

СН	CHANICAL ABBREVIATIONS								
D	AREA DRAIN	INV	INVERT						
FF	ABOVE FINISHED FLOOR	JS	JANITOR SINK						
JU	AIR HANDLING UNIT	KW	KILOWATT						
CH	ARCHITECTURAL	KS	KITCHEN SINK						
В	BASEBOARD HEATER	LV	LAVATORY						
DD	BACKDRAFT DAMPER	LAT	LEAVING AIR TEMPERATURE						
F	BOTTLE FILLER	LBS	POUNDS						
P	BACKFLOW PREVENTER	LWT	LEAVING WATER TEMPERATURE						
HP	BREAK HORSEPOWER	MAU	MAKE-UP AIR UNIT						
UH	BRITISH THERMAL UNIT / HOUR	MAX	MAXIMUM						
D	CONTROL DAMPER	МН	MANHOLE						

BACKURAFT DAIMPER	LAT	LEAVING AIR TEMPERATURE
BOTTLE FILLER	LBS	POUNDS
BACKFLOW PREVENTER	LWT	LEAVING WATER TEMPERATURE
BREAK HORSEPOWER	MAU	MAKE-UP AIR UNIT
BRITISH THERMAL UNIT / HOUR	MAX	MAXIMUM
CONTROL DAMPER	MH	MANHOLE
CATCH BASIN	MBH	1000 BRITISH THERMAL UNITS/HOUR
CUBIC FEET PER MINUTE	MD	MOTORIZED DAMPER
CEILING	MECH	MECHANICAL
CLEANOUT	MIN	MINIMUM
CONNECTION	MU	MAKE-UP MECHANICAL WATER
COMPLETE WITH	NFHB	NON FREEZE WALL HYDRANT
CONTINUATION	NIC	NOT IN CONTRACT
DRY BULB	NC	NOISE CRITERIA/NORMALLY CLOSED
CONNECT TO EXISTING	NO	NORMALLY OPEN
DOMESTIC COLD WATER	NTS	NOT TO SCALE
DIRECT DIGITAL CONTROL	O/A	OUTDOOR AIR
DEGREE	OBD	OPPOSED BLADE DAMPER
DRINKING FOUNTAIN	OED	OPEN ENDED DUCT
DOMESTIC HOT WATER	OD	OUTSIDE DIAMETER
DIAMETER	PDI	PLUMBING AND DRAINAGE INSTITUTE
DOWN	POC	POINT OF CONNECTION
DISH WASHER	PRV	PRESSURE REDUCING VALVE
DRAWING	PSI	POUNDS PER SQUARE INCH
DOMESTIC HOT WATER RECIRCULATION	R/A	RETURN AIR
EXHAUST AIR	RF	RETURN FAN

		OFF OOLD BLADE DAMELIX
FOUNTAIN	OED	OPEN ENDED DUCT
HOT WATER	OD	OUTSIDE DIAMETER
	PDI	PLUMBING AND DRAINAGE INST
	POC	POINT OF CONNECTION
HER	PRV	PRESSURE REDUCING VALVE
	PSI	POUNDS PER SQUARE INCH
HOT WATER RECIRCULATION	R/A	RETURN AIR
AIR	RF	RETURN FAN
AIR TEMPERATURE	RM	ROOM
FAN	RPM	REVOLUTIONS PER MINUTE
Y	RWL	RAIN WATER LEADER
AL	S/A	SUPPLY AIR
	SF	SUPPLY FAN
. STATIC PRESSURE	SH	SHOWER
WATER TEMPERATURE	SK	SPRINKER
	SS	STAINLESS STEEL
	SP	STATIC PRESSURE
AIN	SPEC	SPECIFICATION
IGUISHER	SR	SANITARY RISER
AMPS	ST	STORM MAIN

F FIRE MAIN FD FLOOR DRAIL FE FIRE EXTING FLA FULL LOAD A FLR FLOOR T/A TRANSFER AIR FPM FEET PER MINUTE TAD TRANSFER AIR DUCT FT FEET/FOOT TBC TO BE CONFIRMED GAL GALLONS TBD TO BE DETERMINED GPM GALLONS PER MINUTE TD TRENCH DRAIN GWB GYPSUM WALL BOARD THRU THROUGH HD HUB DRAIN TS TAMPER SWITCH HB HOSE BIBB TSP TOTAL STATIC PRESSURE HP HORSEPOWER TYP TYPICAL

HCR HEATING COIL RETURN UR URINAL HCS HEATING COIL SUPPLY V VENT HRR HEAT RECOVERY RETURN VFD VARIABLE FREQUENCY DRIVE VTR VENT THROUGH ROOF HRS HEAT RECOVERY SUPPLY W WATER MAIN HWR HEATING WATER RETURN WB WET BULB HWS HEATING WATER SUPPLY

WC WATER CLOSET WCO WALL CLEANOUT WG WATER GAUGE

DRAWINGS NO.	DESCRIPTION	SCALE
M001	DRAWING NOTES AND MECHANIAL EQUIPMENT SCHEDULE	NTS
M101	DEMOLITION PLAN	AS NOTED
M102	CONSTRUCTION PLAN	AS NOTED
M801	MECHANICAL DETAILS	NTS
M901	SPECIFICATIONS II	NTS
M902	SPECIFICATIONS II	NTS

DEMOLITION	EXISTING	NEW	DESCRIPTION	DEMOLITION	EXISTING	NEW	DESCRIPTION
FITTINGS AND V	ALVES			SYSTEM MONIT	ORING		
FITTINGS AND V	ALVES NO NC NO NC C C C C C C C C C C C C		DIRECTION OF FLOW PIPE DROP PIPE RISE PIPE TEE UP PIPE TEE DOWN PIPE UNION ISOLATION VALVE (NORMALLY OPEN) ISOLATION VALVE (NORMALLY CLOSED) CHECK VALVE 2-WAY CONTROL VALVE 3-WAY CONTROL VALVE BALANCING VALVE PRESSURE REDUCING VALVE (PRV) POOL FLOW CONTROL VALVE STRAINER RELIEF VALVE BACKFLOW PREVENTOR (BFP) AUTOMATIC AIR VENT (AAV) SEISMIC GAS SHUT-OFF VALVE TEMPERATURE GAUGE PRESSURE GAUGE THERMOMETER	SYSTEM MONITOR DUCTWORK			ROOM TEMPERATURE SENSOR REVERSE ACTING TEMPERATURE SENS SLAB TEMPERATURE SENSOR HUMIDITY SENSOR CO2 SENSOR CI2 SENSOR FLOW SWITCH PIPE TEMPERATURE SENSOR PRESSURE SENSOR SUPPLY OR OUTDOOR AIR DUCT UP SUPPLY OR OUTDOOR AIR DUCT DOWN RETURN AIR DUCT UP RETURN AIR DUCT UP EXHAUST AIR DUCT UP EXHAUST AIR DUCT DOWN TURNING VANES ACOUSTIC INSULATION BALANCING DAMPER (BDD) BACKDRAFT DAMPER (BDD) MOTORIZED DAMPER (MD)
EQUIPMENT TAC	EM BTU	EM BTU	PUMP ENERGY METER BTU METER	PLUMBING FIXT	FD FD UC →		FIRE DAMPER - VERTICAL (FD) FIRE DAMPER - HORIZONTAL (FD) DUCT OR PIPE CAP-OFF RETURN OR EXHAUST AIR GRILLE UNDER-CUT DOOR
////X			GRILLE TYPE	·///#///	——————————————————————————————————————	——и	SIDEWALL SPRINKLER HEAD
	- - - - - M-		NECK/GRILLE SIZE AIR VOLUME EQUIPMENT/FIXTURE TYPE GENERAL NOTE DRAWING REVISION DETAIL NUMBER DRAWING NUMBER SECTION NUMBER DRAWING NUMBER DRAWING NUMBER				

UNIT NUMBER	QTY UN'	JNIT DESCRIPTION	UNIT LOCATION	ELECTRIC	RICAL LOAD	*	,	VOLT PH	1	EQUIPMEN ⁻	۸T	STARTER	R				DISCONNE	<u>€</u> CT	CONTRO	باد			EMERGENCY	NOTES
				MCA	FLA	KW	HP		s	I	С	S	I	С	TYPE	S		С	S	1	С	TYPE	POWER (YES/NO)	
JNIT TAG	DE′	DESCRIPTION						1	<u> </u>										_					_1
EF-103	1 FAN	AN	ROOF				1/4	208 3	3 M	М	Е	М	М	E	VFD	D E	E	E	М	М	М	GS	N	1
MD-01	1 CH	CHLORINE ROOM INTAKE DAMPER	CHLORINE ROOM				FRAC	120 1	1 M	М	Е	-		-	-									3
MD-02	1 CH	CHLORINE ROOM EXHAUST DAMPER	CHLORINE ROOM				FRAC	120 1	1 M	М	E			-	-				М	М	М	GS		3
DCC-01	1 DU	DUAL CHANNEL CONTROLLER	STORAGE ROOM				FRAC	24 1	1 M	М	E			-					M	M	М	GS	Y	2,4
GAS-01	1 CH	CHLORINE SENSOR	CHLORINE ROOM					24 1	1 M	M	М	-	-	-	_				М	М	М		Y	4
GAS-02	1 AU	UDIBLE/VISUAL ALARM	CHLORINE ROOM (EXTERIOR)					24 1	1 M	М	М		-	-	-				М	М	М	GS	Y	4
GAS-03	1 GA	GAS ARRESTOR	CHLORINE ROOM				,	24 1	М	М	М	-	-	-					М	М	М	GS	Y	4
GAS-04		DXYGEN DEPLETION SENSOR	CHLORINE ROOM				,	24 1	1 M	М	М	-	-	-	-				М	М	М	GS	Υ	4
		ALLED BY INECTED BY	BMS = BLDG MANAGEMENT SYSTEM ES = END SWITCH ET = LINE VOLTAGE T'STAT FA = FIRE ALARM FAP = FIRE ALARM PANEL FS = FLOW SWITCH GS = GAS SENSOR			HP = UNIT PH = POW MCA = MII VOLT = RE	OWER PHASE MINIMUM CIRC	OR HORSE POV SE RCUIT AMPS SUPPLY VOLTA				C. PCS E NOTE D. CP, VF	EQUIPMENTED OTHERNOWN FOR EQUIPM CONTROLLE	NT REQUIR RWISE PMENT REQ	RES SINGLE QUIRES POV	E SOURCE P	QUIRE FIELD WE POWER CON	ONNECTION,	,	ΞL				
	MAN = MAN HOA = MAG SY MAG = MAG MRR = MOT & PCS = PAC VFD = VAR RVS = RED WS = WALL	ACCODES: IANUAL STARTER IAGNETIC STARTER W/ HAND/OFF/AUTO SWITCH W/ AUX. CONTACTS IAGNETIC STARTER C/W AUX STATUS CONTACTS IOTOR RATED RELAY, 24 VAC COIL & MOTOR PROTECTION SWITCH ACKAGED CONTROL SYSTEM ARIABLE FREQUENCY DRIVE EDUCED VOLTAGE STARTER ALL SWITCH NTROL PANEL	GS = GAS SENSOR H = HUMIDITY SENSOR I = INTERLOCK, SEE NOTES LIGHT = WIRED TO LIGHT SWITCH LS = LEVEL SWITCH OS = OCCUPANT SENSOR PS = PRESSURE SWITCH R. STAT = REVERSE ACTING THERMOSTAT TC = TIME CLOCK T = LOW VOLTAGE T'STAT OR SENSOR TS = TAMPER SWITCH VS = VARIABLE SPEED SWITCH WS = WALL SWITCH			FFCP = FI	FIRE FIGHTER	ERS CONTROL AL HORSEPOWE				1 2 3	1 INTERLO 2 120 VAC 3 POWER	AC TO 24VAC RED OPEN,	O COMMUNI AC TRANSFC I, FAIL CLOS BATTERY BAG	FORMER DSED	MODULE WITH	H MANUAL	OVERRIDE					

MOTORIZED DAMPERS										
EQUIPMENT	QTY	LOCATION	SERVICE	MANUFACTURER	MODEL	SIZE	NOTES			
TAG										
MD-01	1	CHLORINE STORAGE ROOM	OUTDOOR AIR	GREENHECK	HBT-221	400x300	ALL			
MD-02	1	CHLORINE STORAGE ROOM	EXHAUST AIR	GREENHECK	HBT-221	300x300	ALL			
NOTES:	OTES:									

- CHLORINE RESISTANT EPOXY COATED FRAME AND BLADE
- RELAY CONNECTION TO COMMUNICATION MODULE GAS TIGHT CONSTRUCTION
- DAMPER ACTUATORS AND ACCESSORIES TO BE SUITABLE IN CORROSIVE ENVIRONMENT

5	CONFIRM EXACT SIZE WITH DUCTWORK SIZING

FANS														
EQUIPMENT	QTY	LOCATION	SERVICE	TYPE	MANUFACTURER	MODEL	AIR FLOW	E. S. P.	FAN	MOTOR	DRIVE	SOUND LEVEL	WEIGHT	NOTES
TAG							(LPS)	(PA)	(RPM)	SIZE	TYPE	(SONES)	(KG)	
EF-R-01	1	ROOF	CHLORINE EXHAUST	CENTRIFUGAL	EH PRICE	USF-06-B6	120	100	1027	1/4	BELT	8.3	100	ALL
NOTES:														
1	CONTI	ROLLED BY GAS DETECTION SYSTEM.												
2	2 ALUMINUM CONSTRUCTION													
3		STICALLY LINED CABINET												

- CORROSION RESISTANT FASTENERS DIRECT MOUNT ISOLATORS, ISOLATOR SPRING, RESTRAINED, 25MM BASE-COATING
- **GRAVITY DAMPER** ENTIRE UNIT COATED WITH LABVOAT, RAL 7023, FULLY SUITABLE FOR CHLORINE GAS EXPOSURE/CONTACT
- NEMA 4 SWITCH, TOGGLE, OUTDOOR USE, MOUNTED AND WIRED REFER TO MOTORLIST FOR ELECTRICAL REQUIREMENTS

PROVIDE VFD IN OUTDOOR RATED NEMA 4 CABINET

CHLORINE STORAGE ROOM CHLORINE STORAGE GAS SENSOR CHLORINE STORAGE ROOM CHLORINE STORAGE HORN-STROBE CHLORINE STORAGE ROOM CHLORINE TANKS GAS ARRESTOR GAS-4 CHLORINE STORAGE ROOM CHLORINE STORAGE GAS SENSOR NOTES:

OUTDOOR RATED C/W SURFACE MOUNT BOX RELAY CONNECTION TO COMMUNICATION MODULE 120VAC TO 24VAC TRANSFORMER CORROSION RESISTANT FASTENERS

MECHANICAL ROOM

GAS HANDLING EQUIPMENT

5 GALLONS HIGH DENSITY POLYETHYLENE CONTAINER, UV INHIBITED WITH A LOCKABLE LID SIDE-MOUNTED BOTTOM INLET AND TOP OUTLET PVC BULKHEAD FITTINGS WITH INTERNAL SCREENS

SIDE-MOUNTED EXTERNAL INLET AND OUTLET CLEAR PVC OBSERVATION ELBOWS IMPLANTED WITH COLORIMETRIC CHLORINE INDICATOR STRIPS

SERVICE

CHLORINE STORAGE

MANUFACTURER

BELIMO

BELIMO

EDWARDS

DE NORA

BELIMO

COMMUNICATION MODULE

MODEL

C-22G-5B

22G17-5B

WGAVWA

CAPITAL CONTROLS VEGA

NOTES

3,4

2,4

1,2,4

ALL

2,4

30 LBS OF TYPE "STS" DRY MEDIA, CHEMICALLY IMPREGNATED ACTIVATED ALUMINA FOR CHLORINE TREATMENT

VENT DISCHARGE C.W ACCESSORY PACK (DE NORA PART NO.29128)

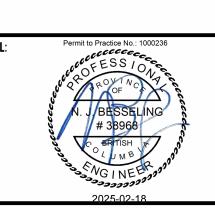
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CONSULTANT:



PROJECT TITLE: CITY OF COQUITLAM, POIRIER SPORT & LEISURE COMPLEX - CHLORINE **VENTILATION**

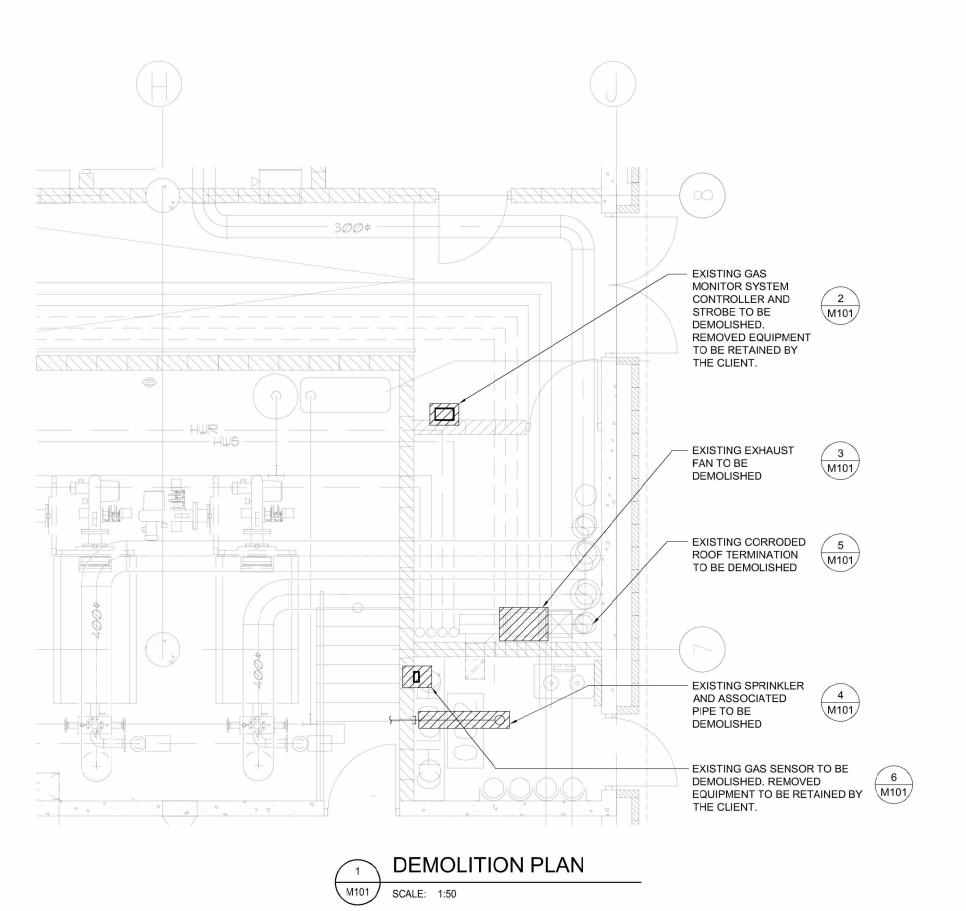
PROJECT ADDRESS: 640 POIRIER STREET, COQUITLAM, BC V3J 6B1

DRAWN BY	JR
CHECKED BY	AC
SCALE	NTS
DATE	FEB 18, 2025
DRAWING TITLE	

DRAWING TITLE:

SYMBOL LIST AND MECHANICAL SCHEDULES

DRAWING NO. 025b-010-24 **M001**



MECHANICAL RENOVATION NOTES

1 CONTRACTOR IS RESPONSIBLE FOR REVIEWING AND VERIFYING ACTUAL ONSITE CONDITIONS AND FOLIPMENT LOCATIONS PRIOR TO ANY AND ALL DEMOLITION WORK AND/OR FOLIPMENT REMOVAL

2. CONTRACTOR TO INCLUDE ALL CUTTING AND PATCHING THAT IS REQUIRED TO INSTALL ALL NEW MECHANICAL SYSTEMS AS REQUIRED TO MEET THE SITE CONDITIONS AS SHOWN ON THE DRAWINGS. FATCHING SHALL MEET THE AESTHETIC CONDITIONS WHICH WAS THE CONDITION PRIOR TO ANY CUTTING BEING PREFORMED. 3. CONTRACTOR TO PROPERLY SEAL AND REPAIR ANY AND ALL DAMAGE THAT IS A RESULT OF REMOVAL OR DEMOLITION OF MECHANICAL EQUIPMENT. THIS INCLUDES BUT IS NOT LIMITED TO WALL, DOOR, CEILINGS, ETC.

4. THE EXISTING FACILITIES MECHANICAL SYSTEMS SHALL REMAIN OPERATIONAL DURING BUT NO LURING THE CONSTRUCTION AND RENOVATION PERICD. CONTRACTOR TO COORDINATE CONSTRUCTION ACTIVITIES AND DAMAGE TO MINIMIZE DISRUPTIONS TO OWNERS OPERATIONS TO OWNERS OPERATIONS TO OWNERS OPERATIONS TO OWNERS OPERATIONS TO OWNERS OPERATION ACTIVITIES AND PHASING WITH OWNER TO MINIMIZE DISRUPTIONS TO OWNERS OPERATIONS TO OWNERS OPERATIONS TO OWNERS OPERATION AND RENOVATION PERICD.

5. THE EXISTING DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. AS A RESULT, THE ENGINEER WILL NOT BE RESPONSIBLE FCR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THIS DOCUMENT. 6. ALL EXISTING DUCTWORK INDICATED ON PLAN WAS TAKEN FROM EXISTING MECHANICAL PLANS AND SHALL NOT BE CONSIDERED 100% ACCURATE. CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING SYSTEMS PRIOR TO CONSTRUCTION.

7. DURING REMOVAL OF ITEMS SO INDICATED, CAUTION SHOULD BE USED TO PREVENT DAMAGE TO ANY EQUIPMENT HAVING SALVAGE VALUE. ALL REUSABLE SALVAGED MATERIAL SHALL REMAIN THE PROPERTY OF THE OWNER AND BE RETAINED FOR THEIR INSPECTION. ONLY ITEMS AGREED BY THE OWNER SHALL BE DISPOSED OF BY THE CONTRACTOR.

8. CONTRACTOR ISTO UNINSTALL AND STORE ALL THAT ARE NOTED AS DEMOLITION AND RETURN TO LANDLORD.

9. GIVE BASE BUILDING A MINIMUM 24 HOURS NOTICE OF ANY SERVICE SHUTDOWN.

10. IF ASBESTOS IS DISCOVERED ON THE PREMISES, OWNER SHALL BE NOTIFIED AND ALL WORK SHALL CEASE IMMEDIATELY UNTIL ASBESTOS ABATEMENT WORKS ARE COMPLETED.

11. PROVIDE SEPARATE PRICE FOR HOT DIP GALVANIZED DUCTWORK IN LIEU CF 316L SS. GENERAL NOTES:

1. THE MECHANICAL SYSTEM AND ALL OTHER SYSTEMS SHALL CONSIST OF ALL WORK SHOWN ON THE DRAWINGS, DIAGRAMS, SCHEMATICS AND AS DESCRIBED IN THE SPECIFICATIONS. 2. THE MECHANICAL PLANS ARE DIAGRAMMATIC IN NATURE AND DO NOT ATTEMPT TO SHOW ALL REQUIRED OFFSETS. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ADDITIONAL CONSTRUCTION DETAILS.

3. COORDINATE THE DRAWINGS WITH THE SPECIFICATIONS AND IN CASES WHERE CONFLICTS OCCUR THE MOST STRINGENT REQUIREMENT SHALL APPLY. 4. CONTRACTOR TO COORDINATE ALL MECHANICAL WORK WITH THAT OF OTHER TRADES TO ENSURE PROPER AND ADEQUATE INTERFACE WITH THE WORK OUTLINED FOR THIS PROJECT.

5. CONTRACTOR TO PROVIDE CEC (CANADIAN ELECTRICAL CODE) CLEARANCE HORIZONTAL AND VERTICAL REQUIREMENTS FOR ALL INSTALLED EQUIPMENT. OFFSET MECHANICAL WORK AS REQUIRED TO MEET THIS REQUIREMENT. 6. MECHANICAL EQUIPMENT SHALL NOT BE USED FOR TEMPORARY HEATING OR COOLING DURING THE CONSTRUCTION PROCESS. A WRITTEN LETTER FROM THE OWNER IS REQUIRED TO DO SO.

7. ALL DUCTWORK SIZES ARE SHOWN AS INSIDE CLEAR. ADD APPROPRIATE DIMENSION FOR INSULATION OR DUCT LINER TO OBTAIN OUTSIDE DUCT DIMENSIONS.

8. ALL OPEN ENDS OF DUCTWORK DURING DEMOLITION AND INSTALLATION SHALL BE CAPPED AND KEPT CLEAN.

9. MAXIMUM FLEXIBLE DUCT LENGTH SHALL BE NO LONGER THAN 1.0 METER UNLESS OTHERWISE NOTED FOR THE SPECIFIC APPLICATION. 10. INSTALL ALL MECHANICAL WORK AS HIGH AS POSSIBLE TIGHT TO STRUCTURE.

11. CONTRACTOR TO PROVIDE A SIMILAR TYPE DUCT CONSTRUCTION FOR ALL EXPOSED APPLICATIONS (I.E. NO LONGITUDINAL SEAM & SPIRAL IN EXPOSED APPLICATIONS). FLANGE TYPE DUCTWORK IN EXPOSED AREAS IS PROHIBITED FOR THIS PROJECT UNLESS OTHERWISE NOTED AS A SPECIFIC REQUIREMENT.

12. PROVIDE CONCEALED DAMPER REGULATORS FOR ALL VOLUME DAMPERS OVER INACCESSIBLE CEILINGS AND SOFFITS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES. 13. CONTRACTOR TO ALLOW AND PROVIDE FOR METAL DUCTWORK TRANSITIONS BETWEEN ALL EQUIPMENT AND DUCT CONNECTIONS.

14. ALL EQUIPMENT CONNECTIONS TO DUCTWORK SHALL HAVE A MINIMUM OF 4 INCH OF REINFORCED CANVAS FLEXIBLE DUCTWORK FOR VIBRATION ISOLATION.

15. PROVIDE DIFFUSERS AND GRILLE COMPATIBLE WITH ARCHITECTURAL CEILING TYPES. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.

16. COORDINATE EXACT LOCATIONS OF ALL ROOM THERMOSTATS AND/OR ROOM TEMPERATURE SENSORS WITH THE DESIGN ARCHITECT BEFORE FINAL INSTALLATION.

17. CONTRACTOR TO SUPPLY AND INSTALL VOLUME DAMPER FOR EACH SUPPLY, RETURN AND EXHAUST DUCTWORK RUN WITH TWO OR MORE OPENINGS ASSOCIATED WITH THE BRANCH. REFER TO THE DRAWINGS FOR ADDITIONAL VOLUME DAMPERS LOCATIONS AND REQUIREMENTS. 18. PROVIDE 25MM THICK DUCTWORK LINER ON ALL TRANSFER AIR DUCTS.

19. ALL BASE BUILDING VALVES REQUIRE ACCESS PANELS FOR VALVES OVER SOLID CEILING TYPES, REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.

20. CONTRACTOR TO INSTALL DRAIN VALVES AT THE LOWEST POINTS OF ALL PIPING SYSTEMS AND HEADERS (OR DRIP LEGS). ALL DRAIN VALVES SHALL BE MINIMUM NPS 20MM UNLESS OTHERWISE INDICATED. VALVES SHALL BE MINIMUM RATED PRESSURE OF THE CONNECTED SYSTEM.

21. CONTRACTOR TO INSTALL AUTOMATIC AIR VENTS AT THE HIGHEST POINTS OF ALL PIPING SYSTEMS.

22. THE DESIGN & INSTALLATION OF ALL BUILDING PIPING SHALL COMPLY WITH THE MECHANICAL DRAWINGS, SPECIFICATIONS AND ASME/ANSI B31.9 CODE AND CSA B51.

23. CONTRACTOR TO PERFORM HYDROSTATIC TESTING ON ALL PIPING AT 1.5 TIMES THE MAXIMUM OPERATING PRESSURE. 24. ALL GAUGES TO BE MOUNTED IN A WAY THAT IS VISIBLE FOR A PERSON STANDING ON THE FLOOR.

25. REPORT TO THE ENGINEER ANY DISCREPANCIES WHICH WILL PREVENT THE WORK FROM BEING INSTALLED AS SHOWN.

1. MECHANICAL CONTRACTOR IS TO RETAIN SERVICES OF A PROFESSIONAL ENGINEER REGISTERED IN BRITISH COLUMBIA TO DESIGN AND CERTIFY THAT WORK COMPLIES WITH SEISMIC PLEAD THE END OF THE PROJECT, SEISMIC PLEAD TO SIGN SCHEDULE "C" CONFIRMING THAT ALL SEISMIC WORK COMPLIES PER CODE AND AS SUCH IT HAS BEEN INSTALLED.

2. INSTALLING CONTRACTOR TO PROVIDE SEISMIC CALCULATIONS WITH A STRUCTURAL ENGINEERING STAMP AS REQUIRED BY THE BRITISH COLUMBIA PROVINCIAL BUILDING CODE. INSULATION WORK: 1. ALLOW FOR ALL REQUIRED INSULATION WORK ASSOCIATED WITH THE PROJECT SCOPE OF WORK.

2. ALL NEW CHILLED & CONDENSER WATER PIPING (INCLUDING ASSOCIATED COMPONENTS) IS TO BE INSULATION ON SIMILAR IS TO BE INSULATION OR SIMILAR IS TO BE FIXED TO MATCH EXISTING INSULATION. REFER TO MECHANICAL SPECIFICATION FOR ADDITIONAL INFORMATION ON PIPING AND EQUIPMENT INSULATION SCOPE OF WORK.

3. PROVIDE INSULATION ON EQUIPMENT AS PER MECHANICAL SPECIFICATION.

4. REFER TO MECHANICAL SPECIFICATION FOR ANY ADDITIONAL REQUIREMENTS ON INSULATION SCOPE OF WORK.

ELECTRICAL WORK:

1. CONTRACTOR TO ARRANGE FOR AND ALLOW FOR COSTS OF ALL PERMITS AND INSPECTIONS.

2. ALL ELECTRICAL WORK TO BE COMPLETED IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE 3. CONTRACTOR TO PROVIDE NEW LED LIGHTING OPERATIONAL AT ALL TIMES. BACKUP LIGHTING TO BE OPERABLE VIA WALL SWITCH.

STRUCTURAL WORK:

1. CONTRACTOR TO ARRANGE FOR AND ALLOW FOR COSTS OF ALL PERMITS AND INSPECTIONS.

2. ALL STRUCTURAL WORK TO BE COMPLETED IN ACCORDANCE WITH THE BC BUILDING CODE COMMISSIONING:

1. ALL NEW EQUIPMENT/SYSTEMS AS WELL AS EXISTING EQUIPMENT/SYSTEMS IMPACTED BY NEW SYSTEM INSTALLATION ARE TO BE CCMMISSIONED/RE-COMMISSIONED. 2. COMMISSIONING AGENT HAS ESSENTIAL ROLE IN COORDINATING AND WORKING CLOSELY WITH ALL INVOLVED TRADES/PARTIES, ENSURING THAT PROJECT (SYSTEMS) MEETS CONSTRUCTION SCHEDULE, AND THEREFORE SHALL ALLOW FOR ADEQUATE TIME THAT COMMISSION PROCESS WILL TAKE FOR PROJECT OF THIS NATURE. HIRED BY CONTRACTOR.

BALANCING: 1. UPON COMPLETION OF INSTALLATION, RE-BALANCE GRILLES AND FAN COILS (NEW & EXISTING AIR SYSTEM) AND SUBMIT AIR BALANCING REPORT.

2. BALANCING TO BE DONE BY PROFESSIONAL AGENCY, WESTEN MECHANICAL OR K.D. ENGINEERING. PROVIDE 2 COPIES OF BALANCE REPORT TO OWNER AND 1 COPY TO ENGINEER. WHEN BALANCING THE AIR FLOW RATE. THE REMAINING AIR FLOW IS TO BE BALANCE UPSTREAM OF THE DIFFUSER ON THE BRANCH VOLUME DAMPERS.

CONTROLS: 1. GENERAL PROJECT INTENT IS TO INSTALL ALL REQUIRED CONTROLS HARDWARE AND SOFTWARE REQUIRED TO MAKE MECHANICAL SYSTEMS FULLY CPERATIONAL AND FUNCTIONAL. UPDATE GRAPHICS ACCORDINGLY.

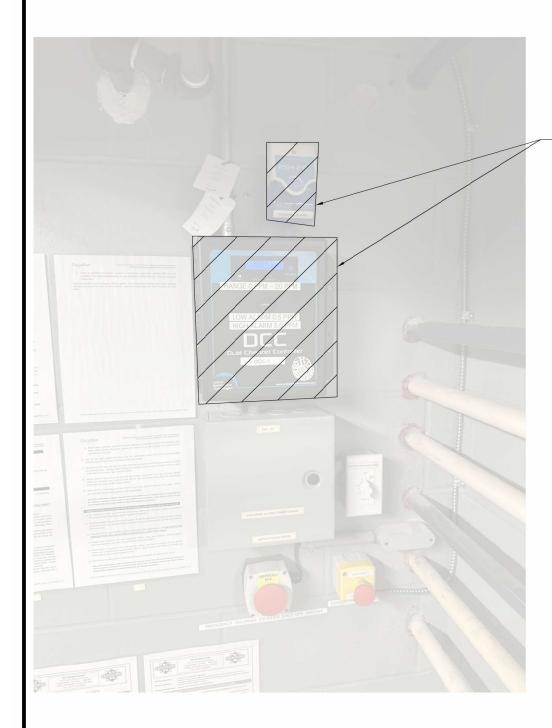
2. INSTALL ALL CONTROLS HARDWARE AND SOFTWARE REQUIRED TO CONTROL EXISTING SYSTEMS.

3. REFER TO MECHANICAL SPECIFICATIONS FOR FURTHER DETAILS ON CONTROL SEQUENCE. 4. CONTRACTOR TO USE THE BASE BUILDING CONTROLS CONTRACTOR MODERGY FOR ANY CONTROLS WORK.

ON-SITE SERVICES (NEW)

1. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL EXERCISE PROPER PRECAUTIONS TO VERIFY THE ROUTING ON THE DRAWING AND BE RESPONSIBLE FOR ERRORS AND ALL EXTRA COSTS OF EXTRA WORK RESULTING FROM FAILURE TO EXERCISE SUCH PRECAUTIONS. ONSITE SERVICES (EXISTING)

PRIOR TO COMMENCING WORK THE CONTRACTOR SHALL LOCATE AND EXPOSE ANY UTILITY SERVICES CROSSING THE ROUTING OF NEW SERVICES. ENSURE THAT THESE SERVICES REMAIN OPERATIONAL AND ARE NOT DAMAGED DURING OPERATIONS. RECORD THE LOCATION AND TYPE OF SERVICE.



EXISTING CHEMICAL CONTROLLER

M101 SCALE: NTS

THE EXISTING STROBE/AUDIO ALARM AND GAS MONITORING CONTROLLER TO BE DECOMMISSIONED AND RETURNED TO THE CLIENT IN GOOD WORKING CONDITION UNLESS THE CLIENT CONFIRMS UNITS TO BE DISPOSED OF.









EXHAUST

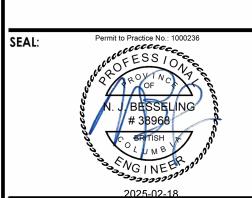






EXISTING CHLORINE SENSOR M101 SCALE: NTS

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3. 2025.02.18 ISSUED FOR TENDER

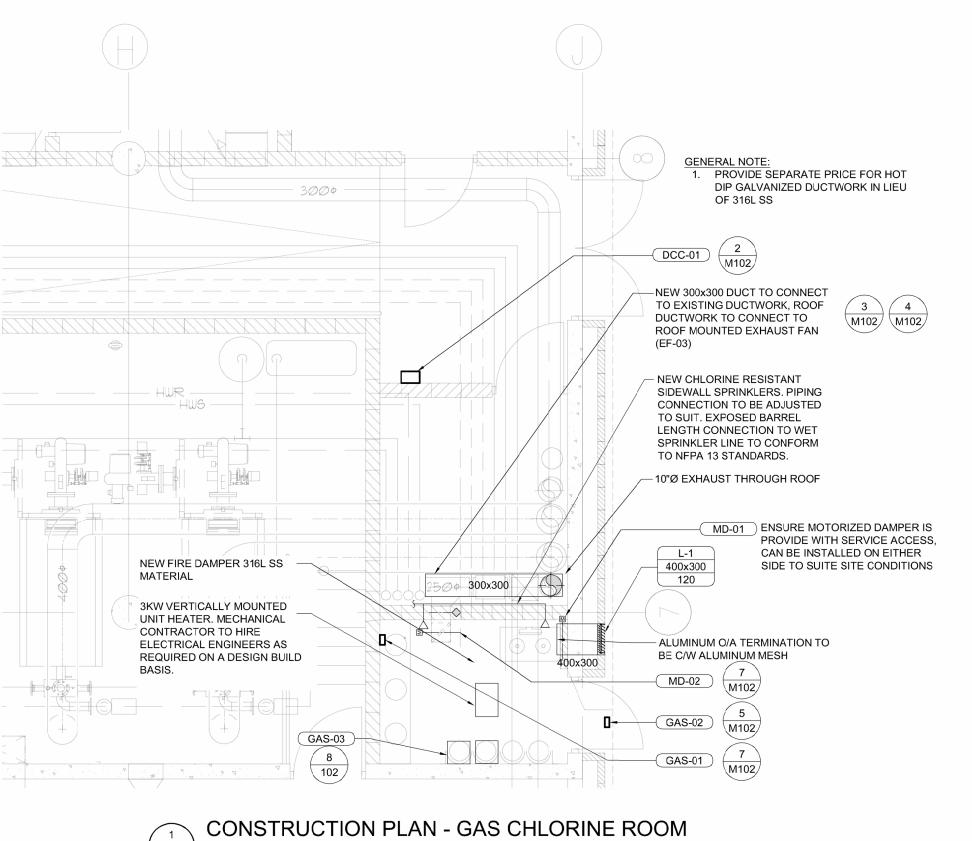
PROJECT TITLE: CITY OF COQUITLAM, POIRIER SPORT & LEISURE COMPLEX - CHLORINE **VENTILATION**

PROJECT ADDRESS: **640 POIRIER STREET,** COQUITLAM, BC V3J 6B1

DRAWN BY	JR
CHECKED BY	AC
SCALE	AS NOTED
DATE	FEB 18, 2025
DRAWING TITLE:	

DEMOLITION PLAN

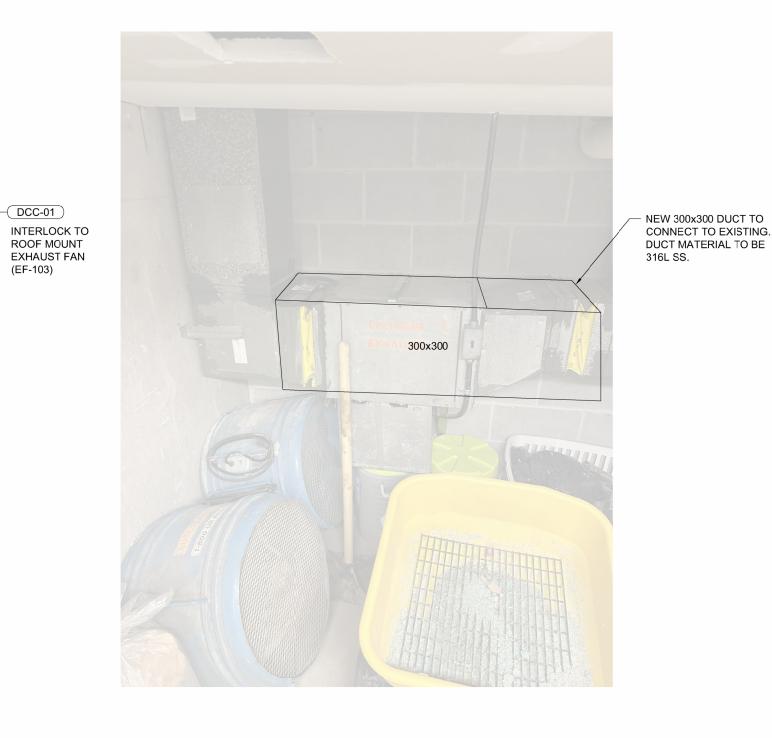
DRAWING NO. 025b-010-24 M101

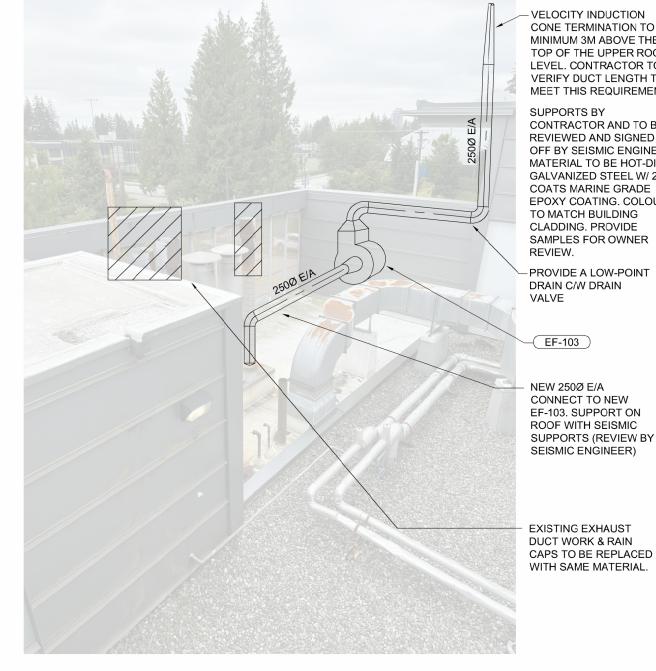


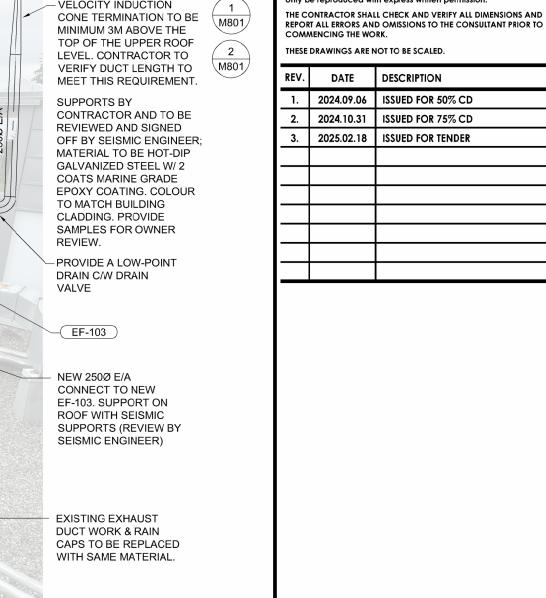


- DCC-01

(EF-103)



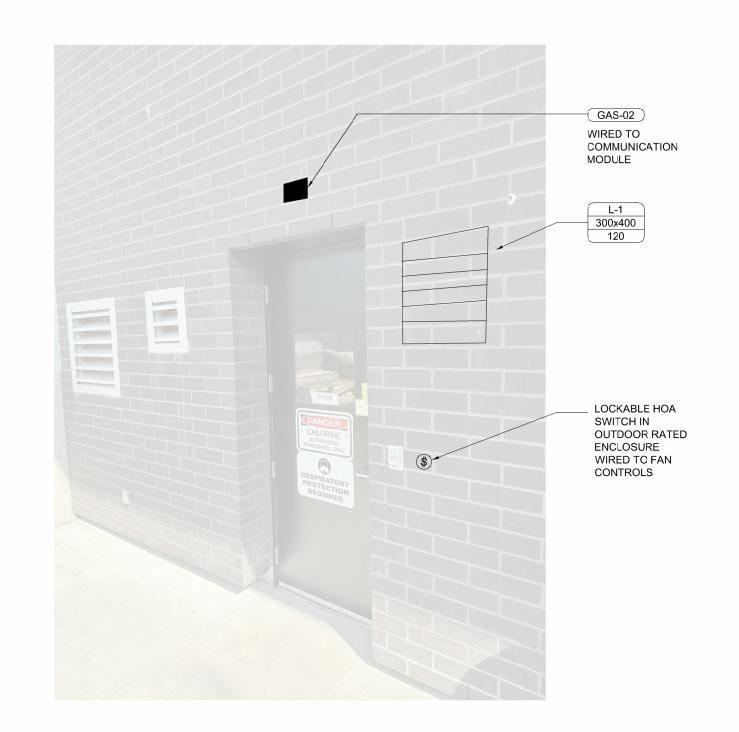




NEW COMMUNICATION MODULE SCALE: NTS

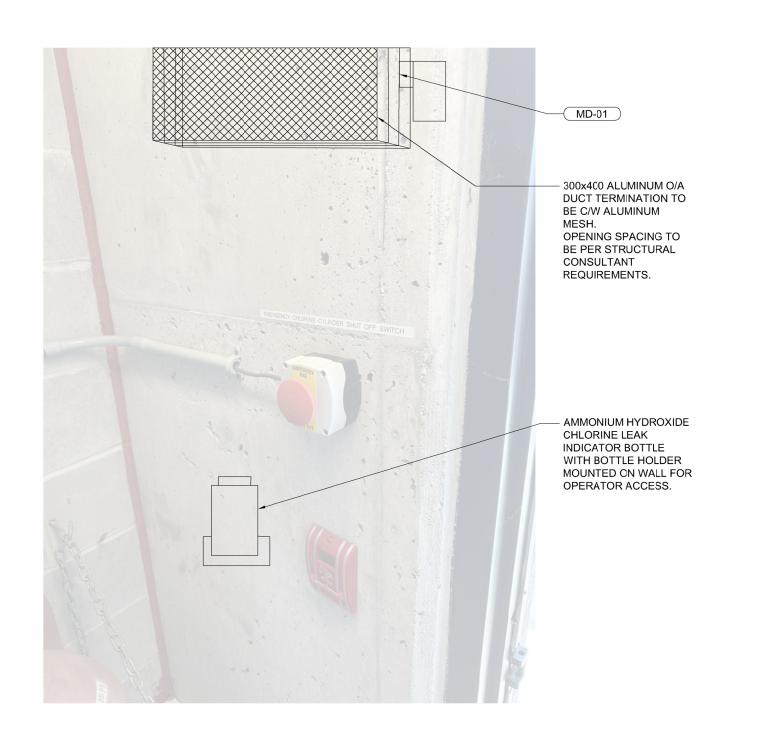
REVISED CHLORINE EXHAUST DUCT M102 SCALE: NTS



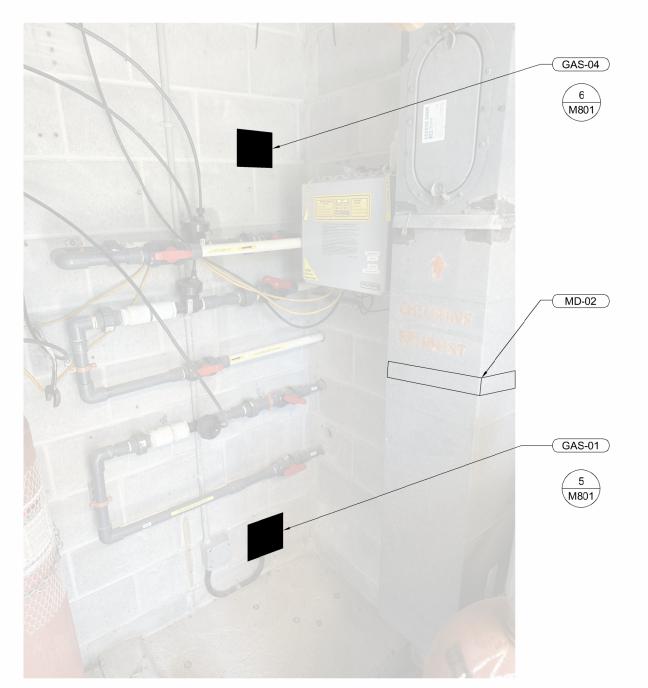


M102 SCALE: 1:50

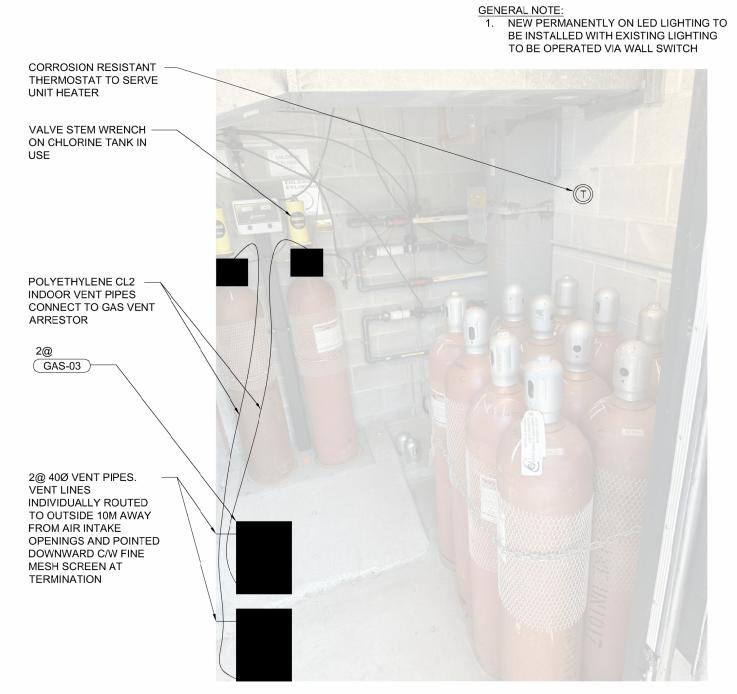




OUTDOOR AIR INTAKE



NEW CHLORINE SENSOR M101 SCALE: NTS



CHLORINE GAS ARRESTORS M101 SCALE: NTS

CONSULTANT:

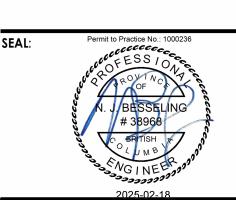
200 - 638 Smithe St Vancouver BC, V6B 1E3

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DATE DESCRIPTION



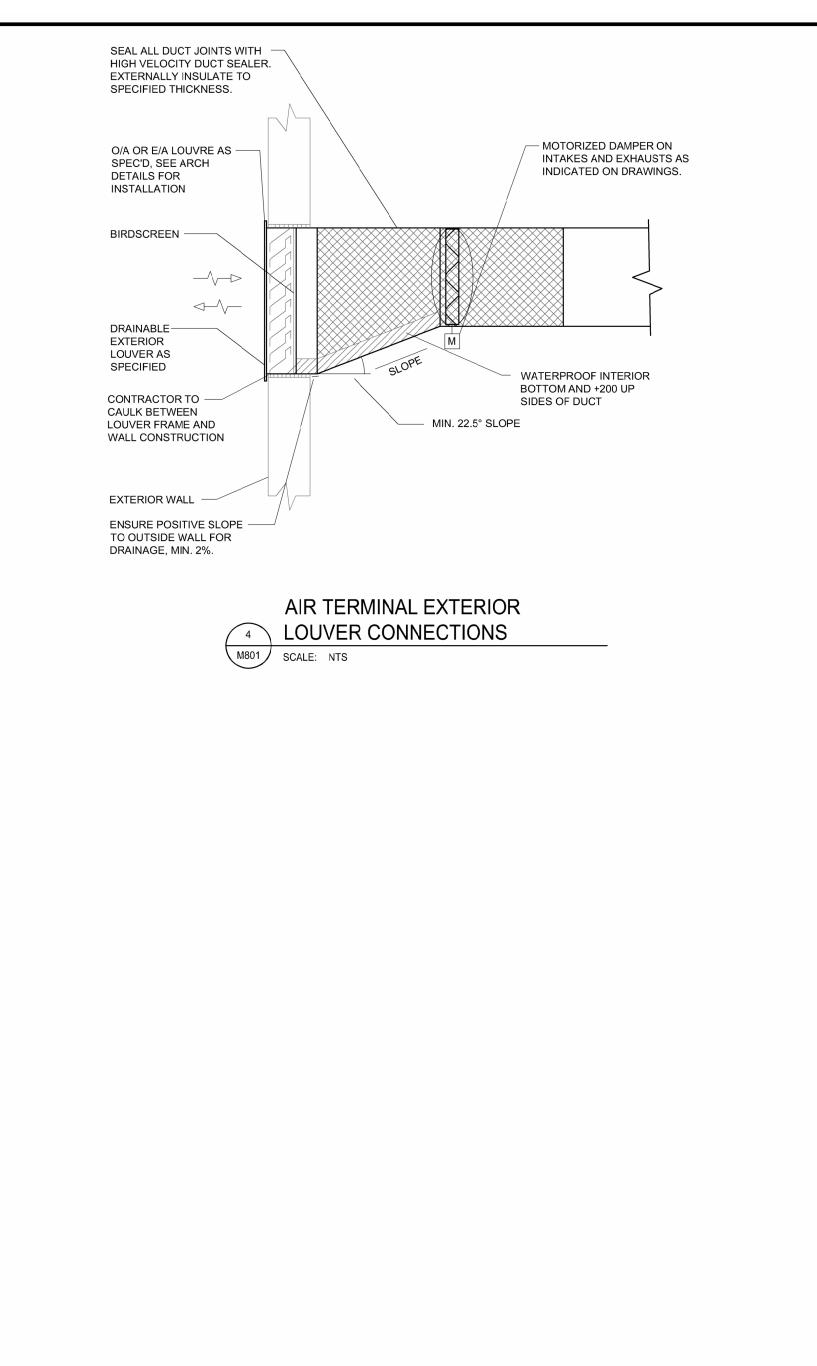
PROJECT TITLE: CITY OF COQUITLAM, POIRIER SPORT & LEISURE COMPLEX - CHLORINE **VENTILATION**

PROJECT ADDRESS: 640 POIRIER STREET, COQUITLAM, BC V3J 6B1

DRAWN BY	JR
CHECKED BY	AC
SCALE	AS NOTED
DATE	FEB 18, 2025
DRAWING TITLE:	

CONSTRUCTION

PROJECT NO. DRAWING NO. 025b-010-24 M102



U/S CEILING

CONDUIT

DETAIL NOTES

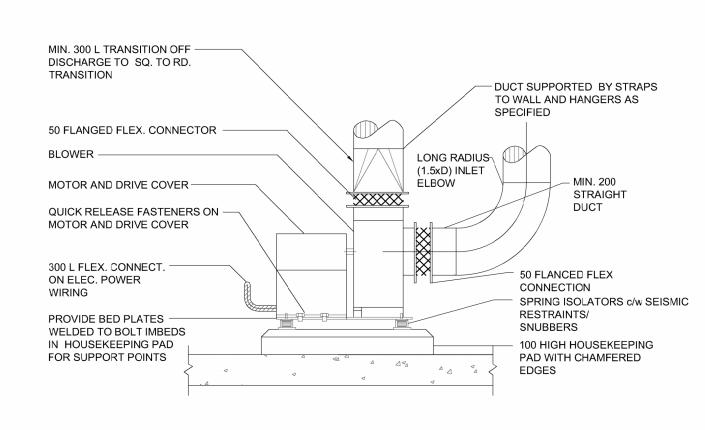
CHLORINE SENSOR (CL2)

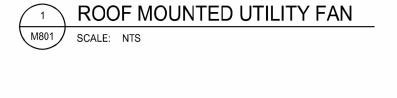
CONDUIT TO

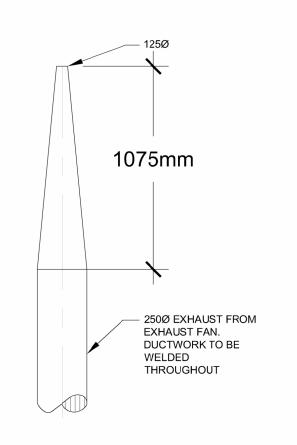
MODULE

150mm

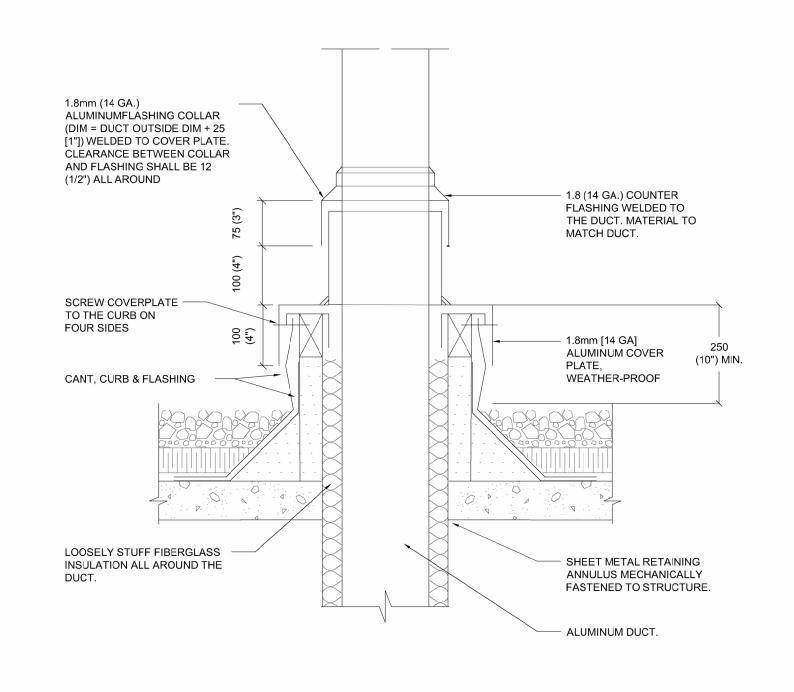
CONTROLLER/COMMUNICATION











DETAIL NOTES REFER TO SPECIFICATION FOR DUCT INSULATION REQUIREMENTS. PRIME AND PAINT ALL WELDED AREAS FOR GALVANIZED STEEL DUCTS. ALL WORK BY DIVISION 15, UNLESS OTHERWISE NOTED.

DUCT PENETRATION THROUGH ROOF M801 SCALE: NTS

PROJECT TITLE: CITY OF COQUITLAM, POIRIER SPORT & LEISURE COMPLEX - CHLORINE **VENTILATION**

PROJECT ADDRESS: 640 POIRIER STREET, COQUITLAM, BC V3J 6B1

CONSULTANT:

200 - 638 Smithe St

THESE DRAWINGS ARE NOT TO BE SCALED.

REV. DATE DESCRIPTION

1. 2024.09.06 ISSUED FOR 50% CD

2024.10.31 ISSUED FOR 75% CD

2025.02.18 ISSUED FOR TENDER

Vancouver BC, V6B 1E3

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THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND

REPORT ALL ERRORS AND OMISSIONS TO THE CONSULTANT PRIOR TO COMMENCING THE WORK.

DRAWN BY	JR
CHECKED BY	AC
SCALE	NTS
DATE	FEB 18, 2025
DRAWING TITLE:	

MECHANICAL DETAILS

PROJECT NO.

DRAWING NO. 025b-010-24 M801



GAS DETECTION SENSORS TO BE C/W METAL GUARDS. TYPICAL.

- CONDUIT TO

MODULE

900mm

TO

1500mm

CONTROLLER/COMMUNICATION

U/S CEILING

CONDUIT -

DETAIL NOTES

CHLORINE SENSOR (CL2) -



GAS DETECTION SENSORS TO BE C/W METAL GUARDS. TYPICAL.

COMMON WORKS

GENERAL

1.1 GENERAL SCOPE

'PROVIDE' SHALL MEAN SUPPLY AND INSTALL

'CONSULTANT' SHALL MEAN AME GROUP CONSULTING PROFESSIONAL ENGINEERS

PROVIDE COMPLETE, FULLY TESTED AND OPERATIONAL SYSTEMS TO MEET THE REQUIREMENTS DESCRIBED HEREIN AND IN COMPLETE ACCORD WITH APPLICABLE CODES AND ORDINANCES CONTRACT DOCUMENTS AND DRAWINGS ARE DIAGRAMMATIC. THEY ESTABLISH SCOPE. MATERIAL AND ISTALLATION QUALITY BUT ARE NOT DETAILED INSTALLATION INSTRUCTIONS

FOLLOW MANUFACTURERS' RECOMMENDED INSTALLATION INSTRUCTIONS, DETAILS AND PROCEDURES FOR EQUIPMENT, SUPPLEMENTED BY REQUIREMENTS OF THE CONTRACT DOCUMENT

BEFORE SUBMITTING RFP, VISITAND EXAMINE THE SITE AND NOTE ALL CHARACTERISTICS AND FEATURES AFFECTING THE WORK. NO ALLOWANCES WILL BE WADE FOR ANY DIFFICULTIES ENCOUNTERED OR ANY EXPENSES INCURRED BECAUSE OF ANY CONDITIONS OF THE SITE OR ITEM EXISTING THEREON, WHICH IS VISIBLE OR KNOWN TO EXIST AT THE TIME OF TENDER.

CLARIFICATIONS OR REQUESTS FOR ALTERNATE MATERIALS OR EQUIPMENT MUST BE SUBMITTED IN WRITING TO

HE CONSULTANT NO LATER THAN SEVEN (7) WORKING DAYS PRIDR TO THE MECHANICAL TRADES' CLOSING FENDER DATE. APPROVAL OF REQUESTS SHALL ONLY BE GIVEN BY ADDENDUM MAKE REFERENCE TO ELECTRICAL. MECHANICAL. STRUCTURAL AND ARCHITECTURAL DRAWINGS WHEN SETTING

OUT WORK. CONSULT WITH RESPECTIVE DIVISIONS IN SETTING OUT LOCATIONS FOR DUCTWORK, EQUIPMENT, AND PIPING, SO THAT CONFLICTS ARE AVOIDED AND SYMMETRICAL EVEN SPACING IS MAINTAINED. JOINTLY WORK OUT ALL CONFLICTS ON SITE BEFORE FABRICATING OR INSTALLING ANY MATERIALS OR EQUIPMENT.

1.2 CODE COMPLIANCE, PERMITS AND FEES

COMPLIANCE SCHEDULE S-C FOR SEISMIC ENGINEERING

ALL WORK SHALL COMPLY WITH CURRENT EDITIONS OF THE NATIONAL PROVINCIAL AND MUNICIPAL CODES. STANDARDS, ACTS AND BYLAWS AND WILL MEET THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION. OBTAIN ALL PERMITS AND PAY ALL FEES APPLICABLE TO THE SCOPE OF WORK, CONTRACTOR SHALL ARRANGE FOR INSPECTIONS OF THE WORK BY THE AUTHORITIES HAVING JURISDICTION AND SHALL PROVIDE CERTIFICATES INDICATING FINAL APPROVAL

1.3 TENDER PRICE BREAKDOWN

SUBMIT A TENDER PRICE BREAKDOWN WITHIN THIRTY (30) DAYS OF TENDER CLOSING AND BEFORE FIRST PROGRESS CLAIM, IN A FORMAT AGREED TO WITH THE CONSULTANT. AS A MINIMUM INCLUDE EQUIPMENT MATERIALS AND LABOUR FOR MECHANICAL, FLUMBING, SHEET METAL, FIRE PROTECTION AND CONTROLS.

COMPLY WITH DIVISION 1 - SUBMISSION AND CLOSEOUT PROCEDURES AND IN ADDITION THE FOLLOWING: CONTRACTOR SHALL PROVIDE AND SUBMIT TO THE CONSULTANT ASSURANCE OF PROFESSIONAL DESIGN AND COMMITMENT FOR FIELD REVIEW SCHEDULE S-B AND ASSURANCE OF PROFESSIONAL FIELD REVIEW AND

SHOP DRAWINGS: PROVIDE SHOP DRAWINGS FOR ALL EQUIPMENT AS ELECTRONIC FILES (FILE FORMAT: .DWG, DXF, PDF, CR COMPARABLE). WHEN MANUFACTURER'S CUT SHEETS APPLY TO A PRODUCT SERIES RATHER THAN A SPECIFIC PRODUCT. THE DATA SPECIFICALLY APPLICABLE TO THE PROJECT SHALL BE HIGHLIGHTED OR CLEARLY INDICATED BY OTHER MEANS. EACH SUBMITTED PIECE OF LITERATURE AND DRAWINGS SHALL CLEARLY REFERENCE THE SPECIFICATION AND/OR DRAWING THAT THE SUBMITTAL IS TO COVER. GENERAL CATALOGS SHALL NOT BE ACCEPTED AS CUT SHEETS TO FULFILL SUBMITTAL REQUIREMENTS

CLOSEOUT SUBMITTALS: PROVIDE A MINIMUM OF TWO (2) MECHANICAL OPERATION AND MAINTENANCE MANUALS ND ONE DIGITAL COPY, PREPARED BY THE TAB CONTRACTOR OPERATION AND MAINTENANCE MANUAL APPROVED BY, AND FINAL COPIES DEPOSITED WITH THE CONSULTANT A

MINIMUM OF 7-DAYS BEFORE FINAL INSPECTION. OPERATION AND MAINTENANCE MANUAL TO INCLUDE BUT NOT LIMITED TO: LAYMAN'S DESCRIPTION OF THE SYSTEMS AND ASSOCIATED CONTROLS; OPERATIONAL INSTRUCTIONS, SERVICING, MAINTENANCE, OPERATION AND TROUBLE-SHOOTING INSTRUCTIONS FOR EACH ITEM OF EQUIPMENT: WARRANTIES: EQUIPMENT

MANUFACTURER'S PERFORMANCE DATASHEETS INDICATING POINT OF OPERATION AS LEFT AFTER IMISSIONING IS COMPLETE; TESTING, ADJUSTING AND BALANCING REPORTS SITE RECORDS: CONTRACTOR SHALL MAINTAIN 1 SET OF WHITE PRINTS AT CONTRACTORS COST TO MARK EACH SERVICE. DO NOT USE PENCIL OR BLACK INK, TRANSFER INFORMATION WEEKLY TO SHOW WORK AS

HANGES AS WORK PROGRESSES AND AS CHANGES OCCUR. USE DIFFERENT COLOUR WATERPROOF INK FOR ACTUALLY INSTALLED. DRAWINGS SHALL BE AVAILABLE FOR REFERENCE PURPOSES AND REVIEW RECORD DRAWINGS: PRIOR TO START OF TESTING, ADJUSTING AND BALANCING FOR MECHANICAL FINALIZE PRODUCTION OF RECORD DRAWINGS

RECORD DRAWINGS: USE FINAL SITE RECORD TO ELECTRONICALLY PRODUCE CAD AND PDF FILES THUS FORMING A "RECORD DRAWING" SET. IDENTIFY EACH DRAWING IN LOWER RIGHT HAND CORNER IN LETTERS AT LEAST 12 MM HIGH AS FOLLOWS: - "RECORD DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW MECHANICAL SYSTEMS AS INSTALLED" (SIGNATURE OF CONTRACTOR) (DATE). PERFORM TESTING, ADJUSTING AND BALANCING FOR HVAC USING RECORD DRAWINGS. SUBMIT RECORD DRAWINGS TO CONSULTANT FOR APPROVAL AND MAKE CORRECTIONS AS DIRECTED. PERFORM TESTING, ADJUSTING, AND BALANCING FOR HVAC USING RECORD RAWINGS. PROVIDE COMPLETED REPRODUCIBLE RECORD DRAWINGS WITH FINAL OPERATING AND MAINTENANCE MANUALS WITHIN TWO (2) WEEKS OF SUBSTANTIAL COMPLETION. FAILURE TO SUBMIT DRAWINGS WILL RESULT IN THE WORK BEING UNDERTAKEN BY THE OWNER AND DEDUCTED FROM THE CONTRACTOR'S DEFICIENCY HOLD. BACK AMOUNT, COST TO TRANSFER RECORD INFORMATION ONTO REPRODUCIBLE MEDIA & AUTO-CAD OR REVIT ARE THIS CONTRACTOR'S RESPONSIBILITY. CONSULTANT WILL RELEASE CAD DRAWINGS TO CONTRACTOR AFTER SIGNING A COPYRIGHT FORM. SHOULD THE CONTRACTOR CHOOSE TO UTILIZE THIS CONSULTANT FOR FRANSFERRING AS BUILT INFORMATION TO RECORD DRAWINGS, ALLOW \$400 / SHEET FOR ALL DRAWINGS IN THE CONSTRUCTION SET. THIS WILL COVER COSTS FOR DRAFTING TIME & PRINTING COSTS.

ALL WORK SHALL BE BY QUALIFIED TRADESMEN WITH VALID PROVINCIAL TRADE QUALIFICATION CERTIFICATES SPOT CHECKS WILL BE MADE BY THE CONSULTANT, WORK WHICH DOES NOT CONFORM TO STANDARDS MAY BE REJECTED BY THE CONSULTANT. THE CONTRACTOR SHALL REDO REJECTED WORK TO THE ACCEPTED STANDARD

1.6 METRIC CONVERSION

1.5 QUALITY OF WORK

ALL UNITS ARE EXPRESSED IN SI UNITS. ON ALL SUBMITTALS (SHOP DRAWINGS ETC.) USE THE SAME SI UNITS AS STATED IN THE SPECIFICATION.

WHERE PIPES ARE SPECIFIED WITH METRIC DIMENSIONS AND IMPERIAL SIZED PIPES ARE AVAILABLE, PROVIDE EQUIVALENT NOMINAL IMPERIAL SIZED PIPE AS INDICATED IN THE TABLE, AND PROVIDE AT NO EXTRA COST ADAPTERS TO ENSURE COMPATIBLE CONNECTIONS TO ALL METRIC SIZED FITTINGS, EQUIPMENT AND PIPING. WHEN CSA APPROVED SI METRIC PIPES ARE PROVIDED, THE CONTRACTOR SHALL PROVIDE AT NO EXTRA COST

PIPES, FITTINGS, AND EQUIPMENT EQUIVALENT NOMINAL DIAMETER OF PIPES

15MM = NPS 1/2 25MM = NPS 1

30MM = NPS 1-1/4

40MM = NPS 1-1/2

50MM = NPS 2 65MM = NPS 2-1/2

100MM = NPS 4

150MM = NPS 6200MM = NPS 8

THE METRIC DUCT SIZES ARE EXPRESSED AS 25 MM = 1 INCH.

SHOULD ANY DISCREPANCY APPEAR BETWEEN DRAWINGS AND SPECIFICATIONS OBTAIN WRITTEN CLARIFICATION FROM THE CONSULTANT DURING THE TENDER PERIOD. WITHOUT A WRITTEN CLARIFICATION THE BETTER QUALITY AND/OR GREATER QUANTITY OF WORK OR MATERIALS SHALL BE ESTIMATED, PERFORMED AND FURNISHED WITHIN THE TENDERED PRICE.

1.8 CUTTING, PATCHING AND CORING

PROVIDE HOLES AND SLEEVES, CUTTING AND FITTING REQUIRED FOR MECHANICAL WORK. RELOCATE IMPROPERLY LOCATED HOLES AND SLEEVES. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES OBTAIN WRITTEN APPROVAL FROM THE STRUCTURAL CONSULTANT BEFORE CUTTING OR BURNING STRUCTURAL

PROVIDE X-RAY OF ALL REQUIRED PENETRATIONS OF THE FLOOR, X-RAY USE FOR LOCATING IN FLOOR REBAR AND CONDUIT TO BE DONE AFTER NORMAL WORKING HOURS. TAKE NECESSARY PRECAUTIONS TO PROTECT COMPUTER EQUIPMENT WHEN X-RAYING FLOORS. COORDINATE WITH OWNER

1.9 COMPLIANCE WITH ENERGY BY-LAW

ALL EQUIPMENT INSTALLED ON THIS PROJECT SHALL COMPLY WITH THE NATIONAL ENERGY CODE OF CANADA FOR BUILDINGS - 2020, ASHRAE STANDARD 90.1 - 2019

1.10 INSTALLATION OF EQUIPMENT

PIPE ALL EQUIPMENT DRAINS TO BUILDING DRAINS EXCEPT SYSTEMS CONTAINING GLYCOL. UNIONS AND FLANGES SHALL BE PROVIDED IN PIPING OR DUCTWORK TO PERMIT EASY REMOVAL OF EQUIPMENT. MAINTAIN PERMANENT ACCESS TO EQUIPMENT FOR MAINTENANCE.

1.11 CONNECTIONS TO EXISTING SERVICES

MAINTAIN LIAISON WITH THE OWNER AND PROVIDE A MUTUALLY ACCEPTABLE SCHEDULE TO INTERRUPT, REROUTE, CR CONNECT TO EXISTING BUILDING SERVICES WITH THE MINIMUM OF INTERRUPTION OF THOSE

1.12 SELECTIVE DEMOLITION REMOVE FROM SITE ALL EQUIPMENT, DUCTING OR PIPING WHICH IS NO LONGER REQUIRED BECAUSE OF WORK UNDER THIS CONTRACT. EXCEPT AS OTHERWISE STATED, SALVAGEABLE MATERIALS FROM AREA OF DEMOLITION

SHALL BECOME THE PROPERTY OF THE OWNER AT HIS DISCRETION. THE INTENT IS FOR A HAZ-MAT CONTRACTOR TO REMOVE ALL ASBESTOS CONTAINING MATERIAL PRIOR TO THE PROPOSED PROJECT WORK TAKING PLACE. NOTIFY THE CONSULTANT IF ASBESTOS CONTAINING MATERIAL IS

SUSPECTED TO REMAIN ON SITE. 1.13 EQUIPMENT AND MATERIALS

WHERE TWO OR MORE PRODUCTS OF THE SAME TYPE ARE REQUIRED, PRODUCTS SHALL BE OF THE SAME MANUFACTURER.

NOTIFY THE CONSULTANT IN WRITING TEN (10) DAYS PRIOR TO THE TENDER CLOSE. ANY MATERIALS OR EQUIPMENT SPECIFIED WHICH IS NOT CURRENTLY AVAILABLE OR WILL NOT BE AVAILABLE FOR USE AS CALLED FOR HEREIN. FAILING THIS, THE CONTRACT WILL ASSUME THAT THE MOST EXPENSIVE ALTERNATE HAS BEEN INCLUDED

APPROVED EQUIVALENTS AND/OR ALTERNATIVES TO SPECIFIED PRODUCTS SHALL BE EQUAL TO THE SPECIFIED RODUCT IN EVERY RESPECT, CPERATE AS INTENDED, AND MEET THE SPACE, CAPACITY, AND NOISE REQUIREMENTS OUTLINED. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY ADDITIONAL LABOUR AND MATERIALS REQUIRED BY

ANY TRADES OR OTHER CONTRACTORS TO ACCOMMODATE THE USE OF OTHER THAN SPECIFIED MATERIALS OR EQUIPMENT. THE CONTRACTOR SHALL BEAR ANY AND ALL COSTS FOR DESIGN/SYSTEM MODIFICATIONS TO ACCOMMODATE THE "ALTERNATE" EQUIPMENT. EXTRAS WILL NOT BE APPROVED TO COVER SUCH WORK.

1.14 DELIVERY, STORAGE AND HANDLING STORE MATERIALS AND FOLIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS IN A

CLEAN, DRY, WELL-VENTILATED AREA. REPLACE DEFECTIVE OR DAMAGED MATERIALS WITH NEW.

1.15 FIRESTOPPING AND SMOKE SEALS

PROVIDE FIRESTOPPING SYSTEM(S) TO PROVIDE AND MAINTAIN A FIRE RESISTANCE RATING. AS INDICATED ON DRAWINGS AND IN ACCORDANCE WITH UL, WH, ULC. CUL OR FM DESIGN DETAILS FOR ALL MECHANICAL WORK IN

DIVISIONS 21, 22, 23 AND 25 FOR RENOVATION PROJECTS, IN ADDITION TO THE NECESSARY NEW PENETRATIONS, PROVIDE THE FIRESTOPPING ${\tt FOR\ ALL\ EXISTING\ MECHANICAL\ ASSEMBLIES\ WHERE\ FIRESTOPPING\ IS\ DAMAGED,\ DISCONTINUED\ OR\ ABSENT}$

OUND TRANSMISSION COEFFICIENT (STC) RATINGS TESTED TO ASTM E90-09 TO ACHIEVE STC RATINGS AS

REQUIRED BY ARCHITECTURAL DRAWINGS.

RECOMMENDATIONS PUBLISHED IN THEIR LITERATURE AND DRAWING DETAILS.

ALL FIRESTOP SYSTEM INSTALLATIONS MUST MEET THE REQUIREMENTS OF CAN4-S115-M OR ULC S-115-M TESTED ASSEMBLIES THAT PROVIDE A FIRE RATING A MANUFACTURER'S DIRECT REPRESENTATIVE (NOT DISTRIBUTOR OR AGENT) SHALL BE ON-SITE DURING THE INITIAL INSTALLATION OF FIRESTOP SYSTEMS TO TRAIN APPROPRIATE CONTRACTOR PERSONNEL IN CORRECT SELECTION AND INSTALLATION PROCEDURES. THIS WILL BE DONE PER MANUFACTURER'S WRITTEN

1.16 ACCESS DOORS PROVIDE ACCESS DOORS FOR MAINTENANCE OR ADJUSTMENT OF ALL PARTS OF THE MECHANICAL SYSTEM.

PROVIDE 300 MM X 300 MM MINIMUM SIZE FOR INSPECTION AND HAND ACCESS. 600 MM X 600 MM MINIMUM SIZE. LARGER IF INDICATED ON DRAWINGS, WHERE ENTRY IS REQUIRED AND ACCESS IS

1.17 ESCUTCHEONS AND PLATES PROVIDE ESCUTCHEONS AND PLATES ON ALL PIPING AND DUCTWORK PASSING THROUGH FINISHED WALLS,

FLOORS, AND CEILINGS.

1.18 GUARANTEE / WARRANT

FURNISH A WRITTEN GUARANTEE STATING THAT ALL WORK EXECUTED IN THIS CONTRACT WILL BE FREE FROM DEFECTIVE WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL

1.19 BALANCING

THE APPROVED BALANCING AGENCIES ARE: WESTERN MECHANICAL; K.D. ENGINEERING, FLOTECH MECHANICAL,

THE APPROVED BALANCING AGENCIES ARE: BIG SKY BALANCING CO., ENVIRO-METRICS TECHNICAL SERVICES LTD.,

HYDRO-AIR TECHNICAL SERVICES PERFECTION-AIRE LTD., AND TABTEK AIR & HYDRONICS LTD. BALANCE EXHAUST FANS AND AIR OUTLETS TO AIR QUANTITIES INDICATED ON THE DRAWINGS AND IN THIS SPECIFICATION. WHERE OUTLET QUANTITIES ARE NOT INDICATED, DIVIDE CAPACITY EQUALLY AMONG ALL

SUBMIT TWO (2) COPIESOF THE REPORT TO THE CONSULTANT WITHIN TWO (2) WEEKS AFTER SUBSTANTIAL COMPLETION. FAILURE TO SUBMIT THE REPORT WITHIN THE SPECIFIED TIME WILL RESULT IN THE WORK BEING DONE BY THE OWNER AND THE COSTS DEDUCTED FROM FINAL PAYMENT. BALANCING SHALL BE PERFORMED TO THE FOLLOWING:

AIR-TERMINAL OUTLETS ±10% AIR-CENTRAL EQUIPMENT ±5%

HYDRONIC-PUMPS AND CENTRAL EQUIPMENT ±5%

PROVIDE A DROP TEST OF ALL FIRE DAMPERS AND A LETTER/CERTIFICATE CONFIRMING THIS WORK. COOPERATE WITH THE BALANCING AGENCY AND MAKE ANY CORRECTIONS AS REQUIRED BY BALANCING AGENCY. PROVIDE BALANCING VALVES AND DAMPERS, PULLEYS, SHEAVES ETC. AS REQUESTED BY THE BALANCING

AGENCY AND/OR NECESSARY TO PROPERLY ADJUST OR CORRECT THE SYSTEMS TO DESIGN FLOWS. WITHOUT

1.20 COMMISSIONING AND DEMONSTRATION

ADDITIONAL COST TO OWNER.

CONTRACTOR TO BE RESPONSIBLE FOR THE PERFORMANCE AND COMMISSIONING OF ALL EQUIPMENT SUPPLIED

CONFIRM OPERATION AND REVIEW CONDITION OF ALL EXISTING ASSOCIATED CONTROL DEVICES IN THE RENOVATED AREA. CONTRACTOR TO CONDUCT A SMOKE TEST WITHIN THE CHLORINE ROOM FOR AIR LEAKAGE. SUBMIT TEST REPORTS AND REPORT ANY REMEDIAL WORK REQUIRED

AT THE CONCLUSION OF COMMISSIONING, DEMONSTRATE THE OPERATION OF THE SYSTEMS TO THE CONSULTANT

AND THEN TO THE OWNER'S OPERATING STAFF. AT THE COMPLETION OF THE COMMISSIONING, TESTING, BALANCING AND DEMONSTRATION SUBMIT TO THE CONSULTANT A LETTER CERTIFYING THAT ALL WORK SPECIFIED UNDER THIS CONTRACT IS COMPLETE, CLEAN AND OPERATIONAL IN ACCORDANCE WITH THE SPECIFICATION AND DRAWINGS.

1.21 FLASHING AND ROOF CURBS

PROVIDE CURBS, FLASH AND COUNTER FLASH AS REQUIRED WHERE MECHANICAL EQUIPMENT PASSES THROUGH WEATHER OR WATERPROOFED WALLS, FLOORS AND ROOFS. PROVIDE FACTORY ROOF CURBS FOR ALL ROOF MOUNTED EQUIPMENT UNLESS NOTED OTHERWISE.

PROVIDE SEISMIC RESTRAINTS FOR ALL REQUIRED EQUIPMENT, PIPING, AND DUCTWORK IN ACCORDANCE WITH THE LATEST EDITION OF THE SEISMIC RESTRAINTS MANUAL FOR MECHANICAL SYSTEMS PRODUCED BY SMACNA, AND THE LATEST EDITION OF THE ASHRAE APPLICATION HANDBOOK CHAPTER 49. SEISMIC RESTRAINTS. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A QUALIFIED PROFESSIONAL SEISMIC ENGINEER (SEISMIC ENGINEER) REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA. THE SEISMIC ENGINEER SHALL DESIGN AND REVIEW THE INSTALLATION OF ALL SEISMIC RESTRAINTS AS WELL AS MECHANICAL EQUIPMENT AND MECHANICAL SYSTEM SUPPORTS. THE RESTRAINTS AND SUPPORTS SHALL BE SPECIFICALLY DESIGNED TO FASTEN TO THE STRUCTURE INDICATED IN THE CONTRACT DOCUMENTS AND INSTALLED IN THE FIELD. THE COMPLETE DESIGN FOR THESE SYSTEMS SHALL COMPLY WITH ALL APPLICABLE BUILDING CODE REQUIREMENTS

SEISMIC ENGINEER SHALL PROVIDE AND SUBMIT TO THE OWNER'S CONSULTANT ASSURANCE OF PROFESSIONAL DESIGN AND COMMITMENT FOR FIELD REVIEW SCHEDULE S-B AND ASSURANCE OF PROFESSIONAL FIELD REVIEW AND COMPLIANCE SCHEDULE S-C FOR SEISMIC ENGINEERING SUBMIT SHOP DRAWINGS OF ALL SEISMIC RESTRAINT DETAILS PREPARED AND SEALED BY THE SEISMIC ENGINEER. PRIOR TO SUBSTANTIAL COMPLETION, THE SEISMIC ENGINEER SHALL VISIT THE SITE AND VERIFY THE SEISMIC

RESTRAINT INSTALLATION AS REQUIRED TO SATISFY THE ASSURANCE OF PROFESSIONAL FIELD REVIEW AND COMPLIANCE SCHEDULE IC-B) IC-21 OF THE BUILDING CODE THE CONTRACTOR SHALL OBTAIN APPROVAL FOR THE LOCATION OF ALL RESTRAINT FIXING POINTS FROM THE

WHERE EQUIPMENT IS MOUNTED ON SPRING OR RESILIENT MOUNTS FOR VIBRATION ISOLATION IT SHALL BE THE RESPONSIBILITY OF THE MANUFACTURER OF THE MOUNT TO INCORPORATE SEISMIC RESTRAINT, PROVIDE STEEL FRAME BASES WHERE NECESSARY TO ACHIEVE THIS AND ALSO AVOID OVERTURNING. THE MANUFACTURER SHALL SUPPLY CERTIFICATES, SIGNED BY A PROFESSIONAL ENGINEER REGISTERED WITHIN THE JURISDICTION, VERIFYING THE DESIGN OF THE SEISMIC RESTRAINTS IS IN ACCORDANCE WITH THIS SECTION

1.23 VIBRATION ISOLATION

STRUCTURAL ENGINEER, ON SITE, PRIOR TO INSTALLATION.

PROVIDE NEOPRENE ISOLATORS FOR DEFLECTIONS 6MM (1/4") AND UNDER. PROVIDE EITHER NEOPRENE OR STEEL SPRING ISOLATORS FOR DEFLECTIONS BETWEEN 6MM AND 12MM (1/2"). PROVIDE STEEL SPRING ISOLATORS FOR DEFLECTIONS OF 12MM (1/2") AND OVER

SUBSTANTIALLY DIFFERENT FROM THE INSTALLED WEIGHTS ALL SPRING ISOLATORS SHALL BE "OPEN SPRING" LINLESS OTHERWISE STATED. SEISMICALLY RATED HOUSED. SPRING ISOLATORS MAY BE USED IN LIEU PROVIDED THAT THEY MEET THIS PROJECT'S REQUIREMENTS FOR

PROVIDE ADJUSTABLE LIMIT STOPS FOR SPRING ISOLATION MOUNTS ON EQUIPMENT WITH OPERATING WEIGHTS

SELECT ISOLATORS IN ACCORDANCE WITH EQUIPMENT WEIGHT DISTRIBUTION TO ALLOW FOR AN AVERAGE DEFLECTION MEETING OR EXCEEDING THE SPECIFIED DEFLECTION REQUIREMENTS AND SO THAT NO ISOLATOR HAS A DEFLECTION LESS THAN 80% OF THE STATIC DEFLECTION SPECIFIED. A MINIMUM OF 4 ISOLATORS ARE REQUIRED FOR EACH PIECE OF EQUIPMENT, UNLESS SPECIFIED OTHERWISE.

1.24 FIRE STOPPING RETAIN AND PAY FOR THE SERVICE OF A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA TO INSPECT EACH AND EVERY MECHANICAL FIRE STOPPING INSTALLATION, AND AS REQUIRED BY THE NGINEER SHALL PROVIDE LETTERS OF ASSURANCE TO THE OWNER'S CONSULTANT. IN ACCORDANCE WITH THE

AUTHORITY HAVING JURISDICTION, AND PROVIDE A REPORT ON ALL INSTALLATIONS. THE FIRE STOPPING BC BUILDING CODE. A MANUFACTURER'S DIRECT REPRESENTATIVE (NOT DISTRIBUTOR OR AGENT) SHALL BE ON-SITE DURING THE INITIAL INSTALLATION OF FIRESTOP SYSTEMS TO TRAIN APPROPRIATE CONTRACTOR PERSONNEL IN CORRECT

RECOMMENDATIONS PUBLISHED IN THEIR LITERATURE AND DRAWING DETAILS. PROPOSED FIRESTOP MATERIALS AND METHODS SHALL CONFORM TO APPLICABLE GOVERNING CODES HAVING LOCAL JURISDICTION.

SELECTION AND INSTALLATION PROCEDURES. THIS WILL BE DONE PER MANUFACTURER'S WRITTEN

FOR THOSE FIRESTOP APPLICATIONS THAT EXIST FOR WHICH NO ULC OR CUL TESTED SYSTEM IS AVAILABLE THROUGH A MANUFACTURER. A MANUFACTURER'S ENGINEERING JUDGMENT DERIVED FROM SIMILAR ULC OR CU SYSTEM DESIGNS OR OTHER TESTS WILL BE SUBMITTED TO LOCAL AUTHORITIES HAVING JURISDICTION FOR THEIR REVIEW AND APPROVAL PRIOR TO INSTALLATION. ENGINEER JUDGMENT DRAWINGS MUST FOLLOW REQUIREMENTS SET FORTH BY THE INTERNATIONAL FIRESTOP COUNCIL AND THE AUTHORITIES HAVING JURISDICTION AND BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH

1.25 SUBSTANTIAL AND TOTAL PERFORMANCE

PRIOR TO REQUESTING AN INSPECTION FOR SUBSTANTIAL PERFORMANCE, PROVIDE A COMPLETE LIST OF ITEMS, A CERTIFICATE OF SUBSTANTIAL PERFORMANCE WILL NOT BE GRANTED UNLESS THE FOLLOWING ITEMS ARE

COMPLETED AND AVAILABLE TO THE OWNER'S CONSULTAN FINAL PLUMBING INSPECTION CERTIFICATE FROM THE AUTHORITY HAVING JURISDICTION. FINAL GAS INSPECTION CERTIFICATE FROM THE AUTHORITY HAVING JURISDICTION.

SCHEDULE [S-B & S-C] FOR FIRE SUPPRESSION AND FIRE SPRINKLER MATERIALS AND TEST CERTIFICATE. SCHEDULE [S-B & S-C] FOR SEISMIC ENGINEERING.

SCHEDULE [S-B & S-C] FOR FIRE STOPPING

FINAL EACKFLOW PREVENTION TEST REPORTS FOR ALL BACKFLOW DEVICES. FIRE DAMPER TEST LETTER

DRAFT OPERATING/MAINTENANCE MANUALS HAVE BEEN SUBMITTED FOR REVIEW.

ALL MECHANICAL SYSTEMS HAVE BEEN COMMISSIONED AND ARE CAPABLE OF OPERATION WITH ALARM CONTROLS FUNCTIONAL AND AUTOMATIC CONTROLS IN OPERATION. AIR AND WATER SYSTEMS HAVE BEEN BALANCED WITH DRAFT REPORT SUBMITTED TO THE CONSULTANT.

OPERATING AND MAINTENANCE DEMONSTRATIONS HAVE BEEN PROVIDED TO THE OWNER RECORD DRAWINGS HAVE BEEN SUBMITTED. ALL PREVIOUSLY IDENTIFIED DEFICIENCIES HAVE BEEN CORRECTED AND ACCEPTED.

PRIOR TO A TOTAL PERFORMANCE INSPECTION PROVIDE DECLARATION IN WRITING THAT SUBSTANTIAL PERFORMANCE DEFICIENCIES HAVE BEEN CORRECTED AND FINAL TAB REPORTS AND O&M MANUALS HAVE BEEN

THE CONSULTANT SHALL PROVIDE ONE (1) VISITATION FOR THE PURPOSE OF TOTAL PERFORMANCE INSPECTION. SUBSEQUENT VISITATIONS IF REQUIRED SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

2. PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

LISTED MANUFACTURERS ARE ACCEPTABLE FOR THEIR ABILITY TO MEET THE GENERAL DESIGN INTENT, QUALITY AND PERFORMANCE CHARACTERISTICS OF THE SPECIFIED PRODUCT. THE LIST DOES NOT ENDORSE THE ACCEPTABILITY OF ALL PRODUCTS AVAILABLE FROM THE LISTED MANUFACTURERS/SUPPLIERS. IT REMAINS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THE PRODUCTS SUPPLIED ARE EQUAL TO THE SPECIFIED PRODUCTS IN EVERY RESPECT, OPERATE AS INTENDED, AND MEET THE PERFORMANCE

SPECIFICATIONS AND PHYSICAL DIMENSIONS OF THE SPECIFIED PRODUC THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY ADDITIONAL WORK OR MATERIALS, TO ACCOMMODATE THE USE OF EQUIPMENT FROM THE ACCEPTABLE MANUFACTURERS AND SUPPLIERS LISTED.

2.2 FIRESTOPPING AND SMOKE SEALS USE THE SAME MANUFACTURER THROUGHOUT THE PROJECT AND COMPATIBLE MATERIALS FOR RESTORATION

PROVIDE FILL MATERIAL COMPONENTS FOR EACH FIRESTOPPING SYSTEM AS NEEDED. USE ONLY COMPONENTS SPECIFIED BY THE FIRESTOPPING MANUFACTURER FOR THE DESIGNATED FIRE-RESISTANCE-RATED SYSTEMS. ACCEPTABLE MANUFACTURERS: 3M, HILTI, AD FIREBARRIER, TREMCO

2.3 PIPE HANGERS AND SUPPORTS PROVIDE HANGERS AND SUPPORTS TO SECURE EQUIPMENT IN PLACE, PREVENT VIBRATION, PROTECT AGAINST

DAMAGE FROM EARTHQUAKE, MAINTAIN GRADE, PROVIDE FOR EXPANSION AND CONTRACTION, AND NATATORIUM: ALL HANGERS AND SUPPORTS SHALL BE EPOXY COATED IN THE NATATORIUM

PROVIDE GALVANIZED HANGERS AND SUPPORTS FOR ALL PIPING EXCEPT HANGERS AND SUPPORTS SHALL BE COPPER PLATED OR EPOXY COATED FOR COPPER PIPING. TOGGLE HANGERS AND/OR STRAP HANGERS SHALL NOT BE USED FOR PIPE HANGERS.

POWER ACTUATED FASTENERS AND "DROP-IN" ANCHORS SHALL NOT BE USED. PROVIDE RING TYPE HANGERS FOR PIPING UP TO NPS 11/2 AND CLEVIS TYPE HANGERS FOR PIPING OVER NPS 11/2.

DRYWALL SURFACE: EXTRUDED ALUMINUM FRAME WITH GYPSUM BOARD INLAY AND STRUCTURAL CORNER ELEMENTS. HINGE TO BE CONCEALED 2-POINT HINGE, NON-CCRRODING WITH SCREWDRIVER OPERATED CAM

PLASTER WALLS AND CEILING: STEEL DOOR (14GA) AND STEEL FRAME (14GA), DOOR FLUSH TO FRAME EDGE, EXPANSION CASING BEAD AND 75 MM WIDE GALVANIZED LATH SURROUND RÉCESSED 18 MM TO RECEIVE PLASTER, CONTINUOUS CONCEALED HINGE, SCREWDRIVER OPERATED CAM LATCH, PRIME COAT GREY PAINTED FINISH FIRE RATED WALLS NON-COMBUSTIBLE CONSTRUCTION: UNINSULATED STEEL DOOR (16GA) AND STEEL FRAME (16GA), DOOR FLUSH TO FRAME EDGE, 25MM MOUNTING FRAME WITH MASONRY ANCHOR STRAPS, CONCEALED SELF-CLOSING HINGE, FLUSH KEY LATCH, PRIME COAT GREY PAINTED FINISH, ULC RATED 2 HOUR 'B' LABEL.

THE SURFACE: UNIVERSAL DESIGN STAINLESS STEEL DOOR (16GA) AND STAINLESS STEEL FRAME (18GA) DOOR

FLUSH TO FRAME, ROUNDED SAFETY CORNERS, CONTINUOUS CONCEALED HINGE, SCREWDRIVER OPERATED CAM

FIRE RATED WALLS COMBUSTIBLE CONSTRUCTION: INSULATED STEEL DOOR (20GA) FOR MAXIMUM 250°C RISE AFTER 30 MINUTES AND STEEL FRAME (16GA), DOOR FLUSH TO FRAME EDGE, 25MM MOUNTING FRAME WITH MASONRY ANCHOR STRAPS, CONCEALED SELF-CLOSING HINGE, FLUSH KEY LATCH, PRIME COAT GREY PAINTED FINISH, ULC RATED 1-1/2 HOUR 'B' LABEL FIRE RATED CEILINGS: 50MM INSULATED STEEL DOOR (16GA) AND STEEL FRAME (16GA), DOOR FLUSH TO FRAME EDGE, 25MM MOUNTING FRAME WITH MASONRY ANCHOR STRAPS, CCNCEALED UPSWING SELF-CLOSING HINGE, L

HANDLE LATCH, WHITE BAKED ENAMEL FINISH, SIZE 600MM X 600MM (24" X 24") ULC RATED 2 HOUR 'B' LABEL. DUCTWORK: ULTRA LOW LEAKAGE TYPE, FLAT OVAL DESIGN, GALVANIZED STEEL FRAME (22GA), DOUBLE SKIN GALVANIZED STEEL DOOR (22 GA) WITH 25MM INSULATION FULLY ENCLOSED IN PANEL, BULB TYPE SEAL INTEGRALLY FASTENED TO DOOR, LEVER CAM LOCKS. PROVIDE STAINLESS STEEL IN LIEU OF GALVANIZED STEEL IN STAINLESS STEEL DUCTWORK

ACCEPTABLE MANUFACTURERS: MAXAM, ACUDOR, MILCOR, CAN.AQUA, MIFAB, BILCO, BAUCOPLUS

2.5 IDENTIFICATION REFER TO OWNER'S TECHNICAL GUIDELINES FOR IDENTIFICATION REQUIREMENTS.

IDENTIFY PIPING WITH LABELS AND FLOW ARROWS. PROVIDE IDENTIFICATION AT 15M (50FT) MAXIMUM INTERVALS. BEFORE AND AFTER PIPES PASSING THROUGH WALLS, AT ALL SIDES OF TEES, BEHIND ACCESS DOORS, USE BRADY B-500 VINYL CLOTH LABELS FOR NON INSULATED PIPES AND B-350 FOR INSULATED PIPES PROVIDE 20MM (3/4") DIAMETER BRASS TAGS, SECURE TO VALVE STEMS WITH KEY CHAIN. PROVIDE A VALVE

ANY ASSOCIATED CONTROLS NOMENCLATURE. EACH PIECE OF EQUIPMENT SHALL BE IDENTIFIED WITH ITS EQUIPMENT SCHEDULE IDENTIFICATION, E.G. EXHAUST FAN EF-103, WITH LAMACOID PLATES HAVING 6MM (1/4") MINIMUM LETTER SIZE ACCEPTABLE MANUFACTURERS: BRADY

DIRECTORY AT ALL MECHANICAL ROOMS, IN THE D&M MANUALS AND A DIGITAL COPY CROSS REFERENCED WITH

2.6 VIBRATION ISOLATION

2.4 ACCESS DOORS

NEOPRENE WASHER/BUSHING: A ONE PIECE MOLDED BRIDGE BEARING NEOPRENE WASHER/BUSHING. THE BUSHING SHALL SURROUND THE ANCHOR BOLT AND HAVE A FLAT WASHER FACE TO AVOID METAL TO METAL CONTACT. USE WASHER/BUSHING CNLY ON LIGHT-WEIGHT EQUIPMENT.

NEOPRENE PAD ISOLATORS: NEOPRENE OR NEOPRENE / STEEL / NECPRENE PAD ISOLATORS. MINIMUM STATIC ACCEPTABLE MANUFACTURER: MASON WMSW OR EQUAL

RUBBER FLOOR MOUNTS: BR DGE BEARING NEOPRENE MOUNTINGS. MINIMUM STATIC DEFLECTION OF 5MM (0.2") OR GREATER AND ALL DIRECTIONAL SEISMIC CAPABILITY ACCEPTABLE MANUFACTURER: MASON RAA OR ND OR EQUAL

SPRING FLOOR MOUNTS: SPRING ISOLATORS BUILT INTO A DUCTILE IRON OR STEEL HOUSING TO PROVIDE ALL DIRECTIONAL SEISMIC SNUBBING. THE SNUBBER SHALL BE ADJUSTABLE VERTICALLY AND ALLOW A MAXIMUM OF 6MM (1/4") TRAVEL IN ALL DIRECTIONS BEFORE CONTACTING THE RESILIENT SNUBBING COLLARS. MOLDED NEOPRENE CUP OR 1/4" (6MM) NEOPRENE ACOUSTICAL FRICTION PAD BETWEEN THE BASEPLATE AND THE SUPPORT, SPRING DIAMETERS SHALL BE NO LESS THAN 0.8 OF THE COMPRESSED HEIGHT OF THE SPRING AT RATED LOAD. SPRINGS SHALL HAVE A MINIMUM ADDITIONAL TRAVEL TO SOLID EQUAL TO 50% OF THE RATED

ACCEPTABLE MANUFACTURER: MASON SSLFH OR EQUAL

ACCEPTABLE MANUFACTURER: MASON HG HEMI GROMMET OR EQUAI

SPRING HANGERS: HANGERS SHALL CONSIST OF RIGID STEEL FRAMES CONTAINING MINIMUM 32MM (1 1/4") THICK JEOPRENE ELEMENTS AT THE TOP AND A STEEL SPRING SEATED IN A STEEL WASHER REINFORCED NEOPRENE CUP ON THE BOTTOM. PROVIDE A COMBINATION RUBBER AND STEEL REBOUND WASHER AS THE SEISMIC UPSTOP FOR SUSPENDED PIPING, DUCTWORK AND EQUIPMENT, RUBBER THICKNESS SHALL BE A MINIMUM OF 6MM (1/4"). COLOUR CODED SPRINGS, RUST RESISTANT, PAINTED BOX TYPE HANGERS. TO MAINTAIN STABILITY THE BOXES SHALL NOT BE ARTICULATED AS CLEVIS HANGERS NOR THE NEOPRENE ELEMENT STACKED ON TOP OF THE

ACCEPTABLE MANUFACTURER: MASON HD, HS OR EQUAL ALTERNATE VIBRATION ISOLATION ACCEPTABLE MANUFACTURERS, KORFUND, VIBRO-ACOUSTICS

3. EXECUTION

3.1 PAINTING REPAIRS AND RESTORATION

DO PAINTING IN ACCORDANCE WITH DIVISION 09 - INTERIOR PAINTING PRIME AND TOLICH UP MARRED FINISHED PAINTWCRK TO MATCH ORIGINAL. RESTORE TO NEW CONDITION, FINISHES WHICH HAVE BEEN DAMAGED CLEAN EXPOSED BARE METAL SURFACES SUPPLIED UNDER DIVISIONS 21, 22, 23 AND 25, APPLY AT LEAST ONE COAT OF CORROSION RESISTANT PRIMER PAINT TO ALL SUPPORTS AND EQUIPMENT FABRICATED FROM FERROUS

SUPPLY TOOLS, EQUIPMENT, PERSONNEL TO DEMONSTRATE AND INSTRUCT THE OPERATING, AND MAINTENANCE PERSONNEL IN OPERATING, CONTROLLING, ADJUSTING, TROUBLE-SHOOTING, AND SERVICING OF ALL SYSTEMS

AND EQUIPMENT DURING REGULAR WORK HOURS, PRIOR TO ACCEPTANCE 3.3 FIRESTOPPING AND SMOKE SEALS THE OWNER'S CONSULTANT SHALL CONDUCT MANDATORY DESTRUCTIVE REVIEWS FOR EACH TYPE OF

NSTALLATION. DESTRUCTIVE TESTING SHALL BE AT THE DISCRETION OF THE OWNER'S CONSULTANT AND

AUTHORITY HAVING JURISDICTION ALLOW FOR DESTRUCTIVE TESTING OF 5% OF FIRE STOPPING APPLICATIONS. SHOULD INSTALLATIONS NOT CONFORM TO MANUFACTURER'S LISTED ASSEMBLY. AN ADDITIONAL 25% OF INSTALLATIONS MAY BE DESTRUCTIVELY TESTED AND SHOULD THERE BE MORE FAILURES, THE CONTRACTOR WILL BE RESPONSIBLE TO REMOVE ALL FIRE STOPPING PRODUCTS AND REINSTALL PRODUCTS CORRECTLY, AT NO ADDITIONAL COST TO THE

TAG ALL PENETRATIONS AND EVERY 3 METERS OF JOINT SEAL WITH PRINTED TAGS. TAGS SHALL INDICATE PRODUCT, SYSTEM #, DATE INSTALLED, INSTALLED BY: (NAME AND PHONE NUMBER OF SUBCONTRACTOR) AND RE-PENETRATED BY & DATE. TAGS SHALL STATE: CAUTION! FIRESTOP - DO NOT REMOVE, PUNCTURE OR DISCONTINUE UNLESS PREPARED TO

COMPLY WITH MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION OF THROUGH-PENETRATION JOINT MATERIALS. WHERE POSSIBLE, USE METAL SLEEVES FOR FLOOR PENETRATIONS TO PREVENT/MITIGATE THE PERFORM UNDER THIS SECTION PATCHING AND REPAIRING OF FIRESTOP CAUSED BY CUTTING OR PENETRATING

OF EXISTING FIRESTOP SYSTEMS ALREADY INSTALLED BY OTHER TRADES. ALL FIRESTOPPING TO BE GAS TIGHT.

RE-SEAL IMMEDIATELY WITH SPECIFIED PRODUCT

3.4 PIPE HANGERS AND SUPPORTS PIPE SUPPORT SPACING AND HANGER ROD DIAMETER SHALL BE: PIPE SIZE: NPS 1/2 ROD DIAMETER 9MM (3/8"), SPACING 1.8M (6') PIPE SIZE: NPS 3/4 TO 11/2 ROD DIAMETER 9MM (3/8"), SPACING 2.4M (8') PIPE SIZE: NPS 2 TO 21/2 ROD DIAMETER 9MM (3/8"), SPACING 3M (10') PIPE SIZE: NPS 3 TO 4 ROD DIAMETER 16MM (5/8"), SPACING 3.6M (12')

ROD DIAMETER 22MM (7/8"), SPACING 4.3M (14') PIPE SIZE: NPS 6 TO 12 3.5 PIPE PRESSURE TESTING ADVISE CONSULTANT OR PROJECT MANAGER 48 HOURS MINIMUM PRIOR TO PERFORMANCE OF PRESSURE TESTS HYDROSTATIC TEST: 150% OF WORKING PRESSURE, BUT NOT LESS THAN 860 KPA (125 PSIG). FOR PP-R PIPING, DO NOT EXCEED 1034 KPA (150 PSI). FCR PEX PIPING. DO NOT EXCEED 690 KPA (100 PSI). MAINTAIN TEST PRESSURE

WITHOUT LOSS FOR 4 HOURS MINIMUM UNLESS SPECIFIED FOR LONGER PERIOD OF TIME IN RELEVANT MECHANICAL SECTIONS. PRIOR TO TESTS, ISOLATE EQUIPMENT AND OTHER PARTS WHICH ARE NOT DESIGNED TO WITHSTAND TEST PRESSURE OR MEDIA.

EXAMINE ALL JOINTS FOR LEAKS AND REMAKE ALL LEAKING JOINTS WITH NEW MATERIALS. PAY COSTS FOR REPAIRS OR REPLACEMENT, RETESTING, AND MAKING GOOD. CONSULTANT TO DETERMINE WHETHER REPAIR OR REPLACEMENT S APPROPRIATE. INSULATE OR CONCEAL WORK ONLY AFTER APPROVAL AND CERTIFICATION OF TESTS BY AUTHORITIES.

PRESSURE TEST ALL GAS PIPING IN ACCORDANCE WITH CSA B149.1. PURGE ALL PIPING AFTER PRESSURE TESTS IN ACCORDANCE WITH CSA B149.1. SUBMIT COPIES OF PRESSURE TEST REPORTS FOR ALL SECTIONS OF PIPING.

CONDUCT TESTS IN PRESENCE OF CONSTRUCTION MANAGER OR PROJECT MANAGER.

3.6 ACCESS DOORS PROVIDE ALL ACCESS DOORS REQUIRED TO ACCESS WORK INSTALLED BY DIVISIONS 21, 22, 23 AND 25. BE RESPONSIBLE FOR COORDINATING LOCATIONS, CUTTING OPENING AND INSTALLING PANELS. ANY SECONDARY SUPPORTS, BLOCKING ETC. WILL BE BY THE CEILING OR WALL CONTRACTOR, ENSURE THAT EQUIPMENT IS WITHIN

VIEW AND ACCESSIBLE FOR OPERATING, INSPECTING, ADJUSTING, SERVICING WITHOUT USING SPECIAL TOOLS.

3.7 VIBRATION ISOLATION

NEOPRENE WASHER/BUSHING: ISOLATE VARIABLE FREQUENCY DRIVE CONTROLLER USING NEOPRENE WASHER/BUSHING ISOLATORS OR SOFT GROMMETS SUCH THAT STRUCTURE BORNE NOISE TRANSMISSION TO RUBBER FLOOR MOUNTS: MCUNT IN-LINE PUMPS ON TWO (2) RUBBER FLOOR MOUNT ISOLATORS UNDER EACH SUPPORT FOOT. FOR EQUIPMENT MOUNTED ON A SLAB ON GRADE MOUNT ON RUBBER FLOOR MOUNT ISOLATORS

UNLESS OTHERWISE SPECIFIED. PROVIDE PROTECTION OF THE RUBBER ELEMENT FROM CONTACT WITH OIL IN THE SPRING FLOOR MOUNTS: ISOLATE ALL FLOOR OR PIER MOUNTED EQUIPMENT ON SPRING FLOOR MOUNT ISOLATORS, UNLESS OTHERWISE SPECIFIED.

SPRING HANGERS: LOCATE ISOLATION HANGERS AS NEAR TO THE OVERHEAD SUPPORT STRUCTURE AS POSSIBLE. INSTALLATION SHALL PERMIT HANGER BOX OR ROD TO MOVE THROUGH A 30 DEGREES ARC WITHOUT METAL TO METAL CONTACT, ALL DISCHARGE DUCTWORK RUNS FOR A DISTANCE OF 15M (50') FROM THE CONNECTED QUIPMENT SHALL BE ISOLATED FROM THE BUILDING STRUCTURE BY MEANS OF SPRING HANGERS. SPRING DEFLECTION SHALL BE A MIN MUM OF 19MM (0.75").

DIVISION 21 FIRE SUPPRESSION

THIS IS A PERFORMANCE SPECIFICATION FOR THE PROVISION OF ALL LABOUR AND MATERIALS NECESSARY TO INSTALL A COMPLETE AND READY FOR CONTINUOUS OPERATION, FIRE SUPPRESSION SYSTEM FOR THIS PROJECT THE SYSTEMS SHALL BE AS INDICATED IN THE CONTRACT DOCUMENTS AND AS REQUIRED BY THE REFERENCED CODES AND THE AUTHORITY HAVING JURISDICTION. 1.2 CODE COMPLIANCE

ALL WORK SHALL COMPLY WITH CURRENT EDITIONS OF THE NATIONAL, PROVINCIAL AND MUNICIPAL CODES STANDARDS, ACTS AND BYLAWS AND WILL MEET THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

1.3 SUBMITTALS

INDICATING WHICH ZONE IS CONTROLLED BY EACH VALVE. ENSURE DEVICES ARE CONNECTED AS REQUIRED TO THE FIRE ALARM SYSTEM. COORDINATE WITH DIVISION 26. INSTALL SPARE PARTS CABINET IN LOCATION DESIGNATED OR LOCATED ADJACENT TO ALARM VALVES. ADJUST SPRINKLER PIPING UP OR DOWN IF CONFLICTIONS OCCUR BETWEEN STRUCTURE, LIGHTING, ELECTRICAL,

JOINTS, BUILDING FIREWALLS AND OTHER LOCATIONS AS REQUIRED ALL GROOVED END COMPONENTS INCLUDING VALVES, FITTINGS AND COUPLINGS SHALL BE OF ONE MANUFACTURER.

PROVIDE EXPANSION JOINTS OR FLEXIBLE COUPLINGS AT BUILDING EXPANSION JOINTS. BUILDING EARTHQUAKE

PROVIDE CONSULTANT ASSURANCE OF PROFESSIONAL DESIGN AND COMMITMENT FOR FIELD REVIEW SCHEDULE B

AND ASSURANCE OF PROFESSIONAL FIELD REVIEW AND COMPLIANCE SCHEDULE C-B FOR FIRE SUPPRESSION

PROVIDE SCHEDULES OF PROFESSIONAL INVOLVEMENT IN ACCORDANCE WITH THE ALBERTA BUILDING CODE.

SHOP DRAWINGS SHALL INCLUDE HYDRAULIC CALCULATIONS FOR SPRINKLER DESIGN, DETAILED PIPING AND

SPRINKLER HEAD LAYOUTS AND MANUFACTURER'S CATALOG DATA INCLUDING SPECIFIC MODEL AND SIZE FOR ALL

THE FIRE SUPPRESSION CONTRACTOR SHALL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER REGISTERED

IN THE PROVINCE OF BRITISH COLUMBIA (FIRE SUPPRESSION ENGINEER) TO PROVIDE COMPLETE ENGINEERING

DESIGN AND FIELD REVIEW SERVICES INCLUDING SIGNED AND SEALED CAD FIRE SUPPRESSION DRAWINGS AND

THE FIRE SUPPRESSION SYSTEM INFORMATION SHOWN ON THE DRAWINGS IS DIAGRAMMATIC. THE SPRINKLER

INSTALLATION. WHERE SPRINKLER HEAD LOCATIONS ARE SHOWN, THIS IS TO INDICATE GENERAL INTENT ONLY. IT

CONTRACTOR SHALL PREPARE FABRICATION/WORKING DRAWINGS FOR ALL THE SPRINKLER WORK, PAY ALL

ASSOCIATED FEES AND OBTAIN ALL APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION PRIOR TO

IS THE RESPONSIBILITY OF THE CONTRACTOR TO ALLOW IN HIS BID AND TO INSTALL ALL HEADS AND PIPING

CONTRACTOR TO ALLOW FOR SPRINKLERS AS REQUIRED DURING CONSTRUCTION TO CONFORM TO ALL NFPA

REQUIREMENTS AND THE AUTHORITY HAVING JURISDICTION, WHETHER SHOWN ON THE DRAWINGS OR NOT.

CONTRACT DRAWINGS INCLUDING WET SPRINKLER SYSTEMS IN ALL HEATED AREAS. DRY SPRINKLERS IN ALL

EXTERIOR AND UNHEATED AREAS (INCLUDING UNDERGROUND AND COVERED PARKING LEVELS, LOADING AREAS.

SUBMIT ALL DOCUMENTATION TO THE AUTHORITIES HAVING JURISDICTION, ARRANGE FOR, PAY FOR, AND OBTAIN

TRADE PERMITS PRIOR TO COMMENCING INSTALLATION WORK ON SITE. ALL INSPECTIONS AND TESTS REQUIRED

PROVIDE ALL TESTING, ADJUSTING AND BALANCING; COMMISSIONING; IDENTIFICATION; INSULATION; AND HEAT

TRACING FOR ALL FIRE SUPPRESSION SYSTEMS AS DESCRIBED IN THIS SPECIFICATION AND REQUIRED BY THE

PROVIDE ALL FIRE SUPPRESSION SYSTEMS THROUGHOUT THE AREA OF THE BUILDING INDICATED ON THE

ATTICS, UN-HEATED CONCEALED SPACES, BALCONIES ETC.) AND PORTABLE FIRE EXTINGUISHERS.

DESIGN SYSTEM IN ACCORDANCE WITH ANS /NFPA 13 AND THE AUTHORITY HAVING JURISDICTION.

PROVIDE FOR ALL PIPES, FITTINGS, COUPLINGS, VALVES, NIPPLES, DRAINS, TEST CONNECTIONS AND ALL

AND PIPE WORK AS REQUIRED DURING CONSTRUCTION TO PROVIDE OFFSETS TO AVOID STRUCTURAL

HAVE BEEN COMMISSIONED AND ARE CAPABLE OF OPERATION WITH ALARM CONTROLS FUNCTIONAL AND

AUTOMATIC CONTROLS IN OPERATION. COMMISSIONING CHECKLISTS MUST BE SUBMITTED PRIOR TO THE

ALL SPRINKLERS SHALL BE FOR COMMERCIAL APPLICATIONS UNLESS STATED OTHERWISE. RESIDENTIAL

NO EXTRA COST WILL BE CONSIDERED BASED ON FAILURE OF THE CONTRACTOR TO ALLOW FOR PIPE, FITTINGS

COMPONENTS, AND TO COORDINATE WITH OTHER PIPING SERVICES, DUCTWORK, CABLE TRAYS, CONDUITS OR

ALL GROOVED JOINT COUPLINGS, FITTINGS, VALVES, AND SPECIALTIES SHALL BE THE PRODUCTS OF A SINGLE

MANUFACTURER. GROOVING TOOLS SHALL BE OF THE SAME MANUFACTURER AS THE GROOVED COMPONENTS.

A CERTIFICATE OF SUBSTANTIAL PERFORMANCE WILL NOT BE GRANTED UNLESS THE FIRE SUPPRESSION SYSTEMS

ALL MATERIALS SHALL BE ULC LISTED FOR THE INTENDED SERVICE AND SHALL BE SUPPLIED IN ORIGINAL FACTORY

INSTALL APPROVED MONITORED VALVES AND FLOW SWITCHES FOR ALL ZONES. MONITORED VALVES AND FLOW

SWITCHES SHALL BE WIRED TO CENTRAL FIRE ALARM SYSTEM BY DIVISION 26. IDENTIFY EACH VALVE BY

BY THE AUTHORITIES SHALL BE ARRANGED AND PAID FOR BY THIS CONTRACTOR.

DESIGN SYSTEMS FOR EARTHQUAKE PROTECTION FOR BUILDINGS IN SEISMIC ZONES.

ACCESSORY PIPE WORK FOR A COMPLETE INSTALLATION WITHIN THE BASE TENDER PRICE

REQUEST BY THE CONTRACTOR TO HAVE A SUBSTANTIAL COMPLETION INSPECTION.

PIPING, VALVES AND SPRINKLER TYPES SHALL MATCH THE BASE BUILDING STANDARD.

SPRINKLERS ARE ONLY PERMITTED IN RESIDENTIAL AREAS OF RESIDENTIAL BUILDINGS.

ALL SPRINKLERS SHALL BE TO ANSI/NFPA 13 AND ULC LISTED FOR FIRE SERVICES.

INSTALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

APPLICABLE CODES AND AUTHORITY HAVING JURISDICTION.

OTHER OBSTACLES WHETHER INDICATED ON THE DRAWINGS OR NOT.

1.5 ENGINEERING DESIGN REQUIREMENTS

1.7 SUBSTANTIAL & TOTAL PERFORMANCE

1.6 PIPE, FITTINGS AND COUPLINGS

REQUIRED TO SATISFY THE CODE. NO EXTRA COST WILL BE CONSIDERED BASED ON FAILURE OF THE

PROVIDE A MINIMUM OF FOUR (4) SETS OF SHOP DRAWINGS, STAMPED AND SIGNED BY A PROFESSIONAL

SCHEDULE B-1: LETTER OF COMMITMENT BY THE REGISTERED PROFESSIONAL OF RECORD

SCHEDULE B-2: SUMMARY OF DESIGN AND FIELD REVIEW REQUIREMENTS

ENGINEER REGISTERED OR LICENSED IN PROVINCE OF BRITISH COLUMBIA.

1.4 GENERAL REQUIREMENTS

HYDRAULIC CALCULATIONS.

SCHEDULE C-2: ASSURANCE OF PROFESSIONAL FIELD REVIEW AND COMPLIANCE

3.2 ISOLATION VALVES INSTALL ISOLATION VALVES WHETHER SHOWN ON THE DRAWINGS OR NOT AT THE BASE OF EACH STANDPIPE RISER, AT EACH SPRINKLER ZONE AND AT ALL POINTS WHERE REQUIRED BY THE BUILDING CODES, BY-LAWS OR

PLUMBING PIPING OR DUCTWORK.

3.1 INSTALLATION

3.3 ELECTRICAL EQUIPMENT PROTECTION FROM WATER RESPONSIBILITY FOR WATER DAMAGE TO ELECTRICAL EQUIPMENT FROM THE SPRINKLER SYSTEM INSTALLATION WHETHER DUE TO TESTING OR LEAKAGE PRIOR TO THE OWNER'S ACCEPTANCE OF THE BUILDING SHALL BE THE

RESPONSIBILITY OF THIS SECTION.

JURISDICTION OR HIS DESIGNATED ALTERNATE.

THE FIRE SUPPRESSION ENGINEER SHALL PERFORM ALL FIELD SERVICES AS REQUIRED TO FULFIL THE BUILDING CODE OBLIGATION FOR THE PROVISION OF THE ASSURANCE OF PROFESSIONAL FIELD REVIEW AND COMPLIANCE SCHEDULE [C-2] [C-B] FOR FIRE SUPPRESSION SYSTEMS AND SEISMIC RESTRAINT OF FIRE SUPPRESSION SYSTEMS. THE FIRE SUPPRESSION ENGINEER SHALL PROVIDE FIELD REVIEWS ON A MONTHLY BASIS (MINIMUM) THROUGHOUT THE DURATION OF THE PROJECT. SUBMIT CONCISE FIELD REPORTS TO THE OWNER'S CONSULTANT WITHIN 3 DAYS

TEST SPRINKLER SYSTEMS TO NFPA LISTED REQUIREMENTS AND FURNISH A CERTIFICATE STATING THAT SUCH

TESTING HAS BEEN CARRIED OUT AND APPROVED. TESTS SHALL BE WITNESSED BY THE AUTHORITY HAVING

VENTILATION PROJECT ADDRESS:

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CONSULTANT:

PROJECT TITLE: CITY OF COQUITLAM, POIRIER SPORT & LEISURE COMPLEX - CHLORINE

640 POIRIER STREET, COQUITLAM, BC V3J 6B1 DRAWN BY JR

DRAWING TITLE: **SPECIFICATIONS**

DRAWING NO.

| 025b-010-24**| M90**1

DIVISION 23 HVAC

GENERAL

1.1 GRILLES, LOUVERS AND DIFFUSERS

AIRFLOW TESTS AND SOUND LEVEL MEASUREMENT SHALL BE MADE IN ACCORDANCE WITH APPLICABLE ADC EQUIPMENT TEST CODES, ASHRAE STANDARDS AND AMCA STANDARDS.

MANUFACTURER SHALL CERTIFY CATALOGUED PERFORMANCE AND ENSURE CORRECT APPLICATION OF AIR

OUTSIDE LCUVERS SHALL BEAR AMCA SEAL FOR FREE AREA AND WATER PENETRATION.

PROJECT CONDITIONS: REVIEW REQUIREMENTS OF OUTLETS AS TO SIZE, FINISH AND TYPE OF MOUNTING PRIOR TO SUBMITTING SHOP DRAWINGS AND SCHEDULES OF OUTLETS. POSITIONS INDICATED ARE APPROXIMATE ONLY. CHECK LOCATIONS OF OUTLETS AND MAKE NECESSARY ADJUSTMENTS IN POSITION TO CONFORM WITH ARCHITECTURAL FEATURES, SYMMETRY, AND LIGHTING ARRANGEMENT

2. PRODUCTS

2.1 DUCTWORK AND ACCESSORIES

PROVIDE DUCTWORK CONSTRUCTED, REINFORCED, SEALED, AND INSTALLED TO WITHSTAND 1-1/2 TIMES THE

PROVIDE LCW PRESSURE DUCTWORK 500 PA (2" W.G.) FOR SUPPLY DUCTWORK AND PLENUMS ON SYSTEMS WITHOUT TERMINAL MIXING BOXES OR AIR VALVES SUPPLY DUCTWORK DOWNSTREAM FROM TERMINAL MIXING BOXES OR AIR VALVES, OUTDOOR AIR DUCTWORK AND PLENUMS, RETURN AIR DUCTWORK AND PLENUMS. EXHAUST AND RELIEF AIR DUCTWORK AND PLENUMS. UNLESS NOTED OTHERWISE

LOW PRESSURE INSULATED FLEXIBLE DUCTWORK SHALL BE EQUAL TO THERMAFLEX TYPE M-KC. PROVIDE MEDIUM PRESSURE DUCTWORK TO 1000 PA (4"W.G.) FOR SUPPLY AIR DUCTWORK DOWNSTREAM FROM

SUPPLY AIR HANDLING UNITS DISCHARGE. TO TERMINAL MIXING EOXES OR AIR VALVES, EXHAUST AND RETURN AIR DUCTWORK DOWNSTREAM OF RETURN/EXHAUST AIR VALVES TO THE RETURN/EXHAUST FANS AND DISCHARGE DUCTWORK FROM THE RETURN/EXHAUST FANS TO THE AIR HANDLING UNITS AND/OR RELIEF OPENING.

WHERE FLEXIBLE AIR DUCTS ARE USED TO CONNECT TERMINAL MIXING BOXES OR AIR VALVES TO METAL DUCTS, THE FLEXIBLE AIR DUCTS SHALL BE RATED FOR 30.5 M/S (6000 FPM) VELOCITY AND 2500 PA (10" W.G.). MAXIMUM STRETCHED LENGTH OF FLEXIBLE AIR DUCT SHALL BE 300 MM (12"). DO NOT USE FLEXIBLE DUCT TO CHANGE DIRECTION. WHERE FLEXIBLE AIR DUCTS ARE ATTACHED TO METAL INSULATED DUCT, FURNISH FLEXIBLE AIR DUCTS WITH FIBERGLASS WOOL INSULATION AND METALIZED JACKET. THERMAFLEX M-KC OR EQUAL.

2.2 DUCT SEALING

DUCT SEALING LOW PRESSURE DUCTWORK 500 PA (2" W.G.) AND UNDER SHALL BE SMACNA SEAL CLASS A. SEAL ALL SUPPLY, RETURN AND EXHAUST DUCT JOINTS, LONGITUDINAL AS WELL AS TRANSVERSE JOINTS AS FOLLOWS: SLIP JOINTS: APPLY HEAVY BRUSH-ON HIGH PRESSURE DUCT SEALANT. APPLY SECOND APPLICATION AFTER THE FIRST APPLICATION HAS COMPLETELY DRIED OUT. WHERE METAL CLEARANCE EXCEEDS 1.5 MM (1/16") USE HEAVY MASTIC TYPE SEALANT.

FLANGED JOINTS: SOFT ELASTOMER BUTYL OR EXTRUDED FORM OF SEALANT BETWEEN FLANGES FOLLOWED BY AN APPLICATION OF HEAVY BRUSH-ON HIGH PRESSURE DUCT SEALANT. OTHER JOINTS: HEAVY MASTIC TYPE SEALANT.

DUCT SEALING MEDIUM PRESSURE DUCTWORK TO 1000 PA (4"W.G.) SHALL BE THE SAME AS 500 PA DUCTWORK EXCEPT PROVIDE A COMBINATION OF WOVEN FABRICS AND SEALING COMPOUND FOLLOWED BY AN APPLICATION

DUCT TAPES AS A SEALING METHOD ARE NOT PERMITTED, EXCEPT ON RESIDENTIAL DUCTWORK - MINIMUM 2 WRAPS OF 2" WIDE (50MM) FOIL DUCT TAPE IS ACCEPTABLE.

DO NOT INSULATE ANY SECTION OF THE DUCTWORK UNTIL IT HAS BEEN INSPECTED AND APPROVED OF DUCT SEALANT APPLICATION, BY THE CONSULTANT.

2.3 DUCT HANGERS AND SUPPORTS

HANGERS AND SUPPORTS TO SMACNA STANDARDS.

STRAP HANGERS: OF SAME MATERIAL AS DUCT BUT NEXT SHEET METAL THICKNESS HEAVIER THAN DUCT. MAXIMUM SIZE DUCT SUPPORTED BY STRAP HANGER: 500 MM.

HANGERS: GALVANIZED STEEL ANGLE WITH GALVANIZED STEEL RODS TO SMACNA.

TOGGLE HANGERS AND/OR STRAP HANGERS SHALL NOT BE USED. POWER ACTUATED FASTENERS AND "DROP-IN" ANCHORS SHALL NOT BE USED.

2.4 DUCT AND BREECHING INSULATION

EXPOSED RECTANGULAR DUCTS: EXTERNAL RIGID INSULATION, SERVICE TEMPERATURE 5°C TO 232°C (41°F TO 450°F), MINERAL FISER BOARD FOR LOW AND MEDIUM TEMPERATURE APPLICATIONS, ALL SERVICE ALUMINUM FOIL-SCRIM KRAFT (FSK) VAPOUR BARRIER JACKET WITH GLASS FIBRE REINFORCEMENT, FACTORY APPLIED. DENSITY 36KG/M3 (2.25 PCF), MINIMUM RSI 0.76/25MM (R 4.3/IN)

ROUND DUCTS AND CONCEALED RECTANGULAR DUCTS: EXTERNAL FLEXIBLE INSULATION, SERVICE TEMPERATURE 5°C TO 232°C (41°F TO 450°F), GLASS FIBER OR MINERAL FIBER FLEXIBLE BLANKET FOR LOW AND MEDIUM TEMPERATURE APPLICATIONS. ALL SERVICE ALUMINUM FOIL-SCRIM KRAFT (FSK) VAPOUR BARRIER JACKET WITH GLASS FIBRE REINFORCEMENT, FACTORY APPLIED, DENSITY 12KG/M3 (0.75PCF), MINIMUM RSI

0.49/25MM (R 2.8/IN) (INSTALLED) ACOUSTIC LINING DUCTS: INTERNAL FLEXIBLE DUCT LINER, FLEXIBLE MINERAL FIBER BLANKET, FOR LOW AND MEDIUM TEMPERATURE ACOUSTICAL APPLICATIONS, AIRSTREAM SURFACE FACED WITH A BLACK MAT BONDED TO THE FIBREGLASS SUBSTRATE, AIR VELOCITY RATING 25.4 M/S (5,000 FT/MIN). DENSITY 24KG/M3 (1.5 PCF), MINIMUM RSI 0.74/25MM (R 4.2/IN)

ACOUSTIC LINING PLENUMS: INTERNAL RIGID DUCT LINER, RIGID MINERAL FIBER BOARD, FOR LOW AND MEDIUM TEMPERATURE ACOUSTICAL APPLICATIONS, AIRSTREAM SURFACE FACED WITH A BLACK MAT BONDED TO THE FIBREGLASS SUBSTRATE, AIR VELOCITY RATING 25.4 M/S (5,000 FT/MIN). DENSITY 48KG/M3 (3 PCF), MINIMUM RSI

BREECHING INSULATION: EXTERNAL SEMI-RIGID INSULATION, SERVICE TEMPERATURE UP TO 538°C (1000°F), GLASS FIBER OR MINERAL FIBER FLEXIBLE BLANKET FOR HIGH TEMPERATURE APPLICATIONS. DENSITY 25KG/M3 (1.6PCF). MINIMUM RSI 0.25/25MM (R 1.4/IN)

THERMOCANVAS JACKET: FIRE RATED, 170G (6 OZ) FIRE RETARDANT CANVAS JACKET FOR COVERING MECHANICAL NSULATION INDOORS, 25/50 FIRE CLASS, PLAIN WAVE COTTON, NO DYES.

UTILITY FINISH: OVER RIGID INSULATION FOR RECTANGULAR DUCTWORK AND FLEXIBLE INSULATION FOR ROUND DUCTWORK APPLY CONTINUOUS METAL CORNER BEAD TO ALL CORNERS. ADHERE VAPOR RETARDER TAPE OVER ALL JOINTS AND BREAKS IN VAPOR RETARDER, AND AT ALL CORNERS.

ALUMINUM JACKET: 51 ML (22 GA.) THICK STUCCO OR SMCOTH ALUMINUM JACKETING WITH LONGITUDINAL SLIP

JOINTS AND 50MM (2") END LAPS WITH FACTORY APPLIED PROTECTIVE LINER ON INTERIOR SURFACE.

FLEXIBLE, NON-COMBUSTIBLE, BLANKET TYPE MINERAL FIBRE DUCT WRAP COMPLETELY ENCAPSULATED IN REINFORCED FOIL ULC TESTED AND LISTED ULD DESIGN FRD-19 FOR KITCHEN EXHAUST/ GREASE DUCT. ULC DESIGNS FRD -17 &23 FOR VENTILATION DUCTS. COMPLY WITH ASTM E2336 STANDARD TEST METHODS FOR FIRE RESISTIVE GREASE DUCT ENCLOSURE SYSTEMS. TWO (2) HOUR FIRE RESISTANCE.

2.7 PREFORMED PIPE INSULATION CHILLED WATER PIPING WITH A SERVICE TEMPERATURE OF -40°C TO 5°C (-40°F TO 41°F) SHALL BE PRE-FORMED AND PRE-SLIT FLEXIBLE FOAMED FLASTOMERIC OR CLOSED CELL INSULATION WITH SELF-ADHESIVE SELF SEAL OR LAP SEAL JOINTS, MAXIMUM "K" VALUE AT 24°C (75°F) = 0.039 W/M.°C (0.27 BTU.IN/HR.FT2.°F)

CHILLED WATER AND HEATING WATER PIPING WITH A SERVICE TEMPERATURE OF 5°C TO 315°C (41°F TO 599°F) SHALL BE PREFORMED INSULATION, FINE FIBROUS GLASS OR FORMED MINERAL FIBRE PIPE INSULATION WITH ALL SERVICE JACKET VAPOUR RETARDER (ASJ). ASJ SHALL BE RE-ENFORCED WITH GLASS FIBRE, FACTORY APPLIED WITH PRESSURE SENSITIVE LAP CLOSURE. MAXIMUM "K" VALUE AT 38°C (100°F) = 0.035 W/M.°C (0.24

2.8 GRILLES, LOUVERS AND DIFFUSERS

ACCEPTABLE MANUFACTURES FOR AIR TERMINALS: E.H. PRICE, TITUS, ANEMOSTAT, NAILOR. ACCEPTABLE MANUFACTURERS FOR LOUVERS: AIROLITE, PENN, AIRSTREAM, WEST VENT, NAILOR, RUSKIN. PROVIDE BAFFLES TO DIRECT AIR AWAY FROM WALLS, COLUMNS OR OTHER OBSTRUCTIONS WITHIN THE RADIUS

OF DIFFUSER OPERATION. PROVIDE PLASTER FRAME FOR DIFFUSERS LOCATED IN PLASTER SURFACES AND ANTI-SMUDGE FRAMES OR PLAQUES ON DIFFUSERS LOCATED IN ROUGH TEXTURED SURFACES SUCH AS ACOUSTICAL PLASTER. PROVIDE 30 MM MARGIN FRAME ON GRILLES WITH [COUNTERSUNK SCREW HOLES] [CONCEALED FASTENING].

PROVIDE OPPOSED BLADE BALANCE DAMPER, ACCESSIBLE FROM GRILLE FACE ON ALL GRILLES LOCATED IN DRYWALL CEILINGS OR BULKHEADS

ALL GRILLES AND DAMPERS SHALL BE ALUMINUM IN WET AREAS (I.E. SHOWERS, AQUATIC AREAS, DISHWASHING IN GYMNASIUM, AQUATIC CENTRES, FRONT BLADES SHALL BE FRONT PIVOTED, WELDED IN PLACE OR SECURELY

FASTENED TO BE IMMOBILE. FABRICATE GOOSENECKS OF MINIMUM 1.3 MM (18 GA.) GALVANIZED STEEL. MOUNT ON MINIMUM 300 MM (12 IN.)

HIGH CURB 3ASE WHERE SIZE EXCEEDS 225 MM X 225 MM (9 IN. X 9 IN). REFER TO GRILLES AND DIFFUSER SCHEDULE FOR TYPES AND CAPACITIES.

ALL EQUIPMENT SHALL BE CSA APPROVED FOR ITS INTENDED USE.

INLINE BELT DRIVEN EXHAUST FAN: WHEEL STATICALLY AND DYNAMICALLY BALANCED TO AMCA STANDARD. TEFC MOTORS, PERMANENTLY LUBRICATED, HEAVY DUTY BEARINGS OR PILLOW BLOCK BALL BEARINGS. BEARING SHALL BE SELECTED FOR A MINIMUM L10 LIFE IN EXCESS OF 100,000 HOURS. (EQUIVALENT TO L50 AVERAGE LIFE OF 500,000 HOURS). HEAVY GAUGE GALVANIZED STEEL HOUSING. RECTANGULAR CONSTRUCTION INCLUDING RECTANGULAR DUCT MOUNTING COLLARS. CRIVE FRAME ASSEMBLIES SHALL BE CONSTRUCTED OF HEAVY GAUGE STEEL AND MOUNTED ON VIBRATION ISOLATORS. ADJUSTABLE BELT DRIVE, PULLEYS, AND KEYS OVERSIZED FOR A MINIMUM OF 150 PERCENT OF DRIVEN HORSEPOWER. PROVIDE A MOTORIZED DAMPER TO PREVENT OUTSIDE AIR FROM ENTERING BACK INTO THE BUILDING WHEN FAN IS OFF. PROVIDE A NEMA 4 DISCONNECT SWITCH WIRED FROM FAN MOTOR TO JUNCTION BOX.

ACCEPTABLE MANUFACTURERS: COOK, GREENHECK

CAPACITY AS SCHEDULED.

EXHAUST FAN: CEILING MOUNT, ENERGY STAR® RATED WITH BUILT-IN SPEED SELECTOR. THE MOTOR SHALL BE TOTALLY ENCLOSED, FOUR POLE CONDENSER TYPE ENGINEERED TO RUN CONTINUOUSLY, POWER RATING SHALL BE 120V/60HZ. HOUSING MATERIAL SHALL BE NO LESS THAN 26 GAUGE GALVANIZED STEEL WITH RUST PROOF

FORWARD CURVED CENTRIFUGAL WHEEL, GALVANIZED STEEL OR CALCIUM CARBONATE FILLED POLYPROPYLENE, STATICALLY AND DYNAMICALLY BALANCED TO AMCA STANDARDS.

ACCEPTABLE MANUFACTURERS: PANASONIC CAPACITY AS SCHEDULED.

3. EXECUTION

3.1 DUCTWORK AND ACCESSORIES FABRICATE DUCTWORK IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE,

NFPA 90A STANDARD FOR THE INSTALLATION OF AIR-CONDITIONING AND VENTILATING SYSTEMS, AND NFPA 90B STANDARD FOR THE INSTALLATION OF WARM AIR HEATING AND AIR-CONDITIONING SYSTEMS

PRIOR TO FABRICATION OF DUCTWORK, CHECK ALL CEILING SPACES AND HEIGHTS AND CONFLICTS WITH OTHER

DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS. FOR ACOUSTICALLY LINED OR INTERNALLY INSULATED DUCTS ALLOW FOR INSULATION THICKNESS AND MAINTAIN INTERIOR CLEAR DIMENSIONS INDICATED. CONNECT OUTLET TERMINALS TO LOW PRESSURE DUCTS WITH 900MM (36") MAXIMUM LENGTH OF STRETCHED

FLEXIBLE DUCT. HOLD IN PLACE WITH STRAP OR CLAMP, CAULK SEALED. DO NOT USE FLEXIBLE DUCT TO CHANGE

PROVIDE A FLEXIBLE CONNECTION WHERE LOW PRESSURE DUCTS ARE CONNECTED TO FAN EQUIPMENT, TERMINAL BOXES OR ANY OTHER APPARATUS. JOINT SHALL BE SCREWED OR BOLTED FLEXIBLE GASKETED JOINT,

MINIMUM 50MM (2") WIDE. PROVIDE FIRE DAMPERS WHERE DUCTS CROSS FIRE SEPARATIONS. FIRE DAMPERS SHALL BE ULC LISTED AND "DYNAMIC"; RATED TO CLOSE UNDER AIRFLOW. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE SEPARATION

PROVIDE BALANCING DAMPERS WHERE INDICATED ON DRAWINGS AND AT POINTS ON LOW PRESSURE SUPPLY, RETURN AND EXHAUST DUCTS WHERE BRANCHES ARE TAKEN FROM LARGER DUCTS.

MODIFY CEILING SYSTEM WHERE REQUIRED TO ACCOMMODATE GRILLES AND DIFFUSERS. SIZE ROUND DUCTS, INSTALLED IN PLACE OF RECTANGULAR DUCTS, FROM ASHRAE TABLE OF EQUIVALENT

RECTANGULAR AND ROUND DUCTS. NO VARIATION OF DUCT CONFIGURATION OR SIZES PERMITTED EXCEPT BY PERMISSION FROM THE CONSULTANT

EXPOSED ROUND DUCTWORK TO BE SPIRAL LOCK SEAM TYPE ONLY. PROVIDE DUCT HANGERS AND SUPPORTS IN ACCORDANCE WITH SMACNA MANUALS.

CONFIRM THE EXISTING BASE BUILDING STANDARDS PRIOR TO SUBMITTING TENDER. DUCTWORK SHALL BE GALVANIZED STEEL UNLESS NOTED OTHERWISE.

3.2 DUCT HANGERS AND SUPPORTS

DUCT SUPPORT SHALL BE:

RATINGS AND LOCATIONS.

UP TO 750MM DUCT SIZE: ANGLE SIZE 25X25X3 MM WITH 6MM ROD SIZE 751 TO 1050MM DUCT SIZE: ANGLE SIZE 40X40X3 MM WITH 6MM ROD SIZE

1051 TO 1500MM DUCT SIZE: ANGLE SIZE 40X40X3 MM WITH 10MM ROD SIZE 1501 TO 2100MM DUCT SIZE: ANGLE SIZE 50X50X3 MM WITH 10MM ROD SIZE

2101 TO 2400MM DUCT SIZE: ANGLE SIZE 50X50X5 MM WITH 10MM ROD SIZE 2401 AND OVER DUCT SIZE: ANGLE SIZE 50X50X6 MM WITH 10MM ROD SIZE

UPPER HANGER ATTACHMENTS SHALL BE:

FOR CONCRETE: MANUFACTURED CONCRETE INSERTS. FOR STEEL JOIST: MANUFACTURED JOIST CLAMP.

FOR STEEL BEAMS: MANUFACTURED BEAM CLAMPS.

3.3 FIRE RATED DUCT WRAP

GREASE EXHAUST DUCT INSTALLATIONS: PROVIDE TWO (2) LAYER INSTALLATION AS PER MFG RECOMMENDATIONS. PROVIDE WHERE GREASE EXHAUST DUCTS ARE WITHIN 450MM OF COMBUSTIBLES, 150MM OF LIMITED COMBUSTIBLES OR AS INDICATED ON DRAWINGS

VENTILATION AIR DUCT/ LIFE SAFETY SYSTEM INSTALLATIONS: PROVIDE SINGLE LAYER INSTALLATION AS PER MFG

3.4 DUCT AND PLENUM INSULATION

INSTALL ALL DUCTWORK INSULATION TO THE THERMAL INSULATION ASSOCIATION OF CANADA BEST PRACTICES GUIDE.

DUCT INSULATION MINIMUM THICKNESS TABLE (ASHRAE 90.1 ZONE 5 AND 6)

		CONDITIONED SPACE	UNCONDITIONED SPACE	
	MINIMUM INSULATION THICKNESS IN MM (IN.)			
COOLING ONLY AIR SUPPLY	25 (1")	25 (1")	40 (1-1/2")	50 (2")
HEATING OR H/C AIR SUPPLY	25 (1")	25 (1")	40 (1-1/2")	75 (3")
OUTDOOR AIR SUPPLY	40 (1-1/2")	40 (1-1/2")	40 (1-1/2")	0
COMBUSTION AIR	40 (1-1/2")	40 (1-1/2")	40 (1-1/2")	0
RETURN AIR	0	0	40 (1-1/2")	75 (3")
EXHAUST AIR (1)(2)	0	0	25 (1")	25 (1")
TEMPERED AIR SUPPLY OR MAKEUP AIR	0	0	40 (1-1/2")	75 (3")
MIXED AIR (3)	25 (1")	25 (1")	40 (1-1/2")	75 (3")
SEE NOTE (6) FOR FACTORY INSTALLED DUCT AND PLENUMS				

FLEXIBLE EXTERIOR DUCT INSULATION					
DUTY	PLENUM(4)	DUCT LOCATION			
		INTERIOR		EXTERIOR	
		CONDITIONED SPACE	UNCONDITIONED SPACE		
	MINIMUM INSULATION THICKNESS IN MM (IN.)				
COOLING ONLY AIR SUPPLY	25 (1")	25 (1")	56 (2-3/16")	75 (3")	
HEATING OR H/C AIR SUPPLY	25 (1")	25 (1")	56 (2-3/16")	115 (4.5")	
OUTDOOR AIR SUPPLY	50 (2")	50 (2")	56 (2-3/16")	0	
COMBUSTION AIR	50 (2")	50 (2")	56 (2-3/16")	0	
RETURN AIR	0	0	56 (2-3/16")	115 (4.5")	
EXHAUST AIR (1)(2)	0	0	40 (1-1/2")	40 (1-1/2")	
TEMPERED AIR SUPPLY OR MAKEUP AIR	0	0	56 (2-3/16")	115 (4.5")	
MIXED AIR (3)	40 (1-1/2")	40 (1-1/2")	56 (2-3/16")	115 (4.5")	
SEE NOTE (5) FOR FACTORY INSTALLED DUCT AND PLENUMS					

NOTE (1): AIR TEMPERATURES 15°C TO 49°C (60°F TO 120°F). AIR TEMPERATURES OUTSIDE RANGE SHALL BE

THIS TABLE PROVIDED THEY MEET THE REQUIREMENTS OF THE RELEVANT CSA STANDARD FOR THAT EQUIPMENT

INSULATED PER HEATING OR H/C AIR REQUIREMENTS. NOTE (2): PROVIDE 38MM (*-½") FLEXIBLE DUCT INSULATION ON ALL EXHAUST AIR DUCTWORK FROM OUTSIDE

WALL OR ROOF TO DAMPER BUT A MINIMUM OF 1.5 M (5 FT.) INSIDE BUILDING. NOTE (3): MIXED AIR INCLUDES TEMPERED AIR DOWNSTREAM OF HEAT RECOVERY UNITS.

NOTE (4): PLENUMS LOCATED OUTSIDE THE BUILDING SHALL BE INSULATED TO THE VALUES LISTED IN THE EXTERIOR COLUMN. NOTE (5): FACTORY INSTALLED DUCTWORK AND PLENUMS PROVIDED WITH EQUIPMENT NEED NOT COMPLY WITH

AND IS INSULATED TO RSI 0.58 (R3.3) OR GREATER. REFER TO NECB ARTICLE 5.2.12.1 FOR RELEVANT CSA

3.5 DUCT FINISHES TABLE INDOORS CONCEALED; FACTORY FINISH

INDOORS EXPOSED IN MECHANICAL ROCM AND ELSEWHERE; CANVAS JACKET AS PER TIAC STANDARD CRF/1-

INDOORS, EXPOSED IN UTILITY AREAS, PARKADE, ETC.; UTILITY FINISH AS PER TIAC CODE CRF/2 - CRD/2 INDOOR EXPOSED IN UTILITY AREAS, PARKADE, ETC. PROVIDE A UTILITY FINISH AS PER TIAC CODE CRF/2 AND

STRUCTURE. WIRE HANGERS SHALL BE A MINIMUM OF TWO (2) PER OUTLET AND ONE PER 1200 MM LENGTH.

AIR OUTLETS OTHER THAN T-BAR MOUNTING MUST BE SECURELY ATTACHED TO THE BUILDING ELEMENTS.

3.6 PIPING FINISH SCHEDULE INDOORS CONCEALED; FACTORY FINISH

INDOORS EXPOSED IN MECHANICAL ROCM AND ELSEWHERE; CANVAS JACKET

INDOORS, EXPOSED IN UTILITY AREAS, PARKADE, ETC.; PVC JACKET

OUTDOORS; ALUMINUM JACKET AS PER TIAC CODE CRF/3 - CRD/3

OUTDOORS; ALUMINUM JACKET

3.7 GRILLES, LOUVERS AND DIFFUSERS

PAINT DUCTWORK VISIBLE BEHIND AIR OUTLETS MATTE BLACK. ALL AIR OUTLETS MOUNTED IN A T-BAR CEILING SHALL BE SEISMICALLY RESTRAINED BY EITHER SECURE ATTACHMENT TO SOLID DUCTWORK, WHICH IS BRACED AT THE OUTLET OR WIRE HANGERS ATTACHED TO

DIVISION 25 INTEGRATED AUTOMATION

GENERAL

1.1 SECTION SCOPE

PROVIDE A COMPLETE SYSTEM OF AUTOMATIC CONTROLS TO MATCH THE BASE BUILDING STANDARD WITH REGARD TO CONTROL DEVICES, COMPONENTS, WIRING AND MATERIALS. ALL CONTROL WORK ASSOCIATED WITH THE WORK OF DIVISIONS 22 AND 23.

1.2 RELATED REQUIREMENTS

THIS SECTION OF THE SPECIFICATION FORMS PART OF THE CONTRACT DOCUMENTS AND IS TO BE READ. INTERPRETED AND COORDINATED WITH ALL OTHER PARTS. FOR GENERAL CONDITIONS REFER TO HEATING, VENTILATION AND AIR CONDITIONING (HVAC) SECTION.

STANDARDS, ACTS AND BYLAWS AND WILL MEET THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

1.4 ACCEPTABLE CONTRACTORS

1.3 CODE COMPLIANCE ALL WORK SHALL COMPLY WITH CURRENT EDITIONS OF THE NATIONAL, PROVINCIAL AND MUNICIPAL CODES,

ALL CONTROLS WORK IS TO BE DONE BY THE BASE BUILDING CONTRACTOR.

1.5 EXAMINATION OF EXISTING SYSTEM

THIS PROJECT INVOLVES RENOVATION TO AN EXISTING CONTROL SYSTEM. THE CONTRACTOR SHALL INSPECT THE SYSTEM PRIOR TO TENDER CLOSE AND INCLUDE IN HIS BID ALL CONTROL COMPONENTS REQUIRED TO PROVIDE A FULLY OPERATIONAL SYSTEM INCLUDING REPLACEMENT OF EXISTING DEFECTIVE COMPONENTS WHERE NOTED IN THE PROJECT DOCUMENTS.

DESIGN AND PROVIDE CONDUIT AND WIRING LINKING ELEMENTS OF SYSTEM TO THE EXISTING BUILDING ENERGY MONITORING AND CONTROL SYSTEM EMCS.

SUPPLY SUFFICIENT PROGRAMMABLE CONTROLLERS OF TYPES TO MEET PROJECT REQUIREMENTS, QUANTITY AND POINTS CONTENTS AS REVIEWED BY CONSULTANT PRIOR TO INSTALLATION.

PROVIDE UTILITY POWER TO EMCS AS INDICATED. RETAIN THE SERVICES OF A QUALIFIED ELECTRICIAN TC PROVIDE POWER AND DATA CABLING TO EACH BUILDING AUTOMATION SYSTEM (BMS) CONTROL PANEL. POWER WIRING AND CONDUIT AS WELL AS DATA CABLING AND CONDUIT SHALL COMPLY WITH THE ELECTRICAL SPECIFICATIONS FOR THIS PROJECT, REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL PANELBOARD AND COMMUNICATION ROOM LOCATIONS. MAKE ALL NECESSARY

2. PRODUCTS

2.1 CONTROL COMPONENTS

PROVIDE CONTROL VALVES AND DAMPER ACTUATORS AS REQUIRED TO MEET THE SEQUENCE OF OPERATION AND MEET THE DESIGN INTENT. VALVES AND ACTUATORS SHALL MATCH THE BASE BUILDING STANDARD UNLESS

CONTROL VALVES FOR NEW MECHANICAL EQUIPMENT SHALL BE PROVIDED BY CONTROLS CONTRACTOR FOR

INSTALLATION BY THE MECHANICAL CONTRACTOR. WHERE EXISTING DEVICES ARE RE-USED, VERIFY OPERATION AND RE-CALIBRATE AS REQUIRED

VERIFY CORRECT OPERATION OF CONTROLLED DEVICES INCLUDING EXISTING [AIR VALVE ACTUATORS], CONTROL VALVES, ETC. WITHIN THE AREA OF RENOVATION. CONTROL VALVES AND ACTUATORS TO BE COMPATIBLE WITH BASE BUILDING STANDARD UNLESS NOTED OTHERWISE. NEW CONTROL VALVE OPERATION TO BE COMPATIBLE WITH EXISTING.

REPORT ANY EXISTING CONTROL DEVICE WHICH NEED REPLACEMENT. REPLACEMENT WILL BE BY BUILDING MANAGEMENT OR VIA CHANGE ORDER, AT THE DISCRETION OF THE OWNER.

3. EXECUTION

3.1 SEQUENCE OF OPERATION

- .1 EXHAUST FAN:
- .1 FAN TO RUN CONTINUOUSLY .2 LOW CHLORINE SENSOR ALARM = FAN ON
- .3 HIGH CHLORINE SENSOR ALARM = FAN OFF VIA RELAY .4 MANUAL OVERRIDE = FAN ON VIA RELAY

ALLOWANCES FOR BRANCH BREAKERS REQUIRED TO BMS PANELS.

- 5 FAN OFF ON LOSS OF POWER
- .2 GAS SENSOR: 1 CHI ORINE CONCENTRATION OF ≥0.5PPM = COMMUNICATION MODULE STROBE AND AUDIBLE ALARM
- ON, OUTDOOR STROBE AND AUDIBLE ALARM OFF, EXHAUST FAN ON, DAMPERS ON .2 CHLORINE CONCENTRATION OF ≥3FPM = COMMUNICATION MODULE STROBE AND AUDIBLE ALARM
- ON, OUTDOOR STROBE AND AUDIBLE ALARM ON, EXHAUST FAN OFF, DAMPERS OF .3 MANUAL OVERRIDE = COMMUNICATION MODULE STROBE AND AUDIBLE ALARM ON, OUTDOOR STROBE
- AND AUDIBLE ALARM ON, EXHAUST FAN ON, DAMPERS ON 4 COMMUNICATION MODULE AND POWER TO SENSORS AND ALARMS ON EMERGENCY BATTERY POWER
- .5 OXYGEN LEVEL <18% = COMMUNICATION MODULE STROBE AND AUDIBLE ALARM ON, OUTDOOR STROBE AND AUDIBLE ALARM ON, EXHAUST FAN ON, DAMPERS ON
- .3 MOTORIZED DAMPER:
- .1 POWERED OPEN. FAIL CLOSED
- .2 LOW CHLORINE SENSOR ALARM = POWERED ON
- .3 HIGH CHLORINE SENSOR ALARM = POWERED OFF VIA RELAY .4 MANUAL OVERRIDE = POWERED ON VIA RELAY

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REV.	DATE	DESCRIPTION
1.	2024.09.06	ISSUED FOR 50% CD
2.	2024.10.31	ISSUED FOR 75% CD
3.	2025.02.18	ISSUED FOR TENDER

CONSULTANT:

PROJECT TITLE:

PROJECT ADDRESS:

640 POIRIER STREET,

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CITY OF COQUITLAM, POIRIER SPORT & LEISURE COMPLEX - CHLORINE **VENTILATION**

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