

Appendix G

Noise Calculations and Output Files

G-1 Noise Calculations and Modelling – Unmitigated

Project: IBC Multi-Use Trail: Barranca Unmitigated
Construction Noise Impact on Sensitive Receptors

Parameters

Leq to L10 factor	3
-------------------	---

				R2				
Construction Phase Equipment Type	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance (ft)	Lmax	Leq	L11	Estimated Noise Shielding, dBA
Demolition					96	89		
Concrete Saw	1	90	20%	25	96	89	92	0
Concrete Saw	1	90	20%	444	71	64	67	0
Other Equipment	1	85	50%	863	60	57	60	0
Excavator	1	85	40%	1281	57	53	56	0
Front end loader	1	80	40%	1700	49	45	48	0
Asphalt Paving					91	88		
Paver	1	85	50%	25	91	88	91	0
Grader	1	85	40%	193	73	69	72	0
Scraper	1	85	40%	360	68	64	67	0
Excavator	1	85	40%	528	65	61	64	0
Dozer	1	85	40%	695	62	58	61	0
Concrete mixer truck	2	85	40%	1198	60	56	59	0
Pavement Scarafier	1	85	20%	863	60	53	56	0
Roller	1	85	20%	1030	59	52	55	0
Tractor/Loader/Backhoe	2	80	40%	1700	52	48	51	0
Front end loader	1	80	40%	1365	51	47	50	0
Compactor (ground)	2	80	20%	1533	53	46	49	0
Channel Retaining Walls					88	84		
Excavator	1	85	40%	45	86	82	85	0
Concrete mixer truck	2	85	40%	94	83	79	82	0
Tractor/Loader/Backhoe	2	80	40%	143	74	70	73	0
Front end loader	1	80	40%	193	68	64	67	0
Tractor/Loader/Backhoe	2	80	40%	242	69	65	68	0
Compactor (ground)	2	80	20%	291	68	61	64	0
Pumps	2	77	50%	340	63	60	63	0
Overcrossing Retaining Wall					91	87		
Excavator	1	85	40%	25	91	87	90	0
Concrete mixer truck	2	85	40%	116	81	77	80	0
Tractor/Loader/Backhoe	2	80	40%	207	71	67	70	0
Front end loader	1	80	40%	298	65	61	64	0
Tractor/Loader/Backhoe	2	80	40%	388	65	61	64	0
Compactor (ground)	2	80	20%	479	63	56	59	0
Pumps	2	77	50%	570	59	56	59	0
Concrete Slab Bridge					91	87		
Excavator	1	85	40%	25	91	87	90	0
Concrete mixer truck	2	85	40%	207	76	72	75	0
Drill rig truck	1	84	20%	116	77	70	73	0
Front end loader	1	80	40%	298	65	61	64	0
Tractor/Loader/Backhoe	2	80	40%	388	65	61	64	0
Compactor (ground)	2	80	20%	479	63	56	59	0
Pumps	1	77	50%	570	56	53	56	0
Prefabricated Truss Bridge					91	83		
Crane	1	85	16%	25	91	83	86	0
Welder	2	73	40%	570	55	51	54	0
Roadway Concrete Paving					92	88		
Concrete mixer truck	2	85	40%	30	92	88	91	0
Vacuum Street Sweeper	1	80	10%	450	61	51	54	0
Pumps	1	77	50%	730	54	51	54	0
Maximum Combined Noise Levels				89.0				
Ambient Noise Level				54.6				
Threshold (80 dBA)				80				
Significant Impact?				Yes				

Source for Ref. Noise Levels: LA CEQA Guides, 2006 & FHWA RCNM, 2005

IBC Multi-Use Trail Barranca unmitigated
Vibration Level Calculations

				Receptor		
				N =	1.5	
Construction Equipment	Project Equipment	Equipment Velocity Decibels @ 25 Feet* (VdB)	Equipment Peak Particle Velocity @ 25 Feet* (Inches/second)	Distance to Structure (Feet)	Estimated Velocity Decibels @ Distance** (VdB)	Estimated Peak Particle Velocity @ Distance*** (Inches/second)
Large Bulldozer	Yes	87	0.089	50	78.0	0.031
Caisson Drilling	Yes	87	0.089	50	78.0	0.031
Loaded Trucks	Yes	86	0.076	25	86.0	0.076
Small Bulldozer	Yes	58	0.003	50	49.0	0.001

Source:
Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, 2018.

Notes:
* Values taken from Table 7-4.
** Based on the formula $VdB(D) = VdB(25ft) - 30 \times \log_{10}(D/25)$, where D is equal to the distance (see page 185).
*** Based on the formula $PPV(D) = PPV(25 ft) \times (25/D)^N$, where D is equal to the distance (see page 185).
N = soil type classification factor (typically ranges from 1 to 1.5)

G-1 Noise Calculations and Modelling – Mitigated

Project: IBC Multi-Use Trail: Barranca Mitigated

Construction Noise Impact on Sensitive Receptors

Parameters

Leq to L10 factor	3
-------------------	---

Construction Phase Equipment Type	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	R2				
				Distance (ft)	Lmax	Leq	L11	Estimated Noise Shielding, dBA
Demolition					86	79		
Concrete Saw	1	90	20%	25	86	79	82	10
Concrete Saw	1	90	20%	444	61	54	57	10
Other Equipment	1	85	50%	863	50	47	50	10
Excavator	1	85	40%	1281	47	43	46	10
Front end loader	1	80	40%	1700	39	35	38	10
Asphalt Paving					81	78		
Paver	1	85	50%	25	81	78	81	10
Grader	1	85	40%	193	63	59	62	10
Scraper	1	85	40%	360	58	54	57	10
Excavator	1	85	40%	528	55	51	54	10
Dozer	1	85	40%	695	52	48	51	10
Concrete mixer truck	2	85	40%	1198	50	46	49	10
Pavement Scarifier	1	85	20%	863	50	43	46	10
Roller	1	85	20%	1030	49	42	45	10
Tractor/Loader/Backhoe	2	80	40%	1700	42	38	41	10
Front end loader	1	80	40%	1365	41	37	40	10
Compactor (ground)	2	80	20%	1533	43	36	39	10
Channel Retaining Walls					78	74		
Excavator	1	85	40%	45	76	72	75	10
Concrete mixer truck	2	85	40%	94	73	69	72	10
Tractor/Loader/Backhoe	2	80	40%	143	64	60	63	10
Front end loader	1	80	40%	193	58	54	57	10
Tractor/Loader/Backhoe	2	80	40%	242	59	55	58	10
Compactor (ground)	2	80	20%	291	58	51	54	10
Pumps	2	77	50%	340	53	50	53	10
Overcrossing Retaining Wall					81	77		
Excavator	1	85	40%	25	81	77	80	10
Concrete mixer truck	2	85	40%	116	71	67	70	10
Tractor/Loader/Backhoe	2	80	40%	207	61	57	60	10
Front end loader	1	80	40%	298	55	51	54	10
Tractor/Loader/Backhoe	2	80	40%	388	55	51	54	10
Compactor (ground)	2	80	20%	479	53	46	49	10
Pumps	2	77	50%	570	49	46	49	10
Concrete Slab Bridge					81	77		
Excavator	1	85	40%	25	81	77	80	10
Concrete mixer truck	2	85	40%	207	66	62	65	10
Drill rig truck	1	84	20%	116	67	60	63	10
Front end loader	1	80	40%	298	55	51	54	10
Tractor/Loader/Backhoe	2	80	40%	388	55	51	54	10
Compactor (ground)	2	80	20%	479	53	46	49	10
Pumps	1	77	50%	570	46	43	46	10
Prefabricated Truss Bridge					81	73		
Crane	1	85	16%	25	81	73	76	10
Welder	2	73	40%	570	45	41	44	10
Roadway Concrete Paving					82	78		
Concrete mixer truck	2	85	40%	30	82	78	81	10
Vacuum Street Sweeper	1	80	10%	450	51	41	44	10
Pumps	1	77	50%	730	44	41	44	10
Maximum Combined Noise Levels						79.0		
Ambient Noise Level						54.6		
Threshold (80 dBA)						80		
Significant Impact?						No		

Source for Ref. Noise Levels: LA CEQA Guides, 2006 & FHWA RCNM, 2005

IBC Multi-Use Trail Barranca Mitigated
Vibration Level Calculations

				Receptor		
				N =		1.5
Construction Equipment	Project Equipment	Equipment Velocity Decibels @ 25 Feet* (VdB)	Equipment Peak Particle Velocity @ 25 Feet* (Inches/second)	Distance to Structure (Feet)	Estimated Velocity Decibels @ Distance** (VdB)	Estimated Peak Particle Velocity @ Distance*** (Inches/second)
Large Bulldozer	Yes	87	0.089	80	71.8	0.016
Caisson Drilling	Yes	87	0.089	80	71.8	0.016
Loaded Trucks	Yes	86	0.076	75	71.7	0.015
Small Bulldozer	Yes	58	0.003	25	58.0	0.003

Source:
Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, 2018.

Notes:
* Values taken from Table 7-4.
** Based on the formula $VdB(D) = VdB(25ft) - 30 \times \log_{10}(D/25)$, where D is equal to the distance (see page 185).
*** Based on the formula $PPV(D) = PPV(25 ft) \times (25/D)^{1/4}$, where D is equal to the distance (see page 185).
N = soil type classification factor (typically ranges from 1 to 1.5)

G-3 Noise Monitoring Data

Summary			
File Name on Meter	LxT_Data.017.s		
File Name on PC	LxT_0007058-20231217 160000-LxT_Data.017.ldbin		
Serial Number	0007058		
Model	SoundTrack LxT®		
Firmware Version	2.404		
User			
Location			
Job Description			
Note			

Measurement			
Description			
Start	2023-12-17	16:00:00	
Stop	2023-12-17	16:15:00	
Duration		00:15:00.0	
Run Time		00:15:00.0	
Pause		00:00:00.0	
Pre-Calibration	2023-12-17	15:45:32	
Post-Calibration		None	
Calibration Deviation		---	

Overall Settings			
RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamplifier	PRMLxT1		
Microphone Correction	Off		
Integration Method	Exponential		
Overload	143.8 dB		
	A	C	Z
Under Range Peak	99.7	96.7	101.7 dB
Under Range Limit	37.0	36.6	43.7 dB
Noise Floor	27.8	27.5	34.5 dB

	First	Second	Third
Instrument Identification			

Results			
LASeq	54.6		
LASE	84.1		
EAS	28.889 µPa²h		
EAS8	924.445 µPa²h		
EAS40	4.622 mPa²h		
LApeak (max)	2023-12-17	16:02:25	90.6 dB
LASmax	2023-12-17	16:00:00	62.5 dB
LASmin	2023-12-17	16:12:46	51.2 dB
SEA	-99.9 dB		

	Exceedance Counts	Duration	
LAS > 85.0 dB	0	0.0 s	
LAS > 115.0 dB	0	0.0 s	
LApeak > 135.0 dB	0	0.0 s	
LApeak > 137.0 dB	0	0.0 s	
LApeak > 140.0 dB	0	0.0 s	

LCSeq	64.8 dB
LASeq	54.6 dB
LCSeq - LASEq	10.2 dB
LALeq	55.7 dB
LAeq	54.6 dB
LALeq - LAeq	1.1 dB

A		C		Z	
dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	54.6				
LS(max)	62.5	2023/12/17	16:00:00		
LS(min)	51.2	2023/12/17	16:12:46		
LPeak(max)	90.6	2023/12/17	16:02:25		

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)	39.6	39.6 dB	

Statistics	
LAS 5.00	56.8 dB
LAS 10.00	56.2 dB
LAS 33.30	54.8 dB
LAS 50.00	54.2 dB
LAS 66.60	53.7 dB
LAS 90.00	52.6 dB