#### 1.0 GENERAL SPECIFICATION - ELECTRICAL

1.) SUPPLY AND INSTALL All ITEMS,

ARTICLES, MATERIAL OPERATIONS INCLUDING ALL LABOUR, EQUIPMENT, MATERIALS & TOOLS NECESSARY TO COMPLETE ALL SYSTEMS SHOWN ON THE DRAWINGS RENDERING A COMPLETE INSTALLATION

2.) OBTAIN ALL PERMITS REQUIRED, ARRANGE FOR INSPECTION OF THE WORK BY INSPECTION AUTHORITY AND PAY ALL FEES

PROVIDE FINAL CERTIFICATE TO THE

3.) CONFORM TO THE LATEST REQUIREMENTS OF THE ELECTRICAL SAFETY CODE AND ALL RULES, BY-LAWS & AUTHORITIES HAVING

4.) ALL MATERIALS AND EQUIPMENT SHALL BE NEW, CSA APPROVED, BEAR CSA STAMP BE COMMERCIAL GRADE.

5.) PROVIDE A CERTIFICATE OF GUARANTEE WORKMANSHIP AND MATERIAL FOR ONE FROM DATE OF ACCEPTANCE.

# 2.0 METHODS

OWNER.

JURISDICTION.

1.) GROUND ALL EQUIPMENT TO THE REQUIREMENT OF THE ELECTRICAL SAFETY CODE AND INSPECTION AUTHORITIES.

2.) PROVIDE JUNCTION BOXES C/W COVER PLATES AS REQUIRED BY CODE.

3.) PROVIDE SEPARATE GROUND WIRE IN ALL PVC (CONCRETE) CONDUITS.

4.) PROVIDE SEPARATE NEUTRAL FOR EACH LIGHTING CIRCUIT.

5.) PROVIDE ONE IDENTIFIED, GROUNDED NEUTRAL CONNECTOR FOR EACH SET OF BRANCH CIRCUITS CONNECTED TO DIFFERENT MAINS AT THE PANELS. CHECK TO ENSURE COMMON NEUTRAL ARE

CONNECTED TO THE SAME MAIN OR PHASE. 6.) MINIMUM WIRE SIZE SHALL BE # 12 AWG FOR HOMERUNS UP TO 90 FT. AND #10 AWG FOR HOMERUNS OVER 90 FT. UNLESS

OTHERWISE NOTED. 7.) BALANCE THE LOADING ON FEEDERS SO THAT UNBALANCED LOAD IS LESS THAN 10%.

WITH THE REQUIREMENTS OF THIS DESIGN.

CONTRACTOR TO VISIT THE SITE AND FAMILIARIZE THEMSELVES

THE WORK SHALL CONSIST OF, BUT SHALL NOT BE LIMITED TO

CONTRACTOR TO VISIT JOB SITE TO BECOME FAMILIAR

WITH THE PROJECT PRIOR TO SUBMITTING TENDER.

SHALL OBTAIN ALL PERMITS, INSPECTIONS, ETC. AS REQUIRED BY ALL AUTHORITIES HAVING JURISDICTION

OVER THIS WORK AND SHALL PAY FOR SAME. ALL PERMITS SHALL BE DELIVERED TO THE OWNERS

REPRESENTATIVE AS SOON AS THEY BECOME

AVAILABLE AND PRIOR TO PROJECT COMPLETION.

SUPPLY & INSTALL ALL ELECTRICAL DISTRIBUTION INCLUDING PANELS, BREAKERS & DISCONNECTS SWITCHES. CONTRACTOR TO REVIEW EX. SITE CONDITIONS & PROVIDE NEW POWER FEED FROM EX.

PANEL A IN BASEMENT TO NEW PANEL M.

**ROOF & FAN COILS IN LIBRARY** 

DETERMINE THE LOCATION OF ALL EXISTING SERVICES

SO AS TO NOT DAMAGE DURING NEW CONSTRUCTION. THE ELECTRICAL SERVICE MUST BE UPGRADED IN ORDER TO ALLOW FULL FUNCTIONALITY OF THE NEW

SUPPLY & INSTALL ALL NECESSARY CONDUIT WIRING & CONNECTIONS FOR A COMPLETE INSTALLATION.

SUPPLY & INSTALL POWER DISTRIBUTION SYSTEM AS

CONTRACTOR TO METER LOADING ON EXISTING PANEL

COOLING LOADS. LOADING ON PANEL IS NOT TO EXCEED

80% OF THE SERVICE RATING. CONTRACTOR TO ADVISE

OWNER OF LOADING OUTCOME. SHOULD THE LOADS OF

THE NEW COOLING EQUIPMT EXCEED THE CAPACITY OF THE SERVICE, THE COOLING FUNCTIONALITY OF THE EQUIPMT SHOULD BE DISABLED & ONLY THE HEATING

SHOWN ON THE DRAWINGS INCLUDING WIRING & CONDUIT FROM NEW PANEL TO NEW RTU-01 & CU-01 ON

A & INCREMENTALLY TURN ON NEWLY INSTALLED

FUNCTIONALITY OF RTU-01 SHOULD REMAIN

THIS CONTRACTOR SHALL BE RESPONSIBLE FOR AND

REFER TO SPECIFICATION & GENERAL PROJECT NOTES

**ELECTRICAL SCOPE OF WORK:** 

INCLUDED IN THIS SET OF DWGS.

GYM RTU COOLING.

FUNCTIONAL.

BLANK SLOTS

TO BE USED FOR NEW 200A BREAKER

FOR NEW PANEL M

THE FOLLOWING:

#### 8.) LIMIT THE VOLTAGE DROP AT THE END OF FEEDERS AND BRANCH CIRCUITS TO 2% AT THE RATED LOAD OF THE CIRCUIT.

9.) ALL GROUNDING SHALL CONFORM TO THE ELECTRICAL SAFETY CODE AND LOCAL WORK, LIGHTING FIXTURES, ETC. WITH AUTHORITY REQUIREMENTS.

10.) ALL DISTRIBUTION EQUIPMENT SHALL BE MANUFACTURED BY SQUARE D UNLESS 8.0 ACCESSIBILITY OTHERWISE INDICATED ON DRAWINGS. 3.0 CONDUIT AND FITTINGS

1.) CONDUIT SIZES SHALL BE AS INDICATED OPERATION, MAINTENANCE AND REPAIRS. ON THE DRAWINGS AND SHALL NOT BE REDUCED IN SIZE WITHOUT 9.0 RESPONSIBILITY AUTHORIZATION. CONDUIT IN FINISHED AREA SHALL BE CONCEALED. ALL CONDUIT 1.) THIS TRADE SHALL BE RESPONSIBLE SHALL BE INSTALLED PARALLEL TO FOR THIS WORK UNTIL THE COMPLETION BUILDING LINES. AND FINAL ACCEPTANCE, FOR REPLACING

2.) CLEAN INTERIOR OF ALL CONDUITS TO REMOVE WATER AND DEBRIS BEFORE PULLING WIRES.

#### **4.0 EXAMINATION OF SITE**

1.) THIS CONTRACTOR SHALL VISIT THE SITE OF THE PROJECT AND FAMILIARIZE HIMSELF WITH THE SPECIFIC SITE

2.) ANY DEVIATION AND / OR CONFLICTS ON AUTHORITIES. SITE ESPECIALLY CONCERNING THE DISTRIBUTION DIAGRAM(S) AS SHOWN ON THE PLANS, SHALL BE REPORTED TO THE ENGINEER PRIOR TO SUBMITTING TENDER.

## 5.0 CONSTRUCTION SCHEDULE

1.) THIS CONTRACTOR SHALL SCHEDULE AND PERFORM HIS WORK TO MEET THE COMPLETION SCHEDULE AS SET OUT BY THE CLIENT.

## 6.0 REVISIONS AND EXTRAS

1.) NO ADDITIONAL MONEY OVER THE CONTRACT PRICE SHALL BE PAID UNLESS AN APPROVED CHANGE ORDER IS ISSUED BY THE ENGINEER.

2.) CLAIMS FOR EXTRAS SHALL BE SUBMITTED WITH A COMPLETE BREAKDOWN OF MATERIAL, LABOUR, HOURLY RATES, ETC.

TO BE READILY ACCESSIBLE FOR

ANY ITEM THAT MAY BE DEFECTIVE,

DAMAGED, LOST OR STOLEN WITHOUT

ADDITIONAL COST TO THE OWNER OR

1.) THIS CONTRACTOR SHALL PREPARE

SCALE WORKING DRAWINGS WHICH MAY

AT THEIS OWN EXPENSE, ANY LARGE

BE REQUIRED BY THE EXAMINING

2.) THIS CONTRACTOR SHALL KEEP A

SITE AND NOTE ALL CHANGES AND

DEVIATIONS FROM THE ORIGINAL

SEPARATE SET OF WHITE PRINTS ON THE

3.) ONE SET OF THESE PLANS SHOWING

FORWARDED TO THE ENGINEER AT THE

4.) CONTRACTOR SHALL SUBMIT TO THE

ENGINEER THE LISTED DOCUMENTS (SEE

APPROVAL AT THE COMPLETION OF THE

ALL AS-BUILT CONDITIONS SHALL BE

COMPLETION OF THE WORK ONSITE.

PLANS FOR LIST) FOR REVIEW AND

PROJECT:

DELAY TO THE COMPLETION OF THE

10.0 ELECTRICAL DRAWINGS

11.0 AS-BUILT DRAWINGS

1.) THIS CONTRACTOR SHALL BE RESPONSIBLE TO CO-ORDINATE THE INSTALLATION OF EQUIPMENT, CONDUIT OTHER TRADES AND THE OWNER PRIOR TO THE ACTUAL INSTALLATION.

2.) THE SHOP DWG REVIEW WILL NOT RÉLEASE THE CONTRACTOR FROM RESPONSIBILITY TO MAKE A FEASIBLE

# 12.0 SHOP DRAWINGS

DIST. PANEL

DP-A

120/208V, 4W

MECH. HEATER

Main Breaker

200A / 3P

50A / 3P

50A / 3P

1.) BASED ON CONTRACT WITH OWNER, THE ENGINEER WILL REVIEW SHOP SUBMISSION DWGS FROM THE CONTRACTOR TO REVIEW THE ITEMS FOR GENERAL CONFORMITY TO THE DESIGN DWGS.

1.) ALL WORK SHALL BE INSTALLED SO AS WORKING SYSTEM.

FROM EX.

DISTRIBUTION

ELEC

#### DIV. 23, DIV. 26 **SMALL PROJECTS: ESA SERVICE APPLICATION RESPONSIBILITIES**

(BASEMENT)

**NEW PANEL** 

BRANCH

**200A BRK** 

200A

120/208V,

3PH, 4W

# ELECTRICAL RESISTANCE

HEATERS, ALL CONTROL AND ELECTRICAL POWER DEVICES OVER 50 VOLTS (ALSO TO BE INSTALLED, WIRED, & TESTED BY DIV. 26 CONT.)

# HEATING / COOLING UNITS, GAS

FANS, HVAC ELECTRICAL CONTROL

DEVICES UNDER 50 VOLTS

(ALSO TO BE INSTALLED, WIRED &

TESTED BY DIV. 23 CONT.)

4 #4/0 (CU)

<sup>−</sup>63 mm Ø C

DISTRIBUTION

TO EX. EXISTING ELEC.

APPLICATION TO INCLUDE [1] COVER LETTER c/w [2] SCOPE OF WORK, CIVIC ADRESS FIRED HVAC EQUIPMENT, EXHAUST

[3] OWNER OF TRANSFORMER

CONTRACTOR TO COORDINATE

AND / OR NOTIFY CONSULTANT OF

THE ELECTRICAL SAFETY

**AUTHORITY (ESA) SERVICE** 

#### ARCHITECTUAL GRID **REF. NOMENCLATURE:**

GRIDS SHOWN ARE FOR REFERENCE FOR THIS DWG. SET. CONFIRMATION OF

# APPLICATION FOR SITE POWER SERVICE.

CONTRACTOR MAY REFER TO ARCHITECTS DWG. SET FOR NOMENCLATURE SHOWN IN THESE DWGS.

# **ELECTRICAL REQUIRED REPORTS**

THE FOLLOWING REPORTS MUST BE SUBMITED TO THE ENGINEER PRIOR TO FINAL APPROVAL OF

COMPLETED SYSTEM. - ESA CERTIFICATE LETTER - CONTRACTOR COMPLETION LETTER

2

CU-01

M- 2,4

LIBRARY

107

(13521) Level 1 - Key Plan

LOWER

ROOF

CONDUIT UP FROM NEW PANEL M

**GYM ROOF** 

ELEC. CONDUIT FROM

COORDINATED ON SITE

D

(13521) Google Map for Project

/ 5  $\setminus$  (13521) B1 - Power Plan - New

FOR NEW PANEL M

EXACT LOC. TO BE

BASEMENT

ELEC.

RTU-01

M- 5,7,9

TO NEW RTU-01 & CU-01

(13521) PROJECT DRAWING REGISTER

HVAC Specification HVAC - Proposed Part Plan

Electrical Specification

Α

POWER FEED TO

NEW PANEL M

EXACT LOC. TO

BE CONFRIMED

ON SITE

ELEC ROOM 111

GYM

113

2,560 SF



92 Caplan Ave. Suite #517 Barrie, Ontario L4N 9J2 Tel. (705) 719-1003 Fax (705) 719-0490 dlong@nset.ca www.nset.ca



#### **GENERAL DRAWING / DESIGNER NOTES:**

ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE LATEST EDITION OF THE PROVINCE OF ONTARIO'S "BUILDING CODE", LOCAL REGULATIONS AND AUTHORITIES HAVING

THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION FOR ADDITIONAL FEES. ADDITIONAL CONSTRUCTION COSTS ARRIVING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND

DRAWINGS ONLY SHOW GENERAL INTENT AND SCOPE OF WORK. EXACT DETAILS OF INSTALLATIONS ARE TO BE PROVIDED BY CONTRACTOR(S), DO NOT SCALE DRAWINGS.

CONTRACTOR/AGENT/OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGNER. PROCEED WITH CONSTRUCTION ONLY USING THE LATEST

REVISED DRAWINGS MARKED "ISSUED FOR CONSTRUCTION". THIS DRAWING IS SPECIFIC TO THIS PROJECT AND CANNOT BE USED FOR OTHER "SIMILAR" PROJECTS.

THIS DRAWING IS THE PROPERTY OF NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. UN-AUTHORIZED RE-PRODUCTION OR USE

BASED ON CONTRACT WITH OWNER, THE ENGINEER WILL REVIEW SHOP SUBMISSION DWGS FROM THE CONTRACTOR TO REVIEW THE ITEMS FOR GENERAL CONFORMITY TO THE DESIGN DWGS. THE SHOP DWG REVIEW WILL NOT RELEASE THE CONTRACTOR FROM ESPONSIBILITY TO MAKE A FEASIBLE WORKING SYSTEM, THESE SHOP DRAWINGS SHALL CONSIST O LUMBING FIXTURES, HVAC EQUIPMENT, HVAC DIFFUSERS MINIMUM 1-2 WEEKS FOR COMPLETION (BASED ON COMPLEXITY)

THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR OTHER DESIGNER'S WORK IN ASSOCIATION WITH THIS PROJECT. RESPONSIBILITY FOR ANY FINAL ASSEMBLY(S) THAT VIOLATE

APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE REQUESTS FOR CHANGES OR SUBSTITUTIONS TO EQUIPMENT

PLANS AND / OR SPECIFICATIONS WILL BE SUBJECT TO ADDITIONAL FEES CHARGED BY THE CONSULTANT

SCOPE OF THIS PROJECT TO BE ARRANGED WITH THE OWNER MINIMUM FORTY EIGHT (48) HOURS PRIOR NOTICE TO BE PROVIDED FOR SITE VISITS - ONCE ARRANGED.

REQUESTS FOR THE RELEASE OF THIS DRAWING SET FROM NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. FOR THE

SITE VISITS TO REVIEW IMPLEMENTED DESIGNS WITHIN THE

PURPOSE OF TENDERING PURPOSES BY ANY CONTRACTOR TO MADE BY THE OWNER OR ARCHITECT IN WRITING. TENDER PRICING BY CONTRACTORS OF DRAWINGS TO BE BASED

ON DWGS MARKED "ISSUED FOR TENDER" OR "ISSUED FOR ALL REQUESTS FOR DESIGN CHANGES / SUBSTITUTIONS TO BE

MADE IN WRITING, ADDITIONAL FEES MAY APPLY, ALLOW MINIMUM (1) ONE WEEK TO REVIEW AND RESPOND TO CHANGE

# DRAWING REVISIONS Description

Apr. 06/21 Issued for Permit & Tender Apr. 27/21

Engineer's Seal:

Trillium Lakelands **District School Board** 

49 Glenelg St., Lindsay, ON K9V 2T9

King Albert PS - Gym &

Library HVAC Upgrades

**Electrical Specification** 

NSET Project #: 3521

Drawn by: Northstar Eng. Checked by: J.D.L.

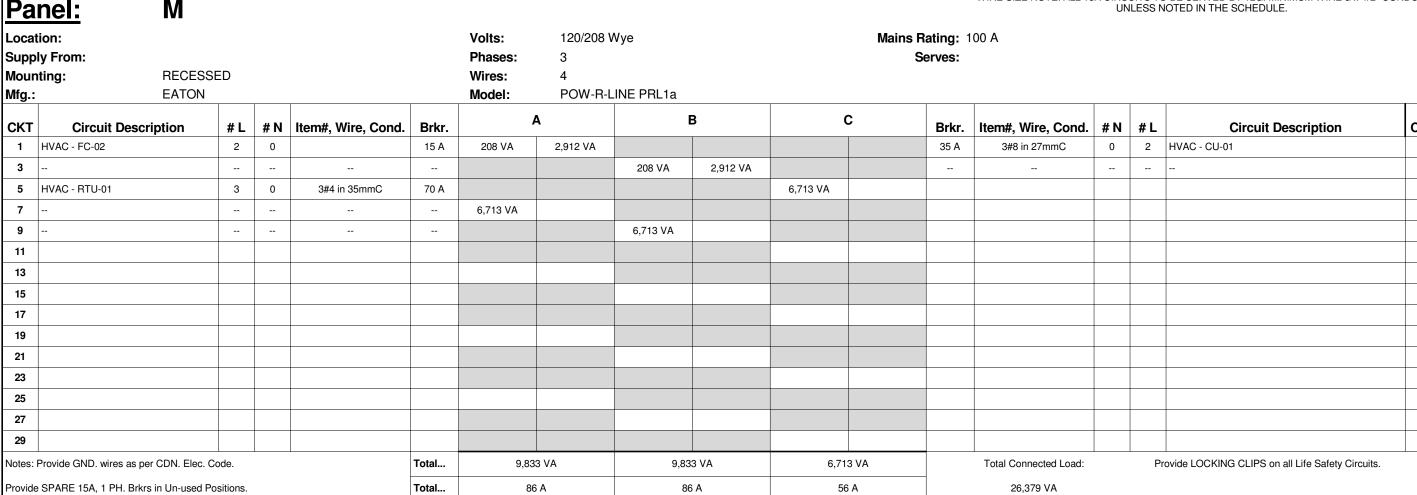
As indicated Revision #: 2.0 Drawing #:

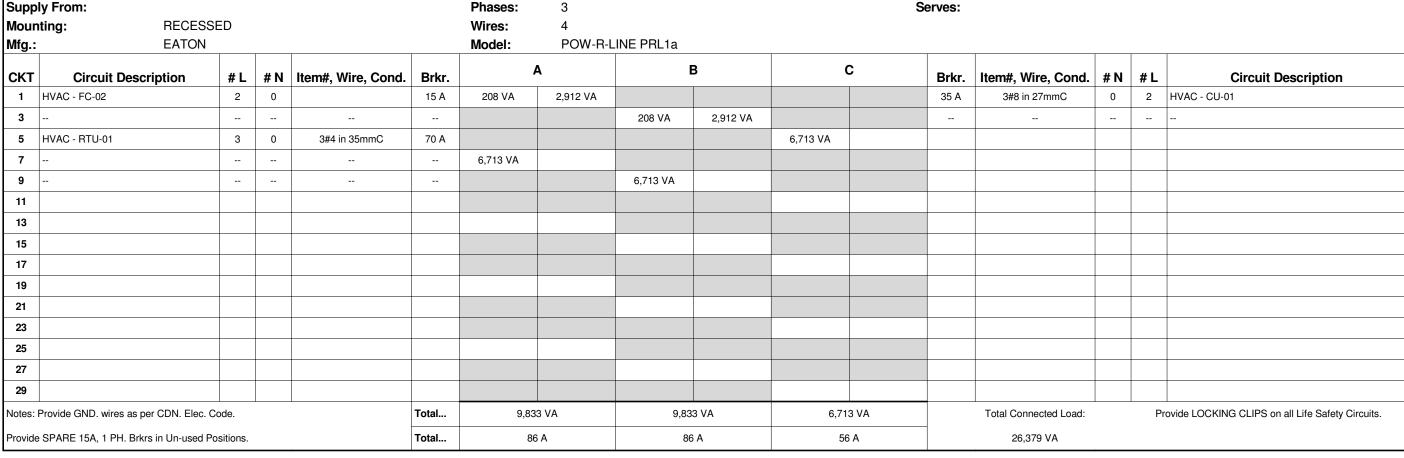
Arch-D (24" x 36"

Project Date: Mar. 30/21

Scale:

1 (13521) Single Line Diagram 🖯 (13521) Partial Roof Plan - Electrical E-1 / 1/16" = 1'-0" WIRE SIZE NOTE: ALL 15A CIRCUITS TO BE SERVED BY 12G. MINIMUM WIRE c/w 1/2" CONDUIT 120/208 Wye Mains Rating: 100 A RECESSED EATON POW-R-LINE PRL1a # L | # N | Item#, Wire, Cond. | Brkr. Brkr. Item#, Wire, Cond. | # N | # L Circuit Description 35 A 15 A 208 VA 2.912 VA 3#8 in 27mmC 0 2 HVAC - CU-01 2,912 VA



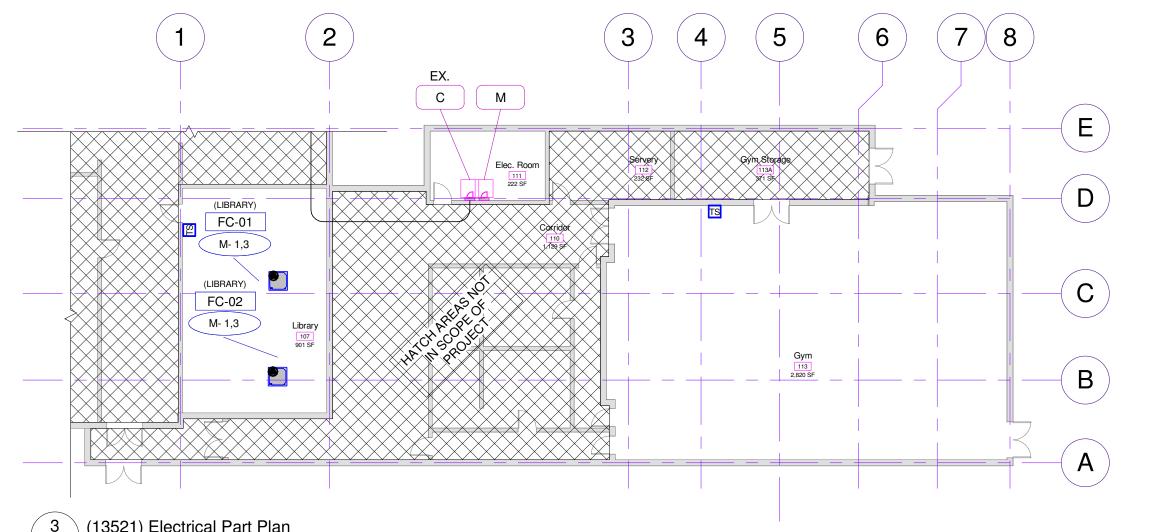


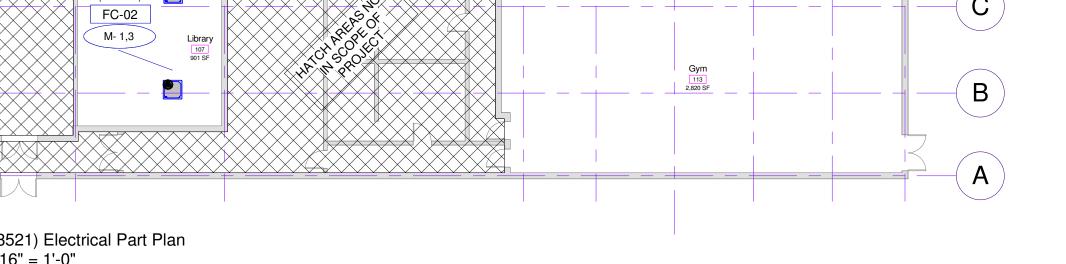


EX. PANEL A IN BASEMENT



NEW PANEL M LOCATION. FRIDGE TO BE RELOCATED





(13521) Electrical Part Plan E-1 1/16" = 1'-0"

#### 1.0 GENERAL SPECIFICATION - MECHANICAL HVAC

1.) PERFORM ALL MECHANICAL WORK DETAILED ON THESE DRAWINGS TO PROVIDE A COMPLETE AND FULLY FUNCTIONING OPERATING SYSTEM TO THE SATISFACTION OF THE OWNER AND THE DESIGN PROVIDED.

2.) DRAWINGS ARE DIAGRAMMATIC AND SHOW GENERAL DESIGN AND ARRANGEMENT OF MECHANICAL SYSTEM INSTALLATION. CONTRACTOR TO VERIFY ALL DUCT RUNS AND POSSIBLE INTERFERENCE WITH EXISTING SERVICES AND STRUCTURAL FEATURES. ANY REQUIRED RELOCATION OF EXISTING SERVICES TO ACCOMMODATE HVAC SYSTEM TO BE INCLUDED IN COST ESTIMATE.

3.) SPECIFIED WORK IN THIS DESIGN DOES NOT IMPLY OR DETERMINE CONTRACTUAL LIMITS OR SCOPE BETWEEN SUB-CONTRACTORS, CONTRACTORS AND THE OWNER.

4.) ALL WORK AND MATERIAL IS TO COMPLY WITH THE APPLICABLE BUILDING CODES, LOCAL BYLAWS AND AUTHORITIES HAVING JURISDICTION.

5.) CONTRACTOR TO OBTAIN AND ARRANGE ALL APPLICABLE PERMITS AND INSPECTIONS AS PER THE LOCAL AUTHORITY. CONTRACTOR TO PAY FOR ALL FEES ASSOCIATED WITH THE PERMIT PROCESS, INCLUDING ALL APPLICABLE TAXES. CORRESPONDENCE WITH THE PERMIT OFFICE TO BE THE RESPONSIBILITY OF THE CONTRACTOR UNLESS OTHERWISE ARRANGED WITH THE OWNER.

6.) CONTRACTOR TO VISIT THE SITE AND VERIFY ALL EXISTING CONDITIONS TO ENSURE DESIGN CAN BE COMPLETED AS INTENDED AT THE TENDER STAGE AND PRIOR TO COMMENCING WORK.

7.) CONTRACTOR SHALL CONTACT THE LOCAL GAS COMPANY AS SOON AS POSSIBLE AND VERIFY THAT GAS SERVICE IS AVAILABLE AT PRESSURE AND CAPACITY REQUIRED FOR THE PROJECT. HE SHALL INFORM ENGINEER IMMEDIATELY, IF THERE IS ANY PROBLEM WITH GAS SERVICE WHATSOEVER. IT SHALL BE THIS CONTRACTOR'S RESPONSIBILITY TO COORDINATE SERVICE REQUIREMENTS WITH THE LOCAL AUTHORITY COMPANY BEFORE ANY OF HIS WORK PROCEED WELL AS DURING CONSTRUCTION.

8.) FOR THE DURATION OF THE CONTRACT, THE WORK SHALL BE KEPT IN A CLEAN AND NEAT CONDITION. REMOVE WASTE MATERIAL FROM THE SITE.

9.) INSURANCE SHALL BE MAINTAINED BY THE CONTRACTOR TO PROTECT THE OWNER AND OTHER TRADES FROM ALL CLAIMS. ALL TRADESMEN TO BE LICENSED, ADEQUATELY TRAINED, BRIEFED ON SITE SAFETY, HAVE APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT IN PLACE AT ALL TIMES AND MEET THE REQUIREMENTS OF ALL APPLICABLE ONTARIO GOVERNING ASSOCIATIONS AND GOVERNMENT BODIES.

10.) ALL CONTRACT DOCUMENTS SHALL BE EXAMINED TO ENSURE FAMILIARITY WITH THE WORK OF OTHER TRADES. MAINTAIN MAXIMUM CEILING HEIGHTS, MINIMUM FURRING SIZES, AND MAXIMUM USE OF THE OCCUPIED SPACE.

11.) WORK SHALL PRESENT A NEAT CLEAN APPEARANCE ON COMPLETION. INDIVIDUAL ELEMENTS SHALL BE ALIGNED PERPENDICULAR OR PARALLEL TO BUILDING SURFACES. EQUIPMENT AND FIXTURES SHALL BE ACCURATELY SET, PLUMBED AND LEVELED.

12.) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY THAT MATERIAL AND EQUIPMENT BE BROUGHT INTO THE BUILDING IN SUCH ASSEMBLIES AND SIZES AS TO ENTER INTO THE SPACES WHERE THEY ARE TO BE LOCATED AND TO BE SMALL ENOUGH TO BE HOISTED INTO THE BUILDING WITHOUT DIFFICULTY. ANY CUTTING, PATCHING, ETC., INVOLVED IN GETTING LARGE ASSEMBLIES INTO PLACE, SHALL BE THE RESPONSIBILITY OF THIS SUBCONTRACTOR

13.) THE CONTRACTOR SHALL CONFER WITH ALL OTHER CONTRACTORS INSTALLING EQUIPMENT, PLANT PIPING, OTHER WORK, FOUNDATIONS, ETC., WHICH MAY AFFECT HIS INSTALLATION, AND HE SHALL ARRANGE HIS EQUIPMENT, PIPING, ETC., IN PROPER RELATION WITH OTHER APPARATUS, AND WITH THE BUILDING CONSTRUCTION. HE SHALL ALSO CONFIRM THE ELECTRICAL CHARACTERISTICS OF THE PROJECT AND ORDER EQUIPMENT ACCORDINGLY.

14.) ADEQUATE ALLOWANCE SHALL BE MADE FOR EXPANSION AND CONTRACTION OF DUCT AND GAS PIPING SYSTEMS. COORDINATE EQUIPMENT, PIPING AND DUCTWORK INSTALLATION TO PROVIDE ADEQUATE SERVICE CLEARANCES AND REMOVAL

15.) THE CONTRACTOR TO MAINTAIN A SET OF 'AS-BUILT' DRAWINGS AND PROVIDE TO THE OWNER AT THE COMPLETION OF WORK. ALL CHANGES IN DUCT LOCATIONS, SIZING, AIR TERMINALS ETC. SHALL BE DOCUMENTED.

16.) IN THE EVENT THAT THE CONTRACTOR OR AUTHORITY HAVING JURISDICTION DOES NOT AGREE WITH THE ENGINEER'S PLANS. THEIR REQUEST SHALL BE COMMUNICATE TO THE ENGINEER IN WRITING. CONTRACTOR SHALL CONSULT THE ENGINEER BEFORE PROCEEDING WITH CHANGES. EACH CONTRACTOR SHALL PREPARE DRAWINGS IN ADDITION TO ENGINEER'S DRAWINGS AS MAY BE REQUIRED BY VARIOUS INSPECTION DEPARTMENTS HAVING JURISDICTION, AND OBTAIN THEIR APPROVAL BEFORE PROCEEDING WITH THE

17.) CHARGES FOR ANY REQUIRED 'PREMIUM HOURS' REQUIRED TO BE INCLUDED IN COST ESTIMATES. CONTRACTOR TO CONSIDER SCHEDULING OF OTHER CONTRACTORS SO AS TO NOT INTERFERE WITH THE OVERALL SCHEDULE. CONTRACTOR SHALL CONSIDER SCHEDULING AND SIMULTANEOUS WORKING OF DIFFERENT TRADES ON THE PROJECT.

18.) FIXTURE / EQUIPMENT SUBSTITUTIONS, IF INITIATED BY THE CONTRACTOR, SHALL BE MADE SO AS TO ENSURE OPERATING PERFORMANCE IS NOT REDUCED. RE-REVIEW OF SPECIFICATIONS FOR SUBSTITUTED EQUIPMENT MAY RESULT IN ADDITIONAL CHARGES BY THIS CONSULTANT. ALL CORRESPONDENCE FOR CLARIFICATION OF DESIGN FEATURES, SPECIFICATIONS, AND EQUIPMENT SUBSTITUTIONS SHALL BE MADE IN WRITING INCLUDING APPROVED SHOP DRAWINGS OF NEW PRODUCTS. ALLOW FOR A 1 WEEK RESPONSE TIME FROM CONSULTANT. ANY ADDITIONAL COSTS RELATED TO EQUIPMENT SUBSTITUTIONS TO BE ABSORBED BY THE CONTRACT.

19.) THE OWNER (OR OWNER'S REPRESENTATIVE) IS TO PROVIDE THE ENGINEER WITH AN ACCURATE CONSTRUCTION SCHEDULE AT THE OUTSET OF CONSTRUCTION AND INCLUDE UPDATES AS APPLICABLE. SITE VISITS DURING CONSTRUCTION ARE TO BE AGREED TO AT THE OUTSET AND AMPLE

NOTIFICATION TO BE GIVEN TO VISIT THE SITE (MIN. 48 HOURS). 20.) THIS CONTRACTOR SHALL SCHEDULE AND PERFORM HIS/HER WORK TO MEET THE

COMPLETION SCHEDULE, NOTED ABOVE, AS SET OUT BY THE CLIENT.

# **2.0 PENETRATIONS**

 ANY OR ALL CUTTING, CORING AND PATCHING SHALL BE VERIFIED WITH THE OWNER PRIOR TO PERFORMING WORK. PAYMENT FOR SUCH SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ANY PENETRATION OF STRUCTURAL MEMBERS, FLOORS OR CEILINGS TO BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF

2.) PROVIDE SLEEVES, FLASHING AND COUNTER FLASHING WHERE MECHANICAL SERVICES PENETRATE WALLS, FLOORS AND ROOFS. ANNULAR SPACE BETWEEN SLEEVES AND SERVICES SHALL BE CAULKED WITH FIREPROOF MATERIAL AND SEALED AIR TIGHT. EX. 2-PART FLEXIBLE POLYURETHANE GROUT - SIKAFIX PU.

3.) CONTRACTORS SHALL NOTIFY THE CONTRACTOR AND OTHER CONTRACTORS WHO ARE CONCERNED, OF ALL OPENINGS, FOUNDATION WORK, HANGERS, INSERTS, ANCHORS, OR OTHER PROVISIONS NECESSARY IN THEIR WORK FOR THE INSTALLATION OF HIS WORK, AND HE SHALL FURNISH ALL INFORMATION AND NECESSARY MATERIALS IN AMPLE TIME SO THAT PROPER PROVISIONS CAN BE MADE FOR SAME, AND SHALL SUPPLY AND CORRECTLY AND ACCURATELY PLACE ALL INSERTS, SLEEVES, ANCHORS, ETC.

4.) FAILURE TO COMPLY WITH THESE REQUIREMENTS ON THE PART OF THIS CONTRACTOR WILL RENDER HIM RESPONSIBLE FOR THE COST OF CUTTING OPENINGS. INSTALLING HANGERS AND OTHER PROVISIONS AT A LATER DATE, AND THE SUBSEQUENT PATCHING, ETC., THEREBY REQUIRED.

5.) NO CUTTING SHALL BE DONE WITHOUT PERMISSION. ALL SUCH WORK SHALL BE DONE BY TRADESMEN SKILLED IN AND CERTIFIED FOR THIS PARTICULAR TRADE.

6.) ALL PENETRATIONS TO BE APPROVED BY THE LANDLORD IN WRITING.

7.) ANY EXTERIOR PENETRATION TO BE APPROPRIATELY FLASHED AND WEATHER PROOFED WITH APPROVED SEALING METHODS. PROVIDE 'BIRD SCREENS' ON ALL EXTERIOR INTAKE AND EXHAUST GRILLES. THERMAL INSULATION TO BE PROVIDED FOR DUCTS SERVING EXTERIOR GRILLES. MIN. 2" FOIL WRAPPED INSULATION REQUIRED.

8.) ALL PLANNED & UN-PLANNED PENETRATION OF SERVICES THROUGH RATED FIRE ASSEMBLIES TO BE COMPLETED USING AN APPROVED FIRE STOP MATERIAL AND METHOD. RATED FIRE DAMPERS AS PER ARCHITECTURAL DRAWINGS AND AS SPECIFIED ON THESE PLANS. ALL FIRE DAMPERS ARE TO BE ACCESSIBLE FOR RESETTING

#### 3.0 HVAC INSTALLATION

1.) ALL MATERIALS SHALL BE NEW, OF GOOD QUALITY AND MEET THE SATISFACTION OF THE OWNER / ARCHITECT. ALL ITEMS REQUIRED TO PROVIDE A COMPLETE WORKING SYSTEM - INCLUDING ITEMS NOT SPECIFIED OR SHOWN, SHALL BE INCLUDED.

2.) MECHANICAL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND TO FACILITATE EASY SERVICE, MAINTENANCE AND REMOVAL.

3.) SUSPENSION OF ANY MECHANICAL EQUIPMENT SPECIFIED IN THIS DESIGN IS THE RESPONSIBILITY OF THE CONTRACTOR. VERIFICATION WITH OTHER CONSULTANTS MAY BE REQUIRED. MINIMUM 3/8" DIA. THREADED ROD HANGERS ACCEPTED. EQUIPMENT MAY REQUIRE VIBRATION ISOLATION. SEE MFG. INSTALLATION MANUALS.

4.) ALL AIR DUCTWORK SHALL BE FABRICATED AND SUPPORTED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE ASHRAE EQUIPMENT GUIDE. NFPA 90A. SMACNA DUCT MANUAL. SHEET METAL USED TO FABRICATE THE DUCTWORK SHALL BE GALVANIZED AND SHALL CONFORM TO ASTM A-446 WITH Z-275 METRIC COATING, AND NOT LIGHTER THAN 26 GAUGE. SEAL ALL DUCTWORK AIR TIGHT. PROVIDE R/A TRANSFER DUCTS C/W SOUND ATTENUATION BETWEEN CEILING PLENUMS AND R/A CORRIDORS COORDINATED WITH OTHER DUCTS AND SERVICES AS REQUIRED. REFER TO PLANS FOR ANY SPECIFIC DESIGN REQUIREMENTS AS APPLICABLE.

5.) ALL EXTERIOR DUCTWORK FROM HEATING / COOLING UNITS TO BE THERMALLY INSULATED WITH MIN. 2" THERMAL INSULATION, WEATHER-PROOF WRAPPED. INTERIOR DUCTWORK WITHIN 10 FT. OF ROOF OR EXTERIOR PENETRATION TO BE THERMALLY INSULATED WITH MIN. 1.5" INSULATION, ALUM. FOIL WRAPPED. ALL INSULATION AND WRAP TO BE APPLIED TO THE EXTERIOR OF THE DUCTS. REFER TO PLANS FOR CLARIFICATIONS.

6.) ALL AIR DISTRIBUTION TERMINALS (AS REQUIRED) TO BE PROVIDED WITH FLOW ADJUSTING BALANCING DAMPER LOCATED AT THE TRUNK OR BRANCH DUCT TAKE-OFF - UNLESS OTHERWISE SPECIFIED ON PLANS. OWNER/ARCHITECT TO APPROVE THE LOCATION, TYPE AND APPEARANCE OF ALL AIR TERMINALS AND GRILLES. EH PRICE / GREENHECK PRODUCTS ARE SPECIFIED IN THIS DESIGN.

7.) ELEVATION OF EXTERIOR GRILLES TO BE ABOVE NORMAL SNOW HEIGHTS AND NOT IN AREAS PRONE TO SNOW DRIFTING. INTAKE AND EXHAUST GRILLES TO BE SEPARATED BY MINIMUM 10 FT. AS PER NFPA 96. SEE DETAIL.

8.) FRESH AIR INTAKE SYSTEMS: PROVIDE EXTERNAL BIRD SCREEN ON GOOSENECK INTAKES. PROVIDE FILTER FOR ALL MAKE UP AIR EQUIPMENT, FANS, SYSTEM COMPONENTS. THESE COMPONENTS TO BE FURNISHED WITH FLEXIBLE DUCT (DURADYNE NEOPRENE OR EQUIVALENT.) COMPLETE SYSTEM TO BE THERMALLY INSULATED. ALL COILS TO BE CASED INCLUDING CONDENSTATE DRAINS. PROVIDE SERVICE CONNECTIONS AS PER MFG. PROVIDE ACCESS TO ANY ADJUSTMENTS CONSIDERING INSULATION. (SERVICE PANELS TO BE SEPARATELY INSULATED FOR EASY REMOVAL. MINIMAL GAPS TO INSULATION - INSULATION TO BE CONTINUOUS AS MUCH AS POSSIBLE.) PROVIDE CONDENSATE DRAINS IN ALL DUCT LOW POINTS. INTERNAL NOISE ATTENUATING ACOUSTICAL INSULATION MAY BE REQUIRED AS SPECIFIED OR REQUIRED. MINIMUM 1' MATERIAL FASTENED WITH MECHANICAL FASTENERS REQUIRED. ALL DUCT SIZES INDICATED ARE AFTER INSULATION IS

CONDENSATE DRAINS (AS REQUIRED) ALL HVAC EQUIPMENT THAT PRODUCES CONDENSATE MUST BE PLUMBED AND INDIRECTLY DRAINED TO AN ACCEPTABLE SANITARY FIXTURE OR HUB DRAIN AS PER OBC 7.4.2.1. SEE DETAIL.

#### 9.) GAS PIPING

ENTIRE NATURAL GAS INSTALLATION SHALL CONFORM TO NATIONAL STANDARD OF CANADA CAN/CSA-B149.1-10 NATURAL GAS INSTALLATION CODE AS PREPARED BY CANADIAN GAS ASSOCIATION AND IN ACCORDANCE WITH THE LATEST LOCAL AMENDMENTS. PIPING SHALL BE SCHEDULE 40 BLACK CARBON STEEL PIPE COMPLYING WITH ASTM-A53. FITTINGS SHALL BE OF EITHER MALLEABLE IRON OR STEEL SCREWED FITTINGS COMPLYING WITH ANSI-B16.3. ALL EXTERIOR GAS PIPING TO BE PAINTED SAFETY YELLOW WITH RUST INHIBITED PAINT.

ENTIRE PROPANE GAS INSTALLATION SHALL CONFORM TO NATIONAL STANDARD OF CANADA CAN/CSA-B149.2-10 FOR PROPANE INSTALLATION CODE AS PREPARED BY CANADIAN GAS ASSOCIATION AND IN ACCORDANCE WITH THE LATEST LOCAL AMENDMENTS. PIPING SHALL BE SCHEDULE 40 BLACK CARBON STEEL PIPE COMPLYING WITH ASTM-A53. FITTINGS SHALL BE OF EITHER MALLEABLE IRON OR STEEL SCREWED FITTINGS COMPLYING WITH ANSI-B16.3. ALL EXTERIOR GAS PIPING TO BE PAINTED SAFETY YELLOW WITH RUST INHIBITED PAINT.

A READILY ACCESSIBLE MANUAL SHUT-OFF VALVE SHALL BE INSTALLED FOR EACH APPLIANCE AND SHALL BE OF EITHER LUBRICATED PLUG, OR ECCENTRIC TYPE. ALL GAS PIPING SHALL BE PAINTED YELLOW-ORANGE BY GENERAL CONTRACTOR.

SUCTION AND LIQUID LINES SHALL BE TYPE ACR COPPER WITH SOLDER TYPE FITTINGS USING 95/9 SILVER SOLDER. EVACUATE COMPLETED SYSTEM WITH VACUUM PUMP TO ENSURE REMOVAL OF MOISTURE. RECHARGE WITH FREMONT TO MANUFACTURER'S SPECIFICATIONS. THOROUGHLY CHECK ENTIRE SYSTEM WITH LEAK DETECTOR WHEN UNDER PRESSURE AND REPAIR ANY LEAK.

11.) ALL EQUIPMENT FABRICATED FROM STEEL AND NOT FACTORY FINISH PAINTED SHALL BE SUPPLIED WITH A PRIME COAT DONE AT THE SUPPLIER'S FACTORY. IF DAMAGED IN TRANSIT OR ON THE JOB, THIS CONTRACTOR SHALL TOUCH UP WITH RED LEAD PRIMER BEFORE FINISH PAINTING.

12.) LOCATE ACCESS DOORS WHERE REQUIRED AND OF SUFFICIENT SIZE FOR SERVICING VALVES, DAMPERS, CLEANOUTS, ETC. DOORS SHALL BE FLUSH MOUNTING, SCREWDRIVER ACCESS, METAL TYPES, 16 GAUGE PRIMED STEEL.

13.) ALL EQUIPMENT SPECIFIED TO BE USED OR EQUIVALENT EQUAL. EQUIPMENT SUBSTITUTIONS, IF INITIATED BY THE CONTRACTOR, SHALL BE MADE SO AS TO ENSURE OPERATING PERFORMANCE IS NOT REDUCED, RE-REVIEW OF SPECIFICATIONS FOR SUBSTITUTED EQUIPMENT MAY RESULT IN ADDITIONAL CHARGES BY THIS CONSULTANT. ALL CORRESPONDENCE FOR CLARIFICATION OF DESIGN FEATURES, SPECIFICATIONS, AND EQUIPMENT SUBSTITUTIONS SHALL BE MADE IN WRITING INCLUDING APPROVED SHOP DRAWINGS OF NEW PRODUCTS. ALLOW FOR A 1 WEEK RESPONSE TIME FROM CONSULTANT. ANY ADDITIONAL COSTS RELATED TO EQUIPMENT SUBSTITUTIONS TO BE ABSORBED BY THE CONTRACT.

# **ELECTRICAL EQUIPMENT**

14.) ELECTRICAL COMPONENTS RELATED TO MECHANICAL EQUIPMENT ARE TO BE INCLUDED BY THE DIV. 23 CONTRACTOR (OVER 50 VOLTS WIRED BY DIV. 26 CONTRACTOR), UNLESS SPECIFIED. CONTROLS DEVICES FOR HVAC UNITS TO BE BY DIV. 23.

15.) ALL DAMAGE TO ADJACENT BUILDING FEATURES OR SYSTEMS LIKE DRYWALL PLASTER, FLOORS, WOOD FINISHES OR OTHER MATERIALS, OR DAMAGE TO OTHER EQUIPMENT, CAUSED BY SUCH DEFECTS OF THIS CONTRACTOR'S WORK OR BY SUBSEQUENT REPLACEMENTS AND REPAIRS, SHALL BE MADE GOOD AT THE EXPENSE OF THIS CONTRACTOR. ALL REPAIR WORK SHALL BE DONE BY TRADES RESPONSIBLE FOR THE ORIGINAL WORK.

1.) OWNER/LANDLORD OR ARCHITECT TO APPROVE LOCATIONS OF ALL THERMOSTAT AND CONTROL DEVICES. UNLESS SPECIFIED. CONTROLS DEVICES FOR HVAC UNITS TO BE BY DIV. 23.

4.0 CONTROLS

1.) DEMONSTRATION OF THE OPERATION TO THE OWNER IS REQUIRED AT THE COMMISSIONING STAGE

2.) ALL SYSTEMS SHALL BE RUN-IN, TESTED AND BALANCED FOR PROPER OPERATION BEFORE ACCEPTANCE BY THE OWNER. TESTS SHALL BE PERFORMED AS REQUIRED BY CODES, BYLAWS, AND AUTHORITIES. WALK THE SYSTEM FROM THE AIR HANDLING EQUIPMENT TO TERMINAL UNITS TO DETERMINE VARIATIONS OF INSTALLATION FROM DESIGN.

3.) PERFORM TESTS AS INSTRUCTED BY THE ENGINEER TO DEMONSTRATE THAT THE WORK CONFORMS TO THE CONTRACT DOCUMENTS. PROVIDE WRITTEN REPORTS OF SAME.

4.) CARRY OUT ALL REQUIRED TESTS ON SYSTEMS TO SATISFY THE AUTHORITIES IN ACCORDANCE WITH THE BUILDING CODE. PROVIDE WRITTEN REPORTS OF SAME.

5.) EXAMPLE OF A TYPICAL HVAC EQUIPMENT AND SYSTEM CHECK - INCLUDES (BUT NOT LIMITED TO):

PLACE ALL FANS (SUPPLY, RETURN AND EXHAUST) IN OPERATION AND VERIFY (WITH REPORTS) THE FOLLOWING ITEMS (AS

APPLICABLE): A) FAN ROTATIONS

B) MOTOR AMPERAGE & VOLTAGE TO GUARD AGAINST OVERLOAD.

C) OPERABILITY OF STATIC PRESSURE LIMIT SWITCH. D) AUTOMATIC DAMPERS FOR PROPER POSITION.

E) THERMOSTAT FUNCTION

F) ZONE CONTROL FUNCTION. G) AIR & WATER RESETS OPERATING TO DELIVER REQUIRED TEMPERATURES.

6.) FINAL AIR BALANCING (AS REQUIRED BY LIST OF REPORTS) OF SYSTEM TO TAKE PLACE AFTER OCCUPANCY TO ADDRESS ANY CONCERNS. FAN SHEAVE ADJUSTMENTS AND SIZING TO BE THE RESPONSIBILITY OF THE CONTRACTOR. AS A MINIMUM, A FINAL INSPECTION BY ENGINEERING CONSULTANT IS IMPERATIVE FOR ANY FINAL APPROVALS.

7.) CONTRACTOR TO REMOVE ANY CEILING TILES / ACCESS COVERS AND PREPARE SITE FOR INSPECTIONS AS REQUIRED. CONTRACTOR TO PROVIDE CERTIFIED, GOOD CONDITION LADDERS / 'GENIE LIFT' AS REQUIRED WITH APPROPRIATE PERSONAL HARNESSES AND SAFETY GEAR FOR USE BY THE ENGINEER ONSITE.

8.) CONTRACTOR TO PROVIDE A NEAT, TABBED BINDER CONTAINING ALL EQUIPMENT MANUALS AND SPECIFICATION SHEETS REQUIRED FOR PROPER MAINTAINING AND SERVICING OF THE EQUIPMENT. BINDER TO CONTAIN AIR BALANCING REPORTS, WATER BALANCING REPORTS AS REQUIRED.

9.) A WRITTEN WARRANTY TO BE PROVIDED FOR A MIN. OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER. PROVIDE LABOUR, MATERIAL AND SERVICES TO CORRECT ALL FAULTS REPORTED DURING THE GUARANTEE PERIOD.

## **MECHANICAL DRAWINGS:**

THIS CONTRACTOR SHALL PREPARE, AT THEIR OWN EXPENSE, ANY LARGE SCALE WORKING DRAWINGS WHICH MAY BE REQUIRED BY THE EXAMINING AUTHORITIES.

CONSTRUCTION TO COMMENCE BASED ON APPROVED DRAWING ONLY LISTED "FOR TENDER & CONSTRUCTION" IN REVISION BLOCK

#### AS-BUILT DRAWINGS

THIS CONTRACTOR SHALL KEEP A SEPARATE SET OF WHITE PRINTS ON THE SITE AND NOTE ALL CHANGES AND DEVIATIONS FROM THE ORIGINAL DESIGN.

TWO SETS OF THESE PLANS SHOWING ALL AS-BUILT CONDITIONS SHALL BE FORWARDED TO THE ENGINEER AT THE COMPLETION OF THE WORK ONSITE.

THE ENGINEERS UPDATING OF THIS INFORMATION IS BASED ON CONTRACTUAL AGREEMENTS WITH THE OWNER. THE QUALITY OF THE UPDATES ARE BASED ON CONTRACTOR WORK. ALLOW MINIMUM 1-2 WEEKS FOR COMPLETION (BASED ON COMPLEXITY).

#### **SHOP DRAWINGS:**

BASED ON CONTRACT WITH OWNER, THE ENGINEER WILL REVIEW SHOP SUBMISSION DWGS FROM THE CONTRACTOR TO REVIEW THE ITEMS FOR GENERAL CONFORMITY TO THE DESIGN DWGS.

THE SHOP DWG REVIEW WILL NOT RELEASE THE CONTRACTOR FROM RESPONSIBILITY TO MAKE A FEASIBLE WORKING SYSTEM.

THESE SHOP DRAWINGS SHALL CONSIST OF (BUT NOT LIMITED TO) MAJOR MECHANICAL EQUIPMENT, FANS, DIFFUSERS, LOUVERS, GRILLES, HVAC CONTROLS.

ALLOW MINIMUM 1-2 WEEKS FOR COMPLETION (BASED ON COMPLEXITY - LARGER PROJECTS MAY REQUIRE MORE REVIEW

SUBSTITUTIONS MAY IMPACT PROJECT BUDGETS. GENERALLY, CHANGES TO MAJOR SYSTEMS WILL INCUR ADDITIONAL FEES.

#### MECHANICAL HVAC - SCOPE OF WORK

CONTRACTOR TO VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH THE REQUIREMENTS OF THIS DESIGN.

REFER TO SPECIFICATION & GENERAL PROJECT NOTES INCLUDED IN THIS SET OF DWGS.

THE WORK SHALL CONSIST OF, BUT SHALL NOT BE LIMITED TO THE

#### **TENDER PHASE**

FOLLOWING:

DWGS ARE GENERAL LAYOUT - CONTRACTOR TO PROVIDE A COMPLETE

- WORKING SYSTEM ALL QUESTIONS RELATED TO MISSING OR UNCLEAR DESIGN DETAILS TO BE COMMUNICATED IMMEDIATELY TO THE ENGINEER VIA THE GENERAL CONTRACTOR USING THE RFI PROCESS. (NORTHSTAR GENERALLY WILL NOT PROVIDE VERBAL DIRECTIVES ON THIS PROJECT
- VISIT THE SITE TO REVIEW THE CONDITIONS PROVIDE ANY QUESTIONS TO THE BID ADMINISTRATOR IN WRITING

#### **PLANNING & MOBILIZATION PHASE**

- REVIEW SITE CONDITIONS AGAIN TO CONFIRM THE VIABILITY OF THE DESIGN
- REPORT ANY CONFLICTS TO THE ENGINEER IN WRITING SHOP DRAWINGS WILL NOT CONSTITUTE A CHANGE IN CONCEPT CONTROLS COORDINATION WITH OTHER TRADES. THIS TYPE OF CHANGE WILL COME IN THE FORM OF AN OFFICIAL CHANGE NOTICE
- THRU THE PROJECT COORDINATOR THE GENERAL CONTRACTOR AND OR CLIENT PROJECT COORDINATOR TO FACILITATE A COMPLETE REVIEW OF ALL TRADES DESIGN
- DRAWINGS. ENGINEER TO BE RETAINED TO FACILITATE TO ATTEND AN ALL TRADES
- PROJECT KICK-OFF ONSITE (OWNER IN ATTENDANCE) THIS TRADE SHALL REVIEW THE TOGETHER WITH THE ELECTRICAL CONTRACTOR TO CONTROLS AND POWER DETAILING AND COORDINATE THE WORK TOGETHER AND NOTICE THE ENGINEER OF ANY DISCREPANCIES IMMEDIATELY
- MECHANICAL ITEMS THAT HAVE ELECTRICAL FEATURES OVER 50V TO BE REVIEWED WITH THE ELECTRICAL TRADES
- THIS CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL OBTAIN ALL PERMITS, INSPECTIONS, ETC. AS REQUIRED BY ALL AUTHORITIES HAVING JURISDICTION OVER THIS WORK AND SHALL PAY FOR SAME. CONFIRM ALL EXISTING SERVICES ON THE PROPERTY BEFORE DIGGING. DETERMINE THE LOCATION OF ALL EXISTING SERVICES SO AS TO NOT
- DAMAGE DURING NEW CONSTRUCTION. **DEMOLITION PHASE**
- DEMOLISH & REMOVE FROM SITE EX. ROOF MOUNTED AIR HANDLER SERVING THE GYM. PRESERVE GAS PIPING, & ELECTRICAL SERVICES FOR THE NEW RTU.
- DEMOLISH & REMOVE FROM SITE EX. DUCTWORK SERVING EX. GYM AHU EXCEPT THE DUCTWORK & AIR TERMINALS NOTED AS EX. ON
  - ARRANGE & PAY FOR CRANE TO LIFT EX. AHU OFF OF GYM & LIFT NEW RTU & CONDENSING UNIT ONTO ROOF.

## **CONSTRUCTION PHASE**

- INSTALL ALL CLIENT SUPPLIED MECHANICAL UNITS & CONTROLS. SUPPLY & INSTALL ALL DUCT WORK, DUCT INSULATION, CONTROLS
- WIRING & PROGRAMMING. SUPPLY & INSTALL WIRE SAFETY HANGERS FOR GYM AIR TERMINALS. ALL EXTERIOR PENETRATIONS TO BE SEALED "LEAKPROOF" INSTALL CONDENSING UNIT OUTDOOR UNITS MOUNTED ON THE ROOF

SUPPLY & INSTALL PRESSURE TREATED SLEEPERS FOR CONDENSING

- SUPPLY & INSTALL CONDENSATE PIPING FROM FAN COILS TO HUB
- DRAIN IN MECHANICAL ROOM VIA INDIRECT CONNECTION. INSTALL CLIENT SUPPLIED RTU CENTERED OVER EX. ROOF OPENING c/w INSULATED ROOF CURB. DISABLE COOLING FOR NEW RTU SERVING GYM UNTIL THE BUILDINGS
- ELECTRICAL SERVICE IS UPGRADED. COMMISSION & TEST ALL MECHANICAL EQUIPMENT & VERIFY CORRECT OPERATION IN WRITING. SET-UP, TEST & CONFIGURE ALL
- PROGRAMMABLE THERMOSTATS. NOTIFY THE ENGINEER OF INSPECTIONS. PROVIDE A MIN. OF 48 HOURS NOTICE
- SUPPLY AND INSTALL ALL REFRIGERANT PIPING COMPLETE WITH HANGERS & INSULATION. TEST ALL PIPING SYSTEMS FOR LEAKS PRIOR TO OPERATION.

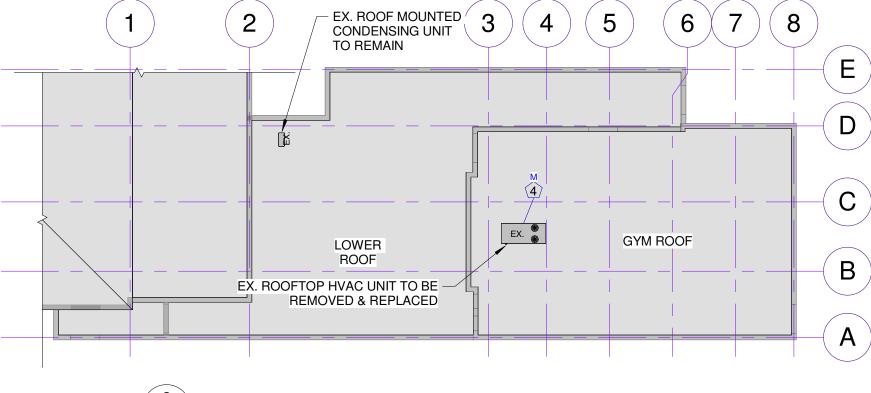
PROVIDE A CERTIFIED THIRD PARTY AIR BALANCE REPORT FOR THE

PROVIDE ALL REPORTS REQUIRED AS LISTED TO THE ENGINEER.

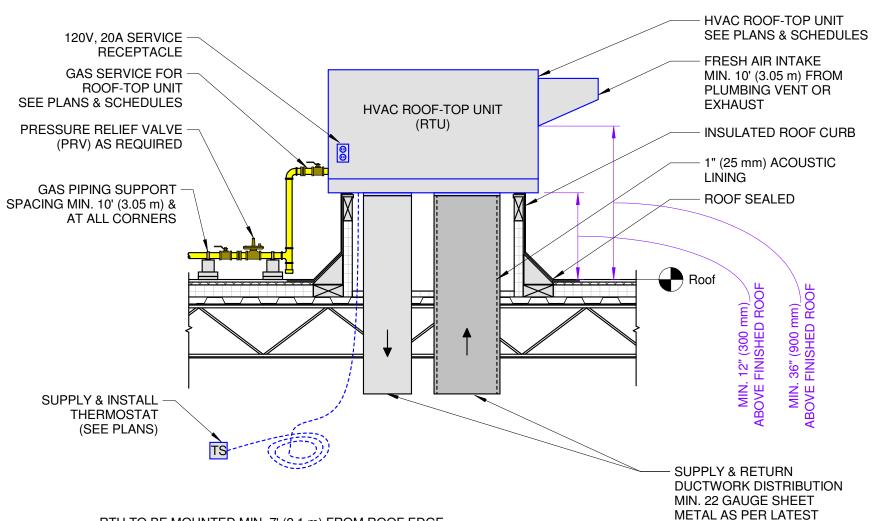
GYM AFTER COMPLETING THE DUCTWORK & NEW RTU INSTALLATION. MAINTAIN AS-BUILT DWGS.

# M-1 HVAC Specification ELEC. CONDUIT FROM M-2 HVAC - Proposed Part Plan **BASEMENT** E-1 Electrical Specification FOR NEW PANEL M **EXACT LOC. TO BE WORK AREAS: COORDINATED ON SITE** GYM 113 • ELEC ROOM 111 GYM 113 LIBRARY 2,560 SF 107

#### (13521) Level 1 - Key Plan



(13521) Partial Roof Plan - Mechanical - Demolition



 RTU TO BE MOUNTED MIN. 7' (2.1 m) FROM ROOF EDGE PROVIDE START UP TEST & COMMISSIONING REPORT TO ENGINEER TO REVIEW INSTALL FOR ADEQUATE SERVICE ACCESS & CLEARANCES REVIEW LOCATION WITH STRUCTURAL DWGS. PROVIDE ROOF RE-ENFORCEMENT

IN ACCORDANCE WITH STRUCTURAL ENGINEER SEALED PERMIT DWGS

M-1 N.T.S.

### MECHANICAL REPORTS **REQUIRED FOR SIGN-OFF**

AIR BALANCING REPORT AHJ (AUTHORITY HAVING JURISDICTION INSPECTION REPORTS

LETTER

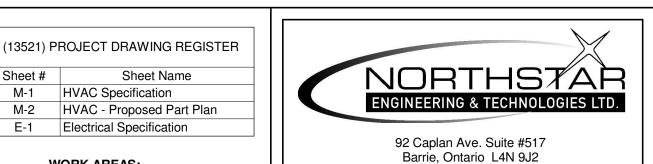
CONTRACTOR COMPLETION

**EDITION OF SMACNA HVAC** 

DUCT CONSTRUCTION

STANDARDS

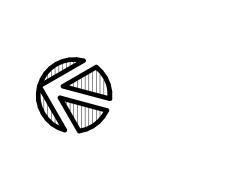
(13521) Google Map for Project.



Tel. (705) 719-1003 Fax (705) 719-0490

dlong@nset.ca www.nset.ca

Sheet Name



#### **GENERAL DRAWING / DESIGNER NOTES**

ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE LATEST EDITION OF THE PROVINCE OF ONTARIO'S "BUILDING CODE", LOCAL REGULATIONS AND AUTHORITIES HAVING

THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING URING CONSTRUCTION FOR ADDITIONAL FEES. ADDITIONAL CONSTRUCTION COSTS ARRIVING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND

DRAWINGS ONLY SHOW GENERAL INTENT AND SCOPE OF WORK EXACT DETAILS OF INSTALLATIONS ARE TO BE PROVIDED BY

CONTRACTOR(S), DO NOT SCALE DRAWINGS. CONTRACTOR/AGENT/OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGNER.

PROCEED WITH CONSTRUCTION ONLY USING THE LATEST REVISED DRAWINGS MARKED "ISSUED FOR CONSTRUCTION". THIS DRAWING IS SPECIFIC TO THIS PROJECT AND CANNOT BE USED FOR OTHER "SIMILAR" PROJECTS.

THIS DRAWING IS THE PROPERTY OF NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. UN-AUTHORIZED RE-PRODUCTION OR USE D ON CONTRACT WITH OWNER, THE ENGINEER WILL

REVIEW SHOP SUBMISSION DWGS FROM THE CONTRACTOR TO

REVIEW THE ITEMS FOR GENERAL CONFORMITY TO THE DESIGN DWGS. THE SHOP DWG REVIEW WILL NOT RELEASE THE CONTRACTOR FROM ESPONSIBILITY TO MAKE A FEASIBLE WORKING SYSTEM, THESE SHOP DRAWINGS SHALL CONSIST O LUMBING FIXTURES, HVAC EQUIPMENT, HVAC DIFFUSERS MINIMUM 1-2 WEEKS FOR COMPLETION (BASED ON COMPLEXITY). THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR

OTHER DESIGNER'S WORK IN ASSOCIATION WITH THIS PROJECT RESPONSIBILITY FOR ANY FINAL ASSEMBLY(S) THAT VIOLATE APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE

REQUESTS FOR CHANGES OR SUBSTITUTIONS TO EQUIPMENT PLANS AND / OR SPECIFICATIONS WILL BE SUBJECT TO ADDITIONAL FEES CHARGED BY THE CONSULTANT

SITE VISITS TO REVIEW IMPLEMENTED DESIGNS WITHIN THE SCOPE OF THIS PROJECT TO BE ARRANGED WITH THE OWNER MINIMUM FORTY EIGHT (48) HOURS PRIOR NOTICE TO BE

PROVIDED FOR SITE VISITS - ONCE ARRANGED. REQUESTS FOR THE RELEASE OF THIS DRAWING SET FROM NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. FOR THE PURPOSE OF TENDERING PURPOSES BY ANY CONTRACTOR TO

MADE BY THE OWNER OR ARCHITECT IN WRITING. TENDER PRICING BY CONTRACTORS OF DRAWINGS TO BE BASED ON DWGS MARKED "ISSUED FOR TENDER" OR "ISSUED FOR

ALL REQUESTS FOR DESIGN CHANGES / SUBSTITUTIONS TO BE MADE IN WRITING ADDITIONAL FEES MAY APPLY ALLOW MINIMUM (1) ONE WEEK TO REVIEW AND RESPOND TO CHANGE

DRAWING REVISIONS Description Issued for Permit & Tender Apr. 27/21 Engineer's Seal:

> Trillium Lakelands District School Board

49 Glenelg St., Lindsay, ON K9V 2T9

King Albert PS - Gym & Library HVAC Upgrades

Dwg. Name: **HVAC Specification** 

As indicated Revision #: 2.0 Drawing #:

Project Date: Mar. 30/21

Drawn by: Northstar Eng.

Arch-D (24" x 36"

Checked by: J.D.L.

