

L-0700-017  
May 1, 2019

Mr. David Rheaume, Chairman  
Board of Adjustment  
City of Portsmouth  
1 Junkins Avenue  
Portsmouth, New Hampshire 03801

**Re: PDA Variance Application  
Lonza Biologics – G2E**

Dear Chairman Rheaume:

On behalf of Lonza Biologics, Inc., we pleased to submit the following information to the Board of Adjustment relative to a request for recommendation of variance approval to the Pease Development Authority (PDA) Board for the above referenced project:

- Site Plan dated May 1, 2019
- Lonza Exterior Storage Tank Inventory last revised April 10, 2019
- Generator Cut Sheet
- Switch Gear Enclosure Cut Sheet

**Site Plan**

Lonza Biologics is proposing exterior improvements along Goose Bay Drive in the rear of its existing facility that is located at 101 International Drive. These exterior improvements are to support on-going improvements that are occurring inside the building. The exterior improvements can be summarized as follows:

- Proposed electrical improvements in the rear of 101C including a two (2) new generators with 3,312-gallon diesel fuel above ground storage tanks (AST), a transformer pad, switch gear housed in an enclosure, automatic transfer switch housed in a proposed enclosure and an associated retaining wall. Cut sheets for the proposed generators and enclosures are enclosed to show their appearance.

**Variance**

Similar to prior relief granted in 2015, the proposed generators noted above will require a variance from Section 308.02(c) of the PDA Land Use Controls which indicates above ground storage facilities shall not exceed a capacity of 2,000 gallons per facility. The following addresses how the project meets the five criteria for a variance as indicated Section 317.01 of the PDA Zoning Ordinance:

1. *No adverse effect or diminution in values of surrounding properties would be suffered.*

The existing facility is a manufacturing/industrial use that has been in operation at Pease Tradeport for over two decades. The rear of the building includes various industrial and mechanical equipment such as generators. There are four (4) existing generators with diesel fuel AST's that exceed 2,000 gallons. These generators have been in operation since 2000, 2003 and 2016 respectively. These existing generators have previously been granted relief. The diesel fuel ASTs are double walled, and the generators are consistent in size and appearance with the four (4) existing generators located in the rear of Lonza's building.



These AST's are regulated by NHDES approvals and have Spill Prevention Control and Countermeasure (SPCC) Plans implemented to ensure the tanks are properly maintained on a periodic basis and to put a plan in place to protect the surrounding properties should an emergency spill occur.

2. *Granting of the variance would be of the benefit to the public interest.*

Granting of the variance would be of the benefit to the public interest as the generator will allow the facility to remain in operation in the event of a power failure ensuring that it can continue manufacture its products that service the pharmaceutical and biologics industries.

3. *Denial of the variance would result in unnecessary hardship to the person seeking it.*

Denial of the variance would eliminate Lonza's ability to provide a temporary means of power in the event that there is outage on Pease Tradeport. This would halt manufacturing of its products, thus preventing them to meet their clients needs. Any stoppage in production would result in undue losses of revenues that could impact the business and its employees.

4. *Granting the variance would be in substantial justice.*

Granting of the variance would be fair and reasonable as this is a large manufacturing facility and mechanical equipment such as generators with diesel fuel AST's exceeding 2,000 gallons are typical of these types of facilities to support their operations.

5. *The proposed use would not be contrary to the spirit of the zoning rule.*

The proposed use would not be contrary to the spirit of the zoning rule as Lonza's facility is located in the Airport Business and Commercial zone. This zone is intended to promote commerce. In order for Lonza to remain in operation during a power outage, generators of this size are needed.

We trust the above supports our request for a recommendation of variance approval to the PDA Board and respectfully request to be placed on the agenda of the next scheduled ZBA meeting on May 21, 2019. If you have any questions or need any additional information, please do not hesitate to contact me at 603.433.8818 or [pmcrimmins@tighebond.com](mailto:pmcrimmins@tighebond.com).

Sincerely,  
**TIGHE & BOND, INC.**



Patrick M. Crimmins, PE  
Senior Project Manager

Enclosures  
Copy: IPS (via email)  
Lonza Biologics (via email)



**Pease Development Authority**  
 55 International Drive, Portsmouth, NH 03801, (603) 433-6088



**Request for Appeal/Variance Application**

For PDA Use Only:			
Date Submitted: _____	Municipal Review: _____	Fee: _____	
Application Complete: _____	Date Forwarded: _____	Paid: _____	Check #: _____

Action Requested (please check one):	Appeal from Administrative Decision: [ <input type="checkbox"/> ]	Variance: [ <input checked="" type="checkbox"/> ]
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**Applicant Information**

Applicant: Lonza Biologics, Inc	Contact Name: Patrick Crimmins, Tighe & Bond (applicant agent)
Address: 101 International Drive Portsmouth, NH 03801	Business Phone: 603-433-8818
	Mobile Phone: _____
	Fax: _____

**Site Information**

Address: 101 International Drive		Frontage: 1040'
Description of Property: Existing Lonza facility		Left Side: 580'
		Right Side: 765'
Zone(s) Location: ABC	Lot #: 305-0006	Rear: 989'
Assessors Plan #: _____	Lot Area: 17.1 acres	
Existing Use: Office/Research/Manufacturing	Proposed Use: Same	

**Request for Appeal from Administrative Decision:**

**Variance:**

Applicable Rule/Regulation/Code Provision: _____
Applicable Zoning Regulation: _____
Interpretation Claimed: _____
Administrative Decision from which appeal is sought: _____

Zoning Regulation(s) from which Variance is Sought: 308.02 (c)
Reason(s) Why Variance Should Be Granted Including Circumstances Which Constitute Unnecessary Hardship: Variance should be granted to allow for diesel fuel above ground storage tanks (AST) that exceed 2,000 gallons for one proposed generator. See attached letter

Please attach any required site plans or drawings to this application with a fee of \$ \_\_\_\_\_. All forms must be completely filled out and signed by the applicant or their agent before they will be accepted. Additional sheets may be attached if required. Completed forms must be returned to the PDA for a hearing by the PDA Zoning Adjustment and Appeals Committee or referral to the appropriate municipality. The applicant or their agent is required to attend the Public Hearing for the Appeal/Variance. If you have any questions, please contact the PDA Engineering Department at 603-433-6088.

**Certification**

I hereby certify under the penalties of perjury that the foregoing information and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge.	
Date: 5/11/19	Signature of Applicant:
	Printed Name: Patrick Crimmins

**Lonza Biologics Storage Facilities located at 101 International Drive Portsmouth, NH**

Location	Service	PDA Classification	Capacity	Year Installed	Equipment #	Storage Facility Description	Lonza Comments Field
101A Utility yard	Wastewater	Not Regulated	12,000 G	N/A	T-17001	Non Hazardous Material	Not Currently Used
101A Gas yard	Liquid Nitrogen	No Spill Risk	1,500 G	N/A	X-680	Cyrogenic Liquid - Gasify and Disperse	
101A Gas yard	Liquid Carbon Dioxide	No Spill Risk	3,300 G	N/A	X-695	Cyrogenic Liquid - Gasify and Disperse	
101A Cold Storage Bldg	Generator-Diesel	Regulated	1,075 G	2013	101A-EGEN-B	Double Walled Tank with Interstitial Monitoring	
101A Utility yard	Generator-Diesel	Regulated	2,400 G	2000	101A-EGEN-B	Double Walled Tank with Interstitial Monitoring	
101B Gas yard	Liquid Nitrogen	No Spill Risk	6,000 G	N/A	X-33050	Cyrogenic Liquid - Gasify and Disperse	Original Volume - 1,500 G
101B Gas yard	Liquid Carbon Dioxide	No Spill Risk	7,100 G	N/A	X33040	Cyrogenic Liquid - Gasify and Disperse	
101B Gas yard	Liquid Oxygen	No Spill Risk	5,855 G	N/A	X-33030	Cyrogenic Liquid - Gasify and Disperse	
101B Gas yard	Gaseous helium	No Spill Risk	43,535 SCF /2,244 G	N/A	X-33060	Stored as a Gas - Disperse lighter than Air	
101B Gas yard	Brine solution	Not Regulated	50 tons	N/A	T-30010	Saturated Salt Solution	No Significant Hazards Mostly dry tank.
101B Electrical yard	Generator-Diesel	Regulated	3,640 G	2003	101B-EGEN	Double Walled Tank with Interstitial Monitoring	
101B Electrical yard	Generator-Diesel	Regulated	3,312	2019	101B-EGEN	Double Walled Tank with Interstitial Monitoring	
101B Electrical yard	Generator-Diesel	Regulated	3,312	2019	101B-EGEN	Double Walled Tank with Interstitial Monitoring	
101C underground	Nitrogen Wastewater (Currently not in use)	Not Regulated	50,000 G	N/A	T-33011	Spray Lined Tank (Will get epoxy lined in 2019)	Non Hazardous
101C underground	Triton Wastewater	Not Regulated	50,000 G	N/A	T-33012	Epoxy Lined	Non Hazardous
101C underground	Wastewater (not used)	Not Regulated	50,000 G	N/A	T-33013	Epoxy Lined	WW flushed into chemical drains in building flow to this lined tank for equalization. Following equalization, the WW is diverted back into the building's waste neutralizaion systems.
101C Gas yard	Liquid Nitrogen	No Spill Risk	3,000 G	N/A	T-43410	Cyrogenic Liquid - Gasify and Disperse	
101C Electrical yard	Generator-Diesel	Regulated	3,312	2016	101C-EGEN	Double Walled Tank with Interstitial Monitoring	
101C Electrical yard	Generator-Diesel	Regulated	3,312	2016	101C-EGEN	Double Walled Tank with Interstitial Monitoring	
Bldg 230	Generator-Diesel	Regulated	660	N/A	230-EGEN	Double Walled Tank with Interstitial Monitoring	



SITE DATA BLOCK

OWNER: PEASE DEVELOPMENT AUTHORITY  
55 INTERNATIONAL DRIVE  
PORTSMOUTH NH, 03801

APPLICANT/  
TENANT: LONZA BIOLOGICS, INC.  
101 INTERNATIONAL DRIVE  
PORTSMOUTH NH, 03801

LOCATION: 101 INTERNATIONAL DRIVE  
PORTSMOUTH NH, 03801  
MAP 305 LOT 6

ZONING DISTRICT: AIRPORT BUSINESS AND COMMERCIAL ZONE (ABC)

PROPOSED USES: OFFICE/MANUFACTURING/RESEARCH AND DEVELOPMENT

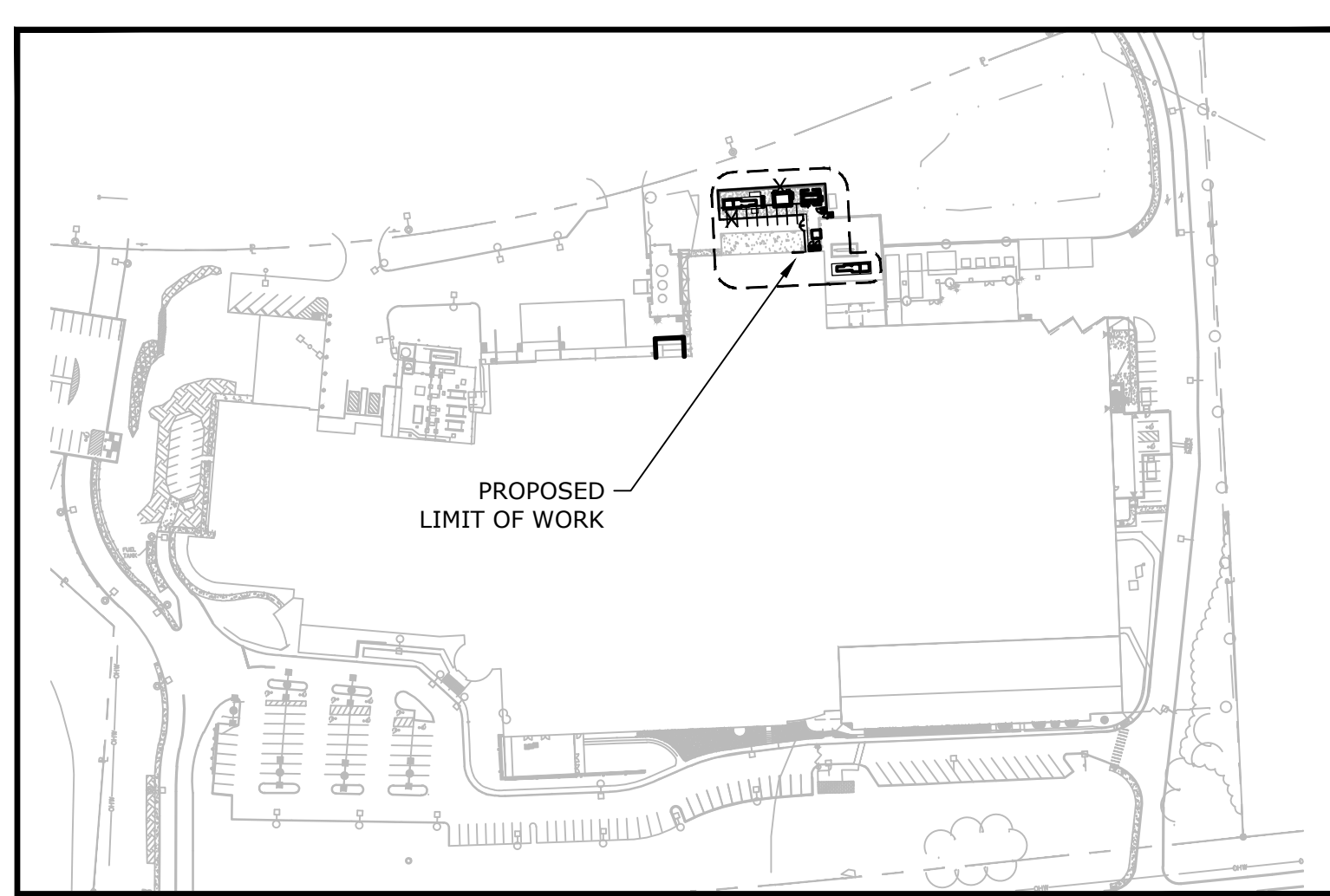
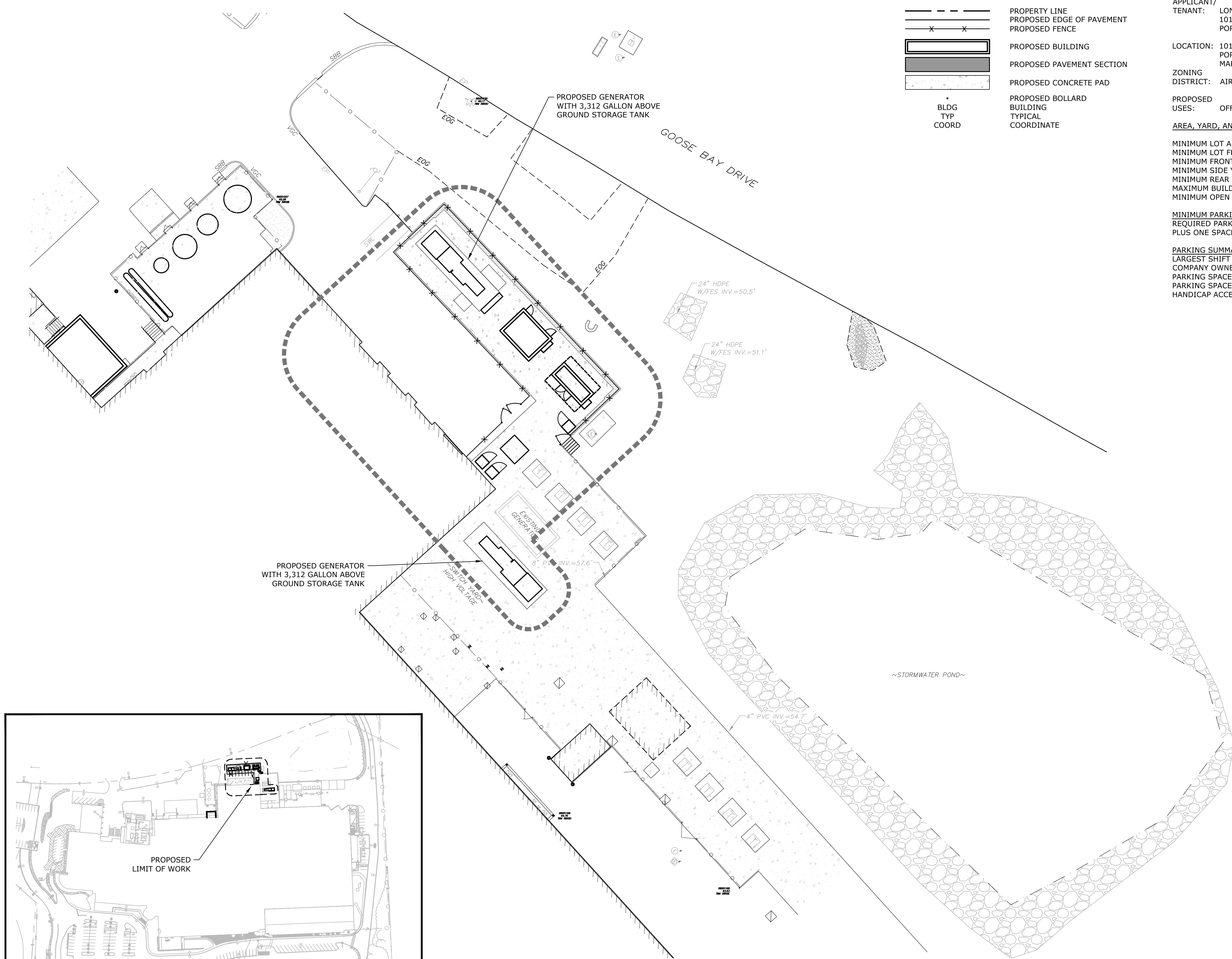
AREA, YARD, AND HEIGHT REQUIREMENTS		
	REQUIRED/ALLOWED	PROPOSED/PROVIDED
MINIMUM LOT AREA	5 ACRES	17.1 ACRES
MINIMUM LOT FRONTAGE	200 FEET	1038 FEET
MINIMUM FRONT YARD	70 FEET	118± FEET
MINIMUM SIDE YARD	30 FEET	30± FEET (EXISTING)
MINIMUM REAR YARD	50 FEET	50± FEET (EXISTING)
MAXIMUM BUILDING HEIGHT	FAA CRITERIA	86 FEET
MINIMUM OPEN SPACE	25% OF LOT AREA	34.2%

MINIMUM PARKING REQUIREMENTS  
REQUIRED PARKING = 2 SPACES PER 3 EMPLOYEES ON LARGEST SHIFT  
PLUS ONE SPACE PER COMPANY OWNED VEHICLE

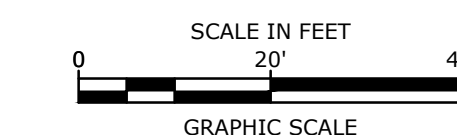
PARKING SUMMARY  
LARGEST SHIFT = 740 EMPLOYEES  
COMPANY OWNED VEHICLE = 1  
PARKING SPACES REQUIRED = 1 + (2/3) X (740) = 493 SPACES  
PARKING SPACES PROVIDED = 521 SPACES  
HANDICAP ACCESSIBLE SPACES PROVIDED = 11 SPACES

**LEGEND**

- PROPERTY LINE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED FENCE
- PROPOSED BUILDING
- PROPOSED PAVEMENT SECTION
- PROPOSED CONCRETE PAD
- PROPOSED BOLLARD
- BUILDING TYPICAL COORDINATE



OVERALL SITE PLAN, SCALE 1" = 150'



**G2E Generator**

**Lonza Biologics**

Portsmouth,  
New Hampshire

MARK	DATE	DESCRIPTION
C	5/1/2019	BOA Submission
B	4/10/2019	Revised PDA Submission
A	4/8/2019	PDA Submission

PROJECT NO:	L0700-017
DATE:	04/08/2019
FILE:	L0700-017_C-DSGN.dwg
DRAWN BY:	NAH
CHECKED:	PMC
APPROVED:	BLM

SITE PLAN

SCALE:

C-102

# Cat® 3516C

## Diesel Generator Sets



Image shown may not reflect actual configuration

Bore – mm (in)	170 (6.69)
Stroke – mm (in)	190 (7.48)
Displacement – L (in <sup>3</sup> )	69 (4210.64)
Compression Ratio	14.7:1
Aspiration	TA
Fuel System	EUI
Governor Type	ADEM™ A3

Standby 60 Hz ekW (kVA)	Mission Critical 60 Hz ekW (kVA)	Prime 60 Hz ekW (kVA)	Continuous 60 Hz ekW (kVA)	Emissions Performance
2000 (2500)	2000 (2500)	1825 (2281)	1650 (2062)	U.S. EPA Stationary Emergency Use Only (Tier 2)

### Standard Features

#### Cat® Diesel Engine

- Meets U.S. EPA Stationary Emergency Use Only (Tier 2) emission standards
- Reliable performance proven in thousands of applications worldwide

#### Generator Set Package

- Accepts 100% block load in one step and meets other NFPA 110 loading requirements
- Conforms to ISO 8528-5 G3 load acceptance requirements
- Reliability verified through torsional vibration, fuel consumption, oil consumption, transient performance, and endurance testing

#### Alternators

- Superior motor starting capability minimizes need for oversizing generator
- Designed to match performance and output characteristics of Cat diesel engines

#### Cooling System

- Cooling systems available to operate in ambient temperatures up to 50°C (122°F)
- Tested to ensure proper generator set cooling

#### EMCP 4 Control Panels

- User-friendly interface and navigation
- Scalable system to meet a wide range of installation requirements
- Expansion modules and site specific programming for specific customer requirements

#### Warranty

- 24 months/1000-hour warranty for standby and mission critical ratings
- 12 months/unlimited hour warranty for prime and continuous ratings
- Extended service protection is available to provide extended coverage options

#### Worldwide Product Support

- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- Your local Cat dealer provides extensive post-sale support, including maintenance and repair agreements

#### Financing

- Caterpillar offers an array of financial products to help you succeed through financial service excellence
- Options include loans, finance lease, operating lease, working capital, and revolving line of credit
- Contact your local Cat dealer for availability in your region

## Optional Equipment

### Engine

#### Air Cleaner

- Single element
- Dual element
- Heavy duty

#### Muffler

- Industrial grade (15 dB)

#### Starting

- Standard batteries
- Oversized batteries
- Standard electric starter(s)
- Heavy duty electric starter(s)
- Dual electric starter(s)
- Air starter(s)
- Dual air starter(s)
- Jacket water heater
- Block heater

### Alternator

#### Output voltage

- 380V     6300V
- 440V     6600V
- 480V     6900V
- 600V     12470V
- 2400V    13200V
- 4160V    13800V

#### Temperature Rise (over 40°C ambient)

- 150°C
- 125°C/130°C
- 105°C
- 80°C

#### Winding type

- Random wound
- Form wound

#### Excitation

- Internal excitation (IE)
- Permanent magnet (PM)

#### Attachments

- Anti-condensation heater
- Stator and bearing temperature monitoring and protection

### Power Termination

#### Type

- Bus bar
- Circuit breaker
- 1600A     2000A
- 2500A     3000A
- 3200A     4000A
- 5000A
- IEC         UL
- 3-pole     4-pole
- Manually operated
- Electrically operated

#### Trip Unit

- LSI         LSI-G
- LSIG-P

### Control System

#### Controller

- EMCP 4.2
- EMCP 4.3
- EMCP 4.4

#### Attachments

- Local annunciator module
- Remote annunciator module
- Expansion I/O module
- Remote monitoring software

#### Charging

- Battery charger – 10A
- Battery charger – 20A
- Battery charger – 35A

### Vibration Isolators

- Rubber
- Spring
- Seismic rated

### Extended Service Options

#### Terms

- 2 year (prime)
- 3 year
- 5 year
- 10 year

#### Coverage

- Silver
- Gold
- Platinum
- Platinum Plus

### Ancillary Equipment

- Automatic transfer switch (ATS)
- Uninterruptible power supply (UPS)
- Paralleling switchgear
- Paralleling controls

### Certifications

- UL2200
- CSA
- IBC seismic certification
- OSHPD pre-approval

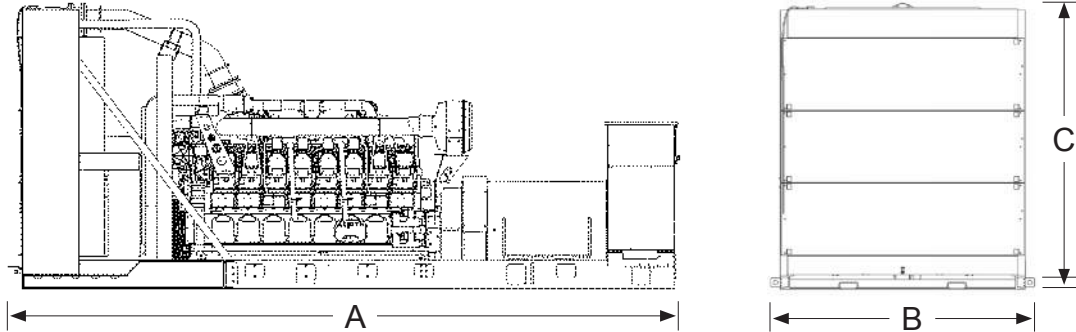
**Note:** Some options may not be available on all models. Certifications may not be available with all model configurations. Consult factory for availability.

**Package Performance**

<b>Performance</b>	<b>Standby</b>	<b>Mission Critical</b>	<b>Prime</b>	<b>Continuous</b>
Frequency	60 Hz	60 Hz	60 Hz	60 Hz
Gen set power rating with fan	2000 ekW	2000 ekW	1825 ekW	1650 ekW
Gen set power rating with fan @ 0.8 power factor	2500 kVA	2500 kVA	2281 kVA	2062 kVA
Emissions	EPA ESE (TIER 2)	EPA ESE (TIER 2)	EPA ESE (TIER 2)	EPA ESE (TIER 2)
Performance number	EM1896-01	EM1897-01	DM8264-05	DM8265-04
<b>Fuel Consumption</b>				
100% load with fan – L/hr (gal/hr)	522.5 (138.0)	522.5 (138.0)	480.9 (127.0)	441.9 (116.7)
75% load with fan – L/hr (gal/hr)	406.8 (107.5)	406.8 (107.5)	378.8 (100.1)	349.4 (92.3)
50% load with fan – L/hr (gal/hr)	293.6 (77.5)	293.6 (77.5)	269.9 (71.3)	246.2 (65.0)
25% load with fan – L/hr (gal/hr)	169.7 (44.8)	169.7 (44.8)	159.2 (42.1)	148.9 (39.3)
<b>Cooling System</b>				
Radiator air flow restriction (system) – kPa (in. water)	0.12 (0.48)	0.12 (0.48)	0.12 (0.48)	0.12 (0.48)
Radiator air flow – m <sup>3</sup> /min (cfm)	2480.0 (87580)	2480.0 (87580)	2480.0 (87580)	2480.0 (87580)
Engine coolant capacity – L (gal)	233.2 (61.6)	233.2 (61.6)	233.2 (61.6)	233.2 (61.6)
Radiator coolant capacity – L (gal)	238.5 (63.0)	238.5 (63.0)	238.5 (63.0)	238.5 (63.0)
Total coolant capacity – L (gal)	471.7 (124.6)	471.7 (124.6)	471.7 (124.6)	471.7 (124.6)
<b>Inlet Air</b>				
Combustion air inlet flow rate – m <sup>3</sup> /min (cfm)	185.5 (6548.9)	185.5 (6548.9)	180.0 (6357.6)	174.3 (6155.8)
<b>Exhaust System</b>				
Exhaust stack gas temperature – °C (°F)	400.1 (752.1)	400.1 (752.1)	382.8 (721.1)	370.7 (699.3)
Exhaust gas flow rate – m <sup>3</sup> /min (cfm)	433.1 (15292.8)	433.1 (15292.8)	408.1 (14410.4)	385.3 (13605.7)
Exhaust system backpressure (maximum allowable) – kPa (in. water)	6.7 (27.0)	6.7 (27.0)	6.7 (27.0)	6.7 (27.0)
<b>Heat Rejection</b>				
Heat rejection to jacket water – kW (Btu/min)	759 (43150)	759 (43150)	715 (40666)	673 (38277)
Heat rejection to exhaust (total) – kW (Btu/min)	1788 (101696)	1788 (101696)	1645 (93554)	1522 (86577)
Heat rejection to aftercooler – kW (Btu/min)	672 (38240)	672 (38240)	612 (34784)	553 (31421)
Heat rejection to atmosphere from engine – kW (Btu/min)	133 (7564)	133 (7564)	127 (7230)	123 (6983)
Heat rejection from alternator – kW (Btu/min)	96 (5464)	96 (5464)	86 (4895)	76 (4326)
<b>Emissions (Nominal)</b>				
NOx mg/Nm <sup>3</sup> (g/hp-h)	2754.3 (5.46)	2754.3 (5.46)	2488.9 (5.05)	2202.3 (4.37)
CO mg/Nm <sup>3</sup> (g/hp-h)	143.3 (0.30)	143.3 (0.30)	129.7 (0.27)	112.3 (0.24)
HC mg/Nm <sup>3</sup> (g/hp-h)	44.7 (0.11)	44.7 (0.11)	55.6 (0.13)	67.4 (0.16)
PM mg/Nm <sup>3</sup> (g/hp-h)	10.4 (0.03)	10.4 (0.03)	10.9 (0.03)	12.0 (0.03)
<b>Emissions (Potential Site Variation)</b>				
NOx mg/Nm <sup>3</sup> (g/hp-h)	3305.2 (6.56)	3305.2 (6.56)	2986.6 (6.06)	2642.7 (5.24)
CO mg/Nm <sup>3</sup> (g/hp-h)	258.0 (0.54)	258.0 (0.54)	233.4 (0.49)	202.1 (0.43)
HC mg/Nm <sup>3</sup> (g/hp-h)	59.5 (0.14)	59.5 (0.14)	73.9 (0.18)	89.6 (0.22)
PM mg/Nm <sup>3</sup> (g/hp-h)	14.6 (0.04)	14.6 (0.04)	15.3 (0.04)	16.8 (0.04)



## Weights and Dimensions



Dim "A" mm (in)	Dim "B" mm (in)	Dim "C" mm (in)	Dry Weight kg (lb)
6770 (266.5)	2379 (93.7)	2958 (116.5)	16 275 (35,880)

**Note:** For reference only. Do not use for installation design. Contact your local Cat dealer for precise weights and dimensions.

## Ratings Definitions

### 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.

### Mission Critical

Output available with varying load for the duration of the interruption of the normal source power. Average power output is 85% of the mission critical power rating. Typical peak demand up to 100% of rated power for up to 5% of the operating time. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

### Prime

Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand is 100% of prime rated kW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year.

### Continuous

Output available with non-varying load for an unlimited time. Average power output is 70-100% of the continuous power rating. Typical peak demand is 100% of continuous rated kW for 100% of the operating hours.

### 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, 2014/35/EU, 2006/42/EC, 2014/30/EU.

**Note:** Codes may not be available in all model configurations. Please consult your local Cat dealer for availability.

### Data Center Applications

Tier III/Tier IV compliant per Uptime Institute requirements. ANSI/TIA-942 compliant for Rated-1 through Rated-4 data centers.

### Fuel Rates

Fuel rates are 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/liter (7.001 lbs/U.S. gal.)

[www.cat.com/electricpower](http://www.cat.com/electricpower)

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