DRAWING LIST				
DWG No.	DRAWING TITLE			
мооо	LEGEND AND DRAWING LIST			
M001	KEY PLAN			
M002	MECHANICAL SPECIFICATIONS			
M003	MECHANICAL SPECIFICATIONS			
M004	MECHANICAL SPECIFICATIONS			
M005	MECHANICAL SPECIFICATIONS			
M006	MECHANICAL SPECIFICATIONS			
м100	LEVEL 0 – DEMOLITION PLUMBING, FIRE PROT, & DRAINAGE PLAN			
M101	LEVEL 0 – PROPOSED PLUMBING & FIRE PROT. PLAN			
M102	LEVEL 0 – PROPOSED DRAINAGE PLAN			
м103	LEVEL 1 — DEMOLITION & PROPOSED UNDERGROUND DRAINAGE PLAN			
M104	LEVEL 1 – DEMOLITION & PROPOSED PLUMBING PLAN			
M200	LEVEL 0 – DEMOLITION HVAC PLAN			
M201	LEVEL 0 – PROPOSED HVAC PLAN			
M202	LEVEL 1 – DEMOLITION & PROPOSED HVAC PLAN			
M203	ROOF – PROPOSED HVAC PLAN			
м300	MECHANICAL DETAILS			
M301	MECHANICAL DETAILS			
M400	MECHANICAL SCHEDULES			
ME100	MECHANICAL & ELECTRICAL SCHEDULES			

PIPING LEGEND				
	HOT WATER SUPPLY (HWS)			
	HOT WATER RETURN (HWR)			
	HEAT PUMP SUPPLY			
	HEAT PUMP RETURN			
	CHILLED WATER SUPPLY			
	CHILLED WATER RETURN			
	EQUIPMENT DRAIN LINE			
	GAS			
	SUCTION LINE			
	LIQUID LINE			
	RELIEF VENT			
<u> </u>	PIPE ANCHOR			
	PIPE GUIDE OR SLEEVE			
	EXPANSION COMPENSATOR c/w GUIDES			
†	BOTTOM TAKE-OFF			
	TOP TAKE-OFF			
•	ELBOW UP			
¢	ELBOW DOWN			
	VALVE – SEE SPECIFICATIONS			
II	UNION CONNECTION			
	FLANGED CONNECTION			
[]	PLUG CAP			
	FLEXIBLE CONNECTION			
LWCO	LOW WATER CUT OFF			
	THERMOMETER			
Ø PG	PRESSURE GAUGE			
	PUMP AND DESIGNATION			
4 ΑV	AIR VENT			
Υ ΑΑV	AUTOMATIC AIR VENT			
	PETES PLUG			
	FLOW SWITCH			
	THERMO WELL			
(T) G	THERMOSTAT W/GUARD			
	FLOW METERING DEVICE (FMD)			
	CABINET HEATERS			
	RADIANT PANELS			
l	REHEAT COILS			
₩ U/C	UNDERCUT DOOR			
AFF	ABOVE FINISHED FLOOR			
CBV	CIRCUIT BALANCING VALVE			
GPM	GALLONS PER MINUTE			
REQ'D	REQUIRED			
TCV	THERMOSTATIC CONTROL VALVE			
TYP.	TYPICAL			
нх	HEAT EXCHANGER			
RFH	RADIANT FLOOR HEATER (IN-FLOOR HEATING)			
FW	FOOT WASH			
TFD	TRENCH FLOOR DRAIN			
BFP	BACK FLOW PREVENTOR			
CFH	CUBIC FEET HOUR			

PLUMBING LEGEND			
	STORM ABOVE GRADE		
	SANITARY ABOVE GRADE		
	STORM BURIED		
	SANITARY BURIED		
	DOMESTIC COLD WATER		
	DOMESTIC HOT WATER		
	DOMESTIC RECIRCULATED WATER		
	VENT LINE		
	RELIEF VENT		
	EQUIPMENT DRAIN LINE		
	FIRE LINE		
co 	CLEANOUT		
AD	AREA DRAIN		
O FD	FLOOR DRAIN		
O FFD	FUNNEL FLOOR DRAIN		
O HD	HUB DRAIN		
O RD	ROOF DRAIN		
HS	HOSE STATION		
FHC	FIRE HOSE CABINET		
● FE	FIRE EXTINGUISHER		
FEC	FIRE EXTINGUISHER c/w CABINET		
FB	FIRE BLANKET		
RWL	RAIN WATER LEADER		
wc	WATER CLOSET		
WCH	WATER CLOSET (HANDICAPPED)		
U	URINAL		
⊲ SH	SHOWER		
ESH	EMERGENCY SHOWER		
L	LAVATORY		
LH	LAVATORY (HANDICAPPED)		
SS	STAINLESS STEEL SINK		
JS	JANITOR SINK		
DF	DRINKING FOUNTAIN		
EEW	EMERGENCY EYE WASH		
HWT	HOT WATER TANK		
⊕ FH	FIRE HYDRANT		
ي برگ	FIRE DEPT. SIAMESE CONNECTION		
<u></u> Г. – Г. – Г. – Т. В.	THRUST BLOCK		
INV. ELEV.	INVERT ELEVATION		
OBV. ELEV.	OBVERT ELEVATION		
	HAND HOLE TRAP		
	RUNNING TRAP		
ABFP	APPROVED BACKFLOW PREVENTOR		
	HOSE BIBB		
Ø P−1	PUMP AND DESIGNATION		
FP	FIRE PUMP		
SMV	SHOWER MIXING VALVE		
● SD	SLAB DRAIN		
● PD	PLANTER DRAIN		
	SANITARY TO GREASE INTERCEPTOR		

VEN	TILATION LEGEND			
	SOUND INSULATION			
	FLEXIBLE CONNECTION			
	DUCT OFFSET			
ᠵᡄ᠆ᡄ᠆ᢣ	DUCT OFFSET (SINGLE LINE)			
r _r r _r r	TURNING VANES			
FSF	FIRE STOP FLAP			
	BALANCING DAMPER			
ED L	FIRE DAMPER			
SD J	SPLITTER DAMPER			
BDD	BACKDRAFT DAMPER			
	OPPOSED BLADE DAMPER			
	MOTORIZED DAMPER			
X	SUPPLY DUCT SECTION			
	RETURN DUCT SECTION			
[כ]	SUPPLY DIFFUSER			
	LINEAR DIFFUSER			
	EXHAUST GRILLE			
D-XXX	DIFFUSER DESIGNATION AND CFM			
G-XXX	GRILLE DESIGNATION AND CFM			
*	FLEXIBLE ROUND DUCT			
	CAPPED END DUCT			
	DUCT REDUCER/ENLARGER			
T)	THERMOSTAT			
	THERMOSTAT w/GUARD			
	THERMOSTAT c/w SUB BASE			
AD	ACCESS DOOR			
AFF	ABOVE FINISHED FLOOR			
CFM	CUBIC FEET PER MINUTE			
EF	EXHAUST FAN			
СН	CABINET HEATER			
MUA	MAKE-UP AIR UNIT			
CBV	CIRCUIT BALANCING VALVE			

CONTROL LEGEND				
Ţ	THERMOSTAT			
(T) _G	THERMOSTAT w/ GUARD			
Ţ	THERMOSTAT c/w SUB BASE			
H	HUMIDISTAT			
\bigcirc	OCCUPANCY SENSOR			
<u>(</u> 0)	CO2 ROOM SENSOR			
<u> </u>	TEMPERATURE SENSOR			
Ps	PRESSURE SWITCH OR SENSOR			
<u> </u>	HUMIDITY SENSOR			
<u> </u>	FLOW SWITCH			
	ELECTRIC-PNEUMATIC RELAY			
Pe	PNEUMATIC-ELECTRIC RELAY			
SD	SMOKE DETECTOR			
sv	SOLENOID VALVE			
 F	FIRESTAT			
 FZ	FREEZESTAT			
	PRESSURE DIFFERENTIAL SWITCH			
DMD	MOTORIZED DAMPER			
OPG	PRESSURE GAUGE			
	TEMPERATURE GAUGE			
	2-WAY CONTROL VALVE			
	3-WAY CONTROL VALVE			
<u></u> Е	HEATING COIL			
c c	COOLING COIL			
OA	OUTSIDE AIR			
RA	RETURN AIR			
SA	SUPPLY AIR			
EA	EXHAUST AIR			
NO	NORMALLY OPEN			
NC	NORMALLY CLOSED			
Ø	MOTOR			
TCV	TEMPERATURE CONTROL VALVE			

VALVE LEGE				
X	VALVE – SEE SPEC			
	CHECK VALVE			
	STRAINER			
Å ₩	PRESSURE REDUCING VAI			
	CONTROL VALVE			
₹ 	2-WAY CONTROL VALVE			
	3-WAY CONTROL VALVE			
R A	RELIEF VALVE			
	PLUG VALVE			
₽sv	SOLENOID VALVE			
	NORMALLY CLOSED VALVE			
_	PET COCK			
Å	CIRCUIT BALANCE VALVE			

LEGEND NOTES	<u>}:</u>		
THESE ARE ST NOT NECESSAF		 	

OL LEGEND	VALVE LEGEND	GENERAL NOTES	Client Halton District School Board 2050 Guelph Line
JL LEGEND	VALVE LEGEND	1. REFER TO SITE AND OWNER INSTRUCTIONS FOR PHASING AND STAGING.	Burlington, Ontario
TAT w/ GUARD	CHECK VALVE	2. THE CONTRACTOR SHALL CO-ORDINATE WITH THE STRUCTURAL TO PROVIDE OPENINGS AND SLEEVES THROUGH STRUCTURAL ELEMENTS WHERE REQUIRED.	T.A. BLAKELOCK H.S.
AT c/w SUB BASE		3. PENETRATIONS OF CONCRETE SHALL BE SAW-CUT OR CORE BORED-IMPACT HAMMERS ARE NOT ALLOWED, SEAL ALL DUCTWORK & SLEEVES TO PREVENT	RENOVATION
CY SENSOR	PRESSURE REDUCING VALVE	LEAKAGE THRU FLOOR.4. DO NOT SCALE DRAWINGS FOR INSTALLATION PURPOSES. OBTAIN ALL	1160 Rebecca Street, Oakville, ON
	PRESSURE REDUCING VALVE	DIMENSIONS FROM ARCHITECTURAL PLANS, MANUFACTURER'S SHOP DRAWINGS, AND ON SITE INSPECTIONS.	L6L 1Y9
URE SENSOR E SWITCH OR SENSOR		 MECHANICAL, DIV. 2-14 AND ELECTRICAL TRADES SHALL WORK IN CONJUNCTION WITH ONE ANOTHER SO AS TO AVOID INTERFERENCE'S BETWEEN PIPING, 	
SENSOR	2-WAY CONTROL VALVE	DUCTWORK, CONDUIT, LIGHTING FIXTURES, ETC.6. WORK SHALL BE CO-ORDINATED THROUGH THE GENERAL CONTRACTOR PRIOR TO	Architect
TCH -PNEUMATIC RELAY		INSTALLATION OF ANY EQUIPMENT, DUCTWORK AND CONTROLS. CO-ORDINATE WITH ARCHITECTURAL ELEVATIONS FOR ARCHITECTURAL, MECHANICAL, AND ELECTRICAL SPACE ALLOCATIONS.	sn/der
C-ELECTRIC RELAY	3-WAY CONTROL VALVE	7. PROPERLY SUPPORT CEILING MOUNTED EQUIPMENT AND ANY OTHER EQUIPMENT	Snyder Architects Inc. 260 King St. E, Unit A101, Toronto, ON M5A 4L5
ETECTOR		INDEPENDENT OF CEILING SUPPORT SYSTEM. REFER TO ARCHITECTURAL DETAILS AND CO-ORDINATE WITH STRUCTURAL TRADE.	tel. 416.966.5444 fax. 416.966.4443 www.snyderarchitects.ca
VALVE		8. REFER TO ARCHITECTURAL FOR OWNER SUPPLIED EQUIPMENT. CONFIRM ALL MECHANICAL REQUIREMENTS AND PROVIDE TO SUIT.	Consultants
AT		9. REVIEW ARCHITECTURAL, ELECTRICAL, AND STRUCTURAL DRAWINGS AND PROVIDE ON SITE INSPECTIONS TO DETERMINE FULL EXTENT OF PROJECT PRIOR TO SUBMITTING BID.	Structural Consultants
E DIFFERENTIAL SWITCH	NORMALLY CLOSED VALVE	10. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL MECHANICAL SERVICES TO THE OCCUPIED AREA THROUGHOUT THE PHASING OF THE WORK. PROVIDE	Kalos Engineering Inc. 875 Main St, W. Unit 3
D DAMPER	CIRCUIT BALANCE VALVE	CONSTRUCTION VALVES, TEMPORARY DUCTWORK AND PIPING AS REQUIRED TO LIMIT THE SHUT DOWN OF SERVICES TO ONE TIME.	Hamilton, Ontario, L8S 4P9 Tel: 905-333-9119
E GAUGE		11. EXISTING MECHANICAL SERVICES SHOWN ON THESE DRAWINGS WERE TAKEN FROM THE ORIGINAL CONTRACT DRAWINGS AS LISTED BELOW. THE CONTRACTOR SHALL	Mechanical and Electrical Consultants
ONTROL VALVE		VERIFY EXACT SIZE AND LOCATION OF ALL EXISTING SERVICES ON SITE AND SHALL REMOVE ALL REDUNDANT SERVICES IN THE AREAS OF CONSTRUCTION.	EXP 1266 S. Service Rd,
	LEGEND_NOTES:	12. ALL DRAWINGS ARE INTEGRATED WITH THE SPECIFICATIONS WHICH ACCOMPANY THEM. NEITHER IS TO BE USED ALONE. ANY ITEM OR SUBJECT OMITTED FROM ONE BUT IMPLIED IN THE OTHER IS FULLY AND PROPERLY REQUIRED. WHEREVER	Stoney Creek, Ontario, L8E 5R9 Tel: 905-525-6069
ONTROL VALVE	THESE ARE STANDARD LEGENDS. ALL SYMBOLS MAY NOT NECESSARILY BE USED ON THESE DRAWINGS.	DIFFERENCE OCCURS, THE MOST ONEROUS CONDITION GOVERNS. 13. PENETRATIONS OF EITHER FIRE OR SMOKE BARRIER RESISTANT WALLS SHALL BE	
COIL		13. PENETRATIONS OF EITHER FIRE OR SMOKE BARRIER RESISTANT WALLS SHALL BE SLEEVED & SEALED AGAINST THE PASSAGE OF FLAME OR SMOKE W/SUITABLE NON-COMBUSTIBLE MATERIALS EQUAL TO THE CONSTRUCTION TO BE PENETRATED.	
		14. AVOID ANY DIRECT CONTACT BETWEEN ANY PIPING, DUCTING AND ELECTRICAL CONDUIT SYSTEMS. TO PREVENT SOUND TRANSMISSION.	
NR		15. IF ANY AREAS ARE AFFECTED BY THE NEW SCOPE OF WORK, CONTRACTOR TO CARRY COSTS FOR THE REMOVAL AND INSTALLATION OF THE EXISTING CEILING	
		TILES. REFER TO ARCHITECTURAL NEW REFLECTED CEILING PLAN FOR SCOPE OF NEW CEILING.	actessio.
AIR ′ OPEN		16. INSTALLATION SHALL BE COMPLETE AND FULLY FUNCTIONAL. PROVIDE ALL LABOR, MATERIALS, TOOLS, SERVICES, EQUIPMENT, ETC. AS REQUIRED.	SED PROFESSION 41 12
CLOSED		17. PROVIDE ACCESS FOR SERVICING EQUIPMENT AS INDICATED, AS REQUIRED BY CODE AND AS RECOMMENDED BY THE MANUFACTURER.	W. S. DSOUZA
URE CONTROL VALVE		18. PROVIDE ACCESS DOORS AS NECESSARY FOR ACCESS TO VALVES, DAMPERS, AND OTHER COMPONENTS REQUIRING MONITORING, INSPECTION, AND MAINTENANCE.	
		19. INSTALL EQUIPMENT, DUCTS, AND PIPES PARALLEL TO OR PERPENDICULAR TO	30 UNCE OF ONTARIO
		BUILDING LINES. PROVIDE SPACE, UNIONS AND FLANGES FOR DISASSEMBLY, SERVICING AND REMOVAL OF EQUIPMENT.	Key Plan N.T.S.
		20. THE CONTRACTOR SHALL, WITH APPROVAL OF THE OWNER AND AT NO ADDITIONAL CONTRACT COST, REMOVE, REARRANGE AND/OR RELOCATE ANY OBSTRUCTIONS WHICH INTERFERE WITH INSTALLATION OF NEW WORK.	
		21. ALL SHUTDOWN OF ANY PORTION OF EXISTING BUILDING SYSTEMS SHALL BE	
		PERFORMED WITH THE OWNER'S CONSENT. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR TIME AND DURATION OF SERVICE INTERRUPTIONS. INCLUDE COST OF PREMIUM TIME IN THE CONTRACT PRICE FOR WORK PERFORMED DURING	
		NIGHTS, WEEK-ENDS OR OTHER TIME OUTSIDE NORMAL WORKING HOURS AS NECESSARY TO MAINTAIN MECHANICAL SERVICES IN OPERATION.	Project North
		22. WHEN A CONFLICT OCCURS BETWEEN INSTALLATION DETAILS, DIAGRAMS, ETC. INDICATED IN THE CONTRACT DOCUMENTS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS, THE MANUFACTURER'S INSTRUCTIONS SHALL GOVERN AND SHALL	Project North True North No. Revisions
		BE FOLLOWED.	
		23. ALL INSTALLATIONS SHALL BE IN ACCORDANCE WITH CODES, APPLICABLE STANDARDS, BULLETINS ETC., AND REQUIREMENTS OF ALL INSPECTION AUTHORITIES FOR THE TOWN OF OAKVILLE .	
		24. DUE TO INCONSISTENT RECORD OF EXISTING SERVICES NOT ALL SERVICES MAY BE SHOWN, OR IF SHOWN MAY NOT BE ACCURATE. IT IS CONTRACTORS	
		RESPONSIBILITY TO FIELD CONFIRM ALL SERVICES.	
		25. CONTRACTOR IS TO VERIFY CONNECTION POINTS TO EXISTING SERVICES ON SITE. 26. CHECK AND VERIFY LOCATION OF ALL PIPES, DUCTS AND EQUIPMENT WITH ALL	
		OTHER TRADES TO PREVENT INTERFERENCE. REMOVAL OR RELOCATION OF ANY SUCH WORK INTERFERING WITH WORK OF OTHER TRADES IS THE RESPONSIBILITY OF THE MECHANICAL TRADE CONCERNED UNLESS OTHERWISE APPROVED IN	
		WRITING. 27. PROVIDE ACCESS DOOR FOR ALL VALVES LOCATED ABOVE DRY WALL CEILING.	
		27. PROVIDE ACCESS DOOR FOR ALL VALVES LOCATED ABOVE DRY WALL CEILING.28. IN ALL INSTANCES THE NEED FOR ACCESS DOOR IN GWB CEILINGS SHOULD BE AVOIDED IF POSSIBLE. WHERE INSTALLATION OF COMPONENTS WHICH REQUIRE	
		AVOIDED IF POSSIBLE. WHERE INSTALLATION OF COMPONENTS WHICH REQUIRE ACCESS CANNOT BE AVOIDED, SUBMIT (DIMENSIONED) LAYOUT ON ARCHITECTURAL REFLECTED CEILING PLANS TO CONSULTANTS FOR APPROVAL PRIOR TO	
		INSTALLATION OF COMPONENT. 29. BEFORE CUTTING ANY HOLES THROUGH THE EXISTING SLAB REFER TO	
		30. PROVIDE SIGN IDENTIFYING LOCATION OF ALL VALVES INSTALLED IN CEILING	
		SPACE.	
			2. Issued for Bids / Permit 2023 03 10
			1. Issued for Bids 2023 02 08
		HVAC NOTES	No. Issue Date
CLEARANCES TO BE V		 REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR CO-ORDINATION OF GRILLES, DIFFUSERS AND OTHER ELEMENTS. 	General Contractor shall check and verify all dimensions and report all errors and omissions to the Architect. Do not scale the drawings. Drawings shall not be used for construction purposes until issued by the Architect for construction.
	AT THE BOTTOM OF EVERY SOIL AND WASTE STACK THAT ZONTAL DRAINAGE PIPE.	2. CONTRACTORS SHALL COORDINATE ALL CEILING FINISHES WITH OWNER AND MATCH EXISTING. CONTRACTOR SHALL REVIEW MECHANICAL DRAWINGS, ARCHITECTURAL REFLECTED CEILING PLANS AND ARCHITECTURAL ROOM FINISH SCHEDULES AS	
	FROM EACH PLUMBING FIXTURE WHERE REQUIRED BY DE, PART 7 - PLUMBING.	SOON AS CONTRACT DOCUMENTS ARE SIGNED. ADVISE CONSULTANT OF ANY CONFLICTS BETWEEN CEILING TYPE AND DIFFUSER/GRILLE TYPE.	Disclaimer: This drawing is being issued at this time in respons
TO BE TRAPPED AND	ES INCLUDING FLOOR DRAINS (HUB, FUNNEL FLOOR DRAINS) VENTED AS REQUIRED BY ONTARIO BUILDING CODE, PART 7	3. THE CONTRACTOR SHALL VERIFY ALL CEILING FINISHES WITH ARCHITECTURAL DRAWINGS. CONTRACTOR AND DIFFUSER/GRILLE SUPPLIER ARE RESPONSIBLE TO	to a request made by a sub-contractor. The burden of coordinating the information contained in this
	T OF ALL PLUMBING FIXTURES REFER TO ARCHITECTURAL	PROVIDE ALL PLASTER AND FINISHING FRAMES, MOUNTING HARDWARE, AND ACCESSORIES TO SUIT ARCHITECTURAL CEILING TYPES. MECHANICAL CONTRACTOR SHALL CO-ORDINATE AND PROVIDE DETAILS OF MOUNTING REQUIREMENTS OF	drawing rests solely on the sub-contractor. The information included in this drawing is subject to change without notice and the Architect does not
DRAWINGS.	R FOR ALL CLEANOUTS LOCATED ABOVE DRY WALL CEILING.	DIFFUSERS AND GRILLES IN DRYWALL CEILINGS TO DRYWALL TRADE AND ENSURE EDGES OF OPENINGS ARE FRAMED BY DRYWALL TRADE TO SUPPORT DIFFUSERS AND GRILLES PROPERLY. DIFFUSERS AND GRILLES MUST NOT BE SUPPORTED	change without notice and the Architect does not assume any liability for its content.
	EMOVE ALL OBSOLETE PIPING WHEREVER POSSIBLE.	SOLELY BY HANGER WIRES.	
REMAIN IN SERVICE UI	NSURE THAT ALL EXISTING PIPING SERVING EXISTING AREAS NTIL THESE AREAS ARE RECONNECTED TO NEW SERVICES.	 CONTRACTOR TO CARRY FOR ADDITIONAL DUCTS AND DUCT FITTING REQUIRED TO CLEAR THE INTERFERENCES IN THE CEILING SPACE. 	
9. RECONNECT VENTS FR	OM EXISTING EQUIPMENT AND PLUMBING FIXTURES WHICH	 ALL NEW DUCTWORK TO BE CLEANED. ALL DUCTWORK FITTINGS SHALL BE RIGID GALVANIZED IRON. 	AND DRAWING LIST
ARE TO REMAIN TO N	EW VENTS AS REQUIRED. HOT WATER DISTRIBUTION TO LAVATORIES IS TO RUN	7. CONTRACTOR TO TAKE ALL MEASUREMENTS NECESSARY TO DETERMINE CURRENT	
	NG DISTRIBUTION IS TO BE INSTALLED AS TIGHT TO UNDER	SYSTEMS PERFORMANCE IN AREAS THAT WILL CONTINUE TO BE SERVED BY EXISTING AIR HANDLING EQUIPMENT AND SHALL REPORT ALL MEASUREMENTS MADE PRIOR TO START OF DEMOLITION.	Scale: _ Date: 05/01/2023
SHALL BE LEAD FREE.	SEWER AND VENT COPPER PIPING WITH SOLDER JOINTS DO NOT INSTALL WATER LINES IN OUTSIDE WALL WHERE	8. ON COMPLETION OF DUCT ALTERATIONS, AIR BALANCE TECHNICIAN SHALL REBALANCE ALL EXISTING SYSTEMS TO DELIVER PRE-CONSTRUCTION FLOWS.	Drawn by: C.M. Checked by: W.D.
INSULATED.	NLESS BOTH THE WALL AND THE PIPES ARE PROPERLY	 WHERE MODIFICATIONS HAVE BEEN DONE TO THE HEATING WATER CIRCUITS CONTRACTOR MUST REBALANCE THE AFFECTED PARTS. 	Job No. Drawing No.
12. INSTALL SHUT-OFF VA	LVES AT EACH PLUMBING FIXTURE.	CONTRACTOR MOOT REDACTION THE ATTENTED FARTS.	2215A M000

7	CONTRACTOR TO TAKE ALL MEASUREMENTS NECESSARY TO DETERMINE CURR
7.	CONTRACTOR TO TAKE ALL MEASUREMENTS NECESSART TO DETERMINE CORR
	SYSTEMS PERFORMANCE IN AREAS THAT WILL CONTINUE TO BE SERVED BY
	EXISTING AIR HANDLING EQUIPMENT AND SHALL REPORT ALL MEASUREMENTS
	MADE PRIOR TO START OF DEMOLITION.

2215A		M000	
Job No.		Drawing No.	
Drawn by:	C.M.	Checked by:	W.D.
Scale:	-	Date:	05/01/2023



Client Halton District School Board 2050 Guelph Line Burlington, Ontario

T.A. BLAKELOCK H.S. RENOVATION

1160 Rebecca Street, Oakville, ON L6L 1Y9

Architect

sn/der

Snyder Architects Inc. 260 King St. E, Unit A101, Toronto, ON M5A 4L5 tel. 416.966.5444 fax. 416.966.4443 w w w . snyderarchitects.ca

Consultants

Structural Consultants **Kalos Engineering Inc.** 875 Main St, W. Unit 3 Hamilton, Ontario, L8S 4P9 Tel: 905-333-9119

Mechanical and Electrical Consultants **EXP** 1266 S. Service Rd, Stoney Creek, Ontario, L8E 5R9 Tel: 905-525-6069



Key Plan N.T.S.



 $\mathbf{\mathbf{X}}$

Project North		True Nor
No.	Revisions	Date
2.	Issued for Bids / Permit	2023 03 1
1.	Issued for Bids	2023 02 0
No.	Issue	Date
errors a Drawing	I Contractor shall check and verify all dimensic and omissions to the Architect. Do not scale th gs shall not be used for construction purposes ct for construction.	e drawings

Drawing Title:	
LEVELS 0 AND 1	
KEY PLANS	

Scale:	AS NOTED	Date: 0	5/01/2023
Drawn by:	C.M.	Checked by:	W.D.
Job No.		Drawing No.	
2215A		M	001

IECHANICAL SPECIFICATIONS – GENERAL	MECHANICAL SPECIFICATIONS – GENER
GENERAL	CANNOT BE MOUNTED ON COOL SURFACE, PROVIDE STANDOFFS. C. IDENTIFY EQUIPMENT TYPE AND NUMBER AND SERVICE OF AREAS OF
GENERAL REQUIREMENTS READ AND CONFORM TO:	BUILDING SERVED. D. FOR EACH ITEM OF EQUIPMENT WHICH MAY BE STARTED AUTOMA
.1 THE CONTRACT CCDC 2, STIPULATED PRICE CONTRACT AS AMENDED. .2 DIVISION 1 REQUIREMENTS AND DOCUMENTS REFERRED TO THEREIN.	REMOTELY, ADD A RED LAMACOID PLATE, $2-1/2$ " X 9" (65 X READING: "WARNING. THIS EQUIPMENT IS AUTOMATICALLY CONTROLLE START AT ANY TIME."
THE SPECIFICATIONS ARE INTEGRAL WITH THE DRAWINGS WHICH ACCOMPANY THEM. NEITHER IS TO BE USED ALONE. ANY ITEM OR SUBJECT OMITTED FROM	2.4 <u>PRESSURE_GAUGES</u>
ONE BUT IMPLIED IN THE OTHER IS FULLY AND PROPERLY REQUIRED. WHEREVER DIFFERENCES OCCUR IN THE TENDER DOCUMENTS, THE MOST ONEROUS CONDITION GOVERNS. BASE THE BID ON THE COSTLIEST	A. APPROVED MANUFACTURER: TRERRICE MODEL 600C. B. OTHER ACCEPTABLE MANUFACTURERS OFFERING EQUIVALENT PRODUC
IRRANGEMENT. INSURE SUB-CONTRACTORS UNDERTAKING THE WORK PROVIDE A 50%	WINTER, MORRISSON, TAYLOR. C. GAUGE: 4–1/2" (115MM) DIAMETER BLACK CAST ALUMINUM, BRONZE BOURDON TUBE, ROTARY BRASS MOVEMENT, BRASS SOU
RFORMANCE BOND AND A 50% LABOUR AND MATERIALS PAYMENT BOND. IN DITION, ENSURE SUB-CONTRACTORS EMPLOYED TO UNDERTAKE ANY PART OF	FRONT RECALIBRATION ADJUSTMENT, BLACK SCALE ON WHITE BA
THE WORK THAT IS \$50,000.00 OR GREATER IN CONTRACT VALUE PROVIDE A 50% PERFORMANCE BOND AND A 50% LABOUR AND MATERIALS BOND TO THE PARTY THEY ARE IN CONTRACT WITH.	D. GAUGE COCK: TEE OR LEVER HANDLE, BRASS FOR MAXIMUM 150 KPAO.
CONFORM TO THE LATEST EDITION OF ONTARIO BUILDING CODE (CSA TANDARDS), ONTARIO FIRE CODE, LOCAL & DISTRICT BYLAWS, REGULATIONS, &	E. NEEDLE VALVE: BRASS, 1/4" (6 MM) NPT FOR MINIMUM 150 PSI (1 F. PULSATION DAMPER: PRESSURE SNUBBER, BRASS WITH 1/4
UBLISHED ENGINEERING STANDARDS. OTIFY CONSULTANT UPON DISCOVERY OF CONDITIONS WHICH ADVERSELY	CONNECTIONS. G. SYPHON: STEEL, SCHEDULE 40, 1/4" (6 MM) ANGLE OR STRAIGHT PA
AFFECT WORK OF THIS DIVISION. NO ALLOWANCE WILL BE MADE AFTER LETTING OF CONTRACT FOR ANY EXPENSES INCURRED THROUGH FAILURE TO DO SO.	2.5 <u>STEM TYPE THERMOMETERS</u>
RRANGE AND PAY FOR PERMITS AND INSPECTIONS BY AUTHORITIES HAVING URISDICTION, REQUIRED IN THE UNDERTAKING OF THIS DIVISION. MAKE IODIFICATIONS REQUIRED BY AUTHORITIES.	 A. APPROVED MANUFACTURER: TRERRICE MODEL BX91403-1/2. B. OTHER ACCEPTABLE MANUFACTURERS OFFERING EQUIVALENT PRODU MODEL 9VS3-1/2, WINTER, MORRISON, TAYLOR.
ALL TRADESMEN EMPLOYED ON THE PROJECT SHALL HOLD VALID TRADE CERTIFICATES/LICENSES AND SHALL MAKE A COPY AVAILABLE FOR REVIEW BY	C. THERMOMETER: 9" (230MM) SCALE, RED APPEARING THERMAL FLUID FIGURES ON WHITE SCALE, CALIBRATED IN BOTH DEGREES F AND I
HE CONSULTANT AND/OR OWNER WHEN REQUESTED OPE OF WORK	ACCURACY TO ASTM E77 OF 2%, CLEAR GLASS LENS FRONT T ALUMINUM CASE WITH ENAMEL FINISH, CAST ALUMINUM ADJUSTABLE
RODUCTS AND METHODS MENTIONED OR SHOWN IN THE CONTRACT DOCUMENTS COMPLETE WITH INCIDENTALS NECESSARY FOR A COMPLETE OPERATING	POSITIVE LOCKING DEVICE, 3/4" (20MM) NPT BRASS STEM. D. ALL THERMOMETERS TO INCLUDE A SEPARABLE WELL.
NSTALLATION. PROVIDE ALL TOOLS, EQUIPMENT AND SERVICES REQUIRED TO DO THE WORK.	E. SOCKET: BRASS SEPARABLE SOCKETS FOR THERMOMETER STEMS WITHOUT EXTENSIONS AS REQUIRED, AND WITH CAP AND CHAIN.
SITE EXAMINE EXISTING CONDITIONS WHICH MAY AFFECT WORK OF THIS DIVISION. EXAMINE ALL CONTRACT DOCUMENTS IN CONJUNCTION WITH SITE EXAMINATION TO ENSURE THAT WORK OF THIS DIVISION MAY BE SATISFACTORILY COMPLETED.	F. FLANGE: 3" (75 MM) OUTSIDE DIAMETER REVERSIBLE FLANGE, DE FASTEN TO SHEET METAL AIR DUCTS, WITH BRASS PERFORATED STEM
DISCONNECTION AND REMOVAL OF VARIOUS MECHANICAL EQUIPMENT IN AREAS TO BE TURNED OVER TO THE OWNER.	2.6 <u>SLEEVES</u> A. MATERIALS: MINIMUM SCHEDULE 20 GALVANIZED STEEL OR CAST IRON
DISCONNECTION AND MAKING SAFE OF VARIOUS MECHANICAL SYSTEMS AND EQUIPMENT IN AREAS TO BE DEMOLISHED AND/OR RENOVATED.	2.7 FLASHINGS AND COUNTER FLASHINGS
SOLATE AND DRAIN (OR PIPE FREEZE IF DRAINING IS NOT FEASIBLE) SYSTEMS AS REQUIRED TO EFFECT DEMOLITION, RENOVATIONS, MODIFICATIONS AND/OR	A. THALER OR EQUIVALENT MECHANICAL/ELECTRICAL FLASHINGS AS REG FOR SPECIFIC PURPOSE. B. STAINLESS STEEL FLASHING SLEEVE INTEGRAL DECK FLANGE AND FPE
EPAIRS. DISCONNECT, CAP AND MAKE SAFE ALL MECHANICAL SERVICES TO THE UILDING INCLUDING, BUT NOT LIMITED TO; SANITARY SEWER(S), STORM EWER(S), WATER SERVICE, NATURAL GAS SERVICE AND HOT WATER HEATING	B. STAINLESS STEEL FLASHING SLEEVE, INTEGRAL DECK FLANGE AND EPE 2.8 <u>PENETRATION SEALS</u>
EVER(S), WATER SERVICE, NATURAL GAS SERVICE AND HOT WATER HEATING EVERENS. ON COMPLETION OF RENOVATIONS, MODIFICATIONS AND/OR REPAIRS, TEST	A. APPROVED MANUFACTURER: LINK-SEA OR EQUAL B. MODULAR MECHANICAL TYPE, CONSISTING OF INTERLOCKING SYNTHET
NTIRE SYSTEM AS IF NEW. REPORT REPAIRS OR REPLACEMENTS REQUIRED OF XISTING EQUIPMENT, PIPING, FITTINGS OR DEVICES THAT ARE NOT INCLUDED IN	LINKS SHAPED TO CONTINUOUSLY FILL THE ANNULAR SPACE BETWEEN AND WALL OPENING. LINKS SHALL BE LOOSELY ASSEMBLED WITH FORM A CONTINUOUS RUBBER BELT AROUND THE PIPE WITH A PRESS
ONTRACT TO CONSULTANT AND OWNER FOR INSTRUCTION. FLUSH, CLEAN AND EFILL RENOVATED SYSTEMS AS SPECIFIED FOR NEW. E RESPONSIBLE FOR THE EXCAVATION & BACKFILL NECESSARY FOR	UNDER EACH BOLT HEAD AND NUT. 2.9 <u>ACCESS DOORS</u>
STALLATION OF UNDERGROUND WORK. EXCAVATE WITH SUITABLE MACHINERY OR Y HAND AS NECESSARY.	A. STANDARD UNIVERSAL FLUSH
ITTING AND PATCHING OF NEW OR EXISTING WORK. ENTIFICATION OF EQUIPMENT, PIPING, VALVES AND CONTROLLERS.	.1 MATERIAL: UPT TO 16" X 16" (400X400) 16 GAUGE MOUNT OVER 16" X 16" (400X400) 14 GAUGE DOOR, 16 GAUGE MOUNT
PERFORM START-UP AND COMPLETELY COMMISSION ALL EQUIPMENT AND SYSTEMS INSTALLED AND/OR MODIFIED UNDER THIS CONTRACT. COMMISSIONING	.2 HINGE: CONTINUOUS, CONCEALED. .3 LATCH: STAINLESS STEEL SCREWDRIVER OPERATED CAM LATCH
ORK SHALL BE COMPLETED TO THE SATISFACTION OF THE CONSULTANT PRIOR D ACCEPTANCE OF THE WORK OR ANY PART THEREOF. PPLY FOR & OBTAIN ALL PERMITS INCLUDING BUILDING PERMITS, & TSSA	.4 FINISH: STEEL: 5-STAGE IRON PHOSPHATE PREPARATION WITH PRI OF WHITE, ALKYD BAKING ENAMEL OR STAINLESS STEEL TYPE 304 SATIN POLISH.
PPLICATIONS, LICENSES, OR CERTIFICATES NECESSARY FOR THE PERFORMANCE F THE WORK. COORDINATE ALL WORK WITH BUILDING OFFICIALS & AUTHORITIES	.5 MANUFACTURERS: ACUDOR ACORN, CEB, MIFAB, CENDRES CONTOU B. RECESSED ACCESS DOOR
AVING JURISDICTION. AKE SUCH MEASURES AND INCLUDE IN BID PRICE FOR THE PROPER	.1 MATERIAL: STEEL OR STAINLESS STEEL, 22 GAUGE DOOR, MOUNTING FRAME. DOOR -RECESSED 5/8"
ROTECTION OF THE EXISTING BUILDING AND ITS FINISHES AT ALL TIMES DURING TERATIONS AND CONSTRUCTION OF THE NEW ADDITION. COORDINATE THIS ROTECTIVE WORK WITH ALL TRADES.	.2 HINGE: CONTINUOUS, CONCEALED. .3 LATCH: STAINLESS STEEL SCREWDRIVER OPERATED CAM LATCH
ERIFY THE CORRECT OPERATION OF EACH EQUIPMENT ITEM PROVIDED AND/OR LTERED AND EACH SYSTEM IN TOTAL AND OBTAIN THE OWNER'S APPROVAL	.4 FINISH: SATIN COAT STEEL .5 MANUFACTURERS: ACUDOR ACORN, CEB, MIFAB, CENDRES CONTOU
RIOR TO STARTING AND/OR RETURNING TO OPERATION.	C. FIRE RATED .1 ACCESS DOORS IN FIRE SEPARATIONS OR FIRE RATED ASSEM
OP DRAWINGS: PREPARE AND SUBMIT TWO (2) COPIES OF SHOP DRAWINGS ALL EQUIPMENT ITEMS TO THE CONSULTANT FOR REVIEW. THE CONSULTANT	LABELLED. REFER TO ARCHITECTURAL DRAWINGS FOR RATINGS SEPARATIONS AND ASSEMBLIES. MINIMUM 12 GAUGE.
F ALL EQUIPMENT TIEMS TO THE CONSULTANT FOR REVIEW. THE CONSULTANT ILL RETURN ONE COPY, MARKED WITH COMMENTS AND HIS REVIEW STAMP AS E DEEMS APPROPRIATE.	.2 HINGE: CONTINUOUS, CONCEALED. .3 LATCH: STAINLESS STEEL SCREWDRIVER OPERATED CAM LATCH
CLEARLY INDICATE MANUFACTURER'S AND SUPPLIER'S NAMES, MODEL NUMBERS, DETAILS OF CONSTRUCTION, ACCURATE DIMENSIONS, CAPACITIES	.4 FINISH: STEEL: 5-STAGE IRON PHOSPHATE PREPARATION WITH PRI OF WHITE, ALKYD BAKING ENAMEL OR STAINLESS STEEL TYPE 304 SATIN POLISH.
AND PERFORMANCE. PRIOR TO SUBMISSION CHECK AND CERTIFY AS CORRECT, SHOP DRAWINGS AND DATA SHEETS. DO NOT ORDER EQUIPMENT UNTIL A COPY OF THE SHOP DRAWINGS, REVIEWED BY CONSULTANT, HAS	.5 MANUFACTURERS: ACUDOR ACORN, CEB, MIFAB, CENDRES CONTOU
BEEN RETURNED TO CONTRACTOR. THE CONSULTANT WILL NOT REVIEW SHOP DRAWINGS THAT FAIL TO BEAR	3 SUPPORTS & ANCHORS
THE CONTRACTOR'S STAMP OF APPROVAL OR CERTIFICATION. AS-BUILT RECORDS: BEFORE FINAL PAYMENT, SUBMIT TWO SETS OF AS-BUILTS	3 <u>SUPPORTS & ANCHORS</u> 3.1 <u>PIPE HANGERS AND SUPPORTS</u>
RAWINGS IN AUTOCAD FORMAT SHOWING ALL CHANGES & CONCEALED SERVICES IMENSIONED. EQUESTS FOR SHUT-DOWN: OBTAIN PERMISSION FOR SYSTEMS SHUT-DOWN	A. APPROVED MANUFACTURERS: ANVIL, MYAT
QUESTS FOR SHUT-DOWN: OBTAIN PERMISSION FOR SYSTEMS SHUT-DOWN ND/OR SERVICE INTERRUPTION FROM THE OWNER PRIOR TO DISRUPTION OF NY SYSTEM OR SERVICE IN USE BY THE OWNER. EMPLOY THE OWNER'S	B. PLUMBING PIPING – DRAIN, WASTE, AND VENT:
ANDARD FORM OF REQUEST WHERE AVAILABLE. QUESTS FOR START-UP: OBTAIN PERMISSION FROM THE OWNER TO START-UP	.1 CONFORM TO ASME B31.9. .2 HANGERS FOR PIPE SIZES $1/2$ " TO $1-1/2$ " (15 TO 40 MM):
TO RETURN TO SERVICE ANY ITEM OF EQUIPMENT, SYSTEM OR SERVICE STALLED NEW OR PREVIOUSLY SHUT-DOWN.	IRON, ADJUSTABLE SWIVEL, SPLIT RING. .3 MULTIPLE OR TRAPEZE HANGERS: STEEL CHANNELS WITH WELDED
/ARRANTY: PROVIDE WRITTEN GUARANTEE FOR ALL NEW EQUIPMENT & /ORKMANSHIP FOR ONE (1) YEAR FROM DATE OF SUBSTANTIAL COMPLETION. IVE (5) YEARS FOR COMPRESSOR & HEAT EXCHANGER. DEFECTIVE PARTS	AND HANGER RODS. .4 WALL SUPPORT FOR PIPE SIZES TO 3-1/4" (80 MM): CAST IR
VE (5) YEARS FOR COMPRESSOR & HEAT EXCHANGER. DEFECTIVE PARTS EPAIRED OR REPLACED WITHOUT CHARGE.	.5 COPPER PIPE SUPPORT: CARBON STEEL RING, ADJUSTABLE, COP PLATED.
	C. PLUMBING PIPING – WATER: .1 CONFORM TO ASME B31.9.
ING SPECIALTIES	.2 HANGERS FOR PIPE SIZES 1/2" TO 1-1/2" (15 TO 40 MM): M IRON, ADJUSTABLE SWIVEL, SPLIT RING.
CAST BRASS, PRESSURE, COPPER TO COPPER UNIONS SHALL BE USED WITH SEAMLESS COPPER TUBING SMALLER THAN 3" (75 MM).	.6 MULTIPLE OR TRAPEZE HANGERS: STEEL CHANNELS WITH WELDED SUPPORTS OR SPACERS AND HANGER RODS.
ART TYPE, 125 LB. (860 KPA) BLACK MALLEABLE IRON UNIONS SHALL BE SED WITH ALL STEEL PIPE FOR PIPING 2-1/2" (65 MM) AND SMALLER.	.7 MULTIPLE OR TRAPEZE HANGERS FOR HOT PIPE SIZES 6" (150 M OVER: STEEL CHANNELS WITH WELDED SUPPORTS OR SPACERS /
IPING SPECIALTIES INCLUDING BACKFLOW PREVENTERS, STRAINERS, VALVES ETC. HALL BE LINE SIZE UNLESS INDICATED OTHERWISE ON DRAWINGS.	HANGER RODS, CAST IRON ROLL. .8 WALL SUPPORT FOR PIPE SIZES TO 3-1/4" (80 MM): CAST IRC
TRAINERS APPROVED MANUFACTURERS: SARCO SB, S.A. ARMSTRONG, CRANE,	.9 VERTICAL SUPPORT: STEEL RISER CLAMP. .10 FLOOR SUPPORT FOR COLD PIPE: CAST IRON ADJUSTABLE PIPE LOCK NUT NIPPLE FLOOR FLANCE AND CONCRETE PIER OR STE
CONBRACO, COLTON IN COPPER TUBING: CLASS 250, WYE TYPE, BRONZE, SCREWED	LOCK NUT, NIPPLE, FLOOR FLANGE, AND CONCRETE PIER OR STE SUPPORT. .11 COPPER PIPE SUPPORT: CARBON STEEL RING, ADJUSTABLE, COP
CONNECTION, WITH BLIND CAPS, AND 1/32" (0.8 MM) PERFORATED STAINLESS STEEL SCREEN.	PLATED.
3 IN STEEL PIPING: 2" (50MM) AND SMALLER .1 BODY AND COVER: SCREWED, LINE SIZE Y TYPE STRAINER, SEMI-STEEL CONFORMING TO ASTM A278-85 CLASS 30 COMPLETE WITH SCREWED	D. HYDRONIC PIPING: .1 CONFORM TO CSA B-51 AND ASME B31.9.
CONFORMING TO ASTM A278—85, CLASS 30, COMPLETE WITH SCREWED BLIND CAP. PRIMARY SERVICE RATING OF 125 PSI @ 350 F (860 KPA @ 178 C). BODY SHALL HAVE SIDE DRAIN CONNECTION.	.2 HANGERS FOR PIPE SIZES 1/2" TO 1-1/2" (13 TO 38 MM): CAN STEEL, ADJUSTABLE SWIVEL, SPLIT RING.
.2 SCREEN: PERFORATED TYPE 304 STAINLESS STEEL SERVICE .1 WATER 1/32" (0.8 MM)	.3 HANGERS FOR COLD PIPE SIZES 2" (50 MM) AND OVER: CARBON ADJUSTABLE, CLEVIS.
	.4 HANGERS FOR HOT PIPE SIZES 2" TO 4" (50 TO 100 MM): CARE ADJUSTABLE, CLEVIS.
IRE STOPPING COMPOUNDS APPROVED MANUFACTURER: 3M PRODUCTS INDICATED.	.5 MULTIPLE OR TRAPEZE HANGERS: STEEL CHANNELS WITH WELDED AND HANGER RODS.
OTHER ACCEPTABLE MANUFACTURERS OFFERING EQUIVALENT PRODUCTS: DOW CORNING, JOHN MANVILLE, HILTI FIRESTOP SYSTEMS	.6 FLOOR SUPPORT FOR COLD PIPE: CAST IRON ADJUSTABLE PIPE LOCK NUT, NIPPLE, FLOOR FLANGE, AND CONCRETE PIER OR STEL SUPPORT.
RE RATED SEALANTS: INTUMESCENT MATERIAL, SYNTHETIC ELASOMERS, APABLE OF EXPANDING UP TO 8 TO 10 TIMES WHEN EXPOSED TO EMPERATURES OF 250°F (121°C) OR HIGHER. ULC LISTED AND LABELLED.	.7 COPPER PIPE SUPPORT: CARBON STEEL RING, ADJUSTABLE, COPP
MEPLATES	.13 COPPER PIPE SUPPORT: CARBON STEEL RING, ADJUSTABLE, COPP
ROVIDE LAMINATED PLASTIC PLATES WITH BLACK FACE AND WHITE CENTRE OF INIMUM SIZE $3-1/2$ " X $1-1/2$ " X $3/32$ " (90 X 40 X 2 MM) NOMINAL	E. REFRIGERANT PIPING: .1 CONFORM TO ASME B31.5.
CKNESS, ENGRAVED WITH 1/4" (6 MM) HIGH LETTERING. USE 1" (25 MM) TERING FOR MAJOR EQUIPMENT.	.2 HANGERS FOR PIPE SIZES 1/2" TO 1-1/2" (13 TO 38 MM): CAN STEEL, ADJUSTABLE SWIVEL, SPLIT RING.
ASTEN NAMEPLATES SECURELY IN CONSPICUOUS PLACE. WHERE NAMEPLATES	

	MECHANICAL SPECIFICATIONS - GENERAL	HVAC SPECIFICATIONS
)F	.3 HANGERS FOR PIPE SIZES 2" (50 MM) AND OVER: CARBON STEEL, ADJUSTABLE, CLEVIS.	
PR	 .4 MULTIPLE OR TRAPEZE HANGERS: STEEL CHANNELS WITH WELDED SPACERS AND HANGER RODS. .5 WALL SUPPORT FOR PIPE SIZES TO 3" (75 MM): CAST IRON HOOK. 	1 <u>HVAC HYDRONIC PIPING</u>
Ϋ́	.6 WALL SUPPORT FOR PIPE SIZES 4" (100 MM) AND OVER: WELDED STEEL BRACKET AND WROUGHT STEEL CLAMP.	1.1 <u>HYDRONIC PIPING – GENERAL</u> : A. KEEP OPEN ENDS OF PIPE FREE FROM SCALE AND DIRT. PROTECT ENDS WITH TENDODADY DUICS OF CARS AFTER CONDUCTION FUN
	.7 VERTICAL SUPPORT: STEEL RISER CLAMP. .8 FLOOR SUPPORT: CAST IRON ADJUSTABLE PIPE SADDLE, LOCK NUT, NIPPLE,	ENDS WITH TEMPORARY PLUGS OR CAPS. AFTER COMPLETION, FILL, AND TREAT SYSTEMS. B. PROVIDE NON-CONDUCTING DIELECTRIC CONNECTIONS WHENEVER JOIN
S,	FLOOR FLANGE, AND CONCRETE PIER OR STEEL SUPPORT. 9 COPPER PIPE SUPPORT: CARBON STEEL RING, ADJUSTABLE, COPPER PLATED.	DISSIMILAR METALS IN OPEN SYSTEMS. C. PRIME COAT EXPOSED STEEL HANGERS AND SUPPORTS. HANGERS AND
R H	3.2 <u>ACCESSORIES</u>	SUPPORTS LOCATED IN CRAWL SPACES, PIPE SHAFTS, AND SUSPENDE CEILING SPACES ARE NOT CONSIDERED EXPOSED. D. AIR VENTS SHALL BE SELECTED TO SUIT THE SYSTEM OPERATING PRE
D,	 A. HANGER RODS: GALVANIZED, CARBON STEEL CONTINUOUS THREADED. B. INSERTS: MALLEABLE IRON CASE OF GALVANIZED STEEL SHELL AND EXPANDER PLUG FOR THREADED CONNECTION WITH LATERAL ADJUSTMENT, TOP SLOT FOR 	 AIR VENTS SHALL BE SELECTED TO SUIT THE STSTEM OPERATING PRE AND SHALL BE AUTOMATIC AND COMPLETE WITH ISOLATING VALVES. E. PIPE ALL DISCHARGE FROM TEMPERATURE & PRESSURE SAFETY RELIE
54	REINFORCING RODS, LUGS FOR ATTACHING TO FORMS; SIZE INSERTS TO SUIT THREADED HANGER ROD	VALVES TO A POINT OF SAFE DISCHARGE DIRECTLY INTO A FLOOR DR HUB DRAIN OR SAFE OUTDOOR LOCATION.
M)	3.3 <u>EQUIPMENT ROOF CURBS</u> A. FABRICATION: WELDED 0.05" (1.2 MM) GALVANIZED STEEL SHELL AND BASE,	 F. AUTOMATIC FEED VALVES: PROVIDE AUTOMATIC FEED VALVE ON THE CONVERTER MAKE-UP LINE TO EACH NEW HOT WATER HEATING SYSTEM. G. TEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT NOT LESS TO A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT DEST A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY AT DEST A DEST A DEST LIQUID HEAT TRANSFER PIPING HYDROSTATICALLY A DEST A DEST
	MITRED 3" (75 MM) CANT, VARIABLE STEP TO MATCH ROOF INSULATION, FACTORY INSTALLED WOOD NAILER. 3.4 <u>ROOFTOP PIPE/DUCT SUPPORTS</u>	150% OF OPERATING PRESSURE OR NOT LESS THAN 125 PSI (860 K WHICHEVER IS THE GREATER. TEST PERIOD SHALL BE NOT LESS THAN HOURS DURATION DURING WHICH TIME EACH JOINT SHALL BE INSPECT GIVEN A SHARP TAP WITH A HAMMER AND CHECKED FOR LEAKS.
S	A. ACCEPTABLE MANUFACTURERS: PORTABLE PIPE HANGERS, INC, UNISTRUTB. PRE-ENGINEERED PIPE/DUCT SUPPORT SYSTEM INCLUDING:	1.2 <u>VALVES – GENERAL</u> A. CONFORM TO REQUIREMENTS OF ANSI, ASTM, ASME, AND APPLICAE
ж С, ST	.1 BASES: WEATHER RESISTANT AND UV RADIATION RESISTANT WITH SEISMIC ATTACHMENTS .2 FRAMING: 1-5/8" (41.3MM) STRUT OR 1-7/8" (47.6MM) STRUT,	STANDARDS. B. MANUFACTURER'S NAME AND PRESSURE RATING CLEARLY MARKED ON B
Ή	FABRICATED OF STEEL TO ASTM A570, GRADE 33., ROLL FORMED OF 12-GAUGE (2.7MM THICK) STEEL INTO 3-SIDED OR TUBULAR SHAPE.	MSS–SP–25. C. VALID CRN (CANADIAN REGISTRATION NUMBER) REQUIRED FOR EACH VAL
R	.3 PIPE SUPPORTS AND HANGERS: CONFORM TO MSS SP-58 AND MSS SP-69, FABRICATED OF CARBON STEEL. SINGLE ROLLER SUPPORTS FOR PIPING	D. MATERIALS: .1 BRONZE: ASTM B62 OR B61 AS APPLICA
o	SUBJECT TO EXPANSION AND CONTRACTION. .4 FINISHES: .1 PLASTICS AS MOULDED WITH UV RADIATION PROTECTION.	.2 BRASS: ASTM B283 C3770 .3 CAST IRON: ASTM A126 CLASS B
	.2 METAL SURFACES HOT DIP GALVANIZED FREE OF ROUGHNESS, WHISKERS, UNSIGHTLY SPANGLES, ICICLES, RUNS, BARBS, SAGS, DROPLETS AND	E. END CONNECTIONS: .1 THREADED ENDS: ANSI B1.20.1
	OTHER SURFACE BLEMISHES. GALVANIZING SHALL CONFORM TO ASTM A123 FOR TUBING AND TO ASTM A153 FOR HARDWARE AND ACCESSORIES.	.2 FLANGED ENDS: ANSI B16.1 (CLASS 125), ANSI .3 FACE-TO-FACE DIMENSIONS: ANSI B16.10
D	3.5 <u>PIPE HANGER SPACING:</u>	F. DESIGN AND TESTING: .1 BRONZE GATE & CHECK VALVES: MSS-SP-80 .2 BALL VALVES: MSS-SP-110
	PIPE SIZE (IN) ROD DIAMETER (IN) SUPPORT SPACING (FT) STEEL PIPE COPPER TUBE	.2 BALL VALVES: MSS-SP-110 .3 CAST IRON GATE VALVES: MSS-SP-70 .4 CAST IRON GLOBE VALVES: MSS-SP-85
R	1/2 3/8 7 6 3/4 3/8 7 6	.5 CAST IRON CHECK: MSS-SP-71 .6 BUTTERFLY VALVES: MSS-SP-67
РЕ Ю	3/4 3/8 7 6 1 3/8 7 6	G. ACCEPTABLE MANUFACTURERS: KITZ, CRANE, JENKINS, CONBRACO, 1.3 HYDRONIC SYSTEMS TO 150 PSIG, ABOVE GROUND
Ē	1-1/4 3/8 7 6 1-1/2 3/8 9 8	A. NOMINAL OPERATING PRESSURE 125 PSIG
	2 3/8 10 9	B.DESIGN PRESSURE150 PSIGC.TEST PRESSURE225 PSIGD.DESIGN TEMPERATURE350°F
E, <u>-</u> .		E. CORROSION ALLOWANCE 0.0625 IN. F. STEEL PIPE ASTM A53 GR.B ERW OR ASTM A106 GR.B SMLS, S
	3.6 <u>DUCT HANGER SPACING:</u>	G. JOINTS, 2" AND SMALLER SCREWED H. SCREWED FITTINGS 150 LB. MALLEABLE IRON
	DUCT SIZES (LARGEST SIDE) ANGLE SIZE ROD SIZE SPACING	I. UNIONS CL.150, ASTM A-47 MALLEABLE IRON, ASTM GALVANIZED, ANSI B2.1 THREADS.
	UP TO 30" 1" X 1" X 1/8" 1/4" DIAMETER 10 FT 31" TO 42" 1-1/2" X 1-1/2" X 1/8" 1/4" DIAMETER 10 FT	J. JOINTS 2-1/2" AND LARGER WELDE . FLANGES AT CONNECTION
ε	43" TO 60" 1-1/2" X 1-1/2" X 1/8" 3/8" DIAMETER 10 FT 61" TO 84" 2" X 2" 1/8" 3/8" DIAMETER 8 FT	. EQUIPMENT K. BUTT WELD FITTINGS ASTM A234 GR. WFB L. FLANGES ASTM A105, CLASS 150, RAISED F
		WELD NECK OR SLIP ON M. BOLTS ASTM A307 C.S. BOLTS, SQ. HEAD; ASTM A563 NUTS, HE
		N. GASKETS 1/16" (1.6 MM) THICK PREFORMED NON-ASBESTOS GRAPHITE FIBRE.
.C RE		O. COPPER TUBING2" AND SMALLER ASTM B88,HARD DRAWN.
		P. JOINTS: SOLDER, LEAD FREE, ASTM B32, 95- TIN-ANTIMONY, OR TIN AND SILVER, WITH MELTING RANGE 220°C TO 280°
		Q. FITTINGS: ASME B16.18, CAST BRASS, OR ASM B16.22, SOLDER WROUGHT COPPER
		R. DIELECTRIC UNIONS: UNION WITH GALVANIZED OR PLATED STEE . THREADED END, COPPER SOLDER EN WATER IMPERVIOUS ISOLATION BARRIE
		S. VALVES, 2" AND SMALLER: ASTM A105 .1 GATE VALVES (ISOLATING) 300 PSIG NON-SHOCK WOG, ASTM B62
		BRONZE BODY, SOLID WEDGE DISC, RISING STEM, BRONZE TRIM, THREADED ENDS, KITZ #25
		.2 GLOBE VALVES (THROTTLING) 300 PSIG NON-SHOCK WOG, AS BRONZE BODY, COMPOSITION (TEFLON) DISC, RISING STEM, BRON
		THREADED ENDS, KITZ #09 .3 CHECK VALVES (BACKFLOW) 300 PSIG NON—SHOCK WOG, AS BRONZE BODY, Y—PATTERN HORIZONTAL, SWING TYPE DISC, T
:		ENDS, KITZ #29 .4 BALL VALVES (DRAIN) 600 PSIG NON-SHOCK WOG, FORGED
6		2—PIECE, CHROME BALL AND STEM, FULL PORT, BLOW—OUT PRO SEATS & STEM, LEVER HANDLE, THREADED ENDS, KITZ #68AC.
		T. PROVIDE STEM EXTENSIONS FOR INSULATED PIPING.U. PROVIDE GEAR OPERATOR AND CHAIN ON VALVES INSTALLED ABOVE 10-
		V. STRAINERS, 2" AND SMALLER CLASS 250, 400 PSIG WOG, CAST IRO Y-PATTERN, SCREWED CAP AND ENDS, A167 304 STAINLESS STEEL
		WITH 1/32" PERFORATIONS. MUELLER STEAM 11M. W. STRAINERS, 2–1/2" AND LARGER CLASS 250 PSIG NON-SHOCK WO
		IRON, Y-PATTERN, BOLTED FLANGE COVER, BLOW-OUT PLUG, A1 STAINLESS STEEL SCREEN WITH 1/32" PERFORATIONS, FLANGED ENDS, STEAM 752 .
		1.4 <u>CIRCUIT BALANCING VALVES</u>
		▲ CIRCUIT BALANCING VALVES; 2" (50 MM) AND SMALLER)
		.1 SCREWED CONNECTION, GLOBE STYLE DESIGN, NONFERROUS, PI DIE-CAST, NONPOROUS AMETAL COPPER ALLOY. EACH VALVE SI SUCH THAT WHEN INSTALLED IN ANY DIRECTION, IT WILL NOT
		FLOW MEASUREMENT. .2 VALVES SHALL PROVIDE THE FOLLOWING FUNCTIONS: 1 DRECISE FLOW MEASUREMENT
		.1 PRECISE FLOW MEASUREMENT. .2 PRECISION FLOW BALANCING. .3 POSITIVE SHUT OFF WITH NO DRIP SEAT AND TEFLON DISC.
		.3 POSITIVE SHUT OFF WITH NO DRIP SEAT AND TEFLON DISC. .4 DRAIN CONNECTION WITH PROTECTIVE CAP. .3 VALVES SHALL HAVE FOUR 360° ADJUSTMENT TURNS OF HANDWH
		MAXIMUM VERNIER—TYPE SETTING WITH "HIDDEN MEMORY" FEAT PROGRAM THE VALVE WITH PRECISION TAMPER—PROOF BA
-,		SETTING. .4 VALVES SHALL BE SHIPPED IN A 4.5 R FACTOR POLYURETHANE CONTAINER THAT SHALL BE USED AS INSULATION AFTER VALVE IN
		INSTALLED. .5 PROVIDE VALVES SUITABLE FOR MAXIMUM WORKING PRESSURE OF
		PSI (1720 KPA) AND MAXIMUM OPERATING TEMPERATURE OF 250° (121°C).
D .		.6 ACCEPTABLE PRODUCTS: S.A. ARMSTRONG CRV I INDICATED OR T ANDERSON STA-D OR NEWMAN HATTERSLEY.
D.		2 HVAC DUCT INSULATION
1		2.1 <u>GLASS FIBRE, FLEXIBLE</u>
		▲ MANUFACTURER: CERTAINTEED SOFT TOUCH AND WIDE WRAP

HVAC SPECIFICATIONS	Halton District School Board 2050 Guelph Line
90A, ASTM E84, ASTM E136. .1 'KSI' VALUE : ASTM C518, 0.039 AT 24 °C (0.27 @ 75.2 °F)	Burlington, Ontario
.2 MAXIMUM SERVICE TEMPERATURE: 121 °C (250 °F). .3 MAXIMUM MOISTURE ABSORPTION: ASTM C1104; <5% BY WEIGHT. .4 MAXIMUM FLAME SPREAD INDEX: 25	T.A. BLAKELOCK H.S.
.5 MAXIMUM SMOKE DEV INDEX: 50 D. VAPOUR BARRIER JACKET:	RENOVATION
.1 KRAFT PAPER WITH GLASS FIBRE YARN AND BONDED TO ALUMINIZED FILM. (FSK)	1160 Rebecca Street, Oakville, ON
.2 KRAFT PAPER REINFORCED WITH GLASS FIBRE YARN AND BONDED TO WHITE METALIZED POLYPROPYLENE	L6L 1Y9
.3 MOISTURE VAPOUR TRANSMISSION: ASTM E96; 0.02 PERM. .4 SECURE WITH PRESSURE SENSITIVE TAPE.	
E. VAPOUR BARRIER TAPE: .1 KRAFT PAPER REINFORCED WITH GLASS FIBRE YARN AND BONDED TO	Architect
ALUMINIZED FILM, WITH PRESSURE SENSITIVE RUBBER BASED ADHESIVE.	sn/der
.1 VINYL EMULSION TYPE ACRYLIC OR MASTIC, COMPATIBLE WITH INSULATION, BLACK COLOUR.	Snyder Architects Inc.
G. TIE WIRE: ANNEALED STEEL, 1/16" (1.5 MM). 2.2 <u>GLASS FIBRE, RIGID</u>	260 King St. E, Unit A101, Toronto, ON M5A 4L5 tel. 416.966.5444 fax. 416.966.4443 w w w . s n y d e r a r c h i t e c t s . c a
A. MANUFACTURER: CERTAINTEED CERTAPRO BOARD.	
B. OTHER ACCEPTABLE MANUFACTURERS: JOHNS MANVILLE 800 SERIES SPIN-GLASS	Consultants
C. INSULATION: ASTM C612; RIGID, NONCOMBUSTIBLE BLANKET. .1 'KSI' VALUE : ASTM C518, 0.25 BTU-in/Hr-Sq.Ft- F AT 75 F (0.036	Structural Consultants
W/M– C AT 24 C). .2 MAXIMUM SERVICE TEMPERATURE: 250 °F (121 °C).	Kalos Engineering Inc. 875 Main St, W. Unit 3
.3 MAXIMUM MOISTURE ABSORPTION: ASTM C1104; <5% BY WEIGHT. D. VAPOUR BARRIER JACKET:	Hamilton, Ontario, L8S 4P9
.1 KRAFT PAPER WITH GLASS FIBRE YARN AND BONDED TO ALUMINIZED FILM. .2 MOISTURE VAPOUR TRANSMISSION: ASTM E96; 0.04 PERM.	Tel: 905-333-9119
.2 MOISTURE VAPOUR TRANSMISSION: ASTM E96; 0.04 PERM. .3 SECURE WITH PRESSURE SENSITIVE TAPE.	Mechanical and Electrical Consultants EXP
2.3 DUCT INSULATION	1266 S. Service Rd, Stoney Creek, Ontario, L8E 5R9
A. INSULATE NEW OR ALTERED DUCTWORK AND RE-INSULATE EXISTING DUCTWORK WHERE INSULATION HAS BEEN REMOVED OR DAMAGED AS FOLLOWS:	Tel: 905-525-6069
SERVICE INSULATION TYPE THICKNESS	
AIR SUPPLY - RECTANGULARRIGID1"AIR SUPPLY - ROUNDFLEXIBLE1"	
EXHAUST WITHIN 6' OF OUTSIDE - RECTANGULAR RIGID 3"	
EXHAUST WITHIN 6' OF OUTSIDE – ROUND FLEXIBLE 3" FRESH AIR INTAKE – RECTANGULAR RIGID 3"	
FRESH AIR INTAKE – ROUND FLEXIBLE 3"	
	PROFESSION
3. <u>HVAC PIPING INSULATION</u>	
3.1 <u>GLASS_FIBRE</u> A. APPROVED_MANUFACTURERS: JOHNSMANVILLE_MICRO-LOK	W.S.DSOUZA
B. OTHER ACCEPTABLE MANUFACTURERS OFFERING EQUIVALENT PRODUCTS: OWENS CORING FIBERGLASS, CERTAINTEED CRIMPWRAP.	100224917
C. INSULATION: ASTM C547; ASTM C411, ASTM C356 ASTM E84, ASTM D774, NFPA 259.	BOLINCE OF ONTAND
.1 'KSI' VALUE : 0.23 BTU-in/Hr-Sq.Ft-F AT 75°F, 0.33 W/m- C AT 24 °C.	WCE OF ONT
.2 MINIMUM SERVICE TEMPERATURE: 0°F (-18°C).	Key Plan N.T.S.
.3 MAXIMUM SERVICE TEMPERATURE: 850°F (454°C). .4 MAXIMUM MOISTURE ABSORPTION: <5% BY WEIGHT.	
D. VAPOUR BARRIER JACKET .1 ASTM C136 TYPE I, WHITE KRAFT PAPER REINFORCED WITH GLASS FIBRE	
YARN AND BONDED TO ALUMINIZED FILM. .2 MOISTURE VAPOUR TRANSMISSION: ASTM E96; 0.02 PERM.	
.3 SECURE WITH SELF SEALING LONGITUDINAL LAPS AND BUTT STRIPS. .4 SECURE WITH OUTWARD CLINCH EXPANDING STAPLES AND VAPOUR	
E. TIE WIRE: 1.3 MM STAINLESS STEEL WITH TWISTED ENDS ON MAXIMUM 12" (300	Project North True Nor
MM) CENTRES F. VAPOUR BARRIER LAP ADHESIVE	No. Revisions Date
.1 COMPATIBLE WITH INSULATION.	
G. INSULATING CEMENT/MASTIC .1 ASTM C195; HYDRAULIC SETTING ON MINERAL WOOL, VOC CONTENT NOT	
TO EXCEED 80 G/L. H. FIBROUS GLASS FABRIC	
.1 CLOTH: UNTREATED; 9 OZ/SQ YD (305 G/SQ M) WEIGHT. .2 BLANKET: 1.0 LB/CU FT (16 KG/CU M) DENSITY.	
I. INDOOR VAPOUR BARRIER FINISH	
.1 VINYL EMULSION TYPE ACRYLIC, COMPATIBLE WITH INSULATION, WHITE COLOUR, VOC CONTENT NOT TO EXCEED 250 G/L. J. OUTDOOR VAPOUR BARRIER MASTIC	
.1 VINYL EMULSION TYPE ACRYLIC, COMPATIBLE WITH INSULATION, WHITE	
COLOUR. K. INSULATING CEMENT	
.1 ASTM C449, VOC CONTENT NOT TO EXCEED 80 G/L. 3.2 JACKETS	
A. PVC PLASTIC	
.1 JACKET: ONE PIECE MOULDED TYPE FITTING COVERS AND SHEET MATERIAL. ASTM E84, ASTM D1784, ULC S102-M88.	
.2 MAXIMUM SERVICE TEMPERATURE: 151°F (66°C). .3 FINISH: GLOSS.	
.4 MAXIMUM FLAME SPREAD: ASTM E84; 25 OR LESS.	
.5 MAXIMUM SMOKE DEVELOPED: ASTM E84; 50 OR LESS. .6 THICKNESS: 20 MIL (0.4 MM) MINIMUM. 30 MIL (0.8 MM) MINIMUM FOR	
OUTDOOR USE. .7 COLOUR: STANDARD OFF-WHITE	2. Issued for Bids / Permit 2023 03 1
.8 COVERING ADHESIVE MASTIC .1 COMPATIBLE WITH INSULATION, MAXIMUM VOC CONTENT OF 50 G/L.	1. Issued for Bids 2023 02 0
.9 APPROVED MANUFACTURER: CEEL-CO 300 SERIES, ZESTON PVC B. ALUMINUM JACKET: ASTM E84. (APPLY TO ALL EXTERIOR PIPING ONLY)	No. Issue Date
.1 THICKNESS: ASTM C1729 REQUIREMENTS FOR RIGID AND NON-RIGID INSULATION FINISH.	General Contractor shall check and verify all dimensions and report a errors and omissions to the Architect. Do not scale the drawings.
.2 FINISH: SMOOTH PLAIN MILL FINISH.	Drawings shall not be used for construction purposes until issued by t Architect for construction.
.3 JOINING: LONGITUDINAL SLIP JOINTS AND 2" (50 MM) LAPS. .4 FITTINGS: 0.02" (0.40 MM) THICK DIE SHAPED FITTING COVERS WITH	
FACTORY ATTACHED PROTECTIVE LINER. .5 METAL JACKET BANDS: 3/8" (10 MM) WIDE; 0.01" (0.38 MM) THICK	
ALUMINUM.	
3.3 <u>PIPE INSULATION</u> A. INSULATE NEW OR ALTERED PIPING WITH RIGID PIPE INSULATION AND	
RE-INSULATE EXISTING PIPING WHERE INSULATION HAS BEEN REMOVED OR DAMAGED AS FOLLOWS:	
RIGID PIPE INSULATION	
SERVICE OPERATING TEMP.(*F) PIPE DIAMETER IN. THK. IN.	
HYDRONIC HEATING	
(HOT WATER &	
GLYCOL/WATER) 105 TO 140 1-1/4 AND SMALLER 1	SPECIFICATIONS
1-1/2 & LARGER 1-1/2	
1-1/2 & LARGER 1-1/2 141 TO 200 1-1/4 AND SMALLER 1-1/2	
1-1/2 & LARGER 1-1/2 141 TO 200 1-1/4 AND SMALLER 1-1/2	· · · · · · · · · · · · · · · · · · ·
1-1/2 & LARGER 1-1/2 141 TO 200 1-1/4 AND SMALLER 1-1/2	Scale:AS NOTEDDate:05/01/202Drawn by:C.M.Checked by:W.IJob No.Drawing No.

HVAC SPECIFICATIONS 4 HYDRONIC SPECIALTIES 5.10 FILTER-DRIERS 4.1 <u>AIR VENTS</u> A. MANUAL TYPE: SHORT VERTICAL SECTIONS OF 2" (50 MM) DIAMETER PIPE FORM AIR CHAMBER, WITH 3 MM BRASS NEEDLE VALVE AT TOP OF CHAMBER B. FLOAT TYPE: .1 MANUFACTURERS: ARMSTRONG, AMTROL, TACO .2 BRASS OR SEMI-STEEL BODY, COPPER, POLYPROPYLENE, OR SOLID NON-METALLIC FLOAT, STAINLESS STEEL VALVE AND VALVE SEAT; SUITABLE FOR SYSTEM OPERATING TEMPERATURE AND PRESSURE; WITH ISOLATING 4.2 <u>STRAINERS</u> A. SIZE 2" (50 MM) AND UNDER: .1 MANUFACTURERS: SARCO SB, CRANE, ARMSTRONG, COLTON 5.11 SOLENOID VALVES B. SCREWED BRASS OR IRON BODY FOR 175 PSI (1200 KPA) WORKING PRESSURE, Y PATTERN WITH 0.8 MM STAINLESS STEEL PERFORATED SCREEN. 4.3 <u>RELIEF VALVES</u> A. MANUFACTURERS: SARCO, WATTS, BELL & GOSSETT, CONBRAC B. BRONZE BODY, TEFLON SEAT, STAINLESS STEEL STEM AND SPRINGS, AUTOMATIC, DIRECT PRESSURE ACTUATED, CAPACITIES ASME CERTIFIED AND LABELLED 5 <u>REFRIGERATION PIPING & SPECIALTIES</u> 5.1 <u>PIPING</u> A. COPPER TUBING: ASTM B280, TYPE ACR HARD DRAWN OR ANNEALED. .1 FITTINGS: ASME B16.22 WROUGHT COPPER. .2 JOINTS: BRAZE, AWS A5.8 BCUP SILVER/PHOSPHORUS/COPPER ALLOY WITH MELTING RANGE 640 TO 805 DEGREES C. B. COPPER TUBING TO 22 MM OD: ASTM B88, TYPE K, ANNEALED. .1 FITTINGS: ASME B16.26 CAST COPPER. .2 JOINTS: FLARED. C. PIPE SUPPORTS AND ANCHORS: 5.13 <u>RECEIVERS</u> .1 CONFORM TO ASME B31.5. .2 HANGERS FOR PIPE SIZES 13 TO 38 MM: MALLEABLE IRON ADJUSTABLE SWIVEL, SPLIT RING. .3 HANGERS FOR PIPE SIZES 50 MM AND OVER: CARBON STEEL, VALVE ADJUSTABLE, CLEVIS. .4 MULTIPLE OR TRAPEZE HANGERS: STEEL CHANNELS WITH WELDED SPACERS AND HANGER RODS. .5 WALL SUPPORT FOR PIPE SIZES TO 75 MM: CAST IRON HOOK. .6 WALL SUPPORT FOR PIPE SIZES 100 MM AND OVER: WELDED STEEL BRACKET AND WROUGHT STEEL CLAMP. .7 VERTICAL SUPPORT: STEEL RISER CLAMP. .8 FLOOR SUPPORT: CAST IRON ADJUSTABLE PIPE SADDLE, LOCK NUT, NIPPLE, FLOOR FLANGE, AND CONCRETE PIER OR STEEL SUPPORT. .9 COPPER PIPE SUPPORT: CARBON STEEL RING, ADJUSTABLE, COPPER PLATED. .10 HANGER RODS: MILD STEEL THREADED BOTH ENDS, THREADED ONE END, OR CONTINUOUS THREADED. 6.1 <u>HVAC DUCTWORK – GENERAL:</u> .11 INSERTS: MALLEABLE IRON CASE OF GALVANIZED STEEL SHELL AND EXPANDER PLUG FOR THREADED CONNECTION WITH LATERAL ADJUSTMENT, TOP SLOT FOR REINFORCING RODS, LUGS FOR ATTACHING TO FORMS; SIZE INSERTS TO SUIT THREADED HANGER RODS. 5.2 REFRIGERANT INSULATION: CLOSED-CELL ELASTOMERIC MANUFACTURER: ARMACELL AP ARMAFLEX OR RODS. COMPLIANCE: ASTM C534, ASTM E84, ULC-S102, NFPA 90A, ASTM D1056 THERMAL CONDUCTIVITY: 0.235 BTU-in/Hr-Sq.Ft- F AT 50 F (0.034 W/mk AT 10 C) PERMEABILITY: 0.05 PERM-IN MAXIMUM FLAME SPREAD INDEX: 25 MAXIMUM SMOKE DEVELOPMENT INDEX: 50 WATER ABSORPTION: 0.2% BY VOLUME MAXIMUM SERVICE TEMPERATURE: 220 F (105 C) MINIMUM SERVICE TEMPERATURE: -297 F (-183 C) FOR OUTDOOR USE: PAINT INSULATION WITH ARMAFLEX WB STANDARD WHITE FINISH. PIGMENTED LATEX. VOC < 50 G/L. 5.3 REFRIGERANT INSULATION SIZES INSULATE ALL REFRIGERANT SUCTION AND HOT GAS PIPING AND FITTINGS. INSULATE LIQUID LINES WHERE EXPOSED TO EXTERIOR CONDITIONS. TEST ZONE. INSULATION SHALL FIT PIPE. THICKNESS SHALL BE AS FOLLOWS: 1/2" (1 MM) THICK FOR PIPE 1" (25 MM) O.D. AND SMALLER; 3/4" (20 MM) THICK 6.2 <u>MATERIALS</u> FOR PIPE 1-1/8" (28 MM) TO 2" (50 MM) O.D.; 1" (25 MM) THICK FOR PIPES 2-1/8" (54 MM) O.D. AND LARGER SLIP INSULATION ON TO TUBING BEFORE TUBING SECTIONS AND FITTINGS ARE ASSEMBLED. KEEP SLITTING OF INSULATION TO A VERY MINIMUM. SEAL ALL JOINTS IN THE INSULATION WITH ARMAFLEX 520 BLV. INSULATE FLEXIBLE PIPE CONNECTORS. ON INSULATION EXPOSED OUTSIDE THE BUILDING, PLACE "SLIT" JOINT SEAMS ON BOTTOM OF PIPE AND PROVIDE TWO COATS OF ARMAFLEX WB FINISH. EXTEND INSULATION THROUGH PIPE SUPPORT CLAMPS. PROVIDE A 6" (150 MM) LONG, 20 GAUGE (1.1 MM) GALVANIZED STEEL SLEEVE AROUND PIPE INSULATION AT EACH SUPPORT 6.3 DUCT SEALING 5.4 MOISTURE AND LIQUID INDICATORS A. INDICATORS: SINGLE PORT TYPE, UL LISTED, WITH COPPER OR BRASS BODY FOLLOWS: FLARED OR SOLDER ENDS, SIGHT GLASS, COLOUR CODED PAPER MOISTURE INDICATOR WITH REMOVABLE ELEMENT CARTRIDGE AND PLASTIC CAP; FOR MAXIMUM WORKING PRESSURE OF 3450 KPA, AND MAXIMUM TEMPERATURE OF 93 DEGREES C. 5.5 <u>VALVES</u> A. BALL VALVES:

- .1 TWO PIECE BOLTED FORGED BRASS BODY WITH TEFLON BALL SEALS AND COPPER TUBE EXTENSIONS, BRASS BONNET AND SEAL CAP, CHROME PLATED BALL, STEM WITH NEOPRENE RING STEM SEALS; FOR MAXIMUM WORKING PRESSURE OF 3450 KPA AND MAXIMUM TEMPERATURE OF 149 DEGREES C. B. SERVICE VALVES:
- .1 FORGED BRASS BODY WITH COPPER STUBS, BRASS CAPS, REMOVABLE VALVE CORE, INTEGRAL BALL CHECK VALVE, FLARED OR SOLDER ENDS, FOR MAXIMUM PRESSURE OF 3450 KPA.
- 5.6 <u>STRAINERS</u> A. STRAIGHT LINE OR ANGLE LINE TYPE:
- BRASS OR STEEL SHELL, STEEL CAP AND FLANGE, AND REPLACEABLE CARTRIDGE, WITH SCREEN OF STAINLESS STEEL WIRE OR MONEL REINFORCED WITH BRASS; FOR MAXIMUM WORKING PRESSURE OF 2960
- B. STRAIGHT LINE, NON-CLEANABLE TYPE:
- .1 STEEL SHELL, COPPER PLATED FITTINGS, STAINLESS STEEL WIRE SCREEN FOR MAXIMUM WORKING PRESSURE TO SUIT APPLICATION. 5.7 <u>CHECK VALVES</u>
- A. GLOBE TYPE:
 - .1 CAST BRONZE OR FORGED BRASS BODY, FORGED BRASS CAP WITH NEOPRENE SEAL, BRASS GUIDE AND DISC HOLDER, PHOSPHOR-BRONZE OR STAINLESS STEEL SPRING, TEFLON SEAT DISC; FOR MAXIMUM WORKING PRESSURE OF 2930 KPA AND MAXIMUM TEMPERATURE OF 149 DEGREES
- B. STRAIGHT THROUGH TYPE: .1 BRASS BODY AND DISC, PHOSPHOR-BRONZE OR STAINLESS STEEL SPRING, NEOPRENE SEAT; FOR MAXIMUM WORKING PRESSURE OF 3450 KPA AND MAXIMUM TEMPERATURE OF 93 DEGREES C.
- 5.8 PRESSURE REGULATORS
- A. BRASS BODY, STAINLESS STEEL DIAPHRAGM, DIRECT ACTING, ADJUSTABLE OVER 0 TO 550 KPA RANGE, FOR MAXIMUM WORKING PRESSURE OF 3100 KPA
- 5.9 PRESSURE RELIEF VALVES
- A. STRAIGHT THROUGH OR ANGLE TYPE: BRASS BODY AND DISC, NEOPRENE SEAT, FACTORY SEALED AND STAMPED WITH ASME UV AND NATIONAL BOARD CERTIFICATION NB; FOR STANDARD 1620 KPA SETTING; SELECTED TO ASHRAE

HVAC SPECIFICATIONS

- A. REPLACEABLE CARTRIDGE ANGLE TYPE:
- .1 SHELL: ARI 710, UL LISTED, BRASS, REMOVABLE CAP, FOR MAXIMUM WORKING PRESSURE OF 2410 KPA.
- .2 FILTER CARTRIDGE: PLEATED MEDIA WITH INTEGRAL END RINGS, STAINLESS STEEL SUPPORT
- .3 FILTER/DRYER CARTRIDGE: PLEATED MEDIA WITH SOLID CORE SIEVE WITH ACTIVATED ALUMINA.
- .4 WAX REMOVAL CARTRIDGE: MOULDED BONDED CORE OF ACTIVATED
- CHARCOAL WITH INTEGRAL GASKETS. PERMANENT STRAIGHT THROUGH TYPE
- ARI 710, UL LISTED, STEEL SHELL WITH MOULDED DESICCANT FILTER CORE, FOR MAXIMUM WORKING PRESSURE OF 2410 KPA.
- A. VALVE: ARI 760, PILOT OPERATED, COPPER OR BRASS OR STEEL BODY AND INTERNAL PARTS, SYNTHETIC SEAT, STAINLESS STEEL STEM AND PLUNGER ASSEMBLY, INTEGRAL STRAINER, WITH FLARED, SOLDER, OR THREADED ENDS; FOR MAXIMUM WORKING PRESSURE OF 3450 KPA. STEM TO PERMIT MANUAL OPERATION IN CASE OF COIL FAILURE.
- COIL ASSEMBLY: UL 429, UL LISTED, REPLACEABLE WITH MOULDED ELECTROMAGNETIC COIL, MOISTURE AND FUNGUS PROOF, WITH SURGE PROTECTOR AND COLOUR CODED LEAD WIRES, INTEGRAL JUNCTION BOX WITH PILOT LIGHT.
- C. ELECTRICAL CHARACTERISTICS: 120 VOLTS, SINGLE PHASE, 60 HZ. 5.12 <u>EXPANSION VALVES</u>
- A. ANGLE OR STRAIGHT THROUGH TYPE: ARI 750; DESIGN SUITABLE FOR REFRIGERANT, BRASS BODY, INTERNAL OR EXTERNAL EQUALIZER, BLEED HOLE SUPERHEAT SETTING, REPLACEABLE INLET STRAINER, WITH NON-REPLACEABLE
- CAPILLARY TUBE AND REMOTE SENSING BULB AND REMOTE BULB WELL. B. SELECTION: EVALUATE REFRIGERANT PRESSURE DROP THROUGH SYSTEM TO DETERMINE AVAILABLE PRESSURE DROP ACROSS VALVE. SELECT VALVE FOR MAXIMUM LOAD AT DESIGN OPERATING PRESSURE AND MINIMUM 6 DEGREES
- SUPERHEAT. SELECT TO AVOID BEING UNDERSIZED AT FULL LOAD AND EXCESSIVELY OVERSIZED AT PART LOAD.
- A. INTERNAL DIAMETER 150 MM AND SMALLER: ARI 495, UL LISTED, STEEL, BRAZED; 2760 KPA MAXIMUM PRESSURE RATING, WITH TAPPINGS FOR INLET, OUTLET, AND PRESSURE RELIEF
- INTERNAL DIAMETER OVER 150 MM: ARI 495, WELDED STEEL, TESTED AND STAMPED TO ASME SEC 8D; 276 KPA WITH TAPPINGS FOR LIQUID INLET AND OUTLET VALVES, PRESSURE RELIEF VALVE, AND MAGNETIC LIQUID LEVEL INDICATOR.
- FLEXIBLE CONNECTORS A. CORRUGATED STAINLESS STEEL HOSE WITH SINGLE LAYER OF STAINLESS STEEL EXTERIOR BRAIDING, MINIMUM 230 MM LONG WITH COPPER TUBE ENDS; FOR MAXIMUM WORKING PRESSURE 3450 KPA.
- HVAC DUCTWORK
- A. INSTALL AND SEAL DUCTS TO SMACNA HVAC DUCT CONSTRUCTION STANDARD METAL AND FLEXIBLE.
- B. SUPPORT ALL DUCTWORK FROM STRUCTURAL MEMBERS. WHERE STRUCTURAL BEARINGS DO NOT EXIST, SUSPEND STRAPPING OR HANGERS FROM STEEL CHANNELS OR ANGLES. PROVIDE SUPPLEMENTARY STRUCTURAL MEMBERS. C. DO NOT BREAK CONTINUITY OF INSULATION VAPOUR BARRIER BY HANGERS
- D. DUCT SIZES ARE INSIDE CLEAR DIMENSIONS. FOR LINED DUCTS, MAINTAIN SIZES INSIDE LINING.
- PROVIDE OPENINGS IN DUCT WORK WHERE REQUIRED TO ACCOMMODATE THERMOMETERS AND CONTROLLERS. PROVIDE PILOT TUBE OPENINGS WHERE REQUIRED FOR TESTING OF SYSTEMS, COMPLETE WITH METAL CAN WITH SPRING DEVICE OR SCREW TO ENSURE AGAINST AIR LEAKAGE. WHERE OPENINGS ARE PROVIDED IN INSULATED DUCTWORK, INSTALL INSULATION MATERIAL INSIDE A METAL RING.
- BALANCING DAMPERS SHALL BE INSTALLED ON BRANCHES AS PER LOCATIONS SHOWN ON THE DRAWINGS AND AS PER THE REQUIREMENTS OF NEBB AND AABC LISTING/MEASURING STANDARDS.
- PROVIDE DRAIN IN EVERY FRESH AIR INTAKE AND EXHAUST PLENUM. DUCTWORK SHALL BE LEAK TESTED IN ACCORDANCE WITH THE SMACN/ "HVAC AIR DUCT LEAKAGE TEST MANUAL". THE MAXIMUM PERMITTED DUCT I FAKAGE SHALL BE DETERMINED BY MULTIPLYING THE LEAKAGE FACTOR FROM PARAGRAPH 2.4 ABOVE BY THE SURFACE AREA OF THE DUCTWORK IN THE
- A. RIGID HVAC DUCTS, CASINGS AND FITTINGS:
 - .1 ASTM A653 GALVANIZED STEEL SHEET, LOCK FORM QUALITY, G90 ZINC COATING (0.90 OZ/FT2) TO ASTM A90. SHEETS FREE OF PITS, BLISTERS, SLIVERS, AND UNGALVANIZED SPOTS.
- B. ALUMINUM DUCTS, DRYER VENTS:
- ASTM B209; ALUMINUM SHEET, ALLOY 3003-H14. ALUMINUM CONNECTORS AND BAR STOCK: ALLOY 6061- T6 OR OF EQUIVALENT STRFNGTH.
- SEAL DUCTWORK IN ACCORDANCE WITH SMACNA SEALING REQUIREMENT AS
- A. SEAL CLASS A: ALL TRANVERSE JOINTS, LONGITUDINAL SEAMS AND DUCT WALL PENETRATIONS
- B. SEAL CLASS B: ALL TRANVERSE JOINTS AND LONGITUDINAL SEAMS C. SEAL CLASS C: ALL TRANVERSE JOINTS
- 6.4 DUCTWORK FABRICATION
- A. ALL DUCTWORK SHALL BE CONSTRUCTED TO WITHSTAND 1-1/2 TIMES FAN PRESSURE AT SHUT-OFF AND 2" (500 PA) MINIMUM.
- B. FABRICATE AND SUPPORT TO SMACNA HVAC DUCT CONSTRUCTION STANDARD - METAL AND FLEXIBLE, AND AS INDICATED. PROVIDE DUCT MATERIAL.
- GAUGES, REINFORCING, AND SEALING FOR OPERATING PRESSURES INDICATED IN ACCORDANCE WITH RECOMMENDATIONS OF ASHRAE AND SMACNA.
- C. JOINTS AND REINFORCEMENTS:
- .1 TO SMACNA AND ASHRAE
- .2 MAY BE MADE WITH THE DUCTMATE SYSTEM OR NEXUS SYSTEM. SYSTEM COMPONENTS SHALL BE MADE OF STANDARD CATALOGUE MANUFACTURE AS SUPPLIED BY DUCTMATE INDUSTRIES, INC. OR NEXUS INC. D. CONSTRUCT TEES, BENDS, AND ELBOWS WITH RADIUS OF NOT LESS THAN
- 1-1/2 TIMES WIDTH OF DUCT ON CENTRELINE. WHERE NOT POSSIBLE AND WHERE RECTANGULAR ELBOWS ARE USED, PROVIDE AIR FOIL TURNING VANES. WHERE ACOUSTICAL LINING IS INDICATED, PROVIDE TURNING VANES OF PERFORATED METAL WITH GLASS FIBRE INSULATION.
- INCREASE DUCT SIZES GRADUALLY, NOT EXCEEDING 15 DEGREES DIVERGENCE WHEREVER POSSIBLE; MAXIMUM 30 DEGREES DIVERGENCE UPSTREAM OF
- EQUIPMENT AND 45 DEGREES CONVERGENCE DOWNSTREAM. FABRICATE CONTINUOUSLY WELDED ROUND AND OVAL DUCT FITTINGS TWO
- GAUGES HEAVIER THAN DUCT GAUGES INDICATED IN SMACNA STANDARD. JOINTS: MINIMUM 80 MM CEMENTED SLIP JOINT, BRAZED OR ELECTRIC
- WELDED. PRIME COAT WELDED JOINTS. PROVIDE STANDARD 45-DEGREE LATERAL WYE TAKEOFFS. ALTERNATIVE 90-DEGREE CONICAL TEE CONNECTIONS MAY BE USED ONLY WHERE SPECIFICALLY INDICATED.
- 6.5 FLEXIBLE DUCTWORK
- A. MANUFACTURER: THERMAFLEX M-KC B. FLEXIBLE DUCTWORK CONFORMING TO UNDERWRITERS LABORATORIES LISTED
- AS CLASS 1 AIR DUCT, UL STANDARD 181 AND CUL S110 WITH NO LIMITATIONS TO 14 FEET RUNS. C. CONFORMS TO NFPA 90A AND 90B.
- D. HEAVY WOVEN AND COATED FIBERGLASS CLOTH CORE.
- E. GREENGUARD CERTIFIED.
- FIBERGLASS INSULATING BLANKET AND LOW PERMEABILITY OUTER VAPOR BARRIER OF FIBERGLASS REINFORCED METALLIZED FILM LAMINATE.
- G. 20/50 FLAME/SMOKE SPREAD RATING.
- H. 0.05 PERM VAPOR TRANSMISSION RATING

HVAC SPECIFICATIONS

TO SUIT APPLICATION.

7.2 BACKDRAFT DAMPERS.

7.3 VOLUME CONTROL DAMPERS

B. SPLITTER DAMPERS:

DYN-AIR

F. QUADRANTS

TAYLOR

7.4 <u>FIRE DAMPERS</u>

A. TURNING VANES IN RECTANGULAR DUCT ELBOWS SHALL BE DOUBLE WALLEI

"DUCTURN", DYN-AIR OR TUTTLE AND BAILY.

MODEL EX-8, DURO-DYNE, DYN-AIR.

MANUFACTURERS STANDARD CONSTRUCTION.

C. ACCEPTABLE MANUFACTURERS: EH PRICE.

FLEXIBLE, AND AS INDICATED.

MULTI-BLADE DAMPERS.

A. MANUFACTURERS: PRICE, RUSKIN, NAILOR

HOURS, OR USED IN A FIREWALL.

WHEN USED IN A CEILING FIRE SEPARATION.

RATED IN CONFORMANCE WITH:

BOTH ENDS.

FIREWALL

STEEL CONSTRUCTION.

7.5 <u>FIRE DAMPERS (DYNAMIC)</u>

MULTI-BLADE VANES WITH BLADES ALIGNED IN SHORT DIMENSION; STEEL

CONSTRUCTION; WITH INDIVIDUALLY ADJUSTABLE BLADES, MOUNTING STRAPS.

ACCEPTABLE PRODUCTS: DURO-DYNE "DURO VANE RAIL", HART & COOLEY

B. VOLUME EXTRACTORS: GANG OPERATED CURVED BLADES, ADJUSTABLE FROM

ASSEMBLED, FABRICATED FROM 14 GA. AND 22 GA. (2 AND .9 MM) STEEL,

WITH BLADES ON 1" (25 MM) CENTRES, AND NO. 2 OR NO. 3 OPERATORS

ACCEPTABLE MANUFACTURERS: EH PRICE MODEL AE1 INDICATED. KRUEGER

SMALLER, PROVIDED WITH AIR MOVING EQUIPMENT: AIR MOVING EQUIPMENT

B. MULTI-BLADE, PARALLEL ACTION GRAVITY BALANCED BACKDRAFT DAMPERS:

1/16" (1.5 MM) THICK GALVANIZED STEEL, OR, WITH CENTRE PIVOTED

BLADES OF MAXIMUM 6" (150 MM) WIDTH, WITH FELT OR FLEXIBLE VINYL

STOP, STEEL BALL BEARINGS, AND PLATED STEEL PIVOT PIN; ADJUSTMENT

DEVICE TO PERMIT SETTING FOR VARYING DIFFERENTIAL STATIC PRESSURE.

A. FABRICATE TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND

.1 MATERIAL: SAME GAUGE AS DUCT TO 24" (600 MM) SIZE IN EITHER

SHAPE, SECURED WITH CONTINUOUS HINGE OR ROD.

DIRECTION, AND TWO GAUGES HEAVIER FOR SIZES OVER 24" (600 MM).

.2 BLADE: FABRICATE OF SINGLE THICKNESS SHEET METAL TO STREAMLINE

GALVANIZED STEEL, SUITABLY REINFORCED TO PREVENT VIBRATION AND FITTED

WITH INDICATING REGULATOR. DURO-DYNE, LAWSON & TAYLOR, DYN-AIR.

.3 OPERATOR: MINIMUM 24" (600 MM) DIAMETER ROD IN SELF ALIGNING,

UNIVERSAL JOINT ACTION, FLANGED BUSHING WITH SET SCREW.

C. SINGLE LEAF DAMPERS: FABRICATED FROM MINIMUM 20 GAUGE (1.0 MM)

D. MULTI-BLADE OPPOSED ACTION DAMPERS: FABRICATED FROM 16 GAUGE

(1.6 MM) GALVANIZED STEEL, MOUNTED IN SEPARATE CHANNEL FRAMES,

REINFORCED TO PREVENT VIBRATION, AND FITTED WITH OPPOSED ACTION

LINKAGE HARDWARE. DURO-DYNE "OPAX" BLADE KIT, LAWSON & TAYLOR,

E. END BEARINGS: EXCEPT IN ROUND DUCTWORK 12" (300 MM) AND SMALLER,

.1 PROVIDE LOCKING, INDICATING QUADRANT REGULATORS ON SINGLE AND

.2 ON INSULATED DUCTS MOUNT QUADRANT REGULATORS ON STAND-OFF

.3 WHERE ROD LENGTHS EXCEED 30" (750 MM) PROVIDE REGULATOR AT

G. ACCEPTABLE MANUFACTURERS: DURO-DYNE, DYN-AIR, PRICE, LAWSON &

B. FIRE DAMPERS SHALL BE ULC LISTED, LABELLED, OR WARNOCK-HERSEY

LABEL, MEET ALL REQUIREMENTS OF NFPA 90A, AND CONSTRUCTED AND

.1 CAN4-S92-M82, "STANDARD FOR FIRE DAMPERS", WHEN USED IN A FIRE

SEPARATION OF NOT MORE THAN 2 HOURS, AND WHICH IS NOT A

ASSEMBLIES", WHEN USED IN A FIRE SEPARATION OF MORE THAN 2

.3 CAN4-S92.2-M84, "FIRE TEST OF CEILING FIRESTOP FLAP ASSEMBLIES",

FIRE DAMPERS SHALL BE GALVANIZED STEEL CHANNEL FRAME CURTAIN TYP

GALVANIZED STEEL ENCLOSURE, AND 160°F (71°C) FUSIBLE LINK STANDARD.

GALVANIZED STEEL INTERLOCKING BLADES, MINIMUM 22 GAUGE (0.9 MM)

D. FIRE DAMPERS FOR HORIZONTAL INSTALLATION IN VERTICAL DUCTWORK SHALL

FIRE DAMPER CONFIGURATION SHALL BE LOW RESISTANCE TYPE B WITH

MEMBRANE TYPE CEILINGS, GALVANIZED STEEL CONSTRUCTION WITH HEAT

G. THERMAL BLANKET SHALL BE ULC LABELLED, FOR FIRE RATED MEMBRANE

I. FUSIBLE LINKS: UL 33, SEPARATE AT 160°F (71°C) WITH ADJUSTABLE LINK

H. FIRE DAMPERS IN STAINLESS STEEL DUCTWORK SHALL BE OF ALL STAINLESS

TYPE CEILINGS, TO COMPLETELY ENSHROUD CEILING PENETRATION.

RETARDANT BLANKET (NON-ASBESTOS) WITH STANDARD 160°F (71°C) FUSIBLE

BE OPERATED BY A STAINLESS STEEL CLOSURE SPRING AND LATCH.

BLADES LOCATED OUTSIDE OF THE AIR STREAM FOR RECTANGULAR

DUCTWORK, AND TYPE C FOR ROUND OR OVAL DUCTWORK.

STRAPS FOR COMBINATION FIRE/BALANCING DAMPERS.

F. CEILING FIRE DAMPERS SHALL BE ULC LABELLED, FOR FIRE RATED

.2 CAN4-S104-M80, "STANDARD METHOD FOR FIRE TESTS OF DOOR

PROVIDE END BEARINGS. ON MULTIPLE BLADE DAMPERS, PROVIDE

OIL-IMPREGNATED NYLON OR SINTERED BRONZE BEARINGS.

MOUNTING BRACKETS, BASES, OR ADAPTERS.

SEALED EDGES. LINKED TOGETHER IN RATTLE-FREE MANNER WITH 90 DEGREE

FULL OPEN TO FULL CLOSED POSITIONS. UNITS SHALL BE FACTORY

A. GRAVITY BACKDRAFT DAMPERS, SIZE 18" X 18" (450 X 450 MM) OR

DUCT ACCESSORIES 7.1 AIR TURNING DEVICES / EXTRACTORS

HVAC SPECIFICATIONS

- 7.8 FLEXIBLE DUCT CONNECTIONS
- A. FABRICATE TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE, AND AS INDICATED. .1 MIL-C-20696B PARA. 4.4.3, 4.4.4 (OIL AND HYDRO CARBON RESISTANCE
- .2 UL CERTIFIED NFPA 701 TESTS FOR FLAME PROPAGATION OF FABRICS AND
- .3 10/120 ASTM E84 FLAME/SMOKE RATING.
- .4 -40F TO 250F CONTINUOUS TEMPERATURE RANGE. .5 WHITE WOVEN FIBERGLASS COLOUR
- .6 GALVANIZED STEEL CONFORMING TO ASTM-A-525 G 60 OR BETTER B. ACCEPTABLE MANUFACTURERS" DURO-DYNE, DDFDC.
- 7.9 HANGERS AND SUPPORTS
- A. FABRICATE STRAP HANGERS TO SAME MATERIAL AS DUCT. HANGER CONFIGURATION TO SMACNA DETAILS. 20" (500 MM) IS MAXIMUM DUCT SIZE TO BE SUPPORTED BY STRAP HANGER.
- B. ROD AND ANGLE HANGERS: GALVANIZED STEEL TO SMACNA DETAILS. C. HANGER ATTACHMENTS: MANUFACTURED CONCRETE INSERTS, EXPANSION SHIELDS AND BOLTED STEEL CLAMPS. DO NOT WELD RODS TO STEEL DECKS OR USE POWDER ACTUATED FASTENERS.
- 7.10 ACOUSTIC LINING
- MANUFACTURER: ARMACELL AP ARMAFLEX SA COMPLIANCE: ASTM C54, ASTM E84, ULC-S102, NFPA 90A, ASTM C1534,
- ASTM D1056
- THICKNESS: 25mm (1") THICK THERMAL CONDUCTIVITY: 0.245 BTU-in/Hr-Sq.Ft- F AT 75 F (0.0353 W/m
- AT 24 C)
- PERMEABILITY: 0.05 PERM-IN MAXIMUM FLAME SPREAD INDEX: 25
- MAXIMUM SMOKE DEVELOPMENT INDEX: 50
- WATER ABSORPTION: 0.2% BY VOLUME
- MAXIMUM SERVICE TEMPERATURE: 180 F (82 C) MINIMUM SERVICE TEMPERATURE: -30 F (34 C)
- EROSION RESISTANCE: ASTM C1071.
- 7.11 DUCT SEALANT
- A. GENERAL: LOW VOC, WATER BASED SEALANT, NON-TOXIC, NON-COMBUSTIBLE NON-FLAMMABLE, AND TESTED IN ACCORDANCE WITH CAN4/ULC-S102. FLAM SPREAD SHALL NOT EXCEED 25 AND SMOKE DEVELOPED SHALL NOT EXCEED
- B. ACCEPTABLE PRODUCTS: MULTI-PURPOSE DUCT SEALANT AS MANUFACTURED BY TRANS CONTINENTAL EQUIPMENT, DURO DYNE SWB DUCT SEALER, IRON GRIP 601 AS SUPPLIED BY ALPHA SHEET METAL CO., OR UNI-GRIP DUCT SEALER FROM UNITED MCGILL CORPORATION.
- .12 ELECTRONIC DAMPER ACTUATORS
- A. MANUFACTURED, BRAND LABELED OR DISTRIBUTED BY BELIMO OR APPROVED EQUIVALENT. B. SIZE FOR TORQUE REQUIRED FOR DAMPER SEAL AT LOAD CONDITIONS.
- C. COUPLING: V-BOLT DUAL NUT CLAMP WITH A V-SHAPED, TOOTHED CRADLE. D. MOUNTING: ACTUATORS SHALL BE CAPABLE OF BEING MECHANICALLY AND
- ELECTRICALLY PARALLELED TO INCREASE TORQUE IF REQUIRED. OVERLOAD PROTECTION: ELECTRONIC OVERLOAD OR DIGITAL
- ROTATION-SENSING CIRCUITRY WITHOUT THE USE OF END SWITCHES TO PREVENT ANY DAMAGE TO THE ACTUATOR DURING A STALL CONDITION. F. FAIL-SAFE OPERATION: MECHANICAL, SPRING-RETURN MECHANISM.
- G. POWER REQUIREMENTS (SPRING RETURN): 120 V AC, MAXIMUM 10 VA AT 24-V AC OR 8 W AT 24-V DC.
- H. PROPORTIONAL ACTUATORS SHALL BE FULLY PROGRAMMABLE. CONTROL INPUT, POSITION FEEDBACK AND RUNNING TIME SHALL BE FACTORY OR FIEL PROGRAMMABLE BY USE OF EXTERNAL COMPUTER SOFTWARE DIAGNOSTIC FEEDBACK SHALL PROVIDE INDICATIONS OF HUNTING OR OSCILLATION, MECHANICAL OVERLOAD AND MECHANICAL TRAVEL. PROGRAMMING SHALL BI THROUGH AN EEPROM WITHOUT THE USE OF ACTUATOR MOUNTED SWITCHES.
- TEMPERATURE RATING: -22 TO $+122^{\circ}F$ (-30 TO $+50^{\circ}C$) J. HOUSING: MINIMUM REQUIREMENT NEMA TYPE 2 MOUNTED IN ANY ORIFNTATION.
- K. AGENCY LISTING: ISO 9001, CULUS, AND CSA C22.2 NO. 24-93. L. THE MANUFACTURER SHALL WARRANT ALL COMPONENTS FOR A PERIOD OF S YEARS FROM THE DATE OF PRODUCTION, WITH THE FIRST TWO YEARS UNCONDITIONAL.

8 <u>TESTING, ADJUSTING, BALANCING</u>

- 8.1 <u>PREPARATION</u>
- A. PROVIDE INSTRUMENTS REQUIRED FOR TESTING, ADJUSTING, AND BALANCING OPERATIONS. MAKE INSTRUMENTS AVAILABLE TO CONSULTANT TO FACILITATE SPOT CHECKS DURING TESTING.
- B. PROVIDE ADDITIONAL BALANCING DEVICES AS REQUIRED.
- 3.2 INSTALLATION TOLERANCES
- A. AIR HANDLING SYSTEMS: ADJUST TO WITHIN PLUS OR MINUS 5 PERCENT OF DESIGN FOR SUPPLY SYSTEMS AND PLUS OR MINUS 5 PERCENT OF DESIGN FOR RETURN AND EXHAUST SYSTEMS. B. AIR OUTLETS AND INLETS: ADJUST TOTAL TO WITHIN PLUS 5 PERCENT AND
- MINUS 5 PERCENT OF DESIGN TO SPACE. ADJUST OUTLETS AND INLETS IN SPACE TO WITHIN PLUS OR MINUS 5 PERCENT OF DESIGN. C. HYDRONIC SYSTEMS: ADJUST TO WITHIN PLUS OR MINUS 10 PERCENT OF
- DESIGN. 8.3 ADJUSTING
- A. ENSURE RECORDED DATA REPRESENTS ACTUAL MEASURED OR OBSERVED CONDITIONS
- B. PERMANENTLY MARK SETTINGS OF VALVES, DAMPERS, AND OTHER ADJUSTMENT DEVICES ALLOWING SETTINGS TO BE RESTORED. SET AND LOCK MEMORY STOPS.
- C. AFTER ADJUSTMENT, TAKE MEASUREMENTS TO VERIFY BALANCE HAS NOT BEEN DISRUPTED OR THAT SUCH DISRUPTION HAS BEEN RECTIFIED.
- D. LEAVE SYSTEMS IN PROPER WORKING ORDER, REPLACING BELT GUARDS, CLOSING ACCESS DOORS, CLOSING DOORS TO ELECTRICAL SWITCH BOXES, AND RESTORING THERMOSTATS TO SPECIFIED SETTINGS.
- E. AT FINAL INSPECTION, RECHECK RANDOM SELECTIONS OF DATA RECORDED I REPORT. RECHECK POINTS OR AREAS AS SELECTED AND WITNESSED BY THE
- F. CHECK AND ADJUST SYSTEMS APPROXIMATELY SIX MONTHS AFTER FINAL ACCEPTANCE AND SUBMIT REPORT.

9.4 AIR SYSTEM PROCEDURE

- A. ADJUST AIR HANDLING MULTI-ZONE DAMPER DISTRIBUTION SYSTEMS TO PROVIDE REQUIRED OR DESIGN SUPPLY, RETURN, AND EXHAUST AIR QUANTITIES AT SITE ALTITUDE. ADJUST ERV DISTRIBUTION SYSTEM TO PROVIDE REQUIRED OR DESIGN SUPPLY, RETURN, OUTDOOR AIR, AND EXHAUST AIR QUANTITIES AT SITE ALTITUDE.
- B. MAKE AIR QUANTITY MEASUREMENTS IN DUCTS BY PITOT TUBE TRAVERSE OF ENTIRE CROSS-SECTIONAL AREA OF DUCT.
- C. MEASURE AIR QUANTITIES AT AIR INLETS AND OUTLETS. D. ADJUST DISTRIBUTION SYSTEM TO OBTAIN UNIFORM SPACE TEMPERATURES
- FREE FROM OBJECTIONABLE DRAFTS AND NOISE. E. USE BRANCH VOLUME CONTROL DAMPERS AND SPLITTERS TO REGULATE AIR QUANTITIES. DEVICES AT AIR OUTLETS MAY BE USED ONLY TO THE EXTENT THAT ADJUSTMENTS DO NOT CREATE OBJECTIONABLE AIR MOTION OR SOUND I EVELS.
- F. VARY TOTAL SYSTEM AIR QUANTITIES BY ADJUSTMENT OF FAN SPEEDS. ADJUST AIRFLOW TO DESIGN QUANTITY. PROVIDE DRIVE CHANGES AS REQUIRED. MAKE ALLOWANCES FOR LOADING OF FILTERS TO 50% OF MANUFACTURERS' RECOMMENDATIONS FOR FINAL PRESSURE AT FANS WITH FIXED SPEED DRIVES AND TO 100% OF MANUFACTURERS' RECOMMENDATIONS FOR FINAL PRESSURE AT FANS WITH VARIABLE SPEED DRIVES.
- G. PROVIDE SYSTEM SCHEMATIC WITH REQUIRED AND ACTUAL AIR QUANTITIES RECORDED AT EACH OUTLET OR INLET. H. MEASURE STATIC AIR PRESSURE CONDITIONS ON AIR SUPPLY UNITS,
- INCLUDING FILTER AND COIL PRESSURE DROPS, AND TOTAL PRESSURE ACROSS THE FAN.
- ADJUST OUTSIDE AIR AUTOMATIC DAMPERS, OUTSIDE AIR, RETURN AIR, AND EXHAUST DAMPERS FOR DESIGN CONDITIONS.
- MEASURE TEMPERATURE CONDITIONS ACROSS OUTSIDE AIR, RETURN AIR, AN EXHAUST DAMPERS TO CHECK LEAKAGE. K. WHERE MODULATING DAMPERS ARE PROVIDED, TAKE MEASUREMENTS AND
- BALANCE AT EXTREME CONDITIONS. BALANCE VARIABLE VOLUME SYSTEMS A MAXIMUM AIR FLOW RATE, FULL COOLING, AND AT MINIMUM AIR FLOW RATE,

- A. DYNAMIC FIRE DAMPERS TESTED, CONSTRUCTED AND LABELED IN ACCORDANCE WITH THE LATEST EDITION OF UL STANDARD 555. DAMPERS SHALL HAVE A FIRE RATING OF 1-1/2 HOURS OR 3 HOURS AND SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF NFPA90A. B. EACH DAMPER SHALL INCLUDE A 165°F (74°C) FUSIBLE LINK AND SHALL B LABELED FOR USE IN DYNAMIC SYSTEMS. THE DAMPER SHALL BE RATED FOR DYNAMIC CLOSURE AT 2000FPM (10.16M/S) AND 4 INCHES W.G. (1 KPA) STATIC PRESSURE AND SHALL BE RATED TO CLOSE WITH AIRFLOW IN EITHER DIRECTION. C. EACH DYNAMIC FIRE DAMPER SHALL INCLUDE A STEEL SLEEVE AND MOUNTING ANGLES FURNISHED BY THE DAMPER MANUFACTURER TO ENSURE
- APPROPRIATE INSTALLATION. SUBMITTALS INFORMATION SHALL INCLUDE THE FIRE PROTECTION RATING. MAXIMUM VELOCITY/PRESSURE RATINGS AND THE MANUFACTURER'S UL INSTALLATION INSTRUCTIONS. THE DAMPERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S UL INSTALLATION INSTRUCTIONS.
- D. ACCEPTABLE PRODUCT: RUSKIN DIBD2/DIBD23, NCA, VENTEX, PRICE, CONTROLLED AIR.
- 7.6 DUCT ACCESS DOORS
- A. FABRICATE TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE, AND AS INDICATED B. FABRICATION: RIGID AND CLOSE-FITTING OF GALVANIZED STEEL WITH SEALING GASKETS AND QUICK FASTENING LOCKING DEVICES. FOR INSULATED DUCT WORK, INSTALL MINIMUM 1" (25 MM) THICK INSULATION WITH SHEET METAL
- COVER .1 LESS THAN 12" (300 MM) SQUARE: SECURE WITH SASH LOCKS.
- .2 UP TO 18" (450 MM) SQUARE: PROVIDE TWO HINGES AND TWO SASH LOCKS.
- .3 UP TO 24" X 48" (600 X 1200 MM): THREE HINGES AND TWO COMPRESSION LATCHES WITH OUTSIDE AND INSIDE HANDLES.
- .4 LARGER SIZES: PROVIDE AN ADDITIONAL HINGE. C. ACCESS DOORS WITH SHEET METAL SCREW FASTENERS ARE NOT

INSULATED/UNINSULATED DUCT, ROUND/RECTANGULAR DUCT).

ACCEPTABLE. D. ACCEPTABLE MANUFACTURER: ACUDOOR, DURO-DYNE, DYN-AIR, NAILOR, KREUGER

B. TEMPORARY TEST HOLES: CUT OR DRILL IN DUCTS AS REQUIRED. CAP WITH

NEAT PATCHES, NEOPRENE PLUGS, THREADED PLUGS, OR THREADED OR

PERMANENT TEST HOLES: FACTORY FABRICATED, AIR TIGHT FLANGED FITTINGS

WITH SCREW CAP. PROVIDE EXTENDED NECK FITTINGS TO CLEAR INSULATION.

7.7 DUCT TEST HOLES PROVIDE TEST PORTS TO SUIT INTENDED APPLICATION, (IE.

TWIST-ON METAL CAPS.

D. ACCEPTABLE MANUFACTURERS: AIR POWER CO..

IVAC SPECIFICATIONS	^{Client} Halton District School Board 2050 Guelph Line Burlington, Ontario
L. CHECK MULTI-ZONE UNITS FOR MOTORIZED DAMPER LEAKAGE. ADJUST AIR QUANTITIES WITH MIXING DAMPERS SET FIRST FOR COOLING, THEN HEATING, THEN MODULATING. 10.5 <u>WATER SYSTEM PROCEDURE</u>	T.A. BLAKELOCK H.S.
 A. ADJUST WATER SYSTEMS TO PROVIDE REQUIRED OR DESIGN QUANTITIES. B. USE CALIBRATED VENTURI TUBES, ORIFICES, OR OTHER METERED FITTINGS AND PRESSURE GAUGES TO DETERMINE FLOW RATES FOR SYSTEM BALANCE. WHERE FLOW METERING DEVICES ARE NOT INSTALLED, BASE FLOW BALANCE ON TEMPERATURE DIFFERENCE ACROSS VARIOUS HEAT TRANSFER ELEMENTS IN THE SYSTEM. 	RENOVATION 1160 Rebecca Street, Oakville, ON L6L 1Y9
 C. ADJUST SYSTEMS TO PROVIDE SPECIFIED PRESSURE DROPS AND FLOWS THROUGH HEAT TRANSFER ELEMENTS PRIOR TO THERMAL TESTING. PERFORM BALANCING BY MEASUREMENT OF TEMPERATURE DIFFERENTIAL IN CONJUNCTION WITH AIR BALANCING. D. EFFECT SYSTEM BALANCE WITH AUTOMATIC CONTROL VALVES FULLY OPEN TO USE AT TRANSFER FLOWENTS. 	Architect
 HEAT TRANSFER ELEMENTS. E. EFFECT ADJUSTMENT OF WATER DISTRIBUTION SYSTEMS BY MEANS OF BALANCING COCKS, VALVES, AND FITTINGS. DO NOT USE SERVICE OR SHUT-OFF VALVES FOR BALANCING UNLESS INDEXED FOR BALANCE POINT. F. WHERE AVAILABLE PUMP CAPACITY IS LESS THAN TOTAL FLOW REQUIREMENTS OR INDIVIDUAL SYSTEM PARTS, FULL FLOW IN ONE PART MAY BE SIMULATED 	Snyder Architects Inc. 260 King St. E, Unit A101, Toronto, ON M5A 4L5 tel. 416.966.5444 fax. 416.966.4443
BY TEMPORARY RESTRICTION OF FLOW TO OTHER PARTS.	www.snyderarchitects.ca Consultants
	Structural Consultants Kalos Engineering Inc. 875 Main St, W. Unit 3 Hamilton, Ontario, L8S 4P9
	Tel: 905-333-9119 Mechanical and Electrical Consultants EXP
	1266 S. Service Rd, Stoney Creek, Ontario, L8E 5R9 Tel: 905-525-6069
	of FSS / O
	W. S. DSOUZA 100224917
	BOLINCE OF ONTARIO
	Key Plan N.T.S.
	Project North True Nor No. Revisions
	2. Issued for Bids / Permit 2023 03 1 1. Issued for Bids 2023 02 0
	No. Issue Date General Contractor shall check and verify all dimensions and report a errors and omissions to the Architect. Do not scale the drawings.
	Drawings shall not be used for construction purposes until issued by a Architect for construction.
	Drawing Title: MECHANICAL SPECIFICATIONS
	Scale: AS NOTED Date: 05/01/202 Drawn by: C.M. Checked by: W.I
	Job No. Drawing No.

IVIUUS

IRE PROTECTION SPECIFICATIONS	PLUMBING SPECIFICATIONS
<u>GENERAL</u> GENERAL REQUIREMENT	OR ASME B16.32, SOVENT. 2. JOINTS: ASTM B32, SOLDER, GRADE 50B.
A. COOPERATE WITH OTHER TRADES WHOSE WORK AFFECTS OR IS AFFECTED BY	1.7 WATER PIPING, ABOVE GRADE
WORK OF THIS DIVISION TO ENSURE SATISFACTORY INSTALLATION AND TO AVOID DELAYS. MATERIALS TO BE BUILT-IN SUCH AS SLEEVES, ANCHORS, ETC., TOGETHER WITH ACCURATE DIMENSIONS OR TEMPLATES, PROMPTLY.	A. DOMESTIC HOT AND COLD WATER. .1 COPPER TUBING: ASTM B88M, TYPE L, HARD DRAWN.
ROVIDE FIRE EXTINGUISHERS WHERE INDICATED AND IN CONFORMANCE WITH	.1 COPPER TOBING: ASTM B88M, TYPE L, HARD DRAWN. .1 FITTINGS: ASME B16.18, CAST COPPER ALLOY OR ASME B1 WROUGHT COPPER AND BRONZE.
THE ONTARIO FIRE CODE AND NFPA 10. .1 PROVIDE 10 LB. (4.54 KG) MULTI-PURPOSE EXTINGUISHERS IN EACH	.2 JOINTS: ASTM B32, SOLDER, GRADE 95TA.
HFIRE HOSE CABINET AND IN MECHANICAL ROOMS.	B. DOMESTIC HOT WATER RE-CIRCULATION..1 COPPER TUBING: ASTM B88M, TYPE L, SOFT ANNEALED.
CEPTABLE MANUFACTURERS	.1 FITTINGS: ASME B18.18 CAST COPPER ALLOY OR ASME B1 WROUGHT COPPER AND BRONZE.
ATIONAL FIRE EQUIPMENT, FLAG, KENT, PYRENE CANADA, CFH, SAFETY UPPLY CHUBB	.2 JOINTS: ASTM B32, SOLDER, GRADE 95TA.
MULTI-PUPURPOSE DRY CHEMICAL TYPE: MULTI-PURPOSE (ABC) TYPE, DRY CHEMICAL	1.8 <u>STORM WATER PIPING, BURIED</u> A. CAST IRON PIPE: ASTM A74 EXTRA HEAVY WEIGHT.
SIZE: 5 LB. (2.27 KG) RATING: MINIMUM 3A:10BC.	.1 FITTINGS: CAST IRON. .2 JOINTS: ASTM C564, NEOPRENE GASKET SYSTEM
OR TYPE: MULTI-PURPOSE (ABC) TYPE, DRY CHEMICAL	B. CAST IRON PIPE: CISPI 301, HUBLESS, SERVICE WEIGHT. .1 FITTINGS: CAST IRON.
SIZE: 10 LB. (4.54 KG)	.2 JOINTS: NEOPRENE GASKETS AND STAINLESS STEEL CLAMP-AND-SH ASSEMBLIES.
RATING: MINIMUM 4A:60BC	C. ABS PIPE: ASTM D2680 OR ASTM D2751. .1 FITTINGS: ABS.
	.2 JOINTS: ASTM D2235, SOLVENT WELD, MAXIMUM VOC CONTENT OF 3 G/L.
MBING SPECIFICATIONS	D. PVC PIPE: ASTM D2665 OR ASTM D3034. .1 FITTINGS: PVC.
	.2 JOINTS: ASTM D2855, SOLVENT WELD WITH ASTM D2564 SOLVENT CEMENT.
UMBING PIPING	E. PVC PIPE: ASTM D2665, ASTM D3034, OR ASTM F679. .1 FITTINGS: PVC.
<u>PLUMBING PIPING – GENERAL:</u> VERIFY THAT EXCAVATIONS ARE TO REQUIRED GRADE, DRY, AND NOT	.2 JOINTS: ASTM F477, ELASTOMERIC GASKETS.
OVER-EXCAVATED REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAIN END FERROUS	1.9 <u>STORM WATER PIPING, ABOVE GRADE</u> A. CAST IRON PIPE: ASTM A74 EXTRA HEAVY WEIGHT.
PIPE. REMOVE SCALE AND DIRT, ON INSIDE AND OUTSIDE, BEFORE ASSEMBLY. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES OR UNIONS.	.1 FITTINGS: CAST IRON. .2 JOINTS: ASTM C564, NEOPRENE GASKET SYSTEM
PROVIDE NON-CONDUCTING DIELECTRIC CONNECTIONS WHEREVER JOINTING DISSIMILAR METALS. PROVIDE ACCESS WHERE VALVES AND FITTINGS ARE NOT EXPOSED.	 B. CAST IRON PIPE: CISPI 301, HUBLESS, SERVICE WEIGHT. .1 FITTINGS: CAST IRON.
COORDINATE SIZE AND LOCATION OF ACCESS DOORS WITH GENERAL TRADES.	.2 JOINTS: NEOPRENE GASKETS AND STAINLESS STEEL CLAMP-AND-SH ASSEMBLIES.
ROOF ASSEMBLY SUPPORT VERTICAL PIPING AT EVERY OTHER FLOOR. SUPPORT RISER PIPING	1.10 FLANGES, UNIONS, AND COUPLINGS
INDEPENDENTLY OF CONNECTED HORIZONTAL PIPING PRIME COAT EXPOSED STEEL HANGERS AND SUPPORTS. HANGERS AND	 A. PIPE SIZE 3-1/4" (80 MM) AND UNDER: .1 FERROUS PIPE: CLASS 150 MALLEABLE IRON THREADED UNIONS.
SUPPORTS LOCATED IN CRAWL SPACES, PIPE SHAFTS, AND SUSPENDED CEILING SPACES ARE NOT CONSIDERED EXPOSED.	.2 COPPER TUBE AND PIPE: CLASS 150 BRONZE UNIONS WITH SOLDER JOINTS.
SUPPORT CAST IRON DRAINAGE PIPING AT EVERY JOINT. DO HYDROSTATIC TESTING PRIOR TO BACKFILLING OVER JOINTS	 B. PIPE SIZE OVER 1" (25 MM): .1 FERROUS PIPE: CLASS 150 MALLEABLE IRON THREADED OR FOR
SINFECT ALL NEW AND ALTERED WATER DISTRIBUTION PIPING. RIFY THAT PIPING SYSTEM IS COMPLETE AND HAS BEEN FLUSHED,	STEEL SLIP-ON FLANGES; PREFORMED NEOPRENE GASKETS. .2 COPPER TUBE AND PIPE: CLASS 150 SLIP-ON BRONZE FLANGES;
CLEANED, INSPECTED, AND PRESSURE TESTED. ISOLATE EXISTING PIPING TO FULL EXTENT POSSIBLE. ENSURE THAT ALL	PREFORMED NEOPRENE GASKETS. C. GROOVED AND SHOULDERED PIPE END COUPLINGS:
IXTURES, EXITING AND NEW THAT ARE SERVED FROM PIPING BEING DISINFECTED, ARE TAKEN OUT OF SERVICE AND SIGNS ARE PLACED AT EACH IXTURE PROHIBITING USE DURING THE DISINFECTION PERIOD.	.1 HOUSING: MALLEABLE IRON CLAMPS TO ENGAGE AND LOCK, DES TO PERMIT SOME ANGULAR DEFLECTION, CONTRACTION, AND EXPAI STEEL BOLTS, NUTS, AND WASHERS; GALVANIZED FOR GALVANIZED P
ISURE PH OF WATER TO BE TREATED IS BETWEEN 7.4 AND 7.6 BY ADDING KALI (CAUSTIC SODA OR SODA ASH) OR ACID (HYDROCHLORIC). INJECT	.2 SEALING GASKET: "C" SHAPE COMPOSITION SEALING GASKET.
SINFECTANT, FREE CHLORINE IN LIQUÍD, POWDER, TABLET OR GÁS FORM, HROUGHOUT SYSTEM TO OBTAIN 50 TO 80 MG/L RESIDUAL.	D. DIELECTRIC CONNECTIONS: UNION WITH GALVANIZED OR PLATED THREADED END, COPPER SOLDER END, WATER IMPERVIOUS ISOL BARRIER.
RY SEWER PIPING, BURIED	1.11 <u>VALVES – GENERAL</u>
AST IRON PIPE: ASTM A74 EXTRA HEAVY WEIGHT. 1 FITTINGS: CAST IRON.	A. CONFORM TO REQUIREMENTS OF ANSI, ASTM, ASME, AND APPLICABLE STANDARDS.
2 JOINTS: HUB-AND-SPIGOT, CISPI HSN COMPRESSION TYPE WITH ASTM C564 NEOPRENE GASKETS CAST IRON PIPE: CISPI 301, HUBLESS.	B. MANUFACTURER'S NAME AND PRESSURE RATING CLEARLY MARKED ON TO MSS-SP-25.
1 FITTINGS: CAST IRON.	C. VALID CRN (CANADIAN REGISTRATION NUMBER) ISSUED BY PROVINCE ONTARIO REQUIRED FOR EACH VALVE.
2 JOINTS: CISPI 310, NEOPRENE GASKET AND STAINLESS STEEL CLAMP AND SHIELD ASSEMBLIES. OPPER TUBE: ASTM B306, DWV.	D. MATERIALS: .1 BRONZE: ASTM B62 OR B61 AS APPLICABLE .2 BRASS: ASTM B283 C3770
FITTINGS: ASME B16.23, CAST BRONZE, OR ASME B16.29, WROUGHT COPPER.	.3 CAST IRON: ASTM A126 CLASS B
JOINTS: ASTM B32, SOLDER, GRADE 50B. BS PIPE: ASTM D2751 OR ASTM F628.	E. END CONNECTIONS: .1 FLANGED ENDS: ANSI B16.1 (CLASS 125), ANSI B1
1 FITTINGS: ABS. 2 JOINTS: ASTM D2235, SOLVENT WELD.	.2 FACE-TO-FACE DIMENSIONS: ANSI B16.10 1.12 ISOLATION VALVES
ABS PIPE: ASTM D2661 OR ASTM D2751. .1 FITTINGS: ABS.	A. UP TO AND INCLUDING 2" (50MM) – BALL TYPE .1 MANUFACTURER: KITZ #69AMLL
.2 JOINTS: ASTM D2235, SOLVENT WELD. PVC PIPE: ASTM D2665 OR ASTM D3034.	.1 MANUFACTURER: KITZ #69AMLL .2 CONSTRUCTION: MSS SP-110, CLASS 150, 600 PSI (4140 KPA) (FORGED BRASS, TWO PIECE BODY, STAINLESS STEEL BALL AND STEM
.1 FITTINGS: PVC. .2 JOINTS: ASTM D2855, SOLVENT WELD WITH ASTM D2564 SOLVENT	FULL PORT, VIRGIN PTFE SEATS AND STEM PACKING, BLOW-OUT PRO STEM, LEVER HANDLE WITH BALANCING STOPS, STEM EXTENSIONS FO
CEMENT. PVC PIPE: ASTM D2665, ASTM D3034, OR ASTM F679.	INSULATED PIPING, SOLDER ENDS.
.1 FITTINGS: PVC. .2 JOINTS: ASTM F477, ELASTOMERIC GASKETS.	1.13 <u>DRAIN_VALVES</u> A. UP TO 150 PSIG – BALL TYPE:
TARY SEWER PIPING, ABOVE GRADE	.1 MANUFACTURERS: KITZ 68C
CAST IRON PIPE: ASTM A74, SERVICE WEIGHT. 1 FITTINGS: CAST IRON.	.2 CONSTRUCTION: 150 PSIG (1034 KPA), 600 WOG, BRASS BODY TO A C37700, TWO PIECE BODY, FULL PORT, PTFE SEATS AND STEM PACE OR DOUBLE "O" RING, BLOW-OUT PROOF STEM, CHROME PLATED BA
.2 JOINTS: ASTM C564, NEOPRENE GASKET SYSTEM CAST IRON PIPE: CISPI 301, HUBLESS, SERVICE WEIGHT.	LEVER HANDLE WITH CAP AND CHAIN, (3/4") 20 MM HOSE CONNEC
.1 FITTINGS: CAST IRON. .2 JOINTS: CISPI 310, NEOPRENE GASKETS AND STAINLESS STEEL	1.14 <u>STRAINERS</u>
CLAMP-AND-SHIELD ASSEMBLIES. COPPER TUBE: ASTM B306, DWV.	A. UP TO 125 PSIG: .1 SIZE 2" (50 MM) AND UNDER:
.1 FITTINGS: ASME B16.23, CAST BRONZE, OR ASME B16.29, WROUGHT COPPER, OR ASME B16.32, SOVENT.	.1 MANUFACTURERS: MUELLER STEAM 351M .2 CONSTRUCTION : 860 KPA (125 PSIG) 200 WOG RATING, BRONZ
.2 JOINTS: ASTM B32, SOLDER, GRADE 50B.	BODY, SCREWED CAP, Y PATTERN, 304 STAINLESS STEEL SCREED WITH 20 MESH PERFORATION, THREADED ENDS.
SANITARY SEWER PIPING, ABOVE GRADE.(URINALS ONLY) COPPER TUBING: ASTM B88M, TYPE K, HARD DRAWN.	.2 SIZE 2-1/2" (65 MM) AND LARGER: .1 MANUFACTURERS: MUELLER STEAM 758
.1 FITTINGS: ASME B18.18 CAST COPPER ALLOW OR ASME B16.22, WROUGHT COPPER AND BRONZE.	.1 MANUFACTURERS: MUELLER STEAM 758 .2 CONSTRUCTION : 860 KPA (125 PSIG)/ 200 WOG RATING, CAST BODY, BOLTED COVER, Y PATTERN, 304 STAINLESS STEEL SCREE
2 JOINTS: ASTM B32, SOLDER, GRADE 95TA SANITARY VENT PIPING, BURIED	WITH 1/16 & 1/8 PERFORATION, THREADED ENDS. B. UP TO 250 PSIG:
CAST IRON PIPE: ASTM A74 EXTRA HEAVY WEIGHT.	.1 SIZE 2" (50 MM) AND UNDER:
TTINGS: CAST IRON. DINTS: HUB-AND-SPIGOT, CISPI HSN COMPRESSION TYPE WITH ASTM C564	.1 MANUFACTURERS: MUELLER STEAM 11M .2 CONSTRUCTION : CLASS 250, 400 PSIG WOG, CAST IRON BODY, Y-PATTERN SCREWED CAP AND ENDS A167 304 STAINLESS STI
NE GASKETS OR LEAD AND OAKUM. CAST IRON PIPE: CISPI 301, HUBLESS.	Y-PATTERN, SCREWED CAP AND ENDS, A167 304 STAINLESS ST SCREEN WITH 1/32" PERFORATIONS.
ITTINGS: CAST IRON. OINTS: CISPI 310, NEOPRENE GASKET AND STAINLESS STEEL CLAMP AND	.2 SIZE 2-1/2" (65 MM) AND LARGER: .1 MANUFACTURERS: MUELLER STEAM 758
O ASSEMBLIES. COPPER TUBE: ASTM B306, DWV.	.2 CONSTRUCTION : 300 PSIG NON-SHOCK WOG, CAST IRON, Y-PATTERN, BOLTED COVER, BLOW-OUT PLUG, A167 304 STAINL STEEL SCREEN WITH 1/32" PERFORATIONS, FLANGED ENDS.
TTTINGS: ASME B16.23, CAST BRONZE, OR ASME B16.29, WROUGHT COPPER. IOINTS: ASTM B32, SOLDER, GRADE 50B.	STELL SUILLIN WITH 17 32 FERFURATIONS, FLANGED ENDS.
SANITARY VENT PIPING, ABOVE GRADE	2. <u>PLUMBING PIPING INSULATION</u>
CAST IRON PIPE: ASTM A74, SERVICE WEIGHT. FITTINGS: CAST IRON.	2.1 <u>GENERAL INSTALLATION</u> A. FINISHES:
OINTS: ASTM C564, NEOPRENE GASKET SYSTEM CAST IRON PIPE: CISPI 301, HUBLESS, SERVICE WEIGHT.	EXPOSED INDOORS: PVC JACKET. CONCEALED, INDOORS: CANVAS ON VALVES, FITTINGS. NO FURTHER FINISH.
TTINGS: CAST IRON. DINTS: CISPI 310, NEOPRENE GASKETS AND STAINLESS STEEL	USE VAPOUR RETARDER JACKET ON TIAC CODE A-3 INSULATION COMPATIBIL
AND-SHIELD ASSEMBLIES. COPPER TUBE: ASTM B306, DWV.	FINISH ATTACHMENTS: SS, BANDS, AT 150 MM ON CENTRE. SEALS: CLOSED
TTINGS: ASME B16.23, CAST BRONZE, OR ASME B16.29, WROUGHT COPPER,	2.2 <u>GLASS_FIBRE</u>

	PLUMBING SPECIFICATIONS
	A. APPROVED MANUFACTURERS: JOHNSMANVILLE MICRO-LOK B. OTHER ACCEPTABLE MANUFACTURERS OFFERING EQUIVALENT PRODUCTS:
	OWENS CORING FIBERGLASS, CERTAINTEED CRIMPWRAP. C. INSULATION: ASTM C547; ASTM C411, ASTM C356 ASTM E84, ASTM D774, NFPA 259.
	.1 'KSI' VALUE : 0.23 BTU-in/Hr-Sq.Ft-F AT 75°F, 0.33 W/m- C AT 24 °C.
E B16.22,	.2 MINIMUM SERVICE TEMPERATURE: 0°F (-18°C).
	.3 MAXIMUM SERVICE TEMPERATURE: 850°F (454°C). .4 MAXIMUM MOISTURE ABSORPTION: <5% BY WEIGHT.
	D. VAPOUR BARRIER JACKET .1 ASTM C136 TYPE I, WHITE KRAFT PAPER REINFORCED WITH GLASS FIBRE
E B16.22,	YARN AND BONDED TO ALUMINIZED FILM. .2 MOISTURE VAPOUR TRANSMISSION: ASTM E96; 0.02 PERM.
	.3 SECURE WITH SELF SEALING LONGITUDINAL LAPS AND BUTT STRIPS. .4 SECURE WITH OUTWARD CLINCH EXPANDING STAPLES AND VAPOUR
	BARRIER MASTIC E. TIE WIRE: 1.3 MM STAINLESS STEEL WITH TWISTED ENDS ON MAXIMUM 12"
	(300 MM) CENTRES F. VAPOUR BARRIER LAP ADHESIVE
	.1 COMPATIBLE WITH INSULATION. G. INSULATING CEMENT/MASTIC
-SHIELD	.1 ASTM C195; HYDRAULIC SETTING ON MINERAL WOOL, VOC CONTENT NOT TO EXCEED 80 G/L.
	H. FIBROUS GLASS FABRIC .1 CLOTH: UNTREATED; 9 OZ/SQ YD (305 G/SQ M) WEIGHT.
DF 325	.2 BLANKET: 1.0 LB/CU FT (16 KG/CU M) DENSITY.
	I. INDOOR VAPOUR BARRIER FINISH .1 VINYL EMULSION TYPE ACRYLIC, COMPATIBLE WITH INSULATION, WHITE COLOUR, VOC CONTENT NOT TO EXCEED 250 G/L.
т	J. OUTDOOR VAPOUR BARRIER MASTIC
	.1 VINYL EMULSION TYPE ACRYLIC, COMPATIBLE WITH INSULATION, WHITE COLOUR.
	K. INSULATING CEMENT .1 ASTM C449, VOC CONTENT NOT TO EXCEED 80 G/L.
	2.3 JACKETS (APPLY TO ALL INTERIOR EXPOSED PIPING ONLY)
	A. PVC PLASTIC .1 JACKET: ONE PIECE MOULDED TYPE FITTING COVERS AND SHEET MATERIAL.
	ASTM E84, ASTM D1784, ULC S102–M88. .2 MAXIMUM SERVICE TEMPERATURE: 151°F (66°C).
-SHIELD	.3 FINISH: GLOSS. .4 MAXIMUM FLAME SPREAD: ASTM E84; 25 OR LESS.
	.5 MAXIMUM SMOKE DEVELOPED: ASTM E84; 50 OR LESS. .6 THICKNESS: 20 MIL (0.4 MM) MINIMUM. 30 MIL (0.8 MM) MINIMUM FOR
	.6 THICKNESS: 20 MIL (0.4 MM) MINIMUM. 30 MIL (0.8 MM) MINIMUM FOR OUTDOOR USE. .7 COLOUR: STANDARD OFF-WHITE
DERED	.8 COVERING ADHESIVE MASTIC
	.1 COMPATIBLE WITH INSULATION, MAXIMUM VOC CONTENT OF 50 G/L. .9 APPROVED MANUFACTURER: CEEL-CO 300 SERIES, ZESTON PVC
FORGED	B. ALUMINUM JACKET: ASTM E84. (APPLY TO ALL EXTERIOR PIPING ONLY) .1 THICKNESS: ASTM C1729 REQUIREMENTS FOR RIGID AND NON-RIGID
5;	INSULATION FINISH. .2 FINISH: SMOOTH PLAIN MILL FINISH.
DESIGNED	.3 JOINING: LONGITUDINAL SLIP JOINTS AND 2" (50 MM) LAPS. .4 FITTINGS: 0.02" (0.40 MM) THICK DIE SHAPED FITTING COVERS WITH
PANSION; PIPE.	FACTORY ATTACHED PROTECTIVE LINER. .5 METAL JACKET BANDS: 3/8" (10 MM) WIDE; 0.01" (0.38 MM) THICK
D STEEL	ALUMINUM.
SOLATION	2.4 <u>PIPE INSULATION THICKNESS</u> A. INSULATE NEW OR ALTERED PIPING WITH RIGID PIPE INSULATION AND
BLE MSS	RE-INSULATE EXISTING PIPING WHERE INSULATION HAS BEEN REMOVED OR DAMAGED AS FOLLOWS:
ON BODY	RIGID PIPE INSULATION OPERATING TEMP. RANGE 'F PIPE DIAMETER IN. INSULATION THK. IN.
INCE OF	DOMESTIC COLD WATER 0 TO 850 ALL SIZES 1
	DOMESTIC HOT WATER & DHW RECIRCULATION 105 TO 140 1-1/4 & SMALLER 1
BLE	1-1/2 & LARGER 1-1/2
	SANITARY DRAINAGE40 TO 55ALL SIZES1STORM DRAINAGE40 TO 55ALL SIZES1
B16.5	
	2.5 <u>PLUMBING AND DRAINAGE TESTING</u> A. AFTER ALL PIPES HAVE BEEN PLACED IN POSITION AND ALL
	BRANCHES INSTALLED, BUT BEFORE FIXTURES HAVE BEEN SET OR CONNECTED, TEST THE TIGHTNESS OF ALL JOINTS AND THE
A) CWP,	SOUNDNESS OF ALL PIPES. B. MAKE ALL TESTS BEFORE PIPING IS FURRED IN.
STÉM, PROOF	C. NOTIFY CONSULTANT AT LEAST 48 HOURS BEFORE COMMENCING WITH TEST, AND GIVE CONSULTANT A WRITTEN CERTIFICATE CONFIRMING THESE TESTS.
FOR	D. STORM, SANITARY, WASTE, AND VENT PIPING: SECURELY CLOSE ALL OPENINGS IN PIPE ENDS THROUGHOUT THE WORK BY MEANS OF APPROVED PLUGS
	AND FILL THE ENTIRE PIPING SYSTEM, INCLUDING STACKS, BRANCHES TO
	FIXTURES AND ALL HORIZONTAL RUNS WITH WATER. TEST BY RUNNING WATER INTO ALL PIPES, FIXTURES, TRAPS, AND APPARATUS IN ORDER TO DETECT ANY IMPERFECT MATERIAL OR WORKMANSHIP.
TO ASTM	WHERE IT IS IMPOSSIBLE TO TEST THE WHOLE SYSTEM AT ONE TIME, DIVIDE
PACKING BALL, NECTION.	INTO PARTS. PERFORM THE WATER TEST IN ACCORDANCE WITH SECTION 7.3 OF OBC. PERFORM AN AIR TEST OR FINAL TEST OR ANY OTHER TEST REQUIRED BYAUTHORITIES HAVING JURISDICTION.
	E. TEST ALL WATER LINES HYDROSTATICALLY AT 1-1/2 TIMES THE WORKING PRESSURE BUT AT NOT LESS THAN
	1,380 KPA (200 PSI), FORA PERIOD OF NOT LESS THAT TWO (2) HOURS WITHOUT ANY DROP
	IN PRESSURE. DO TESTING BEFORE PIPING IS BURIED OR FURRED IN AND BEFORE PRESSURE SENSITIVE DEVICES ARE INSTALLED IN THE PIPEWORK.
	CORRECT ALL DEFECTS DISCLOSED BY TESTS. RETEST UNTIL ALL RESULTS ARE ACCEPTABLE.
EEN	F. LF ANY LEAKS ARE DISCOVERED BY THE ABOVE TESTS, REMOVE AND REPLACE THE FAULTY PORTIONS OF
	THE FAULTY PORTIONS OF THE SYSTEMS AND REPEATTHE TEST. REPEAT THIS PROCEDURE UNTIL THE SYSTEM IS ACCEPTED BY
ST IRON REEN	THE CONSULTANT'S REPRESENTATIVE ON THE SITE. DO NOT CAULK THREADED JOINTS.
	G. CHECK HORIZONTAL PIPE WITH AN ACCURATE LEVEL FOR ANY ALTERATIONS IN PITCH. INSPECT LATERALS, CROSS ARMS, AND ELIMINATE POCKETS. CORRECT ANY CASES OF WATER HAMMERE
DY, STEEL	ANY CASES OF WATER HAMMERE
	H. FLUSHING AND CLEANING
	GENERAL: INSPECT THE SYSTEMS, AND REMOVE ANY HEAVY DEBRIS AND EXCESSIVE
AINLESS	OIL AND DIRT. FLUSH ALL COMPLETED SYSTEMS WITH CLEAR WATER AT THE HIGHEST OBTAINABLE PRESSURE AND VELOCITY.
· I	DURING FLUSHING AND CLEANING, MAINTAIN ALL ISOLATING AND CONTROL VALVES IN THE OPEN POSITION.
	DOMESTIC WATER SYSTEM: FLUSH, CHLORINATE AND REFLUSH ALL OUTSIDE WATER MAINS
	IN ACCORDANCE WITH AWWA C651-99 SPECIFICATION
н.	
IBLE	
ED.	

PLUMBING SPECIFICATIONS

3. PLUMBING FIXTURES AND TRIM

A. <u>WC-1</u>

Z5655-BWL1-AM VITREOUS CHINA ELONGATED BOWL WITH SMARTSILVER[™] SURFACE (ANTIMICROBIAL FINISH), SIPHON JET ACTION, 54 MM (2 1/8 IN) COMPLETELY GLAZED TRAP WAY, BOLT CAPS, 38 MM (1 1/2 IN) TOP SPUD CONNECTION, 6.0 L (1.6 US GAL) AND 4.8 L (1.28 US GAL) PER FLUSH, DEPENDING ON THE FLUSH VALVE SELECTED. Z6000AV-HET-BG EXPOSED QUIET FLUSH VALVE FOR WATER CLOSETS, TPE CHLORAMINE RESISTANT DUAL SEAL DIAPHRAGM WITH TRIPLE FILTER BY-PASS, ADA COMPLIANT OSCILLATING BIOGUARD[™] HANDLE, CONTROL STOP OF DN 1" SWEAT CONNECTION, WITH VANDAL RESISTANT STOP CAP, CAST WALL FLANGE, 38 MM (1 1/2 IN) VACUUM BREAKER TUBE, POLISHED CHROME FINISH, 4.8 L (1.28 US GAL). Z5955SS-AM-STS SOLID PLASTIC ELONGATED SEAT FOR INTENSIVE USE WITH ANTI-MICROBIAL PROTECTION, OPEN FRONT, COVERLESS, MOLDED BUMPER GUARD, STAINLESS STEEL CHECK HINGES. (WHITE). REQUIRES A MIN. DYNAMIC PRESSION OF 25.

В. <u>WC-2</u>

Z5665-BWL1-AM VITREOUS CHINA ELONGATED BOWL WITH SMARTSILVER™ SURFACE (ANTIMICROBIAL FINISH), 425 MM (16 3/4 IN) IN HEIGHT, SIPHON JET ACTION, 54 MM (2 1/8 IN) COMPLETELY GLAZED TRAPWAY, BOLT CAPS, 38 MM (1 1/2 IN) TOP SPUD CONNECTION, 6 I (1.6 US GAL) OR 4.8 L (1.28 US GAL) PER FLUSH, DEPENDING ON THE FLUSH VALVE SELECTED. ZEMS6000AV-1-IS-HET EXPOSED ELECTRONIC FLUSH VALVE SELECTED. ZEM38000AV-T-IS-HET EXFOSED ELECTRONIC FLUSH VALVE FOR WATER CLOSETS, TPE CHLORAMINE RESISTANT DUAL SEAL DIAPHRAGM WITH TRIPLE FILTER BY-PASS, POWERED BY HARDWIRED 6 VDC POWER CONVERTER, INFRARED CONVERGENCE TYPE PROXIMITY SENSOR, MOTORIZED ACTUATOR WITH OVERRIDE BUTTON, METAL CASING, CONTROL STOP WITH VANDAL RESISTANT STOP CAP, CAST WALL FLANGE 38 MM (1 1/2 IN) VACUUM BREAKER TUBE WITH WATER SUPPLY 406 MM (16 IN) ABOVE CLOSET BOWL, POLISHED CHROME FINISH, 4.8 L (1.28 US GAL) PER FLUSH. MUST BE INSTALLED WITH ELECTRICAL POWER CONVERTER 120 VAC/6 VDC (P6000-HW6). REQUIRES A MIN. DYNAMIC PRESSION OF 25 PSI. P6000-HW6 HARDWIRED POWER CONVERTER 120VAC/7.6 VDC, 2 AMP., CAPABLE OF SUPPLYING FOR 8 FAUCETS OR 8 FLUSH VALVES OR 8 FAUCETS/ FLUSH VALVES COMBINED. Z5956SS-AM SOLID PLASTIC ELONGATED SEAT FOR SUPER-INTENSIVE USE WITH ANTI-MICROBIAL PROTECTION, OPEN FRONT, COVERLESS, MOLDED BUMPER GUARD, STAINLESS STEEL CHECK HINGES AND FASTENERS. (WHITE). 3777-T1-8 (FORMERLY 1401-T1-8) STAINLESS STEEL TUBULAR BACKREST OF 32 MM (1 1/4 IN), SATIN FINISH, RECESSED FASTENERS, PHENOLIC COMPOSITE BACKPLATE 102 MM (4 IN) IN HEIGHT X 254 MM (10 IN) IN LENGTH, ANTIQUE WHITE. "A" DIMENSION OF 203 MM (8 IN).

C. <u>UR-1</u>

Z5755–U VITREOUS CHINA WALL HUNG OMNIFLO URINAL, WASHDOWN ACTION, CONSUMING BETWEEN 3.8 L (0.83 IMP. GAL.) AND AS LITTLE AS 0.5 L (1/8 US GAL) PER FLUSH, GRAVITY FLUSH, INCORPORATED PRIVACY SCREEN, INTEGRAL TRAP 19 MM (3/4 IN) TOP SPUD CONNECTION, DN 2 IN FEM. IPS BACK OUTLET, WALL HOOKS, BASIN FRONT AT 361 MM (14 1/4 IN) FROM FINISHED WALL. VANDAL RESISTANT STAINLESS STEEL STRAINER INCLUDED. Z6003AV–ULF–BG EXPOSED QUIET FLUSH VALVE FOR URINALS, TPE CHLORAMINE RESISTANT DUAL SEAL DIAPHRAGM WITH TRIPLE FILTER BY–PASS, ADA COMPLIANT OSCILLATING HANDLE, CONTROL STOP OF DN 3/4" SWEAT CONNECTION, WITH VANDAL RESISTANT STOP CAP, CAST WALL FLANGE, 19 MM (3/4 IN) VACUUM BREAKER TUBE, POLISHED CHROME FINISH, 0.5 L (1/8 USG). NOTE : REQUIRES A MIN. DYNAMIC PRESSION OF 25 PSI. Z1221 CONCEALED WALL HUNG URINAL CARRIER, EXTRA–HEAVY DUTY ADJUSTABLE PLATE, STEEL UPRIGHTS WITH WELDED FEET, MOUNTING FASTENER.

D. <u>L–1</u>

DIVERTA FIXING KIT: INCLUDED INSTALLATION TYPE: WALL-HUNG MATERIAL VITREOUS CHINA PUBLICATION STATUS SHAPE: SQUARE TAPHOLE CONFIGURATION: 1 PREPUNCHED, 1 TAPHOLE, 1 PREPUNCHED WASHBASIN CAPACITY (L): 3 Z6956XL-CWB-CV-F ARCHED STYLE HARDWIRED ELECTRONIC SENSOR FAUCET WITH CERAMIC VALVE, 1.9 L/MIN. (0.5 USGPM) SPRAY OUTLET, SINGLE HOLE INSTALLATION, POLISHED CHROME FINISH, INFRARED CONVERGENCE TYPE PROXIMITY SENSOR, ON-DEMAND ACTIVATION WITH A 30 SECONDS RUN TIME, IN-LINE FILTER, PRE-MIXED WATER SUPPLY. INCLUDES 4 "AA" BATTERIES AS BATTERY BACK-UP FAUCET DURING POWER OUTAGES, BRAIDED STAINLESS STEEL HOSE SUPPLIES. SUPPLIED WITH 85 IN CABLE WIRE (CWB). P6000-HW6 HARDWIRED POWER CONVERTER 120VAC/7.6 VDC, 2 AMP., CAPABLE OF SUPPLYING FOR 8 FAUCETS OR 8 FLUSH VALVES OR 8 FAUCETS/ FLUSH VALVES COMBINED. Z82200-XL-27M SINGLE LEVER FAUCET, LÓW LEAD, WITH AN INTEGRAL 127 MM (5 IN) CAST SPOUT, CAST BRASS BODY, QUARTER-TURN CERAMIC DISC CARTRIDGE, LEVER HANDLE, SINGLE HOLE INSTALLATION, POLISHED CHROME FINISH, ADJUSTABLE HIGH TEMPERATURE LIMIT STOP, WITH 1.9 L/MIN. (0.5 USGPM) VANDAL-RESISTANT PRESSURE COMPENSATING MALE LAMINAR FLOW, STAINLESS STEEL BRAIDED HOSES. ZH8824XL-LKQ-PC/Z8952-58 (2) LAVATORY EXTRA HEAVY DUTY QUARTER TURN STOPS, LOW LEAD, DN 1/2 IN COMPRESSION X 3/8 IN COMPRESSION, LOOSE KEY, FLANGES CHROME PLATED FINISH. Z8743-PC STRAINER DRAIN ASSEMBLY, CAST BRASS BODY, 32 MM (1 1/4 IN), POLISHED CHROME FINISH. Z8700-8-PC-BD 32 MM (1 1/4") CAST BRASS ADJUSTABLE P-TRAP, 32 MM (1 1/4 IN) WITH DEEP WALL FLANGE AND CLEANOUT, CHROME PLATE FINISH. Z1231 BACK TO BACK CONCEALED WALL HUNG CARRIER, STEEL UPRIGHTS WITH WELDED FEET, CAST IRON ADJUSTABLE HEADERS, CONCEALED ARMS, ALIGNMENT TRUSS AND MOUNTING FASTENERS. Z8946-1-NT ANTIMICROBIAL PROTECTORS, RESISTS THERMAL TRANSFERS FOR P-TRAP, STOP AND SUPPLY.

E. <u>L–2</u>

Z5321-PED 581 X 514 MM (22 7/8 X 20 1/4")VITREOUS CHINA WALL HUNG LAVATORY FOR BARRIER-FREE APPLICATION, 581 X 514 MM (22 7/8 X 20 1/4 IN), BACKSPLASH, FRONT OVERFLOW, PRE-DRILLED FOR CONCEALED ARMS, DRILLED SINGLE HOLE. Z6956XL-CWB-CV-F ARCHED STYLE HARDWIRED ELECTRONIC SENSOR FAUCET WITH CERAMIC VALVE, 1.9 L/MIN. (0.5 USGPM) SPRAY OUTLET, SINGLE HOLE INSTALLATION POLISHED CHROME FINISH, INFRARED CONVERGENCE TYPE PROXIMITY SENSOR, ON-DEMAND ACTIVATION WITH A 30 SECONDS RUN TIME IN-LINE FILTER, PRE-MIXED WATER SUPPLY. INCLUDES 4 "AA" BATTERIES AS BATTERY BACK-UP TO FAUCET DURING POWER OUTAGES, BRAIDED STAINLESS STEEL HOSE SUPPLIES. SUPPLIED WITH 85 IN CABLE WIRE (CWB). P6000-HW6 HARDWIRED POWER CONVERTER 120VAC/7.6 VDC, 2 AMP., CAPABLE OF SUPPLYING FOR 8 FAUCETS OR 8 FLUSH VALVES OF 8 FAUCETS/ FLUSH VALVES COMBINED. ZH8824XL-LKQ-PC/Z8952-58 LAVATORY EXTRA HEAVY DUTY QUARTER TURN STOPS, LOW LEAD, DN 1/2 IN COMPRESSION X 3/8 IN COMPRESSION, LOOSE KEY, FLANGES CHROME PLATED FINISH. 170-LF 127 MM X 120 MM (5 X 4") THERMOSTATIC POINT OF USE MIXING VALVE, 3/8" INLETS, 3/8" OUTLET, COMPRESSION CONNECTIONS, BRONZE BODY, LOCKED TEMPÉRATURE ADJUSTMENT CAP (VANDAL RESISTANT), COPPER ENCAPSULATED THERMOSTAT ASSEMBLY WITH, POLYMER THERMOPLASTIC SHUTTLE, STAINLESS STEEL SPRINGS, BUNA-N O'RINGS, INTEGRAL CHECK VALVES ON HOT AND COLD INLETS, COMPRESSION FITTINGS ON INLETS AND OUTLET. MINIMUM FLOW: 1.9 L/MIN (0.5 USGPM). MAXIMUM PRESSURE: 125 PSI (8.6 BAR). MAXIMUM HOT WATER TEMPERATURE: 93°C (200 °F). CERTIFIED ASSE 1070. 37DWC 32 MM "DAISY" TYPE STRAINER OFFSET DRAIN ASSEMBLY, CAST BRASS BODY, 32 MM (1 1/4 IN), POLISHED CHROME FINISH. Z8700-8-PC-BD 32 MM (1 1/4") CAST BRASS ADJUSTABLE P-TRAP, 32 MM (1 1/4 IN) WITH DEEP WALL FLANGE AND CLEANOUT, CHROME PLATE FINISH. Z123 BACK TO BACK CONCEALED WALL HUNG CARRIER, STEEL UPRIGHTS WITH

F. <u>L–3</u>

DIVERTA FIXING KIT: INCLUDED , INSTALLATION TYPE: WALL-HUNG, MATERIAL: VITREOUS CHINA PUBLICATION STATUS SHAPE: SQUARE TAPHOLE CONFIGURATION: 1 PREPUNCHED, 1 TAPHOLE, 1 PREPUNCHED WASHBASIN CAPACITY (L): 3 Z6956XL-CWB-CV-F ARCHED STYLE HARDWIRED ELECTRONIC SENSOR FAUCET WITH CERAMIC VALVE, 1.9 L/MIN. (0.5 USGPM) SPRAY OUTLET, SINGLE HOLE INSTALLATION, POLISHED CHROME FINISH, INFRARED CONVERGENCE TYPE PROXIMITY SENSOR, ON-DEMAND ACTIVATION WITH A 30 SECONDS RUN TIME, IN-LINE FILTER, PRE-MIXED WATER SUPPLY. INCLUDES 4 "AA" BATTERIES AS BATTERY BACK-UP TO FAUCET DURING POWER OUTAGES, BRAIDED STAINLESS STEEL HOSE

WELDED FEET, CAST IRON ADJUSTABLE HEADERS, CONCEALED ARMS,

ALIGNMENT TRUSS AND MOUNTING FASTENERS.

UMBING SPECIFICATIONS	Client Halton District School Board 2050 Guelph Line
SUPPLIES. SUPPLIED WITH 85 IN CABLE WIRE (CWB). P6000–HW6 HARDWIRED POWER CONVERTER 120VAC/7.6 VDC, 2 AMP., CAPABLE OF SUPPLYING FOR 8 FAUCETS OR 8 FLUSH VALVES OR 8 FAUCETS/ FLUSH	Burlington, Ontario
VALVES COMBINED. ZH8824XL-LKQ-PC/Z8952-58 (2) LAVATORY EXTRA HEAVY DUTY QUARTER TURN STOPS, LOW LEAD, DN 1/2 IN COMPRESSION X 3/8 IN COMPRESSION, LOOSE KEY, FLANGES CHROME PLATED FINISH. 170-LF 127 MM X 120 MM (5 X 4") THERMOSTATIC POINT OF USE MIXING VALVE, 3/8" INLETS, 3/8" OUTLET, COMPRESSION CONNECTIONS,	T.A. BLAKELOCK H.S. RENOVATION
INZE BODY, LOCKED TEMPERATURE ADJUSTMENT CAP (VANDAL ISTANT), COPPER ENCAPSULATED THERMOSTAT ASSEMBLY WITH, YMER THERMOPLASTIC SHUTTLE, STAINLESS STEEL SPRINGS, BUNA—N INGS, INTEGRAL CHECK VALVES ON HOT AND COLD INLETS, IPRESSION FITTINGS ON INLETS AND OUTLET. MINIMUM FLOW: 1.9 IIN (0.5 USGPM). MAXIMUM PRESSURE: 125 PSI (8.6 BAR). MAXIMUM	1160 Rebecca Street, Oakville, ON L6L 1Y9
DT WATER TEMPERATURE: 93°C (200 °F). CERTIFIED ASSE 1070. 3743–PC STRAINER DRAIN ASSEMBLY, CAST BRASS BODY, 32 MM (1 74 IN), POLISHED CHROME FINISH. Z8700–8–PC–BD 32 MM (1 1/4")	Architect
SS ADJUSTABLE P—TRAP, 32 MM (1 1/4 IN) WITH DÈÈP WALL ID CLEANOUT, CHROME PLATE FINISH. Z1224 CONCEALED WALL RIER, EXTRA—HEAVY DUTY ADJUSTABLE PLATE, STEEL UPRIGHTS ED FEET, MOUNTING FASTENER.	Snyder Architects Inc. 260 King St. E., Unit A101, Toronto, ON M5A 4L5 tel. 416.966.5444 fax. 416.966.4443 w w w.snyderarchitects.ca
	Consultants
S3281T DROP-IN SINGLE BOWL, 304 SERIES STAINLESS STEEL, BRUSHED SATIN FINISH, 23 X 20 X 9 INCHES, FULLY INSULATED, OFF SET DRAIN, DNE PIECE CONSTRUCTION, THICK SOUND DAMPENER, INSTALLATION KIT NCLUDED. PFISTER STELLEN LG529-SAC, CHROME PLATED, 1.8GPM, 3 FUNCTION PULL DOWN SPRAYER, Z8702-9BD 38 MM (1 1/2") CAST BRASS ADJUSTABLE P-TRAP, 38 MM (1 1/2 IN) WITH CLEANOUT, DEEP SEAL FLANGE, POLISHED CHROME FINISH. SB-S DEEP BASKET STRAINER.	Structural Consultants Kalos Engineering Inc. 875 Main St, W. Unit 3 Hamilton, Ontario, L8S 4P9 Tel: 905-333-9119
<u>I-1</u>	Mechanical and Electrical Consultants EXP
7600-H-15 THERMOSTATIC (T TYPE) MIXING VALVE FOR CONCEALED PIPING, COPPER ENCAPSULATED THERMOSTAT ASSEMBLY WITH BRASS SHUTTLE, COMPENSATES FOR TEMPERATURE AND MINOR PRESSURE FLUCTUATION, ROTATION FROM COLD TO HOT, HIGH TEMPERATURE LIMIT STOP FACTORY PRE-SET AT 43 °C (110 °F), BRASS BODY, INTERNAL BRASS, COPPER AND STAINLESS STEEL COMPONENTS, METAL TRIM AND HANDLE, COLOR-CODED INDICATOR, COMBINED SERVICE STOPS/CHECK STOPS, DN 13 MM (1/2") SWEAT INLET AND OUTLET, DN 13 MM (1/2") THREADED BOTTOM OUTLET, 15 L/MIN (4 USGPM) FLOW. INSTITUTIONAL ADJUSTABLE WATER SAVER SHOWER HEAD, CHROMED THERMOPLASTIC ABS BODY, BALL JOINT,5.7L/MIN (1.50 USGPM), CHROMED BRASS MOUNTING	1266 S. Service Rd, Stoney Creek, Ontario, L8E 5R9 Tel: 905-525-6069
PLATE WITH OPTIONAL CHROMED BRASS ANCHOR PLATE.	
7600-62001-1.5 THERMOSTATIC (T TYPE) MIXING VALVE FOR CONCEALED PIPING, COPPER ENCAPSULATED THERMOSTAT ASSEMBLY WITH BRASS SHUTTLE, COMPENSATES FOR TEMPERATURE AND MINOR PRESSURE FLUCTUATION, ROTATION FROM COLD TO HOT, HIGH TEMPERATURE LIMIT STOP FACTORY PRE-SET AT 43 °C (110 °F), BRASS BODY, INTERNAL BRASS, COPPER AND STAINLESS STEEL COMPONENTS, METAL TRIM AND HANDLE, COLOR-CODED INDICATOR, COMBINED SERVICE STOPS/CHECK STOPS, DN 13 MM (1/2") SWEAT INLET AND OUTLET, DN 13 MM (1/2") THREADED BOTTOM OUTLET, 15 L/MIN (4 USGPM) FLOW, COMPLETE WITH 5.7 L (1.5 USGPM) CONTROL FLOW INSTITUTIONAL HAND SHOWER WITH NSTANT SHUT-OFF BUTTON, AND INTEGRAL CHECK STOPS MOUNTED ON	W. S. DSOUZA 100224917 BOUNCE OF ONTARIO
A 610 MM (24") VERTICAL GRAB BAR WITH SLIDING HANGER, WALL MOUNT SUPPLY ELBOW AND 1829 MM (72") DOUBLE SPIRAL METALLIC HOSE. CONFORMS TO ADA, ASSE 1016 AND CSA.	Key Plan N.T.S.
N-1	
01030401 WALL MOUNTED EMERGENCY EYEWASH OR EYE/FACE WASH, 274 MM (10.8") YELLOW ABS RECEPTOR, LAMINAR FLOW EYEWASH, YELLOW ABS EYEWASH HEAD WITH WATER PRESSURE ACTIVATED YELLOW PLASTIC POP-OFF DUST COVER, INTEGRAL 12 L/MIN (3.2 USGPM) FLOW CONTROL, CHROME-PLATED BRASS STAY-OPEN BALL VALVE EQUIPPED WITH STAINLESS STEEL BALL AND STEM, PUSH FLAG ACTIVATED SIGN, 16 STAINLESS MESH SCREEN (1190 MICRONS) IN-LINE FILTER, DN 1/2"	Project North True North
WATER SUPPLY, CAST-ALUMINUM CHROMATE PROTECTED WALL BRACKET, SATIN FINISH CHROME PLATED DN 1 1/4" WASTE WITH UNIVERSAL PICTOGRAM. OPERATING PRESSURE IS 30-70 PSI. PRODUCT'S NOTES : NOTE : FORESEE FAIL-SAFE PRE-MIXED WATER SYSTEM. TA-300-LF-RF WARNING! AN EMERGENCY EQUIPMENT REQUIRES BETWEEN 30 AND 90 PSI ACCORDING TO ANSI REQUIREMENTS. CONSIDERATION MUST BE TAKEN FOR PRESSURE LOSS THROUGHOUT THE MIXING VALVE. BRONZE DURA-TROL®	No. Revisions Date
SOLID BI-METAL THERMOSTAT COMPENSATING FOR TEMPERATURE AND PRESSURE VARIATIONS. 1.9–38 L/MIN (0.5 – 10 USGPM) FLOW FOR A PRESSURE LOSS UP TO 45 PSI. MAY BE ADJUSTED TO THE DESIRED TEMPERATURE. LOCKING TEMPERATURE REGULATOR TO PREVENT ACCIDENTAL MOVEMENT SET FOR 29 °C (85 °F), MIXING VALVE WILL CLOSE DOWN ON FAILURE OF COLD WATER SUPPLY. MIXING VALVE WITH	
SPECIAL INTERNAL COLD WATER BY-PASS CAPABLE OF A MINIMUM 15 L/MIN (4 USGPM) AT 30 PSI (2.1 BAR) UPON FAILURE OF HOT WATER. HIGH TEMPERATURE LIMIT STOP FACTORY PRE-SET AT 32 °C (90 °F). INTEGRAL WALL SUPPORT. DN 1/2 IN INLETS WITH ANGLE CHECK STOPS, DN 1/2 IN OUTLET. ROUGH BRONZE FINISH. DIAL THERMOMETER. REQUIRED HOT WATER SUPPLY AT 60 °C (140 °F) MIN. COMPLIES TO ANSI Z358.1 2004. OPTION : -TOP TOP INLETS.	
FD-1 7N211-Y5-R CAST IRON FLOOR DRAIN WITH A 165 MM (6 1/2") IN	
ZN211-Y5-P CAST IRON FLOOR DRAIN WITH A 165 MM (6 1/2") IN DIAM. BODY WITH A 102 MM (4") IN DIAM. THREADED THROAT TO RECEIVE ADJUSTABLE 127 MM (5") IN DIAM. ADJUSTABLE ROUND STRAINER COMBINED WITH 127 MM (5 X 5") SQUARE POLISHED NICKEL BRONZE REGULAR TRAFFIC GRATE. TRAP PRIMER CONNECTION. 695-01 TRAP PRIMER VALVE WHERE REPLENISHMENT OF WATER IN FLOOR DRAIN TRAPS IS REQUIRED; TRAP PRIMER VALVES SHALL BE 1/2" FIP INLET X	
1/2" MIP OUTLET, AUTOMATIC TRAP PRIMER VALVES WHICH ACTIVATE WITH A 10 PSIG PRESSURE DROP BETWEEN 30–150 PSIG. WATER RELEASE SHALL BE FACTORY SET. TRAP PRIMER VALVE SHALL HAVE LARGE PORT OPENINGS AND A NON–CORROSIVE BRASS FINISH.	2. Issued for Bids / Permit 2023 03 10
D-2 (SHOWER)	1. Issued for Bids 2023 02 08
ZN415-Y5-P CAST IRON FLOOR DRAIN FOR MEMBRANE WITH A 213 MM (8 3/8") IN DIAM., REVERSIBLE CLAMP COLLAR WITH LATERAL OPENINGS ON TOP BODY WITH A 102 MM (4") IN DIAM. THREADED THROAT TO RECEIVE ADJUSTABLE 127 MM (5") IN DIAM. ADJUSTABLE ROUND STRAINER COMBINED WITH 127 MM (5 X 5") SQUARE POLISHED NICKEL BRONZE REGULAR TRAFFIC GRATE. TRAP PRIMER CONNECTION.	No. Issue Date General Contractor shall check and verify all dimensions and report all errors and omissions to the Architect. Do not scale the drawings. Drawings shall not be used for construction purposes until issued by the Architect for construction.
-1 ELKAY MODEL EZSTLDDWSVRSK, HI–LO DUAL HEIGHT WALL MOUNTED STAINLESS STEEL FOUNTAIN COMPLETE WITH BOTTLE FILLING STATION, VANDAL–RESISTANT BUBBLER, NON–REFRIGERATED AND NON–FILTERED. UNIT SHALL BE CERTIFIED TO UL 399 AND CAN/CSA C22.2 NO. 120. MP20 CONCEALED MOUNTING FRAME.	
<u>CO (FLOOR CLEANOUT)</u> ZURN ZN-1602 ADJUSDTABLE FLOOR CLEANOUT, DURA-COATED CAST	
IRON BODY WITH NEOPRENE SLEEVE, POLISHED NICKEL BRONZE ADJUSTABLE HEAD AND GASKETED, SECURED, SCORIATED COVER WITH STAINLESS STEEL SCREWS.	Drawing Title: MECHANICAL SPECIFICATIONS
	Scale: AS NOTED Date: 05/01/2023 Drawn by: C.M. Checked by: W.D.

CONTROLS AND INSTRUMENTATION SPEC.	CONTROL
	HEATER
1. <u>GENERAL</u> A. THE WORK SHALL INCLUDE DESIGN, SUPPLY, INSTALLATION, AND COMMISSIONING	SETPOII PLASTIC .2 LINE-V
CONTROL SYSTEM TO ACHIEVE THE PERFORMANCE SPECIFIED IN THE FOLLOWING CLAUSES.	CONTAC EQUIVAI
 B. FOR EXISTING SITES VISIT THE PREMISES PRIOR TO TENDER TO BECOME FAMILIAR WITH FIELD CONDITIONS AND EXISTING EQUIPMENT. C. THE CONTROL SYSTEM SHALL BE INSTALLED BY THE CONTROL SUBCONTRACTOR 	ELECTR TO 85° ABS PL
BUT AS AN INTEGRAL PART OF THE MECHANICAL SUB-CONTRACT. THE SYSTEM SHALL BE INSTALLED BY TRADE CERTIFIED ELECTRICIANS REGULARLY EMPLOYED	F. WIRED TEM
BY THE CONTROL SUB-CONTRACTOR. D. THE CONTROLS CONTRACTOR WILL SPECIFICALLY READ ALL MECHANICAL AND ELECTRICAL DRAWINGS, SPECIFICATIONS, AND ADDENDA AND DETERMINE THE	.2 DUCT S
CONTROLS WORK PROVIDED BY THE MECHANICAL CONTRACTOR, HIS SUBCONTRACTORS, AND THE ELECTRICAL CONTRACTOR.	PER 1 .3 IMMERS
2. <u>SCOPE OF WORK</u> E. THIS PROJECT SCOPE SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING	STEEL SYSTEM WITHST/
WORK F. FURNISH AND INSTALL ALL CONTROL DEVICES SUCH AS THERMOSTATS, CONTROL	.4 SPACE OVERRI
VALVES ETC WHERE INDICATED IN THIS SECTION. G. PROVIDE CONTROL WIRING FROM THERMOSTATS, OR ROOM TEMPERATURE	PLANS. .5 PROVID MEASUF
SENSORS, WHERE INDICATED, TO THEIR ASSOCIATED TERMINAL EQUIPMENT OR CONTROL VALVES.	
 H. PROVIDE CONTROL WIRING FROM THE ERV TO THE TIMECLOCK. I. RE-CALIBRATE EACH OF THE EXISTING MULTI-ZONE DAMPERS FOR THE ROOF TOP AIR HANDLING UNIT (RTAC-3) TO AIRFLOWS INDICATED. COORDINATE THIS 	G. RELAYS .1 CONTRO
WORK WITH THE TESTING, ADJUSTING, AND BALANCING CONTRACTOR. RE-ADJUST MOTORIZED OUTDOOR AIR DAMPER POSITION TO THE VALUES INDICATED.	AND LE COIL V
J. SITE COORDINATE THIS WORK WITH OTHER TRADES AFFECTED.	.2 TIME D ADJUST FROM S
3. <u>WARRANTY REQUIREMENTS</u> A. WARRANT ALL WORK AS FOLLOWS:	COIL V ENCLOS
.1 LABOR AND MATERIALS SHALL BE WARRANTED FREE FROM DEFECTS FOR A PERIOD OF TWELVE (12) MONTHS AFTER FINAL COMPLETION ACCEPTANCE BY	H. CURRENT S .1 CURREI ADJUST
THE OWNER. .2 AT THE END OF THE FINAL START-UP/TESTING, IF EQUIPMENT AND SYSTEMS	THE CU DDC SY
ARE OPERATING SATISFACTORILY TO THE CUSTOMER, THE CUSTOMER SHALL SIGN CERTIFICATES CERTIFYING THAT THE BAS CONTROLS SYSTEM IS OPERATIONAL AND HAS BEEN TESTED AND ACCEPTED IN ACCORDANCE WITH	I. DIFFERENTI .1 SHALL
THE TERMS OF THIS SPECIFICATION. THE DATE OF CUSTOMER ACCEPTANCE SHALL BE THE START OF THE WARRANTY PERIOD.	MINIMU SUITABI
	5 00000
4. <u>AUXILLARY CONTROL DEVICES</u> A. MOTORIZED DAMPERS, UNLESS OTHERWISE SPECIFIED ELSEWHERE, SHALL BE AS	5. <u>COORDI</u> A. SITE
FOLLOWS: .1 DAMPER FRAMES SHALL BE 16 GAUGE GALVANIZED SHEET METAL OR 1/8" EXTRUDED ALUMINUM WITH REINFORCED CORNER BRACING.	.1 WHERE OR WIL SHALL
.2 DAMPER BLADES SHALL NOT EXCEED 8" IN WIDTH OR 48" IN LENGTH. BLADES ARE TO BE SUITABLE FOR MEDIUM VELOCITY PERFORMANCE (2,000	SATISFA BEFORE
FPM). BLADES SHALL BE NOT LESS THAN 16 GAUGE. .3 DAMPER SHAFT BEARINGS SHALL BE AS RECOMMENDED BY MANUFACTURER	INTERFE MAKE 1 CONDIT
FOR APPLICATION. .4 ALL BLADE EDGES AND TOP AND BOTTOM OF THE FRAME SHALL BE	.2 COORDI AREA,
PROVIDED WITH COMPRESSIBLE SEALS. SIDE SEALS SHALL BE COMPRESSIBLE STAINLESS STEEL. THE BLADE SEALS SHALL PROVIDE FOR A MAXIMUM LEAKAGE RATE OF 10 CFM PER SQUARE FOOT AT 2.5" W.C. DIFFERENTIAL	FACILIT B. TEST AND
PRESSURE. .5 ALL LEAKAGE TESTING AND PRESSURE RATINGS WILL BE BASED ON AMCA	.1 THE CO TO INT PURPOS
PUBLICATION 500. .6 INDIVIDUAL DAMPER SECTIONS SHALL NOT BE LARGER THAN 48" X 60". PROVIDE A MINIMUM OF ONE DAMPER ACTUATOR PER SECTION.	C. COORDINAT OTHER SEC AND CONTE
B. CONTROL DAMPERS SHALL BE PARALLEL FOR 2 POSITION CONTROL AND OPPOSED BLADE FOR MODULATING CONTROL UNLESS DETAILED ON THE	CONTROL S INTEGRATED
DRAWINGS. C. ELECTRIC DAMPER/VALVE ACTUATORS	FOLLOWS: .1 ALL CO SPECIFI
.1 THE ACTUATOR SHALL HAVE ELECTRONIC OVERLOAD OR DIGITAL ROTATION SENSING CIRCUITRY TO PREVENT DAMAGE TO THE ACTUATOR THROUGHOUT THE ROTATION OF THE ACTUATOR	.2 EACH S CONFIG
.2 WHERE SHOWN, FOR POWER-FAILURE/SAFETY APPLICATIONS, AN INTERNAL MECHANICAL, SPRING RETURN MECHANISM SHALL BE BUILT INTO THE	TO MER .3 THE CO ISSUES
ACTUATOR HOUSING. .3 ALL ROTARY SPRING RETURN ACTUATORS SHALL BE CAPABLE OF BOTH CLOCKWISE OR COUNTER CLOCKWISE SPRING RETURN OPERATION. LINEAR	THIS S OF THIS
ACTUATORS SHALL SPRING RETURN TO THE RETRACTED POSITION. .4 PROPORTIONAL ACTUATORS SHALL ACCEPT A 0-10 VDC OR 0-20 MA	D. PARTS SUF MECHANICA LIMITED TO
CONTROL SIGNAL AND PROVIDE A 2-10 VDC OR 4-20 MA OPERATING RANGE. .5 ALL NON-SPRING RETURN ACTUATORS SHALL HAVE AN EXTERNAL MANUAL	THERMAL V
GEAR RELEASE TO ALLOW MANUAL POSITIONING OF THE DAMPER WHEN THE ACTUATOR IS NOT POWERED. SPRING RETURN ACTUATORS WITH MORE THAN	6. <u>WIRING</u>
60 IN-LB. TORQUE CAPACITY SHALL HAVE A MANUAL CRANK FOR THIS PURPOSE. .6 ACTUATORS SHALL BE PROVIDED WITH A CONDUIT FITTING AND A MINIMUM	A. BAS INSTAL WIRING, SE
1M ELECTRICAL CABLE AND SHALL BE PRE-WIRED TO ELIMINATE THE NECESSITY OF OPENING THE ACTUATOR HOUSING TO MAKE ELECTRICAL	BE FACTOR B. ALL CONTR
CONNECTIONS. .7 ACTUATORS SHALL BE UNDERWRITERS LABORATORIES STANDARD 873 LISTED. .8 ACTUATORS SHALL BE DESIGNED FOR A MINIMUM OF 60,000 FULL STROKE	LOCAL ELE DOCUMENT DIFFER WIT
CYCLES AT THE ACTUATOR'S RATED TORQUE. D. CONTROL VALVES	SECTION SI FOR MECH/ EQUIPMENT
.1 CLOSE-OFF (DIFFERENTIAL) PRESSURE RATING: VALVE ACTUATOR AND TRIM SHALL BE FURNISHED TO PROVIDE THE FOLLOWING MINIMUM CLOSE-OFF	ARE NOT I C. ALL CEC C
PRESSURE RATINGS: .1 WATER VALVES:	RACEWAY A D. WHERE CLA
.1 TWO–WAY: 150% OF TOTAL SYSTEM (PUMP) HEAD. .2 THREE–WAY: SHALL BE INSTALLED IN MIXING CONFIGURATION, 2 IN 1 OUT. IN THE MIXING CONFIGURATION, ACTUATOR SHALL BE RATED FOR	INCLUDING ELECTRICAL ARE MET:
100% OF TOTAL SYSTEM (PUMP) HEAD .3 STEAM VALVES: 150% OF OPERATING (INLET) PRESSURE.	.1 CIRCUIT (LOW_V
.2 WATER VALVES: .1 BODY AND TRIM STYLE AND MATERIALS SHALL BE IN ACCORDANCE WITH	MEET C .2 ALL CA
MANUFACTURER'S RECOMMENDATIONS FOR DESIGN CONDITIONS AND SERVICE SHOWN, WITH EQUAL PERCENTAGE PORTS FOR MODULATING	CEILING E. DO NOT IN BOXES AND
SERVICE. .2 SIZING CRITERIA: .1 TWO-POSITION SERVICE: LINE SIZE.	VOLTAGE W CONTROL F
.2 TWO-WAY MODULATING SERVICE: PRESSURE DROP SHALL BE EQUAL TO TWICE THE PRESSURE DROP THROUGH HEAT EXCHANGER (LOAD), 50%	F. WHERE CLA ALONG A S WIRE TIES
OF THE PRESSURE DIFFERENCE BETWEEN SUPPLY AND RETURN MAINS, OR 34.5 KPA (5 PSI), WHICHEVER IS GREATER. VALVE SHALL NOT BE LESS THAN 1 LINE SIZE SMALLER THAN DESIGN PIPING SIZE.	CABLE SHA FASTENERS
.3 THREE-WAY MODULATING SERVICE: PRESSURE DROP EQUAL TO TWICE THE PRESSURE DROP THROUGH THE COIL EXCHANGER (LOAD), 34.5 KPA	AND WORK G. ALL WIRE— TERMINAL S
(5 PSI) MAXIMUM. VALVE SHALL NOT BE LESS THAN 1 LINE SIZE SMALLER THAN DESIGN PIPING SIZE.	BLOCK, OR SHALL BE
.4 VALVES DN 15 (1/2 IN.) THROUGH DN 50 (2 IN.) SHALL BE BRONZE BODY OR CAST BRASS ANSI CLASS 250, SPRING-LOADED, PTFE PACKING, QUICK OPENING FOR TWO-POSITION SERVICE. TWO-WAY	RESTRICTIO H. MAXIMUM A
VALVES TO HAVE REPLACEABLE COMPOSITION DISC OR STAINLESS STEEL BALL.	ONLY HIGH SHALL PRC VOLTAGES.
.5 VALVES DN 65 (2 1/2 IN.) AND LARGER SHALL BE CAST IRON ANSI CLASS 125 WITH GUIDED PLUG AND PTFE PACKING. .3 WATER VALVES SHALL FAIL IN LAST POSITION UNLESS USED FOR EQUIPMENT	I. ALL CONTR POSSIBLE. APPROVED
.3 WATER VALVES SHALL FAIL IN LAST POSITION UNLESS USED FOR EQUIPMENT PROTECTION APPLICATION. EQUIPMENT PROTECTION SHALL FAIL IN NORMALLY OPEN OR CLOSED, AS SCHEDULED ON PLANS, OR AS FOLLOWS:	APPROVED J. INSTALL PL FLOORS.
.1 HEATING COILS IN AIR HANDLERS – NORMALLY OPEN .2 OTHER APPLICATIONSAS SCHEDULED OR AS REQUIRED BY SEQUENCES	CONTRACT K. CONDUIT A
OF OPERATION .4 ZONE VALVES SHALL BE SIZED TO MEET THE CONTROL APPLICATION AND THEY SHALL MAINTAIN THEIR LAST POSITION IN THE EVENT OF A POWER	IN ORDER AND LOCAL
FAILURE.	L. CONTROL A ENCLOSURE LOCATED W
E. BINARY TEMPERATURE DEVICES .1 LOW-VOLTAGE SPACE THERMOSTAT SHALL BE 24 V, BIMETAL-OPERATED,	COORDINAT STARTER E
MERCURY-SWITCH TYPE, WITH EITHER ADJUSTABLE OR FIXED ANTICIPATION	M. FOLLOW MA

OLS AND INSTRUMENTATION SPEC.

TER. CONCEALED SETPOINT ADJUSTMENT. 13°C TO 30°C (55°F TO 85°F) POINT RANGE, 1°C (2°F) MAXIMUM DIFFERENTIAL, AND VENTED ABS STIC COVER.

- E–VOLTAGE SPACE THERMOSTAT SHALL BE BIMETAL–ACTUATED, OPEN NTACT TYPE, OR BELLOWS–ACTUATED, ENCLOSED, SNAP–SWITCH TYPE OF IVALENT SOLID-STATE TYPE, WITH HEAT ANTICIPATOR, UL LISTED FOR CTRICAL RATING, CONCEALED SETPOINT ADJUSTMENT, 13°C TO 30°C (55°F 85°F) SETPOINT RANGE, 1°C (2°F) MAXIMUM DIFFERENTIAL, AND VENTED PLASTIC COVER.
- TEMPERATURE SENSORS PERATURE SENSORS SHALL BE RTD OR THERMISTOR.
- T SENSORS SHALL BE SINGLE POINT OR AVERAGING AS SHOWN. RAGING SENSORS SHALL BE A MINIMUM OF 1.5 M (5 FT) IN LENGTH 1 M2 (10 FT2) OF DUCT CROSS SECTION.
- ERSION SENSORS SHALL BE PROVIDED WITH A SEPARABLE STAINLESS EL WELL. PRESSURE RATING OF WELL IS TO BE CONSISTENT WITH THE TEM PRESSURE IN WHICH IT IS TO BE INSTALLED. THE WELL MUST HSTAND THE FLOW VELOCITIES IN THE PIPE.
- CE SENSORS SHALL BE EQUIPPED WITH SETPOINT ADJUSTMENT, RRIDE SWITCH, DISPLAY, AND/OR COMMUNICATION PORT AS SHOWN ON
- VIDE MATCHED TEMPERATURE SENSORS FOR DIFFERENTIAL TEMPERATURE SUREMENT.
- ITROL RELAYS SHALL BE UL LISTED PLUG-IN TYPE WITH DUST COVER LED "ENERGIZED" INDICATOR. CONTACT RATING, CONFIGURATION, AND VOLTAGE SHALL BE SUITABLE FOR APPLICATION.
- DELAY RELAYS SHALL BE UL LISTED SOLIDSTATE PLUG-IN TYPE WITH USTABLE TIME DELAY. DELAY SHALL BE ADJUSTABLE $\pm 200\%$ (MINIMUM) M SETPOINT SHOWN ON PLANS. CONTACT RATING, CONFIGURATION, AND VOLTAGE SHALL BE SUITABLE FOR APPLICATION. PROVIDE NEMA 1 LOSURE WHEN NOT INSTALLED IN LOCAL CONTROL PANEL. T SWITCHES
- RENT-OPERATED SWITCHES SHALL BE SELF-POWERED, SOLID STATE WITH USTABLE TRIP CURRENT. THE SWITCHES SHALL BE SELECTED TO MATCH CURRENT OF THE APPLICATION AND OUTPUT REQUIREMENTS OF THE SYSTEM.
- INTIAL PRESSURE TYPE SWITCHES (AIR OR WATER SERVICE) ALL BE UL LISTED, SPDT SNAP-ACTING, PILOT DUTY RATED (125 VA
- IMUM), NEMA 1 ENCLOSURE, WITH SCALE RANGE AND DIFFERENTIAL TABLÉ FOR INTENDED APPLICATION OR AS SHOWN.

<u>RDINATION</u>

- ERE THE MECHANICAL WORK WILL BE INSTALLED IN CLOSE PROXIMITY TO WILL INTERFERE WITH, WORK OF OTHER TRADES, THE CONTRACTOR LL ASSIST IN WORKING OUT SPACE CONDITIONS TO MAKE A ISFACTORY ADJUSTMENT. IF THE CONTRACTOR INSTALLS HIS/HER WORK ORE COORDINATING WITH OTHER TRADES, SO AS TO CAUSE ANY RFERENCE WITH WORK OF OTHER TRADES, THE CONTRACTOR SHALL E THE NECESSARY CHANGES IN HIS/HER WORK TO CORRECT THE IDITION WITHOUT EXTRA CHARGE.
- DRDINATE AND SCHEDULE WORK WITH ALL OTHER WORK IN THE SAME A, OR WITH WORK THAT IS DEPENDENT UPON OTHER WORK, TO ILITATE MUTUAL PROGRESS.
- ND BALANCE CONTRACTOR SHALL FURNISH A SINGLE SET OF ALL TOOLS NECESSARY INTERFACE TO THE CONTROL SYSTEM FOR TEST AND BALANCE POSES.
- NATION WITH CONTROLS SPECIFIED IN OTHER SECTIONS OR DIVISIONS. SECTIONS AND/OR DIVISIONS OF THIS SPECIFICATION INCLUDE CONTROLS INTROL DEVICES THAT ARE TO BE PART OF OR INTERFACED TO THE SYSTEM SPECIFIED IN THIS SECTION. THESE CONTROLS SHALL BE TED INTO THE SYSTEM AND COORDINATED BY THE CONTRACTOR AS
- COMMUNICATION MEDIA AND EQUIPMENT SHALL BE PROVIDED AS CIFIED IN THE "COMMUNICATION" SECTION OF THIS SPECIFICATION H SUPPLIER OF A CONTROLS PRODUCT IS RESPONSIBLE FOR THE
- IFIGURATION, PROGRAMMING, START-UP, AND TESTING OF THAT PRODUCT MEET THE SEQUENCES OF OPERATION DESCRIBED IN THIS SECTION CONTRACTOR SHALL COORDINATE AND RESOLVE ANY INCOMPATIBILITY ES THAT ARISE BETWEEN THE CONTROL PRODUCTS PROVIDED UNDER
- SECTION AND THOSE PROVIDED UNDER OTHER SECTIONS OR DIVISIONS THIS SPECIFICATION. SUPPLIED BY CONTROLS CONTRACTOR MUST BE TURNED OVER TO THE
- IICAL CONTRACTOR FOR INSTALLATION. PARTS INCLUDE BUT ARE NOT TO CONTROL VALVES, DAMPERS, INLINE DEVICES, THERMAL DEVICES, WELLS.
- STALLING CONTRACTOR IS RESPONSIBLE FOR ALL MECHANICAL INTERLOCK SENSOR WIRING, AND CONTROL WIRING REQUIRED UNLESS SPECIFIED TO TORY MOUNTED PER DIVISION 23.
- NTROL AND INTERLOCK WIRING SHALL COMPLY WITH THE NATIONAL, ELECTRICAL CODES, AND SECTION 26 00 00 OF THESE CONTRACT INT SPECIFICATIONS. WHERE THE REQUIREMENTS OF THIS SECTION WITH THOSE IN ELECTRICAL SPECIFICATIONS. THE REQUIREMENTS OF TH SHALL TAKE PRECEDENCE. THIS WORK INCLUDES INTERLOCK WIRING CHANICAL EQUIPMENT REQUIRED FOR A COMPLETE INSTALLATION. ENT SPECIFIED TO HAVE FACTORY MOUNTED CONTROLLERS AND DEVICE INCLUDE BY THIS DIVISION.
- CLASS 1 (LINE VOLTAGE) WIRING SHALL BE UL LISTED IN APPROVED ACCORDING TO CEC REQUIREMENTS.
- CLASS 2 WIRES ARE IN CONCEALED AND ACCESSIBLE LOCATIONS; NG CEILING RETURN AIR PLENUMS, APPROVED CABLES OUTSIDE OF CAL RACEWAY CAN BE USED PROVIDED THAT THE FOLLOWING CONDITIONS
- CUITS MEET CEC CLASS 2 (CURRENT_LIMITED) REQUIREMENTS. V_VOLTAGE POWER CIRCUITS SHALL BE SUB_FUSED WHEN REQUIRED TO CLASS 2 CURRENT_LIMIT.)
- CABLES SHALL BE UL LISTED FOR APPLICATION (I.E., CABLES USED IN ING PLENUMS SHALL BE UL LISTED SPECIFICALLY FOR THAT PURPOSE). INSTALL CLASS 2 WIRING IN CONDUITS CONTAINING CLASS 1 WIRING. AND PANELS CONTAINING HIGH VOLTAGE MAY NOT BE USED FOR LOW
- WIRING EXCEPT FOR THE PURPOSE OF INTERFACING THE TWO VIA RELAYS AND TRANSFORMERS. CLASS 2 WIRING IS RUN EXPOSED, WIRING SHALL BE RUN PARALLEL A SURFACE OR PERPENDICULAR TO IT, AND BUNDLED, USING APPROVED ES AT NO GREATER THAN 3 M (10 FT.) INTERVALS. SUCH BUNDLED
- SHALL BE FASTENED TO THE STRUCTURE, USING INDUSTRY APPROVED ERS, AT 1.5 M (5 FT.) INTERVALS OR MORE OFTEN TO ACHIEVE A NEAT ORKMANLIKE RESULT. RE-TO-DEVICE CONNECTIONS SHALL BE MADE AT A TERMINAL BLOCKS OF
- . STRIP. ALL WIRE-TO WIRE CONNECTIONS SHALL BE AT A TERMINAL OR WITH A CRIMPED CONNECTOR. ALL WIRING WITHIN ENCLOSURES BE NEATLY BUNDLED AND ANCHORED TO PERMIT ACCESS AND PREVENT TION TO DEVICES AND TERMINALS. ALLOWABLE VOLTAGE FOR CONTROL WIRING SHALL BE 120VAC. IF
- IGHER VOLTAGES ARE AVAILABLE FOR USE, THE BAS MANUFACTURER PROVIDE STEP-DOWN TRANSFORMERS TO ACHIEVE THE DESIRED CONTROI NTROL WIRING SHALL BE INSTALLED AS CONTINUOUS LENGTHS, WHERE
- ANY REQUIRED SPLICES SHALL BE MADE ONLY WITHIN AN ED JUNCTION BOX OR OTHER APPROVED PROTECTIVE DEVICE. PLENUM WIRING IN SLEEVES WHERE IT PASSES THROUGH WALLS AND
- MAINTAIN FIRE RATING AT ALL PENETRATIONS IN ACCORDANCE WITH CT DOCUMENTS AND NATIONAL AND/OR LOCAL CODES. AND WIRE SIZING SHALL BE DETERMINED BY THE BAS MANUFACTURER
- ER TO MAINTAIN MANUFACTURER'S RECOMMENDATION AND MEET NATIONAL CAL CODES. AND STATUS RELAYS ARE TO BE LOCATED IN PRE-FABRICATED
- URES THAT MEET THE APPLICATION. THESE RELAYS MAY ALSO BE WITHIN PACKAGED EQUIPMENT CONTROL PANEL ENCLOSURES AS NATED. THESE RELAYS SHALL NOT BE LOCATED WITHIN CLASS 1 ENCLOSURES.
- MANUFACTURER'S INSTALLATION RECOMMENDATIONS FOR ALL

CONTROLS AND INSTRUMENTATION SPEC.

COMMUNICATION AND NETWORK BUS CABLING. NETWORK OR COMMUNICATION CABLING SHALL BE RUN SEPARATELY FROM ALL CONTROL POWER WIRING. N. ADHERE TO ELECTRICAL REQUIREMENTS FOR INSTALLATION OF ELECTRICAL RACEWAYS.

O. FLEXIBLE METAL CONDUITS AND LIQUID_TIGHT FLEXIBLE METAL CONDUITS SHALL NOT EXCEED 3' IN LENGTH AND SHALL BE SUPPORTED AT EACH END. FLEXIBLE METAL CONDUIT LESS THAN 1/2" ELECTRICAL TRADE SIZE SHALL NOT BE USED. IN AREAS EXPOSED TO MOISTURE, INCLUDING CHILLER AND BOILER ROOMS, LIQUID_TIGHT, FLEXIBLE METAL CONDUITS SHALL BE USED.

7. <u>SUPPLY OF CONTROL DEVICES</u>

- A. UNLESS OTHERWISE SPECIFIED, SUPPLY ALL REQUIRED CONTROL DAMPERS. HAND THE DAMPERS TO THE SHEET METAL TRADE AT THE SITE IN THE LOCATION WHERE THEY ARE REQUIRED FOR INSTALLATION AS PART OF THE SHEET METAL WORK. ENSURE THAT EACH DAMPER IS CORRECTLY LOCATED AND MOUNTED. B. PROVIDE LINKAGE AND OPERATORS FOR THE DAMPERS. WHEREVER POSSIBLE LOCATE DAMPER OPERATORS SO THAT THEY ARE ACCESSIBLE FROM OUTSIDE
- DUCT. PLENUM, AND EQUIPMENT CASINGS. BRACKET MOUNT OPERATORS ON DUCTS OR PLENUMS CLEAR OF INSULATION WHERE APPLICABLE. C. WHERE SEQUENCE OPERATION IS INDICATED, OR WHERE MULTIPLE OPERATORS DRIVE A SERIES OF DAMPERS, PROVIDE PILOT POSITIONERS TO COUPLE THEIR
- ACTION. D. ENSURE THAT DAMPERS LOCATED IN DUCTWORK OTHER THAN GALVANIZED STEEL ARE CONSTRUCTED OF TYPE 316 STAINLESS STEEL.
- E. UNLESS OTHERWISE SPECIFIED, SUPPLY ALL REQUIRED AUTOMATIC CONTROL VALVES. HAND THE VALVES TO THE APPROPRIATE PIPING TRADES AT THE SITE IN THE LOCATIONS THEY ARE REQUIRED FOR INSTALLATION AS PART OF THE PIPING WORK. ENSURE THAT EACH VALVE IS PROPERLY SIZED, LOCATED AND INSTALLED. F. PROVIDE AN OPERATOR FOR EACH VALVE WITH ON/OFF CONTROL FOR 2
- POSITION, 0-10VDC OR 4-20MA FOR MODULATING FOR CONTROL. SPRING RETURN ACTUATORS ARE REQUIRED ON AS DEFINED ON THE DRAWINGS FOR FAIL SAFE OPERATION, OR AS NEEDED TO PROTECT THE EQUIPMENT, SUCH AS NORMAL CLOSED POSITION FOR OUTSIDE AIR DAMPERS.

Client Halton District School Board 2050 Guelph Line Burlington, Ontario

T.A. BLAKELOCK H.S. RENOVATION

1160 Rebecca Street, Oakville, ON L6L 1Y9

Architect

sn/der

Snyder Architects Inc. 260 King St. E, Unit A101, Toronto, ON M5A 4L5 tel. 416.966.5444 fax. 416.966.4443 www.snyderarchitects.ca

Consultants

Structural Consultants Kalos Engineering Inc. 875 Main St, W. Unit 3 Hamilton, Ontario, L8S 4P9 Tel: 905-333-9119

Mechanical and Electrical Consultants EXP 1266 S. Service Rd, Stoney Creek, Ontario, L8E 5R9

Tel: 905-525-6069



Key Plan N.T.S.



Proje	ct North	True North
No.	Revisions	Date
2.	Issued for Bids / Permit	2023 03 10
1.	Issued for Bids	2023 02 08
No.	Issue	Date
General Contractor shall check and verify all dimensions and report all errors and omissions to the Architect. Do not scale the drawings. Drawings shall not be used for construction purposes until issued by the Architect for construction.		

Drawing Title: MECHANICAL **SPECIFICATIONS**

2215A			1005
Job No.		Drawing No.	
Drawn by:	C.M.	Checked by:	W.D.
Scale:	AS NOTED	Date:	05/01/2023

ECH	ANICAL EQUIPMENT SPECIFICATIONS
	RECOVERY VENTILATOR (ERV-1)
A. GEN 1.	ERAL: MODEL: TOPVEX FR800-EL-208-3. INDOOR, COMPACT, COMMERCIAL.
	RE-HEAT COIL: ELECTRIC.
3.	AIRFLOW CONTROL: CONSTANT AIR VOLUME
	EACH UNIT: CAPABLE OF OPERATING IN ANY MODE INDEPENDENTLY OR DEPENDENTLY OF OTHER SYSTEMS. CAPABLE OF CHANGING MODES WITH NO INTERRUPTION TO SYSTEM OPERATION.
6.	LISTED UNDER CSA C22.2, NO. 113/UL 1812. EQUIP WITH CONTROL SYSTEMS. PERFORM ALL FUNCTIONS NECESSARY FOR OPERATION.
7.	VENTILATION TO BUILDING: NOT TO CEASE IN ANY MODE BASED SOLELY ON OPERATIONAL TEMPERATURE OF MINUS 13 TO 104 DEGREES F (MINUS 25
8.	TO 40 DEGREES C). SURROUNDING SOUND POWER RATING: NOT HIGHER THAN 75 DB(A).
10.	SOUND DATA: MEASURED IN ACCORDANCE WITH AMCA 300. CAPABLE OF OPERATING AT NORMAL CONDITION WITH SPECIFIC FAN POWER
11.	(SFP) LOWER THAN 0.9 W/CFM (2.35 KW/M ³ /S). CAPABLE OF OPERATING IN WINTER AND SUMMER CONDITIONS WITHOUT IMBALANCE OR LOSS OF VENTILATION CAPACITY GREATER THAN SPECIFIED IN DESIGN.
	CABINET:
1	······
Z	a. DOUBLE-WALL CABINET INTERIOR: a. 20-GAUGE SHEET GALVANIZED STEEL, G90.
3	b. SEAMS: SEALED, REQUIRING NO CAULKING IN FIELD. . INSULATION WITHIN DOUBLE WALL:
5	a. 1.5—INCH (38—MM) FIBERGLASS.
4	b. FLAME SPREAD INDEX, UL 723: NOT OVER 25. c. SMOKE DEVELOPED INDEX, UL 723: NOT OVER 50. c. PROVISIONS FOR FIELD INSTALLED PRE-HEATER SYSTEM.
C. FAN	
	DIRECT-DRIVE, BACKWARD-INCLINED, MOTORIZED IMPELLERS. FAN MOTORS: ELECTRONICALLY COMMUTATED "EC" TO MAXIMIZE EFFICIENCY AT DIFFERENT
	SPEEDS. MOUNTED FOR QUIET OPERATION. MAINTENANCE-FREE, PERMANENTLY LUBRICATED, SEALED BALL BEARINGS. SEPARATE FANS FOR EXHAUST AND SUPPLY BLOWERS.
	. THERMAL OVERLOAD PROTECTED (TOP). . UL LISTED TO UL 1004–1, 1004–2, 1004–3, 1004–7 AND/OR UL
D	2111; CSA C22.2, NO. 77 AND NO.100.
	. IP PROTECTION: CLASS 44 OR 54.
	RGY RECOVERY WHEEL: ROTOR MATRIX: CORROSION-RESISTANT ALUMINUM ALLOY, COMPOSED OF
	ALTERNATING CORRUGATED AND FLAT, CONTINUOUSLY WOUND LAYERS OF UNIFORM WIDTH THAT GUARANTEE LAMINAR AIR FLOW AND LOW STATIC PRESSURE LOSS.
	COUNTER-FLOW CONSTRUCTION TYPE. FREE COOLING CAPACITY.
	PERFORMANCE: CERTIFIED AND LISTED BY AHRI.
7.	ROTOR WHEEL: 8-INCH-THICK WHEEL WELDED AT HUB AND PERIMETER TO PREVENT UNEVEN RUN-OUT DURING NORMAL OPERATIONS.
8.	CORRUGATED SURFACES: COATED WITH THIN, NON-MIGRATING, ADSORBENT,
	ZEOLITE PARTICLES. EFFECTIVENESS OF WHEEL: DOCUMENTED IN ACCORDANCE WITH ASHRAE 84
10	AND AHRI 1060. FLAME SPREAD INDEX, ENERGY RECOVERY WHEEL, UL 723: NOT OVER 25.
11.	SMOKE DEVELOPED INDEX, ENERGY RECOVERY WHEEL, UL 723: NOT OVER 50.
	FILTERS: FRESH AIR PROTECTED BY MER13 POCKETS FILTER CONSTRUCTED TO MEET
	EXHAUST AIR PROTECTED BY MER9 POCKETS FILTER CONSTRUCTED TO MEET
	INDIVIDUAL POCKETS: ASSEMBLED INTO GALVANIZED STEEL HEADER
	PROVIDING RIGID SUPPORT TO FILTER.
	PRE-HEATED AIR PROTECTED BY STRANDED ALUMINUM MESH, NOT SHEDDING OR AFFECTED BY HUMIDITY.
	ADJUSTABLE MONITORING SYSTEM: ACTIVATES ALARM THROUGH MAIN CONTROLLER WHEN PRESSURE DROP INCREASE THROUGH SUPPLY OR EXHAUST FILTERS.
E. TEM MON EFFI	PERATURE SENSORS: FOUR STAINLESS STEEL TEMPERATURE SENSORS FOR IITORING SUPPLY AND EXHAUST AIR IN AND AIR OUT, MAXIMIZING UNITS CIENCY AND DETECTING NEED FOR FROST PREVENTION.
	CTRIC RE-HEATER: PROVIDES TEMPERATURE CONTROL OF SUPPLY AIR.
2.	TEMPERATURE CONTROL FUNCTIONS:
Ь. с.	SUPPLY AIR. SUPPLY AIR WITH COMPENSATION FOR OUTDOOR AIR TEMPERATURE. EXTRACT AIR (CASCADE).
	ROOM AIR CONTROL (CASCADE). SOLID 5/16-INCH (8.5-MM) TUBULAR AIR HEATING ELEMENTS SHEATHED
	WITH STAINLESS STÈEL, AISI TYPE 304.
	ELECTRIC HEATER REGULATORS: CONTROL OUTPUT BY TIME PROPORTIONAL CONTROL (INTERMITTENT ON/OFF CONTROL).
а.	TEMPERATURE LIMITING SWITCHES: 2. AUTOMATIC RESET: 1. MANUAL RESET: 1
6.	MANUAL RESET: 1. INITIATE ALARM AND SHUT DOWN OF UNIT WHEN TEMPERATURE LIMIT
	SWITCHES ARE ACTIVATED. ELECTRICAL 3 PHASE INPUT VOLTAGE:
1.	ELECTRICAL POWER: 208–230 VAC, 3 PHASE, 60 HZ WITH NEUTRAL LINE. INTERNAL ELECTRICAL COMPONENTS: FACTORY WIRED FOR SINGLE–POINT
	POWER CONNECTION. ELECTRICAL BOX COMPONENTS: ACCESSIBLE WITHOUT STOPPING UNIT OR
4.	OPENING DOORS. ELECTRICAL BOX:
	ISOLATED FROM AIRFLOW PATHS. PROTECT INTEGRAL WIRES AND CONNECTIONS.
	CONTROLLED BY INTEGRAL MICROPROCESSOR CONTROLLER.
	SERVICEABILITY: ACCESS PANEL: HINGED AND/OR SCREWED ACCESS PANEL ON BOTTOM OF
	UNIT. SLIDING DOOR SYSTEM: MINIMIZE CLEARANCE REQUIRED FOR DOORS
3.	DURING MAINTENANCE. ENERGY RECOVERY WHEELS, FILTERS, AND MOTORS: SERVICEABLE FROM
	FRONT OF UNIT. FAN ASSEMBLIES: MOUNTED ON REMOVABLE BASE. ENERGY RECOVERY WHEELS AND FILTERS: MOUNTED ON SLIDE-OUT RAILS.
١.	CONTROLS – GENERAL:

MECHANICAL EQUIPMENT SPECIFICATIONS 1. CORRIGO: CAPABLE OF SUPPORTING REMOTE CONTROLLERS, SCHEDULE TIMERS, SYSTEM CONTROLLERS, CENTRALIZED CONTROLLERS, INTEGRATED WEB-BASED INTERFACE, GRAPHICAL USER WORKSTATION, AND SYSTEM INTEGRATION TO BUILDING MANAGEMENT SYSTEMS VIA NATIVE BACNET, MODBUS VIA RS 485, EXOLINE, BUILT-IN WEB, AND TCP/IP. 2. DIGITAL WALL CONTROLLER DISPLAY. 3. CONTROLLER COMMUNICATIONS: VIA COMMON NON-POLAR COMMUNICATIONS BUS 4. CONTROL WIRING: INSTALLED IN SYSTEM DAISY-CHAIN CONFIGURATION FROM UNIT TO BAS CONTROLLER AND TO OTHER UNITS, IF APPLICABLE. 5. NETWORK WIRING: CAT-5E WITH RJ-45 CONNECTION. J. INTEGRATION WITH BUILDING MANAGEMENT SYSTEMS: 1. SCHEDULE TIMER / TIME CLOCK: a. CORRIGO: YEAR-BASE CLOCK FUNCTION. WEEKLY SCHEDULE WITH HOLIDAY PERIODS FOR FULL YEAR CAN BE SET. b. CLOCK: 1) AUTOMATIC SUMMERTIME/WINTERTIME CHANGE-OVER, INDIVIDUAL SCHEDULES FOR EACH WEEKDAY, AND SEPARATE HOLIDAY SETTING. 2) UP TO 24 INDIVIDUAL HOLIDAY PERIODS CONFIGURABLE. 3) HOLIDAY PERIOD: ANYTHING FROM 1 DAY UP TO 365 DAYS. 4) HOLIDAY SCHEDULES: TAKE PRECEDENCE OVER OTHER SCHEDULES. 5) EACH DAY: UP TO 2 INDIVIDUAL RUNNING PERIODS. c. PRESSURE CONTROLLED FANS: DAILY INDIVIDUAL SCHEDULES FOR NORMAL SPEED AND REDUCED SPEED, EACH WITH UP TO 2 RUNNING PERIODS. d. UP TO 5 DIGITAL OUTPUTS AVAILABLE AS TIMER CONTROLLED OUTPUTS. EACH WITH INDIVIDUAL WEEK SCHEDULES WITH 2 ACTIVATION PERIODS PER 2. CORRIGO CONNECTED TO BACNET SYSTEM (FUTURE STATE) K. ACCESSORIES: 1. SLIDING DOOR KIT: MODEL SDF. 2. SHUT-OFF DAMPER: MODEL EFD AND MODEL AF24 MOTOR. FC-01A, 02A, 01B, 02B WALL MOUNTED INDOOR UNIT A. GENERAL 1. THE WALL-MOUNTED INDOOR UNIT SHALL BE FACTORY ASSEMBLED, WIRED AND RUN TESTED. CONTAINED WITHIN THE UNIT SHALL BE ALL FACTORY WIRING, PIPING, ELECTRONIC MODULATING LINEAR EXPANSION DEVICE, CONTROL CIRCUIT BOARD AND FAN MOTOR. THE UNIT SHALL HAVE A SELF-DIAGNOSTIC FUNCTION, 3-MINUTE TIME DELAY MECHANISM, AN AUTO RESTART FUNCTION, AN EMERGENCY OPERATION FUNCTION, A TEST RUN SWITCH, AND THE ABILITY TO ADJUST AIRFLOW PATTERNS FOR DIFFERENT CEILING HEIGHTS. INDOOR UNIT AND REFRIGERANT PIPES SHALL BE CHARGED WITH DEHYDRATED AIR BEFORE SHIPMENT FROM THE FACTORY. B. UNIT CABINET: 1. ALL CASING, REGARDLESS OF THE MODEL SIZE, SHALL HAVE SAME COLOUR FINISH 2. MULTI DIRECTIONAL DRAIN AND REFRIGERANT PIPING SHALL BE AVAILABLE 3. THE UNIT SHALL BE PROVIDED WITH A SEPARATE BACK PLATE WHICH SECURES THE UNIT FIRMLY TO THE WALL C. FAN: 1. THE INDOOR FAN SHALL BE STATICALLY AND DYNAMICALLY BALANCED TO RUN ON A SINGLE MOTOR WITH PERMANENTLY LUBRICATED BEARINGS. 2. A MANUAL ADJUSTABLE GUIDE VANE SHALL BE PROVIDED WITH THE ABILITY TO CHANGE THE AIRFLOW FROM SIDE TO SIDE (LEFT TO RIGHT). 3. A MOTORIZED AIR SWEEP LOUVER SHALL PROVIDE AN AUTOMATIC CHANGE IN AIRFLOW BY DIRECTING THE AIR UP AND DOWN TO PROVIDE UNIFORM AIR DISTRIBUTION D. FILTER: 1. RETURN AIR SHALL BE FILTERED BY MEANS OF A LONG-LIFE WASHABLE FII TFR E. COIL 1. THE INDOOR COIL SHALL BE OF NONFERROUS CONSTRUCTION WITH SMOOTH PLATE FINS ON COPPER TUBING. 2. THE TUBING SHALL HAVE INNER GROOVES FOR HIGH EFFICIENCY HEAT EXCHANGE. 3. ALL TUBE JOINTS SHALL BE BRAZED WITH PHOS-COPPER OR SILVER ALLOY. 4. THE COILS SHALL BE PRESSURE TESTED AT THE FACTORY. 5. BASIS OF DESIGN INDOOR UNITS INCLUDE FACTORY-INSTALLED LEV/EEV. ALTERNATIVE BRANDS WHICH REQUIRE FIELD-INSTALLED, ACCESSORY LEV O EEV KITS ARE PERMISSIBLE ONLY WITH WRITTEN ENGINEER AND ARCHITECT APPROVAL FOR THE LOCATION OF KITS BEING SUBMITTED TWO WEEKS PRIOR TO BID DATE. EEV KITS MOUNTED IN CAVITIES INSIDE FIRE-RATED INTERIOR WALLS SHALL BE MOUNTED INSIDE THREE HOUR FIRE RATED

ENCLOSURES WITH ACCESS PANELS SUPPLIED BY THE MANUFACTURER. ENCLOSURE TYPE AND PLACEMENT REQUIRE PRIOR APPROVAL F. ELECTRICAL:

- 1. THE UNIT ELECTRICAL POWER SHALL BE 208/230 VOLTS, 1-PHASE, 60 HFRT7.
- HERTZ.
 THE SYSTEM SHALL BE CAPABLE OF SATISFACTORY OPERATION WITHIN VOLTAGE LIMITS OF 187–228 VOLTS (208V/60HZ) OR 207–253 VOLTS (230V/60HZ).
- G. CONTROLS:
- THIS UNIT SHALL USE CONTROLS PROVIDED BY MITSUBISHI ELECTRIC TO PERFORM FUNCTIONS NECESSARY TO OPERATE THE SYSTEM.
 INDOOR UNIT SHALL COMPENSATE FOR THE HIGHER TEMPERATURE SENSED BY THE RETURN AIR SENSOR COMPARED TO THE TEMPERATURE AT LEVEL OF THE OCCUPANT WHEN IN HEAT MODE. DISABLING OF COMPENSATION SHALL BE POSSIBLE FOR INDIVIDUAL UNITS TO ACCOMMODATE INSTANCES
- SHALL BE POSSIBLE FOR INDIVIDUAL UNITS TO ACCOMMODATE INSTANCES WHEN COMPENSATION IS NOT REQUIRED. 3. INDOOR UNIT SHALL INCLUDE MULTIPLE DIGITAL INPUTS AND OUTPUTS
- CAPABLE OF BEING USED FOR CUSTOMIZABLE CONTROL STRATEGIES 4. CONTROL BOARD SHALL INCLUDE CONTACTS FOR CONTROL OF EXTERNAL HEAT SOURCE. EXTERNAL HEAT MAY BE ENERGIZED AS SECOND STAGE
- WITH 1.8"F 9.0"F ADJUSTABLE DEADBAND FROM SET POINT
 5. THE CONTROL SYSTEM SHALL CONSIST OF A LOW VOLTAGE COMMUNICATION NETWORK OF UNITARY BUILT-IN CONTROLLERS WITH ON-BOARD COMMUNICATIONS AND A WEB-BASED OPERATOR INTERFACE. A WEB CONTROLLER WITH A NETWORK INTERFACE CARD SHALL GATHER DATA FROM THIS SYSTEM AND GENERATE WEB PAGES ACCESSIBLE THROUGH A CONVENTIONAL WEB BROWSER ON EACH PC CONNECTED TO THE NETWORK. OPERATORS SHALL BE ABLE TO PERFORM ALL NORMAL OPERATOR FUNCTIONS THROUGH THE WEB BROWSER INTERFACE.
- 6. SYSTEM CONTROLS AND CONTROL COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
- FURNISH ENERGY CONSERVATION FEATURES SUCH AS OPTIMAL START, NIGH SETBACK, REQUEST—BASED LOGIC, AND DEMAND LEVEL ADJUSTMENT OF OVERALL SYSTEM CAPACITY AS SPECIFIED IN THE SEQUENCE.
 SYSTEM SHALL PROVIDE DIRECT AND REVERSE—ACTING ON AND OFF
- ALGORITHMS BASED ON AN INPUT CONDITION OR GROUP CONDITIONS TO CYCLE A BINARY OUTPUT OR MULTIPLE BINARY OUTPUTS. 9. PROVIDE CAPABILITY FOR FUTURE SYSTEM EXPANSION TO INCLUDE
- MONITORING AND USE OF OCCUPANT CARD ACCESS, LIGHTING CONTROL AND GENERAL EQUIPMENT CONTROL. 10.SYSTEM SHALL BE CAPABLE OF EMAIL GENERATION FOR REMOTE ALARM ANNUNCIATION.
- ANNONCIATION.
 11.CONTROL SYSTEM START-UP SHALL BE A REQUIRED SERVICE TO BE COMPLETED BY THE MANUFACTURER OR A DULY AUTHORIZED, COMPETENT REPRESENTATIVE THAT HAS BEEN FACTORY TRAINED IN MITSUBISHI CONTROLS SYSTEM CONFIGURATION AND OPERATION. THE REPRESENTATIVE SHALL PROVIDE PROOF OF CERTIFICATION FOR MITSUBISHI CMCN ESSENTIALS TRAINING AND/OR CMCN HANDS-ON TRAINING INDICATING SUCCESSFUL COMPLETION OF NO MORE THAN TWO (2) YEARS PRIOR TO SYSTEM INSTALLATION. THIS CERTIFICATION SHALL BE INCLUDED AS PART OF THE EQUIPMENT AND/OR CONTROLS SUBMITTALS. THIS SERVICE SHALL BE EQUIPMENT AND SYSTEM COUNT DEPENDENT AND SHALL BE A MINIMUM OF ONE (1) EIGHT (8) HOUR PERIOD.

MECHANICAL EQUIPMENT SPECIFICATIONS

<u>CU–1. CU–2 OUTDOOR UNIT</u> A. GENERAL:

- THE PUMY OUTDOOR UNITS SHALL BE EQUIPPED WITH MULTIPLE CIRCUIT BOARDS THAT INTERFACE TO THE M-NET CONTROLS SYSTEM AND SHALL PERFORM ALL FUNCTIONS NECESSARY FOR OPERATION. THE OUTDOOR UNIT SHALL BE COMPLETELY FACTORY ASSEMBLED, PIPED AND WIRED. EACH UNIT SHALL BE RUN TESTED AT THE FACTORY.
- 1. THE SUM OF CONNECTED CAPACITY OF ALL CITY MULTI INDOOR UNITS SHALL RANGE FROM 50% TO 130% OF OUTDOOR RATED CAPACITY.
- 2. OUTDOOR UNIT SHALL HAVE A SOUND RATING NO HIGHER THAN 59 DB(A).
- 3. BOTH REFRIGERANT LINES FROM THE OUTDOOR UNIT TO INDOOR UNITS SHALL BE INDIVIDUALLY INSULATED.
- 4. THE OUTDOOR UNIT SHALL HAVE AN ACCUMULATOR WITH REFRIGERANT LEVEL SENSORS AND CONTROLS.
- 5. THE OUTDOOR UNIT SHALL HAVE A HIGH PRESSURE SAFETY SWITCH, LOW PRESSURE SAFETY SWITCH AND OVER-CURRENT PROTECTION AND DC BUS PROTECTION.
- 6. THE OUTDOOR UNIT SHALL HAVE THE ABILITY TO OPERATE WITH A MAXIMUM HEIGHT DIFFERENCE 164 FEET FOR THE PUMY-P36/48NKMU3 (-BS) DEPEND ON THE SYSTEM LOCATION AND CONFIGURATION AND HAVE A TOTAL REFRIGERANT TUBING LENGTH OF 984 FEET FOR THE PUMY-P36/48NKMU3 (-BS). THE GREATEST LENGTH IS NOT TO EXCEED 492 FEET BETWEEN THE OUTDOOR UNIT AND THE CITY MULTI INDOOR UNITS AND SHALL NOT TRAD
- 7. THE OUTDOOR UNIT SHALL HAVE THE ABILITY TO OPERATE WITH A MAXIMUM HEIGHT DIFFERENCE 164 FEET FOR THE PUMY-P60NKMU3 (-BS) DEPEND ON THE SYSTEM LOCATION AND CONFIGURATION AND HAVE A TOTAL REFRIGERANT TUBING LENGTH OF 492 FEET FOR THE PUMY-P60NKMU3 (-BS). THE GREATEST LENGTH IS NOT TO EXCEED 262 FEET BETWEEN THE OUTDOOR UNIT AND THE CITY MULTI INDOOR UNITS AND SHALL NOT TRAP.
- 8. THE OUTDOOR UNIT SHALL HAVE RATED PERFORMANCE FOR HEAT OPERATION AT -13°F FOR THE PUMY-P36/48/60NKMU3 (-BS) AMBIENT TEMPERATURE WITHOUT ADDITIONAL LOW AMBIENT CONTROLS.
- THE OUTDOOR UNIT SHALL BE CAPABLE OF COOLING OPERATION DOWN TO 23F OUTDOOR AMBIENT WITHOUT ADDITIONAL LOW AMBIENT CONTROLS.
 THE OUTDOOR UNIT SHALL HAVE A HIGH EFFICIENCY OIL SEPARATOR PLUS ADDITIONAL LOGIC CONTROLS TO ENSURE ADEQUATE OIL VOLUME IN THE COMPRESSOR IS MAINTAINED.

B. UNIT CABINET:

1. THE CASING SHALL BE FABRICATED OF GALVANIZED STEEL, BONDERIZED AND FINISHED WITH A POWDER COATED BAKED ENAMEL.

C. FAN:

- 1. THE UNIT SHALL BE FURNISHED WITH DIRECT DRIVE, VARIABLE SPEED FAN(S) ONLY.
- 2. ALL FAN MOTORS SHALL HAVE INHERENT PROTECTION, HAVE PERMANENTLY LUBRICATED BEARINGS, AND BE COMPLETELY VARIABLE SPEED.
- 3. THE FANS WILL BE FORWARD CURVED TYPE BLADES FOR QUIET OPERATION.
- 4. THE FAN MOTOR SHALL BE MOUNTED FOR QUIET OPERATION.5. THE FAN SHALL BE PROVIDED WITH A RAISED GUARD TO PREVENT CONTACT
- WITH MOVING PARTS.

6. THE OUTDOOR UNIT SHALL HAVE HORIZONTAL DISCHARGE AIRFLOW.

D. REFRIGERANT

1. R410A REFRIGERANT SHALL BE REQUIRED FOR ALL S-SERIES OUTDOOR UNIT SYSTEMS.

E. COIL:

- 1. THE OUTDOOR COIL SHALL BE OF NONFERROUS CONSTRUCTION WITH LANCED OR CORRUGATED FINS ON COPPER TUBING.
- 2. THE COIL FINS WILL HAVE A FACTORY APPLIED CORROSION RESISTANT
- BLUE-FIN FINISH. 3. THE COIL SHALL BE PROTECTED WITH AN INTEGRAL METAL GUARD.
- REFRIGERANT FLOW FROM THE OUTDOOR UNIT SHALL BE CONTROLLED BY MEANS OF AN INVERTER DRIVEN COMPRESSOR.

F. COMPRESSOR:

- 1. THE COMPRESSOR SHALL BE A SINGLE HIGH PERFORMANCE, INVERTER DRIVEN, MODULATING CAPACITY SCROLL COMPRESSOR.
- 2. THE OUTDOOR UNIT COMPRESSOR SHALL HAVE AN INVERTER TO MODULATE CAPACITY.
- 3. THE COMPRESSOR SHALL BE EQUIPPED WITH AN INTERNAL THERMAL OVERLOAD.
- 4. THE COMPRESSOR SHALL BE MOUNTED TO AVOID THE TRANSMISSION OF VIBRATION.
- 5. THE OUTDOOR UNIT COMPRESSOR SHALL HAVE AN INVERTER TO MODULATE CAPACITY. THE OPERATING FREQUENCY SHALL BE COMPLETELY VARIABLE DEPENDING UNIT CAPACITY, OPERATION, AND CONFIGURATION.

G. ELECTRICAL:

- 1. THE OUTDOOR UNIT ELECTRICAL POWER SHALL BE 208/230 VOLTS, 1-PHASE, 60 HERTZ.
- 2. THE UNIT SHALL BE CAPABLE OF SATISFACTORY OPERATION WITHIN VOLTAGE LIMITATIONS OF 187-228 VOLTS (208V/60HZ) OR 207-253 VOLTS
- (230V/60HZ) 3. THE OUTDOOR UNIT SHALL BE CONTROLLED BY INTEGRAL MICROPROCESSORS.
- 4. THE CONTROL CIRCUIT BETWEEN THE INDOOR UNITS AND THE OUTDOOR UNIT SHALL BE 24VDC COMPLETED USING A 2-CONDUCTOR, TWISTED PAIR, NON-POLAR SHIELDED CABLE TO PROVIDE TOTAL INTEGRATION OF THE SYSTEM.

H. CONTROLS

- 1. THE CONTROL SYSTEM SHALL CONSIST OF A LOW VOLTAGE COMMUNICATION NETWORK OF UNITARY BUILT-IN CONTROLLERS WITH ON-BOARD COMMUNICATIONS AND A WEB-BASED OPERATOR INTERFACE. A WEB CONTROLLER WITH A NETWORK INTERFACE CARD SHALL GATHER DATA FROM THIS SYSTEM AND GENERATE WEB PAGES ACCESSIBLE THROUGH A CONVENTIONAL WEB BROWSER ON EACH PC CONNECTED TO THE NETWORK. OPERATORS SHALL BE ABLE TO PERFORM ALL NORMAL OPERATOR FUNCTIONS THROUGH THE WEB BROWSER INTERFACE.
- SYSTEM CONTROLS AND CONTROL COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
- FURNISH ENERGY CONSERVATION FEATURES SUCH AS OPTIMAL START, NIGHT SETBACK, REQUEST-BASED LOGIC, AND DEMAND LEVEL ADJUSTMENT OF OVERALL SYSTEM CAPACITY AS SPECIFIED IN THE SEQUENCE.
 SYSTEM SHALL PROVIDE DIRECT AND REVERSE-ACTING ON AND OFF
- ALGORITHMS BASED ON AN INPUT CONDITION OR GROUP CONDITIONS TO CYCLE A BINARY OUTPUT OR MULTIPLE BINARY OUTPUTS. 5. PROVIDE CAPABILITY FOR FUTURE SYSTEM EXPANSION TO INCLUDE
- MONITORING AND USE OF OCCUPANT CARD ACCESS, LIGHTING CONTROL AND GENERAL EQUIPMENT CONTROL. 6. SYSTEM SHALL BE CAPABLE OF EMAIL GENERATION FOR REMOTE ALARM
- ANNUNCIATION.
 CONTROL SYSTEM START-UP SHALL BE A REQUIRED SERVICE TO BE
- COMPLETED BY THE MANUFACTURER OR A DULY AUTHORIZED, COMPETENT REPRESENTATIVE THAT HAS BEEN FACTORY TRAINED IN MITSUBISHI CONTROLS SYSTEM CONFIGURATION AND OPERATION. THE REPRESENTATIVE SHALL PROVIDE PROOF OF CERTIFICATION FOR MITSUBISHI CMCN ESSENTIALS TRAINING AND/OR CMCN HANDS-ON TRAINING INDICATING SUCCESSFUL COMPLETION OF NO MORE THAN TWO (2) YEARS PRIOR TO SYSTEM INSTALLATION. THIS CERTIFICATION SHALL BE INCLUDED AS PART OF THE EQUIPMENT AND/OR CONTROLS SUBMITTALS. THIS SERVICE SHALL BE EQUIPMENT AND SYSTEM COUNT DEPENDENT AND SHALL BE A MINIMUM OF ONE (1) EIGHT (8) HOUR PERIOD.

Client Halton District School Board 2050 Guelph Line Burlington, Ontario

T.A. BLAKELOCK H.S. RENOVATION

1160 Rebecca Street, Oakville, ON L6L 1Y9

Architect

sn/der

Snyder Architects Inc. 260 King St. E, Unit A101, Toronto, ON M5A 4L5 tel. 416.966.5444 fax. 416.966.4443 w w w . snyderarchitects.ca

Consultants

Structural Consultants **Kalos Engineering Inc.** 875 Main St, W. Unit 3 Hamilton, Ontario, L8S 4P9 Tel: 905-333-9119

Mechanical and Electrical Consultants **EXP** 1266 S. Service Rd, Stoney Creek, Ontario, L8E 5R9

Tel: 905-525-6069



Key Plan N.T.S.

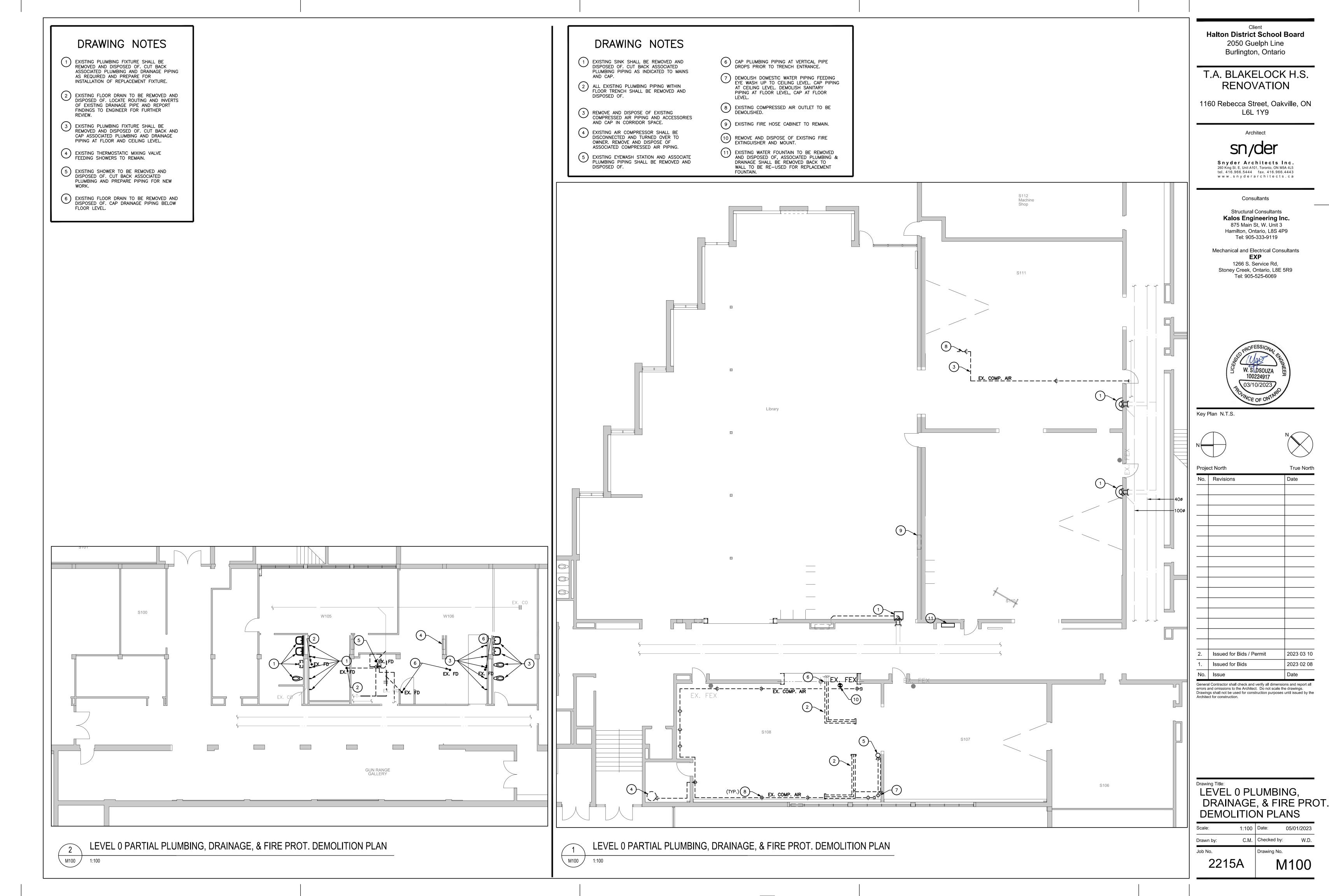


 \mathbf{X}

Proje	ct North	True North
No.	Revisions	Date
2.	Issued for Bids / Permit	2023 03 10
1.	Issued for Bids	2023 02 08
No.	Issue	Date
errors a Drawing	I Contractor shall check and verify all dimensio and omissions to the Architect. Do not scale th gs shall not be used for construction purposes ct for construction.	e drawings.

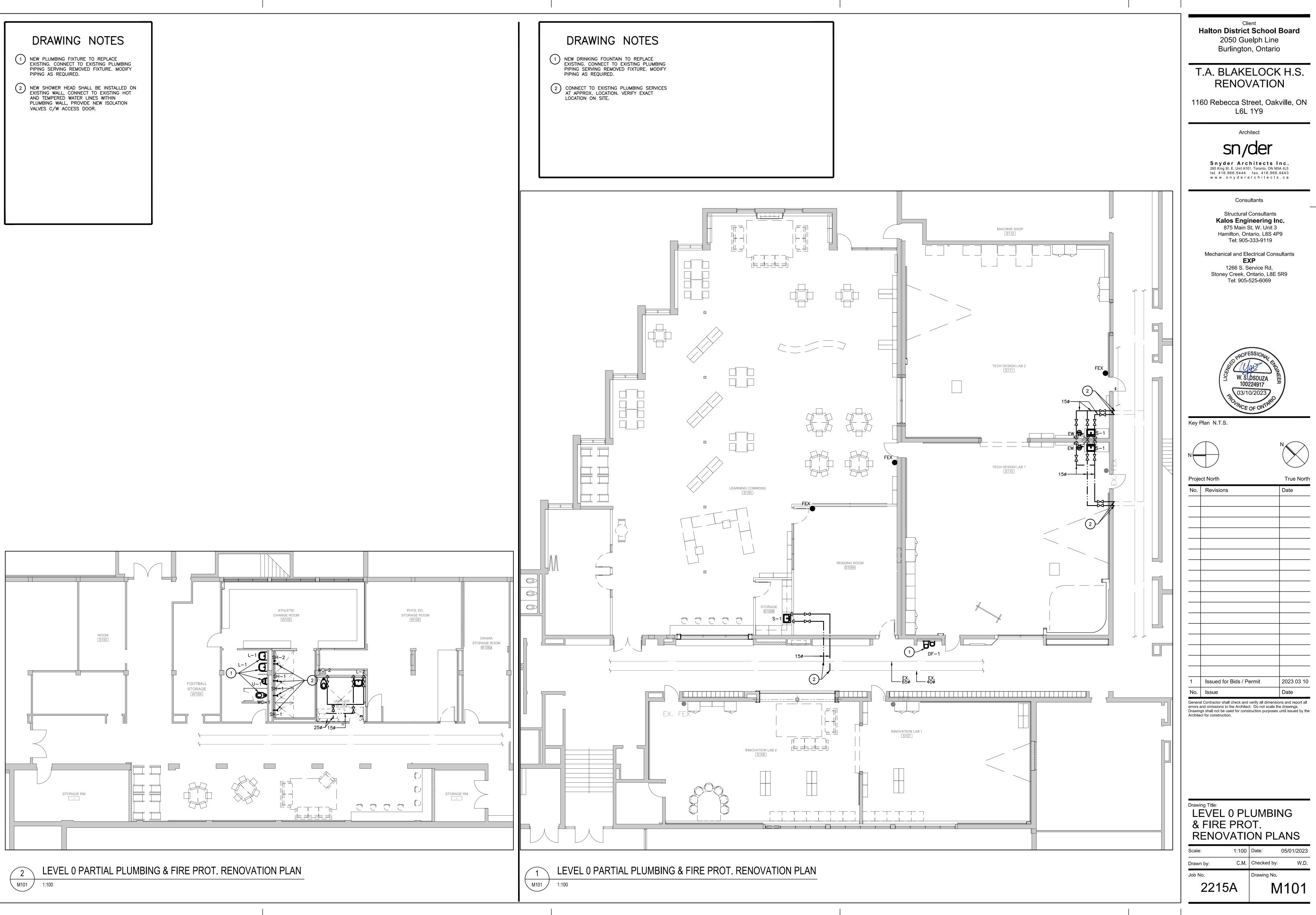
MECHANICAL SPECIFICATIONS

22	15A	I∕	1006					
Job No.		Drawing No.						
Drawn by:	C.M.	Checked by:	W.D.					
Scale:	AS NOTED	Date:	05/01/2023					



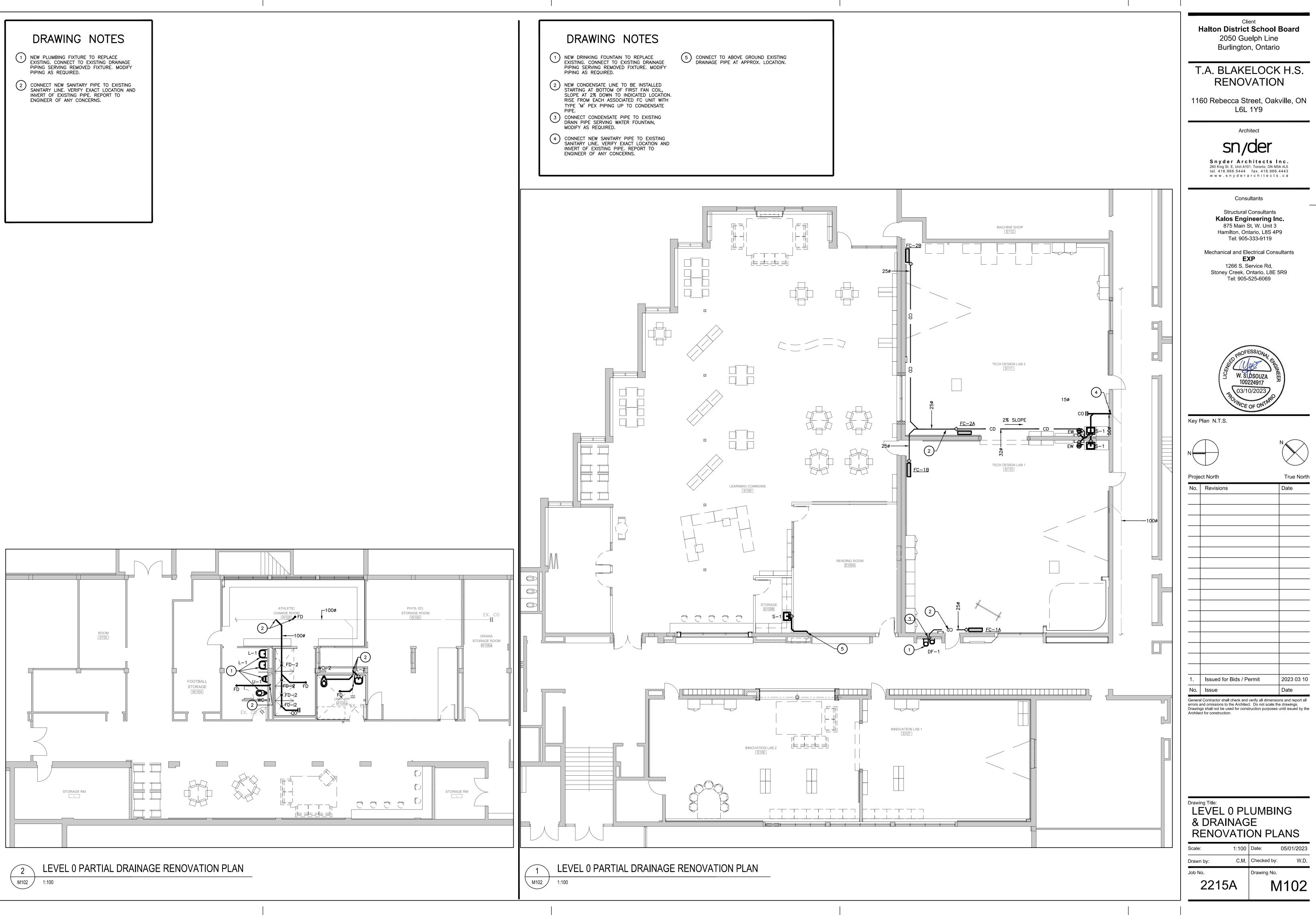


- AND TEMPERED WATER LINES WITHIN PLUMBING WALL, PROVIDE NEW ISOLATION





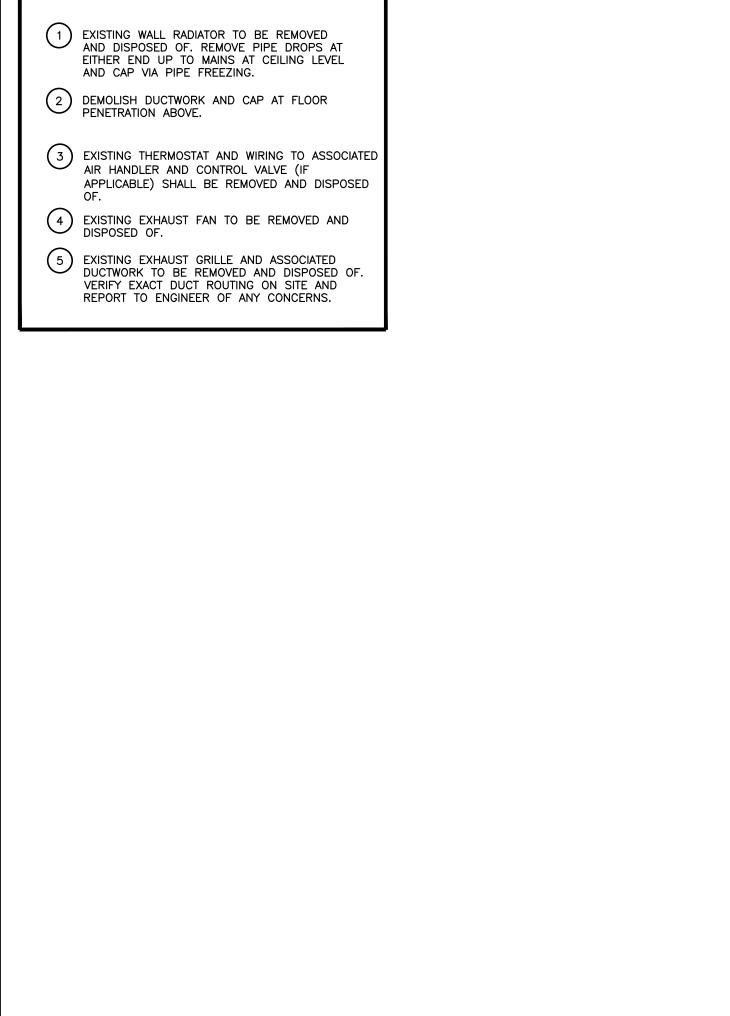
- PIPING AS REQUIRED.
- INVERT OF EXISTING PIPE. REPORT TO

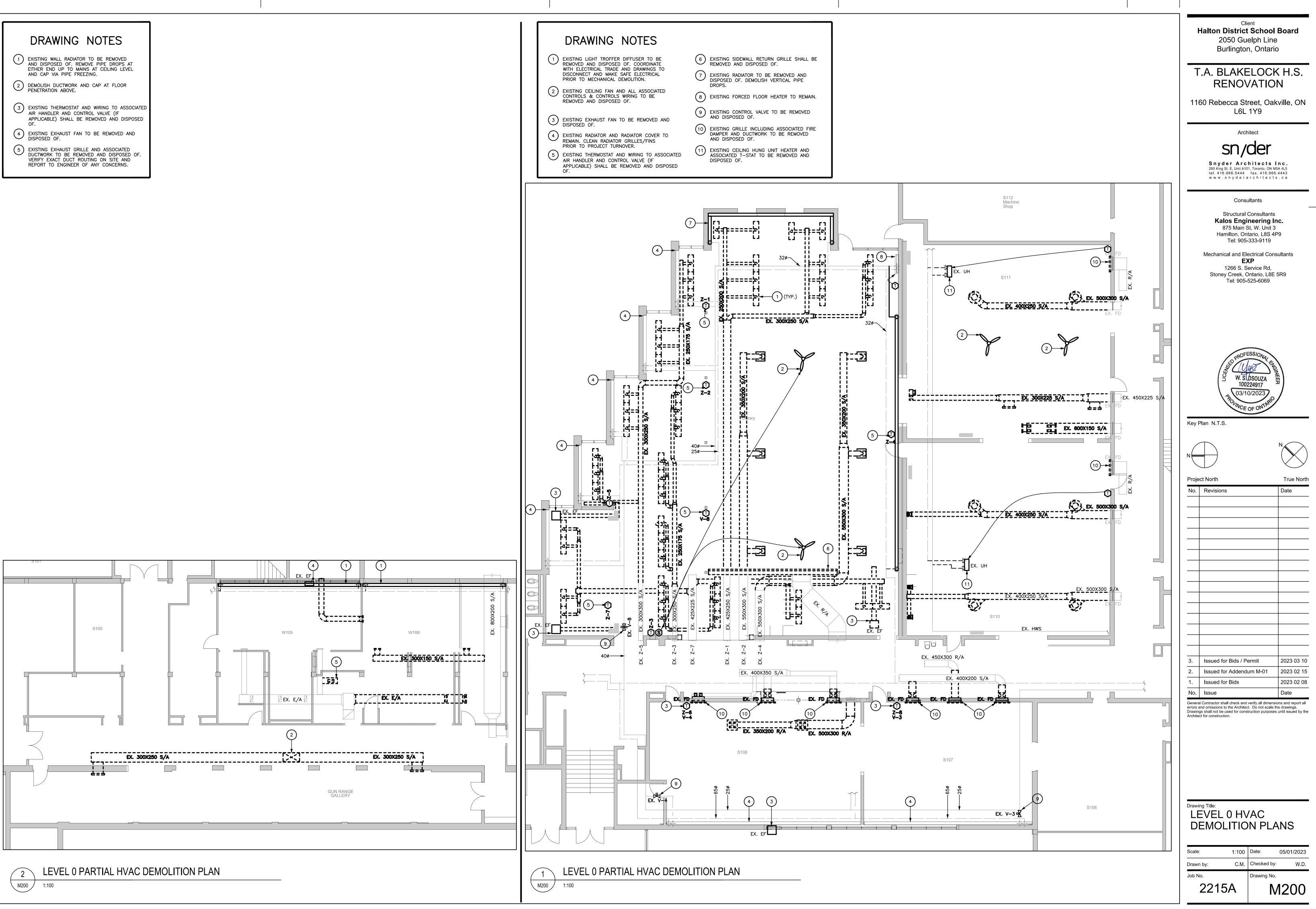




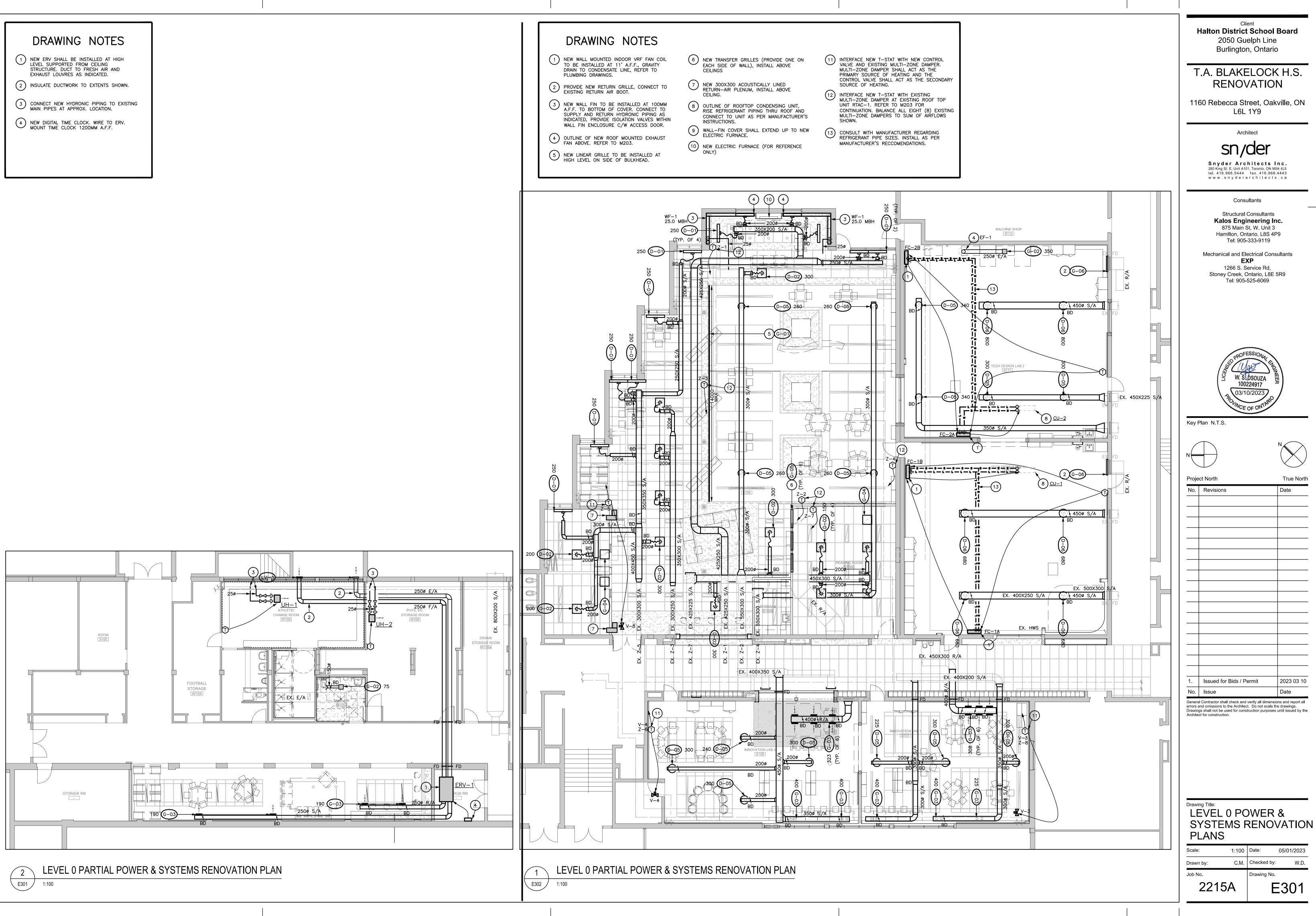


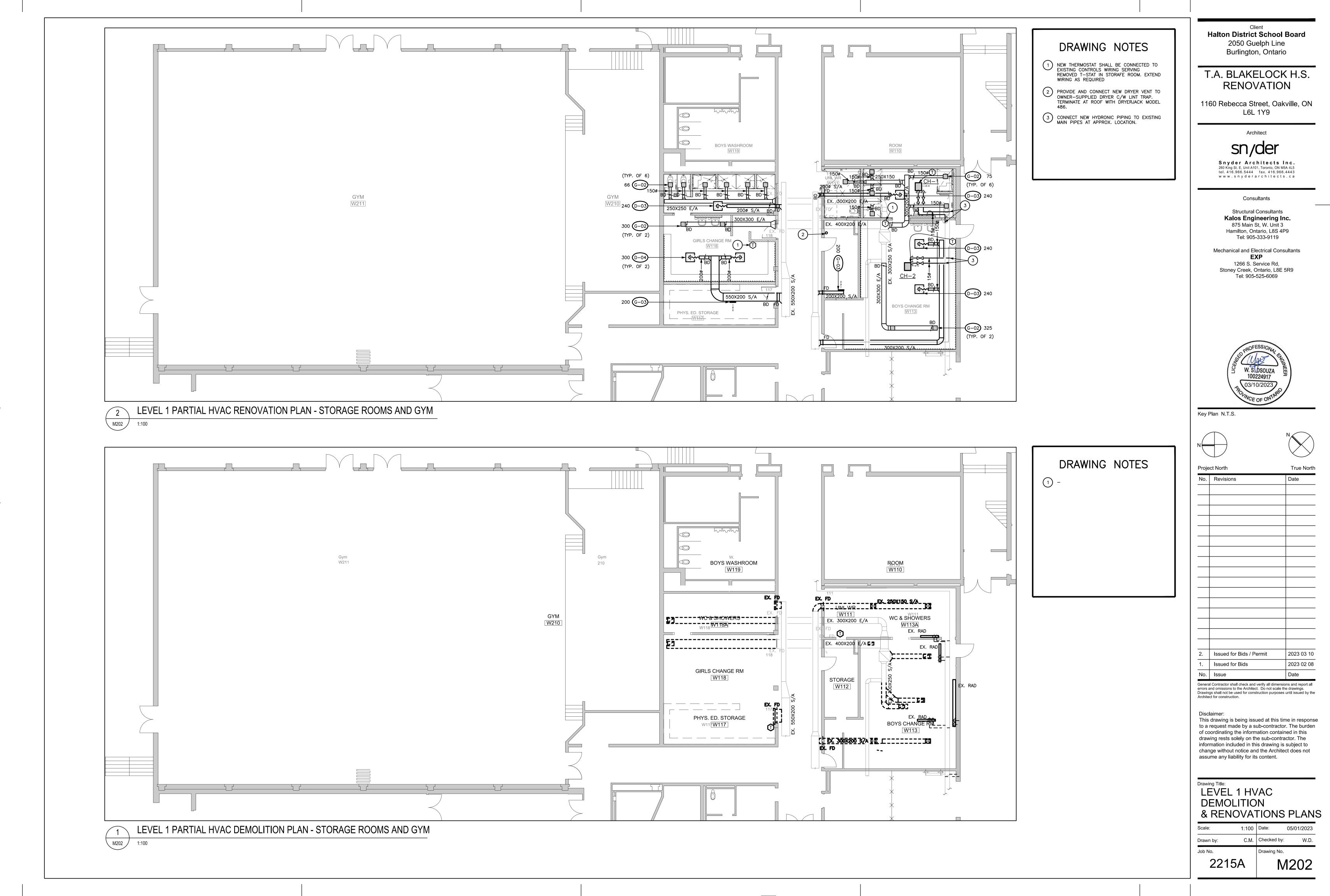


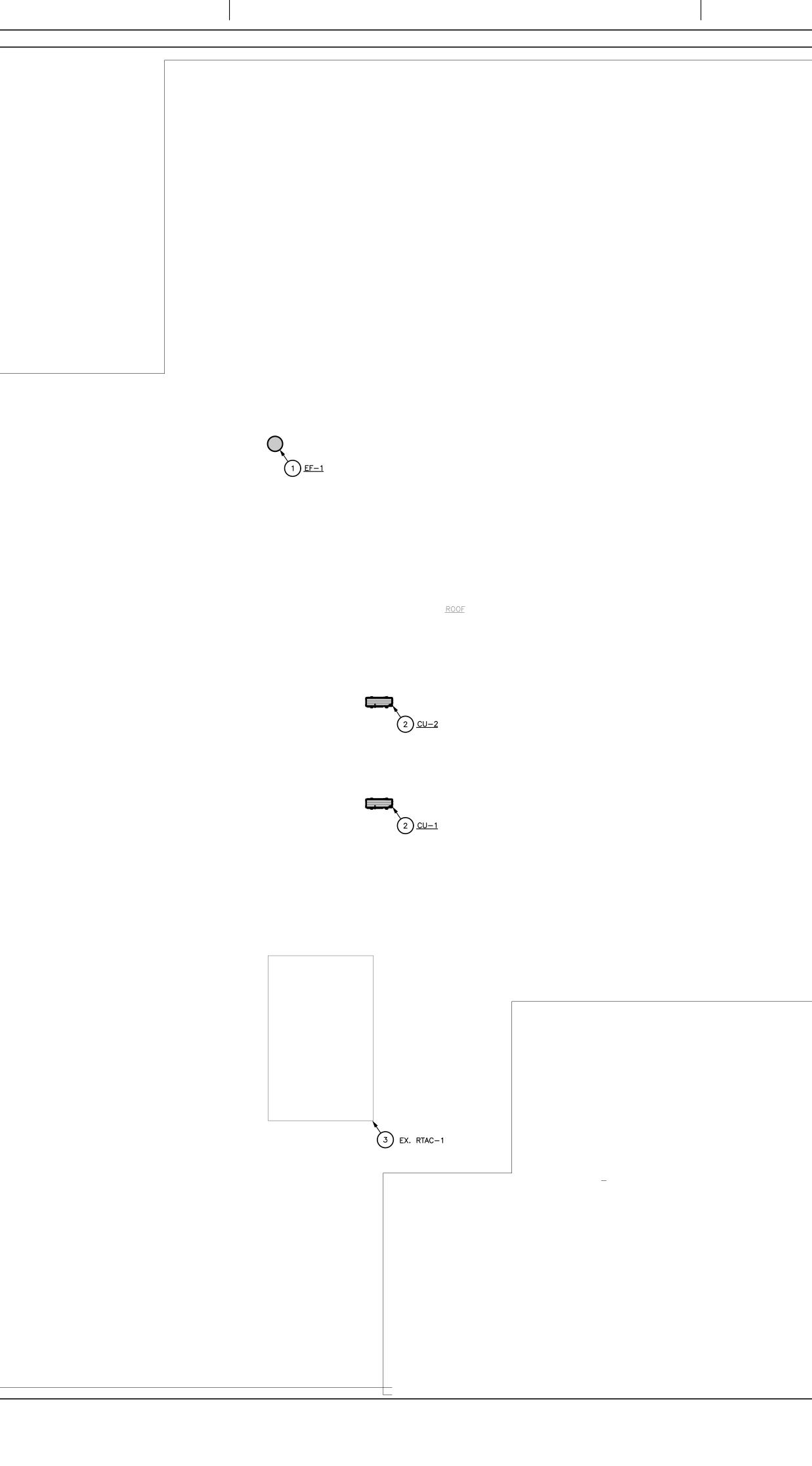




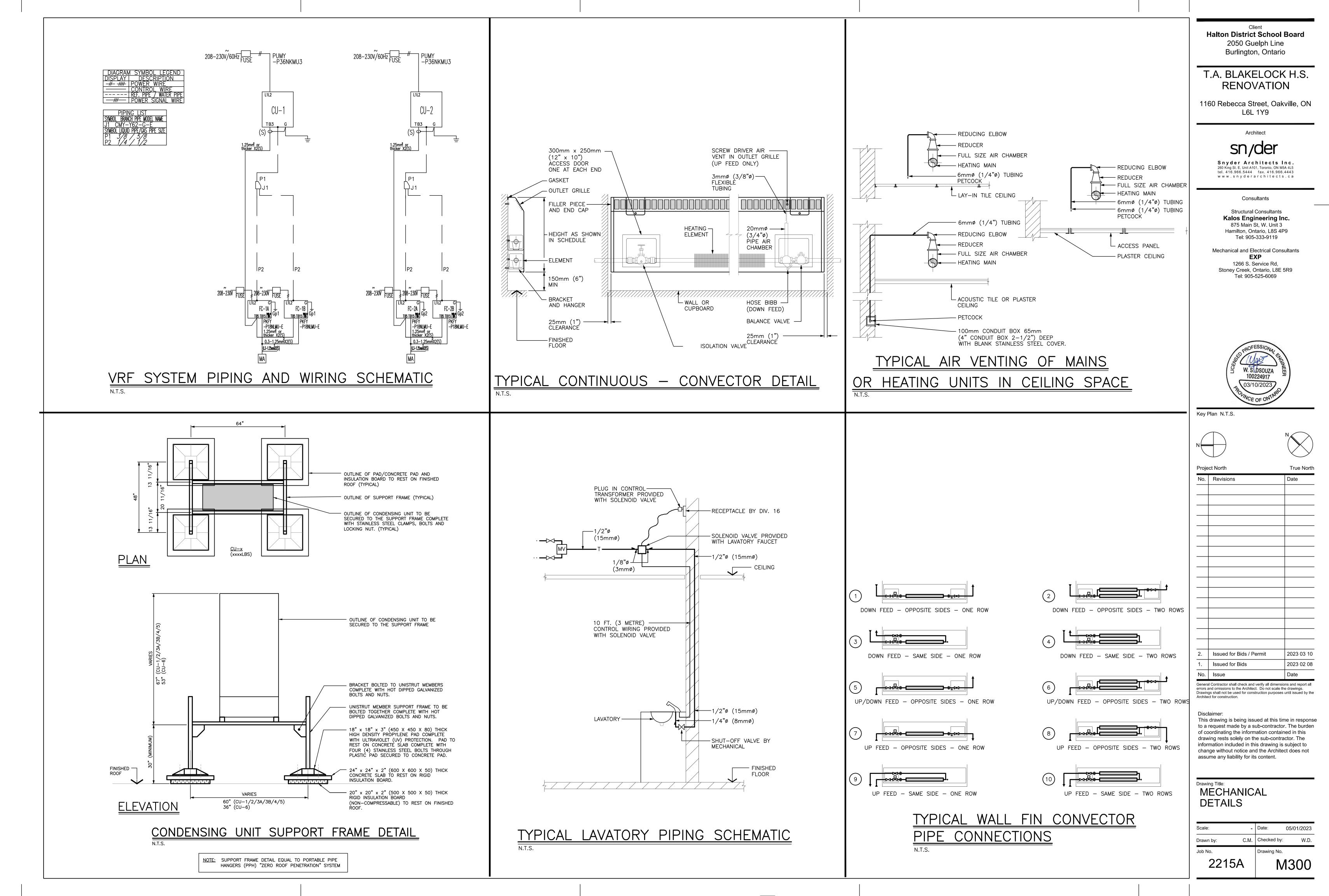
1	NEW ERV SHALL BE INSTALLED AT HIGH LEVEL SUPPORTED FROM CEILING STRUCTURE. DUCT TO FRESH AIR AND EXHAUST LOUVRES AS INDICATED.

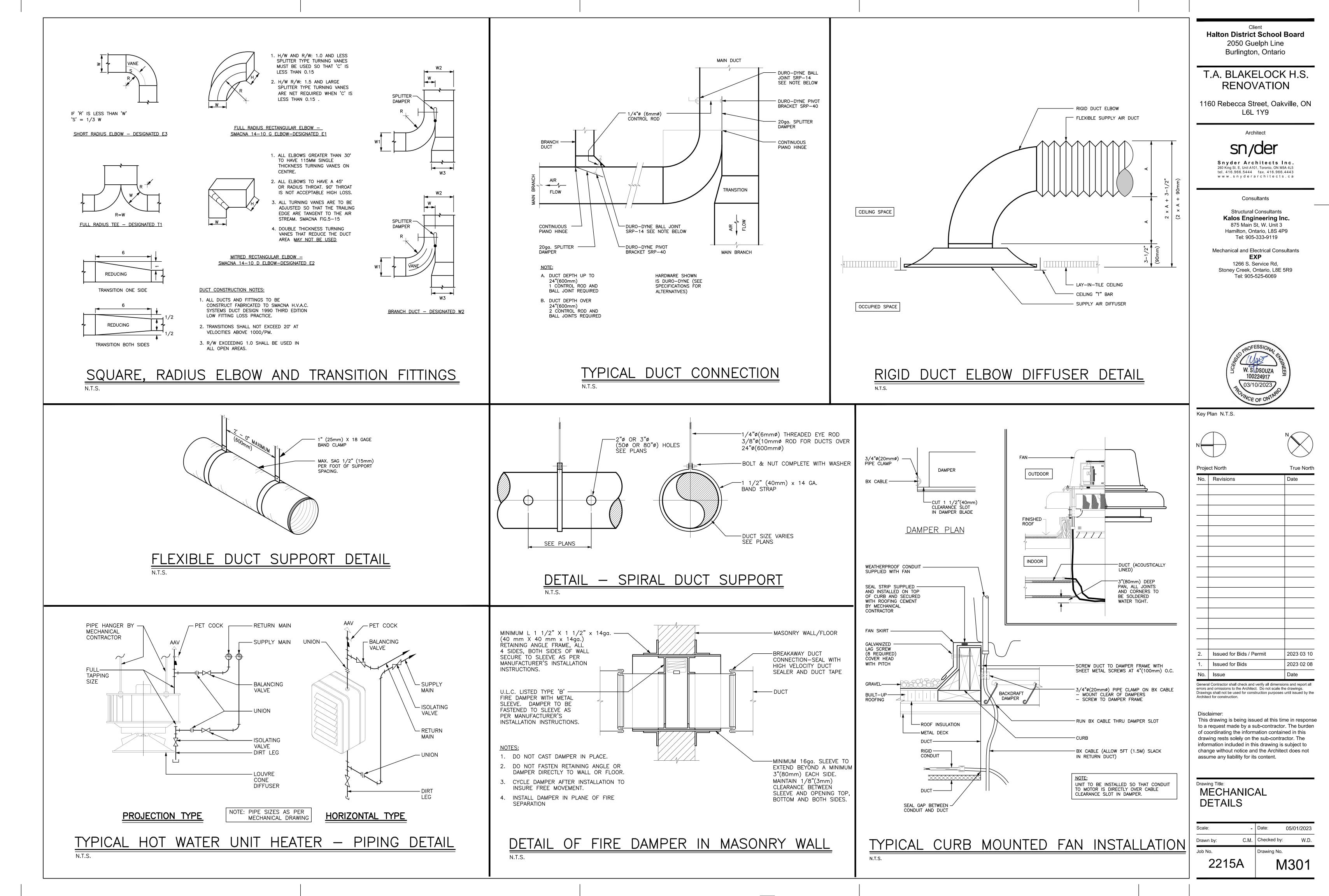






	Client Halton District School Board	
DRAWING NOTES	2050 Guelph Line Burlington, Ontario	
1 NEW ROOF MOUNTED EXHAUST FAN, INSTALL C/W ROOF CURB.	T.A. BLAKELOCK H.S.	
2 NEW ROOF MOUNTED CONDENSING UNIT, PIPE REFRIGERANT PIPING DOWN TO BELOW TO FEED FAN COILS.	RENOVATION	
3 EXISTING RTAC-1 MULTI-ZONE UNIT. BALANCE OUTDOOR AIRFLOW TO 3065 CFM.	1160 Rebecca Street, Oakville, Ol L6L 1Y9	N
	Architect	
	SN/der Snyder Architects Inc.	
	260 King St. E, Unit A101, Toronto, ON M5A 4L5 tel. 416.966.5444 fax. 416.966.4443 www.snyderarchitects.ca	
	Consultants Structural Consultants	_
	875 Main St, W. Unit 3 Hamilton, Ontario, L8S 4P9	
	Tel: 905-333-9119 Mechanical and Electrical Consultants	
	EXP 1266 S. Service Rd, Stoney Creek, Ontario, L8E 5R9	
	Tel: 905-525-6069	
	4D PROFESSION4L	
	W. S. DSOUZA 100224917	
	PROLETON ONTAND	
	Key Plan N.T.S.	
		$\overline{\mathbf{A}}$
	Project North True No. Revisions Date	orth
		_
	2. Issued for Bids / Permit 2023 03 1. Issued for Bids 2023 02	
	No. Issue Date General Contractor shall check and verify all dimensions and report errors and omissions to the Architect. Do not scale the drawings.	
	Drawings shall not be used for construction purposes until issued by Architect for construction.	' the
	Drawing Title: ROOF PROPOSED	—
	HVAC PLAN	
	Scale: 1:100 Date: 05/01/202	23
	Drawn by:C.M.Checked by:W.Job No.Drawing No.	D.
	2215A M203	3

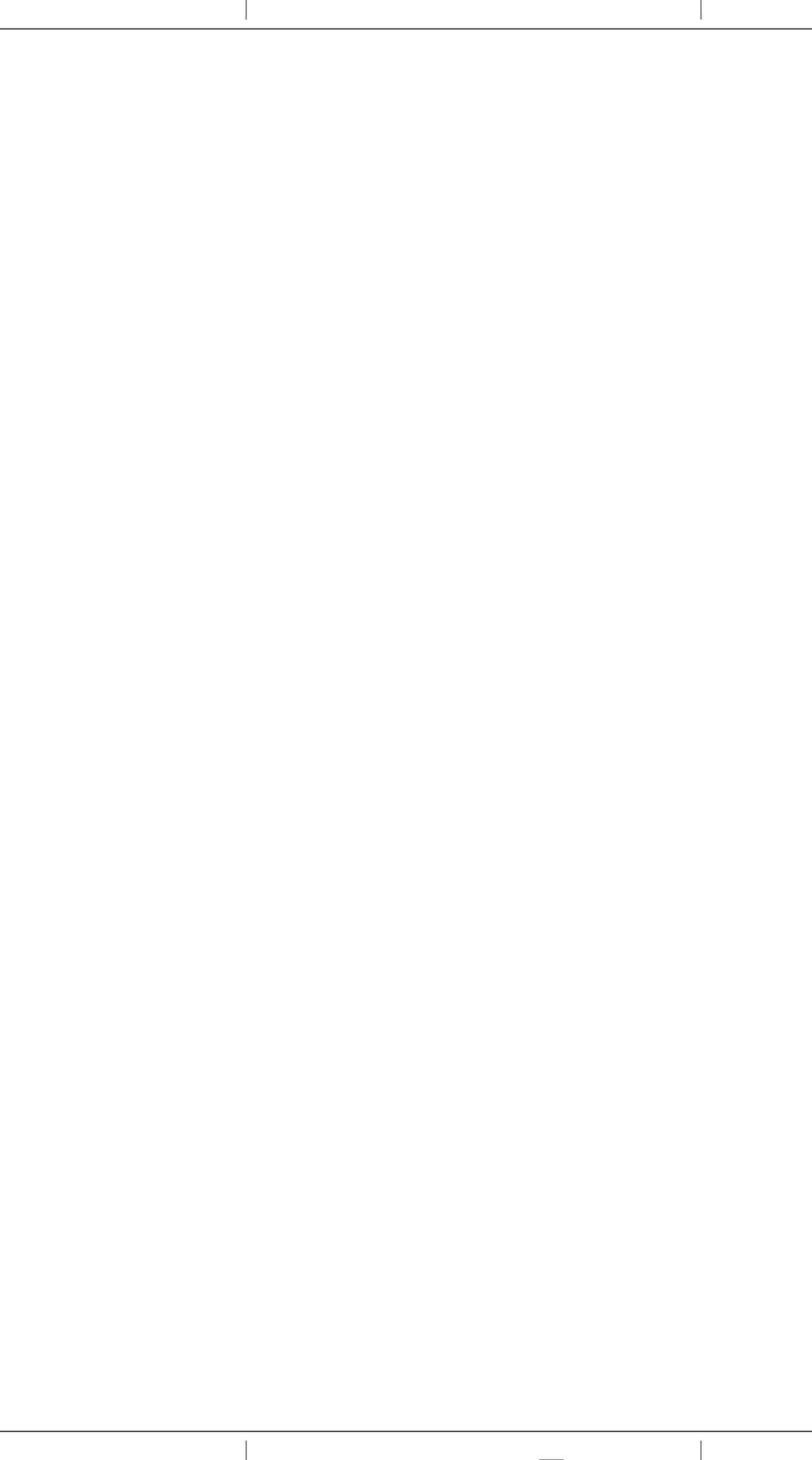




JOB NAME:		T.A.	BLAKELOCK HK	GH SCHOOL R				JOB No.	ALL-22020201
DWC	м	ODEL		NECK SIZE	A LAN SE REAL PLAN	ULE - GRIL	an an ann an annan a	IW.G.)	
DWG. DESIGNATION	SERIES	CORE	SIZE (L x W) (M M)	(MM)	MIN			MAX	MECHANICAL REMARKS
D-01	PRICE SDB 75	3 SLOTS	1,219 x 133	200 DIA.	30	250	0.01	0.02	VCR DAMPER. ACOUSTICALLY LINED AND EXTERNALLY INSULATED FLENUM
D-02	PRICE SPD	600 x 600	600 x 600	200 DIA.	80	350	0.01	0.02	VCR 7 DAMPER. WHITE POWDER COAT FINISH.
D-03	PRICE ASCD	600 x 600	600 x 600	200 DIA.	80	240	0.01	0.02	VCR 7 DAMPER. WHITE POWDER COAT FINISH.
D-04	PRICE ASCD	600 x 600	600 x 600	200 DIA.	80	400	0.01	0.02	VCR 7 DAMPER. WHITE POWDER COAT FINISH.
D-05	PRICE RCD	-	457 DIA	200 DIA.	30	340	0.01	0.02	VCR 7 DAMPER. WHITE POWDER COAT FINISH.
D-06	PRICE RCD	-	550 DIA	300 DIA.	500	800	0.01	0.02	VCR 7 DAMPER. WHITE POWDER COAT FINISH.
G-01	PRICE LBP	15B, 6" WIDTH	AS INDICATED	-	-	-	-	-	EXTRUDED ALUMINUM CONSTRUCTION. MITRED END. 0 DE DEFLECTION SPACED 1/2 IN. ON CENTER. BLADES PARRAL TO LONG DIMENSION, WHITE POWDER COAT FINISH
G-02	PRICE 610	300 x 300	300 x 300	-	30	700	0.01	0.02	WHITE POWDER COAT FINISH
G-03	PRICE 510	350 x 150	350 x 150	-	30	400	0.01	0.02	WHITE POWDER COAT FINISH
G-04	80	600 x 600	600 x 600	-	30	1000	0.01	0.02	WHITE POWDER COAT FINISH
G-05	PRICE 510Z	1200 x 500	1200 x 500	-	30	5000	0.01	0.02	STEEL CONSTRUCTION WITH 0 DEG DEFLECTION AND 3/4 ON CENTER SPACING. FRONT BLADES PARALLEL TO LOI DIMENSION.
G-06	PRICE 530- FR	650 x 600	650 x 600	-	30	2500			FIRE RATED RETURN GRILLE 45 DEG DEFLECTION WITH 3/4 ON CENTER SPACING. FRONT BLADES PARALLEL TO LOI DIMENSION

JOB NAME:				T.A. BLAK	ELOCK HIGH SC	CHOOL RENOVATIONS									
	MECHANICAL SCHEDULE - CONVECTION RADIATOR														
DWG. DESIGNATION	MODEL	ROWS	ENCLOSURE HEIGHT (IN)	OUTPUT (BTU/HR/FT)	AVG WTR TEMP (F)	MECHANICAL REMARKS									
WF-1	ENGA WF-1A	2 at 150mm CENTER	18	1700	170	COPPER TUBE. A LUMINUM FIN. MOUNT AT 100MM A.F.F. FIELD MEASURE EXACT COVER LENGTH PRIOR TO ORDERING. C/W ACCESS DOOR, CORNER HOOK, BUTT JOINT AND ENCLOSURE BRACKETS, HANGERS AND END CAPS.									

JOB NAME:	. BLAKELOCK I	HIGH SCHO	OL RENOVATIO	ALL-22020201										
MECHANICAL SCHEDULE - LOUVERS														
DWG. DESIGNATIO	MODEL	SIZ	Έ (IN.)	MECHANICAL REMARKS										
N	WICDEL	WIDTH	HEIGHT											
LV-1	GREENHECK ESD-435	12	18	HEAVY GUAGE EXTRUDED 6063-T5 ALUMINUM 102mm x 2mm NOMINAL WALL THICKNESS. MILL FINISH, MECHANICALLY FASTENED. COLOUR BY ARCHITECT.										



^{Client} Halton District School Board 2050 Guelph Line Burlington, Ontario

T.A. BLAKELOCK H.S. RENOVATION

1160 Rebecca Street, Oakville, ON L6L 1Y9

Architect

sn/der

Snyder Architects Inc. 260 King St. E, Unit A101, Toronto, ON M5A 4L5 tel. 416.966.5444 fax. 416.966.4443 w w w . snyderarchitects.ca

Consultants

Structural Consultants **Kalos Engineering Inc.** 875 Main St, W. Unit 3 Hamilton, Ontario, L8S 4P9 Tel: 905-333-9119

Mechanical and Electrical Consultants **EXP** 1266 S. Service Rd, Stoney Creek, Ontario, L8E 5R9 Tel: 905-525-6069



Key Plan N.T.S.





No.	Revisions	Date
V O.		
2.	Issued for Bids / Permit	2023 03 10
1.	Issued for Bids	2023 02 08
No.	Issue	Date

Disclaimer:

This drawing is being issued at this time in response to a request made by a sub-contractor. The burden of coordinating the information contained in this drawing rests solely on the sub-contractor. The information included in this drawing is subject to change without notice and the Architect does not assume any liability for its content.

Drawing Title:
MECHANICAL
SCHEDULES
CONFRONCE

2215A M40	\cap
ob No. Drawing No.	
orawn by: C.M. Checked by: V	V.D.
Scale: - Date: 05/01/2	023

JOB NAME:															T.A. E	BLAKELOCK HIGH	SCHOOL RENO	VATIONS											ALL-22020201
																MECI	HANICAL SC	HEDULE - ENE	RGY RECOVER										
			:	SUPPLY FAN	N			EX	HAUST FAN				SUMMERCO	ONDITIONS			WINTER CON	DITIONS											
DWG. DESIG.	SYSTEM MODEL SPEC WEIG TYPE (LE		TION	SUPPLY AIR (CFM)	ESP (IN.WC)	MOTOR (KW)	FUNCTIO	ТҮРЕ	SUPPLY AIR		MOTOR (KW)	AIR TEMP	PERATURE	LATENT EFF SENS. EFF (%) (%)				LATENT EFF (%)	FF SENS. EFF (%)		ELECTRIC COIL		MECHANICAL REMARKS	E.	ECTRICAL		ELECTRICAL WIRING INSTRUCTIONS		
											(CFM)			LAT (DB/WB) (°F)	EAT (DB/WB) (°F)			LAT (DB/WB) (°F)	EAT (DB/WB) (°F)			COIL SIZE (KW)	POWER SUPPLY (V)	ELECTRICAL CONNECTION		МСА	МСОР	VAC/ø	
RV-1	FRESH AIR	SY STEMAIR TOPVEX FR800EL	ERV 423	5 VENTIL	ATION RECOVE	, R 550	0.5	0.48	VENTILATIO	N RECOVE RY	550	0.5	0.47	74/49	81/60	69.5	75.5	55/60	-4/90	82	78.6	4.5	3 x 208	SINGLE POINT POWER CONNECTION	MERV 13 SUPPLY FILTER. MERV 9 RETURN FILTER. DIRECT DRIVE HIGH EFFICIENCY EC FAN. OUTDOOR AND EXHAUST MOTORIZED DAMPER. REMOTE TIMECLOCK CONTROLLER	29.5	40	208/3	DIV TO TO PROVIDE NEW TIPE THORP OSIDE DISCON ADJACENT UNIT AND WIRE 208V/3 PHASE FEEDER TO UNIT THROUGH DIS SWITCH. SUPPLY, INSTALLATION OR REMOTE TIMECLOC CONTROLLER AND ALL CONTROL WIRING BY, DIVISION 15

JOB NAME:								T.A. BLAK	KELOCK HIGH SCH	100L RENOVATIO	NS							ALL-22020201	
								N	IECHANICAL S	CHEDULE - C	CONDENSING	UNITS							
DWG.	EVAPORATOR UNIT			WEIGHT		COOLING HEATING HEATING WIRING FOR MECHANICAL EQUIPMENT SCHEDULE		UIPMENT											
DESIGNATION	DESIGNATION	SYSTEM and ROOM	MODEL	(LBS)	AMBIENT (°F)	CAPACITY (MBH)	Sound Pressure (DBA)	EER	AMBIENT (°F)	CAPACITY (MBH)	Sound Pressure (DBA)	EER	— MECHANICAL REMARKS	MOTOR (KW)	MCA FLA	МСОР	VAC/ø	ELECTRICAL WIRING INSTRUCTIONS	
CU-1 CU-2	FC-1A/B FC-2A/2B	TECH LAB 01/02	CITY MULTI PUMY-P36NKMU3	267	115	36	49	12.6	-13	42	53	15	INVERTER DRIVEN SCROLL HERMETIC COMPRESSOR. R410A REFRIGERANT. HIGH PRESSURE SWITCH. OVERCURRENT DETECTION.	2.8	29	44	208 / 1	DIV. 16 TO PROVIDE NEMA TYPE 3R NON- FUSIBLE DISCONNECT SWITCH ADJACENT UNIT AND WIRE 208V/1 PHASE FEEDER TO UNIT THROUGH DISCONNECT SWITCH. ALL CONTROL WIRING BY DIV. 15.	

OUTDOOR UNIT MUST BE INSTALLED ON 18" HIGH STAND SUPPLIED BY THE INSTALLING CONTRACTOR

START UP AND COMMISSIONING SHALL BE PERFORMED BY THE MANUFACTURER SUPPORTED BY INSTALLING CONTRACTOR UNIT SHALL INCLUDE A MANUFACTURER SUPPLIED SNOW & WIND HOOD KIT FOR EACH MODULE

JOB NAME:					T.A. BLAKELOCK HIGH SCHOOL RENOVATIONS				ALL-22020201	
					MECHANICAL SCHEDULE - TERMINAL	HEATERS				
DWG.						WIRING FOR	MECHANICAL EQUIPME	IT SCHEDULE		
DESIGNATION	MODEL	GPM	CFM	MBH	MECHANICAL REMARKS	MOTOR HP / W	MCA FLA	VAC/ø	ELECTRICAL WIRING INSTRUCTIONS	
CH-1, CH-2	ENGINEERED AIR CUH-2	1.9	245	18.7	ARRANGEMENT #024, STAINLESS STEEL CASING, HERESITE COATED COIL, TOTALLY ENCLOSED MOTOR, C/W REMOTE T-STAT (LINE VOLTAGE)	1/10	1.7	115/1	THERMOSTATS SUPPLIED BY DIVISION 15 AND INSTALLED AND WIRED TO UNITS BY DIVISION 16.	
UH-1, UH-2	ENGINEERED A IR H3L	2.8	910	27	TOTALLY ENCLOSED MOTOR, C/W REMOTE T-STAT (LINE VOLTAGE)	1/10	1.7	115/1	THERMOSTATS SUPPLIED BY DIVISION 15 AND INSTALLED AND WIRED TO UNITS BY DIVISION 16.	

JOB NAME:	T.A. BLAKELOCK HIGH S	SCHOOL RENOVAT	FIONS											ALL-22020201
								MECHANICA	L SCHEDULE - FANS					
DWG.	SYSTEM		FLOW	ESP	TSP			WEIGHT		WIRING FO	R MECHANI	CAL EQUIPI	MENT SCHEDULE	
DESIGNATION	and ROOM	MODEL	(CFM)	(IN W.G.)	(IN W.G.)	RPM	VFD	LBS	MECHANICAL REMARKS	MOTOR W or HP	МСА	МСОР	VAC/ø	ELECTRICAL WIRING INSTRUCTIONS
EF-1	S111 TECH LAB 2	GREENHECK GB-098-4	350	0.5	0.548	1725	NO	/8	GPI 18IN ROOF CURB. BD-100 EXHAUST DAMPER. NEMA-1 TOGGLE SWITCH. JUNCTION BOX MOUNTED AND WIRED.	0.25 HP	3	15	208/3	DIVISION 16 TO WIRE 208V-3 PHASE POWER TO FAN MOUNTED JUNCTION BOX.

JOB NAME:								T.A. BLA	KELOCK HIGI	H SCHOOL R	RENOVATIO	NS				
							MECHA	NICAL SC	HEDULE -	VRF FAN	COILS					
						CFM			TOTAL	TOTAL			WIRING FOR	MECHANIC	Cal Equipm	ENT SCHEDU
DWG. DESIGNATION	SYSTEM and ROOM	MODEL	SPEC TYPE	INTEGRATED SYSTEM TAG	MIN	МАХ	OA	ESP (IN W.G)	COOLING (MBH)		WEIGHT LBS	MECHANICAL REMARKS	MOTOR (KW)	MCA	МСОР	VAC/ø
FC-1A, FC-1B, FC-2A, FC-2B	TECH LAB 01 TECH LAB 02	CITY MULTI PKFY-P18NLMU-E-TH	VRF	CU-1 CU-2	240	440	-	-	18	20	28.4	WALL MOUNTED DUCTLESS TYPE. DIVISION 16 TO PROVIDE A NEMA TYPE 1 NON-FUSIBLE DISCONNECT SWITCH ADJACENT UNIT AND WIRE 208V/1 PHASE FEEDER TO UNIT THROUGH DISCONNECT SWITCH. ALL CONTROL WIRING BY DIVISION 15.	0.03	0.24	-	208 / 1

2) ALL CONTROL WIRING ARE TO BE CARRIED OUT IN 2 CORE 16A WG SHIELDING CABLE WITH COLOUR CODING AND TAGGED ID NUMBERS AT 3 METRE INTERVALS AS PER SCHEMATIC FOR EASE OF IDENTIFICATION AND MAINTENCE. CONTROL WIRING SHALL NOT BE RUN NEXT TO POWER WIRING. A MINUM SPACE OF 100mm BETWEEN BOTH CONTROL AND POWER CALBES SHALL APPLY.

Client
lalton District School Board
2050 Guelph Line
Burlington, Ontario

T.A. BLAKELOCK H.S. RENOVATION

1160 Rebecca Street, Oakville, ON L6L 1Y9

Architect



Snyder Architects Inc. 260 King St. E, Unit A101, Toronto, ON M5A 4L5 tel. 416.966.5444 fax. 416.966.4443 w w w . snyderarchitects.ca

Consultants

Structural Consultants Kalos Engineering Inc. 875 Main St, W. Unit 3 Hamilton, Ontario, L8S 4P9 Tel: 905-333-9119

Mechanical and Electrical Consultants **EXP** 1266 S. Service Rd, Stoney Creek, Ontario, L8E 5R9 Tel: 905-525-6069



Key Plan N.T.S.





	Devision	Date				
No.	Revisions					
2.	Issued for Bids / Permit	2023 03 10				
1.	Issued for Bids	2023 02 08				
No.	Issue	Date				

Disclaimer:

This drawing is being issued at this time in response to a request made by a sub-contractor. The burden of coordinating the information contained in this drawing rests solely on the sub-contractor. The information included in this drawing is subject to change without notice and the Architect does not assume any liability for its content.

Drawing Title:	
MECHANICAL &	
ELECTRICAL SCHEDULE	ç

221		ME100					
Job No.		Drawing No.					
Drawn by: C	:.M. / M.O.	Checked by:	W.D. / J.P.				
Scale:	-	Date:	05/01/2023				