

Appendix NOI

Project Site Noise Measurements and Vibration Calculations

Freq weight : A
Time weight : SLOW
Level Range : 40-100
Max dB : 81.9 - 2021/08/05 16:43:22
Level Range : 40-100
SEL : 95.5
Leq : 66.0

No.s	Date Time	(dB)
1	2021/08/05 16:31:27	56.3
2	2021/08/05 16:31:30	55.2
3	2021/08/05 16:31:33	55.6
4	2021/08/05 16:31:36	58.8
5	2021/08/05 16:31:39	60.6
6	2021/08/05 16:31:42	58.9
7	2021/08/05 16:31:45	57.8
8	2021/08/05 16:31:48	59.0
9	2021/08/05 16:31:51	60.2
10	2021/08/05 16:31:54	68.4
11	2021/08/05 16:31:57	69.9
12	2021/08/05 16:32:00	64.6
13	2021/08/05 16:32:03	62.4
14	2021/08/05 16:32:06	64.0
15	2021/08/05 16:32:09	64.5
16	2021/08/05 16:32:12	63.3
17	2021/08/05 16:32:15	64.0
18	2021/08/05 16:32:18	63.7
19	2021/08/05 16:32:21	67.2
20	2021/08/05 16:32:24	60.9
21	2021/08/05 16:32:27	59.7
22	2021/08/05 16:32:30	61.0
23	2021/08/05 16:32:33	57.8
24	2021/08/05 16:32:36	59.5
25	2021/08/05 16:32:39	58.2
26	2021/08/05 16:32:42	58.1
27	2021/08/05 16:32:45	58.7
28	2021/08/05 16:32:48	59.0
29	2021/08/05 16:32:51	58.7
30	2021/08/05 16:32:54	59.1
31	2021/08/05 16:32:57	58.2
32	2021/08/05 16:33:00	58.2
33	2021/08/05 16:33:03	57.8
34	2021/08/05 16:33:06	59.8
35	2021/08/05 16:33:09	62.6
36	2021/08/05 16:33:12	64.4
37	2021/08/05 16:33:15	72.8
38	2021/08/05 16:33:18	67.3
39	2021/08/05 16:33:21	61.2
40	2021/08/05 16:33:24	60.8
41	2021/08/05 16:33:27	59.5
42	2021/08/05 16:33:30	60.5
43	2021/08/05 16:33:33	59.5
44	2021/08/05 16:33:36	60.4
45	2021/08/05 16:33:39	59.4
46	2021/08/05 16:33:42	72.8
47	2021/08/05 16:33:45	69.8
48	2021/08/05 16:33:48	66.7
49	2021/08/05 16:33:51	62.9
50	2021/08/05 16:33:54	61.0
51	2021/08/05 16:33:57	60.6
52	2021/08/05 16:34:00	58.3
53	2021/08/05 16:34:03	59.6
54	2021/08/05 16:34:06	63.8
55	2021/08/05 16:34:09	63.8
56	2021/08/05 16:34:12	63.6
57	2021/08/05 16:34:15	64.5
58	2021/08/05 16:34:18	64.1
59	2021/08/05 16:34:21	65.8
60	2021/08/05 16:34:24	64.6
61	2021/08/05 16:34:27	63.8
62	2021/08/05 16:34:30	58.8
63	2021/08/05 16:34:33	59.8
64	2021/08/05 16:34:36	60.3
65	2021/08/05 16:34:39	59.9
66	2021/08/05 16:34:42	60.5
67	2021/08/05 16:34:45	60.0
68	2021/08/05 16:34:48	64.5
69	2021/08/05 16:34:51	61.0
70	2021/08/05 16:34:54	57.8
71	2021/08/05 16:34:57	57.2
72	2021/08/05 16:35:00	58.3
73	2021/08/05 16:35:03	56.5
74	2021/08/05 16:35:06	57.2
75	2021/08/05 16:35:09	57.5
76	2021/08/05 16:35:12	59.9
77	2021/08/05 16:35:15	61.5
78	2021/08/05 16:35:18	60.8
79	2021/08/05 16:35:21	68.1
80	2021/08/05 16:35:24	70.3
81	2021/08/05 16:35:27	62.7
82	2021/08/05 16:35:30	60.4
83	2021/08/05 16:35:33	60.3
84	2021/08/05 16:35:36	61.1

85	2021/08/05	16:35:39	59.6
86	2021/08/05	16:35:42	62.1
87	2021/08/05	16:35:45	65.8
88	2021/08/05	16:35:48	71.3
89	2021/08/05	16:35:51	65.9
90	2021/08/05	16:35:54	63.9
91	2021/08/05	16:35:57	64.2
92	2021/08/05	16:36:00	61.7
93	2021/08/05	16:36:03	58.8
94	2021/08/05	16:36:06	57.8
95	2021/08/05	16:36:09	58.9
96	2021/08/05	16:36:12	58.8
97	2021/08/05	16:36:15	58.6
98	2021/08/05	16:36:18	60.0
99	2021/08/05	16:36:21	62.3
100	2021/08/05	16:36:24	59.8
101	2021/08/05	16:36:27	60.6
102	2021/08/05	16:36:30	59.1
103	2021/08/05	16:36:33	57.1
104	2021/08/05	16:36:36	56.9
105	2021/08/05	16:36:39	57.0
106	2021/08/05	16:36:42	56.0
107	2021/08/05	16:36:45	57.0
108	2021/08/05	16:36:48	58.3
109	2021/08/05	16:36:51	58.4
110	2021/08/05	16:36:54	58.0
111	2021/08/05	16:36:57	60.2
112	2021/08/05	16:37:00	68.3
113	2021/08/05	16:37:03	63.4
114	2021/08/05	16:37:06	61.4
115	2021/08/05	16:37:09	60.0
116	2021/08/05	16:37:12	58.6
117	2021/08/05	16:37:15	59.6
118	2021/08/05	16:37:18	60.3
119	2021/08/05	16:37:21	62.4
120	2021/08/05	16:37:24	67.1
121	2021/08/05	16:37:27	66.5
122	2021/08/05	16:37:30	64.8
123	2021/08/05	16:37:33	64.1
124	2021/08/05	16:37:36	61.2
125	2021/08/05	16:37:39	61.5
126	2021/08/05	16:37:42	65.1
127	2021/08/05	16:37:45	65.5
128	2021/08/05	16:37:48	67.2
129	2021/08/05	16:37:51	64.6
130	2021/08/05	16:37:54	66.6
131	2021/08/05	16:37:57	66.3
132	2021/08/05	16:38:00	63.9
133	2021/08/05	16:38:03	60.6
134	2021/08/05	16:38:06	63.5
135	2021/08/05	16:38:09	59.7
136	2021/08/05	16:38:12	59.5
137	2021/08/05	16:38:15	62.1
138	2021/08/05	16:38:18	60.6
139	2021/08/05	16:38:21	59.0
140	2021/08/05	16:38:24	58.7
141	2021/08/05	16:38:27	58.6
142	2021/08/05	16:38:30	58.4
143	2021/08/05	16:38:33	57.8
144	2021/08/05	16:38:36	57.8
145	2021/08/05	16:38:39	58.1
146	2021/08/05	16:38:42	57.9
147	2021/08/05	16:38:45	58.5
148	2021/08/05	16:38:48	58.5
149	2021/08/05	16:38:51	61.6
150	2021/08/05	16:38:54	59.9
151	2021/08/05	16:38:57	64.4
152	2021/08/05	16:39:00	65.5
153	2021/08/05	16:39:03	63.3
154	2021/08/05	16:39:06	64.8
155	2021/08/05	16:39:09	64.0
156	2021/08/05	16:39:12	67.7
157	2021/08/05	16:39:15	65.7
158	2021/08/05	16:39:18	62.8
159	2021/08/05	16:39:21	63.8
160	2021/08/05	16:39:24	64.8
161	2021/08/05	16:39:27	70.3
162	2021/08/05	16:39:30	67.5
163	2021/08/05	16:39:33	62.3
164	2021/08/05	16:39:36	62.4
165	2021/08/05	16:39:39	59.1
166	2021/08/05	16:39:42	57.7
167	2021/08/05	16:39:45	58.0
168	2021/08/05	16:39:48	58.7
169	2021/08/05	16:39:51	58.1
170	2021/08/05	16:39:54	57.1
171	2021/08/05	16:39:57	57.1
172	2021/08/05	16:40:00	57.0
173	2021/08/05	16:40:03	58.0
174	2021/08/05	16:40:06	60.0
175	2021/08/05	16:40:09	61.6
176	2021/08/05	16:40:12	64.3
177	2021/08/05	16:40:15	62.1
178	2021/08/05	16:40:18	61.1
179	2021/08/05	16:40:21	62.3
180	2021/08/05	16:40:24	64.2
181	2021/08/05	16:40:27	69.6
182	2021/08/05	16:40:30	72.3

183	2021/08/05	16:40:33	67.5
184	2021/08/05	16:40:36	68.9
185	2021/08/05	16:40:39	70.5
186	2021/08/05	16:40:42	66.9
187	2021/08/05	16:40:45	64.4
188	2021/08/05	16:40:48	63.8
189	2021/08/05	16:40:51	66.2
190	2021/08/05	16:40:54	67.1
191	2021/08/05	16:40:57	64.9
192	2021/08/05	16:41:00	65.0
193	2021/08/05	16:41:03	63.5
194	2021/08/05	16:41:06	59.6
195	2021/08/05	16:41:09	60.2
196	2021/08/05	16:41:12	61.1
197	2021/08/05	16:41:15	59.8
198	2021/08/05	16:41:18	61.5
199	2021/08/05	16:41:21	62.5
200	2021/08/05	16:41:24	62.3
201	2021/08/05	16:41:27	61.2
202	2021/08/05	16:41:30	63.2
203	2021/08/05	16:41:33	62.4
204	2021/08/05	16:41:36	64.0
205	2021/08/05	16:41:39	63.5
206	2021/08/05	16:41:42	67.0
207	2021/08/05	16:41:45	65.9
208	2021/08/05	16:41:48	64.8
209	2021/08/05	16:41:51	68.2
210	2021/08/05	16:41:54	69.1
211	2021/08/05	16:41:57	70.4
212	2021/08/05	16:42:00	75.0
213	2021/08/05	16:42:03	79.3
214	2021/08/05	16:42:06	75.2
215	2021/08/05	16:42:09	71.1
216	2021/08/05	16:42:12	65.4
217	2021/08/05	16:42:15	63.9
218	2021/08/05	16:42:18	63.1
219	2021/08/05	16:42:21	62.7
220	2021/08/05	16:42:24	63.8
221	2021/08/05	16:42:27	61.1
222	2021/08/05	16:42:30	62.8
223	2021/08/05	16:42:33	60.6
224	2021/08/05	16:42:36	59.3
225	2021/08/05	16:42:39	62.5
226	2021/08/05	16:42:42	67.7
227	2021/08/05	16:42:45	67.5
228	2021/08/05	16:42:48	67.3
229	2021/08/05	16:42:51	69.9
230	2021/08/05	16:42:54	66.9
231	2021/08/05	16:42:57	65.5
232	2021/08/05	16:43:00	69.2
233	2021/08/05	16:43:03	66.3
234	2021/08/05	16:43:06	67.6
235	2021/08/05	16:43:09	67.2
236	2021/08/05	16:43:12	68.0
237	2021/08/05	16:43:15	71.3
238	2021/08/05	16:43:18	79.4
239	2021/08/05	16:43:21	78.5
240	2021/08/05	16:43:24	74.4
241	2021/08/05	16:43:27	67.1
242	2021/08/05	16:43:30	64.7
243	2021/08/05	16:43:33	62.1
244	2021/08/05	16:43:36	58.2
245	2021/08/05	16:43:39	58.8
246	2021/08/05	16:43:42	65.9
247	2021/08/05	16:43:45	60.0
248	2021/08/05	16:43:48	58.4
249	2021/08/05	16:43:51	59.3
250	2021/08/05	16:43:54	59.2
251	2021/08/05	16:43:57	56.7
252	2021/08/05	16:44:00	59.2
253	2021/08/05	16:44:03	62.5
254	2021/08/05	16:44:06	61.3
255	2021/08/05	16:44:09	60.4
256	2021/08/05	16:44:12	59.6
257	2021/08/05	16:44:15	59.1
258	2021/08/05	16:44:18	60.3
259	2021/08/05	16:44:21	60.9
260	2021/08/05	16:44:24	59.3
261	2021/08/05	16:44:27	58.9
262	2021/08/05	16:44:30	59.0
263	2021/08/05	16:44:33	63.5
264	2021/08/05	16:44:36	65.6
265	2021/08/05	16:44:39	66.0
266	2021/08/05	16:44:42	64.0
267	2021/08/05	16:44:45	62.9
268	2021/08/05	16:44:48	62.7
269	2021/08/05	16:44:51	63.1
270	2021/08/05	16:44:54	61.9
271	2021/08/05	16:44:57	60.9
272	2021/08/05	16:45:00	61.4
273	2021/08/05	16:45:03	63.4
274	2021/08/05	16:45:06	61.6
275	2021/08/05	16:45:09	61.0
276	2021/08/05	16:45:12	62.2
277	2021/08/05	16:45:15	60.2
278	2021/08/05	16:45:18	59.7
279	2021/08/05	16:45:21	59.0
280	2021/08/05	16:45:24	59.2

281	2021/08/05	16:45:27	59.5
282	2021/08/05	16:45:30	58.6
283	2021/08/05	16:45:33	57.8
284	2021/08/05	16:45:36	57.6
285	2021/08/05	16:45:39	57.7
286	2021/08/05	16:45:42	59.4
287	2021/08/05	16:45:45	63.7
288	2021/08/05	16:45:48	66.8
289	2021/08/05	16:45:51	66.2
290	2021/08/05	16:45:54	63.1
291	2021/08/05	16:45:57	68.7
292	2021/08/05	16:46:00	68.5
293	2021/08/05	16:46:03	72.2
294	2021/08/05	16:46:06	71.4
295	2021/08/05	16:46:09	68.3
296	2021/08/05	16:46:12	67.8
297	2021/08/05	16:46:15	65.4
298	2021/08/05	16:46:18	62.8
299	2021/08/05	16:46:21	63.3
300	2021/08/05	16:46:24	61.0

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 _{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	300	0.0136	70	0.003
Hoe Ram	300	0.0058	63	0.001
Large bulldozer	300	0.0058	63	0.001
Caisson drilling	300	0.0058	63	0.001
Loaded trucks	300	0.0049	59	0.001
Jack hammer	300	0.0023	55	0.001
Small bulldozer	300	0.0002	34	0.000

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
Last Updated: 4/11/2019

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 _{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	850	0.0043	60	0.001
Hoe Ram	850	0.0018	53	0.000
Large bulldozer	850	0.0018	53	0.000
Caisson drilling	850	0.0018	53	0.000
Loaded trucks	850	0.0016	49	0.000
Jack hammer	850	0.0007	45	0.000
Small bulldozer	850	0.0001	24	0.000

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
Last Updated: 4/11/2019