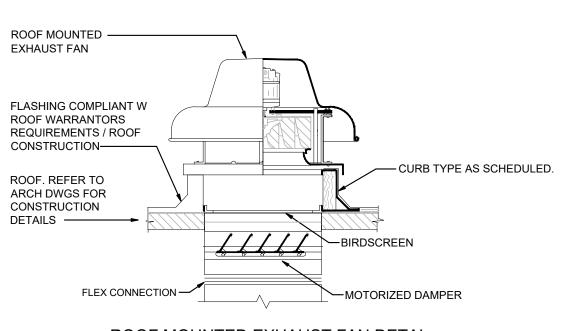
00000										14) WALL MC		TDO: 1 55						
ASE ISOLATOR KIT 10) BIRDSCREEN							CONNECT SWITCH15) BELT DFTS, DRIVES, AND PULLEYS16) INSULATRDSCREEN17) DRAIN CANSFORMER AND RELAY FOR 24V CONTROL18) LOUVEREATHER HOOD19) REVERS				RIVE MOTOR COVERS ATED HOUSING CONNECTION RED WALL BOX C/W B.D.D. ISE ACTING THERMOSTAT OTOR C/W SPEED ADJUSTMENT			TMR: TI MSW: M BAS: BL RAT: RI GDC: B INT <i>-EQ</i> M	LGT: ENERGIZE WITH ROOM LIGHTING TMR: TIME CLOCK MSW: MANUAL SWITCH BAS: BUILDING AUTOMATION SYSTEM RAT: REVERSE ACTING THERMOSTAT, 120V GDC: BY GAS DETECTION CONTROLLER INT-EQMT TAG: INTERLOCKED WITH REFERENCED EQMT OTH: OTHER. SEE REMARKS			
DWG REF	F. M/	ANUF.	SEF	RVING	MODEL	AIRFLOW [CFM] (L/s)	ESP [in. w.c.] (Pa)	FAN POWER [BHP]	MOTOR [HP]	RPM		OUND ONES]	ELECTRIC		ONTROL	CCESSORIES	REMARKS	
EF-1,EF-2		EENHECK	WOMENS	W/R 144 & G S W/R 145 & G	G-090-G	400 (189)	0.25 (62.2)	- FHP	FHP	850		5.5	120 / 1 / 60		ОТН	5, 7, 8, 9,13	CONNECT TO EXISTING CONTROL SYSTEM	
ROVED MAI	NUFACTURER	RS: GREENHEC	CK, COOK,	DELHI, PENN BAF	RY													
										Р	UMP S	CHEDUL	E					
TLET Ø [in.]	REMAR	KS																
(mm) 4 (100)		C/W INTERNAL		DWG REF	MANUF.	MODEL	FLOW [GPM] (L/s)	HEAD [ft. w.c] (kPa)	FLUID	EFF. [%]	PC	UMP)WER 3HP]	MOTOR [HP]	RPM	VOLTAGE [V / Ph / Hz			
				P-5, P-6	BELL AND GOSSETT	E-90 2AAB	48.0 (0.3)	25.00 (1.5)	WATER	64.5		0.47	3/4	1800	208 / 3 / 60	-		
				APPROVED MAN BELL AND GOSS														
														MECHANI	CAL PROJECT SCO	<u>PE:</u>		
										I	ЦОТ						RCEPTOR AND DISHWASHER IN FOOD	
		DWG RE				FLUSH 2462.016 'CAI	DET ELONGATED P	A', VITREOUS CHINA	WATER CLOSET W		HOT 	1/2") DRAIN 3" •	• MODI	FICATIONS TO EXIS	TING LABORATORY	NGS AND IN THE SPECIFICATIONS. VENT ON ROOF AS DESCRIBED ON T	
				3481.01 JPPLY: MCGUI	16 PRESSURE ASSIS	STED ELONGATED S	SIPHON JET FLUSH A	ACTION BOWL AND 4	142.016 TANK.			(13)	(75)	REPL IN TH	E SPECIFICATIONS	TING MIXING STATIC	ONS AS DESCRIBED ON DRAWINGS AN XHAUST FANS AS DESCRIBED ON	
				TYPE 3	316 STAINLESS STE	EL HINGE POSTS AN	ID TRIM.							DRAV	/INGS AND IN THE	SPECIFICATIONS.	AS DESCRIBED ON DRAWINGS & IN TH	
		BWC		30WL: AMERICAN STANDARD 6L FLUSH 3461.001 MADERA FLOOR MOUNTED, VITREOUS CHINA WATER CLOSET WITH ELONGATED SYPHON JET BOWL AND 40 MM (1 ¹ / ₂ ") TOP SPUD INLET. BARRIER FREE COMPLIANT.								1-1/4" (31)	3" (75)	 REPLACEMENT OF EXISTING 3-WAY VALVE AS DESCRIBED ON DRAWINGS & IN THE 				
				CONNE	ECTION, WALL AND	SPUD FLANGES. AD.	JUST FOR 6L FLUSH	, VACUUM BREAKER H, 25MM (1") COPPER	R SWEAT ANGLE CH	ECK				SPEC	IFICATIONS.		NED DRINKING FOUNTAIN AS	
			STOP WITH PROTECTING CAP, AND CENTER COVER BUMPER. BARRIER FREE COMPLIANT. SEAT: BENEKE 521 SOLID WHITE PLASTIC, OPEN FRONT WITH REMOVABLE BUMPERS, CONCEALED CHECK HINGE AND COVER.				NGE				DESC • REPL	RIBED ON DRAWIN ACEMENT OF EXIS	GS & IN THE SPECIF	FICATIONS. PS IN MECHANICAL ROOM AS				
		BLV	BLV LAVATORY: AMERICAN STANDARD 0954.004EC 'MURRO' VITREOUS CHINA WALL-HUNG BASIN WITH FRONT OVERFLOW, AND WALL HANGER, 100 MM (4") CENTRES.)W, AND	1/2" (13)	1/2" (13)	1 1/4" (31)		NING OF ALL EXIST IFICATIONS.	ING DUCTWORK AS	DESCRIBED IN DRAWINGS &						
		F		NON-A	ERATING SPRAY SP		ND 70 MM (3") WRIS	ASS FAUCET WITH V TBLADE HANDLES, 4'			(10)				ING OF EXISTING (PECIFICATIONS.	GAS PIPING ON ROC	F AS DESCRIBED ON DRAWINGS & IN	
									PS AND WALL FLANGES. TE STRAINER MCGUIRE 8872C, D WALL FLANGE. NCEALED ARM SUPPORT AND					<u>GENERAL</u>	NOTES: (APPLICAE	LE TO ALL DRAWING	<u>GS)</u>	
				32 MM ARRIER: WATTS	(1¼") TUBULAR 'P' T S CA SERIES HEAVY	TRAP, CLEANOUT, CH	HROME FINISH, CAS OR WALL-HUNG LAV	ST BRASS BODY AND		,				 THESE DRAWINGS ARE AN INTEGRAL PART OF THE SPECIFICATIONS WHICH ACCOMPANY THEM. ALL MATERIALS AND WORKMANSHIP SHALL BE NEW UNLESS NOTED OTHERWISE FREE OF DEFECTS, AND COMPLY WITH ALL APPLICABLE STANDARDS. 				
		LV1			CAN STANDARD 034	55 012 'I LICERNE' VII	TREOUS CHINA WAI	LL-HUNG BASIN WITH		W AND	1/2"	1/2"	1-1/4"		ALL DIMENSIONS ARE IN MILLIMETERS UNLESS N			
				WALL H	HANGER, 100 MM (4'	") CENTRES.		S FAUCET WITH VANE		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	(##)	(##)	(##)	ARCH	IITECTURAL PLANS	ENSIONS FROM EXISTING S, AND MANUFACTURER'S SHOP		
				NON-A	ERATING SPRAY SP	POUT, 0.5 USGPM, AN	ND 70 MM (3") LEVER	R HANDLES, 4" CENT	RES.					• ALL M		N RETURN AIR PLENUMS SHALL HAVE A FLAME—SPREAD IAN 25 AND A SMOKE DEVELOPED CLASSIFICATION NOT		
				RAIN: DELTA	33T260, 32 MM (1¼") CHROME PLATED (CAST BRASS DRAIN	WITH INLINE WASTE	E STRAINER AND D					MORE	THAN 50.			
			CA	ARRIER: WATTS	CA SERIES HEAVY	, -	OR WALL-HUNG LAV	IISH, CAST BRASS BC /ATORIES WITH CON		-				 OPENINGS IN EXTERIOR WALLS AND ROOF ARE TO BE PROPERLY FLASHED AND MADE WEATHERPROOF. ALL ROOF FLASHING FOR CURBS & PENETRATIONS TO COMPLY WITH ROOF 				
		LV2	LA	AVATORY: AMERI	CAN STANDARD 095	54.004EC 'MURRO' VI		ALL-HUNG BASIN WIT)W, AND	1/2"	1/2"	1 1/4"	WARF	RANTOR'S REQUIRI	EMENTS.		
			FA	AUCET: CHICAG NON-A	ERATING OUTLET. D	Ý INGLE 4-1/4 INCH (10) DECK MOUNT, 4 INCH	H (200mm) CENTRE	ET. 0.5 GPM (1.9 LPM S, CERAMIC CARTRII 7.1 CODE COMPLIAN	ÓGE WITH VOLUME	CONTROL &	(13)	(13)	(31)	PROV NOTE	IDED BY APPROPR D OTHERWISE.	UTTING / PATCHING FOR MECHANICAL WORK SHALL BE ROPRIATE TRADE(S) AT CONTRACTOR'S EXPENSE UNLESS E. JILDING COMPONENTS DAMAGED BY WORK OF THIS TRADE		
			รเ	NSF/AN	NSI 372 LOW LEAD C	CONTENT		E LOCKSHIELD STOP						THE C	CONSULTANT SATIS	FACTION. F & ASSOCIATED DU	CTWORK, PIPING, APPURTENANCES	
			w	ASTE: MCGUI MCGUI	RE 155A, 32 MM (1½	4") CHROME PLATED 1⁄4") TUBULAR 'P' TRA		IN WITH OFFSET INLI ROME FINISH, CAST E						EQUII TYPE	PMENT INSTALLATI AND FIRE RATING	ONS & SERVICE. EN	SURE PROPER ACCESS DOOR SIZE,	
		KS SINK: F		NK: FRANK UNDEF	E MODEL LBD6408 I	DOUBLE SINK, 20 GA	L, TWO CRUMB CUF	AINLESS STEEL, WITH STRAINERS IN BAC 1"L 31"W X 8"D). BACH	K OF BOWLS, AND	DRILLED	1/2" (##)	1/2" (##)	1-1/2" (38)	TO AV WELL COOF	 COORDINATE ALL WORK WITH OTHER TRADES AND SUPPLIERS/MANUFACTUR TO AVOID INTERFERENCES AND CONFLICTS BETWEEN SERVICES. PLAN WORK WELL IN ADVANCE TO ELIMINATE INSTALLATION AND COORDINATE DIFFICULT COOPERATE WITH OTHER TRADES ON SITE TO RESOLVE INTERFERENCES TO COMPENDED TO THE THE DRAY STATE. 			
			FA	FOR 20 AUCET: DELTA SPOUT	00 MM (8") DECK-MO TECK 26T3143 DEC	OUNTED FAUCET. KMOUNT FAUCET, C NT CONTROL FLOW	C.P. CAST BRASS W	C BRASS WITH 200 MM (8") SWING R, 75 MM (3") LEVER HANDLES, BRASS						 SATISFACTORILY COMPLETE THE PROJECT. DEBRIS WILL BE KEPT TO A MINIMUM. ON COMPLETION OF CONSTRUCTION PRIOR TO THE FINAL INSPECTION AND ACCEPTANCE BY THE OWNER, SIT BE CLEANED AND ALL SCRAP MATERIALS RESULTING FROM THE WORK S 				
			w				S "P" TRAP WITH CI	LEANOUT AND WALL	FLANGE.					PRIO	BE CLEANED AND ALL SCRAP MATERIALS RESULTING FROM THE WORK SHALL BE REMOVED. PRIOR TO THE FINAL INSPECTION, ALL EQUIPMENT SHALL BE CLEANED. ALL CONSTRUCTION DUST AND DIRT SHALL BE REMOVED FROM INSTALLED			
		DW	н	GH TEMPERATURE	UNDER COUNTER I	DISHWASHER PROVI	IDED BY CLIENT.				1/2" (13)	 (##)	3/4" (19)	 EQUIF EXIST TO AS AND / 	PMENT AT THE END ING INSTALLATION SSESS WORK PRIO OR EXTEND NEW	OF THE JOB. S SHOWN FOR GEN R TO BID SUBMISSIC WORK AS REQUIREI	ERAL REFERENCE ONLY. ATTEND SIT ON. INCLUDE ALL COSTS TO MODIFY O TO MEET DESIGN INTENT. VERIFY A	
		DF	MI	URDOCK MFG MOD	EL A171100F-BF1 BA	ARRIER FREE WALL I	MOUNTED DRINKIN	IG FOUNTAIN WITH P	PUSH BUTTON OPE	RATED	1/2"		3/4"			ZES & CLEARANCES		

GREASE TRAP CALCULATION USING ASPE FORMAT					<u>IMAT</u>								E	XHAUST FA	N SCHEDUL	E			
1. ON 2. HA 3. UN <u>CALCU</u>	EQUIPMENT: 1. ONE THREE COMPARTMENT POT SINK: 3 @ 20" x 24" x 12". = 74.8 GALLONS. 2. HANDSINK: 22" x 18" x 10" = 17.14 GALLONS 3. UNDERCOUNTER DISHWASHER: = 0.58 GPM CALCULATION: 1. DRAINAGE LOAD = 91.5 GALLON @ 75% FULL (THIS INCLUDES UTENSIL					ACCESSORIES: 1) HANGER RODS 2) HANGING VIBRATION ISOLATORS 3) BASE ISOLATOR KIT 4) FLEXIBLE CONNECTIONS - INLET AND/OR OUTLET 5) MOTORIZED BACKDRAFT DAMPER COORDINATE OPERATING VOLTAGE W/ DIV.16 6) ROOF CURB TO BE PROVIDED BY GENERAL CONTRACTOR AS DETAILED ON ARCHITECTURAL DWGS.					8) DISCONNECT SWITCH15) BELT DRIV9) BELTS, DRIVES, AND PULLEYS16) INSULATE10) BIRDSCREEN17) DRAIN CO11) TRANSFORMER AND RELAY FOR 24V CONTROL18) LOUVEREI12) WEATHER HOOD19) REVERSE						AT	<u>CONTROL</u> LGT: ENERGIZE WITH ROOM LIGHTING TMR: TIME CLOCK MSW: MANUAL SWITCH BAS: BUILDING AUTOMATION SYSTEM RAT: REVERSE ACTING THERMOSTAT, 120V GDC: BY GAS DETECTION CONTROLLER INT- <i>EQMT TAG</i> : INTERLOCKED WITH REFERENCED EQMT OTH: OTHER. SEE REMARKS	
DIS = 2. FL	SPLACEMENT) = 68.63 GAL DW RATE = 68.6 / = 34.6 GPM	C	,	SLODES OTENSIE		DWG RI	EF. M	IANUF.	SERVING	MODEL	AIRFLOW ESP [CFM] [in. w.c.] (L/s) (Pa)		FAN POWER [BHP]	MOTOR [HP]	RPM	SOUND [SONES]	ELECTRICAI [V / Ph / Hz]		L ACCESSORIES REMARKS
SIZE C		OWNER/CONTRA	CTOR BEFORE OR	CIFIED SINK(S). CONF RDERING GREASE IN					MENS W/R 144 & G WOMENS W/R 145 & G	G-090-G	400 (189)	0.25 (62.2)	FHP	FHP	850	5.5	120 / 1 / 60	ОТН	5, 7, 8, 9,13 CONNECT TO EXISTING CONTROL SYSTEM
						APPROVED M	IANUFACTURE	RS: GREENHE	CK, COOK, DELHI, PENN BAR	RRY									
			GREASE IN	TERCEPTOR	SCHEDULE										PU	IMP SCHEDU	IF		
WG REF	MANUF.	MODEL	CAPACITY [lbs] (kg)	FLOW RATE [GPM] (L/s)	INLET Ø [in.] (mm)	OUTLET Ø [in.] (mm)		RKS				FLOW	HEAD		EFF.	PUMP	MOTOR		OLTAGE
GI-101	WATTS	WD-135	70.0 (31.8)	35.0 (2.2)	4 (100)	4 (100)	- PROVIDE FLOW CON	C/W INTERNAL	DWG REF	MANUF.	MODEL	[GPM] (L/s)	[ft. w.c] (kPa)	FLUID	[%]	POWER [BHP]	[HP]		/ Ph / Hz]
									P-5, P-6	BELL AND GOSSETT	E-90 2AAB	48.0 (0.3)	25.00 (1.5)	WATER	64.5	0.47	3/4	1800	208 / 3 / 60 -
									BELL AND GOSS	рстт Г								MECHANICAL PRO	DJECT SCOPE:
								_	NG FIXTURE SCHE	DULE						I			IT OF EXISTING GREASE INTERCEPTOR AND DISHWASHER IN FOOL
								DWG RE								HOT COLE			OOM AS DESCRIBED ON DRAWINGS AND IN THE SPECIFICATIONS. NS TO EXISTING LABORATORY VENT ON ROOF AS DESCRIBED ON
								WC	3481.0 SUPPLY: MCGU	16 PRESSURE ASSI IRE LFH172BV FLEX	_ FLUSH 2462.016 'CA ISTED ELONGATED S KIBLE CLOSET SUPPI	SIPHON JET FLUSH A	CTION BOWL ANE) 4142.016 TANK.		(13)	(75)		ND IN THE SPECIFICATIONS. NT OF EXISTING MIXING STATIONS AS DESCRIBED ON DRAWINGS A FICATIONS.
											E PLASTIC, OPEN FRI EEL HINGE POSTS AN		BLE BUMPERS, CC	NCEALED CHECK HI	INGE AND			DRAWINGS AN	NT OF EXISTING WASHROOM EXHAUST FANS AS DESCRIBED ON ND IN THE SPECIFICATIONS.
								BWC			_ FLUSH 3461.001 MA T BOWL AND 40 MM (T WITH	1-1/4" (31)	3" (75)	SPECIFICATIO	
											POSED CHROME PLA SPUD FLANGES. AD				HECK			REPLACEMEN SPECIFICATIO	NT OF EXISTING 3-WAY VALVE AS DESCRIBED ON DRAWINGS & IN T DNS.
										E 521 SOLID WHITE	CAP, AND CENTER (INGE			DESCRIBED O	IT OF EXISTING DECOMMISSIONED DRINKING FOUNTAIN AS ON DRAWINGS & IN THE SPECIFICATIONS. IT OF EXISTING LEAKING PUMPS IN MECHANICAL ROOM AS ON DRAWINGS & IN THE SPECIFICATIONS.
								BLV	LAVATORY: AMER WALL	ICAN STANDARD 09 HANGER, 100 MM (4		ITREOUS CHINA WA	LL-HUNG BASIN W	/ITH FRONT OVERFL	011,7	1/2" 1/2" 13) (13)	(31)	CLEANING OF SPECIFICATIO	ALL EXISTING DUCTWORK AS DESCRIBED IN DRAWINGS & DNS.
									NON-A COMP	ERATING SPRAY SI LIANT. NSF/ANSI 37	HEAVY DUTY CHROM POUT, 0.5 USGPM, AI 2 LOW LEAD CONTE	ND 70 MM (3") WRIST NT	BLADE HANDLES	4" CENTRES. BARR	IER FREE			THE SPECIFIC	
									DRAIN: MCGU	IRE 115A, 32 MM (1)	KIBLE LAVATORY SUF 1/4") CHROME PLATED TRAP, CLEANOUT, C) CAST BRASS DRAI	N WITH INLINE WA	STE STRAINER MCG				-	(APPLICABLE TO ALL DRAWINGS)
									CARRIER: WATTS	S CA SERIES HEAV	Y DUTY CARRIERS FO	OR WALL-HUNG LAV			PORT AND				THEM. LS AND WORKMANSHIP SHALL BE NEW UNLESS NOTED OTHERWIS ECTS, AND COMPLY WITH ALL APPLICABLE STANDARDS.
								LV1	LAVATORY: AMER WALL	ICAN STANDARD 03 HANGER, 100 MM (4		TREOUS CHINA WAL	L-HUNG BASIN W	TH FRONT OVERFLO	,	/2" 1/2" ##) (##)	1-1/4"	-	ONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE LE DRAWINGS. OBTAIN ALL DIMENSIONS FROM EXISTING
									FAUCET: DELTA	TECK 21T153 HEA	VY DUTY CHROME PI POUT, 0.5 USGPM, AI					, (""")		DRAWINGS.	RAL PLANS, SITE INSPECTIONS, AND MANUFACTURER'S SHOP
									SUPPLIES: DELTA		,,		, -						LS WITHIN RETURN AIR PLENUMS SHALL HAVE A FLAME—SPREAD MORE THAN 25 AND A SMOKE DEVELOPED CLASSIFICATION NOT 50
											4") CHROME PLATED JLAR 'P' TRAP, CLEAN								EXTERIOR WALLS AND ROOF ARE TO BE PROPERLY FLASHED AN
											Y DUTY CARRIERS FO TO STEEL BASE PLA		ATORIES WITH CO	DNCEALED ARM SUP	PORT AND			ALL ROOF FLA	IERPROOF. ASHING FOR CURBS & PENETRATIONS TO COMPLY WITH ROOF 'S REQUIREMENTS.
								LV2	FAUCET: CHICA	HANGER, 100 MM (4 GO FAUCETS 420 S	4") CENTRES. SINGLE 4-1/4 INCH (10	08mm) LEVER FAUCE	T. 0.5 GPM (1.9 LF	M) VANDAL RESISTA	(1/2" 1/2" 13) (13)	1 1/4" (31)	ALL NECESSA	ARY CUTTING / PATCHING FOR MECHANICAL WORK SHALL BE (APPROPRIATE TRADE(S) AT CONTRACTOR'S EXPENSE UNLESS
									HOT W	ATER STOP. ANSI A NSI 372 LOW LEAD (I ÀND ADÁ / ANSI 117	.1 CODE COMPLI	ANT. BARRIER FREE	COMPLIANT.			THE CONSULT	ALL BUILDING COMPONENTS DAMAGED BY WORK OF THIS TRADE T TANT SATISFACTION. EQUIPMENT & ASSOCIATED DUCTWORK, PIPING, APPURTENANCES
									BARRI WASTE: MCGU MCGU	ER FREE COMPLIAN IRE 155A, 32 MM (1) IRE 8872C, 32 MM (1	NT. ¼") CHROME PLATED 1¼") TUBULAR 'P' TR/) CAST BRASS DRAI	N WITH OFFSET IN	LINE WASTE STRAIN	IER AND			EQUIPMENT IN TYPE AND FIR	
								кs	SINK: FRANK UNDEF TAILPI	RCOATING, FACTOF ECES. OVERALL DII	DOUBLE SINK, 20 GA RY APPLIED RIM SEA MENSIONS 530MM X	L, TWO CRUMB CUP	STRAINERS IN BA	CK OF BOWLS, AND	(/2" 1/2" ##) (##)	1-1/2" (38)	TO AVOID INT WELL IN ADVA COOPERATE V	EALL WORK WITH OTHER TRADES AND SUPPLIERS/MANUFACTURE ERFERENCES AND CONFLICTS BETWEEN SERVICES. PLAN WORK ANCE TO ELIMINATE INSTALLATION AND COORDINATE DIFFICULTIE WITH OTHER TRADES ON SITE TO RESOLVE INTERFERENCES TO RILY COMPLETE THE PROJECT.
									FAUCET: DELTA SPOU		CKMOUNT FAUCET, C ANT CONTROL FLOW							PRIOR TO THE	BE KEPT TO A MINIMUM. ON COMPLETION OF CONSTRUCTION AND E FINAL INSPECTION AND ACCEPTANCE BY THE OWNER, SITE SHA AND ALL SCRAP MATERIALS RESULTING FROM THE WORK SHALL B
								DW	WASTE: MCGU		(1½") CP CAST BRAS		EANOUT AND WA	LL FLANGE.		1/2"	3/4"	PRIOR TO THE CONSTRUCTION	E FINAL INSPECTION, ALL EQUIPMENT SHALL BE CLEANED. ALL ON DUST AND DIRT SHALL BE REMOVED FROM INSTALLED AT THE END OF THE JOB.
										. SADER GOUNTER	Southoner PRUV	USED TOLIENT.				13) (##)		TO ASSESS W AND / OR EXTI	TALLATIONS SHOWN FOR GENERAL REFERENCE ONLY. ATTEND SI VORK PRIOR TO BID SUBMISSION. INCLUDE ALL COSTS TO MODIFY END NEW WORK AS REQUIRED TO MEET DESIGN INTENT. VERIFY A CT / PIPE SIZES & CLEARANCES ON SITE.
								DF	MURDOCK MFG MOD BOTTLE FILLER. ELE STAINLESS STEEL FI	CTRIC REFRIGERAT	TED. 1.1 L/S (0.8 GPM	I) FLOW, FRONT PUS	H BUTTON USING	LESS THAN 5 LBS F	ORCE.	1/2" 13) (##)	(19)	ALL EXISTINGSCHEDULE AN	S MECHANICAL EQUIPMENT TO REMAIN UNLESS NOTED OTHERWIS ND PHASE WORK TO REDUCE INTERFERENCE AND DOWNTIME OF STEMS. NOTIFY OWNER'S REPRESENTATIVE OF ALL DOWNTIME PRI

							(HAUST FAN									
LATORS - INLET AND/OR OUTLET DAMPER COORDINATE OPERATING VOLTAGE W/ DIV.16 IDED BY GENERAL CONTRACTOR AS DETAILED ON			7) 18" ROOF CUR 8) DISCONNECT 9) BELTS, DRIVE 10) BIRDSCREEN 11) TRANSFORM 12) WEATHER HO 13) SPEED CONT		 14) WALL MOUNT CONTROLLER 15) BELT DRIVE MOTOR COVERS 16) INSULATED HOUSING 17) DRAIN CONNECTION 18) LOUVERED WALL BOX C/W B.D.D. 19) REVERSE ACTING THERMOSTAT 20) ECM MOTOR C/W SPEED ADJUSTMENT 				CONTROL LGT: ENERGIZE WITH ROOM LIGHTING TMR: TIME CLOCK MSW: MANUAL SWITCH BAS: BUILDING AUTOMATION SYSTEM RAT: REVERSE ACTING THERMOSTAT, 120V GDC: BY GAS DETECTION CONTROLLER INT-EQMT TAG: INTERLOCKED WITH REFERENCED EQMT OTH: OTHER. SEE REMARKS							
ANUF.	SERV	'ING	MODEL	AIRFLOW [CFM] (L/s)	ESP [in. w.c.] (Pa)	FAN POWER [BHP]	MOTOR [HP]	RPM		OUND ONES]	ELECTRICAL [V / Ph / Hz]	со	NTROL	ACCESSORIES	ES REMARKS	
ENHECK	MENS W/R WOMENS W		G-090-G	400 (189)	0.25 (62.2)	FHP	FHP	850		5.5	120 / 1 / 60		ОТН	5, 7, 8, 9,13	CONNECT TO EXISTING CONTROL SYSTEM	
S: GREENHECH	K, COOK, DE	LHI, PENN BARI	RY			•			•							
									PUMP S	CHEDUL	E					
ŚŚ																
C/W INTERNAL ROL		WG REF	MANUF.	MODEL	FLOW [GPM] (L/s)	HEAD [ft. w.c] (kPa)	FLUID	EFF. [%]	PC	UMP DWER BHP]	MOTOR [HP]	RPM	PM VOLTAGE [V / Ph / Hz] REMARKS			
		P-5, P-6	BELL AND GOSSETT	E-90 2AAB	48.0 (0.3)	25.00 (1.5)	WATER	64.5		0.47	3/4	1800	208 / 3 / 60	-		
		PPROVED MAN														
	G FIXTI I	RE SCHED									<u>N</u>	IECHANICA	AL PROJECT SCO	DPE:		
DWG REF		SCRIPTION	-						НОТ	COLD	DRAIN				CEPTOR AND DISHWASHER IN FOOD NGS AND IN THE SPECIFICATIONS.	
WC	BOWL			FLUSH 2462.016 'CAD STED ELONGATED SII				/ITH		1/2" (13)	3" (75)			ISTING LABORATORY SPECIFICATIONS.	VENT ON ROOF AS DESCRIBED ON THE	
	SUPP			BLE CLOSET SUPPLY							•		CEMENT OF EXIS		NS AS DESCRIBED ON DRAWINGS AND	
	SEAT			PLASTIC, OPEN FRO EL HINGE POSTS ANE		LE BUMPERS, CON	CEALED CHECK HI	NGE AND			•			STING WASHROOM EX SPECIFICATIONS.	KHAUST FANS AS DESCRIBED ON	
BWC	BOWL			FLUSH 3461.001 MAD BOWL AND 40 MM (13				T WITH		1-1/4" (31)	3" (75)	SPECIF	ICATIONS.		S DESCRIBED ON DRAWINGS & IN THE	
	VALV	CONNE	CTION, WALL AND S	OSED CHROME PLAT SPUD FLANGES. ADJI	JST FOR 6L FLUSH,	25MM (1") COPPER	SWEAT ANGLE CH	IECK		(01)	•		CEMENT OF EXIS	STING 3-WAY VALVE A	AS DESCRIBED ON DRAWINGS & IN THE	
	SEAT			CAP, AND CENTER CO PLASTIC, OPEN FRO				NGE			•	DESCR	IBED ON DRAWI	NGS & IN THE SPECIF		
		AND CC	VER.								•	DESCR	IBED ON DRAWI	NGS & IN THE SPECIF		
BLV	LAVA		CAN STANDARD 095 ANGER, 100 MM (4"	4.004EC 'MURRO' VIT) CENTRES.	REOUS CHINA WAL	L-HUNG BASIN WIT	H FRONT OVERFLO	OW, AND	1/2" (13)	1/2" (13)	1 1/4" • (31)	SPECIF	ICATIONS.		DESCRIBED IN DRAWINGS &	
	FAUC	NON-AE	RATING SPRAY SP	AVY DUTY CHROME OUT, 0.5 USGPM, ANI LOW LEAD CONTEN	D 70 MM (3") WRIST						•		ECIFICATIONS.	GAS PIPING ON ROOM	F AS DESCRIBED ON DRAWINGS & IN	
	SUPP			BLE LAVATORY SUPP							<u> </u>	ENERAL N	IOTES: (APPLICA	BLE TO ALL DRAWING	<u>GS)</u>	
	DRAI	32 MM (1¼") TUBULAR 'P' T	") CHROME PLATED (RAP, CLEANOUT, CH DUTY CARRIERS FO	ROME FINISH, CAS	F BRASS BODY AND	WALL FLANGE.				•	THESE DRAWINGS ARE AN INTEGRAL PART OF T ACCOMPANY THEM.		OF THE SPECIFICATIONS WHICH		
	CARP			O STEEL BASE PLAT		ATORIES WITH CON	CEALED ARM SUPP				•	FREE C	OF DEFECTS, AN	D COMPLY WITH ALL A	BE NEW UNLESS NOTED OTHERWISE, APPLICABLE STANDARDS.	
LV1	LAVA		CAN STANDARD 035 ANGER, 100 MM (4"	5.012 'LUCERNE' VITI) CENTRES.	REOUS CHINA WALI	HUNG BASIN WITH	H FRONT OVERFLO	W, AND	1/2" (##)	1/2" (##)	• 1-1/4" (##)	DO NO	T SCALE DRAWI	NGS. OBTAIN ALL DIMI	ESS NOTED OTHERWISE ENSIONS FROM EXISTING	
	FAUC			Y DUTY CHROME PLA OUT, 0.5 USGPM, ANI								DRAWI	NGS.			
	SUPP											RATING			MS SHALL HAVE A FLAME—SPREAD DEVELOPED CLASSIFICATION NOT	
	DRAI	33T311,	32 MM (1¼") TUBUL) CHROME PLATED C .AR 'P' TRAP, CLEAN(DUTY CARRIERS FO	OUT, CHROME FINIS	SH, CAST BRASS BC	DDY AND WALL FLA	NGE.			•		NGS IN EXTERIO		ARE TO BE PROPERLY FLASHED AND	
	CARF	PIPE UF	PRIGHTS WELDED T	O STEEL BASE PLAT	ES.						•		OF FLASHING F ANTOR'S REQUIF		ATIONS TO COMPLY WITH ROOF	
LV2		WALL H	ANGER, 100 MM (4"	/ -				,	1/2" (13)	1/2" (13)	1 1/4" (31)	PROVIE	DED BY APPROP		MECHANICAL WORK SHALL BE ONTRACTOR'S EXPENSE UNLESS	
	FAUC	NON-AE HOT WA	RATING OUTLET. D	NGLE 4-1/4 INCH (108) ECK MOUNT, 4 INCH 112.18.1/CSA B125.1 / ONTENT	(200mm) CENTRES	CERAMIC CARTRIE	OGE WITH VOLUME	CONTROL &				MAKE	OTHERWISE. GOOD ALL BUILD ONSULTANT SAT		AMAGED BY WORK OF THIS TRADE TO	
	SUPP	LIES: MCGUIF		BLE LAVATORY SUPP	PLIES WITH ANGLE	LOCKSHIELD STOP	S AND WALL FLANC	GES.				INSTAL PROVIE	L ALL EQUIPMEN DE MAINTENANC	NT & ASSOCIATED DU	CTWORK, PIPING, APPURTENANCES TO DR ALL ACCESS DOORS REQUIRED FOR	
	WAST	MCGUIF		") CHROME PLATED (4") TUBULAR 'P' TRAF OMPLIANT.								TYPE A	ND FIRE RATING	Э.	SURE PROPER ACCESS DOOR SIZE, ES AND SUPPLIERS/MANUFACTURERS	
KS	SINK:		COATING, FACTOR	OOUBLE SINK, 20 GAU Y APPLIED RIM SEAL, ENSIONS 530MM X 7 JNTED FAUCET.	TWO CRUMB CUP	STRAINERS IN BAC	K OF BOWLS, AND		1/2" (##)	1/2" (##)	1-1/2" (38)	WELL I COOPE SATISF	N ADVANCE TO RATE WITH OTH ACTORILY COM	ELIMINATE INSTALLAT IER TRADES ON SITE PLETE THE PROJECT.		
	FAUC	ET: DELTA SPOUT,	TECK 26T3143 DECI	KMOUNT FAUCET, C. NT CONTROL FLOW A							•	 DEBRIS WILL BE KEPT TO A MINIMUM. ON COMPLETION OF CONSTRUCTION A PRIOR TO THE FINAL INSPECTION AND ACCEPTANCE BY THE OWNER, SITE SH BE CLEANED AND ALL SCRAP MATERIALS RESULTING FROM THE WORK SHAL REMOVED. 				
	WAST	re: Mcguif	RE 8912CB, 40 MM (1½") CP CAST BRASS	"P" TRAP WITH CL	EANOUT AND WALL	FLANGE.				•	PRIOR CONST	TO THE FINAL IN RUCTION DUST	AND DIRT SHALL BE F	PMENT SHALL BE CLEANED. ALL REMOVED FROM INSTALLED	
DW	HIGH	TEMPERATURE	UNDER COUNTER I	DISHWASHER PROVIE	DED BY CLIENT.				1/2" (13)	 (##)	3/4" (19)	 EQUIPMENT AT THE END OF THE JOB. EXISTING INSTALLATIONS SHOWN FOR GENERAL REFERENCE ONLY. ATTEND SITE TO ASSESS WORK PRIOR TO BID SUBMISSION. INCLUDE ALL COSTS TO MODIFY AND / OR EXTEND NEW WORK AS REQUIRED TO MEET DESIGN INTENT. VERIFY AL 				
DF	BOTT	LE FILLER. ELEC	TRIC REFRIGERATI	RRIER FREE WALL M ED. 1.1 L/S (0.8 GPM) IDE 10MM (3/8") SUPI	FLOW, FRONT PUSI	H BUTTON USING LE	ESS THAN 5 LBS FO	ORCE.	1/2" (13)	 (##)	3/4" (19)	 AND / OR EXTEND NEW WORK AS REQUIRED TO MEET DESIGN INTENT. VERIFY ALL EXISTING DUCT / PIPE SIZES & CLEARANCES ON SITE. ALL EXISTING MECHANICAL EQUIPMENT TO REMAIN UNLESS NOTED OTHERWISE SCHEDULE AND PHASE WORK TO REDUCE INTERFERENCE AND DOWNTIME OF 				



ROOF MOUNTED EXHAUST FAN DETAL SCALE: N.T.S.

• REMOVE ALL UNUSED, ABANDONED OR REDUNDANT PIPING, HANGERS, & ACCESSORIES BACK TO SOURCE & CAP.

DRAWINGS, GENERAL NOTES OR SPECIFICATIONS.

LOCATION & ROUTING.

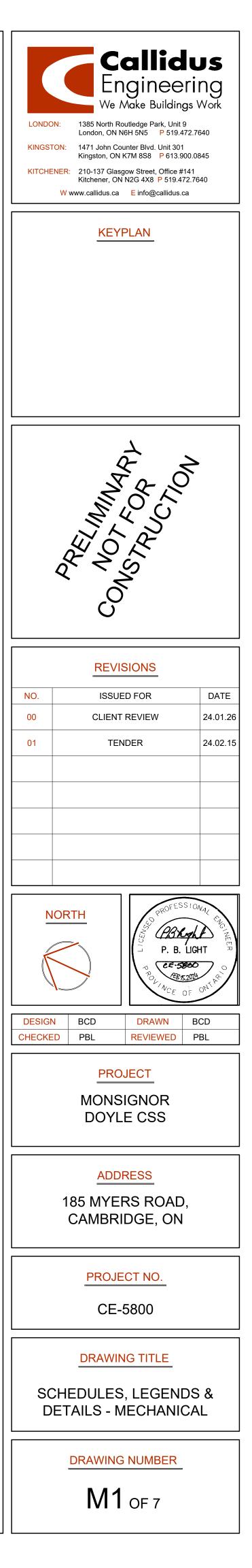
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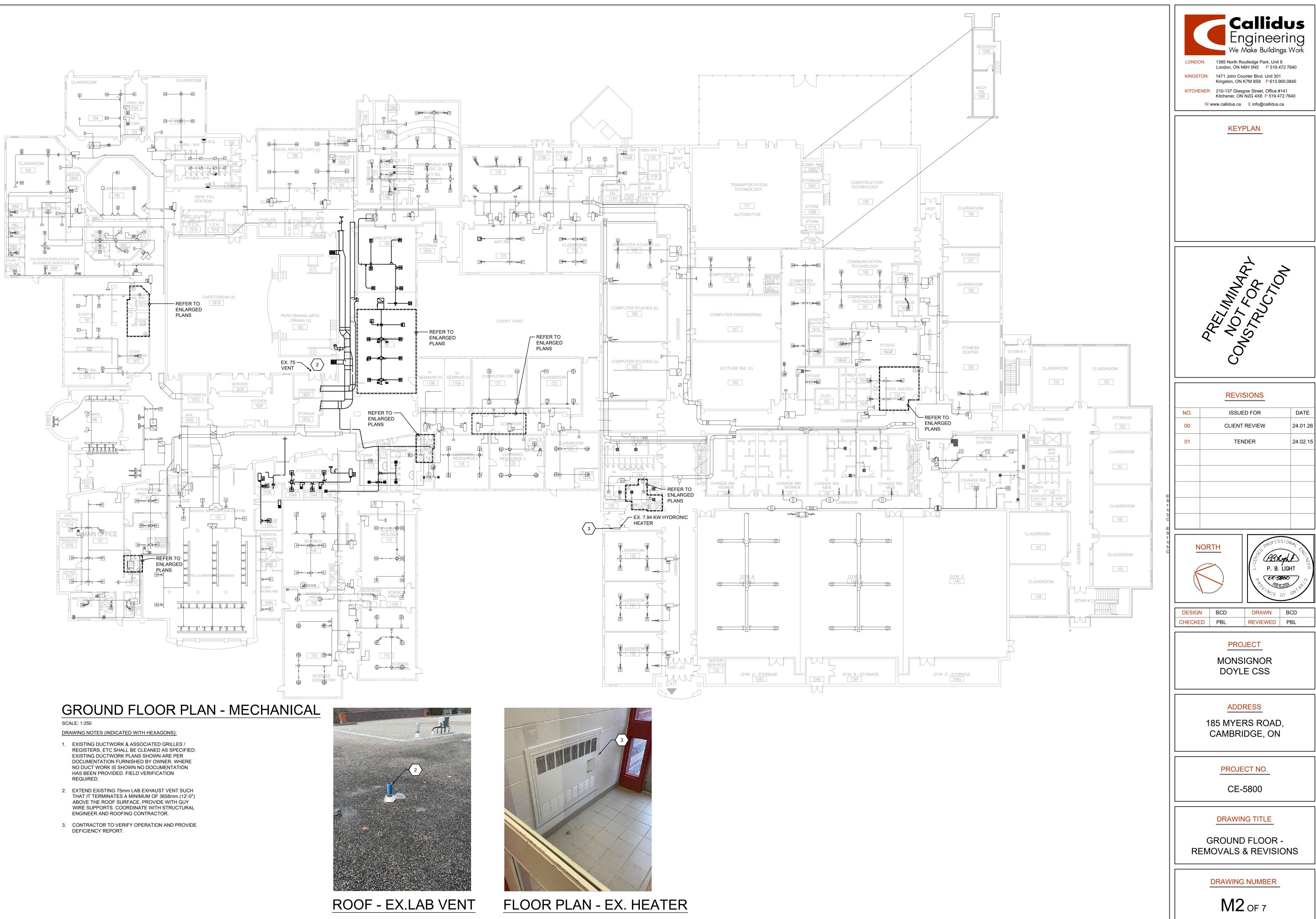
 COORDINATE WITH FACILITY MAINTENANCE DEPARTMENT FOR DISPOSAL OF REMOVED DEVICES. DISPOSE OF ALL UNWANTED DEVICES AS REQUIRED AS PER FACILITY STANDARDS.

- REMOVE EXISTING CEILING TILES AS REQUIRED TO PERFORM WORK. SAFELY STORE TILES FOR REINSTALLATION AFTER WORK & INSPECTIONS ARE COMPLETE. EXISTING DAMAGED TILES MUST BE IDENTIFIED & REPORTED TO OWNER'S REPRESENTATIVE BEFORE REMOVAL. REPLACE ANY DAMAGED TILES TO MATCH
- WHERE REPLACEMENT EQUIPMENT EXPOSES PREVIOUSLY UNFINISHED
- SURFACES, FINISH TO MATCH ADJACENT ASSEMBLIES. • ALLOW FOR SCOPING OF EXISTING CONCEALED DRAINAGE PIPING TO VERIFY
- GENERAL DEMOLITION NOTES: (APPLICABLE TO ALL DRAWINGS)
- ALL EXISTING EQUIPMENT TO REMAIN UNLESS IDENTIFIED OTHERWISE ON THE
- EXTENTS OF DEMOLITION SHOWN ARE APPROXIMATE AND THIS TRADE IS RESPONSIBLE FOR ALL DEMOLITION REQUIRED TO MEET DESIGN INTENT.

PIPING LEGEND ITEM DESCRIPTION _____ NEW ITEM EXISTING ITEM TO REMAIN _____ EXISTING ITEM TO BE REMOVED BELOW FLOOR PIPING ____ POTABLE (DOMESTIC) COLD WATER (DCW) ____ POTABLE (DOMESTIC) HOT WATER (DHW) ____ SANITARY DRAIN ——SAN— -HTWS-HOT WATER SUPPLY ---HTWR----HOT WATER RETURN CHECK VALVE 3 WAY CONTROL VALVE \bigcirc PUMP o-----ELBOW TURNED UP G_____ ELBOW TURNED DOWN E------PIPE CAP PIPE SINGLE LINE CUTOFF <u>ــــــ</u> \bullet NEW CONNECTION TO EXISTING THIS IS A STANDARD LEGEND. ALL SYMBOLS MAY NOT NECESSARILY BE USED ON DRAWINGS.

	DUCTWORK LEGEND
SYMBOL	DESCRIPTION
	NEW ITEM
	EXISTING ITEM TO REMAIN
× × ×	EXISTING ITEM TO BE REMOVED
EX	EXISTING ITEM TO REMAIN
}	DUCTWORK SHOWN DOUBLE LINE
FD	DYNAMIC FIRE DAMPER
	BALANCING DAMPER
T	THERMOSTAT/TEMPERATURE SENSOR
+	NEW CONNECTION TO EXISTING
\times	DUCT DOWN - POSITIVE / NEGATIVE PRESSURE
	DUCT UP - POSITIVE / NEGATIVE PRESSURE
\square	SUPPLY AIR GRILLE
	RETURN AIR GRILLE
?)?x?,?Ø	DIFFUSER TAG — DIFFUSER/GRILLE SIZE (AND NECK SIZE WHERE APPLICABLE) — AIR VOLUME (CFM OR I/s AS INDICATED)
	– DIFFUSER/GRILLE DESIGNATION (REFER TO SCHEDULE FOR TYPE)
	EQUIPMENT TAG
???	- EQUIPMENT TYPE
??	EQUIPMENT NUMBER (REFER TO SCHEDULES FOR INFO)
	ANDARD LEGEND. ALL SYMBOLS MAY NOT LY BE USED ON DRAWINGS.





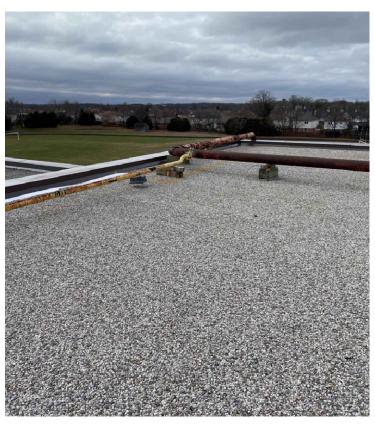




ROOF - GAS PIPING $\langle 5 \rangle$ SCALE: 1:250



MACH. RM - PUMP $6\langle 4 \rangle$ SCALE: 1:250



ROOF - GAS PIPING (5) SCALE: 1:250



MACH. RM - PUMP 5 SCALE: 1:250



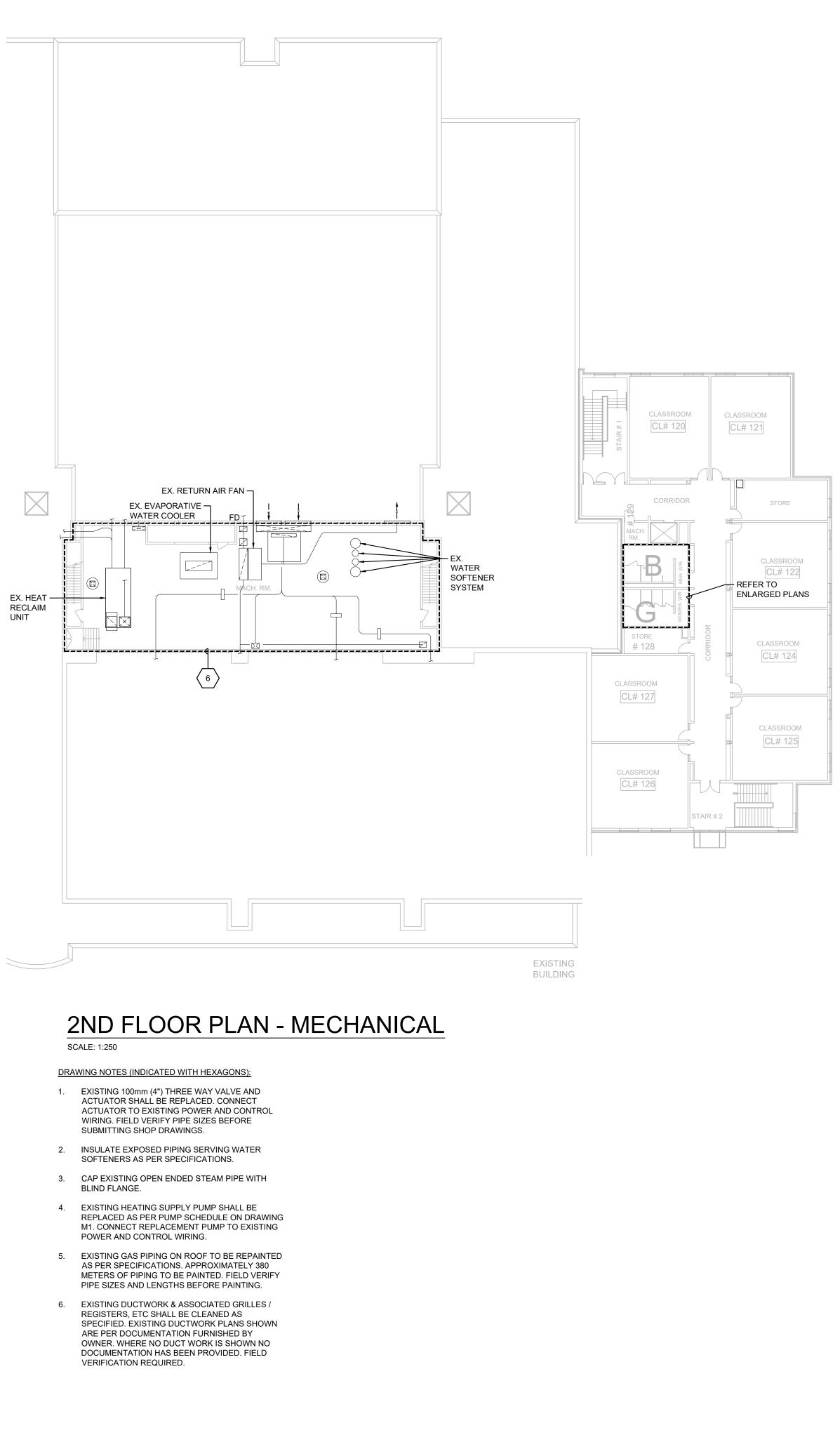
MACH. RM - WATER SOFTENER PIPING $\langle 2 \rangle$

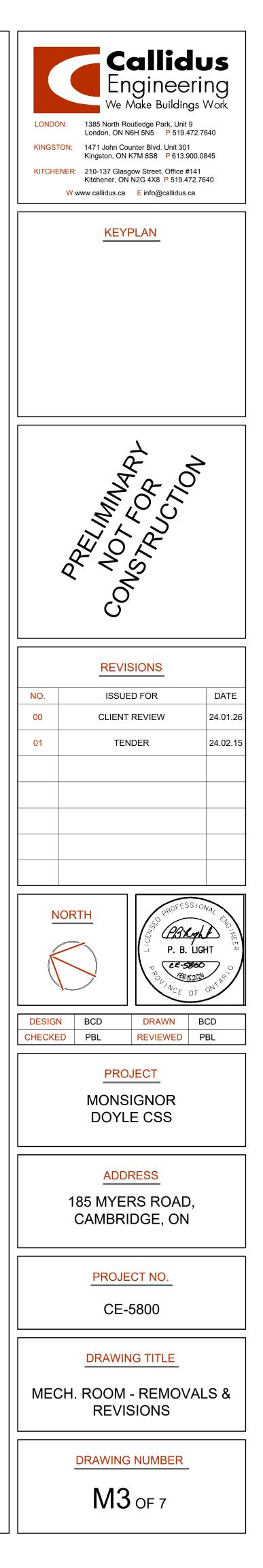


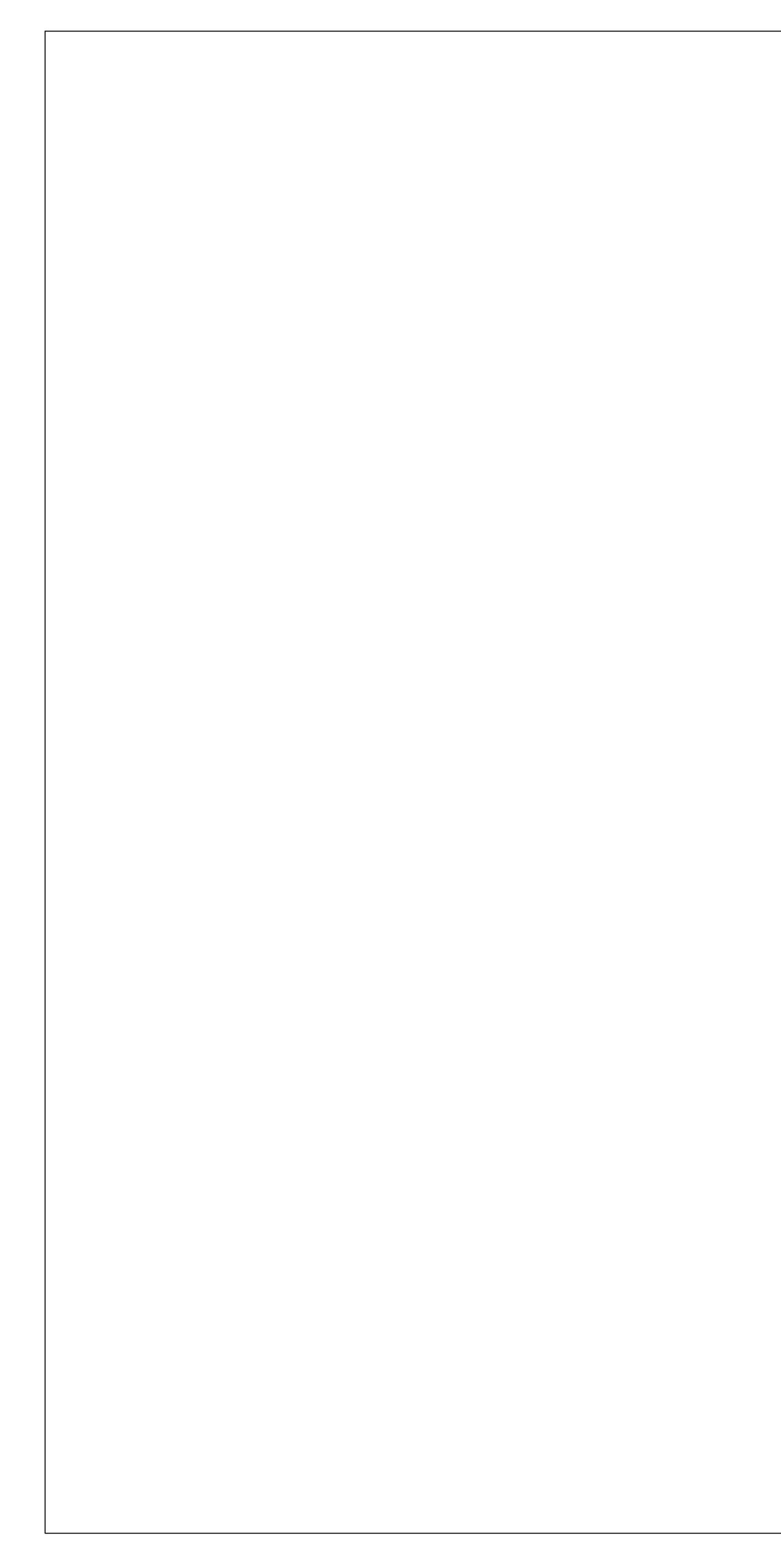
MACH. RM - STEAM $\underline{\mathsf{PIPE}}{}^{3}$ SCALE: 1:250

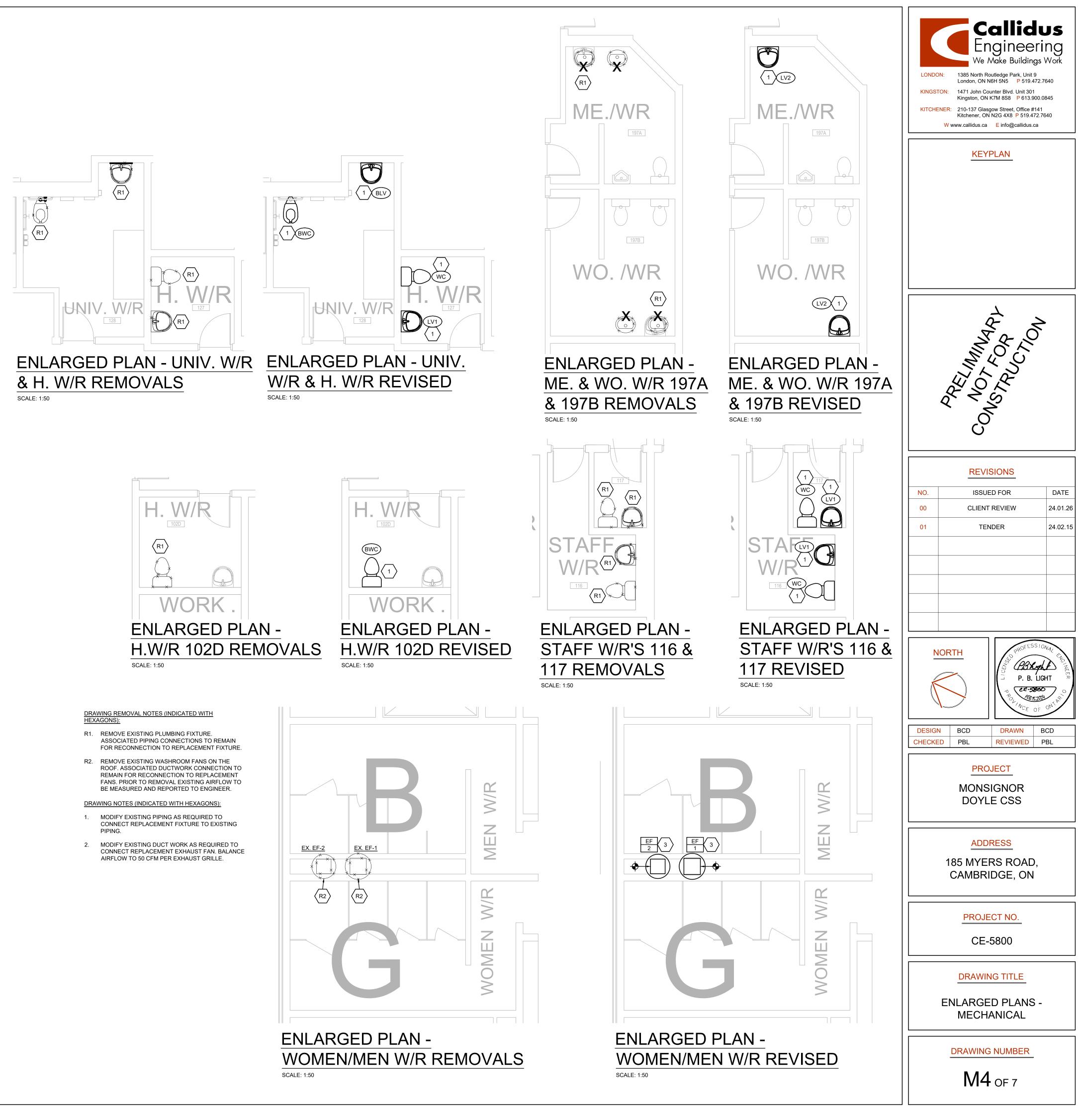


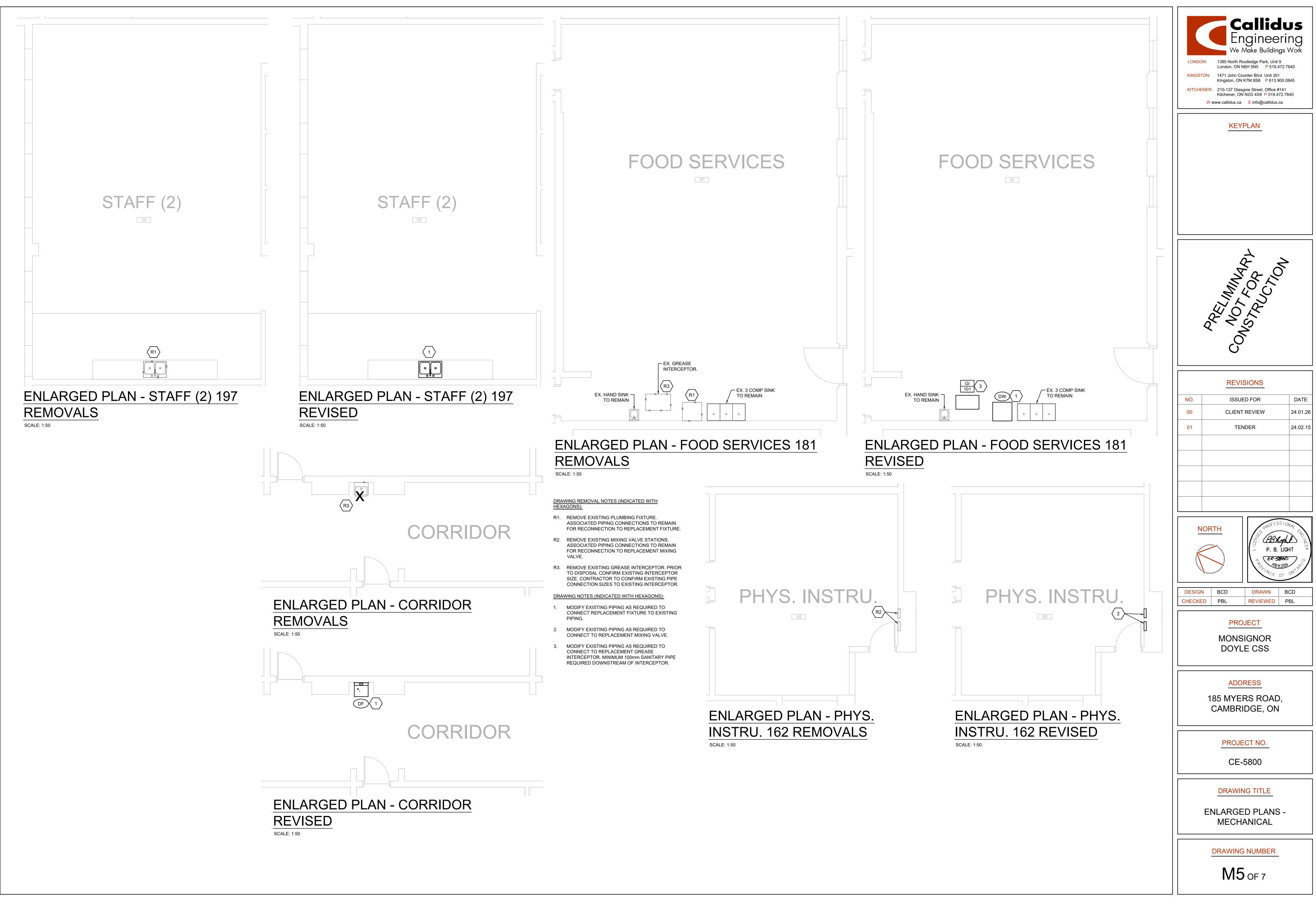
MACH. RM - 3 WAY SCALE: 1:250





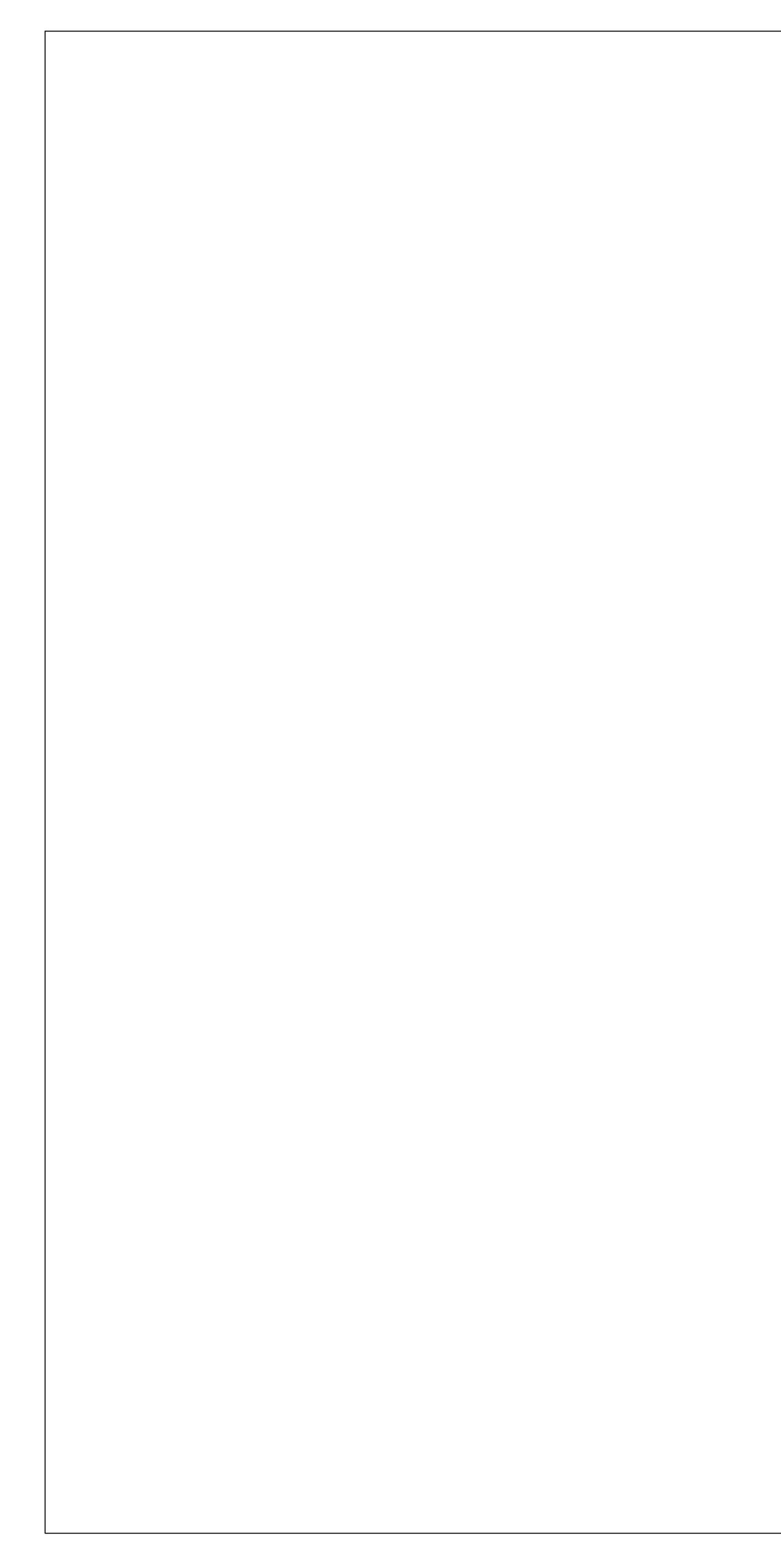






	ANICAL GENERAL REQUIREMENTS:		1.24 2	OPERAT	EACH SUBMISSION, AS EVIDENCE THAT DRAWING HAS BEEN CHECK AGAINST REQUIREMENTS AS CALLED FOR IN SPECIFICATIONS AND I ION AND MAINTENANCE INSTRUCTION MANUALS:
-	1.1.1. MAKE SITE VISIT(S) AS NECESSARY BEFORE BID CLOSING TO ESTABLISH AND VERIFY ALL EXISTING CONDITIONS. MAKE ALLOWANCE FOR ANY NEW OR EXISTING SERVICE				PROVIDE PDF COPIES OF COMPLETE OPERATION AND MAINTENANC
	AND EQUIPMENT RELOCATIONS NECESSARY TO COMPLETE THE WORK AND INCLUDE IN THE BID PRICE. EXTRAS WILL NOT BE ALLOWED FOR FAILURE TO PROPERLY EVALUATE EXISTING CONDITIONS.				TO BE ORGANIZED WITH BOOKMARKS IN A FORMAT TO MATCH THE SPECIFICATION SECTIONS. ONCE MANUAL IS REVIEWED AND ACCEP PROVIDE PDF VERSION ON ELECTRONIC MEDIA
	1.1.2. THE DRAWINGS SHOW THE GENERAL INTENT OF THE WORK, NOT THE DETAILS OF INSTALLATION. CO-ORDINATE THE ROUTING AND INSTALLATION OF ALL MECHANICAL SERVICES WITH ALL EXISTING CONDITIONS, STRUCTURE AND THE WORK OF ALL OTHER TRADEC DEDIVISION INSTALLATION DEDAMINICO AS DECURED			1.24.2.2.	MANUALS SHALL INCLUDE THE FOLLOWING INFORMATION: CONTACT INFORMATION OF CONSULTANTS AND CONTRACTORS
	TRADES. PROVIDE INSTALLATION DRAWINGS AS REQUIRED. 1.1.3. DO NOT SCALE MECHANICAL DRAWINGS. TAKE FIELD DIMENSIONS PRIOR TO ANY INSTALLATION.				COMPLETE SET OF FINAL PROJECT SHOP DRAWINGS
	INSTALLATION. DESCRIPTION: PROVIDE WORK IN ACCORDANCE WITH FULL INTENT AND MEANING OF DRAWINGS AND SPECIFICATIONS. THE WORD "PROVIDE" WHERE USED IN THE CONTRACT DOCUMENTS, IS				OF COMPONENTS OPERATING INSTRUCTIONS, INCLUDING START-UP AND SHUT-DOWN
-	CONNECTIONS.				PROCEDURE MAINTENANCE INSTRUCTIONS, INCLUDING PREVENTIVE MAINTENAN
ī	<u>WORKMANSHIP:</u> PROVIDE ALL NEW MATERIALS AND EQUIPMENT WITH THE APPROPRIATE LISTING (I.E. CSA, ULC, CETL, ETC.) ALL WORKMANSHIP BY THIS TRADE SHALL BE FIRST CLASS, CONFORMING TO INDUSTRY STANDARD PRACTICES FOR SAFETY, ACCESSIBILITY, DURABILITY				INSTRUCTIONS FOR COMPONENTS OF EQUIPMENT FINAL TESTING AND BALANCING REPORT
	AND NEATNESS FOR ACCEPTANCE BY THE OWNER'S REPRESENTATIVES. SLEEVES, HANGERS, INSERTS: PROVIDE ALL SLEEVES, INSERTS AND HANGERS REQUIRED FOR THE MERINA ACCURATION OF A DATA OF				COPIES OF THE FINAL TSSA CERTIFICATES
F	THE MECHANICAL WORK/ TREAT ALL SLEEVES OR HOLES PIERCING ACOUSTICAL SEPARATIONS FOR INSTALLATIONS OF THE DIVISION TO MAINTAIN ACOUSTICAL RATING. ALL GAPS SHALL BE PACKED WITH ACOUSTICAL INSULATION AND SEALED AT BOTH ENDS WITH ACOUSTICAL CAULKING. PATCH ALL OPENINGS AROUND INSTALLATIONS OF THIS DIVISION PIERCING FIRE OR		1.24.3.	AS-BUIL	MANUFACTURERS' WARRANTIES AND GUARANTEES <u>T DRAWINGS:</u>
: 	SMOKE SEPARATIONS WITH AN APPROVED WATERTIGHT SMOKE AND FIRE STOP SEALANT. <u>NTERPRETATION:</u> DIVISION OF THE WORK AMONG SUPPLIERS OR VENDORS AND SUBCONTRACTORS IS SOLELY THE CONTRACTOR'S RESPONSIBILITY. NEITHER THE OWNER NOR			1.24.3.1.	MAINTAIN AN ACCURATE RECORD OF DEVIATIONS AND CHANGES FF CONTRACT DRAWINGS WITH RED LINE MARKINGS. TRANSFER AS-BL MARK-UPS TO DIGITAL DRAWING FORMAT. THIS PROCESS SHOULD F COMPLETED BEFORE TESTING, BALANCING AND/OR COMMISSIONING
(CONSULTANT ASSUMES ANY RESPONSIBILITY TO ACT AS AN ARBITER TO ESTABLISH SUBCONTRACT TERMS BETWEEN SECTORS OR DISCIPLINES OF WORK.			1.24.3.2.	TO THE CONSULTANT WITH THE O&M MANUALS AT COMPLETION OF THE AS-BUILT DRAWINGS SHALL HAVE A VALUE OF \$5,000 UNLESS T MECHANICAL CONTRACT VALUE IS LESS THAN \$100,000 WHICH SHAL
Ē	TRADES ON THE JOB SO THAT THE WORK MAY PROGRESS WITHOUT ANY DELAY. SCHEDULE AND PHASE DEMOLITION AND NEW WORK TO REDUCE INTERFERENCE AND DOWNTIME OF EXISTING SYSTEMS. NOTIFY OWNER'S REPRESENTATIVE OF ALL DOWNTIME PRIOR TO PROCEEDING WITH WORK.			1 24 3 3	\$3,000 VALUE. ONCE AS-BUILT DRAWINGS HAVE BEEN COMPLETED, AND REVIEWED, PAYMENT WILL BE RELEASED. THIS VALUE IS NOT IN THE AMOUNT REQUIRED BY THE CONSTRUCTION LIEN ACT. THIS PROJECT UTILIZED THE FOLLOWING DIGITAL FORMAT(S): AUTO
Ī	<u>DISCREPANCY:</u> IF A DISCREPANCY IS FOUND IN THE SPECIFICATION OR ON THE DRAWINGS, REQUEST CLARIFICATION PRIOR TO THE END OF THE QUESTION PERIOD SO THAT CLARIFICATION CAN BE PROVIDED IN WRITING.	1.25.		MENT NAM	MEPLATES: PROVIDE LAMINATED WHITE PHENOLIC PLASTIC NAMEPLA CK LETTERS FOR EQUIPMENT INSTALLED UNDER THIS DIVISION. INCL
	REGULATORY REQUIREMENTS: CONFORM TO GOVERNING MUNICIPAL AND PROVINCIAL CODES, RULES AND REGULATIONS AND/OR AUTHORITIES HAVING JURISDICTION.		SUBMI	T LIST OF	MBER AND EQUIPMENT NAME GENERALLY AS LISTED ON DRAWING SC NAMEPLATES TO CONSULTANT FOR REVIEW PRIOR TO FABRICATION ECIFIC STANDARDS, FOLLOW THESE STANDARDS.
-	CODES AND STANDARDS:	1.26.	REQUI	RED IN W	3: PROVIDE ACCESS DOOR OF AT LEAST 200 MM x 200 MM (8" X 8") IN S ALLS AND CEILINGS TO ENSURE THAT ACCESS IS PROVIDED FOR ALL LVES OR APPURTENANCES. PROVIDE ACCESS DOORS COMPATIBLE V
	BUILDING CODE, THE ONTARIO FIRE CODE AND ANY OTHER LOCAL REGULATIONS HAVING JURISDICTION OVER THE WORK OF THIS TRADE.		ADJAC IN WHI	ENT FINIS	SHES AND WHERE APPLICABLE, WITH A FIRE RATING EQUAL TO THE S LLED. WHERE ACCESS DOOR IS FIRE RATED, DOOR IS TO BE ULC LIST JGE STEEL. PROVIDE HINGED DOORS WHERE ACCESS DOOR IS 450 M
	1.9.2. WHERE A CODE OR STANDARD IS REFERENCED, THE LATEST VERSION OF THE CODE OR STANDARD REFERENCED IN THE APPLICABLE BUILDING CODE IS TO BE APPLIED.	1.27.	(18"X1	8") or laf	RGER. PROVIDE POSITIVE LATCHING SYSTEM. AND SMOKE SEAL:
Ī	<u>SAFETY:</u> COMPLY WITH ALL PROVINCIAL/FEDERAL AND/OR LOCAL SAFETY REGULATIONS, NCLUDING THE OCCUPATIONAL HEALTH AND SAFETY ACT. IN ADDITION, COMPLY WITH ALL OF THE OWNER'S HEALTH AND SAFETY REQUIREMENTS.		1.27.1.	WHICH F	E ULC LISTED FIRESTOP SYSTEM TO SEAL AROUND ALL MECHANICAL PENETRATE PART OF A BUILDING ASSEMBLY REQUIRED TO HAVE A FI
-	PERMITS AND FEES: OBTAIN ALL PERMITS REQUIRED FOR INSTALLATION OF MECHANICAL TRADES WORK, ARRANGE FOR INSPECTIONS TESTS THEREWITH AND PAY ALL COSTS FOR PERMITS, INSPECTIONS, AND ASSOCIATED FEES. THIS INCLUDES ANY TSSA INSPECTION AND/OR		1.27.2.		ANCE RATING. DETAILED SHOP DRAWINGS TO THE CONSULTANT FOR REVIEW. INCL
(CERTIFICATION. OBTAIN PERMITS IMMEDIATELY AFTER NOTIFICATION OF AWARD OF CONTRACT.				-MANUFACTURER'S TECHNICAL PRODUCT DATA AND INSTALLATION INSTRUCTIONS FOR EACH SPECIFIC TYPE AND LOCATION OF PENET
3. <u>1</u>	<u>WARRANTY:</u> PROVIDE A WRITTEN WARRANTY FOR ALL MATERIALS, EQUIPMENT AND LABOUR FOR A ONE-YEAR PERIOD TO BEGIN AT THE TIME OF SUBSTANTIAL COMPLETION. COMPLETE ALL				-CERTIFICATION THAT PROPOSED FIRESTOPPING MATERIALS AND A COMPLY WITH CAN4-S115-M
(WARRANTY REGISTRATION DOCUMENTATION ON BEHALF OF THE BUILDING OWNER. INCLUDE COPIES OF COMPLETED DOCUMENTATION IN OPERATIONS AND MAINTENANCE MANUALS.				-ULC LISTINGS WITH COPIES OF ULC DATA SHEETS FOR EACH SPEC AND LOCATION OF PENETRATION
7	CERTIFICATION: PROVIDE MANUFACTURER'S WRITTEN CERTIFICATION OF THE INSTALLATION AND OPERATION OF ALL SYSTEMS AND MAJOR EQUIPMENT.		1.27.3.		ES TO INCLUDE: SUBMISSION AND COMPLETION OF DOCUMENTATION REQUIRED BY CONFIRMING THE PROVIDED SYSTEMS HAVE BEEN INSTALLED. TES
	EXISTING SERVICE: 1.15.1. DO NOT SHUT DOWN OR MAKE CONNECTIONS TO ANY EXISTING SERVICE WITHOUT WRITTEN PERMISSION OF THE OWNER.				VERIFIED, INSPECTED AND COMMISSIONED PER CONTRACT DOCUM ARE READY FOR INTEGRATED TESTING.
	1.15.2. BE RESPONSIBLE FOR DEMOLITION AND REMOVAL OF MECHANICAL EQUIPMENT AND SERVICES DESIGNATED FOR REMOVAL ON DRAWINGS.			1.27.3.2.	PARTICIPATION OF QUALIFIED PERSONNEL IN SCHEDULED INTEGRA PROCEDURES INCLUDING OPERATION OF THE PROVIDED SYSTEMS TESTING PROCEDURES AS DESCRIBED IN INTEGRATED TESTING PL/ DIRECTED BY ITC.
7	SITE PROTECTION AND CLEANLINESS: PROTECT ALL WORK AND MATERIALS, BEFORE AND AFTER ERECTION, FROM WEATHER AND OTHER HAZARDS, AND KEEP IN A CLEAN AND ORDERLY MANNER. AVOID ACCUMULATION OF DEBRIS AS THE WORK PROGRESSES. ON COMPLETION OF			1.27.3.3.	CORRECTION OF ANY PROVIDED SYSTEM DEFICIENCIES EXPOSED D INTEGRATED TESTING.
(THE CONSTRUCTION AND PRIOR TO THE FINAL INSPECTION AND ACCEPTANCE BY THE OWNER, CLEAN UP AND REMOVE FROM THE SITE ALL SCRAP MATERIALS RESULTING FROM THE WORK OF THIS TRADE.			1.27.3.4.	PROVIDE SUBSEQUENT RE-TESTING AND RE-SUBMISSION OF REQUI DOCUMENTATION DESCRIBED HEREIN.
Ē	ADJUSTMENT AND OPERATION OF SYSTEMS: WHEN WORK IS COMPLETE, ADJUST ALL EQUIPMENT ITEMS, OF VARIOUS SYSTEMS, FOR PROPER OPERATION WITHIN FRAMEWORK OF DESIGN INTENT, AND OPERATING CHARACTERISTICS AS PUBLISHED BY EQUIPMENT	1.28.			D EQUIPMENT:
<u> </u> 	MANUFACTURER. <u>MISCELLANEOUS STEEL:</u> SUPPLY AND INSTALL MISCELLANEOUS STRUCTURAL SUPPORTS, PLATFORMS, AND BRACES, AS REQUIRED TO HANG OR SUPPORT ALL EQUIPMENT, PIPING, DUCTWORK AND SIMILAR ITEMS.			1.28.1.1.	USE MATERIALS AND EQUIPMENT AS SPECIFIED HEREIN, OR SPECIF EQUIVALENT. DESIGN OF MECHANICAL SYSTEMS HAS BEEN BASED (LISTED SUPPLIER AND MODEL NUMBER/SIZE STATED IN EQUIPMENT SCHEDULES.
. [EQUIPMENT INSTALLATION: INSTALL AND START UP ALL ITEMS OF EQUIPMENT, DEVICES AND SYSTEMS IN ACCORDANCE WITH MOST RECENT MANUFACTURER'S PUBLISHED GUIDELINES AND			1.28.1.2.	SOME ITEMS OF EQUIPMENT, ONE OR MORE ADDITIONAL NAMES OF ACCEPTABLE EQUAL MANUFACTURERS MAY BE LISTED. THE DESIGN
l E	RECOMMENDATIONS. CONTRACTOR IS RESPONSIBLE FOR ASCERTAINING MANUFACTURERS NSTALLATION GUIDELINES AND RECOMMENDATIONS. TOUCH-UP ALL SHOP PAINTED EQUIPMENT DAMAGED IN TRANSIT OR DURING INSTALLATION TO MATCH ORIGINAL SHOP FINISH.				SPACE ALLOCATION, CONNECTION DETAILS, ETC., ARE BASED ON TH PRODUCTS NAMED FIRST IN THE DESCRIPTION AND/OR SCHEDULES GENERAL APPROVAL INDICATED BY LISTING THE NAMES OF OTHER MANUFACTURERS IS TO ESTABLISH THE QUALITY OF MANUFACTURE
-	CUTTING AND PATCHING: PROVIDE ALL CUTTING AND PATCHING REQUIRED FOR THE WORK OF THIS TRADE. ALL CUTTING AND PATCHING SHALL BE PERFORMED BY TRADE SPECIALIZING IN THE MATERIAL TO BE PATCHED. INCLUDE ALL COSTS FOR CUTTING AND PATCHING RELATED TO THE WORK OF THIS TRADE IN THE DID PAPER WHERE DIDED AND DUCTO AND CULOWING PAPERING			1 29 1 2	AND IS SUBJECT TO FINAL REVIEW OF SHOP DRAWINGS, PERFORMATEST REPORTS BY CONSULTANT.
	THE WORK OF THIS TRADE IN THE BID PRICE. WHERE PIPES AND DUCTS ARE SHOWN PASSING THROUGH EXISTING WALLS, FLOORS, AND ROOF, CUT AND PATCH THE NECESSARY OPENINGS. SHOULD CUTTING, REPAIRING, AND PATCHING OF PREVIOUSLY FINISHED WORK, OF OTHER TRADES, BE REQUIRED TO ALLOW INSTALLATION OF MECHANICAL WORK, PAY ALL COSTS FOR			1.20.1.3.	AS AN EQUAL TO THOSE SPECIFIED MUST APPLY TO THE CONSULTA LEAST 10 CALENDAR DAYS BEFORE BID CLOSING DATE. REQUESTS ACCOMPANIED BY COMPLETE DESCRIPTION AND TECHNICAL DATA
-	TRADES, DE REQUIRED TO ALLOW INSTALLATION OF MECHANICAE WORK, FAT ALL COSTST OR TRADE SECTION CONCERNED TO PERFORM WORK. SPARE PARTS: PROVIDE SPARE SET OF FILTERS FOR EACH FILTER BANK. PROVIDE SPARE				ITEMS PROPOSED. DEVIATIONS FROM THE SPECIFICATIONS MUST B IN WRITING AT TIME OF APPLICATION FOR APPROVAL.
E 2. (BELTS FOR ALL EQUIPMENT THAT UTILIZES BELT DRIVES. PROVIDE ALL SPECIALITY TOOLS FOR EQUIPMENT PROVIDED FOR THIS PROJECT. CHANGES IN THE WORK: CHANGES TO THE CONTRACT REQUIRING ADDITIONS TO OR			1.28.1.4.	ITEMS OF EQUIPMENT BY MANUFACTURERS, NOT NAMED IN THE SPECIFICATIONS, MAY BE OFFERED AS ALTERNATIVES. PROPOSALS ACCOMPANIED BY FULL DESCRIPTIVE AND TECHNICAL DATA, TOGE THE STATEMENT OF AMOUNT OF ADDITION OR DEDUCTION FROM T
F	DELETIONS FROM THE WORK OF THIS DIVISION SHALL BE CARRIED OUT UPON WRITTEN REQUEST OF THE CONSULTANT. EXTRAS TO THE CONTRACT OR CREDITS SHALL BE SUBMITTED WITH A COMPLETE COST BREAKDOWN AS FOLLOWS:			1.28.1.5.	BID. AFTER EXECUTION OF THE CONTRACT, SUBSTITUTION OF EQUIPME NOT BE CONSIDERED.
	MATERIALS, QUANTITIES AND UNIT PRICES FOR ALL EQUIPMENT REQUIRED OR DELETED			1.28.1.6.	WHERE EQUIPMENT OTHER THAN THE EQUIPMENT USED AS A BASIS DESIGN, LAYOUT AND SPACE ALLOCATION IS USED, PRODUCE AND SPACE ALLOCATION IS USED, IN THE ARE
	- TOTAL MATERIAL COST - TOTAL HOURS				REVISED LAYOUTS OF EQUIPMENT, PIPES, DUCTS, ETC., IN THE ARE AFFECTED. SUBMIT THESE DRAWINGS WITH THE SHOP DRAWINGS. PRODUCE THESE DRAWINGS IS AN INDICATION BY THE CONTRACTC THEY ARE NOT REQUIRED AND THE ORIGINAL SPACE ALLOCATIONS
	HOURLY RATE (REFER TO SUPPLEMENTARY CONDITIONS AND GENERAL CONTRACT)	2. <u>TES</u>	ING ANI	D BALANC	ADEQUATE FOR THE SUBSTITUTED EQUIPMENT.
	- TOTAL OVERHEAD AND PROFIT (REFER TO SUPPLEMENTARY CONDITIONS AND GENERAL CONTRACT)	2.1.		URE TES	—
ŀ	<u>COMPLETION:</u> PRIOR TO THE FINAL INSPECTION, CLEAN ALL MECHANICAL EQUIPMENT. CLEAN ALL CONSTRUCTION DUST AND DIRT FROM INSTALLED EQUIPMENT AT THE END OF THE JOB. REPAIR ANY DAMAGE BY THE MECHANICAL TRADE TO EXISTING BUILDINGS OR EQUIPMENT, ETC			PUMPS,	E PRESSURE TESTS ON ALL PIPING INCLUDED IN THIS CONTRACT. FUI COMPRESSORS, GAUGES AND CONNECTORS NECESSARY FOR TEST
	TO THE CONSULTANTS SATISFACTION. SUBMITTALS:			TIME TH	CT HYDROSTATIC TESTS FOR A MINIMUM PERIOD OF 2 HOURS. DURIN IE PRESSURE SHALL REMAIN CONSTANT. EUMATIC TESTS, FIRST PRESSURIZE SYSTEM WITH AIR TO APPROXIM.
	1.24.1. <u>SHOP DRAWINGS:</u> 1.24.1.1. SUBMIT SHOP DRAWINGS FOR ALL EQUIPMENT SUPPLIED BY MECHANICAL		<u> </u>	ONE-HA	LF SPECIFIED PRESSURE, BUT NOT TO EXCEED 345 KPA (50 PSIG), AN NTS FOR LEAKS WITH A SOAPSUDS SOLUTION. REPAIR ANY LEAKS.
	DIVISION. SUBMIT ELECTRONIC COPIES TO CONSULTANT FOR REVIEW. 1.24.1.2. SUBMIT UNITS OF MEASURE IN EITHER METRIC OR IMPERIAL THAT MATCH			CONSUL	
	THOSE OF THE DRAWINGS. 1.24.1.3. PRIOR TO SUBMITTING ANY SHOP DRAWINGS, SUBMIT SHOP DRAWING TRACKING DOCUMENT THAT IDENTIFIES ALL SHOP DRAWINGS TO BE	2.2.			- E RESPONSIBILITY FOR TESTING, BALANCING, AND PLACING ALL AIR H
	TRACKING DOCUMENT THAT IDENTIFIES ALL SHOP DRAWINGS TO BE SUBMITTED FOR REVIEW AND APPROVAL. INCLUDE ANTICIPATED DATE OF SUBMISSION. THIS IS TO BE A LIVING DOCUMENT TO BE MAINTAINED THROUGH THE COURSE OF THE PROJECT. ATTACH AN UPDATED COPY WITH EACH SET		2.2.2.		IS IN OPERATION. INDEPENDENT BALANCING FIRM TO BALANCE AIR HANDLING SYSTEM:
	THE COURSE OF THE PROJECT. ATTACH AN UPDATED COPY WITH EACH SET OF MEETING MINUTES, INCLUDING STATUS OF EACH SUBMISSION. 1.24.1.4. PROVIDE TITLE SHEET INCLUDING PROJECT NAME, SHOP DRAWING NAME		2.2.3.		E SHEAVES AND PULLEYS AND BELTS AS REQUIRED TO ACHIEVE AIR I ED. CO-ORDINATE SUPPLY WITH EQUIPMENT MANUFACTURER.
	1.24.1.4. PROVIDE THEE SHEET INCLUDING PROJECT NAME, SHOP DRAWING NAME (INCLUDING SPECIFICATION CLAUSE REFERENCE). 1.24.1.5. EACH SHOP DRAWING MUST BEAR STAMP AND SIGNATURE OF RESPONSIBLE		2.2.4.	CONSUL	IPLETION OF TESTING AND BALANCING OF ALL SYSTEMS, SUBMIT TO TANT A PDF REPORT OF FINDINGS, INCLUDING COMPLETE DATA OF F MANCE, STATIC PRESSURES, AIR AND WATER FLOW RATES, FINAL RE
	OFFICIAL IN CONTRACTOR'S AND SUBCONTRACTOR'S ORGANIZATION, FOR				FLETS, AND AMPERE READINGS OF ALL MOTORS, TAKEN AT MOTOR TE

AT DRAWING HAS BEEN CHECKED	WHEN EQUIPMENT IS OPERATING UNDER FULL LOAD CONDITIONS.		DEVELOPED WITH NO LIMITATIONS ON SPACING.	
FOR IN SPECIFICATIONS AND DRAWINGS.	2.2.5. SUBMIT WITH EACH COPY OF REPORT, COMPLETE SETS OF DUCT LAYOUT PRINTS NEATLY MARKED IN RED INK, SHOWING ALL LOCATIONS AT WHICH TEST READINGS	4.1.5.2. MAKE SLEEVES LARGE ENOUGH TO PASS FULL THICKNESS OF PIPE COVERING WHERE SAME IS USED, AND WITH SUFFICIENT CLEARANCE BETWEEN PIPE AND SLEEVE TO ALLOW FOR ANY LATERAL MOVEMENT OF PIPING DUE TO	65 MM (2-1/2") AND LARGER - CAN/ULC-S102.2 LISTED TO A MAXIMUM OF 25 FLAME SPREAD / 50 SMOKE	
OPERATION AND MAINTENANCE	WERE TAKEN, AIR VOLUME, VELOCITY AND STATIC PRESSURE IN EACH SUPPLY AND RETURN DUCT, AND FINAL READING AT ALL OUTLETS. OBTAIN DUCT LAYOUT PRINTS	EXPANSION AND CONTRACTION.	DEVELOPED WITH RATED FIBERGLASS INSULATION.	📕 🧲 Engineerin
ISHED UNDER THIS CONTRACT. MANUAL IN A FORMAT TO MATCH THE	FOR MARK-UP PURPOSES FROM CONSULTANT.	4.1.5.3. FILL SLEEVES FOR FUTURE USE WITH LIME MORTAR.	4.3.2.1.3.2. SEAL PENETRATIONS AT FIRE SEPARATIONS PER CAN/ULC-S115.	We Make Buildings Wa
JAL IS REVIEWED AND ACCEPTED, C MEDIA	2.2.6. INSTALLATION TOLERANCES 2.2.6.1. AIR HANDLING SYSTEMS: ±5% OF DESIGN	4.1.6. <u>ESCUTCHEON PLATES:</u> PROVIDE ESCUTCHEON PLATES ON BARE PIPING PASSING THROUGH FINISHED WALLS OR FLOORS.	4.3.2.1.3.3. PIPING WITHIN A FIRE SEPARATION PER CAN/ULC-S101.	LONDON: 1385 North Routledge Park, Unit 9 London, ON N6H 5N5 P 519.472.7640
ING INFORMATION:	2.2.6.2. AIR OUTLETS / INLETS: ±10% OF DESIGN	4.1.7. <u>VALVE TAGS AND INDEXES:</u> UPON COMPLETION OF WORK, FURNISH AND INSTALL 25 MM (1") DIA. BRASS TAG AT EACH VALVE BEARING AN INDEX NUMBER DESIGNATING VALVE.	4.3.2.1.3.4. ALL FITTINGS BY TUBING MANUFACTURER.	KINGSTON: 1471 John Counter Blvd. Unit 301
NTS AND CONTRACTORS	2.2.6.3. HYDRONIC SYSTEMS: ±5% OF DESIGN	PROVIDE DIGITAL AND HARDCOPY DIRECTORY MOUNTED IN GLAZED HARDWOOD FRAME FOR EACH SYSTEM, GIVING THE VALVE INDEX NUMBER, SIZE, MAKE AND CATALOGUE	4.3.2.1.3.5. 25 YEAR CSA SYSTEM WARRANTY (INCLUDING CONSEQUENTIAL) FROM INSTALLATION DATE.	Kingston, ON K7M 8S8 P 613.900.084 KITCHENER: 210-137 Glasgow Street, Office #141
OP DRAWINGS	3. MECHANICAL INSULATION:	NO. AND "SERVICE" OF EACH VALVE AND LOCATION OF VALVE. INCLUDE SCHEMATIC SHOWING EACH VALVE ALONG WITH INDEX NUMBER FOR CROSS-REFERENCE.	4.3.2.2. APPLICATION:	Kitchener, ON N2G 4X8 P 519.472.7640
ATING SEQUENCE, INCLUDING WIRING	3.1. WHERE INSULATION THICKNESS IS NOT IDENTIFIED, COMPLY WITH ASHRAE 90.1	4.1.8. <u>PIPE IDENTIFICATION:</u>	4.3.2.2.1. ABOVE GROUND PIPING 75 MM (3") AND SMALLER:	W www.callidus.ca E info@callidus.ca
S START-UP AND SHUT-DOWN	REQUIREMENTS. 3.2. ALL PRODUCTS TO HAVE FLAME SPREAD RATING LESS THAN 25 AND SMOKE DEVELOPED	4.1.8.1. LABEL PIPING INSTALLED UNDER THIS DIVISION TO INDICATE CONTENT AND DIRECTION OF FLOW. INCLUDE OPERATING PRESSURE OR VACUUM, AS	4.3.2.2.1.1. TYPE "L" HARD DRAWN COPPER TUBING. PROVIDE SOLDER TO THREADED ADAPTERS AT SCREWED	
NG PREVENTIVE MAINTENANCE	CLASSIFICATION LESS THAN 50 IN COMPLIANCE WITH CAN/ULC-S102.	APPLICABLE.	VALVES OR EQUIPMENT.	<u>KEYPLAN</u>
EQUIPMENT	3.3. PROVIDE A CONTINUOUS VAPOUR BARRIER ON ALL COLD SYSTEMS.	4.1.8.2. ALL LABELS SHALL BE OF SUFFICIENT WIDTH TO OVERLAP ITSELF.	4.3.2.2.1.2. PEX-A FOR 38 MM (1-1/2") AND SMALLER (ON COMPLETION OF INSTALLATION THE SYSTEM SHALL BE	
RT	3.4. <u>DEFINITIONS:</u>	4.1.8.3. PROVIDE LABELS OF PLASTIC COATED TAPE, WITH SELF-ADHESIVE BACKING SURFACE. FOR INSTALLATION ON INSULATED PIPE, PROVIDE ADHESIVE	CHARGED WITH POTABLE WATER TO A PRESSURE WHICH MEETS LOCAL PLUMBING CODES. THE SYSTEM	
TES	3.5. <u>CONCEALED:</u> INSULATED MECHANICAL SERVICES AND EQUIPMENT IN SUSPENDED CEILINGS AND NON ACCESSIBLE CHASES AND FURRED IN SPACES.	SUITABLE FOR THIS APPLICATION. CONFORM WITH CAN/CGSB-24.3 AND/OR OWNER STANDARDS FOR PRIMARY LABEL COLOUR, AND WITH LEGEND AND	SHALL REMAIN AT THIS PRESSURE FOR A MINIMUM OF 24 HOURS TO ENSURE SYSTEM INTEGRITY.) PROVIDE	
GUARANTEES	3.6. <u>EXPOSED:</u> NOT CONCEALED	DIRECTION ARROWS IN BLACK. PRINT LEGEND IN FULL WHEREVER FEASIBLE, OR A RECOGNIZED ABBREVIATION OF SERVICE INVOLVED.	COPPER STUB-OUT ELBOWS AT EACH FIXTURE CONNECTION. STUB-OUT TO BE MANUFACTURED FROM	
EVIATIONS AND CHANGES FROM	3.7. INSULATION TYPES:	4.1.8.4. LOCATE LABELS AS FOLLOWS: AT EVERY END OF EVERY PIPE RUN, ADJACENT TO VALVE OR ITEM OF EQUIPMENT SERVICES. ON EACH EXPOSED PIPE	SEAMLESS COPPER TUBING WITH A MACHINED ASTM F-1807 PEX BARB CONNECTION AND SPIN SEALED OUTLET. FOLLOW MANUFACTURERS INSTRUCTIONS	
MARKINGS. TRANSFER AS-BUILT AT. THIS PROCESS SHOULD BE	3.7.1. <u>PGF - PREFORMED GLASS FIBRE:</u> FIBROUS GLASS SPLIT SECTIONAL PIPE INSULATION CONFORMING TO CAN/ULC C-S702, WITH FACTORY APPLIED VAPOUR BARRIER JACKET	PASSING THROUGH WALL, PARTITION OR FLOOR AT INTERVALS OF 15 M (50'-0") ALONG EVERY EXPOSED PIPE RUN EXCEEDING 15 M (50'-0") IN LENGTH. AT	FOR INSTALLATION.	
ING AND/OR COMMISSIONING. SUBMIT ANUALS AT COMPLETION OF PROJECT.	TO ASTM C921 AND SELF-SEAL LAP JOINT.	EVERY ACCESS POINT ON CONCEALED PIPING.	4.4. <u>HYDRONIC (HEATING):</u>	
VALUE OF \$5,000 UNLESS THE	3.7.2. FGF - FLEXIBLE GLASS FIBRE: ASTM C553 FLEXIBLE NON-COMBUSTIBLE BLANKET, WITH FACTORY APPLIED VAPOUR BARRIER JACKET TO ASTM E96/E96M. THERMAL	4.2. HANGERS AND SUPPORTS:	4.4.1. <u>REFERENCE STANDARDS:</u>	
THAN \$100,000 WHICH SHALL HAVE A S HAVE BEEN COMPLETED, SUBMITTED	CONDUCTIVITY TO ASTM C518.	4.2.1. <u>GENERAL:</u>	4.4.1.1. <u>PIPING:</u>	
EASED. THIS VALUE IS NOT INCLUDED IN RUCTION LIEN ACT.	3.7.3. <u>RGF - RIGID GLASS FIBRE:</u> ASTM C612 RIGID NON-COMBUSTIBLE BLANKET, WITH FACTORY APPLIED VAPOUR BARRIER JACKET TO ASTM E96/E96M. THERMAL CONDUCTIVITY TO ASTM C518.	4.2.1.1. PIPE HANGERS & SUPPORTS TO CSA B214 & MSS SP-58.4.2.1.2. SUPPORT OR SUSPEND ALL PIPING WITH NECESSARY HANGERS, STRUCTURAL	 4.4.1.1.1. <u>COPPER:</u> SEAMLESS WATER TUBE TO ASTM B88 / B88M. 4.4.1.1.2. STEEL: CONTINUOUS WELD OR ELECTRIC RESISTANCE WELDED 	
G DIGITAL FORMAT(S): AUTOCAD/PDF	3.7.4. CF - CELLULAR FOAM: ASTM C534/C534M, FLEXIBLE, CELLULAR ELASTOMERIC, MOULDED	4.2.1.2. SUPPORT OR SUSPEND ALL FIFING WITH NECESSART HANGERS, STRUCTURAL SUPPORTS AND/OR BRACKETS AS REQUIRED, TO PREVENT SAGGING, WARPING AND VIBRATION.	4.4.1.1.2. <u>STEEL</u> CONTINUOUS WELD ON ELECTRIC RESISTANCE WELDED BLACK CARBON STEEL CONFORMING TO ASTM A 53/A53M GRADE B.	
HENOLIC PLASTIC NAMEPLATES WITH	OR SHEET WITH ANTIMICROBIAL COATING. USE WATERPROOF VAPOUR BARRIER ADHESIVE. EXPOSED INSULATION TO HAVE WHITE FINISH.	4.2.1.3. DO NOT ALLOW LOADS, OF ANY NATURE, TO BE TRANSMITTED THROUGH	4.4.1.1.3. <u>PVC:</u> TO CSA B137.3. SOLVENT WELD JOINTS TO ASTM D2855.	$ \hat{r} \rightarrow$
AS LISTED ON DRAWING SCHEDULES. EW PRIOR TO FABRICATION. IF THE	3.8. <u>PIPING:</u>	PIPING CONNECTIONS TO EQUIPMENT.	4.4.1.1.4. <u>PEX-A:</u>	3.4.
IDARDS.	3.8.1. DO NOT INSULATE FLANGES OR UNIONS AT CONNECTION TO EQUIPMENT.	4.2.1.4. PROVIDE SUITABLY DAMPENED SPRING HANGERS FOR FIRST THREE SUPPORTS FROM EQUIPMENT CONNECTION ON PIPING SUBJECT TO	4.4.1.1.4.1. CROSSLINKED POLYETHYLENE PIPING TO CAN/CSA-B137.5.	
) MM x 200 MM (8" X 8") IN SIZE AS ESS IS PROVIDED FOR ALL	3.8.2. VALVE OPERATORS AND BALANCING VALVE TEST PORTS TO BE ACCESSIBLE WITHOUT REMOVAL OF INSULATION.		50 MM (2") AND SMALLER - CAN/ULC-S102.2 LISTED TO A	
ESS DOORS COMPATIBLE WITH RE RATING EQUAL TO THE SURFACES	REMOVAL OF INSULATION. 3.8.3. PIPE INSULATION INSERTS AND SHIELDS: PROVIDE RIGID INSERTS AND SHIELDS AT ALL	4.2.1.5. DO NOT HANG ANY PIPE, FROM ANOTHER PIPE OR FROM ROOF DECK, UNLESS SPECIFICALLY INDICATED ON DRAWINGS.	MAXIMUM OF 25 FLAME SPREAD / 50 SMOKE DEVELOPED.	
ED, DOOR IS TO BE ULC LISTED. ERE ACCESS DOOR IS 450 MM X 450 MM EM.	3.8.3. <u>PIPE INSULATION INSERTS AND SHIELDS:</u> PROVIDE RIGID INSERTS AND SHIELDS AT ALL HANGER SUPPORTS WHERE PIPING IS INSULATED. INSERT THICKNESS TO MATCH INSULATION THICKNESS. INSERT TO BE HYDROUS CALCIUM SILICATE RIGID PIPE	4.2.1.6. PROVIDE DIELECTRIC SEPARATION AS REQUIRED.	65 MM (2-1/2") AND LARGER - CAN/ULC-S102.2 LISTED TO A MAXIMUM OF 25 FLAME SPREAD / 50 SMOKE	HOR A
L m.	INSULATION. INSERT AND SHIELD TO PROTECT BOTTOM HALF OF PIPE. SHIELD TO BE FABRICATED FROM GALVANIZED STEEL. SHIELD COLOUR TO MATCH COLOUR OF	4.2.2. <u>HANGERS:</u>	DEVELOPED WITH RATED FIBERGLASS INSULATION. PRESSURE AND TEMPERATURE RATINGS: 93°C (200°F)	1 2 2 5
AROUND ALL MECHANICAL SERVICES	INSULATION FINISH. SHIELD AND INSERT LENGTH TO BE AS FOLLOWS:	4.2.2.1. FOR ALL INSULATED PIPING UP TO NPS 4, CARRYING LIQUIDS AT TEMPERATURES 10.5°C (51°F) AND HIGHER, USE STANDARD WEIGHT CLEVIS	AT 80 PSI (551 KPA), 82°C (180°F) AT 100 PSI (689 KPA).	
LY REQUIRED TO HAVE A FIRE	3.8.4. <u>NOMINAL PIPE SIZE</u> <u>INSERT LENGTH</u>		4.4.1.1.4.2. SEAL PENETRATIONS AT FIRE SEPARATIONS PER CAN/ULC-S115.	
ULTANT FOR REVIEW. INCLUDING:	3.8.5. MM (IN) 3.8.6. 40-65 (1-1/2 - 2-1/2) 250 (10)	4.2.2.2. FOR INSULATED PIPING OF NPS 4 DIA. AND LARGER, CARRYING LIQUIDS AT TEMPERATURES 10.5°C (51°F) OR HIGHER, USE ADJUSTABLE ROLLER TYPE HANGERS WITH LOCKNUTS, SUPPORT POLLERS AT BOTH ENDS WITH 2	4.4.1.1.4.3. PIPING WITHIN A FIRE SEPARATION PER CAN/ULC-S101.	
T DATA AND INSTALLATION E AND LOCATION OF PENETRATION	3.8.6. 40-65 (1-1/2 - 2-1/2) 250 (10) 3.8.7. 80-150 (3-6) 300 (12)	HANGERS WITH LOCKNUTS. SUPPORT ROLLERS AT BOTH ENDS WITH 2 ADJUSTABLE RODS WITH LOCKNUTS.	4.4.1.1.4.4. ALL FITTINGS BY TUBING MANUFACTURER.	
TOPPING MATERIALS AND ASSEMBLIES	3.8.8. 200-250 (8-10) 400 (14)	4.2.2.3. FOR INSULATED PIPING CARRYING LIQUIDS AT A TEMPERATURE OF 10°C (50°F) OR LESS, USE ELONGATED CLEVIS TYPE HANGERS.	4.4.1.1.4.5. 25 YEAR WARRANTY FROM INSTALLATION DATE.	DEVISIONS
	3.8.9. >=300 (>=12) 550 (22)	4.2.2.4. PROVIDE INSULATION PROTECTION BEARING PLATES AT ALL HANGERS AND	4.4.1.2. END FITTINGS & JOINTS:	REVISIONS
A SHEETS FOR EACH SPECIFIC TYPE	3.8.10. PIPE INSULATION TYPE AND THICKNESS:	SUPPORTS FOR ALL INSULATED PIPING.	4.4.1.2.1. SOLDERED COPPER: TO ASME B16.18 CAST BRASS OR ASME B16.22. SOLDER - WROUGHT COPPER WITH LEAD FREE SOLDER TO ASTM	NO. ISSUED FOR
	3.8.10.1. <u>PLUMBING:</u>	4.2.2.5. FOR NON-INSULATED PIPING USE CLEVIS TYPE OF WROUGHT STEEL CONSTRUCTION.		00 CLIENT REVIEW 2
	3.8.10.2. POTABLE (DOMESTIC) COLD WATER AND CITY WATER (PGF): 25 MM (1")	4.2.2.6. FOR COPPER TUBING PROVIDE COPPER COATED HANGERS.	4.4.1.2.2. THREADED: TO ASME B1.20.1. 4.4.1.2.3. SOLDER: TO ASTM B16.18.	
IAVE BEEN INSTALLED, TESTED, IED PER CONTRACT DOCUMENTS AND	3.8.10.3. POTABLE (DOMESTIC) HOT WATER (PGF):	4.2.2.7. ATTACH HANGER RODS, TO BUILDING STRUCTURE, BY MEANS OF MALLEABLE IRON BEAM CLAMPS OR CONCRETE INSERTS	4.4.1.2.3.SOLDER: TO ASTM B16.18.4.4.1.2.4.COLD PRESS: TO ASME B16.3 WITH FACTORY INSTALLED EPDM,	01 TENDER 2
EL IN SCHEDULED INTEGRATED TEST	<=32 MM (1-1/4") - 25 MM (1")	4.2.3. <u>HANGER SPACING:</u>	4.4.1.2.4. <u>COLD PRESS.</u> TO ASME BID.5 WITT PACTOR HISTALLED EPDM, INSTALLED USING PROPER TOOL, ACTUATOR, JAWS, AND RINGS AS INSTRUCTED BY THE PRESS FITTING MANUFACTURER.	
F THE PROVIDED SYSTEMS DURING N INTEGRATED TESTING PLAN AND AS	>=40 MM (1-1/2") - 40 MM (1-1/2")	4.2.3.1. FOR HORIZONTAL RUNS OF PLUMBING AND DRAINAGE PIPING COMPLY WITH	4.4.1.2.5. <u>SOCKET WELD:</u> TO ASTM A105/A-105M & ASME B16.1.	
	3.8.10.4. STORM AND SANITARY DRAIN (PGF): 25 MM (1")	HANGER SPACING REQUIREMENTS OF BUILDING CODE.	4.4.1.2.6. <u>GROOVED:</u> CSA B242 TO ASTM A-356 WITH GRADE 'E' EPDM	
M DEFICIENCIES EXPOSED DURING	3.8.10.5. <u>HOT WATER HEATING (PGF):</u> <=32 MM (1-1/4") - 40 MM (1-1/2")	4.2.4. FOR HORIZONTAL RUNS OF COPPER TUBING FOR SERVICES OTHER THAN PLUMBING, DO NOT EXCEED 1.8 M (6'.) BETWEEN HANGERS UNLESS SPECIFICALLY NOTED.	GASKETS RATED FOR -34°C TO 120°C (-30°F TO 250°F)	
RE-SUBMISSION OF REQUIRED	<=32 MM (1-1/2) - 40 MM (1-1/2) >=40 MM (1-1/2") - 50 MM (2")	4.2.5. FOR HORIZONTAL RUNS OF PIPING FABRICATED OF PVC FOR SERVICES OTHER THAN PLUMBING, DO NOT EXCEED 1.22 M (48")	 4.4.1.2.7. <u>FLANGED:</u> TO ASTM B16.1. 4.4.1.2.8. COUPLINGS: HINGED, TWO PIECE FLANGES, SHOULDERED OR 	
	3.8.10.6. <u>COMPLETELY INSULATE THE FOLLOWING SYSTEMS:</u>	PLUMBING, DO NOT EXCEED 1.22 M (48") 4.2.6. IN A HORIZONTAL RUN, PEX TUBING SHALL BE SUPPORTED AT INTERVALS NOT	4.4.1.2.8. <u>COUPLINGS:</u> HINGED, TWO PIECE FLANGES, SHOULDERED OR KEYED CAST DUCTILE IRON CONFORMING TO ASTM A-536 GRADE 65-45-12 AND LOCK BOLT. FLANGE BOLTING - ZINC PLATED HEX	
	-POTABLE (DOMESTIC) COLD WATER	EXCEEDING 800 MM (32"), UNLESS OTHERWISE SPECIFIED BY THE MANUFACTURER.	HEAD MACHINE BOLTS AND HEX NUTS CONFORMING TO ASTM A 307-97 CLASS A.	
ECIFIED HEREIN, OR SPECIFIED	-POTABLE (DOMESTIC) HOT WATER	4.3. MATERIALS OF CONSTRUCTION:	4.4.1.2.9. FLANGED: CLASS 150 FORGED STEEL SLIP-ON OR WELDNECK	
SYSTEMS HAS BEEN BASED ON FIRST SIZE STATED IN EQUIPMENT	-POTABLE (DOMESTIC) HOT WATER RE-CIRCULATION	4.3.1. SANITARY AND INDIRECT DRAIN (INCLUDING VENTING):	RAISED FACE TYPE CONFORMING TO ASTM A 181/A181M-95B GRADE 1 AND ASME B16.5. 1.6 MM (1/16") EPDM GASKETS FOR ANSI CLASS	NORTH
	-CONDENSATE DRAINS	4.3.1.1. <u>REFERENCE STANDARDS:</u>	150 . SEMI-FINISHED HEX HEAD MACHINE BOLTS AND SEMI-FINISHED HEX NUTS, BOTH OF CARBON STEEL CONFORMING TO ASTM A 207 07 CLASS A	
ORE ADDITIONAL NAMES OF MAY BE LISTED. THE DESIGN, LAYOUT,	-HOT WATER HEATING	 4.3.1.1.1. <u>CAST IRON:</u> TO CSA B70. MECHANICAL FITTINGS TO CSA B602. 4.3.1.1.2. COPPER, DWV: HARD DRAWN COPPER DRAINAGE TUBE 	307-97 CLASS A. 4.4.1.2.10. PEX: TO ASTM F1807-8 PEX F1960 BARB ENDS	
NLS, ETC., ARE BASED ON THE IPTION AND/OR SCHEDULES. THE ING THE NAMES OF OTHER FOUND	3.9. <u>EQUIPMENT:</u> INSULATE ALL EQUIPMENT LISTED BELOW THAT IS CONNECTED TO PIPING SYSTEMS. PROVIDE 50 MM (2") OF INSULATION ON HOT EQUIPMENT UNLESS NOTED	4.3.1.1.2. <u>COPPER, DWV:</u> HARD DRAWN COPPER DRAINAGE TUBE CONFORMING TO ASTM B 306 WITH WROUGHT COPPER OR CAST BRASS SOLDER JOINT DRAINAGE FITTINGS TO ASME B16.29 OR	4.4.1.2.10. PEX: IO AS IM F1807-8 PEX F1960 BARB ENDS 4.4.1.2.11. PEX-A FITTINGS COMPRESSION: 25 MM (1") THROUGH 100 MM (4")	2 CE-5860 Po CE-5860 Po CE-5860
FING THE NAMES OF OTHER EQUAL EQUALITY OF MANUFACTURE ONLY HOP DRAWINGS, PERFORMANCE DATA,	OTHERWISE. PROVIDE 20MM (3/4") OF INSULATION ON COLD EQUIPMENT UNLESS NOTED OTHERWISE. DO NOT INSULATE OVER TOP OF NAMEPLATES AND ASME STAMPS. WHERE	ASME B16-29.	4.4.1.2.11. <u>PEX-A FITTINGS COMPRESSION</u> . 25 MM (1) THROUGH 100 MM (4) NOMINAL PIPE SIZE: SDR9 FITTING CONSISTING OF A DOUBLE O-RING INSERT WITH A COMPRESSION SLEEVE TIGHTENED AROUND	NCE OF O
D. S. MARINOO, I LINI ONIMANUE DATA,	EQUIPMENT REQUIRES SERVICE, PROVIDE EASILY REMOVABLE INSULATION THAT CAN BE REMOVED AND REINSTALLED TO ALLOW FOR REQUIRED SERVICE.	4.3.1.1.3. <u>PVC, DWV:</u> TO CAN/CSA-B182.1 OR B182.2. RUBBER RING GASKETS INTEGRAL WITH BELL OR SOLVENT WELD TO ASTM D2564.	THE PIPE AND INSERT.	
ITEMS OF EQUIPMENT FOR APPROVAL T APPLY TO THE CONSULTANT AT	3.10PUMP BODIES	4.3.1.1.4. <u>PVC, SYSTEM 15:</u> TO CSA B182.2. FLAME SPREAD RATING NOT	4.4.1.2.12. 1.1.1.1.4. ALL PEX ELBOWS, ADAPTERS, COUPLINGS, PLUGS, TEES: BRASS ASTM 1960 COLD-EXPANSION BY PIPE MANUFACTURER	DESIGN BCD DRAWN BCI
CLOSING DATE. REQUESTS MUST BE TON AND TECHNICAL DATA ON THE	3.11. SURFACE FINISHES:	GREATER THAN 25 PER CAN/ULC 102.2 WITH CERTIFICATION LABEL.	UTILIZING ING COLD-EXPANSION PEX-A REINFORCING RINGS. PEX TO METAL TRANSITIONS BY PIPE MANUFACTURER. TO ASTM F876.0.	CHECKED PBL REVIEWED PBI
E SPECIFICATIONS MUST BE STATED R APPROVAL.	3.11.1. <u>PIPING:</u>	4.3.1.1.5. <u>PVC, XFR:</u> TO CSA B182.2. FLAME SPREAD RATING NOT GREATER THAN 25 & SMOKE DEVELOPED CLASSIFICATION NOT GREATER THAN 50 PER CAN/ULC 102.2 WITH CERTIFICATION LABEL.		
ERS, NOT NAMED IN THE	3.11.1.1. <u>EXPOSED INTERIOR PIPING:</u> FINISH EXPOSED INSULATED PIPING, VALVES AND FITTINGS WITH PVC JACKETING. PVC MUST HAVE ATTAINED 25/50 FIRE RATING,	THAN 50 PER CAN/ULC 102.2 WITH CERTIFICATION LABEL.		PROJECT
ALTERNATIVES. PROPOSALS MUST BE ND TECHNICAL DATA, TOGETHER WITH ON OR DEDUCTION FROM THE BASE	BASED ON CAN/ULC-S102-M88 TESTING.	4.3.1.2.1. BURIED SECTIONS WITHIN BUILDING AREA AND TO 1.5M (5'-0")		MONSIGNOR
IN ON DEDUCTION FROM THE BASE	3.11.1.2. <u>SANITARY PIPING:</u> FINISH INSULATED SANITARY PIPING BELOW BARRIER FREE LAVATORY TRAPS WITH PVC JACKETING. PVC MUST HAVE ATTAINED 25/50 FIRE RATING. BASED ON CAN/ULC-S102-M88 TESTING.	OUTSIDE BUILDING		DOYLE CSS
UBSTITUTION OF EQUIPMENT WILL	RATING, BASED ON CAN/ULC-S102-M88 TESTING.PIPING SYSTEMS:	PIPING 200 MM (8") AND SMALLER:		
QUIPMENT USED AS A BASIS FOR	4. <u>PIPING SYSTEMS:</u> 4.1. <u>GENERAL:</u>	CAST IRON SOIL PIPE AND FITTINGS OR PVC DWV		
IN IS USED, PRODUCE AND SUBMIT S, DUCTS, ETC., IN THE AREAS	4.1.1. <u>EXPANSION AND CONTRACTION:</u> INSTALL ALL PIPING SO AS TO BE FREE FROM STRAIN	PVC DWV 4.3.1.2.2. ABOVE GRADE:		ADDRESS
ITH THE SHOP DRAWINGS. FAILURE TO ATION BY THE CONTRACTOR THAT	AND DISTORTION DUE TO EXPANSION AND CONTRACTION AS GOVERNED BY REQUIREMENTS OF ANSI B31.1, EXCEPT AS HEREINAFTER MODIFIED. ALLOW FOR	4.3.1.2.2. <u>ABOVE GRADE:</u> 4.3.1.2.2.1. <u>PIPING 75 MM (3") AND SMALLER:</u> DWV COPPER		
INAL SPACE ALLOCATIONS ARE PMENT.	EXPANSION AND CONTRACTION BY OFFSETS, EXPANSION U-BENDS OR LOOPS. DO NOT USE EXPANSION JOINTS OF ANY TYPE UNLESS SPECIFICALLY INDICATED ON DRAWINGS.	4.3.1.2.2.2. <u>PIPING 100 MM (4") AND LARGER:</u> CAST IRON		185 MYERS ROAD,
	4.1.2. LINES, GRADES AND SLOPES:	4.3.1.2.2.3. <u>PIPING 150 MM (6") AND SMALLER:</u> PVC DWV		CAMBRIDGE, ON
	4.1.2.1. INSTALL LIQUID AND AIR PIPING FREE OF POCKETS AND PITCH TO DRAIN, AT LOW POINTS IN PIPING, WITH VALVES OR TRAPS INSTALLED AS REQUIRED FOR	4.3.2. POTABLE (DOMESTIC) HOT AND COLD WATER:		
ED IN THIS CONTRACT. FURNISH ALL RS NECESSARY FOR TESTS.	DRAINAGE OF THE PIPING.	4.3.2.1. <u>REFERENCE STANDARDS:</u>		
RIOD OF 2 HOURS. DURING THIS	4.1.2.2. INSTALL PIPING TO FOLLOWING SLOPES:	4.3.2.1.1. ALL MATERIALS TO BE NSF/ANSI 61 & 372 CERTIFIED.		PROJECT NO.
	DRAINAGE PIPING: 1:50 ON DRAINS OF NPS 3 SIZE AND LESS AND 1:100 ON DRAINS OF NPS 4 AND LARGER.	4.3.2.1.2. <u>COPPER:</u>		
/I WITH AIR TO APPROXIMATELY ED 345 KPA (50 PSIG), AND EXAMINE N. REPAIR ANY LEAKS.	POTABLE (DOMESTIC) WATER PIPING: PITCH TO LOW POINTS SO THAT ALL PIPING MAY BE COMPLETELY DRAINED.	4.3.2.1.2.1. PIPING - SEAMLESS WATER TUBE TO ASTM B88		CE-5800
SSURE AND DRAINAGE PIPING TO	PIPING MAY BE COMPLETELY DRAINED. HOT WATER HEATING WATER PIPING: SLOPE UP 1:500 IN DIRECTION OF FLOW.	4.3.2.1.2.2. <u>FITTINGS:</u> SOLDER JOINT FITTINGS TO ASME B16.18 (CAST) OR		
	4.1.3. UNIONS OR FLANGES - PROVIDE IN THE FOLLOWING LOCATIONS:	SOLDER JOINT FITTINGS TO ASME B16.18 (CAST) OR B16.22 (WROUGHT) OR		DRAWING TITLE
	4.1.3.1. FOR BY-PASSES AROUND EQUIPMENT, CONTROL VALVES, DEVICES IN PIPING	COLD PRESS FITTINGS WITH EPDM SEALING ELEMENT TO ASME B16.18 OR ASME B16.22. INSTALLED USING		
IG, AND PLACING ALL AIR HANDLING	SYSTEMS, AND ELSEWHERE INDICATED ON DRAWINGS.	PROPER TOOL, ACTUATOR, JAWS, AND RINGS AS INSTRUCTED BY THE PRESS FITTING MANUFACTURER.		MECHANICAL -
CE AIR HANDLING SYSTEMS.	4.1.4. <u>PIPING CONNECTIONS TO MAINS:</u>	4.3.2.1.3. <u>PEX-A:</u>		SPECIFICATIONS
EQUIRED TO ACHIEVE AIR FLOWS	4.1.4.1. MAKE DOWN FEED PIPING CONNECTIONS, TO HORIZONTAL SUPPLY AND RETURN WATER MAINS, ON BOTTOM QUADRANT OF MAINS.	4.3.2.1.3.1. CROSSLINKED POLYETHYLENE PIPING TO		
	4.1.5. <u>SLEEVES:</u>	CAN/CSA-B137.5. PRESSURE AND TEMPERATURE RATINGS: 93°C (200°F) AT 80 PSI (551 KPA), 82°C (180°F) AT 100 PSI (680 KPA)		
ALL SYSTEMS SUBMIT TO	4.1.5.1. INSTALL SLEEVES WHERE PIPING PASSES THROUGH FOUNDATIONS, ABOVE	AT 100 PSI (689 KPA).		DRAWING NUMBER
ALL SYSTEMS, SUBMIT TO DING COMPLETE DATA OF FAN TER FLOW RATES, FINAL READINGS AT				
DING COMPLETE DATA OF FAN	GRADE FLOORS, AND WALLS. FABRICATE SLEEVES OF SCHEDULE 40 BLACK STEEL PIPE OR TYPE "K" COPPER TUBING.	50 MM (2") AND SMALLER - CAN/ULC-S102.2 LISTED TO A MAXIMUM OF 25 FLAME SPREAD / 50 SMOKE		M6 of 7



 4.4.1.2. <u>ABOVE FLOOR PIPING 50 MM (2") AND SMALLER:</u> 4.4.1.2.1. COPPER - TYPE "L" HARD DRAWN COPPER TUBING. TYPE "L" SOFT ANNEALED COPPER TUBING MAY BE USED WITHIN CONVECTOR ENCLOSURES. FITTINGS: WROUGHT COPPER SOLDER JOINT 	 7.1. <u>EXHAUST FANS:</u> 7.1.1. <u>DOWNBLAST:</u> CENTRIFUGAL DIRECT DRIVE EXHAUST FAN WITH SPUN ALUMINUM HOUSING. MOUNT MOTOR AND DRIVE HOUSING ON VIBRATION ISOLATORS AND SEAL FROM EXHAUST AIR STREAM. CAPACITIES AND ACCESSORIES AS INDICATED IN 	Callidus Engineering We Make Buildings Work
PRESSURE TYPE, WITH IPS TO COPPER ADAPTERS AT SCREWED CONNECTIONS. 4.4.1.2.2. STEEL - SCHEDULE 40 WITH ASME B16.3 CLASS 150 THREADED OR COLD PRESS FITTINGS. 4.4.1.2.3. PEX-A - WITH F1960 COLD-EXPANSION FITTINGS	SCHEDULE ON DRAWINGS. FAN SOUND SHALL NOT EXCEED SONES NOTED IN SCHEDULES. 8. <u>AIR DISTRIBUTION SYSTEM:</u> 8.1. DUCTWORK:	LONDON: 1385 North Routledge Park, Unit 9 London, ON N6H 5N5 P 519.472.7640 KINGSTON: 1471 John Counter Blvd. Unit 301
4.4.1.2.4.PVC (CONDENSER WATER ONLY) - SCHEDULE 404.4.1.3.ABOVE FLOOR PIPING, 63 MM (2-1/2") AND LARGER:	8.1.1. <u>GENERAL:</u> 8.1.1.1. PROVIDE DUCTWORK CONSTRUCTED TO SMACNA 250 PA (1" W.G.) PRESSURE CLASSIFICATION & SEAL CLASS A. FOLLOW ALL OF THE LATEST SMACNA	Kingston, ON K7M 8S8 P 613.900.0845 KITCHENER: 210-137 Glasgow Street, Office #141 Kitchener, ON N2G 4X8 P 519.472.7640 W www.callidus.ca E info@callidus.ca
 4.4.1.3.1. STEEL - SCHEDULE 40 WITH RAISED FACE FLANGE OR GROOVED FITTINGS. 4.4.1.3.2. PEX-A - WITH COMPRESSION FITTINGS UP TO 100 MM (4"). 4.4.1.3.3. PVC (CONDENSER WATER ONLY) - SCHEDULE 40 	REQUIREMENTS. 8.1.1.2. SEAL ALL DUCT JOINTS AND CONNECTIONS TO DIFFUSERS AND EQUIPMENT WITH HIGH VELOCITY WATER BASED DUCT SEALER. 8.1.1.3. CONTINUOUSLY SOLDER OR SEAL JOINTS IN EXTERIOR AIR INTAKE DUCTS AND	<u>KEYPLAN</u>
4.4.2. <u>CLEANING:</u> 4.4.2.1. CLEAN ALL NEW HYDRONIC PIPING.	PLENUMS TO PREVENT DRIPPING OF MOISTURE. 8.1.2. <u>DUCT CLEANING:</u>	
 4.4.2.2. FLUSH SYSTEMS TO REMOVE LOOSE DIRT. 4.4.2.3. PROVIDE CLEANER TO ADEQUATELY CLEAN NEW SYSTEM PIPING. MIX CONCENTRATION IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS 	8.1.2.1. ALL EXISTING EXHAUST DUCTS SHALL BE THOROUGHLY CLEANED AND SANITIZED. CLEAN DUCT SYSTEMS WITH HIGH POWER VACUUM MACHINES. PROTECT EQUIPMENT WHICH MAY BE HARMED BY EXCESSIVE DIRT WITH FILTERS, OR BYPASS DURING CLEANING.	
AND CIRCULATE FOR 24 TO 72 HOURS AT A TEMPERATURE BETWEEN 21-60°C (70-140°F). 4.4.2.4. DRAIN SYSTEMS, REFILL WITH FRESH WATER AND CIRCULATE FOR MINIMUM	 8.1.2.2. PROVIDE ACCESS OPENINGS AS NECESSARY. RESEAL WITH METAL PLATES NO LESS THAN 20 GA., SECURED WITH SHEET METAL SCREWS AND DUCT TAPE. 8.1.2.3. ALL PORTIONS OF THE DUCT SYSTEM AND ALL EQUIPMENT WITHIN THE DUCT 	
OF 4 HOURS TO FLUSH OUT REMAINING CHEMICAL SOLUTION. 4.4.2.5. REFILL SYSTEMS WITH CLEAN WATER AND INHIBITOR AS REQUIRED.	SYSTEMS AND UNITS SHALL FIRST BE BRUSH CLEANED, THEN VACUUM CLEANED. 8.1.2.4. 10.1.1.4. CONTRACTOR SHALL COVER WITH DROP CLOTHS, ALL FURNITURE	
4.4.2.6. INCLUDE SUPPLIER OF WATER TREATMENT SYSTEMS SUPERVISION AND ASSISTANCE DURING INSTALLATION FOR CLEAN OUT AND STARTUP PROCEDURES. PROVIDE ELECTRONIC VERSION OF WRITTEN REPORT TO CONSULTANT.	6.1.2.4. 10.1.1.4. CONTRACTOR STALL COVER WITH DROP CLOTHS, ALL FORNITURE AND MACHINERY LOCATED UNDER OR ADJACENT TO WORK AREA. AT THE COMPLETION OF WORK IN THIS AREA, THIS CONTRACTOR SHALL CLEAN UP ALL DEBRIS AND DUST RESULTING FROM HIS WORK. 9. CONTROL SYSTEM:	
4.4.2.6.1. 4.4.2.6.2.	9.1. INSTALL CONTROLS SUPPLIED WITH EQUIPMENT UNLESS NOTED OTHERWISE.	
4.5. TESTING: 4.5.1. WATER: HYDROSTATICALLY TEST WATER PIPING AT 862 KPA (125 PSIG) PRESSURE TO DETECT EXCESSIVE WATER LOSSES	 9.2. <u>ELECTRICAL:</u> 9.2.1. PROVIDE POWER BOTH HIGH >120V AND LOW <120 VOLTAGE REQUIRED FOR THIS SECTION. 	545
5. <u>PLUMBING SYSTEM:</u> 5. <u>PLUMBING SYSTEM:</u>	9.2.2. ELECTRICAL INTERLOCK WIRING OF EQUIPMENT SPECIFIED UNDER OTHER SECTIONS OF THIS DIVISION IS THE RESPONSIBILITY OF TRADE SECTION INSTALLING THAT EQUIPMENT, UNLESS INDICATED OTHERWISE.	
5.1. <u>REFERENCES STANDARDS:</u> 5.1.1. CONFORM TO ALL APPLICABLE CODES INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:	9.2.3. SUPPLY AND INSTALL ELECTRICAL WIRING INCLUDING RACEWAYS FOR COMPONENTS FURNISHED UNDER THIS SECTION. INSTALL WIRING IN ACCORDANCE WITH GOVERNING ELECTRICAL CODE.	
5.1.1.1. <u>CSA-B149.1:</u> NATURAL GAS AND PROPANE INSTALLATION CODE 5.2. VENTING: PLUMBING VENTING MAY NOT BE SHOWN ON DRAWINGS. PROVIDE A COMPLETE	9.3. <u>QUALIFICATIONS:</u> 9.3.1. MINIMUM OF 5 YEARS EXPERIENCE INSTALLING SIMILAR SYSTEMS INVOLVING	
PLUMBING VENTING SYSTEM FOR ALL PLUMBING FIXTURES SHOWN, IN ACCORDANCE WITH OBC SECTION 7.5. 5.3. <u>STERILIZATION OF POTABLE (DOMESTIC) WATER SYSTEMS:</u>	COMPUTER BASED CONTROL SYSTEMS AND BE LICENSED REPRESENTATIVE, AFFILIATE, OR OPERATING DIVISION OF CONTROLS MANUFACTURER. WHOLESALERS OR FRANCHISED DEALER/REPRESENTATIVES ARE NOT ACCEPTABLE. USE INSTALLATION PERSONNEL THAT ARE TRAINED AND CERTIFIED AS QUALIFIED BY CONTROLS MANUFACTURER.	
5.3.1. FLUSH EACH SYSTEM, AFTER COMPLETION, BY ALLOWING FULL FLOW OF WATER THROUGH SYSTEM FOR A PERIOD OF FIFTEEN MINUTES, OR LONGER WHEN DIRECTED BY CONSULTANT.	9.3.2. UPON COMPLETION OF INSTALLATION, VERIFY BY TEST AND WRITTEN REPORT, THAT SYSTEM IS FULLY FUNCTIONAL, INSTALLED IN ACCORDANCE WITH PLANS AND SPECIFICATIONS AND CALIBRATED WITHIN OPERATIONAL LIMITS SPECIFIED.	REVISIONS
5.3.2. AFTER FLUSHING OF THE SYSTEM IS COMPLETED, PROVIDE A 24 HOUR CONTACT STERILIZATION TREATMENT BY TREATING THE WATER WITH 50 PPM OF CHLORINE AS RECOMMENDED IN AWWA SPECIFICATION C-651. AFTER STERILIZATION PERIOD HAS ELAPSED, FLUSH SYSTEM TO REDUCE CHLORINE CONTENT TO AN ACCEPTABLE LEVEL.	 9.4. WARRANTY: PROVIDE LABOUR, MATERIAL AND EQUIPMENT NECESSARY TO MAINTAIN BENEFICIAL PERFORMANCE OF ENTIRE BUILDING AUTOMATION SYSTEM FOR PERIOD OF 2 YEARS AFTER ACCEPTANCE OF SYSTEM, OR PARTS THEREOF. 9.5. SEQUENCE OF OPERATIONS: PROVIDE NECESSARY CONTROL DEVICES AND APPLICATION 	NO. ISSUED FOR DATE 00 CLIENT REVIEW 24.01.26
5.4. <u>PLUMBING FIXTURES:</u> 5.4.1. PROVIDE CSA COMPLIANT PLUMBING FIXTURES.	SOFTWARE TO CARRY OUT DESCRIBED SEQUENCES OF OPERATION. SEE DRAWINGS FOR SPECIFIED SEQUENCE OF OPERATIONS.	00 CELERT REVIEW 24.01.20 01 TENDER 24.02.15
5.4.2. PROVIDE PLUMBING FIXTURES AS INDICATED IN SCHEDULE ON DRAWINGS.5.4.3. CAULK ALL AROUND BASES OF MOP SERVICE SINKS, BUILT-IN BATHTUBS, AND OTHER BUILT-IN FIXTURES.	 9.6. <u>SHOP DRAWINGS:</u> 9.6.1. PREPARE AND SUBMIT SHOP DRAWINGS FOR EQUIPMENT AND SYSTEMS COVERED BY THIS SECTION. AS MINIMUM INCLUDE FOLLOWING: 9.6.1.1. COMPLETE CATALOGUE DATA AND INSTALLATION INSTRUCTIONS FOR EACH 	
5.5.VALVES:5.5.1.SUBMIT SHOP DRAWINGS FOR ALL VALVES.	CONTROL COMPONENT. 9.6.1.2. VALVE SCHEDULE WITH PIPE SIZES, FLOW RATES, DESIGN AND ACTUAL	
5.5.2. <u>POTABLE (DOMESTIC) WATER:</u> 5.5.2.1. <u>REFERENCE STANDARDS:</u>	PRESSURE DROPS. 9.6.1.3. SEQUENCE OF OPERATION DIAGRAMS AND DESCRIPTIVE PROSE.	
5.5.2.1.1. LEAD FREE, 0.25% CONTENT PER NSF-61/372 5.5.2.1.2. BRONZE TO ASTM C89530	9.6.1.4. PROJECT TEST PLAN, INDICATING HOW SYSTEM WILL BE TESTED AND FOUND TO BE OPERATING IN ACCORDANCE WITH PLANS AND SPECIFICATION.	
5.5.2.1.3. BRASS TO ASTM C46750	 9.6.2. PROVIDE COMPLETE AND APPROVED AS-BUILT SHOP DRAWINGS DETAILING EQUIPMENT AND INSTALLATION. 9.7. <u>EQUIPMENT:</u> 	NORTH
5.5.2.1.4.CAST IRON TO ASTM A1265.5.2.1.5.STAINLESS STEEL TO ASTM A351	9.7.1. IDENTIFICATION OF EQUIPMENT: 9.7.1.1. IDENTIFY EACH PIECE OF EQUIPMENT WITH NAMEPLATE IDENTIFYING	Bringh D The
5.5.2.1.6. CPVC RATED TO 1,600 KPA (232 PSI) AT 23°C (73°F) 5.5.2.1.7. ALL PRESSURE RATINGS, SIZES TO MSS SP-25	EQUIPMENT AND FUNCTIONS WITH LETTER AND NUMBER DESIGNATION. 9.7.1.2. USE LAMINATED PLASTIC NAMEPLATES OF AT LEAST 75 MM X 25 MM X 3 MM (3"	
5.6. <u>PLUMBING SPECIALTIES:</u> 5.6.1. <u>GREASE INTERCEPTOR:</u> EPOXY COATED STEEL WITH GASKETED STEEL SKID PROOF	X 1" X 1/8") WITH BLACK FACE AND WHITE CENTRE AND 6 MM (1/4") HIGH ENGRAVED LETTERING. SECURELY ATTACH TO EQUIPMENT. 9.7.2. AUTOMATIC CONTROL VALVES:	NCE OF ON THE
COVER SECURED WITH STAINLESS STEEL HARDWARE. REMOVABLE BAFFLE ASSEMBLY, DEEP SEAL TRAP WITH CLEANOUT, EXTERNAL CAST IRON FLOW CONTROL FITTING, AND NO HUB CONNECTIONS. PROVIDE SEDIMENT BUCKET. 6. <u>HYDRONICS (HEATING, COOLING, CONDENSER WATER) SYSTEM:</u>	 9.7.2. <u>AUTOMATIC CONTROL VALVES.</u> 9.7.2.1. CHARACTERISTICS OF CONTROL VALVES SHALL BE SUITED TO REQUIRED APPLICATION. SIZE AND SELECT VALVES. 9.7.2.2. <u>MAXIMUM ALLOWABLE PRESSURE DROPS:</u> 	DESIGNBCDDRAWNBCDCHECKEDPBLREVIEWEDPBL
 6.1. THE SYSTEMS SHALL CONFORM TO ALL APPLICABLE CODES INCLUDING, BUT NOT LIMITED TO, CSA-B214. A. MALVER 	9.7.2.3HOT WATER COIL VALVES - 21 KPA (3 PSIG) 9.7.2.4. <u>VALVE TYPE:</u>	PROJECT
6.2. VALVES: 6.2.1. REFERENCE STANDARDS:	9.7.2.5VALVES 2-1/2" AND LARGER - FLANGED BODIES	MONSIGNOR
6.2.1.1. BRONZE: TO ASTM B62. 6.2.1.2. BRASS: TO ASTM B283.		DOYLE CSS
6.2.1.3. CAST IRON: TO ASTM A126 6.2.1.4. STAINLESS STEEL: TO ASTM A351.		
6.2.2. <u>GENERAL:</u> PROVIDE SAME MANUFACTURER THROUGHOUT WITH PRESSURE RATING MARKED PER MSS-SP-25. ALL VALVES TO HAVE VALID CRN REGISTRATION NO. ISSUED BY RESPECTIVE PROVINCE. SUBMIT SHOP DRAWINGS FOR ALL VALVES.		185 MYERS ROAD,
 6.2.3. <u>VALVES, 63MM (2-1/2") AND LARGER:</u> 6.2.3.1. <u>ISOLATION:</u> LUG STYLE CAST OR DUCTILE IRON BODY, 1,380 KPA (150 PSI) 200 		CAMBRIDGE, ON
WOG RATING, ALUMINUM BRONZE DISC, EPDM, STAINLESS STEEL STEM, LOCKING LEVER HANDLE WITH INSULATION STEM EXTENSION UP TO 150 MM (6"). MANUAL GEAR OPERATOR WITH INSULATION STEM EXTENSION 200MM (8") AND LARGER. DEAD END SERVICE - BUBBLE TIGHT SHUT-OFF TO 200 PSI.		PROJECT NO.
 6.2.3.2. <u>CHECK:</u> WAFER, CAST IRON BODY, STAINLESS STEEL TRIM & SEAT, VITON A SEAT RING. CLASS 125, 200 WOG RATING. 6.2.3.3. <u>CHECK AT PUMP DISCHARGE:</u> SILENT, CAST IRON BODY, STAINLESS STEEL TRIM & SEAT, SPRING LOAD CENTRE GUIDED DISC. CLASS 125, 200 WOG 		CE-5800
6.3. <u>PUMPS:</u>		
6.3.1. SEE SCHEDULE ON DRAWINGS FOR SERIES, CAPACITIES, AND DETAILS.6.3.2. STARTERS AND ELECTRICAL WIRING BY ELECTRICAL TRADE.		DRAWING TITLE
 6.3.3. <u>INLINE:</u> 6.3.3.1. CLOSE-COUPLED, SINGLE STAGE, CENTRIFUGAL PUMPS DESIGNED FOR INSTALLATION IN A VERTICAL OR HORIZONTAL POSITION, OPERATING TO 1207 		MECHANICAL - SPECIFICATIONS CONT'D
 KPA (175 PSIG) MAXIMUM WORKING PRESSURE AND 225°F (107°C) MAXIMUM OPERATING TEMPERATURE. 6.3.3.2. PUMP VOLUTE SHALL BE CAST IRON AND IMPELLER SHALL BE BRONZE/BRASS. 		DRAWING NUMBER
7. <u>MECHANICAL EQUIPMENT:</u>		M7 of 7

5. PLUMBING SY

- 5.1. <u>REFERI</u> 5.1.1.
- 5.2. <u>VENTIN</u> PLUMBII SECTIO
- 5.3. <u>STERILI.</u> 5.3.1. F
- 5.3.2.

5.4. <u>PLUMBI</u>

- 5.4.1.
- 5.4.2.
- 5.4.3.

5.5. <u>VALVES</u>

- 5.5.1.
- 5.5.2.
- 5.6. <u>PLUMBII</u>
- 5.6.1.

6.2. <u>VALVES</u>

- 6.2.1.

- 6.2.2.
- 6.2.3.

- 6.3.1.
- 6.3.2.
- 6.3.3.

7. <u>MECHANICAL</u>