ADDENDUM NO. 3

DATE: **March 15, 2019**

PROJECT: Demolition of Westbrook Village
22 Mark Twain Drive
Hartford, Connecticut 06112

FROM: Freeman Companies, LLC
36 John Street
Hartford, Connecticut 06106

TO: Bidders

This Addendum forms a part of the Contract Documents and modifies the original Bidding Documents. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

The following changes are made with supporting attachments:

1. 4" waste pipe with black mastic will be removed from the abatement bid package and included in the demo bid package.
    a) REVISED Specification 02 8211 - Asbestos Abatement in both Abatement bid package and Demolition bid package.
    b) REVISED Sheet No. ENV titled Hazardous Building Material Abatement Plan to remove 4" waste pipe with black mastic.
2. REVISED specification 02 8411 - Non-Liquid PCB Building Material Removal to include removal of 1 course of brick where in contact with white window caulk at Maintenance Building.
3. REVISED specification 02 6100 - Excavating, Handling, Transporting & Disposing of Soils in demo package to clarify site impacts include pesticides.
4. REVISED specification 02 6100 - Excavating, Handling, Transporting & Disposing of Soils in demo package to clarify pesticide contaminated/polluted soil shall be live loaded and transported off site.
5. REVISED specification 02 0650 - Underground Storage Tank Removal to include the assumption that each of the 81 USTs contain 100-gallons of remaining product, waste sludges and cleaning fluids to be properly disposed of.
6. REVISED unit cost in UST bid package to include cost per gallon of remaining product, waste sludges and cleaning fluids to be properly disposed of.
7. REVISED Sheet No. ENV titled Underground Storage Tank to include approximate locations, depths and proximity of USTs in relationship to buildings.
8. REVISED Sheet No. ENV titled Soil Remediation Plan to include Oil/Water separator.
9. Included an Integrated Pest Management Plan in the demolition bid package.
10. Included is Davis Bacon Schedule, please not both Prevailing Wage and Davis Bacon Schedule are subject to increases over the duration for the project and contractors need to comply throughout the period of work.

11. REVISED schedule in the Demolition and Abatement bid package. Ten (10) business days have been added to the abatement schedule in Phase 1 and fifteen (15) business days have been added to the demolition schedule in Phase I. See attached revised schedule.

The following are additional clarifications:

1. Wheel wash station to include tying into the nearest fire hydrant and spaying wheels as trucks exit the site. An automated system is not required. Contractor shall contain wash water.

Attachments:

Attachment A: Response to RFIs

Attachment B: REVISED specification 02 8211 - Asbestos Abatement included in abatement bid package

Attachment C: REVISED specification 02 8211 - Asbestos Abatement included in demolition bid package

Attachment D: REVISED specification 02 8411 - Non-Liquid PCB Building Material Removal

Attachment E: REVISED specification 02 6100 - Excavating, Handling, Transporting & Disposing of Soils in demolition bid package

Attachment F: REVISED specification 02 0650 - Underground Storage Tank Removal

Attachment G: REVISED unit cost sheet in UST bid package

Attachment H: REVISED Sheet No. ENV titled UST Removal Plan

Attachment I: REVISED Sheet No. ENV titled Soil Remediation Plan

Attachment J: Integrated Pest Management Plan

Attachment K: Davis Bacon Fee Schedule

Attachment L: REVISED Sheet No. ENV Hazardous Building Material Abatement Plan

Attachment M: Schedule

END OF ADDENDUM NO. 3

ATTACHMENT A:

Response to RFIs

WESTBROOK VILLAGE RFI's

Responses in Red

1. There aren't any drawings of a TYP building.
   Contractor to verify size of buildings.
2. Will there be a full-time asbestos monitor onsite? If so, who is responsible for paying for monitoring?
   Yes, paid for by CM
3. Is power available onsite for use during the abatement (all phases)?
   Contractor is responsible for suppling their own power.
4. What are the last known contents of each UST?
   USTs were used for the storage of heating oil
5. How much product is known to be in each UST?
   Unknown. Physical access into USTs has not been achieved. Assume 100 gallons per UST of remaining product, waste sludges and cleaning fluids (i.e., rinse water). See attached revised specification 02 0650 - Underground Storage Tank Removal
6. Is there an amount of product (in each UST) that should be included in the base bid?
   See response above
7. Will Freeman Companies be performing all LEP work, including tank closure reports at no cost to the Contractor?
   Freeman will be performing the LEP work. However, please take note of SECTION 02 0650, 2.5 – "Post Project Close-Out", Contractor will be required to provide the documentation referenced therein in order to support LEP closure reports.
8. Can the sign-in sheet be distributed to all bidders?
   Yes, sent out on 3/11/19 as Addendum #2
9. Who is responsible for hiring and paying for compaction testing?
   The CM is responsible for hiring and paying for compaction testing. The contractor shall coordinate testing with CM.
10. With regard to SECTION 02 6100, 1.3B and 1.3C, could you please explain the practical difference between Polluted Soil and Contaminated Spoil?
    Regarding the removal of pesticide impacted soil, there is essentially no practical difference between 02 61000 1.3 B (polluted) and 1.3C (contaminated) soil. Regarding pesticide impacted soil, soil must be disposed at a permitted facility licensed to accept soil impacted with pesticides at Site specific concentrations.
11. How much product is known to be in the oil/water separator located at the maintenance building?
    No structural information has been reviewed regarding the oil/water separator (OWS) and physical access to the OWS has not been obtained. Therefore, the amount of product in the OWS is unknown. Assume 20cy of impacted soil to be transported off site.
12. Is reclaimed material acceptable as structural fill if it passes CTDOT Form 817, M.01.01, Grading No 6.?
    No, the specification does not allow onsite crushing.
13. Has the demolition permit fee been waived for this project? If not, please provide the fee as the city has multiple schedules of fees.
    The demo permit application fee is expected to be paid by the demolition contractor.
14. In your list of unit prices A1, B1, C1, and D1, are these just delivered prices, or do they include installation? Unit 5A, how thick is new topsoil going to be and do we just stockpile the old topsoil, or does it go offsite?
    Unit prices shall include delivery and installation. Topsoil is 6" per top soil specification and existing top soil is to be stockpiled at the locations shown on the plans.
15. In section 015000 2 of 5 3.2 of the specifications it states, "The construction manager will execute a pest

management plan." Does the demolition contractor hire the pest contractor or does someone else?
Yes, see attached pest management plan.

16. Do all the utilities throughout the job site get removed or is it only what is shown in the roads?
All utilities throughout the site shall be removed and disposed except for a 51" RCP that crosses the site which is located within an MDC easement. Certain drainage structures and pipes noted on the plan are to remain. Not all utilities are shown on the plan such as water laterals, gas laterals, etc.
17. Site Demolition 024100-3 B-2: Where are the future structures going to be located? None are shown on the drawings. Please provide drawings indicating locations.
N/A
18. Section 028211.20 2.2.2: Are we to have on site a CPIH/CIH for our work? The owner, according to section 028211-20, is to have on site an industrial hygienist, this adds a large cost and is clearly unnecessary.
Freeman will be onsite as the owner's representative for project monitoring activities. Contractor not responsible for supplying CPIH/CIH.
19. Are we stripping the top soil from within the whole work limits or just certain areas?
Whole site refer to grading plan.
20. Section 31 3000-1 1.5: Are you requiring us to have a dust monitoring system on site? Due to the buildings locations this does not seem necessary.
Yes, dust monitoring is required
21. There is no detail to show how the sediment control basin is constructed. Please provide
See grading plan
22. Can we cut flush the tree stumps, or do they have to be removed completely?
Removed completely

23. In the demolition note number 24 it states no salvage is permitted. Is this correct that you are looking to keep any metal money that came from the site, please advise.

Salvage is permitted, note 24 in demo plans general notes has been revised and is attached,
24. On drawing GD-1, 2, and 3 it shows an area that gets jet and vacuum cleaned. Only one pipe is shown, is this correct? If not, please provide the quantity of piping of piping that will require cleaning.
Segment of pipe on GD-1 and GD-2 as well as multiple pipes on GD-3.
25. The job schedule for work required is unachievable, please reconsider this schedule. The schedule cannot be met and will require contractors to carry liquidated damages in their bids.
Additional 10 days added to abatement schedule In Phase 1 as well as an additional 15 days to the demolition schedule in Phase 1. See attached revised schedule.
26. In section 028211-1 1.1.2 extent of work, in bold, states exterior vapor barrier behind building façade or below grade foundations. Are we to assume this to be non-friable asbestos and to carry this in our bid? Has this been tested?
Black vapor barrier was only observed behind concrete window sills, not brick façade. No vapor barrier was observed on foundation wall and if present demo contractor shall own the removal and can be performed as exterior non-friable. See attached revised Abatement spec.
27. Please clarify the constituents of concern for the impacted soil as It relates to this bid. The bid drawings identify the contaminated soil as being impacted with Pesticides. However, the specifications (section 026100-4) identify the contaminated soil as being impacted with PAHs and ETPH.
This bid solicitation includes three separate packages, an abatement bid package, a demolition bid package and an Underground Storage Tank (UST) bid package. The demolition bid package includes remediation of pesticide impacted soil and the UST bid package includes petroleum impacted soil related to the USTs. Petroleum impacted soil may include extractable total petroleum hydrocarbons (ETPH) and

polyaromatic hydrocarbons (PAHs).

28. Will the owner/engineer identify the locations of the USTs or is the contractor expected to provide a GPR and perform exploratory operation to identify the locations of the USTs?
    Yes, a GPR survey was performed on 3/11-3/12 and all known USTs have been marked with flags and or spray paint on the buildings. See Attachment sheet No. ENV titled UST Removal Plan.
29. Specification Section 020650-4 note G states "excavation shall be closed by the contractor". Please confirm that backfill of the UST excavation shall be carried in the lump sum number for this bid proposal because specification section 011000-2 identifies Backfilling of Excavated Areas NIC- In Concurrent Contract.
    Backfilling of UST grave site is to be included in the demo package.
30. Is there any compaction testing required, if so, who pays for the testing and what are the compaction testing requirements?
    The compaction needs to meet 95% which is stated in the earthwork spec. The demo contractor is responsible for the compaction of the basement and tank graves. The CM will order the compaction tests via the testing lab once the contactor states he/she is ready for the tests. Contractor to coordinate with CM.
31. Specification section 020650-1 identifies 30 tons of contaminated soil per location totaling 2,430 tons of contaminated soil. Please confirm this should be carried in the lump sum number for this bid proposal because specification section 011000-2 identifies contaminated soil is NIC – In Concurrent.
    30 tons of contaminated soil per UST is to be carried in the lump sum number in the UST bid package. Refer to unit cost for add/deducts.

32. Please confirm that any references to SBE, MBE, or Section 3 business concerns to be used on this project are numeric goals and not quotas.
    Please refer to the Section 3 information in Specification 00 41 01e, the CHRO information in Specification 00 41 01, and labor requirements identified in the Specification 00 73 00. The City of Hartford MBE, Minority and Women, and Hartford resident information can be found at this link: http://www.hartford.gov/procurement/compliance

33. Please confirm that meeting any numeric goals to utilize SBE, MBE, or Section 3 business concerns on this project are not conditions precedents to submitting a bid.
    Please refer to the Section 3 and Labor Requirements identified in the Specifications 00 41 01e and 00 73 00.
34. Please confirm that failure to meet, despite use of good faith efforts, any numeric goals to utilize SBE; MBE; or Section 3 business concerns on this project will not be cause to deem an otherwise responsive bid as unresponsive.
    Please refer to the Section 3 and Labor Requirements identified in the Specifications 00 41 01e and 00 73 00.
35. Please confirm that a contractor is not required to subcontract work it self-performs to SBE; MBE; or Section 3 business concerns in order to achieve any numeric SBE; MBE; or Section 3 business concern goals on this project.
    Please refer to the Section 3 and Labor Requirements identified in the Specifications 00 41 01e and 00 73 00.
36. What is the SBE goal on this project?
    Bidders are expected to meet all of the City of Hartford, Housing Authority for the City of Hartford, Section 3, and State/CHRO requirements as detailed in the RFI responses.

37. What is the MBE goal on this project?
    Bidders are expected to meet all of the City of Hartford, Housing Authority for the City of Hartford, Section 3, and State/CHRO requirements as detailed in the RFI responses.

38. What is the Section 3 business concern goal on this project?
    Please refer to the Section 3 and Labor Requirements identified in the Specifications 00 41 01e

39. What is the DBE goal on this project?
    There are no specific goals for DBEs.

40. What agency or department is overseeing this project?
    There will be multiple agencies overseeing this project. Each have specific reporting requirements. It is the responsibility of the bidder to ensure they remain in compliance with each of the oversight authorities. They include but may not be limited to: City of Hartford EEOC, CT CHRO, CT DOL, and the Housing Authority for the City of Hartford.

41. What is CHRO's oversite role on this project?
    The project is receiving state funds from CT DOH and DECD and is subject to CHRO oversight.

42. Is an Affirmative Action Plan OR Set Aside Plan required on this project and if so what agency or department does it need to be submitted to?
    All bidders are responsible for producing and maintaining an approved Affirmative Action Plan and/or a Set Aside Plan as determined by CHRO.

43. Can the Section 3 business concerns lists of contractors maintained by other housing authorities (i.e. New Haven or Bridgeport) be used to recruit and contract with entities to satisfy any Section 3 business concern goal?
    Yes, however the list of those in the City of Hartford and the project MSA should be exhausted first.
    Bidders are expected to meet all of the City of Hartford, Housing Authority for the City of Hartford, Section 3, and State/CHRO requirements.

44. What does "good faith mean" as there are different definitions under Section 3 and Connecticut State (CHRO) law?
    Bidders are advised to refer to CHRO website for the definition of good faith as it applies to CHRO.
    https://www.ct.gov/chro/site/default.asp
    Please refer to the Specifications 00 41 01e as it applies to Section 3.

45. What does "good faith efforts" mean as there are different definitions under Section 3 and Connecticut State (CHRO) law?
    Bidders are advised to refer to CHRO website for the definition of good faith as it applies to CHRO.
    https://www.ct.gov/chro/site/default.asp
    Please refer to the Specifications 00 41 01e as it applies to Section 3.

46. Does Connecticut General Statute, Section 4a-60g. (Formerly Sec 32.9e). Set-aside programs for small contractors and minority businesses enterprises apply to this project?
    Does the Connecticut General Statute, Section 4a-60g(b)(3), requirement that: "Notwithstanding any provision of the general statutes, and except as provided in this section, on and after October 1, 2015,

each municipality when awarding a municipal public works contract shall state in its notice of solicitation for competitive bids or request for proposals or qualifications for such contract that the general or trade contractor shall be required to comply with the provisions of this section and the requirements concerning nondiscrimination and affirmative action under sections 4a-60 and 4a-60a. Any such contractor awarded a municipal public works contract shall, on the basis of competitive bidding procedures, (A) set aside at least twenty-five per cent of the total value of the state's financial assistance for such contract for award to subcontractors who are small contractors, and (B) of that portion to be set aside in accordance with subparagraph (A) of this subdivision, reserve a portion equivalent to twenty-five per cent of the total value of the contract or portion thereof to be set aside for awards to subcontractors who are minority business enterprises. The provisions of this section shall not apply to any municipality that has established a set-aside program pursuant to section 7-148u where the percentage of contracts set aside for minority business enterprises is equivalent to or exceeds the percentage set forth in this subsection." apply to this project?

At least twenty-five percent (25%) percent set aside for Small contractors/subcontractors holding current certification from the Connecticut Department of Administrative Services ("DAS") under the provisions of CONN. GEN. STAT. § 4a-60g. 25% of the work with DAS certified Small and Minority owned businesses and 25% of that work with DAS certified Minority, Women and/or Disabled owned businesses. If bidders have questions interpreting state statute, they should consult their attorney.

47. What are the Section 3 business concern minority contracting goals for this project?
    Please refer to the Section 3 and Labor Requirements identified in the Specifications 00 41 01e

48. What are the City of Hartford small and minority contracting goals for this project?
    Contractors are required to set-aside for Minority Businesses 15% of the total construction work. Minority/Female Trades worker Participation of 15% of the total project work hours, by trade, shall be worked by minority and female trades-workers. Hartford Resident Participation - 30% of the total project work hours shall be worked by Hartford Residents. The City of Hartford MBE, Minority and Women, and Hartford resident information can be found here: http://www.hartford.gov/procurement/compliance

49. What are the State of Connecticut small and minority contracting goals for this project?
    At least twenty-five percent (25%) percent to Small contractors/subcontractors holding current certification from the Connecticut Department of Administrative Services ("DAS") under the provisions of CONN. GEN. STAT. § 4a-60g. 25% of the work with DAS certified Small and Minority owned businesses and 25% of that work with DAS certified Minority, Women and/or Disabled owned businesses.

50. What are the CHRO small and minority contracting goals for this project?
    At least twenty-five percent (25%) percent to Small contractors/subcontractors holding current certification from the Connecticut Department of Administrative Services ("DAS") under the provisions of CONN. GEN. STAT. § 4a-60g. 25% of the work with DAS certified Small and Minority owned businesses and 25% of that work with DAS certified Minority, Women and/or Disabled owned businesses. Please refer to the CHRO information in Specification 00 41 01

51. What are the State of Connecticut goals for utilizing women on this project?
    Please refer to the CHRO information in Specification 00 41 01.

52. What are the City of Hartford goals for utilizing women on this project?

Contractors are required to set-aside for Minority Businesses 15% of the total construction work.Minority/Female Trades worker Participation of 15% of the total project work hours, by trade, shall be worked by minority and female trades-workers. Hartford Resident Participation - 30% of the total project work hours shall be worked by Hartford Residents. The City of Hartford MBE, Minority and Women, and Hartford resident information can be found here: http://www.hartford.gov/procurement/compliance

53. What are the Section 3 goals for utilizing women on this project?
    Please refer to the Section 3 and Labor Requirements identified in the Specifications 00 41 01e

54. What are the State of Connecticut goals for utilizing minorities on this project?
    Please refer to the CHRO information in Specification 00 41 01

55. What are the City of Hartford goals for utilizing minorities on this project?
    Contractors are required to set-aside for Minority Businesses 15% of the total construction work. Minority/Female Trades worker Participation of 15% of the total project work hours, by trade, shall be worked by minority and female trades-workers. Hartford Resident Participation - 30% of the total project work hours shall be worked by Hartford Residents. The City of Hartford MBE, Minority and Women, and Hartford resident information can be found here: http://www.hartford.gov/procurement/compliance

56. What are the Section 3 goals for utilizing minorities on this project?
    Please refer to the Section 3 and Labor Requirements identified in the Specifications 00 41 01e

57. What are the State of Connecticut goals for utilizing apprentices on this project?
    Please refer to the CHRO information in Specification 00 41 01

58. What are the City of Hartford goals for utilizing apprentices on this project?
    Please refer to the City of Hartford policy found at this link:
    http://www.hartford.gov/procurement/compliance

59. What are the Section 3 goals for utilizing apprentices on this project?
    Please refer to the Section 3 and Labor Requirements identified in the Specifications 00 41 01e

60. What are the State of Connecticut goals for new hires on this project?
    Please refer to the CHRO information in Specification 00 41 01.

61. What are the City of Hartford goals for new hires on this project?
    Please refer to the City of Hartford policy found at this link:
    http://www.hartford.gov/procurement/compliance

62. What are the Section 3 goals for new hires on this project?
    Please refer to the Section 3 and Labor Requirements identified in the Specifications 00 41 01e

63. If a bidder self-performs 100% of work bid will its bid be deemed responsive?
    Responsiveness will not be based on the percentage of work the bidder self-performs. Bidders are expected to meet all of the City of Hartford, Housing Authority for the City of Hartford, Section 3, and State/CHRO requirements.

64. If a bidder self-performs 95% of work bid, and demonstrates good faith efforts in subcontracting the 5% of work it does not self-perform, will its bid be deemed responsive?
    Bidders are expected to meet all of the City of Hartford, Housing Authority for the City of Hartford, Section 3, and State/CHRO requirements.

65. Are the numeric goals on this project applied to the TOTAL BID PRICE or just the State of Connecticut portion funding this project?
    Total Bid Price

66. What is the dollar value of the funding provided by the State of Connecticut?
    CT DOH and DECD are funding 100% of the project.

67. Are the numeric goals on this project applied to the TOTAL BID PRICE or just the City of Hartford portion funding this project?
    Total Bid Price

68. What is the dollar value of the funding provided by the City of Hartford?
    The City of Hartford is not funding this work.

69. Are the numeric goals on this project applied to the TOTAL BID PRICE or just the Housing Authority Section 3 portion funding this project?
    Total Bid Price

70. What is the dollar value of the funding provided by the Housing Authority Section 3?
    CT DOH and DECD is funding the project.

71. According to bid document “Section 3 Training / Employment Goals” “If Federal and State funds are combined to fund an eligible Section 3 project. The combined amount is subject to the Section 3 requirements.” – Does this mean that Section 3 goals apply to the entire bid amount?
    Section 3 goals apply to the entire bid amount

72. Are the Connecticut (CHRO), City of Hartford, and Section 3 goals combined or separate?
    The requirements overlap but Bidders shall comply with each, including whichever requirement is greatest.

73. Is use of SBE/MBE entities from the Connecticut DAS directory acceptable for use on this project?
    Bidders are expected to meet all of the City of Hartford, Housing Authority for the City of Hartford, Section 3, and State/CHRO requirements.

ATTACHMENT B:

02 8211 - Asbestos Abatement (Abatement bid package)

SECTION 02 8211 – ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 SUMMARY OF THE WORK

1.1.1 CONTRACT DOCUMENTS AND RELATED REQUIREMENTS

Drawings, general provisions of the contract, including general and supplementary conditions and other Division 01 specifications, shall apply to the work of this section. The contract documents show the work to be done under the contract and related requirements and conditions impacting the project. Related requirements and conditions include applicable codes and regulations, notices and permits, existing site conditions and restrictions on use of the site, requirements for partial owner occupancy during the work, coordination with other work and the phasing of the work. In the event the Asbestos Abatement Contractor discovers a conflict in the contract documents and/or requirements or codes, the conflict must be brought to the immediate attention of the Engineer for resolution. Whenever there is a conflict or overlap in the requirements, the most stringent shall apply. Any actions taken by the Contractor without obtaining guidance from the Engineer shall become the sole risk and responsibility of the Asbestos Abatement Contractor. All costs incurred due to such action are also the responsibility of the Asbestos Abatement Contractor.

1.1.2 EXTENT OF WORK

A. Below is a brief description of the estimated quantities of asbestos containing materials to be abated. These quantities are for informational purposes only and are based on the best information available at the time of the specification preparation. The Contractor shall satisfy themselves as the actual quantities to be abated. Nothing in this section may be interpreted as limiting the extent of work otherwise required by this contract and related documents. The following materials are to be assumed to be in every building/unit (81 Buildings) unless otherwise specified or the Owners Engineer/Project Monitor determines the material is not present in the building/unit.

I. **Black interior/exterior window caulk – All 80 units (Approximately 30 windows per 4-unit apartments (60 buildings x 30 = 1,800 windows) and 45 windows per 2 family + 4-unit apartments (20 buildings x 45 = 900 windows). Total ~2,700 windows**
II. **Black/brown interior/exterior window caulk – Maintenance Building (Approximately 20 windows)**
III. **Black vapor barrier at behind concrete window sill. (Approximately 2,720 windows x 3LF of vapor barrier per window = ~8,160LF)**
IV. **Black exterior vent caulk – All units (Approximately 4 Vents per Building ~325 Vents x 6LF per vent = ~1,950LF)**
V. **White caulk around garage door – Maintenance Building (Approximately 30LF)**
VI. **White fire door insulation - Wood entrance doors to units (8 Doors per Building ~600 total)**
VII. **White fire door insulation – Metal basement doors All units (4 Doors per Building ~350 total)**
VIII. **Brown pebble pattern sheet flooring – Kitchen/Bathroom – All units (Approximately 800 SF per Building and approximately 200 SF per single family homes ~60,000 SF)**
IX. **12”x12” Brown Floor tile – Kitchen 61 Dillon Rd. unit B-1 (Approximately 135 SF)**
X. **9”X9” White Floor tile – Maintenance Building Closet (Approximately 20 SF)**
XI. **9”x9” Blue Floor tile – Maintenance Building Closet (Approximately 20 SF)**
XII. **White layered paper pipe insulation – Maintenance Building (Approximately 100 LF)**

1.1.3 ALTERNATE WORK PRACTICE (AWP) APPLICATION

A. Abatement contractor shall be responsible for acquiring any AWP's. The letter may also request approval for interior abatement containments to be constructed with poly critical barriers only, since the areas are to be demolished soon following abatement. The abatement Contractor and /or demolition contractor shall adhere to all CT DPH approved procedures and regulations.

1.1.4 RELATED WORK

A. Section 02 4100 – SITE DEMOLITION.

1.1.5 TASKS

The work tasks are summarized briefly as follows:

A. Pre-abatement activities including pre-abatement meeting(s), inspection(s), notifications, permits, submittal approvals, regulated area preparations, emergency procedures arrangements, and standard operating procedures for asbestos abatement work.

B. Abatement activities including removal, clean-up, and disposal of ACM waste, recordkeeping, security, monitoring, and inspections.

C. Cleaning and decontamination activities including final visual inspection by Engineer.

1.1.6 CONTRACTORS USE OF PREMISES

A. The Contractor and Contractor's personnel shall cooperate fully with the Owner and Owner's Engineer to facilitate efficient use of buildings and areas within buildings. The Contractor shall perform the work in accordance with the specifications, drawings, phasing plan and in compliance with any/all applicable Federal, State and Local regulations and requirements.

B. The Contractor shall use the existing facilities in the building strictly within the limits indicated in contract documents as well as the approved Construction Procedures.

1.2 VARIATIONS IN QUANTITY

The quantities and locations of ACM as indicated on the drawing notes and the extent of work included in this section are estimated which are limited by the physical constraints imposed by occupancy of the buildings and accessibility to ACM. Accordingly, minor variations (+/- 5%) in quantities of ACM within the regulated area are considered as having no impact on contract price and time requirements of this contract. Where additional work is required beyond the above variation, the contractor shall provide unit prices for newly discovered ACM and those prices shall be used for additional work required under the contractor.

1.3 STOP ASBESTOS REMOVAL

If the Owner or the Owner's engineer presents a verbal **Stop Asbestos Removal Order**, the Contractor/Personnel shall immediately stop all asbestos removal and adequately wet any exposed ACM. If a verbal Stop Asbestos Removal Order is issued, the Owner shall follow-up with a written order to the Contractor as soon as it is practicable. The Contractor shall not resume any asbestos removal activity until authorized to do so in writing by the Owner. A stop asbestos removal order may be issued at any time the Owner or Owner's Engineer determines abatement conditions/activities are not within the specification, regulatory requirements or that an imminent hazard exists to human health or the environment. Work stoppage will continue until conditions have been corrected to the satisfaction of the Owner. Standby time and costs for corrective actions will be borne by the Contractor. The occurrence of any of the following events shall be reported immediately by the Contractor's competent person to the Owner or Owner's Engineer using the most expeditious means (e.g., verbal or telephonic), followed up with written notification to the

Owner as soon as practical. The Contractor shall immediately stop asbestos removal/disturbance activities and initiate fiber reduction activities:

A. serious injury/death at the site;
B. fire/safety emergency at the site;
C. respiratory protection system failure;
D. power failure or loss of wetting agent;
E. any visible emissions observed outside the regulated area;
F. Airborne PCM analysis results equal to or greater than 0.01 f/cc outside a regulated area or >0.05 f/cc inside a regulated area;
G. breach or break in regulated area containment barrier(s); or
H. less than –0.02" WCG pressure in the regulated area.

1.4 DEFINITIONS

1.4.1 GENERAL

Definitions and explanations here are neither complete nor exclusive of all terms used in the contract documents, but are general for the work to the extent they are not stated more explicitly in another element of the contract documents. Drawings must be recognized as diagrammatic in nature and not completely descriptive of the requirements indicated therein.

1.4.2 GLOSSARY

Abatement - Procedures to control fiber release from asbestos-containing materials. Includes removal, encapsulation, enclosure, demolition, and renovation activities related to asbestos containing materials (ACM).
Aerosol - Solid or liquid particulate suspended in air.
Adequately wet - Sufficiently mixed or penetrated with liquid to prevent the release of particulates. If visible emissions are observed coming from the ACM, then that material has not been adequately wetted.
Aggressive method - Removal or disturbance of building material by sanding, abrading, grinding, or other method that breaks, crumbles, or disintegrates intact ACM.
Aggressive sampling - EPA AHERA defined clearance sampling method using air moving equipment such as fans and leaf blowers to aggressively disturb and maintain in the air residual fibers after abatement.
AHERA - Asbestos Hazard Emergency Response Act. Asbestos regulations for schools issued in 1987.
Aircell - Pipe or duct insulation made of corrugated cardboard which contains asbestos.
Air monitoring - The process of measuring the fiber content of a known volume of air collected over a specified period of time. The NIOSH 7400 Method, Issue 2 is used to determine the fiber levels in air. For personal samples and clearance air testing using Phase Contrast Microscopy (PCM) analysis. NIOSH Method 7402 can be used when it is necessary to confirm fibers counted by PCM as being asbestos. The AHERA TEM analysis may be used for background, area samples and clearance samples when required by this specification, or at the discretion of the PIH/CIH as appropriate.
Air sample filter - The filter used to collect fibers which are then counted. The filter is made of mixed cellulose ester membrane for PCM (Phase Contrast Microscopy) and polycarbonate for TEM (Transmission Electron Microscopy)
Amended water - Water to which a surfactant (wetting agent) has been added to increase the penetrating ability of the liquid.
Asbestos - Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated or altered. Asbestos also includes PACM, as defined below.
Asbestos Hazard Abatement Plan (AHAP) - Asbestos work procedures required to be submitted by the contractor before work begins.

Asbestos-containing material (ACM) - Any material containing more than one percent of asbestos.
Asbestos contaminated elements (ACE) - Building elements such as ceilings, walls, lights, or ductwork that are contaminated with asbestos.
Asbestos-contaminated soil (ACS) – Soil found in the work area or in adjacent areas such as crawlspaces or pipe tunnels which is contaminated with asbestos-containing material debris and cannot be easily separated from the material.
Asbestos-containing waste (ACW) material - Asbestos-containing material or asbestos contaminated objects requiring disposal.
Asbestos Project Monitor – Some states require that any person conducting asbestos abatement clearance inspections and clearance air sampling be licensed as an asbestos project monitor.
Asbestos waste decontamination facility - A system consisting of drum/bag washing facilities and a temporary storage area for cleaned containers of asbestos waste. Used as the exit for waste and equipment leaving the regulated area. In an emergency, it may be used to evacuate personnel.
Authorized person - Any person authorized by the Owner, the Contractor, or government agency and required by work duties to be present in regulated areas.
Authorized visitor - Any person approved by the Owner; the contractor; or any government agency representative having jurisdiction over the regulated area (e.g., OSHA, Federal and State EPA.
Barrier - Any surface the isolates the regulated area and inhibits fiber migration from the regulated area.
Containment Barrier - An airtight barrier consisting of walls, floors, and/or ceilings of sealed plastic sheeting which surrounds and seals the outer perimeter of the regulated area.
Critical Barrier - The barrier responsible for isolating the regulated area from adjacent spaces, typically constructed of plastic sheeting secured in place at openings such as doors, windows, or any other opening into the regulated area.
Primary Barrier – Plastic barriers placed over critical barriers and exposed directly to abatement work.
Secondary Barrier - Any additional plastic barriers used to isolate and provide protection from debris during abatement work.
Breathing zone - The hemisphere forward of the shoulders with a radius of about 150 - 225 mm (6 - 9 inches) from the worker's nose.
Bridging encapsulant - An encapsulant that forms a layer on the surface of the ACM.
Building/facility owner - The legal entity, including a lessee, which exercises control over management and recordkeeping functions relating to a building and/or facility in which asbestos activities take place.
Bulk testing - The collection and analysis of suspect asbestos containing materials.
Certified Industrial Hygienist (CIH) - A person certified in the comprehensive practice of industrial hygiene by the American Board of Industrial Hygiene.
Class I asbestos work - Activities involving the removal of Thermal System Insulation (TSI) and surfacing ACM and Presumed Asbestos Containing Material (PACM).
Class II asbestos work - Activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastic.
Clean room/Changing room - An uncontaminated room having facilities for the storage of employee's street clothing and uncontaminated materials and equipment.
Clearance sample - The final air sample taken after all asbestos work has been done and visually inspected. Performed by the Owner’s Engineer.
Closely resemble - The major workplace conditions which have contributed to the levels of historic asbestos exposure, are no more protective than conditions of the current workplace.
Competent person - In addition to the definition in 29 CFR 1926.32(f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f); in addition, for Class I and II work who is specially trained in a training course which meets the criteria of EPA's Model Accreditation Plan (40 CFR 763) for supervisor.

Contractor's Professional Industrial Hygienist (CPIH/CIH) - The asbestos abatement contractor's industrial hygienist. The industrial hygienist must meet the qualification requirements of a PIH and may be a certified industrial hygienist (CIH).
Count - Refers to the fiber count or the average number of fibers greater than five microns in length with a length-to-width (aspect) ratio of at least 3 to 1, per cubic centimeter of air.
Crawlspace – An area which can be found either in or adjacent to the work area. This area has limited access and egress and may contain asbestos materials and/or asbestos contaminated soil.
Decontamination area/unit - An enclosed area adjacent to and connected to the regulated area and consisting of an equipment room, shower room, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.
Demolition - The wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products.
Disposal bag - Typically 6 mil thick sift-proof, dustproof, leak-tight container used to package and transport asbestos waste from regulated areas to the approved landfill. Each bag/container must be labeled/marked in accordance with EPA, OSHA and DOT requirements.
Disturbance - Activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. Disturbance includes cutting away small amounts of ACM or PACM, no greater than the amount that can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or disposal bag which shall not exceed 60 inches in length or width.
Drum - A rigid, impermeable container made of cardboard fiber, plastic, or metal which can be sealed in order to be sift-proof, dustproof, and leak-tight.
Employee exposure - The exposure to airborne asbestos that would occur if the employee were not wearing respiratory protection equipment.
Encapsulant - A material that surrounds or embeds asbestos fibers in an adhesive matrix and prevents the release of fibers.
Encapsulation - Treating ACM with an encapsulant.
Enclosure - The construction of an air tight, impermeable, permanent barrier around ACM to control the release of asbestos fibers from the material and also eliminate access to the material.
Equipment room - A contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.
Fiber - A particulate form of asbestos, 5 microns or longer, with a length to width (aspect) ratio of at least 3 to 1.
Fibers per cubic centimeter (f/cc) - Abbreviation for fibers per cubic centimeter, used to describe the level of asbestos fibers in air.
Filter - Media used in respirators, vacuums, or other machines to remove particulate from air.
Firestopping - Material used to close the open parts of a structure in order to prevent a fire from spreading.
Friable asbestos containing material - Any material containing more than one (1) percent or asbestos as determined using the method specified in appendix A, Subpart F, 40 CFR 763, section 1, Polarized Light Microscopy, that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.
Glovebag - Not more than a 60 x 60 inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which materials and tools may be handled.
High efficiency particulate air (HEPA) filter – An ASHRAE MERV 17 filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.
HEPA vacuum - Vacuum collection equipment equipped with a HEPA filter system capable of collecting and retaining asbestos fibers.
Homogeneous area - An area of surfacing, thermal system insulation or miscellaneous ACM that is uniform in color, texture and date of application.
HVAC - Heating, Ventilation and Air Conditioning

Industrial hygienist (IH) - A professional qualified by education, training, and experience to anticipate, recognize, evaluate and develop controls for occupational health hazards. Meets definition requirements of the American Industrial Hygiene Association (AIHA).
Industrial hygienist technician (IH Technician) - A person working under the direction of an IH or CIH who has special training, experience, certifications and licenses required for the industrial hygiene work assigned. Some states require that an industrial hygienist technician conducting asbestos abatement clearance inspection and clearance air sampling be licensed as an asbestos project monitor.
Intact - The ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix.
Lockdown - Applying encapsulant, after a final visual inspection, on all abated surfaces at the conclusion of ACM removal prior to removal of critical barriers.
National Emission Standards for Hazardous Air Pollutants (NESHAP) - EPA's rule to control emissions of asbestos to the environment (40 CFR part 61, Subpart M).
Negative initial exposure assessment - A demonstration by the employer which complies with the criteria in 29 CFR 1926.1101 (f)(2)(iii), that employee exposure during an operation is expected to be consistently below the PEL.
Negative pressure - Air pressure which is lower than the surrounding area, created by exhausting air from a sealed regulated area through HEPA equipped filtration units. OSHA requires maintaining -0.02" water column gauge inside the negative pressure enclosure.
Negative pressure respirator - A respirator in which the air pressure inside the facepiece is negative during inhalation relative to the air pressure outside the respirator facepiece.
Non-friable ACM - Material that contains more than 1 percent asbestos but cannot be crumbled, pulverized, or reduced to powder by hand pressure.
Organic vapor cartridge - The type of cartridge used on air purifying respirators to remove organic vapor hazardous air contaminants.
Outside air - The air outside buildings and structures, including, but not limited to, the air under a bridge or in an open ferry dock.
Owner/operator - Any person who owns, leases, operates, controls, or supervises the facility being demolished or renovated or any person who owns, leases, operates, controls, or supervises the demolition or renovation operation, or both.
Penetrating encapsulant - Encapsulant that is absorbed into the ACM matrix without leaving a surface layer.
Personal sampling/monitoring - Representative air samples obtained in the breathing zone for one or workers within the regulated area using a filter cassette and a calibrated air sampling pump to determine asbestos exposure.
Permissible exposure limit (PEL) - The level of exposure OSHA allows for an 8 hour time weighted average. For asbestos fibers, the eight (8) hour time weighted average PEL is 0.1 fibers per cubic centimeter (0.1 f/cc) of air and the 30-minute Excursion Limit is 1.0 fibers per cubic centimeter (1 f/cc).
Personal protective equipment (PPE) – equipment designed to protect user from injury and/or specific job hazard. Such equipment may include protective clothing, hard hats, safety glasses, and respirators.
Pipe tunnel – An area, typically located adjacent to mechanical spaces or boiler rooms in which the pipes servicing the heating system in the building are routed to allow the pipes to access heating elements. These areas may contain asbestos pipe insulation, asbestos fittings, or asbestos-contaminated soil.
Polarized light microscopy (PLM) - Light microscopy using dispersion staining techniques and refractive indices to identify and quantify the type(s) of asbestos present in a bulk sample.
Polyethylene sheeting - Strong plastic barrier material 4 to 6 mils thick, semi-transparent, flame retardant per NFPA 241.
Positive/negative fit check - A method of verifying the seal of a facepiece respirator by temporarily occluding the filters and breathing in (inhaling) and then temporarily occluding the exhalation valve and breathing out (exhaling) while checking for inward or outward leakage of the respirator respectively.

Presumed ACM (PACM) - Thermal system insulation, surfacing, and flooring material installed in buildings prior to 1981. If the building owner has actual knowledge, or should have known through the exercise of due diligence that other materials are ACM, they too must be treated as PACM. The designation of PACM may be rebutted pursuant to 29 CFR 1926.1101 (b).

Professional IH - An IH who meets the definition requirements of AIHA; meets the definition requirements of OSHA as a "Competent Person" at 29 CFR 1926.1101 (b); has completed two specialized EPA approved courses on management and supervision of asbestos abatement projects; has formal training in respiratory protection and waste disposal; and has a minimum of four projects of similar complexity with this project of which at least three projects serving as the supervisory IH.

Project designer - A person who has successfully completed the training requirements for an asbestos abatement project designer as required by 40 CFR 763 Appendix C, Part I; (B)(5).

Assigned protection factor - A value assigned by OSHA/NIOSH to indicate the expected protection provided by each respirator class, when the respirator is properly selected and worn correctly. The number indicates the reduction of exposure level from outside to inside the respirator facepiece.

Qualitative fit test (QLFT) - A fit test using a challenge material that can be sensed by the wearer if leakage in the respirator occurs.

Quantitative fit test (QNFT) - A fit test using a challenge material which is quantified outside and inside the respirator thus allowing the determination of the actual fit factor.

Regulated area - An area established by the employer to demarcate where Class I, II, III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work may accumulate; and a work area within which airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed the PEL.

Regulated ACM (RACM) - Friable ACM; Category I non-friable ACM that has become friable; Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading or; Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of the demolition or renovation operation.

Removal - All operations where ACM, PACM and/or RACM is taken out or stripped from structures or substrates, including demolition operations.

Renovation - Altering a facility or one or more facility components in any way, including the stripping or removal of asbestos from a facility component which does not involve demolition activity.

Repair - Overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM or PACM attached to structures or substrates.

Shower room - The portion of the PDF where personnel shower before leaving the regulated area.

Supplied air respirator (SAR) - A respiratory protection system that supplies minimum Grade D respirable air per ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989.

Surfacing ACM - A material containing more than 1 percent asbestos that is sprayed, troweled on or otherwise applied to surfaces for acoustical, fireproofing and other purposes.

Surfactant - A chemical added to water to decrease water's surface tension thus making it more penetrating into ACM.

Thermal system ACM - A material containing more than 1 percent asbestos applied to pipes, fittings, boilers, breeching, tanks, ducts, or other structural components to prevent heat loss or gain.

Transmission electron microscopy (TEM) - A microscopy method that can identify and count asbestos fibers.

Professional Industrial Hygienist (PIH/CIH) – Professional Industrial Hygienist must meet the qualifications of a PIH, and may be a Certified Industrial Hygienist (CIH).

Owner Representative - The Owner’s official responsible for on-going project work.

Visible emissions - Any emissions, which are visually detectable without the aid of instruments, coming from ACM/PACM/RACM/ACS or ACM waste material.

Waste/Equipment decontamination facility (W/EDF) – The area in which equipment is decontaminated before removal from the regulated area.

Waste generator - Any owner or operator whose act or process produces asbestos-containing waste material.
Waste shipment record - The shipping document, required to be originated and signed by the waste generator, used to track and substantiate the disposition of asbestos-containing waste material.
Wet cleaning - The process of thoroughly eliminating, by wet methods, any asbestos contamination from surfaces or objects.

1.4.3 REFERENCED STANDARDS ORGANIZATIONS

The following acronyms or abbreviations as referenced in contract/specification documents are defined to mean the associated names. Names and addresses may be subject to change.

A. AIHA American Industrial Hygiene Association
2700 Prosperity Avenue, Suite 250
Fairfax, VA 22031
703-849-8888

B. ANSI American National Standards Institute
1430 Broadway
New York, NY 10018
212-354-3300

C. ASTM American Society for Testing and Materials
1916 Race St.
Philadelphia, PA 19103
215-299-5400

D. CFR Code of Federal Regulations
Government Printing Office
Washington, DC 20420

E. CS Commercial Standard of the National Institute of Standards and Technology (NIST)
U. S. Department of Commerce
Government Printing Office
Washington, DC 20420

F. EPA Environmental Protection Agency
401 M St., SW
Washington, DC 20460
202-382-3949

J. NIST National Institute for Standards and Technology
U. S. Department of Commerce
Gaithersburg, MD 20234
301-921-1000

K. NEC National Electrical Code (by NFPA)

L. NEMA National Electrical Manufacturer's Association
2101 L Street, N.W.
Washington, DC 20037

M. NFPA National Fire Protection Association
1 Batterymarch Park

P.O. Box 9101
Quincy, MA 02269-9101
800-344-3555

N. NIOSH National Institutes for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226
513-533-8236

O. OSHA Occupational Safety and Health Administration
U.S. Department of Labor
Government Printing Office
Washington, DC 20402

P. UL Underwriters Laboratory
333 Pfingsten Rd.
Northbrook, IL 60062
312-272-8800

Q. Connecticut Department of Public Health
410 Capitol Avenue
Hartford, CT 06134
(860) 509-7603

1.5 APPLICABLE CODES AND REGULATIONS

1.5.1 GENERAL APPLICABILITY OF CODES, REGULATIONS, AND STANDARDS

A. All work under this contract shall be done in strict accordance with all applicable Federal, State, and local regulations, standards and codes governing asbestos abatement, and any other trade work done in conjunction with the abatement. All applicable codes, regulations and standards are adopted into this specification and will have the same force and effect as this specification.
B. The most recent edition of any relevant regulation, standard, document or code shall be in effect. Where conflict among the requirements or with these specifications exists, the most stringent requirement(s) shall be utilized.
C. Copies of all standards, regulations, codes and other applicable documents, including this specification and those listed in Section 1.5 shall be available at the worksite in the clean change area of the worker decontamination system.

1.5.2 ASBESTOS ABATEMENT CONTRACTOR RESPONSIBILITY

The Asbestos Abatement Contractor (Contractor) shall assume full responsibility and liability for compliance with all applicable Federal, State and Local regulations related to any and all aspects of the asbestos abatement project. The Contractor is responsible for providing and maintaining training, accreditations, medical exams, medical records, personal protective equipment (PPE) including respiratory protection including respirator fit testing, as required by applicable Federal, State and Local regulations. The Contractor shall hold the Owner and Owner's Engineer consultants harmless for any Contractor's failure to comply with any applicable work, packaging, transporting, disposal, safety, health, or environmental requirement on the part of himself, his employees, or his subcontractors. The Contractor will incur all costs of the CPIH/CIH, including all sampling/analytical costs to assure compliance with OSHA/EPA/State requirements related to failure to comply with the regulations applicable to the work.

1.5.3 FEDERAL REQUIREMENTS

Federal requirements which govern of asbestos abatement include, but are not limited to, the following regulations.

A. Occupational Safety and Health Administration (OSHA)
   1. Title 29 CFR 1926.1101 - Construction Standard for Asbestos
   2. Title 29 CFR 1910 Subpart I - Personal Protective Equipment
   3. Title 29 CFR 1910.134 - Respiratory Protection
   4. Title 29 CFR 1926 - Construction Industry Standards
   5. Title 29 CFR 1910.1020 - Access to Employee Exposure and Medical Records
   6. Title 29 CFR 1910.1200 - Hazard Communication
   7. Title 29 CFR 1910 Subpart K - Medical and First Aid
B. Environmental Protection Agency (EPA):
   1. 40 CFR 61 Subpart A and M (Revised Subpart B) - National Emission Standard for Hazardous Air Pollutants - Asbestos.
   2. 40 CFR 763.80 - Asbestos Hazard Emergency Response Act (AHERA)
C. Department of Transportation (DOT)
   Title 49 CFR 100 - 185 – Transportation

1.5.4 STATE REQUIREMENTS

State requirements that apply to the asbestos abatement work, disposal, clearance, etc., include, but are not limited to, the following:

A. Department of Public Health (DPH)

B. Asbestos Licensing and Training Regulations - Section 20-440-1 to 20-440-9, Section 20-441, and Section 19a-332a-1 to 19a-332a-2

C. Standards for Asbestos Abatement - Section 19a-332a-1 to 19a-332a-16

D. Asbestos Containing Materials in Schools - Sections 19a-333-1 to 19a-333-13

E. Policy Concerning Submission of AWP Application

F. Regulatory Interpretation Concerning Asbestos Abatement Notification

G. Department of Energy and Environmental Protection (DEEP)

H. Regulations of Connecticut State Agencies (RCSA) Sections 22a=208a-1, 22a-209-1, and 22a-209-8

1.5.5 LOCAL REQUIREMENTS

If local requirements are more stringent than federal or state standards, the local standards are to be followed.

1.5.6 STANDARDS

A. Standards which govern asbestos abatement activities include, but are not limited to, the following:
   1. American National Standards Institute (ANSI) Z9.2-79 - Fundamentals Governing the Design and Operation of Local Exhaust Systems and ANSI Z88.2 - Practices for Respiratory Protection.
   2. Underwriters Laboratories (UL) 586-90 - UL Standard for Safety of HEPA Filter Units, 7th Edition.
B. Standards which govern encapsulation work include, but are not limited to the following:
   1. American Society for Testing and Materials (ASTM)
C. Standards which govern the fire and safety concerns in abatement work include, but are not limited to, the following:
   1. National Fire Protection Association (NFPA) 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations.
   2. NFPA 701 - Standard Methods for Fire Tests for Flame Resistant Textiles and Film.
   3. NFPA 101 - Life Safety Code

1.5.7 EPA GUIDANCE DOCUMENTS

A. EPA guidance documents which discuss asbestos abatement work activities are listed below. These documents are made part of this section by reference. EPA publications can be ordered from (800) 424-9065.
B. Guidance for Controlling ACM in Buildings (Purple Book) EPA 560/5-85-024
C. Asbestos Waste Management Guidance EPA 530-SW-85-007
D. A Guide to Respiratory Protection for the Asbestos Abatement Industry EPA-560-OPTS-86-001
E. Guide to Managing Asbestos in Place (Green Book) TS 799 20T July 1990

1.5.8 NOTICES

A. State and Local agencies: Send written notification as required by state and local regulations including the local fire department prior to beginning any work on ACM as follows:
B. Copies of notifications shall be submitted to the Owner for the facility's records in the same time frame notification are given to EPA, State, and Local authorities.

1.5.9 PERMITS/LICENSES

A. The contractor shall apply for and have all required permits and licenses to perform asbestos abatement work as required by Federal, State, and Local regulations.

1.5.10 POSTING AND FILING OF REGULATIONS

A. Maintain two (2) copies of applicable federal, state, and local regulations. Post one copy of each in the clean room at the regulated area where workers will have daily access to the regulations and keep another copy in the Contractor's office.

1.5.11 EMERGENCY ACTION PLAN AND ARRANGEMENTS

A. An Emergency Action Plan shall be developed prior to commencing abatement activities and shall be agreed to by the Contractor and the Owner. The Plan shall meet the requirements of 29 CFR 1910.38 (a);(b).

B. Telephone numbers of any/all emergency response personnel shall be prominently posted in the clean room, along with the location of the nearest telephone.

C. The Contractor shall provide verification of first aid/CPR training for personnel responsible for providing first aid/CPR. OSHA requires medical assistance within 3-4 minutes of a life-threatening injury/illness. Bloodborne Pathogen training shall also be verified for those personnel required to provide first aid/CPR.

D. The Emergency Action Plan shall provide for a Contingency Plan in the event that an incident occurs that may require the modification of the standard operating procedures during abatement. Such incidents include, but are not limited to, fire; accident; power failure; negative pressure failure; and supplied air system failure. The Contractor shall detail procedures to be followed in the event of an incident assuring that asbestos abatement work is stopped and wetting is continued until correction of the problem.

1.5.12 PRE-CONSTRUCTION MEETING

Prior to commencing the work, the Contractor shall meet with the Owner’s Engineer to present and review, as appropriate, the items following this paragraph. The Contractor's Competent Person(s) who will be on-site shall participate in the pre-start meeting. The pre-start meeting is to discuss and determine procedures to be used during the project. At this meeting, the Contractor shall provide:

A. Proof of Contractor licensing.

B. Proof the Competent Person(s) is trained and accredited and approved for working in this State. Verification of the experience of the Competent Person(s) shall also be presented.

C. A list of all workers who will participate in the project, including experience and verification of training and accreditation.

D. A list of and verification of training for all personnel who have current first-aid/CPR training. A minimum of one person per shift must have adequate training.

E. Current medical written opinions for all personnel working on-site meeting the requirements of 29 CFR 1926.1101 (m).

F. Current fit-tests for all personnel wearing respirators on-site meeting the requirements of 29 CFR 1926.1101 (h) and Appendix C.

G. A copy of the Contractor's Asbestos Hazard Abatement Plan. In these procedures, the following information must be detailed, specific for this project.
   1. Regulated area preparation procedures;
   2. Notification requirements procedure of Contractor as required in 29 CFR 1926.1101 (d);
   3. Decontamination area set-up/layout and decontamination procedures for employees;
   4. Abatement methods/procedures and equipment to be used;
   5. Personal protective equipment to be used;

H. At this meeting the Contractor shall provide all submittals as required.

I. Procedures for handling, packaging and disposal of asbestos waste.

J. Emergency Action Plan and Contingency Plan Procedures.

1.6 PROJECT COORDINATION

The following are the minimum administrative and supervisory personnel necessary for coordination of the work.

1.6.1 PERSONNEL

A. Administrative and supervisory personnel shall consist of a qualified Competent Person(s) as defined by OSHA in the Construction Standards and the Asbestos Construction Standard; Contractor Professional Industrial Hygienist and Industrial Hygiene Technicians. These employees are the Contractor's representatives responsible for compliance with these specifications and all other applicable requirements.

B. Non-supervisory personnel shall consist of an adequate number of qualified personnel to meet the schedule requirements of the project. Personnel shall meet required qualifications. Personnel utilized on-site shall be pre-approved by the Owner or Owner’s Engineer. A request for approval shall be submitted for any person to be employed during the project giving the person's name; social security number; qualifications; accreditation card with color picture; Certificate of Worker's Acknowledgment; and Affidavit of Medical Surveillance and Respiratory Protection and current Respirator Fit Test.

C. Minimum qualifications for Contractor and assigned personnel are:

   1. The Contractor has conducted within the last three (3) years, three (3) projects of similar complexity and dollar value as this project; has not been cited and penalized for serious violations of federal (and state as applicable) EPA and OSHA asbestos regulations in the past three (3) years; has adequate liability/occurrence insurance for asbestos work as required by

the state; is licensed in applicable states; has adequate and qualified personnel available to complete the work; has comprehensive standard operating procedures for asbestos work; has adequate materials, equipment and supplies to perform the work.

2. The Competent Person has four (4) years of abatement experience of which two (2) years were as the Competent Person on the project; meets the OSHA definition of a Competent Person; has been the Competent Person on two (2) projects of similar size and complexity as this project within the past three (3) years; has completed EPA AHERA/OSHA/State/Local training requirements/accreditation(s) and refreshers; and has all required OSHA documentation related to medical and respiratory protection.

3. The Contractor Professional Industrial Hygienist/CIH (CPIH/CIH) shall have five (5) years of monitoring experience and supervision of asbestos abatement projects; has participated as senior IH on five (5) abatement projects, three (3) of which are similar in size and complexity as this project; has developed at least one complete standard operating procedure for asbestos abatement; has trained abatement personnel for three (3) years; has specialized EPA AHERA/OSHA training in asbestos abatement management, respiratory protection, waste disposal and asbestos inspection; has completed the NIOSH 582 Course or equivalent, Contractor/Supervisor course; and has appropriate medical/respiratory protection records/documentation.

4. The Abatement Personnel shall have completed the EPA AHERA/OSHA abatement worker course; have training on the standard operating procedures of the Contractor; has one year of asbestos abatement experience within the past three (3) years of similar size and complexity; has applicable medical and respiratory protection documentation; has certificate of training/current refresher and State accreditation/license.

All personnel should be in compliance with OSHA construction safety training as applicable and submit certification.

1.7 RESPIRATORY PROTECTION

1.7.1 GENERAL - RESPIRATORY PROTECTION PROGRAM

The Contractor shall develop and implement a written Respiratory Protection Program (RPP) which is in compliance with the January 8, 1998 OSHA requirements found at 29 CFR 1926.1101 and 29 CFR 1910.Subpart I;134. ANSI Standard Z88.2-1992 provides excellent guidance for developing a respiratory protection program. All respirators used must be NIOSH approved for asbestos abatement activities. The written RPP shall, at a minimum, contain the basic requirements found at 29 CFR 1910.134 (c)(1)(i - ix) - Respiratory Protection Program.

1.7.2 RESPIRATORY PROTECTION PROGRAM COORDINATOR

The Respiratory Protection Program Coordinator (RPPC) must be identified and shall have two (2) years' experience coordinating RPP of similar size and complexity. The RPPC must submit a signed statement attesting to the fact that the program meets the above requirements.

1.7.3 SELECTION AND USE OF RESPIRATORS

The procedure for the selection and use of respirators must be submitted to the Owner's Engineer as part of the Contractor's qualifications. The procedure must written clearly enough for workers to understand. A copy of the Respiratory Protection Program must be available in the clean room of the decontamination unit for reference by employees or authorized visitors.

1.7.4 MINIMUM RESPIRATORY PROTECTION

Minimum respiratory protection shall be a half-face negative pressure respirator. A higher level of respiratory protection may be provided or required, depending on fiber levels. Respirator selection shall meet the requirements of 29 CFR 1926.1101 (h); Table 1, except as indicated in this paragraph. Abatement personnel must have a respirator for their exclusive use.

1.7.5 MEDICAL WRITTEN OPINION

No employee shall be allowed to wear a respirator unless a physician or other licensed health care professional has provided a written determination they are medically qualified to wear the class of respirator to be used on the project while wearing whole body impermeable garments and subjected to heat or cold stress.

1.7.6 RESPIRATOR FIT TEST

All personnel wearing respirators shall have a current qualitative/quantitative fit test which was conducted in accordance with 29 CFR 1910.134 (f) and Appendix A. Quantitative fit tests shall be done for PAPRs which have been put into a motor/blower failure mode.

1.7.7 RESPIRATOR FIT CHECK

The Competent Person shall assure that the positive/negative pressure user seal check is done each time the respirator is donned by an employee. Head coverings must cover respirator head straps. Any situation that prevents an effective face piece to face seal as evidenced by failure of a user seal check shall preclude that person from wearing a respirator inside the regulated area until resolution of the problem.

1.7.8 MAINTENANCE AND CARE OF RESPIRATORS

The Respiratory Protection Program Coordinator shall submit evidence and documentation showing compliance with 29 CFR 1910.134 (h) Maintenance and Care of Respirators.

1.7.9 SUPPLIED AIR SYSTEMS

If a supplied air system is used, the system shall meet all requirements of 29 CFR 1910.134 and the ANSI/Compressed Gas Association (CGA) Commodity Specification for Air current requirements for Type 1 - Grade D breathing air. Low pressure systems are not allowed to be used on asbestos abatement projects. Supplied Air respirator use shall be in accordance with EPA/NIOSH publication EPA-560-OPTS-86-001 "A Guide to Respiratory Protection for the Asbestos Abatement Industry". The competent person on site will be responsible for the supplied air system to ensure the safety of the worker.

1.8 WORKER PROTECTION

1.8.1 TRAINING OF ABATEMENT PERSONNEL

Prior to beginning any abatement activity, all personnel shall be trained in accordance with OSHA 29 CFR 1926.1101 (k)(9) and any additional State/Local requirements. Training must include, at a minimum, the elements listed at 29 CFR 1926.1101 (k)(9)(viii). Training shall have been conducted by a third party, EPA/State approved trainer meeting the requirements of EPA 40 CFR 763 Appendix C (AHERA MAP). Initial training certificates and current refresher and accreditation proof must be submitted for each person working at the site.

1.8.2 MEDICAL EXAMINATIONS

Medical examinations meeting the requirements of 29 CFR 1926.1101 (m) shall be provided for all personnel working in the regulated area, regardless of exposure levels. A current physician's written opinion as required by 29 CFR 1926.1101 (m)(4) shall be provided for each person and

shall include in the medical opinion the person has been evaluated for working in a heat and cold stress environment while wearing personal protective equipment (PPE) and is able to perform the work without risk of material health impairment.

1.8.3 REGULATED AREA ENTRY PROCEDURE

The Competent Person shall ensure that each time workers enter the regulated area; they remove ALL street clothes in the clean room of the decontamination unit and put on new disposable coveralls, head coverings, a clean respirator, and then proceed through the shower room to the equipment room where they put on non-disposable required personal protective equipment.

1.8.4 DECONTAMINATION PROCEDURE

The Competent Person shall require all personnel to adhere to following decontamination procedures whenever they leave the regulated area.

A. When exiting the regulated area, remove disposable coveralls, and ALL other clothes, disposable head coverings, and foot coverings or boots in the equipment room.

B. Still wearing the respirator and completely naked, proceed to the shower. Showering is MANDATORY. Care must be taken to follow reasonable procedures in removing the respirator to avoid inhaling asbestos fibers while showering. The following procedure is required as a minimum:

   1. Thoroughly wet body including hair and face. If using a PAPR hold blower above head to keep filters dry.
   2. With respirator still in place, thoroughly decontaminate body, hair, respirator face piece, and all other parts of the respirator except the blower and battery pack on a PAPR. Pay particular attention to cleaning the seal between the face and respirator face piece and under the respirator straps.
   3. Take a deep breath, hold it and/or exhale slowly, completely wetting hair, face, and respirator. While still holding breath, remove the respirator and hold it away from the face before starting to breathe.

C. Carefully decontaminate the face piece of the respirator inside and out. If using a PAPR, shut down using the following sequence: a) first cap inlets to filters; b) turn blower off to keep debris collected on the inlet side of the filter from dislodging and contaminating the outside of the unit; c) thoroughly decontaminate blower and hoses; d) carefully decontaminate battery pack with a wet rag being cautious of getting water in the battery pack thus preventing destruction. (THIS PROCEDURE IS NOT A SUBSTITUTE FOR RESPIRATOR CLEANING!)

D. Shower and wash body completely with soap and water. Rinse thoroughly.

E. Rinse shower room walls and floor to drain prior to exiting.

F. Proceed from shower to clean room; dry off and change into street clothes or into new disposable work clothing.

1.8.5 REGULATED AREA REQUIREMENTS

The Competent Person shall meet all requirements of 29 CFR 1926.1101 (o) and assure that all requirements for regulated areas at 29 CFR 1926.1101 (e) are met. All personnel in the regulated area shall not be allowed to eat, drink, smoke, chew tobacco or gum, apply cosmetics, or in any way interfere with the fit of their respirator.

1.9 DECONTAMINATION FACILITIES

1.9.1 DESCRIPTION

Provide each regulated area with separate personnel decontamination facilities (PDF) and waste/equipment decontamination facilities (W/EDF). Ensure that the PDF are the only means of ingress and egress to the regulated area and that all equipment, bagged waste, and other material exit the regulated area only through the W/EDF.

1.9.2 GENERAL REQUIREMENTS

All personnel entering or exiting a regulated area must go through the PDF and shall follow the requirements at 29 CFR 1926.1101 (j)(1) and these specifications. All waste, equipment and contaminated materials must exit the regulated area through the W/EDF and be decontaminated in accordance with these specifications. Walls and ceilings of the PDF and W/EDF must be constructed of a minimum of 3 layers of 6 mil opaque fire retardant polyethylene sheeting and be securely attached to existing building components and/or an adequate temporary framework. A minimum of 3 layers of 6 mil poly shall also be used to cover the floor under the PDF and W/EDF units. Construct doors so that they overlap and secure to adjacent surfaces. Weight inner doorway sheets with layers of duct tape so that they close quickly after release. Put arrows on sheets so they show direction of travel and overlap. If the building adjacent area is occupied, construct a solid barrier on the occupied side(s) to protect the sheeting and reduce potential for non-authorized personnel entering the regulated area.

1.9.3 TEMPORARY FACILITIES TO THE PDF AND W/EDF

The Competent Person shall provide temporary water service connections to the PDF and W/EDF. Backflow prevention must be provided at the point of connection to the supply system. Water supply must be of adequate pressure and meet requirements of 29 CFR 1910.141(d)(3). Provide adequate temporary overhead electric power with ground fault circuit interruption (GFCI) protection. Provide a sub-panel equipped with GFCI protection for all temporary power in the clean room. Provide adequate lighting to provide a minimum of 50 foot candles in the PDF and W/EDF. Provide temporary heat, if needed, to maintain 70^{o}F throughout the PDF and W/EDF.

1.9.4 PERSONNEL DECONTAMINATION FACILITY (PDF)

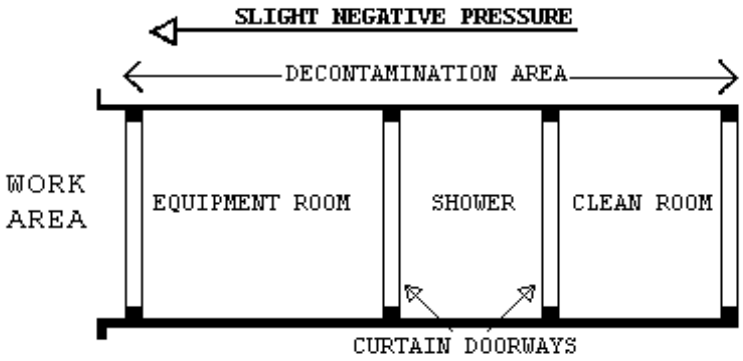
The Competent Person shall provide a PDF consisting of shower room which is contiguous to a clean room and equipment room which is connected to the regulated area. The PDF must be sized to accommodate the number of personnel scheduled for the project. The shower room, located in the center of the PDF, shall be fitted with as many portable showers as necessary to insure all employees can complete the entire decontamination procedure within 15 minutes. The PDF shall be constructed of opaque poly for privacy. The PDF shall be constructed to eliminate any parallel routes of egress without showering.

1. Clean Room: The clean room must be physically and visually separated from the rest of the building to protect the privacy of personnel changing clothes. The clean room shall be constructed of at least 3 layers of 6 mil opaque fire retardant poly to provide an air tight room. Provide a minimum of 2 - 900 mm (3 foot) wide 6 mil poly opaque fire retardant doorways. One doorway shall be the entry from outside the PDF and the second doorway shall be to the shower room of the PDF. The floor of the clean room shall be maintained in a clean, dry condition. Shower overflow shall not be allowed into the clean room. Provide 1 storage locker per person. A portable fire extinguisher, minimum 10 pounds capacity, Type ABC, shall be provided in accordance with OSHA and NFPA Standard 10. All persons entering the regulated area shall remove all street clothing in the clean room and dress in disposable protective clothing and respiratory protection. Any person entering the clean room does so either from the outside with street clothing on or is coming from the shower room completely naked and thoroughly washed. Females required to enter the regulated area shall be ensured of their privacy throughout the

entry/exit process by posting guards at both entry points to the PDF so no male can enter or exit the PDF during her stay in the PDF.

2. Shower Room: The Competent Person shall assure that the shower room is a completely water tight compartment to be used for the movement of all personnel from the clean room to the equipment room and for the showering of all personnel going from the equipment room to the clean room. Each shower shall be constructed so water runs down the walls of the shower and into a drip pan. Install a freely draining smooth floor on top of the shower pan. The shower room shall be separated from the rest of the building and from the clean room and equipment room using air tight walls made from at least 3 layers of 6 mil opaque fire retardant poly. The shower shall be equipped with a shower head and controls, hot and cold water, drainage, soap dish and continuous supply of soap, and shall be maintained in a sanitary condition throughout its use. The controls shall be arranged so an individual can shower without assistance. Provide a flexible hose shower head, hose bibs and all other items shown on Shower Schematic. Waste water will be pumped to a drain after being filtered through a minimum of a 100 micron sock in the shower drain; a 20 micron filter; and a final 5 micron filter. Filters will be changed a minimum of daily or more often as needed. Filter changes must be done in the shower to prevent loss of contaminated water. Hose down all shower surfaces after each shift and clean any debris from the shower pan. Residue is to be disposed of as asbestos waste.

3. Equipment Room: The Competent Person shall provide an equipment room which shall be an air tight compartment for the storage of work equipment/tools, reusable personal protective equipment, except for a respirator and for use as a gross decontamination area for personnel exiting the regulated area. The equipment room shall be separated from the regulated area by a minimum 3 foot wide door made with 2 layers of 6 mil opaque fire retardant poly. The equipment room shall be separated from the regulated area, the shower room and the rest of the building by air tight walls and ceiling constructed of a minimum of 3 layers of 6 mil opaque fire retardant poly. Damp wipe all surfaces of the equipment room after each shift change. Provide an additional loose layer of 6 mil fire retardant poly per shift change and remove this layer after each shift. If needed, provide a temporary electrical sub-panel equipped with GFCI in the equipment room to accommodate any equipment required in the regulated area.
4. The PDF shall be as follows: Clean room at the entrance followed by a shower room followed by an equipment room leading to the regulated area. Each doorway in the PDF shall be a minimum of 2 layers of 6 mil opaque fire retardant poly.



1.9.5 WASTE/EQUIPMENT DECONTAMINATION FACILITY (W/EDF)

The Competent Person shall provide a W/EDF consisting of a wash room, holding room, and clean room for removal of waste, equipment and contaminated material from the regulated area. Personnel shall not enter or exit the W/EDF except in the event of an emergency. Clean debris and

residue in the W/EDF daily. All surfaces in the W/EDF shall be wiped/hosed down after each shift and all debris shall be cleaned from the shower pan. The W/EDF shall consist of the following:

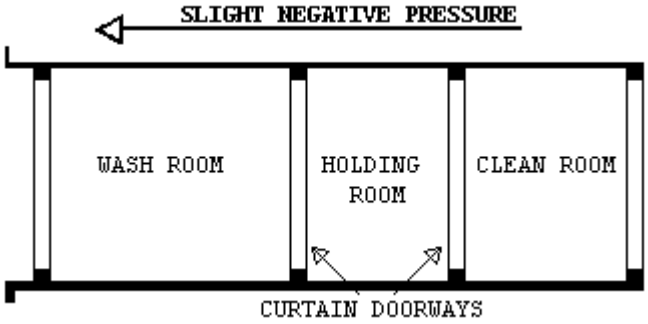
1. Wash Down Station: Provide an enclosed shower unit in the regulated area just outside the Wash Room as an equipment bag and container cleaning station.

2. Wash Room: Provide a wash room for cleaning of bagged or containerized asbestos containing waste materials passed from the regulated area. Construct the wash room using 50 x 100 mm (2" x 4") wood framing and 3 layers of 6 mil fire retardant poly. Locate the wash room so that packaged materials, after being wiped clean, can be passed to the Holding Room. Doorways in the wash room shall be constructed of 2 layers of 6 mil fire retardant poly.

3. Holding Room: Provide a holding room as a drop location for bagged materials passed from the wash room. Construct the holding room using 50 x 100 mm (2" x 4") wood framing and 3 layers of 6 mil fire retardant poly. The holding room shall be located so that bagged material cannot be passed from the wash room to the clean room unless it goes through the holding room. Doorways in the holding room shall be constructed of 2 layers of 6 mil fire retardant poly.

4. Clean Room: Provide a clean room to isolate the holding room from the exterior of the regulated area. Construct the clean room using 2 x 4 wood framing and 2 layers of 6 mil fire retardant poly. The clean room shall be located so as to provide access to the holding room from the building exterior. Doorways to the clean room shall be constructed of 2 layers of 6 mil fire retardant poly. When a negative pressure differential system is used, a rigid enclosure separation between the W/EDF clean room and the adjacent areas shall be provided.

5. The W/EDF shall be as follows: Wash Room leading to a Holding Room followed by a Clean Room leading to outside the regulated area. See diagram.



1.9.6 WASTE/EQUIPMENT DECONTAMINATION PROCEDURES

At the washdown station in the regulated area, thoroughly wet clean contaminated equipment and/or sealed polyethylene bags and pass into Wash Room after visual inspection. When passing anything into the Wash Room, close all doorways of the W/EDF, other than the doorway between the washdown station and the Wash Room. Keep all outside personnel clear of the W/EDF. Once inside the Wash Room, wet clean the equipment and/or bags. After cleaning and inspection, pass items into the Holding Room. Close all doorways except the doorway between the Holding Room and the Clean Room. Workers from the Clean Room/Exterior shall enter the Holding Room and remove the decontaminated/cleaned equipment/bags for removal and disposal. These personnel will not be required to wear PPE. At no time shall personnel from the clean side be allowed to enter the Wash Room.

PART 2 - PRODUCTS, MATERIALS AND EQUIPMENT

2.1 MATERIALS AND EQUIPMENT

2.1.1 GENERAL REQUIREMENTS

Prior to the start of work, the contractor shall provide and maintain a sufficient quantity of materials and equipment to assure continuous and efficient work throughout the duration of the project. Work shall not start unless the following items have been delivered to the site and the CPIH/CIH has submitted verification to the Owner or Owner's Engineer.

A. All materials shall be delivered in their original package, container or bundle bearing the name of the manufacturer and the brand name (where applicable).

B. Store all materials subject to damage off the ground, away from wet or damp surfaces and under cover sufficient enough to prevent damage or contamination. Flammable and combustible materials cannot be stored inside buildings. Replacement materials shall be stored outside of the regulated area until abatement is completed.

C. The Contractor shall not block or hinder use of buildings by patients, staff, and visitors to the Site in partially occupied buildings by placing materials/equipment in any unauthorized location.

D. The Competent Person shall inspect for damaged, deteriorating or previously used materials. Such materials shall not be used and shall be removed from the worksite and disposed of properly.

E. Polyethylene sheeting for walls in the regulated area shall be a minimum of 4-mils. For floors and all other uses, sheeting of at least 6-mil shall be used in widths selected to minimize the frequency of joints. Fire retardant poly shall be used throughout.

F. The method of attaching polyethylene sheeting shall be agreed upon in advance by the Contractor and the Owner and selected to minimize damage to equipment and surfaces. Method of attachment may include any combination of moisture resistant duct tape furring strips, spray glue, staples, nails, screws, lumber and plywood for enclosures or other effective procedures capable of sealing polyethylene to dissimilar finished or unfinished surfaces under both wet and dry conditions.

G. Polyethylene sheeting utilized for the PDF shall be opaque white or black in color, 6 mil fire retardant poly.

H. Installation and plumbing hardware, showers, hoses, drain pans, sump pumps and waste water filtration system shall be provided by the Contractor.

I. An adequate number of HEPA vacuums, scrapers, sprayers, nylon brushes, brooms, disposable mops, rags, sponges, staple guns, shovels, ladders and scaffolding of suitable height and length as well as meeting OSHA requirements, fall protection devices, water hose to reach all areas in the regulated area, airless spray equipment, and any other tools, materials or equipment required to conduct the abatement project. All electrically operated hand tools, equipment, electric cords shall be connected to GFCI protection.

J. Special protection for objects in the regulated area shall be detailed (e.g., plywood over carpeting

K. Disposal bags – 2 layers of 6 mil poly for asbestos waste shall be pre-printed with labels, markings and address as required by OSHA, EPA and DOT regulations.

L. The Owner shall be provided an advance copy of the MSDS as required for all hazardous chemicals under OSHA 29 CFR 1910.1200 - Hazard Communication in the pre-start meeting submittal.

Chlorinated compounds shall not be used with any spray adhesive, mastic remover or other product.

M. OSHA DANGER demarcation signs, as many and as required by OSHA 29 CFR 1926.1101(k)(7) shall be provided and placed by the Competent Person. All other posters and notices required by Federal and State regulations shall be posted in the Clean Room.

N. Adequate and appropriate PPE for the project and number of personnel/shifts shall be provided. All personal protective equipment issued must be based on a written hazard assessment conducted under 29 CFR 1910.132(d).

2.2 MONITORING, INSPECTION AND TESTING

2.2.1 GENERAL

A. Perform throughout abatement work monitoring, inspection and testing inside and around the regulated area in accordance with the OSHA requirements and these specifications. OSHA requires that the employee exposure to asbestos must not exceed 0.1 fiber per cubic centimeter (f/cc) of air, averaged over an 8-hour work shift. The CPIH/CIH is responsible for and shall inspect and oversee the performance of the Contractor IH Technician. The IH Technician shall continuously inspect and monitor conditions inside the regulated area to ensure compliance with these specifications. In addition, the CPIH/CIH shall personally manage air sample collection, analysis, and evaluation for personnel, regulated area, and adjacent area samples to satisfy OSHA requirements. Additional inspection and testing requirements are also indicated in other parts of this specification.

B. The Owner will employ an independent industrial hygienist (PIH/CIH) consultant and/or use its own IH to perform various services on behalf of the Owner. The PIH/CIH will perform the necessary monitoring, inspection, testing, and other support services to ensure that people will not be adversely affected by the abatement work, and that the abatement work proceeds in accordance with these specifications, that the abated areas or abated buildings have been successfully decontaminated. The work of the PIH/CIH consultant in no way relieves the Contractor from their responsibility to perform the work in accordance with contract/specification requirements, to perform continuous inspection, monitoring and testing for the safety of their employees, and to perform other such services as specified. The cost of the PIH/CIH and their services will be borne by the Owner except for any repeat of final inspection and testing that may be required due to unsatisfactory initial results. Any repeated final inspections and/or testing, if required, will be paid for by the Contractor.

C. If fibers counted by the PIH/CIH during abatement work, either inside or outside the regulated area, utilizing the NIOSH 7400 air monitoring method, exceed the specified respective limits, the Contractor shall stop work. The Contractor may request confirmation of the results by analysis of the samples by TEM. Request must be in writing and submitted to the Owner or Owner's Engineer. Cost for the confirmation of results will be borne by the Contractor for both the collection and analysis of samples and for the time delay that may/does result for this confirmation. Confirmation sampling and analysis will be the responsibility of the CPIH with review and approval of the PIH/CIH. An agreement between the CPIH/CIH and the PIH/CIH shall be reached on the exact details of the confirmation effort, in writing, including such things as the number of samples, location, collection, quality control on-site, analytical laboratory, interpretation of results and any follow-up actions. This written agreement shall be co-signed by the IH's and delivered to the Owner.

2.2.2 MONITORING, INSPECTION AND TESTING BY CONTRACTOR CPIH/CIH

The Contractor's CPIH/CIH is responsible for managing all monitoring, inspections, and testing required by these specifications, as well as any and all regulatory requirements adopted by these specifications. The CPIH/CIH is responsible for the continuous monitoring of all subsystems and

procedures which could affect the health and safety of the Contractor's personnel. Safety and health conditions and the provision of those conditions inside the regulated area for all persons entering the regulated area is the exclusive responsibility of the Contractor/Competent Person. The person performing the personnel and area air monitoring inside the regulated area shall be an IH Technician, who shall be trained and shall have specialized field experience in sampling and analysis. The IH Technician shall have successfully completed a NIOSH 582 Course or equivalent and provide documentation. The IH Technician shall participate in the AIHA Asbestos Analysis Registry or participate in the Proficiency Analytic Testing program of AIHA for fiber counting quality control assurance. The IH Technician shall also be an accredited EPA AHERA/State Contractor/Supervisor or Abatement Worker and Building Inspector. The IH Technician shall have participated in five abatement projects collecting personal and area samples as well as responsibility for documentation on substantially similar projects in size and scope. The CPIH/CIH shall collect and analyze samples for each representative job being done in the regulated area, i.e., removal, wetting, clean-up, and load-out. No fewer than two personal samples per shift shall be collected and one area sample per 1,000 square feet of regulated area where abatement is taking place and one sample per shift in the clean room area shall be collected. In addition to the continuous monitoring required, the CPIH/CIH will perform inspection and testing at the final stages of abatement for each regulated area as specified in the CPIH/CIH responsibilities. Additionally, the CPIH/CIH will monitor and record pressure readings within the containment daily with a minimum of two readings at the beginning and at the end of a shift, and submit the data in the daily report.

2.3 ASBESTOS HAZARD ABATEMENT PLAN

The Contractor shall have established an Asbestos Hazard Abatement Plan (AHAP) in printed form and loose leaf folder consisting of simplified text, diagrams, sketches, and pictures that establish and explain clearly the procedures to be followed during all phases of the work by the Contractor's personnel. The AHAP must be modified as needed to address specific requirements of this project and the specifications. The AHAP shall be submitted for review and approval to the Owner prior to the start of any abatement work. The minimum topics and areas to be covered by the AHAPs are:

A. Minimum Personnel Qualifications
B. Emergency Action Plan/Contingency Plans and Arrangements
C. Security and Safety Procedures
D. Respiratory Protection/Personal Protective Equipment Program and Training
E. Medical Surveillance Program and Recordkeeping
F. Regulated Area Requirements - Containment Barriers/Isolation of Regulated Area
G. Decontamination Facilities and Entry/Exit Procedures (PDF and W/EDF)
H. Negative Pressure Systems Requirements
I. Monitoring, Inspections, and Testing
J. Removal Procedures for ACM
K. Disposal of ACM waste/equipment
L. Regulated Area Decontamination/Clean-up
M. Regulated Area Visual and Air Clearance
N. Project Completion/Closeout

2.4 SUBMITTALS

2.4.1 PRE-START MEETING SUBMITTALS

Submit to the Owner a minimum of 14 days prior to the pre-start meeting the following for review and approval. Meeting this requirement is a prerequisite for the pre-start meeting for this project:

A. Submit a detailed work schedule for the entire project reflecting contract documents and the phasing/schedule requirements from the CPM chart.

B. Submit a staff organization chart showing all personnel who will be working on the project and their capacity/function. Provide their qualifications, training, accreditations, and licenses, as appropriate. Provide a copy of the "Certificate of Worker's Acknowledgment" and the "Affidavit of Medical Surveillance and Respiratory Protection" for each person.

C. Submit Asbestos Hazard Abatement Plan developed specifically for this project, incorporating the requirements of the specifications, prepared, signed and dated by the CPIH/CIH.

D. Submit the specifics of the materials and equipment to be used for this project with manufacturer names, model numbers, performance characteristics, pictures/diagrams, and number available for the following:

1. Supplied air system, negative air machines, HEPA vacuums, air monitoring pumps, calibration devices, pressure differential monitoring device and emergency power generating system.
2. Waste water filtration system, shower system, containment barriers.
3. Surfactants, hand held sprayers, airless sprayers, glovebags, and fire extinguishers.
4. Respirators, protective clothing, personal protective equipment.
5. Fire safety equipment to be used in the regulated area.

E. Submit the name, location, and phone number of the approved landfill; proof/verification the landfill is approved for ACM disposal; the landfill's requirements for ACM waste; the type of vehicle to be used for transportation; and name, address, and phone number of subcontractor, if used. Proof of asbestos training for transportation personnel shall be provided.

F. Submit required notifications and arrangements made with regulatory agencies having regulatory jurisdiction and the specific contingency/emergency arrangements made with local health, fire, ambulance, hospital authorities and any other notifications/arrangements.

G. Submit qualifications verification: Submit the following evidence of qualifications. Make sure that all references are current and verifiable by providing current phone numbers and documentation.

1. Asbestos Abatement Company: Project experience within the past 3 years; listing projects first most similar to this project: Project Name; Type of Abatement; Duration; Cost; Reference Name/Phone Number; Final Clearance; Completion Date
2. List of project(s) halted by owner, A/E, IH, regulatory agency in the last 3 years: Project Name; Reason; Date; Reference Name/Number; Resolution
3. List asbestos regulatory citations (e.g., OSHA), notices of violations (e.g., Federal and state EPA), penalties, and legal actions taken against the company including and of the company’s officers (including damages paid) in the last 3 years. Provide copies and all information needed for verification.

H. Submit information on personnel: Provide a resume; address each item completely; copies of certificates, accreditations, and licenses. Submit an affidavit signed by the CPIH/CIH stating that all personnel submitted below have medical records in accordance with OSHA 29 CFR 1926.1101(m) and 29 CFR 1910.20 and that the company has implemented a medical surveillance program and written respiratory protection program, and maintains recordkeeping in accordance with the above regulations. Submit the phone number and doctor/clinic/hospital used for medical evaluations.

1. CPIH/CIH and IH Technician: Name; years of abatement experience; list of projects similar to this one; certificates, licenses, accreditations for proof of AHERA/OSHA specialized asbestos

training; professional affiliations; number of workers trained; samples of training materials; samples of AHAPs developed; medical opinion; and current respirator fit test.

2. Competent Person(s)/Supervisor(s): Number; names; social security numbers; years of abatement experience as Competent Person/Supervisor; list of similar projects in size/complexity as Competent Person/Supervisor; as a worker; certificates, licenses, accreditations; proof of AHERA/OSHA specialized asbestos training; maximum number of personnel supervised on a project; medical opinion (asbestos surveillance and respirator use); and current respirator fit test.

3. Workers: Numbers; names; social security numbers; years of abatement experience; certificates, licenses, accreditations; training courses in asbestos abatement and respiratory protection; medical opinion (asbestos surveillance and respirator use); and current respirator fit test.

I. Submit copies of State license for asbestos abatement; copy of insurance policy, including exclusions with a letter from agent stating in plain language the coverage provided and the fact that asbestos abatement activities are covered by the policy; copy of AHAPs incorporating the requirements of this specification; information on who provides your training, how often; who provides medical surveillance, how often; who performs and how is personal air monitoring of abatement workers conducted; a list of references of independent laboratories/IH's familiar with your air monitoring and standard operating procedures; and copies of monitoring results of the five referenced projects listed and analytical method(s) used.

J. Rented equipment must be decontaminated prior to returning to the rental agency.

K. Submit, before the start of work, the manufacturer's technical data for all types of encapsulants, all MSDS and application instructions.

2.4.2 SUBMITTALS DURING ABATEMENT

A. The Competent Person shall maintain and submit a daily log documenting the dates and times of the following: purpose, attendees and summary of meetings; document and discuss the resolution of unusual events such as, equipment failures, emergencies, and any cause for stopping work; and representative air monitoring and results/TWA's/EL's. Submit this information daily to the PIH/CIH.

B. The CPIH/CIH shall document and maintain the inspection and approval of the regulated area preparation prior to start of work and daily during work.
   1. Removal of any poly barriers.
   2. Visual inspection/testing by the CPIH/CIH or IH Technician prior to application of lockdown encapsulant.
   3. Packaging and removal of ACM waste from regulated area.
   4. Disposal of ACM waste materials; copies of Waste Shipment Records/landfill receipts to the Owner’s Engineer on a weekly basis.

2.4.3 SUBMITTALS AT COMPLETION OF ABATEMENT

The CPIH/CIH shall submit a project report consisting of the daily log book requirements and documentation of events during the abatement project including Waste Shipment Records signed by the landfill's agent. It will also include information on the containment and transportation of waste from the containment with applicable Chain of Custody forms. The report shall include a certificate of completion, signed and dated by the CPIH/CIH, in accordance with Attachment #1. All clearance and perimeter area samples must be submitted. The Owner’s Engineer will retain the abatement report after completion of the project.

PART 3 - EXECUTION

3.1 REGULATED AREA PREPARATIONS

3.1.1 SITE SECURITY

A. Regulated area access is to be restricted only to authorized, trained/accredited and protected personnel. These may include the Contractor's employees, employees of Subcontractors, Owner employees and representatives, State and local inspectors, and any other designated individuals. A list of authorized personnel shall be established prior to commencing the project and be posted in the clean room of the decontamination unit.

B. A log book shall be maintained in the clean room of the decontamination unit. Anyone who enters the regulated area must record their name, affiliation, time in, and time out for each entry.

C. Access to the regulated area shall be through a single decontamination unit. All other access (doors, windows, hallways, etc.) shall be sealed or locked to prevent entry to or exit from the regulated area. The only exceptions for this requirement are the waste/equipment load-out area which shall be sealed except during the removal of containerized asbestos waste from the regulated area, and emergency exits. Emergency exits shall not be locked from the inside; however, they shall be sealed with poly sheeting and taped until needed. In any situation where exposure to high temperatures which may result in a flame hazard, fire retardant poly sheeting must be used.

D. The Contractor's Competent Person shall control site security during abatement operations in order to isolate work in progress and protect adjacent personnel.

3.1.2 SIGNAGE AND POWER MANAGEMENT

A. Post OSHA DANGER signs meeting the specifications of OSHA 29 CFR 1926.1101 at any location and approaches to the regulated area where airborne concentrations of asbestos may exceed the PEL. Signs shall be posted at a distance sufficiently far enough away from the regulated area to permit any personnel to read the sign and take the necessary measures to avoid exposure. Additional signs will be posted following construction of the regulated area enclosure.

B. Shut down and lock out/tag out electric power to the regulated area. Provide temporary power and lighting. Insure safe installation including GFCI of temporary power sources and equipment by compliance with all applicable electrical code and OSHA requirements for temporary electrical systems. Electricity shall be provided by the Owner.

C. Shut down and lock out/tag out heating, cooling, and air conditioning system (HVAC) components that are in, supply or pass through the regulated area. Investigate the regulated area and agree on pre-abatement condition with the Owner. Seal all intake and exhaust vents in the regulated area with duct tape and 2 layers of 6-mil poly. Also, seal any seams in system components that pass through the regulated area. Remove all contaminated HVAC system filters and place in labeled 6-mil polyethylene disposal bags for staging and eventual disposal as asbestos waste.

3.1.3 NEGATIVE PRESSURE FILTRATION SYSTEM

The Contractor shall provide enough HEPA negative air machines to effect > - 0.02” WCG pressure. The Competent Person shall determine the number of units needed for the regulated area by dividing the cubic feet in the regulated area by 15 and then dividing that result by the cubic feet per minute (CFM) for each unit to determine the number of units needed to effect > - 0.02” WCG

pressure. Provide a standby unit in the event of machine failure and/or emergency in an adjacent area.

NIOSH has done extensive studies and has determined that negative air machines typically operate at ~50% efficiency. The contractor shall consider this in their determination of number of units needed to provide > - 0.02” WCG pressure. The contractor shall use double the number of machines, based on their calculations, or submit proof their machines operate at stated capacities, at a 2" pressure drop across the filters.

3.1.3.1 DESIGN AND LAYOUT

A. Before start of work submit the design and layout of the regulated area and the negative air machines. The submittal shall indicate the number of, location of and size of negative air machines. The point(s) of exhaust, air flow within the regulated area, anticipated negative pressure differential, and supporting calculations for sizing shall be provided. In addition, submit the following:

    1. Method of supplying power to the units and designation/location of the panels.

    2. Description of testing method(s) for correct air volume and pressure differential.

    3. If auxiliary power supply is to be provided for the negative air machines, provide a schematic diagram of the power supply and manufacturer's data on the generator and switch.

3.1.3.2 NEGATIVE AIR MACHINES (HEPA UNITS)

A. Negative Air Machine Cabinet: The cabinet shall be constructed of steel or other durable material capable of withstanding potential damage from rough handling and transportation. The width of the cabinet shall be less than 30" in order to fit in standard doorways. The cabinet must be factory sealed to prevent asbestos fibers from being released during use, transport, or maintenance. Any access to and replacement of filters shall be from the inlet end. The unit must be on casters or wheels.

B. Negative Air Machine Fan: The rating capacity of the fan must indicate the CFM under actual operating conditions. Manufacturer's typically use "free-air" (no resistance) conditions when rating fans. The fan must be a centrifugal type fan.

C. Negative Air Machine Final Filter: The final filter shall be a HEPA filter. The filter media must be completely sealed on all edges within a structurally rigid frame. The filter shall align with a continuous flexible gasket material in the negative air machine housing to form an air tight seal. Each HEPA filter shall be certified by the manufacturer to have an efficiency of not less than 99.97%. Testing shall have been done in accordance with Military Standard MIL-STD-282 and Army Instruction Manual 136-300-175A. Each filter must bear a UL586 label to indicate ability to perform under specified conditions. Each filter shall be marked with the name of the manufacturer, serial number, air flow rating, efficiency and resistance, and the direction of test air flow.

D. Negative Air Machine Pre-filters: The pre-filters, which protect the final HEPA filter by removing larger particles, are required to prolong the operating life of the HEPA filter. Two stages of pre-filtration are required. A first stage pre-filter shall be a low efficiency type for particles 10 µm or larger. A second stage pre-filter shall have a medium efficiency effective for particles down to 5 µm or larger. Pre-filters shall be installed either on or in the intake opening of the NAM and the second stage filter must be held in place with a special housing or clamps.

E. Negative Air Machine Instrumentation: Each unit must be equipped with a gauge to measure the pressure drop across the filters and to indicate when filters have become loaded and need to be changed. A table indicating the cfm for various pressure readings on the gauge shall be affixed near the gauge for reference or the reading shall indicate at what point the filters shall be changed, noting cfm delivery. The unit must have an elapsed time meter to show total hours of operation.

F. Negative Air Machine Safety and Warning Devices: An electrical/ mechanical lockout must be provided to prevent the fan from being operated without a HEPA filter. Units must be equipped with an automatic shutdown device to stop the fan in the event of a rupture in the HEPA filter or blockage in the discharge of the fan. Warning lights are required to indicate normal operation; too high a pressure drop across filters; or too low of a pressure drop across filters.

G. Negative Air Machine Electrical: All electrical components shall be approved by the National Electrical Manufacturer's Association (NEMA) and Underwriters Laboratories (UL). Each unit must be provided with overload protection and the motor, fan, fan housing, and cabinet must be grounded.

H. It is essential that replacement HEPA filters be tested using an “in-line” testing method, to ensure the seal around the periphery was not damaged during replacement. Damage to the outer HEPA filter seal could allow contaminated air to bypass the HEPA filter and be discharged to an inappropriate location. Contractor will provide written documentation of test results for negative air machine units with HEPA filters changed by the contractor or documentation when changed and tested by the contractor filters

3.1.3.3 PRESSURE DIFFERENTIAL

The fully operational negative air system within the regulated area shall continuously maintain a pressure differential of -0.02" water column gauge. Before any disturbance of any asbestos material, this shall be demonstrated to the Owner by use of a pressure differential meter/manometer as required by OSHA 29 CFR 1926.1101(e)(5)(i). The Competent Person shall be responsible for providing, maintaining, and documenting the negative pressure and air changes as required by OSHA and this specification.

3.1.3.4 MONITORING

The pressure differential shall be continuously monitored and recorded between the regulated area and the area outside the regulated area with a monitoring device that incorporates a strip chart recorder. The strip chart recorder shall become part of the project log and shall indicate at least -0.02" water column gauge for the duration of the project.

3.1.3.5 SUPPLEMENTAL MAKE-UP AIR INLETS

Provide, as needed for proper air flow in the regulated area, in a location approved by the Owner, openings in the plastic sheeting to allow outside air to flow into the regulated area. Auxiliary makeup air inlets must be located as far from the negative air machines as possible, off the floor near the ceiling, and away from the barriers that separate the regulated area from the occupied clean areas. Cover the inlets with weighted flaps which will seal in the event of failure of the negative pressure system.

3.1.3.6 TESTING THE SYSTEM

The negative pressure system must be tested before any ACM is disturbed in any way. After the regulated area has been completely prepared, the decontamination units set

up, and the negative air machines installed, start the units up one at a time. Demonstrate and document the operation and testing of the negative pressure system to the VA using smoke tubes and a negative pressure gauge. Verification and documentation of adequate negative pressure differential across each barrier must be done at the start of each work shift.

3.1.3.7 DEMONSTRATION OF THE NEGATIVE PRESSURE FILTRATION SYSTEM

The demonstration of the operation of the negative pressure system to the Owner shall include, but not be limited to, the following:

A. Plastic barriers and sheeting move lightly in toward the regulated area.

B. Curtains of the decontamination units move in toward regulated area.

C. There is a noticeable movement of air through the decontamination units. Use the smoke tube to demonstrate air movement from the clean room to the shower room to the equipment room to the regulated area.

D. Use smoke tubes to demonstrate air is moving across all areas in which work is to be done. Use a differential pressure gauge to indicate a negative pressure of at least -0.02" across every barrier separating the regulated area from the rest of the building. Modify the system as necessary to meet the above requirements.

3.1.3.8 USE OF THE NEGATIVE PRESSURE FILTRATION SYSTEM DURING ABATEMENT

A. Start units before beginning any disturbance of ACM occurs. After work begins, the units shall run continuously, maintaining 4 actual air changes per hour at a negative pressure differential of -0.02" water column gauge, for the duration of the work until a final visual clearance and final air clearance has been successfully completed.

   No negative air units shall be shut down at any time unless authorized by the Owner, verbally and in writing.

B. Pre-cleaning of ACM contaminated items shall be performed after the enclosure has been erected and negative pressure has been established in the work area. After items have been pre-cleaned and decontaminated, they may be removed from the work area for storage until the completion of abatement in the work area.

C. Abatement work shall begin at a location farthest from the units and proceed towards them. If an electric failure occurs, the Competent Person shall stop all abatement work and immediately begin wetting all exposed asbestos materials for the duration of the power outage. Abatement work shall not resume until power is restored and all units are operating properly again.

D. The negative air machines shall continue to run after all work is completed and until a final visual clearance and a final air clearance has been successfully completed for that regulated area.

3.1.3.9 DISMANTLING THE SYSTEM

After completion of the final visual and final air clearance has been obtained by the PIH/CIH, the units may be shut down. The unit exterior surfaces shall have been completely decontaminated; pre-filters are not to be removed and the units inlet/outlet

sealed with 2 layers of 6 mil poly immediately after shut down. No filter removal shall occur at the site following successful completion of site clearance.

3.1.3.10 AUXILIARY GENERATOR

If the building is occupied during abatement, provide an auxiliary gasoline/diesel generator located outside the building in an area protected from the weather. In the event of a power failure of the general power grid, the generator must automatically start and supply power to a minimum of 50% of the negative air machines in operation.

3.2 CONTAINMENT BARRIERS AND COVERINGS IN THE REGULATED AREA

3.2.1 GENERAL

Seal off the perimeter to the work area to completely isolate the work area from adjacent spaces. All surfaces in the regulated area must be covered to prevent contamination and to facilitate clean-up. Should adjacent areas become contaminated as a result of the work, shall immediately stop work and clean up the contamination at no additional cost to the Owner.

3.2.2 PREPARATION PRIOR TO SEALING THE REGULATED AREA

Place all tools, scaffolding, materials and equipment needed for working in the regulated area prior to erecting any plastic sheeting. All uncontaminated removable furniture, equipment and/or supplies shall be removed by the Owner from the regulated area before commencing work. Any objects remaining in the regulated area shall be completely covered with 2 layers of 6-mil fire retardant poly sheeting and secured with duct tape. Lock out and tag out any HVAC/electrical systems in the regulated area.

3.2.3 CONTROLLING ACCESS TO THE REGULATED AREA

Access to the regulated area is allowed only through the personnel decontamination facility (PDF). All other means of access shall be eliminated and OSHA DANGER demarcation signs posted as required by OSHA. If the regulated area is adjacent to, or within view of an occupied area, provide a visual barrier of 6 mil opaque fire retardant poly to prevent building occupant observation. If the adjacent area is accessible to the public, the barrier must be solid and capable of withstanding the negative pressure.

3.2.4 CRITICAL BARRIERS

Completely separate any operations in the regulated area from adjacent areas using 2 layers of 6 mil fire retardant poly and duct tape. Individually seal with 2 layers of 6 mil poly and duct tape all HVAC openings into the regulated area. Individually seal all lighting fixtures, clocks, doors, windows, convectors, speakers, or any other objects/openings in the regulated area. Heat must be shut off any objects covered with poly.

3.2.5 PRIMARY BARRIERS

A. Cover the regulated area with two layers of 6 mil fire retardant poly on the floors and two layers of 4 mil, fire retardant poly on the walls, unless otherwise directed in writing by the Owner. Ground layers must form a right angle with the wall and turn up the wall at least 300 mm (12"). Seams must overlap at least 1800 mm (6') and must be spray glued and taped. Install sheeting so that layers can be removed independently from each other. Carpeting shall be covered with three layers of 6 mil poly. Corrugated cardboard sheets must be placed between the bottom and middle layers of poly. Mechanically support and seal with duct tape and glue all wall layers.

B. If stairs and ramps are covered with 6 mil plastic, two layers must be used. Provide 19 mm (3/4") exterior grade plywood treads held in place with duct tape/glue on the plastic. Do not cover rungs or rails with any isolation materials.

3.2.6 SECONDARY BARRIERS

A loose layer of 6 mil shall be used as a drop cloth to protect the primary layers from debris generated during the abatement. This layer shall be replaced as needed during the work and at a minimum once per work day.

3.2.7 EXTENSION OF THE REGULATED AREA

If the enclosure of the regulated area is breached in any way that could allow contamination to occur, the affected area shall be included in the regulated area and constructed as per this section. Decontamination measures must be started immediately and continue until air monitoring indicates background levels are met.

3.3 SANITARY FACILITIES

The Contractor shall provide sanitary facilities for abatement personnel and maintain them in a clean and sanitary condition throughout the abatement project.

3.4 PERSONAL PROTECTIVE EQUIPMENT

Provide whole body clothing, head coverings, gloves and foot coverings and any other personal protective equipment as determined by conducting the hazard assessment required by OSHA at 29 CFR 1910.132 (d). The Competent Person shall ensure the integrity of personal protective equipment worn for the duration of the project. Duct tape shall be used to secure all suit sleeves to wrists and to secure foot coverings at the ankle.

3.5 PRE-ABATEMENT ACTIVITIES

3.5.1 PRE-ABATEMENT MEETING

The Owner’s representative, upon receipt, review, and substantial approval of all pre-abatement submittals and verification by the CPIH/CIH that all materials and equipment required for the project are on the site, will arrange for a pre-abatement meeting between the Contractor, the CPIH/CIH, Competent Person(s), the Owner’s representative(s), and the PIH/CIH. The purpose of the meeting is to discuss any aspect of the submittals needing clarification or amplification and to discuss any aspect of the project execution and the sequence of the operation. The Contractor shall be prepared to provide any supplemental information/documentation to the Owner's representative regarding any submittals, documentation, materials or equipment. Upon satisfactory resolution of any outstanding issues, the Owner's representative will issue a written order to proceed to the Contractor. No abatement work of any kind described in the following provisions shall be initiated prior to the Owner’s written order to proceed.

3.5.2 PRE-ABATEMENT CONSTRUCTION AND OPERATIONS

A. Perform all preparatory work for the first regulated area in accordance with the approved work schedule and with this specification.

B. Upon completion of all preparatory work, the CPIH/CIH will inspect the work and systems and will notify the Owner's representative when the work is completed in accordance with this specification. The Owner's representative may inspect the regulated area and the systems with the PIH/CIH and may require that upon satisfactory inspection, the Contractor's employees perform all major aspects of the approved AHAP(s), especially worker protection, respiratory systems, contingency plans, decontamination procedures,

and monitoring to demonstrate satisfactory operation. The operational systems for respiratory protection and the negative pressure system shall be demonstrated for proper performance.

C. The CPIH/CIH shall document the pre-abatement activities described above and deliver a copy to the Owner's representative.

D. Upon satisfactory inspection of the installation of and operation of systems the Owner's representative will notify the Contractor in writing to proceed with the asbestos abatement work in accordance with this specification and all applicable regulations.

3.5.3 PRE-ABATEMENT INSPECTIONS AND PREPARATIONS

Before any work begins on the construction of the regulated area, the Contractor will:

A. Conduct an inspection with an authorized Owner’s representative and prepare a written inventory of all existing damage in those spaces where asbestos abatement will occur. Still or video photography may be used to supplement the written damage inventory. Document will be signed and certified as accurate by both parties.

B. The Owner’s Representative, the Contractor, and the PIH/CIH must be aware of AEQA 10-95 indicating the failure to identify asbestos in the areas listed as well as common issues when preparing specifications and contract documents. This is especially critical when demolition is planned, because AHERA surveys are non-destructive, and ACM may remain undetected. A NESHAPS (destructive) ACM inspection should be conducted on all building structures that will be demolished. Ensure the following areas are inspected on the project: lay-in ceilings concealing ACM; ACM behind walls/windows from previous renovations; inside utility chases/walls; transite piping/ductwork/sheets; behind radiators; lab fume hoods; transite lab countertops; roofing materials; below window sills; water/sewer lines; electrical conduit coverings; crawlspaces (previous abatement contamination); flooring/mastic covered by carpeting/new flooring; exterior insulated wall panels; on underground fuel tanks; and steam line trench coverings.

C. Ensure that all machinery, equipment, and other movable objects required to be removed from the regulated area have been cleaned and removed or properly protected from contamination.

3.6 REMOVAL OF ACM

3.6.1 WETTING ACM

A. Use amended water for the wetting of ACM prior to removal. The Competent Person shall assure the wetting of ACM meets the definition of "adequately wet" in the EPA NESHAP regulation and OSHA’s “wet methods” for the duration of the project. A removal encapsulant may be used instead of amended water with written approval of the Owner's representative.

B. Amended Water: Provide water to which a surfactant has been added shall be used to wet the ACM and reduce the potential for fiber release during disturbance of ACM. The mixture must be equal to or greater than the wetting provided by water amended by a surfactant consisting one ounce of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with 5 gallons (19L) of water.

C. Removal Encapsulant: When authorized by the Owner, provide a penetrating encapsulant designed specifically for the removal of ACM. The material must, when used, result in adequate wetting of the ACM and retard fiber release during removal.

3.6.2 SECONDARY BARRIER AND WALKWAYS

A. Install as a drop cloth a 6 mil poly sheet at the beginning of each work shift where removal is to be done during that shift. Completely cover floors and any walls within 10 feet (3 meters) of the area where work is to done. Secure the secondary barrier with duct tape to prevent it from moving or debris from getting behind it. Remove the secondary barrier at the end of the shift or as work in the area is completed. Keep residue on the secondary barrier wetted. When removing, fold inward to prevent spillage and place in a disposal bag.

B. Install walkways using 6 mil black poly between the regulated area and the decontamination facilities (PDF and W/EDF) to protect the primary layers from contamination and damage. Install the walkways at the beginning of each shift and remove at the end of each shift.

3.6.3 WET REMOVAL OF ACM

A. Adequately and thoroughly wet the ACM to be removed prior to removal with amended water or when authorized by the Owner' Engineer, removal encapsulant to reduce/prevent fiber release to the air. Adequate time (at a minimum two hours) must be allowed for the amended water or removal encapsulant to saturate the ACM. Abatement personnel must not disturb dry ACM. Use a fine spray of amended water or removal encapsulant. Saturate the material sufficiently to wet to the substrate without causing excessive dripping. The material must be sprayed repeatedly/continuously during the removal process in order to maintain adequately wet conditions. Removal encapsulants must be applied in accordance with the manufacturer's written instructions. Perforate or carefully separate, using wet methods, an outer covering that is painted or jacketed in order to allow penetration and wetting of the material. Where necessary, carefully remove covering while wetting to minimize fiber release. **In no event shall dry removal occur except when authorized in writing by the PIH/CIH and Owner when a greater safety hazard (e.g., electricity) is present.**

B. If ACM does not wet well with amended water due to composition, coating or jacketing, remove as follows:

1. Mist work area continuously with amended water whenever necessary to reduce airborne fiber levels.

2. Remove saturated ACM in small sections. Do not allow material to dry out. As material is removed, bag material, while still wet into disposal bags. Twist the bag neck tightly, bend over (gooseneck) and seal with a minimum of three tight wraps of duct tape. Clean /decontaminate the outside of the bag of any residue.

3. Fireproofing or Architectural Finish on Scratch Coat: Spray with a fine mist of amended water or removal encapsulant. Allow time for saturation to the substrate. Do not over saturate causing excess dripping. Scrape material from substrate. Remove material in manageable quantities and control falling to staging or floor. If the falling distance is over 20 feet (6M), use a drop chute to contain material through descent. Remove residue remaining on the scratch coat after scraping is done using a stiff bristle hand brush. If a removal encapsulant is used, remove residue completely before the encapsulant dries. Periodically re-wet the substrate with amended water as needed to prevent drying of the material before the residue is removed from the substrate.

4. Fireproofing or Architectural Finish on Wire Lath: Spray with a fine mist of amended water or removal encapsulant. Allow time to completely saturate the material. Do not over saturate causing excess dripping. If the surface has been painted or otherwise coated, cut small holes

as needed and apply amended water or removal encapsulant from above. Cut saturated wire lath into 2' x 6' (50mm x 150mm) sections and cut hanger wires. Roll up complete with ACM, cover in burlap and hand place in disposal bag. Do not drop to floor. After removal of lath/ACM, remove any overspray on decking and structure using stiff bristle nylon brushes. Depending on hardness of overspray, scrapers may be needed for removal.

5. Pipe/Tank/Vessel/Boiler Insulation: Remove the outer layer of wrap while spraying with amended water in order to saturate the ACM. Spray ACM with a fine mist of amended water or removal encapsulant. Allow time to saturate the material to the substrate. Cut bands holding pre-formed pipe insulation sections. Slit jacketing at the seams, remove and hand place in a disposal bag. Do not allow dropping to the floor. Remove molded fitting insulation/mud in large pieces and hand place in a disposal bag. Remove any residue on pipe or fitting with a stiff bristle nylon brush. In locations where pipe fitting insulation is removed from fibrous glass or other non-asbestos insulated straight runs of pipe, remove fibrous material at least 6" from the point it contacts the ACM.

3.7 LOCKDOWN ENCAPSULATION

3.7.1 GENERAL

Lockdown encapsulation is an integral part of the ACM removal. At the conclusion of ACM removal and before removal of the primary barriers, the contractor shall encapsulate all surfaces with a bridging encapsulant.

3.7.2 DELIVERY AND STORAGE

Deliver materials to the job site in original, new and unopened containers bearing the manufacturer's name and label as well as the following information: name of material, manufacturer's stock number, date of manufacture, thinning instructions, application instructions and the MSDS for the material.

3.7.3 WORKER PROTECTION

Before beginning work with any material for which an MSDS has been submitted, provide workers with any required personal protective equipment. The required personal protective equipment shall be used whenever exposure to the material might occur. In addition to OSHA/specification requirements for respiratory protection, a paint pre-filter and an organic vapor cartridge, at a minimum, shall used in addition to the HEPA filter when an organic solvent based encapsulant is used. The CPIH/CIH shall be responsible for provision of adequate respiratory protection. Note: Flammable and combustible encapsulants shall not be used, unless authorized in writing by the Owner.

3.7.4 ENCAPSULATION OF SCRATCH COAT PLASTER OR PIPING

A. Apply two coats of lockdown encapsulant to the scratch coat plaster or piping after all ACM has been removed. Apply in strict accordance with the manufacturer's instructions. Any deviation from the instructions must be approved by the Owner in writing prior to commencing the work.
B. Apply the lockdown encapsulant with an airless sprayer at a pressure and using a nozzle orifice as recommended by the manufacturer. Apply the first coat while the while the scratch coat is still damp from the asbestos removal process, after passing the visual inspection. If the surface has been allowed to dry, wet wipe or HEPA vacuum prior to spraying with encapsulant. Apply a second coat over the first coat in strict conformance with the manufacturer's instructions. Color the lockdown encapsulant and contrast the color in the second coat so that visual confirmation of completeness and uniform coverage of each coat is possible. Adhere to the manufacturer's instructions for coloring. At the completion of the encapsulation, the surface must be a uniform third color produced by the mixture.

3.7.5 SEALING EXPOSED EDGES

Seal edges of ACM exposed by removal work which is inaccessible, such as a sleeve, wall penetration, etc., with two coats of bridging encapsulant. Prior to sealing, permit the exposed edges to dry completely to permit penetration of the bridging encapsulant. Apply in accordance with 3.3.4 (B).

3.8 DISPOSAL OF ACM WASTE MATERIALS

3.8.1 GENERAL

Dispose of waste ACM and debris which is packaged in accordance with these specifications, OSHA, EPA and DOT. The landfill requirements for packaging must also be met. Transport will be in compliance with 49 CFR 100–185 regulations. Disposal shall be done at an approved landfill. Disposal of non-friable ACM shall be done in accordance with applicable regulations.

A. Friable (non-intact) ACM shall be disposed of in a Class I landfill that is certified to accept friable ACM. Approval for the selected Class I landfill must be obtained from the Owner and landfill personnel prior to disposal of the ACM.

B. A written waste manifest shall be prepared prior to the transportation and disposal of any friable (non-intact) ACM. The Contractor shall prepare the waste manifest. The Contractor is responsible for ensuring all requirements of the landfill are followed. A copy of the requirements shall be provided to the Owner's representative prior to disposal.

3.8.2 PROCEDURES

A. The Owner must be notified at least 24 hours in advance of any waste removed from the containment.

B. Asbestos waste shall be packaged and moved through the W/EDF into a covered transport container in accordance with procedures is this specification. Waste shall be double-bagged and wetted with amended water prior to disposal. Wetted waste can be very heavy. Bags shall not be overfilled. Bags shall be securely sealed to prevent accidental opening and/or leakage. The top shall be tightly twisted and goose necked prior to tightly sealing with at least three wraps of duct tape. Ensure that unauthorized persons do not have access to the waste material once it is outside the regulated area. All transport containers must be covered at all times when not in use. NESHAP signs must be on containers during loading and unloading. Material shall not be transported in open vehicles. If drums are used for packaging, the drums shall be labeled properly and shall not be re-used.

C. Waste Load Out: Waste load out shall be done in accordance with the procedures in W/EDF Decontamination Procedures. Sealed waste bags shall be decontaminated on exterior surfaces by wet cleaning and/or HEPA vacuuming before being placed in the second waste bag and sealed, which then must also be wet wiped or HEPA vacuumed.

D. Asbestos waste with sharp edged components, i.e., nails, screws, lath, strapping, tin sheeting, jacketing, metal mesh, etc., which might tear poly bags shall be wrapped securely in burlap before packaging and, if needed, use a poly lined fiber drum as the second container, prior to disposal.

3.9 PROJECT DECONTAMINATION

3.9.1 GENERAL

A. The entire work related to project decontamination shall be performed under the close supervision and monitoring of the CPIH/CIH.

B. If the asbestos abatement work is in an area which was contaminated prior to the start of abatement, the decontamination will be done by cleaning the primary barrier poly prior to its removal and cleanings of the surfaces of the regulated area after the primary barrier removal.

C. If the asbestos abatement work is in an area which was uncontaminated prior to the start of abatement, the decontamination will be done by cleaning the primary barrier poly prior to its removal, thus preventing contamination of the building when the regulated area critical barriers are removed.

3.9.2 REGULATED AREA CLEARANCE

Clearance air testing and other requirements which must be met before release of the Contractor and re-occupancy of the regulated area space are specified in Final Testing Procedures.

3.9.3 PRE-DECONTAMINATION CONDITIONS

A. Before decontamination starts, all ACM waste from the work area shall be collected and removed, and the loose 6 mil layer of poly removed while being adequately wetted with amended water and disposed of along with any gross debris generated by the work.

B. At the start of decontamination, the following shall be in place:
   1. Primary barriers consisting of 2 layers of 6 mil poly on the floor and 4 mil poly on the walls.
   2. Critical barriers consisting of 2 layers of 6 mil poly which is the sole barrier between the regulated area and openings to the rest of the building or outside.
   3. Decontamination facilities for personnel and equipment in operating condition and the negative pressure system in operation.

3.9.4 FIRST CLEANING

Carry out a first cleaning of all surfaces of the regulated area including items of remaining poly sheeting, tools, scaffolding, ladders/staging by wet methods and/or HEPA vacuuming. Do not use dry dusting/sweeping/air blowing methods. Use each surface of a wetted cleaning cloth one time only and then dispose of as contaminated waste. Continue this cleaning until there is no visible residue from abated surfaces or poly or other surfaces. Remove all filters in the air handling system and dispose of as ACM waste in accordance with these specifications. The negative pressure system shall remain in operation during this time. Additional cleaning(s) may be needed as determined by the CPIH/PIH/CIH.

3.9.5 PRE-CLEARANCE INSPECTION AND TESTING

The CPIH/CIH and PIH/CIH will perform a thorough and detailed visual inspection at the end of the cleaning to determine whether there is any visible residue in the regulated area. If the visual inspection is acceptable, the CPIH/CIH will perform pre-clearance sampling using aggressive clearance as detailed in 40 CFR 763 Subpart E (AHERA) Appendix A (III)(B)(7)(d). If the sampling results show values below 0.01 f/cc, then the Contractor shall notify the Owner of the results with a brief report from the CPIH/CIH documenting the inspection and sampling results and a statement verifying that the regulated area is ready for lockdown encapsulation. The Owner reserves the right to utilize their own PIH/CIH to perform a pre-clearance inspection and testing for verification.

3.10 FINAL VISUAL INSPECTION AND AIR CLEARANCE TESTING

3.10.1 GENERAL

Notify the Owner’s representative 24 hours in advance for the performance of the final visual inspection. The final visual inspection and testing will be performed by the PIH/CIH starting after the final cleaning.

3.10.2 FINAL VISUAL INSPECTION

Final visual inspection will include the entire work area, all poly sheeting, seals over HVAC openings, doorways, windows, and any other openings. If any debris, residue, dust or any other suspect material is detected, the final cleaning shall be repeated at no cost to the Owner. Dust/material samples may be collected and analyzed at no cost to the Owner at the discretion of the PIH/CIH to confirm visual findings.

3.10.3 FINAL AIR CLEARANCE PROCEDURES

A. Contractor's Release Criteria: Work in a regulated area is complete when the regulated area is visually clean and airborne fiber levels have been reduced to or below 0.01 f/cc as measured by the AHERA PCM protocol, or 70 AHERA structures per square millimeter (s/mm^2) by AHERA TEM.

B. Air Monitoring and Final Clearance Sampling: To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to the specified level, the PIH/CIH will secure samples and analyze them according to the following procedures:

1. Fibers Counted: “Fibers” referred to in this section shall be either all fibers regardless of composition as counted in the NIOSH 7400 PCM method or asbestos fibers counted using the AHERA TEM method.

2. Aggressive Sampling: All final air testing samples shall be collected using aggressive sampling techniques except where soil is not encapsulated or enclosed. Samples will be collected on 0.8µ MCE filters for PCM analysis and 0.45µ Polycarbonate filters for TEM. A minimum of 1200 Liters of using calibrated pumps shall be collected for clearance samples. Before pumps are started, initiate aggressive air mixing sampling as detailed in 40 CFR 763 Subpart E (AHERA) Appendix A (III)(B)(7)(d). Air samples will be collected in areas subject to normal air circulation away from corners, obstructed locations, and locations near windows, doors, or vents. After air sampling pumps have been shut off, circulating fans shall be shut off. The negative pressure system shall continue to operate.

3. Final clearance for soil that is not encapsulated, samples will be collected on 0.8µ MCE filters for PCM analysis and 0.45µ Polycarbonate filters for TEM. A minimum of 1200 Liters of using calibrated pumps shall be collected for clearance samples. Air clearance of work areas where contaminated soil has been removed is in addition to the requirement for clearance by bulk sample analysis discussed within these specifications. There will be no aggressive air sampling for the clearance of soil due to the fact that aggressive air sampling may overload the cassettes.

3.10.4 CLEARANCE SAMPLING USING PCM – LESS THAN 260LF/160SF:

A. The PIH/CIH will perform clearance samples as indicated by the specification.

B. The NIOSH 7400 PCM method will be used for clearance sampling with a minimum collection volume of 1200 Liters of air. A minimum of 5 PCM clearance samples shall be collected. All samples must be equal to or less than 0.01 f/cc to clear the regulated area.

C. Random samples shall be collected from areas of soil which have been abated to ensure that the soil has been properly decontaminated. The total number of samples to be collected from the soil areas shall be; <1000 SF of soil – 3 samples; >1000 to <5000 SF of soil – 5 samples; and >5000 SF of soil – 7 samples. The soil samples shall be collected in a statistically random manner and shall be analyzed by PLM method. The clearance level to determine the soil clean is <1% asbestos by weight as analyzed by PLM method. If this level is achieved, the soil areas shall be considered clear. If the levels are >1% asbestos, the areas shall be re-cleaned until the sample results are <1%.

3.10.5 CLEARANCE SAMPLING USING TEM – EQUAL TO OR MORE THAN 260LF/160SF: TEM

A. Clearance requires 13 samples be collected; 5 inside the regulated area; 5 outside the regulated area; and 3 field blanks.

B. The TEM method will be used for clearance sampling with a minimum collection volume of 1200 Liters of air. A minimum of 13 clearance samples shall be collected. All samples must be equal to or less than 70 AHERA structures per square millimeter (s/mm^2) AHERA TEM. (Note: Refer to the CT Department of Public Health letter dated August 16, 2010 titled, “Regulatory Interpretations Regarding Post Abatement Re-Occupancy Criteria” in lieu of performing post abatement air sampling)

3.11 ABATEMENT CLOSEOUT AND CERTIFICATE OF COMPLIANCE

3.11.1 COMPLETION OF ABATEMENT WORK

After thorough decontamination and fulfilling the following:

A. Remove all equipment and materials from the project area.

B. Dispose of all packaged ACM waste as required.

C. Repair or replace all interior finishes damaged during the abatement work, as required.

D. Fulfill other project closeout requirements as required in this specification.

3.11.2 CERTIFICATE OF COMPLETION BY CONTRACTOR

The CPIH/CIH shall complete and sign the "Certificate of Completion" in accordance with Attachment 1 at the completion of the abatement and decontamination of the regulated area.

3.11.3 WORK SHIFTS

All work shall be done during administrative hours (8:00 AM to 4:30 PM) Monday - Friday excluding Federal Holidays. Any change in the work schedule must be approved in writing by the Owner’s Representative.

ATTACHMENT #1

CERTIFICATE OF COMPLETION

DATE: _____ Project #: _____

PROJECT NAME:_____Abatement Contractor:_____

ADDRESS:_____

1. I certify that I have personally inspected, monitored and supervised the abatement work of (specify regulated area or Building):

   which took place from / / to / /

2. That throughout the work all applicable requirements/regulations and the specifications were met.
3. That all employees of the Abatement Contractor engaged in this work were trained in respiratory protection, were experienced with abatement work, had proper medical surveillance documentation, were fit-tested for their respirator, and were not exposed at any time during the work to asbestos without the benefit of appropriate respiratory protection.
4. That I performed and supervised all inspection and testing specified and required by applicable regulations and the specifications.
5. That all abatement work was done in accordance with OSHA requirements and the manufacturer's recommendations.

CPIH/CIH

Signature/Date:.....
.....

CPIH/CIH Print

Name:.....
.....

Abatement Contractor

Signature/Date:.....
.....

Abatement Contractor Print

Name:.....
.....

ATTACHMENT #2

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME:_____ DATE: _____

PROJECT ADDRESS:_____

ABATEMENT CONTRACTOR'S NAME:_____

WORKING WITH ASBESTOS CAN BE HAZARDOUS TO YOUR HEALTH. INHALING ASBESTOS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCERS. IF YOU SMOKE AND INHALE ASBESTOS FIBERS, YOUR CHANCES OF DEVELOPING LUNG CANCER IS GREATER THAN THAT OF THE NON-SMOKING PUBLIC.

Your employer's contract with the owner for the above project requires that: You must be supplied with the proper personal protective equipment including an adequate respirator and be trained in its use. You must be trained in safe and healthy work practices and in the use of the equipment found at an asbestos abatement project. You must receive/have a current medical examination for working with asbestos. These things shall be provided at no cost to you. By signing this certificate you are indicating to the owner that your employer has met these obligations.

RESPIRATORY PROTECTION: I have been trained in the proper use of respirators and have been informed of the type of respirator to be used on the above indicated project. I have a copy of the written Respiratory Protection Program issued by my employer. I have been provided for my exclusive use, at no cost, with a respirator to be used on the above indicated project.

TRAINING COURSE: I have been trained by a third party, State/EPA accredited trainer in the requirements for an AHERA/OSHA Asbestos Abatement Worker training course, 32 hours minimum duration. I currently have a valid State accreditation certificate. The topics covered in the course include, as a minimum, the following:

Physical Characteristics and Background Information on Asbestos
Potential Health Effects Related to Exposure to Asbestos
Employee Personal Protective Equipment
Establishment of a Respiratory Protection Program
State of the Art Work Practices
Personal Hygiene
Additional Safety Hazards
Medical Monitoring
Air Monitoring
Relevant Federal, State and Local Regulatory Requirements, Procedures, and Standards
Asbestos Waste Disposal

MEDICAL EXAMINATION: I have had a medical examination within the past 12 months which was paid for by my employer. This examination included: health history, occupational history, pulmonary function test, and may have included a chest x-ray evaluation. The physician issued a positive written opinion after the examination.

Signature:_____

Printed Name:_____

Social Security Number:_____

Witness:_____

ATTACHMENT #3

AFFIDAVIT OF MEDICAL SURVEILLANCE, RESPIRATORY PROTECTION AND TRAINING/ACCREDITATION

PROJECT NAME:_____

ABATEMENT CONTRACTOR'S NAME AND ADDRESS:_____

1. I verify that the following individual

   Name:_____ Social Security Number:_____

   who is proposed to be employed in asbestos abatement work associated with the above project by the named Abatement Contractor, is included in a medical surveillance program in accordance with 29 CFR 1926.1101(m), and that complete records of the medical surveillance program as required by 29 CFR 1926.1101(m)(n) and 29 CFR 1910.20 are kept at the offices of the Abatement Contractor at the following address.

   Address:_____

2. I verify that this individual has been trained, fit-tested and instructed in the use of all appropriate respiratory protection systems and that the person is capable of working in safe and healthy manner as expected and required in the expected work environment of this project.

3. I verify that this individual has been trained as required by 29 CFR 1926.1101(k). This individual has also obtained a valid State accreditation certificate. Documentation will be kept on-site.

4. I verify that I meet the minimum qualifications criteria of the specifications for a CPIH.

Signature of CPIH/CIH:_____ Date:_____

Printed Name of CPIH/CIH: _____

Signature of Contractor:_____ Date:_____

Printed Name of Contractor:_____

ATTACHMENT #4

ABATEMENT CONTRACTOR/COMPETENT PERSON(S) REVIEW AND ACCEPTANCE OF THE ASBESTOS SPECIFICATIONS

Project Location:_____

Project #: _____

Project Description:_____

This form shall be signed by the Asbestos Abatement Contractor Owner and the Asbestos Abatement Contractor's Competent Person(s) prior to any start of work at the Project Site related to this Specification. If the Asbestos Abatement Contractor's/Competent Person(s) has not signed this form, they shall not be allowed to work on-site.

I, the undersigned, have read the Asbestos Specification regarding the asbestos abatement requirements. I understand the requirements of the Asbestos Specification and agree to follow these requirements as well as all required rules and regulations of OSHA/EPA/DOT and State/Local requirements. I have been given ample opportunity to read the Asbestos Specification and have been given an opportunity to ask any questions regarding the content and have received a response related to those questions. I do not have any further questions regarding the content, intent and requirements of the Asbestos Specification.

At the conclusion of the asbestos abatement, I will certify that all asbestos abatement work was done in accordance with the Asbestos Specification and all ACM was removed properly and no fibrous residue remains on any abated surfaces.

Abatement Contractor Owner's Signature_____Date_____

Abatement Contractor Competent Person(s)_____Date_____

- - END- - - -

ATTACHMENT C:

02 8211 - Asbestos Abatement (Demo bid package)

SECTION 02 8211 – ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 SUMMARY OF THE WORK

1.1.1 CONTRACT DOCUMENTS AND RELATED REQUIREMENTS

Drawings, general provisions of the contract, including general and supplementary conditions and other Division 01 specifications, shall apply to the work of this section. The contract documents show the work to be done under the contract and related requirements and conditions impacting the project. Related requirements and conditions include applicable codes and regulations, notices and permits, existing site conditions and restrictions on use of the site, requirements for partial owner occupancy during the work, coordination with other work and the phasing of the work. In the event the Asbestos Abatement Contractor discovers a conflict in the contract documents and/or requirements or codes, the conflict must be brought to the immediate attention of the Engineer for resolution. Whenever there is a conflict or overlap in the requirements, the most stringent shall apply. Any actions taken by the Contractor without obtaining guidance from the Engineer shall become the sole risk and responsibility of the Asbestos Abatement Contractor. All costs incurred due to such action are also the responsibility of the Asbestos Abatement Contractor.

1.1.2 EXTENT OF WORK

A. Below is a brief description of potential asbestos containing materials to be abated if encountered. These descriptions are for informational purposes only and are based on the best information available at the time of the specification preparation. The Contractor shall satisfy themselves as the actual quantities to be abated. Nothing in this section may be interpreted as limiting the extent of work otherwise required by this contract and related documents.

   I. **Black mastic on 4" pipe in basement – All units, with the exception of the Maintenance Building. (Approximately 6,000 LF)**

B. The following materials were not observed during the inspection, however, may be observed during demolition and are to be assumed to be asbestos containing material until Engineer performs testing to determine if material is asbestos containing or not.

   I. **Exterior Vapor barrier behind building façade and or below grade concrete foundation.**

1.1.3 ALTERNATE WORK PRACTICE (AWP) APPLICATION

A. Abatement contractor shall be responsible for acquiring any AWP's. The letter may also request approval for interior abatement containments to be constructed with poly critical barriers only, since the areas are to be demolished soon following abatement. The abatement Contractor and /or demolition contractor shall adhere to all CT DPH approved procedures and regulations.

1.1.4 RELATED WORK

A. Section 02 4100 – SITE DEMOLITION.

1.1.5 TASKS

The work tasks are summarized briefly as follows:

A. Pre-abatement activities including pre-abatement meeting(s), inspection(s), notifications, permits, submittal approvals, regulated area preparations, emergency procedures arrangements, and standard operating procedures for asbestos abatement work.

B. Abatement activities including removal, clean-up, and disposal of ACM waste, recordkeeping, security, monitoring, and inspections.

C. Cleaning and decontamination activities including final visual inspection by Engineer.

1.1.6 CONTRACTORS USE OF PREMISES

A. The Contractor and Contractor's personnel shall cooperate fully with the Owner and Owner's Engineer to facilitate efficient use of buildings and areas within buildings. The Contractor shall perform the work in accordance with the specifications, drawings, phasing plan and in compliance with any/all applicable Federal, State and Local regulations and requirements.

B. The Contractor shall use the existing facilities in the building strictly within the limits indicated in contract documents as well as the approved Construction Procedures.

1.2 VARIATIONS IN QUANTITY

The quantities and locations of ACM as indicated on the drawing notes and the extent of work included in this section are estimated which are limited by the physical constraints imposed by occupancy of the buildings and accessibility to ACM. Accordingly, minor variations (+/- 5%) in quantities of ACM within the regulated area are considered as having no impact on contract price and time requirements of this contract. Where additional work is required beyond the above variation, the contractor shall provide unit prices for newly discovered ACM and those prices shall be used for additional work required under the contractor.

1.3 STOP ASBESTOS REMOVAL

If the Owner or the Owner's engineer presents a verbal **Stop Asbestos Removal Order**, the Contractor/Personnel shall immediately stop all asbestos removal and adequately wet any exposed ACM. If a verbal Stop Asbestos Removal Order is issued, the Owner shall follow-up with a written order to the Contractor as soon as it is practicable. The Contractor shall not resume any asbestos removal activity until authorized to do so in writing by the Owner. A stop asbestos removal order may be issued at any time the Owner or Owner's Engineer determines abatement conditions/activities are not within the specification, regulatory requirements or that an imminent hazard exists to human health or the environment. Work stoppage will continue until conditions have been corrected to the satisfaction of the Owner. Standby time and costs for corrective actions will be borne by the Contractor. The occurrence of any of the following events shall be reported immediately by the Contractor's competent person to the Owner or Owner's Engineer using the most expeditious means (e.g., verbal or telephonic), followed up with written notification to the Owner as soon as practical. The Contractor shall immediately stop asbestos removal/disturbance activities and initiate fiber reduction activities:

A. serious injury/death at the site;
B. fire/safety emergency at the site;
C. respiratory protection system failure;
D. power failure or loss of wetting agent;
E. any visible emissions observed outside the regulated area;
F. Airborne PCM analysis results equal to or greater than 0.01 f/cc outside a regulated area or >0.05 f/cc inside a regulated area;
G. breach or break in regulated area containment barrier(s); or
H. less than –0.02" WCG pressure in the regulated area.

1.4 DEFINITIONS

1.4.1 GENERAL

Definitions and explanations here are neither complete nor exclusive of all terms used in the contract documents, but are general for the work to the extent they are not stated more explicitly in another element of the contract documents. Drawings must be recognized as diagrammatic in nature and not completely descriptive of the requirements indicated therein.

1.4.2 GLOSSARY

Abatement - Procedures to control fiber release from asbestos-containing materials. Includes removal, encapsulation, enclosure, demolition, and renovation activities related to asbestos containing materials (ACM).
Aerosol - Solid or liquid particulate suspended in air.
Adequately wet - Sufficiently mixed or penetrated with liquid to prevent the release of particulates. If visible emissions are observed coming from the ACM, then that material has not been adequately wetted.
Aggressive method - Removal or disturbance of building material by sanding, abrading, grinding, or other method that breaks, crumbles, or disintegrates intact ACM.
Aggressive sampling - EPA AHERA defined clearance sampling method using air moving equipment such as fans and leaf blowers to aggressively disturb and maintain in the air residual fibers after abatement.
AHERA - Asbestos Hazard Emergency Response Act. Asbestos regulations for schools issued in 1987.
Aircell - Pipe or duct insulation made of corrugated cardboard which contains asbestos.
Air monitoring - The process of measuring the fiber content of a known volume of air collected over a specified period of time. The NIOSH 7400 Method, Issue 2 is used to determine the fiber levels in air. For personal samples and clearance air testing using Phase Contrast Microscopy (PCM) analysis. NIOSH Method 7402 can be used when it is necessary to confirm fibers counted by PCM as being asbestos. The AHERA TEM analysis may be used for background, area samples and clearance samples when required by this specification, or at the discretion of the PIH/CIH as appropriate.
Air sample filter - The filter used to collect fibers which are then counted. The filter is made of mixed cellulose ester membrane for PCM (Phase Contrast Microscopy) and polycarbonate for TEM (Transmission Electron Microscopy)
Amended water - Water to which a surfactant (wetting agent) has been added to increase the penetrating ability of the liquid.
Asbestos - Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated or altered. Asbestos also includes PACM, as defined below.
Asbestos Hazard Abatement Plan (AHAP) - Asbestos work procedures required to be submitted by the contractor before work begins.
Asbestos-containing material (ACM) - Any material containing more than one percent of asbestos.
Asbestos contaminated elements (ACE) - Building elements such as ceilings, walls, lights, or ductwork that are contaminated with asbestos.
Asbestos-contaminated soil (ACS) – Soil found in the work area or in adjacent areas such as crawlspaces or pipe tunnels which is contaminated with asbestos-containing material debris and cannot be easily separated from the material.
Asbestos-containing waste (ACW) material - Asbestos-containing material or asbestos contaminated objects requiring disposal.
Asbestos Project Monitor – Some states require that any person conducting asbestos abatement clearance inspections and clearance air sampling be licensed as an asbestos project monitor.
Asbestos waste decontamination facility - A system consisting of drum/bag washing facilities and a temporary storage area for cleaned containers of asbestos waste. Used as the exit for waste and equipment leaving the regulated area. In an emergency, it may be used to evacuate personnel.

Authorized person - Any person authorized by the Owner, the Contractor, or government agency and required by work duties to be present in regulated areas.
Authorized visitor - Any person approved by the Owner; the contractor; or any government agency representative having jurisdiction over the regulated area (e.g., OSHA, Federal and State EPA.
Barrier - Any surface the isolates the regulated area and inhibits fiber migration from the regulated area.
Containment Barrier - An airtight barrier consisting of walls, floors, and/or ceilings of sealed plastic sheeting which surrounds and seals the outer perimeter of the regulated area.
Critical Barrier - The barrier responsible for isolating the regulated area from adjacent spaces, typically constructed of plastic sheeting secured in place at openings such as doors, windows, or any other opening into the regulated area.
Primary Barrier – Plastic barriers placed over critical barriers and exposed directly to abatement work.
Secondary Barrier - Any additional plastic barriers used to isolate and provide protection from debris during abatement work.
Breathing zone - The hemisphere forward of the shoulders with a radius of about 150 - 225 mm (6 - 9 inches) from the worker's nose.
Bridging encapsulant - An encapsulant that forms a layer on the surface of the ACM.
Building/facility owner - The legal entity, including a lessee, which exercises control over management and recordkeeping functions relating to a building and/or facility in which asbestos activities take place.
Bulk testing - The collection and analysis of suspect asbestos containing materials.
Certified Industrial Hygienist (CIH) - A person certified in the comprehensive practice of industrial hygiene by the American Board of Industrial Hygiene.
Class I asbestos work - Activities involving the removal of Thermal System Insulation (TSI) and surfacing ACM and Presumed Asbestos Containing Material (PACM).
Class II asbestos work - Activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastic.
Clean room/Changing room - An uncontaminated room having facilities for the storage of employee's street clothing and uncontaminated materials and equipment.
Clearance sample - The final air sample taken after all asbestos work has been done and visually inspected. Performed by the Owner’s Engineer.
Closely resemble - The major workplace conditions which have contributed to the levels of historic asbestos exposure, are no more protective than conditions of the current workplace.
Competent person - In addition to the definition in 29 CFR 1926.32(f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f); in addition, for Class I and II work who is specially trained in a training course which meets the criteria of EPA's Model Accreditation Plan (40 CFR 763) for supervisor.
Contractor's Professional Industrial Hygienist (CPIH/CIH) - The asbestos abatement contractor's industrial hygienist. The industrial hygienist must meet the qualification requirements of a PIH and may be a certified industrial hygienist (CIH).
Count - Refers to the fiber count or the average number of fibers greater than five microns in length with a length-to-width (aspect) ratio of at least 3 to 1, per cubic centimeter of air.
Crawlspace – An area which can be found either in or adjacent to the work area. This area has limited access and egress and may contain asbestos materials and/or asbestos contaminated soil.
Decontamination area/unit - An enclosed area adjacent to and connected to the regulated area and consisting of an equipment room, shower room, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.
Demolition - The wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products.

Disposal bag - Typically 6 mil thick sift-proof, dustproof, leak-tight container used to package and transport asbestos waste from regulated areas to the approved landfill. Each bag/container must be labeled/marked in accordance with EPA, OSHA and DOT requirements.
Disturbance - Activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. Disturbance includes cutting away small amounts of ACM or PACM, no greater than the amount that can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or disposal bag which shall not exceed 60 inches in length or width.
Drum - A rigid, impermeable container made of cardboard fiber, plastic, or metal which can be sealed in order to be sift-proof, dustproof, and leak-tight.
Employee exposure - The exposure to airborne asbestos that would occur if the employee were not wearing respiratory protection equipment.
Encapsulant - A material that surrounds or embeds asbestos fibers in an adhesive matrix and prevents the release of fibers.
Encapsulation - Treating ACM with an encapsulant.
Enclosure - The construction of an air tight, impermeable, permanent barrier around ACM to control the release of asbestos fibers from the material and also eliminate access to the material.
Equipment room - A contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.
Fiber - A particulate form of asbestos, 5 microns or longer, with a length to width (aspect) ratio of at least 3 to 1.
Fibers per cubic centimeter (f/cc) - Abbreviation for fibers per cubic centimeter, used to describe the level of asbestos fibers in air.
Filter - Media used in respirators, vacuums, or other machines to remove particulate from air.
Firestopping - Material used to close the open parts of a structure in order to prevent a fire from spreading.
Friable asbestos containing material - Any material containing more than one (1) percent or asbestos as determined using the method specified in appendix A, Subpart F, 40 CFR 763, section 1, Polarized Light Microscopy, that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.
Glovebag - Not more than a 60 x 60 inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which materials and tools may be handled.
High efficiency particulate air (HEPA) filter – An ASHRAE MERV 17 filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.
HEPA vacuum - Vacuum collection equipment equipped with a HEPA filter system capable of collecting and retaining asbestos fibers.
Homogeneous area - An area of surfacing, thermal system insulation or miscellaneous ACM that is uniform in color, texture and date of application.
HVAC - Heating, Ventilation and Air Conditioning
Industrial hygienist (IH) - A professional qualified by education, training, and experience to anticipate, recognize, evaluate and develop controls for occupational health hazards. Meets definition requirements of the American Industrial Hygiene Association (AIHA).
Industrial hygienist technician (IH Technician) - A person working under the direction of an IH or CIH who has special training, experience, certifications and licenses required for the industrial hygiene work assigned. Some states require that an industrial hygienist technician conducting asbestos abatement clearance inspection and clearance air sampling be licensed as an asbestos project monitor.
Intact - The ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix.
Lockdown - Applying encapsulant, after a final visual inspection, on all abated surfaces at the conclusion of ACM removal prior to removal of critical barriers.

National Emission Standards for Hazardous Air Pollutants (NESHAP) - EPA's rule to control emissions of asbestos to the environment (40 CFR part 61, Subpart M).
Negative initial exposure assessment - A demonstration by the employer which complies with the criteria in 29 CFR 1926.1101 (f)(2)(iii), that employee exposure during an operation is expected to be consistently below the PEL.
Negative pressure - Air pressure which is lower than the surrounding area, created by exhausting air from a sealed regulated area through HEPA equipped filtration units. OSHA requires maintaining -0.02" water column gauge inside the negative pressure enclosure.
Negative pressure respirator - A respirator in which the air pressure inside the facepiece is negative during inhalation relative to the air pressure outside the respirator facepiece.
Non-friable ACM - Material that contains more than 1 percent asbestos but cannot be crumbled, pulverized, or reduced to powder by hand pressure.
Organic vapor cartridge - The type of cartridge used on air purifying respirators to remove organic vapor hazardous air contaminants.
Outside air - The air outside buildings and structures, including, but not limited to, the air under a bridge or in an open ferry dock.
Owner/operator - Any person who owns, leases, operates, controls, or supervises the facility being demolished or renovated or any person who owns, leases, operates, controls, or supervises the demolition or renovation operation, or both.
Penetrating encapsulant - Encapsulant that is absorbed into the ACM matrix without leaving a surface layer.
Personal sampling/monitoring - Representative air samples obtained in the breathing zone for one or workers within the regulated area using a filter cassette and a calibrated air sampling pump to determine asbestos exposure.
Permissible exposure limit (PEL) - The level of exposure OSHA allows for an 8 hour time weighted average. For asbestos fibers, the eight (8) hour time weighted average PEL is 0.1 fibers per cubic centimeter (0.1 f/cc) of air and the 30-minute Excursion Limit is 1.0 fibers per cubic centimeter (1 f/cc).
Personal protective equipment (PPE) – equipment designed to protect user from injury and/or specific job hazard. Such equipment may include protective clothing, hard hats, safety glasses, and respirators.
Pipe tunnel – An area, typically located adjacent to mechanical spaces or boiler rooms in which the pipes servicing the heating system in the building are routed to allow the pipes to access heating elements. These areas may contain asbestos pipe insulation, asbestos fittings, or asbestos-contaminated soil.
Polarized light microscopy (PLM) - Light microscopy using dispersion staining techniques and refractive indices to identify and quantify the type(s) of asbestos present in a bulk sample.
Polyethylene sheeting - Strong plastic barrier material 4 to 6 mils thick, semi-transparent, flame retardant per NFPA 241.
Positive/negative fit check - A method of verifying the seal of a facepiece respirator by temporarily occluding the filters and breathing in (inhaling) and then temporarily occluding the exhalation valve and breathing out (exhaling) while checking for inward or outward leakage of the respirator respectively.
Presumed ACM (PACM) - Thermal system insulation, surfacing, and flooring material installed in buildings prior to 1981. If the building owner has actual knowledge, or should have known through the exercise of due diligence that other materials are ACM, they too must be treated as PACM. The designation of PACM may be rebutted pursuant to 29 CFR 1926.1101 (b).
Professional IH - An IH who meets the definition requirements of AIHA; meets the definition requirements of OSHA as a "Competent Person" at 29 CFR 1926.1101 (b); has completed two specialized EPA approved courses on management and supervision of asbestos abatement projects; has formal training in respiratory protection and waste disposal; and has a minimum of four projects of similar complexity with this project of which at least three projects serving as the supervisory IH.
Project designer - A person who has successfully completed the training requirements for an asbestos abatement project designer as required by 40 CFR 763 Appendix C, Part I; (B)(5).

Assigned protection factor - A value assigned by OSHA/NIOSH to indicate the expected protection provided by each respirator class, when the respirator is properly selected and worn correctly. The number indicates the reduction of exposure level from outside to inside the respirator facepiece.
Qualitative fit test (QLFT) - A fit test using a challenge material that can be sensed by the wearer if leakage in the respirator occurs.
Quantitative fit test (QNFT) - A fit test using a challenge material which is quantified outside and inside the respirator thus allowing the determination of the actual fit factor.
Regulated area - An area established by the employer to demarcate where Class I, II, III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work may accumulate; and a work area within which airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed the PEL.
Regulated ACM (RACM) - Friable ACM; Category I non-friable ACM that has become friable; Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading or; Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of the demolition or renovation operation.
Removal - All operations where ACM, PACM and/or RACM is taken out or stripped from structures or substrates, including demolition operations.
Renovation - Altering a facility or one or more facility components in any way, including the stripping or removal of asbestos from a facility component which does not involve demolition activity.
Repair - Overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM or PACM attached to structures or substrates.
Shower room - The portion of the PDF where personnel shower before leaving the regulated area.
Supplied air respirator (SAR) - A respiratory protection system that supplies minimum Grade D respirable air per ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989.
Surfacing ACM - A material containing more than 1 percent asbestos that is sprayed, troweled on or otherwise applied to surfaces for acoustical, fireproofing and other purposes.
Surfactant - A chemical added to water to decrease water's surface tension thus making it more penetrating into ACM.
Thermal system ACM - A material containing more than 1 percent asbestos applied to pipes, fittings, boilers, breeching, tanks, ducts, or other structural components to prevent heat loss or gain.
Transmission electron microscopy (TEM) - A microscopy method that can identify and count asbestos fibers.
Professional Industrial Hygienist (PIH/CIH) – Professional Industrial Hygienist must meet the qualifications of a PIH, and may be a Certified Industrial Hygienist (CIH).
Owner Representative - The Owner’s official responsible for on-going project work.
Visible emissions - Any emissions, which are visually detectable without the aid of instruments, coming from ACM/PACM/RACM/ACS or ACM waste material.
Waste/Equipment decontamination facility (W/EDF) – The area in which equipment is decontaminated before removal from the regulated area.
Waste generator - Any owner or operator whose act or process produces asbestos-containing waste material.
Waste shipment record - The shipping document, required to be originated and signed by the waste generator, used to track and substantiate the disposition of asbestos-containing waste material.
Wet cleaning - The process of thoroughly eliminating, by wet methods, any asbestos contamination from surfaces or objects.

1.4.3 REFERENCED STANDARDS ORGANIZATIONS

The following acronyms or abbreviations as referenced in contract/specification documents are defined to mean the associated names. Names and addresses may be subject to change.

A. AIHA American Industrial Hygiene Association
2700 Prosperity Avenue, Suite 250
Fairfax, VA 22031
703-849-8888

B. ANSI American National Standards Institute
1430 Broadway
New York, NY 10018
212-354-3300

C. ASTM American Society for Testing and Materials
1916 Race St.
Philadelphia, PA 19103
215-299-5400

D. CFR Code of Federal Regulations
Government Printing Office
Washington, DC 20420

E. CS Commercial Standard of the National Institute of Standards and Technology (NIST)
U. S. Department of Commerce
Government Printing Office
Washington, DC 20420

F. EPA Environmental Protection Agency
401 M St., SW
Washington, DC 20460
202-382-3949

J. NIST National Institute for Standards and Technology
U. S. Department of Commerce
Gaithersburg, MD 20234
301-921-1000

K. NEC National Electrical Code (by NFPA)

L. NEMA National Electrical Manufacturer's Association
2101 L Street, N.W.
Washington, DC 20037

M. NFPA National Fire Protection Association
1 Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101
800-344-3555

N. NIOSH National Institutes for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226
513-533-8236

O. OSHA Occupational Safety and Health Administration
U.S. Department of Labor
Government Printing Office
Washington, DC 20402

P. UL Underwriters Laboratory
333 Pfingsten Rd.
Northbrook, IL 60062
312-272-8800

Q. Connecticut Department of Public Health
410 Capitol Avenue
Hartford, CT 06134
(860) 509-7603

1.5 APPLICABLE CODES AND REGULATIONS

1.5.1 GENERAL APPLICABILITY OF CODES, REGULATIONS, AND STANDARDS

A. All work under this contract shall be done in strict accordance with all applicable Federal, State, and local regulations, standards and codes governing asbestos abatement, and any other trade work done in conjunction with the abatement. All applicable codes, regulations and standards are adopted into this specification and will have the same force and effect as this specification.
B. The most recent edition of any relevant regulation, standard, document or code shall be in effect. Where conflict among the requirements or with these specifications exists, the most stringent requirement(s) shall be utilized.
C. Copies of all standards, regulations, codes and other applicable documents, including this specification and those listed in Section 1.5 shall be available at the worksite in the clean change area of the worker decontamination system.

1.5.2 ASBESTOS ABATEMENT CONTRACTOR RESPONSIBILITY

The Asbestos Abatement Contractor (Contractor) shall assume full responsibility and liability for compliance with all applicable Federal, State and Local regulations related to any and all aspects of the asbestos abatement project. The Contractor is responsible for providing and maintaining training, accreditations, medical exams, medical records, personal protective equipment (PPE) including respiratory protection including respirator fit testing, as required by applicable Federal, State and Local regulations. The Contractor shall hold the Owner and Owner's Engineer consultants harmless for any Contractor's failure to comply with any applicable work, packaging, transporting, disposal, safety, health, or environmental requirement on the part of himself, his employees, or his subcontractors. The Contractor will incur all costs of the CPIH/CIH, including all sampling/analytical costs to assure compliance with OSHA/EPA/State requirements related to failure to comply with the regulations applicable to the work.

1.5.3 FEDERAL REQUIREMENTS

Federal requirements which govern of asbestos abatement include, but are not limited to, the following regulations.

A. Occupational Safety and Health Administration (OSHA)
   1. Title 29 CFR 1926.1101 - Construction Standard for Asbestos
   2. Title 29 CFR 1910 Subpart I - Personal Protective Equipment
   3. Title 29 CFR 1910.134 - Respiratory Protection
   4. Title 29 CFR 1926 - Construction Industry Standards
   5. Title 29 CFR 1910.1020 - Access to Employee Exposure and Medical Records
   6. Title 29 CFR 1910.1200 - Hazard Communication
   7. Title 29 CFR 1910 Subpart K - Medical and First Aid
B. Environmental Protection Agency (EPA):
   1. 40 CFR 61 Subpart A and M (Revised Subpart B) - National Emission Standard for Hazardous Air Pollutants - Asbestos.
   2. 40 CFR 763.80 - Asbestos Hazard Emergency Response Act (AHERA)
C. Department of Transportation (DOT)

Title 49 CFR 100 - 185 – Transportation

1.5.4 STATE REQUIREMENTS

State requirements that apply to the asbestos abatement work, disposal, clearance, etc., include, but are not limited to, the following:

A. Department of Public Health (DPH)
B. Asbestos Licensing and Training Regulations - Section 20-440-1 to 20-440-9, Section 20-441, and Section 19a-332a-1 to 19a-332a-2
C. Standards for Asbestos Abatement - Section 19a-332a-1 to 19a-332a-16
D. Asbestos Containing Materials in Schools - Sections 19a-333-1 to 19a-333-13
E. Policy Concerning Submission of AWP Application
F. Regulatory Interpretation Concerning Asbestos Abatement Notification
G. Department of Energy and Environmental Protection (DEEP)
H. Regulations of Connecticut State Agencies (RCSA) Sections 22a=208a-1, 22a-209-1, and 22a-209-8

1.5.5 LOCAL REQUIREMENTS

If local requirements are more stringent than federal or state standards, the local standards are to be followed.

1.5.6 STANDARDS

A. Standards which govern asbestos abatement activities include, but are not limited to, the following:
   1. American National Standards Institute (ANSI) Z9.2-79 - Fundamentals Governing the Design and Operation of Local Exhaust Systems and ANSI Z88.2 - Practices for Respiratory Protection.
   2. Underwriters Laboratories (UL) 586-90 - UL Standard for Safety of HEPA Filter Units, 7th Edition.
B. Standards which govern encapsulation work include, but are not limited to the following:
   1. American Society for Testing and Materials (ASTM)
C. Standards which govern the fire and safety concerns in abatement work include, but are not limited to, the following:
   1. National Fire Protection Association (NFPA) 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations.
   2. NFPA 701 - Standard Methods for Fire Tests for Flame Resistant Textiles and Film.
   3. NFPA 101 - Life Safety Code

1.5.7 EPA GUIDANCE DOCUMENTS

A. EPA guidance documents which discuss asbestos abatement work activities are listed below. These documents are made part of this section by reference. EPA publications can be ordered from (800) 424-9065.
B. Guidance for Controlling ACM in Buildings (Purple Book) EPA 560/5-85-024
C. Asbestos Waste Management Guidance EPA 530-SW-85-007
D. A Guide to Respiratory Protection for the Asbestos Abatement Industry EPA-560-OPTS-86-001
E. Guide to Managing Asbestos in Place (Green Book) TS 799 20T July 1990

1.5.8 NOTICES

A. State and Local agencies: Send written notification as required by state and local regulations including the local fire department prior to beginning any work on ACM as follows:
B. Copies of notifications shall be submitted to the Owner for the facility's records in the same time frame notification are given to EPA, State, and Local authorities.

1.5.9 PERMITS/LICENSES

A. The contractor shall apply for and have all required permits and licenses to perform asbestos abatement work as required by Federal, State, and Local regulations.

1.5.10 POSTING AND FILING OF REGULATIONS

A. Maintain two (2) copies of applicable federal, state, and local regulations. Post one copy of each in the clean room at the regulated area where workers will have daily access to the regulations and keep another copy in the Contractor's office.

1.5.11 EMERGENCY ACTION PLAN AND ARRANGEMENTS

A. An Emergency Action Plan shall be developed prior to commencing abatement activities and shall be agreed to by the Contractor and the Owner. The Plan shall meet the requirements of 29 CFR 1910.38 (a);(b).

B. Telephone numbers of any/all emergency response personnel shall be prominently posted in the clean room, along with the location of the nearest telephone.

C. The Contractor shall provide verification of first aid/CPR training for personnel responsible for providing first aid/CPR. OSHA requires medical assistance within 3-4 minutes of a life-threatening injury/illness. Bloodborne Pathogen training shall also be verified for those personnel required to provide first aid/CPR.

D. The Emergency Action Plan shall provide for a Contingency Plan in the event that an incident occurs that may require the modification of the standard operating procedures during abatement. Such incidents include, but are not limited to, fire; accident; power failure; negative pressure failure; and supplied air system failure. The Contractor shall detail procedures to be followed in the event of an incident assuring that asbestos abatement work is stopped and wetting is continued until correction of the problem.

1.5.12 PRE-CONSTRUCTION MEETING

Prior to commencing the work, the Contractor shall meet with the Owner’s Engineer to present and review, as appropriate, the items following this paragraph. The Contractor's Competent Person(s) who will be on-site shall participate in the pre-start meeting. The pre-start meeting is to discuss and determine procedures to be used during the project. At this meeting, the Contractor shall provide:

A. Proof of Contractor licensing.

B. Proof the Competent Person(s) is trained and accredited and approved for working in this State. Verification of the experience of the Competent Person(s) shall also be presented.

C. A list of all workers who will participate in the project, including experience and verification of training and accreditation.
D. A list of and verification of training for all personnel who have current first-aid/CPR training. A minimum of one person per shift must have adequate training.

E. Current medical written opinions for all personnel working on-site meeting the requirements of 29 CFR 1926.1101 (m).

F. Current fit-tests for all personnel wearing respirators on-site meeting the requirements of 29 CFR 1926.1101 (h) and Appendix C.

G. A copy of the Contractor's Asbestos Hazard Abatement Plan. In these procedures, the following information must be detailed, specific for this project.
   1. Regulated area preparation procedures;
   2. Notification requirements procedure of Contractor as required in 29 CFR 1926.1101 (d);
   3. Decontamination area set-up/layout and decontamination procedures for employees;
   4. Abatement methods/procedures and equipment to be used;
   5. Personal protective equipment to be used;

H. At this meeting the Contractor shall provide all submittals as required.

I. Procedures for handling, packaging and disposal of asbestos waste.

J. Emergency Action Plan and Contingency Plan Procedures.

1.6 PROJECT COORDINATION

The following are the minimum administrative and supervisory personnel necessary for coordination of the work.

1.6.1 PERSONNEL

A. Administrative and supervisory personnel shall consist of a qualified Competent Person(s) as defined by OSHA in the Construction Standards and the Asbestos Construction Standard; Contractor Professional Industrial Hygienist and Industrial Hygiene Technicians. These employees are the Contractor's representatives responsible for compliance with these specifications and all other applicable requirements.

B. Non-supervisory personnel shall consist of an adequate number of qualified personnel to meet the schedule requirements of the project. Personnel shall meet required qualifications. Personnel utilized on-site shall be pre-approved by the Owner or Owner’s Engineer. A request for approval shall be submitted for any person to be employed during the project giving the person's name; social security number; qualifications; accreditation card with color picture; Certificate of Worker's Acknowledgment; and Affidavit of Medical Surveillance and Respiratory Protection and current Respirator Fit Test.

C. Minimum qualifications for Contractor and assigned personnel are:

   1. The Contractor has conducted within the last three (3) years, three (3) projects of similar complexity and dollar value as this project; has not been cited and penalized for serious violations of federal (and state as applicable) EPA and OSHA asbestos regulations in the past three (3) years; has adequate liability/occurrence insurance for asbestos work as required by the state; is licensed in applicable states; has adequate and qualified personnel available to complete the work; has comprehensive standard operating procedures for asbestos work; has adequate materials, equipment and supplies to perform the work.

   2. The Competent Person has four (4) years of abatement experience of which two (2) years were as the Competent Person on the project; meets the OSHA definition of a Competent Person; has been the Competent Person on two (2) projects of similar size and complexity as this project within the past three (3) years; has completed EPA AHERA/OSHA/State/Local training

requirements/accreditation(s) and refreshers; and has all required OSHA documentation related to medical and respiratory protection.

3. The Contractor Professional Industrial Hygienist/CIH (CPIH/CIH) shall have five (5) years of monitoring experience and supervision of asbestos abatement projects; has participated as senior IH on five (5) abatement projects, three (3) of which are similar in size and complexity as this project; has developed at least one complete standard operating procedure for asbestos abatement; has trained abatement personnel for three (3) years; has specialized EPA AHERA/OSHA training in asbestos abatement management, respiratory protection, waste disposal and asbestos inspection; has completed the NIOSH 582 Course or equivalent, Contractor/Supervisor course; and has appropriate medical/respiratory protection records/documentation.

4. The Abatement Personnel shall have completed the EPA AHERA/OSHA abatement worker course; have training on the standard operating procedures of the Contractor; has one year of asbestos abatement experience within the past three (3) years of similar size and complexity; has applicable medical and respiratory protection documentation; has certificate of training/current refresher and State accreditation/license.

All personnel should be in compliance with OSHA construction safety training as applicable and submit certification.

1.7 RESPIRATORY PROTECTION

1.7.1 GENERAL - RESPIRATORY PROTECTION PROGRAM

The Contractor shall develop and implement a written Respiratory Protection Program (RPP) which is in compliance with the January 8, 1998 OSHA requirements found at 29 CFR 1926.1101 and 29 CFR 1910.Subpart I;134. ANSI Standard Z88.2-1992 provides excellent guidance for developing a respiratory protection program. All respirators used must be NIOSH approved for asbestos abatement activities. The written RPP shall, at a minimum, contain the basic requirements found at 29 CFR 1910.134 (c)(1)(i - ix) - Respiratory Protection Program.

1.7.2 RESPIRATORY PROTECTION PROGRAM COORDINATOR

The Respiratory Protection Program Coordinator (RPPC) must be identified and shall have two (2) years' experience coordinating RPP of similar size and complexity. The RPPC must submit a signed statement attesting to the fact that the program meets the above requirements.

1.7.3 SELECTION AND USE OF RESPIRATORS

The procedure for the selection and use of respirators must be submitted to the Owner's Engineer as part of the Contractor's qualifications. The procedure must written clearly enough for workers to understand. A copy of the Respiratory Protection Program must be available in the clean room of the decontamination unit for reference by employees or authorized visitors.

1.7.4 MINIMUM RESPIRATORY PROTECTION

Minimum respiratory protection shall be a half-face negative pressure respirator. A higher level of respiratory protection may be provided or required, depending on fiber levels. Respirator selection shall meet the requirements of 29 CFR 1926.1101 (h); Table 1, except as indicated in this paragraph. Abatement personnel must have a respirator for their exclusive use.

1.7.5 MEDICAL WRITTEN OPINION

No employee shall be allowed to wear a respirator unless a physician or other licensed health care professional has provided a written determination they are medically qualified to wear the class of

respirator to be used on the project while wearing whole body impermeable garments and subjected to heat or cold stress.

1.7.6 RESPIRATOR FIT TEST

All personnel wearing respirators shall have a current qualitative/quantitative fit test which was conducted in accordance with 29 CFR 1910.134 (f) and Appendix A. Quantitative fit tests shall be done for PAPRs which have been put into a motor/blower failure mode.

1.7.7 RESPIRATOR FIT CHECK

The Competent Person shall assure that the positive/negative pressure user seal check is done each time the respirator is donned by an employee. Head coverings must cover respirator head straps. Any situation that prevents an effective face piece to face seal as evidenced by failure of a user seal check shall preclude that person from wearing a respirator inside the regulated area until resolution of the problem.

1.7.8 MAINTENANCE AND CARE OF RESPIRATORS

The Respiratory Protection Program Coordinator shall submit evidence and documentation showing compliance with 29 CFR 1910.134 (h) Maintenance and Care of Respirators.

1.7.9 SUPPLIED AIR SYSTEMS

If a supplied air system is used, the system shall meet all requirements of 29 CFR 1910.134 and the ANSI/Compressed Gas Association (CGA) Commodity Specification for Air current requirements for Type 1 - Grade D breathing air. Low pressure systems are not allowed to be used on asbestos abatement projects. Supplied Air respirator use shall be in accordance with EPA/NIOSH publication EPA-560-OPTS-86-001 "A Guide to Respiratory Protection for the Asbestos Abatement Industry". The competent person on site will be responsible for the supplied air system to ensure the safety of the worker.

1.8 WORKER PROTECTION

1.8.1 TRAINING OF ABATEMENT PERSONNEL

Prior to beginning any abatement activity, all personnel shall be trained in accordance with OSHA 29 CFR 1926.1101 (k)(9) and any additional State/Local requirements. Training must include, at a minimum, the elements listed at 29 CFR 1926.1101 (k)(9)(viii). Training shall have been conducted by a third party, EPA/State approved trainer meeting the requirements of EPA 40 CFR 763 Appendix C (AHERA MAP). Initial training certificates and current refresher and accreditation proof must be submitted for each person working at the site.

1.8.2 MEDICAL EXAMINATIONS

Medical examinations meeting the requirements of 29 CFR 1926.1101 (m) shall be provided for all personnel working in the regulated area, regardless of exposure levels. A current physician's written opinion as required by 29 CFR 1926.1101 (m)(4) shall be provided for each person and shall include in the medical opinion the person has been evaluated for working in a heat and cold stress environment while wearing personal protective equipment (PPE) and is able to perform the work without risk of material health impairment.

1.8.3 REGULATED AREA ENTRY PROCEDURE

The Competent Person shall ensure that each time workers enter the regulated area; they remove ALL street clothes in the clean room of the decontamination unit and put on new disposable coveralls, head coverings, a clean respirator, and then proceed through the shower room to the equipment room where they put on non-disposable required personal protective equipment.

1.8.4 DECONTAMINATION PROCEDURE

The Competent Person shall require all personnel to adhere to following decontamination procedures whenever they leave the regulated area.

A. When exiting the regulated area, remove disposable coveralls, and ALL other clothes, disposable head coverings, and foot coverings or boots in the equipment room.

B. Still wearing the respirator and completely naked, proceed to the shower. Showering is MANDATORY. Care must be taken to follow reasonable procedures in removing the respirator to avoid inhaling asbestos fibers while showering. The following procedure is required as a minimum:

1. Thoroughly wet body including hair and face. If using a PAPR hold blower above head to keep filters dry.
2. With respirator still in place, thoroughly decontaminate body, hair, respirator face piece, and all other parts of the respirator except the blower and battery pack on a PAPR. Pay particular attention to cleaning the seal between the face and respirator face piece and under the respirator straps.
3. Take a deep breath, hold it and/or exhale slowly, completely wetting hair, face, and respirator. While still holding breath, remove the respirator and hold it away from the face before starting to breathe.

C. Carefully decontaminate the face piece of the respirator inside and out. If using a PAPR, shut down using the following sequence: a) first cap inlets to filters; b) turn blower off to keep debris collected on the inlet side of the filter from dislodging and contaminating the outside of the unit; c) thoroughly decontaminate blower and hoses; d) carefully decontaminate battery pack with a wet rag being cautious of getting water in the battery pack thus preventing destruction. (THIS PROCEDURE IS NOT A SUBSTITUTE FOR RESPIRATOR CLEANING!)

D. Shower and wash body completely with soap and water. Rinse thoroughly.

E. Rinse shower room walls and floor to drain prior to exiting.

F. Proceed from shower to clean room; dry off and change into street clothes or into new disposable work clothing.

1.8.5 REGULATED AREA REQUIREMENTS

The Competent Person shall meet all requirements of 29 CFR 1926.1101 (o) and assure that all requirements for regulated areas at 29 CFR 1926.1101 (e) are met. All personnel in the regulated area shall not be allowed to eat, drink, smoke, chew tobacco or gum, apply cosmetics, or in any way interfere with the fit of their respirator.

1.9 DECONTAMINATION FACILITIES

1.9.1 DESCRIPTION

Provide each regulated area with separate personnel decontamination facilities (PDF) and waste/equipment decontamination facilities (W/EDF). Ensure that the PDF are the only means of ingress and egress to the regulated area and that all equipment, bagged waste, and other material exit the regulated area only through the W/EDF.

1.9.2 GENERAL REQUIREMENTS

All personnel entering or exiting a regulated area must go through the PDF and shall follow the requirements at 29 CFR 1926.1101 (j)(1) and these specifications. All waste, equipment and contaminated materials must exit the regulated area through the W/EDF and be decontaminated

in accordance with these specifications. Walls and ceilings of the PDF and W/EDF must be constructed of a minimum of 3 layers of 6 mil opaque fire retardant polyethylene sheeting and be securely attached to existing building components and/or an adequate temporary framework. A minimum of 3 layers of 6 mil poly shall also be used to cover the floor under the PDF and W/EDF units. Construct doors so that they overlap and secure to adjacent surfaces. Weight inner doorway sheets with layers of duct tape so that they close quickly after release. Put arrows on sheets so they show direction of travel and overlap. If the building adjacent area is occupied, construct a solid barrier on the occupied side(s) to protect the sheeting and reduce potential for non-authorized personnel entering the regulated area.

1.9.3 TEMPORARY FACILITIES TO THE PDF AND W/EDF

The Competent Person shall provide temporary water service connections to the PDF and W/EDF. Backflow prevention must be provided at the point of connection to the supply system. Water supply must be of adequate pressure and meet requirements of 29 CFR 1910.141(d)(3). Provide adequate temporary overhead electric power with ground fault circuit interruption (GFCI) protection. Provide a sub-panel equipped with GFCI protection for all temporary power in the clean room. Provide adequate lighting to provide a minimum of 50 foot candles in the PDF and W/EDF. Provide temporary heat, if needed, to maintain 70^{o}F throughout the PDF and W/EDF.

1.9.4 PERSONNEL DECONTAMINATION FACILITY (PDF)

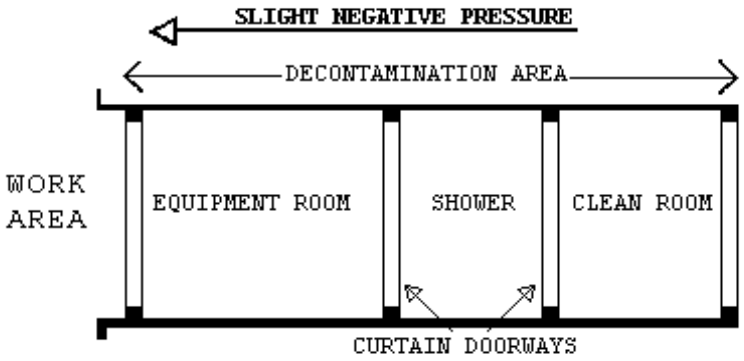
The Competent Person shall provide a PDF consisting of shower room which is contiguous to a clean room and equipment room which is connected to the regulated area. The PDF must be sized to accommodate the number of personnel scheduled for the project. The shower room, located in the center of the PDF, shall be fitted with as many portable showers as necessary to insure all employees can complete the entire decontamination procedure within 15 minutes. The PDF shall be constructed of opaque poly for privacy. The PDF shall be constructed to eliminate any parallel routes of egress without showering.

1. Clean Room: The clean room must be physically and visually separated from the rest of the building to protect the privacy of personnel changing clothes. The clean room shall be constructed of at least 3 layers of 6 mil opaque fire retardant poly to provide an air tight room. Provide a minimum of 2 - 900 mm (3 foot) wide 6 mil poly opaque fire retardant doorways. One doorway shall be the entry from outside the PDF and the second doorway shall be to the shower room of the PDF. The floor of the clean room shall be maintained in a clean, dry condition. Shower overflow shall not be allowed into the clean room. Provide 1 storage locker per person. A portable fire extinguisher, minimum 10 pounds capacity, Type ABC, shall be provided in accordance with OSHA and NFPA Standard 10. All persons entering the regulated area shall remove all street clothing in the clean room and dress in disposable protective clothing and respiratory protection. Any person entering the clean room does so either from the outside with street clothing on or is coming from the shower room completely naked and thoroughly washed. Females required to enter the regulated area shall be ensured of their privacy throughout the entry/exit process by posting guards at both entry points to the PDF so no male can enter or exit the PDF during her stay in the PDF.

2. Shower Room: The Competent Person shall assure that the shower room is a completely water tight compartment to be used for the movement of all personnel from the clean room to the equipment room and for the showering of all personnel going from the equipment room to the clean room. Each shower shall be constructed so water runs down the walls of the shower and into a drip pan. Install a freely draining smooth floor on top of the shower pan. The shower room shall be separated from the rest of the building and from the clean room and equipment room using air tight walls made from at least 3 layers of 6 mil opaque fire retardant poly. The shower shall be equipped with a shower head and controls, hot and cold water, drainage, soap dish and continuous supply of soap, and shall be maintained in a sanitary condition throughout its use. The controls shall be arranged so an individual can shower without assistance. Provide

a flexible hose shower head, hose bibs and all other items shown on Shower Schematic. Waste water will be pumped to a drain after being filtered through a minimum of a 100 micron sock in the shower drain; a 20 micron filter; and a final 5 micron filter. Filters will be changed a minimum of daily or more often as needed. Filter changes must be done in the shower to prevent loss of contaminated water. Hose down all shower surfaces after each shift and clean any debris from the shower pan. Residue is to be disposed of as asbestos waste.

3. Equipment Room: The Competent Person shall provide an equipment room which shall be an air tight compartment for the storage of work equipment/tools, reusable personal protective equipment, except for a respirator and for use as a gross decontamination area for personnel exiting the regulated area. The equipment room shall be separated from the regulated area by a minimum 3 foot wide door made with 2 layers of 6 mil opaque fire retardant poly. The equipment room shall be separated from the regulated area, the shower room and the rest of the building by air tight walls and ceiling constructed of a minimum of 3 layers of 6 mil opaque fire retardant poly. Damp wipe all surfaces of the equipment room after each shift change. Provide an additional loose layer of 6 mil fire retardant poly per shift change and remove this layer after each shift. If needed, provide a temporary electrical sub-panel equipped with GFCI in the equipment room to accommodate any equipment required in the regulated area.
4. The PDF shall be as follows: Clean room at the entrance followed by a shower room followed by an equipment room leading to the regulated area. Each doorway in the PDF shall be a minimum of 2 layers of 6 mil opaque fire retardant poly.



1.9.5 WASTE/EQUIPMENT DECONTAMINATION FACILITY (W/EDF)

The Competent Person shall provide a W/EDF consisting of a wash room, holding room, and clean room for removal of waste, equipment and contaminated material from the regulated area. Personnel shall not enter or exit the W/EDF except in the event of an emergency. Clean debris and residue in the W/EDF daily. All surfaces in the W/EDF shall be wiped/hosed down after each shift and all debris shall be cleaned from the shower pan. The W/EDF shall consist of the following:

1. Wash Down Station: Provide an enclosed shower unit in the regulated area just outside the Wash Room as an equipment bag and container cleaning station.

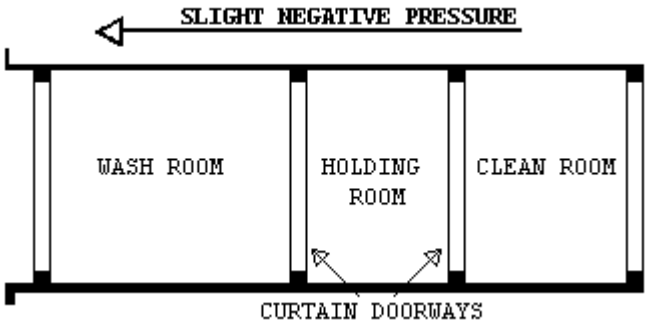
2. Wash Room: Provide a wash room for cleaning of bagged or containerized asbestos containing waste materials passed from the regulated area. Construct the wash room using 50 x 100 mm (2" x 4") wood framing and 3 layers of 6 mil fire retardant poly. Locate the wash room so that packaged materials, after being wiped clean, can be passed to the Holding Room. Doorways in the wash room shall be constructed of 2 layers of 6 mil fire retardant poly.

3. Holding Room: Provide a holding room as a drop location for bagged materials passed from the wash room. Construct the holding room using 50 x 100 mm (2" x 4") wood framing and 3

layers of 6 mil fire retardant poly. The holding room shall be located so that bagged material cannot be passed from the wash room to the clean room unless it goes through the holding room. Doorways in the holding room shall be constructed of 2 layers of 6 mil fire retardant poly.

4. Clean Room: Provide a clean room to isolate the holding room from the exterior of the regulated area. Construct the clean room using 2 x 4 wood framing and 2 layers of 6 mil fire retardant poly. The clean room shall be located so as to provide access to the holding room from the building exterior. Doorways to the clean room shall be constructed of 2 layers of 6 mil fire retardant poly. When a negative pressure differential system is used, a rigid enclosure separation between the W/EDF clean room and the adjacent areas shall be provided.

5. The W/EDF shall be as follows: Wash Room leading to a Holding Room followed by a Clean Room leading to outside the regulated area. See diagram.



1.9.6 WASTE/EQUIPMENT DECONTAMINATION PROCEDURES

At the washdown station in the regulated area, thoroughly wet clean contaminated equipment and/or sealed polyethylene bags and pass into Wash Room after visual inspection. When passing anything into the Wash Room, close all doorways of the W/EDF, other than the doorway between the washdown station and the Wash Room. Keep all outside personnel clear of the W/EDF. Once inside the Wash Room, wet clean the equipment and/or bags. After cleaning and inspection, pass items into the Holding Room. Close all doorways except the doorway between the Holding Room and the Clean Room. Workers from the Clean Room/Exterior shall enter the Holding Room and remove the decontaminated/cleaned equipment/bags for removal and disposal. These personnel will not be required to wear PPE. At no time shall personnel from the clean side be allowed to enter the Wash Room.

PART 2 - PRODUCTS, MATERIALS AND EQUIPMENT

2.1 MATERIALS AND EQUIPMENT

2.1.1 GENERAL REQUIREMENTS

Prior to the start of work, the contractor shall provide and maintain a sufficient quantity of materials and equipment to assure continuous and efficient work throughout the duration of the project. Work shall not start unless the following items have been delivered to the site and the CPIH/CIH has submitted verification to the Owner or Owner's Engineer.

A. All materials shall be delivered in their original package, container or bundle bearing the name of the manufacturer and the brand name (where applicable).

B. Store all materials subject to damage off the ground, away from wet or damp surfaces and under cover sufficient enough to prevent damage or contamination. Flammable and combustible materials cannot be stored inside buildings. Replacement materials shall be stored outside of the regulated area until abatement is completed.

C. The Contractor shall not block or hinder use of buildings by patients, staff, and visitors to the Site in partially occupied buildings by placing materials/equipment in any unauthorized location.

D. The Competent Person shall inspect for damaged, deteriorating or previously used materials. Such materials shall not be used and shall be removed from the worksite and disposed of properly.

E. Polyethylene sheeting for walls in the regulated area shall be a minimum of 4-mils. For floors and all other uses, sheeting of at least 6-mil shall be used in widths selected to minimize the frequency of joints. Fire retardant poly shall be used throughout.

F. The method of attaching polyethylene sheeting shall be agreed upon in advance by the Contractor and the Owner and selected to minimize damage to equipment and surfaces. Method of attachment may include any combination of moisture resistant duct tape furring strips, spray glue, staples, nails, screws, lumber and plywood for enclosures or other effective procedures capable of sealing polyethylene to dissimilar finished or unfinished surfaces under both wet and dry conditions.

G. Polyethylene sheeting utilized for the PDF shall be opaque white or black in color, 6 mil fire retardant poly.

H. Installation and plumbing hardware, showers, hoses, drain pans, sump pumps and waste water filtration system shall be provided by the Contractor.

I. An adequate number of HEPA vacuums, scrapers, sprayers, nylon brushes, brooms, disposable mops, rags, sponges, staple guns, shovels, ladders and scaffolding of suitable height and length as well as meeting OSHA requirements, fall protection devices, water hose to reach all areas in the regulated area, airless spray equipment, and any other tools, materials or equipment required to conduct the abatement project. All electrically operated hand tools, equipment, electric cords shall be connected to GFCI protection.

J. Special protection for objects in the regulated area shall be detailed (e.g., plywood over carpeting

K. Disposal bags – 2 layers of 6 mil poly for asbestos waste shall be pre-printed with labels, markings and address as required by OSHA, EPA and DOT regulations.

L. The Owner shall be provided an advance copy of the MSDS as required for all hazardous chemicals under OSHA 29 CFR 1910.1200 - Hazard Communication in the pre-start meeting submittal. Chlorinated compounds shall not be used with any spray adhesive, mastic remover or other product.

M. OSHA DANGER demarcation signs, as many and as required by OSHA 29 CFR 1926.1101(k)(7) shall be provided and placed by the Competent Person. All other posters and notices required by Federal and State regulations shall be posted in the Clean Room.

N. Adequate and appropriate PPE for the project and number of personnel/shifts shall be provided. All personal protective equipment issued must be based on a written hazard assessment conducted under 29 CFR 1910.132(d).

2.2 MONITORING, INSPECTION AND TESTING

2.2.1 GENERAL

A. Perform throughout abatement work monitoring, inspection and testing inside and around the regulated area in accordance with the OSHA requirements and these specifications. OSHA requires that the employee exposure to asbestos must not exceed 0.1 fiber per cubic centimeter (f/cc) of air, averaged over an 8-hour work shift. The CPIH/CIH is responsible for and shall inspect

and oversee the performance of the Contractor IH Technician. The IH Technician shall continuously inspect and monitor conditions inside the regulated area to ensure compliance with these specifications. In addition, the CPIH/CIH shall personally manage air sample collection, analysis, and evaluation for personnel, regulated area, and adjacent area samples to satisfy OSHA requirements. Additional inspection and testing requirements are also indicated in other parts of this specification.

B. The Owner will employ an independent industrial hygienist (PIH/CIH) consultant and/or use its own IH to perform various services on behalf of the Owner. The PIH/CIH will perform the necessary monitoring, inspection, testing, and other support services to ensure that people will not be adversely affected by the abatement work, and that the abatement work proceeds in accordance with these specifications, that the abated areas or abated buildings have been successfully decontaminated. The work of the PIH/CIH consultant in no way relieves the Contractor from their responsibility to perform the work in accordance with contract/specification requirements, to perform continuous inspection, monitoring and testing for the safety of their employees, and to perform other such services as specified. The cost of the PIH/CIH and their services will be borne by the Owner except for any repeat of final inspection and testing that may be required due to unsatisfactory initial results. Any repeated final inspections and/or testing, if required, will be paid for by the Contractor.

C. If fibers counted by the PIH/CIH during abatement work, either inside or outside the regulated area, utilizing the NIOSH 7400 air monitoring method, exceed the specified respective limits, the Contractor shall stop work. The Contractor may request confirmation of the results by analysis of the samples by TEM. Request must be in writing and submitted to the Owner or Owner's Engineer. Cost for the confirmation of results will be borne by the Contractor for both the collection and analysis of samples and for the time delay that may/does result for this confirmation. Confirmation sampling and analysis will be the responsibility of the CPIH with review and approval of the PIH/CIH. An agreement between the CPIH/CIH and the PIH/CIH shall be reached on the exact details of the confirmation effort, in writing, including such things as the number of samples, location, collection, quality control on-site, analytical laboratory, interpretation of results and any follow-up actions. This written agreement shall be co-signed by the IH's and delivered to the Owner.

2.2.2 MONITORING, INSPECTION AND TESTING BY CONTRACTOR CPIH/CIH

The Contractor's CPIH/CIH is responsible for managing all monitoring, inspections, and testing required by these specifications, as well as any and all regulatory requirements adopted by these specifications. The CPIH/CIH is responsible for the continuous monitoring of all subsystems and procedures which could affect the health and safety of the Contractor's personnel. Safety and health conditions and the provision of those conditions inside the regulated area for all persons entering the regulated area is the exclusive responsibility of the Contractor/Competent Person. The person performing the personnel and area air monitoring inside the regulated area shall be an IH Technician, who shall be trained and shall have specialized field experience in sampling and analysis. The IH Technician shall have successfully completed a NIOSH 582 Course or equivalent and provide documentation. The IH Technician shall participate in the AIHA Asbestos Analysis Registry or participate in the Proficiency Analytic Testing program of AIHA for fiber counting quality control assurance. The IH Technician shall also be an accredited EPA AHERA/State Contractor/Supervisor or Abatement Worker and Building Inspector. The IH Technician shall have participated in five abatement projects collecting personal and area samples as well as responsibility for documentation on substantially similar projects in size and scope. The CPIH/CIH shall collect and analyze samples for each representative job being done in the regulated area, i.e., removal, wetting, clean-up, and load-out. No fewer than two personal samples per shift shall be collected and one area sample per 1,000 square feet of regulated area where abatement is taking place and one sample per shift in the clean room area shall be collected. In addition to the continuous monitoring required, the CPIH/CIH will perform inspection and testing at the final stages of abatement for each regulated area as specified in the CPIH/CIH responsibilities. Additionally,

the CPIH/CIH will monitor and record pressure readings within the containment daily with a minimum of two readings at the beginning and at the end of a shift, and submit the data in the daily report.

2.3 ASBESTOS HAZARD ABATEMENT PLAN

The Contractor shall have established an Asbestos Hazard Abatement Plan (AHAP) in printed form and loose leaf folder consisting of simplified text, diagrams, sketches, and pictures that establish and explain clearly the procedures to be followed during all phases of the work by the Contractor's personnel. The AHAP must be modified as needed to address specific requirements of this project and the specifications. The AHAP shall be submitted for review and approval to the Owner prior to the start of any abatement work. The minimum topics and areas to be covered by the AHAPs are:

A. Minimum Personnel Qualifications
B. Emergency Action Plan/Contingency Plans and Arrangements
C. Security and Safety Procedures
D. Respiratory Protection/Personal Protective Equipment Program and Training
E. Medical Surveillance Program and Recordkeeping
F. Regulated Area Requirements - Containment Barriers/Isolation of Regulated Area
G. Decontamination Facilities and Entry/Exit Procedures (PDF and W/EDF)
H. Negative Pressure Systems Requirements
I. Monitoring, Inspections, and Testing
J. Removal Procedures for ACM
K. Disposal of ACM waste/equipment
L. Regulated Area Decontamination/Clean-up
M. Regulated Area Visual and Air Clearance
N. Project Completion/Closeout

2.4 SUBMITTALS

2.4.1 PRE-START MEETING SUBMITTALS

Submit to the Owner a minimum of 14 days prior to the pre-start meeting the following for review and approval. Meeting this requirement is a prerequisite for the pre-start meeting for this project:

A. Submit a detailed work schedule for the entire project reflecting contract documents and the phasing/schedule requirements from the CPM chart.

B. Submit a staff organization chart showing all personnel who will be working on the project and their capacity/function. Provide their qualifications, training, accreditations, and licenses, as appropriate. Provide a copy of the "Certificate of Worker's Acknowledgment" and the "Affidavit of Medical Surveillance and Respiratory Protection" for each person.

C. Submit Asbestos Hazard Abatement Plan developed specifically for this project, incorporating the requirements of the specifications, prepared, signed and dated by the CPIH/CIH.

D. Submit the specifics of the materials and equipment to be used for this project with manufacturer names, model numbers, performance characteristics, pictures/diagrams, and number available for the following:

1. Supplied air system, negative air machines, HEPA vacuums, air monitoring pumps, calibration devices, pressure differential monitoring device and emergency power generating system.
2. Waste water filtration system, shower system, containment barriers.
3. Surfactants, hand held sprayers, airless sprayers, glovebags, and fire extinguishers.

4. Respirators, protective clothing, personal protective equipment.
5. Fire safety equipment to be used in the regulated area.

E. Submit the name, location, and phone number of the approved landfill; proof/verification the landfill is approved for ACM disposal; the landfill's requirements for ACM waste; the type of vehicle to be used for transportation; and name, address, and phone number of subcontractor, if used. Proof of asbestos training for transportation personnel shall be provided.

F. Submit required notifications and arrangements made with regulatory agencies having regulatory jurisdiction and the specific contingency/emergency arrangements made with local health, fire, ambulance, hospital authorities and any other notifications/arrangements.

G. Submit qualifications verification: Submit the following evidence of qualifications. Make sure that all references are current and verifiable by providing current phone numbers and documentation.

1. Asbestos Abatement Company: Project experience within the past 3 years; listing projects first most similar to this project: Project Name; Type of Abatement; Duration; Cost; Reference Name/Phone Number; Final Clearance; Completion Date
2. List of project(s) halted by owner, A/E, IH, regulatory agency in the last 3 years: Project Name; Reason; Date; Reference Name/Number; Resolution
3. List asbestos regulatory citations (e.g., OSHA), notices of violations (e.g., Federal and state EPA), penalties, and legal actions taken against the company including and of the company's officers (including damages paid) in the last 3 years. Provide copies and all information needed for verification.

H. Submit information on personnel: Provide a resume; address each item completely; copies of certificates, accreditations, and licenses. Submit an affidavit signed by the CPIH/CIH stating that all personnel submitted below have medical records in accordance with OSHA 29 CFR 1926.1101(m) and 29 CFR 1910.20 and that the company has implemented a medical surveillance program and written respiratory protection program, and maintains recordkeeping in accordance with the above regulations. Submit the phone number and doctor/clinic/hospital used for medical evaluations.

1. CPIH/CIH and IH Technician: Name; years of abatement experience; list of projects similar to this one; certificates, licenses, accreditations for proof of AHERA/OSHA specialized asbestos training; professional affiliations; number of workers trained; samples of training materials; samples of AHAPs developed; medical opinion; and current respirator fit test.

2. Competent Person(s)/Supervisor(s): Number; names; social security numbers; years of abatement experience as Competent Person/Supervisor; list of similar projects in size/complexity as Competent Person/Supervisor; as a worker; certificates, licenses, accreditations; proof of AHERA/OSHA specialized asbestos training; maximum number of personnel supervised on a project; medical opinion (asbestos surveillance and respirator use); and current respirator fit test.

3. Workers: Numbers; names; social security numbers; years of abatement experience; certificates, licenses, accreditations; training courses in asbestos abatement and respiratory protection; medical opinion (asbestos surveillance and respirator use); and current respirator fit test.

I. Submit copies of State license for asbestos abatement; copy of insurance policy, including exclusions with a letter from agent stating in plain language the coverage provided and the fact that asbestos abatement activities are covered by the policy; copy of AHAPs incorporating the requirements of this specification; information on who provides your training, how often; who

provides medical surveillance, how often; who performs and how is personal air monitoring of abatement workers conducted; a list of references of independent laboratories/IH's familiar with your air monitoring and standard operating procedures; and copies of monitoring results of the five referenced projects listed and analytical method(s) used.

J. Rented equipment must be decontaminated prior to returning to the rental agency.

K. Submit, before the start of work, the manufacturer's technical data for all types of encapsulants, all MSDS and application instructions.

2.4.2 SUBMITTALS DURING ABATEMENT

A. The Competent Person shall maintain and submit a daily log documenting the dates and times of the following: purpose, attendees and summary of meetings; document and discuss the resolution of unusual events such as, equipment failures, emergencies, and any cause for stopping work; and representative air monitoring and results/TWA's/EL's. Submit this information daily to the PIH/CIH.

B. The CPIH/CIH shall document and maintain the inspection and approval of the regulated area preparation prior to start of work and daily during work.
   1. Removal of any poly barriers.
   2. Visual inspection/testing by the CPIH/CIH or IH Technician prior to application of lockdown encapsulant.
   3. Packaging and removal of ACM waste from regulated area.
   4. Disposal of ACM waste materials; copies of Waste Shipment Records/landfill receipts to the Owner’s Engineer on a weekly basis.

2.4.3 SUBMITTALS AT COMPLETION OF ABATEMENT

The CPIH/CIH shall submit a project report consisting of the daily log book requirements and documentation of events during the abatement project including Waste Shipment Records signed by the landfill's agent. It will also include information on the containment and transportation of waste from the containment with applicable Chain of Custody forms. The report shall include a certificate of completion, signed and dated by the CPIH/CIH, in accordance with Attachment #1. All clearance and perimeter area samples must be submitted. The Owner’s Engineer will retain the abatement report after completion of the project.

PART 3 - EXECUTION

3.1 REGULATED AREA PREPARATIONS

3.1.1 SITE SECURITY

A. Regulated area access is to be restricted only to authorized, trained/accredited and protected personnel. These may include the Contractor's employees, employees of Subcontractors, Owner employees and representatives, State and local inspectors, and any other designated individuals. A list of authorized personnel shall be established prior to commencing the project and be posted in the clean room of the decontamination unit.

B. A log book shall be maintained in the clean room of the decontamination unit. Anyone who enters the regulated area must record their name, affiliation, time in, and time out for each entry.

C. Access to the regulated area shall be through a single decontamination unit. All other access (doors, windows, hallways, etc.) shall be sealed or locked to prevent entry to or exit from the regulated area. The only exceptions for this requirement are the waste/equipment load-out area which shall be sealed except during the removal of containerized asbestos waste from the regulated area, and emergency exits. Emergency exits shall not be locked from the inside; however, they shall be sealed with poly sheeting and taped until needed. In any situation where exposure to high temperatures which may result in a flame hazard, fire retardant poly sheeting must be used.

D. The Contractor's Competent Person shall control site security during abatement operations in order to isolate work in progress and protect adjacent personnel.

3.1.2 SIGNAGE AND POWER MANAGEMENT

A. Post OSHA DANGER signs meeting the specifications of OSHA 29 CFR 1926.1101 at any location and approaches to the regulated area where airborne concentrations of asbestos may exceed the PEL. Signs shall be posted at a distance sufficiently far enough away from the regulated area to permit any personnel to read the sign and take the necessary measures to avoid exposure. Additional signs will be posted following construction of the regulated area enclosure.

B. Shut down and lock out/tag out electric power to the regulated area. Provide temporary power and lighting. Insure safe installation including GFCI of temporary power sources and equipment by compliance with all applicable electrical code and OSHA requirements for temporary electrical systems. Electricity shall be provided by the Owner.

C. Shut down and lock out/tag out heating, cooling, and air conditioning system (HVAC) components that are in, supply or pass through the regulated area. Investigate the regulated area and agree on pre-abatement condition with the Owner. Seal all intake and exhaust vents in the regulated area with duct tape and 2 layers of 6-mil poly. Also, seal any seams in system components that pass through the regulated area. Remove all contaminated HVAC system filters and place in labeled 6-mil polyethylene disposal bags for staging and eventual disposal as asbestos waste.

3.1.3 NEGATIVE PRESSURE FILTRATION SYSTEM

The Contractor shall provide enough HEPA negative air machines to effect > - 0.02” WCG pressure. The Competent Person shall determine the number of units needed for the regulated area by dividing the cubic feet in the regulated area by 15 and then dividing that result by the cubic feet per minute (CFM) for each unit to determine the number of units needed to effect > - 0.02” WCG

pressure. Provide a standby unit in the event of machine failure and/or emergency in an adjacent area.

NIOSH has done extensive studies and has determined that negative air machines typically operate at ~50% efficiency. The contractor shall consider this in their determination of number of units needed to provide > - 0.02” WCG pressure. The contractor shall use double the number of machines, based on their calculations, or submit proof their machines operate at stated capacities, at a 2" pressure drop across the filters.

3.1.3.1 DESIGN AND LAYOUT

A. Before start of work submit the design and layout of the regulated area and the negative air machines. The submittal shall indicate the number of, location of and size of negative air machines. The point(s) of exhaust, air flow within the regulated area, anticipated negative pressure differential, and supporting calculations for sizing shall be provided. In addition, submit the following:

    1. Method of supplying power to the units and designation/location of the panels.

    2. Description of testing method(s) for correct air volume and pressure differential.

    3. If auxiliary power supply is to be provided for the negative air machines, provide a schematic diagram of the power supply and manufacturer's data on the generator and switch.

3.1.3.2 NEGATIVE AIR MACHINES (HEPA UNITS)

A. Negative Air Machine Cabinet: The cabinet shall be constructed of steel or other durable material capable of withstanding potential damage from rough handling and transportation. The width of the cabinet shall be less than 30" in order to fit in standard doorways. The cabinet must be factory sealed to prevent asbestos fibers from being released during use, transport, or maintenance. Any access to and replacement of filters shall be from the inlet end. The unit must be on casters or wheels.

B. Negative Air Machine Fan: The rating capacity of the fan must indicate the CFM under actual operating conditions. Manufacturer's typically use "free-air" (no resistance) conditions when rating fans. The fan must be a centrifugal type fan.

C. Negative Air Machine Final Filter: The final filter shall be a HEPA filter. The filter media must be completely sealed on all edges within a structurally rigid frame. The filter shall align with a continuous flexible gasket material in the negative air machine housing to form an air tight seal. Each HEPA filter shall be certified by the manufacturer to have an efficiency of not less than 99.97%. Testing shall have been done in accordance with Military Standard MIL-STD-282 and Army Instruction Manual 136-300-175A. Each filter must bear a UL586 label to indicate ability to perform under specified conditions. Each filter shall be marked with the name of the manufacturer, serial number, air flow rating, efficiency and resistance, and the direction of test air flow.

D. Negative Air Machine Pre-filters: The pre-filters, which protect the final HEPA filter by removing larger particles, are required to prolong the operating life of the HEPA filter. Two stages of pre-filtration are required. A first stage pre-filter shall be a low efficiency type for particles 10 µm or larger. A second stage pre-filter shall have a medium efficiency effective for particles down to 5 µm or larger. Pre-filters shall be installed either on or in the intake opening of the NAM and the second stage filter must be held in place with a special housing or clamps.

E. Negative Air Machine Instrumentation: Each unit must be equipped with a gauge to measure the pressure drop across the filters and to indicate when filters have become loaded and need to be changed. A table indicating the cfm for various pressure readings on the gauge shall be affixed near the gauge for reference or the reading shall indicate at what point the filters shall be changed, noting cfm delivery. The unit must have an elapsed time meter to show total hours of operation.

F. Negative Air Machine Safety and Warning Devices: An electrical/ mechanical lockout must be provided to prevent the fan from being operated without a HEPA filter. Units must be equipped with an automatic shutdown device to stop the fan in the event of a rupture in the HEPA filter or blockage in the discharge of the fan. Warning lights are required to indicate normal operation; too high a pressure drop across filters; or too low of a pressure drop across filters.

G. Negative Air Machine Electrical: All electrical components shall be approved by the National Electrical Manufacturer's Association (NEMA) and Underwriters Laboratories (UL). Each unit must be provided with overload protection and the motor, fan, fan housing, and cabinet must be grounded.

H. It is essential that replacement HEPA filters be tested using an “in-line” testing method, to ensure the seal around the periphery was not damaged during replacement. Damage to the outer HEPA filter seal could allow contaminated air to bypass the HEPA filter and be discharged to an inappropriate location. Contractor will provide written documentation of test results for negative air machine units with HEPA filters changed by the contractor or documentation when changed and tested by the contractor filters

3.1.3.3 PRESSURE DIFFERENTIAL

The fully operational negative air system within the regulated area shall continuously maintain a pressure differential of -0.02" water column gauge. Before any disturbance of any asbestos material, this shall be demonstrated to the Owner by use of a pressure differential meter/manometer as required by OSHA 29 CFR 1926.1101(e)(5)(i). The Competent Person shall be responsible for providing, maintaining, and documenting the negative pressure and air changes as required by OSHA and this specification.

3.1.3.4 MONITORING

The pressure differential shall be continuously monitored and recorded between the regulated area and the area outside the regulated area with a monitoring device that incorporates a strip chart recorder. The strip chart recorder shall become part of the project log and shall indicate at least -0.02" water column gauge for the duration of the project.

3.1.3.5 SUPPLEMENTAL MAKE-UP AIR INLETS

Provide, as needed for proper air flow in the regulated area, in a location approved by the Owner, openings in the plastic sheeting to allow outside air to flow into the regulated area. Auxiliary makeup air inlets must be located as far from the negative air machines as possible, off the floor near the ceiling, and away from the barriers that separate the regulated area from the occupied clean areas. Cover the inlets with weighted flaps which will seal in the event of failure of the negative pressure system.

3.1.3.6 TESTING THE SYSTEM

The negative pressure system must be tested before any ACM is disturbed in any way. After the regulated area has been completely prepared, the decontamination units set

up, and the negative air machines installed, start the units up one at a time. Demonstrate and document the operation and testing of the negative pressure system to the VA using smoke tubes and a negative pressure gauge. Verification and documentation of adequate negative pressure differential across each barrier must be done at the start of each work shift.

3.1.3.7 DEMONSTRATION OF THE NEGATIVE PRESSURE FILTRATION SYSTEM

The demonstration of the operation of the negative pressure system to the Owner shall include, but not be limited to, the following:

A. Plastic barriers and sheeting move lightly in toward the regulated area.

B. Curtains of the decontamination units move in toward regulated area.

C. There is a noticeable movement of air through the decontamination units. Use the smoke tube to demonstrate air movement from the clean room to the shower room to the equipment room to the regulated area.

D. Use smoke tubes to demonstrate air is moving across all areas in which work is to be done. Use a differential pressure gauge to indicate a negative pressure of at least -0.02" across every barrier separating the regulated area from the rest of the building. Modify the system as necessary to meet the above requirements.

3.1.3.8 USE OF THE NEGATIVE PRESSURE FILTRATION SYSTEM DURING ABATEMENT

A. Start units before beginning any disturbance of ACM occurs. After work begins, the units shall run continuously, maintaining 4 actual air changes per hour at a negative pressure differential of -0.02" water column gauge, for the duration of the work until a final visual clearance and final air clearance has been successfully completed.

   No negative air units shall be shut down at any time unless authorized by the Owner, verbally and in writing.

B. Pre-cleaning of ACM contaminated items shall be performed after the enclosure has been erected and negative pressure has been established in the work area. After items have been pre-cleaned and decontaminated, they may be removed from the work area for storage until the completion of abatement in the work area.

C. Abatement work shall begin at a location farthest from the units and proceed towards them. If an electric failure occurs, the Competent Person shall stop all abatement work and immediately begin wetting all exposed asbestos materials for the duration of the power outage. Abatement work shall not resume until power is restored and all units are operating properly again.

D. The negative air machines shall continue to run after all work is completed and until a final visual clearance and a final air clearance has been successfully completed for that regulated area.

3.1.3.9 DISMANTLING THE SYSTEM

After completion of the final visual and final air clearance has been obtained by the PIH/CIH, the units may be shut down. The unit exterior surfaces shall have been completely decontaminated; pre-filters are not to be removed and the units inlet/outlet

sealed with 2 layers of 6 mil poly immediately after shut down. No filter removal shall occur at the site following successful completion of site clearance.

3.1.3.10 AUXILIARY GENERATOR

If the building is occupied during abatement, provide an auxiliary gasoline/diesel generator located outside the building in an area protected from the weather. In the event of a power failure of the general power grid, the generator must automatically start and supply power to a minimum of 50% of the negative air machines in operation.

3.2 CONTAINMENT BARRIERS AND COVERINGS IN THE REGULATED AREA

3.2.1 GENERAL

Seal off the perimeter to the work area to completely isolate the work area from adjacent spaces. All surfaces in the regulated area must be covered to prevent contamination and to facilitate clean-up. Should adjacent areas become contaminated as a result of the work, shall immediately stop work and clean up the contamination at no additional cost to the Owner.

3.2.2 PREPARATION PRIOR TO SEALING THE REGULATED AREA

Place all tools, scaffolding, materials and equipment needed for working in the regulated area prior to erecting any plastic sheeting. All uncontaminated removable furniture, equipment and/or supplies shall be removed by the Owner from the regulated area before commencing work. Any objects remaining in the regulated area shall be completely covered with 2 layers of 6-mil fire retardant poly sheeting and secured with duct tape. Lock out and tag out any HVAC/electrical systems in the regulated area.

3.2.3 CONTROLLING ACCESS TO THE REGULATED AREA

Access to the regulated area is allowed only through the personnel decontamination facility (PDF). All other means of access shall be eliminated and OSHA DANGER demarcation signs posted as required by OSHA. If the regulated area is adjacent to, or within view of an occupied area, provide a visual barrier of 6 mil opaque fire retardant poly to prevent building occupant observation. If the adjacent area is accessible to the public, the barrier must be solid and capable of withstanding the negative pressure.

3.2.4 CRITICAL BARRIERS

Completely separate any operations in the regulated area from adjacent areas using 2 layers of 6 mil fire retardant poly and duct tape. Individually seal with 2 layers of 6 mil poly and duct tape all HVAC openings into the regulated area. Individually seal all lighting fixtures, clocks, doors, windows, convectors, speakers, or any other objects/openings in the regulated area. Heat must be shut off any objects covered with poly.

3.2.5 PRIMARY BARRIERS

A. Cover the regulated area with two layers of 6 mil fire retardant poly on the floors and two layers of 4 mil, fire retardant poly on the walls, unless otherwise directed in writing by the Owner. Ground layers must form a right angle with the wall and turn up the wall at least 300 mm (12"). Seams must overlap at least 1800 mm (6') and must be spray glued and taped. Install sheeting so that layers can be removed independently from each other. Carpeting shall be covered with three layers of 6 mil poly. Corrugated cardboard sheets must be placed between the bottom and middle layers of poly. Mechanically support and seal with duct tape and glue all wall layers.

B. If stairs and ramps are covered with 6 mil plastic, two layers must be used. Provide 19 mm (3/4") exterior grade plywood treads held in place with duct tape/glue on the plastic. Do not cover rungs or rails with any isolation materials.

3.2.6 SECONDARY BARRIERS

A loose layer of 6 mil shall be used as a drop cloth to protect the primary layers from debris generated during the abatement. This layer shall be replaced as needed during the work and at a minimum once per work day.

3.2.7 EXTENSION OF THE REGULATED AREA

If the enclosure of the regulated area is breached in any way that could allow contamination to occur, the affected area shall be included in the regulated area and constructed as per this section. Decontamination measures must be started immediately and continue until air monitoring indicates background levels are met.

3.3 SANITARY FACILITIES

The Contractor shall provide sanitary facilities for abatement personnel and maintain them in a clean and sanitary condition throughout the abatement project.

3.4 PERSONAL PROTECTIVE EQUIPMENT

Provide whole body clothing, head coverings, gloves and foot coverings and any other personal protective equipment as determined by conducting the hazard assessment required by OSHA at 29 CFR 1910.132 (d). The Competent Person shall ensure the integrity of personal protective equipment worn for the duration of the project. Duct tape shall be used to secure all suit sleeves to wrists and to secure foot coverings at the ankle.

3.5 PRE-ABATEMENT ACTIVITIES

3.5.1 PRE-ABATEMENT MEETING

The Owner’s representative, upon receipt, review, and substantial approval of all pre-abatement submittals and verification by the CPIH/CIH that all materials and equipment required for the project are on the site, will arrange for a pre-abatement meeting between the Contractor, the CPIH/CIH, Competent Person(s), the Owner’s representative(s), and the PIH/CIH. The purpose of the meeting is to discuss any aspect of the submittals needing clarification or amplification and to discuss any aspect of the project execution and the sequence of the operation. The Contractor shall be prepared to provide any supplemental information/documentation to the Owner's representative regarding any submittals, documentation, materials or equipment. Upon satisfactory resolution of any outstanding issues, the Owner's representative will issue a written order to proceed to the Contractor. No abatement work of any kind described in the following provisions shall be initiated prior to the Owner’s written order to proceed.

3.5.2 PRE-ABATEMENT CONSTRUCTION AND OPERATIONS

A. Perform all preparatory work for the first regulated area in accordance with the approved work schedule and with this specification.

B. Upon completion of all preparatory work, the CPIH/CIH will inspect the work and systems and will notify the Owner's representative when the work is completed in accordance with this specification. The Owner's representative may inspect the regulated area and the systems with the PIH/CIH and may require that upon satisfactory inspection, the Contractor's employees perform all major aspects of the approved AHAP(s), especially worker protection, respiratory systems, contingency plans, decontamination procedures,

and monitoring to demonstrate satisfactory operation. The operational systems for respiratory protection and the negative pressure system shall be demonstrated for proper performance.

C. The CPIH/CIH shall document the pre-abatement activities described above and deliver a copy to the Owner's representative.

D. Upon satisfactory inspection of the installation of and operation of systems the Owner's representative will notify the Contractor in writing to proceed with the asbestos abatement work in accordance with this specification and all applicable regulations.

3.5.3 PRE-ABATEMENT INSPECTIONS AND PREPARATIONS

Before any work begins on the construction of the regulated area, the Contractor will:

A. Conduct an inspection with an authorized Owner’s representative and prepare a written inventory of all existing damage in those spaces where asbestos abatement will occur. Still or video photography may be used to supplement the written damage inventory. Document will be signed and certified as accurate by both parties.

B. The Owner’s Representative, the Contractor, and the PIH/CIH must be aware of AEQA 10-95 indicating the failure to identify asbestos in the areas listed as well as common issues when preparing specifications and contract documents. This is especially critical when demolition is planned, because AHERA surveys are non-destructive, and ACM may remain undetected. A NESHAPS (destructive) ACM inspection should be conducted on all building structures that will be demolished. Ensure the following areas are inspected on the project: lay-in ceilings concealing ACM; ACM behind walls/windows from previous renovations; inside utility chases/walls; transite piping/ductwork/sheets; behind radiators; lab fume hoods; transite lab countertops; roofing materials; below window sills; water/sewer lines; electrical conduit coverings; crawlspaces (previous abatement contamination); flooring/mastic covered by carpeting/new flooring; exterior insulated wall panels; on underground fuel tanks; and steam line trench coverings.

C. Ensure that all machinery, equipment, and other movable objects required to be removed from the regulated area have been cleaned and removed or properly protected from contamination.

3.6 REMOVAL OF ACM

3.6.1 WETTING ACM

A. Use amended water for the wetting of ACM prior to removal. The Competent Person shall assure the wetting of ACM meets the definition of "adequately wet" in the EPA NESHAP regulation and OSHA’s “wet methods” for the duration of the project. A removal encapsulant may be used instead of amended water with written approval of the Owner's representative.

B. Amended Water: Provide water to which a surfactant has been added shall be used to wet the ACM and reduce the potential for fiber release during disturbance of ACM. The mixture must be equal to or greater than the wetting provided by water amended by a surfactant consisting one ounce of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with 5 gallons (19L) of water.

C. Removal Encapsulant: When authorized by the Owner, provide a penetrating encapsulant designed specifically for the removal of ACM. The material must, when used, result in adequate wetting of the ACM and retard fiber release during removal.

3.6.2 SECONDARY BARRIER AND WALKWAYS

A. Install as a drop cloth a 6 mil poly sheet at the beginning of each work shift where removal is to be done during that shift. Completely cover floors and any walls within 10 feet (3 meters) of the area where work is to done. Secure the secondary barrier with duct tape to prevent it from moving or debris from getting behind it. Remove the secondary barrier at the end of the shift or as work in the area is completed. Keep residue on the secondary barrier wetted. When removing, fold inward to prevent spillage and place in a disposal bag.

B. Install walkways using 6 mil black poly between the regulated area and the decontamination facilities (PDF and W/EDF) to protect the primary layers from contamination and damage. Install the walkways at the beginning of each shift and remove at the end of each shift.

3.6.3 WET REMOVAL OF ACM

A. Adequately and thoroughly wet the ACM to be removed prior to removal with amended water or when authorized by the Owner' Engineer, removal encapsulant to reduce/prevent fiber release to the air. Adequate time (at a minimum two hours) must be allowed for the amended water or removal encapsulant to saturate the ACM. Abatement personnel must not disturb dry ACM. Use a fine spray of amended water or removal encapsulant. Saturate the material sufficiently to wet to the substrate without causing excessive dripping. The material must be sprayed repeatedly/continuously during the removal process in order to maintain adequately wet conditions. Removal encapsulants must be applied in accordance with the manufacturer's written instructions. Perforate or carefully separate, using wet methods, an outer covering that is painted or jacketed in order to allow penetration and wetting of the material. Where necessary, carefully remove covering while wetting to minimize fiber release. **In no event shall dry removal occur except when authorized in writing by the PIH/CIH and Owner when a greater safety hazard (e.g., electricity) is present.**

B. If ACM does not wet well with amended water due to composition, coating or jacketing, remove as follows:

1. Mist work area continuously with amended water whenever necessary to reduce airborne fiber levels.

2. Remove saturated ACM in small sections. Do not allow material to dry out. As material is removed, bag material, while still wet into disposal bags. Twist the bag neck tightly, bend over (gooseneck) and seal with a minimum of three tight wraps of duct tape. Clean /decontaminate the outside of the bag of any residue.

3. Fireproofing or Architectural Finish on Scratch Coat: Spray with a fine mist of amended water or removal encapsulant. Allow time for saturation to the substrate. Do not over saturate causing excess dripping. Scrape material from substrate. Remove material in manageable quantities and control falling to staging or floor. If the falling distance is over 20 feet (6M), use a drop chute to contain material through descent. Remove residue remaining on the scratch coat after scraping is done using a stiff bristle hand brush. If a removal encapsulant is used, remove residue completely before the encapsulant dries. Periodically re-wet the substrate with amended water as needed to prevent drying of the material before the residue is removed from the substrate.

4. Fireproofing or Architectural Finish on Wire Lath: Spray with a fine mist of amended water or removal encapsulant. Allow time to completely saturate the material. Do not over saturate causing excess dripping. If the surface has been painted or otherwise coated, cut small holes

as needed and apply amended water or removal encapsulant from above. Cut saturated wire lath into 2' x 6' (50mm x 150mm) sections and cut hanger wires. Roll up complete with ACM, cover in burlap and hand place in disposal bag. Do not drop to floor. After removal of lath/ACM, remove any overspray on decking and structure using stiff bristle nylon brushes. Depending on hardness of overspray, scrapers may be needed for removal.

5. Pipe/Tank/Vessel/Boiler Insulation: Remove the outer layer of wrap while spraying with amended water in order to saturate the ACM. Spray ACM with a fine mist of amended water or removal encapsulant. Allow time to saturate the material to the substrate. Cut bands holding pre-formed pipe insulation sections. Slit jacketing at the seams, remove and hand place in a disposal bag. Do not allow dropping to the floor. Remove molded fitting insulation/mud in large pieces and hand place in a disposal bag. Remove any residue on pipe or fitting with a stiff bristle nylon brush. In locations where pipe fitting insulation is removed from fibrous glass or other non-asbestos insulated straight runs of pipe, remove fibrous material at least 6" from the point it contacts the ACM.

3.7 LOCKDOWN ENCAPSULATION

3.7.1 GENERAL

Lockdown encapsulation is an integral part of the ACM removal. At the conclusion of ACM removal and before removal of the primary barriers, the contractor shall encapsulate all surfaces with a bridging encapsulant.

3.7.2 DELIVERY AND STORAGE

Deliver materials to the job site in original, new and unopened containers bearing the manufacturer's name and label as well as the following information: name of material, manufacturer's stock number, date of manufacture, thinning instructions, application instructions and the MSDS for the material.

3.7.3 WORKER PROTECTION

Before beginning work with any material for which an MSDS has been submitted, provide workers with any required personal protective equipment. The required personal protective equipment shall be used whenever exposure to the material might occur. In addition to OSHA/specification requirements for respiratory protection, a paint pre-filter and an organic vapor cartridge, at a minimum, shall used in addition to the HEPA filter when an organic solvent based encapsulant is used. The CPIH/CIH shall be responsible for provision of adequate respiratory protection. Note: Flammable and combustible encapsulants shall not be used, unless authorized in writing by the Owner.

3.7.4 ENCAPSULATION OF SCRATCH COAT PLASTER OR PIPING

A. Apply two coats of lockdown encapsulant to the scratch coat plaster or piping after all ACM has been removed. Apply in strict accordance with the manufacturer's instructions. Any deviation from the instructions must be approved by the Owner in writing prior to commencing the work.
B. Apply the lockdown encapsulant with an airless sprayer at a pressure and using a nozzle orifice as recommended by the manufacturer. Apply the first coat while the while the scratch coat is still damp from the asbestos removal process, after passing the visual inspection. If the surface has been allowed to dry, wet wipe or HEPA vacuum prior to spraying with encapsulant. Apply a second coat over the first coat in strict conformance with the manufacturer's instructions. Color the lockdown encapsulant and contrast the color in the second coat so that visual confirmation of completeness and uniform coverage of each coat is possible. Adhere to the manufacturer's instructions for coloring. At the completion of the encapsulation, the surface must be a uniform third color produced by the mixture.

3.7.5 SEALING EXPOSED EDGES

Seal edges of ACM exposed by removal work which is inaccessible, such as a sleeve, wall penetration, etc., with two coats of bridging encapsulant. Prior to sealing, permit the exposed edges to dry completely to permit penetration of the bridging encapsulant. Apply in accordance with 3.3.4 (B).

3.8 DISPOSAL OF ACM WASTE MATERIALS

3.8.1 GENERAL

Dispose of waste ACM and debris which is packaged in accordance with these specifications, OSHA, EPA and DOT. The landfill requirements for packaging must also be met. Transport will be in compliance with 49 CFR 100–185 regulations. Disposal shall be done at an approved landfill. Disposal of non-friable ACM shall be done in accordance with applicable regulations.

A. Friable (non-intact) ACM shall be disposed of in a Class I landfill that is certified to accept friable ACM. Approval for the selected Class I landfill must be obtained from the Owner and landfill personnel prior to disposal of the ACM.

B. A written waste manifest shall be prepared prior to the transportation and disposal of any friable (non-intact) ACM. The Contractor shall prepare the waste manifest. The Contractor is responsible for ensuring all requirements of the landfill are followed. A copy of the requirements shall be provided to the Owner's representative prior to disposal.

3.8.2 PROCEDURES

A. The Owner must be notified at least 24 hours in advance of any waste removed from the containment.

B. Asbestos waste shall be packaged and moved through the W/EDF into a covered transport container in accordance with procedures is this specification. Waste shall be double-bagged and wetted with amended water prior to disposal. Wetted waste can be very heavy. Bags shall not be overfilled. Bags shall be securely sealed to prevent accidental opening and/or leakage. The top shall be tightly twisted and goose necked prior to tightly sealing with at least three wraps of duct tape. Ensure that unauthorized persons do not have access to the waste material once it is outside the regulated area. All transport containers must be covered at all times when not in use. NESHAP signs must be on containers during loading and unloading. Material shall not be transported in open vehicles. If drums are used for packaging, the drums shall be labeled properly and shall not be re-used.

C. Waste Load Out: Waste load out shall be done in accordance with the procedures in W/EDF Decontamination Procedures. Sealed waste bags shall be decontaminated on exterior surfaces by wet cleaning and/or HEPA vacuuming before being placed in the second waste bag and sealed, which then must also be wet wiped or HEPA vacuumed.

D. Asbestos waste with sharp edged components, i.e., nails, screws, lath, strapping, tin sheeting, jacketing, metal mesh, etc., which might tear poly bags shall be wrapped securely in burlap before packaging and, if needed, use a poly lined fiber drum as the second container, prior to disposal.

3.9 PROJECT DECONTAMINATION

3.9.1 GENERAL

A. The entire work related to project decontamination shall be performed under the close supervision and monitoring of the CPIH/CIH.

B. If the asbestos abatement work is in an area which was contaminated prior to the start of abatement, the decontamination will be done by cleaning the primary barrier poly prior to its removal and cleanings of the surfaces of the regulated area after the primary barrier removal.

C. If the asbestos abatement work is in an area which was uncontaminated prior to the start of abatement, the decontamination will be done by cleaning the primary barrier poly prior to its removal, thus preventing contamination of the building when the regulated area critical barriers are removed.

3.9.2 REGULATED AREA CLEARANCE

Clearance air testing and other requirements which must be met before release of the Contractor and re-occupancy of the regulated area space are specified in Final Testing Procedures.

3.9.3 PRE-DECONTAMINATION CONDITIONS

A. Before decontamination starts, all ACM waste from the work area shall be collected and removed, and the loose 6 mil layer of poly removed while being adequately wetted with amended water and disposed of along with any gross debris generated by the work.

B. At the start of decontamination, the following shall be in place:
   1. Primary barriers consisting of 2 layers of 6 mil poly on the floor and 4 mil poly on the walls.
   2. Critical barriers consisting of 2 layers of 6 mil poly which is the sole barrier between the regulated area and openings to the rest of the building or outside.
   3. Decontamination facilities for personnel and equipment in operating condition and the negative pressure system in operation.

3.9.4 FIRST CLEANING

Carry out a first cleaning of all surfaces of the regulated area including items of remaining poly sheeting, tools, scaffolding, ladders/staging by wet methods and/or HEPA vacuuming. Do not use dry dusting/sweeping/air blowing methods. Use each surface of a wetted cleaning cloth one time only and then dispose of as contaminated waste. Continue this cleaning until there is no visible residue from abated surfaces or poly or other surfaces. Remove all filters in the air handling system and dispose of as ACM waste in accordance with these specifications. The negative pressure system shall remain in operation during this time. Additional cleaning(s) may be needed as determined by the CPIH/PIH/CIH.

3.9.5 PRE-CLEARANCE INSPECTION AND TESTING

The CPIH/CIH and PIH/CIH will perform a thorough and detailed visual inspection at the end of the cleaning to determine whether there is any visible residue in the regulated area. If the visual inspection is acceptable, the CPIH/CIH will perform pre-clearance sampling using aggressive clearance as detailed in 40 CFR 763 Subpart E (AHERA) Appendix A (III)(B)(7)(d). If the sampling results show values below 0.01 f/cc, then the Contractor shall notify the Owner of the results with a brief report from the CPIH/CIH documenting the inspection and sampling results and a statement verifying that the regulated area is ready for lockdown encapsulation. The Owner reserves the right to utilize their own PIH/CIH to perform a pre-clearance inspection and testing for verification.

3.10 FINAL VISUAL INSPECTION AND AIR CLEARANCE TESTING

3.10.1 GENERAL

Notify the Owner’s representative 24 hours in advance for the performance of the final visual inspection. The final visual inspection and testing will be performed by the PIH/CIH starting after the final cleaning.

3.10.2 FINAL VISUAL INSPECTION

Final visual inspection will include the entire work area, all poly sheeting, seals over HVAC openings, doorways, windows, and any other openings. If any debris, residue, dust or any other suspect material is detected, the final cleaning shall be repeated at no cost to the Owner. Dust/material samples may be collected and analyzed at no cost to the Owner at the discretion of the PIH/CIH to confirm visual findings.

3.10.3 FINAL AIR CLEARANCE PROCEDURES

A. Contractor's Release Criteria: Work in a regulated area is complete when the regulated area is visually clean and airborne fiber levels have been reduced to or below 0.01 f/cc as measured by the AHERA PCM protocol, or 70 AHERA structures per square millimeter (s/mm^2) by AHERA TEM.

B. Air Monitoring and Final Clearance Sampling: To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to the specified level, the PIH/CIH will secure samples and analyze them according to the following procedures:

1. Fibers Counted: “Fibers” referred to in this section shall be either all fibers regardless of composition as counted in the NIOSH 7400 PCM method or asbestos fibers counted using the AHERA TEM method.

2. Aggressive Sampling: All final air testing samples shall be collected using aggressive sampling techniques except where soil is not encapsulated or enclosed. Samples will be collected on 0.8µ MCE filters for PCM analysis and 0.45µ Polycarbonate filters for TEM. A minimum of 1200 Liters of using calibrated pumps shall be collected for clearance samples. Before pumps are started, initiate aggressive air mixing sampling as detailed in 40 CFR 763 Subpart E (AHERA) Appendix A (III)(B)(7)(d). Air samples will be collected in areas subject to normal air circulation away from corners, obstructed locations, and locations near windows, doors, or vents. After air sampling pumps have been shut off, circulating fans shall be shut off. The negative pressure system shall continue to operate.

3. Final clearance for soil that is not encapsulated, samples will be collected on 0.8µ MCE filters for PCM analysis and 0.45µ Polycarbonate filters for TEM. A minimum of 1200 Liters of using calibrated pumps shall be collected for clearance samples. Air clearance of work areas where contaminated soil has been removed is in addition to the requirement for clearance by bulk sample analysis discussed within these specifications. There will be no aggressive air sampling for the clearance of soil due to the fact that aggressive air sampling may overload the cassettes.

3.10.4 CLEARANCE SAMPLING USING PCM – LESS THAN 260LF/160SF:

A. The PIH/CIH will perform clearance samples as indicated by the specification.

B. The NIOSH 7400 PCM method will be used for clearance sampling with a minimum collection volume of 1200 Liters of air. A minimum of 5 PCM clearance samples shall be collected. All samples must be equal to or less than 0.01 f/cc to clear the regulated area.

C. Random samples shall be collected from areas of soil which have been abated to ensure that the soil has been properly decontaminated. The total number of samples to be collected from the soil areas shall be; <1000 SF of soil – 3 samples; >1000 to <5000 SF of soil – 5 samples; and >5000 SF of soil – 7 samples. The soil samples shall be collected in a statistically random manner and shall be analyzed by PLM method. The clearance level to determine the soil clean is <1% asbestos by weight as analyzed by PLM method. If this level is achieved, the soil areas shall be considered clear. If the levels are >1% asbestos, the areas shall be re-cleaned until the sample results are <1%.

3.10.5 CLEARANCE SAMPLING USING TEM – EQUAL TO OR MORE THAN 260LF/160SF: TEM

A. Clearance requires 13 samples be collected; 5 inside the regulated area; 5 outside the regulated area; and 3 field blanks.

B. The TEM method will be used for clearance sampling with a minimum collection volume of 1200 Liters of air. A minimum of 13 clearance samples shall be collected. All samples must be equal to or less than 70 AHERA structures per square millimeter (s/mm^2) AHERA TEM. (Note: Refer to the CT Department of Public Health letter dated August 16, 2010 titled, “Regulatory Interpretations Regarding Post Abatement Re-Occupancy Criteria” in lieu of performing post abatement air sampling)

3.11 ABATEMENT CLOSEOUT AND CERTIFICATE OF COMPLIANCE

3.11.1 COMPLETION OF ABATEMENT WORK

After thorough decontamination and fulfilling the following:

A. Remove all equipment and materials from the project area.

B. Dispose of all packaged ACM waste as required.

C. Repair or replace all interior finishes damaged during the abatement work, as required.

D. Fulfill other project closeout requirements as required in this specification.

3.11.2 CERTIFICATE OF COMPLETION BY CONTRACTOR

The CPIH/CIH shall complete and sign the "Certificate of Completion" in accordance with Attachment 1 at the completion of the abatement and decontamination of the regulated area.

3.11.3 WORK SHIFTS

All work shall be done during administrative hours (8:00 AM to 4:30 PM) Monday - Friday excluding Federal Holidays. Any change in the work schedule must be approved in writing by the Owner’s Representative.

ATTACHMENT #1

CERTIFICATE OF COMPLETION

DATE: _____ Project #: _____

PROJECT NAME:_____Abatement Contractor:_____

ADDRESS:_____

1. I certify that I have personally inspected, monitored and supervised the abatement work of (specify regulated area or Building):

   which took place from / / to / /

2. That throughout the work all applicable requirements/regulations and the specifications were met.
3. That all employees of the Abatement Contractor engaged in this work were trained in respiratory protection, were experienced with abatement work, had proper medical surveillance documentation, were fit-tested for their respirator, and were not exposed at any time during the work to asbestos without the benefit of appropriate respiratory protection.
4. That I performed and supervised all inspection and testing specified and required by applicable regulations and the specifications.
5. That all abatement work was done in accordance with OSHA requirements and the manufacturer's recommendations.

CPIH/CIH

Signature/Date:.....
.....

CPIH/CIH Print

Name:.....
.....

Abatement Contractor

Signature/Date:.....
.....

Abatement Contractor Print

Name:.....
.....

ATTACHMENT #2

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME:_____ DATE: _____

PROJECT ADDRESS:_____

ABATEMENT CONTRACTOR'S NAME:_____

WORKING WITH ASBESTOS CAN BE HAZARDOUS TO YOUR HEALTH. INHALING ASBESTOS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCERS. IF YOU SMOKE AND INHALE ASBESTOS FIBERS, YOUR CHANCES OF DEVELOPING LUNG CANCER IS GREATER THAN THAT OF THE NON-SMOKING PUBLIC.

Your employer's contract with the owner for the above project requires that: You must be supplied with the proper personal protective equipment including an adequate respirator and be trained in its use. You must be trained in safe and healthy work practices and in the use of the equipment found at an asbestos abatement project. You must receive/have a current medical examination for working with asbestos. These things shall be provided at no cost to you. By signing this certificate you are indicating to the owner that your employer has met these obligations.

RESPIRATORY PROTECTION: I have been trained in the proper use of respirators and have been informed of the type of respirator to be used on the above indicated project. I have a copy of the written Respiratory Protection Program issued by my employer. I have been provided for my exclusive use, at no cost, with a respirator to be used on the above indicated project.

TRAINING COURSE: I have been trained by a third party, State/EPA accredited trainer in the requirements for an AHERA/OSHA Asbestos Abatement Worker training course, 32 hours minimum duration. I currently have a valid State accreditation certificate. The topics covered in the course include, as a minimum, the following:

Physical Characteristics and Background Information on Asbestos
Potential Health Effects Related to Exposure to Asbestos
Employee Personal Protective Equipment
Establishment of a Respiratory Protection Program
State of the Art Work Practices
Personal Hygiene
Additional Safety Hazards
Medical Monitoring
Air Monitoring
Relevant Federal, State and Local Regulatory Requirements, Procedures, and Standards
Asbestos Waste Disposal

MEDICAL EXAMINATION: I have had a medical examination within the past 12 months which was paid for by my employer. This examination included: health history, occupational history, pulmonary function test, and may have included a chest x-ray evaluation. The physician issued a positive written opinion after the examination.

Signature:_____

Printed Name:_____

Social Security Number:_____

Witness:_____

ATTACHMENT #3

AFFIDAVIT OF MEDICAL SURVEILLANCE, RESPIRATORY PROTECTION AND TRAINING/ACCREDITATION

PROJECT NAME:_____

ABATEMENT CONTRACTOR'S NAME AND ADDRESS:_____

1. I verify that the following individual

   Name:_____ Social Security Number:_____

   who is proposed to be employed in asbestos abatement work associated with the above project by the named Abatement Contractor, is included in a medical surveillance program in accordance with 29 CFR 1926.1101(m), and that complete records of the medical surveillance program as required by 29 CFR 1926.1101(m)(n) and 29 CFR 1910.20 are kept at the offices of the Abatement Contractor at the following address.

   Address:_____

2. I verify that this individual has been trained, fit-tested and instructed in the use of all appropriate respiratory protection systems and that the person is capable of working in safe and healthy manner as expected and required in the expected work environment of this project.

3. I verify that this individual has been trained as required by 29 CFR 1926.1101(k). This individual has also obtained a valid State accreditation certificate. Documentation will be kept on-site.

4. I verify that I meet the minimum qualifications criteria of the specifications for a CPIH.

Signature of CPIH/CIH:_____ Date:_____

Printed Name of CPIH/CIH: _____

Signature of Contractor:_____ Date:_____

Printed Name of Contractor:_____

ATTACHMENT #4

ABATEMENT CONTRACTOR/COMPETENT PERSON(S) REVIEW AND ACCEPTANCE OF THE ASBESTOS SPECIFICATIONS

Project Location:_____

Project #: _____

Project Description:_____

This form shall be signed by the Asbestos Abatement Contractor Owner and the Asbestos Abatement Contractor's Competent Person(s) prior to any start of work at the Project Site related to this Specification. If the Asbestos Abatement Contractor's/Competent Person(s) has not signed this form, they shall not be allowed to work on-site.

I, the undersigned, have read the Asbestos Specification regarding the asbestos abatement requirements. I understand the requirements of the Asbestos Specification and agree to follow these requirements as well as all required rules and regulations of OSHA/EPA/DOT and State/Local requirements. I have been given ample opportunity to read the Asbestos Specification and have been given an opportunity to ask any questions regarding the content and have received a response related to those questions. I do not have any further questions regarding the content, intent and requirements of the Asbestos Specification.

At the conclusion of the asbestos abatement, I will certify that all asbestos abatement work was done in accordance with the Asbestos Specification and all ACM was removed properly and no fibrous residue remains on any abated surfaces.

Abatement Contractor Owner's Signature_____Date_____

Abatement Contractor Competent Person(s)_____Date_____

- - END- - - -

ATTACHMENT D:

02 8411 - Non-Liquid PCB Building Material Removal

SECTION 02 8411 – NON-LIQUID PCB BUILDING MATERIAL REMOVAL

PART 1 GENERAL

1.00 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.01 SCOPE OF WORK

A. This demolition project will include the removal and disposal of non-liquid PCB materials (herein referred to as PCB materials).

B. Work under this item shall include the abatement of: PCB-containing caulking and/or glazing compounds (federally-regulated and non-federally regulated PCB), removal of adjacent non-porous building materials, and removal of adjacent porous building materials (brick, block, granite paneling, etc) as identified in the Contract Documents that are coated with Federally-regulated PCB-containing caulking and/or glazing compounds ("PCB Bulk Product Waste").

C. The Contractor shall be aware of all conditions of the project and is responsible for verifying quantities and locations of all Work to be performed. Failure to do so shall not relieve the Contractor of its obligation to furnish all labor and materials necessary to perform the Work.

D. All Work shall be performed in strict accordance with the Project Documents and all governing codes, rules, and regulations. Where conflicts occur between the Project Documents and applicable codes, rules, and regulations, the more stringent shall apply.

1.02 DESCRIPTION OF WORK

A. Work under this item shall include the abatement of: PCB-containing caulking and/or glazing compounds (federally-regulated and non-federally regulated PCB), removal of adjacent non-porous building materials, and removal of adjacent porous building materials (brick, block, granite paneling, etc) as identified in the Contract Documents that are coated with State-regulated PCB-containing caulking and/or glazing compounds ("PCB Remediation Waste").

B. Below is a brief description of the estimated quantities of PCB containing caulking and/or glazing to be abated. These quantities are for informational purposes only and are based on the best information available at the time of the specification preparation. The Contractor shall satisfy themselves as the actual quantities to be abated. Nothing in this section may be interpreted as limiting the extent of work otherwise required by this contract and related documents.

I. White caulk around windows as well as 1 (one) course of brick where in contact with white window caulk at Maintenance Building. (Approximately 20 windows)

1.03 PERMITS AND COMPLIANCE

A. The Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State, and local laws, rules, and regulations pertaining to Work practices, protection of Workers, authorized visitors to the site, persons, and property adjacent to the Work.

B. Perform PCB related Work in accordance with CT Hazardous Waste Management Regulations (Regulations of Connecticut State Agencies ("RCSA") Sections 22a-449(c)-100 through -119), 40 CFR 761, and 29 CFR 1926, as specified herein. Where more stringent requirements are specified, adhere to the more stringent requirements.

C. The Contractor must maintain current licenses or registrations pursuant to CTDEEP and EPA regulations for all Work related to this Project, including the removal, handling, transport, and disposal of hazardous and industrial waste.

D. Failure to adhere to the Project Documents shall constitute a breach of the Contract and the Owner shall have the right to and may terminate the Contract provided, however, the failure of the Owner to so terminate shall not relieve the Contractor from future compliance.

1.04 SUBMITTALS

A. Pre-Work Submittals: Within 7 days prior to the pre-construction conference, the Contractor shall submit 3 copies of the documents listed below:

1. Progress Schedule:

a. Show the complete sequence of abatement activities and the sequencing of Work within each building or building section.

b. Show the dates for the beginning and completion of each major element of Work including substantial completion dates for each Work Area, building, or phase.

2. Abatement Work Plan: Provide plans that clearly indicate the following:

a. All Work Areas/containments numbered sequentially.

b. Entrances and exits to the Work Areas/containments.

c. Type of abatement activity/technique for each Work Area/containment.

d. Proposed location and construction of storage facilities and field office.

3. Disposal Site/Landfill Permit from applicable regulatory agency.

4. Letter identifying the presence of PCB bulk product waste, with Acknowledgement by the landfill.

B. On-Site Submittals: Refer to Part 3.01.B for all submittals, documentation, and postings required to be maintained on-site during abatement activities.

C. Project Close-out Submittals: Within 30 days after project completion, the Contractor shall submit 1 copy of the closeout-out submittals listed below to Owner for review and approval prior to the Contractors final payment.

1. **Copy** of all waste disposal manifests and disposal logs.

2. Daily progress log.

3. Copy of Contractor's Acknowledgment Statement Forms.

4. Disposal Site/Landfill Permit from applicable regulatory agency.

5. Copy of PCB notification with acknowledgement from the disposal facility/landfill, if applicable.

1.05 PRE-CONSTRUCTION CONFERENCE

A. Prior to start of preparatory Work under this Contract, the Contractor shall attend a pre-construction conference attended by the Owner and the Owner's On-site representative (OSR).

B. Agenda for this conference shall include but not necessarily be limited to:

1. Contractor's scope of Work, Work plan, and schedule to include number of workers and shifts.

2. Contractor's safety and health precautions including protective clothing and equipment and decontamination procedures.

3. OSR's duties, functions, and authority.

4. Contractor's Work procedures including:

   a. Methods of job site preparation and removal methods.

   b. Disposal procedures.

   c. Cleanup procedures.

   d. Emergency procedures.

5. Contractor’s required pre-work and on-site submittals, documentation, and postings.

6. Temporary utilities.

7. Storage of removed PCB materials.

8. Waste disposal requirements and procedures.

1.06 APPLICABLE STANDARDS AND REGULATIONS

A. The Contractor shall comply with the following codes and standards, except where more stringent requirements are shown or specified:

B. Federal Regulations:

1. 29 CFR 1910.1200, "Hazard Communication" (OSHA)

2. 29 CFR 1910.134, "Respiratory Protection" (OSHA)

3. 29 CFR 1910.145, "Specification for Accident Prevention Signs and Tags" (OSHA)

4. 29 CFR 1926, "Construction Industry" (OSHA)

5. 40 CFR 761, “PART 761—POLYCHLORINATED BIPHENYLS (PCBs)” (EPA)

6. 49 CFR 171-173, Transportation Standards (DOT)

C. Connecticut State Regulations:

1. CT Hazardous Waste Management Regulations - RCSA Sections 22a-449(c)-100 through-119

2. CT Hazardous Waste Transporter Permits - RCSA Section 22a-449 (c)-11

D. Standards and Guidance Documents:

1. American National Standard Institute (ANSI) Z88.2-80, Practices for Respiratory Protection

1.07 PROJECT MONITORING

A. The Owner shall engage the services of an OSR in regard to the performance of the PCB abatement Project and provide direction as required throughout the entire abatement Project period.

B. The Contractor is required to ensure cooperation of its personnel with the OSR for the sampling and Project monitoring functions described in this section. The Contractor shall comply with all direction given by the OSR during the course of the Project.

C. The OSR shall provide the following administrative services:

1. Review and approve or disapprove all submittals, shop drawings, schedules, and samples.

2. Assure that all notifications to governmental agencies or landfills by the Contractor are submitted in a timely manner and are correct in content.

D. The OSR shall staff the Project with a trained and certified person(s) to act on the Owner's behalf at the job site. This individual shall be designated as the Abatement Project Monitor (APM).

1. The APM shall be on-site at all times the Contractor is on-site. The Contractor shall not be permitted to conduct any Work unless the APM is on-site (except for inspection and planning purposes during non-working days).

2. The APM shall have the authority to direct the actions of the Contractor verbally and in writing to ensure compliance with the Project documents and all regulations. The APM shall have the authority to Stop Work when gross Work practice deficiencies or unsafe practices are observed.

a. Such Stop Work order shall be effective immediately and remain in effect until corrective measures have been taken and the situation has been corrected.

b. Standby time required to resolve the situation shall be at the Contractor's expense.

3. The APM shall provide the following services:

a. Inspection of the Contractor's Work, practices, and procedures, including temporary protection requirements, for compliance with all regulations and Project specifications.

b. Monitor the progress of the Contractor's Work, and report any deviations from the schedule to the Owner.

c. Monitor, verify, and document all waste load-out operations.

d. The APM shall maintain a log on site that documents all project related and Consultant and Contractor actions, activities, and occurrences.

e. The APM shall take air, swipe, wipe, or bulk samples upon the Owner’s request.

4. The following inspections shall be conducted by the APM. Additional inspections shall be conducted as required by Project conditions. Progression from one phase of Work to the next by the Contractor is only permitted with the written approval of the APM.

a. Pre-Construction Inspection: The purpose of this inspection is to verify the existing conditions of the Work Areas and to document these conditions.

b. Pre-Commencement Inspection: This inspection shall take place only after the Work Area is fully prepped for removal.

c. Work Inspections: The purpose of this inspection is to monitor the Work practices and procedures employed on the Project and to monitor the continued integrity of the containment system. Inspections within the removal areas shall be conducted by the APM during all preparation, removal, and cleaning activities at least twice every Work shift. Additional inspections shall be conducted as warranted.

d. Visual Clearance Inspection: The purpose of this inspection is to verify that: all materials in the scope of work have been properly removed; no visible PCB material debris/residue remains.

e. Punch List Inspection: The purpose of this inspection is to verify the Contractor's certification that all Work has been completed as contracted and the existing condition of the area prior to its release to the Owner.

5. The Owner may, at its discretion, choose to conduct air sampling. If air samples collected during abatement indicate any airborne PCB concentration(s) above the OSHA PEL of 0.5 mg/m3 or EPA recommended thresholds, work shall be stopped immediately and Work methods shall be altered to reduce the airborne PCB concentration(s).

1.08 PROJECT SUPERVISOR

A. The Contractor shall designate a full-time Project Supervisor who shall meet the following qualifications:

1. The Project Supervisor shall be trained in PCB removal and hazardous waste management in CT, via a 40-hour HAZWOPER/Supervisor training course.

2. The Project Supervisor shall have a minimum of one year experience as a supervisor.

3. The Project Supervisor must be able to read and write English fluently, as well as communicate in the primary language of the Workers.

B. If the Project Supervisor is not on-site at any time whatsoever, all Work shall be stopped. The Project Supervisor shall remain on-site until the Project is complete. The Project Supervisor cannot be removed from the Project without the written consent of the Owner. The Project Supervisor shall be removed from the Project if so requested by the Owner.

C. The Project Supervisor shall maintain a bound Daily Project Log that includes the Waste Disposal Log required by section 4.03 of the specifications.

D. The Project Supervisor shall be responsible for the performance of the Work and shall represent the Contractor in all respects at the Project site. The Supervisor shall be the primary point of contact for the APM.

1.09 TRAINING

A. As required by applicable regulations, prior to assignment to PCB Work instruct each employee with regard to the hazards of PCB, safety and health precautions, and the use and requirements of protective clothing and equipment.

1.10 RESPIRATORY PROTECTION

A. Establish a respirator program as required by ANSI Z88.2 and 29 CFR 1910.134. Provide respirator training.

B. Select respirators from those approved by the Mine Safety and Health Administration (MSHA), and the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services. High Efficiency Particulate Air (HEPA) respirator filters shall be approved by NIOSH and shall conform to the OSHA requirements in 29 CFR 1910.134.

C. Respirators shall be individually fit-tested to personnel under the direction of an Industrial Hygienist on a yearly basis. Fit-tested respirators shall be permanently marked to identify the individual fitted, and use shall be limited to that individual.

D. The Contractor shall provide and make available a sufficient quantity of respirator filters so that filter changes can be made as necessary during the work day.

E. Any authorized visitor, Worker, or supervisor found in the Work Area not wearing the required respiratory protection shall be removed from the Project site and not be permitted to return.

1.11 DELIVERY AND STORAGE

A. Deliver all materials to the job site in original packages with containers bearing manufacturer's name and label.

B. Store all materials at the job site in a suitable and designated area.

1. Store materials subject to deterioration or damage away from wet or damp surfaces and under cover.

2. Protect materials from unintended contamination and theft.

3. Storage areas shall be kept clean and organized.

C. Remove damaged or deteriorated materials from the job site. Materials contaminated with PCB shall be disposed of as PCB material as specified herein.

1.12 TEMPORARY UTILITIES

A. Where available, obtain power from Owner's existing system. Otherwise provide power from other sources (i.e. generator).

1. Provide temporary wiring and "weatherproof" receptacles in sufficient quantity and location to serve all HEPA equipment and tools.

2. Provide wiring and receptacles as required by the Environmental Consultant for air sampling equipment.

B. Utilize domestic water service, if available, from Owner's existing system.

PART 2 – PRODUCTS

2.01 PROTECTIVE CLOTHING

A. Provide personnel utilized during the Project with disposable protective whole body clothing, head coverings, and foot coverings. Provide disposable plastic or rubber gloves, suitable to prevent PCB skin contact, to protect hands.

B. Provide sufficient quantities of protective clothing to assure a minimum of four (4) complete disposable outfits per day for each individual performing abatement Work.

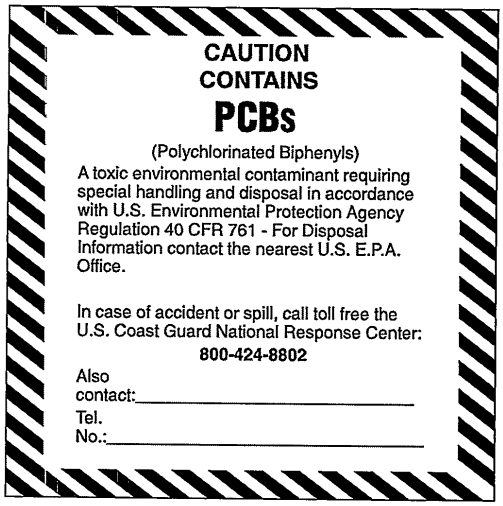
C. Eye protection and hard hats shall be provided and made available for all personnel entering any Work Area.

D. Authorized visitors shall be provided with suitable protective clothing, headgear, eye protection, and footwear whenever they enter the Work Area.

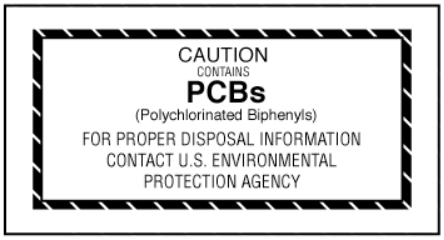
2.02 SIGNS AND LABELS, CONTAINERS

A. Provide warning signs and barrier tapes at all approaches to PCB Work Areas. Locate signs at such distance that personnel may read the sign and take the necessary protective steps required before entering the area.

B. Provide the appropriate “Large PCB Marking” or “Small PCB Marking” (M_L or M_S per 40 CFR 761) as shown below, of sufficient size to be clearly legible, for display on waste containers (bags, boxes, rolloffs or drums) which will be used to contain or transport PCB contaminated material, in accordance with 40 CFR 761. In addition, U.S. Department of Transportation (DOT) 49 CFR Parts 171 and 172 requires the name and UN number of the material to be on the bags or drums, and, if shipped in bulk (rolloffs, Gaylord boxes, etc) the bulk container must also be labeled: Polychlorinated Biphenyl, solid mixture UN 3432.



M_L



M_S

C. The PCB materials are also CT Hazardous Waste, and must have a label stating the following on each container :

HAZARDOUS WASTE--Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority, or the U.S. Environmental Protection Agency.

Generator's Name and Address_____
Generator's EPA Identification Number_____
Manifest Tracking Number _____

D. Provide 6 mil plastic disposal bags with PCB caution labels.

1. The “Small PCB Label” (M_S per 40 CFR 761) may be used as shown above. Bags shall also be labeled with U.S. DOT required markings per 49 CFR 172, Polychlorinated biphenyl, solid mixture UN 3432.

2. Labeled PCB waste containers or bags shall not be used for non-PCB waste or trash. Any material placed in labeled containers or bags, whether turned inside out or not shall be handled and disposed of as PCB waste.

2.03 DAILY PROJECT LOG

A. Provide a Daily Project Log. The log shall contain on title page the Project name, name, address and phone number of Owner; name, address and phone number of Environmental Consultant; name,

address and phone number of Abatement Contractor; emergency numbers including, but not limited to local Fire/Rescue department.

B. All entries into the log shall be made in non-washable, permanent ink and such pen shall be strung to or otherwise attached to the log to prevent removal from the log-in area. Under no circumstances shall pencil entries be permitted.

C. The Project Supervisor shall document all Work performed daily and note all inspections.

2.04 SCAFFOLDING AND LADDERS

A. Provide all scaffolding and/or staging as necessary to accomplish the Work of this Contract. Scaffolding may be of suspension type or standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type or cantilever type. The type, erection and use of all scaffolding and ladders shall comply with all applicable OSHA construction industry standards.

B. Provide scaffolding and ladders as required by the Environmental Consultant for the purposes of performing required inspections.

2.05 SHIPPING CONTAINERS AND PACKAGING

A. Provide packaging in accordance with 49 CFR 173 Packaging Group 9, such as 30 or 55 gallon capacity fiber, plastic, or metal drums, Gaylord Boxes or other Intermediate Bulk Containers (IBCs), or non-siftable bulk containers, capable of being sealed air and water tight if PCB waste has the potential to damage or puncture disposal bags. Affix PCB caution labels on lids of drums, and opposite sides of drums or bulk containers, as well as the ends of bulk containers.

2.06 EQUIPMENT AND MATERIALS

A. All dry vacuuming performed under this contract shall be performed with High Efficiency Particulate Air (HEPA) filter equipped industrial vacuums conforming to ANSI Z9.2.

B. Any power tools used to drill, cut into, or otherwise disturb PCB material shall be manufacturer equipped with HEPA filtered local exhaust ventilation.

C. All polyethylene (plastic) sheeting used on the Project (including but not limited to sheeting used for critical and isolation barriers, fixed objects, walls, floors, ceilings, waste container) shall be at least 6 mil fire retardant sheeting.

PART 3 – EXECUTION

3.01 GENERAL REQUIREMENTS

A. Should visible PCB debris be observed outside the Work Area, immediately stop Work notify the Owner; institute emergency procedures as directed. All costs incurred in decontaminating such non-Work Areas and the contents thereof shall be borne by the Contractor, at no additional cost to the Owner.

B. The following submittals, documentation, and postings shall be maintained on-site by the Contractor during abatement activities at a location approved by the Abatement Project Monitor:

1. Project documents (specifications and drawings.)

2. Applicable regulations.

3. Material Safety Data Sheets of supplies/chemicals used on the Project.

4. Approved Abatement Work Plan.

5. List of emergency telephone numbers.

6. Waste Disposal Log.

7. Daily Project Log.

C. The following documentation shall be maintained on-site by the Abatement Project Monitor during abatement activities:

1. Project Monitor Daily Log.

2. PCB Survey Report.

3.02 WORK AREA PREPARATION

A. PCB caution signs shall be posted at all approaches to the PCB Work Area. Post all emergency exits as emergency exits only on the Work Area side, post with PCB caution signs on the non-Work Area side. Provide all non-Work Area stairs and corridors accessible to the PCB Work Area with warning tapes at the base of stairs and beginning of corridors. Warning tapes shall be in addition to caution signs.

B. Access to areas of work shall be regulated to prevent unauthorized visitors.

C. Personal/Equipment Decontamination Room or Area**:** An existing room or area that is adjacent to the work area shall be used for the decontamination of personnel and equipment. The room or area shall be covered by an impermeable drop cloth on the floor or horizontal working surface. The room or area must be of sufficient size to accommodate cleaning of equipment and removing personal protective equipment. Work clothing must be cleaned with a HEPA vacuum before it is removed. All equipment and surfaces of waste containers must be cleaned prior to removing them from the decontamination room or area. All personnel must enter and exit the PCB work area through the decontamination room or area.

D. Work Area Preparation For Exterior Removal:

1. All ground surfaces exterior to the work area shall have a layer of 6 mil fire retardant plastic sheeting, attached to the building face and laid down on the surface below the exterior abatement work area, at least 10 feet wide or to the furthest point of gravity fall for dislodged debris by methods used, whichever is further. For work at the second story and above, extend 6 mil fire retardant plastic sheeting as necessary. For work above third story, by sidewalk, street, or property boundary, scaffolding sides shall be covered in 6-mil fire retardant plastic sheeting.

2. All operable windows within the work area and 25 ft. from all sides of the work area shall be closed.

3. In the work area, isolate all HVAC equipment intakes by temporarily shutting down units during removals and installing plastic sheeting over the opening.

E. Work Area Preparation For Interior Removal:

1. Isolate all HVAC equipment, including installing plastic sheeting on all air returns and exhausts. Turn off all HVAC systems serving work area when feasible.

2. All floor areas adjacent to the work area shall have a layer of 6 mil fire retardant plastic sheeting, attached to the interior wall and laid down on the surfaces below the abatement work area, at least

5 feet wide or to the furthest point of gravity fall for dislodged debris by methods used, whichever is further.

3. All movable objects shall be removed from the immediate work area. All non-movable objects shall be covered with one layer of 6 mil fire retardant plastic sheeting and sealed at the edges.

4. All operable windows within the work area shall be closed.

5. Temporary dust barriers consisting of a minimum of 6-mil fire-retardant plastic sheeting shall be at installed at hallways, corridors, doorways, and other openings to the work area not used for passage during removals) to establish work area containment enclosure.

6. A 6-mil fire retardant plastic sheeting overlapping curtained doorway shall be installed at the entrance to the work area.

7. For all work areas with use of electromechanical tools for PCB removals, HEPA filtered negative air ventilation units must be installed in work area and operate continuously during removal operations to establish negative pressure. A minimum of 4 air changes per hour must be maintained within work area during removals and cleanings until work area clearance is obtained from the APM.

3.03 REMOVAL OF PCB MATERIALS - GENERAL

A. PCB-containing materials shall be removed in accordance with the Contract Documents and the approved PCB Work Plan.

B. Use tools that generate the least amount of dust and will still complete the PCB caulk removal. See current EPA regulations and recommendations regarding tools and protective measures to be used for PCB caulk removals.

C. Grinding electromechanical tools (e.g. angle grinders, masonry groove cutters, circular saws, and slot mills, etc.) are not allowed to be used for exterior open-air PCB caulk removals.

D. For exterior removals, take appropriate precautions (e.g. install windscreens) to prevent dust and debris from migrating due to windy conditions.

E. Remove accessible caulk that could be disturbed before cutting building components, such as window frames.

F. All removed PCB material shall be placed into 6 mil plastic disposal bags or other suitable container upon detachment from the substrate. Large components with PCB material or PCB residue shall be wrapped in one layer of 6 mil plastic sheeting. Sharp components likely to tear disposal bags shall be placed in fiber drums or boxes and then wrapped with sheeting.

G. Power or pressure washers are not permitted for PCB removal or clean-up procedures

H. All construction and demolition debris determined by the Environmental Consultant to be in contact with the PCB caulk shall be handled and disposed of as PCB bulk product waste.

I. All PCB waste must be located at or near the point of generation, under the control of the Project Supervisor.

J. Personal protective equipment, including respirators, shall be utilized and worn during all removal operations until the Work Area is cleared by the APM.

K. Following completion of gross abatement and after all accumulations of PCB waste materials have been containerized, the decontamination procedures in Section 3.04 shall be followed.

L. Dry sweeping and any other methods that raise dust shall be prohibited.

3.04 EQUIPMENT AND AREA DECONTAMINATION

A. When removal of PCB materials is completed, the decontamination process shall consist of vacuuming (with a HEPA filter), wet wiping/mopping and a repeated vacuuming (with a HEPA filter) of the entire work area. All surfaces in and around the work area must be free of dust generated during the work.

B. Decontaminate all tools and equipment before removal from the work area.

C. If dust or debris has migrated to areas of the building other than the immediate work area, those areas shall be incorporated into the work area and thoroughly decontaminated to ensure all visible dust generated by the activity is eliminated.

D. Uncontaminated dust barriers and other protective sheeting shall be placed in disposable construction bags and disposed of as normal trash.

E. Visually inspect the area for any remaining dust or debris. Vacuum (with HEPA filter) and wet wipe until space is clean. Dispose of vacuum contents as PCB waste.

F. Upon completion of decontamination and removing temporary dust barriers, a final inspection shall be performed by the Contractor and Abatement Project Monitor. As a result of any visual inspection by the Abatement Project Monitor, the Contractor will clean or reclean the affected areas at no additional expense to the Owner.

PART 4 DISPOSAL OF PCB WASTE

4.01 TRANSPORTATION AND DISPOSAL SITE

A. The Contractor's Hauler and Disposal Site shall be approved by the Owner. For any permitted out-of-state landfill not specifically authorized for disposal of PCBs, written notice must be provided 15 days prior to the first shipment of the same waste stream that the waste may contain PCBs greater than 50 ppm, in accordance with 40 CFR 761.62. The letter shall be acknowledged via a disposal facility representative’s signature, printed name and title. If the facility is permitted to accept PCB waste, no letter is required.

B. The Contractor shall give twenty-four (24) hour notification prior to removing any waste from the site. Waste shall be removed from the site only during normal working hours unless otherwise specified. No waste may be taken from the site unless the Contractor and Environmental Consultant are present and the Environmental Consultant authorizes the release of the waste as described herein.

C. All waste generated as part of the PCB project shall be removed from the site within ten (10) calendar days after successful completion of all PCB abatement work.

D. The Hauler, with the Contractor and the Environmental Consultant, shall inspect all material in the transport container prior to taking possession and signing the Hazardous Waste Manifests.

4.02 WASTE STORAGE CONTAINERS

A. All waste containers shall be fully enclosed and lockable (i.e. enclosed dumpster, trailer, etc.).

B. The container shall be plasticized and sealed with one layer of 6 mil plastic. Once on site, it shall be kept locked at all times, except during load out. The waste container shall not be used for storage of equipment or contractor supplies.

C. While on-site, the container shall be labeled with PCB Warning Labels

D. The container is not permitted to be loaded unless it is properly plasticized, has the appropriate danger signage affixed, and has the permit number appropriately stenciled on the container.

E. The Owner may initiate random checks at the Disposal Site to insure that the procedures outlined herein are complied with.

4.03 HAZARDOUS WASTE MANIFESTS

A. A Uniform Hazardous Waste Manifest shall be utilized solely as the waste Manifest for transportation. A hauler billing form or bill of lading may be used if the hauler needs an independent record, but shall not be used as a shipping document.

B. The Manifest shall be completed by the Contractor and verified by the Environmental Consultant that all the information and amounts are accurate and the proper signatures are in place.

C. The Manifest shall have the appropriate signatures of the Owner's Representative (the Generator) and the Hauler representative prior to any waste being removed from the site.

D. Copies of the completed Manifest shall be retained by the Environmental Consultant and shall remain on site for inspection.

E. Upon arrival at the Disposal Site, the Manifest shall be signed by the Disposal Facility operator to certify receipt of PCB materials covered by the manifest.

F. The Disposal Facility operator shall return the original Manifest to the Owner's Representative (the Generator) as required within 45 days.

G. The Contractor shall utilize a Waste Disposal Log. This log shall be maintained by the Project Supervisor and shall be kept on site at all times.

H. Originals of all waste disposal manifests disposal logs shall be submitted by the Contractor to the Owner with the final close-out documentation.

END OF SECTION

ATTACHMENT E:

02 6100 - Excavating, Handling, Transporting & Disposing of Soils

SECTION 02 6100 – EXCAVATING, HANDLING, TRANSPORTING AND DISPOSING OF SOILS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

B. This Section includes the following:

1. Excavating, handling, transporting and disposing of soil.
2. Excavating, handling, transporting and disposing of regulated soil as defined in Section 1.3 must be conducted in compliance with all applicable local State and Federal regulations including, but not limited to, the Connecticut Remediation Regulations, Regulations of Connecticut State Agencies (RCSA) 22a- 133k-1 through k-3.
3. Other work involving the handling of excavated materials which may be required including but not limited to miscellaneous facility component removal, removal of obstructions, excavation support systems, and any incidental work related thereto.
4. Establishment of protocols and implementation of procedures to protect worker health and safety as it relates to activities performed in the presence of Regulated Soil.
5. Backfill all excavation areas including but not limited to, building foundations, underground storage tank (UST) grave sites and utility removals with certified clean structural fill. Place fill materials in horizontal layers and compact each layer in conformance with the Earthwork Section – 31 2300.
6. Backfill and/or waste characterization sampling shall be performed by the Contractor in conformance with section B.2 of this specification.

C. Related Sections include the following:

1. Section 02 0650 – Underground Storage Tank Removal
2. Section 31 2300 – Earthwork
3. Section 31 2395 – Site Specific Health and Safety
4. Section 31 3000 – Dust Control

1.3 DEFINITIONS

A. Clean Fill: Chemically clean fill that meets the definition of natural soil as defined in Sec. 22a-209-1 and Sec. 22a-133k-2(h) of the RCSA. Clean fill does not contain any substances above natural background levels.

B. Polluted Soil: Soil affected by a release of a substance at a concentration above the analytical detection limit for such substance in accordance with RCSA 22a-133k-1(a)(45) and below the Residential Direct Exposure criteria and the GA Pollutant Mobility criteria as these terms are described in the Remediation Standard Regulations (RCSA 22a-133k-1 through 3).

C. Contaminated Soil: Treated or untreated soil and/or sediment affected by a known or suspected release and determined, or reasonably expected to contain substances exceeding Residential Direct Exposure Criteria or GA Pollutant Mobility Criteria, as these terms are defined in the Remediation Standard Regulations (RCSA Section

22a-133k-1).

D. Hazardous Soil: Soil that is classified as a hazardous waste. Soil is classified as hazardous waste if it exhibits a hazardous waste characteristic or if it contains Resource Conservation and Recovery Act (RCRA) listed hazardous constituents above Connecticut's RCRA "Contained-In" Policy dated May 2002.

E. Regulated Soil: Includes Polluted Soil, Contaminated Soil and Hazardous Soil.

F. Treatment or Recycle Facility: Facility permitted to treat or recycle Regulated Soil that is permitted under RCSA 22a-174-3 and CGS Section 22a-454 or for facilities not located in Connecticut, permitted by the state in which the facility is located to treat or recycle Regulated Soil.

G. TSCA Waste: The Toxic Substances Control Act (TSCA) provide regulations for the cleanup and disposal of polychlorinated biphenyl (PCB) contamination pursuant to Title 40 of the Code of Federal Regulations at Part 761 (40 CFR Part 761). The regulation governs the management of PCB waste generated as the result of PCB spills and associated cleanup activities (contaminated environmental media). Additional PCB requirements may also apply.

1.4 SUBMITTALS

A. Submit the following within 14 days after issuance of the Notice to Proceed and prior to commencement of work:

1. Transporter Information:
   a. The name and address of transporters to be used on the project to transport Regulated Soil.
   b. Current licenses and permits to operate in all states affected by transport.
2. Disposal Facility Information:
   a. Facility Name
   b. Facility Address
   c. Name of Contact Person
   d. Title of Contact Person
   e. Telephone Number of Contact Person
   f. Permit Number
3. Written confirmation from the facility that they are permitted to accept and will accept material of the general quality and quantity described by these Specifications.
   a. Facility permits
   b. Facility acceptance criteria.
   c. Written approval from Connecticut Department of Energy and Environmental Protection (CTDEEP) for disposal of Regulated Soil or use of Regulated Soil as cover soil in a solid waste disposal area at facilities located in Connecticut, or similar regulatory approvals for disposal locations in other states.
   d. Facility sampling frequency and analytical testing requirements.
4. The Owner's Engineer must approve the proposed transporter and disposal facility prior to the transport of any Regulated Soil.

B. Submit the following during execution of Work:

1. Laboratory reports and descriptions of sampling procedures for all backfill materials brought on site and or waste characterization conducted.

2. Backfill and or waste characterization samples shall be analyzed for, but not limited to, the following analytes:
    - VOC SW8260
    - SVOC SW8270
    - ETPH – CT DOH Method
    - CT RSR 15 metals 8SW6010
    - TCLP 8 RCRA SW6010
    - PCB SW8082
    - Conductivity SM82510B
    - Flashpoint SW1010A
    - Ph SW9045
    - Reactivity SW846-React
3. Backfill sampling shall be conducted for every 2,000 cubic yards of material brought on site. Waste characterization sampling shall be conducted for every 500 cubic yards of soil transported off site.
4. The cost of all backfill and or waste characterization sampling shall be borne by the Contractor.
5. Registrations, letters, forms or applications to be sent to Federal, State of Local Environmental regulatory agencies to the Engineer for review prior to submittal. Allow seven days for review. No adjustments for time or money will be made if re-submittals are required due to deficiencies.
6. Waste profile forms, material shipping records or any other forms, letters or documents that must be signed by the Owner to obtain authorizations for disposal no less than seven days in advance of shipping materials off site.
7. Shipping papers or manifests that must be signed by the Owner no less than 48 hours in advance of shipping materials off site.
8. Certified manifests or shipping paper and weight slips from the approved disposal facilities for Regulated Soil transported and disposed of offsite within five days of Contractor's receipt. At a minimum, manifests and weight slips include the following:

    <u>Manifests</u>

    a. Transporter name, address and telephone number.
    b. Description of material being transported.

    <u>Weight Slips</u>

    a. Truck number, date and time of load-out.
    b. Gross weight, tare weight and net weight of truck.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements: Perform earthwork, storage, transportation and disposal in compliance with applicable requirements of authorities having jurisdiction, including but not limited to the following:
    1. Connecticut Department of Energy and Environmental Protection (CTDEEP)
        a. Connecticut Remediation Standard Regulations (RSRs), RCSA 22a-133k-1 to 3
        b. Connecticut Hazardous Waste Regulations, RCSA 22a-449(c)-100 to 119.
        c. Connecticut Solid Waste Management Regulations, RCSA 22a-209-1 to 17.
        d. CTDEP Bureau of Materials Management and Compliance Assurance - Disposal of Special Waste Authorization (DEP-WEED-APP-200)
        e. CTDEEP General Guidance on Development of Former Agricultural Properties, March 1999, updated November 2006
        f. CTDEEP General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer)
    2. Massachusetts Department of Environmental Protection (MassDEP),
        a. Massachusetts Solid Waste Management Regulations, 310 CMR 19.000.
        b. Reuse and Disposal of Contaminated Soil at Massachusetts Landfills, DEP Policy

No. COMM-97-001.
c. MassDEP Bureau of Waste Prevention – Solid Waste Management – Special Waste Determination (BWP SW 14, 31).
d. MassDEP Bureau of Waste Prevention – Solid Waste Management – Beneficial Use Determination (BUD) (BWP SW 40).

3. United States Department of Environmental Protection (EPA)
   a. Federal Hazardous Waste Regulations, 40 CFR 261-268.
4. The Owner will be the "generator" of all Regulated Soil. Owner information is as follows:
   a. Owner's Name: Hartford Housing Authority
   b. ATTN: Annette Sanderson, Executive Director
   c. Owner's Address: 180 John D. Wardlaw Way, Hartford, CT 06106
   d. Owner's Telephone Number: 860-723-8410
   e. Owner's Facsimile Number: 860-723-8411
   f. Project Name: Westbrook Village Phase One Development
   g. Site Address: 100 Plainfield Street, Hartford, CT

B. Contractor Qualifications: Conform to the following qualifications:
1. Work must be performed by Contractor personnel formally trained in procedures for Hazardous Soil, Regulated Soil and water removal, with a proven history of successfully executing similar projects for a minimum of five years.
2. Work must be accomplished by Contractor with proper equipment and personnel experienced in similar work.

1.6 PROJECT CONDITIONS

A. Environmental impacts to soil have been identified at the site. Site impacts include pesticides.

B. Notify the Owner if unexpected subsurface conditions are encountered and discontinue work in area until Owner provides notification to resume work.

C. The Engineer shall be notified within 24 hours if Regulated Soil is discovered or if other discrepancies between data provided and actual field conditions are discovered.

D. Do not remediate, excavate, treat, or delineate Regulated soil, not previously identified, without consent from the Engineer.

1.8 SCHEDULING

A. Notify the Owner of Engineer a minimum of 14 calendar days prior to the start of excavation of Regulated Soil. The Engineer will be responsible for contacting regulatory agencies in accordance with any applicable reporting requirements.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Barrier Systems or fencing proposed by the Contractor and approved by the Engineer for definition of work area.
B. Stockpile Liner: The temporary stockpile liner shall be manufactured of new, first quality product designed and manufactured specifically for the intended use and have the following properties:

1. The material shall be U.V. resistant (black in color).
2. The material shall be impervious to prevent precipitation from entering the stockpile or liquids from migrating to underlying soil.
3. The material shall have a minimum thickness of 20 mil for the liner under the stockpile and 6 mil for the liner over the stockpile.

C. Spill Response Materials: Provide appropriate spill response materials including, but not limited to the following: containers, adsorbents, shovels, and personal protective equipment. Spill response materials shall always be available when Regulated Soil is being handled or transported. Spill response materials shall be compatible with the type of soil and contaminants being handled and detailed in the Site-Specific HASP.

D. Packaging, Labeling, Marking and Placarding Materials: Provide all the materials required for the packaging, labeling, marking, placarding and transportation of Regulated Soil in conformance with Department of Transportation standards. Details in this specification shall not be construed as establishing the limits of the Contractor's responsibility.

PART 3 – EXECUTION

3.1 GENERAL

A. It is intended that Contractor activities for the handling and management of Regulated Soil on this project will involve the management of only those materials that are encountered. According to previous Environmental reports, Hazardous Soils were not detected, and it is unlikely such soils will be encountered. If Hazardous Soils are encountered the contractor will be required to manage and handle as Hazardous Soils as outlined in section 1.3 DEFINITIONS paragraph D. It is not intended that the Contractor remediate soils located outside the limits of excavation anticipated for the project as designed.

B. Requirements of this section apply to the Contractor and any Subcontractors involved in activities related to Regulated Soils.

C. Provide all employees and subcontractor(s) with personal protective equipment and protective clothing consistent with the levels of protection for this work as indicated in Contractor’s Health and Safety Plan.

D. Perform all handling and management operations in accordance with standard engineering practices applicable to such activity, according to CTDEEP regulations, and according to the provisions of Contractor Health and Safety Plan. Utilize methods which consider the health and safety of all Contractor and subcontractor personnel, support personnel, Engineer and his representatives, and the surrounding environment.

E. All site health and safety controls shall be fully established and in operation prior to beginning any material handling activity. Site controls shall include but not be limited to work zones properly barricaded, decontamination facilities, air monitoring, and all support equipment and supplies including personal protective equipment. Comply with the requirements of the Contractor’s Health and Safety Plan.

F. Minimize the spread of Regulated Soils during handling. Trucks or other conveyances deemed unacceptable for use by Engineer shall not be used for the movement of contaminated materials.

G. Keep work areas, including but not limited to, areas adjacent to excavations, roadways leading to and from excavation areas, driveways, parking areas, and public roadways free of Regulated Soils. If such materials are deposited, spilled, or spread, such material shall be removed promptly, and properly disposed of to the satisfaction of Engineer no later than the end of each working day or as requested by Engineer.

3.2 FACILITY APPROVAL

A. Upon receipt of the final approval from the treatment, recycling or disposal facility,

immediately forward a copy of the approval to the Engineer. Coordinate facility approval, loading, transportation, and ultimate disposal of the Regulated Soil at the facility.

3.3 EXCAVATED MATERIAL

A. Perform excavation in accordance with the requirements of Sections 312300 Earthwork.
B. Minimize the spread and loss of Regulated Soil during excavation activities.
C. Following excavation, directly load Regulated Soil materials to the selected conveyance system for immediate removal from the site.
D. If possible, segregate construction debris from Regulated Soil materials at the point of excavation, prior to the movement of material from excavation areas.
E. Engineer may evaluate debris during excavation to determine if such material can be designated uncontaminated general demolition material.

3.4 LOADING

A. Excavated material may be stockpiled on site in accordance with the requirements contained herein or directly loaded to the selected conveyance system.
B. The Contractor is required to provide to the engineer at the end of each day a log and site sketch identifying and depicting area excavated and the estimated amount of Regulated Material removed from the site.

3.5 WASTE PROFILES, SHIPPING RECORDS AND MANIFESTS

A. Prepare and submit to the Engineer for review all waste profiles and coordinate with disposal facilities.
B. Prepare all manifests and shipping documents required for review by the Engineer. The Engineer will be responsible for obtaining Owner's signature.
C. Submit to Owner and the Engineer, prior to receiving progress payment, documentation certifying that all materials were transported to, accepted, and disposed of, at the selected receiving facility, including but not limited to:
    1. Facility signed manifests.
    2. Weight slips. Provide certified tare and gross weights for each load.

3.6 TRANSPORTATION

A. The Transporter shall adhere to all pertinent Federal, State, and local laws and regulatory agency policies.
B. No material shall leave the site until the treatment, recycling or disposal facility has approved shipment.
C. Cover transported Regulated Soil prior to leaving the point of generation and until it has arrived at the treatment, recycling or disposal facility.
D. All vehicles departing the site containing Regulated Soil are to be properly logged to show the vehicle identification number, driver's name, time of departure, destination, and approximate volume and content of materials.
E. All transportation vehicles are to have secure, watertight containers free of defects for material transportation and bed liners.

3.7 SPILLS

A. Immediately notify the Construction Manager and Engineer in the event of a spill or release of a hazardous substance, pollutant, contaminant, or oil. The Owner or Engineer will be responsible for any notifications to regulatory agencies. Follow the pre-established procedures as described in the HASP. Immediately take containment actions to minimize the effect of any

spill or leak. Cleanup in accordance with applicable federal, state, and local regulations. Perform additional sampling and testing as directed by the Engineer to verify spills have been cleaned up. Spill cleanup and testing shall be done at no additional cost to the Owner.

END OF SECTION

ATTACHMENT F:

02 0650 - Underground Storage Tank Removal

SECTION 020650 - UNDERGROUND STORAGE TANK REMOVAL

PART 1- GENERAL

1.1 SCOPE OF WORK

A. Locate, remove and dispose of any underground storage tanks (USTs) encountered during demolition activities. One UST per building (eighty-one (81) buildings) and 30 tons of contaminated soil are estimated to be removed off site per building, for a total of 2,430 tons of contaminated soil.

B. Remove and dispose of all remaining materials from the tanks, including product, water, sediment, sand and debris. Assume 100-gallons per UST of remaining product, waste sludges and cleaning fluids.

C. Empty, remove and dispose of all associated piping, fill/vent ports, vent lines, leak detection/ alarm system, and any other associated apparatus present.

D. Confirmatory post excavation soil sampling as determined by ENGINEER and assisted by the Contractor as completion of UST removal.

E. Remove, as determined by the ENGINEER, and properly dispose of any contaminated soil encountered from within the excavation area.

F. Backfill of excavation areas shall be performed by the demolition contractor and shall be certified clean structural fill.

1.2 GENERAL REQUIREMENTS

A. For any planned removal, the contractor shall notify the ENGINEER and Construction Manager at least five days prior to initiation of any scheduled tank, piping or soil removal and/or loadout.

B. The work is to be coordinated with Construction Manager and demolition operations.

C. All work shall be conducted in accordance with all applicable federal, state, and local laws, rules, regulations, and ordinances.

D. The contractor shall be responsible for obtaining all local permits necessary to conduct the work.

E. The contractor shall be responsible for coordinating any inspections that may be required by local officials such as the building, engineering, fire and/or health departments.

F. Contractor to coordinate with Fire Marshall to inspect each UST removed.

G. The contractor shall be responsible for obtaining utility clearance for the site and excavation areas.

H. The Contractor shall provide and maintain all such temporary work as may be required for the protection of the public and those employed at or about the site including warning signs, temporary fences, safety cones, barricades, noise protection barriers, wall partitions, sidewalks, bridges, guide rails around openings, and night lights.

I. Materials encountered in excavations shall be handled in a manner which complies with applicable Federal, State and local laws and regulations and with the procedures described in this Specification. Workers conducting tank, piping, product and contaminated soil removal and workers within defined “exclusion zone” areas as defined by the

J. Contractor’s Health and Safety Plan (HASP) must be participants in a medical monitoring program and have completed acceptable health and safety training consistent with 29 CFR 1910.120. The contractor is responsible for completion and implementation of a HASP or completion of these tasks.

K. The Contractor shall assist the onsite ENGINEER during collection of post-excavation/tank closure samples from the base of the excavation.

L. The Contractor shall not remove any regulated materials from the site for disposal or treatment until approved by the ENGINEER. The Contractor is responsible for providing documentation of all transportation and disposal of tanks, piping, and contaminated soil.

1.3 SUBMITTALS

A. The contractor shall notify the ENGINEER of the date and time the work required under this Section will commence. Notification shall be made in writing a minimum of five days prior to starting work for any planned removal activities.

B. The Contractor shall submit to the ENGINEER copies of all permits, licenses and notifications issued by Federal, State, and/or local agencies that are required to perform the work a minimum of five days prior to mobilization to the site.

C. Copies of all executed manifests, bills of lading, and certificates of recycling and/or disposal shall be provided to the ENGINEER and Construction Manager within 14 days of transportation of material to offsite facilities.

PART 2 – PRODUCTS

Not Applicable

PART 3 – EXECUTION

2.1 EXCAVATION PROCEDURES

A. All work to be conducted in coordination with the construction manager and all applicable State and local regulations.

B. Excavation shall include the removal of all soil, concrete, asphalt, boulders, rock, trees, etc., as necessary to remove an UST system and associated contaminated soil.

C. In general, all excavation may be performed using power equipment except where such equipment may damage existing structures and utilities to remain. Hand methods shall be used where necessary without extra compensation.

D. The Contractor shall provide excavation sheeting and/or bracing, as necessary. All excavation sheeting and bracing systems shall be designed by a professional engineer licensed in Connecticut. The design shall be submitted to the ENGINEER for review prior to installation.

E. The Contractor shall provide excavation dewatering, as necessary.

F. The ENGINEER will field screen the excavated soil for evidence of contamination using appropriate methods (e.g., visual, photoionization detector, etc.). The Contractor shall assist the ENGINEER in screening the soil and if encountered, excavate any contaminated soil to the extent indicated by the ENGINEER.

G. The Contractor shall take any necessary actions to prevent surface runoff from entering excavations and eroding soil stockpiles.

H. In the event surface runoff floods the excavation, the Contractor shall remove the water at his sole expense and in accordance with all federal, state, and local requirements.

2.2 TANK REMOVAL PROCEDURES

A. General guidelines for removal of UST systems are listed below. The Contractor shall be responsible for cleaning, disassembling and removing the tanks and associated piping in accordance with all applicable Federal, State and local regulations and guidelines and industry safety practices. Any damages or delays caused by a failure to comply with the applicable regulations, guidelines or safety practices will be solely at the Contractor's expense.

B. Prior to performing any work on the tank systems which could potentially ignite combustible or flammable vapors within the tanks (including but not limited to cleaning, disassembly or cutting operations), the tanks shall be purged of all combustible or flammable vapors using dry ice, inert gas, or other appropriate purging method.

C. The Contractor shall continuously monitor the vapor mixture within the tanks during purging, cleaning, disassembly and removal using an explosivity meter. No work shall be

performed on the tank systems while the vapor mixture exceeds ten percent of the Lower Explosive Limit (LEL). If the vapor mixture exceeds this limit, the purging procedure shall be repeated followed by a recheck of the LEL.

D. During purging of the tanks, all ignition sources or open flames shall be eliminated from the immediate area. Flammable or combustible vapors shall be vented at a height of 12 feet above grade and 3 feet above any adjacent roof lines.

E. The tank systems shall be completely emptied and cleaned prior to any attempt to move them from their present locations.
   1. All associated piping shall be drained into the tanks prior to tank purging, disassembled, and completely removed from the site.
   2. If no manway exists in the tank, the Contractor shall safely cut an opening in the tank.
   3. The Contractor shall remove all remaining material from the tanks, including product, water, sediment, sludge and debris. The tank walls shall be scraped clean, rinsed, and wiped down with absorbent material. All tank contents, rinse water, spent absorbent material, contaminated personal protective equipment, etc. that cannot be removed and transported directly via a vacuum truck, shall be placed in 55-gallon DOT-approved drums or other suitable containers for disposal.
   4. Any material spilled during cleaning and removal of the tanks, or soil contaminated with this spilled material, shall be immediately cleaned and disposed of properly at the sole expense of the Contractor.
   5. All waste materials generated during removal of the tanks shall be disposed of in accordance with this section.

F. Following cleaning, USTs shall be removed from their excavations using appropriate methods such as chains or slings, placed on level ground, and securely chocked. Excess soil shall be scraped from the exterior of the tanks and placed on the appropriate soil stockpile.

G. The ENGINEER will perform a visual inspection of each tank to determine if any leakage has occurred.

H. The Contractor shall label the tanks using permanent marking paint with information indicating their site of origin, ultimate destination site, and former contents. In addition, tanks that have been removed intact shall be punctured several times so that they are rendered non-usable by industry standards.

I. The tanks shall be disposed of by the Contractor as non-RCRA scrap metal at an appropriate disposal facility in accordance with this section.

J. Following removal of each tank or completion of the excavation, the Contractor shall assist the ENGINEER in inspecting the excavation for any signs of contamination.
   1. Contaminated soil and/or free product shall be removed at the direction of the ENGINEER in accordance with this section and Section 02 6100.
   2. The Contractor shall assist the ENGINEER in collection of post-excavation soil samples from the excavations.

2.3 CONFIRMATORY SAMPLING OF EXCAVATION

A. Work shall consist of assisting the ENGINEER in soil sampling for purposes of analysis to ensure all contaminated soil, if encountered, exceeding applicable Remedial Action Criteria has been excavated.

B. Soil samples shall be collected by the ENGINEER with the Contractor's assistance and analyzed by an off-site laboratory for assessment.

C. Field screening with a flame ionization detector (FID) or photoionization detector (PID) will be conducted by the ENGINEER. Soil samples will be collected at a frequency of one per sidewall and two bottoms (one from each end of tank) of the excavation based upon FID or PID readings.

D. All post excavation samples will be collected using a dedicated decontaminated stainless steel trowel. Due to safety considerations, the ENGINEER will not enter any unbraced excavation. Therefore, it is anticipated that soil samples will be collected from the Contractor's backhoe/excavator bucket.

E. Sampling frequency will vary if contamination is detected and additional excavation is necessary. Quality Control/Quality Assurance field blanks and duplicate samples shall be collected by the Engineer and analyzed to ensure the quality and reproducibility of the data.

F. Closure of excavations will commence upon receipt of sample results. The ENGINEER shall request 5 to 7 business days turn-around-time for post-excavation soil samples from an off-site laboratory.

G. It shall be the Contractor's responsibility to adequately secure the excavation and prevent access from unauthorized personnel for as long as the excavations are open. At a minimum, the excavation will be fenced with orange snow supported by steel stakes until the results are received from the laboratory to allow the Engineer to determine whether excavation of additional soil is necessary. At that time, the excavation shall be closed by the Contractor.

2.4 WASTE DISPOSAL PROCEDURES

A. The Contractor shall locate appropriate disposal facilities for all wastes generated during the work. Such wastes may include, but are not limited to debris, non-hazardous solid and/or liquid wastes, and hazardous solid and/or liquid wastes.
   1. The Contractor shall utilize the disposal facilities they identified within Section 02 6100.

B. The Contractor shall coordinate the transportation and off-site disposal of all waste material generated during the work in accordance with all applicable Federal, State and local requirements.
   1. No vehicle transporting waste materials will be permitted to leave the site until it has been logged by the Construction Manager and ENGINEER. In the event a vehicle leaves the site without being logged, the Contractor shall not be paid for that load.
   2. In the event of an accident or spill during transportation, the Contractor shall immediately notify the Construction Manager and ENGINEER. All spilled material shall be removed by the Contractor and property damage restored at the Contractor's expense.
   3. The Contractor shall provide disposal receipts or manifests daily for each shipment of waste removed from the site.
   4. Tanks and associated piping removed from the site shall be disposed of as non- RCRA scrap metal. Under no circumstances are the tanks to be reused.
   5. Burning of debris, rubbish or other waste materials shall not be permitted on-site.

2.5 POST-PROJECT CLOSE-OUT

A. The Contractor shall provide the following documents to the ENGINEER to satisfy the project close-out requirements.
   1. Copies of all permits, approvals, inspection reports, etc. issued by federal, state, or local agencies within ten days of completion of UST removals;
   2. Copies of all waste classification analytical results, waste manifests, disposal receipts, and certificates documenting proper disposal of all waste materials including but not limited to: tanks; debris; contaminated soil; product; tank

bottoms; rubbish; etc. This information must be submitted within ten days of completion of soil loadout activities.

4. Any other documentation required under this section which was not previously submitted including but not limited to confirmation soil samples from UST grave sites.

B. Final payment shall not be made to the Contractor until all required documentation is submitted and verified.

END OF SECTION

ATTACHMENT G:

Unit cost sheet in UST bid package

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: A list of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

A. Unit Price No. 1c: Structural Fill.

1. Unit of Measurement: C.Y.

B. Unit Price No. 2c: Excavation & loading of polluted fill/soil.

1. Unit of Measurement: Per Ton.

C. Unit Price No. 3c: Transportation and disposal of polluted fill/soil.

1. Unit of Measurement: Per Ton.

D. Unit Price No. 4c: Excavation & loading of contaminated fill/soil.

1. Unit of Measurement: Per Ton.

E. Unit Price No. 5c: Transportation and disposal of contaminated fill/soil .

1. Unit of Measurement: Per Ton.

F. Unit Price No. 6c: Removal of oil underground storage tanks (UST) (assumed one-thousand 1,000-gallon capacity). This shall include evacuation of oil from UST and associated piping, cleaning, excavating, removing and disposing of oil, liquids, tank and associated piping. Closure sampling shall be conducted by others.

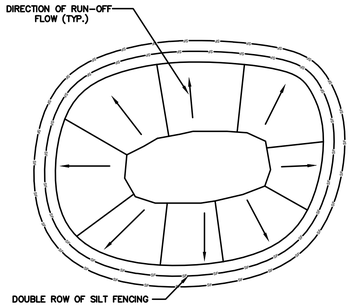
1. Unit of Measurement: Per Tank.

G. Unit Price No. 7c: Removal of remaining product, waste sludges and cleaning fluids.

1. Unit of Measurement: Per Gallon.

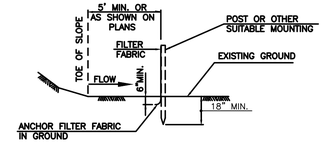
ATTACHMENT H:

Sheet No. ENV titled UST Removal Plan

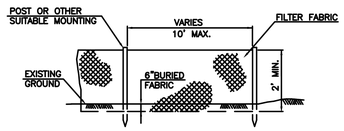


NOTES:

1. U.V. RESISTANT (BLACK IN COLOR), IMPERVIOUS TO PREVENT PRECIPITATION FROM ENTERING THE STOCKPILE OR LIQUIDS FROM MIGRATING TO UNDER SOIL. MATERIAL SHALL HAVE A MINIMUM THICKNESS OF 20 MIL UNDER STOCKPILE AND 6 MIL FOR OVER STOCKPILE.
2. 6 MIL POLYETHYLENE COVER WILL BE SECURED WITH SAND BAGS AT THE BASE, AS WELL AS THROUGHOUT THE PILE TO ENSURE COVER REMAINS INTACT.
3. RESTORE STOCKPILE SITES TO PRE-EXISTING PROJECT CONDITION.
4. STOCKPILE HEIGHTS MUST NOT EXCEED 8'. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.



SECTION



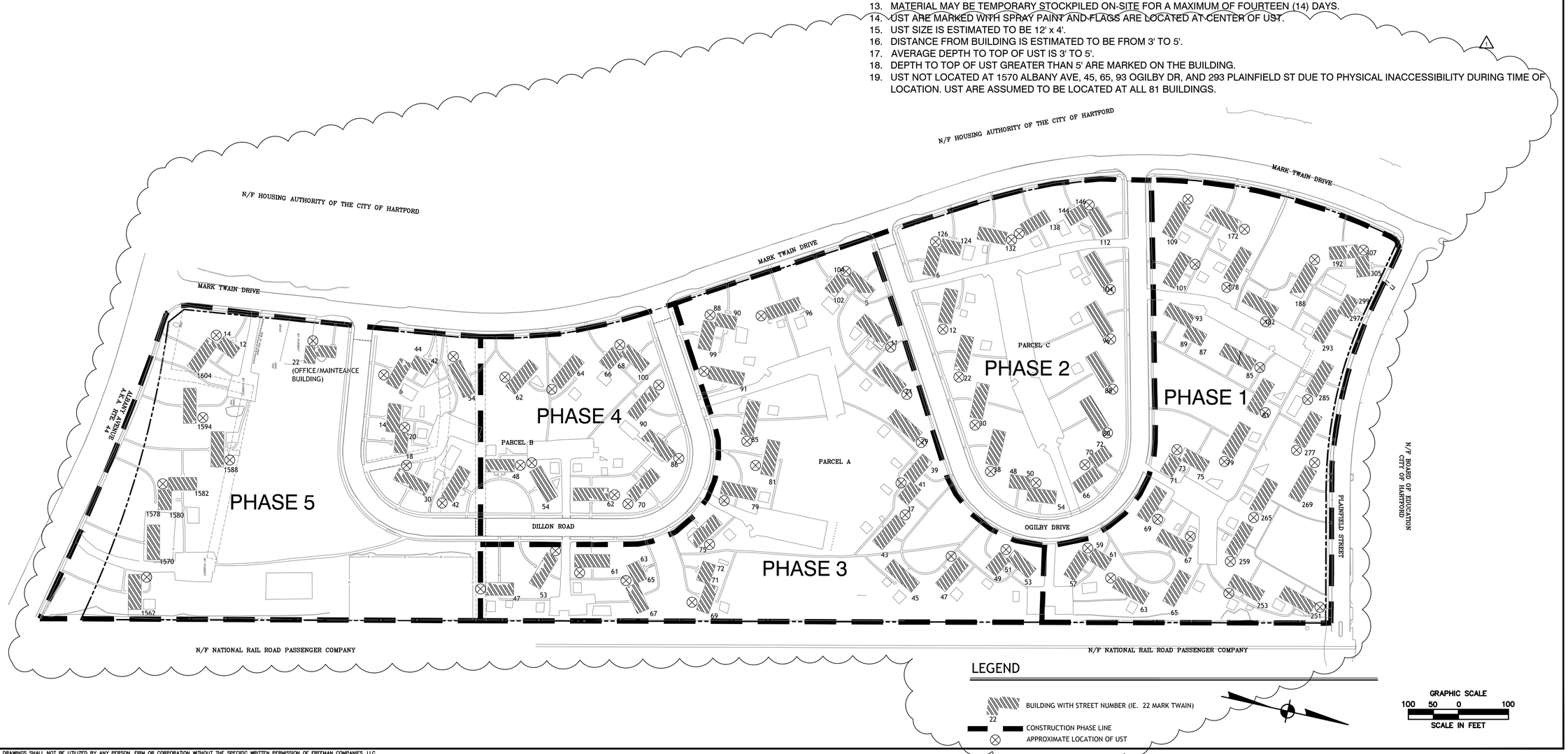
ELEVATION

TEMPORARY WASTE STOCKPILE AREA

N.T.S.

SITE ENVIRONMENTAL NOTES:

1. IT IS ASSUMED THAT ONE UNDERGROUND STORAGE TANK (UST) EXISTS PER BUILDING. LOCATE, REMOVE AND DISPOSE OF EACH UST AND APPURTENCES SHALL BE CONDUCTED IN ACCORDANCE WITH SPECIFICATION 026500.
2. APPROXIMATE LOCATIONS OF IDENTIFIED USTS WERE OBTAINED BY USING GROUND PENETRATING RADAR (GPR). THE UNDERGROUND PRODUCT TRANSFER LINES WERE NOT INCLUDED IN THE GPR SURVEY AND ORIENTATION AND LENGTH OF PRODUCT PIPING MAY VARY. BASED ON THE RESULTS OF THE GPR SURVEY, EACH UST IDENTIFIED IS LOCATED IN LANDSCAPED/GRASSED AREAS ON THE CHIMNEY SIDE OF EACH RESIDENTIAL BUILDING.
3. FOLLOWING THE REMOVAL OF EACH UST, THE CONTRACTOR WILL ASSIST THE ENGINEER IN EVALUATING WHETHER A PETROLEUM RELEASE IS PRESENT IN EACH TANK GRAVE.
4. IF EVIDENCE OF A PETROLEUM RELEASE IS IDENTIFIED, PETROLEUM IMPACTED SOIL SHALL BE REMOVED FOLLOWING PROCEDURES PROVIDED IN THE UST REMOVAL SECTION 020650 AND EXCAVATING, TRANSPORTING AND DISPOSING OF REGULATED SOIL SECTION 026100. THE EXTENT OF EXCAVATION OF PETROLEUM IMPACTED SOIL WILL BE DETERMINED BY THE ENGINEER.
5. IF NO EVIDENCE OF A PETROLEUM RELEASE TO THE SOIL IS IDENTIFIED UPON REMOVAL OF THE UST, THEN CONFIRMATION SOIL SAMPLING WILL BE COMPLETED IN EACH TANK GRAVE. CONTRACTOR WILL ASSIST ENGINEER IN THE COLLECTION OF THE SOIL SAMPLES. SIX (6) CONFIRMATION SOIL SAMPLES WILL BE COLLECTED AND ANALYZED FOR EXTRACTABLE TOTAL PETROLEUM HYDROCARBONS (ETPH) BY THE CT DEPARTMENT OF HEALTH METHOD, VOLATILE ORGANIC COMPOUNDS BY ENVIRONMENTAL PROTECTION AGENCY (EPA) METHOD 8260 AND SEMI-VOCS BY EPA METHOD 8270. THE SAMPLES WILL BE COLLECTED FROM EACH SIDE WALL AND TWO (2) FROM THE BOTTOM. RESULTS WILL BE COMPARED TO THE APPLICABLE RSR CRITERIA. IF AN EXCEEDANCE IS IDENTIFIED, ADDITIONAL EXCAVATION WILL BE REQUIRED ON EACH SIDE WALL OR BOTTOM WHERE THE EXCEEDANCE WAS IDENTIFIED. ADDITIONAL EXCAVATION WILL BE FIVE (5) FEET ON EACH SIDE WALL AND ONE (1) FOOT FOR BOTTOM SAMPLES. RETESTING OF SIDEWALLS AND BOTTOM WILL BE REQUIRED AND RESULTS EVALUATED TO THE RSR CRITERIA. PROCESS CONTINUES UNTIL FOUR (4) SIDEWALLS AND A BOTTOM SAMPLE ARE BELOW RSR CRITERIA.
6. IF PETROLEUM IMPACTED SOIL IS IDENTIFIED AND SUBSEQUENTLY REMOVED, POST EXCAVATION SOIL CONFIRMATION SAMPLES WILL BE COLLECTED IN A MANNER SIMILAR TO NOTE NO. 4 ABOVE. HOWEVER, IF SIDEWALLS ARE EXTENDED TO DISTANCES GREATER THAN TWENTY (20) FEET, THEN A SIDEWALL SAMPLE WILL BE COLLECTED EVERY TWENTY (20) FEET, OR PORTION OF TWENTY (20) FEET (E.G., IF A SIDEWALL IS THIRTY (30) FEET, TWO (2) SIDEWALL SAMPLES WILL BE COLLECTED).
7. ORANGE SNOW FENCING SUPPORTED BY STEEL STAKES WILL BE USED TO SURROUND OPEN UST EXCAVATION AREAS UNTIL THEY ARE BACKFILLED. WARNING SIGNS WILL BE ATTACHED TO THE SNOW FENCING.
8. IMPORTED BACKFILL FOR EXCAVATION AREAS SHALL BE CERTIFIED CLEAN STRUCTURAL FILL AND COMPACTED IN CONFORMANCE WITH SECTION 312300 - EARTHWORK. PROCEDURES FOR COMPACTION AND A DEFINITION OF CLEAN FILL ARE PROVIDED IN SECTION 312300.
12. TEMPORARY STOCKPILE LOCATIONS TO BE APPROVED BY ENGINEER UNLESS LIVE LOADING OCCURS.
13. MATERIAL MAY BE TEMPORARY STOCKPILED ON-SITE FOR A MAXIMUM OF FOURTEEN (14) DAYS.
14. UST ARE MARKED WITH SPRAY PAINT AND FLAGS ARE LOCATED AT CENTER OF UST.
15. UST SIZE IS ESTIMATED TO BE 12' x 4'.
16. DISTANCE FROM BUILDING IS ESTIMATED TO BE FROM 3' TO 5'.
17. AVERAGE DEPTH TO TOP OF UST IS 3' TO 5'.
18. DEPTH TO TOP OF UST GREATER THAN 5' ARE MARKED ON THE BUILDING.
19. UST NOT LOCATED AT 1570 ALBANY AVE, 45, 65, 93 OGILBY DR, AND 293 PLAINFIELD ST DUE TO PHYSICAL INACCESSIBILITY DURING TIME OF LOCATION. UST ARE ASSUMED TO BE LOCATED AT ALL 81 BUILDINGS.



PENNROSE
Bricks & Mortar | Heart & Soul
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PHILADELPHIA, PA 19121
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FREEMAN COMPANIES
LAND DEVELOPMENT · PROPERTIES GROUP · CONSTRUCTION SERVICES
36 JOHN STREET
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TEL:860-251-9930

WRT
WALLACE ROBERTS & TODD
ARCHITECTURE & PLANNING
1700 MARKET STREET, SUITE 2800
PHILADELPHIA, PA 19103
TEL:215-732-5215

The Cloud Company
REAL ESTATE AND BUSINESS DEVELOPMENT
30 LEWIS STREET
HARTFORD, CT 06103
TEL:860-559-6386

JDA
DEVELOPMENT Co. LLC
10 CROSSROADS PLAZA
WEST HARTFORD, CT 06117
TEL:860-232-4500

JCJARCHITECTURE
100 HUTCHINS AVENUE, SUITE 400
HARTFORD, CT 06106
TEL: 860-247-9226

QA+M architecture
195 SCOTT SWAMP ROAD
FARMINGTON, CT 06032
TEL: 860-677-4094

NO.	DATE	REVISIONS
1	03-15-19	ADDENDUM 3
2		
3		
4		
5		
6		
7		
8		

UNDERGROUND STORAGE TANK REMOVAL OF WESTBROOK VILLAGE HARTFORD, CONNECTICUT

DESIGNED:	PAR
DRAFTED:	CAR
CHECKED:	PAR
APPROVED:	PAR
SCALE:	1" = 100'
PROJECT NO.:	2016-0712
DATE:	03-01-19

TITLE:
UNDERGROUND STORAGE TANK REMOVAL PLAN

SHEET NUMBER:
ENV

ATTACHMENT I:

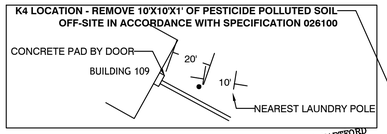
Sheet No. ENV titled Soil Remediation Plan

SITE ENVIRONMENTAL NOTES:

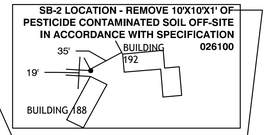
1. REMOVE PESTICIDE POLLUTED SOIL ACCORDING TO FREEMAN COMPANIES' REMEDIAL ACTION PLAN (RAP) DATED 10-27-18.
2. REGULATED SOIL (POLLUTED AND CONTAMINATED) MUST BE HANDLED, TRANSPORTED AND DISPOSED IN ACCORDANCE WITH SPECIFICATION 31 2365.
3. LOCATIONS FOR DUST MONITORING WILL BE DETERMINED AT A MINIMUM OF DAILY BASED ON WIND DIRECTION.
4. POLLUTED SOIL IS DEFINED AS SOILS WITH CONCENTRATIONS OF COMPOUNDS ABOVE DETECTION LIMITS, BUT BELOW REMEDIATION STANDARD REGULATION (RSR) CRITERIA.
5. CONTAMINATED SOIL IS DEFINED AS SOILS WITH CONCENTRATIONS OF COMPOUNDS ABOVE RSR CRITERIA.
6. ALL TEN (10) PESTICIDE IMPACTED SOIL AREAS (POLLUTED AND CONTAMINATED) ARE TO BE LIVE LOADED AND TRANSPORTED OFF-SITE IN ACCORDANCE WITH SPECIFICATION 026100.
7. ALL TEN (10) EXCAVATION AREAS ARE LOCATED IN LANDSCAPED/GRASSED AREAS
8. AT EACH EXCAVATION AREA, FIVE (5) POST EXCAVATION SAMPLES WILL BE COLLECTED AND ANALYZED FOR PESTICIDES BY ENVIRONMENTAL PROTECTION AGENCY (EPA) METHOD 8081, LEAD AND ARSENIC BY EPA MTHOD 6010 AND EXTRACTABLE TOTAL PETROLEUM HYDROCARBONS BY THE CT DEPARTMENT OF HEALTH METHOD. THE SAMPLES WILL BE COLLECTED FROM EACH SIDE WALL AND THE BOTTOM. RESULTS WILL BE COMPARED TO THE APPLICABLE RSR CRITERIA. IF AN EXCEEDANCE IS IDENTIFIED, ADDITIONAL EXCAVATION WILL BE REQUIRED ON EACH SIDE WALL OR BOTTOM WHERE THE EXCEEDANCE WAS IDENTIFIED. ADDITIONAL EXCAVATION WILL BE FIVE (5) FEET ON EACH SIDE WALL AND ONE (1) FOOT FOR BOTTOM SAMPLES. RETESTING OF SIDEWALLS AND BOTTOM WILL BE REQUIRED AND RESULTS EVALUATED TO THE RSR CRITERIA. PROCESS CONTINUES UNTIL FOUR (4) SIDEWALLS AND A BOTTOM SAMPLE ARE BELOW RSR CRITERIA.
9. ORANGE SNOW FENCING SUPPORTED BY STEEL STAKES WILL BE USED TO SURROUND OPEN EXCAVATION AREAS UNTIL THEY ARE BACKFILLED. WARNING SIGNS WILL BE ATTACHED TO THE SNOW FENCING.
10. AFTER ALL FIVE (5) CONFIRMATORY SAMPLES ARE REPORTED BELOW RSR CRITERIA, EXCAVATION AREA MAY BE BACKFILLED WITH SURROUNDING SOIL.
11. REPORTEDLY, AN OIL WATER SEPARATOR (OWS) EXISTS BENEATH THE MAINTENANCE BUILDING FLOOR. OWS IS TO BE REMOVED FOLLOWING DEMOLITION OF THE MAINTENANCE BUILDING AND REMOVAL OF CONCRETE FLOOR. A FLOOR DRAIN IN THE FLOOR CONNECTS TO THE OWS. NO DETAILS REGARDING THE OWS WERE AVAILABLE FOR REVIEW. AS THE MAINTENANCE BUILDING INCLUDED EQUIPMENT STORAGE AND DID NOT INCLUDE SIGNIFICANT MECHANICAL REPAIR, IT IS ANTICIPATED TO BE A RELATIVELY SMALL, SIMPLISTIC OWS. ASSUME FIVE CUBIC YARDS OF IMPACTED SOIL REQUIRING PROPER OFF-SITE DISPOSAL WILL BE NECESSARY.
12. FOLLOWING REMOVAL OF THE OWS (AND IMPACTED SOIL, IF ANY), POST EXCAVATION SOIL SAMPLES WILL BE COLLECTED AND ANALYZED USING THE SAME PROCESS AS DESCRIBED IN NOTE 8 ABOVE. POST EXCAVATION SAMPLES WILL BE ANALYZED FOR VOLATILE ORGANIC COMPOUNDS (VOCS) BY EPA METHOD 8260, SEMI VOLATILE ORGANIC COMPOUNDS (SVOCS BY EPA METHOD 8270, EXTRACTABLE TOTAL PETROLEUM HYDROCARBONS (ETPH) BY THE CT DEPARTMENT OF HEALTH APPROVED METHOD, CT DEEP REMEDIATION STANDARD REGULATION (RSR) 15 TOTAL METALS BY EPA METHOD 6010 (AND OTHER), LEACHABLE METALS (AS DETERMINED NECESSARY) FOLLOWING A SYNTHETIC PRECIPITATE LEACHING PROCEDURE (SPLP) PREPARATION, POLY CHLORINATED BI-PHENYLS (PCBS) BY EPA METHOD 8081.

OWS LOCATED BENEATH FLOOR SLAB IN MAINTENANCE BUILDING

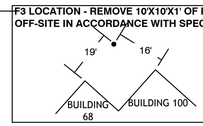
K4 LOCATION - REMOVE 10'X10'X1' OF PESTICIDE POLLUTED SOIL OFF-SITE IN ACCORDANCE WITH SPECIFICATION 026100



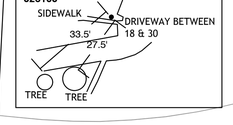
SB-2 LOCATION - REMOVE 10'X10'X1' OF PESTICIDE CONTAMINATED SOIL OFF-SITE IN ACCORDANCE WITH SPECIFICATION 026100



F3 LOCATION - REMOVE 10'X10'X1' OF PESTICIDE POLLUTED SOIL OFF-SITE IN ACCORDANCE WITH SPECIFICATION 026100

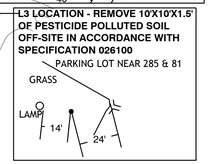


D2 LOCATION - REMOVE 10'X10'X2.5' OF PESTICIDE POLLUTED SOIL OFF-SITE IN ACCORDANCE WITH SPECIFICATION 026100

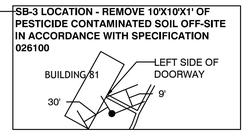


SB-1 LOCATION - REMOVE 10'X10'X1' OF PESTICIDE CONTAMINATED SOIL OFF-SITE IN ACCORDANCE WITH SPECIFICATION 026100

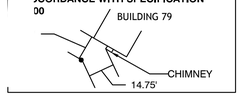
L3 LOCATION - REMOVE 10'X10'X1.5' OF PESTICIDE POLLUTED SOIL OFF-SITE IN ACCORDANCE WITH SPECIFICATION 026100



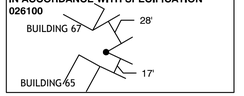
SB-3 LOCATION - REMOVE 10'X10'X1' OF PESTICIDE CONTAMINATED SOIL OFF-SITE IN ACCORDANCE WITH SPECIFICATION 026100



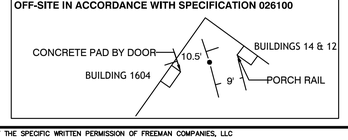
LOCATION - REMOVE 10'X10'X1' OF
'ICIDE CONTAMINATED SOIL OFF-SITE
CORDANCE WITH SPECIFICATION
00



SB-6 LOCATION - REMOVE 10'X10'X1' OF PESTICIDE CONTAMINATED SOIL OFF-SITE IN ACCORDANCE WITH SPECIFICATION 026100



B3 LOCATION - REMOVE 10'X10'X1' OF PESTICIDE POLLUTED SOIL OFF-SITE IN ACCORDANCE WITH SPECIFICATION 026100



N/F HOUSING AUTHORITY OF THE CITY OF HARTFORD

N/F NATIONAL RAIL ROAD PASSENGER COMPANY

MARK TWAIN DRIVE

ASBURY AVENUE

DILLON ROAD

OGILBY DRIVE

PALMERAS STREET

PARCEL A

PARCEL B

PARCEL C

PHASE 1

PHASE 2

PHASE 3

PHASE 4

PHASE 5

B3

D2

F3

K4

SB-1

SB-2

SB-3

SB-4

SB-6

L3

22 (OFFICE/MAINTEANCE BUILDING)

LEGEND

L3 SOIL BORING, FREEMAN COMPANIES, LLC AUGUST 2018

SB-4 SOIL BORING, FREEMAN COMPANIES, LLC OCTOBER 2016

22 BUILDING WITH STREET NUMBER (IE. 22 MARK TWAIN)

CONSTRUCTION PHASE LINE

GRAPHIC SCALE
100 50 0 100
SCALE IN FEET

PENNROSE
Bricks & Mortar | Heart & Soul
1301 NORTH 31ST STREET
PHILADELPHIA, PA 19121
TEL:267-386-8643

FREEMAN COMPANIES
LAND DEVELOPMENT · ENGINEERING SERVICES · CONSTRUCTION SERVICES
36 JOHN STREET
HARTFORD, CT 06106
TEL:860-251-9550

WRT
WALLACE ROBERTS & TODD
ARCHITECTURE & PLANNING
1700 MARKET STREET, SUITE 2800
PHILADELPHIA, PA 19103
TEL:215-732-5215

The Cloud Company
REAL ESTATE AND BUSINESS DEVELOPMENT
30 LEWIS STREET
HARTFORD, CT 06103
TEL:860-559-6386

JDA DEVELOPMENT Co. LLC
10 CROSSROADS PLAZA
WEST HARTFORD, CT 06117
TEL:860-232-4500

JCJ ARCHITECTURE
100 HUYSHOPE AVENUE, SUITE 400
HARTFORD, CT 06106
TEL: 860-247-9226

QA+M architecture
195 SCOTT SWAMP ROAD
FARMINGTON, CT 06032
TEL: 860-677-4094

NO.	DATE	DESCRIPTION
1	03-15-19	ADDENDUM 3
2		
3		
4		
5		
6		
7		
8		

DEMOLITION OF WESTBROOK VILLAGE

HARTFORD, CONNECTICUT

DESIGNED:	PAR
DRAFTED:	CAR
CHECKED:	PAR
APPROVED:	PAR
SCALE:	1" = 100'
PROJECT NO.:	2016-0712
DATE:	03-01-19

TITLE:

SOIL REMEDIATION PLAN

SHEET NUMBER:

ENV

ATTACHMENT J:

Integrated Pest Management Plan

Westbrook Village

Integrated Pest Management Plan

Introduction

The purpose of this Integrated Pest Management Plan (IPM) is to provide comprehensive, environmentally sensitive approach to managing pests on site and within the regulated area (150 feet measured horizontally from the boundary of any wetland). Pests can post significant problems to occupants, property, and the environment. Pesticides and herbicides can also pose significant problems to occupants, property, and the environment.

IPM procedures will determine when to control pests and whether to use mechanical, physical, chemical, cultural, or biological means. Appling IPM principles prevent unacceptable levels of pests' activity and damage by the most economical means and with the least possible hazards to occupants, property, and the environment.

The goals and objectives of the IPM are:

1. To control and manage pests.
2. To preserve the integrity of the environment

For an IPM to be successful, it is critical that a good system of communication be established. To facilitate this communication, an IPM Coordinator should be designated. This person will be the primary contract for all matters related to pest control and act as a liaison between the occupants and the pest management professionals. They will also service as a contact for occupants seeking information about pesticide use or other pest management practices.

IPM Cycle

Inspection – Inspections of the regulated area will be conducted weekly on a routine basis.

Identification – Accurate identification of a pest is a vital part of ensuring that the proper control methods will be used.

Monitoring – To determine when pest are present or when problems are severe enough to justify corrective action.

Action – Habitat modifications, exclusions, repair and sanitation efforts will be the first actions considered. Action thresholds will be considered before any other actions are considered. The action threshold will reflect how many pests can be tolerated for each specific area of the site. The presence of some pests does not, in itself, require action.

IPM Strategies

Typical pest: Mice, Rats, Voles, insects such as Roaches, Ants, Invasive Beetles

Affective area: Entire job-site with specific attention given to debris collection areas

1. Regularly clean trash containers, road gutters, and catch basin sumps.
2. Regularly remove all waste and paper debris.
3. Prophylactic services to, and continued monitoring of predetermined problem areas
4. Aggressive mitigation of known activity by licensed professional
5. Inspection of all exterior areas for pest activity and/or conditions conducive for pests
6. Applied site perimeter baiting and control measures along the perimeter fence line at a frequency of not less than 50' or as required
7. monitor for effectiveness
8. Ongoing monitoring and applied service by licensed professional throughout all phases
9. Sodium chloride is prohibited for de-icing.

10. Inspect and maintain all exterior rodent devices weekly or more frequent as required.
11. Replacement of damaged bait stations, glue and snap traps on a weekly basis or more frequently as required.
12. Removal of dead rodent carcasses in a safe and environmentally manner.
13. Provide on call for service for all aforementioned services.
14. Prior to demolition, pest control contractor shall mobilize to building scheduled for demolition not less than 4 weeks prior to treat said building scheduled for demolition in the following manner;
    a. Install bait stations at building exterior
    b. Install glue boards and snap traps at building interior units to farm out as many rodents as possible
15. Placement of bait stations around adjoining buildings to cover any overflow of rodent activity.

Use of Chemicals

Pesticides and Herbicides are not permitted on this site. Use of any chemicals shall be submitted and approved by Engineer prior to use.

Posting and Notification

1. Notify occupants of impending pesticide/herbicide application in accordance with the Connecticut Department of Health and Connecticut Department of Energy and Environmental Protection.
2. Notices must be posted in areas to be treated.
3. Notices must be posted in common areas where occupants are expected to review on a regular basis.

Evaluation and Record Keeping

1. Record keeping allows the IPM Coordinator to evaluate the IPM program.
2. A weekly pest management log will be maintained by the IPM Coordinator. It will include pesticide/herbicide records that meet the requirements of the City of Hartford, Connecticut Department of Health or Connecticut Department of Energy and Environmental Protection.
3. The following forms must be kept in the IPM Coordinator's office.
    a. Emergency treatment request
    b. Registration notification documentation
    c. Pest management log
    d. Incidental use letters
    e. Documentation of training
    f. Prioritized list of needed landscape improvements
    g. Request/complaint related to pest problems
    h. Contacts and record of pest professionals
    i. All pesticide/herbicide application use records
    j. List of non-chemical control measures

ATTACHMENT K:

Davis Bacon Fee Schedule

General Decision Number: CT190008 02/15/2019 CT8

Superseded General Decision Number: CT20180008

State: Connecticut

Construction Type: Residential

County: Hartford County in Connecticut.

RESIDENTIAL CONSTRUCTION PROJECTS (consisting of single family homes and apartments up to and including 4 stories).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.60 for calendar year 2019 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.60 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2019. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate,if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/04/2019
1	01/18/2019
2	02/15/2019

ELEV0091-001 01/01/2019

	Rates	Fringes

ELEVATOR MECHANIC.....$ 53.37 33.705+a+b

FOOTNOTE:
a.Vacation: 6%/under 5 years based on regular hourly rate for all hours worked. 8%/over 5 years based on regular hourly rate for all hours worked.
b. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Veterans' Day; Thanksgiving Day; the Friday after Thanksgiving Day; and Christmas Day.

ENGI0478-006 04/05/2015

	Rates	Fringes
POWER EQUIPMENT OPERATOR:		
Backhoe/Excavator 2 cubic yards and over	$ 37.23	23.05
Backhoe/Excavator under 2 cubic yards; Rubber Tire Backhoe/Excavator	$ 36.49	23.05
Bulldozer (Rough Grade Dozer)	$ 35.20	23.05
Bulldozer Fine Grade	$ 36.49	23.05
Combination Hoe and Loader	$ 35.51	23.05
Loader (3 cubic yards up to 7 cubic yards)	$ 35.20	23.05
Loader (7 cubic yards or over)	$ 37.55	23.05
Loader (under 3 cubic yards)	$ 34.03	23.05

a. PAID HOLIDAYS: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday.

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* ROOF0009-005 01/01/2019

	Rates	Fringes
ROOFER		
Composition	$ 37.00	20.57
Slate and Tile	$ 37.50	20.57

SFCT0676-002 04/01/2017

	Rates	Fringes
SPRINKLER FITTER (Fire Sprinklers)	$ 43.92	15.84

a. PAID HOLIDAYS: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

SHEE0040-003 07/01/2018

	Rates	Fringes
SHEET METAL WORKER	$ 37.50	36.79

SUCT2002-003 12/16/2008

	Rates	Fringes
CARPENTER, Including Drywall Hanging	$ 15.50	0.00
CEMENT MASON/CONCRETE FINISHER	$ 21.22	0.00
DRYWALL FINISHER/TAPER	$ 16.25	2.70
ELECTRICIAN	$ 19.99	2.00
LABORERS		
Common or General	$ 13.09	1.63
Landscape	$ 14.96	4.63
PAINTER: Brush and Roller, Excludes Drywall Finishing/Taping	$ 15.33	1.56
PLUMBER/PIPEFITTER (Including HVAC Pipe Installation)	$ 16.67	2.63

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave

for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1,

2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.

Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

ATTACHMENT L:

Sheet No. Hazardous Building Material Abatement Plan

HAZARDOUS MATERIALS ABATEMENT NOTES:

1. THE FOLLOWING NOTES APPLY TO ALL 81 BUILDINGS.
2. THE HAZARDOUS MATERIALS ABATEMENT CONTRACTOR SHALL REMOVE AND DISPOSE OF ASBESTOS EXTERIOR/INTERIOR WINDOW/VENT CAULKING ON PERIMETER OF WINDOW/VENTS AS ACM WASTE.
3. THE HAZARDOUS MATERIALS ABATEMENT CONTRACTOR SHALL REMOVE AND DISPOSE OF ASBESTOS CONTAINING BLACK VAPOR BARRIER AT EXTERIOR WINDOW SILLS AS ACM WASTE.
4. THE HAZARDOUS MATERIALS ABATEMENT CONTRACTOR SHALL REMOVE AND DISPOSE OF ASBESTOS CONTAINING WOOD/METAL FIRE DOORS AS ACM.
5. THE HAZARDOUS MATERIALS ABATEMENT CONTRACTOR SHALL REMOVE AND DISPOSE OF ASBESTOS CONTAINING BROWN PEBBLE PATTERN SHEET FLOORING AS ACM WASTE. .

HAZARDOUS WASTE NOTES:

1. ALL MERCURY CONTAINING FLUORESCENT LIGHTS, THERMOSTATIC CONTROLS, AND THERMOMETERS MUST BE DISPOSED OF AS REGULATED WASTE ACCORDING TO THE RESOURCE CONSERVATION RECOVERY ACT (RCRA) REGULATED BY EPA PRIOR TO ANY DEMOLITION ACTIVITY.
2. ALL AIR CONDITIONER WINDOW UNITS AND REFRIGERATORS SHALL BE DRAINED OF ALL FREON FOR RECYCLING PRIOR TO DISMANTLING AND/OR DISPOSAL OF SAID ITEMS.
3. ALL HAZARDOUS CHEMICALS MUST BE HANDLED AND TRANSPORTED ACCORDING TO THE CONNECTICUT HAZARDOUS WASTE MANAGEMENT REGULATIONS 22A-449(C)-1 TO 22A-449(C)-119, AND US EPA 40 CFR 260-279.
4. ANY ADDITIONAL HAZARDOUS MATERIALS (DRUMMED LIQUID WASTE, FLUORESCENT BULBS, FREON, ETC.) IDENTIFIED IN SECTION 4.0 (ADDITIONAL HAZARDOUS WASTE SURVEY) OF INSPECTION REPORT OF OTHERWISE IDENTIFIED ON THE PROPERTY PRIOR TO THE BUILDING DEMOLITION MUST BE PROPERLY DISPOSED OF ACCORDING TO FEDERAL AND STATE REGULATIONS.

MAINTENANCE BUILDING

SMALL BUILDING (TYP.)

LARGE BUILDING (TYP.)

THE HAZARDOUS MATERIALS ABATEMENT CONTRACTOR SHALL REMOVE AND DISPOSE OF ASBESTOS CONTAINING 9"X9" WHITE FLOOR TILE - MAINTENANCE BUILDING CLOSET (APPROXIMATELY 20 SF) AS ACM WASTE.

THE HAZARDOUS MATERIALS ABATEMENT CONTRACTOR SHALL REMOVE AND DISPOSE OF ASBESTOS CONTAINING 9"X9" BLUE FLOOR TILE - MAINTENANCE BUILDING CLOSET (APPROXIMATELY 20 SF) AS ACM WASTE.

THE HAZARDOUS MATERIALS ABATEMENT CONTRACTOR SHALL REMOVE AND DISPOSE OF ASBESTOS CONTAINING WHITE LAYERED PAPER PIPE INSULATION - MAINTENANCE BUILDING - AS ACM WASTE.

1 THE HAZARDOUS MATERIALS ABATEMENT CONTRACTOR SHALL REMOVE AND DISPOSE OF ASBESTOS/PCB CONTAINING EXTERIOR WHITE WINDOW CAULK AND ONE (1) COURSE OF BRICK WHERE IN CONTACT WITH WHITE CAULK - MAINTENANCE BUILDING - AS ACM/PCB REMEDIATION WASTE.

THE HAZARDOUS MATERIALS ABATEMENT CONTRACTOR SHALL REMOVE AND DISPOSE OF ASBESTOS CONTAINING 12"X12" BROWN FLOOR TILE - KITCHEN IN BUILDING 61 UNIT B-1 (APPROXIMATELY 135 SF) AS ACM WASTE.

N/F HOUSING AUTHORITY OF THE CITY OF HARTFORD

MARK TWAIN DRIVE

ADAMS STREET A.K.A. RTE #4

22 (OFFICE/MAINTEANCE BUILDING)

PHASE 1

PHASE 2

PHASE 3

PHASE 4

PHASE 5

PARCEL A

PARCEL B

PARCEL C

DILLON ROAD

OGILBY DRIVE

PLAINFIELD STREET

N/F BOARD OF EDUCATION CITY OF HARTFORD

N/F NATIONAL RAIL ROAD PASSENGER COMPANY

N/F NATIONAL RAIL ROAD PASSENGER COMPANY

LEGEND

22 BUILDING WITH STREET NUMBER (IE. 22 MARK TWAIN)

CONSTRUCTION PHASE LINE

GRAPHIC SCALE

100 50 0 100

SCALE IN FEET

PENNROSE
Bricks & Mortar | Heart & Soul
1301 NORTH 31ST STREET
PHILADELPHIA, PA 19121
TEL:267-386-8643

FREEMAN COMPANIES
LAND DEVELOPMENT · PROPERTIES GROUP · CONSTRUCTION SERVICES
36 JOHN STREET
HARTFORD, CT 06106
TEL:860-251-9930

WRT
WALLACE ROBERTS & TODD
ARCHITECTURE & PLANNING
1700 MARKET STREET, SUITE 2800
PHILADELPHIA, PA 19103
TEL:215-732-5215

The Cloud Company
REAL ESTATE AND BUSINESS DEVELOPMENT
30 LEWIS STREET
HARTFORD, CT 06103
TEL:860-559-6386

JDA DEVELOPMENT Co. LLC
10 CROSSROADS PLAZA
WEST HARTFORD, CT 06117
TEL:860-232-4500

JCJ ARCHITECTURE
100 HUTCHINS AVENUE, SUITE 400
HARTFORD, CT 06106
TEL: 860-247-9226

QA+M architecture
195 SCOTT SWAMP ROAD
FARMINGTON, CT 06032
TEL: 860-677-4094

NO.	DATE	DESCRIPTION
1	03-15-19	ADDENDUM 3
2		
3		
4		
5		
6		
7		
8		

REVISIONS

HAZARDOUS BUILDING MATERIAL ABATEMENT OF WESTBROOK VILLAGE HARTFORD, CONNECTICUT

DESIGNED:	PAR
DRAFTED:	CAR
CHECKED:	PAR
APPROVED:	PAR
SCALE:	1" = 100'
PROJECT NO.:	2016-0712
DATE:	03-01-19

TITLE: HAZARDOUS BUILDING MATERIAL ABATEMENT PLAN

SHEET NUMBER: ENV

ATTACHMENT M:

Schedule

WESTBROOK VILLAGE DEMOLITION
DURATION SCHEDULE PER PHASE
(Assumes working Days M-F)

Demolition of Westbrook Village DOH # FX1806401-A – (Assumes 1 day per building for demolition plus 10 days for clearing/grading/utility removal)

Phase 1: 50 Days - Liquated damages of $500 per day for Phase 1 to incur after number of days has elapsed.
Phase 2: 25 Days
Phase 3: 30 Days
Phase 4: 20 Days
Phase 5: 25 Days

Total days = 150 - Liquated damages of $500 per day for total duration days to incur after number of days has elapsed.

Abatement of Westbrook Village DOH # FX1806401-B – (Assumes 1 day per building for abatement)
Phase 1: 35 Days - Days - Liquated damages of $500 per day for Phase 1 to incur after number of days has elapsed.
Phase 2: 15 Days
Phase 3: 20 Days
Phase 4: 10 Days
Phase 5: 15 Days

Total days = 95 - Liquated damages of $500 per day for total duration days to incur after number of days has elapsed.

UST Removal at Westbrook Village DOH # FX1806401-C– (Assumes removal of 2 USTs per day)
Phase 1: 15 Days - Days - Liquated damages of $500 per day for Phase 1 to incur after number of days has elapsed.
Phase 2: 10 Days
Phase 3: 10 Days
Phase 4: 5 Days
Phase 5 :10 Days

Total days = 50
- Liquated damages of $500 per day for total duration days to incur after number of days has elapsed.

Abatement and UST Removal to start on day 1
Demolition to start 10 working days after abatement/UST removal begins.