F & A Receipt
Aug 10 2011

1070038

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)*

1070038-005

Registration Type

Check one:

INITIAL REGISTRATION - Notification of intent to:

- ☐ 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):
  General Air Permit
- ☐ 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.)

Putnam Crematory, Inc.

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.)

Putnam Crematory

Facility Location (Provide the physical location of the facility, not necessarily the mailing address.)

Street Address: 1235 Hwy 20 West

City: Interlachen County: Putnam Zip Code: 32148

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

September 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: Stephen D. Overturf - President

Owner/Authorized Representative Mailing Address
Organization/Firm: Putnam Crematory, Inc.
Street Address: 307 S. Palm Ave.
City: Palatka County: Putnam Zip Code: 32148

Owner/Authorized Representative Telephone Numbers
Telephone: (386) 325-4521 Fax: (386) 325-3288
Cell phone (optional): (386) 937-0155

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: same

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.

Stephen D. Overturf
Signature

8/8/11
Date

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

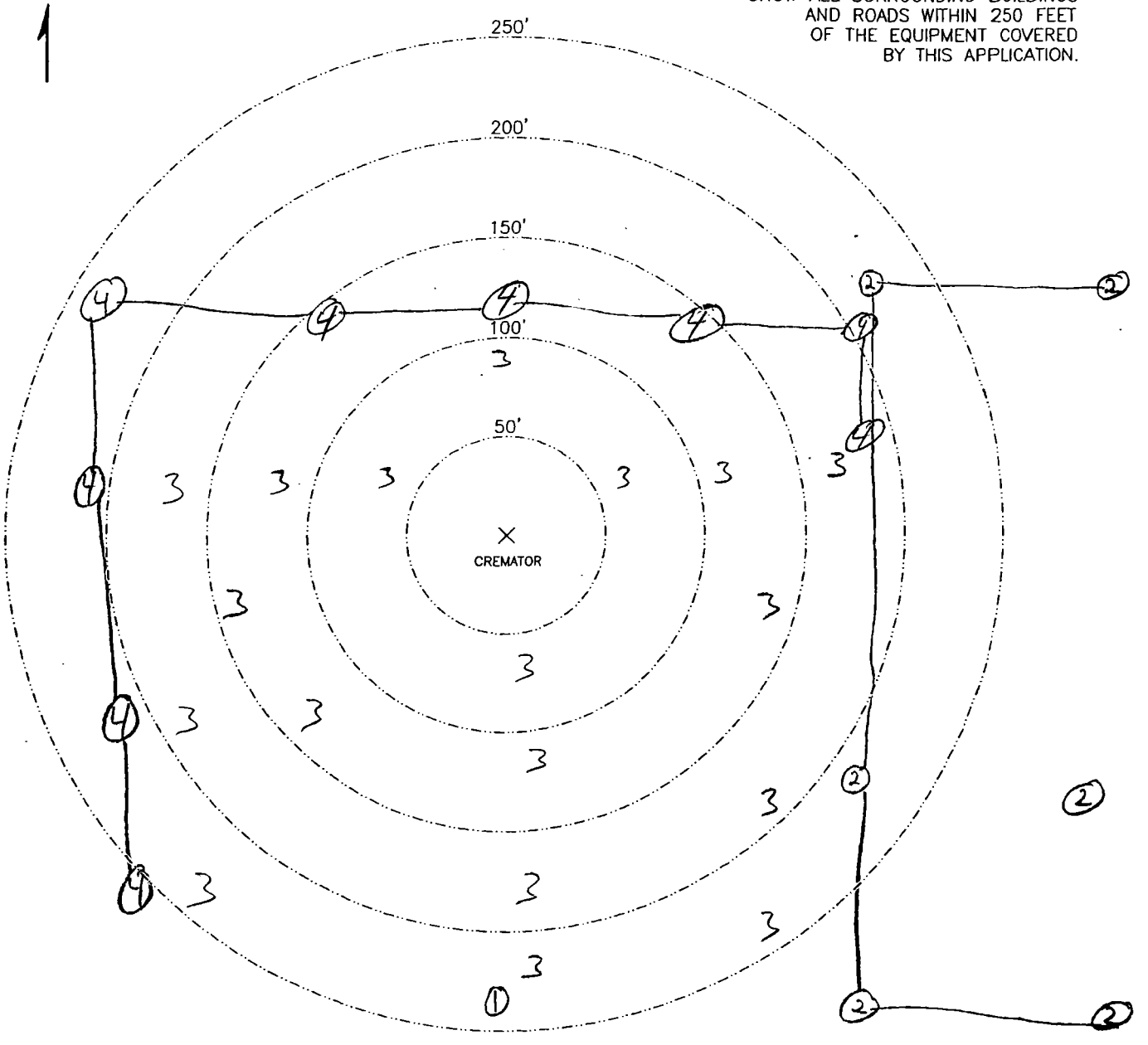
Below, or as an attachment to this form, provide a description of all crematory operations at the facility in sufficient detail to demonstrate the facility's eligibility for use of this air general permit and to provide a basis for tracking any future equipment or process changes at the facility. Describe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

Installation of new Super Power Pak III human cremation unit at existing facility that will replace existing 1996 Power Pak II.
See attached process flow diagram

PLOT PLAN

NORTH

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



STRUCTURE DESCRIPTION

(1) Funeral Home
(2) PineView Cemetery
(3) Clear Land
(4) Wooded Areas
(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.

524194 AUG10 2011

Department of Environmental Protection

Division of Air Resource Management

RECEIVED
AUG 11 2011
BUREAU OF AIR REGULATION

HUMAN CREMATORY AIR GENERAL PERMIT REGISTRATION FORM

Part I. Procedures and Conditions for Use of Air General Permit

The Department of Environmental Protection ("Department" or "DEP") has established an "air general permit" at Florida Administrative Code ("F.A.C.") Rule 62-210.310(5)(c) for human crematories. An air general permit is an authorization by rule to construct or operate a specific type of air pollutant emitting facility. Use of such authorization by any individual facility does not require action by the Department. The terms and conditions of the air general permit are set forth in the rule, rather than in a separately issued air construction or air operation permit.

The owner or operator of an eligible facility comprising one or more human crematories may register to use the air general permit at Rule 62-210.310(5)(c), F.A.C., by following the general procedures given at Rule 62-210.310(2), F.A.C., the text of which is provided below. The owner or operator shall notify the Department of the facility's intent to use this general permit by submitting Part II of this registration form to the appropriate Department of Environmental Protection or local air pollution control program office which has permitting authority. Questions concerning this air general permit or the registration process may be directed to any such office or to the Department's small business assistance program at 1-800-SBAP-HLP (1-800-722-7457).

The owner or operator of a facility who properly registers to use this air general permit, and who is not denied use of the air general permit by the Department, is authorized to construct and operate the facility in accordance with the general terms and conditions of Rule 62-210.310(3), F.A.C., and the specific terms and conditions of Rule 62-210.310(5)(c), F.A.C. The text of these two rules is also provided below, followed by definitions of words and phrases used in the rules and on this form. A facility using this air general permit shall not be entitled to use more than one air general permit for the facility.

Rule 62-210.310(2), F.A.C.

(2) General Procedures. This subsection sets forth general procedures for use of any of the air general permits provided at subsections 62-210.310(4) and (5), F.A.C.

(a) Determination of Eligibility. The owner or operator of a proposed new or existing facility shall determine the facility's eligibility to use an air general permit under this rule. A facility is eligible to use an air general permit under this rule if it meets any specific eligibility criteria given in the applicable air general permit at subsection 62-210.310(4) or (5), F.A.C., and the following general criteria.

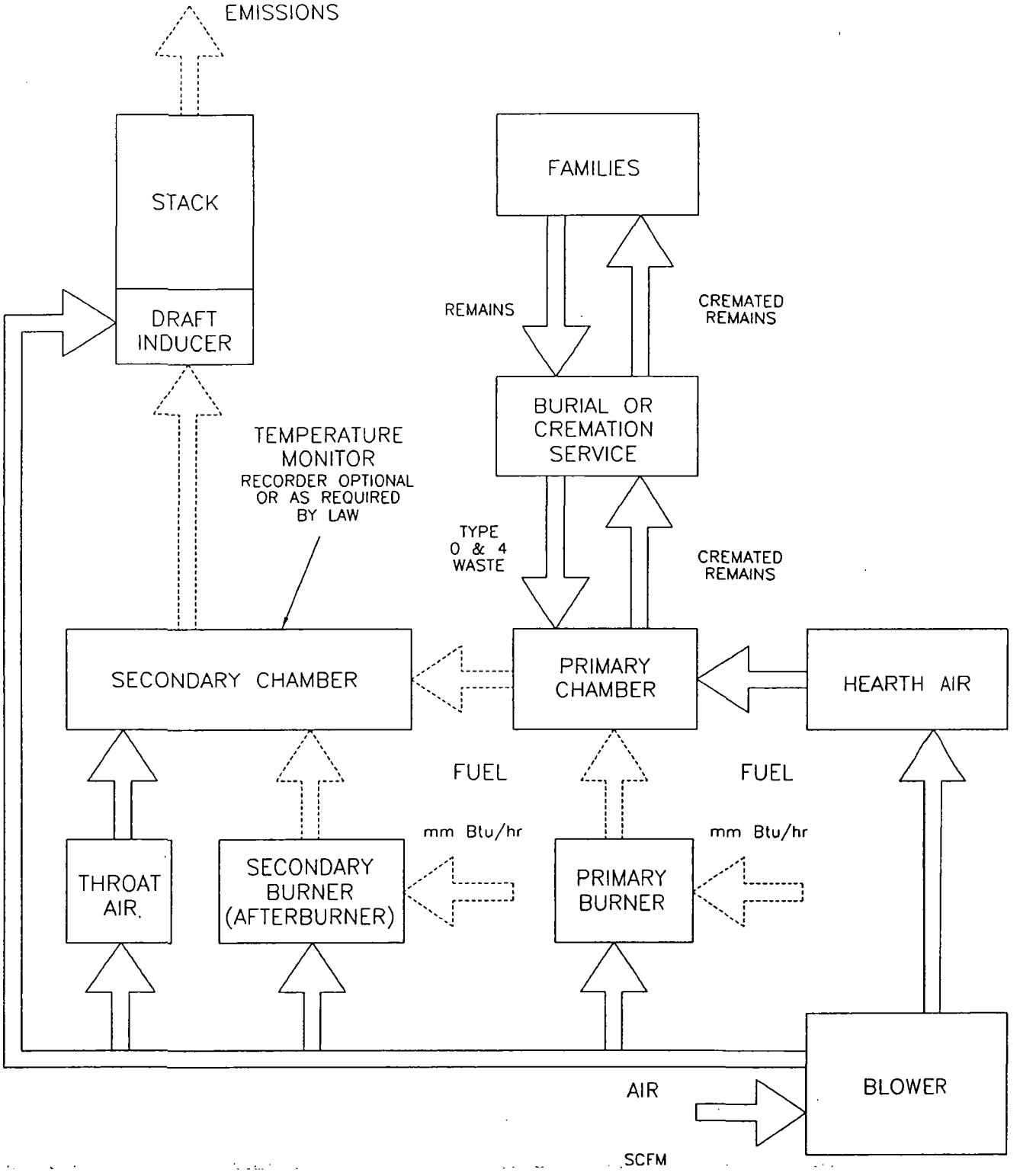
1. The facility shall not emit nor have the potential to emit 10 tons per year or more of any hazardous air pollutant, 25 tons per year or more of any combination of hazardous air pollutants, or 100 tons per year or more of any other regulated air pollutant; be collocated with, or relocated to, such a facility; or create such a facility in combination with any other collocated facilities, emissions units, or pollutant-emitting activities, including any such facility, emissions unit, or activity that is otherwise exempt from air permitting.

2. The facility shall not contain any emissions units or activities not covered by the applicable air general permit, except:

a. Units and activities that are exempt from permitting pursuant to subsection 62-210.300(3), F.A.C., or Rule 62-4.040, F.A.C.; and

b. Units and activities that are authorized by another air general permit where such other air general permit and the air general permit of interest specifically allow the use of one another at the same facility.

PROCESS FLOW DIAGRAM
CREMATOR



SPECIFICATIONS- Model Super Power-Pak

1. Equipment Type	Super Power-Pak
A. Model No.	IE43-SPP
B. Underwriters Laboratories Listing and File No.	87E8; MH14647
2. Dimensions	
A. Footprint	10' – 0" x 7' – 4"
B. Maximum Length	12' – 2" (3.7 m)
C. Maximum Width	8' -7" (2.62 m)
D. Maximum Height	9' - 6¾" (2.91 m)
E. Chamber Loading Opening	33" H x 39" W (838 mm x 991 mm)
3. Weight	32,000 lbs. (14,500 kg)
4. Utility/Air Requirements	
A. Gross Gas Input, Natural or LP Gas	2,000,000 BTU/hr. (2,100,000 kJ/h) 2,750,000 BTU/hr. (2,640,000 kJ/h) if operating temperature is greater then 1,600° F
Running Gas Pressure, Natural Gas	7 inches (180 mm) water column or greater
Running Gas Pressure, LP Gas	11 inches (280 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 standard m^3/min)
5. Incineration Capacity	200 lbs./hr. (91 kg/h)
6. Typical Loading Capacity of Waste Types	750 lbs. (340 kg/h)
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" (10 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., 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 Super Power-Pak

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 (minimum)
    - E. Inner Refractory Wall ..... 4½" (110 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" (150 mm) insulating block
    - E. Inner Refractory Wall ..... 4½" (110 mm) firebrick

14. Refractory Temperature Ratings
    - A. Standard Firebrick ..... 3,100° F. (1700° C)
    - B. Insulating Firebrick ..... 2,600° F. (1430° C)
    - C. Castable Refractory (Hearth) ..... 2,550° F. (1370° C)
    - D. Castable Refractory ..... 2,550° F. (1370° C)
    - E. Insulating Block ..... 1,900° F. (1040° C)
    - F. Bonding Mortar ..... 3,200° F. (1760° C)

15. Chamber Volumes (not including external flues, stacks or chimneys)
    - A. Primary Chamber ..... 71 cubic feet (2.0 m^3)
    - B. Secondary Chamber ..... 104 cubic feet (2.9 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. (650° C - 1000° C)
    - B. Secondary Chamber ..... 1,400° F. - 1,800° F. (760° C - 1000° C) as required

18. Secondary Chamber Retention Time ..... > 2 second

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

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

SPECIFICATIONS- Model Super Power-Pak

F. Motor Starter Function ..... Included
G. Chamber Temperature ..... Included
H. Motor Overload ..... Included
I. Flame Quality ..... Included
J. Burner Safe Start ..... Included

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

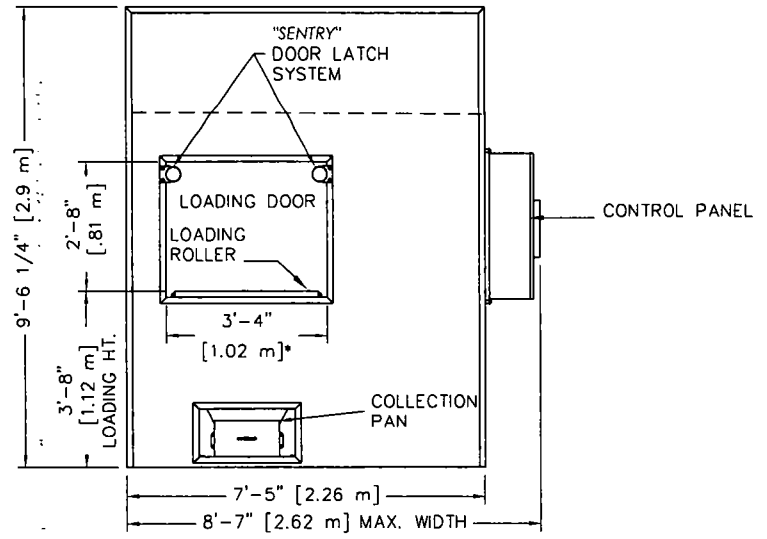
22. Ultraviolet Flame Detection ..... Ultraviolet flame detection has proven to be the most reliable means of flame safety. The system is completely sealed in a quartz capsule to eliminate problems, caused by moisture and dust created in the cremation process, which effect flame rod detectors.

23. 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. Temperature Control ..... Included
G. Afterburner (Secondary Burner) Reset ..... Included
H. Cremation Burner Reset ..... Included
I. Hearth Air ..... Included
J. Throat Air Off ..... Included

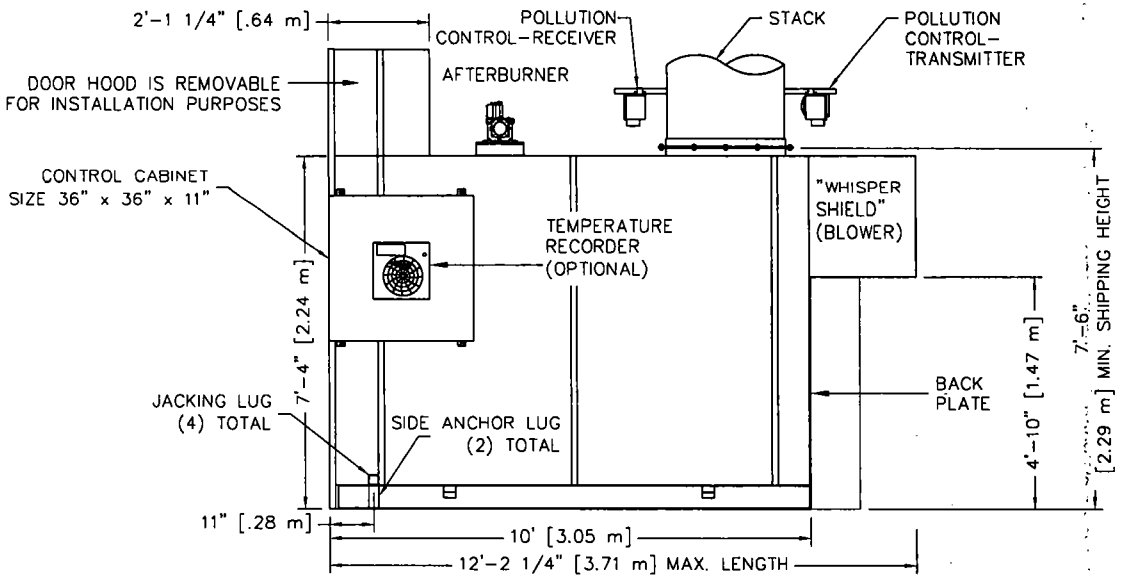
24. Automatic Timer Functions
A. Master Cycle ..... Included
B. Afterburner (Secondary Burner) ..... Included
C. Cremation Burner ..... Included
D. Low Fire Cremation Burner ..... Included
E. Hearth Air ..... Included
F. Throat Air ..... Included
G. Pollution Monitoring ..... Included
H. Afterburner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

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

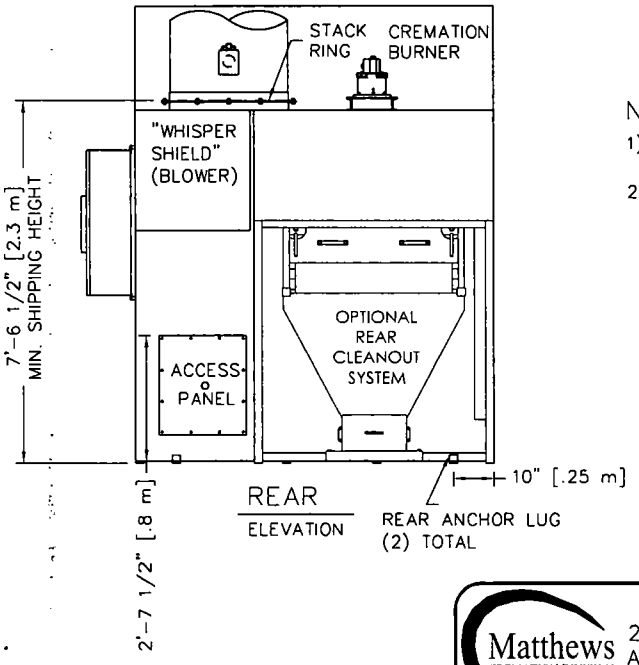
26. Start-Up and Training ..... Startup of cremation equipment and training of operators to properly operate and maintain the equipment is performed on-site under actual operating conditions. Included is a comprehensive owner's manual, with details on the equipment, its components and proper operation.



FRONT
ELEVATION



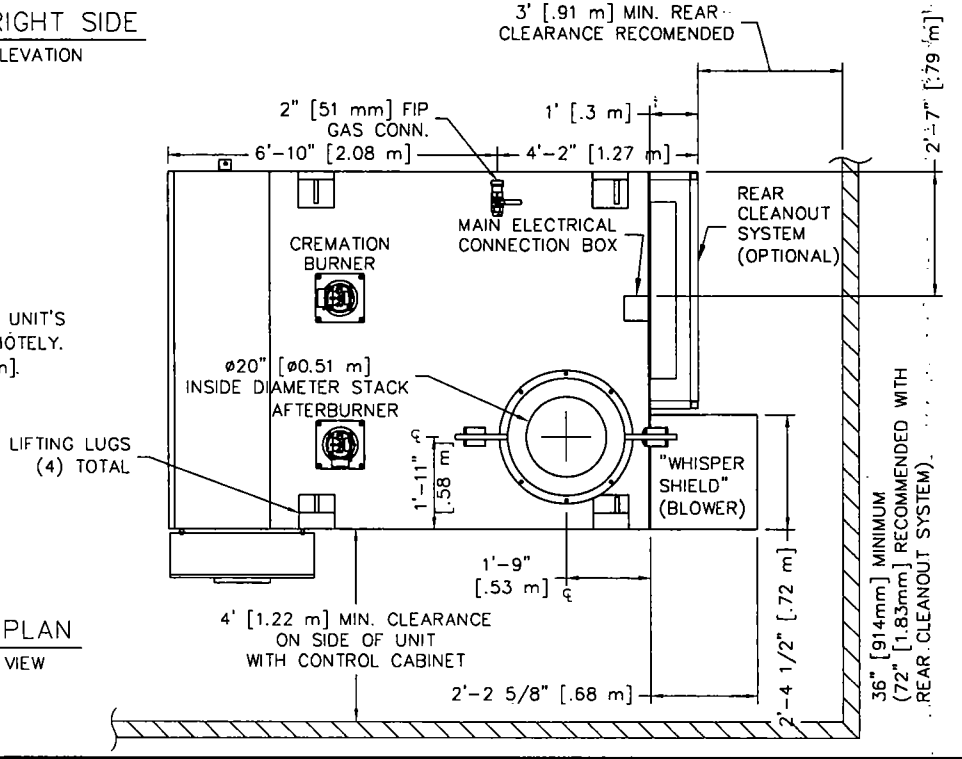
RIGHT SIDE
ELEVATION



REAR
ELEVATION

NOTES:

1) CONTROL CABINET MOUNTS ON UNIT'S LEFT OR RIGHT SIDES, OR REMOTELY.
2) CHAMBER WIDTH IS 39" [0.99m].



PLAN
VIEW

Matthews CREMATION DIVISION
2045 Sprint Boulevard
Apopka, Florida 32703
USA

SUPER POWER-PAK III

PLAN & ELEVATIONS INCL: CLEARANCES, REQUIREMENTS & RECOMENDATIONS

DATE:	10-26-06	SCALE:	1/4"=1'
DRAWN:	JG	PLOT SCALE:	1:48
APRVD:		SHEET:	1 OF: 2
DWG FILE:	SPPIII-MarketingPlanElevR2		
DWG #:	0000196		

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:	9 INCHES	[229 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.

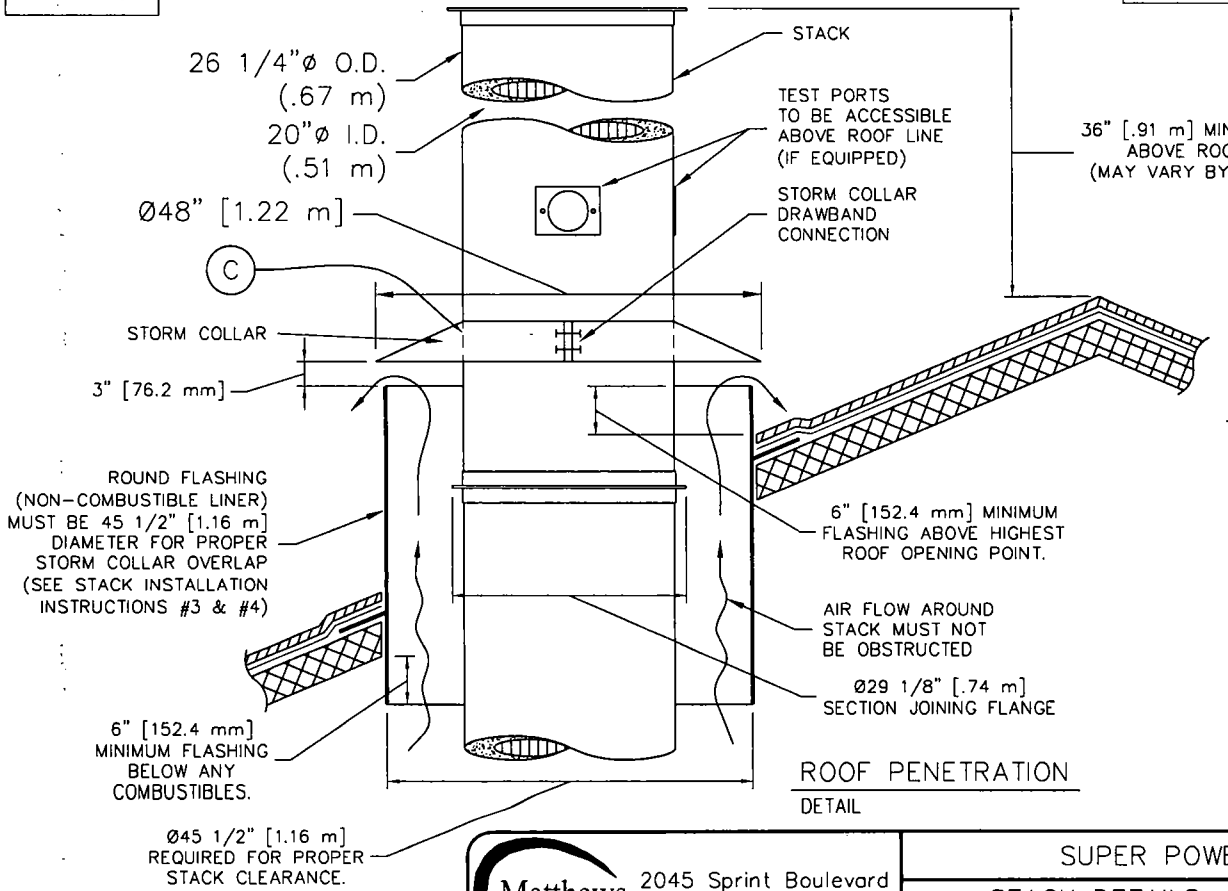
CAPACITY: RANGES FROM 2.0 TO 3.0 MILLION BTU/HR [2.1 TO 3.1 MILLION KILOJOULES/HR] DEPENDING UPON AMOUNT OF BURNERS.

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

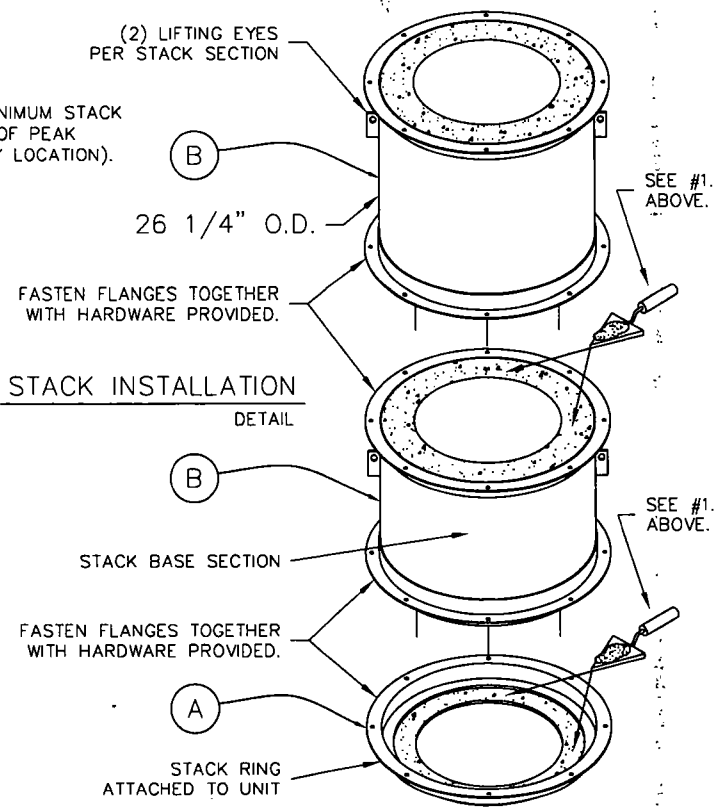
AIR: LOUVER NEAR THE REAR OF THE UNIT CAPABLE OF PASSING 2,500 CU FT/MIN [70.8 CU M/MIN] OF FREE AIR (36" X 36") [914 mm X 914 mm].

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" [72 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

SUPER POWER-PAK III

STACK DETAILS, CLEARANCES & INSTALLATION INSTRUCTIONS.
3" REFRACTORY STACK DETAIL

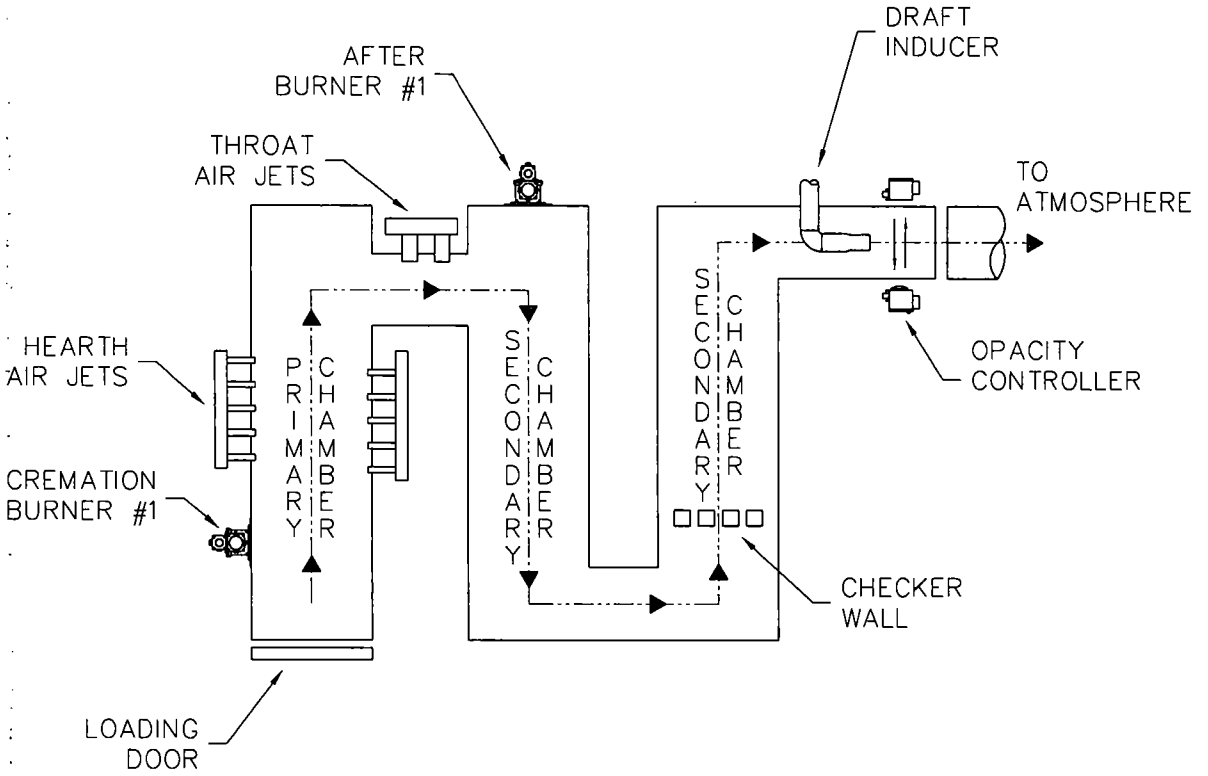
DATE:	05-26-11	SCALE:	1/2"=1'
DRAWN:	JGogel	PLOT SCALE:	1:24
APRVD:		SHEET: 2 OF: 2	
DWG FILE:	SPPIII-MarketingStack3RefS2R3		
DWG #:	0000196		

LEGEND OF SYMBOLS

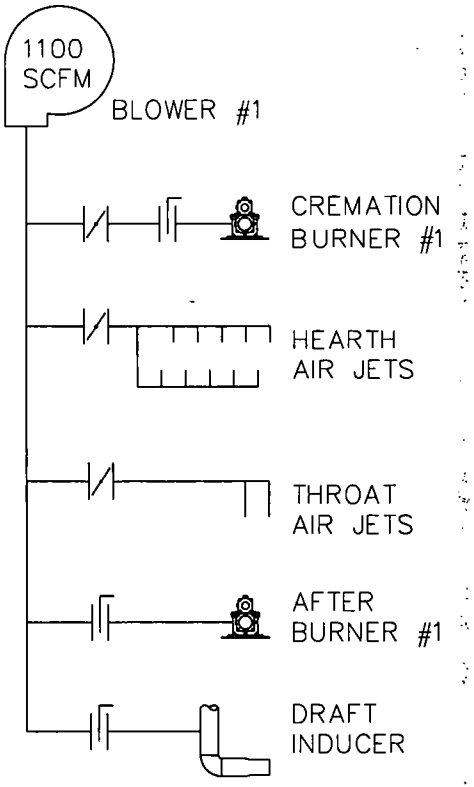
BUTTERFLY VALVE (ON/OFF)

FIXED BLADE BUTTERFLY DAMPER

FLOW DIAGRAM



AIR SCHEMATIC



Matthews CREMATION DIVISION
2045 Sprint Boulevard
Apopka, Florida 32703
USA

SUPER POWER PAK III

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:		SPPIIIFlowDiaAirSchem	
DWG #:		0000715	

Calculation Of Emissions

Potential to Emit

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

Total Incenerator Burn Capacity: 200 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)

$$\frac{200 \text{ lb/hr} \times 2.5 \text{ lb/ton} \times 1 \text{ ton}}{2000 \text{ lbs}} = 0.250 \text{ lb/hr} = 0.468 \text{ TPY}$$

$$\frac{0.25 \text{ lb/hr} \times 4.54E{+}05 \text{ mg/lb} \times 1 \text{ ppmv}}{1175 \text{ dscfm} \times 60 \text{ min/hr} \times 0.0283 \text{ m}^3/\text{f}^3 \times 2.61 \text{ mg/m}^3} = 21.80 \text{ ppmv}$$

Nitrogen Oxide (NOx - as Nitrogen Dioxide)

$$\frac{200 \text{ lb/hr} \times 3 \text{ lb/ton} \times 1 \text{ ton}}{2000 \text{ lbs}} = 0.3 \text{ lb/hr} = 0.5616 \text{ TPY}$$

$$\frac{0.3 \text{ lb/hr} \times 4.54E{+}05 \text{ mg/lb} \times 1 \text{ ppmv}}{1175 \text{ dscfm} \times 60 \text{ min/hr} \times 0.028 \text{ m}^3/\text{f}^3 \times 1.88 \text{ mg/m}^3} = 36.70 \text{ ppmv}$$

Hydrocarbons (TOC/VOC - methane)

$$\frac{200 \text{ lb/hr} \times 3 \text{ lb/ton} \times 1 \text{ ton}}{2000 \text{ lbs}} = 0.3 \text{ lb/hr} = 0.5616 \text{ TPY}$$

$$\frac{0.3 \text{ lb/hr} \times 4.54E{+}05 \text{ mg/lb} \times 1 \text{ ppmv}}{1175 \text{ dscfm} \times 60 \text{ min/hr} \times 0.0283 \text{ m}^3/\text{f}^3 \times 0.65 \text{ mg/m}^3} = 105.02 \text{ ppmv}$$

Lead (Pb) (6.62E-05 % of body weight)

$$\frac{200 \text{ lb/hr} \times 0.0000662 \text{ lb Pb}}{100 \text{ lb}} = 0.0001 \text{ lb/hr} = 0.0002 \text{ TPY}$$

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

$$\frac{200 \text{ lb/hr} \times 7 \text{ lb/ton} \times 1 \text{ ton}}{2000 \text{ lbs}} = 0.7 \text{ lb/hr} = 1.3104 \text{ TPY}$$

$$\frac{0.7 \text{ lb/hr} \times 7.00E{+}03 \text{ gr/lb}}{1175 \text{ dscfm} \times 60 \text{ min/hr}} = 0.07 \text{ gr/dscf}$$

Carbon Monoxide (CO)

$$\frac{200 \text{ lb/hr} \times 10 \text{ lb/ton} \times 1 \text{ ton}}{2000 \text{ lbs}} = 1 \text{ lb/hr} = 1.872 \text{ TPY}$$

$$\frac{1 \text{ lb/hr} \times 4.54E{+}05 \text{ mg/lb} \times 1 \text{ ppmv}}{1175 \text{ dscfm} \times 60 \text{ min/hr} \times 0.028 \text{ m}^3/\text{f}^3 \times 1.14 \text{ mg/m}^3} = 201.75 \text{ ppmv}$$

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
SPPIII

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	190

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)	104
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

$$\frac{900000 \text{ BTU/HR}}{100 \text{ BTU/CF AIR}} \times \frac{1}{\text{Burner}} \times 0.075 \text{ LB/CF AIR} = 675 \text{ LBS/HOUR}$$

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 190 LB/HR BURN RATE = 323 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 = 2413 LBS/HOUR

2. VELOCITY AND TIME CALCULATIONS

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

$$2413 \text{ LBS/HR} \times \frac{13.35 \text{ STD. CU. FT/LB}}{60 \text{ MIN/HR}} = 537 \text{ SCFM}$$

B. TOTAL PRODUCTS ACFM @ 1800 °F

$$\frac{2260 \text{ °RANKINE}}{530 \text{ °RANKINE}} \times 537.0 \text{ CFM} = 2290 \text{ ACFM}$$

C. RETENTION TIME

$$\frac{104 \text{ CU. FT}}{2290 \text{ ACFM}} \times \frac{60 \text{ SECONDS}}{1 \text{ MINUTE}} = 2.73 \text{ SECONDS}$$

D. VELOCITY IN FLAME PORT

$$\frac{2290 \text{ ACFM}}{2.95 \text{ SQ. FT}} \times \frac{1 \text{ MINUTE}}{60 \text{ SECONDS}} = 12.9 \text{ FEET/SECOND}$$

E. VELOCITY AT MIXING BAFFLES

$$\frac{2290 \text{ ACFM}}{1.36 \text{ SQ. FT}} \times \frac{1 \text{ MINUTE}}{60 \text{ SECONDS}} = 28.1 \text{ FEET/SECOND}$$

F. VELOCITY IN SECONDARY CHAMBER

$$\frac{2290 \text{ ACFM}}{2.44 \text{ SQ. FT}} \times \frac{1 \text{ MINUTE}}{60 \text{ SECONDS}} = 15.6 \text{ FEET/SECOND}$$

Source Test Report for

Particulate and Carbon Monoxide Emissions

EPA Methods 1-5 and 10

Report 3264-S

September 22, 2010

prepared for

Fred Hunter's Memorial Services, Inc.
Emission Unit 02 - Hollywood
Facility ID: 0112149

prepared by

Arlington Environmental Services, Inc.
Post Office Box 657
Okeechobee, Florida 34973
Telephone (863) 467-0555

1.0 Introduction

Fred Hunter's Memorial Services, Inc. Facility ID 0112149 located at 6301 Taft Street in Hollywood, Florida operates two human crematories at this location. On September 22, 2010, simultaneous tests for particulate and carbon monoxide emissions were conducted on EU02 West Unit.

The tests were performed in order to comply with the operating permit conditions set forth by Broward County Department of Planning and Environmental Protection, Air Quality Division, Chapter 27 Article IV, Air Quality, Section 27-179(c)(2).

During the testing period, Ray Koterba, of Fred Hunter's Memorial Services, Inc., maintained a log containing the emission control device and process data. This information is presented, along with the temperature charts, in Attachment C.

The results of this test verify compliance with the rules as set forth by Florida Department of Environmental Protection and Broward County Department of Planning, Air Quality Division.

5.0 Summary of Results
Fred Hunter
Crematory 0112149
Report 3264-S

	Run 1	Run 2	Run 3	Average per Run
Date	9/22/2010	9/22/2010	9/22/2010	
Start Time	8:20	10:53	12:20	
Stop Time	9:22	11:54	13:22	
Process Rate (LBS.)	140	293*		144
Particulate Emission Rate (gr./dscf @ 7% O_2)	0.0338	0.0225	0.0591	0.038
Allowable Particulate Emission Rate (gr./dscf @7% O_2)	0.080	0.080	0.080	0.080
Carbon Monoxide Emission Rate (ppm @7% O_2)	6.73	6.57	0.20	4.50
Allowable Carbon Monoxide Emission Rate (ppm @7% O_2)	100	100	100	100

* Please note the sampling for the second and third run was preformed on the same cremation.

6.0 Particulate Emission Results
Fred Hunter
Crematory 0112149
Report 3264-S

	Run 1	Run 2	Run 3
Stack Area (square feet)	2.07	2.07	2.07
Stack Pressure (inches Hg)	29.99	29.99	29.99
Meter Pressure (inches Hg)	30.12	30.11	30.08
Sample Volume (Std. Cu. Ft.)	44.807	40.598	34.779
Water Vapor (Cubic Feet)	5.80	7.69	4.18
Sample Moisture (percent)	11.47	15.92	10.73
Saturation Moisture (percent)	100.00	100.00	100.00
Molecular Weight (lbs/lb Mole wet)	28.15	27.73	28.15
Velocity (fpm)	1025	1079	894
Volumetric Flow Rate (acfm)	2125	2237	1855
Volumetric Flow Rate (scfm)	669	637	583
Concentration (gr/dscf)	0.0241	0.0155	0.0352
Concentration@7% O2 (gr/dscf)	0.0338	0.0225	0.0591
Mass Emission Rate (lbs./hr.)	0.14	0.08	0.18
Percent Isokinetic	109.05	103.80	97.03

7.0 Carbon Monoxide Emission Results
Fred Hunter
Crematory 0112149
Report 3264-S

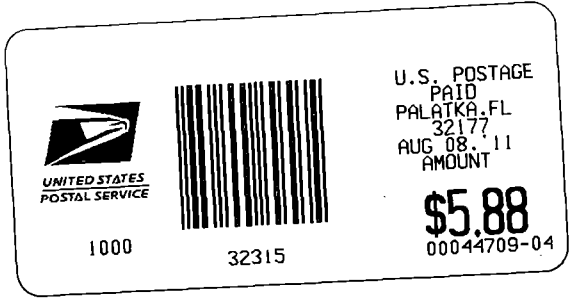
	Run1	Run 2	Run 3	Average
Date	9/22/2010	9/22/2010	9/22/2010	
Start Time	8:20	10:53	12:20	
Stop Time	9:22	11:54	13:22	
Percent Oxygen	10.99	11.31	12.63	
Carbon Monoxide (PPM)	4.80	4.54	0.12	
Carbon Monoxide Emissions (PPM @ 7% O_2)	6.73	6.57	0.20	4.50
Carbon Monoxide Allowable (PPM@ 7% O_2)	100	100	100	100

10.0 Summary of Field and Laboratory Data
Fred Hunter
Crematory 0112149
Report 3264-S

	Run 1	Run 2	Run 3
Date	9/22/2010	9/22/2010	9/22/2010
Start Time	8:20	10:53	12:20
Stop Time	9:22	11:54	13:22
CP	0.84	0.84	0.84
Y	1.0030	1.0030	1.0030
^Ha (inches H2O)	1.7369	1.7369	1.7369
Diameter of Nozzle (inches)	0.6240	0.6240	0.6240
Stack Diameter or Equivlant (inches)	19.50	19.50	19.50
Static Pressure (inches H2O)	-0.09	-0.09	-0.09
Barometric Pressure (inches Hg)	30.00	30.00	30.00
Test Time (minutes)	60	60	60
Meter Volume (cubic feet)	45.830	42.059	36.290
Square Root ^P (inches H2O)	0.179	0.183	0.156
Orifice Pressure ^H (inches H2O)	1.677	1.484	1.063
Average Meter Temperature (Deg. F)	85.2	91.9	95.3
Average Stack Temperature (Deg. F)	1028.0	1103.3	1041.5
Particulate Sample Weight (grms)	0.0700	0.0408	0.0793
Water Collected (grms)	123.1	163.0	88.7
Percent CO2	6.4	7.0	5.4
Percent O2	11.0	11.3	12.6
Molecular Weight (lbs/lb Mole)	29.47	29.57	29.37
Nozzle Area (square feet)	0.00212	0.00212	0.00212

Putnam C
307 S. F
Palatka, FL 32177

7010 2780 0002 6919 5089



FDEP Receipts
Attn: Dick Dibble
PO Box 3070
Tallahassee, FL 3[redacted]3-7555

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