	HVAC LEGEND
	SUPPLY OR OUTDOOR AIR DUCTWORK
	RETURN OR EXHAUST AIR DUCTWORK
<u> </u>	LOW VELOCITY ACOUSTIC INSULATION
Cicre	TURNING VANES
	EXISTING EQUIPMENT/DUCTWORK TO REMAIN
	EQUIPMENT/DUCTWORK
	EXISTING TO BE REMOVED
S/A	SUPPLY AIR DUCTWORK
R/A	RETURN AIR DUCTWORK
O/A	OUTDOOR AIR DUCTWORK
E/A	EXHAUST AIR DUCTWORK
×	MANUAL BALANCING DAMPER
🖌 BDD	BACK DRAFT DAMPER
L	BLAST GATE DAMPER
M	MOTORIZED DAMPER
VCD	OPPOSED BLADE VOLUME CONTROL DAMPER
=⋕ F/D	FIRE DAMPER
⊫ SD	SMOKE DAMPER
井 FSD	FIRE/SMOKE DAMPER
`	CUBIC FEET PER MINUTE
	DIFFUSER DESIGNATION - NECK DIA.
_ / ->	CUBIC FEET PER MINUTE
· •	GRILLE DESIGNATION
AD	ACCESS DOOR
(E)	EXISTING
•	CONNECT TO EXISTING

<u>PI</u>	PING/ PLUMBING LEGEND
HPS	EXISTING HEAT PUMP SUPPLY TO REMAIN
HPS	HEAT PUMP SUPPLY
HPR	EXISTING HEAT RETURN TO REMAIN
—— —— HPR—— ——	HEAT PUMP RETURN
	EXISTING COLD WATER TO REMAIN
	COLD WATER
	EXISTING HOT WATER TO REMAIN
	HOT WATER
	EXISTING HOT WATER RECIRC. TO REMAIN
	HOT WATER RECIRC.
FD	FLOOR DRAIN
FFD	FUNNEL FLOOR DRAIN
×	SHUT-OFF VALVE
	STRAINER
	UNION
Q	BACKFLOW PREVENTER
Μ	MOTOR
M	METER
Ø	INLINE PUMP
\otimes	STEAM TRAP
E	CAP
o	PIPING UP
c≎	PIPING DOWN
FD Q	FLOOR DRAIN
>	FLOW ARROW
	CONCENTRIC REDUCER
1 1	UNION
(E)	EXISTING
•	CONNECT TO EXISTING

										Ŭ																
TAG	SERVICE	MAKE	MODEL	FLUID			FL	UID						FAN			SPRAY PUMP			U	NIT ELECTRICA	L		Г	MENSIONS [IN	i ,
IAG	SERVICE		MODEL	TEOID	FLOW [USGPM]	FLUID PD [PSI]	EWT [F]	LWT [F]	HEAT REJECTION [MBH]	EAT [F] WB	[CFM]		HP	RPM	QTY	HP	RPM	QTY	VOLT	PH	HZ	MCA	MOCP	LENGTH	WIDTH	HEIGHT
CT-01	HEAT PUMP SYSTEM	BAC	NXF-0403N-CS2TS-H3	100% WATER	293	1.66	102	92.04	1464	75.92	25248	0.5	5	1800	3	0.5	3500	3	460	3	60	28.1	30	118.5	49.625	101.75
																							<u> </u>			

DIV 15 TO PROVIDE ALL CONTROL WIRING. POWER WIRING TO UNIT BY DIV 16

NOTES

MODULAR COOLING TOWER THREE MODULE UNIT COMPLETE WITH UNIT MOUNT CONTROL PANEL, SINGLE POINT ELECTRICAL CONNECTION WITH DISCONNECT SWITCH

2 WIRE INTAKE DAMPER TO COOLING TOWER CONTROL PANEL

PIPE BASIN OVERFLOW AND DRAIN LINES TO LOCAL HUB DRAIN

PROVIDE AIR VENT AND DRAIN VALVE ON COOLING TOWER PROCESS FLUID HEADERS

PROVIDE MAKE UP WATER CONNECTION TO BASIN. PROVIDE ISOLATION VALVE 6 PROVIDE CONDUCTIVITY PROBE, CHEMICAL FEED SUPPLY/RETURN LINE TO BASIN

7 WIRE TEMPERATURE SENSOR IN PROCESS WATER LINE TO CONTROL PANEL

8 UNIT C/W INTAKE DUCT ADAPTERS

9 UNIT C/W TAPERED DISCHARGE HOOD WITH POSITIVE CLOSE DAMPERS

¹⁰ PROVIDE BASE RAILS WITH VIBRATION ISOLATION

11 WIRE UNIT CONTROL PANEL TO BUILDING BAS SYSTEM.

				DAMP	ER SCH	EDULI	E											Ρ	UMP SC	HEDUL	Ξ					
ТАС	MAKE	MODEL	SEDVINO		PRESS DROP [IN	DIMENS	SION [IN]		ELECTRICAL	_	NOTES	TAC	MAKE	MODEL	SIZE	FLOW			FLUID					ELECTRICA	L	
TAG	WARE	MODEL	SERVING		WC]	LENGTH	HEIGHT	VOLT	PH	HZ	NOTES	TAG	WARE	MODEL	SIZE	[USGPM]	וטהנרון	TYPE	TEMP [F]				VOLT	PH	HZ	
DMP01	ТАМСО	9000	COOLING TOWER SUPPLY AIR	25248		148"	52"	120	1	60	1,2	P01	XYLEM	2ST	2ST2CCH4	20	16	WATER	85	0.5 17	0 TEFC	1.25	575	3	40	
NOTES												NOTES														
1	PROVIDE BELIN	ΙΟ ΑCTUATO	R C/W NEMA 4X ENCLOSURE,	SIZED FOR TIGHT	SHUTOFF							1	STAINLESS S	TEEL BODY, STA	AINLESS STEEL IMF	ELLER, MECHA	NICAL SEAL									
2	WIRE DAMPER	TO COOLING	TOWER CONTROL PANEL. DA	AMPER TO OPEN (ON ENABLE SIGNAL	FROM COOLING	G TOWER					2	INTERLOCK C	IRCULATION PU	JMP WITH CHEMICA	L FEED CONTR	OLLER AND I	LOAT SWITCH	I. PUMP TO OPERA	TE WHEN BASIN IS F	JLL					

		CONTRO	L VAL	VE SC	HEDU	LE			
ТАС	MAKE	MODEL	TYPE				ELECTRICAL		NOTES
TAG	MARE	MODEL			FLOW [USGPM]	VOLT	PH	HZ	NOTES
CV01	SESTO	MM1F-06-C6LF-E724H-FAK-S007	BALL	6	255	120	1	60	1,2,3
VOTES	· · ·			•					
1	MM1F-06-C6LF-L, 6 NON-DIRECT MOU	3" SESTO SERIES MM1F 3-WAY FLOATING BALL VALVE NT PAD.	, (L-PORT) CLAS	SS 150, RF, AS ⁻	rm A216 WCB Bod	DY, SS316 BAI	L AND STEM,	TFM1600 SEA	Γ, 4-SEAT DESIGN, ISO
2	MAX-AIR MODEL#: CLASS B (ISO 225 ⁷ ANTI-CONDENSAT ROTATION: 90 DEC WDME-IOM-67. MC	MESH089-120A0007, RATED TORQUE : 8855 IN-LBS / 1 3), MANUAL OVERRIDE: CLUTCH-FREE HANDWHEEL, E HEATER - THERMOSTATICALLY CONTROLLED, MOU 3, SPEED: 50 SEC AT RATED TORQUE AND VOLTAGE, I DUNTING KIT.	000 NM, OPERA ELECTRICAL EN NT: ISO5211 F1: ENCLOSURE: N	NTING VOLTAGI NTRY: (2) X 3/4' 2 / ONLY X 36 E EMA 4X, 5 & IP(E: 120VAC 50/60H2 ' NPT PORTS, AUX DSQ X 50MM DEEF 67, COLOR: RAL70	Z, CONTROL 1 SWITCHES: 2, OPERATING 45, PRODUC	TYPE: OPEN/CI (2) FORM C RA 5 TEMPERATUF 7 WEIGHT: 32 F	_OSE/JOG STE TED 5A @ 250 RE: -22 F~+149 KG / 70.4LB, FII), DUTY: 100% (EN 60034) / /VAC RESISTIVE,) F (-30 C~+65 C), ANGLE OF ELD WIRING DIAGRAM:
3	INCLUDE INTEGRA	ATION OF CONTROL VALVE IN TO BAS SYSTEM.							

			W	ALL LO	UVER SC	HED	ULE				
тас	MAKE	MODEL		PRESS DROP [IN		EDM	C	DIMENSIONS [IN	1]		NOTES
IAG	MARE	MODEL	AIRFLOW [CFM]	WC]	FREE AREA [F12]	FFINI	LENGTH	WIDTH	HEIGHT		NOTES
WL01	POTTORFF	EFD-435	25248	0.11	30.31	833	148	4	52	150	1,2
NOTES											
1	EXTRUDED ALUMIN	NUM LOUVER, 4"	DEEP, 35 DEGREE D	RAINABLE BLADES,	HIDDEN MULLION, BI	RDSCREEN					

² CONTRACTOR TO BUILD GALVANIZED STEEL PLENUM ON ROOF FOR INSTALLATION OF LOUVER

	VALVE LEGEND
	SHUI-OFF VALVE - SEE SPECIFICATIONS
ж	BUTTERFLY VALVE
W	CIRCUIT BALANCING VALVE
X	GLOBE VALVE
₽	ELECTRICALLY SUPERVISED VALVE
¥	ELECTRICALLY SUPERVISED 3-WAY VALVE
	3-WAY VALVE
⊙	AUTOMATIC CONTROL VALVE (ACV)
₹	GAS SHUT-OFF VALVE
	PNEUMATIC 3-WAY VALVE
K	PRESSURE REDUCING VALVE
<u>}</u>	PRESSURE RELIEF VALVE
**	STRAINER
₽	ELECTRIC 2-WAY VALVE
<u>ት</u>	AUTOMATIC AIR VENT
↓	CHECK VALVE
Ф	THERMOMETER
\otimes	THERMOSTATIC MIXING VALVE
•	CONNECT TO EXISTING



3 PROVIDE LOSE STARTER FOR PUMP

4 CLOSE COUPLED END SUCTION PUMP

BACKFLOW PREVENTER SCHEDULE

TAG	MAKE	MODEL	SERVING	SIZE [IN]	FLOW [USGPM]	PRESS DROP [PSI]
BFP01	WATTS	009M2QT	COOLING TOWER MAKE UP WATER	1	20	10

NOTES

1 REDUCED PRESSURE BACK FLOW PREVENTER ASSEMBLY, LISTED TO CSA B64.4

² PROVIDE AIR GAP. PIPE TO LOCAL HUB DRAIN

DRAWING LIST

SHEET NUMBER	SHEET NAME
M001	LEGEND AND DRAWING LIST AND MECHANICAL SCHEDULES
ME100	G WING - ROOF PLAN - HVA/C DEMO. & MOD. PLANS AND ELEC. NOTES
ME101	G WING - MECH. ROOM - HVA/C AND PIPING DEMO. & MOD. PLANS AND ELEC. NOTES
M700	EXISTING HEATING FLOW PIPING SCHEMATIC





NOTES
1,2







3 EXISTING COOLING TOWER LOUVERED SUPPLY PENTHOUSE



4 EXISTING COOLING TOWER DISCHARGE HOOD ME100 N.T.S.

DEMOLITION NOTES

- 1 EXISTING LOUVERED SUPPLY PENTHOUSE TO BE REMOVED. RE-USE EXISTING ROOF CURB. CONTRACTOR TO PROTECT OPENINGS DURING CONSTRUCTION FROM WEATHER.
- 2 EXISTING DISCHARGE HOOD, DAMPER TO BE REMOVED. RE-USE EXISTING ROOF CURB. CONTRACTOR TO PROTECT OPENINGS DURING CONSTRUCTION FROM WEATHER.

(#) **DRAWING NOTES**

- 1 INSTALL NEW FULLY WELDED GALVANIZED STEEL PLENUM 4064x1524x1524 (160"x60"x60") HIGH. INSTALL NEW WALL LOUVERS AND DAMPERS. WIRE DAMPER ACTUATORS TO COOLING TOWER CONTROL PANEL. REUSE EXISTING ROOF CURB. PROVIDE ACCESS DOOR TO ACCESS DAMPER ACTUATOR.
- 2 EXTEND EXHAUST DUCT TO 4.572 M (15 FT) ABOVE ROOF. INSTALL TAPERED DISCHARGE HOOD C/W DAMPER. WIRE DAMPER TO COOLING TOWER CONTROL PANEL.
- 3 MOUNT DAMPER ON BACK SIDE OF WALL LOUVER. WIRE DAMPER TO COOLING TOWER CONTROL PANEL.

ELECTRICAL DRAWING NOTES

1 PROVIDE POWER FOR DAMPER AND CONTROL VALVE FROM AVAILABLE SPARE CIRCUIT IN PANEL LPL. PROVIDE 1X15A-1P BREAKER AND 2#12AWG + 1#12GND IN 27MM CONDUIT FOR EACH LOCATION. PROVIDE LOCAL DISCONNECT SWITCH IN THE MECHANICAL ROOM NEAR THE DAMPER IN AN ACCESSIBLE LOCATION.





ME101 N.T.S.



4 EXISTING COOLING TOWER SUPPLY DUCTWORK FROM ROOF. N.T.S.



7 EXISTING COOLING TOWER OVER FLOW PIPE AND PURGE LINE ME101 N.T.S.



5 EXISTING COOLING TOWER SUPPLY AND 5 RETURN WATER CONNECTIONS ME101 N.T.S.



8 EXISTING COOLING TOWER DRAIN PIPING ME101 N.T.S.



EXISTING COOLING TOWER SUPPLY & RETURN 6 PIPING AND BYPASS



9 EXISTING COOLING TOWER CHEMICAL FEED PUMPS AND CONTROLLER ME101 N.T.S.

GENERAL DRAWING NOTES

- A DRAWINGS ARE GENERALLY DIAGRAMATIC. CONTRACTOR IS RESPONSIBLE FOR LAYING OUT MATERIAL IN CONJUNCTION WITH THE INTENT OF THESE
- DRAWINGS. B DRAWINGS ARE TO BE INTERPRETED IN CONJUNCTION WITH ALL OTHER
- DISCIPLINE DRAWINGS AND SPECIFICATIONS. C SYSTEMS CONNECT TO EXISTING SERVICES. ALLOW FOR ADDITIONAL
- FITTINGS AND OFFSETS AS REQUIRED IN ORDER TO CONNECT TO EXISTING.
 ALSO, ALLOW FOR ADDITIONAL LABOUR AND MATERIAL IN ORDER TO ADJUST DESIGNS TO AVOID INTERFERENCE WITH EXISTING SERVICES.
 D TEMPORARY MEASURES SHALL BE DONE IN ORDER TO MAINTAIN SERVICES
- D TEMPORARY MEASURES SHALL BE DONE IN ORDER TO MAINTAIN SERVICES TO ALL OCCUPIED PORTIONS OF THE BUILDING DURING CONSTRUCTION. COORDINATE WITH THE OWNER FOR ANY REQUIRED SHUT-DOWNS, WHICH SHALL BE AFTER-HOURS OR WEEKENDS. PROVIDE TEMPORARY MATERIALS TO ALLOW FOR SWITCH-OVERS OR SHUT-DOWNS; TEMPORARY SERVCES MATERIAL AND INSTALLATION SHALL MEET THE SPECIFICATIONS UNLESS SPECIFICALLY APPROVED BY THE CONSTULTANT.
- E INCLUDE PASSIVATION OF COOLING TOWER AND DUCTWORK.F DUCT ELBOWS TO BE FULL RADIUS OR WITH TURNING VANES. REFER TO
- SPECIFICATIONS.
 G NEW CHEMICAL TREATMENT SYSTEM FOR COOLING TOWER INCLUDED IN THIS SCOPE OF SUPPLY. COORDINATE WITH MOHAWK COLLEGE OPERATIONS AND CHEMICAL SUPPLY VENDOR.
- H CONTRACTOR TO ASSESS CONDITION OF EXISTING DUCTWORK PRIOR TO CONNECTIONS/MODIFICATIONS FOR SUITABILITY OF RE-USE. ANY DAMAGES TO DUCTWORK TO BE REPORTED TO CONSULTANT/ARCHITECT.
 I COORDINATE LOCATION OF ACCESS DOORS IN GWB CEILINGS WITH OTHER
- TRADES. PROVIDE REFLECTED CEILING PLAN INDICATING LOCATIONS OF ALLACCESS DOORS FOR APPROVAL PRIOR TO FINAL INSTALLATION.JCONTRACTOR IS TO REVIEW EXISTING EQUIPMENT CONNECTIONS AND
- LAYOUT BEFORE DEMOLITION. ANY EQUIPMENT TO BE RE-INSTALLED SHALL BE INSTALLED PER MANUFACTURERS WRITTEN INSTRUCTIONS AND APPLICABLE CODES.
 K FOR DUST CONTROL, CAP EXISTING DUCTS IN THE CONSTRUCTION AREA. CONNECTION TO EXISTING AIR DUCTS TO BE DONE AFTER COMPLETION OF
- CONNECTION TO EXISTING AIR DUCTS TO BE DONE AFTER COMPLETION OF ALL DUST PRODUCING TASKS. L RELOCATE OR REROUTE EXISTING MECHANICAL EQUIPMENT AS REQUIRED
- TO ACCOMMODATE THE SCOPE OF NEW WORK.
- M FIRE DAMPERS ARE REQUIRED TO BE INSTALLED ON NEW AND EXISTING DUCTS PASSING THROUGH RATED WALLS, CEILING AND FLOORS.
- N CONTRACTOR RESPONSIBLE FOR COMPLETE WORKING SYSTEM.

DEMOLITION NOTES

- 1 REUSE SUPPLY DUCTWORK TO BE REMOVED COMPLETE WITH ALL ASSOCIATED ACCESSORIES.
- 2 EXISTING EXHAUST DUCTWORK TO BE REMOVED COMPLETE WITH ALL ASSOCIATED ACCESSORIES.
- 3 EXISTING COOLING TOWER TO BE REMOVED COMPLETE WITH ALL DRAIN AND CHEMICAL FEED PIPING. REMOVE EXISTING COOLING TOWER THROUGH ROOF OPENING.
- 4 REMOVE EXISTING CHEMICAL FEED SYSTEM. TURN PUMPS CONTROLS AND INSTRUMENTATION OVER TO OWNER.

DRAWING NOTES

- 1 PROVIDE 19mm PCW DROP TO NEW CHEMICAL EQUIPMENT
- 2 INSTALL NEW 25mm DCW LINE TO EXISTING 50MM DCW.
- 3 INSTALL NEW BACK FLOW PREVENTER IN 25mm DCW LINE. PIPE BACK FLOW PREVENTER DRAIN TO LOCAL HUB DRAIN
- 4 PIPE 25MM PCW LINE TO COOLING TOWER BASIN.
- 5 CONNECT NEW 150mm HPS SUPPLY AND RETURN FROM COOLING TOWER IN TO EXISTING 150mm HEADER.
- 6 INSTALL NEW 150mm THREE WAY CONTROL VALVE IN SUPPLY LINE TO COOLING TOWER. WIRE ACTUATOR TO BUILDING AUTOMATION SYSTEM AND COORDINATE WITH AINSWORTH.
- 7 INSTALL NEW 150MM BYPASS LINE.
- 8 INSTALL NEW 150mm HPS. CONNECT TO COOLING TOWER FLUID OUTLET.
- 9 INSTALL NEW 150mm HPS. CONNECT TO COOLING TOWER FLUID INLET.
- 10 CONNECT NEW 150mm HPS SUPPLY TO COOLING TOWER 100 MM HEADER [TOP] CONNECT NEW 150mm HPS RETURN LINE TO COOLING TOWER 10mm HEADER [BOTTOM].
- 11 SEAL EXISTING DUCT OPENING AS REQUIRED.

UNOBSTRUCTED.

- 12 PIPE 75mm OVERFLOW AND 32mm DRAIN LINE TO LOCAL FUNNEL FLOOR DRAIN. PROVIDE ISOLATION VALVE ON DRAIN LINE.
- 13 COOLING TOWER FAN SWING OUT . ENSURE SPACE REQUIRED FOR SWING OUT IS
- 14 75mm OVER FLOW AND DRAIN LINE ON THIS SIDE PIPE TO FFD NOTE 12.
- 15 PROVIDE NEW CHEMICAL TREATMENT SYSTEM COMPLETE WITH CHEMICAL FEED PUMPS AND CONTROLLER. PIPE ALL PUMPS TO CHEMICAL RECIRCULATION LINE INJECTION PORTS. WIRE FLOW SWITCH, P01, BLEED SOLENOID VALVE AND SENSORS TO CHEMICAL TREATMENT CONTROL PANEL.
- 16 REMOVABLE ACCESS HATCH IN TOP OF DUCTWORK.
- 17 REUSE EXISTING VERTICAL SUPPLY DUCT.
- 18 HORIZONTAL DUCTWORK 2750x750 (108"x30").
- 19 EXHAUST DUCTWORK 2950x1175 (118"x47").
- ELECTRICAL DRAWING NOTES
- 1 PROVIDE POWER TO THE PUMP. PROVIDE 1X15A-3P BREAKER AND 3#10AWG+1#12GND IN 27MM CONDUIT CIRCUITED TO PANEL PP3. PROVIDE LOCAL 15A-3P (MINIMUM) DISCONNECT.
- 2 PROVIDE POWER TO THE COOLING TOWER. PROVIDE 1X30KVA STEP DOWN 3-PHASE TRANSFORMER FROM 600V-3P TO 460V-3P FED FROM PANEL PP3 WITH A 40A-3P BREAKER FOR PRIMARY PROTECTION, 3#8 AWG +1#10 GND IN 27MM CONDUIT AND THE SECONDARY IS 3#6 AWG +1#8 GND IN 35MM CONDUIT. PROVIDE A 40A-3P LOCAL DISCONNECT FOR THE COOLING TOWER.



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As indicated

04/12/22

DP

2024-0177-10

SCALE :

DATE :

PROJECT NO :

CHECKED BY : TB

DRAWN BY :

SHEET NO

ME101



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ISSUANCE

0 ISSUED FOR BID

DATE

04.10.24

MOHAWK COLLEGE

135 FENNELL AVE. WEST, HAMILTON ONT. L9C 0E5

PROJECT

CLIENT

MOHAWK COLLEGE G-WING COOLING TOWER REPLACEMENT

EXISTING HEATING FLOW **PIPING SCHEMATIC**

TORONTO | CALGARY | **KITCHENER** | HAMILTON 800.685.1378 walterfedy.com

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SHEET NO :

M700

SCALE : As indicated DATE : 04/12/22 PROJECT NO : 2024-0177-10 DRAWN BY : DP

CHECKED BY : TB