

APPENDIX E

Noise Analysis Calculations

This appendix includes complex tables that are not accessible using an assistive device such as a screen reader. For additional assistance please contact CPUC.

Noise Calculations for Estrella Sustation and Paso Robles Reinforcement Project

Daytime calculations

Construction Equipment 1 (Concrete Saw)	90	dBA at 50 feet
Construction Equipment 2 (Multiple Equipment Types)	85	dBA at 50 feet

Combined Noise at 50 feet (Ltotal at 50 feet)

91.2 dBA

Combined Noise at 50 feet for Activities w/ No Saw

88 dBA

$L_{total} = 10 \log(10^{L1/10} + 10^{L2/10})$

Noise Threshold Limits and Distances from Program Sites to those Limits for Construction Equipment

Noise Threshold	Threshold Level - Leq (dBA)	Distance to Leq Threshold from Middle of Project Site (feet)	Distance to Leq Threshold from Middle of Project Site - No Saw (feet)
Common Conditionally Acceptable CNEL	70	573.6	397.2
FTA and Some Cities	90	57.4	39.7

Vibration Source Levels for Construction Equipment (FTA 2018)

Equipment	PPV at 25 feet	VBA
Vibratory Roller	0.21	94
Large Bulldozer	0.089	87

Vibration Calculations with Equations for Vibration-Causing Equipment (use of Vibratory Roller) for Project Site

Threshold	Distance to Threshold from Middle of Project Site (feet)	Notes
PPV=PPVref * (25/d)^1.5	25.8	Building damage threshold (sensitive buildings)
	73.2	Human Perception (80 VdB)

Vibration Calculations with Equations for Vibration-Causing Equipment (use of Large Bulldozer) for Project Site

Threshold	Distance to Threshold from Middle of Project Site (feet)	Notes
PPV=PPVref * (25/d)^1.5	14.6	Building damage threshold (sensitive buildings)
	42.8	Human Perception (80 VdB)

NPD Table for Sikorsky 70

Helicopter Type	NOISE_TYPE	OP_MODE	SIDE_TYPE	L_200	L_400	L_630	L_1000	L_2000	L_4000	L_6300	L_10000	L_16000	L_25000
S70	S	A	L	94.9	91.4	89.0	86.3	81.9	76.9	73.1	68.6	64.6	60.2
S70	S	A	C	97.6	94.3	92.0	89.7	85.8	81.4	78.0	74.1	70.5	66.7
S70	S	A	R	100.0	96.7	94.4	92.0	88.1	83.5	79.9	75.6	71.8	67.6
S70	S	D	L	91.3	87.5	84.7	81.7	76.6	70.8	66.6	61.9	57.5	52.9
S70	S	D	C	89.5	85.7	83.1	80.2	75.4	69.9	65.6	60.8	56.3	51.6
S70	S	D	R	92.1	88.4	85.8	82.9	78.2	72.8	68.8	64.1	59.9	55.3
S70	M	G	S	73.7	66.5	61.8	56.9	49.7	42.5	37.8	32.9	28.2	23.4
S70	M	I	S	90.8	83.6	78.9	74.0	66.8	59.6	54.9	50.0	45.3	40.5
S70	S	L	L	100.6	97.1	94.6	91.8	87.1	81.4	77.0	72.0	67.4	62.5
S70	S	L	C	98.0	94.4	91.9	89.0	84.2	78.4	73.9	68.7	64.0	58.9
S70	S	L	R	101.0	97.2	94.5	91.6	86.6	80.8	76.4	71.2	66.5	61.5

Type	90 dB				Distance to 90 dBA	
	Lp1	Lp2	d1	d2		
Approaching from Left	91.4	89.0	400	630	521.3577776	90.0
Approaching from Center	92	89.7	630	1000	941.4017337	90.0
Approaching from Right	92	88.1	1000	2000	1426.866724	90.0
Departing from Left	91.3	87.5	200	400	253.5504179	90.0
Departing from Center						
Departing from Right	92.1	88.4	200	400	296.4009415	90.0
Ground Idling						
Hover Above Ground	90.8	836	200	400	199.851289	90.0
Level Flight from Left	91.8	87.1	1000	2000	1304.056276	90.0
Level Flight from Center	91.9	89	630	1000	852.6839447	90.0
Level Flight from Right	91.6	86.6	1000	2000	1248.331406	90.0