Appendix F:
Noise Supporting Information

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Mobile Construction Activity Noise Calculation

Receptor:	Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements							
		Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)		
No.	Equipment Description	Lmax	Quantity	factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	Grader	85	1	40	110	1	0	78.2	70.7	11879330.05
2	Excavator	85	1	40	160	1	0	74.9	65.9	3860202.222
3	Dozer	85	1	40	160	1	0	74.9	65.9	3860202.222
4	Front End Loader	80	1	40	160	1	0	69.9	60.9	1220703.125
5	Backhoe	80	1	40	160	1	0	69.9	60.9	1220703.125
6										
7										
8										
9										
10										
							Lmax[4]	78	Leq	73

Notes:

[1] Percentage of time activity occurs each hour

[2] Soft ground terrain between project site and receptor.

[3] Shielding due to terrain or structures

[4] Calculated Lmax is the Loudest value.

Commercial-Grade Mechanical Equipment

Receptor:	Nearest Residential Receptor	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
		Reference (dBA) 3 ft			Distance to	Ground	Shielding	Calculated (dBA)		
No.	Equipment Description	Lmax	Quantity	Usage factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	Commercial grade mechanical ventilation equipment	78	1	80	110	1	3	43.7	27.1	513.1870583
2	Commercial grade mechanical ventilation equipment	78	1	80	130	1	3	42.3	24.9	310.9021277
3	Commercial grade mechanical ventilation equipment	78	1	80	150	1	3	41.0	23.1	202.3857703
4	Commercial grade mechanical ventilation equipment	78	1	80	170	1	3	39.9	21.4	139.0295084
5										
6										
7										
8										
9										
10										
									Leq	31

Notes:

[1] Percentage of time activity occurs each hour

[2] Soft ground terrain between project site and receptor.

[3] Shielding due to rooftop parapet/structural shielding

Ldn Calculation at Residenital Receptor					
	Time	Hourly Leq	Leq'	0.1*Leq	antiLog
Night	12:00 AM	30.7	40.7	4.066513941	11655.04465
	1:00 AM	30.7	40.7	4.066513941	11655.04465
	2:00 AM	30.7	40.7	4.066513941	11655.04465
	3:00 AM	30.7	40.7	4.066513941	11655.04465
	4:00 AM	30.7	40.7	4.066513941	11655.04465
	5:00 AM	30.7	40.7	4.066513941	11655.04465
	6:00 AM	30.7	40.7	4.066513941	11655.04465
Day	7:00 AM	30.7	30.7	3.066513941	1165.504465
	8:00 AM	30.7	30.7	3.066513941	1165.504465
	9:00 AM	30.7	30.7	3.066513941	1165.504465
	10:00 AM	30.7	30.7	3.066513941	1165.504465
	11:00 AM	30.7	30.7	3.06651394	1165.504465
	12:00 PM	30.7	30.7	3.066513941	1165.504465
	1:00 PM	30.7	30.7	3.066513941	1165.504465
	2:00 PM	30.7	30.7	3.066513941	1165.504465
	3:00 PM	30.7	30.7	3.066513941	1165.504465
	4:00 PM	30.7	30.7	3.066513941	1165.504465
	5:00 PM	30.7	30.7	3.066513941	1165.504465
	6:00 PM	30.7	30.7	3.066513941	1165.504465
	7:00 PM	30.7	30.7	3.06651394	1165.504465
	8:00 PM	30.7	30.7	3.066513941	1165.504465
	9:00 PM	30.7	30.7	3.066513941	1165.504465
Night	10:00 PM	30.7	40.7	4.066513941	11655.04465
	11:00 PM	30.7	40.7	4.066513941	11655.04465
			Sum		122377.9688
			Sum/24		5099.082033
			Log10(Sum/24)		3.707491999
			10*Log10(Sum/24)		37.07491999
			24 Hour Ldn		37

Commercial-Grade Mechanical Equipment

Receptor:	Commercial Property Line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
		Reference (dBA) 3 ft			Distance to	Ground	Shielding	Calculated (dBA)		
No.	Equipment Description	Lmax	Quantity	Usage factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	Commercial grade mechanical ventilation equipment	78	1	80	100	1	0	47.5	31.3	1362.867864
2	Commercial grade mechanical ventilation equipment	78	1	80	120	1	0	46.0	29.0	788.6966806
3	Commercial grade mechanical ventilation equipment	78	1	80	140	1	0	44.6	27.0	496.6719621
4	Commercial grade mechanical ventilation equipment	78	1	80	160	1	0	43.5	25.2	332.7314121
5										
6										
7										
8										
9										
10										
									Leq	35

Notes:

[1] Percentage of time activity occurs each hour

[2] Soft ground terrain between project site and receptor.

[3] Shielding due to rooftop parapet/structural shielding

Ldn Calculation at Commercial Receptor					
	Time	Hourly Leq	Leq'	0.1*Leq	antiLog
Night	12:00 AM	34.7	44.7	4.474357302	29809.67919
	1:00 AM	34.7	44.7	4.474357302	29809.67919
	2:00 AM	34.7	44.7	4.474357302	29809.67919
	3:00 AM	34.7	44.7	4.474357302	29809.67919
	4:00 AM	34.7	44.7	4.474357302	29809.67919
	5:00 AM	34.7	44.7	4.474357302	29809.67919
	6:00 AM	34.7	44.7	4.474357302	29809.67919
Day	7:00 AM	34.7	34.7	3.474357302	2980.967919
	8:00 AM	34.7	34.7	3.474357302	2980.967919
	9:00 AM	34.7	34.7	3.474357302	2980.967919
	10:00 AM	34.7	34.7	3.474357302	2980.967919
	11:00 AM	34.7	34.7	3.474357302	2980.967919
	12:00 PM	34.7	34.7	3.474357302	2980.967919
	1:00 PM	34.7	34.7	3.474357302	2980.967919
	2:00 PM	34.7	34.7	3.474357302	2980.967919
	3:00 PM	34.7	34.7	3.474357302	2980.967919
	4:00 PM	34.7	34.7	3.474357302	2980.967919
	5:00 PM	34.7	34.7	3.474357302	2980.967919
	6:00 PM	34.7	34.7	3.474357302	2980.967919
	7:00 PM	34.7	34.7	3.474357302	2980.967919
	8:00 PM	34.7	34.7	3.474357302	2980.967919
	9:00 PM	34.7	34.7	3.474357302	2980.967919
Night	10:00 PM	34.7	44.7	4.474357302	29809.67919
	11:00 PM	34.7	44.7	4.474357302	29809.67919
			Sum		313001.6315
			Sum/24		13041.73465
			Log10(Sum/24)		4.11533536
			10*Log10(Sum/24)		41.1533536
			24 Hour Ldn		41

Parking Lot Activity Noise Calculation

Receptor:	Receiving residential property line									
		Reference (dBA) 50 ft			Distance to	Ground	Shielding	Calculated (dBA)		
No.	Equipment Description	Lmax	Quantity	Usage factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	parking lot activity	70	5	2	120	1	8	54.4	40.6	11464.79451
2										
3										
4										
5										
6										
7										
8										
9										
10										
							Lmax[4]	54	Leq	41

Notes:

[1] Percentage of time activity occurs each hour

[2] Soft ground terrain between project site and receptor.

[3] Shielding due to proposed 8-foot soundwall

[4] Calculated Lmax is the Loudest value.

Ldn Calculation at Residential Receptor					
	Time	Hourly Leq	Leq'	0.1*Leq	antiLog
Night	12:00 AM	40.6	50.6	5.059366275	114647.9451
	1:00 AM	40.6	50.6	5.059366275	114647.9451
	2:00 AM	40.6	50.6	5.059366275	114647.9451
	3:00 AM	40.6	50.6	5.059366275	114647.9451
	4:00 AM	40.6	50.6	5.059366275	114647.9451
	5:00 AM	40.6	50.6	5.059366275	114647.9451
	6:00 AM	40.6	50.6	5.059366275	114647.9451
Day	7:00 AM	40.6	40.6	4.059366275	11464.79451
	8:00 AM	40.6	40.6	4.059366275	11464.79451
	9:00 AM	40.6	40.6	4.059366275	11464.79451
	10:00 AM	40.6	40.6	4.059366275	11464.79451
	11:00 AM	40.6	40.6	4.059366275	11464.79451
	12:00 PM	40.6	40.6	4.059366275	11464.79451
	1:00 PM	40.6	40.6	4.059366275	11464.79451
	2:00 PM	40.6	40.6	4.059366275	11464.79451
	3:00 PM	40.6	40.6	4.059366275	11464.79451
	4:00 PM	40.6	40.6	4.059366275	11464.79451
	5:00 PM	40.6	40.6	4.059366275	11464.79451
	6:00 PM	40.6	40.6	4.059366275	11464.79451
	7:00 PM	40.6	40.6	4.059366275	11464.79451
	8:00 PM	40.6	40.6	4.059366275	11464.79451
	9:00 PM	40.6	40.6	4.059366275	11464.79451
Night	10:00 PM	40.6	50.6	5.059366275	114647.9451
	11:00 PM	40.6	50.6	5.059366275	114647.9451
			Sum		1203803.423
			Sum/24		50158.47596
			Log10(Sum/24)		4.700344332
			10*Log10(Sum/24)		47.00344332
			24 Hour Ldn		47

Parking Lot Activity Noise Calculation

Receptor:	Commercial property line	Reference (dBA) 50 ft	Quantity	Usage factor[1]	Distance to Receptor	Ground Effect[2]	Shielding (dBA)[3]	Iculated (dBA)		Energy
No.	Equipment Description	Lmax						Lmax	Leq	
1	parking lot activity	70	5	2	285	1	8	46.9	29.3	855.8062089
2										
3										
4										
5										
6										
7										
8										
9										
10										
							Lmax[4]	47	Leq	29

Notes:

[1] Percentage of time activity occurs each hour

[2] Soft ground terrain between project site and receptor.

[3] Shielding due to proposed 8-foot soundwall

[4] Calculated Lmax is the Loudest value.

Ldn Calculations at Commercial Receptor					
	Time	Hourly Leq	Leq'	0.1*Leq	antiLog
Night	12:00 AM	29.3	39.3	3.932375433	8558.062089
	1:00 AM	29.3	39.3	3.932375433	8558.062089
	2:00 AM	29.3	39.3	3.932375433	8558.062089
	3:00 AM	29.3	39.3	3.932375433	8558.062089
	4:00 AM	29.3	39.3	3.932375433	8558.062089
	5:00 AM	29.3	39.3	3.932375433	8558.062089
	6:00 AM	29.3	39.3	3.932375433	8558.062089
Day	7:00 AM	29.3	29.3	2.932375433	855.8062089
	8:00 AM	29.3	29.3	2.932375433	855.8062089
	9:00 AM	29.3	29.3	2.932375433	855.8062089
	10:00 AM	29.3	29.3	2.932375433	855.8062089
	11:00 AM	29.3	29.3	2.932375433	855.8062089
	12:00 PM	29.3	29.3	2.932375433	855.8062089
	1:00 PM	29.3	29.3	2.932375433	855.8062089
	2:00 PM	29.3	29.3	2.932375433	855.8062089
	3:00 PM	29.3	29.3	2.932375433	855.8062089
	4:00 PM	29.3	29.3	2.932375433	855.8062089
	5:00 PM	29.3	29.3	2.932375433	855.8062089
	6:00 PM	29.3	29.3	2.932375433	855.8062089
	7:00 PM	29.3	29.3	2.932375433	855.8062089
	8:00 PM	29.3	29.3	2.932375433	855.8062089
	9:00 PM	29.3	29.3	2.932375433	855.8062089
Night	10:00 PM	29.3	39.3	3.932375433	8558.062089
	11:00 PM	29.3	39.3	3.932375433	8558.062089
			Sum		89859.65194
			Sum/24		3744.152164
			Log10(Sum/24)		3.57335349
			10*Log10(Sum/24)		35.7335349
			24 Hour Ldn		36

Loading/Unloading Noise Calculation

Receptor:	Receiving residential property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
		Reference (dBA) 50 ft			Distance to	Ground	Shielding	Calculated (dBA)		
No.	Equipment Description	Lmax	Quantity	Usage factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	Loading/Unloading Noise Calculation	70	3	20	270	1	8	47.4	37.8	6039.068711
2	Loading/Unloading Noise Calculation	70	3	20	320	1	8	45.9	35.6	3627.532637
3	Loading/Unloading Noise Calculation	70	3	20	360	1	8	44.9	34.1	2547.732112
4										
5										
6										
7										
8										
9										
10										
									Leq	41

Notes:

[1] Percentage of time activity occurs each hour

[2] Soft ground terrain between project site and receptor.

[3] Shielding due to proposed 8-foot soundwall

Ldn Calculations at nearest residential receptor					
	Time	Hourly Leq	Leq'	0.1*Leq	antiLog
Night	12:00 AM	40.9	50.9	5.086869772	122143.3346
	1:00 AM	40.9	50.9	5.086869772	122143.3346
	2:00 AM	40.9	50.9	5.086869772	122143.3346
	3:00 AM	40.9	50.9	5.086869772	122143.3346
	4:00 AM	40.9	50.9	5.086869772	122143.3346
	5:00 AM	40.9	50.9	5.086869772	122143.3346
	6:00 AM	40.9	50.9	5.086869772	122143.3346
Day	7:00 AM	40.9	40.9	4.086869772	12214.33346
	8:00 AM	40.9	40.9	4.086869772	12214.33346
	9:00 AM	40.9	40.9	4.086869772	12214.33346
	10:00 AM	40.9	40.9	4.086869772	12214.33346
	11:00 AM	40.9	40.9	4.086869772	12214.33346
	12:00 PM	40.9	40.9	4.086869772	12214.33346
	1:00 PM	40.9	40.9	4.086869772	12214.33346
	2:00 PM	40.9	40.9	4.086869772	12214.33346
	3:00 PM	40.9	40.9	4.086869772	12214.33346
	4:00 PM	40.9	40.9	4.086869772	12214.33346
	5:00 PM	40.9	40.9	4.086869772	12214.33346
	6:00 PM	40.9	40.9	4.086869772	12214.33346
	7:00 PM	40.9	40.9	4.086869772	12214.33346
	8:00 PM	40.9	40.9	4.086869772	12214.33346
	9:00 PM	40.9	40.9	4.086869772	12214.33346
Night	10:00 PM	40.9	50.9	5.086869772	122143.3346
	11:00 PM	40.9	50.9	5.086869772	122143.3346
			Sum		1282505.013
			Sum/24		53437.70889
			Log10(Sum/24)		4.72784783
			10*Log10(Sum/24)		47.2784783
			24 Hour Ldn		47

Loading/Unloading Noise Calculation

Receptor:	Commercial property line	Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
		Reference (dBA) 50 ft			Distance to	Ground	Shielding	Calculated (dBA)		
No.	Equipment Description	Lmax	Quantity	Usage factor[1]	Receptor	Effect[2]	(dBA)[3]	Lmax	Leq	Energy
1	Loading/Unloading Noise Calculation	70	3	20	280	1	12	43.0	33.3	2155.69428
2	Loading/Unloading Noise Calculation	70	3	20	330	1	12	41.6	31.2	1316.798866
3	Loading/Unloading Noise Calculation	70	3	20	395	1	12	40.0	28.9	767.8386632
4										
5										
6										
7										
8										
9										
10										
									Leq	36

Notes:

[1] Percentage of time activity occurs each hour

[2] Soft ground terrain between project site and receptor.

[3] Shielding due to proposed 8-foot soundwall

Ldn Calculations at nearest residential receptor					
	Time	Hourly Leq	Leq'	0.1*Leq	antiLog
Night	12:00 AM	36.3	46.3	4.627399842	42403.31809
	1:00 AM	36.3	46.3	4.627399842	42403.31809
	2:00 AM	36.3	46.3	4.627399842	42403.31809
	3:00 AM	36.3	46.3	4.627399842	42403.31809
	4:00 AM	36.3	46.3	4.627399842	42403.31809
	5:00 AM	36.3	46.3	4.627399842	42403.31809
	6:00 AM	36.3	46.3	4.627399842	42403.31809
Day	7:00 AM	36.3	36.3	3.627399842	4240.331809
	8:00 AM	36.3	36.3	3.627399842	4240.331809
	9:00 AM	36.3	36.3	3.627399842	4240.331809
	10:00 AM	36.3	36.3	3.627399842	4240.331809
	11:00 AM	36.3	36.3	3.627399842	4240.331809
	12:00 PM	36.3	36.3	3.627399842	4240.331809
	1:00 PM	36.3	36.3	3.627399842	4240.331809
	2:00 PM	36.3	36.3	3.627399842	4240.331809
	3:00 PM	36.3	36.3	3.627399842	4240.331809
	4:00 PM	36.3	36.3	3.627399842	4240.331809
	5:00 PM	36.3	36.3	3.627399842	4240.331809
	6:00 PM	36.3	36.3	3.627399842	4240.331809
	7:00 PM	36.3	36.3	3.627399842	4240.331809
	8:00 PM	36.3	36.3	3.627399842	4240.331809
	9:00 PM	36.3	36.3	3.627399842	4240.331809
Night	10:00 PM	36.3	46.3	4.627399842	42403.31809
	11:00 PM	36.3	46.3	4.627399842	42403.31809
			Sum		445234.8399
			Sum/24		18551.45166
			Log10(Sum/24)		4.268377899
			10*Log10(Sum/24)		42.68377899
			24 Hour Ldn		43

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