

MECHANICAL SPECIFICATIONS:

1. GENERAL
 - 1.1. VISIT THE SITE PRIOR TO TENDER AND VERIFY ALL CONDITIONS AND DIMENSIONS, INCLUDING LOCATIONS OF EXISTING CAPPED SERVICES, AND ALLOW FOR ANY RE-ROUTING OF EXISTING AND/OR NEW SERVICES AND EQUIPMENT IN TENDER PRICE. FAILURE TO DO SO SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY.
 - 1.2. REPORT TO THE CONSULTANT ALL AMBIGUITIES, DISCREPANCIES, OMISSIONS, ERRORS, DEPARTURES FROM BUILDING BYLAWS AND/OR FROM GOOD PRACTICE PRIOR TO TENDER CLOSING.
 - 1.3. PROVIDE ALL WORK IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNING AUTHORITIES AND LOCAL BY-LAWS.
 - 1.4. APPLY FOR, OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED PRIOR TO COMMENCEMENT OF CONSTRUCTION. INCLUDE ALL PROVINCIAL AND FEDERAL SALES TAXES.
 - 1.5. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE APPROVED SCHEDULE TO MEET THE PROJECT COMPLETION DATE AND ALL SPECIFIED INTERIM SCHEDULES.
 - 1.6. COMPLY WITH THE GENERAL CONTRACTOR'S CONSTRUCTION SCHEDULE.
 - 1.7. PROVIDE ALL CUTTING, PATCHING AND CLEAN-UP OF FLOORS, WALLS, CEILINGS, ETC. ALL SUCH WORK SHALL BE PERFORMED BY TRADESMEN SKILLED IN AND CERTIFIED FOR THIS PARTICULAR TRADE.
 - 1.8. PROVIDE SHOP DRAWINGS OF ALL SPECIFIED PRODUCTS AND SUBMIT FOR APPROVAL TO THE CONSULTANT.
 - 1.9. DURING PROGRESS OF WORK, SUBSTITUTE PRODUCTS WILL ONLY BE CONSIDERED WHEN TENDERED PRODUCTS BECOME UNOBTAINABLE AND WRITTEN PROOF IS SUBMITTED.
 - 1.10. PROVIDE THE OWNER WITH A WRITTEN WARRANTY FOR ALL LABOUR, MATERIALS, AND EQUIPMENT IN THIS CONTRACT FOR A PERIOD OF ONE YEAR COMMENCING AT SUCH TIME AS THE OWNER OR HIS REPRESENTATIVE DEEMS THE WORK IS ACCEPTABLE.
 - 1.11. OBTAIN AND PAY FOR TWO SETS OF WHITE PRINTS OF MECHANICAL DRAWINGS, AS JOB PROGRESSES, MARK UP THE WHITE PRINTS IN RED TO ACCURATELY INDICATE INSTALLED WORK. UPON COMPLETION OF THIS WORK, HAND THESE OVER TO THE CONSULTANT FOR REVIEW AND APPROVAL.
 - 1.12. INCLUDE COST OF PREMIUM TIME IN TENDER PRICE FOR WORK DURING NIGHTS, WEEKENDS OR OTHER TIME OUTSIDE NORMAL WORKING HOURS NECESSARY TO MAINTAIN ALL MECHANICAL SERVICES IN OPERATION AND TO COMPLETE THE WORK.
 - 1.13. PROVIDE A COMPLETE COST BREAKDOWN OF ALL MATERIALS, EQUIPMENT AND LABOUR COSTS ASSOCIATED WITH EACH SUBMISSION FOR EXTRA OR DELETED WORK.
 - 1.14. CONFER WITH ALL TRADES INSTALLING EQUIPMENT WHICH MAY AFFECT THE MECHANICAL WORK AND ARRANGE THE WORK IN PROPER RELATION WITH EQUIPMENT INSTALLED UNDER ALL DIVISIONS OF THE CONTRACT.
 - 1.15. IDENTIFY EACH DUCTED SERVICE COMPLETE WITH DIRECTIONAL FLOW ARROWS. LOCATE IDENTIFICATION AND FLOW ARROWS NOT MORE THAN 12M (40 FEET) APART IN STRAIGHT RUNS OF DUCTS. USE WORDING INDICATED ON THE MECHANICAL LEGEND. USE 50MM (2 INCHES) HIGH STENCIL LETTERS.
 - 1.16. ALL WALL AND FLOOR OPENINGS SHALL BE PACKED AND SEALED WITH AN APPROVED FIRE RESISTANT INSULATION TO 25MM (1 INCH) FROM END SIDE OF OPENING ON BOTH SIDES OF FLOOR OR WALL. REMAINING PORTION SHALL BE SEALED WITH AN APPROVED FIRE STOP SUBSTANCE EQUAL TO 'DOWN CORNING' #3-6548 SILICON RTV FOAM PENETRATION SEALANT.
 - 1.17. IN ALL AREAS REQUIRING CORE DRILLING THROUGH EXISTING FLOOR SLABS AND STRUCTURAL WALLS FOR MECHANICAL SERVICES, ETC., ALLOW FOR ALL NECESSARY X-RAYING BY LANDLORD'S APPROVED COMPANY, TO LOCATE HIDDEN ELECTRICAL SERVICES, STRUCTURAL REINFORCING, ETC., AND INCLUDE ALL COSTS IN TENDER PRICE. CO-ORDINATE THIS WORK WITH LANDLORD AND/OR TENANT CO-ORDINATOR FOR TIME, DURATION AND LOCATIONS REQUIRED, AND ADHERE TO THE LANDLORD'S REQUIREMENTS. X-RAYING SHALL BE CARRIED OUT AFTER 11:00 PM AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION. ONLY PERSONNEL QUALIFIED IN THE USE OF THE TYPE OF EQUIPMENT REQUIRED TO X-RAY THE SAWCUTS OR DRILLING SHALL BE PERMITTED TO PERFORM THIS WORK ON THE SITE. NO CORE DRILLING SHALL PROCEED WITHOUT PRIOR WRITTEN CONSENT OF THE LANDLORD. ALL NOISE-RELATED CONSTRUCTION ACTIVITIES SHALL BE PERFORMED AFTER REGULAR BUSINESS HOURS (8:00 AM TO 6:00 PM) APPROVED BY THE LANDLORD.
 - 1.18. CHECK AND VERIFY LOCATION OF EXISTING MECHANICAL AND ELECTRICAL INTERFERENCES BELOW FLOOR SLAB IN ALL AREAS REQUIRING CORE DRILLING AND ENSURE COMPATIBILITY OF AREA BELOW TO THE SATISFACTION OF THE LANDLORD.
 - 1.19. ALL SHUTDOWNS OF ANY PORTION OF THE EXISTING BASE BUILDING SYSTEMS SHALL BE PERFORMED BY THE LANDLORD'S BUILDING OPERATIONS STAFF AND/OR CO-ORDINATED WITH THE LANDLORD FOR TIME AND DURATION OF INTERRUPTIONS AND ADHERED TO THE LANDLORD'S INSTRUCTIONS IN THIS REGARD. COST FOR SHUTDOWNS, DRAINING AND REFILLING OF BASE BUILDING SYSTEMS SHALL BE INCLUDED IN THE TENDER PRICE. ENSURE THAT ALL DOMESTIC HOT WATER TANKS ARE ISOLATED ELECTRICALLY PRIOR TO DRAIN DOWN OF WATER SYSTEMS.
 - 1.20. PROVIDE ALL ACCESS DOORS WHERE SHOWN AND/OR REQUIRED BY SITE CONDITIONS, IN CEILINGS OR WALLS. ACCESS DOORS SHALL BE EQUAL TO MILCOR OR LEHAGE, AND MUST BE COMPATIBLE WITH CEILING/WALL TYPE AND ACCESS DOORS IN RATED CEILINGS OR WALLS SHALL BE ULC APPROVED FOR THE APPLICATION.
 - 1.21. MECHANICAL CONTRACTOR SHALL CO-ORDINATE WITH GENERAL CONTRACTOR FOR SIZE, LOCATION AND INSTALLATION OF ACCESS PANELS IN DRYWALL CEILINGS TO EQUIPMENT WHERE INDICATED ON PLAN AND/OR REQUIRED FOR PROPER SERVICING OF EQUIPMENT. CEILING ACCESS PANELS SHALL BE SUPPLIED AND INSTALLED BY THE MECHANICAL CONTRACTOR. INSTALLATION AND FINAL LOCATION TO COMPLY WITH THE INTERIOR DESIGNER'S APPROVAL.
 - 1.22. RE-USE EXISTING MATERIALS AND EQUIPMENT WHEREVER POSSIBLE AND PROVIDE NEW ONLY WHERE REQUIRED AND AS SPECIFIED TO ENSURE A COMPLETE INSTALLATION. ALL EQUIPMENT, MATERIALS AND ASSOCIATED CONTROLS SALVAGED FROM DEMOLITION NOT USED IN THIS CONTRACT SHALL BE RETURNED TO LANDLORD/OWNER.
 - 1.23. CHECK AND VERIFY ON SITE FOR ROUTING OF NEW DUCTWORK, AND LOCATION OF NEW EQUIPMENT AND INCLUDE IN TENDER PRICE FOR ANY RELOCATIONS OF EXISTING SERVICES OR ADJUSTMENTS OF NEW SERVICES OR EQUIPMENT AS REQUIRED TO SUIT THE SITE CONDITIONS. PROVIDE OFFSETS IN DUCTWORK AS REQUIRED TO AVOID

INTERFERENCES.

- 1.24. SEAL AIR TIGHT ALL AROUND DUCTWORK AND PIPING PENETRATIONS THROUGH PARTITIONS ABOVE CEILING.
2. BASE BUILDING REQUIREMENTS
 - 2.1. ALL CONSTRUCTION WORK IN THE BUILDING MUST BE CARRIED OUT IN STRICT ACCORDANCE WITH LANDLORD'S TENANT CONSTRUCTION MANUAL AND BE CLEARED THROUGH PROPERTY MANAGEMENT. OBTAIN A COPY FROM LANDLORD PRIOR TO TENDER CLOSING.
 - 2.2. DELIVERIES TO BE ARRANGED THROUGH BUILDING BUSINESS HOURS OR ON THE WEEKEND SO HE MAY NOTIFY SECURITY TO ALLOW CONTRACTORS ENTRANCE TO THE BUILDING.
 - 2.3. ALL MECHANICAL WORK TO BE UNDERTAKEN BY QUALIFIED TRADESMEN WHO ARE TO SUPPLY THEIR TICKET NUMBER TO THE BUILDING SUPERINTENDENT PRIOR TO COMMENCING WORK. UNDER NO CIRCUMSTANCES SHALL AN APPRENTICE BE PERMITTED TO WORK IN THE BUILDING UNLESS DIRECTLY SUPERVISED BY A QUALIFIED TRADESMAN ON SITE.
 - 2.4. TURN OVER TO LANDLORD ANY UNUSED BASE BUILDING EQUIPMENT SUCH AS A/C INDOOR & OUTDOOR UNITS, ETC.
3. PREMIUM TIME
 - 3.1. ALL WORK WHICH SHALL REQUIRE SHUTDOWN OF MECHANICAL SERVICES AND LIFE SAFETY SYSTEMS (SPRINKLER & STANDPIPE), AND NOISE-RELATED CONSTRUCTION ACTIVITIES SHALL BE PERFORMED ON PREMIUM TIME. INCLUDE IN THE TENDER PRICE FOR SUCH WORK.
4. HEATING, VENTILATING AND AIR CONDITIONING
 - 4.1. ALL DUCTWORK AND HANGERS SHALL BE FABRICATED FREE FROM VIBRATION, RATTLE OR DRUMMING UNDER OPERATING CONDITIONS AND IN ACCORDANCE WITH THE LATEST ASHRAE AND SMACNA RECOMMENDATIONS.
 - 4.2. RECTANGULAR DUCTWORK:

FABRICATE RECTANGULAR DUCTWORK TO METAL THICKNESS AND CONSTRUCTION METHODS AS SPECIFIED HEREIN FOR VARIOUS SIZE RANGES OF DUCTS, GIVEN DIMENSIONS REPRESENT WIDEST SIDE OF DUCT.

Gauge (GSG)	MM	LOW PRESSURE	MEDIUM PRESSURE	SLIP
26	0.49MM	UP TO 12"		
24	0.64MM	13"-30"	UP TO 18"	UP TO 30"
22	0.84MM	31"-54"	19"-48"	31"-60"
 - 4.3. ROUND DUCTWORK:

CONSTRUCT ROUND DUCTWORK USING SPIRAL LOCK SEAM TYPE DUCT CONFORMING TO FOLLOWING GAUGES:

DUCT DIAMETER	THICKNESS OF SHEET METAL
8' & UNDER	0.5 MM (26 GA.)
9" TO 12"	0.5 MM (26 GA.)
14" & ABOVE	0.6 MM (24 GA.)
 - 4.4. DIFFUSER BRANCH DUCTS:

PROVIDE SPIN-ON CONNECTORS COMPLETE WITH BALANCING DAMPER AT TAKE-OFF FROM MAIN DUCT.
 - 4.5. FLEXIBLE DUCTWORK:

FLEXIBLE DUCTWORK TO HAVE A MAXIMUM LENGTH OF 3.0M (10'). CONNECT DUCTWORK TO DIFFUSERS AND RIGID DUCTWORK WITH A MINIMUM OF 3 TAPPING SCREWS. SEAL WITH DUCT SEALER AND WRAP WITH GLASS FAB TAPE. FLEXIBLE DUCTWORK TO BE SUPPORTED FROM BUILDING STRUCTURE WHERE IT IS NOT SELF-SUPPORTING AND MUST NOT BE ALLOWED TO LIE ON CEILING OR OTHER EQUIPMENT.
 - 4.6. DUCT SEALING:
 - 4.6.1. SUPPLY AND EXHAUST DUCTS AND PLENUMS: SEAL ALL TRANSVERSE JOINTS AND LONGITUDINAL SEAMS WITH HIGH VELOCITY DUCT SEALER (BAKELITE 530-09 OR EQUIVALENT). DUCT TAPE NOT ACCEPTABLE.
 - 4.6.2. RETURN DUCTS AND PLENUMS: SEAL ALL TRANSVERSE JOINTS WITH HIGH VELOCITY DUCT SEALER (BAKELITE 530-09 OR EQUIVALENT). DUCT TAPE NOT ACCEPTABLE.
 - 4.7. MAKE GOOD ALL EXISTING INSULATION WHEN CONNECTING TO EXISTING SERVICES.
 - 4.8. PROVIDE DUCT ACCESS DOORS, MINIMUM 375MM X 300MM (15" X 12") SIZE FOR EQUIPMENT SUCH AS COILS (BOTH SIDES OF COIL), FIRE DAMPERS, CONTROL AND/OR BALANCING DAMPERS, HEAT AND/OR SMOKE DETECTORS, ETC. AS REQUIRED FOR PROPER SERVICING.
 - 4.9. PROVIDE FLEXIBLE CONNECTORS BETWEEN ALL FANS AND ADJACENT DUCTWORK CONSISTING OF A PREASSEMBLED UNIT WITH 75MM (3") LONG GALVANIZED DUCT CONNECTOR AND 150MM (6") WIDE HEAVY GLASS FIBRE FABRIC WITH ELASTOMER COATING EQUAL TO DURO DYNE "DUROLON".
 - 4.10. DIFFUSERS AND GRILLES:

REFER TO DRAWINGS FOR NEW DIFFUSERS AND GRILLES TYPES.
 - 4.11. FIRE DAMPERS:

ULC LISTED AND LABELED, TYPE B OR C, NON-ASBESTOS. PROVIDE LATCHED ACCESS DOORS IN DUCTWORK FOR ACCESS TO ALL FIRE DAMPERS. MINIMUM 300 MM X 300 MM (12"X12") ACCESS REQUIRED.
 - 4.12. THERMOSTATS TO BE LOCATED A MINIMUM 300 MM (12") FROM DIMMER SWITCHES. THERMOSTATS NOT TO BE LOCATED ABOVE DIMMER SWITCHES. THERMOSTATS TO BE LOCATED AT SAME MOUNTING HEIGHT AS LIGHT SWITCHES. CHECK HEIGHT WITH INTERIOR DESIGNER.
5. AIR BALANCE
 - 5.1. THE AIR BALANCING SHALL BE PERFORMED BY LANDLORD APPROVED CONTRACTOR. ALL AIR QUANTITIES ARE TO BE BALANCED WITHIN A TOLERANCE OF ± 5%. ISSUE A REPORT AND CERTIFICATE COVERING THE FOLLOWING:
 - 5.1.1. SPECIFIED AND ACHIEVED AIR QUANTITIES PER OUTLET COMPLETE WITH SUPPORTING SCHEMATIC DIAGRAMS.
 - 5.1.2. TEMPERATURE AT THE DIFFUSER FARTHEST FROM THE SOURCE OF AIR SUPPLY.
 - 5.1.3. NAMEPLATE AND ACTUAL FAN MOTOR VOLTAGE AND CURRENT OF THE EXISTING COMPARTMENTAL UNIT.
 - 5.2. SUBMIT ONE COPY OF REPORT TO EACH OF THE OWNER AND THE CONSULTANT.
6. INSULATION
 - 6.1. PREMOLDED PIPE INSULATION: SECTIONAL FIBREGLASS IN PREMOLDED SECTIONS 900 MM (36") LONG SPLIT AND READY FOR APPLICATION WITH MAXIMUM K FACTOR OF 0.035 AT 24 DEGREES C (75 DEGREES F) MEAN TEMPERATURE AND CAPABLE OF USE ON SERVICE FROM -40 DEGREES C (-40 DEGREES F) TO 260 DEGREES C (500 DEGREES F) AND WITH FACTORY APPLIED VAPOR SEAL JACKET OF VINYL COATED FOIL CRAFT LAMINATE WITH REINFORCING OF OPEN MESH GLASS FIBRE.

APPLICATION SCHEDULE:

 - DOMESTIC COLD WATER 12MM (½") PREMOLDED
 - DOMESTIC HOT WATER 12MM (½") PREMOLDED
 - 6.2. ALL INSULATION, VAPOUR BARRIER AND PVC COVERS ARE TO MEET THE REQUIREMENTS OF NFPA-90A AND MUST HAVE A FIRE HAZARD RATING OF NOT MORE THAN 25 FOR FLAME SPREAD AND 50 FOR THE SMOKE DEVELOPED WHEN TESTED IN ACCORDANCE WITH CAN/ULC-5102.
 - 6.3. RIGID INTERNAL DUCT LINER:

INSULATION SHALL BE 25 MM (1") THICK, 48 KG/M3 (3.0 LB/FT3) DENSITY. FIX MECHANICAL FASTENERS TO BOTH HORIZONTAL AND VERTICAL SURFACES AT APPROXIMATELY 12 INCHES CENTRES EACH DIRECTION. CUT INSULATION MATERIAL TO REQUIRED SIZE AND APPLY TO INTERIOR OF DUCT AND/OR PLENUM WITH HORIZONTAL SURFACES OVERLAPPING VERTICAL SURFACES AND EDGES TIGHTLY BUTTED TOGETHER. INSULATION SHALL BE APPLIED TO THE DUCTWORK WITH A MINIMUM 90% COVERAGE OF ADHESIVE AND MECHANICAL FASTENERS. WHERE MECHANICAL FASTENERS PENETRATE FACTORY FINISH AND AT ALL JOINTS, APPLY A HEAVY LAYER OF SEAL COATING. SEAL OFF LEADING EDGE OF INSULATION TO DUCT SURFACE WITH REINFORCED SEAL COATING.
 - 6.4. REFRIGERANT PIPING:

ALL REFRIGERANT PIPING SHALL BE INSULATED AS PER MANUFACTURER RECOMMENDATION
7. CLOSED OUT DOCUMENTS
 - 7.1. AT THE END OF THE PROJECT, SUBMIT 3 COPIES OF CLOSED OUT DOCUMENTS CONTAINING NEW EQUIPMENT SHOP DRAWINGS REVIEWED BY THE CONSULTANT, CONTRACTOR'S NFPA 13 CONFORMANCE LETTER, WARRANTY CERTIFICATE, AIR BALANCE REPORT, & AS-BUILT DRAWINGS.

LEGEND

NOTES: EQUIPMENT SHOWN DOTTED [---] ARE EXISTING TO BE REMOVED. EQUIPMENT SHOWN [---] ARE EXISTING TO REMAIN. EQUIPMENT SHOWN BOLD [---] ARE NEW OR RELOCATED.

- WALL MOUNTED TEMPERATURE SENSOR
- WALL MOUNTED THERMOSTAT
- CARBON MONOXIDE SENSOR
- OZONE SENSOR
- NOX SENSOR
- SQUARE DIFFUSER
- TYPE OF GRILLE OR DIFFUSER
- GRILLE OR DIFFUSER SIZE
- AIR QUANTITY IN CFM
- RETURN AIR GRILLE
- DUCTWORK C/W 1" INTERNAL INSULATION
- DUCTWORK C/W 1" EXTERNAL INSULATION
- ROUND DUCT TAKE-OFF C/W BALANCING DAMPER
- RIGID DUCT WORK UP/DOWN C/W BALANCING DAMPER
- TRANSFER AIR DUCT W/ 1" DUCT LINER
- ACCESS DOOR ON DRYWALL CEILING (MIN. 20"x20")
- BALANCING DAMPER
- VAV BOX
- REHEAT COIL
- EXHAUST FAN
- MAGNETIC MOTOR STARTER.
- PERIMETER RADIATOR
- PERIMETER RADIATOR CONTROL VALVE
- SIZE OF VAV BOX (COOLING ONLY)
- MAX AIR FLOW (CFM)
- MIN AIR FLOW (CFM)
- CONDENSATE DRAIN LINE
- BALL VALVE
- CAPPED CONNECTION
- PIPE BREAK
- CAP OFF SERVICE
- ELBOW, TURNED DOWN AND TURNED UP
- BALANCING VALVE
- STRAINER
- HWS HEATING WATER SUPPLY
- HWR HEATING WATER RETURN
- CLEANOUT
- FLOOR DRAIN
- P-TRAP
- CTE DENOTES CONNECT TO EXISTING. (PROVIDE NEW CONNECTION TO PLUMBING LINE AS REQUIRED)
- RL DENOTES RELOCATE
- DENOTES REFER TO NOTE 2.

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No.	Date	Issued or Revised
	Sep 10, 2024	Issued for Tender
	Aug 9, 2024	Issued for Permit



PROJECT:
TORONTO PARAMEDICS
 4330 DUFFERIN STREET
 TORONTO, ON

DRAWING TITLE:
SPECIFICATION

SCALE	AS NOTED	DATE	JUN, 2024
DRAWN BY	A.L.	PROJECT NO.	2409
DRAWING NO.	M-1		

NOTES

- 1 ALL CONSTRUCTION WORK IN THE BUILDING MUST BE CARRIED OUT IN STRICT ACCORDANCE WITH OWNER'S RULES & REGULATIONS AND BE CLEARED THROUGH PROPERTY MANAGEMENT.
- 2 AT THE END OF PROJECT, WIPE & VACUUM CLEAN THE SURFACE OF ANY EXT'G & NEW DIFFUSERS & RETURN AIR GRILLES FOUND TO BE DIRTY.
- 3A PROVIDE AIR BALANCING FOR VAV BOXES & THEIR ASSOCIATED DIFFUSERS SHOWN ON THIS FLOOR PLAN. ALL HVAC CONTROL WORK SHALL BE PERFORMED BY BASE BUILDING HVAC CONTROL CONTRACTOR. ARRANGE & PAY FOR BASE BUILDING HVAC CONTROL CONTRACTOR. CONTROL TECHNICIAN IS TO BE PRESENT AT SITE DURING AIR BALANCING FOR CALIBRATION OF VAV CONTROLLERS. ALLOW FOR AN ADDITIONAL AIR BALANCING TRIP WITHIN 12 MONTHS FROM THE END OF THE PROJECT FOR FUTURE AIR FLOW ADJUSTMENT.
- 3B PROVIDE AIR BALANCING FOR 'MAU-1' & 'EF-48', & THEIR ASSOCIATED DIFFUSERS & EXHAUST AIR GRILLES SHOWN ON THIS FLOOR PLAN. ALLOW FOR AN ADDITIONAL AIR BALANCING TRIP WITHIN 12 MONTHS FROM THE END OF THE PROJECT FOR FUTURE AIR FLOW ADJUSTMENT.
- 4 UNLESS OTHERWISE SHOWN, NEW FLEXIBLE DUCTWORK TO HAVE A MAXIMUM LENGTH OF 3M (10'). CONNECT DUCTWORK TO DIFFUSERS AND RIGID DUCTWORK WITH A MINIMUM OF 3 TAPPING SCREWS. SEAL WITH DUCT SEALER. FLEXIBLE DUCTWORK TO BE SUPPORTED FROM BUILDING STRUCTURE WHERE IT IS NOT SELF-SUPPORTING AND MUST NOT BE ALLOWED TO LIE ON CEILING OR OTHER EQUIPMENT.
- 5 HVAC CONTRACTOR SHALL COORDINATE ALL DUCTWORK INSTALLATION WITH ELECTRICAL, SPRINKLER & GENERAL CONTRACTORS PRIOR TO ROUGH-IN TO AVOID INTERFERENCE.
- 6 RELOCATE EXT'G TEMPERATURE SENSOR AS SHOWN. EXTEND CONTROL WIRING AS REQUIRED. CONTROL WIRING SHALL BE PLENUM-RATED.
- 7 ALL HVAC CONTROL WORK (INCLUDING ALL PROGRAMMING, BAS COMPUTER GRAPHICS UPDATE, CONTROL HARDWARES & WIRING, RELOCATION OF TEMPERATURE SENSORS, ETC.) SHALL BE PERFORMED BY BASE BUILDING HVAC CONTROL CONTRACTOR (AINSWORTH, CONTACT: MICHAEL PREMUS, 416-803-4791, michael.premus@ainsworth.com). ALLOW FOR RE-NUMBERING OF VAV BOXES & THEIR ASSOCIATED TEMPERATURE SENSORS TO REFLECT SITE CONDITIONS.
- 8A RELOCATE EXT'G EXH. FAN 'EF-1' TO THE EAST MOTORIZED DAMPER 'D-1' IN AMBULANCE BAY 134.
- 8B ALLOW FOR REMOVAL & REINSTALLATION OF EXT'G FAIL-SAFE BELIMO ACTUATOR FOR RE-ADJUSTMENT OF ACTUATOR SETTINGS. SEE "AMBULANCE BAY EXHAUST FAN/DAMPER WIRING SCHEMATIC" FOR SEQUENCE OF OPERATION DETAIL. ALL 120V CONTROL WIRING TO BE BY ELECTRICAL CONTRACTOR. ASSIST ELECTRICAL CONTRACTOR DURING CONTROL REWIRING.
- 9 REMOVE EXT'G INDOOR AC UNIT & ITS ASSOCIATED OUTDOOR CONDENSER UNIT, REFRIGERANT PIPING & CONDENSATE DRAIN LINES, & RETURN TO OWNER. ALL REMAINING HOLES IN BLOCK WALL TO BE SEALED WITH WEATHERPROOF SEALANT AS REQUIRED.
- 10 HVAC CONTRACTOR TO CUSTOM FABRICATE PLENUM BOX TO BE INSTALLED ABOVE THE RETURN AIR GRILLE. PROVIDE SUPPORTS FROM BUILDING STRUCTURE AS REQUIRED. SEE "RETURN AIR GRILLE/AIR DUCT DETAIL" ON THIS DWG.
- 11 PROVIDE NEW UNIT HEATER 'UH-1'. NEW UNIT HEATER SHALL BE HUNG FROM BUILDING STRUCTURE & INSTALLED AS PER MANUFACTURER'S INSTALLATION RECOMMENDATIONS. INSTALL THE UNIT HEATER AT 24" AWAY FROM THE EDGE OF THE NEW OVERHEAD DOOR WHEN IT IS FULLY OPENED.
- 12 CUT OPENINGS IN WALLS TO ALLOW RUNNING OF PIPING OR DUCTWORK. SEAL ALL REMAINING GAPS WITH 3M FIRE RATED SEALANT.
- 13 PROVIDE NEW ISOLATION VALVES ON VERTICAL PORTION OF THE EXT'G HEATING WATER SUPPLY & RETURN PIPING. ALLOW FOR SHUT DOWN OF EXT'G HEATING SYSTEM & PROVIDE FREEZING OF EXT'G PIPES AS REQUIRED FOR NEW CONNECTIONS.
- 14 PROVIDE NEW HOT WATER SUPPLY & RETURN LINES C/W WITH ISOLATION VALVES & BALANCING VALVE FOR THE NEW UNIT HEATER 'UH-2'.
- 15 PROVIDE NEW THERMOSTAT JOHNSON CONTROLS SERIES #A19 WITH STYLE 3 COILED BULB & FINGER-TIP ADJUSTING KNOB TO MATCH EXT'G.
- 16 PROVIDE NEW BALANCING VALVE ON HEATING WATER RETURN LINE.
- 17 HVAC CONTRACTOR TO TRACE & LOCATE EXT'G TEMPERATURE SENSOR FOR THIS EXT'G VAV BOX 'VAV-BPB1'. ALLOW TO SUPPLY A NEW TEMPERATURE SENSOR IF NONE IS FOUND. CONTROL WIRING SHALL BE PLENUM-RATED.
- 18 ALL WORK RELATED WITH EXT'G & NEW GAS DETECTION SYSTEMS SHALL BE BY ARMSTRONG MONITORING (CONTACT: RYAN DAMMEIER, 226-789-8733 (C)).
- 19 PROVIDE NEW NOX SENSOR WIRE TO THE EXT'G GAS DETECTION UNIT IN THE SAME ROOM.
- 20 REMOVE EXT'G REDUNDANT CRITICAL ENVIRONMENTAL TECHNOLOGIES #SCS-AMCO-L GAS DETECTION UNIT & ASSOCIATED WIRING. TURN OVER REMOVED UNIT TO OWNER. PROVIDE ADDITIONAL JUNCTION BOX & CONDUITS TO REROUTE EXT'G 24VAC POWER WIRING IF THE WIRING IS STILL ACTIVE FOR OTHER EQUIPMENT. SEE NOTE #18.
- 21 EXT'G GAS DETECTION UNIT TO REMAIN. REPLACE EXT'G REMOTE OZONE SENSOR WITH NEW CO SENSOR & REMOUNT AT 48" AFF. EXT'G ARMSTRONG #AMC-210 SERIES TRANSMITTER UNIT & CONTROL WIRING REMAIN & BE REUSED. SEE NOTE #18.
- 22 EXT'G GAS DETECTION UNIT, ARMSTRONG #IA12-TX-X TO REMAIN. INTERLOCK EXT'G GAS DETECTION UNIT IN AMBULANCE BAY WITH THE RELOCATED EXT'G FAN 'EF-1' & THE TWO MOTORIZED DAMPERS 'D-1' & 'D-2'. SEE "AMBULANCE BAY EXHAUST FAN/DAMPER WIRING SCHEMATIC" ON DWG. M-3 FOR SEQUENCE OF CONTROL.
- 23 PROVIDE NEW GAS DETECTION UNIT, ARMSTRONG #IA12-TX-X (TO MATCH EXT'G UNIT IN AMBULANCE BAY), 120V, C/W CO SENSOR, NOX SENSOR, & 24VAC HIGH & LOW ALARM RELAY/CONTACTS. INTERLOCK THE NEW GAS DETECTION UNIT IN RADIO REPAIR BAY WITH THE EXT'G MAKE-UP AIR UNIT 'MAU-1' & EXHAUST FAN 'EF-48'. SEE NOTE #18.
- 24 ALL HVAC CONTROLS WORK RELATED TO EXT'G MAKE-UP AIR UNIT 'MAU-1' & EXHAUST FAN 'EF-48' SHALL BE BY BASE BUILDING HVAC CONTROLS COMPANY, AINSWORTH (CONTACT: MICHAEL PREMUS, 416-803-4791, michael.premus@ainsworth.com). PROVIDE ALL NECESSARY HARDWARE, WIRING, CONNECTION TO B.A.S., INDOOR TEMPERATURE SENSOR, COMPUTER GRAPHICS UPDATE, ETC.

SEQUENCE OF CONTROL:

- EXT'G 'MAU-1' SHALL OPERATE WHEN:
 - SPACE TEMPERATURE DROPS BELOW HEATING SETPOINT OF THE INDOOR TEMPERATURE SENSOR.
 - RADIO REPAIR BAY INDOOR GAS DETECTION UNIT "WARNING-ALARM" IS ACTIVATED.
 - 7-DAY PROGRAMMABLE TIMER TO ACTIVATE MAU-1 (SCHEDULE TO ACTIVATE A CERTAIN MINIMUM NUMBER OF MINUTES PER HOUR AS PER OWNER'S INSTRUCTION).
 - FURNACE SHALL OPERATE ONLY WHEN SPACE TEMPERATURE DROPS BELOW THE SETPOINT (65F/18C).
- EXT'G 'MAU-1' SHALL BE INTERLOCKED WITH EXT'G EXHAUST FAN 'EF-48'.

OUTDOOR AIR REQUIREMENT (CAC/IT):
ASHRAE OUTDOOR AIR REQUIREMENT:
(1,956 SQFT x 0.06 SQFT + 13 x 5 CFM/PPL)/0.8 = 221.7 CFM
OUTDOOR AIR SUPPLY:
TOTAL OUTDOOR AIR SUPPLY FROM VAV BOXES (#BPB1, BPB2, 145 & 146) IS 20% OF 2,460 CFM = 492 CFM.

OUTDOOR AIR REQUIREMENT (SCHEDULING):
ASHRAE OUTDOOR AIR REQUIREMENT:
(2,054 SQFT x 0.06 SQFT + 9 x 5 CFM/PPL) = 168.24 CFM
OUTDOOR AIR SUPPLY:
TOTAL OUTDOOR AIR SUPPLY FROM VAV BOXES (#21, 124 & 125) IS 20% OF 1,130 CFM = 226 CFM.

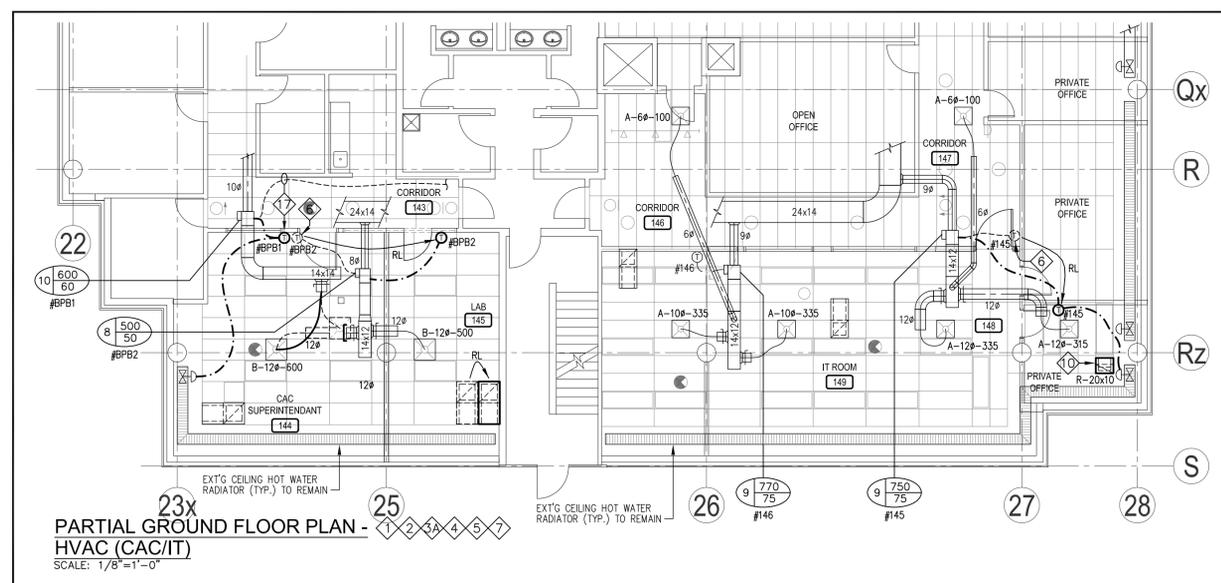
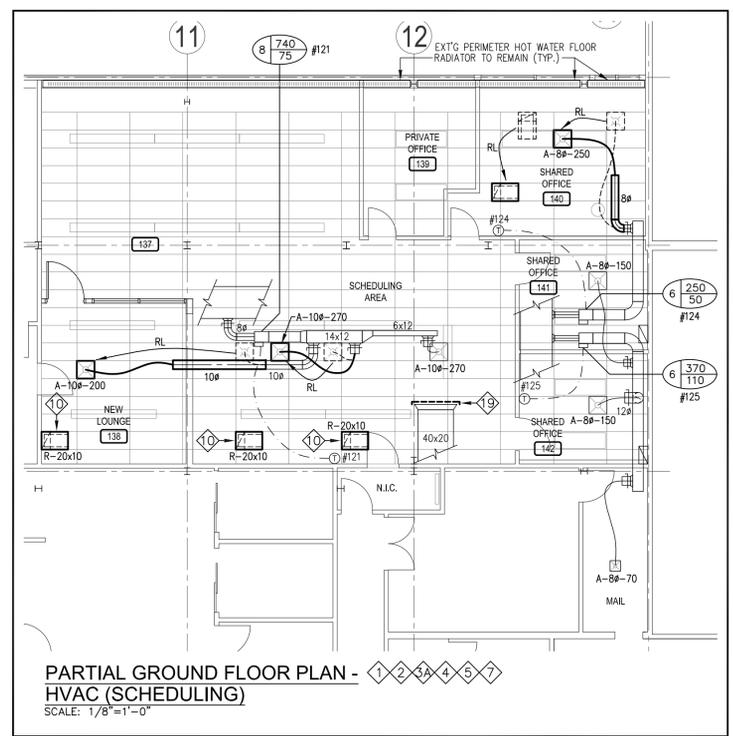
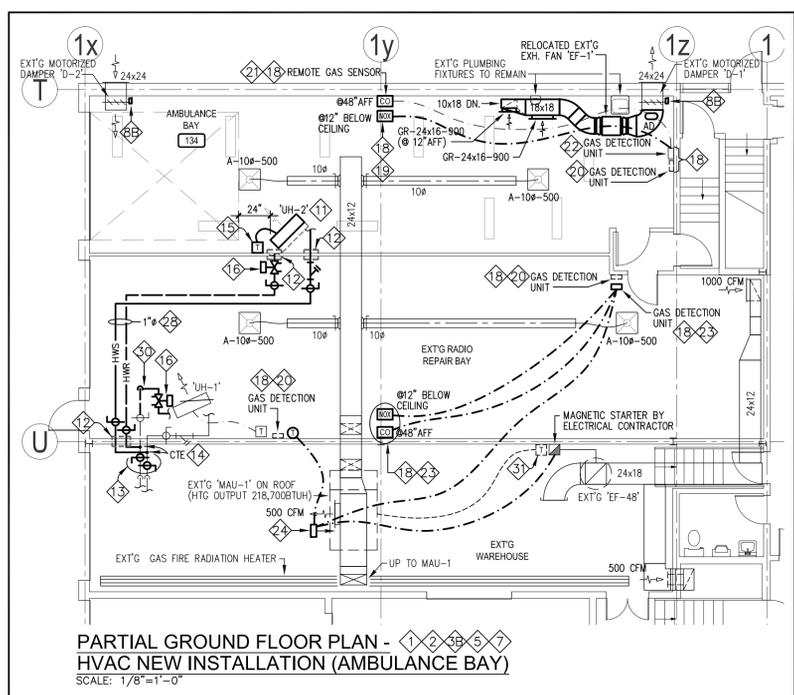
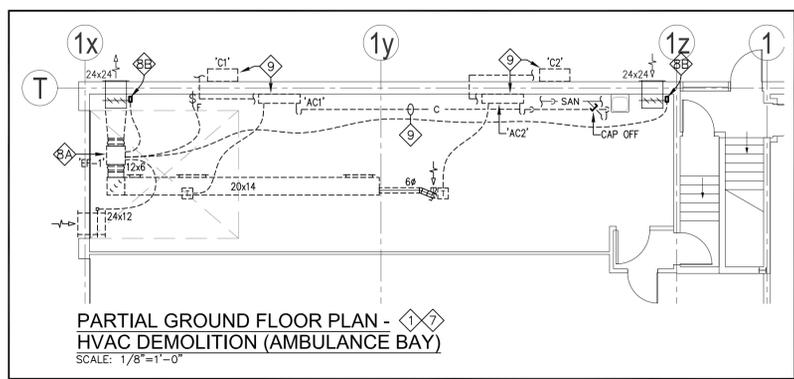
OUTDOOR AIR REQUIREMENT (AMBULANCE BAY):
ASHRAE OUTDOOR AIR REQUIREMENT:
(800 SQFT x 0.06 SQFT + 2 x 5 CFM/PPL)/0.8 = 46.4 CFM
OUTDOOR AIR SUPPLY:
TOTAL OUTDOOR AIR SUPPLY FROM EXT'G TWO SUPPLY DIFFUSERS (FROM MAU-1) IS 1,000 CFM.

PROVIDE 1" THICK FIBERGLASS PIPING INSULATION WITH WHITE VINYL COVERS ON ALL NEW HEATING WATER PIPES.

PROVIDE TEMPORARY FILTERS WITH MERV 8 RATING AT EXT'G RETURN AIR DUCT OPENING FOR THE DURATION OF THE CONSTRUCTION. REPLACE AS REQUIRED DURING CONSTRUCTION MONTHLY OR IF DAMAGED. REMOVE TEMPORARY FILTER PRIOR TO AIR BALANCING AT THE END OF THE PROJECT.

REROUTE EXT'G HEATING WATER RETURN PIPE DOWNSTREAM OF EXT'G SHUT-OFF VALVE TO EXT'G UNIT HEATER 'UH-1' AS REQUIRED TO ALLOW INSTALLATION OF NEW BALANCING VALVE.

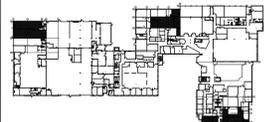
REMOVE EXT'G THERMOSTAT & TURNOVER TO OWNER.



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No.	Date	Issued or Revised
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	Aug 9, 2024	Issued for Permit



KEY PLAN

STAMP

NORTH

PROJECT: **TORONTO PARAMEDICS**
4330 DUFFERIN STREET
TORONTO, ON

DRAWING TITLE: **PARTIAL GROUND FLOOR PLANS - HVAC**

SCALE: AS NOTED	DATE: JUN, 2024
DRAWN BY: A.L.	PROJECT NO.: 2409
DRAWING NO.: M-2	

MECHANICAL SPECIFICATIONS:

1. GENERAL
 - 1.1. VISIT THE SITE PRIOR TO TENDER AND VERIFY ALL CONDITIONS AND DIMENSIONS, INCLUDING LOCATIONS OF EXISTING CAPPED SERVICES, AND ALLOW FOR ANY RE-ROUTING OF EXISTING AND/OR NEW SERVICES AND EQUIPMENT IN TENDER PRICE. FAILURE TO DO SO SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY.
 - 1.2. REPORT TO THE CONSULTANT ALL AMBIGUITIES, DISCREPANCIES, OMISSIONS, ERRORS, DEPARTURES FROM BUILDING BYLAWS AND/OR FROM GOOD PRACTICE PRIOR TO TENDER CLOSING.
 - 1.3. PROVIDE ALL WORK IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNING AUTHORITIES AND LOCAL BY-LAWS.
 - 1.4. APPLY FOR, OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED PRIOR TO COMMENCEMENT OF CONSTRUCTION. INCLUDE ALL PROVINCIAL AND FEDERAL SALES TAXES.
 - 1.5. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE APPROVED SCHEDULE TO MEET THE PROJECT COMPLETION DATE AND ALL SPECIFIED INTERIM SCHEDULES.
 - 1.6. COMPLY WITH THE GENERAL CONTRACTOR'S CONSTRUCTION SCHEDULE.
 - 1.7. PROVIDE ALL CUTTING, PATCHING AND CLEAN-UP OF FLOORS, WALLS, CEILINGS, ETC. ALL SUCH WORK SHALL BE PERFORMED BY TRADESMEN SKILLED IN AND CERTIFIED FOR THIS PARTICULAR TRADE.
 - 1.8. PROVIDE SHOP DRAWINGS OF ALL SPECIFIED PRODUCTS AND SUBMIT FOR APPROVAL TO THE CONSULTANT.
 - 1.9. DURING PROGRESS OF WORK, SUBSTITUTE PRODUCTS WILL ONLY BE CONSIDERED WHEN TENDERED PRODUCTS BECOME UNOBTAINABLE AND WRITTEN PROOF IS SUBMITTED.
 - 1.10. PROVIDE THE OWNER WITH A WRITTEN WARRANTY FOR ALL LABOUR, MATERIALS, AND EQUIPMENT IN THIS CONTRACT FOR A PERIOD OF ONE YEAR COMMENCING AT SUCH TIME AS THE OWNER OR HIS REPRESENTATIVE DEEMS THE WORK IS ACCEPTABLE.
 - 1.11. OBTAIN AND PAY FOR TWO SETS OF WHITE PRINTS OF MECHANICAL DRAWINGS, AS JOB PROGRESSES, MARK UP THE WHITE PRINTS IN RED TO ACCURATELY INDICATE INSTALLED WORK. UPON COMPLETION OF THIS WORK, HAND THESE OVER TO THE CONSULTANT FOR REVIEW AND APPROVAL.
 - 1.12. INCLUDE COST OF PREMIUM TIME IN TENDER PRICE FOR WORK DURING NIGHTS, WEEKENDS OR OTHER TIME OUTSIDE NORMAL WORKING HOURS NECESSARY TO MAINTAIN ALL MECHANICAL SERVICES IN OPERATION AND TO COMPLETE THE WORK.
 - 1.13. PROVIDE A COMPLETE COST BREAKDOWN OF ALL MATERIALS, EQUIPMENT AND LABOUR COSTS ASSOCIATED WITH EACH SUBMISSION FOR EXTRA OR DELETED WORK.
 - 1.14. CONFER WITH ALL TRADES INSTALLING EQUIPMENT WHICH MAY AFFECT THE MECHANICAL WORK AND ARRANGE THE WORK IN PROPER RELATION WITH EQUIPMENT INSTALLED UNDER ALL DIVISIONS OF THE CONTRACT.
 - 1.15. ALL SHUTDOWNS OF ANY PORTION OF THE EXISTING BASE BUILDING SYSTEMS SHALL BE PERFORMED BY THE LANDLORD'S BUILDING OPERATIONS STAFF AND/OR CO-ORDINATED WITH THE LANDLORD FOR TIME AND DURATION OF INTERRUPTIONS AND ADHERED TO THE LANDLORD'S INSTRUCTIONS IN THIS REGARD. COST FOR SHUTDOWNS, DRAINING AND REFILLING OF BASE BUILDING SYSTEMS SHALL BE INCLUDED IN THE TENDER PRICE. ENSURE THAT ALL DOMESTIC HOT WATER TANKS ARE ISOLATED ELECTRICALLY PRIOR TO DRAIN DOWN OF WATER SYSTEMS.
2. BASE BUILDING REQUIREMENTS
 - 2.1. ALL CONSTRUCTION WORK IN THE BUILDING MUST BE CARRIED OUT IN STRICT ACCORDANCE WITH LANDLORD'S TENANT CONSTRUCTION MANUAL AND BE CLEARED THROUGH PROPERTY MANAGEMENT. OBTAIN A COPY FROM LANDLORD PRIOR TO TENDER CLOSING.
 - 2.2. DELIVERIES TO BE ARRANGED THROUGH BUILDING SUPERINTENDENT OF ANY WORK SCHEDULED AFTER NORMAL BUSINESS HOURS OR ON THE WEEKEND SO HE MAY NOTIFY SECURITY TO ALLOW CONTRACTORS ENTRANCE TO THE BUILDING.
 - 2.3. ALL MECHANICAL WORK TO BE UNDERTAKEN BY QUALIFIED TRADESMEN WHO ARE TO SUPPLY THEIR TICKET NUMBER TO THE BUILDING SUPERINTENDENT PRIOR TO COMMENCING WORK. UNDER NO CIRCUMSTANCES SHALL AN APPRENTICE BE PERMITTED TO WORK IN THE BUILDING UNLESS DIRECTLY SUPERVISED BY A QUALIFIED TRADESMAN ON SITE.
3. PREMIUM TIME
 - 3.1. ALL WORK WHICH SHALL REQUIRE SHUTDOWN OF MECHANICAL SERVICES AND LIFE SAFETY SYSTEMS (SPRINKLER & STANDPIPE), AND NOISE-RELATED CONSTRUCTION ACTIVITIES SHALL BE PERFORMED ON PREMIUM TIME. INCLUDE IN THE TENDER PRICE FOR SUCH WORK.
4. FIRE PROTECTION
 - 4.1. MODIFICATIONS TO SPRINKLER & STANDPIPE SYSTEMS MUST BE PROVIDED BY LANDLORD'S APPROVED BASE BUILDING SPRINKLER CONTRACTOR (JD COLLINS- CONTACT DAN MADDEN, 416-606-4117 (C) AND A MEMBER COMPANY OF THE CANADIAN AUTOMATIC SPRINKLER ASSOCIATION. MODIFICATIONS TO BE COMPATIBLE WITH THE BASE BUILDING SPRINKLER SYSTEM, AND IN ACCORDANCE WITH ALL GOVERNING AUTHORITIES AND APPLICABLE BY-LAW REQUIREMENTS INCLUDING REQUIREMENTS OF NFPA STANDARDS.
 - 4.2. PROVIDE NEW SPRINKLER HEADS AS SHOWN ON PLAN. VERIFY SPRINKLER PIPE SIZES ON SITE AND MAKE REQUIRED PIPE SIZE CHANGES TO SUIT HYDRAULIC DESIGN FOR NEW SPRINKLER LAYOUT.
 - 4.3. NEW SPRINKLER HEADS: TO MATCH EXACT EXISTING BASE BUILDING.
 - 4.3.1. SUBMIT ONE COPY OF ALL FIRE PROTECTION TEST RESULTS TO LANDLORD AND ENGINEER.
 - 4.4. THE SPRINKLER CONTRACTOR IS TO PROVIDE THE CUTTING OF THE CEILING TILES IN ORDER TO INCORPORATE THE SPRINKLER HEADS.
5. CLOSED OUT DOCUMENTS
 - 5.1. AT THE END OF THE PROJECT, SUBMIT 3 COPIES OF CLOSED OUT DOCUMENTS CONTAINING NEW EQUIPMENT SHOP DRAWINGS REVIEWED BY THE CONSULTANT, CONTRACTOR'S NFPA 13 CONFORMANCE LETTER, WARRANTY CERTIFICATE, & AS-BUILT DRAWINGS.

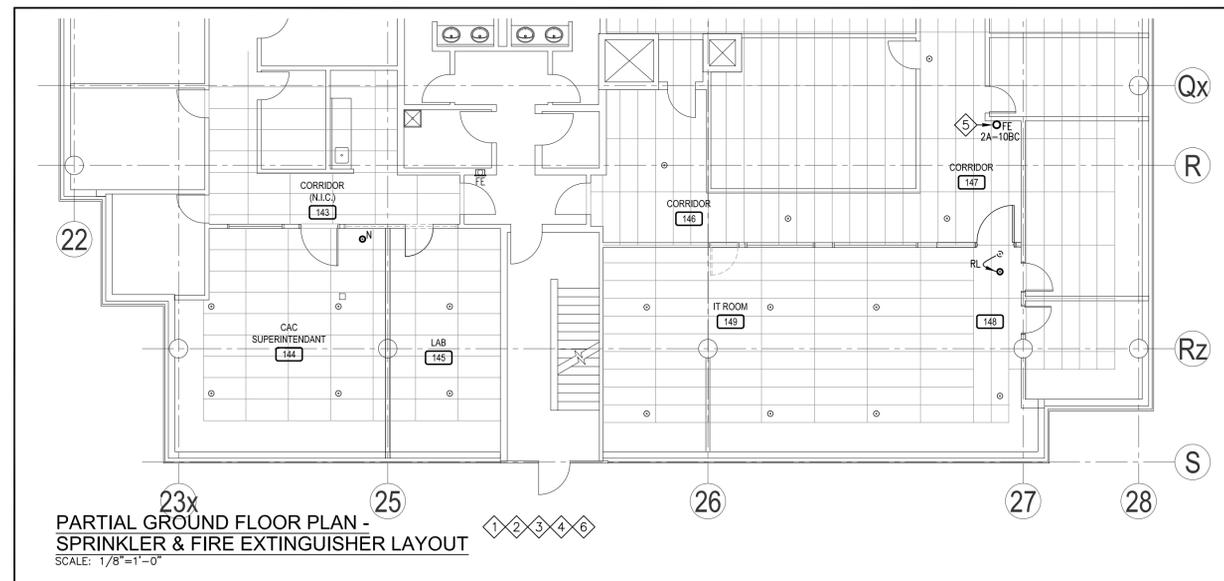
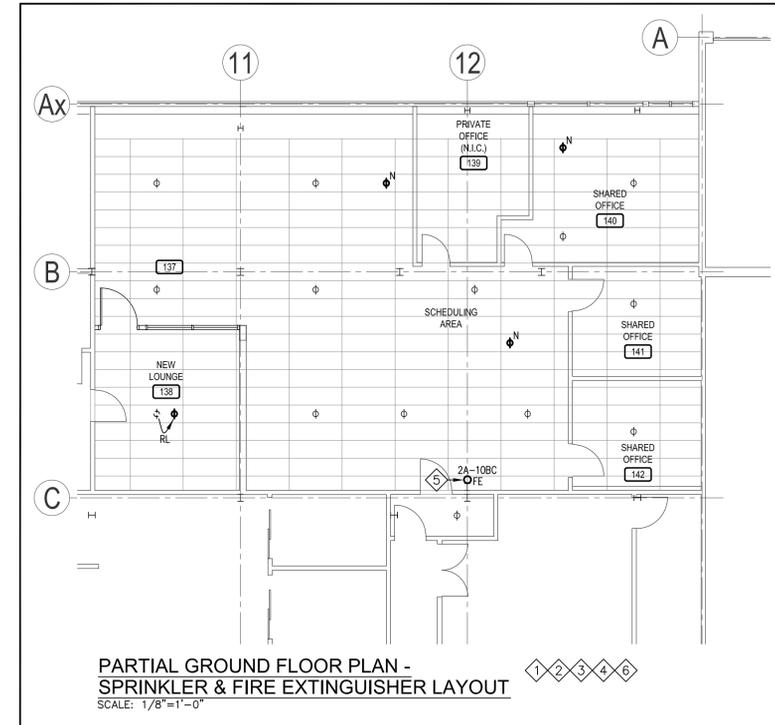
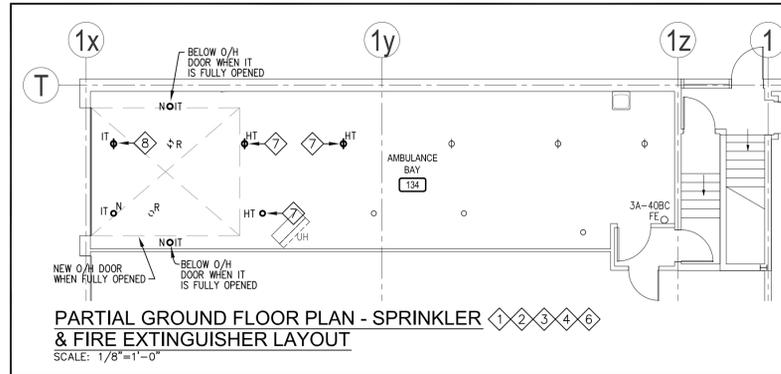
NOTES

1. ALL CONSTRUCTION WORK IN THE BUILDING MUST BE CARRIED OUT IN STRICT ACCORDANCE WITH OWNER'S RULES & REGULATIONS AND BE CLEARED THROUGH PROPERTY MANAGEMENT.
2. ALL SPRINKLER WORK SHALL BE PERFORMED BY OWNER'S APPROVED BASE BUILDING SPRINKLER CONTRACTOR (JD COLLINS: CONTACT DAN MADDEN, 416-606-4117 (C)).
3. PROVIDE ALL NEW SPRINKLER HEADS AS SHOWN ON PLAN. ALL NEW HEADS & DROPS ARE TO BE PROVIDED BY THIS CONTRACTOR. MAKE ALL NECESSARY PIPE SIZE CHANGES, & PROVIDE ADDITIONAL BRANCH SPRINKLER LINES AS REQUIRED FOR NEW SPRINKLER LAYOUT.
4. COORDINATE SPRINKLER HEAD INSTALLATION WITH ELECTRICAL, MECHANICAL & GENERAL CONTRACTORS TO PREVENT CONFLICT WITH LIGHTING, HVAC INSTALLATION & CEILING TILE REPLACEMENT.
5. PROVIDE FIRE EXTINGUISHER & WALL MOUNTING BRACKET.
6. PROVIDE NEW ESCUTCHEON COVER PLATE WHERE MISSING. FINISH TO MATCH EXT'G.

7. REPLACE EXT'G SPRINKLER HEAD WITH HIGH TEMPERATURE SPRINKLER HEAD AS REQUIRED DUE TO CLOSE PROXIMITY TO UNIT HEATER.
8. REPLACE EXT'G SPRINKLER HEAD WITH INTERMEDIATE TEMPERATURE SPRINKLER HEAD AS REQUIRED DUE TO CLOSE PROXIMITY TO UNIT HEATER.

LEGEND

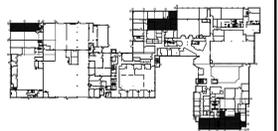
- NOTES: EQUIPMENT SHOWN DOTTED [---] ARE EXISTING TO BE REMOVED. EQUIPMENT SHOWN [---] ARE EXISTING TO REMAIN. EQUIPMENT SHOWN BOLD [---] ARE NEW OR RELOCATED.
- SPRINKLER HEAD - FULLY-RECESSED (N-NEW, R-REMOVE)
 - ◊ SPRINKLER HEAD - SEMI-RECESSED (N-NEW, R-REMOVE)
 - SPRINKLER HEAD - UPRIGHT (N-NEW, R-REMOVE) (HT - HIGH-TEMPERATURE CLASSIFICATION) (IT - INTERMEDIATE-TEMPERATURE CLASSIFICATION)
 - FE FIRE EXTINGUISHER C/W WALL MOUNTING BRACKET (2A-10BC - RATING; CO2 - CO2 TYPE)
 - FE RECESSED FIRE EXTINGUISHER CABINET
 - RL DENOTES RELOCATE
 - 2 DENOTES REFER TO NOTE 2.



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KEY PLAN



PROJECT:
TORONTO PARAMEDICS
4330 DUFFERIN STREET
TORONTO, ON

DRAWING TITLE:
PARTIAL GROUND FLOOR PLANS - SPRINKLER LAYOUT & FIRE EXTINGUISHER LAYOUT

SCALE: AS NOTED DATE: JUN, 2024

DRAWN BY: A.L.L. PROJECT NO.: 2409

DRAWING NO.: **M-4**