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 OWNER.

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

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

OTHERWISE NOTED.

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

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

ELECTRICAL SCOPE OF WORK:

CONTRACTOR TO VISIT THE SITE AND

NOTES INCLUDED IN THIS SET OF DWGS.

REFER TO SPECIFICATION & GENERAL PROJECT

THE WORK SHALL CONSIST OF, BUT SHALL NOT

CONTRACTOR TO VISIT JOB SITE TO BECOME FAMILIAR WITH THE PROJECT PRIOR TO SUBMITTING TENDER.

RESPONSIBLE FOR AND SHALL OBTAIN

REQUIRED BY ALL AUTHORITIES HAVING

ALL PERMITS, INSPECTIONS, ETC. AS

JURISDICTION OVER THIS WORK AND

ALL PERMITS SHALL BE DELIVERED TO THE OWNERS REPRESENTATIVE AS

SOON AS THEY BECOME AVAILABLE AND

DISTRIBUTION INCLUDING BREAKERS 8

CONDUIT WIRING & CONNECTIONS FOR A COMPLETE INSTALLATION. CONDUIT ROUTING SHALL BE OVER THE ROOF TO EACH PIECE OF MECHANIC EQUIPMENT

CONDUIT ROUTING TO BE REVIEWED ON SITE & CONTRACTOR TO ADIVSE ON THE LEAST INVASIVE CONDUIT ROUTING TO

ALL MECH. UNITS SHOWN.

SUPPLY & INSTALL ALL NECESSARY

PRIOR TO PROJECT COMPLETION. DETERMINE THE LOCATION OF ALL **EXISTING SERVICES SO AS TO NOT** DAMAGE DURING NEW CONSTRUCTION SUPPLY & INSTALL ALL ELECTRICAL

THIS CONTRACTOR SHALL BE

SHALL PAY FOR SAME

DISCONNECTS

SHOWN.

FAMILIARIZE THEMSELVES WITH THE

REQUIREMENTS OF THIS DESIGN.

BE LIMITED TO THE FOLLOWING:

8.) LIMIT THE VOLTAGE DROP AT THE END 7.0 COORDINATION 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 AUTHORIZATION. CONDUIT IN FINISHED AREA SHALL BE CONCEALED. ALL CONDUIT 1.) THIS TRADE SHALL BE RESPONSIBLE SHALL BE INSTALLED PARALLEL TO BUILDING LINES.

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 CONDITIONS.

2.) ANY DEVIATION AND / OR CONFLICTS ON BE REQUIRED BY THE EXAMINING 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.

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

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

EX. ELEC

DISTRIBUTION -

TO REMAIN

TO BE READILY ACCESSIBLE FOR

9.0 RESPONSIBILITY FOR THIS WORK UNTIL THE COMPLETION AND FINAL ACCEPTANCE, FOR REPLACING ANY ITEM THAT MAY BE DEFECTIVE. DAMAGED, LOST OR STOLEN WITHOUT ADDITIONAL COST TO THE OWNER OR DELAY TO THE COMPLETION OF THE PROJECT.

10.0 ELECTRICAL DRAWINGS

1.) THIS CONTRACTOR SHALL PREPARE AT THEIS OWN EXPENSE, ANY LARGE SCALE WORKING DRAWINGS WHICH MAY AUTHORITIES.

11.0 AS-BUILT DRAWINGS

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

3.) ONE SET OF THESE PLANS SHOWING ALL AS-BUILT CONDITIONS SHALL BE FORWARDED TO THE ENGINEER AT THE COMPLETION OF THE WORK ONSITE.

4.) CONTRACTOR SHALL SUBMIT TO THE ENGINEER THE LISTED DOCUMENTS (SEE PLANS FOR LIST) FOR REVIEW AND APPROVAL AT THE COMPLETION OF THE PROJECT:

DIV. 23, DIV. 26 **RESPONSIBILITIES**

3 #6 (CU) -

2

DPA

 $\sqrt{3}$ (13321) Electrical Part Plan

E-1 / 1/16" = 1'-0"

Ø35MM C

(13321) Single Line Diagram

1.) BASED ON CONTRACT WITH OWNER, THE ENGINEER WILL REVIEW SHOP SUBMISSION DWGS FROM THE CONTRACTOR TO REVIEW

SWITCHBOARD

DPA

120/208V, 4W

Main Breaker

600A / 3P

100A / 3P

50A / 3P

100A / 3P

100A / 3P

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

12.0 SHOP DRAWINGS

SMALL PROJECTS: **ESA SERVICE APPLICATION**

CONTRACTOR TO COORDINATE ELECTRICAL RESISTANCE AND / OR NOTIFY CONSULTANT OF HEATERS, THE ELECTRICAL SAFETY ALL CONTROL AND ELECTRICAL AUTHORITY (ESA) SERVICE APPLICATION FOR SITE POWER

POWER DEVICES OVER 50 VOLTS (ALSO TO BE INSTALLED, WIRED, & TESTED BY DIV. 26 CONT.) DIV. 23 TO SUPPLY

DEVICES UNDER 50 VOLTS

(ALSO TO BE INSTALLED, WIRED &

TESTED BY DIV. 23 CONT.)

HEATING / COOLING UNITS, GAS 1] COVER LETTER c/w FIRED HVAC EQUIPMENT, EXHAUS 2 SCOPE OF WORK, CIVIC ADRESS FANS, HVAC ELECTRICAL CONTROL [3] OWNER OF TRANSFORMER

ARCHITECTUAL GRID **REF. NOMENCLATURE:**

GRIDS SHOWN ARE FOR REFERENCE FOR THIS DWG. SET. CONTRACTOR MAY REFER TO ARCHITECTS DWG. SET FOR CONFIRMATION OF NOMENCLATURE

SHOWN IN THESE DWGS.

HRV-01

HEAT

RECOVERY

UNIT

208VAC

3PH, 60Hz

FC-01

FAN COIL

208VAC

1PH, 60Hz

FC-02

FAN COIL

208VAC

1PH, 60Hz

2 #12

(CU)

2 #12

(CU)

2 #12

21 mm Ø C

D

FC-02

A- 39,41

A- 38,40,42

FC-01

A- 31,33

Library

40 SF

(CU)

21 mm Ø C

21 mm Ø C

SERVICE. APPLICATION TO INCLUDE:

BRANCH PANEL

PANEL A

120/208V, 4W

250 MAINS

15A / 3P

15A / 3P

15A / 2P

15A / 2P

CU-01

OUTDOOR

COND. UNIT

208VAC

3PH, 60Hz

ELECTRICAL REQUIRED REPORTS

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

ESA CERTIFICATE LETTER CONTRACTOR COMPLETION

CONDUIT UP FROM

DPA TO NEW COND.

CONDUIT UP FROM

PANEL A TO NEW

FANCOILS & HRV

OVER ROOF

LOWER ROOF

4 \ (13321) Partial Roof Plan - Electrical

E-1 1/16" = 1'-0"

ELEC/ BOILE

(13321) Key Plan

GYM 122

2,055 SF

EXISTING FAN TO BE DEMOLISHED &

ELECTRICAL TO BE MADE SAFE

UNIT CU-01 OVER ROOF

(GYM & LIBRARY)

CU-01

DPA- 1

GYM ROOF

(13321) Google Map for Project

WORK AREAS:

LIBRARY 103

ELEC/ BOILER ROOM

• GYM 122

(13321) PROJECT DRAWING REGISTER Sheet Name HVAC Specification HVAC - Proposed Part Plan

Electrical Specification

NGINEERING & TECHNOLOGIES LTD

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

3HOP 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 ESPONSIBILITY TO MAKE A FEASIBLE WORKING SYSTEM. THESE SHOP DRAWINGS SHALL CONSIST OF 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 EMADE 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 Issued for Permit & Tender Apr. 27/21

Engineer's Seal:



Trillium Lakelands **District School Board**

698 ON-7A, Bethany, ON LOA 1A0

Scale:

Grandview PS HVAC

Dwg. Name: **Electrical Specification**

NSET Project #:

13321 Drawn by: Northstar Eng. | Checked by: J.D.L.

As indicated Revision #: 2.0 Drawing #:

Project Date: Mar. 30/21 Arch-D (24" x 36"



SPARE BREAKER IN EX. DISTRIBUTION BOARD DPA TO BE UTILIZED FOR 50A 3Ø SERVICE TO CU-01



BLANK SPACES IN PANEL A FOR HRV & FANCOIL POWER

CONNECTIONS











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

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

<u>NATURAL GAS PIPING (AS REQUIRED)</u> 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.

4.0 CONTROLS

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.

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 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

DESIGN DRAWINGS.

- REVIEW SITE CONDITIONS AGAIN TO CONFIRM THE VIABILITY OF THE
- 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
- 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

CONSTRUCTION PHASE

- INSTALL ALL CLIENT SUPPLIED MECHANICAL UNITS & CONTROLS. SUPPLY & INSTALL ALL DUCT WORK, GRILLES, DIFFUSERS, FLOW DAMPERS, CONTROLS WIRING.
- SUPPLY & INSTALL HRV LOUVERS c/w STEEL LINTEL & STRUCTURAL ENGINEERING. HRV-01 TO BE CONTROLLED BY LIGHTING CIRCUIT IN THE GYM.

DAMAGE DURING NEW CONSTRUCTION.

SUPPLY AND INSTALL ALL FIRE DAMPERS AS REQUIRED BY THE ARCHITECTURAL DRAWINGS. ALL EXPOSED DUCTWORK TO BE PAINTED. CONFIRM COLOUR WITH OWNER & ARCHITECT.

PROVIDE DUCT INSULATION AS PER ASHRAE 90.1 & DRAWINGS.

- SUPPLY & INSTALL CONTROLS TO SHUT DOWN ALL FANS IN EVENT OF FIRE ALARM. SUPPLY & INSTALL CONDENSATE PIPING FROM HRV & FAN COILS TO
- HUB DRAIN IN MECHANICAL ROOM VIA INDIRECT CONNECTION. SUPPLY & INSTALL UNISTRUT & THREADED ROD ON A UNISTRUT FRAME UNDER THE HRV & FAN COIL IN THE EX. GYM STAGE. BOLT TWO SIDES TO THE EX. BLOCK WALLS.
- INSTALL 4-WAY CASSETTE FAN COIL IN THE LIBRARY IN PLACE OF THE EX. CEILING FAN HUNG FROM STEEL CABLE. BUILD A DRYWALL BOX AROUND THE SIDES OF THE FAN COIL UP TO THE CEILING TO CONCEAL THE UNIT. PROVIDE AN ACCESS HATCH FOR SERVICING. INSTALL HEAT PUMP OUTDOOR UNIT MOUNTED TO GYM BLOCK WALL
- ON THE ROOF. HEAT PUMP c/w STEEL WALL MOUNT BRACKET FROM MANUFACTURER. SUPPLY & INSTALL VIBRATION ISOLATORS, DUCT FLEX CONNECTORS FOR ALL HRV'S & AIR HANDLERS.
- ALL EXTERIOR PENETRATIONS TO BE SEALED "LEAKPROOF". 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. MAINTAIN AS-BUILT DWGS.
- PROVIDE ALL REPORTS REQUIRED AS LISTED TO THE ENGINEER PROVIDE ACCURATE BALANCED AIR SUPPLY TO EACH ROOM AS INDICATED ON DRAWINGS INCLUDING FRESH AIR SYSTEM. SUBMISSION OF CERTIFIED AIR BALANCING REPORT IS MANDATORY ONE WEEK PRIOR TO ENGINEERS FINAL INSPECTION.

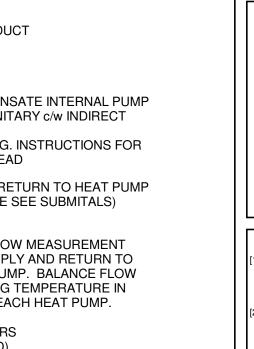
HVAC CONTROL SCHEME

M-1 N.T.S.

OPERATION OF HRV TO BE CONTROLLED BY LIGHTING CIRCUIT IN

FOR "FAN ON" 24/7.

(13321) PROJECT DRAWING REGISTER Sheet Name M-1 HVAC Specification M-2 HVAC - Proposed Part Plan E-1 Electrical Specification



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

GENERAL DRAWING / DESIGNER NOTES

CODE", LOCAL REGULATIONS AND AUTHORITIES HAVING

ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO

THE LATEST EDITION OF THE PROVINCE OF ONTARIO'S "BUILDING

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

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Barrie, Ontario L4N 9J2

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dlong@nset.ca www.nset.ca

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.

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

DRAWING REVISIONS

MINIMUM (1) ONE WEEK TO REVIEW AND RESPOND TO CHANGE

REQUESTS FOR THE RELEASE OF THIS DRAWING SET FROM

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

Trillium Lakelands District School Board

698 ON-7A, Bethany, ON LOA 1A0

Grandview PS HVAC

HVAC Specification

As indicated Revision #: 2.0 Drawing #:

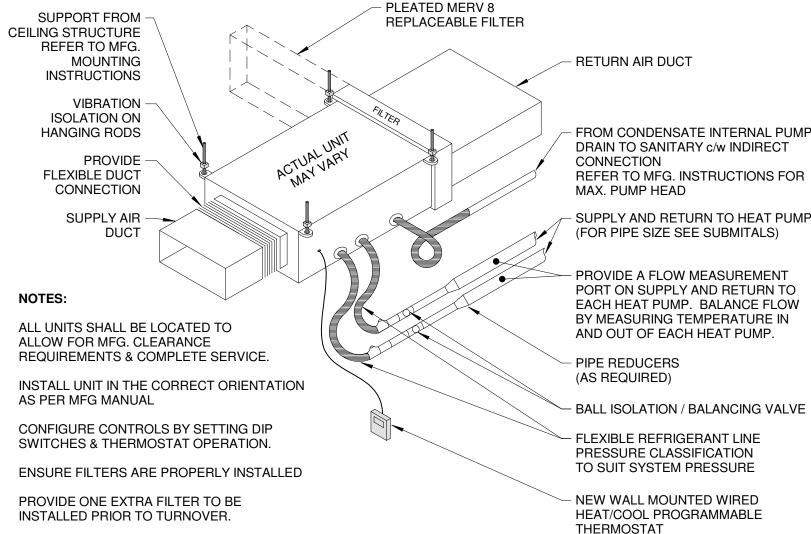
Project Date: Mar. 30/21

Drawn by: Northstar Eng.

Arch-D (24" x 36"

Checked by: J.D.L.

IT IS RECOMMENDED THAT ALL FAN COIL THERMOSTATS BE SET



THREADED ROD—► COMMON SIZE * NO UNSIGHTLY TRANSITIONS SPACING BETWEEN HANGERS THREADED ROD * MINIMISE PRESSURE DROP * NEAT INSTALLATION * SEAL JOINTS TO PREVENT DIS-COLOURATION SPIRAL DUCT PAINT TO SUIT INTERIOR DECOR (CONSULT OWNER) SPIRAL DUCT

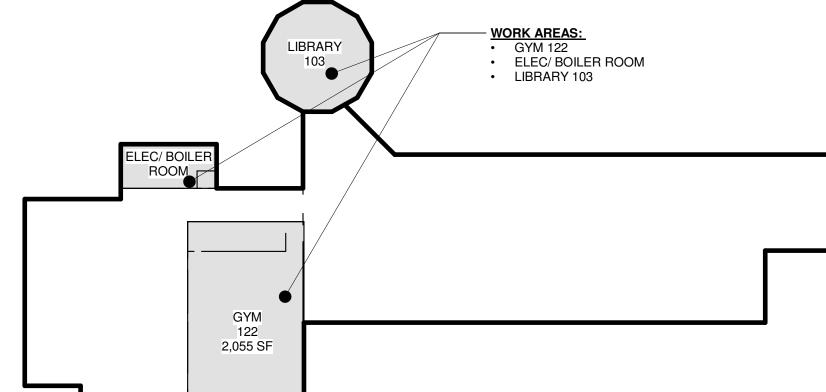
3 ---MH-022-020 / HVAC / Install / Split AC HP / Generic Ducted - Installation

2 ---MH-010-003 / HVAC / Ductwork / Spiral / Support Copy 1 \backslash M-1 / N.T.S.

3" WIDE GAI VANIZED SHEET

METAL BAND AT JOINTS

Mark	Type Mark	Description	Manufacturer	Model	Qty.	Supplied By
TS-01	TS-1	THERMOSTAT / PROGRAMMABLE / TOUCH SCREEN / WIRED / c/w LOCKABLE LEXAN COVER	HISENSE	HYXE-VA01	1	CLIENT
TS-02	TS-1	THERMOSTAT / PROGRAMMABLE / TOUCH SCREEN / WIRED / c/w LOCKABLE LEXAN COVER	HISENSE	HYXE-VA01	1	CLIENT
Grand total			2			



(13321) Key Plan

MECHANICAL REPORTS **REQUIRED FOR SIGN-OFF**

THIRD PARTY AIR BALANCING

AHJ (AUTHORITY HAVING JURISDICTION INSPECTION REPORTS MECHANICAL EQUIPMENT COMMISIONING REPORTS

REPORTS

CONTRACTOR COMPLETION LETTER OPERATION MANUAL (INCLUDING AS-BUILT DWGS)

(13321) Google Map for Project

