

Appendix E  
**Construction Noise Analysis**

**Table E3-1  
Construction Noise Propagation Analysis  
Cabrillo Marina Phase II Development**

Source Activity	Noise Level @ 50 feet, dBA	R1, LAFD FIRE STN.		R2, WHALERS WLK.		R3, HOTEL		R4, CABRILLO MRNA.	
		Distance to Source	Noise Level, dBA	Distance to Source	Noise Level, dBA	Distance to Source	Noise Level, dBA	Distance to Source	Noise Level, dBA
Excavation/Disposal	92	50	92	900	67	1200	64	200	80
Bulkhead/seawall	84	1600	54	1000	58	1200	56	500	64
Dredge/fill	84	25	90	750	60	1200	56	300	68
Demolition/removal	83	100	77	800	59	1200	55	500	63
Utility	82	100	76	1000	56	1200	54	200	70
Roadway/parking	94	300	78	1300	66	1300	66	200	82
Marina/slip	101	25	107	550	80	1000	75	250	87
Bldg foundation	78	100	72	900	53	1200	50	500	58
Bldg const	85	100	79	900	60	1200	57	500	65
Finish/clean up	89	100	83	900	64	1200	61	200	77
		Range:	54 107	Range:	53 80	Range:	50 75	Range:	58 87

Source Activity	Noise Level @ 50 feet, dBA	R5, FT. MAC.		R6, 22ND ST REST.		R7, RES @ CRESNT.		R8, RES ON HARBOR	
		Distance to Source	Noise Level, dBA	Distance to Source	Noise Level, dBA	Distance to Source	Noise Level, dBA	Distance to Source	Noise Level, dBA
Excavation/Disposal	92	500	72	50	92	500	72	7000	49
Bulkhead/seawall	84	1400	55	100	78	1400	55	7000	41
Dredge/fill	84	1500	54	1600	54	3100	48	7000	41
Demolition/removal	83	1400	54	100	77	1300	55	7000	40
Utility	82	500	62	100	76	500	62	7000	39
Roadway/parking	94	300	78	100	88	500	74	50	94
Marina/slip	101	1200	73	25	107	1300	73	7000	58
Bldg foundation	78	1400	49	100	72	1300	50	7000	35
Bldg const	85	1400	56	100	79	1300	57	7000	42
Finish/clean up	89	300	73	100	83	500	69	50	89
		Range:	49 78	Range:	54 107	Range:	48 74	Range:	35 94

Source Activity	Noise Level @ 50 feet, dBA	R9, GIBSON PARK.		R10, YMCA PARK.		R11, PRISON.		R12, WATCHRN BSN.	
		Distance to Source	Noise Level, dBA	Distance to Source	Noise Level, dBA	Distance to Source	Noise Level, dBA	Distance to Source	Noise Level, dBA
Excavation/Disposal	92	7000	49	1200	64	2300	59	50	92
Bulkhead/seawall	84	7000	41	1800	53	2400	50	50	84
Dredge/fill	84	7000	41	3000	48	2500	50	50	84
Demolition/removal	83	7000	40	1800	52	2300	50	50	83
Utility	82	7000	39	1800	51	2300	49	50	82
Roadway/parking	94	50	94	50	94	2400	60	50	94
Marina/slip	101	7000	58	1800	70	2500	67	50	101
Bldg foundation	78	7000	35	1600	48	2400	44	50	78
Bldg const	85	7000	42	1600	55	2400	51	50	85
Finish/clean up	89	50	89	50	89	2400	55	50	89
		Range:	35 94	Range:	48 94	Range:	44 67	Range:	78 101

Source: Planning Consultants Research, 1998.

**Table E3-2  
Estimated Construction Noise Levels**

Projected Excavation and Disposal Construction Equipment <sup>1</sup>	Quantity	Range of Lmax @ 50', dBA	Average Noise Level @ 50', dBA	Construction Usage Factors
Scraper	(10) <sup>2</sup> 3	82 - 91	88	0.55
Tractor, crawler	3	82 - 89	80	1.00
Loader	1	81 - 86	79	0.40
Dump Truck	(10) <sup>2</sup> 3	83 - 94	91	0.40
Compactor	1	91	91	0.10
Grader, motor	1	80 - 96	85	0.08
Drill	1	98	98	0.04
Crane	1	80 - 85	83	0.16
Water Truck	-1	81 - 95	87	0.26
Truck	1	81 - 95	86	0.40
Worker Vehicles	20	81 - 87	70	0.16
<b>Worst Case</b> Average Noise Level @ 50' from center of activity, dBA:				<b>92</b>

Projected Seawall Construction Equipment <sup>1</sup>	Quantity	Range of Lmax @ 50', dBA	Average Noise Level @ 50', dBA	Construction Usage Factors
Gradall (Grader)	1	80 - 96	85	0.20
Crane	1	80 - 85	83	0.16
Dragline	1	79	79	0.40
Loader	1	81 - 86	79	0.40
Work boat	1	91	84	0.40
Tug boat	1	81 - 95	84	0.40
Pump	1	76	76	1.00
Truck	1	81 - 95	86	0.40
Worker Vehicles	20	81 - 87	70	0.16
<b>Worst Case</b> Average Noise Level @ 50' from center of activity, dBA:				<b>84</b>

Projected Groin Construction and Dredging Equipment <sup>1</sup>	Quantity	Range of Lmax @ 50', dBA	Average Noise Level @ 50', dBA	Construction Usage Factors
Dredge	1	72	72	0.40
Loader	1	81 - 86	79	0.40
Truck	1	81 - 95	86	0.40
Crane	1	80 - 85	83	0.16
Work boat	1	84	84	0.40
Tug boat	1	84	84	0.40
Crew boat	1	84	84	0.40
Worker Vehicles	20	81 - 87	70	0.16
<b>Worst Case</b> Average Noise Level @ 50' from center of activity, dBA:				<b>84</b>

*Note:*

1. Construction Equipment List provided by Moffatt Nichol, 1998.
2. Projected maximum quantity, quantity evaluated is a typical average number.

Source: CERL, 1978, Planning Consultants Research, 1998.

**Table E3-2, continued**  
**Estimated Construction Noise Levels**

Projected Demolition and Removals Construction Equipment <sup>1</sup>		Quantity	Range of Lmax @ 50', dBA	Average Noise Level @ 50', dBA	Construction Usage Factors
Loader		1	81 - 86	79	0.40
Truck	(10) <sup>2</sup>	3	81 - 95	86	0.40
Backhoe		1	81 - 90	85	0.16
Work boat		1	84	84	0.40
Tug boat		1	84	84	0.40
Crane		1	80 - 85	83	0.16
Worker Vehicles		20	81 - 87	70	0.16
<b>Worst Case</b> Average Noise Level @ 50' from center of activity, dBA:					<b>83</b>

Projected Utilities Construction Equipment <sup>1</sup>		Quantity	Range of Lmax @ 50', dBA	Average Noise Level @ 50', dBA	Construction Usage Factors
Backhoe		1	81 - 90	85	0.16
Loader		1	81 - 86	79	0.40
Roller		1	81 - 91	74	1.00
Ready Mix Truck		2	87	79	0.40
Dump Truck		2	83 - 94	91	0.40
Welding Machine		1	71 - 87	74	1.00
Worker Vehicles		20	81 - 87	70	0.16
<b>Worst Case</b> Average Noise Level @ 50' from center of activity, dBA:					<b>82</b>

Projected Roadway and Parking Lot Construction Equipment <sup>1</sup>		Quantity	Range of Lmax @ 50', dBA	Average Noise Level @ 50', dBA	Construction Usage Factors
Loader		2	81 - 86	79	0.40
Roller		1	81 - 91	74	1.00
Dump Truck	(30) <sup>2</sup>	3	83 - 94	91	0.40
Grader, motor		1	80 - 96	85	0.08
Ready Mix Truck	(5) <sup>2</sup>	2	87	79	0.40
Paver		1	89	89	1.00
Spreader		1	80 - 96	85	0.40
Air compressor		2	69 - 86	81	1.00
Worker Vehicles		20	81 - 87	70	0.16
<b>Worst Case</b> Average Noise Level @ 50' from center of activity, dBA:					<b>94</b>

Projected Marina Slip Placement Construction Equipment <sup>1</sup>		Quantity	Range of Lmax @ 50', dBA	Average Noise Level @ 50', dBA	Construction Usage Factors
Pile Driver		2	109	101	0.50
Work boat		2	84	84	0.40
Crane		2	80 - 85	83	0.16
Truck	(30) <sup>2</sup>	3	81 - 95	86	0.40
Generator		1	71 - 87	78	0.40
Worker Vehicles		20	81 - 87	70	0.16

**Note:**

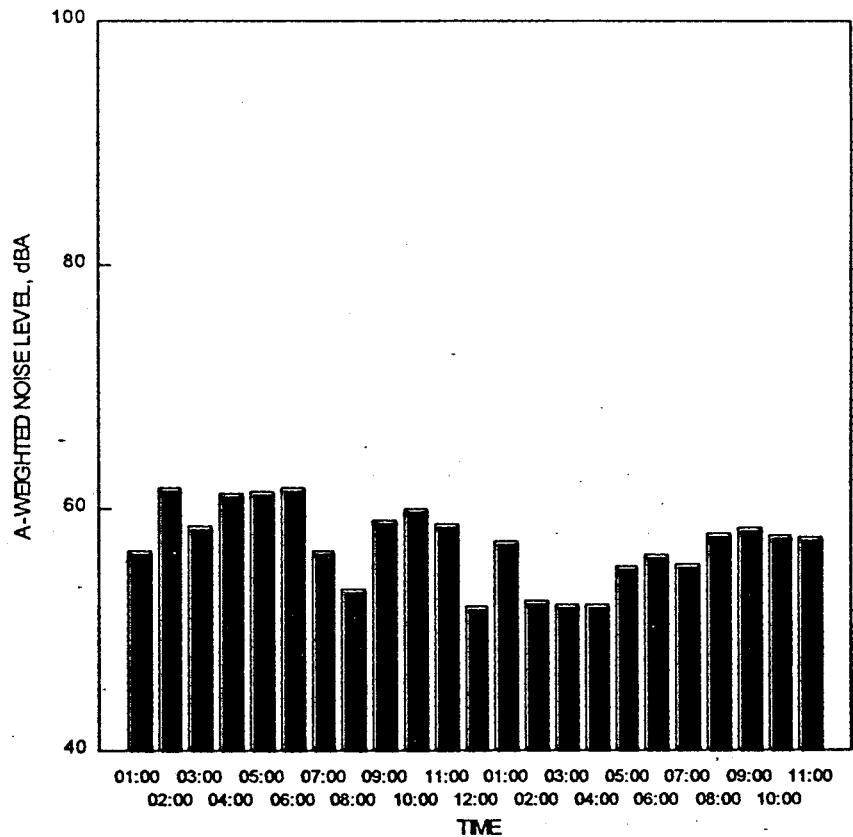
1. Construction Equipment List provided by Moffatt Nichol, 1998.
2. Projected maximum quantity, quantity evaluated is a typical average number.

Source: CERL, 1978, Planning Consultants Research, 1998.

**Table E3-3  
Community Noise Equivalent Level, CNEL**

Location: Harbor Marina  
 Position: On top of small office at end of gang-way, approximately 15 feet above sea level.  
 Sources: Port and marina activities, loudspeaker from nearby fire station, and occasional aircraft noise.  
 Date: July 23-24, 1998

TIME	HNL, dB(A)
01:00 - 02:00 PM	56.4
02:00 - 03:00 PM	61.7
03:00 - 04:00 PM	58.5
04:00 - 05:00 PM	61.2
05:00 - 06:00 PM	61.3
06:00 - 07:00 PM	61.7
07:00 - 08:00 PM	56.4
08:00 - 09:00 PM	53.3
09:00 - 10:00 PM	59.0
10:00 - 11:00 PM	60.0
11:00 - 12:00 AM	58.7
12:00 - 01:00 AM	51.9
01:00 - 02:00 AM	57.3
02:00 - 03:00 AM	52.4
03:00 - 04:00 AM	52.1
04:00 - 05:00 AM	52.1
05:00 - 06:00 AM	55.2
06:00 - 07:00 AM	56.1
07:00 - 08:00 AM	55.4
08:00 - 09:00 AM	57.8
09:00 - 10:00 AM	58.4
10:00 - 11:00 AM	57.7
11:00 - 12:00 PM	57.5
12:00 - 01:00 PM	58.9
<b>CNEL, dB(A):</b>	<b>63.3</b>



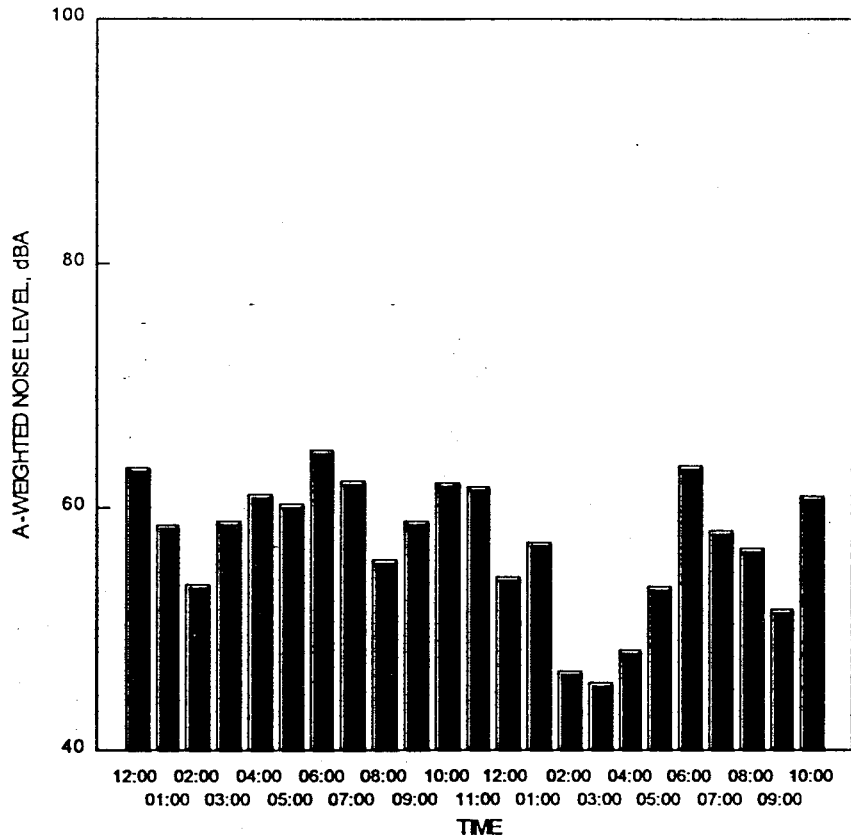
**NOTES:**  
 Noise measurement began on July 23, 1998.

Source: Planning Consultants Research, 1998

**Table E3-4  
Community Noise Equivalent Level, CNEL**

Location: 22nd Street Landing Restaurant  
 Position: Hanging from the second floor eastern balcony facing the marina to the south, approximately 12 feet above the ground.  
 Sources: Port and marina activities and occasional aircraft noise.  
 Date: July 23-24, 1998

TIME	HNL, dB(A)
12:00 - 01:00 PM	63.2
01:00 - 02:00 PM	58.5
02:00 - 03:00 PM	53.6
03:00 - 04:00 PM	58.8
04:00 - 05:00 PM	61.1
05:00 - 06:00 PM	60.3
06:00 - 07:00 PM	64.6
07:00 - 08:00 PM	62.2
08:00 - 09:00 PM	55.7
09:00 - 10:00 PM	58.8
10:00 - 11:00 PM	62.0
11:00 - 12:00 AM	61.6
12:00 - 01:00 AM	54.2
01:00 - 02:00 AM	57.1
02:00 - 03:00 AM	46.6
03:00 - 04:00 AM	45.6
04:00 - 05:00 AM	48.2
05:00 - 06:00 AM	53.4
06:00 - 07:00 AM	63.4
07:00 - 08:00 AM	58.1
08:00 - 09:00 AM	56.6
09:00 - 10:00 AM	51.6
10:00 - 11:00 AM	60.9
11:00 - 12:00 PM	67.5
<b>CNEL, dB(A):</b>	<b>65.7</b>



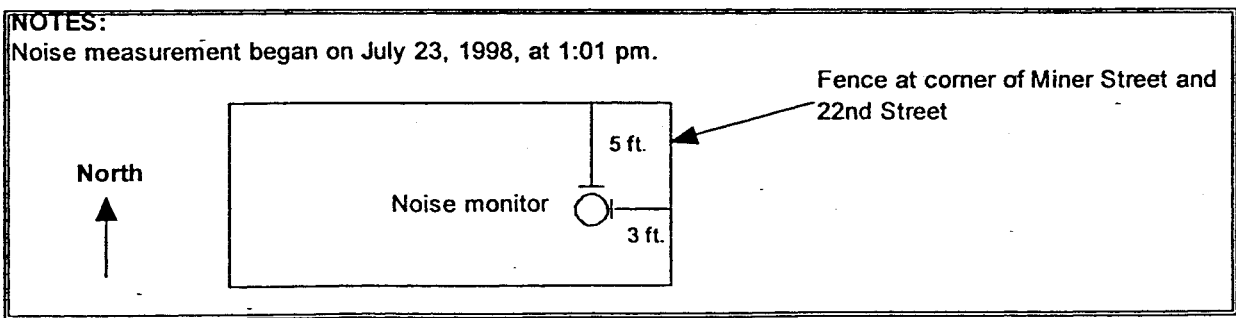
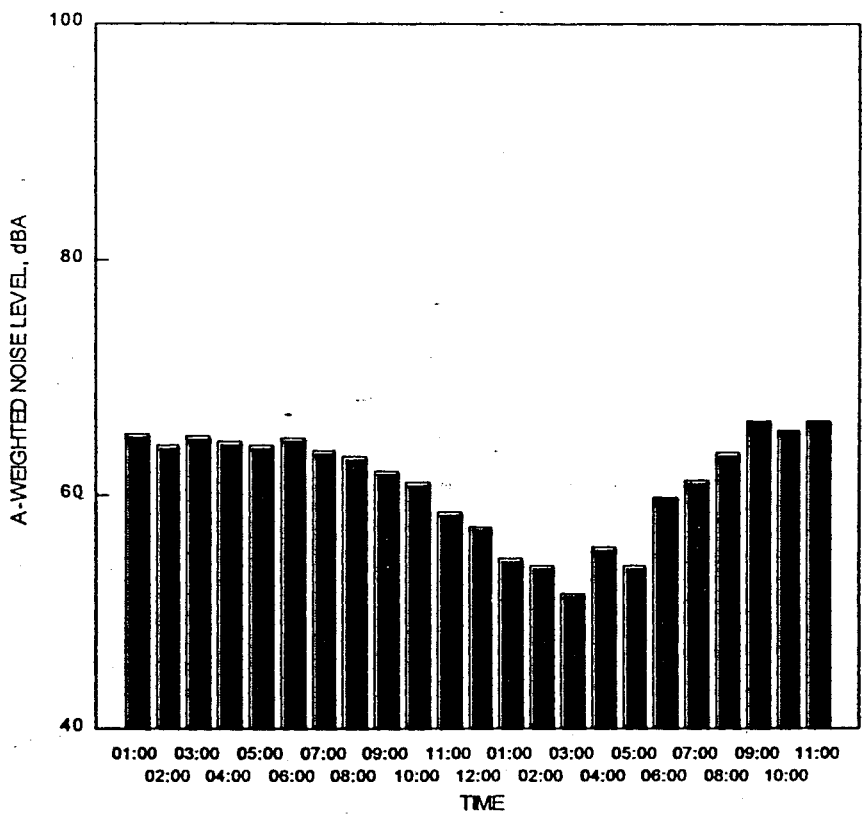
**NOTES:**  
 Noise measurement began on July 23, 1998.

Source: Planning Consultants Research, 1998

**Table E3-5  
Community Noise Equivalent Level, CNEL**

Location: Warehouse at southwest corner of Miner Street and 22nd Street  
 Position: Fence at property line. See figure at bottom of page.  
 Sources: Truck and car traffic on Miner Street and 22nd Street, occasional aircraft noise, and background noise from port and marina activities.  
 Date: July 23-24, 1998

TIME	HNL, dB(A)
01:00 - 02:00 PM	65.1
02:00 - 03:00 PM	64.2
03:00 - 04:00 PM	65.0
04:00 - 05:00 PM	64.5
05:00 - 06:00 PM	64.2
06:00 - 07:00 PM	64.8
07:00 - 08:00 PM	63.7
08:00 - 09:00 PM	63.3
09:00 - 10:00 PM	62.0
10:00 - 11:00 PM	61.0
11:00 - 12:00 AM	58.5
12:00 - 01:00 AM	57.2
01:00 - 02:00 AM	54.6
02:00 - 03:00 AM	53.9
03:00 - 04:00 AM	51.5
04:00 - 05:00 AM	55.5
05:00 - 06:00 AM	53.9
06:00 - 07:00 AM	59.7
07:00 - 08:00 AM	61.2
08:00 - 09:00 AM	63.6
09:00 - 10:00 AM	66.3
10:00 - 11:00 AM	65.5
11:00 - 12:00 PM	66.2
12:00 - 01:00 PM	64.8
<b>CNEL, dB(A):</b>	<b>66.3</b>



Source: Planning Consultants Research, 1998