SG NESBITT MEMORIAL ARENA CONCESSION STAND FIT-UP

55 PARKSIDE ST., MINDEN, ON

MECHANICAL

GENERAL LEGEND

SYMBOL	DESCRIPTION
	EXISTING PIPING/DUCTWORK/EQUIPMENT
	EXISTING PIPING/DUCTWORK/EQUIPMENT TO BE REMOVED
	NEW PIPING/DUCTWORK/EQUIPMENT
	EXISTING PIPING/DUCTWORK/EQUIPMENT BELOW SLAB
	NEW PIPING/DUCTWORK/EQUIPMENT BELOW SLAB
(E)	DENOTES EXISTING EQUIPMENT
(N)	DENOTES NEW EQUIPMENT
(X)	DENOTES EQUIPMENT TO BE REMOVED

PLUMBING LEGEND

SYMBOL	DESCRIPTION
	PIPING BELOW GRADE/SLAB
DCW	DOMESTIC COLD WATER PIPING
DHW	DOMESTIC HOT WATER PIPING
DHWR	DOMESTIC HOT WATER RECIRCULATION PIPING
SAN	SANITARY PIPING
PG	PROPANE GAS PIPING
FD1	FLOOR DRAIN (TYPE)
	PIPING OFFSET
	BRANCH PIPING DOWN
	PIPING DOWN
	PIPING UP
	PIPE BREAK
	CAP
	P-TRAP
	DRAIN ASSEMBLY
CO	CLEAN OUT
CO	FLOOR CLEAN OUT
	ISOLATION VALVES
CBV	CIRCUIT BALANCING VALVE (CBV)
	STRAINER
	CHECK VALVE

HVAC LEGEND

SYMBOL	DESCRIPTION
	RECTANGULAR DUCTWORK
	ROUND DUCTWORK
	ACOUSTICALLY LINED DUCTWORK (RETURN OR SUPPLY)
	THERMALLY INSULATED DUCTWORK (RETURN OR SUPPLY)
	ROUND DUCTWORK OFFSET
	RECTANGULAR DUCTWORK OFFSET
TG	TRANSFER GRILLE (TG)
	WALL GRILLE (TYPE)
TO	TRANSFER OPENING (TO)
TD	ACOUSTICALLY LINED TRANSFER DUCT (TD)
FD	FIRE DAMPER (FD)
BD	BALANCING DAMPER (BD)
BD	BACK DRAFT DAMPER (BBD)
	INLINE CABINET FAN (TYPE)
	CABINET FAN C/W UNIT MOUNTED GRILLE (TYPE)
SD1 200X95	DIFFUSER TAG DIFFUSER TYPE AIRFLOW (L/S)(CFM) SIZE (mm)(in)
SG1 200X95	GRILLE TAG GRILLE TYPE AIRFLOW (L/S)(CFM) DIMENSIONS (mm)(in)
T	LINE VOLTAGE THERMOSTAT
	LINE VOLTAGE WIRING
	LOW VOLTAGE WIRING

GENERAL NOTES:

1. ALL WORK SHOWN OR IMPLIED ON THESE DRAWINGS SHALL BE CARRIED OUT IN ACCORDANCE WITH:
   A. ALL CODES AND LAWS APPLICABLE (OBC)
   B. INSTRUCTIONS TO BIDDERS
   C. IN ACCORDANCE WITH SMACNA-LATEST EDITION (DUCTWORK)
   D. IN ACCORDANCE WITH ULC STANDARDS
2. PRIOR TO SUBMITTING TENDERS, EACH TRADE SHALL EXAMINE THE SITE TO DETERMINE THE CONDITIONS WHICH MAY AFFECT THE PROPOSED WORK. NO CLAIM FOR EXTRA PAYMENT WILL BE CONSIDERED BECAUSE OF FAILURE TO FULFILL THIS CONDITION. START OF WORK WILL BE DEEMED EVIDENCE OF ACCEPTANCE OF, AND SATISFACTION WITH, EXISTING CONDITIONS.
3. THE DRAWINGS SHALL BE CONSIDERED TO SHOW THE GENERAL CHARACTER AND SCOPE OF THE WORK AND NOT THE EXACT DETAILS OF THE INSTALLATION. THE INSTALLATION SHALL BE COMPLETE WITH ALL ACCESSORIES REQUIRED FOR A COMPLETE AND OPERATIVE INSTALLATION.
4. MECHANICAL CONTRACTOR IS RESPONSIBLE TO FIELD MEASURE LOCATION OF NEW OR RELOCATED EQUIPMENT TO VERIFY CLEARANCES WITH THE MANUFACTURER PRIOR TO ORDERING.
5. THESE MECHANICAL DRAWINGS MUST BE READ IN CONJUNCTION WITH THE ARCHITECTURAL AND ELECTRICAL DRAWINGS AND SPECIFICATIONS.
6. THE WORD "PROVIDE" SHALL DENOTE "SUPPLY AND INSTALL". THE WORD "LAB" SHALL DENOTE "TESTING, ADJUSTING, AND BALANCING".
7. CONTRACTOR SHALL FOLLOW THE BIDDING DOCUMENT PROJECT SCHEDULE. UPON AWARD, CONTRACTOR SHALL SUBMIT WORK SCHEDULE TO PROJECT MANAGER & ENGINEER FOR APPROVAL.
8. THE MECHANICAL CONTRACTOR SHALL COORDINATE THE WORK WITH ALL OTHER TRADES AND THE OWNER. THE CONTRACTOR IS RESPONSIBLE FOR COMMUNICATING SAFETY REQUIREMENTS TO ITS EMPLOYEES AND COMPLYING WITH OCCUPATIONAL HEALTH AND SAFETY ACT.
9. CONTRACTOR TO PROVIDE, PRIOR TO COMMENCEMENT OF WORK, ONTARIO MINISTRY OF LABOUR CONTRACTOR REGISTRATION FORM AS WELL AS A CURRENT SIGNED AND DATED CORPORATE HEALTH AND SAFETY POLICY.
10. CONTRACTOR TO PROVIDE FOR THE USE OF HIS WORK FORCE A FIRST AID KIT ACCEPTABLE TO WSIB AND MOL.
11. PAY ALL REQUIRED FEES AND PERMITS.
12. CONTRACTOR SHALL APPLY FOR AND COORDINATE ALL REQUIRED TSSA INSPECTIONS/CERTIFICATIONS. CONTRACTOR SHALL ALSO COMPLETE AND SUBMIT ALL FORMS REQUIRED BY TSSA AND PAY ALL ASSOCIATED FEES.
13. WORKMANSHIP AND MATERIALS SHALL MATCH OR EXCEED THAT OF THE EXISTING AS PRESENTED BY THE PROJECT MANAGER.
14. ALL WORK TO BE CONDUCTED DURING HOURS SPECIFIED BY THE PROJECT MANAGER.
15. ALL CHANGES AND CONNECTIONS TO EXISTING SERVICES, REQUIRING THE SHUTDOWN OF THAT SERVICE SHALL BE DONE AT THE TIME DESIGNATED BY THE PROJECT MANAGER, UNLESS OTHERWISE STATED.
16. THE CONTRACTOR SHALL AT ALL TIMES KEEP PREMISES FREE FROM THE ACCUMULATION OF WASTE MATERIAL TO THE SATISFACTION OF THE PROJECT MANAGER. THE CLEANING OF THE AFFECTED AREA SHALL BE CONTINUOUS. PLACE DUST PROTECTION IN THE FORM OF COVER SHEETS OVER EQUIPMENT AND FURNITURE TO ENSURE NO DUST INFILTRATION.
17. EQUIPMENT REQUIRING CONNECTION TO AN ELECTRICAL POWER SOURCE SHALL BE CSA OR ULC APPROVED FOR USE AT LOCATION OF INSTALLATION.
18. COORDINATE MATERIAL STORAGE WITH THE SITE SUPERINTENDENT AND OTHER TRADES.
19. MANUFACTURER'S INSTRUCTIONS REGARDING THE HANDLING, INSTALLATION AND TESTING OF EQUIPMENT SPECIFIED HEREIN SHALL BE CONSIDERED PART OF THIS SPECIFICATION.
20. SUPPLY TOOLS, EQUIPMENT AND PERSONNEL TO DEMONSTRATE AND INSTRUCT OPERATING AND MAINTENANCE PERSONNEL IN OPERATING, CONTROLLING, ADJUSTING, TROUBLESHOOTING AND SERVICING OF ALL SYSTEMS AND EQUIPMENT DURING REGULAR WORK HOURS, PRIOR TO ACCEPTANCE.
21. MECHANICAL CONTRACTOR SHALL OBTAIN AND PAY FOR HOISTING AND REMOVAL OF MECHANICAL EQUIPMENT. COORDINATE HOISTING SCHEDULE WITH PROJECT MANAGER. TAKE ALL NECESSARY PRECAUTIONS TO PREVENT DAMAGE TO PUBLIC AND PRIVATE PROPERTY. USE PROPER BARRIERS AND/OR PERSONNEL TO ENSURE HOISTING SAFETY FOR EMPLOYEES AND PUBLIC. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EQUIPMENT AND/OR PROPERTY DURING HOISTING. ARRANGE AND PAY FOR ANY REQUIRED PERMITS.
22. INSPECT ALL NEW AND/OR RELOCATED EQUIPMENT UPON DELIVERY AND/OR RELOCATION AND NOTIFY PROJECT ENGINEER OF ANY DAMAGE OR DEFICIENCIES.
23. ALL EQUIPMENT, PIPING, DUCTWORK AND WIRING SHALL BE SUSPENDED FROM THE BUILDING STRUCTURE.
24. PROVIDE BLACK WITH WHITE WRITING LAMACOID PLATE ON ALL NEW EQUIPMENT. LABEL SHALL BE AS SHOWN ON DRAWINGS. LETTERING SIZE TO BE MINIMUM 25MM HIGH. MOUNT NEAR CONTROL SECTION OF THE UNIT.
25. PROVIDE CUTTING, PATCHING AND CORING OF ALL WALLS, CEILING AND OTHER SURFACES REQUIRED FOR MECHANICAL WORK. CHECK WITH BUILDING MANAGEMENT PRIOR TO CORE DRILLING AND CUTTING OF FLOOR SLAB REGARDING BUILDING REQUIREMENTS AND POLICIES. PRIOR TO SLAB CUTTING OR CORING, SCAN THE SLAB USING GPR TECHNOLOGY AND COORDINATE DRILLING TO MINIMIZE CUTTING OF THE REINFORCING STEEL AND CONDUIT. FIRE STOP ALL NEW FIRE RATED PENETRATIONS. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATINGS. THE CONTRACTOR IS TO INCLUDE IN TENDER PRICE ALL WORK ASSOCIATED WITH CORE DRILLING AFTER NORMAL WORKING HOURS. OBTAIN WRITTEN VERIFICATION OF LOCATIONS FROM THE STRUCTURAL ENGINEER OF RECORD PRIOR TO DRILLING. CUTTING TORCHES SHALL NOT BE USED FOR MAKING HOLES. PATCH ALL HOLES THROUGH SLAB WITH FIRE-STOP CAULKING (ULC LISTED). PATCHED SURFACES ARE TO BE PRIMED FINISHED, READY FOR FINAL COVERING BY OTHERS (COORDINATE WITH ROOFING CONTRACTOR).
26. PIPING LAYOUT ILLUSTRATED ON DRAWINGS INDICATES GENERAL ROUTING OF PIPE WORK AND DOES NOT SHOW ALL FITTINGS AND OFFSETS REQUIRED FOR COMPLETE INSTALLATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PIPING FITTINGS & OFFSETS REQUIRED FOR COORDINATED INSTALLATION WITH OTHER SYSTEMS (DUCTWORK, PIPING, CONDUITS, LIGHTS, ETC.)
27. CONTRACTOR SHALL BE RESPONSIBLE FOR DEACTIVATION, DRAINING AND REFILLING OF DOMESTIC WATER SYSTEMS TO ALLOW PLUMBING FIXTURE REPLACEMENTS.
28. DUCT SIZES INDICATED ON DRAWINGS WHERE ACOUSTICALLY LINED ARE FREE AREA SIZES AND NOT SHEET METAL SIZES.
29. UNLESS INDICATED OTHERWISE PROVIDE ONE (1) YEAR WARRANTY STARTING AT SUBSTANTIAL COMPLETION FOR ALL NEW SYSTEMS INCLUDING MATERIALS, EQUIPMENT & LABOUR.
30. SUBMITTALS:
   .1 SUBMIT ONE(1) COPY OF SHOP DRAWINGS AND PRODUCT DATA IN ELECTRONIC PDF FORMAT FOR ENGINEER'S REVIEW PRIOR TO PURCHASING AND ORDERING. HARD COPY SHOP DRAWINGS WILL NOT BE ACCEPTED. REVIEWED ELECTRONIC SHOP DRAWINGS WILL BE RE-DISTRIBUTED AS PER PROJECT MANAGER'S INSTRUCTIONS. SHOP DRAWINGS SHALL INCLUDE ALL SPECIFIED EQUIPMENT & SYSTEMS.
   .2 PROVIDE SUBMITTALS IN ACCORDANCE WITH APPLICABLE CODES REQUIRED FOR OCCUPANCY INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
      .1 PLUMBING & UTILITIES:
         .1 SEISMIC CERTIFICATION LETTER SUBMITTED.
      .2 HVAC:
         .1 SEISMIC CERTIFICATION LETTER SUBMITTED.
   .3 MECHANICAL SCOPE OF WORK CONSIDERED COMPLETE WHEN THE FOLLOWING ITEMS HAVE BEEN RECEIVED AND REVIEWED BY ENGINEER:
      .1 ALL SHOP DRAWINGS LISTED IN THIS SPECIFICATION.
      .2 BALANCING REPORT IN ACCORDANCE WITH TAB SECTION IN SPECIFICATIONS.
      .3 AS-BUILT DRAWINGS SHOWING AS-BUILT CONDITIONS COMPLETE WITH RED LINED MARKUPS TO PROJECT MANAGER WITH CONTRACTOR'S SIGNATURE.
      .4 START-UP REPORT FROM MANUFACTURER OF EQUIPMENT.
      .5 OPERATIONS AND MAINTENANCE MANUALS (CONTAINING ALL ITEMS PREVIOUSLY REVIEWED BY ENGINEER IN A PDF FORMAT AND ORGANIZED ALL SUBMISSIONS BY EACH MECHANICAL TRADE. OPERATIONS MANUAL TO ALSO INCLUDE THE FOLLOWING BUT SHALL NOT BE LIMITED TO:
         .1 LIST OF TRADES INVOLVED AND CONTACT INFORMATION.
         .2 CONTRACTOR'S LETTER OF WARRANTY.
         .3 ALL LETTERS REQUIRED FOR WORKPLACE CONFORMANCE.

MECHANICAL SPECIFICATIONS:

1. SEISMIC RESTRAINT:
.1 PROVIDE COMPLETE SEISMIC RESTRAINT SYSTEM FOR ALL MECHANICAL SYSTEMS AS PER ONTARIO BUILDING CODE LATEST EDITION & NFPA13.
.2 SEISMIC RESTRAINT DESIGN AND SUPERVISION SHALL BE CONDUCTED AND STAMPED BY A PROFESSIONAL SEISMIC ENGINEER. SUBMIT LETTER AND CALCULATION FOR ENGINEER'S REVIEW PRIOR TO SUBSTANTIAL COMPLETION.
.3 THE FINAL CERTIFICATION LETTER SHALL BE FORMATTED TO IDENTIFY THE FOLLOWING WITHIN THE BODY OF THE LETTER:
   .1 THE DATE OF THE FINAL INSPECTION
   .2 A STATEMENT THAT LISTS ALL CONTRACT DOCUMENTS WHICH WERE REVIEWED INCLUDING BUT NOT LIMITED TO THE MECHANICAL DRAWINGS, PROJECT CHANGE ORDERS, SITE INSTRUCTIONS, ETC.
   .3 A STATEMENT WHICH CLEARLY IDENTIFIES ANY EXCLUSIONS OF SCOPE OF SERVICE, AND
   .4 A STATEMENT THAT CERTIFIES THE COMPLETE MECHANICAL SEISMIC INSTALLATION MEETS THE LATEST VERSION OF OBC & APPLICABLE CODES & STANDARDS.

2. FIRE EXTINGUISHERS:
.1 (FE1) STORED PRESSURE WET CHEMICAL SOLUTION WITH (RECHARGEABLE) HEAVY DUTY POLISHED STAINLESS STEEL CYLINDER WITH PROTECTIVE SKIRT, SHUT-OFF NOZZLE, CHROME PLATED BRASS VALVE, WATERPROOF STAINLESS STEEL GAUGE, ULC LABELED FOR CLASS K (KITCHEN) PROTECTION. SIZE 11.1KG/6L, 1-A:K RATING C/W WALL MOUNTING BRACKET.

3. INSTALLATION OF PIPEWORK:
.1 CLEARANCES:
   .1 PROVIDE CLEARANCES AROUND SYSTEMS, EQUIPMENT AND COMPONENTS FOR OBSERVATION OF OPERATION, INSPECTION, SERVICING, MAINTENANCE AND AS RECOMMENDED BY MANUFACTURER.
.2 PIPE WORK INSTALLATION:
   .1 SCREWED FITTINGS TO BE JOINTED WITH POLYTETRAFLUOROETHYLENE (PTFE) THREAD SEAL TAPE.
   .2 PROTECT OPENINGS AGAINST ENTRY OF FOREIGN MATERIAL.
   .3 ASSEMBLE PIPING USING FITTINGS MANUFACTURED TO ANSI STANDARDS.
   .4 EXCEPT WHERE INDICATED OTHERWISE, SLOPE PIPING IN DIRECTION OF FLOW FOR POSITIVE DRAINAGE AND VENTING.
   .5 EXCEPT WHERE INDICATED, INSTALL SO AS TO PERMIT SEPARATE THERMAL INSULATION OF EACH PIPE.
   .6 GROUP PIPING WHEREVER POSSIBLE AND AS INDICATED.
   .7 USE ECCENTRIC REDUCERS AT PIPE SIZE CHANGES TO ENSURE POSITIVE DRAINAGE AND VENTING.
   .8 PROVIDE DIELECTRIC COUPLINGS WHERE DISSIMILAR METALS ARE JOINED.
3.5 SLEEVES:
   .1 INSTALL WHERE PIPES PASS THROUGH CONCRETE STRUCTURES AND FIRE RATED ASSEMBLIES.
   .2 MATERIAL: SCHEDULE 40 BLACK STEEL PIPE.
   .3 PROVIDE SPACE FOR FIRE STOPPING. MAINTAIN FIRE RATING INTEGRITY. ENSURE NO CONTACT BETWEEN COPPER PIPE OR TUBE AND SLEEVE.
.4 FIRE STOPPING:
   .1 SEAL ALL PENETRATIONS OF COPPER/STEEL PIPING THROUGH FIRE SEPARATIONS (I.E. WALL/SLAB) WITH ULC LISTED FIRE STOP CAULKING.
   .2 SEAL ALL PENETRATIONS OF NON-METALLIC PIPING THROUGH FIRE SEPARATIONS (I.E. WALL/SLAB) WITH ULC LISTED FIRE STOP COLLARS.
   .3 ALL FIRE STOPPING SHALL BE INSTALLED IN ACCORDANCE WITH ULC LISTING.

4. DOMESTIC HOT & COLD WATER PIPING:
.1 COPPER TUBE, HARD DRAWN, TYPE "L".
.2 WROUGHT COPPER FITTINGS.
.3 LEAD FREE SOLDER, BRAZE OR SILVER SOLDER (SILFOS 5, 5% SILVER)
.4 BALL VALVES:
   .1 NPS 2" AND UNDER, SCREWED OR SOLDERED:
      .1 CLASS 150.
      .2 BRONZE BODY, STAINLESS STEEL BALL, PTFE TEFLON ADJUSTABLE PACKING, BRASS GLAND AND PTFE TEFLON SEAT, STEEL LEVER HANDLE.
      .3 ACCEPTABLE MATERIAL: CRANE OR EQUAL.

5. DRAINAGE, WASTE & VENT PIPING:
.1 COPPER TYPE DWV ABOVE GRADE; SOLDER: 95.5, 50:50 TO ASTM B32-0DEL, TYPE 50A.
.2 FIRE- & SMOKE-RESISTANT COATED DWV PVC PIPING & FITTINGS, IPEX SYSTEM XFR 25/50 PVC-DWV, ABOVE GRADE.
.3 CAST IRON ABOVE GRADE MECHANICAL JOINTS: PROVIDE HURLESS SOIL PIPE COUPLINGS CONSTRUCTED OF EXTRA WIDE 4 TO 6 BAND CORRUGATED TYPE 304 STAINLESS STEEL BANDS, WITH HEAVY DUTY WORM DRIVE CLAMPS.
.4 BELOW GRADE PVC DR28 OR SYSTEM 15.
.5 SLOPE SANITARY DRAIN ACCORDING TO CODE.
.6 INSTALL IN ACCORDANCE WITH CANADIAN PLUMBING CODE, PROVINCIAL PLUMBING CODE AND LOCAL AUTHORITY HAVING JURISDICTION.

6. PIPE TESTING AND CLEANING:
.1 PRESSURE TESTING
   .1 FILL SYSTEM WITH WATER. ENSURE ALL AIR IS REMOVED FROM SYSTEM. BOOST PRESSURE TO TEST PRESSURE USING WATER ONLY. PRESSURIZATION WITH AIR OR NITROGEN IS NOT ALLOWED. TEST TO 1.5 TIMES NORMAL OPERATING PRESSURE TO A MAXIMUM OF THE PIPING SYSTEMS WORKING PRESSURE INCLUDING DEVICES (I.E. VALVES, FITTINGS, ACCESSORIES).
   .2 MINIMUM TEST PRESSURE TO BE:
      .1 862 kPa (125 PSI) FOR COPPER/STEEL PIPING SYSTEMS.
   .3 MAINTAIN SPECIFIED TEST PRESSURE WITHOUT LOSS FOR FOUR (4) HOURS MINIMUM. TEMPERATURE OF SYSTEM TO REMAIN CONSTANT DURING ENTIRE DURATION OF TEST.
   .4 BEAR COSTS FOR REPAIRS OR REPLACEMENT, RETESTING, AND MAKING GOOD. ENGINEER TO DETERMINE WHETHER REPAIR OR REPLACEMENT IS APPROPRIATE.
   .5 INSULATE OR CONCEAL WORK ONLY AFTER REVIEW AND APPROVAL OF TEST RESULTS BY ENGINEER.
.2 FLUSHING AND CLEANING:
   .1 DOMESTIC WATER SYSTEMS:
      .1 FLUSH ENTIRE SYSTEM FOR 8 HOURS. ENSURE OUTLETS FLUSHED FOR 2 HOURS. LET STAND FOR 24 HOURS, THEN DRAW ONE SAMPLE OFF LONGEST RUN. SUBMIT TO TESTING LABORATORY TO VERIFY THAT SYSTEM IS CLEAN. LET SYSTEM FLUSH FOR AN ADDITIONAL 2 HOURS, THEN DRAW OFF ANOTHER SAMPLE FOR TESTING. SUBMIT TEST RESULTS TO ENGINEER.
   .2 CLEANING AND FLUSHING OF NEW PIPING SYSTEMS SHALL BE PERFORMED AFTER PRESSURE TESTING AND PRIOR TO CONNECTION TO EXISTING SYSTEM.

7. THERMAL INSULATION FOR PIPING:
.1 GENERAL:
   .1 ALL COMPONENTS OF INSULATION SYSTEM TO HAVE MAXIMUM FLAME SPREAD RATING OF 25 AND MAXIMUM SMOKE DEVELOPED RATING OF 50 IN ACCORDANCE WITH CAN4-S102.
.2 TIAC CODE A-3 FORMED MINERAL FIBRE WITH FACTORY APPLIED VAPOUR RETARDER JACKET:
   .1 APPLICATION: FOR PIPING, VALVES AND FITTINGS ON:
      .1 DOMESTIC HOT WATER PIPING SYSTEMS.
      .2 DOMESTIC COLD WATER PIPING SYSTEMS.
   .2 MATERIAL:
      .1 MINERAL FIBRE: TO CAN/CGSB-51.9-92.
      .2 JACKET: TO CGSB 51-GP-52MA.
      .3 MAXIMUM "K" FACTOR: TO CAN/CGSB-51.9-92.
   .3 THICKNESS: AS PER TABLE BELOW.

PIPE SIZES (NPS) AND INSULATION THICKNESS (MM)

APPLICATION	TEMP (°C)	1/2 TO 1-1/4	1-1/2 TO 3	4 TO 6
DOM.HOT WATER	ALL	25	40	40
DOM.COLD WATER	ALL	25	25	25

.3 FASTENINGS:
   .1 FOR INSULATION SYSTEMS TIAC CODE: A-3.
      .1 SECUREMENTS: TAPE AT 300 MM OC.
      .2 SEALS: VR LAP SEAL ADHESIVE, VR LAGGING ADHESIVE.
      .3 INSTALLATION: TIAC CODE: 1501-C.
.4 JACKETS:
   .1 PVC:
      .1 ONTARIO BUILDING CODE COMPLIANT FOR 25/50 FLAME SPREAD AND SMOKE DEVELOPED.
      .2 MINIMUM THICKNESS: 0.015 MIL.
      .3 COLOUR WHITE UNLESS OTHERWISE SPECIFIED.
      .4 NON YELLOWING UV STABILIZED.
      .5 MINIMUM SERVICE TEMPERATURES: -20°C.
      .6 MAXIMUM SERVICE TEMPERATURE: 65°C.
      .7 MOISTURE VAPOUR TRANSMISSION: 0.02 PERM.
      .8 FASTENINGS:
         .1 USE SOLVENT WELD ADHESIVE COMPATIBLE WITH INSULATION TO SEAL LAPS AND JOINTS.
         .2 TACKS.
         .3 PRESSURE SENSITIVE VINYL TAPE OF MATCHING COLOUR.
   .2 APPLICATION:
      .1 EXPOSED INDOORS: PVC.
      .2 EXPOSED PIPING & FITTINGS IN MECHANICAL ROOMS: PVC.
      .3 CONCEALED, INDOORS: PVC ON VALVES AND FITTINGS ONLY. NO FURTHER FINISH.
      .4 USE VAPOUR RETARDER JACKET ON TIAC CODE A-3 INSULATION COMPATIBLE WITH INSULATION.
      .5 FINISH ATTACHMENTS: STAINLESS STEEL BANDS AT 150 MM O.C. SEALS: WING OR CLOSED.
      .6 INSTALLATION: TO APPROPRIATE TIAC CODE CRF/1 THROUGH CRF/5.

8. PIPE IDENTIFICATION:
.1 PVC MARKERS, CONTINUOUS OPERATING TEMPERATURE OF 212F, 2" HIGH LETTERING FOR PIPING 3" OR LARGER, 3/4" HIGH LETTERING FOR 2 1/2" OR SMALLER. MATCH EXISTING BASE BUILDING STANDARD OR AS FOLLOWS:

CONTENTS:	BACKGROUND:	LABEL:
DOMESTIC HOT WATER SUPPLY	GREEN	DOM. HW SUPPLY
DOM.HWS RECIRCULATION	GREEN	DOM. HW CIRC
DOMESTIC COLD WATER SUPPLY	GREEN	DOM. CWS
SANITARY	GREEN	SAN.
PLUMBING VENT	GREEN	SAN. VENT

9. PLUMBING SPECIALTIES AND ACCESSORIES:
.1 FLOOR DRAINS:
   .1 FD1: GENERAL DUTY; EPOXY COATED CAST IRON BODY, ROUND, 5"Ø, ADJUSTABLE STANDARD NICKEL-BRONZE HEAD, TRAP PRIMING CONNECTION, INTEGRAL SEDIMENT PAN, AND CLAMPING COLLAR.
   ACCEPTABLE MATERIAL: WATTS FD-100-A OR EQUIVALENT MIFAB, ZURN & J.R. SMITH.
.2 CLEANOUTS:
   .1 CLEANOUT PLUGS: HEAVY CAST IRON MALE FERRULE WITH BRASS SCREWS AND THREADED BRASS OR BRONZE PLUG.
   SEALING-GASKET: EAD EPDM OR NEOPRENE GASKET.
   .1 ACCEPTABLE MATERIAL: ANCON, ENPROCO, J.R. SMITH & ZURN.
   .2 ACCESS COVERS:
      .1 FLOOR PLUG ACCESS: ROUND CAST IRON BODY AND FRAME WITH ADJUSTABLE SECURED NICKEL BRONZE TOP CAST BOX WITH ANCHOR LUGS AND:
         .1 PLUGS: BOLTED BRONZE WITH NEOPRENE GASKET.
         .2 COVER FOR UNFINISHED CONCRETE FLOORS: NICKEL BRONZE ROUND, GASKET, VANDAL-PROOF SCREWS.
         .3 COVER FOR TERRAZZO FINISH: POLISHED NICKEL BRONZE WITH RECESSED COVER FOR FILLING WITH TERRAZZO, VANDAL-PROOF LOCKING SCREWS.
         .4 COVER FOR TILE AND LINOLEUM FLOORS: POLISHED NICKEL BRONZE WITH RECESSED COVER FOR LINOLEUM OR TILE INFILL, COMPLETE WITH VANDAL-PROOF LOCKING SCREWS.
         .5 COVER FOR CARPETED FLOORS: POLISHED NICKEL BRONZE WITH DEEP FLANGE COVER FOR CARPET INFILL, COMPLETE WITH CARPET RETAINER VANDAL-PROOF LOCKING SCREWS.

.3 TRAP SEAL PRIMERS:
   .1 BRASS TRAP SEAL PRIMER WITH REMOVABLE POPPET, INTEGRAL VACUUM BREAKER, GASKETED ACCESS COVER 13 NPT (3/8") THREADED INLET AND OUTLET CONNECTIONS, COMPLETE WITH 13 NPT (3/8") SWEAT CONNECTION ADAPTERS AND 13 NPT (3/8") DRIP LINE CONNECTION.
   .2 TRAP SEAL PRIMERS ARE LISTED WITH IAPMO. AND CSA AND ARE TESTED AND CERTIFIED TO THE ASSE 1018.
   .3 TRAP SEAL PRIMERS SHALL BE INSTALLED MINIMUM 305 MM (12") ABOVE THE GRID OF A FLOOR DRAIN OR FLOOD LEVEL RIM OF EQUIPMENT SERVED.
   .4 OPERATING RANGE FOR TRAP SEAL PRIMERS IS 138 KPA (20 PSI) TO 861 KPA (125 PSI).
   .5 ACCEPTABLE MATERIALS: PPP PRIME-PRO, MIFAB MI-TSP-3, ZURN.

10. DUCTWORK:
.1 GENERAL:
   .1 DETAILS, CONSTRUCTION AND MATERIALS HEREIN SHALL BE AS PER SMACNA STANDARDS.
   .2 ALL MATERIALS SHALL CONFORM TO SMOKE AND FLAME SPREAD RATING LIMITATIONS STIPULATED IN THE PROVINCIAL BUILDING CODE OR AS SPECIFIED HEREIN.
   .3 ALL GALVANIZED DUCTWORK INDICATED TO BE FABRICATE FROM 0.2% COPPER CONTENT GALVANIZED SHEET STEEL WITH 1-1/4 CLASS ZINC COATING.
   .4 RECTANGULAR AND FITTINGS: GALVANIZED SHEET STEEL NOT LESS THAN THE FOLLOWING THICKNESS: 24 GA. – 750MM (30") WIDE & SMALLER.
   .5 ROUND & OVAL DUCT AND FITTINGS SHALL BE SPIRAL GALVANIZED STEEL MEETING THE ASTM A-527-71 & NOT LESS THAN THE FOLLOWING THICKNESS: 26 GA. – 75MM TO 350MM (3" TO 14"DIA. 24 GA. – 350MM (14") DIA. & LARGER.
   .6 SEAL CLASSIFICATION: SMACNA SEAL CLASS A.

11. FIRE DAMPERS:
.1 FIRE DAMPERS: ARRANGEMENT TYPE B OR C; LISTED AND BEAR LABEL OF ULC, MEET REQUIREMENTS OF NFPA (TIRE) 90A AUTHORITIES HAVING JURISDICTION. FIRE DAMPER ASSEMBLIES TO BE FIRE TESTED IN ACCORDANCE WITH CAN/ULC S112.
.2 MILD STEEL, FACTORY FABRICATED FOR FIRE RATING REQUIREMENT TO MAINTAIN INTEGRITY OF FIRE WALL AND/OR FIRE SEPARATION.
.3 TOP HINGED; OFFSET SINGLE DAMPER, ROUND OR SQUARE; INTERLOCKING TYPE; SIZED TO MAINTAIN FULL DUCT CROSS SECTION AS INDICATED.
.4 FUSIBLE LINK ACTUATED HAVING NEGATOR-SPRING- CLOSING OPERATOR.
.5 40 X 40 X 3 MM RETAINING ANGLE IRON FRAME, ON FULL PERIMETER OF FIRE DAMPER, ON BOTH SIDES OF FIRE SEPARATION BEING PIERCED.
.6 RATING: 1½ HR.
.7 ACCEPTABLE MATERIAL: AM, E.H. PRICE, GREENHECK, NCA, NAILOR, RUSKIN, VENTEX/ALUMAVENT.

12. FANS:
.1 GENERAL:
   .1 STANDARD OF RATING:
      .1 AMCA 201 FOR FAN APPLICATION.
      .2 AMCA 302 FOR APPLICATION OF SONE LOUDNESS RATINGS FOR NON-DUCTED AIR MOVING DEVICES.
      .3 AMCA 303 FOR APPLICATION OF SOUND POWER RATINGS FOR DUCTED AIR MOVING DEVICES.
      .4 PERFORMANCE: TO ANSI/AMCA 210 AND ANSI/ASHRAE 51. UNIT TO BEAR AMCA CERTIFIED SEAL.
   .2 PWL SOUND RATINGS TO COMPLY WITH AMCA 303, TESTED TO ANSI/AMCA 300 UNIT TO BEAR AMCA CERTIFIED SOUND RATING SEAL.
   .3 ANGLE MOUNTING BRACKETS CAN BE ADJUSTED TO ANY TYPICAL CEILING MATERIAL THICKNESS.
   .4 ALL DIRECT DRIVE FANS SHALL BE SUPPLIED WITH VARIABLE SPEED CONTROLLER FOR INSTALLATION AND WIRING BY DIV. 26.
   .5 PERFORMANCE: AS INDICATED ON DRAWING SCHEDULE.
   .6 ACCEPTABLE MATERIAL: GREENHECK, PENN, LOREN COOK, TWIN CITY FAN.
.2 IN-LINE CABINET FAN:
   .1 FAN HOUSING CONSTRUCTION OF CORROSION RESISTANT GALVANIZED STEEL C/W SOUND ABSORBING LINED INSULATION.
   .2 REMOVABLE BOTTOM HOUSING PANEL ALLOWS EASY ACCESS TO THE POWER ASSEMBLY FOR INSPECTION OR SERVICE.
   .3 OUTLET DUCT CONNECTION WITH INTEGRAL BACKDRAFT DAMPER CAN BE CONVERTED FROM HORIZONTAL TO VERTICAL DISCHARGE.
   .4 FAN SCROLL IS CONSTRUCTED OF GALVANIZED STEEL.
   .5 FAN WHEELS ARE DOUBLE WIDTH FORWARD CURVED CENTRIFUGAL TYPE; ALL WHEELS ARE DYNAMICALLY BALANCED FOR VIBRATION FREE OPERATION.
   .6 MOTORS 115/60/1; ALL MOTORS ARE SIZED TO MATCH FAN LOADS, HAVE THERMAL OVERLOAD PROTECTION AND ARE MOUNTED ON VIBRATION ISOLATORS. POWER ASSEMBLIES CAN BE EASILY UNPLUGGED AND REMOVED FOR INSPECTION OR SERVICE.

13. GRILLES, REGISTERS AND DIFFUSER:
.1 GENERAL:
   .1 TO MEET CAPACITY, PRESSURE DROP, TERMINAL VELOCITY, NOISE LEVEL, NECK VELOCITY AS INDICATED.
   .2 FRAMES:
      .1 FULL PERIMETER GASKETS.
      .2 PLASTER FRAMES WHERE SET INTO PLASTER OR GYPSUM BOARD AND AS SPECIFIED.
      .3 CONCEALED FASTENERS
   .3 CONCEALED OPERATORS
   .4 ACCEPTABLE MANUFACTURER: E.H. PRICE, NAILOR, TITUS, KRUEGER.

27. TESTING, ADJUSTING AND BALANCING (TAB):
.1 GENERAL:
   .1 TAB MEANS TO TEST, ADJUST AND BALANCE TO PERFORM IN ACCORDANCE WITH REQUIREMENTS OF CONTRACT DOCUMENTS AND TO DO ALL OTHER WORK AS SPECIFIED IN THIS SECTION.
   .2 DO TAB TO FOLLOWING TOLERANCES OF DESIGN VALUES:
      .1 HVAC SYSTEMS: PLUS OR MINUS 5%.
   .3 ADJUST OR REPLACE SHEAVES AS REQUIRED TO MEET DESIGN PERFORMANCE.
   .5 FOR ALL ADJUSTABLE DIFFUSERS/GRILLES: ADJUST AIR PATTERN TO ENSURE PROPER AIR DISTRIBUTION AND TO AVOID DUMPING. AIR VELOCITY SHALL NOT EXCEED 0.25 M/S (50 FPM) IN THE OCCUPIED ZONE (OR AS DIRECTED BY ENGINEER).
.2 TAB REPORT:
   .1 FORMAT TO BE IN ACCORDANCE WITH ASSOCIATED AIR BALANCING COUNCIL (AABC/CAABC).
.3 SYSTEMS:
   .1 AIR SYSTEMS:
      .1 INCLUDE BOTH SPECIFIED AND M