APPENDIX J

NOISE CALCULATIONS

EAST P.L./Del Taco Parking

Minute Resolution			
Time	**Leq**	**Lmax**	**Lmin**
11:04	59.8	64.9	53.8
11:05	59.4	65.6	54.9
11:06	58.5	62.1	53.1
11:07	66.1	78.5	55.7
11:08	59.7	63.5	56.5
11:09	57.8	60.8	55.2
11:10	57.4	62.4	53.9
11:11	58.0	62.7	54.9
11:12	55.5	59.9	52.3
11:13	58.7	63.1	53.2
11:14	58.1	63.1	52.0
11:15	58.1	62.9	54.1
11:16	58.1	66.4	53.5
11:17	57.7	62.7	53.4
11:18	59.1	62.6	54.6
11:19	56.3	60.4	53.4
11:20	59.1	62.8	52.5
11:21	58.4	65.0	54.2
11:22	59.2	67.9	53.6
11:23	58.2	62.2	54.1
11:24	59.6	64.3	54.9
11:25	57.2	61.2	53.8
11:26	58.3	62.1	55.9
11:27	58.6	64.5	54.9
11:28	59.3	64.1	54.8
11:29	56.5	62.1	52.4
11:30	57.2	62.6	51.6
11:31	59.1	65.1	55.3
11:32	58.5	62.8	52.4
11:33	57.9	62.1	53.9
11:34	61.4	72.0	53.1

15 Minute Resolution			
Time	**Leq**	**Lmax**	**Lmin**
11:04	59.6	78.5	52.0
11:19	58.3	67.9	51.6

30 Minute Resolution			
Time	**Leq**	**Lmax**	**Lmin**
11:04	59.0	78.5	51.6

NORTH P.L./Stater Bros Alleyway

Minute Resolution			
Time	**Leq**	**Lmax**	**Lmin**
11:43	54.5	58.0	52.8
11:44	58.3	69.6	52.7
11:45	54.4	60.1	51.7
11:46	57.4	61.6	53.1
11:47	54.6	58.1	52.8
11:48	54.3	58.3	52.8
11:49	52.7	54.6	51.2
11:50	54.4	64.8	51.7
11:51	55.2	62.7	50.8
11:52	56.6	62.8	50.2
11:53	58.1	62.5	50.9
11:54	60.7	73.6	50.0
11:55	52.7	56.0	49.6
11:56	56.0	67.6	47.9
11:57	56.0	59.3	51.6
11:58	55.4	60.8	50.5
11:59	55.0	59.9	50.5
12:00	58.7	62.3	54.6
12:01	55.3	60.0	52.0
12:02	54.3	57.1	52.5
12:03	52.9	54.2	51.6
12:04	51.9	53.8	50.3
12:05	52.0	54.1	50.2
12:06	55.1	61.1	50.6
12:07	52.3	55.5	50.2
12:08	57.0	67.7	49.7
12:09	54.1	60.1	50.1
12:10	53.4	58.2	50.5
12:11	52.8	54.6	51.1
12:12	52.6	54.8	50.7
12:13	48.1	53.7	51.7

15 Minute Resolution			
Time	**Leq**	**Lmax**	**Lmin**
11:43	56.3	73.6	47.9
11:58	54.6	67.7	49.7

30 Minute Resolution			
Time	**Leq**	**Lmax**	**Lmin**
11:43	55.5	73.6	47.9

WEST P.L./Residential Parking

Minute Resolution			
Time	**Leq**	**Lmax**	**Lmin**
12:19	52.5	67.7	50.1
12:20	52.8	56.2	49.1
12:21	50.4	54.1	47.8
12:22	53.9	63.1	47.8
12:23	51.8	57.8	46.6
12:24	53.4	57.6	49.6
12:25	52.4	59.5	48.1
12:26	55.5	58.8	49.8
12:27	59.0	67.3	50.5
12:28	54.1	57.3	51.0
12:29	52.6	61.5	48.6
12:30	54.1	57.8	49.0
12:31	52.9	57.8	47.5
12:32	56.1	71.4	47.7
12:33	54.5	62.3	49.6
12:34	52.9	56.3	48.3
12:35	52.4	58.3	48.3
12:36	52.9	58.0	47.7
12:37	53.5	58.3	48.4
12:38	52.7	59.2	46.9
12:39	56.5	62.3	47.9
12:40	53.1	61.0	48.1
12:41	59.2	65.6	49.4
12:42	53.0	56.1	49.7
12:43	54.9	60.0	51.1
12:44	58.0	67.5	49.7
12:45	54.3	62.4	49.3
12:46	52.2	54.9	49.3
12:47	56.3	64.9	49.4
12:48	52.4	55.6	49.6
12:49	41.2	56.4	53.0

15 Minute Resolution			
Time	**Leq**	**Lmax**	**Lmin**
12:19	54.3	71.4	46.6
12:34	54.9	67.5	46.9

30 Minute Resolution			
Time	**Leq**	**Lmax**	**Lmin**
12:19	54.6	71.4	46.6

SOUTH P.L./Residential Parking

Minute Resolution			
Time	**Leq**	**Lmax**	**Lmin**
12:53	65.0	73.0	52.6
12:54	59.8	68.0	48.4
12:55	63.7	69.4	48.6
12:56	62.9	69.0	49.6
12:57	59.9	68.0	48.6
12:58	66.8	75.6	52.7
12:59	60.7	68.0	48.5
13:00	63.9	72.6	49.1
13:01	63.0	73.8	53.5
13:02	61.5	69.6	49.6
13:03	62.4	67.2	54.9
13:04	59.8	68.9	51.2
13:05	64.6	73.0	53.1
13:06	62.6	68.0	50.9
13:07	64.9	69.8	52.9
13:08	63.3	71.2	49.6
13:09	63.2	71.6	48.2
13:10	63.8	70.3	51.3
13:11	64.3	73.0	51.8
13:12	60.9	68.1	50.5
13:13	65.1	74.0	50.1
13:14	61.5	69.3	49.3
13:15	66.4	74.2	49.9
13:16	62.8	70.4	48.3
13:17	64.6	71.6	54.0
13:18	63.2	71.1	52.4
13:19	61.6	67.7	48.4
13:20	62.2	70.5	49.1
13:21	63.9	71.8	48.1
13:22	63.1	69.7	55.8
13:23	36.2	60.3	57.4

15 Minute Resolution			
Time	**Leq**	**Lmax**	**Lmin**
12:53	63.2	75.6	48.4
13:08	63.6	74.2	48.1

30 Minute Resolution			
Time	**Leq**	**Lmax**	**Lmin**
12:53	63.4	75.6	48.1

Construction Generated Noise

Building Type		Distance (ft)
Construction Noise at 50 Feet (dBA Leq)		50
Construction Phase	**Minimum Required Equipment in Use**[1]	
Ground Clearing/Demolition	84	
Excavation	79	
Foundation Construction	78	
Building Construction	75	
Finishing and Site Cleanup	75	

North - Residential Uses		
Maximum Construction Noise (dBA Leq)		200
Construction Phase	**Minimum Required Equipment in Use**[1]	
Ground Clearing/Demolition	72	
Excavation (Site Preparation)	67	
Foundation Construction	66	
Building Construction	63	
Paving	63	
Average Construction Noise (dBA Leq)		325
Construction Phase	**Minimum Required Equipment in Use**[1]	
Ground Clearing/Demolition	68	
Excavation (Site Preparation)	63	
Foundation Construction	62	
Building Construction	59	
Paving	59	

West - CHP		
Maximum Construction Noise (dBA Leq)		180
Construction Phase	**Minimum Required Equipment in Use**[1]	
Ground Clearing/Demolition	73	
Excavation (Site Preparation)	68	
Foundation Construction	67	
Building Construction	64	
Paving	64	
Average Construction Noise (dBA Leq)		300
Construction Phase	**Minimum Required Equipment in Use**[1]	
Ground Clearing/Demolition	68	
Excavation (Site Preparation)	63	
Foundation Construction	62	
Building Construction	59	
Paving	59	

South - Nearest Residential		
Maximum Construction Noise (dBA Leq)		80
Construction Phase	**Minimum Required Equipment in Use**[1]	
Ground Clearing/Demolition	80	
Excavation (Site Preparation)	75	
Foundation Construction	74	
Building Construction	71	
Paving	71	
Average Construction Noise (dBA Leq)		170
Construction Phase	**Minimum Required Equipment in Use**[1]	
Ground Clearing/Demolition	73	
Excavation (Site Preparation)	68	
Foundation Construction	67	
Building Construction	64	
Paving	64	

East - Restaurant and Parking Lot Uses		
Maximum Construction Noise (dBA Leq)		60
Construction Phase	**Minimum Required Equipment in Use**[1]	
Ground Clearing/Demolition	82	
Excavation (Site Preparation)	77	
Foundation Construction	76	
Building Construction	73	
Paving	73	
Average Construction Noise (dBA Leq)		155
Construction Phase	**Minimum Required Equipment in Use**[1]	
Ground Clearing/Demolition	74	
Excavation (Site Preparation)	69	
Foundation Construction	68	
Building Construction	65	
Paving	65	

Source: Bolt, Beranek and Newman, "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances," prepared for the USEPA, December 31, 1971. Based on analysis for Office Building, Hotel, Hospital, School, and Public Works.

Construction Generated Vibration

North - Retail		Closest Distance (feet):	32
	Approximate RMS a 66	Approximate RMS 73.000	
Equipment	inch/second	inch/second	
Vibratory roller	0.21	0.145	
Large bulldozer	0.089	0.061	
Small bulldozer	0.003	0.002	
Jackhammer	0.035	0.024	
Loaded trucks	0.076	0.052	
	Criteria	0.250	
West - CHP		Closest Distance (feet):	175
	Approximate RMS a Velocity at 25 ft,	Approximate RMS Velocity Level,	
Equipment	inch/second	inch/second	
Vibratory roller	0.21	0.011	
Large bulldozer	0.089	0.005	
Small bulldozer	0.003	0.000	
Jackhammer	0.035	0.002	
Loaded trucks	0.076	0.004	
	Criteria	0.250	
South - Nearest Residential		Closest Distance (feet):	100
	Approximate RMS a Velocity at 25 ft,	Approximate RMS Velocity Level,	
Equipment	inch/second	inch/second	
Vibratory roller	0.21	0.026	
Large bulldozer	0.089	0.011	
Small bulldozer	0.003	0.000	
Jackhammer	0.035	0.004	
Loaded trucks	0.076	0.010	
	Criteria	0.250	
East - Restaurant and Parking Lot Uses		Closest Distance (feet):	46
	Approximate RMS a Velocity at 25 ft,	Approximate RMS Velocity Level,	
Equipment	inch/second	inch/second	
Vibratory roller	0.21	0.084	
Large bulldozer	0.089	0.036	
Small bulldozer	0.003	0.001	
Jackhammer	0.035	0.014	
Loaded trucks	0.076	0.030	
	Criteria	0.250	

Based on distance to nearest structure

[1.] Determined based on use of jackhammers or pneumatic hammers that may be used for pavement demolition at a distance of 25 feet

Notes: RMS velocity calculated from vibration level (VdB) using the reference of one microinch/second.

Source: Based on methodology from the United States Department of Transportation Federal Transit Administration, *Transit Noise and Vibration Impact Assessment* (2006).

Restaurant Use Noise

Drive Through Window Noise	**North - Residential Uses**	**West - Residential Use Parking**	**South - Residential Uses**	**East - Residential Uses**
Speaking Noise Level (dBA Leq @ 1 meter)	66	66	66	66
Speaking Noise Level for a Crowd				
Utilization Factor	50%	50%	50%	50%
Source Receptor Distance (ft)	460	90	230	650
Noise Level (dBA Leq)	19	33	25	16
Barrier Attenuation (dBA)				
Noise Exposure Level (dBA Leq)	**19**	**33**	**25**	**16**
Parking Lot Noise				
Daytime Traffic Noise Model (a.m. peak traffic)	29	40	45	33
Nighttime Traffic Noise Model (assumed evening traffic 25% of a.m. peak)	25	36	41	29
Daytime Total Noise Levels (dBA Leq)	**30**	**41**	**45**	**33**
City Noise Limit (Daytime)	**55**	**55**	**55**	**55**
Exceeds Noise Limits	**No**	**No**	**No**	**No**
Nighttime Total Noise Levels (dBA Leq)	**26**	**38**	**41**	**29**
City Noise Limit (Nighttime)	45	45	45	65
Exceeds Noise Limits	**No**	**No**	**No**	**No**

Parking Lot Noise (Day Time)

	North - Residential Uses	West - Residential Use Parking	South - Residential Uses	East - Residential Uses
Automobiles/Hour	177	177	177	177
Buses/Hour (Trucks/hour)	0	0	0	0
Leq (hourly) @ 50 ft	55	55	55	55
Source Receptor Distance (ft)	540	150	150	600
Noise Level (dBA)	**34**	**45**	**45**	**33**
Barrier Reduction	-5	-5		
Total Noise Level	**29**	**40**	**45**	**33**

Source: FTA Transit Noise and Vibration Impact Assessment, 1995.

Parking Lot Noise (Night Time)

	North - Residential Uses	West - Residential Use Parking	South - Residential Uses	East - Residential Uses
Automobiles/Hour	65.5	65.5	65.5	65.5
Buses/Hour (Trucks/hour)	0	0	0	0
Leq (hourly) @ 50 ft	51	51	51	51
Source Receptor Distance (ft)	540	150	150	600
Noise Level (dBA)	30	41	41	29
Barrier Reduction	-5	-5		
Total Noise Level	25	36	41	29

Source: FTA Transit Noise and Vibration Impact Assessment, 1995.

McDonald's Santa Clara Avenue Traffic Noise

Roadway Segment	Cross Street	Speed	24-hour Traffic Volume			Distance to CNEL from Roadway Centerline								Noise Level (CNEL or Ldn) at Distance from Roadway Centerline					
						Existing				Future No Project				Future With Project				Change From	Change due to
			Existing	Future Without Project	Future With Project	50.0 Feet	60 CNEL	65 CNEL	70 CNEL	50.0 Feet	60 CNEL	65 CNEL	70 CNEL	50.0 Feet	60 CNEL	65 CNEL	70 CNEL	Existing	Project
Santa Clara Drive	Tustin Avenue	40	10,585	10,585	11,515	70.6	254	118	55	70.6	254	118	55	71.0	269	125	58	0.4	0.4
Tustin Avenue	Santa Clara Drive	40	35,410	35,410	36,340	75.8	568	264	122	75.8	568	264	122	75.9	578	268	125	0.1	0.1

Assumptions:

Simplified to 2 lanes 6.1 meters= 20.0
future 6.1 meters= 20.0
Noise path decay parameter for hard site

Calculations using methods of Federal Highway Administration *Highway Traffic Noise Prediction Model*, December, 1978. Baseline California vehicle noise levels from Caltrans, TAN 95-03, 1995

Source of standard assumptions:

24-hour distribution of traffic volumes:
70% day (7-7), 15% evening (7-10), 15% night (10-7)
Analysis of L.A. County 24-hour traffic counts for selected arterial streets conducted by Pat Mann for Inglewood Noise Element, 1974
Truck Mix

ARB standard fleet mix for air quality analysis
Heavy trucks for noise model includes heavy diesel tractor-trailers only
Medium trucks for noise model includes buses and bobtail trucks
Autos includes cars, vans, pickups and light trucks