

**Regulatory Submittal Part I(S)
Scaffold Erection Operation Work Plan**

Project:

**Remediation and Deconstruction of
Fiterman Hall – 30 West Broadway
New York, New York**

Prepared for:

The Dormitory Authority of the State of New York
City University of New York

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Includes Amendments #1 through #7

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Attachments:

- Attachment I: New York State DOL Regulatory Notification
- Attachment II: New York State DOL Variance Petition
- Attachment III: United States EPA Regulatory Notification
- Attachment IV: Logistics Plan
- Attachment V: Scaffolding Tie-In Diagram
- Attachment VI: Asbestos Waste Hauler Permits & Asbestos Landfill Permit
- Attachment VII: SEO Work Plan Approved Amendments #1 - #7

1.0 General

PAL Environmental Safety Corp. has been retained by the Dormitory Authority of the State of New York (DASNY), and The City University of New York (CUNY) to prepare a Project Plan to conduct the environmental remediation and deconstruction of the Fiterman Hall Building located at 30 West Broadway, New York, NY (Fiterman Hall, the Building, the Site or 30 West Broadway). The Building is a 15-story, 370,000 (SF) classroom building owned by DASNY and operated prior to 9/11 by CUNY/Borough of Manhattan Community College. The Building was physically damaged by the collapse of 7 World Trade Center, and impacted by the environmental effects of the World Trade Center Collapse.

The purpose of Regulatory Submittal Part I(S) – Scaffold Work Plan, is to provide an overview of the procedures to be followed during the remediation and abatement required to allow for the installation of a pipe scaffolding system encompassing the entire Building (Scaffold Erection Operation, or SEO). A Regulatory Submittal for the remediation of the entire Building (Regulatory Submittal Part I – Work Plan) will be made under separate cover. The information contained in this Scaffold Work Plan relates only to procedures required to complete the SEO. The parameters of the SEO are fully outlined in Section 6.0. Please note that it will not be necessary to penetrate the Building envelope or for personnel to enter the Building during the SEO.

2.0 Related Documents

2.1 Façade Characterization Report

Airtek Environmental Corporation (Airtek) was retained by PCF-P, on behalf of DASNY/CUNY to conduct a characterization of the façade of the Fiterman Hall Building. This report was prepared to support specific project planning and execution decisions. The Façade Characterization Report is provided under separate cover.

2.2 Environmental Characterization Report

Airtek was retained by PCF-P on behalf of DASNY/CUNY to conduct an environmental characterization study of the Fiterman Hall Building. The Environmental Characterization Report is provided under separate cover.

2.3 Regulatory Submittal Part II(S)– Environmental Community Air Monitoring Program

Prior to initiation of any decontamination/deconstruction operations, an environmental community air monitoring program (ECAMP) approved by the USEPA, and detailed in the related document, Regulatory Submittal Part II-Environmental Community Air Monitoring Program, will be established and

operational. The Program will consist of daily air monitoring at eight (8) points on the perimeter of the project site. Community Monitoring will continue until building demolition is complete. A Quality Assurance Project Plan (QAPP) is included as Attachment D to the ECAMP.

2.4 Regulatory Submittal Part III(S) – Scaffold Health & Safety Plan

A site-specific Scaffold HASP to be applied to the project has been developed. The Scaffold HASP details requirements for access/egress and requirements for Personal Protective Equipment (PPE) for workers at the Site. The Scaffold HASP is included as Part III of the submittal package.

2.5 Regulatory Submittal Part IV(S) – Scaffold Waste Plan

A site-specific Scaffold Waste Plan (SWP) to be applied to all waste operations for the SEO has been developed. The SWP provides details on how, and by whom, waste determinations and categorizations will be made, and provides detail on sampling and analysis protocols. The SWP is included as Part IV(S) of the submittal package. A QAPP for the SWP is included as Attachment D to the SWP.

3.0 Environmental Regulatory Notifications

3.1 Asbestos Survey

To comply with New York State Department of Labor (NYS DOL) requirements for building demolition, Airtek has undertaken an asbestos survey intended to coordinate and complete previous survey work that has been conducted at the Site. All previous documentation was reviewed and a site survey and bulk sampling were conducted. Based on this survey work, an inventory of in-place asbestos has been developed. The results of the survey are included in Appendix IV to the Environmental Characterization Report.

3.2 NYS DOL Notification

The New York State Department of Labor (NYS DOL) is the primary jurisdiction for the abatement and remediation at Fiterman Hall. Regulatory Submittal Part I(S) shall comply with Industrial Code Rule 56 (ICR56) as amended on January 11, 2006. Procedures requiring variance are outlined in Attachment II – NYS DOL Variance Petition. The remediation and abatement work required for the SEO constitutes a ‘Large Project’ according to the criteria outlined in ICR56, written notification of the entire project will be made to the NYS DOL prior to the commencement of any remediation and abatement activities. Filings will be submitted prior to job start and will be added as Attachment I of this plan at that time.

3.3 NYS DOL Variance Applications

The SEO remediation and abatement will require a site specific variance be granted by NYS DOL. Copies of the variance application and petition letter are included as Attachment II of this Work Plan.

3.4 NYC DEP Notification

Although a copy of the Regulatory Submittal package will be provided to NYC DEP, ACP7 notification will not be made to the NYC DEP for the SEO. Jurisdiction for work practices and variances is under the NYS DOL guidelines.

3.5 USEPA Notification

The remediation and abatement work required for the SEO constitutes a ‘Large Project’ according to the criteria outlined in EPA NESHAP, written notification of the entire project will be made to the US EPA prior to the commencement of any remediation and abatement activities. Filings will be submitted prior to job start and will be added as Attachment III of this plan at that time.

4.0 Utilities - General:

4.1 Electric

The Building is presently fed with a temporary service consisting of 800 Amps, 120 / 208 VAC electric power off of a Con Edison meter located in a protective enclosure and shed situated at the northwest corner of the Site. The power presently feeds a switch providing emergency power for emergency lighting, a single service elevator, and temporary light stringers. This current electrical service is sufficient for the needs of the SEO.

4.2 Plumbing

For the SEO, water will be obtained from an existing hydrant on the west side of the Building (Greenwich Street). Decontamination facilities required for the SEO will be operated off of water fed from temporary clean water storage tanks, which will be filled from the hydrant. PAL Environmental currently holds a permit from NYC DEP to utilize the hydrant (Permit Nos. 420640 & 420643). Permitting for hydrant usage will be kept current for the duration of the SEO.

4.3 HVAC

The HVAC system will not be operated at any time during the SEO.

4.4 Fire Protection

The existing fire standpipe will be filled, pressure tested, and repaired to make it ready for use by the FDNY. The standpipe will be operated as a dry system with hose racks. In the event of an emergency, the FDNY would use a pumper truck connected to a street hydrant to deliver water through the standpipe.

4.5 Elevator Service

All remediation and abatement activity during the scaffolding installation will take place outside of the Building. Elevator service will not be required for the SEO. An exterior hoist will be erected in the SEO phase and be utilized for compliance with FDNY requirements during the Deconstruction phase

5.0 Monitoring:

5.1 Personal Monitoring:

Personal Exposure Monitoring will be performed during all SEO remediation and abatement activities as required by OSHA CFR 1926.

5.2 Work Area Monitoring:

Project monitoring and asbestos air sampling will be conducted throughout the Remediation Phase of the Project. Project Monitoring will be conducted in strict accordance with ICR 56, subsection 56-4, 56-6, 56-7.1, 56-8.1, 56-9.2 and any provisions set forth in the Variance Application. All sample analyses will be by TEM. Project air monitoring is further detailed in Regulatory Submittal Part II – Environmental Community Air Monitoring Plan.

5.3 Fascia Brick Pilot Program Monitoring

During the test tent brick removals to be conducted at the start of the project, monitoring for ACM will be conducted both inside and outside the test tents. In addition to air sampling, close visual inspections will be conducted of all building components.

5.4 Environmental Community Air Monitoring

Community Monitoring will be conducted as detailed in Regulatory Submittal Part II – Environmental Community Air Monitoring Plan.

6.0 SEO Remediation and Abatement Operations

6.1 Scaffold Tie-Methodology

Each scaffold tie connection made to structurally sound areas of the building will be made with four (4) powder actuated domehead nails shot directly into the spandrel web. Domehead nails will have cross hatched threading that will heat up via friction during the installation and form a weld with the spandrel. The nails will install a half inch (.5”) bolt housing connector. Two inch (2”) diameter tube piping, varying in length from eighteen inches (18”) to thirty-six inches (36”), will be attached to the housing connector with a .5” bolt. Scaffolding legs will be braced by attaching to the tube piping with a ninety (90) degree clamp. Please refer to Attachment V for an engineer’s drawing and calculations for the tie-ins.

Approximately one thousand two hundred (1,200) tie-ins are required to attach the scaffolding system around the façade for the full height of the Building. Tie-ins will be installed on every floor (with the exception of the 1st Floor) for every two (2) tiers of scaffolding. The tie-ins require a six inch by six inch (6” x 6”) section of the spandrel web be exposed in order to make the attachment. This equates to approximately forty (40) square feet per floor; six hundred (600) square feet for the entire SEO operation. It will be necessary to penetrate the façade of the Building to make the scaffolding attachments. However, please note that this attachment methodology was specifically designed so that it will not be necessary to penetrate the Building envelope and to prevent air transfer between the Building interior and the external environment. Procedures to handle contaminants that may be encountered within the façade during the scaffolding attachment are outlined below in Section 6.4. Additionally, it will not be necessary for workers to enter the Building interior during the performance of scaffolding installation operations.

On some levels of the South Side Gash Area where damage has been sustained by the structure the integrity of sections of spandrel beams have been compromised. These compromised spandrel beams may not be capable of supporting loads imposed by the scaffolding system. In locations where the spandrel beam has been compromised the following attachment procedure will be utilized.

- Attachment in damage areas will be made to an intact section of the concrete slab where engineering evaluation has determined the structure is capable of sustaining scaffolding and all related loads (i.e. wind load).
- This attachment will replace the spandrel beam attachment. Attachment to compromised spandrel beams will not be attempted.
- Where required, concrete slab scaffold tie-ins will be made approximately two to four feet into the Gash from the edge of the damaged slab. Exact slab connection locations will be determined by the engineer of record for the scaffolding location.
- It will not be necessary to access the interior of the Building to make slab connections.

- Prior to making an attachment to the scaffolding slab a 1foot by 1foot area of exposed concrete slab surface will be HEPA vacuumed and wet wiped by NYC DEP & NYS DOL licensed asbestos handlers in order to remove any residual dust or debris that may be present.
- Laborers will utilize an electric drill equipped with a masonry bit to create a 5/8 inch housing in the cleaned surface of exposed concrete slab at the connection location determined by the engineer of record for the scaffolding installation.
- An angle iron scaffolding connector will be aligned with the connection housing.
- The angle iron connector will be attached to the slab with a 5/8 inch expansion bolt. The expansion bolt will be hammered into the drilled out housing location utilizing a handheld hammer or mallet. Once in place the bolt will be manually tightened with wrenches to activate expansion mechanism and secure the angle iron connector to the slab.
- The secured angle iron will be attached to the scaffolding system via a pipe scaffolding clamp and secured in place.

6.2 Erection of Sidewalk Bridge

There is currently an existing sidewalk bridge on the west and south sides of the Building. Prior to the commencement of the SEO, the existing sidewalk bridge will be dismantled and removed from the site. All required scaffolding permits will be obtained by PAL scaffolding subcontractors Eagle Scaffolding and Safway Services. Prior to the commencement of any remediation and abatement activity, Eagle and Safway will erect a sidewalk bridge around the entire perimeter of the exterior façade at the 1st Floor level. The sidewalk bridge will be constructed and maintained in accordance with all applicable local, state and federal regulations. The sidewalk bridge installation will not disturb any Contaminants of Potential Concern (CoPC). Please refer to the below list of bulleted items for a breakdown of CoPC to which the Building may have been exposed. The Building envelope will not be penetrated and scaffolding personnel will not enter the Building during the sidewalk bridge installation. Effective as of the beginning of the sidewalk bridge erection; access to all sidewalks surrounding the Building will be restricted to project team personnel except on the south side of the Site where access must be maintained to the existing Con Edison transformer and MTA emergency subway exit. A continuous painted wood construction barrier will be installed at the curb line to enclose all sidewalks within the Site with the exception of a portion along the southeast from a portion Barclay to West Broadway to allow for Con Edison and subway vault access to be maintained. All entrances through the construction barrier onto the site will be locked at times when there are no contractor, consultant or security personnel on site. Access to the site will be restricted to authorized personnel and visitors only. See revised *Regulatory Submittal Part I(S) - SEO Work Plan Attachment IV-Logistics Plan*. Sidewalk closure signs will be put in place to redirect pedestrian away from the Site. New York City Department of Transportation (NYC DOT) sidewalk closure permits will be obtained prior to the erection of construction barriers and will be kept in effect for the duration of the project.

Contaminants of Potential Concern (CoPC)

- Asbestos
- MMVF
- Silica
- Dioxin
- PAH
- Lead

6.3 Removal of Existing Netting

As a precautionary measure, the existing netting on the Greenwich and Barclay Street sides of the Building will be removed and disposed of as asbestos at a minimum. After a tier of scaffolding is put in place, it will be used as a working platform for personnel performing the netting removal. Personnel and waste decontamination units will be installed inside the construction barrier, on the sidewalk at the northwest side of the Building adjacent to a sidewalk bridge stair tower. Access to the working platforms will be restricted to allow only properly licensed personnel into the work area while remediation and abatement activities are in progress. The decontamination units shall conform to all requirements specified in ICR56 amended on January 11, 2006. All personnel performing netting removal will have current NYS DOL and NYC DEP certified handlers (workers) and handler supervisors. Original licenses will be presented to the Contractor Safety Officer on site before workers will be permitted into the work area. A paper record of all licensing will be kept on site in the existing Airtek office trailer on the west side of the Building. All personnel accessing the work area will first sign into the project log which will be kept in the Airtek office trailer. Before entering the work area all personnel will don the proper personal protective equipment (PPE). For the SEO the PPE to be used is as follows:

- Two (2) layers of disposable coveralls with hoods
- Half face air purifying respirators with P100 filter cartridges
- Nitrile gloves
- Safety goggles
- Work boots
- Rubber boot covers
- Hard hats

PAL will perform the netting removal from the ground level up, one floor at a time, as the scaffolding rises. One layer of Six (6) mil fire-retardant polyethylene sheeting (poly) will be installed on the floor surface of the work platform. From the platform asbestos handlers will thoroughly wet down the netting with amended water using airless sprayers. Once the netting has been adequately wetted down, PAL asbestos handlers will cut it into manageable sections by manual methods utilizing a combination of utility knives and metal snips. Each

section will be placed onto the work platform, rolled into a bundle and wrapped in two (2) layers of poly. For the netting removal and scaffolding installation an asbestos waste container or trailer will be located within the Greenwich St. lane closure. The asbestos waste container will be six sided and equipped with a lockable door. PAL will utilize the services of waste transporters Asbestos Transportation Corp. (ATC) and Tri-State Transfer (TST). These transporters use landfill Minerva Enterprises for asbestos disposal. Please refer to Attachment VI to view permits for the transporters and the landfill facility. Wrapped bundles of the netting will be labeled, processed through the waste decontamination unit and placed in the asbestos waste container for disposal as asbestos waste. When a section of netting has been removed the exposed cables will be wet wiped. Please note that cables affiliated with the netting are not supporting any part of the structure. The purpose of the cables is solely to attach the netting. Cables will remain in place until the netting has been completely removed. Cables will be removed during the Deconstruction Phase. A work plan for the Deconstruction Phase will be provided under separate cover. The poly on the floor surface of the working platform shall remain in place until the completion of the spot abatement as detailed below in Section 6.7.

6.4 Pilot Program – Brick Removal & Mastic Abatement

The scaffolding system to be installed at the Building will be anchored directly into the spandrel beam. In order to expose the spandrel for the installation of scaffolding tie-ins it is necessary to first remove a plus or minus eight inch by plus or minus eight inch (+/-8" x +/-8") section of bricks at each tie-in location. The underlying spandrel is coated in non-friable, asbestos containing mastic material. Once the bricks have been removed it will be necessary to perform a spot abatement of a six inch by six inch (6" x 6") area of mastic to expose the steel web. The scaffolding installation will require brick removal and mastic abatement at a minimum of 1,200 locations.

The Pilot Program will be performed at four (4) locations on the 2nd Floor level. Each location will be comprised of a continuous four (4') foot wide section of brick wall between two (2) windows. The purpose is to perform brick removal and mastic spot abatement under environmental controls to visually determine whether there is residual WTC dust within the façade gap, and to conduct air testing for asbestos during the removal of ACM spandrel mastic to determine if elevated airborne asbestos levels result from the scaffolding attachment operation. The pilot program will be performed at one (1) location on each side of the Building. Work on the pilot program will be performed under a NYS DOL site specific variance.

The scope of the Scaffold Erection Operation will include the inspection of all scaffold attachment locations in addition to those locations selected for the Pilot Program. The final conclusions related to the condition of the façade will not be

rendered until the inspection of the connection points has been completed and the scaffolding has been installed.

The pilot program will be performed at the following locations:

Pilot Location No. 1: An intact four (4') foot wide section of brick on the 2nd Floor at the southeast corner of the Building in the gash area. The sidewalk bridge will serve as the working platform to access this location.

Pilot Location No. 2: An intact four (4') foot wide section of brick on the 2nd Floor of the west side of the Building façade. The sidewalk bridge will serve as the working platform to access this location.

Pilot Location No. 3: An intact four (4') foot wide section of brick on the 2nd Floor of the north side of the Building façade. The sidewalk bridge will serve as the working platform to access this location.

Pilot Location No. 4: An intact four (4') foot wide section of brick on the 2nd Floor of the east side of the Building façade. The sidewalk bridge will serve as the working platform to access this location.

The following control measures will be implemented during the pilot program:

- All waste generated during the Pilot Program will be placed into a forty (40) yard ACM waste container located on the northwest corner of the Site inside of the construction barrier for disposal as asbestos.
- The pilot program will be conducted by NYS DOL and NYC DEP certified handlers (workers) and handler supervisors. A competent person/asbestos supervisor shall be present on site and will oversee all abatement work. An OSHA competent person in regards to scaffold installation and usage will oversee all work performed on scaffolding.
- Remote worker and waste decons will be utilized for the Pilot Program. The decons will be located on the northwest corner of the site inside the construction barrier. A sidewalk bridge will be installed by others prior to commencing any work on site. The sidewalk bridge does not require tie-ins on the 1st Floor level. The sidewalk bridge will function as the working platform during Pilot Program activities.
- All handlers and handler supervisors will utilize the proper personal protective equipment while performing the brick removal and the mastic abatement for the pilot program.
- Tent enclosures will be constructed at each pilot location. The tent enclosures will contain the entire exterior surface area of the entire wythe of brick from top to bottom (window to window) and 4' wide (window to window) which shall include each +/-8" x +/-8" section of bricks.

- All tent enclosures shall be constructed of 2 layers of poly and will have functioning air locks.
- After construction, tents will be placed under negative pressure during preparatory activities. The interior of the tents will be cleaned, including all building surfaces within the tents, and air testing for asbestos will be conducted. If sample results are below 70s/mm², pilot operations will commence. If results are above 70 s/mm², the tent will be re-cleaned.
- Negative pressure will be shut down prior to the commencement of brick removal since the purpose of the pilot program is to determine if removal operations will release asbestos into the surrounding environment.
- TEM sampling will be performed inside of each tent enclosure to monitor for asbestos during the brick removal and mastic spot abatement.
- If there is any residual dust present on the exterior surface of the pilot location, the surface will be manually wet wiped to remove it.
- Mechanical chipping hammers will be utilized to cut out a +/-8" x +/-8" section of brick. Water will be used as a means of dust control during the brick removal.
- Three grab samples of fascia brick and mortar removed during brick pocketing during scaffold attachment will be collected from each of the four sides of the building so as to discern the waste characteristics of each separate façade and composited for waste characterization analyses (four analyses – one for each facade of the building). The remaining brick/mortar will be handled, packaged and stored on site as ACM waste pending results of the analyses. If the brick and mortar debris removed from each side of the building do not exceed RCRA/TSCA limits, it will remain categorized as ACM waste.
- Brick and mortar debris generated during the scaffold installation procedure will be visually inspected by the Site Hygienist. If any ACM mastic is discovered on or amongst brick and mortar debris, the affected material will be handled and disposed as asbestos waste.
- Once the bricks have been removed asbestos handlers will wet a 6" x 6" spot of the asbestos mastic on the spandrel down with amended water.
- Once the mastic has been sufficiently wetted down, the handlers will remove the 6" x 6" spot of mastic by manual methods using handheld scrapers.
- Directly upon detachment from the spandrel, the mastic material will be double bagged, labeled, processed through the waste decon and placed in an asbestos waste container or trailer will be located within the Greenwich St. lane closure for disposal as asbestos waste.
- Once the mastic has been removed, the exposed surface of the spandrel beam will be HEPA vacuumed and wet wiped.
- Upon completion of the abatement, the TEM sample runs will be terminated. The samples will then be sent to the laboratory for analysis. If sample results are above 70 s/mm², the tents will be re-cleaned and a

new set of TEM samples will be run again until successful clearance is met.

- Tents will remain in place until the sample analysis has been completed.
- The abated area will be encapsulated and tents will only be broken down if sample results are less than seventy (70) structures per millimeter squared.
- If a TEM result exceeds 70 structures per millimeter the tent work areas will be re-cleaned and the results run again until successful clearance is met.

Should TEM results from all pilot locations indicate that mastic removal operations did not generate asbestos contamination then PAL will proceed with the removal at all tie-in locations for the entire Building. Visual inspections for residual WTC dust will continue to be conducted at each tie-in location by the Owner's Environmental Consultant. The results of the pilot program and scaffold attachment inspections will also be applied to work procedure planning for the eventual removal of all fascia brick during the Deconstruction Phase of the project. The removal procedure in support of the scaffold tie-in operation will be conducted as outlined below. If the air sampling characterization results confirm there is no airborne ACM impact from spandrel mastic removal within the Pilot Program tents, if no residual WTC dust is observed and if waste characterization results do not exceed RCRA/TSCA limits, fascia brick and mortar removed subsequent to the Pilot Program tents, in non-gash areas, will be handled and disposed of as conventional construction and demolition (C&D) waste. All materials associated with spandrel mastic removal will be handled and disposed as ACM waste.

In the event suspect material is observed behind fascia brick or within façade interstices, during the Pilot Program or otherwise during the scaffold erection, work will stop and the conditions will be evaluated by the Site Hygienist. At the direction of the Site Hygienist, the remediation contractor will utilize certified personnel to execute localized clean-up and sealing of any access-way to the suspect material. After stabilization and cleaning, the scaffold connection at the subject location will be completed by non-certified scaffold installation personnel. Brick and mastic removal and inspection and scaffold connection work will continue. The Site Hygienist will record the location of any suspect material so appropriate characterization and response actions can be developed and submitted to the Regulators for review and approval. Any brick/mortar removed and process consumables utilized at any identified suspect-WTC-dust location will be handled as ACM at a minimum and according to waste characterization testing results.

6.5 Cleaning of Residual Dust (1st & 2nd Floors)

The Exterior Dust Investigation detected the presence of residual urban road dust on all sides of the exterior façade on 1st and 2nd Floor levels. A complete focused cleaning of the entire 1st and 2nd Floor façade will be performed once the sidewalk bridge is in place since it must be done from the 2nd Floor down. The surface of

all façade components on the 1st and 2nd Floors will be subject to focused cleaning. The cleaning will be performed by manually wet wiping the surface of all façade components including windows. Laborers will utilize a combination of rags, mops, sponges and squeegees to accomplish the focused cleaning. Used cleaning equipment and materials will be disposed of as asbestos waste. Run off water will be controlled to prevent the migration of residual dust from the façade into the outside environment. A trough will be constructed of poly at the Building grade level. Mops and rags will be used to absorb any run-off water from the trough. Only minor amounts of run off water are anticipated to be generated by cleaning activities. For the focused cleaning, minor amounts of water will be considered any volume of run off less than ten (10) gallons. In the event that a large quantity of run off water (greater than 10 gallons) is generated it will be drummed in fifty-five (55) gallon barrels. Drummed water will be tested for NYC Sewer discharge parameters and eventual filtration to the NYC Sewer if analytical results allow. Once the focused cleaning is completed, a visual inspection will be performed by the Owner's Environmental Consultant to confirm that the façade is sufficiently clean. Once visual clearance has been received, work related to the scaffolding installation will begin.

6.6 Brick Removal

Note: Work by certified personnel and work by uncertified scaffold installation personnel will not be conducted on the same façade of the building at the same time. In addition to working on separate facades, a twenty five foot (25') buffer zone will be maintained between the certified-worker restricted work areas and the uncertified-worker work areas. The separation of trades will be defined by "caution" tape at the edge of the restricted work area, and another strip of "caution" tape maintained at the 25' buffer line, demarcating, respectively, the abatement work area and the buffer zone.

The tie-in areas will be free of residual dust before removal activities begin. PAL laborers will utilize mechanical chipping hammers and manual means (hammers and chisels) to perform the brick and mortar removal at each +/-8" x +/-8" tie-in location. Wet methods will be employed to control dust during the brick and mortar removal. The brick and mortar debris generated will be disposed of as determined in waste characterization performed during the Pilot Program. Brick and mortar debris generated during the scaffold installation procedure will be visually inspected by the Site Hygienist. If any ACM mastic is discovered on or amongst brick and mortar debris, the affected material will be handled and disposed of as asbestos waste at a minimum, and according to the waste characterization results.

6.7 Spandrel Tie-In Spot Abatement

Note: Work by certified personnel and work by uncertified scaffold installation personnel will not be conducted on the same façade of the building at the same time. In addition to working on separate facades, a twenty five foot (25') buffer zone will be maintained between the certified-worker restricted work areas and the uncertified-worker work areas. The separation of trades will be defined by "caution" tape at the edge of the restricted work area, and another strip of "caution" tape maintained at the 25' buffer line, demarcating, respectively, the abatement work area and the buffer zone.

The spandrel web surface is coated in a non-friable asbestos containing mastic. The spot abatement will be performed by NYS DOL and NYC DEP certified handlers (workers) and handler supervisors. A competent person/asbestos supervisor shall be present on site and will oversee all abatement work. An OSHA competent person in regards to scaffold installation and usage will oversee all work performed on scaffolding. Air monitoring, project monitoring and community monitoring will be conducted by the Owner's Environmental Consultant. The remote worker and waste decontamination facilities established on the northwest corner of the Site will be used for this procedure. Each worker will don the proper PPE prior to commencing spot removal activities. Please refer to Section 6.3 for a list of the PPE to be utilized. At each tie-in location one (1) layer of poly will be affixed to the scaffolding work platform and attached to the façade below each +/-8" x +/-8" brick opening creating a basin to prevent asbestos mastic material from falling onto the platform. PAL asbestos handlers will thoroughly wet down the mastic at each opening with amended water using airless sprayers. OSHA monitoring will be performed for the duration of spot removal activities as required by the CFR1926. Removal of the mastic will be performed by manual methods utilizing hand held scrapers. Bulk sampling conducted for asbestos content analysis performed on spandrel locations throughout the Building under the existing DOL site specific variance No. 05-0919 has indicated that the material removes easily under manual pressure without the need for intensive scraping or mechanical means. Mastic material will be placed into six (6) mil asbestos bags immediately upon detachment from the spandrel beam. Once full, or at least daily, each bag will be placed inside a second six (6) mil asbestos bag and sealed. Bags of asbestos waste will be clearly labeled, processed through the waste decontamination unit and placed in the asbestos waste container for disposal as asbestos waste. The abated areas of spandrel beam will be HEPA vacuumed, wet wiped and encapsulated. Abatement activities will proceed in a clockwise manner around the Building beginning at the southwest corner. Once the tie-in locations on one (1) side of the Building have been abated, cleaned and encapsulated the poly will be removed from the façade and platform surface on that side of the Building. The poly will be disposed of in the same manner as the mastic waste. When the poly is removed, the abatement work will proceed clockwise around the corner to the next side of the Building. With the cleaning and encapsulation complete, the sidewalk bridge work area will be

rendered accessible for the scaffolding subcontractor to continue with the installation.

6.8 Scaffolding Installation (Floors: 2 through 15)

Note: Work by certified personnel and work by uncertified scaffold installation personnel will not be conducted on the same façade of the building at the same time. In addition to working on separate facades, a twenty five foot (25') buffer zone will be maintained between the certified-worker restricted work areas and the uncertified-worker work areas. The separation of trades will be defined by “caution” tape at the edge of the restricted work area, and another strip of “caution” tape maintained at the 25' buffer line, demarcating, respectively, the abatement work area and the buffer zone.

From the 2nd Floor on, the installation of each higher level of scaffolding will be performed by the same procedure. The installation of each level will be preceded by netting removal, brick removal and spandrel spot abatement. Scaffolding will proceed in a clockwise manner, one tier at a time, upward around the Building beginning at the southwest corner. When the scaffolding rises to a set back roof, the scaffolding will be constructed onto that set back following the structure of the building. On the set back roof levels the scaffolding anchoring methodology will be the same as on the rest of the façade. In order to prevent dust disturbance on the set back roofs during the installation of the scaffolding, NYS DOL and NYC DEP certified handlers (workers) and handler supervisors will wet the ballast down with water at each location where scaffold supports will be set. Wetted ballast will be moved to the side at each location to allow the supports to set directly on the roofing membrane. Prior to the installation of scaffolding supports, the membrane at each location will be cleaned by HEPA vacuuming and wet wiping. Please note that ballast will not be removed from the roof at this time. On the set back roof levels the scaffolding anchoring methodology will be the same as on the rest of the façade. All scaffolding will tie into the spandrel beam. It is not necessary to penetrate the surface of any set back roof to secure the scaffolding.

Shoring will be required beneath the 5th floor and 14th floor Set Back Roof Levels. All shoring installation activities will be monitored by an NYS DOL certified project monitor. The required shoring will be performed by scaffold/shoring installation personnel who have valid asbestos awareness certification and are equipped with abatement work area PPE. PPE for shoring installation shall be: disposable coverall suits with hoods, half-face APR equipped with P100 filter cartridges, nitrile gloves, safety goggles, work boots, rubber boot covers, hard hats and hearing protection (only if noise levels exceed OSHA decibel limits). The existing decontamination unit at the northwest entrance to the 1' Floor will be used for interior shoring related decontamination activities. Shoring to be installed will be made of steel. The exact location and layout of shoring will be determined by the engineer of record for the scaffolding installation. NYS DOL and NYC

DEP certified asbestos handlers equipped with abatement work area PPE will perform pre-cleaning of the surfaces at each location where the shoring will be installed. Pre-cleaning activities to be performed will include HEPA vacuuming and wet-wiping. In addition, depending on the exact location of the shoring, minor removals of raised flooring, ceiling tiles, and/or ceiling grid may be necessary prior to installation. Any waste generated will be containerized, decontaminated and stored in the existing SEO waste storage facility for disposal as asbestos waste at a minimum, and in accordance with any waste characterization testing deemed necessary by the Owner's Environmental Consultant. Limited ACM removal (i.e. VAT) if necessary, will be performed at shoring installation areas only. Should limited abatement be necessary, NYS DOL and NYC DEP certified asbestos handlers will wet down the ACM with amended water and remove it by manual means. Any asbestos waste generated will be containerized, properly labeled, decontaminated and stored in the existing SEO waste storage facility for disposal as asbestos waste at a minimum, or in accordance with any waste characterization testing deemed necessary by the Owner's Environmental Consultant. Any ACM abated areas will be cleaned by HEPA vacuuming and wet-wiping. After these surfaces are cleaned, they will be encapsulated. After pre-cleaning and removals are complete, the installation areas will be visually inspected by the Owner's Environmental Consultant. The visual inspection will be performed by the NYS DOL certified project monitor. The project monitor will verify that the installation areas have been properly cleaned and are free of bulk debris, dust and/or residue. If limited ACM abatement is performed, the project monitor will also visually inspect all abated areas. Once the installation areas have passed OEC visual inspection, the steel shoring will be installed based on the engineer of record for the scaffolding specifications by shoring installation personnel equipped with abatement work area PPE. The shoring will be installed in, and remain in, non-cleaned areas until the cleaning phase of the Remediation Operations reach each level where shoring is installed. Shoring installation personnel with asbestos awareness certification will be instructed that disturbance of ACM is prohibited during the installation procedure.

In the event suspect material is observed behind fascia brick or within façade interstices, during the scaffold installation on Floors 2 through 15, work will stop and the conditions will be evaluated by the Site Hygienist. At the direction of the Site Hygienist, the remediation contractor will utilize certified personnel to execute localized clean-up and sealing of any access-way to the suspect material. After stabilization and cleaning, the scaffold connection at the subject location will be completed by non-certified scaffold installation personnel. Brick and mastic removal and inspection and scaffold connection work will continue. The Site Hygienist will record the location of any suspect material so appropriate characterization and response actions can be developed and submitted to the Regulators for review and approval. Any brick and mortar removed and process consumables utilized at any identified suspect-WTC-dust location will be handled as ACM at a minimum and according to waste characterization testing results.

On the south side gash area much of the spandrel is already exposed due to the damage sustained by the Building. It will only be necessary to perform facade brick removal in the locations where it remains. The majority of remaining brick is located on the southeast corner of the façade. In all areas where existing brick is encasing the spandrel, the surface of the brick will be wet wiped prior to the removal of the +/-8" x +/-8" section. After the opening has been visually inspected by the Owner's Environmental Consultant, a 6" x 6" spot of mastic shall be removed from the spandrel to allow for the scaffolding attachment to be made. Brick and mortar debris generated during the scaffold installation in the gash area will be subject to characterization testing as outlined in Section 4.1.4 of Regulatory Submittal Part IV – SEO WSMP. Disposal of brick and mortar debris from the gash area will be determined based on the results of the waste characterization testing. In addition, the hygienist will inspect the brick for mastic; if any ACM mastic is discovered on or amongst brick and mortar debris, the affected material will be handled and disposed of as asbestos waste at a minimum, and according to the waste characterization results.

In the areas where the spandrel is exposed asbestos spot abatement will be performed on a 6" x 6" section of the beam. Spot Abatement will proceed Floor by Floor once the netting has been removed. Netting removal and spot abatement will be performed as the scaffolding system rises up the façade. Spandrel spot abatement will be performed as detailed in Section 6.7.

In areas of the Gash where the spandrel beam is compromised, the contingency scaffolding attachment to the slab will be made in accordance with the procedure outlined in Section 6.1.

Stair towers will be located on the north and southwest sides of the Building. An exterior personnel hoist will be installed on the north side of the Building. The hoist will tie in by the same methodology as the scaffolding.

New netting will be installed on the scaffold after erection has reached the top on each façade.

NYS DOL and NYC DEP certified asbestos handlers will decontaminate shoring by HEPA vacuuming and wet-wiping. Visual inspection of the work areas where shoring is installed will be performed by the Owner's Environmental Consultant upon the completion of cleaning activities in these work areas. Once the affected work areas pass OEC visual inspection, the regulators will be contacted to perform regulatory visual inspection of these work areas. Twenty-four hour notice will be provided to the regulators prior to the date of regulatory visual inspection. After the work areas have passed regulatory visual inspection, final aggressive air clearance will be run. After successful clearance is achieved, lockdown encapsulant will be applied to all surfaces including the shoring. After encapsulation, the modified full containment on the affected work areas will be broken down. The shoring beneath the Setback Roof Levels will remain in place

after the work areas are broken down since the scaffold must remain in place for deconstruction. As the deconstruction activities proceed down the Building, the scaffolding will be taken down level by level by deconstruction personnel. Once the deconstruction activities reach a Setback Roof Level and the exterior scaffolding on that Roof Level has been removed, the deconstruction personnel will remove the shoring beneath the affected level.

6.9 Gash Area Remediation Procedures

Note: Work by certified personnel and work by uncertified scaffold installation personnel will not be conducted on the same façade of the building at the same time. In addition to working on separate facades, a twenty five foot (25') buffer zone will be maintained between the certified-worker restricted work areas and the uncertified-worker work areas. The separation of trades will be defined by “caution” tape at the edge of the restricted work area, and another strip of “caution” tape maintained at the 25' buffer line, demarcating, respectively, the abatement work area and the buffer zone.

Since it has been determined that the gash area has been exposed to CoPC, the entire external surface area of it will be subject to a focused cleaning once the scaffolding is fully in place. The gash area has previously been cleaned of WTC contamination, structurally shored up and the interior of the Building has been sealed off with hardwood barriers. The seams on all hardwood barriers have been sealed air tight with an expanding foam sealant material so that there is no communication between the Building interior and the outside environment.

All cleaning activities in the gash area will be performed by NYS DOL and NYC DEP certified handlers (workers) and handler supervisors. All handlers entering the gash area will utilize the proper PPE. Please refer to Section 6.3 for a list of PPE to be used during the gash cleaning. OSHA monitoring will be performed for the duration of spot removal activities as required by CFR1926. Focused cleaning will be performed on all surfaces slab to slab on all Building components that are exposed in the gash area including the external facing surface of the hardwood barriers that are sealing the interior. Cleaning will be performed manually by wet methods utilizing rags, mops and sponges. The progression of cleaning will be from the top floor downward in order to prevent potential cross contamination of previously cleaned areas. Run off water will be controlled to prevent the migration of residual dust from the façade into the outside environment. Only minor amounts of run off water are anticipated to be generated by gash component cleaning activities. Once the focused cleaning is completed, a visual inspection will be performed by PAL and Airtek to confirm that each area is sufficiently clean before proceeding to the floor below. Used cleaning materials will be double bagged or otherwise wrapped in poly, clearly labeled, processed through the waste decontamination unit and placed in the asbestos waste container for disposal as asbestos waste at a minimum.

6.10 Cleaning of Operable Window Mechanisms

In order to complete the remediation of the operable window mechanisms it will be necessary to enter the Building to install critical barriers over the operable windows. The cleaning of the operable window mechanisms will be performed from the outside as the scaffold rises up the facade of the Building so that working platforms will be in place to access the windows.

The procedure will be performed as follows:

- Asbestos air sampling will be conducted by the Owner's Environmental Consultant outside the building on the scaffold on the perimeter of the active window cleaning work areas established by the Contractor. The number and location of samples will be determined by the Site Hygienist based on the number, location and configuration of the work area(s).
- The cleaning of windows and operable mechanisms will be performed by NYS DOL and NYC DEP certified asbestos handlers utilizing proper PPE.
- PPE for the cleaning of operable window mechanisms shall be: disposable coverall suits with hoods, half-face APR equipped with P100 filter cartridges, nitrile gloves, safety goggles, work boots, rubber boot covers, hard hats and hearing protection (only if noise levels exceed OSHA decibel limits).
- The existing decontamination unit at the northwest entrance to the 1st Floor will be used for interior window related decontamination activities.
- The existing remote decontamination unit on the Greenwich Street side of the Building will be used for exterior window related decontamination activities.
- The affected windows are awning type windows that have an operable middle section which opens outward. The cleaning of operable window mechanisms shall occur on no more than three (3) floors at the same time. This operation is being limited in number to a manageable amount so that windows that are not scheduled for cleaning are not left unlatched or unsecured.
- The cleaning of windows and operable mechanisms will coincide with the installation of scaffolding on the exterior of the Building in order to provide a working platform from which to access the operable mechanisms.
- A separation of twenty-five feet (25') between asbestos and non-asbestos trades will be observed during the cleaning of the operable window mechanisms. This separation of trades will be defined by asbestos "caution" tape at the edge of the restricted work area, and another strip of asbestos "caution" tape maintained at the twenty five foot (25') buffer line demarcating, respectively, the abatement work

area and the buffer zone.

- Workers will enter the building to clean the interior surface of the operable section of each window will be cleaned via HEPA vacuuming and wet wiping prior to the installation of critical barriers. The installation of critical barriers will proceed from the affected floor upwards. Cleaning materials will be disposed of as asbestos wastes at a minimum or in accordance with any waste characterization testing deemed necessary by the Owner's Environmental Consultant.
- After interior cleaning is completed, windows will be left closed but unlatched to allow for the cleaning of the operable mechanism from the Building exterior. Critical barriers will be installed over the operable section of each window in order to prevent air transfer between the interior of the Building and the outside environment during cleaning activities. The inoperable fixed sections of the windows will not be sealed because there is no air transfer with the outside environment through these sections.
- The installation of critical barriers over all operable sections of windows on a given floor will be completed prior to the commencement of operable window mechanism cleaning activities on that floor. The installation of critical barriers will proceed from the lowest affected floor upwards.
- Once the critical barriers have been installed on a floor, NYS DOL and NYC DEP certified asbestos handlers will proceed to that level on the exterior scaffold platform.
- Workers, equipped with abatement work area PPE, will open the unlatched operable section of window and clean the interior surface and operable mechanism of each window by HEPA vacuuming and wet wiping. Cleaning will be performed from the lowest affected floor upwards utilizing the exterior scaffolding as a working platform. All cleaning materials generated during the cleaning of windows and operable mechanisms will be containerized, decontaminated and stored in the existing SEO waste storage facility for disposal as asbestos waste at a minimum, or in accordance with any waste characterization testing deemed necessary by the Owner's Environmental Consultant.
- After the completion of window mechanism cleaning activities, a Project Monitor from the Owner's Environmental Consultant will perform visual inspections of the cleaned surfaces.
- After the windows have passed visual inspection they will be secured in place by selftapping screws installed into the frames by NYS DOL and NYC DEP certified asbestos handlers.

7.0 Anticipated Waste Generation

It is anticipated that the SEO operations will generate twenty (20) cubic yards of conventional waste and forty (40) cubic yards of asbestos waste. Where uncharacterized or unanticipated waste streams require RCRA characteristic testing, the waste will be characterized according to any exceedances of RCRA parameters.

8.0 Site Work:

PAL Environmental will perform proper dust control during the SEO remediation and abatement work. The procedures to be followed with regards to visible emissions are specified in the ECAMP.

PAL Environmental will comply with all federal and local laws regarding noise control.

All work will be done by appropriately qualified labor. PAL Environmental will be responsible for employing qualified tradesmen for the duration of the PAL's contract work on this project.

Once the SEO is completed, the contractor will leave a clean site with the scaffolding fully in place.

All work is to be performed in accordance with the latest standards as established by OSHA.