Addendum #1
Bid Opportunity: RFT-2025-166 - Operations Centre Garage Expansion
Closing Date: Tuesday, April 15, 2025 2:00 PM

This Addendum will form part of the RFP document.

In the event of any conflicting or inconsistent information, this addendum will take precedence over all requirements of the original RFP document and any addenda issued previously.

All other requirements of the RFP document remain the same.

Bidders must acknowledge receipt of this addendum, in the field requested, when submitting their bid.

Question 1:

We have failed to find specifications on these items in the documents, please advise if we are missing any documents:

1-Epoxy floor finishes
2-Formwork, Rebar, Concrete Floor Finishing.
3-Masonry
4-Structural Steel

Answer 1: You are not missing documents. The information related to those items can be found in the drawings and specifications in the tender package.

Question 2:

There is specifications for Automatic Door Equipment in the specification package, we failed to find this on the drawings. Please advise if there are any automatic door equipment. Where is this used?

Answer 2: No automatic door equipment is proposed for this project.

Question 3:

Mechanical drawings include corrupted characters. Please advise.
(you can see this on plan number for instance)

Answer 3: The corrupted characters on the mechanical drawings have been corrected and the drawings included with this addendum.

Question 4:

Vodaland would be interested in proposing an alternate trench drain product. Our product is called PRO 200PC. This product consists of polymer concrete channel with ductile Iron grate rated for load class E as per EN 1433. This product is offer with a neutral slope or 0.5%. Below is the spec for the consultants review.

Specification: Channels shall be 39.4” (1000mm) long and the nominal clear opening shall be 8” (200mm) with 10.2” (260mm) overall width and built in slope of 0.5% or neutral 0% as per specifier’s requirements. Channels shall have male-to-female interlocking joints. Gratings shall be ductile cast iron fastened to steel edge rails and meet the system load class specified. Channels and grate shall withstand a required EN1433 load class.

Materials: PRO 200PC trench drain shall be manufactured from polymer

concrete with the following approximate properties:

Compressive strength 14,000 Psi
Flexural strength 4,000 Psi
Tensile strength 1,500 Psi
Water absorption 0.05%
Frost proof Yes
Dilute acid and alkali resistant Yes
Salt proof

Answer 4: The Town may have specified certain product and brand names throughout the solicitation documents. Equivalents will not be considered during the bidding period.

Question 5:

Vodaland would be interested in proposing an alternate oil water separator in lieu to what is spec'd. Our product is called Oilbase100 OB1-6. This product has a overall height of 79in and diameter of 55in. This product feature a coalescent filter that has an efficiency of 99.8%. Below are the spec's for the consultants review.

Specification: The oil water separator shall be manufactured from Fiberglass as per BS EN 976-1/2:1997 standard and have the following properties : Water absorption 0.01%, Frost proof, salt proof and Fuels and oils resistant. The oil separator shall be equipped with a coalescing unit and automatic shut-off value including a sludge trap for situations when the maximum oil capacity is reached. An optional bypass version of the same separator is available for high flow scenarios requiring overflow management. Useful capacity of the oil separator shall be 1850L (488.7 gal), a sludge capacity of 600L (158.5 gal) & light liquids capacity of 300L (79.2 gal).

Performance: The oil water separator has an efficiency of 1.456mg/L and flow rate of 6L/sec (95 GPM). The bypass flow rate will be 30 L/sec (475 GPM) for overflow management.

Accessories: Cover shall be manufactured from fibreglass with a minimum inside

opening Ø24.5” (620mm) with an option of Cast iron cover. Neck extension are available with 0.5m,1m,1.5m lengths and with or without ladders. Flange adaptors are also available to attach cast iron manhole cover. Cast Iron cover shall withstand a required EN1433 load class D.

Answer 5: The Town may have specified certain product and brand names throughout the solicitation documents. Equivalents will not be considered during the bidding period.

Question 6:

Specification is calling for stonhard Epoxy finish. Can Sikafloor Morritex be approved as equal ?

Answer 6: The Town may have specified certain product and brand names throughout the solicitation documents. Equivalents will not be considered during the bidding period.

Question 7:

Cove base along the walls - we didn't see any information regarding the cove base. Can you please provide?

Answer 7: No cove bases are proposed for this project.

Question 8:

The roofing plan A-105 does not appear to show any work on the existing roof. However, detail 4/A-401 indicates some removal and reinstallation of the existing roofing for the installation of new parapet on line 2-1X. Please clarify.

Answer 8: For clarification, the roof plan doesn’t show all the required works, please refer the architectural building section and detail 3 on drawing A-400 as well as detail 4 on drawing A-401 for additional information & scope of work for the new parapet along gridline 2-1X.

Question 9:

In Specifications Section 01 21 00, Page 2, Item 2.9.1, Testing & Inspection is noted as part of the cash allowances.

On Drawing S1.1, Structural Steel Notes, Note #7 requests the GC to hire and pay for an independent testing company.
On Drawing S1.3, Construction Note #G1y requests the GC to hire a geotechnical consultant for excavation supervision near the existing building.
On Drawing S2.1, Foundation Notes, Note #5 requests the GC to retain a geotechnical engineer to confirm the soil bearing pressure values prior to pouring concrete for the foundations.
Please confirm that all items 1 through 3 above are to be paid from Cash Allowance 2.9.1.

Answer 9: The items 1 through 3 as noted in the structural drawings that require third party inspection & review shall be paid through the Cash Allowance.

Question 10:

Is the existing block wall on line 1 being painted?

Answer 10: The existing block wall on line 1 shall be painted the same colour as the new concrete block walls in an "off white" epoxy paint from the new finished floor to the U/S of the new deck & on one side only within the new addition. The surface of the existing block wall shall be prepared and cleaned as necessary for the epoxy paint finish.

Question 11:

Detail F4/S2.2 indicates that the steel grating is 'By Others,' referring to the mechanical drawings. However, the mechanical drawings only show the drain connection to this pit. Please confirm whether this grating is a Miscellaneous Metal item and not a mechanical item.

Answer 11: The reference on the structural drawings/detail F4/S2.2 should have been a reference to the architectural drawings and not to the mechanical drawings. For clarification and additional information, refer to the architectural drawing 2/A-103 as this Galvanized steel grate should be a miscellaneous metal item and not a mechanical item. Shop drawings shall

be signed and provided by a P. Eng. for this Galvanized steel grate for review & approval prior to fabrication.

Question 12:

Please provide details for the concrete apron at overhead doors. Structural drawing S2.2 shows the slab and the concrete class referring to architectural drawings, architectural drawings refer to structural drawings. please advise the thickness and rebar requirements.

Answer 12: Refer to the structural drawings/detail F2/S2.2 for the concrete apron/CLSM backfill and the note #G9 on drawing S2.1

Question 13:

On drawing C1, General Note #15 refers to OPSD 802.013 for Rock Excavation. Upon reviewing the geotechnical report and specifications, there is no indication of rock in the boreholes. Please confirm whether Note #15 for Rock Excavation is applicable to this project.

Answer 13: The geotechnical report should be referenced for soil/ground conditions.

Question 14:

Can you please provide geotechnical report?

Answer 14: The geotechnical investigation report was provided in Appendix B – Specifications.

Question 15:

Hardware is a part of allowances as per specifications. would the installation of the hardware be paid under this allowance as well? Please confirm.

Answer 15: The hardware is Cash Allowance item, as a "Supply and Install" allowance.

ISSUED FOR TENDER

ORANGEVILLE OPERATION CENTRE

500 C LINE, ORANGEVILLE, ON

EXPANSION

PROJECT NO.: B22-367.32

DRAWING LIST

Bold Engineering Inc.
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SPECIFICATIONS

GENERAL NOTES:

1. GENERAL SCOPE OF WORK

1.1. FURNISH ALL LABOUR, MATERIALS, EQUIPMENT, TOOLS AND SUPPORTS AS WELL AS SUPERVISION TO PROVIDE A COMPLETE INSTALLATION, TESTED AND IN WORKING ORDER, AS SHOWN ON THE DRAWINGS.

1.2. THE CONTRACTOR SHALL PERFORM THE WORK STIPULATED IN THE CONTRACT AND ANY OR ALL CONTRACT CHANGES AND CHANGE DIRECTIVES, AND SHALL FURNISH, UNLESS OTHERWISE PROVIDED IN THE CONTRACT, EVERYTHING NECESSARY FOR THE PROPER PERFORMANCE AND COMPLETION OF THE WORK.

1.3. ALL WORK SHALL BE FULLY TESTED, COMMISSIONED AND IN GOOD WORKING ORDER AT TIME OF HAND-OVER TO OWNER.

2. CODES AND STANDARDS

2.1. ALL WORK SHALL CONFORM TO THE MOST RECENT ISSUES OF:

2.1.1. THE ONTARIO BUILDING CODE

2.1.2. THE ONTARIO ELECTRICAL SAFETY CODE

2.1.3. THE MINISTRY OF THE ENVIRONMENT

2.1.4. THE NATIONAL ELECTRICAL CODE

2.1.5. BYLAWS AND REGULATIONS ISSUED BY THE BUILDING AUTHORITY HAVING JURISDICTION

2.1.6. ASHRAE
2.1.7. ASME
2.1.8. SMACNA
2.1.9. NFPA
2.1.10. TSSA
2.1.11. CSA
2.1.12. CGA

3. SPECIFICATIONS

3.1. COMPLY WITH THE GENERAL SECTIONS AND APPLICABLE SECTIONS OF THE GENERAL CONTRACT SPECIFICATIONS.

4. WARRANTY

4.1. WARRANT ALL LABOUR AND MATERIALS INCLUDED IN THIS CONTRACT FOR A PERIOD OF TWO YEARS FROM DATE OF FINAL ACCEPTANCE OF ALL AREAS. ASSUME FULL RESPONSIBILITY FOR LAYOUT OF ALL WORK AND FOR ANY DAMAGE CAUSED TO OWNER OR OTHERS BY IMPROPER CARRYING OUT OF THE WORK.

5. DRAWINGS

5.1. DRAWINGS SHOW GENERAL INTENT OF THE WORK AND PROPOSED ROUTING ONLY.

5.2. DO NOT SCALE DRAWINGS. CONTRACTOR SHALL CONFIRM ALL DIMENSIONS BY FIELD MEASURE BEFORE PROCEEDING WITH THE WORK.

5.3. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING POSSIBLE INTERFERENCES AND INFORMING THE ENGINEER.

6. SITE CONDITIONS

6.1. EXAMINE SITE CONDITIONS TO ENSURE THAT WORK CAN BE SATISFACTORILY CARRIED OUT AS SHOWN. IF SITE EXAMINATION REVEALS ANY DIFFICULTIES THAT WILL PREVENT THE WORK FROM BEING CARRIED OUT AS DESIGNED THESE MUST BE INDICATED IN THE TENDER PRICE, AND BROUGHT TO THE ATTENTION OF THE OWNER/ REGION.

6.2. THE CONTRACTOR SHALL INFORM THE ENGINEER IN WRITING OF ANY ADDITIONAL DIFFICULTIES, INTERFERENCES AND SITE CONSTRAINTS THAT MAY BE IDENTIFIED DURING THE QUESTION PERIOD.

6.3. ALL NOISY WORK SHALL BE PERFORMED AFTER NORMAL BUSINESS HOURS: BETWEEN 6PM AND 7AM, MONDAY THROUGH FRIDAY; AND ON WEEKENDS, FRIDAY 6PM THROUGH MONDAY 7AM.

6.4. COORDINATE SITE ACCESS AND DELIVERIES WITH REGION AND/OR GENERAL CONTRACTOR.

7. CLEANING

7.1. CLEAN PREMISES DAILY AT THE END OF EACH WORK DAY.

7.2. DO NOT ACCUMULATE EQUIPMENT, TOOLS, DEBRIS AND WASTE MATERIALS ON SITE. REMOVE FROM SITE DAILY.

7.3. COMPLETELY REMOVE ALL DEBRIS AND RUBBISH FROM SPACE ONCE WORK IS COMPLETE.

7.4. ALL MATERIALS TO BE DISPOSED OF CONSTRUCTION SITE IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.

8. OPEN FLAMES AND WELDING

8.1. NO OPEN FLAMES OR WELDING IS PERMITTED WITHIN THE BUILDING WITHOUT WRITTEN PERMISSION BY THE OWNER AND/OR THE ENGINEER.

8.2. HOT WORK PERMIT MUST BE VISIBLE AT ALL TIMES.

8.3. ADEQUATE NUMBER OF FIRE EXTINGUISHERS MUST BE PROVIDED DURING THE OPEN FLAME PROCESS.

9. MATERIALS

9.1. USE ONLY NEW CSA AND ULC CERTIFIED EQUIPMENT AND MATERIALS UNLESS OTHERWISE INDICATED.

9.2. ONLY FIRST CLASS WORKMANSHIP WILL BE ACCEPTED WITH RESPECT TO STANDARD PRACTICES, SAFETY, ACCESSIBILITY, DURABILITY AND NEATNESS OF INSTALLATION WORK.

10. SHOP DRAWINGS

10.1. SUBMIT 4 COPIES OF SHOP DRAWINGS, UNLESS OTHERWISE INDICATED, FOR ENGINEER'S REVIEW.

10.2. SUBMIT SHOP DRAWINGS AND PRODUCT DATA FOR ENGINEER'S REVIEW COVERING ALL RELEVANT DETAILS, DIMENSIONS AND PERFORMANCE.

10.3. SHOP DRAWINGS MUST BE REVIVED, STAMPED AND SIGNED BY THE CONTRACTOR AND THE GENERAL CONTRACTOR PRIOR TO SUBMITTING TO CONSULTANT / ENGINEER FOR REVIEW.

11. CUTTING, PATCHING AND PAINTING REQUIREMENTS

11.1. PROVIDE CUTTING, PATCHING AND PAINTING FOR ALL OPENINGS. USE QUALIFIED TRADES FOR THIS WORK. RESTORE FINISHES TO MATCH EXISTING SURROUNDINGS.

11.2. SUPPLY AND INSTALL APPROVED FIRESTOPS AS REQUIRED TO MAINTAIN FIRE RATING.

11.3. PIPING AND VENTS THROUGH WALL AND ROOF SHALL BE BY THE MECHANICAL DIVISION CONTRACTOR, INCLUDING ALL PATCHING.

12. CORING REQUIREMENTS

12.1. FOR ALL CORING LESS THEN 3" DIA. CONTRACTOR SHALL BE RESPONSIBLE FOR SCANNING AREA PRIOR TO CORING THROUGH FLOORS/CEILINGS.

12.2. FOR ALL CORING GREATER THEN 3" DIA. CONTRACTOR SHALL BE RESPONSIBLE FOR X-RAYING AREA PRIOR TO CORING THROUGH FLOORS/CEILINGS.

13. ACCESS PANELS

13.1. PROVIDE ACCESS PANELS FOR INSTALLATION BY THE GENERAL CONTRACTOR AND ALL SUB-TRADES WHERE REQUIRED FOR SERVICE OF CONCEALED EQUIPMENT INSTALLED BY THIS DIVISION.

13.2. PROVIDE 12"x12" (300x300mm) ACCESS PANEL TO ACCESS ANY CONCEALED VALVE AND FETTLING AND 24"x24" (600x600mm) TO ACCESS DUCT BALANCING BALANCING DAMPERS, SMOKE/FIRE DAMPERS ETC.

13.3. PROVIDE FIRE RATED ACCESS PANEL WHERE REQUIRED. RATING TO MATCH WALL OR CEILING.

14. PENETRATIONS THROUGH FLOORS AND WALLS

14.1. UNLESS OTHERWISE SPECIFIED ON DRAWINGS, GLASS FIBRE FIRE RETARDANT INSULATION AND FIRESTOP CAULKING SHALL BE PACKED AROUND PIPE OPENINGS IN FLOORS AND WALLS AT TIME OF PIPE INSTALLATION. FIRESTOP CAULKING SHALL BE "3M FIRE BARRIER" FIRETEMP CAULK OR EQUIVALENT.

14.2. APPLY FIRESTOP SYSTEMS IN ACCORDANCE WITH 3M'S INSTRUCTIONS OR EQUIVALENT. ALL SYSTEMS SHALL MEET CSA F-SYSTEM RATINGS FOR THE PARTICULAR FIRE RATING OF THE PENETRATED SURFACE.

14.3. FIRESTOPPING CONTRACTOR MUST BE A LICENSED CERTIFIED INSTALLER (REFER TO LIST IN SPECIFICATION PACKAGE).

14.4. MATERIALS SHALL BE ASBESTOS-FREE ELASTOMERIC MATERIALS OR EQUIVALENT, TESTED, LISTED AND LABELED BY ULC IN ACCORDANCE WITH CAN 4-S115-M85, AND CAN/ULC-S101-M FOR INSTALLATION IN ULC DESIGNATED FIRE STOPPING AND SMOKE SEAL SYSTEMS, TO PROVIDE A POSITIVE FIRE, WATER AND SMOKE SEAL AND A FIRE RESISTANCE RATING (FLAME, HOSE STREAM AND TEMPERATURE) NOT LESS THAN THE FIRE RATING FOR SURROUNDING CONSTRUCTION. MATERIALS SHALL BE COMPATIBLE WITH ABUTTING DISSIMILAR MATERIALS AND FINISHES.

14.5. PROVIDE PIPE SLEEVES FOR ALL PIPING PENETRATION THROUGH FLOOR, WALL AND SLAB. PIPE SLEEVE SHALL BE ONE SIZE LARGER THAN PIPE SIZE (MINIMUM).

15. DIELECTRIC ISOLATION

15.1. PROVIDE ISOLATION WHEN USING DISSIMILAR MATERIALS, TO PREVENT GALVANIC ACTION.

16. VIBRATION ISOLATION

16.1. PROVIDE AND INSTALL MINIMUM 3/4" THICK MSN ELASTOMERIC PADS W/MOUNTS UNDER FLOOR MOUNTED HVAC EQUIPMENT AS PER MANUFACTURER RECOMMENDATIONS.

17. ELECTRICAL

17.1. ALL LOW VOLTAGE CONTROL WIRING (<50V) SHALL BE BY THIS DIVISION, TO ELECTRICAL DIVISION STANDARDS.

18. PRESSURE TESTING

18.1. ALL PIPING SYSTEMS SHALL BE PRESSURE TESTED TO 860 kPa OR 1.5 TIMES SYSTEM OPERATING PRESSURE FOR A DURATION OF 24 HRS UNLESS OTHERWISE INDICATE.

19. AS BUILT DRAWINGS

19.1. MAINTAIN A RECORD OF ALL REVISIONS. PREPARE RECORD DRAWINGS IN A NEAT MANNER SHOWING ALL DEVIATIONS IN WORK. ON COMPLETION OF WORK, SUBMIT TO THE ENGINEER ONE HARD COPY OF AS BUILT DRAWINGS AND ELECTRONIC FORMAT DRAWINGS (IN AUTOCAD).

20. OPERATION AND MAINTENANCE MANUALS

20.1. SUBMIT FOUR (4) COPIES OF O&M MANUALS TO ENGINEER FOR REVIEW. ALSO INCLUDE 1 COPY IN PDF FORMAT. MANUALS SHALL INCLUDE AS BUILT DRAWINGS (CAD AND PDF FORMAT), APPROVED SHOP DRAWINGS OF ALL NEW EQUIPMENT, TEST AND BALANCING REPORTS, COMMISSIONING REPORTS, WARRANTIES, TRAINING RECORDS, AND OPERATION & MAINTENANCE PROCEDURES.

21. REMOVE ALL ABANDONED PIPES, HANGERS, INSERTS, CONDUITS, DUCTS AND SERVICES. FIRESTOP AND SEAL ALL AFFECTED AREAS.

22. SEAL AND FIRESTOP ALL WALL, FLOOR AND ROOF PENETRATIONS THROUGH FIRE RATED ASSEMBLIES.

23. CO-CORDINATE ALL DIMENSIONS WITH EQUIPMENT SHOP DRAWINGS.

24. THOROUGHLY INSPECT EXISTING STRUCTURE AND CHECK SITE CONDITIONS WITH CONDITION SHOWN ON CONTRACT DRAWINGS BEFORE PROCEEDING WITH WORK. MAKE ADJUSTMENTS TO WORK TO SUIT EXISTING CONDITION AND IN CONFORMANCE WITH DESIGN INTENT. REPORT ANY DISCREPANCIES TO THE ENGINEER.

25. WELDING SHALL BE UNDERTAKEN BY A COMPANY CERTIFIED BY CANADIAN WELDING BUREAU UNDER REQUIREMENTS OF DIVISION 1 OR DIVISION 2.1 OR W47.1.

26. MATERIALS AND WORK WHICH FAILS TO MEET SPECIFIED REQUIREMENTS WILL BE REJECTED BY THE ENGINEER WHENEVER FOUND AT ANY TIME PRIOR TO FINAL ACCEPTANCE AND REGARDLESS OF PREVIOUS INSPECTIONS. WHEN REJECTED, DEFECTIVE MATERIALS OR WORK SHALL BE PROMPTLY REMOVED, REPLACED OR REPAIRED TO THE SATISFACTION OF THE ENGINEER AT NO EXPENSE TO THE OWNER.

PROTECTION OF THE WORK AND ADJACENT PROPERTY:

1. THE CONTRACTOR SHALL PROTECT THE WORK, THE SITE, AND ANY OTHER PROPERTY ADJACENT TO THE SITE FROM DAMAGE WHICH MAY ARISE AS A RESULT OF ITS OPERATIONS UNDER THE CONTRACT AND SHALL BE LIABLE FOR ANY DAMAGES WHICH MAY BE ACCESSIONED; AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING GOOD SUCH DAMAGES AT ITS EXPENSE IN THE MANNER DIRECTED BY AND TO SATISFACTION OF ENGINEER.

2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO PROVIDE FOR AND BEAR THE COSTS OF PREVENTATIVE MEASURES TO ACCOMMODATE THE FORCES OF NATURE, WHICH CAN RESULT IN FREEZING, FLOODING, OVERHEATING, OR SIMILAR CIRCUMSTANCES, WHICH OCCUR UNTIL CONTRACT COMPLETION.

PERMITS AND FEES:

1. THE CONTRACTOR SHALL APPLY FOR AND OBTAIN IN ITS OWN NAME, PERMITS, LICENSES, APPROVALS AND SHALL PAY FEES AND GIVE NOTICES NECESSARY PRIOR TO COMMENCING WORK AND INCIDENTAL TO THE DUE AND LAWFUL PERFORMANCE OF THE WORK, IN ACCORDANCE WITH THE SPECIFICATIONS.

2. THE CONTRACTOR SHALL ENSURE THAT THE JURISDICTIONAL AUTHORITIES ARE NOTIFIED OF THE DATE FOR THE COMMENCEMENT OF THE WORK AND THE DATES OF ACTIVITY OF THE WORK FOR WHICH MUNICIPAL INSPECTORS ARE REQUIRED TO BE PRESENT. THE CONTRACTOR SHALL SEND A COPY OF ALL CORRESPONDENCES TO THE ENGINEER.

3. THE CONTRACTOR SHALL BE RESPONSIBLE SHOULD FAILURE OCCUR.

GAS PIPING:

1. PIPE

1.1. STEEL PIPE: TO ASTM A53, GRADE B, SCHEDULE 40, SEAMLESS AS FOLLOWS:

1.1.1. NPS 1/2 TO 2, SCREWED.

1.1.2. NPS 2 1/2 AND OVER, PLAIN END.

1.1.3. COPPER TUBE: TO ASTM B75M.

1.2. JOINING MATERIAL

1.2.1. SCREWED FITTINGS: PULVERIZED LEAD PASTE.

1.2.2. WELDED FITTINGS: TO CSA W47.1.

1.2.3. FLANGE GASKETS: NONMETALLIC FLAT.
1.2.4. SOLDERED: TO ASTM B32, TIN ANTIMONY 5/5.

2. FITTINGS

2.1. STEEL PIPE FITTINGS, SCREWED, FLANGED OR WELDED:
2.1.1. MALLEABLE IRON: SCREWED, BANDED, CLASS 150.
2.1.2. STEEL PIPE FLANGES AND FLANGED FITTINGS: TO ANSI/ASME B16.5.
2.1.3. WELDING: BUTT-WELDING FITTINGS.
2.1.4. UNIONS: MALLEABLE IRON, BRASS TO IRON, GROUND SEAT, TO ASTM A47M.
2.1.5. BOLTS AND NUTS: TO ANSI B18.2.1.
2.1.6. NIPPLES: SCHEDULE 40, TO ASTM A53.

2.2. COPPER PIPE FITTINGS, SCREWED, FLANGED OR SOLDERED:

2.2.1. CAST COPPER FITTINGS: TO ANSI B16.18.
2.2.2. WROUGHT COPPER FITTINGS: TO ANSI/ASME B16.22.

3. VALVES

3.1. PROVINCIAL CODE APPROVED, LUBRICATED PLUG TYPE.

4. INSTALLATION

4.1. INSTALL IN ACCORDANCE WITH APPLICABLE PROVINCIAL CODES.

4.2. INSTALL IN ACCORDANCE WITH CAN/CGA B149.1.

4.3. ASSEMBLE PIPING USING FITTINGS MANUFACTURED TO ANSI STANDARDS.

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

4.5. SLOPE PIPING DOWN IN DIRECTION OF FLOW TO LOW POINTS.

4.6. INSTALL DRIP POINTS:

4.6.1. AT LOW POINTS IN PIPING SYSTEM.

4.6.2. AT EACH CONNECTION TO EQUIPMENT.

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

4.8. PROVIDE CLEARANCE FOR ACCESS AND FOR MAINTENANCE.

4.9. REAM PIPES, CLEAN SCALE AND DIRT, INSIDE AND OUT.

4.10. INSTALL PIPING TO MINIMIZE PIPE DISMANTLING FOR EQUIPMENT REMOVAL.

4.11. INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL UNLESS OTHERWISE APPROVED BY ENGINEER.

4.12. INSTALL VALVES AT BRANCH TAKE-OFFS TO ISOLATE EACH PIECE OF EQUIPMENT, AND AS INDICATED.

5. TESTING

5.1. TEST SYSTEM IN ACCORDANCE WITH CAN/CGA B149.1 AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.

5.2. PURGE AFTER PRESSURE TEST IN ACCORDANCE WITH CAN/CGA B149.1

SIPW-JZ LOW INTENSITY TUBE HEATER FOR CAR WASH AND HARSH ENVIRONMENT APPLICATIONS

RADIANT TUBE HEATERS

CSA INTERNATIONAL APPROVED NATURAL OR PROPANE GAS FIRED RADIANT TUBE HEATERS AS MANUFACTURED BY SCHWANK INC. OR EQUIVALENT HEATER SIZE(S) AND CAPACITY(S) AS NOTED ON DRAWING OR SCHEDULE.

THE RADIANT TUBE HEATER SHALL CONSIST OF A WEATHER RESISTANT POWDER COATED CONTROL BOX CONTAINING A BURNER ASSEMBLY, DUAL PRESSURE SWITCHES, ELECTRONIC IGNITION CONTROL, GAS VALVE, CONTROL TRANSFORMER AND BURNER STATUS INDICATOR LIGHTS; AND ADDITIONALLY SHALL CONSIST OF ALUMINIZED STEEL RADIANT TUBING AND REFLECTORS, HANGERS, TUBE COUPLERS AND ELBOWS, AND/OR TURBULATORS AND TEES AS NEEDED.

1. THE BURNER SHALL BE OF THE FIXED AIR PRESSURIZED TYPE WITH INDEPENDENT OPERATING CONTROLS CAPABLE OF OPERATING SINGLY OR IN TANDEM WITH OTHER UNITS. THE BURNER HEAD SHALL HAVE THE INFRARED CERAMIC MEDIA FOR IMPROVED COMBUSTION, RESULTING IN LOWER SOUND LEVELS AND REDUCED DETRIMENTAL EMISSIONS. THE BURNER PACKAGE SHALL BE OF MODULAR CONSTRUCTION ALLOWING EASY REMOVAL FOR MAINTENANCE OR SERVICING.

   ALL CONTROLS AND THE COMBUSTION BLOWER SHALL BE LOCATED INSIDE THE WEATHER RESISTANT POWDER COATED CABINET TO PREVENT DIRT AND MOISTURE ACCUMULATION, THEREBY REDUCING MAINTENANCE REQUIREMENTS.

   AS STANDARD EQUIPMENT, THE BURNER ASSEMBLY SHALL HAVE TWO SEPARATE FACTORY-SET AND SEALED AIR SAFETY SWITCHES, ONE TO MONITOR INLET AIR PRESSURE AND ONE TO MONITOR FLUE PRESSURE (IN THE EVENT OF A BLOCKED AIR INTAKE OR BLOCKED EXHAUST VENT, THE SYSTEM WILL SHUT OFF). THE BURNER ASSEMBLY SHALL HAVE STATUS LIGHTS VISIBLE FROM THE FLOOR, TO INDICATE THE STATUS OF THE BURNER OPERATION, A FACTORY MOUNTED IGNITER, AND A FLAME OBSERVATION PORT.

2. THE RADIANT COMBUSTION CHAMBER TUBING (FIRST 10 FT.) SHALL BE 16 GAUGE ELECTRIC RESISTANCE WELDED ALUMINIZED STEEL (ALUMATHERM STEEL ON 175 AND 200 MBTUH HEATERS) WITH 1.05 FT.2 OF RADIATING SURFACE PER RUNNING FOOT.

3. THE RADIANT HEAT EXCHANGER (10 FT., 20 FT., 30 FT., 40 FT., 50 FT. OR 60 FT. DOWNSTREAM OF THE 10 FT COMBUSTION CHAMBER TUBE) SHALL BE 16 GAUGE WELDED ALUMINIZED STEEL.

4. ALL RADIANT TUBING WILL HAVE SWAGED ENDS FOR EASE AND CONTINUITY OF ASSEMBLY AND TO INCREASE THE MECHANICAL INTEGRITY OF THE SYSTEM. AN ALUMINIZED STEEL COUPLING SHALL BE USED AT EACH JOINT OF TUBES TO ENSURE CONSISTENT EXPANSION WITH TUBES AND MINIMIZE LEAKAGE.

5. THE REFLECTORS SHALL HAVE END PLATE HANGERS AND EXTEND BELOW THE RADIANT TUBE TO ENTRAP CONVECTION HEAT AND PROVIDE HIGHER RADIANT EFFICIENCY. THE REFLECTOR / TUBE SYSTEM SHALL HAVE INTERMEDIATE WEBBED HANGERS THAT PROMOTE FREE PASSAGE OF ENTRAPPED CONVECTION HEAT ALONG THE LENGTH OF THE SYSTEM, THEREBY PROVIDING INCREASED AND MORE UNIFORM INFRARED HEAT OUTPUT.

6. THE STANDARD CONFIGURATION SHALL BE COMPRISED OF END PLATE HANGERS FASTENED TO THE REFLECTORS AT EACH END OF STRAIGHT TUBE RUN. WEBBED HANGERS SHALL BE LOCATED AT THE END OF EACH REFLECTOR TO SUPPORT THE REFLECTORS AND TUBES.

7. ALL INTERNAL BURNER ELECTRICAL CONNECTIONS SHALL BE COATED TO PROVIDE MOISTURE RESISTANCE, AND THE DIRECT SPARK IGNITION CONTROL SHALL BE COMPLETELY POTTED TO PROTECT ELECTRONICS FROM CONDENSING MOISTURE.

CO/NO2 DETECTION SYSTEM:

TRANSMITTERS: HONEYWELL ANALYTICS E3SM-E3SCO & E3SM-E3NO2

1.1 PROVIDING CONTINUOUS MONITORING IN AMBIENT AIR OF TWO FACTORY-SET ALARM LEVELS AND OUTPUTS.

1.2 THE TRANSMITTER WILL BE CAPABLE OF OPERATING ON A FULLY-ADDRESSABLE MODBUS RS-485 DIGITAL NETWORK IN A DAISY-CHAIN CONFIGURATION. COMMUNICATION 3000FT MAX PER CHANNEL AND POWER 24VAC 1000FT MAX PER CHANNEL.

1.3 TRANSMITTER WILL HAVE AN ONBOARD DPDT RELAY (RATED AT 5A, 30 VDC OR 250 VAC (RESISTIVE LOAD)) AND CAN BE TRIGGERED THROUGH THE PROGRAMMING ON THE CONTROL PANEL TO ACTIVATE REMOTELY LOCATED FAN STARTERS WITHOUT THE NEED FOR A SEPARATE RELAY PACK.

1.4 SENSOR CELL SHALL HAVE A CONTINUOUS SELF-TEST TO ENSURE OPERATION AND TO PROVIDE EOL NOTIFICATION.

1.5 THE TRANSMITTER SHALL HAVE A PLUG-IN CAPABILITY FOR A FIELD REPLACEABLE GAS CARTRIDGE. THE REPLACEABLE GAS CARTRIDGE SHALL BE FACTORY CALIBRATED AND CERTIFIED TO THE TARGET GAS READY FOR OPERATION WITHOUT THE REQUIREMENT FOR SITE CALIBRATION.

1.6 TRANSMITTER WILL BE CAPABLE OF OPERATING WITHIN RELATIVE HUMIDITY RANGES OF 5-95% NON-CONDENSING AND TEMPERATURE RANGES OF -4° F TO 104° F (-20° C TO 40° C).

1.7 ALL SENSORS IN MAINTENANCE BAYS TO BE OUTFITTED FOR WATER INGRESS PROTECTION.

CONTROL PANEL: HONEYWELL ANALYTICS 301C-DLC

2.1 THE CONTROL PANEL MUST BE CAPABLE OF COMMUNICATING DIGITALLY WITH THE NETWORKED GAS DETECTION MONITORS ON THREE SEPARATE RS-485 MODBUS COMMUNICATION CHANNELS.

2.2 THE CONTROLLER WILL HOUSE FOUR INTERNAL DPDT RELAYS AT FULLY PROGRAMMABLE ALARM LEVELS (AND WITHIN PROGRAMMABLE TIME DELAYS). THE RELAY RATING WILL BE NO LOWER THAN 5 A, 30 VDC OR 250 VAC (RESISTIVE LOAD).

2.3 THE CONTROLLER MUST INCLUDE A SELF-TEST FUNCTION THAT ALLOWS FOR THE ACTIVATION/DEACTIVATION OF ALL THE PROGRAMMED OUTPUTS BY SIMULATING A CONTINUOUS 5% INCREASE/DECREASE VALUE UNTIL THE MAXIMUM/MINIMUM VALUE IS REACHED.

2.4 THE CONTROLLER MUST INCLUDE A REAL-TIME CLOCK THAT ENABLES OPERATION OF THE OUTPUTS FOR A SPECIFIC TIME-FRAME.

2.5 THE CONTROLLER MUST ALSO INCLUDE AN ENERGY SAVING FEATURE THAT ALLOWS FOR OUTPUT OPERATION ON ALARMS SET AT THE MAX, MIN OR AVERAGE VALUE OF A SPECIFIC GROUP OF TRANSMITTERS. THIS FEATURE MUST ALSO ALLOW FOR THE ACTIVATION OF OUTPUTS UPON A CERTAIN NUMBER OF A SPECIFIC GROUP (¼, ½, ¾ AND ¾) OF TRANSMITTERS REACHING THEIR ALARM LEVELS.

2.7 THE CONTROLLER WILL INDICATE THE EXACT CONCENTRATION OF GAS, THE GAS DETECTED, AND THE LOCATION OF THE SENSOR BY SWEEPING THROUGH THE NETWORK AND DISPLAYING THE DETECTED LEVELS AT EACH POINT ON A GRAPHIC LCD DISPLAY.

2.8 INTEGRATE STROBE/HORN, 120V, 85DB @ 10FT MINIMUM WITH BLUE LENS.

2.9 RATINGS AND CERTIFICATIONS

- CONFORMS TO INTERNATIONAL MECHANICAL AND ELECTRICAL CODES
- EMI/RFI COMPLIES WITH EMC DIRECTIVE 89/336/EEC
- CSA CERTIFICATION

SEQUENCE OF OPERATION

SENSOR LOCATION	FIRST ALARM (TWA)	SECOND ALARM (STEL)	
CARBON MONOXIDE (CO) A.F.F.	25 PPM	100 PPM	1200MM AS PER OBC
NITROGEN DIOXIDE (NO2) IN ZONE	.72 PPM	2 PPM	1500MM A.F.F. BREATHING

3.1 WHEN FIRST ALARM LEVEL IS ACHIEVED RELAY IS ENERGIZED TO ACTIVATE THE EXHAUST FAN AND OPEN CORRESPONDING DAMPER. PROGRAM A RELAY DELAY-OFF OF 2 MINUTES TO ALLOW GAS TIME TO CLEAR.

3.2 WHEN SECOND ALARM LEVEL IS ACHIEVED STROBE/HORN WILL ACTIVATE.

INSTALLATION & VERIFICATION

4.1 INSTALL HAZARDOUS GAS MONITORING EQUIPMENT INCLUDING SENSORS AND CONTROL PANEL AS SHOWN ON CONTRACT DRAWINGS.

4.2 INSTALL CONDUIT AND WIRING FROM SENSORS TO CONTROL PANEL AND TO THE FAN STARTERS. COMMUNICATION WIRING 24 GAUGE SHIELDED TWISTED PAIR BELDEN 9841 OR EQUIVALENT; 2000FT MAX PER CHANNEL FROM CONTROLLER. POWER IS 24VAC, 14 GAUGE, 1000FT MAX FROM THE CONTROLLER.

4.3 TEST TO DEMONSTRATE OPERATION OF FUNCTIONS DESCRIBED ABOVE UNDER SEQUENCE OF OPERATION TO BE PERFORMED BY MANUFACTURER'S CERTIFIED TECHNICIAN. CERTIFICATE OF COMMISSIONING TO BE PRESENTED TO FACILITY OPERATORS.

LEGEND

X-Z / Y	DIFFUSER/GRILLE X – TYPE Y – NECK SIZE Z – AIRFLOW (CFM)
	TRANSFER GRILL
	SPIN ON CONNECTION COMPLETE WITH BALANCING DAMPER
	DIRECTION OF AIR FLOW
	OPEN-ENDED RETURN AIR DUCT WITH ACOUSTIC LINING
	EXISTING PIPING, DUCTWORK, EQUIPMENT
	NEW PIPING, DUCTWORK, EQUIPMENT
	DOMESTIC COLD WATER (DCW)
	DOMESTIC HOT WATER (DHW)
SAN	HUNG SANITARY DRAIN
SAN	BURIED SANITARY DRAIN
STM	HUNG STORM DRAIN
STM	BURIED STORM DRAIN
	VENT (PLUMBING)
G1	NATURAL GAS LINE (MEDIUM PRESSURE 2 PSI)
G2	NATURAL GAS LINE (LOW PRESSURE 7" WC)
SPR	SPRINKLER MAIN
S	PIPE CUT
	PIPE UP
	PIPE DOWN
	UNION
	CAP OR PLUG
	SHUT-OFF VALVE
	NON-RETURN VALVE (CHECK VALVE)
	NON-RETURN VALVE (CHECK VALVE) WITH BALL DRIP
	PRESSURE REDUCING VALVE OR REGULATOR
	SUPERVISED VALVE
PS	PRESSURE SWITCH
FS	FLOW SWITCH
P	PRESSURE GAUGE COMPLETE WITH SHUT-OFF VALVE
	FLOOR DRAIN
	ROOF DRAIN
	TRAP
	CLEAN OUT
	BACKFLOW PREVENTER
	GAS OR WATER METER
NFHB	NON-FREEZE HOSE BIBB
	PUMP (SCHEMATIC)
	SIAMESE CONNECTION
FE	FIRE EXTINGUISHER
M	MOTORIZED DAMPER
T	THERMOSTAT
	STARTER
	DIRECTION OF AIR FLOW
OR	ROOF FAN
	CEILING MOUNTED EXHAUST FAN

Drawing Notes

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ISSUED FOR TENDER

LICENCED PROFESSIONAL ENGINEER
C. POLITIS
100109702
23-07-12
PROVINCE OF ONTARIO

No.	Revision	Date	By
2.	ISSUED FOR PERMIT & TENDER	JUL 12,23	MK
1.	ISSUED FOR 99% REVIEW	DEC.12,22	CB

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www.boldengineering.ca

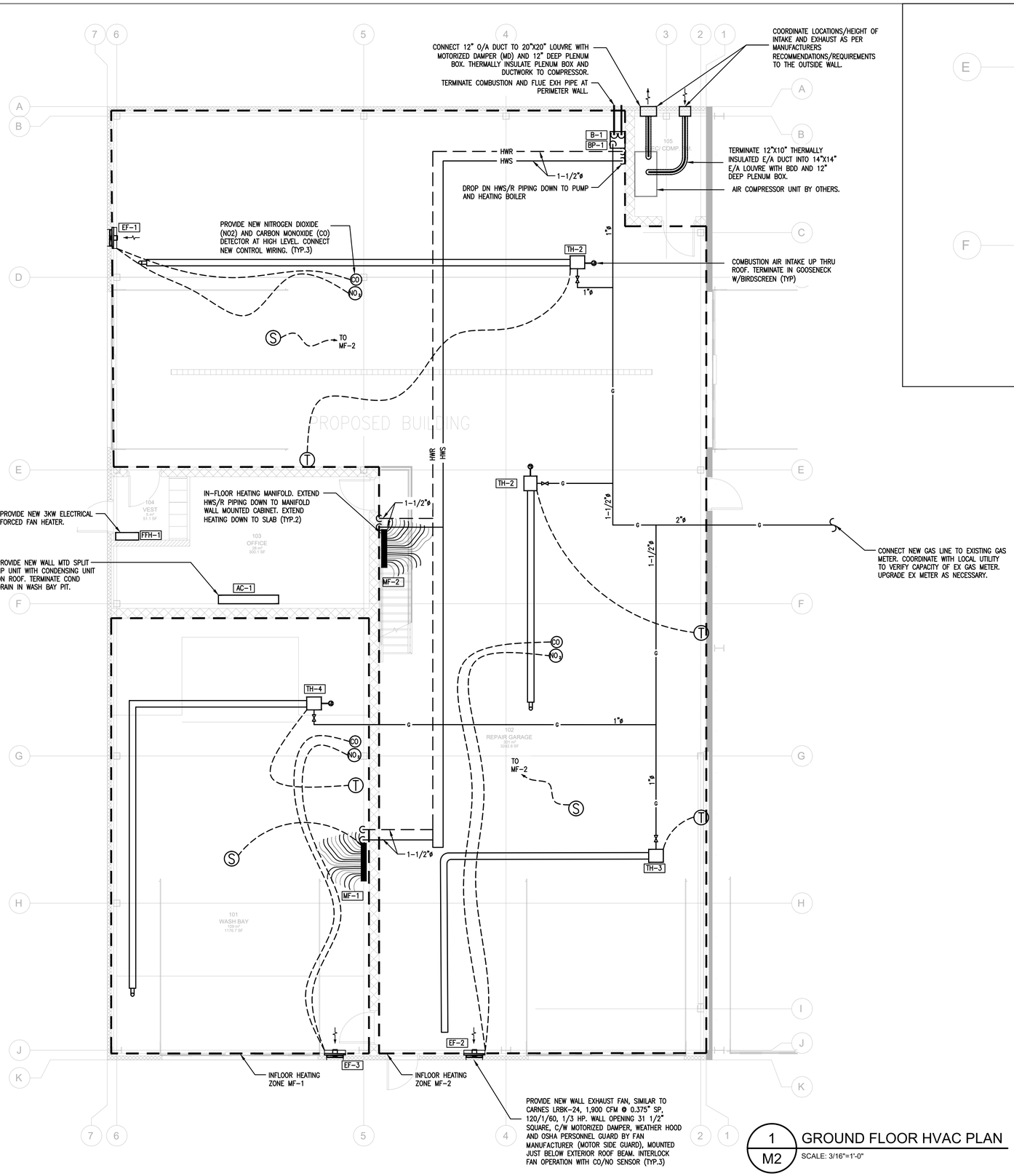
Project Name
ORANGEVILLE OPERATION CENTRE EXPANSION

500 C LINE. ORANGEVILLE, ON L9W 4Z3

Sheet Title
MECHANICAL SPECIFICATIONS

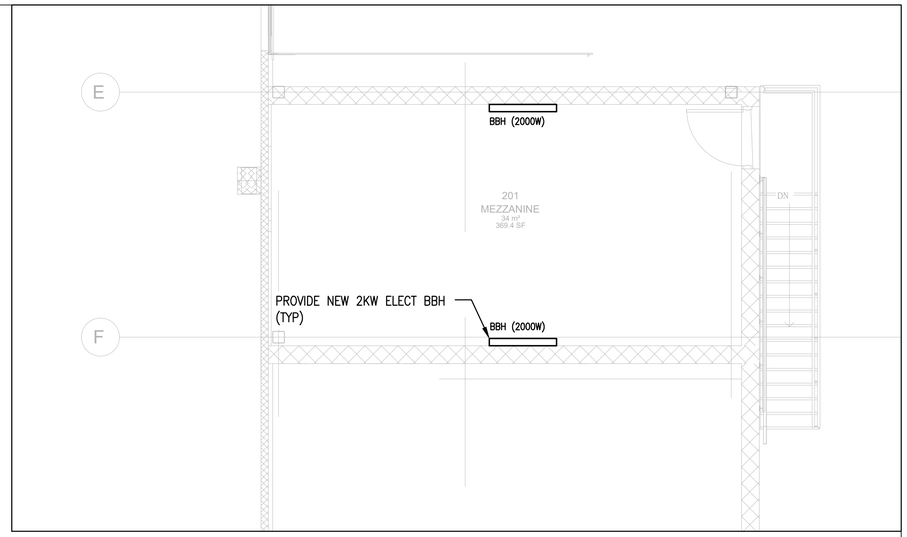
Drawn By MK Scale
Designed By MK Date January 06, 2023
Project Number **B22-367.32**

Sheet Number **M1** Revision **1**



1 / M2 GROUND FLOOR HVAC PLAN

SCALE: 3/16"=1'-0"



2 / M2 MEZZANINE HVAC PLAN

SCALE: 1/4"=1'-0"

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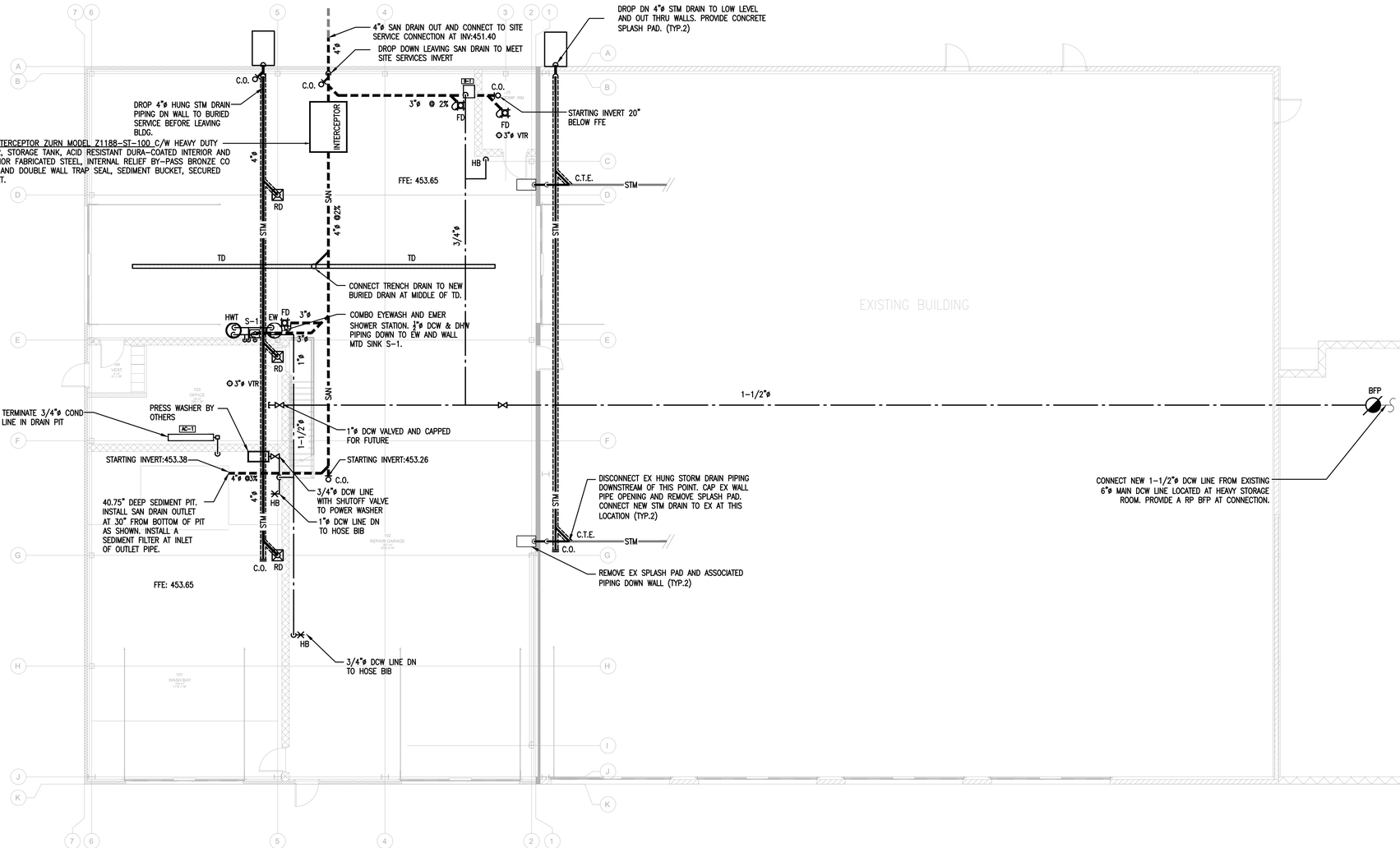
Project Name
ORANGEVILLE OPERATION CENTRE EXPANSION

500 C LINE. ORANGEVILLE, ON L9W 4Z3

Sheet Title
HVAC PLAN

Drawn By MK Scale 3/16"=1'-0"
Designed By MK Date January 06, 2023
Project Number **B22-367.32**

Sheet Number **M2**
Revision **1**



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ISSUED FOR TENDER

LICENSED PROFESSIONAL ENGINEER
C. POLITIS
100109702
23-07-12
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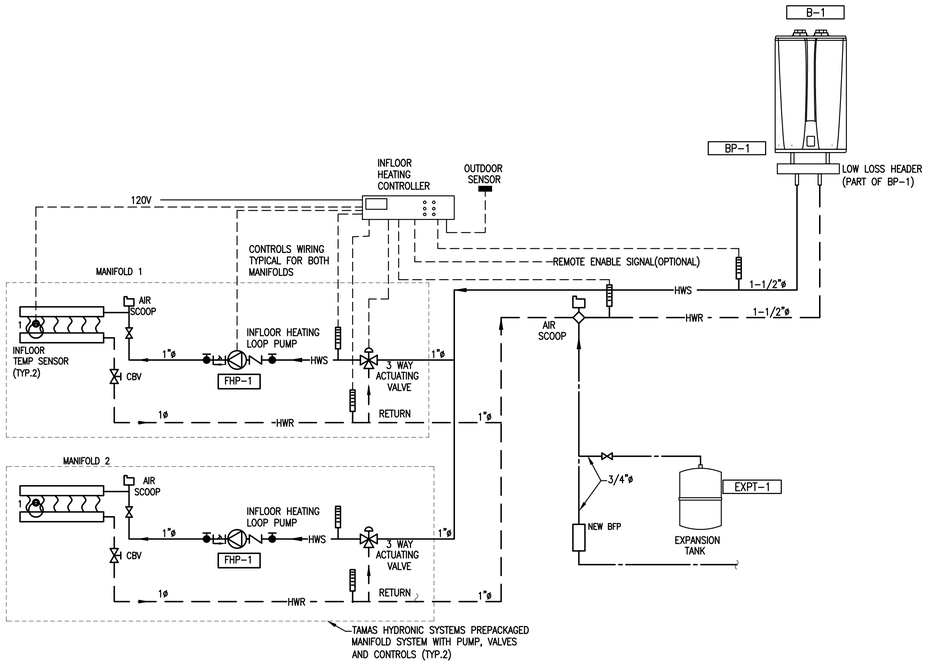
Project Name
ORANGEVILLE OPERATION CENTRE EXPANSION

500 C LINE. ORANGEVILLE, ON L9W 4Z3

Sheet Title
PLUMBING PLAN

Drawn By MK
Designed By MK
Scale 1/8"=1'-0"
Date January 06, 2023
Project Number **B22-367.32**

Sheet Number **M3**
Revision **1**



IN-FLOOR HEATING PIPING SCHEMATIC

IN-FLOOR HEATING BOILER

BASIS OF DESIGN: NAVIEN
APPROVED EQUAL ACCEPTABLE

TAG	MAKE/ MODEL	LOCATION	GAS CONN	FLOW RATE		CAPACITY	EFFICIENCY	ELECT VOLT	MAX LOAD	MAX FUSE	VENTING COMB AIR	WEIGHT	REMARKS
B-1	BUDERUS GB162-80	GARAGE	1"ø			IN:290 MBH OUT:260 MBH	94%	115/1/60	349W	15A	CAT IV 4"ø O/A 4"ø E/A	200 LBS (OPERATING)	TANKLESS WALL HUNG CONDENSING WATER HEATER C/W ALUMINUM HEAT EXCHANGER, INTEGRAL CONTROLLER,LOW LOSS HEADER, GRUNDFOS PUMP (UP26-99) FLOW CHECK, PRESS GAUGE, SHUT-OFF VALVE, PRESS RELIEF VALVE, GAS SHUT-OFF VALVE, COMBUSTION & VENT PIPING AS PER MANUFACTURERS STANDARD, AND CONDENSATE NEUTRALIZER KIT. INTERLOCK WATER HEATERS WITH BAS, ADD CONTROLS POINT IN BAS PANEL TO MONITOR DHW SYSTEM.

PUMP SCHEDULE

BASIS OF DESIGN: MANUFACTURERS SPECIFIED OR EQUAL

PUMP NO.	PUMP NAME	LOCATION	MAKE/MODEL	QTY	FLOW GPM	HEAD FT	VOLT & PHASE	VFD	MAGNETIC STARTER	MOTOR SIZE HP	REMARKS
BP-1	BOILER CIRCULATOR	IN BOILER	GRUNDFOS UP26-99	1	18 GPM	9	115/1/60	YES	--	349w	(1)(2)(3)(5)(6)
FHP-1	INFLOOR HEAT PUMP	MANIFOLD 1	TAMAS UPS 15-58	1	4	6	120/1/60	ECM	--	--	(2)(3)(4)
FHP-1	INFLOOR HEAT PUMP	MANIFOLD 2	TAMAS UPS 26-99FC	1	12	7.5	120/1/60	ECM	--	1/6	(2)(3)

NOTES:
(1) LEAD/LAG OPERATION; ONE STAND BY PUMP
(2) ALARMS & FAILURE MONITORED BY BAS
(3) PUMP CONTROLLER TO BE BACNET COMPATIBLE
(4) BOILER CIRCULATOR PUMPS, PROVIDED BY BOILER MANUFACTURER
(5) PUMPS TO BE MOUNTED ON FLOOR SUPPORTS.
(6) PROVIDE FLO-TREX VALVE MODEL FTV-F,

IN-FLOOR HEATING MANIFOLD SCHEDULE

BASIS OF DESIGN: UPONOR
APPROVED EQUAL ACCEPTABLE

TAG	AREA SQ.FT	SERVICE	CONSTRUCTION	HEATING TYP	RH CIRCUITS	TUBE SPACING	TUBING IN RM	MANIFOLD	FLOWRATE GPM	HEAD LOSS (CIRCUIT ONLY)	RH LOAD	FLUID TYPE	SURFACE TEMP	FLUID TEMP	REMARKS
MF-1	1212	WASHBAY	EMBEDDED SLAB	RH	12	9"	1616 FT	1	3.64	3.0	36 MBH	WATER	82-85°F	119°F	COMMERCIAL S/S 1-1/2ø WITH FLOW METER & BALL VALVE, 5/8"ø HEATING TUBING
MF-2	4219	REPAIR GARAGE	EMBEDDED SLAB	RH	5	12"	4081 FT	1	12.03	5.5	120 MBH	WATER	82-85°F	119°F	COMMERCIAL S/S 1-1/2ø WITH FLOW METER & BALL VALVE, 5/8"ø HEATING TUBING

DOMESTIC ELECTRIC WATER HEATER

TAG	MANU.	MODEL	CAPACITY US GAL	ELEMENT (kW)	QTY.	POWER V/Ph/Hz	REMARKS
HWT	SPACESAVER	SS19LSEB1	19	1.5	1	120/1/60	WATER HEATER SHALL HAVE THE ULC SEAL OR CERTIFICATION AND BE FACTORY EQUIPPED WITH AGA/ASME RATED TEMPRATURE AND PRESSURE RELIEF VALVE. TANK SHALL HAVE A WORKING PRESSURE RATING OF 150 PSI. WATER HEATER SHALL BE EQUIPPED WITH SURFACE MOUNTED THERMOSTAT WITH AN INTEGRAL, MANUAL RESET, HIGH LIMIT CONTROL. OR APPROVED EQUAL

ELECTRIC BASEBOARD HEATER SCHEDULE

TAG	MAKE/MODEL	LOCATION	WATTS	VOLTAGE	REMARKS
BBH	OUELLET OFM1502-2128	MEZZANINE	1500	208/1/60	ELEC BASEBOARD HEATER, COLOR WHITE, 84" LENGTH, 15 LBS. INSTALL BBH ON WALL AT FFE.

SPLIT UNIT SCHEDULE

UNIT NO.	LOCATION	MAKE/MODEL	CFM	VOLTAGE AND PHASE	FAN MOTOR F.L.A	MIN. CIRC. AMPACITY	COOLING CAPACITY	REMARKS
AC-1	OFFICE RM	MISTSUBISHI MS-A09WA	335	115/1/60	0.95	1.2	9,000	MR SLIM WALL MOUNTED INDOOR UNIT COMPLETE WITH THERMOSTAT.
CD-1	ROOF	MISTSUBISHI MU-A09WA	-	115/1/60	0.63	14	9,500	MR SLIM OUTDOOR UNIT, (R-410A REFRIGERANT).

ELECTRIC FORCED FLOW HEATER SCHEDULE

MARK	MAKE/MODEL	HEATING CAPACITY	VOLTS/ PHASE	CFM	COMMENTS
FFH-1	OUELLET OCA03007-T	3 KW	347/1/60	500	WALL MTD UNIT WITH B1 TYPE CONFIGURATION. UNIT TO BE STD WHITE, 18 GAUGE STEEL, HIGH LIMIT TEMP CONTROL WITH AUTO RESET,

GAS DETECTION SCHEDULE

TAG	MAKE/MODEL	QTY	OPERATING TEMP (DEG F)	POWER REQD (AC)	POWER REQD (DC)	AUDIBLE ALARM	ACCURACY	DIMENSION H x W x D
CO	HONEYWELL E3SM + E3SCO (CO SENSOR)	8	-4 TO 122	24 Vac 50/60 hz	24 VDc 20-38Vdc	85 dBA at 3 ft	+/- 3% AT 25 C	8.09 x 5.87 x 2.65"
NO_2	HONEYWELL E3SM + E3NO2 (NO2 SENSOR)	9	-40 TO 122	24 Vac 50/60 hz	24 VDc 20-38Vdc	85 dBA at 3 ft	+/- 3% AT 25 C	8.09 x 5.87 x 2.65"

PLUMBING FIXTURE SCHEDULE

S-1 STAINLESS WALL MTD SINK
FRANKE COMMERCIAL WHB1616-3 BASIN – WALL-HUNG LAVATORY, TYPE 304 STAINLESS STEEL, POLISHED TO #4 SATIN FINISH, CUSTOM HOLE DRILLINGS, LESS OVERFLOW, RADIUS COVED BOWL CORNERS, 203 MM (8") HIGH BACKSPLASH, 38 MM (1-1/2") DUPLEX WASTE WITH RUBBER STOPPER, ONE PIECE WALL HANGER, OVERALL DIMENSIONS: 432 MM (17") LONG, 413 MM (16-1/4") WIDE, 356 MM (14") HIGH, BOWL DIMENSIONS: 356 MM (14") LONG, 305 MM (12") WIDE, 152 MM (6") DEEP. AMERICAN STANDARD 7293152.002 FAUCET – HERITAGE/AMARILIS, WALL-HUNG, MANUAL, TWO HANDLES, SINK FAUCET, POLISHED CHROME FINISH, 203 MM (8") CENTERSET, SOLID BRASS CONSTRUCTION, LESS SUPPLY, CERAMIC DISC CARTRIDGE, 5.7 LPM (1.5 GPM) MAXIMUM FLOWRATE, PRESSURE COMPENSATING AERATOR, BRASS GOOSENECK SPOUT, 229 MM (9") SPOUT REACH, 318 MM (12-1/2") HIGH, LEVER HANDLES, LESS DRAIN, 13 MM (1/2") NPT FEMALE INLET WITH BRASS COUPLING NUT. CHICAGO FAUCETS 131-FMAB MIXING VALVE – POINT OF USE, THERMOSTATIC MIXING VALVE, BRASS BODY, 17.5 LPM (4.6 GPM) MAX, FLOWRATE, 1.5 LPM (0.35 GPM) MINIMUM FLOWRATE, ASSE 1070, CUPC, AND IAPMO LISTED, STANDARD 3/8" (9 MM) DIAMETER COMPRESSION INLET, STANDARD 10 MM (3/8") DIAMETER COMPRESSION OUTLET, BUILT-IN INTEGRAL CHECK STOPS, 100 °F – 180 °F (38 °C – 82 °C) HOT INLET TEMPERATURE, 80–120 °F, 30 PSI MINIMUM SUPPLY PRESSURE
MCGUIRE 201C P-TRAP – SOLID HEAVY DUTY CAST BRASS, CHROME-PLATED FINISH, WITH CLEANOUT PLUG, CAST BRASS SLIP NUTS, 52 MM (2") MINIMUM WATER SEAL. WATTS CA-461 CARRIER – WALL MOUNTED CONCEALED ARM LAVATORY CARRIER WITH BACK PLATE, PLATED HARDWARE

TD – VEHICLE TRENCH DRAIN
MEA DRAINS SUPREME EN2000 POLYMER CONCRETE CHANNEL WITH INTEGRATED CAST IRON EDGE PROTECTION AND SEALABLE CHANNEL GROOVE TO EN1433. PROVIDE MEADRAIN TOP2000 SLOTTED DUCTILE IRON GRATING CLASS E 600, 500MM LENGTH X 233MM WIDTH. CONTRACTOR TO PROVIDE DRAIN LENGTH AND SLOPES IN SHOP DWGS

CO CLEANOUTS
LINE CLEANOUT JAY R. SMITH SERIES 4420 LINE CLEANOUT, IN CAST IRON FERRULE WITH CAST BRONZE TAPERED THREAD PLUG, WITH FULL SIZE PIPE OPENING. WHERE CLEANOUTS ARE CONCEALED BEHIND FINISHED WALLS ACCESS SHALL BE MADE BY SMITH 4422 ROUND STAINLESS STEEL PLATE AND SLOTTED FLAT HEAD STAINLESS STEEL SCREW.

FD-1 FLOOR DRAINS – FINISHED AREAS
JAY R. SMITH SERIES 2005A-P050 FLOOR DRAIN, ALL DUCO COATED CAST IRON BODY, REVERSIBLE FLASHING CLAMP WITH SEEPAGE OPENINGS AND ADJUSTABLE 5" (127MM) DIAMETER NICKEL BRONZE 1/4" (6.35MM) THICK STRAINER, SECURED WITH S.S. SCREWS, 4" (100MM) THROAT ON STRAINER, TRAP PRIMER CONNECTION.

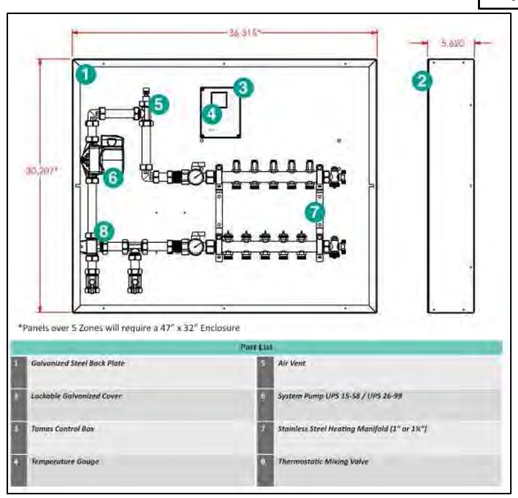
FD-2 FLOOR DRAINS WITH COMBINATION FUNNEL– MECHANICAL ROOMS & UNFINISHED AREAS (FD-2)
ALL DUCO COATED CAST IRON BODY, FLASHING CLAMP WITH SEEPAGE SMITH SERIES 2320-3591 FUNNEL FLOOR DRAIN OPENINGS AND ADJUSTABLE 8-1/2" (216MM) DIAMETER C.I. GRATE WITH 4" X 9" (101.6MM X 228.6MM) OVAL FUNNEL. (WHERE REQUIRED BY LOCAL CODE PROVIDE TRAP PRIMER CONNECTION 'P'.)

WATER HAMMER ARRESTORS –
PPP SC SERIES PPP #SC SERIES WATER HAMMER ARRESTORS WITH BRASS PISTON IN A TYPE 'K' COPPER CASING SIZE ACCORDING TO MANUFACTURER'S RECOMMENDATIONS CHART BELOW TO ELIMINATE WATER HAMMER AND SHOCK FROM PIPING SYSTEM. PROVIDE WATER HAMMER ARRESTORS ON HOT AND COLD WATER SUPPLIES TO ALL QUICK VALVES, SOLENOIDS, AND PLUMBING FIXTURES, AND LOCATE IN AN UPRIGHT POSITION BETWEEN THE LAST TWO FIXTURES ON A LINE, OR HORIZONTALLY AT THE END OF LINE CLOSEST TO SUPPLY SOURCE. ON PROJECTS EXCEEDING FIVE STORIES IN HEIGHT, PROVIDE WATER HAMMER ARRESTORS ON DOMESTIC WATER RISERS AS FOLLOWS. LOCATE ARRESTORS AT THE END OF RISER OPPOSITE SUPPLY SOURCE. ARRESTOR SHALL BE TWO PIPE SIZES LARGER THAN THE RISER IS AT THE CONNECTION POINT, NOT EXCEEDING THE LARGEST PIPE SIZE DIAMETER IN THE RISER. PROVIDE ACCESS PANEL TO MEET LOCAL CODES

TRAP SEAL PRIMERS
MECHANICAL SMS INC. #PRO1-500 PPP PRIME-PRO TRAP SEAL PRIMER VALVE, LEAD-FREE BRASS BODY, SERVING INDIVIDUAL OR REMOTE AREA DRAINS (PRIMER AUTOMATICALLY ACTIVATED WHEN THERE IS A PRESSURE DROP IN THE SYSTEM) WITH 1/2" (12.7MM) NPT CONNECTIONS WITH STAINLESS STEEL SCREEN AND INTEGRAL NEOPERL CHECK VALVE. (FOR 2, 3 OR 4 DRAINS PROVIDE PRIMER UNIT WITH DISTRIBUTION UNIT ASSEMBLY #DU-U).

RD ROOF DRAINS/DECK DRAINS – STANDARD FLOW DRAINS – LARGE CONVENTIONAL INSULATED ROOF
WATTS #RD-100 -NH-B-D-E-K LARGE AREA ROOF DRAIN, EPOXY COATED CAST IRON BODY, FLASHING CLAMP WITH INTEGRAL GRAVEL STOP, NO HUB , SUMP RECEIVER, UNDERDECK CLAMP, SOLID GASKETED ADJUSTABLE EXTENSION – HEIGHT TO SUIT ROOF CONSTRUCTION, DUCTILE IRON DOME.

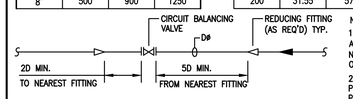
EW EYE/FACE WASH – WALL MOUNTED
GUARDIAN #G1750-T, WALL MOUNTED, EYE/FACE WASH, 11 1/2" (292 MM) DIAMETER, STAINLESS STEEL BOWL, TWO (2) FS-PLUS SPRAY HEADS WITH FLIPTOP DUST COVER AND FILTER, POWDER COATED CAST ALUMINUM FLAG HANDLE ACTIVATION, 1/2" (13 MM) IPS CHROME PLATED BRASS STAY-OPEN BALL VALVE WITH TEFLON SEAL, HEAVY DUTY CAST ALUMINUM WALL BRACKET WITH CORROSION RESISTANT POWDER COATED FINISH, CHROME PLATED BRASS TAILPIECE AND TRAP WITH 1-1/2" (38 MM) IPS WASTE CONNECTION, 1-1/4" (32 MM) NPT FEMALE OUTLET – UNIT IS THIRD PARTY CERTIFIED BY IAPMO TO MEET ANSI Z358.1-2014, THE UNIFORM PLUMBING CODE CUPC AND THE NATIONAL PLUMBING CODE OF CANADA.



INFLOOR HEATING MANIFOLD CABINET (TAMAS)
N.T.S.

CIRCUIT BALANCING VALVE SCHEDULE (IMPERIAL)			
SIZE	NOM FLOW (GPM)		MAX. GPM
½"	UP TO	3.1	4.3
¾"	3	6.9	9.6
1"	6.8	10.1	14.5
1 ¼"	10.2	16.2	24
1 ½"	15	24	32
2"	25	40	55
2 ½"	40	100	138
3"	95	145	200
4"	145	235	310
5"	230	370	500
6"	320	490	700
8"	500	900	1250

CIRCUIT BALANCING VALVE SCHEDULE (METRIC)			
SIZE	NOM FLOW (L/S)		MAX. L/S
15	UP TO	0.20	0.27
20	0.19	0.44	0.61
25	0.43	0.64	0.91
32	0.64	1.02	1.51
x	0.95	1.51	2.02
50	1.58	2.52	3.5
65	2.52	6.3	8.70
75	5.99	9.1	13
100	9.15	15	20
125	14.51	20	32
150	20.19	31	44
200	31.55	57	79



NOTE:
1.ABOVE SELECTION BASED ON TOUR & ANDERSSON: 1FT AP @ MIN, 1 PSI (6.9kPa) NOMINAL & 2 PSI (13.8 KPA) MAX AT FULL OPEN.
2.MECHANICAL CONTRACTOR MUST SIZE AND PROVIDE WATER CIRCUIT BALANCING VALVE AS PER SCHEDULE AND DETAIL

CIRCUIT BALANCING VALVE DETAIL & SCHEDULE
N.T.S.

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ISSUED FOR TENDER

LICENSED PROFESSIONAL ENGINEER
C. POLITIS
100109702
23-07-12
PROVINCE OF ONTARIO

No.	Revision	Date	By
2.	ISSUED FOR PERMIT & TENDER	JUL 12,23	MK
1.	ISSUED FOR 99% REVIEW	DEC.12,22	CB

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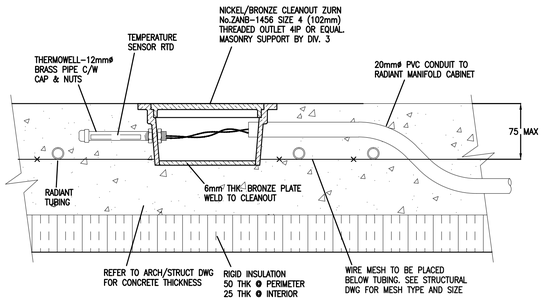
Project Name
ORANGEVILLE OPERATION CENTRE EXPANSION

500 C LINE. ORANGEVILLE, ON L9W 4Z3

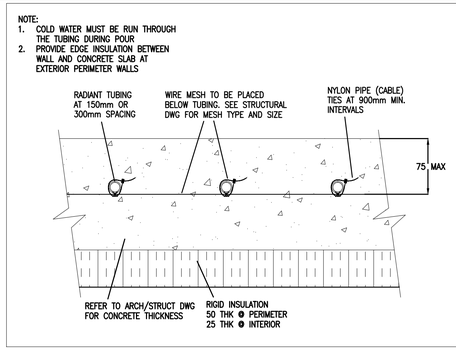
Sheet Title
MECHANICAL SCHEDULES

Drawn By MK Scale
Designed By MK Date January 06, 2023
Project Number **B22-367.32**

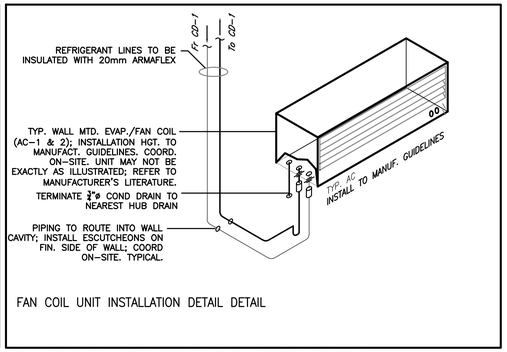
Sheet Number **M4**
Revision **1**



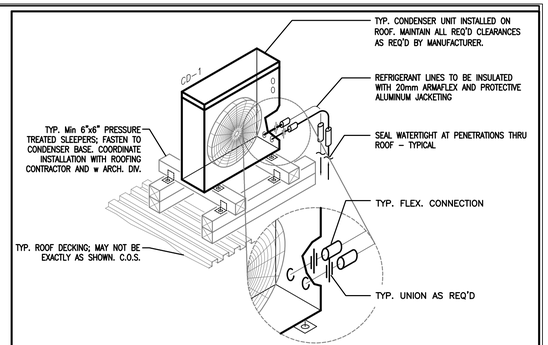
IN-FLOOR RADIANT TEMPERATURE SENSOR THERMOWELL
N.T.S.



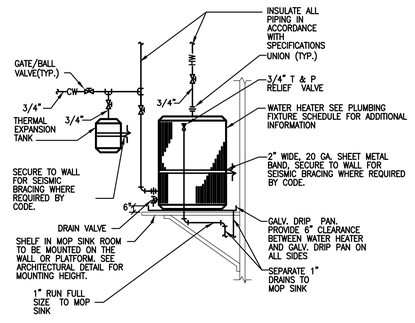
IN-FLOOR RADIANT TUBING INSTALLATION
N.T.S.



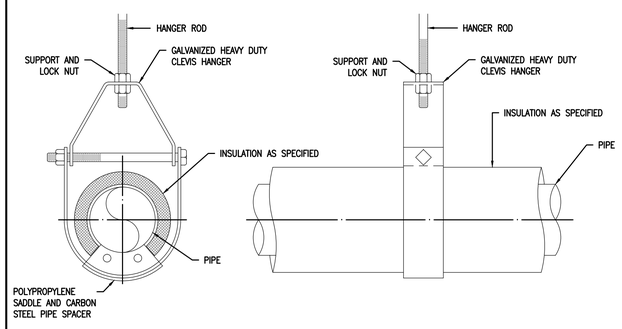
FAN COIL UNIT INSTALLATION DETAIL DETAIL
N.T.S.



CONDENSING UNIT DETAIL
N.T.S.



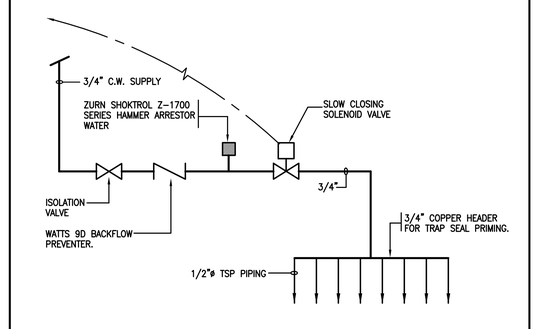
WATER HEATER MOUNTING DETAIL
SCALE: N.T.S.



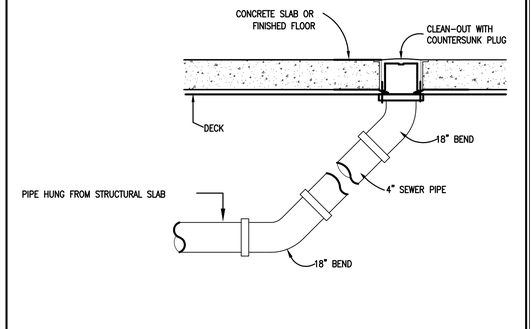
HANGER ROD SIZES											
PIPE SIZE	UP TO 2"			2 1/2" - 3"		4" - 5"		6" -12"			
HANGER ROD DIAMETER	3/8"			1/2"		5/8"		3/4"			
HANGER SPACING											
PIPE SIZE	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
MAXIMUM SPACING	7'	8'	9'	10'	11'	12'	14'	16'	17'	19'	22'	23'

UNIT: IMPERIAL

PIPE HANGER DETAIL
N.T.S.



TRAP SEAL PRIMER DETAIL
N.T.S.



CLEANOUT DETAIL
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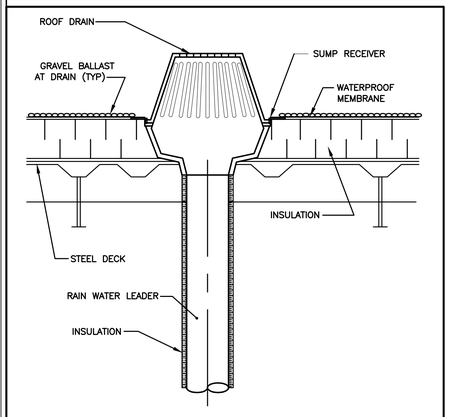
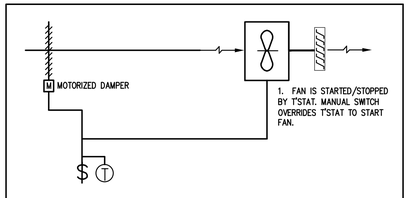


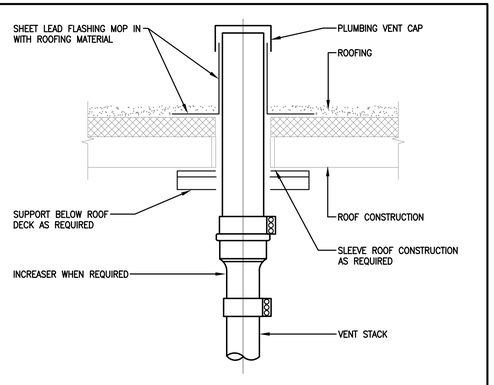
ROOF DRAIN DETAIL
N.T.S.

ABBREVIATIONS

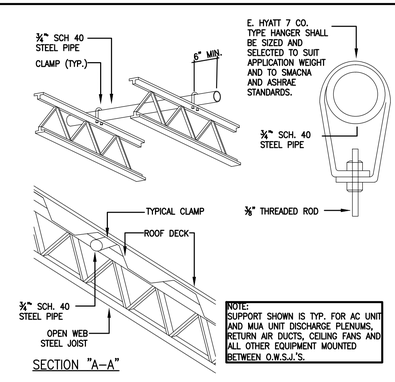
AC	AIR CONDITIONING UNIT
BBH	ELECTRIC BASEBOARD HEATER
BDD	BACK DRAFT DAMPER
CTE	CONNECT TO EXISTING
CFM	CUBIC FEET PER MINUTE
CO	CLEAN OUT
CD	CONDENSING UNIT
CUH	CABINET UNIT HEATER
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
E/A	EXHAUST AIR
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EWT	ENTERING WATER TEMPERATURE
EWC	ELECTRIC WATER COOLER
F/D	FIRE DAMPER
FLR	FLOOR
FTR	FINNED TUBE RADIATION
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
MTD	MOUNTED
MD	MOTOR OPERATED DAMPER
NIC	NOT IN CONTRACT
OA	OUTSIDE AIR
OAT	OUTSIDE AIR TEMPERATURE
OC	ON CENTER
OBD	OPPOSED BLADE DAMPER
RA	RETURN AIR
RAG	RETURN AIR GRILLE
RCP	REFLECTED CEILING PLAN
RHC	REHEAT COIL
SA	SUPPLY AIR
SD	SMOKE DAMPER
SF	SUPPLY FAN
SP	STATIC PRESSURE
TYP	TYPICAL
UH	UNIT HEATER
VTR	VENT THRU ROOF



VENITLATION EXH FAN CONTROL DIAGRAM
N.T.S.



PLUMBING VENT ROOF PENETRATION
N.T.S.



SECTION "A-A"

SUSPENDED EQUIPMENT SUPPORT
N.T.S.

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Designed By MK Date January 06, 2023
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