MECHANICAL NOTES

MECHANICAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS FOR THIS PROJECT.

1 GENERAL:

.1 CONFORM WITH APPLICABLE REQUIREMENTS OF THE MINISTRY OF LABOUR, AND THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.

.2 DO COMPLETE INSTALLATION IN ACCORDANCE WITH THE FOLLOWING:
- .1 ONTARIO BUILDING CODE (OBC);
- .2 NATURAL GAS AND PROPANE INSTALLATION CODE (GAS CODE);
- .3 ASHRAE;
- .4 SMACNA;
- .5 NFPA;
- .6 ALL OTHER RELEVANT CODES AND STANDARDS, AS APPLICABLE.

.3 OBTAIN ALL PERMITS REQUIRED FOR THE INSTALLATION OF MECHANICAL TRADES WORK, ARRANGE FOR INSPECTIONS AND TESTS, AND PAY ALL FEES AND COSTS FOR THE PERMITS, INSPECTIONS AND FEES. OBTAIN PERMITS IMMEDIATELY AFTER NOTIFICATION OF AWARD OF CONTRACT.

.4 PROVIDE DIGITAL AND HARD COPY OF COMPLETE OPERATING AND MAINTENANCE INSTRUCTIONS FOR EQUIPMENT FURNISHED UNDER THIS CONTRACT. BIND INSTRUCTIONS IN 3-RING BINDERS. INCLUDE THE FOLLOWING:
- .1 SCHEMATIC DIAGRAM OF ELECTRICAL SYSTEMS.
- .2 CONTROL SHOP DRAWINGS AND OPERATING SEQUENCE INCLUDING WIRING OF COMPONENTS.
- .3 WIRING DIAGRAM OF CONTROL PANELS.
- .4 OPERATING INSTRUCTIONS, INCLUDING START-UP AND SHUT-DOWN PROCEDURE.
- .5 MAINTENANCE INSTRUCTIONS INCLUDING PREVENTIVE MAINTENANCE INSTRUCTIONS FOR COMPONENTS OF THE EQUIPMENT.
- .6 COMPLETE PARTS LIST OF ASSEMBLIES AND THEIR COMPONENT PARTS, SHOWING MANUFACTURER'S NAME, CATALOGUE NUMBER, AND NEAREST REPLACEMENT SOURCE.
- .7 LIST OF RECOMMENDED SPARE PARTS AND QUANTITY OF EACH ITEM TO BE STOCKED.
- .8 MANUFACTURERS' WARRANTIES AND GUARANTEES.

.5 CLEAN ALL MECHANICAL SYSTEMS AT PROJECT COMPLETION.

.6 COMPLETE AS-BUILT DRAWINGS SHOWING ALL CHANGES AS WORK PROGRESSES.

2 CONTRACTOR QUALIFICATIONS:

.1 ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE "TRADE QUALIFICATION AND APPRENTICESHIP ACT" AND REGULATIONS, BY PERSONS WHO HOLD THE FOLLOWING CERTIFICATES OF QUALIFICATION (AS APPLICABLE):
- .1 PLUMBER;
- .2 REFRIGERATION & AIR CONDITIONING SYSTEMS MECHANIC;
- .3 SHEET METAL WORKER;
- .4 SPRINKLER & FIRE PROTECTION INSTALLER.

.2 ALL FUELS-RELATED WORK TO BE CARRIED OUT IN ACCORDANCE WITH TSSA REQUIREMENTS AND ONTARIO REGULATION 215/01, "FUEL INDUSTRY CERTIFICATES" BY PERSONS WHO HOLD THE APPROPRIATE CERTIFICATES FOR THE WORK BEING PERFORMED.

3 EXISTING FACILITIES AND DEMOLITION:

.1 LOCATE AND PROTECT ALL EXISTING EXTERIOR SITE SERVICES.

.2 RETAIN AND PROTECT ALL EXISTING INTERIOR SERVICES AND BUILDING FABRIC. MAKE GOOD ANY AND ALL DAMAGE RESULTING FROM THIS WORK.

.3 CONNECTIONS TO EXISTING SERVICES SHALL BE COORDINATED WITH THE OWNER.

.4 EXECUTE WORK WITH LEAST POSSIBLE INTERFERENCE OR DISTURBANCE TO NORMAL USE OF THE EXISTING BUILDING.

.5 EXISTING SANITARY PIPING:
- .1 PERFORM A CAMERA INSPECTION OF THE EXISTING SANITARY SERVICE TO CONFIRM EXISTING SANITARY PIPE SIZE, LOCATION AND CONDITION. REPORT ANY PIPE BLOCKAGES, INADEQUATE SLOPES, LOW SPOTS, AND POOR CONDITION TO ENGINEER, FOR COMMENT AND DIRECTION.
- .2 FLOOR CUTTING:
  - .1 CONDUCT THERMAL IMAGING OF THE FLOOR IN ALL AREAS OF FLOOR CUTTING AND REMOVAL, TO LOCATE BURIED ELECTRICAL SERVICES (IF ANY).
  - .2 CAREFULLY SAWCUT FLOOR TO PERMIT INSTALLATION OF NEW SANITARY PIPING.
  - .3 REINSTATE FLOOR TO ORIGINAL CONDITION, FOLLOWING INSTALLATION OF NEW PLUMBING.

.6 CUTTING AND PATCHING:
- .1 EXECUTE CUTTING, FITTING AND PATCHING REQUIRED TO MAKE THE WORK FIT PROPERLY TOGETHER. CUT AND PATCH FOR PROCESS, MECHANICAL AND ELECTRICAL WORK.
- .2 COORDINATE WORK WITH OTHER TRADES SO THAT THERE IS A MINIMUM OF CUTTING, FITTING AND PATCHING.
- .3 DRILLING, CUTTING, FITTING AND PATCHING AND MAKING GOOD WHERE NECESSARY DUE TO FAILURE TO DELIVER ITEMS TO BE BUILT IN TIME OR INSTALLATION IN WRONG LOCATION, SHALL BE EXECUTED AS DIRECTED AT NO COST TO THE OWNER.
- .4 DRILLING AND CUTTING OF LOAD BEARING STRUCTURAL MEMBERS SHALL BE DONE ON PRIOR EXPRESS WRITTEN PERMISSION OF THE ENGINEER FOR EACH INSTANCE.
- .5 CUT HOLES ACCURATELY, WITH SMOOTH, TRUE, CLEAN EDGES. FIT UNITS TO TOLERANCES TO BEST STANDARD PRACTICE FOR APPLICABLE WORK.
- .6 HOLES IN BLOCK AND CONCRETE WORK SHALL BE SAWCUT OR CORE-DRILLED, AND SHALL NOT BE MADE WITH A HAMMER GUN.
- .7 PATCHED WORK SHALL BE INVISIBLE, SIZE HOLES AND OPENINGS FOR PIPES SO AS TO ALLOW FOR EXPANSION AND CONTRACTION OF SUCH PIPES.

.7 DESIGNATED SUBSTANCES:
- .1 DESIGNATED SUBSTANCES SHALL BE TREATED IN ACCORDANCE WITH THE REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS.
- .2 SHOULD ANY DESIGNATED SUBSTANCES BE ENCOUNTERED IN THE AREA OF CONSTRUCTION, ALL WORK SHALL STOP IMMEDIATELY, AND THE OWNER AND ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
- .3 IF APPLICABLE, ASBESTOS REMOVAL SHALL BE COMPLETED IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT AND ONTARIO REGULATION 278 "DESIGNATED SUBSTANCE – ASBESTOS ON CONSTRUCTION PROJECTS AND IN BUILDINGS AND REPAIR OPERATIONS".

4 FIXTURES AND EQUIPMENT:

.1 PROVIDE SHOP DRAWINGS AND PRODUCT DATA FOR ALL MECHANICAL FIXTURES AND EQUIPMENT FOR APPROVAL, PRIOR TO PROCUREMENT.

.2 INSTALL ALL MECHANICAL FIXTURES AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

.3 EQUIPMENT AND MATERIAL TO BE CANADIAN GAS ASSOCIATION (CGA) CERTIFIED. WHERE THERE IS NO ALTERNATIVE TO SUPPLYING EQUIPMENT WHICH IS NOT CGA CERTIFIED, OBTAIN TSSA FIELD APPROVAL.

.4 LOCATE ALL EQUIPMENT WITH CLEARANCES, AS REQUIRED BY THE MANUFACTURER, THE FUEL CODES, AND ALL OTHER CODES AND REGULATIONS, INCLUDING THE FOLLOWING CLEARANCES:
- .1 TO PERMIT PROPER EQUIPMENT OPERATION;
- .2 TO PERMIT SUFFICIENT AIRFLOW AROUND EQUIPMENT;
- .3 FOR EQUIPMENT SERVICE;

.4 SUFFICIENT DISTANCE FROM COMBUSTIBLE MATERIAL;
- .5 WITH SUFFICIENT VENT CLEARANCES;
- .6 SUFFICIENT DISTANCE FROM ROOF EDGES OR OTHER HAZARDS.

5 EQUIPMENT SUPPLIED BY OTHERS:

.1 GENERAL CONTRACTOR SHALL ASSUME FULL REPONSIBILITY FOR COORDINATING MECHANICAL SERVICES AND CONNECTIONS FOR ALL EQUIPMENT, SUPPLIED BY MECHANICAL OR ANY OTHER TRADES.

.2 MAKE ALL MECHANICAL SERVICE CONNECTIONS TO EQUIPMENT SUPPLIED BY OTHERS.

.3 CONFIRM ALL SERVICE CONNECTIONS WITH MANUFACTURER AND SUPPLIER, PRIOR TO INSTALLATION. THIS SHALL INCLUDE ALL CONNECTION SIZES, LOCATIONS AND DETAILS, AND SHALL TAKE INTO ACCOUNT EQUIPMENT CLEARANCES AND INSTALLATION REQUIREMENTS.

6 PIPING AND ESCUTCHEONS:

.1 PROVIDE DIELECTRIC UNIONS AT ALL PIPING LOCATIONS WHERE DISSIMILAR METALS ARE JOINED.

.2 PROVIDE ESCUTCHEONS ON ALL PIPES PASSING THROUGH WALLS, PARTITIONS, FLOORS AND CEILINGS, CHROME, NICKEL PLATED BRASS OR TYPE 302 STAINLESS STEEL.

7 ACCESS DOORS:

.1 SUPPLY ACCESS DOORS, AS REQUIRED IN DUCTWORK AND WALL/CEILING ASSEMBLIES, TO ALL CONCEALED MECHANICAL EQUIPMENT AND OPERATING DEVICES. ACCESS DOORS IN WALL/CEILING ASSEMBLIES TO BE INSTALLED BY OTHER TRADES.

.2 ACCESS DOORS SHALL BE FIRE-RATED TYPE, WHERE USED IN FIRE-RATED ASSEMBLIES, AND SHALL MATCH THE RATING OF THE ASSEMBLY.

8 PIPE INSULATION:

.1 INSTALL IN ACCORDANCE WITH THERMAL INSULATION ASSOCIATION OF CANADA (TIAC) NATIONAL STANDARDS.

.2 MAX. FLAME SPREAD RATING: 25.

.3 MAX. SMOKE DEVELOPED RATING: 50.

.4 DOMESTIC COLD WATER (DCW):
- .1 1" RIGID MOULDED MINERAL FIBRE WITH VAPOUR RETARDER JACKET.
- .2 INSULATE ALL PIPING IN FLOORS, WALLS AND CEILINGS, TO POINT OF FIXTURE CONNECTIONS.

.5 DOMESTIC HOT WATER (DHW):
- .1 1" RIGID MOULDED MINERAL FIBRE FOR PIPING UP TO 1-1/4" SIZE
- .2 1-1/2" RIGID MOULDED MINERAL FIBRE FOR PIPING 1-1/2" TO 3" SIZE.
- .3 INSULATE ALL PIPING IN FLOORS, WALLS AND CEILINGS, TO POINT OF FIXTURE CONNECTIONS.

.6 ROOF DRAINS:
- .1 1" RIGID MOULDED MINERAL FIBRE WITH VAPOUR RETARDER JACKET.
- .2 INSULATE ALL STORM PIPING ABOVE GROUND.

.7 OUTER JACKET:
- .1 CONCEALED LOCATIONS: ALL SERVICE JACKET.
- .2 EXPOSED LOCATIONS: PVC JACKET.
- .3 MECHANICAL/SERVICE ROOMS: PVC JACKET.

9 WATER SERVICE AND WATER SUPPLY PIPING:

.1 ABOVE GROUND: COPPER TUBE, HARD DRAWN, TYPE L. CAN. OR US MANUFACTURE, INCLUDING FITTINGS. LEAD FREE SOLDER.

.2 WATER SUPPLY PIPING IS SHOWN SCHEMATICALLY. ALL PIPING SHALL BE CONCEALED UNLESS OTHERWISE NOTED.

.3 INSTALL TUBING CLOSE TO BUILDING STRUCTURE TO MINIMIZE FURRING, CONSERVE HEADROOM AND SPACE. GROUP EXPOSED PIPING AND RUN PARALLEL TO WALLS.

.4 ISOLATE ALL EQUIPMENT, FIXTURES AND BRANCHES WITH VALVES.

.5 TEST WATER SYSTEM AT 1½ TIMES SYSTEM OPERATING PRESSURE OR MINIMUM 860 KPA, WHICHEVER IS GREATER. TEST PRESSURE AND TIMEFRAME SHALL BE AS REQUIRED BY OBC 7.3.7.2.

.6 FLUSH OUT, DISINFECT AND RINSE SYSTEM, PRIOR TO CONSTRUCTION COMPLETION.

.7 TRAP SEAL PRIMERS AND ACCESS TO THEM, SHALL BE LOCATED IN THE WASHROOM OR AREA THAT THEY SERVE.

.8 SUPPLY AND INSTALL WATER HAMMER ARRESTORS AT THE MIDPOINT AND END OF RUNS OF WATER SUPPLY PIPING AS REQUIRED BY OBC 7.6.1.14.

10 DRAINAGE, WASTE AND VENT PIPING:

.1 BELOW GROUND:
- .1 PVC DWV, TYPE SDR35.

.2 ABOVE GROUND:
- .1 PVC DWV SOLID WALL SCHEDULE 40, CERTIFIED TO CAN/CSA STANDARD B181.2, FOR NONCOMBUSTIBLE CONSTRUCTION (FLAME-SPREAD RATING NOT MORE THAN 25 PER CAN/ULC-S102.2).
- .2 PVC DWV SOLID WALL SCHEDULE 40, CERTIFIED TO CAN/CSA STANDARD B181.2, FOR NONCOMBUSTIBLE CONSTRUCTION (FLAME-SPREAD RATING NOT MORE THAN 25 AND SMOKE DEVELOPED CLASSIFICATION NOT MORE THAN 50 PER CAN/ULC-S102.2 – PLENUMS).

.3 PROVIDE CLEANOUTS AS REQUIRED BY THE ONTARIO BUILDING CODE.

.4 VENT COMPLETE PLUMBING SYSTEM IN ACCORDANCE WITH THE ONTARIO BUILDING CODE.

11 NATURAL GAS PIPING:

.1 STEEL PIPE, SCHEDULE 40, SEAMLESS, SCREWED FITTINGS.

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

.3 ALL NATURAL GAS PIPING AND FITTINGS SHALL BE:
- .1 CLEANED AFTER ASSEMBLY;
- .2 PAINTED WITH ONE BASE LAYER OF METAL PRIMER;
- .3 PAINTED WITH ONE TOP COAT OF EXTERIOR ENAMEL PAINT;
- .4 COLOUR ON EXTERIOR WALL – TO MATCH WALL
- .5 COLOUR ON ROOF AND INTERIOR OF BUILING - YELLOW.

.4 TEST SYSTEM IN ACCORDANCE WITH NATURAL GAS AND PROPANE INSTALLATION CODE.

12 DUCTWORK:

.1 RECTANGULAR DUCT:
- .1 RIGID GALVANIZED STEEL, LOCK FORMING QUALITY TO ASTM A653/A653M
- .2 THICKNESS, FABRICATION, REINFORCEMENT AND SUPPORT/ATTACHMENT TO ASHRAE OR SMACNA.

.2 ROUND DUCT:
- .1 RIGID GALVANIZED STEEL, LOCK FORMING QUALITY TO ASTM A653/A653M
- .2 THICKNESS, FABRICATION, REINFORCEMENT AND SUPPORT/ATTACHMENT TO ASHRAE OR SMACNA.

.3 SEAL CLASSIFICATION:
- .1 CLASS A: LONGITUDINAL SEAMS, TRANSVERSE JOINTS, DUCT WALL PENETRATIONS AND CONNECTIONS MADE AIRTIGHT WITH SEALANT AND TAPE.

.4 FITTINGS
- .1 FABRICATION: TO SMACNA.
- .2 RADIUSED ELBOWS.
  - .1 RECTANGULAR: STANDARD WITH CENTRELINE RADIUS 1.5 TIMES DUCT DIMENSION, WITH SINGLE THICKNESS TURNING VANES.
  - .2 ROUND: FIVE PIECE WITH CENTRELINE RADIUS 1.5 TIMES DIAMETER.
- .3 MITRED ELBOWS, RECTANGULAR: WITH DOUBLE THICKNESS TURNING VANES.

.5 BRANCHES:
- .1 RECTANGULAR MAIN AND BRANCH: WITH RADIUS ON BRANCH 1.5 TIMES WIDTH OF DUCT 45 DEGREES ENTRY ON BRANCH.
- .2 ROUND MAIN AND BRANCH: ENTER MAIN DUCT AT 45 DEGREES WITH CONICAL CONNECTION.
- .3 PROVIDE VOLUME CONTROL DAMPER IN BRANCH DUCT NEAR CONNECTION TO MAIN DUCT.

.6 TRANSITIONS:
- .1 DIVERGING: 20 DEGREES MAXIMUM INCLUDED ANGLE.
- .2 CONVERGING: 30 DEGREES MAXIMUM INCLUDED ANGLE.

.7 FIRE STOPPING
- .1 RETAINING ANGLES AROUND DUCT, ON BOTH SIDES OF FIRE SEPARATION IN ACCORDANCE WITH SECTION.
- .2 FIRE STOPPING MATERIAL AND INSTALLATION MUST NOT DISTORT DUCT.

.8 DAMPERS:
- .1 MANUFACTURE TO SMACNA STANDARDS.
- .2 SINGLE BLADE DAMPERS:
  - .1 FABRICATE FROM SAME MATERIAL AS DUCT, BUT ONE SHEET METAL THICKNESS HEAVIER. V-GROOVE STIFFENED.
  - .2 SIZE AND CONFIGURATION TO RECOMMENDATIONS OF SMACNA.
  - .3 LOCKING QUADRANT (WITH SHAFT EXTENSION TO ACCOMMODATE INSULATION THICKNESS, IF REQUIRED).
  - .4 INSIDE AND OUTSIDE NYLON END BEARINGS.
  - .5 CHANNEL FRAME OF SAME MATERIAL AS ADJACENT DUCT, COMPLETE WITH ANGLE STOP.

.9 DUCT LEAKAGE: IN ACCORDANCE WITH SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL.

.10 ALL DUCT AND SEAL MATERIALS TO HAVE A FLAME SPREAD RATING OF LESS THAN 25 AND A SMOKE DEVELOPED CLASSIFICATION OF LESS THAN 50.

.11 PROVIDE FLEXIBLE CONNECTIONS AT ALL EQUIPMENT DUCT CONNECTION POINTS.

13 DUCT INSULATION:

.1 REFER TO DRAWING FOR DUCT THAT IS IDENTIFIED TO BE INSULATED.

.2 INSTALL IN ACCORDANCE WITH THERMAL INSULATION ASSOCIATION OF CANADA (TIAC) NATIONAL STANDARDS.

.3 MAX. FLAME SPREAD RATING: 25.

.4 MAX. SMOKE DEVELOPED RATING: 50.

.5 THERMAL INSULATION - RECTANGULAR DUCT:
- .1 1" (R4.3) RIGID MINERAL FIBRE BOARD WITH VAPOUR RETARDER JACKET.
- .2 ALUMINUM JACKET WITH MOISTURE BARRIER.

.6 THERMAL INSULATION - ROUND DUCT:
- .1 1" (R3.1) MINERAL FIBRE BLANKET WITH VAPOUR RETARDER JACKET.
- .2 ALUMINUM JACKET WITH MOISTURE BARRIER.

14 MECHANICAL FIRE PROTECTION:

.1 MECHANICAL CONTRACTOR RESPONSIBILITY:
- .1 REFER TO ARCHITECTURAL DRAWINGS, TO VERIFY LOCATION OF ALL FIRE SEPARATIONS AND FIRE-RATED MEMBRANES.
- .2 PROVIDE DRAWINGS FROM HILTI AND/OR 3M FOR FIRE PROTECTION OF ALL PIPING, DUCT AND MECHANICAL ITEMS PENETRATING OR PASSING THROUGH A FIRE SEPARATION OR FIRE-RATED ASSEMBLY, FOR REVIEW BY ARCHITECT AND ENGINEER,
- .3 ALL PIPING, DUCT AND MECHANICAL ITEMS SHALL BE TIGHTLY FITTED AND SEALED WITH FIRESTOPPING MATERIAL AT ALL FIRE SEPARATIONS AND FIRE-RATED MEMBRANES.

.2 ALL PIPING SHALL BE TIGHTLY FITTED AND SEALED WITH FIRESTOPPING MATERIAL AT ALL FIRE SEPARATIONS AND FIRE-RATED MEMBRANES.

.3 FIRE DAMPERS:
- .1 FIRE DAMPERS SHALL BE CAN/ULC-S112 STANDARD METHOD OF FIRE TEST OF FIRE DAMPER ASSEMBLIES) LISTED AND LABELLED.
- .2 FIRE DAMPERS SHALL BE NFPA 80 (STANDARD FOR FIRE DOORS AND OTHER OPENING PROTECTIVES), NFPA 90A (STANDARD FOR THE INSTALLATION OF AIR-CONDITIONING AND VENTILATING SYSTEMS), AND NFPA 101 (LIFE SAFETY CODE) COMPLIANT.
- .3 DUCTWORK SHALL BE FITTED WITH FIRE DAMPERS AT ALL FIRE SEPARATIONS AND FIRE-RATED MEMBRANES.
- .4 SUPPLY AND INSTALL ACCESS DOORS IN ARCHITECTURAL FINISH (WALL, CEILING OR FLOOR) TO ACCESS DUCT, IN COMMON AREA WHERE POSSIBLE.
- .5 SUPPLY AND INSTALL TIGHTLY-FITTED ACCESS DOOR IN DUCT TO ACCESS, INSPECT AND RESET FIRE DAMPER.
- .6 TYPES:
  - .1 DYNAMIC - FOR USE IN AIR HANDLING SYSTEMS THAT DO NOT SHUTDOWN UPON FIRE ALARM.
- .7 RATING:
  - .1 1-1/2 HR (30MIN TO 2HR FIRE RESISTANCE RATING).

.4 ALL MECHANICAL MATERIALS USED WITHIN CEILING RETURN AIR PLENUMS SHALL HAVE FLAME-SPREAD RATING NOT MORE THAN 25 AND SMOKE DEVELOPED CLASSIFICATION NOT MORE THAN 50 PER CAN/ULC-S102.2.

.5 MOCK-UPS:
- .1 PREPARE MOCK-UPS OF TYPICAL FIRESTOP INSTALLATION OF THE FOLLOWING, FOR REVIEW AND APPROVAL BY THE OWNER, ENGINEER AND MUNICIPAL BUILDING INSPECTOR:
  - .1 SANITARY PIPING – WALL AND CEILING/FLOOR FIRE SEPARATION;
  - .2 STORM PIPING – WALL AND CEILING/FLOOR FIRE SEPARATION;
  - .3 SPRINKLER PIPING – WALL AND CEILING/FLOOR FIRE SEPARATION;
  - .4 DCW AND DHW PIPING – WALL AND CEILING/FLOOR FIRE SEPARATION;
  - .5 FIRE DAMPER INSTALLATION – WALL AND CEILING/FLOOR FIRE SEPARATION.
- .2 ALL FIRESTOP INSTALLATIONS SHALL BE COMPLETED IN ACCORDANCE WITH THE APPROPRIATE PRODUCT INSTALLATION INSTRUCTIONS, AND THE REFERENCED UL/ULC LISTING AND/OR TEST STANDARD.
- .3 SUPPLY A COPY OF THE PRODUCT INSTALLATION INSTRUCTIONS WITH ULC LISTING AND/OR TEST STANDARD REFERENCE, FOR EACH INSTALLATION.
- .4 MOCK-UP MAY REMAIN AS PART OF WORK.

15 SPRINKLER AND STANDPIPE SYSTEM:

.1 SPRINKLER SYSTEM DESIGN AND INSTALLATION SHALL CONFORM TO NFPA 13 – INSTALLATION OF SPRINKLER SYSTEMS.

.2 SYSTEM INSPECTION AND TESTING SHALL CONFORM TO NFPA 25 – INSPECTION TESTING AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS.

.3 ADJUST EXISTING SPRINKLER SYSTEM TO SUIT NEW FLOOR PLAN LAYOUT.

.4 PROVIDE DESIGN, LAYOUT, DRAWINGS AND CALCULATIONS FOR COMPLETE SPRINKLER SYSTEM, SEALED BY PROFESSIONAL ENGINEER IN THE PROVINCE OF ONTARIO.

16 MECHANICAL IDENTIFICATION:

.1 IDENTIFY MECHANICAL EQUIPMENT WITH LAMICOID NAMEPLATES.

.2 LABEL ALL PIPING AT LEAST ONCE IN EVERY ROOM, AND AT NO MORE THAN 25 FT CENTERS.

17 EARTHQUAKE LOAD:

.1 ALL MECHANICAL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE EARTHQUAKE LOAD AND EFFECTS REQUIRED BY THE ONTARIO BUILDING CODE.

.2 MECHANICAL ELEMENTS AND COMPONENTS (EQUIPMENT, PIPES, DUCTS, ETC.), AND THEIR CONNECTIONS TO THE BUILDING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SMACNA/ANSI SEISMIC RESTRAINT MANUAL OR OTHER GUIDELINE REFERENCED IN THE ONTARIO BUILDING CODE.

.3 PROVIDE SHOP DRAWINGS FOR SUPPORT, CONNECTIONS AND SEISMIC RESTRAINT OF ALL MECHANICAL EQUIPMENT, PIPES AND DUCTS, INCLUDING, BUT NOT LIMITED TO:
- .1 ROOFTOP HVAC EQUIPMENT;
- .2 FURNACES, FANCOILS AND HEATING EQUIPMENT;
- .3 CONDENSING UNITS;
- .4 TYPICAL DUCT SUPPORTING SYSTEM;
- .5 TYPICAL SAN, STM, DCW, DHW AND SPRINKLER PIPE SUPPORTING SYSTEM;
- .6 TYPICAL NATURAL GAS PIPE SUPPORTING SYSTEM.

THESE SHOP DRAWINGS SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER IN THE PROVINCE OF ONTARIO, WITH EXPERIENCE IN SEISMIC ENGINEERING.

.4 FOLLOWING PROJECT COMPLETION, SEISMIC ENGINEER SHALL PROVIDE A LETTER OF FINAL SITE REVIEW.

.5 CONTRACTOR SHALL CARRY THE COST OF THE SEISMIC ENGINEERING, INCLUDING SITE REVIEWS, DESIGN AND SHOP DRAWING PREPARATION.

18 EQUIPMENT AND MATERIALS SUPPORT:

.1 ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND RELATED ITEMS SHALL BE SECURELY SUPPORTED, ATTACHED AND FASTENED TO BUILDING STRUCTURE, AND SHALL NOT BE FASTENED TO THE ROOF DECK.

.2 PIPE HANGERS AND SUPPORTS SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH MSS STANDARD SP-58, PIPE HANGERS AND SUPPORTS – MATERIALS, DESIGN, MANUFACTURE, SELECTION, APPLICATION, AND INSTALLATION.

19 COORDINATION:

.1 INFORMATION INVOLVING ACCURATE DIMENSIONING OF THE BUILDING SHALL BE TAKEN FROM SITE BY CONTRACTOR.

.2 DRAWINGS ARE IN DIAGRAMMATIC FORM, INTENDED TO CONVEY THE SCOPE OF WORK AND GENERAL ARRANGEMENT FOR EQUIPMENT. COORDINATE PHYSICAL LOCATION OF ALL EQUIPMENT WITH OTHER TRADES AND ALLOW FOR ANY ADDITIONAL PIPING, DUCTING, FITTINGS, SUPPORTS, ETC., IN ORDER TO AVOID INTERFERENCE AND FACILITATE THE WORK.

.3 CONTRACTOR TO MAKE ANY NECESSARY MODIFICATIONS OR ADDITIONS, WITHOUT CHARGE, TO ACCOMMODATE SITE CONDITIONS AND COORDINATION.

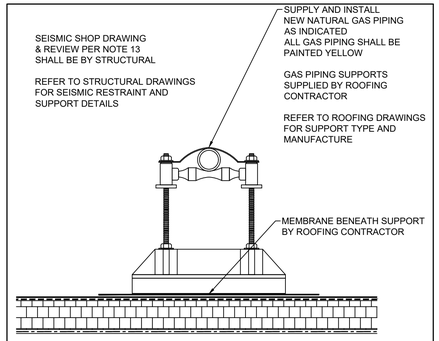
.4 COORDINATE ALL MECHANICAL EQUIPMENT WIRING, INCLUDING LOW VOLTAGE CONTROL WIRING, WITH ELECTRICAL TRADES.

20 START-UP, COMMISSIONING AND TRAINING:

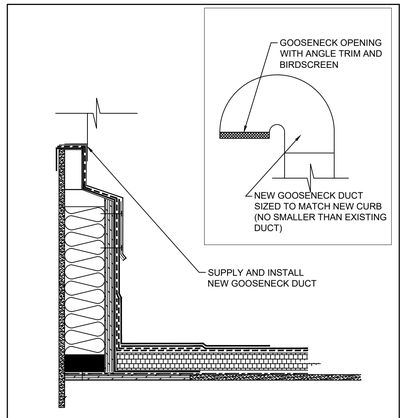
.1 COMMISSIONING:
- .1 START-UP AND COMMISSION THE FOLLOWING SYSTEMS:
  - .1 PLUMBING FIXTURES;
  - .2 HVAC;
  - .3 SPRINKLER.
- .2 PERFORM SYSTEMATIC TESTS, PROCEDURES AND CHECKS ON SYSTEMS, AS FOLLOWS:
  - .1 TO VERIFY OPERATION IN ACCORDANCE WITH CONTRACT DOCUMENTS, DESIGN CRITERIA AND INTENT, AND MANUFACTURER'S REQUIREMENTS;
  - .2 TO ENSURE APPROPRIATE DOCUMENTATION IS PROVIDED;
  - .3 TO EFFECTIVELY TRAIN BUILDING OPERATIONAL STAFF.
- .3 SYSTEMS ARE TO BE OPERATED AT FULL CAPACITY, WITH CORRECTION OF ALL DEFICIENCIES AND ADJUSTMENTS TO MEET OPTIMUM PERFORMANCE.
- .4 PROVIDE WRITTEN REPORT AT END OF COMMISSIONING OUTLINING EQUIPMENT OPERATIONAL CONDITIONS AND PARAMETERS.

.2 TESTING, ADJUSTING AND BALANCING:
- .1 TEST, ADJUST AND BALANCE (TAB) ALL PLUMBING AND HVAC EQUIPMENT AND SYSTEMS; INCLUDING THE FOLLOWING:
  - .1 FURNACES & FANCOIL UNITS;
  - .2 CONDENSING UNITS;
  - .3 HEAT RECOVERY VENTILATORS;
  - .4 ROOFTOP PACKAGED HEAT /COOL UNITS.
- .2 TAB SHALL BE PERFORMED BY A THIRD PARTY TESTING AGENCY, QUALIFIED TO ONE OF THE FOLLOWING:
  - .1 ASSOCIATED AIR BALANCE COUNCIL, (AABC), NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE.
  - .2 NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB), , PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, BALANCING OF ENVIRONMENTAL SYSTEMS.
  - .3 SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA), HVAC TAB HVAC SYSTEMS - TESTING, ADJUSTING AND BALANCING.
- .3 TAB PROCEDURE SHALL BE COMPLETED IN ACCORDANCE WITH ASHRAE STANDARD 111, MEASUREMENT, TESTING, ADJUSTING AND BALANCING OF BUILDING HVAC SYSTEMS.
- .4 PROVIDE DETAILED REPORT AT END OF TAB, IN ACCORDANCE WITH THE REPORTING PROCEDURES OF ASHRAE STANDARD 111.

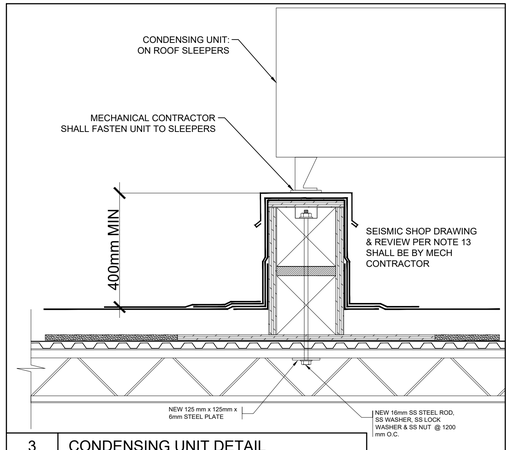
.3 DEMONSTRATION AND TRAINING:
- .1 DEMONSTRATE OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEMS TO OWNER'S PERSONNEL ONE WEEK PRIOR TO DATE OF FINAL INSPECTION
- .2 PRIOR TO DEMONSTRATION AND TRAINING, ENSURE THAT EQUIPMENT HAS BEEN INSPECTED AND PUT INTO OPERATION, INCLUDING COMPLETION OF COMMISSIONING AND TESTING, ADJUSTING, AND BALANCING.
- .3 DEMONSTRATE START-UP, OPERATION, CONTROL, ADJUSTMENT, TROUBLE-SHOOTING, SERVICING, AND MAINTENANCE OF EACH ITEM OF EQUIPMENT.
- .4 INSTRUCT PERSONNEL IN PHASES OF OPERATION AND MAINTENANCE USING OPERATION AND MAINTENANCE MANUALS AS BASIS OF INSTRUCTION. REVIEW CONTENTS OF MANUAL IN DETAIL TO EXPLAIN ASPECTS OF OPERATION AND MAINTENANCE.



1	NATURAL GAS PIPE SUPPORT DETAIL
M001	SCALE: NTS



2	GOOSENECK DETAIL
M001	SCALE: NTS



3	CONDENSING UNIT DETAIL
M001	SCALE: NTS

MORRIS Engineering Ltd.
Brockville, Ontario 613-349-0555

LICENSED PROFESSIONAL ENGINEER 2022-04-18 M. A. MORRIS PROVINCE OF ONTARIO

No.	Date	REVISION
2	2022-04-18	ISSUED FOR TENDER, PERMIT & CONSTRUCTION
1	2022-03-30	FINAL REVIEW
0	2022-03-07	FOR REVIEW

Client: COLBOURNE & KEMBEL ARCHITECTS Kingston Ontario

Project: JOINT ADMIN. FACILITY Renovations & Additions to 2069 Battersea Rd.

Drawing: MECHANICAL Notes & Details

Design:	M.MORRIS
Drawn:	A.M.
Date:	FEB 2022
Project:	607
Scale:	AS NOTED

M001

PLUMBING FIXTURE SCHEDULE

UNIT	DESCRIPTION	PIPE SIZE TRAP (in) (mm)	WASTE (in) (mm)	VENT (in) (mm)	DCW (in) (mm)	DHW (in) (mm)	ACCEPTABLE PRODUCT	NOTES
WC-1	WATER CLOSET - TANK	INT	3"	2"	1/2"	-	WATERCLOSET - AMERICAN STANDARD #2462 (CADET)	PRESSURE ASSISTED, ELONGATED WHITE
			75	50	13	-	SEAT - CENTOCO #820STS	HEAVY DUTY, OPEN FRONT SEAT & COVER, SS HINGE
							OR APPROVED EQUAL	MAX. WATER CONSUMPTION - 6.0 Lpf, 1.6 gpf
								DIM L x W x H - 768 x 521 x 743 mm, 30.25 x 20.5 x 29.25 in
								RIM HEIGHT - 381 mm, 15 in
								FLOOR FLANGE, FLANGE BOLTS & GASKET
								ISOLATING VALVE - BRASS W CHROME FINISH,
								WALL-MOUNTED, SCREWDRIVER STOP
WC-2	WATERCLOSET - TANK	INT	3"	2"	1/2"	-	WATERCLOSET - AMERICAN STANDARD #2467 016 (CADET)	PRESSURE ASSISTED, ELONGATED WHITE
	BARRIER FREE		75	50	13	-	SEAT - CENTOCO #820STS	HEAVY DUTY, OPEN FRONT SEAT & COVER, SS HINGE
							OR APPROVED EQUAL	MAX. WATER CONSUMPTION - 6.0 Lpf, 1.6 gpf
								DIM L x W x H - 768 x 521 x 781 mm, 30.25 x 20.5 x 30.75 in
								RIM HEIGHT - 419 mm, 16.5 in
								SEAT HEIGHT - 430 to 485 mm, 17 to 19 in (OBC 3.8.3.9)
								FLOOR FLANGE, FLANGE BOLTS & GASKET
								ISOLATING VALVE - BRASS W CHROME FINISH,
								WALL-MOUNTED, SCREWDRIVER STOP
LA-1	LAVATORY	1-1/2	1-1/2"	1-1/4"	1/2"	1/2"	AMERICAN STANDARD	WHITE, POP-UP DRAIN
	WALL HUNG	38	38	32	13	13	#0321 (DECLYN) LAVATORY	OVERALL DIM - W x FTB x D - 470 x 432 x 197mm, 18.5 x 17 x 7.75 in
							#7385 SINGLE LEVER FAUCET	BOWL DIM - W x FTB x D - 362 x 273 x 152mm, 14.25 x 10.75 x 6 in
							WATTS #CA-411 FLOOR-MOUNTED, CONCEALED ARM	MAX. WATER CONSUMPTION - TO OBC
							LAVATORY CARRIER	
							PORCELAIN SHROUD/KNEE CONTACT GUARD	
							OR APPROVED EQUAL	
LA-2	LAVATORY	1-1/2"	1-1/2"	1-1/4"	1/2"	1/2"	AMERICAN STANDARD	WHITE, POP-UP DRAIN
	WALL HUNG	38	38	32	13	13	#0954 (MURRO) LAVATORY W EVERCLEAN	OVERALL DIM - W x FTB x D - 540 x 520 x 406mm, 21.25 x 20.5 x 16 in
	BARRIER FREE						#7385 SINGLE LEVER FAUCET	BOWL DIM - W x FTB x D - 394 x 343 x 127mm, 15.5 x 13.5 x 5 in
							WATTS #CA-411 FLOOR-MOUNTED, CONCEALED ARM	MAX. WATER CONSUMPTION - TO OBC
							LAVATORY CARRIER	INSTALLATION DIMENSIONS - TO OBC & ARCH DWGS
							P-TRAP - 1-1/4 (32) TRAP, CHROME PLATED BRASS	
							ISOLATING VALVE - BRASS W CHROME FINISH,	
							WALL-MOUNTED, SCREWDRIVER STOP	
							PORCELAIN SHROUD/KNEE CONTACT GUARD	
							OR APPROVED EQUAL	
SK-1	KITCHEN SINK	1-1/2"	1-1/2"	1-1/4"	1/2"	1/2"	FRANKE KINDRED #LBD6407 SINK	STAINLESS STEEL, LEVER HANDLES
	DOUBLE BOWL WITH LEDGE	38	38	32	13	13	AMERICAN STANDARD #6270 FAUCET	OVERALL DIM - W x FTB x D - 794 x 520 x 178mm, 31.25 x 20.5 x 7 in
								BOWL DIM - W x FTB x D - 355 x 406 x 178mm, 14 x 16 x 7 in
							OR APPROVED EQUAL	MAX. WATER CONSUMPTION - 8.35 Lpm, 2.2 gpm
SK-2	KITCHEN SINK	1-1/2"	1-1/2"	1-1/4"	1/2"	1/2"	FRANKE KINDRED #LBD6407 SINK	STAINLESS STEEL, LEVER HANDLES
	DOUBLE BOWL WITH LEDGE	38	38	32	13	13	AMERICAN STANDARD #6270 FAUCET	OVERALL DIM - W x FTB x D - 794 x 520 x 178mm, 31.25 x 20.5 x 7 in
								BOWL DIM - W x FTB x D - 355 x 406 x 178mm, 14 x 16 x 7 in
							OR APPROVED EQUAL	MAX. WATER CONSUMPTION - 8.35 Lpm, 2.2 gpm
DW	DISHWASHER	1-1/2"	1-1/2"	1-1/4"	-	1/2"		
		38	38	32		13		
HY-1	NON-FREEZE WALL HYDRANT	-	-	-	1/2"	-	WATTS #HY420	AUTOMATIC DRAINING
		-	-	-	13	-		BACKFLOW PREVENTER
								WITH ACCESS DOOR ON INTERIOR WALL
FD-1	FLOOR DRAIN	3"	3"	1-1/2"	1/2"	-	WATTS FD-100	SUIT FLOOR FINISH
	ROUND	75	75	38	13		ZURN	CAST IRON BODY
	HEAVY DUTY							NICKEL BRONZE STRAINER
								TRAP SEAL PRIMER INSTALLED IN WASHROOM WALL
								WITH ACCESS DOOR
							OR APPROVED EQUAL	
RD-1	ROOF DRAIN	-	SIZE	-	-	-	WATTS RD-100	
	ROUND		PER				ZURN	
			PIPE					
							OR APPROVED EQUAL	
FCO	FLOOR CLEANOUT	-	SIZE	-	-	-	WATTS CO-200	SUIT FLOOR FINISH
	ROUND		PER				ZURN	CAST IRON BODY
			PIPE					NICKEL BRONZE TOP, GASKET
							OR APPROVED EQUAL	BRASS CLEANOUT PLUG, GASKET
WCO	WALL CLEANOUT	-	SIZE	-	-	-	WATTS CO-380	SUIT WALL FINISH
	ROUND		PER				ZURN	CAST IRON FERRULE
			PIPE					BRASS PLUG
							OR APPROVED EQUAL	STAINLESS STEEL COVER

PUMP SCHEDULE

UNIT	DESCRIPTION	CAPACITY FLOW (gpm)	HEAD (ft)	CONN. (in)	ELECTRICAL VOLT	PHASE	POWER	ACCEPTABLE PRODUCT	NOTES
P-1	SEWAGE PUMP	45	12	2	120	1	4/10HP	MYERS	18" DIA x 30" BASIN W/COVER
	PACKAGED							#SRM4 PUMP	FLOAT SWITCH CONTROL
								#SR1830 PACKAGE	CONTROL PANEL WITH
								#CE CONTROL PANEL	HAND-OFF-AUTO SWITCH
									ALARM LIGHT, TEST, BUZZER
								OR APPROVED EQUAL	PUMP RUN LIGHT
P-2	SUMP PUMP	15	20	1-1/2	120	1	1/2 HP	MYERS	18" DIA x 30" BASIN W/COVER
	PACKAGED							#MSC150 PUMP	FLOAT SWITCH CONTROL
								#CE CONTROL PANEL	CONTROL PANEL WITH
									HAND-OFF-AUTO SWITCH
									ALARM LIGHT, TEST, BUZZER
								OR APPROVED EQUAL	PUMP RUN LIGHT

ROOFTOP HVAC UNIT SCHEDULE

UNIT	DESCRIPTION	SUPPLY AIR (cfm)	(ESP)	OUTDOOR AIR (cfm)	EFF. (SEER)	COOLING TEMP (deg.F)	TC (Mbtu/hr)	HEATING INPUT (Mbtu/hr)	OUTPUT (Mbtu/hr)	GAS (in)	ELECTRICAL VOLT	PHASE	MCA	MOCP	ACCEPTABLE PRODUCT	NOTES
RTU-1	HVAC UNIT	1600	HIGH	180	14	80 DB	48	130	106	1/2	208	3	26	30	CARRIER	BASE UNIT:
	ELECTRIC COOLING		STATIC			67 WB									#48FC	HIGH SEISMIC CURB (MINM 14" ABOVE FINISHED ROOF)
	NATURAL GAS HEAT					95 AMB										ECONOMIZER WITH ENTHALPY CONTROLS
	4 TON														OR APPROVED EQUAL	HAIL GUARD
																POWER EXHAUST
																HEATING SECTION:
																STAINLESS STEEL HEAT EXCHANGER
																COOLING SECTION:
																TWO STAGE COOLING
																LOW AMBIENT OPERATION THROUGH ECONOMIZER
																HUMIDIMIZER DEHUMIDIFICATION
																FILTER:
																- MERV 8
																ELECTRICAL:
																THROUGH THE BASE ELECTRICAL
																FACTORY DISCONNECT
																CONTROLS:
																DEMAND CONTROL VENTILATION WITH CO2 SENSOR
																7-DAY DIGITAL PROGRAMMABLE THERMOSTAT
																TO MEET ASHRAE 90.1:
																- 7 DAY SCHEDULE
																- 10 HR POWER LOSS
																- 2 HR MANUAL OVERRIDE
																- SETBACK TO 55F (13C)
																- SETUP TO 90F (32C)
																MICROPROCESSOR CONTROLS
																BACnet COMMUNICATIONS INTERFACE

FURNACE SCHEDULE

UNIT	DESCRIPTION	FAN AIR FLOW (cfm)	ESP (in)	HP	HEATING INPUT (Mbtu/hr)	OUTPUT (Mbtu/hr)	EFF (%)	GAS (in)	ELECTRICAL VOLT (V)	PHASE (PH)	MCA (A)	MOCP (A)	ACCEPTABLE PRODUCT	NOTES
F-1	FURNACE	1400	0.6	3/4	60	58	96.7%	1/2	120	1	10.7	15	CARRIER #59TP5A	- TWO STAGE HEATING
F-2	GAS-FIRED, DIRECT VENT													- MATCHING EVAPORATOR COIL
	UPFLOW												OR APPROVED EQUAL	- CONCENTRIC VENT TERMINATION
														WALL/ROOF
														- RETURN AIR FILTER RACK
														- 7-DAY DIGITAL PROGRAMMABLE
														THERMOSTAT
														TO MEET ASHRAE 90.1:
														- 7 DAY SCHEDULE
														- 10 HR POWER LOSS
														- 2 HR MANUAL OVERRIDE
														- SETBACK TO 55F (13C)
														- SETUP TO 90F (32C)

FANCOIL SCHEDULE

UNIT	DESCRIPTION	FAN CFM	ESP	HP	DRIVE	COOLING NOM (ton)	ELECTRICAL VOLT	PHASE	MCA	MOCP	ACCEPTABLE PRODUCT	NOTES
FC-1	FAN COIL UNIT	1200	0.6	1	HIGH	3.5	208	1	5.1	15	CARRIER #FB4C	PROGRAMMABLE THERMOSTAT
FC-2	UP FLOW											- RETURN AIR FILTER RACK
FC-3											OR APPROVED EQUAL	- 7-DAY DIGITAL PROGRAMMABLE
FC-4												THERMOSTAT
												TO MEET ASHRAE 90.1:
												- 7 DAY SCHEDULE
												- 10 HR POWER LOSS
												- 2 HR MANUAL OVERRIDE
												- SETBACK TO 55F (13C)
												- SETUP TO 90F (32C)

CONDENSING UNIT SCHEDULE

UNIT	DESCRIPTION	COOLING EWB (deg.F)	OAT (deg.F)	TC (Mbtuh)	SEER	CONNECTIONS SUCTION (in)	LIQUID (in)	ELECTRICAL VOLT	PHASE	MCA	MOCP	ACCEPTABLE PRODUCT	NOTES
CU-1	CONDENSING UNIT	67	95	36	17.0	AS REQ'D	AS REQ'D	208	1	19.8	35	CARRIER #24ACB7	TWO STAGE
CU-2						TO SUIT	TO SUIT						- LOW AMBIENT COOLING
CU-3						LINE	LINE					OR APPROVED EQUAL	- LONG LINE APPLICATION
CU-4						LENGTH	LENGTH						- COMPRESSOR START ASSIST
CU-5													- CRANKCASE HEATER
CU-6													- EVAPORATOR FREEZE THERMOSTAT
													- LOW AMBIENT PRESSURE SWITCH
													- SUPPORT FEET
													- THERMOSTATIC EXPANSION VALVE
													- WINTER START CONTROL

NOTES:
1. CONTRACTOR TO VERIFY THAT CONDENSING UNIT SELECTED MATCHES FURNACE AND AIR HANDLING UNITS.

HEAT RECOVERY VENTILATOR SCHEDULE

UNIT	DESCRIPTION	AIR FLOW SUPPLY (cfm)	ESP (in)	ENERGY PERF. TEMP (deg.F)	EFF (%)	ELECTRICAL VOLT	PHASE	MCA	MOCP	ACCEPTABLE PRODUCT	NOTES
HRV-1	HEAT RECOVERY VENTILATOR	200	0.3	32	62	120	1	<12	15	LIFEBREATH	5 SPEED/2 MODE
HRV-2	HORIZONTAL									#350DCS	PROGRAMMABLE CONTROL
	COMMERCIAL										BUILT-IN INTERFACE TO
										OR APPROVED EQUAL	FURNACE
HRV-3	HEAT RECOVERY VENTILATOR	300	0.3	32	62	120	1	<12	15	LIFEBREATH	5 SPEED/2 MODE
HRV-4	HORIZONTAL									#350DCS	PROGRAMMABLE CONTROL
	COMMERCIAL										BUILT-IN INTERFACE TO
										OR APPROVED EQUAL	FANCOIL UNIT

EXHAUST FAN (CABINET) SCHEDULE

UNIT	DESCRIPTION	FAN FLOW	ESP	DRIVE	SONES	DUCT CONN	ELECTRICAL VOLT (V)	PHASE	POWER (W)	ACCEPTABLE PRODUCT	NOTES
EF-1	EXHAUST FAN	39 L/s	3 mm	DIRECT	2.3	254 x 83 mm	120	1	39	PENN BARRY	DIM - L x W x D - 318 x 232 x 232 mm, 12.5 x 9.125 x 9.125 in
		83 CFM	0.125 in			10 x 3.25 in				#Z3	GRILLE - 280 x 337 mm, 11 x 13.25 in
										GREENHECK	CONTROL - WALL SWITCH
										OR APPROVED EQUAL	GRILLE - POLYMER
											CAP - WALL, GALV STEEL, PAINTED TO MATCH WALL FINISH
											LINED HOUSING, BACKDRAFT DAMPER

REGISTER, GRILLE & DIFFUSER SCHEDULE

UNIT	DESCRIPTION	CONSTRUCTION	CONFIGURATION PATTERN	BLADE SPACING	DEFLECTION (deg)	FRAME	FINISH	ACCEPTABLE PRODUCT	NOTES
S1	SA DIFFUSER	STEEL	4 CONE	-	-	LAY-IN INVERTED T	WHITE	EH PRICE	
	CEILING		FIXED			DRYWALL FLANGE		#SCD STEEL	
	SQUARE CONE		AIR PATTERN						
								OR APPROVED EQUAL	
S2	LOUVRED SA GRILLE	STEEL	SINGLE	19mm, 3/4 in	ADJUSTABLE	STANDARD	WHITE	EH PRICE	
	CEILING/WALL		DEFLECTION	PARALLEL		32mm, 1.25in		#510 STEEL SINGLE	
			ADJUSTABLE	TO LONG DIM					
								OR APPROVED EQUAL	
S3	LINEAR SA BAR GRILLE	ALUMINUM	FIXED	1/4" SPACE-1/8" BARS	0	1" BORDER	WHITE	EH PRICE #LBP	
	FLOOR								
								OR APPROVED EQUAL	
S4	SA DIFFUSER	STEEL	4 CONE	-	-	SCREW FASTEN	WHITE	EH PRICE	
	CEILING		FIXED			TO DUCT		#RCD STEEL	
	ROUND CONE		AIR PATTERN						
								OR APPROVED EQUAL	
R1	EGG CRATE RA	ALUMINUM	FIXED GRID	12x12x25mm	0	LAY-IN INVERTED T	WHITE	EH PRICE	
	CEILING			1/2x1/2x1in		DRYWALL FLANGE		#81	
								OR APPROVED EQUAL	
R2	LOUVRED SA GRILLE	STEEL	SINGLE	19mm, 3/4 in	ADJUSTABLE	STANDARD	WHITE	EH PRICE	
	CEILING/WALL		DEFLECTION	PARALLEL		32mm, 1.25in		#530 STEEL SINGLE	
			ADJUSTABLE	TO LONG DIM					
								OR APPROVED EQUAL	

MORRIS
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Brockville, Ontario 613-349-0555

LICENSED PROFESSIONAL ENGINEER
2022-04-18
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PROVINCE OF ONTARIO

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Client:
COLBOURNE & KEMBEL ARCHITECTS
Kingston
Ontario

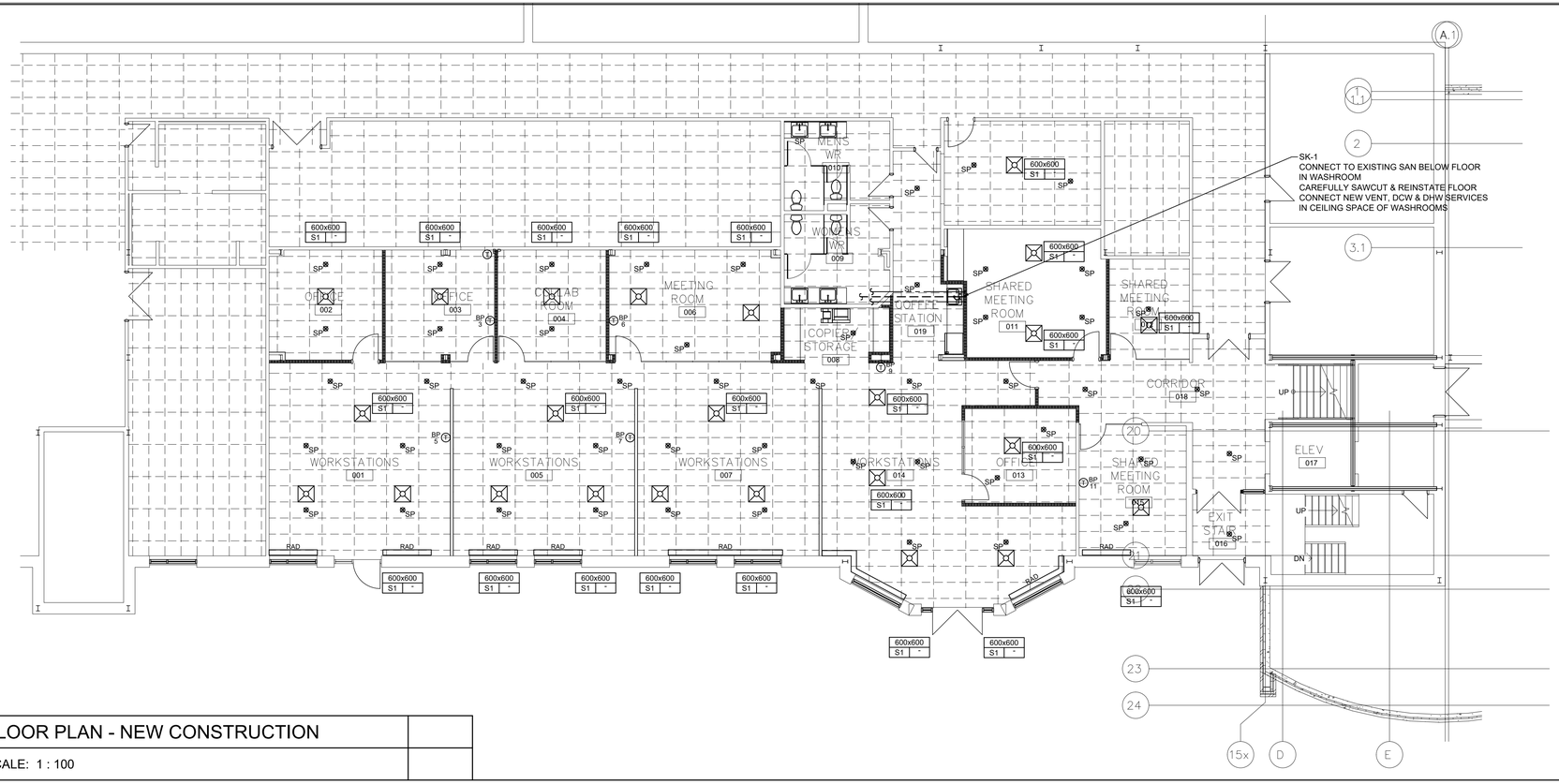
Project:
JOINT ADMIN. FACILITY
Renovations & Additions to 2069 Battersea Rd.

Drawing:
MECHANICAL

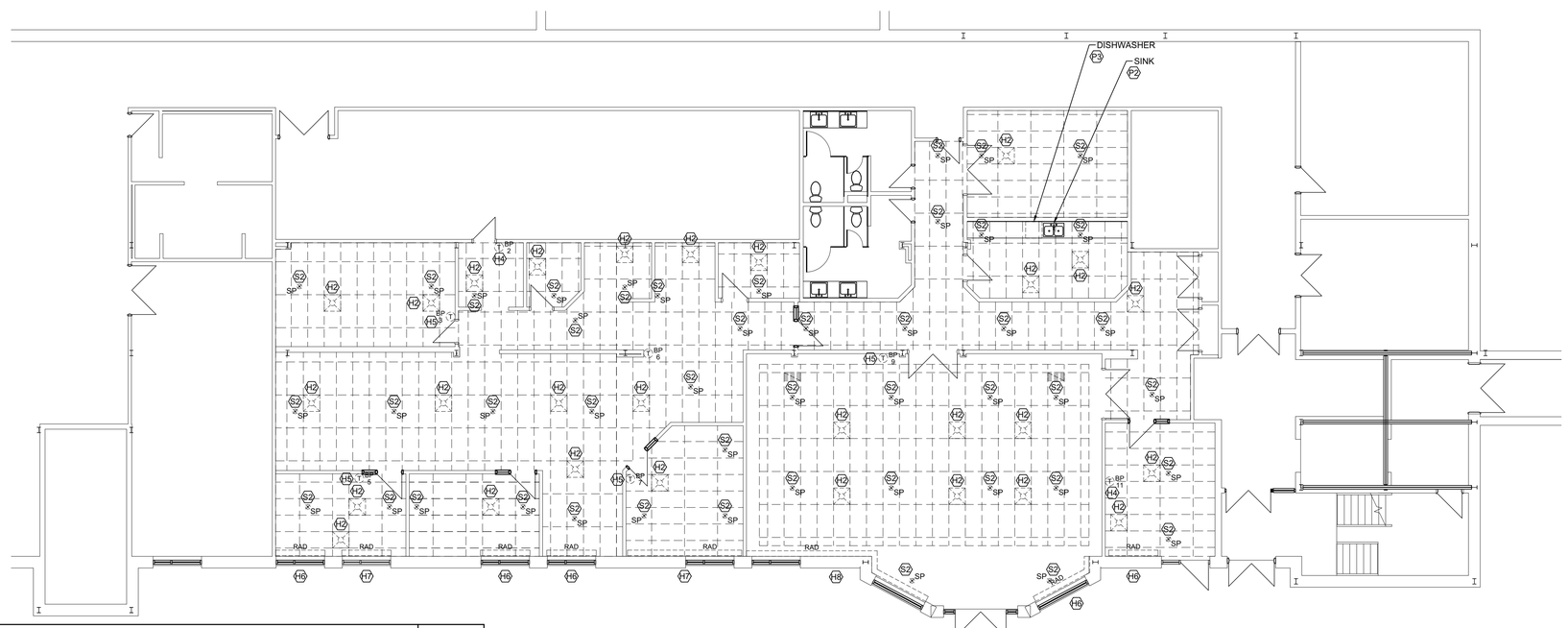
Schedules & Details

Design: M.MORRIS
Drawn: A.M.
Date: FEB 2022
Project: 607
Scale: AS NOTED

M002



2	FLOOR PLAN - NEW CONSTRUCTION	
M100	SCALE: 1 : 100	



1	FLOOR PLAN - DEMOLITION	
M100	SCALE: 1 : 100	

MECHANICAL - DEMOLITION NOTES

ALL EQUIPMENTAND DEVICES THAT WERE CONCEALED, THAT ARE OBSOLETE, SHALL BE DISCONNECTED & REMOVED.

PLUMBING:

- P1 RETAIN EXISTING PLUMBING FIXTURE WITH NO CHANGE
- P2 DISCONNECT & REMOVE EXISTING PLUMBING FIXTURE MODIFY EXISTING SAN, VENT, DCW & DHW SERVICES (AS APPLICABLE) TO SUIT NEW FIXTURE LOCATION
- P3 DISCONNECT & REMOVE EXISTING PLUMBING FIXTURE CAP, RECESS & CONCEAL EXISTING SAN, VENT, DCW & DHW SERVICES (AS APPLICABLE) TO SUIT ARCHITECTURAL ALTERATIONS & FINISHES.

HVAC:

- H1 RETAIN EXISTING SUPPLY AIR (SA) DIFFUSER OR RETURN AIR (RA) GRILLE WITH NO CHANGE
- H2 DISCONNECT & REMOVE EXISTING SUPPLY AIR (SA) DIFFUSER OR RETURN AIR (RA) GRILLE MODIFY EXISTING BRANCH DUCT TO SUIT NEW OUTLET LOCATION
- H3 DISCONNECT & REMOVE EXISTING SUPPLY AIR (SA) DIFFUSER OR RETURN AIR (RA) GRILLE AND BRANCH DUCT
- H4 RETAIN EXISTING DAMPER CONTROL WITH NO CHANGE
- H5 DISCONNECT, REMOVE AND RELOCATE EXISTING DAMPER CONTROL TO SUIT NEW FLOOR PLAN
- H6 RETAIN EXISTING HYDRONIC PIPING OR RADIATOR WITH NO CHANGE
- H7 DISCONNECT, REMOVE & RELOCATE EXISTING HYDRONIC RADIATOR TO SUIT NEW FLOOR PLAN
- H8 ALTER EXISTING HYDRONIC RADIATOR TO SUIT NEW FLOOR PLAN
- H9 DISCONNECT & REMOVE EXISTING HYDRONIC RADIATOR INCLUDING PIPING BACK TO MAIN LINES AND CAP
- H10 DISCONNECT & REMOVE EXISTING HVAC UNIT INCLUDING INDOOR & OUTDOOR, REFRIGERANT PIPING, ELECTRICAL & CONTROL WIRING

SPRINKLER:

- S1 RETAIN EXISTING SPRINKLER WITH NO CHANGE
- S2 DISCONNECT & REMOVE EXISTING SPRINKLER MODIFY EXISTING SPRINKLER BRANCH PIPING TO SUIT NEW SPRINKLER LOCATION

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Project:
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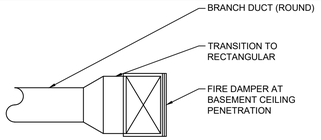
Renovations & Additions to 2069 Battersea Rd.

Drawing:
MECHANICAL

Level 0 Floor Plan

Design:	M.MORRIS
Drawn:	A.M.
Date:	FEB 2022
Project:	607
Scale:	AS NOTED

M100



4	FIRE DAMPER DETAIL	
M101	SCALE: NTS	

MECHANICAL - DEMOLITION NOTES

ALL EQUIPMENTAND DEVICES THAT WERE CONCEALED, THAT ARE OBSOLETE, SHALL BE DISCONNECTED & REMOVED.

PLUMBING:

P1 RETAIN EXISTING PLUMBING FIXTURE WITH NO CHANGE

P2 DISCONNECT & REMOVE EXISTING PLUMBING FIXTURE MODIFY EXISTING SAN, VENT, DCW & DHW SERVICES (AS APPLICABLE) TO SUIT NEW FIXTURE LOCATION

P3 DISCONNECT & REMOVE EXISTING PLUMBING FIXTURE CAP, RECESS & CONCEAL EXISTING SAN, VENT, DCW & DHW SERVICES (AS APPLICABLE) TO SUIT ARCHITECTURAL ALTERATIONS & FINISHES.

HVAC:

H1 RETAIN EXISTING SUPPLY AIR (SA) DIFFUSER OR RETURN AIR (RA) GRILLE WITH NO CHANGE

H2 DISCONNECT & REMOVE EXISTING SUPPLY AIR (SA) DIFFUSER OR RETURN AIR (RA) GRILLE MODIFY EXISTING BRANCH DUCT TO SUIT NEW OUTLET LOCATION

H3 DISCONNECT & REMOVE EXISTING SUPPLY AIR (SA) DIFFUSER OR RETURN AIR (RA) GRILLE AND BRANCH DUCT

H4 RETAIN EXISTING DAMPER CONTROL WITH NO CHANGE

H5 DISCONNECT, REMOVE AND RELOCATE EXISTING DAMPER CONTROL TO SUIT NEW FLOOR PLAN

H6 RETAIN EXISTING HYDRONIC PIPING OR RADIATOR WITH NO CHANGE

H7 DISCONNECT, REMOVE & RELOCATE EXISTING HYDRONIC RADIATOR TO SUIT NEW FLOOR PLAN

H8 ALTER EXISTING HYDRONIC RADIATOR TO SUIT NEW FLOOR PLAN

H9 DISCONNECT & REMOVE EXISTING HYDRONIC RADIATOR INCLUDING PIPING BACK TO MAIN LINES AND CAP

H10 DISCONNECT & REMOVE EXISTING HVAC UNIT INCLUDING INDOOR & OUTDOOR, REFRIGERANT PIPING, ELECTRICAL & CONTROL WIRING

SPRINKLER:

S1 RETAIN EXISTING SPRINKLER WITH NO CHANGE

S2 DISCONNECT & REMOVE EXISTING SPRINKLER MODIFY EXISTING SPRINKLER BRANCH PIPING TO SUIT NEW SPRINKLER LOCATION

F-1
FURNACE (WITH CU-5)
SA500x300 (NOM) OFF UNIT
ELBOW W TURNING VANES & TRANS. TO SA MAIN
WITH FIRE DAMPER AT WALL
RA550x350 (NOM) OFF UNIT
WITH FILTER RACK & FILTER
ELBOW TO RA550x300 TO CEILING RA PLENUM
WITH FIRE DAMPER AT WALL
1/2" NAT GAS CONNECTION W UNION, ISOLATING VALVE & DRIP LEG
COMBUSTION/VENT AIR TO WALL TERMINATION
CONDENSATE DRAIN TO FLOOR DRAIN

F-2
FURNACE (WITH CU-6)
SA500x300 (NOM) OFF UNIT
TRANSITION TO SA550x250 TO SECOND FLR CEILING SPACE
WITH FIRE DAMPER AT FIRST FLOOR FIRE SEPARATION
RA550x350 (NOM) OFF UNIT
WITH FILTER RACK & FILTER
TRANSITION TO RA550x300 TO SECOND FLR CEILING SPACE
WITH FIRE DAMPER AT FIRST FLOOR FIRE SEPARATION
1/2" NAT GAS CONNECTION W UNION, ISOLATING VALVE & DRIP LEG
COMBUSTION/VENT AIR TO WALL TERMINATION
CONDENSATE DRAIN TO FLOOR DRAIN

FC-1, FC-2
FANCOIL UNIT (WITH CU-1, CU-2)
SA578x280 (NOM) OFF UNIT
ELBOW TO SUPPLY AIR MAIN DUCT
RA576x500 (NOM) OFF UNIT
WITH FILTER RACK & FILTER
ELBOW TO RETURN AIR MAIN DUCT
CONDENSATE DRAIN TO FLOOR DRAIN

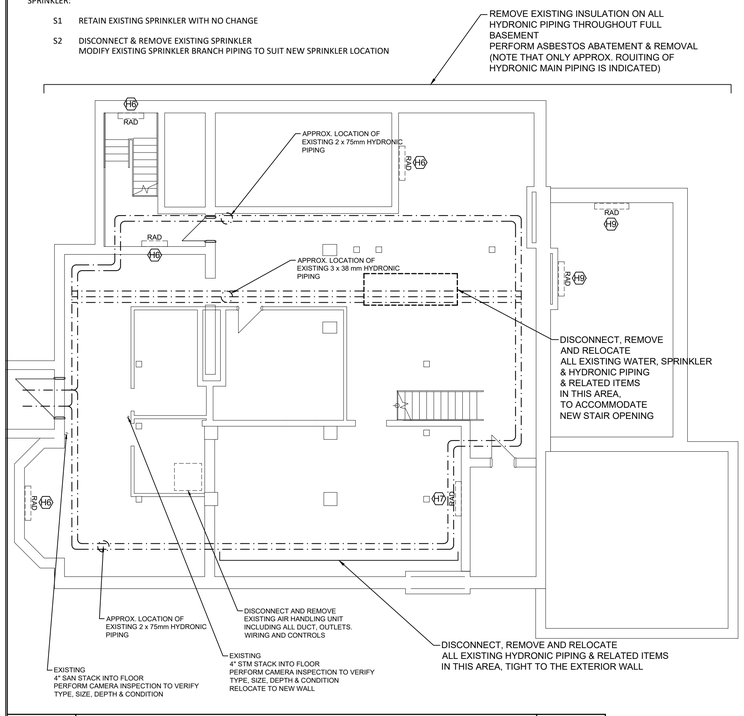
HRV-1, HRV-2
HEAT RECOVERY VENTILATOR
HRV EA 350x200(INSUL) TO EXTERIOR WALL CAP
HRV OA350x200(INSUL) FROM EXTERIOR WALL CAP
HRV SA350x200 WITH DAMPER TO FANCOIL RA DUCT
HRV RA350x200 WITH DAMPER TO FANCOIL SA DUCT
CONDENSATE DRAIN TO FLOOR DRAIN

HRV-3
HEAT RECOVERY VENTILATOR
HRV EA 350x200(INSUL) TO EXTERIOR WALL CAP
HRV OA350x200(INSUL) FROM EXTERIOR WALL CAP
HRV SA350x200 PLENUM, WITH SA200 DIA DUCT WITH DAMPER TO FURNACE RA DUCTS
HRV RA350x200 PLENUM, WITH RA200 DIA DUCT WITH DAMPER FROM FURNACE SA DUCTS
CONDENSATE DRAIN TO FLOOR DRAIN

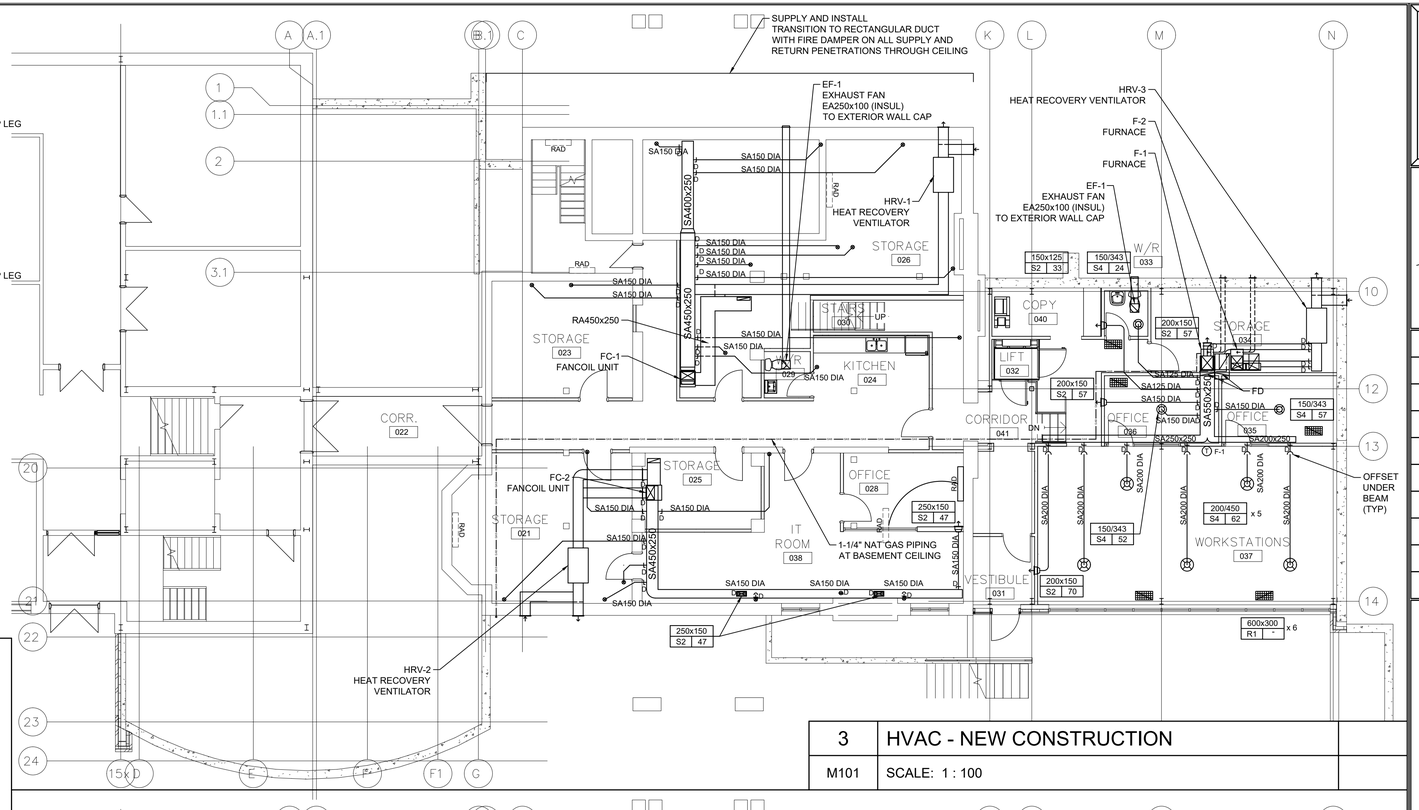
EXISTING SANITARY & STORM SERVICE:

MECHANICAL CONTRACTOR SHALL PERFORM DETAILED INVESTIGATION OF ALL SANITARY AND STORM LINES LEAVING BASEMENT, BY CAMERA INSPECTION & FLOW TESTS, TO VERIFY ALL SERVICE TYPES, SIZES, SLOPES & CONDITIONS

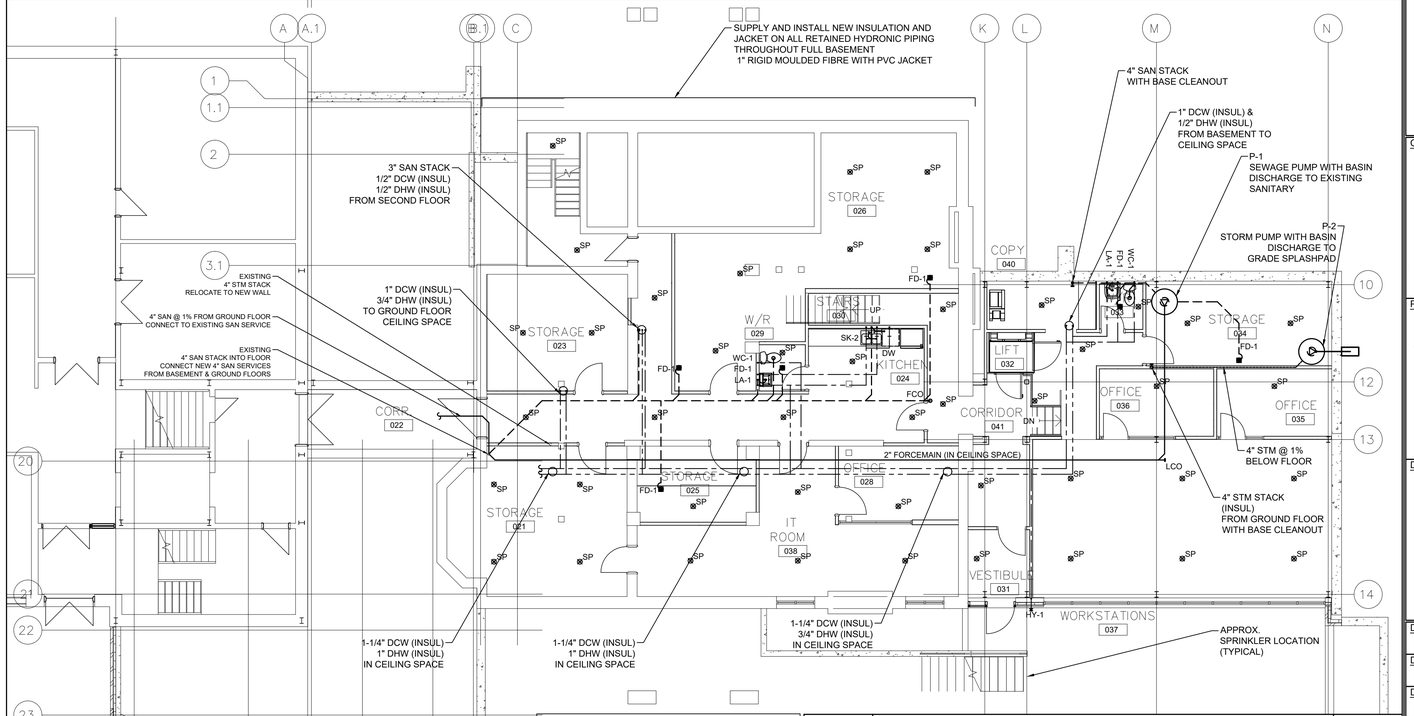
REPORT FINDINGS TO ENGINEER



1	FLOOR PLAN - DEMOLITION	
M101	SCALE: 1 : 100	



3	HVAC - NEW CONSTRUCTION	
M101	SCALE: 1 : 100	



SPRINKLER SYSTEM:
OCCUPANCY: LIGHT HAZARD
SPRINKLER LOCATIONS: APPROXIMATE & SHALL BE VERIFIED BY DETAILED SPRINKLER SYSTEM DESIGN

2	PLUMBING - NEW CONSTRUCTION	
M101	SCALE: 1 : 100	

MORRIS Engineering Ltd.
Brockville, Ontario 613-349-0555

LICENSED PROFESSIONAL ENGINEER 2022-04-18 M. A. MORRIS PROVINCE OF ONTARIO

No.	Date	REVISION
2	2022-04-18	ISSUED FOR TENDER, PERMIT & CONSTRUCTION
1	2022-03-30	FINAL REVIEW
0	2022-03-07	FOR REVIEW

Client:
COLBOURNE & KEMBEL ARCHITECTS
Kingston
Ontario

Project:
JOINT ADMIN. FACILITY
Renovations & Additions to 2069 Battersea Rd.

Drawing:
MECHANICAL

Basement Floor Plan

Design:	M.MORRIS
Drawn:	A.M.
Date:	FEB 2022
Project:	607
Scale:	AS NOTED

M101

MECHANICAL - DEMOLITION NOTES

ALL EQUIPMENTAND DEVICES THAT WERE CONCEALED, THAT ARE OBSOLETE, SHALL BE DISCONNECTED & REMOVED.

PLUMBING:

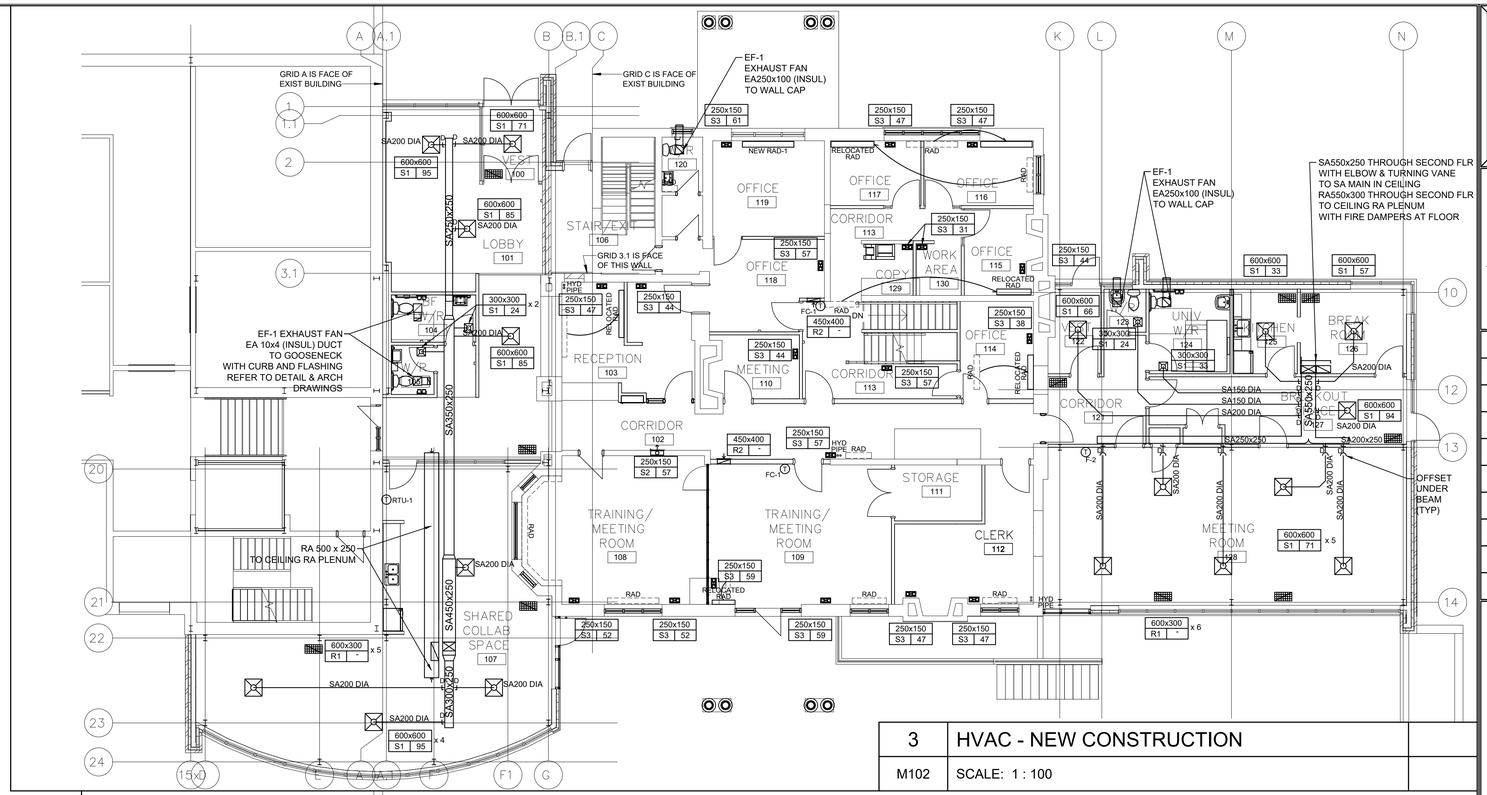
- P1 RETAIN EXISTING PLUMBING FIXTURE WITH NO CHANGE
- P2 DISCONNECT & REMOVE EXISTING PLUMBING FIXTURE MODIFY EXISTING SAN, VENT, DCW & DHW SERVICES (AS APPLICABLE) TO SUIT NEW FIXTURE LOCATION
- P3 DISCONNECT & REMOVE EXISTING PLUMBING FIXTURE CAP, RECESS & CONCEAL EXISTING SAN, VENT, DCW & DHW SERVICES (AS APPLICABLE) TO SUIT ARCHITECTURAL ALTERATIONS & FINISHES.

HVAC:

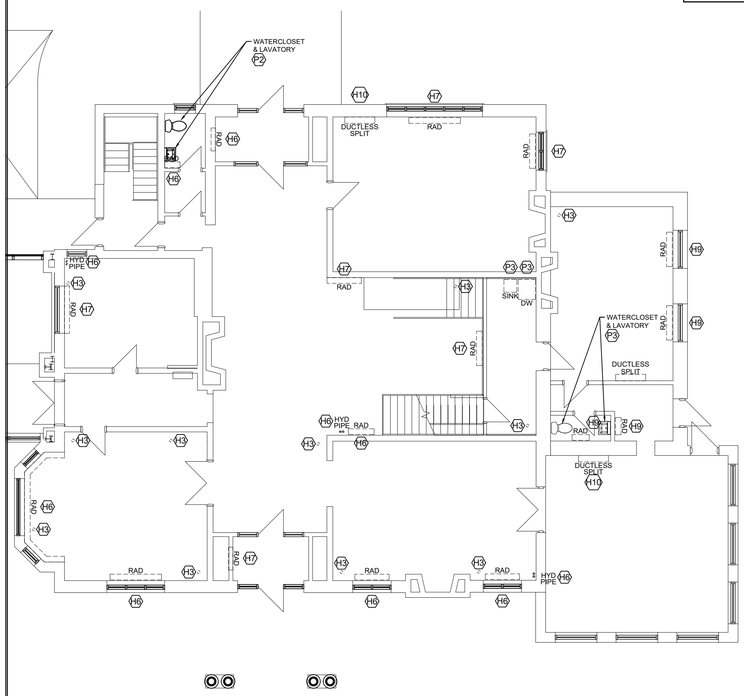
- H1 RETAIN EXISTING SUPPLY AIR (SA) DIFFUSER OR RETURN AIR (RA) GRILLE WITH NO CHANGE
- H2 DISCONNECT & REMOVE EXISTING SUPPLY AIR (SA) DIFFUSER OR RETURN AIR (RA) GRILLE MODIFY EXISTING BRANCH DUCT TO SUIT NEW OUTLET LOCATION
- H3 DISCONNECT & REMOVE EXISTING SUPPLY AIR (SA) DIFFUSER OR RETURN AIR (RA) GRILLE AND BRANCH DUCT
- H4 RETAIN EXISTING DAMPER CONTROL WITH NO CHANGE
- H5 DISCONNECT, REMOVE AND RELOCATE EXISTING DAMPER CONTROL TO SUIT NEW FLOOR PLAN
- H6 RETAIN EXISTING HYDRONIC PIPING OR RADIATOR WITH NO CHANGE
- H7 DISCONNECT, REMOVE & RELOCATE EXISTING HYDRONIC RADIATOR TO SUIT NEW FLOOR PLAN
- H8 ALTER EXISTING HYDRONIC RADIATOR TO SUIT NEW FLOOR PLAN
- H9 DISCONNECT & REMOVE EXISTING HYDRONIC RADIATOR INCLUDING PIPING BACK TO MAIN LINES AND CAP
- H10 DISCONNECT & REMOVE EXISTING HVAC UNIT INCLUDING INDOOR & OUTDOOR, REFRIGERANT PIPING, ELECTRICAL & CONTROL WIRING

SPRINKLER:

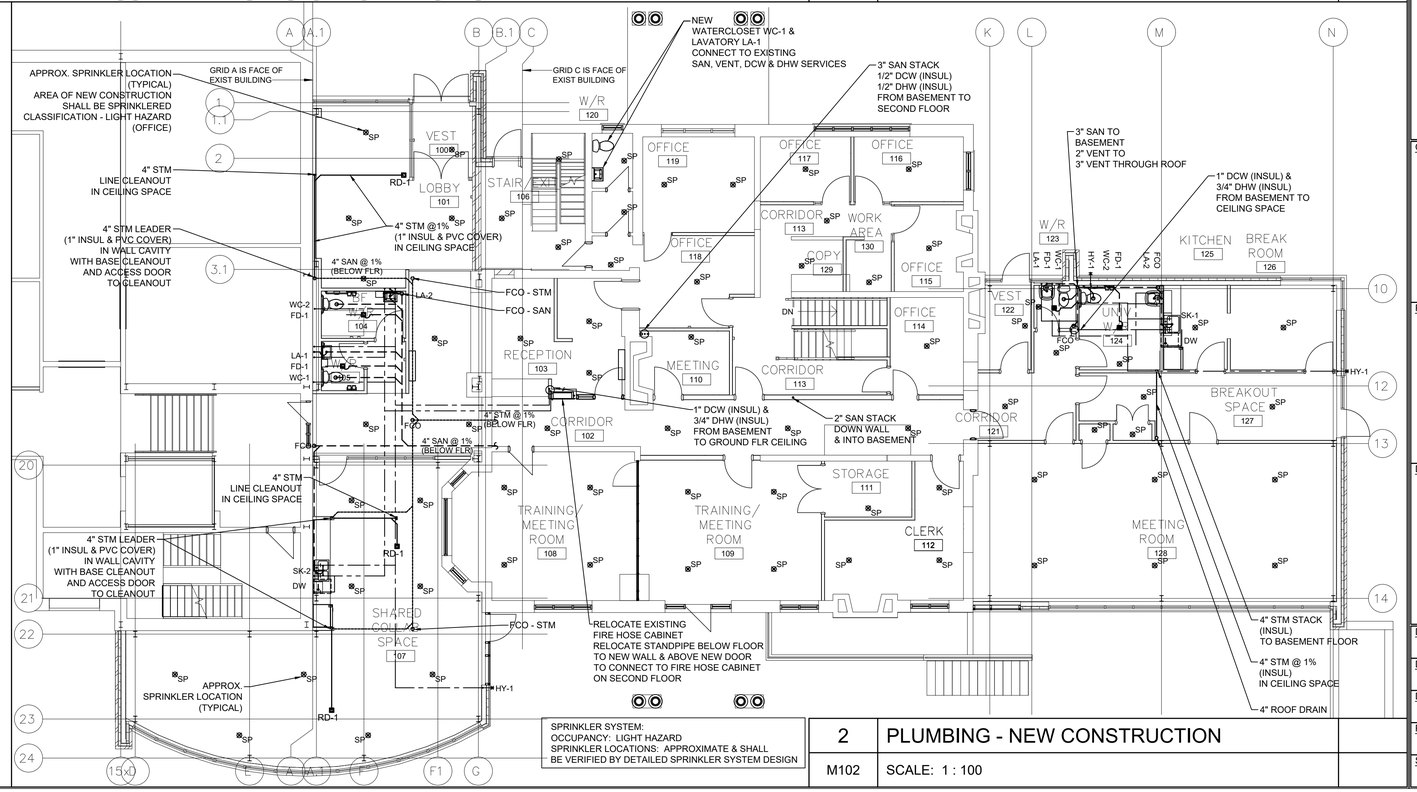
- S1 RETAIN EXISTING SPRINKLER WITH NO CHANGE
- S2 DISCONNECT & REMOVE EXISTING SPRINKLER MODIFY EXISTING SPRINKLER BRANCH PIPING TO SUIT NEW SPRINKLER LOCATION



3	HVAC - NEW CONSTRUCTION
M102	SCALE: 1 : 100



1	MECHANICAL - DEMOLITION
M102	SCALE: 1 : 100



SPRINKLER SYSTEM:
OCCUPANCY: LIGHT HAZARD
SPRINKLER LOCATIONS: APPROXIMATE & SHALL BE VERIFIED BY DETAILED SPRINKLER SYSTEM DESIGN

2	PLUMBING - NEW CONSTRUCTION
M102	SCALE: 1 : 100

MORRIS Engineering Ltd.
Brockville, Ontario 613-349-0555

LICENSED PROFESSIONAL ENGINEER 2022-04-18 M. A. MORRIS PROVINCE OF ONTARIO

No.	Date	REVISION
2	2022-04-18	ISSUED FOR TENDER, PERMIT & CONSTRUCTION
1	2022-03-30	FINAL REVIEW
0	2022-03-07	FOR REVIEW

Client: COLBOURNE & KEMBEL ARCHITECTS Kingston Ontario

Project: JOINT ADMIN. FACILITY Renovations & Additions to 2069 Battersea Rd.

Drawing: MECHANICAL

Ground Floor Plan

Design: M.MORRIS
Drawn: A.M.
Date: FEB 2022
Project: 607
Scale: AS NOTED

M102

MECHANICAL - DEMOLITION NOTES

ALL EQUIPMENTAND DEVICES THAT WERE CONCEALED, THAT ARE OBSOLETE, SHALL BE DISCONNECTED & REMOVED.

PLUMBING:

P1 RETAIN EXISTING PLUMBING FIXTURE WITH NO CHANGE

P2 DISCONNECT & REMOVE EXISTING PLUMBING FIXTURE MODIFY EXISTING SAN, VENT, DCW & DHW SERVICES (AS APPLICABLE) TO SUIT NEW FIXTURE LOCATION

P3 DISCONNECT & REMOVE EXISTING PLUMBING FIXTURE CAP, RECESS & CONCEAL EXISTING SAN, VENT, DCW & DHW SERVICES (AS APPLICABLE) TO SUIT ARCHITECTURAL ALTERATIONS & FINISHES.

HVAC:

H1 RETAIN EXISTING SUPPLY AIR (SA) DIFFUSER OR RETURN AIR (RA) GRILLE WITH NO CHANGE

H2 DISCONNECT & REMOVE EXISTING SUPPLY AIR (SA) DIFFUSER OR RETURN AIR (RA) GRILLE MODIFY EXISTING BRANCH DUCT TO SUIT NEW OUTLET LOCATION

H3 DISCONNECT & REMOVE EXISTING SUPPLY AIR (SA) DIFFUSER OR RETURN AIR (RA) GRILLE AND BRANCH DUCT

H4 RETAIN EXISTING DAMPER CONTROL WITH NO CHANGE

H5 DISCONNECT, REMOVE AND RELOCATE EXISTING DAMPER CONTROL TO SUIT NEW FLOOR PLAN

H6 RETAIN EXISTING HYDRONIC PIPING OR RADIATOR WITH NO CHANGE

H7 DISCONNECT, REMOVE & RELOCATE EXISTING HYDRONIC RADIATOR TO SUIT NEW FLOOR PLAN

H8 ALTER EXISTING HYDRONIC RADIATOR TO SUIT NEW FLOOR PLAN

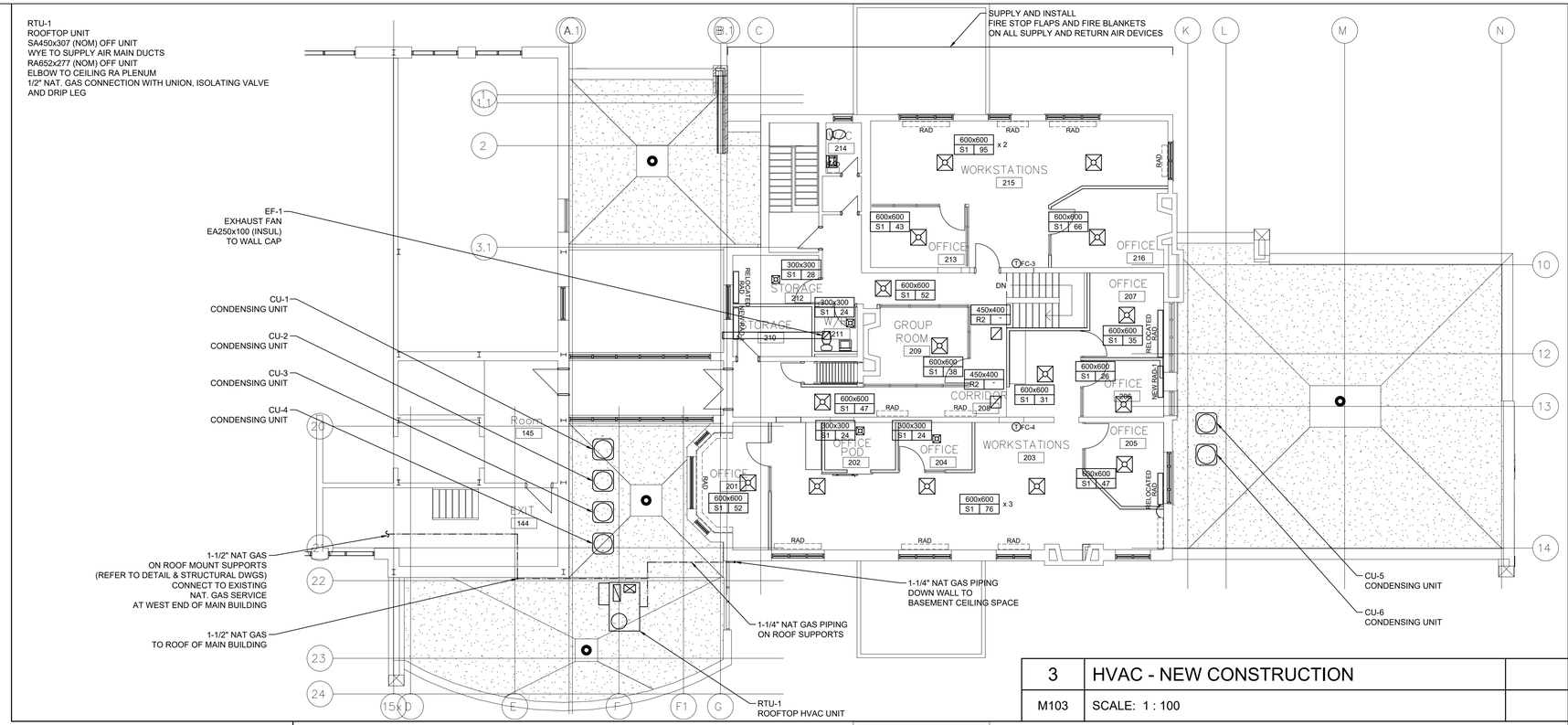
H9 DISCONNECT & REMOVE EXISTING HYDRONIC RADIATOR INCLUDING PIPING BACK TO MAIN LINES AND CAP

H10 DISCONNECT & REMOVE EXISTING HVAC UNIT INCLUDING INDOOR & OUTDOOR, REFRIGERANT PIPING, ELECTRICAL & CONTROL WIRING

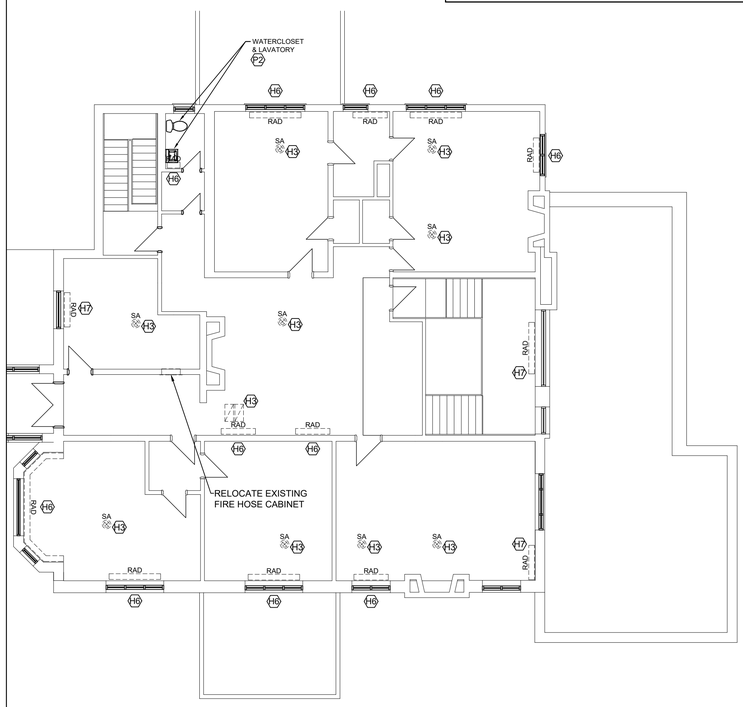
SPRINKLER:

S1 RETAIN EXISTING SPRINKLER WITH NO CHANGE

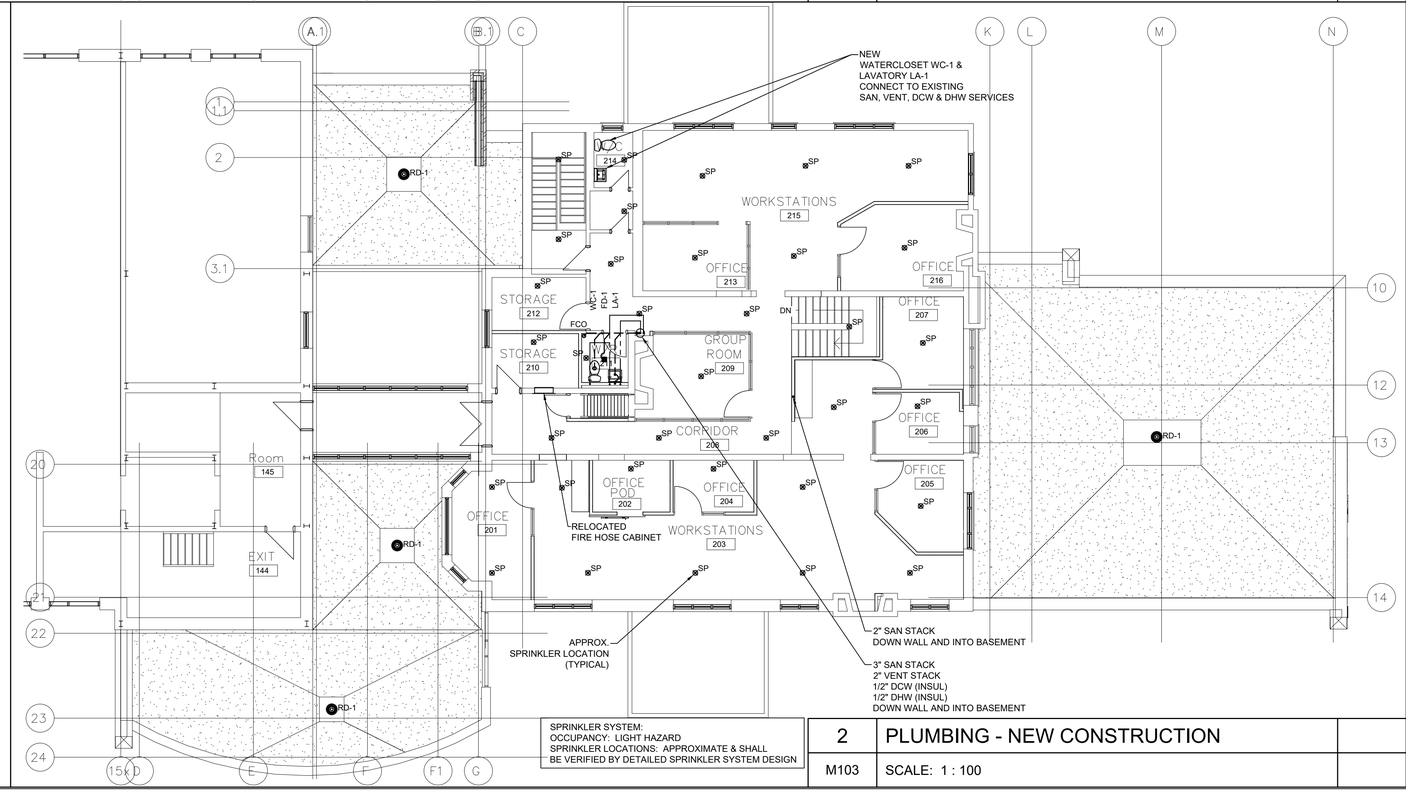
S2 DISCONNECT & REMOVE EXISTING SPRINKLER MODIFY EXISTING SPRINKLER BRANCH PIPING TO SUIT NEW SPRINKLER LOCATION



3	HVAC - NEW CONSTRUCTION	
M103	SCALE: 1 : 100	



1	MECHANICAL - DEMOLITION	
M103	SCALE: 1 : 100	



SPRINKLER SYSTEM:
OCCUPANCY: LIGHT HAZARD
SPRINKLER LOCATIONS: APPROXIMATE & SHALL BE VERIFIED BY DETAILED SPRINKLER SYSTEM DESIGN

2	PLUMBING - NEW CONSTRUCTION	
M103	SCALE: 1 : 100	

MORRIS
Engineering Ltd.
Brockville, Ontario 613-349-0555

LICENSED PROFESSIONAL ENGINEER
2022-04-18
M. A. MORRIS
PROVINCE OF ONTARIO

No.	Date	REVISION
2	2022-04-18	ISSUED FOR TENDER, PERMIT & CONSTRUCTION
1	2022-03-30	FINAL REVIEW
0	2022-03-07	FOR REVIEW

Client:
COLBOURNE & KEMBEL ARCHITECTS
Kingston
Ontario

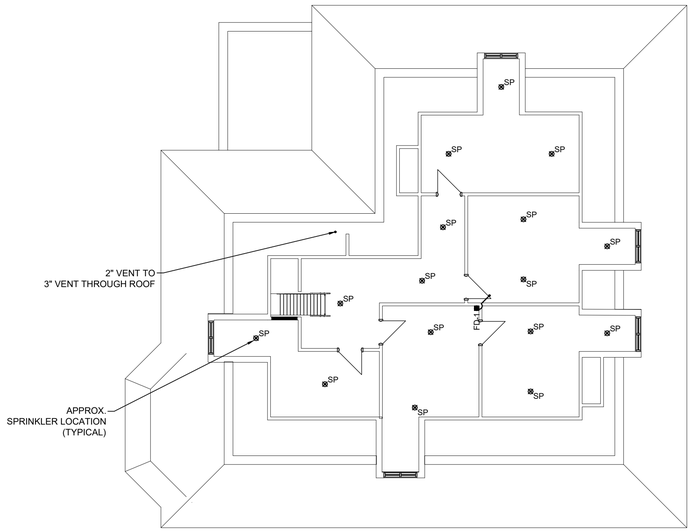
Project:
JOINT ADMIN. FACILITY
Renovations & Additions to 2069 Battersea Rd.

Drawing:
MECHANICAL

Second Floor Plan

Design:	M.MORRIS
Drawn:	A.M.
Date:	FEB 2022
Project:	607
Scale:	AS NOTED

M103



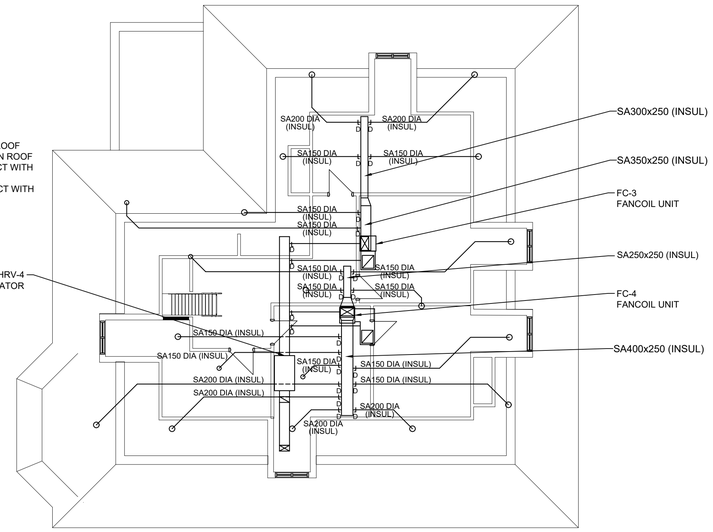
2	PLUMBING - NEW CONSTRUCTION	
M104	SCALE: 1 : 100	

SPRINKLER SYSTEM:
OCCUPANCY: LIGHT HAZARD
SPRINKLER LOCATIONS: APPROXIMATE & SHALL
BE VERIFIED BY DETAILED SPRINKLER SYSTEM DESIGN

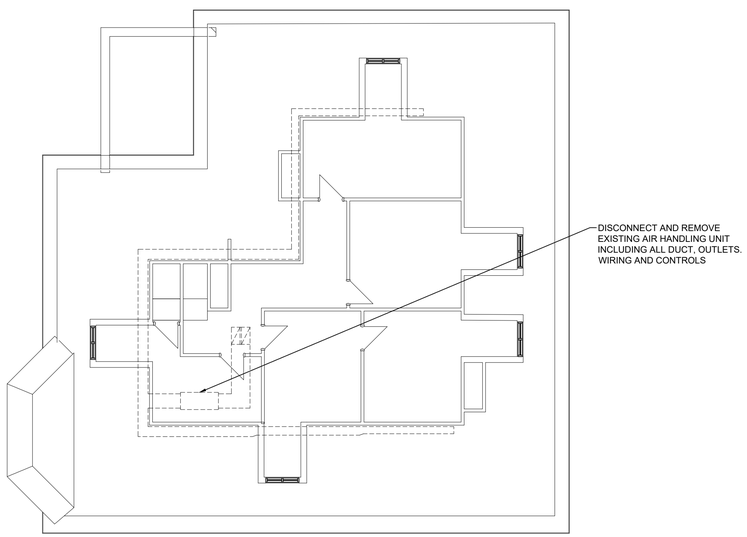
FC-3
FANCOIL UNIT (WITH CU-3)
SA578x280 (NOM, INSUL) OFF UNIT
ELBOW TO SUPPLY AIR MAIN DUCT
RA576x500 (NOM) OFF UNIT
WITH FILTER RACK & FILTER
ELBOW TO RETURN AIR MAIN DUCT
CONDENSATE DRAIN TO FLOOR DRAIN

FC-4
FANCOIL UNIT (WITH CU-4)
SA578x280 (NOM, INSUL) OFF UNIT
WYE TO SUPPLY AIR MAIN DUCTS
RA576x500 (NOM) OFF UNIT
WITH FILTER RACK & FILTER
WYE TO RETURN AIR MAIN DUCTS
CONDENSATE DRAIN TO FLOOR DRAIN

HRV-4
HEAT RECOVERY VENTILATOR
HRV EA 350x200(INSUL) TO GOOSENECK ON ROOF
HRV OA350x200(INSUL) FROM GOOSENECK ON ROOF
HRV SA350x200 PLENUM, WITH SA200 DIA DUCT WITH
DAMPER TO FANCOIL UNIT RA DUCTS
HRV RA350x200 PLENUM, WITH RA200 DIA DUCT WITH
DAMPER FROM FANCOIL UNIT SA DUCTS
CONDENSATE DRAIN TO FLOOR DRAIN



3	HVAC - NEW CONSTRUCTION	
M104	SCALE: 1 : 100	



1	MECHANICAL - DEMOLITION	
M104	SCALE: 1 : 100	

MORRIS
Engineering Ltd.
Brockville, Ontario 613-349-0555

LICENSED PROFESSIONAL ENGINEER
2022-04-18
M. A. MORRIS
PROVINCE OF ONTARIO

No.	Date	REVISION
2	2022-04-18	ISSUED FOR TENDER, PERMIT & CONSTRUCTION
1	2022-03-30	FINAL REVIEW
0	2022-03-07	FOR REVIEW

Client:
COLBOURNE & KEMBEL ARCHITECTS
Kingston
Ontario

Project:
JOINT ADMIN. FACILITY
Renovations & Additions to 2069 Battersea Rd.

Drawing:
MECHANICAL

Attic Floor Plan

Design:	M.MORRIS
Drawn:	A.M.
Date:	FEB 2022
Project:	607
Scale:	AS NOTED

M104