

## APPENDIX E

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### NOISE MODELING DATA

**FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels**

**Project Name:** 1400 Bristol Street  
**Project Number:** 94698012  
**Scenario:** Existing  
**Ldn/CNEL:** CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

#	Roadway	Segment	Lanes	Median Width	ADT Volume	Speed (mph)	Alpha Factor	Vehicle Mix		Distance from Centerline of Roadway				
								Medium Trucks	Heavy Trucks	CNEL at 100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Irvine Avenue	S/O Mesa Drive	6	10	24,500	45	0.5	2.0%	1.0%	65.9	-	114	246	531
2	Irvine Avenue	S/O Bristol Street South	4	14	21,300	50	0.5	2.0%	1.0%	66.1	55	119	256	552
3	Campus Drive	N/O Bristol Street North	6	16	21,000	45	0.5	2.0%	1.0%	65.3	-	104	225	485
4	Campus Drive	E/O Von Karman Ave	4	4	8,900	45	0.5	2.0%	1.0%	61.2	-	56	120	258
5	MacArthur Boulevard	S/O Birch Street	6	4	13,800	55	0.5	2.0%	1.0%	65.4	-	106	229	493
6	Jamboree Road	N/O Eastbluff/University Drive	6	14	50,700	55	0.5	2.0%	1.0%	71.2	120	258	556	1,198
7	University Drive	E/O Jamboree Road	4	16	13,700	50	0.5	2.0%	1.0%	64.2	-	89	192	413
8	Birch Street	S/O Orchard	4	12	6,500	45	0.5	2.0%	1.0%	59.9	-	-	98	211
9	Jamboree Road	N/O Bison Avenue	6	20	43,500	55	0.5	2.0%	1.0%	70.6	110	236	509	1,096
10	Bristol Street North	E/O Birch Street	3	0	20,200	45	0.5	2.0%	1.0%	64.7	44	95	204	440

<sup>1</sup> Distance is from the centerline of the roadway segment to the receptor location.

"-" = contour is located within the roadway right-of-way.

**FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels**

**Project Name:** 1400 Bristol Street  
**Project Number:** 94698012  
**Scenario:** Existing Plus Project  
**Ldn/CNEL:** CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

#	Roadway	Segment	Lanes	Median Width	ADT Volume	Speed (mph)	Alpha Factor	Vehicle Mix		Distance from Centerline of Roadway				
								Medium Trucks	Heavy Trucks	CNEL at 100 Feet	Distance to Contour			
										70 CNEL	65 CNEL	60 CNEL	55 CNEL	
1	Irvine Avenue	S/O Mesa Drive	6	10	24,500	45	0.5	2.0%	1.0%	65.9	-	114	246	531
2	Irvine Avenue	S/O Bristol Street South	4	14	21,300	50	0.5	2.0%	1.0%	66.1	55	119	256	552
3	Campus Drive	N/O Bristol Street North	6	16	21,000	45	0.5	2.0%	1.0%	65.3	-	104	225	485
4	Campus Drive	E/O Von Karman Ave	4	4	8,900	45	0.5	2.0%	1.0%	61.2	-	56	120	258
5	MacArthur Boulevard	S/O Birch Street	6	4	13,900	55	0.5	2.0%	1.0%	65.4	-	107	230	496
6	Jamboree Road	N/O Eastbluff/University Drive	6	14	50,700	55	0.5	2.0%	1.0%	71.2	120	258	556	1,198
7	University Drive	E/O Jamboree Road	4	16	13,700	50	0.5	2.0%	1.0%	64.2	-	89	192	413
8	Birch Street	S/O Orchard	4	12	6,500	45	0.5	2.0%	1.0%	59.9	-	-	98	211
9	Jamboree Road	N/O Bison Avenue	6	20	43,500	55	0.5	2.0%	1.0%	70.6	110	236	509	1,096
10	Bristol Street North	E/O Birch Street	3	0	20,500	45	0.5	2.0%	1.0%	64.7	44	96	206	445

<sup>1</sup> Distance is from the centerline of the roadway segment to the receptor location.  
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**FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels**

**Project Name:** 1400 Bristol Street  
**Project Number:** 94698012  
**Scenario:** Opening Year  
**Ldn/CNEL:** CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

#	Roadway	Segment	Lanes	Median Width	ADT Volume	Speed (mph)	Alpha Factor	Vehicle Mix		Distance from Centerline of Roadway				
								Medium Trucks	Heavy Trucks	CNEL at 100 Feet	Distance to Contour			
										70 CNEL	65 CNEL	60 CNEL	55 CNEL	
1	Irvine Avenue	S/O Mesa Drive	6	10	26,000	45	0.5	2.0%	1.0%	66.1	-	119	256	552
2	Irvine Avenue	S/O Bristol Street South	4	14	22,700	50	0.5	2.0%	1.0%	66.4	58	124	268	576
3	Campus Drive	N/O Bristol Street North	6	16	21,200	45	0.5	2.0%	1.0%	65.3	-	105	227	488
4	Campus Drive	E/O Von Karman Ave	4	4	9,000	45	0.5	2.0%	1.0%	61.2	-	56	121	260
5	MacArthur Boulevard	S/O Birch Street	6	4	15,100	55	0.5	2.0%	1.0%	65.8	-	113	243	524
6	Jamboree Road	N/O Eastbluff/University Drive	6	14	55,000	55	0.5	2.0%	1.0%	71.5	126	272	587	1,265
7	University Drive	E/O Jamboree Road	4	16	13,800	50	0.5	2.0%	1.0%	64.3	-	89	193	415
8	Birch Street	S/O Orchard	4	12	6,600	45	0.5	2.0%	1.0%	59.9	-	-	99	214
9	Jamboree Road	N/O Bison Avenue	6	20	47,500	55	0.5	2.0%	1.0%	71.0	116	250	540	1,163
10	Bristol Street North	E/O Birch Street	3	0	20,600	45	0.5	2.0%	1.0%	64.7	45	96	207	446

<sup>1</sup> Distance is from the centerline of the roadway segment to the receptor location.  
 "-" = contour is located within the roadway right-of-way.

**FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels**

**Project Name:** 1400 Bristol Street  
**Project Number:** 94698012  
**Scenario:** Opening Year Plus Project  
**Ldn/CNEL:** CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

#	Roadway	Segment	Lanes	Median Width	ADT Volume	Speed (mph)	Alpha Factor	Vehicle Mix		Distance from Centerline of Roadway				
								Medium Trucks	Heavy Trucks	CNEL at 100 Feet	Distance to Contour			
										70 CNEL	65 CNEL	60 CNEL	55 CNEL	
1	Irvine Avenue	S/O Mesa Drive	6	10	26,000	45	0.5	2.0%	1.0%	66.1	-	119	256	552
2	Irvine Avenue	S/O Bristol Street South	4	14	22,700	50	0.5	2.0%	1.0%	66.4	58	124	268	576
3	Campus Drive	N/O Bristol Street North	6	16	21,200	45	0.5	2.0%	1.0%	65.3	-	105	227	488
4	Campus Drive	E/O Von Karman Ave	4	4	9,000	45	0.5	2.0%	1.0%	61.2	-	56	121	260
5	MacArthur Boulevard	S/O Birch Street	6	4	15,200	55	0.5	2.0%	1.0%	65.8	-	113	244	526
6	Jamboree Road	N/O Eastbluff/University Drive	6	14	55,000	55	0.5	2.0%	1.0%	71.5	126	272	587	1,265
7	University Drive	E/O Jamboree Road	4	16	13,800	50	0.5	2.0%	1.0%	64.3	-	89	193	415
8	Birch Street	S/O Orchard	4	12	6,600	45	0.5	2.0%	1.0%	59.9	-	-	99	214
9	Jamboree Road	N/O Bison Avenue	6	20	47,500	55	0.5	2.0%	1.0%	71.0	116	250	540	1,163
10	Bristol Street North	E/O Birch Street	3	0	20,900	45	0.5	2.0%	1.0%	64.8	45	97	209	450

<sup>1</sup> Distance is from the centerline of the roadway segment to the receptor location.

"-" = contour is located within the roadway right-of-way.

**Project: 1400 Bristol Street**  
**Construction Noise Impact on Sensitive Receptors**

**Parameters**

<b>Construction Hours:</b>	Daytime hours (7 am to 7 pm)	8
	Evening hours (7 pm to 10 pm)	0
	Nighttime hours (10 pm to 7 am)	0
<b>Leq to L10 factor</b>		3

	Receptor (Land Use)	Distance (feet)	Shielding	Direction
1	Residential	300	0	SE
2	Office	250	0	NE

					RECEPTOR 1	RECEPTOR 2		
Construction Phase	Equipment Type	No. of Equip.	Acoustical Usage Factor	Reference Noise Level at 50ft per Unit, Lmax	Noise Level at Receptor 1, Lmax	Noise Level at Receptor 1, Leq	Noise Level at Receptor 2, Lmax	Noise Level at Receptor 2, Leq
<b>Demolition</b>								
	Concrete Saw	1	20%	90	74.0	67.0	75.6	68.6
(rubber tire dozer)	Dozer	1	40%	82	66.1	62.2	67.7	63.7
(tractors/loaders/backhoes)	Tractor	3	40%	84	73.2	69.2	74.8	70.8
	<b>Combined LEQ</b>					<b>71.8</b>		<b>73.4</b>
<b>Site Preparation</b>								
	Grader	1	40%	85	69.4	65.5	71.0	67.0
(tractors/loaders/backhoes)	Tractor	1	40%	84	68.4	64.5	70.0	66.0
	Scraper	1	40%	84	68.0	64.1	69.6	65.6
	<b>Combined LEQ</b>					<b>69.5</b>		<b>71.1</b>
<b>Grading</b>								
	Grader	1	40%	85	69.4	65.5	71.0	67.0
(rubber tire dozer)	Dozer	1	40%	82	66.1	62.2	67.7	63.7
(tractors/loaders/backhoes)	Tractor	2	40%	84	71.4	67.5	73.0	69.1
	<b>Combined LEQ</b>					<b>70.3</b>		<b>71.9</b>
<b>Building Construction</b>								
	Crane	1	16%	81	65.0	57.1	66.6	58.7
(Forklift)	All Other Equipment > 5 HP	2	50%	85	72.4	69.4	74.0	71.0
	Generator	1	50%	81	65.0	62.0	66.6	63.6
(tractors/loaders/backhoes)	Tractor	1	40%	84	68.4	64.5	70.0	66.0
	Welder/Torch	3	40%	74	63.2	59.2	64.8	60.8
	<b>Combined LEQ</b>					<b>71.6</b>		<b>73.2</b>
<b>Paving</b>								
(cement and mortar mixers)	Concrete Mixer Truck	1	40%	79	63.2	59.3	64.8	60.8
	Paver	1	50%	77	61.6	58.6	63.2	60.2
(paving equipment)	Pavement Scarafier	1	20%	90	73.9	66.9	75.5	68.5
	Roller	2	20%	80	67.4	60.5	69.0	62.0
	Tractor	1	40%	84	68.4	64.5	70.0	66.0
	<b>Combined LEQ</b>					<b>70.2</b>		<b>71.8</b>
<b>Architectural Coating</b>								
	Compressor (air)	1	40%	78	62.1	58.2	63.7	59.7
	<b>Combined LEQ</b>					<b>58.2</b>		<b>59.7</b>
<b>Overlapping Phases</b>								
Overlapping Phases	Demolition & Site Preparation					73.8		74.5
Overlapping Phases	Paving & Architectural Coating					70.2		75.6
Overlapping Phases	Building Construction & Architectural Coating					71.6		75.6
<b>Maximum Noise Level</b>						<b>73.8</b>		<b>75.6</b>

Project: 1400 Bristol Offsite Improvements  
 Construction Noise Impact on Sensitive Receptors

*Parameters*

Construction Hours:	Daytime hours (7 am to 7 pm)	8
	Evening hours (7 pm to 10 pm)	0
	Nighttime hours (10 pm to 7 am)	0
Leq to L10 factor		3

	Receptor (Land Use)	Distance (feet)	Shielding	Direction	
1	Commercial/Office	55	0	SE	RECEPTOR 1

Construction Phase	Equipment Type	No. of Equip.	Acoustical Usage Factor	Reference Noise Level at 50ft per Unit, Lmax	Noise Level at Receptor 1, Lmax	Noise Level at Receptor 1, Leq
Off-Site Sewer Improvements (trencher)	Slurry Trenching Machine	1	50%	80	79.6	76.6
	Excavator	1	40%	81	79.9	75.9
	Combined LEQ					79.3

Source for Ref. Noise Levels: RCNM, 2005