MECHANICAL LEGEND & ABBREVIATIONS

- H — HUMIDISTAT
- S_T — TIMER SWITCH
- CO — CARBON MONOXIDE SENSOR
- M.D. — MOTORIZED DAMPER
- EF-1 — EXHAUST FAN
- L-1 — LOUVER
- E-1 — EQUIPMENT TYPE; E=EXISTING TO REMAIN, R = REMOVE, ER = EXISTING TO BE RELOCATED
- M2 — SECTION NUMBER
- M2 — DRAWING NUMBER
- AIR FLOW INDICATOR

EXHAUST FAN SCHEDULE

PLAN SYMBOL EF-1

No.	MANUFACTURER	MODEL	CFM	E.S.P.	TYPE	RPM	MODEL			REMARKS
							H.P.	VOLT	PH	
EF-1	GREENHECK	SB-SH24-7	5720	0.30	SIDEWALL	1530	3/4	115	1	NOTE 1

NOTE:

1) PROVIDE WALL SLEEVE, LOW LEAKAGE BACKDRAFT DAMPER, EXPLOSION PROOF MOTOR, SPARK PROOF FAN BLADE, OSHA SIDE MOTOR GUARD AND WEATHERHOOD WITH BIRDSCREEN.

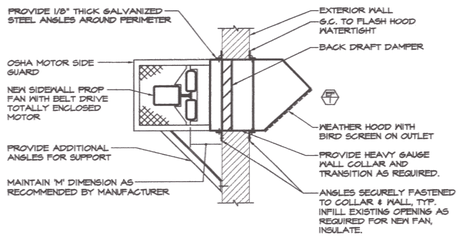
LOUVER SCHEDULE

PLAN SYMBOL L-1

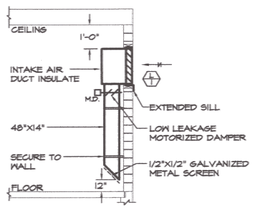
No.	MANUFACTURER	SERIES	MODEL	SIZE	AIR PAT	DAMPER	FINISH	REMARKS
L-1	RUSKIN	ELF	ELF-375DX	48"W x 54"H	INTAKE	-	B.E.	NOTE 1, 2

NOTES:

1) PROVIDE GALVANIZED BIRDSCREEN.
2) COLOR OF LOUVER TO BE SELECTED BY ENGINEER.



A/M1 SIDEWALL EXHAUST FAN DETAIL
NOT TO SCALE



B/M1 INTAKE LOUVER DETAIL
NOT TO SCALE

VENTILATION MATERIAL SPECIFICATIONS:

MECHANICAL SPECIFICATION

PERMITS AND CODES:

THIS CONTRACTOR SHALL OBTAIN AND PAY FOR ALL LICENSES AND PERMITS AND SHALL PAY FOR ALL FEES AND CHARGES FOR THE CONNECTION TO OUTSIDE SERVICES AND USE OF PROPERTY OTHER THAN THE SITE OF THE WORK FOR STORAGE OF MATERIALS OR OTHER PURPOSES. WORK UNDER THIS CONTRACT SHALL BE INSTALLED TO COMPLY STRICTLY WITH LATEST APPLICABLE EDITIONS OF MAINE BUILDING CODE, NATIONAL FIRE PROTECTION ASSOCIATION, ASHRAE GUIDE, SMACNA, NATIONAL ELECTRIC CODE, AND ALL CODES, REGULATIONS AND REQUIREMENTS OF ALL MUNICIPAL, STATE, FEDERAL AND OTHER PUBLIC OR PRIVATE AUTHORITIES WHICH HAVE JURISDICTION. IN EACH CASE, CODES ARE MINIMUM REQUIREMENTS.

SHOP DRAWINGS:

SUBMIT SHOP DRAWINGS ON ALL MAJOR ITEMS OF EQUIPMENT AND MATERIALS TO THE ARCHITECT FOR APPROVAL. MANUFACTURING OR FABRICATING OF ANY MATERIAL OR THE PERFORMING OF ANY WORK PRIOR TO APPROVAL OF SHOP DRAWINGS WILL BE ENTIRELY AT THE RISK OF THE CONTRACTOR.

GUARANTEE, SERVICE AND REPLACEMENT:

EXCEPT AS A LONGER PERIOD MAY BE PROVIDED IN THIS SPECIFICATION, THIS CONTRACTOR SHALL GUARANTEE THE WORK TO THE FULL EXTENT OF THE PROVISION OF THE DRAWINGS, THIS SPECIFICATION AND THE GENERAL CONDITIONS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE BY THE ARCHITECT AS EVIDENCED BY THE ARCHITECT'S FINAL CERTIFICATES.

MISCELLANEOUS STEEL SUPPORTS:

SEE DRAWINGS AND SCHEDULES FOR ITEMS INCLUDED IN THIS SECTION THAT NEED TO BE FASTENED TO AND/OR SUPPORTED BY THE STRUCTURE. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY ANCHOR BOLTS, INSERTS, STEEL BEAMS, BARS, BEARING AND LEVELING PLATES AND INCIDENTAL ITEMS AS MAY BE NEEDED TO INSTALL THE WORK.

AIR BALANCING:

PROVIDE THE SERVICES OF A CERTIFIED BALANCING COMPANY TO MEASURE AND ADJUST ALL AIR FLOWS TO THOSE SHOWN ON THE DRAWINGS. AFTER APPROVED AIR QUANTITIES ARE OBTAINED FINAL ADJUSTMENT OF AIR SHALL BE AS REQUIRED OR DIRECTED TO OBTAIN THE REQUIRED FLOW IN ALL SPACES. ADJUST ALL AUTOMATIC TEMPERATURE CONTROLS FOR SATISFACTORY OPERATION CYCLES.

SYSTEM IDENTIFICATION:

ALL EQUIPMENT SHALL BE IDENTIFIED WITH PERMANENT PHENOLIC NAMEPLATES WITH 1/2" HIGH LETTERS.

EXHAUST DUCTWORK:

EXHAUST DUCTWORK SYSTEMS SHALL BE CONSTRUCTED FROM ALUMINUM FOR 1" W.G. PRESSURE CLASS PER SMACNA DUCT CONSTRUCTION STANDARDS. DUCT GAUGES, REINFORCEMENT METHODS, JOINT CONSTRUCTION AND INTERMEDIATE REINFORCEMENT METHODS SHALL MEET SMACNA STANDARDS FOR 1" W.G. POSITIVE PRESSURE. SUBMIT CONSTRUCTION METHODS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OF DUCT SYSTEMS. DUCTWORK SEALING METHODS FOR THESE SYSTEMS SHALL BE CLASS C SEAL FOR 1" W.G. AND UP. SEAL ALL TRAVERSE JOINTS.

LOUVERS

WALL LOUVERS SHALL COMPLY WITH NATIONAL FIRE PROTECTION ASSOCIATION STANDARD NO. 90A, AS APPLICABLE TO LOUVER CONSTRUCTION.

PROVIDE ALL WALL LOUVERS WHERE INDICATED. DELIVER TO THE GENERAL CONTRACTOR TO BE BUILT-INTO CONSTRUCTION. MATERIAL SHALL BE ALUMINUM CHANNEL BOX FRAME AND BLADES WITH 1/2" MESH NO. 14 GAUGE WIRE BIRD SCREEN, DUCT COLLARS AND STAINLESS STEEL SCREWS. SCREEN SHALL BE PRE-COATED. LOUVERS SHALL BE EQUAL TO RUSKIN WITH MODEL AS SCHEDULED ON CONTRACT DRAWINGS.

ALL LOUVERS TO BE PROVIDED WITH BAKED ENAMEL FINISH, COLOR TO BE SELECTED BY ENGINEER.

EXHAUST FANS

PROPELLER WALL FAN: FURNISH AND INSTALL BELT DRIVE, TYPE SIDEWALL FAN, CONSTRUCTED WITH CAST ALUMINUM PROPELLER. PROVIDE A STANDARD SQUARE KEY AND SET SCREW TO LOCK PROPELLER TO MOTOR SHAFT. PROPELLER SHALL BE STATICALLY AND DYNAMICALLY BALANCED. MOTOR SHALL BE TOTALLY ENCLOSED PERMANENTLY LUBRICATED, HEAVY DUTY TYPE MATCHED TO THE FAN LOAD AND FURNISHED AT THE SCHEDULED RPM, VOLTAGE, PHASE AND ENCLOSURE. UNIT SHALL BE AMCA RATED FOR BOTH SOUND AND AIR PERFORMANCE. PROVIDE OSHA MOTOR SIDE GUARD, WALL MOUNTING COLLAR, GRAVITY BACKDRAFT DAMPER AND EXTERIOR WEATHERHOOD, WALL COLLAR, TOTALLY ENCLOSED EXPLOSION-PROOF MOTOR AND SPARK-PROOF FAN BLADES AS DETAILED.

INSULATION

PROVIDE THERMAL INSULATION FOR EXTERIOR SURFACES OF DUCTWORK AND SPECIALTIES AS INDICATED AND AS SPECIFIED.

INSULATION SHALL INCLUDE INSULATING MATERIALS AND THEIR APPLICATION, INCLUDING FINAL JACKET, FINISH, METAL BENDS, OTHER FINISHES, WEATHER PROTECTION, ETC.

INSULATION SHALL BE APPLIED BY EXPERIENCED INSULATORS AS PER BEST TRADE PRACTICE, GUIDED BY MANUFACTURER'S PRINTED INSTRUCTIONS.

ENDS OF INSULATION AT TERMINATION POINTS SHALL BE COVERED WITH MASTIC TO PRESENT A NEAT FINISHED APPEARANCE.

INSULATION SHALL BE AS MANUFACTURED BY OWENS-CORNING, JOHN-MANSVILLE OR GUSTIN-BACON.

ALL FRESH AIR INTAKE DUCTS LOCATED SHALL BE INSULATED WITH 1 1/2" THICK, 1 POUND DENSITY FLEXIBLE DUCT INSULATION WITH FACTORY APPLIED DUCT WRAP. APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

CARBON MONOXIDE DETECTOR

MACURCO MODEL CM-2I AUTOMATIC VENTILATION CONTROLLER. PROVIDE BUILT-IN ALARM HORN BUZZER WITH DIGITAL DISPLAY OF THE CO LEVEL IN THE SPACE.

HUMIDISTAT

HONEYWELL MODEL H8908BI002. PROVIDE RELAY.

SEQUENCE OF OPERATION

GENERAL: PROVIDE ELECTRIC AUTOMATIC CONTROLS TO ACCOMPLISH THE FOLLOWING CONTROL SEQUENCES. PROVIDE CONTROLS FOR EXHAUST FANS, INTAKE DAMPERS AND ACCESSORIES AS SHOWN ON THE DRAWINGS.

EXHAUST FAN EF-1

A SPACE MOUNTED CARBON MONOXIDE DETECTOR, SPRING WOUND 15 MINUTE TIMER OR HUMIDISTAT SHALL OPEN INTAKE DAMPER AND END SWITCH SHALL START EF-1. IF THE TIMER SWITCH OR HUMIDISTAT HAS NOT BEEN ACTIVATED AND THE SPACE CARBON MONOXIDE LEVEL REACHES 25 PPM IN A 5 MINUTE PERIOD THE FAN SHALL START AND RUN UNTIL CARBON MONOXIDE LEVEL RETURNS TO A LEVEL LESS THAN 25 PPM. IF THE CARBON DIOXIDE LEVEL REACHES 35 PPM IN A 5 MINUTE PERIOD AN ALARM HORN SHALL BE SOUNDED ON THE CARBON MONOXIDE DETECTOR.
IF THE TIMER SWITCH AND THE CARBON MONOXIDE SENSOR HAVE NOT BEEN ACTIVATED AND THE SPACE RELATIVE HUMIDITY LEVEL EXCEEDS 30%, THE FAN SHALL START AND RUN UNTIL THE RELATIVE HUMIDITY LEVEL FALLS BELOW 30%.

INSTALLATION OF CONTROL SYSTEMS

INSTALL SYSTEMS AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, ROUGHING-IN DRAWINGS AND DETAILS SHOWN ON DRAWINGS.

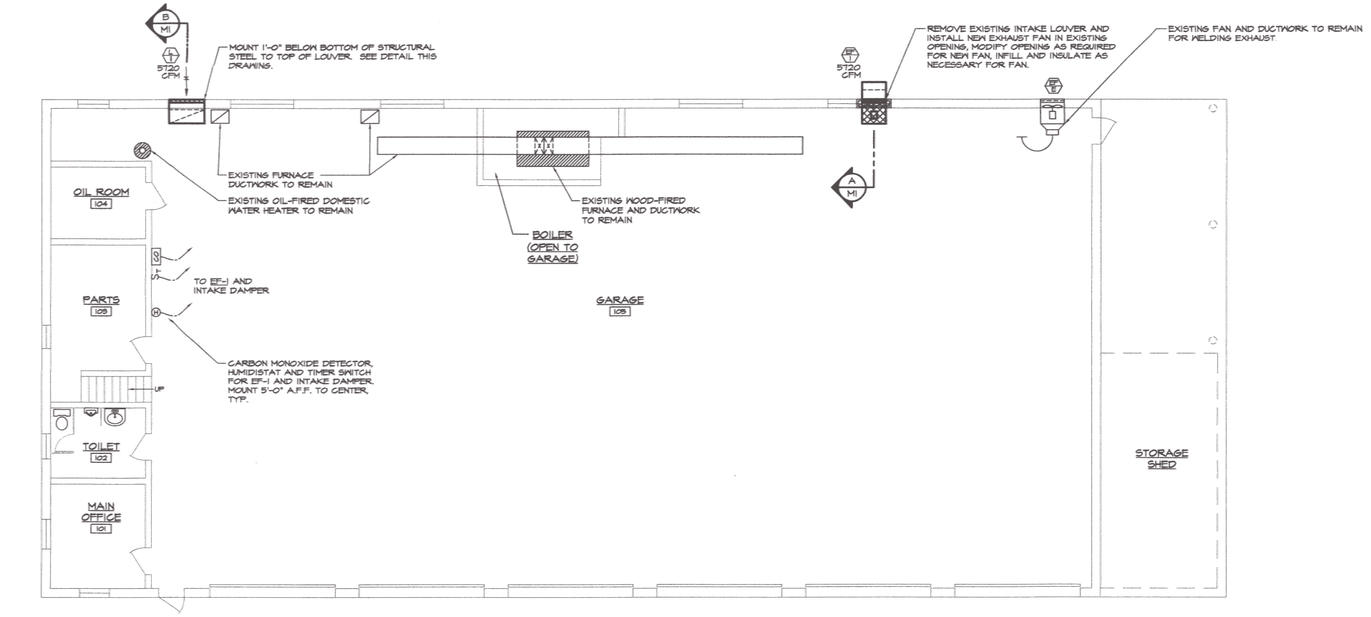
UNIT MOUNTED EQUIPMENT: SHIP ELECTRIC RELAYS, SWITCHES, VALVES, DAMPERS, DAMPER MOTORS TO EQUIPMENT MANUFACTURER FOR MOUNTING AND WIRING AT FACTORY. FIELD MOUNTING OF CONTROLS AND DEVICES ARE THE CONTRACTOR'S OPTION.

CONTROL WIRING: INSTALL CONTROL WIRING, WITHOUT SPLICES BETWEEN TERMINATION POINTS, COLOR-CODED. INSTALL IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE AND PER ELECTRICAL DRAWINGS. ALL CONTROL WIRING SHALL BE RUN IN EMT CONDUIT.

EQUIPMENT IDENTIFICATION: PROVIDE IDENTIFICATION PLATE FOR ALL EQUIPMENT AND DEVICES INDICATING FUNCTION AND CONTROL SEQUENCE FOR ADJUSTMENT AND SERVICING.

ADJUSTING: START-UP, TEST, AND ADJUST ALL CONTROL SYSTEMS IN PRESENCE OF MANUFACTURER'S AUTHORIZED REPRESENTATIVE. DEMONSTRATE COMPLIANCE WITH REQUIREMENTS. REPLACE DAMAGED OR MALFUNCTIONING CONTROLS AND EQUIPMENT.

TRAINING AND FOLLOW-UP: PROVIDE 1 HOURS OF OWNER TRAINING AFTER SYSTEM HAS BEEN STARTED, BALANCED AND ADJUSTED FOR SATISFACTORY OPERATION. PROVIDE AN ADDITIONAL FOLLOW-UP MEETING, MINIMUM OF 1 HOURS, AT LEAST 6 MONTHS AFTER THE SYSTEM HAS BEEN IN OPERATION TO PERMIT REVIEW OF OPERATING CONDITIONS AND TO ALLOW FOR FINAL ADJUSTMENT AND REGALIBRATION OF THE SYSTEM. THIS MEETING MUST INCLUDE THE OWNER, ENGINEERING AND OTHER STATE PERSONNEL. ALL MEETINGS MUST BE SCHEDULED THROUGH THE ENGINEER A MINIMUM OF 1 MONTH PRIOR TO THE DATE REQUESTED TO ALLOW FOR COORDINATION WITH THE OWNER AND OTHER INTERESTED PARTIES.



FIRST FLOOR PLAN - VENTILATION
SCALE: 1/8"=1'-0"

NO.	ISSUED FOR	DATE
1	BIDDING	05/2007

STATE OF VERMONT — DANIEL W. DUPRAS — NO. 7335 MECHANICAL — LICENSED PROFESSIONAL ENGINEER

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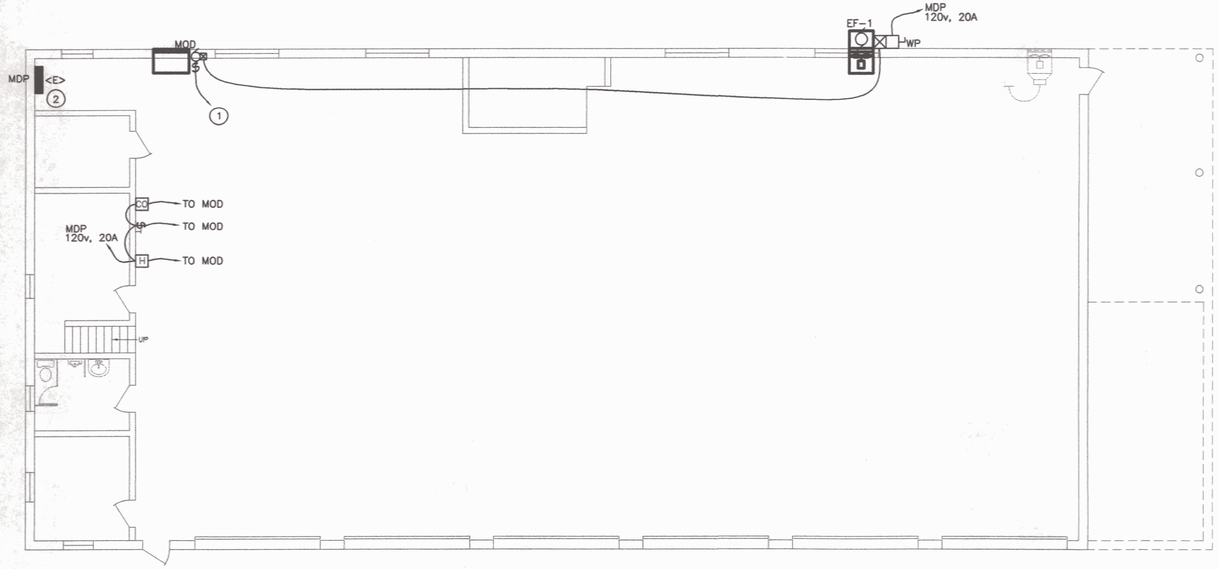
FIRST FLOOR PLAN - VENTILATION

ST. JOHNSBURY AOT GARAGE
DISTRICT 3
ST. JOHNSBURY, VT 05819
VENTILATION SYSTEM

M1

APPR: DWD | DRAWN: KPG/DWD | SCALE: AS NOTED | PROJ. NO. 06044-07



ELECTRICAL PLAN

SCALE: 1/8" = 1'-0"

HORIZONTAL SCALE IN FEET

8 4 0 8 16 24 32

ELECTRICAL LEGEND

$_T	15 MINUTE SPRING-WOUND SWITCH - SINGLE POLE PROVIDED & INSTALLED BY EC	EC	ELECTRICAL CONTRACTOR (DIVISION 16)
	MOTOR STARTER RELAY, PROV. BY MC, INSTALLED BY EC	MC	MECHANICAL CONTRACTOR (DIVISION 15)
	SAFETY DISCONNECT PROV. AND INSTALLED BY EC.	EF	EXPLOSION-PROOF EXHAUST FAN, PROVIDED BY MC, WIRED BY EC.
	PANEL	WP	WEATHERPROOF, NEMA 3R RATED
	BRANCH CIRCUIT	<E>	EXISTING EQUIPMENT TO REMAIN
_JB	JUNCTION BOX	GC	GENERAL CONTRACTOR
		ES	EQUIPMENT SUPPLIER
CO	CARBON-MONOXIDE DETECTOR, PROVIDED BY MC, WIRED BY EC	TYP.	TYPICAL OF ALL
H	HUMIDISTAT, PROVIDED BY MC, WIRED BY EC	GEN	GENERATOR
		MOD	MOTOR-OPERATED DAMPER
	MOTOR		

KEYED NOTES:

1. PROVIDE WIRING TO TIMER SWITCH, HUMIDISTAT, & CO DETECTOR SO THAT THE MOD WILL OPERATE IF ANY OF THE ABOVE ITEMS ARE ACTIVATED. END SWITCH ON MOD SHALL ENERGIZE RELAY TO START EXHAUST FAN. REFER TO MECHANICAL DRAWING, M1.
2. EXISTING PANEL "MDP", VERIFY EXACT LOCATION AND MAKE OF PANEL. PROVIDE NEW BREAKERS AND CIRCUITS FOR THE NEW WIRING AS SHOWN.

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and General Services
Agency of Administration
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AGENCY OF TRANSPORTATION
ST. JOHNSBURY AOT GARAGE
DISTRICT 7 VENTILATION SYSTEM
ST. JOHNSBURY VERMONT

REVISIONS

SCALE: AS SHOWN | DATE: MAY 2007 | DRAWN BY: ASG | APPR. BY: EEP

AGENCY OF TRANSPORTATION GARAGE & OFFICES

ELECTRICAL PLAN

E-1

1 OF 1