



Department of Public Works
Infrastructure Services Division

Ghassan Korban
Commissioner of Public Works

Preston D. Cole
Director of Operations

Jeffrey S. Polenske
City Engineer

February 11, 2015

Subject: Official Notice No. 22-1-2015

Northwest Garage - Compressed Natural Gas Fueling Program
3025 West Ruby Avenue
City of Milwaukee, Milwaukee County, Wisconsin

For which bid will be received on
Wednesday, February 19, 2015

Addendum No. 1

- A. In regard to our advertisement for the Northwest Garage - Compressed Natural Gas Fueling Program, 3025 West Ruby Avenue, City of Milwaukee, Milwaukee County, Wisconsin this attached Addendum No. 1 is issued to modify the original documents and is hereby made part of the proposal.
- B. Each bidder shall read the entire addendum. Proposals shall include all items included in this Addendum No. 1.

Very truly yours,

Paul R. Fredrich, Facilities Operations Manager
Bridges and Buildings



Official Notice No. 22-1-2015

Northwest Garage – Compressed Natural Gas Fueling Program
3025 West Ruby Avenue
City of Milwaukee, Milwaukee County, Wisconsin

Addendum No. 1

IMMEDIATELY UPON RECEIPT OF THE ADDENDUM, PLEASE SIGN THIS RECEIPT AND FAX BACK TO DPW-BRIDGES AND BUILDINGS SECTION AT (414) 286-5907 OR EMAIL (Thomas.tarkowski@Milwaukee.gov).

Company Name

Name

Date



ADDENDUM No. 1
February 12, 2015

Official Notice No. 22-1-2015
NW Garage Compressed Natural Gas Fueling Program
NW Garage
3025 West Ruby Avenue
Milwaukee, Wisconsin

Responses to bidder questions:

1. Are NEMA 4 motors required on door operators?
 - a. Response: Provide NEMA 4 motor on Garage door opener if any part of the motor is within 18" of the ceiling or roof deck.
2. Is bentonite required on the trench cap?
 - a. Response: No bentonite is not required on the trench cap.
 - i. Detail 6/N600: delete note referencing CLAYMAX MAT (BENTONITE).
3. Does the CMU structure on the east side of the existing interior repair bay not shown on the plans need to be removed?
 - a. Response: Refer to Sheet A100. There is a CMU structure (not shown on the plan) attached to the east wall along Grid 7 that is indicated to be removed. The concrete masonry structure is approximately 19 feet long and 7 feet wide and 12 feet tall with a wood framed cap. This structure is within the work area which extends to Grid 9. Per the requirements of General Demolition Notes – Note 1 – the structure shall be removed.
4. Demolition of existing lift equipment was questioned?
 - a. Response: Existing lift equipment within the work area indicated by a note on the dashed lines requiring "Saw cut and remove concrete floor" roughly between Grid 5 and Grid 9 and approximately 40 feet either side of the centerline of the building Grid D, shall be removed per the requirements of General Demolition Notes – Note 1.
5. There is an existing utility trench from the building to the salt dome, visible on site but not shown on the C104 site drawing?
 - a. Response: This trench is a private utility that provides power for the salt dome. The buried line is PVC and approximately 18" below grade. This line needs to be maintained during construction.

Additional Revisions:

6. Refer to Specification Table of Contents:
 - a. Under Division 8 - Delete "083613 Sectional Doors" (Section was not included in the specification)
 - b. Add Section 087100 "Door Hardware" to the TOC.
 - c. Add Section 235523.13 "Low Intensity Gas Fired Radiant Heaters" to the TOC.
7. Refer to Section 081113 2.5-G revise reference from Section 087000 to 087100.
8. Refer to Section 078100 3.6-C."E" revise reference from Section 087000 to 087100.
9. Refer to Section 00031/1 and the Invitation to Bid and modify the residency requirement for this project to be 0% in lieu of 40%.

10. See attached for revised Section 230993 Sequence of Operation for HVAC Controls.
11. See attached for added Section 235523.13 Low Intensity Gas Fired Radiant Heaters.
12. See attached for revised Sheet M100 for revision to keyed note #7.
13. See attached for revised Sheet M200 for information related to infrared heaters.
14. See attached for revised Sheet M800 for added "Gas Infrared Heater" schedule.
15. See attached for revised Sheet N600 for revision to "PIPING TRENCH DETAIL" 6 eliminating bentonite fill layer and membrane.

End of Addendum

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SECTION 230993
SEQUENCE OF OPERATION FOR HVAC CONTROLS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes control sequences for HVAC and plumbing systems, subsystems, and equipment.
 - 1. Temperature and pressure set points listed shall be adjustable.
 - 2. Provide the building automation system operator with manual over-ride for automatic control valves and dampers. The over-ride shall allow the operator to command open or close valves and dampers.
- B. Related Sections include the following:
 - 1. Division 23 Section "Instrumentation and Control for HVAC" for control equipment and devices and for submittal requirements.

1.3 DEFINITIONS

- A. Air terminal damper open: The damper will open to the scheduled maximum air flow.
- B. Damper or valve full open: Damper or valve will be 100 percent open.
- C. DDC: Direct digital control.
- D. Modulate: Proportionally position.
- E. Set points: Set points will be operator adjustable unless noted as fixed.
- F. Temperature: Air and liquid temperatures are in degrees F.
- G. VAV: Variable air volume.

1.4 TIME SCHEDULE

- A. HVAC and designated plumbing equipment will be scheduled for occupied and unoccupied status.
- B. The daily scheduler will allow the system operator to switch between occupied and unoccupied status a minimum of five times per day. Holidays and weekends will be scheduled separately.
- C. The initial schedule will incorporate HVAC and designated plumbing equipment. Coordinate the initial scheduled occupied/unoccupied hours with the owner and incorporate the schedules before substantial completion.

1.5 GAS INFRARED HEATERS (GIH-1)

- A. General: Unit to be controlled by unit manufacturer's factory packaged controls. BAS to have no interface with unit control.

1.6 MAKEUP AIR UNIT CONTROL SEQUENCES (MAU-1 AND MAU-2)

- A. General: Make up air unit will be started and stopped by the DDC system programmed occupied/unoccupied time schedule and unit controller.
- B. The makeup air units shall be controlled from unit manufacturer's factory installed packaged controls. The DDC system shall monitor status of each unit operation including all control points available from units. Refer to Division 23 specification section "Indoor, Indirect, Gas-Fired Heating and Ventilating Units" for list of available points.
- C. Ventilation Air Control:

1. Minimum outdoor air ventilation shall be maintained with an air flow measuring station located in the outdoor air duct and modulation of supply fan VSD controller varying fan speed to maintain outdoor airflow setpoint. When outdoor airflow increases above setpoint, the VSD shall reduce fan speed to maintain setpoint. When outdoor airflow decreases below setpoint, the VSD controller shall increase fan speed to maintain setpoint.
2. Minimum outdoor air flow setpoint shall be reset based on status of manually started engine exhaust hose reel fan operation. Minimum outdoor air flow setpoint shall be increased equal to the sum total of scheduled CFM values for each manually started operating engine exhaust hose reel fan.

1.7 VENTILATION SEQUENCES

- A. General Garage Exhaust Fans (EF-1 and EF-2):
 1. General: The exhaust fan will be started and stopped by the DDC system programmed occupied/unoccupied time schedule and VSD controller.
 2. Emergency Operation: Natural gas and/or carbon monoxide gas detection systems shall override DDC system programmed occupied/unoccupied time schedule and operate exhaust fans upon detection of either gas levels above setpoint.
 3. Fan Status Current Switch: Monitoring of current draw integral to fan VSD shall be used to monitor loss of coupled load. The current switch set up shall be redone by the DDC contractor after the balancer is complete.
 4. Exhaust Fan Balancing: Balancing of exhaust fan air flow rate shall be done through the VSD controller. DDC contractor shall coordinate with the balancing contractor to optimize this setting.
 5. When exhaust fan is on, motor operated exhaust damper in exhaust duct shall open. When exhaust fan is off, motor operated exhaust damper shall close. Motor operated exhaust damper end switch shall be provided and monitored by the DDC system. Wire damper end switch into the DDC system so that the damper is proven open before the exhaust fan is allowed to start.
- B. Engine Exhaust Hose Reel Fan: The exhaust fan will be manually started and stopped by the hose reel manufacturers drop cord accessory. DDC system shall monitor status of fan for adjustment to make up air units minimum outdoor air intake set point.

PART 2 PRODUCTS

PART 3 EXECUTION

END OF SECTION

SECTION 235523
LOW-INTENSITY, GAS-FIRED RADIANT HEATERS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes low-intensity, gas-fired, multiple-burner radiant heaters.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Shop Drawings:
 - 1. Include diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Plans, elevations, and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Structural members to which equipment will be attached.
 - 2. Gas piping to heater installations
 - 3. Heater locations and clearance requirements.
 - 4. Other suspended ceiling components including the following:
 - a. Lighting fixtures.
 - b. Air outlets and inlets.
 - c. Sprinklers.
- B. Field quality-control reports.
- C. Sample Warranty: For manufacturer's special warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For gas-fired, radiant heaters to include in emergency, operation, and maintenance manuals.

1.6 WARRANTY

- A. Manufacturer's Special Warranty: Manufacturer agrees to repair or replace components of radiant heaters that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: All warranty periods listed below are from date of Substantial Completion.
 - a. Burner Assembly: Three years.
 - b. Combustion and Emitter Tubes: Three years.
 - c. Heater Controls: Three years.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. UL listed and labeled, with UL label clearly visible on units indicating compliance with ANSI Z83.20/CSA 2.34.

- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 MULTIPLE-BURNER HEATERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Combustion Research Corporation.
 - 2. Detroit Radiant Products Company.
 - 3. Roberts-Gordon, LLC.
- B. Description: Factory-assembled, indoor, overhead-mounted, electrically controlled, low-intensity, infrared radiant heating units using gas combustion. Heater to have all necessary factory-installed wiring and piping required prior to field installation and startup.
- C. Fuel Type: Design burner for natural gas having characteristics same as those of gas available at Project site.
- D. Burner Assembly:
 - 1. Combustion-Air Inlet: Non-ducted, unvented.
 - 2. Burner Control Housing: Corrosion-resistant, aluminized steel.
 - a. Sight glass for visual inspection of burner.
 - b. Finish: Enameled finish or powder-coated finish.
 - 3. Burner: Aluminized steel with stainless steel end caps.
 - 4. Ignition System: Silicon carbide hot-surface igniter with flame rod sensing capabilities and self-diagnostic control module.
- E. Combustion Chamber: 4-inch- diameter, 16-gage, aluminized-steel tubing with high-emissivity, high-temperature, corrosion-resistant external finish. Chambers shall be equipped with sight glass for burner and pilot flame observation.
- F. Emitter Tube: 4-inch- diameter, 16-gage, aluminized-steel tubing with high-emissivity, high-temperature, corrosion-resistant external finish. Emitter tubing shall be equipped with baffles to maximize heating efficiency.
 - 1. Tubing Connections: Slide on overlapping adaptor with stainless-steel draw bolts.
- G. Reflector: Polished aluminum with end caps. Shape to control radiation from tubing for uniform intensity at floor level with 100 percent cutoff above centerline of tubing. Reflectors shall accommodate rotational adjustment from horizontal to a minimum 30-degree tilt from vertical.
- H. Accessories:
 - 1. Stainless-steel flexible connector with manual valve for gas supply.
 - 2. Hanger chain with "S" hooks.
 - 3. 3/16-inch- diameter, aluminized-steel wire tubing hangers and reflector supports.
 - 4. Rigid mounting kits.
 - 5. Clearance warning plaque.
- I. Capacities and Characteristics:
 - 1. Refer to equipment schedules for capacities and characteristics:

2.3 CONTROLS AND SAFETIES

- A. Gas Control Valve: Modulating, gas valve that contains pilot solenoid valve, electric gas valve, pilot filter, pressure regulator, pilot shutoff, and manual shutoff all in one body.
- B. Failure Safeguards: 100 percent shutoff of gas flow in the event of flame or power failure.
- C. Pre-purge of minimum 15 seconds of air control system prior to burner ignition.
- D. Safety lockout of burner after minimum three consecutive ignition failures.
- E. Blocked Vent Safety: Differential pressure switch in burner safety circuit to stop burner operation with high discharge or suction pressure.
- F. Control Panel Interlock: Stops burner if panel is open.
- G. Indicator Lights: "burner-on" indicator lights.

- H. Thermostat: modulating, wall-mounted type with 50 to 90 deg F operating range.
 - 1. Control Transformer: Integrally mounted.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine structures, substrates, areas and conditions, with Installer present, for compliance with requirements for installation tolerances, required clearances, and other conditions affecting performance of the Work.
- B. Examine roughing-in for fuel-gas piping to verify actual locations of piping connections before equipment installation.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Equipment Installation: Install gas-fired, radiant heaters and associated gas features and systems according to NFPA 54.
- B. Suspended Units: Suspend from substrate using building attachments with manufacturer's chain hanger kits, manufacturer's rigid mounting kits or custom fabricated brackets.
 - 1. Comply with requirements for hangers and supports specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment."
- C. Maintain manufacturers' recommended clearances for combustibles.

3.3 CONNECTIONS

- A. Gas Piping: Comply with Section 231123 "Facility Natural-Gas Piping." Connect gas piping to gas train inlet; provide union with enough clearance for burner removal and service.
 - 1. Gas Connections: Connect gas piping to radiant heaters according to NFPA 54.
- B. Where installing piping adjacent to gas-fired, radiant heaters, allow space for service and maintenance.
- C. Vent Connections: Comply with Section 233113 "Metal Ducts" and with Section 235100 "Breechings, Chimneys, and Stacks."
- D. Electrical Connections: Comply with applicable requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
 - 1. Install electrical devices furnished with heaters but not specified to be factory mounted.

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- B. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
 - 1. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - 2. Verify bearing lubrication.
 - 3. Verify proper motor rotation.
 - 4. Test Reports: Prepare a written report to record the following:
 - a. Test procedures used.
 - b. Test results that comply with requirements.
 - c. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

- C. Gas-fired, radiant heaters will be considered defective if they do not pass tests and inspections.
- D. Prepare test and inspection reports.

3.5 ADJUSTING

- A. Adjust initial-temperature set points.
- B. Adjust burner and other unit components for optimum heating performance and efficiency.

3.6 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain gas-fired, radiant heaters.

END OF SECTION

DIFFUSERS, REGISTERS, AND GRILLES SCHEDULE			
TYPE	USAGE	MATERIAL/ FINISH	REMARKS
SG1	SUPPLY DRUM LOUVER	4	TRUSS MODEL "DL", SINGLE VANE DRUM LOUVER 1-1/2" BORDER FOR SURFACE MOUNTING HEAVY DUTY EXTRUDED ALUMINUM CONSTRUCTION MINIMUM 25 DEGREE DRUM ROTATION UP AND DOWN

NOTES:
 A. GRILLE AND REGISTER SIZES ARE NOTED ON THE HVAC FLOOR PLANS AND VENTILATION SCHEDULES.
 B. PROVIDE APPROVED ANCHOR FOR PROPER MOUNTING.
 C. MATERIAL FINISH KEY FOR SPECIFIC SPECIAL FINISHES (SEE SPECIFICATIONS)
 1. ALUMINUM WITH STANDARD FACTORY WHITE ENAMEL FINISH.
 2. STEEL WITH STANDARD FACTORY WHITE ENAMEL FINISH.
 3. POLISHED STAINLESS STEEL.
 4. NATURAL ALUMINUM.
 5. ANODIZED ALUMINUM. COLOR SELECTION BY ARCHITECT

EXHAUST FAN SCHEDULE (EF)										
TAG	LOCATION	SERVICE	CAPACITY (CFM)	ESP (IN WG)	MOTOR HP	FAN RPM	FAN TYPE	MANUFACTURER	MODEL	NOTES
EF-1	ROOF	GENERAL EXHAUST	4,400	0.8	0.75	860	CENTRIFUGAL ROOF UPBLAST	GREENHECK	CVE-200-C	1.2.3.4
EF-2	ROOF	GENERAL EXHAUST	4,400	0.8	0.75	860	CENTRIFUGAL ROOF UPBLAST	GREENHECK	CVE-200-C	1.2.3.4
EF-3	ROOM 100	HOSE REEL EXHAUST	900	-	3	-	CENTRIFUGAL UTILITY	CARAKON	DH-12A0	1.3
EF-4	ROOM 100	HOSE REEL EXHAUST	900	-	3	-	CENTRIFUGAL UTILITY	CARAKON	DH-12A0	1.3
EF-5	ROOM 100	HOSE REEL EXHAUST	900	-	3	-	CENTRIFUGAL UTILITY	CARAKON	DH-12A0	1.3
EF-6	ROOM 100	HOSE REEL EXHAUST	900	-	3	-	CENTRIFUGAL UTILITY	CARAKON	DH-12A0	1.3

NOTES:
 1. SEE ELECTRICAL MOTOR SCHEDULES OR PLANS FOR VOLTAGE AND PHASING INFORMATION.
 2. PROVIDE ALUMINUM SPARK PROOF CONSTRUCTION.
 3. PROVIDE EXPLOSION PROOF MOTOR.
 4. LIMIT FAN MOTOR TO OPERATE FROM VARIABLE SPEED CONTROLLER

GAS FIRED MAKE-UP AIR UNIT SCHEDULE (MAU)																
TAG	LOCATION	SERVICE	SUPPLY FAN DATA					EAT (DEG. F)	MIN. LAT (DEG. F)	GAS (MBH)	GAS (CFM)	QTY	TYPE	MANUFACTURER	MODEL	NOTES
			CFM	ESP (IN WG)	TSP (IN WG)	HP	RPM									
MAU-1	GARAGE MEZZANINE		8,000	0.5	1.8	5,000	972	-10.0	80.0	480.0			REZTOR	SSCR-600	1.2.3.4	
MAU-2	GARAGE MEZZANINE		8,000	0.5	1.8	5,000	972	-10.0	80.0	480.0			REZTOR	SSCR-600	1.2.3.4	

NOTES:
 1. SEE ELECTRICAL MOTOR SCHEDULES OR PLANS FOR VOLTAGE AND PHASE INFORMATION.
 2. ESP ONLY INCLUDES DUCTWORK EXTERNAL TO UNIT. MANUFACTURER TO DETERMINE TOTAL STATIC PRESSURE DROP FOR FAN SELECTION.
 3. TSP TO INCLUDE ESP + STATIC PRESSURE DROP OF ALL COMPONENTS INTERNAL TO UNIT. MANUFACTURER TO DETERMINE TOTAL STATIC PRESSURE DROP FOR FAN SELECTION.
 4. UNIT FAN MOTOR TO OPERATE FROM VARIABLE SPEED CONTROLLER.

GRAVITY ROOF VENTILATOR SCHEDULE (GRV)									
TAG	LOCATION	SERVICE	AIR FLOW (CFM)	THROAT AREA (SQ. FT.)	OUTLET AREA (SQ. FT.)	MAX. AREA (SQ. FT.)	MANUFACTURER	MODEL	NOTES
GRV-1	ROOF	EMERGENCY EXHAUST MAKE UP	4,400	36	24	275	0.10	GREENHECK	FGR
GRV-2	ROOF	EMERGENCY EXHAUST MAKE UP	4,400	36	24	275	0.10	GREENHECK	FGR

NOTES:

EQUIPMENT SOUND POWER LEVEL SCHEDULE															
TAG	MAX PALET LEVELS BY OCTAVE BAND (dB)						MAX DUCT LEVELS BY OCTAVE BAND (dB)						NOTES		
	63	125	250	500	1K	2K	4K	8K	125	250	500	1K		2K	4K
MAU-1															1
MAU-2															1
EF-1	78	84	81	74	64	60	53	-	-	-	-	-	-	-	1
EF-2	76	84	81	74	64	60	53	-	-	-	-	-	-	-	1

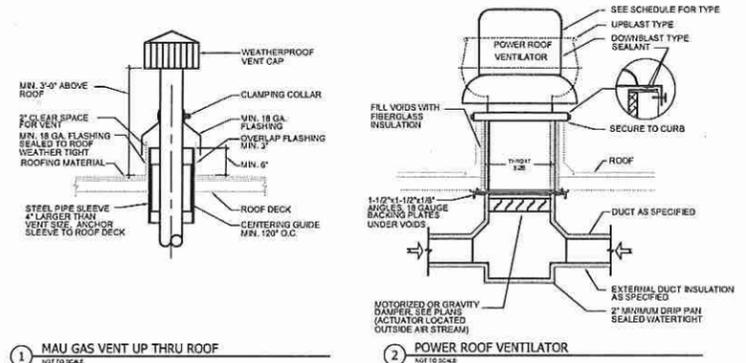
NOTES:
 1. EQUIPMENT SOUND POWER LEVELS SHALL NOT EXCEED VALUES LISTED FOR EACH OCTAVE BAND.

VENTILATION CALCULATION SCHEDULE									
Space	Net SQ. FT.	Room Height FT.	Room Volume CU. FT.	Gasoline/Diesel Repair		CNG Repair		Combined Gasoline/Diesel/CNG Repair	
				CFM/SQ. FT. Calc. Required	Minimum CFM	ACHR Calc. Required	Minimum CFM	Minimum CFM	
Service Garage	3582	23.5	84177	0.5	1791	5	7015		8,806

NOTE: CODE REQUIREMENT FOR 1 CU. FT. OF AIR CHANGE FOR EVERY 12 CU. FT. OF ROOM VOLUME EQUALS 5 AIR CHANGES.

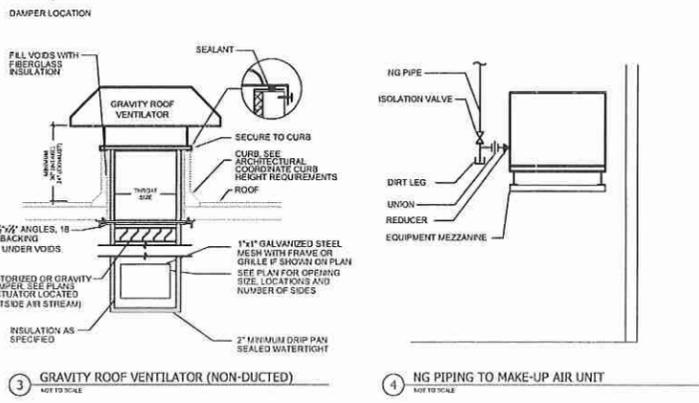
GAS INFRARED HEATER SCHEDULE (GIH)									
TAG	LOCATION	NUMBER OF BURNERS	BURNER INPUT (BTU/H)	GAS PRESSURE (WPG)	EMITTER LENGTH (FT)	MOUNTING HEIGHT (FT)	MANUFACTURER	MODEL	NOTES
GIH-1	OPEN GARAGE	1	8000	5.5	23	14	ROBERTS GORDON	WV7400-RTG-08	1

NOTES:
 1. SEE ELECTRICAL MOTOR SCHEDULES OR PLANS FOR VOLTAGE AND PHASE INFORMATION.



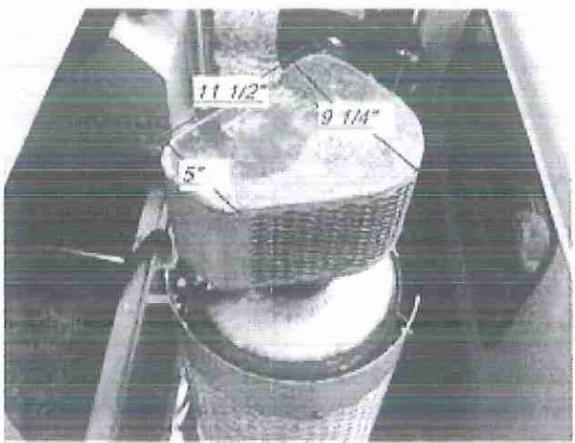
1 MAU GAS VENT UP THRU ROOF NOT TO SCALE

2 POWER ROOF VENTILATOR NOT TO SCALE

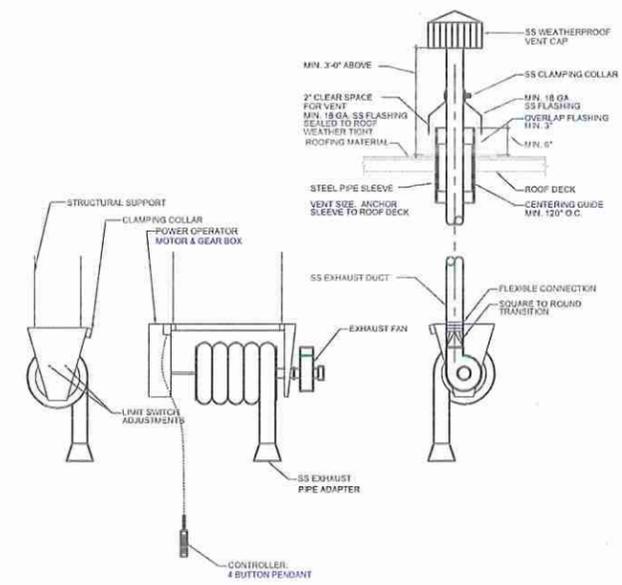


3 GRAVITY ROOF VENTILATOR (NON-DUCTED) NOT TO SCALE

4 NG PIPING TO MAKE-UP AIR UNIT NOT TO SCALE



6 MACK TRUCK EXHAUST DIFFUSER DETAIL NOT TO SCALE



5 NG PIPING TO MAKE-UP AIR UNIT NOT TO SCALE

NO.	DESCRIPTION	DATE
1	ISSUED	FEB. 12, 2015

REVISION HISTORY - THIS SHEET

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EQUIPMENT SCHEDULES

COMM. NO. 1203-005-03
 SCALE NONE
 DATE September 2, 2014
 DRAWN J. LEFFINGWELL

