

MARYLAND DEPARTMENT OF THE ENVIRONMENT

**AIR AND RADIATION ADMINISTRATION
APPLICATION FOR A PERMIT TO CONSTRUCT**

DOCKET #07-21

COMPANY: Evan's Funeral Chapel
LOCATION: 3 Newport Drive, Forest Hill, MD, 21050
APPLICATION: One (1) human crematory

<u>ITEM</u>	<u>DESCRIPTION</u>
1	Notice of Application and Opportunity to Request an Informational Meeting
2	Permit to Construct Application Forms – Forms 5, 5A, 5T, 5EP, Site Location Map and Plot Plan, manufacturer specifications and emissions calculations, zoning approval documentation and process flow diagram.

**DEPARTMENT OF THE ENVIRONMENT
AIR AND RADIATION ADMINISTRATION**

**NOTICE OF APPLICATION AND
OPPORTUNITY TO REQUEST AN INFORMATIONAL MEETING**

The Maryland Department of the Environment, Air and Radiation Administration (ARA) received a permit-to-construct application from Evans Funeral Chapel on April 14, 2021 for the installation of one (1) human crematory rated at 175 lbs/hr. The proposed installation will be located at Evans Funeral Chapel's existing crematory facility, 3 Newport Drive, Forest Hill, MD 21050.

The application and other supporting documents are available for public inspection on the Department's website. Look for Docket #07-21 at the following link:

<https://mde.maryland.gov/programs/Permits/AirManagementPermits/Pages/index.aspx>

Pursuant to the Environment Article, Section 1-603, Annotated Code of Maryland, the Department will hold an informational meeting to discuss the application and the permit review process if the Department receives a written request for a meeting within 10 working days from the date of the second publication of this notice. All requests for an informational meeting should be emailed to Ms. Shannon Heafey at shannon.heafey@maryland.gov.

Further information may be obtained by contacting Ms. Shannon Heafey by email at shannon.heafey@maryland.gov or by phone at (410) 537-4433.

George S. Aburn, Jr., Director
Air and Radiation Administration

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Blvd ▪ Baltimore, Maryland 21230
(410) 537-3230 ▪ 1-800-633-6101 ▪ www.mde.state.md.us

Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PROCESSING/MANUFACTURING EQUIPMENT

Permit to Construct Registration Update Initial Registration

1A. Owner of Equipment/Company Name

EVANS FUNERAL CHAPEL - BEL AIR, P.A.

Mailing Address

3 NEWPORT DRIVE

Street Address

FOREST HILL MD

City

State

21050

Zip

Telephone Number

(410) 893-7575

Signature

CHARLES F. EVANS, JR.

Print Name and Title

DO NOT WRITE IN THIS BLOCK

2. REGISTRATION NUMBER

County No.

Premises No.

--	--

--	--	--	--	--

1-2

3-6

Registration Class

Equipment No.

--

--	--	--	--

7

8-11

Data Year

--	--

12-13

Application Date

APRIL 12 2001

Date

1B. Equipment Location and Telephone Number (if different from above)

Street Number and Street Name

City/Town

State

Zip

Telephone Number

Premises Name (if different from above)

3. Status (A= New, B= Modification to Existing Equipment, C= Existing Equipment)

Status

A

15

New Construction
Begun (MM/YY)

	T	B	D
--	---	---	---

16-19

New Construction
Completed (MM/YY)

	T	B	D
--	---	---	---

20-23

Existing Initial
Operation (MM/YY)

--	--	--	--

20-23

4. Describe this Equipment: Make, Model, Features, Manufacturer (include Maximum Hourly Input Rate, etc.)

Mathews Environmental Solutions; PPII Plus (3.0 MMBTU/hr) / Multi-Chamber cremation unit (Unit #3)

5. Workmen's Compensation Coverage EIG473447000

Binder/Policy Number

4-1-22

Expiration Date

Company

EMPLOYERS

NOTE: Before a Permit to Construct may be issued by the Department, the applicant must provide the Department with proof of worker's compensation coverage as required under Section 1-202 of the Worker's Compensation Act.

6A. Number of Pieces of Identical Equipment Units to be Registered/Permitted at this Time 1

6B. Number of Stack/Emission Points Associated with this Equipment 1

7. Person Installing this Equipment (if different from Number 1 on Page 1)

Name MICHAEL TRICOCHÉ Title _____
 Company MATTHEWS ENVIRONMENTAL SOLUTIONS
 Mailing Address/Street 2045 SPRINT BLVD
 City/Town APOPKA State FL. Telephone (407) 886-5533

8. Major Activity, Product or Service of Company at this Location

CREMATION OF HUMAN REMAINS

9. Control Devices Associated with this Equipment

None
 24-0

Simple/Multiple Cyclone <input type="checkbox"/> 24-1	Spray/Adsorb Tower <input type="checkbox"/> 24-2	Venturi Scrubber <input type="checkbox"/> 24-3	Carbon Adsorber <input type="checkbox"/> 24-4	Electrostatic Precipitator <input type="checkbox"/> 24-5	Baghouse <input type="checkbox"/> 24-6	Thermal/Catalytic Afterburner <input type="checkbox"/> 24-7	Dry Scrubber <input type="checkbox"/> 24-8
--	---	---	--	---	--	--	---

Other
 Describe _____
 24-9

10. Annual Fuel Consumption for this Equipment

OIL-1000 GALLONS <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 26-31	SULFUR % GRADE <input type="text"/> <input type="text"/> 32-33	GRADE <input type="text"/> 34	NATURAL GAS-1000 FT ³ <input type="text"/> 1 <input type="text"/> 1 <input type="text"/> 2 <input type="text"/> 3 <input type="text"/> 2 35-41	LP GAS-100 GALLONS GRADE <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 42-45
COAL- TONS <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 46-52	SULFUR % <input type="text"/> <input type="text"/> 53-55	ASH% <input type="text"/> <input type="text"/> 56-58	WOOD-TONS <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 59-63	MOISTURE % <input type="text"/> <input type="text"/> 64-65

OTHER FUELS ANNUAL AMOUNT CONSUMED (Specify Type) 66-1
 OTHER FUEL ANNUAL AMOUNT CONSUMED (Specify Type) 66-2
 1=Coke 2= COG 3=BFG 4=Other

11. Operating Schedule (for this Equipment)

Continuous Operation <input checked="" type="checkbox"/> 67-1	Batch Process <input type="checkbox"/> 67-2	Hours per Batch <input type="text"/> <input type="text"/> 68-69	Batch per Week <input type="text"/> 69-70	Hours per Day <input type="text"/> 1 <input type="text"/> 2 70-71	Days Per Week <input type="text"/> 6 72	Days per Year <input type="text"/> 3 <input type="text"/> 1 <input type="text"/> 2 73-75
--	--	--	--	--	--	---

Seasonal Variation in Operation:
 No Variation 76
 Winter Percent 77-78
 Spring Percent 79-80
 Summer Percent 81-82
 Fall Percent 83-84
 (Total Seasons= 100%)

12. Equivalent Stack Information- is Exhaust through Doors, Windows, etc. Only? (Y/N)

N
85

If not, then

Height Above Ground (FT)

Inside Diameter at Top (in)

Exit Temperature (°F)

Exit Velocity (FT/SEC)

	3	8
--	---	---

86-88

	2	0
--	---	---

89-91

1	1	0	0
---	---	---	---

92-95

	2	0
--	---	---

96-98

NOTE:

Attach a block diagram of process/process line, indicating new equipment as reported on this form and all existing equipment, including control devices and emission points.

13. Input Materials (for this equipment only)

Is any of this data to be considered confidential? N (Y or N)

	NAME	CAS NO. (IF APPLICABLE)	INPUT RATE		
			PER HOUR	UNITS	PER YEAR
1.	HUMAN REMAINS		175	lbs/hr	
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

TOTAL

14. Output Materials (for this equipment)

Process/Product Stream

	NAME	CAS NO. (IF APPLICABLE)	OUTPUT RATE		
			PER HOUR	UNITS	PER YEAR
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

TOTAL

15. Waste Streams- Solid and Liquid

	NAME	CAS NO. (IF APPLICABLE)	OUTPUT RATE		
			PER HOUR	UNITS	PER YEAR
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					

TOTAL

16. Total Stack Emissions (for this equipment only) in Pounds Per Operating Day

Particulate Matter

		4	.	9	0
--	--	---	---	---	---

99-104

Oxides of Sulfur

		2	.	2	8
--	--	---	---	---	---

105-110

Oxides of Nitrogen

		3	.	7	4
--	--	---	---	---	---

111-116

Carbon Monoxide

		3	.	0	9
--	--	---	---	---	---

177-122

Volatile Organic Compounds

		0	.	3	1
--	--	---	---	---	---

123-128

PM-10

		4	.	9	0
--	--	---	---	---	---

129-134

17. Total Fugitive Emissions (for this equipment only) in Pounds Per Operating Day

Particulate Matter

--	--	--	--	--	--

135-139

Oxides of Sulfur

--	--	--	--	--	--

140-144

Oxides of Nitrogen

--	--	--	--	--	--

145-149

Carbon Monoxide

--	--	--	--	--	--

150-154

Volatile Organic Compounds

--	--	--	--	--	--

155-159

PM-10

--	--	--	--	--	--

160-164

Method Used to Determine Emissions (1= Estimate 2= Emission Factor 3= Stack Test 4= Other)

TSP

2

165

SOX

2

166

NOX

2

167

CO

2

168

VOC

2

169

PM10

2

170

AIR AND RADIATION MANAGEMENT ADMINISTRATION USE ONLY

18. Date Rec'd. Local

Date Rec'd. State

Return to Local Jurisdiction

Date _____ By _____

Reviewed by Local Jurisdiction

Date _____ By _____

Reviewed by State

Date _____ By _____

19. Inventory Date

Month/Year

--	--	--	--

171-174

Equipment Code

--	--	--

175-177

SCC Code

--	--	--	--	--	--	--	--

178-185

20. Annual Operating Rate

Maximum Design Hourly Rate

Permit to Operate Month

Transaction Date (MM/DD/YR)

--	--	--	--	--	--

186-192

--	--	--	--	--	--	--	--

193-199

--	--

200-201

--	--	--	--	--	--	--	--

202-207

Staff Code

--	--	--

208-210

VOC Code

--	--

211 212

SIP Code

--	--

213 214

Regulation Code

--	--	--	--

215-218

Confidentiality

--

219

Point Description

--	--	--	--	--	--	--	--	--	--

220-238

Action

--

239

A: Add
C: Change

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Blvd • Baltimore, Maryland 21230
(410) 537-3230 • 1-800-633-6101 • www.mde.state.md.us

Air and Radiation Management Administration • Air Quality Permits Program

SUMMARY OF DEMONSTRATIONS FOR MEETING THE AMBIENT IMPACT REQUIREMENT (26.11.15.05) AND THE T-BACT REQUIREMENT (26.11.15.06)

DO NOT WRITE IN THIS SPACE

--	--	--	--	--	--	--	--	--	--	--

Company Name EVANS FUNERAL CHAPEL-BELAIR, P.A

- 1. Summary of T-BACT Demonstration: List all emission reduction options considered in determining T-BACT starting with the option that reduces emissions the most. Supporting documentation **must** be attached.

<u>Emission Reduction Option</u>	<u>% Emission Reduction</u>	<u>COSTS</u>	
		<u>Capital</u>	<u>Annual Operating</u>
1. > 1 Second retention time in Secondary Chamber @ 1600F	Unknown		
2. Temperature Monitor and Recorder	Unknown	3,000	100
3. No Burning of PVC plastic bags	Unknown		
4.			
5.			

- 2. Identify the emission reduction option selected as T-BACT and briefly explain why this is the best selection. Supporting documentation **must** be attached.



3. List screening levels and highest estimated off-site concentrations ($\mu\text{g}/\text{m}^3$) resulting from **premises-wide allowable emissions** (1) of each Toxic Air Pollutant that is covered by the regulations and discharged from the installation or source applying for the permit. See the General Instructions for more detail. Supporting documentation **must** be attached.

SEE DISPERSION MODEL ATTACHED

Toxic Air Pollutant	CAS Number	SCREENING LEVEL(S)			OFF-SITE CONCENTRATIONS		
		1-HR	8-HR	Annual	1-HR	8-HR	Annual
1 _____	_____	_____	_____	_____	_____	_____	_____
2 _____	_____	_____	_____	_____	_____	_____	_____
3 _____	_____	_____	_____	_____	_____	_____	_____
4 _____	_____	_____	_____	_____	_____	_____	_____
5 _____	_____	_____	_____	_____	_____	_____	_____
6 _____	_____	_____	_____	_____	_____	_____	_____
7 _____	_____	_____	_____	_____	_____	_____	_____
8 _____	_____	_____	_____	_____	_____	_____	_____
9 _____	_____	_____	_____	_____	_____	_____	_____
10 _____	_____	_____	_____	_____	_____	_____	_____
11 _____	_____	_____	_____	_____	_____	_____	_____
12 _____	_____	_____	_____	_____	_____	_____	_____
13 _____	_____	_____	_____	_____	_____	_____	_____
14 _____	_____	_____	_____	_____	_____	_____	_____
15 _____	_____	_____	_____	_____	_____	_____	_____
16 _____	_____	_____	_____	_____	_____	_____	_____

If unable to use a Screening Analysis, check the box and attach the Second Tier Analysis or Special Permit request to this form.

- (1) **Premises** is defined as: "all the installations or other sources that are located on contiguous or adjacent properties and that are under the control of one person or under common control of a group of persons" (COMAR 26.11.15.01B(12)).

Allowable Emissions are defined as: "the maximum emissions a source or installation is capable of discharging after consideration of any physical or operational limitations required by this subtitle or by enforceable conditions included in an applicable air quality permit to construct, permit to operate, secretarial order, plan for compliance, consent agreement, or court order" (COMAR 26.11.15.01B(2)).



MARYLAND DEPARTMENT OF THE ENVIRONMENT
 Air and Radiation Management Administration • Air Quality Permits Program
 1800 Washington Boulevard • Baltimore, Maryland 21230
 (410)537-3225 • 1-800-633-6101 • www.mde.maryland.gov

FORM 5EP: Emission Point Data

Complete one (1) Form 5EP for EACH emission point (stack or fugitive emissions) related to the proposed installation.

Applicant Name: EVANS FUNERAL CHAPEL-BELAIR, P.A.

1. Emission Point Identification Name/Number

List the applicant assigned name/number for this emission point and use this value on the attached required plot plan:
Unit 03 (Power Pak II Plus, IE43-PPII Plus)

2. Emission Point Description

Describe the emission point including all associated equipment and control devices:
Matthews Environmental Solutions - Nat Gas Fired Multiple Chamber cremation unit. No Add On Control Device

3. Emissions Schedule for the Emission Point

Continuous or Intermittent (C/I)?	I	Seasonal Variation Check box if none: <input checked="" type="checkbox"/> Otherwise estimate seasonal variation:	
Minutes per hour:	60	Winter Percent	
Hours per day:	12	Spring Percent	
Days per week:	6	Summer Percent	
Weeks per year:	52	Fall Percent	

4. Emission Point Information

Height above ground (ft):	38	Length and width dimensions at top of rectangular stack (ft):	Length:	Width:	
Height above structures (ft):	13				
Exit temperature (°F):	1100	Inside diameter at top of round stack (ft):		1.67	
Exit velocity (ft/min):	1200	Distance from emission point to nearest property line (ft):		16ft	
Exhaust gas volumetric flow rate (acfm):	2100	Building dimensions if emission point is located on building (ft)	Height 25	Length 177	Width 112

5. Control Devices Associated with the Emission Point

Identify each control device associated with the emission point and indicate the number of devices. **A Form 6 is also required for each control device.** If none check none:

- | | | |
|---|--|--|
| <input checked="" type="checkbox"/> None | <input type="checkbox"/> Thermal Oxidizer | No. _____ |
| <input type="checkbox"/> Baghouse | <input type="checkbox"/> Regenerative | No. _____ |
| <input type="checkbox"/> Cyclone | <input type="checkbox"/> Catalytic Oxidizer | No. _____ |
| <input type="checkbox"/> Elec. Precipitator (ESP) | <input type="checkbox"/> Nitrogen Oxides Reduction | No. _____ |
| <input type="checkbox"/> Dust Suppression System | <input type="checkbox"/> Selective | <input type="checkbox"/> Non-Selective |
| <input type="checkbox"/> Venturi Scrubber | <input type="checkbox"/> Catalytic | <input type="checkbox"/> Non-Catalytic |
| <input type="checkbox"/> Spray Tower/Packed Bed | <input type="checkbox"/> Other | No. _____ |
| <input type="checkbox"/> Carbon Adsorber | Specify: | |
| <input type="checkbox"/> Cartridge/Canister | | |
| <input type="checkbox"/> Regenerative | | |

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

Criteria Pollutants	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Particulate Matter (filterable as PM10)	0.4086	0.4086	4.9	0.7649
Particulate Matter (filterable as PM2.5)	0.4086	0.4086	4.9	0.7649
Particulate Matter (condensables)	0.4086	0.4086	4.9	0.7649
Volatile Organic Compounds (VOC)	0.0261	0.0261	0.313	0.0489
Oxides of Sulfur (SOx)	0.190	0.190	2.28	0.3554
Oxides of Nitrogen (NOx)	0.3115	0.3115	3.74	0.5831
Carbon Monoxide (CO)	0.258	0.258	3.09	0.4832
Lead (Pb)				
Greenhouse Gases (GHG)	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Carbon Dioxide (CO ₂)				
Methane (CH ₄)				
Nitrous Oxide (N ₂ O)				
Hydrofluorocarbons (HFCs)				
Perfluorocarbons (PFCs)				
Sulfur Hexafluoride (SF ₆)				
Total GHG (as CO ₂ e)				
List individual federal Hazardous Air Pollutants (HAP) below:	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)

-(Attach additional sheets as necessary.)

MARYLAND DEPARTMENT OF THE ENVIRONMENT
 Air and Radiation Management Administration • Air Quality Permits Program
 1800 Washington Boulevard • Baltimore, Maryland 21230
 (410)537-3225 • 1-800-633-6101 • www.mde.maryland.gov

FORM 5T: Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration

Applicant Name: EVANS FUNERAL CHAPEL - BEL AIR **SEE TOXYTOOL RESULTS ATTACHED**

Step 1: Quantify premises-wide emissions of Toxic Air Pollutants (TAP) from new and existing installations in accordance with COMAR 26.11.15.04. Attach supporting documentation as necessary.

Toxic Air Pollutant (TAP)	CAS Number	Class I or Class II?	Screening Levels ($\mu\text{g}/\text{m}^3$)			Estimated Premises Wide Emissions of TAP			
						Actual Total Existing TAP Emissions	Projected TAP Emissions from Proposed Installation	Premises Wide Total TAP Emissions	
			1-hour	8-hour	Annual	(lb/hr)	(lb/hr)	(lb/hr)	(lb/yr)
<i>ex. ethanol</i>	64175	II	18843	3769	N/A	0.60	0.15	0.75	1500
<i>ex. benzene</i>	71432	I	80	16	0.13	0.5	0.75	1.00	400

(attach additional sheets as necessary.)

Note: Screening levels can be obtained from the Department's website (<http://www.mde.maryland.gov>) or by calling the Department.

Step 2: Determine which TAPs are exempt from further review. A TAP that meets either of the following Class I or Class II small quantity emitter exemptions is exempt from further TAP compliance demonstration requirements under Step 3 and Step 4.

Class II TAP Small Quantity Emitter Exemption Requirements (COMAR 26.11.15.03B(3)(a))

A Class II TAP is exempt from Step 3 and Step 4 if the Class II TAP meets the following requirements: Premises wide emissions of the TAP shall not exceed 0.5 pounds per hour, and any applicable 1-hour or 8-hour screening level for the TAP must be greater than $200 \mu\text{g}/\text{m}^3$.

Class I TAP Small Quantity Emitter Exemption Requirements (COMAR 26.11.15.03B(3)(b))

A Class I TAP is exempt from Step 3 and Step 4 if the Class I TAP meets the following requirements: Premises wide emissions of the TAP shall not exceed 0.5 pounds per hour and 350 pounds per year, any applicable 1-hour or 8-hour screening level for the TAP must be greater than $200 \mu\text{g}/\text{m}^3$, and any applicable annual screening level for the TAP must be greater than $1 \mu\text{g}/\text{m}^3$.

If a TAP meets either the Class I or Class II TAP Small Quantity Emitter Exemption Requirements, no further review under Step 3 and Step 4 are required for that specific TAP.

FORM 5T: Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration

Step 3: Best Available Control Technology for Toxics Requirement (T-BACT, COMAR 26.11.15.05)

In the following table, list all TAP emission reduction options considered when determining T-BACT for the proposed installation. The options should be listed in order beginning with the most effective control strategy to the least effective strategy. Attach supporting documentation as necessary.

Target Pollutants	Emission Control Option	% Emission Reduction	Costs		T-BACT Option Selected? (yes/no)
			Capital	Annual Operating	
<i>ex. ethanol and benzene</i>	<i>Thermal Oxidizer</i>	99	\$50,000	\$100,000	no
<i>ex. ethanol and benzene</i>	<i>Low VOC materials</i>	80	0	\$100,000	yes

(attach additional sheets as necessary)

Step 4: Demonstrating Compliance with the Ambient Impact Requirement (COMAR 26.11.15.06)

Each TAP not exempt in Step 2 must be individually evaluated to determine that the emissions of the TAP will not adversely impact public health. The evaluation consists of a series of increasingly non-conservative (and increasingly rigorous) tests. Once a TAP passes a test in the evaluation, no further analysis is required for that TAP. "Demonstrating Compliance with the Ambient Impact Requirement under the Toxic Air Pollutant (TAP) Regulations (COMAR 26.11.15.06)" provides guidance on conducting the evaluation. Summarize your results in the following table. Attach supporting documentation as necessary.

Toxic Air Pollutant (TAP)	CAS Number	Screening Levels ($\mu\text{g}/\text{m}^3$)			Premises Wide Total TAP Emissions		Allowable Emissions Rate (AER) per COMAR 26.11.16.02A		Off-site Concentrations per Screening Analysis ($\mu\text{g}/\text{m}^3$)			Compliance Method Used?
		1-hour	8-hour	Annual	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	1-hour	8-hour	Annual	AER or Screen
<i>ex. ethanol</i>	64175	18843	3769	N/A	0.75	1500	0.89	N/A	N/A	N/A	N/A	AER
<i>ex. benzene</i>	71432	80	16	0.13	1.00	400	0.04	36.52	1.5	1.05	0.12	Screen

(attach additional sheets as necessary)

If compliance with the ambient impact requirement cannot be met using the allowable emissions rate method or the screening analysis method, refined dispersion modeling techniques may be required. Please consult with the Department's Air Quality Permit Program prior to conducting dispersion modeling methods to demonstrate compliance.

03/25/21
12:45:13

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 13043 ***

Evans Funeral Home

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
EMISSION RATE (G/S) = 0.126000
STACK HEIGHT (M) = 11.5800
STK INSIDE DIAM (M) = 0.5080
STK EXIT VELOCITY (M/S) = 6.0960
STK GAS EXIT TEMP (K) = 866.0000
AMBIENT AIR TEMP (K) = 293.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = URBAN
BUILDING HEIGHT (M) = 7.6200
MIN HORIZ BLDG DIM (M) = 34.1400
MAX HORIZ BLDG DIM (M) = 53.9500

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 2.552 M**4/S**3; MOM. FLUX = 0.811 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
5.	0.000	0	0.0	0.0	0.0	0.00	0.00	0.00	NA
100.	13.23	3	2.5	2.6	800.0	28.38	22.10	20.57	HS
200.	11.23	4	2.0	2.1	640.0	32.43	31.36	27.84	HS
300.	9.032	6	1.0	1.0	10000.0	44.79	32.59	24.50	HS
400.	9.712	6	1.0	1.0	10000.0	44.79	41.94	29.31	HS
500.	9.245	6	1.0	1.0	10000.0	44.79	51.10	33.85	HS
600.	8.411	6	1.0	1.0	10000.0	44.79	60.02	38.13	HS
700.	7.534	6	1.0	1.0	10000.0	44.79	68.72	42.17	HS
800.	6.729	6	1.0	1.0	10000.0	44.79	77.18	46.01	HS
900.	6.024	6	1.0	1.0	10000.0	44.79	85.42	49.66	HS
1000.	5.418	6	1.0	1.0	10000.0	44.79	93.45	53.14	HS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 5. M:
 53. 17.11 3 5.0 5.1 1600.0 17.33 11.88 10.94 HS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

 * SUMMARY OF TERRAIN HEIGHTS ENTERED FOR *
 * SIMPLE ELEVATED TERRAIN PROCEDURE *

TERRAIN HT (M)	DISTANCE RANGE (M)	
	MINIMUM	MAXIMUM
0.	5.	1000.

 *** REGULATORY (Default) ***
 PERFORMING CAVITY CALCULATIONS
 WITH ORIGINAL SCREEN CAVITY MODEL
 (BRODE, 1988)

*** CAVITY CALCULATION - 1 ***	*** CAVITY CALCULATION - 2 ***
CONC (UG/M**3) = 0.000	CONC (UG/M**3) = 0.000
CRIT WS @10M (M/S) = 99.99	CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99	CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99	DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 7.66	CAVITY HT (M) = 7.62
CAVITY LENGTH (M) = 34.08	CAVITY LENGTH (M) = 28.18
ALONGWIND DIM (M) = 34.14	ALONGWIND DIM (M) = 53.95

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

 END OF CAVITY CALCULATIONS

 *** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
--------------------------	-----------------------	--------------------	-------------------

SIMPLE TERRAIN 17.11 53. 0.

** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **

Evans Funeral Home Facility Name
 Evans Funeral Home Your Name
 25-Mar-21 Date

HUMAN (number)	Animal (lbs)	Equivalent
2		Cremations per Hour 2.0
12		Cremations per 8-hour 12.0
3000		Cremations per year 3000.0

17.11 Screen3 maximum concentration (1 lb/hr emission rate)
 Toxytool 2015

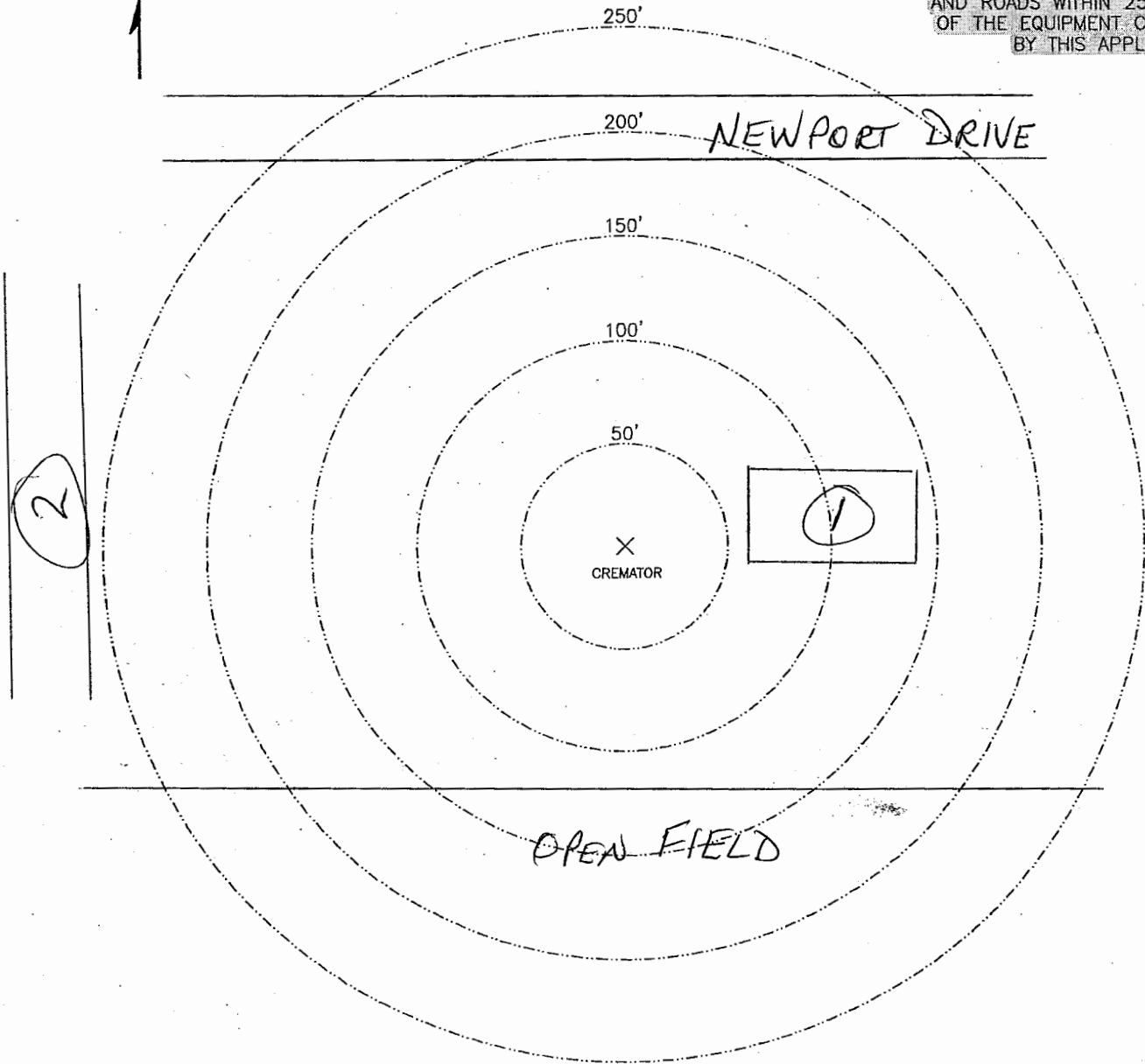
CAS	POLLUTANT	Emission Factor (EPA FIRE) (Pounds)	Emission Factor (as number) (Pounds)	MDE Screening Level (ug/m3)	MDE Screening Level (ug/m3)	MDE Screening Level (ug/m3)	Screen3 Concentration 1-hour (ug/m3)	Screen3 Concentration 8-hour (ug/m3)	Screen3 Concentration Annual (ug/m3)	Screen3 Concentration as % of MDE Screening Level 1-hour	Screen3 Concentration as % of MDE Screening Level 8-hour	Screen3 Concentration as % of MDE Screening Level Annual
83329	Acenaphthene	1.11E-07	1.11E-07	2.03E+01	8.00E-02	3.80E-06	1.99E-06	5.20E-08			0.00	0.00
208968	Acenaphthylene	1.22E-07	1.22E-07	2.46E+01		4.17E-06	2.19E-06	5.72E-08			0.00	
120127	Anthracene	3.24E-07	3.24E-07	2.00E+01		1.11E-05	5.82E-06	1.52E-07			0.00	
7440360	Antimony	< 3.020E-5	3.02E-05	5.00E+00		1.03E-03	5.43E-04	1.42E-05			0.01	
7440382	Arsenic	< 3.000E-5	3.00E-05	1.00E-01	2.00E-04	1.03E-03	5.39E-04	1.41E-05			0.54	7.03
7440393	Barium	2.40E-05	2.40E-05	5.00E+00		8.21E-04	4.31E-04	1.13E-05			0.01	
56553	Benzo (a) anthracene	< 9.760E-9	9.76E-09			3.34E-07	1.75E-07	4.58E-09				
50328	Benzo (a) pyrene	< 2.910E-8	2.91E-08			9.96E-07	5.23E-07	1.36E-08				
205992	Benzo (b) fluoranthene	< 1.590E-8	1.59E-08			5.44E-07	2.86E-07	7.45E-09				
191242	Benzo (g,h,i) perylene	< 2.910E-8	2.91E-08	2.00E+01		9.96E-07	5.23E-07	1.36E-08			0.00	
207089	Benzo (k) fluoranthene	< 1.420E-8	1.42E-08			4.86E-07	2.55E-07	6.66E-09				
7440417	Beryllium	1.37E-06	1.37E-06	5.00E-04	4.00E-04	4.69E-05	2.46E-05	6.42E-07			4.92	0.16
7440439	Cadmium	1.11E-05	1.11E-05	2.00E-02	6.00E-04	3.80E-04	1.99E-04	5.20E-06			1.00	0.87
7440473	Chromium	2.99E-05	2.99E-05	5.00E+00		1.02E-03	5.37E-04	1.40E-05			0.01	
18540299	Chromium (VI)	1.35E-05	1.35E-05	1.00E-01	8.00E-05	4.62E-04	2.43E-04	6.33E-06			0.24	7.91
218019	Chrysene	< 5.400E-8	5.40E-08			1.85E-06	9.70E-07	2.53E-08				
7440484	Cobalt	< 1.750E-6	1.75E-06	2.00E-01		5.99E-05	3.14E-05	8.20E-07			0.02	
7440508	Copper	2.74E-05	2.74E-05	2.00E+00		9.38E-04	4.92E-04	1.28E-05			0.02	
53703	Dibenzo(a,h) anthracene	< 1.270E-8	1.27E-08			4.35E-07	2.28E-07	5.95E-09				
206440	Fluoranthene	2.05E-07	2.05E-07	8.20E+01		7.02E-06	3.68E-06	9.61E-08			0.00	
86737	Fluorene	4.17E-07	4.17E-07	2.00E+01		1.43E-05	7.49E-06	1.95E-07			0.00	
7647010	Hydrogen chloride	7.20E-02	7.20E-02	2.98E+01	1.65E+02	7.00E-01	2.46E+00	1.29E+00	3.38E-02	8.26	0.78	4.82
7664393	Hydrogen fluoride	6.55E-04	6.55E-04	1.64E+01	4.09E+00	2.24E-02	1.18E-02	3.07E-04	0.14	0.29		
193395	Indeno(1,2,3-cd)pyrene	< 1.540E-8	1.54E-08			5.27E-07	2.77E-07	7.22E-09				
7439921	Lead	6.62E-05	6.62E-05	5.00E-01		2.27E-03	1.19E-03	3.10E-05			0.24	
7439976	Mercury	3.29E-03	3.29E-03	3.00E-01	1.00E-01	1.13E-01	5.91E-02	1.54E-03	37.53	59.11		
7439987	Molybdenum	< 1.670E-5	1.67E-05	5.00E+00		5.71E-04	3.00E-04	7.83E-06			0.01	
7440020	Nickel	3.82E-05	3.82E-05	1.00E+00		1.31E-03	6.86E-04	1.79E-05			0.07	
85018	Phenanthrene	2.29E-06	2.29E-06	9.80E+00		7.84E-05	4.11E-05	1.07E-06			0.00	
129000	Pyrene	1.62E-07	1.62E-07	2.00E+01		5.54E-06	2.91E-06	7.59E-08			0.00	
7782492	Selenium	< 4.360E-5	4.36E-05	2.00E+00		1.49E-03	7.83E-04	2.04E-05			0.04	
7440224	Silver	7.30E-06	7.30E-06	1.00E-01		2.50E-04	1.31E-04	3.42E-06			0.13	
7440280	Thallium	< 8.520E-5	8.52E-05	2.00E-01		2.92E-03	1.53E-03	3.99E-05			0.77	
7440622	Vanadium	5.79E-05	5.79E-05	5.00E-01		1.98E-03	1.04E-03	2.71E-05			0.21	
7440666	Zinc	3.53E-04	3.53E-04	1.00E+03	5.00E+02	1.21E-02	6.34E-03	1.65E-04	0.00	0.00		
	PM, filterable	8.50E-02	8.50E-02			2.91E+00	1.53E+00	3.98E-02				
	Polycyclic aromatic hydrocarbons (PAH)	3.76E-06	3.76E-06			1.29E-04	6.76E-05	1.76E-06				
1746016	Total Dioxins & Furans - TEQ balanced		1.41E-09		8.20E-04	3.00E-08	4.81E-08	2.53E-08	6.60E-10		0.00	2.20

PLOT PLAN

NORTH



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

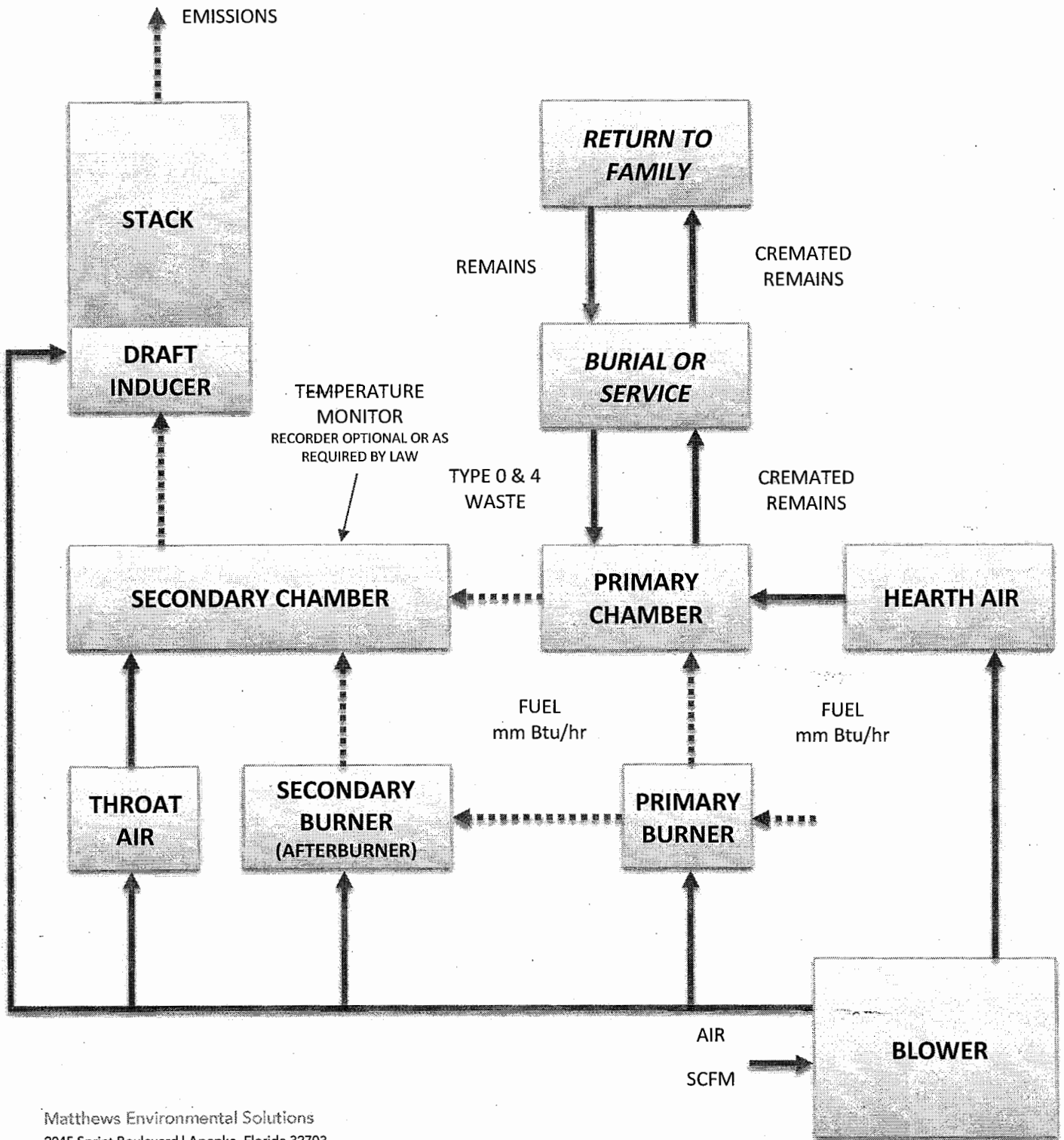


INSTRUCTIONS

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.

STRUCTURE DESCRIPTION

- (1) PIZZA HUT
- (2) RETAIL SHOPPING
- (3)
- (4)
- (5)
- (6)
- (7)
- (8)
- (9)
- (10)



Matthews Environmental Solutions
2045 Sprint Boulevard | Apopka, Florida 32703
O: 407-886-5533 | F: 407-886-5990 | www.matthewsenvironmentalsolutions.com

SPECIFICATIONS- Model Power-Pak II Plus

1. Equipment Type..... Model Power-Pak II Plus
 - A. Model No. IE43-PPII Plus
 - B. Underwriters Laboratories Listing and File No. .. 87E8; MH14647

2. Dimensions
 - A. Footprint 12' – 9 ½" x 5' - 9" (3.9 m x 1.8 m)
 - B. Maximum Length..... 14' – 10 ½" (4.53 m)
 - C. Maximum Width 6' -10" (2.08 m)
 - D. Maximum Height 9' (2.74 m)
 - E. Chamber Loading Opening 30 ¾" H x 43 ½" W (781 mm x 1105 mm)

3. Weight 28,000 lbs. (12,700 kg)

4. Utility/Air Requirements
 - A. Gross Gas Input, Natural or LP Gas..... 3,000,000 BTU/hr. (3,165,168 kJ/h)

Running Gas Pressure, LP or Natural Gas 11 inches (279.4 mm) water column or greater
 - B. Electrical Supply..... 230 volt, 3Ø or 1Ø, 50/60 hz (others available)
 - C. Air Supply..... 2,500 cfm (70.8 standard m³/min)

5. Incineration Capacity 175 lbs./hr. (79 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, Stainless Steel, welded seams (unlined stack available)

10. Draft Nozzle Construction Schedule 40 Stainless Steel pipe with 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 Plus

- 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 3,100° F. (1704° 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 70 cubic feet (2.12 m³)
 - B. Secondary Chamber 96 cubic feet (2.72 m³)

- 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 32° F. - 1,800° F. (0° C - 982° C)
 - B. Secondary Chamber 1,400° F. - 1,800° F. (760°C - 982°C)
(as required by Env. agency)

- 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 Plus

- 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
 - K. Cremation Burner/Door Interlock..... Available upon Env. Agency requirements

- 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 indicators
 - 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

SPECIFICATIONS- Model Power-Pak II Plus

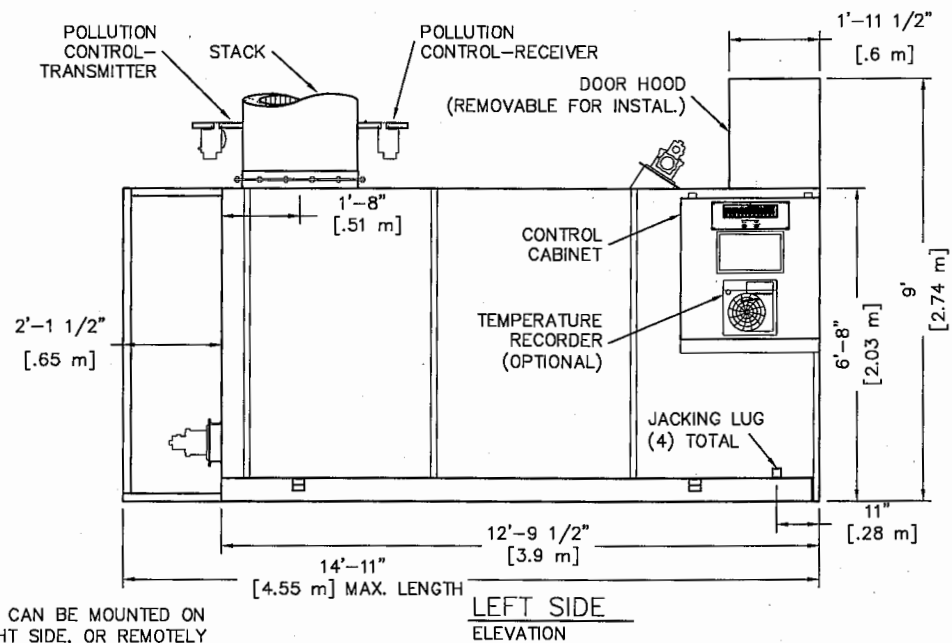
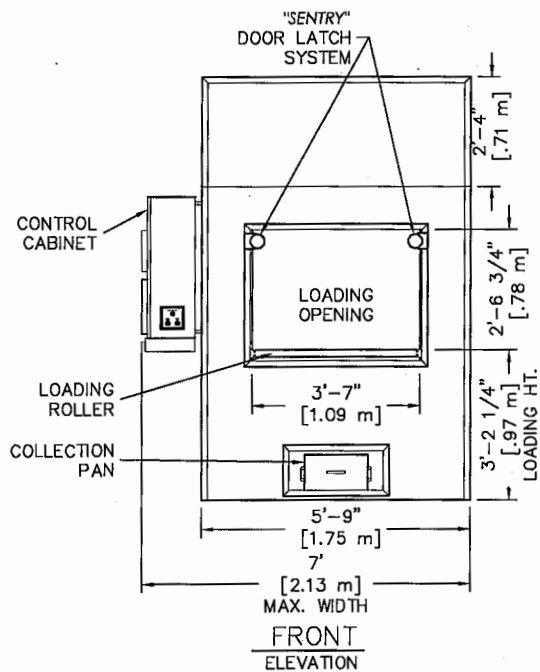
- 24. Automatic Timer Functions
 - A. Master Cycle Included
 - B. Afterburner (Secondary Burner) Included
 - C. Cremation Burner Included
 - D. Low Fire Cremation Burner Included
 - E. Hearth Air Included
 - F. Throat Air Included
 - G. Pollution Monitoring Included
 - H. Afterburner (Secondary Burner)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

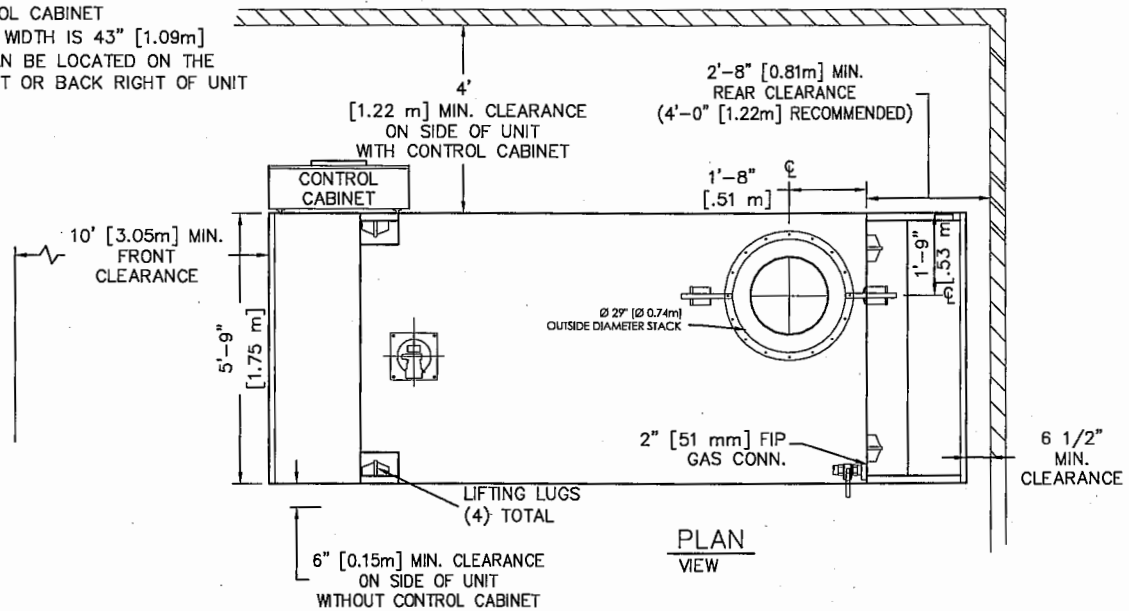
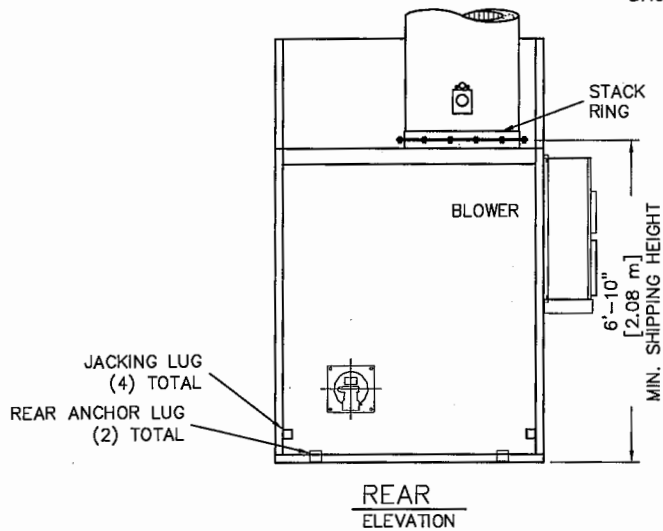
- 27. Environmental Submittals Complete technical portion of state environmental permits. Engineering calculations, technical data, existing stack test results and equipment blueprints provided.

Q:\ENG\MCD_NEW_SYSTEM\OPERATIONS\PII+_SHOP\PII+_09-003-004.DWG



NOTES:

- 1) CONTROL CABINET CAN BE MOUNTED ON THE LEFT OR RIGHT SIDE, OR REMOTELY
- 2) MAIN ELECTRICAL CONNECTION LOCATED IN CONTROL CABINET
- 3) CHAMBER WIDTH IS 43" [1.09m]
- 4) STACK CAN BE LOCATED ON THE BACK LEFT OR BACK RIGHT OF UNIT



Matthews
 ENVIRONMENTAL SOLUTIONS
 2045 Sprint Boulevard
 Apopka, Florida 32703
 USA

POWER-PAK II PLUS
 PLAN & ELEVATIONS INCL: CLEARANCES,
 REQUIREMENTS & RECOMMENDATIONS

DRAWN BY:	JG	DATE:	02.26.2015	REVISION:	
APPROVED BY:	-	DATE:	-	1	07.21.2017 REMOVE MAIN ELEC FROM TOP OF UNIT
SCALE:	1/4" = 1'-0"	SHEET:	OF:	2	09.20.2017 CHANGED MIN. FRONT CLEAR. TO 10'
DWG FILE:					
DWG NUMBER:					\$(GETVAR,??)

THIS DRAWING CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF MATTHEWS ENVIRONMENTAL SOLUTIONS. UNLESS OTHERWISE SPECIFIED IN WRITING, MATTHEWS ENVIRONMENTAL SOLUTIONS IS THE OWNER OF THIS DRAWING AND THE INFORMATION CONTAINED HEREIN. THIS DRAWING AND THE CONTAINED INFORMATION IS CONFIDENTIAL, PROPRIETARY, AND MAY NOT BE REPRODUCED OR DISCLOSED TO THIRD PARTIES WITHOUT THE EXPRESS WRITTEN CONSENT OF MATTHEWS ENVIRONMENTAL SOLUTIONS. IT IS ISSUED FOR ILLUSTRATIVE PURPOSES ONLY AND IS NOT TO BE USED FOR ANY PURPOSE, INCLUDING, BUT NOT LIMITED TO, AS A CONSTRUCTION DRAWING OR FOR A REQUEST FOR BID TO A THIRD PARTY. THIS DRAWING IS PROVIDED WITHOUT ANY WARRANTY EXPRESSED OR IMPLIED. ANY USE OF THIS DRAWING WILL BE AT THE RISK AND SOLE RESPONSIBILITY OF THE USER.

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:	10+ FEET [3.05+ m]	10 FEET [3.05 m]
REAR:	4 FEET [1.22 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 MES 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 11" [279 mm] W.C. FOR NATURAL GAS AND LP GAS.

CAPACITY: 3.0 MILLION BTU/HR [3.1 MILLION KILOJOULES/HR].

ELECTRICAL: 230 VOLT, 3 ϕ , (40A BREAKER) AND 115v (10A BREAKER), OR 230 VOLT, 1 ϕ , (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.

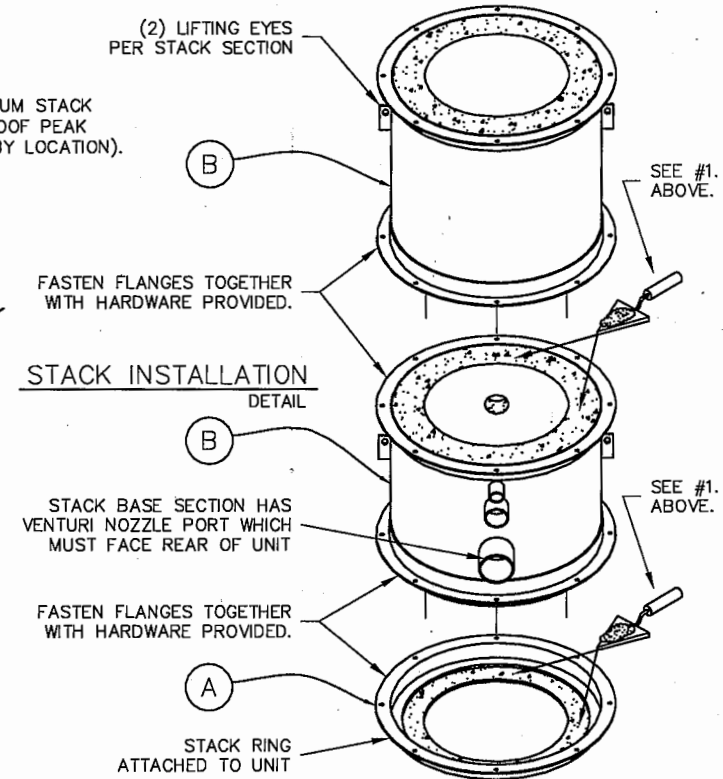
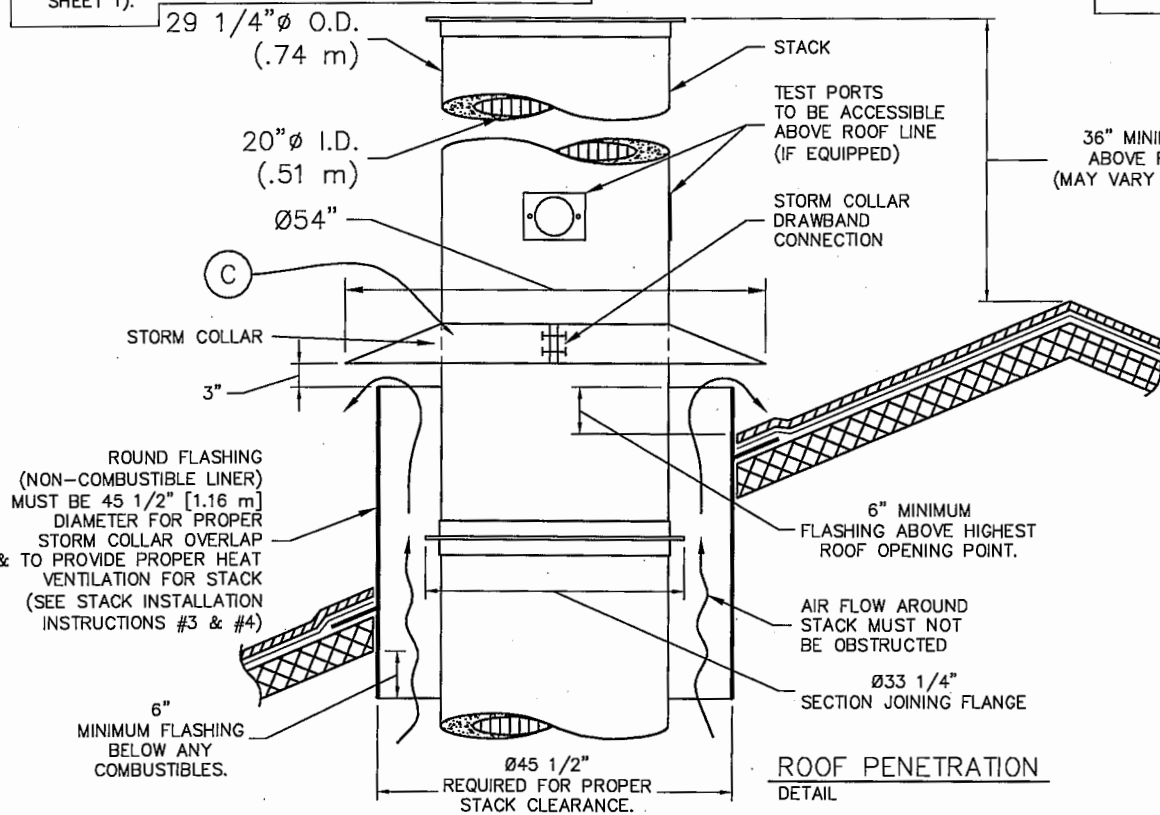
2. INSTALL STORM COLLAR ON STACK, 3" [76 mm] ABOVE NON-COMBUSTIBLE LINER (FLASHING), ALLOWING FOR PROPER VENTILATION (SEE DETAIL).

3. APPLY A 1/4" [6 mm] BEAD OF HIGH-TEMPERATURE SILICON SEALANT (PROVIDED BY MES) TO THE JOINT BETWEEN THE STORM COLLAR (C) AND THE STACK (B).

4. STORM COLLAR IS FURNISHED BY MES. 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 MES REP.

6. RAIN CAP NOT REQUIRED.



C:\ENG\MCD_NEW_SYSTEM\OPERATIONS\PII\SHOP\PII+_09-006.DWG

Matthews
ENVIRONMENTAL SOLUTIONS

2045 Sprint Boulevard
Apopka, Florida 32703
USA

POWER-PAK II PLUS

STACK DETAILS, CLEARANCES &
INSTALLATION INSTRUCTIONS.
REFRACTORY STACK DETAIL

DRAWN BY:	JG	DATE:	03.14.2014	REVISION:	
APPROVED BY:	-	DATE:	-	1	09.20.2017 CHANGED MIN. FRONT CLEAR. TO 10'
SCALE:	1/2" = 1'-0"	SHEET:	OF:		
DWG FILE:					
DWG NUMBER:					\$(GETVAR,??)

THIS DRAWING CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION OF MATTHEWS ENVIRONMENTAL SOLUTIONS. UNLESS OTHERWISE SPECIFIED IN WRITING, MATTHEWS ENVIRONMENTAL SOLUTIONS IS THE OWNER OF THIS DRAWING AND THE INFORMATION CONTAINED HEREIN. THIS DRAWING AND THE CONTAINED INFORMATION IS CONFIDENTIAL, PROPRIETARY, AND MAY NOT BE REPRODUCED OR DISCLOSED TO THIRD PARTIES WITHOUT THE EXPRESS WRITTEN CONSENT OF MATTHEWS ENVIRONMENTAL SOLUTIONS. IT IS ISSUED FOR ILLUSTRATIVE PURPOSES ONLY AND IS NOT TO BE USED FOR ANY PURPOSE, INCLUDING, BUT NOT LIMITED TO, AS A CONSTRUCTION DRAWING OR FOR A REQUEST FOR BID TO A THIRD PARTY. THIS DRAWING IS PROVIDED WITHOUT ANY WARRANTY EXPRESSED OR IMPLIED. ANY USE OF THIS DRAWING WILL BE AT THE RISK AND SOLE RESPONSIBILITY OF THE USER.

Calculation Of Emissions

Estimated Emission Calculation

Matthews Environmental Solutions
(previously Matthews Cremation Division)
Crematory Incinerator Model IE43-PPII Plus

Total Incinerator Burn Capacity 175 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

Sulfur Dioxide (SO₂)

$$\frac{175 \text{ lb/hr X } 2.17 \text{ lb/ton X } 1 \text{ ton}}{2000 \text{ lbs}} = 0.190 \text{ lb/hr}$$

$$= 0.355446 \text{ TPY}$$

$$\frac{0.189875 \text{ lb/hr X } 4.54\text{E}+05 \text{ mg/lb X } 1 \text{ ppmv}}{1175 \text{ dscfm X } 60 \text{ min/hr X } 0.0283 \text{ m}^3/\text{f}^3 \text{ X } 2.61 \text{ mg/m}^3} = 16.55 \text{ ppmv}$$

Nitrogen Oxide (NOx - as Nitrogen Dioxide)

$$\frac{175 \text{ lb/hr X } 3.56 \text{ lb/ton X } 1 \text{ ton}}{2000 \text{ lbs}} = 0.3115 \text{ lb/hr}$$

$$= 0.583128 \text{ TPY}$$

$$\frac{0.3115 \text{ lb/hr X } 4.54\text{E}+05 \text{ mg/lb X } 1 \text{ ppmv}}{1175 \text{ dscfm X } 60 \text{ min/hr X } 0.028 \text{ m}^3/\text{f}^3 \text{ X } 1.88 \text{ mg/m}^3} = 38.11 \text{ ppmv}$$

Particulates (PM & PM₁₀)

$$\frac{175 \text{ lb/hr X } 4.67 \text{ lb/ton X } 1 \text{ ton}}{2000 \text{ lbs}} = 0.408625 \text{ lb/hr}$$

$$= 0.764946 \text{ TPY}$$

$$\frac{0.408625 \text{ lb/hr X } 7.00\text{E}+03 \text{ gr/lb X}}{1175 \text{ dscfm X } 60 \text{ min/hr}} = 0.04 \text{ gr/dscf}$$

Carbon Monoxide (CO)

$$\frac{175 \text{ lb/hr X } 2.95 \text{ lb/ton X } 1 \text{ ton}}{2000 \text{ lbs}} = 0.258125 \text{ lb/hr}$$

$$= 0.48321 \text{ TPY}$$

$$\frac{0.258125 \text{ lb/hr X } 4.54\text{E}+05 \text{ mg/lb X } 1 \text{ ppmv}}{1175 \text{ dscfm X } 60 \text{ min/hr X } 0.028 \text{ m}^3/\text{f}^3 \text{ X } 1.14 \text{ mg/m}^3} = 52.08 \text{ ppmv}$$

Hydrocarbons (TOC/VOC - methane)

$$\frac{175 \text{ lb/hr X } 2.99\text{E}-01 \text{ lb/ton X } 1 \text{ ton}}{2000 \text{ lbs}} = 0.026163 \text{ lb/hr}$$

$$= 0.048976 \text{ TPY}$$

$$\frac{0.0261625 \text{ lb/hr X } 4.54\text{E}+05 \text{ mg/lb X } 1 \text{ ppmv}}{1175 \text{ dscfm X } 60 \text{ min/hr X } 0.0283 \text{ m}^3/\text{f}^3 \text{ X } 0.65 \text{ mg/m}^3} = 9.16 \text{ ppmv}$$

Notes:

1. Incinerator Emissions based on EPA emissions from Table 2.3-1 and 2.3-2 of AP-42 (5th Edition)
2. All conversion factors from AP-42 Appendix A.

CREMATOR MASS BALANCE
Matthews Environmental Solutions
PPII Plus

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	165

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)	1
SECONDARY BURNER FUEL CONSUMPTION (MMBTU/HR)	1.2
ADDITIONAL SECONDARY AIR SUPPLIED (CFM)	200
SEC. CHAMBER OPERATING TEMPERATURE (°F)	1600
SECONDARY CHAMBER VOLUME (CU. FT)	96
SEC. CHAMB. CROSS-SECTIONAL AREA (SQ. FT)	2.76
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

$$1000000 \text{ BTU/HR} \times 4.8\text{E-}05 \text{ LBS/BTU} = 48 \text{ LBS/HR}$$

B. COMBUSTION AIR FOR PRIMARY BURNER

$$\frac{1000000 \text{ BTU/HR}}{100 \text{ BTU/CF AIR}} \times 1 \text{ Burner} \times 0.075 \text{ LB/CF AIR} = 750 \text{ LBS/HR.}$$

C. MAXIMUM SECONDARY BURNER GAS USAGE

$$1200000 \text{ BTU/HR} \times 4.8\text{E-}05 \text{ LBS/BTU} = 58 \text{ LBS/HOUR}$$

D. COMBUSTION AIR FOR SECONDARY BURNER

$$\frac{1200000 \text{ BTU/HR}}{100 \text{ BTU/CF AIR}} \times 1 \text{ Burner} \times 0.075 \text{ LB/CF AIR} = 900 \text{ LBS/HOUR}$$

E. PRODUCTS FROM TYPE 0 WASTE (CONTAINER)

$$7.33 \text{ LBS/LB BURNED} \times 10 \text{ LB/HR BURN RATE} = 73 \text{ LBS/HOUR}$$

F. PRODUCTS FROM TYPE 4 WASTE (TISSUE)

$$1.70 \text{ LBS/LB WASTE} \times 165 \text{ LB/HR BURN RATE} = 281 \text{ LBS/HOUR}$$

G. ADDITIONAL SECONDARY CHAMBER COMBUSTION AIR (THROAT AIR)

$$12000 \text{ CF/HR*} \times 0.075 \text{ LB/CF AIR} = 900 \text{ LBS/HOUR}$$

H. TOTAL FLUE PRODUCTS

$$= \underline{\underline{3009 \text{ LBS/HOUR}}}$$

2. VELOCITY AND TIME CALCULATIONS

A. SCFM CALCULATION

(PRODUCTS ASSUMED TO HAVE DENSITY CLOSE TO AIR)

$$3009 \text{ LBS/HR} \times \frac{13.35 \text{ STD. CU. FT/LB}}{60 \text{ MIN/HR}} = 670 \text{ SCFM}$$

B. TOTAL PRODUCTS ACFM

@ 1600 °F

$$\frac{2060 \text{ °RANKINE}}{530 \text{ °RANKINE}} \times 669.6 \text{ CFM} = 2603 \text{ ACFM}$$

C. RETENTION TIME

$$\frac{96 \text{ CU. FT}}{2603 \text{ ACFM}} \times \frac{60 \text{ SECONDS}}{1 \text{ MINUTE}} = 2.21 \text{ SECONDS}$$

BARRY GLASSMAN
HARFORD COUNTY EXECUTIVE



JENNY B. JARKOWSKI
DIRECTOR OF PLANNING & ZONING

April 26, 2021

Susan Carlozo
Evans Funeral Chapel & Cremation Services
3 Newport Drive
Forest Hill, MD. 21050

Re: Zoning Verification
3 Newport Drive, Forest Hill, Maryland, 21050
Tax Map: 40 / Grid: 1D / Parcel: 0348 / Account 03-247376

Dear Ms. Carlozo:

I am writing to you in regards to your recent e-mail requesting zoning verification for a replacement crematory at the above referenced property. The Harford County Department of Planning and Zoning is the responsible authority for the enforcement of zoning ordinances related to the above reference property. Please be advised the subject property is currently zoned CI/Commercial Industrial District.

Upon review of our zoning records, I did find that on July 5, 1995 the subject site was granted approval to operate a crematory. In addition, I also found a DAC Waiver that granted the replacement of the crematory on March 31, 2010.

In addition, and to the best of my knowledge, we do not have any outstanding zoning or building violations and the property is in compliance.

If I can be of any further assistance, please feel free to contact me at 220 South Main Street, Bel Air, MD. 21014, by e-mail at dculver@harfordcountymd.gov or by phone at 410-638-3103, ext. 3227. Thank you for your continued cooperation.

Sincerely,

David M. Culver
Development Review

Cc/file

MARYLAND'S NEW CENTER OF OPPORTUNITY

410.638.3103 | 410.879.2000 | TTY Maryland Relay 711 | www.harfordcountymd.gov

220 South Main Street, Bel Air, Maryland 21014

THIS DOCUMENT IS AVAILABLE IN ALTERNATIVE FORMAT UPON REQUEST