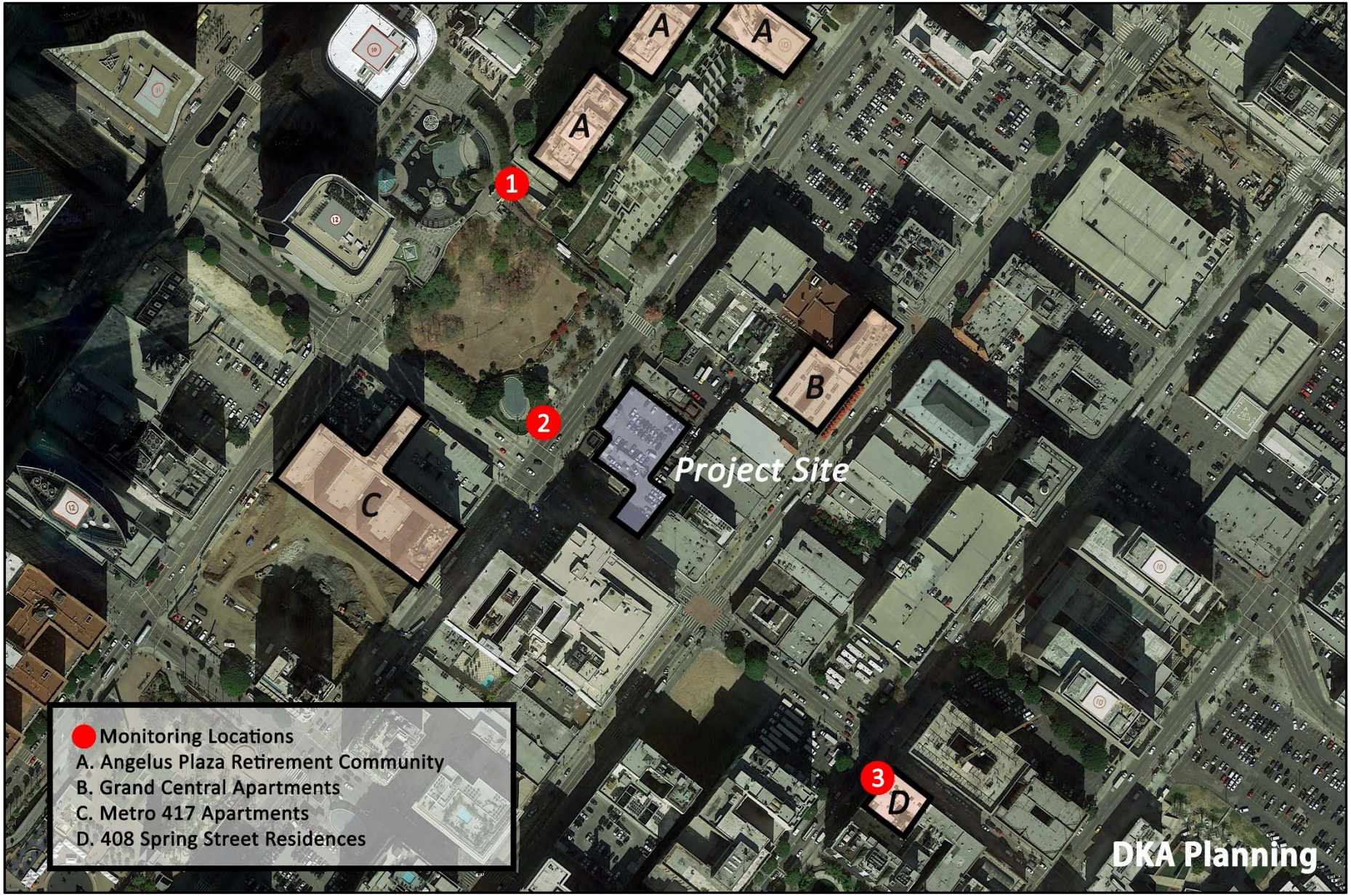


DKA Planning

NOISE RECEPTOR MAP
4th and Hill Project
Imagery via Google

1. Angelus Plaza Noise Report

11/21/2017

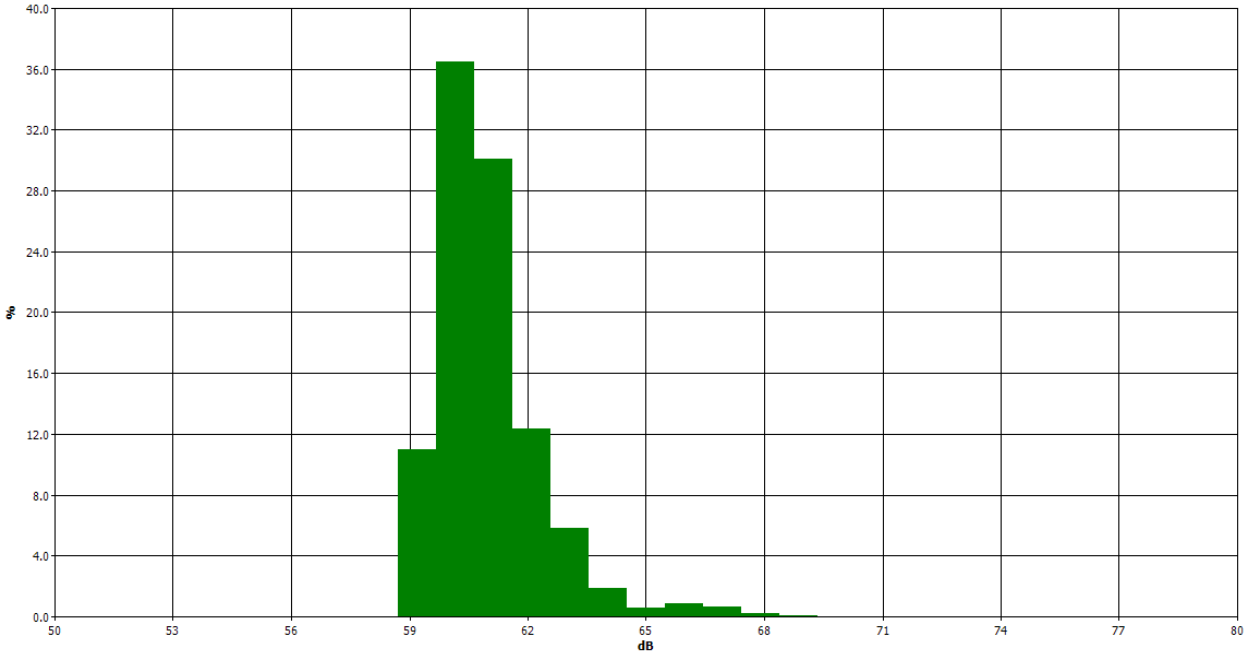
Information Panel

Name	S509_BIJ050019_30012018_235937
Start Time	Tuesday, November 21, 2017, 12:20pm
Stop Time	Tuesday, November 21, 2017, 12:33pm
Device Model Type	SoundPro DL

General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	61.5dB	Exchange Rate	1	3dB
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	2	3dB
Weighting	2	C	Response	2	SLOW

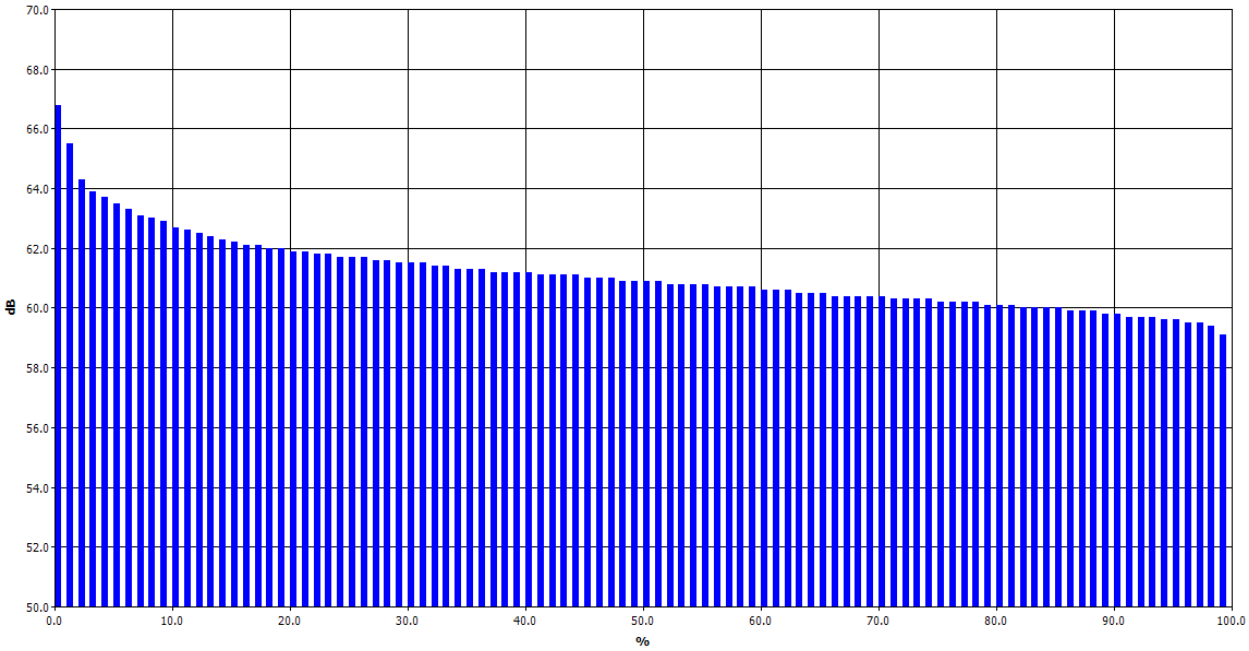
Statistics Chart



Statistics Table

dB	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	%
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59	0.00	0.00	0.00	0.19	0.63	1.16	1.34	2.47	2.62	2.57	10.97
60	2.55	3.52	3.57	4.23	3.99	4.21	3.13	3.49	3.77	4.05	36.51
61	3.55	3.85	3.70	4.01	2.90	2.19	2.49	2.78	2.38	2.21	30.06
62	2.06	2.04	1.62	1.06	1.29	0.93	0.99	0.93	0.77	0.68	12.38
63	0.85	0.76	0.63	0.74	0.49	0.48	0.57	0.49	0.38	0.44	5.83
64	0.42	0.36	0.21	0.18	0.22	0.13	0.08	0.08	0.07	0.10	1.85
65	0.08	0.06	0.06	0.03	0.05	0.08	0.09	0.05	0.03	0.05	0.58
66	0.04	0.05	0.09	0.10	0.09	0.09	0.13	0.11	0.08	0.11	0.89
67	0.12	0.10	0.11	0.05	0.05	0.05	0.03	0.02	0.06	0.03	0.62
68	0.02	0.02	0.04	0.03	0.04	0.03	0.04	0.00	0.01	0.00	0.23
69	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.04
70	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.03
71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

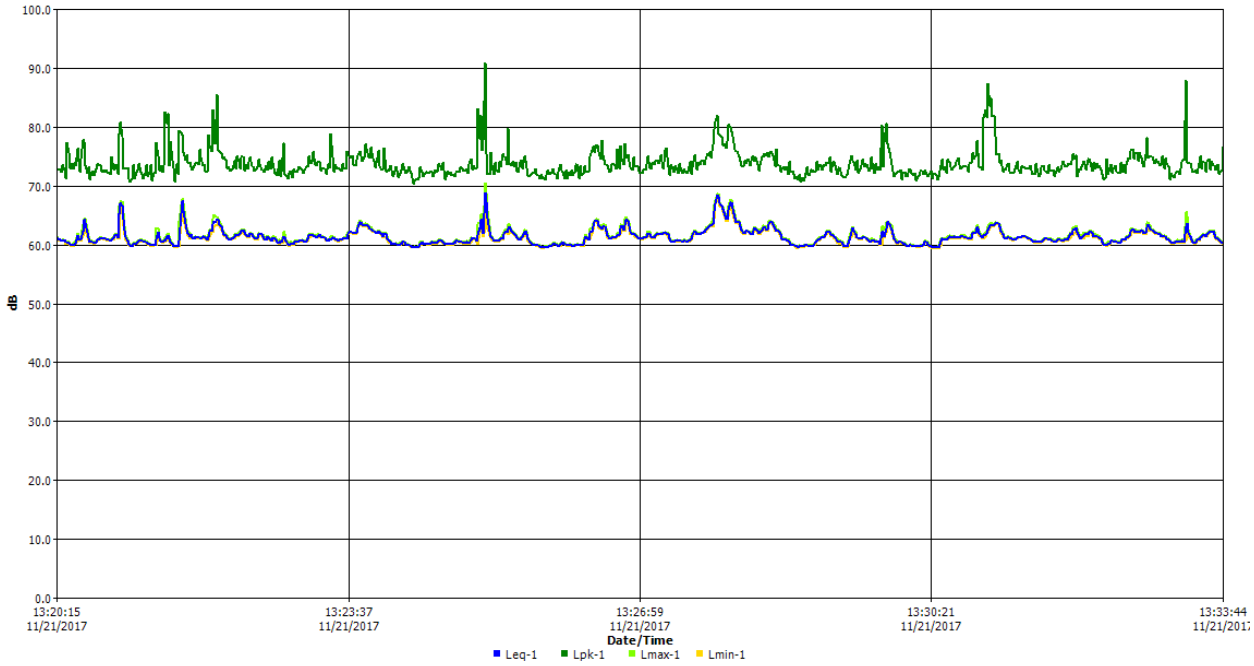
Exceedance Chart



Exceedance Table

	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%
0%		66.8	65.5	64.3	63.9	63.7	63.5	63.3	63.1	63
10%	62.9	62.7	62.6	62.5	62.4	62.3	62.2	62.1	62.1	62
20%	62	61.9	61.9	61.8	61.8	61.7	61.7	61.7	61.6	61.6
30%	61.5	61.5	61.5	61.4	61.4	61.3	61.3	61.3	61.2	61.2
40%	61.2	61.2	61.1	61.1	61.1	61.1	61	61	61	60.9
50%	60.9	60.9	60.9	60.8	60.8	60.8	60.8	60.7	60.7	60.7
60%	60.7	60.6	60.6	60.6	60.5	60.5	60.5	60.4	60.4	60.4
70%	60.4	60.4	60.3	60.3	60.3	60.3	60.2	60.2	60.2	60.2
80%	60.1	60.1	60.1	60	60	60	60	59.9	59.9	59.9
90%	59.8	59.8	59.7	59.7	59.7	59.6	59.6	59.5	59.5	59.4
100%	59.1									

Logged Data Chart



2. Intersection of 4th St. and Hill St. Noise Report

11/21/2017

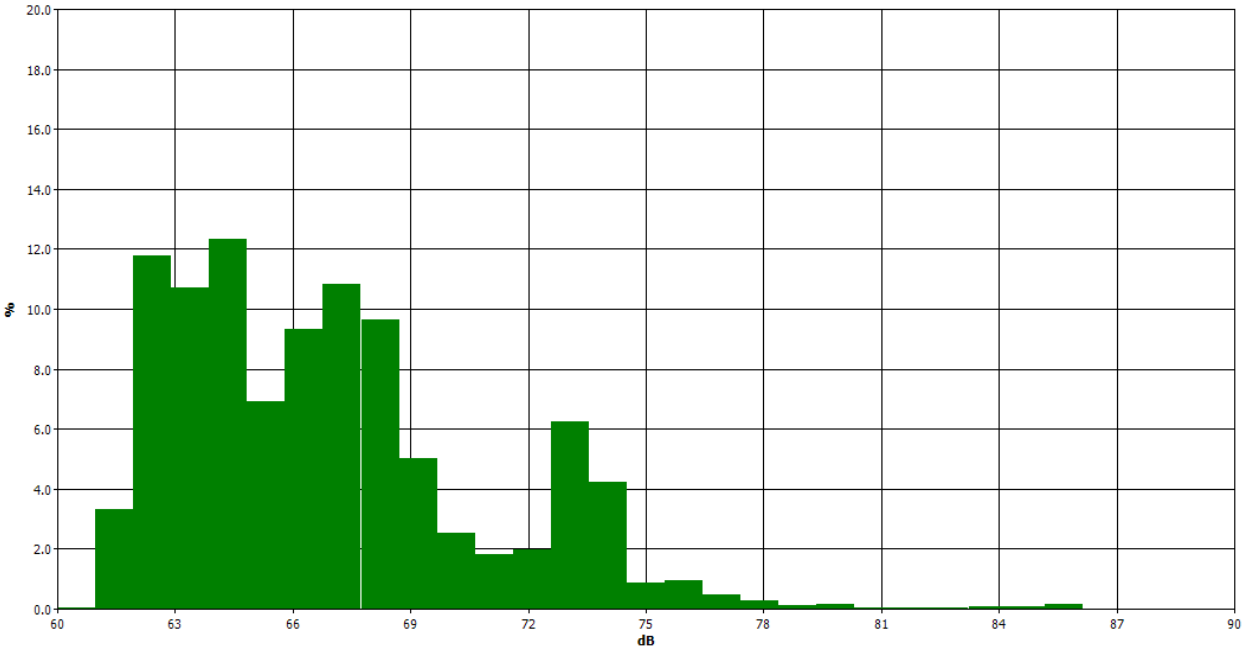
Information Panel

Name	S509_BIJ050019_30012018_235937
Start Time	Tuesday, November 21, 2017, 1:00pm
Stop Time	Tuesday, November 21, 2017, 1:16pm
Device Model Type	SoundPro DL

General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	69.7dB	Exchange Rate	1	3dB
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	2	3dB
Weighting	2	C	Response	2	SLOW

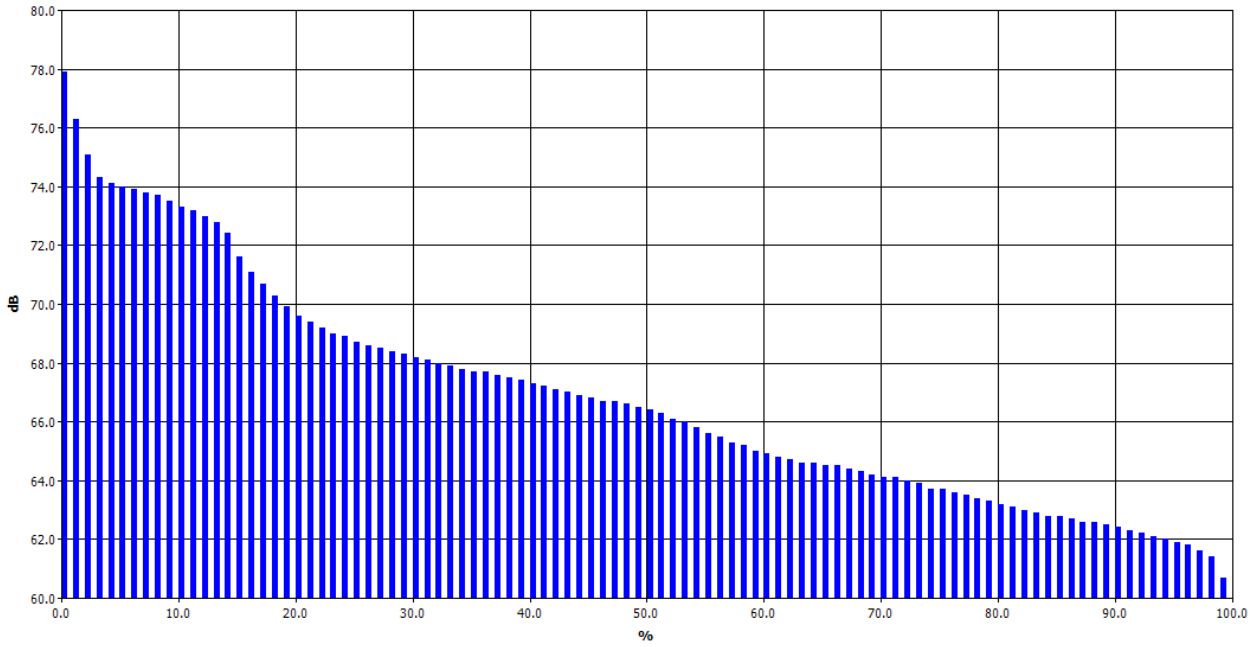
Statistics Chart



Statistics Table

dB	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	%
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.04
61	0.03	0.04	0.12	0.14	0.21	0.45	0.65	0.57	0.66	0.45	3.31
62	0.65	1.14	1.27	0.77	1.21	1.01	1.29	1.52	1.40	1.52	11.78
63	1.46	1.02	0.88	0.94	0.98	1.34	1.04	1.07	1.20	0.81	10.73
64	0.94	1.17	1.05	1.07	1.15	1.55	1.91	1.61	1.08	0.82	12.34
65	0.82	1.05	0.84	0.50	0.64	0.60	0.70	0.67	0.62	0.50	6.93
66	0.53	0.62	0.75	0.68	0.72	1.00	1.20	1.18	1.38	1.26	9.32
67	1.10	1.09	1.09	1.09	0.83	0.85	1.06	1.25	1.25	1.20	10.82
68	1.15	0.88	1.29	0.90	0.85	0.95	0.98	0.95	0.90	0.80	9.65
69	0.63	0.70	0.53	0.48	0.49	0.39	0.37	0.49	0.51	0.42	5.01
70	0.25	0.28	0.20	0.22	0.32	0.27	0.22	0.24	0.35	0.20	2.54
71	0.25	0.24	0.20	0.12	0.18	0.18	0.18	0.18	0.14	0.14	1.82
72	0.12	0.11	0.13	0.12	0.12	0.14	0.22	0.29	0.36	0.35	1.96
73	0.39	0.58	0.59	0.78	0.68	0.67	0.51	0.37	0.59	1.08	6.24
74	1.00	0.88	0.88	0.39	0.38	0.19	0.14	0.12	0.13	0.12	4.23
75	0.17	0.10	0.07	0.10	0.09	0.08	0.08	0.05	0.07	0.06	0.87
76	0.07	0.10	0.15	0.07	0.08	0.08	0.11	0.11	0.12	0.07	0.95
77	0.06	0.08	0.07	0.02	0.05	0.04	0.04	0.03	0.03	0.03	0.45
78	0.03	0.03	0.07	0.10	0.02	0.01	0.01	0.01	0.01	0.01	0.29
79	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11
80	0.01	0.01	0.01	0.01	0.01	0.03	0.02	0.04	0.02	0.01	0.16
81	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.04
82	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.04
83	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.04
84	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.06
85	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.08
86	0.06	0.03	0.06	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.17
87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

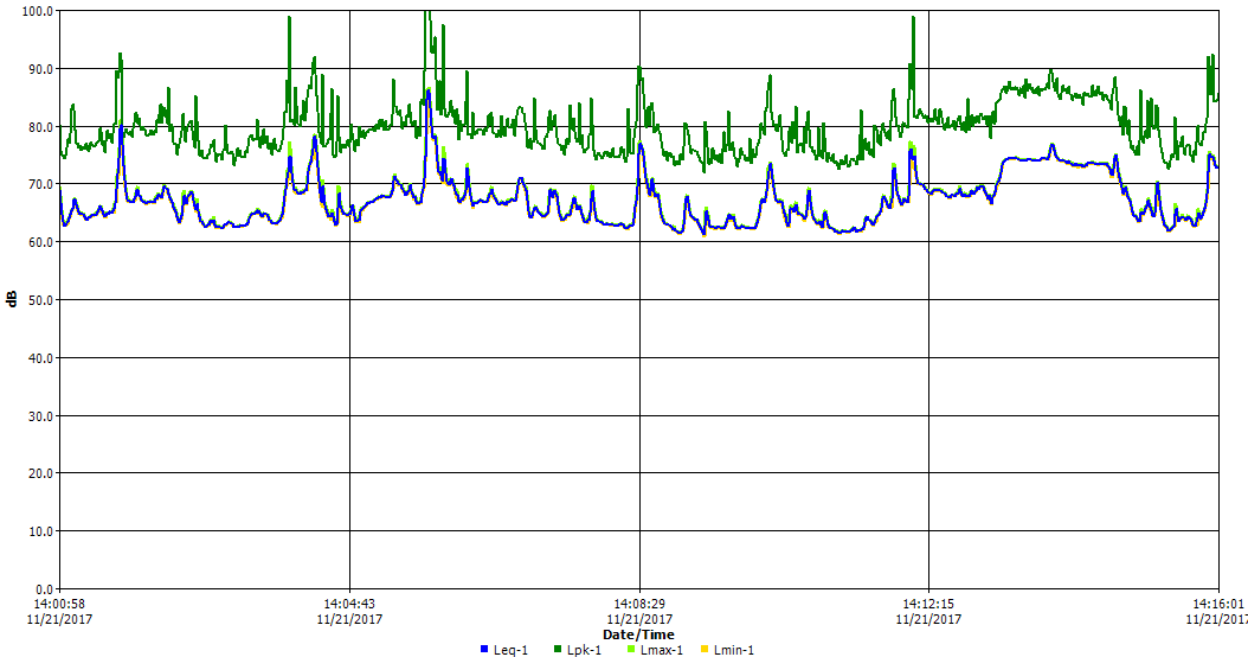
Exceedance Chart



Exceedance Table

	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%
0%		77.9	76.3	75.1	74.3	74.1	74	73.9	73.8	73.7
10%	73.5	73.3	73.2	73	72.8	72.4	71.6	71.1	70.7	70.3
20%	69.9	69.6	69.4	69.2	69	68.9	68.7	68.6	68.5	68.4
30%	68.3	68.2	68.1	68	67.9	67.8	67.7	67.7	67.6	67.5
40%	67.4	67.3	67.2	67.1	67	66.9	66.8	66.7	66.7	66.6
50%	66.5	66.4	66.3	66.1	66	65.8	65.6	65.5	65.3	65.2
60%	65	64.9	64.8	64.7	64.6	64.6	64.5	64.5	64.4	64.3
70%	64.2	64.1	64.1	64	63.9	63.7	63.7	63.6	63.5	63.4
80%	63.3	63.2	63.1	63	62.9	62.8	62.8	62.7	62.6	62.6
90%	62.5	62.4	62.3	62.2	62.1	62	61.9	61.8	61.6	61.4
100%	60.7									

Logged Data Chart



3. Intersection of 4th St. and Spring St. Noise Report

11/21/2017

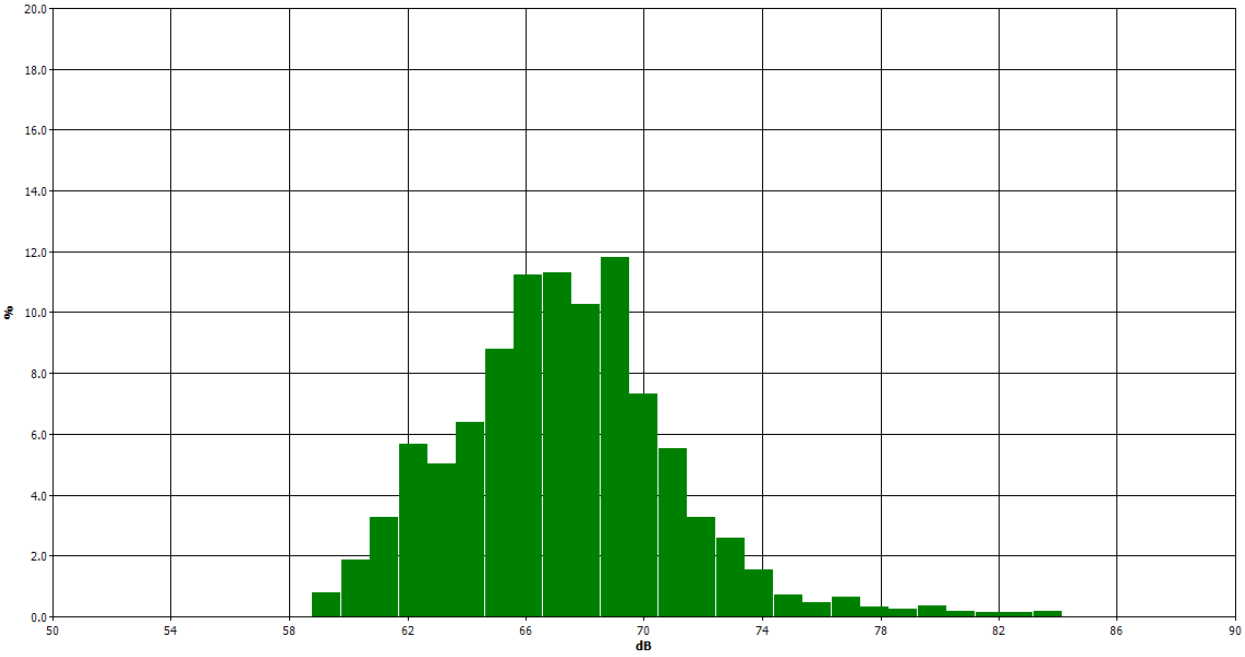
Information Panel

Name	S510_BIJ050019_30012018_235937
Start Time	Tuesday, November 21, 2017, 1:21pm
Stop Time	Tuesday, November 21, 2017, 1:36pm
Device Model Type	SoundPro DL

General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	69.8dB	Exchange Rate	1	3dB
Weighting	1	A	Response	1	SLOW
Bandwidth	1	OFF	Exchange Rate	2	3dB
Weighting	2	C	Response	2	SLOW

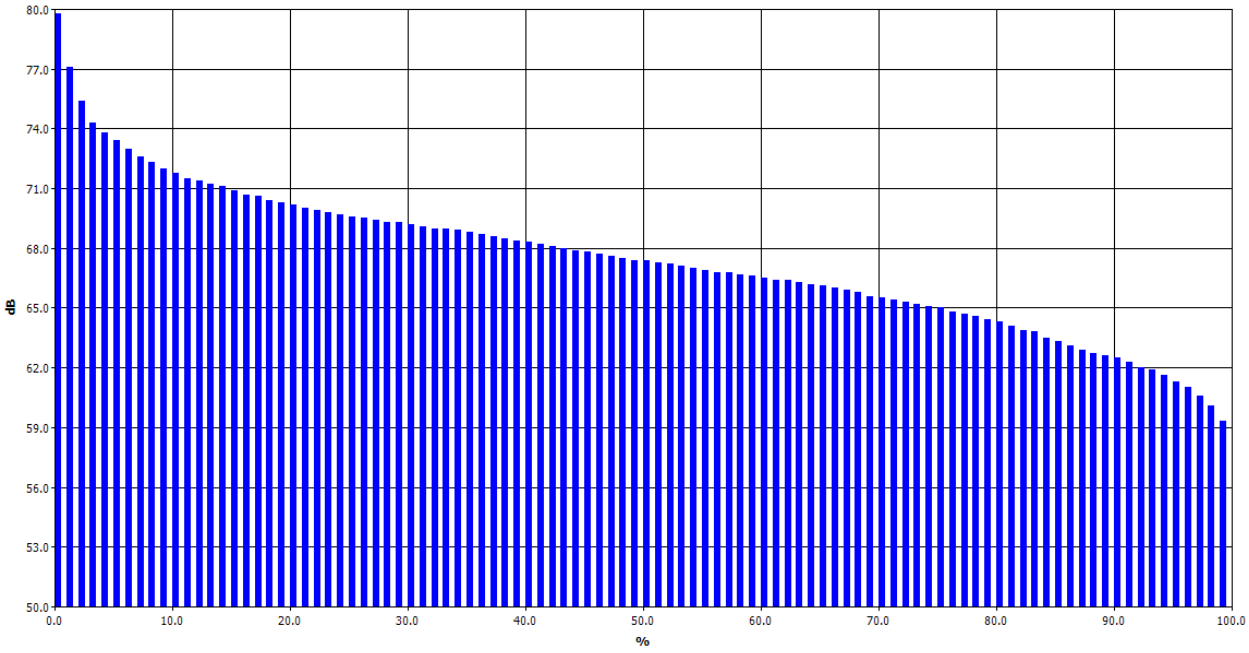
Statistics Chart



Statistics Table

dB	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	%
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59	0.00	0.00	0.00	0.00	0.09	0.10	0.17	0.14	0.16	0.11	0.77
60	0.08	0.14	0.23	0.17	0.19	0.23	0.16	0.19	0.20	0.27	1.87
61	0.23	0.21	0.23	0.29	0.50	0.47	0.26	0.36	0.29	0.44	3.27
62	0.66	0.47	0.53	0.39	0.44	0.46	0.78	0.69	0.79	0.48	5.69
63	0.51	0.75	0.47	0.50	0.48	0.43	0.41	0.36	0.46	0.64	5.02
64	0.55	0.54	0.53	0.53	0.66	0.59	0.65	0.72	0.81	0.82	6.39
65	0.85	0.75	1.22	0.67	0.89	0.85	0.95	0.87	0.92	0.82	8.79
66	0.85	1.11	1.03	0.99	1.00	1.34	1.18	1.17	1.23	1.33	11.22
67	1.02	1.23	1.21	1.24	1.13	1.18	1.09	1.07	1.10	1.04	11.33
68	0.99	1.06	1.10	0.73	1.04	0.98	0.92	0.96	1.01	1.47	10.26
69	1.35	1.34	1.29	1.20	1.23	1.05	1.13	1.34	1.05	0.85	11.82
70	0.89	0.86	0.77	0.80	0.86	0.77	0.58	0.61	0.59	0.59	7.32
71	0.60	0.58	0.65	0.53	0.78	0.58	0.57	0.42	0.43	0.40	5.53
72	0.38	0.46	0.47	0.30	0.37	0.28	0.23	0.24	0.27	0.25	3.25
73	0.24	0.24	0.25	0.27	0.25	0.33	0.27	0.26	0.25	0.22	2.57
74	0.23	0.23	0.25	0.11	0.11	0.12	0.11	0.10	0.15	0.12	1.53
75	0.07	0.06	0.06	0.06	0.07	0.06	0.08	0.11	0.09	0.06	0.71
76	0.04	0.03	0.04	0.04	0.04	0.04	0.06	0.04	0.03	0.09	0.45
77	0.09	0.08	0.05	0.03	0.04	0.04	0.04	0.05	0.13	0.10	0.64
78	0.04	0.04	0.05	0.05	0.05	0.02	0.02	0.02	0.01	0.02	0.31
79	0.03	0.02	0.02	0.02	0.03	0.02	0.02	0.03	0.02	0.05	0.27
80	0.08	0.06	0.05	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.35
81	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.17
82	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.01	0.02	0.01	0.16
83	0.02	0.02	0.01	0.01	0.01	0.02	0.01	0.01	0.02	0.01	0.14
84	0.02	0.03	0.01	0.01	0.01	0.02	0.02	0.01	0.02	0.00	0.16
85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

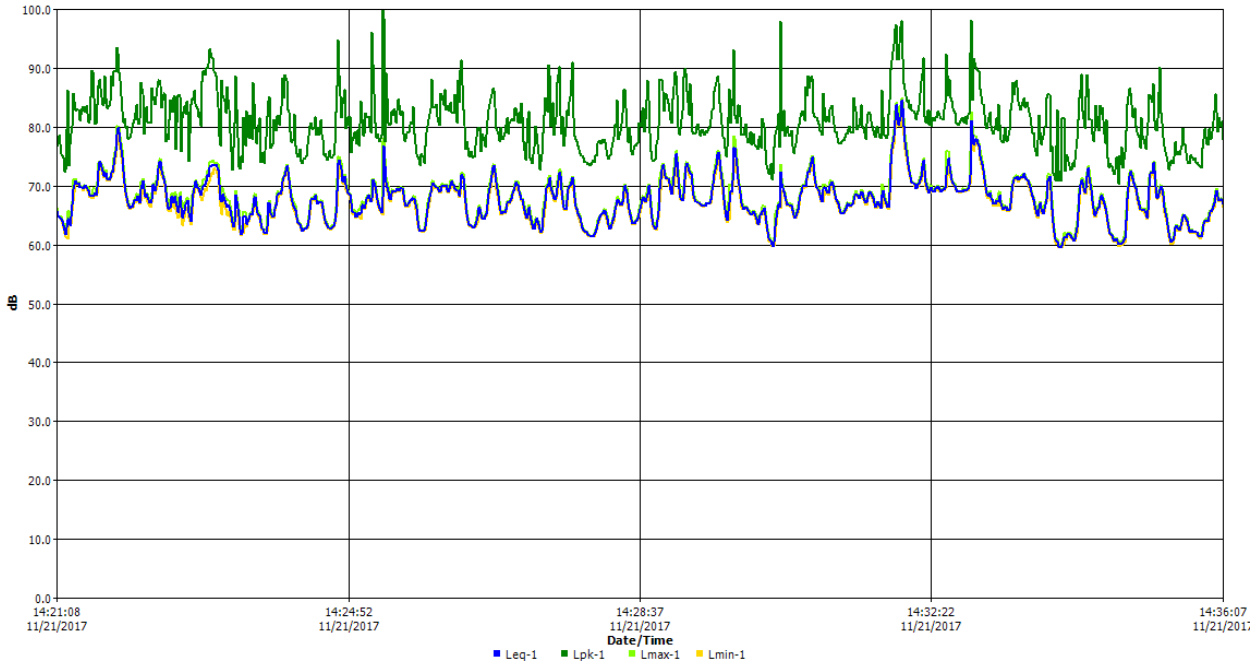
Exceedance Chart



Exceedance Table

	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%
0%		79.8	77.1	75.4	74.3	73.8	73.4	73	72.6	72.3
10%	72	71.8	71.5	71.4	71.2	71.1	70.9	70.7	70.6	70.4
20%	70.3	70.2	70	69.9	69.8	69.7	69.6	69.5	69.4	69.3
30%	69.3	69.2	69.1	69	69	68.9	68.8	68.7	68.6	68.5
40%	68.4	68.3	68.2	68.1	68	67.9	67.8	67.7	67.6	67.5
50%	67.4	67.4	67.3	67.2	67.1	67	66.9	66.8	66.8	66.7
60%	66.6	66.5	66.4	66.4	66.3	66.2	66.1	66	65.9	65.8
70%	65.6	65.5	65.4	65.3	65.2	65.1	65	64.8	64.7	64.6
80%	64.4	64.3	64.1	63.9	63.8	63.5	63.3	63.1	62.9	62.7
90%	62.6	62.5	62.3	62	61.9	61.6	61.3	61	60.6	60.1
100%	59.3									

Logged Data Chart



Angelus Plaza Retirement Community: GRADING

Construction Noise - Unmitigated

Total Equipment Noise Levels

Source	Emission Level (dBA)	Usage Factor	Adjusted dBA
Excavator	80.7	0.4	76.7
Loader	79.1	0.4	75.1
		Combined dBA	**79.0**

Housing Row Shielding

If gaps in the row of buildings constitute less than 35% of the length of the row:		
R	0	*number of rows of houses between source and receiver
A(rows1)	**0**	

If gaps in the row of buildings constitute between 35-65% of the length of the row:		
R	0	*number of rows of houses between source and receiver
A(rows2)	**0**	

If gaps in the row of buildings constitute more than 65% of the length of the row:		
A(rows3)	**0**	

Tree Zone Shielding

Where at least 100 feet of trees intervene between source and receiver, ***and*** *if no clear line of sight exists between source and receiver,* ***and*** *if the trees extend 15 feet or more above the line of sight:*		
W	0	*width of the tree zone along the line of sight between source and receiver, in feet.
A(trees)	**0**	

Cumulative Shielding

Axxx	0
Axxx	0
Axxx	0
A(rows1)	0
A(rows2)	0
A(trees)	0
A(cumulative)	**0**

Angelus Plaza Retirement Community: GRADING

Unmitigated Construction Noise Level

Total Equipment Noise Level	79.0
Cumulative Shielding (A)	0
G	0
Distance	360
Unmitigated Construction Noise	**61.9**

Unmitigated Receptor Noise Level

Unmitigated Construction Noise	61.9
Existing Ambient Noise	61.5
Unmitigated Ambient Noise	64.7
Unmitigated Increase	**3.2**

Angelus Plaza Retirement Community: GRADING

Construction Noise - Mitigated

Construction Equipment Mitigation

Source	Emission Level (dBA)	Usage Factor	Mitigative Attenuation	Adjusted dBA
Excavator	80.7	0.4	3	73.7
Loader	79.1	0.4	3	72.1
		Combined dBA, Mitigated		**76.0**

Mitigated Construction Noise Level

Total Equipment Noise Level	76.0
Cumulative Shielding (A)	0
Sound Barrier Shielding	0.0
G	0.0
Distance	360
Mitigated Construction Noise	**58.9**

Mitigated Receptor Noise Level

Mitigated Construction Noise	58.9
Existing Ambient Noise	61.5
Mitigated Ambient Noise	63.4
Mitigated Increase	**1.9**

Sources

Federal Highway Administration (FHWA), *Construction Noise Handbook* , August 2006

Federal Transit Administration (FTA), *Transit Noise and Vibration Assessment* , May 2006

California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol* , September 2013

Grand Central Apartments: GRADING

Construction Noise - Unmitigated

Total Equipment Noise Levels

Source	Emission Level (dBA)	Usage Factor	Adjusted dBA
Excavator	80.7	0.4	76.7
Loader	79.1	0.4	75.1
		Combined dBA	**79.0**

Housing Row Shielding

If gaps in the row of buildings constitute less than 35% of the length of the row:		
R	0	*number of rows of houses between source and receiver
A(rows1)	**0**	

If gaps in the row of buildings constitute between 35-65% of the length of the row:		
R	0	*number of rows of houses between source and receiver
A(rows2)	**0**	

If gaps in the row of buildings constitute more than 65% of the length of the row:		
A(rows3)	**0**	

Tree Zone Shielding

Where at least 100 feet of trees intervene between source and receiver, ***and*** *if no clear line of sight exists between source and receiver,* ***and*** *if the trees extend 15 feet or more above the line of sight:*		
W	0	*width of the tree zone along the line of sight between source and receiver, in feet.
A(trees)	**0**	

Cumulative Shielding

Axxx	0
Axxx	0
Axxx	0
A(rows1)	0
A(rows2)	0
A(trees)	0
A(cumulative)	**0**

Grand Central Apartments: GRADING

Unmitigated Construction Noise Level

Total Equipment Noise Level	79.0
Cumulative Shielding (A)	0
G	0
Distance	165
Unmitigated Construction Noise	**68.6**

Unmitigated Receptor Noise Level

Unmitigated Construction Noise	68.6
Existing Ambient Noise	63.7
Unmitigated Ambient Noise	69.8
Unmitigated Increase	**6.1**

Estimated Ambient Noise Level at Receptor

Monitored Noise Level	61.5
Reference Distance	310
G	0
D	240
Estimated Noise Level	**63.7**

Grand Central Apartments: GRADING

Construction Noise - Mitigated

Construction Equipment Mitigation

Source	Emission Level (dBA)	Usage Factor	Mitigative Attenuation	Adjusted dBA
Excavator	80.7	0.4	3	73.7
Loader	79.1	0.4	3	72.1
		Combined dBA, Mitigated		**76.0**

Mitigated Construction Noise Level

Total Equipment Noise Level	76.0
Cumulative Shielding (A)	0
Sound Barrier Shielding	0.0
G	0.0
Distance	165
Mitigated Construction Noise	**65.6**

Mitigated Receptor Noise Level

Mitigated Construction Noise	65.6
Existing Ambient Noise	63.7
Mitigated Ambient Noise	67.8
Mitigated Increase	**4.1**

Sources

Federal Highway Administration (FHWA), *Construction Noise Handbook* , August 2006

Federal Transit Administration (FTA), *Transit Noise and Vibration Assessment* , May 2006

California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol* , September 2013

Metro 417 Apartments: GRADING

Construction Noise - Unmitigated

Total Equipment Noise Levels

Source	Emission Level (dBA)	Usage Factor	Adjusted dBA
Excavator	80.7	0.4	76.7
Loader	79.1	0.4	75.1
		Combined dBA	**79.0**

Housing Row Shielding

If gaps in the row of buildings constitute less than 35% of the length of the row:		
R	0	*number of rows of houses between source and receiver
A(rows1)	**0**	

If gaps in the row of buildings constitute between 35-65% of the length of the row:		
R	0	*number of rows of houses between source and receiver
A(rows2)	**0**	

If gaps in the row of buildings constitute more than 65% of the length of the row:		
A(rows3)	**0**	

Tree Zone Shielding

Where at least 100 feet of trees intervene between source and receiver, ***and*** *if no clear line of sight exists between source and receiver,* ***and*** *if the trees extend 15 feet or more above the line of sight:*		
W	0	*width of the tree zone along the line of sight between source and receiver, in feet.
A(trees)	**0**	

Cumulative Shielding

Axxx	0
Axxx	0
Axxx	0
A(rows1)	0
A(rows2)	0
A(trees)	0
A(cumulative)	**0**

Metro 417 Apartments: GRADING

Unmitigated Construction Noise Level

Total Equipment Noise Level	79.0
Cumulative Shielding (A)	0
G	0
Distance	270
Unmitigated Construction Noise	**64.4**

Unmitigated Receptor Noise Level

Unmitigated Construction Noise	64.4
Existing Ambient Noise	69.7
Unmitigated Ambient Noise	70.8
Unmitigated Increase	**1.1**

Metro 417 Apartments: GRADING

Construction Noise - Mitigated

Construction Equipment Mitigation

Source	Emission Level (dBA)	Usage Factor	Mitigative Attenuation	Adjusted dBA
Excavator	80.7	0.4	3	73.7
Loader	79.1	0.4	3	72.1
		Combined dBA, Mitigated		**76.0**

Mitigated Construction Noise Level

Total Equipment Noise Level	76.0
Cumulative Shielding (A)	0
Sound Barrier Shielding	0.0
G	0.0
Distance	270
Mitigated Construction Noise	**61.4**

Mitigated Receptor Noise Level

Mitigated Construction Noise	61.4
Existing Ambient Noise	69.7
Mitigated Ambient Noise	70.3
Mitigated Increase	**0.6**

Sources

Federal Highway Administration (FHWA), *Construction Noise Handbook* , August 2006

Federal Transit Administration (FTA), *Transit Noise and Vibration Assessment* , May 2006

California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol* , September 2013

408 S. Spring Street Residences: GRADING

Construction Noise - Unmitigated

Total Equipment Noise Levels

Source	Emission Level (dBA)	Usage Factor	Adjusted dBA
Excavator	80.7	0.4	76.7
Loader	79.1	0.4	75.1
		Combined dBA	**79.0**

Housing Row Shielding

If gaps in the row of buildings constitute less than 35% of the length of the row:		
R	0	*number of rows of houses between source and receiver
A(rows1)	**0**	

If gaps in the row of buildings constitute between 35-65% of the length of the row:		
R	0	*number of rows of houses between source and receiver
A(rows2)	**0**	

If gaps in the row of buildings constitute more than 65% of the length of the row:		
A(rows3)	**0**	

Tree Zone Shielding

Where at least 100 feet of trees intervene between source and receiver, ***and*** *if no clear line of sight exists between source and receiver,* ***and*** *if the trees extend 15 feet or more above the line of sight:*		
W	0	*width of the tree zone along the line of sight between source and receiver, in feet.
A(trees)	**0**	

Cumulative Shielding

Limited LOS	5
Axxx	0
Axxx	0
A(rows1)	0
A(rows2)	0
A(trees)	0
A(cumulative)	**5**

408 S. Spring Street Residences: GRADING

Unmitigated Construction Noise Level

Total Equipment Noise Level	79.0
Cumulative Shielding (A)	5
G	0
Distance	640
Unmitigated Construction Noise	**51.9**

Unmitigated Receptor Noise Level

Unmitigated Construction Noise	51.9
Existing Ambient Noise	69.8
Unmitigated Ambient Noise	69.9
Unmitigated Increase	**0.1**

408 S. Spring Street Residences: GRADING

Construction Noise - Mitigated

Construction Equipment Mitigation

Source	Emission Level (dBA)	Usage Factor	Mitigative Attenuation	Adjusted dBA
Excavator	80.7	0.4	3	73.7
Loader	79.1	0.4	3	72.1
		Combined dBA, Mitigated		**76.0**

Mitigated Construction Noise Level

Total Equipment Noise Level	76.0
Cumulative Shielding (A)	5
Sound Barrier Shielding	0.0
G	0.0
Distance	640
Mitigated Construction Noise	**48.9**

Mitigated Receptor Noise Level

Mitigated Construction Noise	48.9
Existing Ambient Noise	69.8
Mitigated Ambient Noise	69.8
Mitigated Increase	**0.0**

Sources

Federal Highway Administration (FHWA), *Construction Noise Handbook* , August 2006

Federal Transit Administration (FTA), *Transit Noise and Vibration Assessment* , May 2006

California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol* , September 2013

4th and Hill Project

Construction Vibration: UNMITIGATED

Receptor: Angelus Plaza Retirement Community
Equipment: Large Bulldozer, Auger Drill Rig

Source PPV (in/sec)	0.089
Reference Distance (ft)	25
Ground Factor (N)	1.5
Distance (ft)	220
Unmitigated Vibration Level (in/sec)	**0.003**

Receptor: The Million Dollar Theater Building, 307 S. Broadway Street.
Equipment: Large Bulldozer, Auger Drill Rig

Source PPV (in/sec)	0.089
Reference Distance (ft)	25
Ground Factor (N)	1.5
Distance (ft)	280
Unmitigated Vibration Level (in/sec)	**0.002**

Receptor: Subway Terminal Building, 417 S. Hill Street (Metro 417 Apartments)
Equipment: Large Bulldozer, Auger Drill Rig

Source PPV (in/sec)	0.089
Reference Distance (ft)	25
Ground Factor (N)	1.5
Distance (ft)	160
Unmitigated Vibration Level (in/sec)	**0.005**

Receptor: Continental Building (408 Spring Street Residences)
Equipment: Large Bulldozer, Auger Drill Rig

Source PPV (in/sec)	0.089
Reference Distance (ft)	25
Ground Factor (N)	1.5
Distance (ft)	640
Unmitigated Vibration Level (in/sec)	**0.001**

4th and Hill Project

Receptor: La Cita Bar, 336 Hill Street
Equipment: Large Bulldozer, Auger Drill Rig

Source PPV (in/sec)	0.089
Reference Distance (ft)	25
Ground Factor (N)	1.5
Distance (ft)	5
Unmitigated Vibration Level (in/sec)	**0.995**

Receptor: Juniperro Serra Building, 320 W. 4th Street
Equipment: Large Bulldozer, Auger Drill Rig

Source PPV (in/sec)	0.089
Reference Distance (ft)	25
Ground Factor (N)	1.5
Distance (ft)	45
Unmitigated Vibration Level (in/sec)	**0.037**

Receptor: Commercial Land Uses, S. Broadway Street
Equipment: Large Bulldozer, Auger Drill Rig

Source PPV (in/sec)	0.089
Reference Distance (ft)	25
Ground Factor (N)	1.5
Distance (ft)	9
Unmitigated Vibration Level (in/sec)	**0.412**

Receptor: Homer Laughlin Building, 317 S. Broadway Street
Equipment: Large Bulldozer, Auger Drill Rig

Source PPV (in/sec)	0.089
Reference Distance (ft)	25
Ground Factor (N)	1.5
Distance (ft)	130
Unmitigated Vibration Level (in/sec)	**0.008**

Sources

California Department of Transportation (Caltrans), *Transportation and Construction Vibration Guidance Manual*, September 2013.
Federal Transit Administration (FTA), *Transit Noise and Vibration Impact Assessment*, May 2006

DKA Planning
Noah Tanski
5 July 2017
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 4th and Hill
RUN: X7: AM Existing + Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	With Barrier Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
NB Hill N of 5th	1	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
SB Hill N of 5th	2	1	0.0	70.5	66	70.5	10	Snd Lvl	70.5	0.0	8	-8.0
SE INT of Hill and 4th	4	1	0.0	75.9	66	75.9	10	Snd Lvl	75.9	0.0	8	-8.0
SW INT of Hill and 4th	5	1	0.0	75.3	66	75.3	10	Snd Lvl	75.3	0.0	8	-8.0
EB 4th E of Hill S	6	1	0.0	72.3	66	72.3	10	Snd Lvl	72.3	0.0	8	-8.0
EB 4th E of Hill N	7	1	0.0	72.4	66	72.4	10	Snd Lvl	72.4	0.0	8	-8.0
NB Hill N of 4th	8	1	0.0	69.6	66	69.6	10	Snd Lvl	69.6	0.0	8	-8.0
SB Hill N of 4th	9	1	0.0	70.2	66	70.2	10	Snd Lvl	70.2	0.0	8	-8.0
SE INT of Hill and 3rd	10	1	0.0	74.7	66	74.7	10	Snd Lvl	74.7	0.0	8	-8.0
NE INT of Hill and 3rd	11	1	0.0	73.8	66	73.8	10	Snd Lvl	73.8	0.0	8	-8.0
EB 3rd E of Hill S	12	1	0.0	70.0	66	70.0	10	Snd Lvl	70.0	0.0	8	-8.0
EB 3rd E of Hill N	13	1	0.0	70.2	66	70.2	10	Snd Lvl	70.2	0.0	8	-8.0
NB Hill N of 3rd	14	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
SB Hill N of 3rd	15	1	0.0	71.8	66	71.8	10	Snd Lvl	71.8	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	14	0.0	0.0	0.0
All Impacted	14	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

DKA Planning 5 July 2017
Noah Tanski TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 4th and Hill
RUN: X7: AM Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	With Barrier Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
NB Hill N of 5th	1	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
SB Hill N of 5th	2	1	0.0	70.5	66	70.5	10	Snd Lvl	70.5	0.0	8	-8.0
SE INT of Hill and 4th	4	1	0.0	75.9	66	75.9	10	Snd Lvl	75.9	0.0	8	-8.0
SW INT of Hill and 4th	5	1	0.0	75.2	66	75.2	10	Snd Lvl	75.2	0.0	8	-8.0
EB 4th E of Hill S	6	1	0.0	72.3	66	72.3	10	Snd Lvl	72.3	0.0	8	-8.0
EB 4th E of Hill N	7	1	0.0	72.5	66	72.5	10	Snd Lvl	72.5	0.0	8	-8.0
NB Hill N of 4th	8	1	0.0	69.6	66	69.6	10	Snd Lvl	69.6	0.0	8	-8.0
SB Hill N of 4th	9	1	0.0	70.1	66	70.1	10	Snd Lvl	70.1	0.0	8	-8.0
SE INT of Hill and 3rd	10	1	0.0	74.7	66	74.7	10	Snd Lvl	74.7	0.0	8	-8.0
NE INT of Hill and 3rd	11	1	0.0	73.7	66	73.7	10	Snd Lvl	73.7	0.0	8	-8.0
EB 3rd E of Hill S	12	1	0.0	70.0	66	70.0	10	Snd Lvl	70.0	0.0	8	-8.0
EB 3rd E of Hill N	13	1	0.0	70.2	66	70.2	10	Snd Lvl	70.2	0.0	8	-8.0
NB Hill N of 3rd	14	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
SB Hill N of 3rd	15	1	0.0	71.7	66	71.7	10	Snd Lvl	71.7	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	14	0.0	0.0	0.0
All Impacted	14	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

DKA Planning 5 July 2017
Noah Tanski TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 4th and Hill
RUN: X7: AM Future + Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	With Barrier Type Impact	Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
NB Hill N of 5th	1	1	0.0	71.3	66	71.3	10	Snd Lvl	71.3	0.0	8	-8.0
SB Hill N of 5th	2	1	0.0	71.0	66	71.0	10	Snd Lvl	71.0	0.0	8	-8.0
SE INT of Hill and 4th	4	1	0.0	76.6	66	76.6	10	Snd Lvl	76.6	0.0	8	-8.0
SW INT of Hill and 4th	5	1	0.0	75.9	66	75.9	10	Snd Lvl	75.9	0.0	8	-8.0
EB 4th E of Hill S	6	1	0.0	73.1	66	73.1	10	Snd Lvl	73.1	0.0	8	-8.0
EB 4th E of Hill N	7	1	0.0	73.2	66	73.2	10	Snd Lvl	73.2	0.0	8	-8.0
NB Hill N of 4th	8	1	0.0	70.2	66	70.2	10	Snd Lvl	70.2	0.0	8	-8.0
SB Hill N of 4th	9	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
SE INT of Hill and 3rd	10	1	0.0	75.3	66	75.3	10	Snd Lvl	75.3	0.0	8	-8.0
NE INT of Hill and 3rd	11	1	0.0	74.4	66	74.4	10	Snd Lvl	74.4	0.0	8	-8.0
EB 3rd E of Hill S	12	1	0.0	70.5	66	70.5	10	Snd Lvl	70.5	0.0	8	-8.0
EB 3rd E of Hill N	13	1	0.0	70.7	66	70.7	10	Snd Lvl	70.7	0.0	8	-8.0
NB Hill N of 3rd	14	1	0.0	71.1	66	71.1	10	Snd Lvl	71.1	0.0	8	-8.0
SB Hill N of 3rd	15	1	0.0	72.2	66	72.2	10	Snd Lvl	72.2	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	14	0.0	0.0	0.0
All Impacted	14	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

DKA Planning
Noah Tanski
5 July 2017
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 4th and Hill
RUN: X7: AM Future
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	With Barrier Type Impact	Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
NB Hill N of 5th	1	1	0.0	71.3	66	71.3	10	Snd Lvl	71.3	0.0	8	-8.0
SB Hill N of 5th	2	1	0.0	71.0	66	71.0	10	Snd Lvl	71.0	0.0	8	-8.0
SE INT of Hill and 4th	4	1	0.0	76.6	66	76.6	10	Snd Lvl	76.6	0.0	8	-8.0
SW INT of Hill and 4th	5	1	0.0	75.9	66	75.9	10	Snd Lvl	75.9	0.0	8	-8.0
EB 4th E of Hill S	6	1	0.0	73.0	66	73.0	10	Snd Lvl	73.0	0.0	8	-8.0
EB 4th E of Hill N	7	1	0.0	73.2	66	73.2	10	Snd Lvl	73.2	0.0	8	-8.0
NB Hill N of 4th	8	1	0.0	70.2	66	70.2	10	Snd Lvl	70.2	0.0	8	-8.0
SB Hill N of 4th	9	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
SE INT of Hill and 3rd	10	1	0.0	75.2	66	75.2	10	Snd Lvl	75.2	0.0	8	-8.0
NE INT of Hill and 3rd	11	1	0.0	74.4	66	74.4	10	Snd Lvl	74.4	0.0	8	-8.0
EB 3rd E of Hill S	12	1	0.0	70.5	66	70.5	10	Snd Lvl	70.5	0.0	8	-8.0
EB 3rd E of Hill N	13	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
NB Hill N of 3rd	14	1	0.0	71.0	66	71.0	10	Snd Lvl	71.0	0.0	8	-8.0
SB Hill N of 3rd	15	1	0.0	72.1	66	72.1	10	Snd Lvl	72.1	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	14	0.0	0.0	0.0
All Impacted	14	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

DKA Planning
Noah Tanski
5 July 2017
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 4th and Hill
RUN: X7: PM Existing + Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	With Barrier Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
NB Hill N of 5th	1	1	0.0	72.6	66	72.6	10	Snd Lvl	72.6	0.0	8	-8.0
SB Hill N of 5th	2	1	0.0	71.3	66	71.3	10	Snd Lvl	71.3	0.0	8	-8.0
SE INT of Hill and 4th	4	1	0.0	77.3	66	77.3	10	Snd Lvl	77.3	0.0	8	-8.0
SW INT of Hill and 4th	5	1	0.0	76.0	66	76.0	10	Snd Lvl	76.0	0.0	8	-8.0
EB 4th E of Hill S	6	1	0.0	73.7	66	73.7	10	Snd Lvl	73.7	0.0	8	-8.0
EB 4th E of Hill N	7	1	0.0	73.8	66	73.8	10	Snd Lvl	73.8	0.0	8	-8.0
NB Hill N of 4th	8	1	0.0	70.7	66	70.7	10	Snd Lvl	70.7	0.0	8	-8.0
SB Hill N of 4th	9	1	0.0	70.8	66	70.8	10	Snd Lvl	70.8	0.0	8	-8.0
SE INT of Hill and 3rd	10	1	0.0	75.5	66	75.5	10	Snd Lvl	75.5	0.0	8	-8.0
NE INT of Hill and 3rd	11	1	0.0	74.1	66	74.1	10	Snd Lvl	74.1	0.0	8	-8.0
EB 3rd E of Hill S	12	1	0.0	69.3	66	69.3	10	Snd Lvl	69.3	0.0	8	-8.0
EB 3rd E of Hill N	13	1	0.0	69.5	66	69.5	10	Snd Lvl	69.5	0.0	8	-8.0
NB Hill N of 3rd	14	1	0.0	71.3	66	71.3	10	Snd Lvl	71.3	0.0	8	-8.0
SB Hill N of 3rd	15	1	0.0	72.1	66	72.1	10	Snd Lvl	72.1	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	14	0.0	0.0	0.0
All Impacted	14	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

DKA Planning 5 July 2017
Noah Tanski TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 4th and Hill
RUN: X7: PM Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	With Barrier Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
NB Hill N of 5th	1	1	0.0	72.5	66	72.5	10	Snd Lvl	72.5	0.0	8	-8.0
SB Hill N of 5th	2	1	0.0	71.3	66	71.3	10	Snd Lvl	71.3	0.0	8	-8.0
SE INT of Hill and 4th	4	1	0.0	77.2	66	77.2	10	Snd Lvl	77.2	0.0	8	-8.0
SW INT of Hill and 4th	5	1	0.0	75.9	66	75.9	10	Snd Lvl	75.9	0.0	8	-8.0
EB 4th E of Hill S	6	1	0.0	73.6	66	73.6	10	Snd Lvl	73.6	0.0	8	-8.0
EB 4th E of Hill N	7	1	0.0	73.7	66	73.7	10	Snd Lvl	73.7	0.0	8	-8.0
NB Hill N of 4th	8	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0
SB Hill N of 4th	9	1	0.0	70.7	66	70.7	10	Snd Lvl	70.7	0.0	8	-8.0
SE INT of Hill and 3rd	10	1	0.0	75.4	66	75.4	10	Snd Lvl	75.4	0.0	8	-8.0
NE INT of Hill and 3rd	11	1	0.0	74.0	66	74.0	10	Snd Lvl	74.0	0.0	8	-8.0
EB 3rd E of Hill S	12	1	0.0	69.2	66	69.2	10	Snd Lvl	69.2	0.0	8	-8.0
EB 3rd E of Hill N	13	1	0.0	69.5	66	69.5	10	Snd Lvl	69.5	0.0	8	-8.0
NB Hill N of 3rd	14	1	0.0	71.3	66	71.3	10	Snd Lvl	71.3	0.0	8	-8.0
SB Hill N of 3rd	15	1	0.0	72.1	66	72.1	10	Snd Lvl	72.1	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	14	0.0	0.0	0.0
All Impacted	14	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

DKA Planning 5 July 2017
Noah Tanski TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 4th and Hill
RUN: X7: PM Future + Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	With Barrier Type Impact	Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
NB Hill N of 5th	1	1	0.0	73.3	66	73.3	10	Snd Lvl	73.3	0.0	8	-8.0
SB Hill N of 5th	2	1	0.0	72.0	66	72.0	10	Snd Lvl	72.0	0.0	8	-8.0
SE INT of Hill and 4th	4	1	0.0	77.9	66	77.9	10	Snd Lvl	77.9	0.0	8	-8.0
SW INT of Hill and 4th	5	1	0.0	76.8	66	76.8	10	Snd Lvl	76.8	0.0	8	-8.0
EB 4th E of Hill S	6	1	0.0	74.3	66	74.3	10	Snd Lvl	74.3	0.0	8	-8.0
EB 4th E of Hill N	7	1	0.0	74.4	66	74.4	10	Snd Lvl	74.4	0.0	8	-8.0
NB Hill N of 4th	8	1	0.0	71.5	66	71.5	10	Snd Lvl	71.5	0.0	8	-8.0
SB Hill N of 4th	9	1	0.0	71.5	66	71.5	10	Snd Lvl	71.5	0.0	8	-8.0
SE INT of Hill and 3rd	10	1	0.0	76.0	66	76.0	10	Snd Lvl	76.0	0.0	8	-8.0
NE INT of Hill and 3rd	11	1	0.0	74.8	66	74.8	10	Snd Lvl	74.8	0.0	8	-8.0
EB 3rd E of Hill S	12	1	0.0	69.9	66	69.9	10	Snd Lvl	69.9	0.0	8	-8.0
EB 3rd E of Hill N	13	1	0.0	70.1	66	70.1	10	Snd Lvl	70.1	0.0	8	-8.0
NB Hill N of 3rd	14	1	0.0	71.9	66	71.9	10	Snd Lvl	71.9	0.0	8	-8.0
SB Hill N of 3rd	15	1	0.0	72.7	66	72.7	10	Snd Lvl	72.7	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	14	0.0	0.0	0.0
All Impacted	14	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

DKA Planning 5 July 2017
Noah Tanski TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 4th and Hill
RUN: X7: PM Future
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
NB Hill N of 5th	1	1	0.0	73.2	66	73.2	10	Snd Lvl	73.2	0.0	8	-8.0
SB Hill N of 5th	2	1	0.0	72.0	66	72.0	10	Snd Lvl	72.0	0.0	8	-8.0
SE INT of Hill and 4th	4	1	0.0	77.8	66	77.8	10	Snd Lvl	77.8	0.0	8	-8.0
SW INT of Hill and 4th	5	1	0.0	76.7	66	76.7	10	Snd Lvl	76.7	0.0	8	-8.0
EB 4th E of Hill S	6	1	0.0	74.2	66	74.2	10	Snd Lvl	74.2	0.0	8	-8.0
EB 4th E of Hill N	7	1	0.0	74.3	66	74.3	10	Snd Lvl	74.3	0.0	8	-8.0
NB Hill N of 4th	8	1	0.0	71.4	66	71.4	10	Snd Lvl	71.4	0.0	8	-8.0
SB Hill N of 4th	9	1	0.0	71.4	66	71.4	10	Snd Lvl	71.4	0.0	8	-8.0
SE INT of Hill and 3rd	10	1	0.0	76.0	66	76.0	10	Snd Lvl	76.0	0.0	8	-8.0
NE INT of Hill and 3rd	11	1	0.0	74.7	66	74.7	10	Snd Lvl	74.7	0.0	8	-8.0
EB 3rd E of Hill S	12	1	0.0	69.9	66	69.9	10	Snd Lvl	69.9	0.0	8	-8.0
EB 3rd E of Hill N	13	1	0.0	70.1	66	70.1	10	Snd Lvl	70.1	0.0	8	-8.0
NB Hill N of 3rd	14	1	0.0	71.8	66	71.8	10	Snd Lvl	71.8	0.0	8	-8.0
SB Hill N of 3rd	15	1	0.0	72.6	66	72.6	10	Snd Lvl	72.6	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	14	0.0	0.0	0.0
All Impacted	14	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0