PERMIT TO CONSTRUCT
PERMIT BY RULE

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct and operate the air contaminant source(s) described below, in accordance with the laws, rules, and conditions set forth here in.

Construction Permit Number: 072015-008
Project Number: 2015-06-062
Installation ID: 077-0153

Installation Name and Address
Greenlawn Funeral Home, Inc.
3506 North National Avenue
Springfield, Missouri 65803
Greene County

Parent Company's Name and Address
Greenlawn Funeral Home, Inc.
3506 North National Avenue
Springfield, Missouri 65803

Installation Description:
Greenlawn Funeral Home, Inc. is located in Springfield, Missouri (Site ID: 077-0153), and the nature of business is exclusively human cremation services in lieu of earth burial. Greenlawn Funeral Home, Inc. is installing a Matthews Cremation Power Pak I incinerator (Model: IE43-PP1), that meets all requirements set forth in 10 CSR 10-6.062 Construction Permits By Rule, Section (3)(B)2.

JUL 16 2015

Effective Date

Director or Designee
Department of Natural Resources
STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 and 10 CSR 10-6.062 if you fail to adhere to the specifications and conditions listed in your permit by rule application and this permit. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Department of Natural Resources Regional office responsible for the area within which the equipment is located within 15 days after the actual start up of this air contaminant source.

A copy of this permit and permit notification shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions as provided in RSMo 643.075. If you choose to appeal, the Air Pollution Control Program must receive your written declaration within 30 days of receipt of this permit.

If you choose not to appeal, this certificate, the project review, your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Department of Natural Resources has established the Outreach and Assistance Center to help in completing future applications or fielding complaints about the permitting process. You are invited to contact them at 1-800-361-4827 or (573) 526-6627, or your can write to the Outreach and Assistance Center, P.O. Box 176, Jefferson City, Missouri 65102-0176.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Air Pollution Control Program, P.O. Box 176, Jefferson City, Missouri 65102-0176, attention: Construction Permit Unit.
**SECTION A: GENERAL NOTIFICATION INFORMATION – ALL NOTIFICATIONS MUST BE ACCOMPANIED BY A $700 FEE.**

### Section A-1: General Installation Information

1. Installation Name: Greenlawn Funeral Home
2. FIPS: 3506 N. National Ave.
3. Plant No:
4. Installation Street Address: Same
5. Installation Mailing Address: Springfield, MO 65803
6. City: Springfield
7. County Name: Greene
8. Section: S6
9. Township: T29N
10. Range: R21W
11. City State: Greene 1/4, MO 65803
12. Contact Person: Frank Burke
13. Contact Person's Title: Corp Officer
14. Contact Person's Mailing Address: 3506 N. National Ave Springfield, MO 65803
15. Installation Contact Telephone No: (417) 833 3131
16. Installation Contact Fax No: (417) 833 0607
17. Installation Contact E-Mail Address: f.a.burke@att.net
18. Projected Date To Commence Construction: ASAP
19. Project Date Of Operation Startup: ASAP

### Section A-2: Installation Description

Installation of a Matthews Cremation Power Pak I (IE43-PPI) human cremation unit.

*This will replace a 20 year old unit.*

### Section A-3: Certification Statement

I certify that I have personally examined and am familiar with the information in this application and believe that the information submitted is accurate and complete. I am aware that making a false statement or misrepresentation in this application is grounds for denying or revoking this permit.

21. Signature of Responsible Official: Frank Burke
22. Date: 06/18/2015
23. Type or Print Name of Responsible Official: Frank Burke
24. Responsible Official's Telephone Number: (417) 833 3131
25. Title of Responsible Official: Corp. Officer
Latitude and Longitude of a Point

To find the latitude and longitude of a point Click on the map, Drag the marker, or enter the...

Address: 3506 N. National, Springfield, MO 65803

Map Center: Wikipedia/Wikivoyage Places of Interest - Get Address - Land Plat Size

Latitude and Longitude of a Point

When you click on the map, move the marker or enter an address the latitude and longitude coordinates of the point are inserted in the boxes below.

Latitude: 37.260521
Longitude: -93.273336

Decimal Deg. Latitude:
Decimal Deg. Longitude:

Degrees Minutes Seconds

Latitude: 37 15 37.875
Longitude: -93 16 24.0096

Show Point from Latitude and Longitude

Use this if you know the latitude and longitude coordinates of a point and want to see where on the map the point is.

Use: + for N Lat or E Long - for S Lat or W Long.
Example: +40.689060 -74.044636

Note: Your entry should not have any embedded spaces.

Decimal Deg. Latitude:
Decimal Deg. Longitude:

Example: +34 40 50.12 for 34N 40° 50.12"
### Township and Range - Search By Latitude and Longitude.

Enter latitude and longitude. Find the corresponding township and section. The BLM database is searched first. If nothing is found then the National Atlas database is searched. Note that the National Atlas database has only townships, no sections.

| Latitude | 37.260521 | Examples: 43°38'19.39"N, 43 38 19.39, 43.6387194 |

Free. User account is not needed.

If you want to see the surrounding townships, then once you have clicked the "Fly To" button, come back and click the BLM or National Atlas "View on Google Earth" button. Free. User account is not needed.

---

### Township - BLM database

| Township | T29N R21W |
| Meridian | Fifth |
| State | Missouri |
| Source | USFS |
| GLO | GLO Township Records |

**Calculated Values**

- **Acres**: 27,439
- **Centroid**: 37.2189935, -93.2226311
- **Corners**:
  - NW: 37.2737960, -93.2736185
  - NE: 37.2733865, -93.2600965
  - SE: 37.2399479, -93.2608948
  - SW: 37.2405995, -93.2746968

For illustration only. User to verify all information. [www.earthpoint.us](http://www.earthpoint.us)

### Section - BLM database

| Section | S6 T29N R21W |
| Meridian | Fifth |
| State | Missouri |
| Source | USFS |
| GLO | GLO Township Records |

**Calculated Values**

- **Acres**: 1,107
- **Centroid**: 37.2568991, -93.2672336
- **Corners**:
  - NW: 37.2737960, -93.2736185
  - NE: 37.2715745, -93.2600965
  - SE: 37.2405995, -93.2746968

For illustration only. User to verify all information. [www.earthpoint.us](http://www.earthpoint.us)

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**Hint**

In mountainous areas it might be helpful to turn off the terrain layer in Google Earth. Otherwise, the survey grid can look distorted as it shapes itself to the earth's surface.

---

**Information: BLM Township and Range**

The Bureau of Land Management (BLM) cadastral survey program is responsible for the official boundary surveys for all federal agencies in the U.S. that together manage over 700 million acres. The Public Land Survey System also called the Rectangular Survey System is the foundation for many survey-based land information systems.


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**BLM DISCLAIMER:**
**SECTION B: SPECIAL CONDITIONS FOR CREMATORIES AND ANIMAL INCINERATORS**

Construction and operation of this new air pollution source is subject to the special conditions listed below. These special conditions are based on the authority granted to the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically, OSMA 643.075) and the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.062(2) through (5)).

Please indicate by marking the appropriate box as to whether or not the emission source complies with the requirements of the applicable emission limit or standard. If any of the applicable emission source boxes are checked "no," source permitting for a crematory and animal incinerators permit no.

This permit by rule applies only to crematories and animal incinerators constructed after October 31, 2003.

<table>
<thead>
<tr>
<th>SPECIAL CONDITION</th>
<th>EMISSION SOURCE COMPLY?</th>
<th>APPLICABLE EMISSION LIMIT OR STANDARD</th>
<th>METHOD OF COMPLIANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 CSR 10-6.062(3)(B)2.A.</td>
<td>☑ YES □ NO</td>
<td>The materials to be disposed of shall be limited to noninfectious human materials removed during surgery, labor and delivery, autopsy, or biopsy including body parts, tissues and fetuses, organs, bulk blood and body fluids, blood and tissue laboratory specimens, and other noninfectious anatomical remains or animal carcasses in whole or in part. The owner or operator shall minimize the amount of packaging fed to the incinerator, particularly plastic containing chlorine. The incinerators shall not be used to dispose of other non-biological medical wastes including, but not limited to, sharps, rubber gloves, intravenous bags, tubing, and metal parts.</td>
<td>Proper work practice.</td>
</tr>
<tr>
<td>10 CSR 10-6.062(3)(B)2.B.</td>
<td>☑ YES □ NO</td>
<td>The manufacturer's rated capacity (burn rate) shall be two hundred (200) pounds per hour or less.</td>
<td>Proper work practice.</td>
</tr>
<tr>
<td>10 CSR 10-6.062(3)(B)2.C.</td>
<td>☑ YES □ NO</td>
<td>The incinerator shall be a dual-chamber design.</td>
<td>Proper work practice.</td>
</tr>
<tr>
<td>10 CSR 10-6.062(3)(B)2.D.</td>
<td>☑ YES □ NO</td>
<td>Burners shall be located in each chamber, sized to manufacturer's specifications, and operated as necessary to maintain the minimum temperature requirements of subparagraph 10 CSR 10-6.062(3)(B)2.E. at all times when the unit is burning waste.</td>
<td>Proper work practice.</td>
</tr>
<tr>
<td>10 CSR 10-6.062(3)(B)2.E.</td>
<td>☑ YES □ NO</td>
<td>Excluding crematories, the second chamber must be designed to maintain a temperature of one thousand six hundred degrees Fahrenheit (1,600°F) or more with a gas residence time of one-half (1/2) second or more. The temperature shall be monitored with equipment that is accurate to plus or minus two percent (±2%) and continuously recorded. The thermocouples or radiation pyrometers shall be fitted to the incinerator and wired into a manual reset noise alarm such that if the temperature of either of the two (2) chambers falls below the minimum temperature above, the alarm will sound at which time plant personnel shall take immediate measures to correct the problem or cease operation of the incinerator until the problem is corrected.</td>
<td>Proper work practice and maintenance of proper alarm records. These records shall be maintained for not less than five (5) years, and shall be immediately available to any Missouri Department of Natural Resources personnel upon request.</td>
</tr>
<tr>
<td>10 CSR 10-6.062(3)(B)2.F.</td>
<td>☑ YES □ NO</td>
<td>There shall be no obstruction to stack flow, such as by rain caps, unless such devices are designed to automatically open when the incinerator is operated. Properly installed and maintained spark arresters are not considered obstructions.</td>
<td>Proper work practice.</td>
</tr>
</tbody>
</table>
## SECTION B: SPECIAL CONDITIONS FOR CREMATORIES AND ANIMAL INCINERATORS (CONTINUED)

<table>
<thead>
<tr>
<th>SPECIAL CONDITION</th>
<th>EMISSION SOURCE COMPLY?</th>
<th>APPLICABLE EMISSION LIMIT OR STANDARD</th>
<th>METHOD OF COMPLIANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 CSR 10-6.062(3)(B)2.G.</td>
<td>☑ YES ☐ NO</td>
<td>Each incinerator operator shall be trained in the incinerator operating procedures as developed by the American Society of Mechanical Engineers (ASME), by the incinerator manufacturer, or by a trained individual with more than one (1) year experience in the operation of the incinerator that the trainee will be operating. Minimum training shall include basic combustion control parameters of the incinerator and all emergency procedures to be followed should the incinerator malfunction or exceed operating parameters. An operator who meets the training requirements of this condition shall be on duty and immediately accessible during all periods of operation. The manufacturer's operating instructions and guidelines shall be posted at the unit and the unit shall be operated in accordance with these instructions.</td>
<td>Proper work practice and maintenance of proper operator training records. These records shall be maintained for not less than five (5) years, and they shall be immediately available to any Missouri Department of Natural Resources personnel upon request.</td>
</tr>
<tr>
<td>10 CSR 10-6.062(3)(B)2.H.</td>
<td>☑ YES ☐ NO</td>
<td>The incinerator shall have an opacity of less than ten percent (10%) at all times.</td>
<td>Proper work practice such that no opacity violations are noted.</td>
</tr>
<tr>
<td>10 CSR 10-6.062(3)(B)2.I.</td>
<td>☑ YES ☐ NO</td>
<td>Heat shall be provided by the combustion of natural gas, liquid petroleum gas, or Number 2 fuel oil with less than three-tenths percent (0.3%) sulfur by weight, or by electric power.</td>
<td>Proper work practice.</td>
</tr>
<tr>
<td>10 CSR 10-6.062(3)(B)2.J.</td>
<td>☑ YES ☐ NO</td>
<td>The operator shall maintain a log of all alarm trips and the resulting action taken. A written certification of the appropriate training received by the operator, with the date of training, that includes a list of the instructor's qualifications or ASME certification school shall be maintained for each operator. The operator shall maintain an accurate record of the monthly amount and type of waste combusted.</td>
<td>Determined through proper alarm and operator training record keeping. These records shall be maintained for not less than five (5) years, and they shall be immediately available to any Missouri Department of Natural Resources personnel upon request.</td>
</tr>
</tbody>
</table>
### SECTION C: OTHER POTENTIALLY APPLICABLE REQUIREMENTS

This section is intended to identify regulations that may apply to this installation. There may be others not listed that apply to determine use-applicability and specific standards. Please consult the appropriate sections in the Code of Federal Regulations (CFR) and Code of State Regulations (CSR) for the full text of the applicable requirements.

Please note, this permit allows you to conduct and operate your air contaminant source, but it may waive you of your obligation to comply with applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources, and other applicable federal, state, and local laws and ordinances.

<table>
<thead>
<tr>
<th>REGULATION OR CONSTRUCTION PERMIT REFERENCE</th>
<th>APPLICABLE EMISSION LIMIT OR STANDARD</th>
<th>METHOD OF COMPLIANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 CSR 10-2.100, 10-3.030, or 10-4.090, 10-5.070 Open Burning Restrictions</td>
<td>Shall not conduct, cause, permit or allow a salvage operation, the disposal of trade wastes or burning of refuse by open burning.</td>
<td>Any person intending to engage in open burning shall submit a request to the Director.</td>
</tr>
<tr>
<td>10 CSR 10-2.070, 10-3.090 or 10-4.070, Restriction of Emission of Odors</td>
<td>No person may cause, permit or allow the emission of odorous matter in concentrations and frequencies or for durations that odor can be perceived when air is diluted to 1:7 volumes of odorless to odor-free air for 2 separate trails not less than 15 minutes apart within 1 hour.</td>
<td>No odor violations noted, if and when scendentometer readings are taken.</td>
</tr>
<tr>
<td>10 CSR 10-5.160 Control of Odors in the Ambient Air</td>
<td>No person shall emit odorous matter as to cause an objectionable odors unless within the limits established by this rule.</td>
<td>No odor violations noted, if an when scendentometer readings are taken.</td>
</tr>
<tr>
<td>10 CSR 10-5.170 Control of Odors From Processing Animal Matter</td>
<td>No person shall operate or use any device, machine, equipment, or other contrivance for the reduction of animal matter unless all gases, vapors, and gas-entrained effluents from the facility are incinerated at a temperature of not less than 1,200°F for a period of not less than 0.3 seconds and otherwise in compliance with this rule.</td>
<td>Proper work practice.</td>
</tr>
<tr>
<td>10 CSR 10-6.050, Start-up, Shutdown and Malfunction Conditions</td>
<td>Shall not commence construction or modification of any installation subject to this rule; begin operation after construction or modification; or begin operation of any installation which has been shut down longer than 5 years without first obtaining a permit.</td>
<td>In the event of a malfunction, which results in excess emissions that exceed 1 hour, the permittee shall implement corrective action and submit reports.</td>
</tr>
<tr>
<td>10 CSR 10-6.065, Operating Permits</td>
<td>The permittee shall comply with all applicable requirements identified in the operating permit (OP); file for timely renewal of this OP; and retain a copy of the OP on-site and make available to any MDNR personnel upon request.</td>
<td>The permittee shall submit an annual compliance certification in accordance with the regulation. The permittee shall maintain a current equipment list on-site with the date of installation of the equipment.</td>
</tr>
<tr>
<td>10 CSR 10-6.110, Submission of Emission Data, Emission Fees and Process Information</td>
<td>Submittal of Emission Inventory Questionnaire (EIQ) and emission fees by frequency noted in 10 CSR 10-6.110.</td>
<td>The permittee shall complete and submit an EIQ in accordance with 10 CSR 10-6.110.</td>
</tr>
<tr>
<td>10 CSR 10-6.200 Hospital, Medical, Infectious Waste Incinerators</td>
<td>No owner or operator shall cause to be discharged into the atmosphere any gases that contain stack emissions in excess of those listed in 10 CSR 10-6.200(3)(A).</td>
<td>Proper work practice and maintenance of appropriate performance test results.</td>
</tr>
<tr>
<td>10 CSR 10-6.070 New Source Performance Regulations</td>
<td>The following federal NSPS standards may apply: (Ec) Medical Waste Incinerators. Standards of Performance for Incinerators.</td>
<td>As required by regulations.</td>
</tr>
</tbody>
</table>
**INSTRUCTIONS:**

By submitting your notification, you are accepting all conditions and terms stated in this form. If you find the special conditions listed in Section B unacceptable, you may choose to submit a construction permit application and undergo a case-by-case review.

Please refer to the following line-by-line instructions to complete the notification. The notification, along with the $700.00 fee, should be mailed to:

Air Pollution Control Program
Permit-By-Rule
P.O. Box 176
Jefferson City, Missouri 65102

You must also retain a copy of the notification at the installation and make it immediately available to any inspector.

Once the fee and notifications have been mailed or hand-delivered, you are free to begin construction of your project under the special conditions that you have accepted.

The Air Pollution Control Program will send you a letter acknowledging receipt of your notification with a permit number and a project number for agency tracking purposes.

A copy of this electronic package may be obtained from the Department of Natural Resources Air and Land Protection Division's web site at: http://www.dnr.mo.gov/alpd/apcp/PermitInfo.htm.

If you have any questions about the notification form or the permit-by-rule notification procedure, please feel free to contact the Permit Section at (573) 751-4817.

**NOTIFICATION FORM INSTRUCTIONS:**

<table>
<thead>
<tr>
<th>1.) Installation Name:</th>
<th>Enter the official company name and/or plant designation for the installation that is making the permit-by-rule notification.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.) FIPS Number:</td>
<td>Enter the official FIPS Number (3 digit code) which corresponds to the county name for the county in which the installation is located. Please refer to <a href="http://www.itl.nist.gov/fipspubs/co-codes/mo.txt">http://www.itl.nist.gov/fipspubs/co-codes/mo.txt</a> for a listing. The FIPS number in combination with the Plant Number provides the identification/tracking information for the installation in the State/Federal databases.</td>
</tr>
<tr>
<td>3.) Plant Number:</td>
<td>Enter the official Plant Number that has been assigned to the installation by the respective State or Local Agencies. If you do not know your plant number, please leave blank.</td>
</tr>
<tr>
<td>4.) Installation Street Address:</td>
<td>Enter the street address of the physical location of installation.</td>
</tr>
<tr>
<td>5.) Installation Mailing Address:</td>
<td>Enter the mailing address if that address is different from the street address.</td>
</tr>
<tr>
<td>6.) City, State and Zip Code:</td>
<td>Enter the City, State and Zip Code of the physical location of the installation.</td>
</tr>
<tr>
<td>7.) County:</td>
<td>Enter the county in which the installation is located.</td>
</tr>
<tr>
<td>8.) Section, Township, Range:</td>
<td>Enter the appropriate information on the Section, Township and Range in which the installation is located.</td>
</tr>
<tr>
<td>9.) Parent Company:</td>
<td>Complete this block if this installation is totally or partially owned by another company.</td>
</tr>
<tr>
<td>10.) Parent Company Mailing Address:</td>
<td>Complete this block if this installation is totally or partially owned by another company.</td>
</tr>
<tr>
<td>11.) Parent Company City, State and Zip Code:</td>
<td>Complete this block if this installation is totally or partially owned by another company.</td>
</tr>
<tr>
<td>12.) Installation Contact Person:</td>
<td>Enter the name of the person who is most familiar with the operations of the installation and who can answer any questions regarding information about the installation.</td>
</tr>
<tr>
<td>13.) Contact Person’s Title:</td>
<td>Enter the title of the contact person.</td>
</tr>
<tr>
<td>14.) Contact Person’s Mailing Address:</td>
<td>Enter the mailing address for the Contact Person.</td>
</tr>
<tr>
<td>15.) Installation Contact Person’s Telephone Number:</td>
<td>Enter the Contact Person’s telephone number.</td>
</tr>
<tr>
<td>16.) Installation Contact Person’s Fax Number:</td>
<td>Enter the Contact Person’s fax number.</td>
</tr>
<tr>
<td><strong>17.) Installation Contact Person's E-Mail Address:</strong> Enter the Contact Person's e-mail address.</td>
<td></td>
</tr>
<tr>
<td><strong>18.) Projected Date to Commence Construction:</strong> Enter the date you intend to commence construction of your installation.</td>
<td></td>
</tr>
<tr>
<td><strong>19.) Projected Date of Operation Startup:</strong> Enter the date you plan to begin operation with the installation.</td>
<td></td>
</tr>
<tr>
<td><strong>20.) Installation Description:</strong> Enter the general product manufactured, the material handled by your installation and principal activity that is performed at this installation.</td>
<td></td>
</tr>
<tr>
<td><strong>21.) Signature of Responsible Official:</strong> Enter the signature of the installation's official, certifying that the notification is accurate and complete. Notifications without a signed certification are not considered complete. A responsible official is:</td>
<td></td>
</tr>
<tr>
<td>1. The president, secretary, treasurer or vice-president of a corporation in charge of a principal business function, or any other person who performs similar policy and decision-making functions for the corporation or a duly authorized representative of this person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either-</td>
<td></td>
</tr>
<tr>
<td>a) The facilities employ more than 250 person or have a gross annual sales or expenditures exceeding twenty-five million dollars (in second quarter 1980 dollars); or</td>
<td></td>
</tr>
<tr>
<td>b) The delegation of authority to his representative is approved in advance by the permitting authority.</td>
<td></td>
</tr>
<tr>
<td>2. A general partner in a partnership or the proprietor in a sole proprietorship.</td>
<td></td>
</tr>
<tr>
<td>3. Either a principal executive officer or a ranking elected official in a municipality, state, federal, or other public agency. For the purpose of this part, a principal executive officer of a federal agency includes the chief executive officer having responsibility for the operations of a principal geographic unit of the agency; or</td>
<td></td>
</tr>
<tr>
<td>4. The designated representative of an affected source insofar as actions, standards, requirements or prohibitions under Title IV of the Clean Air Act or the regulations promulgated under the Act are concerned or the designated representative for any purposes under Part 70.</td>
<td></td>
</tr>
<tr>
<td><strong>22.) Date:</strong> Enter the date that the Signature of the Responsible Official was obtained.</td>
<td></td>
</tr>
<tr>
<td><strong>23.) Type or Print Name of Responsible Official:</strong> Type or print the name of the Responsible Official signing in item 21.</td>
<td></td>
</tr>
<tr>
<td><strong>24.) Responsible Official’s Telephone Number:</strong> Enter the telephone number where the Responsible Official may be contacted who signed in item 21.</td>
<td></td>
</tr>
<tr>
<td><strong>25.) Title of Responsible Official:</strong> Enter the official title of the Responsible Official from item 21.</td>
<td></td>
</tr>
</tbody>
</table>
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.

4. Indicate location and type of building by the use of small numbered circles with the description below.

5. Show all surrounding buildings and roads within 500 feet of the equipment covered by this application.

6. Structures Description:
   (1) Cemetery Wall Bldn
   (2) Storage, Guns, Crematory, Prop. Room
   (3) Monument Shop Bldn
   (4) Funeral Home Bldn
   (5) Personal Homes
   (6)
   (7)
   (8)
   (9)
   (10)
SPECIFICATIONS- Model Power-Pak I

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

2. Dimensions
   A. Footprint .......................................................... 12' - 6 ½" x 5' - 3" (3.82 m x 1.60 m)
   B. Maximum Length ................................................. 14' - 8" (4.47 m)
   C. Maximum Width .................................................. 6' - 5" (1.96 m)
   D. Maximum Height .................................................. 8' - 4" (2.54 m)
   E. Chamber Loading Opening ....................................... 25 ¾" H x 39 ½" W (654 mm x 1003 mm)

3. Weight ................................................................. 23,400 lbs. (10,614 kg)

4. Utility/Air Requirements
   A. Gross Gas Input, Natural or LP Gas......................... 2,000,000 BTU/hr. (2,110,112 kJ/hr)
      Running Gas Pressure, Natural Gas ......................... 11 inches (279.4 mm) water column or greater
      Running Gas Pressure, LP Gas ............................... 11 inches (279.4 mm) water column or greater
   B. Electrical Supply .................................................. 230 volt, 30 or 10, 50/60 hz (other available)
   C. Air Supply .......................................................... 2,500 cfm (70.8 standard m³/min)

5. Incineration Capacity .................................................. 150 lbs./hr. (68 kg/h)

6. Typical Loading Capacity of Waste Types ...................... 750 lbs. (340.2 kg)

7. Construction and Safety Standards.............................. Incineration Institute of America, Underwriters Laboratories, Canadian Standards Association

8. Steel Structure Construction
   A. Frame ............................................................... 2" (51 mm) square tubing
   B. Front/Rear Plates ............................................... 3/8" (9.5 mm) plate
   C. Floor Plates ....................................................... 3/16" (5 mm) plate
   D. Outer Side Casing ............................................... 12 gauge (3 mm) plate
   E. Inner Side Casing ................................................ 12 gauge (3 mm) plate

9. Stack Construction
   A. Inner Wall .......................................................... 3" (76 mm) castable
   B. Outer Wall .......................................................... 12 gauge (3 mm) stainless steel sheet with welded seams. (unlined stack available)

10. Draft Nozzle Construction ............................................. Schedule 40 type 316 s.s. pipe, welded connections

11. Main Chamber Door Construction
   A. Steel Shell .......................................................... 3/16" (5 mm) steel, welded with reinforcement
   B. Outer Refractory ................................................... 1" (25 mm) insulating block
   C. Inner Refractory ................................................... 4½" (110 mm) insulating firebrick
SPECIFICATIONS - Model Power-Pak I

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

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

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

15. Chamber Volumes (not including external flues, stacks or chimneys)
   A. Primary Chamber ............................................... 64 cubic feet (1.8 m³)
   B. Secondary Chamber .......................................... 74 cubic feet (2.1 m³)

16. Emission Control Features
   A. Secondary Chamber with Afterburner ................ Included
   B. Opacity Monitor and Controller with Visual and Audible Alarms .................. Optional Upgrade Package
   C. 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

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 I

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

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

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

24. Operating Panel Indicating Lights
   A. Safe Run ............................................................ Included
   B. Door Closed ....................................................... Included
   C. Pollution Alarm ...................................................... Optional Upgrade Package
   E. Afterburner On (Secondary Burner) ....................... Included
   H. Afterburner (Secondary Burner) Reset ...................... Included
   I. Cremation Burner Reset ......................................... Included
   H. High Fire Cremation Burner .................................. Included
   H. Low Fire Cremation Burner .................................. Included
   J. Hearth Air .......................................................... Included
   K. Throat Air Off .................................................... Included

25. Automatic Timer Functions
   A. Master Cycle ...................................................... Included
   B. Hearth Air ......................................................... Optional Upgrade Package
   C. Throat Air .......................................................... Optional Upgrade Package
   D. Pollution Monitoring ............................................. Optional Upgrade Package
   E. Cremation Burner Hi - Low ..................................... Optional Upgrade Package
   F. Cool Down ........................................................ Included

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

Environmental Submittals ........................................ Complete technical portion of state environmental permits. Engineering calculations, technical data, existing stack test results and equipment blueprints provided.
NOTES:
1) CONTROL CABINET CAN BE MOUNTED ON THE LEFT OR RIGHT SIDE, OR REMOTELY.
2) CHAMBER WIDTH IS 39" [0.99m].

PLAN & ELEVATIONS INCL: CLEARANCES, REQUIREMENTS & RECOMMENDATIONS
CREMATOR CLEARANCES

<table>
<thead>
<tr>
<th>TOP</th>
<th>CABINET SIDE</th>
<th>OTHER SIDE</th>
<th>FRONT</th>
<th>REAR</th>
<th>STACK</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 FEET [610 mm]</td>
<td>4 FEET [1,22 m]</td>
<td>2 FEET [610 mm]</td>
<td>9 FEET [2,74 m]</td>
<td>3 FEET [0,91 m]</td>
<td>9 INCHES [229 mm]</td>
</tr>
<tr>
<td>6 INCHES [152 mm]</td>
<td>4 FEET [1,22 m]</td>
<td>6 INCHES [152 mm]</td>
<td>8 FEET [2,44 m]</td>
<td>32 INCHES [812 mm]</td>
<td>9 INCHES [229 mm]</td>
</tr>
</tbody>
</table>

1. For clearances other than those shown, or for special requirements, consult your MCD Rep.

2. From highest point on unit.

3. Control cabinet mounts on unit's left or right sides, or remotely. (See plan view, sheet 1).

4. Rear of unit refers to the "back plate," rather than the back of the "whisper shield." (See plan view, sheet 1).

CREMATOR REQUIREMENTS

FUEL: A pressure regulator adjustable to 11" [279 mm] w.c. for natural gas, or 11" [279 mm] w.c. for LP gas.

CAPACITY: Ranges from 2.0 to 3.0 million Btu/hr [2.1 to 3.1 million kilojoules/hr] depending upon amount of burners.

ELECTRICAL: 230 volt, 30A (40A breaker), 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 (A) onto stack ring (B) 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" [76.2 mm] above non-combustible liner (flashing), allowing for proper ventilation (see detail).

3. Apply a 1/4" [6 mm] bead of high-temperature silicon sealant (provided by MCD) to the joint between the storm collar (C) and the stack (D).

4. Storm collar is furnished by MCD. The non-combustible liner (flashing) to be provided by the others.

5. If fifty percent of the stack length is above the roof, guy wires may be required. Consult with your MCD Rep.

6. Rain cap not required.
Calculation Of Emissions
Potential to Emit
Matthews Cremation Division (MCD)
(formerly Industrial Equipment and Engineering Company (IEE))
Crematory Incinerator Model IE43-PPI

Total Incenerator Burn Capacity = 150 lb/hr of remains (type 4) and associated containers (type 0)
Flue gas flow rate = 1100 dscfm
12 Hours/Day X 6 Days/Week X 52 Weeks/Year = 3744 Hours/Year

Total Emission Rate = Incinerator Burn Rate X Emission Factor

Sulfer Dioxide (SO₂)

\[
\begin{align*}
150 \text{ lb/hr} & \times 2.5 \text{ lb/ton} \times 1 \text{ ton} = 0.188 \text{ lb/hr} \\
& \times \frac{2000 \text{ lbs}}{} = 0.351 \text{ TPY} \\
0.1875 \text{ lb/hr} & \times 4.54 \times 10^5 \text{ mg/lb} \times 1 \text{ ppmv} = 17.46 \text{ ppmv} \\
1100 \text{ dscfm} & \times 60 \text{ min/hr} \times 0.0283 \text{ m}^3/\text{f}^3 \times 2.61 \text{ mg/m}^3
\end{align*}
\]

Nitrogen Oxide (NOₓ - as Nitrogen Dioxide)

\[
\begin{align*}
150 \text{ lb/hr} & \times 3 \text{ lb/ton} \times 1 \text{ ton} = 0.225 \text{ lb/hr} \\
& \times \frac{2000 \text{ lbs}}{} = 0.4212 \text{ TPY} \\
0.225 \text{ lb/hr} & \times 4.54 \times 10^5 \text{ mg/lb} \times 1 \text{ ppmv} = 29.40 \text{ ppmv} \\
1100 \text{ dscfm} & \times 60 \text{ min/hr} \times 0.0283 \text{ m}^3/\text{f}^3 \times 1.88 \text{ mg/m}^3
\end{align*}
\]

Hydrocarbons (TOC/VOC - methane)

\[
\begin{align*}
150 \text{ lb/hr} & \times 3 \text{ lb/ton} \times 1 \text{ ton} = 0.225 \text{ lb/hr} \\
& \times \frac{2000 \text{ lbs}}{} = 0.4212 \text{ TPY} \\
0.225 \text{ lb/hr} & \times 4.54 \times 10^5 \text{ mg/lb} \times 1 \text{ ppmv} = 84.14 \text{ ppmv} \\
1100 \text{ dscfm} & \times 60 \text{ min/hr} \times 0.0283 \text{ m}^3/\text{f}^3 \times 0.65 \text{ mg/m}^3
\end{align*}
\]

Lead (Pb)

\[
\begin{align*}
6.62 \times 10^{-5} \text{ lbs/cremation} & \times 0.0000662 \text{ lb Pb} \\
& \times \frac{100 \text{ lb}}{} = 1 \text{E-04 lb/hr} \\
& \times \frac{0.0002 \text{ TPY}}{} = 0.0002 \text{ TPY}
\end{align*}
\]

Particulates (PM & PM₁₀)
(Actual Levels lower as shown by test results)

\[
\begin{align*}
150 \text{ lb/hr} & \times 7 \text{ lb/ton} \times 1 \text{ ton} = 0.525 \text{ lb/hr} \\
& \times \frac{2000 \text{ lbs}}{} = 0.9828 \text{ TPY} \\
0.525 \text{ lb/hr} & \times 7.00 \times 10^3 \text{ gr/lb} \\
& \times \frac{1100 \text{ dscfm}}{} \times 60 \text{ min/hr} = 0.06 \text{ gr/dscf}
\end{align*}
\]

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

\[
\begin{align*}
150 \text{ lb/hr} & \times 10 \text{ lb/ton} \times 1 \text{ ton} = 0.75 \text{ lb/hr} \\
& \times \frac{2000 \text{ lbs}}{} = 1.404 \text{ TPY} \\
0.75 \text{ lb/hr} & \times 4.54 \times 10^5 \text{ mg/lb} \times 1 \text{ ppmv} = 161.63 \text{ ppmv} \\
1100 \text{ dscfm} & \times 60 \text{ min/hr} \times 0.0283 \text{ m}^3/\text{f}^3 \times 1.14 \text{ mg/m}^3
\end{align*}
\]

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

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.

<table>
<thead>
<tr>
<th>WASTE TYPE</th>
<th>TYPE 6</th>
<th>TYPE 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTU PER POUND</td>
<td>8500</td>
<td>1000</td>
</tr>
<tr>
<td>POUND ASH PER POUND WASTE</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>POUND MOISTURE PER POUND WASTE</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>POUND COMBUSTIBLES PER POUND WASTE</td>
<td>0.85</td>
<td>0.85</td>
</tr>
<tr>
<td>HOURLY CONSUMPTION OF WASTE (LBS)</td>
<td>10</td>
<td>140</td>
</tr>
</tbody>
</table>

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

3. TOTAL FLUE PRODUCTS

A. MAXIMUM PRIMARY BURNER GAS USAGE

\[
500000 \text{ BTU/HR} \times 4.5E-05 \text{ LBS/BTU} = 22.5 \text{ LBS/HR}
\]

B. COMBUSTION AIR FOR PRIMARY BURNER

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

C. MAXIMUM SECONDARY BURNER GAS USAGE

\[
900000 \text{ BTU/HR} \times 4.5E-05 \text{ LBS/BTU} = 41 \text{ LBS/HOUR}
\]
D. COMBUSTION AIR FOR SECONDARY BURNER

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

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)

\[
1.70 \text{ LBS/LB WASTE} \times 140 \text{ LB/HR BURN RATE} = 238 \text{ LBS/HOUR}
\]

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

\[
\frac{12000 \text{ CF/HR} \times 0.075 \text{ LB/CF AIR}}{100 \text{ BTU/CF AIR}} = 2324 \text{ LBS/HOUR}
\]

2. VELOCITY AND TIME CALCULATIONS

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

\[
2324 \text{ LBS/HR} \times \frac{13.35 \text{ STD. CU. FT/LB}}{60 \text{ MIN/HR}} = 517 \text{ SCFM}
\]

B. TOTAL PRODUCTS ACFM @ 1600 °F

\[
\frac{2060 \text{ °RANKINE}}{530 \text{ °RANKINE}} \times 517.1 \text{ CFM} = 2010 \text{ ACFM}
\]

C. RETENTION TIME

\[
\frac{74 \text{ CU. FT}}{2010 \text{ ACFM}} \times 60 \text{ SECONDS} = 2.21 \text{ SECONDS}
\]

D. VELOCITY IN FLAME PORT

\[
\frac{2010 \text{ ACFM}}{2.95 \text{ SQ. FT}} \times 1 \text{ MINUTE} = 11.4 \text{ FEET/SECOND}
\]

E. VELOCITY AT MIXING BAFFLES

\[
\frac{2010 \text{ ACFM}}{1.36 \text{ SQ. FT}} \times 1 \text{ MINUTE} = 24.6 \text{ FEET/SECOND}
\]

F. VELOCITY IN SECONDARY CHAMBER

\[
\frac{2010 \text{ ACFM}}{2.44 \text{ SQ. FT}} \times 1 \text{ MINUTE} = 13.7 \text{ FEET/SECOND}
\]