



Cooling Tower and Dehumidification Unit Installation

**TOWNSHIP OF ESQUIMALT –
ESQUIMALT’S ARCHIE BROWNING SPORTS CENTRE
1151 Esquimalt Rd,
Esquimalt V9A 3N6**

Invitation to Bid

Date: November 28, 2023

**TOWNSHIP OF ESQUIMALT
1151 Esquimalt Rd., Esquimalt V9A 3N6**

November 28, 2023

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1.1 GENERAL

This project is for the installation of an owner supplied Evaporative Condenser and Dehumidification Unit to the following facility:

Esquimalt Archie Browning Sports Centre
1151 Esquimalt Rd., Esquimalt, B.C.

1. Prior to Bid submission, examine the specification and ascertain the extent and nature of all conditions, limitations or building regulations affecting the performance of the Work.
2. The bid shall include the cost of permitting and taking delivery of the equipment will be the responsibility of the installation contractor, royalties, freight, government duties and taxes where applicable.
3. Prices contained in the bid, whether unit prices or lump sums, are quoted in utmost good faith without any collusive arrangement or agreement with any person or corporation.
4. It is the intention of the Owner to award the selected work to one (1) Contractor.
5. The awarding of this Bid is subject to the Township of Esquimalt executive approval and/or funding. Should Bid submissions not receive approval and/or exceed funding levels, Township of Esquimalt reserves the right to reject without penalty, any, or all bids.

1.2 WORK SCHEDULE

1. Upon award of the project, a detailed schedule in Gantt Chart form is to be provided to the consultant, who will review and provide comments in 5 working days. The Gantt Chart is expected to mirror the milestones presented below, to not delay regular operation of the facility entering Fall 2024
2. All equipment is to be onsite prior to June 3rd, 2024, barring any owner or consultant delays.
3. Anticipated Construction Schedule (All Dates in 2024)
 - April 12th – Ice rink shutdown
 - April 15th – The successful contractor is to be onsite to remove roof mounted equipment and ductwork, refer to drawings for scope of work
 - April 22nd – Roofers start roof replacement
 - April 22nd – Potential Equipment Arrival Dates
 - June 3rd – Roofing work complete, Installation of Dehumidifier and Evaporative Condenser Start
 - August 2nd – Substantial Completion
 - August 16th – Total Completion

1.3 CONTRACT FORM

1. The form of Contract between the accepted bidder and Owner will be a CCDC2 - 2020 Contract from the Township of Esquimalt.
2. The holdback percentage shall be ten percent (10%). This holdback shall be released upon substantial completion of the installation contract, currently expected by August 2024.

1.4 TECHNICAL ENQUIRIES

1. Any questions regarding the Work during the bid period shall be directed to Chris Best at (250) 661-2870.

1.5 PRE-BID SITE MEETING

Mandatory Site Visit at Archie Browning Arena December 5th at 11AM. Please meet in front of the arena, a sign in sheet will be provided.

1.6 BID CLOSING AND SUBMISSION

1. The closing date and time for this bid request is:

Date: **December 12th, 2023**

Time: 11:00:00 Hours Local Time Per the Township of Esquimalt wall clock located in the Archie Browning Sport Centre

2. **Email bids will be accepted**

3. Bidders have the sole responsibility to deliver and ensure bids are received with the date and time at;

**Township of Esquimalt
1151 Esquimalt Rd,
Esquimalt, BC**

Email: steve.knoke@esquimalt.ca

CC: dan.henderson@esquimalt.ca

CC: larry.braes@esquimalt.ca

CC: ChrisBest@amegroup.ca

Electronic Bid Amendments will be accepted.

4. Bidders must complete and return all the mandatory documentation by the bid closing date and time 11am December 12th, 2023.
5. Completed Bid Form together with the required submittals shall be included in the email.
6. The email shall be clearly marked "Esquimalt Archie Browning Sports Centre Cooling Tower and Dehumidification Unit Installation
7. Submissions received after Closing will be returned unopened to the Contractor. It is the Contractor's responsibility to allow sufficient time for their agent to deliver their submission or any amendments to the specific physical location by the closing.
8. The Owner will not accept an amendment to a previously submitted Bid unless:
 - It indicates a change to a bid already submitted.
 - It is from the same person(s) who sent the original Bid submission.
9. A Submission may be withdrawn by written notice or email only, provided such notice is received at the main office at the specific physical location set out in this section prior to the bid closing.
10. Submissions received by the Owner at the specified location prior to the bid closing will be opened after bid closing. All Submissions received by bid closing will be opened and are subject to review and evaluation by the Owner.

1.7 ACCEPTANCE / REJECTION OF BIDS AND IRREVOCABILITY

1. The Owner reserves the right to reject any or all Submissions, or to accept any part of any submission and to waive any informality or irregularity in bids received. Submissions which contain qualifying conditions or otherwise fail to conform to the tender documents may be disqualified or rejected.
2. Bids submitted will be irrevocable and open for acceptance for sixty (60) days following the Closing.

1.8 ADDENDA

1. Any explanation, interpretation or clarification of the tender documents will be made in the form of Addenda.
2. No oral explanation, interpretation, or clarification of the tender documents by any person whatsoever shall bind the Owner in the interpretation of the tender documents.
3. Explanations, interpretations, or clarifications, in the form of Addenda, may be issued by the Owner prior to Closing. Any Addenda issued will be emailed to the contractors. The Contractor is solely responsible to ensure that they have received all addenda prior to submitting their bid.
4. All Addenda issued by the Owner shall be incorporated into and become part of the tender documents.

1.9 CONTRACTOR'S INCURRED COSTS

1. The submission of a bid by the Contractor constitutes the agreement of the Contractor to be solely responsible for any and all costs and expenses incurred by it in preparing and submitting its bid. This includes any costs incurred by the Contractor after bid closing, or due to the Owner's acceptance or non-acceptance of their submission.

1.10 DISCLAIMERS/ LIABILITY FOR ERRORS

1. While the Owner has made considerable effort to ensure an accurate representation of information, the information contained herein is supplied solely as a guideline for Contractors. The information is not guaranteed or warranted to be accurate by the Owner, its directors, officers, servants, employees, or agents, nor is it necessarily comprehensive or exhaustive. Nothing in this tender is intended to relieve Contractors from forming their own opinions and conclusions with respect to the matters addressed in this tender.

END OF SECTION

To:
TOWNSHIP OF ESQUIMALT
1151 Esquimalt Rd,
Esquimalt, BC
V9A 3N6

Name of Company	Phone Number
-----------------	--------------

Address

We acknowledge receipt of the following addenda to the tender documents:

Addendum No.: _____ Date: _____ Pages: _____

Addendum No.: _____ Date: _____ Pages: _____

Addendum No.: _____ Date: _____ Pages: _____

Addendum No.: _____ Date: _____ Pages: _____

Addendum No.: _____ Date: _____ Pages: _____

Addendum No.: _____ Date: _____ Pages: _____

Esquimalt Archie Browning Sports Centre Supply of Cooling Tower and Dehumidification Unit as specified.

EQUIPMENT COST: _____ Dollars (\$ _____)

INSTALLATION COST: _____ Dollars (\$ _____)

GST: Dollars (\$ _____) PST: (\$ _____)

—

Total Dollars (\$ _____)

Current Leadtime for all equipment (weeks): _____

ACCEPTANCE

1. This Bid is open to acceptance for a period of ten (10) days from the date of bid closing.
2. Having examined the Specifications, including addenda, we hereby offer to perform the work set forth in the aforesaid documents.
3. Submission of this bid implies acceptance of the existing conditions at the site.
4. In submitting this tender, we recognize and agree that the Owner reserves the right to accept any tender, to reject any or all tenders, to waive any irregularity or informality in a tender, and to negotiate with and award to one or more of the bidders after the Tender Closing. Without limitation, the Owner shall not be obligated to accept the lowest or any other tender, and by submitting a tender each bidder assumes all costs and risks associated therewith, and irrevocably releases any claim it may have against the Owner or any of its trustees, officers, employees or agents, whether based in contract, tort, legitimate expectation or any other principle of law, trade, custom or practice.

Name of Company

Date

Signature & Name of Company Official

PART 1 GENERAL

1.1 DESCRIPTION

1. Contractor to install a new evaporative condenser and arena dehumidifier using the provided mechanical, electrical and structural drawings at:
2. Archie Browning Sports Centre 1151 Esquimalt Rd., Esquimalt, BC
3. Contract Documents to be reviewed in their entirety with all sections, including the drawing packages from all disciplines
4. Equipment Startup and Commissioning is to be provided by the manufacturer for both pieces of equipment included in this project as part of the equipment price and do not need to be included in the installation bid.
5. Over the course of the work schedule, the building is being re-roofed, including the area where the scope of work in these contract documents is referring to. The successful contractor is to coordinate with the roofing contractor regarding the timing and access to site for the removal of the existing equipment and the timing and access to site for the installation of the new equipment.
6. The pre-ordered equipment price will be provided via addendum in order for the successful contractor to include the required 1 year warranty from substantial completion in their bid.

1.2 PROJECT SCHEDULE

1. Contractor to provide a schedule within 5 days from contract award.
2. All equipment is to be onsite by June 3rd, 2023, barring any owner or consultant delays.

1.3 EXAMINATION OF DRAWINGS, SPECIFICATIONS, AND WORKSITE

1. Carefully examine and study, as indicated in instructions to bidders, all bid requirements together with any other necessary data or conditions that may affect performance of work to determine full extent of work.

1.4 BID PRICING

1. Provide a Stipulated Sum Price on Bid Form to perform all work outlined in this Summary of Work, its related technical specification sections, and as shown in the specification.

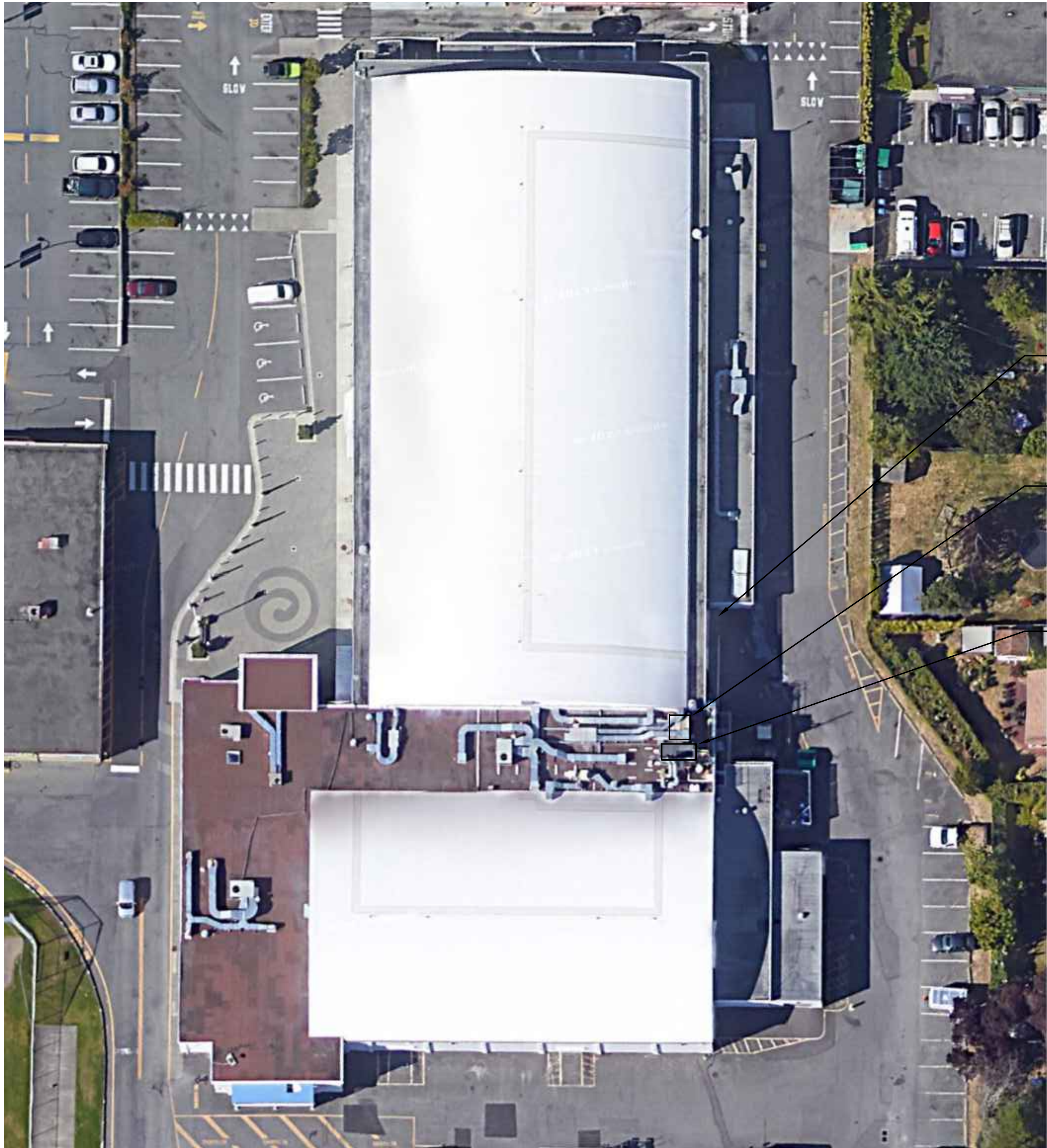
PART 2 - PRODUCTS

Refer to attached stamped mechanical, electrical, and structural drawing sets for further information

PART 3 – EXECUTION

Not Applicable

END OF SECTION



01
M0.00

SCOPE OF WORK

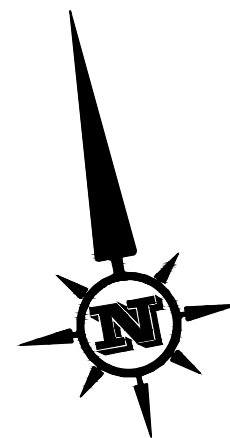
SCALE: NTS

MECHANICAL DRAWING LIST		
DRAWINGS NO.	DESCRIPTION	SCALE
M0.00	SITE PLAN	NTS
M0.01	MECHANICAL SCHEDULES	NTS
M1.01	DEMOLITION PLAN	AS INDICATED
M2.01	NEW EQUIPMENT PLAN	AS INDICATED
M3.01	SPECIFICATION I	NTS
M3.02	SPECIFICATION II	NTS

SYMBOL SCHEDULE							
DEMOLITION	EXISTING	NEW	DESCRIPTION	DEMOLITION	EXISTING	NEW	DESCRIPTION
PIPING				SYSTEM MONITORING			
			DOMESTIC COLD WATER (DCW)				ROOM TEMPERATURE SENSOR
			DOMESTIC HOT WATER (DHW)				REVERSE ACTING TEMPERATURE SENSOR
			DOMESTIC HOT WATER RECIRC. (DHWRC)				SLAB TEMPERATURE SENSOR
			SANITARY VENT				HUMIDITY SENSOR
			SANITARY SEWER ABOVE GRADE				CO2 SENSOR
			SANITARY SEWER BELOW GRADE				AIR FLOW METER
			STORM SEWER ABOVE GRADE				FLOW SWITCH
			STORM SEWER BELOW GRADE				PIPE TEMPERATURE SENSOR
			PIPE CLEAN-OUT				PRESSURE SENSOR
			FIRE LINE	DUCTWORK			
			WET SPRINKLER LINE				SUPPLY OR OUTDOOR AIR DUCT UP
			DRY SPRINKLER LINE				SUPPLY OR OUTDOOR AIR DUCT DOWN
			HYDRONIC HEATING WATER SUPPLY				RETURN AIR DUCT UP
			HYDRONIC HEATING WATER RETURN				RETURN AIR DUCT DOWN
			CHILLED WATER SUPPLY				EXHAUST AIR DUCT UP
			CHILLED WATER RETURN				EXHAUST AIR DUCT DOWN
			CONDENSATE DRAIN				TURNING VANES
			HEAT RECOVERY SUPPLY				ACOUSTIC INSULATION
			HEAT RECOVERY RETURN				BALANCING DAMPER (BD)
			CONDENSER WATER SUPPLY				BACKDRAFT DAMPER (BDD)
			CONDENSER WATER RETURN				MOTORIZED DAMPER (MD)
FITTINGS AND VALVES							FIRE DAMPER - VERTICAL (FDV)
			DIRECTION OF FLOW				FIRE DAMPER - HORIZONTAL (FDH)
			PIPE DROP				DUCT OR PIPE CAP-OFF
			PIPE RISE				RETURN OR EXHAUST AIR GRILLE
			PIPE TEE UP				UNDER-CUT DOOR
			PIPE TEE DOWN	EQUIPMENT TAGS			
			PIPE UNION				GRILLE TYPE
			ISOLATION VALVE (NORMALLY OPEN)				NECK/GRILLE SIZE
			ISOLATION VALVE (NORMALLY CLOSED)				AIR VOLUME
			CHECK VALVE				EQUIPMENT/FIXTURE TYPE
			2-WAY CONTROL VALVE				GENERAL NOTE
			3-WAY CONTROL VALVE				DRAWING REVISION
			BALANCING VALVE				DETAIL NUMBER
			PRESSURE REDUCING VALVE (PRV)				DRAWING NUMBER
			POOL FLOW CONTROL VALVE				
			STRAINER				
			RELIEF VALVE				
			BACKFLOW PREVENTOR (BFP)				
			AUTOMATIC AIR VENT (AAV)				
			SEISMIC GAS SHUT-OFF VALVE				
			TEMPERATURE GAUGE				
			PRESSURE GAUGE				
			THERMOMETER				
			PUMP				
			ENERGY METER				
			BTU METER				
OUTLETS AND DRAINS							
			OPEN DRAIN				
			HOSE-BIBB (HB)				
			FLOOR DRAIN (FD)				
			FUNNEL FLOOR DRAIN				
			ROOF DRAIN (RD)				
			AREA DRAIN				

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THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND REPORT ALL ERRORS AND OMISSIONS TO THE CONSULTANT PRIOR TO COMMENCING THE WORK.
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REV.	DATE	DESCRIPTION
1.	2023.02.07	ISSUED FOR COORDINATION
2.	2023.03.21	ISSUED FOR CLIENT REVIEW
3.	2023.10.04	ISSUED FOR FINAL REVIEW
4.	2023.10.20	ISSUED FOR CLIENT REVIEW
5.	2023.11.24	ISSUED FOR TENDER



CONSULTANT:

SEAL:

NOT FOR
CONSTRUCTION

PROJECT TITLE:

ARCHIE BROWNING
SPORTS CENTRE -
HVAC REPLACEMENT

PROJECT ADDRESS:

1153 Esquimalt Road, Victoria, BC

DRAWN BY

JL

CHECKED BY

CJB

SCALE

AS NOTED

DATE

November 24, 2023

DRAWING TITLE:

SITE PLAN

PROJECT NO.

000a-1303-22

DRAWING NO.

M0.00

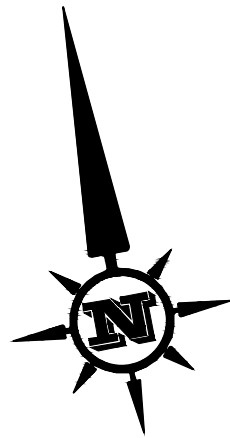
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MECHANICAL MOTORLIST																									
UNIT NUMBER	QTY	UNIT DESCRIPTION	UNIT LOCATION	ELECTRICAL LOAD				VOLT	PH	EQUIPMENT			STARTER				DISCONNECT			CONTROL				EMERGENCY POWER (YES/NO)	NOTES
				MCA	FLA	KW	HP			S	I	C	S	I	C	TYPE	S	I	C	S	I	C	TYPE		
DH-1	1	DEHUMIDIFIER	ROOF	139	111.2			575	3	M	M	E	E	E	E	PCS	E	E	E	M	M	M	BMS	NO	1
CT-1	1	EVAPORATIVE CONDENSER - Fan	ROOF				20	575	3	M	M	E	E	E	E	VFD	E	E	E	M	M	M	BMS	NO	1
CT-1	1	EVAPORATIVE CONDENSER - Pump	ROOF				1.5	575	3	M	M	E	E	E	E	VFD	E	E	E	M	M	M	BMS	NO	1
<div><div><div><u>SUPPLIER / INSTALL / WIRE CODES:</u> MECH = MECHANICAL ELEC = ELECTRICAL G = GENERAL CONTRACTOR S = SUPPLIED BY I = INSTALLED BY C = CONNECTED BY <u>STARTER CODES:</u> MAN = MANUAL STARTER HOA = MAGNETIC STARTER W/ HAND/OFF/AUTO SWITCH W/ AUX. CONTACTS MAG = MAGNETIC STARTER C/W AUX STATUS CONTACTS MRR = MOTOR RATED RELAY, 24 VAC COIL & MOTOR PROTECTION SWITCH PCS = PACKAGED CONTROL SYSTEM VFD = VARIABLE FREQUENCY DRIVE RVS = REDUCED VOLTAGE STARTER WS = WALL SWITCH CP = CONTROL PANEL</div><div><u>CONTROL DEVICE CODES:</u> AQUA = PUMP CONTROLLED BY AQUASTAT BMS = BLDG MANAGEMENT SYSTEM ES = END SWITCH ET = LINE VOLTAGE T'STAT FA = FIRE ALARM FAP = FIRE ALARM PANEL FS = FLOW SWITCH GS = GAS SENSOR H = HUMIDITY SENSOR I = INTERLOCK, SEE NOTES LIGHT = WIRED TO LIGHT SWITCH LS = LEVEL SWITCH OS = OCCUPANT SENSOR PS = PRESSURE SWITCH R. STAT = REVERSE ACTING THERMOSTAT TC = TIME CLOCK T = LOW VOLTAGE T'STAT OR SENSOR TS = TAMPER SWITCH VS = VARIABLE SPEED SWITCH WS = WALL SWITCH</div><div><u>ELECTRICAL LOAD CODES:</u> BHP = BRAKE HORSEPOWER FLA = UNIT FULL LOAD AMPS HP = UNIT OR MOTOR HORSE POWER PH = POWER PHASE MCA = MINIMUM CIRCUIT AMPS VOLT = REQUIRED SUPPLY VOLTAGE <u>MISCELLANEOUS CODES:</u> FFCP = FIRE FIGHTERS CONTROL PANEL FRAC = FRACTIONAL HORSEPOWER INT = INTEGRAL PART OF UNIT</div><div><u>GENERAL NOTES:</u> A. ALL FIRE ALARM DEVICES WIRED BY ELECTRICAL B. CONTROL PANELS ARE SHIPPED LOSS & REQUIRE FIELD WIRING C. PCS EQUIPMENT REQUIRES SINGLE SOURCE POWER CONNECTION, UNLESS NOTED OTHERWISE D. CP. VFD EQUIPMENT REQUIRES POWER WIRING TO AND FROM CONTROL PANEL TO CONTROLLED EQUIPMENT <u>NOTES:</u> 1. SINGLE POINT POWER CONNECTION (EXCEPT FOR LIGHTS) 2. INDOOR UNIT IS POWERED BY OUTDOOR UNIT</div></div></div>																									

COOLING TOWER SCHEDULE															
EQUIPMENT TAG	DESCRIPTION	SERVICE	MANUFACTURER	MODEL NO.	LxWxH (INCHES)	OPERATING WT. (LBS)	FLOW (GPM)	COOLING (MBH)	FLUID P. DROP (FT. WG)	FLUID TYPE	TEMPERATURES (DEG F)		FAN MOTOR		NOTES
											CONDENSING TEMPERATURE	INLET AIR (DEG F WB)	AIR FLOW (CFM)	MOTOR (HP)	
CT-1	COOLING TOWER	ARENA	BALTIMORE AIRCOIL COMPANY	VC1-205	144X57X138	10,420	220	2700.0	-	R-717	95.0	68.0	35,800	20	ALL
NOTES:															
1	PROVIDE FLOAT TYPE WATER LEVEL CONTROL														
2	PROVIDE MANUFACTURER STRUCTURAL STEEL SUPPORT AS REQUIRED														
3	PROVIDE VARIABLE SPEED DRIVE ON FAN MOTOR														
4	VIBRATION ISOLATION (AS PER SPECIFICATIONS)														
5	PROVIDE CHILLED WATER GLYCOL CONNECTIONS FOR ICEPLANT COMPRESSOR COOLING														

AIR HANDLING UNIT	
TAG	DH-1
QUANTITY	1
LOCATION	ROOFTOP
SERVICE	DEHUMIDIFIER
MANUFACTURER	NOVELAIRE
MODEL	DH8000
SUPPLY FAN	
NORMAL VOLUME (CFM)	7,000
MINIMUM OUTDOOR AIR (CFM)	2,000
EXTERNAL STATIC (IN. WG)	1.5
TOTAL STATIC (IN. WG)	3.6
FAN SPEED (RPM)	1800.0
MOTOR (HP)	7.5
VFD MODEL	CFW500C07P0T5DB20
POWER SUPPLY	600-3-60
REGENERATION FAN	
VOLUME (CFM)	2,000
EXTERNAL STATIC (IN. WG)	0.0
TOTAL STATIC (IN. WG)	1.4
FAN SPEED (RPM)	1750.0
MOTOR (HP)	1.5
VFD MODEL	CFW500C01P7T5DB20
POWER SUPPLY	600-3-60
ELECTRIC COIL	
QUANTITY	3
CAPACITY (KW)	100
EAT (DEG. F)	80.0
LAT (DEG. F)	225.0
SCR	Wattow/DB20-60F0-000
DESICCANT WHEEL (SUMMER)	
MOISTURE REMOVAL (LB/HR)	134.0
MEDIA	FSG
ROTATION SPEED (RPH)	8.0
EAT (DEG. F)	225.0
GRAINS/LB	76.0
LAT (DEG. F)	117.2
GRAINS/LB	10.5
VFD MODEL	WEG CFW300
DESICCANT WHEEL (RECIRC)	
MOISTURE REMOVAL (LB/HR)	100.4
MEDIA	FSG
ROTATION SPEED (RPH)	8.0
EAT (DEG. F)	225.0
GRAINS/LB	26.0
LAT (DEG. F)	133.7
GRAINS/LB	3.7
VFD MODEL	WEG CFW300
FILTERS	
MAIN FILTER	MERV 8
DIMENSIONS	
LxWxH (INCH)	204X90X98
REMARKS	
NOTES: <div><div>1</div><div>2</div></div> <div>BMS CONNECTION OUTDOOR PAD MOUNT</div>	



CONSULTANT:

SEAL:

NOT FOR
CONSTRUCTION

PROJECT TITLE:

ARCHIE BROWNING
SPORTS CENTRE -
HVAC REPLACEMENT

PROJECT ADDRESS:

1153 Esquimalt Road, Victoria, BC

DRAWN BY

JL

CHECKED BY

CJB

SCALE

AS NOTED

DATE

November 24, 2023

DRAWING TITLE:

MECHANICAL
SCHEDULES

PROJECT NO.

000a-1303-22

DRAWING NO.

M0.01



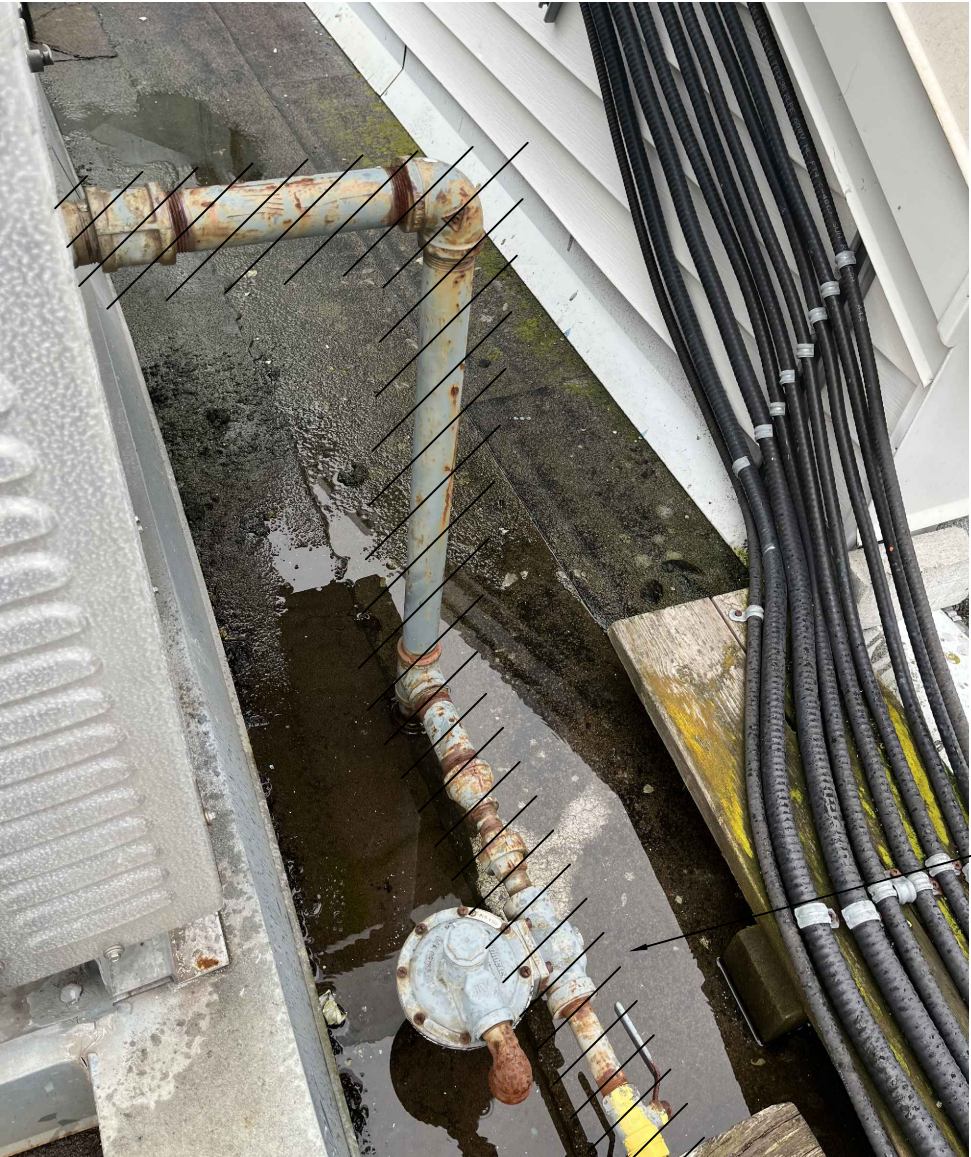
02 ROOFTOP SITE IMAGE - DEMOLITION
M1.01 SCALE: NTS



03 ROOFTOP SITE IMAGE - DEMOLITION
M1.01 SCALE: NTS



05 ROOFTOP SITE IMAGE - DEMOLITION
M1.01 SCALE: NTS



07 ROOFTOP SITE IMAGE - DEMOLITION
M1.01 SCALE: NTS



08 ROOFTOP SITE IMAGE - DEMOLITION
M1.01 SCALE: NTS



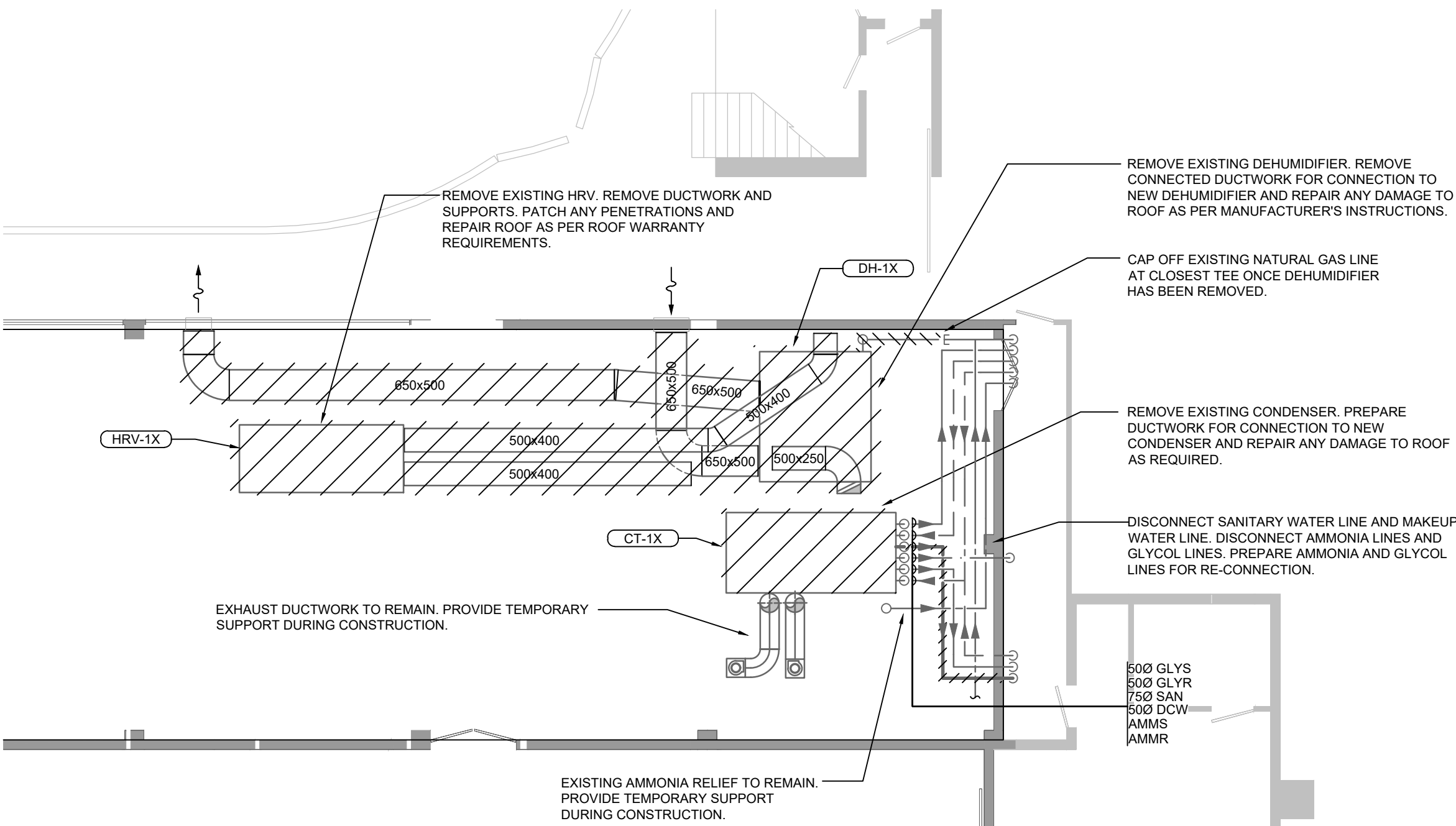
09 ROOFTOP SITE IMAGE - DEMOLITION
M1.01 SCALE: NTS

DEMOLITION & RENOVATION NOTES

- CONTRACTOR IS RESPONSIBLE FOR REVIEWING AND VERIFYING ACTUAL ONSITE CONDITIONS AND EQUIPMENT LOCATIONS PRIOR TO ANY AND ALL DEMOLITION WORK AND/OR EQUIPMENT REMOVAL.
 - CONTRACTOR TO INCLUDE ALL CUTTING AND PATCHING THAT IS REQUIRED TO INSTALL ALL NEW MECHANICAL SYSTEMS AS REQUIRED TO MEET THE SITE CONDITIONS AS SHOWN ON THE DRAWINGS. PATCHING SHALL MEET THE AESTHETIC CONDITIONS WHICH WAS THE CONDITION PRIOR TO ANY CUTTING BEING PERFORMED.
 - CONTRACTOR TO PROPERLY SEAL AND REPAIR ANY AND ALL DAMAGE THAT IS A RESULT OF REMOVAL OR DEMOLITION OF MECHANICAL EQUIPMENT. THIS INCLUDES BUT IS NOT LIMITED TO WALL, DOOR, CEILINGS, ETC.
 - THE EXISTING DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. AS A RESULT, THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THIS DOCUMENT.
 - ALL EXISTING DUCTWORK INDICATED ON PLAN WAS TAKEN FROM EXISTING MECHANICAL PLANS AND SHALL NOT BE CONSIDERED 100% ACCURATE. CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING SYSTEMS PRIOR TO CONSTRUCTION.
 - DURING REMOVAL OF ITEMS SO INDICATED, CAUTION SHOULD BE USED TO PREVENT DAMAGE TO ANY EQUIPMENT HAVING SALVAGE VALUE. ALL REUSABLE SALVAGED MATERIAL SHALL REMAIN THE PROPERTY OF THE OWNER AND BE RETAINED FOR THEIR INSPECTION. ONLY ITEMS AGREED BY THE OWNER SHALL BE DISPOSED OF BY THE CONTRACTOR.
 - GIVE BASE BUILDING A MINIMUM 24 HOURS NOTICE OF ANY SERVICE SHUTDOWN.
 - IF ASBESTOS IS DISCOVERED ON THE PREMISES, OWNER SHALL BE NOTIFIED AND ALL WORK SHALL CEASE IMMEDIATELY UNTIL ASBESTOS ABATEMENT WORKS ARE COMPLETED.
- GENERAL NOTES:**
- THE MECHANICAL SYSTEM AND ALL OTHER SYSTEMS SHALL CONSIST OF ALL WORK SHOWN ON THE DRAWINGS, DIAGRAMS, SCHEMATICS AND AS DESCRIBED IN THE SPECIFICATIONS.
 - COORDINATE THE DRAWINGS WITH THE SPECIFICATIONS AND IN CASES WHERE CONFLICTS OCCUR THE MOST STRINGENT REQUIREMENT SHALL APPLY.
 - CONTRACTOR TO COORDINATE ALL MECHANICAL WORK WITH THAT OF OTHER TRADES TO ENSURE PROPER AND ADEQUATE INTERFACE WITH THE WORK OUTLINED FOR THIS PROJECT.
 - CONTRACTOR TO PROVIDE CEC (CANADIAN ELECTRICAL CODE) CLEARANCE HORIZONTAL AND VERTICAL REQUIREMENTS FOR ALL INSTALLED EQUIPMENT. OFFSET MECHANICAL WORK AS REQUIRED TO MEET THIS REQUIREMENT.
 - MECHANICAL EQUIPMENT SHALL NOT BE USED FOR TEMPORARY HEATING OR COOLING DURING THE CONSTRUCTION PROCESS. A WRITTEN LETTER FROM THE OWNER IS REQUIRED TO DO SO.
 - ALL DUCTWORK SIZES ARE SHOWN AS INSIDE CLEAR. ADD APPROPRIATE DIMENSION FOR INSULATION OR DUCT LINER TO OBTAIN OUTSIDE DUCT DIMENSIONS.
 - ALL OPEN ENDS OF DUCTWORK DURING DEMOLITION AND INSTALLATION SHALL BE CAPPED AND KEPT CLEAN.
 - MAXIMUM FLEXIBLE DUCT LENGTH SHALL BE NO LONGER THAN 1.0 METER UNLESS OTHERWISE NOTED FOR THE SPECIFIC APPLICATION.
 - INSTALL ALL MECHANICAL WORK AS HIGH AS POSSIBLE TIGHT TO STRUCTURE.
 - CONTRACTOR TO PROVIDE A SIMILAR TYPE DUCT CONSTRUCTION FOR ALL EXPOSED APPLICATIONS (I.E. NO LONGITUDINAL SEAM & SPIRAL IN EXPOSED APPLICATIONS). FLANGE TYPE DUCTWORK IN EXPOSED AREAS IS PROHIBITED FOR THIS PROJECT UNLESS OTHERWISE NOTED AS A SPECIFIC REQUIREMENT.
 - PROVIDE CONCEALED DAMPER REGULATORS FOR ALL VOLUME DAMPERS OVER INACCESSIBLE CEILINGS AND SOFFITS.

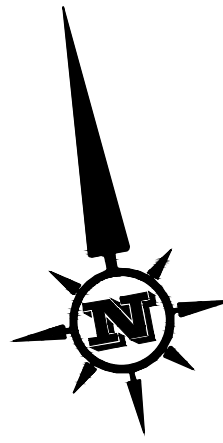


04 ROOFTOP SITE IMAGE - DEMOLITION
M1.01 SCALE: NTS



01 EXISTING EQUIPMENT - DEMOLITION
M1.01 SCALE: 1:100

REV.	DATE	DESCRIPTION
1.	2023.02.07	ISSUED FOR COORDINATION
2.	2023.03.21	ISSUED FOR CLIENT REVIEW
3.	2023.10.04	ISSUED FOR FINAL REVIEW
4.	2023.10.20	ISSUED FOR CLIENT REVIEW
5.	2023.11.24	ISSUED FOR TENDER



CONSULTANT:

SEAL:

NOT FOR
CONSTRUCTION

PROJECT TITLE:

ARCHIE BROWNING
SPORTS CENTRE -
HVAC REPLACEMENT

PROJECT ADDRESS:

1153 Esquimalt Road, Victoria, BC

DRAWN BY

JL

CHECKED BY

CJB

SCALE

AS NOTED

DATE

November 24, 2023

DRAWING TITLE:

DEMOLITION PLAN

PROJECT NO.

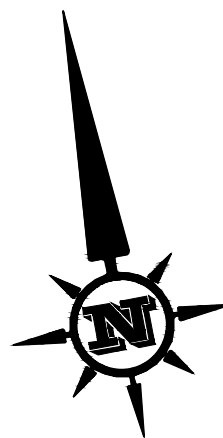
000a-1303-22

DRAWING NO.

M1.01

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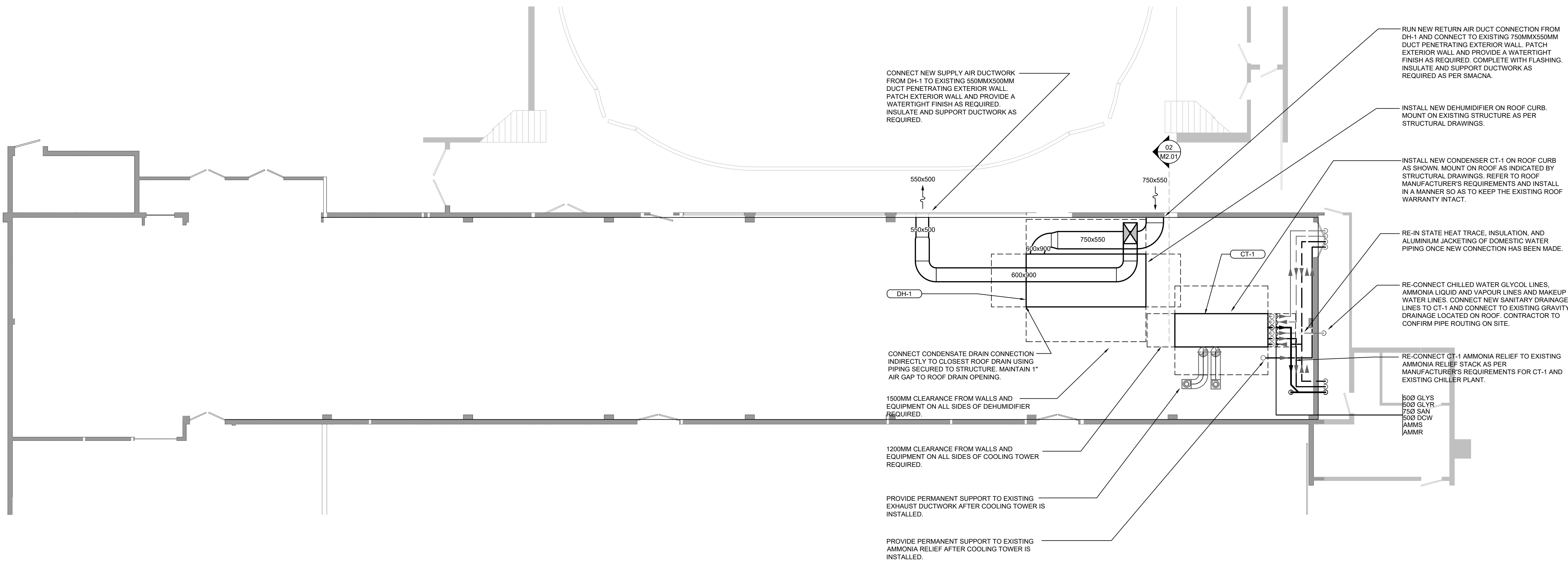
PROJECT ADDRESS:
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SCALE	AS NOTED
DATE	November 24, 2023

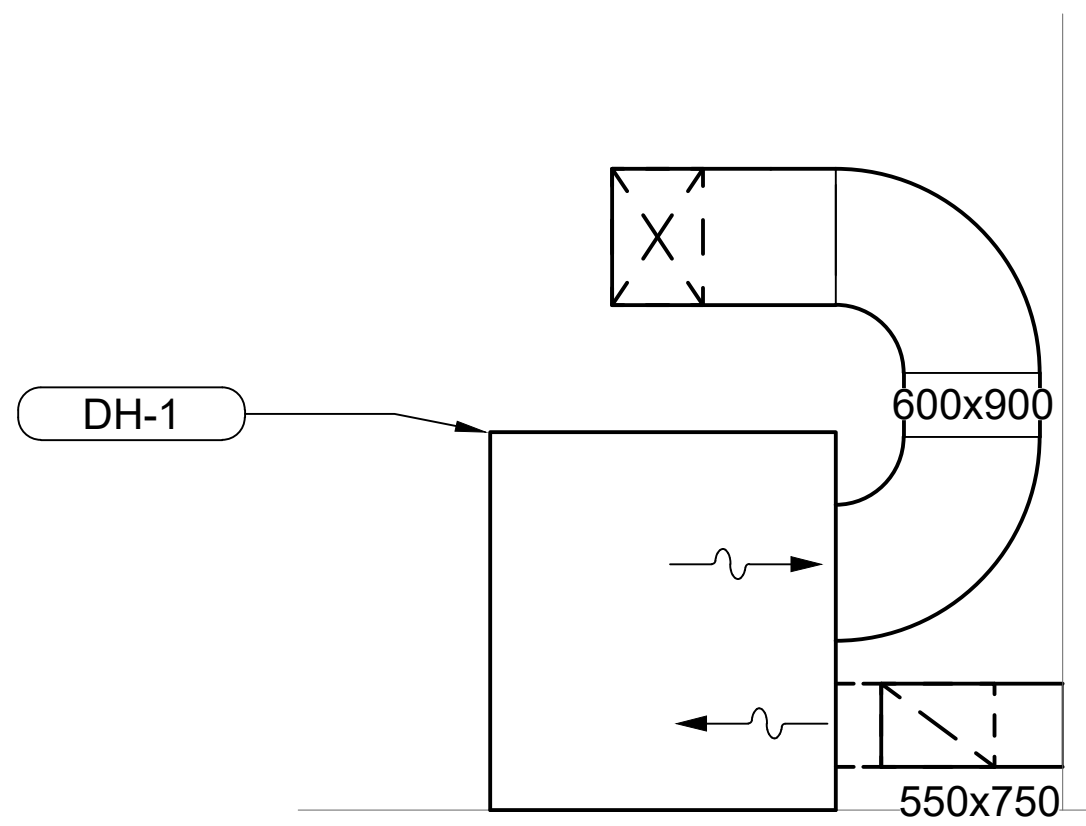
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NEW EQUIPMENT PLAN

PROJECT NO.
000a-1303-22

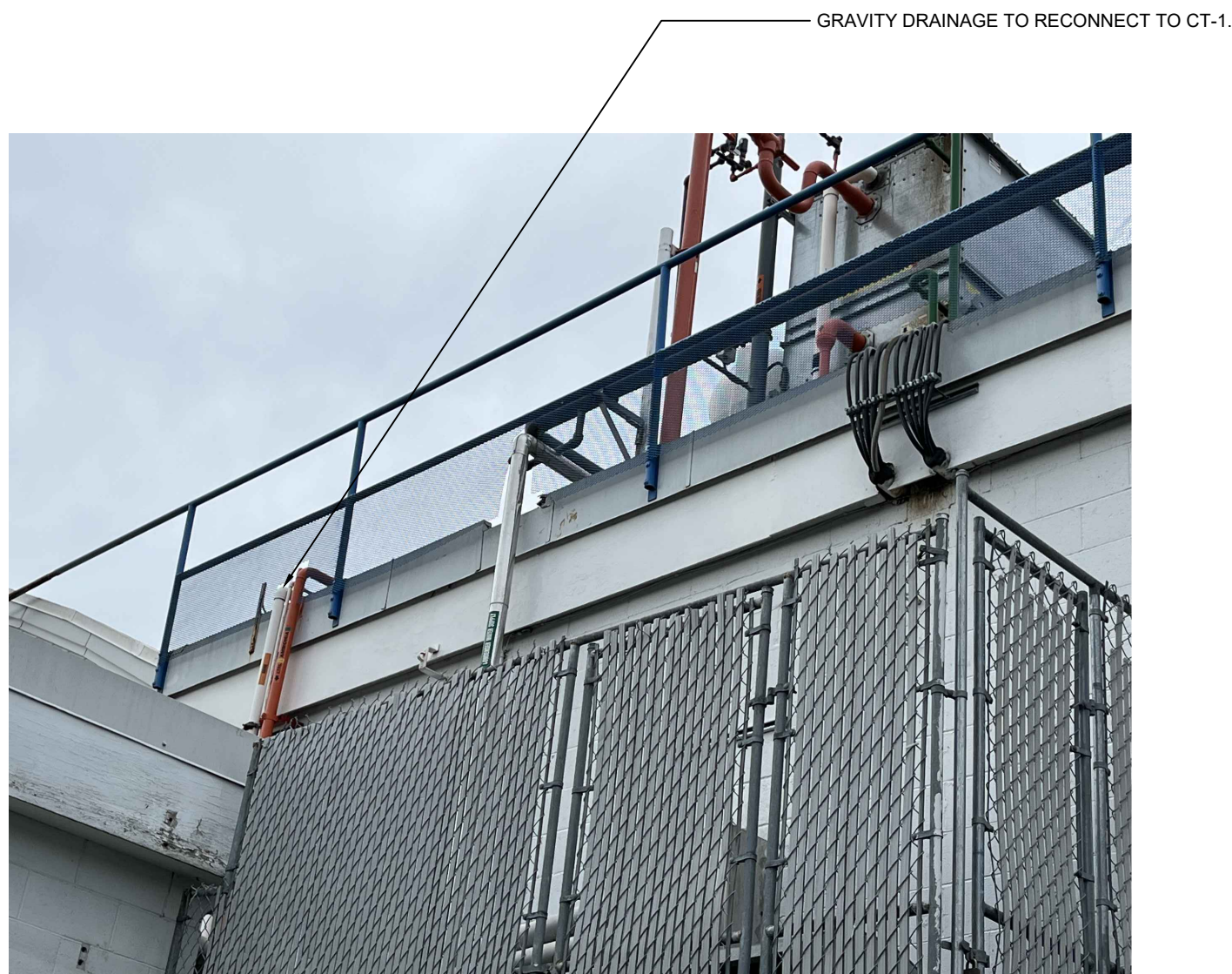
DRAWING NO.
M2.01



01
M2.01
ROOFTOP NEW INSTALLATION
SCALE: 1:100



02
M2.01
DEHUMIDIFIER SECTION VIEW
SCALE: 1:50



03
M2.01
SANITARY DRAIN LINE LOCATION
SCALE: NTS

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DIVISION 22 PLUMBING

1. GENERAL

1.1 SECTION SCOPE

RE-CONNECTION OF EXISTING DOMESTIC WATER CONNECTIONS AND SANITARY DRAIN CONNECTIONS AS PART OF RE AND RE OF EXISTING COOLING TOWER. REINSTATEMENT OF DRAIN CONNECTIONS FOR NEW DEHUMIDIFIER.

2. PRODUCTS

2.1 PIPE AND FITTINGS

SANITARY AND STORM DRAINAGE, AND VENT (ABOVE GRADE) SHALL BE DWV COPPER, CAST IRON CLASS 4000, PVC-15 SCHEDULE 40 OR PVC-15XFR SCHEDULE 40.

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

DOMESTIC WATER (ABOVE GRADE INSIDE BUILDING) SHALL BE:

TYPE "K" COPPER FOR HOT AND TYPE "L" COPPER FOR COLD WATER HARD DRAWN SEAMLESS COPPER TUBING TO ASTM B88 WITH CAST BRASS OR WROUGHT COPPER SOLDER JOINT PRESSURE FITTINGS WITH 95/5 SN58S OR SILVABRITE 100 SOLDER JOINTS.

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

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

CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE, FITTINGS AND SOLVENT CEMENTS SHALL CONFORM TO CAN/CSA B137.6, SUITABLE FOR POTABLE WATER USE AND CANULC S1022 LISTED FOR FLAME SPREAD AND SMOKE DEVELOPED RATINGS. TEMPERATURE AND PRESSURE RATINGS SHALL BE SUITABLE FOR THE APPLICATION. ALL TUBING, PIPE FITTINGS AND FITTING ASSEMBLIES SHALL BE BY ONE MANUFACTURER. NATURAL GAS SHALL BE STEEL SCHEDULE 40, A53 GRADE B.

2.2 VALVES

WHEREVER POSSIBLE ALL VALVES SHALL BE OF ONE MANUFACTURER.

GROOVED VALVES SHALL BE OF THE SAME MANUFACTURER AS THE ADJOINING COUPLINGS.

PROVIDE VALVES WITH MANUFACTURER'S NAME AND PRESSURE RATING CLEARLY MARKED ON OUTSIDE OF BODY. ALL VALVES MUST BE SUITABLE IN ALL RESPECTS FOR SERVICE USED.

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

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

GATE VALVES 2 NPS AND UNDER SHALL BE LEAD FREE BRONZE BODY, SOLID WEDGE DISC, BRONZE OR STAINLESS STEEL TRIM, NON-RISING STEM, FOR DOMESTIC WATER SERVICE, CLASS 1380 KPA (200 PSI) W.O.G.

STRAINERS SHALL BE ¼ - 2 NPS THREADED ENDS, BRONZE BODY, 1034 KPA (150 PSI) RATING.

WATER HAMMER ARRESTORS SHALL BE BELLOWES TYPE WITH WELDED STAINLESS STEEL NESTING BELLOWES OR PISTON STYLE AND STAINLESS STEEL CASING. AIR CHAMBERS ARE UNACCEPTABLE.

2.3 PREFORMED PIPE INSULATION

MATCH EXISTING DOMESTIC COLD WATER INSULATION THICKNESS AND JACKETING.

3. EXECUTION

3.1 PIPING

PIPE CONNECTIONS NPS 1½ AND LESS SHALL BE SOLDERED OR SCREWED JOINT UNLESS NOTED OTHERWISE.

PIPE CONNECTIONS NPS 2 SHALL BE SCREWED JOINT FOR LIQUID SYSTEMS UNLESS NOTED OTHERWISE.

PIPE CONNECTIONS NPS 2½ AND LARGER SHALL BE WELDED OR FLANGED UNLESS NOTED OTHERWISE.

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

USE DIELECTRIC TYPE COUPLINGS WHEN JOINING DISSIMILAR METAL PIPES.

USE LEAD FREE SOLDER FOR SOLDERING DOMESTIC WATER COPPER PIPE.

PROVIDE EXPANSION COMPENSATION FOR ALL FLUID PIPING SYSTEMS.

3.2 PRESSURE TESTING

ADVISE CONSULTANT OR PROJECT MANAGER 48 HOURS MINIMUM PRIOR TO PERFORMANCE OF PRESSURE TESTS.

USE ONLY POTABLE WATER FOR TESTING OF POTABLE WATER SYSTEMS.

TEST PRESSURE SHALL BE THE GREATER OF 1.5 TIMES MAXIMUM SYSTEM OPERATING PRESSURE OR 860 KPA FOR 8 HOURS EXCEPT IF THESE PRESSURES EXCEED THE PIPE MANUFACTURER'S RECOMMENDED MAXIMUM TEST PRESSURE FOR THE TYPE OF PIPE AND FITTINGS INSTALLED.

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

INSULATE OR CONCEAL WORK ONLY AFTER APPROVAL AND CERTIFICATION OF TESTS BY AUTHORITIES. SUBMIT COPIES OF PRESSURE TEST REPORTS FOR ALL SECTIONS OF PIPING.

3.3 GAS DISTRIBUTION PIPING

DURING CONSTRUCTION, PROTECT ALL OPENINGS IN PIPING AND EQUIPMENT, BY CAPPING OR PLUGGING TO PREVENT ENTRY OF DIRT.

CONNECT TO EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION UNLESS OTHERWISE INDICATED.

SLOPE PIPING DOWN IN DIRECTION OF FLOW TO LOW POINTS.

USE ECCENTRIC REDUCERS AT PIPE SIZE CHANGE INSTALLED TO PROVIDE POSITIVE DRAINAGE.

USE DIELECTRIC TYPE FITTINGS WHERE BURIED SERVICE ENTERS AND CONNECTS TO BUILDING PIPING.

3.4 VALVES

INSTALL ALL VALVES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

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

INSTALL CONTROL VALVES WITH THEIR STEMS UPRIGHT UNLESS APPROVED OTHERWISE AND WITH ADEQUATE CLEARANCE FOR REMOVAL OF ACTUATORS.

PROVIDE STEM EXTENSIONS ON ALL INSULATED VALVES.

PROVIDE FULL PORT BALL VALVES IN PIPING 50 MM (2") AND SMALLER AND BUTTERFLY VALVES IN PIPING 65 MM (2½") AND LARGER FOR SHUT-OFF, EQUIPMENT ISOLATION, THROTTLING, BYPASS OR MANUAL FLOW CONTROL SERVICES.

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

3.5 PIPING INSULATION MINIMUM THICKNESS SCHEDULE

CONTRACTOR TO MATCH EXISTING THICKNESS AS EXISTING.

3.6 PIPING FINISH SCHEDULE

CONTRACTOR TO MATCH EXISTING THICKNESS AS EXISTING.

3.7 SAFES, FLASHING AND VENT TERMINALS

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

WORK UNDER THIS CONTRACT. EXCEPT AS OTHERWISE STATED, SALVAGEABLE MATERIALS FROM AREA OF DEMOLITION SHALL BECOME THE PROPERTY OF THE OWNER AT HIS DISCRETION.

1.13 EQUIPMENT AND MATERIALS

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

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

APPROVED EQUIVALENTS AND/OR ALTERNATIVES TO SPECIFIED PRODUCTS SHALL BE EQUAL TO THE SPECIFIED PRODUCT IN EVERY RESPECT, OPERATE AS INTENDED, AND MEET THE SPACE, CAPACITY, AND NOISE REQUIREMENTS OUTLINED.

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

1.14 DELIVERY, STORAGE AND HANDLING

STORE MATERIALS AND EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS IN A CLEAN, DRY, WELL-VENTILATED AREA.

REPLACE DEFECTIVE OR DAMAGED MATERIALS WITH NEW.

1.15 GUARANTEE / WARRANTY

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

1.16 BALANCING

THE APPROVED BALANCING AGENCIES ARE: FLOTECH MECHANICAL.

THE APPROVED BALANCING AGENCY ARE: PERFECTION-AIRE LTD.

BALANCE [TERMINAL BOXES] [FAN-COIL UNITS] [HEAT PUMPS] EXHAUST FANS AND AIR OUTLETS TO AIR QUANTITIES INDICATED ON THE DRAWINGS AND IN THIS SPECIFICATION. WHERE OUTLET QUANTITIES ARE NOT INDICATED, DIVIDE [BOX] [FAN-COIL] [HEAT PUMP] CAPACITY EQUALLY AMONG ALL OUTLETS.

SUBMIT [A PDF COPY] OF THE REPORT TO THE CONSULTANT WITHIN TWO (2) WEEKS AFTER SUBSTANTIAL COMPLETION. FAILURE TO SUBMIT THE REPORT WITHIN THE SPECIFIED TIME WILL RESULT IN THE WORK BEING DONE BY THE OWNER AND THE COSTS DEDUCTED FROM FINAL PAYMENT.

BALANCING SHALL BE PERFORMED TO THE FOLLOWING:

HYDRONIC-PUMPS AND CENTRAL EQUIPMENT ±5%

COOPERATE WITH THE BALANCING AGENCY AND MAKE ANY CORRECTIONS AS REQUIRED BY BALANCING AGENCY.

PROVIDE BALANCING VALVES AS REQUESTED BY THE BALANCING AGENCY AND/OR NECESSARY TO PROPERLY ADJUST OR CORRECT THE SYSTEMS TO DESIGN FLOWS, WITHOUT ADDITIONAL COST TO OWNER.

1.17 COMMISSIONING AND DEMONSTRATION

BE RESPONSIBLE FOR THE PERFORMANCE AND COMMISSIONING OF ALL EQUIPMENT SUPPLIED AND RE-USED UNDER DIVISIONS 22 AND 23.

CONFIRM OPERATION AND REVIEW CONDITION OF COOLING TOWER AND DEHUMIDIFIER OPERATION, AND ASSOCIATED CONTROL DEVICES IN THE RENOVATED AREA. SUBMIT REPORT NOTING ANY REMEDIAL WORK REQUIRED.

AT THE CONCLUSION OF COMMISSIONING, DEMONSTRATE THE OPERATION OF THE SYSTEMS TO THE CONSULTANT AND THEN TO THE OWNER'S OPERATING STAFF.

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

1.18 FLASHING AND ROOF CURBS

PROVIDE CURBS, FLASH AND COUNTER FLASH AS REQUIRED WHERE MECHANICAL EQUIPMENT PASSES THROUGH WEATHER OR WATERPROOFED WALLS, FLOORS AND ROOFS.

PROVIDE FACTORY ROOF CURBS FOR ALL ROOF MOUNTED EQUIPMENT UNLESS NOTED OTHERWISE.

1.19 SEISMIC CONTROL

PROVIDE SEISMIC RESTRAINTS FOR ALL REQUIRED EQUIPMENT, PIPING, AND DUCTWORK IN ACCORDANCE WITH THE LATEST EDITION OF THE SEISMIC RESTRAINTS MANUAL FOR MECHANICAL SYSTEMS PRODUCED BY SMACNA, AND THE LATEST EDITION OF THE ASHRAE APPLICATION HANDBOOK CHAPTER 49, SEISMIC RESTRAINTS.

THE CONTRACTOR SHALL RETAIN THE SERVICES OF A QUALIFIED PROFESSIONAL SEISMIC ENGINEER (GEOTECHNICAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA, THE SEISMIC ENGINEER SHALL DESIGN AND REVIEW THE INSTALLATION OF ALL SEISMIC RESTRAINTS AS WELL AS MECHANICAL EQUIPMENT AND MECHANICAL SYSTEM SUPPORTS. THE RESTRAINTS AND SUPPORTS SHALL BE SPECIFICALLY DESIGNED TO FASTEN TO THE STRUCTURE INDICATED IN THE CONTRACT DOCUMENTS AND INSTALLED IN THE FIELD. THE COMPLETE DESIGN FOR THESE SYSTEMS SHALL COMPLY WITH ALL APPLICABLE BUILDING CODE REQUIREMENTS.

SEISMIC ENGINEER SHALL PROVIDE AND SUBMIT TO THE OWNER'S CONSULTANT ASSURANCE OF PROFESSIONAL DESIGN AND COMMITMENT FOR FIELD REVIEW SCHEDULE S-B AND ASSURANCE OF COST TO TRANSFER REPAIR INFORMATION UNTO REPRODUCIBLE MEDIA & AUTO-CAD OR REVIT ARE THIS CONTRACTOR'S RESPONSIBILITY. CONSULTANT WILL RELEASE CAD DRAWINGS TO CONTRACTOR AFTER SIGNING A COPYRIGHT FORM. SHOULD THE CONTRACTOR CHOOSE TO UTILIZE THIS CONSULTANT FOR TRANSFERRING AS BUILT INFORMATION TO RECORD DRAWINGS, ALLOW \$400 / SHEET FOR ALL DRAWINGS IN THE CONSTRUCTION SET. THIS WILL COVER COSTS FOR DRAFTING TIME & PRINTING COSTS.

THE CONTRACTOR SHALL OBTAIN APPROVAL FOR THE LOCATION OF ALL RESTRAINT FIXING POINTS FROM THE STRUCTURAL ENGINEER, ON SITE, PRIOR TO INSTALLATION.

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

1.20 VIBRATION ISOLATION

PROVIDE NEOPRENE ISOLATORS FOR DEFLECTIONS 6MM (¼") AND UNDER.

PROVIDE EITHER NEOPRENE OR STEEL SPRING ISOLATORS FOR DEFLECTIONS BETWEEN 6MM AND 12MM (½").

PROVIDE STEEL SPRING ISOLATORS FOR DEFLECTIONS OF 12MM (½") AND OVER.

PROVIDE ADJUSTABLE LIMIT STOPS FOR SPRING ISOLATION MOUNTS ON EQUIPMENT WITH OPERATING WEIGHTS SUBSTANTIALLY DIFFERENT FROM THE INSTALLED WEIGHTS

ALL SPRING ISOLATORS SHALL BE "OPEN SPRING" UNLESS OTHERWISE STATED. SEISMICALLY RATED HOUSED SPRING ISOLATORS MAY BE USED IN LIEU PROVIDED THAT THEY MEET THIS PROJECT'S REQUIREMENTS FOR SEISMIC RESTRAINT.

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

1.21 SUBSTANTIAL AND TOTAL PERFORMANCE

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

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

FINAL PLUMBING INSPECTION CERTIFICATE FROM THE AUTHORITY HAVING JURISDICTION.

SCHEDULE S-B & S-B FOR SEISMIC ENGINEERING.

FINAL BACKFLOW PREVENTION TEST REPORTS FOR ALL BACKFLOW DEVICES.

FIRE STOPPING AND FIRE DAMPER TEST LETTER

DRAFT OPERATING/MAINTENANCE MANUALS HAVE BEEN SUBMITTED FOR REVIEW.

ALL MECHANICAL SYSTEMS HAVE BEEN COMMISSIONED AND ARE CAPABLE OF OPERATION WITH ALARM CONTROLS FUNCTIONAL AND AUTOMATIC CONTROLS IN OPERATION.

AIR AND WATER SYSTEMS HAVE BEEN BALANCED WITH DRAFT REPORT SUBMITTED TO THE CONSULTANT. OPERATING AND MAINTENANCE DEMONSTRATIONS HAVE BEEN PROVIDED TO THE OWNER.

RECORD DRAWINGS HAVE BEEN SUBMITTED.

ALL PREVIOUSLY IDENTIFIED DEFICIENCIES HAVE BEEN CORRECTED AND ACCEPTED.

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

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

2. PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

LISTED MANUFACTURERS ARE ACCEPTABLE FOR THEIR ABILITY TO MEET THE GENERAL DESIGN INTENT, QUALITY AND PERFORMANCE CHARACTERISTICS OF THE SPECIFIED PRODUCT. THE LIST DOES NOT ENDORSE THE ACCEPTABILITY OF ALL PRODUCTS AVAILABLE FROM THE LISTED MANUFACTURERS/SUPPLIERS.

IT REMAINS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THE PRODUCTS SUPPLIED ARE EQUAL TO THE SPECIFIED PRODUCTS IN EVERY RESPECT, OPERATE AS INTENDED, AND MEET THE PERFORMANCE SPECIFICATIONS AND PHYSICAL DIMENSIONS OF THE SPECIFIED PRODUCT.

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

COMMON WORKS

1. GENERAL

1.1 GENERAL SCOPE

'PROVIDE' SHALL MEAN SUPPLY AND INSTALL.

CONSULTANT SHALL MEAN AME GROUP CONSULTING PROFESSIONAL ENGINEERS

PROVIDE COMPLETE, FULLY TESTED AND OPERATIONAL SYSTEMS TO MEET THE REQUIREMENTS DESCRIBED HEREIN AND IN COMPLETE ACCORD WITH APPLICABLE CODES AND ORDINANCES.

CONTRACT DOCUMENTS AND DRAWINGS ARE DIAGRAMMATIC. THEY ESTABLISH SCOPE, MATERIAL AND FEATURES AFFECTING THE WORK. NO ALLOWANCES WILL BE MADE FOR ANY DIFFICULTIES ENCOUNTERED OR ANY EXPENSES INCURRED BECAUSE OF ANY CONDITIONS OF THE SITE OR ITEM EXISTING THEREON, WHICH IS VISIBLE OR KNOWN TO EXIST AT THE TIME OF TENDER.

CLARIFICATIONS OR REQUESTS FOR ALTERNATE MATERIALS OR EQUIPMENT MUST BE SUBMITTED IN WRITING TO THE CONSULTANT NO LATER THAN SEVEN (7) WORKING DAYS PRIOR TO THE MECHANICAL TRADES CLOSING TENDER DATE. APPROVAL OF REQUESTS SHALL ONLY BE GIVEN BY ADDENDUM.

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

CLARIFICATIONS OR REQUESTS FOR ALTERNATE MATERIALS OR EQUIPMENT MUST BE SUBMITTED IN WRITING TO THE CONSULTANT NO LATER THAN SEVEN (7) WORKING DAYS PRIOR TO THE MECHANICAL TRADES CLOSING TENDER DATE. APPROVAL OF REQUESTS SHALL ONLY BE GIVEN BY ADDENDUM.

1.2 CODE COMPLIANCE, PERMITS AND FEES

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

OBTAIN ALL PERMITS AND PAY ALL FEES APPLICABLE TO THE SCOPE OF WORK. CONTRACTOR SHALL ARRANGE FOR INSPECTIONS OF THE WORK BY THE AUTHORITIES HAVING JURISDICTION AND SHALL PROVIDE CERTIFICATES INDICATING FINAL APPROVAL.

1.3 TENDER PRICE BREAKDOWN

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

1.4 SUBMITTALS

COMPLY WITH THE FOLLOWING:

CONTRACTOR SHALL PROVIDE AND SUBMIT TO THE CONSULTANT ASSURANCE OF PROFESSIONAL DESIGN AND COMMITMENT FOR FIELD REVIEW SCHEDULE S-B AND ASSURANCE OF PROFESSIONAL FIELD REVIEW AND COMPLIANCE SCHEDULE S-C FOR SEISMIC ENGINEERING.

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

CLOSEOUT SUBMITTALS: PROVIDE A MINIMUM OF TWO (2) MECHANICAL OPERATION AND MAINTENANCE MANUALS AND ONE DIGITAL COPY, PREPARED BY THE TAB CONTRACTOR.

OPERATION AND MAINTENANCE MANUAL APPROVED BY, AND FINAL COPIES DEPOSITED WITH THE CONSULTANT A MINIMUM OF 7-DAYS BEFORE FINAL INSPECTION.

OPERATION AND MAINTENANCE MANUAL TO INCLUDE BUT NOT LIMITED TO: LAYMAN'S DESCRIPTION OF THE SYSTEMS AND ASSOCIATED CONTROLS, OPERATIONAL INSTRUCTIONS, SERVICING, MAINTENANCE, OPERATION AND TROUBLE-SHOOTING INSTRUCTIONS FOR EACH ITEM OF EQUIPMENT, WARRANTIES, EQUIPMENT MANUFACTURER'S PERFORMANCE DATASHEETS INDICATING POINT OF OPERATION AS LEFT AFTER COMMISSIONING IS COMPLETE, TESTING, ADJUSTING AND BALANCING REPORTS.

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

RECORD DRAWINGS: PRIOR TO START OF TESTING, ADJUSTING AND BALANCING FOR MECHANICAL FINALIZE PRODUCTION OF RECORD DRAWINGS.

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

1.5 QUALITY OF WORK

ALL WORK SHALL BE BY QUALIFIED TRADESMEN WITH VALID PROVINCIAL TRADE QUALIFICATION CERTIFICATES. SPOT CHECKS WILL BE MADE BY THE CONSULTANT. WORK WHICH DOES NOT CONFORM TO STANDARDS MAY BE REJECTED BY THE CONSULTANT. THE CONTRACTOR SHALL REDO REJECTED WORK TO THE ACCEPTED STANDARD AT NO COST TO THE OWNER.

1.6 METRIC CONVERSION

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

WHERE PIPES ARE SPECIFIED WITH METRIC DIMENSIONS AND IMPERIAL SIZED PIPES ARE AVAILABLE, PROVIDE EQUIVALENT NOMINAL IMPERIAL SIZE PIPE AS INDICATED. WORK WHICH DOES NOT CONFORM TO STANDARDS MAY BE REJECTED BY THE CONSULTANT. THE CONTRACTOR SHALL REDO REJECTED WORK TO THE ACCEPTED STANDARD AT NO COST TO THE OWNER.

EQUIVALENT NOMINAL DIAMETER OF PIPES

15MM = NPS ½

20MM = NPS ¾

25MM = NPS 1

30MM = NPS 1-1/4

40MM = NPS 1-1/2

50MM = NPS 2

65MM = NPS 2-1/2

75MM = NPS 3

100MM = NPS 4

150MM = NPS 6

200MM = NPS 8

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

1.7 DRAWINGS AND SPECIFICATIONS

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

1.8 CUTTING, PATCHING AND CORING

PROVIDE HOLES AND SLEEVES, CUTTING AND FITTING REQUIRED FOR MECHANICAL WORK. RELOCATE IMPROPERLY LOCATED HOLES AND SLEEVES. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES.

OBTAIN WRITTEN APPROVAL FROM THE STRUCTURAL CONSULTANT BEFORE CUTTING OR BURNING STRUCTURAL MEMBERS.

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

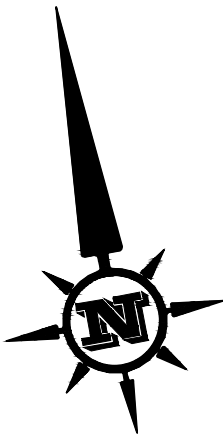
1.9 COMPLIANCE WITH ENERGY BY-LAW

ALL EQUIPMENT INSTALLED ON THIS PROJECT SHALL COMPLY WITH THE NATIONAL ENERGY CODE OF CANADA FOR BUILDINGS - 2015, ASHRAE STANDARD 90.1 - 2016.

1.10 INSTALLATION OF EQUIPMENT

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THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND REPORT ALL ERRORS AND OMISSIONS TO THE CONSULTANT PRIOR TO COMMENCING THE WORK.
THESE DRAWINGS ARE NOT TO BE SCALED.

REV.	DATE	DESCRIPTION
1.	2023.02.07	ISSUED FOR COORDINATION
2.	2023.03.21	ISSUED FOR CLIENT REVIEW
3.	2023.10.04	ISSUED FOR FINAL REVIEW
4.	2023.10.20	ISSUED FOR CLIENT REVIEW
5.	2023.11.24	ISSUED FOR TENDER



CONSULTANT:

SEAL:

NOT FOR
CONSTRUCTION

PROJECT TITLE:

ARCHIE BROWNING
SPORTS CENTRE -
HVAC REPLACEMENT

PROJECT ADDRESS:

1153 Esquimalt Road, Victoria, BC

DRAWN BY

JL

CHECKED BY

CJB

SCALE

AS NOTED

DATE

November 24, 2023

DRAWING TITLE:

SPECIFICATION II

PROJECT NO.

000a-1303-22

DRAWING NO.

M3.02

DIVISION 23 HVAC

1. GENERAL

1.1 SYSTEM CLEANING AND CHEMICAL TREATMENT

EMPLOY SERVICES OF THE EXISTING BUILDING'S WATER TREATMENT FIRM OR IF THERE IS NOT ONE, A FIRM SPECIALIZING IN CHEMICAL TREATMENT. THIS FIRM SHALL SUBMIT A SCHEDULE OF WORK TO BE PERFORMED, CHEMICAL TYPES AND QUANTITY TO BE USED. AT THE COMPLETION OF THE CHEMICAL TREATMENT A REPORT SHALL BE SUBMITTED TO OUTLINE THE WORK PERFORMED AND DETAILS OF PROCEDURES TO BE USED BY THE BUILDING OPERATOR FOR CONTINUED WATER QUALITY TESTING AND CHEMICAL TREATMENT.

PROVIDE TEST KITS AS REQUIRED ALONG WITH ADEQUATE CHEMICALS AND REAGENTS FOR ONE YEAR OF TESTING. APPROPRIATE TEST KITS WILL BE PROVIDED TO PROPERLY TEST EACH SYSTEM INSTALLED UNDER THIS CONTRACT.

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

1.2 PERMITS AND QUALIFICATIONS

1. ENSURE THAT A PERMIT IS OBTAINED BEFORE ANYONE COMMENCES TO INSTALL OR ALTER ANY REFRIGERATION SYSTEM.

2. EVERY PERSON WHO INSTALLS OR MAKES ALTERATIONS OR REPAIRS TO A REFRIGERATION SYSTEM SHALL BE THE HOLDER OF A VALID AND SUBSISTING REFRIGERATION CONTRACTOR'S LICENSE AND ALL PERSONS REPAIRING EQUIPMENT WITH ODS/CFCS SHALL HAVE COMPLETED AN ENVIRONMENT CANADA APPROVED TRAINING PROGRAM.

1.3 PERFORMANCE REQUIREMENTS

1. LINE TEST PRESSURE FOR REFRIGERANT R717
1. HOT-GAS AND LIQUID LINES: 150 PSIG.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

1. SUBMIT IN ACCORDANCE WITH - SUBMITTAL PROCEDURES.
2. PRODUCT DATA:
 1. SUBMIT MANUFACTURER'S INSTRUCTIONS, PRINTED PRODUCT LITERATURE AND DATA SHEETS FOR REFRIGERANT PIPING, FITTINGS AND INCLUDE PRODUCT CHARACTERISTICS, PERFORMANCE CRITERIA, PHYSICAL SIZE, FINISH, AND LIMITATIONS.
2. SUBMIT [2] COPIES OF WHIM MSDS IN ACCORDANCE WITH SECTION 01 35 29.06 - HEALTH AND SAFETY REQUIREMENTS. INDICATE VOC'S FOR ADHESIVE AND SOLVENTS DURING APPLICATION AND CURING.
3. CERTIFICATES: SUBMIT CERTIFICATES SIGNED BY MANUFACTURER CERTIFYING THAT MATERIALS COMPLY WITH SPECIFIED PERFORMANCE CHARACTERISTICS AND PHYSICAL PROPERTIES.

1.5 CLOSEOUT SUBMITTALS

1. SUBMIT IN ACCORDANCE WITH - CLOSEOUT SUBMITTALS.
2. OPERATION AND MAINTENANCE DATA: SUBMIT OPERATION AND MAINTENANCE DATA FOR REFRIGERANT PIPING FOR INCORPORATION INTO MANUAL.

1.6 DELIVERY, STORAGE AND HANDLING

1. DELIVER, STORE AND HANDLE MATERIALS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
2. DELIVERY AND ACCEPTANCE REQUIREMENTS: DELIVER MATERIALS TO SITE IN ORIGINAL FACTORY PACKAGING, LABELLED WITH MANUFACTURER'S NAME AND ADDRESS.
3. STORAGE AND HANDLING REQUIREMENTS:
 1. STORE MATERIALS OFF GROUND AND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS IN CLEAN, DRY, WELL-VENTILATED AREA.
2. STORE AND PROTECT REFRIGERANT PIPING, FITTINGS, AND EQUIPMENT FROM NICKS, SCRATCHES, AND BLEMISHES
3. REPLACE DEFECTIVE OR DAMAGED MATERIALS WITH NEW.

2. PRODUCTS

2.1 DUCTWORK AND ACCESSORIES

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

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

LOW PRESSURE INSULATED FLEXIBLE DUCTWORK SHALL BE EQUAL TO THERMAFLEX TYPE M-KC.

2.2 DUCT SEALING

DUCT SEALING LOW PRESSURE DUCTWORK 500 PA (2" W.G.) AND UNDER SHALL BE SMACNA SEAL CLASS A. SEAL ALL SUPPLY, RETURN AND EXHAUST DUCT JOINTS, LONGITUDINAL AS WELL AS TRANSVERSE JOINTS AS FOLLOWS:

SLIP JOINTS: APPLY HEAVY BRUSH-ON HIGH PRESSURE DUCT SEALANT. APPLY SECOND APPLICATION AFTER THE FIRST APPLICATION HAS COMPLETELY DRIED OUT. WHERE METAL CLEARANCE EXCEEDS 1.5 MM (1/16") USE HEAVY MASTIC TYPE SEALANT.

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

OTHER JOINTS: HEAVY MASTIC TYPE SEALANT.

DUCT TAPES AS A SEALING METHOD ARE NOT PERMITTED.

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

2.3 DUCT HANGERS AND SUPPORTS

HANGERS AND SUPPORTS TO SMACNA STANDARDS.

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

MAXIMUM SIZE DUCT SUPPORTED BY STRAP HANGER: 500 MM.

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

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

POWER ACTUATED FASTENERS AND "DROP-IN" ANCHORS SHALL NOT BE USED.

2.4 PIPING

CHILLED WATER SHALL BE STEEL SCHEDULE 40, A53 GRADE B. AMMONIA PIPING AND WELD MATERIAL SHALL MATCH EXISTING PIPING. CONTRACTOR TO CONFIRM ONSITE.

REFRIGERANT PIPING SHALL BE ACR COPPER. AMMONIA PIPING AND WELD MATERIAL SHALL MATCH EXISTING PIPING. CONTRACTOR TO CONFIRM ONSITE.

PIPE CONNECTIONS UNLESS NOTED OTHERWISE SHALL BE: NPS 1/4" AND LESS: SCREWED JOINT STEEL PIPING, NPS 2" SCREWED JOINT FOR LIQUID SYSTEMS, WELD JOINT FOR AIR OR GAS SYSTEMS, NPS 2 1/2" AND LARGER: WELD OR FLANGED PIPING INCLUDING BRANCH CONNECTIONS.

USE DIELECTRIC TYPE COUPLINGS WHEN JOINING DISSIMILAR METAL PIPES.

USE LEAD FREE SOLDER FOR SOLDERING DOMESTIC WATER COPPER PIPE.

2.5 VALVES

WHEREVER POSSIBLE ALL VALVES SHALL BE OF ONE MANUFACTURER.

GROOVED VALVES SHALL BE OF THE SAME MANUFACTURER AS THE ADJOINING COUPLINGS.

PROVIDE VALVES WITH MANUFACTURER'S NAME AND PRESSURE RATING CLEARLY MARKED ON OUTSIDE OF BODY. ALL VALVES MUST BE SUITABLE IN ALL RESPECTS FOR SERVICE USED.

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

USE NON-RISING STEM VALVES ONLY WHERE THERE IS INSUFFICIENT CLEARANCE FOR STEM TO RISE.

GATE VALVES NPS 2 AND UNDER SHALL BE BRONZE BODY, RISING STEM, SOLID WEDGE DISC, UNION OR SCREWED BONNET, SCREWED ENDS, CLASS 2070 KPA (300 PSI) W.O.G. TOYORED & WHITE 298 OR EQUAL. GATE VALVES NPS 2-1/2 AND OVER SHALL BE CAST IRON BODY, RISING STEM, O.S. & Y, SOLID WEDGE DISC, BRONZE TRIM, BOLTED BONNET, FLANGED ENDS, CLASS 1033 KPA (150 PSI) W.O.G. TOYORED & WHITE 421 OR EQUAL.

2.6 DUCT AND BREECHING INSULATION

EXPOSED RECTANGULAR DUCTS: EXTERNAL RIGID INSULATION, SERVICE TEMPERATURE 5°C TO 232°C (41°F TO 450°F), MINERAL FIBER BOARD FOR LOW AND MEDIUM TEMPERATURE APPLICATIONS, ALL SERVICE ALUMINUM FOIL-SCRM KRAFT (FSK) VAPOUR BARRIER JACKET WITH GLASS FIBRE REINFORCEMENT, FACTORY APPLIED. DENSITY 38KGM3 (2.25 PCF), MINIMUM RSI 0.76239MM (R 4.3/IN)

2.7 DUCTWORK FINISH JACKETS

ALUMINUM JACKET: 51 MIL (22 GA.) THICK STUCCO OR SMOOTH ALUMINUM JACKETING WITH LONGITUDINAL SLIP JOINTS AND 50MM (2") END LAPS WITH FACTORY APPLIED PROTECTIVE LINER ON INTERIOR SURFACE.

2.8 PIPING FINISH JACKETS

PAINT GLYCOL AND AMMONIA PIPING TO MATCH EXISTING.

2.9 EQUIPMENT

ALL EQUIPMENT SHALL BE CSA APPROVED FOR ITS INTENDED USE.

2.10 REFRIGERANT PIPING AND FITTINGS

1. REFRIGERANT PIPING AND FITTINGS SHALL BE EITHER:
 1. REGISTERED IN ACCORDANCE WITH CSA 851 AND SHALL BE DESIGNED, CONSTRUCTED AND TESTED IN ACCORDANCE WITH ASME B31.5 OR THE ASME BOILER AND PRESSURE VESSEL CODE, SECTION VIII, DIVISION 1 OR
 2. PART OF REFRIGERATION SYSTEMS THAT ARE EXEMPTED FROM REGISTRATION BY CSA B52-2018.
3. REGISTRATION SHALL ALSO BE IN COMPLIANCE WITH THE REQUIREMENTS OF TECHNICAL SAFETY BC.

2.11 STEEL PIPING

1. ASTM A 53/A 53M, BLACK STEEL WITH PLAIN ENDS.

2.12 REFRIGERANT TUBE SUPPORTS

1. MIDDLE A ATTACHMENTS (ROD):
 1. CARBON STEEL BLACK (ELECTRO-GALVANIZED FOR MECHANICAL ROOMS) CONTINUOUS THREADED ROD - ANVIL FIG. 146 MYATT FIG. 434.
2. PIPE HANGERS:
 1. UNINSULATED PIPE, UP TO 1-1/4" GRINNELL 97C.
 2. INSULATED PIPE, UP TO NPS 1 - GRINNELL FIG. 269 OR MYATT FIG. 120.
 3. INSULATED PIPE, NPS 1-1/4 - ANVIL FIGS. 65 OR 260 OR MYATT FIGS. 122 OR 124.
 4. MAXIMUM HORIZONTAL PIPE HANGER SPACING:

Pipe Size	Maximum Spacing	Rod Diameter
up to NPS 3/4	1.5 m [5 ft]	10 mm [3/8"]
NPS 1 & NPS 1 1/4	1.8 m [6 ft]	10 mm [3/8"]

3. WALL SUPPORTS:
 1. HORIZONTAL PIPE ADJACENT TO WALL; ANGLE IRON WALL BRACKETS WITH SPECIFIED HANGERS
 2. VERTICAL PIPE ADJACENT TO WALL; EXPOSED PIPE WALL SUPPORT FOR LATERAL MOVEMENT RESTRAINT - ANVIL FIG. 262.
4. NOTE:
 1. COLD SERVICES - REFRIGERANT SUCTION LINES.

3. EXECUTION

3.1 DUCTWORK AND ACCESSORIES

FABRICATE DUCTWORK IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS - METAL, NFPA 90A STANDARD FOR THE INSTALLATION OF AIR-CONDITIONING AND VENTILATING SYSTEMS, AND NFPA 90B STANDARD FOR THE INSTALLATION OF WARM AIR HEATING AND AIR-CONDITIONING SYSTEMS PRIOR TO FABRICATION OF DUCTWORK, CHECK ALL SPACES AND HEIGHTS AND CONFLICTS WITH OTHER TRADES.

DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS. FOR ACOUSTICALLY LINED OR INTERNALLY INSULATED DUCTS ALLOW FOR INSULATION THICKNESS AND MAINTAIN INTERIOR CLEAR DIMENSIONS INDICATED.

PROVIDE A FLEXIBLE CONNECTION WHERE LOW PRESSURE DUCTS ARE CONNECTED TO FAN EQUIPMENT, TERMINAL BOXES OR ANY OTHER APPARATUS. JOINT SHALL BE SCREWED OR BOLTED FLEXIBLE GASKETED JOINT, MINIMUM 50MM (2") WIDE.

PROVIDE DUCT HANGERS AND SUPPORTS IN ACCORDANCE WITH SMACNA MANUALS.

DUCTWORK SHALL BE GALVANIZED STEEL UNLESS NOTED OTHERWISE.

3.2 DUCT HANGERS AND SUPPORTS

DUCT SUPPORT SHALL BE:

UP TO 750MM DUCT SIZE: ANGLE SIZE 25X25X3 MM WITH 6MM ROD SIZE

751 TO 1050MM DUCT SIZE: ANGLE SIZE 40X40X3 MM WITH 6MM ROD SIZE

1051 TO 1500MM DUCT SIZE: ANGLE SIZE 40X40X3 MM WITH 10MM ROD SIZE

1501 TO 2100MM DUCT SIZE: ANGLE SIZE 50X50X3 MM WITH 10MM ROD SIZE

2101 TO 2400MM DUCT SIZE: ANGLE SIZE 50X50X5 MM WITH 10MM ROD SIZE

2401 AND OVER DUCT SIZE: ANGLE SIZE 50X50X8 MM WITH 10MM ROD SIZE

FABRICATED SUPPORTS ATTACHED TO THE ROOF STRUCTURE.

3.3 EXPANSION COMPENSATION

PROVIDE STRUCTURAL WORK AND EQUIPMENT REQUIRED FOR EXPANSION AND CONTRACTION OF ALL PIPING. PROVIDE ANCHORS, GUIDES, AND EXPANSION JOINTS AS REQUIRED TO ADEQUATELY PROTECT THE PIPING SYSTEMS.

PROVIDE EXPANSION COMPENSATION FOR ALL PIPING SYSTEMS INCLUDING BUT NOT LIMITED TO: CHILLED WATER, AND ALL OTHER PIPING SYSTEMS THAT OPERATE AT VARYING TEMPERATURES.

ALL PIPING SHALL BE ANCHORED AND SUPPORTED IN SUCH A MANNER THAT STRAIN AND/OR WEIGHT DOES NOT COME UPON ANY APPARATUS AND PIPE BRANCH CONNECTIONS. EXPANSION JOINTS AND COMPENSATORS SHALL BE INSTALLED AND GUIDED AS PER MANUFACTURER'S RECOMMENDATIONS. ALL EQUIPMENT SHALL BE CONNECTED WITH UNIONS OR FLANGES TO PROVIDE FOR EASY REMOVAL. WHERE PIPING PASSES THROUGH WALLS OR FLOOR SLABS, THE SLEEVES SHALL BE OF SUFFICIENT SIZE TO ACCOMMODATE THE EXPANSION AND THE PIPE INSULATION, WITHOUT BINDING OR CRUSHING THE INSULATION OR PREVENTING THE EXPANSION OF THE PIPING.

3.4 VALVES

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

PROVIDE STEM EXTENSIONS ON ALL INSULATED VALVES.

PROVIDE BALL VALVES IN PIPING NPS 2 AND SMALLER AND GATE VALVES IN PIPING NPS 2-1/2 AND LARGER FOR SHUT-OFF, EQUIPMENT ISOLATION, THROTTLING, BYPASS OR MANUAL FLOW CONTROL SERVICES. BALL VALVES USED FOR SHUT-OFF / ISOLATION SHALL BE FULL PORT.

3.5 DUCT AND BREECHING INSULATION

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

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

Duty	Rigid Exterior Duct Insulation			
	Plenum (4)	Duct Location		Exterior
		Interior		
		Conditioned Space	Unconditioned Space	
Minimum Insulation Thickness in mm (in.)				
Cooling Only Air Supply	25 (1")	25 (1")	40 (1-1/2")	50 (2")
Heating or HVAC Air Supply	25 (1")	25 (1")	40 (1-1/2")	75 (3")
Outdoor Air Supply	40 (1-1/2")	40 (1-1/2")	40 (1-1/2")	0
Combustion Air	40 (1-1/2")	40 (1-1/2")	40 (1-1/2")	0
Return Air	0	0	40 (1-1/2")	75 (3")
Exhaust Air (1)(2)	0	0	25 (1")	25 (1")
Grease Hood Exhaust (5)	N/A	40 (1-1/2")	40 (1-1/2")	0
Tempered Air Supply or Makeup Air	0	0	40 (1-1/2")	75 (3")
Mixed Air (3)	25 (1")	25 (1")	40 (1-1/2")	75 (3")
See note (6) for factory installed duct and plenums				

Duty	Flexible Exterior Duct Insulation			
	Plenum (4)	Duct Location		Exterior
		Interior		
		Conditioned Space	Unconditioned Space	
		Minimum Insulation Thickness in mm (in.)		
Cooling Only Air Supply	25 (1")	25 (1")	55 (2-3/16")	75 (3")
Heating or HVAC Air Supply	25 (1")	25 (1")	55 (2-3/16")	115 (4.5)
Outdoor Air Supply	50 (2")	50 (2")	55 (2-3/16")	0
Combustion Air	50 (2")	50 (2")	55 (2-3/16")	0
Return Air (1)	0	0	55 (2-3/16")	115 (4.5)
Exhaust Air (1)(2)	0	0	40 (1-1/2")	40 (1-1/2")
Grease Hood Exhaust (5)	N/A	40 (1-1/2")	40 (1-1/2")	0
Tempered Air Supply or Makeup Air	0	0	55 (2-3/16")	115 (4.5)
Mixed Air (3)	40 (1-1/2")	40 (1-1/2")	55 (2-3/16")	115 (4.5)
See Note (6) for factory installed duct and plenums				

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

NOTE (2): PROVIDE 38MM (1-1/2") FLEXIBLE DUCT INSULATION ON ALL EXHAUST AIR DUCTWORK FROM OUTSIDE WALL OR ROOF TO DAMPER BUT A MINIMUM OF 1.5 M (5 FT.) INSIDE BUILDING.

NOTE (3): MIXED AIR OUTSIDES TEMPERED AIR DOWNSTREAM OF HEAT RECOVERY UNITS.

NOTE (4): PLENUMS LOCATED OUTSIDE THE BUILDING SHALL BE INSULATED TO THE VALUES LISTED IN THE EXTERIOR COLUMN.

NOTE (5): PROVIDES 1 HOUR FIRE RATING. THICKNESS SHALL BE DOUBLED FOR 2 HOUR APPLICATIONS.

NOTE (6): FACTORY INSTALLED DUCTWORK AND PLENUMS PROVIDED WITH EQUIPMENT NEED NOT COMPLY WITH THIS TABLE PROVIDED THEY MEET THE REQUIREMENTS OF THE RELEVANT CSA STANDARD FOR THAT EQUIPMENT AND IS INSULATED TO RSI 0.58 (R3.3) OR GREATER. REFER TO NECB ARTICLE 5.2.12.1 FOR RELEVANT CSA STANDARDS.

3.6 DUCT FINISHES TABLE

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

3.7 PIPING INSULATION MINIMUM THICKNESS SCHEDULE (ASHRAE 90.1)

CHILLED WATER AND REFRIGERANT PIPING IN AN UNCONDITIONED SPACE OR EXTERIOR TO THE BUILDING.

MATCH EXISTING.

3.8 PIPING FINISH SCHEDULE

PAINTED TO MATCH EXISTING.

3.9 EXAMINATION

1. VERIFICATION OF CONDITIONS: VERIFY THAT CONDITIONS OF SUBSTRATE PREVIOUSLY INSTALLED UNDER OTHER SECTIONS OR CONTRACTS ARE ACCEPTABLE FOR REFRIGERANT PIPING INSTALLATION IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
 1. VISUALLY INSPECT SUBSTRATE
 2. INFORM CONSULTANT OF UNACCEPTABLE CONDITIONS IMMEDIATELY UPON DISCOVERY.
 3. PROCEED WITH INSTALLATION ONLY AFTER UNACCEPTABLE CONDITIONS HAVE BEEN REMEDIED AND AFTER RECEIPT OF WRITTEN APPROVAL TO PROCEED CONSULTANT.
- 3.10 MANUFACTURER'S INSTRUCTIONS**
1. COMPLIANCE: COMPLY WITH MANUFACTURER'S WRITTEN RECOMMENDATIONS OR SPECIFICATIONS, INCLUDING PRODUCT TECHNICAL BULLETINS, HANDLING, STORAGE AND INSTALLATION INSTRUCTIONS, AND DATASHEET.

3.11 GENERAL

1. INSTALL IN ACCORDANCE WITH CSA B52, EPS1/RA1 AND ASME B31.5 SECTION 23 05 15 - COMMON INSTALLATION REQUIREMENTS FOR HVAC PIPEWORK.

3.12 PIPING INSTALLATION

1. GENERAL:
 1. TUBING SHALL BE CUT SQUARE AND HAVE ALL BURRS REMOVED.
 2. PIPING SHALL BE KEPT METICULOUSLY CLEAN. ALL CLEANED PIPING IN THE PROCESS OF ERECTION, WHETHER INSTALLED OR AWAITING INSTALLATION SHALL BE CAPED OR PLUGGED.
 3. PIPING SHALL BE INSTALLED IN TRUE VERTICAL AND HORIZONTAL PLANES CLOSE TO WALLS AND CEILINGS, WITH SPECIFIED PITCH. PROVIDE SUITABLE OFFSETS TO ACCOUNT FOR EXPANSION.
 4. PIPING CONNECTIONS TO EQUIPMENT AND TERMINAL APPARATUS SHALL BE SUPPORTED INDEPENDENTLY AND ARRANGED TO GIVE EASY ACCESS FOR MAINTENANCE.
 5. SELECT SYSTEM COMPONENTS WITH PRESSURE RATING EQUAL TO OR GREATER THAN SYSTEM OPERATING PRESSURE.
 2. HOT GAS LINES:
 1. PITCH AT LEAST 1:240 DOWN IN DIRECTION OF FLOW TO PREVENT OIL RETURN TO COMPRESSOR DURING OPERATION.
 2. PROVIDE INVERTED DEEP TRAP AT TOP OF RISERS.
 3. SAFETY-RELIEF-VALVE DISCHARGE PIPING:
 1. SAFETY RELIEF PIPING IS ONLY TO BE MODIFIED IF NECESSARY. INTENT IS NOT TO DISTURB THIS PIPING OVER THE COURSE OF WORK.
 2. SCHEDULE 40, BLACK-STEEL AND WROUGHT-STEEL FITTINGS WITH WELDED JOINTS. CONSTRUCT JOINTS ACCORDING TO AWS D10.12D/10.12M.
 4. EXPANSION COMPENSATION:
 1. PIPING IS TO BE INSTALLED WITH SUFFICIENT COMPONENTS TO ALLOW FOR EXPANSION COMPENSATION AND PIPE MOVEMENT. PRODUCTS USED FOR REFRIGERANT PIPING MUST BE MANUFACTURED SPECIFICALLY FOR THIS APPLICATION. EXPANSION SYSTEMS MUST ALSO BE INSTALLED WITH APPROPRIATE ANCHORS AND GUIDES TO ALLOW MOVEMENT AS REQUIRED.

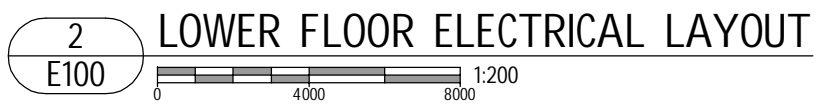
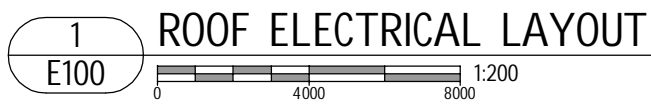
3.13 PRESSURE AND LEAK TESTING




1. CLOSE VALVES ON FACTORY CHARGED EQUIPMENT AND OTHER EQUIPMENT NOT DESIGNED FOR TEST PRESSURES.
2. LEAK TEST TO CSA B52 BEFORE EVACUATION TO 2 MPA AND 1 MPA ON HIGH AND LOW SIDES RESPECTIVELY.
3. TEST PROCEDURE: BUILD PRESSURE UP TO 35 KPA WITH REFRIGERANT GAS ON HIGH AND LOW SIDES. SUPPLEMENT WITH NITROGEN TO REQUIRED TEST PRESSURE. TEST FOR LEAKS WITH ELECTRONIC OR HALIDE DETECTOR. REPAIR LEAKS AND REPEAT TESTS.

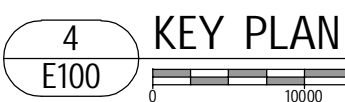
3.14 FIELD QUALITY CONTROL

1. SITE TESTS/INSPECTION:
 1. CLOSE SERVICE VALVES ON FACTORY CHARGED EQUIPMENT.
2. AMBIENT TEMPERATURES TO BE AT LEAST 13 DEGREES C FOR AT LEAST 12 HOURS BEFORE AND DURING DEHYDRATION.
3. USE COPPER LINES OF LARGEST PRACTICAL SIZE TO REDUCE EVACUATION TIME.
4. USE TWO-STAGE VACUUM PUMP WITH GAS BALLAST ON 2ND ST

M = BY MECHANICAL PCS = PACKAGED CONTROL SYSTEM BMS = BLDG MANAGEMENT SYSTEM
E = BY ELECTRICAL VFD = VARIABLE FREQUENCY DRIVE T = LOW VOLTAGE T'STAT OR SENSOR
O = BY OTHERS



	MOTOR CONNECTION
	DISCONNECT
	PEDESTAL C/W DUPLEX 5-20R GFCI WEATHERPROOF RECEPTACLE



3
E100

RACK MOUNTED SPLITTER DETAIL

NTS

1. BUS TAP EXISTING MAIN DISTRIBUTION SWITCH-BOARD (FEDERAL PIONEER - QMOB 600A, 347/600V, 3PH, 4W) BUSSING TO EXTEND FEEDERS TO NEW DISTRIBUTION AS INDICATED. ENGAGE THE MANUFACTURER OR SPECIALTY ENGINEERING COMPANY TO ACCOMMODATE RETROFIT AND RE-CERTIFICATION OF THE SWITCHBOARD FOR A COMPLETE FUNCTIONAL SYSTEM.

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PROJECT

ARCHIE BROWNING
SPORTS CENTRE -
HVAC REPLACEMENT

1153 ESQUIMALT ROAD,
VICTORIA, BC

E100