

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 WORK.

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 AMPLIFIED 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

1) 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 RECORD.

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 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 CONDENSATE 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 ADDED.

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

NATURAL GAS PIPING (AS REQUIRED)
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.

PROPANE PIPING (AS REQUIRED)
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.

10.) REFRIGERANT PIPING:
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.

PAINTING

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.

ACCESS DOORS

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.

SUBSTITUTIONS

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 DEVICES 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.

5.0 JOB COMPLETION

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):

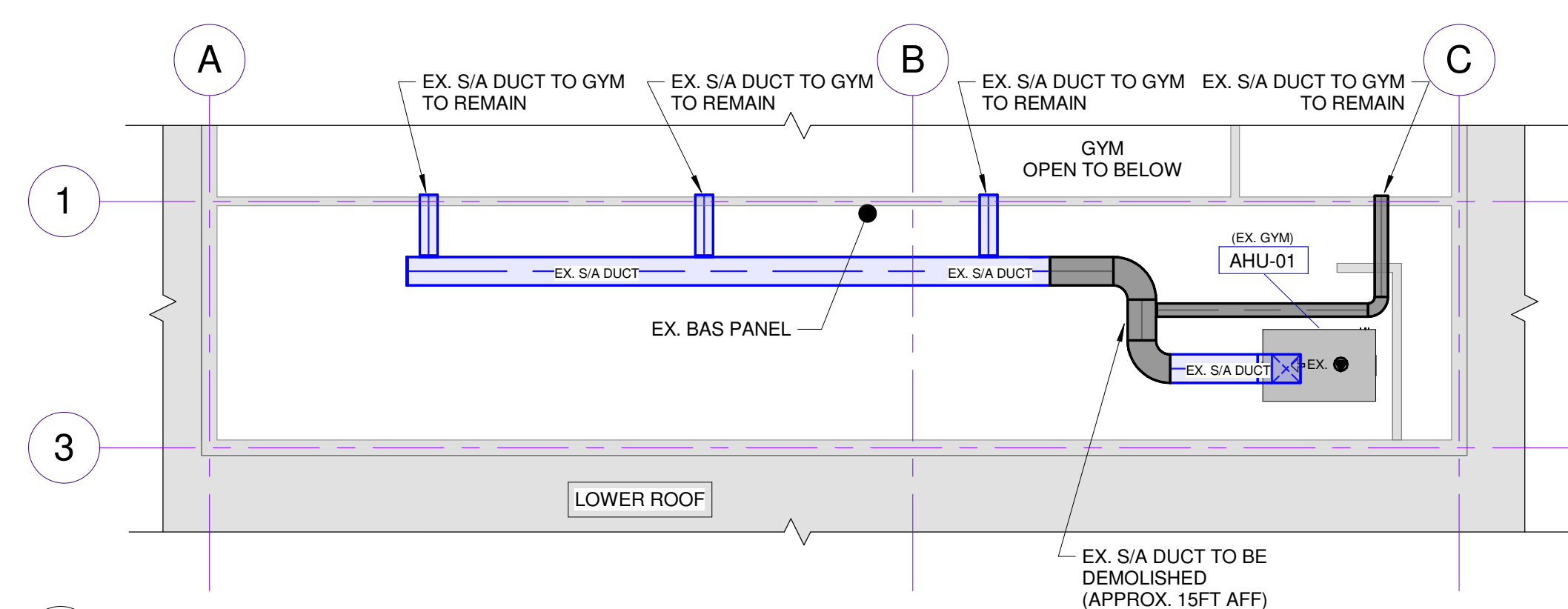
- A) FAN ROTATIONS.
- B) MOTOR AMPERAGE & VOLTAGE TO GUARD AGAINST OVERLOAD.
- C) OPERABILITY OF STATIC PRESSURE LIMIT SWITCH.
- D) AUTOMATIC DAMPERS FOR PROPER POSITION.
- E) THERMOSTAT FUNCTION.
- F) ZONE CONTROL FUNCTION.
- G) AIR & WATER RESETS OPERATING TO DELIVER REQUIRED TEMPERATURES.

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.

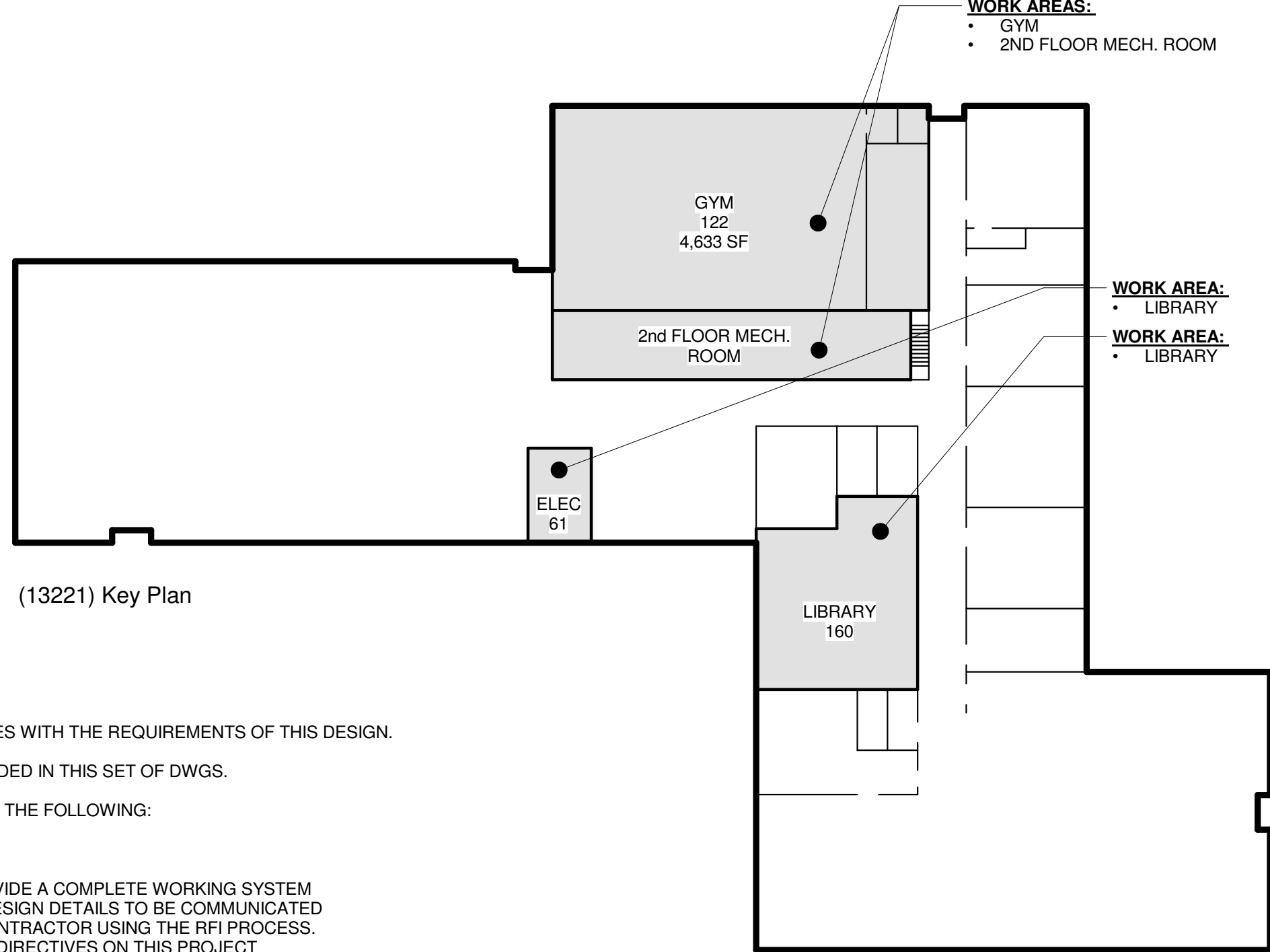
7) CONTRACTOR TO REMOVE ANY CEILING TILES / ACCESS COVERS AND PREPARE SITE FOR INSPECTIONS AS REQUIRED. CONTRACTOR TO PROVIDE CERTIFIED, GOOD CONDITION LADDERS / 'GENIE LIFT' AS REQUIRED WITH APPROPRIATE PERSONAL HARNESSES AND SAFETY GEAR FOR USE BY THE ENGINEER ONSITE.

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.



(13221) HVAC Part Plan - 2nd Floor Mech. Room - Demolition
3/32" = 1'-0"



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:

TENDER PHASE

1. DWGS ARE GENERAL LAYOUT - CONTRACTOR TO PROVIDE A COMPLETE WORKING SYSTEM
2. 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
3. VISIT THE SITE TO REVIEW THE CONDITIONS
4. PROVIDE ANY QUESTIONS TO THE BID ADMINISTRATOR IN WRITING

PLANNING & MOBILIZATION PHASE

1. REVIEW SITE CONDITIONS AGAIN TO CONFIRM THE VIABILITY OF THE DESIGN
2. REPORT ANY CONFLICTS TO THE ENGINEER IN WRITING
3. 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.
4. THE GENERAL CONTRACTOR AND OR CLIENT PROJECT COORDINATOR TO FACILITATE A COMPLETE REVIEW OF ALL TRADES DESIGN DRAWINGS.
5. ENGINEER TO BE RETAINED TO FACILITATE TO ATTEND AN ALL TRADES PROJECT KICK-OFF ONSITE (OWNER IN ATTENDANCE)
6. 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
7. MECHANICAL ITEMS THAT HAVE ELECTRICAL FEATURES OVER 50V TO BE REVIEWED WITH THE ELECTRICAL TRADES
8. 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
9. CONFIRM ALL EXISTING SERVICES ON THE PROPERTY BEFORE DIGGING.
10. DETERMINE THE LOCATION OF ALL EXISTING SERVICES SO AS TO NOT DAMAGE DURING NEW CONSTRUCTION.

DEMOLITION PHASE

1. PROVIDE A CERTIFIED THIRD PARTY AIR BALANCE REPORT FOR THE GYM EX. AIR HANDLER BEFORE PERFORMING ANY WORK ON THE EX. DUCTWORK.
2. LOCK OUT THE GYM EX. AIR HANDLER BEFORE PERFORMING ANY WORK ON THE DUCTWORK OR CONTROLS.
3. DEMOLISH THE EXISTING DUCTWORK AS SHOWN IN PREPARATION FOR THE NEW DUCTWORK SERVING THE NEW COOLING COIL.

CONSTRUCTION PHASE

1. INSTALL ALL CLIENT SUPPLIED MECHANICAL UNITS, DUCT MOUNTED COOLING COIL & CONTROLS.
2. SUPPLY & INSTALL ALL DUCT WORK, GRILLES, DIFFUSERS, FLOW DAMPERS, CONTROLS WIRING & PROGRAMMING.
3. SUPPLY & INSTALL CABLE & PROGRAMMING TO INTEGRATE HISENSE FAN COIL & COOLING COIL CONTROLS EQUIPMENT INTO THE BUILDINGS EX. BACNET SYSTEM. ALLOW FOR MIN. 20 CONTROL POINTS.
4. SUPPLY & INSTALL LOCKABLE LEXAN COVER FOR THERMOSTAT.
5. PROVIDE DUCT INSULATION AS PER ASHRAE 90.1 & DRAWINGS.
6. SUPPLY AND INSTALL ALL FIRE DAMPERS AS REQUIRED BY THE ARCHITECTURAL DRAWINGS.
7. ALL EXPOSED DUCTWORK TO BE PAINTED. CONFIRM COLOUR WITH OWNER & ARCHITECT.
8. SUPPLY & INSTALL CONTROLS TO SHUT DOWN FAN COIL FAN IN EVENT OF FIRE ALARM.
9. SUPPLY & INSTALL UNISTRUT & THREADED ROD SUPPORTS FOR THE FAN COIL IN THE LIBRARY MEZZANINE.
10. INSTALL HEAT PUMP OUTDOOR UNITS MOUNTED ON THE ROOF. CONTRACTOR TO SUPPLY & INTALL PRESSURE TREATED SLEEPERS.
11. SUPPLY & INSTALL CONDENSATE PIPING FROM DUCT MOUNTED COOLING COIL & FAN COIL TO HUB DRAIN IN MECHANICAL ROOM VIA INDIRECT CONNECTION. SUPPLY & INSTALL VIBRATION ISOLATORS, DUCT FLEX CONNECTORS FOR ALL HRV'S & AIR HANDLERS.
12. ALL EXTERIOR PENETRATIONS TO BE SEALED "LEAKPROOF".
13. COMMISSION & TEST ALL MECHANICAL EQUIPMENT & VERIFY CORRECT OPERATION IN WRITING. SET-UP, TEST & CONFIGURE ALL PROGRAMMABLE THERMOSTATS.
14. NOTIFY THE ENGINEER OF INSPECTIONS. PROVIDE A MIN. OF 48 HOURS NOTICE.
15. SUPPLY AND INSTALL ALL REFRIGERANT PIPING COMPLETE WITH HANGERS & INSULATION.
16. TEST ALL PIPING SYSTEMS FOR LEAKS PRIOR TO OPERATION.
17. MAINTAIN AS-BUILT DWGS.
18. PROVIDE ALL REPORTS REQUIRED AS LISTED TO THE ENGINEER.
19. PROVIDE A CERTIFIED THIRD PARTY AIR BALANCE REPORT FOR THE GYM EX. AIR HANDLER AFTER COMPLETING THE DUCTWORK, COOLING COIL & CONTROLS INSTALLATION. SUBMISSION OF CERTIFIED AIR BALANCING REPORT IS MANDATORY ONE WEEK PRIOR TO ENGINEERS FINAL INSPECTION.

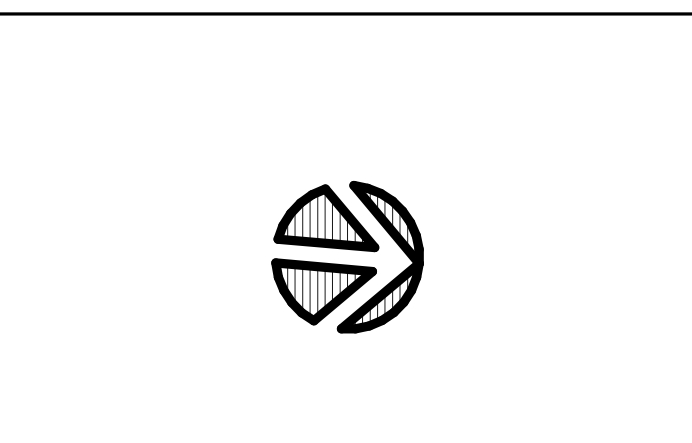
(13221) PROJECT DRAWING REGISTER	
Sheet #	Sheet Name
M-1	HVAC Specification
M-2	HVAC - Proposed Part Plan
M-3	HVAC Details
E-1	Electrical Specification

MECHANICAL REPORTS
REQUIRED FOR SIGN-OFF

1. THIRD PARTY AIR BALANCING REPORTS
2. AHJ (AUTHORITY HAVING JURISDICTION) INSPECTION REPORTS
3. MECHANICAL EQUIPMENT COMMISSIONING REPORTS
4. CONTRACTOR COMPLETION LETTER
5. OPERATION MANUAL (INCLUDING AS-BUILT DWGS)

NORTHSTAR
ENGINEERING & TECHNOLOGIES LTD.

82 Caplan Ave. Suite #517
Barrie, Ontario L4N 5J2
Tel. (705) 719-1003 Fax (705) 719-0490
dong@nset.ca www.nset.ca



GENERAL DRAWING / DESIGNER NOTES:		
[1]	ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE LATEST EDITION OF THE PROVISIONS ARISING DURING CONSTRUCTION FOR ADDITIONAL FEES. ADDITIONAL CONSTRUCTION COSTS ARISING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.	
[2]	THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION FOR ADDITIONAL FEES. ADDITIONAL CONSTRUCTION COSTS ARISING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.	
[3]	DRAWINGS ONLY SHOW GENERAL INTENT AND SCOPE OF WORK. EXACT DETAILS OF INSTALLATIONS ARE TO BE PROVIDED BY CONTRACTOR(S). DO NOT SCALE DRAWINGS.	
[4]	CONTRACTOR/AGENT/OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGNER	
[5]	PROCEED WITH CONSTRUCTION ONLY USING THE LATEST REVISED DRAWINGS MARKED "ISSUED FOR CONSTRUCTION".	
[6]	THIS DRAWING IS SPECIFIC TO THIS PROJECT AND CANNOT BE USED FOR OTHER "SIMILAR" PROJECTS.	
[7]	THIS DRAWING IS THE PROPERTY OF NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. UN-AUTHORIZED RE-PRODUCTION OR USE IS PROHIBITED.	
[8]	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 PLUMBING FIXTURES, HVAC EQUIPMENT, HVAC DIFFUSERS, MINIMUM 1-2 WEEKS FOR COMPLETION (BASED ON COMPLEXITY).	ALLOW
[9]	THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR OTHER DESIGNERS WORK IN ASSOCIATION WITH THIS PROJECT.	
[10]	RESPONSIBILITY FOR ANY FINAL ASSEMBLYS THAT VIOLATE APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE DESIGNER.	
[11]	REQUESTS FOR CHANGES OR SUBSTITUTIONS TO EQUIPMENT, PLANS AND / OR SPECIFICATIONS WILL BE SUBJECT TO ADDITIONAL FEES CHARGED BY THE CONSULTANT.	
[12]	SITE VISITS TO REVIEW IMPLEMENTED DESIGNS WITH THE OWNER. THE SCOPE OF THIS PROJECT TO BE ARRANGED WITH THE OWNER.	
[13]	MINIMUM FORTY EIGHT (48) HOURS PRIOR NOTICE TO BE PROVIDED FOR SITE VISITS - ONCE ARRANGED.	
[14]	REQUESTS FOR THE RELEASE OF THIS DRAWING SET FROM NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. FOR THE PURPOSE OF TENDERING PURPOSES BY ANY CONTRACTOR TO BE MADE BY THE OWNER OR ARCHITECT IN WRITING.	
[15]	TENDER PRICING BY CONTRACTORS OF DRAWINGS TO BE BASED ON DWGS MARKED "ISSUED FOR TENDER" OR "ISSUED FOR CONSTRUCTION" ONLY.	
[16]	ALL REQUESTS FOR DESIGN CHANGES / SUBSTITUTIONS TO BE MADE IN WRITING. ADDITIONAL FEES MAY APPLY TO ALLOW MINIMUM (1) ONE WEEK TO REVIEW AND RESPOND TO CHANGE REQUESTS.	

DRAWING REVISIONS		
No.	Description	Date
1	Preliminary	Apr. 16/21
2	Issued for Permit & Tender	Apr. 27/21
Engineer's Seal:		

Client: **Trillium Lakelands District School Board**

Address: **30 Balacalava St., Bobcaygeon, ON K0M 1A0**

Project Name: **Bobcaygeon PS HVAC**

Dwg. Name: **HVAC Specification**

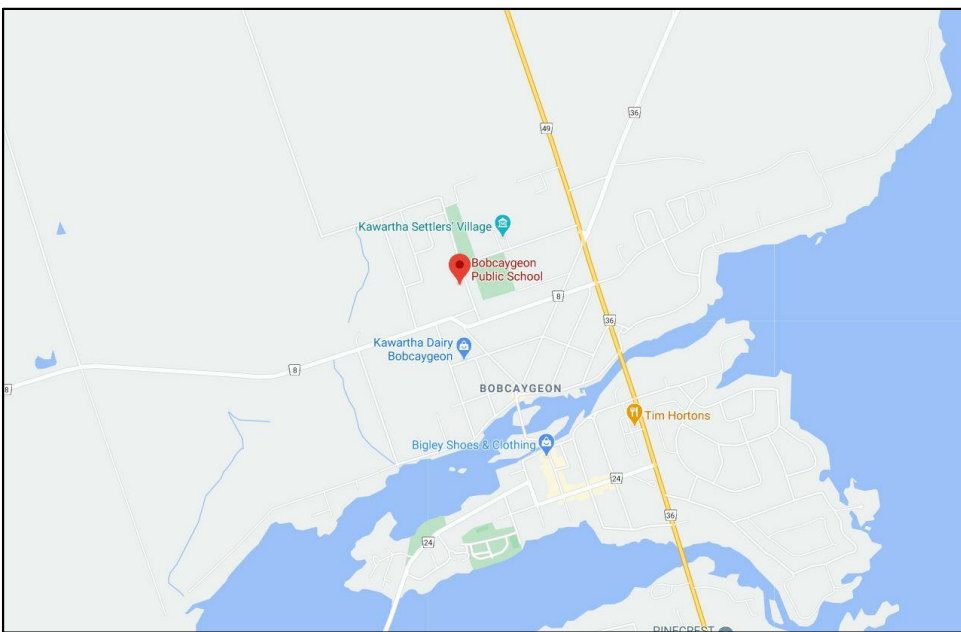
NSET Project #: **13221**

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

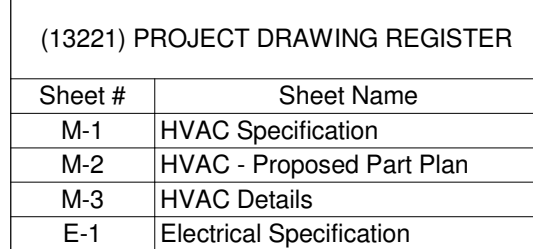
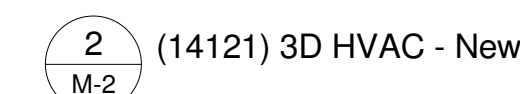
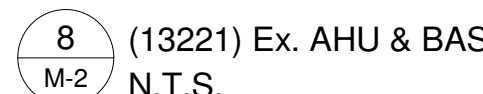
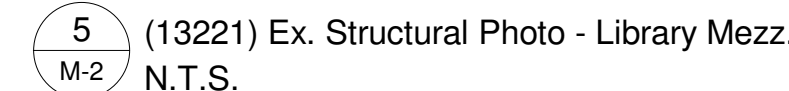
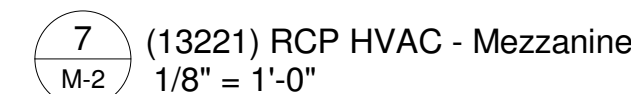
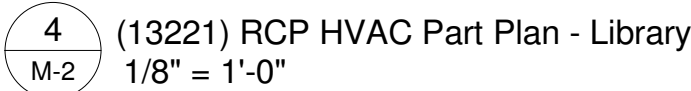
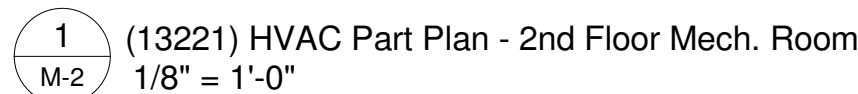
Scale: As indicated Revision #: 2.0

Drawing #: **M-1**

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



(13221) Google Map for Project

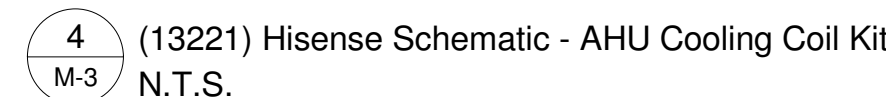
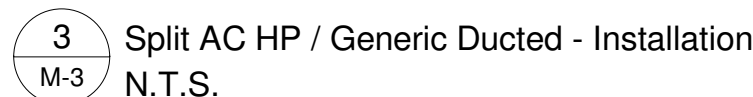
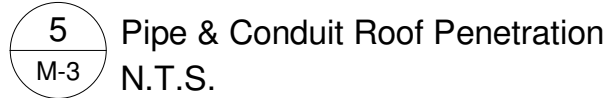


- [illegible]

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

(13221) PROJECT DRAWING REGISTER	
Sheet #	Sheet Name
M-1	HVAC Specification
M-2	HVAC - Proposed Part Plan
M-3	HVAC Details
E-1	Electrical Specification

(MASTER-M) Thermostat Schedule - (New)						
Mark	Type Mark	Description	Manufacturer	Model	Qty.	Supplied By
TS-01	TS-1	THERMOSTAT / PROGRAMMABLE / TOUCH SCREEN / c/w LOCKABLE LEXAN COVER	HISENSE	HYXE-VA01	1	CLIENT
Grand total					1	



GENERAL DRAWING / DESIGNER NOTES:

[1] ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE LATEST EDITION OF THE PROVINCE OF ONTARIO'S BUILDING CODE, LOCAL REGULATIONS AND AUTHORITIES HAVING JURISDICTION.

[2] THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING FROM CONSTRUCTION OR ADDITIONAL FEES. ADDITIONAL CONSTRUCTION COSTS ARISING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.

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

[4] CONTRACTOR/AGENT OWNER TO REPORT ALL DISCOVERIES OF ERRORS/OMISSIONS OF THE DESIGN TO THE DESIGNER.

[5] PROCEED WITH CONSTRUCTION ONLY USING THE LATEST REVISIONS DRAWINGS MARKED "ISSUED FOR CONSTRUCTION".

[6] THIS DRAWING IS SPECIFIC TO THIS PROJECT AND CANNOT BE USED FOR ANY OTHER "SIMILAR" PROJECTS.

[7] THIS DRAWING IS THE PROPERTY OF NORTHBSTAR ENGINEERING & TECHNOLOGIES LTD. UNAUTHORIZED RE-PRODUCTION OR USE IS PROHIBITED.

[8] **SHOP DRAWINGS:**
BASED ON CONTRACT WITH OWNER. THE ENGINEER WILL REVIEW & SUBMIT TO THE CONTRACTOR TO REVIEW THE ITEMS FOR GENERAL CONFORMITY TO THE DESIGN DOCUMENTS. THE SHOP DRAWING REVIEW WILL NOT RELEASE THE CONTRACTOR FROM ESTIMATING & TO MAKE A FEASIBLE WORKING SYSTEM. THESE SHOP DRAWINGS SHALL CONSIST OF SHOP DRAWINGS FOR ALL STRUCTURES, HAVING A MINIMUM 1-2 WEEKS FOR COMPLETION (BASED ON COMPLEXITY).

[9] THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR OTHER DESIGNERS WORK IN ASSOCIATION WITH THIS PROJECT.

[10] RESPONSIBILITY FOR ANY FINAL ASSEMBLY(S) THAT VIOLATE ANY APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE DESIGNER.

[11] REQUESTS FOR CHANGES OR SUBSTITUTIONS TO EQUIPMENT PLANNING AND/OR SPECIFICATIONS WILL BE SUBJECT TO ADDITIONAL FEES CHARGED BY THE DESIGNER.

[12] SITE VISITS TO REVIEW IMPLEMENTED DECISIONS WITHIN THE SCOPE OF THIS PROJECT TO BE ARRANGED BY THE OWNER.

[13] MINIMUM FORTY EIGHT (48) HOURS PRIOR NOTICE TO BE PROVIDED FOR SITE VISITS - ONCE ARRANGED.

[14] REQUESTS FOR THE RELEASE OF THIS DRAWING SET FOR NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. FOR THE PURPOSES OF TENDERING TO BE MADE TO THE CONTRACTOR TO BE MADE BY THE OWNER OR ARCHITECT IN WRITING.

[15] TENDER PRICING BY CONTRACTORS OF DRAWINGS TO BE BASED ON DQS MARKED "ISSUED FOR TENDER" OR "ISSUED FOR CONSTRUCTION" ONLY.

[16] ALL REQUESTS FOR DESIGN CHANGES / SUBSTITUTIONS TO BE MADE IN WRITING. ADDITIONAL FEES MAY APPLY. ALLOW MINIMUM (1) ONE WEEKLY REVIEW AND RESPOND TO CHANGE REQUEST.

[illegible]

Engineer's Seal:

The seal is circular with the text "LICENSED PROFESSIONAL ENGINEER" around the top and "PROVINCE OF ONTARIO" around the bottom. In the center, it says "J. J. LONG" and "Apr. 27/21". A signature is written across the seal.

Client	Trillium Lakelands District School Board
Address:	30 Balaclava St., Bobcaygeon, ON K0M 1A0

Project Name:

Bobcaygeon PS HVAC

Dwg. Name: HVAC Details

NSET Project #: 13221

Drawn by: Northstar Eng.	Checked by: J.D.L.
Scale: As indicated	Revision #: 2.0

Drawing #: **M-3**

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