

- I. ALL DUCTWORK, PIPING & EQUIPMENT IS
- 2. VISIT AND EXAMINE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS AFFECTING WORK. NO ALLOWANCES WILL BE MADE BY THE OWNER FOR DIFFICULTIES ENCOUNTERED IN THE WORK ARISING OUT OF CONDITIONS EXISTING AT
- 3. CONDITIONS SHOWN ON PLANS ARE RELATIVE TO THE WORK TO BE PERFORMED. DRAWINGS ARE BASED ON THE BEST INFORMATION AVAILABLE BUT ARE SUBJECT TO VERIFICATION. VERIFY EXACT LOCATION AND ELEVATION OF ALL SERVICES PRIOR TO COMMENCING ANY WORK. FAILURE TO TO PERFORM SUCH VERIFICATIONS WHICH CAUSE DEFICIENCIES SHALL BE CORRECTED
- DUCTWORK, PIPING, EQUIPMENT ETC. WITH ARCHITECTURAL, STRUCTURAL, ELECTRICAL & FIRE PROTECTION TRADES

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ENGINEERING LTD

Tel: (705) 775-1517

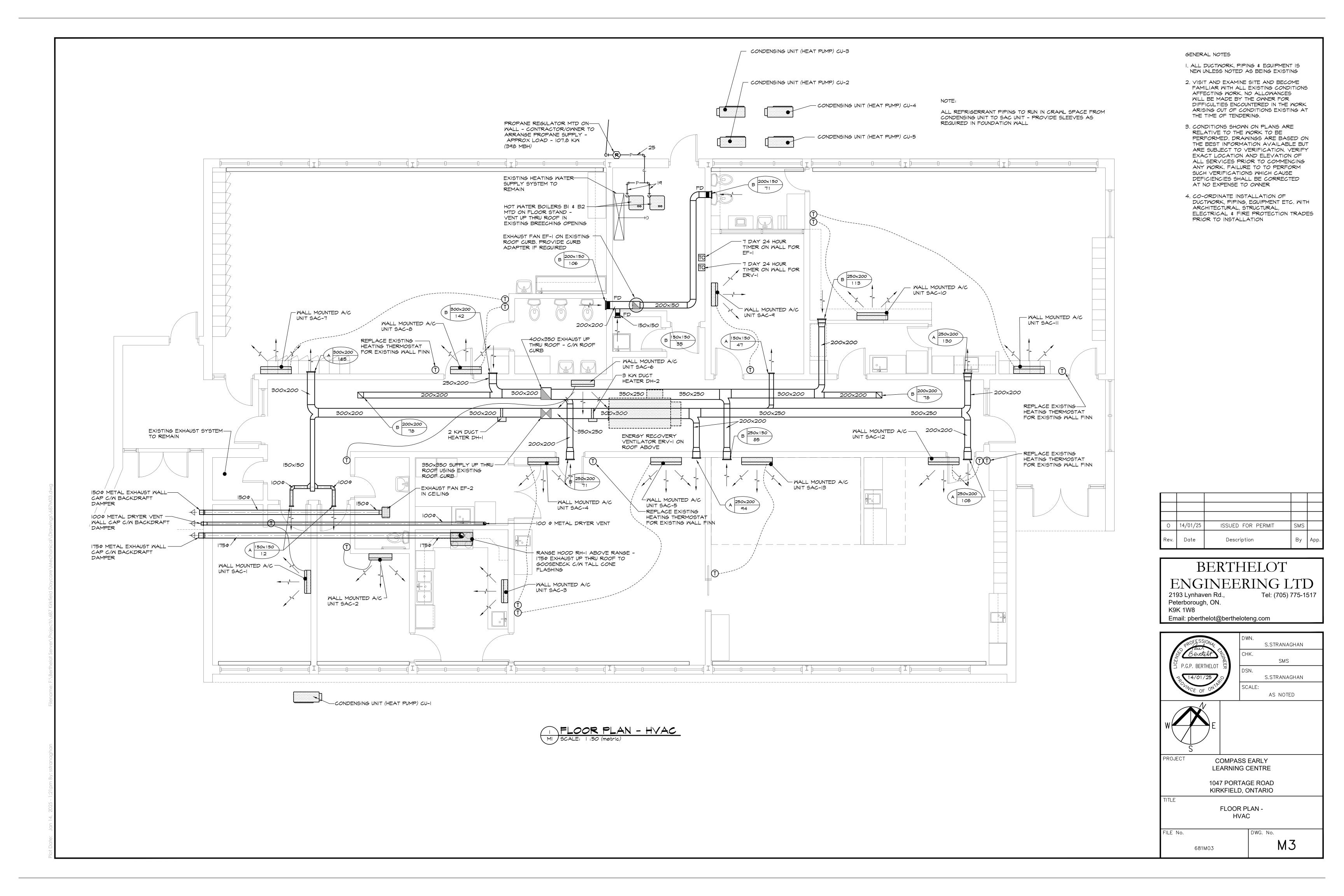
SMS S.STRANAGHAN AS NOTED

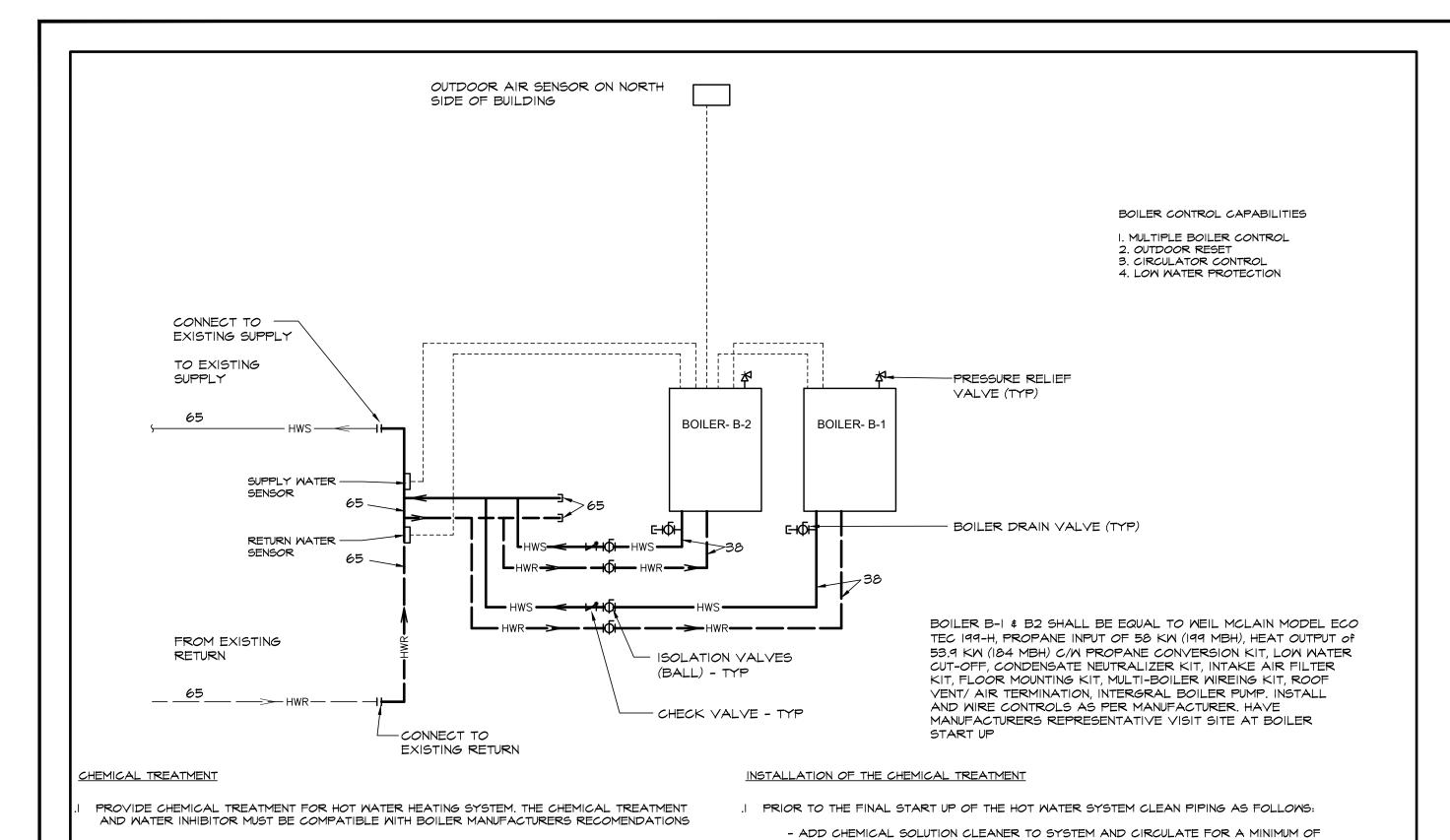
1047 PORTAGE ROAD KIRKFIELD, ONTARIO

PLUMBING & DRAINAGE

FILE No. 681M02

DWG. No.





CHEMICALS FOR THE INITIAL START-UP PLUS ONE MONTH'S SUPPLY CHEMICAL AFTER TURNOVER OF .2 EXACT LOCATION OF EQUIPMENT SHALL BE CO-ORDINATED WITH MECHANICAL CONTRACTOR.

HEATING SYSTEM SCHEMATIC

FOR HOT WATER HEATING SYSTEM PROVIDE A BYPASS CHEMICAL FEEDER AND A MICRON FILTER

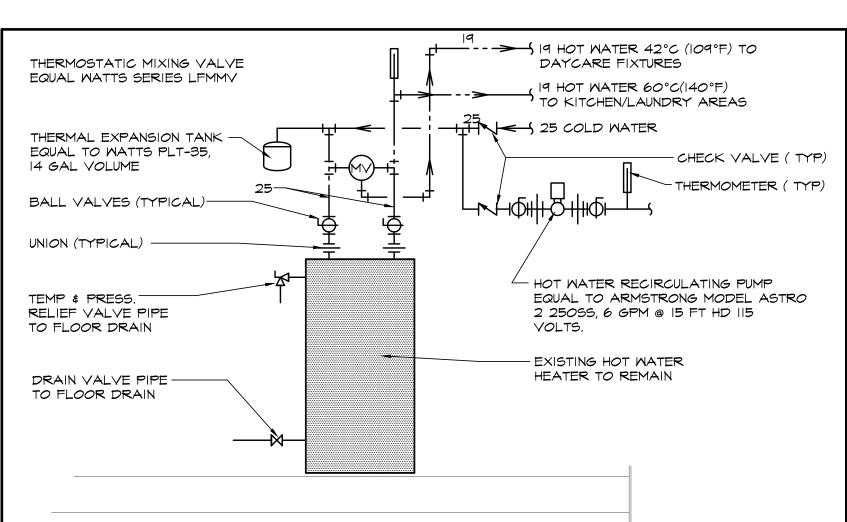
ONE BYPASS MICRON FILTER WITH CAPACITY TO HANDLE 5% OF THE TOTAL RECIRCULATING PUMP'S CAPACITY. PROVIDE SIX (6) FILTER CARTRIDGES FOR REPLACEMENTS, 20 MICRON. PROVIDE NEW

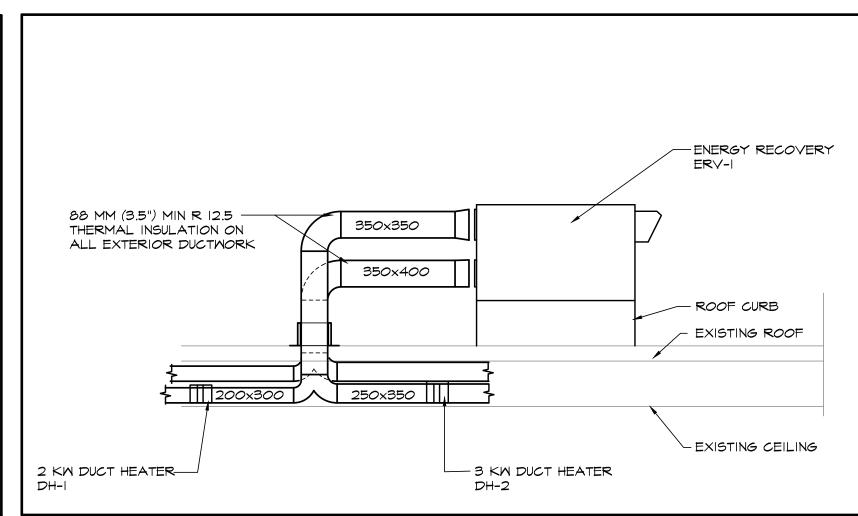
SYSTEM CLEANER AS A PRESCRIBED BY CHEMICAL SUPPLIER TO REMOVE OIL, MILL SCALE AND IRON

ACROSS THE RECIRCULATING PUMP'S SUCTION AND DISCHARGE HEADERS, ONE BYPASS FEEDER,

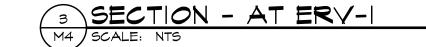
OXIDE FROM THE SYSTEM BY RECIRCULATING AND FLUSHING UNDER THE CHEMICAL SUPPLIER'S SUPERVISION. PROVIDE TEST EQUIPMENT AND WALL MOUNTING CABINET PLUS WATER TREATMENT

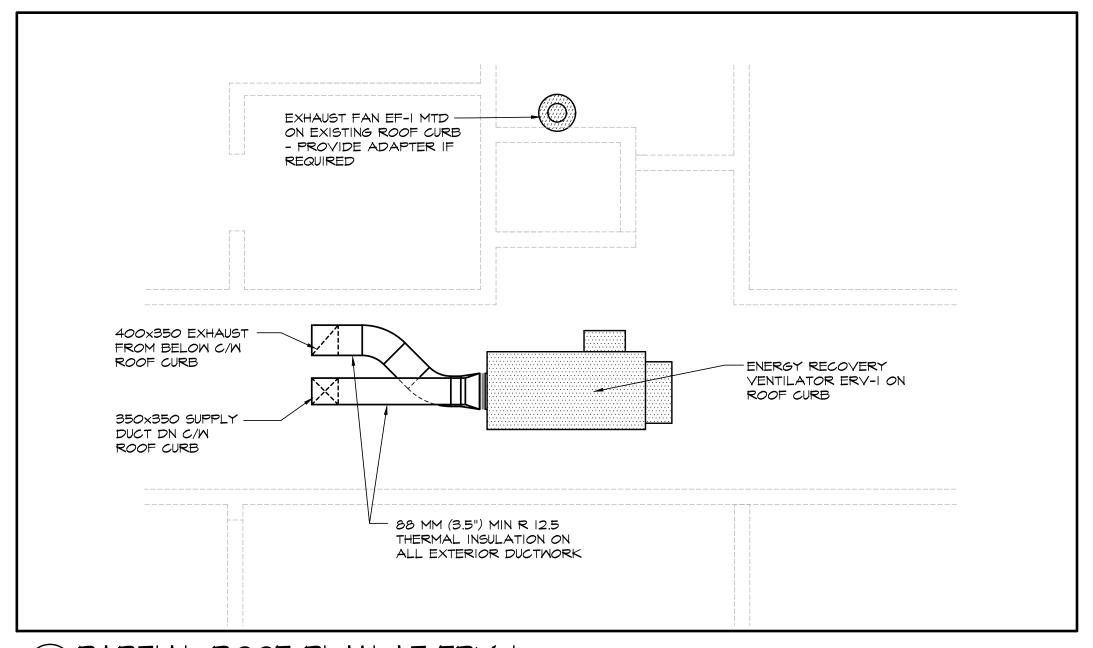
THE SYSTEM AND TECHNICAL SERVICE CALLS AND WRITTEN REPORTS FOR THE FIRST YEAR.





DETAIL WATER HEATER
M4 SCALE: NTS





4 PARTIAL ROOF PLAN AT ERV-I M4 SCALE: 1:50 (METRIC)

										ENER	rgy r	ECOVE	ry sc	CHEDUL	E		OUTDOOR TEMPERATURE CONDITIONS: SUMMER 84.2°F db/73.4°F WINTER : -13.0 °F db
TAG	AREA		MODEL		OUTSIDE AIR	2	EXHAI	UST AIR			SUMMER		ELECT	RICAL		OPERATING WEIGHT IN	PEMARKS
TAG	SERVED	MANUFACTURER	NO.	FLOW, L/S (CFM)	ESP PA (IN)	FAN (hp)	FLOW, L/S (CFM)	ESP PA (IN)	FAN (hp)	SUPPLY TEMP.	SUPPLY TEMP.	VOLTS	PH	MCA			REMARKS
ERV-I	BUILDING	ALDES	PW-20	566 (1200)	100 (0.4)	3/4	566 (1200)	100 (0.4)	3/4	60.7°F	75.8F	240	I	59.6	60	XX	OUTDOOR INSTALLATION, MERY & SUPPLY & EXHAUST FILTERS, DOUBLE WALL CONSTRUCTION WITH I" R4 INSULATION, POLYMER WHEEL WITH SILICA GEL DESICCANT HINGED ACCESS, SINGLE POINT POWER POINT, DISCONECT SWITCH, SUPPLY & EXHAUST WEATHERHOODS, NEOPRENE FAN ISOLATION, 9 KM ELEC FROST CONTROL, OUTDOOR AIR AND RETURN AIR LOW LEAK DAMPER, 18" ROOF CURBS -
																	CONTROLS: CONTROL TERMINAL STRIP, REMOTE PANEL WITH ON/OFF LIGHT, ECONOMIZER LIGHT, 7 DAY TIME CLOCK, DIRTY FILTER SENSOR (BOTH), WHEEL ROTATION SENSOR

24 HOURS. RETURN PIPE MUST PASS THROUGH A PIPE MOUNTED FILTER PRIOR TO

BYPASS FILTER ON A 20mm PIPELINE ACROSS THE SYSTEM PUMP.

COMPANY.

PASSING THROUGH EQUIPMENT. IN ADDITION, PIPE MOUNT A SINGLE CYLINDER PUMP

- FLUSH ENTIRE SYSTEM OUT AND ADD NEUTRALIZER AS RECOMMENDED BY CHEMICAL

.3 CONSULT THE CHEMICAL COMPANY PRIOR TO COMMENCING ABOVE NOTED WORK TO DETERMINE THE STRENGTH AND AMOUNT OF THE CHEMICAL CLEANER AND FILTER SIZES.

.4 THE CHEMICAL SUPPLIER SHALL INSTRUCT THE OWNER'S PERSONNEL IN OPERATION OF THE SYSTEM, DO THE INITIAL CHARGING OF THE SYSTEMS AND MAKE 3 MONTHLY VISITS DURING FIRST YEAR

OF OPERATION AND ASSURE OWNER'S UNDERSTANDING OF OPERATION AND TEST PROCEDURES.

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BERTHELOT ENGINEERING LTD 2193 Lynhaven Rd., Peterborough, ON. K9K 1W8

Email: pberthelot@bertheloteng.com

S.STRANAGHAN SMS P.G.P. BERTHELOT S.STRANAGHAN 14/01/25 AS NOTED COMPASS EARLY LEARNING CENTRE 1047 PORTAGE ROAD KIRKFIELD, ONTARIO DETAILS & SCHEDULE - MECHANICAL DWG. No. M4

681M04

	PLUMBING FIXTURE SCHEDULE APPROVED ALTERNATES: CRANE, MAAX, MOEN, MIROLIN, KHOLER												
NO.	DESCRIPTION	HOT WATER	TEMP WATER	COLD WATER	DRAIN	VENT	FIXTURE MAKE & MODEL	TRIM MAKE & MODEL	REMARKS				
A	WATER CLOSET	-	-	13	75	38	1/8") GLAZED TRAPWAY , LINED FLUSH TANK, 4.8 L	CENTOCO 820STS.001 HEAVY DUTY, OPEN FRONT WITH COVER FOR ELONGATED BOWL STAINLESS STEEL CHECK HINGES, METAL WASHERS & STAINLESS STEEL POSTS AND NUTS	C/W FLEXIBLE SUPPLIES & ESCUTCHEONS				
Al	WATER CLOSET - BARRIER FREE	-	-	13	75	38	AMERICAN STANDARD "CADET PRO" 215AA.054 FLOOR MTD VITREOUS CHINA, ELONGATED , 54 mm (2 1/8") GLAZED TRAPWAY , LINED FLUSH TANK, 6 L (1.6 GAL) FLUSH, CHROME FINISH HANDLE	CENTOCO 820STS.OOI HEAVY DUTY, OPEN FRONT WITH COVER FOR ELONGATED BOWL STAINLESS STEEL CHECK HINGES, METAL WASHERS & STAINLESS STEEL POSTS AND NUTS	C/W FLEXIBLE SUPPLIES & ESCUTCHEONS				
A2	WATER CLOSET - TODDLER	-	-	13	75	38		AMERICAN STANDARD 50016.055 " BABY DEVORO", OPEN FRONT LESS COVER FOR ELONGATED BOWL STAINLESS STEEL CHECK HINGES, METAL WASHERS & STAINLESS STEEL POSTS AND NUTS	C/W FLEXIBLE SUPPLIES & ESCUTCHEONS				
В	LAVATORY	13	-	13	32	32	VITREOUS CHINA WALL MOUNTED, REAR OVERFLOW, RECESSED SELE DRAINING DECK 102mm (4") CENTRES	DELTA 22C551, SINGLE HANDLE, CAST BRASS, CHROME PLATED, 3 1/2" (89 mm) LEVER HANDLE, VANDAL RESISTANT AERATOR, 1.9 L/MIN (0.5 GPM), OFF-SET OPEN GRID STRAINER	MOUNTING HEIGHT AS PER ARCHITECTS DRAWING C/W FIXTURE CARRIER, RIGID SUPPLIES				
BI	LAVATORY - BARRIER FREE	13	-	13	32	32	AMERICAN STANDARD " MURRO" 0954 004EC VITREOUS CHINA WALL MOUNTED, REAR OVERFLOW, RECESSED SELF DRAINING DECK, IO2mm (4") CENTRES, C/W 0059 020EC SHROUD/KNEE CONTACT GUARD	DELTA 22C551, SINGLE HANDLE, CAST BRASS, CHROME PLATED, 3 1/2" (89 mm) LEVER HANDLE, VANDAL RESISTANT AERATOR, 1.9 L/MIN (0.5 GPM), OFF-SET OPEN GRID STRAINER	C/W FIXTURE CARRIER, THERMOSTATIC MIXING VALVE, RIGID SUPPLIES				
B2	LAVATORY - BARRIER FREE	13	-	13	32	32		DELTA 22C451, SINGLE HANDLE, CAST BRASS, CHROME PLATED, 3 1/2" (89 mm) LEVER HANDLE, VANDAL RESISTANT AERATOR, 1.9 L/MIN (0.5 GPM), OPEN GRID STRAINER	C/W FLEXIBLE SUPPLIES & ESCUTCHEONS				
C	SINK - I COMP.	13	-	13	38	32	120 GUAGE 18-8 STAIN ESS STEEL EXPOSED FINISHED	DELTA IOOLF-HDF SINGLE HANDLE DECK FAUCET, ALL METAL BODY, 22Imm (8 II/16") LONG SWING SPOUT., 8" CENTRES, CERAMIC CARTRIDGE, 5/7 L/min (I.5 GPM),	C/W FLEXIBLE SUPPLIES & ESCUTCHEONS				
CI	SINK - HAND	13	-	13	38	32	GUAGE, 18-8 STAINLESS STEEL, EXPOSED FINISHED ARE SATIN FINISHED, 102mm (4") CENTRESET, 89mm (3 1/2") BASKET STRAINER -	DELTA 27C944-LS-TI TWO HANDLE DECK FAUCET, ALL METAL BODY, I52mm (6") GOOSENECK SWING SPOUT., IO2mm (4")" CENTRES,HOOD BLADE HANDLES, LIMITED SWING, TEMPERATURE INDICATORS, CERAMIC CARTRIDGE, 5/7 L/min (I.5 GPM),	C/W FLEXIBLE SUPPLIES & ESCUTCHEONS				
C2	EXISTING SINK - 3 COMP.	13	-	13	38	32	EXISTING 5 COM - TO REMAIN	DELTA IOOLF-HDF SINGLE HANDLE DECK FAUCET, ALL METAL BODY, 22Imm (8 II/I6") LONG SWING SPOUT., 8" CENTRES, CERAMIC CARTRIDGE, 5/7 L/min (I.5 GPM),	C/W FLEXIBLE SUPPLIES & ESCUTCHEONS				
D	LAUNDRY BOX	13	-	13	50	38	PPP MM-500MLB, STEEL BOX WITH WHITE POWDER COATED FINISH, 50mm DRAIN PIPE CONNECTION WATER HAMMER ARRESTORS, , QUARTER TURN BALL VALVES						
E	ACTIVITY SINK	13	-	13	38	32	250mm (IO") BACK SPLASH, DRAIN ASSEMBLY - PUNCHED FOR 2 FAUCETS	DELTA 27C944-LS-TI TWO HANDLE DECK FAUCET, ALL METAL BODY, 152mm (6") GOOSENECK SWING SPOUT., 203mm (8") CENTRES, HOOD BLADE HANDLES, LIMITED SWING, TEMPERATURE INDICATORS, CERAMIC CARTRIDGE, 5/7 L/min (1.5 GPM),	C/W FLEXIBLE SUPPLIES & ESCUTCHEONS - MOUNT AS PER ARCHTECTURAL DRAWINGS				

APPROVED ALTERNATES: CRANE, MAAX, MOEN, MIROLIN, KHOLER

			DIFFUSER &	GRILLE SCHEDULE
TYPE	MANUFACTURER	FUNCTION	MODEL	REMARKS
Α	E.H. PRICE	EXHAUST	535D/F/L/A/BI2	SINGLE DEFLECTION, 1/2" BLADE SPACING, 32 (1-1/4") FLAT BORDER, OPPOSED BLADE DAMPER, SCREW FASTENING, WHITE FINISH
В	E.H. PRICE	TRANSFER	535/F/L/A/BI2	SINGLE DEFLECTION, 1/2" BLADE SPACING, 32 (1-1/4") FLAT BORDER,, SCREW FASTENING, WHITE FINISH
C	E.H. PRICE	TRANSFER	STGI/BF/BI5	HEAVY DUTY STEEL DOOR GRILLE, I 1/5/16" FLAT BORDER BOTH SIDES, SCREW FASTENING, ALUMINUM POWDER COAT FINISH

ALTERNATES : METALAIRE, NAILOR

	ELECTRIC DUCT HEATER SCHEDULE											
UNIT NO.	MANUFACTURER	MODEL	DUC DIMENSIC WIDTH		kΜ	VOLTS/ PHASES	STAGES	AIR FLOM L/S	AT TEMP F°	CONT. VOLTS	OPTIONS	
DH-I	THERMOLEC	FC	300	200	2	240/1	SCR	189	10	24	C/W OPTION 1, 2, 3, 4, 5, 10	
DH-2	THERMOLEC	FC	300	250	æ	240/1	SCR	379	10	24	C/W OPTION 1, 2, 3, 4, 5, 10	

REQUIRED OPTIONS:

I BUILT-IN DISCONNECT SMITCH

6 LOAD FUSES, HRC TYPE 2 SCR PROPORTIONAL CONTROLLER 7 PILOT LIGHTS

3 SCREENS BOTH SIDES

8 FULL BREAK CONTRACTORS

4 ELECTRONIC AIR FLOW SENSOR 9 ELECTRONIC ROOM THERMOSTAT RT 10 MODULATING DUCT THERMOSTAT - 0 DEG F TO 100 DEG F 5 SOLID STATE RELAY (TRIAC)

II 24 VOLT CONTROL CIRCUIT - FOR CONNECTION

TO BY-PASS BOX CONTROLS

									FAI	N SCH	EDULE		ALTERNA	ITES : PEN	IN, COOK		
FAN					MODEL	CAPA	KCITY	EXT. STAT	IC PRESS	1		MO ⁻	TOR		MEI	SHT	
NO.	LOCATION	FUNCTION	MANUFACTURER	FAN TYPE	NO.	L/S	CFM	ра	inch	R.P.M.	HP OR W	VOLTS	PHASE	RPM	KG	LBS	REMARKS
EF-I	ROOF	EXHAUST	GREENHECK	ROOF EXHAUST	G-090-VG	2 2	450	62	0.25	1265	1/10 HP	115	I	1725	13.6	30	5.3 SONES C/W VARI-GREEN EC MOTOR, DIAL FOR BALANCING, CURB, DISCONNECT SMITCH, BACKDRAFT DAMPER - INTERLOCK WITH 7 DAY 24 HOUR TIMER
EF-2	UNIV MR	EXHAUST	GREENHECK	CEILING EXHAUST	SP-AP05IIW	38	80	31	0.125	817	ВМ	115	I	817	4.5	10	0.3 SONES C/W MULTI SPEED CONTROLLER, BACKDRAFT DAMPER - INTERLOCK WITH LIGHTING CONTROL
RH-I	STAFF ROOM	EXHAUST	BROAN	RANGE HOOD	42000 SERIES	52	<u>0</u>	62	0.25	-	-	115	ı	-	-	-	750 mm (30") WIDE STAINLESS STEEL C/W BACK DRAFT DAMPER SPEED CONTROLLER \$ LIGHTS

	LEGEND
SYMBOL	DESCRIPTION
	EXISTING SANITARY ABOVE GROUND TO REMAIN
	EXISTING SANITARY BELOW GROUND TO REMAIN
	EXISTING DOMESTIC COLD WATER TO REMAIN
	EXISTING DOMESTIC HOT WATER TO REMAIN
	EXISTING PIPING, EQUIPMENT ETC. TO BE REMOVED
	SANITARY ABOVE GROUND
	SANITARY BELOW GROUND
	DOMESTIC COLD WATER
	DOMESTIC HOT WATER - 42°C (109°F)
60 ———	DOMESTIC HOT WATER - 60° (140°F)
	DOMESTIC HOT WATER RECIRCULATING LINE
	SANITARY VENT
——ф—	BALL VALVE
	PLUMBING FIXTURE DESIGNATION
P	PROPANE GAS PIPING
co a — co II—	CLEANOUT (BELOW GROUND & ABOVE GROUND DRAINAGE)
II NEHB	NON FREEZE HOSE BIBB
\boxtimes	SUPPLY DIFFUSER
	RETURN OR EXHAUST GRILLE
	SIDEMALL SUPPLY OR RETURN GRILLE
	10"x8" TRANSFER SHEET METAL SLEVE IN WALL ABOVE CEILING (2" WIDER THAT WALL THICKNESS)
	RETURN OR EXHAUST DUCT DOWN OR AWAY
	SUPPLY DUCT DOWN OR AWAY
	SUPPLY DUCT UP OR TOWARDS
	RETURN OR EXHAUST UP OR TOWARDS
TYPE A SIZE 100 FLOW (CFM)	DIFFUSER DESIGNATION TYPE - REFER TO SCHEDULE SIZE - DIFFUSER NECK OR GRILLE SIZE
	FLEXIBLE CONNECTION
	TURNING VANES (DOUBLE THICKNESS)
FD FD	TYPE "B" FIRE DAMPER IN HORIZONTAL OR VERTICAL DUCT
BDD BDD	BACKDRAFT DAMPER
JVD	VOLUME DAMPER
	THERMOSTAT (MTD AT 48" AFF UNLESS OTHERWISE NOTED) TEMPERATURE SENSOR (MTD AT 5'-6" AFF UNLESS OTHERWISE NOTED)
	THERMOSTAT CONTROL LINE
TC	24 HOUR - 7 DAY TIME CLOCK
CTE	CONNECT TO EXISTING

GENERAL NOTES

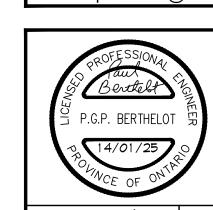
- I. ALL DUCTWORK, PIPING & EQUIPMENT IS NEW UNLESS NOTED AS BEING EXISTING
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- 4. CO-ORDINATE INSTALLATION OF DUCTWORK, PIPING, EQUIPMENT ETC. WITH ARCHITECTURAL, STRUCTURAL, ELECTRICAL & FIRE PROTECTION TRADES PRIOR TO INSTALLATION

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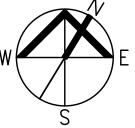
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S.STRANAGHAN SMS S.STRANAGHAN AS NOTED



COMPASS EARLY LEARNING CENTRE

1047 PORTAGE ROAD

KIRKFIELD, ONTARIO SCHEDULES & LEGEND

MECHANICAL FILE No. DWG. No.

681M05

															SP	LIT /	AIR (CON	DITIO	ning s	SYSTEM	45	CHEDULE	E AL	TERNATES :	MITSUBIS	HI ELECTR	IC, CARRIER	
										INDOC	R UNIT											<i>0</i> U ⁻	TDOOR UNIT -	HEA-	T PUMP				
					COOLING CAPACIT		H	EATING	CAPACI	TY				FAN				ELECT	PIC.AI						ELECTRICAL		LOW		REMARKS
NO.	LOCATION	MANUFACTURER	MODEL NO.	TYPE	0/11/1011		AT PUMP	GAS	INPUT	GAS OUT	PUT	AIRFLON	١	HP R.P.M.	EXT STA	-	_			SYSTEM NO.	MANUFACT	TURER	MODEL NO			_	AMBIENT CONTROL	REFRIGERAN	
					KM Mi	BH KW	N MBH	KM	MBH	KM 1	MBH L/9	5 (HI) cfr	m (HI)		PA	INCH	+ VOLTS	5 PH	AMPS -				VC	OLTS	PH MCA	MOCP			
SAC-I	STAFF	DAIKIN	FTXSI5LVJU	MALL	3.3 11.2	25 3.3	3 11.25	NA	NA	NA	NA :	268 5	568		-	-	240	l		CU-1	DAIKIN	١ .	4MXS36RMVJUA 2	240	1 23.9	30	NO	410A	C/W FILTER KIT REFRIGERANT PIPING, & REFRIGERANT, - PIPE CONDENSATE TO NEAREST DRAIN -
SAC-2	OFFICE	DAIKIN	FTXSI5LVJU	MALL	3.3 11.2	25 3.3	3 11.25	NA	NA	NA	NA :	268 5	568	- -	-	-	240	1	- -										
SAC-3	KITCHEN	DAIKIN	FTXSI8LVJU	MALL	3.65 3	3.5 3.9	15 13.5	NA	NA	NA	NA :	295 6	625		-	-	240	ı											
SAC-4	DINING	DAIKIN	FTXSI8LVJU	MALL	3.65 14	1.9 3.9	15 14.9	NA	NA	NA	NA :	295 6	625		-	-	240	1		CU-2	DAIKIN	١ .	4MX536RMVJUA 2	240	1 23.9	30	NO	410A	
SAC-5	DINING	DAIKIN	FTXSI8LVJU	MALL	3.65 14	1.9 3.9	15 14.9	NA	NA	NA	NA :	295 6	625	- -	-	-	240	ı			•	•						•	
SAC-6	CORRIDOR	DAIKIN	FTXS09LVJU	MALL	1.8 6.	.21 1.8	3 6.21	NA	NA	NA	NA :	295 6	625		-	-	240	ı											
SAC-7	PRESCHOOL	DAIKIN	FTXS24LVJU	MALL	5.3 18	8 5.3	3 18	NA	NA	NA	NA E	330 6	699		-	-	240	ı		CU-3	DAIKIN	\ <u> </u>	4MXS36RMVJUA 2	240	1 23.9	30	NO	410A	
SAC-8	PRESCHOOL	DAIKIN	FTXS24LVJU	MALL	5.3 18	8 5.3	3 18	NA	NA	NA	NA E	330 6	699	- -	-	-	240	ı					_	•	•			•	
SAC-9	MULTI USE	DAIKIN	CTXS07LVJU	MALL	1.5 5.	.14 1.5	5 5.14	NA	NA	NA	NA	165 3	350		-	-	240	ı		CU-4	DAIKIN	١ .	4MXS36RMVJUA 2	240	1 23.9	30	NO	410A	
SAC-10	TODDLER	DAIKIN	FTXSI8LVJU	MALL	4.5 15.	43 4.5	5 15.43	NA	NA	NA	NA :	295 6	625		-	-	240				•	•	_	•	•			•	
SAC-II	TODDLER	DAIKIN	FTXSI8LVJU	MALL	4.5 5.	43 4.5	5 15.43	NA	NA	NA	NA :	295 6	625		-	-	240												
SAC-12	INFANT	DAIKIN	FTXS24LVJU	MALL	5.3 18	ð 5.3	3 18	NA	NA	NA	NA E	330 6	699		-	-	240	ı		CU-5	DAIKIN	١ .	4MXS36RMVJUA 2	240	1 23.9	30	NO	410A	
SAC-13	INFANT	DAIKIN	FTXS24LVJU	MALL	5.3 18	g 5.3	3 18	NA	NA	NA	NA E	330 6	699		-	-	240												

GENERAL SPECIFICATION

- PROVIDE ALL EQUIPMENT, MATERIALS, LABOUR AND SERVICES, ETC. NECESSARY TO COMPLETE THE WORK. ALL MATERIALS AND EQUIPMENT USED ARE TO BE NEW AND ARE TO HAVE C.S.A. APPROVAL. MATERIALS AND EQUIPMENT ARE SPECIFIED BY NAME TO ESTABLISH A STANDARD OF QUALITY AND WORKMANSHIP. USE ONLY SPECIFIED EQUIPMENT OR ALTERNATES NOTED.
- .2 VISIT AND EXAMINE THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS AFFECTING THE WORK, PRIOR TO SUBMITTING TENDER. NO ALLOWANCES IN COST WILL BE MADE BY THE OWNER FOR ANY DIFFICULTIES ENCOUNTERED IN THE WORK ARISING OUT OF CONDITIONS EXISTING AT THE TIME OF TENDERING.
- .3 OBEY ALL APPLICABLE CODES AND REGULATIONS OF ALL GOVERNING AUTHORITIES HAVING JURISDICTION OVER THE WORK.
- .4 WHERE THE SUPPLY OF AN ITEM IS SPECIFIED GENERALLY ONLY WITHOUT EXTENSIVE DETAIL, THIS IMPLIES THE ITEM AND/OR WORK SHALL CONFORM WITH THE REQUIREMENTS OF THE GOVERNING AUTHORITY AND/OR MANUFACTURER'S RECOMMENDATIONS.
- .5 CONFORM TO THE BEST PRACTICES APPLICABLE TO THIS TYPE OF WORK. INSTALL ALL EQUIPMENT AND SYSTEMS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION BUT CONSISTENT WITH THE GENERAL REQUIREMENTS OF THIS SPECIFICATION.
- .6 ARRANGE AND PAY FOR ALL PERMITS, INSPECTION FEES, CERTIFICATES, ETC. CONNECTED WITH THE WORK.
- .7 OBTAIN FROM THE CONSULTANT TWO EXTRA SETS OF WHITE PRINTS ON WHICH TO NOTE AND CLEARLY MARK ANY APPROVAL DEVIATIONS FROM THE WORK SHOWN ON THE PLANS AS THE JOB PROGRESSES. THESE SETS OF PRINTS SHALL BE KEPT UP TO DATA AND RETURNED TO THE OWNER FOR RECORD PURPOSES AT THE COMPLETION OF THE JOB.
- .8 PERFORM ALL TESTS REQUIRED BY THE AUTHORITIES HAVING JURISDICTION, SUPPLYING THEREFORE ALL NECESSARY EQUIPMENT AND LABOUR.
- GUARANTEE ALL WORK FOR A PERIOD OF ONE YEAR. IT SHALL BE UNDERSTOOD THAT IF ANY DEFECTS BECOME EVIDENT WITHIN THE GUARANTEE PERIOD, ALL NECESSARY REPAIRS AND REPLACEMENTS TO THE WORK SHALL BE MADE WITHOUT COST TO THE OWNER. ALSO PAY FOR MAKING GOOD ANY OTHER WORK DAMAGED THROUGH DEFECTS IN THE WORK OF THIS CONTRACT DURING BOTH CONSTRUCTION AND GUARANTEE PERIODS.
- .IO PROVIDE HANGERS FOR ALL PIPES AND DUCTS AND AVOID ANY DIRECT CONTACT OF DISSIMILAR METALS. SPACE HANGERS TO PREVENT SAGGING OR LOADING JOINTS.
- .II HANGERS SHALL ONLY BE SUSPENDED FROM STRUCTURAL BEARINGS SUCH AS STEEL BEAMS OR TOP CHORD OF JOISTS. WHERE SUCH BEARINGS DO NOT EXISTS, USE NECESSARY BRIDGING STEEL.
- .12 PROVIDE SUPPORTS FOR EQUIPMENT INSTALLED IN THIS CONTRACT, INCLUDING HANGER RODS AND SPRING VIBRATION ISOLATORS.
- .13 PROVIDE MOTORS AND DRIVES FOR ALL POWERED EQUIPMENT OF CANADIAN MAKE AND LOCALLY SERVICEABLE MANUFACTURE.
- .14 SUBMIT I ELECTRONIC (PDF) COPY OF SHOP DRAWINGS OF EACH PIECE OF MANUFACTURED EQUIPMENT TO CONSULTANT FOR REVIEW.
- .15 RUN IN ADJUST AND BALANCE THE SYSTEMS FOR PROPER OPERATION.
- .16 ALL EQUIPMENT, PIPING, DUCTWORK, ETC. IS NEW UNLESS NOTED AS BEING EXISTING.
- .17 VERIFY EXACT LOCATION AND ELEVATION OF ALL EXISTING SERVICES PRIOR TO COMMENCING ANY WORK.
- .18 MAINTAIN ALL NECESSARY INSURANCE TO PROTECT THE OWNER AND ALL TRADES FROM ALL POSSIBLE CLAIMS DURING THE CONSTRUCTION PERIOD.
- .19 DO ALL NECESSARY REQUIRED CUTTING AND PATCHING AS MAY BE REQUIRED TO PERFORM THE WORKS OF THIS CONTRACT. CUTTINGS SHALL BE KEPT TO A MINIMUM, AND SHALL BE PERFORMED WITH CLEAN CUT STRAIGHT EDGES. PATCHING SHALL BE NEAT AND CLEAN AND RESTORE TO ORIGINAL FINISH CONDITIONS USING SIMILAR TYPES TO MATERIALS. USE ONLY TRADES PERSONNEL SKILLED IN THE VARIOUS TYPES OF WORK REQUIRED (ig. MASONS, ROOFERS, ETC.).
- .20 UPON COMPLETION, REMOVE ALL WASTES, MATERIAL, ETC. AND LEAVE SITE IN CLEAN
- .21 AT PROJECT COMPLETION AND PRIOR TO FINAL INSPECTION DELIVER TO THE CONSULTANT THREE (3) COMPLETE SETS OF OPERATION AND MAINTENANCE DATA FOR ALL EQUIPMENT SUPPLIED. SUBMIT THREE (3) VINYL HARD COVERED LOOSE LEAF BINDERS. INFORMATION REQUIRED IN THESE MANUALS IS DATA PERTAINING TO EFFICIENT OPERATING AND MAINTAINING OF EQUIPMENT, INCLUDING EQUIPMENT INSTALLATION INSTRUCTIONS SUPPLIED BY MANUFACTURER. INCLUDE FINAL REVIEWED SHOP DRAWINGS THAT HAVE BEEN SUBMITTED. COMPLETED SUBMISSION MUST BE INDEXED AND DIVIDED BETWEEN INDIVIDUAL COMPONENTS.
- .22 PROVIDE & PAY FOR SERVICES OF FULLY EXPERIENCED TECHNICIAN TO INSTRUCT PERSONNEL DESIGNATED BY THE OWNER IN THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT INSTALLED UNDER THIS CONTRACT INCLUDING CONTROLS, THERMOSTATS ETC.

SYSTEM FLUSHING AND CLEANING

- FLUSH AND CLEAN FLUID-CARRYING SYSTEMS AFTER COMPLETION WITH CLEAR WATER AT HIGHEST OBTAINABLE PRESSURE AND VELOCITY. DISCHARGE FLUSHING WATER THROUGH STRAINERS AND OUT THROUGH SYSTEM DRAINS WITH HOSE END. CLEAN STRAINERS. REPEAT FLUSHING OPERATION TO SATISFACTION OF CONSULTANT UNTIL NO FOREIGN MATTER COLLECTS IN STRAINERS. DRAIN AND CLEAN TANKS AND INSPECT TUBING AND PASSAGEWAYS IN MAJOR EQUIPMENT AND CLEAN AS NECESSARY.
- .2 ENSURE THAT VALVES INCLUDING CONTROL VALVES ARE FULLY OPEN DURING FLUSHING.
- .3 PRIOR TO STARTING FANS AND AIR HANDLING EQUIPMENT INSPECT AND CLEAN THE OUTSIDE AND INSIDE OF THE AIR HANDLING SYSTEMS INCLUDING FANS, DUCTS, COILS, AND TERMINAL UNITS TO ENSURE THAT THEY ARE COMPLETELY FREE FROM DUST AND DEBRIS. INSTALL CLEAN FILTERS IN SYSTEMS REQUIRING FILTERS.
- .4 CLEAN POLISHED, PAINTED AND PLATED WORK. CLEAN ALL FIXTURES. REMOVE DEBRIS, SURPLUS MATERIAL AND ALL TOOLS FROM SITE.
- .5 CARRY OUT ADDITIONAL CLEANING OPERATIONS AND CHEMICAL TREATMENT ON SYSTEMS SPECIFIED IN OTHER SECTIONS OF THIS DIVISION. REFER ALSO TO GENERAL REQUIREMENTS FOR GENERAL CLEANUP OF SITE.

ACCESS PANELS AND DOORS

- I INSTALL CONCEALED MECHANICAL EQUIPMENT REQUIRING ADJUSTMENT OR MAINTENANCE IN LOCATIONS EASILY ACCESSIBLE THROUGH ACCESS PANELS OR DOORS. INSTALL SYSTEMS AND COMPONENTS TO RESULT IN A MINIMUM NUMBER OF ACCESS PANELS. INDICATE ACCESS PANELS AND DOORS ON 'AS BUILT' DRAWINGS.
- .2 PROVIDE OTHER RESPECTIVE DIVISIONS WITH PANELS, DOORS OR FRAMES TOGETHER WITH PERTINENT INSTALLATION INFORMATION. ENSURE ACCESS PANELS AND DOORS ARE INSTALLED IN A MANNER TO MATCH BUILDING MATERIAL AND GRIDS WHERE APPLICABLE.
- .3 IN WALLS, CEILINGS, ETC. USE ACCESS DOORS CONSTRUCTED OF 12 GAUGE STEEL WITH FRAME STYLE COMPATIBLE WITH BUILDING SURFACE IN WHICH IT IS MOUNTED, EQUIPPED WITH CONTINUOUS PIANO HINGES AND SCREWDRIVER OPERATED LATCHES. USE ULC LISTED DOORS IN FIRE RATED WALLS AND CEILINGS. USE ACCESS DOORS MANUFACTURED BY ACUDOR, MIFAB OR LEHAGE. PROVIDE ACCESS DOORS AS FOLLOWS UNLESS OTHERWISE NOTED:
 - FOR ACCESS TO VALVES, BALANCING DAMPERS AND ITEMS REQUIRING ONLY HAND ACCESS USE 225mm X 225mm (9"x9").
- FOR ACCESS TO EQUIPMENT REQUIRING PERSONNEL ENTRY USE 600mm X 600mm (24"x24").

 .4 INSTALL AT EACH FIRE DAMPER AN ACCESS DOOR IN DUCT TO ALLOW FOR INSPECTION AND RESETTING OF RELEASE DEVICE. IF DUCT IS ENCLOSED IN AN ARCHITECTURAL FINISH, ALSO PROVIDE AN ACCESS DOOR IN FINISH AS DESCRIBED ABOVE FOR DAMPER ACCESS

PLUMBING & DRAINAGE

SYSTEM XFR 15-50 DWV

- I SANITARY DRAINAGE AND VENT PIPING ABOVE FLOOR SHALL BE PVC DWV CERTIFIED TO CSABIBI.Z. OR TYPE DWV HARD DRAWN COPPER TUBE WITH CAST BRASS SOLDER FITTINGS (USE 95/5 SOLDER), UP TO 63mm (2-1/2") COPPER OVERCAST IRON. NO NON APPROVED PVC TO BE LOCATED IN RETURN AIR CEILING SPACE.
- .2 SANITARY DRAINAGE AND VENT PIPING IN PLENUM SPACE SHALL BE CERTIFIED TO CSA BIBI.2 AND TESTED AND LISTED IN ACCORDANCE WITH CANVULC SIO2.2 AND CLEARLY MARKED WITH CERTIFICATION LOGO INDICATING FLAME SPREAD RATING NOT MORE THAN 25 AND SMOKE-DEVELOPED CLASSIFICATION NOT EXCEEDING 50. PIPING EQUAL TO IPEX
- .3 SANITARY DRAINAGE AND VENT PIPING BELOW FLOOR SHALL BE ABS-DWV PIPING WITH SOLVENT WELD JOINTS FOR SIZES UP TO 75mm (3"). FOR SIZES 4" AND LARGER USE PVC PIPING WITH RING TITE COUPLINGS TO CSAI82.1 (DR35 OR 28).
- .4 HOT AND COLD WATER PIPING SHALL BE TYPE 'L' HARD DRAWN COPPER TUBE WITH WROUGHT COPPER SOLDER FITTINGS (USE 95/5 SOLDER).
- .5 DOMESTIC WATER PIPING BELOW FLOOR SHALL BE TYPE 'K' SOFT DRAWN COPPER TUBE WITH BRONZE FLARE FITTINGS FOR SIZES UP TO 50mm (2").

<u>INSULATION</u>

I COVER COLD WATER PIPING AND ABOVE HORIZONTAL STORM PIPING WITH 25mm (I")
THICK JOHNS MANVILLE MICROLOK GLASS FIBRE DUAL TEMPERATURE INSULATION WITH
FACTORY APPLIED FIRE RESISTANT GLASS FIBRE REINFORCED KRAFT PAPER AND
ALUMINUM FOIL VAPOUR BARRIER, AND ALL SERVICE JACKET. USE PRESSURE SENSITIVE
LAP SEALING SYSTEM. INSTALL INSULATION AS PER MANUFACTURERS RECOMMENDATIONS

INSULATION THICKNESS ON HOT WATER PIPE SIZES							
TEMPERATURE		NOMI	NAL PIPE S	JZE			
RANGE DEG F	3/4"	I" TO I 1/4"	1/2" TO 3"	1 1/2" TO 3"	4" TO 6"		
105° TO 140°	<u>".</u>	<u> </u>	1.5"	1.5"	1.5"		

.2 ALL EXPOSED INSULATIONS SHALL BE COVERED WITH WHITE PVC INSULATED FITTING COVERS AND JACKETING SYSTEM EQUAL TO JOHNS MANVILLE ZESTON 2000. INSTALL AS PER MANUFACTURERS RECOMMENDATIONS

<u>VALVES</u>

I BALL VALVES SHALL BE, FULL PORT, PTFE SEATS, O-RING STEM SEAL, SELF CLEANING CHROME PLATED BRASS BALL, VINYL GRIP ON CADMIUM PLATED STEEL HANDLE, SOLDER ENDS WITH PRESSURE RATING OF 600 PSI EQUALS: WATTS, TOYO

NON-FREEZE HOSE BIBB

- .I NON-FREEZE HOSE BIBB SHALL BE AUTOMATIC DRAINING WALL HYDRANT, FLUSH INSTALLATION, NON-FREEZE INTEGRAL BACKFLOW PREVENTER, COPPER CASING, ALL BRONZE INTERIOR PARTS CERAMIC DISC CARTRIDGE, NICKEL BRONZE BOX, HINGED COVER WITH OPERATING KEY LOCK. ALTERNATES: WATTS, J.R.SMITH, ZURN
- PIPELINE SPECIALTIES

ALTERNATES: WATTS, J.R.SMITH, ZURN

- .I TRAP PRIMERS SHALL BE WITH BRONZE BODY, I6mm (5/8") SWEAT
 CONNECTIONS FOR WATER SUPPLY LINE AND I6mm (5/8") FEMALE IPS OUTLET CONNECTION TO
 DRAIN. CONNECT TO NEAREST PLUMBING FIXTURE WATER SUPPLY.
 ALTERNATES: WATTS, J.R.SMITH, ZURN
- .2 ELECTRONIC TRAP PRIMING MANIFOLD SHALL BE EQUAL TO PPP INC MODEL PT SERIES (SIZE AS NUMBER OF TRAPS) 120 VOLT INSTALL AS PER MANUFACTURES RECOMMENDATIONS
- .3 PIPELINE SHOCK ABSORBERS SHALL BE WITH 18-8 STAINLESS
 STEEL CONSTRUCTION, AIR CHARGED BELLOWS AND THREADED MALE OUTLETS.

CLEANOUTS

- .I UNFINISHED AND FINISHED AREA CLEANOUTS SHALL BE WITH BOLTED CLEANOUT PLUG, NICKEL BRONZE FRAME, ROUND FULL OPENING NICKEL BRONZE ACCESS COVER, EXTENDED FERRULE, NEOPRENE GASKETS AND VANDAL PROOF SCREMS. EQUALS: WATTS, J.R.SMITH, ZURN.
- .2 CONCEALED STACK CLEANOUTS SHALL BE ZURN ZSS-1445-1 CAST IRON CLEANOUT TEE AT BASE OF CONCEALED STACKS, AND ROUND STAINLESS STEEL ACCESS COVER. EQUALS: WATTS, J.R.SMITH, ZURN.

FLOOR DRAINS

.I FLOOR DRAINS IN CONC FLOOR TYPE "A" SHALL BE WITH CAST IRON BODY, TRAP PRIMER, I3mm (I/2") THICK I25mm (5") DIAMETER NICKEL BRONZE, STRAINER AND GRATE. EQUALS: WATTS, J.R. SMITH, ZURN.

PLUMBING INSTALLATION

- .I PROVIDE A COMPLETE DOMESTIC HOT AND COLD WATER DRAINAGE AND VENT TO SERVE FIXTURES AND ITEMS SPECIFIED AND SHOWN ON PLANS. INSTALL AS PER OBC PART 7 AND AUTHORITY HAVING JURISDICTION.
- .2 ROUTE ABOVE GROUND PIPING IN CEILING SPACE OR WALL INTERIORS FOR CONCEALMENT WHERE EVER POSSIBLE UNLESS SPECIFICALLY NOTED OTHERWISE ON DRAWINGS. CO-ORDINATE PIPE INSTALLATION IN WALLS WITH MASON AND OR DRYWALLER OR APPROPRIATE TRADE INVOLVED
- .4 INSTALL ISOLATION VALVES IN EACH BRANCH LINES FROM MAINS AND AT BASE OF EACH RISER. PROVIDE A FIRE RATED ACCESS DOOR AT EACH CONCEALED VALVE.
- .5 INSTALL PIPING STRAIGHT PARALLEL AND CLOSE TO WALLS AND CEILINGS, WITH APPROPRIATE PITCH. USE STANDARD FITTINGS FOR DIRECTION CHANGES.
- .6 INSTALL FLANGES OR UNIONS TO PERMIT REMOVAL OF EQUIPMENT WITHOUT DISTURBING
- .7 PROVIDE COMPLETE DRAINAGE AND VENT SYSTEMS TO SERVE FIXTURES AND ITEMS SPECIFIED AND AS SHOWN ON PLANS.
- .8 INSTALL PIPING PASSING THROUGH FIRE SEPARATIONS WITH NON-COMBUSTIBLE MATERIAL ONE SIDE OF SEPARATION OR PROVIDE APPROVED FIRE STOPPING DEVICE
- .9 WHERE EXPOSED PIPES PASSES THROUGH FINISHED FLOORS, WALLS OR CEILINGS, PROVIDE CHROME PLATED ESCUTCHEON WITH SET SCREW.
- .10 GRADE HORIZONTAL DRAINAGE AND VENT PIPING LARGER THAN 75mm (3") AT 1.0% OR AS NOTED ON DRAWINGS AND SLOPE 75mm (3") AND SMALLER AT 2.0 % MIN
- .II WHEN PIPE LAYING NOT IN PROGRESS, CLOSE OFF OPEN ENDS OF PIPE WITH WATER TIGHT
- .12 INSTALL CLEANOUTS AS PER THE PLUMBING CODE AND/OR AS SHOWN ON DRAWINGS.
 ENSURE CLEAN OUTS ARE MADE ACCESSIBLE. WHERE PIPING RUNS CONCEALED IN WALL
 INSTALL EXTENDED TYPE CLEANOUTS WHERE NECESSARY SO THAT COVER IS LOCATED ON
 EXPOSED WALL SURFACE.
- .13 INSTALL FLOOR DRAINS SO THAT STRAINER IS FLUSH WITH FINISHED FLOOR AND WITH TRAP PRIMER PIPED TO NEAREST PLUMBING FIXTURE WATER SUPPLY.

INSTALLATION OF PLUMBING FIXTURES

- .I CONNECT FIXTURES COMPLETE WITH SUPPLIES AND DRAINS, TRAPPED, SUPPORTED, SANITARY LEVEL AND SQUARE WITH HOT WATER FAUCETS ON THE LEFT.
- .2 PROVIDE CHROME PLATED FLEXIBLE SUPPLIES TO FIXTURES WITH SCREWDRIVER STOPS, REDUCERS AND ESCUTCHEONS.
- .3 PROVIDE CHROME PLATED TRAPS & PIPING EXPOSED TO VEIW UNDER LAVATORIES

PROPANE PIPING

- .I INSTALL PROPANE PIPING IN ACCORDANCE WITH LATEST EDITION OF CAN/CSA BI49.I-00 NATURAL GAS & PROPANE INSTALLATION CODE INCLUDING LATEST AMENDMENTS AND LOCAL AUTHORITY HAVING JURISDICTION.
- .2 PROVIDE COMPLETE DISTRIBUTION SYSTEM AS SHOWN ON DRAWINGS AND CONNECT TO ALL GAS APPLIANCES. PROVIDE UNION SYSTEM & SHUT OFF VALVES AT ISOLATION POINTS, AS INDICATED AND AT GAS APPLIANCES.
- .3 TEST PIPING BEFORE APPLIANCES ARE CONNECTED AS REQUIRED BY THE GAS AUTHORITY.
- .4 IDENTIFY PIPING AS PER CODE.

DUCTWORK AND ACCESSORIES

- I UNLESS NOTED OTHERWISE CONSTRUCT LOW PRESSURE RECTANGULAR DUCTWORK OF LOCK FORMING PRIME QUALITY GALVANIZED SHEET STEEL WITH ZINC COATING ASTM 525M-80 GUARANTEED TO BEND 180° AND FLATTEN WITHOUT FRACTURE OF GALVANIZATION OR METAL. ENSURE DUCT MATERIAL IS FREE FROM BLISTERS, PITS AND IMPERFECTLY COATED SPOTS, AND IS IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS FOR DUCT DESIGN AND METAL GAUGES.
- CONSTRUCT DUCTS IN ACCORDANCE WITH FOLLOWING:

LOW PRESSURE MAX. DUCT DIMENSION

UP TO 600mm (12")	26
325mm (13") TO 750mm (30")	24
775mm (31") TO 1350mm (54")	22

.2 CONSTRUCT ROUND GALVANIZED DUCTWORK USING SAME MATERIAL AS RECTANGULAR DUCTWORK EXCEPT DUCT TO BE WOUND HELICOIDALLY TO VARIOUS DIAMETERS REQUIRED, WITH FOUR PLY LOCKSEAM TIGHTLY CLOSED TO PROVIDE A SMOOTH INTERIOR. PROVIDE FITTINGS FOR ROUND DUCTWORK DIE STAMPED, SEAM WELDED, CALIBRATED AND HOT DIPPED GALVANIZED TYPE, NO JOB MADE FITTINGS WILL BE PERMITTED. CONSTRUCT ROUND DUCTS IN ACCORDANCE WITH FOLLOWING:

U.S. GAUGE

200mm (4") TO 400mm (8") DIAMETER - 26 GAUGE 225mm (9") TO 600mm (24") DIAMETER - 24 GAUGE

- .3 CONSTRUCT MANUAL BALANCING DAMPERS OF 18 GAUGE GALVANIZED STEEL WITH 4" WIDE OPPOSED BLADES WITH 3/8" DIAMETER TIE BARS AND DURO DYNE UNXLD QUADRANT SET WITH HEAVY GAUGE INDICATING QUADRANT, LEVER ARM AND WING TYPE LOCKING NUT.
- .4 INSTRUMENT TEST PORTS SHALL BE DURO DYNE MODEL IP-4 |8mm (3/4") DIAMETER WITH NEOPRENE GASKETS, SCREW IN CAP AND MOUNTED WITH 2 SCREWS.
- .5 ACOUSTIC INSULATION FOR DUCTWORK SHALL BE JOHNS MANVILLE PERMACOTE LINACOUSTIC, 245mm (I")THICK INTERNAL ACOUSTIC INSULATION RIGID COATED DUCT LINER. INSTALL AS RECOMMENDED BY MANUFACTURER.
- .6 FIRE DAMPERS IN THE HORIZONTAL & VERTICAL DUCTS SHALL BE EQUAL TO RUSKIN DIBD20 TYPE "B" (DYNAMIC SYSTEMS). FIRE DAMPER SHALL BE CONSTRUCTED AND TESTED IN ACCORDANCE WITH UL SAFETY STANDARD 555. DAMPER SHALL HAVE
- 1 1/2 HOUR FIRE RATING, 212 ° F FUSIBLE LINK AND INCLUDE UL LABELS.

 .7 FLEXIBLE THERMAL INSULATION FOR DUCTWORK SHALL BE EQUAL TO JOHNS MANVILLE
- MICROLITE FIBRE GLASS DUCT WRAP WITH FOIL, SCRIM, KRAFT FACING.

 -APPLY 38 mm (1 1/2") THICKNESS TO:
- ALL MECHANICAL DUCTS UNCONDITIONED SPACES (UNLESS ACOUSTICALLY LINED)
 INTAKE DUCT FROM DH-I TO HRV-I & SUPPLY FROM HRV-I TO DH-2
- INTAKE DUCT FROM DH-I TO HRV-I & SUPPLY FROM HRV-I TO DH- ALL EXHAUST DUCT FROM ROOF/WALL TO IO'-O" OR TILL FAN)

-APPLY 50 mm (2") THICKNESS TO:

- ALL SUPPLY DUCTS FROM LOUVRE TO DH-I
- -APPLY 75 mm (3") THICKNESS TO:
- ALL INTAKE & EXHAUST PLENUMS

INSULATED MOTORIZED DAMPER

I INSULATED DAMPER SHALL BE EQUAL TO TAMCO SERIES 9000 THERMALLY BROKEN, ALUMINUM FRAME, 4 " DEEP, INSULATED WITH POLYSTYREN. BLADES TO BE EXTRUDED ALUMINUM, INTERNALLY INSULATED WITH EXPANDED POLYURETHANE FOAM & THERMALLY

PRELIMINAR Y

GENERAL NOTES

I. ALL DUCTMORK, PIPING & EQUIPMENT IS NEW UNLESS NOTED AS BEING EXISTING

2. VISIT AND EXAMINE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS AFFECTING WORK. NO ALLOWANCES WILL BE MADE BY THE OWNER FOR DIFFICULTIES ENCOUNTERED IN THE WORK ARISING OUT OF CONDITIONS EXISTING AT

3. CONDITIONS SHOWN ON PLANS ARE RELATIVE TO THE WORK TO BE

AT NO EXPENSE TO OWNER

4. CO-ORDINATE INSTALLATION OF

ARCHITECTURAL, STRUCTURAL,

PRIOR TO INSTALLATION

PERFORMED. DRAWINGS ARE BASED ON THE BEST INFORMATION AVAILABLE BUT ARE SUBJECT TO VERIFICATION. VERIFY EXACT LOCATION AND ELEVATION OF ALL SERVICES PRIOR TO COMMENCING ANY WORK. FAILURE TO TO PERFORM SUCH VERIFICATIONS WHICH CAUSE DEFICIENCIES SHALL BE CORRECTED

DUCTWORK, PIPING, EQUIPMENT ETC. WITH

ELECTRICAL & FIRE PROTECTION TRADES

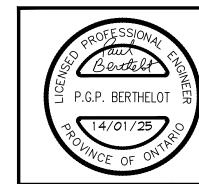
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SCHEDULE & SPECIFICATION MECHANICAL

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INSTALLATION OF DUCTWORK AND ACCESSORIES

LOCATIONS FOR ALL DUCTS.

- PROVIDE COMPLETE SYSTEM OF DUCTWORK, DAMPERS, GRILLES, AND REGISTERS, ETC. REQUIRED FOR COMPLETE AIR HANDLING SYSTEMS.
- .2 DETAILS OF CONSTRUCTION AND MATERIALS NOT SPECIFIED HEREIN MUST CONFORM TO RECOMMENDATIONS OF ASHRAE HANDBOOK, AND SMACNA STANDARDS (LATEST EDITION).
- .4 PRIOR TO ORDERING OR FABRICATING DUCTS, CHECK EXACT SIZES OF OPENINGS AND
- .5 PROVIDE ELBOWS WITH MINIMUM CENTER LINE RADIUS OF 1 1/2 TIMES DUCT WIDTH. WHERE THIS IS NOT POSSIBLE FIT ELBOMS WITH DOUBLE THICKNESS TURNING VANES. SHORT RADIUS ELBOWS ARE NOT ACCEPTABLE.
- .6 EXPOSED ANGLES MUST BE CLEANED AND PAINTED WITH ONE COAT OF RUST RESISTANT PAINT PRIOR TO INSTALLATION.
- .7 RECTANGULAR DUCTS OVER 450mm (18") WIDE MUST HAVE CROSS BREAKS ON FLAT SECTIONS BETWEEN JOINTS OR JOINTS AND REINFORCING.
- .8 PATTERN LONGITUDINAL SEAM JOINT AFTER PITTSBURGH OR LOCK-GROOVE TYPE LOCK.
- .9 TRANSVERSE JOINTS IN ROUND DUCTS MUST BE CRIMPED AND BEADED SLIP JOINT.

TRANSVERSE JOINTS MAY BE CONSIDERED AS REINFORCING.

.IO INSTALL TRANSVERSE JOINTS WITH THE FOLLOWING MINIMUM CHARACTERISTICS:

TYPE OF JOINT AND MAX. REINFORCING REQUIREDAND MAX. DUCT DIMENSION SPACING MAX. SPACING DRIVE OR FLAT SLIP AT UP TO 600mm (12") NONE 2400mm (96") 25mm (I") STANDING S, BAR 325mm (I3") TO 600mm (24") OR POCKET ANGLELOCK | | X | X | AT |200mm (48") AT 2400mmm (96") 38mm (1 1/2") STANDING 1/2" X | 1/2" X |/8"AT |200mm 625mm (25") TO 1200mm (48") ANGLE BAR OR POCKET

LOCK AT 2400mm (96")

.II USE STRAP HANGERS FOR DUCT SUPPORT.

.12 UNLESS NOTED OR DETAILED OTHERWISE SUPPORT HORIZONTAL DUCTS AS FOLLOMS:

MAX. DUCT WIDTH OR HEIGHT	MAX. CENTER DISTANCE	TYPE OF SUPPORT	
UP TO 600mm (12")	1800mm (72")	TRAPEZE FORMED BY ANGLE 25x25x3mm, 6mm THREADED ROD WITH WASHERS AND LOCKNUTS	
325mm (13") TO 600mm (24")	1200mm (48")	TRAPEZE FORMED BY ANGLE 40×40×3mm, I3mm THREADED ROD WITH WASHERS AND LOCKNUTS	
625mm (25") TO 1200mm (48")	1200mm (48")	AS ABOVE	

UNLESS NOTED OTHERWISE SUPPORT ROUND DUCTS AS FOLLOWS:

DUCT DIAMETER	MAX. CENTER DISTANCE	TYPE OF SUPPORT	
UP TO 450mm (18")	AS PER MANUFACTURER	"GRIPPLE" WIRE HANGING SYSTEM	

.13 DO NOT HANG DUCTS FROM ROOF DECK.

- .14 ALL DUCT JOINTS (TRAVERSE) SHALL BE CLASS "C" AND SEALED WITH APPROVED DUCT SEALANT ON EXTERIOR.
- .15 INSTALL FIRE DAMPERS TO SUIT NFPA-90A STANDARD AND MANUFACTURERS INSTRUCTIONS WITH FRAME RIGIDLY SECURED TO WALLS AND OR FLOORS. PROVIDE STEEL SLEEVES, ANGLES, & ALL REQUIRED MATERIALS TO SUIT UL TESTING. PROVIDE BREAKAWAY JOINT AT DUCTS

INSTALLATION OF AIR HANDLING EQUIPMENT

- INSTALL AIR HANDLING EQUIPMENT, COMPLETE WITH MOTORS, BELT DRIVES GUARDS, VIBRATION ISOLATORS ETC., AS DESCRIBED AND SHOWN ON DRAWINGS. SET EQUIPMENT PLUMB, LEVEL, AND ARRANGE FOR MAXIMUM SERVICABLILITY.
- .2 FOR ROOF MOUNTED EQUIPMENT PROVIDE PREFABRICATED ROOF CURBS. PROVIDE GENERAL CONTRACTOR WITH EXACT LOCATION AND DIMENSIONS REQUIRED FOR CURBS
- .3 AT INLET AND OUTLET OF EACH PIECE OF AIR HANDLING EQUIPMENT, PROVIDE FLEXIBLE CONNECTIONS: WHERE CONNECTIONS ARE EXPOSED TO OUTSIDE BUILDING , PROVIDE WEATHERPROOF FLEXIBLE CONNECTIONS.
- .4 PROVIDE NECESSARYSTRUCTURAL STEEL MEMBERS, RODS, BRACKETS, BOLTS, NUTS ETC TO SUPPORT AIR HANDLING EQUIPMENT

HYDRONIC HEATING SYSTEM

.I PIPE AND FITTINGS

HOT WATER HEATING PIPING SHALL BE STANDARD BLACK CARBON STEEL PIPE SCHEDULE 40 ASTM A53, UP TO 2" SCREWED WITH 150 PSI MALLEABLE IRON FITTINGS, 2 1/2" AND UP WELDED, VICTAULIC GROOVED OR FLANGED WITH 150 PSI WELDING, VICTAULIC OR FLANGED AND BOLTED FITTINGS.

ON HOT WATER HEATING USE VALVES AS FOLLOWS:

- BALL VALVE SIZES UP TO 2" TOYO MODEL 5044C, I25 PSI BLOWOUT-PROOF STEM, 2 PIECE SCREWED BRASS BODY, LARGE BORE, LEVER HANDLE, SCREWED ENDS.
- CIRCUIT BALANCING VALVES UP TO 2" ARMSTRONG CBV WITH PRECISE FLOW MEASURMENT AND BALANCING WITH POSITIVE SHUT-OFF . VALVE SHALL HAVE MICROMETER-TYPE INDICATOR AND
- GATE VALVES FOR DRIPS AND DRAINS TOYO MODEL 221, 200 PSI W.O.G., BRONZE BODY, SOLID MEDGE INSIDE SCREW, NON RISING STEM AND THREADED INLET.
- CHECK VALVES UP TO 2" TOYO MODEL 238 SMIG TYPE, Y PATTERN, SCREWED CAP, SMIVL TYPE METAL DISK, SCREWED ENDS.

ALTERNATES: WATTS.

INSTALLATION OF HYDRONIC PIPING

- .I PROVIDE HOT WATER HEATING PIPING TO SERVE TERMINALS SPECIFIED AS SHOWN ON PLANS.
- .2 ROUTE PIPING IN CEILING SPACE FOR CONCEALMENT UNLESS SPECIFICALLY NOTED OTHERWISE ON DRAWINGS OR IF APPROVED BY CONSULTANT.
- .3 INSTALL PIPING STRAIGHT, PARALLEL AND CLOSE TO WALLS AND CEILINGS, WITH SPECIFIED PITCH.
- .4 INSTALL ECCENTRIC REDUCERS IN HORIZONTAL PIPING TO PERMIT DRAINAGE AND ELIMINATE AIR POCKETS. USE STANDARD FITTINGS FOR DIRECTION CHANGE. WHERE PIPE SIZES DIFFER FROM CONNECTIONS SIZES OF EQUIPMENT, INSTALL REDUCING FITTINGS, CLOSE TO EQUIPMENT. REDUCING BUSHING NOT PERMITTED. NO JOB MADE FITTINGS ARE ALLOWED. USE LONG RADIUS ELBOWS
- 5 ENGURE PIPING AND TUBING ARE FREE FROM INTERNAL AND SURFACE DAMAGE. REPLACE DAMAGED PIPE OR TUBING. CUT GROOVED PIPE ENDS SQUARE, ENSURE SEATING SURFACE IS CLEAN AND FREE FROM INDENT AND SCORE MARKS. THOROUGHLY CLEAN INSIDE OF FITTINGS AND OUTSIDE OF PIPE WITH STEEL WOOL OR EMERY PAPER BEFORE MAKING ANY PIPEWORK JOINT. REMOVE WORKING PARTS OF VALVES DURING SOLDERING
- .6 WHEN WELDING OR CUTTING WITH A TORCH TAKE EVERY PRECAUTION TO PREVENT FIRE. WELDING OR TORCH CUTTING OPERATORS MUST HAVE A FULLY CHARGED CO2 FIRE EXTINGUISHER WITH THEM WHENEVER WELDING OR CUTTING. PROTECT WOODEN STRUCTURES WITH FIRE RESISTANT BLANKET.
- .7 GRADE PIPING TO 0.5% BACK TO MAIN TO ENABLE ENTIRE SYSTEM TO BE DRAINED. INSTALL DRAIN VALVES AT LOW POINTS. INSTALL AUTOMATIC AIR VENTS AT HIGH POINTS.
- .8 INSTALL PIPING SO THAT STRAIN AND WEIGHT OF PIPING IS NOT TAKEN BY CONNECTORS TO EQUIPMENT AND APPARATUS.
- .9 INSTALL PIPING SO THAT THERE WILL BE NO INTERFERENCE WITH INSTALLATION OF EQUIPMENT, OTHER PIPING SYSTEMS, DUCTS, ETC. AND SO AS TO ENSURE NOISELESS CIRCULATION.
- .IO MAKE WELDED JOINTS IN COMPLIANCE WITH ASME CODES, ANSI POWER CODE B3I.I AND RECOMMENDATIONS OF AMERICAN WELDING SOCIETY GOVERNING FUSION WELDING METHODS. IN ALL CASES PIPE, FITTING, OR FLANGE MUST BE SAME MATERIAL AS PIPE, FITTING, OR FLANGE TO WHICH IT IS TO BE WELDED. WELDING MUST BE DONE BY CERTIFIED WELDERS. PIPES FOR WELDING PURPOSES MUST HAVE PROPERLY BEVELLED ENDS, ALSO USE BACKING RINGS. FILLER METAL (ELECTRODES) MUST BE SAME MATERIAL AS PIPE FITTINGS OR VALVES TO BE WELDED.
- II MAKE THREADED JOINTS WITH TEFLON TAPE, UNLESS OTHERWISE SPECIFIED. APPLY THREADED JOINT COMPOUND TO MALE THREADS ONLY, AND EXERCISE CARE TO PREVENT COMPOUND FROM REACHING INTERIOR OF PIPE OR FITTING. COAT EXPOSED THREADS ON FINISHED JOINT WITH SUBMARINE PRIMER. NO HEMP, WICK OR PACKING TO BE USED ON SCREWED JOINTS.
- .12 INSULATE HOT WATER HEATING SUPPLY AND RETURN PIPING WITH I" THICK FIBREGLASS PIPE INSULATION EQUAL TO JOHNS MANVILLE MICRO-LOK FIBREGLASS PIPE INSULATIONMITH FACTORY APPLIED ALL PURPOSE SERVICE JACKET. INSTALL AS PER MANUFACTURERS REQUIREMENTS

MINIMUM HOT WATER PIPE SIZES					
TEMPERATURE	NOMINAL PIPE SIZE				
RANGE DEG F	3/4"	I" TO I I/4"	1/2" TO 4"	4" TO 8"	8" and up
105° TO 140°	1.0"	1.0"	1.5"	1.5"	1.5"
141° TO 200°	1.5"	1.5"	2"	2"	1.5"

.13 ALL EXPOSED INSULATIONS SHALL BE COVERED WITH WHITE PVC INSULATED FITTING COVERS AND JACKETING SYSTEM EQUAL TO JOHNS MANVILLE ZESTON 2000. INSTALL AS PER MANUFACTURERS RECOMMENDATIONS

INSTALLATION OF HOT WATER BOILERS

I INSTALL BOILERS ON WALL AS PER MANUFACTURES INSTRUCTIONS, ARRANGE PIPING SO AS TO PROVIDE ADEQUATE CLEARANCE FOR SERVICE AND OPERATION, PIPE SAFETY RELIEF VALVES AND DRAIN VALVES TO FLOOR DRAINS. INSTALL THERMOMETERS NO HIGHER THAN 6'-O" ABOVE FINISHED FLOOR. INSTALL RELIEF VALVE SIZED TO SUIT BOILER AND LOCATE UPSTREAM OF SHUTOFF VALVES. CONFORM TO MANUFACTURERS INSTALLATION INSTRUCTIONS AND PIPING SCHEMATICS ON DRAWINGS

<u>**EONTROLS**</u>

- I THE CONTRACTOR IS TO INCLUDE ALL MECHANICAL SYSTEM CONTROLS CALLED FOR OR IMPLIED BY THE DRAWINGS AND SPECIFICATIONS, TOGETHER WITH ALL NECESSARY INCIDENTALS WHETHER REFERRED TO OR NOT TO ALLOW ALL SYSTEMS TO FUNCTION COMPLETELY TO THE FULL INTENT OF THE DRAWINGS AND SPECIFICATIONS
- .2 LOW VOLTAGE WIRING (< 50 VOLTS) TO BE BY MECHANICAL CONTRACTOR
- .3 LOW VOLTAGE WIRING TO BE SUITABLE FOR THE USE IN THE RETURN AIR PLENUM (PLENUM RATED LOW VOLTAGE WIRE)
- .4 WIRING IN THE MECHANICAL ROOM, SERVICE ROOMS AND ANY OTHER AREAS WHERE WIRING IS EXPOSED TO VIEW SHALL RUN IN EMT CONDUIT.

CONTROL EQUIPMENT

- I THERMOSTATS SHALL BE HONEYWELL TB8220 COMMERCIAL VISION PRO PROGRAMMABLE THERMOSTAT. THERMOSTAT TO BE TOUCH SCREEN, CAPABILITY OF 2 HEAT \$ 2 COOL STAGES, AUTOMATIC CHANGE OVER, CONTINOUS FAN OPERATION DURING OCCUPIEED TIMES, CAPABILE OF OPERATING SYSTEMS AT OCCUPIED/UNOCCUPIED TIMES, CAPABILITY TO HAVE REMOTE TEMPERATURE SENSOR (S), TEMPORARY OCCUPIED SETTINGS (O-4 HRS DURATION)
- .2 BOILER CONTROL SYSTEM SHALL BE INTEGRAL TO THE BOILERS SEE SCHEMATIC WILL STAGE BOILER, CONTROL WATER TEMPERATURE, OPERATE EXISTING HEATING PUMPS,
- .3 PROVIDE ALL REQUIRED CONTROL TRANSFORMERS TO ALLOW THE SYSTEM TO WORK AS DESIGNED.
- .4 ALL HAND/OFF/AUTO STARTERS TO BE BY ELECTRICAL DIVISION MECHANICAL CONTRACTOR RESPONSIBLE FOR LOW VOLTAGE CONTROL WIRING TO AND FROM STARTER
- .5 7 DAY 24 HR TIMER SHALL BE EQUAL TO INTERMATIC ETITOSC,

CONTROL DESCRIPTION

- .I SAC UNITS SAC-I TO IS SHALL BE OPERATED BY CONTROLLER SUPPLIED WITH UNIT THERMOSTAT SET POINTS SHALL AS DIRECTED BY OWNER. FAN SHALL RUN CONTINUOUSLY DURING BUILDING OCCUPIED TIMES.
- .2 BOILERS BI & B2 ARE CONTROLLED BOILER CONTROL SYSTEM & OUTDOOR TEMPERATURE SENSOR
- .3 EXISTING HOT WATER PUMP IS CONTROLLED BY BOILER SYSTEM CONTROLS
- .4 EXHAUST FAN EF-I SHALL START/STOP FROM 7 DAY 24 HOUR TIMER
- .5 ENERGY RECOVERY VENTILATOR ERV-2 SHALL START/STOP 7 DAY 24 HR TIMER
- .6 DOMESTIC HOT WATER RECIRC PUMP SHALL START/STOP 7 DAY 24 HR TIMER

BALANCING OF AIR SYSTEM & HYDRONIC SYSTEMS

- BALANCING OF SYSTEMS MUST BE DONE BY A REPUTABLE QUALIFIED FIRM EXPERIENCED IN
- RUN-IN COMPLETE HEATING AND VENTILATING SYSTEM. AFTER CLEANING SYSTEM REMOVE FILTERS AND RE-INSTALL. LUBRICATE SHAFTS, SHEAVES, BEARINGS, ETC. IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- .3 BALANCE, ADJUST AND PUT PARTS OF SYSTEM INTO PROPER WORKING ORDER, ADJUST, DAMPERS, CONTROLS, FAN SPEEDS, ETC., IN ORDER THAT PROPER DISTRIBUTION AND FLOW QUANTITIES ARE OBTAINED SO THAT COMPLETE JOB WILL BE LEFT READY FOR REGULAR OPERATION, ALL TO SATISFACTION OF CONSULTANT. SETTING UP AND BALANCING OF COMPLETE HEATING AND VENTILATING SYSTEMS TO BE DONE BY A TECHNICIAN EXPERIENCED IN THIS TYPE OF WORK.
- .4 BALANCE AIR SYSTEMS TO OBTAIN AIR FLOW CONDITIONS SPECIFIED AND GIVEN ON DRAWINGS. AFTER BALANCING HAS BEEN COMPLETE PREPARE AN AIR BALANCE REPORT INDICATING THE FOLLOWING. THREE COPES TO BE SUBMITTED TO CONSULTANT.
- .5 BALANCING OF AIR SYSTEM
- FANS AND MOTORS:
- FAN RPM - MOTOR RPM
- MOTOR CURRENT FOR ALL PHASES - MOTOR VOLTAGE FOR ALL PHASES
- STATIC PRESSURE AT FAN INLET - STATIC PRESSURE AT FAN DISCHARGE
- AIR CAPACITY
- SYSTEM AND COMPONENTS:
- FILTER INLET AND DISCHARGE STATIC PRESSURES
- COIL INLET AND DISCHARGE STATIC PRESSURES - AIR CAPACITY IN EACH MAIN DUCT MEASURED BY PITOT TRAVERSE - AIR CAPACITY IN EACH BRANCH DUCT MEASURED BY PITOT TRAVERSE
- AIR WET AND DRY BULB TEMPERATURE BEFORE AND AFTER EACH COIL AT DESIGN AIR
- FRESH AND RETURN AIR VOLUMES
- DIFFUSERS AND GRILLES
- AIR CAPACITY AT EACH OUTLET
- .5 BALANCING OF HYDRONIC SYSTEM
- MOTOR RPM
- MOTOR CURRENT FOR ALL PHASES - MOTOR VOLTAGE FOR ALL PHASES
- SYSTEM PRESSURE (INLET AND OUTLET) - SYSTEM FLOW
- AT EACH MANIFOLD WITH CONTROL VALVE: - FLOW

- PRESSURE DROP

- PROVIDE ALL EQUIPMENT, LABOUR, INSTRUMENTS, AND PAY FOR EXPENSES OF MANUFACTURER'S REPRESENTATIVE, INCIDENTALS, ALL POWER, ETC., AS REQUIRED TO CARRY OUT TESTS.
- .2 CARRY OUT TESTS SPECIFIED AND TEST REQUIRED BY AUTHORITIES HAVING JURISDICTION. TEST EQUIPMENT TO REQUIREMENTS OF EQUIPMENT MANUFACTURER AND WHERE NECESSARY IN PRESENCE OF HIS REPRESENTATIVE. PREFORM TESTS TO SATISFACTION OF LOCAL AUTHORITY AND THE CONSULTANT.
- .3 KEEP A RECORD OF TEST, NOTING DURATION OF TEST AND ANY SPECIAL REMARKS PRETAINING TO EVENTS DURING THE TESTING. NOTE WHICH TESTS HAVE BEEN WITNESSED BY AUTHORITIES HAVING JURISDICTION AND CONSULTANT.
- .4 PRIOR TO TESTING FLUSH AND CLEAN SYSTEMS TO ENSURE CONSTRUCTION DEBRIS, DIRT OR OTHER FOREIGN MATERIALS ARE EVACUATED. REMOVE EQUIPMENT SUCH AS PUMPS, HEATING APPARATUS OR FIXTURES WHEN FLUSHING IS CARRIED OUT TO ENSURE EQUIPMENT IS NOT DAMAGED. PROVIDE SUITABLE DRAINAGE FACILITIES TO CARRY AWAY WATER USED IN FLUSHING OPERATION. HOMEVER, UNDER NO CIRCUMSTANCES SHALL THIS WATER BE PIPED INTO THE STORM OR SANITARY DRAINAGE SYSTEM SERVING BUILDING.
- .5 NOTIFY CONSULTANT AND LOCAL INSPECTORS OF TESTS. REPEAT TESTS UNTIL SYSTEM IS LEAK TIGHT AND IN PROPER WORKING CONDITION, TO SATISFACTION OF ALL INSPECTORS HAVING AUTHORITY.
- .6 PERFORM TESTING IN ACCORDANCE WITH REQUIREMENTS OF LOCAL AND PROVINCIAL AUTHORITIES.
- .7 TEST DRAINS AND VENTS FOR TIGHTNESS. TEST UNDERGROUND DRAINS BEFORE BACKFILL IS PLACED. .8 ALL TESTS MUST LAST AT LEAST 24 HOURS AND IF LEAKS DEVELOP, THESE MUST BE CORRECTED
- AND THE TEST REPEATED TO SATISFACTION OF CONSULTANT. .9 TEST PIPING NOT INTENDED TO OPERATE UNDER ATMOSPHERIC CONDITIONS HYDRAULICALLY AT I I/2 TIMES OPERATING PRESSURE OR AS NOTED BUT NOT LESS THAN 1035 kPa. REMOVE FROM THE SYSTEM ANY COMPONENTS NOT DESIGNED FOR TEST PRESSURE. VERIFY WITH MANUFACTURER'S
- .IO PERFORM TEST BEFORE APPLICATION OF PIPE COVERING. TEST CONCEALED PIPES BEFORE BEING
- DOING TESTING ONLY AFTER SYSTEM INSTALLATION IS COMPLETE AND SYSTEM HAS BEEN PUT INTO OPERATION. PERFORM TESTING, WHEN CONDITIONS ARE COMMENSURATE WITH DESIGN CONDITIONS FOR THE GIVEN SYSTEM.
- .12 SUBMIT TEST REPORTS IN TRIPLICATE TO CONSULTANT FOR HIS REVIEW AND RECORDS.

MAXIMUM ALLOWABLE TEST PRESSURE FOR ANY MATERIAL.

GENERAL NOTES

- I. ALL DUCTWORK, PIPING & EQUIPMENT IS NEW UNLESS NOTED AS BEING EXISTING
- 2. VISIT AND EXAMINE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS AFFECTING WORK. NO ALLOWANCES WILL BE MADE BY THE OWNER FOR DIFFICULTIES ENCOUNTERED IN THE WORK ARISING OUT OF CONDITIONS EXISTING AT THE TIME OF TENDERING.
- 3. CONDITIONS SHOWN ON PLANS ARE RELATIVE TO THE WORK TO BE PERFORMED. DRAWINGS ARE BASED ON THE BEST INFORMATION AVAILABLE BUT ARE SUBJECT TO VERIFICATION. VERIFY EXACT LOCATION AND ELEVATION OF ALL SERVICES PRIOR TO COMMENCING ANY WORK. FAILURE TO TO PERFORM SUCH VERIFICATIONS WHICH CAUSE DEFICIENCIES SHALL BE CORRECTED AT NO EXPENSE TO OWNER
- 4. CO-ORDINATE INSTALLATION OF DUCTWORK, PIPING, EQUIPMENT ETC. WITH ARCHITECTURAL, STRUCTURAL, ELECTRICAL & FIRE PROTECTION TRADES PRIOR TO INSTALLATION

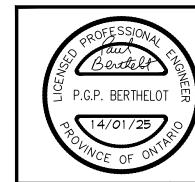
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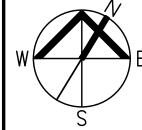
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KIRKFIELD, ONTARIO

SPECIFICATION MECHANICAL

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