

Appendix H

Noise Calculation Worksheets

2143 Violet Project

Noise Calculations Worksheets

Provided by Acoustical Engineering Services

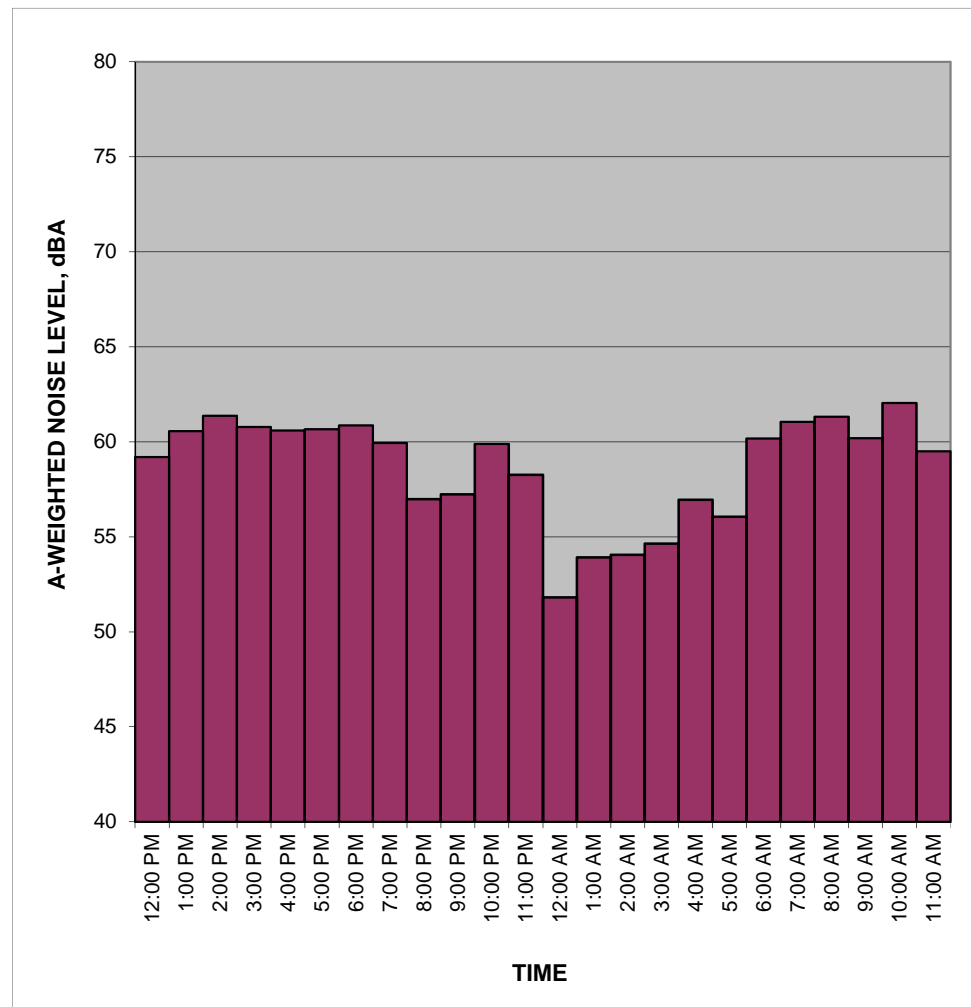
Ambient Noise Measurements

Measured Ambient Noise Levels

Project: 2143 Violet
Location: P1, Project Site
Sources: Ambient

Date: 10/10 - 10/11/2018

TIME	HNL, dB(A)
12:00 PM	59.2
1:00 PM	60.6
2:00 PM	61.4
3:00 PM	60.8
4:00 PM	60.6
5:00 PM	60.7
6:00 PM	60.9
7:00 PM	59.9
8:00 PM	57.0
9:00 PM	57.2
10:00 PM	59.9
11:00 PM	58.3
12:00 AM	51.8
1:00 AM	53.9
2:00 AM	54.1
3:00 AM	54.6
4:00 AM	57.0
5:00 AM	56.1
6:00 AM	60.2
7:00 AM	61.0
8:00 AM	61.3
9:00 AM	60.2
10:00 AM	62.0
11:00 AM	59.5
CNEL, dB(A):	64.4



NOTES:

Location: R1
Date: 10/10/2018

Time	Overload	Leq	Lmax	L10	L90
12:07:09 PM	No	54.3	57	55.7	53.1
12:08:09 PM	No	55.9	62.5	58.1	53.6
12:09:09 PM	No	55.9	60.1	57.1	53.3
12:10:09 PM	No	54.3	57.3	55.7	52.6
12:11:09 PM	No	55.6	62.5	57.4	53.4
12:12:09 PM	No	54.4	62.8	55.9	52.3
12:13:09 PM	No	55.6	62.1	58	52.9
12:14:09 PM	No	54.4	58.5	56.4	52.3
12:15:09 PM	No	53.8	59	55.9	51.7
12:16:09 PM	No	59	66.4	62.5	53.8
12:17:09 PM	No	61.8	73	65.9	51.9
12:18:09 PM	No	52.8	59.9	54.9	50.6
12:19:09 PM	No	52.3	60.5	55.1	49.9
12:20:09 PM	No	52.4	61	54.4	49.5
12:21:09 PM	No	59	76	54.9	49.7

56.3

Time	Overload	Leq	Lmax	L10	L90
9:59:55 PM	No	53.9	56.5	54.9	52.7
10:00:55 PM	No	56.5	62.7	59.1	53.3
10:01:55 PM	No	54.2	56.1	55.2	53.1
10:02:55 PM	No	53.5	56.5	54.8	52.3
10:03:55 PM	No	55.2	58.6	56.9	52.6
10:04:55 PM	No	53.7	56.4	54.8	52.4
10:05:55 PM	No	53.9	56.3	54.7	52.8
10:06:55 PM	No	54.9	59.6	56.4	53.7
10:07:55 PM	No	54.2	56.8	55.5	53.1
10:08:55 PM	No	54.1	57.2	55	53.2
10:09:55 PM	No	54.8	62.5	56.2	53.5
10:10:55 PM	No	55.6	64.5	56	53.1
10:11:55 PM	No	53.6	57.3	54.6	52.4
10:12:55 PM	No	60.6	68.2	65.9	53
10:13:55 PM	No	53.7	60.1	55.3	52.2

55.3

Location: R2
Date: 10/10/2018

Time	Overload	Leq	Lmax	L10	L90
12:24:58 PM	No	68.1	76.6	72	63.3
12:25:58 PM	No	74.1	81.7	77.5	69.3
12:26:58 PM	No	75.9	86.9	79.7	66.8
12:27:58 PM	No	69.4	74.7	72.1	64.7
12:28:58 PM	No	66.9	75.8	69.8	60.8
12:29:58 PM	No	71.8	83.3	74.9	61.6
12:30:58 PM	No	68.4	77	70.7	64.9
12:31:58 PM	No	74.4	83.7	77.4	66.8
12:32:58 PM	No	74.2	81.2	78.5	67.6
12:33:58 PM	No	66.7	72.3	70.2	61.4
12:34:58 PM	No	71.1	77.2	75.1	65
12:35:58 PM	No	68	74	71.1	58.8
12:36:58 PM	No	70.5	76.7	74.5	64.8
12:37:58 PM	No	73.8	81.2	76.8	67.3
12:38:58 PM	No	68	73.5	70.7	64.6
		71.8			

Time	Overload	Leq	Lmax	L10	L90
10:17:05 PM	No	64.4	73.7	69.8	52.4
10:18:05 PM	No	64.2	70.1	68.2	55.7
10:19:05 PM	No	63.6	70.5	67.4	56.5
10:20:05 PM	No	67.7	74.9	71	56.1
10:21:05 PM	No	65.6	69.5	68.1	60.7
10:22:05 PM	No	67.7	73.7	71.1	60.4
10:23:05 PM	No	64	71.4	67.8	55.6
10:24:05 PM	No	65.7	72	69.9	57.3
10:25:05 PM	No	63.1	72.4	68.1	53
10:26:05 PM	No	66.4	73.8	70.2	58.8
10:27:05 PM	No	67.7	75.1	72	60.6
10:28:05 PM	No	69.2	80.2	72.6	57.5
10:29:05 PM	No	61.9	70.1	65.7	55.6
10:30:05 PM	No	66	74.3	69.6	54.6
10:31:05 PM	No	64.3	71.1	68.2	56.7
		65.9			

Location: R3
Date: 10/10/2018

Time	Overload	Leq	Lmax	L10	L90
12:41:42 PM	No	58.7	66.1	62.2	55.7
12:42:42 PM	No	73	79.9	77.4	60.1
12:43:42 PM	No	69.6	78.4	75.4	60.2
12:44:42 PM	No	58.9	63.9	61.3	56.5
12:45:42 PM	No	61.6	69.3	65.6	56.9
12:46:42 PM	No	57.7	62.6	59.7	55.3
12:47:42 PM	No	58.4	64.5	61	55
12:48:42 PM	No	61	67.1	63.4	57.2
12:49:42 PM	No	60.5	67.3	62.7	57.1
12:50:42 PM	No	61.9	70.9	65	58.5
12:51:42 PM	No	59.5	66.6	62.5	54.8
12:52:42 PM	No	58.4	62.6	61	55.2
12:53:42 PM	No	58.4	65.2	62.1	54.9
12:54:42 PM	No	61	67.8	65.5	56
12:55:42 PM	No	62.8	68.3	66.4	56.5
		64.5			

Time	Overload	Leq	Lmax	L10	L90
10:33:36 PM	No	58.5	62.7	60	56.5
10:34:36 PM	No	59.6	65.9	63.2	55.4
10:35:36 PM	No	58.2	62.7	59.5	56.3
10:36:36 PM	No	57.7	60.7	59.2	56.3
10:37:36 PM	No	56.9	61.2	59	54.2
10:38:36 PM	No	59.3	66.2	61.9	56.6
10:39:36 PM	No	58.2	62.7	59.7	56.3
10:40:36 PM	No	56.8	61.5	58	55.1
10:41:36 PM	No	57.1	60.1	58.5	56
10:42:36 PM	No	58	63.2	59.2	56.5
10:43:36 PM	No	58.6	67.4	59.8	56.3
10:44:36 PM	No	58.6	61.2	59.6	57.1
10:45:36 PM	No	60.8	70.5	61.7	58.2
10:46:36 PM	No	59.9	61.7	61.2	58.6
10:47:36 PM	No	60.8	66.8	63.5	57.9
		58.8			

Location: R4
Date: 10/10/2018

Time	Overload	Leq	Lmax	L10	L90
1:03:34 PM	No	61.7	66.1	62.8	60.4
1:04:34 PM	No	61.2	67.8	63.3	58.9
1:05:34 PM	No	61	68.6	63.3	57.9
1:06:34 PM	No	62.4	67.3	65.6	56.7
1:07:34 PM	No	57.2	65.4	59.1	53.2
1:08:34 PM	No	60	63.9	62.3	56.8
1:09:34 PM	No	56.7	63.6	58.6	54.1
1:10:34 PM	No	62.9	67.9	65.6	58.1
1:11:34 PM	No	59.6	65.3	62.4	56.9
1:12:34 PM	No	61	65.4	63.5	57.9
1:13:34 PM	No	58.5	63.3	60.2	56.5
1:14:34 PM	No	58.9	64	60.5	57
1:15:34 PM	No	58.7	64.3	61.7	53.8
1:16:34 PM	No	59.1	67.4	60.3	57.2
1:17:34 PM	No	58.1	67.8	60.6	52.6
		60.2			

Time	Overload	Leq	Lmax	L10	L90
10:54:20 PM	No	52.2	56.8	54.1	50
10:55:20 PM	No	51.4	59.1	55.1	47.9
10:56:20 PM	No	49.8	54.1	52.1	48
10:57:20 PM	No	60.9	66.4	64.7	49.1
10:58:20 PM	No	51.8	60.1	54.7	48.1
10:59:20 PM	No	48.6	53.9	50.3	47
11:00:20 PM	No	52.9	62.2	54.9	47.8
11:01:20 PM	No	52.2	57.7	55.6	48.5
11:02:20 PM	No	50.2	57.6	52.2	48.2
11:03:20 PM	No	57.4	65.9	61.6	50.1
11:04:20 PM	No	51.1	56.4	53.7	48.6
11:05:20 PM	No	52.6	62.6	56.2	48.6
11:06:20 PM	No	57.6	64.4	62.8	48.8
11:07:20 PM	Yes	53.6	68.2	55	48.1
11:08:20 PM	No	51.3	59.6	54.7	48.4
		54.4			

Construction Noise & Vibration Calculations

Project: 2143 Violet Project

Construction Phase: *Demolition*

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Concrete Saw	1	90	20%	50	0
Rubber Tired Dozer	1	82	40%	50	0
Rubber Tired Loader	1	79	40%	70	0
Tractor/Loader/Backhoe	1	84	40%	70	0
Air Compressor	1	78	40%	95	0
Tractor/Loader/Backhoe	1	84	40%	95	0

6

Receptor: ***R1***

Results:

1-hour Leq: 85.6

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: *Grading*

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Bore/Drill Rig	1	84	20%	50	0
Excavator	1	81	40%	50	0
Forklift	1	75	20%	70	0
Welders	1	74	40%	70	0
Tractor/Loader/Backhoe	1	84	40%	95	0
Rubber Tired Dozer	1	82	40%	95	0
Rubber Tired Loader	1	79	40%	120	0
Bore/Drill Rig	1	84	20%	120	0
Excavator	1	81	40%	145	0
Welders	2	74	40%	145	0
Tractor/Loader/Backhoe	1	84	40%	170	0
Rubber Tired Dozer	1	82	40%	170	0
Rubber Tired Loader	1	79	40%	170	0

14

Receptor: *R1*

Results:

1-hour Leq: 82.9

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: *Mat Foundation*

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Concrete Pump	1	81	20%	50	0
Concrete Pump	1	81	20%	50	0
Concrete Pump	1	81	20%	70	0
Concrete Pump	1	81	20%	70	0
Concrete Pump	1	81	20%	95	0
Concrete Pump	1	81	20%	95	0

6

Receptor: ***R1***

Results:
1-hour Leq: 79.5

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: Concrete

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Concrete Saw	1	90	20%	50	0
Crane	1	81	16%	50	0
Fork Lift	1	75	20%	70	0
Concrete Pump	1	81	20%	70	0
Generator Set	1	81	50%	95	0
Fork Lift	1	75	20%	95	0
Concrete Pump	1	81	20%	120	0

7

Receptor: **R1**

Results:
1-hour Leq: 84.1

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: *Building Construction*

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Concrete Saw	1	90	20%	50	0
Crane	1	81	16%	50	0
Concrete Pump	1	81	20%	70	0
Aerial Lift	1	75	20%	70	0
Fork Lift	1	75	20%	95	0
Generator Set	1	81	50%	95	0
Welders	1	74	40%	120	0
Concrete Saw	1	90	20%	120	0
Concrete Pump	1	81	20%	145	0
Aerial Lift	1	75	20%	145	0
Fork Lift	1	75	20%	170	0
Generator Set	1	81	50%	170	0

12

Receptor: ***R1***

Results:

1-hour Leq: 84.8

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: Paving/Landscaping

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Cement and Mortar Mixer	1	80	50%	50	0
Pavers	1	77	50%	70	0
Plate Compactor	1	83	20%	70	0
Tractor/Loader/Backhoe	1	84	40%	90	0

Receptor: 4 **R1**

Results: **1-hour Leq:** **80.6**

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: *Demolition*

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Concrete Saw	1	90	20%	200	15
Rubber Tired Dozer	1	82	40%	200	15
Rubber Tired Loader	1	79	40%	220	15
Tractor/Loader/Backhoe	1	84	40%	220	15
Air Compressor	1	78	40%	245	15
Tractor/Loader/Backhoe	1	84	40%	245	15

6

Receptor: ***R2***

Results:
1-hour Leq: 59.6

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: *Grading*

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Bore/Drill Rig	1	84	20%	200	15
Excavator	1	81	40%	200	15
Forklift	1	75	20%	220	15
Welders	1	74	40%	220	15
Tractor/Loader/Backhoe	1	84	40%	245	15
Rubber Tired Dozer	1	82	40%	245	15
Rubber Tired Loader	1	79	40%	270	15
Bore/Drill Rig	1	84	20%	270	15
Excavator	1	81	40%	295	15
Welders	2	74	40%	295	15
Tractor/Loader/Backhoe	1	84	40%	320	15
Rubber Tired Dozer	1	82	40%	320	15
Rubber Tired Loader	1	79	40%	320	15

14

Receptor: *R2*

Results:

1-hour Leq: 58.7

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: *Mat Foundation*

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Concrete Pump	1	81	20%	200	15
Concrete Pump	1	81	20%	200	15
Concrete Pump	1	81	20%	220	15
Concrete Pump	1	81	20%	220	15
Concrete Pump	1	81	20%	245	15
Concrete Pump	1	81	20%	245	15

6

Receptor: *R2*

Results:
1-hour Leq: 53.9

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: Concrete

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Concrete Saw	1	90	20%	200	15
Crane	1	81	16%	200	15
Fork Lift	1	75	20%	220	15
Concrete Pump	1	81	20%	220	15
Generator Set	1	81	50%	245	15
Fork Lift	1	75	20%	245	15
Concrete Pump	1	81	20%	270	15

7

Receptor: **R2**

Results:
1-hour Leq: 57.8

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: *Building Construction*

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Concrete Saw	1	90	20%	200	15
Crane	1	81	16%	200	15
Concrete Pump	1	81	20%	220	15
Aerial Lift	1	75	20%	220	15
Fork Lift	1	75	20%	245	15
Generator Set	1	81	50%	245	15
Welders	1	74	40%	270	15
Concrete Saw	1	90	20%	270	15
Concrete Pump	1	81	20%	295	15
Aerial Lift	1	75	20%	295	15
Fork Lift	1	75	20%	320	15
Generator Set	1	81	50%	320	15

12

Receptor: *R2*

Results:

1-hour Leq: 59.5

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: Paving/Landscaping

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Cement and Mortar Mixer	1	80	50%	200	15
Pavers	1	77	50%	200	15
Plate Compactor	1	83	20%	220	15
Tractor/Loader/Backhoe	1	84	40%	220	15

Receptor: 4
R2

Results:
1-hour Leq: 55.8

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: *Demolition*

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Concrete Saw	1	90	20%	140	10
Rubber Tired Dozer	1	82	40%	140	10
Rubber Tired Loader	1	79	40%	160	10
Tractor/Loader/Backhoe	1	84	40%	160	10
Air Compressor	1	78	40%	180	10
Tractor/Loader/Backhoe	1	84	40%	180	10

6

Receptor: *R3*

Results:

1-hour Leq: 67.5

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: *Grading*

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Bore/Drill Rig	1	84	20%	140	10
Excavator	1	81	40%	140	10
Forklift	1	75	20%	160	10
Welders	1	74	40%	160	10
Tractor/Loader/Backhoe	1	84	40%	180	10
Rubber Tired Dozer	1	82	40%	180	10
Rubber Tired Loader	1	79	40%	200	10
Bore/Drill Rig	1	84	20%	200	10
Excavator	1	81	40%	220	10
Welders	2	74	40%	220	10
Tractor/Loader/Backhoe	1	84	40%	240	10
Rubber Tired Dozer	1	82	40%	240	10
Rubber Tired Loader	1	79	40%	240	10

14

Receptor: *R3*

Results:

1-hour Leq: 66.5

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: *Mat Foundation*

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Concrete Pump	1	81	20%	140	10
Concrete Pump	1	81	20%	140	10
Concrete Pump	1	81	20%	160	10
Concrete Pump	1	81	20%	160	10
Concrete Pump	1	81	20%	180	10
Concrete Pump	1	81	20%	180	10

6

Receptor: *R3*

Results:
1-hour Leq: 61.8

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: Concrete

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Concrete Saw	1	90	20%	140	10
Crane	1	81	16%	140	10
Fork Lift	1	75	20%	160	10
Concrete Pump	1	81	20%	160	10
Generator Set	1	81	50%	180	10
Fork Lift	1	75	20%	180	10
Concrete Pump	1	81	20%	200	10

7

Receptor: **R3**

Results:
1-hour Leq: 65.8

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: *Building Construction*

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Concrete Saw	1	90	20%	140	10
Crane	1	81	16%	140	10
Concrete Pump	1	81	20%	160	10
Aerial Lift	1	75	20%	160	10
Fork Lift	1	75	20%	180	10
Generator Set	1	81	50%	180	10
Welders	1	74	40%	200	10
Concrete Saw	1	90	20%	200	10
Concrete Pump	1	81	20%	220	10
Aerial Lift	1	75	20%	220	10
Fork Lift	1	75	20%	240	10
Generator Set	1	81	50%	240	10

12

Receptor: *R3*

Results:

1-hour Leq: 67.3

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: Paving/Landscaping

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Cement and Mortar Mixer	1	80	50%	140	10
Pavers	1	77	50%	140	10
Plate Compactor	1	83	20%	160	10
Tractor/Loader/Backhoe	1	84	40%	160	10

Receptor: 4 **R3**

Results: **1-hour Leq:** **63.7**

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: *Demolition*

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Concrete Saw	1	90	20%	410	15
Rubber Tired Dozer	1	82	40%	410	15
Rubber Tired Loader	1	79	40%	430	15
Tractor/Loader/Backhoe	1	84	40%	430	15
Air Compressor	1	78	40%	450	15
Tractor/Loader/Backhoe	1	84	40%	450	15

6

Receptor: ***R4***

Results:

1-hour Leq: 53.6

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: *Grading*

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Bore/Drill Rig	1	84	20%	410	15
Excavator	1	81	40%	410	15
Forklift	1	75	20%	430	15
Welders	1	74	40%	430	15
Tractor/Loader/Backhoe	1	84	40%	450	15
Rubber Tired Dozer	1	82	40%	450	15
Rubber Tired Loader	1	79	40%	470	15
Bore/Drill Rig	1	84	20%	470	15
Excavator	1	81	40%	490	15
Welders	2	74	40%	490	15
Tractor/Loader/Backhoe	1	84	40%	510	15
Rubber Tired Dozer	1	82	40%	510	15
Rubber Tired Loader	1	79	40%	530	15

14

Receptor: *R4*

Results:

1-hour Leq: 53.6

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: *Mat Foundation*

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Concrete Pump	1	81	20%	410	15
Concrete Pump	1	81	20%	410	15
Concrete Pump	1	81	20%	430	15
Concrete Pump	1	81	20%	430	15
Concrete Pump	1	81	20%	450	15
Concrete Pump	1	81	20%	450	15

6

Receptor: *R4*

Results:
1-hour Leq: 48.1

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: Concrete

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Concrete Saw	1	90	20%	410	15
Crane	1	81	16%	410	15
Fork Lift	1	75	20%	430	15
Concrete Pump	1	81	20%	430	15
Generator Set	1	81	50%	450	15
Fork Lift	1	75	20%	450	15
Concrete Pump	1	81	20%	470	15

7

Receptor: **R4**

Results:
1-hour Leq: 51.8

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: *Building Construction*

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Concrete Saw	1	90	20%	410	15
Crane	1	81	16%	410	15
Concrete Pump	1	81	20%	430	15
Aerial Lift	1	75	20%	430	15
Fork Lift	1	75	20%	450	15
Generator Set	1	81	50%	450	15
Welders	1	74	40%	470	15
Concrete Saw	1	90	20%	470	15
Concrete Pump	1	81	20%	490	15
Aerial Lift	1	75	20%	490	15
Fork Lift	1	75	20%	510	15
Generator Set	1	81	50%	510	15

12

Receptor: *R4*

Results:

1-hour Leq: 54.0

Source for Ref. Noise Levels: FHWA RCNM, 2006

Project: 2143 Violet Project

Construction Phase: Paving/Landscaping

Equipment

Description	No. of Equip.	Reference Noise Level at 50ft, Lmax	Acoustical Usage Factor	Distance to Receptor, ft	Estimated Noise Shielding, dBA
Cement and Mortar Mixer	1	80	50%	410	15
Pavers	1	77	50%	410	15
Plate Compactor	1	83	20%	430	15
Tractor/Loader/Backhoe	1	84	40%	430	15

Receptor: 4
R4

Results:
1-hour Leq: **49.8**

Source for Ref. Noise Levels: FHWA RCNM, 2006

INPUT: ROADWAYS
2143 Violet Project

Eyestone Environmental					24 October 2018						
Sean Bui					TNM 2.5						

INPUT: ROADWAYS
PROJECT/CONTRACT:
2143 Violet Project
RUN:
Construction Trucks - Demo Phase

Average pavement type shall be used unless
a State highway agency substantiates the use
of a different type with the approval of FHWA

Roadway		Points									
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control	Speed	Percent	Pvmt	On
							Device	Constraint	Vehicles	Type	Struct?
									Affected		
	ft			ft	ft	ft		mph	%		
Haul Route	12.0	point1	1	0.0	0.0	0.00	Signal	0.00	100	Average	
		point2	2	1,000.0	0.0	0.00					

INPUT: TRAFFIC FOR LAeq1h Volumes

2143 Violet Project

Eyestone Environmental													
Sean Bui													
INPUT: TRAFFIC FOR LAeq1h Volumes													
PROJECT/CONTRACT:	2143 Violet Project												
RUN:	Construction Trucks - Demo Phase												
Roadway	Points												
Name	Name	No.	Segment										
			Autos		MTrucks		HTrucks		Buses		Motorcycles		
			V	S	V	S	V	S	V	S	V	S	
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	
Haul Route	point1	1	7	35	0	0	5	35	0	0	0	0	
	point2	2											

INPUT: RECEIVERS

2143 Violet Project

Eyestone Environmental												
Sean Bui												
INPUT: RECEIVERS												
PROJECT/CONTRACT:	2143 Violet Project											
RUN:	Construction Trucks - Demo Phase											
Receiver												
Name	No.	#DUs	Coordinates (ground)			Height	Input Sound Levels and Criteria				Active	
			X	Y	Z	above	Existing	Impact Criteria		NR	in	
						Ground	L _{Aeq} 1h	L _{Aeq} 1h	Sub'l	Goal	Calc.	
			ft	ft	ft	ft	dBA	dBA	dB	dB		
At 30 feet from Roadway CL	1	1	250.0	30.0	0.00	4.92	0.00	71	5.0	0.0	Y	
At 40 feet from Roadway CL	8	1	250.0	40.0	0.00	4.92	0.00	66	10.0	8.0	Y	

RESULTS: SOUND LEVELS
2143 Violet Project

Eyestone Environmental												
Sean Bui												
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:												
2143 Violet Project												
RUN:												
Construction Trucks - Demo Phase												
BARRIER DESIGN:												
INPUT HEIGHTS												
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.												
ATMOSPHERICS:												
68 deg F, 50% RH												
Receiver												
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	With Barrier				
								Type Impact	Calculated LAeq1h	Noise Reduction		
										Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
At 30 feet from Roadway CL	1	1	0.0	60.5	71	60.5	5	----	60.5	0.0	0	0.0
At 40 feet from Roadway CL	8	1	0.0	59.1	66	59.1	10	----	59.1	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction									
			Min dB	Avg dB	Max dB							
All Selected		2	0.0	0.0	0.0							
All Impacted		0	0.0	0.0	0.0							
All that meet NR Goal		1	0.0	0.0	0.0							

INPUT: ROADWAYS
2143 Violet Project

Eyestone Environmental					18 July 2019						
Sean Bui					TNM 2.5						

INPUT: ROADWAYS
PROJECT/CONTRACT:
2143 Violet Project
RUN:
Construction Trucks - Grading Phase

Average pavement type shall be used unless
a State highway agency substantiates the use
of a different type with the approval of FHWA

Roadway		Points									
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control	Speed	Percent	Pvmt	On
							Device	Constraint	Vehicles	Type	Struct?
									Affected		
	ft			ft	ft	ft		mph	%		
Haul Route	12.0	point1	1	0.0	0.0	0.00	Signal	0.00	100	Average	
		point2	2	1,000.0	0.0	0.00					

INPUT: TRAFFIC FOR LAeq1h Volumes

2143 Violet Project

Eyestone Environmental													
Sean Bui													
INPUT: TRAFFIC FOR LAeq1h Volumes													
PROJECT/CONTRACT:	2143 Violet Project												
RUN:	Construction Trucks - Grading Phase												
Roadway	Points												
Name	Name	No.	Segment										
			Autos		MTrucks		HTrucks		Buses		Motorcycles		
			V	S	V	S	V	S	V	S	V	S	
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	
Haul Route	point1	1	8	35	0	0	29	35	0	0	0	0	
	point2	2											

INPUT: RECEIVERS

2143 Violet Project

Eyestone Environmental												
Sean Bui												
INPUT: RECEIVERS												
PROJECT/CONTRACT:	2143 Violet Project											
RUN:	Construction Trucks - Grading Phase											
Receiver												
Name	No.	#DUs	Coordinates (ground)			Height	Input Sound Levels and Criteria				Active	
			X	Y	Z	above	Existing	Impact Criteria		NR	in	
						Ground	L _{Aeq} 1h	L _{Aeq} 1h	Sub'l	Goal	Calc.	
			ft	ft	ft	ft	dBA	dBA	dB	dB		
At 30 feet from Roadway CL	1	1	250.0	30.0	0.00	4.92	0.00	71	5.0	0.0	Y	
At 40 feet from Roadway CL	8	1	250.0	40.0	0.00	4.92	0.00	66	10.0	8.0	Y	

RESULTS: SOUND LEVELS
2143 Violet Project

Eyestone Environmental												
Sean Bui												
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:												
2143 Violet Project												
RUN:												
Construction Trucks - Grading Phase												
BARRIER DESIGN:												
INPUT HEIGHTS												
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.												
ATMOSPHERICS:												
68 deg F, 50% RH												
Receiver												
Name	No.	#DUs	Existing	No Barrier	Crit'n	With Barrier						
			LAeq1h	LAeq1h		Increase over existing	Type	Calculated	Noise Reduction			
				Calculated		Calculated	Crit'n			Calculated	Goal	Calculated
						Sub'l Inc	Impact					minus
												Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
At 30 feet from Roadway CL	1	1	0.0	68.0	71	68.0	5	----	68.0	0.0	0	0.0
At 40 feet from Roadway CL	8	1	0.0	66.5	66	66.5	10	Snd Lvl	66.5	0.0	8	-8.0
Dwelling Units												
		# DUs	Noise Reduction									
			Min	Avg	Max							
			dB	dB	dB							
All Selected		2	0.0	0.0	0.0							
All Impacted		1	0.0	0.0	0.0							
All that meet NR Goal		1	0.0	0.0	0.0							

INPUT: ROADWAYS
2143 Violet Project

Eyestone Environmental					24 October 2018						
Sean Bui					TNM 2.5						

INPUT: ROADWAYS
PROJECT/CONTRACT:
2143 Violet Project
RUN:
Construction Trucks - Mat Foundation

Average pavement type shall be used unless
a State highway agency substantiates the use
of a different type with the approval of FHWA

Roadway		Points									
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control	Speed	Percent	Pvmt	On
							Device	Constraint	Vehicles	Type	Struct?
									Affected		
	ft			ft	ft	ft		mph	%		
Haul Route	12.0	point1	1	0.0	0.0	0.00	Signal	0.00	100	Average	
		point2	2	1,000.0	0.0	0.00					

INPUT: TRAFFIC FOR LAeq1h Volumes
2143 Violet Project

Eyestone Environmental													
Sean Bui													
INPUT: TRAFFIC FOR LAeq1h Volumes													
PROJECT/CONTRACT:	2143 Violet Project												
RUN:	Construction Trucks - Mat Foundation												
Roadway	Points												
Name	Name	No.	Segment										
			Autos		MTrucks		HTrucks		Buses		Motorcycles		
			V	S	V	S	V	S	V	S	V	S	
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	
Haul Route	point1	1	60	35	0	0	39	35	0	0	0	0	
	point2	2											

INPUT: RECEIVERS

2143 Violet Project

Eyestone Environmental												
Sean Bui												
INPUT: RECEIVERS												
PROJECT/CONTRACT:	2143 Violet Project											
RUN:	Construction Trucks - Mat Foundation											
Receiver												
Name	No.	#DUs	Coordinates (ground)			Height	Input Sound Levels and Criteria				Active	
			X	Y	Z	above	Existing	Impact Criteria		NR	in	
						Ground	L _{Aeq} 1h	L _{Aeq} 1h	Sub'l	Goal	Calc.	
			ft	ft	ft	ft	dBA	dBA	dB	dB		
At 30 feet from Roadway CL	1	1	250.0	30.0	0.00	4.92	0.00	71	5.0	0.0	Y	
At 40 feet from Roadway CL	8	1	250.0	40.0	0.00	4.92	0.00	66	10.0	8.0	Y	

INPUT: ROADWAYS
2143 Violet Project

Eyestone Environmental					24 October 2018						
Sean Bui					TNM 2.5						

INPUT: ROADWAYS
PROJECT/CONTRACT:
2143 Violet Project
RUN:
Construction Trucks - Concrete Phase

Average pavement type shall be used unless
a State highway agency substantiates the use
of a different type with the approval of FHWA

Roadway		Points									
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control	Speed	Percent	Pvmt	On
							Device	Constraint	Vehicles	Type	Struct?
									Affected		
	ft			ft	ft	ft		mph	%		
Haul Route	12.0	point1	1	0.0	0.0	0.00	Signal	0.00	100	Average	
		point2	2	1,000.0	0.0	0.00					

INPUT: TRAFFIC FOR LAeq1h Volumes
2143 Violet Project

Eyestone Environmental													
Sean Bui													
INPUT: TRAFFIC FOR LAeq1h Volumes													
PROJECT/CONTRACT:	2143 Violet Project												
RUN:	Construction Trucks - Concrete Phase												
Roadway	Points												
Name	Name	No.	Segment										
			Autos		MTrucks		HTrucks		Buses		Motorcycles		
			V	S	V	S	V	S	V	S	V	S	
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	
Haul Route	point1	1	200	35	0	0	5	35	0	0	0	0	
	point2	2											

INPUT: RECEIVERS

2143 Violet Project

Eyestone Environmental												
Sean Bui												
INPUT: RECEIVERS												
PROJECT/CONTRACT:	2143 Violet Project											
RUN:	Construction Trucks - Concrete Phase											
Receiver												
Name	No.	#DUs	Coordinates (ground)			Height	Input Sound Levels and Criteria				Active	
			X	Y	Z	above	Existing	Impact Criteria		NR	in	
						Ground	L _{Aeq} 1h	L _{Aeq} 1h	Sub'l	Goal	Calc.	
			ft	ft	ft	ft	dBA	dBA	dB	dB		
At 30 feet from Roadway CL	1	1	250.0	30.0	0.00	4.92	0.00	71	5.0	0.0	Y	
At 40 feet from Roadway CL	8	1	250.0	40.0	0.00	4.92	0.00	66	10.0	8.0	Y	

RESULTS: SOUND LEVELS
2143 Violet Project

Eyestone Environmental													
Sean Bui													
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:													
RUN:													
BARRIER DESIGN:													
ATMOSPHERICS:													
Receiver													
Name	No.	#DUs	Existing	No Barrier									
			LAeq1h	LAeq1h									
				Calculated	Crit'n								
						Increase over existing	Crit'n	Type	Calculated	Noise Reduction			
						Calculated	Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated	
												minus	
												Goal	
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	
At 30 feet from Roadway CL	1	1	0.0	64.6	71	64.6	5	----	64.6	0.0	0	0.0	
At 40 feet from Roadway CL	8	1	0.0	63.3	66	63.3	10	----	63.3	0.0	8	-8.0	
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		2	0.0	0.0	0.0								
All Impacted		0	0.0	0.0	0.0								
All that meet NR Goal		1	0.0	0.0	0.0								

INPUT: ROADWAYS
2143 Violet Project

Eyestone Environmental					24 October 2018						
Sean Bui					TNM 2.5						

INPUT: ROADWAYS
PROJECT/CONTRACT:
2143 Violet Project
RUN:
Construction Trucks - Building Constructi

Average pavement type shall be used unless
a State highway agency substantiates the use
of a different type with the approval of FHWA

Roadway		Points									
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control	Speed	Percent	Pvmt	On
							Device	Constraint	Vehicles	Type	Struct?
									Affected		
	ft			ft	ft	ft		mph	%		
Haul Route	12.0	point1	1	0.0	0.0	0.00	Signal	0.00	100	Average	
		point2	2	1,000.0	0.0	0.00					

INPUT: TRAFFIC FOR LAeq1h Volumes

2143 Violet Project

Eyestone Environmental													
Sean Bui													
INPUT: TRAFFIC FOR LAeq1h Volumes													
PROJECT/CONTRACT:	2143 Violet Project												
RUN:	Construction Trucks - Building Constructi												
Roadway	Points												
Name	Name	No.	Segment										
			Autos		MTrucks		HTrucks		Buses		Motorcycles		
			V	S	V	S	V	S	V	S	V	S	
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	
Haul Route	point1	1	200	35	0	0	34	35	0	0	0	0	
	point2	2											

INPUT: RECEIVERS

2143 Violet Project

Eyestone Environmental												
Sean Bui												
INPUT: RECEIVERS												
PROJECT/CONTRACT:	2143 Violet Project											
RUN:	Construction Trucks - Building Constructi											
Receiver												
Name	No.	#DUs	Coordinates (ground)			Height	Input Sound Levels and Criteria				Active	
			X	Y	Z	above	Existing	Impact Criteria		NR	in	
						Ground	L_{Aeq}1h	L_{Aeq}1h	Sub'l	Goal	Calc.	
			ft	ft	ft	ft	dBA	dBA	dB	dB		
At 30 feet from Roadway CL	1	1	250.0	30.0	0.00	4.92	0.00	71	5.0	0.0	Y	
At 40 feet from Roadway CL	8	1	250.0	40.0	0.00	4.92	0.00	66	10.0	8.0	Y	

RESULTS: SOUND LEVELS
2143 Violet Project

Eyestone Environmental												
Sean Bui												
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:												
2143 Violet Project												
RUN:												
Construction Trucks - Building Constructi												
BARRIER DESIGN:												
INPUT HEIGHTS												
Average pavement type shall be used unless												
a State highway agency substantiates the use												
of a different type with approval of FHWA.												
ATMOSPHERICS:												
68 deg F, 50% RH												
Receiver												
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	With Barrier						
						Increase over existing		Type	Calculated	Noise Reduction		
						Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated
							Sub'l Inc					minus
												Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
At 30 feet from Roadway CL	1	1	0.0	69.6	71	69.6	5	----	69.6	0.0	0	0.0
At 40 feet from Roadway CL	8	1	0.0	68.2	66	68.2	10	Snd Lvl	68.2	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction									
			Min	Avg	Max							
			dB	dB	dB							
All Selected		2	0.0	0.0	0.0							
All Impacted		1	0.0	0.0	0.0							
All that meet NR Goal		1	0.0	0.0	0.0							

INPUT: ROADWAYS
2143 Violet Project

Eyestone Environmental					24 October 2018					
Sean Bui					TNM 2.5					

INPUT: ROADWAYS
PROJECT/CONTRACT:
2143 Violet Project
RUN:
Construction Trucks - Paving Phase

Average pavement type shall be used unless
a State highway agency substantiates the use
of a different type with the approval of FHWA

Roadway		Points								
Name	Width	Name	No.	Coordinates (pavement)			Flow Control			Segment
				X	Y	Z	Control	Speed	Percent	Pvmt
							Device	Constraint	Vehicles	Type
									Affected	
	ft			ft	ft	ft		mph	%	
Haul Route	12.0	point1	1	0.0	0.0	0.00	Signal	0.00	100	Average
		point2	2	1,000.0	0.0	0.00				

INPUT: TRAFFIC FOR LAeq1h Volumes

2143 Violet Project

Eyestone Environmental													
Sean Bui													
INPUT: TRAFFIC FOR LAeq1h Volumes													
PROJECT/CONTRACT:	2143 Violet Project												
RUN:	Construction Trucks - Paving Phase												
Roadway	Points												
Name	Name	No.	Segment										
			Autos		MTrucks		HTrucks		Buses		Motorcycles		
			V	S	V	S	V	S	V	S	V	S	
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	
Haul Route	point1	1	20	35	0	0	3	35	0	0	0	0	
	point2	2											

INPUT: RECEIVERS
2143 Violet Project

Eyestone Environmental												
Sean Bui												
INPUT: RECEIVERS												
PROJECT/CONTRACT:	2143 Violet Project											
RUN:	Construction Trucks - Paving Phase											
Receiver												
Name	No.	#DUs	Coordinates (ground)			Height	Input Sound Levels and Criteria				Active	
			X	Y	Z	above	Existing	Impact Criteria		NR	in	
						Ground	L_{Aeq}1h	L_{Aeq}1h	Sub'l	Goal	Calc.	
			ft	ft	ft	ft	dBA	dBA	dB	dB		
At 30 feet from Roadway CL	1	1	250.0	30.0	0.00	4.92	0.00	71	5.0	0.0	Y	
At 40 feet from Roadway CL	8	1	250.0	40.0	0.00	4.92	0.00	66	10.0	8.0	Y	

RESULTS: SOUND LEVELS
2143 Violet Project

Eyestone Environmental												
Sean Bui												
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:												
2143 Violet Project												
RUN:												
Construction Trucks - Paving Phase												
BARRIER DESIGN:												
INPUT HEIGHTS												
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.												
ATMOSPHERICS:												
68 deg F, 50% RH												
Receiver												
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	With Barrier				
								Type Impact	Calculated LAeq1h	Noise Reduction		
										Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
At 30 feet from Roadway CL	1	1	0.0	59.1	71	59.1	5	----	59.1	0.0	0	0.0
At 40 feet from Roadway CL	8	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
Dwelling Units												
		# DUs	Noise Reduction									
			Min dB	Avg dB	Max dB							
All Selected		2	0.0	0.0	0.0							
All Impacted		0	0.0	0.0	0.0							
All that meet NR Goal		1	0.0	0.0	0.0							

Project: 2143 Violet Project EIR

Construction Vibration Impacts

Reference Levels at 25 feet are based on FTA, 2006 (Transit Noise and Vibration Impact Assessment)

Calculations using FTA procedure with

n= 1.5 (for receptors 25 feet or greater)

n= 1.1 (for receptors less than 25 feet, per Caltrans procedure)

ON-SITE CONSTRUCTION ACTIVITIES

Table 1: Construction Equipment Vibration Levels (PPV) - Building Damages

Equipment	Reference Vibration Levels at 25 ft., PPV	Estimated Vibration Levels at nearest off-site building structures (distance in feet), PPV						
		Building to the North	Building the South	Building to the west	Engine Co. 17 Building	Ford Motor Co. Factory Building	Historic Building at 2035 Bay Street	On-site historic Building C at 2140 7th Place
		50	60	20	225	220	450	5
Large Bulldozer	0.089	0.032	0.024	0.114	0.003	0.003	0.001	0.523
Caisson Drilling	0.089	0.032	0.024	0.114	0.003	0.003	0.001	0.523
Loaded Trucks	0.076	0.027	0.020	0.097	0.003	0.003	0.001	0.446
Jackhammer	0.035	0.012	0.009	0.045	0.001	0.001	0.001	0.206
Small bulldozer	0.003	0.001	0.001	0.004	0.000	0.000	0.000	0.018
Significance Threshold, PPV		0.3	0.2	0.3	0.12	0.12	0.12	0.12

Table 2: Construction Equipment Vibration Levels (VdB) - Human Annoyance

Equipment	Reference Vibration Levels at 25 ft., VdB	Estimated Vibration Levels at Off-Site Receptors (at note distance in feet), VdB						
		R1	R2	R3	R4			
		50	200	100	410			
Large Bulldozer	87	78	60	69	51			
Caisson Drilling	87	78	60	69	51			
Loaded Trucks	86	77	59	68	50			
Jackhammer	79	70	52	61	43			
Small bulldozer	58	49	31	40	22			
Significance Threshold, VdB		72	72	65	72			

OFF-SITE CONSTRUCTION HAUL TRUCKS

Table 3: Off-Site Haul Trucks - Building Damage

Equipment	Reference Vibration Levels at 50 ft., PPV	Estimated Vibration Levels at noted distance in feet, PPV						
		20						
Typical road surface	0.00565	0.022						
Significance Threshold, PPV		0.12						

Ref. Levels based on FTA Figure 7-3 (converted from VdB to PPV)

Table 4: Off-Site Haul Trucks - Human Annoyance

Equipment	Reference Vibration Levels at 50 ft., VdB	Estimated Vibration Levels at noted distance in feet, VdB						
		30	160					
Typical road surface	63	70	48					
Significance Threshold, VdB		72	65					

Ref. Levels based on FTA Figure 7-3

Operation Noise Calculations

Project Composite Noise Calculations (CNEL)

Project: 2143 Violet Project

Receptor	Ambient	Traffic ^a	Mechanical	Parking	Loading	Outdoor		Project Composite	Ambient + Project	Increase
R1	60.2	47.9	48.1	20.3	29.9	57.4		58.3	62.4	2.2
R2	72.5	62.7	51.8	15.9	33.9	55.7		63.8	73.0	0.5
R3	65.3	50.5	48.3	16.3	39.1	50.0		54.6	65.7	0.4
R4	60.9	54.6	49.5	26.3	49.5	54.9		58.9	63.0	2.1

^a - Project traffic noise levels at each receptor is based on the traffic noise analysis for the roadway segment in front of the receptor.
Project traffic noise level is equal to "Baseline+Project" minus "Baseline" traffic noise levels, as provided in the table below.

Receptor	Roadway Segment	Traffic Noise Levels, CNEL			distance to roadway, ft	Baseline	Baseline + Project	barrier	distance to Center Line	adj. for distance
		Existing	Existing + Project	Project Only						
R1	Santa Fe	55.4	56.1	47.9	315	70.3	71.0	5	35	-9.9
R2	Santa Fe	70.3	71.0	62.7	10	70.3	71.0	0	35	0.0
R3	Santa Fe	58.1	58.8	50.5	160	70.3	71.0	5	35	-7.2
R4	Santa Fe	64.8	65.2	54.6	100	70.3	70.7	0	35	-5.5

Outdoor Mechanical Equipment Noise Calculations

Project: 2143 Violet Project

Hours of Operations

Estimated Noise Levels, Leq from SOUNDPLAN			Ld (7am to 7pm)	Le (7pm to 10pm)	Ln (10pm to 7am)
Receptor	Leq	CNEL	12	3	9
R1	41.4	48.1	41.4	41.4	41.4
R2	45.1	51.8	45.1	45.1	45.1
R3	41.6	48.3	41.6	41.6	41.6
R4	42.8	49.5	42.8	42.8	42.8

Receptor	Ambient CNEL	Ambient + Project (CNEL)	Increase (CNEL)	ambient (Leq)	Ambient + Project (Leq)
R1	60.2	60.5	0.3	55.3	55.5
R2	72.5	72.5	0.0	65.9	65.9
R3	65.3	65.4	0.1	58.8	58.9
R4	60.9	61.2	0.3	54.4	54.7

Parking Structure Noise Calculations

Project: 2143 Violet Project

		Hours of Operations			
Estimated Noise Levels, Leq from SOUNDPLAN		Ld (7am to 7pm)	Le (7pm to 10pm)	Ln (10pm to 7am)	
Receptor	Leq	CNEL	12	3	9
R1	13.6	20.3	13.6	13.6	13.6
R2	9.2	15.9	9.2	9.2	9.2
R3	9.6	16.3	9.6	9.6	9.6
R4	19.6	26.3	19.6	19.6	19.6

Receptor	Ambient CNEL	Ambient + Project (CNEL)	Increase (CNEL)	nighttime ambient (Leq)	Ambient + Project (Leq)	Increase (Leq)
R1	60.2	60.2	0.0	55.3	55.3	0.0
R2	72.5	72.5	0.0	65.9	65.9	0.0
R3	65.3	65.3	0.0	58.8	58.8	0.0
R4	60.9	60.9	0.0	54.4	54.4	0.0

Outdoor Noise Calculations

Project: 2143 Violet Project

ALL LEVEL

Hours of Operations

Estimated noise levels, Leq (FROM SOUNDPLAN)					Ld (7am to 7pm)	Le (7pm to 10pm)	Ln (10pm to 7am)
Receptor	Sound System	Occupants	Total, Leq	CNEL	12	3	0
R1	55.7	53.9	57.9	57.4	57.9	57.9	0.0
R2	56.0	42.0	56.2	55.7	56.2	56.2	0.0
R3	50.1	40.4	50.5	50.0	50.5	50.5	0.0
R4	55.2	41.6	55.4	54.9	55.4	55.4	0.0

NOT USED

Hours of Operations

Estimated noise levels, Leq (FROM SOUNDPLAN)					Ld (7am to 7pm)	Le (7pm to 10pm)	Ln (10pm to 7am)
Receptor	Sound System	Occupants	Total, Leq	CNEL	0	0	0
R1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
R2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
R3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
R4	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TOTAL COMBINED

Receptor	Project (CNEL)	Ambient (CNEL)	Ambient + Project (CNEL)	Increase (CNEL)	Project Noise, (Leq)	Ambient (Leq)	Ambient + Project (Leq)
R1	57.4	60.2	62.0	1.8	57.9	55.3	59.8
R2	55.7	72.5	72.6	0.1	56.2	65.9	66.3
R3	50.0	65.3	65.4	0.1	50.5	58.8	59.4
R4	54.9	60.9	61.9	1.0	55.4	54.4	57.9

Loading and Trash Compactor Noise Calculations

Project: 2143 Violet Project

LOADING

Estimated Noise Levels, Leq from SOUNDPLAN			Ld (7am to 7pm)	Le (7pm to 10pm)	Ln (10pm to 7am)
Receptor	Leq	CNEL	3	3	0
R1	32.7	29.9	26.7	32.7	0.0
R2	36.7	33.9	30.7	36.7	0.0
R3	41.9	39.1	35.9	41.9	0.0
R4	52.3	49.5	46.3	52.3	0.0

TOTAL COMBINED

Receptor	Project CNEL	Ambient CNEL	Ambient + Project (CNEL)	Increase (CNEL)	Project Noise, (Leq)	Ambient (Leq)	Ambient + Project (Leq)
R1	29.9	60.2	60.2	0.0	32.7	56.3	56.3
R2	33.9	72.5	72.5	0.0	36.7	71.8	71.8
R3	39.1	65.3	65.3	0.0	41.9	64.5	64.5
R4	49.5	60.9	61.2	0.3	52.3	60.2	60.9

2143 Violet

Octave spectra of the sources in dB(A) - Loading

3

Name	Source type	Lw	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	
Commercial Loading	Point	101.9	68.9	78.9	85.9	91.9	94.9	95.9	95.9	93.9	
Residential Loading Dock 1	Point	101.9	68.9	78.9	85.9	91.9	94.9	95.9	95.9	93.9	
Residential Loading Dock 2	Point	101.9	68.9	78.9	85.9	91.9	94.9	95.9	95.9	93.9	

2143 Violet
Assessed contribution level - Loading

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Source	Ld dB(A)	
Receiver R1 Ld 32.7 dB(A)		
Commercial Loading	27.1	
Residential Loading Dock 1	27.9	
Residential Loading Dock 2	28.7	
Receiver R2 Ld 36.7 dB(A)		
Commercial Loading	24.1	
Residential Loading Dock 1	34.9	
Residential Loading Dock 2	31.1	
Receiver R3 Ld 41.9 dB(A)		
Commercial Loading	26.1	
Residential Loading Dock 1	41.2	
Residential Loading Dock 2	32.3	
Receiver R4 Ld 52.3 dB(A)		
Commercial Loading	32.9	
Residential Loading Dock 1	50.3	
Residential Loading Dock 2	47.8	

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Octave spectra of the sources in dB(A) - Mechanical

3

Name	Source type	Lw	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	
Mechanical Office 1	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Office 2	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Office 3	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Office 4	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Office 5	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Office 6	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Office 7	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Office 8	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Office 9	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Office 10	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Residential 1	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Residential 2	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Residential 3	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Residential 4	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Residential 5	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Residential 6	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Residential 7	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Residential 8	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Residential 9	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Residential 10	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Residential 11	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	
Mechanical Residential 12	Point	95.0	78.1	83.1	87.2	88.3	88.9	87.2	84.8	80.8	

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2143 Violet
Assessed contribution level - Mechanical

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Source	Ld dB(A)	
Receiver R1 Ld 41.4 dB(A)		
Mechanical Office 1	25.9	
Mechanical Office 2	26.9	
Mechanical Office 3	28.0	
Mechanical Office 4	32.5	
Mechanical Office 5	32.5	
Mechanical Office 6	32.5	
Mechanical Office 7	32.5	
Mechanical Office 8	28.1	
Mechanical Office 9	26.9	
Mechanical Office 10	26.0	
Mechanical Residential 1	24.7	
Mechanical Residential 2	23.0	
Mechanical Residential 3	22.2	
Mechanical Residential 4	21.7	
Mechanical Residential 5	21.4	
Mechanical Residential 6	26.8	
Mechanical Residential 7	26.4	
Mechanical Residential 8	26.1	
Mechanical Residential 9	25.9	
Mechanical Residential 10	25.7	
Mechanical Residential 11	25.4	
Mechanical Residential 12	22.4	
Receiver R2 Ld 45.1 dB(A)		
Mechanical Office 1	38.7	
Mechanical Office 2	35.5	
Mechanical Office 3	36.1	
Mechanical Office 4	37.5	
Mechanical Office 5	34.7	
Mechanical Office 6	32.0	
Mechanical Office 7	29.9	
Mechanical Office 8	29.3	
Mechanical Office 9	30.3	
Mechanical Office 10	27.8	
Mechanical Residential 1	26.4	
Mechanical Residential 2	25.7	
Mechanical Residential 3	25.4	
Mechanical Residential 4	25.2	
Mechanical Residential 5	25.0	
Mechanical Residential 6	25.0	

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2143 Violet
Assessed contribution level - Mechanical

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Source	Ld dB(A)	
Mechanical Residential 7	23.3	
Mechanical Residential 8	22.5	
Mechanical Residential 9	21.9	
Mechanical Residential 10	21.6	
Mechanical Residential 11	25.0	
Mechanical Residential 12	22.1	
Receiver R3 Ld 41.6 dB(A)		
Mechanical Office 1	33.0	
Mechanical Office 2	30.5	
Mechanical Office 3	31.2	
Mechanical Office 4	33.2	
Mechanical Office 5	30.3	
Mechanical Office 6	28.4	
Mechanical Office 7	27.0	
Mechanical Office 8	26.6	
Mechanical Office 9	25.9	
Mechanical Office 10	25.7	
Mechanical Residential 1	26.7	
Mechanical Residential 2	25.8	
Mechanical Residential 3	25.4	
Mechanical Residential 4	25.1	
Mechanical Residential 5	24.9	
Mechanical Residential 6	27.4	
Mechanical Residential 7	26.2	
Mechanical Residential 8	25.7	
Mechanical Residential 9	25.2	
Mechanical Residential 10	22.9	
Mechanical Residential 11	27.2	
Mechanical Residential 12	23.2	
Receiver R4 Ld 42.8 dB(A)		
Mechanical Office 1	36.1	
Mechanical Office 2	32.5	
Mechanical Office 3	30.6	
Mechanical Office 4	31.9	
Mechanical Office 5	28.6	
Mechanical Office 6	28.4	
Mechanical Office 7	28.3	
Mechanical Office 8	29.7	
Mechanical Office 9	31.7	
Mechanical Office 10	35.6	

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2143 Violet
Assessed contribution level - Mechanical

9

Source	Ld dB(A)	
Mechanical Residential 1	22.3	
Mechanical Residential 2	22.6	
Mechanical Residential 3	23.1	
Mechanical Residential 4	23.8	
Mechanical Residential 5	25.4	
Mechanical Residential 6	21.0	
Mechanical Residential 7	21.5	
Mechanical Residential 8	22.2	
Mechanical Residential 9	23.2	
Mechanical Residential 10	24.9	
Mechanical Residential 11	20.8	
Mechanical Residential 12	24.5	

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Road	ADT Veh/24h	Pavement type	
Residential Driveway	2595	PCC (Portland cement concrete)	
Office Driveway	2595	PCC (Portland cement concrete)	

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2143 Violet
Assessed contribution level - Parking

9

Source	Ld dB(A)	
Receiver R1 Ld 13.6 dB(A)		
Residential Driveway	4.4	
Office Driveway	13.1	
Receiver R2 Ld 9.2 dB(A)		
Residential Driveway	5.1	
Office Driveway	7.0	
Receiver R3 Ld 9.6 dB(A)		
Residential Driveway	5.3	
Office Driveway	7.6	
Receiver R4 Ld 19.6 dB(A)		
Residential Driveway	3.6	
Office Driveway	19.5	

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Octave spectra of the sources in dB(A) - People

3

Name	Source type	Lw	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	
Outdoor People	Area	97.9	51.0	61.1	77.8	92.9	94.1	90.6	85.9	75.4	
People - Level 4 Deck	Area	92.5	45.6	55.7	72.4	87.5	88.7	85.2	80.5	70.0	
People - Level 8 Deck	Area	101.5	54.6	64.7	81.4	96.5	97.7	94.2	89.5	79.0	



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Assessed contribution level - People

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Source	Ld dB(A)	
Receiver R1 Ld 53.9 dB(A)		
Outdoor People	53.6	
People - Level 4 Deck	39.8	
People - Level 8 Deck	38.9	
Receiver R2 Ld 42.0 dB(A)		
Outdoor People	34.5	
People - Level 4 Deck	36.4	
People - Level 8 Deck	39.4	
Receiver R3 Ld 40.4 dB(A)		
Outdoor People	38.5	
People - Level 4 Deck	27.6	
People - Level 8 Deck	35.3	
Receiver R4 Ld 41.6 dB(A)		
Outdoor People	38.8	
People - Level 4 Deck	10.8	
People - Level 8 Deck	38.4	

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Octave spectra of the sources in dB(A) - Speakers

3

Name	Source type	Lw	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	
Speakers - Level 1 Paseo 1	Point	99.2	68.4	78.0	86.2	91.3	93.5	93.3	93.2	
Speakers - Level 1 Paseo 2	Point	99.2	68.4	78.0	86.2	91.3	93.5	93.3	93.2	
Speakers - Level 1 Paseo 3	Point	99.2	68.4	78.0	86.2	91.3	93.5	93.3	93.2	
Speakers - Level 1 Paseo 4	Point	99.2	68.4	78.0	86.2	91.3	93.5	93.3	93.2	
Speakers - Level 1 Paseo 5	Point	99.2	68.4	78.0	86.2	91.3	93.5	93.3	93.2	
Speakers - Level 1 Paseo 6	Point	99.2	68.4	78.0	86.2	91.3	93.5	93.3	93.2	
Speakers - Level 1 Paseo 7	Point	99.2	68.4	78.0	86.2	91.3	93.5	93.3	93.2	
Speakers - Level 1 Paseo 8	Point	99.2	68.4	78.0	86.2	91.3	93.5	93.3	93.2	
Speakers - Level 1 Paseo 9	Point	99.2	68.4	78.0	86.2	91.3	93.5	93.3	93.2	
Speakers Level 4 Deck 1	Point	108.6	77.8	87.4	95.6	100.7	102.9	102.7	102.6	
Speakers Level 4 Deck 2	Point	108.6	77.8	87.4	95.6	100.7	102.9	102.7	102.6	
Speakers Level 4 Deck 3	Point	108.6	77.8	87.4	95.6	100.7	102.9	102.7	102.6	
Speakers Level 4 Deck 4	Point	108.6	77.8	87.4	95.6	100.7	102.9	102.7	102.6	
Speakers Level 4 Deck 5	Point	108.6	77.8	87.4	95.6	100.7	102.9	102.7	102.6	
Speakers Level 8 Deck 1	Point	118.6	87.8	97.4	105.6	110.7	112.9	112.7	112.6	
Speakers Level 8 Deck 2	Point	118.6	87.8	97.4	105.6	110.7	112.9	112.7	112.6	
Speakers Level 8 Deck 3	Point	118.6	87.8	97.4	105.6	110.7	112.9	112.7	112.6	
Speakers Level 8 Deck 4	Point	118.6	87.8	97.4	105.6	110.7	112.9	112.7	112.6	
Speakers Level 8 Deck 5	Point	118.6	87.8	97.4	105.6	110.7	112.9	112.7	112.6	
Speakers Level 8 Deck 6	Point	118.6	87.8	97.4	105.6	110.7	112.9	112.7	112.6	
Speakers Level 8 Deck 7	Point	118.6	87.8	97.4	105.6	110.7	112.9	112.7	112.6	
Speakers Level 8 Deck 8	Point	118.6	87.8	97.4	105.6	110.7	112.9	112.7	112.6	

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Assessed contribution level - Speakers

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Source	Ld dB(A)	
Receiver R1 Ld 55.7 dB(A)		
Speakers - Level 1 Paseo 1	24.6	
Speakers - Level 1 Paseo 2	15.8	
Speakers - Level 1 Paseo 3	24.9	
Speakers - Level 1 Paseo 4	18.3	
Speakers - Level 1 Paseo 5	35.3	
Speakers - Level 1 Paseo 6	45.6	
Speakers - Level 1 Paseo 7	25.3	
Speakers - Level 1 Paseo 8	23.1	
Speakers - Level 1 Paseo 9	3.6	
Speakers Level 4 Deck 5	47.1	
Speakers Level 4 Deck 4	41.6	
Speakers Level 4 Deck 2	47.2	
Speakers Level 4 Deck 3	39.7	
Speakers Level 4 Deck 1	32.3	
Speakers Level 8 Deck 1	49.4	
Speakers Level 8 Deck 2	50.4	
Speakers Level 8 Deck 3	31.6	
Speakers Level 8 Deck 4	29.7	
Speakers Level 8 Deck 5	24.7	
Speakers Level 8 Deck 6	25.1	
Speakers Level 8 Deck 7	29.0	
Speakers Level 8 Deck 8	30.2	
Receiver R2 Ld 56.0 dB(A)		
Speakers - Level 1 Paseo 1	24.0	
Speakers - Level 1 Paseo 2	23.7	
Speakers - Level 1 Paseo 3	23.5	
Speakers - Level 1 Paseo 4	24.4	
Speakers - Level 1 Paseo 5	22.5	
Speakers - Level 1 Paseo 6	27.9	
Speakers - Level 1 Paseo 7	23.4	
Speakers - Level 1 Paseo 8	22.9	
Speakers - Level 1 Paseo 9	2.8	
Speakers Level 4 Deck 5	36.3	
Speakers Level 4 Deck 4	40.8	
Speakers Level 4 Deck 2	48.7	
Speakers Level 4 Deck 3	45.7	
Speakers Level 4 Deck 1	21.8	
Speakers Level 8 Deck 1	47.7	
Speakers Level 8 Deck 2	41.9	

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2143 Violet
Assessed contribution level - Speakers

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Source	Ld dB(A)	
Speakers Level 8 Deck 3	26.0	
Speakers Level 8 Deck 4	24.9	
Speakers Level 8 Deck 5	28.7	
Speakers Level 8 Deck 6	29.5	
Speakers Level 8 Deck 7	50.1	
Speakers Level 8 Deck 8	49.3	
Receiver R3 Ld 50.1 dB(A)		
Speakers - Level 1 Paseo 1	23.9	
Speakers - Level 1 Paseo 2	26.9	
Speakers - Level 1 Paseo 3	25.5	
Speakers - Level 1 Paseo 4	27.1	
Speakers - Level 1 Paseo 5	24.4	
Speakers - Level 1 Paseo 6	31.6	
Speakers - Level 1 Paseo 7	33.4	
Speakers - Level 1 Paseo 8	35.6	
Speakers - Level 1 Paseo 9	23.8	
Speakers Level 4 Deck 5	28.1	
Speakers Level 4 Deck 4	29.4	
Speakers Level 4 Deck 2	37.6	
Speakers Level 4 Deck 3	34.5	
Speakers Level 4 Deck 1	20.8	
Speakers Level 8 Deck 1	41.8	
Speakers Level 8 Deck 2	37.5	
Speakers Level 8 Deck 3	26.9	
Speakers Level 8 Deck 4	26.6	
Speakers Level 8 Deck 5	26.5	
Speakers Level 8 Deck 6	31.5	
Speakers Level 8 Deck 7	46.1	
Speakers Level 8 Deck 8	42.8	
Receiver R4 Ld 55.2 dB(A)		
Speakers - Level 1 Paseo 1	21.7	
Speakers - Level 1 Paseo 2	7.5	
Speakers - Level 1 Paseo 3	16.5	
Speakers - Level 1 Paseo 4	20.6	
Speakers - Level 1 Paseo 5	14.2	
Speakers - Level 1 Paseo 6	8.1	
Speakers - Level 1 Paseo 7	19.9	
Speakers - Level 1 Paseo 8	20.3	
Speakers - Level 1 Paseo 9	45.2	
Speakers Level 4 Deck 5	8.6	

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2143 Violet
Assessed contribution level - Speakers

9

Source	Ld dB(A)	
Speakers Level 4 Deck 4	7.9	
Speakers Level 4 Deck 2	15.3	
Speakers Level 4 Deck 3	16.0	
Speakers Level 4 Deck 1	8.2	
Speakers Level 8 Deck 1	24.6	
Speakers Level 8 Deck 2	23.9	
Speakers Level 8 Deck 3	27.7	
Speakers Level 8 Deck 4	27.4	
Speakers Level 8 Deck 5	50.5	
Speakers Level 8 Deck 6	51.4	
Speakers Level 8 Deck 7	44.6	
Speakers Level 8 Deck 8	42.5	

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Off-Site Traffic Noise Calculations

Project: 2143 Violet Project

Traffic Distribution as % of ADT				
Vehicle Type	Day	Eve	Night	Sub total
Auto	77.6%	9.7%	9.7%	97.0%
Medium Truck	1.6%	0.2%	0.2%	2.0%
Heavy Truck	0.8%	0.1%	0.1%	1.0%
	80.0%	10.0%	10.0%	100.0%

PHV to
ADT factor
10%

EXISTING CONDITIONS

Roadway Segment	Roadway Width*, ft	Distance to Edge of Roadway, ft	Distance to Centerline, feet	Speed mph	Traffic Volume PHV	Traffic Volume ADT	PHV to ADT factor	Barrier Atten.	Site Adjust., dBA	24-Hour CNEL
Mateo Street										
- Between 6th St. and 7th St.	40	10	30	25	659	6,590	10%	0	0	68.4
- Between 7th St. and Violet St.	40	10	30	25	844	8,440	10%	0	0	69.5
Santa Fe Avenue										
- Between 6th St. and 7th St.	50	10	35	30	766	7,660	10%	0	0	68.2
- Between 7th St. and Violet St.	50	10	35	30	1,239	12,390	10%	0	0	70.3
- Between Violet St. and 8th St.	50	10	35	30	1,246	12,460	10%	0	0	70.3
7th Street										
- Between Alameda St. and Mateo St.	50	10	35	30	1,749	17,490	10%	0	0	71.8
- Between Mateo St. and Santa Fe Ave.	50	10	35	30	1,881	18,810	10%	0	0	72.1
- Between Santa Fe Ave. and Boyle Ave.	50	10	35	30	2,489	24,890	10%	0	0	73.3
Violet Street										
- Between Mateo St. and Santa Fe Ave.	40	10	30	25	84	840	10%	0	0	59.5
- East of Santa Fe Ave.	40	10	30	25	36	360	10%	0	0	55.8

* Estimated based on Google Earth map.

** Calculated using FHWA's TNM Version 2.5 Computer Noise Model.

Off-Site Traffic Noise Calculations

Project: 2143 Violet Project

Traffic Distribution as % of ADT				
Vehicle Type	Day	Eve	Night	Sub total
Auto	77.6%	9.7%	9.7%	97.0%
Medium Truck	1.6%	0.2%	0.2%	2.0%
Heavy Truck	0.8%	0.1%	0.1%	1.0%
	80.0%	10.0%	10.0%	100.0%

PHV to
ADT factor
10%

EXISTING + PROJECT CONDITIONS

Roadway Segment	Roadway Width*, ft	Distance to Edge of Roadway, ft	Distance to Centerline, feet	Speed mph	Traffic Volume PHV	Traffic Volume ADT	PHV to ADT factor	Barrier Atten.	Site Adjust., dBA	24-Hour CNEL
Mateo Street										
- Between 6th St. and 7th St.	40	10	30	25	677	6,770	10%	0	0	68.6
- Between 7th St. and Violet St.	40	10	30	25	870	8,700	10%	0	0	69.7
Santa Fe Avenue										
- Between 6th St. and 7th St.	50	10	35	30	810	8,100	10%	0	0	68.4
- Between 7th St. and Violet St.	50	10	35	30	1,474	14,740	10%	0	0	71.0
- Between Violet St. and 8th St.	50	10	35	30	1,364	13,640	10%	0	0	70.7
7th Street										
- Between Alameda St. and Mateo St.	50	10	35	30	1,836	18,360	10%	0	0	72.0
- Between Mateo St. and Santa Fe Ave.	50	10	35	30	1,948	19,480	10%	0	0	72.3
- Between Santa Fe Ave. and Boyle Ave.	50	10	35	30	2,582	25,820	10%	0	0	73.5
Violet Street										
- Between Mateo St. and Santa Fe Ave.	40	10	30	25	114	1,140	10%	0	0	60.8
- East of Santa Fe Ave.	40	10	30	25	426	4,260	10%	0	0	66.5

* Estimated based on Google Earth map.

** Calculated using FHWA's TNM Version 2.5 Computer Noise Model.

Off-Site Traffic Noise Calculations

Project: 2143 Violet Project

Traffic Distribution as % of ADT				
Vehicle Type	Day	Eve	Night	Sub total
Auto	77.6%	9.7%	9.7%	97.0%
Medium Truck	1.6%	0.2%	0.2%	2.0%
Heavy Truck	0.8%	0.1%	0.1%	1.0%
	80.0%	10.0%	10.0%	100.0%

PHV to
ADT factor
10%

BASELINE NO PROJECT CONDITIONS

Roadway Segment	Roadway Width*, ft	Distance to Edge of Roadway, ft	Distance to Centerline, feet	Speed mph	Traffic Volume PHV	Traffic Volume ADT	PHV to ADT factor	Barrier Atten.	Site Adjust., dBA	24-Hour CNEL
Mateo Street										
- Between 6th St. and 7th St.	40	10	30	25	670	6,700	10%	0	0	68.5
- Between 7th St. and Violet St.	40	10	30	25	871	8,710	10%	0	0	69.7
Santa Fe Avenue										
- Between 6th St. and 7th St.	50	10	35	30	766	7,660	10%	0	0	68.2
- Between 7th St. and Violet St.	50	10	35	30	1,239	12,390	10%	0	0	70.3
- Between Violet St. and 8th St.	50	10	35	30	1,246	12,460	10%	0	0	70.3
7th Street										
- Between Alameda St. and Mateo St.	50	10	35	30	1,607	16,070	10%	0	0	71.4
- Between Mateo St. and Santa Fe Ave.	50	10	35	30	1,716	17,160	10%	0	0	71.7
- Between Santa Fe Ave. and Boyle Ave.	50	10	35	30	2,323	23,230	10%	0	0	73.0
Violet Street										
- Between Mateo St. and Santa Fe Ave.	40	10	30	25	84	840	10%	0	0	59.5
- East of Santa Fe Ave.	40	10	30	25	36	360	10%	0	0	55.8

* Estimated based on Google Earth map.

** Calculated using FHWA's TNM Version 2.5 Computer Noise Model.

Off-Site Traffic Noise Calculations

Project: 2143 Violet Project

Traffic Distribution as % of ADT				
Vehicle Type	Day	Eve	Night	Sub total
Auto	77.6%	9.7%	9.7%	97.0%
Medium Truck	1.6%	0.2%	0.2%	2.0%
Heavy Truck	0.8%	0.1%	0.1%	1.0%
	80.0%	10.0%	10.0%	100.0%

PHV to
ADT factor
10%

BASELINE + PROJECT CONDITIONS

Roadway Segment	Roadway Width*, ft	Distance to Edge of Roadway, ft	Distance to Centerline, feet	Speed mph	Traffic Volume PHV	Traffic Volume ADT	PHV to ADT factor	Barrier Atten.	Site Adjust., dBA	24-Hour CNEL
Mateo Street										
- Between 6th St. and 7th St.	40	10	30	25	688	6,880	10%	0	0	68.6
- Between 7th St. and Violet St.	40	10	30	25	897	8,970	10%	0	0	69.8
Santa Fe Avenue										
- Between 6th St. and 7th St.	50	10	35	30	810	8,100	10%	0	0	68.4
- Between 7th St. and Violet St.	50	10	35	30	1,474	14,740	10%	0	0	71.0
- Between Violet St. and 8th St.	50	10	35	30	1,364	13,640	10%	0	0	70.7
7th Street										
- Between Alameda St. and Mateo St.	50	10	35	30	1,694	16,940	10%	0	0	71.6
- Between Mateo St. and Santa Fe Ave.	50	10	35	30	1,783	17,830	10%	0	0	71.9
- Between Santa Fe Ave. and Boyle Ave.	50	10	35	30	2,416	24,160	10%	0	0	73.2
Violet Street										
- Between Mateo St. and Santa Fe Ave.	40	10	30	25	114	1,140	10%	0	0	60.8
- East of Santa Fe Ave.	40	10	30	25	426	4,260	10%	0	0	66.5

* Estimated based on Google Earth map.

** Calculated using FHWA's TNM Version 2.5 Computer Noise Model.

Off-Site Traffic Noise Calculations

Project: 2143 Violet Project

Traffic Distribution as % of ADT				
Vehicle Type	Day	Eve	Night	Sub total
Auto	77.6%	9.7%	9.7%	97.0%
Medium Truck	1.6%	0.2%	0.2%	2.0%
Heavy Truck	0.8%	0.1%	0.1%	1.0%
	80.0%	10.0%	10.0%	100.0%

PHV to
ADT factor
10%

FUTURE NO PROJECT CONDITIONS

Roadway Segment	Roadway Width*, ft	Distance to Edge of Roadway, ft	Distance to Centerline, feet	Speed mph	Traffic Volume PHV	Traffic Volume ADT	PHV to ADT factor	Barrier Atten.	Site Adjust., dBA	24-Hour CNEL
Mateo Street										
- Between 6th St. and 7th St.	40	10	30	25	1,381	13,810	10%	0	0	71.7
- Between 7th St. and Violet St.	40	10	30	25	1,419	14,190	10%	0	0	71.8
Santa Fe Avenue										
- Between 6th St. and 7th St.	50	10	35	30	1,549	15,490	10%	0	0	71.3
- Between 7th St. and Violet St.	50	10	35	30	2,411	24,110	10%	0	0	73.2
- Between Violet St. and 8th St.	50	10	35	30	2,281	22,810	10%	0	0	72.9
7th Street										
- Between Alameda St. and Mateo St.	50	10	35	30	2,987	29,870	10%	0	0	74.1
- Between Mateo St. and Santa Fe Ave.	50	10	35	30	2,809	28,090	10%	0	0	73.8
- Between Santa Fe Ave. and Boyle Ave.	50	10	35	30	3,620	36,200	10%	0	0	74.9
Violet Street										
- Between Mateo St. and Santa Fe Ave.	40	10	30	25	93	930	10%	0	0	59.9
- East of Santa Fe Ave.	40	10	30	25	197	1,970	10%	0	0	63.2

* Estimated based on Google Earth map.

** Calculated using FHWA's TNM Version 2.5 Computer Noise Model.

Off-Site Traffic Noise Calculations

Project: 2143 Violet Project

Traffic Distribution as % of ADT				
Vehicle Type	Day	Eve	Night	Sub total
Auto	77.6%	9.7%	9.7%	97.0%
Medium Truck	1.6%	0.2%	0.2%	2.0%
Heavy Truck	0.8%	0.1%	0.1%	1.0%
	80.0%	10.0%	10.0%	100.0%

PHV to
ADT factor
10%

FUTURE + PROJECT CONDITIONS

Roadway Segment	Roadway Width*, ft	Distance to Edge of Roadway, ft	Distance to Centerline, feet	Speed mph	Traffic Volume PHV	Traffic Volume ADT	PHV to ADT factor	Barrier Atten.	Site Adjust., dBA	24-Hour CNEL
Mateo Street										
- Between 6th St. and 7th St.	40	10	30	25	1,399	13,990	10%	0	0	71.7
- Between 7th St. and Violet St.	40	10	30	25	1,445	14,450	10%	0	0	71.9
Santa Fe Avenue										
- Between 6th St. and 7th St.	50	10	35	30	1,593	15,930	10%	0	0	71.4
- Between 7th St. and Violet St.	50	10	35	30	2,646	26,460	10%	0	0	73.6
- Between Violet St. and 8th St.	50	10	35	30	2,405	24,050	10%	0	0	73.2
7th Street										
- Between Alameda St. and Mateo St.	50	10	35	30	3,074	30,740	10%	0	0	74.2
- Between Mateo St. and Santa Fe Ave.	50	10	35	30	2,888	28,880	10%	0	0	74.0
- Between Santa Fe Ave. and Boyle Ave.	50	10	35	30	3,713	37,130	10%	0	0	75.1
Violet Street										
- Between Mateo St. and Santa Fe Ave.	40	10	30	25	123	1,230	10%	0	0	61.2
- East of Santa Fe Ave.	40	10	30	25	587	5,870	10%	0	0	67.9

* Estimated based on Google Earth map.

** Calculated using FHWA's TNM Version 2.5 Computer Noise Model.