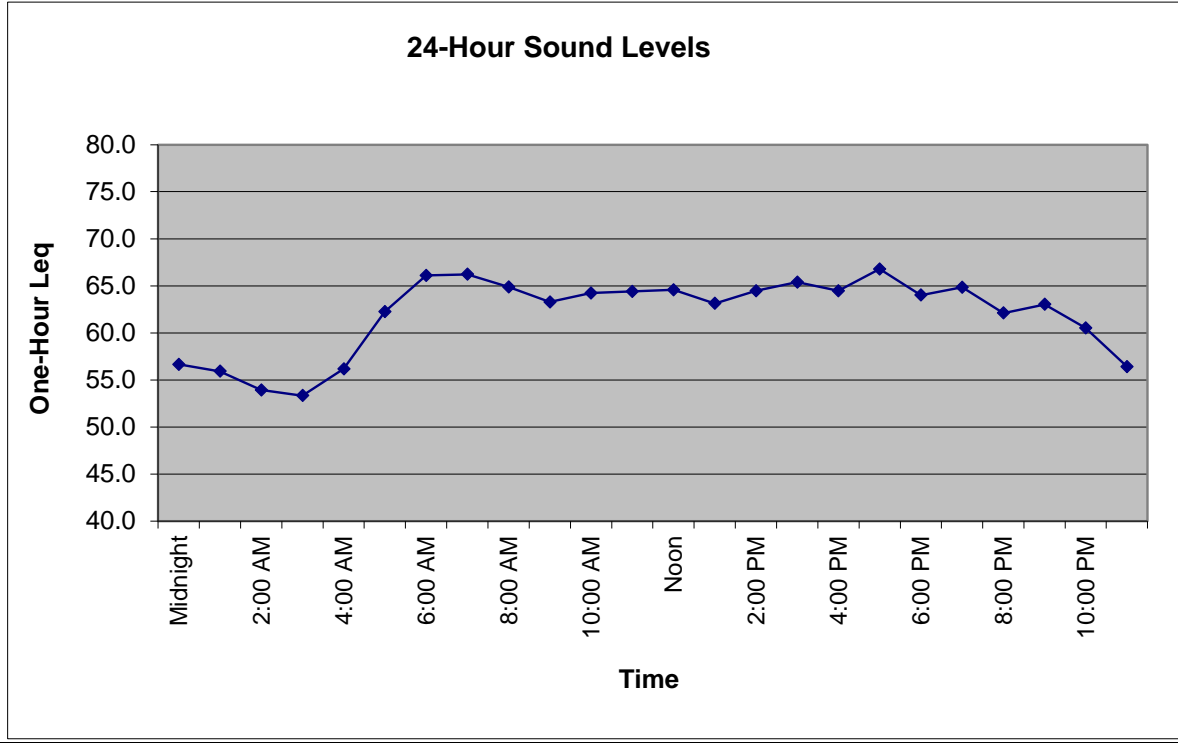


Appendix 3.7
Noise Measurements and Data

Noise Appendix
Long Term Measurement Data

Ldn/CNEL Calculation Spreadsheet

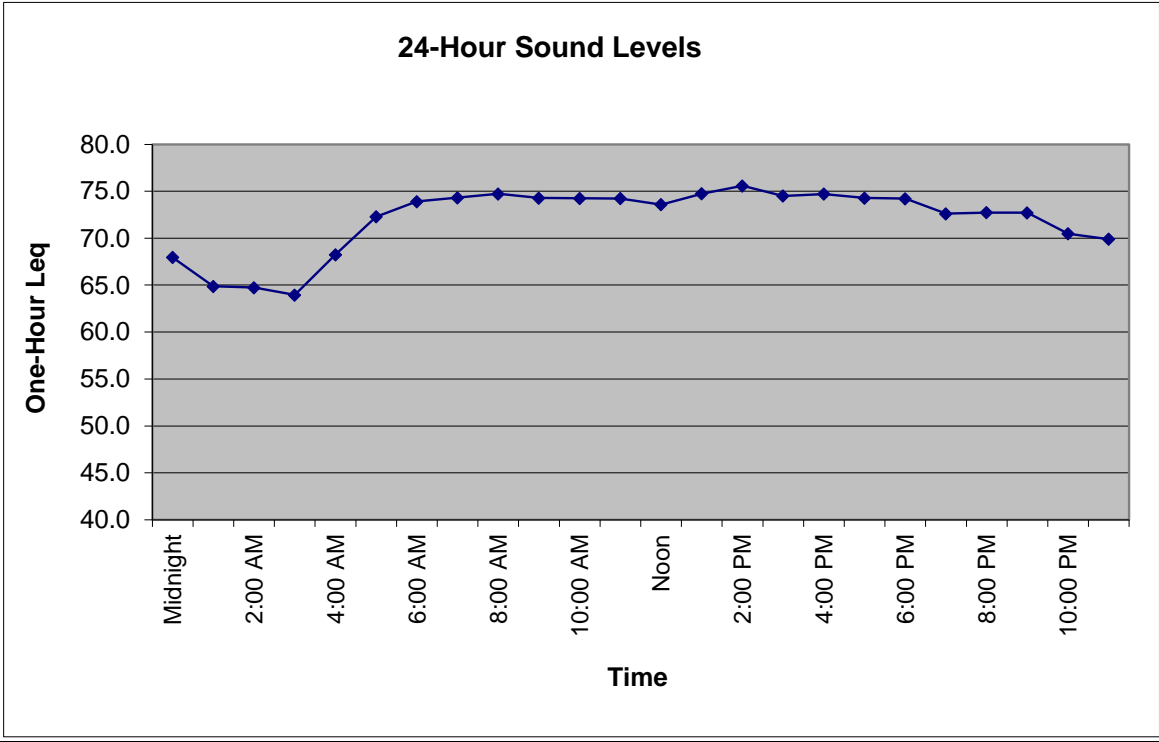
Project:	CitMenlo: Facebook Willow Village		Date:	7/27/2021	Analyst:	Schumaker, N		
Location:	LT-1							
	Tuesday				Worst Hour	Ldn minus	CNEL minus	
Time	7/27/2021	Leq(24)	Ldn	CNEL	Leq	Worst Hour Leq	Ldn	Day
Midnight	56.7	63.3	67.4	67.9	66.8	0.7	0.4	Evening
1:00 AM	55.9		1.2	1.7				Night
2:00 AM	53.9							
3:00 AM	53.3							
4:00 AM	56.2							
5:00 AM	62.3							
6:00 AM	66.1							
7:00 AM	66.2							
8:00 AM	64.9							
9:00 AM	63.3							
10:00 AM	64.2							
11:00 AM	64.4							
Noon	64.6							
1:00 PM	63.1							
2:00 PM	64.5							
3:00 PM	65.4							
4:00 PM	64.5							
5:00 PM	66.8							
6:00 PM	64.0							
7:00 PM	64.8							
8:00 PM	62.1							
9:00 PM	63.0							
10:00 PM	60.5							
11:00 PM	56.4							



Ldn	67.4
Worst Hour Leq	66.8
Lowest Hour LEQ	53.3
12-hour Leq	64.8

Ldn/CNEL Calculation Spreadsheet

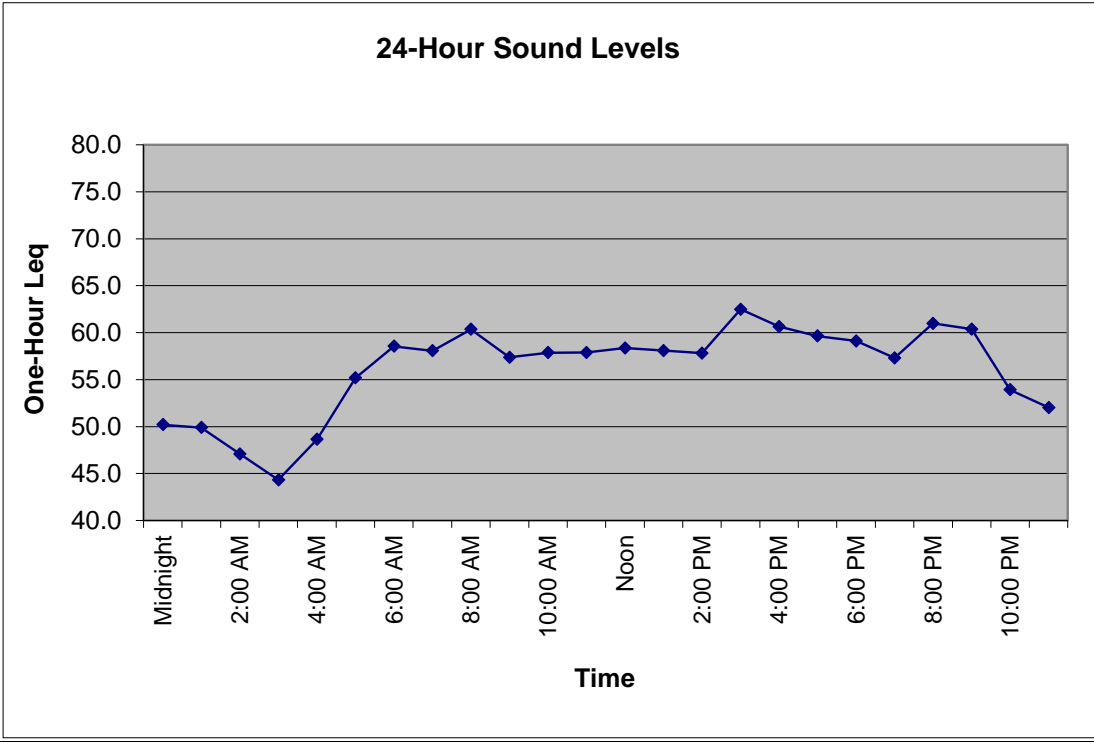
Project:	CitMenlo: Facebook Willow Village	Date:	7/27/2021	Analyst:	Schumaker, N			
Location:	LT-2							
	Tuesday							
Time	7/27/2021	Leq(24)	Ldn	CNEL	Worst Hour Leq	Ldn minus Worst Hour Leq	CNEL minus Ldn	Day
Midnight	68.0	73.0	77.1	77.5	75.6	1.5	0.4	Evening
1:00 AM	64.9		2.8	3.2				Night
2:00 AM	64.7							
3:00 AM	64.0							
4:00 AM	68.2							
5:00 AM	72.3							
6:00 AM	73.9							
7:00 AM	74.3							
8:00 AM	74.7							
9:00 AM	74.3							
10:00 AM	74.2							
11:00 AM	74.2							
Noon	73.6							
1:00 PM	74.7							
2:00 PM	75.6							
3:00 PM	74.5							
4:00 PM	74.7							
5:00 PM	74.3							
6:00 PM	74.2							
7:00 PM	72.6							
8:00 PM	72.7							
9:00 PM	72.7							
10:00 PM	70.5							
11:00 PM	69.9							



Ldn	77.1
Worst Hour Leq	75.6
Lowest Hour LEQ	64.0
12-hour Leq	74.5

Ldn/CNEL Calculation Spreadsheet

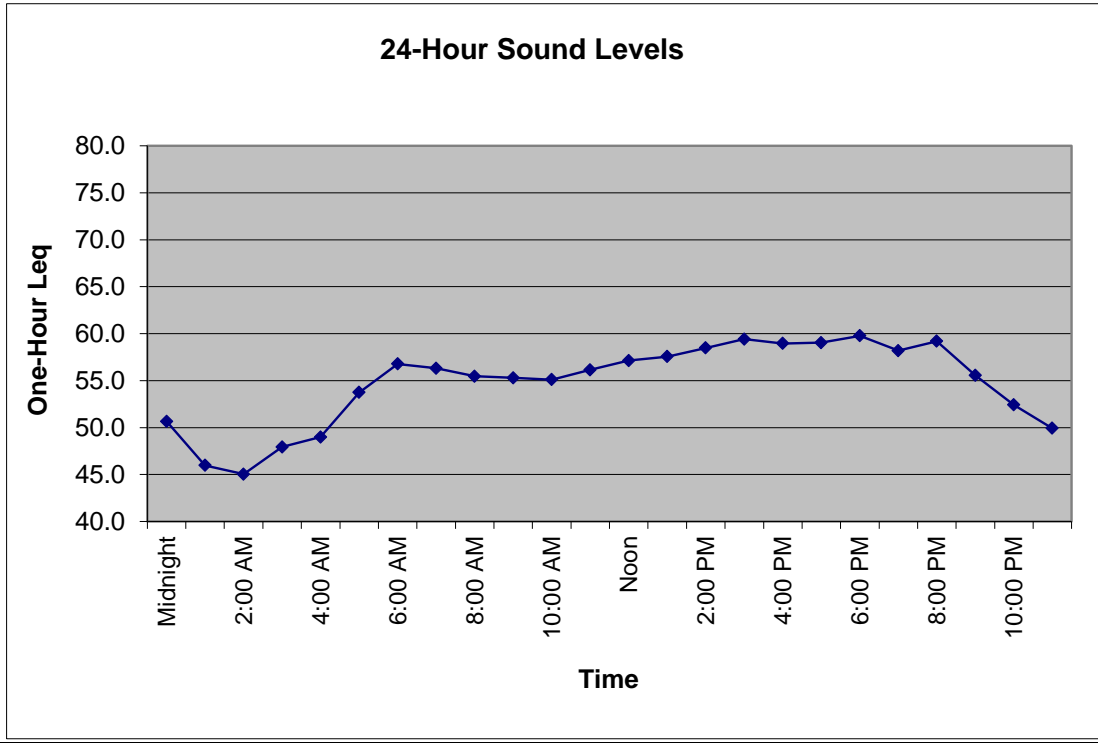
Project:	CitMenlo: Facebook Willow Village		Date:	7/27/2021	Analyst:	Schumaker, N		
Location:	LT-3							
	Tuesday				Worst Hour	Ldn minus	CNEL minus	
Time	7/27/2021	Leq(24)	Ldn	CNEL	Leq	Worst Hour Leq	Ldn	Day
Midnight	50.2	57.9	61.1	61.9	62.5	-1.4	0.8	Evening
1:00 AM	49.9		3.0	3.8				Night
2:00 AM	47.1							
3:00 AM	44.3							
4:00 AM	48.6							
5:00 AM	55.2							
6:00 AM	58.5							
7:00 AM	58.1							
8:00 AM	60.4							
9:00 AM	57.4							
10:00 AM	57.9							
11:00 AM	57.9							
Noon	58.4							
1:00 PM	58.1							
2:00 PM	57.8							
3:00 PM	62.5							
4:00 PM	60.6							
5:00 PM	59.6							
6:00 PM	59.1							
7:00 PM	57.3							
8:00 PM	61.0							
9:00 PM	60.4							
10:00 PM	53.9							
11:00 PM	52.0							



Ldn	61.1
Worst Hour Leq	62.5
Lowest Hour LEQ	44.3
12-hour Leq	59.3

Ldn/CNEL Calculation Spreadsheet

Project:	CitMenlo: Facebook Willow Village		Date:	7/27/2021	Analyst:	Schumaker, N		
Location:	LT-4							
	Tuesday				Worst Hour	Ldn minus	CNEL minus	
Time	7/27/2021	Leq(24)	Ldn	CNEL	Leq	Worst Hour Leq	Ldn	Day
Midnight	50.7	56.3	59.6	60.4	59.8	-0.2	0.7	Evening
1:00 AM	46.0		3.3	4.0				Night
2:00 AM	45.0							
3:00 AM	47.9							
4:00 AM	49.0							
5:00 AM	53.8							
6:00 AM	56.8							
7:00 AM	56.3							
8:00 AM	55.5							
9:00 AM	55.3							
10:00 AM	55.1							
11:00 AM	56.2							
Noon	57.1							
1:00 PM	57.6							
2:00 PM	58.5							
3:00 PM	59.4							
4:00 PM	59.0							
5:00 PM	59.0							
6:00 PM	59.8							
7:00 PM	58.2							
8:00 PM	59.2							
9:00 PM	55.6							
10:00 PM	52.4							
11:00 PM	49.9							



Ldn	59.6
Worst Hour Leq	59.8
Lowest Hour LEQ	45.0
12-hour Leq	57.7

Noise Appendix
Short Term Measurement Data

ST-1 Summary

Summary	
File Name on Meter	LxT_Data.012.s
File Name on PC	LxT_0004004-20210727 133200-LxT_Data.012.ldbin
Serial Number	0004004
Model	SoundTrack LxT*
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement	
Description	
Start	2021-07-27 13:32:00
Stop	2021-07-27 13:47:01
Duration	00:15:00.7
Run Time	00:15:00.7
Pause	00:00:00.0
Pre-Calibration	2021-07-27 13:12:05
Post-Calibration	None
Calibration Deviation	---

Overall Settings			
RMS Weight	A Weighting		
Peak Weight	Z Weighting		
Detector	Slow		
Preamplifier	PRMLxTIL		
Microphone Correction	Off		
Integration Method	Linear		
Overload	123.3 dB		
	A	C	Z
Under Range Peak	79.9	76.9	81.9 dB
Under Range Limit	24.5	25.8	32.1 dB
Noise Floor	15.4	16.7	23.0 dB

Results		
LAeq	65.2	
LAE	94.7	
EA	327.872 $\mu\text{Pa}^2\text{h}$	
EAB	10.484 mPa^2h	
EA40	52.419 mPa^2h	
LZpeak (max)	2021-07-27 13:35:08	103.6 dB
LASmax	2021-07-27 13:44:12	78.9 dB
LASmin	2021-07-27 13:46:25	54.3 dB
SEA	-99.9 dB	
LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s
LZpeak > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s
LZpeak > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s
LZpeak > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s

Community Noise	Ldn	LDay 07:00-22:00	LNight 22:00-07:00	Lden	LDay 07:00-19:00	LEvening 19:00-22:00
	65.2	65.2	-99.9	65.2	65.2	-99.9
LCeq	73.0 dB					
LAeq	65.2 dB					
LCeq - LAeq	7.9 dB					
LAeq	67.1 dB					
LAeq	65.2 dB					
LAeq - LAeq	2.0 dB					
Leq	65.2			73.0		
LS(max)	78.9	2021/07/27 13:44:12				
LS(min)	54.3	2021/07/27 13:46:25				
LPeak(max)					103.6	2021/07/27 13:35:08
Overload Count	0					
Overload Duration	0.0 s					

Dose Settings	
Dose Name	OSHA-1
Exchange Rate	5
Threshold	90
Criterion Level	90
	OSHA-2
	5 dB
	80 dB
	90 dB

Criterion Duration

8

8 h

Results

Dose	-99.94	-99.94 %
Projected Dose	-99.94	-99.94 %
TWA (Projected)	-99.9	-99.9 dB
TWA (t)	-99.9	-99.9 dB
Lep (t)	50.1	50.1 dB

Statistics

LA5.00	69.6 dB
LA10.00	67.7 dB
LA33.30	65.2 dB
LA50.00	63.8 dB
LA66.60	62.5 dB
LA90.00	58.4 dB

Calibration History

Preamp	Date	dB re. 1V/Pa	6.3	8.0	10.0
PRMLXT1L	2021-07-27 13:12:05	-29.61	43.30	47.93	50.24

ST-2 Summary

Summary	
File Name on Meter	LxT_Data.016.s
File Name on PC	LxT_0004004-20210728 121400-LxT_Data.016.ldbin
Serial Number	0004004
Model	SoundTrack LxT®
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement	
Description	
Start	2021-07-28 12:14:00
Stop	2021-07-28 12:29:01
Duration	00:15:00.6
Run Time	00:15:00.6
Pause	00:00:00.0
Pre-Calibration	2021-07-28 12:11:25
Post-Calibration	None
Calibration Deviation	---

Overall Settings			
RMS Weight	A Weighting		
Peak Weight	Z Weighting		
Detector	Slow		
Preamplifier	PRMLxT1L		
Microphone Correction	Off		
Integration Method	Linear		
Overload	123.4 dB		
	A	C	Z
Under Range Peak	79.9	76.9	81.9 dB
Under Range Limit	24.5	25.8	32.2 dB
Noise Floor	15.4	16.7	23.0 dB

Results			
L _{Aeq}	67.3		
L _{AE}	96.9		
E _A	542.504 μPa ² h		
E _{A8}	17.349 mPa ² h		
E _{A40}	86.743 mPa ² h		
L _{Zpeak} (max)	2021-07-28 12:15:29	105.5 dB	
L _{ASmax}	2021-07-28 12:19:06	79.1 dB	
L _{ASmin}	2021-07-28 12:18:06	47.5 dB	
SEA	-99.9 dB		
L _{AS} > 85.0 dB (Exceedance Counts / Duration)	0	0.0 s	
L _{AS} > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s	
L _{Zpeak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s	
L _{Zpeak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s	
L _{Zpeak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s	

Community Noise	L _{dn}	L _{Day 07:00-22:00}	L _{Night 22:00-07:00}	L _{den}	L _{Day 07:00-19:00}	L _{Evening 19:00-22:00}
	67.3	67.3	-99.9	67.3	67.3	-99.9

L _{Ceq}	74.1 dB
L _{Aeq}	67.3 dB
L _{Ceq} - L _{Aeq}	6.8 dB
L _{Aeq}	69.0 dB
L _{Aeq}	67.3 dB
L _{Aeq} - L _{Aeq}	1.7 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
L _{eq}	67.3		74.1			
L _{S(max)}	79.1	2021/07/28 12:19:06				
L _{S(min)}	47.5	2021/07/28 12:18:06				
L _{Peak(max)}					105.5	2021/07/28 12:15:29

Overload Count	0
Overload Duration	0.0 s

Dose Settings		
Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	5 dB
Threshold	90	80 dB
Criterion Level	90	90 dB

Criterion Duration

8

8 h

Results

Dose	-99.94	-99.94 %
Projected Dose	-99.94	-99.94 %
TWA (Projected)	-99.9	-99.9 dB
TWA (t)	-99.9	-99.9 dB
Lep (t)	52.3	52.3 dB

Statistics

LA5.00	72.8 dB
LA10.00	71.4 dB
LA33.30	67.6 dB
LA50.00	63.9 dB
LA66.60	58.7 dB
LA90.00	53.3 dB

Calibration History

Preamp	Date	dB re. 1V/Pa	6.3	8.0	10.0
PRMLXT1L	2021-07-28 12:11:25	-29.64	56.50	56.62	47.66

ST-3 Summary

Summary	
File Name on Meter	LxT_Data.014.s
File Name on PC	LxT_0004004-20210727 144500-LxT_Data.014.ldbin
Serial Number	0004004
Model	SoundTrack LxT®
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement	
Description	
Start	2021-07-27 14:45:00
Stop	2021-07-27 15:00:02
Duration	00:15:01.8
Run Time	00:15:01.8
Pause	00:00:00.0
Pre-Calibration	2021-07-27 14:32:09
Post-Calibration	None
Calibration Deviation	---

Overall Settings			
RMS Weight	A Weighting		
Peak Weight	Z Weighting		
Detector	Slow		
Preamplifier	PRMLxT1L		
Microphone Correction	Off		
Integration Method	Linear		
Overload	123.4 dB		
	A	C	Z
Under Range Peak	79.9	76.9	81.9 dB
Under Range Limit	24.5	25.8	32.2 dB
Noise Floor	15.4	16.7	23.0 dB

Results			
L _{Aeq}	55.8		
L _{AE}	85.4		
E _A	38.385 µPa²h		
E _{A8}	1.226 mPa²h		
E _{A40}	6.129 mPa²h		
L _{Zpeak} (max)	2021-07-27 14:52:05	98.9 dB	
L _{ASmax}	2021-07-27 14:55:32	74.3 dB	
L _{ASmin}	2021-07-27 14:46:34	48.2 dB	
SEA	-99.9 dB		
L _{AS} > 85.0 dB (Exceedance Counts / Duration)	0	0.0 s	
L _{AS} > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s	
L _{Zpeak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s	
L _{Zpeak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s	
L _{Zpeak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s	

Community Noise	L _{dn}	L _{Day 07:00-22:00}	L _{Night 22:00-07:00}	L _{den}	L _{Day 07:00-19:00}	L _{Evening 19:00-22:00}
	55.8	55.8	-99.9	55.8	55.8	-99.9
L _{Ceq}	64.6 dB					
L _{Aeq}	55.8 dB					
L _{Ceq} - L _{Aeq}	8.8 dB					
L _{Aeq}	60.6 dB					
L _{Aeq}	55.8 dB					
L _{Aeq} - L _{Aeq}	4.8 dB					

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	55.8		64.6			
LS(max)	74.3	2021/07/27 14:55:32				
LS(min)	48.2	2021/07/27 14:46:34				
L _{Peak} (max)					98.9	2021/07/27 14:52:05

Overload Count	0
Overload Duration	0.0 s

Dose Settings		
Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	5 dB
Threshold	90	80 dB
Criterion Level	90	90 dB

Criterion Duration

8

8 h

Results

Dose	-99.94	-99.94 %
Projected Dose	-99.94	-99.94 %
TWA (Projected)	-99.9	-99.9 dB
TWA (t)	-99.9	-99.9 dB
Lep (t)	40.8	40.8 dB

Statistics

LA5.00	58.6 dB
LA10.00	55.1 dB
LA33.30	52.6 dB
LA50.00	52.1 dB
LA66.60	51.5 dB
LA90.00	50.3 dB

Calibration History

Preamp	Date	dB re. 1V/Pa	6.3	8.0	10.0
PRMLXT1L	2021-07-27 14:32:07	-29.64	58.44	59.58	52.38

ST-4 Summary

Summary	
File Name on Meter	LxT_Data.013.s
File Name on PC	LxT_0004004-20210727 140800-LxT_Data.013.ldbin
Serial Number	0004004
Model	SoundTrack LxT®
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement	
Description	
Start	2021-07-27 14:08:00
Stop	2021-07-27 14:23:01
Duration	00:15:00.5
Run Time	00:15:00.5
Pause	00:00:00.0
Pre-Calibration	2021-07-27 14:04:38
Post-Calibration	None
Calibration Deviation	---

Overall Settings			
RMS Weight	A Weighting		
Peak Weight	Z Weighting		
Detector	Slow		
Preamplifier	PRMLxT1L		
Microphone Correction	Off		
Integration Method	Linear		
Overload	123.4 dB		
	A	C	Z
Under Range Peak	80.0	77.0	82.0 dB
Under Range Limit	24.5	25.8	32.2 dB
Noise Floor	15.4	16.7	23.1 dB

Results			
L _{Aeq}	55.9		
L _{AE}	85.5		
E _A	39.245 µPa ² h		
E _{A8}	1.255 mPa ² h		
E _{A40}	6.276 mPa ² h		
L _{Zpeak} (max)	2021-07-27 14:20:59	102.6 dB	
L _{ASmax}	2021-07-27 14:15:16	71.5 dB	
L _{ASmin}	2021-07-27 14:19:59	49.4 dB	
SEA	-99.9 dB		
L _{AS} > 85.0 dB (Exceedance Counts / Duration)	0	0.0 s	
L _{AS} > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s	
L _{Zpeak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s	
L _{Zpeak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s	
L _{Zpeak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s	

Community Noise	L _{dn}	L _{Day 07:00-22:00}	L _{Night 22:00-07:00}	L _{den}	L _{Day 07:00-19:00}	L _{Evening 19:00-22:00}
	55.9	55.9	-99.9	55.9	55.9	-99.9
L _{Ceq}	68.3 dB					
L _{Aeq}	55.9 dB					
L _{Ceq} - L _{Aeq}	12.4 dB					
L _{Aeq}	57.7 dB					
L _{Aeq}	55.9 dB					
L _{Aeq} - L _{Aeq}	1.8 dB					
	A	C	Z			
	dB	dB	dB			
Leq	55.9	68.3				
LS(max)	71.5	2021/07/27 14:15:16				
LS(min)	49.4	2021/07/27 14:19:59				
L _{Peak} (max)				102.6	2021/07/27 14:20:59	
Overload Count	0					
Overload Duration	0.0 s					

Dose Settings		
Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	5 dB
Threshold	90	80 dB
Criterion Level	90	90 dB

Criterion Duration

8

8 h

Results

Dose	-99.94	-99.94 %
Projected Dose	-99.94	-99.94 %
TWA (Projected)	-99.9	-99.9 dB
TWA (t)	-99.9	-99.9 dB
Lep (t)	40.9	40.9 dB

Statistics

LA5.00	60.3 dB
LA10.00	57.7 dB
LA33.30	54.6 dB
LA50.00	53.4 dB
LA66.60	52.3 dB
LA90.00	50.8 dB

Calibration History

Preamp	Date	dB re. 1V/Pa	6.3	8.0	10.0
PRMLXT1L	2021-07-27 14:04:38	-29.68	77.57	67.41	50.35

ST-5 Summary

Summary	
File Name on Meter	LxT_Data.015.s
File Name on PC	LxT_0004004-20210728 114400-LxT_Data.015.ldbin
Serial Number	0004004
Model	SoundTrack LxT*
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement	
Description	
Start	2021-07-28 11:44:00
Stop	2021-07-28 11:59:01
Duration	00:15:00.6
Run Time	00:15:00.6
Pause	00:00:00.0
Pre-Calibration	2021-07-28 11:38:14
Post-Calibration	None
Calibration Deviation	---

Overall Settings			
RMS Weight	A Weighting		
Peak Weight	Z Weighting		
Detector	Slow		
Preamplifier	PRMLxT1L		
Microphone Correction	Off		
Integration Method	Linear		
Overload	123.4 dB		
	A	C	Z
Under Range Peak	80.0	77.0	82.0 dB
Under Range Limit	24.5	25.8	32.2 dB
Noise Floor	15.4	16.7	23.1 dB

Results			
L _{Aeq}	59.5		
L _{AE}	89.1		
E _A	90.127 μPa ² h		
E _{A8}	2.882 mPa ² h		
E _{A40}	14.411 mPa ² h		
L _{Zpeak} (max)	2021-07-28 11:57:22	98.8 dB	
L _{ASmax}	2021-07-28 11:54:26	72.0 dB	
L _{ASmin}	2021-07-28 11:52:28	45.4 dB	
SEA	-99.9 dB		
L _{AS} > 85.0 dB (Exceedance Counts / Duration)	0	0.0 s	
L _{AS} > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s	
L _{Zpeak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s	
L _{Zpeak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s	
L _{Zpeak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s	

Community Noise	L _{dn}	L _{Day} 07:00-22:00	L _{Night} 22:00-07:00	L _{den}	L _{Day} 07:00-19:00	L _{Evening} 19:00-22:00
	59.5	59.5	-99.9	59.5	59.5	-99.9
L _{Ceq}	71.7 dB					
L _{Aeq}	59.5 dB					
L _{Ceq} - L _{Aeq}	12.1 dB					
L _{Aeq}	60.7 dB					
L _{Aeq}	59.5 dB					
L _{Aeq} - L _{Aeq}	1.2 dB					
	A	C	Z			
	dB	dB	dB			
	Time Stamp	Time Stamp	Time Stamp			
L _{eq}	59.5	71.7				
L _S (max)	72.0	2021/07/28 11:54:26				
L _S (min)	45.4	2021/07/28 11:52:28				
L _{Peak} (max)				98.8	2021/07/28 11:57:22	
Overload Count	0					
Overload Duration	0.0 s					

Dose Settings		
Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	5 dB
Threshold	90	80 dB
Criterion Level	90	90 dB

Criterion Duration

8

8 h

Results

Dose	-99.94	-99.94 %
Projected Dose	-99.94	-99.94 %
TWA (Projected)	-99.9	-99.9 dB
TWA (t)	-99.9	-99.9 dB
Lep (t)	44.5	44.5 dB

Statistics

LA5.00	63.6 dB
LA10.00	62.6 dB
LA33.30	59.8 dB
LA50.00	57.9 dB
LA66.60	55.8 dB
LA90.00	52.7 dB

Calibration History

Preamp	Date	dB re. 1V/Pa	6.3	8.0	10.0
PRMLX11L	2021-07-28 11:38:14	-29.71	55.17	49.54	53.22

Noise Appendix

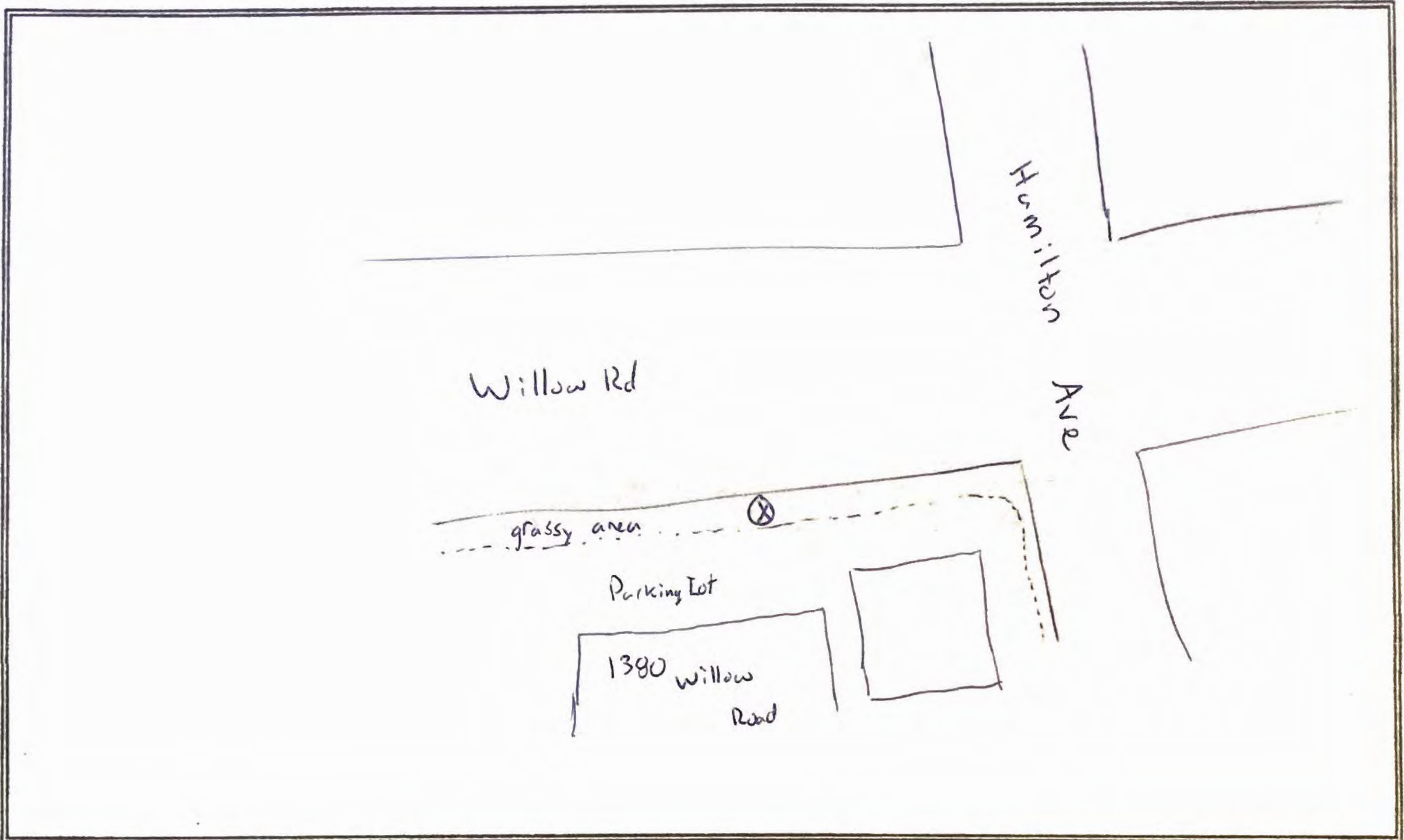
Field Sheets

NOISE MEASUREMENT SITE INFORMATION SHEET

PROJECT NAME: Mentor Park Projects
SITE NUMBER: ST-1
LOCATION/ADDRESS: 1380 Willow Road

PROJECT #: _____
DATE/TIME: 2021 07 27
ENGINEERS: Matsu / Schumaker

SITE SKETCH: Show microphone location, nearby residences/buildings, potential reflective surfaces, project roadways, local roadways, driveways, ground type, trees. Indicate reference distances between objects, arrows showing wind direction, North, and camera locations/directions. Describe the line-of-sight and topography/elevation changes relative to noise sources.



WEATHER DATA: (temperature, wind speed/direction, sky conditions, relative humidity)

78°F 2.6 mph Blue Skies mostly clear 57%

EQUIPMENT DATA: (sound level meter, microphone, preamp, calibrator, factory cal. date)

LXT

ESTIMATED CONSTRUCTION DATE OF RESIDENCES: (Pre-1978, or new construction)

POSTED SPEED: _____ COMMENTS: _____

TRAFFIC COUNTS:

Roadway/Direction	Autos	Medium	Heavy	Speed	Start Time	Duration

NOISE MEASUREMENT LOG SHEET (20)


Jones & Stokes

PROJECT NAME: Mentlo Park Projects
 SITE NUMBER: ST-1
 LOCATION/ADDRESS: 1380 Willow Rd

PROJECT #: _____
 DATE/TIME: 2021 07 27 13:32
 ENGINEERS: Matsui / Schunaber

#	Minute Starting	Measured Leq (dBA)	O or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources/Comments (include SLM equipment, Calibration Data)
1	13:32						
2	13:33						helicopter fly by.
3	13:34						drilling noises from across Willow Rd
4	13:35						
5	13:36						
6	13:37						office door shuts heavily
7	13:38						
8	13:39						small plane fly by
9	13:40						
10	13:41						group talking as walking by
11	13:42						
12	13:43						small plane fly by
13	13:44						
14	13:45						
15	13:46						
16							
17							decent amount of traffic throughout LXT-Data-012
18							
19							
20							

Leq 65.2
 Lmax 78.4
 Lmin 54.3
 L10 67.7
 L33 65.2
 L50 63.8
 L90 58.4

Overall Leq (Include "O" minutes, Exclude "X" minutes) = dBA
 Subset Leq (Exclude "O" and "X" minutes) = dBA

"O" = other characteristic sources that contributed to the Leq
 "X" = exclude from Leq calculation; a non-typical source contaminated the measurement

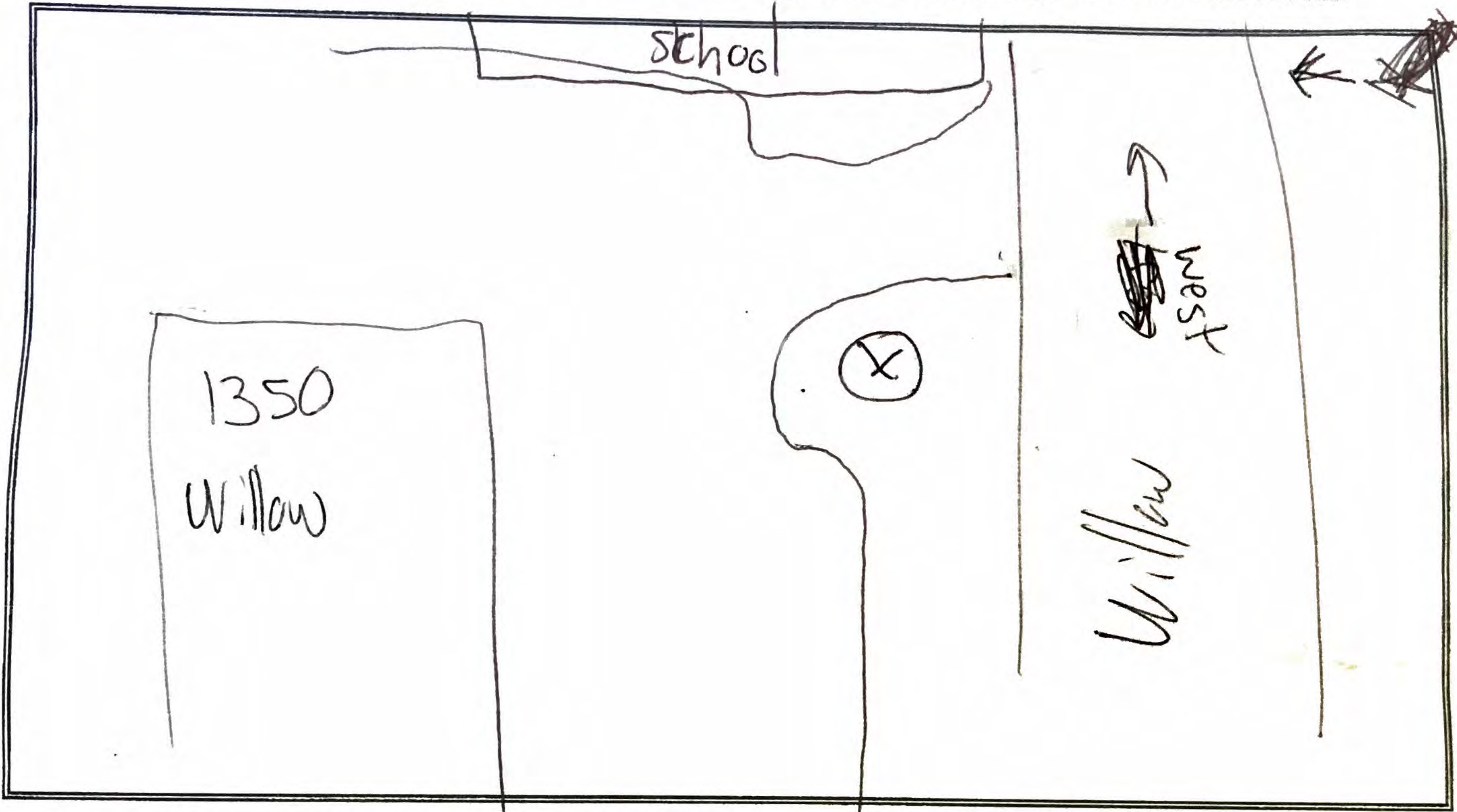
NOISE MEASUREMENT SITE INFORMATION SHEET

Jones & Stokes

PROJECT NAME: Menlo Park
 SITE NUMBER: ST-2
 LOCATION/ADDRESS: 1350 Willow, SW corner

PROJECT #: _____
 DATE/TIME: 7/20/21
 ENGINEERS: C. Matsui

SITE SKETCH: Show microphone location, nearby residences/buildings, potential reflective surfaces, project roadways, local roadways, driveways, ground type, trees. Indicate reference distances between objects, arrows showing wind direction, North, and camera locations/directions. Describe the line-of-sight and topography/elevation changes relative to noise sources.



WEATHER DATA: (temperature, wind speed/direction, sky conditions, relative humidity)

75° F, 1.9 mph, mostly sunny, 67-68%

EQUIPMENT DATA: (sound level meter, microphone, preamp, calibrator, factory cal. date)

LxT

ESTIMATED CONSTRUCTION DATE OF RESIDENCES: (Pre-1978, or new construction)

POSTED SPEED: 40 mph COMMENTS: _____

TRAFFIC COUNTS: (Willow Rd)

Roadway/Direction	Autos	Medium	Heavy	Speed	Start Time	Duration

NOISE MEASUREMENT LOG SHEET (20)


 Jones & Stokes

PROJECT NAME: Menlo Park
 SITE NUMBER: ST-2
 LOCATION/ADDRESS: 1350 Willow, SW corner

PROJECT #: _____
 DATE/TIME: 7/28/21
 ENGINEERS: C. Matsui

#	Minute Starting	Measured Leq (dBA)	O or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources/Comments (include SLM equipment, Calibration Data)
1	12 14						
2	12 15						
3	12 16						vehicle reverse alarm
4	12 17						↓
5	12 18						
6	12 19						
7	12 20						car start nearby
8	12 21						
9	12 22						
10	12 23						car passby in lot
11	12 24						
12	12 25						
13	12 26						
14	12 27						vehicle reverse alarm
15	12 28						car passby in lot
16							L ₉₅ -Data, 016
17							L ₁₀ 71.4
18							L ₃₃ 67.6
19							L ₅₀ 63.9
20							L ₉₀ 53.3

Overall Leq (Include "O" minutes, Exclude "X" minutes) = dBA
 Subset Leq (Exclude "O" and "X" minutes) = dBA

"O" = other characteristic sources that contributed to the Leq
 "X" = exclude from Leq calculation; a non-typical source contaminated the measurement

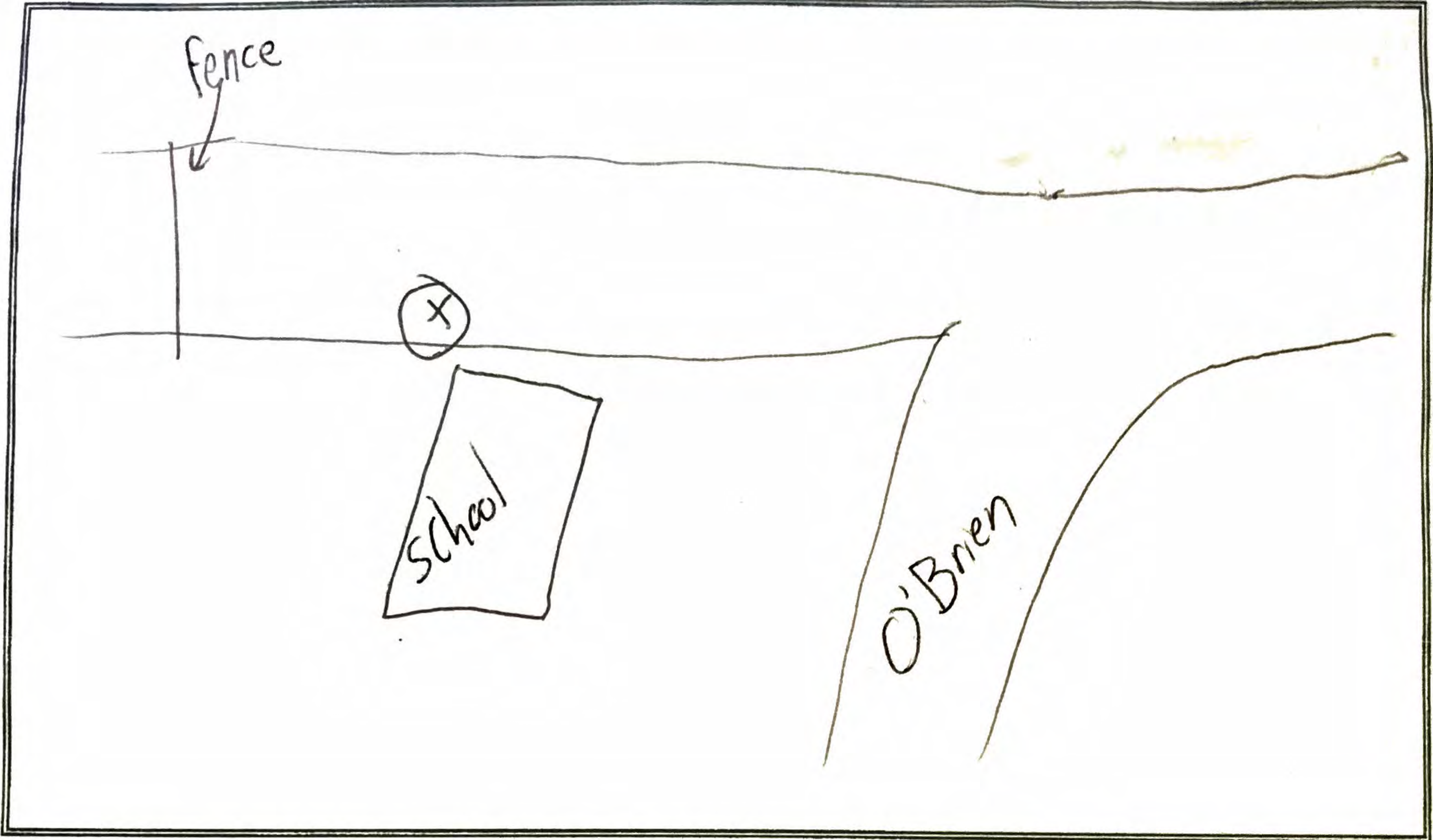
NOISE MEASUREMENT SITE INFORMATION SHEET

Jones & Stokes

PROJECT NAME: Menlo Park
 SITE NUMBER: ST-3
 LOCATION/ADDRESS: Near school

PROJECT #: _____
 DATE/TIME: 7/27/21
 ENGINEERS: C. Matsui

SITE SKETCH: Show microphone location, nearby residences/buildings, potential reflective surfaces, project roadways, local roadways, driveways, ground type, trees. Indicate reference distances between objects, arrows showing wind direction, North, and camera locations/directions. Describe the line-of-sight and topography/elevation changes relative to noise sources.



WEATHER DATA: (temperature, wind speed/direction, sky conditions, relative humidity)

79°F, 1.3 mph, Mostly clear, 55%

EQUIPMENT DATA: (sound level meter, microphone, preamp, calibrator, factory cal. date)

LxT

ESTIMATED CONSTRUCTION DATE OF RESIDENCES: (Pre-1978, or new construction) _____

POSTED SPEED: 30 mph COMMENTS: _____

TRAFFIC COUNTS: (O'Brien)

Roadway/Direction	Autos	Medium	Heavy	Speed	Start Time	Duration

NOISE MEASUREMENT LOG SHEET (20)

Jones & Stokes

PROJECT NAME: Menlo Park
 SITE NUMBER: ST-3
 LOCATION/ADDRESS: Near school

PROJECT #: _____
 DATE/TIME: 7/27/21
 ENGINEERS: C. Matsu

#	Minute Starting	Measured Leq (dBA)	O or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources/Comments (include SLM equipment, Calibration Data)
1	14:45						
2	14:46						Horn
3	14:47						
4	14:48						commercial airliner
5	14:49						
6	14:50						
7	14:51						
8	14:52						commercial airliner
9	14:53						
10	14:54						
11	14:55						very loud motorcycle
12	14:56						
13	14:57						
14	14:58						
15	14:59						voices
16							Machine hum
17							throughout
18							Li Data. 014
19							
20							

Leq	55.8
Lmax	74.3
Lmin	48.2
L10	55.8
L33	52.6
L50	52.1
L90	50.3

Overall Leq (Include "O" minutes, Exclude "X" minutes) = dBA
 Subset Leq (Exclude "O" and "X" minutes) = dBA

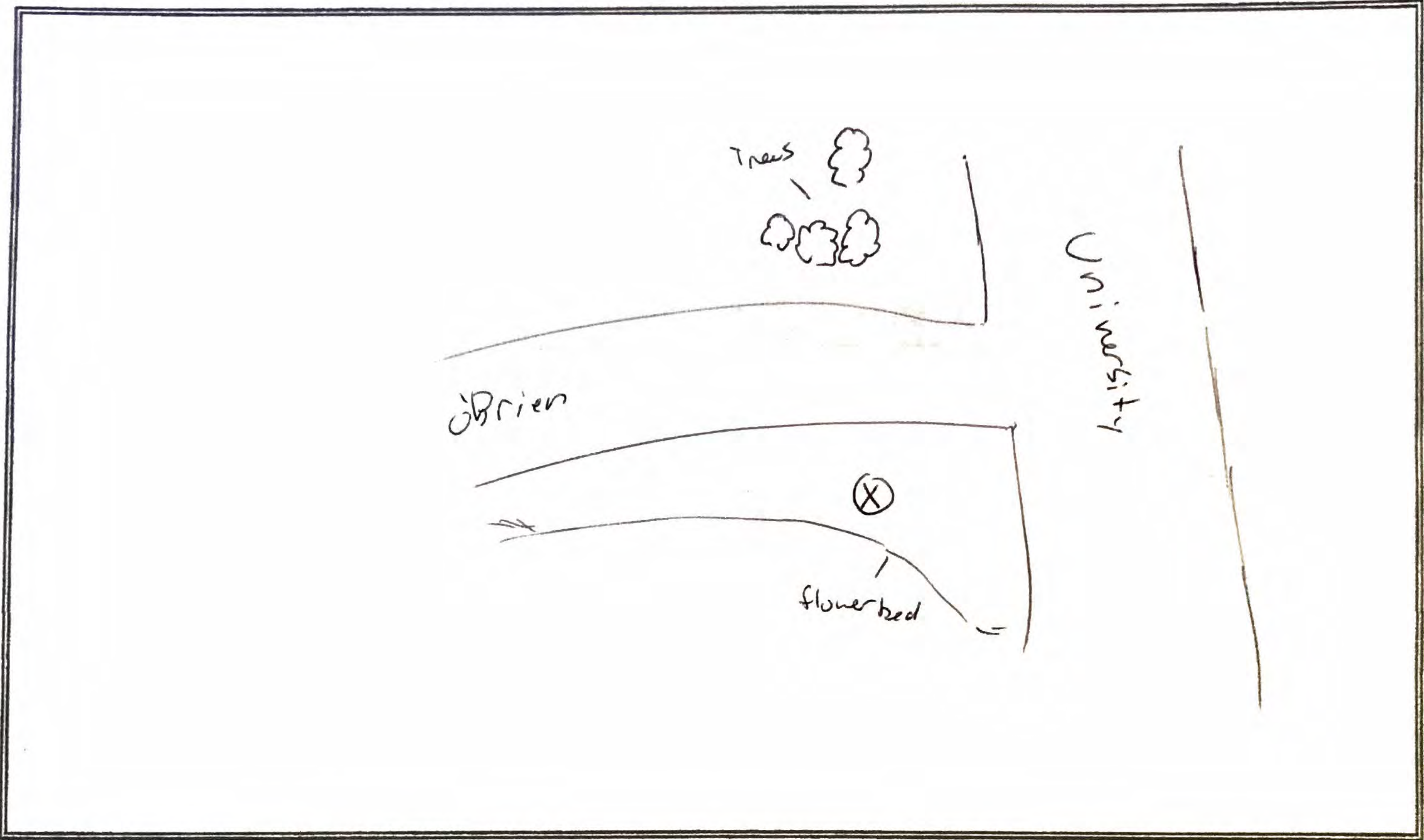
"O" = other characteristic sources that contributed to the Leq

"X" = exclude from Leq calculation; a non-typical source contaminated the measurement

NOISE MEASUREMENT SITE INFORMATION SHEET

PROJECT NAME: Menlo Park Project PROJECT #: _____
 SITE NUMBER: ST-4 DATE/TIME: 2021 07 27 2:08 PM
 LOCATION/ADDRESS: 1530 O'Brien ENGINEERS: Matsui / Schumder

SITE SKETCH: Show microphone location, nearby residences/buildings, potential reflective surfaces, project roadways, local roadways, driveways, ground type, trees. Indicate reference distances between objects, arrows showing wind direction, North, and camera locations/directions. Describe the line-of-sight and topography/elevation changes relative to noise sources.



WEATHER DATA: (temperature, wind speed/direction, sky conditions, relative humidity)
64.4 1.4 Blue and Like clouds 52.6

EQUIPMENT DATA: (sound level meter, microphone, preamp, calibrator, factory cal. date)

LD LXT

ESTIMATED CONSTRUCTION DATE OF RESIDENCES: (Pre-1978, or new construction)

POSTED SPEED: 25 mph COMMENTS: _____

TRAFFIC COUNTS: (University)

Roadway/Direction	Autos	Medium	Heavy	Speed	Start Time	Duration

NOISE MEASUREMENT LOG SHEET (20)


Jones & Stokes

PROJECT NAME: Mentlo Park Projects
 SITE NUMBER: ST-4 LXT₂Data.013
 LOCATION/ADDRESS: 1530 O'Brien

PROJECT #: _____
 DATE/TIME: 2:08 PM 20210727
 ENGINEERS: matsui/schumacher

#	Minute Starting	Measured Leq (dBA)	O or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources/Comments (include SLM equipment, Calibration Data)
1	2:08 pm						
2	2:09						
3	2:10						
4	2:11						
5	2:12						
6	2:13						
7	2:14						
8	2:15 2:15						car horn driving by
9	2:16						
10	2:17						
11	2:18						
12	2:19						
13	2:20						
14	2:21						Leq 55.9
15	2:22						Lmax 71.5
16							Lmin 44.4
17							L10 57.7
18							L33 54.6
19							L50 53.4
20							L90 50.8

Overall Leq (Include "O" minutes, Exclude "X" minutes) = dBA
 Subset Leq (Exclude "O" and "X" minutes) = dBA

"O" = other characteristic sources that contributed to the Leq

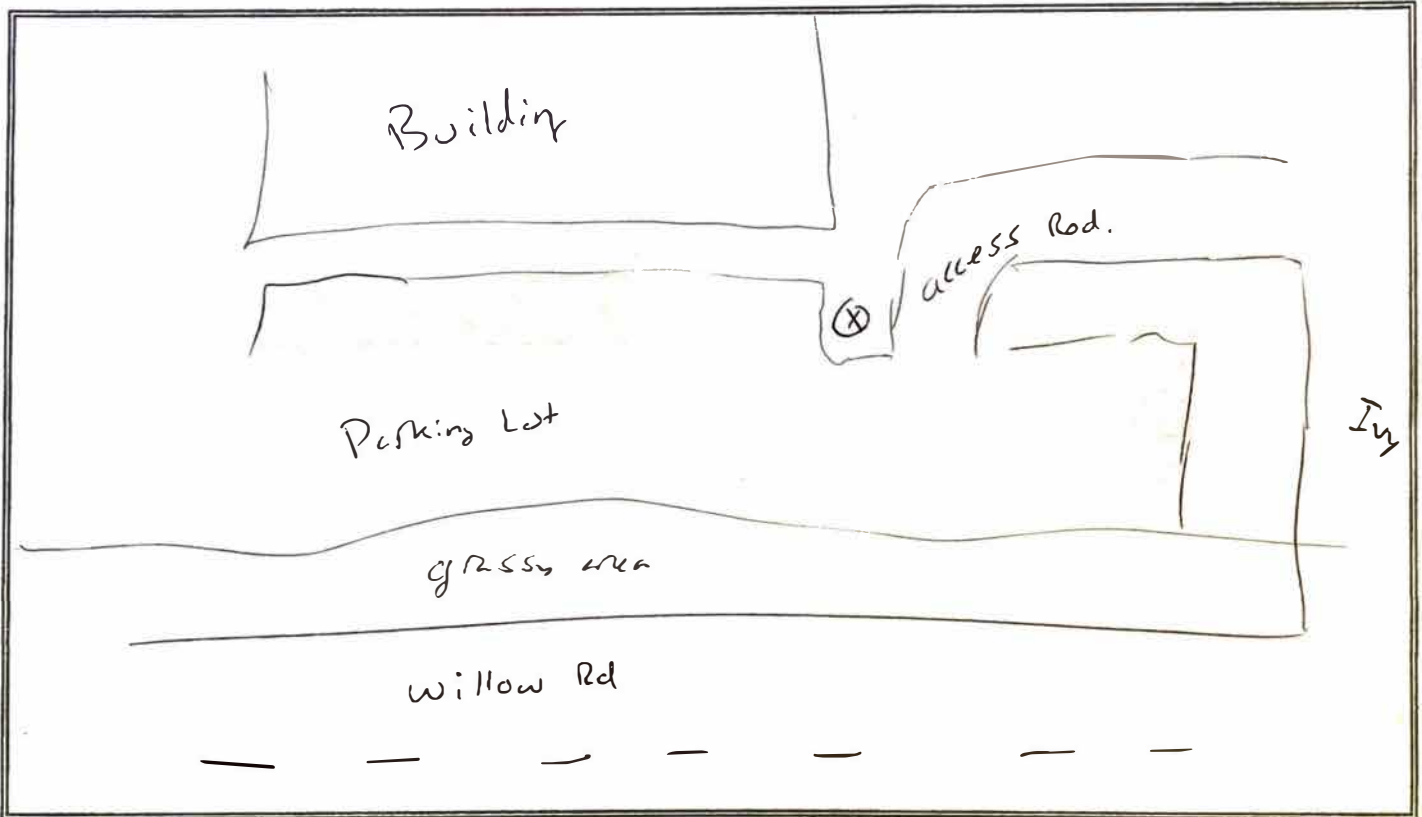
"X" = exclude from Leq calculation; a non-typical source contaminated the measurement

NOISE MEASUREMENT SITE INFORMATION SHEET


 Jones & Stokes

PROJECT NAME: Manly Park PROJECT #: _____
 SITE NUMBER: ST-5 DATE/TIME: 2021 07 28 11:44
 LOCATION/ADDRESS: 1221 Willow Rd ENGINEERS: Schuncker

SITE SKETCH: Show microphone location, nearby residences/buildings, potential reflective surfaces, project roadways, local roadways, driveways, ground type, trees. Indicate reference distances between objects, arrows showing wind direction, North, and camera locations/directions. Describe the line-of-sight and topography/elevation changes relative to noise sources.



WEATHER DATA: (temperature, wind speed/direction, sky conditions, relative humidity)

78.6 °F 10.6 mph partly cloudy 62.3%

EQUIPMENT DATA: (sound level meter, microphone, preamp, calibrator, factory cal. date)

LXT

ESTIMATED CONSTRUCTION DATE OF RESIDENCES: (Pre-1978, or new construction) _____

POSTED SPEED: 40 mph **COMMENTS:** _____

TRAFFIC COUNTS: (Willow Rd)

Roadway/Direction	Autos	Medium	Heavy	Speed	Start Time	Duration

NOISE MEASUREMENT LOG SHEET (20)



PROJECT NAME: Menlo Park
 SITE NUMBER: ST-5
 LOCATION/ADDRESS: 1221 Willow Road

PROJECT #: _____
 DATE/TIME: _____
 ENGINEERS: _____

#	Minute Starting	Measured Leq (dBA)	O or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources/Comments (include SLM equipment, Calibration Data)
1	11:44						
2	11:45						
3	11:46						
4	11:47						car horn
5	11:48						
6	11:49						Door slam Small plane fly by
7	11:50						
8	11:51						Building door slam X2
9	11:52						
10	11:53						car starting nearby ~ 15 ft away
11	11:54						plane flying over
12	11:55						
13	11:56						
14	11:57						Back up beeping Sort of distant
15	11:58						
16							LXT-Data-015
17							Decent traffic flow
18							
19							
20							

Leq	59.5
Lmax	72.0
Lmin	45.4
L10	62.6
L33	59.8
L50	57.4
L90	52.7

Overall Leq (Include "O" minutes, Exclude "X" minutes) = dBA
 Subset Leq (Exclude "O" and "X" minutes) = dBA

"O" = other characteristic sources that contributed to the Leq
 "X" = exclude from Leq calculation; a non-typical source contaminated the measurement

Noise Appendix

Field Pictures

Noise Monitoring Site LT-1.
Location: 1439 Kavanaugh Drive



On Kavanaugh Drive looking East, ~130 feet West of the Kavanaugh Drive/Gertrude Court intersection.



On Kavanaugh Drive, looking North towards 1439 Kavanaugh Drive.



On Kavanaugh Drive looking West, ~180 feet East of the Kavanaugh Drive/Clarence Court intersection.



On Kavanaugh Drive, looking Northwest towards 1439 Kavanaugh Drive.

Noise Monitoring Site LT-2.
Location: 1360 Willow Road



West of 1360 Willow Road, looking North towards the Willow Road/Hamilton Avenue intersection.



~110 feet Northwest of 1360 Willow Road, looking West.



Looking Southwest towards Willow Road.



Looking South along Willow Road.

Noise Monitoring Site LT-3.
Location: 1125 Alberni Avenue



Looking West along Alberni Avenue.



Looking Southwest along Alberni Avenue.



Looking East towards along Alberni Avenue. The Alberni Avenue/Poplar Avenue intersection is ~25 feet to the Southeast.



Looking South on the Northeast corner of Orizaba Avenue and Broad Street.

Noise Monitoring Site LT-4.
Location: 1396 Carlton Avenue



On Carlton Avenue, looking South.



On Carlton Avenue, looking East towards 1396 Carlton Avenue.



Looking North on Carlton Avenue, ~170 feet South of Hamilton Avenue.



Looking Northwest on Carlton Avenue, South of Hamilton Avenue.

Noise Monitoring Site ST-1.
Location: 1380 Willow Road



Looking West towards Willow Road.



Looking Northwest towards Willow Road.



Looking East, ~60 feet West from 1380 Willow Road.



Looking Southwest towards Willow Road.

Noise Monitoring Site ST-2.
Location: 1350 Willow Road



~40 feet from Willow Road, looking West.



Looking South towards Mid-Peninsula High School. Sound level meter is ~70 feet from the school.



Looking East, with 1350 Willow Road to the Northeast (left) and Mid-Peninsula High School to the Southeast (right).



On Willow Road, looking Northeast towards 1350 Willow Road.

Noise Monitoring Site ST-3.
Location: Open Mind School (1215 O'Brien Drive)



Looking North, the Northwest corner of Open Mind School is behind the camera.



Looking South towards Open Mind School.



Looking East, ~220 feet from O'Brien Drive.

Noise Monitoring Site ST-4.
Location: 1530 O'Brien Drive



Looking Northeast towards the O'Brien Drive/University Avenue intersection.



Looking North, ~30 feet from O'Brien Drive.



Looking Southwest towards 1530 O'Brien Drive.



Looking South at 1530 O'Brien, ~100 feet from the sound level meter.

Noise Monitoring Site ST-5.
Location: 1221 Willow Road



Looking Southwest towards 1221 Willow Road (~40 feet away).



Looking East, towards Willow Road.



Looking Northeast, ~80 feet from Willow Road.



Looking West, at 1221 Willow Road.

Noise Appendix
Construction Noise Modeling

Distance Between Project Site Construction and Sensitive Receptors

Sensitive Receptor	Structure Type	Distance to... (ft)	Project
Mid-Peninsula High School	Modern industrial/commercial	10	Park
Mid-Peninsula High School	Modern industrial/commercial	290	Nearest Vertical Building
Open Mind School	Modern industrial/commercial	190	Nearest Vertical Building
Commercial/Industrial	Modern industrial/commercial	100	North Parking Garage
Residential #1	Older Residential Structures	170	Nearest Vertical Building
Residential #2	Older Residential Structures	170	Nearest Vertical Building
Hamilton Avenue Parcel - Residential	Older Residential Structures	20	Hamilton Avenue Parcel

Construction Noise at 50 feet, Summary by Phase/Subphase

Phase	Description	Distance	Calculated Leq (dBA)
Phase 1	Demolition	50	82
Phase 1	Grading and Utilities	50	85
Phase 1 Office	North Garage, 2022	50	94
Phase 1 Office	North Garage, 2023	50	83
Phase 1 Office	Office Building 4, 2023	50	94
Phase 1 Office	Office Building 4, 2024	50	80
Phase 1 Office	Meeting, Collaboration, Park, 2022	50	94
Phase 1 Office	Meeting, Collaboration, Park, 2023	50	94
Phase 1 Office	Meeting, Collaboration, Park, 2024	50	81
Phase 1 Office	Meeting, Collaboration, Park, 2025	50	81
Phase 1 Office	Meeting, Collaboration, Park, 2026	50	81
Phase 1 Office	Hotel Excavation, 2022	50	94
Phase 1 Office	Hotel Excavation, 2023	50	83
Phase 1 Office	Hotel Construction, 2024	50	81
Phase 1 Office	Hotel Construction, 2025	50	81
Phase 1 Office	Town Square, 2024	50	83
Phase 1 Office	Town Square, 2025	50	81
Phase 1 Multi Use	Parcel 2 Foundation	50	83
Phase 1 Multi Use	Parcel 2 Core and Shell	50	82
Phase 1 Multi Use	Parcel 2 Tenant Improvements	50	82
Phase 1 Multi Use	Parcel 2 Landscaping	50	80
Phase 1 Multi Use	Parcel 3 Foundation	50	83
Phase 1 Multi Use	Parcel 3 Core and Shell	50	82
Phase 1 Multi Use	Parcel 3 Tenant Improvements	50	82
Phase 1 Multi Use	Parcel 3 Landscaping	50	80
Phase 1	Demolition	50	82
Phase 1	Grading and Utilities	50	85
Phase 1 Office	South Garage, 2023	50	94
Phase 1 Office	South Garage, 2024	50	81
Phase 1 Office	Office Building 3, 2023	50	94
Phase 1 Office	Office Building 3, 2024	50	81
Phase 1 Office	Office Building 3, 2025	50	80
Phase 1 Office	Office Building 1, 2023	50	94
Phase 1 Office	Office Building 1, 2024	50	81
Phase 1 Office	Office Building 2, 2023	50	94
Phase 1 Office	Office Building 2, 2024	50	81
Phase 1 Office	Office Building 2, 2025	50	80
Phase 1 Office	Office Building 5, 2023	50	94
Phase 1 Office	Office Building 5, 2024	50	81
Phase 1 Office	Office Building 5, 2025	50	80
Phase 1 Office	Office Building 6, 2023	50	94
Phase 1 Office	Office Building 6, 2024	50	81
Phase 1 Office	Office Building 6, 2025	50	80

Phase 1 Multi Use	Parcel 7 Foundation	50	83
Phase 1 Multi Use	Parcel 7 Core and Shell	50	82
Phase 1 Multi Use	Parcel 7 Tenant Improvements	50	82
Phase 1 Multi Use	Parcel 7 Landscaping	50	80
Phase 1 Multi Use	Parcel 6 Foundation	50	83
Phase 1 Multi Use	Parcel 6 Core and Shell	50	82
Phase 1 Multi Use	Parcel 6 Tenant Improvements	50	82
Phase 1 Multi Use	Parcel 6 Landscaping	50	80
Phase 2Multi Use	Grading and Utilities	50	85
Phase 2Multi Use	Tunnel Construction	50	82
Phase 2Multi Use	Foundations	50	83
Phase 2Multi Use	Core and Shell	50	82
Phase 2Multi Use	Tenant Improvements	50	82
Phase 2Multi Use	Tenant Improvements	50	80
Hamilton Avenue	Demolition	50	82
Hamilton Avenue	Grading and Utilities	50	82
Hamilton Avenue	Foundations	50	82
Hamilton Avenue	Core and Shell	50	82
Hamilton Avenue	Tenant Improvements	50	82
Nighttime	Install/Remove Detours	50	87
Nighttime	Traffic Shift	50	82
Nighttime	Tunnel Shoring	50	97
Nighttime	Restore Willow Road	50	82

Table 1. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Demolition			
Source 1: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Front end loader - Sound level (dBA) at 50 feet =	79	40%	75.0
Source 3: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			85
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	91	88
50	0	0.0	85	82
100	-6	0.0	79	76
150	-10	0.0	76	72
200	-12	0.0	73	70
250	-14	0.0	71	68
300	-16	0.0	70	66
400	-18	0.0	67	64
500	-20	0.0	65	62
600	-22	0.0	64	60
700	-23	0.0	62	59

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 2. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Grading & Utilities			
Source 1: Grader - Sound level (dBA) at 50 feet =	85	40%	81.0
Source 2: Scraper - Sound level (dBA) at 50 feet =	84	40%	80.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			89
All Sources Combined - Leq sound level (dBA) at 50 feet =			85

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
10	14	0.0	103	99
25	6	0.0	95	91
50	0	0.0	89	85
60	-2	0.0	87	83
100	-6	0.0	83	79
150	-10	0.0	79	75
300	-16	0.0	73	69
400	-18	0.0	71	67
500	-20	0.0	69	65
600	-22	0.0	67	63
700	-23	0.0	66	62

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 3. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - North Garage 2022			
Source 1: Pile Driver - Sound level (dBA) at 50 feet =	101	20%	94.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Trencher - Sound level (dBA) at 50 feet =	80	50%	77.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			101
All Sources Combined - Leq sound level (dBA) at 50 feet =			94

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
10	14	0.0	115	108
25	6	0.0	107	100
50	0	0.0	101	94
100	-6	0.0	95	88
170	-11	0.0	90	84
190	-12	0.0	89	83
290	-15	0.0	86	79
400	-18	0.0	83	76
500	-20	0.0	81	74
600	-22	0.0	79	73
700	-23	0.0	78	71

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 4. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office North Garage 2023			
Source 1: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			87
All Sources Combined - Leq sound level (dBA) at 50 feet =			83

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	93	89
50	0	0.0	87	83
100	-6	0.0	81	77
150	-10	0.0	77	73
200	-12	0.0	75	71
250	-14	0.0	73	69
300	-16	0.0	71	67
400	-18	0.0	68	65
500	-20	0.0	67	63
600	-22	0.0	65	61
700	-23	0.0	64	60

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 5. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Office Building 4, 2023			
Source 1: Pile Driver - Sound level (dBA) at 50 feet =	101	20%	94.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Compactor (ground) - Sound level (dBA) at 50 feet =	83	20%	76.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			101
All Sources Combined - Leq sound level (dBA) at 50 feet =			94

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
50	0	0.0	101	94
65	-2	0.0	99	92
85	-5	0.0	97	90
100	-6	0.0	95	88
150	-10	0.0	92	85
200	-12	0.0	89	82
250	-14	0.0	87	80
300	-16	0.0	86	79
500	-20	0.0	81	74
600	-22	0.0	80	73
700	-23	0.0	78	71

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 6. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Office Building 4, 2024			
Source 1: Dump truck - Sound level (dBA) at 50 feet =	76	40%	72.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Pickup Truck - Sound level (dBA) at 50 feet =	75	40%	71.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			84
All Sources Combined - Leq sound level (dBA) at 50 feet =			80

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	90	86
50	0	0.0	84	80
100	-6	0.0	78	74
150	-10	0.0	75	71
200	-12	0.0	72	68
250	-14	0.0	70	66
300	-16	0.0	69	65
400	-18	0.0	66	62
500	-20	0.0	64	60
600	-22	0.0	63	59
700	-23	0.0	61	57

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 7. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Meeting, Collaboration, Park, 2022			
Source 1: Compactor (ground) - Sound level (dBA) at 50 feet =	83	20%	76.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Pile Driver - Sound level (dBA) at 50 feet =	101	20%	94.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			101
All Sources Combined - Leq sound level (dBA) at 50 feet =			94

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	107	100
50	0	0.0	101	94
100	-6	0.0	95	88
150	-10	0.0	92	85
200	-12	0.0	89	82
250	-14	0.0	87	80
300	-16	0.0	86	79
400	-18	0.0	83	76
500	-20	0.0	81	74
600	-22	0.0	80	73
700	-23	0.0	78	71

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 8. Construction Noise

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Phase 1 Office - Meeting, Collaboration, Park, 2023			
Source 1: Compactor (ground) - Sound level (dBA) at 50 feet =	83	20%	76.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Pile Driver - Sound level (dBA) at 50 feet =	101	20%	94.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			101
All Sources Combined - Leq sound level (dBA) at 50 feet =			94

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	107	100
50	0	0.0	101	94
100	-6	0.0	95	88
150	-10	0.0	92	85
200	-12	0.0	89	82
250	-14	0.0	87	80
300	-16	0.0	86	79
400	-18	0.0	83	76
500	-20	0.0	81	74
600	-22	0.0	80	73
700	-23	0.0	78	71

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 9. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Meeting, Collaboration, Park, 2024			
Source 1: Dump truck - Sound level (dBA) at 50 feet =	76	40%	72.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Crane - Sound level (dBA) at 50 feet =	81	16%	73.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			81

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	92	87
50	0	0.0	86	81
100	-6	0.0	80	75
150	-10	0.0	76	71
200	-12	0.0	74	69
250	-14	0.0	72	67
300	-16	0.0	70	65
400	-18	0.0	68	63
500	-20	0.0	66	61
600	-22	0.0	64	59
700	-23	0.0	63	58

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 10. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Meeting, Collaboration, Park, 2025			
Source 1: Dump truck - Sound level (dBA) at 50 feet =	76	40%	72.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Crane - Sound level (dBA) at 50 feet =	81	16%	73.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			81

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	92	87
50	0	0.0	86	81
100	-6	0.0	80	75
150	-10	0.0	76	71
200	-12	0.0	74	69
250	-14	0.0	72	67
300	-16	0.0	70	65
400	-18	0.0	68	63
500	-20	0.0	66	61
600	-22	0.0	64	59
700	-23	0.0	63	58

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 11. Construction Noise

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Phase 1 Office - Meeting, Collaboration, Park, 2026			
Source 1: Dump truck - Sound level (dBA) at 50 feet =	76	40%	72.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Crane - Sound level (dBA) at 50 feet =	81	16%	73.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			81

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	92	87
35	3	0.0	89	84
50	0	0.0	86	81
85	-5	0.0	81	76
90	-5	0.0	81	76
100	-6	0.0	80	75
150	-10	0.0	76	71
200	-12	0.0	74	69
400	-18	0.0	68	63
600	-22	0.0	64	59
800	-24	0.0	62	57

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 12. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Hotel Excavation 2022			
Source 1: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Pile Driver - Sound level (dBA) at 50 feet =	101	20%	94.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			101
All Sources Combined - Leq sound level (dBA) at 50 feet =			94

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	107	100
50	0	0.0	101	94
100	-6	0.0	95	88
150	-10	0.0	92	85
200	-12	0.0	89	82
250	-14	0.0	87	80
300	-16	0.0	86	79
400	-18	0.0	83	76
500	-20	0.0	81	74
600	-22	0.0	80	73
700	-23	0.0	78	71

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 13. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Hotel Excavation 2023			
Source 1: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			87
All Sources Combined - Leq sound level (dBA) at 50 feet =			83

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	93	89
50	0	0.0	87	83
100	-6	0.0	81	77
150	-10	0.0	77	73
200	-12	0.0	75	71
250	-14	0.0	73	69
300	-16	0.0	71	67
400	-18	0.0	68	65
500	-20	0.0	67	63
600	-22	0.0	65	61
700	-23	0.0	64	60

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 14. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Hotel Construction 2024			
Source 1: Concrete mixer truck - Sound level (dBA) at 50 feet =	79	40%	75.0
Source 2: Concrete pump truck - Sound level (dBA) at 50 feet =	81	20%	74.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			81

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	92	87
50	0	0.0	86	81
100	-6	0.0	80	75
150	-10	0.0	77	72
200	-12	0.0	74	69
250	-14	0.0	72	67
300	-16	0.0	71	66
400	-18	0.0	68	63
500	-20	0.0	66	61
600	-22	0.0	64	60
700	-23	0.0	63	58

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 15. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Hotel Construction 2025			
Source 1: Concrete mixer truck - Sound level (dBA) at 50 feet =	79	40%	75.0
Source 2: Concrete pump truck - Sound level (dBA) at 50 feet =	81	20%	74.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			81

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	92	87
50	0	0.0	86	81
100	-6	0.0	80	75
150	-10	0.0	77	72
200	-12	0.0	74	69
250	-14	0.0	72	67
300	-16	0.0	71	66
400	-18	0.0	68	63
500	-20	0.0	66	61
600	-22	0.0	64	60
700	-23	0.0	63	58

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 16. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Town Square 2024			
Source 1: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			87
All Sources Combined - Leq sound level (dBA) at 50 feet =			83

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	93	89
50	0	0.0	87	83
100	-6	0.0	81	77
150	-10	0.0	77	73
200	-12	0.0	75	71
250	-14	0.0	73	69
300	-16	0.0	71	67
400	-18	0.0	68	65
500	-20	0.0	67	63
600	-22	0.0	65	61
700	-23	0.0	64	60

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 17. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Town Square 2025			
Source 1: Crane - Sound level (dBA) at 50 feet =	81	16%	73.0
Source 2: Dump truck - Sound level (dBA) at 50 feet =	76	40%	72.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			81

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	92	87
50	0	0.0	86	81
100	-6	0.0	80	75
150	-10	0.0	76	71
200	-12	0.0	74	69
250	-14	0.0	72	67
300	-16	0.0	70	65
400	-18	0.0	68	63
500	-20	0.0	66	61
600	-22	0.0	64	59
700	-23	0.0	63	58

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 18. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Mixed Use - Parcel 2 Foundations			
Source 1: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			87
All Sources Combined - Leq sound level (dBA) at 50 feet =			83

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	93	89
50	0	0.0	87	83
100	-6	0.0	81	77
150	-10	0.0	77	73
200	-12	0.0	75	71
250	-14	0.0	73	69
300	-16	0.0	71	67
400	-18	0.0	68	65
500	-20	0.0	67	63
600	-22	0.0	65	61
700	-23	0.0	64	60

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 19. Construction Noise

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Phase 1 Mixed Use - Parcel 2 Core and Shell			
Source 1: Crane - Sound level (dBA) at 50 feet =	81	16%	73.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			87
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	93	88
50	0	0.0	87	82
100	-6	0.0	81	76
150	-10	0.0	77	73
200	-12	0.0	75	70
250	-14	0.0	73	68
300	-16	0.0	71	67
400	-18	0.0	68	64
500	-20	0.0	67	62
600	-22	0.0	65	61
700	-23	0.0	64	59

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 20. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Mixed Use - Parcel 2 Tenant Improvements			
Source 1: Dump truck - Sound level (dBA) at 50 feet =	76	40%	72.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	92	88
50	0	0.0	86	82
100	-6	0.0	80	76
150	-10	0.0	76	72
200	-12	0.0	74	70
250	-14	0.0	72	68
300	-16	0.0	70	66
400	-18	0.0	68	64
500	-20	0.0	66	62
600	-22	0.0	64	60
700	-23	0.0	63	59

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 21. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Mixed Use - Parcel 2 Landscaping			
Source 1: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Backhoe - Sound level (dBA) at 50 feet =	78	40%	74.0
Source 3: Front end loader - Sound level (dBA) at 50 feet =	79	40%	75.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			84
All Sources Combined - Leq sound level (dBA) at 50 feet =			80

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
10	14	0.0	98	94
25	6	0.0	90	86
50	0	0.0	84	80
100	-6	0.0	78	74
170	-11	0.0	74	70
250	-14	0.0	70	66
300	-16	0.0	69	65
400	-18	0.0	66	62
500	-20	0.0	64	60
600	-22	0.0	63	59
700	-23	0.0	61	57

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 22. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Mixed Use - Parcel 3 Foundations			
Source 1: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			87
All Sources Combined - Leq sound level (dBA) at 50 feet =			83

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	93	89
50	0	0.0	87	83
100	-6	0.0	81	77
150	-10	0.0	77	73
200	-12	0.0	75	71
250	-14	0.0	73	69
300	-16	0.0	71	67
400	-18	0.0	68	65
500	-20	0.0	67	63
600	-22	0.0	65	61
700	-23	0.0	64	60

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 23. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Mixed Use - Parcel 3 Core and Shell			
Source 1: Crane - Sound level (dBA) at 50 feet =	81	16%	73.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			87
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	93	88
50	0	0.0	87	82
100	-6	0.0	81	76
150	-10	0.0	77	73
200	-12	0.0	75	70
250	-14	0.0	73	68
300	-16	0.0	71	67
400	-18	0.0	68	64
500	-20	0.0	67	62
600	-22	0.0	65	61
700	-23	0.0	64	59

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 24. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Mixed Use - Parcel 3 Tenant Improvements			
Source 1: Dump truck - Sound level (dBA) at 50 feet =	76	40%	72.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	92	88
50	0	0.0	86	82
100	-6	0.0	80	76
150	-10	0.0	76	72
200	-12	0.0	74	70
250	-14	0.0	72	68
300	-16	0.0	70	66
400	-18	0.0	68	64
500	-20	0.0	66	62
600	-22	0.0	64	60
700	-23	0.0	63	59

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 25. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Mixed Use - Parcel 3 Landscaping			
Source 1: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Backhoe - Sound level (dBA) at 50 feet =	78	40%	74.0
Source 3: Front end loader - Sound level (dBA) at 50 feet =	79	40%	75.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			84
All Sources Combined - Leq sound level (dBA) at 50 feet =			80

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	90	86
50	0	0.0	84	80
100	-6	0.0	78	74
150	-10	0.0	75	71
200	-12	0.0	72	68
250	-14	0.0	70	66
300	-16	0.0	69	65
400	-18	0.0	66	62
500	-20	0.0	64	60
600	-22	0.0	63	59
700	-23	0.0	61	57

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 26. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Demolition			
Source 1: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Front end loader - Sound level (dBA) at 50 feet =	79	40%	75.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			85
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	91	88
50	0	0.0	85	82
100	-6	0.0	79	76
150	-10	0.0	76	72
200	-12	0.0	73	70
250	-14	0.0	71	68
300	-16	0.0	70	66
400	-18	0.0	67	64
500	-20	0.0	65	62
600	-22	0.0	64	60
700	-23	0.0	62	59

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 27. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Grading & Utilities			
Source 1: Grader - Sound level (dBA) at 50 feet =	85	40%	81.0
Source 2: Scraper - Sound level (dBA) at 50 feet =	84	40%	80.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			89
All Sources Combined - Leq sound level (dBA) at 50 feet =			85

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	95	91
50	0	0.0	89	85
100	-6	0.0	83	79
150	-10	0.0	79	75
200	-12	0.0	77	73
250	-14	0.0	75	71
300	-16	0.0	73	69
400	-18	0.0	71	67
500	-20	0.0	69	65
600	-22	0.0	67	63
700	-23	0.0	66	62

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 28. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - South Garage 2023			
Source 1: Pile Driver - Sound level (dBA) at 50 feet =	101	20%	94.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			101
All Sources Combined - Leq sound level (dBA) at 50 feet =			94

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	107	100
50	0	0.0	101	94
100	-6	0.0	95	88
150	-10	0.0	92	85
200	-12	0.0	89	82
250	-14	0.0	87	80
300	-16	0.0	86	79
400	-18	0.0	83	76
500	-20	0.0	81	74
600	-22	0.0	80	73
700	-23	0.0	78	71

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 29. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - South Garage 2024			
Source 1: Crane - Sound level (dBA) at 50 feet =	81	16%	73.0
Source 2: Concrete pump truck - Sound level (dBA) at 50 feet =	81	20%	74.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			87
All Sources Combined - Leq sound level (dBA) at 50 feet =			81

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	93	87
50	0	0.0	87	81
100	-6	0.0	81	75
150	-10	0.0	77	71
200	-12	0.0	75	69
250	-14	0.0	73	67
300	-16	0.0	71	65
400	-18	0.0	68	63
500	-20	0.0	67	61
600	-22	0.0	65	59
700	-23	0.0	64	58

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 30. Construction Noise

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Phase 1 Office - Office Building 3 2023			
Source 1: Compactor (ground) - Sound level (dBA) at 50 feet =	83	20%	76.0
Source 2: Pile Driver - Sound level (dBA) at 50 feet =	101	20%	94.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			101
All Sources Combined - Leq sound level (dBA) at 50 feet =			94

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	107	100
50	0	0.0	101	94
100	-6	0.0	95	88
150	-10	0.0	92	85
200	-12	0.0	89	82
250	-14	0.0	87	80
300	-16	0.0	86	79
400	-18	0.0	83	76
500	-20	0.0	81	74
600	-22	0.0	80	73
700	-23	0.0	78	71

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 31. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Office Building 3 2024			
Source 1: Concrete mixer truck - Sound level (dBA) at 50 feet =	79	40%	75.0
Source 2: Concrete pump truck - Sound level (dBA) at 50 feet =	81	20%	74.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			81

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	92	87
50	0	0.0	86	81
100	-6	0.0	80	75
150	-10	0.0	77	72
200	-12	0.0	74	69
250	-14	0.0	72	67
300	-16	0.0	71	66
400	-18	0.0	68	63
500	-20	0.0	66	61
600	-22	0.0	64	60
700	-23	0.0	63	58

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 32. Construction Noise

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Phase 1 Office - Office Building 3 2025			
Source 1: Dump truck - Sound level (dBA) at 50 feet =	76	40%	72.0
Source 2: Pickup Truck - Sound level (dBA) at 50 feet =	75	40%	71.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			84
All Sources Combined - Leq sound level (dBA) at 50 feet =			80

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	90	86
50	0	0.0	84	80
100	-6	0.0	78	74
150	-10	0.0	75	71
200	-12	0.0	72	68
250	-14	0.0	70	66
300	-16	0.0	69	65
400	-18	0.0	66	62
500	-20	0.0	64	60
600	-22	0.0	63	59
700	-23	0.0	61	57

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 33. Construction Noise

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Phase 1 Office - Office Building 1 2023			
Source 1: Compactor (ground) - Sound level (dBA) at 50 feet =	83	20%	76.0
Source 2: Pile Driver - Sound level (dBA) at 50 feet =	101	20%	94.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			101
All Sources Combined - Leq sound level (dBA) at 50 feet =			94

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	107	100
50	0	0.0	101	94
100	-6	0.0	95	88
150	-10	0.0	92	85
200	-12	0.0	89	82
250	-14	0.0	87	80
300	-16	0.0	86	79
400	-18	0.0	83	76
500	-20	0.0	81	74
600	-22	0.0	80	73
700	-23	0.0	78	71

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 34. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Office Building 1 2024			
Source 1: Concrete mixer truck - Sound level (dBA) at 50 feet =	79	40%	75.0
Source 2: Concrete pump truck - Sound level (dBA) at 50 feet =	81	20%	74.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			81

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	92	87
50	0	0.0	86	81
100	-6	0.0	80	75
150	-10	0.0	77	72
200	-12	0.0	74	69
250	-14	0.0	72	67
300	-16	0.0	71	66
400	-18	0.0	68	63
500	-20	0.0	66	61
600	-22	0.0	64	60
700	-23	0.0	63	58

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 35. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Office Building 2 2023			
Source 1: Compactor (ground) - Sound level (dBA) at 50 feet =	83	20%	76.0
Source 2: Pile Driver - Sound level (dBA) at 50 feet =	101	20%	94.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			101
All Sources Combined - Leq sound level (dBA) at 50 feet =			94

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	107	100
50	0	0.0	101	94
100	-6	0.0	95	88
150	-10	0.0	92	85
200	-12	0.0	89	82
250	-14	0.0	87	80
300	-16	0.0	86	79
400	-18	0.0	83	76
500	-20	0.0	81	74
600	-22	0.0	80	73
700	-23	0.0	78	71

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 36. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Office Building 2 2024			
Source 1: Concrete mixer truck - Sound level (dBA) at 50 feet =	79	40%	75.0
Source 2: Concrete pump truck - Sound level (dBA) at 50 feet =	81	20%	74.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			81

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	92	87
50	0	0.0	86	81
100	-6	0.0	80	75
150	-10	0.0	77	72
200	-12	0.0	74	69
250	-14	0.0	72	67
300	-16	0.0	71	66
400	-18	0.0	68	63
500	-20	0.0	66	61
600	-22	0.0	64	60
700	-23	0.0	63	58

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 37. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Office Building 2 2025			
Source 1: Dump truck - Sound level (dBA) at 50 feet =	76	40%	72.0
Source 2: Pickup Truck - Sound level (dBA) at 50 feet =	75	40%	71.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			84
All Sources Combined - Leq sound level (dBA) at 50 feet =			80

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	90	86
50	0	0.0	84	80
100	-6	0.0	78	74
150	-10	0.0	75	71
200	-12	0.0	72	68
250	-14	0.0	70	66
300	-16	0.0	69	65
400	-18	0.0	66	62
500	-20	0.0	64	60
600	-22	0.0	63	59
700	-23	0.0	61	57

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 38. Construction Noise

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Phase 1 Office - Office Building 5 2023			
Source 1: Compactor (ground) - Sound level (dBA) at 50 feet =	83	20%	76.0
Source 2: Pile Driver - Sound level (dBA) at 50 feet =	101	20%	94.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			101
All Sources Combined - Leq sound level (dBA) at 50 feet =			94

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	107	100
50	0	0.0	101	94
100	-6	0.0	95	88
150	-10	0.0	92	85
200	-12	0.0	89	82
250	-14	0.0	87	80
300	-16	0.0	86	79
400	-18	0.0	83	76
500	-20	0.0	81	74
600	-22	0.0	80	73
700	-23	0.0	78	71

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 39. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Office Building 5 2024			
Source 1: Concrete mixer truck - Sound level (dBA) at 50 feet =	79	40%	75.0
Source 2: Concrete pump truck - Sound level (dBA) at 50 feet =	81	20%	74.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			81

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	92	87
50	0	0.0	86	81
100	-6	0.0	80	75
150	-10	0.0	77	72
200	-12	0.0	74	69
250	-14	0.0	72	67
300	-16	0.0	71	66
400	-18	0.0	68	63
500	-20	0.0	66	61
600	-22	0.0	64	60
700	-23	0.0	63	58

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 40. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Office Building 5 2025			
Source 1: Dump truck - Sound level (dBA) at 50 feet =	76	40%	72.0
Source 2: Pickup Truck - Sound level (dBA) at 50 feet =	75	40%	71.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			84
All Sources Combined - Leq sound level (dBA) at 50 feet =			80

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	90	86
50	0	0.0	84	80
100	-6	0.0	78	74
150	-10	0.0	75	71
200	-12	0.0	72	68
250	-14	0.0	70	66
300	-16	0.0	69	65
400	-18	0.0	66	62
500	-20	0.0	64	60
600	-22	0.0	63	59
700	-23	0.0	61	57

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 41. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Office - Office Building 6 2023			
Source 1: Compactor (ground) - Sound level (dBA) at 50 feet =	83	20%	76.0
Source 2: Pile Driver - Sound level (dBA) at 50 feet =	101	20%	94.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			101
All Sources Combined - Leq sound level (dBA) at 50 feet =			94

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	107	100
50	0	0.0	101	94
100	-6	0.0	95	88
150	-10	0.0	92	85
200	-12	0.0	89	82
250	-14	0.0	87	80
300	-16	0.0	86	79
400	-18	0.0	83	76
500	-20	0.0	81	74
600	-22	0.0	80	73
700	-23	0.0	78	71

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 42. Construction Noise

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Phase 1 Office - Office Building 6 2024			
Source 1: Concrete mixer truck - Sound level (dBA) at 50 feet =	79	40%	75.0
Source 2: Concrete pump truck - Sound level (dBA) at 50 feet =	81	20%	74.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			81

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	92	87
50	0	0.0	86	81
100	-6	0.0	80	75
150	-10	0.0	77	72
200	-12	0.0	74	69
250	-14	0.0	72	67
300	-16	0.0	71	66
400	-18	0.0	68	63
500	-20	0.0	66	61
600	-22	0.0	64	60
700	-23	0.0	63	58

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 43. Construction Noise

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Phase 1 Office - Office Building 6 2025			
Source 1: Dump truck - Sound level (dBA) at 50 feet =	76	40%	72.0
Source 2: Pickup Truck - Sound level (dBA) at 50 feet =	75	40%	71.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			84
All Sources Combined - Leq sound level (dBA) at 50 feet =			80

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	90	86
50	0	0.0	84	80
100	-6	0.0	78	74
150	-10	0.0	75	71
200	-12	0.0	72	68
250	-14	0.0	70	66
300	-16	0.0	69	65
400	-18	0.0	66	62
500	-20	0.0	64	60
600	-22	0.0	63	59
700	-23	0.0	61	57

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 44. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Mixed Use - Parcel 7 Foundations			
Source 1: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			87
All Sources Combined - Leq sound level (dBA) at 50 feet =			83

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	93	89
50	0	0.0	87	83
100	-6	0.0	81	77
150	-10	0.0	77	73
200	-12	0.0	75	71
250	-14	0.0	73	69
300	-16	0.0	71	67
400	-18	0.0	68	65
500	-20	0.0	67	63
600	-22	0.0	65	61
700	-23	0.0	64	60

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 45. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Mixed Use - Parcel 7 Core and Shell			
Source 1: Crane - Sound level (dBA) at 50 feet =	81	16%	73.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			87
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	93	88
50	0	0.0	87	82
100	-6	0.0	81	76
150	-10	0.0	77	73
200	-12	0.0	75	70
250	-14	0.0	73	68
300	-16	0.0	71	67
400	-18	0.0	68	64
500	-20	0.0	67	62
600	-22	0.0	65	61
700	-23	0.0	64	59

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 46. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Mixed Use - Parcel 7 Tenant Improvements			
Source 1: Dump truck - Sound level (dBA) at 50 feet =	76	40%	72.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	92	88
50	0	0.0	86	82
100	-6	0.0	80	76
150	-10	0.0	76	72
200	-12	0.0	74	70
250	-14	0.0	72	68
300	-16	0.0	70	66
400	-18	0.0	68	64
500	-20	0.0	66	62
600	-22	0.0	64	60
700	-23	0.0	63	59

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 47. Construction Noise

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Phase 1 Mixed Use - Parcel 7 Landscaping			
Source 1: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Backhoe - Sound level (dBA) at 50 feet =	78	40%	74.0
Source 3: Front end loader - Sound level (dBA) at 50 feet =	79	40%	75.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			84
All Sources Combined - Leq sound level (dBA) at 50 feet =			80

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	90	86
50	0	0.0	84	80
100	-6	0.0	78	74
150	-10	0.0	75	71
200	-12	0.0	72	68
250	-14	0.0	70	66
300	-16	0.0	69	65
400	-18	0.0	66	62
500	-20	0.0	64	60
600	-22	0.0	63	59
700	-23	0.0	61	57

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 48. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Mixed Use - Parcel 6 Foundations			
Source 1: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			87
All Sources Combined - Leq sound level (dBA) at 50 feet =			83

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	93	89
50	0	0.0	87	83
100	-6	0.0	81	77
150	-10	0.0	77	73
200	-12	0.0	75	71
250	-14	0.0	73	69
300	-16	0.0	71	67
400	-18	0.0	68	65
500	-20	0.0	67	63
600	-22	0.0	65	61
700	-23	0.0	64	60

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 49. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Mixed Use - Parcel 6 Core and Shell			
Source 1: Crane - Sound level (dBA) at 50 feet =	81	16%	73.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			87
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	93	88
50	0	0.0	87	82
100	-6	0.0	81	76
150	-10	0.0	77	73
200	-12	0.0	75	70
250	-14	0.0	73	68
300	-16	0.0	71	67
400	-18	0.0	68	64
500	-20	0.0	67	62
600	-22	0.0	65	61
700	-23	0.0	64	59

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 50. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 1 Mixed Use - Parcel 6 Tenant Improvements			
Source 1: Dump truck - Sound level (dBA) at 50 feet =	76	40%	72.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	92	88
35	3	0.0	89	85
50	0	0.0	86	82
85	-5	0.0	81	77
90	-5	0.0	81	77
100	-6	0.0	80	76
150	-10	0.0	76	72
200	-12	0.0	74	70
400	-18	0.0	68	64
600	-22	0.0	64	60
800	-24	0.0	62	58

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 51. Construction Noise

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Phase 1 Mixed Use - Parcel 6 Landscaping			
Source 1: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Backhoe - Sound level (dBA) at 50 feet =	78	40%	74.0
Source 3: Front end loader - Sound level (dBA) at 50 feet =	79	40%	75.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			84
All Sources Combined - Leq sound level (dBA) at 50 feet =			80

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	90	86
35	3	0.0	87	83
50	0	0.0	84	80
85	-5	0.0	80	76
90	-5	0.0	79	75
100	-6	0.0	78	74
150	-10	0.0	75	71
200	-12	0.0	72	68
400	-18	0.0	66	62
600	-22	0.0	63	59
800	-24	0.0	60	56

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 52. Construction Noise

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Phase 2 Mixed Use - Grading and Utilities			
Source 1: Grader - Sound level (dBA) at 50 feet =	85	40%	81.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Scraper - Sound level (dBA) at 50 feet =	84	40%	80.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			89
All Sources Combined - Leq sound level (dBA) at 50 feet =			85

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	95	91
50	0	0.0	89	85
100	-6	0.0	83	79
150	-10	0.0	79	75
200	-12	0.0	77	73
250	-14	0.0	75	71
300	-16	0.0	73	69
400	-18	0.0	71	67
500	-20	0.0	69	65
600	-22	0.0	67	63
700	-23	0.0	66	62

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 53. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 2 Mixed Use - Tunnel Construction			
Source 1: Crane - Sound level (dBA) at 50 feet =	81	16%	73.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			87
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	93	88
50	0	0.0	87	82
100	-6	0.0	81	76
150	-10	0.0	77	72
200	-12	0.0	75	70
250	-14	0.0	73	68
300	-16	0.0	71	66
400	-18	0.0	68	64
500	-20	0.0	67	62
600	-22	0.0	65	60
700	-23	0.0	64	59

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 54. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 2 Mixed Use - Foundations			
Source 1: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			87
All Sources Combined - Leq sound level (dBA) at 50 feet =			83

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	93	89
50	0	0.0	87	83
100	-6	0.0	81	77
150	-10	0.0	77	73
200	-12	0.0	75	71
250	-14	0.0	73	69
300	-16	0.0	71	67
400	-18	0.0	68	65
500	-20	0.0	67	63
600	-22	0.0	65	61
700	-23	0.0	64	60

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 55. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 2 Mixed Use - Core and Shell			
Source 1: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Crane - Sound level (dBA) at 50 feet =	81	16%	73.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			87
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	93	88
35	3	0.0	90	85
50	0	0.0	87	82
85	-5	0.0	82	78
90	-5	0.0	81	77
100	-6	0.0	81	76
150	-10	0.0	77	73
200	-12	0.0	75	70
400	-18	0.0	68	64
600	-22	0.0	65	61
800	-24	0.0	62	58

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 56. Construction Noise

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Phase 2 Mixed Use - Tenant Improvements			
Source 1: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Dump truck - Sound level (dBA) at 50 feet =	76	40%	72.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	92	88
35	3	0.0	89	85
50	0	0.0	86	82
85	-5	0.0	81	77
90	-5	0.0	81	77
100	-6	0.0	80	76
150	-10	0.0	76	72
200	-12	0.0	74	70
400	-18	0.0	68	64
600	-22	0.0	64	60
800	-24	0.0	62	58

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 57. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Phase 2 Mixed Use - Landscaping			
Source 1: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Backhoe - Sound level (dBA) at 50 feet =	78	40%	74.0
Source 3: Front end loader - Sound level (dBA) at 50 feet =	79	40%	75.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			84
All Sources Combined - Leq sound level (dBA) at 50 feet =			80

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
25	6	0.0	90	86
35	3	0.0	87	83
50	0	0.0	84	80
85	-5	0.0	80	76
90	-5	0.0	79	75
100	-6	0.0	78	74
150	-10	0.0	75	71
200	-12	0.0	72	68
400	-18	0.0	66	62
600	-22	0.0	63	59
800	-24	0.0	60	56

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 58. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Hamilton Avenue - Demolition			
Source 1: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Front end loader - Sound level (dBA) at 50 feet =	79	40%	75.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			85
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
10	14	0.0	99	96
20	8	0.0	93	90
25	6	0.0	91	88
50	0	0.0	85	82
100	-6	0.0	79	76
150	-10	0.0	76	72
200	-12	0.0	73	70
300	-16	0.0	70	66
500	-20	0.0	65	62
600	-22	0.0	64	60
700	-23	0.0	62	59

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 59. Construction Noise

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Hamilton Avenue - Grading and Utilities			
Source 1: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Compactor (ground) - Sound level (dBA) at 50 feet =	83	20%	76.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			87
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
10	14	0.0	101	96
20	8	0.0	95	90
25	6	0.0	93	88
50	0	0.0	87	82
100	-6	0.0	81	76
150	-10	0.0	78	73
200	-12	0.0	75	70
300	-16	0.0	72	67
500	-20	0.0	67	62
600	-22	0.0	66	61
700	-23	0.0	64	59

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 60. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Hamilton Avenue - Foundations			
Source 1: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Front end loader - Sound level (dBA) at 50 feet =	79	40%	75.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
10	14	0.0	100	96
20	8	0.0	94	90
25	6	0.0	92	88
50	0	0.0	86	82
100	-6	0.0	80	76
150	-10	0.0	77	73
200	-12	0.0	74	70
300	-16	0.0	71	67
500	-20	0.0	66	62
600	-22	0.0	64	61
700	-23	0.0	63	59

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 61. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Hamilton Avenue - Core and Shell			
Source 1: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Dump truck - Sound level (dBA) at 50 feet =	76	40%	72.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
10	14	0.0	100	96
20	8	0.0	94	90
25	6	0.0	92	88
50	0	0.0	86	82
100	-6	0.0	80	76
150	-10	0.0	76	72
200	-12	0.0	74	70
300	-16	0.0	70	66
500	-20	0.0	66	62
600	-22	0.0	64	60
700	-23	0.0	63	59

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 62. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Hamilton Avenue - Tenant Improvements			
Source 1: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 2: Gradall - Sound level (dBA) at 50 feet =	83	40%	79.0
Source 3: Dump truck - Sound level (dBA) at 50 feet =	76	40%	72.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
10	14	0.0	100	96
20	8	0.0	94	90
25	6	0.0	92	88
50	0	0.0	86	82
100	-6	0.0	80	76
150	-10	0.0	76	72
200	-12	0.0	74	70
300	-16	0.0	70	66
500	-20	0.0	66	62
600	-22	0.0	64	60
700	-23	0.0	63	59

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 63. Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Install/Remove Detours			
Source 1: Mounted Impact Hammer (hoe ram) - Sound level (dBA) at 50 feet =	90	20%	83.0
Source 2: Concrete saw - Sound level (dBA) at 50 feet =	90	20%	83.0
Source 3: Jackhammer - Sound level (dBA) at 50 feet =	89	20%	82.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			94
All Sources Combined - Leq sound level (dBA) at 50 feet =			87

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
50	0	0.0	94	87
100	-6	0.0	88	81
150	-10	0.0	85	78
200	-12	0.0	82	75
250	-14	0.0	80	73
300	-16	0.0	79	72
400	-18	0.0	76	69
480	-20	0.0	75	68
620	-22	0.0	73	66
800	-24	0.0	70	63
1200	-28	0.0	67	60

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

1. Concrete Saw was used as source data for an AC Grinder

Table 64. Nighttime Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Traffic Shift			
Source 1: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Air Compressor - Sound level (dBA) at 50 feet =	78	40%	74.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			85
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
50	0	0.0	85	82
100	-6	0.0	79	76
150	-10	0.0	75	72
200	-12	0.0	73	70
250	-14	0.0	71	68
300	-16	0.0	69	66
400	-18	0.0	67	64
480	-20	0.0	65	62
620	-22	0.0	63	60
800	-24	0.0	61	58
1200	-28	0.0	57	54

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

1. Generators were used to model Light Plants

Table 65. Nighttime Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Tunnel Shoring			
Source 1: Vibratory Pile Driver - Sound level (dBA) at 50 feet =	101	20%	94
Source 2: Auger Drill Rig - Sound level (dBA) at 50 feet =	84	20%	77
Source 3: Pile Driver - Sound level (dBA) at 50 feet =	101	20%	94
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			104
All Sources Combined - Leq sound level (dBA) at 50 feet =			97

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
50	0	0.0	104	97
100	-6	0.0	98	91
150	-10	0.0	95	88
200	-12	0.0	92	85
250	-14	0.0	90	83
300	-16	0.0	88	82
480	-20	0.0	84	77
515	-20	0.0	84	77
610	-22	0.0	82	75
800	-24	0.0	80	73
1200	-28	0.0	76	69

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

1. Pile Driver was used to model Vibratory Hammer

Table 66. Nighttime Construction Noise

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Restore Willow Road			
Source 1: Excavator - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Source 3: Generator - Sound level (dBA) at 50 feet =	81	50%	78.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			86
All Sources Combined - Leq sound level (dBA) at 50 feet =			82

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
50	0	0.0	86	82
100	-6	0.0	80	76
150	-10	0.0	76	73
200	-12	0.0	74	70
250	-14	0.0	72	68
300	-16	0.0	70	67
400	-18	0.0	68	64
480	-20	0.0	66	63
620	-22	0.0	64	61
800	-24	0.0	62	58
1200	-28	0.0	58	55

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

1. Generators were used to model Light Plants

Noise Appendix
Off-site Improvement
Construction Noise Modeling

Off-Site Improvement Equipment by Activity, Screening Assessment

Update Std Utilization

Rank 3 loudest pieces of equipment by Phase. When two have the same Lmax, pick one with highest Utilization %

Phase	Subphase	Equipment Type	Number	Horsepower	Hours/Day	Utilization for Duration	Construction Equipment Terminology	Lmax Noise Level 50 feet	FHWA Utilization Rates	Rank	3 Loudest Equipment By Phase
Off-site 1	Intersections - Marsh & Bayfront	Striping Truck	1				Flat bed Truck	74	40%		
Off-site 1	Intersections - Marsh & Bayfront	Pick-Ups	2				Pickup Truck	75	40%		2 Flat bed Truck 1 Pickup Truck
Off-site 1	Intersections - Marsh & Bayfront	Traffic Control Truck	1				Flat bed Truck	74	40%		3 Flat bed Truck
Off-site 2	Intersections - Chilco & Hamilton	Truck Mounted Auger	1				Drill Rig Truck	79	20%		2 Drill Rig Truck
Off-site 2	Intersections - Chilco & Hamilton	Truck Mounted Crane	1				Crane	81	16%		1 Crane
Off-site 2	Intersections - Chilco & Hamilton	Utility Truck	2				Flat bed Truck	74	40%		
Off-site 2	Intersections - Chilco & Hamilton	Pick-Ups	2				Pickup Truck	75	40%		3 Pickup Truck
Off-site 2	Intersections - Chilco & Hamilton	Traffic Control Truck	1				Flat bed Truck	74	40%		
Off-site 3	Intersections - Willow & Ivy	Rubber-Tired Backhoe	1				Backhoe	78	40%		1 Backhoe
Off-site 3	Intersections - Willow & Ivy	10-wheel Dump	1				Dump Truck	76	40%		2 Dump Truck
Off-site 3	Intersections - Willow & Ivy	Utility Trucks	1				Flat bed Truck	74	40%		
Off-site 3	Intersections - Willow & Ivy	Pick-Ups	3				Pickup Truck	75	40%		3 Pickup Truck
Off-site 3	Intersections - Willow & Ivy	Traffic Control Truck	1				Flat bed Truck	74	40%		
Off-site 4	Intersections - O'Brien & Kavanaugh	Rubber-Tired Backhoe	1				Backhoe	78	40%		3 Backhoe
Off-site 4	Intersections - O'Brien & Kavanaugh	10-wheel Dump	1				Dump truck	76	40%		4
Off-site 4	Intersections - O'Brien & Kavanaugh	Utility Trucks	1				Flat Bed Truck	74	40%		7
Off-site 4	Intersections - O'Brien & Kavanaugh	Pick-Ups	3				Pickup Truck	75	40%		5
Off-site 4	Intersections - O'Brien & Kavanaugh	Traffic Control Truck	1				Flat Bed Truck	74	40%		7
Off-site 4	Intersections - O'Brien & Kavanaugh	Truck Mounted Auger	1				Drill Rig Truck	79	20%		2 Drill Rig Truck
Off-site 4	Intersections - O'Brien & Kavanaugh	Truck-Mounted Crane	1				Crane	81	16%		1 Crane
Off-site 4	Intersections - O'Brien & Kavanaugh	Utility Trucks	2				Flat Bed Truck	74	40%		7
Off-site 4	Intersections - O'Brien & Kavanaugh	Pick-Ups	2				Pickup Truck	75	40%		5
Off-site 4	Intersections - O'Brien & Kavanaugh	Traffic Control Truck	1				Flat Bed Truck	74	40%		7
Off-site 5	Intersections - Adams & O'Brien	Rubber-Tired Backhoe	1				Backhoe	78	40%		3 Backhoe
Off-site 5	Intersections - Adams & O'Brien	10-wheel Dump	1				Dump truck	76	40%		4
Off-site 5	Intersections - Adams & O'Brien	Utility Trucks	1				Flat Bed Truck	74	40%		7
Off-site 5	Intersections - Adams & O'Brien	Pick-Ups	3				Pickup Truck	75	40%		5
Off-site 5	Intersections - Adams & O'Brien	Traffic Control Truck	1				Flat Bed Truck	74	40%		7
Off-site 5	Intersections - Adams & O'Brien	Truck-Mounted Auger	1				Drill Rig Truck	79	20%		2 Drill Rig Truck
Off-site 5	Intersections - Adams & O'Brien	Truck-Mounted Crane	1				Crane	81	16%		1 Crane
Off-site 5	Intersections - Adams & O'Brien	Utility Trucks	2				Flat Bed Truck	74	40%		7
Off-site 5	Intersections - Adams & O'Brien	Pick-Ups	2				Pickup Truck	75	40%		5
Off-site 5	Intersections - Adams & O'Brien	Traffic Control Truck	1				Flat Bed Truck	74	40%		7
Off-site 6	Recycled Water Line - Main	Tracked Excavators	2				Excavator	81	40%		1 Excavator
Off-site 6	Recycled Water Line - Main	Rubber Tired Loaders	2				Front End Loader	79	40%		
Off-site 6	Recycled Water Line - Main	Utility/Crew Trucks	2				Flat Bed Truck	74	40%		
Off-site 6	Recycled Water Line - Main	Pickup Trucks	3				Pickup Truck	75	40%		
Off-site 6	Recycled Water Line - Main	10-wheel Dump Truck	2				Dump Truck	76	40%		
Off-site 6	Recycled Water Line - Main	Backhoe	1				Backhoe	78	40%		
Off-site 6	Recycled Water Line - Main	Vibratory Roller	1				Roller	80	20%		2 Roller
Off-site 6	Recycled Water Line - Main	Finish Roller	1				Roller	80	20%		3 Roller
Off-site 6	Recycled Water Line - Main	Utility/Crew Trucks	1				Flat Bed Truck	74	40%		
Off-site 6	Recycled Water Line - Main	Pickup Trucks	2				Pickup Truck	75	40%		
Off-site 7	PGE Feeder Line	Tracked Excavators	2				Excavator	81	40%		1 Excavator
Off-site 7	PGE Feeder Line	Rubber Tired Loaders	1				Front End Loader	79	40%		
Off-site 7	PGE Feeder Line	Utility/Crew Trucks	2				Flat Bed Truck	74	40%		
Off-site 7	PGE Feeder Line	Pickup Trucks	2				Pickup Truck	75	40%		
Off-site 7	PGE Feeder Line	10-wheel Dump Truck	2				Dump Truck	76	40%		
Off-site 7	PGE Feeder Line	AC Paver	1				Paver	77	50%		
Off-site 7	PGE Feeder Line	Backhoe	1				Backhoe	78	40%		
Off-site 7	PGE Feeder Line	Vibratory Roller	1				Roller	80	20%		2 Roller
Off-site 7	PGE Feeder Line	Finish Roller	1				Roller	80	20%		3 Roller
Off-site 7	PGE Feeder Line	Utility/Crew Trucks	1				Flat Bed Truck	74	40%		
Off-site 7	PGE Feeder Line	Pickup Trucks	2				Pickup Truck	75	40%		
Off-site 7	PGE Feeder Line	10-wheel Dump Truck	4				Dump Truck	76	40%		

Table 1. Construction Noise

Intersections - Marsh & Bayfront

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Intersections - Marsh & Bayfront			
Source 1: Pick-Ups - Sound level (dBA) at 50 feet =	75	40%	71.0
Source 2: Striping Truck - Sound level (dBA) at 50 feet =	74	40%	70.0
Source 3: Traffic Control Truck - Sound level (dBA) at 50 feet =	74	40%	70.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			79
All Sources Combined - Leq sound level (dBA) at 50 feet =			75

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
15	10	0.0	90	86
40	2	0.0	81	77
75	-4	0.0	76	72
100	-6	0.0	73	69
125	-8	0.0	71	67
150	-10	0.0	70	66
170	-11	0.0	69	65
230	-13	0.0	66	62
290	-15	0.0	64	60
300	-16	0.0	64	60
400	-18	0.0	61	57
550	-21	0.0	58	54
600	-22	0.0	58	54
750	-24	0.0	56	52
830	-24	0.0	55	51
900	-25	0.0	54	50
1000	-26	0.0	53	49

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 2. Construction Noise

Intersections - Chilco & Hamilton

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Intersections - Chilco & Hamilton			
Source 1: Truck Mounted Crane - Sound level (dBA) at 50 fe	81	16%	73.0
Source 2: Truck Mounted Auger - Sound level (dBA) at 50 fe	79	20%	72.0
Source 3: Pick-Ups - Sound level (dBA) at 50 feet =	75	40%	71.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			84
All Sources Combined - Leq sound level (dBA) at 50 feet =			77

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
15	10	0.0	94	87
40	2	0.0	86	79
75	-4	0.0	80	73
100	-6	0.0	78	71
125	-8	0.0	76	69
150	-10	0.0	74	67
170	-11	0.0	73	66
230	-13	0.0	70	64
290	-15	0.0	68	62
300	-16	0.0	68	61
400	-18	0.0	66	59
550	-21	0.0	63	56
600	-22	0.0	62	55
750	-24	0.0	60	53
830	-24	0.0	59	52
900	-25	0.0	59	52
1000	-26	0.0	58	51

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 3. Construction Noise

Intersections - Willow & Ivy

Source Data:	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Construction Condition: Intersections - Willow & Ivy			
Source 1: Rubber-Tired Backhoe - Sound level (dBA) at 50 feet =	78	40%	74.0
Source 2: 10-wheel Dump - Sound level (dBA) at 50 feet =	76	40%	72.0
Source 3: Pick-Ups - Sound level (dBA) at 50 feet =	75	40%	71.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			81
All Sources Combined - Leq sound level (dBA) at 50 feet =			77

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
15	10	0.0	92	88
40	2	0.0	83	79
75	-4	0.0	78	74
100	-6	0.0	75	71
125	-8	0.0	73	69
150	-10	0.0	72	68
170	-11	0.0	71	67
230	-13	0.0	68	64
290	-15	0.0	66	62
300	-16	0.0	66	62
400	-18	0.0	63	59
550	-21	0.0	60	56
600	-22	0.0	60	56
750	-24	0.0	58	54
830	-24	0.0	57	53
900	-25	0.0	56	52
1000	-26	0.0	55	51

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 4. Construction Noise

Intersections - O'Brien & Kavanaugh

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Intersections - O'Brien & Kavanaugh			
Source 1: Truck-Mounted Crane - Sound level (dBA) at 50 feet =	81	16%	73.0
Source 2: Truck-Mounted Auger - Sound level (dBA) at 50 feet =	79	20%	72.0
Source 3: Rubber-Tired Backhoe - Sound level (dBA) at 50 feet =	78	40%	74.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			84
All Sources Combined - Leq sound level (dBA) at 50 feet =			78

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
15	10	0.0	95	88
40	2	0.0	86	80
75	-4	0.0	81	74
100	-6	0.0	78	72
125	-8	0.0	76	70
150	-10	0.0	75	68
170	-11	0.0	74	67
230	-13	0.0	71	65
290	-15	0.0	69	63
300	-16	0.0	69	62
400	-18	0.0	66	60
550	-21	0.0	63	57
600	-22	0.0	63	56
750	-24	0.0	61	54
830	-24	0.0	60	53
900	-25	0.0	59	53
1000	-26	0.0	58	52

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 5. Construction Noise

Intersections - Adams & O'Brien

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Intersections - Adams & O'Brien			
Source 1: Truck-Mounted Crane - Sound level (dBA) at 50 feet =	81	16%	73.0
Source 2: Truck-Mounted Auger - Sound level (dBA) at 50 feet =	79	20%	72.0
Source 3: Rubber-Tired Backhoe - Sound level (dBA) at 50 feet =	78	40%	74.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			84
All Sources Combined - Leq sound level (dBA) at 50 feet =			78

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
15	10	0.0	95	88
40	2	0.0	86	80
75	-4	0.0	81	74
100	-6	0.0	78	72
125	-8	0.0	76	70
150	-10	0.0	75	68
170	-11	0.0	74	67
230	-13	0.0	71	65
290	-15	0.0	69	63
300	-16	0.0	69	62
400	-18	0.0	66	60
550	-21	0.0	63	57
600	-22	0.0	63	56
750	-24	0.0	61	54
830	-24	0.0	60	53
900	-25	0.0	59	53
1000	-26	0.0	58	52

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 6. Construction Noise

Recycled Water Line - Main

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: Recycled Water Line - Main			
Source 1: Tracked Excavators - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Vibratory Roller - Sound level (dBA) at 50 feet =	80	20%	73.0
Source 3: Finish Roller - Sound level (dBA) at 50 feet =	80	20%	73.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			85
All Sources Combined - Leq sound level (dBA) at 50 feet =			80

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
15	10	0.0	96	90
25	6	0.0	91	86
50	0	0.0	85	80
100	-6	0.0	79	74
150	-10	0.0	76	70
200	-12	0.0	73	68
250	-14	0.0	71	66
300	-16	0.0	70	64
400	-18	0.0	67	61
500	-20	0.0	65	60
600	-22	0.0	64	58
700	-23	0.0	62	57
800	-24	0.0	61	55
900	-25	0.0	60	54
1000	-26	0.0	59	54

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Table 8. Construction Noise

PGE Feeder Line

	Maximum Sound Level (dBA)	Utilization Factor	Leq Sound Level (dBA)
Source Data:			
Construction Condition: PGE Feeder Line			
Source 1: Tracked Excavators - Sound level (dBA) at 50 feet =	81	40%	77.0
Source 2: Vibratory Roller - Sound level (dBA) at 50 feet =	80	20%	73.0
Source 3: Finish Roller - Sound level (dBA) at 50 feet =	80	20%	73.0
Calculated Data:			
All Sources Combined - Lmax sound level (dBA) at 50 feet =			85
All Sources Combined - Leq sound level (dBA) at 50 feet =			80

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Ground Effect Attenuation (dB)	Calculated Lmax Sound Level (dBA)	Calculated Leq Sound Level (dBA)
15	10	0.0	96	90
25	6	0.0	91	86
75	-4	0.0	82	76
100	-6	0.0	79	74
150	-10	0.0	76	70
200	-12	0.0	73	68
250	-14	0.0	71	66
300	-16	0.0	70	64
400	-18	0.0	67	61
500	-20	0.0	65	60
600	-22	0.0	64	58
700	-23	0.0	62	57
800	-24	0.0	61	55
900	-25	0.0	60	54
1000	-26	0.0	59	54
2500	-34	0.0	51	46
3000	-36	0.0	50	44

Geometric attenuation based on 6 dB per doubling of distance.

Note: This calculation does not include the effects, if any, of local shielding from walls, topography or other barriers which may reduce sound levels further.

Noise Appendix
Construction Haul Truck Noise Modeling

Haul Truck Noise Modeling, Received Data for Phase 1 (a - not worst-case)

Roadway	Segment	ADT			Baseline Truck Percentage	Baseline Truck Volumes	Baseline Trucks + Haul Trucks	Baseline Trucks + Haul Truck Percentage	Posted Speeds
		Baseline Conditions	Truck Counts	Baseline Conditions + Haul Trucks					
Bayfront Expressway	Between Willow Road and University Avenue	42,495	268	42,763	4%	1700	1,968	5%	45
Bayfront Expressway	East of University Avenue Between Bayfront Expressway and Hamilton Avenue	57,918	268	58,186	4%	2317	2,585	4%	45
Willow Road	Avenue	21,735	268	22,003	4%	869	1,137	5%	40
Willow Road	Between Hamilton Avenue and Ivy Drive	22,195	268	22,463	4%	888	1,156	5%	40
Willow Road	Between Ivy Drive and O'Brien Drive	23,300	268	23,568	3%	699	967	4%	40
Willow Road	Between O'Brien Drive and Newbridge Street Between Newbridge Street and the US 101 NB	28,260	268	28,528	3%	848	1,116	4%	40
Willow Road	Ramps	35,427	268	35,695	3%	1063	1,331	4%	40

Haul Truck Noise Modeling, Received Data for Phase 1 (b - worst-case)

Roadway	Segment	ADT			Baseline Truck Percentage	Baseline Truck Volumes	Baseline Trucks + Haul Trucks	Baseline Trucks + Haul Truck Percentage	Posted Speeds
		Baseline Conditions	Truck Counts	Baseline Conditions + Haul Trucks					
Bayfront Expressway	Between Willow Road and University Avenue	42,495	386	42,881	4%	1700	2,086	5%	45
Bayfront Expressway	East of University Avenue Between Bayfront Expressway and Hamilton Avenue	57,918	386	58,304	4%	2317	2,703	5%	45
Willow Road	Avenue	21,735	386	22,121	4%	869	1,255	6%	40
Willow Road	Between Hamilton Avenue and Ivy Drive	22,195	386	22,581	4%	888	1,274	6%	40
Willow Road	Between Ivy Drive and O'Brien Drive	23,300	386	23,686	3%	699	1,085	5%	40
Willow Road	Between O'Brien Drive and Newbridge Street Between Newbridge Street and the US 101 NB	28,260	386	28,646	3%	848	1,234	4%	40
Willow Road	Ramps	35,427	386	35,813	3%	1063	1,449	4%	40

Haul Truck Noise Modeling, Received Data for Phase 2

Roadway	Segment	ADT			Baseline Truck Percentage	Baseline Truck Volumes	Baseline Trucks + Haul Trucks	Baseline Trucks + Haul Truck Percentage	Posted Speeds
		Baseline Conditions	Truck Counts	Baseline Conditions + Haul Trucks					
Bayfront Expressway	Between Willow Road and University Avenue	42,495	70	42,565	4%	1700	1,770	4%	45
Bayfront Expressway	East of University Avenue Between Bayfront Expressway and Hamilton Avenue	57,918	70	57,988	4%	2317	2,387	4%	45
Willow Road	Avenue	21,735	70	21,805	4%	869	939	4%	40
Willow Road	Between Hamilton Avenue and Ivy Drive	22,195	70	22,265	4%	888	958	4%	40
Willow Road	Between Ivy Drive and O'Brien Drive	23,300	70	23,370	3%	699	769	3%	40
Willow Road	Between O'Brien Drive and Newbridge Street Between Newbridge Street and the US 101 NB	28,260	70	28,330	3%	848	918	3%	40
Willow Road	Ramps	35,427	70	35,497	3%	1063	1,133	3%	40

Haul Truck Noise Modeling, Phase 1 Summary (a)

Roadway	Segment	Baseline Conditions dBA Ldn	Baseline Plus Haul Trucks dBA Ldn	Change in Sound Level (dBA Ldn)	Haul Truck Noise Only (dBA Ldn)
Bayfront Expressway	Between Willow Road and University Avenue	74.0	74.4	0.3	63.0
Bayfront Expressway	East of University Avenue	75.4	75.4	0.0	52.0
	Between Bayfront Expressway and Hamilton Avenue				59.7
Willow Road	Avenue	69.8	70.2	0.4	
Willow Road	Between Hamilton Avenue and Ivy Drive	69.9	70.3	0.4	59.7
Willow Road	Between Ivy Drive and O'Brien Drive	69.7	70.2	0.4	59.9
Willow Road	Between O'Brien Drive and Newbridge Street	70.6	71.0	0.4	60.6
Willow Road	Between Newbridge Street and the US 101 NB				61.5
Willow Road	Ramps	71.5	72.0	0.4	

Note: Modeled Distance is 50 feet

Haul Truck Noise Modeling, Phase 1 Summary (b)

Roadway	Segment	Baseline Conditions dBA Ldn	Baseline Plus Haul Trucks dBA Ldn	Change in Sound Level (dBA Ldn)	Haul Truck Noise Only (dBA Ldn)
Bayfront Expressway	Between Willow Road and University Avenue	74.0	74.4	0.3	63.2
Bayfront Expressway	East of University Avenue	75.4	75.7	0.3	64.4
	Between Bayfront Expressway and Hamilton Avenue				62.5
Willow Road	Avenue	69.8	70.5	0.7	
Willow Road	Between Hamilton Avenue and Ivy Drive	69.9	70.6	0.7	62.6
Willow Road	Between Ivy Drive and O'Brien Drive	69.7	70.5	0.8	62.8
Willow Road	Between O'Brien Drive and Newbridge Street	70.6	71.0	0.4	60.8
Willow Road	Between Newbridge Street and the US 101 NB				61.7
Willow Road	Ramps	71.5	72.0	0.4	

Note: Modeled Distance is 50 feet

Haul Truck Noise Modeling, Phase 2 Summary

Roadway	Segment	Baseline Conditions dBA Ldn	Baseline Plus Haul Trucks dBA Ldn	Change in Sound Level (dBA Ldn)	Haul Truck Noise Only (dBA Ldn)
Bayfront Expressway	Between Willow Road and University Avenue	74.0	74.1	0.0	46.2
Bayfront Expressway	East of University Avenue	75.4	75.4	0.0	46.2
	Between Bayfront Expressway and Hamilton Avenue				44.9
Willow Road	Avenue	69.8	69.8	0.0	
Willow Road	Between Hamilton Avenue and Ivy Drive	69.9	69.9	0.0	44.9
Willow Road	Between Ivy Drive and O'Brien Drive	69.7	69.7	0.0	44.5
Willow Road	Between O'Brien Drive and Newbridge Street	70.6	70.6	0.0	44.5
Willow Road	Between Newbridge Street and the US 101 NB				44.5
Willow Road	Ramps	71.5	71.5	0.0	

Note: Modeled Distance is 50 feet

Noise Appendix
Operations

Noise Appendix
Traffic Noise Modeling

Received ADT Data

Roadway	Segment	Truck %	Posted Speed (MPH)	Existing ADT	Background ADT	Background + Project ADT	Cumulative ADT	Cumulative + Project ADT
Marsh Road	North of Bayfront	0%	25	1,135	1,135	1,135	1,135	1,135
Bayfront Expressway	East of Marsh Road	3%	45	41,750	41,750	46,491	60,856	62,597
Marsh Road	South of Bayfront Expressway	3%	35	40,310	40,310	44,112	54,022	54,782
Haven Avenue	West of Marsh Road	3%	25	10,325	11,673	12,503	20,403	21,044
Marsh Road	North of US 101 Ramps	3%	35	30,080	30,560	34,094	44,571	45,368
US 101 NB On-Ramp	East of Marsh Road	3%	25	12,090	14,132	14,619	17,905	18,026
Marsh Road	South of US 101 NB Ramps	3%	35	31,400	31,400	34,109	40,519	40,882
Marsh Road	North of US 101 SB Ramps	2%	35	33,055	33,055	33,828	39,167	39,573
Marsh Road	South of US 101 SB Ramps	2%	35	25,220	25,999	26,716	30,364	30,881
US 101 SB Off-Ramp	West of Marsh Road	2%	25	15,155	15,694	15,745	19,315	19,315
Marsh Road	North of Scott Drive	2%	30	31,375	32,446	33,335	38,484	38,903
Scott Drive	East of Marsh Road	4%	25	5,125	5,125	5,129	5,805	5,805
Marsh Road	South of Scott Drive	2%	30	22,420	23,003	24,014	27,280	28,015
Marsh Road/Scott Drive	West of Marsh Road	2%	25	5,210	5,745	5,745	7,072	7,072
Marsh Road	North of Bohannon Street	2%	30	25,325	25,927	26,847	30,257	31,029
Bohannon Drive	East of Marsh Road	2%	25	2,495	2,535	2,542	3,226	3,261
Marsh Road	South of Bohannon Street	2%	30	20,545	21,025	21,866	25,987	26,645
Florence Street	West of Marsh Road	2%	25	12,085	12,775	12,980	15,174	15,515
Marsh Road	North of Bay Road	2%	30	20,805	21,285	22,126	26,247	26,905
Bay Road	East of Marsh Road	1%	30	6,230	6,349	6,494	9,069	9,488
Marsh Road	South of Bay Road	2%	30	16,065	16,065	16,709	17,616	17,969
Bay Road	West of Marsh Road	1%	25	2,000	2,860	2,917	4,403	4,561
Marsh Road	North of Middlefield Road	2%	30	16,445	16,483	17,085	18,679	19,006
Middlefield Road	East of Marsh Road	2%	30	15,285	16,017	16,697	18,777	19,085
Middlefield Road	West of Marsh Road	1%	30	12,540	12,923	13,083	15,083	15,247
Bayfront Expressway	East of Chrysler Drive	3%	45	36,835	36,835	41,729	49,141	50,934
Chrysler Drive	South of Bayfront Expressway	3%	25	9,035	9,035	9,247	15,854	16,007
Bayfront Expressway	West of Chrysler Drive	3%	45	43,420	43,420	48,161	62,526	64,267
Bayfront Expressway	East of Chilco Street	4%	45	36,060	36,060	40,704	48,858	50,332
Chilco Street	South of Bayfront Expressway	3%	25	9,580	9,874	10,293	14,358	14,358
Bayfront Expressway	West of Chilco Street	3%	45	36,820	36,820	41,714	49,126	50,919
Bayfront Expressway	East of MPK 21	4%	45	33,995	34,447	37,737	42,837	43,407
MPK 21	South of Bayfront Expressway	4%	25	6,670	6,670	8,024	11,078	11,983

Bayfront Expressway	West of MPK 21	4%	45	35,865	35,865	40,509	48,663	50,137
Bayfront Expressway	East of MPK 20	4%	45	34,410	34,410	36,200	44,652	44,652
MPK 20	South of Bayfront Expressway	5%	25	2,975	2,975	2,975	4,826	4,826
Bayfront Expressway	West of MPK 20	4%	45	34,375	34,827	38,117	43,217	43,787
Chrysler Drive	North of Constitution Drive	3%	25	10,105	10,105	10,317	16,924	17,077
Constitution Drive	East of Chrysler Drive	2%	25	2,885	3,995	4,197	8,829	8,957
Chrysler Drive	South of Constitution Drive	3%	25	7,945	7,945	8,230	12,756	12,767
Constitution Drive	West of Chrysler Drive	2%	25	295	4,417	4,511	5,577	5,701
Chilco Street	North of Constitution Drive	3%	25	10,310	10,604	11,023	15,088	15,088
Constitution Drive	East of Chilco Street	1%	25	3,080	3,080	3,292	3,622	3,622
Chilco Street	South of Constitution Drive	2%	25	7,630	7,630	8,711	10,971	11,271
Constitution Drive	West of Chilco Street	3%	25	6,250	6,527	6,809	11,853	12,195
Chilco Street	North of Hamilton Avenue	2%	25	5,225	5,225	6,313	8,555	8,854
Hamilton Avenue	East of Chilco Street	0%	25	2,940	2,940	3,054	3,675	3,675
Chilco Street	South of Hamilton Avenue	2%	25	3,815	3,815	4,724	6,258	7,017
Hamilton Avenue	West of Chilco Street	0%	25	2,050	2,050	2,251	2,050	2,194
Middlefield Road	East of Ravenswood Avenue	1%	30	17,145	18,786	19,369	21,061	21,304
Ravenswood Avenue	South of Middlefield Road	1%	25	10,750	11,229	11,242	11,229	11,320
Middlefield Road	West of Ravenswood Avenue	2%	30	10,715	10,769	11,263	11,617	11,699
Ringwood Avenue	North of Middlefield Road	2%	30	6,860	8,092	8,188	9,775	9,934
Middlefield Road	East of Ringwood Avenue	1%	30	14,420	14,903	15,472	17,803	18,045
Ringwood Avenue	South of Middlefield Road	0%	25	1,165	1,165	1,165	1,165	1,165
Middlefield Road	West of Ringwood Avenue	1%	30	16,925	18,566	19,149	20,841	21,084
Willow Road	North of Bayfront Expressway	5%	40	8,565	8,650	9,019	9,013	9,229
Bayfront Expressway	East of Willow Road	4%	45	42,495	42,495	43,645	51,362	51,362
Willow Road	South of Bayfront Expressway	4%	40	21,665	21,665	23,757	27,060	27,060
Bayfront Expressway	West of Willow Road	4%	45	32,125	32,125	33,915	42,367	42,367
Willow Road	North of Hamilton Avenue	4%	40	21,735	21,735	23,827	27,130	27,130
Hamilton Avenue	East of Willow Road	0%	25	4,570	4,570	4,570	7,504	7,504
Willow Road	South of Hamilton Avenue	4%	40	20,845	20,845	26,966	28,679	29,775
Hamilton Avenue	West of Willow Road	0%	25	2,600	2,600	2,600	2,600	2,600
Willow Road	North of Ivy Drive	3%	40	22,195	22,195	25,800	28,070	29,128
Willow Road	South of Ivy Drive	3%	40	23,300	23,300	24,997	29,547	29,547
Ivy Drive	West of Willow Road	2%	25	1,915	1,915	1,915	6,602	6,602
Willow Road	North of O'Brien Drive	3%	40	23,180	23,180	24,877	29,427	29,427
O'Brien Drive	East of Willow Road	3%	30	6,970	8,026	9,455	14,290	14,290
Willow Road	South of O'Brien Drive	3%	40	28,260	28,260	33,165	35,843	37,142

Willow Road	North of Newbridge Street	3%	40	27,795	27,795	32,705	34,354	35,838
Newbridge Street	East of Willow Road	1%	25	7,475	10,062	10,062	12,877	12,877
Willow Road	South of Newbridge Street	3%	40	34,290	34,387	39,625	45,326	47,267
Newbridge Street	West of Willow Road	2%	25	7,860	8,046	8,154	12,164	12,164
Willow Road	North of US 101 NB Ramps	3%	40	35,330	35,427	40,665	46,366	48,307
US 101 NB Ramps	East of Willow Road	3%	25	13,245	14,788	14,788	14,788	14,788
Willow Road	South of US 101 NB Ramps	3%	40	27,490	34,562	37,150	43,295	43,978
US 101 NB Ramps	West of Willow Road	2%	25	4,595	4,857	6,335	7,281	8,249
Willow Road	North of US 101 SB Ramps	3%	40	27,190	34,262	36,850	42,995	43,678
US 101 SB Ramps	East of Willow Road	3%	25	4,110	4,110	4,301	4,205	4,472
Willow Road	South of US 101 SB Ramps	3%	40	24,365	28,207	28,982	32,229	32,304
US 101 SB Ramps	West of Willow Road	3%	25	14,365	15,967	17,681	21,095	21,717
Willow Road	North of Bay Road	3%	25	26,310	30,152	30,927	34,174	34,249
Willow Road	South of Bay Road	3%	25	21,650	23,007	23,007	24,882	24,882
Bay Road	West of Willow Road	3%	30	6,505	8,551	9,409	10,866	11,605
Willow Road	North of Durham Street	3%	25	19,195	19,710	19,733	21,762	21,762
Durham Street	East of Willow Road	2%	25	1,300	1,741	1,741	2,441	2,441
Willow Road	South of Durham Street	3%	25	17,775	17,811	18,051	19,183	19,183
Hospital Plaza	West of Willow Road	0%	25	2,200	2,271	2,345	2,720	2,729
Willow Road	North of Coleman Avenue	3%	25	17,490	17,623	17,971	18,709	18,709
Coleman Avenue	East of Willow Road	0%	25	300	300	300	300	300
Willow Road	South of Coleman Avenue	3%	25	16,000	16,000	16,376	16,581	16,581
Coleman Avenue	West of Willow Road	0%	25	2,940	3,224	3,224	3,946	3,946
Willow Road	North of Gilbert Avenue	3%	25	16,025	16,025	16,401	16,606	16,606
Gilbert Avenue	East of Willow Road	0%	25	4,040	4,104	4,104	4,640	4,640
Willow Road	South of Gilbert Avenue	0%	25	16,120	16,120	16,120	16,120	16,120
Gilbert Avenue	West of Willow Road	1%	25	1,635	1,962	1,962	2,197	2,197
Willow Road	North of Middlefield Road	3%	25	15,155	15,235	15,681	15,824	15,824
Middlefield Road	East of Willow Road	3%	30	15,725	15,725	16,389	17,838	18,198
Willow Road	South of Middlefield Road	1%	25	6,270	7,293	7,548	8,227	8,306
Middlefield Road	West of Willow Road	3%	30	14,510	14,510	15,223	16,344	16,488
O'Biren Drive	North of Kavanaugh Drive	4%	30	5,695	6,116	10,753	9,987	13,993
Kavanaugh Drive	East of O'Brien Drive	2%	25	2,410	2,872	4,710	5,369	7,444
O'Brien Drive	South of Kavanaugh Drive	3%	30	7,510	8,391	10,157	14,700	14,700
Adams Drive	North of Adams Court	5%	25	2,535	2,535	2,628	2,537	2,665
Adams Drive	South of Adams Court	4%	25	2,635	2,636	2,636	5,300	5,300
Adams Court	West of Adams Drive	4%	25	1,710	1,711	1,711	4,373	4,373

Adams Drive	North of O'Brien Drive	4%	25	2,960	2,961	2,961	5,625	5,625
O'Brien Drive	East of Adams Drive	5%	30	3,925	4,174	9,921	8,362	15,759
O'Brien Drive	West of Adams Drive	5%	30	5,435	5,856	11,605	9,727	17,178
Bayfront Expressway	East of University Avenue	4%	45	57,635	57,918	58,901	70,168	70,626
University Avenue	South of Bayfront Expressway	5%	35	20,430	23,645	23,645	29,961	29,961
Bayfront Expressway	West of University Avenue	4%	45	40,805	40,805	41,602	49,337	49,337
University Avenue	North of Purdue Avenue	5%	35	22,355	25,570	25,570	31,886	31,886
Purdue Avenue	East of University Avenue	4%	25	2,080	4,271	4,475	8,303	9,099
University Avenue	South of Purdue Avenue	5%	35	21,485	22,624	22,624	26,158	26,158
University Avenue	North of Adams Drive	5%	35	23,930	25,069	25,069	28,603	28,603
University Avenue	South of Adams Drive	5%	35	22,735	23,949	23,949	26,586	26,586
Adams Drive	West of University Avenue	4%	25	2,640	2,640	2,640	3,538	3,538
University Avenue	North of O'Brien Drive	5%	35	22,025	23,239	23,239	25,876	25,876
University Avenue	South of O'Brien Drive	5%	35	20,900	21,943	23,477	25,202	27,443
O'Brien Drive	West of University Avenue	5%	30	3,890	3,954	9,579	8,534	15,567
University Avenue	North of Notre Dame Avenue	5%	25	21,705	22,748	24,282	26,007	28,248
Notre Dame Avenue	East of University Avenue	3%	25	1,190	1,195	1,461	1,564	2,023
University Avenue	South of Notre Dame Avenue	5%	25	22,155	23,194	24,497	26,093	27,894
University Avenue	North of Kavanaugh Drive	5%	25	23,270	24,309	25,612	27,208	29,009
University Avenue	South of Kavanaugh Drive	5%	25	22,345	23,510	24,836	27,521	29,200
Kavanaugh Drive	West of University Avenue	2%	25	2,385	2,530	2,530	4,349	4,349
University Avenue	North of Bay Road	5%	25	22,840	23,368	24,971	26,050	28,030
Bay Road	East of University Avenue	4%	25	10,380	14,802	14,802	25,046	25,046
University Avenue	South of Bay Road	4%	25	20,555	24,922	26,005	29,893	31,416
Bay Road	West of University Avenue	2%	25	7,165	9,409	9,718	13,001	13,388
University Avenue	North of Runnymede Street	4%	25	20,090	24,337	24,979	28,132	28,731
Runnymede Street	East of University Avenue	2%	25	5,015	5,095	5,419	5,233	5,334
University Avenue	South of Runnymede Street	4%	25	18,175	22,555	23,377	27,193	28,297
Runnymede Street	West of University Avenue	2%	25	3,320	3,534	4,038	4,532	5,142
University Avenue	North of Bell Street	4%	25	19,395	23,775	24,597	28,413	29,517
Bell Street	East of University Avenue	1%	25	3,865	4,297	4,297	6,277	7,231
University Avenue	South of Bell Street	4%	25	20,575	25,530	26,179	29,820	30,987
Bell Street	West of University Avenue	1%	25	2,995	3,696	3,696	6,919	7,224
University Avenue	North of Donohoe Street	4%	25	17,570	22,525	23,174	26,815	27,982
Donohoe Street	East of University Avenue	3%	25	20,835	21,337	21,337	25,381	25,530
University Avenue	South of Donohoe Street	3%	25	27,715	27,715	28,810	32,885	32,885
Donohoe Street	West of University Avenue	2%	25	12,190	12,427	12,427	12,818	12,818

Donohoe Street	North of US 101 NB Ramps	0%	25	1,615	1,615	1,615	1,615	1,615
US 101 NB Ramps	East of University Avenue	3%	25	18,540	18,762	19,323	22,151	22,176
University Avenue	South of US 101 NB Ramps	4%	25	10,915	11,677	12,082	17,054	18,683
US 101 NB Ramps	West of University Avenue	3%	25	21,160	21,662	21,662	25,706	25,855
Cooley Avenue	North of Donohoe Street	4%	25	7,115	7,311	8,056	10,427	12,017
Donohoe Street	East of Cooley Avenue	2%	25	14,200	14,498	14,735	16,489	16,489
Cooley Avenue	South of Donohoe Street	0%	25	690	690	690	690	690
Donohoe Street	West of Cooley Avenue	3%	25	17,985	18,207	18,768	21,596	21,621
University Avenue	North of US 101 SB Ramps	3%	25	32,555	32,882	33,341	37,572	37,785
US 101 SB Ramps	East of University Avenue	3%	25	18,005	19,546	19,843	20,802	20,802
University Avenue	South of US 101 SB Ramps	2%	25	26,160	26,645	26,667	29,892	30,160
University Avenue	North of Woodland Avenue	2%	25	27,030	27,515	27,537	30,762	31,030
Woodland Avenue	East of University Avenue	1%	25	7,035	7,179	7,179	7,938	8,154
University Avenue	South of Woodland Avenue	4%	25	14,745	14,980	14,980	16,183	16,183
Woodland Avenue	West of University Avenue	1%	25	10,520	10,520	10,953	13,144	13,144
University Avenue	North of Middlefield Road	4%	25	9,680	9,680	9,680	11,066	11,179
Middlefield Road	East of University Avenue	3%	25	8,420	8,691	9,091	10,272	10,582
University Avenue	South of Middlefield Road	4%	25	7,330	7,330	7,330	7,954	8,128
Middlefield Road	West of University Avenue	3%	25	9,440	9,440	10,032	10,428	11,184
Lytton Avenue	North of Middlefield Road	2%	25	2,140	2,189	2,189	2,189	2,202
Middlefield Road	East of Lytton Avenue	3%	25	9,485	9,485	10,077	10,473	11,229
Lytton Avenue	South of Middlefield Road	1%	25	7,320	7,405	7,405	7,675	7,675
Middlefield Road	West Lytton Avenue	3%	25	12,045	12,045	12,653	13,445	13,830
Donohoe Street	North of East Bayshore Road	2%	25	14,660	14,958	15,195	16,949	16,949
Donohoe Street	East of East Bayshore Road	2%	25	5,420	5,945	5,963	7,214	7,214
East Bayshore Road	South of Donohoe Street	1%	25	9,750	9,750	9,969	10,471	10,471
East Bayshore Road	North of Holland Street	0%	25	2,460	2,460	2,460	2,460	2,460
Holland Street	East of East Bayshore Road	3%	25	210	210	210	219	219
East Bayshore Road	South of Holland Street	2%	25	2,370	2,374	2,374	3,603	3,603
Saratoga Avenue	North of Newbridge Street	2%	25	495	495	495	1,538	1,538
Newbridge Street	East of Saratoga Avenue	1%	25	7,210	9,880	9,880	12,486	12,486
Saratoga Avenue	South of Newbridge Street	2%	25	1,690	1,694	1,694	2,932	2,932
Newbridge Street	West of Saratoga Avenue	1%	25	9,125	11,712	11,712	14,527	14,527
Euclid Avenue	North of East Bayshore Road	1%	25	3,310	4,302	4,302	7,023	7,218
East Bayshore Road	East of Euclid Avenue	1%	25	10,515	11,169	11,169	13,931	13,931
East Bayshore Road	West of Euclid Avenue	1%	25	7,655	7,655	7,655	8,965	8,965
Clark Avenue	North of East Bayshore Road	4%	25	4,025	4,087	4,227	4,921	5,072

East Bayshore Road	East of Clark Avenue	2%	25	7,120	7,157	7,372	8,393	8,550
East Bayshore Road	West of Clark Avenue	1%	25	5,055	5,055	5,130	5,457	5,463
Pulgas Avenue	North of East Bayshore Road	5%	25	8,675	10,213	10,303	14,091	14,619
East Bayshore Road	East of Pulgas Avenue	5%	25	12,115	13,689	13,995	18,804	19,489
East Bayshore Road	West of Pulgas Avenue	2%	25	6,580	6,617	6,832	7,853	8,010

Traffic Modeling Summary for ADT Changes of 10% and More, Background and Background with Project

Roadway	Segment	Truck %	Posted speed	Distance Modeled	Background				Background + Project				DELTA Ldn	DELTA CNEL	DELTA Leq	Delta	
					Background ADT	Ldn (dB)	CNEL (dB)	Leq (dB)	Background + Project ADT	Ldn (dB)	CNEL (dB)	Leq (dB)				(Project ADT)	(% increase from Project)
Bayfront Expressway	East of Marsh Road	3%	45	50	41,750	73.6	74.2	72.8	46,491	74.1	74.7	73.3	0.5	0.5	0.5	4,741	11%
Marsh Road	North of US 101 Ramps	3%	35	50	30,560	69.5	70.1	68.7	34,094	69.9	70.5	69.1	0.5	0.5	0.5	3,534	12%
Bayfront Expressway	East of Chrysler Drive	3%	45	50	36,835	73.1	73.7	72.3	41,729	73.6	74.2	72.8	0.5	0.5	0.5	4,894	13%
Bayfront Expressway	West of Chrysler Drive	3%	45	50	43,420	73.8	74.4	73.0	48,161	74.3	74.9	73.5	0.4	0.4	0.4	4,741	11%
Bayfront Expressway	East of Chilco Street	4%	45	50	36,060	73.1	73.7	72.3	40,704	73.6	74.2	72.8	0.5	0.5	0.5	4,644	13%
Bayfront Expressway	West of Chilco Street	3%	45	50	36,820	73.3	73.9	72.5	41,714	73.9	74.5	73.1	0.5	0.5	0.5	4,894	13%
Bayfront Expressway	East of MPK 21	4%	45	50	34,447	61.0	61.6	60.2	37,737	61.8	62.4	61.0	0.8	0.8	0.8	3,290	10%
MPK 21	South of Bayfront Expressway	4%	25	50	6,670	73.3	73.9	72.5	8,024	73.8	74.4	73.0	0.5	0.5	0.5	1,354	20%
Bayfront Expressway	West of MPK 21	4%	45	50	35,865	73.1	73.7	72.3	40,509	73.5	74.1	72.7	0.4	0.4	0.4	4,644	13%
Chilco Street	South of Constitution Drive	2%	25	50	7,630	60.7	60.7	59.2	8,711	60.6	61.2	59.8	0.6	0.6	0.6	1,081	14%
Chilco Street	North of Hamilton Avenue	2%	25	50	5,225	57.1	57.7	56.2	6,313	58.0	58.6	57.1	0.9	0.9	0.9	1,088	21%
Chilco Street	South of Hamilton Avenue	2%	25	50	3,815	58.5	59.0	57.6	4,724	59.3	59.8	58.4	0.8	0.8	0.8	909	24%
Hamilton Avenue	West of Chilco Street	0%	25	50	2,050	52.4	53.0	51.2	2,251	52.8	53.3	51.6	0.4	0.4	0.4	201	10%
Willow Road	South of Bayfront Expressway	4%	40	50	21,665	69.8	70.4	69.0	23,757	70.2	70.8	69.4	0.4	0.4	0.4	2,092	10%
Willow Road	North of Hamilton Avenue	4%	40	50	21,735	69.6	70.2	68.8	23,827	70.7	71.3	69.9	1.1	1.1	1.1	2,092	10%
Willow Road	South of Hamilton Avenue	4%	40	50	20,845	69.8	70.4	69.0	26,966	70.2	70.8	69.4	0.4	0.4	0.4	6,121	29%
Willow Road	North of Ivy Drive	3%	40	50	22,195	69.5	70.1	68.7	25,800	70.2	70.8	69.4	0.7	0.7	0.7	3,605	16%
O'Brien Drive	East of Willow Road	3%	30	50	8,026	62.3	62.9	61.5	9,455	63.0	63.6	62.2	0.7	0.7	0.7	1,429	18%
Willow Road	South of O'Brien Drive	3%	40	50	28,260	70.6	71.2	69.8	33,165	71.3	71.9	70.5	0.7	0.7	0.7	4,905	17%
Willow Road	North of Newbridge Street	3%	40	50	27,795	70.5	71.1	69.7	32,705	71.2	71.8	70.4	0.7	0.7	0.7	4,910	18%
Willow Road	South of Newbridge Street	3%	40	50	34,387	71.4	72.0	70.6	39,625	72.0	72.6	71.2	0.6	0.6	0.6	5,238	15%
Willow Road	North of US 101 NB Ramps	3%	40	50	35,427	58.2	58.7	57.3	40,665	59.3	59.9	58.4	1.1	1.1	1.1	5,238	15%
US 101 NB Ramps	West of Willow Road	2%	25	50	4,857	71.5	72.1	70.7	6,335	72.1	72.7	71.3	0.6	0.6	0.6	1,478	30%
US 101 SB Ramps	West of Willow Road	3%	25	50	15,967	64.1	64.7	63.2	17,681	64.5	65.1	63.7	0.4	0.4	0.4	1,714	11%
Bay Road	West of Willow Road	3%	30	50	8,551	62.6	63.2	61.7	9,409	63.0	63.6	62.2	0.4	0.4	0.4	858	10%
O'Brien Drive	North of Kavanaugh Drive	4%	30	50	6,116	61.7	62.3	60.9	10,753	64.1	64.7	63.3	2.4	2.4	2.4	4,637	76%
Kavanaugh Drive	East of O'Brien Drive	2%	25	50	2,872	56.0	56.6	55.0	4,710	58.0	58.6	57.1	2.1	2.1	2.1	1,838	64%
O'Brien Drive	South of Kavanaugh Drive	3%	30	50	8,391	62.5	63.1	61.7	10,157	63.3	63.9	62.5	0.8	0.8	0.8	1,766	21%
O'Brien Drive	East of Adams Drive	5%	30	280	4,174	52.8	53.3	51.9	9,921	56.5	57.0	55.6	3.7	3.7	3.7	5,747	138%
O'Brien Drive	West of Adams Drive	5%	30	50	5,856	62.0	62.6	61.2	11,605	64.9	65.5	64.1	2.9	2.9	3.0	5,749	98%
O'Brien Drive	West of University Avenue	5%	30	280	3,954	52.5	53.1	51.7	9,579	56.3	56.9	55.5	3.8	3.8	3.8	5,625	142%
Notre Dame Avenue	East of University Avenue	3%	25	50	1,195	53.2	53.8	52.1	1,461	54.0	54.6	53.0	0.8	0.8	0.8	266	22%
Runnymede Street	West of University Avenue	2%	25	50	3,534	56.8	57.4	55.9	4,038	57.4	58.0	56.5	0.6	0.6	0.6	504	14%
Cooley Avenue	North of Donohoe Street	4%	25	50	7,311	61.4	62.0	60.6	8,056	61.8	62.4	61.0	0.4	0.4	0.4	745	10%

Traffic Modeling Summary for ADT Changes of 10% and More, Cumulative and Cumulative with Project

Roadway	Segment	Truck %	Posted speed	Distance Modeled	Cumulative				Cumulative + Project				DELTA Ldn	DELTA CNEL	DELTA Leq	Delta	
					Cumulative ADT	Ldn (dB)	CNEL (dB)	Leq (dB)	Cumulative + Project ADT	Ldn (dB)	CNEL (dB)	Leq (dB)				(Project ADT)	(% increase from Project)
Chilco Street	South of Hamilton Avenue	2%	25	50	6,258	59.2	59.8	58.3	7,017	59.7	60.3	58.8	0.5	0.5	0.5	759	12%
US 101 NB Ramps	West of Willow Road	2%	25	50	7,281	59.9	60.5	59.0	8,249	60.4	61.0	59.5	0.5	0.5	0.5	968	13%
O'Brien Drive	North of Kavanaugh Drive	4%	30	50	9,987	63.8	64.4	63.0	13,993	65.2	65.8	64.4	1.5	1.5	1.5	4,006	40%
Kavanaugh Drive	East of O'Brien Drive	2%	25	50	5,369	58.6	59.2	57.7	7,444	60.0	60.5	59.1	1.4	1.4	1.4	2,075	39%
O'Brien Drive	East of Adams Drive	5%	30	50	8,362	63.5	64.1	62.7	15,759	66.3	66.9	65.4	2.7	2.7	2.7	7,397	88%
O'Brien Drive	West of Adams Drive	5%	30	50	9,727	64.2	64.8	63.4	17,178	66.6	67.2	65.8	2.5	2.5	2.5	7,451	77%
Purdue Avenue	East of University Avenue	4%	25	50	8,303	61.9	62.5	61.1	9,099	62.3	62.9	61.5	0.4	0.4	0.4	796	10%
O'Brien Drive	West of University Avenue	5%	30	50	8,534	63.6	64.2	62.8	15,567	66.2	66.8	65.4	2.6	2.6	2.6	7,033	82%
Notre Dame Avenue	East of University Avenue	3%	25	50	1,564	54.3	54.9	53.2	2,023	55.3	55.9	54.3	1.0	1.0	1.1	459	29%
Runnymede Street	West of University Avenue	2%	25	50	4,532	57.9	58.4	57.0	5,142	58.4	59.0	57.5	0.5	0.5	0.5	610	13%
Bell Street	East of University Avenue	1%	25	50	6,277	58.2	58.8	57.3	7,231	58.8	59.4	57.9	0.6	0.6	0.6	954	15%
University Avenue	South of US 101 NB Ramps	4%	25	50	17,054	65.0	65.6	64.2	18,683	65.4	66.0	64.6	0.4	0.4	0.4	1,629	10%
Cooley Avenue	North of Donohoe Street	4%	25	50	10,427	62.9	63.5	62.1	12,017	63.5	64.1	62.7	0.6	0.6	0.6	1,590	15%

Full Traffic Noise Data

Roadway	Segment	Truck %	Posted speed	Existing			Background			Background + Project			Cumulative			Cumulative + Project		
				Existing ADT	Existing Ldn (dB)	Existing CNEL (dB)	Background ADT	Existing Ldn (dB)	Existing CNEL (dB)	Background + Project ADT	Existing Ldn (dB)	Existing CNEL (dB)	Cumulative ADT	Existing Ldn (dB)	Existing CNEL (dB)	Cumulative + Project ADT	Existing Ldn (dB)	Existing CNEL (dB)
Marsh Road	North of Bayfront	0%	25	1,135	50.3	50.8	1,135	50.3	50.8	1,135	50.3	50.8	1,135	50.3	50.8	1,135	50.3	50.8
Bayfront Expressway	East of Marsh Road	3%	45	41,750	73.6	74.2	41,750	61.4	62.0	46,491	61.6	62.2	60,856	75.3	75.9	62,597	75.4	76.0
Marsh Road	South of Bayfront Expressway	3%	35	40,310	70.7	71.3	40,310	48.7	49.2	44,112	48.7	49.2	54,022	71.9	72.5	54,782	72.0	72.6
Haven Avenue	West of Marsh Road	3%	25	10,325	62.2	62.8	11,673	51.5	52.1	12,503	51.5	52.1	20,403	65.1	65.7	21,044	65.2	65.8
Marsh Road	North of US 101 Ramps	3%	35	30,080	69.4	70.0	30,560	61.4	62.0	34,094	61.4	62.0	44,571	71.1	71.7	45,368	71.2	71.8
US 101 NB On-Ramp	East of Marsh Road	3%	25	12,090	62.9	63.5	14,132	61.7	62.3	14,619	64.1	64.7	17,905	64.6	65.1	18,026	64.6	65.2
Marsh Road	South of US 101 NB Ramps	3%	35	31,400	69.6	70.2	31,400	62.8	63.4	34,109	62.9	63.5	40,519	70.7	71.3	40,882	70.7	71.3
Marsh Road	North of US 101 SB Ramps	2%	35	33,055	69.3	69.9	33,055	58.3	58.9	33,828	58.5	59.0	39,167	70.0	70.6	39,573	70.1	70.7
Marsh Road	South of US 101 SB Ramps	2%	35	25,220	68.1	68.7	25,999	64.5	65.1	26,716	64.6	65.2	30,364	68.9	69.5	30,881	69.0	69.6
US 101 SB Off-Ramp	West of Marsh Road	2%	25	15,155	63.0	63.6	15,694	69.8	70.4	15,745	70.2	70.8	19,315	64.0	64.6	19,315	64.0	64.6
Marsh Road	North of Scott Drive	2%	30	31,375	67.5	68.1	32,446	64.5	65.1	33,335	64.6	65.2	38,484	68.4	69.0	38,903	68.5	69.1
Scott Drive	East of Marsh Road	4%	25	5,125	59.9	60.5	5,125	62.9	63.5	5,129	63.1	63.7	5,805	60.4	61.0	5,805	60.4	61.0
Marsh Road	South of Scott Drive	2%	30	22,420	66.1	66.7	23,003	67.0	67.6	24,014	67.2	67.8	27,280	66.9	67.5	28,015	67.0	67.6
Marsh Road/Scott Drive	West of Marsh Road	2%	25	5,210	58.4	59.0	5,745	73.6	74.2	5,745	74.1	74.7	7,072	59.7	60.3	7,072	59.7	60.3
Marsh Road	North of Bohannon Street	2%	30	25,325	66.6	67.2	25,927	57.1	57.7	26,847	57.1	57.7	30,257	67.4	68.0	31,029	67.5	68.1
Bohannon Drive	East of Marsh Road	2%	25	2,495	55.4	56.0	2,535	66.2	66.8	2,542	66.4	66.9	3,226	56.5	57.0	3,261	56.5	57.1
Marsh Road	South of Bohannon Street	2%	30	20,545	65.7	66.3	21,025	69.0	69.6	21,866	69.0	69.6	25,987	66.7	67.3	26,645	66.8	67.4
Florence Street	West of Marsh Road	2%	25	12,085	62.0	62.6	12,775	62.3	62.9	12,980	63.0	63.6	15,174	63.0	63.6	15,515	63.1	63.7
Marsh Road	North of Bay Road	2%	30	20,805	65.8	66.4	21,285	69.6	70.2	22,126	69.6	70.2	26,247	66.8	67.4	26,905	66.9	67.5
Bay Road	East of Marsh Road	1%	30	6,230	59.8	60.4	6,349	71.4	72.0	6,494	71.7	72.3	9,069	61.4	62.0	9,488	61.6	62.2
Marsh Road	South of Bay Road	2%	30	16,065	64.6	65.2	16,065	69.5	70.1	16,709	69.5	70.1	17,616	65.0	65.6	17,969	65.1	65.7
Bay Road	West of Marsh Road	1%	25	2,000	53.5	54.1	2,860	60.3	60.9	2,917	60.3	60.9	4,403	56.7	57.3	4,561	56.9	57.5
Marsh Road	North of Middlefield Road	2%	30	16,445	64.7	65.3	16,483	52.8	53.3	17,085	56.5	57.0	18,679	65.3	65.9	19,006	65.4	66.0
Middlefield Road	East of Marsh Road	2%	30	15,285	64.4	65.0	16,017	68.9	69.5	16,697	69.2	69.8	18,777	65.3	65.9	19,085	65.4	66.0
Middlefield Road	West of Marsh Road	1%	30	12,540	62.8	63.4	12,923	55.6	56.1	13,083	55.6	56.1	15,083	63.6	64.2	15,247	63.7	64.3
Bayfront Expressway	East of Chrysler Drive	3%	45	36,835	73.1	73.7	36,835	61.8	62.4	41,729	62.1	62.7	49,141	74.4	74.9	50,934	74.5	75.1
Chrysler Drive	South of Bayfront Expressway	3%	25	9,035	61.6	62.2	9,035	64.1	64.7	9,247	64.5	65.1	15,854	64.0	64.6	16,007	64.1	64.7
Bayfront Expressway	West of Chrysler Drive	3%	45	43,420	73.8	74.4	43,420	62.6	63.2	48,161	62.6	63.2	62,526	75.4	76.0	64,267	75.5	76.1
Bayfront Expressway	East of Chilco Street	4%	45	36,060	73.3	73.9	36,060	61.8	62.4	40,704	62.1	62.7	48,858	74.7	75.2	50,332	74.8	75.4
Chilco Street	South of Bayfront Expressway	3%	25	9,580	61.9	62.5	9,874	69.2	69.7	10,293	69.2	69.7	14,358	63.6	64.2	14,358	63.6	64.2
Bayfront Expressway	West of Chilco Street	3%	45	36,820	73.1	73.7	36,820	58.9	59.5	41,714	58.9	59.5	49,126	74.3	74.9	50,919	74.5	75.1
Bayfront Expressway	East of MPK 21	4%	45	33,995	73.1	73.7	34,447	67.2	67.8	37,737	67.2	67.8	42,837	74.1	74.7	43,407	74.1	74.7
MPK 21	South of Bayfront Expressway	4%	25	6,670	61.0	61.6	6,670	60.1	60.7	8,024	60.1	60.7	11,078	63.2	63.8	11,983	63.5	64.1
Bayfront Expressway	West of MPK 21	4%	45	35,865	73.3	73.9	35,865	54.9	55.4	40,509	54.9	55.4	48,663	74.6	75.2	50,137	74.8	75.4
Bayfront Expressway	East of MPK 20	4%	45	34,410	73.1	73.7	34,410	66.6	67.2	36,200	66.7	67.3	44,652	74.3	74.9	44,652	74.3	74.9
MPK 20	South of Bayfront Expressway	5%	25	2,975	58.2	58.8	2,975	70.7	71.3	2,975	71.1	71.7	4,826	60.2	60.8	4,826	60.2	60.8
Bayfront Expressway	West of MPK 20	4%	45	34,375	73.1	73.7	34,827	64.6	65.2	38,117	64.8	65.3	43,217	74.1	74.7	43,787	74.2	74.8
Chrysler Drive	North of Constitution Drive	3%	25	10,105	62.1	62.7	10,105	71.5	72.1	10,317	72.1	72.7	16,924	64.3	64.9	17,077	64.3	64.9
Constitution Drive	East of Chrysler Drive	2%	25	2,885	56.0	56.6	3,995	61.0	61.5	4,197	61.1	61.7	8,829	60.7	61.3	8,957	60.7	61.3
Chrysler Drive	South of Constitution Drive	3%	25	7,945	61.1	61.7	7,945	55.3	55.9	8,230	55.3	55.9	12,756	63.1	63.7	12,767	63.1	63.7
Constitution Drive	West of Chrysler Drive	2%	25	295	47.8	48.3	4,417	63.7	64.3	4,511	63.7	64.3	5,577	58.7	59.3	5,701	58.8	59.4
Chilco Street	North of Constitution Drive	3%	25	10,310	62.2	62.8	10,604	59.1	59.7	11,023	59.3	59.9	15,088	63.8	64.4	15,088	63.8	64.4
Constitution Drive	East of Chilco Street	1%	25	3,080	55.3	55.8	3,080	66.4	67.0	3,292	66.6	67.2	3,622	55.9	56.5	3,622	55.9	56.5
Chilco Street	South of Constitution Drive	2%	25	7,630	60.1	60.7	7,630	62.8	63.4	8,711	63.1	63.6	10,971	61.6	62.2	11,271	61.7	62.3
Constitution Drive	West of Chilco Street	3%	25	6,250	60.0	60.6	6,527	66.9	67.5	6,809	67.2	67.8	11,853	62.8	63.4	12,195	62.9	63.5
Chilco Street	North of Hamilton Avenue	2%	25	5,225	58.5	59.0	5,225	53.8	54.4	6,313	53.8	54.4	8,555	60.5	61.1	8,854	60.7	61.3
Hamilton Avenue	East of Chilco Street	0%	25	2,940	53.8	54.4	2,940	69.2	69.8	3,054	69.2	69.8	3,675	54.7	55.3	3,675	54.7	55.3
Chilco Street	South of Hamilton Avenue	2%	25	3,815	57.1	57.7	3,815	60.7	61.2	4,724	60.7	61.2	6,258	59.2	59.8	7,017	59.7	60.3
Hamilton Avenue	West of Chilco Street	0%	25	2,050	52.4	53.0	2,050	65.6	66.2	2,251	65.6	66.2	2,050	52.4	53.0	2,194	52.7	53.2
Middlefield Road	East of Ravenswood Avenue	1%	30	17,145	64.2	64.8	18,786	60.8	61.4	19,369	60.8	61.4	21,061	65.1	65.7	21,304	65.1	65.7
Ravenswood Avenue	South of Middlefield Road	1%	25	10,750	60.5	61.1	11,229	50.4	50.9	11,242	50.4	50.9	11,229	60.7	61.3	11,320	60.7	61.3
Middlefield Road	West of Ravenswood Avenue	2%	30	10,715	62.9	63.5	10,769	67.2	67.8	11,263	67.4	68.0	11,617	63.3	63.8	11,699	63.3	63.9
Ringwood Avenue	North of Middlefield Road	2%	30	6,860	61.0	61.6	8,092	69.8	70.4	8,188	70.2	70.8	9,775	62.5	63.1	9,934	62.6	63.2
Middlefield Road	East of Ringwood Avenue	1%	30	14,420	63.4	64.0	14,903	75.4	76.0	15,472	75.5	76.1	17,803	64.3	64.9	18,045	64.4	65.0
Ringwood Avenue	South of Middlefield Road	0%	25	1,165	50.4	50.9	1,165	62.7	63.3	1,165	63.0	63.6	1,165	50.4	50.9	1,165	50.4	50.9
Middlefield Road	West of Ringwood Avenue	1%	30	16,925	64.1	64.7	18,566	53.5	54.0	19,149	53.5	54.0	20,841	65.0	65.6	21,084	65.1	65.7
Willow Road	North of Bayfront Expressway	5%	40	8,565	66.1	66.7	8,650	52.5	53.1	9,019	56.3	56.9	9,013	66.3	66.9	9,229	66.5	67.0
Bayfront Expressway	East of Willow Road	4%	45	42,495	74.0	74.6	42,495	54.0	54.5	43,645	54.0	54.5	51,362	74.9	75.5	51,362	74.9	75.5
Willow Road	South of Bayfront Expressway	4%	40	21,665	69.8	70.4	21,665	65.4	66.0	23,757	65.4	66.0	27,060	70.8	71.3	27,060	70.8	71.3

Bayfront Expressway	West of Willow Road	4%	45	32,125	72.8	73.4	32,125	66.3	66.8	33,915	66.4	67.0	42,367	74.0	74.6	42,367	74.0	74.6
Willow Road	North of Hamilton Avenue	4%	40	21,735	69.8	70.4	21,735	64.9	65.5	23,827	65.0	65.6	27,130	70.8	71.4	27,130	70.8	71.4
Hamilton Avenue	East of Willow Road	0%	25	4,570	55.6	56.1	4,570	69.5	70.1	4,570	69.9	70.5	7,504	57.6	58.2	7,504	57.6	58.2
Willow Road	South of Hamilton Avenue	4%	40	20,845	69.6	70.2	20,845	59.0	59.6	26,966	59.0	59.6	28,679	71.0	71.6	29,775	71.2	71.8
Hamilton Avenue	West of Willow Road	0%	25	2,600	53.3	53.9	2,600	63.5	64.1	2,600	63.7	64.3	2,600	53.3	53.9	2,600	53.3	53.9
Willow Road	North of Ivy Drive	3%	40	22,195	69.5	70.1	22,195	53.1	53.7	25,800	53.1	53.7	28,070	70.5	71.1	29,128	70.7	71.3
Willow Road	South of Ivy Drive	3%	40	23,300	69.7	70.3	23,300	64.8	65.3	24,997	64.9	65.5	29,547	70.8	71.4	29,547	70.8	71.4
Ivy Drive	West of Willow Road	2%	25	1,915	54.3	54.9	1,915	69.6	70.2	1,915	69.9	70.5	6,602	59.4	60.0	6,602	59.4	60.0
Willow Road	North of O'Brien Drive	3%	40	23,180	69.7	70.3	23,180	63.4	64.0	24,877	63.6	64.2	29,427	70.7	71.3	29,427	70.7	71.3
O'Brien Drive	East of Willow Road	3%	30	6,970	61.7	62.3	8,026	49.4	49.9	9,455	49.4	49.9	14,290	64.8	65.4	14,290	64.8	65.4
Willow Road	South of O'Brien Drive	3%	40	28,260	70.6	71.2	28,260	47.4	47.9	33,165	47.4	47.9	35,843	71.6	72.2	37,142	71.7	72.3
Willow Road	North of Newbridge Street	3%	40	27,795	70.5	71.1	27,795	55.2	55.8	32,705	55.2	55.8	34,354	71.4	72.0	35,838	71.6	72.2
Newbridge Street	East of Willow Road	1%	25	7,475	58.9	59.5	10,062	69.3	69.9	10,062	69.4	70.0	12,877	61.3	61.8	12,877	61.3	61.8
Willow Road	South of Newbridge Street	3%	40	34,290	71.4	72.0	34,387	60.1	60.7	39,625	60.2	60.8	45,326	72.6	73.2	47,267	72.8	73.4
Newbridge Street	West of Willow Road	2%	25	7,860	60.2	60.8	8,046	69.6	70.2	8,154	70.7	71.3	12,164	62.1	62.6	12,164	62.1	62.6
Willow Road	North of US 101 NB Ramps	3%	40	35,330	71.5	72.1	35,427	59.0	59.6	40,665	59.0	59.6	46,366	72.7	73.3	48,307	72.9	73.5
US 101 NB Ramps	East of Willow Road	3%	25	13,245	63.3	63.8	14,788	68.3	68.9	14,788	68.4	69.0	14,788	63.7	64.3	14,788	63.7	64.3
Willow Road	South of US 101 NB Ramps	3%	40	27,490	70.4	71.0	34,562	65.4	66.0	37,150	65.4	66.0	43,295	72.4	73.0	43,978	72.5	73.1
US 101 NB Ramps	West of Willow Road	2%	25	4,595	57.9	58.5	4,857	58.9	59.5	6,335	59.1	59.7	7,281	59.9	60.5	8,249	60.4	61.0
Willow Road	North of US 101 SB Ramps	3%	40	27,190	70.4	71.0	34,262	61.4	62.0	36,850	61.8	62.4	42,995	72.4	73.0	43,678	72.4	73.0
US 101 SB Ramps	East of Willow Road	3%	25	4,110	58.3	58.9	4,110	55.5	56.0	4,301	55.5	56.0	4,205	58.4	59.0	4,472	58.6	59.2
Willow Road	South of US 101 SB Ramps	3%	40	24,365	69.9	70.5	28,207	52.8	53.4	28,982	52.9	53.5	32,229	71.1	71.7	32,304	71.1	71.7
US 101 SB Ramps	West of Willow Road	3%	25	14,365	63.6	64.2	15,967	60.4	61.0	17,681	60.6	61.2	21,095	65.3	65.9	21,717	65.4	66.0
Willow Road	North of Bay Road	3%	25	26,310	66.2	66.8	30,152	62.6	63.2	30,927	63.0	63.6	34,174	67.3	67.9	34,249	67.4	67.9
Willow Road	South of Bay Road	3%	25	21,650	65.4	66.0	23,007	63.1	63.7	23,007	63.2	63.8	24,882	66.0	66.6	24,882	66.0	66.6
Bay Road	West of Willow Road	3%	30	6,505	61.4	62.0	8,551	58.8	59.4	9,409	58.8	59.4	10,866	63.6	64.2	11,605	63.9	64.5
Willow Road	North of Durham Street	3%	25	19,195	64.9	65.4	19,710	64.5	65.1	19,733	64.6	65.2	21,762	65.4	66.0	21,762	65.4	66.0
Durham Street	East of Willow Road	2%	25	1,300	52.8	53.4	1,741	67.7	68.3	1,741	67.8	68.4	2,441	55.3	55.9	2,441	55.3	55.9
Willow Road	South of Durham Street	3%	25	17,775	64.5	65.1	17,811	53.3	53.9	18,051	53.3	53.9	19,183	64.8	65.4	19,183	64.8	65.4
Hospital Plaza	West of Willow Road	0%	25	2,200	52.7	53.2	2,271	65.2	65.8	2,345	65.4	66.0	2,720	53.5	54.1	2,729	53.5	54.1
Willow Road	North of Coleman Avenue	3%	25	17,490	64.4	65.0	17,623	71.4	72.0	17,971	72.0	72.6	18,709	64.7	65.3	18,709	64.7	65.3
Coleman Avenue	East of Willow Road	0%	25	300	46.5	46.9	300	59.9	60.5	300	59.9	60.5	300	46.5	46.9	300	46.5	46.9
Willow Road	South of Coleman Avenue	3%	25	16,000	64.1	64.7	16,000	66.8	67.4	16,376	66.9	67.5	16,581	64.2	64.8	16,581	64.2	64.8
Coleman Avenue	West of Willow Road	0%	25	2,940	53.8	54.4	3,224	66.2	66.8	3,224	66.4	67.0	3,946	55.0	55.5	3,946	55.0	55.5
Willow Road	North of Gilbert Avenue	3%	25	16,025	64.1	64.7	16,025	70.6	71.1	16,401	70.7	71.3	16,606	64.2	64.8	16,606	64.2	64.8
Gilbert Avenue	East of Willow Road	0%	25	4,040	55.1	55.6	4,104	58.9	59.4	4,104	58.9	59.4	4,640	55.6	56.2	4,640	55.6	56.2
Willow Road	South of Gilbert Avenue	0%	25	16,120	60.8	61.4	16,120	66.7	67.3	16,120	66.9	67.5	16,120	60.8	61.4	16,120	60.8	61.4
Gilbert Avenue	West of Willow Road	1%	25	1,635	52.8	53.3	1,962	55.5	56.0	1,962	55.5	56.1	2,197	53.9	54.5	2,197	53.9	54.5
Willow Road	North of Middlefield Road	3%	25	15,155	63.8	64.4	15,235	64.1	64.7	15,681	64.2	64.8	15,824	64.0	64.6	15,824	64.0	64.6
Middlefield Road	East of Willow Road	3%	30	15,725	65.2	65.8	15,725	57.1	57.7	16,389	57.1	57.7	17,838	65.7	66.3	18,198	65.8	66.4
Willow Road	South of Middlefield Road	1%	25	6,270	58.2	58.8	7,293	57.5	58.1	7,548	57.7	58.3	8,227	59.4	59.9	8,306	59.4	60.0
Middlefield Road	West of Willow Road	3%	30	14,510	64.8	65.4	14,510	64.4	65.0	15,223	64.4	65.0	16,344	65.4	66.0	16,488	65.4	66.0
O'Brien Drive	North of Kavanaugh Drive	4%	30	5,695	61.4	62.0	6,116	57.3	57.9	10,753	57.4	58.0	9,987	63.8	64.4	13,993	65.2	65.8
Kavanaugh Drive	East of O'Brien Drive	2%	25	2,410	55.3	55.8	2,872	59.8	60.4	4,710	59.9	60.5	5,369	58.6	59.2	7,444	60.0	60.5
O'Brien Drive	South of Kavanaugh Drive	3%	30	7,510	62.0	62.6	8,391	60.9	61.4	10,157	60.9	61.4	14,700	64.9	65.5	14,700	64.9	65.5
Adams Drive	North of Adams Court	5%	25	2,535	57.5	58.1	2,535	62.0	62.6	2,628	64.9	65.5	2,537	57.5	58.1	2,665	57.7	58.3
Adams Drive	South of Adams Court	4%	25	2,635	57.1	57.7	2,636	65.8	66.4	2,636	66.0	66.6	5,300	60.0	60.6	5,300	60.0	60.6
Adams Court	West of Adams Drive	4%	25	1,710	55.3	55.9	1,711	62.3	62.9	1,711	62.3	62.9	4,373	59.2	59.8	4,373	59.2	59.8
Adams Drive	North of O'Brien Drive	4%	25	2,960	57.6	58.2	2,961	65.9	66.5	2,961	66.0	66.6	5,625	60.3	60.9	5,625	60.3	60.9
O'Brien Drive	East of Adams Drive	5%	30	3,925	60.3	60.9	4,174	64.7	65.3	9,921	64.8	65.4	8,362	63.5	64.1	15,759	66.3	66.9
O'Brien Drive	West of Adams Drive	5%	30	5,435	61.7	62.3	5,856	63.4	64.0	11,605	63.5	64.1	9,727	64.2	64.8	17,178	66.6	67.2
Bayfront Expressway	East of University Avenue	4%	45	57,635	75.4	76.0	57,918	70.5	71.1	58,901	71.2	71.8	70,168	76.2	76.8	70,626	76.2	76.8
University Avenue	South of Bayfront Expressway	5%	35	20,430	68.6	69.2	23,645	59.9	60.5	23,645	60.0	60.6	29,961	70.3	70.8	29,961	70.3	70.8
Bayfront Expressway	West of University Avenue	4%	45	40,805	73.9	74.5	40,805	60.2	60.8	41,602	60.2	60.8	49,337	74.7	75.3	49,337	74.7	75.3
University Avenue	North of Purdue Avenue	5%	35	22,355	69.0	69.6	25,570	64.6	65.2	25,570	64.8	65.4	31,886	70.5	71.1	31,886	70.5	71.1
Purdue Avenue	East of University Avenue	4%	25	2,080	56.1	56.7	4,271	67.0	67.6	4,475	67.3	67.9	8,303	61.9	62.5	9,099	62.3	62.9
University Avenue	South of Purdue Avenue	5%	35	21,485	68.8	69.4	22,624	55.0	55.5	22,624	55.0	55.6	26,158	69.7	70.3	26,158	69.7	70.3
University Avenue	North of Adams Drive	5%	35	23,930	69.3	69.9	25,069	64.8	65.3	25,069	64.9	65.5	28,603	70.0	70.6	28,603	70.0	70.6
University Avenue	South of Adams Drive	5%	35	22,735	69.1	69.7	23,949	64.6	65.2	23,949	64.8	65.4	26,586	69.7	70.3	26,586	69.7	70.3
Adams Drive	West of University Avenue	4%	25	2,640	57.1	57.7	2,640	63.0	63.5	2,640	63.0	63.6	3,538	58.3	58.9	3,538	58.3	58.9
University Avenue	North of O'Brien Drive	5%	35	22,025	68.9	69.5	23,239	73.1	73.7	23,239	73.6	74.2	25,876	69.6	70.2	25,876	69.6	70.2
University Avenue	South of O'Brien Drive	5%	35	20,900	68.7	69.3	21,943	62.1	62.7	23,477	62.1	62.7	25,202	69.5	70.1	27,443	69.9	70.5
O'Brien Drive	West of University Avenue	5%	30	3,890	60.3	60.8	3,954	59.5	60.0	9,579	59.6	60.2	8,534	63.6	64.2	15,567	66.2	66.8
University Avenue	North of Notre Dame Avenue	5%	25	21,705	66.7	67.3	22,748	66.2	66.8	24,282	66.4	67.0	26,007	67.5	68.1	28,248	67.8	68.4

Notre Dame Avenue	East of University Avenue	3%	25	1,190	53.2	53.8	1,195	56.6	57.2	1,461	56.6	57.2	1,564	54.3	54.9	2,023	55.3	55.9
University Avenue	South of Notre Dame Avenue	5%	25	22,155	66.8	67.4	23,194	56.8	57.4	24,497	57.4	58.0	26,093	67.5	68.1	27,894	67.8	68.4
University Avenue	North of Kavanaugh Drive	5%	25	23,270	67.0	67.6	24,309	58.4	58.9	25,612	58.6	59.2	27,208	67.7	68.3	29,009	67.9	68.5
University Avenue	South of Kavanaugh Drive	5%	25	22,345	66.8	67.4	23,510	66.5	67.1	24,836	66.6	67.2	27,521	67.7	68.3	29,200	68.0	68.6
Kavanaugh Drive	West of University Avenue	2%	25	2,385	55.2	55.8	2,530	61.6	62.2	2,530	61.7	62.3	4,349	57.7	58.3	4,349	57.7	58.3
University Avenue	North of Bay Road	5%	25	22,840	66.9	67.5	23,368	65.3	65.9	24,971	65.3	65.9	26,050	67.5	68.1	28,030	67.8	68.4
Bay Road	East of University Avenue	4%	25	10,380	62.9	63.5	14,802	73.8	74.4	14,802	74.3	74.9	25,046	66.7	67.3	25,046	66.7	67.3
University Avenue	South of Bay Road	4%	25	20,555	65.8	66.4	24,922	53.2	53.8	26,005	54.0	54.6	29,893	67.5	68.1	31,416	67.7	68.3
Bay Road	West of University Avenue	2%	25	7,165	59.8	60.4	9,409	58.8	59.4	9,718	59.0	59.6	13,001	62.3	62.9	13,388	62.5	63.1
University Avenue	North of Runnymede Street	4%	25	20,090	65.8	66.3	24,337	65.0	65.6	24,979	65.0	65.6	28,132	67.2	67.8	28,731	67.3	67.9
Runnymede Street	East of University Avenue	2%	25	5,015	58.3	58.9	5,095	56.0	56.6	5,419	56.0	56.6	5,233	58.5	59.1	5,334	58.5	59.1
University Avenue	South of Runnymede Street	4%	25	18,175	65.3	65.9	22,555	57.6	58.2	23,377	57.6	58.2	27,193	67.1	67.7	28,297	67.2	67.8
Runnymede Street	West of University Avenue	2%	25	3,320	56.6	57.2	3,534	62.9	63.5	4,038	63.0	63.6	4,532	57.9	58.4	5,142	58.4	59.0
University Avenue	North of Bell Street	4%	25	19,395	65.6	66.2	23,775	56.0	56.6	24,597	58.0	58.6	28,413	67.2	67.8	29,517	67.4	68.0
Bell Street	East of University Avenue	1%	25	3,865	56.2	56.8	4,297	73.3	73.9	4,297	73.9	74.5	6,277	58.2	58.8	7,231	58.8	59.4
University Avenue	South of Bell Street	4%	25	20,575	65.9	66.4	25,530	65.6	66.2	26,179	65.6	66.2	29,820	67.5	68.1	30,987	67.6	68.2
Bell Street	West of University Avenue	1%	25	2,995	55.2	55.7	3,696	62.0	62.6	3,696	62.2	62.8	6,919	58.6	59.2	7,224	58.8	59.4
University Avenue	North of Donohoe Street	4%	25	17,570	65.2	65.8	22,525	46.5	46.9	23,174	46.5	46.9	26,815	67.0	67.6	27,982	67.2	67.8
Donohoe Street	East of University Avenue	3%	25	20,835	65.2	65.8	21,337	73.1	73.7	21,337	73.6	74.2	25,381	66.1	66.7	25,530	66.1	66.7
University Avenue	South of Donohoe Street	3%	25	27,715	66.4	67.0	27,715	73.9	74.5	28,810	74.0	74.6	32,885	67.2	67.8	32,885	67.2	67.8
Donohoe Street	West of University Avenue	2%	25	12,190	62.1	62.7	12,427	73.1	73.7	12,427	73.5	74.1	12,818	62.3	62.9	12,818	62.3	62.9
Donohoe Street	North of US 101 NB Ramps	0%	25	1,615	51.5	52.1	1,615	61.0	61.6	1,615	61.8	62.4	1,615	51.5	52.1	1,615	51.5	52.1
US 101 NB Ramps	East of University Avenue	3%	25	18,540	64.7	65.3	18,762	54.2	54.7	19,323	54.2	54.7	22,151	65.5	66.1	22,176	65.5	66.1
University Avenue	South of US 101 NB Ramps	4%	25	10,915	63.1	63.7	11,677	62.5	63.1	12,082	63.3	63.9	17,054	65.0	65.6	18,683	65.4	66.0
US 101 NB Ramps	West of University Avenue	3%	25	21,160	65.3	65.9	21,662	73.3	73.9	21,662	73.8	74.4	25,706	66.1	66.7	25,855	66.1	66.7
Cooley Avenue	North of Donohoe Street	4%	25	7,115	61.3	61.9	7,311	64.5	65.1	8,056	64.5	65.1	10,427	62.9	63.5	12,017	63.5	64.1
Donohoe Street	East of Cooley Avenue	2%	25	14,200	62.7	63.3	14,498	70.6	71.2	14,735	71.3	71.9	16,489	63.4	63.9	16,489	63.4	63.9
Cooley Avenue	South of Donohoe Street	0%	25	690	48.7	49.2	690	73.1	73.7	690	73.4	73.9	690	48.7	49.2	690	48.7	49.2
Donohoe Street	West of Cooley Avenue	3%	25	17,985	64.6	65.2	18,207	55.1	55.7	18,768	55.1	55.7	21,596	65.4	66.0	21,621	65.4	66.0
University Avenue	North of US 101 SB Ramps	3%	25	32,555	67.1	67.7	32,882	69.5	70.1	33,341	70.2	70.8	37,572	67.8	68.3	37,785	67.8	68.4
US 101 SB Ramps	East of University Avenue	3%	25	18,005	64.6	65.2	19,546	54.3	54.9	19,843	54.3	54.9	20,802	65.2	65.8	20,802	65.2	65.8
University Avenue	South of US 101 SB Ramps	2%	25	26,160	65.3	65.9	26,645	63.6	64.2	26,667	63.7	64.3	29,892	65.9	66.5	30,160	66.0	66.6
University Avenue	North of Woodland Avenue	2%	25	27,030	65.5	66.1	27,515	61.7	62.3	27,537	61.8	62.3	30,762	66.0	66.6	31,030	66.1	66.7
Woodland Avenue	East of University Avenue	1%	25	7,035	58.7	59.3	7,179	58.2	58.8	7,179	58.2	58.8	7,938	59.2	59.8	8,154	59.3	59.9
University Avenue	South of Woodland Avenue	4%	25	14,745	64.4	65.0	14,980	73.2	73.8	14,980	73.6	74.2	16,183	64.8	65.4	16,183	64.8	65.4
Woodland Avenue	West of University Avenue	1%	25	10,520	60.4	61.0	10,520	69.3	69.9	10,953	69.3	69.9	13,144	61.3	61.9	13,144	61.3	61.9
University Avenue	North of Middlefield Road	4%	25	9,680	62.6	63.2	9,680	62.1	62.7	9,680	62.2	62.8	11,066	63.2	63.8	11,179	63.2	63.8
Middlefield Road	East of University Avenue	3%	25	8,420	61.3	61.9	8,691	67.0	67.6	9,091	67.3	67.9	10,272	62.2	62.8	10,582	62.3	62.9
University Avenue	South of Middlefield Road	4%	25	7,330	61.4	62.0	7,330	57.3	57.9	7,330	57.5	58.1	7,954	61.8	62.4	8,128	61.9	62.5
Middlefield Road	West of University Avenue	3%	25	9,440	61.8	62.4	9,440	66.8	67.4	10,032	66.9	67.5	10,428	62.2	62.8	11,184	62.5	63.1
Lytton Avenue	North of Middlefield Road	2%	25	2,140	54.8	55.4	2,189	61.1	61.7	2,189	61.2	61.8	2,189	54.9	55.4	2,202	54.9	55.5
Middlefield Road	East of Lytton Avenue	3%	25	9,485	61.8	62.4	9,485	56.6	57.2	10,077	56.6	57.2	10,473	62.2	62.8	11,229	62.5	63.1
Lytton Avenue	South of Middlefield Road	1%	25	7,320	58.9	59.4	7,405	57.8	58.3	7,405	57.8	58.4	7,675	59.1	59.6	7,675	59.1	59.6
Middlefield Road	West Lytton Avenue	3%	25	12,045	62.8	63.4	12,045	66.7	67.3	12,653	66.9	67.5	13,445	63.3	63.9	13,830	63.4	64.0
Donohoe Street	North of East Bayshore Road	2%	25	14,660	62.9	63.4	14,958	69.7	70.3	15,195	70.0	70.6	16,949	63.5	64.1	16,949	63.5	64.1
Donohoe Street	East of East Bayshore Road	2%	25	5,420	58.6	59.2	5,945	74.0	74.6	5,963	74.2	74.8	7,214	59.8	60.4	7,214	59.8	60.4
East Bayshore Road	South of Donohoe Street	1%	25	9,750	60.1	60.7	9,750	58.2	58.7	9,969	59.3	59.9	10,471	60.4	61.0	10,471	60.4	61.0
East Bayshore Road	North of Holland Street	0%	25	2,460	53.1	53.7	2,460	62.3	62.9	2,460	62.5	63.1	2,460	53.1	53.7	2,460	53.1	53.7
Holland Street	East of East Bayshore Road	3%	25	210	47.4	47.9	210	55.3	55.8	210	55.5	56.1	219	47.6	48.0	219	47.6	48.0
East Bayshore Road	South of Holland Street	2%	25	2,370	55.2	55.8	2,374	60.1	60.7	2,374	60.6	61.2	3,603	56.9	57.5	3,603	56.9	57.5
Saratoga Avenue	North of Newbridge Street	2%	25	495	49.4	49.9	495	60.2	60.8	495	60.4	61.0	1,538	53.5	54.0	1,538	53.5	54.0
Newbridge Street	East of Saratoga Avenue	1%	25	7,210	58.8	59.4	9,880	58.5	59.0	9,880	59.3	59.8	12,486	61.1	61.7	12,486	61.1	61.7
Saratoga Avenue	South of Newbridge Street	2%	25	1,690	53.8	54.4	1,694	53.8	54.4	1,694	54.0	54.5	2,932	56.1	56.6	2,932	56.1	56.6
Newbridge Street	West of Saratoga Avenue	1%	25	9,125	59.8	60.4	11,712	57.1	57.7	11,712	58.0	58.6	14,527	61.8	62.4	14,527	61.8	62.4
Euclid Avenue	North of East Bayshore Road	1%	25	3,310	55.6	56.1	4,302	52.4	53.0	4,302	52.8	53.3	7,023	58.7	59.3	7,218	58.8	59.4
East Bayshore Road	East of Euclid Avenue	1%	25	10,515	60.4	61.0	11,169	64.6	65.2	11,169	64.7	65.3	13,931	61.6	62.2	13,931	61.6	62.2
East Bayshore Road	West of Euclid Avenue	1%	25	7,655	59.0	59.6	7,655	60.7	61.3	7,655	60.7	61.3	8,965	59.7	60.3	8,965	59.7	60.3
Clark Avenue	North of East Bayshore Road	4%	25	4,025	58.9	59.5	4,087	64.8	65.4	4,227	65.1	65.6	4,921	59.7	60.3	5,072	59.8	60.4
East Bayshore Road	East of Clark Avenue	2%	25	7,120	59.8	60.4	7,157	64.1	64.7	7,372	64.2	64.8	8,393	60.5	61.1	8,550	60.5	61.1
East Bayshore Road	West of Clark Avenue	1%	25	5,055	57.3	57.9	5,055	69.7	70.3	5,130	70.0	70.6	5,457	57.6	58.2	5,463	57.6	58.2
Pulgas Avenue	North of East Bayshore Road	5%	25	8,675	62.7	63.3	10,213	72.8	73.4	10,303	73.1	73.7	14,091	64.8	65.4	14,619	65.0	65.6
East Bayshore Road	East of Pulgas Avenue	5%	25	12,115	64.2	64.8	13,689	71.4	72.0	13,995	71.7	72.3	18,804	66.1	66.7	19,489	66.2	66.8
East Bayshore Road	West of Pulgas Avenue	2%	25	6,580	59.4	60.0	6,617	63.9	64.4	6,832	64.0	64.6	7,853	60.2	60.8	8,010	60.3	60.9

Noise Appendix
Mechanical Equipment Noise Modeling

Mixed Use Parcels

Parcel 2		Building Quantity					2			
Equipment Type	Model	Leq @ 50 ft per equipment piece	Equipment Location	Location Attenuation (dB)	Total Quantity for Parcel	Qty per building*	Leq @ 50 ft for total of each Equipment type	Combined total Leq @ 50 ft	Horizontal Distance to Nearest Sensative Land Use	Leq @ Nearest Sensitive Receiver
VRF Air Cooled Condensing Units	REYQ432TYDN	33.2		0.0	24	12	44.0			
Scavenger Fans	USF-18	51.0		0.0	48	24	64.8			
Garage Exhaust	Custom Fan Array	56.0		0.0	5	3	60.8			
DOAS Units	DPSA031	61.7		0.0	4	2	64.7			
Grease Exhaust Fans	USF-24	53.0		0.0	1	1	53.0	84.3	150	74.8
Vaport Exhaust Fans	USF-13	48.4		0.0	1	1	48.4			
Hot Water Heating Pumps	N/A - FHWA	78.0		0.0	8	4	84.0			
Air Cooled Heat Pump Boiler	NRK700	53.4		0.0	2	1	53.4			
Air Source Heat Pump Water Heater	CxA-25	65.4		0.0	6	3	70.2			

Parcel 3		Building Quantity					2			
Equipment Type	Model	Leq @ 50 ft per equipment piece	Equipment Location	Location Attenuation (dB)	Total Quantity for Parcel	Qty per building*	Leq @ 50 ft for total of each Equipment type	Combined total Leq @ 50 ft	Horizontal Distance to Nearest Sensative Land Use	Leq @ Nearest Sensitive Receiver
VRF Air Cooled Condensing Units	REYQ432TYDN	33.6		0.0	22	11	44.0			
Scavenger Fans	USF-18	51.0		0.0	2	1	51.0			
Garage Exhaust	Custom Fan Array	56.0		0.0	4	2	59.0			
DOAS Units	DPSA031	61.7		0.0	4	2	64.7			
Grease Exhaust Fans	USF-24	53.0		0.0	1	1	53.0	84.3	480	64.6
Vaport Exhaust Fans	USF-13	48.4		0.0	1	1	48.4			
Hot Water Heating Pumps	N/A - FHWA	78.0		0.0	8	4	84.0			
Air Cooled Heat Pump Boiler	NRK700	53.4		0.0	2	1	53.4			
Air Source Heat Pump Water Heater	CxA-25	65.4		0.0	5	3	70.2			

Parcel 4		Building Quantity					2			
Equipment Type	Model	Leq @ 50 ft per equipment piece	Equipment Location	Location Attenuation (dB)	Total Quantity for Parcel	Qty per building*	Leq @ 50 ft for total of each Equipment type	Combined total Leq @ 50 ft	Horizontal Distance to Nearest Sensative Land Use	Leq @ Nearest Sensitive Receiver
VRF Air Cooled Condensing Units	REYQ432TYDN	33.6		0.0	20	10	43.6			
Scavenger Fans	USF-18	51.0		0.0	2	1	51.0			
Garage Exhaust	AER-E20C-610-VG	50.6		0.0	2	1	50.6			
DOAS Units	DPSA031	61.7		0.0	4	2	64.7	84.2	410	66.0
Hot Water Heating Pumps	N/A - FHWA	78.0		0.0	8	4	84.0			
Air Cooled Heat Pump Boiler	NRK700	53.4		0.0	2	1	53.4			
Air Source Heat Pump Water Heater	CxA-25	65.4		0.0	5	3	70.2			

* Quantity per building is rounded up to the nearest whole number.

Parcel 5		Building Quantity					1			
Equipment Type	Model	Leq @ 50 ft per equipment piece	Equipment Location	Location Attenuation (dB)	Total Quantity for Parcel	Qty per building*	Leq @ 50 ft for total of each Equipment type	Combined total Leq @ 50 ft	Horizontal Distance to Nearest Sensative Land Use	Leq @ Nearest Sensitive Receiver
VRF Air Cooled Condensing Units	REYQ240TYDN	33.2		0.0	22	11	43.6			
Scavenger Fans	USF-18	51.0		0.0	2	1	51.0			
Garage Exhaust	AER-E20C-610-VG	50.6		0.0	2	1	50.6			
DOAS Units	DPSA0314S	55.3		0.0	4	2	58.3	84.1	200	72.1
Hot Water Heating Pumps	N/A - FHWA	78.0		0.0	8	4	84.0			
Air Cooled Heat Pump Boiler	NRK700	53.4		0.0	2	1	53.4			
Air Source Heat Pump Water Heater	CxA-25	65.4		0.0	3	2	68.4			

Parcel 6		Building Quantity					1			
Equipment Type	Model	Leq @ 50 ft per equipment piece	Equipment Location	Location Attenuation (dB)	Total Quantity for Parcel	Qty per building*	Leq @ 50 ft for total of each Equipment type	Combined total Leq @ 50 ft	Horizontal Distance to Nearest Sensative Land Use	Leq @ Nearest Sensitive Receiver
VRF Air Cooled Condensing Units	REYQ240TYDN	33.2		0.0	22	11	43.6			
Scavenger Fans	USF-18	51.0		0.0	2	1	51.0			
Garage Exhaust	Custom Fan Array	56.0		0.0	2	1	56.0			
DOAS Units	DPSA0314S	55.3		0.0	4	2	58.3	84.2	290	68.9
Hot Water Heating Pumps	N/A - FHWA	78.0		0.0	8	4	84.0			
Air Cooled Heat Pump Boiler	NRK700	53.4		0.0	2	1	53.4			
Air Source Heat Pump Water Heater	CxA-25	65.4		0.0	3	2	68.4			

Parcel 7		Building Quantity					1			
Equipment Type	Model	Leq @ 50 ft per equipment piece	Equipment Location	Location Attenuation (dB)	Total Quantity for Parcel	Qty per building*	Leq @ 50 ft for total of each Equipment type	Combined total Leq @ 50 ft	Horizontal Distance to Nearest Sensative Land Use	Leq @ Nearest Sensitive Receiver
VRF Air Cooled Condensing Units	REYQ240TYDN	33.2		0.0	8	4	39.3			
Scavenger Fans	USF-18	51.0		0.0	2	1	51.0			
Garage Exhaust	AER-E20C-610-VG	50.6		0.0	5	3	55.3			
DOAS Units	DPSA031	61.7		0.0	1	1	61.7	84.1	280	69.1
Hot Water Heating Pumps	N/A - FHWA	78.0		0.0	8	4	84.0			
Air Cooled Heat Pump Boiler	NRK700	53.4		0.0	2	1	53.4			
Air Source Heat Pump Water Heater	CxA-25	65.4		0.0	2	1	65.4			

* Quantity per building is rounded up to the nearest whole number.

South Garage Central Plant

Equipment Type	Model	Leq @ 50 ft per equipment piece	Total Quantity for Parcel	Equipment Location	Location Attenuation (dB)	dB Leq @ 50 ft for total of each Equipment type	With Attenuation	Combined total dBA Leq @ 50 ft	Horizontal Distance to Nearest School (ft)	Horizontal Distance to Nearest Residence (ft)	dB Leq @ Nearest School	dB Leq @ Nearest Residence
Chiller	CVHF 1070	56.9	5	Mech Room	5.0	63.9	58.9					
Condenser Water Pump	N/A - FHWA	78.0	4	Mech Room	5.0	84.0	79.0	82.1	225	400	69.0	64.0
Chilled Water Pump	N/A - FHWA	78.0	4	Mech Room	5.0	84.0	79.0					
Cooling Tower	S3E-142412S Series 3000	57.3	4	Screen	0.0	63.3	63.3					

Northern Garage CUP

Equipment Type	Model	Leq @ 50 ft per equipment piece	Total Quantity for Parcel	Equipment Location	Location Attenuation (dB)	Leq @ 50 ft for total of each Equipment type	Combined total dBA Leq @ 50 ft (ft)	Horizontal Distance to Nearest School	Horizontal Distance to Nearest Residence (ft)	dBA Leq @ Nearest School	dBA Leq @ Nearest Residence
Chiller	CVHF 1070	56.9	4	Mech Room	5.0	58.0					
Ice Storage Tank	N/A - Assuming Chiller	60.6	6	Mech Room	5.0	63.4					
Glycol Chilled Water Pump	N/A - FHWA	78.0	2	Mech Room	5.0	76.0					
Chilled Water Pump	N/A - FHWA	78.0	3	Mech Room	5.0	77.8					
Heat Pump	N/A - FHWA	78.0	4	Mech Room	5.0	79.0					
Heating Water Pump	N/A - FHWA	78.0	3	Mech Room	5.0	77.8					
Cooling Tower	S3E-1424125 Series 3000	57.3	6	Screen	0.0	65.1	100.6	1080	1250.00	73.9	72.6
Condensing Water Pump	N/A - FHWA	78.0	2	Mech Room	5.0	76.0					
Heat Exchangers	REYQ432TYDN	33.6	4	Mech Room	5.0	34.7					
Fuel Oil Pump	N/A - FHWA	78.0	2	Mech Room	5.0	76.0					
Generator	TIB-114 1750REOZMD	102.4	2	Mech Room	5.0	100.4					
Battery Storage	MEGAPACK	57.0	1	Mech Room	5.0	52.0					
MV Substation	N/A - Streamview Substation Rebuild and Expansion	59.4	3	Mech Room	5.0	59.2					

Noise Appendix
Generator Noise Modeling

Generator Location	Generator Size	Sound Pressure at 50 Feet (combined Engine & Exhaust)	Combined Noise from 2	Nearest Receptor Distance (ft)	What is the Receptor?	Attenuation	Sound Pressure at nearest Receptor
TS1 – Hotel	600 kW	99.7	NA	465	Residential - 1385 Willow Rd	-19.4	80.3
NG – North Garage – two	750 kW	100.7	103.7	1100	Open Mind School - 1215 O'Brien Dr	-26.8	73.8
SG – South Garage – two	1,750 kW	96.9	99.9	210	Open Mind School - 1215 O'Brien Dr	-12.5	84.4
RS2 - Parcel 2	1000 kW	100.2	NA	330	Residential - 1363 Willow Rd	-16.4	83.8
RS3 - Parcel 3	750 kW	100.7	NA	660	Residential - 1383 Willow Rd	-22.4	78.3
RS4 - Parcel 4	500 kW	101.5	NA	490	Residential - 1373 Willow Rd	-19.8	81.7
RS5 - Parcel 5	500 kW	101.5	NA	345	Open Mind School - 1215 O'Brien Dr	-16.8	84.8
RS6 - Parcel 6	250 kW	88.8	NA	520	Mid-Peninsula High School - 1340 Willow Rd	-20.3	68.5
RS7 - Parcel 7	150 kW	69.9	NA	525	Open Mind School - 1215 O'Brien Dr	-20.4	49.5
Hamilton Avenue Parcel	150 kW	69.9	NA	400	Residences to the south	-18.1	51.8
SW Park	500 KW	101.5	NA	25	Mid Peninsula High School	6.0	107.5

Noise Appendix
Parking Garage Noise Modeling

Parking Garage Noise Calculations - Daytime Peak Hour

Source: FTA 2006

Calculation:

$$LEQ = 92 + (10 * \log([\# \text{ of cars}]/1000)) - 35.6$$

Equation to convert SEL to LEQ $10 * \log(3600) = 35.6$

	SEL of	1000 cars	3600 seconds in an hour	
92 SEL with 1,000 cars				35.56
Delta?		0.00	35.56	
56.437	dBA leq	of 1000 vehicles at 50 feet		

Adjust to Project-Specific Distance?

d=	210 Distance to nearest receiver	
	-12.46 Distance attenuation	
	44.0 dBA Leq	of 1000 vehicles at 210 feet

Noise Appendix
Parking Transit Noise Modeling

Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:

Receiver Parameters	
Receiver:	Receiver 1
Land Use Category:	1. Outdoor Quiet
Existing Noise (Measured or Generic Value):	60 dBA

Noise Source Parameters	
Number of Noise Sources:	1

Noise Source Parameters		Source 1
	Source Type:	Stationary Source
	Specific Source:	Bus Transit Center
Noisiest hr of Activity During Sensitive hrs	Number of Buses/hr	2
Distance	Distance from Source to Receiver (ft)	100
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	

Project Results Summary

Existing Leqh:	60 dBA
Total Project Leqh:	48 dBA
Total Noise Exposure:	60 dBA
Increase:	0 dB
Impact?:	None

Distance to Impact Contours

Dist to Mod. Impact Contour (Source 1):	40 ft
Dist to Sev. Impact Contour (Source 1):	24 ft

Source 1 Results

Leqh:	47.9 dBA
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