

SECTION 02283 – FLOOR ABATEMENT-INTERIOR

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Documents affecting the Work of this section include, but are not necessarily limited to the following:
- All Contract Documents

1.02 SUMMARY

- A. The Work in this Section specifies the requirements for the abatement of mercury-containing poured polyurethane flooring (PPF) within the Auxiliary Gymnasium (C145) of the Neptune Senior High School (NSHS). Mercury was detected in the flooring within C145 at concentrations ranging from 120 milligrams per kilogram (mg/kg) to 220 mg/kg. The flooring measures approximately ½ inch thick and covers the entire floor space within the room (approximately 6,200 ft²).
- B. Applicability: As stated above, the intent of this project is to properly remove and legally dispose of all mercury-containing flooring, which is specified in Section 2.02. Due to the similarity in the preparation, abatement, and air monitoring requirements outlined in this specification to that of an interior asbestos abatement, a NJ licensed asbestos Abatement Contractor shall be required to perform the floor abatement activities. State and Federal notification requirements required for an asbestos abatement are not required for the subject floor abatement project. Abatement Contractor as referenced in this specification refers to a NJ licensed asbestos abatement Contractor.

1.03 DEFINITIONS

- A. Terminology commonly used in the context of this Section:
1. Air Filtration Device (AFD): A portable local exhaust system equipped with HEPA filtration capable of maintaining a constant low velocity air flow into contaminated areas from adjacent, uncontaminated areas and capable of maintaining a negative air pressure with respect to the adjacent, uncontaminated areas.
 2. Air Monitoring: The process of measuring the contaminant concentration of a specific volume of air in a stated period of time. Personal air sampling results shall be calculated to reflect the employee's eight-hour time weighted average (TWA) exposure. Area sampling results shall be reported directly without calculating the TWA. Area sampling and containment clearance air sampling results shall be compared to the New Jersey Department of Health Mercury Guidance Maximum Contamination Level of 0.8 micrograms per cubic meter. Any personal OSHA air sampling performed by the contractor will be compared to the OSHA 8-hour time-weighted average permissible exposure limit (see definition below).

- The Contractor shall conduct OSHA exposure monitoring for comparison to the OSHA Permissible Exposure Limit (PEL) of 0.1 mg/m³ or provide evidence of Negative Exposure Assessment (NEA) from mercury flooring removal projects.
 - The Contractor shall conduct OSHA exposure monitoring for compliance with the OSHA Respirable Crystalline Silica standard 1926.153, for comparison to the Permissible Exposure Limit (PEL) of 50 µg/m³ during grinding tasks or provide evidence of Negative Exposure Assessment (NEA) from mercury flooring removal projects.
3. Amended Water: Water to which a surfactant has been added.
 4. Critical Barriers. Two layers of 6-mil fire retardant polyethylene sheeting used to cover vents, outlets, doors, windows and other areas that have a high potential for a pathway of air to develop leaking from the containment. For doors where polyurethane flooring extends under the bottom of the door, the doors should either be removed, and/or a plywood barrier should be installed.
 5. Decontamination Unit: A serial arrangement of rooms or spaces for the purpose of separating the work area from the building environment upon entering the work area and for the cleaning of persons, equipment, and materials prior to returning to the clean environment.
 6. Enclosure or Full Containment: Procedures necessary to completely enclose the in-place, mercury-containing flooring within airtight, impermeable, permanent barriers. Each enclosure or full containment will have an attached 3-stage decontamination unit. Each enclosure or full containment will be placed under negative air pressure with complete air exchanges every 10 minutes.
 7. Equipment/Waste Decontamination Unit: A decontamination system for materials and equipment typically consisting of a designated area of the work area, a washroom and a holding area, with an air lock between any two adjacent rooms and a curtained doorway between the holding area and the non-work area. Not to be used for personal entry/exit.
 8. HEPA Vacuum Equipment: HEPA filtered Vacuuming equipment having a UL 586 filter system.
 9. NJSDA On-Site Project Monitor: A person meeting U.S. Environmental Protection Agency (EPA) training requirements to conduct air monitoring and inspect work during asbestos-like abatement projects. Though not a regulatory requirement, this individual should have training similar to one of the following; AHERA Asbestos Abatement Project Designer, Abatement Supervisor or New Jersey Asbestos Safety Technician.
 10. Permissible Exposure Limit (PEL): An airborne contaminant concentration to which no employee shall be exposed unless using respiratory protection.
 11. Polyethylene Sheet: A single nominal six (6) mil thick, fire retardant polyethylene film.

12. Removal: The taking out or the stripping of mercury-containing flooring material from a building or structure.
13. Separation Barrier: A wall constructed of fire-rated wood to isolate the clean area from the work area and to support polyethylene sheets.
14. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required.
15. Work Area Containment: Designated rooms, spaces, or areas where abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained work area is plasticized, sealed, and equipped with an attached 3-stage decontamination unit.

1.04 STANDARDS AND REGULATION:

Due to the similarity in the preparation, abatement, and air monitoring requirements outlined in this specification to that of an interior asbestos abatement, the following standards and regulations shall apply to the subject floor abatement project:

- A. New Jersey Department of Labor N.J.A.C. 12:120 Asbestos Licenses and Permits.
- B. Occupational Safety and Health Administration (OSHA) various standards, including without limitation, 29 CFR 1926.1101 Asbestos.
- C. Environmental Protection Agency (EPA) AHERA regulations 40 CFR Part 763.
- D. Environmental Protection Agency (EPA) Hazardous Waste Regulations 40 CFR 260-263.

1.05 NOTIFICATIONS

There are no current regulatory notification requirements for the abatement of mercury-containing polyurethane flooring in New Jersey. However, signage shall be posted during the work. (See Section 2.09.)

1.06 ACCESS TO WORK SITE

- A. Access point to the work area shall be through half of Door C6, two double doors located at the rear of the building. The ramp at this location shall serve as the location waste is removed and where equipment is mobilized and demobilized. Similarly, half of the double door set on the other side of the Aux Gym are available for routing the discharge from the AFDs. The GC shall protect these access points and maintain the other half of the doorway clear, to allow building egress from the connected corridors. Contractor shall be responsible to protect, remove, and store existing double doors to the exterior and interior. Contractor shall install temporary louvered door to the exterior of fire rated plywood that is secured by padlock.

1.07 RESTRICTIONS AND QUALITY CONTROL:

- A. Mercury-containing flooring shall be properly handled, packaged, and transported for disposal in an approved landfill/disposal facility, permitted to accept regulated hazardous waste.

- B. The Contractor shall be responsible for monitoring his own construction safety work practices for compliance with OSHA regulations. This includes the collection of personal air samples for compliance with OSHA. NJSDA's on-site Project Monitor will be responsible for the collection of perimeter real-time meter monitoring and the collection of final clearance air samples.
- C. Wastewater: All water used during the flooring abatement activities shall be collected by the Contractor and disposed of in accordance with local, State, and Federal requirements.
- D. Health and Safety:
 - 1. Toxic Effects: The GC shall assume all responsibility for any toxic effects to workers from toxic or damaging vapors or residues generated during the abatement activities or other substances used during construction.
 - 2. Chemical/Biological hazards: The known chemical and or biological hazards on site include mercury and silica dust. Provide materials, equipment and training to ensure worker protection from these materials and any other chemical/biological hazards that may be identified during the course of this work.
- E. Work Supervision and Coordination:
 - 1. From the start of work through completion, provide an on-site responsible and competent supervisor possessing valid NJDOL Asbestos Abatement Supervisor certifications meeting the qualifications as required by Article 1.12 for a job supervisor.
 - 2. Quality of Work: Supervisor shall supervise, inspect and direct the Work.
 - 3. Supervisor shall hold current 40-hour training per 29 CFR Part 1910.120.
- F. Experience and Training: Supervisors, foremen, and workers engaged in the subject flooring abatement activity shall be adequately trained and knowledgeable in the field of asbestos abatement and handling of hazardous waste. All personnel engaged in the subject flooring abatement activities shall have valid New Jersey DOL licensure.
- G. Skilled craftsmen experienced in each respective trade shall execute all phases of the work. Improperly trained, untrained, or inexperienced personnel shall not be allowed in the work areas.
- H. Job supervisors and foremen shall be thoroughly familiar with and experienced in asbestos-like removal and related work and shall meet the requirements of a competent person set forth in OSHA Standard 29 CFR 1926.1101 and 29 CFR Part 1910.120.
- I. All flooring abatement workers shall be certified as having attended and satisfactorily completed asbestos worker training in accordance with OSHA standard 29 CFR 1926.1101(k)(3) and hold current 40-hour training per 29 CFR Part 1910.120.
- J. Jobs Supervisors, foremen, and flooring abatement workers shall be certified and licensed as required for asbestos abatement work by the NJDOL.

- K. Prior to commencement of the work, all personnel who are to enter the work area shall be instructed in and shall be knowledgeable of the appropriate procedures for personnel protection and asbestos abatement type work. On-site training in the use of equipment and facilities unique to this job site shall be performed. Emergency evacuation procedures from the work area shall also be included in worker training.
- L. Worker Medical Examinations: Provide medical examinations for all employees engaged in asbestos-type removal and disposal operations in accordance with OSHA Standard 29 CFR 1910.134, 1926.1101, and applicable State regulations. Ensure that all employee examination results are on file, available for review and maintained in accordance with OSHA Standard 29 CFR 1926.1101 (n)(3).

1.08 SUBMITTALS:

- A. Prior to commencing of flooring abatement work, the Abatement Contractor will provide evidence that he is duly licensed in the State of New Jersey in accordance with the Asbestos Control and Licensing Act.
- B. Prior to commencing flooring abatement work, the Abatement Contractor will provide evidence that they are licensed as an asbestos contractor by the New Jersey Department of Labor and Workforce Development and that they are pre-qualified by the NJ DPMC and SDA to perform asbestos abatement activities.
- C. Prior to commencing flooring abatement work, the Abatement Contractor will provide proof that personnel and Abatement Contractor subcontractor(s) personnel working within the flooring removal areas have been trained to meet the requirements of 29 CFR Part 1926, and N.J.A.C. 12-120 regulations. The training and fit testing will be of a quality and substance deemed to be satisfactory by the independent air monitoring firm and NJSDA. The Abatement Contractor will provide proof that personnel and Abatement Contractor subcontractor(s) personnel working within the abatement enclosures are included in the medical surveillance program required by 29 CFR Part 1926 requirements and they have medical approval to work with asbestos and wear respirators.
- D. Prior to commencing flooring abatement work, the Abatement Contractor will provide NJSDA and the NJSDA's independent air monitoring firm an abatement plan showing the Contractor's phased approach for abatement (including mapping indicating each proposed containment/work area and proposed order of abatement). This abatement plan shall be presented to NJSDA for approval prior to the scheduling of said abatement activities. The plan shall include a schedule for the replacement of the floor in kind. The plan will also include a projected schedule to complete the scope of work by a date to be determined by the Neptune School District based on the presence of students and resumption of classes (August 2021).
- E. For this project, transportation and disposal of the mercury-containing flooring waste (estimated at 19 to 20 tons) as a hazardous waste will be the responsibility of the General Contractor and/or its Abatement Contractor. The General Contractor and/or its Abatement Contractor is responsible for the packaging and any intermediate transportation to disposal containers. Interim storage of disposal containers must be within the footprint of the construction area (to be proposed in Abatement Contractor's

- plan). Prior to the start of the project, the contractor will identify the waste hauler and landfill, providing proof of licensing and permitting for each. Approximate dumpster locations are defined in Figure 1.0 appended to this specification. All dumpsters will be placed on plywood to protect paved parking lots, concrete sidewalks and any other hardscaped surfaces.
- F. Prior to commencing work, the Abatement Contractor will provide the on-site Project Monitor the necessary documentation regarding the fire retardancy of the following containment materials: polyethylene (poly) sheeting, lumber and other combustible materials.
 - G. Prior to commencing work, the Abatement Contractor will follow the construction of any containments listed in this or the approved abatement plan including the Waste/Equipment decontamination unit, personnel decontamination unit location and number of air filtration units (AFUs), location of AFU exhaust, air flow maps, critical barriers, separation barriers, ingress/egress, staging area, storage trailer location, dumpster location, drum storage area and associated fencing.
 - H. HEPA air filtration units and HEPA vacuum cleaners used during this project will be leak-tested (PAO or equivalent) on site prior to use. A copy of certification for each unit will remain on-site during the entire length of the project and a certification sticker will be placed on the unit.
 - I. Prior to commencing work, the Abatement Contractor is to provide a copy of the waste generator label to be affixed to each bag, container, etc., of flooring debris. The proper name and address of this label will be provided to the Abatement Contractor by NJSDA.
 - J. Prior to commencing work, the Abatement Contractor will provide to the Project Monitor and NJSDA, applicable Safety Data Sheets (SDS) for their containment supplies and/or materials for approval. The Project Monitor or NJSDA will approve and/or disapprove any supply/material based on the information in the SDS.
 - K. Prior to commencing work, the contractor will inspect the premises with the NJSDA On-site Project Monitor and they will agree in writing on the condition of the project site, any equipment to remain in the work area during the abatement, etc.
 - L. Prior to commencing work, the Abatement Contractor will develop emergency planning and procedures for the project site.
 - 1. These emergency procedures will be in written form and prominently posted in the clean room/change area. Everyone, prior to entering the regulated area, will read and sign these procedures to acknowledge receipt and understanding of the work site layout, location of the emergency exits and emergency procedures.
 - 2. This emergency planning will include written notification of police, fire and emergency medical personnel of planned abatement activities, work schedule and layout of work area, and particularly barriers that may affect response capabilities.
 - 3. This emergency planning will include considerations of fire, explosion, toxic atmospheres, electrical hazards, slips, trips, and fs, confined spaces and heat

related injury. Written procedures will be developed and employee training in procedures will be provided.

4. Employees will be trained in evacuation procedures in the event of workplace emergencies. Special consideration for tunnels/crawlspace evacuations will be provided by the Abatement Contractor.
5. For non-life-threatening situations, employees injured or otherwise incapacitated will decontaminate themselves following normal procedures with assistance from fellow workers, if necessary, before exiting the regulated area to obtain proper medical treatment.
6. For life threatening injury or illness, worker decontamination will take least priority. After measures to stabilize the injured worker, remove him/her from the regulated area and secure proper medical treatment.
7. Telephone numbers of emergency response personnel will be prominently posted in the clean room/change area and equipment room, along with the location of the nearest telephone.

PART 2 - SCOPE OF WORK

2.01 SUMMARY

- A. The Contractor shall furnish all labor, materials, facilities, equipment, services, employee training and testing, permits and agreements necessary to perform the work required for flooring abatement and flooring replacement in accordance with these specifications, EPA, OSHA Regulations, NIOSH recommendations, State of New Jersey Regulations, and all other applicable Federal, State, and local government regulations. Whenever there is a conflict or overlap of the above references the most stringent provisions shall apply. It shall be the Contractor's responsibility to verify exact quantities and locations of all mercury-containing flooring materials. The quantities shown are for informational purposes only. Prospective bidder should bid this project according to what is observed during the Pre-bid walk through.

2.02 DESCRIPTION OF WORK

- A. Contractor must provide a Foreman/Supervisor that can speak and write in English.
- B. Worker training, respiratory protection and fit testing, and OSHA required medical examinations.
- C. Work area preparation including protection of all surrounding fixtures as described herein. Further, the Contractor is responsible to remove the bleacher systems, provide portable trailers to store the bleachers during the flooring abatement and flooring installation. The Contractor shall reinstall the bleacher systems upon completion and acceptance of the new flooring.
- D. Schedule: The Contractor shall be required to complete the flooring abatement prior to the installation of a new flooring system in the Auxiliary Gymnasium (C145). If needed to install the replacement floor, the GC shall engage a design consultant to complete necessary predesign and design of the new flooring system, and install the

new flooring system following approval of the design by both the NJSDA and School District.

- E. The Approximate Amount(s) of mercury-containing flooring listed in the table below is offered merely to provide a general and relative frame of reference. No attempt has been made to quantify the exact amount of flooring in the below referenced locations. The Contractor is expected to have acquainted itself with the spaces involved, and to have investigated the location and amount of all identified materials. The approximate amounts shall not in any way be construed or applied so as to limit the Contractor's obligation to remove, dispose and otherwise treat as specified, all flooring so identified, nor to form the basis for any change order to the Contract Sum or Time.

Table No. 1 – Mercury-Containing Polyurethane Flooring

| Location | Description | Approximate Quantity (SF) | Abatement Method |
|----------------------|--|---------------------------|--------------------------------|
| Auxiliary Gym (C145) | Mercury Containing Polyurethane Flooring | 6,200 | Section 2.03- Full Containment |

2.03 FULL CONTAINMENT

All the requirements specified in this section shall be followed for the “Full Containment” abatement of the mercury-containing flooring.

A. Equipment and Materials

HEPA Negative Air Filtration Units (AFU’s): The Contractor shall have available HEPA filter equipped air filtering equipment capable of filtering at 99.97% efficiency. The Contractor shall employ the AFU’s in sufficient quantity and capacity to cause a complete air change or total air filtration within the work area at least every 15 minutes. The negative air filtration units shall exhaust to the exterior of the building only. These units shall be rated by the manufacturer as to their actual working air capacity and field tested. At least two (2) additional HEPA equipped AFU’s shall be installed for use in case of equipment failure and connected to a separate circuit breaker than the main AFU’s. The exhaust capacity from each work area shall be sufficient to establish a pressure differential between the work area and all adjacent spaces greater than or equal to 0.02 inches.

Air Filtration Unit Exhaust: Air shall exhaust through the air pressure differential filtration unit by means of flexible or solid duct leading outside the building. Where exhaust ducts traverse hallways, a separation barrier shall be installed to prevent access by building occupants.

Pressure Differential of 0.02: The exhaust capacity shall be sufficient to establish a pressure differential between the work area and all adjacent spaces greater than or equal to 0.02 inches water column gauge. The Pressure Differential shall be maintained continuously for the duration of the abatement work. The Contractor shall provide for remote monitoring devices, as indicated, so that the Pressure Differential can be

monitored and recorded continuously (inclusive of periods when abatement is not occurring, such as weekends) from a remote location. In the event of a lapse in the Pressure Differential, the Contractor shall take immediate action to restore and continuously maintain the 0.02-inch Differential.

Warning Signs: The Contractor shall post warning signs and notices to restrict access to the work area.

Manometer: Pressure differential shall be monitored by manometers supplied by the Contractor. The Contractor must maintain continuous - 0.02 inches negative air pressure in the work area until successful final air clearance has been achieved and documented.

B. Personal Protective Equipment (PPE)

The Contractor shall have available sufficient inventory of personal protective equipment (PPE), including clothing, impermeable neoprene or nitrile gloves, earplugs, full face respirators, combination P100/Mercury Vapor filter cartridges,. This PPE shall be available for usage by authorized personnel.

C. Construction of Work Area Containment

1. Before removing any flooring from the work area, the Contractor shall ensure that the outer perimeters of the work area have been securely sealed off from the rest of the building. All vertical and horizontal openings shall be sealed with two (2) layers of air-tight polyethylene sheeting. All doors leading to the work area shall have the thresholds removed, labelled, and stored for reinstallation. Critical barriers located at the doors shall include two (2) independent layers separately taped to the interior side of the doorway, and two (2) independent layers separately taped to the exterior side of the doorway. Special protection and/or critical barriers shall be installed for the “rock climbing wall” and the wall and hanging floor mats, if present. All penetrations around conduits, pipes, ducts or other openings between the work area and adjacent spaces shall be sealed, using materials determined to be suitable. The four (4) exhaust fan /louver systems at the ceiling level shall be sealed as critical barriers and the fans de-energized, locked-out/tagged-out. The only exception to total enclosure shall be: an entrance airlock with showers and a decontamination chamber; a debris removal airlock to permit cleaning and removing waste; and controlled makeup air inlets into the work area.
2. The Contractor shall construct a work area containment structure to completely enclose each work area. The work areas are to be plasticized, sealed and equipped with an attached 3-stage decontamination unit.
3. Polyethylene sheeting shall be utilized to plasticize each work area. Polyethylene sheeting shall be at least a single nominal six mil thick polyethylene film. This polyethylene sheeting shall be replaced or repaired immediately if torn or damaged and shall be applied as follows:
 - a. All layers (wall and ceiling): Two layers of six mil fire retardant polyethylene sheeting shall be used to seal all walls and floors, as

Critical Barriers. The ceiling will be held in place by straps/wires/wood strips of equivalent.

4. All materials used must meet the Uniform Construction Code, building sub-code requirements for that building. All polyethylene used must be flame-resistant polyethylene sheeting, nominal six mil thick, conforming to the requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-Resistant Textiles and Films.
5. The Contractor shall wet clean and/or HEPA vacuum all surfaces within the containment work areas such as radiators, non-flooring horizontal surfaces, suspended light fixtures, built-in equipment; etc., and shall then cover with two layers of six mil thick polyethylene sheeting taped securely in place.
6. Because the ceiling and walls will be treated as Critical Barriers, the Contractor does not have to detach and wet clean removable electrical, heating and ventilating equipment and other items, which may be connected to the work areas. Any special equipment (e.g. internet routers, etc.) will be removed by the District prior to the abatement and returned and reattached to their proper place when the work areas have been decontaminated and final air testing has provided satisfactory results.

E. Decontamination Unit

The decontamination unit shall be a 3-stage unit, consisting of a Clean Room, a Shower Room and an Equipment Room. Decontamination unit shall be attached to each work area containment. In order to prevent contamination of the environment, the Contractor shall be responsible for controlling access at the work area and shall maintain a daily log of personnel entering the work area. A list of names of workers shall be posted with their start and stop times for each day.

F. Waste/Equipment Decontamination Unit

A Waste/Equipment decontamination unit shall be a wide unit, large enough to move floor cutting and grinding equipment into and out of the work area, clean the equipment, and remove flooring waste in carts. The personnel decontamination unit may be attached in configuration to the Waste/Equipment decontamination unit. The flaps shall be secured and closed when the unit is not being actively used, to minimize work area pressure loss.

- G. Contractor shall install a solid wooden Separation Barrier between Room C135 and C149 to isolate the area from the occupied building. Contractor shall secure access to the work area using padlock and louvered fire-rated plywood or metal door. The decontamination units shall be designed and installed within the space leading from Door C6 to C145.

Equipment staging is to be in the restroom C139/C141 that will be accessible only to the Contractor. Contractor is responsible for surface protection and maintaining restrooms.

Contractor shall install solid wooden Separation Barrier to include one (1) set of double doors at C9, extending to the wall abutting E125. Fire-rated plywood shall be installed

at the exterior door, and AFD exhausts secured to the door to isolate the area from the occupied building.

C143 Weight Room will be inaccessible. The HVAC system serving C143 is to be shut down for the project duration.

2.04 WORK PRACTICES FOR FLOORING REMOVAL

All the requirements specified in this section shall be followed for the abatement of the mercury-containing flooring as specified in Table No. 1 of Section 2.02.

- A. The Contractor shall implement the following procedures:
1. All work area preparation actions, including critical barriers, wall and ceiling polyethylene sheeting are to be installed, and appropriate caution and/or danger signs posted on the perimeter to prevent unauthorized personnel from entering the work area.
 2. A three stage decontamination chamber shall be erected and signage installed at the entrance to the Clean Room.
 3. All necessary materials and supplies shall be brought into the work area before any removal begins.
 4. The Contractor shall use a mechanical floor cutting machine, a combination of hand and mechanical tools, as necessary to remove the polyurethane flooring from the concrete sub-slab. If propane powered machines are used in the work area, carbon monoxide monitors shall be on each machine operator. If CO is detected at or above the PEL, changes to engineering controls or substitution of the propane machines will be required.
 5. All residual polyurethane flooring shall be removed from the sub-slab. The sub-slab shall be scarified, with up to 1/4 inch of concrete to be removed. After scarifying concrete, expansion joints and cracks in slab must be cleaned of flooring residues to the approval of the Project Monitor. Flooring shall be cleaned using multiple applications of Mercon X™, followed in between with HEPA vacuuming. Flooring damages are to be repaired in a manner that leaves it ready for the installation of a new flooring system.
 6. The flooring material must be removed and disposed of as mercury-containing hazardous waste.

2.05 SHUT DOWN OF HVAC AND ELECTRICAL SYSTEMS

- A. All HVAC and electrical systems located in the work area shall be shut down. Use of electrical systems may be approved by the NJSDA On-Site Project Monitor if they are properly protected by ground fault circuit interrupters, they are cleanable, and provided that such other precautions as may be necessary are taken to ensure the safety of all who are in the work area.

2.06 DUTIES FOR AIR MONITORING TO BE PERFORMED BY INDEPENDENT PROJECT MONITOR

- A. The floor abatement work will be performed under the strict work practices and procedures outlined herein, as applicable. An independent Asbestos/Mercury Abatement Project Monitor (Project Monitor) directly contracted with NJSDA will be the on-site NJSDA representative who will be responsible for the day-to-day abatement activities and will have the authority to stop-work if this specification is not be followed or if work practices are unsafe. The Project Monitor's decision(s) will be final in matters relating to the interpretations of this plan and applicable regulations. The Abatement Contractor will abide by directions and decisions of the Project Monitor relative to mercury flooring removal and/or mercury vapor control.
- B. The Project Monitor shall perform air sampling to include ambient monitoring of occupied spaces, within the work area and outside, as well as final clearance sampling as specified herein. The Project Monitor shall have access to all areas of the abatement project at all times and shall be permitted to inspect and monitor the performance of the Contractor to verify that the Contractor's work complies with the requirements of this Specification.
- C. The Project Monitor shall direct such corrective action as may be necessary. If the Contractor fails to take the corrective action, or if the Contractor violates the requirements of similar asbestos regulation, then the Project Monitor shall order, in writing, that the work be stopped.
- D. If the pressure differential drops below - 0.01 inches water column, the Contractor's supervisor shall investigate and evaluate engineering controls to determine the source of the pressure loss and the Contractor shall institute corrective action as needed.

2.07 FINAL AIR CLEARANCE SAMPLING

- A. The Project Monitor shall perform all final air clearance sampling. Preliminary, real-time readings (via a Lumex Handheld Meter, or Jerome J505 or approved equal) will be collected within each work area following the final application of Mercon X™ or approved equal. The Contractor will notify NJSDA's On-Site Project Monitor when they are ready for the collection of final clearance samples. If all real-time airborne mercury concentrations are below 0.4 µg/m³, final air clearance samples will be collected and analyzed via NIOSH Method 6009. Final air clearance samples will be compared to the NJDOL guidance value of 0.8 µg/m³.
- B. Five (5) final air clearance samples will be collected within the work area containment. One (1) additional clearance sample will be collected at the exterior to represent make-up air to the containment.
- C. Should the analytical results of the final air clearance testing exhibit mercury concentrations in excess of 0.8 µg/m³, the Contractor shall be required to re-clean the work area, inclusive of further slab scarification, abatement and additional Mercon X treatments as necessary until final air clearance testing is successful.

2.08 STANDARD OPERATING PROCEDURES

- A. The Contractor shall develop and implement a written standard procedure for abatement work to ensure maximum protection and safeguard from mercury exposure of the workers, visitors, general public, and the environment. In addition to the requirements outlined in Section 02115 Health and Safety Requirements, the standard operating procedure shall ensure:
1. Tight security on a 24 hours basis from unauthorized entry into the work space.
 2. Remove flooring in ways that minimize release of mercury vapor to surrounding areas.
 3. Safe work practices in the work place, including provisions for inter-room communications, exclusion of eating, drinking, smoking, or in any way breaking respiratory protection.
 4. Proper protective clothing and respiratory protection prior to entering the work space from the outside.
 5. Packing, labeling, loading, transporting, and disposing of contaminated material in a way that minimizes exposure and contamination.
 6. Proper exit practices from the work space to the outside through the showering and decontamination facilities.
 7. Emergency evacuation for medical or safety (fire and smoke) so that exposure will be minimized.
 8. Safety from accidents in the work space, especially from electrical shocks, slippery surfaces, and entanglements in loose hoses and equipment.
 9. Provisions for effective supervision, air monitoring and personnel monitoring for exposure during the work.
 10. Engineering systems that minimize exposure to mercury vapor in the work space.
 11. The Contractor shall submit these plans and procedures at least five (5) days prior to abatement.

2.09 NOTIFICATIONS, PERMITS, WARNING SIGNS, LABELS, AND POSTERS

- A. The Contractor shall erect English warning signs around the work space and at every point of potential entry from the outside, with the words "Polyurethane Floor Removal in Progress – Do Not Enter". The warning signs shall be a bright color so that they will be easily noticeable.
- B. The Contractor shall provide all required labels for all bags and drums utilized to transport waste material to the landfill.

2.10 EMERGENCY PRECAUTIONS

- A. The Contractor shall establish emergency and fire exits from each work area.

- B. The Contractor shall be prepared to administer first aid to injured personnel after decontamination. Seriously injured personnel shall be treated immediately or evacuated without delay for decontamination. When an injury occurs, precautions shall be taken to reduce airborne dust and mercury vapor concentrations (i.e. misting of the air with water) until the injured person has been removed from the work area.

2.11 CONTRACTOR RESPONSIBILITIES

- A. The Contractor shall clean with wet cloths and/or with HEPA vacuums all of the work areas prior to setup of containment area. All equipment and material used for cleaning shall be decontaminated or disposed of as mercury contaminated waste.
- B. During this period, the Contractor shall provide security to prevent unauthorized entry into the work area, and maintenance of decontamination chambers, isolation barriers and negative air systems.
- C. Should the failure of any utility occur, the Owner will not be responsible to the Contractor for loss of time or any other expense incurred.
- D. The Contractor is required to protect workers (e.g. confined space, fall protection, etc.) in accordance with all applicable OSHA regulations.

2.12 USE OF BUILDING FACILITIES

- A. The approximate location of available water and electrical sources are presented on Figure 1.0, the access to which must be coordinated between the Contractor and the District. The Contractor shall provide all electrical and water connections, portable water supply if required, tie-ins, extensions, and construction materials, supplies, etc.
- B. The Contractor shall provide a separate temporary electric panel board and/or portable generator to power his/her equipment. Contractor's licensed electrician shall provide temporary tie-in via cable, outlet boxes, junction boxes, receptacles and lights, all with ground fault interruption. All temporary electric shall be in accordance with OSHA Regulations, specifically, but not limited to, 29 CFR 1926 Subpart K.
- C. Contractor shall provide fire protection in accordance with all State and Local fire codes.
- D. When temporary services lines are no longer required, they shall be removed by the Contractor.
- E. Contractor shall provide hot shower water necessary for use in the 3-stage decontamination unit. As an option to a shower, the Contractor may wear two-layers of Tyvek coveralls and shed the outer layer in the Equipment/dirty room and the inner layer in the clean room

2.13 USE OF THE PREMISES

- A. The Contractor shall confine his/her apparatus, the storage of materials, and supplies, and the operation of his/her workmen to limits established by law, ordinances, and the directions of the Owner. All flammable or combustible materials shall be properly stored to prevent fire and in areas approved by the Owner.

- B. The Contractor shall assure that no exits from the building are obstructed other than those directly involved in the project, that appropriate safety barriers are established to prevent access, and that work areas are kept neat, clean, and safe.
- C. All surrounding work, fixtures, soil lines, drains, water lines, pipes, electrical conduit, wires, utilities, railings, shrubbery, landscaping, etc. which is to remain in place shall be carefully protected and, if disturbed or damaged, shall be repaired or replaced as directed by the Owner, at no additional cost.

2.14 PROTECTION AND DAMAGE

- A. The Contractor shall not throw any materials from windows or doors of buildings.
- B. The Contractor shall remove debris from the site daily. Premises shall be left neat and clean after each work shift, so that work may proceed the next regular workday without interruption.

2.15 RESPIRATORY SYSTEMS

- A. Workers conducting the abatement and other support activities shall use respiratory protection unless air sampling results, as part of an exposure assessment program, determine airborne mercury concentrations are below 0.25 mg/M³ (15 min TWA). Details on the air sampling requirements are discussed below in Section 2.17.
- B. Respiratory protection shall be provided during abatement and other support activities if the worker exposure assessment determines that the anticipated airborne concentration of elemental mercury measured inside the containment is as follows:
 - Preparation: 0.025 – 0.25 mg/m³ (15 min TWA) Half face, Air Purifying respirator with Hg cartridges.
 - Flooring Removal/Grinding: 0.25 mg/m³ – 1.25 mg/m³ (15 min TWA) Full face, Air Purifying respirator with Hg/P-100 cartridges (quantitative fit test is required).
 - Flooring Removal/Grinding: 1.25 mg/m³ (15 min TWA) and above - supplied air pressure demand respirator.
- C. All workers who are required to wear respirators must meet the training, fit-testing and medical qualification standards in OSHA standard 1910.134.
- D. NO ONE is to be permitted into the work area without proper authorization.
- E. All personnel engaged in mercury abatement procedures requiring an air purifying respirator shall have an unobstructed face/mask seal (i.e. no facial hair).

2.16 PROTECTIVE CLOTHING

- A. Provide to all workers, foremen, superintendents and authorized visitors and inspectors protective disposable clothing (TYVEK) or approved equal consisting of full-body coveralls, head covers, gloves and 18 inch high boot type covers or reusable footwear.
- B. Provide eye protection and hard hats as required by job conditions and safety regulations.

- C. Reusable footwear, hard hats and eye protection devices shall be left in the "Contaminated Equipment Room" until the end of the flooring abatement work.
- D. Disposable protective clothing shall be discarded and disposed of as mercury-containing waste every time the wearer exits from the work space to the outside through the decontamination facility.
- E. The Contractor shall also maintain sufficient supply of all other related items such as towels, soap, etc.

2.17 OSHA AIR MONITORING - WORKERS

- A. The Contractor shall conduct an exposure assessment to determine the anticipated worker exposure levels to airborne mercury vapor during abatement and associated support tasks. The type of respiratory protection shall follow the requirements in Section 2.15(B) above.
- B. The Contractor shall select a competent person to conduct the exposure assessment and to perform the following functions:
 - 1. Monitor the setup of the containment and other work area enclosure and ensure it will contain airborne mercury vapors.
 - 2. Insure that employees are adequately trained in the use of proper work practices, proper personal protective equipment and in decontamination procedures.
 - 3. Insure that employees use proper work practices, proper personal protective equipment and proper decontamination procedures.
 - 4. Supervise all employee exposure monitoring.
- C. The mercury air sampling can use a combination of real-time detection air sampling. The real-time mercury instrument shall have minimum detection limit of 0.01mg/m³.
- D. All costs for required air monitoring by the Contractor's competent person shall be borne by the Contractor.

PART 3 - DISPOSAL OF MERCURY_CONTAINING FLOORING WASTE

3.01 DISPOSAL OF FLOORING WASTE

This subsection shall apply to the removal of mercury-containing flooring from the job site and the disposal of mercury-containing waste.

- A. Disposal of flooring and associated waste shall be conducted as follows:
 - 1. All flooring waste materials destined for disposal shall be removed from the work area in covered carts to a dumpster with fire-retardant 6 mil polyethylene under a tarp cover before it can be transported and disposed. . Concrete scarification grinding debris shall be stored within sealed 55-gallon metal drums, prior to disposal as mercury hazardous waste. Should the Contractor desire to dispose of the concrete grindings as non-hazardous, the Contractor shall collect a composite sample, including sub-samples from each drum, and have the sample analyzed using the TCLP Method EPA 1311/7470A. Results must be below 0.2 mg/l mercury to be classified as non-hazardous waste.

2. A secure container shall be provided if waste is to be temporarily stored outside unattended. The container shall have a temporary fence constructed around the container to obstruct view and minimize access. Fencing shall have lockable gate.
 3. Dumpster and drums shall be located adjacent to the building at the end of the ramp along the bus lane. Access to the area shall be restricted with fencing with screening to obscure view. Fenced area shall be secured with padlock at the end of each shift.
- B. Use only enclosed or covered trucks to haul impermeable containers to prevent loss or damage to containers in route to the landfill.

PART 4 - MATERIALS AND EQUIPMENT

4.01 MATERIALS

- A. Materials shall be standard products of manufacturers regularly engaged in the production of the items and shall conform to OSHA Standard 29 CFR 1926.1101; EPA Standard 40 CFR 61, Subpart M; Department of Transportation Standards 49 CFR 171, 172, and 173; and applicable State regulations.
- B. Plastic: Fire retardant, 6-mil thickness provided in rolls of sizes that minimize joints, for plasticizing the enclosed work area, preparation of the decontamination enclosure system, and waste packaging.
- C. Duct Tape: Capable of sealing joints of adjacent sheets of plastic and attaching plastic sheeting to finished surfaces without damage to existing finish; capable of adhering under both dry and wet conditions, including use of amended water.
- D. Surfactant: Resin materials in a water base that have been tested to ensure materials are non-toxic and non-hazardous.
- E. Mercury decontaminant solution: Ross Healthcare Mercon X™ or approved equal.
- F. Plywood: Use for temporary partitions, decontamination enclosure systems, and tunnels; fire-rated, exterior grade and a minimum ½ inch thick.
- G. Spray Adhesive: Aerosol, specially formulated to stick to sheet polyethylene; 3M 76, 3M 77, or approved equal.
- H. Disposal Bags: Plastic, minimum 6 mils thick, labeled in accordance with this Section.
- I. Shipping Containers: Impermeable, suitable to receive and retain any mercury-containing materials until they are disposed of at an approved landfill. Containers shall be labeled in accordance with this Section and shall be both airtight and watertight and conform to DOT Standard 49 CFR 178. Each container shall be constructed of fiber, hard plastic, or metal, with locking, airtight lids.
- J. Markings and Labels: Shipping containers shall bear danger labels, transportation packaging labels, and generator identification information. Labels shall be permanently affixed to shipping containers containing flooring and associated waste, in accordance with OSHA Standard 29 CFR 1926.1101(k)(2), DOT Standard 49 CFR Part 171, 172, 173, and EPA Standard 40 CFR Part 61.150(a)(1)(v).

4.02 EQUIPMENT

- A. Containers: Containers used for the transportation of hazardous waste shall be enclosed and suitable for loading, temporary storage, transit, and unloading of waste without exposure to persons or property.
- B. Fall Protection Equipment: Certified and approved to be used by trained personnel when working elevated to protect against falling from an elevated work area.
- C. Fire Extinguisher: Type ABC dry chemical extinguisher or a combination of NFPA recommended types for the fire hazard exposures in each location. Supply a minimum of one extinguisher for every 1,000 SF of floor area, with a maximum travel distance to an extinguisher of 75 feet. Supply at least one extinguisher in each decontamination enclosure equipment room and clean room.
- D. Water Filtration System: Capable of filtering and retaining particles larger than 5.0 microns in size.
- E. Carts: Water-tight wheeled carts with tight fitting lids suitable for movement of non-contaminated waste or mercury-contaminated waste from the decontamination enclosure system to the waste storage container or transport vehicle.
- F. Power Tools: When used directly for flooring removal, equip with a dust collection system.
- G. Attach a shroud connected to a HEPA vacuum system for capture of dust.

4.03 PROTECTIVE CLOTHING AND EQUIPMENT:

- A. Protective clothing and equipment shall conform to OSHA Standard 29 CFR 1926.1101.
- B. Protective Clothing: Workers shall be provided with sufficient sets of properly fitting, full-body, disposable coveralls, head covers, impermeable gloves, and 18-inch high boot-type foot covers, constructed of Dupont "TYVEK-Type 14", Kimberly-Clark "Kleenguard", or approved equal.
- C. Equipment: Provide eye protection and hard hats required for job conditions or by applicable safety regulations.
- D. Respiratory Protection: Provide adequate respiratory protection at all times for all individuals in the work area. Respirators shall be approved by NIOSH in accordance with OSHA Standard 29 CFR 1910.134 and for grinding and cleaning shall be a minimum full face APR equipped with combination mercury/P-100 cartridges

PART 5 - EXECUTION

5.01 PREPARATION:

- A. Transmit submittals required by this Section.
- B. Furnish products as indicated.
- C. Ensure that the substrates are in suitable condition to receive the work.

5.02 DECONTAMINATION ENCLOSURE SYSTEMS:

- A. Attached Personal/Waste Decontamination Enclosure: Provide an attached, combined, personal / waste decontamination enclosure, in compliance with OSHA Standard 29 CFR 1926.1101, NJAC 5:23-8.15.

5.03 PERSONNEL PROTECTION AND DECONTAMINATION:

- A. Take all safety measures and precautions necessary to protect employees in accordance with OSHA Standard 29 CFR 1926, EPA Standard 40 CFR, Part 61, Subpart M, and applicable State regulations.
- B. Provide authorized visitors and the Project Monitor with suitable properly fitting protective disposable clothing, respiratory protection, and footwear (up to four sets per 8-hour shift) whenever they are required to enter the work area.

5.04 AUTHORITY TO STOP WORK:

- A. The Project Monitor has the authority to stop the removal work if a determination is made that conditions are not within Specification requirements and/or applicable regulations. The stoppage of work shall continue until conditions have been corrected to the satisfaction of the Project Monitor. Standby time to resolve the problems shall be at the Contractor's expense.

5.05 TESTING AND INSPECTION:

- A. Visual inspections and air monitoring shall be performed by the Project Monitor during and after abatement to document airborne mercury concentrations. This might include Authorization to Begin Abatement (inspection of the containment construction), Fine Cleaning Inspection, and Authorization to Removal Critical Barriers. All inspections performed by the Project Monitor will be provided to the Contractor in writing.
- B. Should a delay occur due to failures of clearance air testing, all associated expenses such as sample collection and testing, shall be the responsibility of the Contractor.
- C. The Contractor shall provide OSHA monitoring and all other tests required by specified applicable regulations, codes, and standards.
- D. The Contractor shall perform an inspection of the Work to evaluate completeness prior to requesting an inspection by the Project Monitor.

5.06 CLEAN-UP:

- A. All clean-up work related to the flooring abatement work shall be in strict accordance with general technical requirements.
- B. Final Site Cleaning: Upon completion of the work, remove all temporary construction and decontamination facilities; put the premises in a neat and clean condition; and sweep, clean, and wash to restore the condition of the site to its original condition.

5.07 CONTINGENT ACTIVITIES:

It is possible additional abatement activities listed below may also be required. The Contractor shall upon authorization, if and when directed, perform one or all of these activities, to be compensated under the Contingency.

- A. Installation of additional concrete to return the concrete floor slab to pre-scarification elevations, including both pre and post site survey to confirm elevations.
- B. Application of a cold-spray applied 40- mil chemical vapor barrier to the concrete floor slab following abatement and prior to the installation of a new flooring system.

5.08 NEW REPLACEMENT FLOORING - Resilient Flooring

1. Provide an indoor seamless heterogeneous resilient multipurpose synthetic floor system with the following;
 - a. Class 2 shock absorption consistent with ASTM F2772.
 - b. A flooring system that will consist of the following:
 - c. Recycled resilient sheet force-reduction layer, 9 mm thick.
 - d. Seamless, liquid-applied self-leveling 2-mm polyurethane topcoat.
 - e. 7-mil protective color coat.
2. Provide floor slab installation and testing consistent with the manufacturer's instructions.
3. Warranties
 - a. 8 years from date of Substantial Completion for material defects and surface wear-through.
 - b. 2 years from date of Substantial Completion for workmanship and installation.
4. Basis of Design
 - a. Tarkett PolyTurf Plus Pad and Pour 9+2 or approved equal.

END OF SECTION 02283