VILLAGE CENTRE PLACE

NEW RETAIL BUILDING - 6075 BANK STREET, GREELY, ON

MECHANICAL

DRAWING LIST

SYMBOL	DESCRIPTION
M1	MECHANICAL – GENERAL NOTE, DRAWING LIST & LEGENDS
M2	MECHANICAL – SPECIFICATIONS
M3	MECHANICAL – PLUMBING & FIRE PROTECTION
M4	MECHANICAL – HVAC
M5	MECHANICAL – UTILITIES

GENERAL LEGEND

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

PLUMBING / UTILITIES LEGEND

SYMBOL	DESCRIPTION
—— DCW ——	DOMESTIC COLD WATER PIPING
—— SAN ——	SANITARY PIPING
—— NG ——	NATURAL GAS PIPING
—— DHW ——	DOMESTIC HOT WATER PIPING
—— REFL ——	REFRIGERANT LIQUID PIPING
—— REFG ——	REFRIGERANT GAS PIPING
FD1	FLOOR DRAIN (TYPE)
	PIPING OFFSET
	BRANCH PIPING DOWN
	PIPING DOWN
	PIPING UP
	REDUCER
	DRAIN ASSEMBLY C/W TRAP
—HCO	CLEAN OUT
	ISOLATION VALVES
	CHECK VALVE
	FLEXIBLE CONNECTION
	PUMP
	WATER METER
	NON FREEZE WALL HYDRANT

HVAC & CONTROLS LEGEND

SYMBOL	DESCRIPTION
	RECTANGULAR DUCTWORK
	ROUND DUCTWORK
	ACOUSTICALLY LINED DUCTWORK (RETURN OR SUPPLY)
	THERMALLY INSULATED DUCTWORK (RETURN OR SUPPLY)
	TAKE-OFF C/W BALANCING DAMPER
	RETURN GRILLE
	FLEXIBLE CONNECTION
	INLINE CABINET FAN
	LOW VOLTAGE CONTROL WIRING
	ERV CONTROLLER
T	TEMPERATURE SENSOR
	SPEED CONTROLLER
	DUCT HEATER

FIRE PROTECTION LEGEND

SYMBOL	DESCRIPTION
FE1	FIRE EXTINGUISHER C/W MOUNTING BRACKET

WELL PRESSURE TANK SCHEDULE

TAG	LOCATION	FUNCTION	TYPE	PRE-CHARGE PSI	VOLUME USG	ACCEPT. VOL. USG	MAX. PRESS. PSI	MAX. TEMP. °F	ORIENTATION	BASIS OF DESIGN	REMARKS
PT1	SERVICE ROOM	WELL WATER PRESSURE	BLADDER	35	53	53	125	240	VERTICAL	AMTROL WX-448C	

NOTES:
1. FOR DETAILS REFER TO MECHANICAL SPECIFICATIONS.

PUMP SCHEDULE

TAG	LOCATION	FUNCTION	PUMP DATA					ELECTRICAL DATA		BASIS OF DESIGN	REMARKS
			TYPE	FLOW GPM	HEAD FT H20	SPEED (RPM)	MIN. EFF. %	V/PH/Hz	MOTOR HP		
WP1	WELL	WELL WATER	SIMPLEX	24	220	VARIABLE	–	208/1/60	1.5	GRUNDFOS 22SQUE-220	*CU-301 PUMP CONTROLLER

NOTES:
1. FOR DETAILS REFER TO MECHANICAL SPECIFICATIONS.
2. DISCONNECT SWITCH BY DIV. 26

FAN SCHEDULE

TAG	LOCATION	FUNCTION	FAN DATA						ELECTRICAL DATA		BASIS OF DESIGN	REMARKS
			TYPE	DRIVE	AIRFLOW CFM	ESP (in wg)	SPEED (RPM)	SONES	V/PH/Hz	NEC FLA		
EF-1.1	SERVICE ROOM	EXHAUST	CABINET	DIRECT	250	0.25	1032	3	120/1/60	0.72	GREENHECK SP-A290	*C/W SPEED CONTROLLER, DISCONNECT SWITCH & LINE VOLTAGE TEMPERATURE SENSOR SUPPLIED BY MECHANICAL CONTRACTOR, INSTALLED BY ELECTRICAL CONTRACTOR. * C/W STAINLESS STEEL GRILLE

NOTES:
1. FOR DETAILS REFER TO MECHANICAL SPECIFICATIONS.
2. DISCONNECT SWITCH BY DIV. 26

ERV SCHEDULE

TAG	LOCATION	AREA SERVED	SUPPLY FAN DATA				EXHAUST FAN DATA				HEAT EXCHANGER		ELECTRICAL DATA		FILTER	BASIS OF DESIGN	REMARKS
			TYPE	AIRFLOW CFM	E.S.P IN*WC	SPEED (RPM)	TYPE	AIRFLOW CFM	E.S.P IN*WC	SPEED (RPM)	FLOW CFM	% SEN EFF. SUMMER/WINTER	V/PH/Hz	F.L.A			
ERV1	UNITS	UNITS	CENTRIFUGAL	285	0.5	–	CENTRIFUGAL	285	0.5	–	285	71/71	120/1/60	3.3	2" MERV-8	RENEWAIRE EV300	* HVI CERTIFIED * FM CONTROLLER, HANGING BRACKET * 8" ROUND TRANSITION KIT * 4KW ELECTRIC 8"x8" PREHEATER C/W SCR CONTROLLER

NOTES:
1. FOR DETAILS REFER TO MECHANICAL SPECIFICATIONS.
2. DISCONNECT SWITCH BY DIV. 26

FURNACE SCHEDULE

TAG	LOCATION	AREA SERVED	BURNER				DX COOLING COIL				SUPPLY FAN (ECM MOTOR)				ELECTRICAL DATA		FILTER	BASIS OF DESIGN	REMARKS
			INPUT MBH	OUTPUT MBH	STAGES	AFUE %	TOT/SEN CLG MBH	REFRIGERENT	ARI SEER	PRESS. DROP IN*WC	TYPE	AIRFLOW CFM	E.S.P IN*WC	SPEED RPM	V/PH/Hz	ECM MOTOR HP			
F1	UNITS 101 & 105	UNITS 101 & 105	60/39	58/37	2	96	35.8/25.8	R-410A	16.50	–	CENTRIFUGAL	1200	0.6	–	120/1/60	1/2	2" PLEATED	YORK TM9V060B	* BOX COIL EVAPORATOR AND CONDENSING UNIT (REFER TO DX SPLIT AC UNIT SCHEDULE * PROGRAMMABLE THERMOSTAT
F2	UNITS 102, 103, 104	UNITS 102, 103, 104	40/26	38/25	2	96	30/21	R-410A	16.50	–	CENTRIFUGAL	1000	0.6	–	120/1/60	1/2	2" PLEATED	YORK TM9V040A	* BOX COIL EVAPORATOR AND CONDENSING UNIT (REFER TO DX SPLIT AC UNIT SCHEDULE * PROGRAMMABLE THERMOSTAT

NOTES:
1. FOR DETAILS REFER TO MECHANICAL SPECIFICATIONS.
2. DISCONNECT SWITCH BY DIV. 26

DX SPLIT AC UNIT SCHEDULE

EVAPORATING UNIT								CONDENSING UNIT								REMARKS
TAG	SYSTEM	LOCATION	TOT/SEN CLG (MBH)	INDOOR DESIGN TEMP (DB)(°C)	ELECTRICAL DATA		BASIS OF DESIGN	TAG	LOCATION	TOT/SEN CLG (MBH)	AMBIENT TEMPERATURE	ELECTRICAL DATA		BASIS OF DESIGN		
					MCA/MOP	V/PH/Hz						MCA/MOP	V/PH/Hz			
AC1	CU1	UNITS 101 & 105	35.8/25.8	75	–	–	YORK CM36BBCA1	CU1	OUTSIDE	35.8/25.8	95	21.4/35	208/1/60	YORK YXT36B21S		
AC2	CU2	UNITS 102, 103 & 104	30/21	75	–	–	YORK CM30AXA1	CU2	OUTSIDE	30/21	95	18.8/30	208/1/60	YORK YCG30BS21S	*C/W TXV KIT	

NOTES:
1. FOR DETAILS REFER TO MECHANICAL SPECIFICATIONS.
2. DISCONNECT SWITCH BY DIV. 26

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 FM & NFPA (FIRE PROTECTION)
   E. 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 "TAB" 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. WORKMANSHIP AND MATERIALS SHALL MATCH OR EXCEED THAT OF THE EXISTING AS PRESENTED BY THE PROJECT MANAGER.
13. ALL WORK TO BE CONDUCTED DURING HOURS SPECIFIED BY THE PROJECT MANAGER.
14. 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.
15. 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.
16. EQUIPMENT REQUIRING CONNECTION TO AN ELECTRICAL POWER SOURCE SHALL BE CSA OR ULC APPROVED FOR USE AT LOCATION OF INSTALLATION.
17. COORDINATE MATERIAL STORAGE WITH THE SITE SUPERINTENDENT AND OTHER TRADES.
18. MANUFACTURER'S INSTRUCTIONS REGARDING THE HANDLING, INSTALLATION AND TESTING OF EQUIPMENT SPECIFIED HEREIN SHALL BE CONSIDERED PART OF THIS SPECIFICATION.
19. 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.
20. 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.
21. INSPECT ALL NEW AND/OR RELOCATED EQUIPMENT UPON DELIVERY AND/OR RELOCATION AND NOTIFY PROJECT ENGINEER OF ANY DAMAGE OR DEFICIENCIES.
22. ALL EQUIPMENT, PIPING, DUCTWORK AND WIRING SHALL BE SUSPENDED FROM THE BUILDING STRUCTURE.
23. PROVIDE BLACK WITH WHITE WRITING LAMACOID PLATE ON ALL NEW EQUIPMENT. LABEL UNIT AS SHOWN ON DRAWINGS. LETTERING SIZE TO BE MINIMUM 25MM HIGH. MOUNT NEAR CONTROL SECTION OF THE UNIT.
24. PROVIDE CUTTING, PATCHING AND CORING OF ALL WALLS, CEILING AND OTHER SURFACES AS 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. 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).
25. CONTRACTOR SHALL BE RESPONSIBLE FOR DEACTIVATION, DRAINING, REFILLING AND REACTIVATING OF WET PIPE SPRINKLER SYSTEM OR STANDPIPE ON A DAILY BASIS. COORDINATE WITH OWNER.
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. PROTECT EXISTING AIR HANDLING SYSTEM FROM CONSTRUCTION DUST. PROVIDE FILTER MEDIA ON RETURN OPENINGS; FASTEN SECURELY TO THE RETURN DUCT INLET; REPLACE DURING CONSTRUCTION AS REQUIRED. APPROVED MATERIAL: AIRGUARD TR200 OR APPROVED EQUAL.
29. DUCT SIZES INDICATED ON DRAWINGS WHERE ACOUSTICALLY LINED ARE FREE AREA SIZES AND NOT SHEET METAL SIZES.
30. COORDINATE DUCTWORK ROUTING PRIOR TO DUCT FABRICATION; IF MODIFICATIONS ARE REQUIRED, REVISE DUCT SIZE TO MAINTAIN CROSS SECTIONAL AREA.
31. ALLOW FOR 1500 MM OF ADJUSTMENT FOR EXACT LOCATION OF AIR HANDLING UNITS, PUMPS, DUCTS, PIPING, ETC. AT NO EXTRA COST OR CREDIT.
32. PRIOR TO CLOSING OF CEILINGS, MECHANICAL CONTRACTOR SHALL NOTIFY THE ENGINEER THAT AN INSPECTION IS REQUIRED BEFORE PROCEEDING.
33. CONTRACTOR TO NOTIFY PROJECT MANAGER 3 DAYS BEFORE SCHEDULED SUBSTANTIAL COMPLETION TO ARRANGE INTERIM INSPECTION AND EQUIPMENT COMMISSIONING. NOTIFY PROJECT MANAGER IN WRITING OF ANY CHANGES IN SCHEDULE.
34. WARRANTY PERIOD SHALL BE FOR TWELVE (12) MONTHS AFTER THE DATE OF SUBSTANTIAL COMPLETION AS DETERMINED BY ENGINEER.
35. 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 FIRE PROTECTION:
         .1 NFPA-13 CERTIFICATION LETTER (WARRANTY LETTER IS SUFFICIENT IF THE LETTER NOTES IN ITS CONTENT THAT THE INSTALLATION MEETS NFPA-13).
         .2 BACKFLOW PREVENTER TEST REPORTS SUBMITTED AND B.F.P. TEST TAGS INSTALLED.
         .3 FLOW TEST PERFORMED AND CONNECTION TO FIRE ALARM SYSTEM (BY ELECTRICAL) INCLUDING TESTING AND VERIFICATION, REPORT SUBMITTED BY ELECTRICAL.
      .2 PLUMBING & UTILITIES:
         .1 SEISMIC CERTIFICATION LETTER SUBMITTED.
         .2 BACKFLOW PREVENTER TEST REPORTS SUBMITTED AND B.F.P. TEST TAGS INSTALLED.
      .3 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 THREE (3) COPIES OF OPERATIONS AND MAINTENANCE MANUALS CONTAINING ALL ITEMS PREVIOUSLY REVIEWED BY ENGINEER IN A THREE RING BINDER AND DIVIDERS ORGANIZING 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.

Client

DATE	REVISION	REF
2019-06-18	ISSUED FOR SITE PLAN	2
2018-12-05	ISSUED FOR TENDER	1
2018-11-02	ISSUED FOR PERMIT	0
2018-10-19	ISSUED FOR COORDINATION	–
2018-09-28	ISSUED FOR 66% REVIEW	–

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHER FAILURE TO OBTAIN AND / OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCES, AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

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NE PAS MESURER LES DESSINS A L'ÉCHELLE

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Project north
Nord du projet

Seal/Sceau

LICENSED PROFESSIONAL ENGINEER
E. E. PERUSSE
June 18/19
PROVINCE OF ONTARIO

Project/Projet

VILLAGE CENTRE PLACE
NEW RETAIL BUILDING
6075 BANK STREET, GREELY, ON

Drawing title/Titre du dessin

MECHANICAL - GENERAL NOTES, DRAWING LIST, LEGENDS

Scale / Échelle	AS NOTED	Project no./No. du projet	2018-509
Design by / Conçu par	J. TROTTIER	Drawing/Dessin	M1
Drawn by / Dessiné par	J. TROTTIER		
Reviewed by / Examiné par	E. PERUSSE		OF 5
Date	DECEMBER 2018	Revision no: 0	Acad file/Fichier: –

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FILENAME: Z:\2018\2018-509\Mech\2018-509-M.dwg
PLOTDATE: Jun 18, 2019 - 3:36pm

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 COES & STANDARDS.

2. FIRE EXTINGUISHERS:
.1 (FE1) STORED PRESSURE DRY CHEMICAL TYPE WITH HEAVY DUTY STEEL CYLINDER, POSITIVE ON/OFF OPERATION, WATERPROOF STAINLESS STEEL GAUGE, SHUT-OFF NOZZLE, ULC LABELLED FOR A, B AND C CLASS PROTECTION C/W WALL MOUNTING BRACKET. SIZE 2.25 KG, 3A-10BC RATING. ACCEPTABLE MATERIAL: NATIONAL FIRE, CANADIAN FIRE EQUIPMENT OR EQUAL.

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 DRAINAGE:
.1 INSTALL DRAIN VALVE AT LOW POINTS IN PIPING SYSTEMS AND AT THE BASE OF ALL RISERS.
.2 DRAIN VALVE: NPS 3/4 FULL PORT BALL VALVES UNLESS INDICATED OTHERWISE, WITH HOSE MALE THREAD, CAP AND DRAIN.
.3 PIPE WORK INSTALLATION:
.1 SCREWED FITTINGS TO BE JOINTED WITH TEFLON 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.
.4 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. 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)

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 15/50 PVC-DWV, ABOVE GRADE.
.3 CAST IRON ABOVE GRADE; MECHANICAL JOINTS: PROVIDE HUBLESS 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. WELL PUMP:
.1 3" DIAMETER DEEP WELL PUMP, STAINLESS STEEL CONSTRUCTION, PERMANENT MAGNET MOTOR, VARIABLE SPEED FOR CONSTANT PRESSURE SYSTEM.
.2 STANDARD OF ACCEPTANCE: GRUNDFOS MODEL 22SQE-220, C/W CU 301 CONSTANT PRESSURE SYSTEM AND PRESSURE SENSOR. 1.5HP, 208V, 1ø, 60HZ.

7. CONDENSATE PUMP (CP-1)
.1 AUTOMATIC, LOW PROFILE TYPE, STAINLESS STEEL/PLASTIC CONSTRUCTION, FLOAT TYPE LEVEL CONTROLLER,
.1 95 LPH @ 3M HEAD (25 GPH @ 10' HEAD), 1/50HP, 115 V, 1PH, PLUG-IN CORD; LITTLE GIANT VCMA-15 OR EQUIVALENT.

8. CONDENSATE PIPING:
.1 PIPING DESIGNED TO ENSURE COMPLETE REMOVAL OF ALL WATER. DRAIN CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND DRAIN INTO NEARBY HUB DRAIN STAYING TIGHT TO THE SLAB.
.2 COPPER TUBE, HARD DRAWN, TYPE "L".
.3 WROUGHT COPPER FITTINGS.
.4 LEAD FREE SOLDER, BRAZE OR SILVER SOLDER (SILFOS 5, 5% SILVER)
.5 FIRE & SMOKE RESISTANT COATED DWV PVC PIPING & FITTINGS, IPEX SYSTEM XFR 15/50 PVC-DWV, ABOVE GRADE.

9. WELL PRESSURE TANK:
.1 VERTICAL, STEEL, PRESSURIZED REMOVABLE BLADDER EXPANSION TANK.
.2 EPDM BLADDER SUITABLE FOR 115°C (240°F) OPERATING TEMPERATURE.
.3 WORKING PRESSURE: 125 PSI WITH ASME STAMP AND CERTIFICATION INCLUDING CANADIAN REGISTRATION NUMBER (CRN).
.4 AIR PRECHARGED TO 35 PSI.
.5 BASE MOUNT FOR VERTICAL INSTALLATION.
.6 SUPPORTS: PROVIDE SUPPORTS WITH HOLD DOWN BOLTS AND INSTALLATION TEMPLATES INCORPORATING SEISMIC RESTRAINT SYSTEMS.
.7 CAPACITY: AS PER SCHEDULE.
.8 ACCEPTABLE MATERIALS: AMTROL, EXPANFLEX, BELL & GOSSETT.

10. REFRIGERANT COPPER TUBING:
.1 TUBING:
.1 PROCESSED FOR REFRIGERATION INSTALLATIONS, DEOXIDIZED, DEHYDRATED AND SEALED.
.1 HARD COPPER: TO ASTM B280, TYPE ACR.
.2 ANNEALED COPPER: TO ASTM B280, WITH MINIMUM WALL THICKNESS AS PER CSA B52 SMART AND ASME B31.5.
.2 FITTINGS:
.1 SERVICE: DESIGN PRESSURE 300 PSI AND TEMPERATURE 121°C.
.2 BRAZED:
.1 FITTINGS: WROUGHT COPPER TO ASME B16.22.
.2 JOINTS: SILVER SOLDER, 45% AG-15% CU AND NON-CORROSIVE FLUX.
.3 FLANGED:
.1 BRONZE OR BRASS, TO ASME B16.24, CLASS 150 AND CLASS 300.
.2 GASKETS: SUITABLE FOR SERVICE.
.3 BOLTS, NUTS AND WASHERS: TO ASTM A307, HEAVY SERIES.
.4 FLARED:
.1 BRONZE OR BRASS, FOR REFRIGERATION, TO ANSI/ASME16.26.
.3 PIPE SLEEVES:
.1 HARD COPPER OR STEEL, SIZED TO PROVIDE 7 MM (¼") CLEARANCE ALL AROUND BETWEEN SLEEVE AND UNINSULATED PIPE OR BETWEEN SLEEVE AND INSULATION.
.4 VALVES:
.1 20 MM (3/4") AND UNDER: CLASS 500, 3,450 KPA (500 PSIG), GLOBE OR ANGLE NON-DIRECTIONAL TYPE, DIAPHRAGM, PACKLESS TYPE, WITH FORGED BRASS BODY AND BONNET, MOISTUREPROOF SEAL FOR BELOW FREEZING APPLICATIONS, BRAZED CONNECTIONS.
.2 OVER 20 MM (3/4") : CLASS 375, 2,585 KPA (375 PSIG), GLOBE OR ANGLE TYPE, DIAPHRAGM, PACKLESS TYPE, BACK-SEATING, CAP SEAL, WITH CAST BRONZE BODY AND BONNET, MOISTUREPROOF SEAL FOR BELOW FREEZING APPLICATIONS, BRAZED CONNECTIONS.
.5 INSULATION:
.1 TIAC CODE A-6: 13 MM (½") THICKNESS FLEXIBLE UNICELLULAR TUBULAR ELASTOMER.
.1 INSULATION: TO CAN/CGSB-51.40 WITH VAPOUR RETARDER JACKET.
.6 INSULATION SECUREMENT: TAPE: SELF-ADHESIVE, REINFORCED, 50 MM WIDE MINIMUM TO INSULATION MANUFACTURER'S RECOMMENDATION.
.7 JACKETS:
.1 ALUMINUM ON ALL OUTDOOR PIPING:
.1 TO ASTM B209.
.2 THICKNESS: 0.50 MM SHEET.
.3 FINISH: EMBOSSED.
.4 JOINING: LONGTUDINAL AND CIRCUMFERENTIAL SLIP JOINTS WITH 50 MM LAPS.
.5 FITTINGS: 0.5 MM THICK DIE-SHAPED FITTING COVERS WITH FACTORY-ATTACHED PROTECTIVE LINER.
.6 METAL JACKET BANDING AND MECHANICAL SEALS: STAINLESS STEEL, 19 MM WIDE, 0.5 MM THICK AT 300 MM SPACING.
.8 INSTALLATION:
.1 HARD DRAWN COPPER TUBING: DO NOT BEND. MINIMIZE USE OF FITTINGS.
.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 TRAP AT BASE OF RISERS GREATER THAN 2,400 MM (8 FEET) HIGH.
.3 PROVIDE INVERTED DEEP TRAP AT TOP OF EACH RISER.
.4 PROVIDE DOUBLE RISERS FOR COMPRESSORS HAVING CAPACITY MODULATION.
.1 LARGE RISER: INSTALL TRAPS AS SPECIFIED ABOVE.
.2 SMALL RISER: SIZE FOR 5.1M/S AT MINIMUM LOAD. CONNECT UPSTREAM OF TRAPS ON LARGE RISER.
.3 PRESSURE AND LEAK TEST TO MANUFACTURE'S RECOMMENDATIONS.

11. 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-1 FORMED MINERAL FIBRE WITHOUT VAPOUR BARRIER:
.1 APPLICATION: FOR PIPING, VALVES AND FITTINGS ON:
.1 DOMESTIC HOT WATER PIPING SYSTEMS.
.2 MATERIAL:
.1 MINERAL FIBRE: TO CAN/CGSB-51.9-92.
.2 MAXIMUM "K" FACTOR: TO CAN/CGSB-51.9-92.
.3 THICKNESS: 25MM
.3 TIAC CODE A-3 FORMED MINERAL FIBRE WITH FACTORY APPLIED VAPOUR RETARDER JACKET:
.1 APPLICATION: FOR PIPING, VALVES AND FITTINGS ON:
.1 DOMESTIC COLD WATER PIPING SYSTEMS.
.2 CONDENSATE PIPING SYSTEM.
.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: 25MM
.4 FASTENINGS:
.1 FOR INSULATION SYSTEMS TIAC CODE A-1:
.1 TAPE: SELF-ADHESIVE, ALUMINUM, REINFORCED, 50MM WIDE MINIMUM.
.2 CONTACT ADHESIVE: QUICK SETTING.
.3 CANVAS ADHESIVE: WASHABLE.
.4 TIE WIRE: 1.5MM DIAMETER STAINLESS STEEL.
.5 BANDS: STAINLESS STEEL, 19MM WIDE, 0.5MM THICK.
.6 THERMAL INSULATING AND FINISHING CEMENT: TO CAN/CGSB-51.12-95.
.7 VAPOUR RETARDER LAP ADHESIVE: WATER BASED, FIRE RETARDANT TYPE, COMPATIBLE WITH INSULATION.
.8 INDOOR VAPOUR RETARDER FINISH: VINYL EMULSION TYPE ACRYLIC, COMPATIBLE WITH INSULATION.
.2 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.
.5 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.

12. VALVES:
.1 BALL VALVES:
.1 BODY AND CAP: CAST HIGH TENSILE BRONZE TO ASTM B62 OR BRASS TO ASTM B16/B16M C36000.
.2 STEM: TAMPERPROOF BALL DRIVE.
.3 STEM PACKING NUT: EXTERNAL TO BODY.
.4 BALL AND SEAT: REPLACEABLE CHROME PLATED BRASS SOLID FULL PORT BALL AND TEFLON SEATS.
.5 STEM SEAL: TFE WITH EXTERNAL PACKING NUT.
.6 OPERATOR: REMOVABLE LEVER HANDLE.
.7 ACCEPTABLE MATERIAL: CRANE, JENKINS, TOYO, VICTAULIC, KITZ.
.2 CHECK VALVES:
.1 NPS 2 AND UNDER, BRONZE SWING TYPE, BRONZE DISC:
.1 STANDARD SPECIFICATION: MSS SP-80.
.2 CONNECTIONS: WITH HEX. SHOULDERS.
.3 BODY: Y-PATTERN WITH INTEGRAL SEAT AT 45°, SCREW-IN CAP WITH HEX HEAD.
.4 DISC AND SEAT: RENEWABLE ROTATING DISC, TWO-PIECE HINGE DISC CONSTRUCTION; SEAT: REGRINDABLE.

13. PIPE TESTING AND CLEANING (DOMESTIC WATER):
.1 PRESSURE TEST ENTIRE DOMESTIC WATER SYSTEM (COLD AND HOT) FOR A PERIOD OF EIGHT(8) HOURS AT 1.5 TIMES THE OPERATING PRESSURE OR 150 PSI, WHICHEVER IS GREATER. PRIOR TO TEST ISOLATE EQUIPMENT AND OTHER PARTS WHICH ARE NOT DESIGNED TO WITHSTAND TEST PRESSURE OR MEDIA. BEAR COSTS FOR REPAIRS OR REPLACEMENT, RETESTING, AND MAKING GOOD. ENGINEER TO DETERMINE WHETHER REPAIR OR REPLACEMENT IS APPROPRIATE.
.2 CLEANING AND FLUSHING OF NEW PIPING TO BE DONE PRIOR TO MAKING FINAL CONNECTION TO EXISTING SYSTEM.

14. BASES, PIPE HANGERS AND SUPPORTS:
.1 GENERAL:
.1 BASES, HANGERS, SUPPORTS AND SWAY BRACES SHALL BE OF MANUFACTURED TYPE AND ASSEMBLED AS PER MANUFACTURER'S INSTRUCTIONS. ENSURE THAT SUPPORTS, GUIDES AND ANCHORS DO NOT TRANSMIT EXCESSIVE QUANTITIES OF HEAT TO BUILDING STRUCTURE. DESIGN HANGERS AND SUPPORTS TO OPERATE UNDER ALL OPERATING CONDITIONS. ALLOW FOR FREE EXPANSION AND CONTRACTION AND PREVENT THE TRANSMISSION OF EXCESSIVE STRESSES INTO PIPE WORK OR CONNECTED EQUIPMENT. PROVIDE FOR VERTICAL ADJUSTMENT AFTER INSTALLATION. DESIGN SHALL BE IN ACCORDANCE WITH ANSI B31.1 AND MSS-SP58.
.2 SUPPORT FROM TOP OR BOTTOM OF STRUCTURAL MEMBERS. WHERE STRUCTURAL BEARING DOES NOT EXIST OR INSERTS ARE NOT IN SUITABLE LOCATIONS; PROVIDE SUPPLEMENTARY STRUCTURAL STEEL MEMBERS.
.3 SUPPORTS MADE FROM WIRE, WOOD, ROPE OR ANY OTHER VULNERABLE MAKE-SHIFT MATERIAL ARE NOT PERMITTED.
.4 FOR UNINSULATED COPPER PIPE OR TUBING THE CLAMPS AND SUPPORTS SHALL HAVE AN ELECTROPLATED COPPER FINISH.
.5 PROVIDE ADDITIONAL SUPPORTS AT CHANGES IN PIPE DIRECTION AND FOR CONCENTRATION OF LOADS DUE TO WEIGHT OF VALVES, STRAINERS, ETC.
.6 PIPE HANGERS AND SUPPORTS SHALL BE PAINTED WITH ZINC RICH PAINT AFTER MANUFACTURE.
.7 PROVIDE INSULATION PROTECTION SHIELDS AS REQUIRED.
.4 HANGER SPACING:
.1 COPPER PIPING UP TO NPS 1/2" EVERY 5FT.
.2 HANGERS SHALL BE WITHIN 12" OF EACH ELBOW.
.3 HANGERS SHALL BE SPACED AS FOLLOWS:

MAXIMUM PIPE SIZE (NPS):	MAXIMUM STEEL PIPE SPACING	MAXIMUM COPPER PIPE SPACING:
UP TO 1-1/4	2.1M (7')	1.8M (6')

15. 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
SANITARY	GREEN	SAN.
PLUMBING VENT	GREEN	SAN. VENT

16. PLUMBING SPECIALTIES AND ACCESSORIES:
.1 FLOOR DRAINS:
.1 FD1: GENERAL DUTY; CAST IRON BODY, ROUND, 5"ø, ADJUSTABLE HEAD, SEDIMENT BASKET, STAINLESS STEEL, TRAP PRIMING CONNECTION, INTEGRAL SEEPAGE PAN, CLAMPING COLLAR AND SEDIMENT BUCKET.
.2 ACCEPTABLE MATERIAL: WATTS FD-100-C-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-CAULKED LEAD SEAT OR NEOPRENE GASKET.
.2 ACCEPTABLE MATERIAL: ANCON, ENPOCO, J.R. SMITH & ZURN.
.3 TYPE 3: ELECTRONIC TRAP PRIMER - TIMER TYPE.
.1 ELECTRONIC ACTIVATED TYPE, BRASS CONSTRUCTION WITH "O" RING SEALS, 12 MM (NPT ½) FEMALE INLET & 12 MM (NPT ½) FEMALE OUTLET DRIP LEG CONNECTION WITH AIR GAP, VIEWING HOLES, AND REMOVABLE FILTER SCREEN. TRAP PRIMER SHALL HAVE NO FLOW FLOW ADJUSTMENT. OPERATING RANGE SHALL BE 138 KPA (20 PSI) TO 861 KPA (125 PSI). OPERATES ON PRE-SET 24 H CLOCK WITH MANUAL OVERRIDE SWITCH/TEST BUTTON. UNIT SHALL HAVE 120 V SOLENOID VALVE AND CALIBRATED MANIFOLD FOR EQUAL WATER DISTRIBUTION.
.2 IDENTIFY ON AS-BUILT DRAWINGS THE LOCATION OF EACH TRAP SEAL PRIMER.
.3 ENSURE ALL TRAP SEAL PRIMERS ARE ACCESSIBLE FOR MAINTENANCE PURPOSES AND ARE CONNECTED TO COLD WATER LINE. TRAP LINE SHALL BE FROM TOP OF COLD WATER LINE AND INCLUDE A SERVICE VALVE. ALL TO BE INSTALLED IN STEEL CABINET AND SERVICEABLE FROM ACCESS DOOR.
.4 ACCEPTABLE MATERIALS: PRECISION PLUMBING PRODUCT MP-500 OR PTS-6, MIFAB MI-300-EWC OR MI-100-10.
.4 NON FREEZE WALL HYDRANTS
.1 RECESSED WITH INTEGRAL VACUUM BREAKER, NPS 3/4 HOSE OUTLET, LOCKING COVER WITH REMOVABLE OPERATING KEY. POLISHED BRONZE FINISH
.2 ACCEPTABLE METERIALS: WATTS, J.R. SMITH & ZURN.

17. NATURAL GAS PIPING:
.1 STEEL PIPE: TO ANSI/ASME A120.1 OR ASTM A53/A53M, SCHEDULE 40, SEAMLESS AS FOLLOWS:
.1 NPS ½ TO 2, SCREWED.
.2 JOINTING:
.1 SCREWED FITTINGS: PULVERIZED LEAD PASTE.
.2 WELDED FITTINGS: TO CSA W47.1.
.3 FLANGE GASKETS: TO ANSI/ASME B16.21 OR ANSI/ASME B16.20.
.3 FITTINGS
.1 STEEL PIPE FITTINGS, SCREWED, FLANGED OR WELDED:
.1 MALLEABLE IRON: SCREWED, BANDED, CLASS 150.
.2 STEEL PIPE FLANGES AND FLANGED FITTINGS: TO ANSI/ASME B16.5.
.3 STEEL BUTT-WELDING FITTINGS.
.4 UNIONS: MALLEABLE IRON, BRASS TO IRON, GROUND SEAT, TO ASTM A47/A47M.
.5 BOLTS AND NUTS: TO ANSI/ASME B18.2.1.
.6 NIPPLES: SCHEDULE 40, TO ASTM A53/ A53M.
.4 VALVES
.1 PROVINCIAL CODE APPROVED, LUBRICATED PLUG OR BALL TYPE.
.5 PRESSURE
.1 (PRV): PROVIDE GAS SERVICE REGULATOR SELF-CONTAINED TO REDUCE PRESSURE TO DESIGN CAPACITY C/W BUILT-IN OR REMOTE RELIEF VALVE. REFER TO DRAWING SCHEDULE FOR CAPACITIES.
.2 EXTEND SAFETY RELIEF VALVE TO ATMOSPHERE; TERMINATE IN SAFE LOCATION.
.3 REFERENCE EQUIPMENT SCHEDULES FOR GAS FLOWS.
.4 ACCEPTABLE MATERIAL: FISHER SERIES 66,SCHLUMBERGER, OR EQUAL.
.6 EMERGENCY
.1 PROVIDE RECESSED STAINLESS STEEL VALVE CABINET 18 GAUGE CONSTRUCTION C/W STAINLESS STEEL DOOR, LATCHING, WITH PIANO HINGES. SIZED TO FIT VALVE IDENTIFY AS "EMERGENCY GAS SHUT-OFF VALVE".
.7 SEISMIC GAS
.1 HORIZONTAL OR VERTICAL EARTHQUAKE SENSITIVE GAS SHUT-OFF VALVE CONSISTING OF SWING CHECK VALVE ARRANGEMENT, WITH AN ACCELERATION SENSITIVE TRIGGERING MECHANISM. THE TRIP MECHANISM CONSISTING OF A STEEL BALL VALVE RESTING ON A TAPERED CUP-SHAPED SUPPORT SOFFIT SEAT CONSTRUCTION FOR POSITIVE SEAL. TRIP MECHANISM TO BE FACTORY SET & SEALED. SIGHT GLASS TO INDICATE OPEN OR CLOSED POSITION. SENSITIVE TO WIDE AMPLITUDE "G" WAVE.
.2 413 KPA (60 PSI) RATE PRESSURE.
.3 SUITABLE TO NATURAL GAS FLUID WITH AMBIENT TEMPERATURE RANGE OF -40°C TO 65°C (-40°F TO 150°F).
.4 FLANGED CONNECTIONS.
.5 SIZE: LINE SIZE AS INDICATED.
.8 IDENTIFICATION: TO CSA B149.1
.9 INSTALLATION: TO CSA B149.1

18. 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.
.7 FLEXIBLE DUCTWORK SHALL BE ALUMINUM WITH TRIPLE LOCK MECHANICAL JOINTS WITH CIRCUMFERENTIAL CORRUGATIONS WITH FACTORY APPLIED, 25mm (1") THICK FLEXIBLE GLASS FIBRE THERMAL INSULATION WITH VAPOUR BARRIER AND VINYL JACKET. MATERIAL SHALL MEET NFPA BULLETIN 90A, PARAGRAPH 113 AND UL-181 CLASS-1. DUCT SHALL WITHSTAND A PRESSURE OF 10" W.C. MAXIMUM LENGTH OF FLEXIBLE DUCTWORK SHALL BE 1.5M (5') FROM DIFFUSER.
.1 ACCEPTABLE MATERIAL: FLEXMASTER T/L.

19. THERMAL INSULATION FOR DUCTING:
.1 FLAME AND SMOKE:
.1 IN ACCORDANCE WITH CAN/ULC S102:
.1 MAXIMUM FLAME SPREAD RATING: 25.
.2 MAXIMUM SMOKE DEVELOPED RATING: 50.
.2 INSULATION:
.1 MINERAL FIBRE AS SPECIFIED HEREIN INCLUDES GLASS FIBRE, ROCK WOOL, SLAG WOOL.
.2 THERMAL CONDUCTIVITY ("K" FACTOR) NOT TO EXCEED SPECIFIED VALUES AT 24°C MEAN TEMPERATURE WHEN TESTED IN ACCORDANCE WITH ASTM C335/C335M.
.3 MINERAL FIBRE BLANKET TO CAN/CGSB-51.11 FACED WITH FACTORY APPLIED VAPOUR RETARDER JACKET TO CGSB 51-GP-52MA.
.1 MINERAL FIBRE: TO CAN/CGSB-51.11.
.2 JACKET: TO CGSB 51-GP-52MA.
.3 MAXIMUM "K" FACTOR: TO CAN/CGSB-51.11.
.4 DENSITY: 24 KG/M3.
.3 ACCESSORIES:
.1 TAPE: SELF-ADHESIVE, ALUMINUM, REINFORCED, 75 MM (3") WIDE MINIMUM.
.3 TIE WIRE: 1.5 MM STAINLESS STEEL.
.4 DUCTWORK INSULATION SCHEDULE:
.1 INSULATION TYPES AND THICKNESSES: CONFORM TO FOLLOWING TABLE:

DUCT TYPE:	THICKNESS:
OUTSIDE AIR TO ERV	50 (2")
EXHAUST AIR WITHIN 3M FROM OUTSIDE	50 (2")
ACOUSTICALLY LINED	NONE

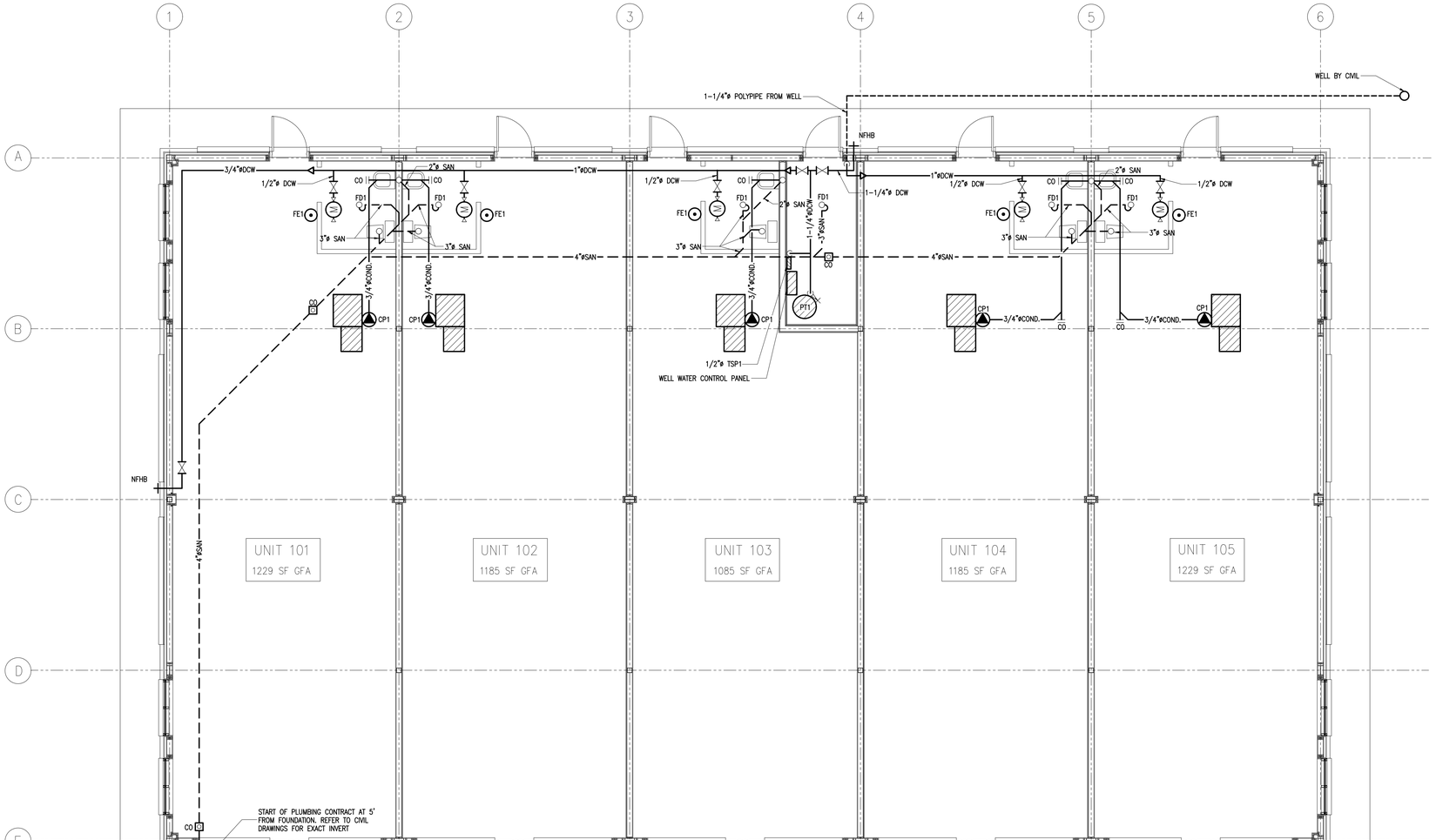
20. ACOUSTIC LINING:
.1 GENERAL:
.1 FIBROUS GLASS OR "TEXTILE" FIBROUS GLASS DUCT LINER: AIR STREAM SIDE FACED WITH MAT FACING.
.2 FLAME SPREAD RATING SHALL NOT EXCEED 25. SMOKE DEVELOPMENT RATING SHALL NOT EXCEED 50 WHEN TESTED IN ACCORDANCE WITH CAN/ULC S102.
.2 FLEXIBLE:
.1 USE ON FLAT SURFACES WHERE INDICATED.
.2 25 MM (1") THICK, TO CAN/CGSB-51.10, FIBROUS GLASS DUCT LINER.
.3 DENSITY: 36 KG/M3 MINIMUM.
.4 THERMAL RESISTANCE TO BE MINIMUM 0.76 M2°C/W FOR 25 MM THICKNESS WHEN TESTED IN ACCORDANCE WITH ASTM C177, AT 24°C MEAN TEMPERATURE.
.3 FASTENERS:
.1 WELD PINS 2.0 MM DIAMETER, LENGTH TO SUIT THICKNESS OF INSULATION. METAL RETAINING CLIPS, 32 MM SQUARE.
.4 JOINT TAPE:
.1 POLY-VINYL TREATED OPEN WEAVE FIBERGLASS MEMBRANE 50 MM WIDE.
.5 SEALER:
.1 MEET REQUIREMENTS OF NFPA (FIRE) 90A AND NFPA (FIRE) 90B.
.2 FLAME SPREAD RATING SHALL NOT EXCEED 25. SMOKE DEVELOPMENT RATING SHALL NOT EXCEED 50. TEMPERATURE RANGE MINUS 68°C TO PLUS 93°C.
.6 EDGES:
.1 PROTECT LEADING AND TRAILING EDGES OF EACH DUCT SECTIONS WITH SHEET METAL NOSING TO 25MM OVERLAP AND FASTENED TO DUCT.

21. DAMPERS - BALANCING:
.1 INSTALLATION:
.1 DAMPERS ARE TO BE LOCATED IN EACH SUPPLY AIR BRANCH DUCT.
.2 EACH GRILLE, REGISTER AND DIFFUSER CONNECTION TO HAVE BALANCING DAMPER LOCATED AS CLOSE AS POSSIBLE TO MAIN DUCTS.
.2 SINGLE BLADE DAMPERS:
.1 OF SAME MATERIAL AS DUCT, BUT ONE SHEET METAL THICKNESS HEAVIER. V-GROOVE STIFFENED.
.2 SIZE AND CONFIGURATION TO RECOMMENDATIONS OF SMACNA, EXCEPT MAXIMUM HEIGHT 100MM.
.3 LOCKING WITH SHAFT EXTENSION TO ACCOMMODATE INSULATION THICKNESS.
.4 INSIDE AND OUTSIDE NYLON OR BRONZE END BEARINGS.
.5 CHANNEL FRAME OF SAME MATERIAL AS ADJACENT DUCT, COMPLETE WITH ANGLE STOP.

22. DUCT ACCESSORIES:
.1 FLEXIBLE CONNECTIONS:
.1 FRAME: ALUMINUM METAL FRAME 24 GAUGE THICK WITH FABRIC CLENCHED BY MEANS OF DOUBLE LOCKED SEAMS.
.2 MATERIAL:
.1 FIRE RESISTANT, SELF EXTINGUISHING, NEOPRENE COATED GLASS FABRIC, TEMPERATURE RATED AT -40°F TO 200°F, DENSITY OF 0.25 PSF.
.3 APPLICATION: ON INLET AND OUTLET OF ALL FANS, AND ANYWHERE ELSE INDICATED ON DRAWINGS.
.2 ACCESS DOORS:
.1 SUPPLY & INSTALL AS NECESSARY TO GAIN ACCESS TO ALL CONCEALED MECHANICAL EQUIPMENT.
.2 SIZES: FOR BODY ENTRY 24"x24", FOR HAND ENTRY 12"x12"
.3 ROUNDED SAFETY CORNERS, CONCEALED HINGES, SCREWDRIVER LATCH, ANCHOR STRAPS, ABLE TO OPEN 180 DEGREES.
.4 MATERIAL SHALL BE PRIME COATED STEEL UNLESS OTHERWISE NOTED.

23. BACKDRAFT DAMPER:
.1 MULTI-LEAF,PARALLEL BLADE TYPE.
.2 EXTRUDED ALUMINUM INTERLOCKING BLADES, VIBRATION FREE
.3 ACCEPTABLE MATERIAL: TAMCO, NAILOR OR EQUAL

24. FANS:
.1 GENERAL:
.1 STANDARD OF RATING:
.1 AMCA 201 FOR FAN APPLICATION.
.2 AMCA 3023 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

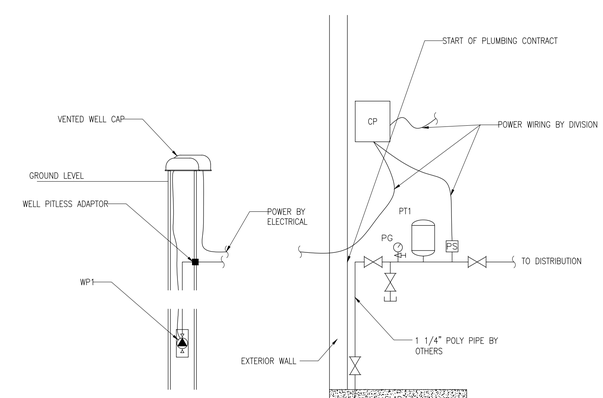


1 / M3 PLUMBING & FIRE PROTECTION

3/16"=1'0"

DESCRITION OF WORK

1. PROVIDE SAN, DCW AND DHW PIPING AS INDICATED C/W VALVES, METERS AND ASSOCIATED ACCESORIES. SAN ROUGH INS SHALL BE TEMPORARY CAPPED AT THE FLOOR, FUTURE WATER CLOSETS AND LAVATORIES BY OTHERS
2. PROVIDE NEW TRAP SEAL PRIMER C/W ASSOCIATED ACCESSORIES AND PIPING TO FLOOR DRAINS
3. PROVIDE FIRE EXTINGUISHER AS INDICATED.
4. PROVIDE NEW WELL PUMP SYSTEM AS INDICATED, C/W PITLESS ADAPTER, CONTROLS AND ASSOCIATED ACCESSORIES. POLY WELL PIPE FROM WELL TO MECHANICAL ROOM PROVIDED BY GENERAL CONTRACTOR.
5. PROVIDE NEW CONDENSATE PUMP C/W PIPING TO FURNACE HEAT EXCHANGER AND EVAPORATOR CONDENSATE DRAINS, TEMPORARILY PIPE TO NEARBY FLOOR DRAIN. FINAL CONNECTION TO LAVATORY DRAIN SHALL BE BY THE TENANT.



2 / M3 SCHEMATIC WELL PUMP

NTS

Client

DATE	REVISION	REF
2019-06-18	ISSUED FOR SITE PLAN	2
2018-12-05	ISSUED FOR TENDER	1
2018-11-02	ISSUED FOR PERMIT	0
2018-10-19	ISSUED FOR COORDINATION	–
2018-09-28	ISSUED FOR 66% REVIEW	–

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Project north
Nord du projet

Seal/Sceau

LICENSED PROFESSIONAL ENGINEER — B. E. PERUSSE — June 13/19 — PROVINCE OF ONTARIO

Project/Projet

VILLAGE CENTRE PLACE
NEW RETAIL BUILDING
6075 BANK STREET, GREELY, ON

Drawing title/Titre du dessin

MECHANICAL - PLUMBING AND FIRE PROTECTION

Scale / Échelle	AS NOTED	Project no./No. du projet	2018-509
Design by / Conçu par	J. TROTTIER	Drawing/Dessin	M3
Drawn by / Dessiné par	J. TROTTIER		
Reviewed by / Examiné par	E. PERUSSE		OF 5
Date / Date	DECEMBER 2018	Revision no:	0
		Acad file/Fichier:	–

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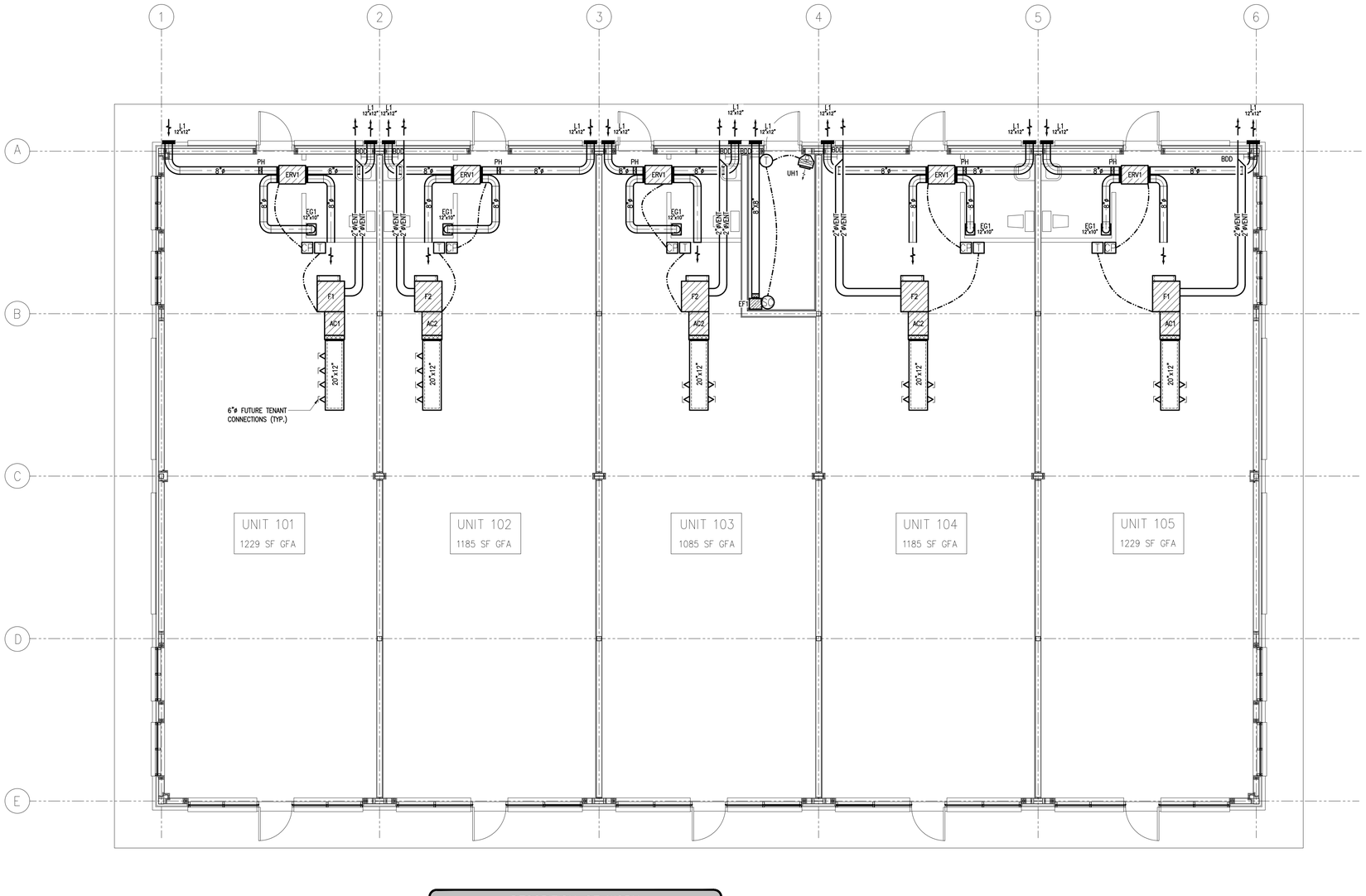
PLOTDATE: Jun 18, 2019 - 3:36pm



1 / M4 HVAC
3/16"=1'0"

DESCRITION OF WORK

1. PROVIDE FURNACE, AC, AND ERV C/W ASSOCIATED DUCTWORK, CONTROLS AND ACCESSORIES AS INDICATED. DIGITAL PROGRAMMABLE THERMOSTAT SHALL ENABLE HEATING AND COOLING TO MAINTAIN SPACE TEMPERATURE. ERV SHALL BE CONTROLLED INDIVIDUALLY VIA FACTORY SUPPLIED CONTROLLER ON ADJUSTABLE SCHEDULE. FUTURE WASHROOM EXHAUST, DUCT DISTRIBUTION & DIFFUSERS BY TENANT.

2. PROVIDE EXHAUST FAN AS INDICATED C/W ASSOCIATED DUCTWORK & ACCESSORIES. FANS AND UNIT HEATER SHALL OPERATE ON LINE VOLTAGE HEATING/COOLING THERMOSTAT. UNIT HEATER, AND WIRING SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR.

3. PROVIDE NEW WALL LOUVERS AS SHOWN, C/W BACKDRAFT DAMPERS. THERMALLY INSULATE OUTDOOR AIR DUCT. THERMALLY INSULATE EXHAUST DUCT WITHIN 10' OF EXTERIOR PENETRATION.

4. NEW PROGRAMMABLE FURNACE THERMOSTAT TO ENABLE HEATING & COOLING CYCLES TO MAINTAIN SPACE TEMPERATURE. ERV TO BE CONTROLLED BY INDIVIDUAL CONTROLLER BASED ON ADJUSTABLE SCHEDULE BY CONTROLLER. TEMPORARILY SUPPORT CONTROLLER AT ERV.

5. PROVIDE FURNACE EXHAUST/INTAKE PIPING AS INDICATED, C/W CONCENTRIC WALL TERMINATION KIT. INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS & GAS CODE.

Client

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2018-12-05	ISSUED FOR TENDER	1
2018-11-02	ISSUED FOR PERMIT	0
2018-10-19	ISSUED FOR COORDINATION	–
2018-09-28	ISSUED FOR 66% REVIEW	–

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Project north
Nord du projet

Seal/Sceau

LICENSED PROFESSIONAL ENGINEER
E. PERUSSE
June 13/19
PROVINCE OF ONTARIO

Project/Projet

VILLAGE CENTRE PLACE
NEW RETAIL BUILDING
6075 BANK STREET, GREELY, ON

Drawing title/Titre du dessin

MECHANICAL - HVAC

Scale / Échelle	AS NOTED	Project no./No. du projet	2018-509
Design by / Conçu par	J. TROTTIER	Drawing/Dessin	M4
Drawn by / Dessiné par	J. TROTTIER		
Reviewed by / Examiné par	E. PERUSSE		OF 5
Date / Date	DECEMBER 2018	Revision no: 0	Acad file/Fichier: –

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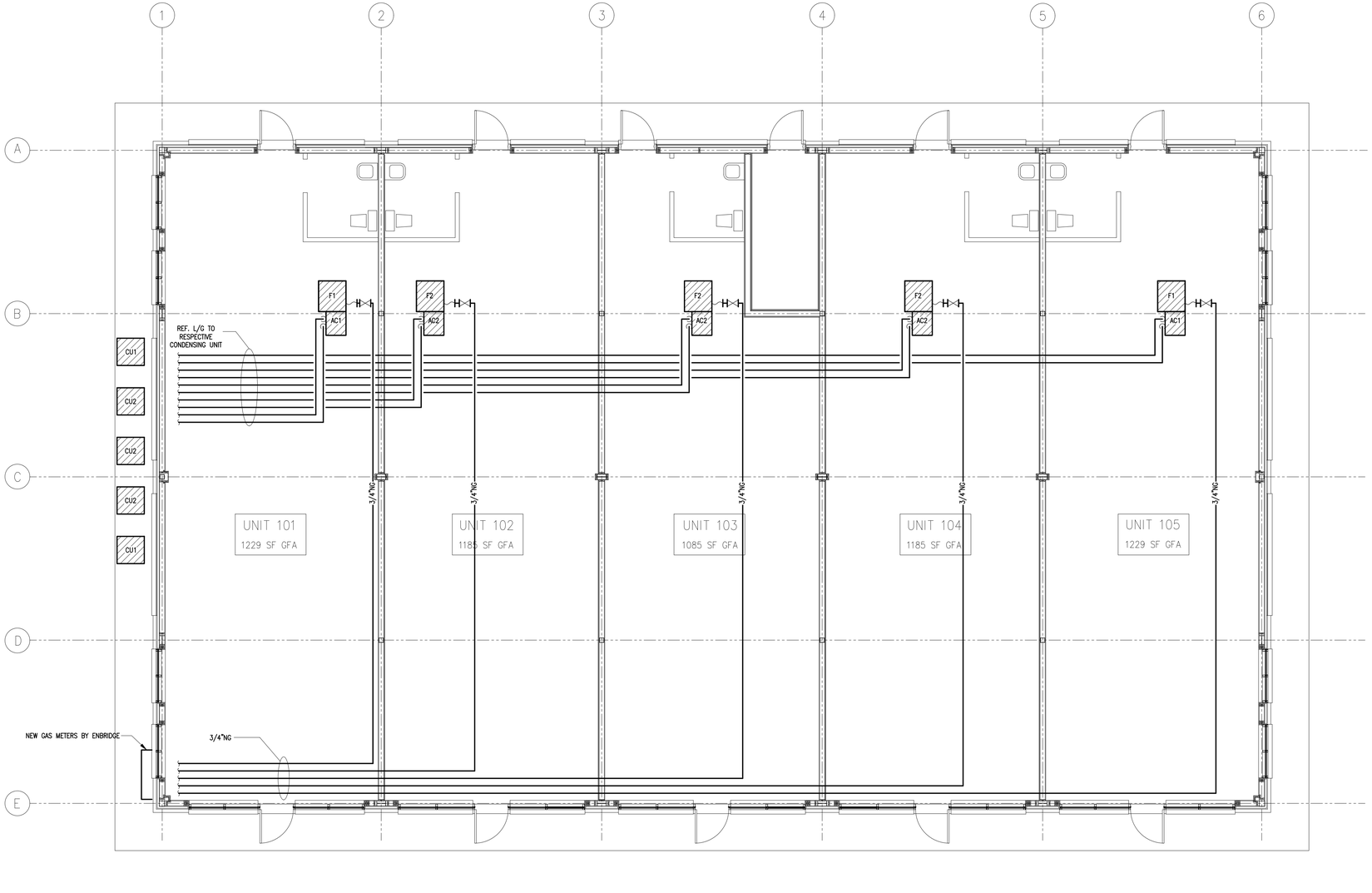
PLOTDATE: Jun 18, 2019 - 3:36pm



1 / M5 MECHANICAL - UTILITIES NEW WORK

3/16"=1'0"

DESCRITION OF WORK

1. PROVIDE REFRIGERANT SUPPLY & RETURN PIPING C/W ASSOCIATED ACCESSORIES BETWEEN CONDENSING UNIT AND EVAPORATOR AS INDICATED.
2. PROVIDE NEW NATURAL GAS SERVICE TO NEW FURNACES AS INDICATED C/W INDIVIDUAL REGULATOR ASSEMBLIES, DISTRIBUTION PIPING, AND ASSOCIATED ACCESSORIES. CALIBRATE FOR 240 MBH.

Client

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Project north / Nord du projet

Seal/Sceau

LICENSED PROFESSIONAL ENGINEER — E. PERUSSE — June 13/19 — PROVINCE OF ONTARIO

Project/Projet

VILLAGE CENTRE PLACE
NEW RETAIL BUILDING
6075 BANK STREET, GREELY, ON

Drawing title/Titre du dessin

MECHANICAL - UTILITIES

Scale / Échelle	AS NOTED	Project no./No. du projet	2018-509
Design by / Conçu par	J. TROTTIER	Drawing/Dessin	M5
Drawn by / Dessiné par	J. TROTTIER		OF 5
Reviewed by / Examiné par	E. PERUSSE		
Date / Date	DECEMBER 2018	Revision no: 0	Acad file/Fichier: –

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