



AYCDC Board Meeting Response Sheet

On Monday, March 23, 2015, the Atlantic Yards Community Development Corporation held its second meeting. Below are responses to questions and concerns raised by AYCDC Directors and members of the public.

Response Outline

I. Memorandum of Environmental Commitments (MEC)

- a. Second Amended Memorandum of Environmental Commitments (Attached)
- b. Organizational chart for MEC oversight requirements (Attached)
- c. MEC Improvements (Attached)
- d. Compilation of addresses identified in the FSEIS and a map of eligible sound attenuation properties (Attached)
- e. Tech memo providing justification for double pane windows in attenuating construction noise (Attached)
- f. Scope of work for the On-site Environmental Monitor issued on August 27, 2014 (Attached)
- g. Response to question about lead levels at Project Site (Attached)

II. Block 1129 16 Ft. Fence

- a. Block 1129 Noise Barrier Height Analysis Tech Memo (Attached)

III. Project Design

a. Design Guidelines & ESD Review

The Atlantic Yards Project Design Guidelines are part of the approved General Project Plan. There are specific design goals and principles that inform these guidelines and provide the overall framework for the project's development. The Design Guidelines include building specifications (e.g. lot coverage, height limits, required setbacks, streetwall dimensions) and open space requirements for the full scope of the Project.

Designs for new buildings are typically reviewed six months before the building's anticipated groundbreaking. Designs are reviewed to ensure compliance with the specifications of the Design Guidelines

b. Renderings of Pacific Park, Brooklyn (Attached)

Attached are renderings of 535 Carlton Avenue, 550 Vanderbilt Avenue, 461 Dean Street, 38 Sixth Avenue; additional renderings will be shared when available.

IV. Community Relations

a. ESD's Community Relations Office

ESD's satellite office, on the ground floor of the Shirley Chisholm State Office Building (55 Hanson Place, between Fort Greene Place and South Elliott Place), is a place where community members may direct inquiries and concerns.

ESD's satellite office is staffed by a full time employee, who walks the site daily, observing activity around the Project. Observations made during the daily site visits are directed to Nicole Jordan, Director of Community Relations for the Project. Nicole maintains a detailed log of the observations, and then coordinates with the Developer, and relevant government agencies to address matters of concern.

b. ESD Incident Report Log

ESD will continue to compile information from the community's complaints and inquiries. The log will include the date incidents were reported (open) and the date of ESD's response (closed).

c. Community Update ("Quality of Life") Meetings

New complaints raised during community update meetings are added to ESD's Incident Report Log. While there are no minutes from previous Quality of Life Meetings, all agendas, presentations and materials provided are available on ESD's website. A summary of questions and concerns raised during Community Update meetings will be presented to AYCDC Directors.

V. Barclays Center Arena

a. Event Operations & Parking / Traffic Concerns

Barclays Center Arena and neighborhood parking related issues are overseen by the Mayor's Office of Citywide Event Coordination and Management / Permits, and the NYPD. The public's compliance with parking regulations and traffic rules are monitored by the NYPD.

VI. AYCDC

a. Conflict of Interest

All Board members are required to comply with Section 74 of the Public Officers Law which governs conflicts of interests. Board members have been instructed to recuse themselves from any votes which may create a conflict of interest for them based on their outside activities, employment or business interests.

b. Directors role with ESD Staff & Consultants

Directors will not have access to ESD staff meetings with consultants, but a summary of reports and materials will be made available.



AYCDC March 23 Meeting Response Sheet Attachments Outline

Attachment #1: Second Amended Memorandum of Environmental Commitments (MEC) (31 pgs.)

Attachment #2: Organizational chart for MEC oversight requirements (1pg.)

Attachment #3: MEC Improvements (5pgs.)

Attachment #4: Compilation of addresses identified in the FSEIS (5pgs.)

Attachment #5: Map of eligible sound attenuation properties (1pg.)

Attachment #6: Tech memo providing justification for double pane windows in attenuating construction noise (35pgs.)

Attachment #7: Scope of work for the On-site Environmental Monitor issued on August 27, 2014 (8pgs.)

Attachment #8: Response to question about lead levels at Project Site (3pgs.)

Attachment #9: Block 1129 Noise Barrier Height Analysis Tech Memo (4pgs.)

Attachment #10: Renderings of Pacific Park, Brooklyn (4pgs.)

Attachment #1:
Second Amended
Memorandum of
Environmental Commitments
(MEC) (31 pgs.)

**SECOND AMENDED
MEMORANDUM OF ENVIRONMENTAL COMMITMENTS
FOR THE ATLANTIC YARDS PROJECT**

A. PURPOSE OF MEMORANDUM

This second amended memorandum of environmental commitments dated as of June 10, 2014 (the “MEC”) documents the commitments made by Forest City Ratner Companies and its affiliates including Atlantic Yards Development Company, LLC and Brooklyn Arena, LLC (collectively, “FCRC”) to: (i) incorporate measures into the Atlantic Yards Project (the “Project”) to avoid adverse environmental impacts, as described in the Final Environmental Impact Statement issued by the Empire State Development Corporation (“ESD”) on November 27, 2006 (the “FEIS”), the Technical Memorandum prepared with respect to the Project in June 2009 (the “Technical Memorandum”), and the Final Supplemental Environmental Impact Statement issued by ESD on June 12, 2014 (the “FSEIS”); and (ii) implement measures to mitigate, to the maximum extent practicable, the significant adverse impacts identified in the FEIS and FSEIS. ESD and FCRC anticipate that the measures set forth in this memorandum will be included in appropriate Project documentation, with measures associated with, or the responsibility of, individual buildings or building parcels included in the applicable ground leases, and measures associated with the Project site as a whole or not specific to any one building parcel included in other Project documentation (any such lease or other Project documentation, a “Project Document” and such documentation collectively, the “Project Documentation”). Modifications to the obligations herein described may be granted by ESD (not to be unreasonably withheld) or as otherwise provided for in this memorandum, and in the event of any such modification, the Project Document imposing the affected obligation shall be deemed to be revised to incorporate such modification. The Project Documentation shall provide that the commitments set forth herein shall run with the land and be binding upon FCRC’s successors and assigns for the period of time any such party holds a property interest in the relevant portion of the Project or the Project site or until such earlier time as the relevant obligation is satisfied or fully discharged, with respect to those obligations that do not exist in perpetuity.

B. SOCIOECONOMICS

The Project (including Phase I and Phase II) shall generate at least 2,250 units of affordable housing on site for low-, moderate-, and middle-income persons and families. At least 30% of the units built on the arena block in Phase I (but no less than 300 units) shall be affordable to such households. The remainder of the affordable units shall be built in Phase II or on Site 5; however, not more than 50% of the Phase II units shall be built without completion of at least 50% of the Phase II affordable units. The affordable units are anticipated to be built as part of the Mayor’s New Housing Marketplace Plan and are expected to be financed through tax-exempt bonds provided under existing and proposed City of New York (“City”) and State of New York (“State”) housing programs such as the City’s 50-30-20 program. Based on currently available information, the parties anticipate that the affordable housing units will be made available to households with incomes falling within the income bands set forth in the FEIS and

FSEIS. However, the income bands may be adjusted to accommodate the requirements of any City, State or federal housing program utilized for the construction of the affordable housing, subject to City approval.

C. COMMUNITY FACILITIES

1. FCRC shall provide 24 parking spaces on the Project site for police vehicles assigned to the 78th Precinct House. Such parking shall be provided without charge and at a location that is proximate and convenient to the Precinct House. FCRC shall have the right to modify the location of such spaces from time to time in order to address construction logistics and operational matters, provided that the location remains proximate and convenient to the Precinct House.

2. As mitigation for the projected significant adverse impact to the supply of elementary and intermediate school seats, FCRC shall, if requested by the New York City Department of Education (“DOE”) or the New York City School Construction Authority (“SCA”) prior to the date that is 18-months prior to the anticipated commencement of construction of the first Phase II residential building constructed after completion or substantial completion of each of the Phase I residential buildings (or such other date agreed to in writing by FCRC, DOE and ESD), convey or lease to DOE, space within a development parcel sufficient in size to allow for the development of an approximately 100,000 gross square foot elementary and intermediate public school of contiguous space, a portion of which shall be located on the ground floor of the building (the “School”). As soon as practicable after receipt of the request from DOE or SCA, FCRC shall consult and cooperate with SCA in its public review process for site selection, thereafter cooperate with DOE and SCA in their design process in accordance with SCA/DOE practice, and construct the building containing the School as soon as practicable after SCA approves the design of the School, completes its public review process, and authorizes commencement of construction of the core and shell of the School and the financing of the School. FCRC shall also provide to DOE, by lease, easement or other conveyance acceptable to DOE, access to suitable outdoor space for use as a playground for the School’s students. It is likely that the School will be located in the lower floors of Building 15; therefore, FCRC shall provide notice to DOE, SCA and ESD that it intends to begin architectural design of Building 15 prior to the commencement of such design. In the event that an alternative location is selected, the School site shall be one of the other residential parcels located east of 6th Avenue as determined by FCRC and DOE. If leased to DOE, such lease shall be on a triple net basis and with a rent of \$1.00, and if conveyed, shall be conveyed for consideration of \$1.00. DOE shall be responsible for all costs of constructing, fitting out, and operating the School (excluding the cost of land, infrastructure, site remediation and if applicable the platform over the rail yard), and FCRC shall undertake the construction of the School on DOE’s behalf and at DOE’s expense. The space provided for the School shall be in addition to the Atlantic Yards program described in Table S-1 of the FEIS and shall not replace or result in a reduction of any part thereof. In the event that DOE elects to locate the School on the Project site, DOE and FCRC shall enter into appropriate arrangements providing for the construction and operation of the School, which agreements shall among other things provide FCRC with the right to locate residential units and other

compatible uses within the same building as the School, and to coordinate the construction of the School with FCRC's construction of the remainder of the building in which the School is to be located. The School shall be constructed to provide adequate noise attenuation so that noise in the vicinity of the School (including Project-related traffic, general construction and the School playground) will not result in interior noise levels within the School in excess of 45 dBA L₁₀.

3. In order to avoid a significant adverse impact to day care services as a result of the Project, FCRC shall: (i) construct on the Project site and arrange for the long-term operation of a duly licensed day care center that shall accommodate at least 100 children with publicly funded vouchers available to income-eligible households (or with some alternate form of publicly funded day care for income-eligible households); and (ii) assess day care enrollment and capacity in the study area identified in the FEIS as construction of the Project progresses, and, as and to the extent necessary to avoid a significant adverse impact (following the methodology of the *CEQR Technical Manual*, as of the date of the FSEIS), make arrangements with one or more duly licensed day care providers for the long-term operation of a duly licensed day care center (or centers) that shall accommodate approximately 250 additional children, either on or in the vicinity of the Project site. FCRC shall place into operation the day care center specified in clause (C)(3)(i) above by the date that certificates of occupancy have been issued for 620 of the Phase II affordable housing units targeted to households earning up to 80% AMI, or as soon thereafter as is practicable, provided, however, that the operation of the day care center may be delayed to a later point in the Project as determined by ESD based on information provided by FCRC and the City that there are adequate day care facilities in the area to accommodate children requiring subsidized day care services from the existing and immediately anticipated Project buildings.

D. OPEN SPACE AND RECREATIONAL FACILITIES

1. FCRC shall design and construct the Open Space as described in the FEIS, Technical Memorandum and FSEIS and in accordance with the Design Guidelines. Such Open Space shall be placed into operation pursuant to a phased schedule (which schedule shall call for the construction of a portion of such Open Space as each building in Phase II is constructed) as specified in the Design Guidelines.

2. The permanent Open Space shall be owned by a Conservancy or other not-for-profit entity established by FCRC, which shall be responsible for the maintenance, operation, and security of this public amenity. The Conservancy or other not-for-profit entity shall be funded in the first instance by FCRC, and when the surrounding parcels are developed, by the owners of the surrounding buildings pursuant to restrictive declarations recorded against the surrounding Project properties. The Conservancy or other not-for-profit entity shall be governed by a board, which shall include representatives of FCRC, civic group(s) active in park matters, representatives of surrounding properties on the project site, and, on an *ex officio* basis, Brooklyn Community Boards 2, 6 and 8, and the New York City Department of Parks and Recreation (the "Parks Department"). The initial program and plans for the Open Space shall be subject to the reasonable approval of ESD, consistent with the Design

Guidelines, and any material modifications to the program and plans for the Open Space shall also be subject to the reasonable approval of ESD, consistent with the Design Guidelines. The permanent Open Space shall be, at a minimum, accessible to the public as specified in the Design Guidelines.

3. Subject to the review and approval of the New York City Department of Transportation (“NYCDOT”) and, if applicable, the New York City Public Design Commission (“PDC”), FCRC shall promptly plan, design, implement and fully fund improvements at Times Plaza, which will consist of the addition of seating, plantings and other open space amenities approved by NYCDOT and, if applicable, PDC. If practicable, FCRC shall implement these improvements in coordination with restoration of the adjoining segment of Atlantic Avenue affected by the construction of the portal between the LIRR rail yard and Atlantic Terminal.

E. CULTURAL RESOURCES

1. FCRC shall comply with the requirements of the Letter of Resolution (“LOR”) dated November 9, 2006 among Atlantic Yards Development Company, LLC, ESD and the Office of Parks, Recreation and Historic Preservation. The LOR is included in Appendix B to the FEIS and requires certain mitigation or other measures to be taken with respect to architectural and archeological resources.

2. If the LOR is duly amended, FCRC shall comply with the terms of such amended LOR.

F. SHADOWS

1. As set forth in the FEIS and LOR, prior to the time when the Project casts shadows on the stained glass windows of the Church of the Redeemer (the “Church”), FCRC shall develop and implement measures to offset the impacts of the shadows comprised of: (i) removing the existing protective coverings from all of the stained glass windows, including any patching and repair associated with the removal; (ii) cleaning both the interior and exterior of the windows; and (iii) installation of new transparent protective coverings of similar or greater durability, or other measures agreed to by FCRC and the Church pursuant to the letter between FCRC and the Bishop of Long Island dated October 31, 2006 included in Appendix I to the FEIS.

2. Prior to the time when the Project casts shadows on the Atlantic Terminal Houses open space, FCRC, in consultation with the New York City Housing Authority (“NYCHA”), shall develop and implement measures to ameliorate the significant adverse shadow impacts, comprised of one or more amenities from the following list: (i) new landscaping and shade resistant plantings within the Atlantic Avenue open space; (ii) additional play equipment within the Atlantic Avenue or Carlton Avenue open spaces; (iii) upgrade of the Carlton Avenue children’s play area, including possible spray shower; and (iv) replacement of benches and other fixtures in the Atlantic Avenue or Carlton Avenue open spaces, subject to and in accordance with a letter dated

October 23, 2006 from FCRC to Douglas Apple of NYCHA, and accepted on November 3, 2006 by NYCHA included in Appendix I of the FEIS.

G. HAZARDOUS MATERIALS

1. FCRC shall design and construct the Project so as to prevent volatile organic compounds (“VOCs”) from infiltrating the interior of the Project buildings. To address this concern, residential and community facility uses shall (i) be located above ventilated underground parking or other facilities or above the platform over the ventilated rail yard and/or (ii) incorporate equivalently effective engineering controls, such as a vapor barrier and/or sub-slab depressurization system. FCRC shall submit engineering plans demonstrating compliance with the requirements of this paragraph to ESD (or, if applicable, the Mayor’s Office of Environmental Remediation) with respect to each of the Project buildings prior to the commencement of the construction thereof.

2. FCRC shall implement the investigation and remediation measures specified in the FEIS and FSEIS to protect workers and the general public from adverse impacts associated with environmental conditions at the Project site during the period of construction. In particular:

- (a) FCRC shall develop and implement procedures for pre-demolition removal of asbestos in accordance with applicable federal, State and City regulations which shall be monitored by an independent contractor as required by such regulations.
- (b) FCRC shall develop and implement procedures for pre-demolition removal of PCB-containing equipment in accordance with applicable federal, State and City laws and regulations.
- (c) FCRC shall implement dust suppression techniques reflecting best construction practices during the demolition of Project buildings and any excavation, grading or earth-moving activities at the Project site in connection with the construction of the Project or any related excavation or remediation.
- (d) FCRC shall conduct additional subsurface investigations as needed to refine and supplement data presented in the Phase 1 and Phase 2 reports heretofore prepared by Roux Associates, and shall provide the results of such investigations to ESD; upon review of such Phase 2 reports, ESD may require additional sampling as necessary to determine whether remediation is appropriate. Remediation Plans, which shall include protocols for any remedial activities (and associated additional sampling and investigation), and Health and Safety Plans, shall be prepared with respect to any remedial activities to be undertaken by FCRC, and shall be submitted to

ESD for review and approval prior to the commencement of such activities.

- (e) In the event that the New York City Department of Environmental Protection (“NYCDEP”) or the Mayor’s Office of Environmental Remediation (“OER”) exercises jurisdiction over any portion of the environmental remediation at the Project site, FCRC shall (in lieu of the remedial plan called for under Subparagraph G.2(d) above) submit to NYCDEP or OER a remedial action plan with respect to such portion of the environmental remediation, for review and approval in accordance with NYCDEP or OER requirements, as applicable, prior to or in connection with excavation activities at the Project site. FCRC shall simultaneously submit such remedial action plan to ESD for its review and consultation with NYCDEP or OER, as applicable.
- (f) Prior to remediation and excavation at the site, FCRC shall develop a Construction Health and Safety Plan (“CHASP”) which shall be approved by ESD (or, for any portion of the environmental remediation under the supervision of the New York State Department of Environmental Conservation (“NYSDEC”), NYCDEP or OER, approved by the relevant agency, as applicable) and implemented by FCRC in connection with the remediation or excavation work at the Project site. The CHASP shall include a Community Air Monitoring Plan for PM₁₀ and VOCs conforming to guidance published by the New York State Department of Health to be implemented during the excavation of site soils (or other activities that involve moving existing site soils around or off the site) in connection with the construction of the Project or any related excavation or remediation. If the CHASP is modified, such modifications shall be submitted for approval to ESD or, for any portion of the site subject to supervision of NYCDEP, OER or NYSDEC, approval by such agency. FCRC shall implement the CHASP in accordance with its terms during all remediation or excavation work at the site and during the performance of any other activities that involve moving existing site soils around or off the site.
- (g) FCRC shall remediate or cause the remediation of the spills to the extent required by NYSDEC and close the spill numbers at the gasoline station on Block 1127, Lot 1, and the U-Haul facility on Block 1119, Lots 1 and 64, both of which have active petroleum spill numbers on file with the NYSDEC. Remediation of these spills shall be completed under the direction of NYSDEC.

H. INFRASTRUCTURE

1. FCRC shall construct new water mains in and around the Project site in accordance with a water main plan to be approved by NYCDEP, as same may be modified and/or approved by NYCDEP.

2. FCRC shall construct new sewer improvements in and around the Project site as specified in an amended drainage plan RH-103 prepared by Vollmuth and Brush Environmental Engineers dated October 26, 2006, as same may be modified and/or approved by NYCDEP.

I. STORMWATER AND SEWAGE MINIMIZATION MEASURES

1. As part of the Project, FCRC shall implement the stormwater management measures set forth in the FEIS as designed by Judith Nitsch Engineering and the Olin Partnership, which formed one basis of a report prepared by HydroQual Environmental Engineers and Scientists, P.C. (“HydroQual”) entitled “Impact of the Atlantic Yards Project on Local Sewer Infrastructure” dated November 8, 2006 (the “HydroQual Report”) and included as Appendix H to the FEIS, as modified by the measures described in the Technical Memorandum, which modifications were analyzed in supplemental reports by HydroQual dated October 17, 2007 and June 25, 2008. (These three HydroQual reports are referred to collectively as the “HydroQual Reports”). Such measures shall include installation or implementation of the following facilities or alternative detention/retention facilities providing the same or greater combined retention and detention capacity:

- (a) Two 100,000 gallon tanks in the Project site (one for the runoff from Buildings 5, 6 and 7 and one for the runoff from Buildings 8, 9, and 14);
- (b) Storage tanks in the area of the Long Island Rail Road yard, with an aggregate capacity of 124,000 gallons;
- (c) Storage tanks within the Arena Block having an aggregate capacity of 388,568 gallons upon completion of the Arena and a total of 636,000 gallons upon the build out of the Arena and Buildings 2, 3 and 4 on the Arena Block; and
- (d) Two 12,000 gallon storage tanks at Site 5.

2. The stormwater storage tanks set forth above (and any tanks installed in lieu of such tanks as allowed by subparagraph I.8) shall be designed and built to have two outlets, with a smaller outlet at the base and another larger outlet at a higher elevation in the tank wall.

3. FCRC shall landscape the Open Space at the Project in accordance with the landscaping plan developed by Olin Partnership (the “Landscaping Plan”), in a

manner that accommodates the use of recycled stormwater for irrigation and the cultivation of native plants that have minimal irrigation needs.

4. The Project shall be designed to utilize recycled stormwater in the cooling towers of the Project buildings for make-up water, and also for cultivation of vegetation planted pursuant to the Landscaping Plan.

5. The Open Space shall include a surface water feature with a capacity of at least 279,000 gallons in the area identified in the Open Space Design Guidelines.

6. FCRC shall equip sinks, toilets and showers in the Project buildings with high-efficiency, low-flow fixtures. All leases and condominium documents shall require the continued maintenance and use of these fixtures.

7. FCRC shall equip the arena with waterless urinals.

8. FCRC (and FCRC's successors and assigns) shall have the right to modify any and all of the measures set forth in subparagraphs I.1 through I.7 above, provided that FCRC demonstrates to ESD through appropriate analysis that such modification results in a level of stormwater management equivalent or superior to that described in the FEIS, the Technical Memorandum and the HydroQual Reports.

9. FCRC and its successors in interest shall maintain the equipment and fixtures described in this section of the memorandum in a proper and well functioning condition.

J. SUSTAINABLE DESIGN, MINIMIZATION OF AIR EMISSIONS AND NOISE ATTENUATION

1. FCRC shall design and construct the Project so that each building meets, at a minimum, the requirements for Leadership in Energy and Environmental Design ("LEED") certification, as established by the non-profit U.S. Green Building Council, with the goal of attaining a silver rating where feasible and practicable. LEED certification provides independent, third-party verification that a project meets advanced performance standards relating to environmental stewardship, including the conservation of energy and water, the reduction of waste sent to landfills, and protection of the health of building occupants and neighbors.

2. All Project boilers shall operate exclusively on natural gas and shall be equipped with low nitrogen oxide burners (achieving an emissions level less than or equal to 20 ppm), provided that FCRC may substitute an alternative fuel or technology upon a demonstration to ESD through appropriate analysis that such alternative fuel and/or technology would achieve equivalent or superior emission levels for nitrogen oxides and particulate matter. The previous sentence does not preclude the use of standby or emergency generators, as set forth in the FEIS.

3. The Project boilers shall have emission rate specifications that do not exceed the emission rates specified in Table 14-3 and pages 14-16 and 14-17 of the FEIS.

4. The heating and hot water equipment exhaust stack(s) on Building 3 will extend at least 259 feet above grade and will be located at least 69 feet away from the lot line facing 6th Avenue and no more than 70 feet away from the lot line facing Dean Street. This requirement may be adjusted if an air dispersion analysis is prepared confirming that such adjustments would not result in any significant adverse air quality impacts.

5. The School described in C.2 above shall be served solely by electric Heating, Ventilation and Air Conditioning (“HVAC”) equipment, with no fossil fuel-fired boilers. In the event the SCA proposes installation of a fossil fuel-fired boiler for the School, such proposal shall not be accepted and no such boiler shall be installed unless an air dispersion analysis is prepared confirming that such boiler would not result in any significant adverse air quality impacts.

6. The HVAC intake vents for the Project buildings shall not be located in areas that have a modeled aggregate impact from Project buildings that would exceed 0.3 micrograms of PM_{2.5} per cubic meter (annual average) using the dispersion modeling assumptions (including boiler load) used for the FEIS. Based on the design of the buildings used to prepare the air dispersion modeling for the FEIS, such locations are identified in the memorandum from Henry M. Kearney, P.E. of AKRF dated November 30, 2006.

7. FCRC and its successors in interest shall maintain the equipment and fixtures described in this section of the memorandum (or installed in obtaining LEED certification) in a proper and well functioning condition.

8. The 16 non-Arena Project buildings (a) shall have double-glazed windows and alternative ventilation (air conditioning) and (b) in order to conform to the 45 dBA L₁₀₍₁₎ interior noise level recommended by the *CEQR Technical Manual* shall achieve the building noise attenuation as specified for (i) the Phase I buildings in Table 15-12 on page 15-21 of the FEIS and (ii) the Phase II buildings in Table 4G-8 on page 4G-14 of the FSEIS. However, with respect to a particular building, FCRC may request an adjustment to these requirements upon an adequate demonstration that the design would achieve a level of window wall attenuation sufficient to result in a 45 dBA L₁₀₍₁₎ interior noise level for residential and community use and 50 dBA L₁₀₍₁₎ for other uses during operation and construction based on methodologies in the then current *CEQR Technical Manual*.

9. FCRC shall demonstrate that the buildings are designed to comply with the requirements of this section in drawings or other appropriate documents submitted to ESD prior to commencement of construction of the affected buildings.

K. PHYSICAL ROADWAY AND TRANSIT IMPROVEMENTS

1. FCRC shall fund NYCDOT in completing the roadway modifications and installation of traffic signals set forth in the conceptual design set forth in Figure 19-1 of the FEIS and shall cooperate in implementing the operational changes (including street closures, changes in street direction, signal timing modifications, restriping, and parking regulation modifications) described in the FEIS and FSEIS; however, it is understood that actions such as signal timing modifications at existing traffic signals, changes to travel direction, and changing parking regulation signs will be implemented by NYCDOT staff. The roadway modifications, signal installations and operational changes and the timing thereof shall be subject to the approval of the NYCDOT. FCRC shall prepare and submit all drawings and designs (which shall meet AASHTO and NYCDOT specifications) required for implementation of such measures identified in the FEIS and FSEIS to NYCDOT for review and approval.

2. Among the roadway improvements FCRC shall fund and/or implement are the following:

- (a) Reconfiguration of the Atlantic Avenue/Flatbush Avenue/4th Avenue intersection and complementary operational changes to the adjacent streets, including physical changes relating to the following:
 - i. elimination of northbound traffic operations on 4th Avenue between Atlantic and Flatbush Avenues;
 - ii. modifications to 4th Avenue lane designations between Dean Street and Atlantic Avenue;
 - iii. construction of expanded pedestrian spaces at Times Plaza along with crosswalk changes; and
 - iv. re-striping at various locations to accommodate new lane configurations as indicated in Table 19-1 of the FEIS, except as such re-striping is undertaken directly by NYCDOT.
- (b) widening of portions of Pacific Street adjacent to the project site and related re-striping, except as such re-striping is undertaken by NYCDOT;
- (c) installation of a new traffic signal and crosswalk (south approach) at the intersection of Pacific Street and Flatbush Avenue;
- (d) physical changes associated with the introduction of an eastbound left-turn lane on Atlantic Avenue at Fort Greene Place;

- (e) re-striping a westbound right-turn lane on Atlantic Avenue for 100 feet approaching 3rd Avenue and re-striping and physical modifications at various other locations in the street network adjacent to the Project site as shown in Figure 19-1 and Tables 19-1 and 19-2 of the FEIS and Tables 5-1 and 5-9 of the FSEIS, except as such re-striping is undertaken directly by NYCDOT;
- (f) physical improvements to enhance vehicle flow and pedestrian safety at the intersection of Atlantic and Vanderbilt Avenues, including:
 - i. elimination of the eastbound Atlantic Avenue left-turn movement to Vanderbilt Avenue;
 - ii. widening of the existing median on this approach to 15 feet to provide additional pedestrian refuge space;
 - iii. re-striping the approach to accommodate an exclusive right-turn-only lane, except as such re-striping is undertaken directly by NYCDOT;
 - iv. re-striping Vanderbilt Avenue between Atlantic Avenue and Pacific Street to provide for four northbound travel lanes and two southbound travel lanes, except as such re-striping is undertaken directly by NYCDOT; and
 - v. reconfiguration of the west sidewalk along Vanderbilt Avenue between Atlantic Avenue and Pacific Street from 20 feet to 12.5 feet in width to accommodate a new lay-by lane along the west curb.

3. It is expected that NYCDOT will implement areawide signal coordination, timing changes, curbside parking regulation changes, changes in travel direction and other operational changes, as described in the FEIS and FSEIS. FCRC shall cooperate with NYCDOT in the implementation of such changes including keeping NYCDOT apprised of the progress of the Project's construction.

4. FCRC shall construct a new entrance to the Atlantic Avenue/Pacific Street subway station complex on Block 1118 at the southeast corner of Atlantic and Flatbush Avenues consistent with the conceptual drawings included in the FEIS or Technical Memorandum, and pursuant to a final design approved by New York City Transit ("NYCT"). FCRC's construction contract schedules shall require substantial completion of the new subway entrance prior to or simultaneously with the opening of the arena. For purposes of the foregoing, substantial completion shall mean that construction of the new subway entrance is sufficiently complete to be operational.

5. Promptly after the issuance of certificates of occupancy for 1,500 Project dwelling units, FCRC shall undertake a traffic monitoring study pursuant to a

scope to be approved by NYCDOT to: (i) refine the signal timing and other traffic mitigation measures described in the FEIS and FSEIS as necessary to reflect then existing traffic conditions; (ii) provide further information as to the implementation date for the signal timing and other traffic mitigation measures specified in the FEIS and FSEIS; and (iii) identify potential additional measures to address unmitigated significant adverse impacts identified in the FEIS and FSEIS based on then existing traffic conditions. FCRC shall undertake a second traffic monitoring study with the same objectives following substantial completion of Project construction. Both traffic monitoring studies shall conform to the requirements specified in the letter from NYCDOT to ESD dated May 30, 2014 (the “2014 DOT Letter”), and shall include the evaluation of additional measures to enhance overall safety at the Atlantic Avenue/Vanderbilt Avenue intersection as specified in the FSEIS. FCRC shall fund and/or implement any identified safety improvements at this intersection at the direction of DOT. FCRC shall also comply with all other requirements of the 2014 DOT Letter (and the DOT letter dated November 22, 2006 (the “2006 DOT Letter”) to the extent not superseded by the 2014 DOT Letter), including those pertaining to the funding of mitigation measures. The traffic monitoring study required after the issuance of certificates of occupancy for 1,500 Project dwelling units shall be in lieu of the traffic monitoring study at the completion of Phase I discussed in the FEIS.

6. FCRC shall enter into discussions with NYCDOT to determine the extent of FCRC’s financial responsibility for the traffic enforcement agents (“TEAs”) required to manage traffic flow for major arena events and shall comply with the terms of any such agreement with NYCDOT as required by the 2006 DOT Letter. If necessary to ensure that the TEAs are deployed for major arena events as described in the FEIS, and only in the event that FCRC and NYCDOT do not reach a funding agreement, FCRC shall provide such funding for TEAs as ESD shall reasonably direct, considering funding arrangements at other sports and entertainment venues in New York City.

7. FCRC shall reconstruct the Carlton Avenue Bridge so as to be functional as of the opening date of the arena.

L. TRANSPORTATION DEMAND MANAGEMENT

1. FCRC shall implement incentives to reduce traffic demand associated with the operation of the Arena to reduce the overall number of vehicles coming to the Arena for a Nets game within one-half mile of the Arena by 30% of the initially projected demand presented in the FEIS. In connection with this requirement for a transportation demand management (“TDM”) plan, FCRC shall:

- (a) promote transit (including rail) travel to the Arena on the Barclays Center web site, event ads and event tickets;
- (b) arrange for the Atlantic Avenue/Pacific Street subway station to be renamed the Atlantic Ave-Barclays Center subway station;
- (c) post transit schedules on Arena monitors;

- (d) make arrangements for a Full-Time Arena Traffic Manager to manage transportation plans for each Arena event, in coordination with NYCT, LIRR, NYPD, NYCDOT, TLC, Traffic Enforcement Agents, and pedestrian traffic managers assigned by FCRC to facilitate pedestrian crossing and circulation in the pre-and post-event periods and provide wayfinding assistance to arena patrons seeking mass transit and rail facilities;
- (e) make arrangements for vehicles with 3 or more arena ticket holders to receive a minimum discount of 20 percent or \$5.00, whichever is greater, from the event rates charged for other vehicles parking on the Project site;
- (f) implement an on-line parking reservation system for event-goers to reduce the need for those who elect to drive to circulate in search of parking;
- (g) if determined to be effective and needed to achieve the TDM goals specified in the FEIS, and subject to the review and approval of NYCT and changes in technology that would allow Metrocards to be used only for certain dates, provide a free round-trip subway fare to Nets basketball game ticketholders who would otherwise drive;
- (h) cross-market with area businesses to encourage ticketholders to patronize local restaurants and stores before and after games;
- (i) provide any ticketholder traveling to the arena by bicycle with free indoor bicycle storage in a secure, manned facility designed to accommodate at least 400 bicycles on the arena block;
- (j) provide expected attendance data to, and otherwise cooperate with, NYCT as necessary to assist NYCT in determining the appropriate increase in subway service to the Atlantic Avenue/Pacific Street subway station on selected subway lines immediately following basketball games and other major arena events as necessary to alleviate potential platform crowding at that subway station and to encourage transit use; and
- (k) provide expected attendance data to, and otherwise cooperate with, LIRR as necessary to assist LIRR in determining the appropriate increase in train service to Atlantic Terminal immediately following basketball games and other major arena events.

2. FCRC shall collect data midway through the first basketball season from Nets patrons documenting the travel mode of such patrons to evaluate the effectiveness of the demand management program, and shall provide such data to NYCT and ESD. Subject to ESD approval, which approval shall not be unreasonably withheld,

FCRC may adjust the elements of the program to achieve the goal of reducing the auto share by a minimum of 30% of the number of vehicle trips projected for the Build Condition in the FEIS (as specified in FEIS Table 12-30 and page 63 of ESD's SEQRA Findings Statement dated December 8, 2006) within one-half mile of the Arena, provided that all practicable and effective demand management measures are maintained. FCRC shall annually provide ESD with documentation demonstrating its diligent implementation of the TDM plan. FCRC shall conduct follow-up studies documenting the travel mode of Nets patrons to evaluate the continued effectiveness of the TDM plan midway through the 10th and 20th basketball seasons at the Arena.

3. For major Arena events other than Nets games, FCRC shall make available to event promoters practicable TDM measures described above and encourage such promoters to implement such measures.

M. PEDESTRIAN IMPROVEMENTS

FCRC shall fund and cooperate with NYCDOT in the design and construction of the following crosswalk and sidewalk improvements to improve pedestrian circulation in the vicinity of the arena, subject to NYCDOT approval:

1. Widening of cross-walks adjoining the Project site as specified in Table 5-7 of the FSEIS;

2. Provision of a new sidewalk extension at the northeast corner of Atlantic Avenue at Fort Greene Place;

3. Provision of a new crosswalk on the south leg of the intersection of Flatbush Avenue and Pacific Street where the new traffic signal is to be installed;

4. Installation of fencing (consistent in design with NYCDOT-installed fencing throughout the City or as otherwise proposed by FCRC and approved by NYCDOT) on the northwest corner of the Flatbush Avenue/Pacific Street intersection to discourage pedestrians from crossing on the north side of the intersection where no crosswalk exists;

5. Installation of fencing (consistent in design with NYCDOT-installed fencing throughout the City or as otherwise proposed by FCRC and approved by NYCDOT) at the northwest and southwest corners of the Atlantic Avenue/Flatbush Avenue/4th Avenue intersection; and

6. Extension of the sidewalk at the northeast corner of Atlantic and Flatbush Avenues.

N. CONSTRUCTION

1. FCRC shall provide ESD with "six month look aheads" that will describe, in general terms, the activities anticipated on the Project site for the next six months (including major milestones for areas of new construction activity, excavation,

construction, anticipated maintenance and protection of traffic (“MPT”) measures, soil and groundwater remediation work and soil characterization). The six month look aheads shall be provided to ESD one month prior to the beginning of the six-month period.

2. FCRC shall promptly seek to retain the services of a qualified engineering firm to serve as the on-site environmental monitor (“OEM”) pursuant to a scope to be reviewed by ESD, and shall use commercially reasonable efforts to retain the engineering firm to serve as the OEM on or before September 15, 2014. FCRC shall make arrangements for the engineering firm to assign one or more engineers with substantial construction management experience in New York City to monitor compliance with the construction-related requirements of the MEC (the “OEM Engineers”). The OEM Engineers may be assisted by qualified staff members (Monitoring Engineers, or “ME’s”). FCRC shall not engage a different engineering firm as the OEM, or move the OEM function in-house, without the prior reasonable approval of ESD. In the event FCRC proposes to change the OEM, it shall submit the following information to ESD: (i) the qualifications of the proposed staff establishing that it would consist of one or more engineers with substantial construction management experience in New York City; (ii) a description of what job duties, if any, such staff members would have apart from serving as the OEM for the Atlantic Yards Project; and (iii) the proposed reporting and documentation procedures to be put into place for the OEM work.

3. During periods of active construction activity, an OEM Engineer shall be assigned to work primarily from a construction trailer or other on-site location to facilitate daily monitoring of the contractors’ compliance with MEC requirements.

4. During periods of active construction work, FCRC shall submit to ESD a report (the “FCRC Quarterly Report”) summarizing its contractors’ compliance with the requirements of the MEC during the previous three months, non-compliance issues that have been identified, steps taken to address any instances of non-compliance and plans to prevent the reoccurrence of any such instances of non-compliance. The FCRC Quarterly Report shall be submitted to ESD within 45 days of the end of the 3-month period to which it relates.

5. During the construction of the Project, FCRC shall undertake, fund and/or cooperate in the undertaking of the measures set forth below in order to minimize, avoid and/or mitigate, as applicable, the effects of Project construction on traffic conditions, noise and air quality in the surrounding area. FCRC shall require its contractors to adhere to these construction measures (to the extent such measures are relevant to the contractor’s activities) by including appropriate provisions in its contractor agreements and enforcing such provisions as necessary to assure compliance. FCRC shall provide ESD documentation demonstrating same.

6. Traffic

(a) FCRC shall coordinate with the NYCDOT Office of Construction and Mitigation Coordination (“OCMC”) to develop, implement and fund the implementation of MPT plans developed by OCMC.

Construction shall proceed in accordance with the requirements set forth in such MPT plans.

- (b) As set forth at pages 19-78 and 19-79 of the FEIS and Table 5-9 of the FSEIS, certain of the roadway modifications, traffic installations and operational improvements shall be put into place at or about the time that significant construction activity begins at the Project site in order to minimize construction-related traffic impacts, or as otherwise directed by NYCDOT. FCRC shall fund and cooperate with NYCDOT to implement these measures; however, it is understood that changes in signal timing at existing traffic signals, installation of signage, implementation of parking regulations, and changes in traffic direction will be implemented by NYCDOT staff.
- (c) FCRC shall make arrangements for security guards and flaggers to be deployed to manage vehicle access to the construction site. To the extent feasible, curbside deliveries shall occur within delineated closed-off areas.
- (d) Truck deliveries shall be scheduled, and untimely deliveries shall, in general, be turned away or reassigned with different delivery times. Trucks shall be required to use NYCDOT-designated truck routes for traveling to and from the construction site, which include primarily Atlantic Avenue, Flatbush Avenue, 4th Avenue, and the Brooklyn-Queens Expressway except as required for movement between staging and construction areas.

7. Truck Protocol.

- i. FCRC shall maintain sufficient staff to patrol the Project site regularly to check for non-compliance with the truck protocol requirements concerning idling and/or queuing. The staff devoted to monitoring compliance with the truck protocol will be adjusted based upon the level of construction activity at the site. Staffing for overseeing compliance with truck protocol requirements will be assessed in the six month look aheads, and discussed at weekly meetings with the ESD Environmental Monitoring Firm (defined below).
- ii. Staff assigned to oversee compliance with the truck protocol shall be properly trained in the truck protocol and will direct drivers to comply with MEC requirements.
- iii. FCRC shall put into place a system to facilitate the reporting of truck protocol violations to FCRC. Material

violations of the truck protocol will be reported by staff to FCRC management representatives, and FCRC shall keep a record of such reported incidents.

- iv. FCRC shall advise the ESD Environmental Monitoring Firm at the weekly meetings of any circumstance where a company or driver has been found to be a repeat violator of the truck protocols. FCRC and ESD will agree, on a case-by-case basis, on the steps to be taken to deal with such repeat violators. Those measures may include, without limitation, providing warnings, invoking contract sanctions and/or banning from the site such companies and/or drivers in the event that violations continue after reasonable warning has been given.
 - v. FCRC shall ensure that contractor logistics plans maximize the utilization of the Pacific Street Queue Area or other designated location for truck marshalling and queuing to the extent practicable and appropriate so long as such areas are available. FCRC shall provide ESD and the ESD Environmental Monitoring Firm with copies of the logistics plans for review and comment.
 - vi. Maps that identify acceptable routing of trucks to and from the Project site shall be provided to all contractors as part of the MEC training program. FCRC or its contractors shall take measures to ensure that the trucks follow such routes. Among other things, contractors shall be directed to provide those maps to their subcontractors, and require that the maps be distributed to drivers and kept available for reference in the cabs at all times. The Pacific Street Queue Area (if part of the then currently effective logistics plan) will be incorporated into these truck routing maps so long as this area is available.
- (b) On-site designated staging areas shall be maintained throughout the construction period to store materials and to accommodate construction vehicles that require early arrival and marshalling for immediate material delivery to high-demand construction areas. Wherever practicable, FCRC shall establish dedicated queuing areas instead of using streets for queuing.
 - (c) To avoid overtaxing the nearby on-street and off-street parking facilities, FCRC shall make available to construction workers the 300 on-site spaces typically used to accommodate Arena demand. If practicable, additional spaces shall be made available on the project site during any phase of construction if more than 500

construction workers are at the site and there is a shortfall of parking spaces at the Atlantic Center parking garage. The on-site spaces to be utilized by construction workers shall be made available at a fee comparable to other parking facilities in the area. Any lighting on any interim construction staging and parking area shall be equipped with directional lighting angled to limit light intrusion beyond the site, and shall employ controls to reduce lighting during periods when the facility is not in active use, consistent with site security. The screening measures required herein shall be properly maintained so long as such facility remains in operation. No more than 1100 vehicles, in the aggregate, shall be parked in any surface parking lot(s) on Block 1129 at any one time.

- (d) NYCT shall be given at least four weeks notice prior to the date on which a bus stop is to be relocated. Any change in a temporary location from that identified in the MPT plans shall be subject to the reasonable approval of NYCT.
- (e) FCRC shall fund physical improvements associated with and cooperate with NYCDOT in the early implementation of certain of the roadway modifications and mitigation measures specified in Sections K.1 and K.2 above, and in the further implementation of temporary construction measures pursuant to the MPT. Unless otherwise directed by NYCDOT, after consultation with ESD, such additional construction period traffic measures shall include the following:
 - i. converting 6th Avenue to two-way operation during the period that Carlton Avenue bridge is closed for reconstruction;
 - ii. prohibiting left turns along Atlantic Avenue at locations where roadways are expected to be narrowed during the Carlton Avenue bridge reconstruction work, the LIRR West Portal reconfiguration, and utility relocation;
 - iii. providing temporary left-turn bays or channelized lanes for traffic detours and added capacity;
 - iv. reconfiguring the Flatbush/Atlantic/4th Avenue intersection complex, entailing terminating northbound 4th Avenue traffic at Atlantic Avenue, converting Pacific Street between Flatbush Avenue and 4th Avenue to one-way eastbound, and creating a new eastbound left-turn bay at Fort Greene Place, to optimize traffic movements;

- v. prohibiting parking during peak periods or at all times, where needed, to provide added lane capacity; and,
 - vi. changing signal phasing and/or timing.
8. Noise and Vibration
- (a) FCRC shall comply with the City’s Noise Control Code (Chapter 2 of Title 24 of the City Administrative Code) (the “Noise Code”). Prior to commencement of construction of each building or other major element of the Project, FCRC or its contractors shall develop a construction noise mitigation plan in accordance with the Noise Code which shall be subject to NYCDEP review and approval procedures. All FCRC contractors shall follow the construction noise mitigation plan in combination with the noise protocols described below and adhere to the noise reduction measures described below and set forth in the FEIS and FSEIS. During construction, FCRC and its contractors shall implement the construction noise mitigation plan.
 - (b) FCRC shall develop a written protocol for confirming that its contractors utilize equipment that meets the noise levels set forth in the Noise Code or Table 3J-1 of the FSEIS, whichever is lower (the “MEC Noise Levels”). Such protocol will focus on construction equipment that generates noise at levels that would materially affect off-site ambient noise. The protocol shall provide for the following alternative means of demonstrating compliance: (i) documentation may be provided acceptable to FCRC and ESD that the equipment has been tested previously and found to meet the MEC Noise Levels; or (ii) in the event compliance is not established pursuant to alternative (i) the OEM will perform noise monitoring pursuant to procedures set forth in the protocol, utilizing monitoring equipment that downloads testing results. In the event that noise monitoring indicates an exceedance of the MEC Noise Level, FCRC shall so advise ESD and the ESD Environmental Monitoring Firm, and require the involved contractor to replace the equipment with equipment that complies with the MEC Noise Level or institute pathway controls that effectively reduce equipment noise to acceptable levels. ESD acknowledges that it has determined that FCRC has satisfied the requirement to develop the aforementioned protocol by development of the document annexed to the letter signed on behalf of certain FCRC affiliates dated January 28, 2014. The approved protocol may be amended by FCRC with the approval of ESD.

- (c) Pursuant to the protocol described above, the OEM staff shall check applicable equipment for compliance with the MEC Noise Requirements when the equipment is first mobilized. The OEM staff also shall regularly check equipment in use on-site against the construction noise mitigation plan or the alternative construction noise mitigation plan (as applicable under the Noise Code) posted for the site to confirm that there are no discrepancies, or revise such plans as necessary.
- (d) FCRC shall employ the following measures in the construction of the Project:
 - i. Using equipment that meets the MEC Noise Levels;
 - ii. Scheduling work that would generate high noise levels during weekday daytime hours to extent feasible, rather than during weekday nighttime or weekend hours, unless required as a result of safety or other agency requirements;
 - iii. To the extent feasible, scheduling equipment and material deliveries during weekday daytime hours, rather than during weekday nighttime or weekend hours;
 - iv. Where practicable and feasible, configuring sites to minimize back-up alarm noise;
 - v. Where practicable and feasible, using sound-mitigated backup alarms such as backup alarms that lower backup alarm noise in response to more quiet ambient conditions (such as night-time work) or backup alarms that use white noise or other mitigating technologies for trucks and equipment expected to operate at or make deliveries to the Project site during any phase of extended night-time work or night-time module deliveries;
 - vi. Requiring that pre-cast decking or plates on roadways be stable;
 - vii. Prohibiting the idling of trucks for more than three minutes at the construction site per New York City law, except when operation of the engine is required to operate ancillary truck-mounted equipment (e.g., concrete trucks);
 - viii. As early as practicable in the construction period and wherever feasible, using electrical-powered equipment, such as electric scissor lifts and electric articulating boom lifts, rather than diesel-powered equipment for construction activities;

- ix. Situating noisier equipment, such as generators, cranes, tractor trailers, concrete pumps, concrete trucks and dump trucks at locations that are removed from sensitive receptor locations and are shielded from sensitive receptor locations wherever feasible. For example, during the early construction phases of the Project, delivery trucks and dump trucks are to be located approximately 20 feet below grade to take advantage of the shielding benefits of grade differences. Once building foundations are completed, delivery trucks are to be located adjacent to noisy streets (i.e., Atlantic Avenue, Flatbush Avenue and 6th Avenue) rather than at quieter streets, such as Dean Street and Pacific Street, where there are residences;
 - x. Erecting and maintaining a minimum 8 foot high perimeter barrier (constructed of 3/4" thick plywood), with a 16 foot high barrier (of 3/4" thick plywood) adjacent to sensitive locations where practicable and feasible;
 - xi. Where 16-foot barriers are not practicable and feasible adjacent to sensitive receptors, installing the best feasible and practicable additional noise path controls, which may include noise curtains or other barriers within the site between the noise sources and sensitive receptors, angled/cantilevered fences, and/or other practicable pathway controls;
 - xii. Operating delivery trucks behind the noise barriers where practicable;
 - xiii. Where practicable, using quiet construction procedures and equipment, including, where practicable, the use of a bed liner made of thick rubber, spray-on liner, plywood, sand or gravel on dump trucks to mitigate the noise of the first load being dropped into the dump truck;
 - xiv. Requiring all contractors and subcontractors to properly maintain their equipment and have quality mufflers installed; and
 - xv. Where practicable, utilizing noise curtains and equipment enclosures to provide shielding from significant noise-generating equipment to sensitive receptor locations.
- (e) In an effort to avoid delays occasioned by Con Edison scheduling constraints, FCRC shall submit electrification requests as early in the construction sequence as practicable, and follow up with Con

Edison on a regular basis until electrification has been timely accomplished, subject to scheduling restraints of other entities not under FCRC control.

- (f) FCRC shall assure that construction fencing, where required, meets the requirements of the MEC and the applicable Sound Transmission Class specifications of the Noise Code.
- (g) Where construction staging areas used in connection with nighttime work are located within 200 feet of a sensitive receptor, such areas shall be shielded on the side facing those sensitive receptor(s) by Noise Code/MEC-compliant noise mitigating fencing and/or blanketing, where practicable, unless ESD determines that such shielding is not required due to the nature of the activities anticipated in such area, and the duration of such activities.
- (h) FCRC shall make available double-glazed or storm windows and alternative ventilation (e.g., air conditioning, through the provision of one air conditioner per bedroom or main living room with a window along a façade predicted to experience significant adverse construction noise impacts) for those residential locations where the FEIS or FSEIS identified significant noise impacts and such windows and air conditioning are not currently installed, subject to the consent of the owners and tenants of such residences, and subject to applicable laws, rules and regulations. All such windows and alternative ventilation shall be provided without charge and with free installation. In the event that an air conditioning unit required to be provided pursuant to this paragraph requires replacement, FCRC shall replace the unit if Project-related construction activities in the vicinity of such residential location have not yet been completed such that the location would be subject to continued construction-related significant adverse noise impacts.
- (i) As described in the FEIS, and subject to the consent of the respective property owners, FCRC shall make available and install, free of charge (i) interior-fitted storm windows (or suitable alternative windows) for the Pacific Street side of the Pacific Branch of the Brooklyn Public Library and (ii) storm windows for the second floor of the Temple of Restoration windows facing Dean Street (if such windows do not already have storm windows).
- (j) FCRC shall work with the Parks Department to supplement its planned improvements to the Dean Playground with a comfort station open to the general public.

- (k) Noise mitigation measures shall be implemented – where such measures have been accepted by building owners and their tenants – in a timely manner so as to avoid the significant adverse noise impacts identified in the FEIS and FSEIS where practicable.
- (l) FCRC shall implement a monitoring program to ensure that vibration levels at the Swedish Baptist Church and the town houses along Dean Street immediately adjacent to the Project’s Building 15 site are kept below 0.50 inches/second.

9. Air Quality

- (a) Prior to the commencement of construction activities for each major work phase, FCRC or its contractor(s) shall prepare a Dust Management Plan that identifies: the location of the fixtures to be used in controlling dust at the site (including without limitation hydrants or other points of water supply), any wheel washing stations, gravel placement locations, hoses, dust suppression agents and any other equipment and material to be used in complying with the dust suppression requirements of the MEC. FCRC shall require its contractors to adhere to such plans. ESD and the ESD Environmental Monitoring Firm shall be provided with the opportunity to comment on the Dust Management Plan and require revisions if warranted, prior to its implementation in the field.
- (b) FCRC and its contractors shall assign sufficient staff to allow for careful monitoring of contractor compliance with MEC dust control measures, and staffing will be keyed to the level of dust-generating construction activities at the site. Staffing levels will be assessed in the six month look aheads and discussed at the weekly meetings with the ESD Environmental Monitoring Firm.
- (c) OEM personnel will follow the manufacturer’s recommendations for operation and maintenance of the air monitoring equipment, and routine inspections of the equipment will be performed to ensure functionality. OEM personnel will follow the best management practices previously recommended by the ESD Environmental Monitoring Firm in operating this equipment, or equally effective procedures.
- (d) FCRC shall require its contractors to implement dust suppression measures, including the following:
 - i. Limiting on-site speed to five miles per hour. Signage of the 5-mile per hour limit shall be posted at all site entrances and along routes within the sites.

- ii. Using sleeves and wetting during demolition activities, and wetting equipment. All demolition activities, including but not limited to building, roadway, and pavement demolition, shall utilize dust suppression. All drop transfer operations shall be via closed sleeves and into sealed bins. Sleeves shall have no openings other than the loading chute. During all breaking up of material such as concrete, an employee shall be assigned to wet the surface while the activity is taking place.
- iii. Watering unpaved surfaces, including haul roads and excavation faces. Gravel cover shall be applied to unpaved surfaces which are regularly traveled. Unless gravel cover is applied, unpaved haul roads and excavation surfaces shall be adequately watered by watering trucks or misting, so that surfaces remain damp when in use during construction. If watering activities are not practicable due to below-freezing conditions or other safety considerations, alternate dust suppression techniques may be utilized such as broom sweeping of truck tires and the use of other dust suppression agents. The Dust Management Plan shall address such alternate dust suppression techniques.
- iv. Adequately moistening or covering by a tarp, dust suppression agent or other effective means any soil stockpiled on site. This requirement will be specifically incorporated into the training materials for the relevant contractors. Stockpiles of contaminated material shall be managed in accordance with the HASP approved by NYSDEC, NYCDEP or OER, as applicable.
- v. Accompanying the loading of dry material that may release dust from trucks with manual water spraying of the material, when feasible.
- vi. Covering all trucks carrying loose material such as debris, excavate or fill, and verifying that covers on all such trucks have been properly sealed. Outgoing trucks shall be inspected by the contractor at the gate, and not allowed to exit if covers are not properly sealed.
- vii. Washing the wheels of all trucks as they exit from the site. A washing station shall be constructed at each truck exit, whereby truck wheels shall be washed, and the water shall be contained and recycled to avoid tracking mud out of the site. If construction of a wheel washing station is not practicable at a construction site exit due to site conditions,

the circumstances giving rise to any claim of impracticability shall be set forth in the relevant Dust Management Plan, and in such circumstances, the Dust Management Plan prepared by FCRC or its contractor shall include a substitute program for wheel cleaning that will achieve equivalent results, taking into account weather conditions, space availability, site pitch, catch basin location and other relevant factors.

- (e) FCRC shall implement a diesel emissions reduction program, which shall include minimizing the use of diesel engines and maximizing the use of electric engines in lieu of diesel. In particular, FCRC shall:
 - i. ensure sufficient grid power is available to each site as early as practicable;
 - ii. ensure the distribution of power throughout the Project at all locations where electric engines are to be used, in order to avoid the use of portable or stationary generators where practicable;
 - iii. use only electric engines where practicable (e.g., welders, compressors, electric saws, forklifts, etc.);
 - iv. ensure that all contractors plug into the grid where available and do not use portable generators (diesel or gasoline, small or large); and
 - v. ensure that generators will not be used for tasks where grid power is available, and that diesel engines will not be used for tasks that can be performed with electric engines.
- (f) FCRC shall require its contractors to limit all unnecessary idling of vehicles and non-road engines, ensure that engines are shut off when not in use, and enforce idling limits on queuing trucks.
- (g) FCRC shall require the use of ultra-low sulfur diesel (“ULSD”) fuel (i.e., fuel having less than 15 parts per million (15 ppm) sulfur content) for all equipment having diesel engines.
- (h) FCRC shall employ best available tailpipe emissions reduction technologies, including utilization of diesel particulate filters (“DPF”) (or, subject to ESD approval, improved technologies verified by EPA or the California Air Resources Board to reduce particle emissions by at least 90%) on all nonroad engines of 50 hp or greater and on all concrete trucks and concrete pump trucks. All nonroad engines used for the construction work shall be inspected

and labeled where practicable to confirm that DPF (or approved alternative technology) is installed and functioning and that the engine is to be fueled only with ULSD.

- (i) All non-road construction equipment with a power rating of 50 hp or greater shall meet at least the Tier 3 emission standard. All non-road diesel engines rated less than 50 hp shall meet at least the Tier 2 emission standard. This paragraph shall not apply to the construction of Building 2, Building 3 or rail yard construction.
- (j) All non-road construction equipment with a power rating of 50 hp or greater shall meet the Tier 4 emissions standard beginning in 2022.
- (k) FCRC shall bar any non-complying equipment from the work site or expeditiously bring into compliance any equipment found to not be in compliance. Notwithstanding the foregoing:
 - i. with respect to a specific nonroad engine of 50 hp or greater, the requirement to use a DPF (or other technology proven to achieve equivalent emissions reduction) may be waived by the OEM upon notice to ESD where the equipment is: (a) determined on very short notice to be necessary to complete a critical path item; (b) to remain on site for a very brief period of time; or (c) not practicable to retrofit with a DPF (or other technology proven to achieve equivalent emissions reduction) and DPF-compliant equipment of that type is not practicably available;
 - ii. if with respect to any equipment subject to the Tier 3 or Tier 4 requirement, it is determined that such equipment is not practicably available for the type of equipment required for construction, equipment otherwise in compliance with MEC requirements may be used.
- (l) As one element of the MEC training program, contractors will be instructed on how to complete and submit the documentation needed to confirm compliance with the diesel particulate matter reduction technology requirements of the MEC. Such instruction will be provided at a level of detail commensurate with the training needs of the contractors on the site.
- (m) Where practicable, all equipment subject to the DPF (or equivalent) emission control requirements of the MEC shall be prominently labeled with a label prepared by FCRC that indicates that the equipment has a DPF (or equivalent emission control technology) that complies with the MEC emission control

requirement. ESD and the ESD Environmental Monitoring Firm shall be given the opportunity to review the form of label before it is used in the field. Information on how to label compliant equipment will be provided as part of contractor training. Additional labels are not required for equipment with USEPA labels indicating that the emission controls on such equipment satisfy requirements that are at least as stringent as those required by the MEC

- (n) To the extent practicable, FCRC shall require that all stationary engines be located at least 50 feet from locations such as sidewalks, residential or school windows, and building air intakes.

10. Construction Air Quality Measures Compliance Plan

- (a) FCRC shall submit to ESD for review and approval, not to be unreasonably withheld, a written plan to adequately and reasonably demonstrate compliance with the foregoing construction air quality measures (the “CAQM”) during construction. The CAQM shall be submitted before intensive construction work at the Project site begins and, if not approved by ESD as submitted, there shall be a consultation between FCRC and ESD with respect to the submission and, after such consultation, the CAQM shall be revised as required to conform to reasonable ESD revisions. Elements of the CAQM shall include: (i) incorporation into construction contracts appropriate terms requiring the contractors to implement the air quality measures contemplated by the FEIS and FSEIS; (ii) periodic meetings between FCRC’s construction manager and the relevant contractors to discuss implementation of the air quality measures; (iii) practicable documentation requirements; (iv) recordkeeping with respect to the equipment and vehicles used during construction; and (v) compliance monitoring by the OEM. If deemed appropriate as construction proceeds, the CAQM may be revised from time-to-time with the written approval of FCRC and ESD.

- (b) The CAQM shall be updated in 2014, and as necessary, thereafter, to reference the contractors and personnel currently working at the project site and to reflect current OEM protocols and procedures. Exhibits to the CAQM shall be updated from time to time as necessary to maintain the effectiveness of the CAQM. Among other things, monitoring logs, visual-observation logs and incident-report logs (examples of which are included, or will be included, as exhibits in the CAQM) will be streamlined to facilitate their daily completion by the MEs. ESD and the ESD Environmental Monitoring Firm will be given the opportunity to review and provide comments on the modified logs prior to their use in the

field. Once the logs have been revised they will be completed by an OEM Engineer or the MEs on a daily basis, or as otherwise set forth in the updated CAQM, and will be compiled and submitted to ESD as attachments to the FCRC Quarterly Report for that period.

11. FCRC shall undertake the following steps to improve the contractor training program:

- (a) FCRC shall target its PowerPoint presentation so that it provides specific instructions to contractors on the requirements of the MEC. ESD and the ESD Environmental Monitoring Firm will be provided with the opportunity to comment on the PowerPoint presentations (and any modifications thereto) prior to their use in contractor training.
- (b) PowerPoint presentations shall be presented by the OEM to all foreman, project managers, field managers (such as project superintendents and foremen) and similar key personnel of all subcontractors every 90 days and upon mobilization, with sign-in sheets to track attendance. Sign in sheets for said 90 day period will be included in the FCRC Quarterly Report for that period.

12. FCRC shall implement a rodent control program in compliance with DOB and NYCDOH requirements and guidelines.

13. FCRC shall maintain an on-site construction coordinator to function as a liaison between FCRC and the community with respect to construction-related issues (the "CLO"). The CLO shall be available to consider specific concerns raised by the community with respect to the construction issues and seek to resolve such concerns. The CLO shall keep a record (log book) of construction-related complaints received by the CLO from the public and efforts taken to resolve such complaints. The CLO shall seek to resolve all complaints or provide relevant information to the person who brought the issue to the CLO's attention within 24-hours or as soon thereafter as is practicable.

14. The FCRC compliance staff for the construction-related requirements of this MEC shall include one or more OEM Engineers and MEs. Each six month look ahead shall include an assessment of staffing levels, and OEM staffing will be adjusted as appropriate in light of anticipated changes to the level of construction activity during future reporting periods. At each weekly meeting with the ESD Environmental Monitoring Firm, the OEM shall provide an update on upcoming after-hour and/or weekend work and make a recommendation as to whether such work requires the presence of an ME. If the ESD Environmental Monitor disagrees with a recommendation that an ME not be present during such activities, and FCRC thereafter disagrees with the position of the ESD Environmental Monitor, FCRC shall bring the matter to ESD's attention so that the issue is resolved before such work occurs.

15. In the event FCRC does not expect to commence construction of a particular portion of the Project site or to use such portion of the Project site for interim parking facilities or construction-related activities, including staging, in each case for a period of time to be set forth in the Project Documentation, then such portion of the project site shall be used as publicly accessible temporary open space, subject to safety and security requirements. FCRC shall improve and develop areas to be used as publicly accessible interim open space in accordance with a design and program subject to the approval of ESD (which is not to be unreasonably withheld), and such open space on the Arena Block shall include amenities such as kiosks, seating areas and landscaping. FCRC shall thereafter operate and maintain such interim public open space in good and clean condition until the property is needed for construction of the Project.

16. In the event that construction of Building 1 is delayed so that the Urban Room will not be completed by the date the arena commences operation, FCRC shall construct an urban plaza at the southeast corner of Flatbush and Atlantic Avenues, in substantially the same location as the location where the Urban Room is to be constructed. The design and program for the urban plaza shall follow the basic use and design principles of the Urban Room as set forth in the Design Guidelines, creating a significant public amenity. The urban plaza shall be a minimum of 10,000 square feet and shall include the following elements: landscaping, retail, seating, the subway entrance and space to allow for formal and informal public uses, such as outdoor performances, temporary markets, art installations and seating. In addition, the plaza may include public art or a prominent sculptural element (such as a canopy or other architectural feature that could be part of the arena and/or the subway entrance). The urban plaza shall be completed and available for public use upon the date of the opening of the arena. Thereafter, FCRC shall operate and maintain the urban plaza in good and clean condition, until such time as the area occupied by the urban plaza is required for construction of Building 1 or the Urban Room.

17. In the event development of Building 1 is delayed so that it will be constructed after the arena commences operation, FCRC shall, for the period of construction of Building 1: (i) relocate the main arena entrances to the north and east side of the arena; (ii) provide directional signage at various point on the arena block, indicating routes to the arena's entrances and amenities; and (iii) erect pedestrian construction sheds protecting, among other areas, the subway entrance and pedestrian walkways and sidewalks on the arena block.

18. FCRC shall screen the construction staging area and interim parking areas on Blocks 1120 and 1129 with fencing and landscaping installed in accordance with a plan subject to the approval of ESD, which is not to be unreasonably withheld. If an interim construction staging or parking facility is equipped with lighting, it shall be directional lighting angled to limit light intrusion beyond the site and shall employ controls to reduce lighting during periods when the facility is not in active use, consistent with site security. The screening measures required herein shall be properly maintained so long as such facilities remains in operation. Subject to LIRR requirements, lighting for Project-related construction work in the rail yard shall also be directional lighting angled to limit light intrusion beyond the rail yard and shall employ controls to

reduce lighting during periods and in areas when such lighting is not needed for construction, consistent with site security.

19. FCRC shall comply with applicable construction stormwater requirements of NYSDEC and NYCDEP during all phases of construction.

20. Should there be periods in which there are temporary cessations of site construction, there shall be no major equipment stored on the site; however, the project sites would be maintained and secured.

21. Where feasible and practicable, for construction sites east of 6th Avenue, construction fencing facing Vanderbilt Avenue, Dean Street, Carlton Avenue, Pacific Street or 6th Avenue shall be visually enhanced with temporary art displays curated by Artbridge or a similar organization if such fencing is to remain in place for more than one year. This requirement does not apply to the landscaped screening currently in place around the temporary parking lot on Block 1129.

22. Temporary parking and construction staging areas, if paved or otherwise required by law, shall have on-site detention systems equipped with standard NYCDEP Type 2 catch basins with oil water separators, as required by NYCDEP.

O. ENFORCEMENT

1. The Project Documentation shall provide that ESD shall have the right to enforce FCRC's compliance with the commitments set forth above.

2. ESD shall have the right to enter the Project site at all reasonable times, subject to safety and operational constraints, to monitor FCRC's and FCRC's contractors' compliance with the terms of such commitments.

3. FCRC and FCRC's general contractor shall meet with ESD, at ESD's request, to discuss the compliance and implementation of the obligations and measures set forth in this memorandum.

4. FCRC shall include in its construction contracts, and require its contractors to include in all subcontracts, an exhibit incorporating an excerpt from the MEC that sets forth all construction-related requirements contained in that document. FCRC's construction contracts shall expressly require each contractor to comply with all of the terms of the MEC that apply to its construction activity, and to require its subcontractors to do the same. FCRC shall add to its standard MEC-related contractual terms a provision that reiterates FCRC's remedies for a contractor's non-compliance with the MEC, including the rights to withhold payment or terminate the contract; such provision, however, shall be in addition to other remedies available to FCRC to address any contractor's non-compliance with an MEC requirement. FCRC shall cause its contractors to address any substantive non-compliance with the MEC within 7 days after written notice thereof by ESD, or shall promptly advise ESD in writing as to why FCRC does not agree that a non-compliance has occurred (or why the matter cannot be addressed within a 7-day period and the time period FCRC believes is needed to address

this issue, in which case FCRC shall cause its contractors to address any substantive non-compliance with the MEC as soon as is practicable under the circumstances). In the event that a non-compliance has not been disputed by FCRC (or is disputed but is subsequently determined to be a non-compliance after further discussion between ESD and FCRC) and the contractor does not promptly address such non-compliance, FCRC shall utilize one or more of the remedies contained in its agreements with the non-complying contractor and shall advise ESD of the steps taken under the contract to address the non-complying condition.

5. During the period in which the Project buildings, or any one of them, are being constructed, FCRC shall provide funding for the reasonable costs of an environmental monitor (which shall be a qualified consulting firm with subconsultants, as appropriate, the “ESD Environmental Monitoring Firm”) to be selected by and retained by ESD to: (i) monitor FCRC’s compliance with certain provisions of this memorandum; (ii) review any submittals made by FCRC pursuant to such provisions and advise ESD with respect thereto; and (iii) provide ESD with periodic written reports concerning FCRC’s implementation of such provisions. The certain provisions referred to in the preceding sentence are paragraphs: C.3 (pertaining to Day Care); E (with respect to protection of cultural resources near the project site from being impacted by construction on the project site); G.2 (pertaining to Hazardous Materials); I.8 (pertaining to reviewing the effectiveness of any modified design for stormwater management facilities); J.2 (pertaining to reviewing alternative fuels or boiler technologies); J.4 (pertaining to the review of any proposed adjustment to the location of the Building 3 stack); J.5 (pertaining to review of any proposed installation of a fossil fuel-fired boiler in the public school); J.6 (pertaining to review of the location of HVAC intakes in the event that the design of the relevant Project buildings changes from the design subject to air dispersion modeling in the FEIS); J.8 (pertaining to review of any proposed reduction in specified window wall attenuation levels); J.9 (pertaining to review of designs to confirm compliance); K.6 (pertaining to decisionmaking with respect to the funding of TEAs in the event that FCRC and NYCDOT do not reach agreement on this issue); L.2 (pertaining to the potential adjustment of demand management measures as a result of the evaluation to occur in the 10th and 20th basketball season at the arena); and N (pertaining to construction). The obligation set forth in this paragraph shall cease upon completion of the Project buildings. This memorandum shall not make FCRC responsible for the cost or time expended by any ESD personnel or consultant otherwise hired by or in the employment of ESD. This memorandum is without prejudice to other funding discussions that may occur between ESD and FCRC.

6. Where ESD review and approval is required under this memorandum, ESD shall review, comment and make its determination on an expedited basis where practicable but in any event within twenty (20) days of the date a request for ESD approval is made. In the event ESD has not acted on any request within such twenty (20) day period, such request shall be deemed approved by ESD.

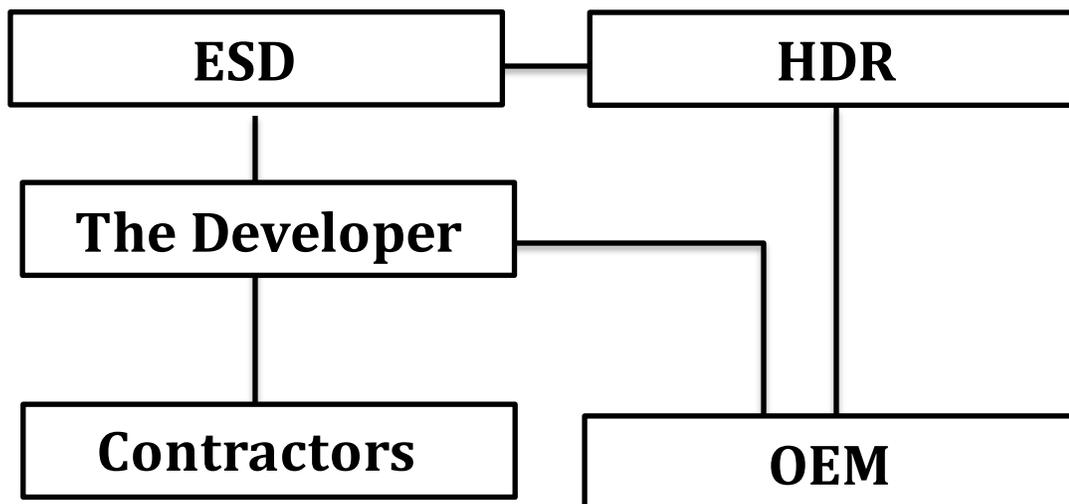
Attachment #2:

Organizational chart for MEC
oversight requirements

(1pg.)



Memorandum of Environmental Commitments Organizational Chart



ESD: As lead agency for the FEIS and SEIS, ESD required certain mitigation measures to offset construction related impacts from the project on the community. These mitigation measures were incorporated into a Memorandum of Environmental Commitments (MEC). The Developer is obligated under the Development Agreement to implement the measures in the MEC.

HDR: ESD hired HDR to monitor the Developer’s compliance with the MEC. HDR has no contractual relationship with the Developer. HDR observes site activities, monitors MEC requirements, checks project documentation and reports to ESD on compliance performance. Site visits are generally conducted twice weekly and meetings with ESD are held weekly. In addition, meetings with ESD, the OEM, the Developer and their contractors are held weekly.

The Developer is required to implement the MEC requirements. Per the latest amendment to the MEC, the Developer retained the services of a qualified outside engineering firm to serve as the OEM for certain MEC categories. Those MEC categories remaining under the Developer’s oversight include: historic resources mitigation, community facilities mitigation, open space mitigation, shadow mitigation, window and alternate ventilation installation, MPT implementation, soil remediation, stormwater management, transportation demand management, and sustainable design.

OEM: The Developer hired a qualified firm, Remedial Engineering, as the Onsite Environmental Monitor to assist in monitoring contractor compliance with the following MEC categories: construction truck protocols and traffic, air quality/dust suppression, construction noise, MPT plans, contractor training, rodent control measures, erosion and sediment control.

Contractors: Staff of the Developer’s construction contractors are obligated by their contracts to comply with the MEC requirements. Under the construction contracts, the Developer may withhold payment, stop work and take other actions to enforce compliance. All contractors are required to attend mandatory training to review MEC requirements and compliance measures.

Attachment #3:

MEC Improvements (5pgs.)



Below is the “Program Improvements” Section of Chapter 3A: “Construction Overview” of the June 2014 Atlantic Yards Arena and Redevelopment Project Final Supplemental Environmental Impact Statement (FSEIS).

PROGRAM IMPROVEMENTS

Upon completion of the Arena, HDR reviewed its quarterly construction reports and further reexamined in detail the project sponsors’ compliance with the construction-related requirements of the MEC. ESD and HDR have discussed the findings of HDR’s review with the project sponsors, and have also further discussed in detail HDR’s preliminary recommendations with regard to how the practices and procedures for implementing the construction-related measures required by the MEC could be improved. As a result of those discussions, the project sponsors have agreed to incorporate a number of improvements recommended by ESD and HDR to bolster the project sponsors’ program to meet the requirements of the MEC. The agreed upon adjustments to the current construction practices include:

- *Six-Month Look-Ahead Reports.*
 - The project sponsors will provide ESD and HDR with six month look-ahead reports at regular intervals that will describe, in general terms, the activities anticipated on the project site for the next six months (including major milestones for areas of new construction activity, excavation, construction, MPT, soil and groundwater remediation work, and soil characterization). Among other things, each look-ahead report will include an assessment of the level of OEM staffing that should be deployed during the relevant period to properly monitor compliance with the MEC. That assessment will provide a basis for discussion regarding the level of staffing for the relevant period among ESD, HDR, and the project sponsors.
- *Contractor Training.*
 - The project sponsors will target its PowerPoint presentation so that it provides specific instructions to contractors on the requirements of the MEC. The project sponsors may tailor the presentation so that it focuses on MEC requirements that relate specifically to a particular project component. ESD and HDR will be provided with the opportunity to comment on the PowerPoints prior to their use in contractor training.
 - PowerPoint presentations will be presented by the OEM to all foremen, project managers, field managers, and similar key personnel of all subcontractors upon mobilization, and every 90 days thereafter, with sign-in sheets to track attendance.
- *Contracts.*
 - The project sponsors will include in their construction contracts, and require their contractors to include in all subcontracts, an exhibit incorporating an excerpt from the MEC that sets forth all construction-related requirements contained in that document. The project sponsors’ construction contracts will expressly require each contractor to comply with all the terms of the MEC that apply to its construction activity, and to require its subcontractors to do the same.

- The project sponsors will add to their standard MEC-related contractual terms a provision that reiterates the project sponsors' remedies for a contractor's non-compliance with the MEC, including the rights to withhold payment or terminate the contract; such provision, however, will be in addition to other remedies available to the project sponsors to address any contractor's non-compliance with an MEC requirement.
- *Staffing and Off-Hour Work.*
 - Each six month look-ahead report will include a reassessment of staffing levels, and OEM staff will be adjusted as appropriate in light of any changes anticipated to the level of construction activity during future reporting periods.
 - The OEM will provide an update on upcoming after-hour and/or weekend construction work at each weekly meeting with HDR, during which it will be agreed upon by ESD and the project sponsors whether such work requires the presence of an ME. The OEM is ultimately responsible for ensuring that a proper level of monitoring coverage is maintained, even where after-hours or weekend work is performed on short notice from the contractor.
- *Traffic.*
 - Sufficient staff will be available to patrol the project site regularly to check for non-compliance with the truck protocol requirements concerning idling and/or queuing. The staff devoted to monitoring compliance with the truck protocol will be adjusted based upon the level of construction activity at the site. Staffing for overseeing compliance with truck protocol requirements will be assessed in the six month look-ahead reports, and discussed at weekly meetings with HDR.
 - Staff assigned to oversee compliance with the truck protocol will be properly trained in the truck protocol and will direct drivers to comply with MEC requirements.
 - A system will be instituted to facilitate the reporting of truck protocol violations to the project sponsors. Material violations of the truck protocol will be reported by staff to the project sponsors' management representatives, and the project sponsors will keep a record of such reported incidents.
 - The project sponsors will advise HDR at the weekly meetings of any circumstance where a contractor or driver has been found to be a repeat violator of the truck protocols. The project sponsors and ESD will agree, on a case-by-case basis, on the steps to be taken to deal with the repeat violator. Those measures may include, without limitation, providing warnings, invoking contract sanctions and/or banning from the site such companies and/or drivers in the event that violations continue after reasonable warning has been given.
 - The project sponsors will ensure that contractor logistics plans maximize the utilization of the Pacific Street queuing area between Carlton Avenue and Vanderbilt Avenue or other designated location for truck marshalling and queuing to the extent practicable and appropriate, so long as such areas are available. The project sponsors will provide HDR and ESD with copies of the logistics plans for review and comment.
 - Maps that identify acceptable truck routes to and from the project site will be provided to all contractors as part of the MEC training program. The project sponsor or its contractors will take measures to ensure that the trucks follow such routes. Among other things, contractors will be directed to provide those maps to their trucking subcontractors, and require that the maps be distributed to drivers and kept available for reference in the cabs at all times. The Pacific Street queen area

(if part of the then currently effective logistics plan) will be incorporated into these truck routing maps so long as that area is available.

- The project sponsors and its contractors will assign sufficient staff to allow for careful monitoring of contractor compliance with MEC dust control measures, and staffing will be keyed to the level of dust-generating construction activities at the site. Staffing levels will be assessed in the six month look-ahead reports and discussed at the weekly meetings with HDR.
- As one element of the MEC training program, contractors will be instructed on how to complete and submit documentation needed to confirm compliance with the DPF requirement of the MEC. Such instruction will be provided at a level of detail commensurate with the training needs of the contractors on the site.
- Where practicable, all equipment subject to the DPF requirement (or equivalent controls) will be prominently labeled with a label prepared by the project sponsors that indicates that the equipment has a DPF (or equivalent controls) that complies with the MEC emission control requirement. Information on how to label compliant equipment will be provided as part of contractor training. Additional labels are not required for equipment with USEPA labels indicating that the emission controls on such equipment satisfy requirements that are at least as stringent as those required by the MEC.
- *CAQM Compliance Plan.*
 - In 2014, the CAQM Compliance Plan was updated to reference the contractors and personnel working at the project site and to reflect current protocols and procedures. Exhibits to the CAQM Compliance Plan were updated to improve the effectiveness of the CAQM Compliance Plan.
- *Dust Suppression and Wheel Washing.*
 - Prior to the commencement of construction activities for each major work phase, the project sponsors or its contractor(s) will prepare a fugitive dust management plan that identifies: the location of the fixtures to be used in controlling dust at the site (including without limitation hydrants or other points of water supply), any wheel washing stations, gravel placement locations, hoses, dust suppression agents and any other equipment and material to be used in complying with the dust suppression requirements of the MEC. The project sponsors will require its contractors to adhere to such plans, and HDR will refer to such plans in assessing the project sponsors' compliance with the dust suppression requirements of the MEC. ESD and HDR will be provided with the opportunity to comment on the plans prior to their implementation in the field.
 - A wheel washing station will be constructed at each truck exit, whereby truck wheels will be washed, and the water will be contained and recycled to avoid tracking mud out of the site. If construction of a wheel washing station is not practicable at a construction site exit due to site conditions, the circumstances giving rise to any claim of impracticability will be set forth in the relevant Dust Management Plan, and in such circumstances, the Dust Management Plan prepared by the project sponsors or its contractor will include a substitute program for wheel cleaning that will achieve equivalent results, taking into account weather conditions, space availability, site pitch, catch basin location and other relevant factors.

- *Soil Stockpiling.*
 - In order to avoid excessive dust conditions, the MEC requires that any soil stockpiled on site be adequately moistened or covered by a tarp, dust suppression agent or other effective means. This requirement will be specifically incorporated into the training materials for the relevant contractors. Stockpiles of contaminated material will continue to be managed in accordance with the HASP approved by the NYSDEC.
- *Air Monitoring.*
 - The project sponsors have procured five new particulate monitors, four of which have been deployed on a daily basis at the site to monitor particulate levels associated with construction activity, as required by the MEC. OEM personnel will follow the manufacturer's recommendations for operation and maintenance of this monitoring equipment, and routine inspections of the dust monitoring equipment will be conducted by the OEM to ensure functionality. OEM personnel will follow the best management practices previously developed by HDR in operating this equipment, or equally effective procedures.
- *Noise.*
 - A written protocol has been developed to confirm that certain "noisier" equipment complies with the noise levels set forth in Table 17c-3 of the 2006 FEIS.
 - The OEM staff will check applicable equipment for compliance with the MEC noise requirements when the equipment is first mobilized. They will do so pursuant to the protocol described above. The OEM staff also will regularly check equipment in use on-site against the Construction Noise Mitigation Plan or the Alternative Construction Noise Mitigation Plan (as applicable) posted for the site to confirm that there are no discrepancies, or revise such plans as necessary.
 - The project sponsors will assure that perimeter fencing meets both the requirements of the MEC and the New York City Noise Code, which requires that perimeter fencing meet the STC rating of 30 or greater.
 - Where it is impracticable due to field conditions to meet the noise fence height requirements of the MEC and/or the New York City Noise Code in areas that are proximate to residences or other sensitive receptors, the project sponsors will install the best practicable sound barriers which may include some or all of the following, depending on the circumstances: sound attenuation blankets, additional sound barriers placed between the noise source and sensitive receptors, and/or angled cantilevered fences, and/or other practicable pathway controls.
 - In an effort to avoid delays occasioned by Con Edison scheduling constraints, the project sponsors will continue to submit electrification requests as early in the construction sequence as practicable, and follow up with Con Edison

on a regular basis until electrification has been timely accomplished, subject to scheduling restraints of other entities not under the project sponsor's control.

- Construction staging areas that are located within 200 feet of a sensitive receptor and are used in connection with nighttime work will be shielded (by noise mitigating fencing and/or blanketing) on the side facing those sensitive receptors by New York City Noise Code and MEC-compliant noise mitigating fencing and/or blanketing, unless ESD determines that shielding is not required because of the level of anticipated activities and/or duration of such activities.
 - Where practicable, quiet construction procedures and equipment will be used, including where practicable the use of a bed liner made of thick rubber, spray-on liner, plywood, sand or gravel on dump trucks to mitigate the noise of the first load being dropped into the dump truck.
 - Where practicable and feasible, sound-mitigated backup alarms will be used such as backup alarms that lower backup alarm noise in response to more quiet ambient conditions (such as night-time work) or backup alarms that use white noise or other mitigating technologies for trucks and equipment expected to operate at or make deliveries to the Project site during any phase of extended night-time work or night-time module deliveries.
- *General Compliance.*
 - The project sponsors have agreed to pursue the services of a qualified outside engineering firm or construction management firm to serve as the OEM for the Project pursuant to a scope to be reviewed by ESD and that thereafter, the OEM function would not be moved in-house without prior approval by ESD.

CONCLUSION

HDR found that the project sponsors were generally in compliance with the requirements set forth in the MEC. In the areas that the project sponsors were not in compliance, HDR noted that prompt action was generally taken to address the non-compliance issues. HDR observed that there were improvements to processes and protocols after construction began, which resulted in improved compliance. The measures outlined in the MEC will continue during Phase II construction. Further, the project sponsors have agreed to incorporate a number of improvements recommended by ESD and HDR to improve the project sponsors' MEC compliance program. The SEIS analyses presented in the subsequent construction-related chapters examine whether there are additional practicable measures that should be implemented beyond those already required in the MEC for Phase II construction activities under the Extended Build-Out Scenario. ESD will continue to require the project sponsors to implement the required environmental impact avoidance and mitigation measures. During construction of the Project, ESD will also continue to retain the services of appropriate professionals to monitor compliance.

Attachment #4:

Compilation of addresses
identified in the FSEIS (5pgs.)

Summary of Locations Exceeding Construction Noise Impact Criteria

All Construction Phasing Plans

Building/Location	Associated Land Use	Façade	Associated Receptor(s)	Impacted Floor(s)	Impact Scenario
700 Pacific Street	Mixed Residential & Commercial	North	1A	All	2006 FEIS Impact
		West	1C	All	2006 FEIS Impact
		North	2A	All	2006 FEIS Impact
		South	2C	7 to Top	2006 FEIS Impact
		West	2D	All	2006 FEIS Impact
		North	3A	All	2006 FEIS Impact
		East (northern-most section)	3B	2 to top	2006 FEIS Impact
516-518 Carlton Avenue	Residential	East	4A	All	2006 FEIS Impact
		West	4B	All	2006 FEIS Impact
		North	4C	All	2006 FEIS Impact
520-522 Carlton Avenue	Residential	East	5A	All	2006 FEIS Impact
		West	5C	All	2006 FEIS Impact
524-526 Carlton Avenue	Residential	East	6B	All	2006 FEIS Impact
		West	6C	All	2006 FEIS Impact
528-530 Carlton Avenue	Residential	East	7B	All	2006 FEIS Impact
		West	7C	All	2006 FEIS Impact
532-534 Carlton Avenue	Residential	East	8B	All	2006 FEIS Impact
		West	8D	All	2006 FEIS Impact
565 Dean Street	Residential	East	9B	All	2006 FEIS Impact
		South	9C	All	2006 FEIS Impact
		West	9D	All	2006 FEIS Impact
541-547 Dean Street	Residential	North	10C	2 to top	2006 FEIS Impact
		East	10D	All	2006 FEIS Impact
521-523 Dean Street	Residential	North	12A	Top	2006 FEIS Impact
		West	12D	Top	2006 FEIS Impact
507-515 Dean Street	Residential	South	13A	Top	2006 FEIS Impact
		West	13B	Top	2006 FEIS Impact
		North	13C	All	2006 FEIS Impact
		East	13D	4 to top	2006 FEIS Impact
497-501 Dean Street	Residential	South	14A	All	2006 FEIS Impact
		West	14B	All	2006 FEIS Impact
		North	14C	All	2006 FEIS Impact
860 Atlantic Avenue	Mixed Residential & Commercial	South	15C	4 to top	2014 FSEIS Impact with Existing Receptor Controls
856 Atlantic Avenue	Mixed Residential & Commercial	South	16C	Top	2014 FSEIS Impact without Existing Receptor Controls

Summary of Locations Exceeding Construction Noise Impact Criteria

All Construction Phasing Plans

Building/Location	Associated Land Use	Façade	Associated Receptor(s)	Impacted Floor(s)	Impact Scenario
849 Pacific Street	Residential	North	17A	All	2014 FSEIS Impact without Existing Receptor Controls
		South	17C	All	2014 FSEIS Impact without Existing Receptor Controls
		North	18A	All	2014 FSEIS Impact with Existing Receptor Controls
		South	18C	All	2014 FSEIS Impact with Existing Receptor Controls
851-869 Pacific Street	Residential	North	19A	All	2014 FSEIS Impact with Existing Receptor Controls
		South	19C	All	2014 FSEIS Impact with Existing Receptor Controls
474-478 Dean Street	Residential	North	24C	All	2006 FEIS Impact
		East	24D	2 to top	2006 FEIS Impact
46-50 6th Avenue	Residential	East	25A	All	2006 FEIS Impact
		West	25C	3 to top	2006 FEIS Impact
		North	25D	All	2006 FEIS Impact
52-60 6th Avenue	Residential	East	26B	All	2006 FEIS Impact
479 Bergen Street	Mixed Residential/Commercial	East	27A	All	2006 FEIS Impact
486-492 Dean Street	Residential/Commercial/Institutional	North	31A	All	2006 FEIS Impact
		West	31C	All	2006 FEIS Impact
546-560 Dean Street	Residential/Commercial/Institutional	North	32D	Top	2006 FEIS Impact
538-542 Carlton Avenue	Residential	East	33A	All	2006 FEIS Impact
		West	33C	3 to Top	2006 FEIS Impact
		North	33D	All	2006 FEIS Impact
544-554 Carlton Avenue	Residential	East	34A	All	2006 FEIS Impact
556-560 Carlton Avenue	Residential	East	35B	Top	2006 FEIS Impact
531-549 Bergen Street	Residential	West	36C	Top	2006 FEIS Impact
		North	36D	Top	2006 FEIS Impact
51-55 6th Avenue	Institutional	North	37A	3 to Top	2006 FEIS Impact
		East	37B	5 to Top	2006 FEIS Impact
		West	37D	4 to Top	2006 FEIS Impact
555-559 Carlton Avenue	Residential	East	38A	All	2006 FEIS Impact
		West	38C	All	2006 FEIS Impact
		North	38D	All	2006 FEIS Impact
586-590 Dean Street	Residential	North	39A	All	2006 FEIS Impact
610-618 Dean Street	Residential	North	40A	All	2006 FEIS Impact
636 Dean Street	Residential	North	41A	All	2006 FEIS Impact
648-652 Dean Street	Residential	North	42A	All	2006 FEIS Impact
656-660 Dean Street	Residential	North	43A	All	2006 FEIS Impact
550-550 Mendham	Mixed Residential	East	44A	Top	2006 FEIS Impact

Summary of Locations Exceeding Construction Noise Impact Criteria

All Construction Phasing Plans

Building/Location	Associated Land Use	Façade	Associated Receptor(s)	Impacted Floor(s)	Impact Scenario
552-556 Vanderbilt Avenue	Mixed Residential & Commercial	West	44C	All	2006 FEIS Impact
		North	44D	All	2006 FEIS Impact
558-564 Vanderbilt Ave	Mixed Residential/Commercial	North	45A	Top	2006 FEIS Impact
		West	45D	Top	2006 FEIS Impact
573-585 Bergen Street	Residential	North	47A	Top	2014 FSEIS Impact with Existing Receptor Controls
571-575 Carlton Avenue	Residential	North	48A	4 to top	2006 FEIS Impact
		East	48B	Top	2006 FEIS Impact
561-569 Carlton Avenue	Residential	East	49B	2 to Top	2006 FEIS Impact
		West	49C	1	2006 FEIS Impact
854 Pacific Street	Residential/Institutional	North	50A	5 to Top	2014 FSEIS Impact without Existing Receptor Controls
		South	50B	5 to Top	2014 FSEIS Impact without Existing Receptor Controls
		West	50C	4 to Top	2014 FSEIS Impact without Existing Receptor Controls
856 Pacific Street	Residential/Institutional	West	51C	Top	2014 FSEIS Impact without Existing Receptor Controls
579-583 Vanderbilt Ave	Mixed Residential & Commercial	South	55C	Top	2006 FEIS Impact
		West	55D	All	2006 FEIS Impact
573-577 Vanderbilt Ave	Mixed Residential & Commercial	West	56B	All	2006 FEIS Impact
565-569 Vanderbilt Avenue	Mixed Residential & Commercial	West	57A	All	2006 FEIS Impact
		North	57B	All	2006 FEIS Impact
678-690 Dean Street	Residential	North	60A	All	2014 FSEIS Impact without Existing Receptor Controls
585-589 Vanderbilt Avenue	Mixed Residential & Commercial	North	61B	All	2014 FSEIS Impact with Existing Receptor Controls
173 South Elliott Place	Residential	South	81C	13 to top	2006 FEIS Impact
212 South Oxford Street	Mixed Residential & Commercial	East	82B	All	2006 FEIS Impact
		South	82C	All	2006 FEIS Impact
		West	82D	3 to top	2006 FEIS Impact
202-208 South Oxford Street	Residential	East	86B	2 to top	2006 FEIS Impact
213 South Oxford Street	Residential	West	89A	All	2006 FEIS Impact
		East	89B	All	2006 FEIS Impact
		South	89C	All	2006 FEIS Impact
207-211 South Oxford Street	Residential	East	90A	All	2006 FEIS Impact
		West	90C	All	2006 FEIS Impact
205 South Oxford Street	Residential	East	91A	All	2006 FEIS Impact
		West	91B	All	2006 FEIS Impact
424 Cumberland Street	Residential	West	92A	All	2006 FEIS Impact
		West	92B	1 & Top	2006 FEIS Impact
		East	92C	All	2006 FEIS Impact
414-422 Cumberland Street	Residential	West	93C	All	2006 FEIS Impact

Summary of Locations Exceeding Construction Noise Impact Criteria

All Construction Phasing Plans

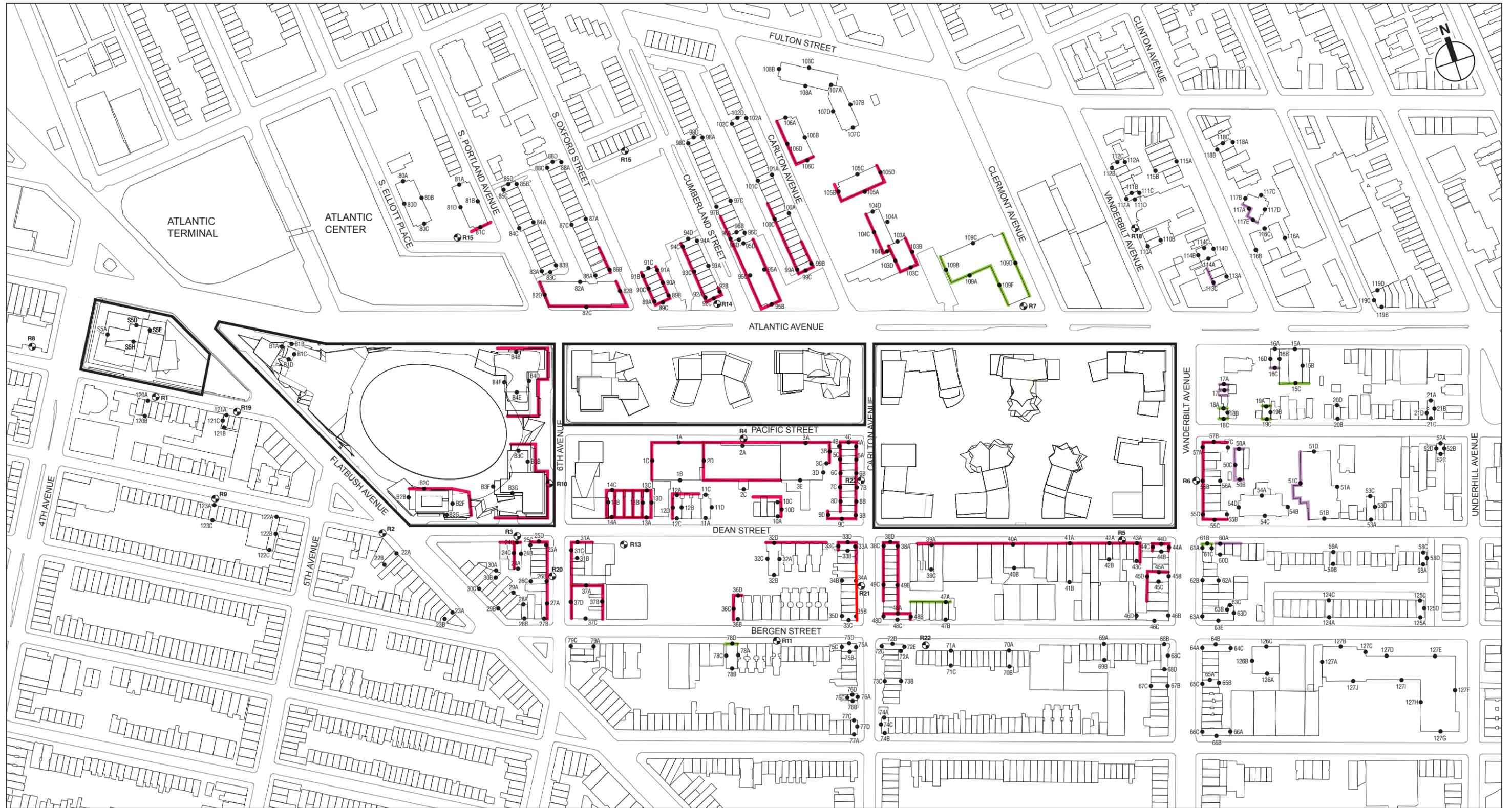
Building/Location	Associated Land Use	Façade	Associated Receptor(s)	Impacted Floor(s)	Impact Scenario
408-412 Cumberland Street	Residential	West	94C	All	2006 FEIS Impact
425 Cumberland Street	Residential	East	95A	All	2006 FEIS Impact
		East	95B	All	2006 FEIS Impact
		South	95C	All	2006 FEIS Impact
397-403 Cumberland Street	Residential	West	96A	Top	2006 FEIS Impact
472-478 Carlton Avenue	Residential	West	99A	All	2006 FEIS Impact
		East	99B	All	2006 FEIS Impact
458-470 Carlton Avenue	Residential	West	100C	All	2006 FEIS Impact
761 Atlantic Avenue	Residential	East	103B	All	2006 FEIS Impact
		South	103C	All	2006 FEIS Impact
		West	103D	3 to top	2006 FEIS Impact
		South	104B	3 to top	2006 FEIS Impact
		West	104C	All	2006 FEIS Impact
475 Carlton Avenue	Residential	South	105A	All	2006 FEIS Impact
		West	105B	All	2006 FEIS Impact
		East	105D	11 to top	2006 FEIS Impact
		South	106C	5 to top	2006 FEIS Impact
		West	106D	10 to top	2006 FEIS Impact
510 Clermont Avenue	Institutional	South (western-most section)	109A	All	2014 FSEIS Impact with Existing Receptor Controls
		West (northern-most section)	109B	All	2014 FSEIS Impact with Existing Receptor Controls
		East	109D	2 to top	2014 FSEIS Impact with Existing Receptor Controls
		West (southern-most section)	109F	All	2014 FSEIS Impact with Existing Receptor Controls
536-540 Clinton Avenue	Residential/Institutional	West	113C	3 to Top	2014 FSEIS Impact without Existing Receptor Controls
525 Clinton Avenue	Residential	Southwest	117A	11 to Top	2014 FSEIS Impact with Existing Receptor Controls but with Balconies
	Mixed Residential & Commercial	South	117E	11 to Top	2014 FSEIS Impact with Existing Receptor Controls but with Balconies
Phase I Building 2	Residential	North (western-most section)	B2C	27 to top	2006 FEIS Impact
		East	B2F	17 to top	2006 FEIS Impact
		East	B3B	All	2006 FEIS Impact

Summary of Locations Exceeding Construction Noise Impact Criteria

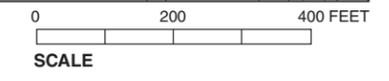
All Construction Phasing Plans

Building/Location	Associated Land Use	Façade	Associated Receptor(s)	Impacted Floor(s)	Impact Scenario
Phase I Building 3	Residential	North (eastern-most section)	B3C	12 to top	2006 FEIS Impact
		South	B3G	4 to top	2006 FEIS Impact
Phase I Building 4	Residential	North	B4B	2 to top	2006 FEIS Impact
		East	B4D	All	2006 FEIS Impact
		South	B4E	All	2006 FEIS Impact

Attachment #5:
Map of eligible sound
attenuation properties (1pg.)



- Project Site Boundary
- Location of Predicted Significant Adverse Construction Noise Impacts According to 2006 FEIS and SEIS Construction Noise Analyses
- Location of Predicted Significant Adverse Construction Noise Impacts According to SEIS Construction Noise Analysis with Existing Receptor Controls
- Location of Predicted Significant Adverse Construction Noise Impacts According to SEIS Construction Noise Analysis without Existing Receptor Controls



Attachment #6:

Tech memo providing
justification for double pane
windows in attenuating
construction noise

(35pgs.)



Environmental and Planning Consultants

440 Park Avenue South
7th Floor
New York, NY 10016
tel: 212 696-0670
fax: 212 213-3191
www.akrf.com

Memorandum

To: Rachel Shatz
From: Daniel Abatemarco
Date: April 20, 2015
Re: Atlantic Yards Construction Noise Receptor Control Measures
cc: Shabana Tajwar

INTRODUCTION

This memorandum has been prepared to provide additional information regarding the receptor noise control measures prescribed in the 2006 Atlantic Yards Arena and Redevelopment Project Final Environmental Impact Statement (FEIS) and 2014 Final Supplemental Environmental Impact Statement (FSEIS), specifically the effectiveness of double-glazed windows or secondary storm windows in attenuating construction noise incident at building façades predicted to experience levels of construction noise resulting from the Project that exceed the *CEQR Technical Manual* noise impact criteria.

The *Second Amended Memorandum of Environmental Commitments for the Atlantic Yards Project* (MEC) states—based on the commitments described in Chapter 5 “Mitigation” of the FSEIS—that FCRC and its affiliates (FCRC) must make available double-glazed windows or storm windows (along with an alternate means of ventilation to allow for the maintenance of a closed window condition) to residential locations where the FEIS or FSEIS identified significant noise impacts and where such measures are not currently installed. With this commitment, all residences predicted to experience construction noise at a level that would be considered a significant adverse impact according to the FSEIS, subject to the consent of the owners and tenants of such residences, would have either double-glazed windows or storm windows installed in their building façades. With such measures, the FSEIS assumes approximately 25 to 30 dBA of composite façade noise attenuation, meaning that the level of noise from exterior sources would be 25 to 30 dBA less inside the residences.

DEFINITIONS

Composite façade attenuation—Composite façade attenuation refers to the amount of noise reduction between the exterior of a building and the interior of the building as provided by the building façade, including all of the façade elements. The façade of a building typically includes some combination of the following elements: windows, masonry wall, spandrel, metal panels, and louvers for HVAC equipment. While each element may have different acoustical properties providing different levels of noise

attenuation, the composite façade attenuation refers to the level of attenuation provided by the façade as a whole, including all of its constituent elements. The level of composite façade attenuation can be quantified in dBA (the difference between A-weighted levels outside and inside the façade), but building materials are often evaluated using the Outdoor-Indoor Transmission Class (OITC). The OITC descriptor conservatively represents the expected composite façade attenuation in dBA for construction noise.

Double-glazed windows—Double-glazed windows refers to windows that use insulated glazing units, i.e., glazing units consisting of at least two lites of glass separated by an air space or air spaces. In some cases, one or more of the glass lites may be laminated, which further improves the noise-attenuating properties of the glass. The most typical insulated glazing unit used in NYC building construction is a 1-inch insulated glazing unit consisting of 1/4-inch glass – 1/2-inch air space – 1/4-inch glass. This type of glazing unit offers substantially more noise attenuation than single-glazed windows (i.e., one lite of glass with no air space). Much of the improved acoustical performance of double-glazed windows comes from the stationary air between the glass lites acting as a buffer for sound waves incident at the window exterior. Nearly all modern residential construction in New York City includes double-glazed windows in the façade.

Storm windows—Storm windows refers to additional windows added in parallel to existing windows (also referred to as the primary windows) within the existing window opening. Storm windows can be installed on the interior side of the existing window on the window sill, or outside the existing window. Storm windows installed in parallel with operable primary windows are typically also operable, independently from the primary window. Storm windows, along with the primary window, form a structure similar to an insulated glazing unit consisting of a volume of stationary air between two layers of glass. Consequently, the storm windows provide substantially increased noise attenuation compared to single-pane windows.

MITIGATION OF CONSTRUCTION NOISE IMPACTS IN NEW YORK CITY

The provision of double-glazed windows or storm windows (along with an alternate means of ventilation to allow for the maintenance of a closed window condition) is the typical form of mitigation provided for receptors predicted to experience significant adverse construction noise impacts associated with projects in New York City. Additionally, for projects that are predicted to result in significant adverse construction noise impacts at receptors that already have double-glazed windows and some alternate means of ventilation, typically no additional receptor noise control measures beyond those existing building features are made available as mitigation.

Some recent projects located in New York City that were predicted to result in significant adverse construction noise impacts and proposed double-glazed windows or storm windows as mitigation measures only for buildings that did not already have double-glazed windows and some alternate means of ventilation include:

- Halletts Point Rezoning (2013)
- Seward Park Mixed-Use Development Project (2012)
- NYU CORE (2012)
- Saint Vincents Campus Redevelopment (2012)
- Riverside Center (2010)

These projects generally assume the buildings that already have double-glazed windows and alternate means of ventilation and the buildings that are provided double-glazed windows or storm windows along with an alternate means of ventilation would achieve a composite façade attenuation of 25 to 30 dBA.

There are no projects in New York City that AKRF is aware of that required the project sponsor to provide façade attenuation measures beyond double-glazed windows or storm windows (e.g., triple-glazed windows).

NOISE ATTENUATION PROVIDED BY DOUBLE-GLAZED WINDOWS

The amount of attenuation provided by double-glazed windows varies depending on the specific glazing unit make-up. As described above, the most basic and typical insulated glazing unit used in NYC building construction is a 1-inch insulated glazing unit consisting of 1/4-inch glass – 1/2-inch air space – 1/4-inch glass. The amount of noise attenuation provided by a window with this glazing unit, as quantified by OITC ratings, varies depending on the type of window operation (e.g., casement, slider, etc.). Most windows with this 1-inch insulated glazing unit are rated with OITC values ranging from 25 to 29, meaning they provide approximately 25 to 29 dBA noise attenuation. The amount of noise attenuation provided by a specific façade element is typically evaluated using the ASTM E90 laboratory test procedure. Attached are three ASTM E90 test reports for four different windows (including a fixed window, two sliding windows, and a casement window), each with a 1-inch insulated glazing unit consisting of 1/4-inch glass – 1/2-inch air space – 1/4-inch glass. The reported OITC ratings for these windows range from 25 to 29.

NOISE ATTENUATION PROVIDED BY STORM WINDOWS

It is more difficult to estimate the noise attenuation provided by storm window assemblies, because it depends on the composition and condition of the existing primary window and the depth of the air gap between the primary window and storm window. Laboratory test results for storm window assemblies are less common and also less applicable, because of the variety of conditions that may exist in the primary (existing) window. However, in AKRF's experience, well-sealed storm windows typically provide approximately 5 to 10 dBA of improvement in noise attenuation when added to a primary window. As stated in the FSEIS, single-paned windows (with a closed window condition) typically result in approximately 20 dBA noise attenuation (comparing outdoor and indoor noise levels), leading to the assumption of approximately 25 to 30 dBA noise attenuation with storm windows. This is comparable to the performance of the typical insulated glazing unit described above. While the storm window assembly is not sealed in the way that an insulated glazing unit is, the size of the air gap between the primary window and storm window is larger than the 1/2-inch described above in the insulated glazing unit, which brings the performance up to a comparable level.

COMPOSITE FAÇADE ATTENUATION ASSUMPTION IN THE FSEIS

The façades of most buildings predicted to experience significant adverse construction noise impacts in the FSEIS include windows and masonry wall area, and many include a penetration in the façade for an air conditioner (e.g., window air-conditioner, through-wall air conditioner, or PTAC). Those with double-glazed windows were assumed to have windows that perform at least as well as those with the typical 1-inch insulated glazing unit consisting of 1/4-inch glass – 1/2-inch air space – 1/4-inch glass, as described above. Most masonry elements provide substantially more façade attenuation (40 dBA or more) than the window, and the air conditioners provide less (approximately 15 to 25 dBA). The air conditioner makes up a very small area of the façade compared to the other elements, but its lower attenuation value is assumed to approximately “balance out” with the greater attenuation provided by the masonry leaving the window as the most important element in determining the attenuation of the whole façade. This is the basis for the assumption of 25 to 30 dBA composite façade attenuation for buildings with double glazed windows. As discussed above, storm windows installed in combination with existing primary windows were assumed in the FSEIS to perform comparably to double-glazed windows with typical 1-inch insulated glazing units.



Architectural Testing

ACOUSTICAL PERFORMANCE TEST REPORT

Rendered to:

EFCO CORPORATION
1000 County Road
Monett, Missouri 65708

Report No: 01-48522.01
Test Date: 12/11/03
Report Date: 01/06/04
Expiration Date: 12/11/07

Test Sample Identification:

Series/Model: 3500

Type: Horizontal Sliding Window

Overall Size: 72" x 48"

Glazing: 1" IG (1/4" Annealed, 1/2" Air Space, 1/4" Annealed)

All performance values shown on this report are for products of a standard configuration, tested in accordance with AAMA specifications, in a laboratory environment under optimum conditions. They are provided for purposes of comparison only. Performance values will vary according to project specifications, such as but not limited to, quality installation workmanship, product size, configuration, hardware, glass type, and accessories.

Project Scope: Architectural Testing, Inc. (ATI) was contracted by EFCO Corporation to conduct a sound transmission loss test on a Series/Model 3500, horizontal sliding window. A summary of the results is listed in the Test Results section and the complete test data is included as Appendix B of this report.

Test Methods: The acoustical tests were conducted in accordance with the following:

ASTM E 90-02, *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.*

ASTM E 413-87 (Re-approved 1999), *Classification for Rating Sound Insulation.*

ASTM E 1332-90 (Re-approved 1998), *Standard Classification for Determination of Outdoor-Indoor Transmission Class.*

Test Equipment: The equipment, used to conduct these tests, meets the requirements of ASTM E 90-02. The microphones were calibrated before conducting sound transmission loss tests. The test equipment and test chamber descriptions are listed in Appendix A.

130 Derry Court
York, PA 17402-9405
phone: 717.764.7700
fax: 717.764.4129
www.archtest.com

Test Procedure:

Sound transmission loss tests were initially performed on a filler wall that was designed to test 4' 0" by 6' 0" and 6' 0" by 4' 0" specimens. The filler wall achieved an STC rating of 63.

A wood frame was placed around the outside perimeter of the horizontal sliding window. Duct seal was used to seal the window to the wood frame. The 6' 0" by 4' 0" plug was removed from the filler wall assembly and the test specimen was installed in the opening. The interior side of the window frame, when installed, was approximately 1/4" from being flush with the receiving room side of the filler wall. A dense neoprene gasket and duct seal was used to seal the wood frame to the inside perimeter of the filler wall opening. A stethoscope was used to check for any abnormal air leaks before the test. The sash was opened and closed at least five times prior to testing.

One background noise sound pressure level, and five sound absorption measurements were conducted at each of the five microphone positions. Two sound pressure level measurements were made simultaneously in both rooms, at each of the five microphone positions. The air temperature and relative humidity conditions were monitored and recorded during the background, absorption, source, and receive room measurements.

Sample Descriptions:

Frame Construction:

	Main Frame	Active Sash
Size	72" x 48"	35-3/4" x 43-1/16"
Thickness	3-1/4"	1-5/16"
CORNERS	Coped	Butted
Fasteners	Screws	Screws
Seal Method	Foam pads/sealant	Sealant
MATERIAL	Aluminum	Aluminum
Reinforcement	NA	NA
Thermal Break Material	Urethane	Urethane
Daylight Opening Size	32" x 40-7/16"	31-7/8" x 40-1/4"

Sample Descriptions: (Continued)

Sash Glazing:

Measured Overall Insulation Glass Unit Thickness	0.945"
Spacer Type	Steel U shape

	Exterior Sheet	Gap	Interior Sheet
MEASURED THICKNESS	0.221"	0.503"	0.221"
MUNTIN PATTERN	NA	NA	NA
MATERIAL	Annealed	Air*	Annealed
LAMINATE MATERIAL	NA	NA	NA

The sash were interior glazed onto butyl tape and held-in-place with aluminum glazing beads.

Components:

TYPE	QUANTITY	LOCATION
WEATHERSTRIP		
1/4" Diameter foam filled leaf gasket	2 Rows	Frame at vent perimeter
HARDWARE		
Roller assembly	2	Bottom rail
Spring loaded latch	1	Active sash meeting rail
Metal keeper	1	Fixed meeting rail
DRAINAGE		
1" x 1/4" Weepslot	2	Sill
1/4" x 1/4" Weepslot	2	Sill

* - Stated per Client/Manufacturer NA-Non Applicable

Comments: The weight of the sample was 159 lbs. The client did not supply drawings on the Series/Model 3500, horizontal sliding window. The horizontal sliding window was disassembled, and the components will be retained by ATI for four years.

Test Results: The STC (Sound Transmission Class) rating was calculated in accordance with ASTM E 413-87. The OITC (Outdoor-Indoor Transmission Class) was calculated in accordance with ASTM E 1332-90. A summary of the sound transmission loss test results on the horizontal sliding window is listed below.

ATI Job File No.	Sample Description	STC	OITC
01-48522.01	Series/Model 3500, horizontal sliding window with 1" IG (1/4" Annealed, 1/2" Air Space, 1/4" Annealed)	31	25

The complete test results are listed in Appendix B.

This report is prepared for the convenience of our customer and endeavors to provide accurate and timely project information. It contains a summary of observations made by a qualified representative of Architectural Testing, Inc. The results of this report apply only to the specimen that was tested. The statements made herein do not constitute approval, disapproval, certification or acceptance of performance or materials.

A copy of this report will be retained by ATI for a period of four years. This report is the exclusive property of the client so named herein. This report shall not be reproduced, except in full, without written approval by Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC:



Digitally Signed by: Kurt A. Golden

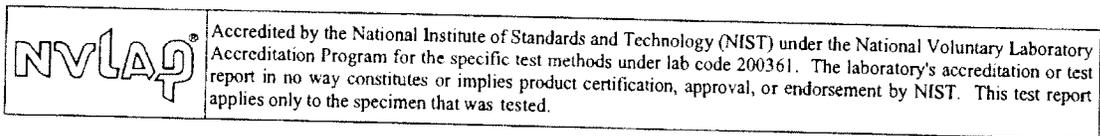
Kurt A. Golden
Technician - Acoustical Testing



Digitally Signed by: Todd D. Kister

Todd D. Kister
Laboratory Supervisor - Acoustical Testing

KAG:vlm
01-48522.01





SOUND TRANSMISSION LOSS

ASTM E90

Architectural Testing

ATI No.	01-48522.01	Date	12/11/03
Client	EFCO Corporation		
Specimen	Series/Model 3500, horizontal sliding window with 1" IG (1/4" annealed, 1/2" air space, 1/4" annealed)		
Specimen Area	24.00 Sq Ft		
Filler Area	116.00 Sq Ft		
Operator	Kurt A. Golden		

	Bkgrd	Absorp	Source	Receive	Filler	Specimen
Temp F	75.8	75.1	77.1	75.7	72.2	75.9
RH %	60.5	61.4	61.4	60.5	65.4	61.0

Freq (Hz)	Bkgrd SPL (dB)	Absorp (Sabines /Sq Ft)	Source SPL (dB)	Receive SPL (dB)	Filler TL (dB)	Specimen TL (dB)	95% Conf Limit	No. of Deficiencies	Trans Coef Diff
80	40.4	48.7	85.3	56.8	33.8	27	2.89	0	1.5
100	42.8	52.6	88.1	65.3	37.8	20	2.17	0	11.6
125	41.5	42.6	92.4	64.9	44.1	25	1.71	0	12.3
160	44.4	44.2	96.1	75.6	45.6	18	1.79	0	20.9
200	43.5	46.3	101.3	84.0	48.8	14	0.55	7	27.5
250	38.0	50.1	103.2	80.2	49.6	20	1.06	4	23.0
315	36.5	53.3	101.9	72.5	52.5	26	0.43	1	19.8
400	35.6	51.4	101.1	71.5	56.8	26	0.67	4	23.7
500	32.6	53.3	101.7	68.9	60.5	29	0.36	2	24.3
630	28.7	54.1	104.7	68.9	65.4	32	0.35	0	26.2
800	29.1	57.6	106.4	68.9	68.0	34	0.30	0	27.4
1000	28.8	58.9	106.2	67.0	72.8	35	0.33	0	30.6
1250	27.4	65.6	107.7	66.2	79.7	37	0.25	0	35.7
1600	23.2	70.1	112.4	71.3	82.6	36	0.39	0	39.4
2000	18.5	73.8	109.8	73.1	79.6	32	0.23	3	41.0
2500	13.1	86.9	108.0	70.1	76.7	32	0.19	3	37.6
3150	9.9	106.6	108.0	64.3	80.1	37	0.31	0	36.0
4000	8.6	131.1	107.0	58.4	83.1	41	0.43	0	35.0
5000	7.5	168.8	104.7	51.7	82.5	45	0.42	0	31.1

STC Rating 31 (Sound Transmission Class)
Deficiencies 24 (Number of deficiencies versus contour curve)
OITC Rating 25 (Outdoor/Indoor Transmission Class)

	Accredited by the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program for the specific test methods under lab code 200361. The laboratory's accreditation or test report in no way constitutes or implies product certification, approval, or endorsement by NIST. This test report applies only to the specimen that was tested.
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Architectural Testing

ATI No. 01-48522.01

Date 12/11/03

Client EFCO Corporation

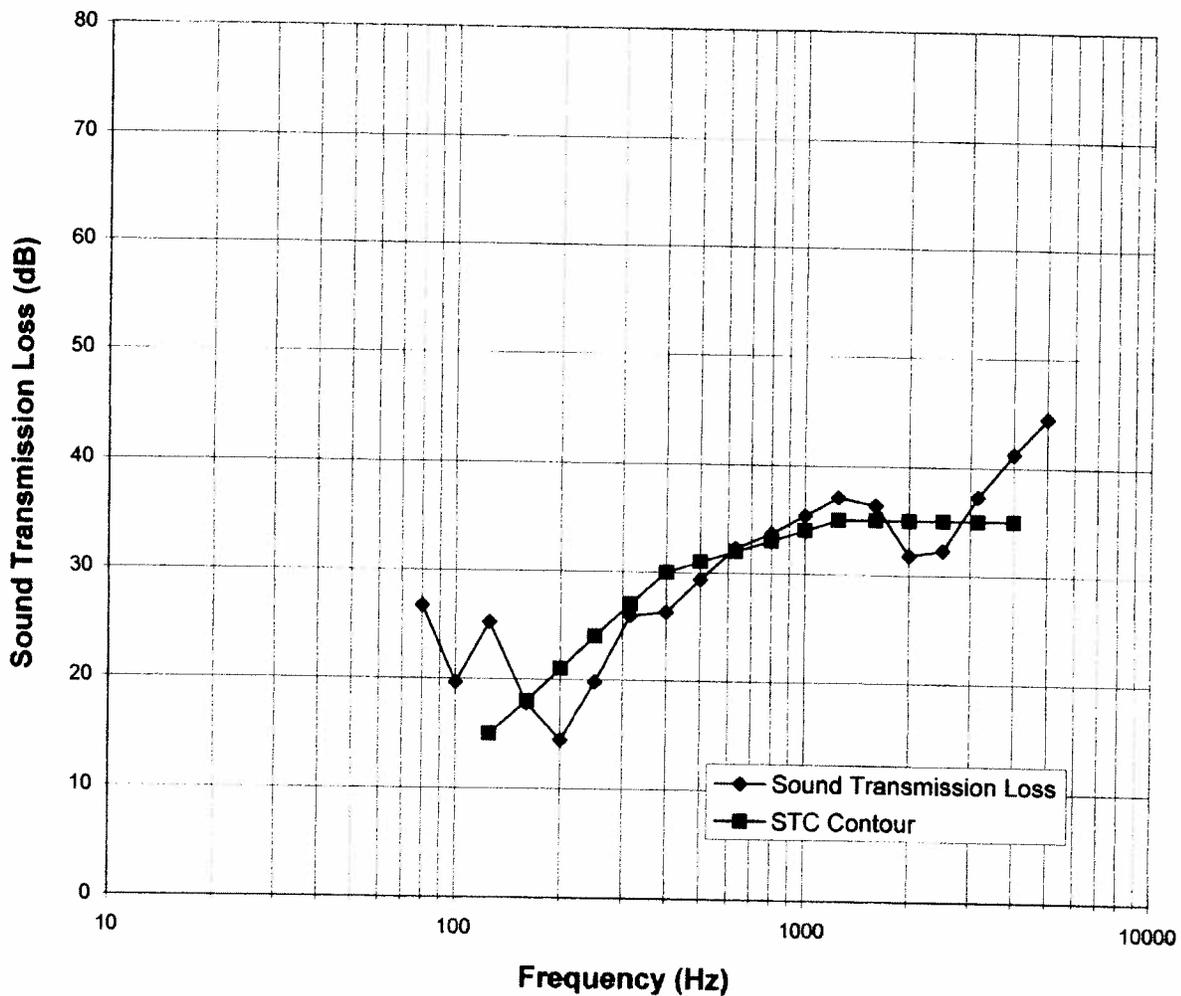
Specimen Series/Model 3500, horizontal sliding window with 1" IG (1/4" annealed, 1/2" air space, 1/4" annealed)

Specimen Area 24.00 Sq Ft

Filler Area 116.00 Sq Ft

Operator Kurt A. Golden

Sound Transmission Loss



Accredited by the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program. The laboratory's accreditation or test report in no way constitutes or implies product certification, approval, or endorsement by NIST. This test report applies only to the specimen that was tested.

ACOUSTICAL TEST REPORT

Rendered to:

Graham Architectural Products Corporation

**Project: Sound Transmission Loss Testing of a
Graham Architectural Products, Series/Model
0300/0375, Aluminum Horizontal Sliding Window.**

Report No: 01-32198.01
Report Date: 08/21/98
Expiration Date: 06/24/02

ACOUSTICAL TEST REPORT

Rendered to:

Graham Architectural Products Corporation
1551 Mt. Rose Avenue
York, PA 17403-2909

Report No: 01-32198.01
Test Dates: 06/24/98
Report Date: 08/21/98

Project Identification: Sound Transmission Loss Testing of a Graham Architectural Products, Series/Model 0300/0375, Aluminum Horizontal Sliding Window.

Project Summary: Architectural Testing, Inc. (ATI) was contracted to conduct acoustical tests on a Graham Architectural Products Series/Model 0300/0375 aluminum horizontal sliding window with two glazing configurations. A summary of the results is listed in the Test Results section and the complete test data is included as Appendix B of this report.

Test Methods: The tests were conducted in accordance with the following:

ASTM E90-97, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

ASTM E413-87 (Re-approved 1994), Classification for Rating Sound Insulation.

ASTM E1332-90, Standard Classification for Determination of Outdoor-Indoor Transmission Class.

Test Equipment: The equipment, used to conduct the acoustical tests, meets the requirements of ASTM E 90-97. The microphones were calibrated before conducting the transmission loss test. The test equipment and test chamber descriptions are listed in Appendix A.

Test Procedure: A sound transmission loss test was initially performed on a filler wall assembly that was designed to test 4'0" by 6'0" double hung and 6'0" by 4'0" horizontal sliding windows. The filler wall achieved an STC rating of 63.

The 6'0" wide by 4'0" high plug was removed from the filler wall assembly and the aluminum horizontal sliding window (which was received with a 1-1/2" thick, wood buck) was installed in the opening. The window frame, when installed, was approximately 1/4" from being flush with the receive room side of the filler wall. A dense neoprene gasket and duct seal was used to seal the wood buck to the inside perimeter of the filler wall opening. The two glazing configurations were tested in the same window frame and filler wall assembly. Each window configuration was opened and closed several times, and the sound transmission loss test was performed with no further adjustments. A stethoscope was used to check for any abnormal air leaks before each test.

Test Procedure (Continued): For each transmission loss test, one background sound pressure level, and five sound absorption measurements were conducted at each of the five microphone positions. For each test, two sound pressure level measurements were made simultaneously in both rooms, at each of the five microphone positions. The air temperature and relative humidity conditions were monitored and recorded during the background, absorption, source and receive room measurements.

Sample Descriptions:

Series/Model #: 0300/0375

Window Type: Horizontal Sliding Window.

Overall Size: 72" wide by 48" high.

Finish: Brown

Frame & Sash: The frame and both sashes were constructed utilizing extruded aluminum members that incorporated a poured-in-place urethane thermal break with an average debridged width of .135" (3.5 mm). All corners were coped, butted, sealed and fastened with two screws. The fixed lite mounting rail was also coped, butted and attached with two screws at each end.

Glazing 1: 1" thick, insulating glass, consisting of two sheets of .25" (6.4 mm) annealed glass, separated by a 1/2", desiccant filled metal spacer system. The I.G. system was interior drop-in glazed, backbedded by silicone and held in place with aluminum snap-fit glazing beads.

Glazing 2: 1" thick, insulating glass, consisting of one sheet of .25" (6.4 mm) annealed glass and one sheet of .25" (6.4 mm) laminated glass separated by a 1/2", desiccant filled metal spacer system. The laminated glass consisted of two sheets of .125" (3.2 mm) annealed with a .030" (0.08 mm) interlayer. The I.G. system was interior drop-in glazed, backbedded by silicone and held in place with aluminum snap-fit glazing beads.

Hardware: The operable sash contained four plastic housings (one at each end of the top and bottom rails). The bottom housings contained metal rollers. A spring-loaded aluminum lock was located mid-span of the pull rail.

Comments: The requestor supplied the sample description listed above. The horizontal sliding window was tested without a window screen. The requestor did not provide drawings. The window specimen and sash configurations were not disassembled, but were placed in storage for future testing.

Test Results:

A summary of the sound transmission loss tests on the Graham Architectural Products Series/Model 0300/0375 Aluminum Horizontal Sliding Window with the two glazing configurations is listed below.

Glazing 1

Sound Transmission Class	STC = 33
Outdoor-Indoor Transmission Class	OITC = 27

Glazing 2

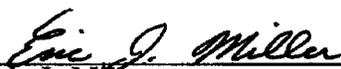
Sound Transmission Class	STC = 36
Outdoor-Indoor Transmission Class	OITC = 30

The complete test results are listed in Appendix B. Test data on the ASTM E1289 transmission loss reference specimen and the test chamber's flanking limitation is available upon request.

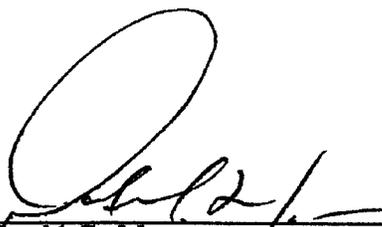
This report is prepared for the convenience of our customer and endeavors to provide accurate and timely project information. It contains a summary of observations made by a qualified representative of Architectural Testing, Inc. The statements made herein do not constitute approval, disapproval, certification or acceptance of performance or materials.

A copy of this report will be retained by ATI for a period of four years. This report is the exclusive property of the client so named herein.

For ARCHITECTURAL TESTING, INC:



Eric J. Miller
Sr. Project Engineer



David G. Moyer
Director of Testing Services

EJM:ejm
01-32198.01

Appendix A

Instrumentation:

1. Analyzer: Hewlett Packard Model 35670A, Dynamic Signal Analyzer.
2. Receive room microphone: Hewlett Packard (ACO), model ACOJ 7047 1/2" pressure type, condenser microphone.
3. Source room microphone: Hewlett Packard (ACO), model ACOJ 7047 1/2" pressure type, condenser microphone.
4. Microphone calibrator: Bruel & Kjaer, Type 4228 Pistonphone Calibrator, 124 dB at 250 hertz.
5. Noise source: Two, non-coherelated "Pink" noise signals generated by a Delta Electronics, Type SNG-1 Stereo Noise Generator.
6. Spectrum shaper: Rane Type RPE228 Programmable EQ.
7. Power amplifiers: Two Renkus-Heinz Model P2000 Amplifiers.
8. Receive room loudspeakers: Two Renkus-Heinz "Trap Jr/9" loudspeakers.
9. Source room loudspeakers: Two Renkus-Heinz "Trap Jr/9" loudspeakers.

Test Chamber Descriptions:

1. Receive Room: Volume = 8,291.3 ft³ (234 m³).
Rotating vane and stationary diffusers.
Temperature & humidity controlled.
Isolation pads under the floor.
2. Source Room: Volume = 7296.3 ft³ (206.6 m³).
Stationary diffusers only.
Temperature & humidity controlled.
3. TL Test Opening: Size = 14 ft wide by 10 ft high. Vibration break between source and receive rooms.

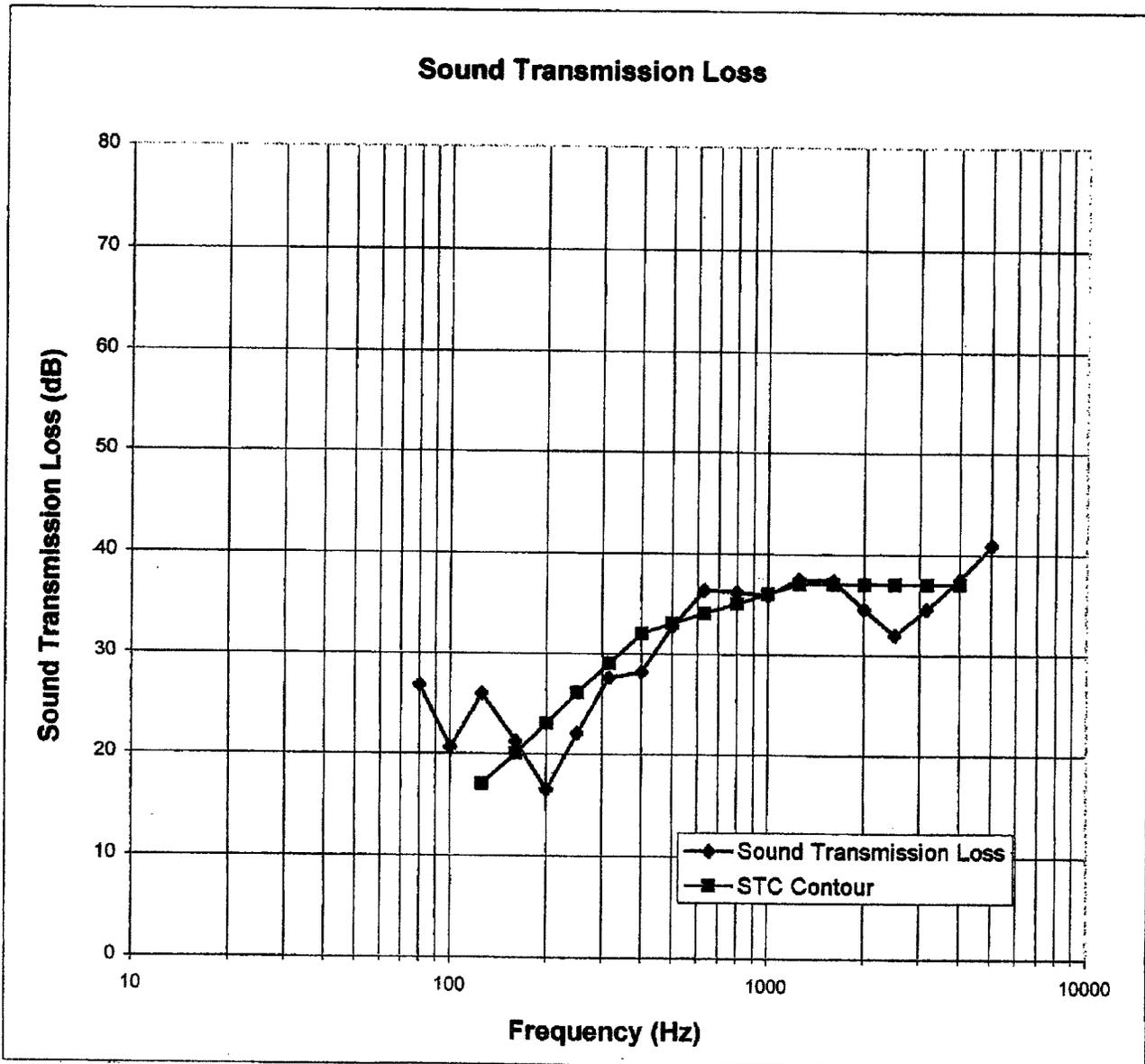
ATI No.	01-32198-1	Date	06/24/98
Client	Graham Architectural Products Corporation		
Specimen	0300/0375 Slider, 1" IG with 1/4" Annealed, 1/2" Airspace, 1/4" Annealed		
Specimen Area	24.00 Sq Ft		
Filler Area	116.00 Sq Ft		

	Bkgrd	Absorp	Source	Receive	Filler	Specimen
Temp F	85.9	85.9	83.5	85.7	86.1	85.2
RH %	60.6	60.0	60.7	60.4	57.1	60.4

Freq (Hz)	Bkgrd SPL (dB)	Absorp (Sabines /Sq Ft)	Source SPL (dB)	Receive SPL (dB)	Filler TL (dB)	Specimen TL (dB)	95% Conf Limit	No. of Defici- encies	Trans Coef Diff
80	45.4	45.8	86.5	58.2	33.9	26.8	3.62	0	1.5
100	39.5	52.3	89.0	65.3	38.8	20.7	1.09	0	11.6
125	39.9	43.0	92.6	64.3	45.3	26.0	1.42	0	12.7
160	42.8	46.3	96.9	72.7	45.9	21.3	1.64	0	17.8
200	42.7	46.9	102.0	82.5	50.0	16.6	1.15	6	26.6
250	39.3	46.7	104.9	79.9	51.2	22.1	0.61	4	22.3
315	35.4	43.9	103.9	73.7	55.1	27.6	0.89	1	20.7
400	34.2	45.3	102.7	71.7	57.8	28.2	0.77	4	22.7
500	30.7	48.4	100.5	64.7	59.4	32.7	0.51	0	19.8
630	25.7	49.3	105.3	65.8	65.5	36.4	0.55	0	22.3
800	25.0	54.6	107.4	67.5	66.3	36.2	0.27	0	23.2
1000	23.7	59.9	107.3	67.5	71.2	35.9	0.40	0	28.4
1250	20.5	65.4	106.7	64.9	77.5	37.5	0.33	0	33.1
1600	20.5	72.8	109.2	67.0	81.1	37.4	0.25	0	36.9
2000	14.9	75.1	107.5	68.0	82.0	34.5	0.25	2	40.6
2500	11.4	86.3	103.0	65.5	79.0	32.0	0.25	5	40.1
3150	10.0	98.6	104.0	63.3	80.9	34.6	0.37	2	39.5
4000	9.5	112.1	104.8	60.6	83.4	37.5	0.47	0	39.0
5000	8.6	137.7	103.8	55.3	82.6	40.9	0.31	0	34.8

STC Rating 33 (*Sound Transmission Class*)
Deficiencies 24 (*Number of deficiencies versus contour curve*)
OITC Rating 27 (*Outdoor/Indoor Transmission Class*)

ATI No. 01-32198-1 Date 06/24/98
Client Graham Architectural Products Corporation
Specimen 0300/0375 Slider, 1" IG with 1/4" Annealed, 1/2" Airspace, 1/4" Annealed
Specimen Area 24.00 Sq Ft
Filler Area 116.00 Sq Ft





ACOUSTICAL PERFORMANCE TEST REPORT

Rendered to:

MANNIX
345 Crooked Hill Road
Brentwood, New York 11717

Report No: 71241.01-113-11
Test Date: 02/15/07
Report Date: 02/19/07
Expiration Date: 02/15/11

Test Sample Identification:

Series/Model: 5000

Type: Horizontal Sliding Window

Overall Size: 96" by 78"

Glazing Option A (Nominal Dimensions): 1" IG (1/4" Annealed, 1/2" Air Space,
1/4" Annealed)

Glazing Option B (Nominal Dimensions): 15/16" IG (1/4" Annealed Exterior,
1/2" Air Space, 3/16" Annealed Interior)

Glazing Option C (Nominal Dimensions): 1" IG (1/4" Annealed Exterior, 1/2" Air Space,
1/4" Laminated Interior)

Project Scope: Architectural Testing, Inc. (ATI) was contracted by Mannix to conduct sound transmission loss tests on Series/Model 5000, horizontal sliding window with three glazing options. A summary of the results is listed in the Test Results section and the complete test data is included as Appendix B of this report. The samples were provided by the client.

130 Derry Court
York, PA 17406-8405
phone: 717-764-7700
fax: 717-764-4129



Test Methods: The acoustical tests were conducted in accordance with the following:

ASTM E 90-04, *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.*

ASTM E 413-04, *Classification for Rating Sound Insulation.*

ASTM E 1332-90 (Re-approved 2003), *Standard Classification for Determination of Outdoor-Indoor Transmission Class.*

ASTM E 2235-04, *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods.*

Test Equipment: The equipment used to conduct these tests meets the requirements of ASTM E 90. The microphones were calibrated before conducting sound transmission loss tests. The test equipment and test chamber descriptions are listed in Appendix A.

Sample Installation:

A double stud filler wall was constructed with 2x4 steel studs spaced 16" on center. Three layers of 5/8" type "X" gypsum board were fastened to the source side of the filler wall. Three layers of 5/8" type "X" gypsum board were fastened to the receive side of the filler wall. The cavity was filled with R-13 fiberglass insulation. The perimeter and seams were sealed with acoustical sealant. A sound transmission loss test was then conducted on the filler wall. The filler wall achieved an STC rating of 67. The filler wall plug was removed. The test specimen was installed in the test opening. The interior face of the sample, when installed, was at least 1/4" from the receiving room side of the filler wall. Duct seal was used to seal the perimeter of the sample to the test opening on both sides. A stethoscope was used to check for any abnormal air leaks before the test.

Test Procedure: The window was closed and locked for this test. The sound transmission loss test consisted of the following measurements: One background noise sound pressure level and five sound absorption measurements were conducted at each of the five microphone positions. Two sound pressure level measurements were made simultaneously in both rooms, at each of the five microphone positions. The air temperature and relative humidity conditions were monitored and recorded during the background, absorption, source, and receive room measurements.

**Sample Descriptions:****Frame Construction:**

	Frame
Size	96" by 78"
Thickness	5"
CORNERS	Coped
Fasteners	Screws
Seal Method	Sealant
MATERIAL	Thermally broken aluminum
Reinforcement	N/A
Thermal Break Material	Urethane

Sash Construction:

	Active Sash	Fixed Sash
Size	47-5/8" by 72-1/4"	47-3/4" by 72-1/2"
Thickness	1-1/2"	1-1/2"
CORNERS	Coped	Coped
Fasteners	Screws	Screws
Seal Method	Sealant	Sealant
MATERIAL	Thermally broken aluminum	Thermally broken aluminum
Reinforcement	N/A	N/A
Thermal Break Material	Urethane	Urethane
Daylight Opening Size	42-1/2" by 67-1/2"	42-1/2" by 67-1/2"

71241.01-113-11
Page 4 of 8**Sample Descriptions: (Continued)****Glazing Option A:**

Measured Overall Insulation Glass Unit Thickness	0.971"
Spacer Type	Aluminum

	Exterior Sheet	Gap	Interior Sheet
MEASURED THICKNESS	0.223"	0.524"	0.224"
MUNTIN PATTERN	N/A	N/A	N/A
MATERIAL	Annealed	Air*	Annealed
LAMINATE MATERIAL	N/A	N/A	N/A

GLAZING METHOD	Channel Glazed
GLAZING MATERIAL	N/A
GLAZING BEAD MATERIAL	N/A

Glazing Option B:

Measured Overall Insulation Glass Unit Thickness	0.897"
Spacer Type	Aluminum

	Exterior Sheet	Gap	Interior Sheet
MEASURED THICKNESS	0.229"	0.520"	0.148"
MUNTIN PATTERN	N/A	N/A	N/A
MATERIAL	Annealed	Air*	Annealed
LAMINATE MATERIAL	N/A	N/A	N/A

GLAZING METHOD	Channel Glazed
GLAZING MATERIAL	N/A
GLAZING BEAD MATERIAL	N/A

**Sample Descriptions: (Continued)****Glazing Option C:**

Measured Overall Insulation Glass Unit Thickness	0.992"
Spacer Type	Aluminum

	Exterior Sheet	Gap	Interior Sheet
MEASURED THICKNESS	0.223"	0.521"	0.248"
MUNTIN PATTERN	N/A	N/A	N/A
MATERIAL	Annealed	Air*	Laminated
LAMINATE MATERIAL	N/A	N/A	PVB

GLAZING METHOD	Channel Glazed
GLAZING MATERIAL	N/A
GLAZING BEAD MATERIAL	N/A

Components:

TYPE	QUANTITY	LOCATION
WEATHERSTRIP		
Polypile with center fin	2 Rows	Rails and jamb stiles
Polypile with center fin	1 Row	Meeting stiles
1/2" by 1/4" Polypile spring loaded dust plug	4	Top and bottom corners of both meeting stiles
2-1/2" by 3" by 11/32" Neoprene pads	2	Top and bottom corners of fixed meeting stile
HARDWARE		
Metal roller assembly	4	2 on each bottom rail
Spring loaded lock	1	Active meeting rail
DRAINAGE		
1/8" Diameter weep holes	6	2 on sill face, 4 on screen track
5/8" by 3/8" Weep slot	1	Sill face at active panel jamb stile

* - Stated per Client/Manufacturer N/A-Non Applicable



71241.01-113-11

Page 6 of 8

Comments: The fixed panel was held in place with a plastic channel and self tapping screws. The weight of the sample with glazing option A was 354 lbs. The weight of the sample with glazing option B was 332 lbs. The weight of the sample with glazing option C was 378 lbs. The client did not supply drawings on the Series/Model 5000, horizontal sliding window. The window will be retained by ATI for future testing. Photographs of the test specimen are included in Appendix C.

Test Results: The STC (Sound Transmission Class) rating was calculated in accordance with ASTM E 413. The OITC (Outdoor-Indoor Transmission Class) was calculated in accordance with ASTM E 1332. A summary of the sound transmission loss test results on the Series/Model 5000, horizontal sliding window is listed below.

Summary of Test Results			
ATI Data File No.	Glazing Option (Nominal Dimensions)	STC	OITC
71241.01A	1" IG (1/4" annealed, 1/2" air space, 1/4" annealed)	35	29
71241.01B	15/16" IG (1/4" annealed exterior, 1/2" air space, 3/16" annealed interior)	35	29
71241.01C	1" IG (1/4" annealed, 1/2" air space, 1/4" laminated interior) Glass Temperature 75°F	37	31

The complete test results are listed in Appendix B. Flanking limit tests and reference specimen tests are available upon request.



Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire. Results obtained are tested values and were secured by using the designated test methods. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC:

Digitally Signed by: Brandon C. Ward

Brandon C. Ward
Technician - Acoustical Testing

Digitally Signed by: Todd D. Kister

Todd D. Kister
Laboratory Supervisor - Acoustical Testing

BCW:crc

- Attachments (pages): This report is complete only when all attachments listed are included.
- Appendix-A: Equipment description (1)
 - Appendix-B: Complete test results (6)
 - Appendix-C: Photographs (1)

	Architectural Testing, Inc is accredited by the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program for the specific test methods listed under lab code 200361. The laboratory's accreditation or test report in no way constitutes or implies product certification, approval, or endorsement by NIST. This test report applies only to the specimen that was tested.
NVLAP LAB CODE 200361	



**ASTM E 90 SOUND TRANSMISSION LOSS
TEST REPORT**

Rendered to:

WAUSAU WINDOW AND WALL SYSTEMS

SERIES/MODEL: 2250i (14mm I-Bar)

TYPE: Fixed Over Projected Window

Summary of Test Results			
Data File No.	Glazing (Nominal Dimensions)	STC	OITC
97545.01	1" IG (1/4" tempered, 1/2" argon, 1/4" tempered)	34	28

Reference should be made to Architectural Testing, Inc. Report No. 97545.01-113-11 for complete test specimen description. The complete test results are listed in Appendix B.



ACOUSTICAL PERFORMANCE TEST REPORT

Rendered to:

WAUSAU WINDOW AND WALL SYSTEMS
7800 International Drive
P.O. Box 1746
Wausau, Wisconsin 54402-1746

Report No: 97545.01-113-11
Test Date: 02/04/10
Report Date: 02/15/10
Expiration Date: 02/04/14

Test Sample Identification:

Series/Model: 2250i (14mm I-Bar)

Type: Fixed Over Projected Window

Overall Size: 48" by 60"

Glazing (Nominal Dimensions): 1" IG (1/4" Tempered, 1/2" Argon, 1/4" Tempered)

Project Scope: Architectural Testing, Inc. was contracted by Wausau Window and Wall Systems to conduct a sound transmission loss test on a Series/Model 2250i (14mm I-Bar), fixed over projected window. A summary of the results is listed in the Test Results section and the complete test data is included as Appendix B of this report. The sample was provided by the client.

Test Methods: The acoustical test was conducted in accordance with the following:

ASTM E 90-09, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

ASTM E 413-04, Classification for Rating Sound Insulation.

ASTM E 1332-90 (Re-approved 2003), Standard Classification for Determination of Outdoor-Indoor Transmission Class.

ASTM E 2235-04, Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods.

Test Equipment: The equipment used to conduct this test meets the requirements of ASTM E 90. The microphones were calibrated before conducting the sound transmission loss test. The test equipment and test chamber descriptions are listed in Appendix A.

Sample Installation: Sound transmission loss tests were initially performed on a filler wall that was designed to test 48" by 72" and 72" by 48" specimens. The filler wall achieved an STC rating of 69.

A filler wall reducing element was used to reduce the test opening size. The reducing element consisted of two separate 2" by 6" wood frames filled with concrete to reduce the test opening size to 48-3/4" wide by 60-1/2" high. A dense neoprene gasket was placed between the two wood and concrete frames. The window was placed on an isolation pad in the new test opening. Duct seal was used to seal the perimeter of the window to the test opening on both sides. The interior side of the window frame, when installed, was approximately 1/4" from being flush with the receiving room side of the filler wall. A stethoscope was used to check for any abnormal air leaks around the test specimen prior to testing. The vent was opened and closed at least five times prior to testing.

Test Procedure: The window was closed and locked for this test. The sound transmission loss test consisted of the following measurements: One background noise sound pressure level and five sound absorption measurements were conducted at each of the five microphone positions. Two sound pressure level measurements were made simultaneously in both rooms, at each of the five microphone positions. The air temperature and relative humidity conditions were monitored and recorded during the background, absorption, source, and receive room measurements.

Sample Descriptions:

Primary Frame Construction:

	Primary Frame	Vent
Size	48" by 60"	45-9/16" by 16"
Thickness	2-1/2"	2-1/2"
Corners	Coped	Mitered
Fasteners	Screws	Keyed and staked
Seal Method	Sealant	Sealant
Material	Aluminum	Aluminum
Reinforcement	N/A	N/A
Thermal Break Material	Insulbar (14 mm)	Insulbar (14 mm)
Daylight Opening Size	44" by 38-3/4"	41-1/4" by 11-5/8"

N/A-Non Applicable

Sample Descriptions: (Continued)

Glazing:

Measured Overall Insulation Glass Unit Thickness	0.986"
Spacer Type	Stainless Steel

	Exterior Sheet	Gap	Interior Sheet
Measured Thickness	0.225"	0.532"	0.229"
Muntin Pattern	N/A	N/A	N/A
Material	Tempered / Low E	Argon*	Tempered
Laminate Material	N/A	N/A	N/A

Glazing Method	Interior
Glazing Material	Silicone / Flexible wedge gasket
Glazing Bead Material	Aluminum

Components:

TYPE	QUANTITY	LOCATION
Weatherstrip		
1/2" Leaf gasket	1 Row	Vent top rail
1/8" Leaf gasket	1 Row	Frame at vent top rail and at jambs with a 2-1/2" cut out at bottom corners
Hardware		
Multi-point hinge system	2	Jambs at vent
Sweep lock	2	Vent bottom rail
Keeper	2	Sill
Snubber	1	Vent top rail
Drainage		
No drainage		

* - Stated per Client/Manufacturer N/A-Non Applicable

Comments: The weight of the sample was 142 lbs. The design drawings (included in Appendix C) supplied by the client, accurately describe the Series/Model 2250i (14mm I-Bar), fixed over projected window. The dimensions on the drawings that are circled and/or checked were verified against the accessible components of the test specimen. The test specimen was held for future testing per the client's request, so the internal components and dimensions could not be verified against the drawings. Photographs of the test specimen are included in Appendix D.

Test Results: The STC (Sound Transmission Class) rating was calculated in accordance with ASTM E 413. The OITC (Outdoor-Indoor Transmission Class) was calculated in accordance with ASTM E 1332. A summary of the sound transmission loss test results on the Series/Model 2250i (14mm I-Bar), fixed over projected window is listed below.

Summary of Test Results			
Data File No.	Glazing (Nominal Dimensions)	STC	OITC
97545.01	1" IG (1/4" tempered, 1/2" argon, 1/4" tempered)	34	28

Note: Due to the calculations and sample size, transmission loss coefficient differences between 6 and 15 indicate there has been a filler wall correction applied. On each data sheet listed in Appendix B, cells highlighted in green indicate transmission loss values affected in this way.

The complete test results are listed in Appendix B. Flanking limit tests and reference specimen tests are available upon request.

Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire. Results obtained are tested values and were secured by using the designated test methods. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing.

For ARCHITECTURAL TESTING, INC:



Digitally Signed by: Kurt A. Golden

Kurt A. Golden
Senior Technician - Acoustical Testing



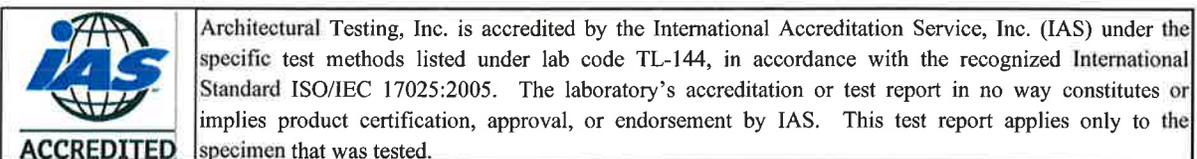
Digitally Signed by: Todd D. Kister

Todd D. Kister
Laboratory Supervisor - Acoustical Testing

KAG:jmc

Attachments (pages): This report is complete only when all attachments listed are included.

- Appendix-A: Equipment description (1)
- Appendix-B: Complete test results (2)
- Appendix-C: Design drawings (5)
- Appendix-D: Photographs (1)



Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	02/15/10	N/A	Original Report Issue

Appendix A

Instrumentation:

Instrument	Manufacturer	Model	Description	ATI Number	Last Calibrated
Analyzer	Agilent Technologies	35670A	Dynamic signal analyzer	004112	06/08/09*
Data Acquisition Unit	Agilent Technologies	34970A	Data Acquisition Unit	62211	07/29/09
Receive Room Microphone	G.R.A.S.	40AR	1/2", Pressure type, condenser microphone	Y003246	08/18/09
Source Room Microphone	G.R.A.S.	40AR	1/2", Pressure type, condenser microphone	Y003245	08/18/09
Receive Room Preamp	G.R.A.S.	26AK	1/2" Preamplifier	Y003249	08/08/09
Source Room Preamp	G.R.A.S.	26AK	1/2" Preamplifier	Y003248	08/18/09
Microphone Calibrator	Bruel & Kjaer	4228	Pistonphone calibrator	Y002816	02/10/09
Noise Source	Delta Electronics	SNG-1	Two, Uncorrelated "Pink" noise signals	Y002181	N/A
Equalizer	Rane	RPE228	Programmable EQ	Y002180	N/A
Power Amplifiers	Renkus-Heinz	P2000	Two, Amplifiers	Y002179 Y001779	N/A
Receive Room Loudspeakers	Renkus-Heinz	Trap Jr/9"	Two, Loudspeakers	Y001784 Y001785	N/A
Source Room Loudspeakers	Renkus-Heinz	Trap Jr/9"	Two, Loudspeakers	Y002649 Y002650	N/A
Receiving Room Environmental Indicator	Vaisala	HMW60Y	Temperature / Humidity Indicator	Y002652	08/23/09
Source Room Environmental Indicator	Vaisala	HMW60Y	Temperature / Humidity Indicator	005066	08/18/09
Weather Station	Davis Instruments	6150C	Laboratory Barometric Pressure, Temperature, and Humidity	Y003257	03/26/09

*- Note: The calibration frequency for this equipment is every two years per the manufacturer's recommendation.

Test Chamber:

	Volume	Description
Receiving Room	234 m ³ (8291.3 ft ³)	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
Source Room	206.6 m ³ (7296.3 ft ³)	Stationary diffusers only Temperature and humidity controlled

	Maximum Size	Description
TL Test Opening	4.27 m (14 ft) wide by 3.05 m (10 ft) high	Vibration break between source and receive rooms

N/A-Non Applicable

Appendix B
Complete Test Results



SOUND TRANSMISSION LOSS

ASTM E 90

Architectural Testing

ATI No.	97545.01	Date	02/04/10
Client	Wausau Window and Wall Systems		
Specimen	Series/Model: 2250i (14mm I-Bar), fixed over projected window with 1" IG (1/4" tempered, 1/2" argon, 1/4" tempered)		
Specimen Area	20.00 Sq Ft		
Filler Area	120.00 Sq Ft		
Operator	Brandon C. Ward		

	Bkgrd	Absorp	Source	Receive	Filler	Specimen
Temp F	72.4	74.2	73.7	73.1	74.0	73.4
RH %	43.0	40.5	41.3	41.9	43.6	41.7

Freq (Hz)	Bkgrd SPL (dB)	Absorp (Sabines /Sq Ft)	Source SPL (dB)	Receive SPL (dB)	Filler TL (dB)	Specimen TL (dB)	95% Conf Limit	No. of Deficiencies	Trans Coef Diff
80	48.9	46.5	84.1	61.1	36.0	20	1.92	0	9.0
100	44.2	52.7	87.8	57.9	41.3	27	2.47	0	7.8
125	45.3	49.3	91.6	59.9	47.3	28	1.85	0	11.7
160	45.0	48.9	93.7	66.5	49.5	23	0.82	0	18.3
200	43.6	54.4	98.5	73.5	52.9	21	1.65	3	24.5
250	41.8	56.4	99.4	75.5	56.1	19	1.28	8	28.9
315	40.9	55.7	97.9	68.3	57.7	25	0.55	5	24.8
400	40.5	60.6	97.8	65.4	62.8	28	0.44	5	27.4
500	40.3	61.7	99.0	60.8	67.1	33	0.31	1	26.0
630	35.8	59.2	101.3	61.1	71.0	35	0.49	0	27.7
800	37.2	61.7	100.9	58.5	73.1	37	0.36	0	27.8
1000	34.4	65.7	100.9	56.3	76.4	39	0.61	0	29.2
1250	33.6	69.9	104.1	59.3	78.3	39	0.40	0	31.2
1600	30.8	73.5	110.4	66.0	83.2	39	0.29	0	36.7
2000	21.4	78.4	106.0	65.3	84.2	35	0.18	3	41.6
2500	11.7	91.4	104.7	63.9	85.7	34	0.36	4	43.7
3150	11.1	109.4	105.4	59.8	86.3	38	0.37	0	40.3
4000	9.0	135.0	103.9	53.2	87.2	42	0.57	0	37.0
5000	7.6	180.3	102.0	45.4	85.6	47	0.58	0	30.8

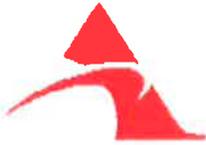
STC Rating = 34 (Sound Transmission Class)
Deficiencies = 29 (Number of deficiencies versus contour curve)
OITC Rating = 28 (Outdoor/Indoor Transmission Class)

Notes:

- 1) The acoustical chambers are qualified for measurements down to 80 hertz. Data reported below 80 hertz is for reference only.
- 2) Transmission loss coefficient differences less than 6 indicate the lower limit of the transmission loss for this specimen. These cells are highlighted red.
- 3) Transmission loss coefficient differences between 6 and 15 indicate there has been a filler wall correction applied. These cells are highlighted green.
- 4) Receive Room levels less than 5dB above the Background levels are highlighted in yellow.

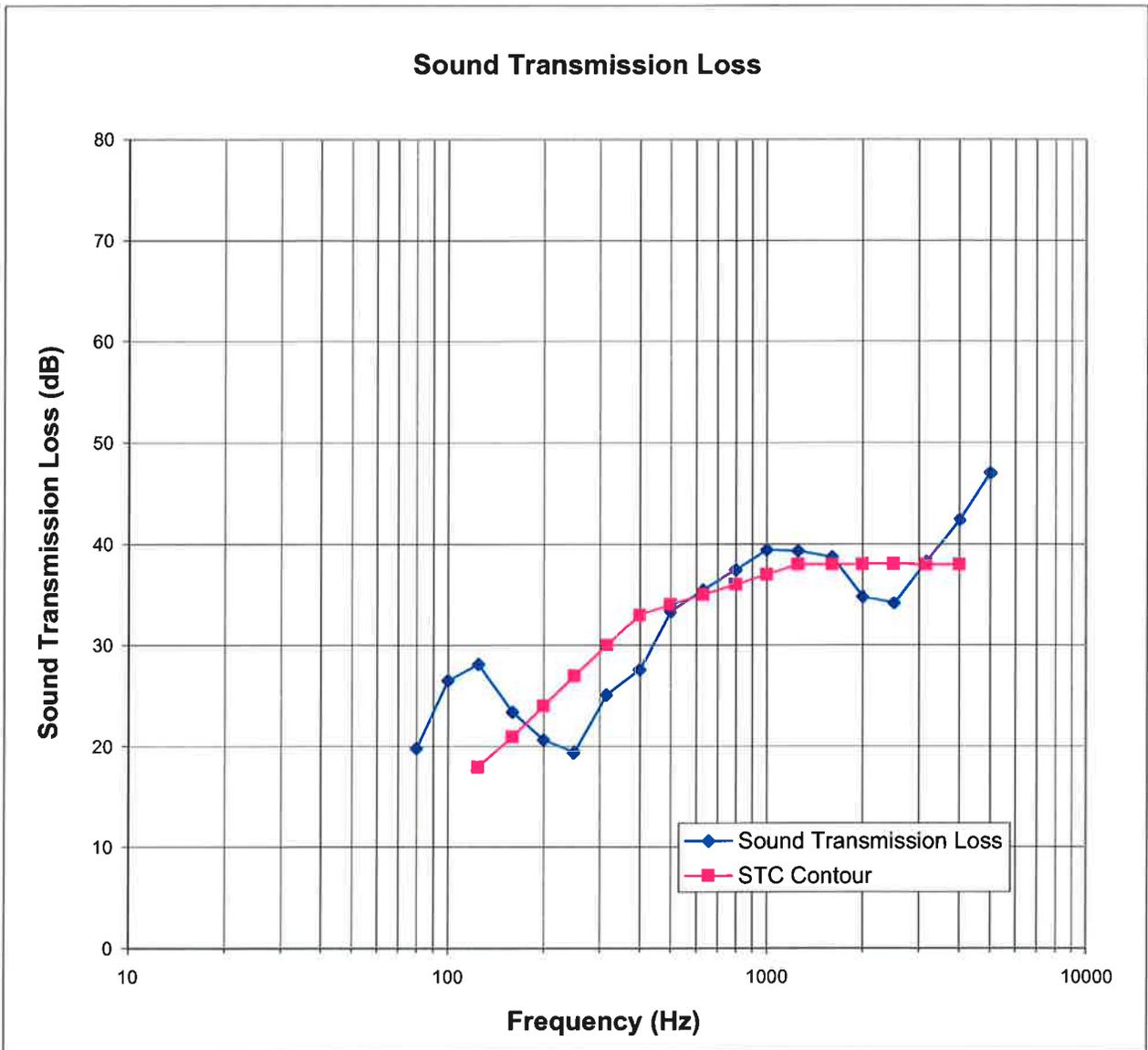


Architectural Testing, Inc. is accredited by the International Accreditation Service, Inc. (IAS) under the specific test methods listed under lab code TL-144, in accordance with the recognized International Standard ISO/IEC 17025:2005. The laboratory's accreditation or test report in no way constitutes or implies product certification, approval, or endorsement by IAS. This test report applies only to the specimen that was tested.



Architectural Testing

ATI No. 97545.01 Date 02/04/10
Client Wausau Window and Wall Systems
Specimen Series/Model: 2250i (14mm I-Bar), fixed over projected window with 1" IG (1/4" tempered, 1/2" argon, 1/4" tempered)
Specimen Area 20.00 Sq Ft
Filler Area 120.00 Sq Ft
Operator Brandon C. Ward



Architectural Testing, Inc. is accredited by the International Accreditation Service, Inc. (IAS) under the specific test methods listed under lab code TL-144, in accordance with the recognized International Standard ISO/IEC 17025:2005. The laboratory's accreditation or test report in no way constitutes or implies product certification, approval, or endorsement by IAS. This test report applies only to the specimen that was tested.

Appendix D

Photographs



Receive Room View of Installed Specimen



Source Room View of Installed Specimen

Attachment #7:

Scope of work for the On-site
Environmental Monitor issued
on August 27, 2014 (8pgs.)



GreenlandForestCity
Partners

**Request for Proposals
Provision of Onsite Environmental Monitoring Services
Pacific Park Brooklyn**

August 27, 2014

This Request for Proposals (“RFP”) seeks the services of a qualified engineering firm to serve as the on-site environmental monitor (“OEM”) for the Pacific Park Brooklyn Project (former, Atlantic Yards; the “Project”) in Brooklyn, New York. The successful candidate will have substantial construction management experience in New York City.

Project Description

Atlantic Yards Venture, LLC, (“Owner”), affiliate of GreenlandForestCity Partners (the “Developer”) are developing the Pacific Park Brooklyn Project on a 22-acre project site (the “Project Site”) roughly bounded by Flatbush and 4th Avenues to the west, Vanderbilt Avenue to the east, Atlantic Avenue to the north, and Dean and Pacific Streets to the south (see Exhibit A). The Project consists of the 18,000-seat Barclays Center arena and 16 other buildings; two of which could be mixed use (commercial and residential) or be entirely commercial and 14 residential buildings containing up to 6,340 market rate rental, affordable and for sale units, eight (8) acres of public open space and approximately 1,200 below grade parking spaces and some retail and community facility uses. The Project also includes the development and construction a new storage and maintenance rail yard facility for the Long Island Rail Road (LIRR) below grade on two blocks east of 6th Avenue (Blocks 1120 and 1121), over which a platform will be constructed along with six of the Project buildings and some of the open space.

Current Project Status

Since approval of the Project in December 2006, a number of project-related construction and design tasks have been undertaken. Key areas of construction include clearance of most of the buildings on the project site; completion and opening of the Barclays Center; completion and opening of the new subway entrance at the intersection of Flatbush and Atlantic Avenues on the Arena Block; the re-routing of water, sewer, and utility lines around the Arena Block; a portion of a new water main built on behalf of the City of New York on Atlantic Avenue; roadway modifications; work on the new LIRR rail yard and completion of the new Carlton Avenue Bridge spanning the rail yard; construction of a temporary surface parking lot on Block 1129; and commencement of construction of the first residential building (B2) on the Arena Block, which broke ground on December 18, 2012 and is being constructed using modular methods. Concurrently, many of the environmental commitments and mitigation measures described in the 2009 Amended Memorandum of Environmental Commitments have been implemented on an on-going basis. As the State sponsor for this Project, Empire State Development (ESD) maintains an active website to

provide updates on the Project and a venue for public information on the Project's construction> ESD also maintains an active presence at the project site through its Community Liaison, Owner's Representative (STV) and Environmental Monitoring consultant, Henningson, Durham & Richardson (HDR).

Expected Construction Activities in 2014 and 2015

In July 2014, work commenced on the construction of the LIRR West Portal Tunnel and Stages 3 + 4 of the new LIRR Vanderbilt Storage yard, which is currently bounded by Atlantic Avenue to the north, Vanderbilt Avenue to the east, Pacific Street to the south and 6th Avenue to the west. This work entails the construction of a west portal (LIRR Tunnel) to service the LIRR Yard, installation ConEd vaults and SOE installation in support of the construction of the south side of the LIRR Yard. Between the 3rd quarter 2014 and the 1st quarter 2015, the following project components are expected to commence:

- Installation of a Green Roof on the Barclays Center Arena;
- Demolition of the 6 story building known as 752 Pacific Street, on Block 1129 which is bounded by Pacific Street to the north, Vanderbilt Avenue to the east, Dean Street to the south and Carlton Avenue to the west;
- Demolition of the existing parking lot on Block 1129, which could be done in phases;
- Commencement of construction of two residential buildings (buildings B14 and B11) on Block 1129;
- Commencement of construction of a third residential buildings (B12) on Block 1129;
- Commencement of construction of a residential building (B3) at the corner of Dean Street and 6th Avenue.

It is anticipated that going forward, a new residential building could commence construction approximately every 12 months. There are two additional buildings at the Building 1 and Site 5 sites that may commence construction at any time.

Purpose of RFP and Scope of Work for the Environmental Monitor Engineer –

The Developer currently has an Onsite Environmental Monitor (OEM), which is staffed in-house, working with two mitigation engineers (“MEs”), covering the existing activities at the Project site. This RFP is seeking a firm to provide the services of an outside Environmental/Engineering firm to assume the role of OEM for the activities identified in this RFP at staffing levels commensurate with ongoing construction activities. The Environmental Monitor Engineer, serving as OEM, would work under the direction of the Developer, in accordance with the scope of work detailed below and as more fully described in **Section N** of the Second Amended Memorandum of Environmental Commitments for the Pacific Park Brooklyn Project, (the “2014 MEC”) attached in Exhibit B. As stipulated in the 2014 ME Pacific Park Brooklyn, there are a number of ongoing requirements in place to minimize the effects of the construction of the Pacific Park Brooklyn project on the surrounding community. These measures are primarily in the areas of are: Traffic & Truck traffic, Noise & Vibration and Air Quality.

The OEM will devote the resources and expertise necessary to properly monitor compliance by the contractors and subcontractors engaged to construct the Project with the requirements of the 2014 MEC. During periods of active construction, one or more OEM engineers shall be assigned to work primarily from a construction trailer or another on-site location. More particularly, the OEM team’s scope of work requires:

Sufficient staff be onsite to monitor on a daily basis (including weekends and at night time when warranted) compliance by all contractors and construction personnel with the MEC requirements and provisions, including but not limited to:

1. **Traffic & Truck Protocol:**–

- Ensure the presence of security guards and flagger to manage vehicle access to the project construction sites;
- Ensure that Maintenance and Protection of Traffic plans (“MPTs”) are implemented as approved;
- Ensure compliance with the Project Truck Protocol (See Exhibit C) that stipulates, among other things, the required use by trucks of NYCDOT – designated truck routes when traveling to and from the construction site; the scheduling of deliveries and the limitation of unnecessary idling; and
- Ensure maximum practicable utilization of the Pacific Street Queue Area.

2. **Noise & Vibration:**

- Ensure compliance with NYC Noise Control Code and provision of and implementation of construction noise mitigation plans, which shall detail procedures (for example, use of sound blankets, attenuating back up alarms and other measures to shield noise-generating equipment) and equipment that will be used to mitigate noise;
- Ensure compliance with the 2014 MEC Noise Levels (following the “Noise Protocol” – see Exhibit D);
- Ensure compliance with the requirement that noisier equipment be placed away from sensitive receptor locations;

3. **Air Quality:**

- Ensure contractor compliance with the requirement to provide and implement Dust Management Plans;
- Ensure compliance with and implementation of dust suppression measures:

- Ensure enforcement of construction site speed limit;
- Ensure utilization of sleeves and watering equipment during demolition activities;
- Ensure watering of and/or placement of gravel at unpaved surfaces, haul roads and excavation access points,;
- Ensure that contractors are moistening, covering or using dust suppression agents (or other effective means) on stockpiled soil;
- Ensure wheel washing of all trucks as they exit the construction site;
- Ensure wetting of dry materials during loading to/from trucks;
- Ensure covering of all trucks carry loose materials;
- Ensure compliance with and implementation of diesel emissions reduction program currently in place onsite:
 - Ensure maximum use of electric engines where practicable,
 - Ensure enforcement of limitation on unnecessary idling of vehicles and non-road engines,;
 - Ensure utilization of ultra-low sulfur diesel fuel for all equipment having diesel engines;
 - Ensure, where applicable, use of Diesel Particulate Filters (DPFs) on all non-road engines of 50 HP or greater and on all concrete trucks and concrete pump trucks;
 - Ensure compliance with Project specific equipment emission limitations:
 - All non-road construction equipment with a power rating of 50HP or greater shall meet at least Tier 3 emission standard;
 - All non-road construction equipment with a power rating of 50HP or less shall meet at least the Tier 2 emission standard (this requirement shall not apply to the construction of Building 2, Building 3 and the rail yard construction);
 - All non-road construction equipment with a power rating of 50 HP or greater shall meet the Tier 4 emission standard beginning in 2022.
 - Ensure that all equipment required to have emission reduction technology under the 2014 MEC is properly labeled to indicate compliance with such requirement; and
 - Review documentation and ensure that equipment subject to emission reduction technology requirements is in compliance with such requirements.

4. Other – general

- Ensure implementation of rodent control program;

Ensure compliance with applicable construction storm water requirements and conduct inspections as stipulated in Storm water Pollution Protection Plans, as may be modified (see Exhibit E) The OEM shall have the right to, and as part of its activities as OEM shall, direct any contractor, construction worker, or driver of construction or delivery vehicles to comply with the terms of the MEC in the event that the OEM observes a violation of the terms of the MEC. In the event the violation is not addressed in a

reasonably prompt fashion, the OEM shall be required to (i) record the ongoing violation in its daily compliance reports, and (ii) notify the construction manager for the construction activity causing the violation, or the Developer if the responsible construction manager is not readily ascertainable. Any MEC violations not promptly addressed by the relevant construction manager shall be reported by the OEM to the Developer for appropriate remedy.

Respondents are encouraged to review the 2014 MEC in its entirety, attached as Exhibit B, for complete itemized obligations and program requirements that will be the responsibility of the OEM. The OEM role will involve the specific aspects of the MEC set forth in this Request for Proposals, and the other elements of the 2014 MEC will be carried out by Owner, Developer, or other consultants or contractors of Owner or Developer. The OEM will coordinate its monitoring, reporting and enforcement activities under the 2014 MEC with Owner, Developer, and Owner and Developer's consultants and contractors to ensure implementation of all of the 2014 MEC requirements in an efficient and coordinated fashion.

In addition to responding to the specific scope set forth in this RFP, responders may also propose to oversee or implement other aspects of the 2014 MEC beyond the tasks set forth in this RFP as a Supplemental Scope. Any fee proposal for Supplemental Work shall be provided separately from the fee proposal for the main scope of work.

Detail on Compliance Measures

There are a number of reporting mechanisms for confirming compliance with the obligations outlined in the MEC. These include:

1. Construction Air Quality Measures ("CAQM") Compliance Plan (See Exhibit F) identifying the protocols to be undertaken to monitor and document compliance with the measures set forth in *Section N.9* (Air Quality) of the MEC once intensive construction activities are underway at the Pacific Park Brooklyn Project. The CAQM was initially placed into effect on April 6, 2010 and has been subsequently revised and updated to incorporate changes and improvements implemented under the Developer's On-site Monitoring Program and to make the CAQM such applicable to all components of the Pacific Park Brooklyn Project that may be under construction.

The primary means of documenting compliance with the MEC Air Quality Obligations is through completion of the four (4) Reporting Forms as referenced in the previous 'Compliance Monitoring' section, and described below.

The Reporting Forms, attached as Exhibits to the CAQM and provided in Exhibit F-1 of this RFP, include:

- the CAQM Inspection Checklist,
This is the primary form to be completed by OEM personnel. The form is a checklist containing all of the MEC Air Quality Obligations. The form shall be kept with OEM personnel during daily inspections and completed as required. A new form shall

be used for each week, with notable observations recorded throughout the week. The form shall be filed onsite and uploaded to Developer's electronic database on a weekly basis.

- **Equipment Inspection Log**
This form shall be updated when new equipment is mobilized to the site and is the primary document for DPF compliance recordkeeping. The form shall be kept with OEM personnel during daily inspections and completed as required. A separate equipment log shall be maintained for each project component and the latest version of the form shall be filed onsite and uploaded to Developer's electronic database on a weekly basis.
- As applicable equipment documentation shall include documentation that the equipment has been tested previously and found to meet the 2014 MEC Noise Levels; or testing shall be conducted by the OEM in compliance with the MEC Noise protocol and documentation of compliance shall be prepared
- **Community Air Monitoring Plan (CAMP) Log**
This form contains the daily readings of particulate matter (PM) levels recorded by the PM monitors in areas where soil disturbance is occurring or is expected to occur. The form contains a column to include notes – any malfunctions with the monitors, the cause for any recorded exceedances, or other notable visual observations should be recorded in this column. The form shall be completed onsite and uploaded to Developer's electronic database on a weekly basis.

2. Storm water Pollution Protection Plans ("SWPPP") (see Exhibit E) -- developed in accordance with the requirements of the FEIS, to maximize the potential benefits of pollution prevention and sediment and erosion control measures. The contents of the SWPPP include only the erosion and sediment control components that shall be implemented during construction activities. The primary means of documenting compliance, with the SWPPP is through the completion of SWPPP Construction Duration Inspection Form (see Exhibit E-1) which shall be based upon inspection of construction sites to ensure, the following practices will be implemented during construction:

- Clearing and grading will occur only where absolutely necessary;
- Storm drain inlets will be protected;
- Construction will occur in phases to limit soil exposure;
- Steep slopes and cuts will be protected; and
- Perimeter controls to filter sediments will be installed.

Recordkeeping and Quarterly Reports

Developer currently maintains an online secure data base that contains all documentation compiled or prepared with respect to undertaking and monitoring the requirements of the MEC and the CAQM Compliance Plan.

1. The OEM will assist the Developer in preparing for ESD quarterly reports (form of which has been provided in Exhibit G-1) that among other things shall:
 - Describe the construction activities that have taken place over the previous three months, including location of work and site logistics;
 - Describe anticipated construction activities expected to occur over the ensuing three months, including location of work and site logistics;
 - Summarize any significant incidents observed over the preceding three months, including the measures implemented to address the incident;
 - Include the inspection forms and other environmental reports prepared by OEM personnel;
 - Describe the principal equipment used in the construction activities;
 - Describe any specific environmental measures implemented in the preceding three-month period and any specific measures proposed for the ensuing three-month period; and
 - Such other information as may be reasonably requested.

2. The OEM will assist the Developer in preparing for ESD Six month "look aheads" (form of which has been included in Exhibit G-2) describing anticipated construction activities on the Project site for the next six months including such information as detailed in the MEC (including proposed OEM staffing levels during the relevant period).

Meetings:

- Oversight and coordination of weekly meetings with ESD's on-site environmental monitor, HDR, and other ESD personnel;
- Participation in any additional meetings as requested by Developer;
- Coordination of participation with Developer in Contractor Training sessions, which shall entail:
 - Targeted PowerPoint presentation, based on the existing PowerPoint presentation prepared by Developer, which provides specific instructions to contractors on the requirements of the MEC. To the extent there are any

changes to the existing presentation, ESD and the ESD Environmental Monitoring Firm will be provided with the opportunity to comment on the PowerPoint presentations (and any modifications thereto) prior to its use in contractor training.

- PowerPoint presentations shall be presented by the OEM to all foreman, project managers, field managers (such as project superintendents and foremen) and similar key personnel of all subcontractors every 90 days and upon mobilization, with sign-in sheets to track attendance. Sign in sheets for said 90 day period will
- Such other meetings where the OEM's attendance may be required/necessary to ensure awareness of upcoming activities on the project site that may require the input of the OEM to ensure compliance with the MEC.
- OEM shall participate in developing responses to community concerns/questions generated through the Community Liaison Office (CLO) or elsewhere.

Request for Proposals Responses:

Proposals are due to Sonya Covington by September 12, 2014 by email to scovington@fcrc.com and should include:

1. Firm address/ Contact information
2. Description of past construction management experience in NYC with compliance monitoring of construction related requirements similar to those outlined in the 2014 MEC.
3. Resumes of Principals that will be responsible for oversight.
4. Resume of staff personnel that will be on site performing the tasks outlined in the scope of work. Mitigation Engineers must be licensed engineers with a minimum of 10 years in construction management, environmental consulting or similar field preferred.
5. A table matching each MEC requirement subject to OEM monitoring with a "means and method" detailing how the OEM would monitor this requirement.
6. Organization chart detailing proposed staffing
7. Resource and rate structure reflective of fluctuations in equipment and staffing requirements as construction across the site progresses;
8. Description of what job duties, if any, such staff members may have apart from serving as monitoring engineer for the Pacific Park Brooklyn project;
9. List of other major development site where the firm has provided similar environmental monitoring services.

Attachment #8:

Response to question about
lead levels at Project Site
(3pgs.)



May 7, 2015

Ms. Sonya Covington
Forest City Ratner Companies
One MetroTech Center
Brooklyn, New York 11201

Re: Lead Remediation Concerns
Pacific Park Brooklyn Project

Dear Ms. Covington:

On behalf of Greenland Forest City partners (GFCP), Roux Associates Inc. (Roux Associates) has prepared this letter to address concerns raised at the Atlantic Yards Community Development Corporation (AYCDC) Board Meeting on March 23, 2015 regarding occurrences of lead in relation to soil disposal and demolition throughout the course of the Pacific Park Project (formerly known as Atlantic Yards and herein referred to as 'the Project'). This letter provides data information that addresses the lead concerns as requested by the Empire State Development Corporation (ESDC) and HDR, Inc. (HDR), the independent environmental monitor for the Project.

Soil Characterization Methodology and Results

Prior to excavation at each of the Project locations (i.e., Barclays Center, rail yard work, B2, B3, B11, B12, B13, and B14), Roux Associates performed an *in situ* waste characterization program to characterize the soil for appropriate offsite disposal. Generally, one boring was drilled for each grid and soil was collected and submitted to TestAmerica Laboratories in Edison, New Jersey, a National Environmental Laboratory Approval Program (NELAP) accredited-laboratory for analysis. The laboratory analytical data was compared to relevant New York State Department of Environmental Conservation (NYSDEC) and United States Environmental Protection Agency (USEPA) standards to determine the appropriate disposal location for the excavated soil. The results of each *in situ* waste characterization event have been provided to HDR.

The analysis of soil for the determination of USEPA characteristically hazardous levels of lead is accomplished through the Toxicity Characteristic Leaching Procedure (TCLP), with a concentration of greater than 5 milligrams per liter (mg/L) indicating the soil, once excavated, must be handled as a hazardous waste. Limited soil samples from the excavation of Barclays Center, B2, and B14 have been determined hazardous for lead based on these criteria. The occurrence of lead in these localized areas is a result of the

presence of historic fill throughout the Project, and has not been linked to any former manufacturing or industrial operations. The table below shows the TCLP lead concentration and amount of soil disposed for each location and sample.

Location	Sample Identification (Depth in feet)	TCLP Lead (mg/L)	Total Soil Disposal (Tons)
Barclays Center	L1 (0-2)	0.268	370.52
	L1 (2-10)	393	805.97
	L1 (10-18)	5.19	404.80
B2	SB-270101 (0-2)	7.74	12.47
B14	B14-A4 (0-8)	21.9	124.73
	B14-A3 (0-8)	6.73	207.98
	B14-B3 (0-8)	10.7	83.57
	B14-B3 (24-32)	6.89	Disposal Pending
TOTAL			2,010.03

Hazardous Soil Disposal and Reporting

Once the soil was determined to be hazardous for lead, a RCRA Subtitle C Site Identification Form was submitted to the USEPA to register the appropriate entity as a generator of hazardous waste and obtain an EPA ID Number. This number is specific to a site and is included on all documentation pertaining to the disposal of the hazardous waste, including all manifests. All of the lead hazardous soil for the Project was disposed at a properly permitted facility in accordance with all applicable federal and state regulations. All lead hazardous soil was disposed at Pure Earth Recycling (NJ), Inc. in Vineland, New Jersey, and Clean Earth of North Jersey in Kearny, New Jersey.

Demolition Activities

Although Roux Associates did not oversee all demolition activities, it has been our understanding that demolition of the buildings and structures throughout the Project did not include specific lead abatement, since lead abatement is not required by New York City Department of Environmental Protection (NYCDEP) or New York City Department of Buildings (NYCDOB) regulations. Demolition and disposal of all building material and debris was performed by various contractors in accordance with pertinent local and state regulations. The demolition contractors were also responsible for monitoring worker health and safety regarding the presence of lead during demolition activities.

During the demolition of the Carlton Avenue Bridge in 2008, the lead paint was disturbed by the mechanical cutting and removal of the structure. Preventative measures were taken to protect the workers and community, including watering down the work area to prevent

Ms. Sonya Covington
May 7, 2015
Page 3

dust and performing breathing zone air monitoring for workers. Throughout demolition, the large paint chips were collected and disposed of as hazardous waste at Veolia Environmental Services in Flanders, New Jersey. Soil from beneath the bridge was collected, sampled, and disposed of at a properly permitted facility as non-hazardous soil.

Dust Control and Community Air Monitoring

Throughout demolition and construction activities, measures are implemented to prevent fugitive dust from leaving the Project area. This includes watering down demolition areas and stockpiles to prevent windblown dust from migrating off the Project. A Community Air Monitoring Plan (CAMP) is also implemented as required by the Memorandum of Environmental Commitments for the Project to monitor the concentration of particulates at the perimeter of the Project. While not specifically monitoring for a compound such as lead, the monitoring records the concentration of particulates and triggers action levels for mitigating the dust and adding control measures.

Please contact the undersigned at (631) 232-2600 if you have any questions.

Sincerely,

ROUX ASSOCIATES, INC.



Jessica L. Taylor

Senior Hydrogeologist



Sin Senh

Principal Hydrogeologist/
Vice President

Attachment #9:

Block 1129 Noise Barrier Height
Analysis Tech Memo (4pgs.)



Environmental and Planning Consultants

440 Park Avenue South
7th Floor
New York, NY 10016
tel: 212 696-0670
fax: 212 213-3191
www.akrf.com

DRAFT Memorandum

To: Rachel Shatz
From: Daniel Abatemarco
Date: November 19, 2014
Re: Atlantic Yards Construction Noise Barrier Height Comparative Analysis
cc: Shabana Tajwar

INTRODUCTION

This memorandum has been prepared in response to your request to examine the height of noise barriers along Dean Street during construction on Block 1129. A quantified analysis was conducted to examine the effects of 8-foot barriers on Block 1129 along Dean Street, rather than 16-foot barriers as had been stipulated in the project's Memorandum of Environmental Commitments (MEC) (based on the construction noise analysis conducted for Final Supplemental Environmental Impact Statement [FSEIS]).

The analysis determined that the lower 8-foot barrier height in this location would result in increased noise levels (as compared to the 16-foot barrier) primarily at the second and third floors of residential buildings on the south side of Dean Street across from Block 1129, with the noise level differences ranging from perceptible to readily noticeable. The lower barriers would also result in exceedances of *CEQR Technical Manual* noise impact criteria that would not occur with the barrier heights prescribed in the MEC.

METHODOLOGY

To examine the effects of the 8-foot barrier along Dean Street on Block 1129, a representative snapshot of construction activity from the FSEIS construction noise analysis (which considered a 16-foot barrier) was selected. August, 2027 under Construction Phasing Plan 3 was selected because it included simultaneous construction at three buildings on Block 1129. In this month, Building 11 would be undergoing excavation and foundation activities, Building 12 would be undergoing superstructure and exterior façade activities, and Building 13 would be undergoing interior and finishing activities. Consequently, this month is representative of any scenario in which multiple buildings are undergoing simultaneous construction on Block 1129, including multiple construction activities.

Construction noise was modeled at all of the same receptors used in the FSEIS construction noise analysis, and using the same methodology used in the FSEIS construction noise analysis. As in the FSEIS construction noise analysis, receptors were placed on multiple façades and floors to determine the

potential construction noise effects at various portions of each building in the study area. Furthermore, as in the FSEIS, many of the noise receptors represented multiple buildings.

The only change made to the construction noise model was the change in the height of the barrier along Dean Street on Block 1129 from 16 feet to 8 feet. The resulting construction noise levels with the lower barrier height were then compared to the construction noise levels with the taller barrier as calculated in the FSEIS construction noise analysis. This included determining the change in construction noise level resulting from the lower barrier height, as well as identifying any locations where the lower barrier height resulted in an exceedance of *CEQR Technical Manual* noise impact criteria that had not been predicted to occur with the taller barrier height. The predicted increases in construction noise level were classified as either perceptible (2 – 4 dBA) or readily noticeable (4 – 7 dBA). Predicted exceedances of *CEQR Technical Manual* noise impact criteria would not necessarily constitute significant impacts, since they are predicted only for a single analysis scenario, and it is not certain whether the exceedance would occur for two consecutive years as is required to constitute a significant adverse impact according to *CEQR Technical Manual* construction noise impact evaluation guidance.

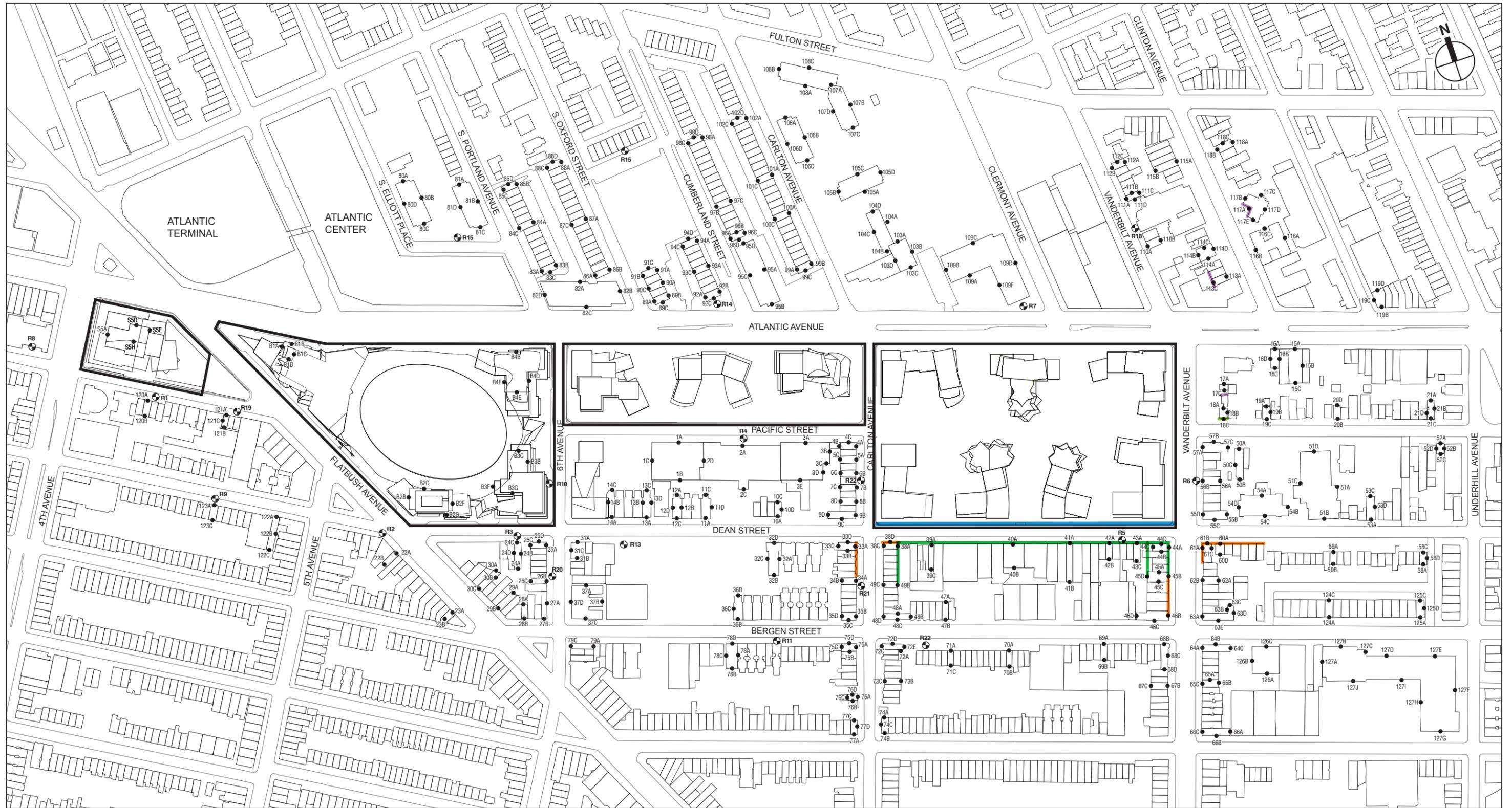
ANALYSIS RESULTS

Based on the analysis conducted as described above, approximately 56 building floors would experience a perceptible increase in construction noise level (2 – 4 dBA) with the use of an 8-foot barrier compared to noise levels with the use of a 16-foot barrier along Dean Street on Block 1129, and approximately 74 building floors would experience a readily noticeable increase in construction noise level (4 – 7 dBA) with the use of an 8-foot barrier compared to noise levels with the use of a 16-foot barrier along Dean Street on Block 1129. The locations of these increases are shown in plan-view in **Figure 1**. The readily noticeable increases are primarily at the second and third floors of residential buildings on the south side of Dean Street across from Block 1129. These second and third stories directly across from Block 1129 were the ones that received the most benefit from the 16-foot barrier. Buildings near the intersection of Dean Street and Carlton Avenue and the intersection of Dean Street and Vanderbilt Avenue were also predicted to experience higher construction noise levels with the lower barrier height, although the magnitude of the difference was smaller than along Dean Street.

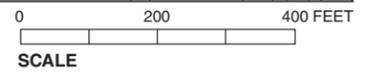
Additionally, the lower barrier would result in exceedances of *CEQR Technical Manual* noise impact criteria at 30 additional building floors. The locations of these exceedances are shown in plan-view in **Figure 2**. These exceedances occurred primarily at the second and third floors of buildings near the intersection of Dean Street and Carlton Avenue and the intersection of Dean Street and Vanderbilt Avenue.

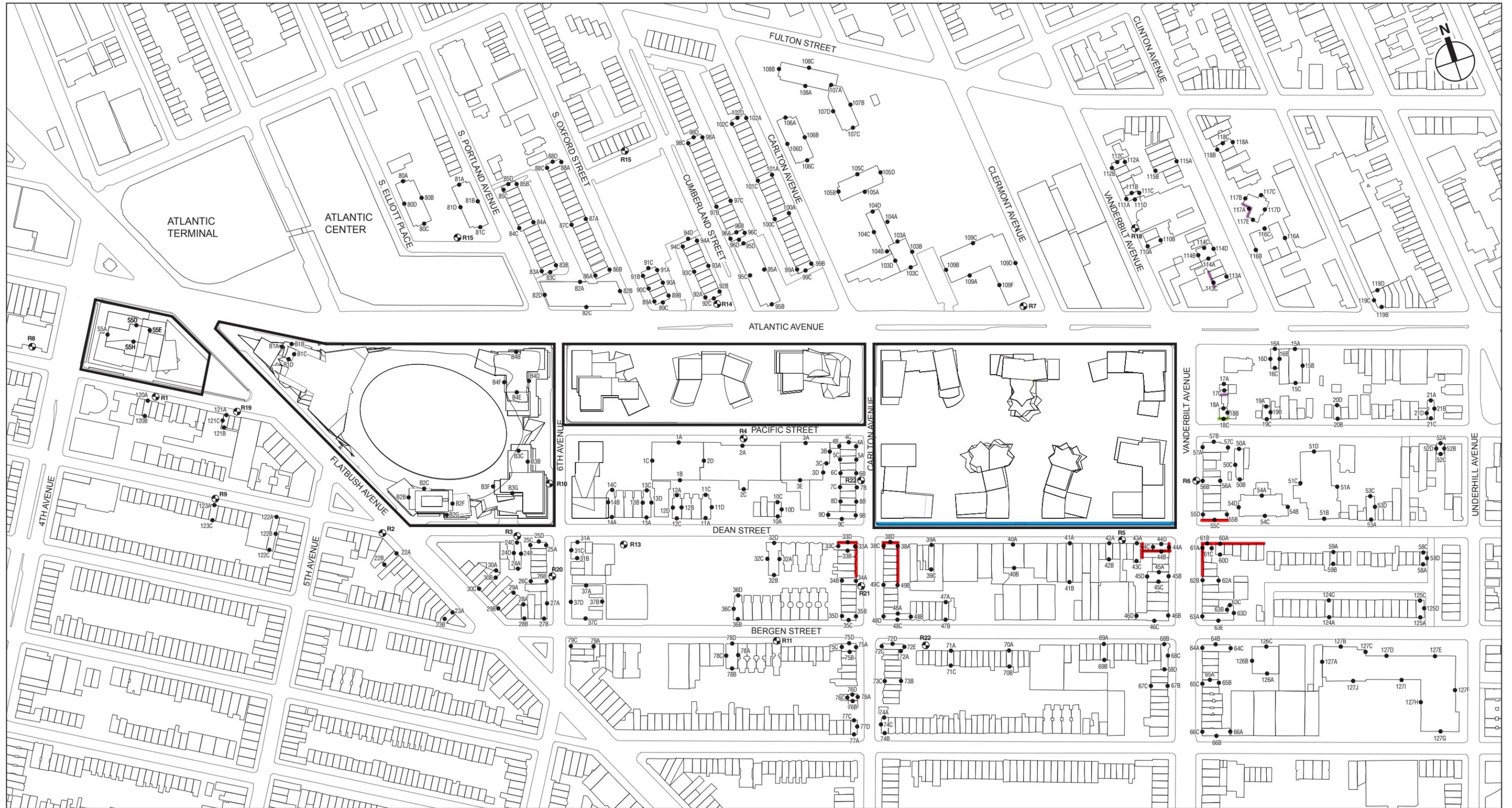
CONCLUSIONS

Installing an 8-foot rather than 16-foot barrier along Dean Street on Block 1129 during construction on that block would result in elevated noise levels at nearby noise receptor locations, primarily on the second and third floors of buildings, which would receive the most benefit from the taller barrier height. The receptors most affected are those with a clear line of sight to the south side of Block 1129, including along the south side of Dean Street between Carlton and Vanderbilt Avenue and near the intersection of Dean Street and Carlton Avenue and the intersection of Dean Street and Vanderbilt Avenue.



- Project Site Boundary
- Perceptible Increase in Construction Noise (2-4 dBA)
- 8' Barrier Instead of 16' Barrier
- Readily Noticeable Increase in Construction Noise (4-7 dBA)





- Project Site Boundary
- 8' Barrier Instead of 16' Barrier
- Locations Where Lower Barrier Results in Exceedance of CEQR Noise Impact Threshold

0 200 400 FEET
SCALE

Attachment #10:

Renderings of Pacific Park,
Brooklyn (4pgs.)



550 Vanderbilt Avenue



30 Sixth Avenue



