

MECHANICAL SPECIFICATION – JN 39-128M – BRIDGEWATER STORAGE GARAGE

MECHANICAL SUBCONTRACTOR SHALL SUBMIT PRICE FOR THE COST OF SUPPLY AND INSTALLATION OF EQUIPMENT AND MATERIAL NECESSARY TO PROVIDE A COMPLETE AND OPERATING MECHANICAL PACKAGE. MECHANICAL PACKAGE TO CONSIST OF EQUIPMENT AND MATERIALS AS DESCRIBED IN THIS OUTLINE SPECIFICATION. REFER TO MECHANICAL PLANS FOR ACTUAL REQUIREMENTS OF EQUIPMENT.

MECHANICAL SCOPE OF WORK

- INCLUDE IN MECHANICAL SECTION, PROVISION OF LABOUR, NEW MATERIALS, TOOLS, TRANSPORTATION, SERVICES AND FACILITIES FOR A COMPLETE MECHANICAL INSTALLATION. THE INSTALLATION SHALL BE LEFT COMPLETE IN ALL RESPECTS AND READY FOR OPERATION. FINAL INSTALLATION SHALL BE INSTALLED TO COMPLETE SATISFACTION OF THE RESPONSIBLE PROFESSIONAL ENGINEER.
- THE MECHANICAL SCOPE OF WORK INCLUDES, BUT IS NOT NECESSARILY LIMITED TO THE FOLLOWING PROVISION:
 - GENERAL:
 - FAMILIARIZE CREW WITH SITE IN ORDER TO DETERMINE APPROPRIATE LOCATIONS, SITE CONDITIONS, ETC. THAT MAY AFFECT WORK.
 - WORK MAY NEED TO BE PERFORMED AT NON-STANDARD HOURS. DETERMINE SCHEDULE WITH OWNER.
 - OWN MANUALS AND OWNER TRAINING.
 - RECORD DRAWINGS.
 - HVAC
 - PROVISION OF ALL AIR HANDLING EQUIPMENT, FANS, DUCTWORK, CONTROL/BALANCE FITTINGS, INSULATION, GRILLES/REGISTERS/DIFFUSERS/LOWERS, FIRE DAMPERS, LABOR AND MISCELLANEOUS MATERIALS AS REQUIRED TO COMPLETE THE PROJECT.
 - PROVISION OF TAB REPORTS INCLUDING FIRE DAMPER TESTING, CERTIFICATION AND AIR FLOWS.
 - CONTROLS
 - PROVISION OF COMPLETE ELECTRONIC CONTROLS AS DESCRIBED.
 - COORDINATION OF ALL CONTROL INTERFACE AND POWER REQUIREMENTS WITH ELECTRICAL SUBCONTRACTOR.

GENERAL CONDITIONS

- PROVIDE ALL LABOUR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THE WORK SHOWN ON DRAWINGS AND AS SPECIFIED HEREIN.
- ALL NECESSARY PERMITS SHALL BE OBTAINED AND ALL FEES SHALL BE PAID TO CARRY OUT THE SPECIFIED WORK.
- ALL WORK SHALL BE GUARANTEED FOR ONE YEAR FROM DATE OF COMPLETED WORK ACCEPTANCE BY THE OWNER. SUBMIT DOCUMENTATION IDENTIFYING ADDITIONAL EQUIPMENT WARRANTY COVERAGE AND TIME FRAMES.
- ALL WORK SHALL COMPLY IN EVERY RESPECT WITH ALL NATIONAL, PROVINCIAL AND LOCAL CODES AND BY-LAWS, WHICH SHALL BE CONSIDERED PART OF THIS SPECIFICATION. IN THE CASE OF CONFLICTING REQUIREMENTS, BE GOVERNED BY THE MOST STRINGENT REGULATIONS.
- ALL CUTTING, PATCHING, FLASHING FOR WORK AS REQUIRED HEREIN SHALL BE BY THE GENERAL CONTRACTOR.
- THE MECHANICAL SUBCONTRACTOR SHALL INSTALL HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS IN COMPLETE ACCORDANCE WITH THE RECOMMENDATIONS OF THE NATIONAL/PROVINCIAL BUILDING CODE, ASHRAE, SMOA/NA LATEST EDITION DUCT STANDARDS, AND LOCAL PLUMBING CODES, N.F.P.A. REQUIREMENTS, AND THE MANITOBA ENERGY CODE FOR BUILDINGS.
- COORDINATE WORK WITH WORK OF OTHER TRADES TO AVOID CONFLICT.
- ALTER THE LOCATION OF DUCTS AT THE DIRECTION OF THE CONTRACT ADMINISTRATORS WITHOUT CHARGE TO THE OWNER, PROVIDED THE CHANGE IS MADE BEFORE INSTALLATION AND DOES NOT NECESSITATE ADDITIONAL MATERIALS.
- QUOTATIONS SHALL BE BASED ON THE USE OF SPECIFIED MANUFACTURERS OR APPROVED EQUAL. THE USE OF AN EQUAL OR ALTERNATE MANUFACTURER SHALL IN NO WAY RELIEVE THE MECHANICAL SUBCONTRACTOR FROM THE RESPONSIBILITY OF PROVIDING ALL WORK THAT MAY BE REQUIRED BY REASON OF DIFFERENT SPACE WEIGHT, ELECTRICAL, OR OTHER REQUIREMENT FROM THAT OF THE SPECIFIED MANUFACTURER. ALTERNATES SHALL BE APPROVED PRIOR TO THE CLOSE OF TENDERS. NO SUBMITTALS RECEIVED AFTER TENDER CLOSING WILL BE ACCEPTED.
- THE MECHANICAL SUBCONTRACTOR SHALL SUBMIT ELECTRONIC COPIES OF SHOP DRAWINGS FOR ALL EQUIPMENT FOR REVIEW AND APPROVAL BY CONTRACT ADMINISTRATORS. SUBCONTRACTOR SHALL STAMP SHOP DRAWINGS REVIEWED BY SUBCONTRACTOR PRIOR TO SUBMISSION. SUBCONTRACTOR SHALL LABEL SHOP DRAWINGS WITH THE CORRESPONDING EQUIPMENT LABEL LISTED ON MECHANICAL DRAWINGS, SPECIFICATION, AND/OR SCHEDULES. FAILURE TO COMPLY WILL RESULT IN SHOP DRAWINGS BEING RETURNED UNREVIEWED BY CONTRACT ADMINISTRATOR.
- FURNISH TO THE CONTRACT ADMINISTRATOR THREE (3) HARD-COVERED LOOSE-LEAF BINDERS CONTAINING THEREIN ONE (1) COMPLETE SET OF MANUFACTURERS' OPERATING AND MAINTENANCE INSTRUCTIONS SHOWING ALL MAJOR EQUIPMENT AND APPARATUS REQUIRING MAINTENANCE. INSTRUCTIONS SHALL BE COMPLETE FOR INSTALLATION, OPERATION AND MAINTENANCE AND SHALL INCLUDE PERTINENT INFORMATION SUCH AS DETAILED DRAWINGS AND OPERATION CURVES. SPARE PARTS, SUPPLIER LISTS AND ADDRESSES SHALL BE SUPPLIED. INSTRUCTION SHALL BE REQUIRED WITH THE OWNERS' REPRESENTATIVE TO ENSURE A THOROUGH UNDERSTANDING OF THE EQUIPMENT AND ITS OPERATION.
- ALL WIRING, SUPPLY AND INSTALLATION OF DISCONNECT SWITCHES FOR EQUIPMENT SPECIFIED HEREIN SHALL BE PERFORMED BY THE ELECTRICAL SUBCONTRACTOR, UNLESS OTHERWISE NOTED.
- MECHANICAL SUBCONTRACTOR SHALL EXAMINE THE SITE AND CONDITIONS AFFECTING WORK, METHODS OF CONNECTION AND LOCATION OF ALL SERVICES INVOLVED UNDER THIS CONTRACT. FAILURE TO MAKE THIS VISIT IN NO WAY ALLEVIATES THE MECHANICAL SUBCONTRACTOR FROM RESPONSIBILITY FOR COMPLETING THE MECHANICAL WORK OF THIS CONTRACT IN A WORKMANLIKE MANNER. NO ALLOWANCE WILL BE MADE AFTER CONTRACT AWARD FOR ANY EXPENSE INCURRED THROUGH A FAILURE TO MAKE THIS EXAMINATION AND INVESTIGATION.
- SCHEDULING OF ALL WORK SHALL BE ARRANGED WITH THE OWNER, AND THE OWNER SHALL BE NOTIFIED AND OWNER APPROVAL OBTAINED PRIOR TO SHUTTING OFF EXISTING SERVICES FOR PURPOSES OF CONNECTING NEW WORK. WORK WITHIN THE BUILDING MAY HAVE TO BE PERFORMED DURING NON-REGULAR WORKING HOURS AND MUST CONFORM TO WORK RULES OF THE BUILDING AS DIRECTED BY THE OWNER.
- RECORD DRAWINGS
 - OBTAIN SETS OF WHITE PRINTS AND KEEP AT JOB SITE AT ALL TIMES.
 - RECORD ALL ADDITIONS OR DEVIATIONS FROM THE CONTRACT DOCUMENTS INCLUDING ALL CHANGES INCURRED BY ADDENDA, CHANGE ORDERS, FIELD CHANGES, JOB CONDITIONS, ETC.
 - MECHANICAL SUBCONTRACTORS SHALL BE RESPONSIBLE FOR THE PRODUCTION OF RECORD DRAWINGS WHICH SHALL PROVIDE A COMPLETE AND ACCURATE RECORD OF THE ACTUAL MECHANICAL INSTALLATION. ALL PRINCIPLE BELOW GRADE OR INACCESSIBLE PIPING OR DUCT SYSTEMS, ETC. SHALL BE DIMENSIONED AT EACH CHANGE IN DIRECTION. INCLUDE ALL ROUTING OF SERVICES NOT INDICATED ON ORIGINAL DRAWINGS.
 - PROJECT RECORD DRAWINGS SHALL BE TRANSFERRED BY MECHANICAL SUBCONTRACTOR TO REPRODUCIBLE BOND DRAWINGS AND LABELED RECORD.
 - SUBMIT REPRODUCIBLE BOND DRAWINGS TO CONTRACT ADMINISTRATOR FOR REVIEW UPON COMPLETION. IF CORRECTIVE MEASURES ARE REQUIRED AFTER THE SECOND CONTRACT ADMINISTRATOR REVIEW (DUE TO MISSING INFORMATION AND/OR IMPROPER DRAFTING STANDARDS), THE MECHANICAL SUBCONTRACTOR SHALL BE RESPONSIBLE FOR CONSULTANT'S TIME COSTS FOR CORRECTIVE MEASURES, COURIER AND PRINTING COSTS.
 - SUBCONTRACTOR SHALL EMPLOY CONTRACT ADMINISTRATOR'S OFFICE (OR CAD DRAFTING SERVICE) TO PRODUCE ELECTRONIC COPY RECORD DRAWINGS. MECHANICAL SUBCONTRACTOR SHALL BEAR ALL COSTS OF PRODUCTION.
 - COPY OF FINAL RECORD DRAWING SHALL BE SUBMITTED TO ARCHITECT.
 - ALL COSTS OF RECORD DRAWINGS PRODUCTION SHALL BE BORNE BY MECHANICAL SUBCONTRACTOR.
- THE SUBCONTRACTOR SHALL, AT HIS OWN EXPENSE, PROVIDE TEMPORARY HEATING AND HOARDING AS REQUIRED FOR THE PROPER PROGRESS OF THE WORK.
- VERIFY SIZES, INVERTS AND LOCATIONS OF ALL SERVICES PRIOR TO COMMENCEMENT OF WORK. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO SANITARY SEWER, STORM SEWER, DOMESTIC WATER MAINS, FORCE MAINS, ETC.
- HOSTING OF ALL MECHANICAL EQUIPMENT SHALL BE BY THE MECHANICAL SUBCONTRACTOR.
- ASSUME FULL RESPONSIBILITY FOR LAYING OUT ALL WORK AND ENSURING THAT NO DAMAGE IS CAUSED TO THE OWNER'S EQUIPMENT AND PREMISES DUE TO IMPROPER LOCATION AND EXECUTION OF WORK IN THIS CONTRACT. PROTECT AND MAINTAIN ALL WORK UNTIL WORK HAS BEEN COMPLETED AND ACCEPTED BY THE OWNER. STORE ALL MATERIALS AS REQUIRED, AND CLEAN UP REFUSE CAUSED BY ALL WORK.
- IN THE CASE OF DISCREPANCY BETWEEN ARCHITECTURAL AND MECHANICAL DRAWINGS TO NUMBER, TYPE, OR LOCATION OF HVAC EQUIPMENT AND SYSTEMS COMPONENTS, OBTAIN WRITTEN RULING.
- ALL TIME/DATE SENSITIVE ELECTRONIC EQUIPMENT AND SOFTWARE PROVIDED ON THIS PROJECT SHALL BE 4 DIGIT YEAR INPUT COMPATIBLE AND SHALL BE BASED ON THE USE OF FULL UNABBREVIATED, UNAMBIGUOUS DISCRETE TIME AND DATE CODES.
- MECHANICAL SUBCONTRACTOR SHALL COORDINATE PROVISION OF POWER TO BUILDING CONTROL TRANSFORMERS WITH ELECTRICAL SUBCONTRACTOR AND CARRY ALL INCREMENTAL COSTS.
- ALL CONTROL WIRING TO COMPLY IN EVERY RESPECT WITH THE LATEST EDITION OF THE CANADIAN ELECTRICAL CODE. REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR ROOM HAZARD CLASSIFICATIONS. ALL ELECTRICAL/MECHANICAL EQUIPMENT, CONTROL WIRING, ACTUATORS, CONTROL DEVICES ETC. SHALL BE INSTALLED IN STRICT CONFORMANCE WITH SECTION 18 OF THE CANADIAN ELECTRICAL CODE FOR EACH ZONE THEREIN. IN CASE OF ANY DISCREPANCIES OBTAIN A WRITTEN RULING FROM THE CONTRACT ADMINISTRATOR.
- COORDINATE THE ELECTRICAL REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH ELECTRICAL SUBCONTRACTOR. ELECTRICAL SUBCONTRACTOR SHALL PROVIDE ALL POWER WIRING TO EQUIPMENT. REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR ROOM HAZARD CLASSIFICATIONS. ALL ELECTRICAL/MECHANICAL EQUIPMENT, CONTROL WIRING, ACTUATORS, CONTROL DEVICES ETC. SHALL BE INSTALLED IN STRICT CONFORMANCE WITH SECTION 18 OF THE CANADIAN ELECTRICAL CODE FOR EACH ZONE THEREIN. IN CASE OF ANY DISCREPANCIES OBTAIN A WRITTEN RULING FROM THE CONTRACT ADMINISTRATOR.
- PROVIDE FIRE STOPPING AT ALL PIPING, CONDUIT (CONTROLS) AND DUCTWORK PENETRATIONS OF ALL REQUIRED FIRE SEPARATIONS WITH APPROVED MATERIAL SYSTEMS. ACCEPTABLE MATERIALS: 3M, DOW, CORNING, APS.
- MECHANICAL CONTRACT DOCUMENTS ARE DIAGRAMMATIC AND APPROXIMATE TO SCALE. REFER TO ARCHITECTURAL AND/OR STRUCTURAL DRAWINGS, AND SITE VERIFY ALL CRITICAL DIMENSIONS. THE DRAWINGS AND SPECIFICATIONS ESTABLISH SCOPE FOR MATERIAL AND INSTALLATION QUALITY AND ARE NOT DETAILED

INSTALLATION INSTRUCTIONS. ANY DISCREPANCIES MUST BE BROUGHT TO THE CONTRACT ADMINISTRATOR'S ATTENTION IN WRITING PRIOR TO THE CLOSE OF TENDERS.

- SHOULD ANY DISCREPANCY APPEAR BETWEEN THE DRAWINGS AND SPECIFICATIONS, WHICH LEAVE THE SUBCONTRACTOR IN DOUBT AS TO THE TRUE INTENT AND MEANING OF THE PLANS AND SPECIFICATIONS, THE SUBCONTRACTOR SHALL OBTAIN A WRITTEN RULING FROM THE CONTRACT ADMINISTRATOR PRIOR TO TENDER SUBMISSION. IF WRITTEN APPROVAL IS NOT PROVIDED, THE MOST EXPENSIVE ALTERNATIVE SHALL BE INCLUDED IN THE TENDER PRICE.
- FIELD VERIFY ALL BUILDING AND SITE DIMENSIONS AND REVIEW MECHANICAL DRAWINGS AND SPECIFICATIONS PRIOR TO ANY FABRICATION OR INSTALLATION OF EQUIPMENT OR MATERIALS. DO NOT ATTEMPT ANY FABRICATION OR INSTALLATION UNTIL SUCH CLARIFICATION IS PROVIDED. NO CONTRACT REVISIONS WILL BE CONSIDERED FOR FAILURE TO VERIFY THESE DIMENSIONS ON SITE.
- DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY EACH TO THE OTHER, WHAT IS CALLED FOR BY ONE SHALL BE BINDING AS IF CALLED FOR BY BOTH.
- MECHANICAL WORK SHALL BE COMPLETED IN CONFORMANCE WITH, AND SUBJECT TO, ALL CAUTIONARY NOTES AVAILABLE TO THE READER INCLUDING THOSE AVAILABLE ON THE WEBSITES OF THE MANUFACTURERS AND CONSULTANTS.

INSULATION

ALL INSULATING MATERIALS, METHODS, SIZES AND TYPES OF INSULATION FOR ALL PIPING AND DUCT WORK SHALL BE INSTALLED TO THE REQUIREMENTS OF THE ASHRAE STANDARDS 90.1-2010 ENERGY STANDARD FOR BUILDING EXCEPT LOW-RISE RESIDENTIAL BUILDING; MANITOBA ENERGY CODE FOR BUILDINGS AND THERMAL INSULATION ASSOCIATION OF CANADA (TIA/C) STANDARDS.

- PROVIDE 1 1/2" (38 MM) THICK KNAUF ATMOSPHERE DUCTWRAP, 1.0 PCF DENSITY, R4.5 (RSI 0.80), 25% COMPRESSED, FLEXIBLE DUCT INSULATION C/W RFRFK FACING ON:
 - ALL RETURN AIR DUCTWORK LOCATED IN A CEILING SPACE NOT USED AS A RETURN AIR PLENUM.
 - EXHAUST AIR DUCTWORK FOR A MINIMUM DISTANCE OF 10'-0" (3 M) FROM PENETRATION OF BUILDING THERMAL ENVELOPE, AND
 - ANY ADDITIONAL DUCTWORK INSULATION NOTED ON DRAWINGS.
- PROVIDE 2" (50 MM) THICK KNAUF ATMOSPHERE DUCTWRAP, 1.5 PCF DENSITY, R6.4 (RSI 1.13), 25% COMPRESSED, THERMAL FACED INSULATION C/W RFRFK FACING ON ALL DUCTWORK CONVEYING OUTSIDE AIR. DUCTWORK SHALL BE INSULATED OVER ENTIRE RUN FROM PENETRATION OF BUILDING THERMAL ENVELOPE TO UNIT CONNECTION.
- PROVIDE 1" (25 MM) ACOUSTIC, FLEXIBLE DUCT INSULATION WITH FLAME-ATTENUATED FIBRES BONDED WITH THERMOSETTING RESIN; BLACK PLASTIC-COATED MAT FINISH ON:
 - SUPPLY AND RETURN AIR DUCTWORK OF AIR HANDLING EQUIPMENT, 10'-0" (3 M) FROM OPENINGS, AND
 - ANY ADDITIONAL ACOUSTIC DUCTWORK INSULATION NOTED ON DRAWINGS.
 - ACCEPTABLE PRODUCT: KNAUF AIR DUCT BOARD.
- DO NOT EXTERNALLY INSULATE ANY DUCTWORK WHICH IS SPECIFIED OR SHOWN TO BE INTERNALLY INSULATED UNLESS NOTED OTHERWISE.
- ALL DUCT INSULATION AND COVERINGS SHALL MEET THE REQUIREMENTS OF CAN/ULC-S110 STANDARD STANDARD METHODS OF TEST FOR AIR DUCTS AND HAVE A FLAME SPREAD RATING NOT EXCEEDING 25 AND A SMOKE DEVELOPED CLASSIFICATION NOT EXCEEDING 50. THIS SHALL INCLUDE ALL TAPES, SEALANTS, AND MISCELLANEOUS PRODUCTS ASSOCIATED WITH THE INSTALLATION.

HEATING, VENTILATION & AIR CONDITIONING

- PROVIDE SUPPLY, RETURN AND EXHAUST AIR DUCT SYSTEMS FROM AIR HANDLING EQUIPMENT AND FANS AS SHOWN.
- ALL DUCTWORK INSTALLATION SHALL BE PERFORMED IN ACCORDANCE WITH ASHRAE, SMOA/NA LATEST EDITION DUCT STANDARDS AND THE MANITOBA ENERGY CODE FOR BUILDINGS.
- THIS SUBCONTRACTOR SHALL SUPPLY AND INSTALL ALL DUCTWORK INCLUDING APPURTENANCES, HANGERS, DAMPERS, ETC.
- DUCT CONSTRUCTION:
 - RECTANGULAR DUCTWORK SHALL BE CONSTRUCTED FROM GALVANIZED SHEET METAL OF THE FOLLOWING U.S. STANDARD GAUGES:

DUCTS UP TO 12" ON LONGEST DIMENSION 26 GA
DUCTS 13" TO 28" ON LONGEST DIMENSION 24 GA
 - ROUND AND OVAL DUCTWORK SHALL BE SPIRAL CONDUIT CONSTRUCTION OF ZINC COATED STEEL OF THE FOLLOWING U.S. GAUGES:

CONDUIT SIZE	GAUGE OF METAL
8" AND SMALLER	26
9" TO 22"	24

DUCTS UP TO 12" ON LONGEST DIMENSION 26 GA
DUCTS 13" TO 28" ON LONGEST DIMENSION 24 GA

CONDUIT SIZE	GAUGE OF METAL
8" AND SMALLER	26
9" TO 22"	24

- ALL SEAMS AND JOINTS IN ROUND OR OVAL DUCT FITTINGS SHALL BE CONTIGUOUSLY WELDED. RE-COAT ZINC COATING DAMAGED BY WELDING PROCEDURE.
- THE FOLLOWING DUCT JOINING METHODS SHALL BE USED:
 - PITTSBURGH LOCK OR DOUBLE SLIDE LOCK HAMMERED FLAT FOR LONGITUDINAL JOINTS ON STRAIGHT DUCTWORK.
 - PITTSBURGH LOCK FOR CORNER LOCK OF FITTING.
 - FLAT DRIVE CLEAT JOINT ON ALL SIDE JOINTS 18" (450MM) AND UNDER IN LENGTH.
 - FLAT SLIP CLEAT JOINT ON ALL TRANSVERSE JOINTS 18" (450MM) AND UNDER IN LENGTH.
 - ANGLE "S" OR STANDING DRIVE CLEATS ON ALL SIDE JOINTS 19"(479MM) TO 30"(750MM) ON HEIGHT.
 - STANDING "S" OR STANDING DRIVE CLEATS ON ALL TRANSVERSE JOINTS 19"(479MM) TO 30"(750MM) IN LENGTH.
 - ANGLE "S" OR STANDING DRIVE CLEATS ON ALL TRANSVERSE AND SIDE JOINTS 31"(729MM) TO 72"(1800MM).
 - STANDING "S" OR STANDING DRIVE CLEATS REINFORCED WITH 1 1/2"(38MM) X 5/32" (4.5MM) MILD STEEL BAR ON ALL TRANSVERSE JOINTS AND SIDE JOINTS 73" (1829MM) AND OVER.

- ALL NEW DUCTWORK SHALL BE SEALED USING DUCT BOND II HIGH PRESSURE, NON-TOXIC, DUCT SEALER THROUGHOUT ALL SEAMS AND JOINTS.
- SUPPORT HORIZONTAL DUCTS ON MAXIMUM 8'-0" (2.4 M) CENTERS BY PERFORATED GALV. STEEL RIVETED STRAP FOR DUCTWORK 36" (915 MM) (EITHER DIMENSION) OR LESS, AND MINIMUM 1" X 1" X 1/8" (25 X 25 X 2 MM) GALV. IRON UNDER DUCTS OVER 36" (915 MM) (EITHER DIMENSION) WITH 3/8" (6 MM) DIAM. THREADED RODS SUSPENDING ANGLES FROM STRUCTURE.
- PROVIDE ACCESS DOORS WHERE REQUIRED FOR SERVING OF EQUIPMENT AND FIRE DAMPERS.
- PROVIDE 4" (100 MM) FLEXIBLE DUCT CONNECTIONS ON BOTH INLET AND OUTLET DISCHARGE SIDES OF ALL FANS AND AIR HANDLING EQUIPMENT.
- PROVIDE ONE SPARE SET OF FILTERS FOR EACH AIR HANDLING UNIT.
- DUCT MOUNTED MOTORIZED DAMPERS SHALL BE PROVIDED WITH THE FOLLOWING REQUIREMENTS:
 - ALL MOTORIZED DAMPERS SHALL BE INSULATED LOW LEAKAGE TYPE TO AMCA STANDARD CLASS 1A (MAXIMUM LEAKAGE OF 3 CFM/50 FT @ 1" W.C.).
 - MOTORIZED DAMPERS SHALL BE LOCATED AS NEAR AS POSSIBLE TO THE PLANE OF THE BUILDING ENVELOPE FOR ALL AIR INTAKE AND OUTLET TYPES.
 - MOTORIZED DAMPERS SHALL CLOSE AUTOMATICALLY WHEN HVAC SYSTEM IS NOT IN OPERATION.
 - STANDARD OF ACCEPTANCE: TAMCO 9000, GREENCHECK (C).
 - MOTORIZED DAMPERS SHALL BE PROVIDED ON ALL AIR INTAKES AND AIR OUTLET DUCTS EXCEEDING 12" Ø OR 12"x12" IN SIZE.

- PROVIDE VIBRATION ISOLATORS FOR ALL MECHANICAL EQUIPMENT, INCLUDING PUMPS, UTILITY FANS, AND VENT SETS, AIR HANDLERS, ROOF-TOPS UNITS, CONDENSING UNITS, COMPRESSED, ETC. AS APPLICABLE. SUBMIT SHOP DRAWINGS PRIOR TO INSTALLATION.
- ALL AIR SYSTEMS SHALL BE BALANCED AND TESTED BY A CERTIFIED A.A.B.C. INDEPENDENT BALANCING AGENCY TO PROVIDE QUANTITIES AS SHOWN. PROVIDE ELECTRONIC SET OF BALANCE AND TESTING REPORTS FOR REVIEW BY THE CONTRACT ADMINISTRATOR. ALL BALANCING REPORTS SHALL INCLUDE FIRE DAMPER TESTING AND CERTIFICATION.

CONTROLS

THE POINTS BELOW DESCRIBE THE CONTROL SEQUENCE OF THE HVAC EQUIPMENT SPECIFIED IN THE SCHEDULES. ALL CONTROLS TO BE SUPPLIED AND WIRED BY THE MECHANICAL SUBCONTRACTOR UNLESS OTHERWISE NOTED. CONTROLS SUBCONTRACTOR SHALL BE A SUBCONTRACTOR OF THE MECHANICAL SUBCONTRACTOR (IF REQUIRED). ALL CONTROL WIRING SHALL BE PLENUM RATED IN ACCORDANCE WITH THE LATEST EDITION OF THE CANADIAN ELECTRICAL CODE TO MEET THE DEVELOPED SMOKE/FLAME SPREAD RATINGS OF 25/50 REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR ROOM HAZARD CLASSIFICATIONS. ALL ELECTRICAL/MECHANICAL EQUIPMENT, CONTROL WIRING, ACTUATORS, CONTROL DEVICES ETC. SHALL BE INSTALLED IN STRICT CONFORMANCE WITH SECTION 18 OF THE CANADIAN ELECTRICAL CODE FOR EACH ZONE THEREIN. IN CASE OF ANY DISCREPANCIES OBTAIN A WRITTEN RULING FROM THE CONTRACT ADMINISTRATOR. ALL LINE VOLTAGE WIRING TO BE BY ELECTRICAL (COORDINATE WITH ELECTRICAL ON SITE). ALL LOW VOLTAGE CONTROL WIRING BY MECHANICAL/CONTROL SUBCONTRACTOR.

GARAGE VENTILATION CONTROL:

- PROVIDE GAS DETECTOR(S) AND ALARM. AIR FLOW SWITCHES, RELAYS, ETC.
- UPON SENSING 25 PPM CO OR 0.7 PPM NO2, SENSOR SHALL ENERGIZE EXHAUST AND OUTDOOR AIR DAMPER OPERATORS TO OPEN. END SWITCHES SHALL ENERGIZE EXHAUST FAN WITH AIR FLOW PROVEN AT EXHAUST FAN.
- SHOULD AIR FLOW NOT BE PROVEN AT EITHER EXHAUST FAN OR FRESH AIR INLET, THE SYSTEM SHALL DE-ENERGIZE AND AN AUDIBLE ALARM SHALL SOUND.
- UPON SENSING ABOVE 100 PPM CO OR 2.0 PPM NO2, SENSOR SOUND AUDIBLE ALARM.

ALL DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF THE CONSULTANT. NO REPRODUCTIONS MAY BE MADE WITHOUT THE CONSENT OF THE CONSULTANT AND ALL REPRODUCTIONS MUST BEAR THE NAME OF THE CONSULTANT. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, DATUMS AND LEVELS NOTED ON THE DRAWINGS WITH THE CONDITIONS ON SITE AND SHALL BE RESPONSIBLE FOR REPORTING ANY ERRORS OR OMISSIONS TO THE ENGINEER FOR ADJUSTMENTS. THIS DRAWING SHALL NOT BE SCALED.

COPY PRINTED ON 24-Jan-20 AT 09:40

NOVA 3 ENGINEERING LTD. PROFESSIONAL ENGINEERS

201-120 FORT STREET TEL: (204) 943-6142
WINNIPEG, MANITOBA R3C 1C7 FAX: (204) 942-1276
WWW.NOVA3.CA ENL: 39-128M

THIS DRAWING IS THE EXCLUSIVE PROPERTY OF NOVA 3 ENGINEERING LTD. AND MAY ONLY BE REPRODUCED WITH THE WRITTEN PERMISSION OF NOVA 3 ENGINEERING LTD.

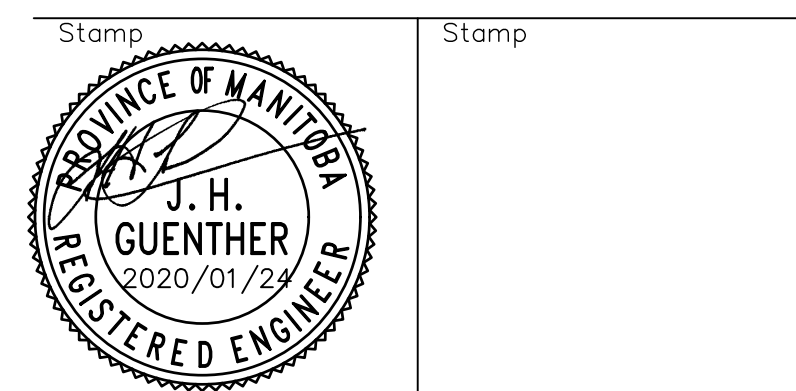
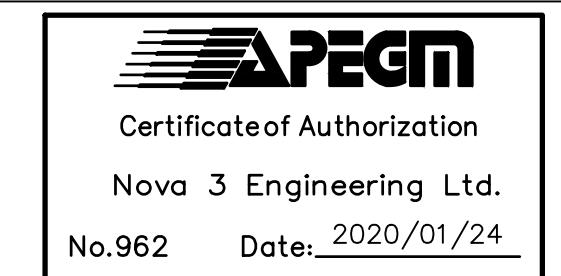
THE CONCEPT AND DESIGN INCORPORATED INTO THIS DRAWING ARE BASED ON INFORMATION PROVIDED BY THE CLIENT AND OTHER RELATED SOURCES. PROFESSIONAL ENGINEER ACCEPTS NO RESPONSIBILITY FOR DRAWING AND DESIGN UNLESS DRAWING IS ACCOMPANIED BY ORIGINAL SEALED LETTER OF INTENT OR EQUIVALENT ACCEPTABLE FACSIMILE. PROFESSIONAL ENGINEER ACCEPTS NO RESPONSIBILITY FOR FINAL INSTALLATION CONFORMANCE WITHOUT ORIGINAL SEALED CERTIFICATE OF INSPECTION OR EQUIVALENT ACCEPTABLE FACSIMILE.

Revisions

2020.01.24	Issued for Construction
Date	Revision

Northern Sky Architecture Inc.

100-128 James Avenue
Winnipeg, Manitoba, Canada
R3B 5N8
Phone: 204.943.9979
204.943.6767



Project City of Winnipeg

Bridgewater Storage Garage

North Town Road
Winnipeg, Manitoba

drawing title	MECHANICAL SPEC AND DETAILS		
scale	as noted	designed by	QD
date	January 24, 2020	drawn by	QD/GS
project no.	19.236	reviewed by	JHG
reference no.		sheet	M1.0 REV. 3