O'Day, Liz

From: Carlson, Ryan <Ryan.Carlson@kimley-horn.com>
Sent: Tuesday, June 25, 2024 9:00 AM
To: O'Day, Liz; Blixrud, Alex
Subject: RE: [EXTERNAL]: RE: 8000 Ikea Way - Generator
Attachments: KD1000_60Hz Sound Info.pdf

Good morning Liz,

I've attached the noise information we received from the vendor today. In short, the emergency generator with a Level 2 sound enclosure produces 75dB at 23 feet. This is over the Level 1 classification but I want to reiterate some points.

- This is an emergency generator. It is only used when the power goes out and for monthly testing.
    - Per city code 10.31, this should fall under a public safety exception as personnel depend on its use in emergency situations.
- The 75 dB level occurs 23 feet from the generator. The vendor is unsure of the exact distance to reach 50 dB but it is heavily reduced by the time it could reach the hotel to the north that is 300 plus feet away.
    - Other factors that contribute to the noise reduction are the tightly packed safety fence inserts and concrete retaining wall to the north which also serves as the ramp to the loading dock. Both of which exceed the height of the generator at grade.
- A Level 2 enclosure is the industry standard when noise is to be limited.
    - Does Bloomington require these emergency generators to get custom enclosures?

Hopefully these points resolve this hold-up but please let me know if we need to have further discussions or if you have any questions.

Thank you!

Ryan Carlson, E.I.T.
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Direct: 612 426 2210

From: O'Day, Liz <eoday@BloomingtonMN.gov>
Sent: Monday, June 24, 2024 12:53 PM
To: Blixrud, Alex <Alex.Blixrud@kimley-horn.com>; Carlson, Ryan <Ryan.Carlson@kimley-horn.com>
Subject: RE: [EXTERNAL]: RE: 8000 Ikea Way - Generator

Hi Alex –

The noise Code has requirements based on the maximum allowable sound level by land use at the point of the nearest receiver. Noise area classification 1 is residential or lodging. Area 2 is commercial and Area 3 is Industrial. Because there is hotel to the north, the generator noise level cannot exceed 60 and 65 during the daytime (7am-10pm) at the nearest receiver and 50 and 55 during the nighttime (10pm-7am)

KOHLER. Power Systems

TECHNICAL INFORMATION BULLETIN

Generator Set Sound Data Sheet

			Sound Pressure Data in dB(A)			
Generator Set Model	**Hz**	**Load**	**Raw Exhaust**	**Open Unit, Isolated Exhaust**	**Level 1 Sound Enclosure**	**Level 2 Sound Enclosure**
KD1000	60	100% Load	124.4	96.2	91.8	75.7
		No Load	111.3	92.8	88.6	72.1
Note: Sound pressure data is the logarithmic average of eight perimeter measurement points at a distance of 7 m (23 ft.), except Raw Exhaust data which is a single measurement point at 1 m (3.3 ft.) from the mouth of a straight pipe exhaust.						

KD1000	**60 Hz**

				Sound Pressure Levels, dB(A)								
Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
100% Load	7 (23)	Level 2 Sound	3:00	61.3	67.9	68.3	71.3	68.3	64.1	58.5	55.6	75.8
			1:30	58.4	60.3	70.9	70.2	67.8	64.0	58.7	52.7	75.3
			12:00 - Engine	57.4	64.4	70.5	70.4	68.9	63.9	57.1	49.2	75.6
			10:30	55.1	60.4	76.2	72.2	70.0	67.5	61.3	55.3	78.9
			9:00	60.8	65.6	69.4	70.7	68.5	65.0	58.3	55.5	75.6
			7:30	61.7	67.2	68.5	69.2	66.5	63.1	56.2	55.9	74.7
			6:00 - Alternator	56.4	64.3	59.1	63.4	57.9	58.2	53.5	59.9	69.4
			4:30	62.9	69.7	71.6	67.0	62.0	62.9	57.1	57.1	75.4
			8-pos. log avg.	60.0	66.0	71.1	69.9	67.4	64.2	58.1	56.0	75.7

				Sound Pressure Levels, dB(A)								
Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
100% Load	7 (23)	Level 1 Sound	3:00	63.5	72.9	76.2	81.0	78.1	75.0	71.8	63.9	84.8
			1:30	64.4	76.0	86.6	88.4	91.0	88.7	86.4	79.1	95.7
			12:00 - Engine	68.6	78.8	81.4	89.3	91.5	83.1	78.2	70.8	94.4
			10:30	61.8	77.8	86.6	88.4	91.9	90.2	87.8	78.5	96.5
			9:00	61.8	73.8	74.9	81.6	78.3	74.9	71.4	63.7	85.0
			7:30	56.2	70.3	76.8	74.2	79.3	75.3	67.2	60.4	83.2
			6:00 - Alternator	51.5	64.4	76.4	73.7	69.8	67.1	61.6	53.9	79.4
			4:30	59.7	69.7	76.0	76.3	76.6	75.9	69.7	65.5	82.8
			8-pos. log avg.	63.2	74.8	82.0	85.1	87.5	84.3	81.6	73.4	91.8

				Sound Pressure Levels, dB(A)								
Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
100% Load	7 (23)	Open Unit, Isolated Exhaust	3:00	59.9	73.6	90.4	87.0	89.7	91.2	88.2	86.2	96.9
			1:30	53.9	70.3	92.3	90.8	91.4	92.1	88.6	85.7	98.5
			12:00 - Engine	55.6	72.5	78.2	87.6	87.7	87.4	82.9	77.7	93.1
			10:30	57.1	72.9	86.1	87.9	89.6	90.0	87.4	82.8	95.7
			9:00	57.7	74.5	85.9	87.7	89.1	90.9	88.2	86.0	96.2
			7:30	58.5	76.6	86.3	87.2	89.8	91.2	88.1	85.1	96.3
			6:00 - Alternator	57.7	72.6	85.1	82.6	85.1	87.4	84.6	81.6	92.7
			4:30	59.5	75.2	91.1	88.6	89.4	90.7	88.7	86.8	97.3
			8-pos. log avg.	57.8	73.9	88.5	87.9	89.3	90.4	87.5	84.7	96.2

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Load	Distance, m (ft)	Exhaust	Sound Pressure Levels, dB(A) Octave Band Center Frequency (Hz) 63	125	250	500	1000	2000	4000	8000	Overall Level
100% Load	1 (3.3)	Raw Exhaust (No Silencer)	98.8	105.0	111.6	117.6	116.7	119.1	117.1	113.1	124.4

KD1000	60 Hz

Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Sound Pressure Levels, dB(A) Octave Band Center Frequency (Hz) 63	125	250	500	1000	2000	4000	8000	Overall Level
No Load	7 (23)	Level 2 Sound	3:00	55.6	61.7	65.7	64.5	62.7	59.3	54.7	47.1	70.6
			1:30	53.4	60.8	68.5	64.4	63.3	56.9	50.4	44.1	71.5
			12:00 - Engine	54.4	60.7	67.9	63.7	65.7	57.5	50.9	45.6	71.6
			10:30	53.7	61.0	72.8	66.9	64.3	59.1	52.9	47.1	74.6
			9:00	53.7	61.4	65.8	66.8	63.3	56.5	51.7	45.0	71.1
			7:30	51.8	59.7	69.5	66.0	62.4	57.8	51.0	44.3	72.2
			6:00 - Alternator	52.7	57.6	67.9	62.7	59.2	54.1	49.1	42.9	70.0
			4:30	53.8	62.9	70.1	67.8	63.1	59.6	53.7	45.8	73.3
			8-pos. log avg.	53.8	60.9	69.1	65.7	63.3	57.9	52.1	45.5	72.1

Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Sound Pressure Levels, dB(A) Octave Band Center Frequency (Hz) 63	125	250	500	1000	2000	4000	8000	Overall Level
No Load	7 (23)	Level 1 Sound	3:00	61.0	68.2	72.3	73.9	74.7	69.4	61.5	55.6	79.5
			1:30	60.1	68.0	83.5	88.4	85.1	83.0	76.7	71.9	91.8
			12:00 - Engine	63.7	71.2	80.9	82.4	92.3	83.8	76.5	70.6	93.6
			10:30	59.7	67.1	83.4	84.7	88.1	84.3	76.8	70.8	91.7
			9:00	61.2	68.2	72.3	75.7	75.6	70.5	61.8	56.0	80.5
			7:30	54.3	63.1	75.9	71.8	77.9	73.4	63.9	54.8	81.5
			6:00 - Alternator	52.1	60.9	75.9	72.6	67.3	65.6	55.7	48.3	78.3
			4:30	56.3	64.6	73.4	72.9	76.3	74.9	66.2	58.9	80.9
			8-pos. log avg.	59.9	67.4	79.4	82.0	85.5	79.9	72.7	67.1	88.6

Load	Distance, m (ft)	Measurement Clock Position	Sound Pressure Levels, dB(A) Octave Band Center Frequency (Hz) 63	125	250	500	1000	2000	4000	8000	Overall Level
No Load	7 (23)	3:00	58.0	75.7	86.4	84.9	87.4	86.9	84.4	76.8	93.3
		1:30	54.9	71.8	86.6	89.0	86.8	86.8	83.8	76.9	94.0
		12:00 - Engine	55.4	74.0	81.2	86.8	84.4	82.8	79.1	72.7	90.8
		10:30	53.3	71.5	82.7	85.3	86.7	86.9	82.9	74.5	92.4
		9:00	55.9	74.2	86.3	85.2	87.1	87.2	85.0	77.8	93.4
		7:30	55.8	75.2	85.2	84.7	87.5	87.3	84.4	77.7	93.2
		6:00 - Alternator	54.1	73.5	84.4	82.2	82.6	82.1	78.9	70.6	89.5
		4:30	57.4	75.9	89.0	85.2	87.0	86.4	84.3	77.9	93.9
		8-pos. log avg.	55.8	74.2	85.8	85.8	86.4	86.2	83.3	76.2	92.8

Open Unit, Isolated Exhaust

Load	Distance, m (ft)	Exhaust	Sound Pressure Levels, dB(A) Octave Band Center Frequency (Hz) 63	125	250	500	1000	2000	4000	8000	Overall Level
No Load	1 (3.3)	Raw Exhaust (No Silencer)	86.9	94.6	108.2	102.0	104.9	100.9	95.6	91.9	111.3