

**MECHANICAL LEGEND & ABBREVIATIONS**

Ⓜ	HUMIDISTAT	Ⓜ	EXHAUST FAN
S <sub>T</sub>	TIMER SWITCH	Ⓛ	LOUVER
Ⓢ	CARBON MONOXIDE SENSOR	Ⓛ	EQUIPMENT TYPE E=EXISTING TO REMAIN, R = REMOVE, ER = EXISTING TO BE RELOCATED
M <sub>D</sub>	MOTORIZED DAMPER	Ⓛ	SECTION NUMBER DRAWING NUMBER
		→	AIR FLOW INDICATOR

**EXHAUST FAN SCHEDULE**

No.	MANUFACTURER	MODEL	CFM	E.S.P.	TYPE	RPM	MODEL			REMARKS
							H.P.	VOLT	PH	
EF-1	GREENECK	9B-3H24-T	5120	0.30	SIDEMALL	1930	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**

No.	MANUFACTURER	SERIES	MODEL	SIZE	AIR PAT	DAMPER	FINISH	REMARKS
L-1	RUSKIN	ELF	ELF-3T50X	48"X14"	INTAKE	-	B.E.	NOTE 1, 2

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

**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 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 CERTIFICATE.

**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.

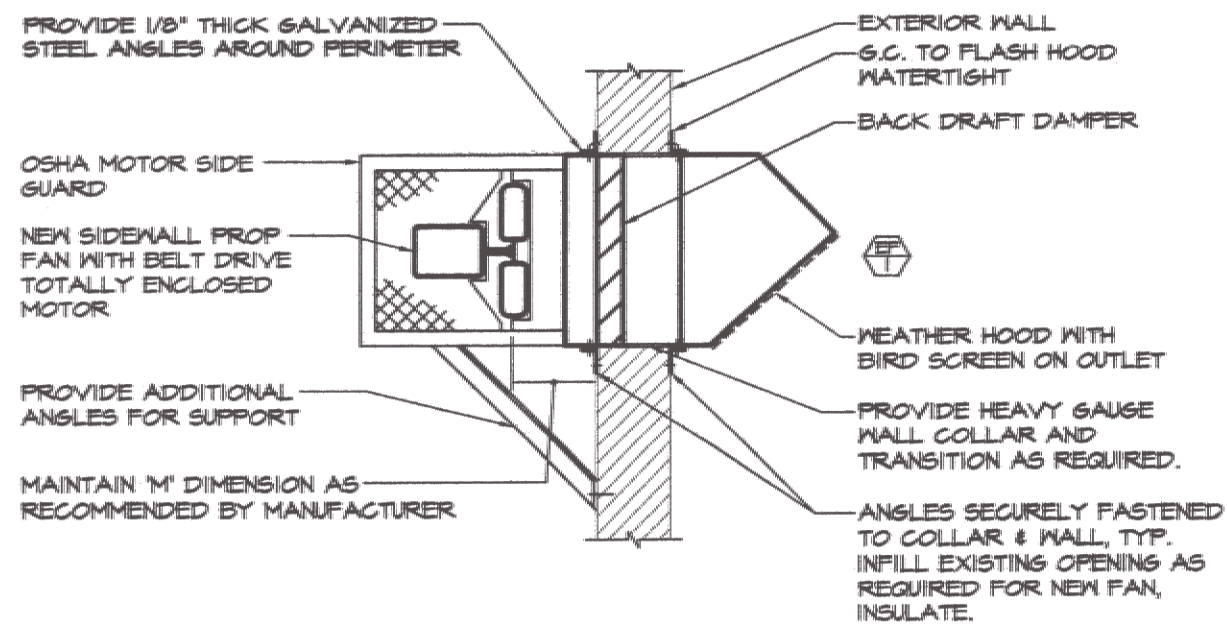
**EXHAUST DUCTWORK:**  
EXHAUST DUCTWORK SYSTEMS SHALL BE CONSTRUCTED FROM ALUMINUM FOR 1" M.G. PRESSURE CLASS PER SMACNA DUCT CONSTRUCTION STANDARDS. DUCT GAUGES, REINFORCEMENT METHODS, JOINT CONSTRUCTION AND INTERMEDIATE REINFORCEMENT METHODS SHALL MEET SMACNA STANDARDS FOR 1" M.G. POSITIVE PRESSURE. 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" M.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.

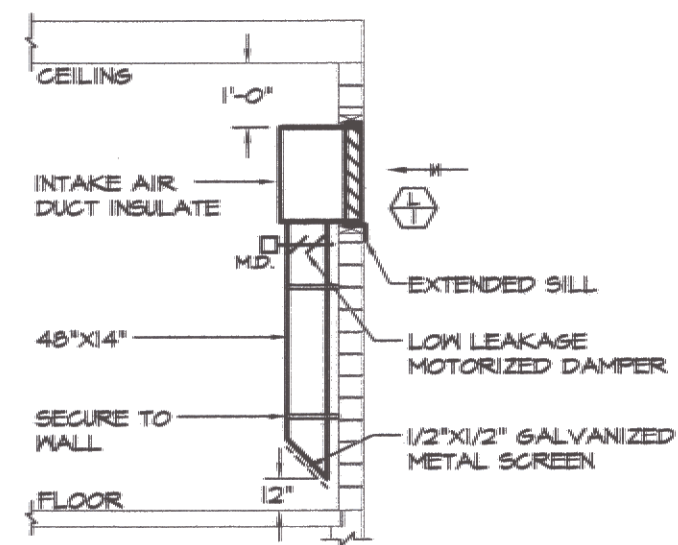
**EXHAUST FANS**  
PROPELLER WALL FAN. FURNISH AND INSTALL BELT DRIVE, TYPE SIDEMALL FAN CONSTRUCTED WITH CAST ALUMINUM PROPELLER. PROVIDE A STANDARD SQUARE KEY AND SET SCREW TO LOCK PROPELLER TO MOTOR SHAFT. PROPELLER SHALL BE STATICALLY AND DYNAMICALLY BALANCED. MOTOR SHALL BE TOTALLY ENCLOSED PERMANENTLY 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-MANVILLE 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.

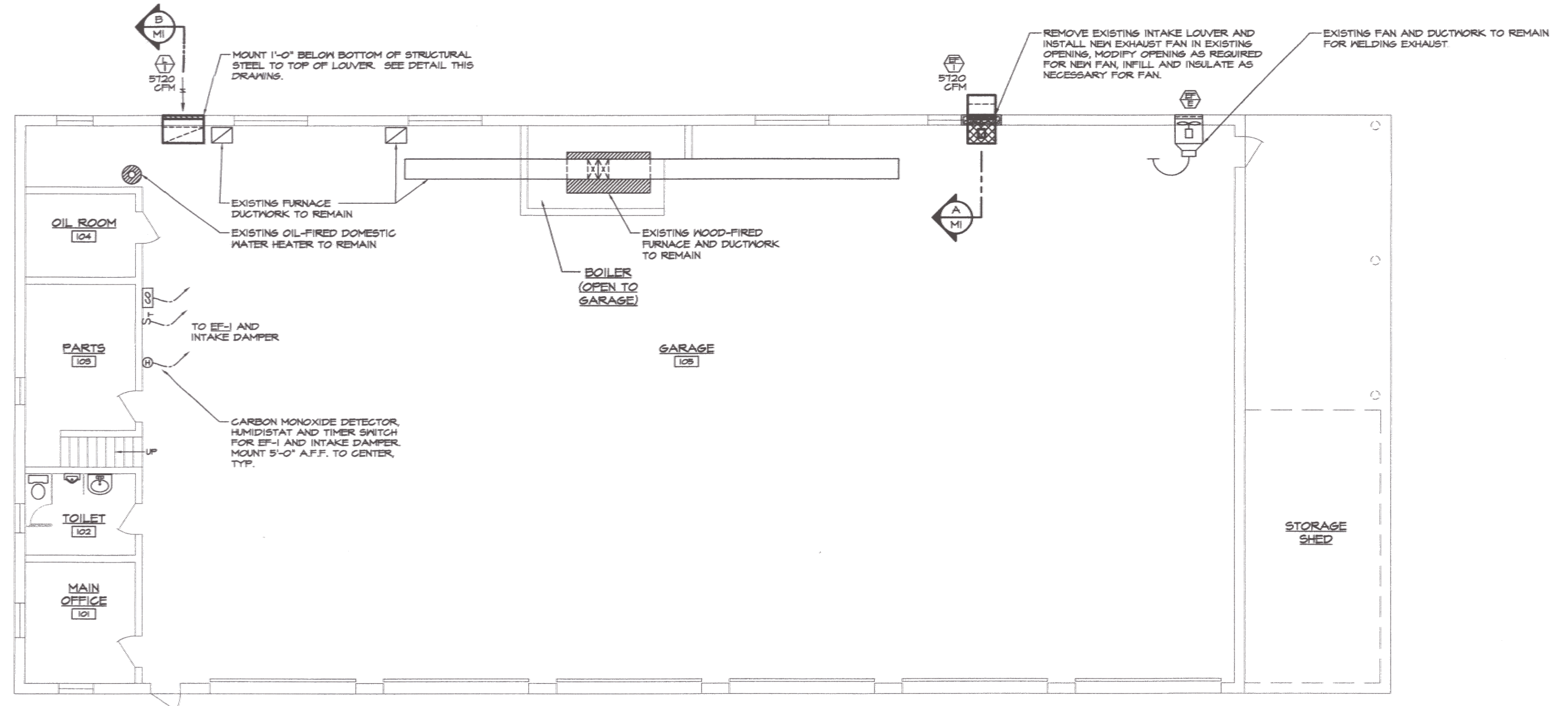
**CARBON MONOXIDE DETECTOR**  
MAGURCO MODEL CM-21 AUTOMATIC VENTILATION CONTROLLER. PROVIDE BUILT-IN ALARM HORN BUZZER WITH DIGITAL DISPLAY OF THE CO LEVEL IN THE SPACE.  
HUMIDISTAT  
HONEYWELL MODEL H9408B1002. PROVIDE RELAY.  
**SEQUENCE OF OPERATION**  
GENERAL: PROVIDE ELECTRIC AUTOMATIC CONTROLS 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 50%, THE FAN SHALL START AND RUN UNTIL THE RELATIVE HUMIDITY LEVEL FALLS BELOW 50%.  
**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 HOUR OF OWNER TRAINING AFTER SYSTEM HAS BEEN STARTED, BALANCED AND ADJUSTED FOR SATISFACTORY OPERATION. PROVIDE AN ADDITIONAL FOLLOW-UP MEETING, MINIMUM OF 1 HOUR, AT LEAST 6 MONTHS AFTER THE SYSTEM HAS BEEN IN OPERATION TO PERMIT REVIEW OF OPERATING CONDITIONS AND TO ALLOW FOR FINAL ADJUSTMENT AND RECALIBRATION OF THE SYSTEM. THIS MEETING MUST INCLUDE THE OWNER, ENGINEERS 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.



**(A) SIDEWALL EXHAUST FAN DETAIL**  
NOT TO SCALE



**(B) INTAKE LOUVER DETAIL**  
NOT TO SCALE



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

	<p><b>LANE ASSOCIATES</b> CONSULTING ENGINEERS, P.C.</p>		<p>HEATING, VENTILATION, &amp; AIR CONDITIONING, PLUMBING, FIRE PROTECTION, &amp; ELECTRICAL. CHARLES F. LANE, P.E. DANIEL W. DUPRAS, P.E. RODNEY R. TUCKER, P.E. 51 KILLINGTON AVENUE, RUTLAND, VERMONT 05701 TELEPHONE: (802)747-3346 FAX: (802)747-3356 E-MAIL: lonaepc@vernet.net</p>		<p><b>FIRST FLOOR PLAN - VENTILATION</b></p> <p>ST. JOHNSBURY AOT GARAGE DISTRICT 3 ST. JOHNSBURY, VT 05819 VENTILATION SYSTEM</p>		<p><b>M 1</b></p>
	<p>PEARSON &amp; ASSOCIATES P.O. Box 610, Stowe Vermont 05672 TELEPHONE: (802)253-9607 FAX: (802)253-9290 E-MAIL: pearson@stowevt.net</p>		<p>APPR: DWD DRAWN: KPC/DWD SCALE: AS NOTED PROJ. NO. 06044-07</p>				

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