



CITY OF SAINT PAUL
Christopher B. Coleman, Mayor

375 Jackson Street, Suite 220
Saint Paul, Minnesota 55101-1806

Telephone: 651-266-8989
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Web: www.stpaul.gov/dsi

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APR 08 2016

Sound Level Variance Application
City of Saint Paul Noise Ordinance (Chapter 293)

By: City of St Paul DSI

Note: A public hearing before the Saint Paul City Council is required. Application and fee must be received no fewer than forty five (45) days prior to the public hearing date that is before the requested Variance start date.

1. Organization/person seeking variance: Flannery Construction / Doug Hawkinson
2. Mailing Address w/zip code: 1375 St. Anthony Avenue
3. Responsible person: Doug Hawkinson / Kenneth Allen Title: Project Manager / Superintendent
4. Event Name: Construction of Brownstone Structure at 839 University Ave, St. Paul.
5. Telephone: (612) 396-4665 E-Mail: dhawkinson@flanneryconstruction.com
6. Date(s) during which the variance is requested: 6/15/16 to 7/15/16 to 8/15/16
7. Noise source - Time(s) of operation: 7:00 am - 6:00 pm
- Time(s) of pre-event sound check: _____
8. Address or legal description of Noise source: 839 University Ave, St. Paul
9. Sound level requested: 200 DB per pile hammer strike (see attached)
10. Describe the noise source and all equipment involved: Excavators, latus boom crane, pile hammer, dump trucks, misc. heavy equipment.
11. Describe the steps that will be taken to minimize the noise levels: Maintain an aggressive schedule for pile driving to minimize duration. Not allow equipment to idle when not in operation.
12. State reason for seeking variance: (E.g. music, announcements, construction, etc.)
Construction demolition of existing building. Pile driving for soil retention system along university.
13. Attach site diagram showing location of noise source(s), streets, stages, tents, etc. (If there will be amplified sound, Indicate location and direction that all speakers will be facing.) Multiple locations may require more than one application.
14. Return completed Application, Site Diagram, and \$169.00 fee to:

CITY OF SAINT PAUL
DEPARTMENT OF SAFETY AND INSPECTIONS
375 JACKSON STREET, SUITE 220
SAINT PAUL, MN 55101-1806

Signature of responsible person: [Signature] Date: 4/8/16

Pile Type	Sound Level (single strike)		
Wood piles: ¹	180 dB _{peak}	170 dB _{RMS}	160 dB SEL
Concrete piles: ²	192 dB _{peak}	176 dB _{RMS}	174 dB SEL
Steel H-piles: ³	190 dB _{peak}	175 dB _{RMS}	155 dB SEL
12-inch steel piles:	208 dB _{peak} ⁴	191 dB _{RMS} ⁵	175 dB SEL ⁶
14-inch steel piles:	195 dB _{peak} @ 30m ⁷	180 dB _{RMS} @ 30m ⁸	
16-inch steel piles ⁸ :	200 dB _{peak} @ 9 m	187 dB _{RMS} @ 9m	
24-inch steel piles ⁹ :	212 dB _{peak}	189 dB _{RMS}	181 dB SEL
30-inch steel piles ¹⁰ :	212 dB _{peak}	195 dB _{RMS}	186 dB SEL
36-inch steel piles ¹¹ :	214 dB _{peak}	201 dB _{RMS}	186 dB SEL
60-inch dia. steel piles ¹² :	210 dB _{peak}	195 dB _{RMS}	185 dB SEL
66-inch dia. steel piles ¹² :	210 dB _{peak}	195 dB _{RMS}	
96-inch dia. steel piles ¹² :	220 dB _{peak}	205 dB _{RMS}	195 dB SEL
126-inch dia. steel piles ¹² :	213 dB _{peak} @ 11m	202 dB _{RMS} @ 11m	
150-inch dia. steel piles ¹³ :	200 dB _{peak} @ 100m	185 dB _{RMS} @ 100m	

1. Timber piles, 12-inches in diameter, have been measured underwater by Illingworth and Rodkin and are published in the draft Pile Driving Compendium which as of the date of this update has not yet been released as final. Illingworth and Rodkin (2004) have compared the shape of the sound wave between steel piles and timber piles and found that the timber pile produced a more 'rounded' wave than with steel piles. This means that although the peak sound levels may be similar, the waveform appears more stretched out than for steel piles and the rise time is relatively slower. A slower rise time means that the shock wave produced with each pile strike is not as severe presumably resulting in less damage to the fish. The effect is similar to the difference between a push and a punch.

2. Concrete piles measured had 36-inch diameter and 4 -inch wall thickness (~419 Lbs/ft weight per unit length (MacGillivray et al. 2007). Concrete piles with 24-inch diameter have been measured by POV, and sound levels range between 190 dB_{peak} and 205 dB_{peak} (DesJardin 2003 pers. comm.). While there have been no documented fish kills with the installation of concrete piles, the Services may require sound mitigation strategies or monitoring because of the lack of formally documented effects (CalTrans 2003 personal communication).

3. Illingworth and Rodkin, pers. comm. (2004). Illingworth and Rodkin (2004 personal communication) measured 10-inch steel H-piles in a slough approximately 6 feet deep at 10 meter distance from the pile to range between 180 – 195 dB (160-177 dB RMS). They also measured 10-inch steel H-pile at Noyo Bridge with peak levels at 180 dB (165 dB RMS) at 30 meters from the pile. An H-pile driven on shore next to the water produced peak levels in the water of 170-175 dB (155-162 dB RMS) at 23 meters from the pile. The measurements at Noyo Bridge were highly variable due to the shallow water.

4. Illingworth and Rodkin (2002).

5. CalTrans (2003 personal communication) has measured the sound energy emanating from driving 12-inch diameter steel piles to range between 180 – 190 dB, and 14-inch diameter steel piles to range between 195 and 200 dB. Vibratory driving has been shown to be 10 – 20 dB lower than impact driving steel piles of similar diameter (CalTrans 2003 personal communication).

6 Laughlin (2006).

7.. Reyff (2003).

8. Laughlin, Jim. 2004. Underwater Sound Levels Associated with the Construction of the SR 240 Bridge on the Yakima River at Richland. WSDOT, Office of Air Quality and Noise, Seattle, WA. September 2004. 33 pages.

9. Laughlin (2005a).

10. Laughlin (2005b).

11. Laughlin (2007).

12. Reyff (2003).

13. Reyff (2003).



DSI RECEIPT

CITY OF SAINT PAUL
Department of Safety and Inspections
375 Jackson Street Suite 220
Saint Paul, Minnesota 55101-1806
Phone: (651) 266-8989 Fax: (651) 266-9124
www.stpaul.gov/dsi

Date: 04/08/2016

Received From: FLANNERY CONSTRUCTION
1375 ST ANTHONY AVE ST PAUL MN 55104

Description:

Invoice Details	Invoice Amount	Amount Paid
956733		
Noise Variance	\$169.00	\$169.00
TOTAL AMOUNT PAID:		\$169.00

Paid By:

Payment Type	Check #	Received Date	Amount
Check	111078	04/08/2016	\$169.00