

# Appendix L

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Noise Modeling (November 2022)



## GVSP Phase 2 Construction Noise

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L <sub>eq</sub> dBA)	Equipment	Reference Emission Noise Levels (L <sub>max</sub> ) at 50 feet <sup>1</sup>	Usage Factor <sup>1</sup>
Threshold	100	80.0	Scraper	85	0.2
SF Base Term. Res.	50	87.6	Dozer	85	0.4
Residence South of Green Valley Parkway	1400	49.4	Excavator	85	0.4
			Dozer	85	0.4
			Excavator	85	0.4

Ground Type	soft
Source Height	8
Receiver Height	5
Ground Factor <sup>2</sup>	0.63

Predicted Noise Level <sup>3</sup>	L <sub>eq</sub> dBA at 50 feet <sup>3</sup>
Scraper	78.0
Dozer	81.0
Excavator	81.0
Dozer	81.0
Excavator	81.0

**Combined Predicted Noise Level (L<sub>eq</sub> dBA at 50 feet)**

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88

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

<sup>2</sup> Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

<sup>3</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(equip) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

## Attenuation Calculations for Stationary Noise Sources

**KEY:** Orange cells are for input.

Grey cells are intermediate calculations performed by the model.

Green cells are data to present in a written analysis (output).

**STEP 1: Identify the noise source and enter the reference noise level (dBA and distance).**

**STEP 2: Select the ground type (hard or soft), and enter the source and receiver heights.**

**STEP 3: Select the distance to the receiver.**

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
	noise level (dBA)	@	distance (ft)	Ground Type (soft/hard)	Source Height (ft)	Receiver Height (ft)	Ground Factor	noise level (dBA)	@	distance (ft)
Helicopter	68.0	@	492	soft	6	5	0.65	94.3	@	50
chipper	99.0	@	3	soft	6	5	0.65	67.7	@	50
blasting (night lmax)	94.0	@	50	soft	6	5	0.65	65.0	@	620
helicopter (night leq)	68.0	@	492.00	soft	6	5	0.65	45.1	@	3600
blasting (day lmax)	94.0	@	50	soft	6	5	0.65	70.1	@	400
helicopter (day leq)	68.0	@	492	soft	6	5	0.65	55.0	@	1520
Blasting (SF Res)	94.0	@	50	soft	6	5	0.65	79.6	@	175
blasting	94.0	@	50	soft	6	5	0.65	86.0	@	100
construction	85.0	@	50	soft	6	5	0.65	93.0	@	25
construction	95.0	@	50	soft	6	5	0.65	103.0	@	25
							0.66			
							0.66			
							0.66			
							0.66			

**Notes:**

Estimates of attenuated noise levels do not account for reductions from intervening barriers, including walls, trees, vegetation, or structures of any type.

Computation of the attenuated noise level is based on the equation presented on pg. 12-3 and 12-4 of FTA 2006.

Computation of the ground factor is based on the equation presented in Figure 6-23 on pg. 6-23 of FTA 2006, where the distance of the reference noise level can be adjusted and the usage factor is not applied (i.e., the usage factor is equal to 1).

**Sources:**

Federal Transit Association (FTA). 2006 (May). Transit Noise and Vibration Impact Assessment. FTA-VA-90-1003-06. Washington, D.C. Available: <[http://www.fta.dot.gov/documents/FTA\\_Noise\\_and\\_Vibration\\_Manual.pdf](http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf)>. Accessed: September 24, 2010.

Equipment Description	Acoustical Usage Factor (%)	Spec 721.560 Lmax @ 50ft (dBA slow)	Actual Measured Lmax @ 50ft (dBA slow)	No. of Actual Data Samples (count)	Spec 721.560 LmaxCalc	Spec 721.560 Leq	Distance	Actual Measured LmaxCalc	Actual Measured Leq
Auger Drill Rig	20	85	84	36	79.0	72.0	100	78.0	71.0
Backhoe	40	80	78	372	74.0	70.0	100	72.0	68.0
Bar Bender	20	80	na	0	74.0	67.0	100		
Blasting	na	94	na	0	88.0		100		
Boring Jack Power Unit	50	80	83	1	74.0	71.0	100	77.0	74.0
Chain Saw	20	85	84	46	79.0	72.0	100	78.0	71.0
Clam Shovel (dropping)	20	93	87	4	87.0	80.0	100	81.0	74.0
Compactor (ground)	20	80	83	57	74.0	67.0	100	77.0	70.0
Compressor (air)	40	80	78	18	74.0	70.0	100	72.0	68.0
Concrete Batch Plant	15	83	na	0	77.0	68.7	100		
Concrete Mixer Truck	40	85	79	40	79.0	75.0	100	73.0	69.0
Concrete Pump Truck	20	82	81	30	76.0	69.0	100	75.0	68.0
Concrete Saw	20	90	90	55	84.0	77.0	100	84.0	77.0
Crane	16	85	81	405	79.0	71.0	100	75.0	67.0
Dozer	40	85	82	55	79.0	75.0	100	76.0	72.0
Drill Rig Truck	20	84	79	22	78.0	71.0	100	73.0	66.0
Drum Mixer	50	80	80	1	74.0	71.0	100	74.0	71.0
Dump Truck	40	84	76	31	78.0	74.0	100	70.0	66.0
Excavator	40	85	81	170	79.0	75.0	100	75.0	71.0
Flat Bed Truck	40	84	74	4	78.0	74.0	100	68.0	64.0
Front End Loader	40	80	79	96	74.0	70.0	100	73.0	69.0
Generator	50	82	81	19	76.0	73.0	100	75.0	72.0
Generator (<25KVA, VMS signs)	50	70	73	74	64.0	61.0	100	67.0	64.0
Gradall	40	85	83	70	79.0	75.0	100	77.0	73.0
Grader	40	85	na	0	79.0	75.0	100		
Grapple (on Backhoe)	40	85	87	1	79.0	75.0	100	81.0	77.0
Horizontal Boring Hydr. Jack	25	80	82	6	74.0	68.0	100	76.0	70.0
Hydra Break Ram	10	90	na	0	84.0	74.0	100		
Impact Pile Driver	20	95	101	11	89.0	82.0	100	95.0	88.0
Jackhammer	20	85	89	133	79.0	72.0	100	83.0	76.0
Man Lift	20	85	75	23	79.0	72.0	100	69.0	62.0
Mounted Impact Hammer (hoe ram)	20	90	90	212	84.0	77.0	100	84.0	77.0
Pavement Scarafier	20	85	90	2	79.0	72.0	100	84.0	77.0
Paver	50	85	77	9	79.0	76.0	100	71.0	68.0
Pickup Truck	40	55	75	1	49.0	45.0	100	69.0	65.0
Pneumatic Tools	50	85	85	90	79.0	76.0	100	79.0	76.0
Pumps	50	77	81	17	71.0	68.0	100	75.0	72.0
Refrigerator Unit	100	82	73	3	76.0	76.0	100	67.0	67.0
Rivit Buster/chipping gun	20	85	79	19	79.0	72.0	100	73.0	66.0
Rock Drill	20	85	81	3	79.0	72.0	100	75.0	68.0
Roller	20	85	80	16	79.0	72.0	100	74.0	67.0
Sand Blasting (Single Nozzle)	20	85	96	9	79.0	72.0	100	90.0	83.0
Scraper	40	85	84	12	79.0	75.0	100	78.0	74.0
Shears (on backhoe)	40	85	96	5	79.0	75.0	100	90.0	86.0
Slurry Plant	100	78	78	1	72.0	72.0	100	72.0	72.0
Slurry Trenching Machine	50	82	80	75	76.0	73.0	100	74.0	71.0
Soil Mix Drill Rig	50	80	na	0	74.0	71.0	100		
Tractor	40	84	na	0	78.0	74.0	100		
Vacuum Excavator (Vac-truck)	40	85	85	149	79.0	75.0	100	79.0	75.0
Vacuum Street Sweeper	10	80	82	19	74.0	64.0	100	76.0	66.0
Ventilation Fan	100	85	79	13	79.0	79.0	100	73.0	73.0
Vibrating Hopper	50	85	87	1	79.0	76.0	100	81.0	78.0
Vibratory Concrete Mixer	20	80	80	1	74.0	67.0	100	74.0	67.0
Vibratory Pile Driver	20	95	101	44	89.0	82.0	100	95.0	88.0
Warning Horn	5	85	83	12	79.0	66.0	100	77.0	64.0
Welder / Torch chipper	40	73	74	5	67.0	63.0	100	68.0	64.0
		75							

Source:  
FHWA Roadway Construction Noise Model, January 2006. Table 9.1  
U.S. Department of Transportation  
CA/T Construction Spec. 721.560

Traffic Noise Spreadsheet Calculator



Project:			Input										Output				
Noise Level Descriptor: CNEL Site Conditions: Hard Traffic Input: Peak Traffic K-Factor: 10			Peak Hour Volume	Speed (mph)	Distance to Directional Centerline, (feet) <sub>4</sub>		Traffic Distribution Characteristics					CNEL, (dBA) <sub>5,6,7</sub>	Distance to Contour, (feet) <sub>3</sub>				
Number	Name	Segment Description and Location From To			Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve		% Night	75 dBA	70 dBA	65 dBA	60 dBA
Existing Conditions																	
1	Murrieta Rd from Case Rd to Green Valley Loop Rd		203	35	50	50	96.0%	2.0%	2.0%	80.0%	15.0%	5.0%	58.3	1	3	11	34
2	Murrieta Rd from Green Valley Loop Rd to Watson Rd		205	35	50	50	96.0%	2.0%	2.0%	80.0%	15.0%	5.0%	58.3	1	3	11	34
3	Murrieta Rd from Watson Rd to Green Valley Pkwy		205	35	50	50	96.0%	2.0%	2.0%	80.0%	15.0%	5.0%	58.3	1	3	11	34
4	Murrieta Rd from Green Valley Pkwy to Ethanac Rd		218	35	50	50	96.2%	2.0%	1.8%	80.0%	15.0%	5.0%	58.5	1	4	11	35
5	Murrieta Rd south of Ethanac Rd		717	35	50	50	89.6%	2.0%	8.4%	80.0%	15.0%	5.0%	66.3	7	21	67	211
6	Ethanac Rd from Goetz Rd to Murrieta Rd		1,132	50	50	50	94.4%	2.0%	3.6%	80.0%	15.0%	5.0%	70.5	18	56	176	558
7	Ethanac Rd from Murrieta Rd to Green Valley Pkwy		1,167	50	50	50	92.9%	2.0%	5.1%	80.0%	15.0%	5.0%	71.1	20	64	202	638
8	Ethanac Rd from Green Valley Pkwy to Case Rd		1,265	50	50	50	93.3%	2.0%	4.7%	80.0%	15.0%	5.0%	71.3	21	67	213	674
9	Ethanac Rd from Case Rd to I-215 SB Ramps		1,793	50	50	50	93.3%	2.0%	4.7%	80.0%	15.0%	5.0%	72.8	30	95	302	955
10	Ethanac Rd from I-215 SB Ramps to I-215 NB Ramps		1,403	50	50	50	92.2%	2.0%	5.8%	80.0%	15.0%	5.0%	72.1	25	80	254	802
11	Ethanac Rd from I-215 NB Ramps to Encanto Dr		1,117	50	50	50	92.5%	2.0%	5.5%	80.0%	15.0%	5.0%	71.0	20	63	198	627
12	Ethanac Rd from Encanto Dr to Sherman Rd		1,060	50	50	50	92.9%	2.0%	5.1%	80.0%	15.0%	5.0%	70.6	18	58	182	577
13	Goetz Rd from Ellis Ave to Mapes Rd		523	50	50	50	88.8%	2.0%	9.2%	80.0%	15.0%	5.0%	68.6	11	36	114	361
14	Goetz Rd from Mapes Rd to Fieldstone Dr		1,038	55	50	50	94.1%	2.0%	3.9%	80.0%	15.0%	5.0%	71.4	22	68	216	683
15	Goetz Rd from Fieldstone Dr to Ethanac Rd		993	55	50	50	93.9%	2.0%	4.1%	80.0%	15.0%	5.0%	71.2	21	66	209	661
16	Goetz Rd south of Ethanac Rd		878	55	50	50	93.3%	2.0%	4.7%	80.0%	15.0%	5.0%	70.8	19	61	191	605
17	SR-74 from Navajo Rd to A St		3,075	35	50	50	94.1%	2.0%	3.9%	80.0%	15.0%	5.0%	71.0	20	63	199	630
18	SR-74 from A St to Perris Blvd		2,912	35	50	50	94.6%	2.0%	3.4%	80.0%	15.0%	5.0%	70.6	18	57	179	568
19	SR-74 from Perris Blvd to Redlands Ave		1,591	35	50	50	93.9%	2.0%	4.1%	80.0%	15.0%	5.0%	68.2	10	33	105	331
20	Perris Blvd north of SR-74		1,219	35	50	50	94.3%	2.0%	3.7%	80.0%	15.0%	5.0%	66.9	8	24	77	244
21	Perris Blvd from SR-74 to 11th St-Case Rd		782	35	50	50	93.9%	2.0%	4.1%	80.0%	15.0%	5.0%	65.1	5	16	51	163
22	Perris Blvd from 11th St-Case Rd to Ellis Ave		169	35	50	50	93.9%	2.0%	4.1%	80.0%	15.0%	5.0%	58.5	1	4	11	35
23	Redlands Ave north of I-215 NB Ramps		2,106	45	50	50	95.5%	2.0%	2.5%	80.0%	15.0%	5.0%	71.5	22	71	225	711
24	Redlands Ave from I-215 NB Ramps to I-215 SB Ramps		2,012	35	50	50	94.1%	2.0%	3.9%	80.0%	15.0%	5.0%	69.1	13	41	130	410
25	Redlands Ave from I-215 SB Ramps to SR-74		2,096	35	50	50	92.9%	2.0%	5.1%	80.0%	15.0%	5.0%	69.8	15	48	152	479
26	11th St from A St to Perris Blvd		465	45	50	50	94.3%	2.0%	3.7%	80.0%	15.0%	5.0%	65.4	5	17	55	173
27	Case Rd from Perris Blvd to Ellis Ave		671	45	50	50	88.2%	2.0%	9.8%	80.0%	15.0%	5.0%	68.7	12	37	117	370
28	Case Rd from Ellis Ave to Murrieta Rd		611	45	50	50	91.5%	2.0%	6.5%	80.0%	15.0%	5.0%	67.5	9	28	88	278
29	Case Rd from Murrieta Rd to Bonnie Dr		476	45	50	50	89.3%	2.0%	8.7%	80.0%	15.0%	5.0%	66.9	8	25	78	247
30	Bonnie Dr west of I-215 SB Ramps		452	35	50	50	89.2%	2.0%	8.8%	80.0%	15.0%	5.0%	64.4	4	14	43	137
31	SR-74 from I-215 SB Ramps to I-215 NB Ramps		1,239	55	50	50	91.6%	2.0%	6.4%	80.0%	15.0%	5.0%	72.8	30	95	299	946
32	SR-74 from I-215 NB Ramps to Trumble Rd		1,904	55	50	50	93.5%	2.0%	4.5%	80.0%	15.0%	5.0%	74.1	41	130	410	1295
33	SR-74 from Trumble Rd to Palomar Rd		1,293	50	50	50	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	71.2	21	66	207	656
34	SR-74 from Palomar Rd to Menifee Rd		1,133	50	50	50	93.5%	2.0%	4.5%	80.0%	15.0%	5.0%	70.7	19	59	188	594
35	SR-74 from Menifee Rd to Briggs Rd		1,359	50	50	50	93.5%	2.0%	4.5%	80.0%	15.0%	5.0%	71.5	23	71	225	712

Traffic Noise Spreadsheet Calculator



Project:			Input										Output				
Noise Level Descriptor: CNEL Site Conditions: Hard Traffic Input: Peak Traffic K-Factor: 10			Peak Hour Volume	Speed (mph)	Distance to Directional Centerline, (feet) <sub>4</sub>		Traffic Distribution Characteristics					CNEL, (dBA) <sub>5,6,7</sub>	Distance to Contour, (feet) <sub>3</sub>				
Number	Name	Segment Description and Location From To			Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve		% Night	75 dBA	70 dBA	65 dBA	60 dBA
Existing Plus Project Conditions																	
1	Murrieta Rd from Case Rd to Green Valley Loop Rd		1,327	35	50	50	96.0%	2.0%	2.0%	80.0%	15.0%	5.0%	66.4	7	22	69	219
2	Murrieta Rd from Green Valley Loop Rd to Watson Rd		1,079	35	50	50	96.0%	2.0%	2.0%	80.0%	15.0%	5.0%	65.5	6	18	56	178
3	Murrieta Rd from Watson Rd to Green Valley Pkwy		1,019	35	50	50	96.0%	2.0%	2.0%	80.0%	15.0%	5.0%	65.3	5	17	53	168
4	Murrieta Rd from Green Valley Pkwy to Ethanac Rd		888	35	50	50	96.2%	2.0%	1.8%	80.0%	15.0%	5.0%	64.6	5	14	46	144
5	Murrieta Rd south of Ethanac Rd		808	35	50	50	89.6%	2.0%	8.4%	80.0%	15.0%	5.0%	66.8	8	24	75	238
6	Ethanac Rd from Goetz Rd to Murrieta Rd		1,264	50	50	50	94.4%	2.0%	3.6%	80.0%	15.0%	5.0%	71.0	20	62	197	623
7	Ethanac Rd from Murrieta Rd to Green Valley Pkwy		1,739	50	50	50	92.9%	2.0%	5.1%	80.0%	15.0%	5.0%	72.8	30	95	301	951
8	Ethanac Rd from Green Valley Pkwy to Case Rd		1,837	50	50	50	93.3%	2.0%	4.7%	80.0%	15.0%	5.0%	72.9	31	98	309	979
9	Ethanac Rd from Case Rd to I-215 SB Ramps		2,377	50	50	50	93.3%	2.0%	4.7%	80.0%	15.0%	5.0%	74.0	40	127	400	1266
10	Ethanac Rd from I-215 SB Ramps to I-215 NB Ramps		1,826	50	50	50	92.2%	2.0%	5.8%	80.0%	15.0%	5.0%	73.2	33	104	330	1044
11	Ethanac Rd from I-215 NB Ramps to Encanto Dr		1,345	50	50	50	92.5%	2.0%	5.5%	80.0%	15.0%	5.0%	71.8	24	75	239	754
12	Ethanac Rd from Encanto Dr to Sherman Rd		1,272	50	50	50	92.9%	2.0%	5.1%	80.0%	15.0%	5.0%	71.4	22	69	219	692
13	Goetz Rd from Ellis Ave to Mapes Rd		669	50	50	50	88.8%	2.0%	9.2%	80.0%	15.0%	5.0%	69.7	15	46	146	462
14	Goetz Rd from Mapes Rd to Fieldstone Dr		1,215	55	50	50	94.1%	2.0%	3.9%	80.0%	15.0%	5.0%	72.0	25	80	253	800
15	Goetz Rd from Fieldstone Dr to Ethanac Rd		1,026	55	50	50	93.9%	2.0%	4.1%	80.0%	15.0%	5.0%	71.4	22	68	216	683
16	Goetz Rd south of Ethanac Rd		961	55	50	50	93.3%	2.0%	4.7%	80.0%	15.0%	5.0%	71.2	21	66	209	662
17	SR-74 from Navajo Rd to A St		3,235	35	50	50	94.1%	2.0%	3.9%	80.0%	15.0%	5.0%	71.2	21	66	210	663
18	SR-74 from A St to Perris Blvd		3,153	35	50	50	94.6%	2.0%	3.4%	80.0%	15.0%	5.0%	70.9	19	61	194	615
19	SR-74 from Perris Blvd to Redlands Ave		1,799	35	50	50	93.9%	2.0%	4.1%	80.0%	15.0%	5.0%	68.7	12	37	118	374
20	Perris Blvd north of SR-74		1,272	35	50	50	94.3%	2.0%	3.7%	80.0%	15.0%	5.0%	67.1	8	25	80	255
21	Perris Blvd from SR-74 to 11th St-Case Rd		992	35	50	50	93.9%	2.0%	4.1%	80.0%	15.0%	5.0%	66.2	7	21	65	207
22	Perris Blvd from 11th St-Case Rd to Ellis Ave		269	35	50	50	93.9%	2.0%	4.1%	80.0%	15.0%	5.0%	60.5	2	6	18	56
23	Redlands Ave north of I-215 NB Ramps		2,170	45	50	50	95.5%	2.0%	2.5%	80.0%	15.0%	5.0%	71.7	23	73	232	733
24	Redlands Ave from I-215 NB Ramps to I-215 SB Ramps		2,260	35	50	50	94.1%	2.0%	3.9%	80.0%	15.0%	5.0%	69.6	15	46	146	461
25	Redlands Ave from I-215 SB Ramps to SR-74		2,600	35	50	50	92.9%	2.0%	5.1%	80.0%	15.0%	5.0%	70.8	19	59	188	594
26	11th St from A St to Perris Blvd		592	45	50	50	94.3%	2.0%	3.7%	80.0%	15.0%	5.0%	66.4	7	22	70	221
27	Case Rd from Perris Blvd to Ellis Ave		961	45	50	50	88.2%	2.0%	9.8%	80.0%	15.0%	5.0%	70.2	17	53	167	529
28	Case Rd from Ellis Ave to Murrieta Rd		1,144	45	50	50	91.5%	2.0%	6.5%	80.0%	15.0%	5.0%	70.2	16	52	165	521
29	Case Rd from Murrieta Rd to Bonnie Dr		605	45	50	50	89.3%	2.0%	8.7%	80.0%	15.0%	5.0%	68.0	10	31	99	314
30	Bonnie Dr west of I-215 SB Ramps		578	35	50	50	89.2%	2.0%	8.8%	80.0%	15.0%	5.0%	65.5	6	18	56	176
31	SR-74 from I-215 SB Ramps to I-215 NB Ramps		1,380	55	50	50	91.6%	2.0%	6.4%	80.0%	15.0%	5.0%	73.2	33	105	333	1054
32	SR-74 from I-215 NB Ramps to Trumble Rd		2,021	55	50	50	93.5%	2.0%	4.5%	80.0%	15.0%	5.0%	74.4	43	138	435	1375
33	SR-74 from Trumble Rd to Palomar Rd		1,364	50	50	50	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	71.4	22	69	219	692
34	SR-74 from Palomar Rd to Menifee Rd		1,282	50	50	50	93.5%	2.0%	4.5%	80.0%	15.0%	5.0%	71.3	21	67	212	672
35	SR-74 from Menifee Rd to Briggs Rd		1,496	50	50	50	93.5%	2.0%	4.5%	80.0%	15.0%	5.0%	71.9	25	78	248	783

Traffic Noise Spreadsheet Calculator



Project:			Input										Output				
Noise Level Descriptor: CNEL Site Conditions: Hard Traffic Input: Peak Traffic K-Factor: 10			Peak Hour Volume	Speed (mph)	Distance to Directional Centerline, (feet) <sub>4</sub>		Traffic Distribution Characteristics					CNEL, (dBA) <sub>5,6,7</sub>	Distance to Contour, (feet) <sub>3</sub>				
Number	Name	Segment Description and Location From To			Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve		% Night	75 dBA	70 dBA	65 dBA	60 dBA
<b>2040 Without Project Conditions</b>																	
1	Murrieta Rd from Case Rd to Green Valley Loop Rd		524	35	50	50	96.0%	2.0%	2.0%	80.0%	15.0%	5.0%	62.4	3	9	27	87
2	Murrieta Rd from Green Valley Loop Rd to Watson Rd		526	35	50	50	96.0%	2.0%	2.0%	80.0%	15.0%	5.0%	62.4	3	9	27	87
3	Murrieta Rd from Watson Rd to Green Valley Pkwy		576	35	50	50	96.0%	2.0%	2.0%	80.0%	15.0%	5.0%	62.8	3	9	30	95
4	Murrieta Rd from Green Valley Pkwy to Ethanac Rd		874	35	50	50	96.2%	2.0%	1.8%	80.0%	15.0%	5.0%	64.5	4	14	45	142
5	Murrieta Rd south of Ethanac Rd		1,025	35	50	50	89.6%	2.0%	8.4%	80.0%	15.0%	5.0%	67.8	10	30	95	302
6	Ethanac Rd from Goetz Rd to Murrieta Rd		3,228	50	50	50	94.4%	2.0%	3.6%	80.0%	15.0%	5.0%	75.0	50	159	503	1591
7	Ethanac Rd from Murrieta Rd to Green Valley Pkwy		3,306	50	50	50	92.9%	2.0%	5.1%	80.0%	15.0%	5.0%	75.6	57	181	572	1808
8	Ethanac Rd from Green Valley Pkwy to Case Rd		3,923	50	50	50	93.3%	2.0%	4.7%	80.0%	15.0%	5.0%	76.2	66	209	661	2090
9	Ethanac Rd from Case Rd to I-215 SB Ramps		4,738	50	50	50	93.3%	2.0%	4.7%	80.0%	15.0%	5.0%	77.0	80	252	798	2523
10	Ethanac Rd from I-215 SB Ramps to I-215 NB Ramps		3,693	50	50	50	92.2%	2.0%	5.8%	80.0%	15.0%	5.0%	76.3	67	211	667	2110
11	Ethanac Rd from I-215 NB Ramps to Encanto Dr		3,398	50	50	50	92.5%	2.0%	5.5%	80.0%	15.0%	5.0%	75.8	60	191	603	1906
12	Ethanac Rd from Encanto Dr to Sherman Rd		3,188	50	50	50	92.9%	2.0%	5.1%	80.0%	15.0%	5.0%	75.4	55	173	549	1735
13	Goetz Rd from Ellis Ave to Mapes Rd		1,030	50	50	50	88.8%	2.0%	9.2%	80.0%	15.0%	5.0%	71.5	22	71	225	711
14	Goetz Rd from Mapes Rd to Fieldstone Dr		1,781	55	50	50	94.1%	2.0%	3.9%	80.0%	15.0%	5.0%	73.7	37	117	371	1172
15	Goetz Rd from Fieldstone Dr to Ethanac Rd		2,225	55	50	50	93.9%	2.0%	4.1%	80.0%	15.0%	5.0%	74.7	47	148	469	1482
16	Goetz Rd south of Ethanac Rd		2,340	55	50	50	93.3%	2.0%	4.7%	80.0%	15.0%	5.0%	75.1	51	161	510	1613
17	SR-74 from Navajo Rd to A St		2,620	35	50	50	94.1%	2.0%	3.9%	80.0%	15.0%	5.0%	70.3	17	54	170	537
18	SR-74 from A St to Perris Blvd		2,492	35	50	50	94.6%	2.0%	3.4%	80.0%	15.0%	5.0%	69.9	15	49	154	486
19	SR-74 from Perris Blvd to Redlands Ave		1,470	35	50	50	93.9%	2.0%	4.1%	80.0%	15.0%	5.0%	67.9	10	31	97	306
20	Perris Blvd north of SR-74		2,242	35	50	50	94.3%	2.0%	3.7%	80.0%	15.0%	5.0%	69.5	14	45	142	449
21	Perris Blvd from SR-74 to 11th St-Case Rd		1,732	35	50	50	93.9%	2.0%	4.1%	80.0%	15.0%	5.0%	68.6	11	36	114	360
22	Perris Blvd from 11th St-Case Rd to Ellis Ave		963	35	50	50	93.9%	2.0%	4.1%	80.0%	15.0%	5.0%	66.1	6	20	64	201
23	Redlands Ave north of I-215 NB Ramps		1,849	45	50	50	95.5%	2.0%	2.5%	80.0%	15.0%	5.0%	71.0	20	62	198	625
24	Redlands Ave from I-215 NB Ramps to I-215 SB Ramps		1,616	35	50	50	94.1%	2.0%	3.9%	80.0%	15.0%	5.0%	68.2	10	33	104	329
25	Redlands Ave from I-215 SB Ramps to SR-74		1,744	35	50	50	92.9%	2.0%	5.1%	80.0%	15.0%	5.0%	69.0	13	40	126	399
26	11th St from A St to Perris Blvd		881	45	50	50	94.3%	2.0%	3.7%	80.0%	15.0%	5.0%	68.2	10	33	104	328
27	Case Rd from Perris Blvd to Ellis Ave		967	45	50	50	88.2%	2.0%	9.8%	80.0%	15.0%	5.0%	70.3	17	53	168	533
28	Case Rd from Ellis Ave to Murrieta Rd		715	45	50	50	91.5%	2.0%	6.5%	80.0%	15.0%	5.0%	68.1	10	33	103	325
29	Case Rd from Murrieta Rd to Bonnie Dr		521	45	50	50	89.3%	2.0%	8.7%	80.0%	15.0%	5.0%	67.3	9	27	85	270
30	Bonnie Dr west of I-215 SB Ramps		442	35	50	50	89.2%	2.0%	8.8%	80.0%	15.0%	5.0%	64.3	4	13	43	134
31	SR-74 from I-215 SB Ramps to I-215 NB Ramps		984	55	50	50	91.6%	2.0%	6.4%	80.0%	15.0%	5.0%	71.8	24	75	238	751
32	SR-74 from I-215 NB Ramps to Trumble Rd		1,131	55	50	50	93.5%	2.0%	4.5%	80.0%	15.0%	5.0%	71.9	24	77	243	769
33	SR-74 from Trumble Rd to Palomar Rd		2,420	50	50	50	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	73.9	39	123	388	1227
34	SR-74 from Palomar Rd to Menifee Rd		2,672	50	50	50	93.5%	2.0%	4.5%	80.0%	15.0%	5.0%	74.5	44	140	443	1400
35	SR-74 from Menifee Rd to Briggs Rd		2,878	50	50	50	93.5%	2.0%	4.5%	80.0%	15.0%	5.0%	74.8	48	151	477	1507

Traffic Noise Spreadsheet Calculator



Project:			Input										Output				
Noise Level Descriptor: CNEL Site Conditions: Hard Traffic Input: Peak Traffic K-Factor: 10			Peak Hour Volume	Speed (mph)	Distance to Directional Centerline, (feet) <sub>4</sub>		Traffic Distribution Characteristics					CNEL, (dBA) <sub>5,6,7</sub>	Distance to Contour, (feet) <sub>3</sub>				
Number	Name	Segment Description and Location From To			Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve		% Night	75 dBA	70 dBA	65 dBA	60 dBA
<b>2040 With Project Conditions</b>																	
1	Murrieta Rd from Case Rd to Green Valley Loop Rd		1,655	35	50	50	96.0%	2.0%	2.0%	80.0%	15.0%	5.0%	67.4	9	27	87	274
2	Murrieta Rd from Green Valley Loop Rd to Watson Rd		1,408	35	50	50	96.0%	2.0%	2.0%	80.0%	15.0%	5.0%	66.7	7	23	73	232
3	Murrieta Rd from Watson Rd to Green Valley Pkwy		1,398	35	50	50	96.0%	2.0%	2.0%	80.0%	15.0%	5.0%	66.6	7	23	73	231
4	Murrieta Rd from Green Valley Pkwy to Ethanac Rd		1,558	35	50	50	96.2%	2.0%	1.8%	80.0%	15.0%	5.0%	67.0	8	25	80	253
5	Murrieta Rd south of Ethanac Rd		1,154	35	50	50	89.6%	2.0%	8.4%	80.0%	15.0%	5.0%	68.3	11	34	107	340
6	Ethanac Rd from Goetz Rd to Murrieta Rd		3,415	50	50	50	94.4%	2.0%	3.6%	80.0%	15.0%	5.0%	75.3	53	168	532	1684
7	Ethanac Rd from Murrieta Rd to Green Valley Pkwy		3,998	50	50	50	92.9%	2.0%	5.1%	80.0%	15.0%	5.0%	76.4	69	219	691	2186
8	Ethanac Rd from Green Valley Pkwy to Case Rd		4,631	50	50	50	93.3%	2.0%	4.7%	80.0%	15.0%	5.0%	76.9	78	247	780	2467
9	Ethanac Rd from Case Rd to I-215 SB Ramps		5,474	50	50	50	93.3%	2.0%	4.7%	80.0%	15.0%	5.0%	77.7	92	292	922	2915
10	Ethanac Rd from I-215 SB Ramps to I-215 NB Ramps		4,256	50	50	50	92.2%	2.0%	5.8%	80.0%	15.0%	5.0%	76.9	77	243	769	2433
11	Ethanac Rd from I-215 NB Ramps to Encanto Dr		3,726	50	50	50	92.5%	2.0%	5.5%	80.0%	15.0%	5.0%	76.2	66	209	661	2090
12	Ethanac Rd from Encanto Dr to Sherman Rd		3,503	50	50	50	92.9%	2.0%	5.1%	80.0%	15.0%	5.0%	75.8	60	191	603	1906
13	Goetz Rd from Ellis Ave to Mapes Rd		1,219	50	50	50	88.8%	2.0%	9.2%	80.0%	15.0%	5.0%	72.3	27	84	266	841
14	Goetz Rd from Mapes Rd to Fieldstone Dr		1,978	55	50	50	94.1%	2.0%	3.9%	80.0%	15.0%	5.0%	74.2	41	130	412	1302
15	Goetz Rd from Fieldstone Dr to Ethanac Rd		2,294	55	50	50	93.9%	2.0%	4.1%	80.0%	15.0%	5.0%	74.9	48	153	483	1528
16	Goetz Rd south of Ethanac Rd		2,473	55	50	50	93.3%	2.0%	4.7%	80.0%	15.0%	5.0%	75.3	54	170	539	1705
17	SR-74 from Navajo Rd to A St		2,776	35	50	50	94.1%	2.0%	3.9%	80.0%	15.0%	5.0%	70.6	18	57	180	569
18	SR-74 from A St to Perris Blvd		2,730	35	50	50	94.6%	2.0%	3.4%	80.0%	15.0%	5.0%	70.3	17	53	168	532
19	SR-74 from Perris Blvd to Redlands Ave		1,680	35	50	50	93.9%	2.0%	4.1%	80.0%	15.0%	5.0%	68.4	11	35	111	349
20	Perris Blvd north of SR-74		2,330	35	50	50	94.3%	2.0%	3.7%	80.0%	15.0%	5.0%	69.7	15	47	147	466
21	Perris Blvd from SR-74 to 11th St-Case Rd		1,983	35	50	50	93.9%	2.0%	4.1%	80.0%	15.0%	5.0%	69.2	13	41	131	413
22	Perris Blvd from 11th St-Case Rd to Ellis Ave		1,103	35	50	50	93.9%	2.0%	4.1%	80.0%	15.0%	5.0%	66.6	7	23	73	231
23	Redlands Ave north of I-215 NB Ramps		1,922	45	50	50	95.5%	2.0%	2.5%	80.0%	15.0%	5.0%	71.1	21	65	205	649
24	Redlands Ave from I-215 NB Ramps to I-215 SB Ramps		1,865	35	50	50	94.1%	2.0%	3.9%	80.0%	15.0%	5.0%	68.8	12	38	120	380
25	Redlands Ave from I-215 SB Ramps to SR-74		2,239	35	50	50	92.9%	2.0%	5.1%	80.0%	15.0%	5.0%	70.1	16	51	162	512
26	11th St from A St to Perris Blvd		1,019	45	50	50	94.3%	2.0%	3.7%	80.0%	15.0%	5.0%	68.8	12	38	120	380
27	Case Rd from Perris Blvd to Ellis Ave		1,281	45	50	50	88.2%	2.0%	9.8%	80.0%	15.0%	5.0%	71.5	22	71	223	706
28	Case Rd from Ellis Ave to Murrieta Rd		1,263	45	50	50	91.5%	2.0%	6.5%	80.0%	15.0%	5.0%	70.6	18	57	182	575
29	Case Rd from Murrieta Rd to Bonnie Dr		658	45	50	50	89.3%	2.0%	8.7%	80.0%	15.0%	5.0%	68.3	11	34	108	341
30	Bonnie Dr west of I-215 SB Ramps		570	35	50	50	89.2%	2.0%	8.8%	80.0%	15.0%	5.0%	65.4	5	17	55	173
31	SR-74 from I-215 SB Ramps to I-215 NB Ramps		1,116	55	50	50	91.6%	2.0%	6.4%	80.0%	15.0%	5.0%	72.3	27	85	270	852
32	SR-74 from I-215 NB Ramps to Trumble Rd		1,227	55	50	50	93.5%	2.0%	4.5%	80.0%	15.0%	5.0%	72.2	26	83	264	835
33	SR-74 from Trumble Rd to Palomar Rd		2,532	50	50	50	94.0%	2.0%	4.0%	80.0%	15.0%	5.0%	74.1	41	128	406	1284
34	SR-74 from Palomar Rd to Menifee Rd		2,879	50	50	50	93.5%	2.0%	4.5%	80.0%	15.0%	5.0%	74.8	48	151	477	1509
35	SR-74 from Menifee Rd to Briggs Rd		3,073	50	50	50	93.5%	2.0%	4.5%	80.0%	15.0%	5.0%	75.1	51	161	509	1609



Citation # Citations

- |    |  |  |
|----|--|--|
| 1  | Caltrans Technical Noise Supplement. 2009 (November). Table (5-11), Pg 5-60.   | Caltrans Technical Noise Supplement. 2013 (September). Table (4-2), Pg 4-17.     |
| 2  | Caltrans Technical Noise Supplement. 2009 (November). Equation (5-26), Pg 5-60.  | Caltrans Technical Noise Supplement. 2013 (September). Equation (4-5), Pg 4-17.  |
| 3  | Caltrans Technical Noise Supplement. 2009 (November). Equation (2-16), Pg 2-32.  | FHWA 2004 TNM Version 2.5  |
| 4  | Caltrans Technical Noise Supplement. 2009 (November). Equation (5-11), Pg 5-47, 48.  | FHWA 2004 TNM Version 2.5  |
| 5  | Caltrans Technical Noise Supplement. 2009 (November). Equation (2-26), Pg 2-55, 56.  | Caltrans Technical Noise Supplement. 2013 (September). Equation (2-23), Pg 2-57. |
| 6  | Caltrans Technical Noise Supplement. 2009 (November). Equation (2-27), Pg 2-57.  | Caltrans Technical Noise Supplement. 2013 (September). Equation (2-24), Pg 2-57. |
| 7  | Caltrans Technical Noise Supplement. 2009 (November). Pg 2-53.   | Caltrans Technical Noise Supplement. 2013 (September). Pg 2-57.                  |
| 8  | Caltrans Technical Noise Supplement. 2009 (November). Equation (5-7), Pg 5-45.   | FHWA 2004 TNM Version 2.5  |
| 9  | Caltrans Technical Noise Supplement. 2009 (November). Equation (5-8), Pg 5-45.   | FHWA 2004 TNM Version 2.5  |
| 10 | Caltrans Technical Noise Supplement. 2009 (November). Equation (5-9), Pg 5-45.   | FHWA 2004 TNM Version 2.5  |
| 11 | Caltrans Technical Noise Supplement. 2009 (November). Equation (5-13), Pg 5-49.  | FHWA 2004 TNM Version 2.5  |
| 12 | Caltrans Technical Noise Supplement. 2009 (November). Equation (5-14), Pg 5-49.  | FHWA 2004 TNM Version 2.5  |
| 13 | Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (16), Pg 67 |  |
| 14 | Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (20), Pg 69 |  |
| 15 | Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (18), Pg 69 |  |

References

California Department of Transportation (Caltrans). 2009 (November). Technical Noise Supplement. Available: [http://www.dot.ca.gov/hq/env/noise/pub/tens\\_complete.pdf](http://www.dot.ca.gov/hq/env/noise/pub/tens_complete.pdf). Accessed 4/2017.

**KEY:** Orange cells are for input.  
 Grey cells are intermediate calculations performed by the model.  
 Green cells are data to present in a written analysis (output).

**STEP 1: Identify the noise source and enter the reference noise level (dBA and distance).**

**STEP 2: Select the ground type (hard or soft), and enter the source and receiver heights.**

**STEP 3: Select the distance to the receiver.**

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
	noise level (dBA)	@	distance (ft)	Ground Type (soft/hard)	Source Height (ft)	Receiver Height (ft)	Ground Factor	noise level (dBA)	@	distance (ft)
Traffic Noise Setback Measurement	67.4	@	50	hard	5	5	0.00	60.0	@	117
				hard	8	5	0.00			
				hard	8	5	0.00			
							0.66			
							0.66			
							0.66			
							0.66			

**Notes:**  
 Estimates of attenuated noise levels do not account for reductions from intervening barriers, including walls, trees, vegetation, or structures of any type.

Computation of the attenuated noise level is based on the equation presented on pg. 176 and 177 of FTA 2018.  
 Computation of the ground factor is based on the equation presentd in Table 4-26 on pg. 86 of FTA 2018, where the distance of the reference noise leve can be adjusted and the usage factor is not applied (i.e., the usage factor is equal to 1).

**Sources:**  
 Federal Transit Association (FTA). 2018 (September). Transit Noise and Vibration Impact Assessment. Washington, D.C. Available: <[http://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123\\_0.pdf](http://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf)>Accessed: March 5, 2020.

Ground Type

hard

soft



## GVSP PA 13 Construction Noise

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L <sub>eq</sub> dBA)	Equipment	Reference Emission Noise Levels (L <sub>max</sub> ) at 50 feet <sup>1</sup>	Usage Factor <sup>1</sup>
Threshold	89	80.0	Scraper	85	0.2
SF Base Term. Res. Residences West of Goetz Road	50	85.0	Dozer	85	0.4
	130	76.7	Excavator	85	0.4

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor <sup>2</sup>	0.00

Predicted Noise Level <sup>3</sup>	L <sub>eq</sub> dBA at 50 feet <sup>3</sup>
Scraper	78.0
Dozer	81.0
Excavator	81.0

Combined Predicted Noise Level (L <sub>eq</sub> dBA at 50 feet)
85

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

<sup>2</sup> Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

<sup>3</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(equip) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.



## GVSP PA 13 Construction Noise

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L <sub>eq</sub> dBA)	Equipment	Reference Emission Noise Levels (L <sub>max</sub> ) at 50 feet <sup>1</sup>	Usage Factor <sup>1</sup>
Threshold	154	80.0	Scraper	85	1
SF Base Term. Res.	50	89.8	Dozer	85	1
Residences West of Goetz Road	130	81.5	Excavator	85	1

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor <sup>2</sup>	0.00

Predicted Noise Level <sup>3</sup>	L <sub>eq</sub> dBA at 50 feet <sup>3</sup>
Scraper	85.0
Dozer	85.0
Excavator	85.0

**Combined Predicted Noise Level (L<sub>eq</sub> dBA at 50 feet)**

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90

Sources:

<sup>1</sup> Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

<sup>2</sup> Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

<sup>3</sup> Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(equip) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Equipment Description	Acoustical Usage Factor (%)	Spec 721.560 Lmax @ 50ft (dBA slow)	Actual Measured Lmax @ 50ft (dBA slow)	No. of Actual Data Samples (count)	Spec 721.560 LmaxCalc	Spec 721.560 Leq	Distance	Actual Measured LmaxCalc	Actual Measured Leq
Auger Drill Rig	20	85	84	36	79.0	72.0	100	78.0	71.0
Backhoe	40	80	78	372	74.0	70.0	100	72.0	68.0
Bar Bender	20	80	na	0	74.0	67.0	100		
Blasting	na	94	na	0	88.0		100		
Boring Jack Power Unit	50	80	83	1	74.0	71.0	100	77.0	74.0
Chain Saw	20	85	84	46	79.0	72.0	100	78.0	71.0
Clam Shovel (dropping)	20	93	87	4	87.0	80.0	100	81.0	74.0
Compactor (ground)	20	80	83	57	74.0	67.0	100	77.0	70.0
Compressor (air)	40	80	78	18	74.0	70.0	100	72.0	68.0
Concrete Batch Plant	15	83	na	0	77.0	68.7	100		
Concrete Mixer Truck	40	85	79	40	79.0	75.0	100	73.0	69.0
Concrete Pump Truck	20	82	81	30	76.0	69.0	100	75.0	68.0
Concrete Saw	20	90	90	55	84.0	77.0	100	84.0	77.0
Crane	16	85	81	405	79.0	71.0	100	75.0	67.0
Dozer	40	85	82	55	79.0	75.0	100	76.0	72.0
Drill Rig Truck	20	84	79	22	78.0	71.0	100	73.0	66.0
Drum Mixer	50	80	80	1	74.0	71.0	100	74.0	71.0
Dump Truck	40	84	76	31	78.0	74.0	100	70.0	66.0
Excavator	40	85	81	170	79.0	75.0	100	75.0	71.0
Flat Bed Truck	40	84	74	4	78.0	74.0	100	68.0	64.0
Front End Loader	40	80	79	96	74.0	70.0	100	73.0	69.0
Generator	50	82	81	19	76.0	73.0	100	75.0	72.0
Generator (<25KVA, VMS signs)	50	70	73	74	64.0	61.0	100	67.0	64.0
Gradall	40	85	83	70	79.0	75.0	100	77.0	73.0
Grader	40	85	na	0	79.0	75.0	100		
Grapple (on Backhoe)	40	85	87	1	79.0	75.0	100	81.0	77.0
Horizontal Boring Hydr. Jack	25	80	82	6	74.0	68.0	100	76.0	70.0
Hydra Break Ram	10	90	na	0	84.0	74.0	100		
Impact Pile Driver	20	95	101	11	89.0	82.0	100	95.0	88.0
Jackhammer	20	85	89	133	79.0	72.0	100	83.0	76.0
Man Lift	20	85	75	23	79.0	72.0	100	69.0	62.0
Mounted Impact Hammer (hoe ram)	20	90	90	212	84.0	77.0	100	84.0	77.0
Pavement Scarafier	20	85	90	2	79.0	72.0	100	84.0	77.0
Paver	50	85	77	9	79.0	76.0	100	71.0	68.0
Pickup Truck	40	55	75	1	49.0	45.0	100	69.0	65.0
Pneumatic Tools	50	85	85	90	79.0	76.0	100	79.0	76.0
Pumps	50	77	81	17	71.0	68.0	100	75.0	72.0
Refrigerator Unit	100	82	73	3	76.0	76.0	100	67.0	67.0
Rivit Buster/chipping gun	20	85	79	19	79.0	72.0	100	73.0	66.0
Rock Drill	20	85	81	3	79.0	72.0	100	75.0	68.0
Roller	20	85	80	16	79.0	72.0	100	74.0	67.0
Sand Blasting (Single Nozzle)	20	85	96	9	79.0	72.0	100	90.0	83.0
Scraper	40	85	84	12	79.0	75.0	100	78.0	74.0
Shears (on backhoe)	40	85	96	5	79.0	75.0	100	90.0	86.0
Slurry Plant	100	78	78	1	72.0	72.0	100	72.0	72.0
Slurry Trenching Machine	50	82	80	75	76.0	73.0	100	74.0	71.0
Soil Mix Drill Rig	50	80	na	0	74.0	71.0	100		
Tractor	40	84	na	0	78.0	74.0	100		
Vacuum Excavator (Vac-truck)	40	85	85	149	79.0	75.0	100	79.0	75.0
Vacuum Street Sweeper	10	80	82	19	74.0	64.0	100	76.0	66.0
Ventilation Fan	100	85	79	13	79.0	79.0	100	73.0	73.0
Vibrating Hopper	50	85	87	1	79.0	76.0	100	81.0	78.0
Vibratory Concrete Mixer	20	80	80	1	74.0	67.0	100	74.0	67.0
Vibratory Pile Driver	20	95	101	44	89.0	82.0	100	95.0	88.0
Warning Horn	5	85	83	12	79.0	66.0	100	77.0	64.0
Welder / Torch chipper	40	73	74	5	67.0	63.0	100	68.0	64.0
		75							

Source:  
FHWA Roadway Construction Noise Model, January 2006. Table 9.1  
U.S. Department of Transportation  
CA/T Construction Spec. 721.560