STANDARD MECHANICAL LEGEND AND SYMBOLS

HVAC

SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
	DUCT – SINGLE LINE		ELECTRIC UNIT HEATER
600x400	RECTANGULAR DUCT – DOUBLE LINE FIRST DIM VISIBLE SIDE (mm)		WALL MOUNTED PROPELLER FAN
600ø	ROUND DUCT		
	FLEXIBLE DUCT		SQUARE INLINE CENTRIFUGAL FAN
	RETURN & EXHAUST DUCT RISER		
	RETURN & EXHAUST DUCT AWAY		ELECTRIC REHEAT COIL
	SUPPLY DUCT RISER		
	SUPPLY DUCT AWAY		DUCT MOUNTED HEATING COIL
	AIR IN DIRECTION		
	AIR OUT DIRECTION		ROOF MOUNTED CENTRIFUGAL FAN – PLAN
	SUPPLY DIFFUSERS		ROOF MOUNTED CENTRIFUGAL FAN – SECTION
	RETURN AIR GRILLE	C	COOLING COIL
	CEILING MOUNTED AIR UNIT	H C	HEATING COIL
AD	CEILING ACCESS DOOR		DOOR GRILLE
	DUCT INSPECTION DOOR		DOOR UNDERCUT
BD	BALANCING DAMPER		CENTRIFUGAL FAN
FD	FIRE DAMPER		THERMAL WELL
SD	SMOKE DAMPER		PLATE & FRAME HEAT EXCHANGER
M	MOTORIZED DAMPER		EXHAUST AIR PENTHOUSE
BDD	BACKDRAFT DAMPER		PIPE BREAK
	FLOOR MOUNTED FIRE DAMPER	AC	AIR CONDITIONING INDOOR UNIT
R	INCLINED RISE (R) OR DROP (D) ARROW IN DIRECTION OF FLOW	AHU	AIR HANDLING UNIT
	MITERED ELBOW WITH TURNING VANES	CU	CONDENSING UNIT
		MAU	MAKE–UP AIR UNIT (OUT DOOR AIR UNIT)
	ECCENTRIC TRANSITION	ET	EXPANSION TANK
	CONCENTRIC TRANSITION	AS	AIR SEPARATOR
PRC	PREHEAT COIL	WFH	WALL FIN HEATER
RC	REHEAT COIL	EBH	ELECTRICAL BASEBOARD HEATER
EDH	ELECTRIC DUCT HEATER	R/A	RETURN AIR
ERV	ENERGY RECOVERY VENTILATOR	E/A	EXHAUST AIR
HRV	HEAT RECOVERY VENTILATOR	DX	DIRECT EXPANSION
		CTE	CONNECT TO EXISTING

GENERAL

SYMBOLS	DESCRIPTION
	EXISTING SERVICES TO REMAIN
	EXISTING SERVICES TO BE DEMOLISHED
	NEW SERVICES
R	RELOCATED EXISTING EQUIPMENT
	ABANDONED EXISTING PIPE
	CONNECTION POINT – RENOVATION
	REMOVAL POINT – DEMOLITION

ANNOTATION

SYMBOLS	DESCRIPTION
XX–X	EQUPMENT TAG TYPE NUMBER
	DIFFUSER TAG TYPE SIZE [MM] AIRFLOW [L/S]
	VAV TAG VAV NUMBER VAV SIZE
A	PHOTO NO. IDENTIFIER
X	NOTE TAG

Public Works and Government Services Canada

Travaux publics et Services gouvernementaux Canada

key plan

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PROVINCE OF ONTARIO

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WARKWORTH Ontario
MEDIUM SECURITY INSTITUTION
UNDERGROUND DUCT REPLACEMENT

drawing title / titre du dessin
MECHANICAL LEGENDS AND SYMBOLS (SHEET 1 OF 2)

drawn by / dessine par: L. TAURO

designed by / conc par: A. KABBANI

approved by / approuve par: D. DOVAS

bid / offre: O. TABAREZ — project manager / administrateur de projets

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STANDARD PIPING AND PIPING LABEL SYMBOLS AND LEGEND

PIPING

SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
	STRAINER		METAL RESTRAINT JOINT – DOUBLE LINE
	REDUCER		HUB–SPIGOT JOINT – DOUBLE LINE
	FLANGE COUPLING ADAPTER		REDUCER – DOUBLE LINE
	FLANGED END JOINT		FLANGE COUPLING ADAPTER – DOUBLE LINE
	GROOVED END ADAPTOR FLANGE		FLANGED END JOINT – DOUBLE LINE
	GROOVED END JOINT		GROOVED END ADAPTOR FLANGE – DOUBLE LINE
	ECCENTRIC REDUCER		GROOVED END JOINT – DOUBLE LINE
	ELASTOMER BELLOWS EXPANSION JOINT		ECCENTRIC REDUCER – DOUBLE LINE
	METAL BELLOWS EXPANSION JOINT		ELASTOMER BELLOWS EXPANSION JOINT – DOUBLE LINE
	PIPE TO DRAIN		METAL BELLOWS EXPANSION JOINT – DOUBLE LINE
	TEE CONNECTION SIDE		BUSHING
	TEE CONNECTION DOWN		TEE CONNECTION SIDE – DOUBLE LINE
	TEE CONNECTION UP		TEE CONNECTION DOWN – DOUBLE LINE
	BRANCH CONNECTION – BOTTOM		TEE CONNECTION UP – DOUBLE LINE
	UNION		BRANCH CONNECTION – TOP
	RISER UP – STRAIGHT		UNION – DOUBLE LINE
	RISER UP – SIDE		RISER UP – STRAIGHT – DOUBLE LINE
	LATERAL DOWN		PIPE END
	LATERAL SIDE		LATERAL DOWN – DOUBLE LINE
	CROSS		LATERAL SIDE – DOUBLE LINE
	45 DEGREE ELBOW		CROSS – DOUBLE LINE
	90 DEGREE ELBOW		45 DEGREE ELBOW – DOUBLE LINE
CI	ELBOW DOWN		90 DEGREE ELBOW – DOUBLE LINE
OI	ELBOW UP		ELBOW DOWN – DOUBLE LINE
	PIPE CAP		ELBOW UP – DOUBLE LINE
	AIR–VACUUM RELEASE		PIPE CAP – DOUBLE LINE
	PRESSURE AND TEMPERATURE TEST PLUG		WEATHER PROOF COMBO
	GAUGE		PIPE ALIGNMENT GUIDE
	TURBINE METER		PIPE ANCHOR
	FLANGE CONNECTION		FLEXIBLE PIPE CONNECTION
	SUCTION GUIDE C/W STRAINER	WM	WATER METER
	MULTI–FUNCTION VALVE (CHECK, ISOLATION AND BALANCING)		PUMP KIT WITH ACCESSORY
AV	MANUAL AIR VENT		PUMP
AAV	AUTOMATIC AIR VENT		

PIPING LABEL

SYMBOLS	DESCRIPTION
D	DRAIN
DCW	DOMESTIC COLD WATER
HTWS	HIGH TEMPERATURE HEATING WATER SUPPLY
HTWR	HIGH TEMPERATURE HEATING WATER RETURN
RD	REFRIGERANT DISCHARGE
RS	REFRIGERANT SUCTION
RL	REFRIGERANT LIQUID
V	VENT

STANDARD PLUMBING AND DRAINAGE, VALVE SYMBOLS AND LEGEND

VALVES

SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
	GATE VALVE		BALL VALVE – DOUBLE LINE
	GLOBE VALVE		GLOBE VALVE – DOUBLE LINE
	BUTTERFLY VALVE		BUTTERFLY VALVE – DOUBLE LINE
	PLUG VALVE		PRESSURE GUAGE ISOLATING BALL VALVE – 1
	ECCENTRIC PLUG VALVE		PRESSURE RELIEF VALVE
	PINCH VALVE		BACKPRESSURE REGULATOR – SELF CONTAINED
	DIAPHRAGM VALVE	80 40	PRESSURE REDUCING INDICATOR VALVE
	CONE VALVE		RELIEF VALVE – PRESSURE AND TEMPERATURE
	BALL VALVE	BFP	BACKFLOW PREVENTER SET
	HOSE VALVE	BFP	BACKFLOW PREVENTER SET PRESSURE REDUCING PRINCIPLE
	CIRCUIT BALANCING VALVE	TPD	TRAP PRIMING DEVICE
	BALL CHECK		
	LOCKSHIELD GATE VALVE		
	LOCKSHIELD GLOBE VALVE		
	CHECK VALVE		
	DOUBLE CHECK VALVE		
V	2–WAY MOTORIZED VALVE		
V	3–WAY MOTORIZED VALVE		
M	ELECTRIC MOTORIZED VALVE		
	3–WAY VALVE		
	DRAIN VALVE – HOSE END CONNECTION		
	MULTI–PORT VALVE – 1		
	MULTI–PORT VALVE – 2		

PLUMBING AND DRAINAGE

SYMBOLS	DESCRIPTION
	DIRECTION OF SLOPE DOWN
CO	CLEAN OUT – ABOVE GRADE
	P–TRAP
CO	TRAP WITH CLEANOUT
FD	FLOOR DRAIN
FFD	FUNNEL FLOOR DRAIN
RD	ROOF DRAIN
HB	HOSE BIBB
BFP	BACKFLOW PREVENTER SET
TPD	TRAP PRIMER DEVICE

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MOTORIZED DAMPER SCHEDULE – WW03

UNIT No.	LISTED SIZE (L x H)	TYPE	ASSOCIATED SYSTEM	REMARKS
MD–1	500x225	ON/OFF TWO POSITION	ENERGY RECOVERY VENTILATOR	1, 2, 3.
MD–2	600x600	ON/OFF TWO POSITION	ENERGY RECOVERY VENTILATOR	1, 2, 3.

NOTES:

1. C/W AUXILIARY SWITCH
2. FAIL SAFE ACTUATOR.
3. 120V POWER SUPPLY TO DAMPER ACTUATOR BY DIVISION 26.

EXPANSION TANK SCHEDULE – WW03

UNIT No.	SYSTEM SERVED	LOCATION	MANUFACTURER & MODEL NO.	DIMENSIONS HEIGHT (mm)	DIMENSIONS DIA. (mm)	VOLUME (L)	WORKING PRESSURE (KPA)	WORKING TEMP. (°C)	REMARKS
ET–1	WATER HEATING BOILER LOOP	MECHANICAL ROOM 130	–	635	305	35	862	115	1, 2.
ET–2	GLYCOL HEATING LOOP	MECHANICAL ROOM 130	–	305	254	30	1034	115	1, 2.

NOTES:

1. C/W RING BASE, LIFTING RINGS AND AIR CHARGING VALVE.
2. DESIGNED AND BUILT IN ACCORDANCE WITH ASME PRESSURE VESSEL CODE.

DIFFUSER, GRILLE AND REGISTER SCHEDULE

TYPE	DESCRIPTION	BLADE SPACING (mm)	TYPE	SIZE	VOLUME CONTROL	DEFLECTION	REMARKS
A	SUPPLY AIR	19	LOUVERED STEEL REGISTER	REFER TO DRAWING	STEEL DAMPER	0°	1, 2, 6.
B	RETURN AIR	19	LOUVRED STEEL GRILLE	REFER TO DRAWING	NO	0°	1, 2, 6.
C	EXHAUST AIR	19	LOUVRED STEEL REGISTER	REFER TO DRAWING	STEEL DAMPER	45°	1, 2, 6.
D	SUPPLY AIR	–	LATTICE FACE SECURITY DIFFUSER	REFER TO DRAWING	STEEL DAMPER	–	2, 3, 4, 6.
E	SUPPLY AIR	19	LOUVRED STEEL REGISTER	REFER TO DRAWING	STEEL DAMPER	SINGLE DEFLECTION	2, 6.
F	EXHAUST AIR	19	LOUVRED STEEL REGISTER	REFER TO DRAWING	STEEL DAMPER	45° FIXED	2, 6.
G	SUPPLY AIR	–	STEEL SQUARE CONE	REFER TO DRAWING	STEEL DAMPER	ADJUSTABLE VANES	2, 5, 6.

NOTES:

1. HEAVY DUTY, ABUSE RESISTANT.
2. COLOR BY DEPARTMENTAL REPRESENTATING.
3. LOUVRED FOUR WAY DIFFUSER WITH LATTICE FACE PLATE.
4. NECK SIZE 150x150.
5. FACE SIZE 300X300, NECK TO BE SIZED IN ACCORDANCE WITH DUCT SIZE, MANUFACTURER'S STANDARD AND AIR FLOW.
6. SUBMIT SHOP SUBMITTAL TO ENGINEER FOR REVIEW PRIOR TO PROCUREMENT.

HEAT EXCHANGER SCHEDULE – WW03

TAG No.	LOCATION	SERVICES	HOT SIDE (WATER) INLET TEMP. (°C)	HOT SIDE (WATER) OUTLET TEMP. (°C)	HOT SIDE (WATER) FLOW (L/S)	HOT SIDE (WATER) PRESSURE DROP (kPa)	COLD SIDE (45% PROPYLENE GLYCOL) INLET TEMP. (°C)	COLD SIDE (45% PROPYLENE GLYCOL) OUTLET TEMP. (°C)	COLD SIDE (45% PROPYLENE GLYCOL) FLOW (L/S)	COLD SIDE (45% PROPYLENE GLYCOL) PRESSURE DROP (kPa)	CAPACITY (kW)	LMTD (°C)	REMARKS
HEX–1	MECHANICAL ROOM 130	PRC–1 RC–1	93.33	82.22	0.352	34.47	71.11	82.22	0.378	34.47	15.86	11.11	1 – 10.

NOTES:

1. BRAZED PLATE HEAT EXCHANGER, PLATE MATERIAL 316L SS
2. 30 TOTAL PLATES, BRAZING MATERIAL, COPPER
3. ESTIMATED WEITHT (EMPTY/OPERATING) 2.72 KG/3.63 KG
4. DESIGN TEMP. (MIN/MAX), HOT AND COLD SIDE, –190 °C/232 °C
5. ALL INLET AND OUTLET CONNECTIONS, 19 MM MALE THREAD FRONT
6. OVERALL DIMENSION (HXWXD) 214X80X94 MM
7. PRESSURE, DESIGN/TEST, HOT AND COLD SIDE, 3000 KPa/3613 KPa
8. HOT SIDE NUMBER OF PASSES X CHANNELS 1X14
9. COLD SIDE NUMBER OF PASSES X CHANNELS 1X15
10. SUBMIT SHOP SUBMITTAL TO ENGINEER FOR REVIEW PRIOR TO PROCUREMENT

CONDENSING UNIT (HEAT PUMP) SCHEDULE – WW02

UNIT No.	LOCATION	MANUFACTURER & MODEL No.	COOLING CAPACITY (kW)	HEATING CAPACITY (kW)	POWER SUPPLY MAX. OVER CURRENT PROTECTION (A)	POWER SUPPLY V/ø/Hz	REMARKS
ACU–1	ROOF OF SECURITY POST 113	–	8.78	9.95	40	208/1/60	1, 2, 3, 4.

NOTES:

1. COMPRESSOR WITH VARIABLE SPEED.
2. UNIT WITH R–410A REFRIGERANT WITH INDICATED CAPACITIES AT:
   A) COOLING:
   – OUTDOOR TEMP. OF 35°C
   – INDOOR TEMP. OF 26.7°C DB/19.4° CW.B
   B) HEATING:
   – OUTDOOR TEMP. OF 8.3°C DB/6.1° CW.B
   – INDOOR TEMP. OF 21.1°C.
3. CONTROL WITH FIXED REMOTE CONTROLLER AS DESCRIBED IN AIR CONDITIONING UNIT SCHEDULE.
4. SUBMIT SHOP SUBMITTAL TO ENGINEER FOR REVIEW PRIOR TO PROCUREMENT.

PUMP SCHEDULE – WW03

UNIT No.	SYSTEM SERVED	LOCATION	TYPE	FLUID TYPE	FLOW (L/s)	HEAD (kPA)	MOTOR kW	MOTOR (RPM)	MOTOR V/pH/Hz	RATED TEMP. (°C)	RATED PRESS. (kPA)	REMARKS
P–1	HOT WATER HEATING SYSTEM	MECHANICAL ROOM 130	–	WATER	1.335	45	0.3	3600	208/1/60	110	1034	1, 2, 5
P–2	HOT WATER HEATING SYSTEM	MECHANICAL ROOM 130	–	WATER	1.335	45	0.3	3600	208/1/60	110	1034	1, 2, 5
P–3	GLYCOL HEATING SYSTEM	MECHANICAL ROOM 130	SYSTEM LUBRICATED IRON BODY CIRCULATOR	GLYCOL	0.378	89.67	0.27	3300	120/1/60	107	1034	1, 2. 4, 5
P–4	GLYCOL HEATING SYSTEM	MECHANICAL ROOM 130	SYSTEM LUBRICATED IRON BODY CIRCULATOR	GLYCOL	0.378	89.67	0.27	3300	120/1/60	107	1034	1, 2. 4, 5

NOTES:

1. DUPLEX DUTY/STANDBY CONFIGURATION, WITH RUN TIME TOTALIZER & AUTO CHANGEOVER.
2. MAGNETIC STARTER WITH HAND/OFF/AUTO SELECTOR SWITCH WITH AUXILIARY CONTACTS BY DIV.26.
3. SUBMIT SHOP SUBMITTAL TO ENGINEER FOR REVIEW PRIOR TO PROCUREMENT.
4. PROVIDE FLANGE IN–LINE, CAST IRON BODY, NORYL IMPELLER, CERAMIC SHAFT AND CARBON BEARINGS, MOTOR TO BE NON–OVERLOADING WITH ROTOR SHEATHED IN STAINLESS STEEL.
5. PUMP MANUFACTURER SHALL BE ISO–9001 CERTIFIED.

AIR CONDITIONING UNIT (HEAT PUMP) INDOOR UNIT SCHEDULE – WW02

UNIT No.	LOCATION	TYPE	MANUFACTURER & MODEL No.	EVAPORATOR FLOW (L/S)	EVAPORATOR ESP (Pa)	EVAPORATOR MOTOR (kW)	COOLING CAPACITY (kW)	HEATING CAPACITY (kW)	FILTER TYPE	POWER SUPPLY	REMARKS
AC–1	SECURITY POST 113	CEILING SUSPENDED	–	450	0	0.16	8.78	9.95	WASHABLE PP HONEY AMP	208/1/60	1, 2, 3, 4, 5.

NOTES:

1. MULTI–SPEED UNITS FLOW INDICATED AT MEDIUM SPEED.
2. UNIT WITH R–410A REFRIGERANT WITH INDICATED CAPACITIES AT:
   A) COOLING:
   – OUTDOOR TEMP. OF 35°C
   – INDOOR TEMP. OF 26.7°C DB/19.4° CW.B
   B) HEATING:
   – OUTDOOR TEMP. OF 8.3°C DB/6.1° CW.B
   – INDOOR TEMP. OF 21.1°C.
3. EXTERNAL DRAIN PUMP PROVIDED BY MANUFACTURER.
4. C/W FIXED REMOTE CONTROLLER WITH READ OUT TO BMS.
5. SUBMIT SHOP SUBMITTAL TO ENGINEER FOR REVIEW PRIOR TO PROCUREMENT.

AIR SEPARATOR SCHEDULE – WW03

UNIT No.	MANUFACTURER & MODEL NO.	SYSTEM	MAX FLOW (L/s)	CONNECTION SIZE (DIA. mm)	CONSTRUCTION SHELL	CONSTRUCTION GASKET	OPERATING CONDITIONS MAX. TEMP. (°C)	OPERATING CONDITIONS MAX. PRESS. (kPA)	REMARKS
AS–1	–	BOILER LOOP	53	50	CAST IRON	NON ASBESTOS	176	1105	1, 2.

NOTES:

1. C/W BLOWDOWN CONNECTION AND SHUTOFF VALVE.
2. DESIGN BUILT IN ACCORDANCE WITH ASME PRESSURE VESSEL CODE.

GLYCOL PACKAGE UNIT – WW03

TAG. No.	MANUFACTURER & MODEL NO.	LOCATION	TANK CAPACITY (L)	PUMP FLOW (L/MIN)	PUMP PRESSURE (kPa)	POWER SUPPLY V/ø/Hz	REMARKS
GF–1	–	MECHANICAL ROOM 130	200	7.3	480	120/1/60	

COIL SCHEDULE – WW03

TAG No.	LOCATION	CONSTRUCTION	NUMBER OF ROWS	CAPACITY (kW)	AIR FLOW (L/S)	AIR TEMP. IN (°C)	AIR TEMP. OUT (°C)	AIR PRESS. DROP (Pa)	WATER FLOW (L/S)	WATER TEMP. IN (°C)	WATER TEMP. OUT (°C)	WATER PRESS. DROP (kPA)	REMARKS
PRC–1	MECHANICAL ROOM 130 PRE–HEAT	TUBE: COPPER FIN: ALUMINUM CASING: GALVANIZED STEEL	1	6.7	405.5	–23	–9.4	20	0.14	93	81.5	2.1	1.
RC–1	MECHANICAL ROOM 130 RE–HEAT	TUBE: COPPER FIN: ALUMINUM CASING: GALVANIZED STEEL	1	8.14	235	4.15	20.5	25	0.17	93	81.5	3	1.

NOTES:

1. COORDINATE INSTALLATION BASED ON COIL DIMENSIONS, REQUIRED FLANGES AND SERVICES LAYOUTS.

SCHEDULE OF OUTDOOR AIR UNIT – WW02

UNIT No.	FLOW (L/S)	POWER SUPPLY (kW)	POWER SUPPLY V/ø/Hz	COLLAR SIZE (mm)	REMARKS
MAU–1	28	2	208/1/60	150	1.

NOTES:

1. C/W ROOM CONTROLLER BUILT IN DAMPER AND FACTORY INSTALLED DISCHARGE GRILL. CONTROLLER TO HAVE FAN STATUS AND FAULT STATUS READ OUT TO BMS.

ENERGY RECOVERY VENTILATOR SCHEDULE – WW03

UNIT No.	UNIT LOCATION	MANUFACTURER & MODEL No.	SYSTEM	FAN FLOW (L/S)	FAN ESP (Pa)	FAN MOTOR (kW)	FAN MOTOR (V/Ph/hz)	FILTER	TEMPERATURE (°C) WINTER (TE)	TEMPERATURE (°C) WINTER (TL)	TEMPERATURE (°C) SUMMER (TE)	TEMPERATURE (°C) SUMMER (TL)	ENERGY RECOVERED (kW) WINTER SENSIBLE	ENERGY RECOVERED (kW) WINTER TOTAL	ENERGY RECOVERED (kW) SUMMER SENSIBLE	ENERGY RECOVERED (kW) SUMMER TOTAL	REMARKS
ERV–1	MECHANICAL ROOM 130	–	SUPPLY AIR	405.5	200	0.4	208/1/60	WASHABLE FIBRE	9.4	4.15/3.11	30/23	27.3/21.3	6.6	9.6	1.32	3	1, 2, 3, 4, 5.
			EXHAUST AIR	235	125	0.4	208/1/60	WASHABLE FIBRE	21.1/12.4	–2/–2.7	24/17	29.8/18.6	6.6	9.6	1.32	3	1, 2, 3, 4, 5.

NOTES:

1. UNITS WITH WASHABLE FIBRE FILTER.
2. SHOP DRAWING SUBMITTAL TO INCLUDE SELECTION OF PREHEAT AND REHEAT COILS.
3. COORDINATE INSTALLATION WITH SERVICES LAYOUT IN MECHANICAL ROOM 130.
4. ERV SHALL BE SUPPLIED BY MANUFACTURER OF SPLIT SYSTEM. REFER TO NOTE No.3 IN CONDENSING UNIT (HEAT PUMP) SCHEDULE – WW03.
5. SUBMIT SHOP SUBMITTAL TO ENGINEER FOR REVIEW PRIOR TO PROCUREMENT.

FIRE DAMPER SCHEDULE – WW03

TAG No.	DRAWING No.	LOCATION	TYPE	SIZE
FD–1	WDR–WW03–H–04	NORTHEAST WALL IN MECHANICAL ROOM 130	DYNAMIC	350X300
FD–2	WDR–WW03–H–04	SOUTHWEST WALL IN MECHANICAL ROOM 130	DYNAMIC	350X320

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MECHANICAL – SCHEDULES (SHEET 1 OF 2)

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designed by / conc par: A. KABBANI
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WALL FIN HEATER SCHEDULE–WW03

S.I. NO.	UNIT NO.	LOCATION	CAPACITY (kW)	WATER			ELEMENT		ROW(S)	ENCLOSURE		NOTES
				FLOW (L/S)	TEMP. IN (°C)	TEMP. OUT (°C)	DIA. (mm)	LENGTH (mm)		HEIGHT (mm)	LENGTH (mm)	
1	WFH–102	INMATE WAITING ROOM 102	1.2	0.025	93	81.5	32	820	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3, 4.
2	WFH–106	OFFICE 106	2.4	0.05	93	81.5	32	1635	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
3	WFH–107	OFFICE 107	2.4	0.05	93	81.5	32	1635	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
4	WFH–108–1	OFFICE 108	1.55	0.032	93	81.5	32	1050	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
5	WFH–108–2	OFFICE 108	1.55	0.032	93	81.5	32	1050	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
6	WFH–110	OFFICE 110	0.95	0.02	93	81.5	32	650	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
7	WFH–111	BOARDROOM 111	2.15	0.045	93	81.5	32	1465	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
8	WFH–112	OFFICE 112	1.9	0.04	93	81.5	32	1300	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
9	WFH–113	OFFICE 113	2.4	0.05	93	81.5	32	1635	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
10	WFH–114–1	OFFICE 114	2.1	0.043	93	81.5	32	1430	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
11	WFH–114–2	OFFICE 114	1.0	0.021	93	81.5	32	680	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
12	WFH–115	OFFICE 115	1.425	0.03	93	81.5	32	975	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
13	WFH–116	OFFICE 116	2.4	0.05	93	81.5	32	1635	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
14	WFH–117	OFFICE 117	2.4	0.05	93	81.5	32	1635	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
15	WFH–118	OFFICE 118	2.4	0.05	93	81.5	32	1635	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
16	WFH–119	OFFICE 119	2.15	0.045	93	81.5	32	1465	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
17	WFH–121–1	GENERAL OFFICE 121	1.2	0.025	93	81.5	32	820	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
18	WFH–121–2	GENERAL OFFICE 121	2.4	0.05	93	81.5	32	1635	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
19	WFH–122–1	BOARD ROOM 122	2.15	0.045	93	81.5	32	1465	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
20	WFH–122–2	BOARD ROOM 122	2.15	0.045	93	81.5	32	1465	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
21	WFH–123	OFFICE 123	2.4	0.05	93	81.5	32	1635	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
21	WFH–124	FOYER 124	2.4	0.05	93	81.5	32	1635	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
22	WFH–125–1	OFFICE 125	1.8	0.0375	93	81.5	32	1225	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
23	WFH–125–2	OFFICE 125	1.8	0.0375	93	81.5	32	1225	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.
24	WFH–136	OFFICE 136	2.4	0.05	93	81.5	32	1635	1	450	REFER TO ARCH. DRAWINGS	1, 2, 3.

NOTES:

1. COORDINATE WITH ARCHITECTURAL DETAILS AND EXISTING MILLWORK DETAILS.
2. REFER TO NOTE No.3 IN CONDENSING UNIT (HEAT PUMP) SCHEDULE – WW03.
3. C/W BRACKETS, ELEMENT HANGERS, END CAPS, CORNERS AND ACCESS DOORS/REMOVABLE PANELS.
4. UNIT TO BE RATED FOR MEDIUM SECURITY APPLICATION.

WALL FIN HEATER SCHEDULE – WW02

REF. No.	LOCATION	CAPACITY (kW)	WATER			ELEMENT		ENCLOSURE		REMARKS
			FLOW (L/S)	TEMP. IN (°C)	TEMP. OUT (°C)	DIA. (mm)	LENGTH (mm)	HEIGHT (mm)	LENGTH (mm)	
WFH–113–01	SECURITY POST 113	1.79	0.038	93	81.5	32	1220	450	REFER TO ARCH. DRAWINGS	1, 2.
WFH–113–02	SECURITY POST 113	1.02	0.022	93	81.5	32	700	450	REFER TO ARCH. DRAWINGS	1, 2.
WFH–113–03	SECURITY POST 113	1.02	0.022	93	81.5	32	700	450	REFER TO ARCH. DRAWINGS	1, 2.
WFH–113–04	SECURITY POST 113	1.02	0.022	93	81.5	32	700	450	REFER TO ARCH. DRAWINGS	1, 2.
WFH–113–05	SECURITY POST 113	1.02	0.022	93	81.5	32	700	450	REFER TO ARCH. DRAWINGS	1, 2.
WFH–113–06	SECURITY POST 113	1.02	0.022	93	81.5	32	700	450	REFER TO ARCH. DRAWINGS	1, 2.
WFH–113–07	SECURITY POST 113	1.02	0.022	93	81.5	32	700	450	REFER TO ARCH. DRAWINGS	1, 2.

NOTES:

1. COORDINATE WITH ARCHITECTURAL DETAILS AND EXISTING MILLWORK DETAILS.
2. C/W BRACKETS, ELEMENT HANGERS, END CAP CORNERS AND ACCESS DOORS/REMOVABLE PANELS

AIR CONDITIONING UNIT (HEAT PUMP) INDOOR UNIT SCHEDULE – WW03

UNIT NO.	LOCATION	TYPE	MANUFACTURER & MODEL NO.	EVAPORATOR			COOLING CAPACITY	HEATING CAPACITY (kW)	FILTER TYPE	POWER SUPPLY V/ø/Hz	NOTES
				AIR FLOW	ESP	MOTOR					
AC–102	INMATE WAITING ROOM 102	CEILING CASSETTE 4 WAY	–	120 L/s	0	0.05 kW	1.8	2.0	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 3, 6.
AC–106	OFFICE 106	WALL MOUNTED	–	87 L/s	0	0.008 kW	2.3	2.6	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–107	OFFICE 107	WALL MOUNTED	–	87 L/s	0	0.008 kW	2.3	2.6	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–108	OFFICE 108	WALL MOUNTED	–	167 L/s	0	0.008 kW	3.6	4.0	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–110	OFFICE 110	WALL MOUNTED	–	87 L/s	0	0.008 kW	1.8	2.0	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–110A	ELECTRICAL CLOSET 110A	WALL MOUNTED	–	87 L/s	0	0.008 kW	2.3	2.6	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 6.
AC–111	BOARD ROOM 111	WALL MOUNTED	–	167 L/s	0	0.03 kW	3.6	4.0	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–112	OFFICE 112	WALL MOUNTED	–	87 L/s	0	0.008 kW	2.3	2.6	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–113	OFFICE 113	WALL MOUNTED	–	87 L/s	0	0.008 kW	2.3	2.6	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–114	OFFICE 114	WALL MOUNTED	–	145 L/s	0	0.028 kW	4.4	5.0	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–115	OFFICE 115	WALL MOUNTED	–	87 L/s	0	0.008 kW	1.8	2.0	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–116	OFFICE 116	WALL MOUNTED	–	87 L/s	0	0.008 kW	2.3	2.6	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–117	OFFICE 117	WALL MOUNTED	–	87 L/s	0	0.008 kW	2.3	2.6	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–118	OFFICE 118	WALL MOUNTED	–	167 L/s	0	0.03 kW	3.6	4.0	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–119	OFFICE 119	WALL MOUNTED	–	87 L/s	0	0.008 kW	2.3	2.6	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–121	GENERAL OFFICE 121	WALL MOUNTED	–	175 L/s	0	0.03 kW	5.3	5.9	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–122–1	BOARD ROOM 122	CEILING CASSETTE 4 WAY	–	150 L/s	0	0.015 kW	2.3	2.6	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 3, 7.
AC–122–2	BOARD ROOM 122	CEILING CASSETTE 4 WAY	–	150 L/s	0	0.015 kW	2.3	2.6	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 3, 7.
AC–124	FOYER	WALL MOUNTED	–	87 L/s	0	0.008 kW	2.3	2.6	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–125	OFFICE 125	WALL MOUNTED	–	145 L/s	0	0.028 kW	4.4	5.0	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–127	LOUNGE 127	CEILING CASSETTE 4 WAY	–	217 L/s	0	0.05 kW	4.4	5.0	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 3, 6.
AC–131–1	LOUNGE CORRIDOR	CEILING CASSETTE 4 WAY	–	150 L/s	0	0.015 kW	2.3	2.6	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 3, 6.
AC–131–2	LOUNGE CORRIDOR	CEILING CASSETTE 4 WAY	–	150 L/s	0	0.015 kW	2.3	2.6	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 3, 6.
AC–128	OFFICE 128	WALL MOUNTED	–	87 L/s	0	0.008 kW	1.8	2.0	WASHABLE PP HONEYCOMB	208/1/60	1, 3, 4.
AC–129	OFFICE 129	WALL MOUNTED	–	87 L/s	0	0.008 kW	1.8	2.0	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–135	BOARD ROOM 135	WALL MOUNTED	–	87 L/s	0	0.008 kW	2.3	2.6	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–136	OFFICE 136	WALL MOUNTED	–	87 L/s	0	0.008 kW	2.3	2.6	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–137	OFFICE 137	WALL MOUNTED	–	87 L/s	0	0.008 kW	1.8	2.0	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.
AC–138	OFFICE 138	WALL MOUNTED	–	87 L/s	0	0.008 kW	1.8	2.0	WASHABLE PP HONEYCOMB	208/1/60	1, 2, 4, 5.

NOTES:

1. MULTI SPEED UNIT. FLOW INDICATED AT MEDIUM SPEED.
2. UNIT WITH R–410A REFRIGERANT WITH INDICATED CAPACITIES AT:
   A) COOLING:
      – OUTDOOR TEMP. OF 35°C
      – INDOOR TEMP. OF 26.7°C DB/19.4° CW.B
   B) HEATING:
      – OUTDOOR TEMP. OF 8.3°C DB/6.1° CW.B
      – INDOOR TEMP. OF 21.1°C.
3. C/W BUILT IN DRAIN PUMP & DECORATION PANEL.
4. WITH REMOTE FIXED CONTROLLER.
5. EXTERNAL DRAIN PUMP PROVIDED BY MANUFACTURER.
6. TEMPERATURE SETTING BY DIGITAL GROUP CONTROLLER IN MECHANICAL ROOM.
7. TWO UNITS CONNECTED TO SINGLE FIXED REMOTE CONTROLLER.

CONDENSING UNIT (HEAT PUMP) SCHEDULE – WW03

UNIT NO.	UNIT LOCATION	MANUFACTURER & MODEL No.	CONDENSER FAN			COOLING CAPACITY (kW)	HEATING CAPACITY (kW)	POWER SUPPLY		REMARKS
			FLOW (L/S)	ESP (Pa)	MOTOR (kW)			MAX. OVER CURRENT PROTECTION (A)	V/ø/Hz	
ACU–1	ROOF	–	5000	0	0.92/0.92	35.15	39.55	77	208/3/60	1, 2, 3.
ACU–2	ROOF	–	5000	0	0.92/0.92	35.15	39.55	77	208/3/60	1, 2, 3.

NOTES:

1. UNIT IS PART OF A MODULAR OUTDOOR UNIT (WITH 2 MODULES) CONNECTED TO MULTIPLE INDOOR UNITS AS INDICATED ON DRAWINGS. TO BE C/W OUTDOOR CONNECTION PIPE, TUNING KIT, JOINT AND HEADER CONNECTING BOTH MODULES.
2. UNIT WITH R–410A REFRIGERANT WITH INDICATED CAPACITIES AT:
   A) COOLING:
      – OUTDOOR TEMP. OF 35°C
      – INDOOR TEMP. OF 26.7°C DB/19.4° CW.B
   B) HEATING:
      – OUTDOOR TEMP. OF 8.3°C DB/6.1° CW.B
      – INDOOR TEMP. OF 21.1°C.
3. CONTROL OF OUTDOOR UNITS, INDOOR UNITS, ENERGY RECOVERY VENTILATOR (INCLUDING SCHEDULING) AND VALVES OF HYDRONIC WALL FIN HEATERS IS THROUGH THE DIGITAL GROUP CONTROLLER PROVIDED BY THE SPLIT UNIT SYSTEM MANUFACTURER AND LOCATED IN THE MECHANICAL ROOM.

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

key plan

LICENSED PROFESSIONAL ENGINEER
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100178514
10/29/13
PROVINCE OF ONTARIO

04	ISSUED FOR TENDER	2013/10/29
03	ISSUED FOR 100% OWNER REVIEW	2013/07/25
02	SUBMITTED FOR 99% DESIGN	2011/07/18
01	ISSUED FOR REVIEW	2011/02/15
revision		date

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

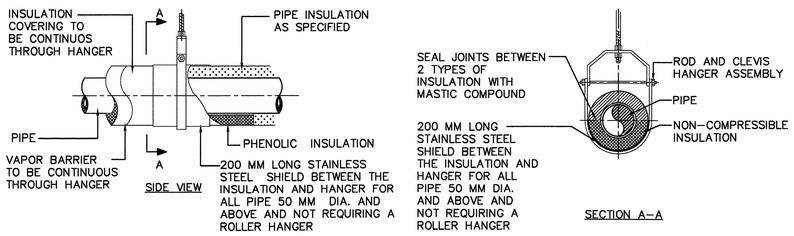
AECOM

project title
titre du projet
WARKWORTH Ontario
MEDIUM SECURITY INSTITUTION
UNDERGROUND DUCT REPLACEMENT

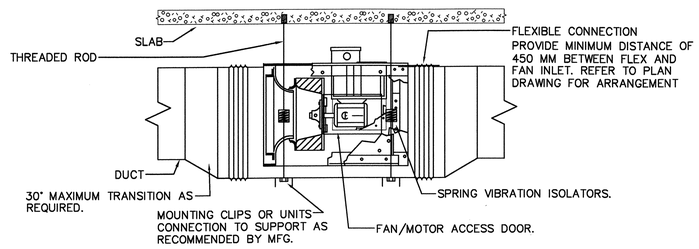
drawing title
titre du dessin
MECHANICAL – SCHEDULES (SHEET 2 OF 2)

drawn by / dessine par: L. TAURO
designed by / conc par: A. KABBANI
approved by / approuve par: D. DOVAS
bid / offre: O. TABAREZ
project manager / administrateur de projets

project date / date du projet: 2013–10–29
project no. / no. du projet: R.033225.001
drawing no. / dessine no.: WDR–G–05



1 G-06 TYPICAL PIPE HANGER DETAIL
N.T.S.



2 G-06 HEAT RECOVERY VENTILATOR DETAIL
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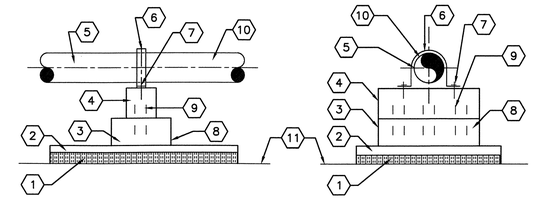
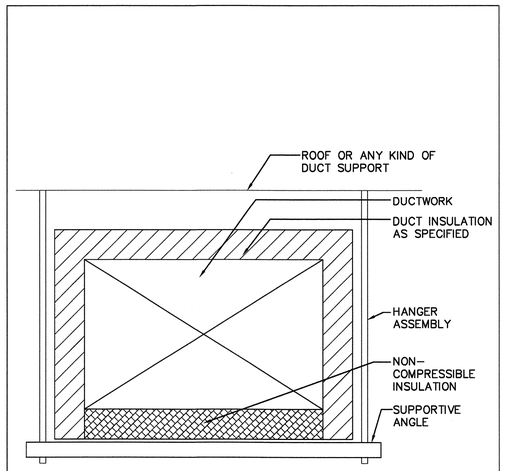
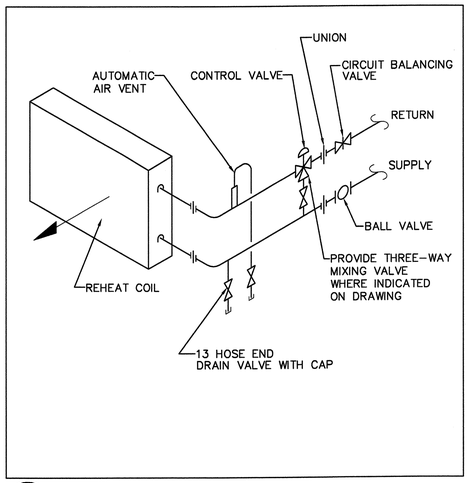


1. 600x 600x 25 THICK RIGID INSULATION.
2. 600x 600x 20 THICK CREOSOTED EXTERIOR GRADE PLYWOOD.
3. 50x 200x 450 LONG CREOSOTED PLANK.
4. 150x 150x 450 LONG CREOSOTED BLOCK.
5. SCHEDULE 40 STEEL GAS PIPE OR COPPER REFRIGERANT PIPE.
6. WROUGHT IRON STRAPS – GRINNEL FIG. 262. 2 SIZES LARGER TO ALLOW FOR PIPE MOVEMENT. PAINT STRAPS WITH ANTI-CORROSIVE PAINT.
7. CADIUM PLATED 50 LONG WOOD SCREWS.
8. PIPING SUPPORTS TO BE 3000 APART. PROVIDE A SUPPORT WITHIN 600 OF EVERY BEND AND TAKE-OFF.
9. SHIM WOOD BLOCKS AS REQUIRED TO COMPENSATE FOR ROOF SLOPE.
10. INSULATION WITH VAPOUR BARRIER AND JACKETING AS SPECIFIED.
11. FINISHED ROOF.

3 G-06 SUPPORTS FOR REFRIGERANT OR GAS PIPING ON ROOF
N.T.S.



4 G-06 TYPICAL DUCT SUPPORT DETAIL
N.T.S.



5 G-06 HOT WATER COIL PIPING DIAGRAM
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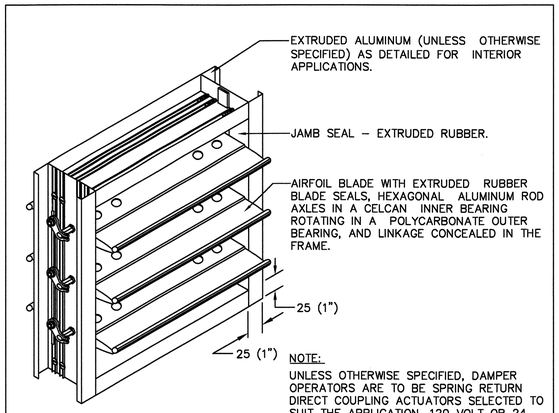

6 G-06 MOTORIZED DAMPER DETAIL
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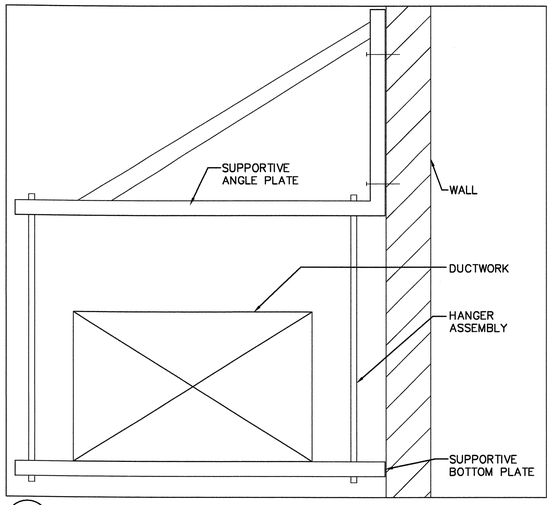

7 G-06 DUCT SUPPORT DETAIL – WOODSHOP-LOW LEVEL
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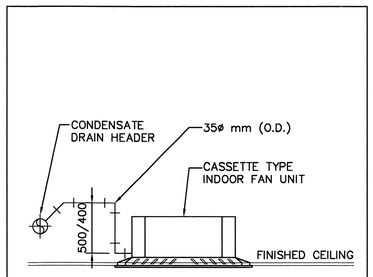
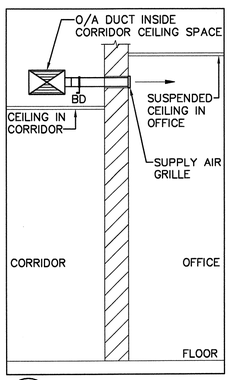


8 G-06 CASSETTE UNIT DRAIN DETAIL
N.T.S.



9 G-06 O/A DUCT DETAIL-1
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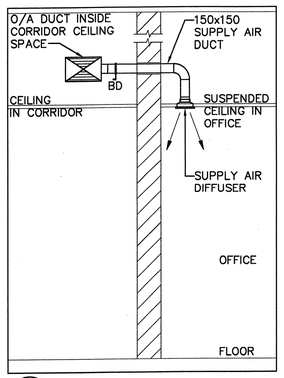

10 G-06 O/A DUCT DETAIL-2
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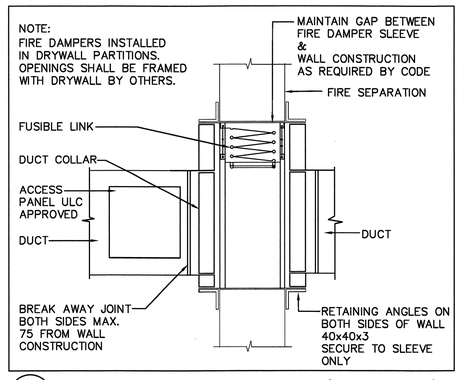
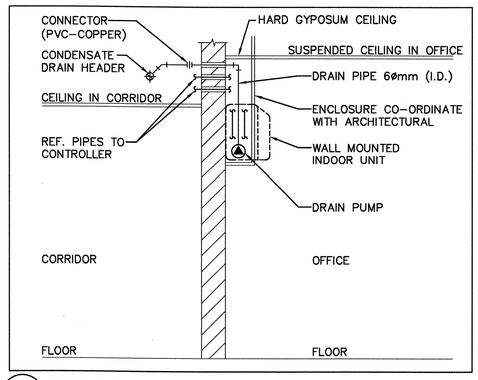
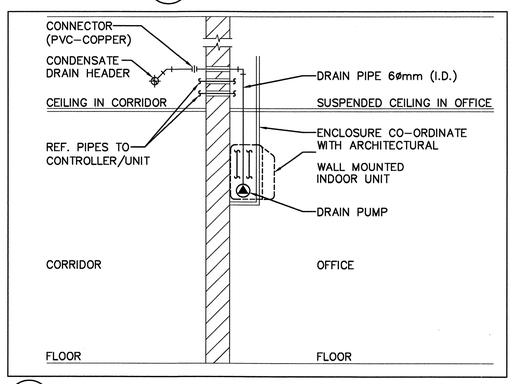


11 G-06 FIRE DAMPER – THROUGH WALL (SMALL DUCT)
N.T.S.



12 G-06 WALL MOUNTED A/C UNIT- DRAIN & REF.PIPE DETAIL
N.T.S.



13 G-06 WALL MOUNTED A/C UNIT – DRN & REF. PIPE DETAIL (2)
N.T.S.

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

key plan

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PROVINCE OF ONTARIO

04	ISSUED FOR TENDER	2013/10/29
03	ISSUED FOR 100% OWNER REVIEW	2013/07/25
02	SUBMITTED FOR 99% DESIGN	2011/07/18
01	ISSUED FOR REVIEW	2011/02/15
revision		date

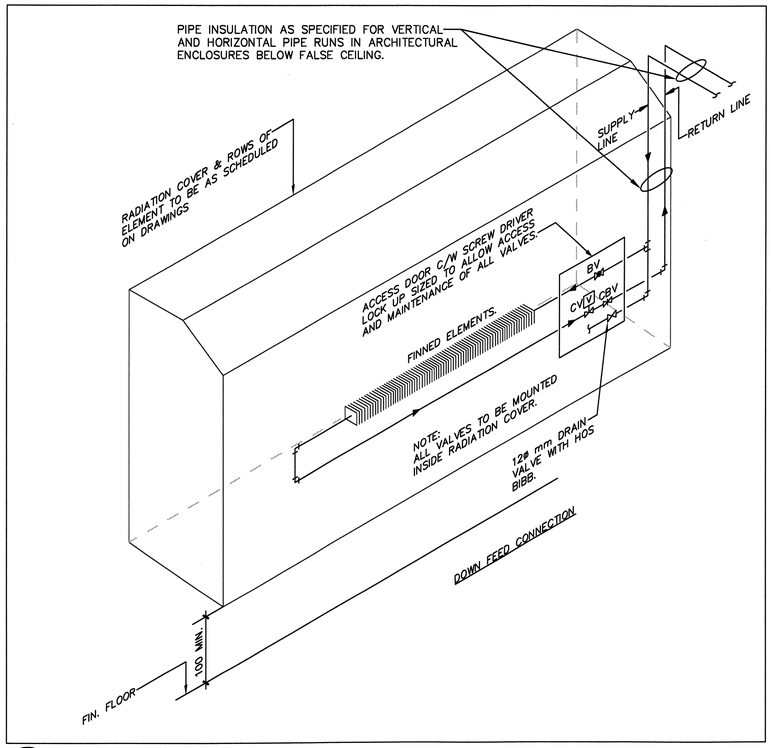
Do not scale drawings.
Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

AECOM

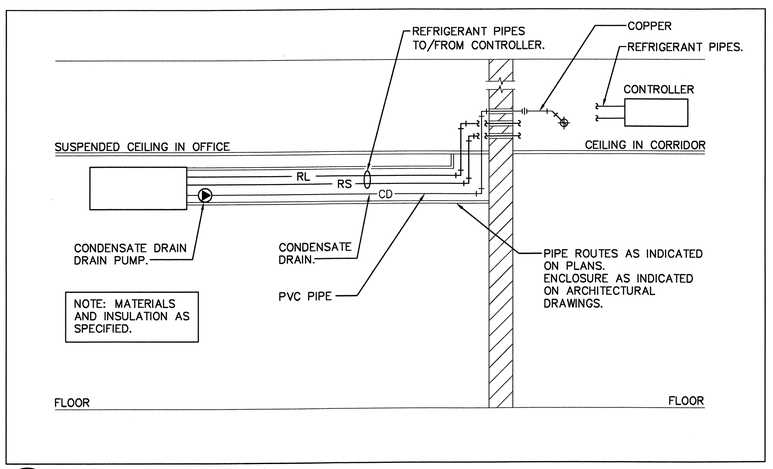
project title
titre du projet
WARKWORTH Ontario
MEDIUM SECURITY INSTITUTION
UNDERGROUND DUCT REPLACEMENT

drawing title
titre du dessin
MECHANICAL DETAILS (SHEET 1 OF 2)

drawn by dessine par	L. TAURO
designed by conc par	A. KABBANI
approved by approuve par	D. DOVAS
bid offre	O. TABAREZ
project manager administrateur de projets	
project date date du projet	2013-10-29
project no. no. du projet	R.033225.001
drawing no. dessine no.	WDR-G-06



15 G-07 WALL FIN HEATER DETAIL #1
N.T.S.



14 G-07 WALL MOUNTED UNIT – DRAIN & REF. PIPE DETAIL #3
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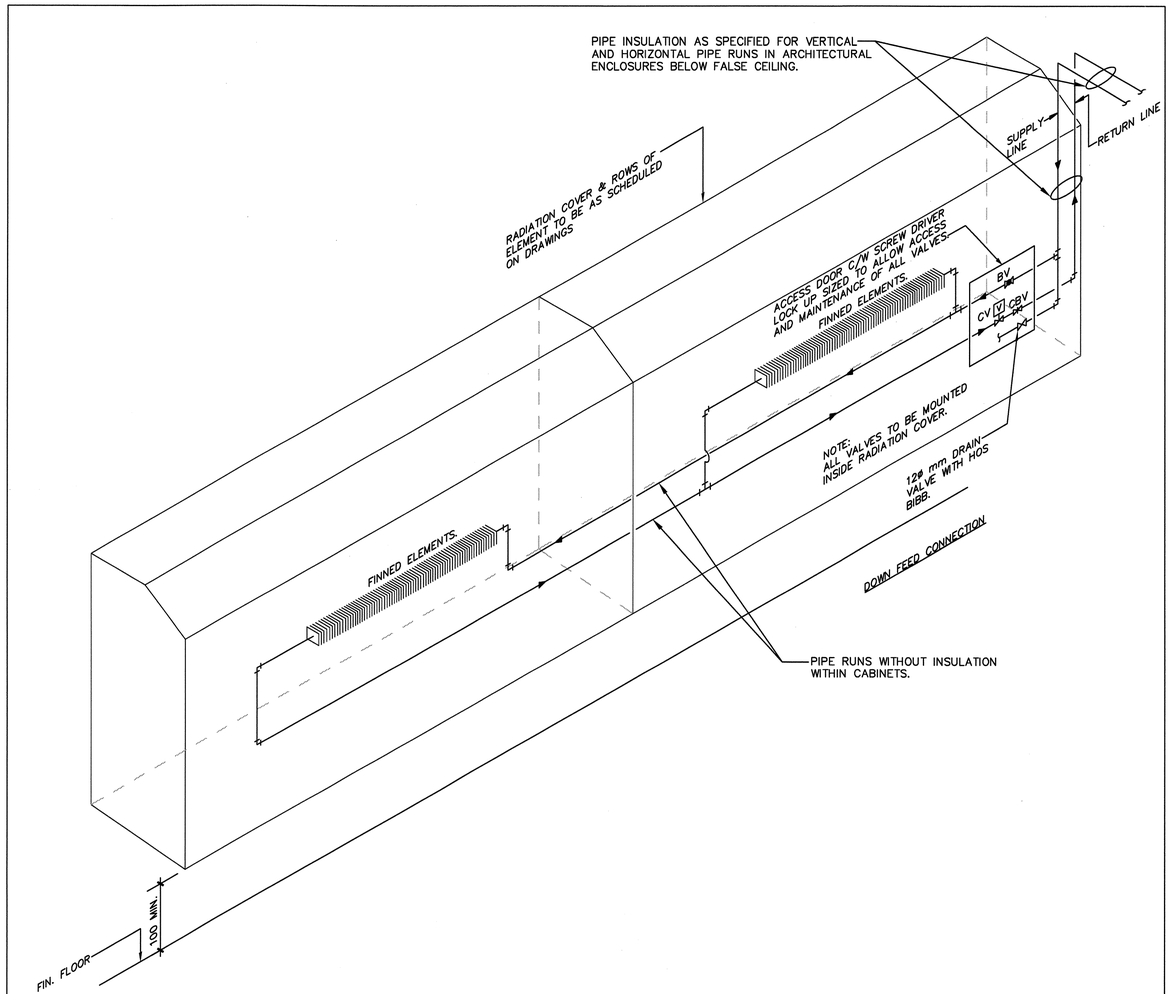

16 G-07 WALL FIN HEATER DETAIL #2
N.T.S.

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

key plan

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01	ISSUED FOR REVIEW	2011/02/15
revision		date

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WARKWORTH Ontario
MEDIUM SECURITY INSTITUTION
UNDERGROUND DUCT REPLACEMENT

drawing title
titre du dessin
MECHANICAL DETAILS
(SHEET 2 OF 2)

drawn by
dessine par L. TAURO

designed by
conc par A. KABBANI

approved by
approuve par D. DOVAS

bid
offre

project manager
administrateur de projets
O. TABAREZ

project date
date du projet 2013-10-29

project no.
no. du projet R.033225.001

drawing no.
dessine no. WDR-G-07