

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

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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)

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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	Spray/Adsorb Tower	Venturi Scrubber	Carbon Adsorber	Electrostatic Precipitator	Baghouse	Thermal/Catalytic Afterburner	Dry Scrubber
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24-1	24-2	24-3	24-4	24-5	24-6	24-7	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"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 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"/> <input type="text"/> 70-71	Days Per Week <input type="text"/> 72	Days per Year <input type="text"/> <input type="text"/> <input type="text"/> 73-75
Seasonal Variation in Operation: No Variation <input checked="" type="checkbox"/> 76 Winter Percent <input type="text"/> <input type="text"/> 77-78 Spring Percent <input type="text"/> <input type="text"/> 79-80 Summer Percent <input type="text"/> <input type="text"/> 81-82 Fall Percent <input type="text"/> <input type="text"/> 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	UNITS
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	UNITS
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	UNITS
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

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

186-192

Maximum Design

Hourly Rate

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

193-199

Permit to Operate

Month

--	--

200-201

Transaction Date

(MM/DD/YR)

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

202-207

Staff Code

--	--	--

208-210

VOC Code

--	--

211 212

SIP Code

--	--

213 214

Regulation Code

--	--	--	--

215-218

Confidentiality

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219

Point Description

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

220-238

Action

--

239

A: Add
C: Change

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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

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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)).



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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.)

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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

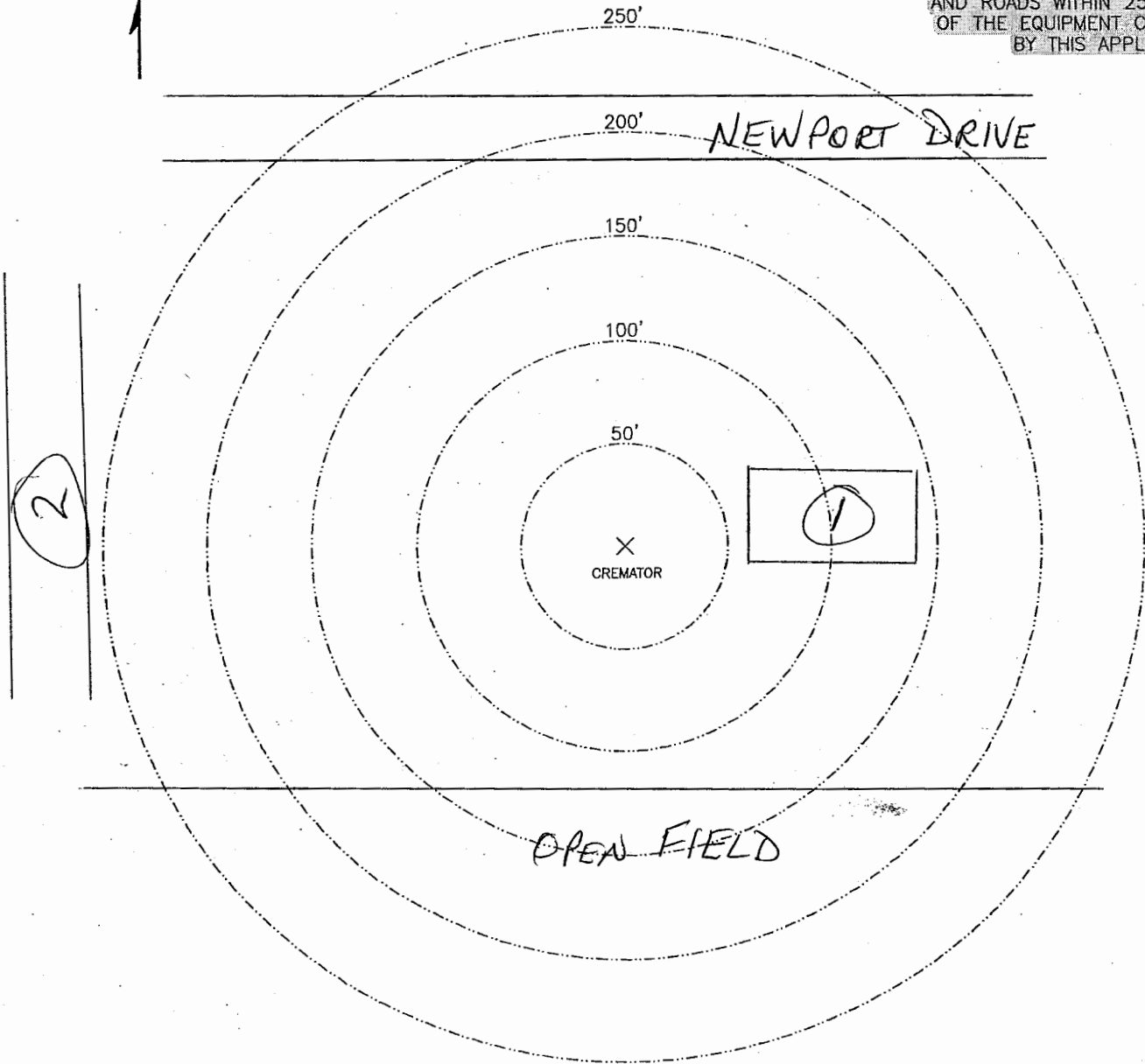
CAS	POLLUTANT	Emission Factor (EPA FIRE) (Pounds)	Emission Factor (as number) (Pounds)	MDE Screening Level (ug/m3)	MDE Screening Level (ug/m3)	MDE Screening Level (ug/m3)	Screen3 Concentration 1-hour (ug/m3)	Screen3 Concentration 8-hour (ug/m3)	Screen3 Concentration Annual (ug/m3)	Screen3 Concentration 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.

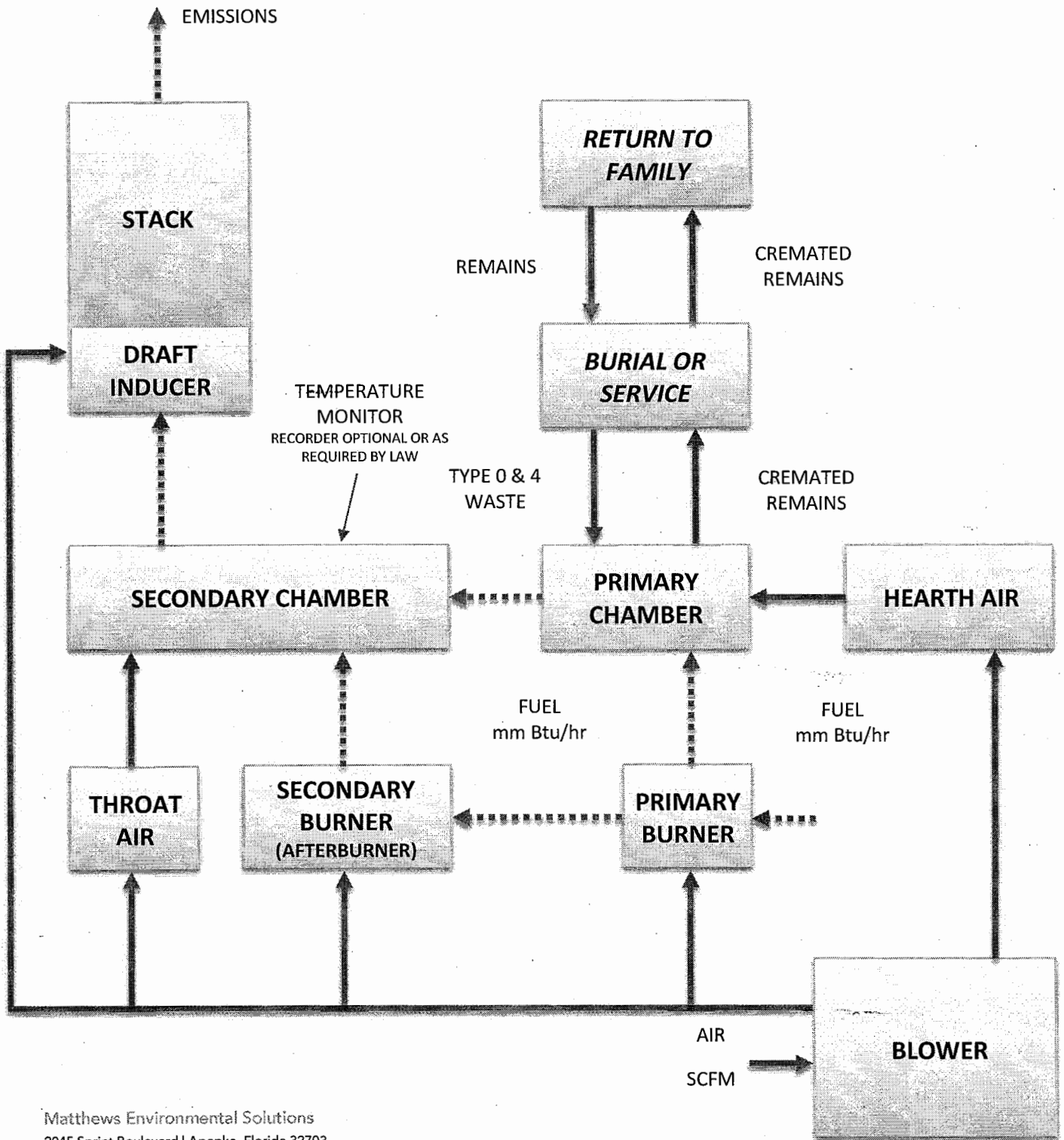


INSTRUCTIONS

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.matthewsenviromentalsolutions.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

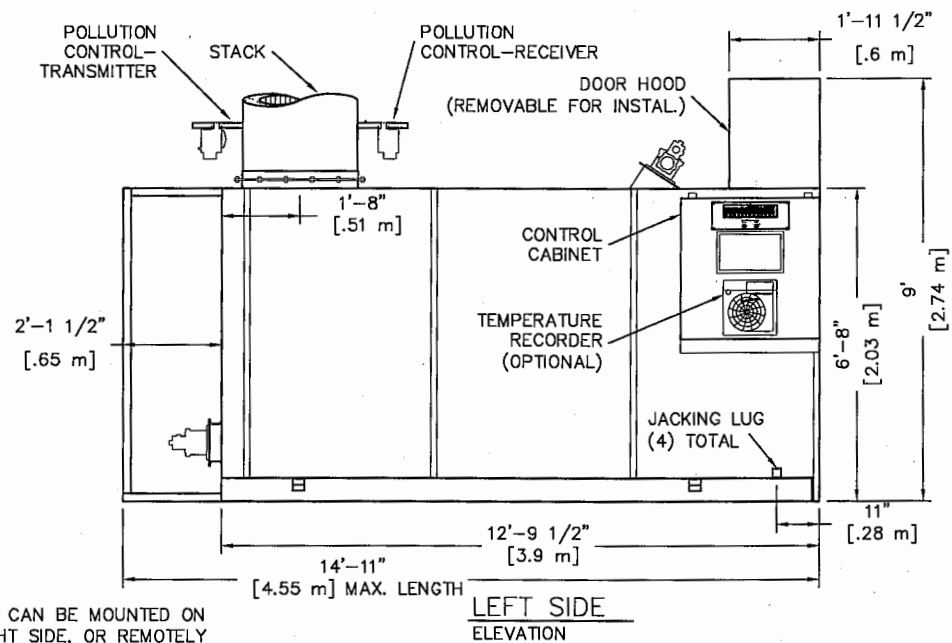
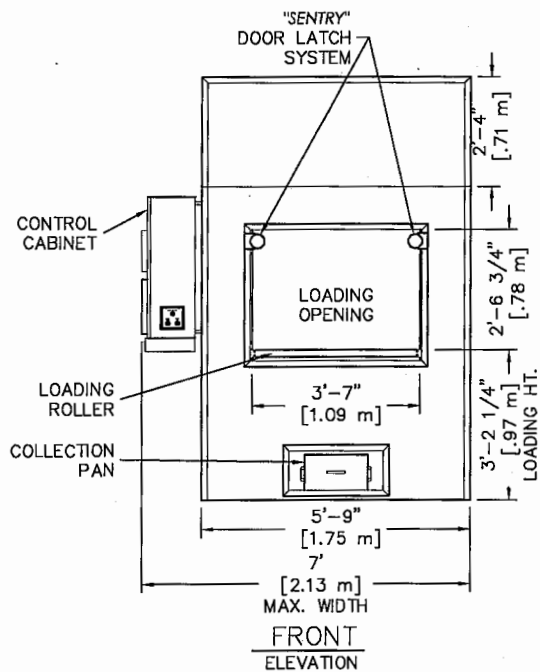
- 24. Automatic Timer Functions
 - A. Master Cycle Included
 - B. Afterburner (Secondary Burner) Included
 - C. Cremation Burner Included
 - D. Low Fire Cremation Burner Included
 - E. Hearth Air Included
 - F. Throat Air Included
 - G. Pollution Monitoring Included
 - H. Afterburner (Secondary Burner)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

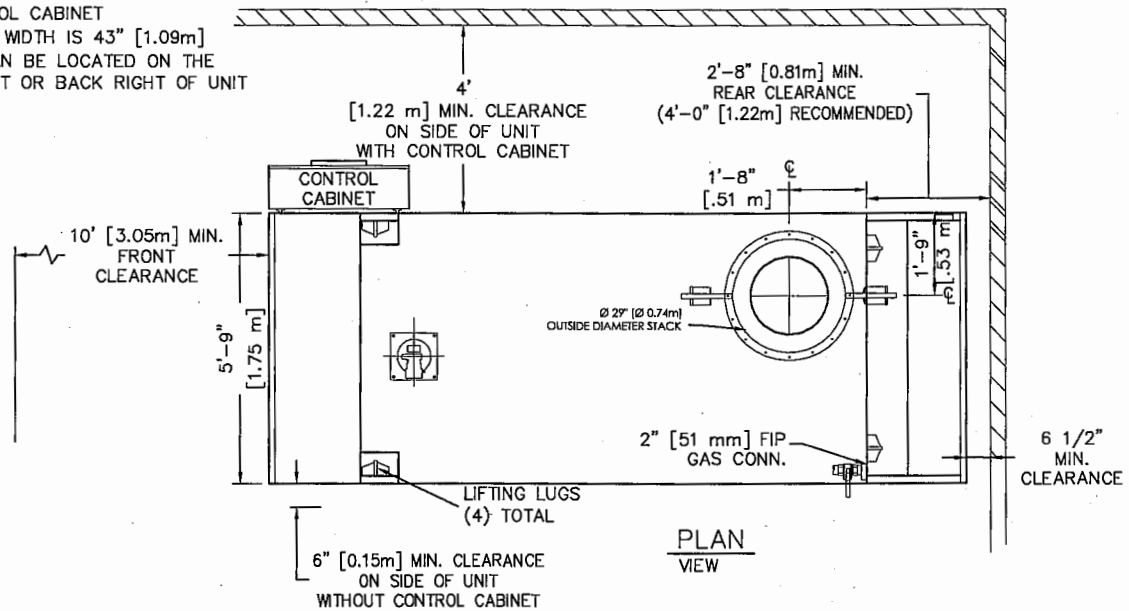
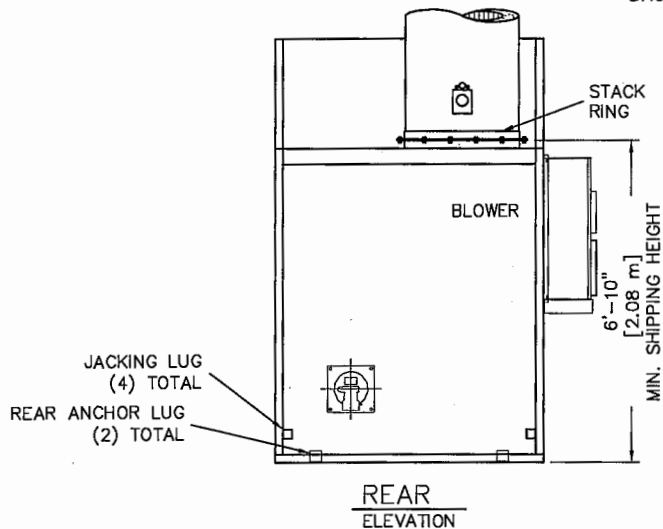
- 27. Environmental Submittals Complete technical portion of state environmental permits. Engineering calculations, technical data, existing stack test results and equipment blueprints provided.

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,??)

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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.

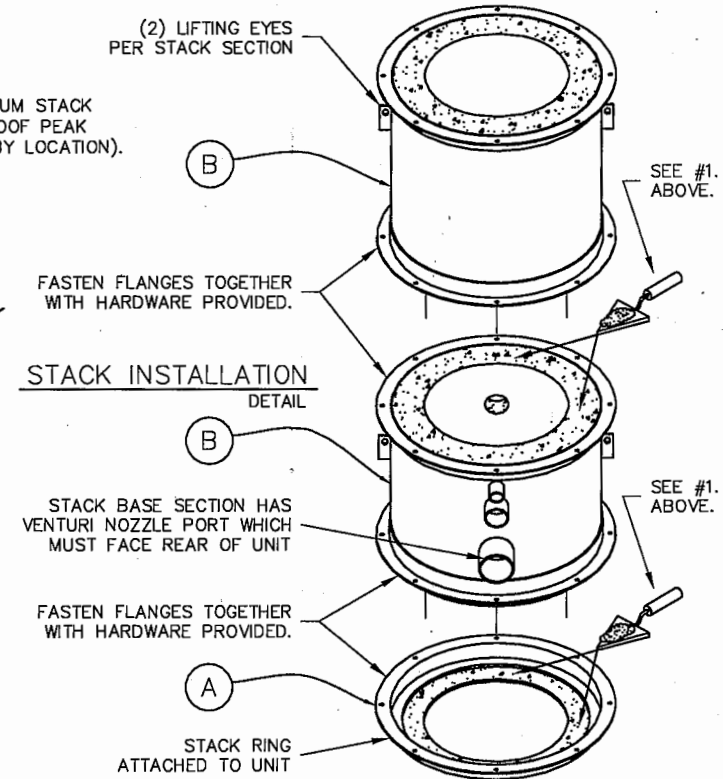
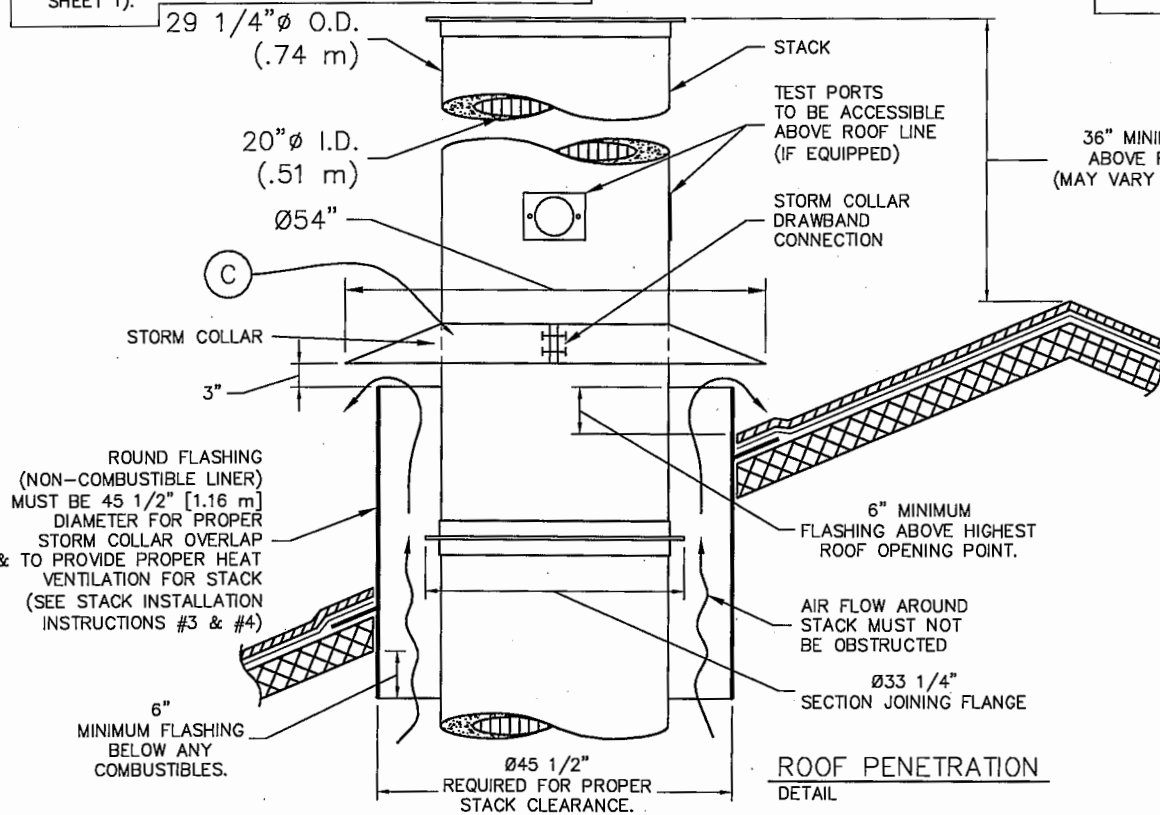
2. INSTALL STORM COLLAR ON STACK, 3" [76 mm] ABOVE NON-COMBUSTIBLE LINER (FLASHING), ALLOWING FOR PROPER VENTILATION (SEE DETAIL).

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.



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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,??)

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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)

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

$$= 0.355446 \text{ TPY}$$

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

Nitrogen Oxide (NOx - as Nitrogen Dioxide)

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

$$= 0.583128 \text{ TPY}$$

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

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)

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

$$= 0.48321 \text{ TPY}$$

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

Hydrocarbons (TOC/VOC - methane)

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

$$= 0.048976 \text{ TPY}$$

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

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

MARYLAND DEPARTMENT OF THE ENVIRONMENT

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

**SUPPLEMENT TO
DOCKET #07-21**

COMPANY: Evans Funeral Chapel
LOCATION: 3 Newport Drive, Forest Hill, MD, 21050
APPLICATION: Installation of one (1) human crematory

<u>ITEM</u>	<u>DESCRIPTION</u>
1	Notice of Tentative Determination, Opportunity to Request a Public Hearing, and Opportunity to Submit Written Comments
2	Fact Sheet and Tentative Determination
3	Draft Permit to Construct and Conditions
4	Supplemental Information - Reference List
5	Privilege Log – Not Applicable

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

**NOTICE OF TENTATIVE DETERMINATION, OPPORTUNITY TO REQUEST
A PUBLIC HEARING, AND OPPORTUNITY TO SUBMIT WRITTEN COMMENTS**

FIRST NOTICE

The Department of the Environment, Air and Radiation Administration (ARA) has completed its review of an application for a Permit to Construct submitted by 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.

Pursuant to Section 1-604, of the Environment Article, Annotated Code of Maryland, the Department has made a tentative determination that the Permit to Construct can be issued and is now ready to receive public comment on the application.

Copies of the Department's tentative determination, the application, the draft permit to construct with conditions, 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>

Interested persons may request a public hearing and/or submit written comments on the tentative determination. Requests for a public hearing must be submitted in writing and must be received by the Department no later than 20 days from the date of this notice. Written comments must be received by the Department no later than 30 days from the date of this notice9+-.

Interested persons may request an extension to the public comment period. The extension request must be submitted in writing and must be received by the Department no later than 30 days from the date of this notice or within 5 days after the hearing (if a hearing is requested), whichever is later. The public comment period may only be extended one time for a 60-day period.

All requests for a public hearing, requests for an extension to the public comment period, and all written comments 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 ENVIRONMENT
AIR AND RADIATION ADMINISTRATION**

**FACT SHEET AND TENTATIVE DETERMINATION
EVANS FUNERAL CHAPEL – BEL AIR, P.A.**

PROPOSED INSTALLATION OF ONE (1) HUMAN CREMATORY

I. INTRODUCTION

The Maryland Department of the Environment (the "Department") received an application from Evans Funeral Chapel – Bel Air, P.A. on April 14, 2021 for a Permit to Construct for the installation of one (1) new Matthews ES PPII Plus, 175 pounds per hour, human crematory to replace an existing unit. The proposed installation will be located at 3 Newport Drive, Forest Hill, MD, 21050.

A notice was placed in Aegis on August 11, 2021 and again on August 18, 2021 announcing an opportunity to request an informational meeting to discuss the application for a Permit to Construct. An informational meeting was not requested.

As required by law, all public notices were also provided to elected officials in all State, county, and municipality legislative districts located within a one-mile radius of the facility's property boundary.

The Department has reviewed the application and has made a tentative determination that the proposed facility is expected to comply with all applicable air quality regulations. A notice will be published to provide the public with opportunities to request a public hearing and to comment on the application, the Department's tentative determination, the draft permit conditions, and other supporting documents. The Department will not schedule a public hearing unless a legitimate request is received.

If the Department does not receive any comments that are adverse to the tentative determination, the tentative determination will automatically become a final determination. If adverse comments are received, the Department will review the comments, and will then make a final determination with regard to issuance or denial of the permit. A notice of final determination will be published in a newspaper of general circulation in the affected area. The final determination may be subject to judicial review pursuant to Section 1-601 of the Environment Article, Annotated Code of Maryland.

II. CURRENT STATUS AND PROPOSED INSTALLATION

A. Current Status

Evans Funeral Chapel currently operates a funeral home located at 3 Newport Drive, Forest Hill, MD, 21050. That includes the following permitted crematory units:

- (1) One (1) All Crematory Corporation's natural gas/LP fired multiple chamber crematory model 2101 rated at 150 pounds per hour and used for human cremation.

- (2) One (1) Matthews Cremation Division's natural gas/LP fired multiple chamber Cremation Retort, Model IE43-PP II rated at 150 pounds per hour and used for human cremation.

B. Proposed Installation

Evans Funeral Chapel is proposing to install one (1) new 175 pounds per hour, Matthews ES PPII Plus to replace the All Crematory Corporations model 2101 crematory at their facility.

The Matthews ES PPII Plus human crematory will be equipped with a secondary combustion chamber capable of meeting at least a 1.0 second retention time and a minimum operating temperature of 1600 °F. The Matthews ES PPII Plus crematory must be equipped with temperature sensors and monitors to continuously measure and record the temperature of the secondary combustion chamber. Exhaust gases must be vented out of a stack at a height of at least 38 feet from the ground to ensure proper dispersion of exhaust gases.

III. APPLICABLE REGULATIONS

The proposed installation is subject to all applicable Federal and State air quality control regulations, including, but not limited to the following:

- (a) COMAR 26.11.01.07C, which requires that the Permittee report to the Department occurrences of excess emissions.
- (b) COMAR 26.11.02.13A(1), which requires that the Permittee obtain from the Department, and maintain and renew as required, a valid State permit-to-operate.
- (c) COMAR 26.11.02.19C & D, which require that the Permittee submit to the Department annual certifications of emissions, and that the Permittee maintain sufficient records to support the emissions information presented in the submittals.
- (d) COMAR 26.11.06.08 and 26.11.06.09, which generally prohibit the discharge of emissions beyond the property line in such a manner that a nuisance or air pollution is created.
- (e) COMAR 26.11.08.04B, which prohibits visible emissions other than uncombined water.

Exceptions. The requirements do not apply to emissions during start-up, or adjustments or occasional cleaning of control equipment if:

- (1) The visible emissions are not greater than 40 percent opacity; and
- (2) The visible emissions do not occur for more than 6 consecutive minutes in any 60-minute period.

- (f) COMAR 26.11.08.05B(2)(a), which limits the concentration of particulate matter in any exhaust gases to not more than 0.10 grains per standard cubic foot of dry exhaust gas.
- (g) COMAR 26.11.15.05, which requires that the Permittee implement “Best Available Control Technology for Toxics” (T – BACT) to control emissions of toxic air pollutants.
- (h) COMAR 26.11.15.06, which prohibits the discharge of toxic air pollutants to the extent that such emissions would unreasonably endanger human health.

IV. GENERAL AIR QUALITY

The U.S. Environmental Protection Agency (EPA) has established primary and secondary National Ambient Air Quality Standards (NAAQS) for six (6) criteria pollutants, i.e., sulfur dioxide, particulate matter, carbon monoxide, nitrogen dioxide, ozone, and lead. The primary standards were established to protect public health, and the secondary standards were developed to protect against non-health effects such as damage to property and vegetation.

The Department utilizes a statewide air monitoring network, operated in accordance with EPA guidelines, to measure the concentrations of criteria pollutants in Maryland’s ambient air. The measurements are used to project statewide ambient air quality, and currently indicate that Harford County complies with the NAAQS for sulfur dioxide, particulate matter, carbon monoxide, nitrogen dioxide, and lead.

Ground level ozone continues to present a problem for the entire Baltimore metropolitan area, which is classified as a non-attainment area for ozone. The primary contributors to the formation of ozone are emissions of oxides of nitrogen, primarily from combustion equipment, and emissions of Volatile Organic Compounds (VOC) such as paint solvents and gasoline vapors. Harford County is included in the non-attainment area for ozone.

With regard to toxic air pollutants (TAPs), screening levels (i.e., acceptable ambient concentrations for toxic air pollutants) are generally established at 1/100 of allowed worker exposure levels (TLVs)¹. The Department has also developed additional screening levels for carcinogenic compounds. The additional screening levels are established such that continuous exposure to the subject TAP at the screening level for a period of 70 years is expected to cause an increase in lifetime cancer risk of no more than 1 in 100,000.

¹ TLVs are threshold limit values (exposure limits) established for toxic materials by the American Conference of Governmental Industrial Hygienists (ACGIH). Some TLVs are established for short-term exposure (TLV – STEL), and some are established for longer-term exposure (TLV – TWA), where TWA is an acronym for time-weight average.

V. COMPLIANCE DEMONSTRATION AND ANALYSIS

The proposed installation must comply with all State imposed emissions limitations and screening levels, as well as the NAAQS. The Department has conducted an engineering and air quality review of the application. The emissions were projected based on U.S. EPA-approved emissions factors for crematory operations. The conservative U.S. EPA's SCREEN3 model was also used to project the maximum ground level concentrations from the proposed installation, which were then compared to the screening levels and the NAAQS.

- A. **Estimated Emissions** - The maximum emissions of criterial pollutants from the proposed installation, are listed in Table I.
- B. **Compliance with National Ambient Air Quality Standards** - The maximum ground level concentrations for particulate matter, sulfur dioxide, oxides of nitrogen, carbon monoxide, and volatile organic compounds based on the emissions from the proposed installation, are listed in column 2 of Table II. The combined impact of the proposed installation, and the ambient background concentration for each pollutant shown in column 3 of Table II, is less than the NAAQS for each pollutant shown in column 4. Emissions of oxides of nitrogen and volatile organic compounds from the proposed crematory are each less than 1 ton per year, much less than the federal major source threshold of 25 tons per year. Emissions from the proposed crematory will not significantly impact the local ground level ozone concentration.
- C. **Compliance with Air Toxics Regulations** – The premises wide toxic air pollutants of concern that would be emitted from this facility are listed in column 1 of Table III. The predicted maximum off-site ambient concentrations of these toxic air pollutants are shown in column 4 of Table III, and in each case the maximum concentration is less than the corresponding screening level for the toxic air pollutant shown in column 3.

VI. TENTATIVE DETERMINATION

Based on the above information, the Department has concluded that the proposed installation will comply with all applicable Federal and State air quality control requirements. In accordance with the Administrative Procedure Act, Department has made a tentative determination to issue the Permit to Construct. Enclosed with the tentative determination is a copy of the draft Permit to Construct.

**TABLE I
PROJECTED MAXIMUM EMISSIONS FROM THE PROPOSED INSTALLATION**

POLLUTANT	PROJECTED MAXIMUM EMISSIONS	
	(lbs/day)	(tons/year)
Oxides of Nitrogen (NO _x) (includes Nitrogen Dioxide – NO ₂)	0.25	0.05
Carbon Monoxide (CO)	0.21	0.04
Sulfur Dioxide (SO ₂)	0.09	0.02
Total Particulate Matter (PM) (includes PM-10 and PM-2.5)	0.05	0.01
Volatile Organic Compounds (VOC)	0.13	0.02

**TABLE II
PROJECTED IMPACT OF EMISSIONS OF CRITERIA POLLUTANTS FROM THE
PROPOSED INSTALLATION ON AMBIENT AIR QUALITY**

POLLUTANTS	MAXIMUM OFF-SITE GROUND LEVEL CONCENTRATIONS CAUSED BY EMISSIONS FROM PROPOSED PROCESS (µg/m ³)	BACKGROUND AMBIENT AIR CONCENTRATIONS (µg/m ³)*	NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) (µg/m ³)
Nitrogen Dioxide (NO ₂)	1-hour max → 16 annual avg → 0.22	1-hour max → 107 annual avg → 22	1-hour max → 188 annual avg → 100
Carbon Monoxide (CO)	1-hour max → 14 8-hour max → 7	1-hour max. → 3322 8-hour max. → 2406	1-hour max. → 40,000 8-hour max. → 10,000
Sulfur Dioxide (SO ₂)	1-hour max → 6 24-hour max → 2	1-hour max → 59 24-hour max → 10	1-hour max → 196 24-hour max → 366
Particulate Matter (PM ₁₀)	24-hour max → 1	24-hour max. → 53	24-hour max. → 150

*Background concentrations were obtained from Maryland air monitoring stations as follows:

NO₂ and PM₁₀ → Monitoring Station in Old Town, Baltimore City
CO and SO₂ → Monitoring Station in Essex, Baltimore County

**TABLE III
PREDICTED MAXIMUM OFF-SITE AMBIENT CONCENTRATIONS FOR
TOXIC AIR POLLUTANTS EMITTED FROM THE FACILITY**

Toxic Air Pollutant	PROJECTED WORST-CASE FACILITY-WIDE EMISSIONS (lbs/hr)	SCREENING LEVELS ($\mu\text{g}/\text{m}^3$)	PREDICTED MAXIMUM OFF-SITE GROUND LEVEL CONCENTRATIONS ($\mu\text{g}/\text{m}^3$)
Acenaphthene (CAS No. 83329)	0.0000002	20.3 (8-hr)	0.000002 (8-hr)
Acenaphthylene (CAS No. 208968)	0.0000002	24.6 (8-hr)	0.000002 (8-hr)
Anthracene (CAS No. 120127)	0.0000006	20 (8-hr)	0.000006 (8-hr)
Antimony (CAS No. 7440360)	0.00006	5 (8-hr)	0.0005 (8-hr)
Arsenic (CAS No. 7440382)	0.00006	0.1 (8-hr) 0.002 (annual)	0.0005 (8-hr) 0.000014 (annual)
Barium (CAS No. 7440393)	0.00005	5 (8-hr)	0.0004 (8-hr)
Benzo (g,h,i) perylene (CAS No. 191242)	0.00000006	20 (8-hr)	0.0000005 (8-hr)
Beryllium (CAS No. 7440417)	0.000003	0.0005 (8-hr) 0.004 (annual)	0.00002 (8-hr) 0.0000006 (annual)
Cadmium (CAS No. 7440439)	0.00002	0.02 (8-hr) 0.006 (annual)	0.0002 (8-hr) 0.000005 (annual)
Chromium (CAS No. 7440473)	0.00006	5 (8-hr)	0.0005 (8-hr)
Chromium VI (CAS No. 18540299)	0.00003	0.01 (8-hr) 0.0008 (annual)	0.0002 (8-hr) 0.000006 (annual)
Cobalt (CAS No. 7440484)	0.000004	0.2 (8-hr)	0.00003 (8-hr)
Copper (CAS No. 7440508)	0.00005	2 (8-hr)	0.0005 (8-hr)
Fluoranthene (CAS No. 206440)	0.0000004	82 (8-hr)	0.000004 (8-hr)
Fluorene (CAS No. 86737)	0.0000008	20 (8-hr)	0.000007 (8-hr)
Hydrogen Chloride (CAS No. 7647010)	0.14	29.8 (1-hr) 165 (8-hr)	2.46(1-hr) 1.29 (8-hr)
Hydrogen Fluoride (CAS No. 7664393)	0.0013	16.4 (1-hr) 4.1 (8-hr)	0.02 (1-hr) 0.012 (8-hr)
Lead (CAS No. 7439921)	0.00013	0.5 (8-hr)	0.0012 (8-hr)
Mercury (CAS No. 7439976)	0.0066	0.3 (1-hr) 0.1 (8-hr)	0.11 (1-hr) 0.06 (8-hr)
Molybdenum (CAS No. 7439987)	0.000033	5 (8-hr)	0.0003 (8-hr)
Nickel (CAS No. 7440020)	0.000076	1 (8-hr)	0.0007 (8-hr)
Phenanthrene (CAS No. 85018)	0.000005	9.8 (8-hr)	0.00004 (8-hr)
Pyrene (CAS No. 129000)	0.0000003	20 (8-hr)	0.000003 (8-hr)
Selenium (CAS No. 7782492)	0.000087	2 (8-hr)	0.0008 (8-hr)

Toxic Air Pollutant	PROJECTED WORST-CASE FACILITY-WIDE EMISSIONS (lbs/hr)	SCREENING LEVELS ($\mu\text{g}/\text{m}^3$)	PREDICTED MAXIMUM OFF-SITE GROUND LEVEL CONCENTRATIONS ($\mu\text{g}/\text{m}^3$)
Silver (CAS No. 7440224)	0.000015	0.1 (8-hr)	0.0001 (8-hr)
Thallium (CAS No. 7440280)	0.00017	0.2 (8-hr)	0.002 (8-hr)
Vanadium (CAS No. 7440622)	0.000012	0.5 (8-hr)	0.001(8-hr)
Zinc (CAS No. 7440666)	0.0007	1000 (1-hr) 500 (8-hr)	0.012 (1-hr) 0.006 (8-hr)
Total Dioxins and Furans (CAS No. 174016)	0.000000003	0.0008 (8-hr)	0.00000003 (8-hr)

The values represent maximum facility-wide emissions of toxic air pollutants during any 1-hour period of facility operation.

The values are based on worst-case emissions from the proposed facility and were predicted by EPA's SCREEN3 model, which provides conservative estimations concerning the impact of pollutants on ambient air quality.

DRAFT PERMIT

Larry Hogan

Ben Grumbles

Air and Radiation Administration

1800 Washington Boulevard, Suite 720
Baltimore, MD 21230

Construction Permit

Operating Permit

PERMIT NO. 025-0380

DATE ISSUED _____

PERMIT FEE \$1,500.00 (PAID)

EXPIRATION DATE In accordance with
COMAR 26.11.02.04B

LEGAL OWNER & ADDRESS

Evans Funeral Chapel – Bel Air, P.A.
3 Newport Drive,
Forest Hill, 21050
Attention: Mr. Charles F Evans Jr.
President

SITE

Evans Funeral Chapel Evans Funeral Chapel –
Bel Air, P.A.
3 Newport Drive,
Forest Hill, 21050

AI # 26594

SOURCE DESCRIPTION

Installation of one (1) Matthews ES PPII Plus, 175 pounds per hour, human crematory and used for human cremation.

This source is subject to the conditions described on the attached pages.

Program Manager

Director, Air and Radiation Administration

**EVANS FUNERAL CHAPEL – BEL AIR, P.A.
PERMIT-TO-CONSTRUCT CONDITIONS
PREMISES NO. 025-0380**

INDEX

- Part A – General Provisions
- Part B – Applicable Regulations
- Part C – Construction Conditions
- Part D – Operating Conditions
- Part E – Notifications and Monitoring
- Part F – Record Keeping and Reporting
- Part G – Temporary Permit-To-Operate Conditions

This permit covers the following registered installation:

ARA Registration No.	Description	Installation Date
025-0380-1-0043	One (1) Matthews Cremation Division's natural gas/LP fired multiple chamber Cremation Retort, Model IE43-PP II rated at 150 pounds per hour and used for human cremation.	2010
025-0380-1-0046	Matthews ES PPII Plus, 175 pounds per hour, human crematory	2022

Part A – General Provisions

- (1) The following Air and Radiation Administration (ARA) permit-to-construct application forms and supplemental information are incorporated into this permit by reference:
 - (a) All valid applications for Processing or Manufacturing Equipment (Form 5) received at the Department prior to issuance of this permit, and pertaining to registered equipment associated with Evans Funeral Chapel – Bel Air P.A. This includes the Application for Processing or Manufacturing Equipment (Form 5) received on April 14, 2021 for the installation of one (1) Matthews ES PPII, 175 lb/hr human crematory.
 - (b) All valid applications for Emissions Point Data (Form 5 EP) received at the Department prior to issuance of this permit, and pertaining to registered equipment associated with Evans Funeral Chapel – Bel Air P.A. This includes Emissions Point Data (Form 5 EP) received April 14, 2021.
 - (c) All valid applications for Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration (Form 5T) received at the

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Department prior to issuance of this permit, and pertaining to registered equipment associated with Evans Funeral Chapel – Bel Air P.A. This includes Emissions Summary and Compliance Demonstration (Form 5T) received April 14, 2021.

- (d) Supplemental Information received in previous applications as well as Emissions calculations, screen modeling results, plot plan, and equipment specifications received April 14, 2021.

If there are any conflicts between representations in this permit and representations in the applications, the representations in the permit shall govern. Estimates of dimensions, volumes, emissions rates, operating rates, feed rates and hours of operation included in the applications do not constitute enforceable numeric limits beyond the extent necessary for compliance with applicable requirements.

- (2) Upon presentation of credentials, representatives of the Maryland Department of the Environment (“MDE” or the “Department”) and the Harford County Health Department shall at any reasonable time be granted, without delay and without prior notification, access to the Permittee’s property and permitted to:
 - (a) inspect any construction authorized by this permit;
 - (b) sample, as necessary to determine compliance with requirements of this permit, any materials stored or processed on-site, any waste materials, and any discharge into the environment;
 - (c) inspect any monitoring equipment required by this permit;
 - (d) review and copy any records, including all documents required to be maintained by this permit, relevant to a determination of compliance with requirements of this permit; and
 - (e) obtain any photographic documentation or evidence necessary to determine compliance with the requirements of this permit.
- (3) The Permittee shall notify the Department prior to increasing quantities and/or changing the types of any materials referenced in the application or limited by this permit. If the Department determines that such increases or changes constitute a modification, the Permittee shall obtain a permit-to-construct prior to implementing the modification.
- (4) Nothing in this permit authorizes the violation of any rule or regulation or the creation of a nuisance or air pollution.

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- (5) If any provision of this permit is declared by proper authority to be invalid, the remaining provisions of the permit shall remain in effect.
- (6) This permit supersedes all previous permits to construct issued under ARA Premises Number 025-0380.
- (7) Subsequent to issuance of this permit, the Department may impose additional and modified requirements that are incorporated into a State permit-to-operate issued pursuant to COMAR 26.11.02.13.

Part B – Applicable Regulations

- (1) This source is subject to all applicable federal air pollution control requirements.
- (2) This source is subject to all applicable federally enforceable State air pollution control requirements including, but not limited to, the following regulations:
 - (a) COMAR 26.11.01.07C, which requires that the Permittee report to the Department occurrences of excess emissions.
 - (b) COMAR 26.11.02.04B, which states that a permit to construct or an approval expires if, as determined by the Department:
 - (i) Substantial construction or modification is not commenced within 18 months after the date of issuance of the permit or approval, unless the Department specifies a longer period in the permit or approval;
 - (ii) Construction or modification is substantially discontinued for a period of 18 months after the construction or modification has commenced; or
 - (iii) The source for which the permit or approval was issued is not completed within a reasonable period after the date of issuance of the permit or approval.
 - (c) COMAR 26.11.02.09A, which requires that the Permittee obtain a permit-to-construct if an installation is to be modified in a manner that would cause changes in the quantity, nature, or characteristics of emissions from the installation as referenced in this permit.
 - (d) COMAR 26.11.08.04B, which prohibits visible emissions other than uncombined water.

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Exceptions. The requirements do not apply to emissions during start-up, or adjustments or occasional cleaning of control equipment if:

- (i) The visible emissions are not greater than 40 percent opacity; and
 - (ii) The visible emissions do not occur for more than 6 consecutive minutes in any 60-minute period.
- (e) COMAR 26.11.08.05B(2)(a), which limits the concentration of particulate matter in any exhaust gases to not more than 0.10 grains per standard cubic foot of dry exhaust gas.
- (3) This source is subject to all applicable State-only enforceable air pollution control requirements including, but not limited to, the following regulations:
- (a) COMAR 26.11.02.13A(1), which requires that the Permittee obtain from the Department, and maintain and renew as required, a valid State permit-to-operate.
 - (b) COMAR 26.11.02.19C & D, which require that the Permittee submit to the Department annual certifications of emissions, and that the Permittee maintain sufficient records to support the emissions information presented in such submittals.
 - (c) COMAR 26.11.06.08 and 26.11.06.09, which generally prohibit the discharge of emissions beyond the property line in such a manner that a nuisance or air pollution is created.
 - (d) COMAR 26.11.15.05, which requires that the Permittee implement “Best Available Control Technology for Toxics” (T – BACT) to control emissions of toxic air pollutants.
 - (e) COMAR 26.11.15.06, which prohibits the discharge of toxic air pollutants to the extent that such emissions would unreasonably endanger human health.

**Part C – Construction Conditions for the
Matthews ES PPII Plus Crematory**

- (1) Except as otherwise provided in this part, the Matthews ES PPII Plus, 175 pounds per hour, human crematory shall be constructed in accordance with specifications included in the incorporated applications and in accordance with the specifications provided by the vendor and manufacturer.

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- (2) The crematory shall be designed to limit particulate matter emissions to no more than 0.10 grains per standard cubic foot dry, adjusted to 12 percent carbon dioxide.
- (3) The crematory shall be equipped with a secondary combustion chamber capable of achieving a retention time of at least 1.0 second, and an operating temperature of at least 1600 °F.
- (4) The crematory shall be equipped with temperature sensors and recorders to continuously monitor and record the temperature of the secondary combustion chamber during operation.
- (5) The exhaust gases from the crematory stack shall discharge at least 38 feet above the ground.

Part D – Operating Conditions

- (1) Except as otherwise provided in this part, all registered equipment shall be operated in accordance with specifications included in the application and any operating procedures recommended by equipment vendors unless the Permittee obtains from the Department written authorization for alternative operating procedures.
- (2) The Permittee shall keep the Matthews ES PPII Plus, and Matthews Model IE43-PP II human crematories properly maintained and in good working condition so as to ensure full and continuous compliance with all applicable regulations
- (3) The Permittee shall comply with the following premises-wide operational limitations unless the Permittee can demonstrate, to the satisfaction of the Department, that compliance with all applicable air quality regulations and standards can be achieved at other conditions:
 - (a) Only human remains shall be cremated in the crematory units.
 - (b) The Permittee shall not cremate more than 12 human remains in each crematory during any 8-hour period.
 - (c) The Permittee shall not cremate more than 3000 human remains in each crematory per rolling 12-month period.
 - (d) The Permittee shall not combust any halogenated plastics, including polyvinyl chloride (PVC) body bags or PVC pipes.

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- (e) The Permittee shall not combust any hazardous waste, or hospital, medical, and infectious waste as defined in COMAR 26.11.08.01B(18).
 - (f) The Permittee shall remove all sampling, monitoring, or other devices from human remains prior to cremation.
 - (g) The Permittee shall determine the weight of the human remains to be cremated prior to each cremation.
 - (h) The Permittee shall utilize the secondary chamber of the incinerator to comply with the T-BACT requirements of COMAR 26.11.15.05.
- (4) The Permittee shall comply with the following operational limitations on the Matthews Model IE43-PP II human crematory unless the Permittee can demonstrate, to the satisfaction of the Department, that compliance with all applicable air quality regulations and standards can be achieved at other conditions:
- (a) The Permittee shall not charge the cremator unless the secondary chamber is “on” and has attained a temperature of at least 1800 °F.
 - (b) The Permittee shall set the recycle time for the cremation so that human remains will not be cremated at a rate exceeding 150 pounds per hour.
 - (c) The exhaust gases from the crematory stack shall discharge at least 18 feet above the ground.
 - (d) While remains are being cremated, the Permittee shall maintain a secondary chamber temperature of at least 1800 °F.
- (5) The Permittee shall comply with the following operational limitations for the Matthews ES PPII Plus, human crematory unless the Permittee can demonstrate, to the satisfaction of the Department, that compliance with all applicable air quality regulations and standards can be achieved at other conditions:
- (a) Prior to the initiation of cremation in the primary chamber, the secondary chamber shall be preheated until the gases leaving the secondary chamber attain a temperature of at least 1600 °F.
 - (b) The Permittee shall set the recycle time for the cremation so that human remains will not be cremated at a rate exceeding 175 pounds per hour.

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- (c) The exhaust gases from the crematory stack shall discharge at least 38 feet above the ground.
- (d) While remains are being cremated, the Permittee shall maintain a secondary chamber temperature of at least 1600 °F.

Part E – Notifications and Monitoring

- (1) The Permittee shall notify the Department of the initial start-up date of the Matthews ES PPII Plus human crematory within fifteen (15) days after the date.
- (2) While remains are cremated, the temperature of the flue gases at the outlet of the secondary combustion chamber shall be continuously monitored and recorded on a chart recorder or other continuous record keeping device. The records shall show the dates and times of all recorded temperature readings.

Part F – Record Keeping and Reporting

- (1) The Permittee shall maintain for at least five (5) years, and shall make available to the Department upon request, records of the following information for the crematory:
 - (a) Charts or other continuous records of the flue gas temperature at the outlet of the secondary combustion chamber. The records must show the date and start time of each cremation.
 - (b) A daily log of the following information:
 - (i) the date and start time of each cremation;
 - (ii) the approximate weight of each charge; and
 - (iii) the duration of each cremation cycle.
- (2) The Permittee shall maintain at the facility for at least five (5) years, and shall make available to the Department upon request, records necessary to support annual certifications of emissions and demonstrations of compliance for toxic air pollutants. Such records shall include, if applicable, the following:
 - (a) mass emissions rates for each regulated pollutant, and the total mass emissions rate for all regulated pollutants for each registered source of emissions;

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- (b) accounts of the methods and assumptions used to quantify emissions;
 - (c) all operating data, including operating schedules and production data, that were used in determinations of emissions;
 - (d) amounts, types, and analyses of all fuels used;
 - (e) any records, the maintenance of which is required by this permit or by State or federal regulations, that pertain to the operation and maintenance of continuous emissions monitors, including:
 - (i) all emissions data generated by such monitors;
 - (ii) all monitor calibration data;
 - (iii) information regarding the percentage of time each monitor was available for service; and
 - (iv) information concerning any equipment malfunctions.
 - (f) information concerning operation, maintenance, and performance of air pollution control equipment and compliance monitoring equipment, including:
 - (i) identifications and descriptions of all such equipment;
 - (ii) operating schedules for each item of such equipment;
 - (iii) accounts of any significant maintenance performed;
 - (iv) accounts of all malfunctions and outages; and
 - (v) accounts of any episodes of reduced efficiency.
 - (g) limitations on source operation or any work practice standards that significantly affect emissions; and
 - (h) other relevant information as required by the Department.
- (3) The Permittee shall submit to the Department by April 1 of each year a certification of emissions for the previous calendar year. The certifications shall be prepared in accordance with requirements, as applicable, adopted under COMAR 26.11.01.05 – 1 and COMAR 26.11.02.19D.

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- (a) Certifications of emissions shall be submitted on forms obtained from the Department.
- (b) A certification of emissions shall include mass emissions rates for each regulated pollutant, and the total mass emissions rate for all regulated pollutants for each of the facility's registered sources of emissions.
- (c) The person responsible for a certification of emissions shall certify the submittal to the Department in the following manner:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”
- (4) The Permittee shall submit to the Department by April 1 of each year a written certification of the results of an analysis of emissions of toxic air pollutants from the Permittee's facility during the previous calendar year. Such analysis shall include either:
 - (a) a statement that previously submitted compliance demonstrations for emissions of toxic air pollutants remain valid; or
 - (b) a revised compliance demonstration, developed in accordance with requirements included under COMAR 26.11.15 & 16, that accounts for changes in operations, analytical methods, emissions determinations, or other factors that have invalidated previous demonstrations.
- (5) The Permittee shall report, in accordance with requirements under COMAR 26.11.01.07, occurrences of excess emissions to the Compliance Program of the Air and Radiation Administration.

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Part G – Temporary Permit-to-Operate Conditions

- (1) This permit-to-construct shall also serve as a temporary permit-to-operate that confers upon the Permittee authorization to operate the Matthews ES PPII Plus human crematory for a period of up to 180 days after initiating operation of the unit.
- (2) During the effective period of the temporary permit-to-operate the Permittee shall operate the new installation as required by the applicable terms and conditions of this permit-to-construct, and in accordance with operating procedures and recommendations provided by equipment vendors.
- (3) The Permittee shall submit to the Department an application for a State permit-to-operate no later than 60 days prior to expiration of the effective period of the temporary permit-to-operate.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

AIR AND RADIATION ADMINISTRATION

SUPPLEMENTAL INFORMATION REFERENCES

The Code of Maryland Regulations (COMAR) is searchable by COMAR citation at the following Division of State Documents website:

<http://www.dsd.state.md.us/COMAR/ComarHome.html>

The Code of Federal Regulations (CFR), including New Source Performance Standards (NSPS) at 40 CFR, Part 60 and National Emission Standards for Hazardous Air Pollutants (NESHAP) at 40 CFR, Parts 61 and 63, is searchable by CFR citation at the following U.S. Government Publishing Office website:

<http://www.ecfr.gov>

Information on National Ambient Air Quality Standards (NAAQS) is located at the following U.S. Environmental Protection Agency (EPA) website:

<https://www.epa.gov/criteria-air-pollutants/naaqs-table>

Information on Maryland's Ambient Air Monitoring Program is located at the following Maryland Department of the Environment website:

<http://mde.maryland.gov/programs/Air/AirQualityMonitoring/Pages/index.aspx>

Information on the U.S. EPA's Screen3 computer model and other EPA-approved air dispersion models is located at the following U.S. EPA website:

http://www.epa.gov/scram001/dispersion_screening.htm

Information on the U.S. EPA TANKS Emission Estimation Software is located at the following U.S. EPA website:

<http://www.epa.gov/ttn/chief/software/tanks/index.html>

Information on the U.S. EPA Emission Factors and AP-42 is located at the following U.S. EPA website:

<https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emission-factors>