTDOWN OF SERVICES WITH THE DEPARTMENTAL REPRESENTATIVE PRIOR TO COMMENCING WORK.
5. PROTECT EXISTING FLOOR DRAINS FROM CONTAMINATION BY DEBRIS DURING CONSTRUCTION. CONTRACTOR TO FLUSH AND SCOPE DRAINS UPON COMPLETION OF CONSTRUCTION.
6. CONTRACTOR TO REVIEW DUCT ROUTING & SITE CONDITIONS TO IDENTIFY AREAS OF POTENTIAL INTERFERENCE. CONTRACTOR SHALL PROVIDE CLEARLY LABELLED RED LINE SKETCHES TO THE DEPARTMENTAL REPRESENTATIVE WHICH IDENTIFY INTERFERENCES WITH NEW WORK. SUBMIT SKETCHES FOR REVIEW PRIOR TO COMMENCING ANY NEW WORK.
7. COORDINATE SHUTDOWN OF SERVICES WITH THE DEPARTMENTAL REPRESENTATIVE PRIOR TO COMMENCING WORK.
8. CONTRACTOR SHALL SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

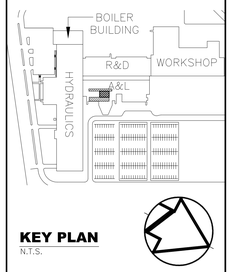
KEYNOTES

1 DISCONNECT PIPING FROM EXISTING FUME HOOD CUP SINK. REMOVE AND CUT BACK PIPING TO SERVICE CORRIDOR.

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

Stamp



KEY PLAN
N.T.S.

revision	issue	date
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CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
A&L BUILDING
LAB L527 & L530
FIFTH FLOOR
PLUMBING PLAN – DEMOLITION

drawn by / dessiné par	MM
designed by / conc par	RD
approved by / approuvé par	RD
bid / offre	KC
project manager / administrateur de projets	
project date / date du projet	2015-7-13
project no. / no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.	M1.11

DEMOLITION GENERAL NOTES

1. COORDINATE SHUTDOWN OF SERVICES WITH THE DEPARTMENTAL REPRESENTATIVE PRIOR TO COMMENCING WORK.
2. REMOVE ALL DEBRIS AND RUBBISH AT THE END OF EACH DAY AND ONCE JOB IS COMPLETE.
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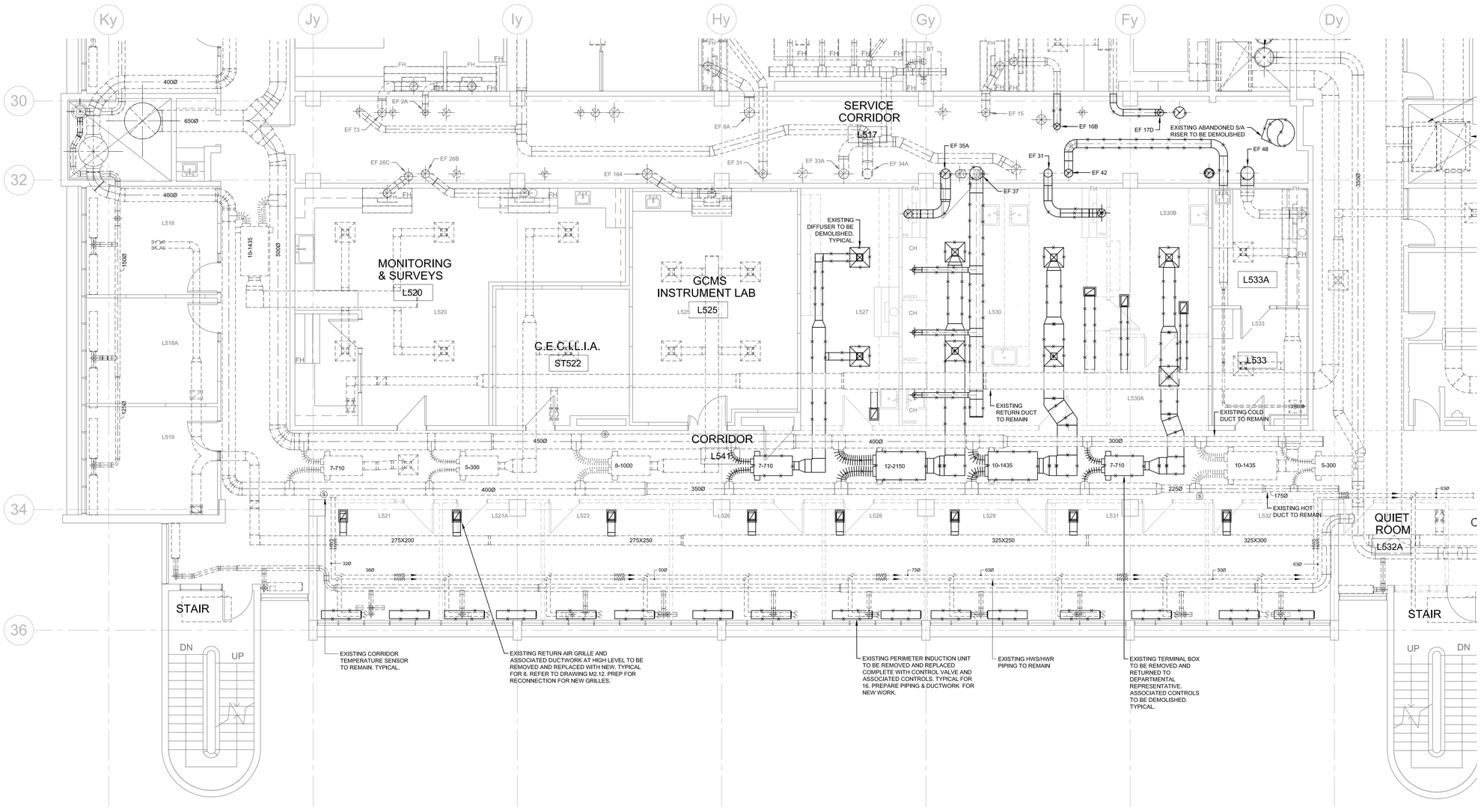
4. FUME HOOD EXHAUST RISERS AND ASSOCIATED DUCTWORK TO BE DEMOLISHED AS INDICATED. PREPARE REMAINING DUCTWORK FOR RECONNECTION TO NEW WORK WITHIN THE SERVICE CORRIDOR.
5. ALL DEMOLISHED BRANCH DUCTWORK SHALL BE CUT BACK AND CAPPED AT MAIN LIQUID & AIRTIGHT.
6. DUAL DUCT TERMINAL BOXES TO BE TURNED OVER TO DEPARTMENTAL REPRESENTATIVE ONCE REMOVED.
7. CONTRACTOR SHALL SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

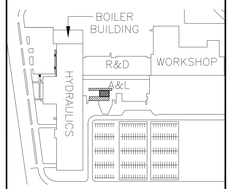


1 M1.12 5TH FLOOR L527/530 HVAC DEMOLITION PLAN
SCALE: 1:50

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

Stamp



KEY PLAN
N.T.S.

revision	issue	date
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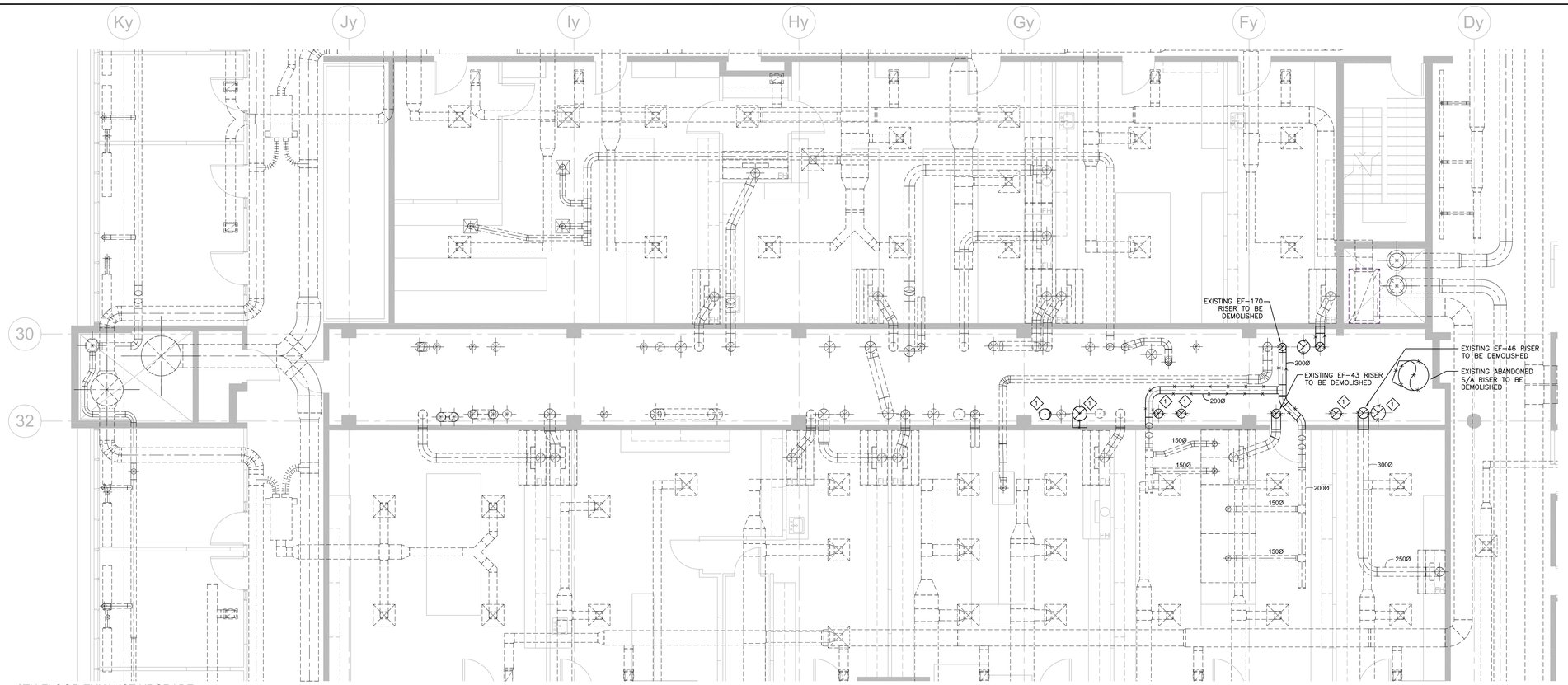
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
A&L BUILDING
LAB L527 & L530
FIFTH FLOOR
HVAC PLAN – DEMOLITION

drawn by / dessiné par: MM
designed by / conc par: RD
approved by / approuvé par: RD
bid / offre: KC
project manager / administrateur de projets
project date / date du projet: 2015-7-13
project no. / no. du projet: DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.: M1.12



1 M1.10 6TH FLOOR EXHAUST UPGRADE HVAC DEMOLITION PLAN

SCALE: 1/50

DEMOLITION GENERAL NOTES

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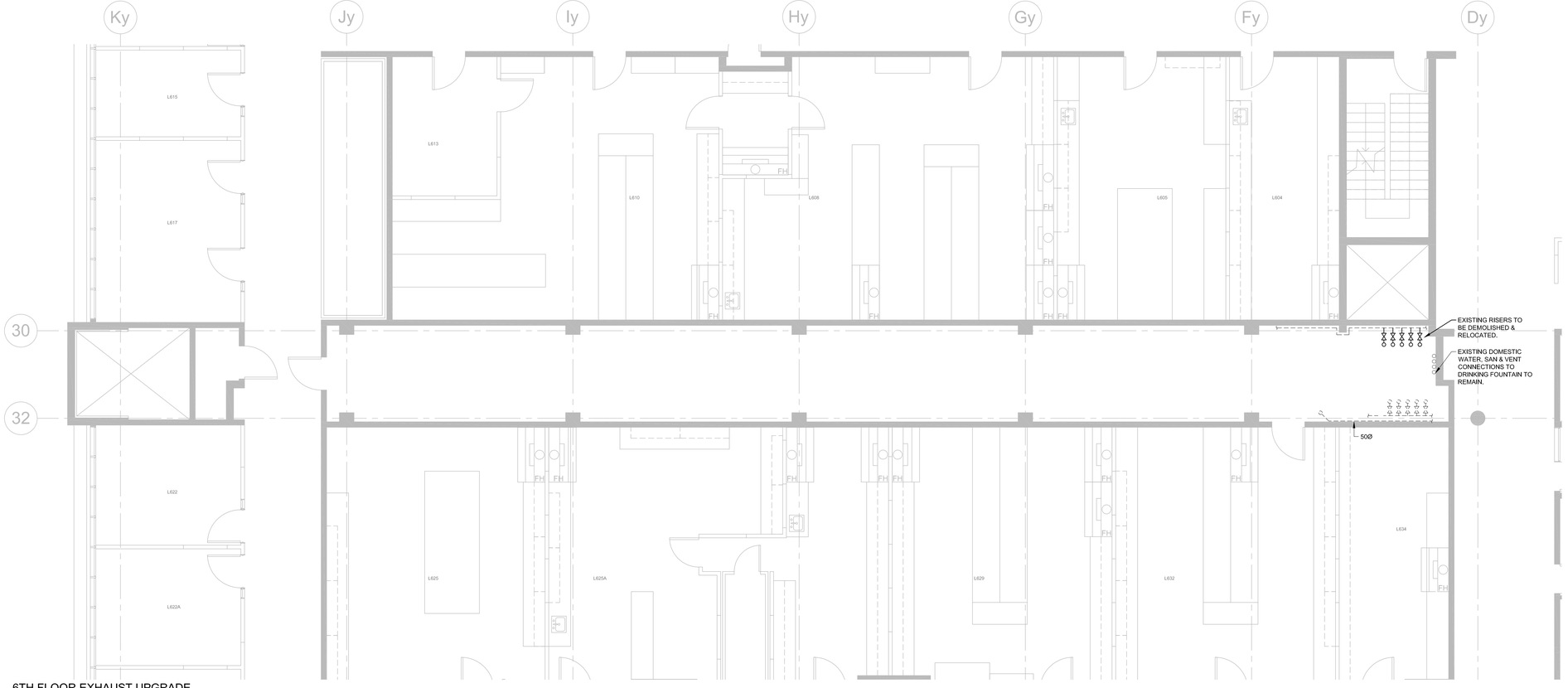
5. CONTRACTOR SHALL SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

KEYNOTES

1. EXHAUST DUCT RISER FROM FLOOR BELOW TO BE REMOVED.



2 M1.10 6TH FLOOR EXHAUST UPGRADE PLUMBING DEMOLITION PLAN

SCALE: 1/50

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DEMOLITION GENERAL NOTES

1. COORDINATE SHUTDOWN OF SERVICES WITH THE DEPARTMENTAL REPRESENTATIVE TO COMMENCING WORK.
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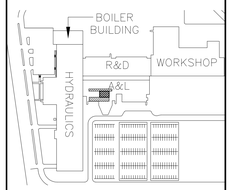
Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

Stamp



KEY PLAN
N.T.S.

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project title / titre du projet

CANADA CENTRE FOR INLAND WATERS

867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6

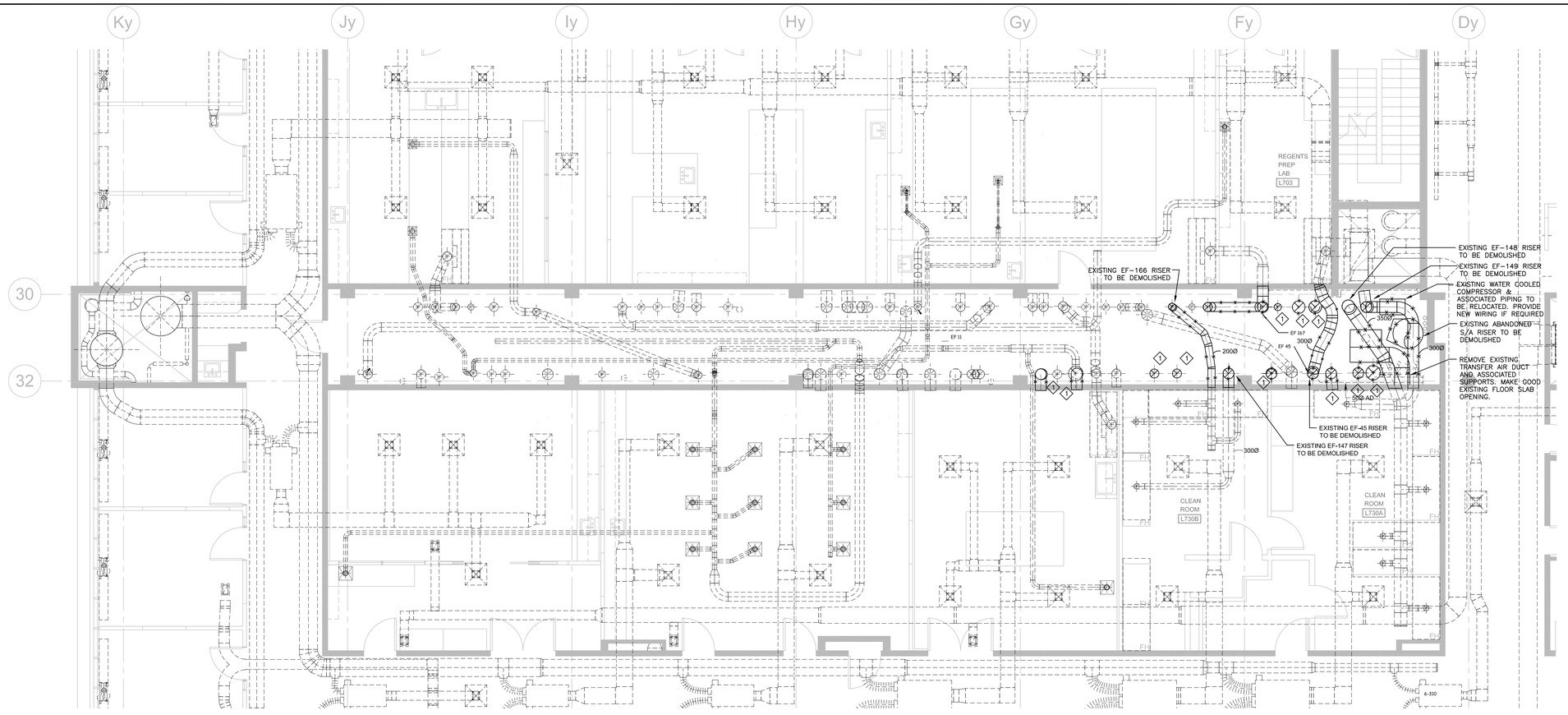
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin

A&L BUILDING
EXHAUST UPGRADE
SIXTH FLOOR

HVAC & PLUMBING PLAN–DEMOLITION

drawn by / dessine par	MN
designed by / conc par	DM
approved by / approuve par	RD
bid / offre	KC (project manager / administrateur de projets)
project date / date du projet	2015-7-13
project no. / no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.	M1.13



1 M1.14 7TH FLOOR EXHAUST UPGRADE HVAC DEMOLITION PLAN
SCALE: 1:50

DEMOLITION GENERAL NOTES

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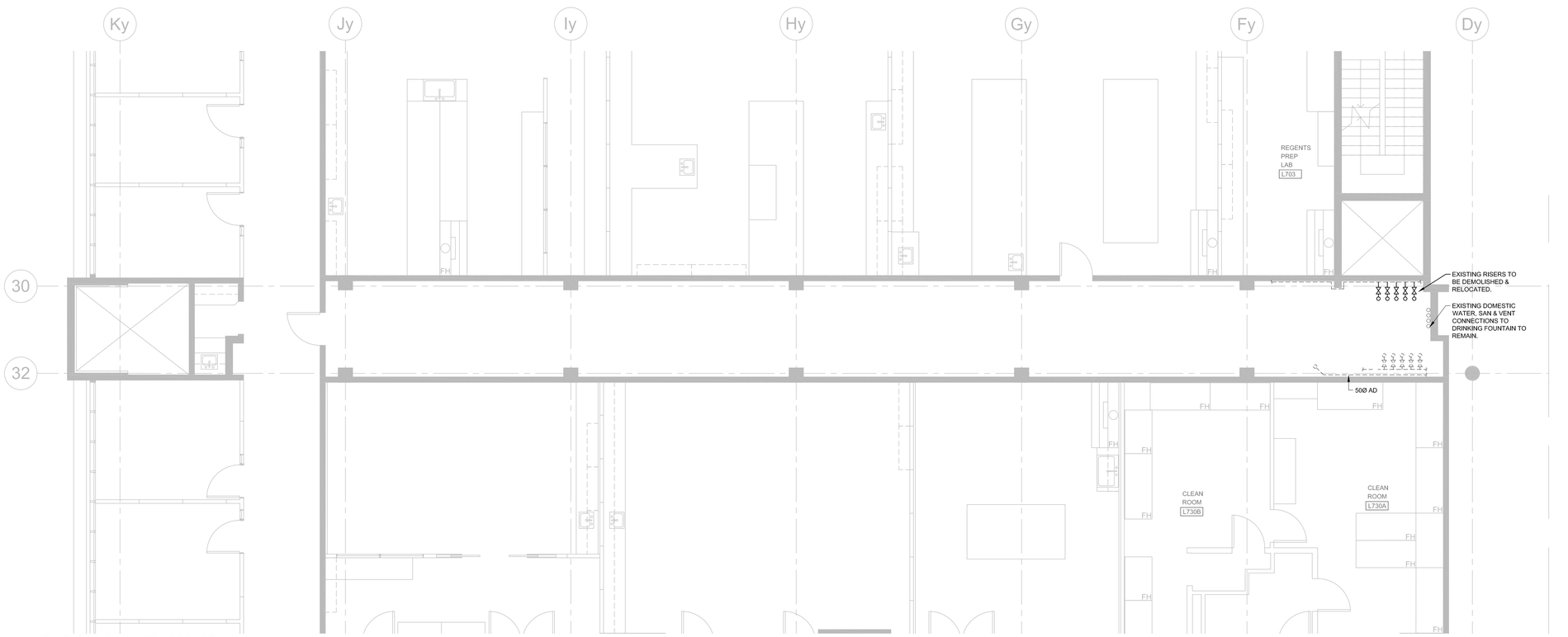
5. CONTRACTOR SHALL SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

KEYNOTES

1 EXHAUST DUCT RISER FROM FLOOR BELOW TO BE REMOVED.



2 M1.14 7TH FLOOR EXHAUST UPGRADE PLUMBING DEMOLITION PLAN
SCALE: 1:50
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GENERAL NOTES

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Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

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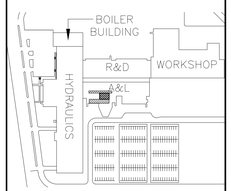

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867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
A&L BUILDING
EXHAUST UPGRADE
SEVENTH FLOOR
HVAC & PLUMBING PLAN–DEMOLITION

drawn by / dessiné par	MN
designed by / conc par	DM
approved by / approuvé par	RD
bid / offre	KC
project manager / administrateur de projets	
project date / date du projet	2015-7-13
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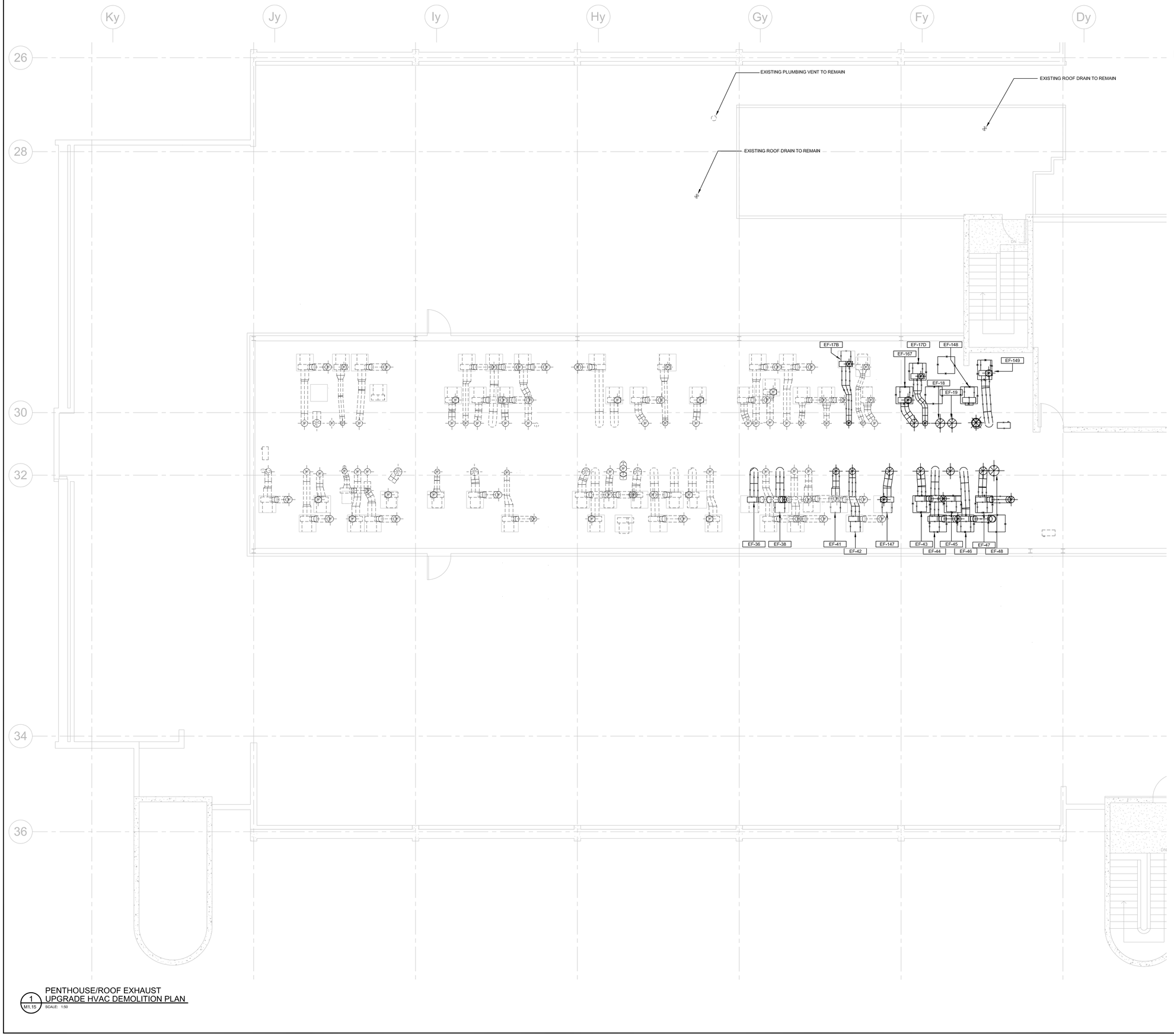

DEMOLITION GENERAL NOTES

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4. REMOVE EXHAUST FANS AND DUCTWORK AS INDICATED. REMOVE ASSOCIATED STARTERS AND CONTROLS.
5. REMOVE HOUSE KEEPING PADS WHERE EXHAUST FANS HAVE BEEN DEMOLISHED. MAKE GOOD EXISTING FLOOR SLAB.
6. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

1 M1.15 PENTHOUSE/ROOF EXHAUST UPGRADE HVAC DEMOLITION PLAN
SCALE: 1:50

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

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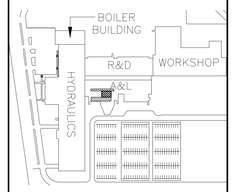

KEY PLAN
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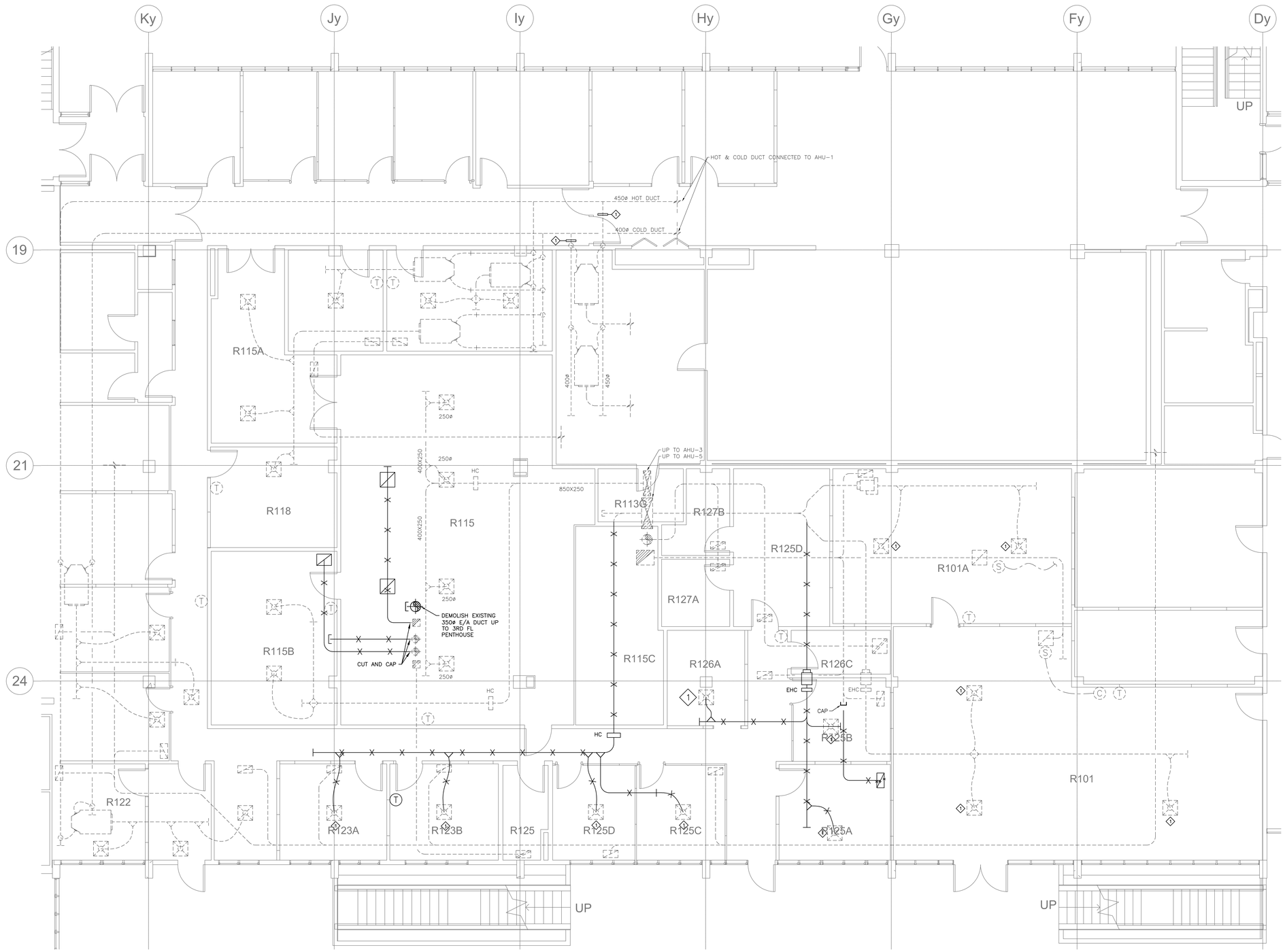
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
A&L BUILDING
EXHAUST UPGRADE
PENTHOUSE/ROOF
HVAC PLAN – DEMOLITION

drawn by / dessiné par	MN
designed by / conc par	DM
approved by / approuvé par	RD
bid / offre	KC
project manager / administrateur de projets	
project date / date du projet	2015-7-13
project no. / no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.	M1.15



1 M1.20 GROUND FLOOR HVAC DEMOLITION PLAN
SCALE: 1:50

GENERAL NOTES

1. CONTRACTOR TO COORDINATE ANY SHUTDOWN OF EQUIPMENT WITH DEPARTMENTAL REPRESENTATIVE PRIOR TO COMMENCING WORK.
2. EXISTING DUCTWORK, GRILLES, DIFFUSERS AND CONTROLS TO BE DEMOLISHED AND REMOVED AS INDICATED.
3. DISCONNECT AND CAP HOT WATER SUPPLY AND RETURN PIPING FROM HOT WATER REHEAT COILS AND PREP FOR RECONNECTION TO NEW EQUIPMENT.
4. CONTRACTOR TO OBTAIN BASELINE AIRFLOW MEASUREMENTS WHERE INDICATED AND SUBMIT REPORT TO DEPARTMENTAL REPRESENTATIVE.
5. CONTRACTOR TO SITE VERIFY EXISTING DUCT ROUTING, SIZE, AND DIMENSIONS. REPORT TO ENGINEER ANY DISCREPANCIES OBSERVED ON SITE PRIOR TO DEMOLITION.
6. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

KEYNOTES

1. CONTRACTOR TO MEASURE BASELINE AIRFLOW RATE AT DIFFUSERS AND DUCTS.

Public Works and Government Services Canada
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DIALOG

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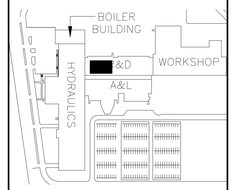

KEY PLAN
N.T.S.

revision	issue	date
1	ISSUED FOR BID	04/11/2015

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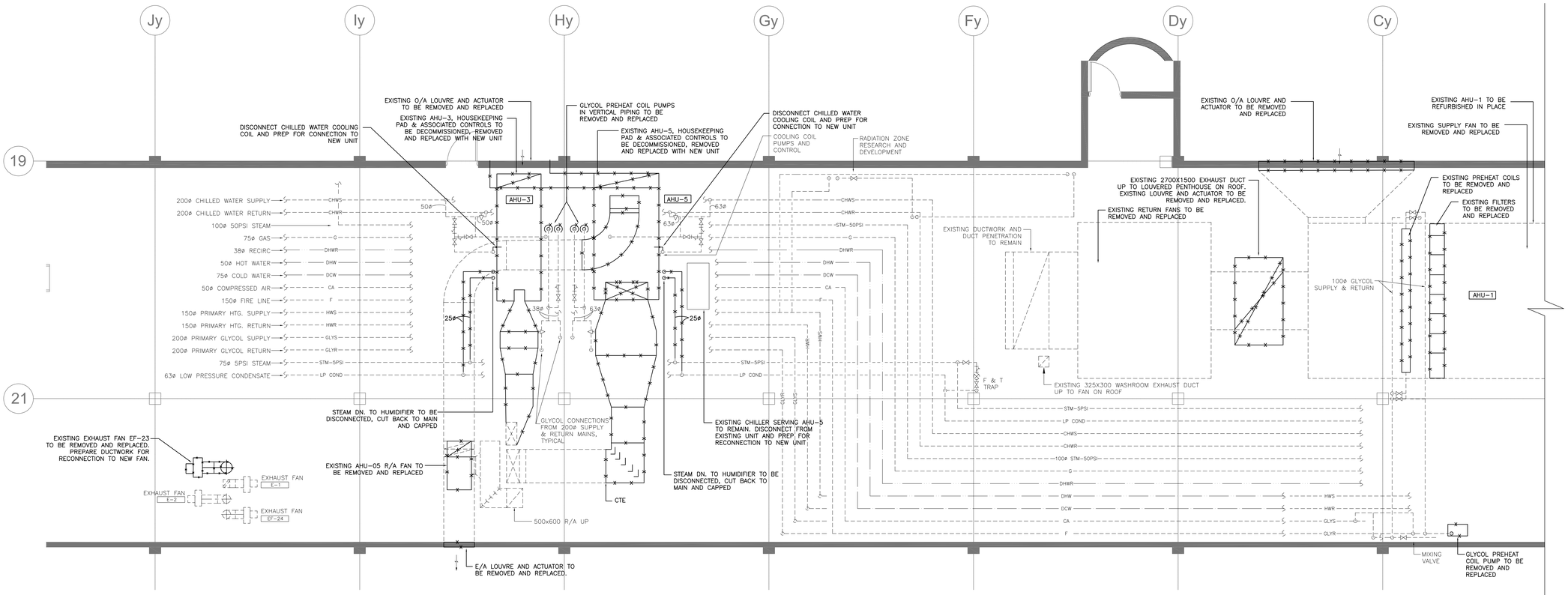
B drawing no. – where detail required dessin no. – ou detail exigé
C drawing no. – where detailed dessin no. – ou détaillé

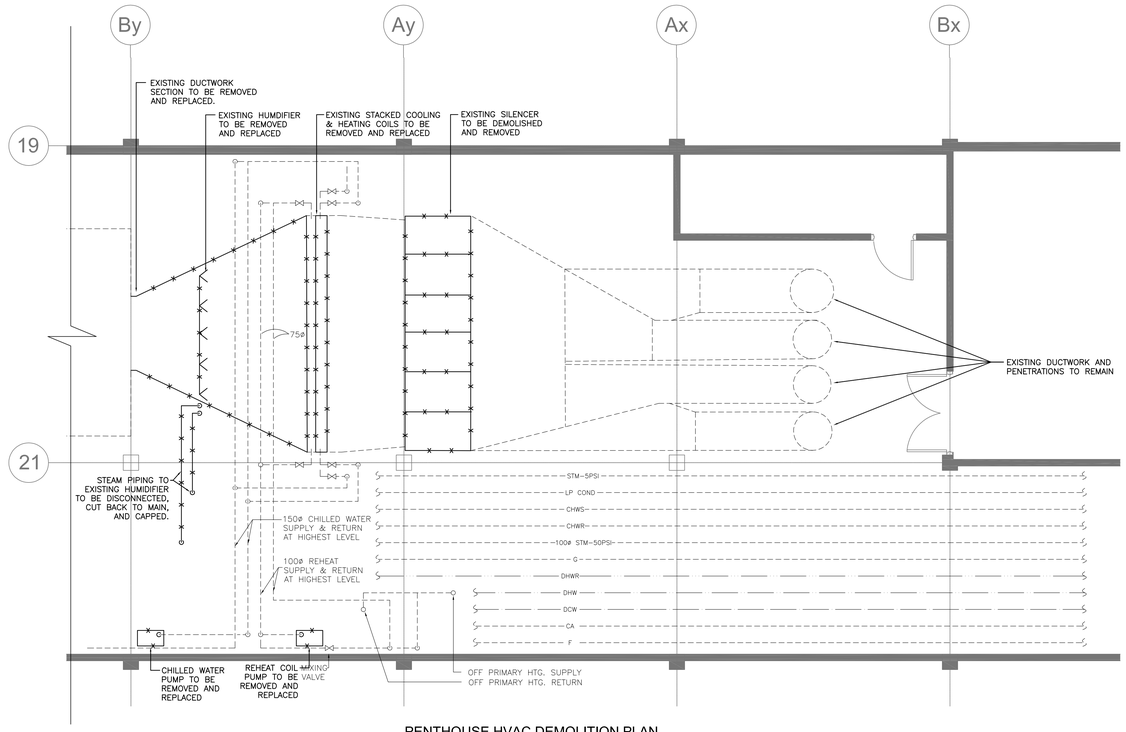
project title / titre du projet
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
R & D BUILDING
GROUND FLOOR
EVIDENCE ROOM AND LABS
HVAC PLAN – DEMOLITION

drawn by / dessine par	MM
designed by / conc par	RD
approved by / approuve par	RD
bid / offre	KC
project manager / administrateur de projets	
project date / date du projet	2015-07-13
project no. / no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.	M1.20



1 M1.21 PENTHOUSE HVAC DEMOLITION PLAN
AHU-1,3 & 5
SCALE: 1:50



1 M1.21 PENTHOUSE HVAC DEMOLITION PLAN
AHU-1 CONTINUATION
SCALE: 1:50

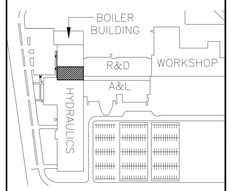
DEMOLITION GENERAL NOTES

1. AHU-3 & AHU-5 ARE TO BE REMOVED AND REPLACED WITH NEW AIR HANDLING UNITS IN EXISTING UNIT LOCATIONS. REFER TO MECHANICAL EQUIPMENT SCHEDULES.
2. AHU-1 TO BE REFURBISHED IN PLACE. UNIT REFURBISHMENT TO BE STAGED TO MAINTAIN AIRFLOW TO SPACES. NEW AHU-1 TO BE OF SIMILAR TYPE, PERFORMANCE AND CAPACITY. SUPPLY FANS, RETURN FANS, AND HYDRONIC COILS TO EXISTING AHU-1 DUCTWORK TO BE MAINTAINED UNLESS OTHERWISE NOTED. HYDRONIC COILS IN AHU-1, AHU-3 AND AHU-5 ARE TO BE DISCONNECTED AS REQUIRED DURING DEMOLITION, AND PREPPED FOR RECONNECTION TO EXISTING NEW UNITS. EXISTING HYDRONIC PUMPS AND CONTROL VALVES ARE TO BE DEMOLISHED AND REPLACED. REFER TO DRAWING M2.21 AND EQUIPMENT SCHEDULES.
3. INERTIA PADS AND CONCRETE HOUSEKEEPING PADS TO BE DEMOLISHED.
4. REMOVE ALL DEBRIS AND RUBBISH AT EVERY SCHEDULED CLEAN UP.
5. ALL DEMOLISHED BRANCH DUCTWORK SHALL BE CUT-BACK AND CAPPED AT MAIN AIRTIGHT.
6. COORDINATE SHUTDOWN OF SERVICES WITH THE DEPARTMENTAL REPRESENTATIVE PRIOR TO COMMENCING WORK.
7. ALL DRAINS ASSOCIATED WITH AHU OPERATION ARE TO BE CLEANED, SNAKED, & VIDEO SCOPED. PROVIDE FINDINGS TO DEPARTMENTAL REPRESENTATIVE FOR REVIEW.
8. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

Stamp



KEY PLAN
N.T.S.

revision	issue	date
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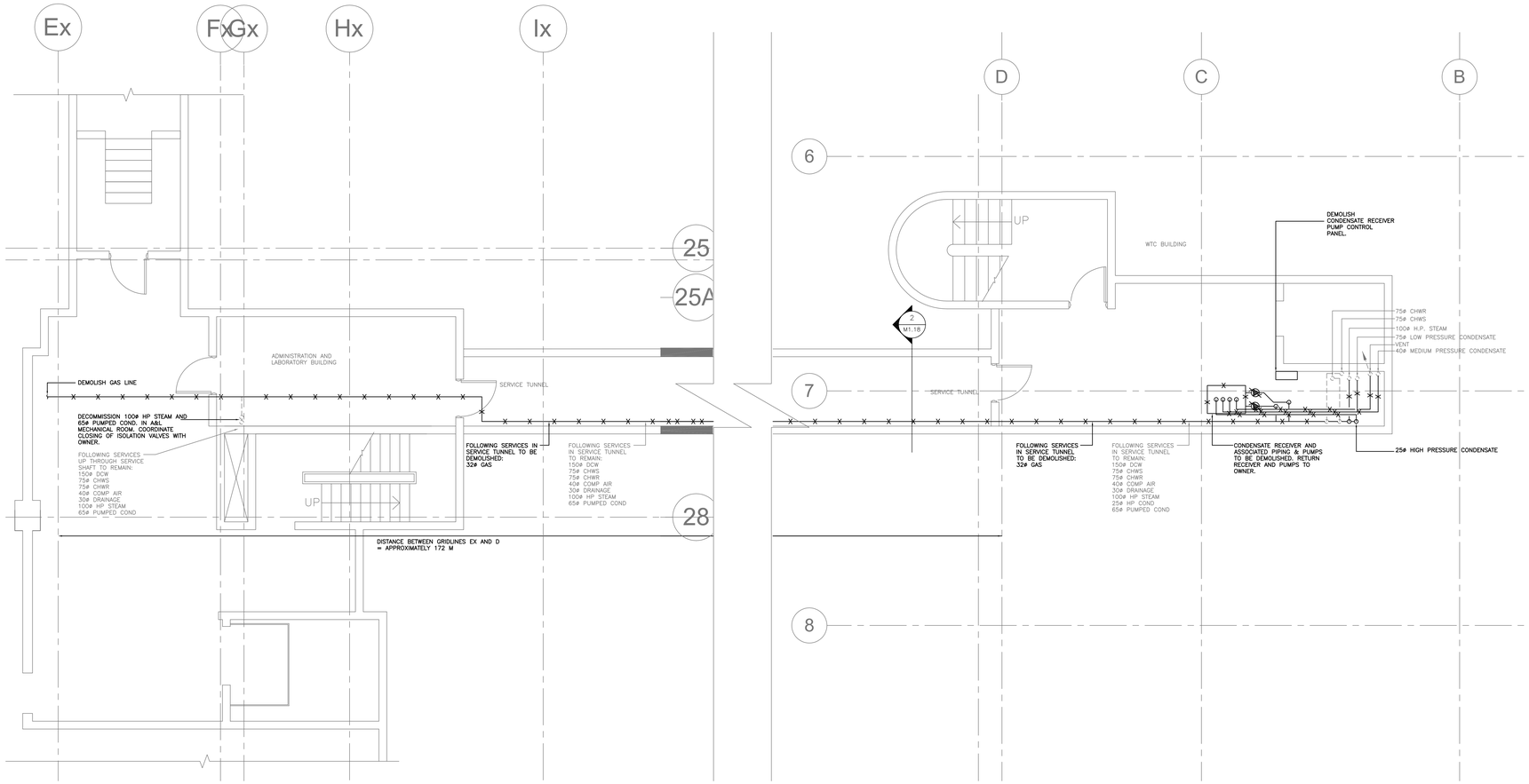
project title
titre du projet
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title
titre du dessin
R & D BUILDING
AHU-1, 3, & 5
PENTHOUSE
HVAC PLAN – DEMOLITION

drawn by / dessine par: MM
designed by / conc par: RD
approved by / approuve par: RD
bid / offre: project manager / administrateur de projets: KC
project date / date du projet: 2015-7-13
project no. / no. du projet: DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.: M1.21

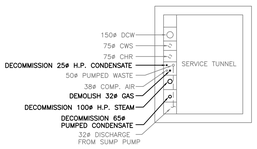


1 M1.30 SERVICE TUNNEL AND BASEMENT MECHANICAL PLAN - DEMOLITION
SCALE: 1:50

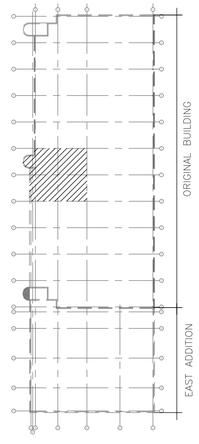
GENERAL NOTES

1. DEMOLISH EXISTING GAS, STEAM, VENT, AND CONDENSATE PIPING AS NOTED.
2. CONTRACTOR TO SITE VERIFY ROUTING & SIZE OF EXISTING GAS, VENT, CONDENSATE, STEAM, GLYOCL, AND DOMESTIC WATER PIPING
3. REMOVE ALL RUBBISH & DEBRIS ONCE JOB IS COMPLETE
4. COORDINATE ANY SHUTDOWN OF SERVICES WITH THE OWNER PRIOR TO COMMENCING WORK.
5. CONTRACTOR SHALL SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING

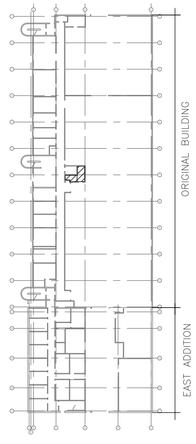
NOTE: COMPLETE A FULL ABATEMENT OF ASBESTOS CONTAINING MATERIAL SUCH AS PIPE AND DUCT INSULATIONS IN THE MECHANICAL PENTHOUSE AS PER HAZARDOUS MATERIALS REPORT BY PINCHIN. SITE VERIFY EXTENT OF ABATEMENT ON SITE PRIOR TO COMMENCEMENT OF WORK.



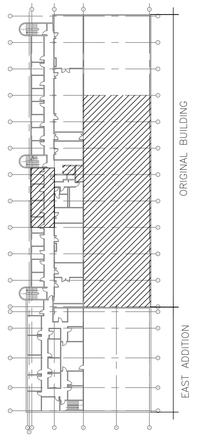
2 M1.30 SECTION THROUGH TUNNEL
SCALE: 1:50



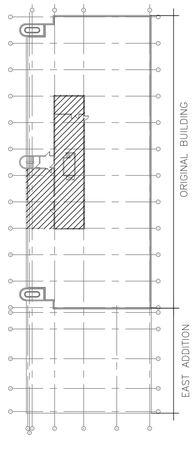
3 M1.30 SECTION THROUGH TUNNEL
SCALE: 1:500



4 M1.30 GROUND FLOOR AREA OF WORK
SCALE: 1:500



5 M1.30 SECOND FLOOR AREA OF WORK
SCALE: 1:500



6 M1.30 PENTHOUSE/LOW ROOF AREA OF WORK
SCALE: 1:500

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Travaux publics et Services gouvernementaux Canada

DIALOG

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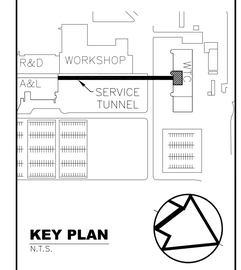

KEY PLAN
N.T.S.

revision	issue	date
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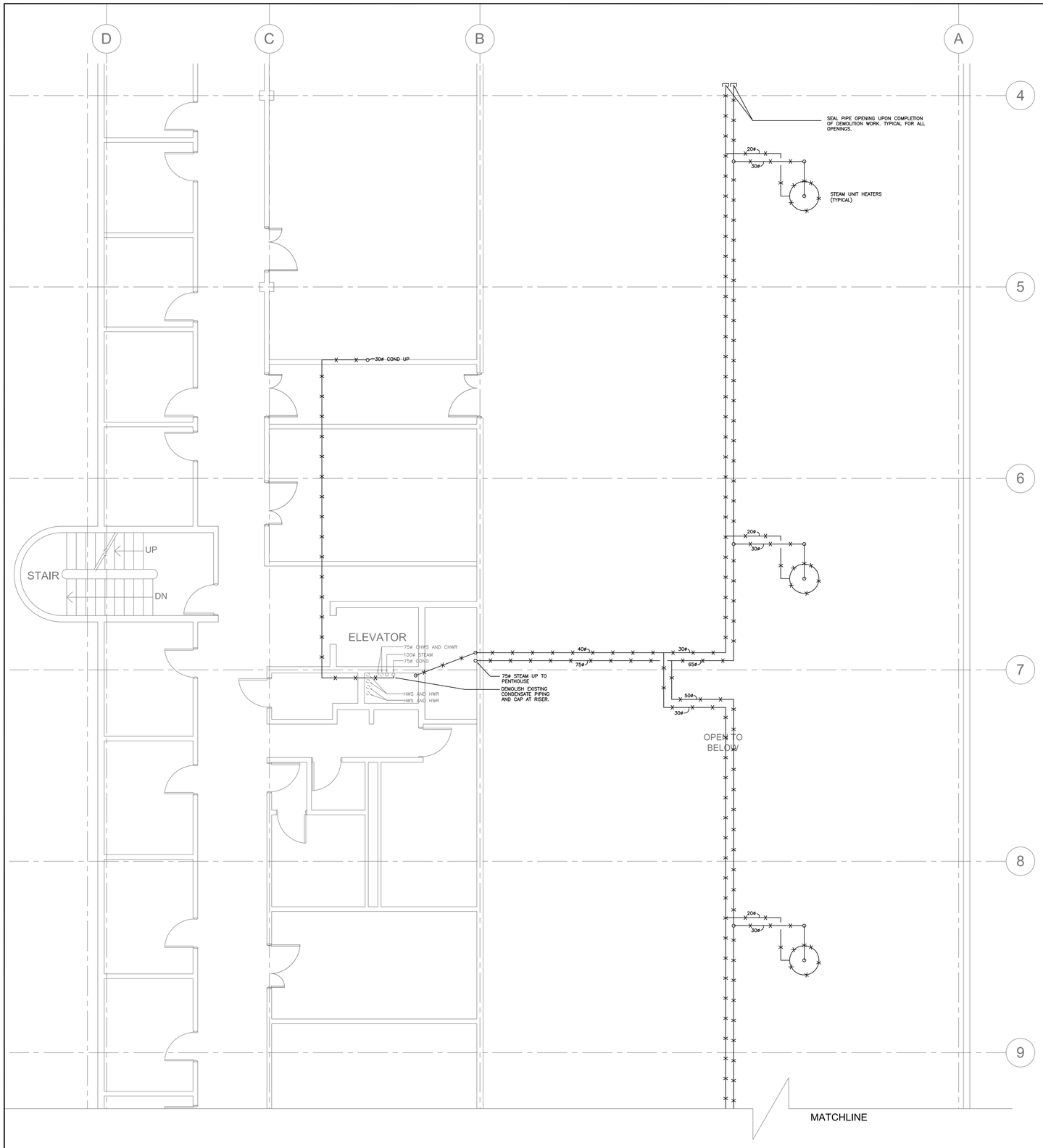
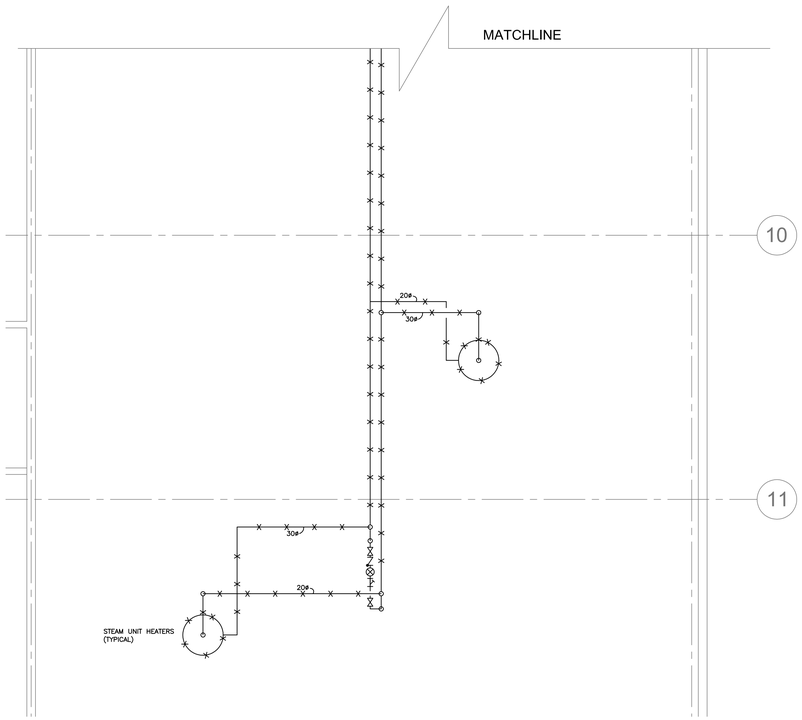
project title / titre du projet
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
WTC BUILDING HEATING SYSTEM SERVICE TUNNEL & BASEMENT MECHANICAL PLAN
DEMOLITION

drawn by / dessiné par	MM
designed by / conc par	RD
approved by / approuvé par	RD
bid / offre	
project manager / administrateur de projets	KC
project date / date du projet	2015-2-24
project no. / no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.	M1.30





GENERAL NOTES

1. DEMOLISH EXISTING GAS, STEAM, VENT, AND CONDENSATE PIPING AS NOTED.
2. CONTRACTOR TO SITE VERIFY ROUTING & SIZE OF EXISTING GAS, VENT, CONDENSATE, STEAM, GLYCOL, DUCTWORK, AND DOMESTIC WATER PIPING
3. REMOVE ALL RUBBISH & DEBRIS ONCE JOB IS COMPLETE
4. COORDINATE ANY SHUTDOWN OF SERVICES WITH THE OWNER PRIOR TO COMMENCING WORK.
5. COORDINATE DEMOLITION THAT REQUIRE CEILING ACCESS IN WITH GENERAL CONTRACTOR TO SCHEDULE WORK IN ADVANCE THAT NOTIFIES CLIENT OF POTENTIAL DISTURBANCES TO NORMAL LABORATORY OPERATION.
6. DEMOLISH PIPE HANGERS AND ASSOCIATED CLAMPS AND RODS THAT ARE NO LONGER IN USE.
7. COORDINATE DEMOLITION OF UNIT HEATERS WITH ELECTRICAL CONTRACTOR.
8. CONTRACTOR SHALL SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING

1 / M1.32 SECOND FLOOR MECHANICAL PLAN - DEMOLITION
SCALE: 1:50

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

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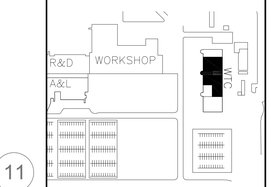

KEY PLAN
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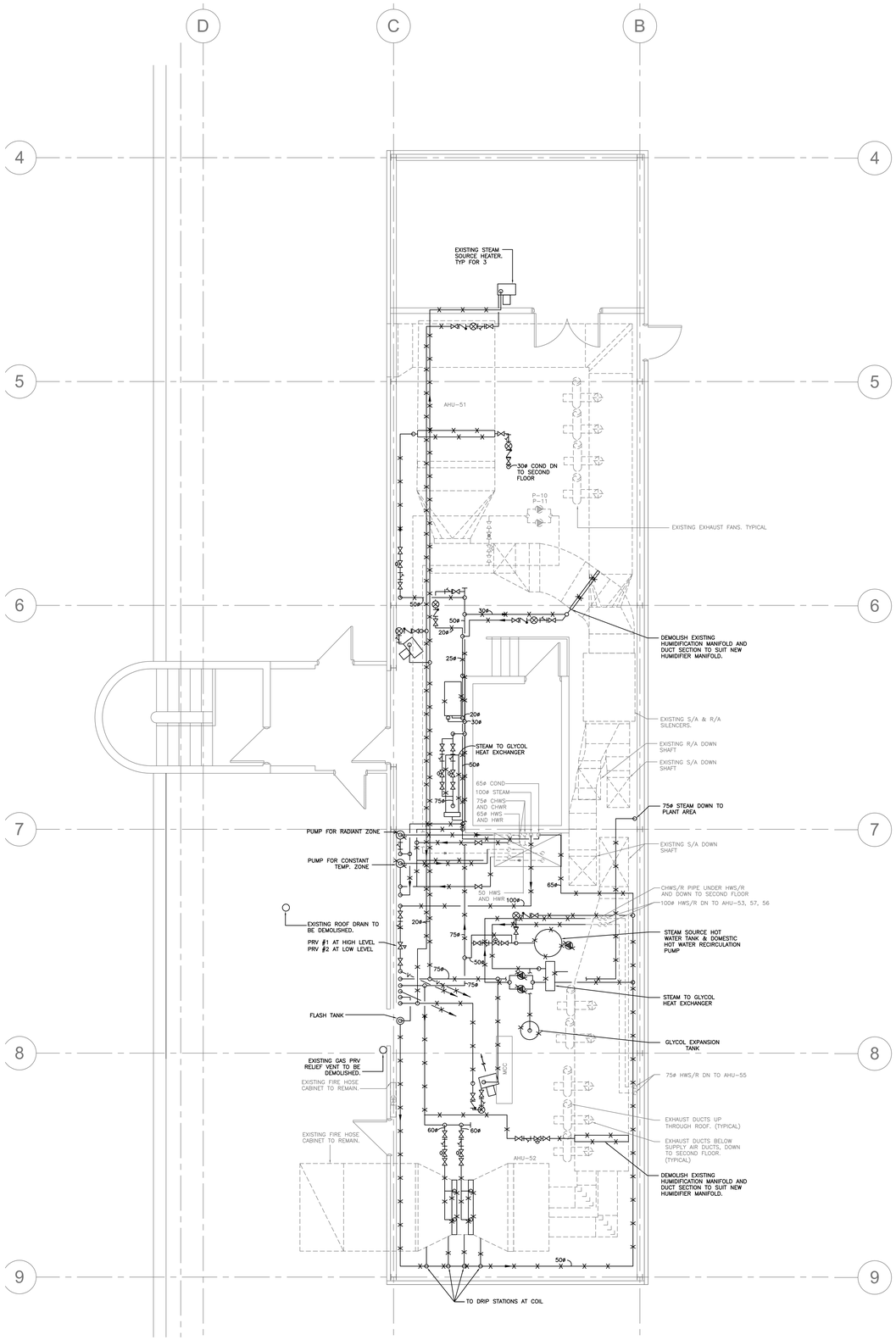
project title / titre du projet
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
WTC BUILDING HEATING SYSTEM
SECOND FLOOR
MECHANICAL PLAN
DEMOLITION

drawn by / dessine par: MM
designed by / conc par: RD
approved by / approuve par: RD
bid / offre: KC
project manager / administrateur de projets:
project date / date du projet: 2015-2-24
project no. / no. du projet: DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.: M1.32



1 M1.33 PENTHOUSE MECHANICAL PLAN - DEMOLITION
SCALE: 1:50

GENERAL NOTES

1. DEMOLISH EXISTING GAS, STEAM, VENT, AND CONDENSATE PIPING AS NOTED.
2. DEMOLISH EXISTING INDIRECT WATER HEATER, HEAT EXCHANGERS, UNIT HEATERS, HUMIDIFICATION MANIFOLD, AND PUMPS AS NOTED. DISCONNECT ALL EQUIPMENT AND REMOVE PIPING AS SHOWN.
3. CONTRACTOR TO SITE VERIFY ROUTING & SIZE OF EXISTING GAS, VENT, CONDENSATE, STEAM, GLYCOL, SUPPLY/RETURN/EXHAUST DUCTS, CHILLED WATER, AND DOMESTIC WATER PIPING
4. REMOVE ALL RUBBISH & DEBRIS ONCE JOB IS COMPLETE
5. COORDINATE ANY SHUTDOWN OF SERVICES WITH THE OWNER PRIOR TO COMMENCING WORK.
6. DEMOLISH PIPE HANGERS AND ASSOCIATED CLAMPS AND RODS THAT ARE NO LONGER IN USE.
7. COORDINATE DEMOLITION OF UNIT HEATERS, CONTROL VALVES, & PUMPS, WITH ELECTRICAL CONTRACTOR.
8. ALL ABANDONED PENETRATIONS THROUGH FLOOR AND WALLS TO BE FILLED. FILL MATERIAL TO MATCH FIRE RATING OF EXISTING WALLS.
9. REFER TO SCHEMATIC ON DRAWING M4.00 FOR ADDITIONAL INFORMATION.
10. CONTRACTOR SHALL SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING
11. ALL EXISTING DUCT AND PIPE INSULATION WITH ASBESTOS CONTAINING MATERIALS (ACM) SHALL BE REMOVED AS PART OF THE ASBESTOS ABATEMENT, AS PER SPECIFICATIONS.

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

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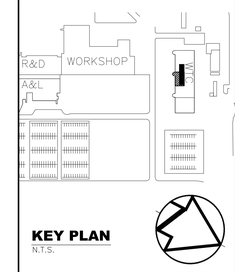

KEY PLAN
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CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
WTC BUILDING HEATING SYSTEM
PENTHOUSE
MECHANICAL PLAN
DEMOLITION

drawn by / dessine par	MM
designed by / conc par	RD
approved by / approuve par	RD
bid / offre	KC
project manager / administrateur de projets	
project date / date du projet	2015-7-13
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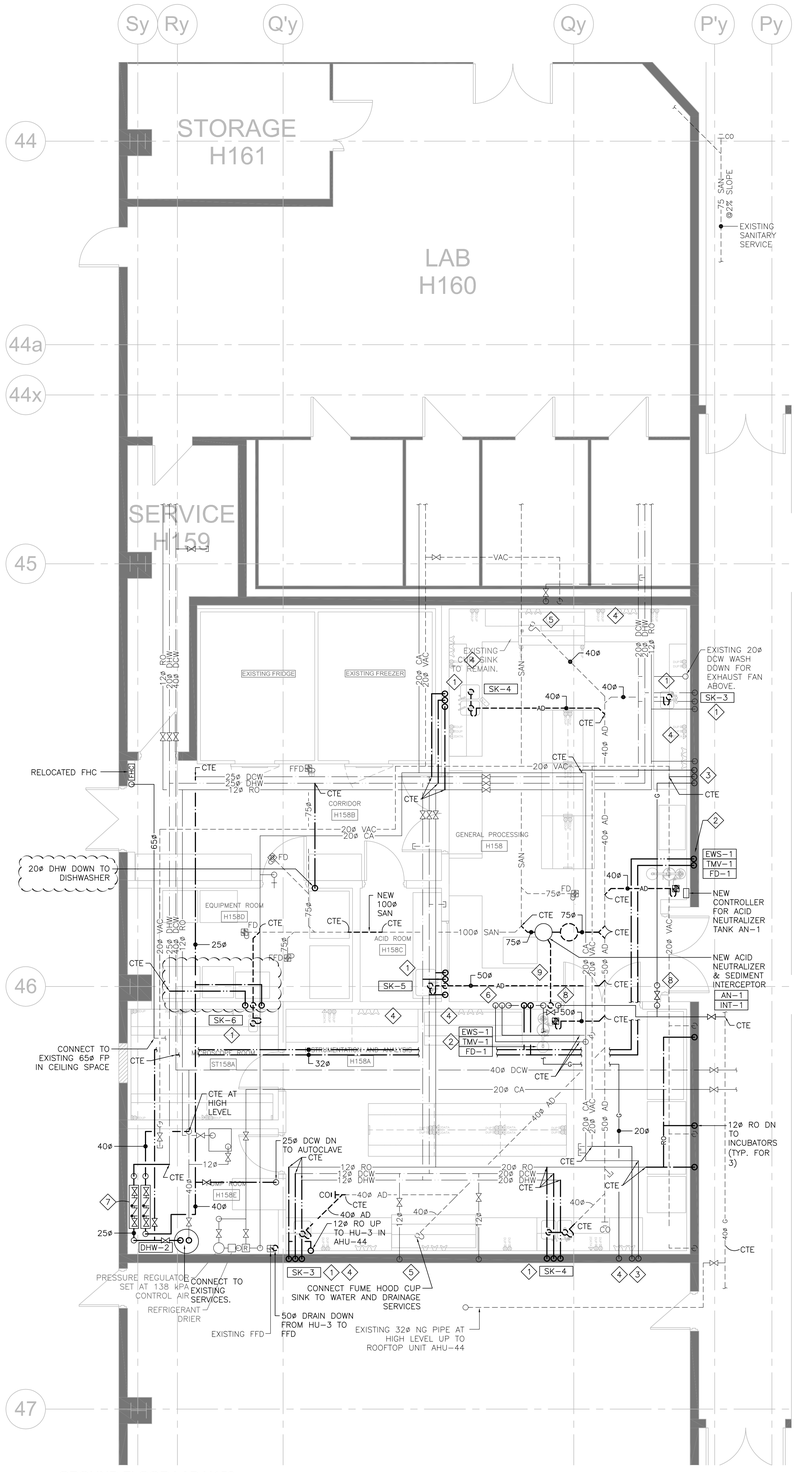
drawing no. / dessine no.	M1.33



1 M2.01 GROUND FLOOR LAB H158
PLUMBING UPGRADE PLAN
SCALE: 1:50

GENERAL NOTES

1. THIS DRAWING INDICATES GENERAL INTENT OF DESIGN ONLY. CONTRACTOR TO VERIFY SITE CONDITION BEFORE ORDERING MATERIALS AND COMMENCING WORK. REPORT TO DEPARTMENTAL REPRESENTATIVE ANY DISCREPANCIES BETWEEN EXISTING AND DESIGN DRAWINGS.
2. PROVIDE NEW EQUIPMENT INCLUDING PIPING, VALVES, FITTINGS, FIXTURES, DOMESTIC WATER TANK, HUMIDIFICATION SYSTEM AND ACCESSORIES AS INDICATED.
3. COORDINATE FINAL LOCATION OF EQUIPMENT AND NEW WORK WITH ALL TRADES.
4. ALL PLUMBING FIXTURES SHALL BE VENTED AND ALL TRAPS SHALL BE PRIMMED AS PER NATIONAL PLUMBING CODE.
5. ALL PIPING SHALL BE INSULATED AS SPECIFIED IN THE SPECIFICATION.
6. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR LOCATION OF FLOOR SLAB CUTS & EXCAVATION OF NEW BURIED DRAINAGE, ACID NEUTRALIZER & SEDIMENT BASIN. REFER TO TYPICAL STRUCTURAL DETAIL FOR BACKFILL AND SLAB CONSTRUCTION.
7. PROVIDE WELL COMPACTED SUB-GRADE BELOW INSTALLATION OF NEW ACID NEUTRALIZER TANK AND SEDIMENT BASIN.
8. PROVIDE BURIED CONDUIT & WIRING AS REQUIRED TO CONNECT ACID NEUTRALIZER CONTROL PANEL TO ACID NEUTRALIZER TANK.
9. CONTRACTOR SHALL SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

KEYNOTES

1. CONNECT NEW SINK TO NEW RO, DCW, DHW & SAN SERVICES. CONNECT NEW SERVICES TO EXISTING MAINS AS INDICATED.
2. CONNECT DCW & DHW TO TMV-1. TEMPERED WATER TO SERVE EMERGENCY EYE WASH & EMERGENCY SHOWER. TMV-1 SHALL BE MOUNTED IN CEILING SPACE.
3. DROP COMPRESSED 20ø AIR, 20ø GAS & 20ø VAC IN WALL. ROUTE DISTRIBUTION PIPING TO OUTLETS WITHIN MILLWORK.
4. NEW COMPRESSED AIR, GAS & VAC OUTLETS. CONNECT COMPLETE TO SERVICE DISTRIBUTION PIPING WITHIN MILLWORK. COORDINATE FINAL INSTALLATION LOCATION WITH CASEWORK SUPPLER.
5. NEW COMPRESSED AIR & GAS OUTLETS. CONNECT COMPLETE TO SERVICE DISTRIBUTION PIPING WITHIN MILLWORK. COORDINATE FINAL INSTALLATION LOCATION WITH CASEWORK SUPPLER.
6. DROP COMPRESSED 20ø AIR, 20ø GAS & 20ø VAC IN WALL. ROUTE DISTRIBUTION PIPING TO OUTLETS WITHIN WALL.
7. INSTALL RP BFP'S FOR DCW AND DHW. INSTALL IN ACCORDANCE WITH CSA B64-10.
8. WALL MOUNTED GAS SHUTOFF VALVE. COORDINATE WITH ARCHITECTURAL ELEVATIONS.
9. PROVIDE ACID RESISTANT VENT PIPE, OF SAME CONSTRUCTION AS ACID DRAINAGE PIPING, SIZED IN ACCORDANCE WITH MANUFACTURING INSTRUCTIONS.

PLUMBING FIXTURE CONNECTIONS

FIXTURE	DRAIN		VENT	COLD WATER	HOT WATER	RO WATER
	CAST IRON	DWV COPPER				
LAB SINK	40ø	40ø	32ø	12ø	12ø	12ø
EYEWASH	----	----	----	32ø	32ø	----

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

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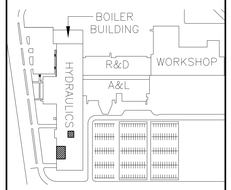

KEY PLAN
N.T.S.

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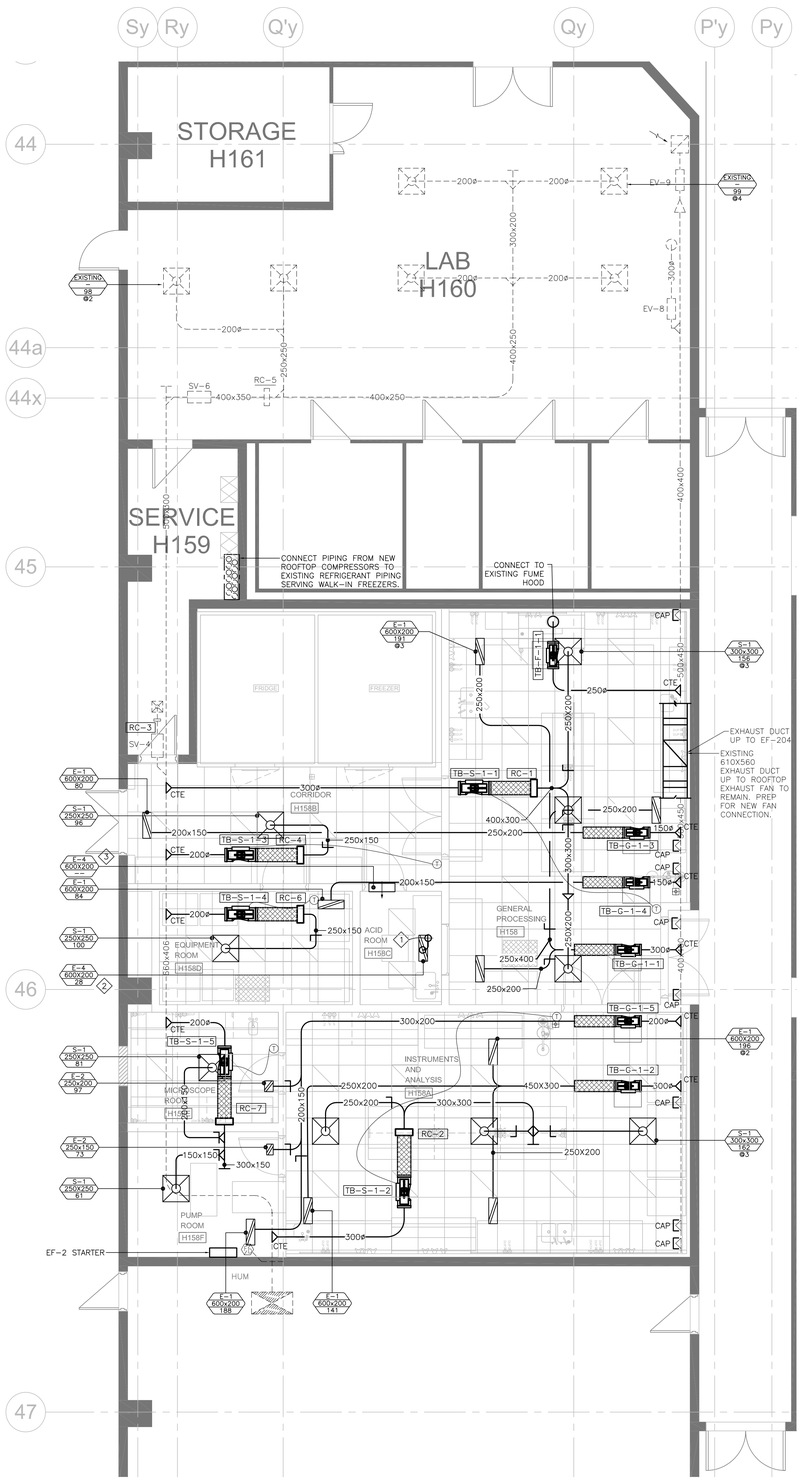
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
HYDRAULICS WING
LAB H158
GROUND FLOOR
PLUMBING PLAN

drawn by / dessiné par: MM
designed by / conc par: RD
approved by / approuvé par: RD
bid / offre: KC
project manager / administrateur de projets
project date / date du projet: 2015-7-13
project no. / no. du projet: DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.: M2.01



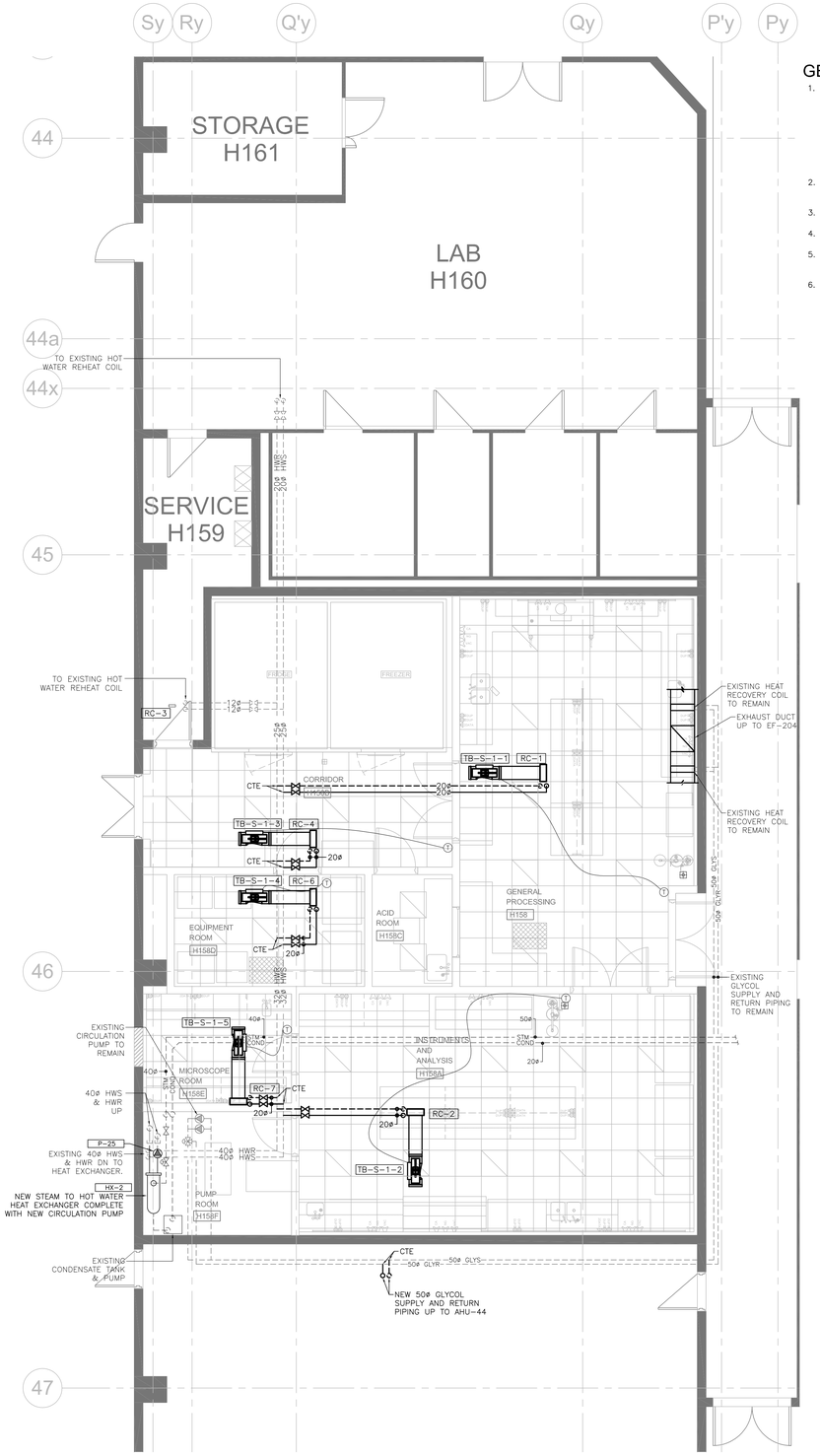
GENERAL NOTES

1. THE DRAWING INDICATES THE INTENT OF THE DESIGN ONLY. CONTRACTOR TO PRESUME FULL RESPONSIBILITY TO INVESTIGATE EXISTING MECHANICAL LAYOUT AND REPORT TO DEPARTMENTAL REPRESENTATIVE ON ANY DISCREPANCIES BETWEEN RECORD DRAWING AND SITE CONDITION. PERFORM SITE VERIFICATION AT THE OUTSET OF THE PROJECT PRIOR TO ORDERING MATERIALS AND COMMENCING WORK. PROVIDE HAND DRAWN "AS-BUILT" SKETCHES AS REQUIRED AND/OR REQUESTED BY THE DEPARTMENTAL REPRESENTATIVE.
2. PROVIDE NEW DUCTWORK, EQUIPMENT, DIFFUSERS, FITTINGS, AND ACCESSORIES AS INDICATED AND AS REQUIRED TO COMPLETE WORK.
3. REMOVE ALL DEBRIS AND RUBBISH ONCE WORK IS COMPLETE.
4. COORDINATE FINAL LOCATION OF EQUIPMENT AND ALL WORK WITH ALL TRADES.
5. BALANCE AIR FLOWS TO FIGURES INDICATED ON DRAWING.
6. NEW VENTURI VALVES TO BE COMPLETE WITH ELECTRIC CONTROLS AND CONNECTED TO EXISTING BMS.
7. SUPPLY AND GENERAL EXHAUST VENTURI VALVES TO BE COMPLETE WITH ACOUSTIC SILENCERS.
8. COORDINATE WITH DEPARTMENTAL REPRESENTATIVE FOR SHUTDOWN OF AHU AND EXHAUST FAN TO MINIMIZE DISRUPTION IN ADJACENT LAB. CONTRACTOR TO REBALANCE AIRFLOWS AS INDICATED.
9. PROVIDE 120-24V TRANSFORMER FOR LOW VOLTAGE CONNECTIONS. REFER TO ELECTRICAL FOR LOCATION AND QUANTITY OF 120V JUNCTION BOXES.
10. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.
11. COORDINATE WITH DEPARTMENTAL REPRESENTATIVE FOR SHUTDOWN OF AHU AND EXHAUST FAN TO MINIMIZE DISRUPTION IN ADJACENT LAB. CONTRACTOR TO REBALANCE AIRFLOWS AS INDICATED.
12. ALL DUCTWORK ASSOCIATED WITH FUMEHOOD AND GENERAL EXHAUST TO BE STAINLESS STEEL.

KEYNOTES

1. 150ø ACID RESISTANT DUCT UP TO EF-209 ON ROOF ABOVE.
2. ACID RESISTANT EXHAUST GRILLE.
3. ACID RESISTANT TRANSFER AIR GRILLE CENTRED ABOVE DOOR. FINISH BOTH SIDES OF TRANSFER AIR OPENING WITH GRILLES.

1 M2.02 GROUND FLOOR LAB H158
HVAC UPGRADE PLAN
SCALE: 1:50



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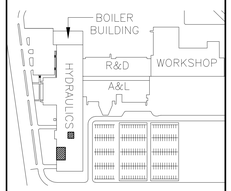
2. PROVIDE NEW PIPING, EQUIPMENT, VALVES, TRIM, AND ACCESSORIES AS INDICATED AND AS REQUIRED TO COMPLETE WORK.
3. REMOVE ALL DEBRIS AND RUBBISH ONCE WORK IS COMPLETE.
4. COORDINATE FINAL LOCATION OF EQUIPMENT AND ALL WORK WITH ALL TRADES.
5. PROVIDE 120-24V TRANSFORMER FOR LOW VOLTAGE CONNECTIONS. REFER TO ELECTRICAL FOR LOCATION AND QUANTITY OF 120V JUNCTION BOXES.
6. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

1 M2.02 GROUND FLOOR LAB H158
HVAC PIPING UPGRADE PLAN
SCALE: 1:50

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

Stamp



KEY PLAN
N.T.S.

revision	issue	date
1	ISSUED FOR BID	04/11/2015

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A/B/C
A Detail No. No. du détail
B drawing no. – where detail required dessin no. – où detail exigé
C drawing no. – where detailed dessin no. – où détaillé

project title
titre du projet

CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title
titre du dessin
HYDRAULICS WING
LAB H158
GROUND FLOOR

HVAC & HVAC PIPING PLAN

drawn by
dessine par MM

designed by
conc par RD

approved by
approuve par RD

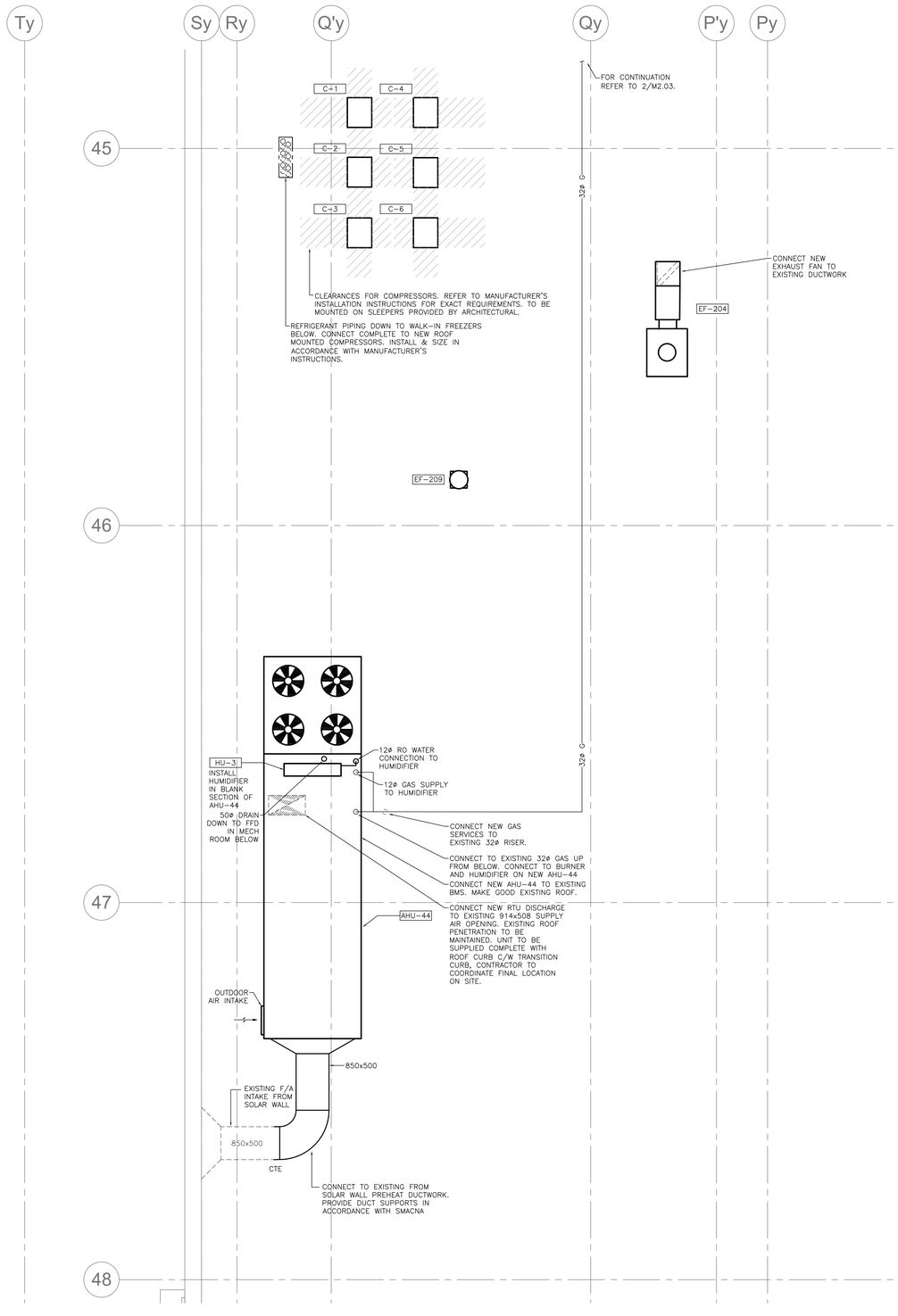
bid
offre

project manager
administrateur de projets
KC

project date
date du projet 2015-7-13

project no.
no. du projet DIALOG NO. 09946T0200
R.073578.001

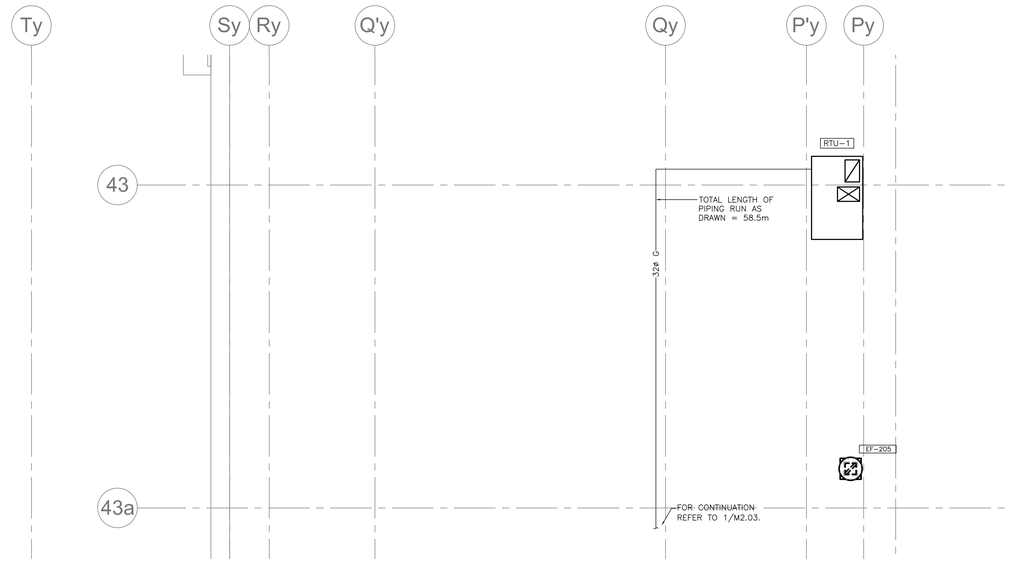
drawing no.
dessine no. M2.02



1 M2.03 ROOF LAB H158 PLAN
SCALE: 1:50

GENERAL NOTES

1. EF-204 TO BE COMPLETE WITH 900MM (3 FT.) STACK EXTENSION AND DISCHARGE NOZZLE, TO REACH MINIMUM DISCHARGE HEIGHT OF 3000MM (10 FT.) ABOVE ROOF.
2. PROVIDE GAS PIPE SUPPORTS IN ACCORDANCE WITH SPECIFICATIONS
3. NEW AHU-44 TO BE INSTALLED ON ROOF CURB ADAPTOR TO MINIMIZE DISRUPTION TO EXISTING ROOF. CONTRACTOR TO FLASH AND MAKE GOOD EXISTING ROOF.
4. ROOFTOP CONDENSING UNITS TO BE INSTALLED ON SLEEPERS. REFER TO ARCHITECTURAL FOR DETAILS.
5. PROVIDE PVC JACKETING ON INSULATED REFRIGERANT PIPING EXPOSED OUTDOORS. REFER TO SPECIFICATIONS.

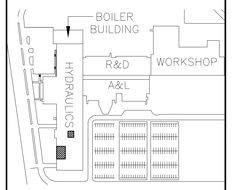


2 M2.03 ROOF LAB H158 PLAN
SCALE: 1:50

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

Stamp



KEY PLAN
N.T.S.

1	ISSUED FOR BID	04/11/2015
revision	issue	date

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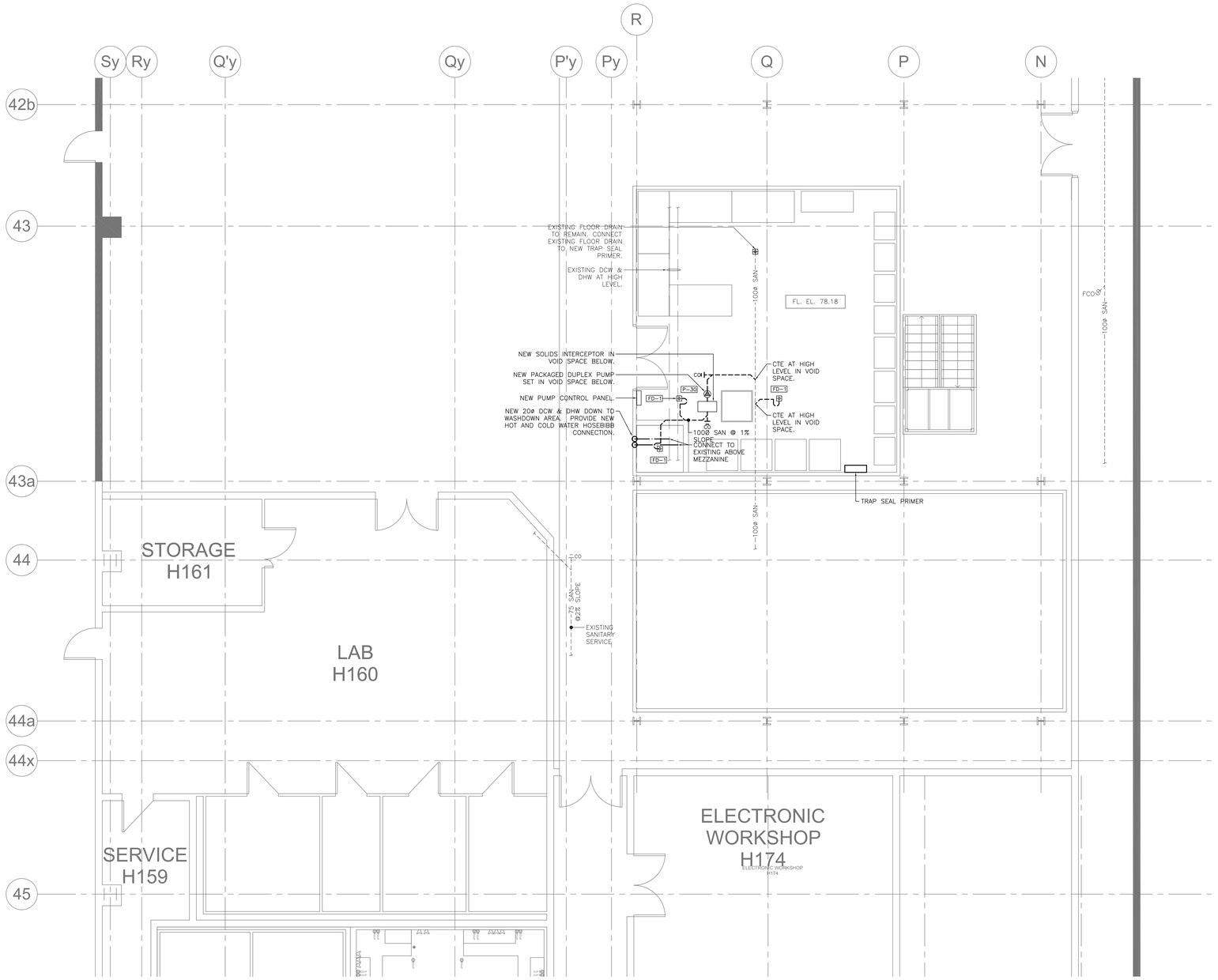
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
HYDRAULICS WING
LAB H158
ROOF
HVAC PLAN

drawn by / dessiné par	MM
designed by / conc par	RD
approved by / approuvé par	RD
bid / offre	KC
project manager / administrateur de projets	
project date / date du projet	2015-7-13
project no. / no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.	M2.03



1 M2.04 TRACE METALS STAGING & STORAGE ROOM
GROUND FLOOR PLUMBING PLAN
SCALE: 1:50

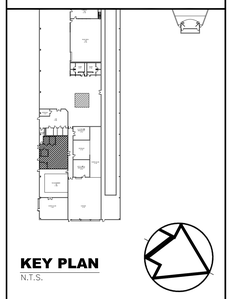
GENERAL NOTES

1. THIS DRAWING INDICATES GENERAL INTENT OF DESIGN ONLY. CONTRACTOR TO VERIFY SITE CONDITION BEFORE ORDERING MATERIALS AND COMMENCING WORK. REPORT TO ENGINEER ANY DISCREPANCIES BETWEEN EXISTING AND DESIGN DRAWINGS.
2. PROVIDE NEW EQUIPMENT INCLUDING PIPING, VALVES, FITTINGS, FIXTURES, DOMESTIC WATER TANK, HUMIDIFICATION SYSTEM AND ACCESSORIES AS INDICATED.
3. COORDINATE FINAL LOCATION OF EQUIPMENT AND NEW WORK WITH ALL TRADES.
4. ALL PLUMBING FIXTURES SHALL BE VENTED AND ALL TRAPS SHALL BE PRIMED AS PER ONTARIO PLUMBING CODE.
5. ALL PIPING SHALL BE INSULATED AS SPECIFIED IN THE SPECIFICATION.
6. CONTRACTOR TO CONFIRM EXACT LOCATION OF EXISTING BURIED DRAINAGE PRIOR TO COMMENCING WORK AND REPORT AND DISCREPANCIES TO THE ENGINEER. CONTRACTOR TO VIDEO SCOPE EXISTING DRAIN TO ASSESS CONDITION PRIOR TO TIE IN. CONTRACTOR TO POWER WASH AND FLUSH EXISTING PIPING AFTER TIE IN IS COMPLETE.
7. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION OF SLAB CUTS TO ACCOMODATE NEW UNDERGROUND DRAINAGE PIPING.
8. EXCAVATE BELOW SLAB CUTS TO CONNECT TO EXISTING PIPING AT INVERTS INDICATED. PROVIDE SHORING TO SUPPORT EXISTING SOIL. BACKFILL AND REPAIR SLAB AS REQUIRED.
9. PIPES IN PIT AREA TO BE HUNG FROM UNDERSIDE OF SLAB.
10. CONTRACTOR SHALL SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.
11. NW SOLIDS INTERCEPTOR AND PACKAGED PUMP SET SHALL BE SECURELY SUPPORTED WITHIN VOID SPACE BELOW. EQUIPMENT LOADS SHALL NOT BEAR ON PIPE. PROVIDE SUITABLE MOUNTING HARDWARE.
12. REFER TO MECHANICAL SCHEMATIC DRAWINGS FOR ARRANGEMENT OF INTERCEPTOR AND PACKAGED PUMP SET.
13. CONTRACTOR SHALL VIDEO SCOPE AND FLUSH EXISTING 100ø SAN PIPING PRIOR TO CONNECTING TO ENSURE FLOW OF WATER IS CLEAR FROM DEBRIS. CONTRACTOR TO SUBMIT VIDEO SCOPE TO ENGINEER FOR REVIEW PRIOR TO COMMENCEMENT OF CONSTRUCTION. PROVIDE SIGNED LETTER INDICATING COMPLETION OF SCOPING AND FLUSHING SERVICES TO ENGINEER.

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

Stamp



KEY PLAN
N.T.S.

revision	issue	date
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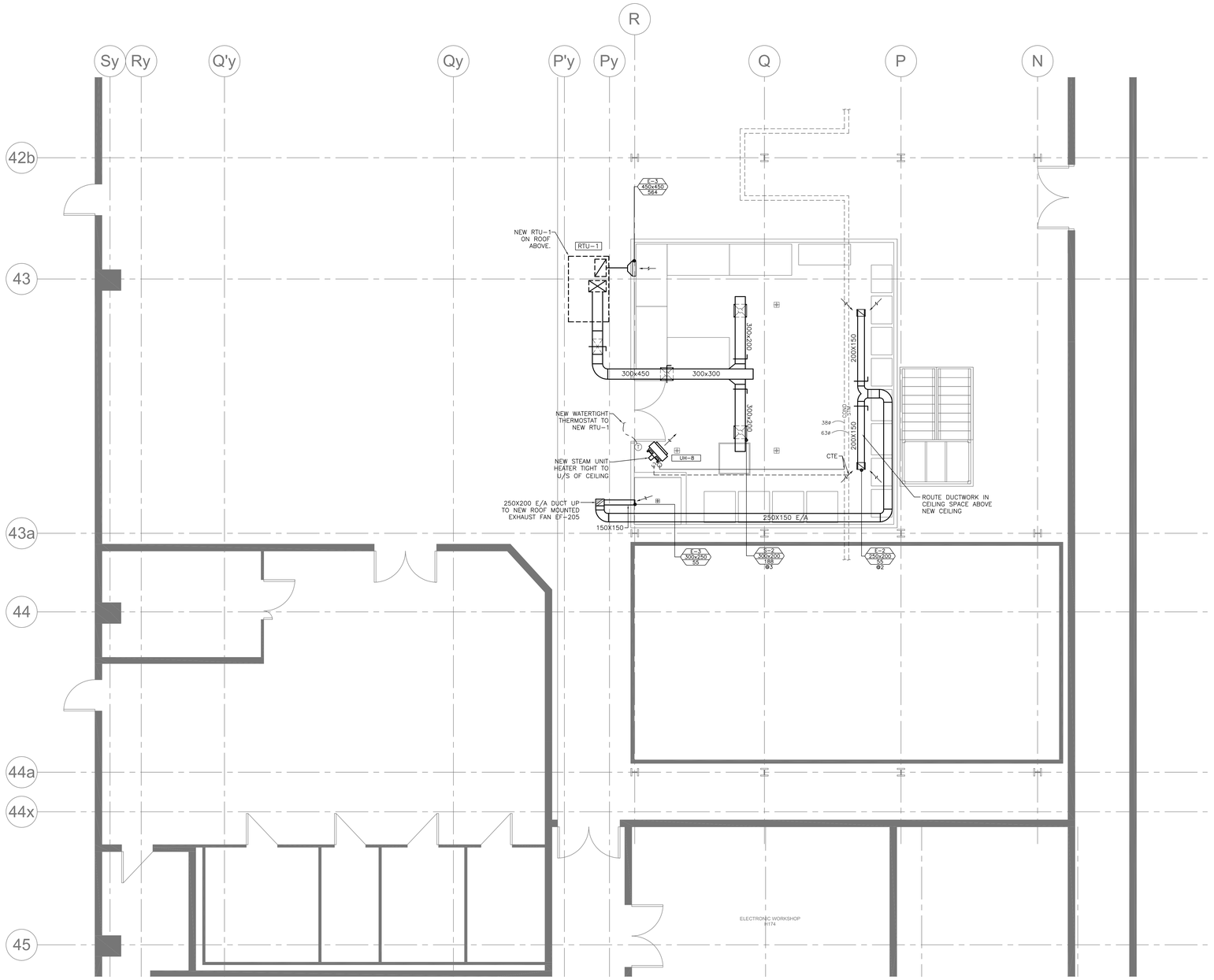
project title
titre du projet

CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title
titre du dessin

HYDRAULICS WING
TRACE METALS STAGING & STORAGE ROOM
GROUND FLOOR PLUMBING PLAN

drawn by dessine par	MM
designed by conc par	RD
approved by approuve par	RD
bid offre	
project manager administrateur de projets	KC
project date date du projet	2015-7-13
project no. no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. dessine no.	M2.04



1 M2.05 TRACE METALS STAGING & STORAGE ROOM GROUND FLOOR HVAC PLAN
SCALE: 1:50

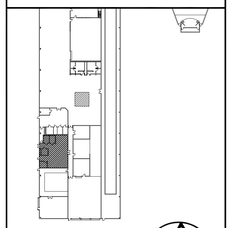
GENERAL NOTES

1. THE DRAWING INDICATES THE INTENT OF THE DESIGN ONLY. CONTRACTOR TO PRESUME FULL RESPONSIBILITY TO INVESTIGATE EXISTING MECHANICAL LAYOUT AND REPORT TO DEPARTMENTAL REPRESENTATIVE ON ANY DISCREPANCIES BETWEEN RECORD DRAWING AND SITE CONDITION. PERFORM SITE VERIFICATION AT THE OUTSET OF THE PROJECT PRIOR TO ORDERING MATERIALS AND COMMENCING WORK. PROVIDE HAND DRAWN "AS-BUILT" SKETCHES AS REQUIRED AND/OR REQUESTED BY THE DEPARTMENTAL REPRESENTATIVE.
2. PROVIDE NEW DUCTWORK, EQUIPMENT, DIFFUSERS, FITTINGS, AND ACCESSORIES AS INDICATED AND AS REQUIRED TO COMPLETE WORK.
3. REMOVE ALL DEBRIS AND RUBBISH ONCE WORK IS COMPLETE.
4. COORDINATE FINAL LOCATION OF EQUIPMENT AND ALL WORK WITH ALL TRADES.
5. BALANCE AIR FLOWS TO FIGURES INDICATED ON DRAWING.
6. CONNECT NEW ROOFTOP UNIT RTU-1 TO EXISTING BMS TO MONITOR AND CONTROL SPACE TEMPERATURE AND HUMIDITY.
7. INTERLOCK RTU-1 AND UNIT HEATERS VIA BMS SUCH THAT SIMULTANEOUS HEATING AND COOLING CANNOT OCCUR.
8. CONTRACTOR SHALL SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

Stamp



KEY PLAN
N.T.S.

revision	issue	date
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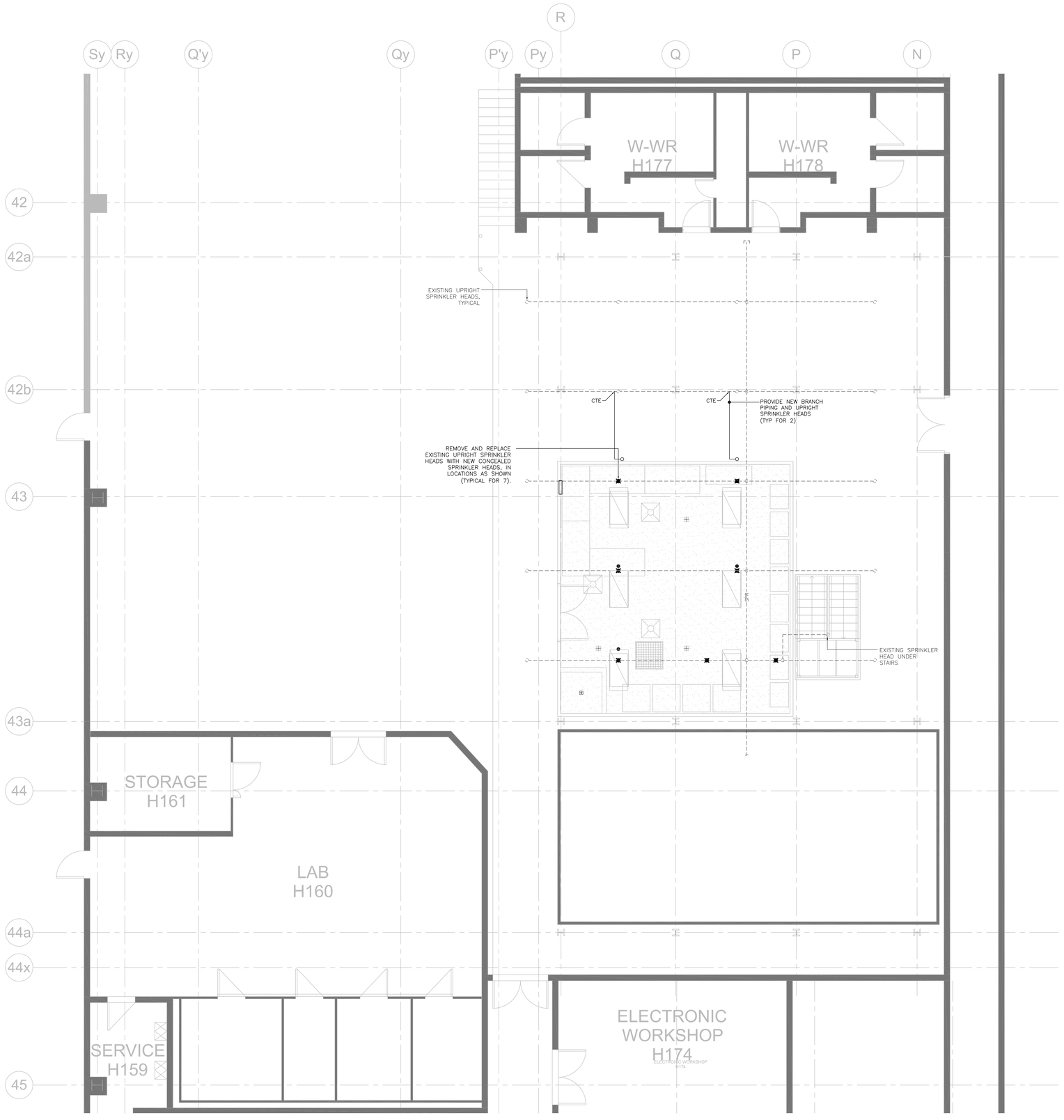
project title / titre du projet
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
HYDRAULICS WING
TRACE METALS STAGING & STORAGE ROOM GROUND FLOOR
HVAC PLAN

drawn by / dessine par	MM
designed by / conc par	RD
approved by / approuve par	RD
bid / offre	KC
project manager / administrateur de projets	
project date / date du projet	2015-7-13
project no. / no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.	M2.05



1 M2.06 TRACE METALS STAGING & STORAGE ROOM GROUND FLOOR FIRE PROTECTION PLAN
SCALE: 1:50

GENERAL NOTES

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2. PROVIDE NEW SPRINKLER HEADS AND PIPING MODIFICATIONS AS INDICATED AND AS REQUIRED TO COMPLETE THE WORK. CONTRACTOR TO VERIFY SIZE OF EXISTING PIPING ON SITE. CONTRACTOR TO COORDINATE PLACEMENT OF SPRINKLER HEADS TO AVOID INTERFERENCE WITH OTHER WORK.
3. INSTALL NEW SPRINKLER HEADS AND PIPING IN ACCORDANCE WITH NFPA 13 AND REQUIREMENTS OF AUTHORITY HAVING JURISDICTION.
4. REMOVE ALL DEBRIS AND RUBBISH ONCE WORK IS COMPLETE.
5. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING

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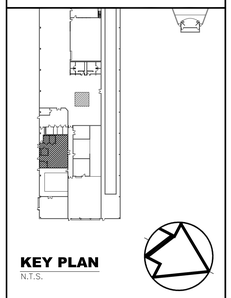
Travaux publics et Services gouvernementaux Canada

DIALOG

Stamp



KEY PLAN
N.T.S.

revision	issue	date
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project title / titre du projet

CANADA CENTRE FOR INLAND WATERS

867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6

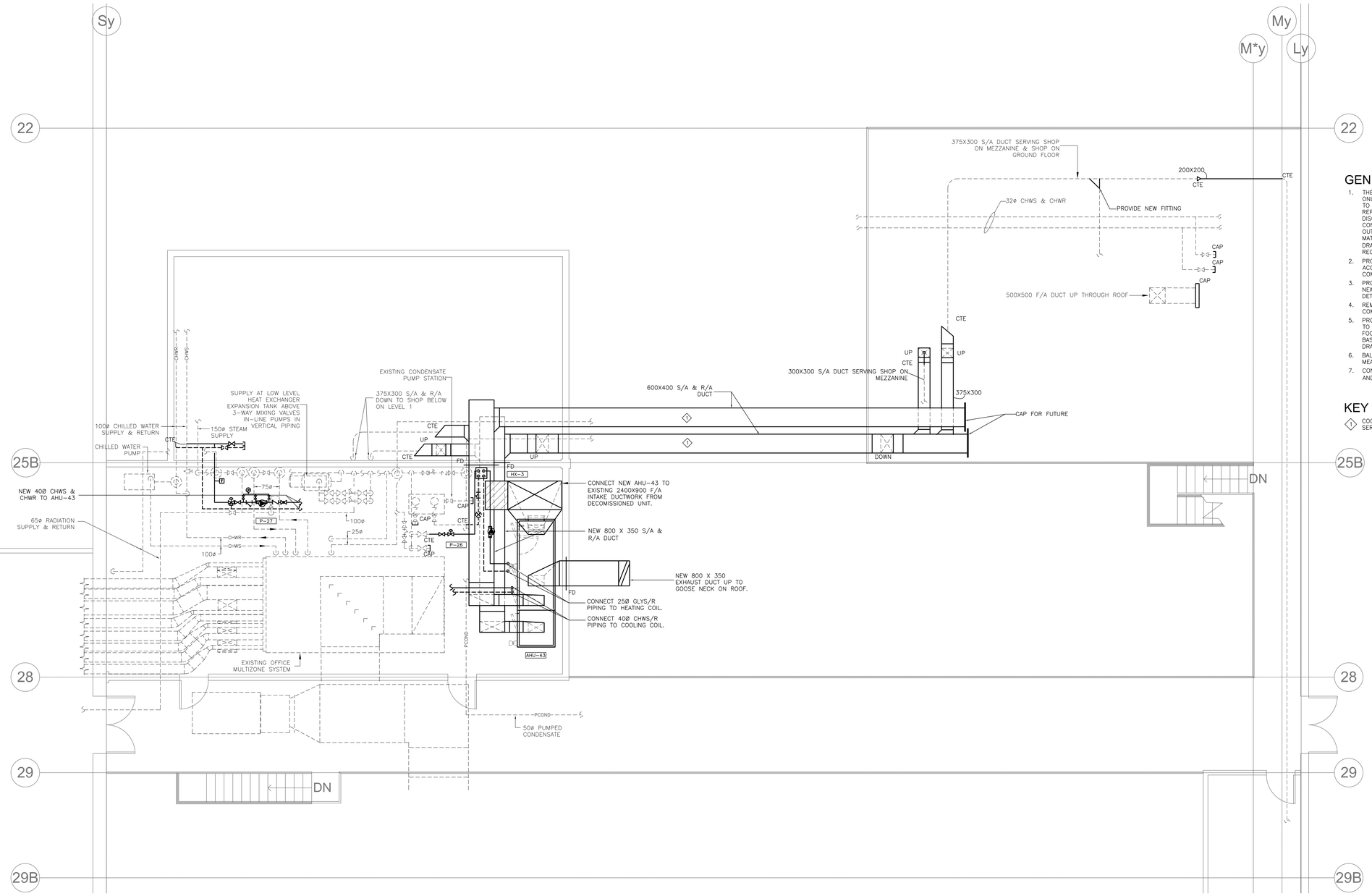
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin

HYDRAULICS WING
TRACE METALS STAGING & STORAGE ROOM GROUND FLOOR

FIRE PROTECTION PLAN

drawn by / dessiné par	MM
designed by / conc par	RD
approved by / approuvé par	RD
bid / offre	
project manager / administrateur de projets	KC
project date / date du projet	2015-7-13
project no. / no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.	M2.06



1 M2.07 MEZZANINE AHU 43 & MECH. ROOM HVAC & HVAC PIPING PLAN

SCALE: 1:50

GENERAL NOTES

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2. PROVIDE NEW PIPING, EQUIPMENT, VALVES, TRIM, AND ACCESSORIES AS INDICATED AND AS REQUIRED TO COMPLETE WORK.
3. PROVIDE NEW STEEL LINTEL ANGLES TO FRAME AROUND NEW WALL OPENINGS. REFER TO TYPICAL STRUCTURAL DETAIL M07.
4. REMOVE ALL DEBRIS AND RUBBISH ONCE WORK IS COMPLETE.
5. PROVIDE NEW HOUSEKEEPING PAD FOR AHU-43. PAD TO EXTEND NO LESS THAN 50mm BEYOND THE UNIT FOOTPRINT. SIZE TO BE 4470mm X 1524mm TO SUIT BASIS OF DESIGN UNIT. REFER TO STRUCTURAL DRAWINGS FOR DETAIL OF PAD CONSTRUCTION.
6. BALANCE AHU-43 TO MEET PRE-AIRFLOW MEASUREMENTS.
7. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

KEY NOTES

1 COORDINATE ROUTING OF DUCTWORK WITH EXISTING SERVICES.

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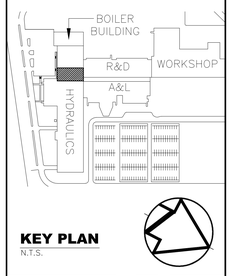

KEY PLAN
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CANADA CENTRE FOR INLAND WATERS

867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6

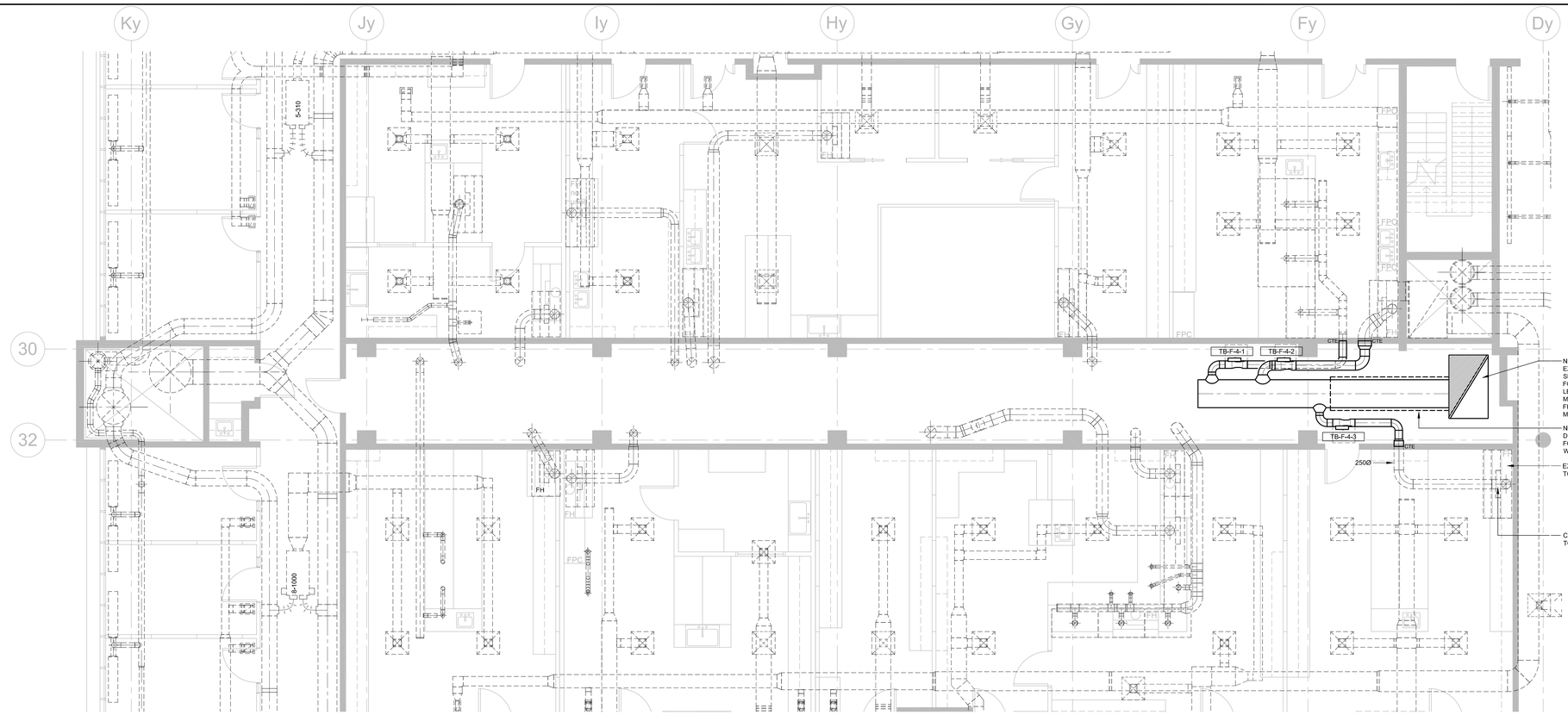
LABS, AHUs, AND HEATING UPGRADE

drawing title
titre du dessin

HYDRAULICS WING
AHU-43
MEZZANINE

HVAC & HVAC PIPING PLAN

drawn by dessine par	MM
designed by conc par	RD
approved by approuve par	RD
bid offre	project manager administrateur de projets: KC
project date date du projet	2015-7-13
project no. no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. dessine no.	M2.07



1 M2.10 — 4TH FLOOR EXHAUST UPGRADE
HVAC UPGRADE PLAN
SCALE: 1:50

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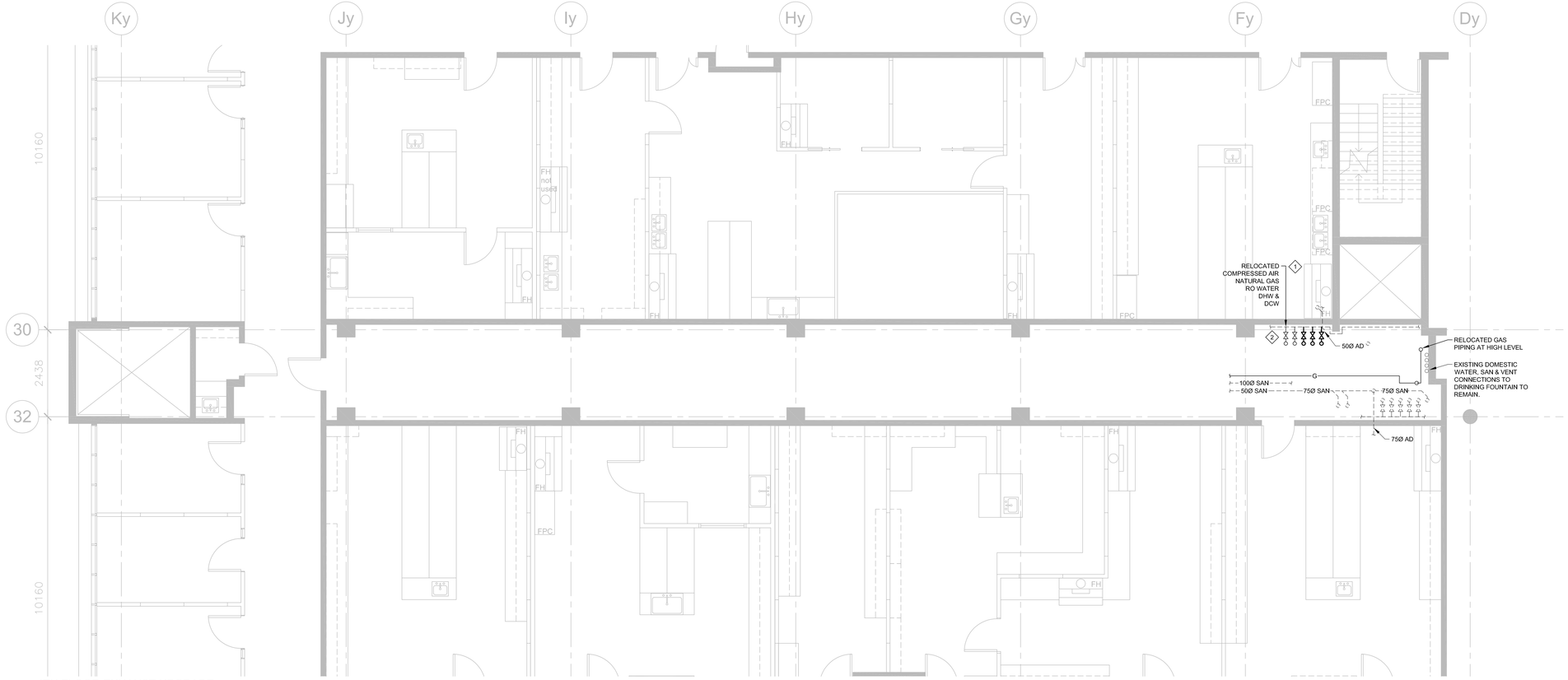
6. NEW VENTURI VALVES TO BE COMPLETE WITH ELECTRIC CONTROLS.
7. SUPPLY AND GENERAL EXHAUST VENTURI VALVES TO BE COMPLETE WITH ACOUSTIC SILENCERS.
8. PROVIDE 120V-24V TRANSFORMERS FOR LOW VOLTAGE CONNECTIONS. REFER TO ELECTRICAL DRAWINGS FOR LOCATION AND QUANTITY OF 120V JUNCTION BOXES.
9. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.



2 M2.10 — 4TH FLOOR EXHAUST UPGRADE
PLUMBING UPGRADE PLAN
SCALE: 1:50
\\Toronto\data\Building\09946T0203 3D WORK\CHPLOT\CCEW-M-M2.10.dwg

GENERAL NOTES

1. COORDINATE SHUTDOWN OF SERVICES WITH THE OWNER PRIOR TO COMMENCING WORK.
2. REMOVE ALL DEBRIS AND RUBBISH AT THE END OF EACH DAY AND ONCE JOB IS COMPLETE.
3. CONTRACTOR TO REVIEW PIPE ROUTING & SITE CONDITIONS TO IDENTIFY AREAS OF POTENTIAL INTERFERENCE. CONTRACTOR SHALL PROVIDE CLEARLY LABELLED RED LINE SKETCHES TO THE ENGINEER WHICH IDENTIFY INTERFERENCES WITH NEW WORK. SUBMIT SKETCHES FOR REVIEW PRIOR TO COMMENCING ANY NEW WORK.
4. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

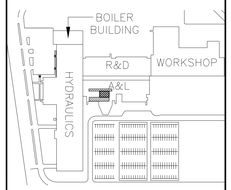
KEYNOTES

1. PLUMB ALL EXISTING CONNECTIONS COMPLETE TO RELOCATED SERVICE RISERS IN MECHANICAL CORRIDOR.
2. RELOCATED 20Ø DCW, 20Ø DHW, 20Ø RO, 32Ø GAS, 32Ø CA RISERS, COMPLETE WITH NEW BRANCH ISOLATION VALVES CONNECTED TO EXISTING BRANCH PIPING.

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

Stamp



KEY PLAN
N.T.S.

revision	issue	date
1	ISSUED FOR BID	04/11/2015

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A/B/C
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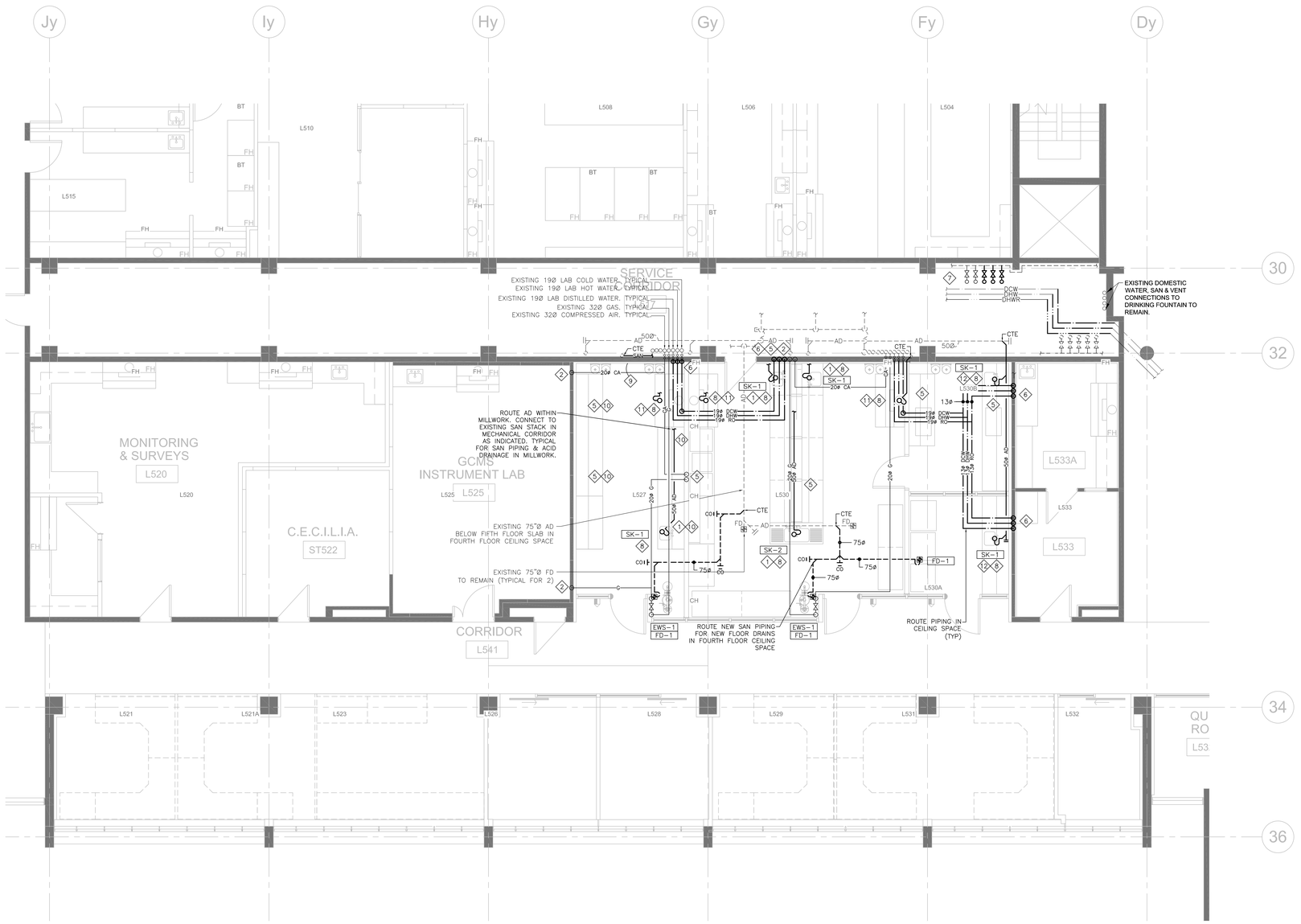
B drawing no. – where detail required dessin no. – où detail exigé
C drawing no. – where detailed dessin no. – où détaillé

project title / titre du projet
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
A & L BUILDING
EXHAUST UPGRADE
FOURTH FLOOR
HVAC & PLUMBING PLAN

drawn by / dessine par	MN
designed by / conc par	DM
approved by / approuve par	RD
bid / offre	KC (project manager / administrateur de projets)
project date / date du projet	2015-7-13
project no. / no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.	M2.10



1 M2.11 FIFTH FLOOR L527/530 PLUMBING PLAN
SCALE: 1:50

GENERAL NOTES

1. THIS DRAWING INDICATES GENERAL INTENT OF DESIGN ONLY. CONTRACTOR TO VERIFY SITE CONDITION BEFORE ORDERING MATERIALS AND COMMENCING WORK. REPORT TO DEPARTMENTAL REPRESENTATIVE ANY DISCREPANCIES BETWEEN EXISTING AND DESIGN DRAWINGS.
2. PROVIDE NEW EQUIPMENT INCLUDING PIPING, VALVES, FITTINGS, FIXTURES, DOMESTIC WATER TANK, HUMIDIFICATION SYSTEM AND ACCESSORIES AS INDICATED.
3. COORDINATE FINAL LOCATION OF EQUIPMENT AND NEW WORK WITH ALL TRADES.
4. ALL PLUMBING FIXTURES SHALL BE VENTED AND ALL TRAPS SHALL BE PRIMMED AS PER ONTARIO PLUMBING CODE.
5. ALL PIPING SHALL BE INSULATED IN ACCORDANCE WITH THE SPECIFICATION.
6. INSTALL NEW BACKFLOW PREVENTERS IN SERVICE CORRIDOR TO ISOLATE DOMESTIC HOT, COLD, AND RO WATER SERVING LABORATORY SINKS.
7. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

KEYNOTES

1. CONNECT NEW SINK TO NEW RO, DCW, DHW & SAN SERVICES RUN WITHIN MILLWORK.
2. DROP LAB GAS SERVICE IN WALL. ROUTE DISTRIBUTION PIPING TO OUTLETS WITHIN MILLWORK.
3. WALL MOUNTED GAS SHUTOFF VALVE. COORDINATE WITH ARCHITECTURAL ELEVATIONS.
4. CONNECT DCW & DHW TO TMV-1. TEMPERED WATER TO SERVE EMERGENCY EYE WASH & EMERGENCY SHOWER. TMV-1 SHALL BE MOUNTED IN CEILING SPACE.
5. NEW COMPRESSED AIR & GAS OUTLETS. CONNECT COMPLETE TO SERVICE DISTRIBUTION PIPING WITHIN MILLWORK. COORDINATE FINAL INSTALLATION LOCATION WITH ARCHITECTURAL.
6. DROP 19ø DCW, 19ø DHW & 19ø RO WITHIN WALL. ROUTE PIPING WITHIN MILLWORK TO SERVE FIXTURES AS INDICATED.
7. RELOCATED 20ø DCW, 20ø DHW, 20ø RO, 32ø GAS, 32ø CA RISERS, COMPLETE WITH NEW BRANCH ISOLATION VALVES CONNECTED TO EXISTING BRANCH PIPING.
8. ROUTE NEW 50ø AD FROM NEW SINK WITHIN MILLWORK TO EXISTING AD RISER IN CORNER.
9. PROVIDE NEW LAB GAS DISTRIBUTION MANIFOLD. REFER TO MECHANICAL SCHEMATIC.
10. PROVIDE NEW 12ø OXYGEN, NITROGEN, HYDROGEN, AND HELIUM CAPPED OUTLET.
11. CONNECT 12mmø RO SERVICE TO NEW FUME HOOD CUP SINK. ROUTE SERVICE WITHIN MILLWORK.
12. CONNECT NEW SINK TO NEW DCW, DHW & SAN SERVICES RUN WITHIN MILLWORK.

PLUMBING FIXTURE CONNECTIONS

FIXTURE	DRAIN		VENT	COLD WATER	HOT WATER	RO WATER
	CAST IRON	DWV COPPER				
LAB SINK	40ø	40ø	32ø	12ø	12ø	12ø
EYEWASH	----	----	----	32ø	32ø	----

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

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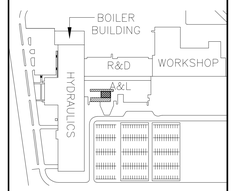

KEY PLAN
N.T.S.

revision	issue	date
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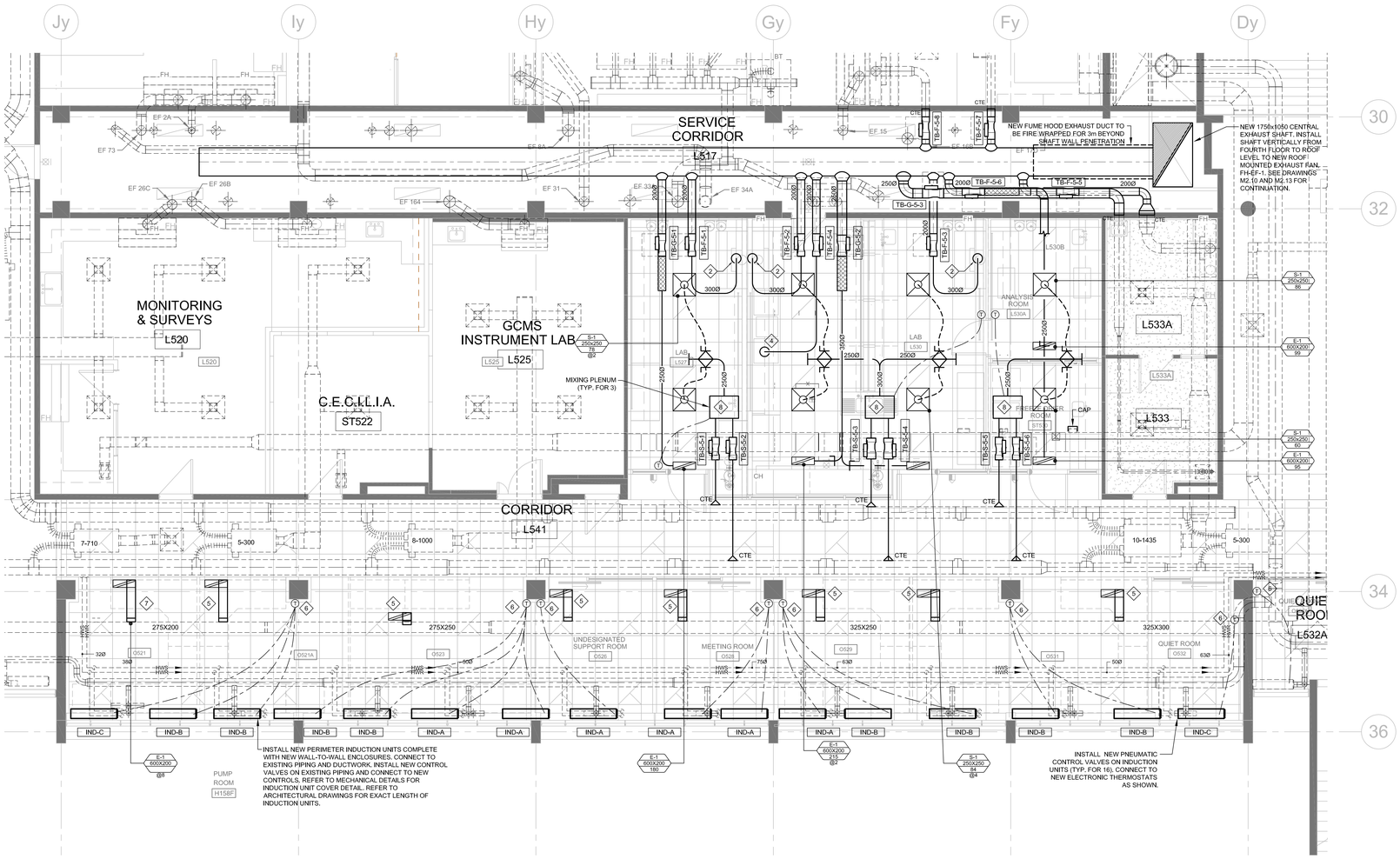
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
A & L BUILDING
LAB L527 & L530
FIFTH FLOOR
PLUMBING PLAN

drawn by / dessiné par: MM
designed by / conc par: RD
approved by / approuvé par: RD
bid / offre: KC
project manager / administrateur de projets
project date / date du projet: 2015-2-24
project no. / no. du projet: DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.: M2.11



1 M2.12 5TH FLOOR L527/530 HVAC PLAN

SCALE: 1:50

GENERAL NOTES

1. THE DRAWING INDICATES THE INTENT OF THE DESIGN ONLY. CONTRACTOR TO PRESUME FULL RESPONSIBILITY TO INVESTIGATE EXISTING MECHANICAL LAYOUT AND REPORT TO DEPARTMENTAL REPRESENTATIVE ON ANY DISCREPANCIES BETWEEN RECORD DRAWING AND SITE CONDITION. PERFORM SITE VERIFICATION AT THE OUTSET OF THE PROJECT PRIOR TO ORDERING MATERIALS AND COMMENCING WORK. PROVIDE HAND DRAWN "AS-BUILT" SKETCHES AS REQUIRED AND/OR REQUESTED BY THE DEPARTMENTAL REPRESENTATIVE.
2. PROVIDE NEW DUCTWORK, EQUIPMENT, DIFFUSERS, FITTINGS, AND ACCESSORIES AS INDICATED AND AS REQUIRED TO COMPLETE WORK.
3. REMOVE ALL DEBRIS AND RUBBISH ONCE WORK IS COMPLETE.
4. COORDINATE FINAL LOCATION OF EQUIPMENT AND ALL WORK WITH ALL TRADES.
5. BALANCE AIR FLOWS TO FIGURES INDICATED ON DRAWING.
6. NEW VENTURI VALVES TO BE COMPLETE WITH ELECTRIC CONTROLS.
7. SUPPLY AND GENERAL EXHAUST VENTURI VALVES TO BE COMPLETE WITH ACOUSTIC SILENCERS.
8. PROVIDE 120V-24V TRANSFORMERS FOR LOW VOLTAGE CONNECTIONS. REFER TO ELECTRICAL DRAWINGS FOR LOCATION AND QUANTITY OF 120V JUNCTION BOXES.
9. VACUUM CLEAN PERIMETER INDUCTION UNIT FINS FOLLOWING CONSTRUCTION.
10. REBALANCE OFFICE AIR FLOWS TO MAINTAIN POSITIVE PRESSURIZATION WITH RESPECT TO LABS.
12. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.
13. ALL DUCTWORK ASSOCIATED WITH FUME HOOD AND GENERAL EXHAUST TO BE STAINLESS STEEL.

KEYNOTES

1. CONNECT NEW DUCTWORK TO EXISTING FUME HOOD.
2. CONNECT NEW DUCTWORK TO NEW FUME HOOD.
3. 1750x1050 CENTRAL EXHAUST SHAFT. INSTALL SHAFT VERTICALLY FROM FOURTH FLOOR TO ROOF LEVEL TO NEW ROOF MOUNTED EXHAUST FAN, EF-4. SEE DRAWINGS M2.10 AND M2.13 FOR CONTINUATION.
4. CONNECT NEW DUCTWORK TO NEW CANOPY HOOD.
5. CONNECT NEW EXHAUST AIR GRILLE TO EXISTING EXHAUST AIR DUCTWORK, TYPICAL AS SHOWN.
6. INSTALL NEW THERMOSTAT TO CONTROL NEW PERIMETER INDUCTION UNITS. INDUCTION UNITS TO BE ZONED TOGETHER AS SHOWN.
7. CONNECT NEW EXHAUST AIR GRILLE TO NEW DUCTWORK.
8. PROVIDE GALVANIZED SHEET METAL MIXING PLENUM FOR HOT AND COLD AIR SUPPLY VALVES. PLENUM TO BE 900 x 600 x 450mm (W x L x D). COORDINATE INLET DIAMETER SIZES FROM SUPPLY VALVES AS REQUIRED.

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

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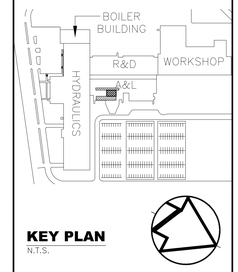

KEY PLAN
N.T.S.

revision	issue	date
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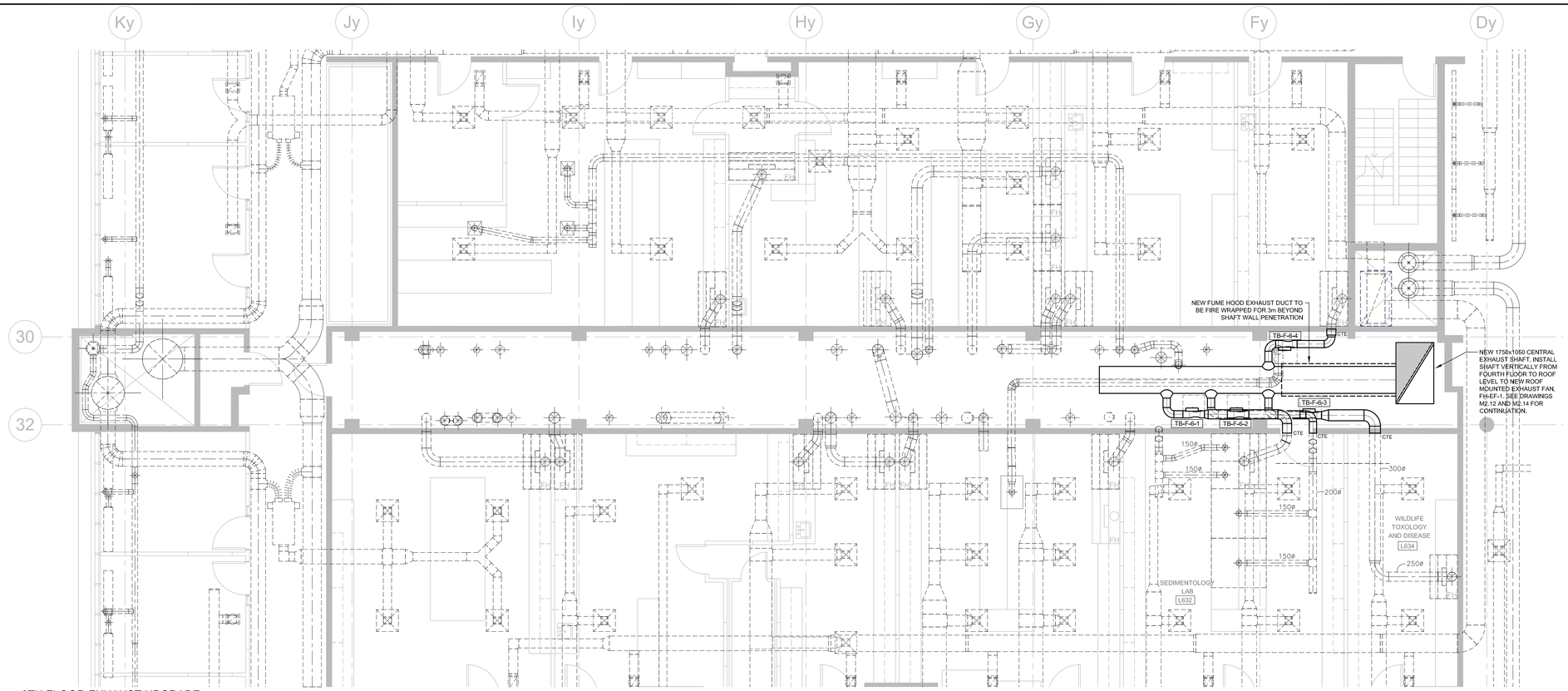
project title / titre du projet
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
A & L BUILDING
LAB L527 & L530
FIFTH FLOOR
HVAC PLAN

drawn by / dessine par	AO
designed by / conc par	DM
approved by / approuve par	RD
bid / offre	KC (project manager / administrateur de projets)
project date / date du projet	2015-07-13
project no. / no. du projet	R.073578.001
drawing no. / dessine no.	M2.12

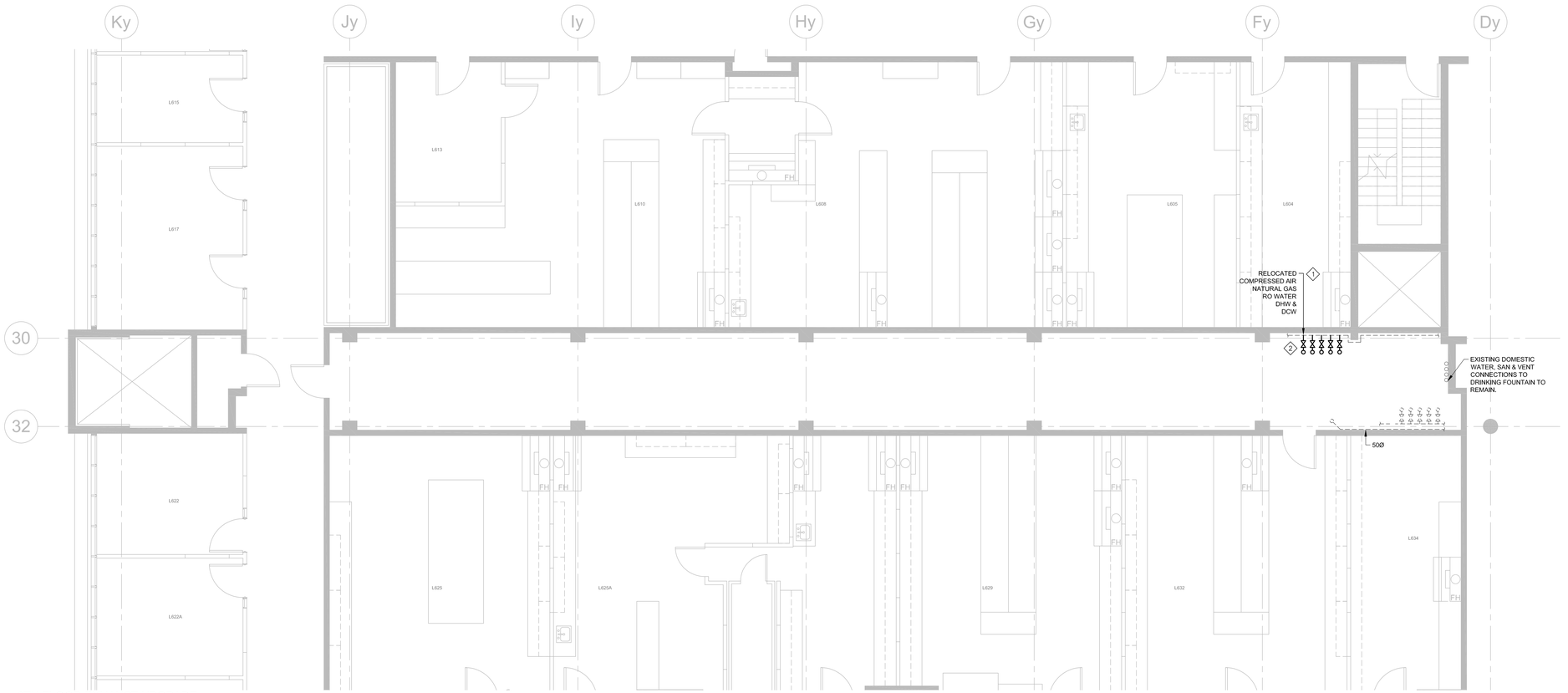


1 M2.13 — 6TH FLOOR EXHAUST UPGRADE HVAC UPGRADE PLAN

SCALE: 1:50

GENERAL NOTES

1. COORDINATE SHUTDOWN OF SERVICES WITH THE OWNER PRIOR TO COMMENCING WORK.
2. REMOVE ALL DEBRIS AND RUBBISH AT THE END OF EACH DAY AND ONCE JOB IS COMPLETE.
3. CONTRACTOR TO REVIEW DUCT ROUTING & SITE CONDITIONS TO IDENTIFY AREAS OF POTENTIAL INTERFERENCE. CONTRACTOR SHALL PROVIDE CLEARLY LABELLED RED LINE SKETCHES TO THE DEPARTMENTAL REPRESENTATIVE WHICH IDENTIFY INTERFERENCES WITH NEW WORK. SUBMIT SKETCHES FOR REVIEW PRIOR TO COMMENCING ANY NEW WORK.
4. PROVIDE 120-24V TRANSFORMER FOR LOW VOLTAGE CONNECTIONS. REFER TO ELECTRICAL FOR LOCATION AND QUANTITY OF 120V JUNCTION BOXES.
5. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.
6. ALL DUCTWORK ASSOCIATED WITH FUME HOOD AND GENERAL EXHAUST TO BE STAINLESS STEEL.



2 M2.13 — 6TH FLOOR EXHAUST UPGRADE PLUMBING UPGRADE PLAN

SCALE: 1:50

GENERAL NOTES

1. COORDINATE SHUTDOWN OF SERVICES WITH THE OWNER PRIOR TO COMMENCING WORK.
2. REMOVE ALL DEBRIS AND RUBBISH AT THE END OF EACH DAY AND ONCE JOB IS COMPLETE.
3. CONTRACTOR TO REVIEW DUCT ROUTING & SITE CONDITIONS TO IDENTIFY AREAS OF POTENTIAL INTERFERENCE. CONTRACTOR SHALL PROVIDE CLEARLY LABELLED RED LINE SKETCHES TO THE DEPARTMENTAL REPRESENTATIVE WHICH IDENTIFY INTERFERENCES WITH NEW WORK. SUBMIT SKETCHES FOR REVIEW PRIOR TO COMMENCING ANY NEW WORK.
4. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

KEYNOTES

1. PLUMB ALL EXISTING CONNECTIONS COMPLETE TO RELOCATED SERVICE RISERS IN MECHANICAL CORRIDOR.
2. RELOCATED 20ø DCW, 20ø DHW, 20ø RO, 32ø GAS, 32ø CA RISERS, COMPLETE WITH NEW BRANCH ISOLATION VALVES CONNECTED TO EXISTING BRANCH PIPING.

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

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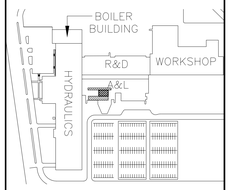

KEY PLAN
N.T.S.

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titre du projet

CANADA CENTRE FOR INLAND WATERS

867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6

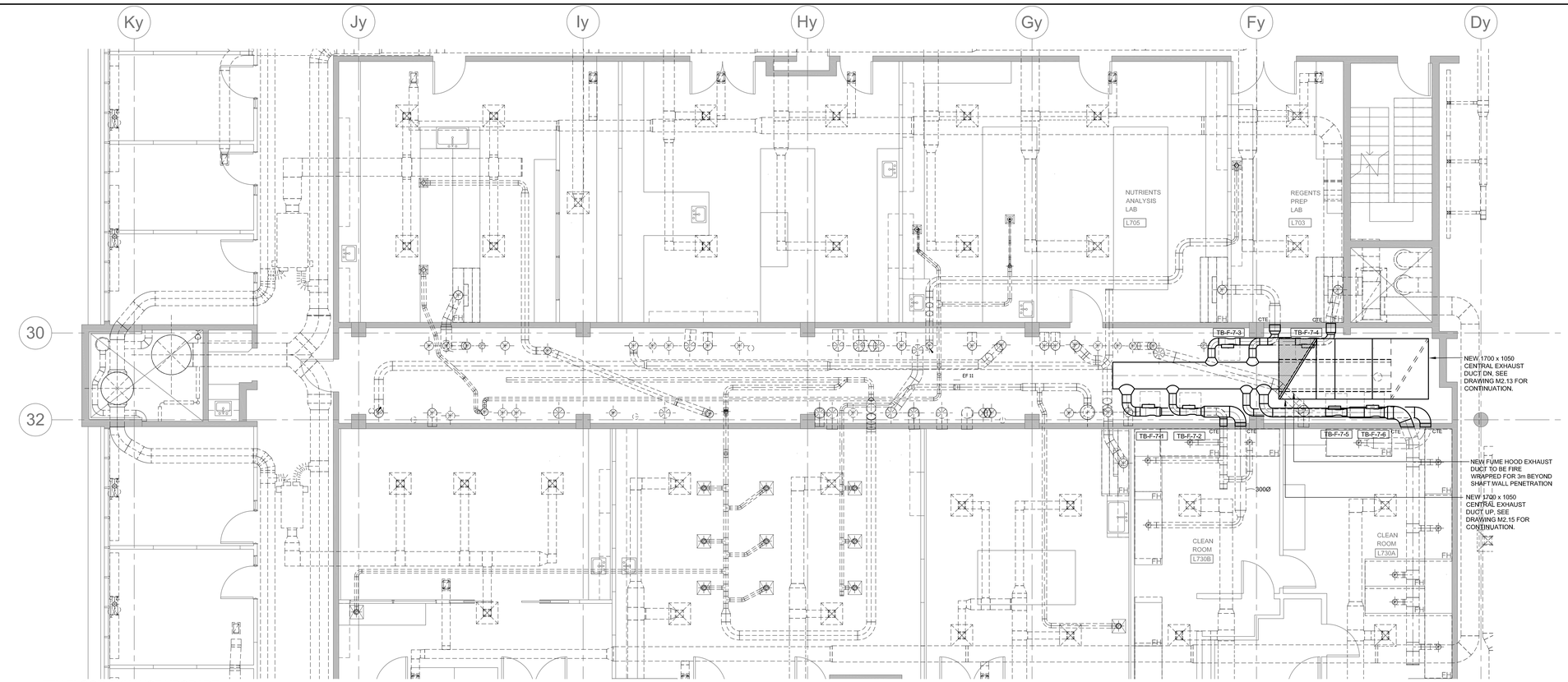
LABS, AHUs, AND HEATING UPGRADE

drawing title
titre du dessin

A & L BUILDING
EXHAUST UPGRADE
SIXTH FLOOR

HVAC & PLUMBING PLAN

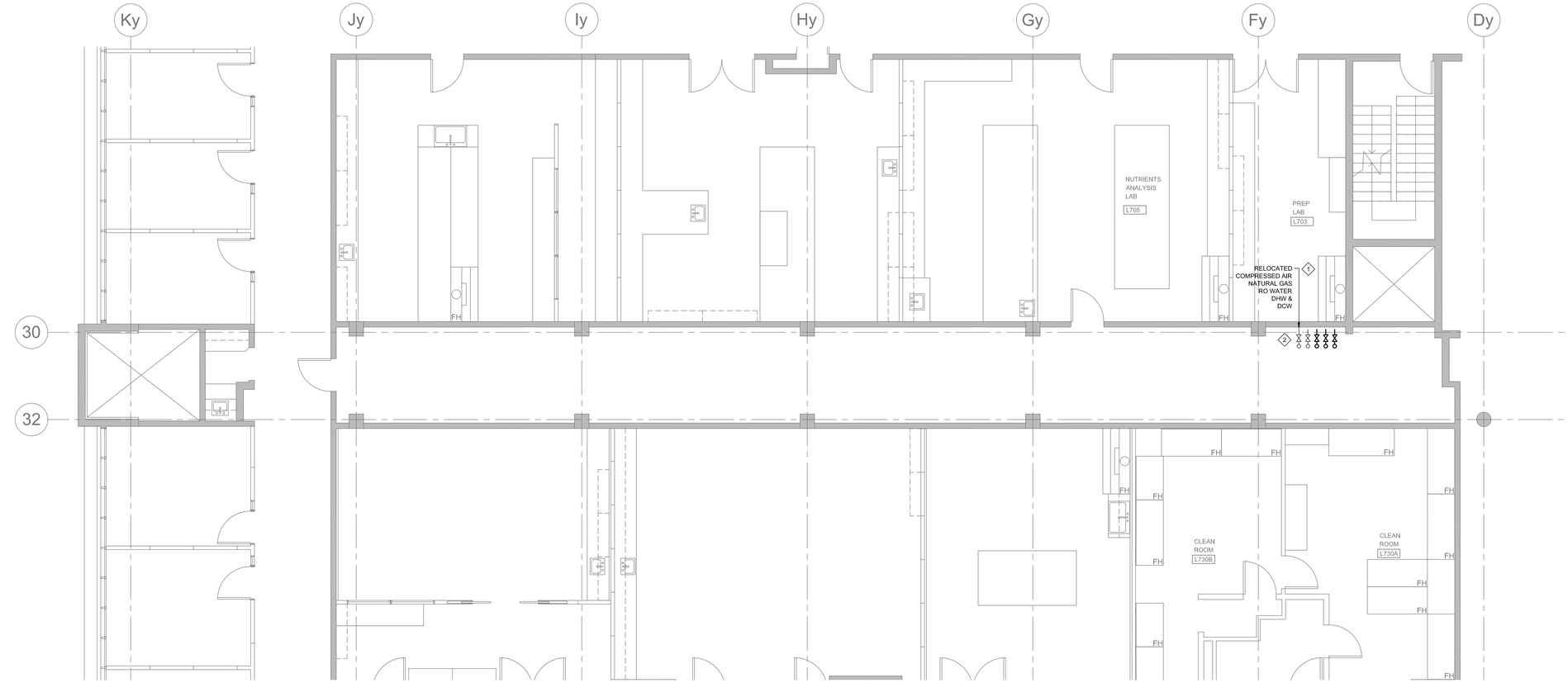
drawn by dessine par	MN
designed by conc par	DM
approved by approuve par	RD
bid offre	
project manager administrateur de projets	KC
project date date du projet	2015-7-13
project no. no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. dessine no.	M2.13



1 M2.14 7TH FLOOR EXHAUST UPGRADE HVAC UPGRADE PLAN
SCALE: 1:50

GENERAL NOTES

1. COORDINATE SHUTDOWN OF SERVICES WITH THE OWNER PRIOR TO COMMENCING WORK.
2. REMOVE ALL DEBRIS AND RUBBISH AT THE END OF EACH DAY AND ONCE JOB IS COMPLETE.
3. CONTRACTOR TO REVIEW DUCT ROUTING & SITE CONDITIONS TO IDENTIFY AREAS OF POTENTIAL INTERFERENCE. CONTRACTOR SHALL PROVIDE CLEARLY LABELLED RED LINE SKETCHES TO THE DEPARTMENTAL REPRESENTATIVE WHICH IDENTIFY INTERFERENCES WITH NEW WORK. SUBMIT SKETCHES FOR REVIEW PRIOR TO COMMENCING ANY NEW WORK.
4. PROVIDE 120-24V TRANSFORMER FOR LOW VOLTAGE CONNECTIONS. REFER TO ELECTRICAL FOR LOCATION AND QUANTITY OF 120V JUNCTION BOXES.
5. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.
6. ALL DUCTWORK ASSOCIATED WITH FUME HOOD AND GENERAL EXHAUST TO BE STAINLESS STEEL.



2 M2.14 7TH FLOOR EXHAUST UPGRADE PLUMBING UPGRADE PLAN
SCALE: 1:50

GENERAL NOTES

1. COORDINATE SHUTDOWN OF SERVICES WITH THE OWNER PRIOR TO COMMENCING WORK.
2. REMOVE ALL DEBRIS AND RUBBISH AT THE END OF EACH DAY AND ONCE JOB IS COMPLETE.
3. CONTRACTOR TO REVIEW PIPE ROUTING & SITE CONDITIONS TO IDENTIFY AREAS OF POTENTIAL INTERFERENCE. CONTRACTOR SHALL PROVIDE CLEARLY LABELLED RED LINE SKETCHES TO THE DEPARTMENTAL REPRESENTATIVE WHICH IDENTIFY INTERFERENCES WITH NEW WORK. SUBMIT SKETCHES FOR REVIEW PRIOR TO COMMENCING ANY NEW WORK.
4. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

KEYNOTES

1. PLUMB ALL EXISTING CONNECTIONS COMPLETE TO RELOCATED SERVICE RISERS IN MECHANICAL CORRIDOR.
2. RELOCATED 20Ø DCW, 20Ø DHW, 20Ø RO, 32Ø GAS, 32Ø CA RISERS, COMPLETE WITH NEW BRANCH ISOLATION VALVES CONNECTED TO EXISTING BRANCH PIPING.

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

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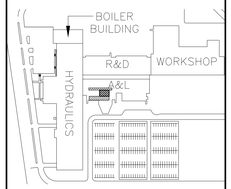

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CANADA CENTRE FOR INLAND WATERS

867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6

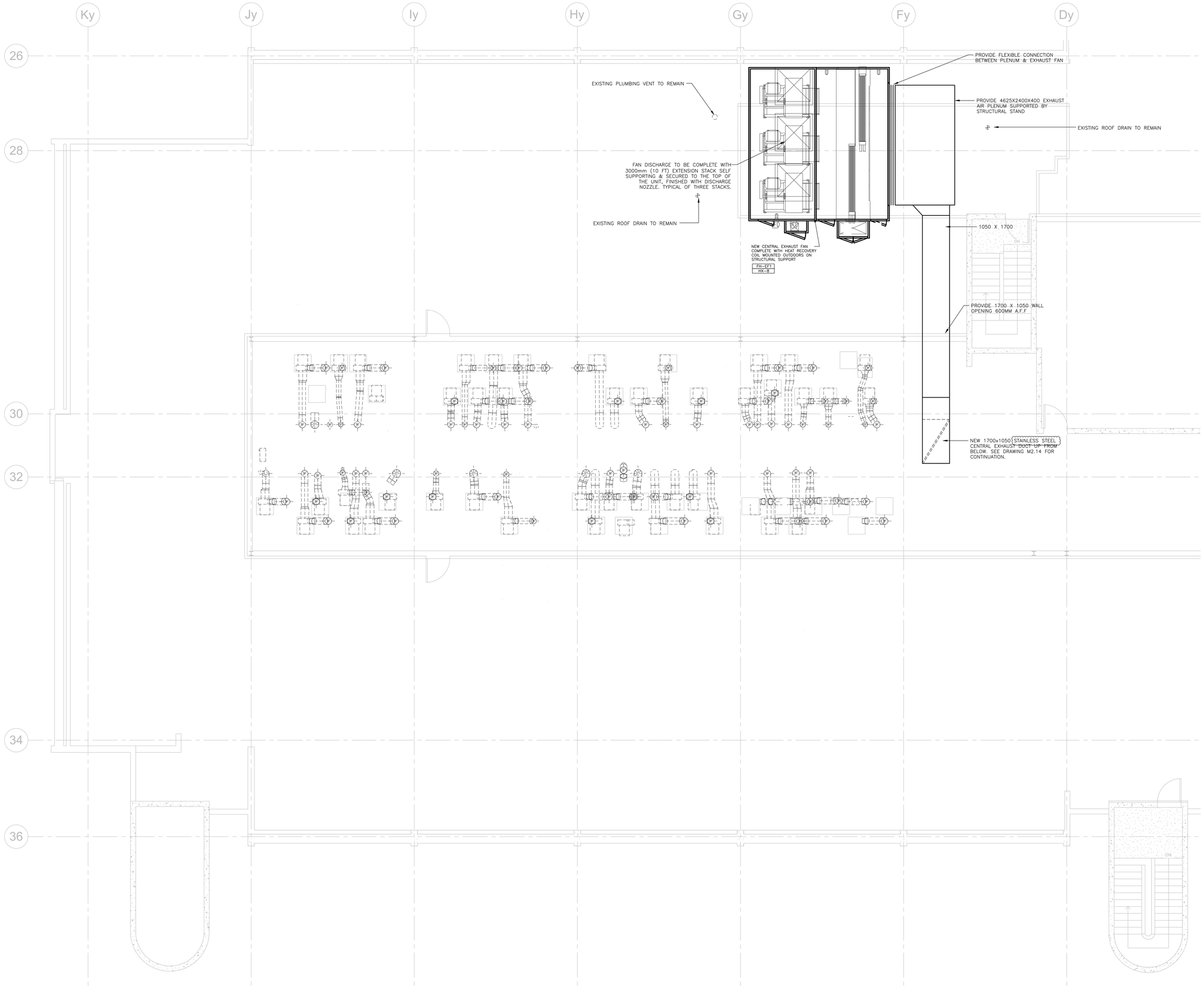
LABS, AHUs, AND HEATING UPGRADE

drawing title
titre du dessin

A & L BUILDING
EXHAUST UPGRADE
SEVENTH FLOOR

HVAC & PLUMBING PLAN

drawn by dessine par	MN
designed by conc par	DM
approved by approuve par	RD
bid offre	KC
project manager administrateur de projets	
project date date du projet	2015-7-13
project no. no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. dessine no.	M2.14



1 M2.15 PENTHOUSE/ROOF EXHAUST UPGRADE HVAC PLAN
SCALE: 1:50

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

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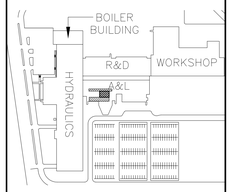

KEY PLAN
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CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
A & L BUILDING EXHAUST UPGRADE PENTHOUSE/ROOF
HVAC PLAN

drawn by / dessine par	MN
designed by / conc par	DM
approved by / approuve par	RD
bid / offre	KC
project manager / administrateur de projets	
project date / date du projet	2015-7-13
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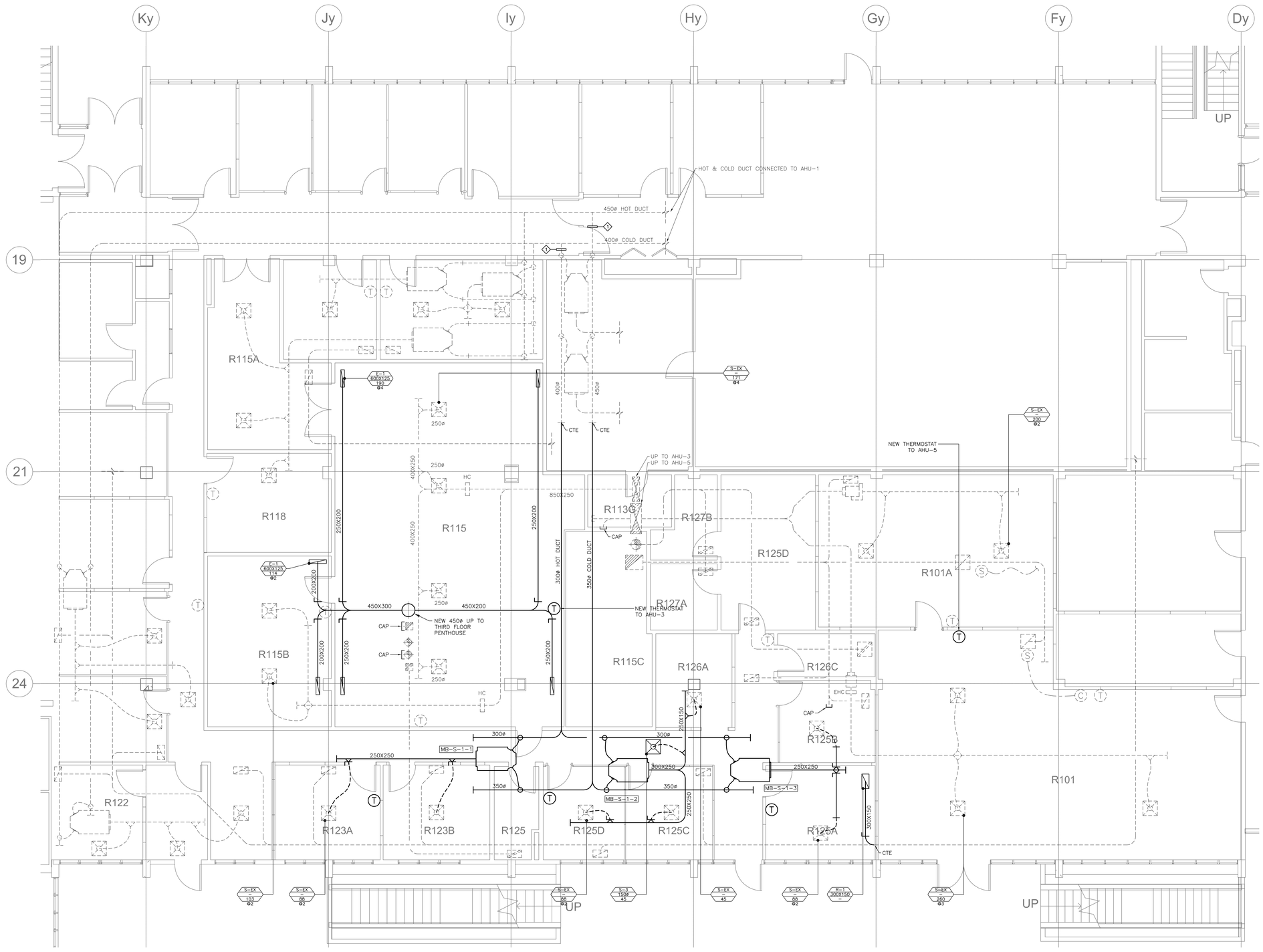
drawing no. / dessine no.	M2.15



GENERAL NOTES

1. NEW EQUIPMENT TO BE CONNECTED TO EXISTING BMS. GRAPHICS AND CONTROL POINTS TO MATCH EXISTING.
2. CONTRACTOR TO COORDINATE ANY SHUTDOWN OF EQUIPMENT WITH OWNER PRIOR TO COMMENCING WORK.
3. RETAIN EXISTING SUPPLY AIR DIFFUSERS AND CONNECT TO NEW DUCTWORK AS SHOWN. ALL WORK TO BE COMPLETED ABOVE EXISTING T-BAR CEILING.
4. COORDINATE INSTALLATION OF NEW DUCTWORK AND GRILLES AND DIFFUSERS WITH EXISTING CONDITIONS. REPORT TO ENGINEER OF ANY DISCREPANCIES AND INTERFERENCES PRIOR TO COMMENCEMENT OF NEW WORK.
5. BALANCE ALL DIFFUSERS AS SHOWN.
6. MATCH S/A BRANCH DUCT SIZES WITH EXISTING DIFFUSER NECK SIZES.
7. PROVIDE BALANCING DAMPERS ON ALL NEW SUPPLY AIR DUCT TAKE-OFFS TO DIFFUSERS.

KEYNOTES

1. CONTRACTOR TO MEASURE BASELINE AIRFLOW RATE AT DIFFUSERS AND DUCTS.

1 M2.20 GROUND FLOOR HVAC PLAN
SCALE: 1:50

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

DIALOG

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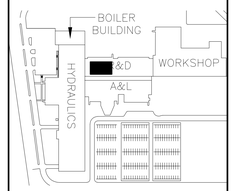

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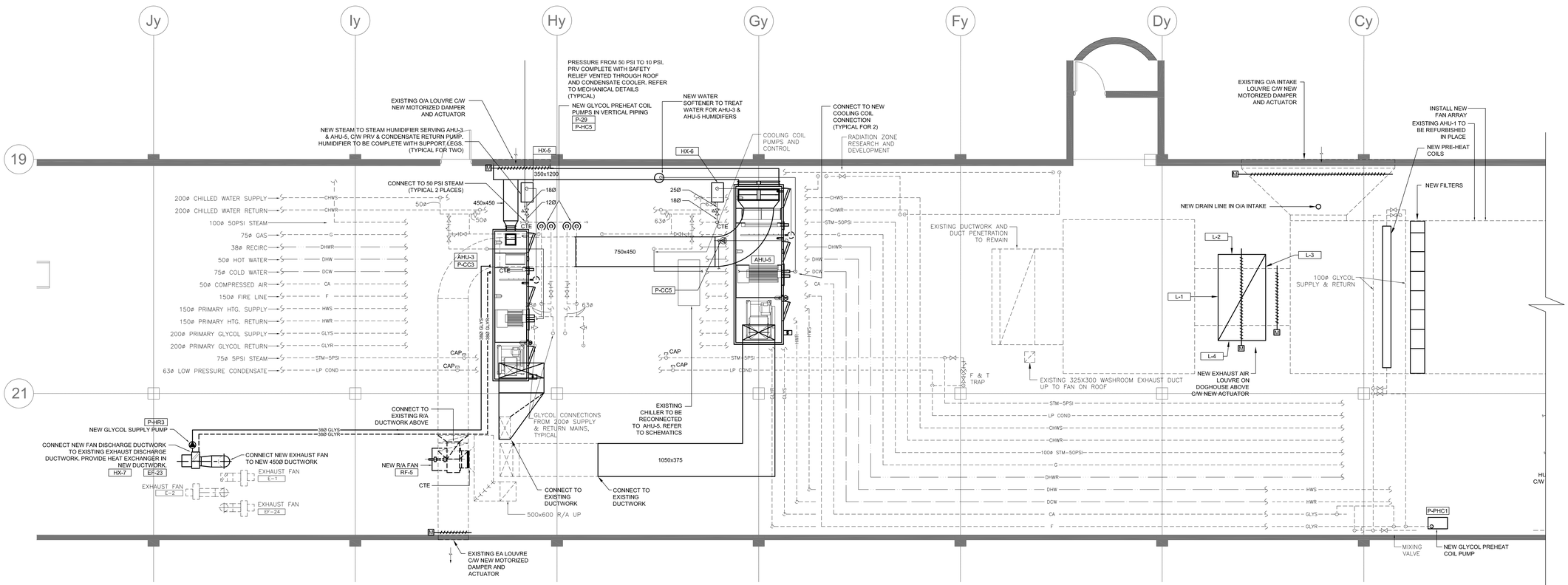
project title / titre du projet
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
R & D BUILDING
GROUND FLOOR
EVIDENCE ROOM AND LABS
HVAC PLAN

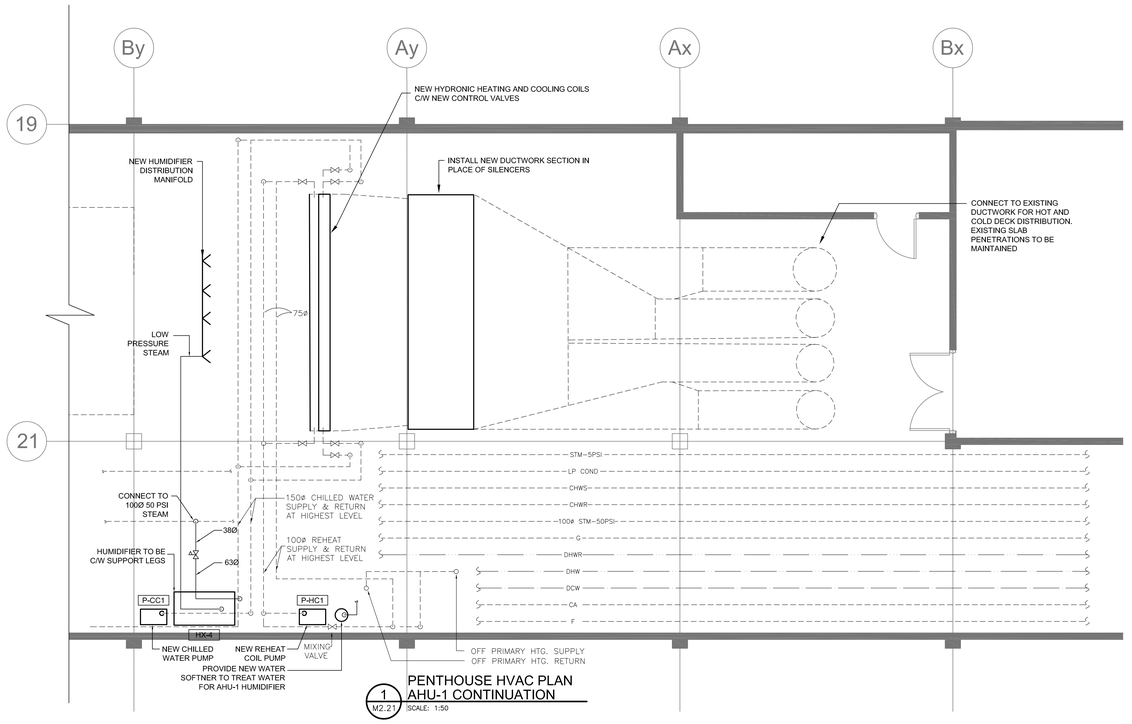
drawn by / dessine par: MM
designed by / conc par: RD
approved by / approuve par: RD
bid / offre:
project manager / administrateur de projets: KC
project date / date du projet: 2015-7-13
project no. / no. du projet: DIALOG NO. 09946T0200
R.073578.001
drawing no. / dessine no.: M2.20



1 M2.21 PENTHOUSE HVAC PLAN AHU-1,3 & 5
SCALE: 1:50

GENERAL NOTES AHU-3 AND AHU-5 REPLACEMENT

1. EXISTING GLYCOL PREHEAT AND HEATING PIPING TO BE MODIFIED TO SUIT CONNECTIONS TO NEW UNITS. PUMP AND THREE WAY VALVES TO BE REPLACED. NEW VALVES TO BE CONNECTED TO EXISTING BMS.
2. EXISTING CHILLED WATER PIPING TO BE MODIFIED TO SUIT CONNECTION TO NEW UNITS. PUMPS AND THREE WAY VALVES TO BE REPLACED. NEW VALVES TO BE CONNECTED TO EXISTING BMS. AHU-5 TO BE CONNECTED TO EXISTING CHILLER.
3. PROVIDE NEW STEAM TO STEAM HUMIDIFIERS. WATER FOR HUMIDIFIERS TO BE SUPPLIED VIA DOMESTIC COLD WATER PASSED THROUGH NEW WATER SOFTENER
4. UNITS TO BE COMPLETE WITH GLYCOL DEHUMIDIFICATION RUN-AROUND PIPE
5. PROVIDE NEW HOUSEKEEPING PADS FOR AHU-3 AND AHU-5, PAD TO EXTEND NO LESS THAN 50mm BEYOND THE UNIT PERIMETER. PAD SIZE FOR AHU-3 TO BE 1372mm X 6000mm TO SUIT BASIS OF DESIGN UNIT. PAD SIZE FOR AHU-5 TO BE 1524mm X 5132mm TO SUIT BASIS OF DESIGN UNIT. REFER TO STRUCTURAL DRAWINGS FOR DETAIL OF PAD CONSTRUCTION.
6. REFER TO MECHANICAL DETAIL SHEETS FOR PIPING CONNECTIONS TO NEW PUMPS AND COILS
7. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.



1 M2.21 PENTHOUSE HVAC PLAN AHU-1 CONTINUATION
SCALE: 1:50

GENERAL NOTES AHU-1 REFURBISHMENT

1. SUPPLY AND INSTALL NEW 304 STAINLESS STEEL DRAIN TRAYS IN THE EXHAUST AIR PLENUM, COOLING COIL AND HUMIDIFICATION SECTION.
2. SUPPLY AND INSTALL NEW DRAINS FOR COOLING COILS AND HUMIDIFIER SECTION.
3. REPLACE SUPPLY AND RETURN FAN WITH NEW FAN ARRAY TECHNOLOGY. FAN ARRAY SHALL BE SIZED TO ALLOW FOR THE AIR HANDLER TO CONTINUE OPERATION AT A 100% FLOW WITH ONE FAN DOWN. DEMOLISH EXISTING CONCRETE INERTIA PADS. NEW FANS TO BE COMPLETE WITH VFDS. REFER TO MECHANICAL EQUIPMENT SCHEDULES FOR PERFORMANCE DETAILS.

   REPLACE PREHEAT COIL, HEATING COIL, AND COOLING COIL WITH NEW NEW COILS. REFER TO MECHANICAL EQUIPMENT SCHEDULES FOR PERFORMANCE DETAILS.
4. SUPPLY AND INSTALL NEW FLEXIBLE DUCT CONNECTIONS AT FAN CABINET INLET AND OUTLET
5. SUPPLY AND INSTALL NEW LIGHTING INSIDE AIR HANDLERS-MINIMUM T8 BULBS
6. RESTORE ALL RUSTED METAL SURFACES INSIDE THE AIR HANDLERS TO REMOVE ALL RUST DUST SCALE AND OTHER CONTAMINANTS THAT MAY AFFECT THE ADHESION OF COATING TO THE SUBSTRATE.
7. COAT ALL EXPOSED CLEANED METAL INSIDE OF THE AIR HANDLER WITH A SUBMERSIBLE PRIMER/FINISH COAT SPECIFICALLY DESIGNED FOR APPLICATION OVER PREPARED RUSTED METAL.
8. SUPPLY AND INSTALL ALL NEW COMPARTMENT DOOR SEALS AND ADJUST DOOR HANDLES ACCORDINGLY.
9. SUPPLY AND INSTALL NEW TESTPORTS INSIDE EACH SECTION OF THE UNIT.
10. SUPPLY AND INSTALL ALL NEW FILTER RACK SYSTEMS CAPABLE OF HANDLING 2" PLEATED BOX PRE FILTERS AND FINAL BAG FILTERS.
11. CLEAN & COAT CONCRETE FLOORS WITH A SUBMERSIBLE, VOC COMPLIANT TWO PART EPOXY.
12. APPLY TO THE COMPLETE INSIDE OF THE AIR HANDLERS A BROAD SPECTRUM ANTIMICROBIAL, ODOURLESS, COLOURLESS, NON-LEACHING AND DURABLE CLEANER.
13. PREPARE THE ENTIRE OUTSIDE OF THE AIR HANDLERS REMOVING ANY LOOSE PAINT, FIXING ANY HOLES OR RUSTED AREAS.
14. PAINT THE ENTIRE OUTSIDE OF THE AIR HANDLERS WITH A HIGH QUALITY COATING.
15. PROVIDE NEW CONTROLS AND INTERFACE WITH THE EXISTING BASE BUILDING CONTROLS SYSTEM. REFER TO CONTROL SCHEMATICS AND SPECIFICATIONS FOR DETAILS.
16. PROVIDE NEW STEAM TO STEAM HUMIDIFIERS. WATER FOR HUMIDIFIERS TO BE SUPPLIED VIA DOMESTIC COLD WATER PASSED THROUGH NEW WATER SOFTENER
17. REFER TO MECHANICAL DETAIL SHEETS FOR PIPING CONNECTIONS TO NEW PUMPS AND COILS
18. CONTRACTOR TO SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.

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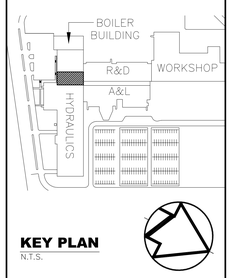
DIALOG

Stamp



KEY PLAN
N.T.S.

revision	issue	date
1	ISSUED FOR BID	04/11/2015

Do not scale drawings.
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A/B/C
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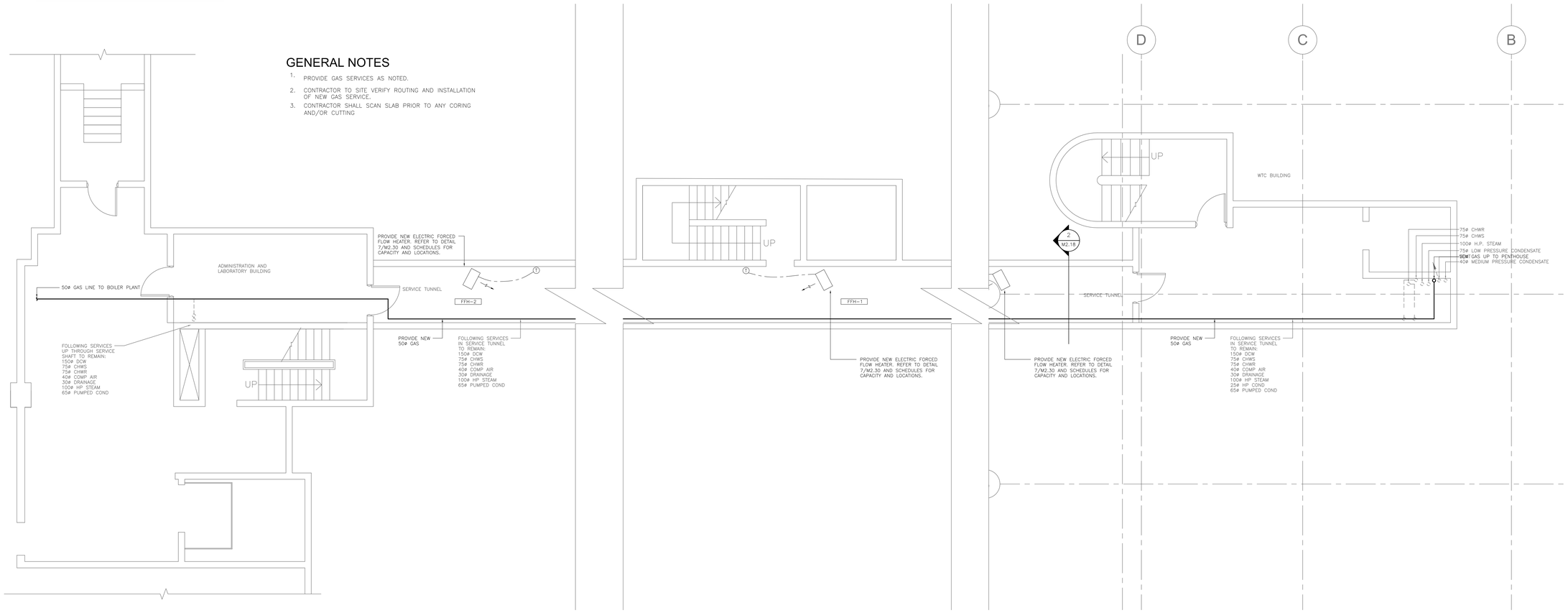
project title / titre du projet
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
R & D BUILDING AHU-1, 3, & 5 PENTHOUSE
HVAC PLAN

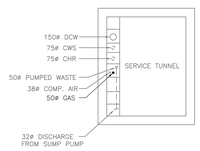
drawn by / dessiné par	MM
designed by / conc par	RD
approved by / approuvé par	RD
bid / offre	KC (project manager / administrateur de projets)
project date / date du projet	2015-7-13
project no. / no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.	M2.21

GENERAL NOTES

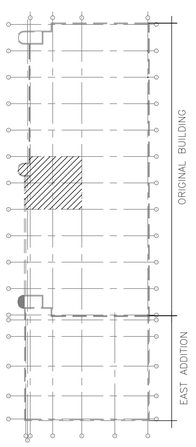
1. PROVIDE GAS SERVICES AS NOTED.
2. CONTRACTOR TO SITE VERIFY ROUTING AND INSTALLATION OF NEW GAS SERVICE.
3. CONTRACTOR SHALL SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING



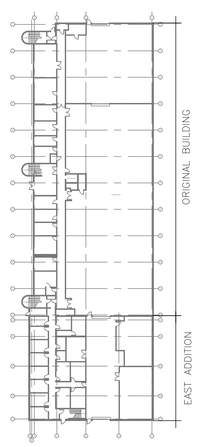
1 M2.30 SERVICE TUNNEL AND BASEMENT MECHANICAL PLAN
SCALE: 1:50



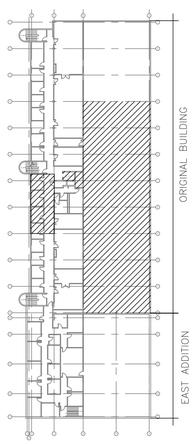
2 M2.30 SECTION THROUGH TUNNEL
SCALE: 1:50



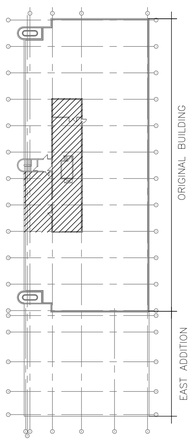
3 M2.30 SECTION THROUGH TUNNEL
SCALE: NTS



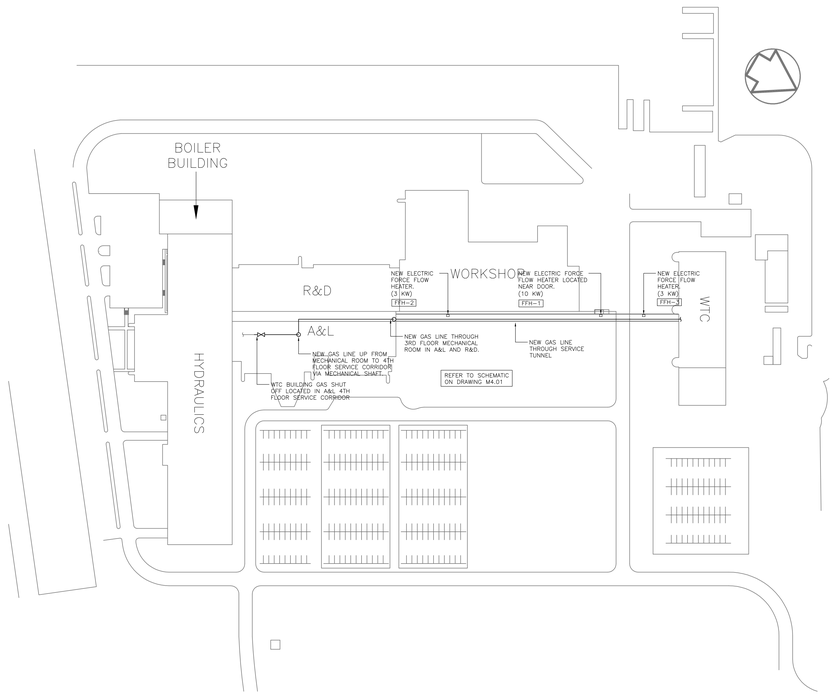
4 M2.30 GROUND FLOOR AREA OF WORK
SCALE: NTS



5 M2.30 SECOND FLOOR AREA OF WORK
SCALE: NTS



6 M2.30 PENTHOUSE/LOW ROOF AREA OF WORK
SCALE: NTS



7 M2.30 GAS SERVICE SITE PLAN
SCALE: NTS

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DIALOG

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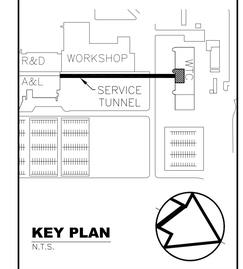

KEY PLAN
N.T.S.

revision	issue	date
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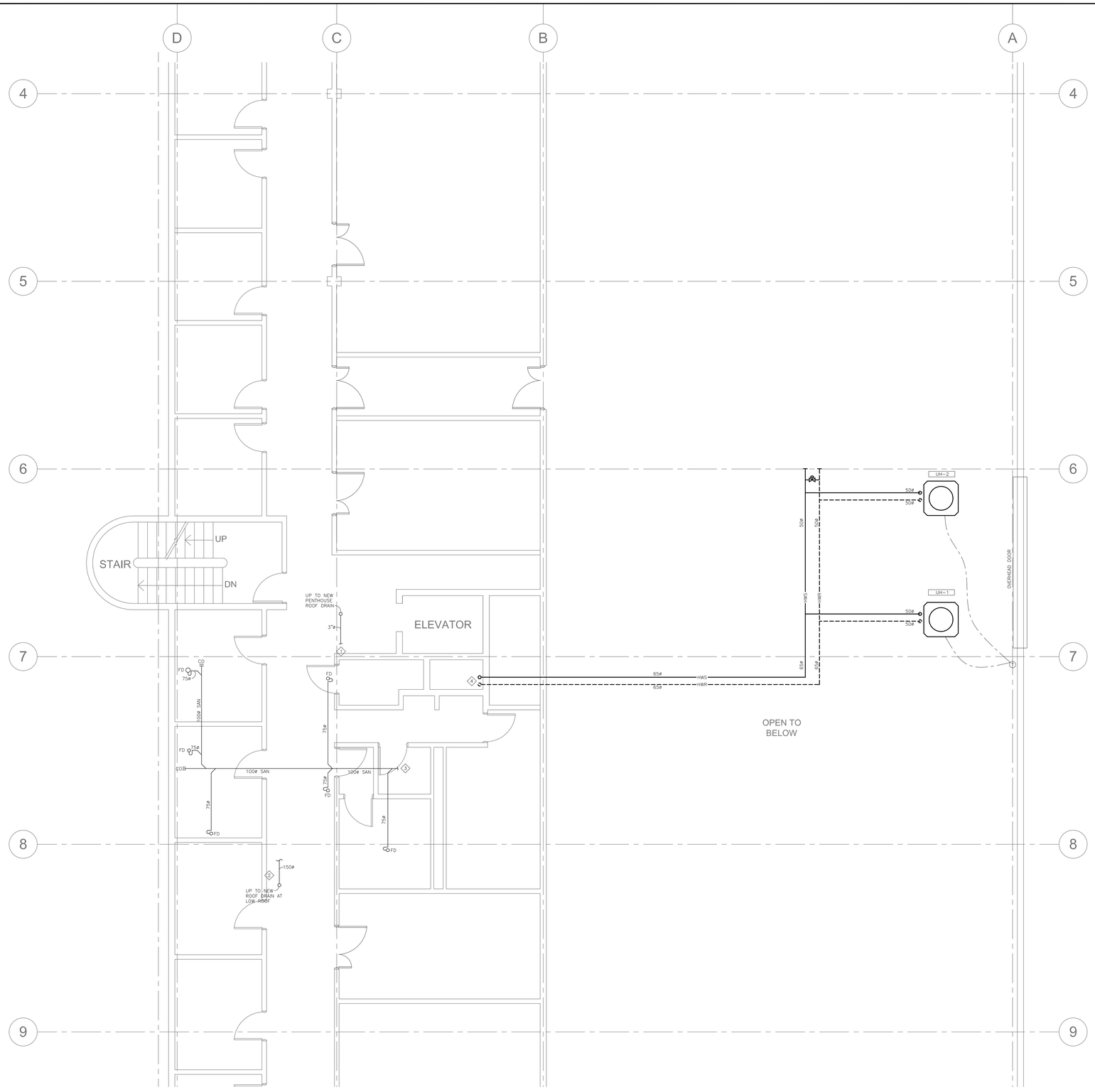
titre du projet
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title
titre du dessin
WTC BUILDING HEATING SYSTEM SERVICE TUNNEL & BASEMENT MECHANICAL PLAN

drawn by dessine par	MM
designed by conc par	RD
approved by approuve par	RD
bid offre	project manager administrateur de projets: KC
project date date du projet	2015-2-24
project no. no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. dessine no.	M2.30



1 SECOND FLOOR MECHANICAL PLAN
M2.32 SCALE: 1:50

GENERAL NOTES

1. PROVIDE NEW UNIT HEATERS AND HYDRONIC PIPING AS NOTED. CONTRACTOR TO SITE VERIFY PROPOSED EQUIPMENT LOCATIONS AND PIPE ROUTING.
2. COORDINATE ANY SHUTDOWN OF SERVICES WITH THE OWNER PRIOR TO COMMENCING WORK.
3. SITE VERIFY EXISTING CONDITION OF CEILING SPACE PRIOR TO COMMENCEMENT OF NEW WORK. REPORT TO ENGINEER OF ANY DISCREPANCIES AND INTERFERENCES OBSERVED ON SITE.
4. INSTALL NEW STORM AND SANITARY PIPES ABOVE CEILING.
5. CONTRACTOR SHALL SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.
6. COORDINATE THERMOSTAT LOCATION WITH OWNER.

KEYNOTES

1. EXTEND NEW STORM PIPE DOWN TO SECOND FLOOR CEILING SPACE. CONNECT TO EXISTING STORM PIPE IN THIS APPROXIMATE LOCATION. CONTRACTOR TO SITE VERIFY FINAL ROUTING TO SUIT SITE CONDITION.
2. EXTEND EXISTING STORM LINE TO NEW ROOF DRAIN. ALL STORM LINE TO ROUTE WITHIN SECOND FLOOR CEILING SPACE. CONTRACTOR TO ROUTE PIPE TO SUIT SITE CONDITION, AS VERIFIED ON SITE.
3. CONNECT TO EXISTING 100ø SANITARY PIPE IN APPROXIMATE LOCATION OF WASHROOMS.
4. 65ø HWS/R UP TO PUMPS P-4 AND P-5.

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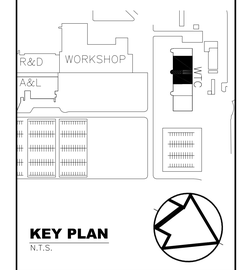
DIALOG

Stamp



KEY PLAN
N.T.S.

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CANADA CENTRE FOR INLAND WATERS

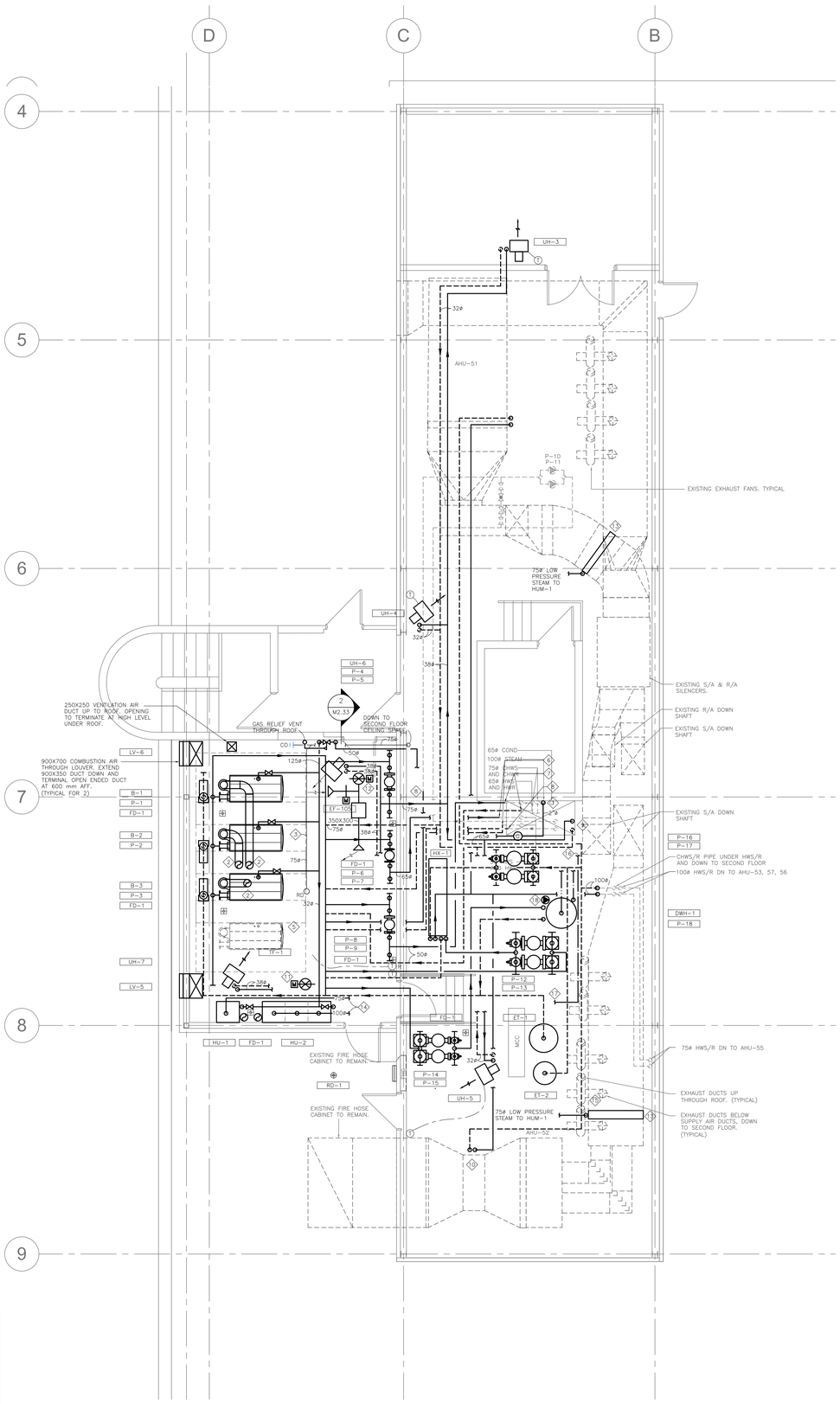
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6

LABS, AHUs, AND HEATING UPGRADE

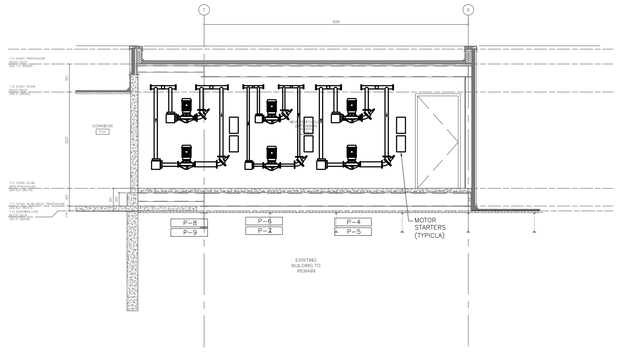
drawing title
titre du dessin

WTC BUILDING HEATING SYSTEM SECOND FLOOR MECHANICAL PLAN

drawn by dessine par	MM
designed by conc par	RD
approved by approuve par	RD
bid offre	project manager administrateur de projets: KC
project date date du projet	2015-2-24
project no. no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. dessine no.	M2.32



1 M2.33 PENTHOUSE MECHANICAL PLAN
SCALE: 1:50



2 M2.33 PENTHOUSE MECHANICAL SECTION
SCALE: 1:50

GENERAL NOTES

1. PROVIDE NEW BOILERS, PUMPS, PIPING, CONTROLS, AND SUPPORTS AS INDICATED.
2. CONTRACTOR TO SITE VERIFY ROUTING & SIZE OF EXISTING GAS, STEAM, HOT WATER, GLYCOL, CHILLED WATER, SUPLLY/RETURN/EXHAUST DUCTS AND DOMESTIC WATER PIPING.
3. CONTRACTOR SHALL SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING.
4. PROVIDE INSULATION ON ALL EXISTING AND NEW DUCTWORK AND PIPING WITHIN THE MECHANICAL PENTHOUSE. DUCT AND PIPE SYSTEMS REQUIRING INSULATION INCLUDES BUT ARE NOT LIMITED TO: DCW, DHW, DHWR, HWS/R, GLYS/R, CHWS/R. COORDINATE EXTENT OF RE-INSULATION OF EXISTING DUCT AND PIPE SYSTEMS WITH ASBESTOS ABATEMENT.

KEYNOTES

1. 50ø GAS FROM SERVICE TUNNEL. REFER TO GAS SERVICE SCHEMATIC.
2. 200ø EXHAUST FLUE UP THROUGH ROOF.
3. NEW STORM PIPE TO RUN IN NEW PENTHOUSE. DRAIN TO EXISTING STORM PIPE IN SECOND FLOOR CEILING SPACE.
4. RESERVED
5. OPEN ENDED DUCT AT HIGH LEVEL C/W SCREEN.
6. CONNECT TO EXISTING CONSTANT TEMPERATURE ZONE HWS/R.
7. CONNECT TO EXISTING RADIATION ZONE HWS/R
8. CONNECT TO EXISTING HWS/R ASSOCIATED WITH PUMPS P-10 AND P-11.
9. 65ø HWS/R DOPWN TO UNIT HEATERS.
10. EXTEND HWS/R COIL SPOOLS FROM THE FURTHEST COILS THROUGH CASING.
11. 300X300 F/A DUCT UP THROUGH ROOF TO GRAVITY VENTILATOR GV-2 C/W SCREEN AND MOTORIZED DAMPER.
12. 300ø RELIEF AIR DUCT UP THROUGH ROOF TO GRAVITY VENTILATOR GV-1 C/W SCREEN AND MOTORIZED DAMPER.
13. NEW HUMIDIFICATION MANIFOLD. MODIFY EXISTING DUCTWORK TO SUIT. REFER TO HUMIDIFICATION DISTRIBUTION DETAILS.
14. EXTEND 75ø AND 100ø STEAM PIPE TO AHU-1 AND AHU-2. COORDINATE STEAM PIPE ROUTING WITH NEW HYDRONIC PIPING. SLOPE AND INSULATE STEAM AND CONDENSATE PIPING AS PER DETAILS.
15. COORDINATE TEMPORARY REMOVAL OF ANGLED SUPPORTS WITH GENERAL CONTRACTOR. SITE VERIFY EXTENT OF WORK PRIOR TO COMMENCEMENT OF DEMOLITION.
16. CONNECT TO EXISTING MAIN DCW LINE.
17. EXTEND 25ø DCW TO HU-1 AND HU-2.
18. LOCATE NEW DHW RECIRCULATION PUMP P-18 IN SAME LOCATION AS DEMOLISHED. MODIFY EXISTING DHWR PIPE TO SUIT NEW.

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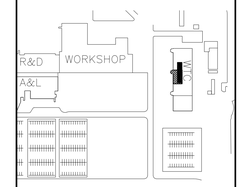

KEY PLAN
N.T.S.

1	ISSUED FOR BD	04/11/2015
revision	issue	date

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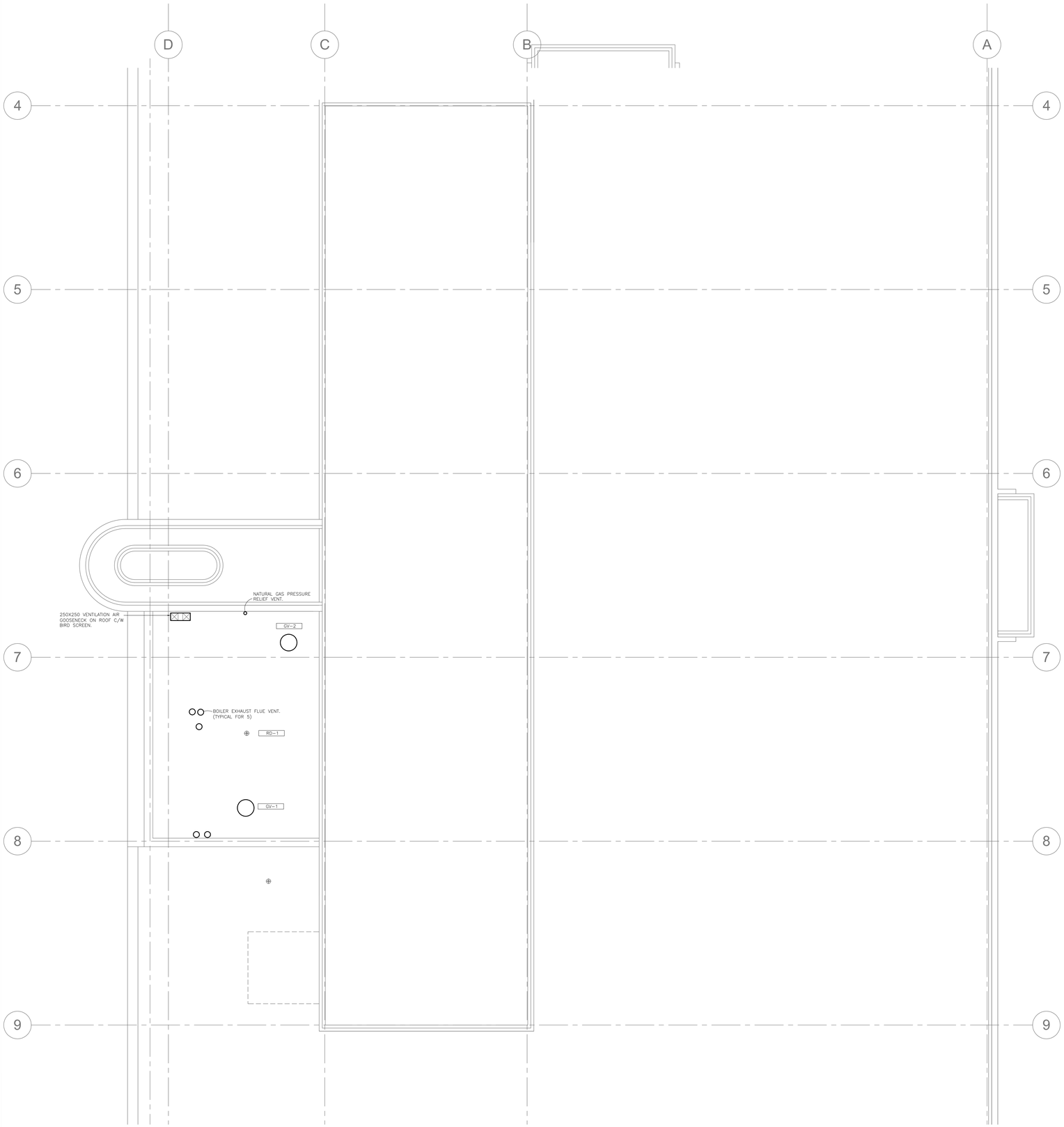
titre du projet
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title
titre du dessin
WTC BUILDING HEATING SYSTEM
PENTHOUSE
MECHANICAL PLAN

drawn by / dessiné par: MM
designed by / conc par: RD
approved by / approuvé par: RD
bid / offre: KC
project manager / administrateur de projets:
project date / date du projet: 2015-2-24
project no. / no. du projet: DIALOG NO. 09946T0200
R.073578.001
drawing no. / dessine no.: M2.33



1 M2.34 ROOF MECHANICAL PLAN
SCALE: 1:50

GENERAL NOTES

1. PROVIDE NEW ROOF PENETRATIONS, DUCTWORK, AND PIPING AS SHOWN.
2. CONTRACTOR TO SITE VERIFY ROUTING & SIZE OF EXISTING STORM WATER PIPING AND DUCTWORK IN SECOND FLOOR CEILING SPACE.
3. CONTRACTOR SHALL SCAN SLAB PRIOR TO ANY CORING AND/OR CUTTING
4. COORDINATE ALL ROOF OPENINGS WITH ROOFING CONTRACTOR. MAINTAIN DISTANCES BETWEEN EXHAUST VENTS AND IN-TAKE OPENINGS AS PER CSA B149.1-10.

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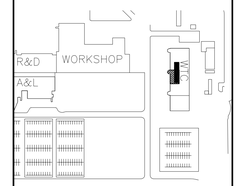

KEY PLAN
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titre du projet

CANADA CENTRE FOR INLAND WATERS

867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6

LABS, AHUs, AND HEATING UPGRADE

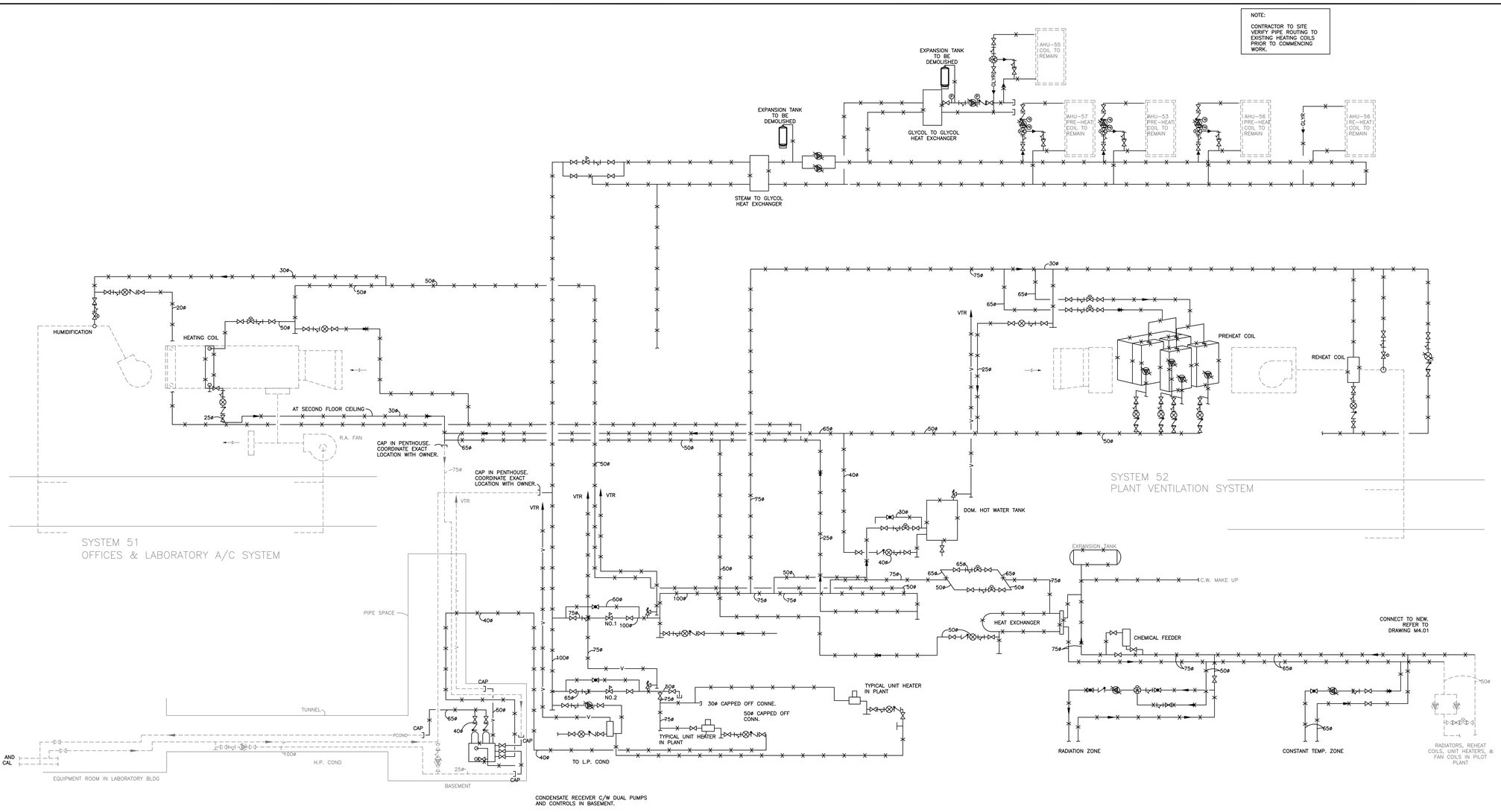
drawing title
titre du dessin

WTC BUILDING HEATING SYSTEM ROOF MECHANICAL PLAN

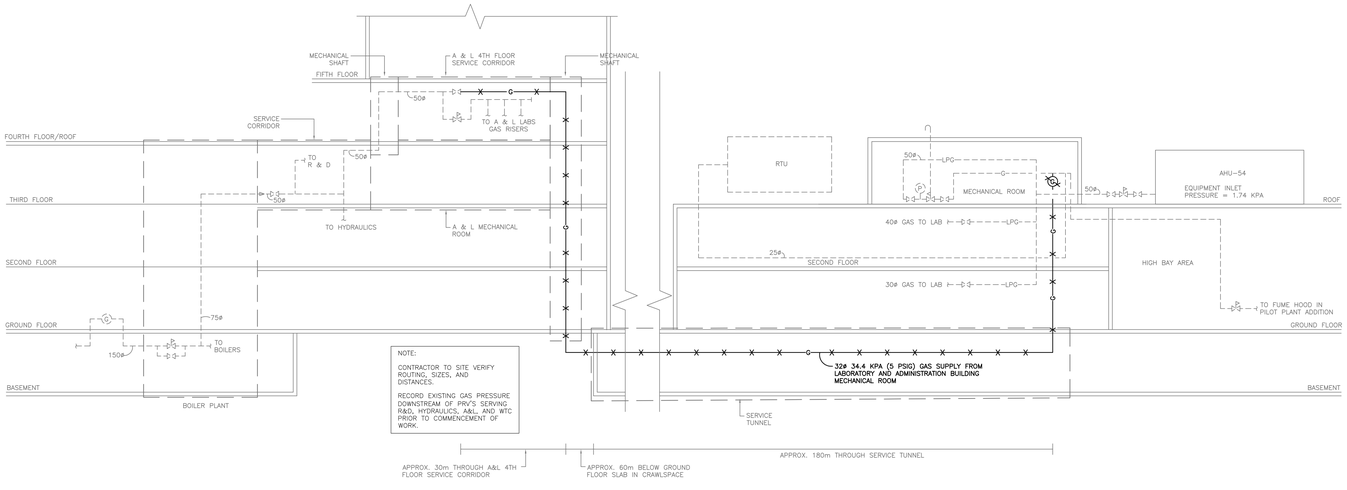
drawn by dessine par	MM
designed by conc par	RD
approved by approuve par	RD
bid offre	KC
project manager administrateur de projets	
project date date du projet	2015-2-24
project no. no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. dessine no.	M2.34

NOTE:

CONTRACTOR TO SITE VERIFY PIPE ROUTING TO EXISTING HEATING COILS PRIOR TO COMMENCING WORK.



1 HEATING SCHEMATIC - DEMOLITION
M4.00 SCALE: NTS

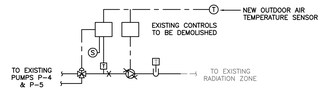


NOTE:

CONTRACTOR TO SITE VERIFY ROUTING, SIZES, AND DISTANCES.

RECORD EXISTING GAS PRESSURE DOWNSTREAM OF PRV'S SERVING R&D, HYDRAULICS, A&L, AND WTC PRIOR TO COMMENCEMENT OF WORK.

2 GAS SCHEMATIC - DEMOLITION
M4.00 SCALE: NTS



3 RADIATION ZONE CONTROL SCHEMATIC - DEMOLITION
M4.00 SCALE: NTS

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Travaux publics et Services gouvernementaux Canada

DIALOG

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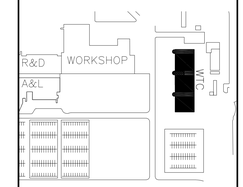

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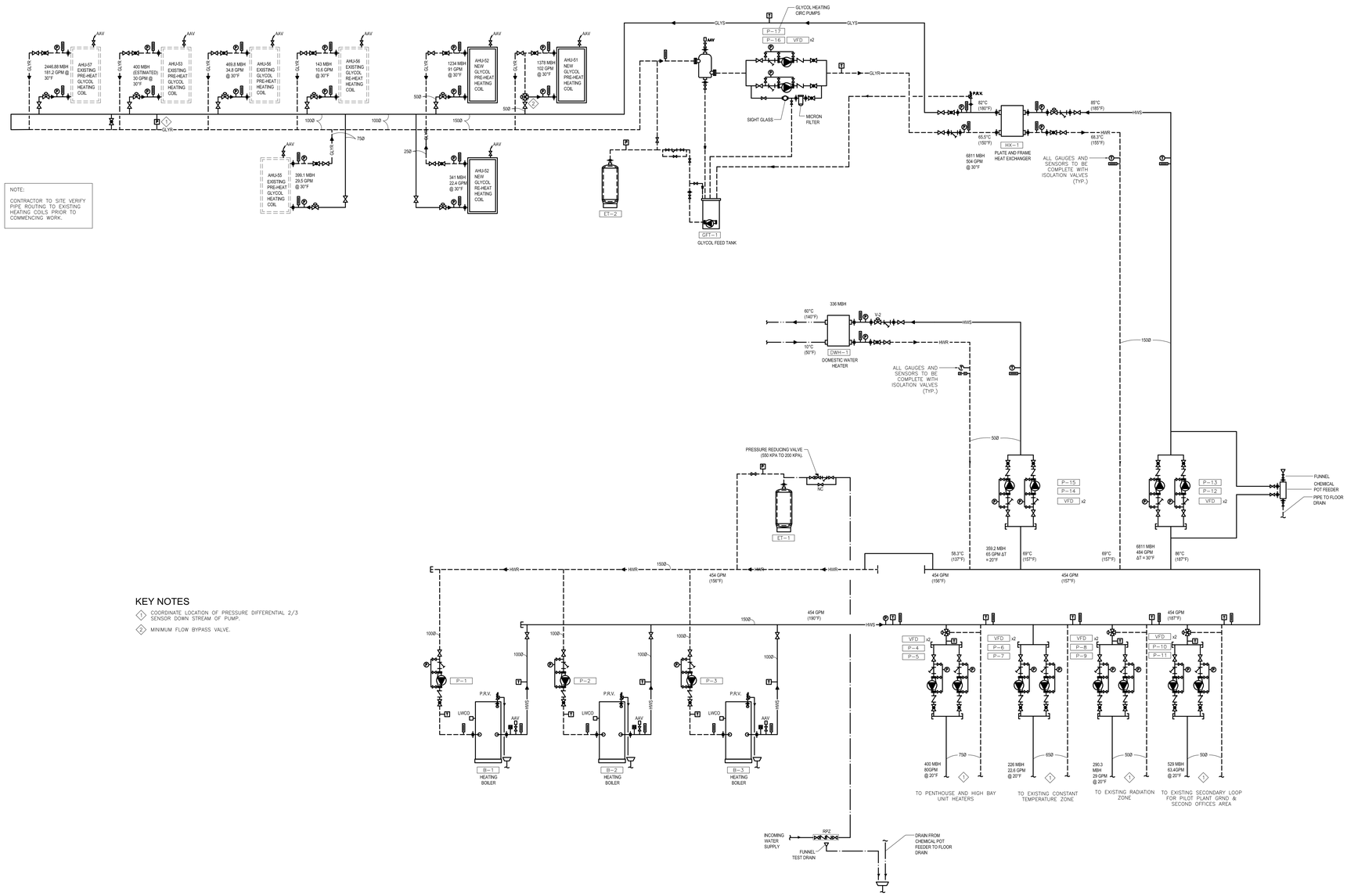
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
MECHANICAL SCHEMATICS
WTC BUILDING
HEATING SYSTEM
DEMOLITION

drawn by / dessiné par: MM
designed by / conc par: RD
approved by / approuvé par: RD
bid / offre: KC
project manager / administrateur de projets:
project date / date du projet: 2015-7-13
project no. / no. du projet: DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.: M4.00

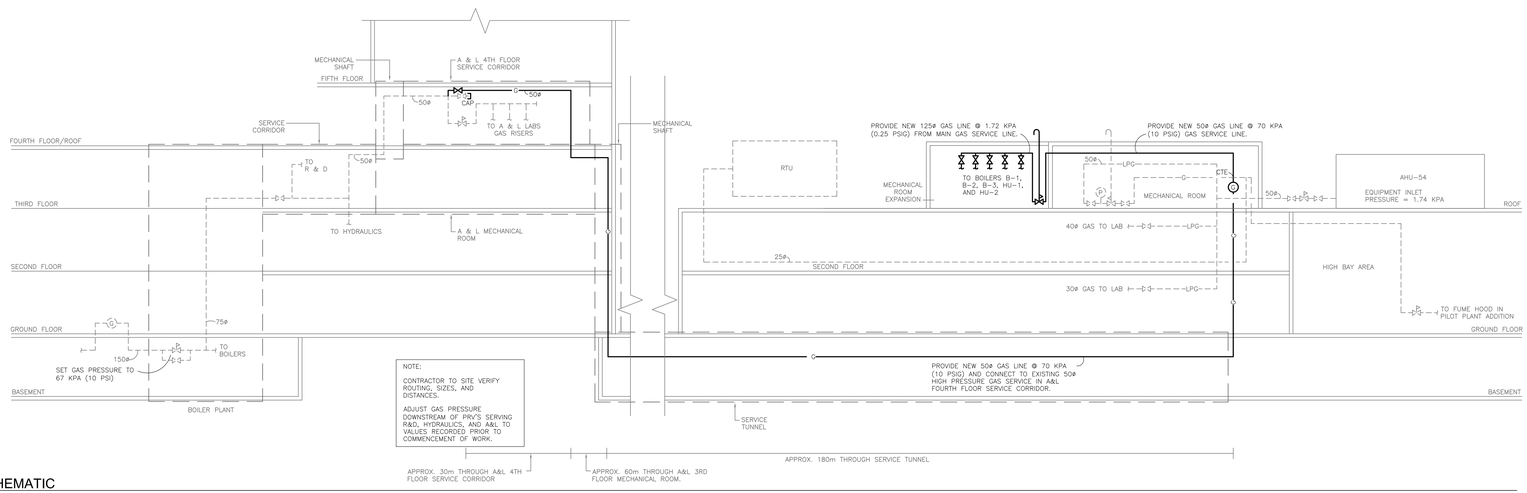


KEY NOTES

1. COORDINATE LOCATION OF PRESSURE DIFFERENTIAL 2/3 SENSOR DOWN STREAM OF PUMP.
2. MINIMUM FLOW BYPASS VALVE.

1 HEATING SCHEMATIC

M4.01 SCALE: NTS



2 GAS SCHEMATIC

M4.01 SCALE: NTS

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DIALOG

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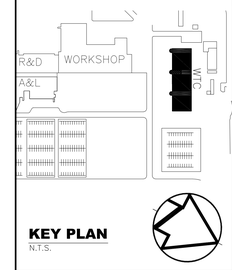


KEY PLAN
N.T.S.

1	ISSUED FOR BID	04/11/2015
revision	issue	date

Do not scale drawings.
Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

A/B/C
A Detail No. No. du détail
B drawing no. – where detail required dessin no. – où détail exigé
C drawing no. – where detailed dessin no. – où détaillé

project title / titre du projet

CANADA CENTRE FOR INLAND WATERS

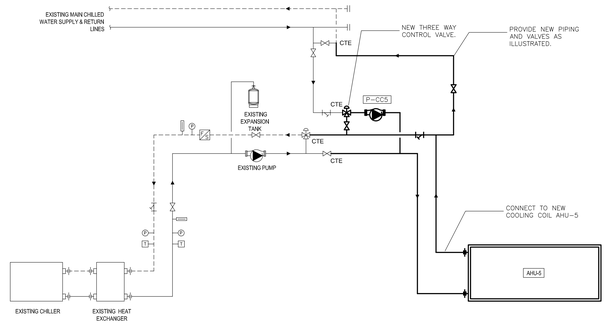
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6

LABS, AHUs, AND HEATING UPGRADE

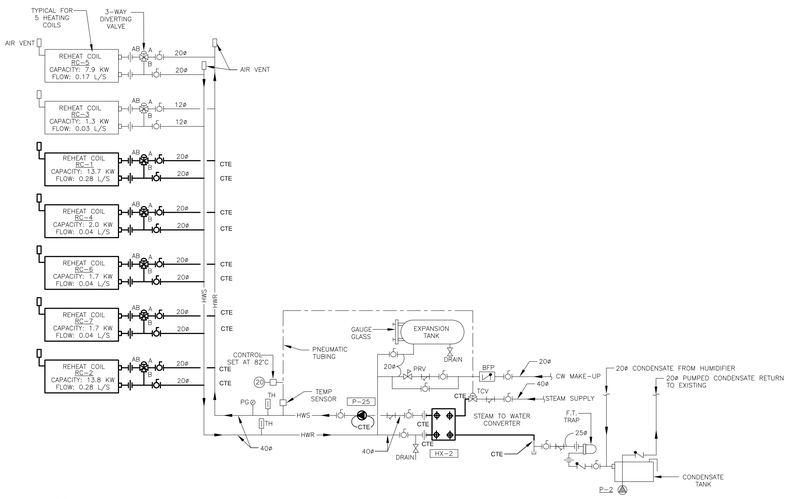
drawing title / titre du dessin

MECHANICAL SCHEMATICS
WTC BUILDING
HEATING SYSTEM

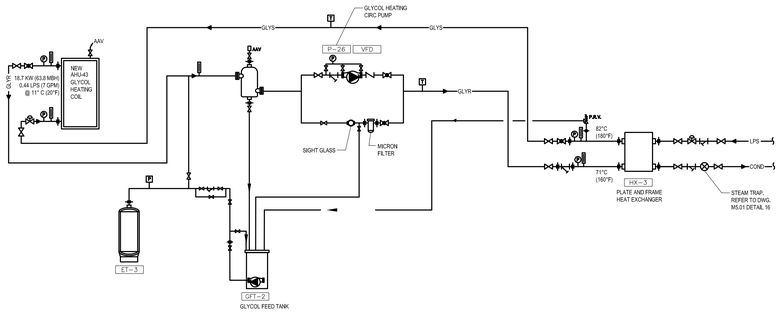
drawn by / dessiné par	MM
designed by / conc par	RD
approved by / approuvé par	RD
bid / offre	KC
project manager / administrateur de projets	
project date / date du projet	2015-2-24
project no. / no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.	M4.01



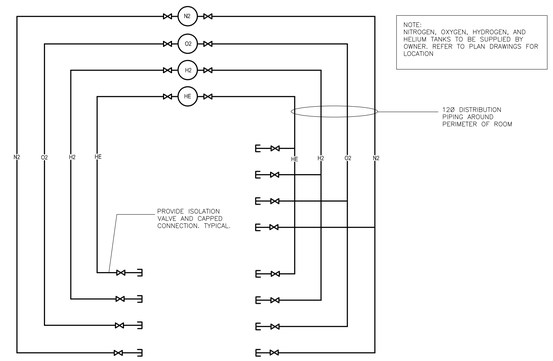
1 M402 CHILLED WATER LOOP TO AHU-5
SCALE: N.T.S.



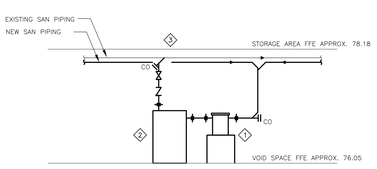
2 M402 STEAM TO WATER HEAT EXCHANGER & HEATING COIL PIPING CONNECTION DIAGRAM
SCALE: N.T.S.



3 M402 AHU-43 HEATING STEAM TO GLYCOL HEAT EXCHANGER PIPING CONNECTION SCHEMATIC
SCALE: N.T.S.



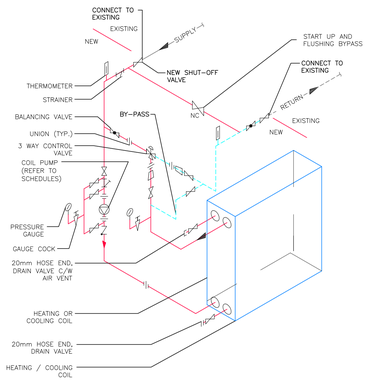
4 M402 LAB L527 GAS MANIFOLD SCHEMATIC
SCALE: N.T.S.



KEYNOTES

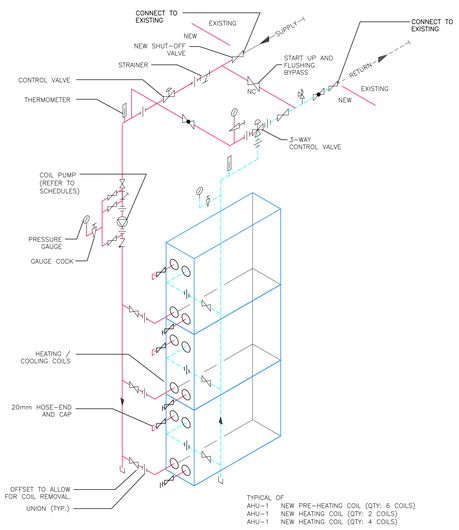
1. PROVIDE SOLIDS INTERCEPTOR COMPLETE WITH SUPPORT STAND TO ALIGN OUTLET OF INTERCEPTOR WITH INLET OF SUMP BASIN. REFER TO SPECIFICATIONS FOR INTERCEPTOR DESCRIPTION. PROVIDE SUPPORT STAND IN ACCORDANCE WITH METAL FABRICATIONS SPECIFICATION. COORDINATE WITH INTERCEPTOR SUPPLIER FOR SIZE AND WEIGHT REQUIREMENTS.
2. PROVIDE PRE-PACKAGED DUPLEX PUMP SET SUITED FOR PUMPING SANITARY WASTE. REFER TO MECHANICAL EQUIPMENT SCHEDULES FOR CAPACITY. REFER TO SPECIFICATIONS FOR PUMP SET DESCRIPTION. PUMP BASIN TO BE SECURELY FASTENED TO CONCRETE FLOORING.
3. CONNECT TO EXISTING SANITARY PIPING. PRIOR TO CONNECTING, CONTRACTOR TO FLUSH AND SCOPE EXISTING PIPING TO ENSURE THE PATH OF WATER IS CLEAR OF DEBRIS. PROVIDE WRITTEN CONFIRMATION OF FLUSHING AND SCOPING.

5 M402 INTERCEPTOR AND PUMP SCHEMATIC - TRACE METAL STAGING AND STORAGE AREA
SCALE: N.T.S.



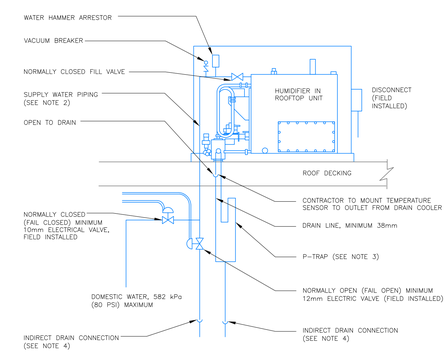
TYPICAL OF
AHU-3 NEW HEATING COIL
AHU-3 NEW COOLING COIL
AHU-5 NEW HEATING COIL
AHU-5 NEW COOLING COIL
AHU-4.5 NEW COOLING COIL

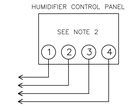
6 M402 SINGLE WATER COIL WITH 3 PORT CONTROL VALVE
SCALE: N.T.S.



TYPICAL OF
AHU-1 NEW PRE-HEATING COIL (QTY: 6 COILS)
AHU-1 NEW HEATING COIL (QTY: 2 COILS)
AHU-1 NEW HEATING COIL (QTY: 4 COILS)

7 M402 MULTIPLE WATER COIL WITH 3 PORT CONTROL VALVE
SCALE: N.T.S.





PIPING NOTES :
1. INSULATE SUPPLY WATER PIPING TO AVOID DRIPPING FROM CONDENSATION.
2. TO ENSURE THAT WATER DOES NOT REMAIN IN THE FILL LINE AND FREEZE IF THERE IS A LOSS OF POWER, FIELD INSTALL ADDITIONAL VALVES UPSTREAM OF THE FILL VALVE IN A CONDITIONED SPACE. POWER THESE VALVES FROM THE CONTROL PANEL TERMINALS 1 & 2. THIS FEATURE DRAINS SUPPLY LINE AFTER EACH FILL. SENSOR POWERS FILL VALVES SO DRAIN COOLER HAS WATER SUPPLY WHEN FILL VALVE IS CLOSED.
3. ENSURE THAT WATER LINES ARE PROTECTED FROM FREEZING CONDITIONS. IF EXTRA SUPPLY AND DRAIN VALVES ARE NOT USED, THEN
   - INSTALL HEAT TRACING AND INSULATION ON FILL PIPING INSIDE THE OUTDOOR ENCLOSURE
   - IN EXTREME OR CRITICAL APPLICATIONS IN WHICH THE LIKELY EVENT OF A WATER LEAK COULD CAUSE SEVERE DAMAGE, INSTALL A THERMOSTAT WITH A REMOTE SENSOR ON THE FILL LINE TO CUT POWER TO THE HUMIDIFIER AND SAFETY VALVES TO STOP FILL WATER TO THE HUMIDIFIER AND DRAIN THE FILL PIPING WHEN THE TEMPERATURE IS BELOW FREEZING.
4. PROVIDE COPPER DRAIN PIPING FOR OUTDOOR ENCLOSURES. ON A LOSS POWER THE TANK WATER WILL DRAIN, BUT NOT BE COOLED BY THE DRAIN COOLER BECAUSE OF THE FIELD SUPPLIED SAFETY SHUT-OFF VALVES. IF IT IS CRITICAL TO KEEP THE DRAIN COOLER FUNCTIONAL IN THE CASE OF A POWER LOSS, DISCONNECT THE DRAIN COOLER AND RELOCATE IT DOWN INSIDE THE CONDITIONED SPACE OF THE BUILDING. PIPE THE SUPPLY WATER FOR THE DRAIN COOLER BEFORE THE SAFETY SHUT-OFF VALVES.
5. IF COPPER PIPING IS USED FOR BOTH THE FILL AND DRAIN PIPING, THESE DRAINS MAY BE TIED TOGETHER. LOCATE 25mm AIR GAP ONLY IN SPACES WITH ADEQUATE TEMPERATURE AND AIR MOVEMENT TO ABSORB FLASH STEAM; OTHERWISE, CONDENSATION MAY FORM ON NEARBY SURFACES. REFER TO GOVERNING CODES FOR DRAIN PIPE SIZE AND MAXIMUM DISCHARGE WATER TEMPERATURE.

8 M402 AHU-44 - HUMIDIFIER CONNECTION SCHEMATIC
SCALE: N.T.S.

Public Works and Government Services Canada
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DIALOG

Stamp

revision	issue	date
1	ISSUED FOR BID	04/11/2015

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A Detail No. No. du détail
B drawing no. – where detail required dessin no. – où détail exigé
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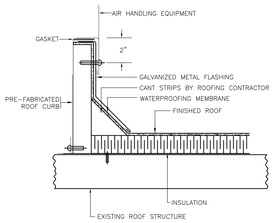
project title
titre du projet

CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title
titre du dessin

MECHANICAL SCHEMATICS

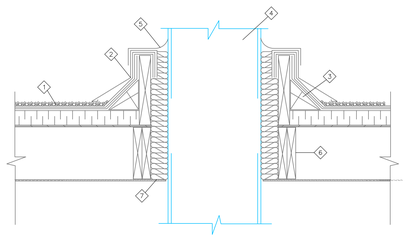
drawn by dessiné par	MM
designed by conc par	RD
approved by approuvé par	RD
bid offre	KC
project manager administrateur de projets	
project date date du projet	2015-7-13
project no. no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. dessine no.	M4.02



NOTES:

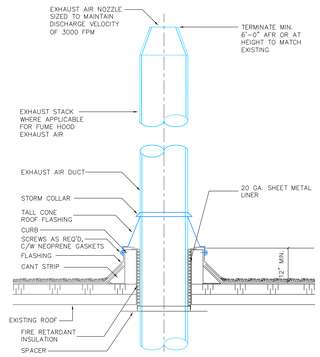
1. PRE-FABRICATED ROOF CURB SHALL BE SUPPLIED BY THE MECHANICAL TRADE AND TURNED OVER TO THE GENERAL/ROOFING TRADE ON SITE FOR INSTALLATION.

1 M5.01 ROOF CURB INSTALLATION DETAIL
SCALE: N.T.S.

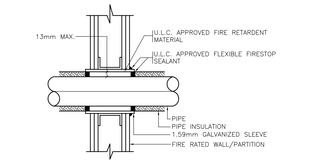


1. FINISHED ROOF
2. FLASHING AND COUNTER FLASHING WITH PRE-PAINTED GALVANIZED MATERIAL WITH FLAT S-LOCK SEAMS.
3. CANT STRIP
4. DUCTWORK COMPLETE WITH THERMAL INSULATION AND WEATHERPROOF ALUMINUM JACKET.
5. SECURE COUNTER FLASHING TO ALUMINUM JACKET AND WEATHER PROOF.
6. ROOF OPENING SUPPORT
7. THERMAL INSULATION

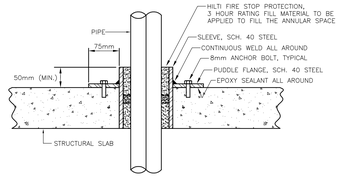
2 M5.01 DUCT PENETRATION DETAIL
SCALE: N.T.S.



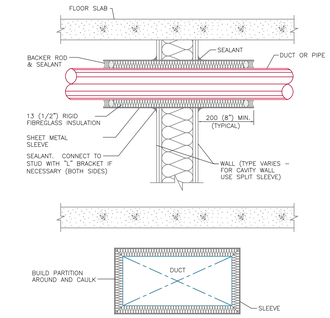
3 M5.01 EXHAUST DUCT THROUGH ROOF DETAIL
SCALE: N.T.S.



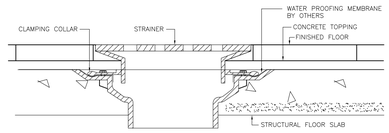
4 M5.01 PIPE SLEEVE THROUGH FIRE RATED WALL DETAIL
SCALE: N.T.S.



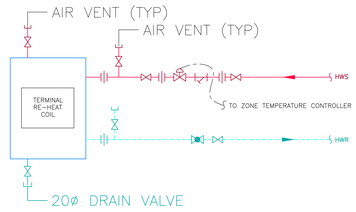
5 M5.01 PIPE PENETRATION THROUGH SLAB DETAIL
SCALE: N.T.S.



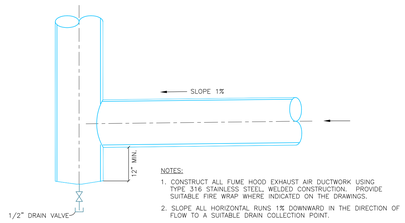
6 M5.01 PIPE & DUCT PENETRATIONS DETAIL
SCALE: N.T.S.



7 M5.01 FLOOR DRAIN INSTALLATION DETAIL
SCALE: N.T.S.



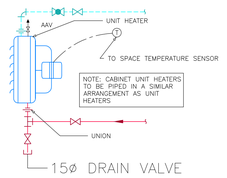
8 M5.01 TERMINAL REHEAT COIL CONNECTION DETAIL
SCALE: N.T.S.



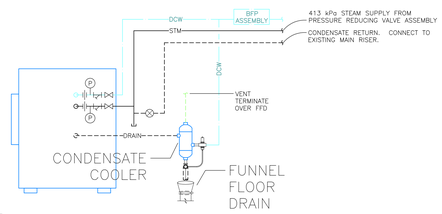
NOTES:

1. CONSTRUCT ALL FUME HOOD EXHAUST AIR DUCTWORK USING TYPE 316 STAINLESS STEEL, WELDED CONSTRUCTION. PROVIDE SUITABLE FIRE WRAP WHERE INDICATED ON THE DRAWINGS.
2. SLOPE ALL HORIZONTAL RUNS 1% DOWNWARD IN THE DIRECTION OF FLOW TO A SUITABLE DRAIN COLLECTION POINT.

9 M5.01 TYPICAL HORIZONTAL FUME HOOD EXHAUST DUCT INSTALLATION DETAIL
SCALE: N.T.S.



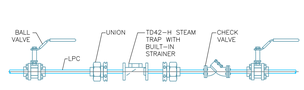
10 M5.01 MOTORIZED HEATER CONNECTION DETAIL
SCALE: N.T.S.



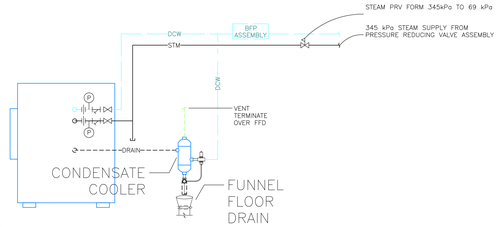
NOTE:

1. PROVIDE A STEAM CONTROL VALVE ASSEMBLY WHERE NOT INCLUDED AS AN INTEGRAL COMPONENT OF THE AUTOCLAVE/STERILIZER

11 M5.01 TYPICAL AUTOCLAVE/STERILIZER CONNECTION DETAIL
SCALE: N.T.S.



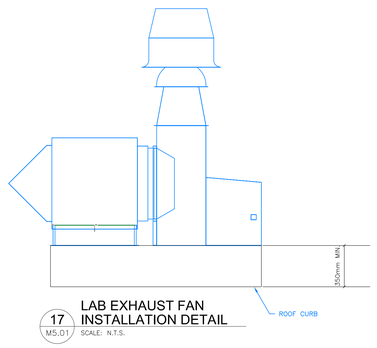
16 M5.01 TYPICAL STEAM TRAP MODULE
SCALE: N.T.S.



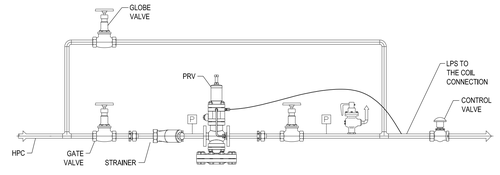
NOTE:

1. PROVIDE A STEAM CONTROL VALVE ASSEMBLY WHERE NOT INCLUDED AS AN INTEGRAL COMPONENT OF THE HUMIDIFIER

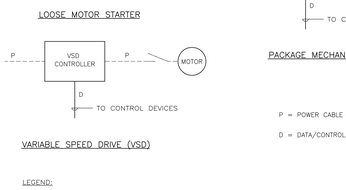
20 M5.01 TYPICAL STEAM HUMIDIFIER CONNECTION DETAIL
SCALE: N.T.S.



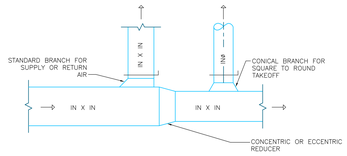
17 M5.01 LAB EXHAUST FAN INSTALLATION DETAIL
SCALE: N.T.S.



21 M5.01 STEAM PRV ASSEMBLY DETAIL
SCALE: N.T.S.



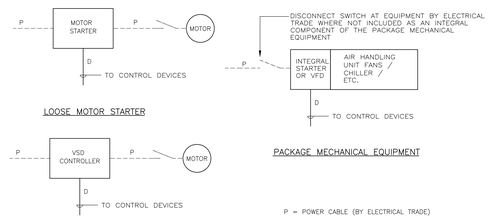
14 M5.01 TYPICAL SUPPLY AIR DIFFUSER CONNECTION DETAIL
SCALE: N.T.S.



TYPICAL LOW VELOCITY SQUARE DUCT TAKEOFF

REFER TO FLOOR PLANS FOR DUCT SIZES AND MINIMUM REQUIRED LOCATIONS REQUIRING BALANCING DAMPERS

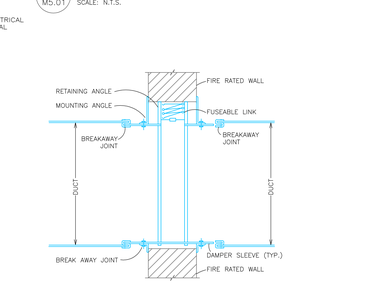
15 M5.01 TYPICAL LOW VELOCITY SQUARE DUCT TAKEOFF
SCALE: N.T.S.



LEGEND:

- ELECTRICAL CONTRACT
- MECHANICAL CONTRACT
- DISCONNECT SWITCH LOCATED BESIDE ROTATING EQUIPMENT.

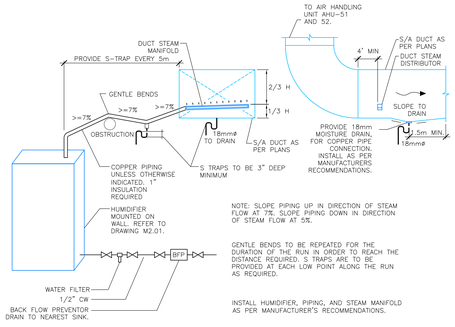
12 M5.01 TYPICAL WIRING DETAILS
SCALE: N.T.S.



NOTES:

1. PROVIDE MINIMUM 8"x8" (200MMX200MM) ACCESS DOOR TO SERVICE FIRE DAMPER.
2. TYPE A IN-STREAM STYLE FIRE DAMPERS ARE ONLY ACCEPTABLE FOR INSTALLATION WITHIN LOW AND MEDIUM VELOCITY DUCTWORK GREATER THAN 12" (300MM) IN HEIGHT.
3. MOUNTING ANGLES SHALL BE MIN. 40X40X14 GAUGE FASTENED TO DAMPER SLEEVES WITH NO. 10 BOLTS OR SCREWS, 15MM LONG WELDS, OR 5MM RIVETS. MIN. 2 CONNECTIONS PER SIDE AND TOP AND BOTTOM OF DAMPER WALLS. MOUNTING ANGLES FOR GALVANIZED DAMPERS 1270W X 1525H OR 1525W x 1270 H AND LESS CAN BE A MINIMUM OF 40X40x16 GAUGE. MAXIMUM FASTENER SPACING OF 16 GAGE MOUNTING ANGLES IS 12" (300MM) CENTER TO CENTER. MOUNTING ANGLES ARE NOT TO BE FASTENED OR WELDED TOGETHER AT CORNERS OF DAMPER. MOUNTING ANGLE TO OVERLAP FIRE RATED WALL MIN. 1" (25MM) ON ALL FOUR SIDES.
4. DUCT TO DAMPER SLEEVE CONNECTIONS SHALL BE BREAKAWAY STYLE. FOR SQUARE DUCTWORK THE FOLLOWING CONNECTIONS ARE ACCEPTABLE: PLAIN OR HEMMED OR STANDING S-SLIP, REINFORCED STANDING S-SLIP, INSIDE SLIP JOINT, DOUBLE S-SLIP, BREAKAWAY DUCTMATE TYPE, AND S-AND-DRIVEMATE NO. 14880. ONLY 4" WIDE DRAWBAND CONNECTION IS ACCEPTABLE FOR ROUND OR OVAL DUCTWORK. DUCT TO SLEEVE CONNECTIONS SHALL BE EQUAL TO OR LESS THAN SLEEVE THICKNESS. SHOULD ANY OTHER DUCT TO SLEEVE CONNECTIONS BE USED, SLEEVE SHALL BE MIN. 16 GAGE FOR DAMPERS UP TO 900 WIDE BY 600 HIGH AND 14 GAGE FOR ANY DAMPER EXCEEDING 900 WIDE OR 600 HIGH. ALL CONNECTIONS AND SLEEVE GAUGE REQUIREMENTS ARE DEPICTED IN THE SMACNA FIRE, SMOKE AND RADIATION DAMPER INSTALLATION GUIDE.
5. DAMPER SLEEVES SHALL BE 10 TO 26 GAUGE STEEL IF FIELD SUPPLIED. DAMPER SLEEVES ARE NOT TO EXTEND FURTHER THAN 6" (150MM) BEYOND THE FIRE RATED WALL OR PARTITION UNLESS THE DAMPER IS EQUIPPED WITH A FACTORY INSTALLED ACCESS DOOR. THE DAMPER SLEEVE CAN EXTEND 16" (400MM) BEYOND THE WALL ON ONE SIDE WHEN SLEEVE CONTAINS A FACTORY INSTALLED ACCESS DOOR.
6. FOR WALL OPENINGS, INDIVIDUAL DAMPER JOINING AND OTHER SPECIAL REQUIREMENTS REFER TO THE MANUFACTURER'S INSTALLATION/OPERATION MANUAL.

13 M5.01 FIRE DAMPER INSTALLATION DETAIL
SCALE: N.T.S.

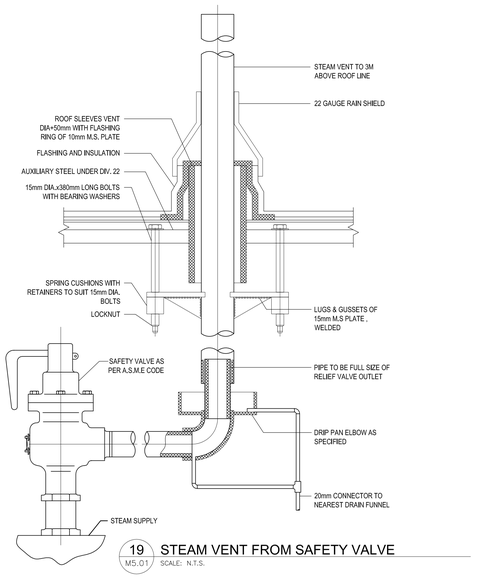


NOTE: SLOPE PIPING UP IN DIRECTION OF STEAM FLOW AT 7%. SLOPE PIPING DOWN IN DIRECTION OF STEAM FLOW AT 5%.

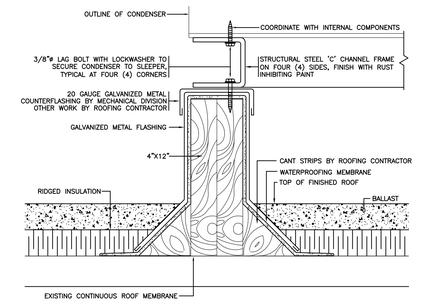
GENTLE BENDS TO BE REPEATED FOR THE DURATION OF THE RUN IN ORDER TO REACH THE DISTANCE REQUIRED. S TRAPS ARE TO BE PROVIDED AT EACH LOW POINT ALONG THE RUN AS REQUIRED.

INSTALL HUMIDIFIER, PIPING, AND STEAM MANIFOLD AS PER MANUFACTURER'S RECOMMENDATIONS.

18 M5.01 HUMIDIFIER DETAIL FOR AHU-51 AND AHU-52
SCALE: N.T.S.



19 M5.01 STEAM VENT FROM SAFETY VALVE
SCALE: N.T.S.



22 M5.01 DETAIL OF WOODEN SLEEPER
SCALE: N.T.S.

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Travaux publics et Services gouvernementaux Canada

DIALOG

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C drawing no. – where detailed dessin no. – où détaillé

project title
titre du projet

CANADA CENTRE FOR INLAND WATERS

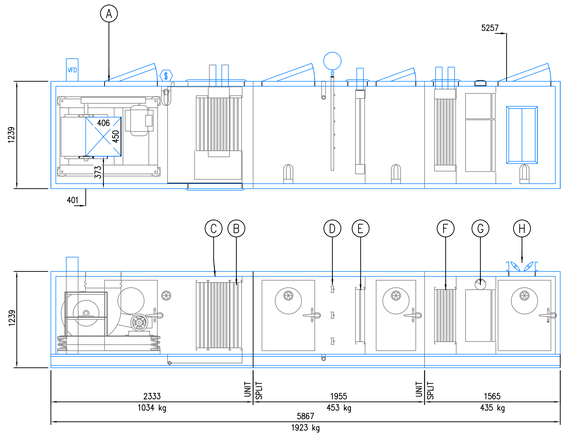
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6

LABS, AHUs, AND HEATING UPGRADE

drawing title
titre du dessin

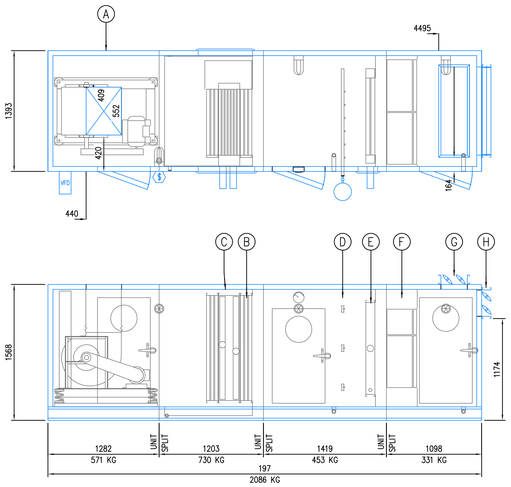
MECHANICAL DETAILS SHEET 1

drawn by dessiné par	MM
designed by conc par	RD
approved by approuvé par	RD
bid offre	KC
project manager administrateur de projets	
project date date du projet	2015-7-13
project no. no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. dessiné no.	M5.01



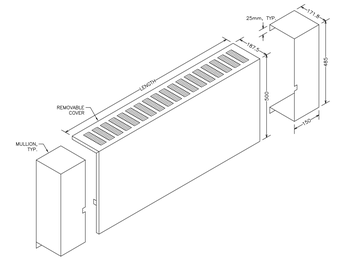
- A FAN(SF)
- B Wrap around heat pipe
- C COOLING COIL
- D HUMIDIFIER
- E HEATING COIL
- F HEAT RECOVERY COIL
- G FILTERS
- H OA DAMPER

1 AHU-3
M5.02 SCALE: N.T.S.



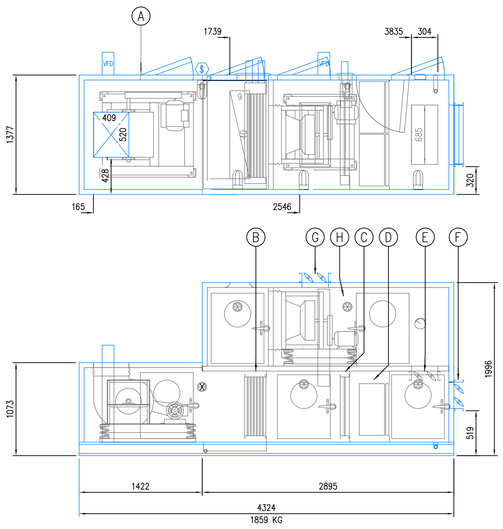
- A FAN(SF)
- B Wrap around heat pipe
- C COOLING COIL
- D HUMIDIFIER
- E HEATING COIL
- F FILTERS
- G R/A DAMPERS
- H OA DAMPER

2 AHU-5
M5.02 SCALE: N.T.S.



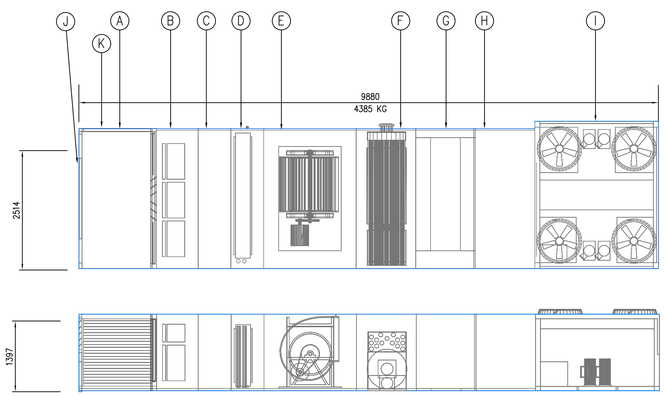
NOTES:
1. INDUCTION UNIT ENCLOSURE TO BE CONSTRUCTED OF 16 GA. STEEL.
2. REFER TO ARCHITECTURAL DRAWINGS FOR LENGTH AND LOCATION OF ENCLOSURES.

6 TYPICAL INDUCTION UNIT COVER DETAIL
M5.02 SCALE: N.T.S.



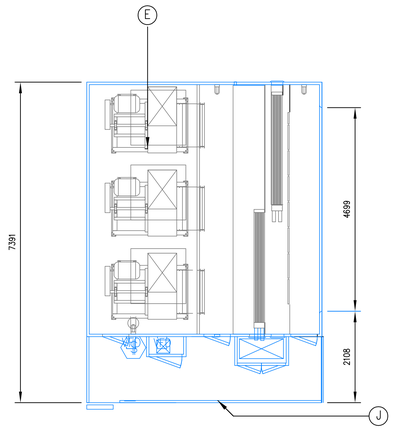
- A FAN(SF)
- B COOLING COIL
- C HEATING COIL
- D FILTERS
- E RA DAMPER
- F OA DAMPER
- G EA DAMPER
- H FAN

3 AHU-43
M5.02 SCALE: N.T.S.



- A ECONOMIZER
- B CARTRIDGE FILTER
- C SPECIAL BLANK
- D DX COIL
- E SUPPLY FAN
- F GAS HEAT
- G SUPPLY DISCHARGE
- H BLANK/ACCESS
- I CONDENSER
- J SOLAR WALL REHEAT OUTDOOR AIR INTAKE
- K OUTDOOR AIR INTAKE

4 AHU-44
M5.02 SCALE: N.T.S.



- A STACK
- B RAILING
- C LADDER
- D FAN INLET DAMPER
- E FAN
- F FAN INLET DAMPER
- G FAN INLET DAMPER
- H HEAT EXTRACTION COIL
- I FILTERS
- J MAINTENANCE PLATFORM

5 EF-4
M5.02 SCALE: N.T.S.

Public Works and Government Services Canada
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revision	issue	date
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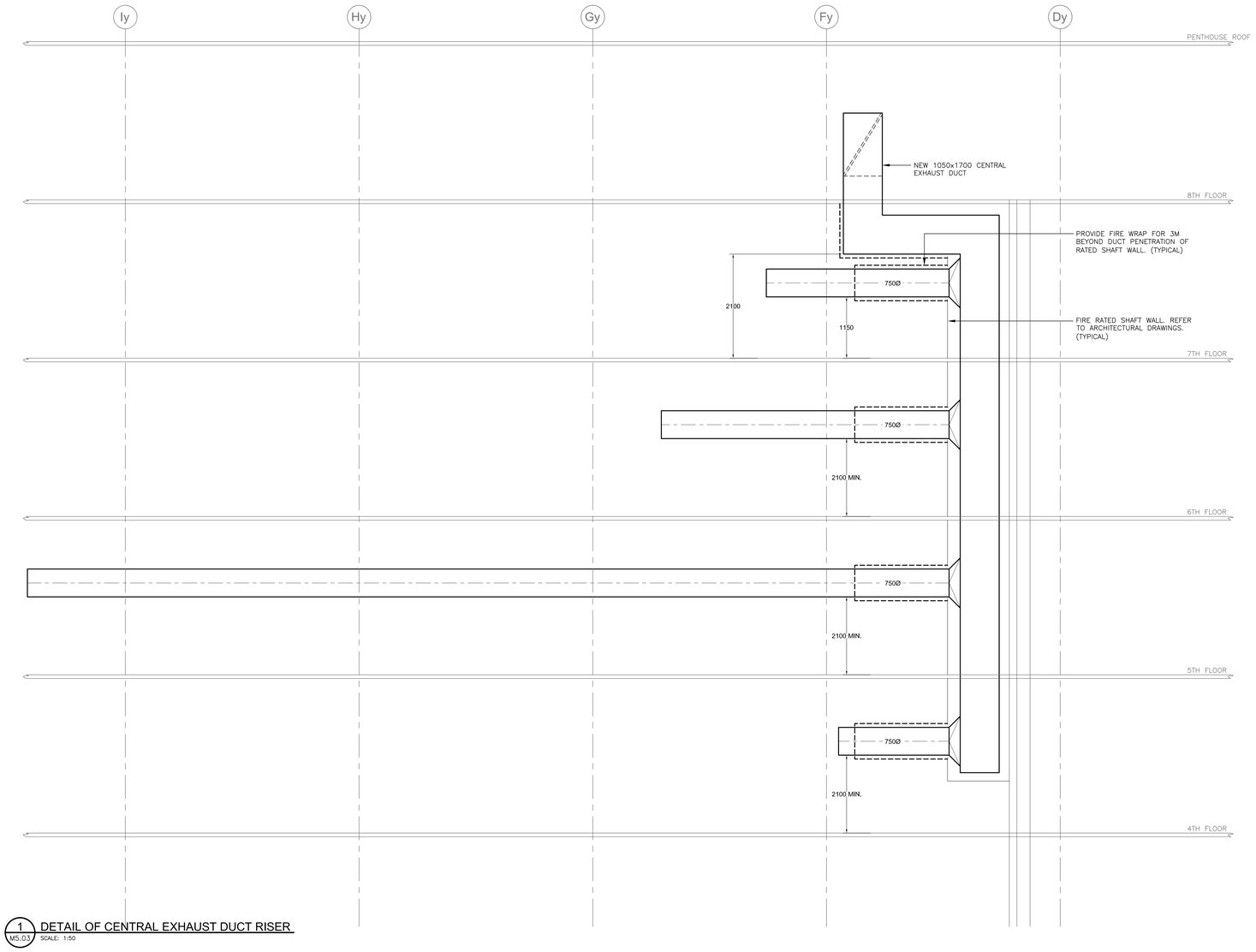
B drawing no. – where detail required dessin no. – où détail exigé
C drawing no. – where detailed dessin no. – où détaillé

project title / titre du projet
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6
LABS, AHUs, AND HEATING UPGRADE

drawing title / titre du dessin
MECHANICAL DETAILS SHEET 2

drawn by / dessine par	MM
designed by / conc par	RD
approved by / approuve par	RD
bid / offre	KC (project manager / administrateur de projets)
project date / date du projet	2015-2-24
project no. / no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.	M5.02



1 M5.03 DETAIL OF CENTRAL EXHAUST DUCT RISER
SCALE: 1:50

GENERAL NOTES

1. EXHAUST AIR VALVES NOT SHOWN FOR CLARITY. REFER TO PLAN DRAWINGS FOR LOCATION OF VALVES.
2. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION, DIMENSIONS AND CONSTRUCTION DETAILS OF FIRE RATED SHAFT WALL.

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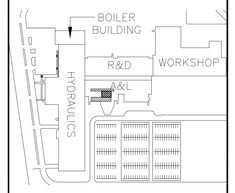

KEY PLAN
N.T.S.

revision	issue	date
1	ISSUED FOR BID	04/11/2015

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project title
titre du projet

CANADA CENTRE FOR INLAND WATERS

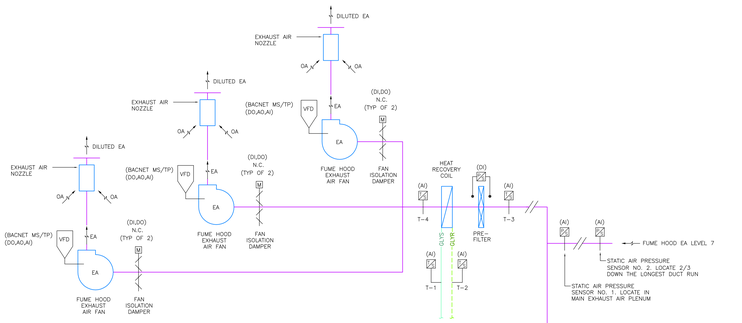
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6

LABS, AHUs, AND HEATING UPGRADE

drawing title
titre du dessin

MECHANICAL DETAILS SHEET 3

drawn by dessine par	MN
designed by conc par	DM
approved by approuve par	RD
bid offre	KC
project manager administrateur de projets	
project date date du projet	2015-7-13
project no. no. du projet	DIALOG NO. 09946T0200 R.073578.001
drawing no. dessine no.	M5.03



1 FUME HOOD AND GENERAL EXHAUST AIR HANDLING SYSTEM FH-EF-1 SOUTH CENTRAL EXHAUST CONTROL SCHEMATIC

M6.01 SCALE: N.T.S.

SEQUENCE OF OPERATION:

1. SYSTEM IS ENABLED THROUGH THE BAS BASED ON AN OPERATOR DEFINED SCHEDULE. ONCE ENABLED THE SYSTEM SHALL OPERATE CONTINUOUSLY IN ACCORDANCE WITH THE FOLLOWING SEQUENCE OF OPERATION.

DAMPER CONTROL:

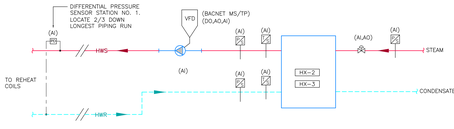
1. UPON ACTIVATION OF THE FUME HOOD EXHAUST AIR HANDLING SYSTEM, EACH FAN ISOLATION DAMPER SHALL BE POWERED OPEN, AND ONCE PROVEN OPEN, THE BAS SHALL ENABLE THE ASSOCIATED EXHAUST AIR FAN (TYPICAL FOR 2 ISOLATION DAMPERS AND EXHAUST AIR FANS).
2. UPON FAILURE OF ANY EXHAUST AIR FAN, THE ASSOCIATED FAN ISOLATION DAMPER SHALL CLOSE.
4. STATUS OF EACH FAN ISOLATION DAMPER SHALL BE MONITORED BY THE BAS. GENERATE AN ALARM IF FAN ISOLATION DAMPER STATUS DOES NOT MATCH COMMAND.

FAN CONTROL:

1. EXHAUST AIR FANS SHALL MODULATE IN UNISON TO MAINTAIN EXHAUST DUCT PRESSURE SETPOINT AS SENSED BY STATIC AIR PRESSURE SENSOR NO.1. AS PRESSURE DECREASES (INCREASE IN NEGATIVE VALUE) EXHAUST AIR FAN SPEED SHALL DECREASE. AS PRESSURE INCREASES (DECREASE IN NEGATIVE VALUE) EXHAUST AIR FAN SPEED SHALL INCREASE. (TYPICAL FOR TWO FANS OPERATING IN PARALLEL)
2. STATUS OF EACH EXHAUST AIR FAN SHALL BE MONITORED BY THE BAS. UPON FAILURE OF ANY EXHAUST AIR FAN, THE ASSOCIATED FAN ISOLATION DAMPER SHALL CLOSE AND AN ALARM SHALL BE GENERATED.

NOTES:

1. STATIC AIR PRESSURE SENSOR NO. 2 SHALL MONITOR PRESSURE 2/3 DOWN THE LONGEST DUCT RUN. ALARM TO BAS ON LOW PRESSURE CONDITION.
2. MONITOR TOTAL EXHAUST AIRFLOW THROUGH INTEGRAL AIRFLOW MONITORING STATION AND REPORT VALUE TO BAS (AI).
3. REFER TO POINT SCHEDULES INCLUDED WITHIN THE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



2 TERMINAL REHEAT CIRCULATING PUMP P-25 LAB H158 AND 160 HEATING GLYCOL CIRCULATING PUMP P-26 SERVING AHU-43 CONTROL SCHEMATIC

M6.01 SCALE: N.T.S.

SEQUENCE OF OPERATION:

1. SYSTEM IS ENABLED THROUGH THE BAS BASED ON AN OPERATOR DEFINED SCHEDULE. ONCE ENABLED THE SYSTEM SHALL OPERATE IN ACCORDANCE WITH THE FOLLOWING SEQUENCE OF OPERATION. TERMINAL REHEAT WATER SHALL BE AVAILABLE CONTINUOUSLY THROUGHOUT THE YEAR.

TEMPERATURE CONTROL:

1. TWO-WAY STEAM CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY WATER TEMPERATURE SETPOINT OF 180°F (ADJUSTABLE).
2. TWO-WAY CONTROL VALVE STATUS/POSITION SHALL BE MONITORED BY THE BAS.

TERMINAL REHEAT WATER PUMP CONTROL:

1. TERMINAL REHEAT CIRCULATING PUMP SHALL MODULATE TO MAINTAIN PRESSURE DIFFERENTIAL SETPOINT, AS SENSED BY DIFFERENTIAL PRESSURE SENSOR STATION NO. 1. AS PRESSURE INCREASES PUMP SPEED SHALL DECREASE. AS PRESSURE DECREASES PUMP SPEED SHALL INCREASE.
2. STATUS OF TERMINAL REHEAT CIRCULATING PUMP SHALL BE MONITORED BY THE BAS. GENERATE AN ALARM IF PUMP STATUS DOES NOT MATCH COMMAND.

NOTES:

1. REFER TO POINT SCHEDULES INCLUDED WITHIN THE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

3 TYPICAL MOTORIZED HEATER CONTROL SCHEMATIC

M6.01 SCALE: N.T.S.

SEQUENCE OF OPERATION:

1. TEMPERATURE SENSOR T-1 SHALL ENABLE/DISABLE MOTORIZED HEATER TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 65°F (ADJUSTABLE).
2. MOTORIZED HEATER STATUS SHALL BE MONITORED BY THE BAS. GENERATE AN ALARM IF STATUS DOES NOT MATCH COMMAND.

NOTES:

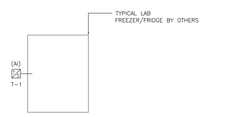
1. REFER TO FLOOR PLANS AND SCHEDULE DRAWING FOR LOCATIONS AND QUANTITIES OF MOTORIZED HEATERS. FOR TRACE METAL STORAGE PROVIDE A 90MIN. TIMER.

4 EXHAUST AIR FAN EF-23 CONTROL SCHEMATIC

M6.01 SCALE: N.T.S.

SEQUENCE OF OPERATION:

1. EXHAUST AIR FAN SHALL BE ENABLED THROUGH THE BAS BASED ON AN OPERATOR DEFINED SCHEDULE. ONCE ENABLED THE EXHAUST AIR FAN SHALL OPERATE CONTINUOUSLY IN ACCORDANCE WITH THE FOLLOWING SEQUENCE OF OPERATION.
2. ON SIGNAL TO ENABLE EXHAUST AIR FAN, MOTORIZED EXHAUST AIR DAMPER D-1 SHALL OPEN AND ONCE CONFIRMED OPEN EXHAUST AIR FAN SHALL BE ENABLED AND OPERATE CONTINUOUSLY. DAMPER STATUS SHALL BE MONITORED BY THE BAS. GENERATE AN ALARM IF DAMPER STATUS DOES NOT MATCH COMMAND.
3. FAN STATUS SHALL BE MONITORED BY THE BAS. GENERATE AN ALARM IF FAN STATUS DOES NOT MATCH COMMAND.



5 TYPICAL LAB INCUBATOR/FRIDGE & WALK-IN UNIT TEMP. MONITORING AND ALARM CONTROL SCHEMATIC

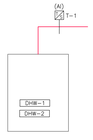
M6.01 SCALE: N.T.S.

SEQUENCE OF OPERATION:

1. TEMPERATURE SENSOR T-1 MONITORS FREEZER/FRIDGE TEMPERATURE. GENERATE AN ALARM IF TEMPERATURE IS MEASURED TO BE OUTSIDE AN OPERATOR DEFINED RANGE.

NOTES:

1. PROVIDE SENSORS TO ROOM ST530, TYP. OF 3 UNITS.
2. PROVIDE SENSORS IN ROOM H158D (TYP. OF 6) AND H158A (TYP. OF 3)
3. PROVIDE SENSORS IN WALKIN UNITS IN IN THE HYDRAULICS WING H160 AND H158 (TYP. OF 6)
4. PROVIDE SENSOR IN TRACE METAL STAGING ROOM (TYP. OF 8)

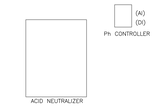


6 DOMESTIC HOT WATER HEATER MONITORING AND ALARM CONTROL SCHEMATIC

M6.01 SCALE: N.T.S.

SEQUENCE OF OPERATION:

1. TEMPERATURE SENSOR T-1 MONITORS SUPPLY WATER TEMPERATURE. GENERATE AN ALARM IF TEMPERATURE IS MEASURED TO BE OUTSIDE AN OPERATOR DEFINED RANGE.

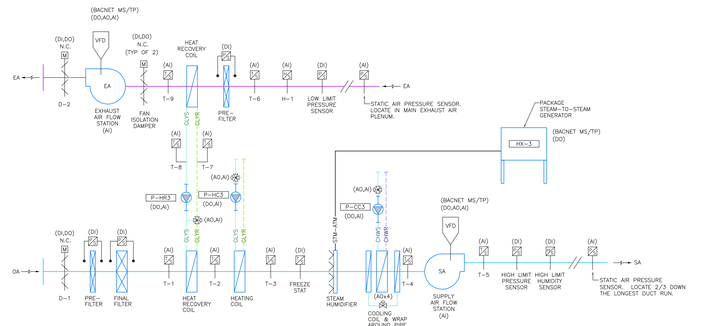


7 ACID NEUTRALIZER MONITORING AND ALARM CONTROL SCHEMATIC

M6.01 SCALE: N.T.S.

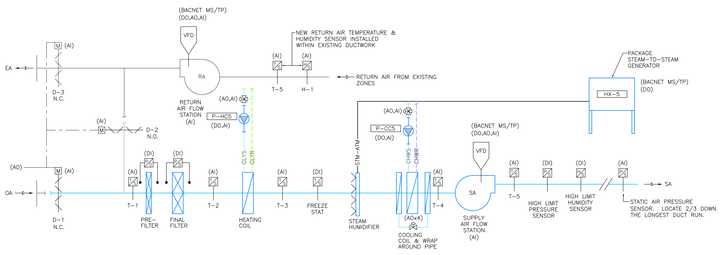
SEQUENCE OF OPERATION:

1. MONITOR Ph LEVEL (4-20mA) AND GENERAL ALARM. GENERATE AN ALARM IF pH LEVEL IS MEASURED TO BE OUTSIDE AN OPERATOR DEFINED RANGE.



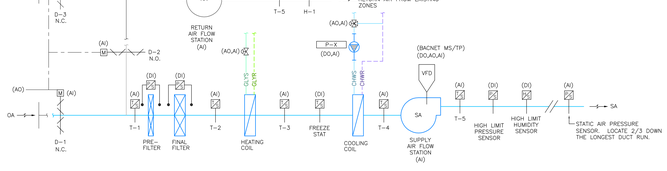
8 SUPPLY AIR & GENERAL EXHAUST AIR HANDLING SYSTEM AHU-3 CONTROL SCHEMATIC

M6.01 SCALE: N.T.S.



9 INTERIOR ZONE SUPPLY AIR HANDLING SYSTEM AHU-5 CONTROL SCHEMATIC

M6.01 SCALE: N.T.S.



10 INTERIOR ZONE SUPPLY AIR HANDLING SYSTEM AHU-43 CONTROL SCHEMATIC

M6.01 SCALE: N.T.S.

TYPICAL SEQUENCE OF OPERATION AHU-3, 5 and 43:

1. SYSTEM IS ENABLED THROUGH THE BAS BASED ON AN OPERATOR DEFINED SCHEDULE. THE SUPPLY AIR AND GENERAL EXHAUST AIR HANDLING SYSTEMS SHALL BE ENABLED AND DISABLED IN A SIMILAR FASHION. ONCE ENABLED THE SYSTEM SHALL OPERATE CONTINUOUSLY IN ACCORDANCE WITH THE FOLLOWING SEQUENCE OF OPERATION.
2. SUPPLY AIR TEMPERATURE SENSOR (T-5) SETPOINT SHALL BE RE-SET THROUGH THE BAS ON A "HIGHEST-TO GOVERN BASIS" AS DETERMINED BY THE TERMINAL UNIT ZONE WITH THE HIGHEST COOLING DEMAND. SAMPLING PERIOD FOR THE "HIGHEST TO GOVERN" STRATEGY SHALL OCCUR AT 15 MINUTE INTERVALS (ADJUSTABLE) AND SHALL GRADUALLY RE-SET SUPPLY AIR TEMPERATURE SETPOINT ACCORDINGLY. PROVIDE A 55°F LOW LIMIT SUPPLY AIR TEMPERATURE SETPOINT.

DAMPER CONTROL AHU-3:

1. UPON ACTIVATION OF THE SUPPLY AIR HANDLING SYSTEM, OUTDOOR AIR DAMPER (D-1) SHALL BE POWERED OPEN AND ONCE PROVEN OPEN THE BAS SHALL POWER OPEN EACH FAN ISOLATION DAMPER. ONCE FAN ISOLATION DAMPER STATUS IS PROVEN OPEN THE ASSOCIATED SUPPLY AIR FAN SHALL BE ENABLED (TYPICAL FOR 4 ISOLATION DAMPERS AND SUPPLY AIR FANS).
2. UPON ACTIVATION OF THE GENERAL EXHAUST AIR HANDLING SYSTEM, EXHAUST AIR DAMPER (D-2) SHALL BE POWERED OPEN AND ONCE PROVEN OPEN THE BAS SHALL POWER OPEN EACH FAN ISOLATION DAMPER. ONCE FAN ISOLATION DAMPER STATUS IS PROVEN OPEN THE ASSOCIATED EXHAUST AIR FAN SHALL BE ENABLED (TYPICAL FOR 2 ISOLATION DAMPERS AND EXHAUST AIR FANS).
3. UPON FAILURE OF ANY SUPPLY AIR OR EXHAUST AIR FAN, THE ASSOCIATED FAN ISOLATION DAMPER SHALL CLOSE.
4. STATUS OF EACH DAMPER SHALL BE MONITORED BY THE BAS. GENERATE AN ALARM IF DAMPER STATUS DOES NOT MATCH COMMAND.

DAMPER CONTROL AHU-5 AND 43:

1. UPON ACTIVATION OF THE SUPPLY AIR HANDLING SYSTEM, OUTDOOR AIR DAMPER (D-1), RETURN AIR DAMPER (D-2) AND EXHAUST AIR DAMPER (D-3) SHALL OPEN AND BE POSITIONED TO MAINTAIN THE MINIMUM OUTDOOR AIR REQUIREMENT (BASED ON ASHRAE STANDARD 62.1 AND TOTAL SUPPLY FAN AIR VOLUME) AS FOLLOWS:
   - AHU-3 AND 43: 30%

   ONCE DAMPERS ARE CONFIRMED OPEN, THE BAS SHALL ENABLE THE ASSOCIATED RETURN/EXHAUST AIR FAN AND SUPPLY AIR FAN.
2. STATUS/POSITION OF EACH DAMPER SHALL BE MONITORED BY THE BAS. GENERATE AN ALARM IF DAMPER STATUS DOES NOT MATCH COMMAND.

FAN CONTROL:

1. SUPPLY AIR FANS SHALL MODULATE IN UNISON TO MAINTAIN SUPPLY AIR DUCT PRESSURE SETPOINT, AS SENSED BY STATIC AIR PRESSURE SENSOR LOCATED 2/3 DOWN THE LONGEST DUCT RUN. AS PRESSURE DECREASES SUPPLY AIR FAN SPEED SHALL INCREASE. AS PRESSURE INCREASES SUPPLY AIR FAN SPEED SHALL DECREASE. (TYPICAL FOR FOUR FANS OPERATING IN PARALLEL)

   STATUS OF EACH SUPPLY AIR FAN SHALL BE MONITORED BY THE BAS. UPON FAILURE OF ANY
2. SUPPLY AIR FAN, THE ASSOCIATED FAN ISOLATION DAMPER SHALL CLOSE AND AN ALARM SHALL BE GENERATED.

   EXHAUST AIR FANS SHALL MODULATE IN UNISON TO MAINTAIN EXHAUST DUCT PRESSURE SETPOINT AS
3. SENSED BY STATIC AIR PRESSURE SENSOR LOCATED IN MAIN EXHAUST AIR PLENUM. AS PRESSURE DECREASES (INCREASE IN NEGATIVE VALUE) EXHAUST AIR FAN SPEED SHALL DECREASE. AS PRESSURE INCREASES (DECREASE IN NEGATIVE VALUE) EXHAUST AIR FAN SPEED SHALL INCREASE. (TYPICAL FOR TWO FANS OPERATING IN PARALLEL)

   STATUS OF EACH EXHAUST AIR FAN SHALL BE MONITORED BY THE BAS. UPON FAILURE OF ANY
4. EXHAUST AIR FAN, THE ASSOCIATED FAN ISOLATION DAMPER SHALL CLOSE AND AN ALARM SHALL BE GENERATED.

HEAT RECOVERY SYSTEM CONTROL (AHU-3):

1. HEAT RECOVERY SYSTEM SHALL BE ENABLED/DISABLED BASED ON OUTDOOR AIR TEMPERATURE, AS SENSED BY OUTDOOR AIR TEMPERATURE SENSOR T-1. WHENEVER OUTDOOR AIR TEMPERATURE IS SENSED TO BE BELOW 55°F (ADJUSTABLE) HEAT RECOVERY CIRCULATING PUMP P-HRx SHALL BE ENABLED AND OPERATE CONTINUOUSLY.
2. THREE WAY VALVE SHALL MODULATE TO PREVENT FROSTING OF THE GENERAL EXHAUST AIR SYSTEM HEAT RECOVERY COIL. VALVE STATUS/POSITION SHALL BE MONITORED BY THE BAS.
2. CIRCULATING PUMP P-HRx STATUS SHALL BE MONITORED BY THE BAS. UPON DETECTION OF PUMP FAILURE, AN ALARM SHALL BE GENERATED.

HEATING CONTROL AHU-3 AND 5:

1. HEATING COIL THREE-WAY CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE SETPOINT T-5. HEATING PUMP P-HCx SHALL RUN CONTINUOUSLY DURING HEATING DEMAND AND DURING HEATING SEASON.
2. THREE-WAY CONTROL VALVE STATUS/POSITION SHALL BE MONITORED BY THE BAS.

HEATING CONTROL AHU-43:

1. HEATING COIL TWO-WAY CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE SETPOINT T-5.
2. TWO-WAY CONTROL VALVE STATUS/POSITION SHALL BE MONITORED BY THE BAS.

COOLING CONTROL:

1. COOLING COIL THREE-WAY CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE SETPOINT T-5 AND MAXIMUM HUMIDITY OF 60% R.H. (ADJUSTABLE), AS SENSED BY GENERAL EXHAUST AIR HUMIDITY SENSOR H-1. PUMP P-CCx SHALL RUN CONTINUOUSLY ON CALL FOR COOLING.
2. THREE-WAY CONTROL VALVE STATUS/POSITION SHALL BE MONITORED BY THE BAS.

HUMIDIFIER CONTROL AHU-3 AND 5

1. STEAM-TO-STEAM HUMIDIFIER SHALL BE ENABLED/DISABLED WHENEVER OUTDOOR AIR TEMPERATURE (T-1) IS SENSED TO BE BELOW 50°F (ADJUSTABLE).

   ONCE ENABLED, PACKAGE STEAM-TO-STEAM HUMIDIFIER SHALL MODULATE TO MAINTAIN A HUMIDITY
2. SETPOINT OF 15% R.H. (ADJUSTABLE), AS SENSED BY GENERAL EXHAUST AIR HUMIDITY SENSOR H-1 AND REPORTED BY THE BAS.
3. STEAM-TO-STEAM HUMIDIFICATION STATUS SHALL BE MONITORED BY THE BAS
4. STEAM-TO-STEAM HUMIDIFIER SHALL BE INTERLOCKED WITH SUPPLY AIR FAN OPERATION. WHENEVER THE SUPPLY AIR FAN(S) ARE ENABLED, THE HUMIDIFICATION SYSTEM SHALL BE ALLOWED TO OPERATE. WHENEVER THE SUPPLY AIR FAN(S) ARE DISABLED THE HUMIDIFICATION SYSTEM SHALL NOT BE ALLOWED TO OPERATE.

NOTES:

1. FREEZE STAT: UPON ACTIVATION OF THE FREEZE STAT, SUPPLY AIR FAN(S) AND GENERAL EXHAUST AIR FAN(S) SHALL BE DE-ENERGIZED VIA A HARDWIRE INTERLOCK. HEATING WATER AND CHILLED WATER VALVES SHALL BE COMMANDED TO FULL OPEN, OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL CLOSE AND AN ALARM SHALL BE GENERATED BY THE BAS.
2. HIGH OR LOW PRESSURE SAFETY: UPON ACTIVATION OF A HIGH OR LOW (NEGATIVE) PRESSURE SAFETY SWITCH THE SUPPLY AIR HANDLING SYSTEM AND GENERAL EXHAUST AIR HANDLING SYSTEM SHALL BE DISABLED. SUPPLY AIR FAN(S) AND GENERAL EXHAUST AIR FAN(S) SHALL BE DE-ENRGIZED VIA A HARDWIRE INTERLOCK. OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL CLOSE AND A ALARM SHALL BE GENERATED BY THE BAS.
3. HIGH LIMIT HUMIDITY: HIGH LIMIT HUMIDITY SENSOR SHALL MONITOR SUPPLY AIR HUMIDITY AND SHALL OVERRIDE ALL HUMIDIFICATION CONTROLS TO MAINTAIN A MAXIMUM SUPPLY AIR HUMIDITY SETPOINT OF 80% R.H. (ADJUSTABLE).
4. SMOKE DETECTOR: UPON INDICATION OF SMOKE BY A SMOKE DETECTOR THE SUPPLY AIR HANDLING SYSTEM AND GENERAL EXHAUST AIR HANDLING SYSTEM SHALL BE DISABLED AND AN ALARM SHALL BE GENERATED BY THE BAS.
5. FILTER MONITORING: DIFFERENTIAL PRESSURE SHALL BE MONITORED ACROSS EACH FILTER. A FILTER MAINTENANCE ALARM SHALL BE GENERATED BY THE BAS WHENEVER REPORTED PRESSURE DROP EXCEEDS SETPOINT.
6. MONITOR TOTAL SUPPLY AIRFLOW AND GENERAL EXHAUST AIRFLOW THROUGH INTEGRAL AIRFLOW MONITORING STATIONS AND REPORT VALUE TO BAS (2 X AI).
7. REFER TO POINT SCHEDULES INCLUDED WITHIN THE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

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DIALOG

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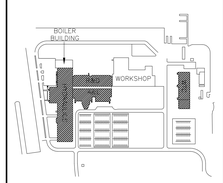
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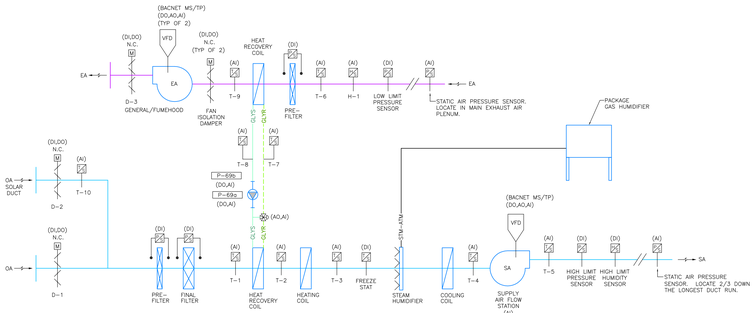


2 SUPPLY AIR & GENERAL EXHAUST AIR HANDLING SYSTEM AHU-44 CONTROL SCHEMATIC

M6.02 SCALE: N.T.S.

SEQUENCE OF OPERATION:

1. SYSTEM IS ENABLED THROUGH THE BAS BASED ON AN OPERATOR DEFINED SCHEDULE. THE SUPPLY AIR AND GENERAL EXHAUST AIR HANDLING SYSTEMS SHALL BE ENABLED AND DISABLED IN A SIMILAR FASHION. ONCE ENABLED EACH SYSTEM SHALL OPERATE CONTINUOUSLY IN ACCORDANCE WITH THE FOLLOWING SEQUENCE OF OPERATION.

2. SUPPLY AIR TEMPERATURE SENSOR (T-5) SETPOINT SHALL BE RE-SET THROUGH THE BAS ON A "HIGHEST-TO GOVERN BASIS" AS DETERMINED BY THE TERMINAL UNIT ZONE WITH THE HIGHEST COOLING DEMAND. SAMPLING PERIOD FOR THE "HIGHEST TO GOVERN" STRATEGY SHALL OCCUR AT 15 MINUTE INTERVALS (ADJUSTABLE) AND SHALL GRADUALLY RE-SET SUPPLY AIR TEMPERATURE SETPOINT ACCORDINGLY. PROVIDE A 55°F LOW LIMIT SUPPLY AIR TEMPERATURE SETPOINT.

3. AHU 44 HALL BE EQUIPPED WITH INTEGRAL MICROPROCESSOR BASED CONTROL SYSTEM. THE UNIT CONTROL SYSTEM SHALL INCLUDE ALL REQUIRED TEMPERATURE AND PRESSURE SENSORS, INPUT/OUTPUT BOARDS, MAIN MICROPROCESSORS AND OPERATOR INTERFACE. THE UNIT CONTROL SYSTEM SHALL PERFORM ALL UNIT CONTROL FUNCTIONS INCLUDING SCHEDULING, UNIT DIAGNOSTICS AND SAFETIES. REFER TO AIR HANDLING SPECIFICATION FOR DETAILS. UNIT SHALL COMMUNICATION TO BAS VIA BACNET.

DAMPER CONTROL:

1. UPON ACTIVATION OF THE SUPPLY AIR HANDLING SYSTEM, OUTDOOR AIR DAMPER (D-1) SHALL BE POWERED OPEN AND ONCE PROVEN OPEN THE BAS SHALL POWER SUPPLY FAN AND OPEN EXHAUST AIR DAMPER D-3. BASED ON OUTDOOR AIR CONDITIONS, IN HEATING MODE BAS SHALL DETERMINE IF SOLAR DUCT DAMPER D-2 SHALL BE UTILIZED FOR HEAT RECOVERY.

EXHAUST AIR DAMPER (D-3) SHALL BE POWERED OPEN AND ONCE PROVEN OPEN THE BAS SHALL ENERGIZE EXHAUST FAN.

3. UPON FAILURE OF ANY SUPPLY AIR OR EXHAUST AIR FAN, THE ASSOCIATED FAN ISOLATION DAMPER SHALL CLOSE.
4. STATUS OF EACH DAMPER SHALL BE MONITORED BY THE BAS. GENERATE AN ALARM IF DAMPER STATUS DOES NOT MATCH COMMAND.

FAN CONTROL:

1. SUPPLY AIR FANS SHALL MODULATE IN UNISON TO MAINTAIN SUPPLY AIR DUCT PRESSURE SETPOINT, AS SENSED BY STATIC AIR PRESSURE SENSOR LOCATED 2/3 DOWN THE LONGEST DUCT RUN. AS PRESSURE DECREASES SUPPLY AIR FAN SPEED SHALL INCREASE. AS PRESSURE INCREASES SUPPLY AIR FAN SPEED SHALL DECREASE. (TYPICAL FOR FOUR FANS OPERATING IN PARALLEL)
2. STATUS OF EACH SUPPLY AIR FAN SHALL BE MONITORED BY THE BAS. UPON FAILURE OF ANY SUPPLY AIR FAN, THE ASSOCIATED FAN ISOLATION DAMPER SHALL CLOSE AND AN ALARM SHALL BE GENERATED.

EXHAUST AIR FAN SHALL MODULATE IN UNISON TO MAINTAIN EXHAUST DUCT PRESSURE SETPOINT AS SENSED BY STATIC AIR PRESSURE SENSOR LOCATED IN MAIN EXHAUST AIR PLENUM. AS PRESSURE

3. DECREASES (INCREASE IN NEGATIVE VALUE) EXHAUST AIR FAN SPEED SHALL DECREASE. AS PRESSURE INCREASES (DECREASE IN NEGATIVE VALUE) EXHAUST AIR FAN SPEED SHALL INCREASE. (TYPICAL FOR TWO FANS OPERATING IN PARALLEL)
4. STATUS OF EACH EXHAUST AIR FAN SHALL BE MONITORED BY THE BAS. UPON FAILURE OF ANY EXHAUST AIR FAN, THE ASSOCIATED FAN ISOLATION DAMPER SHALL CLOSE AND AN ALARM SHALL BE GENERATED.

HEAT RECOVERY SYSTEM CONTROL:

1. HEAT RECOVERY SYSTEM SHALL BE ENABLED/DISABLED BASED ON OUTDOOR AIR TEMPERATURE, AS SENSED BY OUTDOOR AIR TEMPERATURE SENSOR T-1. WHENEVER OUTDOOR AIR TEMPERATURE IS SENSED TO BE BELOW 55°F (ADJUSTABLE) HEAT RECOVERY CIRCULATING PUMP P-44 SHALL BE ENABLED AND OPERATE CONTINUOUSLY.
2. THREE WAY VALVE SHALL MODULATE TO PREVENT FROSTING OF THE GENERAL EXHAUST AIR SYSTEM HEAT RECOVERY COIL. VALVE STATUS/POSITION SHALL BE MONITORED BY THE BAS.
3. CIRCULATING PUMP P-44 STATUS SHALL BE MONITORED BY THE BAS. UPON DETECTION OF PUMP FAILURE, AN ALARM SHALL BE GENERATED.

HEATING CONTROL:

1. GAS FIRED HEATER SHALL BE MODULATED TO MAINTAIN SUPPLY TEMPERATURE SETPOINT.

COOLING CONTROL:

1. DX COOLING COILS SHALL BE MODULATED TO MAINTAIN SUPPLY TEMPERATURE SETPOINT, HOT GAS REHEAT SHALL BE MODULATED FOR DEHUMIDIFICATION CONTROL.

HUMIDIFIER CONTROL:

1. HUMIDIFIER SHALL BE ENABLED/DISABLED WHENEVER OUTDOOR AIR TEMPERATURE (T-1) IS SENSED TO BE BELOW 50°F (ADJUSTABLE).
2. ONCE ENABLED, PACKAGE STEAM HUMIDIFIER SHALL MODULATE TO MAINTAIN A HUMIDITY SETPOINT OF 15% R.H. (ADJUSTABLE), AS SENSED BY GENERAL EXHAUST AIR HUMIDITY SENSOR H-1 AND REPORTED BY THE BAS.
4. STEAM HUMIDIFIER SHALL BE INTERLOCKED WITH SUPPLY AIR FAN OPERATION. WHENEVER THE SUPPLY AIR FAN(S) ARE ENABLED, THE HUMIDIFICATION SYSTEM SHALL BE ALLOWED TO OPERATE. WHENEVER THE SUPPLY AIR FAN(S) ARE DISABLED THE HUMIDIFICATION SYSTEM SHALL NOT BE ALLOWED TO OPERATE.

NOTES:

1. FREEZE STAT: UPON ACTIVATION OF THE FREEZE STAT, SUPPLY AIR FAN(S) AND GENERAL EXHAUST AIR FAN(S) SHALL BE DE-ENRGIZED VIA A HARDWIRE INTERLOCK. HEATING WATER AND CHILLED WATER VALVES SHALL BE COMMANDED TO FULL OPEN, OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL CLOSE AND AN ALARM SHALL BE GENERATED BY THE BAS.

2. HIGH OR LOW PRESSURE SAFETY: UPON ACTIVATION OF A HIGH OR LOW (NEGATIVE) PRESSURE SAFETY SWITCH THE SUPPLY AIR HANDLING SYSTEM AND GENERAL EXHAUST AIR HANDLING SYSTEM SHALL BE DISABLED. SUPPLY AIR FAN(S) AND GENERAL EXHAUST AIR FAN(S) SHALL BE DE-ENRGIZED VIA A HARDWIRE INTERLOCK. OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL CLOSE AND A ALARM SHALL BE GENERATED BY THE BAS.

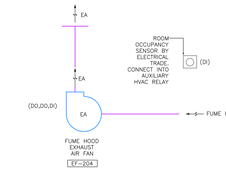
3. HIGH LIMIT HUMIDITY: HIGH LIMIT HUMIDITY SENSOR SHALL MONITOR SUPPLY AIR HUMIDITY AND SHALL OVERRIDE ALL HUMIDIFICATION CONTROLS TO MAINTAIN A MAXIMUM SUPPLY AIR HUMIDITY SETPOINT OF 80% R.H. (ADJUSTABLE).

4. SMOKE DETECTOR: UPON INDICATION OF SMOKE BY A SMOKE DETECTOR THE SUPPLY AIR HANDLING SYSTEM AND GENERAL EXHAUST AIR HANDLING SYSTEM SHALL BE DISABLED AND AN ALARM SHALL BE GENERATED BY THE BAS.

5. FILTER MONITORING: DIFFERENTIAL PRESSURE SHALL BE MONITORED ACROSS EACH FILTER. A FILTER MAINTENANCE ALARM SHALL BE GENERATED BY THE BAS WHENEVER REPORTED PRESSURE DROP EXCEEDS SETPOINT.

6. MONITOR TOTAL SUPPLY AIRFLOW AND GENERAL EXHAUST AIRFLOW THROUGH INTEGRAL AIRFLOW MONITORING STATIONS AND REPORT VALUE TO BAS (2 X AI).

7. REFER TO POINT SCHEDULES INCLUDED WITHIN THE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



3 FUME HOOD EXHAUST AIR FAN EF-204 CONTROL SCHEMATIC

M6.02 SCALE: N.T.S.

SEQUENCE OF OPERATION:

1. FUME HOOD EXHAUST AIR FAN SHALL BE ENABLED THROUGH THE BAS. ONCE ENABLED THE EXHAUST AIR FAN SHALL OPERATE CONTINUOUSLY IN ACCORDANCE WITH THE FOLLOWING SEQUENCE OF OPERATION.

OCCUPIED MODE:

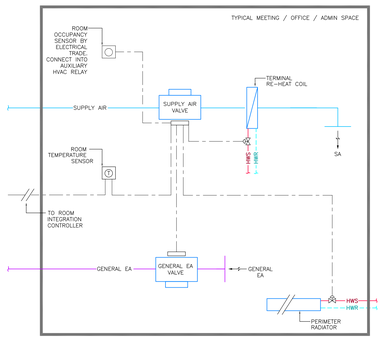
2. UPON CONFIRMATION OF OCCUPANCY BY ROOM OCCUPANCY SENSOR, EXHAUST AIR FAN EF-204 SHALL OPERATE CONTINUOUSLY ON HIGH SPEED.

UNOCCUPIED MODE:

3. UPON CONFIRMATION OF NO OCCUPANCY BY ROOM OCCUPANCY SENSOR, EXHAUST AIR FAN EF-204 SHALL ENTER UNOCCUPIED MODE AFTER A FIELD ADJUSTABLE TIME DELAY.

DURING UNOCCUPIED MODE, EXHAUST AIR FAN EF-204 SHALL OPERATE CONTINUOUSLY ON LOW SPEED.

3. FAN STATUS SHALL BE MONITORED BY THE BAS. GENERATE AN ALARM IF FAN STATUS DOES NOT MATCH COMMAND.



4 TYPICAL ADMIN/MEETING ZONE TEMPERATURE AND PRESSURIZATION CONTROL SCHEMATIC NO. 2

M6.02 SCALE: N.T.S.

SEQUENCE OF OPERATION:

ADMIN/OFFICE/ MEETING ROOM TEMPERATURE/PRESSURIZATION CONTROL AND MONITORING SYSTEM SHALL OPERATE UNDER ITS OWN SYSTEM OF SAFETIES AD CONTROLS IN ACCORDANCE WITH THE

1. FOLLOWING SEQUENCE OF OPERATION.

SUPPLY AIR VALVE AND ROOM TEMPERATURE CONTROL:

SUPPLY AIR VALVE AND ROOM TEMPERATURE CONTROL SYSTEM SHALL OPERATE IN TWO (2) MODES OF AS FOLLOWS:

1. ► OCCUPIED MODE
► UNOCCUPIED MODE

OCCUPIED MODE:

UPON CONFIRMATION OF OCCUPANCY BY ROOM OCCUPANCY SENSOR, THE SUPPLY AIR VALVE AND TEMPERATURE CONTROL SYSTEM SHALL ENTER 'OCCUPIED MODE'.

ON A CALL FOR COOLING, SUPPLY AIR VALVE SHALL MODULATE VALVE POSITION FROM MINIMUM OCCUPIED AIRFLOW TO MAXIMUM SUPPLY AIRFLOW AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 74°F (ADJUSTABLE). ON A CALL FOR REHEAT, TERMINAL REHEAT VALVE SHALL MODULATE OPEN (WHERE APPLICABLE). PERIMETER RADIATOR VALVE SHALL BE FULLY CLOSED DURING COOLING OPERATION.

2. ON A CALL FOR HEATING, SUPPLY AIR VALVE SHALL MODULATE VALVE POSITION TO MINIMUM OCCUPIED AIRFLOW SETTING. ON A CALL FOR FURTHER HEATING, PERIMETER RADIATOR CONTROL VALVE AND TERMINAL REHEAT COIL CONTROL VALVE (WHERE APPLICABLE) SHALL MODULATE OPEN TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 72°F (ADJUSTABLE). WHERE A ZONE IS SERVED BY A PERIMETER RADIATOR AS WELL AS A TERMINAL REHEAT DEVICE, PERIMETER RADIATOR VALVE SHALL BE FULLY OPEN PRIOR TO ENABLING THE TERMINAL REHEAT DEVICE.

REFER TO SUPPLY AIR TERMINAL UNIT SCHEDULE FOR MINIMUM OCCUPIED AIRFLOW AND MAXIMUM SUPPLY AIRFLOW SETTINGS.

UNOCCUPIED MODE:

UPON DETECTION OF NO OCCUPANCY BY ROOM OCCUPANCY SENSOR, THE SUPPLY AIR VALVE AND TEMPERATURE CONTROL SYSTEM SHALL ENTER 'UNOCCUPIED MODE', AFTER A FIELD ADJUSTABLE TIME DELAY.

ON A CALL FOR COOLING, SUPPLY AIR VALVE SHALL MODULATE VALVE POSITION FROM MINIMUM OCCUPIED AIRFLOW TO MAXIMUM SUPPLY AIRFLOW AS REQUIRED TO MAINTAIN SPACE TEMPERATURE

3. SETPOINT OF 78°F (ADJUSTABLE).

ON A CALL FOR HEATING, SUPPLY AIR VALVE SHALL MODULATE VALVE POSITION TO MINIMUM OCCUPIED AIRFLOW SETTING. ON A CALL FOR FURTHER HEATING, PERIMETER RADIATOR VALVE AND TERMINAL REHEAT COIL VALVE (WHERE APPLICABLE) SHALL MODULATE OPEN TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 68°F (ADJUSTABLE). PERIMETER RADIATOR VALVE SHALL BE FULLY OPEN PRIOR TO ENABLING THE TERMINAL REHEAT DEVICE.

REFER TO SUPPLY AIR TERMINAL UNIT SCHEDULE FOR MINIMUM UNOCCUPIED AIRFLOW AND MAXIMUM SUPPLY AIRFLOW SETTINGS.

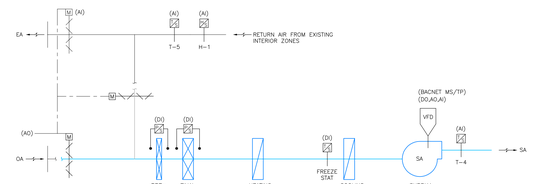
GENERAL EXHAUST AIR VALVE CONTROL:

1. GENERAL EXHAUST AIR VALVE POSITION SHALL TRACK SUPPLY AIR VALVE POSITION TO MAINTAIN A FIXED POSITIVE VOLUMETRIC ZONE OFFSET OF 150CFM (ADJUSTABLE).

2. REFER TO PROJECT SPECIFICATIONS AND GENERAL EXHAUST AIR VALVE SCHEDULE FOR ADDITIONAL INFORMATION AND DESIGN MINIMUM AND MAXIMUM AIRFLOW(S).

NOTES:

1. ROOM INTEGRATION CONTROLLER SHALL INTERFACE WITH THE BUILDING AUTOMATION SYSTEM THROUGH BACNET OVER IP OR MS/TP COMMUNICATION PROTOCOL TO PROVIDE REMOTE MONITORING AND CONTROL FUNCTIONS. SUCCESSFUL VALVE AND CONTROL SYSTEM SUPPLIER SHALL COORDINATE FINAL QUANTITY OF ROOM INTEGRATION CONTROLLER(S) REQUIRED TO SUIT THE PROJECT REQUIREMENTS. PROVIDE MINIMUM ONE (1) PER FLOOR.
2. REFER TO POINT SCHEDULES INCLUDED WITHIN THE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
3. REFER TO HVAC PIPING FLOOR PLANS FOR QUANTITIES OF PERIMETER RADIATION VALVES REQUIRING CONTROL.



5 INTERIOR ZONE SUPPLY AIR HANDLING SYSTEM RTU-1 CONTROL SCHEMATIC

M6.02 SCALE: N.T.S.

SEQUENCE OF OPERATION:

1. SYSTEM IS ENABLED THROUGH THE BAS BASED ON AN OPERATOR DEFINED SCHEDULE. ONCE ENABLED THE SUPPLY AIR HANDLING SYSTEM SHALL OPERATE CONTINUOUSLY IN ACCORDANCE WITH THE FOLLOWING SEQUENCE OF OPERATION.

2. SUPPLY AIR TEMPERATURE SENSOR (T-4) SETPOINT SHALL BE RE-SET THROUGH THE BAS BASED ON RETURN AIR TEMPERATURE AND HUMIDITY SETPOINT (ADJUSTABLE). PROVIDE A 55°F LOW LIMIT SUPPLY AIR TEMPERATURE SETPOINT.

3. RTU-1 HALL BE EQUIPPED WITH INTEGRAL MICROPROCESSOR BASED CONTROL SYSTEM. THE UNIT CONTROL SYSTEM SHALL INCLUDE ALL REQUIRED TEMPERATURE AND PRESSURE SENSORS, INPUT/OUTPUT BOARDS, MAIN MICROPROCESSORS AND OPERATOR INTERFACE. THE UNIT CONTROL SYSTEM SHALL PERFORM ALL UNIT CONTROL FUNCTIONS INCLUDING SCHEDULING, UNIT DIAGNOSTICS AND SAFETIES. REFER TO AIR HANDLING SPECIFICATION FOR DETAILS. UNIT SHALL COMMUNICATION TO BAS VIA BACNET.

FAN CONTROL:

1. FAN SHALL BE CONTROLLED BY INTEGRAL CONTROLLER.

2. STATUS OF SUPPLY AIR FAN SHALL BE MONITORED BY THE BAS. GENERATE AN ALARM IF STATUS DOES NOT MATCH COMMAND.

HEATING CONTROL:

1. HEATING COIL TWO-WAY CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE SETPOINT T-4.

2. TWO-WAY CONTROL VALVE STATUS/POSITION SHALL BE MONITORED BY THE BAS.

COOLING CONTROL:

COOLING COIL THREE-WAY CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE

1. SETPOINT T-4 AND MAXIMUM HUMIDITY OF 60% R.H. (ADJUSTABLE), AS SENSED BY RETURN AIR HUMIDITY SENSOR H-1.

2. THREE-WAY CONTROL VALVE STATUS/POSITION SHALL BE MONITORED BY THE BAS.

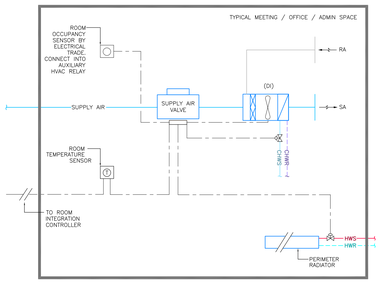
NOTES:

1. FREEZE STAT: UPON ACTIVATION OF THE FREEZE STAT, SUPPLY AIR FAN AND RETURN/EXHAUST AIR FAN SHALL BE DE-ENRGIZED VIA A HARDWIRE INTERLOCK. HEATING WATER AND CHILLED WATER VALVES SHALL BE COMMANDED TO FULL OPEN, OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL CLOSE AND AN ALARM SHALL BE GENERATED BY THE BAS.

2. SMOKE DETECTOR: UPON INDICATION OF SMOKE BY A SMOKE DETECTOR THE SUPPLY AIR HANDLING SYSTEM AND ASSOCIATED RETURN/EXHAUST AIR HANDLING SYSTEM SHALL BE DISABLED AND AN ALARM SHALL BE GENERATED BY THE BAS.

3. FILTER MONITORING: DIFFERENTIAL PRESSURE SHALL BE MONITORED ACROSS EACH FILTER. A FILTER MAINTENANCE ALARM SHALL BE GENERATED BY THE BAS WHENEVER REPORTED PRESSURE DROP EXCEEDS SETPOINT.

4. REFER TO POINT SCHEDULES INCLUDED WITHIN THE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



6 TYPICAL ADMIN/MEETING ZONE TEMPERATURE AND PRESSURIZATION CONTROL SCHEMATIC NO. 1

M6.02 SCALE: N.T.S.

SEQUENCE OF OPERATION:

ADMIN/OFFICE/ MEETING ROOM TEMPERATURE/PRESSURIZATION CONTROL AND MONITORING SYSTEM SHALL OPERATE UNDER ITS OWN SYSTEM OF SAFETIES AD CONTROLS IN ACCORDANCE WITH THE

1. FOLLOWING SEQUENCE OF OPERATION.

SUPPLY AIR VALVE AND ROOM TEMPERATURE CONTROL:

SUPPLY AIR VALVE AND ROOM TEMPERATURE CONTROL SYSTEM SHALL OPERATE IN TWO (2) MODES OF AS FOLLOWS:

1. ► OCCUPIED MODE
► UNOCCUPIED MODE

OCCUPIED MODE:

UPON CONFIRMATION OF OCCUPANCY BY ROOM OCCUPANCY SENSOR, THE SUPPLY AIR VALVE AND TEMPERATURE CONTROL SYSTEM SHALL ENTER 'OCCUPIED MODE'.

SUPPLY AIR VALVE SHALL MAINTAIN CONSTANT SUPPLY AIRFLOW AS INDICATED ON SUPPLY AIR TERMINAL UNIT SCHEDULE AND FAN COIL UNIT SHALL OPERATE CONTINUOUSLY ON MEDIUM SPEED.

2. ON A CALL FOR COOLING, CHILLED WATER COIL CONTROL VALVE SHALL MODULATE OPEN AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 74°F (ADJUSTABLE). PERIMETER RADIATOR VALVE SHALL BE FULLY CLOSED DURING COOLING OPERATION.

ON A CALL FOR HEATING, PERIMETER RADIATOR CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 72°F (ADJUSTABLE). COOLING COIL VALVE SHALL BE FULLY CLOSED DURING HEATING OPERATION.

UNOCCUPIED MODE:

UPON DETECTION OF NO OCCUPANCY BY ROOM OCCUPANCY SENSOR, THE SUPPLY AIR VALVE AND TEMPERATURE CONTROL SYSTEM SHALL ENTER 'UNOCCUPIED MODE', AFTER A FIELD ADJUSTABLE TIME DELAY.

SUPPLY AIR VALVE SHALL MAINTAIN CONSTANT SUPPLY AIRFLOW AS INDICATED ON SUPPLY AIR

3. TERMINAL UNIT SCHEDULE AND FAN COIL UNIT SHALL OPERATE CONTINUOUSLY ON MEDIUM SPEED.

ON A CALL FOR COOLING, CHILLED WATER COIL CONTROL VALVE SHALL MODULATE OPEN AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 78°F (ADJUSTABLE).

ON A CALL FOR HEATING, PERIMETER RADIATOR CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 68°F (ADJUSTABLE).

NOTES:

ROOM INTEGRATION CONTROLLER SHALL INTERFACE WITH THE BUILDING AUTOMATION SYSTEM THROUGH BACNET OVER IP OR MS/TP COMMUNICATION PROTOCOL TO PROVIDE REMOTE MONITORING AND CONTROL

1. FUNCTIONS. SUCCESSFUL VALVE AND CONTROL SYSTEM SUPPLIER SHALL COORDINATE FINAL QUANTITY OF ROOM INTEGRATION CONTROLLER(S) REQUIRED TO SUIT THE PROJECT REQUIREMENTS. PROVIDE MINIMUM ONE (1) PER FLOOR.

2. REFER TO POINT SCHEDULES INCLUDED WITHIN THE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

3. REFER TO HVAC PIPING FLOOR PLANS FOR QUANTITIES OF PERIMETER RADIATION VALVES REQUIRING CONTROL.

4. FAN COIL UNIT STATUS SHALL BE MONITORED BY THE BAS.

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DIALOG

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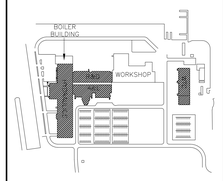


KEY PLAN
N.T.S.

1	ISSUED FOR BID	04/11/2015
revision	issue	date

Do not scale drawings.
Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

A Detail No. No. du détail
B drawing no. – where detail required dessin no. – où détail exigé
C drawing no. – where detailed dessin no. – où détaillé

project title
titre du projet

CANADA CENTRE FOR INLAND WATERS

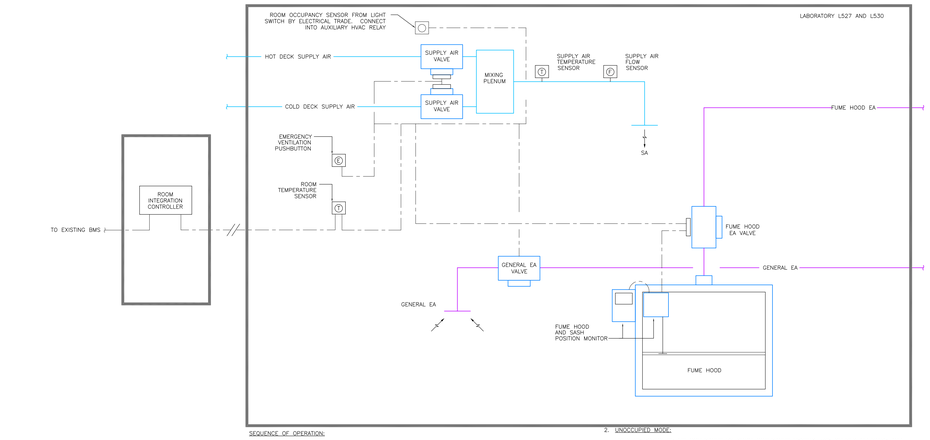
867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6

LABS, AHUs, AND HEATING UPGRADE

drawing title
titre du dessin

CONTROLS SCHEMATICS SHEET 2

drawn by / dessine par: MM
designed by / conc par: RD
approved by / approuve par: RD
bid / offre: KC
project manager / administrateur de projets:
project date / date du projet: 2015-7-13
project no. / no. du projet: DIALOG NO. 09946T0200 R.073578.001
drawing no. / dessine no.: M6.02



SEQUENCE OF OPERATION:

LABORATORY ROOM TEMPERATURE/PRESSURIZATION CONTROL AND MONITORING SYSTEM SHALL OPERATE UNDER ITS OWN SYSTEM OF SAFETIES AD CONTROLS IN ACCORDANCE WITH THE FOLLOWING SEQUENCE OF OPERATION.

1.

FUME HOOD & FUME HOOD EA VALVE CONTROL:

FUME HOOD EA VALVE SHALL OPERATE IN TWO (2) MODES OF CONTROL AS FOLLOWS:

- ► NORMAL MODE
- ► EMERGENCY VENTILATION MODE

NORMAL MODE

1. FUME HOOD AND SASH POSITION MONITOR SHALL CONTINUOUSLY MONITOR FUME HOOD AND MODULATE FUME HOOD EA VALVE POSITION TO MAINTAIN MINIMUM FUME HOOD FACE VELOCITY OF 0.3 M/S (60 FPM) (ADJUSTABLE).

EMERGENCY VENTILATION MODE:

2. UPON ACTIVATION OF EMERGENCY VENTILATION PUSH-BUTTON, THE FUME HOOD EA VALVE SHALL ENTER EMERGENCY VENTILATION MODE AND FUME HOOD EXHAUST AIR VALVE SHALL MODULATE VALVE POSITION OPEN TO MAINTAIN MAXIMUM AIRFLOW AS INDICATED ON FUME HOOD EXHAUST AIR VALVE SCHEDULE.

3. FUME HOOD EA VALVE SHALL BE NORMALLY OPEN, UPON A LOSS OF POWER FUME HOOD EA VALVE SHALL OPEN TO MAXIMUM POSITION.

4. REFER TO PROJECT SPECIFICATIONS AND FUME HOOD EXHAUST AIR VALVE SCHEDULE FOR ADDITIONAL INFORMATION AND REQUIRED MINIMUM AND MAXIMUM AIRFLOW(S).

SUPPLY AIR VALVE AND ROOM TEMPERATURE CONTROL:

1. SUPPLY AIR VALVE SHALL OPERATE IN THREE (3) MODES OF CONTROL AS FOLLOWS:

- ► OCCUPIED MODE
- ► UNOCCUPIED MODE
- ► EMERGENCY VENTILATION MODE

OCCUPIED MODE:

UPON CONFIRMATION OF OCCUPANCY BY ROOM OCCUPANCY SENSOR, THE SUPPLY AIR VALVE AND TEMPERATURE CONTROL SYSTEM SHALL ENTER 'OCCUPIED MODE'.

ON A CALL FOR COOLING, HOT DECK SUPPLY AIR VALVE SHALL MODULATE TO MINIMUM POSITION WHILE SUPPLY AIR VALVE ON COLD DECK MODULATES TO MAXIMUM POSITION AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 23ºC (ADJUSTABLE).

ON A CALL FOR HEATING, COLD DECK SUPPLY AIR VALVE SHALL MODULATE TO MINIMUM POSITION WHILE SUPPLY AIR VALVE ON HOT DECK MODULATES TO MAXIMUM POSITION AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 21ºC (ADJUSTABLE).

2. UNOCCUPIED MODE:

UPON DETECTION OF NO OCCUPANCY BY ROOM OCCUPANCY SENSOR, THE SUPPLY AIR VALVE AND TEMPERATURE CONTROL SYSTEM SHALL ENTER 'UNOCCUPIED MODE', AFTER A FIELD ADJUSTABLE TIME DELAY.

ON A CALL FOR COOLING, COLD DECK SUPPLY AIR VALVE SHALL MODULATE VALVE POSITION FROM MINIMUM AIRFLOW TO MAXIMUM SUPPLY AIRFLOW AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 25ºC (ADJUSTABLE). HOT DECK SUPPLY AIR VALVE TO REMAIN AT MINIMUM POSITION.

ON A CALL FOR HEATING, HOT DECK SUPPLY AIR VALVE SHALL MODULATE VALVE POSITION AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 20 °C (ADJUSTABLE). COLD DECK SUPPLY AIR VALVE TO REMAIN AT MINIMUM POSITION.

REFER TO SUPPLY AIR TERMINAL UNIT SCHEDULE FOR MINIMUM UNOCCUPIED AIRFLOW AND MAXIMUM SUPPLY AIRFLOW SETTINGS.

3. EMERGENCY VENTILATION MODE:

UPON ACTIVATION OF EMERGENCY VENTILATION PUSH-BUTTON, THE SUPPLY AIR VALVES SHALL ENTER EMERGENCY VENTILATION MODE AND SUPPLY AIR VALVE SHALL MODULATE VALVE POSITION OPEN TO MAINTAIN "EMERGENCY PURGE" AIRFLOW AS INDICATED ON SUPPLY AIR TERMINAL UNIT SCHEDULE.

HEATING VALVE POSITION(S) TO BE MAINTAINED AT LAST KNOWN SETTING PRIOR TO ACTIVATION OF EMERGENCY VENTILATION MODE.

GENERAL EXHAUST AIR VALVE CONTROL:

GENERAL EXHAUST AIR VALVE SHALL OPERATE IN TWO (2) MODES OF CONTROL AS FOLLOWS:

1. ► NORMAL MODE
► EMERGENCY VENTILATION MODE

NORMAL MODE:

1. GENERAL EXHAUST AIR VALVE POSITION SHALL TRACK FUME HOOD EXHAUST AIR VALVE POSITION AND SUPPLY AIR VALVE POSITION TO MAINTAIN A FIXED NEGATIVE VOLUMETRIC ZONE OFFSET OF 150CFM (ADJUSTABLE).

EMERGENCY VENTILATION MODE:

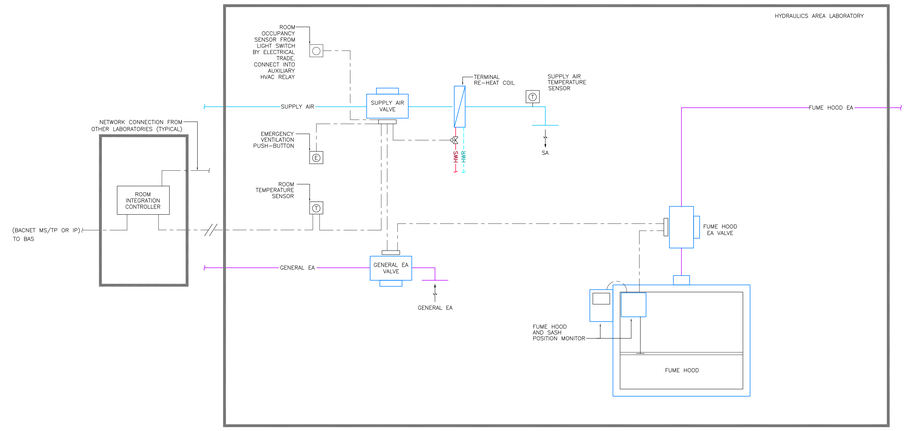
GENERAL EXHAUST AIR VALVE POSITION SHALL TRACK FUME HOOD EXHAUST AIR VALVE POSITION AND SUPPLY AIR VALVE POSITION TO MAINTAIN A FIXED NEGATIVE VOLUMETRIC ZONE OFFSET OF 300CFM (ADJUSTABLE).

2. REFER TO PROJECT SPECIFICATIONS AND GENERAL EXHAUST AIR VALVE SCHEDULE FOR ADDITIONAL INFORMATION AND DESIGN MINIMUM AND MAXIMUM AIRFLOW(S).

NOTES:

1. ROOM INTEGRATION CONTROLLER SHALL INTERFACE WITH THE BUILDING AUTOMATION SYSTEM THROUGH BACNET OVER IP OR MS/TP COMMUNICATION PROTOCOL TO PROVIDE REMOTE MONITORING AND CONTROL FUNCTIONS. SUCCESSFUL VALVE AND CONTROL SYSTEM SUPPLIER SHALL COORDINATE FINAL QUANTITY OF ROOM INTEGRATION CONTROLLER(S) REQUIRED TO SUIT THE PROJECT REQUIREMENTS. PROVIDE MINIMUM ONE (1) PER FLOOR.
2. FUME HOOD AND SASH POSITION MONITOR SHALL BE SUPPLIED BY THE VALVE CONTROL SYSTEM MANUFACTURER AND INSTALLED BY THE FUME HOOD MANUFACTURER. COORDINATE ALL REQUIREMENTS WITH THE SUCCESSFUL FUME HOOD MANUFACTURER PRIOR TO FABRICATION.
3. EMERGENCY VENTILATION PUSH-BUTTON SHALL BE SUPPLIED AND INSTALLED BY THE CONTROL TRADE. VALVE SYSTEM CONTROL PROVIDER SHALL BE RESPONSIBLE FOR ALL INTERLOCKING WIRING.
4. ROOM TEMPERATURE SENSOR SHALL BE SUPPLIED, INSTALLED AND WIRED BY THE VALVE SYSTEM CONTROL PROVIDER.
5. REFER TO POINT SCHEDULES INCLUDED WITHIN THE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

1 A&L BUILDING LABORATORY TEMPERATURE AND PRESSURIZATION CONTROL SCHEMATIC
M6.03 SCALE: N.T.S.



SEQUENCE OF OPERATION:

LABORATORY ROOM TEMPERATURE/PRESSURIZATION CONTROL AND MONITORING SYSTEM SHALL OPERATE UNDER ITS OWN SYSTEM OF SAFETIES AD CONTROLS IN ACCORDANCE WITH THE FOLLOWING SEQUENCE OF OPERATION.

1.

FUME HOOD & FUME HOOD EA VALVE CONTROL:

FUME HOOD EA VALVE SHALL OPERATE IN TWO (2) MODES OF CONTROL AS FOLLOWS:

- ► NORMAL MODE
- ► EMERGENCY VENTILATION MODE

NORMAL MODE

1. FUME HOOD AND SASH POSITION MONITOR SHALL CONTINUOUSLY MONITOR FUME HOOD AND MODULATE FUME HOOD EA VALVE POSITION TO MAINTAIN MINIMUM FUME HOOD FACE VELOCITY OF 0.3 M/S (60 FPM) (ADJUSTABLE).

EMERGENCY VENTILATION MODE:

2. UPON ACTIVATION OF EMERGENCY VENTILATION PUSH-BUTTON, THE FUME HOOD EA VALVE SHALL ENTER EMERGENCY VENTILATION MODE AND FUME HOOD EXHAUST AIR VALVE SHALL MODULATE VALVE POSITION OPEN TO MAINTAIN MAXIMUM AIRFLOW AS INDICATED ON FUME HOOD EXHAUST AIR VALVE SCHEDULE.

3. FUME HOOD EA VALVE SHALL BE NORMALLY OPEN, UPON A LOSS OF POWER FUME HOOD EA VALVE SHALL OPEN TO MAXIMUM POSITION.

4. REFER TO PROJECT SPECIFICATIONS AND FUME HOOD EXHAUST AIR VALVE SCHEDULE FOR ADDITIONAL INFORMATION AND REQUIRED MINIMUM AND MAXIMUM AIRFLOW(S).

SUPPLY AIR VALVE AND ROOM TEMPERATURE CONTROL:

SUPPLY AIR VALVE SHALL OPERATE IN THREE (3) MODES OF CONTROL AS FOLLOWS:

1. ► OCCUPIED MODE
► UNOCCUPIED MODE
► EMERGENCY VENTILATION MODE

OCCUPIED MODE:

UPON CONFIRMATION OF OCCUPANCY BY ROOM OCCUPANCY SENSOR, THE SUPPLY AIR VALVE AND TEMPERATURE CONTROL SYSTEM SHALL ENTER 'OCCUPIED MODE'.

ON A CALL FOR COOLING, SUPPLY AIR VALVE SHALL MODULATE VALVE POSITION FROM MINIMUM OCCUPIED AIRFLOW TO MAXIMUM SUPPLY AIRFLOW AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 23.3ºC (ADJUSTABLE). ON A CALL FOR REHEAT, TERMINAL REHEAT VALVE SHALL MODULATE OPEN. PERIMETER RADIATOR VALVE SHALL BE FULLY CLOSED DURING COOLING OPERATION.

2.

ON A CALL FOR HEATING, SUPPLY AIR VALVE SHALL MODULATE VALVE POSITION TO MINIMUM OCCUPIED AIRFLOW SETTING. ON A CALL FOR FURTHER HEATING, PERIMETER RADIATOR CONTROL VALVE AND TERMINAL REHEAT COIL CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 22.2ºC (ADJUSTABLE). WHERE A ZONE IS SERVED BY A PERIMETER RADIATOR AS WELL AS A TERMINAL REHEAT DEVICE, PERIMETER RADIATOR VALVE SHALL BE FULLY OPEN PRIOR TO ENABLING THE TERMINAL REHEAT DEVICE.

REFER TO SUPPLY AIR TERMINAL UNIT SCHEDULE FOR MINIMUM OCCUPIED AIRFLOW AND MAXIMUM SUPPLY AIRFLOW SETTINGS.

UNOCCUPIED MODE:

UPON DETECTION OF NO OCCUPANCY BY ROOM OCCUPANCY SENSOR, THE SUPPLY AIR VALVE AND TEMPERATURE CONTROL SYSTEM SHALL ENTER 'UNOCCUPIED MODE', AFTER A FIELD ADJUSTABLE TIME DELAY.

ON A CALL FOR COOLING, SUPPLY AIR VALVE SHALL MODULATE VALVE POSITION FROM MINIMUM OCCUPIED AIRFLOW TO MAXIMUM SUPPLY AIRFLOW AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 25.6ºC (ADJUSTABLE). ON A CALL FOR REHEAT, TERMINAL REHEAT VALVE SHALL
3. MODULATE OPEN. PERIMETER RADIATOR VALVE SHALL BE FULLY CLOSED DURING COOLING OPERATION.

ON A CALL FOR HEATING, SUPPLY AIR VALVE SHALL MODULATE VALVE POSITION TO MINIMUM OCCUPIED AIRFLOW SETTING. ON A CALL FOR FURTHER HEATING, PERIMETER RADIATOR VALVE AND TERMINAL REHEAT COIL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 68ºF (ADJUSTABLE). PERIMETER RADIATOR VALVE SHALL BE FULLY OPEN PRIOR TO ENABLING THE TERMINAL REHEAT DEVICE.

REFER TO SUPPLY AIR TERMINAL UNIT SCHEDULE FOR MINIMUM UNOCCUPIED AIRFLOW AND MAXIMUM SUPPLY AIRFLOW SETTINGS.

EMERGENCY VENTILATION MODE:

4. UPON ACTIVATION OF EMERGENCY VENTILATION PUSH-BUTTON, THE SUPPLY AIR VALVE SHALL ENTER EMERGENCY VENTILATION MODE AND SUPPLY AIR VALVE SHALL MODULATE VALVE POSITION OPEN TO MAINTAIN "EMERGENCY PURGE" AIRFLOW AS INDICATED ON SUPPLY AIR TERMINAL UNIT SCHEDULE.

HEATING VALVE POSITION(S) TO BE MAINTAINED AT LAST KNOWN SETTING PRIOR TO ACTIVATION OF EMERGENCY VENTILATION MODE.

GENERAL EXHAUST AIR VALVE CONTROL:

GENERAL EXHAUST AIR VALVE SHALL OPERATE IN TWO (2) MODES OF CONTROL AS FOLLOWS:

1. ► NORMAL MODE
► EMERGENCY VENTILATION MODE

NORMAL MODE:

1. GENERAL EXHAUST AIR VALVE POSITION SHALL TRACK FUME HOOD EXHAUST AIR VALVE POSITION AND SUPPLY AIR VALVE POSITION TO MAINTAIN A FIXED NEGATIVE VOLUMETRIC ZONE OFFSET OF 150CFM (ADJUSTABLE).

EMERGENCY VENTILATION MODE:

GENERAL EXHAUST AIR VALVE POSITION SHALL TRACK FUME HOOD EXHAUST AIR VALVE POSITION AND SUPPLY AIR VALVE POSITION TO MAINTAIN A FIXED NEGATIVE VOLUMETRIC ZONE OFFSET OF 300CFM (ADJUSTABLE).

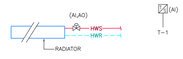
2. REFER TO PROJECT SPECIFICATIONS AND GENERAL EXHAUST AIR VALVE SCHEDULE FOR ADDITIONAL INFORMATION AND DESIGN MINIMUM AND MAXIMUM AIRFLOW(S).

NOTES:

1. ROOM INTEGRATION CONTROLLER SHALL INTERFACE WITH THE BUILDING AUTOMATION SYSTEM THROUGH BACNET OVER IP OR MS/TP COMMUNICATION PROTOCOL TO PROVIDE REMOTE MONITORING AND CONTROL FUNCTIONS. SUCCESSFUL VALVE AND CONTROL SYSTEM SUPPLIER SHALL COORDINATE FINAL QUANTITY OF ROOM INTEGRATION CONTROLLER(S) REQUIRED TO SUIT THE PROJECT REQUIREMENTS. PROVIDE MINIMUM ONE (1) PER FLOOR.

FUME HOOD AND SASH POSITION MONITOR SHALL BE SUPPLIED BY THE VALVE CONTROL SYSTEM
2. MANUFACTURER AND INSTALLED BY THE FUME HOOD MANUFACTURER. COORDINATE ALL REQUIREMENTS WITH THE SUCCESSFUL FUME HOOD MANUFACTURER PRIOR TO FABRICATION.
3. EMERGENCY VENTILATION PUSH-BUTTON SHALL BE SUPPLIED AND INSTALLED BY THE CONTROL TRADE. VALVE SYSTEM CONTROL PROVIDER SHALL BE RESPONSIBLE FOR ALL INTERLOCKING WIRING.
4. ROOM TEMPERATURE SENSOR SHALL BE SUPPLIED, INSTALLED AND WIRED BY THE VALVE SYSTEM CONTROL PROVIDER.
5. REFER TO HVAC PIPING FLOOR PLANS FOR QUANTITIES OF PERIMETER RADIATION VALVES REQUIRING CONTROL.
6. REFER TO POINT SCHEDULES INCLUDED WITHIN THE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

5 HYDRAULICS BULDING LABORATORY TEMPERATURE AND PRESSURIZATION CONTROL SCHEMATIC
M6.03 SCALE: N.T.S.

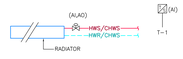


3 TYPICAL RADIANT HEATER CONTROL SCHEMATIC
M6.03 SCALE: N.T.S.

SEQUENCE OF OPERATION:

1. ON A CALL FOR HEATING, RADIATOR TWO-WAY CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 72ºF (ADJUSTABLE), AS SENSED BY SPACE TEMPERATURE SENSOR T-1.

2. TWO-WAY CONTROL VALVE STATUS/POSITION SHALL BE MONITORED BY THE BAS.



4 TYPICAL INDUCTION UNIT CONTROL SCHEMATIC
M6.03 SCALE: N.T.S.

SEQUENCE OF OPERATION:

1. ON A CALL FOR HEATING/COOLING, RADIATOR TWO-WAY CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 72ºF (ADJUSTABLE), AS SENSED BY SPACE TEMPERATURE SENSOR T-1.

2. TWO-WAY CONTROL VALVE STATUS/POSITION SHALL BE MONITORED BY THE BAS.

6 TYPICAL CHECK GAS METER CONTROL SCHEMATIC
M6.03 SCALE: N.T.S.

SEQUENCE OF OPERATION:

1. BAS TO MONITOR AND RECORD GAS CONSUMPTION ON CHECK METER, GAS METER TO BE PULSE TYPE.

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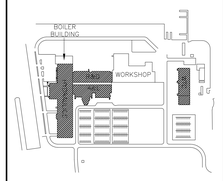

KEY PLAN
N.T.S.

1	ISSUED FOR BID	04/11/2015
revision	issue	date

Do not scale drawings.
Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

A B C
A Detail No. No. du détail
B drawing no. – where detail required dessin no. – ou détail exigé
C drawing no. – where detailed dessin no. – ou détaillé

project title
titre du projet

CANADA CENTRE FOR INLAND WATERS

867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6

LABS, AHUs, AND HEATING UPGRADE

drawing title
titre du dessin

CONTROLS SCHEMATICS SHEET 3

drawn by dessine par	MM
designed by conc par	RD
approved by approuve par	RD
bid offre	KC
project manager administrateur de projets	
project date date du projet	2015-7-13
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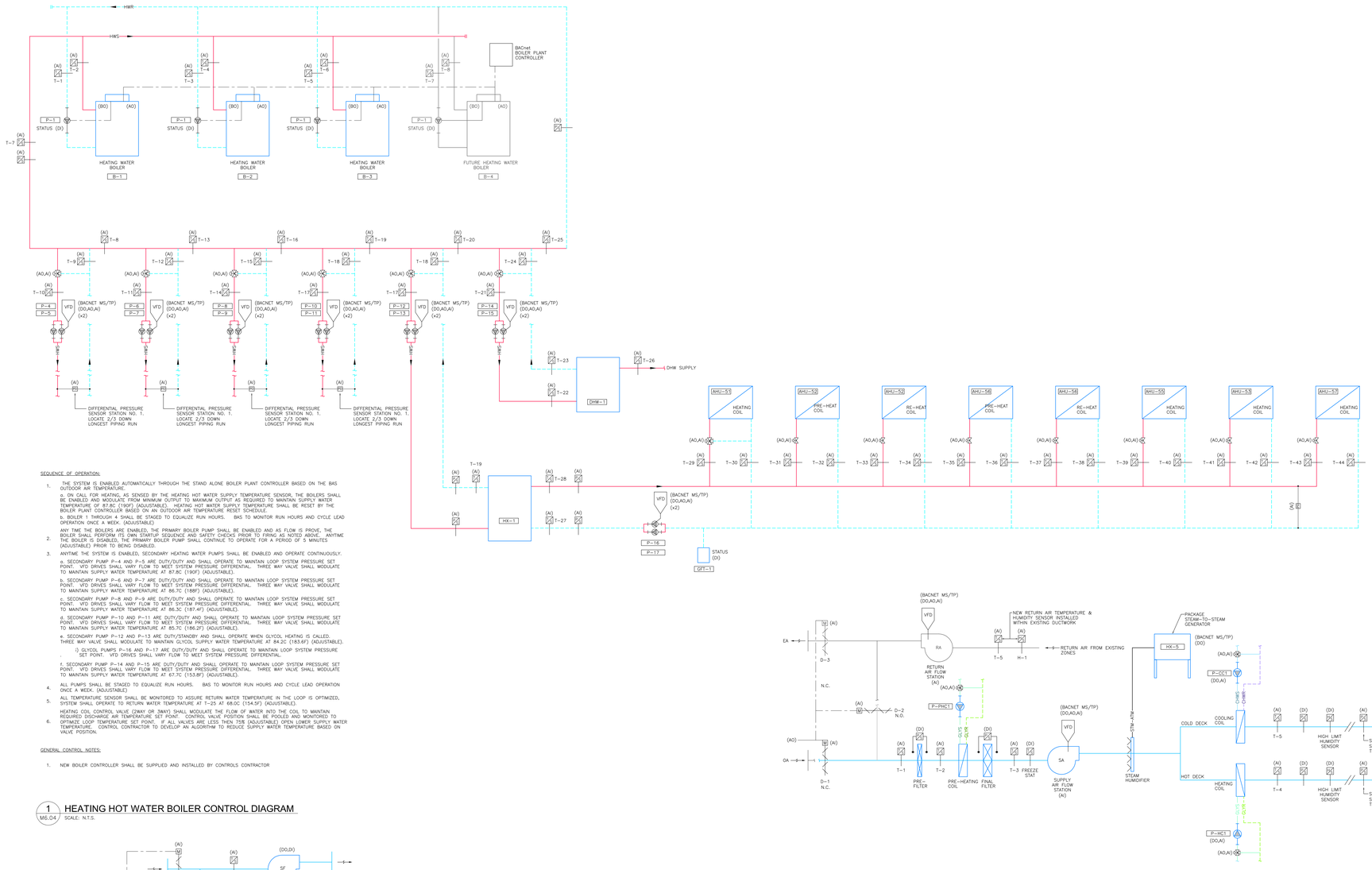
drawing no. dessine no.	M6.03



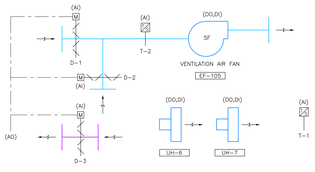
SEQUENCE OF OPERATION:

1. THE SYSTEM IS ENABLED AUTOMATICALLY THROUGH THE STAND ALONE BOILER PLANT CONTROLLER BASED ON THE BAS OUTDOOR AIR TEMPERATURE.
   a. ON CALL FOR HEATING, AS SENSED BY THE HEATING HOT WATER SUPPLY TEMPERATURE SENSOR, THE BOILERS SHALL BE ENABLED AND MODULATE FROM MINIMUM OUTPUT TO MAXIMUM OUTPUT AS REQUIRED TO MAINTAIN SUPPLY WATER TEMPERATURE OF 87.8C (190F) (ADJUSTABLE). HEATING HOT WATER SUPPLY TEMPERATURE SHALL BE RESET BY THE BOILER PLANT CONTROLLER BASED ON AN OUTDOOR AIR TEMPERATURE RESET SCHEDULE.
   b. BOILER 1 THROUGH 4 SHALL BE STAGED TO EQUALIZE RUN HOURS. BAS TO MONITOR RUN HOURS AND CYCLE LEAD OPERATION ONCE A WEEK. (ADJUSTABLE)
   ANY TIME THE BOILERS ARE ENABLED, THE PRIMARY BOILER PUMP SHALL BE ENABLED AND AS FLOW IS PROVE, THE
2. BOILER SHALL PERFORM ITS OWN STARTUP SEQUENCE AND SAFETY CHECKS PRIOR TO FIRING AS NOTED ABOVE. ANYTIME THE BOILER IS DISABLED, THE PRIMARY BOILER PUMP SHALL CONTINUE TO OPERATE FOR A PERIOD OF 5 MINUTES (ADJUSTABLE) PRIOR TO BEING DISABLED.
3. ANYTIME THE SYSTEM IS ENABLED, SECONDARY HEATING WATER PUMPS SHALL BE ENABLED AND OPERATE CONTINUOUSLY.
   a. SECONDARY PUMP P-4 AND P-5 ARE DUTY/DUTY AND SHALL OPERATE TO MAINTAIN LOOP SYSTEM PRESSURE SET POINT. VFD DRIVES SHALL VARY FLOW TO MEET SYSTEM PRESSURE DIFFERENTIAL. THREE WAY VALVE SHALL MODULATE TO MAINTAIN SUPPLY WATER TEMPERATURE AT 87.8C (190F) (ADJUSTABLE).
   b. SECONDARY PUMP P-6 AND P-7 ARE DUTY/DUTY AND SHALL OPERATE TO MAINTAIN LOOP SYSTEM PRESSURE SET POINT. VFD DRIVES SHALL VARY FLOW TO MEET SYSTEM PRESSURE DIFFERENTIAL. THREE WAY VALVE SHALL MODULATE TO MAINTAIN SUPPLY WATER TEMPERATURE AT 86.7C (188F) (ADJUSTABLE).
   c. SECONDARY PUMP P-8 AND P-9 ARE DUTY/DUTY AND SHALL OPERATE TO MAINTAIN LOOP SYSTEM PRESSURE SET POINT. VFD DRIVES SHALL VARY FLOW TO MEET SYSTEM PRESSURE DIFFERENTIAL. THREE WAY VALVE SHALL MODULATE TO MAINTAIN SUPPLY WATER TEMPERATURE AT 86.3C (187.4F) (ADJUSTABLE).
   d. SECONDARY PUMP P-10 AND P-11 ARE DUTY/DUTY AND SHALL OPERATE TO MAINTAIN LOOP SYSTEM PRESSURE SET POINT. VFD DRIVES SHALL VARY FLOW TO MEET SYSTEM PRESSURE DIFFERENTIAL. THREE WAY VALVE SHALL MODULATE TO MAINTAIN SUPPLY WATER TEMPERATURE AT 85.7C (186.2F) (ADJUSTABLE).
   e. SECONDARY PUMP P-12 AND P-13 ARE DUTY/STANDBY AND SHALL OPERATE WHEN GLYCOL HEATING IS CALLED. THREE WAY VALVE SHALL MODULATE TO MAINTAIN GLYCOL SUPPLY WATER TEMPERATURE AT 84.2C (183.6F) (ADJUSTABLE).
      i) GLYCOL PUMPS P-16 AND P-17 ARE DUTY/DUTY AND SHALL OPERATE TO MAINTAIN LOOP SYSTEM PRESSURE SET POINT. VFD DRIVES SHALL VARY FLOW TO MEET SYSTEM PRESSURE DIFFERENTIAL.
   f. SECONDARY PUMP P-14 AND P-15 ARE DUTY/DUTY AND SHALL OPERATE TO MAINTAIN LOOP SYSTEM PRESSURE SET POINT. VFD DRIVES SHALL VARY FLOW TO MEET SYSTEM PRESSURE DIFFERENTIAL. THREE WAY VALVE SHALL MODULATE TO MAINTAIN SUPPLY WATER TEMPERATURE AT 67.7C (153.8F) (ADJUSTABLE).
4. ALL PUMPS SHALL BE STAGED TO EQUALIZE RUN HOURS. BAS TO MONITOR RUN HOURS AND CYCLE LEAD OPERATION ONCE A WEEK. (ADJUSTABLE)
5. ALL TEMPERATURE SENSOR SHALL BE MONITORED TO ASSURE RETURN WATER TEMPERATURE IN THE LOOP IS OPTIMIZED, SYSTEM SHALL OPERATE TO RETURN WATER TEMPERATURE AT T-25 AT 68.0C (154.5F) (ADJUSTABLE).
6. HEATING COIL CONTROL VALVE (2WAY OR 3WAY) SHALL MODULATE THE FLOW OF WATER INTO THE COIL TO MAINTAIN REQUIRED DISCHARGE AIR TEMPERATURE SET POINT. CONTROL VALVE POSITION SHALL BE POOLED AND MONITORED TO OPTIMIZE LOOP TEMPERATURE SET POINT. IF ALL VALVES ARE LESS THEN 75% (ADJUSTABLE) OPEN LOWER SUPPLY WATER TEMPERATURE, CONTROL CONTRACTOR TO DEVELOP AN ALGORITHM TO REDUCE SUPPLY WATER TEMPERATURE BASED ON VALVE POSITION.

GENERAL CONTROL NOTES:

1. NEW BOILER CONTROLLER SHALL BE SUPPLIED AND INSTALLED BY CONTROLS CONTRACTOR

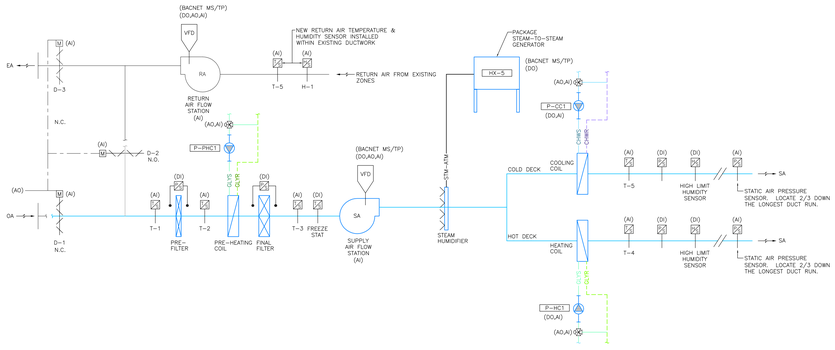
1 HEATING HOT WATER BOILER CONTROL DIAGRAM
M6.04 SCALE: N.T.S.



3 WTC NEW PENTHOUSE VENTILATION AND TEMPERATURE CONTROL SCHEMATIC
M6.04 SCALE: N.T.S.

SEQUENCE OF OPERATION:

1. PENTHOUSE VENTILATION AND TEMPERATURE CONTROL SYSTEM COMPONENTS SHALL BE ENABLED THROUGH THE BAS. ONCE ENABLED, THE SYSTEM SHALL OPERATE CONTINUOUSLY IN ACCORDANCE WITH THE FOLLOWING SEQUENCE OF OPERATION.
2. ON SIGNAL TO ENABLE SUPPLY AIR FAN, RECIRCULATION AIR DAMPER D-2 SHALL MODULATE OPEN TO MAXIMUM POSITION, OUTDOOR AIR DAMPER D-1 AND EXHAUST AIR DAMPER D-3 SHALL BE POSITIONED TO PROVIDE 5% OUTDOOR AIR. ONCE DAMPERS ARE CONFIRMED OPEN SUPPLY AIR FAN SHALL BE ENABLED AND OPERATE CONTINUOUSLY.
3. ON A CALL FOR COOLING, OUTDOOR AIR DAMPER D-1, RECIRCULATION AIR DAMPER D-2 AND EXHAUST AIR DAMPER D-3 SHALL MODULATE IN UNISON TO ALLOW MORE OUTDOOR AIR INTO THE SPACE AS REQUIRED MAINTAIN SPACE AIR TEMPERATURE SETPOINT OF 80?F (ADJUSTABLE). MIXED AIR TEMPERATURE SENSOR T-2 SHALL OVERRIDE SPACE TEMPERATURE SENSOR T-1 TO ENSURE MIXED AIR TEMPERATURE DOES NOT DROP BELOW 55?F.
4. ON A CALL FOR HEATING, OUTDOOR AIR DAMPER D-1, RECIRCULATION AIR DAMPER D-2 AND EXHAUST AIR DAMPER D-3 SHALL MODULATE IN UNISON TO ALLOW LESS OUTDOOR AIR INTO THE SPACE AS REQUIRED TO MAINTAIN SPACE AIR TEMPERATURE SETPOINT OF 65?F (ADJUSTABLE). WITH OUTDOOR AIR DAMPER IN MINIMUM POSITION AND ON A FURTHER CALL FOR HEATING, UNIT HEATER UH-6 & 7 SHALL BE ENABLED TO MAINTAIN SPACE TEMPERATURE SETPOINT.
3. FAN STATUS AND UNIT HEATER STATUS SHALL BE MONITORED BY THE BAS. GENERATE AN ALARM IF FAN STATUS DOES NOT MATCH COMMAND.
4. OUTDOOR AIR DAMPER (D-1), RECIRCULATION AIR DAMPER (D-2) AND EXHAUST AIR DAMPER (D-3) STATUS/POSITION SHALL BE MONITORED BY THE BAS.



2 INTERIOR ZONE SUPPLY AIR HANDLING SYSTEM AHU-1 CONTROL SCHEMATIC
M6.04 SCALE: N.T.S.

SEQUENCE OF OPERATION:

1. SYSTEM IS ENABLED THROUGH THE BAS BASED ON AN OPERATOR DEFINED SCHEDULE. ONCE ENABLED THE SUPPLY AIR HANDLING SYSTEM SHALL OPERATE CONTINUOUSLY IN ACCORDANCE WITH THE FOLLOWING SEQUENCE OF OPERATION.
2. SUPPLY AIR TEMPERATURE SENSOR (T-4) SETPOINT SHALL BE RE-SET THROUGH THE BAS BASED ON A USER DEFINED SETPOINT (ADJUSTABLE). PROVIDE A 55?F LOW LIMIT SUPPLY AIR TEMPERATURE SETPOINT.

DAMPER CONTROL:

UPON ACTIVATION OF THE SUPPLY AIR HANDLING SYSTEM, OUTDOOR AIR DAMPER (D-1), RETURN AIR DAMPER (D-2) AND EXHAUST AIR DAMPER (D-3) SHALL OPEN AND BE POSITIONED TO MAINTAIN THE MINIMUM OUTDOOR AIR REQUIREMENT (BASED ON ASHRAE STANDARD 62.1 AND TOTAL SUPPLY FAN AIR VOLUME) AS FOLLOWS:

1. ► AHU-1: 25%

   ONCE DAMPERS ARE CONFIRMED OPEN, THE BAS SHALL ENABLE THE ASSOCIATED RETURN/EXHAUST AIR FAN AND SUPPLY AIR FAN.
2. STATUS/POSITION OF EACH DAMPER SHALL BE MONITORED BY THE BAS. GENERATE AN ALARM IF DAMPER STATUS DOES NOT MATCH COMMAND:

FAN CONTROL:

1. ONCE ENABLED, SUPPLY AIR FAN SHALL OPERATE CONTINUOUSLY AT A FIXED SPEED. (ADJUSTABLE THROUGH THE BAS).
2. STATUS OF SUPPLY AIR FAN SHALL BE MONITORED BY THE BAS. GENERATE AN ALARM IF STATUS DOES NOT MATCH COMMAND.

PRE-HEATING CONTROL:

1. HEATING COIL THREE-WAY CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE SETPOINT T-3.
2. THREE-WAY CONTROL VALVE STATUS/POSITION SHALL BE MONITORED BY THE BAS.

HEATING CONTROL:

1. HEATING COIL THREE-WAY CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE SETPOINT T-4.
2. THREE-WAY CONTROL VALVE STATUS/POSITION SHALL BE MONITORED BY THE BAS.

COOLING CONTROL:

1. COOLING COIL THREE-WAY CONTROL VALVE SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE SETPOINT T-4 AND MAXIMUM HUMIDITY OF 60% R.H. (ADJUSTABLE), AS SENSED BY RETURN AIR HUMIDITY SENSOR H-1.
2. THREE-WAY CONTROL VALVE STATUS/POSITION SHALL BE MONITORED BY THE BAS.

NOTES:

1. FREEZE STAT: UPON ACTIVATION OF THE FREEZE STAT, SUPPLY AIR FAN AND RETURN/EXHAUST AIR FAN SHALL BE DE-ENRGIZED VIA A HARDWIRE INTERLOCK, HEATING WATER AND CHILLED WATER VALVES SHALL BE COMMANDED TO FULL OPEN, RETURN AIR DAMPER SHALL OPEN, OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL CLOSE AND AN ALARM SHALL BE GENERATED BY THE BAS.
2. SMOKE DETECTOR: UPON INDICATION OF SMOKE BY A SMOKE DETECTOR THE SUPPLY AIR HANDLING SYSTEM AND ASSOCIATED RETURN/EXHAUST AIR HANDLING SYSTEM SHALL BE DISABLED AND AN ALARM SHALL BE GENERATED BY THE BAS.
3. FILTER MONITORING: DIFFERENTIAL PRESSURE SHALL BE MONITORED ACROSS EACH FILTER. A FILTER MAINTENANCE ALARM SHALL BE GENERATED BY THE BAS WHENEVER REPORTED PRESSURE DROP EXCEEDS SETPOINT.
4. THE RETURN AIR FAN SHALL BE INTERLOCKED WITH THE SUPPLY AIR FAN SUCH THAT IT IS ENABLED OR DISABLED IN SIMILAR FASHION.
5. MONITOR TOTAL SUPPLY AIRFLOW THROUGH INTEGRAL AIRFLOW MONITORING STATION AND REPORT VALUE TO BAS (AI).
6. REFER TO POINT SCHEDULES INCLUDED WITHIN THE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

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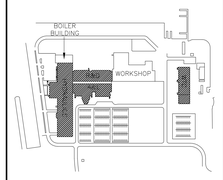

KEY PLAN
N.T.S.

1	ISSUED FOR BID	04/11/2015
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867 LAKESHORE ROAD BURLINGTON, ONTARIO, L7R 4A6

LABS, AHUs, AND HEATING UPGRADE

drawing title
titre du dessin

CONTROLS SCHEMATICS SHEET 4

drawn by dessiné par	MM
designed by conc par	RD
approved by approuvé par	RD
bid offre	KC
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AIR HANDLING UNIT SCHEDULE

TAG	SUPPLY FAN (C/W VFD)								RETURN FAN (C/W VFD)								MIN. O/A AIR (%)	HEAT RECOVERY COIL											PRE-HEATING COIL											RE-HEAT COIL											HUMIDIFIER SECTION					COOLING COIL										
																		COIL				FLUID (40% P, GLYCOL)				AIR					COIL				FLUID (40% P, GLYCOL)				AIR					COIL				FLUID (40% P, GLYCOL)				AIR										COIL				FLUID (WATER)				AIR				
	TOTAL AIR FLOW (L/S)	MOTOR QTY.	E.S.P. (KPA)	T.S.P. (KPA)	MOTOR (KW)	MOTOR BHP (KW)	RPM	CLASS	TYPE	TOTAL AIR FLOW (L/S)	MOTOR QTY.	E.S.P. (KPA)	T.S.P. (KPA)	MOTOR (KW)	MOTOR BHP (KW)	RPM	CLASS	TYPE		SIZE (M x M)	QTY.	ROW	FIN/INCH	FLOW (L/S)	P.D. (KPA)	EFT (°C)	LFT (°C)	P.D. (KPA)	EAT DB (°C)	LAT DB (°C)	TOTAL CAPACITY (KW)

PLATE & FRAME HEAT EXCHANGER SCHEDULE

TAG	SERVICE	HOT SIDE					COLD SIDE				HEAT EXCHANGED (KW)	NOTES
		MEDIUM	FLUID FLOW (L/S)	STEAM PRESSURE (KPA)	MAX. PD (KPA)	EFT/LFT (°C)	MEDIUM	FLUID FLOW (L/S)	MAX. PD (KPA)	EFT/LFT (°C)		
HX-1	WTC BUILDING AHU HEATING	WATER	30,4	-	29,2	84/67	40% P. GLYCOL	31,8	34,3	65/82	2055	DUTY
HX-2	H158 REHEATS	STEAM	-	100	-	-	WATER	1,05	32,8	71/60	47,2	DUTY

BRAZED PLATE HEAT EXCHANGER SCHEDULE

TAG	SERVICE	HOT SIDE					COLD SIDE				HEAT EXCHANGED (KW)	NOTES
		MEDIUM	FLUID FLOW (L/S)	STEAM PRESSURE (KPA)	MAX. PD (KPA)	EFT/LFT (°C)	MEDIUM	FLUID FLOW (L/S)	MAX. PD (KPA)	EFT/LFT (°C)		
HX-3	AHU 43 HEATING COIL	STEAM	-	100	-	-	40% P. GLYCOL	0,44	5	82/71	19	DUTY

STEAM-TO-STEAM HUMIDIFIER SCHEDULE

TAG	SERVICE	LOAD (KG/HR)	AIR FLOW (L/S)	ENERGY SOURCE	WATER TYPE	ENTERING CONDITIONS (DB°C/%RH)	LEAVING CONDITIONS (DB°C/%RH)	DUCT AREA W x H (MM)	HEAT GAIN FROM ASSEMBLY (°C)	HEAT GAIN FROM STEAM (°C)	VOLTAGE (V/PH/HZ)	NOTES
HX-4	AHU-1	176	34358	69 KPA STEAM	RO	12.3/41	12.6/53	-	-	-	120/1/60	1, 2, 3
HX-5	AHU-3	12	1180	69 KPA STEAM	RO	17.9/20	18.3/38	-	-	-	120/1/60	1, 2, 3
HX-5	AHU-5	24.00	2360	69 KPA STEAM	RO	17.9/20	18.3/38	-	-	-	120/1/60	1, 2, 3

1 UNIT SHALL BE COMPLETE WITH INTEGRAL LEG SUPPORT FRAME

2 REFER TO SPECIFICATIONS AND AIR HANDLING UNIT SCHEDULE FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

3 COMPLETE WITH UNIT MOUNTED STEAM DISPERSION MANIFOLD.

INDIRECT DOMESTIC HOT WATER HEATER

TAG	SERVICE	BOILER WATER				DOMESTIC HOT WATER				NOTES
		MEDIUM	FLUID FLOW (L/S)	MAX. PD (KPA)	EFT/LFT (°C)	MEDIUM	STORAGE CAPACITY (L)	TEMP. RISE 37°C	RECOVERY RATE (LPS)	
DWH-1	WTC BUILDING DOMESTIC HOT WATER	WATER	4,1	103 @ 2,3 m/s	66/49	WATER	757	37	0,473	

DOMESTIC WATER HEATER SCHEDULE

TAG	HEATING INPUT (KW)	HEATING OUTPUT (KW)	RECOVERY @55°C (L/H)	STORAGE (L)	GAS/ ELECTRIC	ELECTRICAL SERVICE V/PH/Hz	WEIGHT (KG)	NOTES
DHW-2	3	3	38	189	ELECTRIC	208/3/60	100	

HIGH EFFICIENCY CONDENSING BOILER SCHEDULE

TAG	SERVICE	FUEL	MAX/MIN GAS PRESSURE (KPA)	HEATING INPUT (KW)	HEATING OUTPUT (KW)	FLOW (L/S)	P.D. (KPA)	ELECTRICAL SERVICE (V/PH/Hz)	FLA	AHRI EFFICIENCY (%)	FOOT PRINT LxDxH (MM)	OPERATING WEIGHT (KG)	TURNDOWN	NOTES
B-1	PRIMARY HEATING LOOP	NATURAL GAS	1.0/3.49	879	844	9,53	8,67	208/3/60	10	93,5	700X1400X1950	1173	15:1	1
B-2		NATURAL GAS	1.0/3.49	879	844	9,53	8,67	208/3/60	10	93,5	700X1400X1950	1173	15:1	1
B-3		NATURAL GAS	1.0/3.49	879	844	9,53	8,67	208/3/60	10	93,5	700X1400X1950	1173	15:1	1

1 C/W EXHAUST VENT. COORDINATE ROOF PENETRATION WITH GENERAL CONTRACTOR.

HYDRONIC UNIT HEATER SCHEDULE

TAG	ARRANGEMENT	AIR FLOW (L/S)	E.W.T. (°C)	SOURCE	FLUID FLOW (L/S)	T.D. (°C)	HEATING OUTPUT (KW)	ELECTRICAL SERVICE (V/PH/HZ)	MOTOR (KW)	RPM	WEIGHT (KG)	NOTES
UH-1	VERITCAL DOWN DISCHARGE	495	88	WATER	1,0	10	23	115/1/60	37	1050	54	C/W WALL MOUNT THERMOSTAT
UH-2	VERITCAL DOWN DISCHARGE	495	88	WATER	1,0	10	23	115/1/60	37	1050	54	C/W WALL MOUNT THERMOSTAT
UH-3	HORIZONTAL SIDE DISCHARGE	198	88	WATER	0,35	10	8	115/1/60	37	850	32	C/W WALL MOUNT THERMOSTAT
UH-4	HORIZONTAL SIDE DISCHARGE	198	88	WATER	0,35	10	8	115/1/60	37	850	32	C/W WALL MOUNT THERMOSTAT
UH-5	HORIZONTAL SIDE DISCHARGE	198	88	WATER	0,35	10	8	115/1/60	37	850	32	C/W WALL MOUNT THERMOSTAT
UH-6	HORIZONTAL SIDE DISCHARGE	760	88	WATER	1,0	10	24	115/1/60	124	1625	34	C/W WALL MOUNT THERMOSTAT
UH-7	HORIZONTAL SIDE DISCHARGE	760	88	WATER	1,0	10	24	115/1/60	124	1625	34	C/W WALL MOUNT THERMOSTAT

STEAM UNIT HEATER SCHEDULE

TAG	ARRANGEMENT	AIR FLOW (L/S)	STEAM PRESSURE (KPa)	SOURCE	HEATING OUTPUT (KW)	ELECTRICAL SERVICE (V/PH/HZ)	MOTO R (KW)	RPM	WEIGHT (KG)	NOTES
UH-8	HORIZONTAL	296	103,4	STEAM	9,6	115/1/60	0,093	1625	16	TO SERVE TRACE METAL STAGING STORAGE ROOM

REHEAT COIL SCHEDULE

TAG	HEATING COIL										NOTES
	COIL				FLUID			AIR			
	CAPACITY (KW)	SIZE (MM)	ROW	FIN/INCH	FLOW (L/S)	P.D. (KPA)	EFT (°C)	LFT (°C)	FLOW (L/S)	P.D. (KPA)	EAT DB (°C)	LAT DB (°C)	
RC-1	13.7	455x380	2	6	0.28	7.47	82	71	481	0.04	12	36	SERVING TERMINAL UNIT TB-S-1-1
RC-2	13.8	455x380	2	6	0.28	7.47	82	71	488	0.04	13	36	SERVING TERMINAL UNIT TB-S-1-2
RC-3	1.3	150X150			0.03		82	71	47		15.6	37.8	EXISTING TO REMAIN
RC-4	2	255X230	1	6	0.04	0.56	82	71	139	0.015	14	24	SERVING TERMINAL UNIT TB-S-1-3
RC-5	7.9	300X450			0.17		82	71	593		15.6	26.7	EXISTING TO REMAIN
RC-6	1.7	255X150	1	9	0.04	0.56	82	71	99	0.024	15	27	SERVING TERMINAL UNIT TB-S-1-4
RC-7	2	255X230	1	6	0.04	0.56	82	71	145	0.017	16	24	SERVING TERMINAL UNIT TB-S-1-5

PLUMBING FIXTURE SCHEDULE

TAG	FIXTURE	DESCRIPTION/TRIM
AN-1	ACID NEUTRALIZER	23L CAPACITY INCLUDING CHIPS, WITH GASKETED 1/2" (12 MM) THICK POLY COVER WITH STAINLESS STEEL BOLTS, M.J. INLET, OUTLET AND VENT CONNECTIONS AND INSPECTION COVER ON LARGE TANKS, FOR RECESSED INSTALLATIONS, PROVIDE FLUSH WITH FINISHED FLOOR TOPS, FLUSH INPS, PORT ON NIXED ALUMINUM COVERS. REMOTE ALARM 120VAC (FOR FLUSH WITH GRADE INSTALLATION) PH DIGITAL MONITORING PANEL FLUSH WITH FLOOR TANK COVER, FOR FLUSH WITH GRADE INSTALLATION, PROVIDE EXTENSION E ON TANK AND INTERCEPTOR (IF REQUIRED) TO MEET INVERT OF PIPE. FILL WITH INITIAL CHARGE OF LIMESTONE NEUTRALIZING CHIPS 2" (50 MM) DIAMETER SIZE.
EWS-1	COMBINATION SHOWER AND EYE/FACE WASH - PEDESTAL MOUNTED	PEDESTAL MOUNTED, COMBINATION SHOWER AND EYE/FACE WASH, STAINLESS STEEL BOWL, SINGLE INVERTED DIRECTIONAL LAMINAR FLOW HEAD WITH INTEGRAL FLOW CONTROL, HYDRODYNAMIC DESIGNED ABS PLASTIC SHOWER HEAD WITH SELF-RECULATING FLOW CONTROL, CHROME PLATED BRASS STAY OPEN BALL VALVE WITH STAINLESS STEEL BALL AND STEM, 1117.6 MM (44") STAINLESS STEEL PULL ROD WITH TRIANGULAR HANDLE, INLINE MESH WATER STRAINER, GALVANIZED STEEL PIPE WITH CAST IRON FLOOR FLANGE, FLOW RATE OF 24 LPM (6.34 GPM) FOR EYE/FACE WASH AND 75.7 LPM (20 GPM) FOR SHOWER, 32 MM (1-1/4") WASTE, UNIVERSAL SIGN. FLOOR DRAIN, EPOXY COATED CAST IRON, ANCHOR FLANGE, 5" (127 MM) ADJUSTABLE ROUND NICKEL BRONZE STRAINER, REVERSIBLE CLAMPING COLLAR WITH PRIMARY & SECONDARY WEEPHOLES. EMERGENCY EYEWASH AND DRENCH SHOWER (COMBINATION) - MODULAR BRASS DESIGN WITH ONE PIECE CASTING, EFFICIENT FUNNEL DESIGN WITH TURBULENT HOT WATER PASSAGES TO IMPROVE MIXING AT LOW FLOW RATES AND ENHANCE TEMPERATURE CONTROL, 32 MM (1-1/4") N.P.T. OUTLET, UNIT EMPLOY WITH A PARAFFIN FILLED THERMOSTATIC MIXING ELEMENT, 29 °C (84.2 °F) FACTORY SET TEMPERATURE, STANDARD 16 °C (60.8 °F) - 35 °C (95 °F) TEMPERATURE RANGE, 117 LPM (30.9 GPM) FLOW CAPACITY AT 30 PSI (207 KPA) PRESSURE DROP ACROSS THE VALVE, 76 LPM (20.1 GPM) BYPASS FLOW RATE AT 30 PSID.
FD-1	FLOOR DRAIN	EPOXY COATED CAST IRON FLOOR DRAIN, ANCHOR FLANGE, VANDAL RESISTANT, REVERSIBLE MEMBRANE CLAMP WITH PRIMARY AND SECONDARY WEEPHOLES, 127mm Ø NICKEL BRONZE STRAINER, TRAP PRIMER CONNECTION WITH PLUG,
SK-1	SINGLE BOWL SINK	SINGLE BOWL COUNTERTOP MOUNTED SINK, 560x540x254mm DEEP, 18-10 TYPE 316 18 GA. (1.2mm) STAINLESS STEEL, SANIGUARD COATED, SELF RIMMING, BACK LEDGE, SATIN FINISH RIM AND BOWLS, THREE HOLE WITH 203mm CENTERS, FULLY UNDERCOATED, FACTORY APPLIED RIM SEAL, 89mm (3-1/2") DRAIN, PERSTANT OPEN GRID STRAINER WASTE ASSEMBLY, 38mm TAILPIECE, MOUNTING KIT PROVIDED. TRIM: CHICAGO FAUCETS 1100-GN2BVB-E7-317-XK, CHROME PLATED, 203mm CENTERSET, WRISTBLADE, 1/4 TURN CERAMIC DISC VALVE, 248mm HIGH, 133mm REACH RIGID/SWING GOOSENECK COMPLETE WITH BODY VACUUM BREAKER, LEAD FREE CAST BRASS BODY, 2.8 LPM FLOW SERRATED HOSE OUTLET, PROVIDE CHROME PLATED POLISHED BRASS HEAVY DUTY ANGLE STOPS WITH 9.5mm I.P.S. INLET x 127mm LONG RIGID HORIZONTAL NIPPLES, PROVIDE MATCHING SECONDARY FAUCET COMPLETE WITH SHUT-OFF HANDLES FOR CONNECTION TO RO WATER SUPPLY, CHROME PLATED P-TRAP, HEAVY CAST BRASS ADJUSTABLE BODY, SLIP NUT, 38mm, WITH CLEANOUT. LAWLER 570986020-CK THERMOSTATIC MIXING VALVE WITH TEMPERATURE ADJUST DIAL AND BACK CHECKS. SET VALVE TEMPERATURE AT 40°C, SHUT OFF TEMP AT 48.8°C.
SK-2	SINGLE BOWL SINK	SINGLE BOWL COUNTERTOP MOUNTED SINK, 520x770x305mm DEEP, 18-10 TYPE 316 18 GA. (1.2mm) STAINLESS STEEL, SANIGUARD COATED, SELF RIMMING, BACK LEDGE, SATIN FINISH RIM AND BOWLS, SINGLE HOLE, FULLY UNDERCOATED, FACTORY APPLIED RIM SEAL, 89mm (3-1/2") CRUMB CUP STRAINER WASTE ASSEMBLY, 38mm TAILPIECE, MOUNTING KIT PROVIDED. TRIM: CHICAGO FAUCETS 930-GN8WVB-E7FC-317, CHROME PLATED, WRISTBLADE, 1/4 TURN CERAMIC DISC VALVE, 286mm HIGH, 203mm REACH RIGID/SWING GOOSENECK COMPLETE WITH BODY VACUUM BREAKER, LEAD FREE CAST BRASS BODY, 2.8 LPM FLOW SERRATED HOSE OUTLET, PROVIDE CHROME PLATED POLISHED BRASS HEAVY DUTY ANGLE STOPS WITH 9.5mm I.P.S. INLET x 127mm LONG RIGID HORIZONTAL NIPPLES, PROVIDE MATCHING SECONDARY FAUCET COMPLETE WITH SHUT-OFF HANDLES FOR CONNECTION TO RO WATER SUPPLY, CHROME PLATED P-TRAP, HEAVY CAST BRASS ADJUSTABLE BODY, SLIP NUT, 38mm, WITH CLEANOUT. LAWLER 570986020-CK THERMOSTATIC MIXING VALVE WITH TEMPERATURE ADJUST DIAL AND BACK CHECKS. SET VALVE TEMPERATURE AT 40°C, SHUT OFF TEMP AT 48.8°C.
SK-3	SINGLE BOWL LAB SINK	SINGLE BOWL LAB SINK, 527 MM (20-3/4") X 375 MM (14-3/4") X 260 MM (10-1/4") DEEP, COUNTER MOUNTED, NO LEDGE, MOLDED VIRGIN HIGH DENSITY POLYETHYLENE, 38 MM (1-1/2") INTEGRAL MOLDED THREADED OUTLET, CHICAGO FAUCETS #930-317XKCP TWO HANDLE FAUCET, CHROME PLATED, CENTER HOLE ONLY, CAST BRASS BODY, 1/4 TURN CERAMIC DISC VALVE CARTRIDGES, LABORATORY 30-DEGREE ANGLED FULL FLOW SERRATED NOZZLE, 152 MM (6") PROJECTION RIGID/SWING GOOSENECK SPOUT WITH ATMOSPHERIC VACUUM BREAKER, 102 MM (4") METAL VANDAL PROOF WRISTBLADE HANDLES WITH BLUE AND RED INDEX BUTTONS, PROVIDE MATCHING SECONDARY FAUCET COMPLETE WITH SHUT-OFF HANDLES FOR CONNECTION TO RO WATER SUPPLY, AMERICAN STANDARD #6055TMV1070, POINT OF USE THERMOSTATIC WATER MIXING VALVE, BRONZE BODY, TEMPERATURE ADJUSTMENT BY USING A HEX WRENCH, 10 MM (3/8") INLETS COMPRESSION FITTINGS WITH STAINLESS STEEL, 508 MM (20") FLEXIBLE HOSES AND 13 MM (1/2") MNPT OUTLET CONNECTION, BUILT-IN CHECKS, HOUSED IN 127 MM X 86 MM X 81 MM (5" X 3-3/8" X 3-3/16") ENCLOSURE, SET VALVE TEMPERATURE AT 46 °C (114.8 °F), MCGUIRE #LFH170BV, FAUCET SUPPLIES, CHROME PLATED POLISHED BRASS, COMMERCIAL DUTY 1/4 TURN BALL VALVE ANGLE STOPS, 13 MM (1/2") I.D. INLET X 127 MM (5") HORIZONTAL EXTENSION TUBES, COMBINATION V.P. LOOSE KEY HANDLE, ESCUTCHEON AND FLEXIBLE COPPER RISER. PROVIDE P-TRAP, ACID RESISTANT, 38 MM (1-1/2") SIZE.
SK-4	DOUBLE BOWL LAB SINK	DOUBLE BOWL LAB SINK, 368 MM (14-1/2") X 768 MM (30-1/4") X 279 MM (11") DEEP, COUNTER MOUNTED, NO LEDGE, MOLDED VIRGIN HIGH DENSITY POLYETHYLENE, 38 MM (1-1/2") INTEGRAL MOLDED THREADED OUTLET, CHICAGO FAUCETS #930-317XKCP TWO HANDLE FAUCET, CHROME PLATED, CENTER HOLE ONLY, CAST BRASS BODY, 1/4 TURN CERAMIC DISC VALVE CARTRIDGES, LABORATORY 30-DEGREE ANGLED FULL FLOW SERRATED NOZZLE, 152 MM (6") PROJECTION RIGID/SWING GOOSENECK SPOUT WITH ATMOSPHERIC VACUUM BREAKER, 102 MM (4") METAL VANDAL PROOF WRISTBLADE HANDLES WITH BLUE AND RED INDEX BUTTONS, PROVIDE MATCHING SECONDARY FAUCET COMPLETE WITH SHUT-OFF HANDLES FOR CONNECTION TO RO WATER SUPPLY, AMERICAN STANDARD #6055TMV1070, POINT OF USE THERMOSTATIC WATER MIXING VALVE, BRONZE BODY, TEMPERATURE ADJUSTMENT BY USING A HEX WRENCH, 10 MM (3/8") INLETS COMPRESSION FITTINGS WITH STAINLESS STEEL, 508 MM (20") FLEXIBLE HOSES AND 13 MM (1/2") MNPT OUTLET CONNECTION, BUILT-IN CHECKS, HOUSED IN 127 MM X 86 MM X 81 MM (5" X 3-3/8" X 3-3/16") ENCLOSURE, SET VALVE TEMPERATURE AT 46 °C (114.8 °F), MCGUIRE #LFH170BV, FAUCET SUPPLIES, CHROME PLATED POLISHED BRASS, COMMERCIAL DUTY 1/4 TURN BALL VALVE ANGLE STOPS, 13 MM (1/2") I.D. INLET X 127 MM (5") HORIZONTAL EXTENSION TUBES, COMBINATION V.P. LOOSE KEY HANDLE, ESCUTCHEON AND FLEXIBLE COPPER RISER. PROVIDE P-TRAP, ACID RESISTANT, 38 MM (1-1/2") SIZE.
SK-5	SINGLE BOWL LAB SINK	SINGLE BOWL LAB SINK, 521 MM (20-1/2") X 445 MM (17-1/2") X 381 MM (15") DEEP, COUNTER MOUNTED, NO LEDGE, MOLDED VIRGIN HIGH DENSITY POLYETHYLENE, 38 MM (1-1/2") INTEGRAL MOLDED THREADED OUTLET, CHICAGO FAUCETS #930-GN8BVBE1-317XK TWO HANDLE FAUCET, CHROME PLATED, CENTER HOLE ONLY, CAST BRASS BODY, 1/4 TURN CERAMIC DISC VALVE CARTRIDGES, LABORATORY 30-DEGREE ANGLED FULL FLOW SERRATED NOZZLE, 203 MM (8") PROJECTION RIGID/SWING GOOSENECK SPOUT WITH ATMOSPHERIC VACUUM BREAKER, 102 MM (4") METAL VANDAL PROOF WRISTBLADE HANDLES WITH BLUE AND RED INDEX BUTTONS, AMERICAN STANDARD #6055TMV1070, POINT OF USE THERMOSTATIC WATER MIXING VALVE, BRONZE BODY, TEMPERATURE ADJUSTMENT BY USING A HEX WRENCH, 10 MM (3/8") INLETS COMPRESSION FITTINGS WITH STAINLESS STEEL, 508 MM (20") FLEXIBLE HOSES AND 13 MM (1/2") MNPT OUTLET CONNECTION, BUILT-IN CHECKS, HOUSED IN 127 MM X 86 MM X 81 MM (5" X 3-3/8" X 3-3/16") ENCLOSURE, SET VALVE TEMPERATURE AT 46 °C (114.8 °F), MCGUIRE #LFH170BV, FAUCET SUPPLIES, CHROME PLATED POLISHED BRASS, COMMERCIAL DUTY 1/4 TURN BALL VALVE ANGLE STOPS, 13 MM (1/2") I.D. INLET X 127 MM (5") HORIZONTAL EXTENSION TUBES, COMBINATION V.P. LOOSE KEY HANDLE, ESCUTCHEON AND FLEXIBLE COPPER RISER, PROVIDE P-TRAP, ACID RESISTANT, 38 MM (1-1/2") SIZE.
SK-6	CUP SINK	LABORATORY CUP SINK, 114 MM (4-1/2") X 191 MM (7-1/2") X 94 MM (3-11/16") DEEP, COUNTER MOUNTED, GRADE 18-8, 20 GA. (0.9 MM) TYPE 316 STAINLESS STEEL, SELF-RIMMING, SAND BLAST FINISHED RIM AND BOWLS, MOUNTING KIT PROVIDED, 38 MM (1-1/2") DUPLEX WASTE ASSEMBLY, CHICAGO FAUCETS #930-317XKCP TWO HANDLE FAUCET, CHROME PLATED, CENTER HOLE ONLY, CAST BRASS BODY, 1/4 TURN CERAMIC DISC VALVE CARTRIDGES, LABORATORY 30-DEGREE ANGLED FULL FLOW SERRATED NOZZLE, 152 MM (6") PROJECTION RIGID/SWING GOOSENECK SPOUT WITH ATMOSPHERIC VACUUM BREAKER, 102 MM (4") METAL VANDAL PROOF WRISTBLADE HANDLES WITH BLUE AND RED INDEX BUTTONS, MCGUIRE #LFH170BV, FAUCET SUPPLIES, CHROME PLATED POLISHED BRASS, COMMERCIAL DUTY 1/4 TURN BALL VALVE ANGLE STOPS, 13 MM (1/2") I.D. INLET X 127 MM (5") HORIZONTAL EXTENSION TUBES, COMBINATION V.P. LOOSE KEY HANDLE, ESCUTCHEON AND FLEXIBLE COPPER RISER, PROVIDE P-TRAP, ACID RESISTANT, 38 MM (1-1/2") SIZE.
RD-1	ROOF DRAIN	EPOXY COAT CAST IRON ROOF DRAIN WITH FLASHING CMAP WITH INTEGRAL GRAVEL STOP, SELF-LOCKING POLYETHYLENE DOME, AND NO HUB OUTLET. REFER TO DRAWINGS FOR SIZE.

PUMP SCHEDULE

TAG	SERVICE	FLUID	OPERATION	FLUID FLOW LPS	PRESS. HEAD (KPA)	NPSHR (KPA)	VOLTAGE (V/PH/Hz)	MOTOR (KW)	BRAKE MOTOR (KW)	MOTOR RPM	EFF (%)	VFD	CRITICAL POWER	NOTES
P-1	WTC BUILDING BOILER B-1	WATER	DUTY	10,1	81	-	208/3/60	1,49	-	1750	-	N	YES	1
P-2	WTC BUILDING BOILER B-2	WATER	DUTY	10,1	81	-	208/3/60	1,49	-	1750	-	N	NO	1
P-3	WTC BUILDING BOILER B-3	WATER	DUTY	10,1	81	-	208/3/60	1,49	-	1750	-	N	NO	1
P-4	WTC BUILDING EXIST. PENTHOUSE UNIT HEATERS	WATER	DUTY/DUTY	3,8	77	-	575/3/60	1,12	-	998	-	Y	YES	1
P-5	WTC BUILDING EXIST. PENTHOUSE UNIT HEATERS	WATER	DUTY/DUTY	3,8	77	-	575/3/60	1,12	-	998	-	Y	NO	1
P-6	WTC BUILDING EXIST. CONSTANT TEMP ZONE	WATER	DUTY/DUTY	2,0	83	-	575/3/60	0,75	-	1118	-	Y	NO	1
P-7	WTC BUILDING EXIST. CONSTANT TEMP ZONE	WATER	DUTY/DUTY	2,0	83	-	575/3/60	0,75	-	1118	-	Y	NO	1
P-8	WTC BUILDING EXIST. RADIATION ZONE	WATER	DUTY/DUTY	1,39	80	-	575/3/60	0,75	-	1499	-	Y	NO	1
P-9	WTC BUILDING EXIST. RADIATION ZONE	WATER	DUTY/DUTY	1,39	80	-	575/3/60	0,75	-	1499	-	Y	NO	1
P-10	WTC BUILDING EXIST. EAST WING ADDITION	GLYCOL	-	-	-	-	-	-	-	-	-	Y	NO	2
P-11	WTC BUILDING EXIST. EAST WING ADDITION	GLYCOL	-	-	-	-	-	-	-	-	-	Y	NO	2
P-12	WTC BUILDING AHU HEATING COIL SECONDARY LOOP	WATER	DUTY/DUTY	22,9	120	-	575/3/60	5,6	-	1588	-	Y	NO	1
P-13	WTC BUILDING AHU HEATING COIL SECONDARY LOOP	WATER	DUTY/DUTY	22,9	120	-	575/3/60	5,6	-	1588	-	Y	NO	1
P-14	WTC BUILDING DOMESTIC HOT WATER	WATER	DUTY/DUTY	3,1	42	-	575/3/60	0,75	-	1083	-	Y	N	1
P-15	WTC BUILDING DOMESTIC HOT WATER	WATER	DUTY/DUTY	3,1	42	-	575/3/60	0,75	-	1083	-	Y	N	1
P-16	WTC BUILDING AHU HEATING COIL TERTIARY LOOP	40% PROPYLENE	DUTY/DUTY	23,85	317	-	575/3/60	14,9	-	1732	-	Y	N	1
P-17	WTC BUILDING AHU HEATING COIL TERTIARY LOOP	40% PROPYLENE	DUTY/DUTY	23,85	317	-	575/3/60	14,9	-	1732	-	Y	N	1
P-18	WTC BUILDING DHW RECIRCULATION	WATER	DUTY	2,6	42	-	120/1/60	0,187	-	1740	-	N	N	1
P-19	RESERVED													
P-20	RESERVED													
P-21	RESERVED													
P-22	RESERVED													
P-22	RESERVED													
P-23	RESERVED													
P-24	RESERVED													
P-25	LAB H158 HOT WATER REHEAT COILS	WATER	DUTY	1,01	45	-	120 / 1 / 60	0,12	-	-	-	Y	NO	1
P-26	AHU-43 HEATING COIL	40% PROPYLENE GLYCOL	DUTY	0,5	45	-	120 / 1 / 60	0,062	-	-	-	Y	NO	1
P-27	AHU-43 COOLING COIL	WATER	DUTY	1,58	90	-	208 / 1 / 60	0,37	-	-	-	Y	NO	1
P-28	RESERVED													
P-29	AHU-3 HEATING COIL	40% PROPYLENE GLYCOL	DUTY	1,58	75	-	208 / 1 / 60	0,56	-	-	-	Y	NO	1
P-30	TRACE METAL STAGING AND STORAGE AREA	WATER	DUTY/ STANDBY	1,58	3,1	-	120 / 1 / 60	0,3	-	-	-	N	NO	1
P-HR3	AHU-3 HEAT RECOVERY LOOP	40% PROPYLENE GLYCOL	DUTY	1,89	90	-	208 / 1 / 60	0,37	-	-	-	Y	NO	1
P-CC3	AHU-3 COOLING COIL	WATER	DUTY	2,21	90	-	208 / 1 / 60	0,75	-	-	-	Y	NO	1
P-HC5	AHU-5 HEATING COIL	40% PROPYLENE GLYCOL	DUTY	1,64	75	-	208 / 1 / 60	0,37	-	-	-	Y	NO	1
P-CC5	AHU-5 COOLING COIL	WATER	DUTY	3,02	90	-	208 / 1 / 60	0,75	-	-	-	Y	NO	1
P-PHC1	AHU-1 PREHEAT COIL	40% PROPYLENE GLYCOL	DUTY	14,83	90	-	575 / 3 / 60	2,24	-	-	-	N	NO	1
P-HC1	AHU-1 HEATING COIL	40% PROPYLENE GLYCOL	DUTY	5,68	35	-	575 / 3 / 60	2,24	-	-	-	N	NO	1
P-CC1	AHU-1 COOLING COIL	WATER	DUTY	18,93	120,0	-	575 / 3 / 60	6,0	-	-	-	N	NO	1

1 PROVIDE SUCTION GUIDE/STRAINER AT PUMP INLET AND COMBINATION CHECK/BALANCING VALVE AT PUMP OUTLET.

2 EXISTING PUMPS TO REMAIN.

AHU HEATING COIL SCHEDULE

TAG	HEATING COIL										NOTES
	COIL				FLUID (40% PROPYLENE)			AIR			
	CAPACITY (KW)	SIZE (MM)	ROW	FIN/INCH	FLOW (L/S)	P.D. (KPA)	EFT (°C)	LFT (°C)	FLOW (L/S)	P.D. (PA)	EAT DB (°C)	LAT DB (°C)	
HC-1	384	1924X 1270	2	12	5	17	82	65	6608	67	-20	28	SERVING AHU-51
HC-2	92 (X4)	838X 1213 (X4)	2	9	1,4 (X4)	5	82	65	2063 (X4)	60	-23	16	SERVING AHU-52 PRE-HEAT, COMPOSED OF FOUR SEPARATE COILS C/W RETROFIT RACK,
HC-3	99	533X 1543	3	8	1	8	82	65	3537	269	13	36	SERVING AHU-52 RE-HEAT

GAS FIRED HUMIDIFIER SCHEDULE

TAG	SERVICE	LOAD (KG/HR)	AIR FLOW (L/S)	ENERGY SOURCE	WATER TYPE	ENTERING CONDITIONS (DB°C/%RH)	LEAVING CONDITIONS (DB°C/%RH)	GAS INPUT (KW)	NO. OF OUTLETS	VOLTAGE (V/PH/HZ)	OPERATING WEIGHT (KG)	NOTES
HU-1	AHU-51	70	6603	NATURAL GAS	WATER	-18/75	22/40	52	1	208 / 1 / 60	200	1, 2, 3
HU-2	AHU-52	275	8255	NATURAL GAS	WATER	-18/75	22/40	232	3	208 / 1 / 60	600	1, 2, 3
HU-3	AHU-44	68	2831	NATURAL GAS	WATER	12/3	13/53	59	1	120 / 1 / 60	320	1, 2, 3

1 C/W EXHAUST VENT. COORDINATE ROOF PENETRATION WITH GENERAL CONTRACTOR.

2 COMPLETE WITH UNIT MOUNTED STEAM DISPERSION MANIFOLD.

3 C/W COMBUSTION AIR INLET

TANK SCHEDULE

TAG	SERVICE	TANK VOLUME (L)	TANK ACCEPTANCE (L)	OUTSIDE DIA. (MM)	OVERALL HEIGHT (MM)	MAX. RATED PRESS. (KPA)	SHIP WEIGHT (KG)	NOTES
ET-1	WTC BUILDING PRIMARY LOOP	500	174	762	1470	862	194	
ET-2	WTC BUILDING AHU GLYCOL LOOP	257	128	610	1203	862	107	
ET-3	AHU 43 GLYCOL LOOP	30	9	305	495	862	19	

INDUCTION UNIT SCHEDULE

TAG	PRIMARY AIR (L/S)	NOZZLE PRESSURE (Pa)	COIL POWER (kW)	WATER FLOW RATE RATE (L/S)	WATER PRESSURE DROP (KPa)	NOTES
IND-A	17	300	0,67	0,09	30	1, 2
IND-B	26	275	0,93	0,09	30	1, 2
IND-C	24	225	0,88	0,09	30	1, 2

1 COIL CAPACITIES BASED ON 12°C ENTERING WATER TEMPERATURE AND 24°C ENTERING AIR TEMPERATURE,

2 PROVIDE NEW INDUCTION UNITS COMPLETE WITH WALL-TO-WALL ENCLOSURES

MOTOR +A1:N86CONTROL SCHEDULE

TAG	UNIT DESCRIPTION	LOCATION	ELECTRICAL CHARACTERISTICS						CRITICAL POWER	FIRE ALARM SHUTDOWN	DUCT DETECTOR SHUTDOWN	CONTROL	REMARKS
			HP	FLA	KW	M