FEA Receipt # 522518

JUN 6 2011

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JUN 07 2011

Bureau of Air Monitoring & Mobile Sources

HUMAN CREMATORY
AIR GENERAL PERMIT REGISTRATION FORM

Part II. Notification to Permitting Office

(Detach and submit to appropriate permitting office; keep copy onsite)

Instructions: To give notice to the Department of an eligible facility's intent to use this air general permit, the owner or operator of the facility must detach and complete this part of the Air General Permit Registration Form and submit it to the appropriate Department of Environmental Protection or local air pollution control program office which has permitting authority. Please type or print clearly all information, and enclose the appropriate air general permit registration processing fee pursuant to Rule 62-4.050, F.A.C. *($100 as of the effective date of this form)* 1170411-001

Registration Type

Check one:

INITIAL REGISTRATION - Notification of intent to:

- [x] Construct and operate a proposed new facility.
- [ ] Operate an existing facility not currently using an air general permit (e.g., a facility proposing to go from an air operation permit to an air general permit).

RE-REGISTRATION (for facilities currently using an air general permit) - Notification of intent to:

- [ ] Continue operating the facility after expiration of the current term of air general permit use.
- [ ] Continue operating the facility after a change of ownership.
- [ ] Make an equipment change requiring re-registration pursuant to Rule 62-210.310(2)(e), F.A.C., or any other change not considered an administrative correction under Rule 62-210.310(2)(d), F.A.C.

Surrender of Existing Air Operation Permit(s) - For Initial Registrations Only

If the facility currently holds one or more air operation permits, such permit(s) must be surrendered by the owner or operator upon the effective date of this air general permit. In such case, check the first box, and indicate the operation permits being surrendered. If no air operation permits are held by the facility, check the second box.

- [ ] All existing air operation permits for this facility are hereby surrendered upon the effective date of this air general permit; specifically permit number(s): _____
- [x] No air operation permits currently exist for this facility.

General Facility Information

Facility Owner/Company Name (Name of corporation, agency, or individual owner who or which owns, leases, operates, controls, or supervises the facility.)
Collison Holding Company - Longwood

Site Name (Name, if any, of the facility site; e.g., Plant A, Metropolis Plant, etc. If more than one facility is owned, a registration form must be completed for each.)
Collison Family Funeral Home & Crematory

Facility Location (Provide the physical location of the facility, not necessarily the mailing address.)
Street Address: 335 East State Road 434
City: Longwood County: Seminole Zip Code: 32750 - 5217

Facility Start-Up Date (Estimated start-up date of proposed **new** facility.) (N/A for existing facility)
August 1, 2011

Owner/Authorized Representative

Name and Position Title (Person who, by signing this form below, certifies that the facility is eligible to use this air general permit.)
Print Name and Title: Gregory L. Collison, President

Owner/Authorized Representative Mailing Address
Organization/Firm: Collison Family Funeral Home & Crematory
Street Address: 335 E. State Road 434
City: Longwood County: Seminole Zip Code: 32750 - 5217

Owner/Authorized Representative Telephone Numbers
Telephone: ~~407-260-5400~~ Fax: ~~407-260-5404~~
Cell phone (optional): 407-509-1180 * only use this phone number please

Facility Contact (If different from Owner/Authorized Representative)

Name and Position Title (Plant manager or person to be contacted regarding day-to-day operations at the facility.)
Print Name and Title: Gregory L. Collison

Facility Contact Mailing Address
Organization/Firm:
Street Address:
City: County: Zip Code:

Facility Contact Telephone Numbers
Telephone: Fax:
Cell phone (optional):

Owner/Authorized Representative Statement

This statement must be signed and dated by the person named above as owner or authorized representative

I, the undersigned, am the owner or authorized representative of the owner or operator of the facility addressed in this Air General Permit Registration Form. I hereby certify, based on information and belief formed after reasonable inquiry, that the facility addressed in this registration form is eligible for use of this air general permit and that the statements made in this registration form are true, accurate and complete. Further, I agree to operate and maintain the facility described in this registration form so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof.

I will promptly notify the Department of any changes to the information contained in this registration form.

Signature Date 6/2/11

Design Calculations

If this is an initial registration for a proposed new human crematory unit, provide design calculations to confirm a sufficient volume in the secondary chamber combustion zone to provide for at least a 1.0 second gas residence time at 1800 degrees F.

☒ Manufacturer's' design calculations attached.

☐ Registration is not for proposed new human crematory unit(s).

Description of Facility

Below, or as an attachment to this form, provide a description of all crematory operations at the facility in sufficient detail to demonstrate the facility's eligibility for use of this air general permit and to provide a basis for tracking any future equipment or process changes at the facility. Describe all air pollutant-emitting processes and equipment at the facility, and identify any air pollution control measures or equipment used.

Installation of Power Pak II human cremation unit.
See attached process flow diagram.

* SEE E-MAIL DATED 6/16/11 ATTACHED AS AN ADDENDUM TO THIS FORM.

* ADDENDUM TO #1170411-001
PAGE 9. DESCRIPTION OF FACILITY

Dibble, Dickson

From: daynacollison@aol.com
Sent: Thursday, June 16, 2011 12:01 PM
To: Dibble, Dickson
Subject: Collison - crematory

Mr. Dibble -

As per our conversation yesterday, I am emailing to clarify 2 questions you had regarding our permit application. Number one was the fuel type. The fuel type will be natural gas. Second was the serial number of the unit. The unit has not been built yet and therefore we don't have a specific serial number at this time. When we are further along in the process and a serial number becomes available I will email that to you as well. Thanks for your time and assistance with this matter. If any further questions arise, please feel free to call Greg at 407-509-1180.

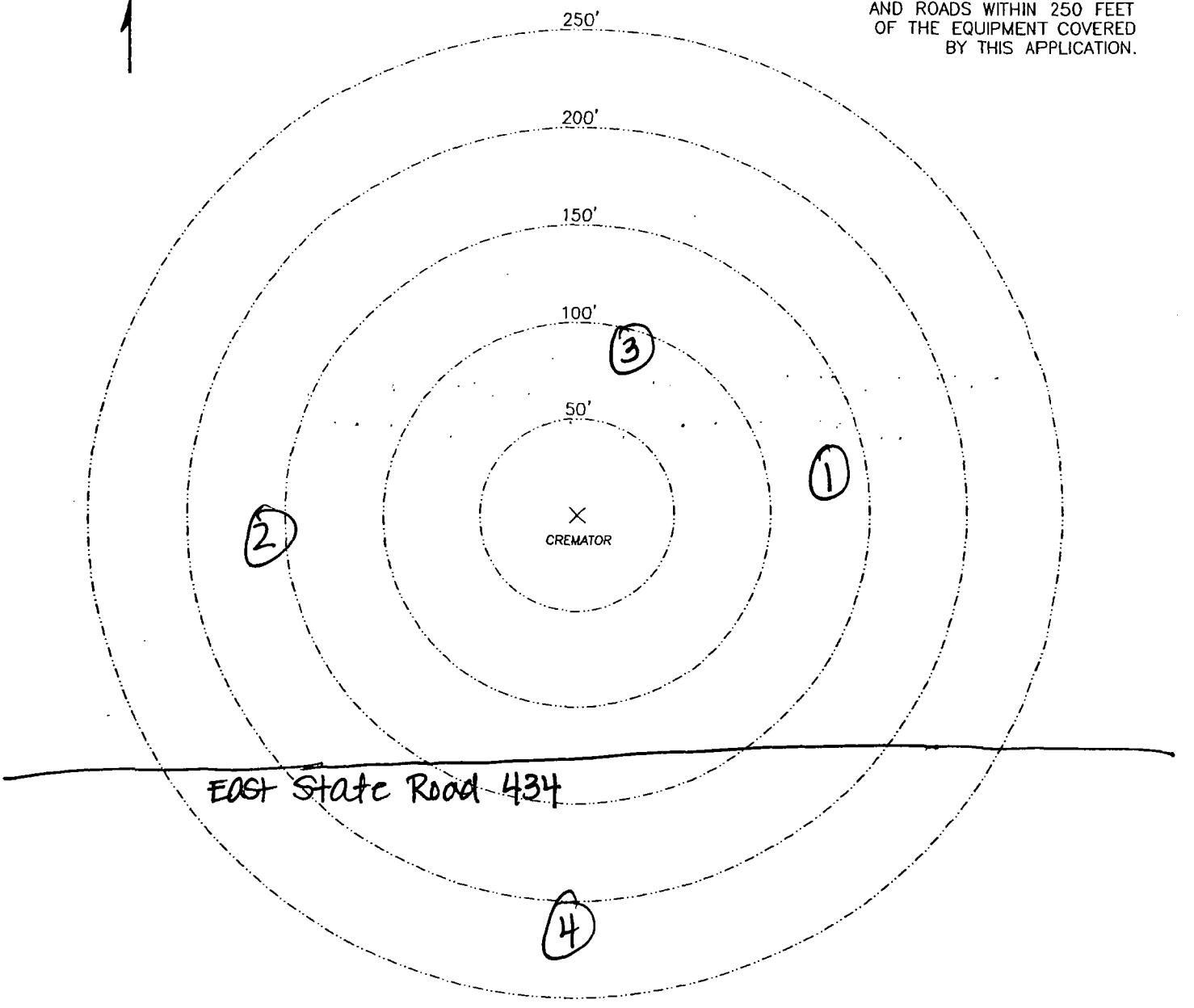
Regards -

Dayna Collison

PLOT PLAN

NORTH

SHOW ALL SURROUNDING BUILDINGS AND ROADS WITHIN 250 FEET OF THE EQUIPMENT COVERED BY THIS APPLICATION.

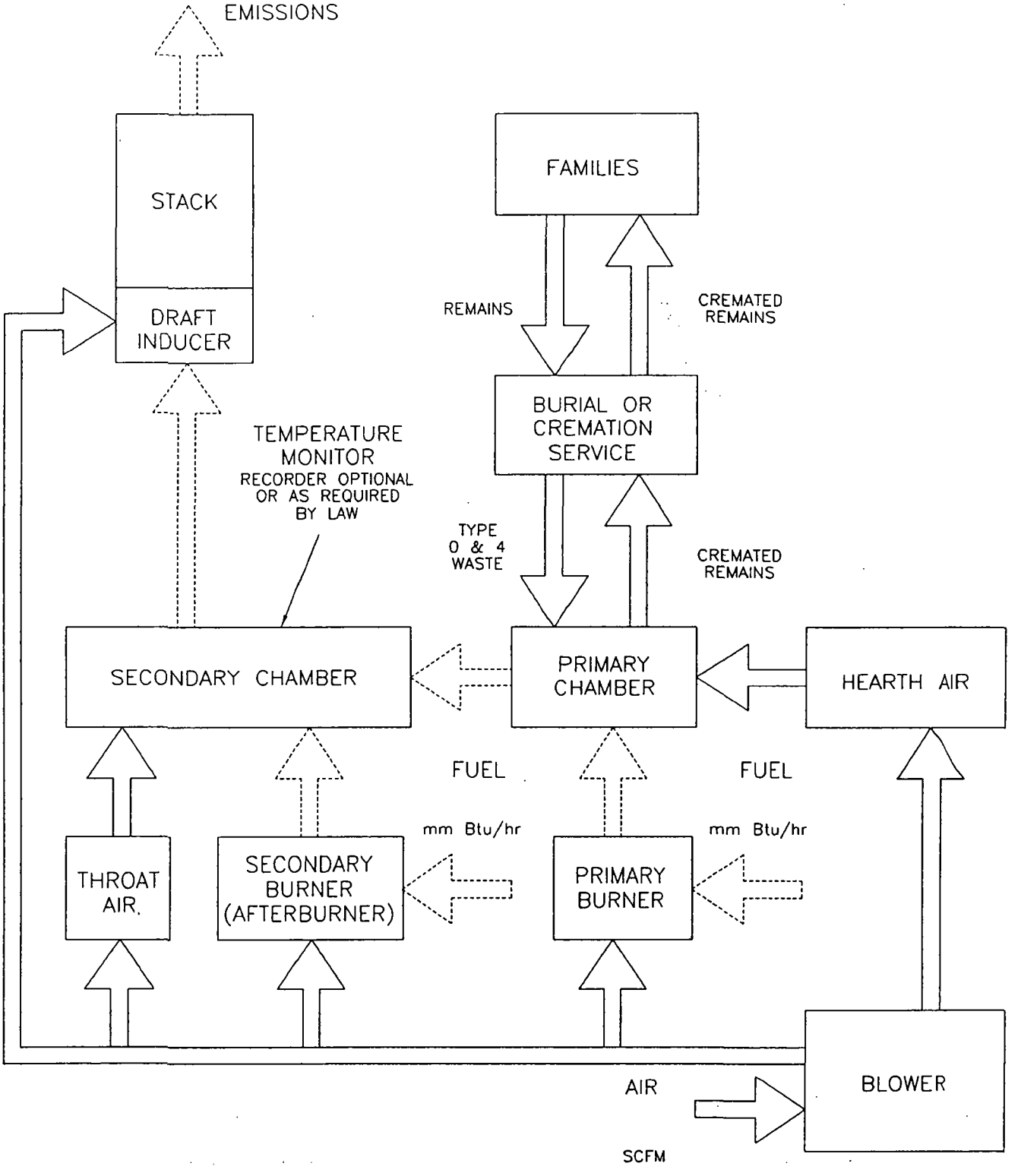


STRUCTURE	DESCRIPTION
(1)	car lot
(2)	Dr. office
(3)	Auto body shop
(4)	self storage
(5)	
(6)	
(7)	
(8)	
(9)	
(10)	

INSTRUCTIONS

1. INDICATE LOCATION AND TYPE OF BUILDING BY THE USE OF SMALL NUMBERED CIRCLES WITH THE DESCRIPTION BELOW.
2. SHOW ROADS AS LINES REPRESENTING THE ROAD EDGES. INDICATE STREET NAMES AND HIGHWAY NUMBERS.
3. SHOW WOODED OR CLEARED AREA BY APPROXIMATE BOUNDARY LINES AND THE WORDS "WOODS," "CLEARED," "CORNFIELD," ETC.

PROCESS FLOW DIAGRAM
CREMATOR



SPECIFICATIONS- Model Power-Pak II

1. Equipment Type	Model Power-Pak II
A. Model No.	IE43-PPII
B. Underwriters Laboratories Listing and File No.	87E8; MH14647
2. Dimensions	
A. Footprint	12' – 6 ½ " x 6' – 8" (3.82 m x 2.03 m)
B. Maximum Length	14' – 8" (4.47 m)
C. Maximum Width	6' -5" (1.96 m)
D. Maximum Height	8' - 4" (2.54 m)
E. Chamber Loading Opening	25 ¾ " H x 39 ½ " W (654 mm x 990 mm)
3. Weight	24,000 lbs. (10,900 kg)
4. Utility/Air Requirements	
A. Gross Gas Input, Natural or LP Gas	2,000,000 BTU/hr. (2,110,112 kJ/h) 3,000,000 BTU/hr. (3,165,168 kJ/h) if operating temperature is greater than 1,600° F (871° C)
Running Gas Pressure, Natural Gas	7 inches (177.8 mm) water column or greater
Running Gas Pressure, LP Gas	11 inches (279.4 mm) water column or greater
B. Electrical Supply	230 volt, 3Ø or 1Ø, 50/60 hz (other available)
C. Air Supply	2,500 cfm (70.8 standard m^3/min)
5. Incineration Capacity	150 lbs./hr. (68 kg/h)
6. Typical Loading Capacity of Waste Types	750 lbs. (340.2 kg)
7. Construction and Safety Standards	Incineration Institute of America, Underwriters Laboratories, Canadian Standards Association
8. Steel Structure Construction	
A. Frame	2" (51 mm) square tubing
B. Front/Rear Plates	3/8" (9.5 mm) plate
C. Floor Plates	3/16" (5 mm) plate
D. Outer Side Casing	12 gauge (3 mm) plate
E. Inner Side Casing	12 gauge (3 mm) plate
9. Stack Construction	
A. Inner Wall	4 1/2" (110 mm) insulating firebrick or castable
B. Outer Wall	12 gauge (3 mm) sheet, 304 s.s., welded seams (unlined stack available)
10. Draft Nozzle Construction	Schedule 40 type 316 s.s. pipe, welded connections
11. Main Chamber Door Construction	
A. Steel Shell	3/16" (5 mm) steel, welded with reinforcement
B. Outer Refractory	1" (25 mm) insulating block
C. Inner Refractory	4½" (110 mm) insulating firebrick

SPECIFICATIONS- Model Power-Pak II

12. Primary Chamber Wall Construction
    - A. Outer Casing Wall ..... 12 gauge (3 mm) sheet
    - B. Inner Frame/Air Compartment ..... 2" (51 mm) air compartment
    - C. Inner Casing Wall ..... 12 gauge (3 mm) sheet
    - D. Outer Refractory Wall ..... 5" (127 mm) insulating block
    - E. Inner Refractory Wall ..... 4½" (114 mm) firebrick

13. Secondary Chamber Wall Construction
    - A. Outer Casing Wall ..... 12 gauge (3 mm) sheet
    - B. Inner Frame/Air Compartment ..... 2" (51 mm) air compartment
    - C. Inner Casing Wall ..... 12 gauge (3 mm) sheet
    - D. Outer Refractory Wall ..... 6" (152 mm) insulating block
    - E. Inner Refractory Wall ..... 4½" (114 mm) firebrick

14. Refractory Temperature Ratings
    - A. Standard Firebrick ..... 3,100° F. (1704° C)
    - B. Insulating Firebrick ..... 2,600° F. (1427° C)
    - C. Castable Refractory (Hearth) ..... 2,550° F. (1399° C)
    - D. Castable Refractory ..... 2,550° F. (1399° C)
    - E. Insulating Block ..... 1,900° F. (1038° C)
    - F. Bonding Mortar ..... 3,200° F. (1760° C)

15. Chamber Volumes (not including external flues, stacks or chimneys)
    - A. Primary Chamber ..... 64 cubic feet (1.8 m^3)
    - B. Secondary Chamber ..... 74 cubic feet (2.1 m^3)

16. Emission Control Features
    - A. Secondary Chamber with Afterburner ..... Included
    - B. Opacity Monitor and Controller with Visual and Audible Alarms ..... Included
    - C. Auxiliary Air Control System ..... Included
    - D. Microprocessor Temperature Control System .... Included

17. Operating Temperatures
    - A. Primary Chamber ..... 1,200° F. - 1,800° F. (649° C - 982° C)
    - B. Secondary Chamber ..... 1,400° F. - 1,800° F. (760° C - 982° C) as required

18. Secondary Chamber Retention Time ..... > 1 second

19. Ash Removal ..... Door functions as a heat shield. Sweep out beneath front door into hopper that fills collection pan.

SPECIFICATIONS- Model Power-Pak II

20. Safety Interlocks
    - A. High Gas Pressure ..... Optional
    - B. Low Gas Pressure ..... Optional
    - C. Blower Air Pressure ..... Included
    - D. Door Position ..... Included
    - E. Opacity ..... Included
    - F. Motor Starter Function ..... Included
    - G. Chamber Temperature ..... Included
    - H. Motor Overload ..... Included
    - I. Flame Quality ..... Included
    - J. Burner Safe Start ..... Included

22. Burner Description ..... The nozzle mix burners used on this cremation equipment are industrial quality and designed for incinerator use.

23. Ultraviolet Flame Detection ..... Ultraviolet flame detection has proven to be the most reliable means of flame safety. The system is completely sealed in a quartz capsule to eliminate problems, caused by moisture and dust created in the cremation process, which effect flame rod detectors.

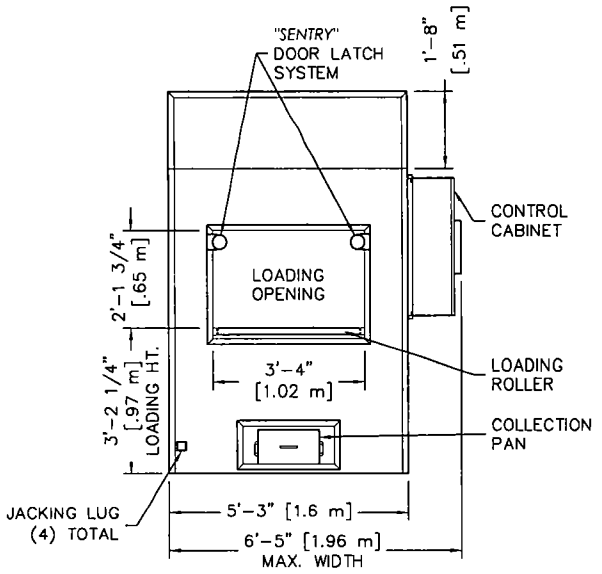
24. Operating Panel Indicating Lights
    - A. Safe Run ..... Included
    - B. Door Closed ..... Included
    - C. Pollution Alarm ..... Included
    - D. Afterburner On (Secondary Burner) ..... Included
    - E. Cremation Burner On ..... Included
    - F. Low Fire Cremation Burner On ..... Included
    - G. Afterburner (Secondary Burner) Reset ..... Included
    - H. Cremation Burner Reset ..... Included
    - I. Hearth Air ..... Included
    - J. Throat Air Off ..... Included

25. Automatic Timer Functions
    - A. Master Cycle ..... Included
    - B. Afterburner (Secondary Burner) ..... Included
    - C. Cremation Burner ..... Included
    - D. Low Fire Cremation Burner ..... Included
    - E. Hearth Air ..... Included
    - F. Throat Air ..... Included
    - G. Pollution Monitoring ..... Included
    - H. Afterburner (Secondary Burner) Prepurge ..... Included
    - I. Cremation Burner Prepurge ..... Included
    - J. Cool Down ..... Included

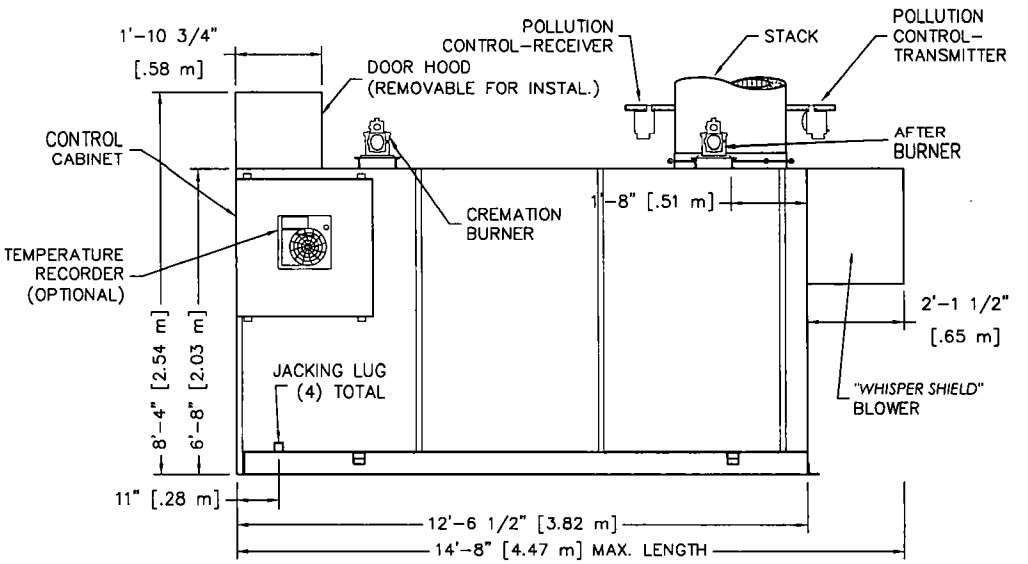
26. Exterior Finish
    - A. Primer ..... 2 coats rust inhibiting
    - B. Finish ..... 2 coats textured finish

SPECIFICATIONS- Model Power-Pak II

27.	Start-Up and Training.....	Startup of cremation equipment and training of operators to properly operate and maintain the equipment is performed on-site under actual operating conditions. Included is a comprehensive owner's manual, with details on the equipment, its components and proper operation.
28.	Environmental Submittals	Complete technical portion of state environmental permits. Engineering calculations, technical data, existing stack test results and equipment blueprints provided.



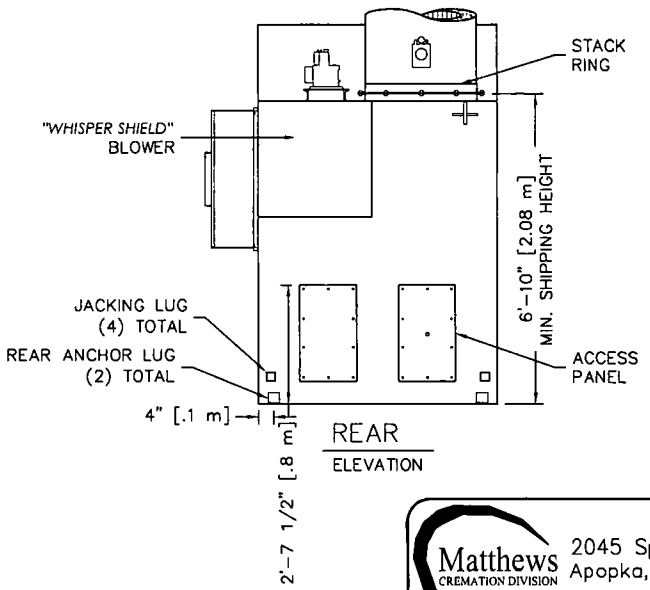
FRONT ELEVATION



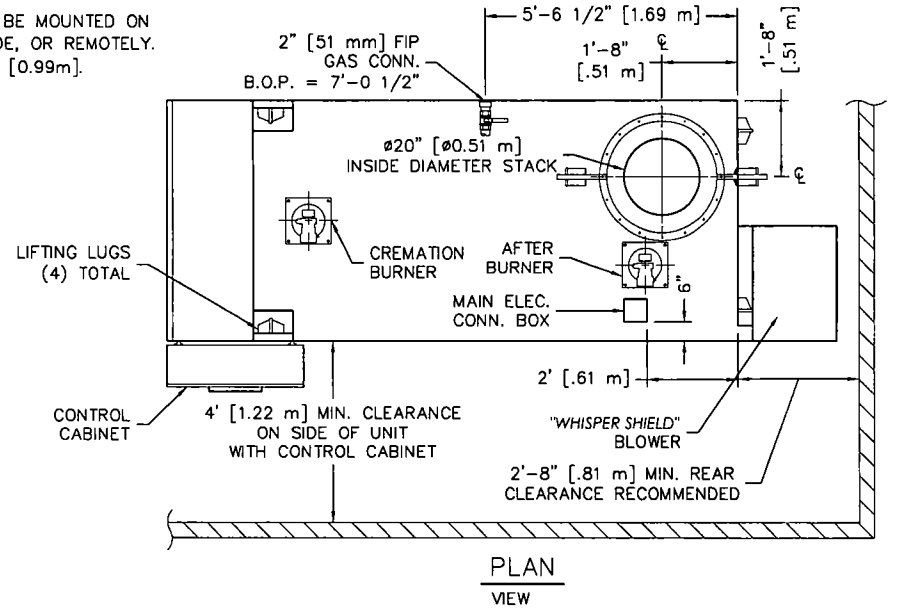
RIGHT SIDE ELEVATION

NOTES:

1) CONTROL CABINET CAN BE MOUNTED ON THE LEFT OR RIGHT SIDE, OR REMOTELY.
2) CHAMBER WIDTH IS 39" [0.99m].



REAR ELEVATION



PLAN VIEW

Matthews CREMATION DIVISION
2045 Sprint Boulevard
Apopka, Florida 32703
USA

POWER-PAK II

PLAN & ELEVATIONS INCL: CLEARANCES, REQUIREMENTS & RECOMMENDATIONS

DATE:	08-03-09	SCALE:	1/4"=1'
DRAWN:	JG	PLOT SCALE:	1:48
APRVD:		SHEET:	1 OF: 2
DWG FILE:	PPII-MarketingPlanElevS1R5		
DWG #:	0000140		

CREMATOR CLEARANCES

	RECOMMENDED		MINIMUM	
TOP: (2)	2 FEET	[610 mm]	6 INCHES	[152 mm]
CABINET SIDE:	4 FEET	[1.22 m]	4 FEET	[1.22 m]
OTHER SIDE:	2 FEET	[610 mm]	6 INCHES	[152 mm]
FRONT:	9 FEET	[2.74 m]	8 FEET	[2.44 m]
REAR:	3 FEET	[0.91 m]	32 INCHES	[812 mm]
STACK:	6 INCHES	[152 mm]	6 INCHES	[152 mm]

1. FOR CLEARANCES OTHER THAN THOSE SHOWN, OR FOR SPECIAL REQUIREMENTS, CONSULT YOUR MCD REP.
2. FROM HIGHEST POINT ON UNIT.
3. CONTROL CABINET MOUNTS ON UNIT'S LEFT OR RIGHT SIDES, OR REMOTELY. (SEE PLAN VIEW, SHEET 1).
4. REAR OF UNIT REFERS TO THE "BACK PLATE", RATHER THAN THE BACK OF THE "WHISPER SHIELD". (SEE PLAN VIEW, SHEET 1).

CREMATOR REQUIREMENTS

FUEL: A PRESSURE REGULATOR ADJUSTABLE TO 7" [178 mm] W.C. FOR NATURAL GAS, OR 11" [279 mm] W.C. FOR LP GAS.

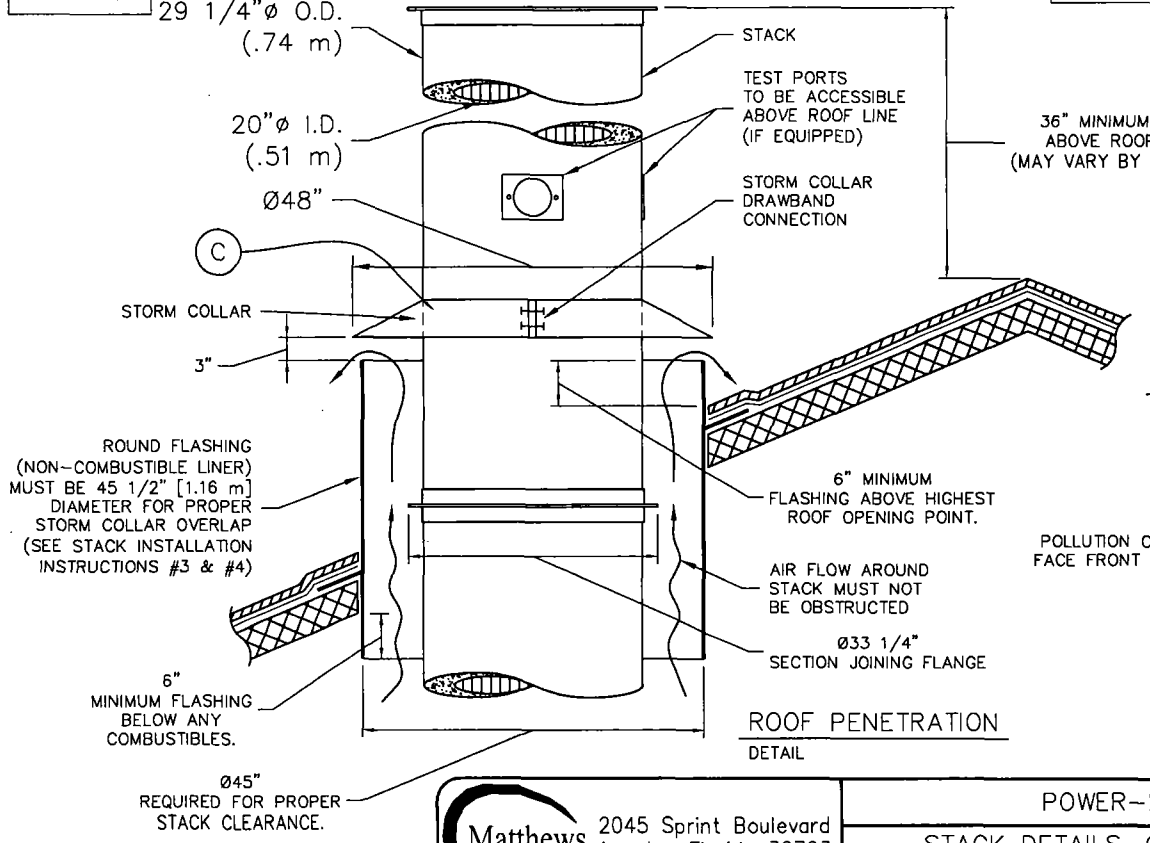
CAPACITY: RANGES FROM 2.0 TO 3.0 MILLION BTU/HR [2.1 TO 3.1 MILLION KILOJOULES/HR] DEPENDING UPON AMOUNT OF BURNERS.

ELECTRICAL: 230 VOLT, 3ø, (40A BREAKER) AND 115v (10A BREAKER), OR 230 VOLT, 1ø, (70A BREAKER) AND 115v (10A BREAKER) 50/60 HERTZ

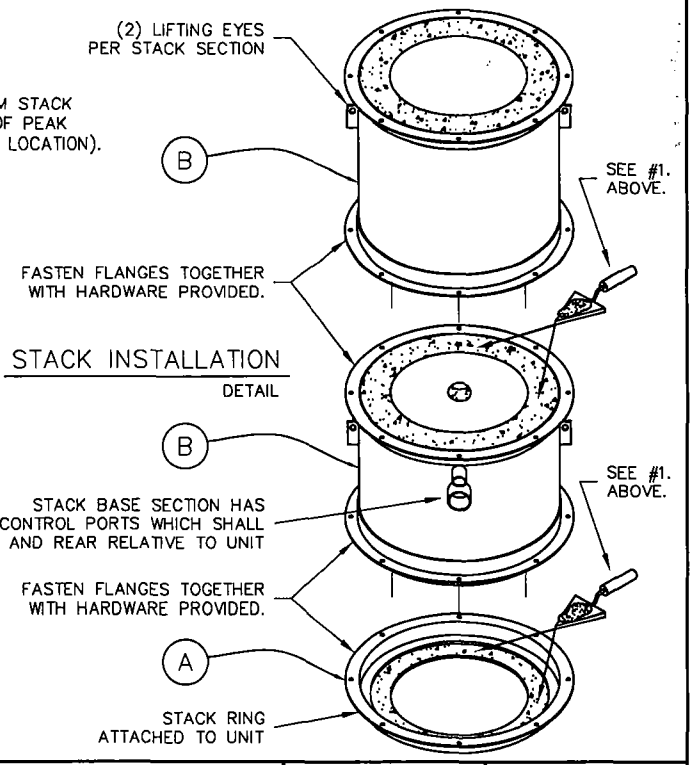
AIR: LOUVER NEAR THE REAR OF THE UNIT CAPABLE OF PASSING 2,500 CU FT/MIN [70.8 CU M/MIN] OF FREE AIR (36" X 36") [914 mm X 914 mm].

STACK INSTALLATION INSTRUCTIONS

1. APPLY A 1/2" THICK MORTAR JOINT TO EXPOSED REFRACTORY SURFACE IN STACK RING. LOWER THE BASE STACK SECTION (B) ONTO STACK RING (A) AND FASTEN WITH HARDWARE PROVIDED (NO MORE THAN (2) STACK SECTIONS SHALL BE LIFTED TOGETHER). REPEAT PROCESS FOR REMAINING STACK SECTIONS. IF SECTIONS OF VARYING LENGTHS ARE SUPPLIED, ASSEMBLE AS TO AVOID FLANGES & LIFTING EYES INTERFERING WITH RAIN COLLAR LOCATION.
2. INSTALL STORM COLLAR ON STACK, 3" [76 mm] ABOVE NON-COMBUSTIBLE LINER (FLASHING), ALLOWING FOR PROPER VENTILATION (SEE DETAIL).
3. APPLY A 1/4" [6 mm] BEAD OF HIGH-TEMPERATURE SILICON SEALANT (PROVIDED BY MCD) TO THE JOINT BETWEEN THE STORM COLLAR (C) AND THE STACK (B).
4. STORM COLLAR IS FURNISHED BY MCD. THE NON-COMBUSTIBLE LINER (FLASHING) TO BE PROVIDED BY THE OTHERS.
5. IF FIFTY PERCENT OF THE STACK LENGTH IS ABOVE THE ROOF, GUY WIRES MAY BE REQUIRED. CONSULT WITH YOUR MCD REP.
6. RAIN CAP NOT REQUIRED.



ROOF PENETRATION
DETAIL



STACK INSTALLATION
DETAIL

Matthews CREMATION DIVISION
2045 Sprint Boulevard
Apopka, Florida 32703
USA

POWER-PAK II

STACK DETAILS, CLEARANCES & INSTALLATION INSTRUCTIONS.
REFRACTORY STACK DETAIL

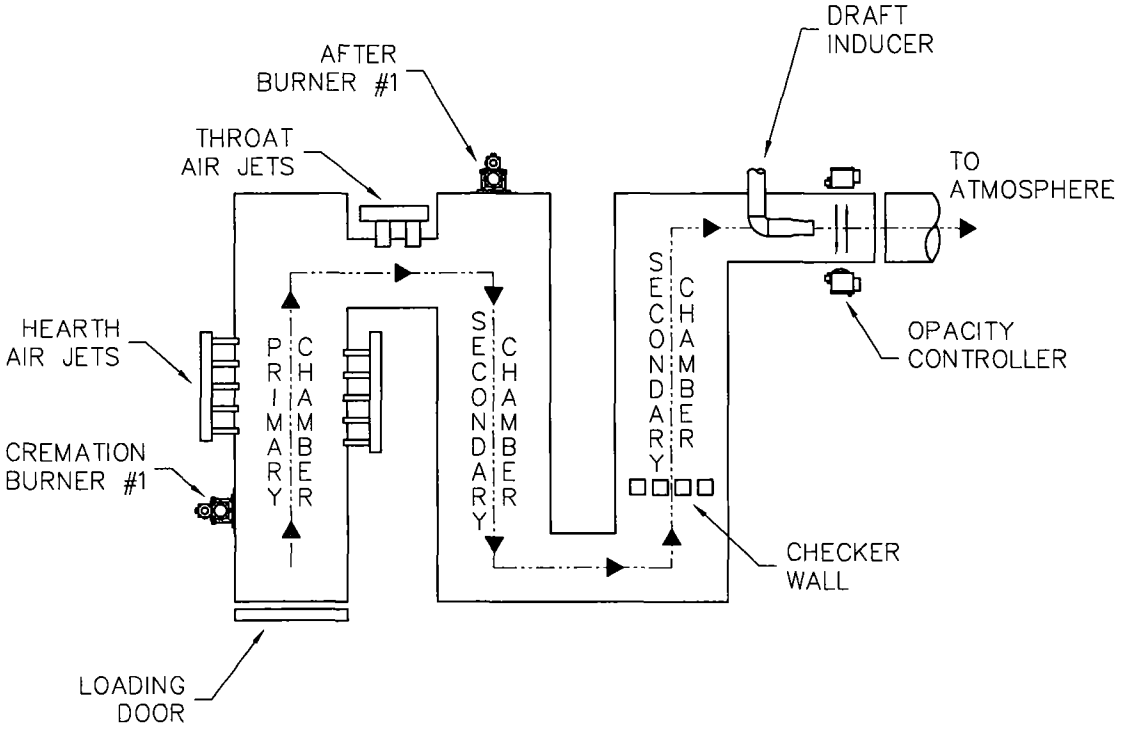
DATE:	08-18-05	SCALE:	1/2"=1'
DRAWN:	JG	PLOT SCALE:	1:24
APRVD:		SHEET: 2	OF: 2
DWG FILE:	PPII-MarketingStackRefS2R2		
DWG #:	0000140		

LEGEND OF SYMBOLS

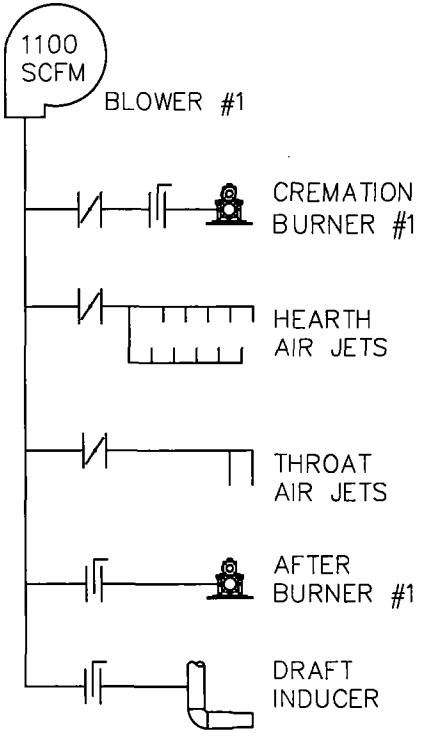
BUTTERFLY VALVE (ON/OFF)

FIXED BLADE BUTTERFLY DAMPER

FLOW DIAGRAM



AIR SCHEMATIC



Matthews CREMATION DIVISION

2045 Sprint Boulevard
Apopka, Florida 32703
USA

POWER PAK II

FLOW DIAGRAM
& AIR SCHEMATIC

DATE:	08-05-05	SCALE:	1/4"=1'
DRAWN:	JG	PLOT SCALE:	1:48
APRVD:		SHEET: 1	OF: 1
DWG FILE:		PPIIFlowDiaAirSchem	
DWG #:		0000523	

Calculation Of Emissions

Potential to Emit

Matthews Cremation Division (MCD)
(formerly Industrial Equipment and Engineering Company (IEE))
Crematory Incinerator Model IE43-PPII

Total Incenerator Burn Capacity: 150 lb/hr of remains (type 4) and associated containers (type 0)
Flue gas flow rate = 1175 dscfm 12 Hours/Day X 6 Days/Week X 52 Weeks/Year
(100 % Excess Air) = 3744 Hours/Year

Total Emission Rate = Incinerator Burn Rate X Emission Factor

Sulfer Dioxide (SO_2)

$$\frac{150 \text{ lb/hr} \times 2.5 \text{ lb/ton} \times 1 \text{ ton}}{2000 \text{ lbs}} = 0.188 \text{ lb/hr} = 0.351 \text{ TPY}$$

$$\frac{0.1875 \text{ lb/hr} \times 4.54E{+}05 \text{ mg/lb} \times 1 \text{ ppmv}}{1175 \text{ dscfm} \times 60 \text{ min/hr} \times 0.0283 \text{ m}^3/\text{f}^3 \times 2.61 \text{ mg/m}^3} = 16.35 \text{ ppmv}$$

Nitrogen Oxide (NOx - as Nitrogen Dioxide)

$$\frac{150 \text{ lb/hr} \times 3 \text{ lb/ton} \times 1 \text{ ton}}{2000 \text{ lbs}} = 0.225 \text{ lb/hr} = 0.4212 \text{ TPY}$$

$$\frac{0.225 \text{ lb/hr} \times 4.54E{+}05 \text{ mg/lb} \times 1 \text{ ppmv}}{1175 \text{ dscfm} \times 60 \text{ min/hr} \times 0.028 \text{ m}^3/\text{f}^3 \times 1.88 \text{ mg/m}^3} = 27.53 \text{ ppmv}$$

Hydrocarbons (TOC/VOC - methane)

$$\frac{150 \text{ lb/hr} \times 3 \text{ lb/ton} \times 1 \text{ ton}}{2000 \text{ lbs}} = 0.225 \text{ lb/hr} = 0.4212 \text{ TPY}$$

$$\frac{0.225 \text{ lb/hr} \times 4.54E{+}05 \text{ mg/lb} \times 1 \text{ ppmv}}{1175 \text{ dscfm} \times 60 \text{ min/hr} \times 0.0283 \text{ m}^3/\text{f}^3 \times 0.65 \text{ mg/m}^3} = 78.77 \text{ ppmv}$$

Lead (Pb) (6.62E-05 lbs/cremation)

$$\frac{150 \text{ lb/hr} \times 0.0000662 \text{ lb Pb}}{100 \text{ lb}} = 1E{-}04 \text{ lb/hr} = 0.0002 \text{ TPY}$$

Particulates (PM & PM_{10}) (Actual Levels lower as shown by test results)

$$\frac{150 \text{ lb/hr} \times 7 \text{ lb/ton} \times 1 \text{ ton}}{2000 \text{ lbs}} = 0.525 \text{ lb/hr} = 0.9828 \text{ TPY}$$

$$\frac{0.525 \text{ lb/hr} \times 7.00E{+}03 \text{ gr/lb}}{1175 \text{ dscfm} \times 60 \text{ min/hr}} = 0.05 \text{ gr/dscf}$$

Carbon Monoxide (CO) (Actual Levels lower as shown by test results)

$$\frac{150 \text{ lb/hr} \times 10 \text{ lb/ton} \times 1 \text{ ton}}{2000 \text{ lbs}} = 0.75 \text{ lb/hr} = 1.404 \text{ TPY}$$

$$\frac{0.75 \text{ lb/hr} \times 4.54E{+}05 \text{ mg/lb} \times 1 \text{ ppmv}}{1175 \text{ dscfm} \times 60 \text{ min/hr} \times 0.028 \text{ m}^3/\text{f}^3 \times 1.14 \text{ mg/m}^3} = 151.31 \text{ ppmv}$$

Notes:
1. Incinerator Emissions based on EPA emissions from Table 2.1-12 of AP-42 (5th Edition)
2. All conversion factors from AP-42 Appendix A.

CREMATOR MASS BALANCE

Matthews Cremation

PPII

THESE CALCULATIONS HAVE BEEN PREPARED TO EVALUATE THE COMBUSTION PROCESS IN THIS UNIT.

THE INCINERATOR INSTITUTE OF AMERICA HAS PUBLISHED THE FOLLOWING SPECIFICATIONS COVERING AVERAGE WASTES.

WASTE TYPE	TYPE 0	TYPE 4
BTU PER POUND	8500	1000
POUND ASH PER POUND WASTE	0.05	0.05
POUND MOISTURE PER POUND WASTE	0.1	0.85
POUND COMBUSTIBLES PER POUND WASTE	0.85	0.1
HOURLY CONSUMPTION OF WASTE (LBS)	10	140

1. MASS OF PRODUCTS OF COMBUSTION FROM CONTAINER

A. COMBUSTION AIR

$$\frac{8500 \text{ BTU/LB}}{100 \text{ BTU/CF OF AIR*}} \times 0.075 \text{ LB/CF OF AIR} = 6.38 \text{ LB/LB BURNED}$$

B. COMBUSTIBLES AND WATER VAPOR FROM CHART ABOVE = 0.95 LB/LB BURNED

C. TOTAL FLUE PRODUCT MASS PER LB BURNED = 7.33 LB/LB BURNED

2. MASS OF PRODUCTS OF COMBUSTION FROM BODY

A. COMBUSTION AIR

$$\frac{1000 \text{ BTU/LB}}{100 \text{ BTU/CF OF AIR*}} \times 0.075 \text{ LB/CF OF AIR} = 0.75 \text{ LB/LB BURNED}$$

B. COMBUSTIBLES AND WATER VAPOR FROM CHART ABOVE = 0.95 LB/LB BURNED

C. TOTAL FLUE PRODUCT MASS PER LB BURNED = 1.70 LB/LB BURNED

SPECIFICATIONS	
PRIMARY BURNER FUEL CONSUMPTION (MMBTU/HR)	0.5
SECONDARY BURNER FUEL CONSUMPTION (MMBTU/HR)	0.9
ADDITIONAL SECONDARY AIR SUPPLIED (CFM)	200
SEC. CHAMBER OPERATING TEMPERATURE (°F)	1800
SECONDARY CHAMBER VOLUME (CU. FT)	74
SEC. CHAMB. CROSS-SECTIONAL AREA (SQ. FT)	2.44
FLAME PORT AREA (SQ. FT)	2.95
MIXING BAFFLES AREA (SQ. FT)	1.36

*AIR AT STANDARD CONDITIONS

3. TOTAL FLUE PRODUCTS

A. MAXIMUM PRIMARY BURNER GAS USAGE

500000 BTU/HR x 4.8E-05 LBS/BTU = 24 LBS/HR

B. COMBUSTION AIR FOR PRIMARY BURNER

$$\frac{500000 \text{ BTU/HR}}{100 \text{ BTU/CF AIR}} \times \frac{1}{\text{Burner}} \times 0.075 \text{ LB/CF AIR} = 375 \text{ LBS/HR}$$

C. MAXIMUM SECONDARY BURNER GAS USAGE

900000 BTU/HR x 4.8E-05 LBS/BTU = 43 LBS/HOUR

D. COMBUSTION AIR FOR SECONDARY BURNER

900000 BTU/HR / 100 BTU/CF AIR x 1 Burner x 0.075 LB/CF AIR = 675 LBS/HOUR

E. PRODUCTS FROM TYPE 0 WASTE (CONTAINER)

7.33 LBS/LB BURNED x 10 LB/HR BURN RATE = 73 LBS/HOUR

F. PRODUCTS FROM TYPE 4 WASTE (TISSUE)

1.70 LBS/LB WASTE x 140 LB/HR BURN RATE = 238 LBS/HOUR

G. ADDITIONAL SECONDARY CHAMBER COMBUSTION AIR (THROAT AIR)

12000 CF/HR* x 0.075 LB/CF AIR = 900 LBS/HOUR

H. TOTAL FLUE PRODUCTS = 2328 LBS/HOUR

2. VELOCITY AND TIME CALCULATIONS

A. SCFM CALCULATION (PRODUCTS ASSUMED TO HAVE DENSITY CLOSE TO AIR)

2328 LBS/HR x 13.35 STD. CU. FT/LB / 60 MIN/HR = 518 SCFM

B. TOTAL PRODUCTS ACFM @ 1800 °F

2260 °RANKINE / 530 °RANKINE x 518.1 CFM = 2209 ACFM

C. RETENTION TIME

74 CU. FT / 2209 ACFM x 60 SECONDS / 1 MINUTE = **2.01 SECONDS**

D. VELOCITY IN FLAME PORT

2209 ACFM / 2.95 SQ. FT x 1 MINUTE / 60 SECONDS = 12.5 FEET/SECOND

E. VELOCITY AT MIXING BAFFLES

2209 ACFM / 1.36 SQ. FT x 1 MINUTE / 60 SECONDS = 27.1 FEET/SECOND

F. VELOCITY IN SECONDARY CHAMBER

2209 ACFM / 2.44 SQ. FT x 1 MINUTE / 60 SECONDS = 15.1 FEET/SECOND

Prepared for:

Mr. William Sucharski
Manager
Philadelphia Crematories, Inc.
7350 State Road
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Submitted to:

Mr. Ramesh Mahadevan
Environmental Engineer
Philadelphia Department of Health
Air Management Services
500 South Broad Street
Philadelphia, Pennsylvania 19146

Submitted: September 2010

1.0 Introduction

AirNova, inc. conducted an emission compliance test program at the Philadelphia Crematories, Inc. facility located in Philadelphia, Pennsylvania on August 25, 2010. Emission sampling was conducted to determine emissions from one (1) human crematory incinerator in operation at this site. The unit is identified as Furnace A. The emission testing was performed in determination of particulate matter for the purpose of demonstrating compliance with regulations specified by Philadelphia Air Management Services (AMS) Installation Permit regulations. Previous testing conducted on May 20, 2010 indicated that Furnace A exceeded the particulate matter emission limit of 0.03 gr/DSCF @7% O_2.

AirNova, Inc. was responsible for all on-site sampling, sample analysis and for the submittal of the final test report. The report which follows provides a description of the source, the sampling location and a discussion of all test methodologies and analytical techniques employed in the completion of this test program. Any questions pertaining to the information provided herein may be addressed to:

Mark D. Daly
AirNova, Inc.
5845 Clayton Avenue
Telephone: (856) 486-1500
Telefax: (856) 486-9896
E-mail: daly@airnova.com

2.0 Source Description

The emission source under evaluation includes one (1) IEE Power- Pak II crematory incinerator. The incineration system consists of primary and secondary combustion chambers which are each fired by natural gas only. The waste stream consists solely of human remains and associated materials. Waste is charged to the incinerator at a maximum capacity of 100 pounds per hour. Details regarding the emission sampling location are provided below.

2.1 Test Port Location - Furnace A

The exhaust stack is 20 inches in diameter. Two (2) test ports situated at 90° apart and located 157-inches (7.9 duct diameters) downstream and 102-inches (5.1 duct diameters) upstream from the nearest flow disturbances were utilized for all sampling. The traverse points utilized across each diameter are provided below in Table 2-1.

Table 2-1
Philadelphia Crematories, Inc.
Emission Compliance Test Program
Traverse Point Locations
Furnace A

Point No.	% of Diameter	Location (inches)
1	2.1	0.5*
2	6.7	1.3
3	11.8	2.4
4	17.7	3.5
5	25.0	5.0
6	35.6	7.1
7	64.4	12.9
8	75.0	15.0
9	82.3	16.5
10	88.2	17.6
11	93.3	18.7
12	97.9	19.5*

* Relocated in accordance with EPA Reference Method 1, Section 11.3.2.1

3.0 Summary of Test Results

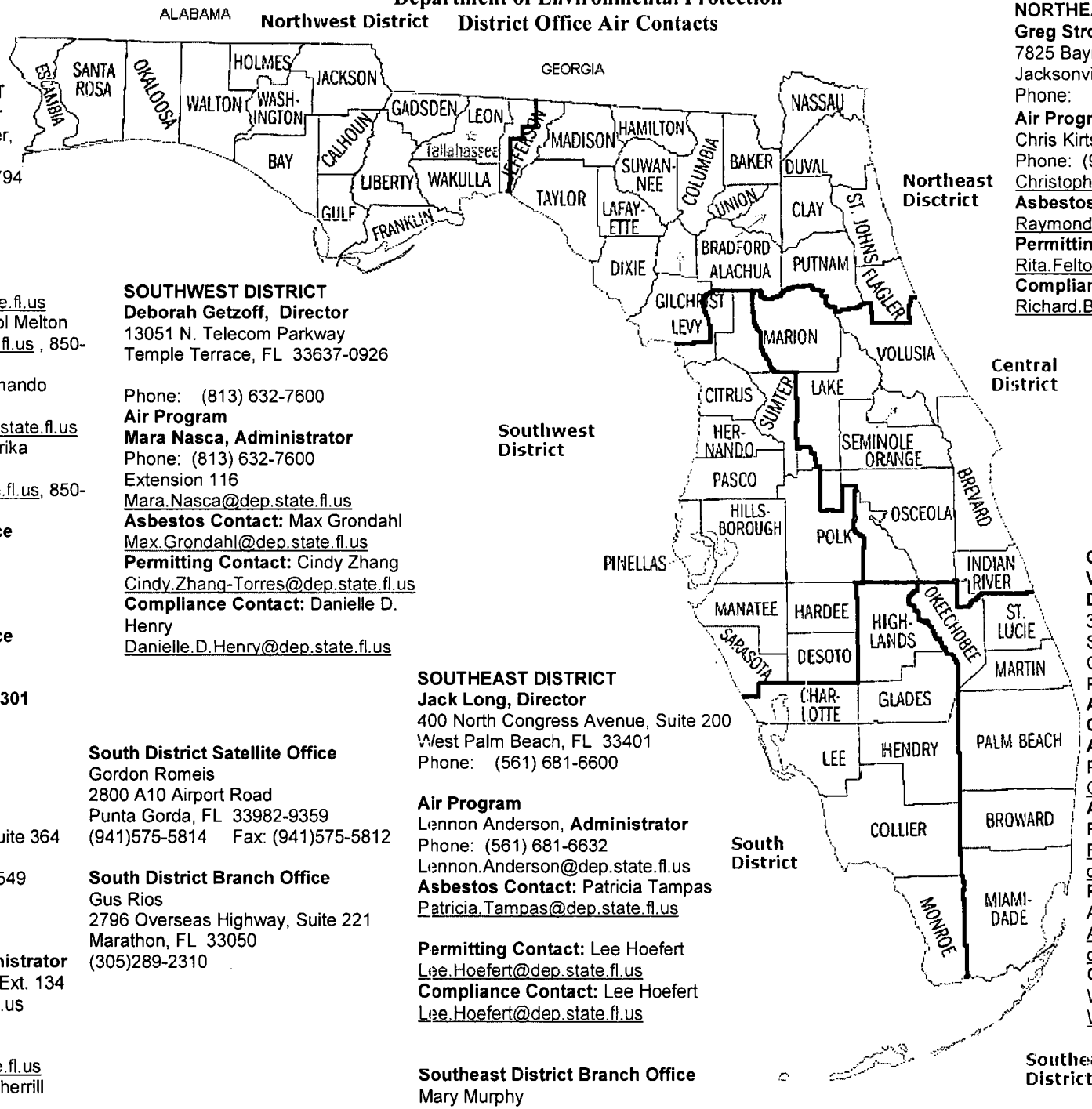
A complete summary of results for the test program conducted at the Philadelphia Crematories, Inc. facility for Furnace A is provided in tabular format below in Table 3-1.

Table 3-1
Philadelphia Crematories, Inc.
Emission Test Data Summary
Crematory Incinerator - Furnace A

Run No.	1	2	3	Average	AMS Permit Limit
Date	8/25/10	8/25/10	8/25/10		
Time Period	0935-1039	1215-1319	1535-1638		
Temperature (°F)	989	927	1,015	977	
Moisture Content (%)	12.9	7.0	15.7	11.9	
Velocity (fps)	19.5	15.7	16.7	17.3	
Flow Rate (ACFM)	2,554	2,061	2,182	2,266	
Flow Rate (DSCFM)	812	732	660	735	
Oxygen (%-dry)	10.2	10.1	10.0	10.1	
Carbon Dioxide (%-dry)	7.2	7.0	7.0	7.1	
Particulate Matter					
Concentration (gr/DSCF)	0.022	0.011	0.066	0.033	—
Concentration (gr/DSCF @ 7% O_2)	0.029	0.015	0.084	0.043	0.03
Emission Rate (lb/hr)	0.15	0.07	0.37	0.20	—

Standard Conditions: 68°F, 29.92 in. Hg

Department of Environmental Protection
District Office Air Contacts



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8/03/10

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Windermere FL 34786

TO FDEP Receipts
Attn: Dick Dibble
PO BOX 3070
Tallahassee FL 32315

Label 228, January 2008

Dibble, Dickson

Subject:	Processed AIRS ID# 1170411-001, COLLISON HOLDING COMPANY dba COLLISON FAMILY FUNERAL HOME & CREMATORY, 335 E SR 434, LONGWOOD, FL 32750-5217
Location:	HUMAN CREMATORY-Longwood
Start:	Wed 6/15/2011 12:00 AM
End:	Thu 6/16/2011 12:00 AM
Show Time As:	Free
Recurrence:	(none)
Organizer:	Dibble, Dickson
Categories:	PENDING

PENDING

06/15/11, 1525 hrs-left VM message (407) 509-1180

1) Need Unit S/N
2) Fuel type

1535 hrs-Dana Collison (wife of Gregory) called back and will retrieve info from Matthews and send via e-mail.
1550 hrs-Dana Collison called back with the following info:

1) Unit has not been built yet by Matthews so no S/N is available as of this moment-she will send as soon as unit is built and when Matthews advises her of the number.
2) Fuel type is Natural Gas-she will send above info now in e-mail and S/N later.