

APPENDIX D-1

WORKERS AND TRUCKS DURING CONSTRUCTION

APPENDIX D-2

VEHICLE TRIPS

Weekend East Campus Vehicle Trips

[illegible][illegible]

Weekend Triangle Site Vehicle Trips

[illegible]

Vehicle PCE Trips		Regular Shift												Extended Shift												Total											
Time	In / Out	2012			2013			2014			2015			2012			2013			2014			2015			2012			2013			2014			2015		
		1Q	2Q	3Q	1Q	2Q	3Q	1Q	2Q	3Q	1Q	2Q	3Q	1Q	2Q	3Q	1Q	2Q	3Q	1Q	2Q	3Q	1Q	2Q	3Q	1Q	2Q	3Q	1Q	2Q	3Q	1Q	2Q	3Q			
05:00 AM - 06:00 AM	In	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Out	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 AM - 07:00 AM	In	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Out	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM - 08:00 AM	In	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Out	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM - 09:00 AM	In	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Out	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00 AM - 10:00 AM	In	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Out	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0																												

APPENDIX D-3

EMISSIONS

NONROAD Emission Factors¹
Saint Vincent's Construction Equipment (O'Toole Building)

Pollutant	Combustion Source Emission Factor by Equipment Type in g/hp-hr			
	BobCat 331	Hydro-Crane	Concrete Pump	Air Compressor
NOx	2.796	1.442	2.698	1.951
CO	1.025	0.304	1.258	1.124
PM ₁₀	0.027	0.004	N/A	0.009
PM _{2.5}	0.026	0.004	N/A	0.008

Pollutant	Combustion Source Emission Factor by Equipment Type in g/hp-hr			
	Water Pump	Mobile Crane	Concrete Breakers	Front End Loaders
NOx	1.917	1.442	1.192	1.092
CO	487.860	0.304	1.324	0.787
PM ₁₀	0.076	0.004	0.009	0.014
PM _{2.5}	0.070	0.004	0.009	0.013

Notes:

1. Emission factors, derived from the NONROAD model output, were back calculated from the NONROAD regional emissions estimates. For PM, a base year of 2006 was used in conjunction with a 90 % control efficiency for use of diesel particulate filters on all equipment.

**Estimated Peak-Hour Short-Term Emission Rates
Fuel Combustion Sources (O'Toole Bldg)**

Construction Equipment	Site Eqp Rated HP	Emission Rates in g/sec (per unit) ³				Emission Rates in lb/hr (per unit)			
		NO _x	CO	PM ₁₀	PM _{2.5}	NO _x	CO	PM ₁₀	PM _{2.5}
BobCat 331	42	3.26E-02	1.20E-02	3.16E-04	3.07E-04	2.59E-01	9.49E-02	2.51E-03	2.44E-03
Hydro-Crane	340	1.36E-01	2.87E-02	3.83E-04	3.72E-04	1.08E+00	2.28E-01	3.04E-03	2.95E-03
Concrete Pump	400	3.00E-01	1.40E-01	3.00E-04	2.91E-04	2.38E+00	1.11E+00	2.38E-03	2.31E-03
Air Compressor	60	3.25E-02	1.87E-02	1.42E-04	1.38E-04	2.58E-01	1.49E-01	1.13E-03	1.10E-03
Water Pump	25	1.33E-02	3.39E+00	5.30E-04	4.88E-04	1.06E-01	2.69E+01	4.21E-03	3.87E-03
Mobile Crane	300	1.20E-01	2.53E-02	3.49E-04	3.38E-04	9.54E-01	2.01E-01	2.77E-03	2.68E-03
Concrete Breaker	60	1.99E-02	2.21E-02	1.48E-04	1.44E-04	1.58E-01	1.75E-01	1.18E-03	1.14E-03
Front End Loader	50	1.52E-02	1.09E-02	1.93E-04	1.87E-04	1.20E-01	8.67E-02	1.53E-03	1.48E-03
Trucks									
Heavy Trucks ²	N/A	7.19E-03	5.97E-03	2.95E-04	2.72E-04	5.71E-02	4.74E-02	2.34E-03	2.16E-03

Notes:

1. Construction equipment emission factors were derived from the USEPA NONROAD model. These factors, presented in grams per horsepower-hour (g/hp-hr), are provided in Table A-2.
2. Heavy Duty Diesel Vehicle emissions were derived from the USEPA MOBILE6.2 model. Since travel time is a very small percentage of time spent on-site, it was conservatively assumed that emission rates for all time spent on-site were the result of idling vehicles. Idle vehicle emission factors were generated using a vehicle speed of 2.5 mph. MOBILE6.2 Emission Factors for trucks in the year 2012 are provided below:

NO _x :	10.36 grams per vehicle mile traveled (g/VMT) at 2.5 miles per hour
CO:	8.59 grams per vehicle mile traveled (g/VMT) at 2.5 miles per hour
PM ₁₀ :	1.06 g/hr
PM _{2.5} :	0.98 g/hr

Emission rates for heavy trucks (in g/sec) were calculated by multiplying the emission factor in g/VMT by 2.5 miles per hour and then dividing by 3,600 seconds per hour.

Sample Emission Calculation for NO_x (Hydro-Crane):

$$E_R = (E_f \text{ NONROAD} * \text{Eqpmt HP}) / 60 \text{ (min/hr)} / 60 \text{ (s/min)}$$

where:

E_R = Pollutant specific emission rate in grams per second (g/sec)

E_f NONROAD = the NONROAD model derived emission factor in g/hp-hr

Actual HP = the rated horsepower for the actual equipment expected on-site

$$E_R \text{ NO}_x = (1.442 \text{ g/hp-hr} * 340 \text{ hp}) / 60 \text{ min/hr} / 60 \text{ s/min}$$

$$E_R \text{ NO}_x = 1.36 \text{ E-01 g/sec}$$

NONROAD Emission Factors¹
Saint Vincent Construction Equipment (East Site)

Pollutant	Combustion Source Emission Factor by Equipment Type in g/hp-hr				
	Bobcat 331	Bobcat S150	Air Compressor	Concrete Pump	Excavator Cat321
NOx	2.796	1.092	1.951	2.698	1.748
CO	1.025	0.787	1.124	1.258	0.745
PM ₁₀	0.027	0.014	0.009	N/A	0.012
PM _{2.5}	0.026	0.013	0.008	N/A	0.012

Pollutant	Combustion Source Emission Factor by Equipment Type in g/hp-hr				
	Gen. Pack Welder	Pile Driver	Rebar Bender	Concrete Trowel	
NOx	2.292	1.442	1.332	0.899	
CO	1.142	0.304	345.470	352.958	
PM ₁₀	0.129	0.004	0.054	0.081	
PM _{2.5}	0.125	0.004	0.050	0.074	

Pollutant	Combustion Source Emission Factor by Equipment Type in g/hp-hr				
	Excavator (Hobknocker)	Excavator (Hitachi-200)	Line Drill		
NOx	1.748	1.748	2.376		
CO	0.745	0.745	1.270		
PM ₁₀	0.012	0.012	0.008		
PM _{2.5}	0.012	0.012	0.008		

Notes:

1. Emission factors, derived from the NONROAD model output, were back calculated from the NONROAD regional emissions estimates. For PM, a base year of 2006 was used in conjunction with a 90 % control efficiency for use of diesel particulate filters on all equipment.

**Estimated Peak-Hour Short-Term Emission Rates
Fuel Combustion Sources (East Site)**

Construction Equipment ¹	Site Eqp Rated HP	Emission Rates in g/sec (per unit) ³				Emission Rates in lb/hr (per unit)			
		NO _x	CO	PM ₁₀	PM _{2.5}	NO _x	CO	PM ₁₀	PM _{2.5}
Bobcat 331	42	3.3E-02	1.2E-02	3.2E-04	3.1E-04	2.6E-01	9.5E-02	2.5E-03	2.4E-03
Bobcat S150	50	1.5E-02	1.1E-02	1.9E-04	1.8E-04	1.2E-01	8.7E-02	1.5E-03	1.4E-03
Air Compressor	60	3.3E-02	1.9E-02	1.4E-04	1.4E-04	2.6E-01	1.5E-01	1.1E-03	1.1E-03
Concrete Pump	400	3.0E-01	1.4E-01	3.0E-04	2.9E-04	2.4E+00	1.1E+00	2.4E-03	2.3E-03
Excavator Hobknocker	148	7.2E-02	3.1E-02	4.9E-04	4.7E-04	5.7E-01	2.4E-01	3.9E-03	3.8E-03
Excavator - CAT 321	148	7.2E-02	3.1E-02	4.9E-04	4.7E-04	5.7E-01	2.4E-01	3.9E-03	3.8E-03
Generator Pack Welding	30	1.9E-02	9.5E-03	1.1E-03	1.0E-03	1.5E-01	7.6E-02	8.5E-03	8.3E-03
Excavator - Hitachi 200	159	7.7E-02	3.3E-02	5.3E-04	5.1E-04	6.1E-01	2.6E-01	4.2E-03	4.0E-03
Line Drill	90	5.9E-02	3.2E-02	2.1E-04	2.0E-04	4.7E-01	2.5E-01	1.6E-03	1.6E-03
Pile Driving Rig	300	1.2E-01	2.5E-02	3.5E-04	3.4E-04	9.5E-01	2.0E-01	2.8E-03	2.7E-03
Rebar Bender	11	4.1E-03	1.1E+00	1.6E-04	1.5E-04	3.2E-02	8.4E+00	1.3E-03	1.2E-03
Concrete Trowel Machine	6	1.5E-03	5.9E-01	1.3E-04	1.2E-04	1.2E-02	4.7E+00	1.1E-03	9.8E-04
Trucks									
Heavy Trucks ²	400	7.2E-03	6.0E-03	3.0E-04	2.7E-04	5.7E-02	4.7E-02	2.3E-03	2.2E-03

Notes:

- Construction equipment emission factors were derived from the USEPA NONROAD model. These factors, presented in grams per horsepower-hour (g/hp-hr), are provided in Table A-2.
- Heavy Duty Diesel Vehicle emissions were derived from the USEPA MOBILE6.2 model. Since travel time is a very small percentage of time spent on-site, it was conservatively assumed that emission rates for all time spent on-site were the result of idling vehicles. Idle vehicle emission factors were generated using a vehicle speed of 2.5 mph. MOBILE6.2 Emission Factors for trucks in the year 2012 are provided below:

NO_x: 10.36 grams per vehicle mile traveled (g/VMT) at 2.5 miles per hour
CO: 8.59 grams per vehicle mile traveled (g/VMT) at 2.5 miles per hour
PM₁₀: 1.06 g/hr
PM_{2.5}: 0.98 g/hr

Emission rates for heavy trucks (in g/sec) were calculated by multiplying the emission factor in g/VMT by 2.5 miles per hour and then dividing by 3,600 seconds per hour.

Sample Emission Calculation for NO_x (Excavator - Cat 321):

$$E_R = (E_f \text{ NONROAD} * \text{Eqpmt HP}) / 60 (\text{min/hr}) / 60 (\text{s/min})$$

where:

E_R = Pollutant specific emission rate in grams per second (g/sec)

E_f NONROAD = the NONROAD model derived emission factor in g/hp-hr

Actual HP = the rated horsepower for the actual equipment expected on-site

$$E_R \text{ NO}_x = (1.748 * 148) / 60 / 60$$

$$E_R \text{ NO}_x = 7.2 \text{ E-02 g/sec}$$

APPENDIX D-4

NOISE AND VIBRATION

St. Vincent Hospital Construction Equipment Noise Emission Data

Equipment	Equipment Type	Lmax (dBA) at 50 feet					Resource/Model
		FTA	CEQR	NYC Noise Code	Typical Equipment	Final Lmax	
Acetylene Torch	electric		73			73	CEQR
Asphalt Spreaders	diesel		85			85	CEQR
Backhoe	diesel		80			80	CEQR
Bar Bender	gas		80			80	CEQR
Bobcat (Skid Steer)	diesel		80			80	CEQR
Boring Jack Power	diesel		80			80	CEQR
Cherry Picker	diesel		85			85	CEQR
Compactor	gas		80			80	CEQR
Compressor			58			58	CEQR
Concrete Pump	diesel		82			82	CEQR
Concrete Trowel	gas		85			75	Path Controls ¹
Concrete Truck	diesel		85			85	CEQR
Concrete Vibrator	electric	76				76	FTA
Crab to Erect CW Panels	electric		NA		75	75	Electric Equipment ²
Crane	diesel		85			75	Noise Curtain or Barrier ³
Crane (Tower Crane)	diesel		85			75	Noise Curtain or Barrier ³
Delivery Truck	diesel		84			84	CEQR
Drill Rig	diesel		84			74	Manufacturer's Muffler & Path Controls ⁴
Dump Truck	diesel		84			84	CEQR
Excavator	diesel		85			85	CEQR
Fuel Truck	diesel		84			84	CEQR
Generator	diesel		82			82	CEQR
Hand Tool	electric		NA		59	59	Typical Equipment ⁵
Hydraulic Break Ram	diesel		90			80	Path Controls ¹
Hydraulic (Jack) Hammer	diesel		73			73	CEQR
Impact Wrench	air	85				75	Path Controls ¹
Line Drill	diesel		84			74	Manufacturer's Muffler & Path Controls ⁴
Loader (front end)	diesel		80			80	CEQR
Man Lift (Hoist)	electric		85		75	75	Electric Equipment ²
Masonry Mixer	electric		75			75	Electric Equipment ²
Pile driving Rig	diesel		85			75	Manufacturer's Muffler & Path Controls ⁶
Pile driver (vibratory)	Air		95	85*		75	Manufacturer's Muffler & Path Controls ⁶
Pneumatic Tool	gas		85			75	Path Controls ¹
Pump	diesel		77			77	CEQR
Rock Driller	diesel		85			75	Manufacturer's Muffler & Path Controls ⁴
Rubbish Carting Truck	diesel		78			78	CEQR
Telehandler	diesel		NA		74	74	Buc Ere - 308 (crane)
Temp Elec Plant	electric		NA		75	75	Electric Equipment ²
Tractor	diesel		84			84	CEQR
Welder	electric		73			73	CEQR

1. See p8-9 on Chapter 28 "Citywide Construction Noise Mitigation". With mitigation measures, 10 dB reduction was estimated.

2. 75 dBA was assumed for electric equipment at 50 feet.

3. See p17-18 on Chapter 28 "Citywide Construction Noise Mitigation". With mitigation measures, 10 dB reduction was estimated.

4. See p19-20 on Chapter 28 "Citywide Construction Noise Mitigation". With mitigation measures, 10 dB reduction was estimated.

5. Noise from Construction....December 31, 1971. Bolt, Beranek and Newman. p104.

6. See p5-6 on Chapter 28 "Citywide Construction Noise Mitigation". With mitigation measures, 10 dB reduction was estimated.

* New York City Noise Control Code (24-228 (a)(1)).

Saint Vincent's

Monitoring Date: 9/24/2009, 9/29/2009, 9/30/2009,

SiteID	Location	Weekday	L _{eq}	L ₁	L ₁₀	L ₅₀	L ₉₀	L _{Min}	L _{Max}	Minimum L _{eq}	Maximum L ₁₀
1	West 12th Street between 6th and 7th Avenues	AM	64.3	73.9	66.8	61.7	58.7	57.3	79.2	64.3	67.8
		PreMD	66.0	77.4	67.8	61.7	59.6	57.8	84.5		
		MD	67.8	79.3	67.4	62.2	59.5	57.6	90.2		
		PrePM	64.8	73.0	67.7	62.3	60.0	58.7	81.8		
		PM	62.9	70.9	65.6	60.7	58.2	57.0	78.7		
2	West 11th Street between 6th and 7th Avenues	AM	63.8	73.8	66.4	60.9	59.5	58.5	79.5	63.6	66.4
		PreMD	64.3	71.1	66.4	63.1	61.1	59.9	75.3		
		MD	64.1	73.6	66.0	62.0	60.5	59.5	79.2		
		PrePM	63.6	69.4	66.0	62.5	61.2	60.4	72.0		
		PM	64.6	70.8	66.6	63.3	62.4	61.3	75.1		
3	Greenwich Avenue between West 11th and West 12th Streets	AM	66.2	73.5	69.3	64.5	60.5	58.1	75.9	65.0	70.2
		PreMD	67.3	75.5	70.2	65.1	62.0	59.2	79.8		
		MD	65.0	73.1	67.5	62.8	60.2	58.4	80.3		
		PrePM	65.4	72.6	68.0	63.9	60.6	58.1	80.7		
		PM	65.4	73.5	68.0	63.5	60.7	58.4	79.1		
4	West 12th Street between 7th and Greenwich Avenues	AM	67.0	72.6	69.3	65.8	64.1	62.8	75.7	65.8	69.4
		PreMD	66.8	74.5	68.9	65.1	62.2	60.4	80.7		
		MD	67.3	75.3	69.4	65.4	63.1	61.3	82.7		
		PrePM	65.8	73.2	68.1	64.3	62.2	60.7	79.2		
		PM	66.2	72.7	68.9	64.8	62.1	59.8	80.3		
5	7th Avenue between West 12th and West 13th Streets	AM	72.6	80.5	75.6	70.4	66.1	62.9	85.9	71.8	76.0
		PreMD	71.9	78.9	75.0	70.1	66.2	64.4	82.7		
		MD	71.8	80.6	74.6	69.2	66.4	63.6	86.2		
		PrePM	73.3	80.1	76.0	72.2	67.2	64.0	86.2		
		PM	71.7	77.7	74.6	70.6	66.7	63.3	80.3		
6	West 13th Street between 7th and Greenwich Avenues	AM	66.9	73.9	69.3	65.7	62.2	60.3	80.7	66.5	70.1
		PreMD	67.9	78.4	70.1	65.5	63.1	61.6	80.7		
		MD	67.1	75.1	69.0	65.7	63.1	61.3	81.5		
		PrePM	66.5	74.1	68.6	64.9	62.9	60.9	80.3		
		PM	65.4	71.4	67.5	64.6	62.1	61.0	75.7		
7	West 14th Street between 7th and 8th Avenues	AM	75.1	84.3	78.6	71.4	65.7	61.6	90.4	71.2	78.6
		PreMD	72.3	82.7	74.4	69.3	64.7	62.7	87.9		
		MD	71.2	79.4	73.7	69.5	65.5	63.3	85.2		
		PrePM	73.7	82.3	76.2	71.0	66.3	64.3	89.9		
		PM	74.4	81.9	77.8	72.9	66.7	63.9	85.0		
8	Jane Street between West 4th Street and Greenwich Avenue	AM	59.3	66.1	61.2	58.2	56.7	55.6	70.2	59.1	62.6
		PreMD	61.8	72.2	62.6	57.4	55.5	54.2	82.3		
		MD	59.1	67.0	62.4	56.7	54.7	53.1	71.6		
		PrePM	59.3	67.3	62.0	57.5	55.0	53.3	71.8		
		PM	57.2	65.9	59.5	55.3	52.8	51.5	70.0		
9	West 11th Street between West 4th Street and Waverly Place	AM	62.9	72.9	66.2	58.7	54.8	52.1	78.3	62.2	66.6
		PreMD	63.9	74.6	65.7	58.1	54.7	52.7	84.5		
		MD	63.7	74.9	66.6	57.5	53.6	51.3	84.2		
		PrePM	62.2	71.9	65.5	58.9	55.6	52.6	76.8		
		PM	63.4	72.9	66.9	58.3	54.2	51.2	81.5		
10	Perry Street between 7th Avenue South and Greenwich Avenue	AM	66.8	74.5	70.2	64.7	58.6	56.0	79.5	65.2	70.2
		PreMD	66.2	74.6	68.8	64.2	60.2	58.5	79.0		
		MD	66.2	75.5	68.8	64.1	60.0	57.9	80.9		
		PrePM	65.2	73.0	68.3	63.7	60.3	58.9	76.3		
		PM	65.1	72.7	67.8	63.6	59.7	57.9	77.9		
11	6th Avenue between West 11th and West 12th Streets	AM	73.1	82.4	76.6	69.7	62.7	57.9	85.7	69.1	76.6
		PreMD	69.1	76.8	71.7	67.3	64.4	62.0	84.6		
		MD	70.3	79.8	73.7	67.4	62.4	59.4	83.1		
		PrePM	71.0	78.7	74.2	69.0	63.9	61.1	82.1		
		PM	69.4	78.0	73.1	66.3	60.9	59.0	85.5		
12	West 13th Street between 6th and 7th Avenues	AM	67.3	77.2	69.6	63.9	60.0	56.5	84.5	64.0	69.6
		MD	64.0	74.1	67.3	59.9	57.0	55.0	79.7		
		PrePM	64.2	73.3	67.1	61.5	58.2	56.7	79.2		
		PM	63.1	71.2	66.3	60.4	57.2	55.7	76.7		

Saint Vincent's
9/24/2009, 9/29/2009, 9/30/2009, 10/14/2

SiteID	Location	Weekend	L _{eq}	L ₁	L ₁₀	L ₅₀	L ₉₀	L _{Min}	L _{Max}	Minimum L _{eq}	Maximum L ₁₀
1	West 12th Street between 6th and 7th Avenues	AM	62.5	71.3	66.3	58.9	56.3	54.9	76.1	62.5	68.4
		PreMD	64.7	73.2	68.4	61.3	56.7	54.7	81.6		
		MD	63.4	71.5	67.3	60.2	56.8	55.5	77.1		
		PrePM	66.2	76.2	68.1	61.2	56.9	55.2	86.5		
		PM	62.8	70.7	65.8	59.6	56.6	55.7	80.0		
2	West 11th Street between 6th and 7th Avenues	AM	61.7	72.1	63.1	59.3	58.3	57.7	76.0	61.7	67.0
		PreMD	63.7	72.8	67.0	60.5	58.9	58.1	76.1		
		MD	63.7	73.4	66.3	60.0	58.7	58.0	79.2		
		PrePM	63.5	71.2	66.9	60.9	59.3	58.4	73.5		
		PM	62.8	70.4	66.4	60.2	59.1	58.5	75.0		
3	Greenwich Avenue between West 11th and West 12th Streets	AM	65.4	73.1	69.2	62.7	57.9	56.2	78.3	64.5	69.2
		PreMD	64.5	72.9	67.3	62.5	59.1	56.2	79.9		
		MD	65.0	73.2	67.0	62.9	60.7	58.4	81.4		
		PrePM	65.2	72.1	67.0	62.9	60.5	58.9	85.3		
		PM	66.5	75.4	68.0	63.5	60.2	58.1	86.4		
4	West 12th Street between 7th and Greenwich Avenues	AM	64.3	71.6	67.1	62.6	59.5	58.2	77.1	64.2	68.3
		PreMD	64.2	70.3	66.7	63.3	60.0	58.0	73.5		
		MD	64.3	70.9	66.6	62.9	60.9	59.4	79.6		
		PrePM	65.8	73.3	68.3	64.4	61.5	59.4	78.0		
		PM	65.4	73.6	67.5	62.9	60.7	59.4	85.1		
5	7th Avenue between West 12th and West 13th Streets	AM	69.3	77.3	72.9	66.1	60.9	58.5	83.8	69.3	76.0
		PreMD	71.3	80.7	73.8	68.1	63.3	60.7	86.7		
		MD	72.7	81.3	76.0	69.8	64.3	61.8	85.1		
		PrePM	72.1	81.1	75.2	69.1	63.3	61.3	86.4		
		PM	71.4	79.4	75.2	68.6	62.8	61.3	84.6		
6	West 13th Street between 7th and Greenwich Avenues	AM	64.0	72.4	67.3	61.6	56.0	54.1	77.6	64.0	70.3
		PreMD	65.9	74.1	68.7	64.3	59.4	56.3	78.6		
		MD	67.3	74.2	70.3	66.1	61.7	58.9	81.0		
		PrePM	64.0	70.4	66.8	62.9	59.8	56.6	73.9		
		PM	65.4	73.3	67.2	63.2	59.2	56.6	85.1		
7	West 14th Street between 7th and 8th Avenues	AM	71.9	82.5	73.5	67.7	63.7	59.5	91.6	70.8	74.4
		PreMD	71.1	79.8	74.2	68.6	65.1	60.9	85.2		
		MD	71.5	81.5	74.4	68.5	64.1	60.9	85.8		
		PrePM	70.8	79.9	72.9	68.6	64.3	61.3	87.3		
		PM	70.4	79.5	72.9	67.9	64.5	60.9	85.3		
8	Jane Street between West 4th Street and Greenwich Avenue	AM	53.7	62.3	55.9	51.5	49.9	49.1	67.6	53.7	61.3
		PreMD	56.6	65.7	58.6	53.5	51.3	50.0	74.0		
		MD	56.9	63.9	59.4	55.4	53.2	51.8	67.7		
		PrePM	59.2	67.9	61.3	56.6	54.2	52.4	77.3		
		PM	58.7	67.4	61.7	56.6	52.9	51.3	72.6		
9	West 11th Street between West 4th Street and Waverly Place	AM	65.2	76.4	66.2	60.2	51.8	49.5	84.5	62.2	67.6
		PreMD	62.2	71.7	65.9	59.1	54.1	50.8	74.4		
		MD	63.6	73.8	67.6	58.5	54.9	52.9	76.8		
		PrePM	62.7	72.4	66.1	59.2	56.1	53.8	77.9		
		PM	62.7	72.1	67.2	57.6	53.9	51.6	75.9		
10	Perry Street between 7th Avenue South and Greenwich Avenue	AM	64.6	72.6	68.4	61.3	55.4	53.0	79.1	64.6	69.5
		PreMD	66.8	76.0	69.5	64.2	60.3	59.0	83.1		
		MD	66.3	74.0	68.7	64.7	60.8	59.0	83.4		
		PrePM	65.8	72.9	68.4	64.3	61.2	59.1	80.9		
		PM	65.6	73.5	68.4	63.8	60.1	58.2	78.4		
11	6th Avenue between West 11th and West 12th Streets	AM	72.1	80.7	76.0	67.1	59.6	57.0	86.4	69.7	76.0
		PreMD	70.8	79.4	74.0	68.7	61.7	58.2	83.5		
		MD	71.0	79.0	74.1	69.0	61.7	59.2	86.0		
		PrePM	69.7	78.4	72.6	67.6	62.0	59.4	84.0		
		PM	70.4	78.8	73.6	68.4	61.4	59.0	84.4		
12	West 13th Street between 6th and 7th Avenues	AM	61.7	70.9	64.5	57.0	54.5	53.2	82.4	60.5	64.8
		PreMD	61.1	68.8	64.4	58.3	55.6	53.5	76.8		
		MD	60.5	67.2	64.1	58.4	55.2	53.1	75.7		
		PrePM	62.0	71.7	64.8	59.1	55.4	52.7	79.4		
		PM	63.8	76.2	64.7	58.3	54.6	53.4	83.7		

Construction Noise Results (Weekdays)

	Exceed the CEQR noise criterion
	Exceed Leq 65 dBA

CadnaA Receptor Sites	Elevation (floor)	Construction Duration																							
		2012-June				2013-January				2013-July				2014-January				2014-July				2015-January			
		NoBuild Leq	Build Leq	Leq Change	Build L10	NoBuild d Leq	Build Leq	Leq Change	Build L10	NoBuild d Leq	Build Leq	Leq Change	Build L10	NoBuild d Leq	Build Leq	Leq Change	Build L10	NoBuild d Leq	Build Leq	Leq Change	Build L10	NoBuild d Leq	Build Leq	Leq Change	Build L10
BB	at-grade	65.8	65.9	0.1	69.0	65.8	65.9	0.1	69.0	73.8	73.8	0.0	76.9	73.8	74.0	0.2	77.1	72.9	73.1	0.2	76.2	72.9	72.9	0.1	76.0
BB	3	65.9	66.6	0.7	69.7	65.9	66.5	0.6	69.6	75.8	76.0	0.2	79.1	75.8	76.1	0.3	79.2	74.2	74.4	0.2	77.5	74.2	74.3	0.1	77.4
BB	top floor	65.4	66.4	1.0	69.5	65.4	66.3	0.9	69.4	75.7	76.0	0.3	79.1	75.7	76.1	0.4	79.2	73.4	73.8	0.3	76.9	73.4	73.6	0.1	76.7
CC	at-grade	65.8	66.1	0.3	69.2	65.8	66.1	0.3	69.2	66.0	66.5	0.5	69.6	66.0	66.6	0.6	69.7	66.0	67.5	1.5	70.6	66.0	67.2	1.3	70.3
CC	3	65.2	65.9	0.7	69.0	65.2	65.9	0.7	69.0	65.5	67.1	1.6	70.2	65.5	66.8	1.3	69.9	65.4	69.8	4.4	72.9	65.4	69.2	3.8	72.3
CC	top floor	64.1	65.7	1.6	68.8	64.1	65.8	1.7	68.9	64.5	67.6	3.1	70.7	64.5	66.7	2.3	69.8	64.4	72.1	7.7	75.2	64.4	71.8	7.4	74.9
DD	at-grade	61.6	61.6	0.0	63.5	61.6	61.6	0.0	63.5	61.6	61.6	0.0	63.5	61.6	61.6	0.0	63.5	61.6	61.6	0.0	63.5	61.6	61.6	0.0	63.5
DD	3	60.6	60.6	0.0	62.5	60.6	60.6	0.0	62.5	60.6	60.7	0.1	62.6	60.6	60.7	0.1	62.6	60.6	60.7	0.1	62.6	60.6	60.6	0.0	62.5
DD	5	59.2	59.3	0.1	61.2	59.2	59.3	0.1	61.2	59.2	59.3	0.1	61.2	59.2	59.5	0.3	61.4	59.2	59.8	0.6	61.7	59.2	59.2	0.0	61.1
DD	10	57.4	59.0	1.6	60.9	57.4	59.4	2.0	61.3	57.5	60.7	3.2	62.6	57.5	60.5	3.0	62.4	57.4	59.0	1.6	60.9	57.4	57.6	0.2	59.5
DD	top floor	57.7	60.0	2.3	61.9	57.7	60.4	2.7	62.3	57.9	62.1	4.2	64.0	57.9	61.3	3.4	63.2	57.7	59.9	2.1	61.8	57.7	58.3	0.6	60.2
EE	at-grade	65.9	65.9	0.0	67.8	65.9	65.9	0.0	67.8	65.9	65.9	0.0	67.8	65.9	65.9	0.0	67.8	65.9	65.9	0.0	67.8	65.9	65.9	0.0	67.8
EE	3	65.1	65.1	0.0	67.0	65.1	65.1	0.0	67.0	65.1	65.2	0.1	67.1	65.1	65.2	0.1	67.1	65.1	65.2	0.1	67.1	65.1	65.1	0.0	67.0
EE	5	63.6	63.7	0.1	65.6	63.6	63.7	0.1	65.6	63.6	63.7	0.1	65.6	63.6	63.8	0.2	65.7	63.6	63.9	0.3	65.8	63.6	63.6	0.0	65.5
EE	top floor	61.7	62.2	0.5	64.1	61.7	62.1	0.4	64.0	61.7	62.5	0.8	64.4	61.7	63.1	1.4	65.0	61.7	62.7	1.0	64.6	61.7	61.8	0.1	63.7
FF	at-grade	62.3	62.6	0.2	64.5	62.3	62.6	0.2	64.5	62.3	62.6	0.3	64.5	62.3	62.6	0.3	64.5	62.3	64.4	2.0	66.3	62.3	64.2	1.9	66.1
FF	3	62.5	62.7	0.2	64.6	62.5	62.8	0.3	64.7	62.5	62.9	0.4	64.8	62.5	62.9	0.4	64.8	62.5	66.7	4.3	68.6	62.5	66.3	3.9	68.2
FF	top floor	61.9	62.4	0.5	64.3	61.9	62.6	0.7	64.5	61.9	62.7	0.8	64.6	61.9	62.5	0.6	64.4	61.9	68.6	6.8	70.5	61.9	68.2	6.3	70.1

Construction Noise Results (Weekdays)

	Exceed the CEQR noise criterion
	Exceed Leq 65 dBA

CadnaA Receptor Sites	Elevation (floor)	Construction Duration																							
		2012-June				2013-January				2013-July				2014-January				2014-July				2015-January			
		NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10
I6	10	56.4	61.4	5.0	63.9	56.4	59.1	2.7	61.6	56.4	63.6	7.2	66.1	56.4	67.5	11.0	70.0	56.4	62.8	6.4	65.3	56.4	57.1	0.7	59.6
I6	top floor	55.4	60.9	5.4	63.4	55.4	58.7	3.3	61.2	55.4	63.2	7.8	65.7	55.4	66.8	11.4	69.3	55.4	62.0	6.6	64.5	55.4	56.1	0.7	58.6
I7	at-grade	61.0	62.6	1.6	65.1	61.0	62.0	1.0	64.5	61.0	64.5	3.5	67.0	61.0	66.5	5.5	69.0	61.0	63.9	2.9	66.4	61.0	61.3	0.3	63.8
I7	3	60.6	63.8	3.2	66.3	60.6	63.0	2.4	65.5	60.6	66.7	6.1	69.2	60.6	69.7	9.1	72.2	60.6	66.1	5.4	68.6	60.6	61.1	0.5	63.6
I7	top floor	59.4	62.8	3.4	65.3	59.4	61.9	2.5	64.4	59.4	66.5	7.1	69.0	59.4	70.0	10.6	72.5	59.4	66.5	7.0	69.0	59.4	60.0	0.6	62.5
I8	at-grade	63.5	64.6	1.1	67.1	63.5	64.4	0.9	66.9	63.5	65.4	1.9	67.9	63.5	66.0	2.5	68.5	63.5	64.6	1.1	67.1	63.5	63.7	0.2	66.2
I8	3	62.9	65.3	2.4	67.8	62.9	65.0	2.0	67.5	62.9	66.1	3.2	68.6	62.9	67.8	4.9	70.3	62.9	65.4	2.5	67.9	62.9	63.2	0.3	65.7
I8	top floor	61.9	64.8	2.9	67.3	61.9	64.4	2.5	66.9	61.9	66.2	4.3	68.7	61.9	67.4	5.5	69.9	61.9	64.7	2.8	67.2	61.9	62.2	0.2	64.7
I9	at-grade	54.7	60.1	5.5	62.6	54.7	58.4	3.8	60.9	54.7	65.4	10.7	67.9	54.7	61.4	6.7	63.9	54.7	62.3	7.6	64.8	54.7	60.6	5.9	63.1
I9	3	56.6	63.6	7.0	66.1	56.6	62.4	5.8	64.9	57.1	69.7	12.6	72.2	57.1	66.8	9.7	69.3	56.7	65.7	9.0	68.2	56.7	63.8	7.2	66.3
I9	5	60.9	64.6	3.7	67.1	60.9	63.9	2.9	66.4	61.1	71.4	10.4	73.9	61.1	67.5	6.5	70.0	60.9	66.4	5.4	68.9	60.9	64.8	3.9	67.3
I9	10	69.1	69.9	0.8	72.4	69.1	69.7	0.6	72.2	69.2	73.2	3.9	75.7	69.2	71.2	2.0	73.7	69.2	70.5	1.3	73.0	69.2	70.0	0.8	72.5
I9	top floor	73.0	73.3	0.4	75.8	73.0	73.3	0.3	75.8	73.0	75.3	2.3	77.8	73.0	74.1	1.1	76.6	73.0	73.6	0.7	76.1	73.0	73.3	0.3	75.8
I10	at-grade	54.6	56.0	1.3	58.5	54.6	55.3	0.6	57.8	54.7	57.7	3.0	60.2	54.7	56.4	1.7	58.9	54.7	56.5	1.8	59.0	54.7	55.6	0.9	58.1
I10	3	56.5	57.9	1.4	60.4	56.5	57.3	0.8	59.8	56.6	59.7	3.1	62.2	56.6	59.1	2.4	61.6	56.6	59.0	2.5	61.5	56.6	57.7	1.1	60.2
I10	top floor	59.7	60.5	0.7	63.0	59.7	60.1	0.4	62.6	60.0	62.1	2.1	64.6	60.0	61.3	1.3	63.8	59.8	61.0	1.2	63.5	59.8	60.3	0.6	62.8
I11	at-grade	54.6	56.7	2.1	59.2	54.6	56.3	1.7	58.8	54.6	59.4	4.8	61.9	54.6	57.8	3.2	60.3	54.6	58.7	4.1	61.2	54.6	56.9	2.3	59.4
I11	3	56.4	59.6	3.2	62.1	56.4	59.2	2.8	61.7	56.4	62.8	6.4	65.3	56.4	61.4	5.0	63.9	56.4	61.6	5.2	64.1	56.4	59.6	3.2	62.1
I11	top floor	59.6	61.8	2.2	64.3	59.6	61.6	2.0	64.1	59.6	64.8	5.1	67.3	59.6	62.7	3.1	65.2	59.6	62.9	3.3	65.4	59.6	61.5	1.9	64.0
A1	at-grade	72.5	73.0	0.5	76.0	72.5	73.0	0.5	76.0	72.6	73.0	0.5	76.0	72.6	73.2	0.7	76.2	72.4	74.3	1.8	77.3	72.4	74.0	1.6	77.0

Construction Noise Results (Weekdays)

Exceed the CEQR noise criterion
Exceed Leq 65 dBA

CadnaA Receptor Sites	Elevation (floor)	Construction Duration																							
		2012-June				2013-January				2013-July				2014-January				2014-July				2015-January			
		NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil Leq	Build Leq	Leq Change	Build L10
K1	top floor	67.1	70.4	3.3	72.7	67.1	70.4	3.3	72.7	67.5	74.9	7.4	77.2	67.5	74.6	7.1	76.9	67.4	73.1	5.8	75.4	67.4	72.8	5.5	75.1
I9a	at-grade	54.7	62.3	7.7	64.8	54.7	55.8	1.2	58.3	54.7	65.5	10.8	68.0	54.7	60.0	5.3	62.5	54.7	61.8	7.0	64.3	54.7	61.4	6.7	63.9
I9a	3	56.6	76.3	19.8	78.8	56.6	65.1	8.5	67.6	57.1	80.8	23.7	83.3	57.1	70.0	12.9	72.5	56.7	78.1	21.5	80.6	56.7	77.9	21.3	80.4
I9a	5	60.9	75.9	15.0	78.4	60.9	66.2	5.2	68.7	61.1	80.4	19.3	82.9	61.1	70.6	9.5	73.1	60.9	76.7	15.8	79.2	60.9	76.4	15.5	78.9
I9a	10	60.9	73.4	12.5	75.9	60.9	66.2	5.3	68.7	61.2	78.1	16.9	80.6	61.2	79.6	18.4	82.1	60.7	72.8	12.1	75.3	60.7	72.1	11.4	74.6
I9a	top floor	61.3	71.8	10.5	74.3	61.3	66.3	5.0	68.8	61.2	76.6	15.4	79.1	61.2	77.8	16.5	80.3	60.7	71.4	10.7	73.9	60.7	70.0	9.3	72.5



June – 2012 (Weekday)



January – 2013 (Weekday)



July – 2013 (Weekday)



January – 2014 (Weekday)



July – 2014 (Weekday)



January – 2015 (Weekday)

Construction Noise Results

Exceed the CEQR noise criterion

Exceed Leq 65 dBA

CadnaA Receptor Sites	Elevation (floor)	Construction Duration															
		2012-June				2013-July				2014-January				2014-May			
		NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10
A	at-grade	68.9	68.9	0.1	72.5	68.9	68.9	0.0	72.5	68.9	68.9	0.0	72.5	68.9	69.0	0.0	72.7
A	3	68.5	68.6	0.1	72.2	68.5	68.7	0.2	72.3	68.5	68.6	0.1	72.2	68.5	68.7	0.1	72.4
A	5	67.2	67.3	0.1	70.9	67.2	67.5	0.3	71.1	67.2	67.3	0.1	70.9	67.2	67.4	0.1	71.3
A	10	65.2	65.4	0.2	69.0	65.2	65.6	0.4	69.2	65.2	65.4	0.2	69.0	65.2	65.5	0.2	69.5
A	top floor	63.4	64.0	0.7	67.6	63.4	63.9	0.5	67.5	63.4	63.8	0.4	67.4	63.4	63.8	0.4	68.2
B	at-grade	67.4	67.5	0.1	71.1	67.4	67.5	0.1	71.1	67.4	67.5	0.1	71.1	67.4	67.5	0.1	71.4
B	3	67.6	67.7	0.1	71.3	67.6	67.7	0.1	71.3	67.6	67.7	0.1	71.3	67.6	67.7	0.1	71.7
B	5	66.3	66.4	0.1	70.0	66.3	66.6	0.3	70.2	66.3	66.5	0.2	70.1	66.3	66.5	0.2	70.5
B	10	63.9	64.3	0.4	67.9	63.9	64.7	0.8	68.3	63.9	64.4	0.5	68.0	63.9	64.5	0.5	68.5
B	top floor	62.1	63.2	1.1	66.8	62.1	64.3	2.2	67.9	62.1	63.4	1.3	67.0	62.1	63.5	1.3	66.9
C	at-grade	70.5	70.5	0.0	74.1	70.5	70.5	0.0	74.1	70.5	70.5	0.0	74.1	70.5	70.5	0.0	74.2
C	3	70.9	70.9	0.0	74.5	70.9	70.9	0.0	74.5	70.9	70.9	0.0	74.5	70.9	70.9	0.0	74.6
C	5	69.9	69.9	0.0	73.5	69.9	69.9	0.0	73.5	69.9	69.9	0.0	73.5	69.9	69.9	0.0	73.6
C	10	67.5	67.5	0.0	71.1	67.5	67.5	0.0	71.1	67.5	67.5	0.0	71.1	67.5	67.5	0.0	71.2
C	15	66.0	66.0	0.0	69.6	66.0	66.0	0.0	69.6	66.0	66.0	0.0	69.6	66.0	66.0	0.0	69.7
C	top floor	65.0	65.0	0.0	68.6	65.0	65.0	0.0	68.6	65.0	65.0	0.0	68.6	65.0	65.0	0.0	68.8
D	at-grade	71.6	71.6	0.0	75.2	71.6	71.6	0.0	75.2	71.6	71.6	0.0	75.2	71.6	71.6	0.0	75.4
D	3	71.2	71.2	0.0	74.8	71.2	71.2	0.0	74.8	71.2	71.2	0.0	74.8	71.2	71.2	0.0	75.0
D	top floor	69.9	69.9	0.0	73.5	69.9	69.9	0.0	73.5	69.9	69.9	0.0	73.5	69.9	69.9	0.0	73.7
E	at-grade	68.8	68.8	0.0	72.4	68.8	68.8	0.0	72.4	68.8	68.8	0.0	72.4	68.8	68.9	0.0	72.6
E	3	68.4	68.4	0.1	72.0	68.4	68.5	0.1	72.1	68.4	68.5	0.1	72.1	68.4	68.5	0.1	72.2
E	top floor	67.2	67.2	0.1	70.8	67.2	67.3	0.1	70.9	67.2	67.3	0.1	70.9	67.2	67.3	0.1	71.0
F	at-grade	68.8	68.8	0.0	72.4	68.8	68.8	0.0	72.4	68.8	68.8	0.0	72.4	68.8	68.9	0.0	72.6
F	3	68.9	68.9	0.0	72.5	68.9	68.9	0.0	72.5	68.9	68.9	0.0	72.5	68.9	69.0	0.0	72.7
F	5	67.8	67.8	0.0	71.4	67.8	67.8	0.0	71.4	67.8	67.8	0.0	71.4	67.8	67.9	0.0	71.6
F	top floor	66.8	66.9	0.1	70.5	66.8	66.8	0.0	70.4	66.8	66.8	0.0	70.4	66.8	66.9	0.0	70.6
G	at-grade	70.7	70.7	0.0	74.3	70.7	70.7	0.0	74.3	70.7	70.7	0.0	74.3	70.7	70.8	0.0	74.4
G	3	70.4	70.4	0.0	74.0	70.4	70.4	0.0	74.0	70.4	70.4	0.0	74.0	70.4	70.5	0.0	74.2
G	top floor	69.1	69.1	0.0	72.7	69.1	69.1	0.0	72.7	69.1	69.1	0.0	72.7	69.1	69.2	0.0	72.9
H	at-grade	63.0	63.1	0.1	66.9	63.0	63.1	0.1	66.9	63.0	63.0	0.0	66.8	63.0	63.1	0.0	67.4
H	3	62.1	62.2	0.1	66.0	62.1	62.2	0.1	66.0	62.1	62.1	0.0	65.9	62.1	62.2	0.0	66.6
H	5	60.9	61.0	0.1	64.8	60.9	61.0	0.1	64.8	60.9	60.9	0.0	64.7	60.9	61.0	0.0	65.4
H	10	58.7	59.0	0.3	62.8	58.7	58.9	0.2	62.7	58.7	58.8	0.1	62.6	58.7	58.8	0.1	63.6
H	15	59.1	59.4	0.3	63.2	59.1	59.5	0.4	63.3	59.1	59.2	0.1	63.0	59.1	59.2	0.1	64.0
H	top floor	58.9	59.2	0.3	63.0	58.9	59.4	0.5	63.2	58.9	59.0	0.1	62.8	58.9	59.1	0.1	63.8
I	at-grade	62.8	63.0	0.2	66.8	62.8	63.0	0.2	66.8	62.8	62.9	0.1	66.7	62.8	62.9	0.1	67.4
I	3	60.8	61.2	0.4	65.0	60.8	61.2	0.4	65.0	60.8	60.9	0.1	64.7	60.8	61.0	0.1	65.9
I	top floor	59.1	59.6	0.5	63.4	59.1	59.8	0.7	63.6	59.1	59.3	0.2	63.1	59.1	59.3	0.2	64.6

Construction Noise Results

Exceed the CEQR noise criterion

Exceed Leq 65 dBA

CadnaA Receptor Sites	Elevation (floor)	Construction Duration															
		2012-June				2013-July				2014-January				2014-May			
		NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10
J	at-grade	66.2	66.5	0.3	70.3	66.2	66.5	0.3	70.3	66.2	66.3	0.1	70.1	66.2	66.4	0.1	71.2
J	3	66.1	67.1	1.0	70.9	66.1	67.5	1.4	71.3	66.1	66.7	0.6	70.5	66.1	66.7	0.6	72.1
J	5	64.8	66.6	1.8	70.4	64.8	67.3	2.5	71.1	64.8	66.0	1.2	69.8	64.8	66.0	1.2	71.3
J	10	62.6	65.6	3.0	69.4	62.6	66.3	3.7	70.1	62.6	64.8	2.2	68.6	62.6	64.9	2.2	69.9
J	top floor	60.6	63.9	3.3	67.7	60.6	64.7	4.1	68.5	60.6	63.1	2.5	66.9	60.6	63.1	2.4	68.6
K	at-grade	64.7	65.9	1.2	68.7	64.7	65.8	1.1	68.6	64.7	65.0	0.3	67.8	64.7	65.0	0.3	70.5
K	3	64.9	67.4	2.6	70.2	64.9	68.0	3.1	70.8	64.9	66.0	1.1	68.8	64.9	66.0	1.1	73.5
K	top floor	64.1	67.9	3.8	70.7	64.1	67.7	3.6	70.5	64.1	65.3	1.2	68.1	64.1	65.3	1.2	73.1
L	at-grade	64.2	64.2	0.0	68.0	64.2	64.2	0.0	68.0	64.2	64.2	0.0	68.0	64.2	64.2	0.0	68.3
L	3	63.8	63.9	0.1	67.7	63.8	63.8	0.0	67.6	63.8	63.8	0.0	67.6	63.8	63.9	0.0	68.1
L	top floor	62.5	62.6	0.1	66.4	62.5	62.7	0.2	66.5	62.5	62.6	0.1	66.4	62.5	62.6	0.1	67.0
M	at-grade	62.0	62.0	0.0	65.8	62.0	62.0	0.0	65.8	62.0	62.0	0.0	65.8	62.0	62.0	0.0	65.9
M	3	61.2	61.2	0.0	65.0	61.2	61.2	0.0	65.0	61.2	61.2	0.0	65.0	61.2	61.2	0.0	65.4
M	5	59.5	59.51	0.0	63.3	59.5	59.5	0.0	63.3	59.5	59.5	0.0	63.3	59.5	59.5	0.0	63.6
M	10	56.4	56.5	0.2	60.3	56.4	56.6	0.2	60.4	56.4	56.5	0.1	60.3	56.4	56.6	0.1	60.5
M	15	55.1	55.3	0.3	59.1	55.1	55.5	0.4	59.3	55.1	55.4	0.3	59.2	55.1	55.4	0.3	59.3
M	top floor	56.3	56.5	0.2	60.3	56.3	56.7	0.4	60.5	56.3	56.6	0.3	60.4	56.3	56.6	0.3	60.6
N	at-grade	67.0	67.0	0.0	70.8	67.0	67.1	0.1	70.9	67.0	67.1	0.1	70.9	67.0	67.1	0.1	70.9
N	3	66.4	66.4	0.1	70.2	66.4	66.5	0.1	70.3	66.4	66.5	0.1	70.3	66.4	66.5	0.1	70.3
N	top floor	65.1	65.2	0.1	69.0	65.1	65.3	0.2	69.1	65.1	65.3	0.2	69.1	65.1	65.3	0.2	69.0
O	at-grade	61.0	61.6	0.6	64.9	61.0	62.8	1.8	66.1	61.0	62.6	1.6	65.9	61.0	62.6	1.6	65.7
O	3	60.3	61.4	1.1	64.7	60.3	63.4	3.1	66.7	60.3	63.0	2.7	66.3	60.3	63.0	2.7	66.2
O	top floor	59.2	61.8	2.6	65.1	59.2	65.2	6.0	68.5	59.2	64.6	5.4	67.9	59.2	64.6	5.4	65.8
P	at-grade	65.0	65.5	0.5	68.8	65.0	66.3	1.3	69.6	65.0	65.9	0.9	69.2	65.0	65.9	0.9	69.9
P	10	53.6	54.9	1.3	58.2	53.6	55.2	1.6	58.5	53.6	54.6	1.0	57.9	53.6	54.6	1.0	57.7
P	15	61.1	62.0	0.9	65.3	61.1	62.2	1.1	65.5	61.1	61.7	0.6	65.0	61.1	61.8	0.6	64.7
P	top floor	61.7	63.4	1.7	66.7	61.7	65.4	3.7	68.7	61.7	64.8	3.1	68.1	61.7	64.8	3.1	65.5
Q	at-grade	60.8	60.9	0.1	63.7	60.8	61.1	0.3	63.9	60.8	61.0	0.2	63.8	60.8	61.1	0.2	64.0
Q	3	60.2	60.4	0.3	63.2	60.2	60.9	0.7	63.7	60.2	60.7	0.5	63.5	60.2	60.8	0.5	63.4
Q	5	58.9	59.3	0.4	62.1	58.9	60.0	1.1	62.8	58.9	59.7	0.8	62.5	58.9	59.8	0.8	62.2
Q	10	56.3	57.0	0.8	59.8	56.3	58.5	2.2	61.3	56.3	57.8	1.5	60.6	56.3	57.9	1.5	59.8
Q	15	55.1	56.0	1.0	58.8	55.1	58.0	2.9	60.8	55.1	57.3	2.2	60.1	55.1	57.3	2.2	59.0
Q	top floor	54.4	55.5	1.1	58.3	54.4	57.6	3.2	60.4	54.4	56.9	2.5	59.7	54.4	56.9	2.4	58.4
R	at-grade	71.4	71.4	0.0	75.3	71.4	71.4	0.0	75.3	71.4	71.4	0.0	75.3	71.4	71.4	0.0	75.4
R	3	70.8	70.8	0.0	74.7	70.8	70.8	0.0	74.7	70.8	70.8	0.0	74.7	70.8	70.9	0.0	74.8
R	5	69.3	69.3	0.0	73.2	69.3	69.4	0.1	73.3	69.3	69.3	0.0	73.2	69.3	69.4	0.0	73.4
R	10	66.3	66.4	0.1	70.3	66.3	66.4	0.1	70.3	66.3	66.4	0.1	70.3	66.3	66.4	0.1	70.4
R	top floor	63.9	64.0	0.1	67.9	63.9	64.1	0.2	68.0	63.9	64.1	0.2	68.0	63.9	64.1	0.2	68.0

Construction Noise Results

Exceed the CEQR noise criterion

Exceed Leq 65 dBA

CadnaA Receptor Sites	Elevation (floor)	Construction Duration															
		2012-June				2013-July				2014-January				2014-May			
		NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10
S	at-grade	71.3	71.3	0.0	75.2	71.3	71.3	0.0	75.2	71.3	71.3	0.0	75.2	71.3	71.4	0.0	75.3
S	3	70.9	70.9	0.0	74.8	70.9	70.9	0.0	74.8	70.9	70.9	0.0	74.8	70.9	71.0	0.0	75.0
S	5	69.6	69.6	0.0	73.5	69.6	69.6	0.0	73.5	69.6	69.6	0.0	73.5	69.6	69.7	0.0	73.7
S	10	66.7	66.7	0.0	70.6	66.7	66.7	0.0	70.6	66.7	66.7	0.0	70.6	66.7	66.8	0.0	70.8
S	top floor	65.3	65.3	0.0	69.2	65.3	65.3	0.0	69.2	65.3	65.3	0.0	69.2	65.3	65.4	0.0	69.4
T	at-grade	69.4	69.4	0.0	73.3	69.4	69.4	0.0	73.3	69.4	69.4	0.0	73.3	69.4	69.5	0.0	73.5
T	3	69.2	69.2	0.0	73.1	69.2	69.2	0.0	73.1	69.2	69.2	0.0	73.1	69.2	69.3	0.0	73.3
T	top floor	66.9	66.9	0.0	70.8	66.9	66.9	0.0	70.8	66.9	66.9	0.0	70.8	66.9	67.0	0.0	71.1
U	at-grade	69.7	69.7	0.0	73.6	69.7	69.7	0.0	73.6	69.7	69.7	0.0	73.6	69.7	69.7	0.0	73.7
U	3	69.5	69.5	0.0	73.4	69.5	69.5	0.0	73.4	69.5	69.5	0.0	73.4	69.5	69.5	0.0	73.5
U	top floor	68.3	68.3	0.0	72.2	68.3	68.3	0.0	72.2	68.3	68.3	0.0	72.2	68.3	68.3	0.0	72.3
V	at-grade	69.0	69.0	0.0	72.9	69.0	69.0	0.0	72.9	69.0	69.0	0.0	72.9	69.0	69.0	0.0	73.1
V	3	68.9	68.9	0.0	72.8	68.9	68.9	0.0	72.8	68.9	68.9	0.0	72.8	68.9	68.9	0.0	73.0
V	5	67.8	67.8	0.0	71.7	67.8	67.8	0.0	71.7	67.8	67.8	0.0	71.7	67.8	67.8	0.0	71.9
V	top floor	65.2	65.2	0.0	69.1	65.2	65.2	0.0	69.1	65.2	65.2	0.0	69.1	65.2	65.2	0.0	69.3
w	at-grade	65.4	65.4	0.0	66.8	65.4	65.4	0.0	66.8	65.4	65.4	0.0	66.8	65.4	65.4	0.0	67.0
w	top floor	66.5	66.5	0.0	67.9	66.5	66.5	0.0	67.9	66.5	66.5	0.0	67.9	66.5	66.5	0.0	68.1
X	at-grade	59.8	59.8	0.0	61.2	59.8	59.8	0.0	61.2	59.8	59.8	0.0	61.2	59.8	59.8	0.0	61.4
X	3	59.3	59.4	0.1	60.8	59.3	59.4	0.1	60.8	59.3	59.3	0.0	60.7	59.3	59.3	0.0	60.9
X	top floor	58.3	58.4	0.1	59.8	58.3	58.4	0.1	59.8	58.3	58.3	0.0	59.7	58.3	58.3	0.0	59.9
Y	at-grade	66.0	66.0	0.0	69.8	66.0	66.0	0.0	69.8	66.0	66.0	0.0	69.8	66.0	66.0	0.0	69.9
Y	3	66.7	66.7	0.0	70.5	66.7	66.7	0.0	70.5	66.7	66.7	0.0	70.5	66.7	66.7	0.0	70.6
Y	5	66.6	66.6	0.0	70.4	66.6	66.6	0.0	70.4	66.6	66.6	0.0	70.4	66.6	66.6	0.0	70.5
Y	10	65.0	65.0	0.0	68.8	65.0	65.0	0.0	68.8	65.0	65.0	0.0	68.8	65.0	65.0	0.0	68.9
Y	top floor	64.1	64.1	0.0	67.9	64.1	64.1	0.0	67.9	64.1	64.1	0.0	67.9	64.1	64.1	0.0	68.0
Z	at-grade	61.7	61.7	0.0	65.5	61.7	61.7	0.0	65.5	61.7	61.7	0.0	65.5	61.7	61.7	0.0	65.5
Z	3	61.5	61.5	0.0	65.3	61.5	61.5	0.0	65.3	61.5	61.5	0.0	65.3	61.5	61.5	0.0	65.3
Z	5	60.3	60.3	0.0	64.1	60.3	60.3	0.0	64.1	60.3	60.3	0.0	64.1	60.3	60.3	0.0	64.1
Z	top floor	58.8	58.8	0.0	62.6	58.8	58.9	0.1	62.7	58.8	58.8	0.0	62.6	58.8	58.8	0.0	62.6
AA	at-grade	64.2	64.2	0.0	68.0	64.2	64.2	0.0	68.0	64.2	64.2	0.0	68.0	64.2	64.2	0.0	68.0
AA	3	64.0	64.0	0.0	67.8	64.0	64.0	0.0	67.8	64.0	64.0	0.0	67.8	64.0	64.0	0.0	67.9
AA	top floor	62.9	62.9	0.0	66.7	62.9	62.9	0.0	66.7	62.9	62.9	0.0	66.7	62.9	62.9	0.0	66.8
BB	at-grade	64.9	64.9	0.0	68.7	64.9	64.9	0.0	68.7	64.9	64.9	0.0	68.7	64.9	64.9	0.0	68.9
BB	3	64.7	64.7	0.0	68.5	64.7	64.7	0.0	68.5	64.7	64.8	0.1	68.6	64.7	64.8	0.1	68.8
BB	top floor	63.9	63.9	0.0	67.7	63.9	64.0	0.1	67.8	63.9	64.0	0.1	67.8	63.9	64.0	0.1	68.1

Construction Noise Results

Exceed the CEQR noise criterion

Exceed Leq 65 dBA

CadnaA Receptor Sites	Elevation (floor)	Construction Duration															
		2012-June				2013-July				2014-January				2014-May			
		NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10	NoBuil d Leq	Build Leq	Leq Change	Build L10
CC	at-grade	65.2	65.3	0.1	69.1	65.2	65.2	0.0	69.0	65.2	65.2	0.0	69.0	65.2	65.2	0.0	69.3
CC	3	64.7	64.8	0.1	68.6	64.7	64.8	0.1	68.6	64.7	64.8	0.1	68.6	64.7	64.8	0.1	69.3
CC	top floor	63.8	64.1	0.3	67.9	63.8	64.2	0.4	68.0	63.8	63.9	0.1	67.7	63.8	64.0	0.1	70.6
DD	at-grade	56.9	56.9	0.0	59.1	56.9	56.9	0.0	59.1	56.9	56.9	0.0	59.1	57.2	57.2	0.0	60.5
DD	3	55.9	55.9	0.0	58.1	55.9	55.9	0.0	58.1	55.9	55.9	0.0	58.1	56.2	56.2	0.0	59.8
DD	5	54.5	54.6	0.1	56.8	54.5	54.5	0.0	56.7	54.5	54.5	0.0	56.7	54.8	54.8	0.0	58.6
DD	10	52.6	53.7	1.1	55.9	52.6	54.1	1.5	56.3	52.6	53.3	0.7	55.5	52.9	53.5	0.7	57.8
DD	top floor	53.1	54.9	1.8	57.1	53.1	55.0	1.9	57.2	53.1	54.0	0.9	56.2	53.4	54.2	0.8	59.0
EE	at-grade	61.1	61.1	0.0	63.3	61.1	61.1	0.0	63.3	61.1	61.1	0.0	63.3	61.1	61.1	0.0	63.5
EE	3	60.3	60.3	0.0	62.5	60.3	60.3	0.0	62.5	60.3	60.3	0.0	62.5	60.3	60.4	0.0	62.8
EE	5	58.8	58.8	0.1	61.0	58.8	58.9	0.1	61.1	58.8	58.8	0.0	61.0	58.8	58.9	0.0	61.4
EE	top floor	56.9	57.0	0.2	59.2	56.9	57.1	0.2	59.3	56.9	57.0	0.1	59.2	56.9	57.0	0.1	59.9
FF	at-grade	57.6	57.8	0.2	58.8	57.6	57.8	0.2	58.8	57.6	57.7	0.1	58.7	57.6	57.7	0.1	59.4
FF	3	57.2	57.5	0.3	58.5	57.2	57.4	0.2	58.4	57.2	57.4	0.2	58.4	57.2	57.5	0.2	59.8
FF	top floor	56.6	57.3	0.7	58.3	56.6	57.3	0.7	58.3	56.6	56.9	0.3	57.9	56.6	56.9	0.3	60.0

Construction Noise Results

Exceed the CEQR noise criterion

Exceed Leq 65 dBA

Receptor Site	Elevation (floor)	Change (Leq v.s L10)	Construction Duration															
			2012-June				2013-July				2014-January				2014-May			
			NoBuild Leq	Build Leq	Leq Change	Build L10	NoBuild Leq	Build Leq	Leq Change	Build L10	NoBuild Leq	Build Leq	Leq Change	Build L10	NoBuild Leq	Build Leq	Leq Change	Build L10
K1	5-6	2.8	64.1	66.2	2.1	69.0	64.1	66.4	2.3	69.2	64.1	64.7	0.6	67.5	64.1	64.7	0.6	67.5



June – 2012 (Saturday)



July – 2013 (Saturday)



January – 2014 (Saturday)



May – 2014 (Saturday)

Proportional Model Results

Weekday (AM)

NOISE LEVEL CALCULATIONS

Receptor Location	Site	Hour	2011						2012-4Q					
			Total Volume	Auto	Medium	Heavy	Bus	PCEs	Total Volume	NB PCEs	Auto	Truck	PCEs	Double PCEs
12th Street between 6th and 7th Avenues	1	7-8 AM	172	92.6%	5.6%	1%	1%	386.6	172.0	387.6	18	0	405.4	no
				159	10	2	2							
West 11th Street between 6th and 7th Avenues	2	7-8 AM	185	94.6%	1.8%	0.0%	3.6%	336.7	185.3	337.5	2	0	339.5	no
				175	3	0	7							
West 12th Street between 7th and Greenwich Avenues	4	7-8 AM	79	98.2%	1.8%	0.0%	0.0%	96.5	79.4	96.7	5	1	166.6	no
				78	1	0	0							
West 13th Street between 7th and Greenwich Avenues	6	7-8 AM	73	94.3%	4.3%	1.4%	0.0%	157.7	72.8	158.1	5	0	163.6	no
				68	3	1	0							
West 13th Street between 6th and 7th Avenues	12	7-8 AM	132	95.0%	2.9%	0.0%	2.2%	226.1	132.3	226.7	2	0	228.7	no
				125	4	0	3							

Weekend (AM)

NOISE LEVEL CALCULATIONS

Receptor Location	Site	Hour	2011						2012-4Q					
			Total Volume	Auto	Medium	Heavy	Bus	PCEs	Total Volume	NB PCEs	Auto	Truck	PCEs	Double PCEs
12th Street between 6th and 7th Avenues	1	8-9 AM	320	98.6%	1.4%	0.0%	0.0%	373.6	320.3	374.5	3	0	377.5	no
West 11th Street between 6th and 7th Avenues	2	8-9 AM	68	93.3%	6.7%	0.0%	0.0%	121.5	67.7	121.8	0	0	122.2	no
West 12th Street between 7th and Greenwich Avenues	4	8-9 AM	216	92.1%	7.9%	0.0%	0.0%	420.5	216.5	421.6	1	0	433.3	no
West 13th Street between 7th and Greenwich Avenues	6	8-9 AM	113	96.0%	0.0%	4.0%	0.0%	319.5	112.8	320.3	1	0	321.2	no
West 13th Street between 6th and 7th Avenues	12	8-9 AM	216	95.8%	2.1%	2.1%	0.0%	476.6	216.5	477.8	0	0	478.1	no

Exceeds 3 dBA CEQR threshold

Proportional Model Results

Weekday (AM)

NOISE LEVEL CALCULATIONS

Receptor Location	Site	Hour	2013-3Q						2014-1Q					
			Total Volume	NB PCEs	Auto	Truck	PCEs	Double PCEs	Total Volume	NB PCEs	Auto	Truck	PCEs	Double PCEs
12th Street between 6th and 7th Avenues	1	7-8 AM	172.5	388.6	20	0	408.7	no	172.9	389.6	26	0	415.6	no
West 11th Street between 6th and 7th Avenues	2	7-8 AM	185.7	338.3	2	0	340.7	no	186.2	339.2	3	0	342.2	no
West 12th Street between 7th and Greenwich Avenues	4	7-8 AM	79.6	97.0	6	2	176.1	no	79.8	97.2	8	2	199.2	yes
West 13th Street between 7th and Greenwich Avenues	6	7-8 AM	73.0	158.5	6	0	164.7	no	73.1	158.9	8	0	166.9	no
West 13th Street between 6th and 7th Avenues	12	7-8 AM	132.7	227.2	2	0	229.5	no	133.0	227.8	3	0	230.8	no

Weekend (AM)

NOISE LEVEL CALCULATIONS

Receptor Location	Site	Hour	2013-3Q						2014-1Q					
			Total Volume	NB PCEs	Auto	Truck	PCEs	Double PCEs	Total Volume	NB PCEs	Auto	Truck	PCEs	Double PCEs
12th Street between 6th and 7th Avenues	1	8-9 AM	321.1	65	3	0	68.5	no	321.9	376.4	4	0	380.8	no
West 11th Street between 6th and 7th Avenues	2	8-9 AM	67.8	57	0	0	57.4	no	68.0	122.4	1	0	122.9	no
West 12th Street between 7th and Greenwich Avenues	4	8-9 AM	217.1	16	1	0	29.5	no	217.6	423.7	1	0	440.9	no
West 13th Street between 7th and Greenwich Avenues	6	8-9 AM	113.1	27	1	0	27.6	no	113.3	321.9	1	0	323.3	no
West 13th Street between 6th and 7th Avenues	12	8-9 AM	217.1	38	0	0	38.6	no	217.6	480.1	1	0	480.6	no

Exceeds 3 dBA CEQR threshold

Calculations for Construction Vibration

$$PPV_{\text{equipment}} = PPV_{\text{ref}} * (25/D)^{1.5}$$

where:

PPV_{equip} is the peak particle velocity in in/sec of the equipment at the receiver location

PPV_{ref} is the reference vibration level in in/sec at 25 feet

D is the distance from the equipment to the received location in feet

Equipment		PPVr	Criterion PPV	Impact Distance (ft)	PPVe
Pile Driver (sonic)		0.17	0.5	12.5	0.481
Hoe Ram & Caisson Drilling		0.089	0.5	8.0	0.492
Loaded Truck		0.076	0.5	7.5	0.463
Jackhammer		0.035	0.5	4.5	0.458

The worst case

Calculations for Construction Ground-Bore Vibration

$$Lv(D) = Lv(25ft) - 30 \log(D/25)$$

where:

$L_v(D)$ is the vibration level in VdB of the equipment at the receiver location

$L_v(\text{ref})$ is the reference vibration level in VdB at 25 feet

D is the distance from the equipment to the receiver location in feet

Equipment		$L_v(25ft)$	Criterion VdB	Impact Distance (ft)	$L_v(D)$
Pile Driver (sonic)		93	65	214	65.0
Hoe Ram		87	65	135	65.0
Loaded Truck		86	65	125	65.0
Jackhammer		79	65	73	65.0

The worst case