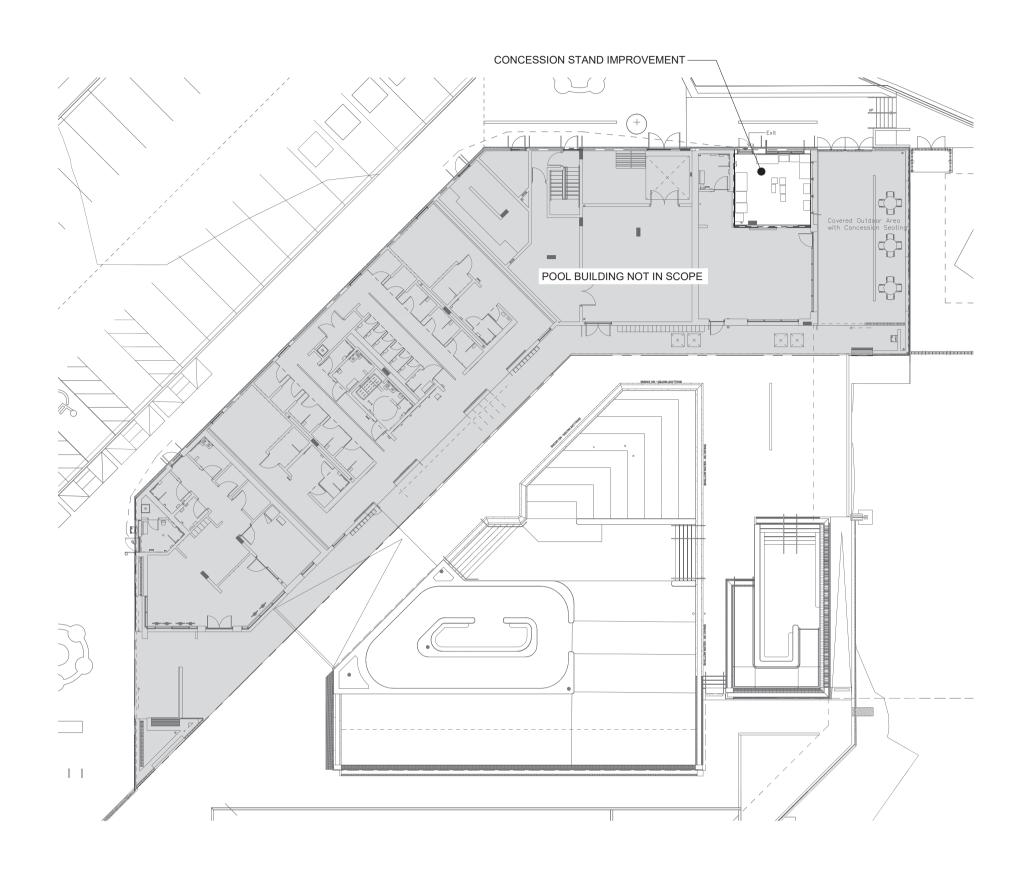
# SPANI POOL CONCESSION TENANT IMPROVEMENT

655 HILLCREST ST, COQUITLAM, BC V3J 3Z6





FD FLOOR DRAIN/ FIRE DAMPER



FNU	JECT INFORMATION	_	LDING LOADS	1045	LINUTO	DIDE CIZE (MM)
	ECT ADDRESS:	DESCR		LOAD	UNITS	PIPE SIZE (MM)
	LCREST ST, COQUITLAM, BC		TIC WATER  RY GREASE	4.06	LPS	25MM 100MM TO EXISTING GREASE INTERCEPTO
			RY GREASE (NON CONTINUOUS FLOW)	4.73	LPS	100MM TO EXISTING GREASE INTERCEPTO
		97.11.117	in one for the first service of the first service o	10		TOOMIN' TO EXTENSE WE HAVE TOOL TO
ECH	IANICAL ABBREVIATIONS					
AD	AREA DRAIN	FE	FIRE EXTINGUISHER	N	IO NO	DRMALLY OPEN
AFF	ABOVE FINISHED FLOOR	FFH	FORCE FLOW HEATER	N.	TS NO	OT TO SCALE
AHU	AIR HANDLING UNIT	FLA	FULL LOAD AMPS	0	/A OU	JTDOOR AIR
ARCH	ARCHITECTURAL	FLR	FLOOR	OI	BD OP	PPOSED BLADE DAMPER
BB	BASEBOARD HEATER	FPM	FEET PER MINUTE	OI	ED OP	PEN ENDED DUCT
BDD	BACKDRAFT DAMPER	FSD	FIRE-SMOKE DAMPER	C	D OU	JTSIDE DIAMETER
BF	BOTTLE FILLER	FT	FEET/FOOT	P	DI PL	UMBING AND DRAINAGE INSTITUTE
BFP	BACKFLOW PREVENTER	GAL	GALLONS	PO	OC PO	OINT OF CONNECTION
BHP	BREAK HORSEPOWER	GPM	GALLONS PER MINUTE	PF	RV PR	ESSURE REDUCING VALVE
BTUH	BRITISH THERMAL UNIT / HOUR	GWB	GYPSUM WALL BOARD	P	SI PO	OUNDS PER SQUARE INCH
CD	CONTROL DAMPER	HD	HUB DRAIN	R	/A RE	TURN AIR
CB	CATCH BASIN	HB	HOSE BIBB	F	RF RE	TURN FAN
CFM	CUBIC FEET PER MINUTE	HP	HORSEPOWER	R	RM RO	OOM
CLG	CEILING	HCR	HEATING COIL RETURN	RI	PM RE	VOLUTIONS PER MINUTE
CO	CLEANOUT	HCS	HEATING COIL SUPPLY	R\	WL RA	IN WATER LEADER
CONN	CONNECTION	HRR	HEAT RECOVERY RETURN	s	/A SU	IPPLY AIR
C/W	COMPLETE WITH	HRS	HEAT RECOVERY SUPPLY	S	SF SU	IPPLY FAN
CONT	CONTINUATION	HWR	HEATING WATER RETURN	S	SH SH	IOWER
DB	DRY BULB	HWS	HEATING WATER SUPPLY	S	SK SIN	NK DRAIN ABOVE
CTE	CONNECT TO EXISTING	ID	INSIDE DIAMETER	S	SS ST.	AINLESS STEEL
DCW	DOMESTIC COLD WATER	IE	INVERT ELEVATION	S	SP ST.	ATIC PRESSURE
DDC	DIRECT DIGITAL CONTROL	IN	INCH	SP	PEC SP	ECIFICATION
DEG	DEGREE	INV	INVERT	S	SR SA	NITARY RISER
DF	DRINKING FOUNTAIN	JS	JANITOR SINK	S	ST ST	ORM MAIN
DHW	DOMESTIC HOT WATER	KW	KILOWATT	Т	/A TR	ANSFER AIR
DIA	DIAMETER	KS	KITCHEN SINK	T/	AD TR	ANSFER AIR DUCT
DN	DOWN	LV	LAVATORY	TE	вс то	BE CONFIRMED
DW	DISH WASHER	LAT	LEAVING AIR TEMPERATURE	TE	BD TO	BE DETERMINED
DWG	DRAWING	LBS	POUNDS	Т Т	D TR	ENCH DRAIN
DWHR	DOMESTIC HOT WATER RECIRCULATION	LWT	LEAVING WATER TEMPERATURE	THR	U TH	IROUGH
E/A	EXHAUST AIR	MAU	MAKE-UP AIR UNIT	Т Т	S TA	MPER SWITCH
EAT	ENTERING AIR TEMPERATURE	MAX	MAXIMUM	T	SP TO	TAL STATIC PRESSURE
EF	EXHAUST FAN	MH	MANHOLE	T	YP TY	PICAL
EFF	EFFICIENCY	MBH	1000 BRITISH THERMAL UNITS/HOUR	U	JR UR	RINAL
ELEC	ELECTRICAL	MD	MOTORIZED DAMPER	,	V VE	NT
ENT	ENTERING	MECH	MECHANICAL	VI	FD VA	RIABLE FREQUENCY DRIVE
ESP	EXTERNAL STATIC PRESSURE	MIN	MINIMUM	V	TR VE	NT THROUGH ROOF
EWT	ENTERING WATER TEMPERATURE	MU	MAKE-UP MECHANICAL WATER	\	N WA	ATER MAIN
EXH	EXHAUST	NFHB	NON FREEZE WALL HYDRANT	W	VB WE	ET BULB
F	FIRE MAIN	NIC	NOT IN CONTRACT	W	VC WA	ATER CLOSET
	EL COD DDAIN/ EIDE DAMPED	NIC	NOICE CRITERIA/NORMALLY CLOCER	100	00 \	ALL CLEANOUT

NC NOISE CRITERIA/NORMALLY CLOSED

WCO WALL CLEANOUT WG WATER GAUGE

MECHANICAL	DRAWING LIST	
DRAWINGS NO.	DESCRIPTION	SCALE
M000	COVER SHEET	NTS
M001	MECHANICAL EQUIPMENT SCHEDULES	NTS
M100	PLUMBING PLAN - LEVEL 0	1:25
M101	PLUMBING PLAN - LEVEL 1	1:25
M200	HVAC PLAN - LEVEL 1	1:25
M300	MECHANICAL DETAILS	NTS
M400	SPECIFICATIONS I	NTS
M401	SPECIFICATIONS II	NTS

# MECHANICAL GENERAL NOTES:

- 1. CONTRACTOR IS RESPONSIBLE FOR REVIEWING AND VERIFYING ACTUAL ONSITE CONDITIONS AND EQUIPMENT LOCATIONS PRIOR TO ANY AND ALL DEMOLITION WORK AND/OR EQUIPMENT REMOVAL.
- 2. CONTRACTOR TO INCLUDE AS A PART OF THE BID ALL COSTS ASSOCIATED WITH CUTTING AND PATCHING THAT IS REQUIRED TO INSTALL ALL NEW MECHANICAL SYSTEMS AS REQUIRED TO MEET THE SITE CONDITIONS AS SHOWN ON THE DRAWINGS. PATCHING SHALL MEET THE AESTHETIC CONDITIONS WHICH WAS THE CONDITION PRIOR TO ANY CUTTING BEING PERFORMED.
- 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 THE CONSTRUCTION AND RENOVATION PERIOD. CONTRACTOR TO COORDINATE CONSTRUCTION ACTIVITIES AND PHASING WITH OWNER TO MINIMIZE DISRUPTIONS TO OWNERS OPERATIONS AND ACCESS, AND TO ENSURE SAFETY OF THE USERS. PROVIDE ALL MEASURES REQUIRED TO PREVENT HAZARDS TO PEOPLE AND DAMAGE TO ITEMS REMAINING INCLUDING BUT NOT LIMITED TO DAMAGE FROM DUST AND HEAT. BUILDING WILL NOT BE IN OPERATION.
- 5. THE MECHANICAL SYSTEM SHALL CONSIST OF ALL WORK SHOWN ON THE DRAWINGS, DIAGRAMS, SCHEMATICS AND AS DESCRIBED IN THE SPECIFICATIONS.
- 6. 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.
- 7. COORDINATE THE DRAWINGS WITH THE SPECIFICATIONS AND IN CASES WHERE CONFLICTS OCCUR THE MOST STRINGENT REQUIREMENT SHALL APPLY.
- 8. CONTRACTOR TO COORDINATE ALL MECHANICAL WORK WITH THAT OF OTHER TRADES TO ENSURE PROPER AND ADEQUATE INTERFACE WITH THE WORK OUTLINED FOR THIS PROJECT.
- 9. CONTRACTOR TO PROVIDE NEC (NATIONAL ELECTRICAL CODE) CLEARANCE HORIZONTAL AND VERTICAL REQUIREMENTS FOR ALL INSTALLED EQUIPMENT. OFFSET MECHANICAL WORK AS REQUIRED TO MEET THIS REQUIREMENT.
- PROVIDE CONCEALED DAMPER REGULATORS FOR ALL VOLUME DAMPERS OVER INACCESSIBLE CEILINGS AND SOFFITS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
- 1. CONTRACTOR TO ALLOW AND PROVIDE FOR METAL DUCTWORK TRANSITIONS BETWEEN ALL EQUIPMENT AND DUCT CONNECTIONS.
- 12. COORDINATE EXACT LOCATIONS OF ALL ROOM THERMOSTATS AND/OR ROOM TEMPERATURE SENSORS WITH THE DESIGN ARCHITECT BEFORE FINAL INSTALLATION.
- 13. CONTRACTOR TO PROVIDE FIRESTOPPING THROUGH ALL FIRE SEPARATIONS

PIPING				DUCTWORK			
DEMOLITION	EXISTING	NEW		DEMOLITION	EXISTING	NEW	
·//////			DOMESTIC COLD WATER (DCW)	<b>1 1 1 1 1 1 1 1 1 1</b>	•	₩ \$	SUPPLY OR OUTDOOR AIR DUCT UP
			DOMESTIC HOT WATER (DHW)	4年2. 196,	5≥3 ↔	0 ≅ 3 €	SUPPLY OR OUTDOOR AIR DUCT DOWN
++1.11++			DOMESTIC HOT WATER RECIRC. (DHWR)	<b>(%)</b>	•	✓ •	RETURN AIR DUCT UP
+/+×+/+,	V	v	SANITARY VENT	1, £ 7, 'S,	5≥3 ↔	5 ≥ 3 <b>⊙</b>	RETURN AIR DUCT DOWN
///\$AN///	SAN	——SAN——	SANITARY SEWER ABOVE GRADE	( <b>%</b> )	•	<b>S</b>	EXHAUST AIR DUCT UP
///\$AN///		— —SAN— —	SANITARY SEWER BELOW GRADE	1. JEZ. (S.,	[=] (·)	[2] ()	EXHAUST AIR DUCT DOWN
·/// st///,	ST	st	STORM SEWER ABOVE GRADE			[AAAAA	TURNING VANES
///s/t///	— —ST— —	st	STORM SEWER BELOW GRADE	· / ***	***	***	ACOUSTIC INSULATION
·/////	———————————————————————————————————————	<del></del> 1	PIPE CLEAN-OUT	<b>/</b>	===	=	BALANCING DAMPER (BD)
1///8/.		$\bigcirc$	PIPE CLEAN-OUT TO GRADE	BDÓ	BDD	BDD	BACKDRAFT DAMPER (BDD)
1////	——F——	——F——	FIRE LINE	<del></del>	ro .		MOTORIZED DAMPER (MD)
1////	SP	SP	WET SPRINKLER LINE	▼FD′	₩FD	▼FD	` '
FITTINGS AND V	ALVES			- FÓ	→ FD		FIRE DAMPER - VERTICAL (FD)
				50	<b>₽</b> FD	<b>♣</b> FD	FIRE DAMPER - HORIZONTAL (FD)
<i>'</i> <del>///≯///</del> ,		<b>—</b>	DIRECTION OF FLOW	1/			DUCT OR PIPE CAP-OFF
+++>///	<del></del>	<del></del>	PIPE DROP				RETURN OR EXHAUST AIR GRILLE
<i>HH</i>		<del></del>	PIPE RISE	/yc/-X-/ <del>-</del> /	UC	UC√-	UNDER-CUT DOOR
<i>'</i>		<del></del>	PIPE TEE UP	FIRE PROTECTION	ON		
<del>////////</del>	<del></del>	<del></del>	PIPE TEE DOWN	Ø <sup>F</sup> E′	⊗FE	⊗FE	FIDE EXTINOLIIOUED
//////////////////////////////////////	NO NO	NO NO	PIPE UNION	187-7 14%	⊗ · -	—————————————————————————————————————	FIRE EXTINGUISHER
// NC	NC NC	NC NC	ISOLATION VALVE (NORMALLY OPEN)	77%, 1441 <b>6</b> 444			FIRE DEPARTMENT SIAMESE CONNECTION - PENDANT SPRINKLER HEAD
/// NC//			ISOLATION VALVE (NORMALLY CLOSED)	<i></i>			- UPRIGHT SPRINKLER HEAD
			CHECK VALVE				- CONCEALED SPRINKLER HEAD
////////		X	2-WAY CONTROL VALVE				SIDEWALL SPRINKLER HEAD
/// 1////			3-WAY CONTROL VALVE	//////////////////////////////////////	EC EC	——N EC	EXT. COVERAGE SIDEWALL HEAD
'/// <i>▶</i> ///,			BALANCING VALVE	<del>///  •  ///</del>		7	- DRY SPRINKLER ALARM VALVE
			PRESSURE REDUCING VALVE (PRV)	<i>'</i>			- WET SPRINKLER SUPPLY LINE
<del>/////////////////////////////////////</del>			POOL FLOW CONTROL VALVE				
<del></del>	*	*1	STRAINER RELIEF VALVE	///DRY///	—— DRY ——	— DRY —	
	<b>A</b>	A		/// / / / / / / / / / / / / / / / / /	PRE		PRE-ACTION SPRINKLER LINE
**/*/*///		<b>—</b>	BACKFLOW PREVENTOR (BFP)	~///F///	—— F ——	F	FIRE LINE TO STANDPIPE
', '	ř	r 	AUTOMATIC AIR VENT (AAV)			R	RELOCATION ARROW
'			SEISMIC GAS SHUT-OFF VALVE				
<i>'</i>			TEMPERATURE GAUGE	EQUIPMENT TAC	GS		
	(P)	(P) X	PRESSURE GAUGE	1444			
<del>//////</del> ,					-	-	GRILLE TYPE NECK / GRILLE SIZE
<i>'///////</i>			THERMOMETER	1/-/-	-	_	AIR VOLUME (L/s)
OUTLETS AND D	DAING				-	-	EQUIPMENT / FIXTURE TYPE
OUTLETS AND D	KAINS			4/2/	⟨-⟩	(-)	GENERAL NOTE
Xb,	Ys.	<b>\</b>	OPEN DRAIN				DRAWING REVISION
4////	<del></del>	<del></del>	HOSE-BIBB (HB)	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	<u> </u>		PICAMINO ILLAIDION
/#/. /#/. /Ø/.	<b>(a)</b>	•	FLOOR DRAIN (FD)	(/ <del>/</del> /X		- <u>-</u>	DETAIL NUMBER
/ <del>\$</del> /.	•	<b>\rightarrow</b>	FUNNEL FLOOR DRAIN	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	M-	M-	DRAWING NUMBER
<b>%</b> /.	•	•	ROOF DRAIN (RD)	1/2//			SECTION NUMBER
<b>%</b> .			AREA DRAIN		M-	M-	DRAWING NUMBER
SYSTEM MONITO	RING			/////			
(A)	(T)	(T)	ROOM TEMPERATURE SENSOR				
\$\text{\$\psi_{\text{\text{\$\psi_{\text{\text{\$\psi_{\text{\$\psi_{\text{\$\psi_{\text{\$\psi_{\text{\$\psi_{\text{\$\psi_{\text{\$\psi_{\text{\$\psi_{\text{\$\psi_{\text{\$\psi_{\text{\$\psi_{\text{\$\empty}}}}} \emptyre{\text{\$\psi_{\text{\$\psi_{\text{\$\psi_{\text{\$\emptyred{\text{\$\psi_{\ext{\$\psi_{\text{\$\psi_{\text{\$\psi_{\text{\$\psi_{\text{\$\psi_{\text{\$\psi_{\ext{\$\psi_{\text{\$\psi_{\ext{\$\enticlestender \ext{\$\psi_{\ext{\$\psi_{\ext{\$\psi_{\ext{\$\psi_{\exitinglestender \ext{\$\psi_{\ext{\$\psi_{\ext{\$\psi_{\ext{\$\psi_{\ext{\$\psi_{\ext{\$\psi_{\ext{\$\pi_{\ext{\$\psi_{\ext{\$\pi_{\ext{\$\exitinglestini_{\ext{\$\pi_{\ext{\$\pi_{\ext{\$\exitinglestini_{\exitinglestini_{\ext{\$\exitinglestini_{\ext{\$\exitinglestini_{\ext{\$\pi_{\ext{\$\exitinglestini_{\ext{\$\exitinglestini_{\ext{\$\exitinglestini_{\ext{\$\exitinglestini_{\ext{\$\exitinglestini_{\ext{\$\exitinglestini_{\ext{\$\exitinglestini_{\ext{\$\exitinglestini_{\exitinglestini_{\exitini_{\ext{\$\tini_{\ext{\$\tini_{\ext{\$\tini_{\ext{\$\tini_{\ext{\$\tini_{\ext{\$\tini_{\exitini_{\ext{\$\}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}	R(T)	R(T)	REVERSE ACTING TEMPERATURE SENSOR				
(\$)	(S)	(S)	SLAB TEMPERATURE SENSOR				
	(H)	(H)	HUMIDITY SENSOR				
14/	11)	•••	I SAIDIT SEROOK				

# FAULKNERBROWNS ARCHITECTS

FaulknerBrowns Architecture Inc 204—1551 Johnston St Vancouver BC Canada V6H 3R9

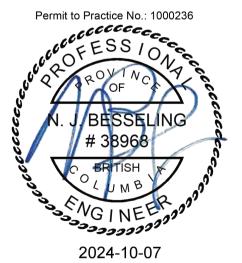


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4	ISSUED F	FOR RFP		10/07/24
3	ISSUED F	FOR BP/RFP REVIEW		09/13/24
2	ISSUED F	FOR BP & HP		08/23/24
1	ISSUED F	FOR 50% DD		08/12/24
#	Submissio	n / Revision Issue		Issue Date
Project Name:		AM CESSION TEN	ANT IMPF	ROVEM
CITY OF Project Name: SPANI PO Project Address 655 HILL	OOL CON			
CITY OF Project Name: SPANI Po	OOL CONG	CESSION TEN		
CITY OF Project Name: SPANI Po Project Address 655 HILL Sheet Name:	OOL CONG	CESSION TEN		

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PIPE MATERIAL	NOM PIPE SIZE INCHES	COLD WATER				HOT WATER	R (< 140°F)		
		FU	L/S	GPM	VELOCITY (FT/S)	FU	L/S	GPM	VELOCITY (FT/S)
COPPER - TYPE K	0.5	1.0	0.07	1.2	1.7	1.0	0.07	1.1	1.7
COPPER - TYPE K	0.75	3.0	0.18	2.9	2.2	3.0	0.18	2.9	2.1
COPPER - TYPE K	1	8.0	0.41	6.4	2.7	8.0	0.39	6.2	2.6
COPPER - TYPE K	1.25	16.0	0.74	11.8	3.1	15.5	0.72	11.4	3.0
COPPER - TYPE K	1.5	28.0	1.19	18.8	3.5	26.5	1.13	18.0	3.4
COPPER - TYPE K	2	86.5	2.52	39.9	4.2	78.5	2.37	37.6	4.0
COPPER - TYPE K	2.5	230.5	4.49	71.1	4.9	165.5	3.66	58.1	4.0
OTES:	·				·				
	1 THIS PIPE SIZING TABLE U	SES THE DETAIL	ED ENGINEERIN	NG METHOD.					

4 DOMESTIC HOT WATER REIRC SIZED FOR MAXIMUM PRESSURE LOSS OF 3 PSI/100' OR MAXIMUM ALLOWABLE PIPE VELOCITY

FANS (EXI	STIN	NG)										
EQUIPMENT	QTY	LOCATION	SERVICE	TYPE	MANUFACTURER	MODEL	AIR FLOW	E. S. P.	FAN	SOUND LEVEL	WEIGHT	NOTES
TAG							(LPS)	(PA)	(RPM)	(SONES)	(KG)	
EF-5	1	ROOF	CONCESSION	CENTRIFUGAL	GREENHECK	G-070-VG	47	25	1725	0.4	9	ALL
NOTES:												
1	BACKI	DRAFT DAMPE	R									

DIFFUSE	RS AND GRILLES				
EQUIPMENT	DESCRIPTION/TYPE	MANUFACTURER	SERVICE	MODEL NUMBER	NOTES
TAG					
E-1	EGG CRATE	PRICE INDUSTRIES	EXHAUST	80	ALL
R-1	EGG CRATE	PRICE INDUSTRIES	RETURN	80-VCS3	ALL
S-1	600X600 SQUARE PLAQUE DIFFUSER	PRICE INDUSTRIES	SUPPLY	SPD	ALL
NOTES:					
1	PROVIDE WITH BORDER STYLES THAT ARE COMPATIBLE WITH ADJACENT WALL	S AND CEILING SYSTEMS			
2	NC LEVELS BASED ON OCTAVE BANDS 2-7 SOUND POWER LEVELS MINUS A ROC	M ABSORPTION OF 10 DB, MEAS	URED PER ASHRAE 7	<b>'</b> 0-91.	

CUSTOM COLOUR OF PRODUCT TO BE SELECTED BY THE ARCHITECT DURING THE SHOP DRAWINGS SUBMITTAL PROCESS. 4 CONTRACTOR TO REFER TO MECHANICAL AND ARCHITECTURAL DETAILS FOR SUPPLY AND INSTALLATION OF LINEAR GRILLE DOMESTIC WATER HEATER (ELECTRIC)

EQUIPMENT	LOCATION	MANUFACTURER	MODEL	INPUT	TANK CAPACITY	AMPS	POWER	SHIPPING WEIGHT	NOTES
TAG				(KW)	(L)		(V/PH/HZ)	(KG)	
HWT-1	CONCESSION STAND	HUBBEL	V610R	10.5	23	29	208/3/60	43	
NOTES:									

4 PIPE FAN COIL UNIT (EXISTING)															
EQUIPMENT	LOCATION	MANUFACTURER	MODEL	WEIGHT	AIR FLOW	ESP	HGT CAP	TOTAL CLG	SEER	EER	EER ELECTRICAL				NOTES
TAG			SIZE	(KG)	(LPS)	(PA)	(KW)	CAP (KW)			MCA	V	PH	HZ	
FC-1	CONCESSION	SAMSUNG	AC009BNHDCH/AA	34	122	150	4.40	2.64	20.6	13.1	10.9	208	1	60	

BACKFL	OW	PREVENTER							
EQUIPMENT	QTY	LOCATION	SERVICE	BACKFLOW PREVENTOR TYPE	MANUFACTURER	MODEL NO.	SIZE	MAX WORKING	NOTES
TAG							(MM)	PRESS. (KPA)	
BFP-1	1	CONCESSION STAND	FILTER FOR HOT BEVERAGE MACHINE DCW	DCVA	WATTS	LF007M3QT	20	1207	ALL
BFP-2	1	CONCESSION STAND	JANITOR SINK DCW	RPBP	WATTS	LF009M3-QT-FS	20	1207	ALL
BFP-3	1	CONCESSION STAND	JANITOR SINK DHW	RPBP	WATTS	LF009M3-QT-FS	20	1207	ALL
BFP-4	1	CONCESSION STAND	3-COMPARTMENT SINK/ CHEMICAL DISPENSER	RPBP	WATTS	LF009M3-QT-FS	20	1207	ALL
BFP-5	1	CONCESSION STAND	3-COMPARTMENT SINK	RPBP	WATTS	LF009M3-QT-FS	20	1207	ALL
NOTES:	1	LEAD FREE (NO EXCEPTIONS)							

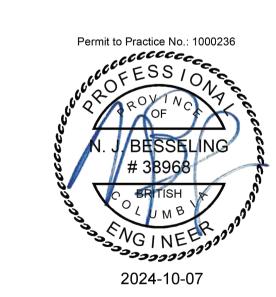
EXPANSI	ON TANK											
EQUIPMENT	LOCATION	TANK DESCRIPTION	TYPE	MANUFACTURER	MODEL	VOLUME	ACCEPTANCE VOLUME	TANK DIAMETER	TANK LENGTH	PRE CHARGE	MAX WORKING	NOTES
TAG						(L)	(LITRES)	(MM)	(MM)	PRESS (KPA)	PRESS. (KPA)	
ET-1	CONCESSION STAND	DOMESTIC HOT WATER	DIAPHRAGM	AMTROL	ST-5C-DD	8	3.4	203	356	380	1034	ALL
NOTES:					·							

- 1 FIXED BLADDER (FDA APPROVED BUTYL) TANK SUITABLE FOR DOMESTIC USE.
- DIELECTRIC CONNECTION.
- TANK TO BE ASME RATED.

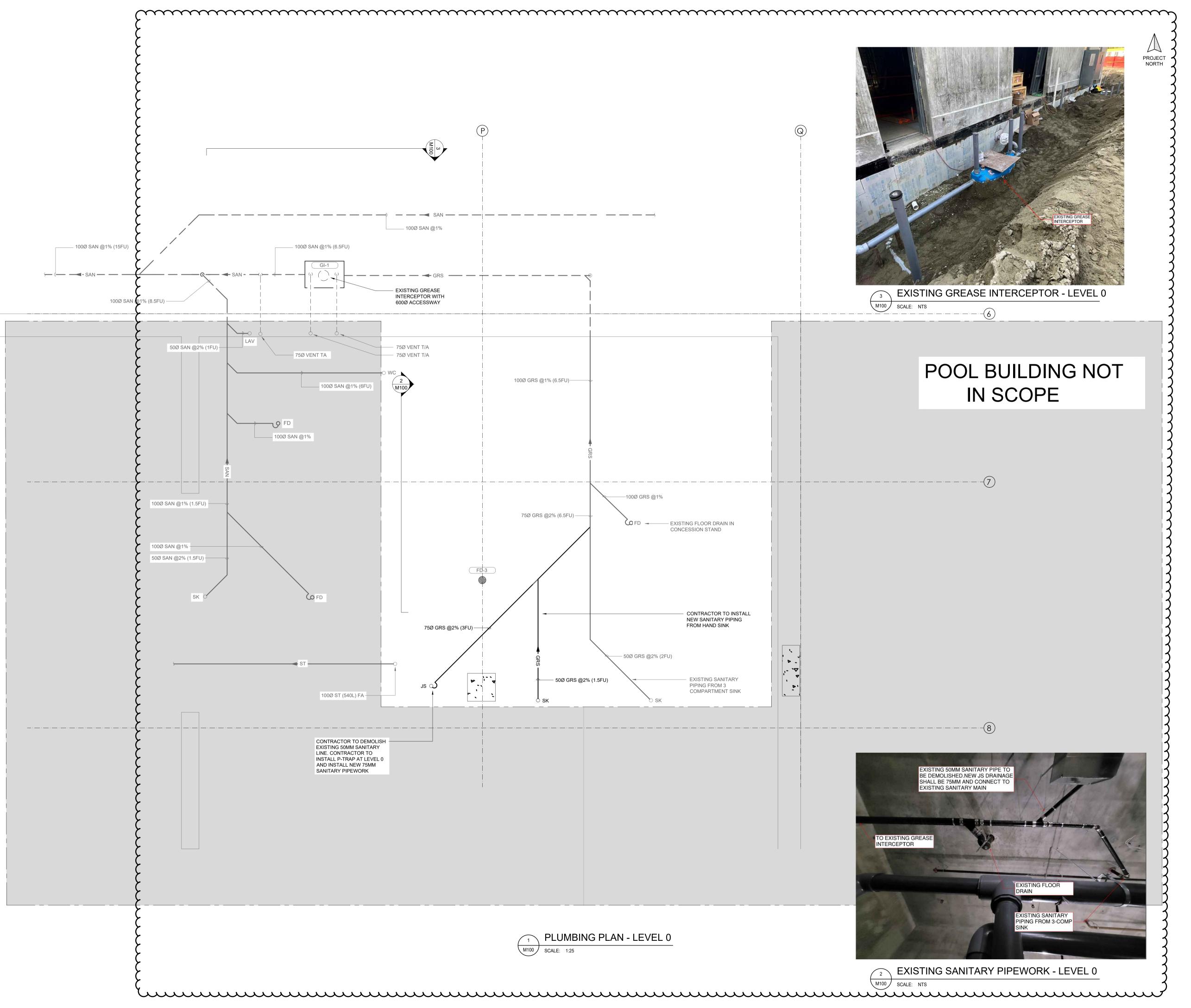
  ASHRAE 90.1 INSULATION COMPLIANCE

GRE	ASE INTERCEPTOR (EXIST	TNG)								
UNIT	DESCRIPTION	LOCATION	MANUFACTURER	MODEL	SIZE	INLET	WATER	GREASE	FLOW	NOTES
TAG					(WxDxH MM)	SIZE (MM)	CAPACITY (L)	CAPACITY (KG)	RATE (LPS)	
GI-1	GREASE INTERCEPTOR	BELOW GRADE	GREEN TURTLE TECHNOLOGIES	GMC100	1575x815x815	100Ø	378.5	90.7	6.3	ALL
NOTES:										
1	FILL WITH CLEAN WATER PRIOR TO START-UP	OF SYSTEM.								

PLUMBING FIXTURE	SCHEDULE	
EQUIPMENT TAG	MANUFACTURER / MODEL	DESCRIPTION/TYPE
HAND SINK FAUCET (FT-1)	FAUCET: MOEN MODEL MALI 87651	SINGLE-HANDLE HIGH ARC PULLDOWN KITCHEN FAUCET, LEVER STYLE HANDLE, FLOW RATE 5.7 L/MIN, ASME RATED, PULLDOWN SPRAY, 360 ROTATING SPOUT
3 COMP SINK FAUCET (FT-2)	PRE-RINSE FAUCET: T&S BRASS MODEL MPY-8WLN-12-4C	PRE-RINSE UNIT: EASY INSTALL 8" WALL MOUNT MIXING FAUCET, QUARTER TURN ETERNA CARTRIDGES W/ SPRING CHECKS, LEVER HANDLES, ADD-ON FAUCET W/12" SWING NOZZLE, COMPACT SPRING, 24" FLEXIBLE STAINLESS STEEL HOSE, 0.65 GPM LOW FLOW SPRAY NOZZLE, 6"" WALL BRACKET & 1/2" NPT FEMALE INLETS
3 COMP SINK FAUCET (FT-3)	FAUCET: T&S BRASS MODEL B-0331	8" WALL MOUNTED MIXING FAUCET, QUARTER-TURN ETERNA CARTRIDGES W/ SPRING CHECKS, LEVER HANDLES, 6" SWIVEL/RIGID GOOSENECK & 1/2" NPT FEMALE INLETS
JS-1	BASIN: STERN-WILLIAMS MODEL SB-900 TRIM: CHICAGO FAUCETS MODEL 897-XK-CP MIXING VALVE: LAWLER TMM1070	MOP SERVICE BASIN 24"X24"X12", T-35 36"HOSE AND WALL HOOK, T-40 MOP HANGER, 20 GA. 304 STAINLESS BP BACK SPLASH PANEL  WALL MOUNTED HOT AND COLD SINK FAUCET, VANDAL PROOF LEVER HANDLES, ATMOSPHERIC VACUUM BREAKER, THREADED FOR HOSE CONNECTION  BELOW DECK MECHANICAL MIXING VALVE, BRONZE BODY, TEMPERATURE ADJUSTING DIAL, 10MM (3/8") INLET AND OUTLET COMPRESSION FITTINGS, HIGH TEMPERATURE THERMOSTATIC  LIMIT STOP, SHUT-OFF WITH AUTOMATIC RESET WHEN TEMPERATURE EXCEEDS 48.8C (120F), INTEGRAL CHECKS, OFFER TEMPERATURE RANGE FROM FULL COLD THROUGH 46C (114.8F)
		PROVIDE P-TRAP, SAME MATERIAL AS THE CONNECTING PIPE DRAIN
FD-1 (EXISTING)	WATTS DRAINAGE MODEL FD-100-C-A	FLOOR DRAIN WITH ROUND STRAINER, EPOXY COATED CAST IRON FLOOR DRAIN WITH ANCHOR FLANGE 6" DIAMETER STRAINER, DRAIN TO BE EXTENDED TO FINISHED FLOOR THROUGH SUB FLOOR
NOTES:	<ol> <li>PROVIDE TEE, ADAPTORS AND FLEX FOR FITTINGS.</li> <li>PROVIDE FLOOR FLANGES FOR CONNECTING PIPE DRAINS OFF FIXTURE</li> </ol>	RES



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2	ISSUED F	OR BP & HP		08/23/24	
1	ISSUED F	OR 50% DD		08/12/24	
#	Submission	n / Revision Issue		Issue Date	_
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# FAULKNERBROWNS ARCHITECTS

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 5
 ISSUED FOR ADDENDUM 01
 10/22/24

 4
 ISSUED FOR RFP
 10/07/24

 3
 ISSUED FOR BP/RFP REVIEW
 09/13/24

 2
 ISSUED FOR BP & HP
 08/23/24

 1
 ISSUED FOR 50% DD
 08/12/24

 #
 Submission / Revision Issue
 Issue Date

Client Name:

CITY OF COQUITLAM

Project Name:

SPANI POOL CONCESSION TENANT IMPROVEMENT

655 HILLCREST ST, COQUITLAM, BC V3J 3Z6

Sheet Name:

PLUMBING PLAN - LEVEL 0

341B-005-21 06/18/24 1 : 25

Sheet No:



# FAULKNERBROWNS ARCHITECTS

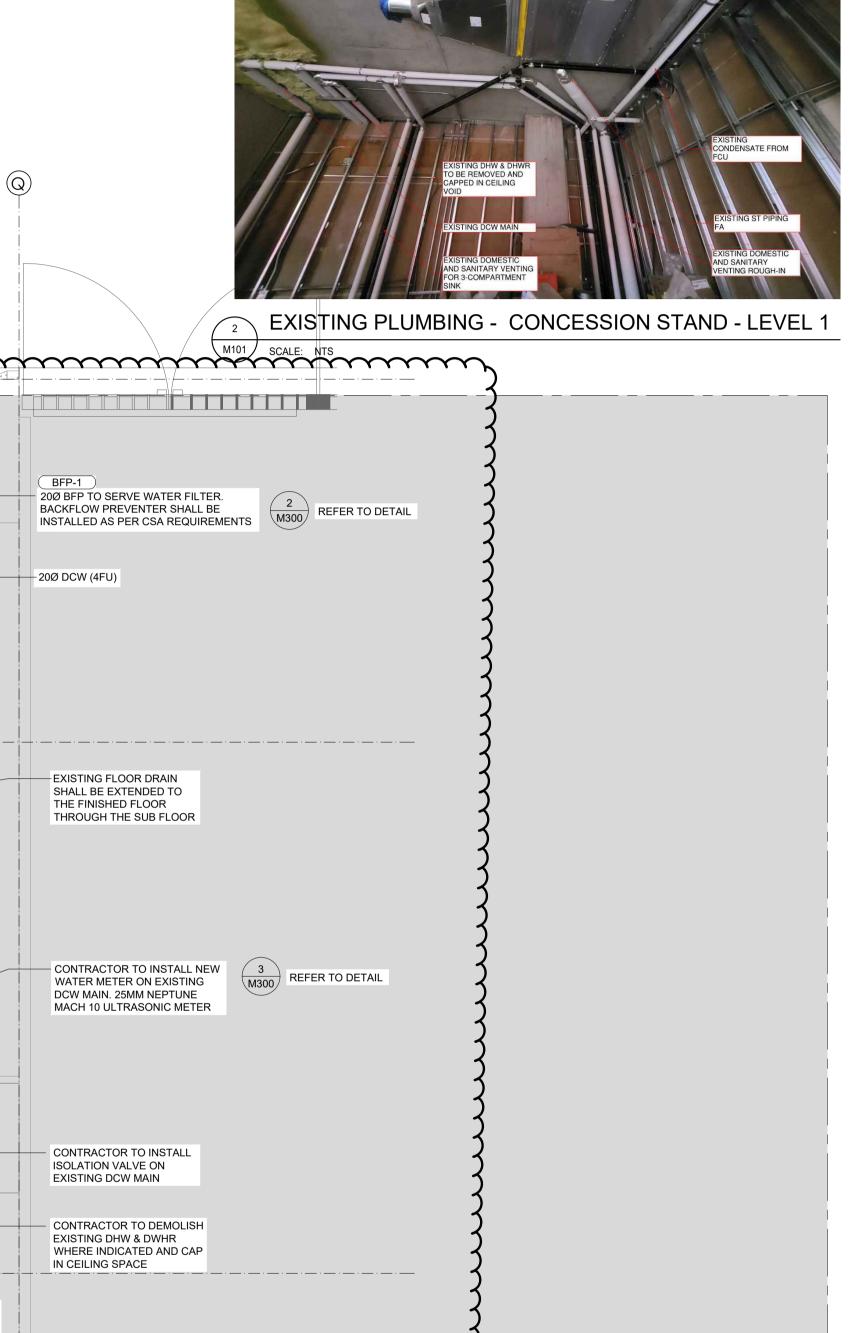
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CITY OF COQUITLAM

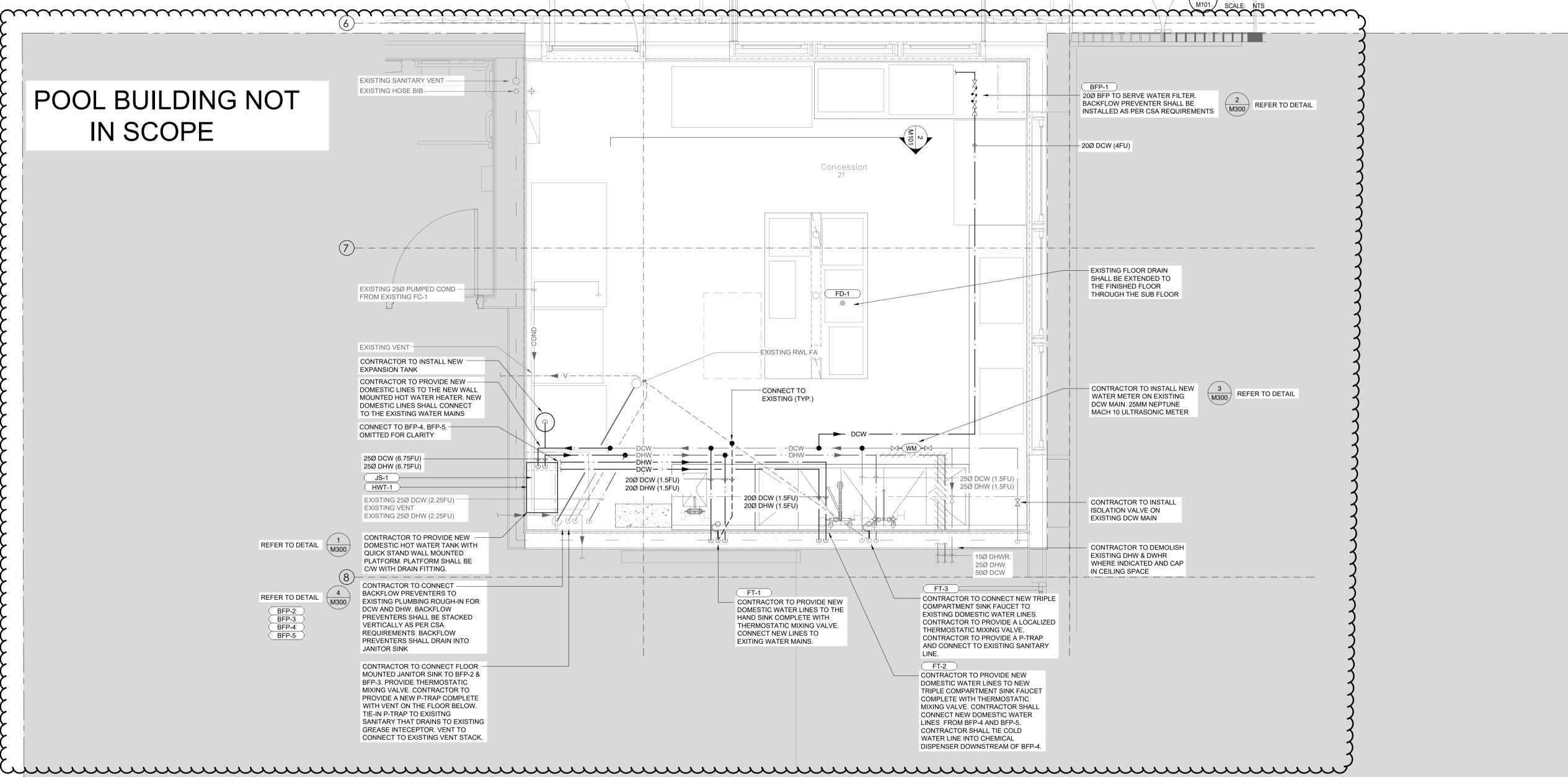
SPANI POOL CONCESSION TENANT IMPROVEMENT

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Sheet Name:

PLUMBING PLAN - LEVEL 1 Project No: Date:

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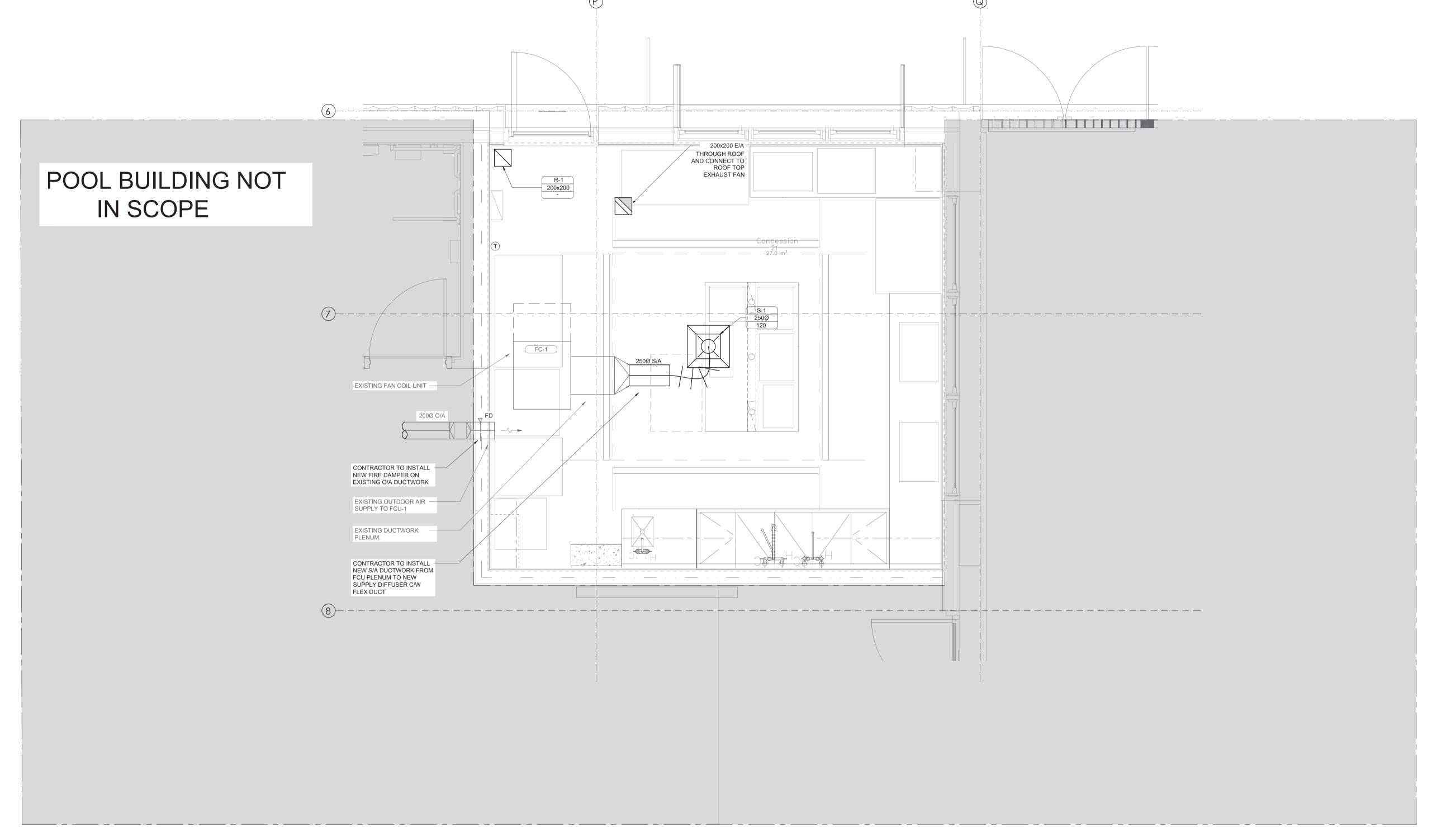
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1	ISSUED FOR 50% DD	08/12/24
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4	ISSUED FOR RFP	10/07/24

CITY OF COQUITLAM

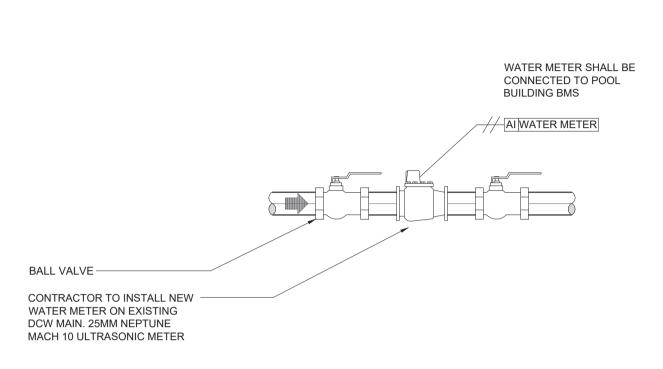
SPANI POOL CONCESSION TENANT IMPROVEMENT

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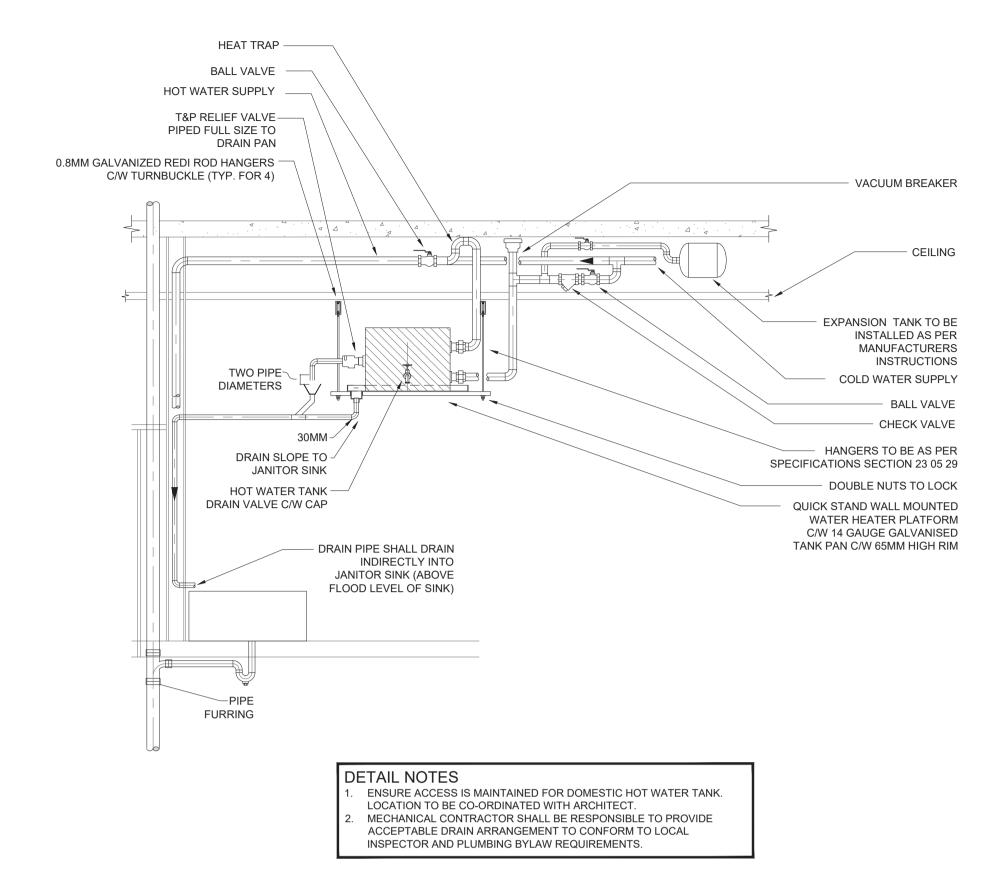
Project No: Date:

**HVAC PLAN** 

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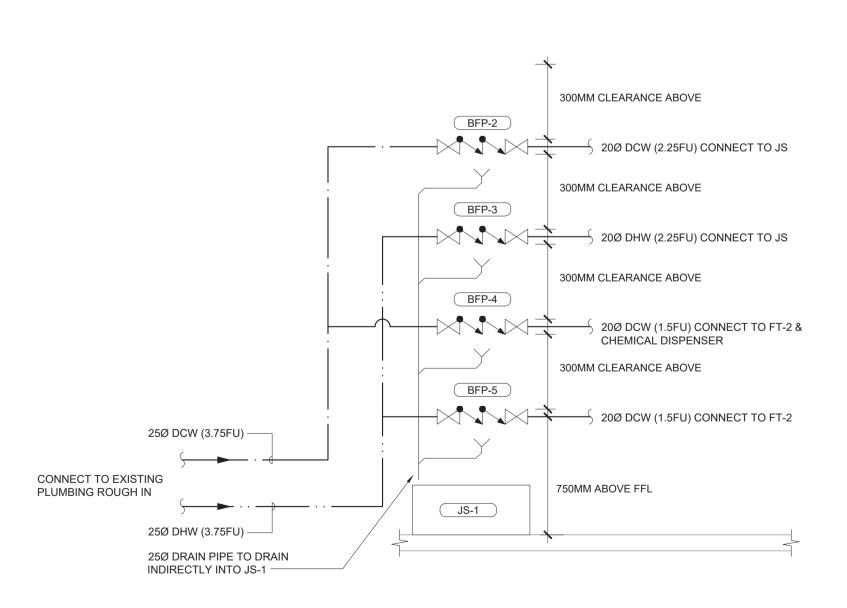


M300 SCALE: NTS



WALL MOUNTED DOMESTIC HOT WATER TANK

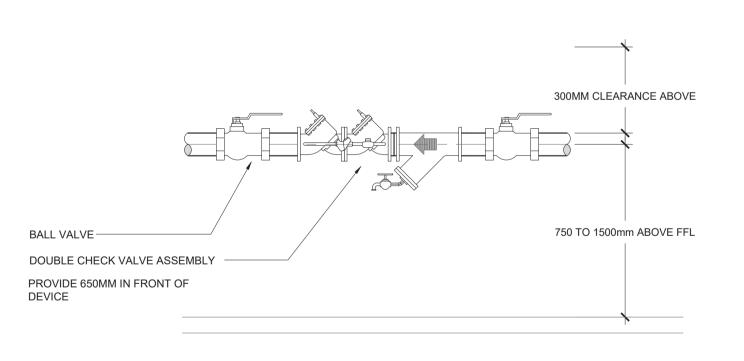
SCALE: NTS



WATER METER DETAILS

REDUCED PRESSURE BACKFLOW PREVENTER MOUNTING

SCALE: NTS



DOUBLE CHECK VALVE ASSEMBLY MOUNTING

SCALE: NTS

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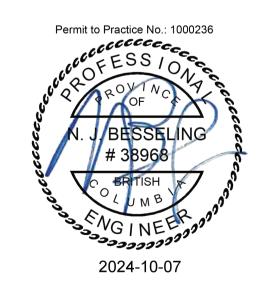
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# COMMON WORKS

### '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 INSTALLATION QUALITY

FOLLOW MANUFACTURERS' RECOMMENDED INSTALLATION INSTRUCTIONS, DETAILS AND PROCEDURES FOR EQUIPMENT, SUPPLEMENTED BY REQUIREMENTS OF THE CONTRACT DOCUMENTS BEFORE SUBMITTING TENDER, VISIT AND EXAMINE THE SITE AND NOTE ALL CHARACTERISTICS AND FEATURES AFFECTING THE ) YORK. NO ALLOWANCES WILL BE MADE FOR ANY DIFFICULTIES ENCOUNTERED OR ANY EXPENSES INCURRED BECAUSE

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 FOLLIPMENT MUST BE SUBMITTED IN WRITING TO THE DISULTANT NO LATER THAN SEVEN (7) WORKING DAYS PRIOR TO THE MECHANICAL TRADES' CLOSING TENDER 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

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

### 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, PLUMBING, SHEET METAL, FIRE PROTECTION AND CONTROLS.

APPROVAL.

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 OR FIELD REVIEW SCHEDULE S-B AND ASSURANCE OF PROFESSIONAL FIELD REVIEW AND COMPLIANCE SCHEDULE S-C FOR

SEISMIC ENGINEERING SHOP DRAWINGS: PROVIDE SHOP DRAWINGS FOR ALL EQUIPMENT AS ELECTRONIC FILES (FILE FORMAT: .DWG. .DXF. PDF. OR 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

CLOSEOUT SUBMITTALS: PROVIDE A MINIMUM OF TWO (2) MECHANICAL OPERATION AND MAINTENANCE MANUALS AND ONE IGITAL 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 COMMISSIONING IS COMPLETE; TESTING, ADJUSTING AND BALANCING

SITE RECORDS: CONTRACTOR SHALL MAINTAIN 1 SET OF WHITE PRINTS AT CONTRACTORS COST TO MARK CHANGES AS WORK PROGRESSES AND AS CHANGES OCCUR. USE DIFFERENT COLOUR WATERPROOF INK FOR EACH SERVICE. DO NOT USE PENCIL OR BLACK INK. TRANSFER INFORMATION WEEKLY TO SHOW WORK AS ACTUALLY INSTALLED. DRAWINGS SHALL BE AVAILABLE

### 1.5 QUALITY OF WORK

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 AT NO COST TO THE OWNER. 1.6 METRIC CONVERSION

### 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 IOMINAL 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 ADAPTERS TO ENSURE COMPATIBLE CONNECTIONS BETWEEN THE SI METRIC PIPES AND ALL NEW AND EXISTING PIPES, FITTINGS, AND EQUIPMENT.

### **EQUIVALENT NOMINAL DIAMETER OF PIPES**

15MM = NPS 1/2 20MM = NPS 3/4

25MM = NPS 1

30MM = NPS 1-1/4

40MM = NPS 1-1/2 50MM = NPS 2

65MM = NPS 2-1/2

75MM = NPS 3 100MM = NPS 4

150MM = NPS 6

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

# 1.7 DRAWINGS AND SPECIFICATIONS

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.

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 MEMBERS. 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. LINIONS AND ELANGES SHALL BE PROVIDED IN PIPING OR DUCTWORK TO PERMIT FASY REMOVAL OF FOLLIPMENT

### 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, OR

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

# 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 /HICH 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 IN THE TENDER PRICE. APPROVED EQUIVALENTS AND/OR ALTERNATIVES TO SPECIFIED PRODUCTS SHALL BE EQUAL TO THE SPECIFIED PRODUCT IN

EVERY RESPECT, OPERATE 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 RACTOR 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 EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS IN A CLEAN, DRY,

# 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 FOR ALL EXISTING MECHANICAL ASSEMBLIES WHERE FIRESTOPPING IS DAMAGED, DISCONTINUED OR ABSENT WITHIN THE CONSTRUCTION AREA.

SOUND TRANSMISSION COEFFICIENT (STC) RATINGS TESTED TO ASTM E90-09 TO ACHIEVE STC RATINGS AS REQUIRED BY

ALL FIRESTOP SYSTEM INSTALLATIONS MUST MEET THE REQUIREMENTS OF CAN4-S115-M OR ULC S-115-M TESTED ASSEMBLIES THAT PROVIDE A FIRE RATING

# 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 DIFFICULT.

# 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 PERFORMANCE

# 1.19 BALANCING

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

BALANCE FAN-COIL UNITS AND AIR OUTLETS TO AIR QUANTITIES INDICATED ON THE DRAWINGS AND IN THIS SPECIFICATION WHERE OUTLET QUANTITIES ARE NOT INDICATED, DIVIDE FAN-COIL CAPACITY EQUALLY AMONG ALL OUTLETS.

SUBMIT TWO (2) COPIES PDF COPIES OF THE REPORT TO THE CONSULTANT WITHIN TWO (2) WEEKS AFTER SUBSTANTIAL OMPLETION. 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.

### AIR-TERMINAL OUTLETS ±10%

ACCORDANCE WITH THE SPECIFICATION AND DRAWINGS.

BALANCING SHALL BE PERFORMED TO THE FOLLOWING:

AIR-CENTRAL FOUIPMENT ±5% HYDRONIC-PUMPS AND CENTRAL EQUIPMENT ±5%

PROVIDE A DROP TEST OF ALL FIRE DAMPERS AND A LETTER/CERTIFICATE CONFIRMING THIS WORK

DEVICES IN THE RENOVATED AREA. SUBMIT REPORT NOTING ANY REMEDIAL WORK REQUIRED.

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 ADDITIONAL COST TO OWNER.

BE RESPONSIBLE FOR THE PERFORMANCE AND COMMISSIONING OF ALL EQUIPMENT SUPPLIED AND RE-USED UNDER DIVISIONS 22 AND 23 INCLUDING AIR VALVES, FAN-COIL UNITS, PLUMBING FIXTURES, AND TANKS.

CONFIRM OPERATION AND REVIEW CONDITION OF ALL EXISTING AIR VALVES FAN-COIL UNITS AND ASSOCIATED CONTROL

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 ETTER CERTIFYING THAT ALL WORK SPECIFIED UNDER THIS CONTRACT IS COMPLETE, CLEAN AND OPERATIONAL IN

### 1.22 SEISMIC CONTROL

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 OMMITMENT FOR FIELD REVIEW SCHEDULE S-B AND ASSURANCE OF PROFESSIONAL FIELD REVIEW AND COMPLIANCE SCHEDULE S-C FOR SEISMIC ENGINEERING.

# 1.23 VIBRATION ISOLATION

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

SUBSTANTIALLY DIFFERENT FROM THE INSTALLED WEIGHTS ALL SPRING ISOLATORS SHALL BE "OPEN SPRING" UNLESS OTHERWISE STATED. SEISMICALLY RATED HOUSED SPRING ISOLATORS MAY BE USED IN LIEU PROVIDED THAT THEY MEET THIS PROJECT'S REQUIREMENTS FOR SEISMIC RESTRAINT 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 COLLIMBIA TO NSPECT EACH AND EVERY MECHANICAL FIRE STOPPING INSTALLATION, AND AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION, AND PROVIDE A REPORT ON ALL INSTALLATIONS. THE FIRE STOPPING ENGINEER SHALL PROVIDE LETTERS OF ASSURANCE TO THE OWNER'S CONSULTANT, IN ACCORDANCE WITH THE BC BUILDING CODE. A MANUFACTURER'S DIRECT REPRESENTATIVE (NOT DISTRIBUTOR OR AGENT) SHALL BE ON-SITE DURING THE INITIAL NSTALLATION OF FIRESTOP SYSTEMS TO TRAIN APPROPRIATE CONTRACTOR PERSONNEL IN CORRECT SELECTION AND

NSTALLATION PROCEDURES. THIS WILL BE DONE PER MANUFACTURER'S WRITTEN RECOMMENDATIONS PUBLISHED IN THEIR PROPOSED FIRESTOP MATERIALS AND METHODS SHALL CONFORM TO APPLICABLE GOVERNING CODES HAVING LOCAL

JURISDICTION. 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 CUL SYSTEM DESIGNS OR OTHER TESTS WILL BE SUBMITTED TO LOCAL AUTHORITIES HAVING JURISDICTION FOR THEIR REVIEW AND APPROVAL PRIOR TO NSTALLATION. ENGINEER JUDGMENT DRAWINGS MUST FOLLOW REQUIREMENTS SET FORTH BY THE INTERNATIONAL FIRESTO COUNCIL AND THE AUTHORITIES HAVING JURISDICTION AND BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE

### 1.25 SUBSTANTIAL AND TOTAL PERFORMANCE

PROVINCE OF BRITISH COLUMBIA.

PRIOR TO REQUESTING AN INSPECTION FOR SUBSTANTIAL PERFORMANCE, PROVIDE A COMPLETE LIST OF ITEMS, WHICH ARE

A CERTIFICATE OF SUBSTANTIAL PERFORMANCE WILL NOT BE GRANTED UNLESS THE FOLLOWING ITEMS ARE COMPLETED AND AVAILABLE TO THE OWNER'S CONSULTANT

FINAL PLUMBING INSPECTION CERTIFICATE FROM THE AUTHORITY HAVING JURISDICTION.

FINAL GAS INSPECTION CERTIFICATE FROM THE AUTHORITY HAVING JURISDICTION. SCHEDULE IS-B & S-CI IC-2I FOR FIRE SUPPRESSION AND FIRE SPRINKLER MATERIALS AND TEST CERTIFICATE.

SCHEDULE [S-B & S-C] [C-2] FOR SEISMIC ENGINEERING SCHEDULE [S-B & S-C] [C-2] FOR FIRE STOPPING

# FINAL BACKFLOW PREVENTION TEST REPORTS FOR ALL BACKFLOW DEVICES.

DRAFT OPERATING/MAINTENANCE MANUALS HAVE BEEN SUBMITTED FOR REVIEW.

ALL MECHANICAL SYSTEMS HAVE BEEN COMMISSIONED AND ARE CAPABLE OF OPERATION WITH ALARM CONTROLS

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 SUBMITTED. 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

2.1 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 PRODUCT 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 WORK. 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

PROVIDE HANGERS AND SUPPORTS TO SECURE EQUIPMENT IN PLACE, PREVENT VIBRATION, PROTECT AGAINST DAMAGE FROM EARTHQUAKE, MAINTAIN GRADE, PROVIDE FOR EXPANSION AND CONTRACTION, AND ACCOMMODATE INSULATION.

DRYWALL SURFACE: EXTRUDED ALUMINUM FRAME WITH GYPSUM BOARD INLAY AND STRUCTURAL CORNER ELEMENTS. HINGE TO BE CONCEALED 2-POINT HINGE. NON-CORRODING WITH SCREWDRIVER OPERATED CAM LATCH. TILE SURFACE: UNIVERSAL DESIGN, STAINLESS STEEL DOOR (16GA) AND STAINLESS STEEL FRAME (18GA), DOOR FLUSH TO RAME, ROUNDED SAFETY CORNERS, CONTINUOUS CONCEALED HINGE, SCREWDRIVER OPERATED CAM LATCH, #4 SATIN STAINLESS STEEL FINISH.

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 RECESSED 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

LUSH 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. 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 MOÙNTING 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, CONCEALED 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, ELAT 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

ACCEPTABLE MANUFACTURERS: BRADY

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 DIRECTORY AT ALL MECHANICAL ROOMS, IN THE O&M MANUALS AND A DIGITAL COPY CROSS REFERENCED WITH ANY ASSOCIATED CONTROLS

NOMENCLATURE. EACH PIECE OF EQUIPMENT SHALL BE IDENTIFIED WITH ITS EQUIPMENT SCHEDULE IDENTIFICATION, E.G. SUPPLY FAN SF-1, COOLING COIL CC-1, PUMP P-1 WITH LAMACOID PLATES HAVING 6MM (1/4") MINIMUM LETTER SIZE

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

ACCEPTABLE MANUFACTURER: MASON HG HEMI GROMMET OR EQUAL

NEOPRENE PAD ISOLATORS: NEOPRENE OR NEOPRENE / STEEL / NEOPRENE PAD ISOLATORS. MINIMUM STATIC DEFLECTION 2.5

ACCEPTABLE MANUFACTURER: MASON WMSW OR EQUAL RUBBER FLOOR MOUNTS: BRIDGE 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 C THE COMPRESSED HEIGHT OF THE SPRING AT RATED LOAD. SPRINGS SHALL HAVE A MINIMUM ADDITIONAL TRAVEL TO SOLID

ACCEPTABLE MANUFACTURER: MASON SSLFH OR EQUAL SPRING HANGERS: HANGERS SHALL CONSIST OF RIGID STEEL FRAMES CONTAINING MINIMUM 32MM (1 1/4") THICK NEOPRENE 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

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

# 3.1 PAINTING REPAIRS AND RESTORATION

HANGERS NOR THE NEOPRENE ELEMENT STACKED ON TOP OF THE SPRING

EQUAL TO 50% OF THE RATED DEFLECTION.

DO PAINTING IN ACCORDANCE WITH DIVISION 09 - INTERIOR PAINTING. PRIME AND TOUCH UP MARRED FINISHED PAINTWORK TO MATCH ORIGINAL. RESTORE TO NEW CONDITION, FINISHES WHICH HAVE BEEN DAMAGE

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 METAL

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 INSTALLATION. 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

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 RE-SEAL IMMEDIATELY WITH SPECIFIED PRODUCT

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

# 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')

FIRESTOP SYSTEMS ALREADY INSTALLED BY OTHER TRADES.

REINSTALL PRODUCTS CORRECTLY, AT NO ADDITIONAL COST TO THE PROJECT.

PIPE SIZE: NPS 3/4 TO 11/2 ROD DIAMETER 9MM (3/8"), SPACING 2.4M (8') ROD DIAMETER 9MM (3/8"), SPACING 3M (10')

CONDUCT TESTS IN PRESENCE OF CONSTRUCTION MANAGER OR PROJECT MANAGER.

INSULATE OR CONCEAL WORK ONLY AFTER APPROVAL AND CERTIFICATION OF TESTS BY AUTHORITIES.

### 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). FOR 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

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 IS

# SUBMIT COPIES OF PRESSURE TEST REPORTS FOR ALL SECTIONS OF PIPING.

INSPECTING, ADJUSTING, SERVICING WITHOUT USING SPECIAL TOOLS

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,

# 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 OCCUPIED SPACE IS LESS THAN

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

3.8 EXPANSION COMPENSATION PROVIDE STRUCTURAL WORK AND EQUIPMENT REQUIRED FOR EXPANSION AND CONTRACTION OF ALL PIPING. PROVIDE ANCHORS, GUIDES, AND EXPANSION JOINTS AS REQUIRED TO ADEQUATELY PROTECT THE PIPING SYS PROVIDE EXPANSION COMPENSATION FOR ALL PIPING SYSTEMS INCLUDING BUT NOT LIMITED TO: HEATING WATER, CHILLED WATER, STEAM AND CONDENSATE, CLOSED CONDENSER WATER SYSTEMS, AND ALL OTHER PIPING SYSTEMS THAT OPERATE

SPRING HANGERS: LOCATE ISOLATION HANGERS AS NEAR TO THE OVERHEAD SUPPORT STRUCTURE AS POSSIBLE.

CONTACT. ALL DISCHARGE DUCTWORK RUNS FOR A DISTANCE OF 15M (50') FROM THE CONNECTED

INSTALLATION SHALL PERMIT HANGER BOX OR ROD TO MOVE THROUGH A 30 DEGREES ARC WITHOUT METAL TO META

ISOLATED FROM THE BUILDING STRUCTURE BY MEANS OF SPRING HANGERS. SPRING DEFLECTION SHALL BE A MINIMUM OF

ANY APPARATUS AND PIPE BRANCH CONNECTIONS. EXPANSION JOINTS AND COMPENSATORS SHALL BE INSTALLED AND GUIDED AS PER MANUFACTURER'S RECOMMENDATIONS. ALL EQUIPMENT SHALL BE CONNECTED WITH UNIONS OR FLANGES TO PROVIDE FOR EASY REMOVAL. WHERE PIPING PASSES THROUGH WALLS OR FLOOR SLABS. THE SLEEVES SHALL BE OF FICIENT SIZE TO ACCOMMODATE THE EXPANSION AND THE PIPE INSULATION, WITHOUT BINDING OR CRUSHING THE INSULATION OR PREVENTING THE EXPANSION OF THE PIPING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO RETAIN THE SERVICES OF A QUALIFIED PROFESSIONAL ENGINEER (REGISTERED IN THE PROJECT AREA) TO DESIGN THE PIPE EXPANSION SYSTEM FOR THE ACTUAL INSTALLED LAYOUT OF ALL PIPING SYSTEMS

ALL PIPING SHALL BE ANCHORED AND SUPPORTED IN SUCH A MANNER THAT STRAIN AND/OR WEIGHT DOES NOT COME UPON

COVERED BY THIS SPECIFICATION SECTION (INCLUDING REFRIGERANT PIPING). THE EXPANSION SYSTEM MUST INCLUDE ANSION FITTINGS, COMPENSATORS, JOINTS, OR PIPING BENDS, PIPE GUIDES, AND PIPING ANCHORS. ANCHOR FORCES MUST BE COORDINATED WITH THE PROJECT STRUCTURAL ENGINEER. THE INSTALLATION OF ALL PIPING SYSTEMS MUST FOLLOW THE DESIGN REQUIREMENTS OF THE CONTRACTOR'S QUALIFIED PROFESSIONAL ENGINEER THAT HAS DESIGNED THE ENTIRE PIPING SYSTEM TO ALLOW EXPANSION COMPENSATION SPECIAL ATTENTION SHOULD BE GIVEN TO STRAIGHT PIPE RUNS. PIPE RISER INSTALLATIONS AND NON-METALLIC PIPE INSTALLATIONS. AS A MINIMUM ON HOT PIPING, PROVIDE EXPANSION COMPENSATION ON EVERY OTHER FLOOR OF A NON-METALLIC PIPE RISER IN A SHAFT AND EVERY THIRD FLOOR FOR METALLIC PIPE RISERS. ALL PIPE TAKE-OFFS FROM THE RISER MUST ALSO BE DESIGNED TO ALLOW VERTICAL MOVEMENT OF THE RISER CONNECTION IF NEEDED. TAKE-OFFS WITH SPECIFICALLY DESIGNED SWING JOINTS WITH APPROPRIATE PIPING SUPPORT CAN BE USED TO ALLOW MOVEMENT UNLESS REQUIRED OTHERWISE BY THE CONTRACTOR'S ENGINEER, METALLIC PIPING EXPANSION COMPENSATION IS GENERALLY NOT REQUIRED FOR: PIPING RISERS LESS THAN 12M (39 FEET) IN VERTICAL HEIGHT, OR HORIZONTAL RUNS WITH

STRAIGHT LENGTHS LESS THAN 11M (36 FEET) AND A TOTAL FLOATING PIPING SYSTEM LENGTH LESS THAN 30M (98 FEET).

FLOATING SYSTEMS CONSIST OF PIPING SUPPORTS ALLOWING MOVEMENT IN AT LEAST 2 DIRECTIONS (PIPE HANGERS) ANI

# EQUIPMENT CONNECTIONS WITH FLEXIBLE HOSES. **DIVISION 22 PLUMBING**

1.1 SECTION SCOPE PIPING, VALVES AND SPECIALTIES SERVING BUILDING WATER DISTRIBUTION SYSTEMS TO 1M (36") OUTSIDE THE BUILDING AND SANITARY AND STORM DRAIN WASTE AND VENT PIPING, EQUIPMENT AND ACCESSORIES BETWEEN

### PLUMBING FIXTURES TO 1M (36") FROM THE BUILDING. 1.2 CLEANOUTS

PROVIDE SANITARY AND STORM PIPING CLEANOUTS AT ALL CHANGES IN DIRECTION, AT THE ENDS OF ALL HORIZONTAL RUNS. AT THE BASE OF EVERY STACK. WHERE DRAINS LEAVE THE BUILDING: WHERE SHOWN ON THE DRAWINGS AND IN COMPLIANCE WITH THE LOCAL PLUMBING CODE, BYLAWS AND ORDINANCES. PROVIDE CAULKED OR THREADED TYPE CLEANOUTS EXTENDED TO FINISHED FLOOR WALL SURFACE. PROVIDE BOLTED COVER PLATE CLEAN OUTS ON VERTICAL RAINWATER LEADERS ONLY. ENSURE AMPLE

### CLEARANCE AT CLEAN OUT FOR RODDING OF DRAINAGE SYSTEM. 1.3 BACKFLOW PREVENTION DEVICES

ALL BACKFLOW PREVENTION DEVICES SHALL BE SELECTED AND INSTALLED IN COMPLIANCE WITH THE

# 2. PRODUCTS

REQUIREMENTS OF CSA B64.10.

SANITARY AND STORM DRAINAGE, AND VENT (ABOVE GRADE) SHALL BE DWV COPPER, CAST IRON CLASS 4000, OR PVC-15 SCHEDULE 40. SANITARY AND STORM DRAINAGE AND VENT (BELOW GRADE INSIDE BUILDING TO 1M OUTSIDE) SHALL BE CAST

IRON CLASS 4000, PVC-DWV SCHEDULE 40 OR ABS-DWV (SOLID CORE) SCHEDULE 40. ALL NO-HUB CAST IRON PIPE AND ASSOCIATED FITTINGS INSTALLATIONS OVER 100MM (F4") IN SIZE SHALL INCLUDE THE USE OF MANUFACTURED THRUST RESTRAINT ASSEMBLIES AT EACH BRANCH OPENING AND CHANGE OF DIRECTION INCLUDING AT BASE OF RISER TO PREVENT HORIZONTAL MOVEMENT AND JOINT SEPARATION. FIELD-DEVISED METHODS AND MATERIALS SHALL NOT BE USED TO ACCOMPLISH THIS APPLICATION SOLUTION. MANUFACTURED THRUST RESTRAINT PRODUCTS SHALL HAVE ADEQUATE THRUST PREVENTION RATING FOR THE

SPECIFIC INSTALLATION. HEAVY DUTY OR WIDE BODY COUPLINGS ARE NOT ACCEPTABLE FOR PROPER THRUST

RESTRAINT FOR PIPING SYSTEMS SERVING FULL FILLED HEIGHTS BEYOND 3 048MM (10 FFFT) WATER COLUMN THE PRESSURES USED FOR DETERMINING THE REQUIREMENTS OF RESTRAINED FITTINGS SHALL ALLOW FOR PRESSURES ACCOMMODATING FULL FILL HEIGHT WATER COLUMN PRESSURES.

FOR THE INSTALLATION OF VERTICAL NO-HUB CAST IRON PIPE RISERS, SPECIAL HEAVY DUTY PIPE RISER CLAMPS MUST BE USED AS ANCHORS (DESIGNED SPECIFICALLY TO SUPPORT THE FULL WEIGHT OF FILLED PIPING SYSTEMS) AND INSTALLED AT A MAXIMUM OF 7,500MM (24'-6") INTERVALS FOR SUFFICIENT PIPE SUPPORT STANDARD PIPE RISER CLAMPS THROUGHOUT ARE NOT SUFFICIENT.

FOR THE INSTALLATION OF PIPING MATERIALS OTHER THAN CAST IRON FOR SANITARY DRAIN. WASTE, AND VENT (DWV) SYSTEMS, ALL MANUFACTURER REQUIREMENTS AS A MINIMUM SHALL BE USED FOR THE INSTALLATION OF THE PIPING SYSTEMS INCLUDING RESTRAINED FITTINGS AND ALL OTHER MANUFACTURER REQUIREMENTS.

### DOMESTIC WATER (ABOVE GRADE INSIDE BUILDING) SHALL BE:

TYPE "K" COPPER FOR HOT AND TYPE "L" COPPER FOR COLD WATER HARD DRAWN SEAMLESS COPPER TUBING TO ASTM B88 WITH CAST BRASS OR WROUGHT COPPER SOLDER JOINT PRESSURE FITTINGS WITH 95/5 SN/SB OR SILVABRITE 100 SOLDER JOINTS.

PRESS TO CONNECT COPPER AND COPPER ALLOY 12MM TO 50MM FITTINGS TO PRESS FITTINGS SHALL CONFORM TO: ASME B16.51, ASTM F3226 OR IAPMO/ANSI/CAN Z1117. PRESSING TOOLS AND JAWS USED SHALL BE APPROVED FOR USE BY THE FITTING MANUFACTURER.

PUSH TO CONNECT 12MM TO 50MM FITTINGS SUITABLE FOR USE WITH COPPER TUBING AND CERTIFIED TO NSF/ANSI 61, NSF/ANSI 14 AND ASSE 1061 FOR USE WITH POTABLE WATER. LEAD FREE DZR BRASS BODY, EPDM

HIGH DENSITY CROSSLINKED POLYETHYLENE PIPE (PEX-A) TO ASTM F876, ASTM F877, ASTM F1960 AND CSA B137.5. ALL PEX TUBING, FITTINGS AND FITTING ASSEMBLIES SHALL BE BY ONE MANUFACTURER, FITTINGS TO BE COLD EXPANSION MEETING ASTM F1960. CAN/ULC S102.2 LISTED FOR FLAME SPREAD AND SMOKE DEVELOPED RATING OF 25/50. FOR IN CONCRETE SLAB OR SOL INSTALLATIONS. NSF 61 CERTIFIED HIGH DENSITY POLYETHYLENE (HDPE) CORRUGATED PRE-SLEEVED TUBING FOR USE IN PEX-A HOT AND COLD POTABLE WATER DISTRIBUTION SYSTEMS TO ALLOW REMOVAL AND REPLACEMENT OF THE TUBING.

DUCTILE IRON WATER PIPE AND FITTINGS INSIDE THE BUILDING TO CONFORM TO C151/A21.51, CEMENT MORTAR LINING TO CONFORM TO ANSI/AWWA C104/A21.4 AND RUBBER GASKET JOINTS CONFORMING TO ANSI/AWWA C111/A21.11, GRADE 'M' FLUSH SEAL GASKETS TO ANSI/NSF 61. FITTINGS TO CONFORM TO ANSI/AWWA C606 AND CSA B-05.

(150 PSI @ 200°F) RATING.

# WHEREVER POSSIBLE ALL VALVES SHALL BE OF ONE MANUFACTURER.

GROOVED VALVES SHALL BE OF THE SAME MANUFACTURER AS THE ADJOINING COUPLINGS PROVIDE VALVES WITH MANUFACTURER'S NAME AND PRESSURE RATING CLEARLY MARKED ON THE OUTSIDE OF BODY. ALL VALVES MUST BE SUITABLE IN ALL RESPECTS FOR SERVICE USED.

ALL VALVES SHALL HAVE A PROVINCIAL CRN NUMBER WHICH IS CURRENT.

UNION BONNET, FOR DOMESTIC WATER SERVICE, CLASS 1380 KPA (200 PSI) W.O.G.

BALL VALVES 2 NPS AND UNDER SHALL BE LOW LEAD FORGED BRASS BODY, 2 PIECE BODY, FULL PORT, CHROME PLATED BALL, PTFE SEATS, BLOW OUT PROOF STEM, ADJUSTABLE PACKING NUT, FOR DOMESTIC WATER SERVICE, CLASS 4140 KPA (600 PSI) W.O.G. GATE VALVES 2 NPS AND UNDER SHALL BE LEAD FREE BRONZE BODY, SOLID WEDGE DISC, BRONZE OR STAINLESS

STEEL TRIM, NON-RISING STEM, FOR DOMESTIC WATER SERVICE, CLASS 1380 KPA (200 PSI) W.O.G. GATE VALVES 2-1/2 NPS AND OVER SHALL BE CAST IRON BODY, SOLID WEDGE DISC, BRONZE OR STAINLESS STEEL TRIM, RISING STEM, OUTSIDE SCREW AND YOKE COMPLYING WITH MSS SP 70. CLASS 1380 KPA (200 PSI) W.O.G. GLOBE VALVES 2 NPS AND UNDER SHALL BE LEAD FREE BRONZE BODY, SWIVEL TYPE STAINLESS STEEL DISC.

CHECK VALVES 2 NPS AND SMALLER SHALL BE LEAD FREE BRONZE SWING CHECK WITH BRONZE DISC CAPABLE OF BEING REGROUND, Y PATTERN, SUITABLE FOR DOMESTIC WATER USE, CLASS 1380 KPA (200 PSI) W.O.G. CIRCUIT SETTER VALVE (FOR DOMESTIC HOT WATER RECIRCULATION) SHALL BE SCREWED, LEAD FREE BRASS REGULATING VALVE SUITABLE FOR POTABLE WATER, COMBINATION P/T TEST POINTS WITH EPT INSERTS/CHECK VALVES, DRAIN PORT, MEMORY STOP HANDLE WITH GRADUATED MARKINGS, POSITIVE SHUT OFF, 1035 KPA @ 93°C

PRESSURE REDUCING VALVE NPS 1 AND SMALLER SHALL BE LEAD FREE COPPER SILICON ALLOY BODY OR LOW LEAD BRONZE BODY, SS INTEGRAL STRAINER, RENEWABLE SS SEAT, SERVICEABLE INLINE, BUILT IN BYPASS CHECK VALVE, SUITABLE FOR HOT AND COLD WATER POTABLE WATER. RATED AT MAXIMUM INLET PRESSURE OF 2100 KPA (305 PSI) AND 82°C (180°F) TEMPERATURE PRESSURE REDUCING VALVE NPS 1-1/4 NPS TO NPS 2 SHALL BE PILOT OPERATED WITH LOW FLOW BYPASS,

DIAPHRAGM ACTUATED GLOBE VALVE, LEAD FREE, BRONZE BODY OR DUCTILE IRON TO ASTM A536. LEAD FREE

REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) SHALL BE 2 NPS AND SMALLER. LEAD FREE CAST COPPER

WATER HAMMER ARRESTORS SHALL BE BELLOWS TYPE WITH WELDED STAINLESS STEEL NESTING BELLOWS OR

PREFORMED INSULATION. FINE FIBROUS GLASS OR FORMED MINERAL FIBRE PIPE INSULATION WITH ALL SERVICE

PISTON STYLE AND STAINLESS STEEL CASING. AIR CHAMBERS ARE UNACCEPTABLE.

BRONZE, STAINLESS STEEL OR DUCTILE IRON INTERNALS. ALL DUCTILE IRON COMPONENTS INCLUDING BODY AND

COVER SHALL BE LINED AND COATED WITH EPOXY COATING. BACKFLOW PREVENTERS DOUBLE CHECK VALVE ASSEMBLY (DCVA) SHALL BE 2 NPS AND SMALLER, LEAD FREE CAST COPPER SILICONE ALLOY BODY, TWIN POSITIVE SEAT CHECK MODULES, CAPTURED SPRINGS, REPLACEABLE CHECK MODULE SEATS AND DISCS, TWO ISOLATION VALVES, TEST COCKS AND A BRONZE STRAINER. COMPLY WITH

SILICONE ALLOY BODY, PRESSURE DIFFERENTIAL RELIEF VALVE, REPLACEABLE CHECK MODULE SEATS AND DISCS. TWO ISOLATION VALVES, TEST COCKS AND A STRAINER. COMPLY WITH CSA B64.4 AND AWWA C511 STRAINERS SHALL BE 1/4 - 2 NPS THREADED ENDS, BRONZE BODY, 1034 KPA (150 PSI) RATING.

JACKET VAPOUR RETARDER (ASJ). ASJ SHALL BE RE-ENFORCED WITH GLASS FIBRE, FACTORY APPLIED WITH IVE LAP CLOSURE MAXIMUM "K" VALUE AT  $38^{\circ}$ C ( $100^{\circ}$ F) = 0.035 W/M  $^{\circ}$ C (0.24 BTU IN/HR FT2) ACCEPTABLE MANUFACTURERS: MANSON INSULATION, KNAUF, ROXUL, JOHNS MANVILLE, FIBREX

THERMOCANVAS FINISHING JACKET: FIRE RATED, 170G (6 OZ.) FIRE RETARDANT CANVAS JACKET FOR COVERING

### MECHANICAL INSULATION INDOORS, 25/50 FIRE CLASS, PLAIN WAVE COTTON, NO DYES. PVC FINISHING JACKET: WHITE, UV RESISTANT, FOR INDOOR OR OUTDOOR APPLICATIONS, 25/50 FIRE CLASS.

MINIMUM 0.50 MM (0.02") THICK.

FLOOR - UNFINISHED AREA: CAST IRON FLOOR LEVEL CLEANOUT ASSEMBLY WITH EXTRA HEAVY DUTY, ROUND, ADJUSTABLE, SCORIATED, SECURED CAST IRON TOP AND NO-HUB OUTLET. SUITABLE FOR HEAVY TRAFFIC FLOOR - FINISHED AREA: GENERAL AREAS SHALL BE CAST IRON CLEANOUT WITH EXTRA HEAVY DUTY ROUND, ADJUSTABLE, SCORIATED, SECURED NICKEL BRONZE TOP, AND NO-HUB OUTLET. FOOT TRAFFIC AREAS WITH SHEET GOODS FLOORING SHALL BE CAST IRON FLOOR LEVEL CLEANOUT ASSEMBLY WITH A SQUARE ADJUSTABLE NICKEL BRONZE TOP WITH 6MM (1/8") TILE RECESS, AND NO-HUB OUTLET. CARPETED FLOOR AREA SUBJECT TO FOOT TRAFFIC SHALL BE CAST IRON FLOOR LEVEL CLEANOUT ASSEMBLY WITH ROUND, ADJUSTABLE, SCORIATED,

WALL - FINISHED AREA SHALL BE CONCEALED DRAINAGE LINE IN A FINISHED WALL: CAST IRON CLEANOUT TEE AND

# CAST IRON COUNTERSUNK PLUG WITH STAINLESS STEEL ROUND COVER AND SCREW.

NICKEL BRONZE TOP AND CARPET CLAMPING FRAME

ACCEPTABLE MANUFACTURERS: ZURN, J R SMITH, WATTS, WADE

PROVIDE ALL FLOOR DRAINS WITH A TRAP SEAL USING A TRAP PRIMER CONNECTION OR OTHER EQUALLY EFFECTIVE MEANS IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODE REQUIREMENTS.

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ISSUED FOR RFP ISSUED FOR BP/RFP REVIEW 09/13/24 ISSUED FOR BP & HP 08/23/24 ISSUED FOR 50% DD

SPANI POOL CONCESSION TENANT IMPROVEMENT Project Address: 655 HILLCREST ST, COQUITLAM, BC V3J 3Z6

SPECIFICATIONS I Project No: Date:

341B-005-21 06/18/24 NTS

CITY OF COQUITLAM

### 2.6 TRAP SEAL PRIMERS

PROVIDE FLOW ACTUATED TYPE PRIMING DEVICE. VACUUM BREAKER PORTS AND INTERNAL BACK-FLOW PROTECTION, LEAD FREE BRASS BODY, STAINLESS STEEL SCREEN, FACTORY PRE-SET, ACTIVATION BY A MINIMUM FLOW RATE OF 0.03L/S @ 138 KPA (0.5 GPM @ 20 PSI). ½ NPS INLET AND OUTLET, CAPABLE OF SERVING 1 TO 4

### 2.8 EXPANSION TANKS - DOMESTIC HOT WATER

DIAPHRAGM OR BLADDER TYPE EXPANSION TANK, WELDED STEEL TANK, INTERNAL BUTYL/EPDM DIAPHRAGM OR BLITYL BLADDER RIGID POLYPROPYLENE LINER. INTEGRAL FLOOR STAND FOR VERTICAL INSTALLATION, LISTED FOR POTABLE WATER SYSTEMS. ASME RATED FOR A WORKING PRESSURE OF 861 KPA (125PSI)

### AMTROL THERM-X-TROL MODEL ST-C SERIES OR EQUAL

# 2.9 PLUMBING FIXTURES

# GREASE INTERCEPTORS

CONNECT ALL DRAINAGE PIPING FROM FIXTURES AND FOLIPMENT THAT DISCHARGE WASTE WATER THAT CONTAINS OR MAY BE CONTAMINATED WITH FATS, OILS AND GREASE TO GREASE INTERCEPTORS.

.1 FOOD GRINDERS, POTATO PEELERS AND SIMILAR EQUIPMENT USED IN THE PREPARATION OF FOOD SHALL BE CONNECTED TO A SOLIDS INTERCEPTOR PRIOR TO CONNECTION TO A GREASE INTERCEPTOR IF THE WASTEWATER FROM THIS EQUIPMENT CONTAINS OR MAY BE CONTAMINATED WITH FATS, OILS AND GREASES. 2 A GARBAGE COMPACTOR USED IN CONNECTION WITH A FOOD PREPARATION FACILITY LOCATED WITHIN THE ABOVE GRADE EXTERIOR OR OUTSIDE THE BUILDING INSULATION FOR ALL PIPE SIZES SHALL BE: BUILDING SHALL BE CONNECTED TO A DRAIN THAT IS CONNECTED TO A GREASE INTERCEPTOR. STORM WATER SHALL BE PREVENTED FROM MIXING WITH THE WASTEWATER THAT IS DISCHARGED INTO THE DRAIN CONNECTED TO THE GREASE INTERCEPTOR.

.3 THE MAXIMUM FLOW CAPACITY OF ALL FIXTURES AND EQUIPMENT CONNECTED TO A GREASE INTERCEPTOR SHALL NOT EXCEED THE MAXIMUM RATED FLOW CAPACITY OF THE INTERCEPTOR.

.4 THE SIZE OF A FLOW CONTROL FITTING REQUIRED TO BE USED WITH A GREASE INTERCEPTOR SHALL NOT EXCEED THE RATED FLOW CAPACITY OF THE GREASE INTERCEPTOR.

.5 GREASE INTERCEPTORS SHALL ACHIEVE THE MOST RESTRICTIVE RATING STANDARD FOR THE MAXIMUM FEELUENT CONCENTRATION FOR THE JURISDICTION IN WHICH IT IS BEING INSTALLED AS MEASURED IN ACCORDANCE WITH THE REQUIREMENTS OF CSA B481.2, OR AS DETERMINED BY THE AUTHORITY HAVING

.6 GREASE INTERCEPTORS SHALL BE COMPLETE WITH AN ACCESSIBLE SAMPLING PORT ON THE DISCHARGE PIPING LOCATED PRIOR TO THE DISCHARGE PIPING CONNECTING TO ANY OTHER PART OF THE DRAINAGE SYSTEM. THE GREASE INTERCEPTOR'S RATED FLOW CAPACITY SHALL BE PERMANENTLY LABELLED ON THE GREASE

INTERCEPTOR AND BE CLEARLY VISIBLE .8 ENZYMES TO FACILITATE THE PASSAGE OF FATS, OILS AND GREASE SHALL NOT BE PERMITTED.

### .2 GREASE INTERCEPTORS: .1 GREASE INTERCEPTOR GI-1

.1 ELLIPTICAL FIBERGLASS (FRP) GREASE INTERCEPTOR CONSTRUCTION WITH INLET PIPING AND U1 = UPPER RANGE LIMIT "K" VALUE FROM THE TABLE ABOVE. BAFFLE PENETRATION DESIGNED TO INTRODUCE WASTEWATER IN A TANGENTIAL LAMINAR FLOW PATTERN, TO BE APPROPRIATELY SIZED BASED ON ANTICIPATED USAGE AND FLOW RATES TO 3.6 PIPING FINISH SCHEDULE MEET APPLICABLE SANITARY SEWER DISCHARGE LIMITS, INCL. MUNICIPAL BY-LAWS.

.2 ACCESSWAY .1 INCLUDE ACCESSWAYS, TANKS, AND PIPING AND BAFFLE OPENINGS TO RETAIN GREASE AND

SOLIDS AND TO PERMIT TANGENTIAL LAMINAR WASTEWATER FLOW .2 ROUND COVER WITH NON SLIP COVER FINISH, GASKETED AND NON VENTED TOP DESIGN

.3 FOR RECESSED INSTALLATION: .1 USE ACCESSWAY EXTENSION COLLAR. REFER TO MECH DRAWINGS FOR EXTENSION LENGTH REQUIREMENTS.

WATERTIGHT FLEXIBLE CAULKING: SIKAFLEX 255 OR SIKAFLEX 221 OR APPROVED ALTERNATE TO PROVIDE .3 FACTORY INSTALLED SCHEDULE 40 PVC CEMENT WELDED TYPE SOCKET PORTS, OR STRAIGHT

PIPE, FITTED INTO INTERCEPTOR WALLS FOR EACH PIPE CONNECTION .4 REFER TO SCHEDULE FOR FLOW RATE AND CAPACITY

.5 INTERCEPTOR SHALL BE SUITABLE FOR SURFACE, SEMI-RECESSED, FLUSH-DEEP INSTALLATION AS REQUIRED. (REFER TO DRAWINGS FOR LOCATION.)

.6 COMPLETE WITH VENTED IN-LINE FLOW CONTROL

.7 VENT LINES FROM INTERCEPTOR TO TERMINATE INDIVIDUALLY THROUGH ROOF OF BUILDING. VENTS CANNOT BE COMBINE WITH ANY OTHER VENTS .8 GI-1 TO BE C/W H20 LOADED COVER

# 2.10 DOMESTIC HOT WATER HEATER (POINT OF USE)

ELECTRIC HOT WATER HEATER. 34 NPS CONNECTIONS, ANODE ROD, T & P RELIEF VALVE, CAPACITY: 23L (6GAL) 38L (10GAL) 76L (20GAL) 114L (30GAL). WATER HEATERS FURNISHED STANDARD WITH 120 VOLT AC, 2000 WATT SINGLE

### HUBBEL, RHEEM PRO E SERIES OR EQUAL

.1 DOMESTIC HOT WATER HEATER SHALL BE WALL MOUNTED C/W QUICK STAND WALL MOUNTED WATER HEATER PLATFORM. MODEL NUMBER 50-SWHP-WM. DIMENSIONS (26.-1/2 IN. X 26-1/2 IN. X 2-1/2 IN.) .2 PLATFORM MATERIAL: PAN: 12 GAUGE CRS, GALVANIZED, CORNER BRACKETS: 14 GAUGE CRS, GALVANIZED, C-BRACKETS: 16 GAUGE CRS, GALVANIZED, 45 BRACKETS: 12 GAUGE CRS, GALVANIZED, THREADED ROD: LOW CARBON STEEL, ZINC PLATED.

# 1. EXECUTION

PIPE CONNECTIONS NPS 11/2 AND LESS SHALL BE SOLDERED OR SCREWED JOINT UNLESS NOTED OTHERWISE. FOR THIS WORK. PEX. USE COLD EXPANSION FITTINGS INSTALLED WITH TOOLS AS RECOMMENDED BY THE FITTING MANUFACTURER PIPE CONNECTIONS NPS 2 SHALL BE SCREWED JOINT FOR LIQUID SYSTEMS UNLESS NOTED OTHERWISE. PIPE CONNECTIONS NPS 21/2 AND LARGER SHALL BE WELDED OR FLANGED UNLESS NOTED OTHERWISE.

FOR PEX-A TUBING USE COLD EXPANSION FITTINGS INSTALLED WITH TOOLS AS RECOMMENDED BY THE FITTING MANUFACTURER

PRESS TO CONNECT FITTINGS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

USE DIELECTRIC TYPE COUPLINGS WHEN JOINING DISSIMILAR METAL PIPES. USE LEAD FREE SOLDER FOR SOLDERING DOMESTIC WATER COPPER PIPE

PROVIDE EXPANSION COMPENSATION FOR ALL FLUID PIPING SYSTEMS.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO RETAIN THE SERVICES OF A QUALIFIED PROFESSIONAL ENGINEER (REGISTERED IN THE PROJECT AREA) TO DESIGN THE PIPE EXPANSION SYSTEM FOR THE ACTUAL INSTALLED LAYOUT OF ALL PIPING SYSTEMS COVERED BY THIS SPECIFICATION SECTION. THE EXPANSION SYSTEM MUST INCLUDE EXPANSION FITTINGS, COMPENSATORS, JOINTS, OR PIPING BENDS, PIPE GUIDES, AND PIPING ANCHORS.

ANCHOR FORCES MUST BE COORDINATED WITH THE PROJECT STRUCTURAL ENGINEER. THE INSTALLATION OF ALL PIPING SYSTEMS MUST FOLLOW THE DESIGN REQUIREMENTS OF THE CONTRACTOR'S QUALIFIED PROFESSIONAL ENGINEER THAT HAS DESIGNED THE ENTIRE PIPING SYSTEM TO ALLOW EXPANSION COMPENSATION.

SPECIAL ATTENTION SHOULD BE GIVEN TO STRAIGHT PIPE RUNS. PIPE RISER INSTALLATIONS AND NON-METALLIC PIPE INSTALLATIONS. AS A MINIMUM ON HOT PIPING, PROVIDE EXPANSION COMPENSATION ON EVERY OTHER FLOOR OF A NON-METALLIC PIPE RISER IN A SHAFT AND EVERY THIRD FLOOR FOR METALLIC PIPE RISERS. ALL PIPE TAKE-OFFS FROM THE RISER MUST ALSO BE DESIGNED TO ALLOW VERTICAL MOVEMENT OF THE RISER CONNECTION IF NEEDED. TAKE-OFFS WITH SPECIFICALLY DESIGNED SWING JOINTS WITH APPROPRIATE PIPING SUPPORT CAN BE USED TO ALLOW MOVEMENT

UNLESS REQUIRED OTHERWISE BY THE CONTRACTOR'S ENGINEER, METALLIC PIPING EXPANSION COMPENSATION IS GENERALLY NOT REQUIRED FOR: PIPING RISERS LESS THAN 12M (39 FEET) IN VERTICAL HEIGHT. AND HORIZONTAL RUNS WITH STRAIGHT LENGTHS LESS THAN 11M (36 FEET) AND A TOTAL FLOATING PIPING SYSTEM LENGTH LESS THAN 30M (98 FFFT). FLOATING SYSTEMS CONSIST OF PIPING SUPPORTS ALLOWING MOVEMENT IN AT LEAST 2 DIRECTIONS (PIPE HANGERS) AND EQUIPMENT CONNECTIONS WITH FLEXIBLE HOSES.

# 3.2 DOMESTIC WATER PRESSURE TESTING

ADVISE CONSULTANT OR PROJECT MANAGER 48 HOURS MINIMUM PRIOR TO PERFORMANCE OF PRESSURE TESTS. A WATER PRESSURE TEST SHALL BE CONDUCTED PRIOR TO THE DOMESTIC WATER SYSTEM BEING PUT INTO OPERATION. AN AIR PRESSURE TEST MAY ONLY BE USED IN FREEZING CONDITIONS UNLESS ACCEPTABLE BY THE AUTHORITY HAVING JURISDICTION.

WATER PRESSURE TESTS SHALL USE ONLY POTABLE WATER FOR TESTING OF DOMESTIC WATER SYSTEMS. THE DOMESTIC WATER SYSTEM SHALL BE ABLE TO WITHSTAND WITHOUT LEAKING. A WATER PRESSURE AT LEAST EQUAL TO THE MAXIMUM IN-SERVICE PRESSURE. DURATION OF A WATER PRESSURE TEST SHALL BE AS RECOMMENDED BY THE PIPING AND FITTING MATERIAL MANUFACTURER.

DURING FREEZING CONDITIONS. AN AIR PRESSURE TEST MAY BE USED FOR DOMESTIC WATER SYSTEM TESTING. THE DOMESTIC WATER SYSTEM SHALL BE ABLE TO WITHSTAND AN AIR PRESSURE OF NOT LESS THAN 700 KPA (100 PSI) OR THE SYSTEM MAXIMUM IN-SERVICE WORKING PRESSURE, WHICHEVER IS GREATER, FOR AT LEAST 2 HOURS WITHOUT A DROP IN PRESSURE. IF A MANUFACTURER OF THE PIPE AND FITTINGS BEING TESTED STATES

AN AIR PRESSURE TEST IS NOT RECOMMENDED, A WATER PRESSURE TEST SHALL BE PERFORMED. ALL TEST PRESSURES USED FOR BOTH WATER AND AIR PRESSURE TESTING SHALL NOT EXCEED THE PIPE

### MANUFACTURERS RECOMMENDED MAXIMUM TEST PRESSURES. ANY LEAKS SHALL BE CORRECTED AND THE SYSTEM RETESTED.

PRIOR TO TESTS, ISOLATE EQUIPMENT AND OTHER PARTS WHICH ARE NOT DESIGNED TO WITHSTAND TEST PRESSURE OR MEDIA.

INSULATE OR CONCEAL WORK ONLY AFTER APPROVAL AND CERTIFICATION OF TESTS BY AUTHORITIES

# SUBMIT COPIES OF PRESSURE TEST REPORTS FOR ALL SECTIONS OF PIPING

# 3.3 STORM AND SANITARY DRAINAGE AND VENT PIPING TESTING

EXCEPT FOR AN EXTERNAL LEADER OR A FIXTURE OUTLET PIPE, PIPES IN A DRAINAGE OR VENT SYSTEM SHALL BE HANGERS AND SUPPORTS TO SMACNA STANDARDS. CAPABLE OF WITHSTANDING, WITHOUT LEAKAGE, A WATER PRESSURE TEST, AIR PRESSURE TEST AND FINAL TEST PIPES IN A DRAINAGE SYSTEM SHALL BE CAPABLE OF MEETING A BALL TEST.

A WATER PRESSURE TEST SHALL CONSIST OF A WATER COLUMN OF 3 M (10 FT.) FOR A DURATION OF NO LESS MAXIMUM SIZE DUCT SUPPORTED BY STRAP HANGER: 500 MM. THAN 15 MINUTES OR AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.

DURING FREEZING CONDITIONS AN AIR PRESSURE TEST MAY BE USED AND IT SHALL BE CONDUCTED IN ACCORDANCE WITH THE PIPE MANUFACTURER'S INSTRUCTIONS. THE PIPING SYSTEM SHALL BE CAPABLE OF WITHSTANDING AN AIR PRESSURE OF 35 KPA (5 PSI) WITHOUT LEAKAGE FOR A MINIMUM DURATION OF 15 MINUTES

POWER ACTUATED FASTENERS AND "DROP-IN" ANCHORS SHALL NOT BE USED. OR AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION

ANY LEAKS SHALL BE CORRECTED, AND THE SYSTEM RETESTED

# 3.4 VALVES

INSTALL ALL VALVES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

INSTALL VALVES IN ACCESSIBLE LOCATIONS WITH STEMS UPRIGHT OR ANGLED 45° ABOVE HORIZONTAL UNLESS APPROVED OTHERWISE. VALVES MUST BE ACCESSIBLE WITHOUT REMOVING ADJACENT PIPING. INSTALL CONTROL VALVES WITH THEIR STEMS UPRIGHT UNLESS APPROVED OTHERWISE AND WITH ADEQUATE

CLEARANCE FOR REMOVAL OF ACTUATORS. PROVIDE STEM EXTENSIONS ON ALL INSULATED VALVES

PROVIDE FULL PORT BALL VALVES IN PIPING 50 MM (2") AND SMALLER AND BUTTERFLY VALVES IN PIPING 65 MM  $(2-\frac{1}{2})$  AND LARGER FOR SHUT-OFF, EQUIPMENT ISOLATION, THROTTLING, BYPASS OR MANUAL FLOW CONTROL THROTTLING VALVES ARE NOT TO BE USED FOR SHUT-OFF; ADDITIONAL VALVES SHALL BE INSTALLED FOR

PROVIDE ISOLATION VALVES AT BRANCH TAKE-OFFS, TO ISOLATE EACH PIECE OF EQUIPMENT, UPSTREAM OF ALL METERS, GAUGES, AUTOMATIC AIR VENTS, AND AS INDICATED

USE SILENT CHECK VALVES ON DISCHARGE OF PUMPS AND IN VERTICAL PIPES WITH DOWNWARD FLOW, AND AS

USE CIRCUIT SETTING GLOBE VALVES COMPLETE WITH LOCK SHIELD TO CONTROL FLOW IN CIRCUITS, EXCEPT WHERE BALANCING COCKS ARE SPECIFICALLY SPECIFIED INSTALL BALANCING VALVES IN RETURN PIPING CONNECTIONS TO EACH TERMINAL HEATING AND COOLING UNIT

E.G. RADIATORS, UNIT HEATERS, FAN COIL UNITS, HEATING AND COOLING COILS, AND RADIANT PANELS. 3.5 PIPING INSULATION MINIMUM THICKNESS SCHEDULE - PART 9

### CLIMATIC ZONES 5, 6 & 7A 112MM (4 1/2") THICKNESS

# DOMESTIC HOT WATER & RECIRC 61°C TO 93°C (142-200°F):

PIPE DIAMETERS UP TO NPS 1-1/4 = 40MM MINIMUM THICKNESS PIPE DIAMETERS NPS 1-1/2 AND LARGER = 50MM MINIMUM THICKNESS

DOMESTIC HOT WATER & RECIRC 41°C TO 60°C (106-141°F)

PIPE DIAMETERS UP TO NPS 1-1/4 = 25MM MINIMUM THICKNESS

PIPE DIAMETERS NPS 1-1/2 AND LARGER = 40MM MINIMUM THICKNESS

DOMESTIC COLD WATER ABOVE 5°C (41°F):

THICKNESS WILL BE INCREASED BY THE RATIO OF U2/U1.

ALL PIPE DIAMETERS = 25MM MINIMUM THICKNESS NOTE: WHERE THE THERMAL CONDUCTIVITY OF A PROPOSED INSULATION IS GREATER THAN SPECIFIED, THE

U2 = PROPOSED INSULATION "K" VALUE AT THE TABLE MEAN RATING TEMPERATURE

INDOORS CONCEALED, FACTORY FINISH

INDOORS EXPOSED IN MECHANICAL ROOM AND ELSEWHERE, CANVAS JACKET

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

# 3.7 SAFES, FLASHING AND VENT TERMINALS

PROVIDE FLEXIBLE FLASHING AND METAL COUNTER FLASHING WHERE PIPING PENETRATES WEATHER OR WATERPROOFED WALLS AND FLOORS.

CPE, CHLORALOY 240 LINING OR LEAD MATERIAL MAY BE USED AT FLOOR DRAINS AND CLEANOUTS. CHLORALOY SHALL BE SOLVENT WELDED TO MANUFACTURER'S INSTALLATION INSTRUCTIONS. LEAD SHALL NOT BE USED ON ROOFS WHERE THE ROOFING MATERIAL IS APPLIED BY A TORCH-ON METHOD.

FLASH FLOOR DRAINS IN FLOORS WITH TOPPING OVER OCCUPIED AREAS WITH LEAD OR CPE MEMBRANE, A MINIMUM OF 300MM (12") CLEAR ON SIDES WITH MINIMUM 900MM X 900MM (36" X 36") SHEET SIZE. FASTEN FLASHING TO DRAIN CLAMP DEVICE

# 3.8 BACKFLOW PREVENTION DEVICES

ALL BACKFLOW PREVENTION DEVICES SHALL BE TESTED ONLY BY A CERTIFIED BACKFLOW ASSEMBLY TESTER

# **DIVISION 23 HVA**

### GENERAL

# 1.1 SYSTEM CLEANING AND CHEMICAL TREATMENT

EMPLOY SERVICES OF THE EXISTING BUILDING'S WATER TREATMENT FIRM OR IF THERE IS NOT ONE. A FIRM SPECIALIZING IN HYDRONIC SYSTEM CHEMICAL TREATMENT. THIS FIRM SHALL SUBMIT A SCHEDULE OF WORK TO BE PERFORMED, CHEMICAL TYPES AND QUANTITY TO BE USED. AT THE COMPLETION OF THE CHEMICAL TREATMENT A REPORT SHALL BE SUBMITTED TO OUTLINE THE WORK PERFORMED AND DETAILS OF PROCEDURES TO BE USED BY THE BUILDING OPERATOR FOR CONTINUED WATER QUALITY TESTING AND CHEMICAL TREATMENT. PROVIDE TEST KITS AS REQUIRED ALONG WITH ADEQUATE CHEMICALS AND REAGENTS FOR ONE YEAR OF TESTING. APPROPRIATE TEST KITS WILL BE PROVIDED TO PROPERLY TEST EACH SYSTEM INSTALLED UNDER THIS CONTRACT

CLEAN AND FLUSH ALL NEW HOT AND COLD CLOSED LOOP WATER SYSTEM PIPING. PROVIDE A CERTIFICATE FOR

# 1.2 GRILLES, LOUVERS AND DIFFUSERS

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

MANUFACTURER SHALL CERTIFY CATALOGUED PERFORMANCE AND ENSURE CORRECT APPLICATION OF AIR

OUTSIDE LOUVERS 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.

# 2.1 DUCTWORK AND ACCESSORIES

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

PROVIDE LOW 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 BOXES 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.

FABRICATE KITCHEN EXHAUST DUCTWORK IN ACCORDANCE WITH NFPA 96 STANDARD FOR VENTILATION CONTROL AND FIRE PROTECTION OF COMMERCIAL COOKING OPERATIONS. MINIMUM 1.52 MM (16GA) CARBON STEEL, WELDED AT SEAMS AND JOINTS. PROVIDE RESIDUE TRAPS AT BASE OF VERTICAL RISERS WITH PROVISIONS FOR CLEANOUT. PROVIDE ACCESS DOORS FOR DUCT CLEANING AT EVERY CHANGE OF DIRECTION AND EVERY 6 M (20')

# 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 FOLLOW 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

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

EXCEPT PROVIDE A COMBINATION OF WOVEN FABRICS AND SEALING COMPOUND FOLLOWED BY AN APPLICATION OF HIGH PRESSURE DUCT SEALANT. 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.

DUCT SEALING MEDIUM PRESSURE DUCTWORK TO 1000 PA (4"W.G.) SHALL BE THE SAME AS 500 PA DUCTWORK

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

OTHER JOINTS: HEAVY MASTIC TYPE SEALANT.

STRAP HANGERS: OF SAME MATERIAL AS DUCT BUT NEXT SHEET METAL THICKNESS HEAVIER THAN DUCT.

# TOGGLE HANGERS AND/OR STRAP HANGERS SHALL NOT BE USED

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

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 FIBER 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

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 0.76/25MM (R 4.3/IN)

BREECHING INSULATION: EXTERNAL SEMI-RIGID INSULATION, SERVICE TEMPERATURE UP TO 538°C (1000°F), GLASS 3.6 GRILLES, LOUVERS AND DIFFUSERS FIBER OR MINERAL FIBER FLEXIBLE BLANKET FOR HIGH TEMPERATURE APPLICATIONS. DENSITY 25KG/M3 (1.6PCF), PAINT DUCTWORK VISIBLE BEHIND AIR OUTLETS MATTE BLACK. MINIMUM RSI 0.25/25MM (R 1.4/IN)

### 2.5 DUCTWORK FINISH JACKETS

THERMOCANVAS JACKET: FIRE RATED, 170G (6 OZ) FIRE RETARDANT CANVAS JACKET FOR COVERING MECHANICAL INSULATION 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 MIL (22 GA.) THICK STUCCO OR SMOOTH ALUMINUM JACKETING WITH LONGITUDINAL SLIP JOINTS AND 50MM (2") END LAPS WITH FACTORY APPLIED PROTECTIVE LINER ON INTERIOR SURFACE.

2.6 FIRE RATED DUCT WRAP

REINFORCED FOIL, ULC TESTED AND LISTED ULD DESIGN FRD-19 FOR KITCHEN EXHAUST/ GREASE DUCT, ULC THE WORK OF DIVISIONS 22 AND 23. 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 GRILLES, LOUVERS AND DIFFUSERS

DRYWALL CEILINGS OR BULKHEADS.

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

FABRICATE GOOSENECKS OF MINIMUM 1.3 MM (18 GA.) GALVANIZED STEEL. MOUNT ON MINIMUM 300 MM (12 IN.) HIGH CURB BASE WHERE SIZE EXCEEDS 225 MM X 225 MM (9 IN. X 9 IN). REFER TO GRILLES AND DIFFUSER SCHEDULE FOR TYPES AND CAPACITIES.

# 2.8 EQUIPMENT

ALL EQUIPMENT SHALL BE CSA APPROVED FOR ITS INTENDED USE.

HORIZONTAL CONCEALED FAN COIL: CABINET SHALL BE MADE OF HEAVY GAUGE GALVANIZED STEEL. THE INTERIOR SURFACES SHALL BE LINED WITH [12MM (1/2") THICK STANDARD FIBERGLASS A HEAVY GAUGE GALVANIZED STEEL PLENUM SHALL ENCLOSE THE BLOWER/MOTOR ASSEMBLY WITH BOTTOM OR REAR RETURN. PROVIDE A DUCTED COLLAR FOR SUPPLY DUCT CONNECTION. PROVIDE DISPOSABLE PLEATED FILTERS TO MERV 8

ACCEPTABLE MANUFACTURERS: INTERNATIONAL ENVIRONMENTAL, TRANE, MCQUAY, WILLIAMS, ENVIRO TEC 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 FOLLIPMENT 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 RATINGS AND LOCATIONS. PROVIDE BALANCING DAMPERS WHERE INDICATED ON DRAWINGS AND AT POINTS ON LOW PRESSURE SUPPLY,

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

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.

RETURN AND EXHAUST DUCTS WHERE BRANCHES ARE TAKEN FROM LARGER DUCTS.

# DUCTWORK SHALL BE GALVANIZED STEEL UNLESS NOTED OTHERWISE

### 3.2 DUCT HANGERS AND SUPPORTS DUCT SUPPORT SHALL BE:

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

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

LENUM(4) DUCT LOCATION OMBUSTION AIR

RIGID EXTERIOR DUCT INSULATION

	FLEXIBLE EXT	ERIOR DUCT INSU	LATION			
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		
DUTDOOR 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"		

# 3.5 DUCT FINISHES TABLE

INDOORS CONCEALED; FACTORY FINISH INDOORS EXPOSED IN MECHANICAL ROOM 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

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

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 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.

# **DIVISION 25 INTEGRATED AUTOMATION**

PROVIDE A COMPLETE SYSTEM OF AUTOMATIC CONTROLS TO MATCH THE BASE BUILDING STANDARD WITH FLEXIBLE. NON-COMBUSTIBLE, BLANKET TYPE MINERAL FIBRE DUCT WRAP COMPLETELY ENCAPSULATED IN REGARD TO CONTROL DEVICES, COMPONENTS, WIRING AND MATERIALS. ALL CONTROL WORK ASSOCIATED WITH

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.

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.

# 1.4 ACCEPTABLE CONTRACTORS

### ALL CONTROLS WORK IS TO BE DONE BY THE TENDER IMPROVEMENT 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.

PROVIDE UTILITY POWER TO EMCS AS INDICATED

OWNER IF AN EXISTING THERMOSTAT NEEDS REPLACING

1.6 DESIGN REQUIREMENTS 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.

RETAIN THE SERVICES OF A QUALIFIED ELECTRICIAN TO 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 ALLOWANCES FOR BRANCH BREAKERS REQUIRED TO BMS PANELS

# 2. PRODUCTS

NOTED OTHERWISE.

# RELOCATE AND RECONNECT EXISTING THERMOSTATS AS SHOWN ON THE DRAWINGS.

PROVIDE NEW THERMOSTATS WHERE INDICATED OF BUILDING STANDARD TYPE. ENSURE OPERATING CHARACTERISTICS ARE COMPATIBLE WITH CONTROL COMPONENTS (I.E. DIRECT/REVERSE ACTING). ALL THERMOSTATS TO BE WALL OR COLUMN MOUNTED [TO MATCH EXISTING BASE BUILDING MOUNTING HEIGHT] IAT 1200MM ABOVE FINISHED FLOORI UNLESS SPECIFICALLY NOTED OTHERWISE.

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

ALL THERMOSTATS, EXISTING AND NEW, ARE TO BE CALIBRATED PRIOR TO AIR BALANCING. CONTACT BUILDING

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

### 3. EXECUTION 3.1 SEQUENCE OF OPERATION

# 1.1 FAN COILS (FC-\*)

- .1 GENERAL .1 CEILING MOUNTED FAN COILS RE-CIRCULATE ROOM AIR AND PROVIDE EITHER HEATING OR COOLING
- THROUGH A HYDRONIC CHANGEOVER VALVE TO MAINTAIN SPACE TEMPERATURE SETPOINTS. THE FAN COILS ARE DECOUPLED FROM THE SPACE OUTDOOR AIR VENTILATION. .2 RESET SUPPLY WATER TEMPERATURES BASED ON INTERIOR SENSOR FEEDBACK, TRIM AND
- 3 MAXIMUM HEATING WATER OR MINIMUM CHILLED WATER COIL DEMAND TEMPERATURES TO DETERMINE MAIN SYSTEM WATER SUPPLY TEMPERATURE SETPOINTS, BASED ON ZONE OF HIGHEST

### .4 MODULATE CONTROL VALVE WHEN THE ZONE IS NOT THE HIGHEST DEMAND ZONE. .2 RUN CONDITIONS:

- .1 SERVICE SPACE FAN COILS .1 THE FAN SHALL BE ENABLED CONTINUOUSLY.
- .2 THE CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE SETPOINTS: .2 OCCUPIED SPACE
- .1 THE FAN SHALL BE ENABLED CONTINUOUSLY IN OCCUPIED MODE. .2 THE FAN SHALL CYCLE ON DEMAND IN UN-OCCUPIED MODE. CONTROL VALVE (2-WAY UNITS) - HEATING OR COOLING ONLY:
- .1 THE BAS SHALL MODULATE THE RESPECTIVE CONTROL VALVE TO MAINTAIN THE SPACE TEMPERATURE SETPOINT.
- .1 SHUT-OFF UNITS VIA THE BMS WHEN A FIRE EVENT IS REGISTERED AT THE BMS CONTROL PANEL. ALARMS:
- (ADJ.) FOR A MINIMUM OF 30 MINUTES (ADJ.) CONTINUOUSLY .2 LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LOWER THAN THE HEATING SETPOINT BY 3°C (ADJ.) FOR A MINIMUM OF 30 MINUTES (ADJ.) CONTINUOUSLY.



.1 HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY 3°C



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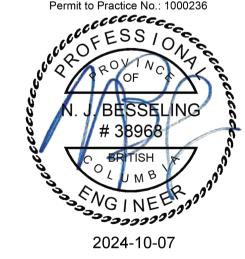


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ISSUED FOR RFP ISSUED FOR BP/RFP REVIEW ISSUED FOR BP & HP 08/23/24

SPANI POOL CONCESSION TENANT IMPROVEMENT

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CITY OF COQUITLAM

SPECIFICATIONS I

341B-005-21 06/18/24 NTS