

Appendix NOI

Groundborne Noise and Vibration Modeling

Attenuation and Contours

Noise Attenuation and Contours	
Input Variables	
Point or Line Source	Point
Hard or Soft Site	Hard
Attenuation Rate	6 dBA/Doubling of Distance <i>(Choice: 3, 4.5, 6, or 7.5)</i>
Reference Noise Level	60 dBA
Reference Distance	50 feet
<i>Note: Within 0-10 feet from the source, there is virtually no attenuation.</i>	

Noise Level at Receiver	
Distance to Receiver	Noise Level
50 ft	60.0 dBA
100 ft	54.0 dBA
150 ft	50.5 dBA
200 ft	48.0 dBA
400 ft	41.9 dBA
500 ft	40.0 dBA

Noise Contours	
Noise Level Contour	Distance from Source
80 dBA	5 ft
75 dBA	9 ft
70 dBA	16 ft
65 dBA	28 ft
60 dBA	50 ft
55 dBA	89 ft
50 dBA	158 ft
45 dBA	281 ft

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Notes

The reference distance is measured from the nearest anticipated point of construction equipment to the nearest structure.

Equipment	Reference Level Inputs			
	PPV _{ref} (in/sec)	Lv _{ref} (VdB)	RMS _{ref} (in/sec)	Reference Distance
Vibratory Roller	0.21	94	0.050	25
Hoe Ram	0.089	87	0.022	25
Large bulldozer	0.089	87	0.022	25
Caisson drilling	0.089	87	0.022	25
Loaded trucks	0.076	83	0.014	25
Jack hammer	0.035	79	0.009	25
Small bulldozer	0.003	58	0.001	25

Equipment	Vibration Level at Receiver			
	Distance (feet)	PPV _x (in/sec)	Lv _x (VdB)	RMS _x (in/sec)
Vibratory Roller	10	0.5754	103	0.137
Hoe Ram	10	0.2439	96	0.061
Large bulldozer	10	0.2439	96	0.061
Caisson drilling	10	0.2439	96	0.061
Loaded trucks	10	0.2082	92	0.039
Jack hammer	10	0.0959	88	0.024
Small bulldozer	10	0.0082	67	0.002

Equipment	Vibration Contours		
	Distance to (feet)		
	0.200 PPV	72.0 VdB	0.0080 RMS
Vibratory Roller	26	250	133
Hoe Ram	12	120	64
Large bulldozer	12	120	64
Caisson drilling	12	120	64
Loaded trucks	10	79	42
Jack hammer	5	52	28
Small bulldozer	1	6	3

Source

California Department of Transportation (Caltrans). 2013. Transportation and Construction
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