

# Appendix E

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Noise and Vibration Calculations

Roadway Construction Noise Model (RCNM), Version 1.1

Report date 10/20/2021

Case Description Whittier Murphy Reservoir Project

---- Receptor #1 ----

Description Land Use		Baselines (dBA)		
		Daytime	Evening	Night
Reservoir	Industrial	75	75	75

Description	Impact Device	Usage(%)	Equipment			Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	
Compactor (ground)	No	20		83.2	560	0
Dozer	No	40		81.7	560	0
Excavator	No	40		80.7	560	0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)				
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq	Night Lmax
Compactor (ground)	62.2	55.3	N/A	N/A	N/A	N/A	N/A
Dozer	60.7	56.7	N/A	N/A	N/A	N/A	N/A
Excavator	59.7	55.7	N/A	N/A	N/A	N/A	N/A
Total	62.2	60.7	N/A	N/A	N/A	N/A	N/A

\*Calculated Lmax is the Loudest value.

Noise Limit Exceedance (dBA)

	Day		Evening		Night	
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A

## Groundborne Noise and Vibration Modeling

### Notes

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

Equipment	Reference Level Inputs			
	PPV <sub>ref</sub> (in/sec)	Lv <sub>ref</sub> (VdB)	RMS <sub>ref</sub> (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 <sub>x</sub> (in/sec)	Lv <sub>x</sub> (VdB)	RMS <sub>x</sub> (in/sec)
Vibratory Roller	250	0.0167	72	0.004
Hoe Ram	0	#DIV/0!	#DIV/0!	#DIV/0!
Large bulldozer	250	0.0071	65	0.002
Caisson drilling	0	#DIV/0!	#DIV/0!	#DIV/0!
Loaded trucks	0	#DIV/0!	#DIV/0!	#DIV/0!
Jack hammer	0	#DIV/0!	#DIV/0!	#DIV/0!
Small bulldozer	0	#DIV/0!	#DIV/0!	#DIV/0!

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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