



Bovis
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The John Galt Corp.

**130 Liberty Street
Implementation Plan**

03.01.07
Amendment 003



130 LIBERTY STREET DECONSTRUCTION PROCEDURES - IMPLEMENTATION PLAN

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PREFACE

This implementation plan sets forth the deconstruction procedures for the building located at 130 Liberty Street, New York, New York (the "Building"). The implementation plan was developed and is intended to meet the spirit and intent of the law by protecting workers and the general public from exposure to asbestos fibers and other contaminants of potential concern, both inside and outside the Building and in the vicinity of 130 Liberty Street in compliance with contract documents and the accepted Deconstruction Plan dated September 7, 2005 (the "Deconstruction Plan"). In the event of an inconsistency with a specific provision of the Deconstruction Plan, related to structural deconstruction, the Implementation Plan shall govern. The implementation plan includes all the work necessary to completely remove the Building.

The work described in this implementation plan has been designed to comply with the requirements of:

- The New York City Department of Buildings (NYCDOB)
- The United States Environmental Protection Agency (USEPA)
- The New York City Department of Environmental Protection (NYCDEP)
- The New York State Department of Labor (NYS DOL), including Approved Variance Decision Nos. 04-1432, 05-0427 and 05-0813
- The Deconstruction Plan approved by regulatory agencies on September 7, 2005 and
- Contract documents between the LMDC and Bovis, dated October 20, 2005.

The project is divided into three (3) components:

- a. Interior asbestos/environmental abatement
- b. Exterior asbestos/environmental abatement
- c. Phase II structural deconstruction

Abatement issues addressed within this implementation plan include:

1. Removal of porous materials, impacted by WTC dust, at a minimum, as asbestos waste, including, but not limited to:
 - a. Gypsum wallboard.
 - b. Ceiling tiles.
 - c. Insulation materials.
 - d. Carpets.
 - e. Fireproofing.
 - f. ACM existing in the Building *prior* to September 11, 2001.
 - g. Dust on the 30th, 38th and 39th floors shall be handled as hazardous waste, as dictated by characterization results. All waste material shall be characterized and handled in accordance with the results of the September 7, 2005 Waste Sampling and Management Plan. Any dust characterized as a hazardous waste shall be managed, handled, packaged, labeled, stored, transported and disposed of as a hazardous waste.
 - h. Porous materials, impacted by dust on floors 30, 38 and 39, will be handled as dictated by hazardous waste characterization sampling and testing, performed in conformance with Section 4.2.3 of the approved waste plan
2. Removal of decontaminated nonporous material as conventional waste including, but not limited to:
 - a. Ducts.
 - b. Metal ceiling components.

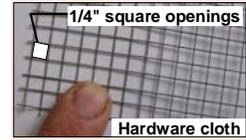
- c. Pipes.
 - d. Raised floor systems.
 - e. Convection units and enclosures.
 - f. Metal hardware cloth (wire mesh).
3. Abatement of mechanical shafts including pipes and ducts, risers and main trunk lines, as well as all associated HVAC equipment in mechanical rooms.
 4. Cleaning of concrete slab floor cell systems.
 5. Wipe down of exterior facade.
 6. Removal of exterior aluminum column enclosures and associated aluminum fascia panels.
 7. Cleaning and abatement of roof areas.
 8. Removal of hazardous waste, universal waste and regulated waste identified within the Building.

I. PROJECT OVERVIEW

A. General Building Information

1. The building, located at 130 Liberty Street, is a 40-level, steel frame curtain-wall, office building in Lower Manhattan.
2. Structural damage was sustained on the North face of the building as a result of the collapse of the World Trade Center on September 11, 2001. The damaged portion of the structure was repaired which included installing the necessary structural components required for the stability of the building.
3. The site is bounded by Liberty, Albany, Washington and Greenwich Streets.
4. Approximate building dimensions are 182' x 182' x 535' in overall height, from grade elevation.
5. The approximate gross building floor area is 1,450,000 square feet.
6. The building's exterior "skin" is a glass and aluminum curtain-wall, mechanically attached to the building's structure at each floor slab elevation.
7. Floor slabs are constructed with poured concrete slab over corrugated metal decking.
8. There are two (2) full floor Mechanical Rooms that provided necessary HVAC, plumbing, electrical and other support services to the building during its operation. These machine rooms are located on the 5th and 38th floors.
9. Vertical transportation is configured with twenty-nine (29) existing building elevators divided into low, mid and high-rise banks.
10. Building floor designations used in this document and on the job site, shall represent structural floor designations. (The architectural "elevator button" floors did not have a 6th or 13th floor.)
11. Scaffolding installation has been completed by others around the building perimeter and includes a new black mesh enclosure on the outboard side of the scaffold.
12. Two, dual car, personnel / material construction hoists are located on the North and South faces of the building. These hoists provide access to a clean vestibule area on each floor. Vestibule dimensions are approximately 26'x26'.

13. Hardware cloth (1/4" spacing, wire nonporous metal mesh/screen) has been installed, by others, on the exterior side of existing spandrel glass from the 20th floor to the roof level. The contractor will decide whether this material will either be cleaned and disposed of as conventional waste, or wrapped in two layers of 6 mil polyethylene and disposed of as asbestos waste, subject to applicable legal requirements. On the 30th floor, sampling shall be performed on the installed hardware cloth and glass to ensure that it does not need to be handled both as an Asbestos waste and a hazardous waste. Sampling results shall be submitted to the regulatory agencies.



- B. Environmental controls and procedures, identified in this plan shall, at a minimum, conform to the requirements of:
1. NYSDOL.
 2. NYCDEP.
 3. USEPA.
 4. The New York State Department of Environmental Conservation (NYSDEC).
 5. Deconstruction Plan dated September 7, 2005
 6. Contract documents.

Additionally, standard construction/deconstruction procedures shall be adhered to as required by NYCDOB, OSHA, NYCDOS, FDNY, etc.

- C. Site Specific Variance Nos. 04-1432, 05-0427 and 05-0813, approved by NYSDOL, shall be followed where those methods and procedures are used.
- D. Necessary permits shall be obtained and notifications shall be filed with the appropriate agencies prior to starting those activities at the site. Permits and Notifications required for this project shall include, *but not be limited to*, the following:
1. NYSDOL Asbestos Notification (DOSH-483).
 2. NYCDEP Asbestos Project Notification (ACP7).
 3. USEPA Asbestos Notification.
 4. NYCDOB Work Permit for Building Demolition, sidewalk bridges.
 5. NYC Cranes and Derricks permit to install and use tower crane.
 6. FDNY Permit to store air and gas at the site.
 7. FDNY Certificate of Fitness for Burners and Firewatch for torch work operations.
 8. NYCDEP waste water discharge permit.
- E. Utilities shall be disconnected and capped prior to deconstruction, with the exception of temporary water, sewer and electric, which shall be maintained by the General Contractor during the deconstruction process.
1. Existing vertical electric power risers shall be maintained within the building core to provide electricity for power within abatement work areas, emergency access lighting, etc. Power to the work areas shall comply with ICR 56, pertinent variance decisions and OSHA lockout tagout (LOTO) requirements. Live lines through abatement floors will be appropriately marked.

2. Water risers and drains, also located within the core area, shall be maintained for decon units, dust control, etc.

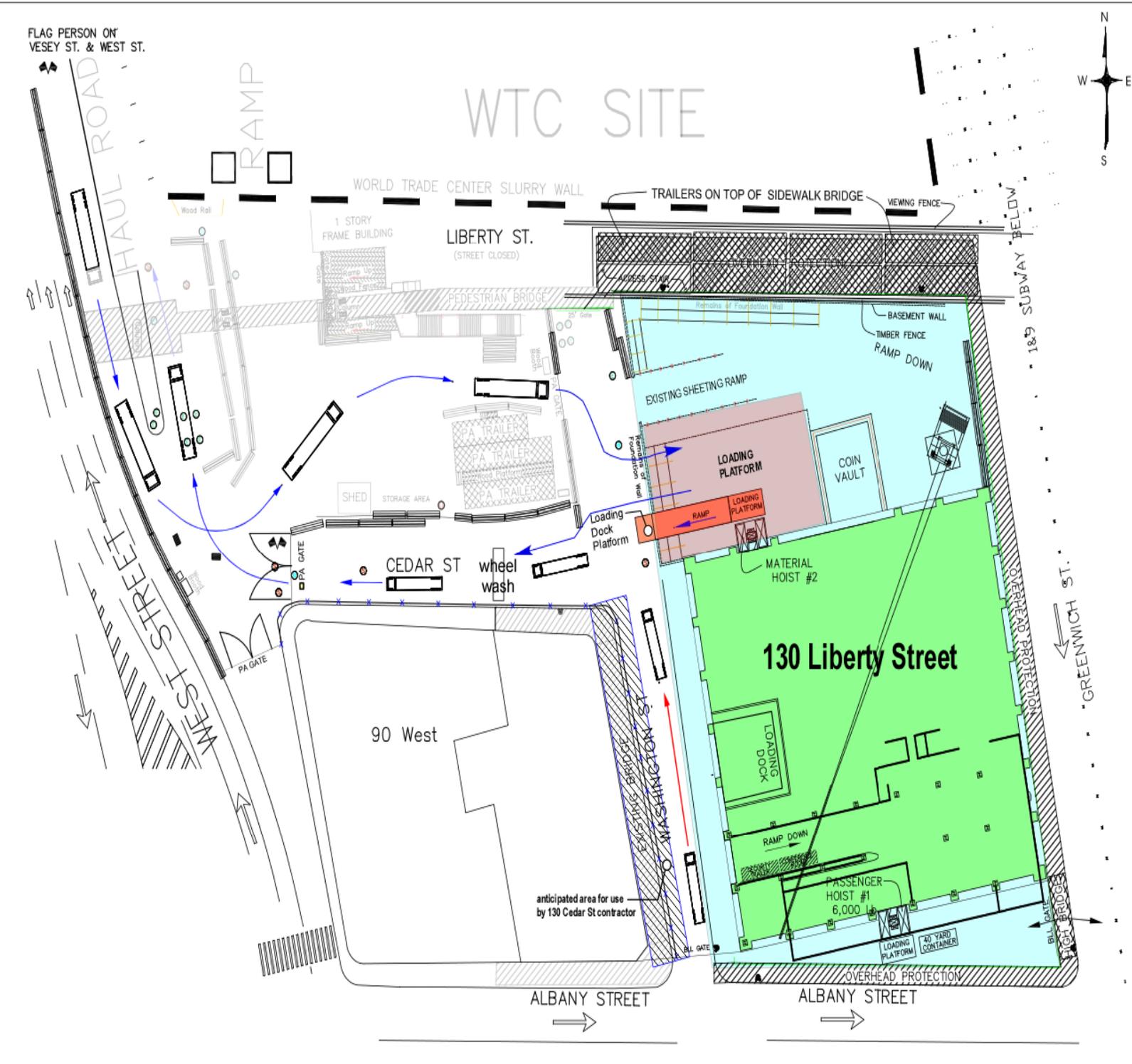
II. SITE LOGISTICS

- A. A tower crane shall be erected on the north side of the Building to assist the deconstruction phase of the project and for vertical transportation of material, equipment and waste. Areas where crane tie-backs are required for crane connections to the building shall be abated out of sequence to provide access for those attachments to the building structure. This out of sequence abatement shall be performed within negative pressure tent enclosures located within the building and shall comply with approved variances and the approved Deconstruction Plan.
- B. Due to the poor condition and questionable reliability of the existing building elevators, the two dual car exterior construction hoists shall be used to provide vertical transportation for material and personnel access. Existing building elevators shall be grounded and weights and cables shall be removed.
- C. Waste shall be managed at the site in accordance with the approved Waste Storage and Management Plan. We do not intend to store asbestos waste at the site. PCB waste, in addition to Hazardous and universal waste shall be staged at a designated storage location.

Asbestos waste may be temporarily staged within containment areas, in anticipation of daily loadout to transport vehicles. The magnitude of the temporary staging of Asbestos waste shall be determined by the materials and activities being performed at that location and shall vary significantly from one area to the next. All waste generated within containment areas shall be removed from those areas prior to the commencement of project monitor visual inspection and clearance air monitoring. At no time shall temporary waste storage containers obstruct work area exits or routes of egress, both routine and emergency. Waste storage shall comply with applicable regulatory requirements, including those restricting the duration of storage at the site.

- D. A wheel wash station shall be established at the exit from the site.
 1. The wheel wash shall be used to clean truck tires regardless of whether wheels have passed through dirt and soil.
 2. The majority of asbestos waste generated at the site shall be transported from the building using 100-130cy trailers. The use of trailers will reduce vehicular traffic over the project duration, where smaller containers would require more trips through the surrounding neighborhoods.

III. ENVIRONMENTAL ABATEMENT - INTERIOR



Proposed Site Logistics Plan

A. General Procedures and Assumptions

1. Any disturbance of ACM or WTC debris/dust/residue shall be performed in a manner consistent with the requirements of Industrial Code Rule 56 (ICR 56) and relevant site-specific variance decisions.
2. In general, asbestos abatement and WTC dust removal work shall start at the top of the Building and proceed downward, with the exception of the following out of sequence activities:
 - a. To support the effort of the Office of the Chief Medical Examiner (OCME) with the recovery of Potential Human Remains (PHR) the following areas may be abated out of sequence in the following order. These work area groupings shall be protected from water intrusion from above by the established water barrier floor and isolation barrier seal between the curtain wall and concrete slab installed in accordance with ICR56 at the bottom floor of any contained floor grouping above. Decontamination work in these areas may occur concurrently. Abatement activities within the areas will continue until completion at the conclusion of PHR activities.
 - i. 5th floor mechanical equipment room (MER).
 - ii. 4th floor.
 - iii. 3rd, 2nd and 1st floors, including entrance lobbies.
 - b. .Basement levels (to prepare for deconstruction backfilling activities).
 - c. Coin vault area, to prepare for the installation of the tower crane.
 - d. Tower crane tieback locations: 5th floor, 11th floor, 19th floor, 27th floor and 35th floor slab.
 - e. 38/39 MER

- B. Abatement work areas shall be established in groups of up to three (3) floors. Multiple three floor groupings may be under containment simultaneously. Anticipated containment area groupings are illustrated to the right.
 - a. As identified in Table 5 of Section 2 – The Ambient Air Monitoring Program of the September 7, 2005 Deconstruction Plan allows for Phase I Asbestos and COPC Abatement work to proceed below the scaffold monitors if additional air monitoring for metals is conducted at the exhaust manifolds on the lowest elevation of the work area grouping. As per EPA directive, abatement work areas shall not proceed more than one work area below the scaffold air monitoring stations.

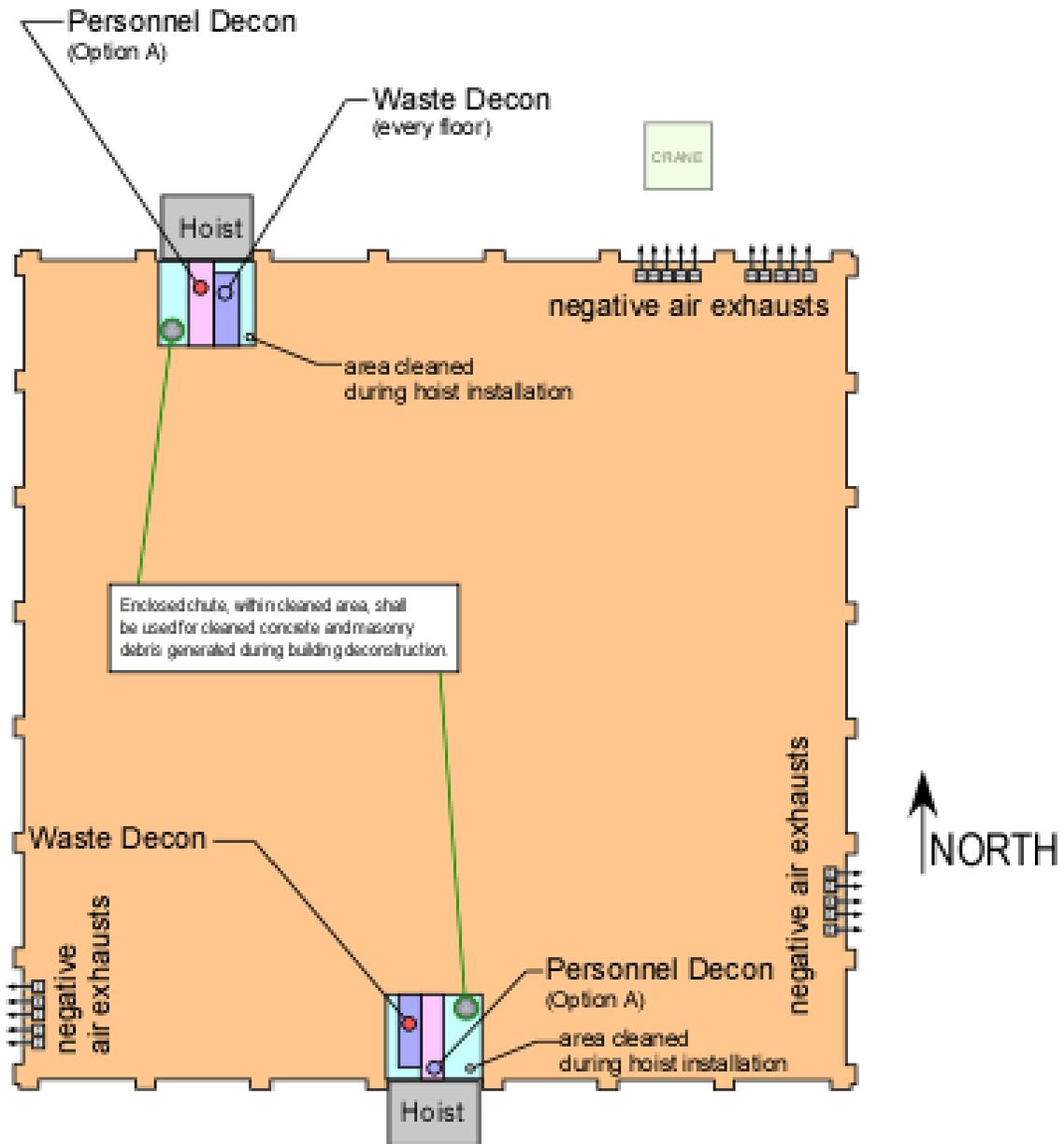


colors identify separate work areas

Deviations to this sequencing, as may be dictated by existing site conditions and established boundaries within the building shall be submitted to the LMDC, their consultants and the regulatory agencies, for review and acceptance.

- C. PCB and Asbestos waste, in addition to hazardous and universal wastes will be handled in accordance with the approved September 7, 2005 plans, including amendments.
 - 1. Where PCB containing material, i.e., PCB caulking in the Cellar 'A' area has been identified, that material shall be demarcated by John Galt Corp personnel, with barrier tape, spray painting, or other means, to ensure that PCB and nonPCB waste streams are kept separate. This material shall be removed, as a separate activity, during abatement, within the containment. These materials shall be managed, handled, marked, stored and disposed of as PCB waste.

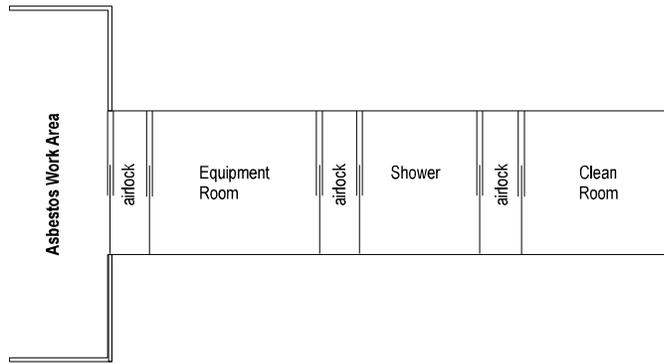
- D. Decon units shall be located as needed on typical contained floors, as shown below.



Typical abatement floor layout

1. Personnel Decons

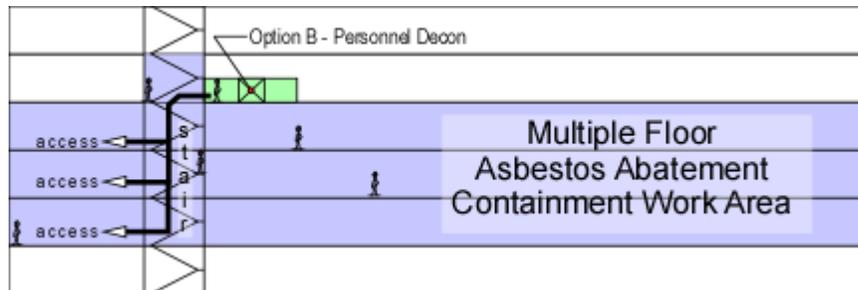
- a. Personnel Decons shall be constructed in accordance with NY State ICR 56 regulatory requirements consistent with the schematic below.



- b. The majority of the Personnel Decons used on the project shall be located within the south vestibule, with access to the exterior personnel / material hoist.
- c. Personnel Decons shall be located in accordance with either of the following options.

Option A – Within hoist vestibules, on any given floor, or

Option B – On the floor above or below a multiple floor containment, with access down or up an existing stairwell. This shall be a floor previously cleaned and free of contaminants, e.g., decon in the basement, after abatement out of sequence, where workers would proceed up to the 1st floor work area and Decon on the 5th floor, after abatement out of sequence, where workers would proceed up to the 6th floor work area.

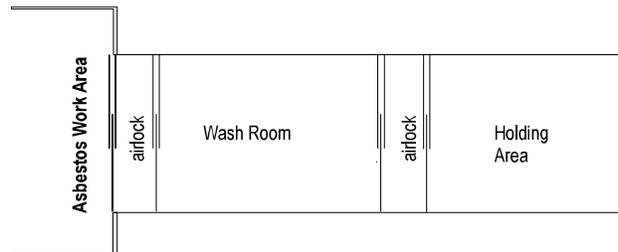


Option B, depicted above, allows storage of materials and supplies proximate to the Personnel Decon on that floor.

- d. Personnel Decons located under Option B shall be attached to an existing building stairwell. Personnel shall have access to the personnel/material hoist from the decon floor above or below the contained areas.

2. Waste & Equipment Decons

- a. Waste and Equipment Decon units shall be constructed on *every* floor, within the established north vestibule areas to provide access for the removal of waste from each floor.
- b. While south vestibules shall be used primarily for Personnel Decons, Waste & Equipment Decons may be constructed within the south vestibules, as dictated by site conditions.



- c. After passing through the Waste & Equipment Decon, asbestos, PCB, hazardous and universal waste shall be transported down the construction hoist to the hoist loading platforms areas constructed off of Washington and Albany Streets, to be loaded into an approved waste transport vehicle. When required, PCB, hazardous and universal wastes shall be stored in the designated storage area.
 - d. Waste & Equipment Decons shall be constructed in accordance with the above schematic.
- E. The gash area on the north side of the Building from the 6th floor to the 22nd floor shall be included within abatement work areas on each of those floors. These areas shall be cleaned of remaining materials and contamination, including cleaning of the floor cells.
- F. The two (2) existing building stairwells, shall be maintained free of obstructions and shall be used to provide access between floors within the containment areas. All interior stairs shall be accessible in the event of an emergency. At work area containment boundaries, stairwells shall be isolated using minimum 2x4 studs at 16" on center, sheathed with 3/8" plywood and two layers of 6 mil polyethylene, secured with duct tape. Kick-out panels shall be installed in containment barrier walls and within stairwells to maintain emergency egress throughout the duration of the project. Kick out panels shall be clearly marked with adequate signage.
- G. Where no building curtain wall exists, or where windows are missing, plywood barriers shall be installed to complete the building perimeter. Wall construction shall conform to requirements identified in NYS DOL ICR 56 and applicable variances.
- H. The non-porous metal ventilation louvers, for the 1st, 5th, and 38th and 39th floor machine rooms, shall be enclosed with 3/8" plywood and sealed, bringing the louvers into the environmental containment work area. Mounting surfaces on the building, where barriers are to be attached, shall be precleaned prior to barrier installation.
- Within the containment, the non-porous metal louvers shall either be:
1. Cleaned and left in place, to be cleared with the work area, or
 2. Removed, pulling the louvers into the containment, where they will be:

- a. cleaned and disposed of as conventional waste, or
- b. wrapped in two (2) layers of polyethylene to be disposed of as asbestos.

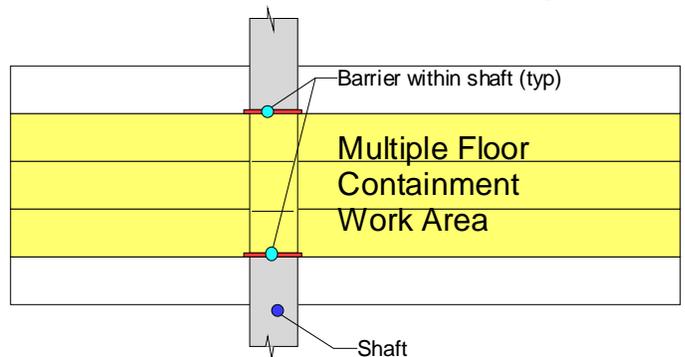
The dust on the 30th, 38th and 39th floors has been characterized as hazardous waste due to the presence of Cadmium. However, the September 7, 2005 Deconstruction Plan provides details for the testing of anticipated waste stream materials that are impacted by dust characterized as hazardous waste. In accordance with Section 4.3.3 of the approved waste plan, samples of painted non-porous louvers were collected from the 38th and 39th floors for TCLP metals analysis.

The TCLP metals analytical results from the painted non-porous louvers sampled recorded no detectable levels of Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium or Silver. Based upon these results the louvers can be managed as a non-hazardous waste and disposed of as Asbestos waste in accordance with Section 4.3.4 of the approved waste plan.

- I. To provide effective environmental containment, the top and bottom floors of each three floor contained floor grouping shall be sealed between the curtain wall and the concrete floor slab. To access these areas the perimeter convection enclosures and the perimeter convection units shall be removed to provide access to the space between the curtain wall and the floor slab. On other floors where the removal of the perimeter convection enclosures and the perimeter convection units is not required to install a barrier around the perimeter, the perimeter convection enclosures and the perimeter convection units shall be demolished with the remainder of the floor, after the containment is established.
- J. Perimeter column enclosures shall be sealed
 - 1. The lower portions of each of the twenty eight perimeter gypsum wallboard column enclosures, on the interior of the building, shall be removed to provide access to the interiors of those enclosures.
 - 2. Fireproofing shall be removed at the base of the columns to allow barrier installation, proximate to the slab.
 - 3. A barrier, constructed in accordance with ICR56 requirements, shall be installed within the enclosures, outboard of the slab, to seal that floor from adjacent, non work area, floors.
 - 4. This procedure shall not be required on each floor, but only the bottom floor of each multiple floor containment.
 - 5. After work is underway, the bottom floor barrier shall become the upper boundary barrier for the next group below.

K. Elevator Shafts

- 1. The two exterior dual car construction hoists shall be used to provide vertical transportation during the course of the project.
- 2. Existing interior elevator cars shall be taken out of service and decommissioned.
- 3. Interior elevator cars shall be grounded and weights and cables shall be removed.



4. Interior elevator doors shall be removed from work area floors. Fall protection barriers shall be placed at door openings, in accordance with OSHA requirements.
5. Elevator shafts shall be isolated at the bottom floor of each containment, and from the previously abated floors above, with a deck constructed of structural beams, planking, plywood and sealed with two (2) layers of 6-mil polyethylene, on the containment side of the barrier. Barrier construction within shafts shall be approved by a NY State Professional Engineer.
6. With the aforementioned barriers in place, the three floor section of the shaft is included within the three floor containment area.
7. Decontaminating the area of these shafts with the floors shall prevent ACM, and other nonporous materials, from being left behind within otherwise inaccessible locations. This procedure shall expedite the schedule by not requiring a separate phase to clean the Building's forty story elevator shafts.

L. Building Core Areas and Mechanical Shafts

1. Portions of masonry walls shall be removed, as necessary, to provide access for the removal of fireproofing materials. Masonry walls that remain in place shall be cleaned and cleared with the work area.
 Note: Selective demolition of some interior masonry walls will be required to gain access to areas to install critical barriers or to allow access for abatement. Otherwise, all interior masonry walls in the building will remain in place to be removed, along with concrete and steel, during Phase II activities.
2. Selected piping within shafts shall be removed to below that floor slab level to permit barrier installation. Ductwork shall be cleaned, on the interior and exterior, and removed from the work area, as conventional waste. Where large sections of ductwork can be accessed and cleaned on all sides those sections may stay within the work area to be cleaned and cleared with the floor, at the discretion of the onsite supervisor.
3. The exposed shaft openings shall be covered, at the bottom floor of each containment and from the previously abated floors above, with a barrier constructed of structural beams, planking and plywood using a similar decking method employed within the elevator shafts. Barrier construction for the shafts shall be approved by a NY State Professional Engineer.
4. Decks, identified above, constructed within the shafts, shall be caulked and sealed with two (2) layers of 6 mil polyethylene, forming a barrier, meeting the requirements of NYS ICR 56 and NYC Title 15.
5. With decks in place, the interior of the mechanical shafts are effectively within the containment work area, sealed at the top and bottom of the shaft.
6. This process shall prevent ACM, or other porous materials, from being left behind and shall expedite the schedule, making the abatement process more efficient.

- M. Negative air units, required to establish negative pressure and a minimum air exchange of 4 air changes per hour, shall be located, in banks of 5, as identified in the approved variance. These units shall be placed to provide a laminar air flow, across the work area, eliminating dead spots. The number of negative air units, assuming the exclusive use of 2,000 cfm units, rated at a more conservative flow rate of 1,500 cfm per unit, shall be as shown in the following example, for a typical floor.

$$[182' \times 182' \times 13' \text{ (average deck ht)}] \times [1/1,500\text{cfm}] \times [60 \text{ min/hr}] \times [4 \text{ air changes}] = 19.14 \text{ units} = \boxed{20 \text{ units}}$$

An additional five negative air units shall be installed as "back up".

While we do not intend to proceed with work requiring air exchanges greater than four/hour, we shall follow variance requirements, if methods and procedures are used that dictate a higher rate of air exchange.

N. After all engineering controls are in place and negative pressure is established removal activities shall commence. In general, work shall proceed from the top down.

O. **All porous materials shall be handled as asbestos, with the exception of dust on floors 30 and 38/39, which shall be handled as Asbestos, at a minimum.**

No attempt shall be made to clean porous materials.

All porous materials shall be packaged and disposed of as asbestos waste.

Where PCB, hazardous and universal wastes are encountered, more stringent handling, disposal, etc. requirements shall apply.

NOTE: Dust on floors 30, 38, and 39 have been characterized as hazardous waste for cadmium, however the September 7, 2005 Deconstruction Plan provides details for the testing of anticipated waste stream materials that are impacted by dust characterized as hazardous waste. In accordance with Section 4.2.3 of the approved waste plan, samples of the porous deconstruction waste/dust matrix (suspended ceiling tiles, fiberglass insulation, gypsum wallboard and spray-applied fireproofing) were collected from the thirty-eighth (38) and thirty-ninth (39) floors. Samples collected were analyzed for TCLP Cadmium as indicated by analytical results for settled dust contained in the *TRC Additional Waste Characterization Sampling Summary Report* which identified levels of Cadmium that exceeded criteria provided in 40 CFR 261.24 on those floors.

The TCLP Cadmium analytical results from the porous waste stream for the thirty-eighth (38) and thirty-ninth (39) floors recorded no detectable levels of Cadmium. Based upon these results the porous waste stream from these floors will be managed as a non-hazardous waste stream and disposed of as asbestos waste in accordance with Section 4.2.4 of the approved waste plan.

Samples will be collected from the 30th floor in accordance with the approved waste plan upon establishment of negative pressure. The sampling results shall be submitted to the Regulatory agencies.

Based on the sampling results, still to be performed on the 30th floor, the porous building components, **including carpeting**, would need to be disposed of as hazardous waste, in addition to Asbestos waste if the sampling results conclude that the porous items are hazardous waste.

Typical porous materials identified on this project shall include but not be limited to:

1. Fireproofing.
2. Carpets.
3. Ceiling tiles.
4. Insulation materials (e.g., fiberglass and paper jacket covering).
5. Gypsum wallboard.
6. Paper, etc.

- P. Non-porous items within the prescribed work areas shall be:
1. cleaned of all surface contaminants, to a visual cleanliness standard, as mandated by ICR 56 and NYC Title 15, and disposed of as conventional construction waste, recycled, salvaged, or
 2. not cleaned and double bagged, or wrapped for disposal as asbestos waste, or
 3. cleaned, with the work area, and left in place to be cleared with the floor.

The option of cleaning nonporous materials to a visual cleanliness standard or disposing of them as asbestos shall be at the discretion of the on-site abatement supervisor.

Determining factors for material disposal as asbestos or C&D shall be:

1. Ease of cleaning.
2. Required time to clean.
3. Ability to completely clean.

In accordance with regulations and site specific issues, cleaning of non-porous materials shall require that visible contamination be removed from all surfaces prior to the removal of that material from the containment work area. These non-porous materials shall be disposed of as conventional construction waste or recycled. The non-porous materials identified at this site include, but are not limited to:

1. Raised flooring components.
2. Metal ceiling suspension systems, including black-iron, "T"-Grid, hangers.
3. Conduit.
4. Metal studs.
5. Ductwork.
6. Piping.
7. Light units.
8. Perimeter convactor units, including metal convactor enclosures and covers.
9. MEP equipment from mechanical rooms, including pumps, motors and fan units.
10. Formica desks and cabinets

In accordance with Section 4.3.3 of the approved waste plan, samples of painted non-porous building components were collected from the 38th and 39th floors for TCLP metals analysis. Samples were collected from the following painted non-porous deconstruction waste streams identified by The John Galt Corp.

- Louvers
- Piping/conduits
- Electrical units/panels
- Elevator motors
- Generators
- Door frames
- Suspended ceiling support tracking/grid

Additionally, due to the previously identified concentration of Cadmium in settled dust that exceeded regulatory limits for hazardous characteristics, samples were collected from the

following unpainted non-porous deconstruction waste streams identified by The John Galt Corp.

- Piping/ conduits
- Metal studs

The TCLP metals analytical results from the painted non-porous waste streams sampled recorded no detectable levels of Arsenic, Barium, Cadmium, Lead, Mercury, Selenium, or Silver. Chromium was detected (0.502 mg/l) below the project action level of 5.0 mg/l in the door buck (frame) sample from the 38th floor. The TCLP Cadmium analytical results from the unpainted non-porous waste streams sampled recorded no detectable levels of Cadmium. Based upon these results both the painted and unpainted non-porous waste streams can be managed as a non-hazardous waste and disposed of as asbestos waste in accordance with Section 4.3.4 of the approved waste plan.

14. Samples will be collected from the 30th floor in accordance with the approved waste plan upon establishment of negative pressure. The sampling results shall be submitted to the Regulatory agencies.

Based on the sampling, still to be performed on the 30th floor, the painted and unpainted non-porous building components would need to be disposed of as Asbestos **and** Hazardous waste, for those building components not cleaned, if sampling results conclude that those non-porous items were hazardous waste,

Q. Pipes, conduits, hangers and other non-porous 'immovable objects' may be left in place to be cleaned and cleared with the work area.

R. In Mechanical Equipment Rooms

1. Motors and other immovable equipment shall be power washed, after an effective water collection system is in place, vacuumed and/or wet wiped to remove surface contamination. Motor interiors shall be cleaned by accessing all areas to ensure that that equipment is clean.
2. Hand tools, e.g., wrenches, screwdrivers, etc., shall be used to mechanically disassemble equipment. Where required, this work shall be supplemented with the use of reciprocating saws and other cutting tools, which shall be used to cut only non-asbestos metal equipment components where other hand tools are not effective. As identified in the NYSDOL Variance 05-0427, open flame cutting shall not be permitted. All power tools used to drill, cut, or otherwise potentially disturb WTC dust/debris/residue during equipment dismantlement in regulated abatement work areas shall be manufacturer equipped with HEPA-filtered local exhaust ventilation.
3. Where interior cleaning cannot be guaranteed for items such as small motors, those objects shall be double wrapped in 6 mil polyethylene for disposal, as Asbestos containing material.

NOTE: Dust on floors 30, 38, and 39 have been characterized as hazardous waste due to the presence of Cadmium, however the September 7, 2005 Deconstruction Plan includes provisions for testing anticipated waste stream materials that are impacted by dust characterized as hazardous waste. In accordance with Section 4.2.3 of the approved waste plan, samples of the porous deconstruction waste/dust matrix (suspended ceiling

tiles, fiberglass insulation, gypsum wallboard and spray-applied fireproofing) were collected from the thirty-eighth (38) and thirty-ninth (39) floors. Samples collected were analyzed for TCLP Cadmium as indicated by analytical results for settled dust contained in the *TRC Additional Waste Characterization Sampling Summary Report* which identified levels of Cadmium that exceeded criteria provided in 40 CFR 261.24 on those floors.

In accordance with Section 4.3.3 of the approved waste plan, samples of painted non-porous building components were collected from the thirty-eighth (38) and thirty-ninth (39) floors for TCLP metals analysis. Samples were collected from the following painted non-porous deconstruction waste streams identified by The John Galt Corp.

- Louvers
- Piping/conduits
- Electrical units/panels
- Elevator motors
- Generators
- Door frames
- Suspended ceiling support tracking/grid

Additionally, due to the previously identified concentration of Cadmium in settled dust that exceeded regulatory limits for hazardous characteristics, samples were collected from the following unpainted non-porous deconstruction waste streams identified by The John Galt Corp.

- Piping/ conduits
- Metal studs

The TCLP metals analytical results from the painted non-porous waste streams sampled recorded no detectable levels of Arsenic, Barium, Cadmium, Lead, Mercury, Selenium, or Silver. Chromium was detected (0.502 mg/l) below the hazardous waste level of 5.0 mg/l in the door buck (frame) sample from the 38th floor. The TCLP Cadmium analytical results from the unpainted non-porous waste streams sampled recorded no detectable levels of Cadmium. Based upon these results both the painted and unpainted non-porous waste streams can be managed as a non-hazardous waste and disposed of as asbestos waste in accordance with Section 4.3.4 of the approved waste plan.

Samples will be collected from the 30th floor in accordance with the accepted waste plan upon establishment of negative pressure. The sampling results shall be submitted to the Regulatory agencies.

Based on sampling, still to be performed on the 30th floor, the painted and unpainted non-porous building components would need to be disposed of as Asbestos **and** Hazardous waste for those building components not cleaned, if sampling results conclude that those non-porous items were hazardous waste.

4. Large sealed equipment with no open exposure to the atmosphere, i.e., chillers, heat exchangers, etc. shall be cleaned of all exterior surface contamination and left in place.

5. The area shall be cleared with large immovable equipment left in place. After the floor slab above is removed during the deconstruction phase, the cleaned equipment shall be removed. That equipment shall be rendered inoperable and recycled.
- S. Abatement work, including demolition and handling of materials within the containment areas, shall be performed manually. Waste materials shall be packaged on the floor of origin and "double bagged" at the waste decon in accordance with regulatory requirements. The majority of waste shall be removed from the Building using the exterior construction hoist on the north side of the building, supplemented with removal of material using the south hoist.
 - T. All fireproofing shall be removed from structural steel and decking until visually clean. Prior to the removal of porous materials, plastic sheeting shall be placed on floor surfaces to act as a drop-cloth, to aid in the cleanup of this material.
 - U. Removal of multiple types of materials within a single containment shall follow the sequential order from the ceiling down and/or from the most friable to the least friable in each active abatement area, as identified in the project variances. All fireproofing and porous materials shall be handled, and disposed of as an asbestos containing material.

V. Floor Cell Systems

Specified floor slabs within the building contain an electric floor cell network, comprised of an upper system, within the concrete slab (Walker Ducts) and a lower system, as an extension of the corrugated metal deck (raceways). These systems, existing between the 6th and 31st floor slabs, run perpendicular to one another. The work of this section shall conform to requirements addressed in the Site Specific Variances 05-0427 and 05-0813, as applicable, or in accordance with ICR 56. All floor cell work shall be performed, within a negative pressure containment, per the approved variance.

1. HEPA vacuums shall be used to remove accessible gross contaminants from openings into floor cell systems.
2. Wire will be pulled from the raceways and Walker ducts and disposed of as ACM, or cleaned and disposed of / recycled as conventional waste. The dust on floors 30, 38, and 39 has been characterized as hazardous waste due to the presence of cadmium, however the September 7, 2005 Deconstruction Plan provides details for the testing of anticipated waste stream materials that are impacted by dust characterized as hazardous waste. In accordance with Section 4.3.3 of the approved waste plan, due to the previously identified concentration of Cadmium in settled dust that exceeded regulatory limits for hazardous characteristics samples of non-porous wires/cables were collected from the thirty-eighth (38) and thirty-ninth (39) floors for TCLP Cadmium analysis. The TCLP Cadmium analytical results from the non-porous wires/cables waste stream sampled recorded no detectable levels of Cadmium. Based upon this result the non-porous wire/cable waste stream from these floors will be managed as a non-hazardous waste stream and disposed of as asbestos waste in accordance with Section 4.2.4 of the approved waste plan. Samples will be collected from the 30th floor in accordance with the approved waste plan upon establishment of negative pressure. The sampling results shall be submitted to the

regulatory agencies. Based on the sampling results still to be performed on the 30th floor, the non-porous wire/cable building components would need to be disposed of as asbestos and hazardous waste, for those building components not cleaned, if sampling results conclude that the non-porous items were hazardous waste.

3. Where the electric floor cell system is a boundary floor between containments, the existing access holes, *between* the **Walker Duct** system on top and the **raceway** system on the bottom, shall be sealed as they become exposed. This isolation barrier shall be sealed using caulk, expandable foam or duct tape to form an airtight seal. Where the floor slab is not a part of a containment boundary, e.g. the 29th floor slab within the 28/29 containment area, barriers shall not be required
4. Work on floor cells shall be performed when all areas being accessed are under negative pressure containment, in accordance with approved variances. Work shall be performed by workers possessing NY State and NYC Asbestos Handler Certificates.
5. Floor cell systems will be:
 - a. cleaned and inspected in accordance with the approved variances, *or*
 - b. cut open and cleaned of visual contaminants in accordance with requirements identified in ICR56, as follows:
 - i. Access to the system of **raceways**, beneath the structural Q-deck, shall be achieved by cutting and removing the metal plates, using electric shears, nibblers, or other similar means. These metal plates shall be cleaned for disposal / recycling as conventional waste, or packaged and disposed of as Asbestos waste.
 - ii. **Walker ducts**, present within the slab, shall be exposed using wet methods by removing the concrete topping above the duct using HEPA filtered saws, chipping hammers, other similar tools or any combination thereof, to expose the metal duct. Concrete debris, generated during this activity, shall be disposed of as Asbestos waste. With the metal duct exposed, the duct shall be cut open with a HEPA filtered electric saw, nibbler, shear, or similar means to expose the *interior* of the duct, for cleaning and visual inspection.
6. Visual inspections shall be performed to insure that cell systems are free of visual contaminants by a NYS Certified Asbestos Supervisor, followed by satisfactory Project Monitor visual inspection.
7. If the area is determined to be adequately clean, no further work is necessary. If visible debris is identified, additional cleaning will be performed.

- W. Work shall proceed, within each negative pressure enclosure area, until all ACM, WTC Dust and porous materials have been removed and the area is visually clean. Items remaining shall include, but not be limited to, the cleaned concrete floor slab, interior masonry walls, metal door bucks, corrugated steel deck, structural steel columns beams, curtain wall components and large, cleaned equipment to be recycled. These materials shall be removed during Phase II Structural Deconstruction.

All interior masonry walls in the building will remain in place and shall be removed along with the concrete and steel during Phase II activities, though selective demolition of some interior masonry walls shall be required to gain access to areas to install critical barriers, or to allow access for abatement.

- X. In accordance with regulatory requirements, final clearance air tests shall be performed by the owner's third party air monitoring consultant.
- Y. After confirmation of satisfactory visual inspection and clearance air sample results the work area shall be stripped of abatement protection, decons and all equipment used during abatement. Only structural barriers within the shafts, perimeter barriers around the floor and barriers at stairwells shall remain in place on the lowest floor within multiple floor groups. This shall be done to maintain the barrier between the upper floor of the containment immediately below and the abated area.

IV. ENVIRONMENTAL ABATEMENT – EXTERIOR

The exterior abatement phase of the project includes:

A. Cleaning of exterior surfaces of the curtain wall

1. Building wipe-down shall be performed from the existing scaffold system, within the protected area of the scaffold enclosure.
2. Cleaning protocol shall be in accordance with the NYC DEP's WTC Dust/Residue Roof & Façade Cleaning Procedures.
3. Broken glass, found in remaining sections of the curtain wall, shall be double bagged for disposal as asbestos, at a minimum. Material characterization shall be performed, for uncleaned glass on 30 to insure proper disposal. Samples will be collected from the 30th floor in accordance with the approved waste plan upon establishment of negative pressure. The sampling results shall be submitted to the regulatory agencies. Based on the sampling results still to be performed, on the 30th floor, the glass would need to be disposed of as asbestos and hazardous waste, for glass not cleaned, if sampling results conclude that the non-porous items were hazardous waste.
4. Hardware cloth (1/4" spaced, nonporous metal wire mesh/screen) has been installed, by others, on the exterior side of existing spandrel glass, from the 20th floor to the roof level. The hardware cloth shall either be cleaned and disposed of as conventional waste, or wrapped in two layers of 6 mil polyethylene and disposed of as asbestos waste. On the 30th floor, sampling shall be performed on the installed hardware cloth to ensure that it does not need to be handled as both an Asbestos and Hazardous waste.

Samples will be collected from the 30th floor in accordance with the approved waste plan. The sampling results shall be submitted to the regulatory agencies. Based on the sampling results still to be performed on the 30th floor, the hardware cloth would need to be disposed of as asbestos and hazardous waste, for those building components not cleaned, if sampling results conclude that the non-porous items were hazardous waste.

B. Removal of non-friable asbestos caulking materials

1. Non-friable asbestos caulking mastic materials were used in the assembly of the building's exterior aluminum column enclosures and associated façade curtain-wall panels. These seams run vertically and are located approximately every 8" across the three (3) faces of each aluminum column enclosure and on the connection seams of the aluminum fascia.
2. After environmental cleanup of the curtain wall, including cleaning of exterior surfaces, and abatement of interior containment areas within a multiple floor grouping has been completed, the removal of column enclosures, with asbestos containing caulking material, shall be able to commence. To ensure complete removal of the asbestos caulk, the entire aluminum column enclosure shall be removed and handled as asbestos waste. Although it is not our intent, in the unlikely event that the interior, or exterior, surface of a column enclosure is unable to be cleaned, the abatement of that

column enclosure shall be performed within a tent enclosure in accordance with variance 05-0427, variance amendment #3 and cleaned prior to disposal, as asbestos waste.

3. As a result of the successful implementation of a pilot program to monitor fiber release during the removal of the aluminum column enclosures, work with approved equipment and without tents or other negative pressure enclosures has been approved by the NYSDOL for work under the approved variance.
4. Removal of column enclosures and fascia shall be performed by cutting the aluminum into manageable sections, using methods and equipment approved for use by the NYSDOL.
5. Column sections shall be pulled into the floor of the building and wrapped, individually or in groups of multiple sections, in two (2) layers of 6-mil polyethylene, in preparation for transport and disposal, as asbestos waste.

C. Removal of cleaned glass from the curtain wall

1. Removal of cleaned glass from the curtain wall shall be performed while planking and protection are in place on the exterior scaffold for façade wipe down and column enclosure removal at each floor elevation.
2. Glass removal shall be kept separate from column enclosure abatement and shall not commence until the façade wipe down is complete at that location. A minimum distance of two column bays, or approximately 50', shall be maintained between column enclosure abatement and glass removal.
3. Glass shall be removed into the Building in large sections and downsized on the floor, in a controlled manner, with hammers, etc. Personnel shall be provided with appropriate protective equipment, e.g., hardhats, safety glasses, Kevlar gloves, etc. during this process.
4. Downsized glass panels shall be containerized and taken down the hoist.

D. Roof cleaning and abatement shall follow procedures identified in the NYCDEP's Building Exterior Cleanup Procedure, dated May 3, 2002 and all pertinent procedures and conditions of site specific variance decisions 05-0427, 05-0813 and as set forth in revised Roof Search/Cleaning Protocol submitted to the Regulators on May 31, 2006 and approved by the Regulators on June 9, 2006. Roofing materials potentially contaminated with WTC dust shall be cleaned, or removed, as follows.

1. For work on the roof, the Worker Decon shall be located on the south side of the roof and the Waste & Equipment Decon shall be located on the north side of the roof.
2. The roof drain system shall be isolated and sealed for the duration of the roof work.
3. Stone ballast shall be disposed of as asbestos.
4. The fabric covering, over the roof insulation, shall be wet down, rolled up into manageable sections and bagged, or wrapped in two layers of 6 mil polyethylene, for disposal as asbestos waste.
5. Roof insulation shall be packaged for disposal as asbestos waste.
6. The surface of the roof shall be cleaned of visual contaminants using HEPA vacuums and/or wet wiping methods and procedures.

7. Waste water generated during the cleaning procedure will be collected and filtered to 5 microns for asbestos and discharged into the NYC sewer system using NYCDEP discharge permit C-3935, to be amended as required, in conformance with the most recent amendment to the Waste Sampling and Management Plan.
8. Cooling tower components and other asbestos materials shall be abated in accordance with protocol identified in the site specific variances.
9. After the roof has been deemed clean, the roof drain systems shall be opened to allow drainage from the roof until structural deconstruction commences.

V. PHASE II STRUCTURAL DECONSTRUCTION

A. Overview

1. With abatement work complete on a given floor, remaining components on each level shall include:
 - i. structural steel columns and beams,
 - ii. corrugated decking,
 - iii. concrete floor slabs,
 - iv. curtain wall,
 - v. large cleaned equipment, rendered inoperable, to be recycled and
 - vi. other nonporous materials which have been left clean and in place, e.g., masonry walls, pipe, conduit, metal doors, etc.

2. Deconstruction activities shall maintain a minimum distance of 4 floors between environmental abatement at all times. This minimum 4 floor buffer shall be maintained throughout the duration of the project. Deconstruction will be occurring on two floors at a time in a stepped sequence and will continue during deconstruction of the structure. Prior to initiating Structural Deconstruction activities, including removal of structural steel columns and beams, concrete floor slabs and corrugated decking, a four (4) floor buffer zone must exist. The tower crane shall not be utilized until the four floor buffer is created. This four floor buffer is defined as four floors where glass has been removed from the perimeter of the building and interior and exterior abatement work has been completed. No buffer zone is required between interior and exterior abatement work. Exterior abatement work cannot commence until successful final air clearance has been obtained in the associated interior work area grouping.

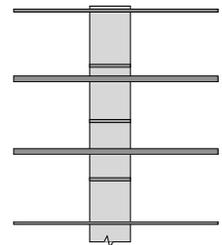
Removal of non-structural mechanical, electrical and plumbing (MEP) equipment that may exist subsequent to interior abatement will not be contingent upon establishing the four floor buffer. A minimum distance of 2 column bays or approximately 50 feet, shall be maintained between column enclosure/fascia abatement activities and the removal of cleaned remaining MEP. Cleaned MEP will be dismantled using hand tools or cut with power tools and/or torches. During torch cutting, a firewatch and burner (with FDNY certificates of fitness) shall be present during torch cutting to ensure that proper fire protection measures are employed. Materials will be removed via the personnel/material hoists or staged on the level where it originated for subsequent removal by tower crane. MEP shall be staged on the floor in a manner that does not exceed floor slab load restrictions, as established by the Engineer of Record.

Exterior scaffolding shall be utilized to provide access for the column enclosure/fascia abatement. The scaffolding enclosure shall also provide added protection around the building's perimeter during the removal activities, insuring that all materials are maintained within the enclosure of the scaffold.

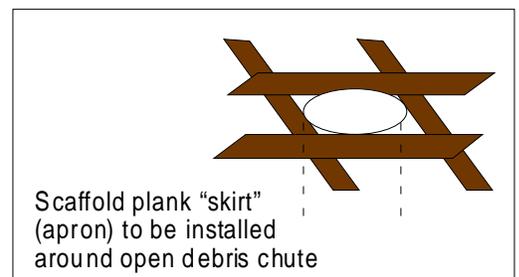
3. The Engineer of Record shall have a representative on site to monitor compliance with the Deconstruction Plan.

4. Where required, added protection shall be installed over abatement areas by sealing barriers at shafts and other floor penetrations to prevent water infiltration from deconstruction areas above, during abatement below. Holes and other small openings shall be filled with spray foam, caulking, cement, etc and large openings shall be covered with a plywood cover. Wood construction shall be covered with polyethylene, EPDM rubber roofing or similar material and sealed around the perimeter edges of the sheeting material to prevent water infiltration. A water resistant barrier shall be in place above the unabated area of the building between the demolition and abatement work a (non-Asbestos activity). Locations for additional protection shall be determined as warranted by existing building conditions and prevailing weather patterns. Storm water at the barrier level shall be directed into the existing building storm leader system and discharged into the NYC sewer system. A water resistant barrier floor shall be maintained at a location over the active abatement floors.
5. Diesel powered equipment used on the project shall use only ultra low sulfur diesel fuel (ULSD).

6. Steel debris chutes shall be constructed inside the building, within the clean areas of the north and south hoist vestibules.



- i. Only downsized clean concrete from floor slabs and masonry walls (maximum allowable material not to exceed 6" cube, or 25lbs in weight), cleaned during the environmental abatement, shall be deposited within these chutes.
- ii. The top of the chutes shall be screened, reduced or similarly restricted to eliminate the potential of the chute clogging with concrete masonry material.
- iii. Debris chutes shall be 30" diameter and constructed out of a minimum ¼" steel.
- iv. The debris chutes shall be supported, on each floor slab elevation, with pre-engineered attachments, connected to the cylindrical debris chutes, and resting on each floor slab, as approved by the Engineer of Record.
- v. Chute sections shall be welded and sealed in a manner approved by the Engineer of Record.
- vi. After visually surveying the vestibule areas, it has been determined that chute locations shall not impact walker ducts and raceways within the concrete floor slabs. In the unlikely event that a walker duct is impacted, tents shall be constructed in conformance with Variance File No. 05-0427 and the exposed duct shall be cleaned and sealed. A variance request, addressing this potential eventuality, will be submitted for approval, if required. The tent shall then be cleaned, cleared and broken down.
- vii. Debris chutes shall open into the cellar 'B' within an area protected with minimum ½" thick steel street plates, where downsized concrete slabs and masonry walls shall be deposited for use as



backfill. The chute receiving area design shall be approved by the Engineer of Record prior to use.

viii. The entrance to the drop zone area shall be protected with a timber barrier moved with the help of a bulldozer, or similar equipment, to provide access into that area.

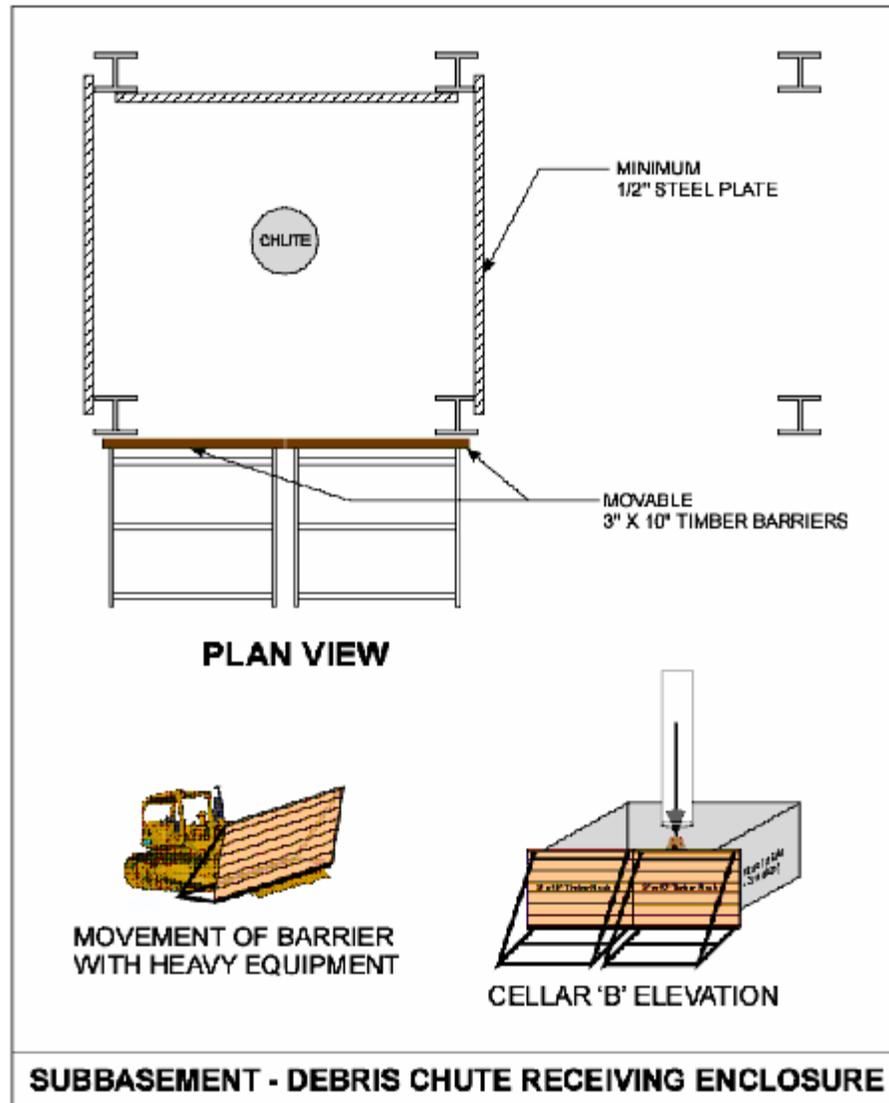
ix. Further access to clean out receiving areas shall be controlled with workers using two way radios at the top and bottom of the chutes.

x. Concrete receiving areas shall be constantly wet down with a water misting system while concrete is deposited within the basements to minimize dust during this operation.

xi. Due to the small size of the concrete and masonry material being sent into the chutes and its 90° orientation, minimal horizontal loads will be applied to chute systems during the work.

xii. In the event that an obstruction becomes lodged within a chute, causing the chute to jam, the chute shall be cut open at the jam location, the jam shall be cleared and the steel chute shall be repaired with a welded steel patch. Note: Prior to performing repair work appropriate protective barriers, e.g., fire blanket, firewatch, etc., shall be in place.

xiii. Material requiring downsizing, using the crusher, shall be transported using a front end loader from the basement receiving area beneath the chutes, to the crusher in the North Plaza area. After the material has been downsized to 1½" minus it shall be placed within the basement area, as backfill.



- xiv. Debris chute design and installation shall be approved by the Engineer of Record for the project.
7. The tower crane, constructed in the north plaza area, shall be used to hoist cleaned structural steel and other cleaned, containerized debris off of the building, as well as to place equipment within the building.
8. Deconstruction work shall be performed in accordance with all Federal, State and City regulatory requirements, as well as project-specific requirements dictated by construction documents and permits. Construction documents refer to Thornton Tomasetti drawings T-000, G-101 and A-101 through A-109.

B. Interior Deconstruction

1. During deconstruction, a concrete crushing machine *may* be used at grade elevation to downsize material, for use as backfill within basement areas. The concrete crushing machine shall be located within the North Plaza area, bounded by Liberty, Greenwich and Washington Streets. Units shall not be located on sidewalks or streets.
2. As deconstruction progresses, remaining sections of masonry walls shall be downsized, to a maximum 6" cube or a weight of 25 lbs, and sent down the debris chutes into the basement.
3. Remaining pipes, hangers, ducts, etc. shall be removed from the floor by torch cutting.
4. Mini-excavators and rubber-tired loaders, equipped with hydraulic breakers and grapple buckets, shall be used to complete the interior deconstruction at each floor level.
5. Structural steel shall be collected into bundles or placed in metal containers or 'skip buckets' to be lifted and placed in the North Plaza laydown area.
6. Decking material shall be placed in containers, to be lifted from the building and placed in the North Plaza laydown area.
7. Cleaned and cleared concrete and masonry material shall be downsized on the floors and loaded into debris chutes, for transport to the basement or loaded into "skip boxes" to be lowered, to grade elevation, with the tower crane. The downsized material shall be placed as backfill in basement areas. Concrete and masonry backfill material shall conform to specifications identified in the contract documents (1½" minus).
8. Concrete will also be placed in containers on the floor, lowered to grade, using the tower crane and moved with bulldozers, into the basement areas to be used as backfill.
9. During this phase, as with all phases of the deconstruction process, dust palliation shall be a primary concern. Water shall be used at all potential sources of dust generation, throughout all phases of the project, to ensure low levels of dust during the deconstruction

process. Laborers, with water hoses equipped with fogging nozzles, shall be situated at potential sources of dust generation to wet down materials.

C. Major Equipment

The following equipment shall be used at various stages during the deconstruction process. All equipment shall be approved by the Engineer of Record prior to mobilizing the equipment for work on any floor within the building.

1. Tower Crane

- a. The Tower Crane shall be installed on the north face of the Building and shall be used to:
 - i. move machinery, equipment and supplies to various working levels in the building.
 - ii. lower structural steel bundled elements, containers and equipment to be recycled to ground level for transport off site.
 - iii. The installation of the tower crane shall require tie-backs to the building structure on the 5th, 11th, 19th, 27th and 35th floors. Out of sequence abatement work shall be required on 5, 27 and 35, on those floors not located within the clean "North Gash" area (6-22).

2. Man and Material Hoists

- a. The two construction hoists shall be used for the vertical transportation of workers, materials, waste and equipment to all levels of the building during the deconstruction process.

3. Deconstruction Equipment

- a. The following is a summary of the demolition equipment to be used for deconstruction.

Note: All diesel-powered equipment shall use ultra low sulfur diesel fuel. Manufacturer names have not been identified at this time. Various manufacturers shall be used to supply equipment for this work and may be subject, in some part, to manufacturer's availability of equipment, etc.

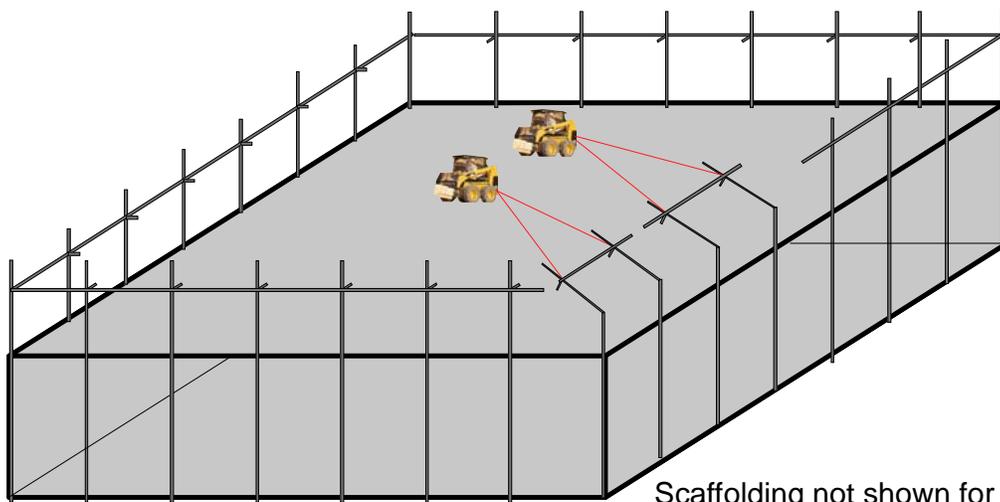
The Engineer of Record shall approve equipment to be used on elevated slabs.

- i. Concrete Crushing Machine - To crush concrete and masonry
- ii. Excavators - For the systematic removal of floors slabs and walls
- ii. Front end loaders - To handle material on each elevation
- v. Hydraulic Breaker attachments - To break concrete slabs and walls and downsize and break apart concrete and masonry prior to crushing
- vi. Grapple Bucket attachments - To move irregularly shaped demolition debris
- vii. "Skip Buckets" – To be used during deconstruction to transport material to grade level.

D. Deconstruction Process

This plan shall be under the direction of the Engineer of Record for the project.

1. Structural demolition shall start at the top and proceed downward through the building.
2. Work shall be ongoing in various states of deconstruction, on multiple floors, throughout the deconstruction process.
3. In order to maintain a flow in the deconstruction schedule, piping and equipment within the machine rooms on the 5th and 38th floors, shall be downsized early in the project, taking the removal of equipment out of the project's 'critical path'. Steel and miscellaneous equipment shall be downsized by torch cutting. During burning operations a firewatch and burner (with FDNY certificates of fitness) shall be present at all times.
4. Interior columns, beams and masonry/concrete shall be cleared before the floor below is demolished.
5. The perimeter columns and spandrel beams shall be removed as follows:

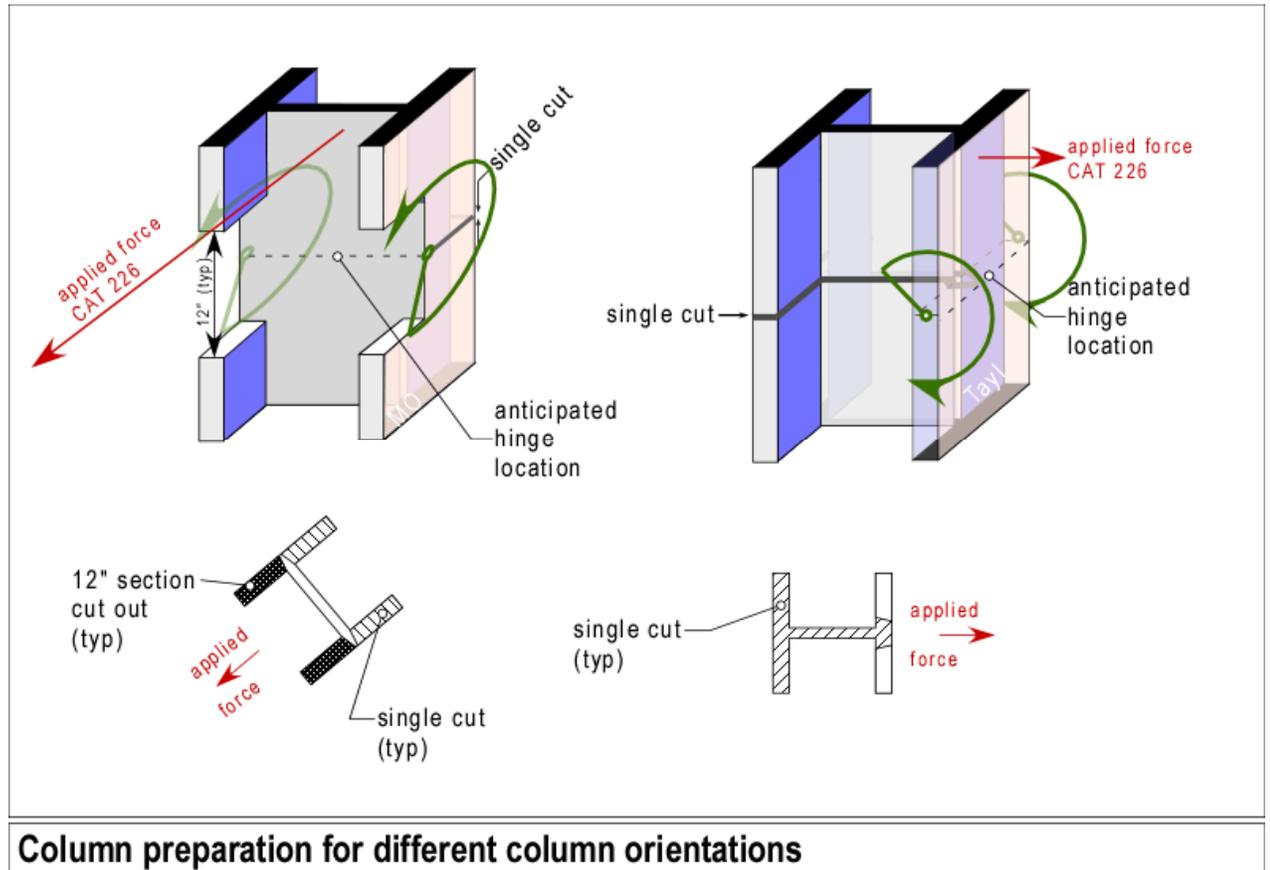


Scaffolding not shown for clarity.

- a. Points of attachment shall be made with steel cable chokers around the columns, aluminum mullions and other structural components remaining at one end and a CAT 226 loader (or equivalent) at the other end of the cabling chokers.
- b. The CAT 226 loaders (or similar equipment) shall assist in the removal of perimeter columns. These machines shall be used as anchors, ensuring that steel columns can only move inward, onto the floor during this process.
- c. The CAT 226 shall provide the necessary mass to anchor the columns, as well as provide the necessary power to pull columns onto the floor slab.
- d. After the CAT 226 is in place and secured to the perimeter column, the remaining procedures for this work shall be permitted to proceed.
- e. Structural steel perimeter columns shall be removed by pre-cutting the steel columns above the concrete floor slab. OSHA compliant fall protection, per 29CFR1926 – Subpart M – Fall Protection, shall be maintained during this and other demolition activities with the scaffolding enclosure system surrounding the building to manage fall

exposures. Scaffolded demolition levels shall be planked and protected with plywood, as required, during the course of that work.

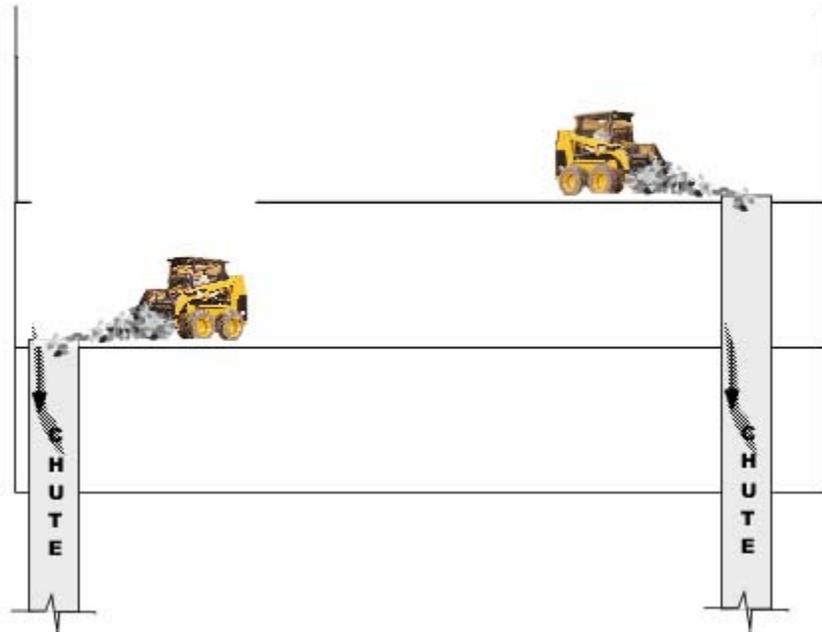
- f. During cutting operations, the operator of the CAT 226, with the assistance of a laborer, shall monitor cable tension and remove slack in cables, maintaining a constant pull on the section being brought inward.
- g. Columns shall be cut, leaving 'tabs' that will ensure that the columns remain vertical until they are pulled inward with positive control.



- h. Pre-burning to create hinges as shown in the sketch above.
 - i. After columns have been prepared, the CAT 226 shall move away from the curtain wall, pulling the columns inward on to the floor slab.
 - j. After the columns have been pulled inward and onto the floor slab, the bent over 'tabs' shall be torch cut to sever the columns from the column stub below.
 - k. The steel columns and beams shall be downsized for handling and lowering to grade.
6. Floor slabs shall be demolished using small excavators and rubber tire loaders, equipped with hydraulic breakers and sent to the floor slab below as follows:
 - a. A 1' wide chase shall be chopped through the slab and metal decking around the perimeter of each bay.

- b. The structural steel supporting the metal decking and slab, or each bay, shall be cut with oxygen/acetylene and or propane torches.
- c. The metal decking shall be separated from the concrete through the means of a hammer attachment on one of the pieces of equipment permitted for use on the floors during deconstruction. The equipment permitted for use on the floors during deconstruction is outlined on Drawing A-104. Nevertheless, some concrete will remain attached to the metal decking and this combination of metal deck and concrete shall be disposed of as typical construction debris.

- 7. Cleaned and cleared concrete and masonry debris shall be loaded into "skip boxes" and lowered to grade elevation or downsized (to a maximum size cube of 6" or weight of 25 lbs) and loaded into debris chutes, for transport to the basement. Concrete shall be placed, as backfill, in basement areas in accordance with the contract specifications. Concrete and masonry backfill material shall conform to specifications identified in the contract documents, with a maximum size of 1½" minus.



- 8. Structural steel shall be downsized and bundled and lowered to the ground level using the tower crane. Light iron and other materials shall be placed in a steel container and hoisted off of the building using the tower crane. Any materials remaining after abatement will be placed, at the contractor's option, in steel containers and hoisted off of the building using the tower crane.
- 9. Throughout the work day, the work area shall be inspected and maintained to ensure that no light or loose materials are left out in the open.
- 10. The following process shall be repeated on each floor for the systematic floor-by-floor deconstruction of the building. Demolition work will be occurring on two floors at a time in a stepped sequence and will continue during deconstruction of the building structure.
 - a. Downsized concrete and masonry material (maximum 6" cube or weight of 25 lbs) shall be deposited into the debris chute where the material shall fall to the basement

level to be used as backfill. Chutes shall be located within the area of the North and South Hoist vestibules.

- b. Concrete will also be loaded into skip boxes on the floor, lowered to grade, using the tower crane and moved, as backfill, with bulldozers, into the basement areas, or the concrete will be sent down to the basement using the chutes. Crushed concrete and masonry shall be used as backfill in the basement areas. Only material conforming to contract requirements, i.e., 1½" minus, shall be used for backfill on-site. Concrete, structural steel, welded wire reinforcing steel and corrugated metal decking shall be separated on the floor where it is generated. There is also a magnetic attachment on the concrete crusher which will pull out reinforcing steel after the concrete slabs and reinforcing steel have been crushed and segregated. Although there is potential for residual steel to still be commingled with the crushed concrete and masonry after the segregation process, NYSDEC has indicated that this would not preclude its use as on-site backfill. Reinforcing Steel (Rebar), welded wire reinforcing mesh and other deleterious material shall be removed from backfill material, as practical.

Note: Painted concrete or concrete exhibiting stains shall be segregated and sampled, analyzed and disposed of pursuant to the September 2005 Plan. After abatement and clearance of a work area, uncontaminated concrete shall be crushed and used as backfill within the building footprint as allowed by NYSDEC regulations. Should the contractor opt to use painted or stained concrete as fill, it will

- (1) submit a testing protocol to NYSDEC for its review and Approval,
- (2) conduct sampling in accordance with the approved protocol and
- (3) submit sampling results to the NYSDEC for approval before any such concrete could be used as fill.

- c. While corrugated decking and concrete is being removed, structural steel, beams and columns shall be torch cut and moved to a load out area on the floor where the steel sections shall be cut into manageable sections. Steel shall be removed from the building with the tower crane, either in bundles, secured with chokers, or in a skip bucket.
 - d. Corrugated decking shall be containerized and removed from the building with the tower crane.
- 11. Materials lowered with the tower crane shall be placed onto trucks for removal from the site. Waste shall be taken to the appropriate disposal site, transfer station, or recycling facility, as dictated by that material.
 - 12. Calculations, showing allowable equipment floor loading, were submitted, by the Engineer of Record, to the New York City Department of Buildings in advance of the commencement of deconstruction activities.
 - 13. There will be vibration monitoring in each quadrant of the building at the lowest buffer floor that will continuously monitor the peak particle velocities during the deconstruction process. Vibration monitoring will occur from the onset of the deconstruction process for a time period to be determined in conjunction with the NYCDOB. The data received from the

vibration monitors, for the specified time period, will be reviewed concurrently with the NYCDOB to determine acceptable peak particle velocity limitations and warning levels. Once these acceptable peak particle velocity limitations and warning levels have been agreed upon by NYCDOB and TTG the values will be published and distributed to all parties. Vibration monitoring shall continue keeping the peak particle velocity levels below acceptable and published limits. In the event that excessive vibration levels exceeding established peak particle velocity levels are experienced, the work activity causing those vibrations shall be halted and alternate methods and techniques shall be explored. Setup of monitoring of cellar foundation walls shall include structural reference points to detect structural movements (benchmarks) shall be attached at select interior locations at the East, West, North, South faces of the foundation walls and will be monitored by licensed surveyors throughout the deconstruction of the building.

14. In the unlikely event that unanticipated contaminated items are discovered the Contractor's procedures for cleanup shall comply with ICR 56 as well as any pertinent site-specific variance decision. All necessary cleanups shall be completed by a licensed asbestos abatement contractor using appropriately certified asbestos handlers within negative pressure containment enclosure regulated abatement work areas. A site-specific variance reopening request shall be submitted to address appropriate procedures for this potential cleanup scenario, including the scope and extent of any necessary work stoppage. Any such contamination shall be tested and disposed of pursuant to the approved Deconstruction Plan.

E. Fire Protection

1. A dry fire standpipe shall be maintained within the building throughout the duration of the deconstruction process.

F. Dust Control

1. Water shall be provided from a dedicated 2" pipe installed in Stairwell B, through a series of pumps to be distributed throughout the work areas of the building, for dust control during deconstruction. Care shall be taken with water usage throughout the deconstruction process using only amounts of water required to insure effective dust control.
2. Dust control shall be maintained at the site throughout the deconstruction process:
 - i. on each level where the demolition of concrete slabs is ongoing,
 - ii. proximate to concrete crushing operations
 - iii. as well as within basement levels where debris is deposited at the base of concrete debris chutes.
3. Water supplied to these areas shall be distributed using water hoses, equipped with fogging nozzles, to ensure that airborne particulates are kept to an absolute minimum during this process.
4. A permanent water misting system will be installed within the concrete receiving areas in the basement and shall consist of rubber hoses with fogging nozzles attached to the

building structure, structural steel or underside of metal decking. Several fogging nozzles shall be installed at the base of the chute, as deemed appropriate by dust levels generated during demolition operations. Dust control for the movement of the crushed concrete and masonry debris shall be maintained using laborers with water hoses equipped with fogging nozzles to ensure that airborne particles are kept to an absolute minimum during the process.

G. Basement Backfill

1. The Cellar B **slab on grade** shall not be removed during the deconstruction of the building. Only the top portion of the foundation walls, protruding above the elevation of the surrounding streets, shall be removed during the deconstruction of the building. The 1st Floor and Cellar A slabs will be removed systematically to facilitate the backfilling of the basement. At the end of the deconstruction, the 1st Floor and Cellar A slabs will be removed in their entirety, except for those steel members required to remain in place to provide bracing for the foundation walls.
2. Basement areas shall be systematically backfilled and compacted with crushed concrete generated from the deconstruction operations on the floors above.
3. Foundation walls shall be braced in accordance requirements identified by the Engineer of Record.
4. Hard hats, appropriate footwear, eye protection, two-way radios, etc. shall be used. If required protection shall include ½ face respirators, equipped with P100 filters.