DRAWING LIST

DRAWING NO.	DRAWING NAME
M00-00	MECHANICAL SPECIFICATIONS & DRAWING LIST AND SCHEDULES
M00-01	BASEMENT MECHANICAL LAYOUT
M01-01	MAIN FLOOR MECHANICAL LAYOUT

FURNACE SCHEDULE

TAG	LOCATION	MANUF. AND MODEL/SERIES	AIR FLOW RANGE (L/S)	HEAD (IN W.C)	GAS MANIFOLD PRESSURE (IN.W.C)	HEAT INPUT (KW)	HEAT OUTPUT (KW)	TEMPERATURE RISE RANGE (C°)	V/Hz/P	BLOWER MOTOR FULL LOAD (AMPS)	MOCP (AMPS)	MOTOR (HP)	DIMENSIONS LxWxH (mm)	SHIPPING WEIGHT (KG)	NOTES
FU-1	MECH ROOM	LENNOX - ML193UH070XP36B	558	0.58	3.5/10	19.34	18.17	4.4-21.1	120/ 60 /1	6.1	15	1/3	730x446x838	57.6	C/W DX COOLING CC-1, SIDE RETURN AIR FILTER KIT, FLUE CONDENSATE TRAP ASSEMBLY, TOUCH SCREEN COMFORTSENSE 7500- 7 DAY PROGRAMMABLE THERMOSTAT
FU-2,3	MECH ROOM	LENNOX - ML193UH070XP36B	311/762	0.5	3.5/10	19.34	18.17	4.4-21.1	120/ 60 /1	6.1	15	1/3	730x446x838	57.6	C/W SIDE RETURN AIR FILTER KIT, FLUE CONDENSATE TRAP ASSEMBLY, TOUCH SCREEN COMFORTSENSE 7500- 7DAY PROGRAMMABLE THERMOSTAT

EVAPORATOR COIL SCHEDULE

TAG	LOCATION	MANUF. AND MODEL/SERIES	COOLING CAPACITY (TONS)	INDOOR COIL # ROWS	DIMENSIONS LxWxH (mm)	SHIPPING WEIGHT (IBS)	NOTES
CC-1	MECH ROOM	LENNOX - CX34-43B-6F	3.5	3	533x445x699	27.2	CONNECTED TO FU-1

CONDENSING UNIT SCHEDULE

TAG	LOCATION	MANUF. AND MODEL/SERIES	COOLING CAPACITY (TONS)	OUT DOOR FAN (L/S)	OUT DOOR FAN (RPM)	OUT DOOR FAN (W)	V/Hz/P	MOTOR (HP)	MOCP (AMPS)	MIN. AMP.	DIMENSIONS LxWxH (mm)	SHIPPING WEIGHT (KG)	NOTES
CU-1	OUTDOOR	LENNOX - 13ACXN-036-230	3	1132	1090	185	208/1/60	1/5	35	22	617x617x744	68.5	REFRIGERANT R-410A CHARGE

MECHANICAL SPECIFICATIONS:

1. GENERAL
1.1. ALL WORK SHOWN OR IMPLIED ON THESE DRAWINGS SHALL BE CARRIED OUT IN ACCORDANCE WITH:
1.1.1. ALBERTA BUILDING CODE (ABC) 2006
1.1.2. PLUMBING CODE OF CANADA 2010
1.1.3. CAN/CSA-B125-05 PLUMBING FITTINGS.
1.1.4. LOCAL AUTHORITY HAVING JURISDICTION.
1.1.5. NFPA 10-2002 PORTABLE FIRE EXTINGUISHERS.
1.1.6. ULC STANDARDS
1.2. 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.
1.3. 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 AND SUPPORTS REQUIRED FOR A COMPLETE AND OPERATIVE INSTALLATION. THESE MECHANICAL DRAWINGS MUST BE READ IN CONJUNCTION WITH THE ARCHITECTURAL, STRUCTURAL, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS.
1.4. 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 COMPLY WITH OCCUPATIONAL HEALTH AND SAFETY ACT.
1.5. ARRANGE, COORDINATE AND PAY ALL REQUIRED FEES AND PERMITS. SUBMIT DRAWINGS AND SPECIFICATIONS TO ALL AUTHORITIES AND OBTAIN APPROVAL BEFORE COMMENCING ANY WORK. PAY FOR FEES AND CHARGES LEVIED BY THE MUNICIPALITY, UTILITIES AND OTHER GOVERNING AUTHORITY FOR PERMITS, INSPECTIONS AND CERTIFICATES, AND WORK PERFORMED BY THE MUNICIPALITY OR UTILITIES IN CONNECTION WITH THE MECHANICAL WORK. ARRANGE AND COORDINATE SUCH WORK AND OBTAIN PERMITS. KEEP A COPY OF ALL SUCH PERMITS AND CERTIFICATES ON THE JOB SITE DURING THE PROJECT DURATION.
1.6. WORKMANSHIP AND MATERIALS SHALL MATCH OR EXCEED THAT OF THE EXISTING.
1.7. ALL WORK TO BE CONDUCTED DURING HOURS SPECIFIED BY THE PROJECT MANAGER. NO DISRUPTION TO BUILDING OPERATIONS WILL BE ALLOWED WITHOUT PRIOR APPROVAL OF THE OWNER. ALL CHANGES AND CONNECTIONS TO EXISTING SERVICES, REQUIRING THE SHUTDOWN OF THAT SERVICE SHALL BE DONE AT A TIME DESIGNATED BY THE PROJECT MANAGER. ALLOW FOR PREMIUM TIME NEEDED.
1.8. CARRY OUT DEMOLITION IN A MANNER TO CAUSE AS LITTLE INCONVENIENCE TO THE OCCUPIED BUILDING AREA AS POSSIBLE. CO-ORDINATE THIS ACTIVITY WITH THE FACILITY MANAGER.
1.9. CAREFULLY REMOVE EQUIPMENT TO BE REUSED OR HANDED OVER TO THE OWNER. STORE EQUIPMENT FOR RE-INSTALLATION. RELOCATE ANY PIPING, DUCTWORK, OR EQUIPMENT INTERFERING WITH NEW CONSTRUCTION.
1.10. 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.
1.11. MANUFACTURER'S INSTRUCTIONS REGARDING THE HANDLING, INSTALLATION AND TESTING OF EQUIPMENT SPECIFIED HEREIN SHALL BE CONSIDERED PART OF THIS SPECIFICATION.
1.12. 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.
1.13. MECHANICAL CONTRACTOR SHALL OBTAIN AND PAY FOR HOISTING OF MECHANICAL EQUIPMENT. COORDINATE HOISTING SCHEDULE WITH PROJECT MANAGER. ARRANGE AND PAY FOR ANY REQUIRED PERMITS.
1.14. INSPECT ALL EQUIPMENT UPON DELIVERY AND NOTIFY PROJECT ENGINEER OF ANY DAMAGE OR DEFICIENCIES.
1.15. SUBMIT ONE (1) COPY OF SHOP DRAWINGS AND PRODUCT DATA IN ELECTRONIC PDF FORMAT OF ALL SPECIFIED EQUIPMENT & SYSTEMS. HARD COPY SHOP DRAWINGS WILL NOT BE ACCEPTED. CERTIFY THAT SHOP DRAWINGS HAVE BEEN REVIEWED BY GENERAL CONTRACTOR PRIOR TO SUBMITTING TO CONSULTANT FOR REVIEW. REVIEWED ELECTRONIC SHOP DRAWINGS WILL BE RE-DISTRIBUTED AS PER PROJECT MANAGER'S INSTRUCTIONS.
1.16. ALL EQUIPMENT, PIPING, DUCTWORK AND WIRING SHALL BE RUN AT RIGHT ANGLES TO AND BE SUSPENDED FROM THE BUILDING STRUCTURE.
1.17. 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.
1.18. PROVIDE CUTTING, PATCHING AND CORING OF ALL WALLS, CEILING AND OTHER SURFACES AS REQUIRED FOR MECHANICAL WORK. OBTAIN WRITTEN VERIFICATION OF LOCATIONS FROM THE ENGINEER PRIOR TO CUTTING. ALL ROOFING WORK FOR MECHANICAL EQUIPMENT TO BE UNDERTAKEN BY QUALIFIED ROOFING CONTRACTORS UNDER THIS SECTION.
1.19. INSTALL ALL EQUIPMENT ACCORDING TO MANUFACTURER'S RECOMMENDATIONS WITH ADEQUATE ACCESS.
1.20. 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.).
1.21. CONTRACTOR SHALL BE RESPONSIBLE FOR DEACTIVATION, DRAINING, REFILLING AND REACTIVATING OF OPERATIONAL SYSTEMS. COORDINATE WITH OWNER AND ENSURE THAT NO UNDUE DISRUPTION OF BUILDING OPERATIONS OCCUR.
1.22. MAINTAIN A SET OF WHITE PRINTS MARKED UP TO "AS BUILT" CONDITION ON SITE, UPDATED ON AN ONGOING BASIS THROUGHOUT THE COURSE OF THE PROJECT. PURCHASE, FROM THE CONSULTANT, SET OF CADD FILES OF THE MECHANICAL CONTRACT DRAWINGS AND TRANSFER ALL INFORMATION ONTO THE CAD DRAWINGS. HAND OVER 2 SETS OF WHITE PRINTS AND CD WITH CADD FILES SHOWING THE "AS BUILT" CONDITION TO THE CONSULTANT FOR FINAL REVIEW PRIOR TO FINAL INSPECTIONS.
1.23. SUBMIT THREE (3) COPIES OF OPERATION AND MAINTENANCE MANUALS FOR ENGINEER'S APPROVAL.
1.24. WARRANTY PERIOD SHALL BE FOR TWELVE (12) MONTHS AFTER THE DATE OF SUBSTANTIAL COMPLETION AS DETERMINED BY ENGINEER.

2. INSULATION
2.1. ALL COMPONENTS OF INSULATION SYSTEM TO BE SUITABLE FOR PLENUM INSTALLATION, HAVING MAXIMUM FLAME SPREAD RATING OF 25 AND MAXIMUM SMOKE DEVELOPED RATING OF 50 IN ACCORDANCE WITH CAN4-S102
2.2. INSULATE DOMESTIC COLD WATER PIPING WITH 1" FIBER GLASS INSULATION WITH FACTORY APPLIED VAPOUR BARRIER JACKED, MOLDED TO CONFORM TO PIPING K VALUE AT 24 C.
2.2. PROVIDE ISOLATING VALVES ON MAIN AND/OR BRANCH LINES AND AT ALL EQUIPMENT OR FIXTURES OR WHERE SHOWN. ALL VALVES SHALL BE SUITABLE FOR THE OPERATING PRESSURE OF THE SYSTEM.
2.3. ALL THE INDOOR SUPPLY DUCT WORK TO BE INSULATED WITH 25mmTHICK FIBERGLASS INSULATION.
2.4. OUTDOOR & COMBUSTION AIR DUCT WORKS ARE TO BE INSULATED WITH 50mm OF INSULATION.
2.5. INSULATE EXHAUST DUCTS WITH 25mm INSULATION FOR 3000mm FROM OUTSIDE WALL.

3. PLUMBING
3.1. PROVIDE DIELECTRIC COUPLINGS/UNION UNIONS WHERE DISSIMILAR METALS ARE JOINED.
3.2. PROVIDE ISOLATING VALVES ON MAIN AND/OR BRANCH LINES AND AT ALL EQUIPMENT OR FIXTURES OR WHERE SHOWN. ALL VALVES SHALL BE SUITABLE FOR THE OPERATING PRESSURE OF THE SYSTEM IN WHICH THEY ARE INSTALLED. MAKE AND MODEL SHALL BE AS PER BASE BUILDING STANDARDS AND SPECIFICATIONS UNLESS NOTED OTHERWISE.
3.3. INSTALL ALL ABOVE GRADE PIPING TO ALLOW COMPLETE DRAINAGE.
3.4. DOMESTIC COLD WATER PIPING: COPPER TUBE, HARD DRAWN, TYPE "L" WITH WROUGHT COPPER FITTINGS USING LEAD FREE SOLDER AND PRESSURE TESTED TO PLUMBING CODE.
3.5. BALL VALVES NPS 2 AND UNDER, SCREWED, CLASS 150, BRONZE BODY, STAINLESS STEEL BALL, PTFE TEFLON ADJUSTABLE PACKING, BRASS GLAND AND PTFE TEFLON SEAT, STEEL LEVER HANDLE, CRANE OR APPROVED EQUAL.
3.6. HANGERS AND SUPPORTS SHALL BE OF MANUFACTURED TYPE AND ASSEMBLED AS PER MANUFACTURER'S INSTRUCTIONS. 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. 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. PROVIDE ADDITIONAL SUPPORTS AT CHANGES IN PIPE DIRECTION AND FOR CONCENTRATION OF LOADS DUE TO WEIGHT OF VALVES, STRAINERS, ETC. HANGER SPACING:COPPER PIPING UP TO NPS 1/2 EVERY 5 FT, STEEL PIPING EVERY 10'. HANGERS SHALL BE WITHIN 12" OF EACH ELBOW.
3.7. PROVIDE PIPE IDENTIFICATION TO MATCH EXISTING BASE BUILDING STANDARD; IDENTIFY PIPE ON EITHER SIDE OF WALL / SLAB / ROOF PENETRATIONS, AND AT NOT LESS THAN 30' INTERVALS THROUGH LARGE ROOMS.
3.8. SHUT-OFF VALVE: BALL TYPE FOR NPS 2 ID AND SMALLER. BUTTERFLY TYPE FOR 65 MM (2-1/2") AND LARGER.
3.9. PLUMBING FIXTURES TO BE AS DWG M00-02.

4. HEATING, VENTILATION, AND COOLING
4.1. GALVANIZED STEEL DUCT LOCK FORMING QUALITY: TO ASTM A 525M, Z90 ZINC COATING. THICKNESS, FABRICATION, JOINTS AND REINFORCEMENT: TO ASHRAE AND SMACNA. ALL TRANSVERSE JOINTS AND CONNECTIONS SHALL BE SEALED WITH WATER BASED DUCT SEALANT AND TAPE.
4.2. HANGERS: ALL DUCTWORK AND HANGERS SHALL BE FABRICATED IN ACCORDANCE WITH THE LATEST ASHRAE AND SMACNA RECOMMENDATIONS AND STANDARDS.
4.3. IDENTIFICATION DUCTWORK SYSTEMS STENCILLED LETTERS 50 MM (2") HIGH. DIRECTIONAL ARROWS 150 MM (6") LONG X 50 MM (2") HIGH. COLORS: BLACK, OR CO-ORDINATED WITH BASE COLOR TO ENSURE STRONG CONTRAST.
5. TESTING, ADJUSTING AND BALANCING
5.1. TEST, ADJUST AND BALANCE NEW DUCTWORK.
5.2. REPORT: PROVIDE REPORT INDICATING AIR VOLUMES AND LOCATION OF TESTING ON A COPY OF CONSTRUCTION DRAWINGS. SUBMIT 3 BOUND COPIES OF TAB REPORTS, COMPLETE WITH INDEX TABS FOR VERIFICATION AND APPROVAL OF ENGINEER.

6. CONTROLS
6.1. PROVIDE ALL CONTROLS AND WIRING INCLUDING APPURTENANCES NECESSARY FOR COMPLETE AND OPERATING SYSTEM.

7. LIST OF APPROVED MANUFACTURERS
7.1. AIR TERMINALS - GRILLES, REGISTERS, DIFFUSERS: E.H PRICE, TITUS, NAILOR OR APPROVED EQUIVALENT.
7.2. ACCESS DOORS: MAXAM, MILCOR, MIFAB, ACUDOR OR APPROVED EQUIVALENT.
7.3. AIR VENTS: HOFFMAN, MAID-O-MIST, TACO OR APPROVED EQUIVALENT.
7.4. BALANCING AGENTS: KD ENGINEERING, MDT SYSTEMS, WESTERN MECHANICAL SYSTEMS OR APPROVED EQUIVALENT.
7.5. DRAINS-FLOOR, CLEANOUTS, PRIMERS: ZURN, ANCON, PPP, J.R-SMITH OR APPROVED EQUIVALENT.
7.6. FANS: BROAN, GREENHECK, ACME, NUTONE, COOK OR APPROVED EQUIVALENT.
7.7. FIRE EXTINGUISHERS: FLAG, NFE, WILSON & COUSINS OR APPROVED EQUIVALENT.
7.8. ELECTRIC HEATERS: OULLET, CHROMALOX, STELPRO, QMARK OR APPROVED EQUIVALENT.
7.9. GAS FIRED HEATER: MODINE, REZNOR OR APPROVED EQUIVALENT.

ELECTRICAL SPECIFICATIONS:

1. GENERAL
2. THE GENERAL REQUIREMENTS, INSTRUCTIONS TO BIDDERS, THIS SPECIFICATION AND ANY ADDENDA HERETO FORM PART OF THE CONTRACT DOCUMENTS AND SHALL BE READ IN CONJUNCTION WITH THEM. WORK SHALL INCLUDE THE FURNISHING OF ALL LABOR AND MATERIALS UNLESS SPECIFICALLY NOTED OTHERWISE TO COMPLETE AND PUT INTO OPERATING CONDITION ALL ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN.
2.1. THE SCOPE OF WORK IS AS DESCRIBED HEREIN AND SHOWN ON THE DRAWINGS.
3. STANDARD OF MATERIAL AND WORKMANSHIP
3.1. ALL MATERIALS SHALL BE NEW UNLESS SPECIFICALLY NOTED ON DRAWINGS AND BE OF THE QUALITY SPECIFIED AND SHALL CONFORM TO THE STANDARDS OF THE CANADIAN STANDARDS ASSOCIATION. WHERE EQUIPMENT OR MATERIALS ARE SPECIFIED BY TECHNICAL DESCRIPTION ONLY, THEY SHALL BE OF THE BEST COMMERCIAL QUALITY OBTAINABLE FOR THE PURPOSE.
3.2. ALL WORK SHALL BE EXECUTED IN A NEAT AND WORKMANLIKE MANNER BY QUALIFIED TRADESMEN. ELECTRICAL CONTRACTOR SHALL KEEP A COMPETENT FOREMAN AND NECESSARY ASSISTANTS, ALL SATISFACTORY TO THE ENGINEER, ON THE JOB DURING THE PROGRESS OF THE WORK.
3.3. WORKMANSHIP SHALL BE OF THE HIGHEST STANDARDS THROUGHOUT AND SHALL BE MINIMUM OF THE CURRENT TRADE PRACTICES FOR ELECTRICAL INSTALLATIONS IN THIS BUILDING.
4. UNIFORMITY OF EQUIPMENT
4.1. UNLESS OTHERWISE SPECIFICALLY CALLED FOR IN THE SPECIFICATIONS, UNIFORMITY OF MANUFACTURE SHALL BE MAINTAINED FOR ANY PARTICULAR ITEM THROUGHOUT THE BUILDING.
4.2. SPECIFICATIONS, UNIFORMITY OF MANUFACTURE SHALL BE MAINTAINED FOR ANY PARTICULAR ITEM THROUGHOUT THE BUILDING.
4.2.1. SPECIFICATIONS, UNIFORMITY OF MANUFACTURE SHALL BE MAINTAINED FOR ANY PARTICULAR ITEM THROUGHOUT THE BUILDING.
5. DRAWINGS AND SPECIFICATIONS
5.1. THE DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY, EACH TO THE OTHER, AND WHAT IS CALLED FOR BY ONE, SHALL BE BINDING AS IF CALLED FOR BY BOTH. WHERE INFORMATION IS CONFLICTING THE SPECIFICATIONS TRUMP THE DRAWINGS.
5.2. SHOULD ANY DISCREPANCY APPEAR BETWEEN THE DRAWINGS AND SPECIFICATIONS WHICH LEAVES THE ELECTRICAL CONTRACTOR IN DOUBT AS TO THE TRUE INTENT AND MEANING OF THE PLANS AND SPECIFICATIONS, A RULING SHALL BE OBTAINED FROM THE ENGINEER. IF THIS IS NOT DONE, IT WILL BE ASSUMED THAT THE MOST EXPENSIVE ALTERNATE HAS BEEN ALLOWED FOR.
6. CODES, PERMITS AND INSPECTION
6.1. THE INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF THE CURRENT EDITION OF THE CANADIAN ELECTRICAL CODE AND THE REGULATIONS OF THE RURAL MUNICIPALITY OF WOOD BUFFALO ELECTRICAL INSPECTION DEPARTMENT.
6.2. THE ELECTRICAL CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED AT THEIR EXPENSE AND DISPLAY THEM IN THE ELECTRICAL ROOM, AND COORDINATE INSPECTIONS AS REQUIRED AND OBTAIN A FINAL INSPECTION CERTIFICATE.
7. EXAMINATION OF THE SITE
7.1. PRIOR TO SUBMITTING THEIR TENDER, THE ELECTRICAL CONTRACTOR SHALL CAREFULLY EXAMINE THE SITE AND ASCERTAIN ALL CONDITIONS, WHICH SHALL AFFECT HIS TRADE. NO EXTRAS WILL BE ALLOWED FOR WORK RESULTING FROM CONDITIONS THAT WOULD HAVE BEEN EVIDENT UPON A THOROUGH EXAMINATION OF THE SITE.
8. CLEAN UP
8.1. THE ELECTRICAL CONTRACTOR AND THEIR SUB-TRADES SHALL AT ALL TIMES DURING CONSTRUCTION, KEEP THE SITE FREE OF ALL DEBRIS, BOXES, PACKING, ETC., RESULTING FROM WORK OF THIS TRADE.
8.2. AT THE COMPLETION OF THE WORK, THE ELECTRICAL INSTALLATION SHALL BE LEFT IN A CLEAN FINISHED CONDITION TO THE SATISFACTION OF THE ENGINEER.
8.3. ALL LUMINAIRES AND ELECTRICAL DEVICES SHALL BE WASHED, CLEANED OF GREASE, DIRT AND LINT AS REQUIRED.
8.4. ALL HANDLING OF LUMINAIRES AND LAMPS SHALL BE DONE WITH CLEAN GLOVES. TO ENSURE CLEANLINESS AND LAMP LIFE.
8.5. RECYCLE PACKING MATERIAL AND OTHER SUCH ITEMS THAT CAN BE DIVERTED FROM LANDFILL.
9. SETTING OUT OF THE WORK
9.1. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING ALL WORK COMPLETED CONTRARY TO THE INTENT OF THE DRAWINGS AND SPECIFICATIONS AND SHALL BEAR ALL COSTS FOR SAME. WHERE THE INTENT OF THE DRAWINGS AND SPECIFICATIONS IS NOT CLEAR, HE SHALL OBTAIN THE CLARIFICATION OF THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
9.2. THE ELECTRICAL CONTRACTOR SHALL GIVE THE WORK THEIR PERSONAL SUPERVISION, LAY OUT HIS OWN WORK, DO ALL NECESSARY LEVELLING AND MEASURING OR EMPLOY A COMPETENT ENGINEER TO DO SO. FIGURES, FULL SIZE AND DETAIL DRAWINGS SHALL TAKE PRECEDENCE OVER SCALE MEASUREMENTS.
9.3. WHERE ANY EQUIPMENT SUPPLIED BY THE ELECTRICAL CONTRACTOR MUST BE BUILT IN WITH THE WORK OF OTHER CONTRACTORS, THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE SUPPLYING OF THE EQUIPMENT TO BE BUILT IN OR MEASUREMENTS TO ALLOW NECESSARY OPENINGS TO BE LEFT SO AS NOT TO HOLD UP THE WORK.
9.4. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE CAUSED TO THE OWNER OR ANY OF THE OTHER TRADES BY IMPROPER LOCATION OR CARRYING OUT OF HIS WORK.
10. LOCATION OF OUTLETS
10.1. ENGINEER RESERVES THE RIGHT TO CHANGE LOCATION OF OUTLETS TO WITHIN 3.0 METRES OF POINTS INDICATED ON PLANS WITHOUT EXTRA CHARGE PROVIDING ELECTRICAL CONTRACTOR IS ADVISED PRIOR TO INSTALLATION.
11. CORING, CUTTING AND PATCHING
11.1. THE GENERAL TRADE WILL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED FOR THE ELECTRICAL INSTALLATION. STRUCTURAL MEMBERS SHALL NOT BE CUT WITHOUT THE CONSENT OF THE STRUCTURAL ENGINEER.
11.2. WHERE WORK BY THE ELECTRICAL CONTRACTOR DAMAGES WORK OF OTHER TRADES, THE ELECTRICAL CONTRACTOR SHALL REPAIR AND MAKE GOOD SUCH DAMAGE TO THE SATISFACTION OF THE TRADE CONCERNED AND THE ENGINEER.
11.3. WHERE THE FLOOR SLAB IS DRILLED FOR CONDUIT INSTALLATION TO WALL JUNCTION BOXES OR TO FLOOR FITTINGS THE FLOOR SHALL BE DRY CORE DRILLED. AFTER CONDUIT INSTALLATION, THE OPENING SHALL BE FIRE STOPPED. (SEE SECTION "FIRE STOPPING") ELECTRICAL CONTRACTOR TO PAY FOR ALL ASSOCIATED X-RAY COSTS, STRUCTURAL ENGINEER REVIEW, ETC.
12. ACCESS DOORS
12.1. NUMBER OF ACCESS DOORS TO BE KEPT TO AN ABSOLUTE MINIMUM. DOOR LOCATIONS WILL BE COORDINATED WITH THE ENGINEER PRIOR TO INSTALLATION.
12.2. WHERE ACCESS IS REQUIRED TO PULLBOXES AND JUNCTION BOXES, THESE BOXES ARE TO BE LOCATED IN REMOVABLE TYPE CEILING AREAS WHERE POSSIBLE OR ADJACENT TO RECESSED LUMINAIRES.
12.3. WHERE IT IS ABSOLUTELY IMPOSSIBLE TO SERVICE CERTAIN EQUIPMENT THROUGH REMOVABLE TYPE CEILINGS OR RECESSED LUMINAIRES AND WHERE SPECIAL PERMISSION HAS BEEN OBTAINED FROM THE ENGINEER, ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL ACCESS DOORS REQUIRED FOR SERVICING OF SUCH WORK.
12.4. ACCESS DOORS TO BE HELD CLOSED WITH CAPTIVE TYPE STUDS. ACCESS PANELS TO BE OF NOT LESS THAN 14 GAUGE STEEL, PRIME COATED AND PAINTED ON THE JOB TO MATCH THE WALL OR CEILING FINISH AS REQUESTED BY THE ARCHITECT.
12.5. WHERE ACCESS PANELS WILL BE USED, PROPER SHOP DRAWINGS ARE TO BE SUBMITTED FOR APPROVAL, PRIOR TO INSTALLATION.
13. PAINTING AND FINISHES
13.1. ALL ELECTRICAL FITTINGS, SUPPORTS, HANGER RODS, PULLBOXES, CHANNEL FRAMES, CONDUIT RACKS, OUTLET BOXES, BRACKETS, CLAMPS, ETC., SHALL HAVE GALVANIZED FINISH OR PAINT FINISH OVER CORROSION-RESISTANT PRIMER.
13.2. ALL PANELS OR SIMILAR FACTORY FINISHED UNITS THAT ARE SCRATCHED OR MARKED DURING INSTALLATIONS SHALL BE TOUCHED UP WITH MATCHING SPRAY OR DRY LACQUER AND IF REQUIRED TO PROVIDE SATISFACTORY JOB SHALL BE COMPLETELY REFINISHED.
14. N/A.
15. SHOP DRAWINGS
15.1. THE ELECTRICAL CONTRACTOR MUST REVIEW AND STAMP ACCEPTABLE ALL SHOP DRAWINGS PRIOR TO SUBMITTING TO THE ENGINEER.
15.2. ELECTRICAL CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW, ONE (1) SET OF ELECTRONIC SHOP DRAWINGS IN PDF FORMAT INCLUDING BUT NOT LIMITED TO DISTRIBUTION, LUMINAIRES, EXIT SIGNS, OCCUPANCY SENSORS, BATTERY PACKS, FIRE ALARM EQUIPMENT AND TELECOMMUNICATIONS EQUIPMENT AND CABLING.
15.3. ENGINEER SHALL BE ALLOWED MINIMUM 5 BUSINESS DAYS TO RETURN REVIEWED SHOP DRAWINGS.
15.4. SCANNED SHOP DRAWINGS MUST BE LEGIBLE. SHOP DRAWINGS WHICH ARE UNCLEAR WILL BE REJECTED AND RETURNED FOR RESUBMISSION.
15.5. SHOP DRAWING SHALL BE SPECIFIC TO THIS PROJECT ONLY. GENERIC DRAWINGS WILL NOT BE ACCEPTED. INDICATING ARROWS SHALL HIGHLIGHT THE PRODUCT FOR REVIEW. GENERIC DRAWINGS, DRAWINGS WITHOUT INDICATING ARROWS AND DRAWINGS WITHOUT CONTRACTOR REVIEWED STAMP WILL BE RETURNED REJECTED FOR RESUBMISSION.
15.6. THE ENGINEER'S REVIEW OF SHOP DRAWINGS SHALL BE FOR GENERAL DESIGN ONLY AND SHALL NOT RELIEVE THE ELECTRICAL CONTRACTOR OR SUPPLIER FROM THEIR RESPONSIBILITY FOR ERRORS, PROPER FITTING, AND CONSTRUCTION OF THE WORK AND FURNISHING OF MATERIALS. THE REVIEW SHALL NOT BE CONSTRUED AS APPROVING DEPARTURES FROM THE CONTRACT DOCUMENT REQUIREMENTS IF SUCH DEPARTURES ARE NOT SPECIFICALLY NOTED IN A COVERING LETTER ACCOMPANYING SUCH DRAWINGS.
15.7. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS.
15.8. ANY WORK PERFORMED PRIOR TO THE RETURN OF REVIEWED SHOP DRAWINGS IS DONE AT THE RISK OF THE CONTRACTOR.
16. RECORDS PLANS
16.1. THE ENGINEER WILL FURNISH TO THE ELECTRICAL CONTRACTOR ONE SET OF WHITE PRINTS TO BE USED FOR RECORD WORK AS ACTUALLY INSTALLED. ELECTRICAL CONTRACTOR SHALL ACCURATELY RECORD ON THIS SET OF PLANS, DAY BY DAY, ALL OUTLETS, CONDUIT, LUMINAIRES EQUIPMENT BREAKER CHANGES IN PANELS, ETC. AS ACTUALLY INSTALLED ON THE JOB. ANY CHANGES TO THE CONTRACT WORK SHALL BE SIMILARLY RECORDED.
16.2. AS-BUILT DRAWINGS SHALL BE CLEARLY MARKED IN RED INCLUDING ALL CHANGES TO THE ORIGINAL TENDER DRAWINGS COVERED BY ADDENDA, CHANGE ORDERS, FIELD CHANGES, JOB CONDITIONS, ETC.
16.3. FINAL PAYMENT TO THE CONTRACTOR WILL NOT BE RELEASED UNTIL AS-BUILT DRAWINGS ARE RECEIVED BY THE ENGINEER. AS-BUILT DRAWINGS ARE TO BE TURNED OVER TO THE ENGINEER AT TIME OF FINAL INSPECTION.
17. EQUIPMENT IDENTIFICATION
17.1. CLEARLY IDENTIFY ALL ELECTRICAL EQUIPMENT USING PRINTED PTOUCH LABELS OR LAMACOIDS. HAND-WRITTEN LABELS ARE UNACCEPTABLE.
17.2. ALL ELECTRICAL DISTRIBUTION EQUIPMENT SHALL HAVE A LAMACOID NAMEPLATE FASTENED TO THE OUTSIDE FRONT OF THE EQUIPMENT.
17.3. EQUIPMENT TAG NUMBER SHALL CONTAIN A MINIMUM OF; THE EQUIPMENT NAME, VOLTAGE, PHASE, WIRE (3 OR 4), AMPERAGE, SOURCE: XXXX, LOAD: XXXX. SUBMIT PROPOSED TAGGING FOR ENGINEER'S APPROVAL PRIOR TO FABRICATION.
17.4. PROVIDE TYPEWRITTEN CIRCUIT INDEXES FOR ALL PANELS.
17.5. JUNCTION BOXES SHALL ALL BE LABELED INDICATING THE SYSTEM AND OR CIRCUITS CONTAINED WITHIN.
17.6. ALL RECEPTACLES SHALL BE LABELED WITH THE CIRCUIT NUMBERS AND PANEL IDENTIFICATION. UTILIZE P-TOUCH ADHESIVE LABELS COMPLETE WITH A MINIMUM OF 5 LETTERING. I.E. "PNL-CCT."
17.7. ALL COMMUNICATIONS AND OTHER SYSTEMS CABLES AND DEVICES ARE TO BE IDENTIFIED AS PER THE EIA/TIA 606 STANDARDS. CONFIRM PROTOCOL WITH OWNER OR ENGINEER PRIOR TO COMMENCEMENT OF LABELS.
17.8. ALL LUMINAIRES CONNECTED TO EMERGENCY CIRCUITS TO BE LABELLED WITH P-TOUCH LABEL INDICATING PANEL AND CIRCUIT DESIGNATION. LABEL TO BE VISIBLE FROM BELOW AFTER INSTALLATION.
18. TESTS
18.1. ALL PORTIONS OF THE ELECTRICAL WORK SHALL BE TESTED AND CHECKED FOR SATISFACTORY OPERATION.
18.2. BEFORE ENERGIZING ANY PORTION OF THE ELECTRICAL SYSTEM, PERFORM MEGGER TESTS ON ALL FEEDERS. RESULTS OF SUCH TESTS SHALL CONFORM TO THE REQUIREMENTS OF THE CANADIAN ELECTRICAL CODE AND SHALL BE TO THE SATISFACTION OF THE AUTHORIZED INSPECTION AGENCY AND THE ENGINEER.
18.3. SUBMIT ALL TEST RESULTS TO THE ENGINEER FOR APPROVAL
18.4. ANY TEST RESULTS THAT DO NOT MEET THE MINIMUM REQUIREMENTS OF THE MANUFACTURER, CANADIAN ELECTRICAL CODE, AUTHORIZED INSPECTION AGENCY AND THE ENGINEER SHALL BE REPAIRED IN A METHOD APPROVED BY THE ENGINEER AND RETESTED AT THE EXPENSE OF THE CONTRACTOR.
18.5. UPON COMPLETION OF THE WORK AND IMMEDIATELY PRIOR TO FINAL INSPECTION AND TAKEOVER, CHECK THE LOAD BALANCE OF ALL FEEDERS AND AT DISTRIBUTION CENTER, PANELS, ETC. THE TESTS SHALL BE CARRIED OUT BY TURNING ON ALL POSSIBLE LOADS IN THE TENANT AND CHECKING LOAD CURRENT BALANCE. IF LOAD UNBALANCE EXCEEDS 15 PERCENT, RECONNECT CIRCUITS TO BALANCE THE LOAD.
19. GUARANTEE/WARRANTY
19.1. THAT ALL WORK EXECUTED UNDER THIS CONTRACT WILL BE FREE FROM DEFECTS OF MATERIAL AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE FROM ENGINEER (C2 SCHEDULE) FOR THIS WORK.
19.2. THE ABOVE PARTIES FURTHER AGREE TO, AT THEIR OWN EXPENSE, REPAIR AND REPLACE ALL SUCH DEFECTIVE WORK AND OTHER WORK DAMAGED THEREBY WHICH FAILS OR BECOMES DEFECTIVE DURING THE TERM OF THE WARRANTY PROVIDED THAT SUCH FAILURE IS NOT DUE TO IMPROPER USAGE.
19.3. THE PERIOD OF THE GUARANTEE SPECIFIED SHALL IN NO WAY SUPPLANT ANY OTHER GUARANTEE OF A LONGER PERIOD BUT SHALL BE BINDING ON WORK NOT OTHERWISE COVERED.
19.4. ELECTRICAL CONTRACTOR TO ISSUE LETTER STIPULATING WARRANTY PERIOD DATES FOR ALL EQUIPMENT.
20. BUILDING WIRING
20.1. ALL WIRING SHALL BE COPPER WITH RW90 X-LINK INSULATION IN ELECTRICAL METALLIC TUBING UNLESS INDICATED OTHERWISE ON DRAWINGS.
20.2. NO WIRE SMALLER THAN NO. 12 AWG GAUGE SHALL BE USED FOR BRANCH CIRCUIT WIRING.
20.3. BX CABLE MAY BE USED **ONLY** AS FOLLOWS:
20.3.1. WITHIN NEW DRYWALL PARTITIONS WITHIN ONE ROOM TO INTERCONNECT ELECTRICAL DEVICES, EXCEPT THAT THE CONNECTION FROM THE JUNCTION BOX ABOVE THE SUSPENDED CEILING DOWN TO THE FIRST ELECTRICAL DEVICE IN THE DRYWALL SHALL BE WIRED IN THE EMT CONDUIT.
20.3.2. INDIVIDUAL DROPS FROM JUNCTION BOXES IN CEILING SPACES TO LUMINAIRES TO A MAXIMUM OF THREE (3) METRES. ("DAISY-CHAINING" OF LUMINAIRES IS NOT PERMITTED).
20.3.3. WITH THE ABOVE EXCEPTIONS, ALL 120-VOLT BRANCH CIRCUIT WIRING MUST BE INSTALLED IN EMT CONDUIT.
20.3.4. WIRING SHALL BE COLOUR CODED TO MATCH EXISTING INSTALLATION.
20.4. CONDUIT TO BE SIZED IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE.
20.5. WIRING SHALL BE COLOUR CODED AS FOLLOWS:

	120/208V	277/480V	347/600V
A PHASE	RED	ORANGE	ORANGE
B PHASE	BLACK	BROWN	BROWN
C PHASE	BLUE	YELLOW	YELLOW
NEUTRAL	WHITE	WHITE	WHITE
GROUND	GREEN	GREEN	GREEN

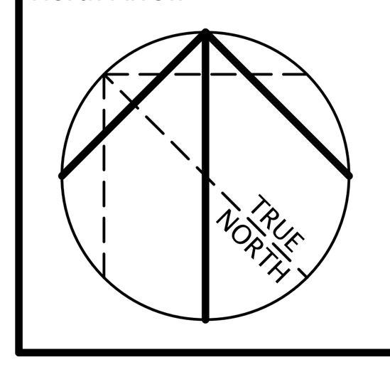
20.6. ALL LINE VOLTAGE WIRING SHALL BE INSTALLED IN CONDUIT.
20.7. ALUMINUM CONDUCTORS MAY ONLY BE USED WHERE INDICATED ON DRAWINGS. APPLY ZINC JOINT COMPOUND ON ALL ALUMINUM CONDUCTORS PRIOR TO INSTALLATION OF CONNECTORS OR TERMINATING CONDUCTORS.
20.8. COMPUTER RECEPTACLES SHALL BE COMPLETE WITH A DEDICATED NEUTRAL CONDUCTOR PER PHASE.
20.9. VOLTAGE DROP FOR WIRING SHALL MEET REQUIREMETNS AS LAID OUT IN THE CANADIAN ELECTRICAL CODE. GENERALLY MAXIMUM BRANCH CIRCUIT CONDUCTOR DISTANCES (120VAC) TO MAINTAIN MAX. 3% VOLTAGE DROP ARE AS FOLLOWS:
20.9.1. 15A-1P BREAKER - #12AWG WIRING - 80 FEET (24 METRES)
20.9.2. 15A-1P BREAKER - #10AWG WIRING - 125 FEET (39 METRES)
20.9.3. 20A-1P BREAKER - #12AWG WIRING - 60 FEET (18 METRES)
20.9.4. 20A-1P BREAKER - #10AWG WIRING - 95 FEET (29 METRES)
21. DEMOLITION
21.1. GENERAL
21.1.1. ALL UNUSED AND ABBANDONNED CONDUIT, WIRE, HANGERS, ETC. SHALL BE REMOVED FROM THE CEILING SPACE.
21.1.2. ABANDONED BREAKERS IN PANEL BOARDS SHALL BE MARKED AS SPARE IF THEY NO LONGER SERVICE ANY LOAD.
21.1.3. AS NOTED ON DRAWINGS THE CONTRACTOR SHALL TURN OVER EQUIPMENT BEING REMOVED TO BUILDING MANAGEMENT. EQUIPMENT NOT REQUIRED BY BUILDING MANAGEMENT SHALL BE REMOVED FROM SITE BY THE CONTRACTOR.
21.1.4. THE CONTRACTOR SHALL SEAL ALL UNUSED OPENINGS DUE TO ELECTRICAL DEMOLITION TO ENSURE THAT FIRE-RESISTANCE RATING IS MAINTAINED. REFER TO "FIRE STOPPING" SECTION OF THIS SPEC.
21.1.5. IF INDICATED ON DRAWINGS, PROVIDE BLANK COVER PLATE MATCHING WALL FINISH FOR BOXES TO REMAIN.
21.2. LIGHTING
21.2.1. ALL UNUSED AND ABANDONED CONDUIT, WIRE, HANGERS, ETC. SHALL BE REMOVED FROM THE CEILING SPACE.
21.2.2. EXISTING BUILDING LUMINAIRES SHALL BE REMOVED AS NOTED ON DRAWINGS AND RESPONSIBLY DISPOSED OF.
21.3. POWER
21.3.1. ALL CIRCUITS ORIGINATING FROM PANELBOARDS LOCATED IN ELECTRICAL ROOM WHICH ARE NOT BEING RE-USED SHALL BE PULLED BACK TO THE PANEL.
21.3.2. THE ELECTRICAL CONTRACTOR SHALL INFORM THE ENGINEER OF ANY DEFICIENCIES THAT ARE ENCOUNTERED DURING THE DEMOLITION.
21.3.3. ALL ELECTRICAL DEVICES ON EXISTING WALLS BEING DEMOLISHED ARE TO BE REMOVED.
21.3.4. ENSURE THAT ALL EXISTING RECEPTACLES LEFT ISOLATED BY THE REMOVAL OF OUTLETS IN THE SAME RUN SHALL BE RE-FED TO BECOME FULLY FUNCTIONAL TO THE SATISFACTION OF THE ENGINEER.
21.4. COMMUNICATIONS
21.4.1. N/A
21.5. SYSTEMS
21.5.1. SECURITY DEVICES AND ASSOCIATED WIRING NOT BEING REUSED SHALL BE REMOVED AND RETURNED TO OWNER
22. WIRING DEVICES
22.1. BOXES, EXCEPT WHERE OTHERWISE NOTED, SHALL BE PRESSED SHEET STEEL GALVANIZED TO CSA STANDARDS.
22.2. ALL OUTLETS FOR FLUSH WALL-MOUNTING SWITCHES, RECEPTACLES, TELEPHONE AND LV OUTLETS SHALL BE NO.52151 BOX WITH APPROPRIATE PLASTER COVER FOR SINGLE OR 2-GANG OUTLETS OR 4-GANG OUTLETS.
22.3. FLUSH MOUNTING VOICE/DATA WALL OUTLETS SHALL BE NO. 52151 SERIES (4-INCH SQUARE, 1.5 INCHES DEEP WITH APPROPRIATE PLASTER OR EXTENSION RING).
22.4. USE A SINGLE COVER PLATE FOR RECEPTACLE OUTLET BOXED WHERE SHOWN GANGED.
22.5. GANG BOXES AND WIRING DEVICES ARE GROUPED. ELECTRO-GALVANIZED STEEL MULTI GANG BOXED SHALL BE USED WHERE MORE THAN 2 DEVICES ARE GANGED TOGETHER.
22.6. SECTIONAL TYPE BOXES OR HANDY BOXES SHALL NOT BE USED.
22.7. RECEPTACLES SHALL BE WHITE DECORA TO MATCH EXISTING. COMPUTER RECEPTACLES SHALL BE GREY DECORA.
22.8. SPECIAL RECEPTACLES WILL BE AS SHOWN ON THE DRAWINGS.
22.9. RECEPTACLES TO BE OF SPECIFICATION GRADE AND OF ONE MANUFACTURER. ACCEPTABLE MANUFACTURES ARE LEVITON, THOMAS AND BETTS, COOPER WIRING DEVICES.
22.10. PLATES FOR ALL FLUSH MOUNTING DEVICES SHALL BE WHITE DECORA. EXISTING DAMAGED FACEPLATES ARE TO BE REPLACED WITH NEW.
22.11. P-TOUCH ADHESIVE LABEL COMPLETE WITH A MINIMUM 5MM LETTERS TO BE PROVIDED ON ALL EXISTING AND NEW RECEPTACLES INDICATING CIRCUIT AND PANEL DESIGNATION.
22.12. TRACE CIRCUITS FOR EXISTING RECEPTACLES AND ENSURE EXISTING RECEPTACLES ARE LABELLED.
23. SUPPORTING DEVICES
23.1. CONDUIT SUPPORTS
23.1.1. SINGLE RUNS - TO BE GALVANIZED CONDUIT STRAPS OR RING BOLT RANGE 1 TYPE HANGERS
23.1.2. MULTIPLE RUNS (THREE OR MORE) - CONDUIT RACK
23.1.3. VERTICAL RUNS - CHANNEL SUPPORT WITH CONDUIT FITTINGS.
23.2. INSTALL TO MAINTAIN HEADROOM, NEAT MECHANICAL APPEARANCE AND TO SUPPORT EQUIPMENT LOADS REQUIRED.
23.3. WHERE INSERTS ARE REQUIRED IN CONCRETE, EXPANSION INSERTS, LEAD INSERTS OR PLASTIC INSERTS MAY BE USED IN DRILLED HOLES. WOOD OR FIBRE PLUGS NOT PERMITTED.
23.4. ALL ELECTRICAL DISTRIBUTION INCLUDING CABLE TRAY AND CONDUIT, WHICH IS MOUNTED ABOVE THE SUSPENDED CEILING, SHALL BE SUPPORTED DIRECTLY AND INDEPENDENTLY FROM THE CONCRETE SLAB.
23.5. THE USE OF ANY PART OF THE CEILING SUSPENSION SYSTEM AS A SUPPORT OR FOUNDATION FOR THE SUSPENSION OF CABLE TRAY, CONDUIT OR FLEXIBLE CONDUIT IS FORBIDDEN.
23.6. THE USE OF ANY DRYWALL OR WALL PARTITION AS A SUPPORT OR FOUNDATION FOR CABLE TRAY OR CONDUIT ROUTED HORIZONTALLY THROUGH THE CEILING SPACE IS FORBIDDEN.
23.7. SUPPORT HANGERS AND OTHER TRADES TO SUPPORT NON-ELECTRICAL SERVICES OR DEVICES SHALL NOT USE TRAYS INSTALLED BY THE ELECTRICAL CONTRACTOR.
23.8. ALL EQUIPMENT THAT MAY TRANSMIT VIBRATION TO THE BUILDING STRUCTURES IS TO BE INSTALLED USING SUITABLE METHODS TO PREVENT THE TRANSMISSION OF THE VIBRATIONS TO THE BUILDING STRUCTURE.
24. GROUNDING
24.1. SUPPLY AND INSTALL COMPLETE GROUNDING SYSTEM AS INDICATED AND AS REQUIRED BY CANADIAN ELECTRICAL CODE AND ELECTRICAL INSPECTION DEPARTMENT.
24.2. ALL COMPONENTS SHALL BE SECURELY AND ADEQUATELY GROUNDED AND WHERE REQUIRED TO ACCOMPLISH THE GROUNDING STUDS AND BUSHINGS SHALL BE USED. ENSURE THAT ALL RACEWAYS, TERMINAL PANELS, ETC., FOR TELEPHONE, LOW VOLTAGE, FIRE ALARM, CABLE TRAY, SOUND, ETC., ARE SECURELY AND ADEQUATELY GROUNDED.
24.3. PROVIDE 1#6 INSULATED GROUND TO EACH DATA RACK AND TELEPHONE SWITCH.
25. MECHANICAL EQUIPMENT WIRING
25.1. ELECTRICAL CONTRACTOR TO PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECT, ETC., REQUIRED FOR MECHANICAL EQUIPMENT.
25.2. ALL LOW VOLTAGE CONTROLS AND CONTROL WIRING WILL BE THE RESPONSIBILITY OF THE MECHANICAL TRADE AND/OR HIS CONTROL SUB-TRADE. 120V CONNECTION FOR CONTROLS CONTRACTOR SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR. COORDINATE WITH CONTROLS CONTRACTOR FOR LOCATION.
25.3. ELECTRICAL CONTRACTOR SHALL CONFIRM WITH THE MECHANICAL TRADE, THE SIZE, CHARACTERISTICS, AND LOCATIONS OF ALL MECHANICAL EQUIPMENT BEFORE INSTALLATION OF CONDUITS, OUTLETS, HEATERS ETC.
26. ENGINEER'S INSPECTIONS
26.1. AT MINIMUM, AN INSPECTION WILL BE CARRIED OUT BY THE ENGINEER AT ROUGH-IN STAGE AND AT COMPLETION.
26.2. THE ELECTRICAL CONTRACTOR SHALL ADVISE THE ENGINEER WHEN ALL WORK HAS BEEN COMPLETED ABOVE THE SUSPENDED CEILING, EITHER DRYWALL OR T-BAR.
26.3. FAILURE TO NOTIFY THE ENGINEER IN TIME WILL NECESSITATE THE REMOVAL OF ALL CEILING FOR INSPECTION PURPOSES
26.4. THE ELECTRICAL CONTRACTOR SHALL NOTIFY THE ENGINEER AND SHALL ALLOW AT LEAST 3 WORKING DAYS NOTICE OF THE INSTALLATION OF CEILING.

DATE	ISSUED FOR	REV
2016-09-30	50% REVIEW	1
2016-11-01	90% REVIEW	2
2016-11-10	TENDER	3

Project Component
Phase # - Description

Keyplan

North Arrow

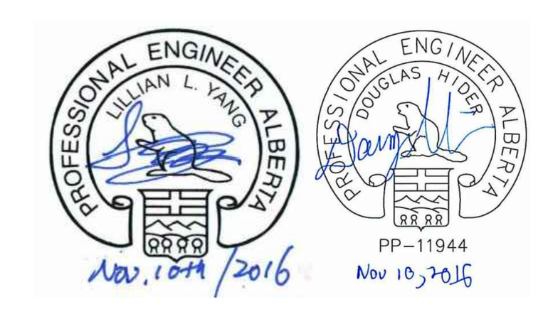


Detail Symbol

DETAIL#
SHEET #
Symbol not to scale

Consultants
Civil:
Landscape:
Architectural:
Structural:
Mechanical: NORR ARCHITECTS ENGINEERS PLANNERS
Electrical: NORR ARCHITECTS ENGINEERS PLANNERS

Seal(s)



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Chris Pal, P.Eng., APEGA

Project Manager	Drawn
D.HIDER	N.ALY/A.MOHAMMADZA.
Project Leader	Checked
D.HIDER	L.YANG / D.HIDER

Client
RCMP

Project
BASHAW
RCMP DETACHMENT
RENOVATIONS

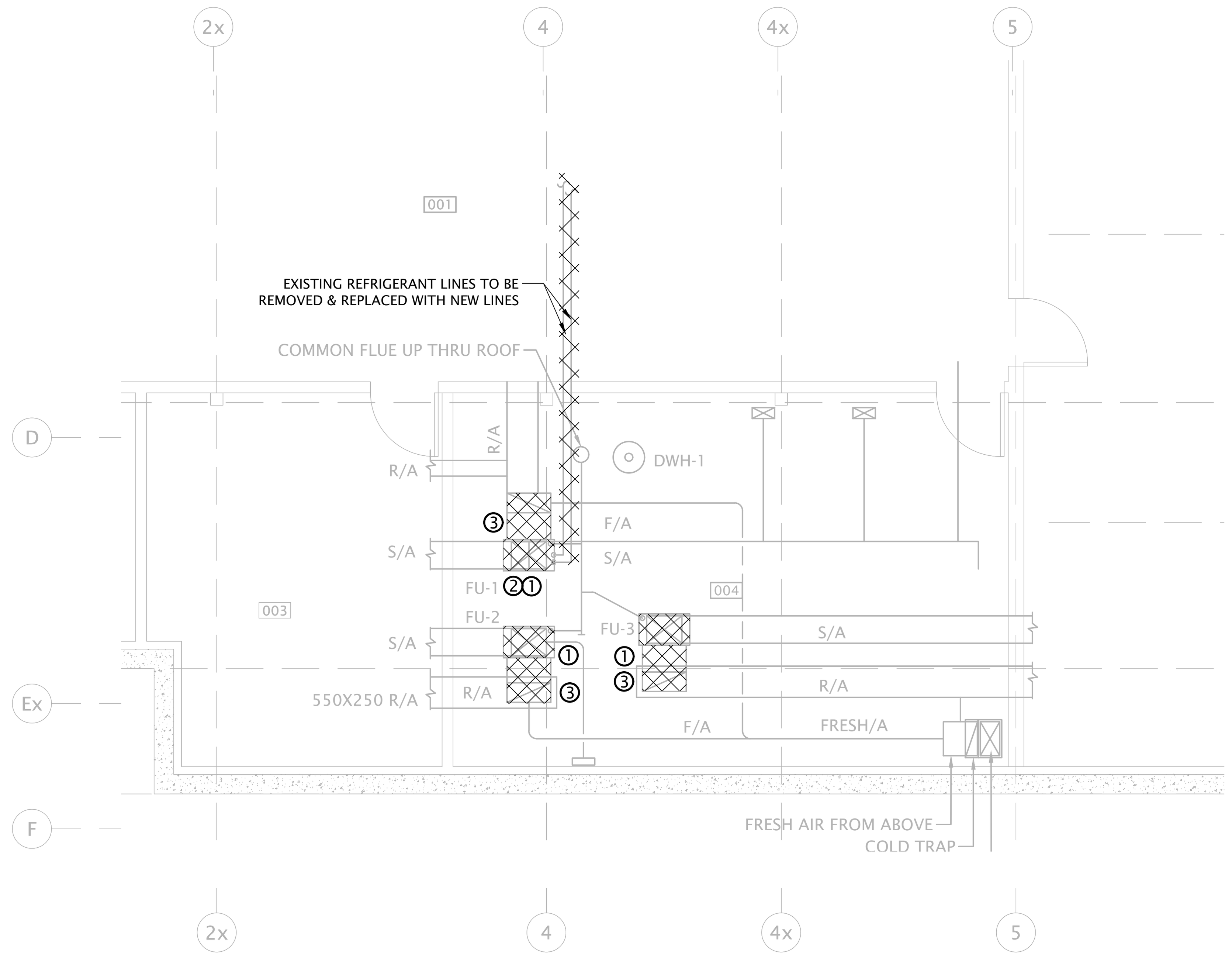
Drawing Title
MECHANICAL
SPECIFICATIONS & DRAWING LIST AND SCHEDULES

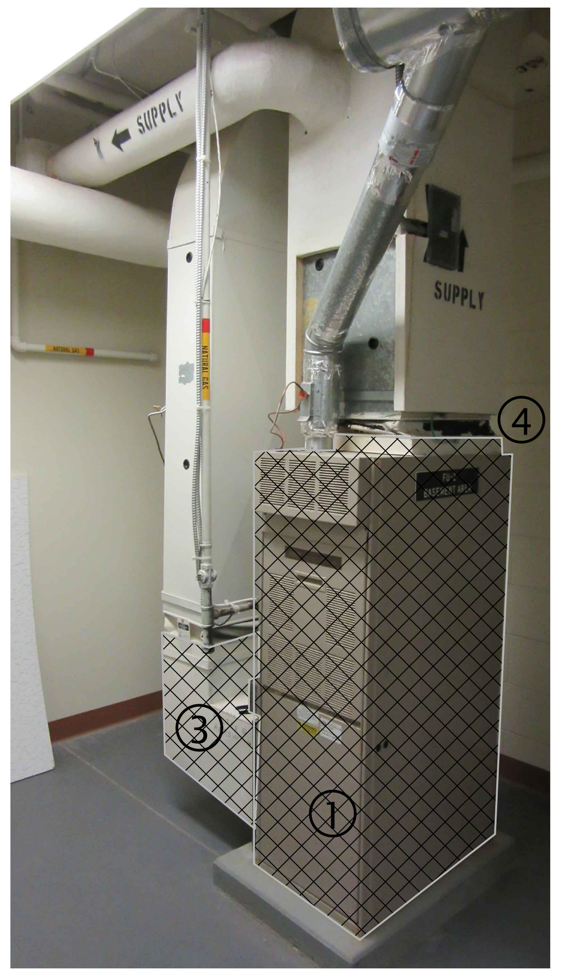
Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No. NCCA-16-0094

Drawing No. M00-00

PLOT DATE: November 10, 2016 TIME: 9:10 AM FULL PATH AND FILENAME: P:\RCMP_PROJECTS\NCCA16009499 RCMP BASHAW RENOVATIONS\BASHAW-DRAWINGS\MECHANICAL\WD\M00-00.DWG PLOTSYLE TABLE: PMA-STD-100.ctb





ELECTRICAL GENERAL NOTES:

A. GENERALLY THE ELECTRICAL SCOPE OF WORK CONSISTS OF PROVIDING ELECTRICAL CONNECTIONS TO MECHANICAL EQUIPMENT THAT IS BEING REPLACED WITH NEW. ELECTRICAL CONTRACTOR SHALL DISCONNECT EXISTING MECHANICAL EQUIPMENT BEING DEMOLISHED AND RECONNECT NEW EQUIPMENT ONCE INSTALLED. EXISTING CONNECTIONS CAN BE REUSED PROVIDED THE CIRCUIT BREAKER AND WIRING ARE SUFFICIENTLY SIZED TO SERVICE NEW EQUIPMENT.

B. CONTRACTOR TO VERIFY THE EXISTING CIRCUIT BREAKERS AND CABLES FEEDING THE FURNACES AND CONDENSING UNIT. THE REQUIRED BREAKER FOR EACH FURNACE FU-1, FU-2 AND FU-3 IS 15A-1P (120V/1PH/60Hz) AND FOR CONDENSER UNIT IS 35A-2P (208V/1PH/60Hz) AND CABLES TO MATCH THE FEEDER BREAKER. CONTRACTOR TO REPLACE BREAKERS AND CABLES IF DON'T MATCH THE REQUIREMENTS.

C. ALL NEW ELECTRICAL WORKS AND ALL NEW ELECTRICAL EQUIPMENT RATINGS (INCLUDING ALL CABLES AND CIRCUIT BREAKERS) TO MEET THE CEC REQUIREMENTS.

D. ELECTRICAL CONTRACTOR TO REFER TO MECHANICAL SCHEDULE AND EQUIPMENT LAYOUT FOR ALL MECHANICAL EQUIPMENT RATING AND ELECTRICAL REQUIREMENTS.

MECHANICAL KEY NOTES:

① REPLACE EXISTING FURNACES WITH NEW FU-1, FU-2 AND FU-3 AS PER FURNACE SCHEDULE.

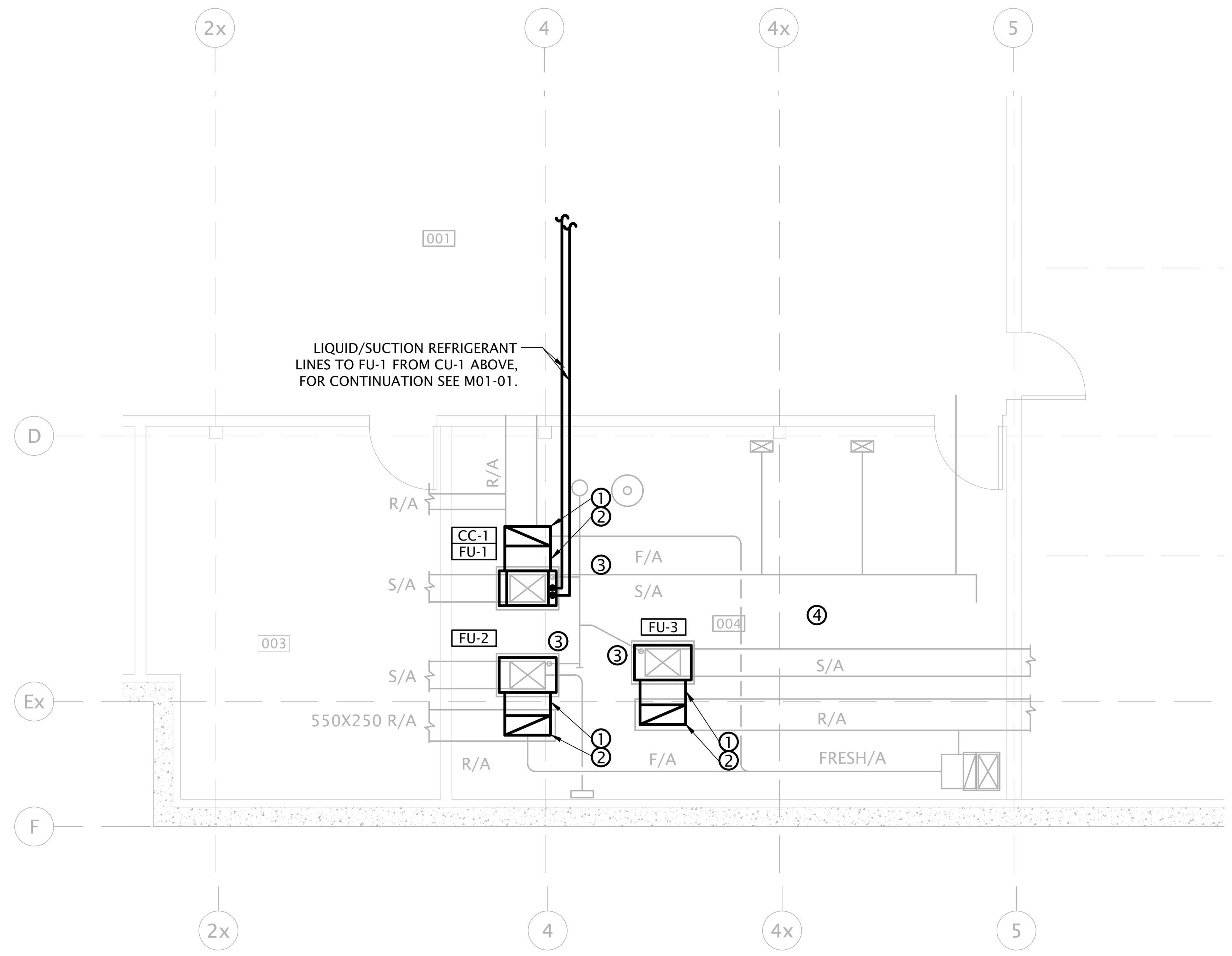
② REPLACE EXISTING EVAPORATOR COIL ON FU-1 AS PER SCHEDULE.

③ DEMOLISH HIGHLIGHTED RETURN AIR DUCT TO THE FLEXIBLE CONNECTION.

④ DEMOLISH HIGHLIGHTED SUPPLY AIR DUCT TO THE FLEXIBLE CONNECTION.

1 / M00-01 BASEMENT MECHANICAL DEMOLITION LAYOUT

1:50



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B. CONTRACTOR TO VERIFY THE EXISTING CIRCUIT BREAKERS AND CABLES FEEDING THE FURNACES AND CONDENSING UNIT. THE REQUIRED BREAKER FOR EACH FURNACE FU-1, FU-2 AND FU-3 IS 15A-1P (120V/1PH/60Hz) AND FOR CONDENSER UNIT IS 35A-2P (208V/1PH/60Hz) AND CABLES TO MATCH THE FEEDER BREAKER. CONTRACTOR TO REPLACE BREAKERS AND CABLES IF DON'T MATCH THE REQUIREMENTS.

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MECHANICAL GENERAL NOTES:

A. CONTRACTOR TO VERIFY THE EXISTING CONDITION BEFORE COMMENCEMENT OF DEMOLITION.

B. DISCONNECT AND REMOVE FURNACES AND DX COOLING COIL. ALL EXISTING DUCTWORK, GAS LINES, FLUES, ARE TO BE REMAINED AND CAPPED FOR FUTURE RE-CONNECTION.

C. SUPPLY AND INSTALL ALL FIRE STOPPING MATERIAL AND ENSURE THAT ALL FIRE PENETRATIONS ARE PROTECTED AS REQUIRED BY THE ALBERTA BUILDING CODE AND THE LOCAL AUTHORITIES.

D. MECHANICAL SYSTEMS AND THEIR SUPPORTS, AND THE LIKE, MUST BE DESIGNED AND DETAILED TO ACCOMMODATE THE ANTICIPATED MOVEMENTS NOTED UNDER 'SERVICEABILITY CRITERIA' ON THE STRUCTURAL DRAWINGS.

E. DESIGN AND DETAIL ALL NECESSARY SEISMIC RESTRAINTS FOR MECHANICAL SYSTEMS SHOWN ON THE CONTRACT DOCUMENTS. SUBMIT SHOP DRAWINGS PREPARED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE PROVINCE OF ALBERTA, FOR REVIEW BY THE CONSULTANT.

F. MECHANICAL CONTRACTOR SHALL SUBMIT SLEEVING DRAWINGS INDICATING LAYOUT AND SIZES OF ALL INTENDED PENETRATIONS THROUGH ANY STRUCTURAL ELEMENTS, INCLUDING ANY EMBEDDED ITEMS, FOR REVIEW BY CONSULTANT WELL IN ADVANCE OF COMPLETING THE WORK.

G. PROVIDE COLLAR CONNECTION; LENGTH TO SUIT SITE CONDITION.

MECHANICAL KEY NOTES:

① NEW 584x406mm HORIZONTAL RETURN AIR DUCT FROM FURNACE.

② NEW 584x250mm VERTICAL RETURN AIR DUCT TO BE CONNECTED TO EXISTING FLEXIBLE CONNECTION.

③ EXTEND VENT PIPE AND CONNECT TO EXISTING PIPE TO SUITE NEW FURNACE HEIGHT (TYPICAL FOR THREE FURNACES).

④ REPLACE EXISTING THERMOSTAT WITH NEW SPECIFIED THERMOSTAT AS PER SCHEDULE; CONTRACTOR TO VERIFY LOCATION ON SITE.

MECHANICAL LEGEND:

▨	EXISTING TO REMAIN
─	EXISTING TO BE REMOVED
━	NEW

2 / M00-01 BASEMENT MECHANICAL NEW LAYOUT

1:50

DATE	ISSUED FOR	REV
2016-09-30	50% REVIEW	1
2016-11-01	90% REVIEW	2
2016-11-10	TENDER	3

Project Component
Phase # - Description

Keyplan

North Arrow
TRUE NORTH

Detail Symbol
DETAIL#
SHEET #
Symbol not to scale

Consultants
Civil:
Landscape:
Architectural:
Structural:
Mechanical: NORR ARCHITECTS ENGINEERS PLANNERS
Electrical: NORR ARCHITECTS ENGINEERS PLANNERS

Seal(s)
PROFESSIONAL ENGINEER ALBERTA LILLIAN L. YANG
Nov. 10th /2016
PROFESSIONAL ENGINEER ALBERTA DOUGLAS HIDER
PP-11944
Nov 10, 2016

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Project Manager D.HIDER	Drawn N.ALY/A.MOHAMMADZA.
Project Leader D.HIDER	Checked L.YANG / D.HIDER

Client
RCMP

Project
BASHAW
RCMP DETACHMENT
RENOVATIONS

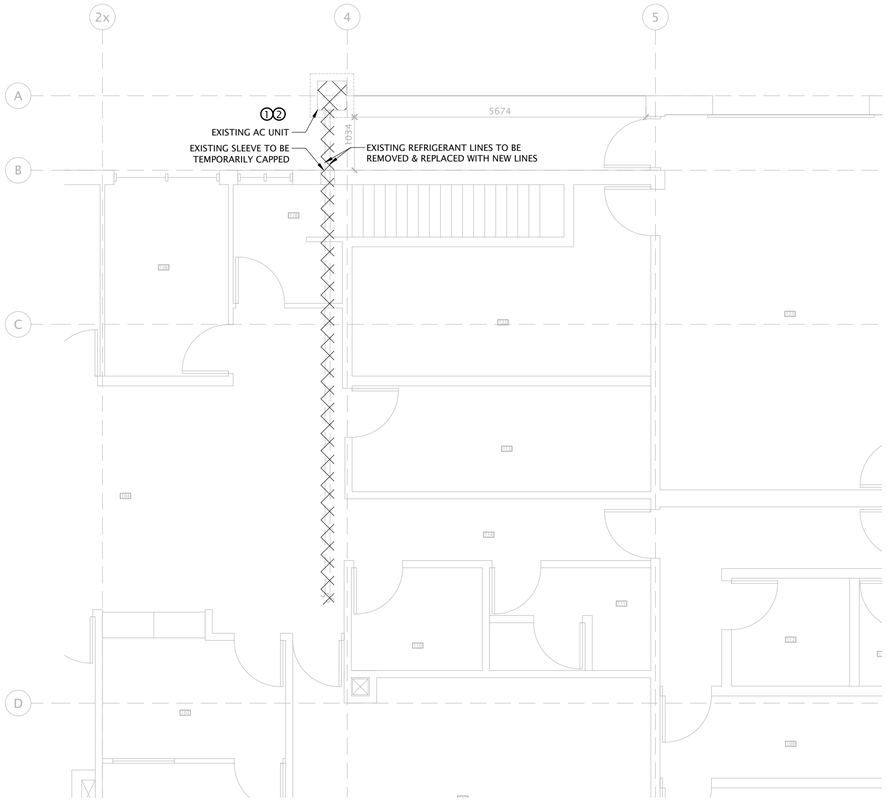
Drawing Title
BASEMENT MECHANICAL
LAYOUT

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No. NCCA-16-0094

Drawing No. M00-01

PLOT DATE: November 10, 2016 TIME: 9:11 AM FULL PATH AND FILENAME: P:\RCMP_PROJECTS\NCCA16009499 RCMP BASHAW RENOVATIONS\BASHAW-DRAWINGS\MECHANICAL\WD\M00-01.DWG PLOTSYLE TABLE: Ingenium.ctb



ELECTRICAL GENERAL NOTES:

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B. CONTRACTOR TO VERIFY THE EXISTING CIRCUIT BREAKERS AND CABLES FEEDING THE FURNACES AND CONDENSING UNIT. THE REQUIRED BREAKER FOR EACH FURNACE FU-1, FU-2 AND FU-3 IS 15A-1P (120V/1PH/60Hz) AND FOR CONDENSER UNIT IS 35A-2P (208V/1PH/60Hz) AND CABLES TO MATCH THE FEEDER BREAKER. CONTRACTOR TO REPLACE BREAKERS AND CABLES IF DON'T MATCH THE REQUIREMENTS.

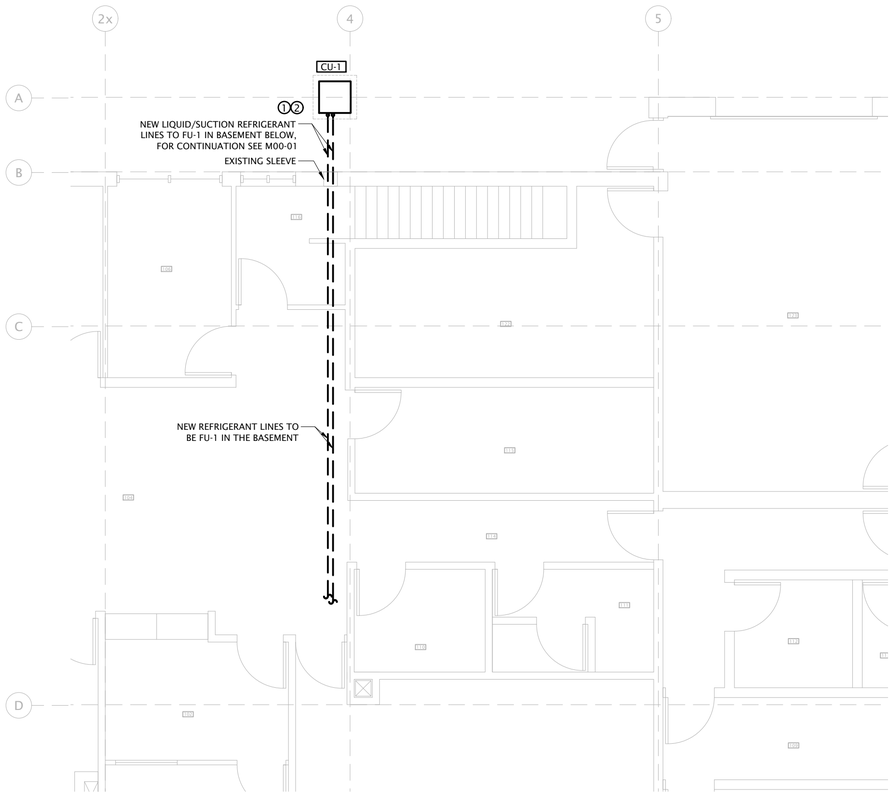
C. ALL NEW ELECTRICAL WORKS AND ALL NEW ELECTRICAL EQUIPMENT RATINGS (INCLUDING ALL CABLES AND CIRCUIT BREAKERS) TO MEET THE CEC REQUIREMENTS.

D. ELECTRICAL CONTRACTOR TO REFER TO MECHANICAL SCHEDULE AND EQUIPMENT LAYOUT FOR ALL MECHANICAL EQUIPMENT RATING AND ELECTRICAL REQUIREMENTS.

MECHANICAL KEY NOTES:

1. REPLACE EXISTING OUTDOOR CONDENSING UNIT WITH NEW CU-1 AS PER SCHEDULE.
2. DEMOLISH THE EXISTING REFRIGERANT PIPING AS SPECIFIED IN MAIN FLOOR NEW MECHANICAL DRAWING.

1 M01-01 MAIN FLOOR MECHANICAL DEMOLITION LAYOUT
1:50



ELECTRICAL GENERAL NOTES:

A. GENERALLY THE ELECTRICAL SCOPE OF WORK CONSISTS OF PROVIDING ELECTRICAL CONNECTIONS TO MECHANICAL EQUIPMENT THAT IS BEING REPLACED WITH NEW. ELECTRICAL CONTRACTOR SHALL DISCONNECT EXISTING MECHANICAL EQUIPMENT BEING DEMOLISHED AND RECONNECT NEW EQUIPMENT ONCE INSTALLED. EXISTING CONNECTIONS CAN BE REUSED PROVIDED THE CIRCUIT BREAKER AND WIRING ARE SUFFICIENTLY SIZED TO SERVICE NEW EQUIPMENT.

B. CONTRACTOR TO VERIFY THE EXISTING CIRCUIT BREAKERS AND CABLES FEEDING THE FURNACES AND CONDENSING UNIT. THE REQUIRED BREAKER FOR EACH FURNACE FU-1, FU-2 AND FU-3 IS 15A-1P (120V/1PH/60Hz) AND FOR CONDENSER UNIT IS 35A-2P (208V/1PH/60Hz) AND CABLES TO MATCH THE FEEDER BREAKER. CONTRACTOR TO REPLACE BREAKERS AND CABLES IF DON'T MATCH THE REQUIREMENTS.

C. ALL NEW ELECTRICAL WORKS AND ALL NEW ELECTRICAL EQUIPMENT RATINGS (INCLUDING ALL CABLES AND CIRCUIT BREAKERS) TO MEET THE CEC REQUIREMENTS.

D. ELECTRICAL CONTRACTOR TO REFER TO MECHANICAL SCHEDULE AND EQUIPMENT LAYOUT FOR ALL MECHANICAL EQUIPMENT RATING AND ELECTRICAL REQUIREMENTS.

MECHANICAL GENERAL NOTES:

A. CONTRACTOR TO VERIFY THE EXISTING CONDITION BEFORE COMMENCEMENT OF DEMOLITION.

B. DISCONNECT AND REMOVE CONDENSING UNIT AND ASSOCIATED REFRIGERANT LINES. PROTECT THE EXISTING REFRIGERANT ROUTE FOR FUTURE REPLACEMENT.

C. SUPPLY AND INSTALL ALL FIRE STOPPING MATERIAL AND ENSURE THAT ALL FIRE PENETRATIONS ARE PROTECTED AS REQUIRED BY THE ALBERTA BUILDING CODE AND THE LOCAL AUTHORITIES.

D. MECHANICAL SYSTEMS AND THEIR SUPPORTS, AND THE LIKE, MUST BE DESIGNED AND DETAILED TO ACCOMMODATE THE ANTICIPATED MOVEMENTS NOTED UNDER 'SERVICEABILITY CRITERIA' ON THE STRUCTURAL DRAWINGS.

E. DESIGN AND DETAIL ALL NECESSARY SEISMIC RESTRAINTS FOR MECHANICAL SYSTEMS SHOWN ON THE CONTRACT DOCUMENTS. SUBMIT SHOP DRAWINGS PREPARED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE PROVINCE OF ALBERTA, FOR REVIEW BY THE CONSULTANT.

F. MECHANICAL CONTRACTOR SHALL SUBMIT SLEEVING DRAWINGS INDICATING LAYOUT AND SIZES OF ALL INTENDED PENETRATIONS THROUGH ANY STRUCTURAL ELEMENTS, INCLUDING ANY EMBEDDED ITEMS, FOR REVIEW BY CONSULTANT WELL IN ADVANCE OF COMPLETING THE WORK.

MECHANICAL KEY NOTES:

1. PROVIDE AND INSTALL NEW CONDENSING UNIT CU-1 AS PER SCHEDULE.
2. PROVIDE AND INSTALL NEW REFRIGERANT PIPING.

MECHANICAL LEGEND:

- EXISTING TO REMAIN
- EXISTING TO BE REMOVED
- NEW

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1:50

DATE	ISSUED FOR	REV
2016-09-30	50% REVIEW	1
2016-11-01	90% REVIEW	2
2016-11-10	TENDER	3

Project Component
Phase # - Description

Keyplan

North Arrow: TRUE NORTH

Detail Symbol: DETAIL# / SHEET #
Symbol not to scale

Consultants
Civil:
Landscape:
Architectural:
Structural:
Mechanical: NORR ARCHITECTS ENGINEERS PLANNERS
Electrical: NORR ARCHITECTS ENGINEERS PLANNERS

Seal(s)

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Adrian Tiedela, P.Eng., APEGA
Chris Pai, P.Eng., APEGA

Project Manager	Drawn
D.HIDER	N.ALY/A.MOHAMMADZA.
Project Leader	Checked
D.HIDER	L.YANG / DI.HIDER

Client
RCMP

Project
BASHAW
RCMP DETACHMENT
RENOVATIONS

Drawing Title
MAIN FLOOR
MECHANICAL LAYOUT

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No. NCCA-16-0094

Drawing No. M01-01

PLOT DATE: November 10, 2016 TIME: 9:11 AM FULL PATH AND FILENAME: P:\RCMP PROJECTS\NCCA16009499 RCMP BASHAW RENOVATIONS\BASHAW DRAWINGS\MECHANICAL\WD\M01-01.DWG PLOTSTYLE TABLE: Ingenium.ctb