Alan Frazier <afrazier@chattanooga.gov>

City of Chattanooga e2i2 Project - South Lee Hwy EQ Station Air Permit Application

1 message

Jay, Steve <SJay@brasfieldgorrie.com> Mon, Jul 28, 2025 at 12:36 PM
To: "afrazier@chattanooga.gov" <afrazier@chattanooga.gov>
Cc: "jason.winningham@bargedesign.com" <jason.winningham@bargedesign.com>, Craig Parker <craig.parker@greshamsmith.com>, "Cook, Shane" <scook@brasfieldgorrie.com>

Mr. Frazier, attached is our completed and signed air permit application for the above referenced City project we are constructing. Will you please process this application for review and approval? Please call me at 205-613-2319 or reply via email if you have any questions, if you need any additional information or if you want to meet to discuss this project during your review? Thank you very much for your time and help.

Steve Jay
Senior Project Manager

sjay@brasfieldgorrie.com
m: 205.613.2319
o: 205.328.4000

BRASFIELD & GORRIE | 3021 7th Avenue South | Birmingham, Alabama 35233
brasfieldgorrie.com

South Lee Hwy EQ Station-600kw-air-permit-application - 2025-07-11.pdf
1314K

Installation Permit No. 6205-20300101-01I

615 3rd Ave. South, Ste 700
Nashville, TN 37204
Phone: 615-254-1500
bargedesign.com

VIA USPS ☐ UPS / FedEx ☐ Local Courier ☐ Hand Delivery ☐ Electronic ☐

TO: City of Chattanooga
Mark Heinzer
1250 Market Street
Chattanooga, TN 37402

DATE: 6/13/2025

BARGE PROJECT NUMBER: 3700109

SUBJECT: Air permit application – Emergency Generators

TRANSMITTED HEREWITH ARE THE FOLLOWING:

NO. COPIES	DATE	DESCRIPTION
1		Form E001 – South Lee EQ Station CAT D600 GC diesel engine
1		Form E011 – South Lee EQ Station CAT D600 GC diesel engine
1		CAT 600kW diesel generator set specifications

Remarks: Enclosed please find application forms and supporting documentation for air permitting the South Lee EQ station CAT D600 GC diesel engine for an emergency generator. Please sign each form where indicated and send a signed copy including the attachment to Alan Frazier, P.E., Engineering Manager – Chattanooga Air Pollution Control Bureau, by email at afrazier@chattanooga.com. If you have any questions, please contact Jason Winningham at 615-988-2857 or jason.winningham@bargedesign.com.

Copy to:

Barge Design Solutions, Inc.

By: Jason Winningham
Jason Winningham, PE

Received
JUL 28 2025
Chattanooga-Hamilton County
Air Pollution Control Bureau

BASIC APPLICATION FOR EQUIPMENT / AIR POLLUTION PERMIT OR CERTIFICATE OF OPERATION

FORM E001
03/2011

1. Name of Company City of Chattanooga – South Lee Hwy. EQ Station
(If corporation or LLC, name on file with Tennessee Secretary of State Corporate Records Division)

2. NAICS Code: 221320

3. Company Official to Contact: Mark Heinzer

4. Phone No. 423-643-7499

5. Mailing Address: 1250 Market Street (*Street or P.O. Box*) Chattanooga (*City*) TN (*State*) 37402 (*Zip Code*)

6. Physical Location
(If different from line 5) South Lee Hwy EQ Station: 7150 St. Stephens Place (*Street*) Chattanooga (*City*) TN (*State*) 37421 (*Zip Code*)

7. Application for:
✓ Installation Permit Initial Certificate of Operation Renewal Certificate of Operation

Previous Installation Permit or Certificate of Operation No.: _____

8. Type of equipment for which application is made:

☑ Process Equipment (Form E010 or Form E010A)	☐ Previously Submitted	☐ Attached
☑ Fuel Burning Equipment (Form E011)	☐ Previously Submitted	☑ Attached
☐ Incineration Equipment (Form E012)	☐ Previously Submitted	☐ Attached
☐ Minor Pollution Source (Form E014)	☐ Previously Submitted	☐ Attached

(Less than 1000 lbs/yr and less than 10 lbs/day total uncontrolled contaminant emissions)

The following forms are filed with this application:
Form E011

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JUL 28 2025
Chattanooga-Hamilton County Air Pollution Control Bureau

9. Equipment Name:
CAT D600 GC (for emergency 600 kW diesel engine generator)

10. If application is for a Certificate of Operation (Initial or Renewal), are there any changes since previous application on the equipment or operation which might:

A. Increase, decrease, or alter process materials, fuel, refuse type, etc.? ☐ Yes ☑ No

B. Increase, decrease, or alter emissions or emission points? ☐ Yes ☑ No

11. Process Weight, lb/hr, (Item 6 on Form E010), Incineration Rate, lb/hr, (Item 3C on Form E012), or Fuel Burning Rate, 1,000 Btu/hr, (Item 7C on Form E011): 42.1 gal/hr x 7.05 lb/gal = 296.8 lb/hr

This is to certify that I am familiar with operations concerning this equipment and the information provided on this application is true and complete to the best of my knowledge:

Mail completed form to:
CHATTANOOGA-HAMILTON COUNTY
AIR POLLUTION CONTROL BUREAU
2034 Hamilton Place Blvd., Suite 300
Chattanooga, TN 37421

This form must be completely filled out before it will be processed

Mark D. Heinzer
Name

Administrator, Wastewater Dept., Chattanooga
Title

July 1, 2025
Date

FUEL BURNING EQUIPMENT APPLICATION
A separate form must be filed for each stack or emission point.

FORM E011
01/2001

1. Name of Company: City of Chattanooga – South Lee Hwy. EQ Station
As shown on Line 1 of Form E001

2. Equipment Name: CAT D600 GC (for emergency 600 kW diesel engine generator)
As shown on Line 9 of Form E001

3. Stack Designation: 001
If there is more than one stack at this location, provide a written or numeric designation to identify each stack.

4. Control Equipment Data:

- [X] Emissions Uncontrolled
- [ ] Electrostatic Precipitator (File Form E104)
- [ ] Baghouse (File Form E102)
- [ ] Inertial Separators (File Form E105)
- [ ] Wet Collecting Device (File Form E103)
- [ ] Other (Specify): _____

5. Control Equipment Efficiency:
Enter the control equipment efficiency for each pollutant emitted by this equipment as determined on the appropriate Form E102, E103, E104, E105, E107, or enter zeros if "A" is checked in Item 4.

Pollutant	% Efficiency
Particulates	
PM_{10}	
SO_x	
NO_x	N/A
CO	
VOC	
Other:	

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Chattanooga-Hamilton County Air Pollution Control Bureau

6. Emissions Estimation: *File Form E110 for each fuel used*

*See attached emission data from CAT

		Fuel No.1	Fuel No.2	Fuel No.3
Particulate Matter (Form E110, Item 6)	Uncontrolled	Lbs/hr	Lbs/hr	Lbs/hr
	Actual[1]	Lbs/hr	Lbs/hr	Lbs/hr
	Estimated[2]	Lbs/hr	Lbs/hr	Lbs/hr
SO_x (Form E110, Item 7)	Uncontrolled	Lbs/hr	Lbs/hr	Lbs/hr
	Actual[1]	Lbs/hr	Lbs/hr	Lbs/hr
	Estimated[2]	Lbs/hr	Lbs/hr	Lbs/hr
PM_{10}	Uncontrolled	Lbs/hr	Lbs/hr	Lbs/hr
	Actual[1]	Lbs/hr	Lbs/hr	Lbs/hr
	Estimated[2]	Lbs/hr	Lbs/hr	Lbs/hr
NO_x (Form E110, Item 9E)	Uncontrolled	ppm	ppm	ppm
	Actual[1]	ppm	ppm	ppm
	Estimated[2]	ppm	ppm	ppm
Other Air Contaminants (Specify)	Uncontrolled	Lbs/hr	Lbs/hr	Lbs/hr
	Actual[1]	Lbs/hr	Lbs/hr	Lbs/hr
	Estimated[2]	Lbs/hr	Lbs/hr	Lbs/hr

1. *Submit stack test report with full details.*
2. *Estimate the emissions using the formula below*

$$\text{Estimated Emissions (lbs/hr, ppm)} = \frac{\text{100\%-Control Efficiency (\%)}}{\text{100\%}} \times \text{Uncontrolled Emissions}$$

Company Name: City of Chattanooga – South Lee Hwy. EQ Station Equipment Name: 600 kW Generator

7. Equipment Data:

Manufacturer of Equipment: Caterpillar

Date of Manufacture: 2025 Date of Installation: tbd

Boiler No.		Fuel Type	Rated Capacity 10^6 BTU/hr. Input	Type of Firing	Fuel Consumption			Percent Content		Heating Content of Fuel	(%) Excess Air
					Ave.	Max.	Annual	Sulfur	Ash		
	Primary: Normal Operating Fuel(s)	Diesel	5.77 ~~m~~MBTU/hr			42.1 gal/hr max				137000 BTU/hr	
	Standby: Fuel(s) used in emergency only										
	Primary: Normal Operating Fuel(s)										
	Standby: Fuel(s) used in emergency only										

a. If more than one boiler per stack, list a separate code number to represent each individual boiler.
b. List all fuels used.
c. Give rated or maximum input capacity, whichever is greater.
d. Specify the type of firing for each fuel used.
e. Indicate consumption of each fuel used in tons/hr, gal/hr, or ft^3/hr.
f. Indicate annual consumption of each fuel used in tons/yr, gal/yr, or ft^3/yr.
g. The average sulfur and ash content of each fuel must be included – This information may be obtained from the fuel supplier.
h. Indicate the heating content of each fuel in BTU/ton, BTU/gal, or BTU/ft^3 – This information may be obtained from the fuel supplier.

	Space Heating	Process Heating	Other (Describe)
Percent (%)of Load Used			

8. Emissions Impact:

Those emissions indicated in Item 6 mat at times under normal operating conditions cause (check one or more):

☐ Odors	☐ Health Effects
☐ Eye Irritations	☐ Other nuisances outside of plant property
☐ Property Damage	☒ No environmental damage

9. Emission Point Data:

Stack Height (emission point) above ground:	7.3 Ft
Ground Elevation above sea level at stack base:	697 Ft
Stack Diameter:	0.72 Ft
Volume of gas discharged into atmosphere:	4784.4Cfm
Gas exit temperature:	994.3 °F

10. Average Equipment Operating Time:

emergency use only except routine testing not to exceed 100 hr/yr

Daily:	Hours
Weekly:	Days
Yearly:	Weeks

This is to certify that I am familiar with the operations concerning this equipment and that the information provided on this application is true and complete to the best of my knowledge. ***This form must be completely filled out before it will be processed.***

Company Official

Mark Heinzer

Title

Administrator, Wastewater Dept., Chattanooga

Date

July 1, 2025

Mail to:
CHATTANOOGA-HAMILTON
COUNTY AIR POLLUTION
CONTROL BUREAU
2034 Hamilton Place Blvd. Suite 300
Chattanooga, TN 37421

Do not write below this line

Engineer Approval

Lbs/hr Allowable particulate emissions

Lbs/10^6 BTU allowable SO_x emissions

ppm allowable NO_x emissions

UTM Coordinate of Company: EW NS

This form corresponds to permit number: 6205-20300101-01I

Special Notations:

Stowers CAT

STOWERS MACHINERY CORPORATION

Jack

Generator Submittals

Received
JUL 28 2025
Chattanooga-Hamilton County
Air Pollution Control Bureau

Installation Permit No. 6205-20300101-01I

Cat® D600 GC
Diesel Generator Sets

CAT®

Standby: 60 Hz

Image shown may not reflect actual configuration

Engine Model	Cat® C18 In-line 6, 4-cycle diesel
Bore x Stroke	145 mm x 183 mm (5.7 in x 7.2 in)
Displacement	18.1 L (1106 in³)
Compression Ratio	14.5:1
Aspiration	Turbocharged Air-to-Air Aftercooled
Fuel Injection System	MEUI
Governor	Electronic ADEM™ A4

Model	Standby	Emission Strategy
D600 GC	600 ekW, 750 kVA	EPA Certified for Stationary Emergency Application

PACKAGE PERFORMANCE

Performance	Standby
Frequency	60 Hz
Genset Power Rating	750 kVA
Genset power rating with fan @ 0.8 power factor	600 ekW
Emissions	EPA TIER 2
Performance Number	DM8518
Fuel Consumption	
100% load with fan, L/hr (gal/hr)	159.5 (42.1)
75% load with fan, L/hr (gal/hr)	127.9 (33.8)
50% load with fan, L/hr (gal/hr)	90.5 (23.9)
25% load with fan, L/hr (gal/hr)	46.2 (12.2)
Cooling System[1]	
Radiator air flow restriction (system), kPa (in water)	0.12 (0.48)
Radiator air flow, m³/min (cfm)	803 (28357)
Engine coolant capacity, L (gal)	20.8 (5.5)
Radiator coolant capacity, L (gal)	61 (16)
Total coolant capacity, L (gal)	82 (22)
Inlet Air	
Combustion air inlet flow rate m³/min (cfm)	47.8 (1688)
Max. allowable combustion air inlet temp, °C (°F)	49 (122)
Exhaust System	
Exhaust stack gas temperature, °C (°F)	534.6 (994.3)
Exhaust gas flow rate, m³/min (cfm)	135.5 (4784.4)
Exhaust system backpressure (maximum allowable) kPa (in. water)	10.0 (40.0)
Heat Rejection	
Heat rejection to jacket water, kW (Btu/min)	180 (10236)
Heat rejection to exhaust (total), kW (Btu/min)	595 (33837)
Heat rejection to aftercooler, kW (Btu/min)	141 (8019)
Heat rejection to atmosphere from engine, kW (Btu/min)	77 (4379)
Heat rejection from alternator, kW (Btu/min)	33 (1854)
Emissions (Nominal)[2]	
NOx, mg/Nm³ (g/hp-hr)	2703.5 (5.5)
CO, mg/Nm³ (g/hp-hr)	161.0 (0.3)
HC, mg/Nm³ (g/hp-hr)	4.6 (0.01)
PM, mg/Nm³ (g/hp-hr)	13.2 (0.03)

$\frac{161.0}{2703.5} \cdot 5.5 = 0.33$

$\frac{4.6}{2703.5} \cdot 5.5 = 0.0094$

$\frac{13.2}{2703.5} \cdot 5.5 = 0.027$

LEHE2013-10

power output: 600 kW · $\frac{1\ hp}{0.7456998716\ kW}$ = 804.6 hp potential usage: 100 hr/yr

NO_x: 5.5 g/hp·hr · 804.6 hp · $\frac{1\ lb}{453.59237\ g}$ = 9.756 lb/hr (0.488 ton/yr potential)

CO: 0.33 · 804.6/453.59237 = 0.585 lb/hr (0.029 ton/yr potential)

VOC: 0.0094 · 804.6/453.59237 = 0.017 lb/hr (0.00083 ton/yr potential)

PM: 0.027 · 804.6/453.59237 = 0.048 lb/hr (0.0024 ton/yr potential)

SO_2: 42.1 $\frac{gal}{hr}$ · 0.144 · 0.0015 $\frac{lb}{gal}$ = 0.0091 lb/hr (0.00045 ton/yr potential)

D600 GC Diesel Generator Sets
Electric Power

Alternator[3]		
Voltages	480V	600V
Motor starting capability @ 30% Voltage Dip, skVA	1438	1494
Current Amps	902.1	721.7
Frame Size	M3154L41	M3156L41
Excitation	S.E	AREP
Temperature Rise, °C	105	130

APPLICABLE CODES AND STANDARDS:

AS1359, CSA C22.2 No100-04, UL142, UL489, UL869, UL2200, NFPA37, NFPA70, NFPA99, NFPA110, IBC, IEC60034-1, ISO3046, ISO8528, NEMA MG1-22, NEMA MG1-33, 2006/95/EC, 2006/42/EC, 2004/108/EC.
Note: Codes may not be available in all model configurations. Please consult your local Cat Dealer representative for availability.

STANDBY: Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

RATINGS: Ratings are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions.

FUEL RATES: Based on fuel oil of 35° API [16° C (60° F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29° C (85° F) and weighing 838.9 g/litre (7.001 lbs/U.S. gal.). Additional ratings may be available for specific customer requirements, contact your Caterpillar representative for details.
For information regarding Low Sulfur fuel and Biodiesel capability, please consult your Cat dealer.

DEFINITIONS AND CONDITIONS

[1] For ambient and altitude capabilities consult your Cat dealer. Air flow restriction (system) is added to existing restriction from factory.

[2] Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77° F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 BTU/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

[3] UL 2200 Listed packages may have oversized generators with a different temperature rise and motor starting characteristics. Generator temperature rise is based on a 40° C ambient per NEMA MG1-32.

LET'S DO THE WORK.™

LEHE2013-10 (07/24)

BRASFIELD & GORRIE GENERAL CONTRACTORS

Jacobs

Gresham Smith

SUBMITTAL TRANSMITTAL

March 6, 2025

Mr. Craig Parker
Gresham Smith
222 Second Avenue South
Suite 1400
Nashville, TN 37201

RE: Submittal No. 26 32 13-002
600 kW Generator and 800 A Automatic Transfer Switch
e2i2 SSO Abatement Program Phase 1
South Lee Hwy EQ Station
Industrial Development Board of the City of Chattanooga

Dear Mr. Parker,

Please find enclosed the reference submittal information for review and approval.

Please feel free to contact me directly at (M) 256-276-9382 or tfreeman@brasfieldgorrie.com if you have any questions or if you need any additional information. Thank you.

Sincerely,

Trent Freeman
Brasfield & Gorrie

Received
JUL 28 2025
Chattanooga-Hamilton County
Air Pollution Control Bureau

Installation Permit No. 6205-20300101-01I

BARGE DESIGN SOLUTIONS CROY JDS Terracon

BRASFIELD & GORRIE GENERAL CONTRACTORS

Jacobs

Gresham Smith

Submittal No. 26 32 13-002
600 kW Generator and 800 A Automatic Transfer Switch
Exceptions/Clarifications/Corrections
e2i2 SSO Abatement Program Phase 1
South Lee Hwy EQ Station

Engineer:

1. The enclosed 600 kW generator and transfer switch for the South Lee EQ Pump Station are submitted for approval. Please review and verify all submittal information, exceptions and clarifications are acceptable as submitted.
2. Please review the enclosed checked specification section and verify all comments, clarifications and exceptions are acceptable.
3. Transfer Switch vendor ASCO cannot guarantee emergency maintenance repairs of the Automatic Transfer Switch within an 8 hour period from time of notification without a maintenance contract.
4. The custom enclosure was approved as noted in Submittal No. 26 32 13-001.
5. Engineer and Owner will be provided with custom color table at a later date for selection of color for enclosure.
6. Disregard the submittal acceptance agreement portion of this submittal. That portion is between Lawson Electric and Stowers Machinery Corporation.

Manufacturer/Vendor/Subcontractor

1. All materials associated with the South Lee Hwy EQ Station project are to be delivered to the SLEQ site as follows:

Brasfield & Gorrie
SLEQ Tank Site - 7148 Lee Hwy Chattanooga, TN 37421
Attn: John Garrett (205-368-2632)

BRASFIELD & GORRIE GENERAL CONTRACTORS

e2i2 SSO Abatement
Program Phase 1
SLEQ & WCEQ Stations

Reviewed By: TFreeman
Review Date: 3/6/2025
Submittal Package: 26 32 13-002

This submittal has been reviewed for conformance with the Contract Documents

Received
JUL 28 2025
Chattanooga-Hamilton County Air Pollution Control Bureau

BARGE DESIGN SOLUTIONS CROY JDS Terracon

JAG

Construction is Underway on Phase 1 of City of Chattanooga's e2i2 Program

New Sewer Infrastructure Will Reduce Sanitary Sewer Overflows and Support Future Development in Chattanooga

Published

April 29, 2025

Category

News

Installation Permit No. 6205-20300101-01I

Share

The progressive design-build team of Brasfield & Gorrie and Gresham Smith is at work on construction of two new wet weather equalization (EQ) stations and improvements to two interceptor sewer lines for the City of Chattanooga Wastewater Department.

The project is the first phase of the City's Environmental and Economic Infrastructure Improvements (e2i2) portion of "Clear Chattanooga," the City's Sewer Overflow Abatement Program. The EQ stations will reduce the occurrence of sanitary sewer overflows during heavy rain events and add capacity to increase reliability and accommodate Chattanooga's future growth and development.

"This project has thus far been a model for collaborative delivery, which enabled the design team to achieve all of the design milestones on-time and fast track the start of construction," said Craig Parker, P.E., Senior Vice President at Gresham Smith. "This has been a great experience for our team, and we are excited that the new facilities are under construction."

"The design-build model offers many benefits, such as improved schedules and innovation in design and construction, but that's not possible without collaboration," said Brasfield & Gorrie Vice President and Division Manager Ben Harris. "We're grateful we can leverage our design-build experience to benefit the people of Chattanooga."

Located along South Lee Highway and West Chickamauga, the new EQ stations will consist of above grade prestressed concrete EQ tanks, which will store approximately 10 million gallons (MG) and 30 MG, respectively, as well as a wet weather diversion structure and an EQ pump station. Additionally, at the South Lee Highway location, the team will increase sewer capacity and will perform sewer rehabilitation in two sections of the City's interceptor sewer system.

The project team also includes program manager Jacobs, as well as Croy Engineering, Terracon Consultants, Barge Design Solutions and JDS.

About Gresham Smith

Gresham Smith is a top-ranked architecture, engineering, design and consulting firm with $354 million in annual gross revenue and 26 offices across the United States. We provide full-service solutions for the built environment with a focus on the aviation, building engineering, healthcare, industrial, land planning, life and work places, transportation, and water and environment market sectors. Throughout all of our work, we are united in our Core Purpose: to plan, design and consult to create healthy and

thriving communities. Consistently ranked as a "best place to work," we are committed to creating a culture that fosters diversity of experience combined with a common goal of genuine care for each other, our partners and the outcome of our work.

About Brasfield & Gorrie

Since Brasfield & Gorrie started in 1964, we've grown from a local contractor to a national construction company with 13 offices in eight states. We've helped clients complete projects that transform communities and power economies. In 2024, we had $6.4 billion in revenue and Engineering News-Record currently ranks us #22 on its Top 400 Contractors list. And during our growth, we've maintained the identity that sets us apart—true builders guided by the Golden Rule.