INVENTUM ENGINEERING, PC

Interim Remedial Measures Work Plan
Brownfield Cleanup Program

Site No. C932169

3125 Highland Avenue Site

Niagara Falls, New York

March 2026

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Engineering Certification

I, John P. Black certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Interim Remedial Measures Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the NYSDEC Technical Guidance for Site Investigation and Remediation (DER-10), Green Remediation (DER-31) and that all activities producing the data were performed in full accordance with NYSDEC-approved work plans and any NYSDEC-approved modifications.

Respectfully Submitted,

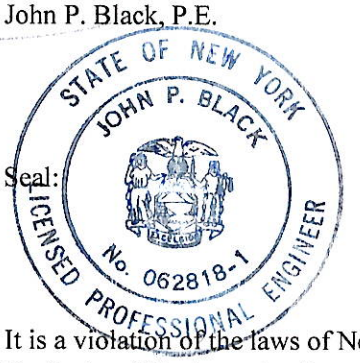
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Date: 3/17/2020

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1 Introduction

This Interim Remedial Measures Work Plan (IRMWP) has been developed for the 3125 Highland Avenue Brownfield Cleanup Program (BCP) Site located at 3219 and 3301 Highland Avenue, Niagara Falls, New York (Figure 1). This IRM Work Plan addresses three known issues on the BCP Site:

1. Demolition of Unstable Structures;
2. Solidification and Offsite Disposal of Debris Piles; and
3. Solidification and Offsite Disposal of Soils Exhibiting the Characteristic of Toxicity.

The IRM Work Plan complements and will be implemented in support of the BCP Site Remedial Investigation Work Plan (RIWP). Descriptions of the BCP Site can be found in detail in the RIWP (Inventum 2025).

1.1 Demolition

The demolition and dismantlement of structures on the BCP Site is necessary to provide access to conduct the required remedial investigations and anticipated remedial actions. The buildings to be removed are unsuitable for occupancy and/or unstable preventing the needed access to implement a complete RI. The structures being addressed by this IRM Work Plan are those that are required to be demolished to complete the remedial investigation required by the BCP due to unsafe conditions. This encompasses all structures on the BCP Site. All demolition will be conducted in accordance with a demolition permit that will be obtained from the City of Niagara Falls.

Asbestos Containing Material (ACM) and universal waste removal will be addressed prior to the demolition of any structure. To avoid confusion associated with the various names given to the site buildings, structures are identified by number on Figure 2 of this work plan.

This work plan includes the buildings on the BCP Site that are unstable and that interfere with the implementation of the IRM Work Plan and the RIWP.

1.2 Soil Excavation, Solidification, and Disposal

Soils and debris identified on Site with concentrations of lead above the characteristic toxicity threshold for hazardous waste (5 milligrams per liter [mg/l]) will be solidified and disposed offsite. A bench scale test conducted during the Site Investigation (Inventum 2022) confirmed an admixture of 5-percent (by weight) Portland Cement is efficient at eliminating the hazardous characteristic of toxicity for lead. The locations to be addressed under the solidification and disposal scope are shown on Figure 3. The size of the areas shown on Figure 3 are approximate, the actual extent will be determined by sampling as discussed in Section 3 of this Work Plan.

1.3 Site Materials Management

Site Materials Management protocols are included in this IRM Work Plan and include procedures to follow whenever ground intrusive site work is conducted during the demolition, remedial investigation, and site management during the BCP prior to issuance of a certificate of completion (COC). Section 3 of this IRM Work Plan includes:

- Requirements for excavation/grading activities, stockpiling and soil staging areas, waste characterization sampling, onsite reuse criteria, soil loading and transportation, and requirements for offsite disposal;

- Solidification procedures to be utilized if additional soils exceeding the toxicity characteristic for lead are identified;
- Requirements for site cover and imported fill;
- Health and Safety for construction personnel, including requirements for Site and community air monitoring (Appendix A);
- Quality Assurance/Quality Control Plan (Appendix B);
- Community Air Monitoring Plan (Appendix C); and
- NYSDEC and NYSDOH notification and reporting requirements

1.4 Schedule

The work is to be scheduled as soon as the RIWP and IRMWP are approved. The schedules for the two IRM programs, Demolition and Soil Excavation, will be coordinated with the investigation activities in the RIWP.

2 Demolition

2.1 Mobilization and Site Controls

Mobilization for the demolition of each structure will include the following steps:

1. Surveys and Inspections:
   a. ACM Survey – completed (Appendix F)
   b. Universal Waste survey, including equipment containing refrigerants – completed (Appendix F);
   c. Lead-based Paint (LBP) Survey;
   d. Utility inspection including all electrical equipment;
   e. Pre-demolition building inspection, sampling, photographs; and
   f. Materials Management Survey/Plan.

2. Permits and Approvals - No permits have been issued to GAE for the demolition as of the date of this IRM WP. The following permits are anticipated as being applicable to performance of the work, and if required/issued, will be provided NYSDEC prior to implementation.:

   a. A City of Niagara Falls Building Permit for demolition is required. The requirements of that permit are in addition to, and not superseded by, this work plan. The more stringent requirements of this Work Plan or the Building Permit apply. The permit application requires the following:
      i. Applicant must be a Registered Demolition Contractor in the City of Niagara Falls (OSC is a Registered Demolition Contractor). Contact Patrick Ciccarelli (Patrick.Ciccarelli@niagarafalls.ny.gov);
      ii. ACM Survey;
      iii. Abatement and a clearance letter for ACM;
      iv. Building Dimensions (Height, Average Width, Average Length) and Estimated Volume;
      v. Cost of Demolition; and
      vi. Utility Disconnection (Plumbing must be isolated by a Licensed Plumber)

   b. Stormwater and Dust Control Water Management

      i. A Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SWPPP) will be prepared to address demolition activities in conformance with the requirements set forth in the NYSDEC State Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities.

   c. Verify no threatened or endangered species are present in work zone, https://www.dec.ny.gov/animals/38801.html

   d. Approval for discharge of decontamination and dust control water from the City of Niagara Falls. This will be completed after data on the water quality is available.

   e. All disposal facilities shall be approved by GAE prior to approval of any waste profile.

3. Health and Safety Plan (HASP):

a. Building/structure specific amendments to the Site HASP (Appendix A). The provided HASP will be updated with Job Safety Analysis (JSA's) specific to the demolition and/or materials management tasks to be completed following the building inspection surveys.
b. OSHA Pre-demolition engineered survey (Appendix D) will be completed by Inventum and/or OSC on-site management. A copy of these surveys will always be available on-site.
c. Structural inspection as appropriate.

4. Electrical Equipment:

a. De-energizing electrical equipment.
b. Removing structures from electrical supply.
c. All electrical equipment containing or potentially containing liquid dielectric fluids will be sampled and tested for Polychlorinated Biphenyls (PCBs) unless previous testing is available.
d. All fluids will be drained and properly recycled or disposed of appropriately prior to demolition.
e. No electrical equipment will be recycled until it is confirmed to contain acceptable levels of PCBs.

5. Final Building Sweep – A final building sweep will be conducted to remove remaining:

a. Containers of liquids or solids.
b. Lights and light ballasts.
c. Universal Wastes (batteries, mercury containing equipment, equipment with refrigerants, etc.).
d. Laboratory equipment containing residuals.
e. Process equipment containing fine particles that can be removed.
f. Dust control for process equipment containing fine particles that cannot be removed.

6. Work Zone Delineation:

a. Utilities and utility protection.
b. Fall radius.
c. Laydown Areas (Waste, recyclable materials, equipment).
d. Staff parking and break areas.

7. Community Air Monitoring Plan (Appendix C):

a. Monitoring Station Location(s).
b. Type and frequency of monitoring.

8. Sampling Analysis includes the testing of building materials and water associated with Materials Management. The exact numbers and types of samples to be collected cannot be determined in advance. The pre-demolition survey will provide guidance on the types and numbers of samples. The sampling program for each building will be based on:

a. Number and type of sampling of building materials. For disposal characterization, or if clean, for beneficial reuse on the property.

b. Each class of like material to be shipped offsite for disposal in accordance with the requirements of the disposal facility(ies).

c. Sampling may be conducted before or after demolition.

d. The testing required by the City of Niagara Falls for the IDW Permit will be managed in accordance with the associated permit.

2.1.1 Dust Control

Dust control is a critical component of this work plan. The CAMP in Appendix C addresses the required air monitoring. One (1) upwind and two (2) downwind CAMP stations (particulate and VOC monitoring) will be established during demolition activities. Monitor locations will be adjusted as needed based on prevailing wind direction and the location of the demolition activities. Data from the CAMP stations will be available to site personnel in real-time using a web user interface (mobile phone accessible) and include remote alerts/alarms above the CAMP established action levels.

Management of surface water and the dust control requirements for the structure demolition, include, but are not limited to the following:

1. ACM will be removed prior to demolition.
2. Universal Wastes shall be removed prior to demolition.
3. Dust control must be planned, and an appropriate water supply shall be identified as building interiors can be coated with dust and/or other particulates.
4. During demolition, brief, dust events are unavoidable, but will be controlled in accordance with the CAMP:
    a. Adjust site engineering controls if PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be adjusted or reemployed; and,
    b. After implementation of dust suppression techniques, if downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped, and a re-evaluation of activities initiated.
5. OSC shall conduct JSA's and daily safety briefings to ensure that every employee works in the safest and cleanest environment possible.
6. Water will be used to limit fugitive dust beyond the work area. All OSC employees who notice or anticipate dust are required to communicate with their supervisor to implement mitigation measures.
7. OSC's Site Superintendent will take steps to control excessive amounts of dust and/or exposure using water, positioning ground personnel based on wind direction, and directing Operators to close their equipment cab.
8. Dust control water shall be contained, collected, and managed in accordance with the City of Niagara Falls IWD Permit. The permit will be provided to NYSDEC prior to the start of work.

OSC will maintain a water truck onsite to keep access roads wet to manage dust generated from site traffic. Dust shall be removed from roadways in conjunction with water application throughout the workday. No dust or soil associated with the BCP Site shall remain on Highland Avenue at the end of a daily shift. The water truck will be filled from an onsite source of potable water. Recycled dust control water shall not be used on public roadways.

The entrance and egress locations from the site will be regularly swept and sprayed with the water truck.

A water cannon will be used as necessary during demolition activities to apply a focused water mist to the structure(s) being dismantled. The water cannon will be positioned ahead of the lead demolition excavator and care will be taken not to blind the operator with misting water, creating a potential hazard. The water cannon will be fed from a hose and plumbed to the closest source of potable water. If no water source is accessible, a tank of potable water will be mobilized. Additionally, and as needed, laborers equipped with fire hoses and spray nozzles, will directly apply water to locations producing excessive dust and in areas used for concrete processing activities.

Potable or amended water may be used for dust control. Amended water is only required in the event a controlled demolition area is required in order to ensure proper control of ACM. Amended water will be contained, collected, treated, and discharged to the City of Niagara Falls. Potable water used for dust control of potentially impacted buildings will be contained to the extent practicable, filtered, and discharged to the City of Niagara Falls. All discharges to the City of Niagara Falls will be in accordance with an IDW Permit as approved by the City Pre-Treatment Supervisor. A copy of the IDW Permit will be provided to NYSDEC when obtained.

The exterior surfaces and tires will be inspected before leaving the BCP Site. Trucks with visible sediment will go through a tire wash station if a stabilized construction entrance is insufficient to prevent track-out. Tire wash water will be managed onsite through filters prior to discharge.

Trucks or containers carrying ACM or significant dust producing materials will be enclosed or properly covered once filled. Only tight-fitting covers and secured covers will be permitted for offsite transport. No mesh covers will be allowed.

2.1.2 Process Piping

Process piping is prevalent in some areas of the site. Based on the former use, this piping may contain residuals that are corrosive (sulfuric acid). The JSA for process piping will be prepared to address the possibility for corrosive liquids. All process piping shall be inspected and addressed for each building in accordance with this work plan. If process piping contains residuals and is disposed of as a solid waste, the source, volume, and cost will be tracked under the BCP Waste Log. Of note, the following must be carefully planned and managed during the demolition program:

1. Structures with Process and Structural Related Safety Concerns:
    a. Office/Laboratory/Maintenance Buildings (H, H-Addition, L and L-Addition) – ACM, LBP, laboratory impacted materials, lubricants and paints, air conditioners and other refrigerant containing equipment.
    b. Boiler House – ACM, combustion residuals, water treatment chemicals.
    c. Chip Storage – confined spaces, battery chip residuals (lead).
    d. Former Extruder Room (J-2) – sump, battery chip residuals (lead), LBP, compromised wooden framing, overhead piping.
2. Building with Structural and Safety Concerns:
    a. Maintenance and Storage Buildings (J-3, X, W, W-extension, and Q) – LBP, compromised wooden framing, overhead piping, maintenance lubricants and paints.
    b. Coal Silo – confined space, dust combustion hazards, compromised structure.
    c. Storage Silos (between J-2 and J-3, south of Q) - confined space, dust combustion hazards, compromised structures.

d. Plastic Pellet Storage Silo – confined space and compromised structure, protection of adjacent capping system.

Routine summary reports and routine project status calls with NYSDEC will be utilized to document progress of the inspections. The summary reports will include any investigations that must be completed based on the inspection findings and any site-specific health and safety procedures/protocols that must be followed as a result of the identification or potential presence of residual materials.

2.1.3 Utilities

There are active and abandoned utilities in the facility. Utilities supplying any structure in this work plan will be abandoned and properly decommissioned/isolated prior to commencing active demolition.

2.1.3.1 Electrical Equipment

The electrical service to all buildings will be isolated/air-gapped before structural demolition begins. Equipment capable of holding electrical energy will be discharged. The buildings will then be cleared of any remaining electrical equipment consisting of:

1. Transformers
2. Capacitors
3. Batteries
4. Light Bulbs
5. Light Ballasts
6. Automatic switches that potentially contain mercury.

Liquid-filled and sealed electrical equipment that cannot be directly loaded for transport will be moved to a staging area prior to being shipped from the property. Universal Wastes will be properly sorted and packaged onsite for disposal and managed offsite for disposal.

2.1.3.2 Natural Gas

There was likely a natural gas supply pipe that fed the boiler house and potentially used to heat the structures. The supply to the lines shall be terminated and the lines shall be isolated and purged.

2.1.3.3 Water

Water (excluding the water required for dust control) must be managed when broken pipes release uncontrolled water flow that is not desirable or not in accordance with the City of Niagara Falls IDW Permit. Water supply to all portions of each building will be terminated outside the limits of construction prior to being demolished.

Temporary taps and valves for use in dust control are acceptable in protected locations outside the limits of the building being actively demolished. Backflow preventors will be installed as required by the utility provider.

2.1.3.4 Sewer

Both sanitary and process sewers leading from each subject building shall be identified and plugged prior to demolition. Any sewer leading from the BCP Site shall be disconnected by a Licensed Plumber.

Ponding dust control water will be collected and treated prior to discharge in accordance with the City of Niagara Falls IWD Permit.

2.1.3.5 Storm Drainage

Surface water in the vicinity of the demolition will be managed in accordance with the requirements of the City of Niagara Falls. Decontamination and dust control water will be controlled to an extent practicable. Accumulations of water on and around the active demolition site will be managed as decontamination water and shall be collected, treated, and discharged to the City of Niagara Falls Sewer system in accordance with the IDW Permit. Sampling, Testing and Pre-approval will be completed before discharge. Results will be submitted in accordance with the City of Niagara Falls Permit.

2.1.4 Mechanical Equipment

There is old materials handling and other mechanical equipment located throughout the BCP Site in the vicinity of the buildings to be demolished. All equipment shall be inspected and any equipment capable of storing mechanical energy shall be deenergized. Any equipment meeting the definition of a confined space will be opened to eliminate any entrapment hazard before decontamination.

2.1.5 Hot Work

Torch cutting will be limited to structural steel components on the property in areas that are open to the atmosphere. When practicable, mechanical shearing shall be used in lieu of hot cutting.

Torch cutting of natural gas (yellow painted) lines is prohibited unless the line has been purged, frequently monitored with a LEL/O_2 meter, and visibly open at both ends to confirm the conditions are safe for torch cutting. Torch cutting of piping, tanks, process equipment or hoppers and conveyor systems covered with dust, battery chips, or inside closed buildings is prohibited without approval of the OSC site superintendent and in strict accordance with a Hot Work Permit (Appendix E).

2.2 Materials Management

A Materials Management Plan or series of plans will be prepared and submitted for NYSDEC approval following the materials management survey. The following sub-sections describe the materials management approach that will be followed as the structures are demolished and equipment is decontaminated.

2.2.1 Segregation

To the extent practicable and safe, materials will be segregated in accordance with their material composition, including but not limited to:

1. Clean and Non-Friable Construction and Demolition (C&D) Debris
2. Friable ACM debris
3. Grossly contaminated materials
4. Uncontaminated Brick and Concrete
5. Uncontaminated Metals – Ferrous and Non-Ferrous – Including:
    a. Non-BCP Waste Process Pipes
    b. Uncontaminated Utility Piping
6. Uncontaminated Non-Steel/Iron Utility Piping
7. Processes Piping – BCP Waste Pipes
8. Equipment and Machinery – Reuse, Recycling, or Disposal

The management of each of these materials shall be as defined in subsections below. All materials transported offsite will be tracked by weight and disposal facility and presented in the Waste Log by source.



2.2.2 Clean and Non-Friable C&D Debris

Clean C&D debris are those materials that are not suitable for use as fill, and which are not known to be impacted by ACM or the former operations on the BCP Site. These materials are anticipated to be wood (e.g., framing, lumber and railroad ties), plastic, fiberglass, and other non-durable materials. These materials will be separated, inspected and shipped offsite for disposal at a permitted C&D disposal facility.

Non-Friable C&D debris are those materials that are not suitable for use as fill, and which are known to be impacted by non-friable ACM. These materials are anticipated to be wood (e.g., framing, lumber), plastics, fiberglass, and other non-durable materials that will be impacted during controlled demolition of the slated buildings. These materials will be separated, inspected and shipped offsite for disposal at a permitted landfill.

All shipments of C&D will be tracked by transporter, disposal facility, and weight (see proposed Tracking Table 1). Any materials found to be impacted will be segregated and tracked in accordance with this Work Plan and the BCP Waste Log.

2.2.3 ACM Containing Debris

ACM's, both friable and non-friable removed during abatement activities and any debris containing ACM (pipe flanges, coatings, or building materials) will be managed in accordance with New York State Department of Labor (NYSDOL) requirements and in accordance with NYSDOL approval.

2.2.4 Grossly Contaminated Materials

In the context of building demolition, the characterization of grossly contaminated materials will include:

- Building materials covered with waste materials that cannot be physically removed;
- Building materials that are covered or saturated with petroleum or other liquid by-products;
- Building materials that produce a sheen; and
- Building materials that produce sufficient odor that could be detectable during transportation.

Grossly contaminated materials are not anticipated at the 3125 Highland Avenue Site. All grossly contaminated materials will be segregated, the volume quantified, described and sampled for disposal.

2.2.5 Fill – Brick, CMU, and Concrete

Clean brick, concrete masonry unit (CMU), and concrete are defined as brick and concrete with no accumulations on the surface and are deemed uncontaminated. Concrete will be swept free of any surface material prior to demolition and representative samples of the accumulated material collected and profiled for offsite disposal:

Uncontaminated means not commingled with, and not containing:

(i) other waste;

(ii) petroleum and petroleum products, except those present solely as a result of normal use of vehicles on roadways or parking areas;

(iii) pesticides except those present solely as a result of the proper application in normal agricultural or horticultural practices; and

(iv) hazardous waste.

Sampling of the brick, CMU, and concrete will be performed as part of the building inspection process prior to demolition. These materials will be visually assessed within each of the buildings identified in Figure 2 to document and photograph any observed staining.

Concrete sampling locations will be selected to include, at least, one concrete sample per location that exhibits signs of staining. If no staining is observed on the concrete, then the sample location(s) will be evenly spaced within the building footprint. The sampling frequency of the concrete will consist of one sample for each building slab, tank pad, or other concrete base under or equal to 1,000 square feet and two samples of concrete for building slab over 1,000 square feet. Concrete samples will be collected from concrete broken from the slab with a hydraulic breaking hammer in the designated sample location. The concrete will then be pulverized onsite using decontaminated hand tools, placed in laboratory provided glassware, and analyzed for waste disposal parameters.

One representative sample of the brick and/or CMU from each of the buildings (Figure 2) exterior and/or interior sidewalls will be collected and analyzed for waste disposal parameters. Samples will be collected from material broken from the brick/CMU with a hydraulic breaking hammer or decontaminated hand tool. The collected material will then be pulverized onsite using decontaminated hand tools, placed in laboratory provided glassware, and analyzed for waste disposal parameters.

The proposed disposition of the brick, CMU, and Concrete will be provided to NYSDEC in a Materials Management Plan. The plan will include a tabular summary of the laboratory results, figure showing sampling locations, photographic documentation, and laboratory data report.

These uncontaminated materials are not subject to a BCP Agreement and will be prepared for backfill re-use purposes as approved by the City of Niagara Falls and NYSDEC. An import/reuse request form will be submitted to NYSDEC for any materials proposed for reuse as backfill on the BCP Site. Included with the form will be the results of any additional sampling conducted in accordance with the imported material requirements in DER-10. Work plans for any additional sampling of these materials, if necessary, will be included in the Materials Management Plan and/or progress reports. All staging and preparation activities shall be on or adjacent to the source of the materials.

Brick, CMU, and concrete that are potentially contaminated, identified as contaminated following inspection, or not proposed for reuse as backfill on the BCP Site will be transported offsite for disposal as C&D material. All shipments of C&D will be recorded in the Waste Tracking Log (submitted Monthly to NYSDEC). NYSDEC shall be notified no less than 5 days before any new waste stream is transported from the property.

2.2.6 Ferrous Steel

Uncontaminated steel (structural, equipment components, bins, hoppers, and clean tank materials) shall be segregated into manageable stockpiles in preparation for off-site recycling. Clean structural steel is defined as structural elements that recyclers will accept. Clean structural steel shall be stockpiled and inspected before it is prepared for recycling. All shipments of scrap will be recorded on the Waste Tracker Log.

2.2.7 Non-ferrous Metals

Non-ferrous metals recovered from the buildings shall be stockpiled separately for inspection. Following inspection and approval, the materials will be prepared for recycling. All shipments of scrap will be recorded on the Waste Tracker Log.

2.2.8 Pipe

Pipe can fall into several categories sorted by material (ex. ceramic, plastic, steel, iron) or use (ex. process piping and utility piping).

2.2.8.1 Piping as C&D

Plastic and ceramic piping will be treated as C&D materials as they typically were only used to convey water, sewage, or stormwater. This pipe will be stockpiled with C&D materials and after inspection will be disposed of as C&D. Inspections will include breaking the pipe and performing a visual assessment to determine if any residual sediment or sludges are present. If present, representative samples of the residual materials will be collected to determine the appropriate disposal requirements. Sampling results will be provided in a Materials Management Plan. The plan will include a tabular summary of the laboratory results, figure showing sampling locations, estimate of linear footage categorized as C&D, photographic documentation, and laboratory data report.

2.2.8.2 Process Piping

Piping used for the boiler house, chip recycling, or process water treatment activities will be considered process piping. The pipes will be inspected prior to demolition by breaking the pipes and performing a visual assessment. Prior to demolition, the pipes will be inspected and classified as BCP Waste Pipes (those that contain sediment or sludges from the former processes at the site) or Non-BCP Waste Pipes. Representative samples of residual sediment or sludges will be collected from each unique BCP Waste Pipe type to determine the appropriate disposal requirements.

Pipes classified as BCP Waste will be segregated and disposed at Modern or WM Chafee (depending on facility profile and approval) and Non-BCP Pipes will be segregated and recycled for thermal recovery of the metals, or in the case of water and steam piping, metal recovery or reuse.

Sampling results will be provided in a Materials Management Plan. The plan will include a tabular summary of the laboratory results, figure showing sampling locations, estimate of linear footage categorized BCP Waste Pipes and Non-BCP Waste Pipes, photographic documentation, and laboratory data report.

2.2.8.3 Utility Piping

Utility piping (natural gas [marked as yellow piping], water, sewage, and steam) does not typically contain significant amounts of residual solid material. These pipes will be demolished during structural demolition operations and prepared for off-site recycling.

2.2.9 Equipment and Machinery

There is a significant amount of equipment and machinery within and around the buildings to be demolished. The equipment and machinery will be segregated as the demolition proceeds into the following categories:

a. Electrical Supply Equipment – Transformers, Capacitors, Switches.
b. Electric Motors
c. Pumps
d. Heat Exchangers and Boilers

Each category of equipment will be managed in accordance with the likely method of disposition (reuse, recycling, or disposal). The management of equipment will be documented and reported to the NYSDEC as:

- Reuse – Onsite or offsite. No less than 5 days' notice[1] will be provided for all equipment to be transported offsite for reuse;
- Recycling – Equipment to be recycled will either be prepared on site to separate the component materials or transported as a unit; and
- Disposal – Materials or components to be disposed of will be segregated. No less than 5 days' notice[2] will be provided for all equipment to be transported offsite for disposal at a permitted facility.

2.2.9.1 Electrical Equipment – Transformers, Capacitors, Switches, AC/DC Convertor

Electrical supply equipment will be deenergized and removed prior to demolition. The equipment will be segregated by; (1) known PCB containing equipment, (2) equipment known to contain less than 50 ppm PCBs, and (3) equipment to be tested. To the extent practicable, all liquid containing electrical supply equipment will be tested before it is moved. Representative samples of any remaining dielectric fluid will be collected and analyzed for PCBs. All liquid containing electrical supply equipment will be managed in accordance with the concentration of PCBs in the dielectric fluid.

Sampling results will be provided in the Materials Management Plan. The plan will include a tabular summary of the laboratory results, figure showing sampling locations, estimated volume of recovered fluid, photographic documentation, and laboratory data report.

2.2.9.2 Electric Motors

Electric motors will be prepared for offsite recycling by removing any accumulations of process residuals (if present) from the exterior surfaces. The motors will be transported offsite for reuse or recycling.

2.2.9.3 Pumps

Pumps fall into two general categories: utility (water and steam) and process. Process pumps will be decontaminated before recycling or disposal. Water and steam pumps will be staged for reuse, recycling, or disposal.

2.2.9.3.1 Water and Steam

Water and steam pumps will be segregated, inspected and shipped offsite for recycling. The inspection will be conducted to view the intake and discharge ends of the pump to ensure it had not been repurposed from a process.

2.2.9.3.2 Process Pumps (including Exhausters)

Process pumps will be managed with process piping unless they can be cleaned. If the pumps cannot be cleaned, the pumps will be disposed of with impacted process piping.

2.2.9.4 Heat Exchangers and Boilers

The shells and internal tubing are very different materials and can be managed separately. The tubing within the heat exchangers and boilers can be removed and inspected. These tubes will be managed in accordance with the protocol for process and utility piping (Sections 2.2.8.2 and 2.2.8.3).

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[1] This does not include equipment owned by Tulip Molded Plastics that is transported to 3123 Highland Avenue.
[2] This does not include equipment owned by Tulip Molded Plastics that is transported to 3123 Highland Avenue.

The shells of the heat exchangers and boilers can typically be cleaned and recycled. Unless there is a heavy coating of process residuals that cannot be removed, the shells of all heat exchangers and boilers will be cleaned, prepped for recycling, inspected, and transported offsite.

2.2.9.5 Silos, Bins, and Tanks

The following shall be the minimum protocol for sampling unknown[3] contents of the silos, bins, and tanks, including any sampling of residuals on, or from floors, equipment pedestals, piping, or exterior components of the process equipment:

1. Inspect the exterior of the process equipment to be sampled. There are existing covered or open access points to all process equipment to be decommissioned under this IRM Work Plan. Avoid torch cutting the equipment to gain access for sampling. Access shall be through existing threaded or bolted connections (e.g., flange) or from pipe or drain connections. The connections shall be removed with non-sparking tools to allow inspection and sampling;
2. Inspect the ground surface around the process equipment to determine if there has been any previous or suspected historical leakage. Any identified historical leakage will be documented in the field book and reported to NYSDEC within 24 hours;
3. Covers or pipes removed to allow sampling shall be replaced immediately after the sample has been collected;
4. Inspect the exterior of the process equipment and piping for signs of rupture, wear/holes, and bulging. If the process equipment or piping shows signs of structural weakness, contact Inventum personnel for inspection;
5. Use a photoionization detector (PID) to check the atmosphere around the outside of the component;
6. Measure the temperature of the vessel, sun side, shade side and at the proposed access point;
7. Establish a work zone to allow access to the process equipment;
8. Set up the CAMP air monitoring station no more than 50 feet downwind of the work zone. Refer to the CAMP (Appendix C) for action levels;
9. During sampling:
    a. No one or no part of anyone's body shall cross into the process equipment for sampling. Non-sparking tools shall be used to extract samples;
    b. Refer to HASP **(**Attachment A**)**, for the minimum respiratory protection required while sampling;
    c. Scan the vapors at the opening, just inside the interior of the component for VOCs. Refer to the HASP (Attachment A) for Action Levels;
    d. Scan the vapors at the opening for Lower Explosive (LEL) and oxygen (O_2). Refer to the HASP (Attachment A) for Action Levels; and
10. If the LEL/O_2 meter indicates a potentially explosive atmosphere, oxygen deficient, or oxygen rich atmosphere in the process equipment and the material is not reacting to the atmosphere, vent in accordance with the HASP (Attachment A). During venting, monitor the temperature of the process equipment. If the temperature monitoring shows an increase of temperature associated with exposure to the atmosphere, stop purging and inert the process equipment with nitrogen. If no temperature rise, vent until the LEL/O_2 reading indicates the vapor no longer contains a potentially explosive concentration. Wait 15 minutes and retest;

[3] Former Tulip Molded Plastics personnel are expected to be able to identify the majority of the contents, this protocol only apples to true unknown materials.

11. If the temperature monitoring shows a temperature rise of 10^0F above the ambient temperature due to exposure to the atmosphere, the process equipment shall be purged with nitrogen.
12. If possible, gauge the depth to contents of a process vessel with a non-sparking tape or non-metallic rod. Record depth to first material and the number of phases (liquid, sludge, and solid) present. The thickness of solid(s), thickness of liquid(s), color and physical descriptions shall be recorded in the field book. Sample crew shall be prepared to encounter more than one liquid and more than one solid layer,
13. Record (if applicable):
    a. Depth to each layer;
    b. Thickness of each layer;
    c. Apparent viscosity/density;
    d. Color;
    e. Other observations.
14. Process equipment field screening samples
    a. Solids Field Testing – Each different solid shall be sampled, and representative amounts (no less than 100 grams) shall be placed into a sealable (e.g., Ziploc™) bag and visually characterized.
    b. Liquids field sampling – Each different liquid shall be sampled, and representative amount (no less than 100 ml) shall be placed into clean laboratory provided glass container(s). record a field visual description and test aqueous materials for pH.
15. Laboratory Samples (Note: Laboratory samples shall not be collected from the field screening samples; they shall be a split collected BEFORE field screening samples are placed in the sealable bags and open container.)
    a. Solids - Collect samples from each unique solid material (from process equipment, decontamination containments, and quench tanks) for waste characterization for the full suite of DER-10 parameters except the per- and polyfluoroalkyl substances (PFAS) but including aliquots for Hazardous Characteristics and Toxicity Characteristic Leaching Procedure (TCLP). PFAS sampling is not required for disposal characterization.
    b. Quench Water – Place no less than one gallon of each solid phase in a 5-gallon container and cover the solids with no less than one-inch of potable water. Cover and label the container. Allow water and solids to come to equilibrium for no less than 72 hours. After 72 hours, collect samples for the IWD Permit parameters.
    c. Liquids – Collect samples from each unique liquid material within the process equipment for the full suite of DER-10 parameters (excluding Per-and Polyfluoroalkyl Substances [PFAS]) and Hazardous Waste Characteristic parameters.
    d. Soils – If there is evidence of a release to soils, samples collected below the containment or foundation from each unique soil or other solid material will be for the full suite of DER-10 parameters (including PFAS). If there is evidence of a historical release, one sample from each location will be sampled and analyzed for Hazardous Waste Characteristic parameters. Note: Any evidence of a historical release shall be documented in the field book, photographed, and included in the IRM construction completion report (CCR).
    e. Sample analysis to determine the appropriate disposal alternative shall include:
        i. TCL VOCs and SVOCs'
        ii. Metals,
        iii. Pesticides and herbicides,
        iv. Cyanide,



v. Ammonia,
vi. Toxicity Characteristic Leaching Procedure (TCLP) VOCs, SVOCs, and Metals,
vii. PCBs,
viii. Flash Point,
ix. Paint Filter Test,
x. pH,
xi. Reactivity, Cyanide, and
xii. Reactivity, Sulfide.

2.3 Disposal

It is expected that multiple types of waste streams will be produced as described above:

- C&D
- ACM Materials
- Non-hazardous Waste
- Characteristic Hazardous Waste

All waste materials will be sampled, waste profiles will be developed, and the wastes will be transported to a landfill appropriately permitted to accept that waste. All materials transported for disposal will be tracked on the BCP Waste Log. A minimum of 5 days' notice will be provided to NYSDEC for all materials transported offsite for disposal. The notice will include the name and location of the disposal facility and any approvals of the waste stream from the disposal facility.

3 Soil Excavation, Solidification, and Disposal

The elimination of potential exposures to isolated areas of soils with concentrations of lead that exhibit the characteristic of toxicity will be achieved by excavations, solidification, and offsite disposal. These are those isolated "hot spot" areas (Figure 3) that were identified as part of the site investigations (Inventum 2022) conducted prior to submittal of the BCP Application and are not intended to be a final remedy.

The size of the areas shown on Figure 3 are approximate, the actual extent will be determined by sampling as discussed in Section 3.2 of this work Plan.

A preliminary bench scale test was conducted during the Site Investigation (Inventum 2022) and confirmed an admixture of 5-percent (by weight) Portland Cement eliminated the characteristic of toxicity for lead in the samples tested.

3.1 Mobilization and Site Controls

Mobilization for the proposed excavations will include the following steps:

1. Surveys and Inspections:
    a. Utility notification and inspection including UDig NY (https://udigny.org/ or 811) and private utility locator;
    b. Pre-inspection building survey and photographs; and
    c. Materials Management Plan.
2. Permits and Approvals: No permits have been issued to GAE for the excavation, solidification, and disposal component of this IRM WP. The following permits are anticipated as being applicable to performance of the work, and if required/issued, will be provided to NYSDEC prior to implementation.
    a. Stormwater and Dust Control Water Management
        i. A Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SWPPP) will be prepared to address demolition activities in conformance with the requirements set forth in the NYSDEC State Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities.
    b. Verify no threatened or endangered species are present in work zone, https://www.dec.ny.gov/animals/38801.html
    c. Approval for discharge of excavation dewatering and dust control water from the City of Niagara Falls. This will be completed after data on the water quality is available.
    d. All disposal facilities shall be approved by GAE prior to approval of any waste profile.
3. Health and Safety Plan (HASP):
    a. HASP (Appendix A) includes excavation and solidification specific amendments to the Site HASP.
4. Electrical Equipment:

a. De-energizing electrical utilities within and above excavation areas.
b. Removing electrical supply crossing the excavation.

5. Work Zone Delineation:

a. Utilities and utility protection.
b. Laydown Areas (Waste solidification, recyclable materials, equipment).
c. Traffic controls (Tire cleaning, staging, tarping [if needed]).
d. Staff parking and break areas.

6. Community Air Monitoring Plan (CAMP), Appendix C:

a. Monitoring Station Location(s).
b. Type and frequency of monitoring.

3.1.1 Dust Control

Dust control is a critical component of the excavation and solidification activities in this work plan. The CAMP in Appendix C addresses the required air monitoring. Management of surface water and the dust control requirements for the structure demolition, include, but are not limited to the following:

1. During pavement demolition, brief, dust events are unavoidable, but will be controlled in accordance with the CAMP:
   a. Adjust engineering controls if PM-10 particulate level is 100 mcg/m^3 greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be adjusted or reemployed; and
   b. After implementation of dust suppression techniques, if downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped, and a re-evaluation of activities initiated.
2. OSC shall conduct Job Safety Analyses and daily safety briefing to ensure that every employee works in the safest and cleanest environment possible.
3. Water will be used to limit fugitive dust beyond the work area. All OSC employees who notice or anticipate dust are required to communicate with their supervisor to implement mitigation measures.
4. OSC's Site Superintendent will take steps to control excessive amounts of dust and/or exposure using water, positioning ground personnel based on wind direction, and directing Operators to close their equipment cab.
5. Dust control water shall be contained, collected, and managed in accordance with the City of Niagara Falls IWD Permit.

OSC will maintain a water truck onsite to keep access roads wet to manage dust generated from site traffic. Dust shall be removed from roadways, in conjunction with water application throughout the workday. No dust or soil associated with the BCP Site shall remain on Highland Avenue at the end of a daily shift. The water truck will be filled from an onsite source of potable water. Recycled dust control water shall not be used on public roadways.

The entrance and egress locations from the site will be regularly swept and sprayed with the water truck.

Only potable water will be used for dust control.

All trucks from the site will go through a tire wash station before leaving the BCP Site boundary. Truck wash water will be managed onsite through filters prior to discharge.

All trucks utilized for off-site disposal of impacted materials will utilize tight-fitting and secure covers. No mesh covers will be allowed.

3.2 Soil Excavation and Solidification

Soil excavations will be completed in the two isolated "hot spot" areas of the site where GAE's investigations conducted prior to the BCP application produced samples that exhibited the characteristic of toxicity for lead (Figure 3). The protocols for each area will be as defined below.

3.2.1 Former Chip Unloading Area

The excavation in the former chip unloading area is initially planned for a 60-foot by 60-foot area immediately west of the former chip storage area (Figure 3). The initial horizontal and vertical limits of the excavation area are defined by total lead and TCLP-lead results from soil samples collected as part of the scoping investigations prior to entry into the BCP (Figure 3a).

- The pavement will be removed from the limits of the excavation. The removed pavement will be stockpiled outside the proposed excavation to allow inspection and sampling (if needed). Pavement that if free of soil or staining does not require sampling and will be disposed of as C&D debris. If there are accumulations of soils on the surfaces of the debris that cannot be sufficiently removed in bulk, it shall be sampled to ensure it meets the landfill acceptance criteria.
- The area will be divided into 6 approximately 400 square foot grid areas. Test trenches will be excavated to 4 feet bgs in each grid. A sample will be collected from the upper 1 foot and between 3 and 4 feet BGS from each grid and analyzed for Total Lead and TCLP-Lead to define both the horizontal and vertical extent of the excavation.
- Following receipt of the laboratory data, a final excavation plan, or additional sampling needs to define the final excavation limits, will be discussed with the NYSDEC PM.
- The upper 4 feet of each grid that produces a sample that exhibits the characteristic of toxicity will be solidified in-situ with 5% Portland Cement (approximately 3 tons per grid). If needed, moisture will be added to activate the reagent and allow for uniform mixing and provide dust control.
- Two samples of the solidified material will be collected after the solidified matrix has been mixed and allowed to hydrate for no less than 24 hours.
- If a solidified grid produces samples that still exhibit the characteristics of toxicity, an additional one ton of Portland cement will be blended into the soil in the grid and the sampling and analysis will be repeated.
- Following receipt of data below the characteristic, the upper four feet of solidified soil from those grids that had previously produced samples exhibiting the characteristic of toxicity (TCLP-Lead > 5 mg/L) will be excavated and transported offsite for disposal as solid non-hazardous waste.
- Stockpiles generated as part of the solidification will be staged on plastic sheeting, covered with plastic sheeting, and a perimeter sediment barrier (ex. fiber rolls, filter socks, sandbags, gravel bags) will be established at the base. Filter socks will be placed around all catch basins in the

vicinity of the solidification and stockpile area. Stockpiled materials may include pavement, imported backfill, and non-hazardous solidified soils.

- Following solidification and excavation of soils in the grid, grab samples of the excavation bottom and sidewalls will be collected prior to backfill and analyzed for TAL Metals and TCLP-lead. One sample will be collected from each sidewall and one sample per 400 square feet of excavation will be collected and analyzed.
- If required and site features allow, the excavation limits will be extended horizontally and/or vertically if any TCLP result(s) for the grab samples exceed the toxicity characteristic threshold for lead of 5 mg/L.

The excavations will be backfilled with imported fill approved by the NYSDEC for commercial use. A demarcation layer will be placed in the excavation area prior to backfilling. Inventum will submit a Request to Import Fill to the NYSDEC for approval prior to bringing any material onsite.

3.2.2 South Side of Warehouse

An excavation will be conducted in the vicinity of SB-007, immediately south of the former plastic production/current warehouse (Building Q-1, Figure 3), to further delineate the extent of soils with TCLP-lead concentrations above the characteristic of toxicity threshold of 5 mg/L. The initial excavation will be from the building wall to the edge of pavement and five feet east and west of the SB-007 location (Figure 3b).

- The upper 3 feet of the area will be solidified in-situ with 5% Portland Cement (approximately 0.5 ton). If needed, moisture will be added to activate the reagent and allow for uniform mixing and provide dust control.
- Two samples of the solidified material will be collected after the solidified matrix has been mixed and allowed to hydrate for no less than 24-hours and analyzed for TCLP-lead.
- If either sample exhibits the characteristics of toxicity, an additional 200 pounds of Portland cement will be blended into the soil and the sampling and analysis will be repeated.
- Following receipt of data below the characteristic, the upper three feet of solidified soil from those grids that had previously produced samples exhibiting the characteristic of toxicity will be excavated and transported offsite for disposal as a non-hazardous solid waste.
- Stockpiles generated as part of the solidification will be covered with plastic sheeting and a perimeter sediment barrier (ex. fiber rolls, filter socks, sandbags, gravel bags) established at the base. Filter socks will be placed around all catch basins in the vicinity of the solidification and stockpile area. Stockpiled materials may include pavement, imported backfill, and non-hazardous solidified soils.
- Grab samples of the excavation bottom and sidewalls will be collected prior to backfill and analyzed for TAL Metals and TCLP-lead. One sample will be collected from each sidewall and one sample from the base of the excavation will be collected and analyzed for total and TCLP-lead.
- If required and site features allow, the excavation limits will be extended horizontally and/or vertically if any TCLP result(s) exceed the toxicity characteristic threshold of 5 mg/L. If the

sidewall sample against the building exhibits the characteristic of toxicity, the location will be surveyed and recorded for evaluation in the Alternatives Analysis.

The excavation will be backfilled with imported fill approved by the NYSDEC for commercial use. A demarcation layer will be placed in the excavation area prior to backfilling. Inventum will submit a Request to Import Fill to the NYSDEC for approval prior to bringing any material onsite. The final cover system will be determined based on the specification of the planned redevelopment.

3.3 Debris Piles

The solidification and offsite disposal of material in the two debris piles on the north side of the property will be conducted in conjunction with the soil solidification. The source of the materials in the piles is unknown. The removal of the two debris piles will be completed by:

- Surface drains/inlets around the mixing area will be identified and protected from any runoff.
- Large pieces of concrete and other debris in the debris piles will be removed prior to mixing. Loose soil will be removed from the concrete and large debris. Concrete will be separated from other debris and categorized for disposal as C&D.
- If feasible, the remaining finer grained materials stockpiles will be consolidated within the footprint of each pile. After removal of the large debris, the quantity of remaining material will be estimated by weight. A unit weight of 135 pounds per cubic foot will be used for the initial solidification addition rate estimate.
- The materials will be stockpiled in piles of 100 tons (1,500 cubic feet) or less to facilitate mixing.
- The Portland cement (5% by weight) will be mixed in place with the bucket of an excavator. Sufficient moisture will be added, if necessary, to activate the reagent and allow for uniform mixing and provide dust control.
- Solidified piles will be covered while curing (minimum 24-hours) to prevent runoff. A perimeter sediment barrier (ex. fiber rolls, filter socks, sandbags, gravel bags) will be established at the base. Filter socks will be placed around all catch basins in the vicinity of the stockpiled and curing materials.
- Composite samples from each pile will be collected following solidification and analyzed for TAL Metals and TCLP Metals to confirm successful application prior to shipping off-site as non-hazardous solid waste.
- Additional samples may be collected and analyzed as required by the disposal facility.
- Following removal of the debris piles, five samples of the surface soil (surface to 6-inches BGS) will be collected and analyzed for TAL and TCLP lead. If any samples exhibits the characteristic of toxicity (TCLP-lead > 5 mg/L), the area around the sample will be subject to further investigation.

4 Communications and Reporting

4.1 Contact Information/Responsible Parties

Facility Operator
Ganson Alternative Energy, LLC 140 Lee Street Buffalo, NY 14210 Contact: Lawrence Pirrone Telephone: 716.4184204 E-Mail: lpirrone@oscinc.com
Facility Owner
Ganson Alternative Energy, LLC 140 Lee Street Buffalo, NY 14210 Contact: Jon M. Williams Telephone: 716.856.3333
SWPPP and CAMP Contact
Inventum Engineering, P.C. 441 Carlisle Drive; Suite C Herndon, VA 20170 Contact: John P. Black, P.E. Telephone: 571.752.6559 (office) / 571.217.6761(cell) E-Mail: john.black@inventumeng.com

4.2 Contact Information/Inspections and Notifications

Contact information for regulatory agencies are provided in the sections below. The contact information will be updated with the appropriate agency personnel when finalized.

4.2.1 Inspections

Prior to shipping any new waste streams and any impacted (non-C&D) materials from the site, the New York State Department of Environmental Conservation shall be notified:

Division of Environmental Remediation
New York State Department of Environmental Conservation
700 Delaware Avenue
Buffalo, NY 14209
Contact: Taylor Monnin – Project Manager
P: (716) 851-7220 | F: (716) 851-7226

4.2.2 CAMP Reporting

Public Health Specialist, Bureau of Environmental Exposure Investigation (BEEI)
New York State Department of Health
Center for Environmental Health
Corning Tower, Rm 1787
Albany, NY 12237
Contact: Ryan Minzloff

Division of Environmental Remediation
New York State Department of Environmental Conservation
700 Delaware Avenue
Buffalo, NY 14209
Contact: Taylor Monnin – Project Manager
P: (716) 851-7220 | F: (716) 851-7226

4.2.3 Spills

In the event of a spill:

1. The person discovering the spill shall report to the OSC onsite superintendent and the Inventum project manager immediately:
    a. OSC Superintendent - TBD
    b. Inventum Engineering - Todd Waldrop: 571.217.3627
2. Project Manager shall inspect the area as soon as the flow is abated and call the NYS Spill Hotline (1-800-457-7362) within 2 hours of incident identification;
3. Project Manager shall notify NYSDEC PM – Taylor Monnin
4. In the event of a potential or actual release from the property through a sanitary sewer, the following shall also be called after calling the NYSDEC PM and the NYS Spill Hotline (1-800-457-7362):
    a. Niagara Falls Water Board – Wastewater Treatment Plant – 716.283.9770
5. In the event of a potential or actual release from the property beyond the property line, the following shall be called in the order given after calling the NYS Spill Hotline (1-800-457-7362):
    a. National Response Center: 800.424.8802
    b. U.S. Coast Guard: 716.846.4168
    c. USEPA: 732.548.8730
    d. NYSDEC (Region 9): 716.851.7220

4.3 Reporting

A series of reports will be provided during and following the IRMs.

4.3.1 Daily Field Reports

Daily field reports will be submitted to NYSDEC during all field activities associated with the IRMWP and will include (at minimum):

- An update of progress made during the reporting day;
- Locations of work/site activities identified on a site map;

- Quantities and descriptions of materials imported to and exported from the site;
- Summary of any and all complaints with relevant details (names, phone numbers);
- Summary of CAMP findings, including exceedances;
- Explanation of notable site conditions/findings; and
- Deviations from the approved work plan.

The daily report of activities will be submitted via e-mail to the NYSDEC PM by the end of the following day unless a different submittal schedule is approved by the NYSDEC PM.

4.3.2 Demolition

A final demolition inspection will be documented to confirm all items in the pre-demolition form (Appendix D) have been addressed and a Construction Completion Report (CCR) will be prepared in accordance with DER-10. Attached to the CCR shall be copies of all permits and approvals, a shipping summary table of any materials shipped from the property, a summary table of where fill has been placed on the property, and a photographic log of the demolition progress. The supplemental demolition information will also be included in the BCP Site Final Engineering Report (FER).

4.3.3 Solidification Program – Soil and Debris Piles

During the soil and debris pile solidification program, there will be a series of interim memoranda to allow sharing of the data and NYSDEC review and approval will be required before progressing to further stages of solidification and mixing:

- Pre-treatment Sample Data Reports – All premixing data will be provided to the NYSDEC and NYSDOH with a proposed volume to be treated.
- Solidification Testing – All test data collected to verify treatment will be submitted to the NYSDEC and NYSDOH. The memorandum will include recommendations for additional solidification, if needed.
- Post-excavation Sampling – The results of the sidewall and base sampling will be provided prior to backfill placement.
- Import Approval Form – An import approval form shall be submitted for the backfill to be used to fill the excavation voids.

5 Schedules

The schedules for the IRMs and the RI are interdependent, but for the purposes of this IRM Work Plan, the following are known.

5.1 Demolition Program

The schedule for the demolition program is dependent on the approval of the IRM Work Plan, permitting, and weather. Permitting and access will be defined by the ACM survey and subsequent abatement. Inventum, on behalf of GAE, submitted an Asbestos Containment Material Removal Work Plan to NYSDEC on September 19, 2025, outlining the measures for the management of ACM on the BCP Site. The work plan was acknowledged by NYSDEC in an e-mail on October 29, 2025. An ACM clearance letter is required for the issuance of each building permit. Wind weather and temperatures affect the demolition of the buildings. The schedule is to have the unstable buildings demolished in 2026. The proposed sequence[4] is as follows:

- ACM and Universal Waste Surveys – Completed (Appendix F)
- ACM Abatement as defined by the survey – ACM Removal Work Plan - September 19, 2025
- Building Sweep of containers and universal wastes
- Utility Disconnection/Isolation
- Erosion and access controls
- Initiate CAMP monitoring
- Demolition and materials segregation
- Materials characterization sampling
- Notification of proposed disposition of materials – Materials Management Plan(s)
- Materials management (placement or offsite transportation)
- Restoration.

5.2 Soil Excavation and Disposal

The schedule for the soil excavation and disposal program is dependent on the approval IRM Work Plan, permitting, weather, and completion of the demolition. The soil excavation and disposal program can be initiated prior to the start of demolition. The debris piles could be sorted at the same time or before allowing the C&D to be disposed with the demolition debris, and the work in the former chip handling area can be completed without disturbance to the structures.

The proposed sequence assumes the excavations and debris piles are treated simultaneously, is as follows:

- Utility Clearance and Disconnection;
- Pavement Removal Former Chip Handling Area;
- Large Debris Removal from Piles;
- Sampling and Analysis:
    - Former Chip Handling Area
    - SB-007 Area
    - Finer-grained Residual from Debris Piles
- Data Summary Memorandum;

[4] The sequence is dependent on equipment logistics and weather. Some alteration of the schedule may be necessary

- Solidification
    - Former Chip Handling Area
    - SB-007 Area
    - Finer-grained Residual from Debris Piles
- Sampling and Analysis:
    - Former Chip Handling Area
    - SB-007 Area
    - Finer-grained Residual from Debris Piles
- Data Summary Memorandum;
- Waste Profiles and Approvals;
- Excavation and Offsite Disposal;
- Sidewall and Base Sampling
    - Former Chip Handling Area
    - SB-007 Area
    - Debris Pile Areas
- Import Request Form
- CCR

6 References

AECOM. September 2010. Draft Phase I Environmental Site Assessment. Tulip Corporation Site. 3125 Highland Avenue, Niagara Falls, NY

AECOM. October 2011. Phase II Environmental Site Assessment. 3125 Highland Avenue Property. Niagara Falls, New York.

AECOM. November 2013. Remediation Documentation Report (Incomplete Copy). Remediation Documentation Report. Tulip corporation. 3125 Highland Avenue, Niagara Falls, New York.

AMEC. December 2014. Tract I Site, Final Engineering Report. NYSDEC Site Number. C932157. Niagara County, New York

AMEC Foster Wheeler. March 2018. Final Engineering Report. Tract II Site. 3001 Highland Avenue. Niagara Falls, Niagara County, New York. Site No. 932136

Inventum Engineering 2022, Site Investigation Report, Tulip Molded Plastics Corporation Site #932169, 3125 Highland Avenue, Niagara Falls, New York, April 12.

Inventum Engineering 2026. Remedial Investigation Work Plan. 3125 Highland Avenue. Site #C932169. September.

Inventum Engineering 2025. Asbestos Containing Material Removal Work Plan. 3125 Highland Avenue. Site #C932169. September.

NYSDEC. May 2010. DER-10, Technical Guidance for Site Investigation and Remediation. Issued on May 3, 2010

Table

Table 1

Waste and Scrap Tracker
3125 Highland Avenue BCP Site
Site No. C932169
Niagara Falls, New York

Date	Container Type	Matrix	Materials	Weight/Volume		Shipped By/To	Solid Waste	Liquid Beneficial Use	Recycled	Hazardous Waste	ACM
				Tons	Gallons						
			Waste and Recycle	0	Tons		0	0	0	0	0
				-	Pounds						

Figures



D

1" = 40'

80' 40' 0' 80'

DRAWING BY	R. BIRX
CHECKED	T. WALDROP
APPROVED	J. BLACK

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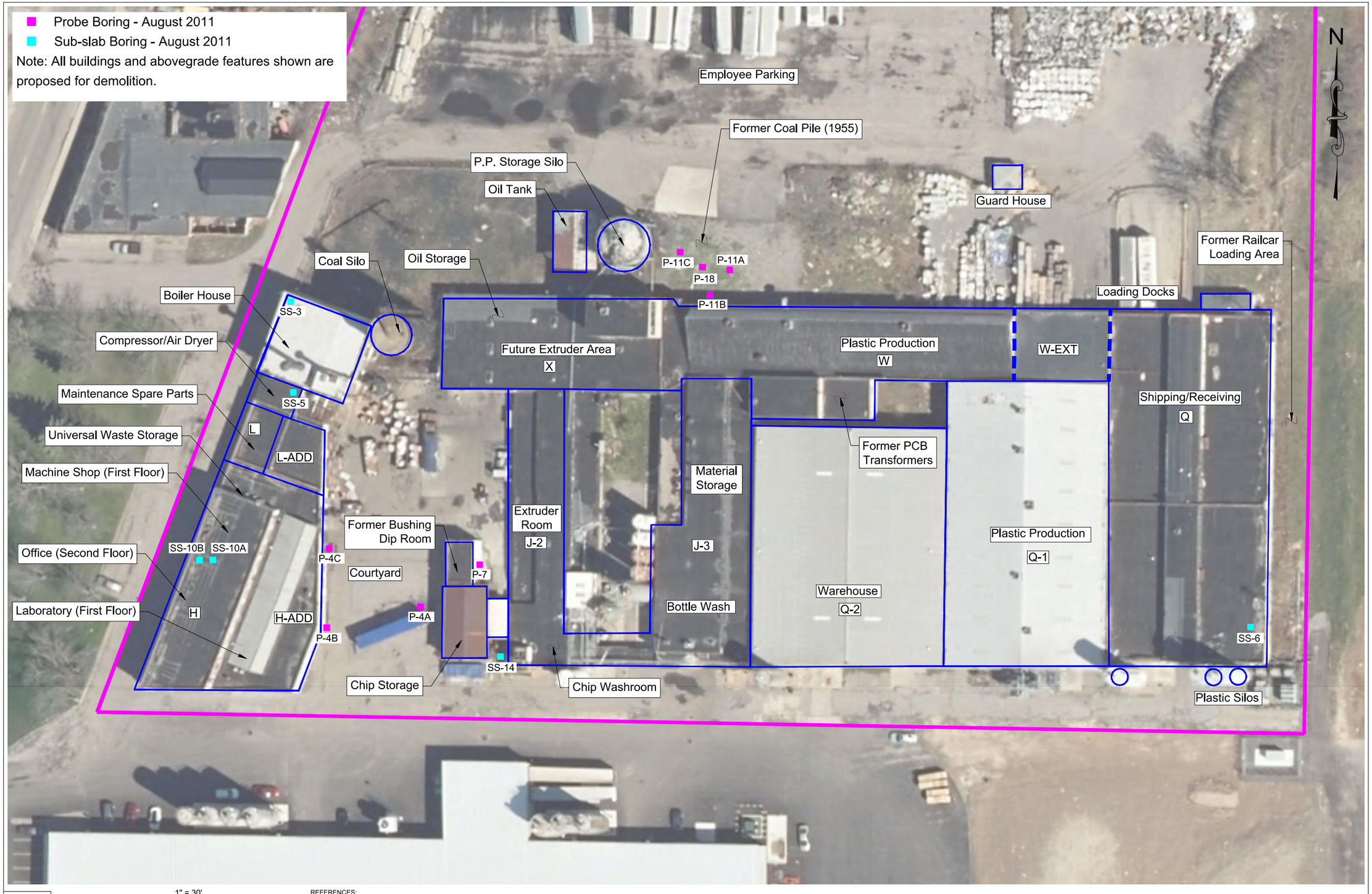
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Ganson Alternative Energy LLC
3125 Highland Avenue
Niagara Falls, NY
Site No. 932169

3125 HIGHLAND AVENUE
BCP SITE No. C932169

INVENTUM ENGINEERING
441 CARLISLE DRIVE
SUITE C
HERNDON, VIRGINIA 20170
(703) 722-6049
www.InventumEng.com

FIGURE 1



D

1" = 30'

60' 30' 0' 60'

REFERENCES:
1. BUILDING KEY - PRESTOLITE DIVISION OF ELTRA CORP, PLOT PLAN PRESTOLITE 11/24/1982
2. HISTORICAL SAMPLE LOCATIONS FROM OCTOBER 2011 PHASE II ENVIRONMENTAL SITE ASSESSMENT CONDUCTED BY AECOM TECHNICAL SERVICES, INC. ON BEHALF OF TULIP CORPORATION

DRAWING BY: R. BIRX
CHECKED: T. WALDROP
APPROVED: J. BLACK

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Ganson Alternative Energy LLC
3125 Highland Avenue
Niagara Falls, NY
Site No. 932169

HISTORICAL BUILDING PLAN

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FIGURE 2

- Soil Boring Location - July 2021 Scoping
- Debris Pile Sample
- Monitoring Well
- Tract I remediation confirmation sample location
- Tract II remediation confirmation sample location

Note: All buildings are proposed for demolition to complete the Remedial Investigation required by the BCP due to unsafe conditions.

Material Estimate Ranges	DEBRIS PILE 1	DEBRIS PILE 2
Volume	2,500 - 3,500 cubic feet	3,000 - 4,000 cubic feet
Stabilization Required	128 to 179 tons	153 to 204 tons
Portland Cement Required	7 to 9 tons	8 to 10.5 tons

Proposed Excavation/Solidification Equipment Decontamination Area

Debris Pile Area 1

Debris Pile Area 2

Demolition of Boiler House to Investigate lead in soils

Demolition of Former Chip Processing Areas to investigate the extent of lead

Demolition of Former Extruder, Plastic Production and Shipping/Receiving Buildings

Estimated area of impact with TCLP - Lead > 5 mg/L
Area: ~3,600 square feet
Depth: 0 - 4 feet bgs

Estimated area of impact with TCLP - Lead > 5 mg/L
Area: ~200 square feet
Depth: 0 - 3 feet bgs

Demolition of Laboratory to allow assessment of VOC impact

SB-015 SB-016 DEBRIS-3 SB-014 DEBRIS-2 DEBRIS-1 MW-4 MW-3 X W W-EXT Q SB-011 SB-013 L SB-001 SB-019 SB-005 L-ADD SB-002 J-3 J-2 SB-018 SB-017 H H-ADD SB-004 MW-2 Q-2 Q-1 SB-010 T2-NG-SW6 LEAD = ,030 PPM SB-009 SB-012 MW-5 SB-006 SB-007 SB-008 MW-1 T2-NG-SW5 LEAD = 19,40 PPM T1-EA1-CS34 LEAD = 1,250 PPM T1-EA1-CS18 LEAD = 7,050 PPM T1-EA1-CS23 LEAD = 2,150 PPM

D

1" = 40'

80' 40' 0' 80'

DRAWING BY	R. BIRX
CHECKED	T. WALDROP
APPROVED	J. BLACK

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SOIL EXCAVATION, SOLIDIFICATION, AND DISPOSAL IRM

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SUITE C
HERNDON, VIRGINIA 20170
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FIGURE 3

- Soil Boring Location (Scoping Investigations)
- Monitoring Well
- Proposed Pre-Solidification Test Pit Sample Locations
- Solidification Grid (Approximately 60'x60').

Note:

Initial Solidification/Excavation Interval of 0 to 4' BGS.

N

MW-3

SB-001

SB-019

SB-005

SB-002

SB-003

SB-017

SB-018

MW-2

SB-004

Analytes (a)	NYSDEC 6NYCRR Part 375 SCOs (b)		SB-005					
	Commercial	Industrial	(0 to 1')		(4 to 5')		(7 to 8')	
Metals (TOTALS) (mg/kg)								
LEAD	1000	3900	**44.7**		**6.6**		**11.3**	

Analytes (a)	NYSDEC 6NYCRR Part 375 SCOs (b)		SB-001 SB-001-45					
	Commercial	Industrial	(0 to 1')		(4 to 5')	(4 to 5')		(9 to 10')
Metals (TOTALS) (mg/kg)								
LEAD	1000	3900	**119**		**806**	**40.2**		**392**

Analytes (a)	NYSDEC 6NYCRR Part 375 SCOs (b)		SB-001 SB-001-45	
	Commercial	Industrial	(4 to 5')	
Metals (TOTALS) (mg/kg)				
LEAD	1000	3900	**806**	
TCLP (mg/L)				
LEAD	5		**0.17**	

Analytes (a)	NYSDEC 6NYCRR Part 375 SCOs (b)		SB-002 SB-002-01				
	Commercial	Industrial	(0 to 1')		(3 to 4')		(9 to 10')
Metals (TOTALS) (mg/kg)							
LEAD	1000	3900	**831**		**120**		**8.1**

Analytes (a)	NYSDEC 6NYCRR Part 375 SCOs (b)		SB-002 SB-002-01	
	Commercial	Industrial	(0 to 1')	
Metals (TOTALS) (mg/kg)				
LEAD	1000	3900	**831**	
TCLP (mg/L)				
LEAD	5		**3.8**	

Analytes (a)	NYSDEC 6NYCRR Part 375 SCOs (b)		SB-17	
	Commercial	Industrial	(0 to 2')	(10 to 12')
Metals (TOTALS) (mg/kg)				
Lead	1000	3900	**240**	**9**

Analytes (a)	NYSDEC 6NYCRR Part 375 SCOs (b)		SB-003 SB-003-01				
	Commercial	Industrial	(0 to 1')		(3 to 4')		(9 to 10')
Metals (TOTALS) (mg/kg)							
LEAD	1000	3900	**801**		**263**		**12.8**

Analytes (a)	NYSDEC 6NYCRR Part 375 SCOs (b)		SB-003 SB-003-01	
	Commercial	Industrial	(0 to 1')	
Metals (TOTALS) (mg/kg)				
LEAD	1000	3900	**801**	
TCLP (mg/L)				
LEAD	5		**13.1**	

Analytes (a)	NYSDEC 6NYCRR Part 375 SCOs (b)		SB-004		
	Commercial	Industrial	(0 to 1')	(3 to 4')	(7 to 8')
Metals (TOTALS) (mg/kg)					
LEAD	1000	3900	**50.3**	**8.5**	**6**

B

1" = 30'

30' 15' 0' 30'

DRAWING BY: RB

CHECKED:

APPROVED:

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SOIL EXCAVATION AND
SOLIDIFICATION - FORMER
CHIP UNLOADING AREA

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FIGURE 3A

DRAWING NUMBER

Soil Boring Location (Scoping Investigations)

Tract I Remediation Confirmation Sample Location

Monitoring Well

Solidification Area (Approximately 10'x 20').

Note:

Initial Solidification/Excavation Interval of 0 to 3' BGS.

N

Analytes (a)	NYSDEC 6NYCRR Part 375 SCOs (b)		SB-006 SB-006-23	
	Commercial	Industrial	(2 to 3')	
Metals (TOTALS) (mg/kg)				
LEAD	1000	3900	**337**	
TCLP (mg/L)				
LEAD	5		**0.71**	

Analytes (a)	NYSDEC 6NYCRR Part 375 SCOs (b)		SB-007 SB-007-52	
	Commercial	Industrial	(1.5 to 2')	
Metals (TOTALS) (mg/kg)				
LEAD	1000	3900	**258**	
TCLP (mg/L)				
LEAD	5		**5.03**	

Analytes (a)	NYSDEC 6NYCRR Part 375 SCOs (b)		SB-008					
	Commercial	Industrial	(1 to 2')		(5 to 6')		(9 to 10')	(9 to 10')	
Metals (TOTALS) (mg/kg)									
LEAD	1000	3900	**72.4**		**182**		**8.1**	**7.3**	

SB-006

SB-007

SB-008

T1-EA1-CS34
LEAD = 1,250 PPM

T1-EA1-CS18
LEAD = 7,050 PPM

T1-EA1-CS23
LEAD = 2,150 PPM

B

1" = 20'

20' 10' 0' 20'

DRAWING BY: RB

CHECKED:

APPROVED:

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SOIL EXCAVATION AND SOLIDIFICATION - SOUTH SIDE OF WAREHOUSE

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FIGURE 3B

DRAWING NUMBER

Appendix A – Health and Safety Plans

Inventum Engineering
Site-Specific Health and Safety Plan (HASP)

(Required for all Type 2 and 3 projects.)

1. General Information

Client Name: Ganson Alternative Energy, LLC

Project #:

Project Name: 3125 Highland Avenue BCP Site Remedial Investigations and Interim Remedial Measures

Project Manager: John Black, PE

Street Address:

3219 and 3301 Highland Avenue

Niagara Falls, New York

Prepared By: Todd Waldrop Date: September 2, 2025

Approved By: John Black, P.E. Date:

Proposed Date(s) of Work: TBD

Proposed Scope of Work:

Inventum Engineering, P.C. (Inventum) will be the owner's representative and engineer for the site management, site investigation(s), remedial investigation(s), and Interim Remedial Measures (IRMs) through the New York State Brownfield Cleanup Program (BCP) for the 3125 Highland Avenue BCP Site (BCP Site #C932169). The general scope of work is provided below, and tasks will be updated with additional details/specifications as the project progresses through the BCP.

Task 1 - Site Management and Oversight

Inventum will conduct site visits, general management, and general contractor and subcontractor oversight related to the Site's entry into the BCP. This task includes site visits related to performance of Site maintenance, relocation of equipment and products, and housekeeping, but specifically excludes Inventum personnel directly performing any intrusive site work or oversight of contractors/subcontractors performing intrusive site work. Direct intrusive site work and/or intrusive site work oversight is covered under the tasks listed below.

Task 2 – Shallow Soil Sampling

Shallow (approximately 0 to 1 foot below ground surface [bgs]) soil samples will be collected from various locations of the BCP Site to establish current conditions. Shallow borings will be installed using a hand-auger, shovel, trowel, light or heavy excavating equipment, direct-push equipment, or rotary drilling equipment. Material will be recovered for lithological characterization and field screening with a PID equipped with a 10.6 eV lamp. All observations and measurements will be logged in the field notebook. Samples may be collected for various constituents including

Metals, Semi-Volatile Organic Compounds (SVOCs), Volatile Organic Compounds (VOCs), Polychlorinated Biphenyls (PCBs), 1,4-Dioxane, Cyanide, Pesticides, Herbicides, and Per- and Polyfluoroalkyl Substances (PFAS).

Task 3 – Subsurface Soil Sampling

Subsurface (> 1 feet bgs) soils samples will be collected from various locations of the BCP Site to establish current conditions. Depending on the depth of sample, subsurface borings may be installed using a hand-auger, shovel, trowel, light or heavy excavating equipment, direct-push equipment, or rotary drilling equipment. Material will be recovered for lithological characterization and field screening with a PID equipped with a 10.6 eV lamp. All observations and measurements will be logged in the field notebook. Samples may be collected for various constituents including Metals, SVOCs, VOCs, PCBs, 1,4-Dioxane, Cyanide, Pesticides, Herbicides, and PFAS.

Task 4 – Monitoring Well Installation

New monitoring wells may be installed as part of the BCP investigation(s) and remedial activities. The borings for the wells will be advanced to depth using hollow-stem augers for the collection of soil samples for lithological characterization. Unconsolidated material samples will be collected for observation and screening with a photo-ionization detector (PID) equipped with a 10.6 eV lamp in a continuous interval over the total depth of the boring with a split barrel sampler driven through the augers. All lithological observations, field measurements, and well construction details will be logged in the field notebook. Surface and subsurface soil samples may be collected in accordance with Tasks 2 and 3.

The new wells will be completed with a 2-inch Schedule 40 polyvinyl chloride (PVC) well casing and 5-feet of 0.010-inch slotted screen. A sand filter pack will be placed from the bottom of the screened interval to a minimum of 2 feet above the top of the screen. A 2-foot bentonite seal will be placed on top the filter pack and the remaining annular space will be completed with a cement grout (Portland Type I cement with 3 – 5% bentonite). The wells may either be completed flush-to-grade within a traffic rated box or within a steel bollard enclosure that protrudes a minimum of 2-feet above ground surface.

All newly installed wells will be developed prior to sampling and any existing monitoring wells may be redeveloped prior to sampling. The water levels in the monitoring wells will be manually measured using an oil/water interface probe prior to redevelopment and the depth to water, depth and thickness of any Light Non-Aqueous Phase Liquid (LNAPL), and the total depth of the well will be measured and logged in the field notebook. The wells will be redeveloped by removing three well volumes, purging the wells until dry, or purging and surging the wells using a submersible pump.

Field parameters (temperature, pH, conductivity, ORP, turbidity) will be measured and logged in the field notebook at least three (3) times during the development process (beginning, middle, and end) using a hand-held water quality monitor. All development water will be containerized and stored in appropriately labeled drums or totes and disposed offsite in accordance with applicable local, state, and federal regulations.

Task 5 – Groundwater Monitoring and Sampling

Inspections will be conducted prior to sampling and will include visual observations of the well head, seal, and cover. Measurements of the depth to liquid (if LNAPL is present), depth to water, and the overall total depth of the well will

be collected using an oil/water interface probe and recorded in the field notebook for comparison to construction dimensions and previous records.

Monitoring wells will be sampled using a peristaltic pump following low-flow sampling procedures. Field parameters (temperature, pH, conductivity, ORP, turbidity) will be measured and logged in the field notebook at periodic intervals using a hand-held water quality monitor. All purge water will be containerized and stored in appropriately labeled drums or totes and disposed offsite in accordance with applicable local, state, and federal regulations.

Samples may be collected for various constituents including Metals, SVOCs, VOCs, PCBs, 1,4-Dioxane, and PFAS.

Task 6 – Demolition Monitoring

Inspections and air monitoring will be conducted throughout the process of demolition of buildings, process equipment and pavement. Inspections will include; observing and documenting the collection and proper management of containers and liquid filled equipment; proper placement of erosion and sediment controls, dust control, tire washing and inlet control, and materials management.

Monitoring will include compliance monitoring defined by the Community Air Monitoring Plan (CAMP), photographs to document progress, and documentation of progress and generation of material for offsite disposal.

Samples may be collected from liquids and solid debris for various constituents including Metals, SVOCs, VOCs, and PCBs.

Task 7 – Soil Excavation and Solidification

There are soils and piles of debris known to contain materials that exhibit the characteristics of hazardous waste for lead. Onsite activities will include sampling materials for offsite analysis, documenting the activities associated with solidification of the soils, documentation of the excavation of the soils, and monitoring the placement of fill.

Monitoring will include compliance monitoring defined by the Community Air Monitoring Plan (CAMP), photographs to document progress, and documentation of progress and generation of material for offsite disposal.

Samples will be collected from soil and solid debris for various constituents including Metals, SVOCs, VOCs, and PCBs.

Inventum Engineering
Site-Specific Health and Safety Plan (HASP)

(Required for all Type 2 and 3 projects.)

Inventum Role(s) On Site:

- ☐ Inventum Staff Will Not Be On Site (HASP and Risk Analysis is for subcontractor information only)
- ☐ Resident Project Representative (*e.g.,* "Observe and Document")
- ☐ Construction Manager (*e.g.,* CM, Managing/General Contractor)
- ☒ Representative for Client (*e.g.,* "Agent for Owner")
- ☒ General On-site Consulting/Engineering Services
- ☒ Other

☒ Soil Sampling	☒ Solid Waste Sampling	☒ Liquid Waste Sampling
☒ Groundwater Sampling	☒ Surface Water Sampling	☒ Wastewater Sampling
☒ Sediment Sampling	☐ Surveying	☐ Confined Space Entry

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Major Project Tasks		Inventum Task	Subcontractor Task	Minimum PPE Level Required see HASP for details (suggested levels for Subcontractor work)
1.	Site Management and Oversight	☒	☐	☐ N/A ☒ D ☐ C ☐ B ☐ A
2.	Shallow Soil Sampling	☒	☒	☐ N/A ☒ D ☐ C ☐ B ☐ A
3.	Subsurface Soil Sampling	☒	☒	☐ N/A ☒ D ☐ C ☐ B ☐ A
4.	Monitoring Well Installation	☒	☒	☐ N/A ☒ D ☐ C ☐ B ☐ A
5.	Groundwater Monitoring and Sampling	☒	☐	☐ N/A ☒ D ☐ C ☐ B ☐ A
6.	Demolition Monitoring	☒	☒	☐ N/A ☒ D ☐ C ☐ B ☐ A
7.	Soil Excavation and Solidification	☒	☒	☐ N/A ☒ D ☐ C ☐ B ☐ A

2. Contingency Planning

LOCAL EMERGENCY RESOURCES:	
Ambulance: 911	Emergency Room: 716.278.4395
Police: 911	Fire Department: 911
NYSDEC Contact: Taylor Monnin, Project Manager, 716.851.7220	Poison Control Center: 1-800-222-1222 ☐ Specify:
Other (client services offered, etc.):	

SITE RESOURCES:			
Drinking Water Supply	☒ Inventum	☒ Subcontractor	☐ Client
Wash Water Supply	☐ Inventum	☒ Subcontractor	☒ Client
Telephone – Land Line	☐ Inventum	☐ Subcontractor	☐ Client
Telephone - Cellular	☒ Inventum	☒ Subcontractor	☐ Client
First Aid Kit	☒ Inventum	☒ Subcontractor	☐ Client
Fire Extinguisher	☐ Inventum	☒ Subcontractor	☒ Client
Emergency Shower N/A	☐ Inventum	☐ Subcontractor	☐ Client
Eye Wash	☐ Inventum	☐ Subcontractor	☒ Client
Other: Confined space retrieval device N/A	☐ Inventum	☐ Subcontractor	☐ Client

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

EMERGENCY/SAFETY CONTACTS:	
Inventum Technical Contacts	John Black (571.217.6761); Todd Waldrop (571.217.3627);)
Inventum Project Manager (PM): John Black	571.217.6761
Inventum Office Safety Coordinator (OSC)	John Black (571.217.6761); Todd Waldrop (571.217.3627);
Inventum Field Contact:	John Black (571.217.6761); Todd Waldrop (571.217.3627); Peter Zaffram (716.553.5129)
Contractor Contact (To Vary – Main Remedial Contractor provided):	Ontario Specialty Contracting; 716.856.3333
Client Contact:	Jon Williams: 716.856.3333; John Yensan (716.856.3333)

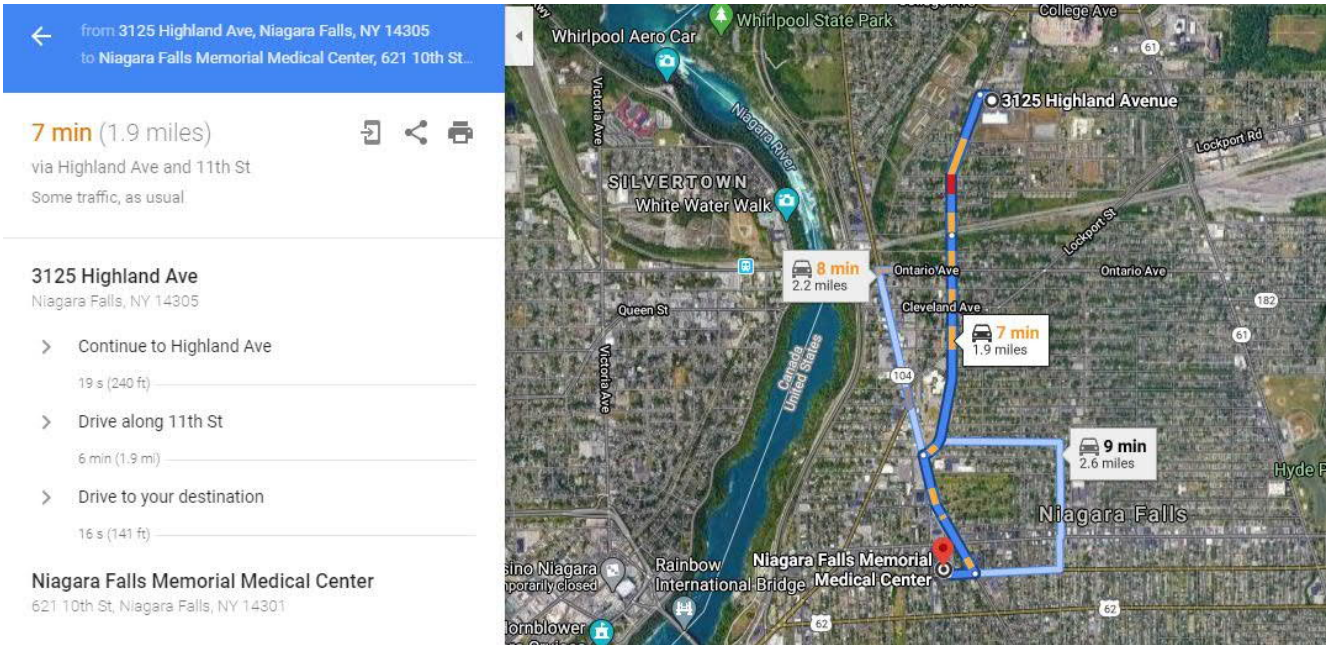
Emergency Route:

Hospitals or clinics identified for emergency medical care should be contacted, to verify that emergency care is provided at that location. Verify the exact location of the medical facility during this call. See directions and map of route to Niagara Falls Memorial Medical Center Hospital on the following page:

Hospital: **Niagara Falls Memorial Medical Center**
621 Tenth Street
Niagara Falls, NY 14302
716.278.4395 (ER)
716.278.4000 (Main)

Other: NA

Map to Hospital



Directions to Hospital:

- **Turn left onto Highland Avenue**
- **Continue onto 11 St.**
- **Use any lane to turn left onto Portage Road**
- **Turn Right onto Walnut Ave.**
- **Turn right at Memorial Parkway**
- **Hospital will be on the left.**

Emergency Procedures:

If an emergency develops at the site, the first responder should take the following course of action:

- Notify the proper emergency services for assistance.
- Notify other personnel at the site.
- As soon as possible, contact the Inventum Project Manager to inform them of the incident.
- Complete the Inventum Incident Report Form (see Appendices) within 24 hours of the incident and client notifications, as required.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Investigation of Near Miss Incident and Initial Report of Incident/Exposure:

Inventum employees are required to report any incident, near miss, or injury, as soon as possible, by contacting the following:

☒ Inventum Managing Partner ☒ Notify supervisor ☒ Notify project manager

☐ Notify Site Manager () ☐ Complete client report: as required

(name):

(phone number):

Emergency Equipment Required On Site:

☒ First Aid Kit

☐ Emergency Eye Wash

☐ Emergency Shower

☐ Fire Extinguisher

☐ Spill Control Media

☐ Tripod/Hoist/Harness for non-entry confined space rescue

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

3. Site Classification

	Identification of Potential Hazards	YES	NO	SITE TYPE(1)
1.	Is the work a Phase I ESA (i.e., supervised plant walk-through, etc.)?	☐	☒	1
2.	Is the work being performed solely by a subcontractor (i.e., INVENTUM not on site)?	☐	☒	1
3.	Is the work just a supervised inspection for process evaluation, other inspections, meetings, records review, or a tour?	☐	☒	1
4.[1]	Is the work completely absent any chemical, physical, biological, or radiological hazards which would require a site-specific health and safety plan?	☐	☒	1
5.	Does the work include any mandatory client H&S requirements?	☐	☒	1, 2, or 3
6.	Does the project include on-site work other than office type areas?	☒	☐	2 or 3
7.	Does the proposed work scope involve any of the following:			
	Known and controlled chemical or biological hazards	☒	☐	2
	Unprotected work at elevation (fall protection required)	☐	☒	2
	Invasive activities (*i.e.,* Phase II ESA, UST Removal, sampling, etc.)	☒	☐	2 or 3
	Exposure to ionizing radiation (i.e., using nuclear gauges, etc.)	☐	☒	2 or 3
	Open excavations/trenches (Competent Person may be required on site)	☒	☐	2 or 3
	Confined space entry (permit may be required)	☐	☒	2 or 3
	The use of scaffolding (qualified inspections are required)	☐	☒	2 or 3
	Heavy equipment	☒	☐	2 or 3
	Facility maintenance (O&M, piping, electrical, lockout/tagout, etc.)	☐	☒	2 or 3
	Underground utilities may be encountered	☒	☐	2 or 3
	Overhead utilities may be encountered	☒	☐	2 or 3
	Stack testing	☐	☒	2 or 3
	Geotechnical drilling	☐	☒	2 or 3
	Demolition Activities with known or suspected contamination	☒	☐	2 or 3
	Unknown or uncontrolled chemical or biological hazards	☐	☒	3
	Known and uncontrolled chemical or biological hazards	☐	☒	3
	Waste sampling	☒	☐	3
	Construction activities with known or suspected contamination	☒	☐	3
	Remedial activities (RCRA, CERCLA, EnviroBlend®, Oxigent, etc.)	☒	☐	3
8.	Is the work regulated by 29 CFR 1910.120 (OSHA) or 30 CFR (MSHA)?	☒	☐	3
9.	Is the work regulated by NPL, CERCLA, RCRA, TSD, or SARA?	☒	☐	3

(1) Denotes typical site level (based on activities).

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Site Type Designation:

☐ Type 1 Known and controlled hazards associated with consulting/engineering services.

☐ Type 2 Known and controlled hazards, but with invasive, hazardous activities and/or civil/mechanical construction related services, or sampling.

☒ Type 3 Unknown and/or uncontrolled hazards associated with corrective action clean-up, and/or remediation of hazardous substances.

4. Site Characterization

Client Requirement(s)[1]:	☒ None	☐ Site Orientation	☐ H&S Orientation
	☐ Permits or Other Requirements (specify and attach, if available):		
Site Information:	☒ Map/Diagram (attach)	☐ Map/Diagram Unavailable	
	☐ Inactive Site	☒ Active Site (specify below)	
General Environmental Concerns:	☒ Contaminated Water	☒ Wastewater	☒ Dust
	☒ Contaminated Soil	☒ Solid Waste	☒ Noise
	☒ Contaminated Air	☒ Waterways	☐ Other:
Site Security/Access Control:	☐ None	☒ On Site	
	☐ Other (explain):		
Amenities Available for Work:	☐ None	☒ Waste Storage	☒ Restrooms
	☒ Tools/Equipment Storage	☒ Office/Trailer Space	☒ Supplies Storage
Utilities Available For Work:	☐ None	☒ As Listed: Water, electric	
Medical Services Available:	☐ None On Site	☒ As Listed: First aid	
Facility Alarms/Signals:	☒ None	☐ As Listed:	
Traffic/Parking/Railway Issues:	☐ None	☒ As Listed (On-Site/Off-Site): On-site parking	
☐ Permits Required (specify)[2]:	☐ Confined Space Entry	☐ Local:	☐ State:
	☐ Federal:	☐ Other:	☒ N/A
☒ Utility Locate Service(s):	☒ On Site	☐ Client	☒ Other: Private locating as needed.
	☐ Off Site	☐	☒ One Call
		☐	☐ N/A

[1] If relying on the client for any specific hazard identification and control, implemented control and effectiveness should be documented prior to beginning any work activities. This is recommended for all field projects.

[2] Permit examples: Utilities (electrical, water, gas, etc.); Excavations; Explosives; Cranes; Burning; Fuel storage; Traffic control; Hoists; Cutting; Welding; Demolition; Confined space; Restricted access areas; etc.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Detailed Physical Description of Site/Facility: ☒ Map/Diagram Attached

The BCP Site encompasses approximately 8.04 acres and is located at 3219 and 3301 Highland Avenue in Niagara Falls, New York. The BCP Site is in a commercial, industrial, and residential area and bounded to the south by the former Power City Warehouse (a.k.a Tract I Highland Avenue BCP Site; BCP Site No. C932157); to the east by a narrow strip of land owned by National Grid[1] and beyond by the Tract II Highland Avenue Site (IHWS Site No. 932136); to the west by the remaining five (5) GAE owned parcels, two industrial parcels owned by James N. Gant, and Highland Avenue. The facility is no longer in operation, but some former process equipment remains.

Investigations conducted by Inventum, and others, prior to entry into the BCP have identified lead in soils as the primary contaminant of concern. VOCs and SVOCs have also been identified in soils and/or groundwater at concentrations exceeding applicable New York State standards, criteria, and guidance values.

Historically, manufacturing on the BCP Site included the production of molded plastic products for the automotive industry, injection molded recycling containers, and other specialized containers for industrial customers. The facility has been utilized for commercial and industrial activities for over 100 years. The BCP Site was developed as early as 1914 and used for manufacturing axle lighting devices, storage batteries, and electric self-starters for automobiles.

Figure 1; Site Location



Site Activities/Current Operations: ☐ None ☒ As Specified

[1] This is a utility right of way and is also known as the 15th Street ROW in the Tract II Highland Avenue Site (IHWS Site No. 932136) documentation.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Concurrent Site Activities, Work, and/or Other Adjacent Hazards or Concerns:

☐ None

As Specified:

☐ Schools ☐ Daycare ☐ Hospital ☐ Airport

☐ Residential ☒ Offices ☐ Shopping ☐ Active parking lot in work space

5. Hazard Evaluation

Complete (1) Substance Name (be specific)	Specific Applicable OSHA Standard (if any)	Physical State (2) (S, L, G, Aq, Vap, F, P)	Max. (3) Conc. Level Per Physical State	General (4) Control Measures (Eng., Admin., PPE)
Lead	0.050 mg/m3	S	7,050 mg/L	Eng., PPE
Copper	1 mg/m3	S	386 mg/kg	Eng., PPE
Benzo(a)anthracene	N/A	S	8.1 mg/kg	Eng., PPE
Benzo(a)pyrene	0.2 mg/m3	S	6.4 mg/kg	Eng., PPE
Benzo(b)fluoranthene	N/A	S	7.8 mg/kg	Eng., PPE
Dibenzo(a,h)anthracene	N/A	S	0.9 mg/kg	Eng., PPE
Cis-1,2-Dichloroethene	N/A	Ls	19 ug/L	Eng., PPE
Trichloroethene	N/A	L	120 ug/L	Eng., PPE
Vinyl Chloride	N/A	L	2.4 ug/L	Eng., PPE

(1) Use OSHA regulated name, not elemental forms. If available, attach SDS. Identify any sample preservative or O&M chemicals or subcontractor chemicals in this table also.

(2) S = Solids, L = Liquid, G = Gas, Aq = Aqueous, Vap = Vapor, F = Fume, P = Airborne Particulate.

(3) If available, attach laboratory results or summary tables.

(4) See the following sections for detailed control measures: personal protection equipment (PPE), Air Monitoring (Admin), or Site Control (Admin and Eng.).

(6) IP = Ionization Potential, VP = Vapor Pressure, LEL = Lower Explosive Limit, UEL = Upper Explosive Limit, N/A = Not Applicable, N.D. = Not Determined

(7) IDLH = Immediately Dangerous to Life and Health. NEVER enter IDLH conditions on site without proper respiratory protection.

(8) C = Ceiling Value, ST = Short-Term Exposure Limit, TWA = Time-Weighted Average, None Est. = None Established

(9) R = Respirable Limit, T = Total Limit

(10) Warning Properties: Good (G), Poor (P), None (N)

5. Hazard Evaluation (continued)

Site-Specific Physical Hazards

HAZARD	SPECIFIC CONTROL MEASURE
Slip/Trip/Fall Injury	— Use roads or trails whenever possible. — Occasionally reassess route to avoid dangerous terrain. — Maintain good housekeeping and keep work area clear of loose materials and equipment. — Use portable steps to mount and dismount sampling vehicle.
Ingestion of or contact with impacted soil	— Wear safety glasses. — Wear nitrile and appropriate cut-/puncture-resistant gloves (see Glove Selection Guideline) when performing tasks. — Wash hands and arms thoroughly when daily work is completed. — No eating, drinking, or smoking while conducting monitoring or sampling activities.
Pinched fingers or toes	— Where appropriate cut-/puncture-resistant gloves (see Glove Selection Guideline) when the potential for hand injury exists. — Where steel-toed safety shoes with steel shanks while on site.
Strained muscles	— Use proper lifting posture, techniques, and equipment when handling heavy objects. — Use two people for loads >40 lbs. or awkward items. — Take rests as needed during and between carries.
Cutting activities	
Flying debris/eye injuries	— Wear ANSI-approved safety glasses when the potential for flying debris and eye injuries exists.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☒	Aboveground Storage Tanks (AST)	Be aware of any aboveground storage tanks and the type of material being stored in them. Be aware of the potential of spills, fires, explosions, etc., while working near the tanks. Stay clear of tanks whenever possible, and be aware of any equipment operators near the tank(s).
☒	Animals (dogs, etc.)	Be aware of any animals on site or adjacent to the site. Appropriate care should be taken if any feral (wild) animals are encountered.
☐	Blasting/Explosives	INVENTUM personnel shall not handle any explosive devices or materials. INVENTUM personnel should understand the blasting procedures being used by the subcontractor, and all of the associated health & safety precautions. The subcontractor shall handle, store, and use the explosives in accordance with 29 CFR 1926.900, Subpart H and U.
☐	Boat or Barge	A boat or barge should be used that is adequately stable for the type of activity conducted. The boat or barge should have all of the appropriate and current licensing and registrations required by the applicable regulatory agencies. All applicable laws and regulations will be followed when launching the boat or barge, and when navigating to and from the work site. Personal floatation devices should always be worn while navigating the boat or barge. The boat must be equipped with the following approved United States Coast Guard (USCG) safety equipment: — A Type 1, 2, or 3 personal flotation device (PFD) for every person aboard (should be worn while navigating) The following equipment is recommended: — A Type 4 throwable PFD — Audible distress signal device (air horn, whistle) — Fire extinguisher (if engine-propelled) — Auxiliary propulsion (spare paddles, trolling motor) — Bow and stern lines — Anchor and anchor line — First aid kit — Visual distress signal device(s) (flares, dyes) — Additional PFDs Be familiar with local weather and tidal characteristics. Do not conduct sampling from a boat/barge when threatening weather is imminent, or poor visibility exists. Sampling from a boat is prohibited in water containing substances likely to cause injury upon short-term or prolonged contact. Sampling from a boat is prohibited when the temperature of the water is high or low enough to cause injury upon short-term or prolonged exposure. Avoid sampling from a boat when unsafe water turbulence (waves) exists. Avoid standing in a boat. Always use the buddy system when sampling from a boat or barge; one person should be on shore with visual contact of the barge and should be able to summon emergency assistance if needed. Be familiar with local weather and tidal characteristics. Work on a boat or barge will not be performed when threatening or severe weather is impending or present.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☒	Briars or Thistles	Be aware of any briars or thistles on site. Wear appropriate clothing and gloves. Avoid contact with briars or thistles whenever possible.
☒	Business Traffic	Be aware of traffic patterns associated with local businesses near the work site. Allow traffic to enter and exit the businesses in such a manner to avoid creating traffic hazards, back-ups, delays, or potential accident situations.
☐	Cement Dust	Stay clear of mixing operations and avoid contact with or breathing of the dust.
☐	Chain Saws	Stay clear of any chain saw operations. Subcontractor is responsible for the safe use of chain saws on site.
☐	Cleaning Agents	Use caution when applying cleaning agent to equipment. Use gloves, safety glasses, splash shields, and protective clothing as needed.
☒	Client Activities	Be aware of client activities at or adjacent to the site. Work activities should be coordinated with other site activities to avoid conflicts. Contact EDP offices prior to starting work.
☒	Cold Stress	Work schedules may be modified when temperatures are below 20° F as measured by the wind chill factor. Take frequent breaks to warm up. Drink plenty of fluids. Wear appropriate clothing, and monitor for cold stress symptoms (frostbite, hypothermia, etc.).
☒	Compressed Air or Gas Cylinders	Compressed air or gas cylinders should be clearly marked, and they should be stored, transported, and secured in an approved manner.
☒	Compressed Air/Gas or Pressurized Liquids Hoses, Lines & Fittings	Compressed air or gas, or pressurized liquid lines or hoses should be inspected at least daily, or in the event a leak develops, or if a line or hose is run over or crimped.
☐	Concrete/Masonry/ Foundations	No construction loads shall be placed on a concrete structure or portion of a concrete structure unless a person who is qualified in structural design has determined that the structure or portion of the structure is capable of supporting the loads. All protruding reinforcing steel, onto and into which employees could fall, shall be guarded to eliminate the hazard of impalement. No employee shall be permitted to work under concrete buckets while buckets are being elevated or lowered into position. To the extent practical, elevated concrete buckets shall be routed so that no employee, or the fewest number of employees, are exposed to the hazards associated with falling concrete buckets. A limited access zone shall be established whenever a masonry wall is being constructed. All masonry walls over eight feet in height shall be adequately braced to prevent overturning and to prevent collapse unless the wall is adequately supported so that it will not overturn or collapse. The bracing shall remain in place until permanent supporting elements of the structure are in place.
☐	Confined Spaces (tanks, vaults, vessels, trenches, manholes, some excavations, etc.)	The scope of this project does entail entry into confined spaces. Confined spaces will not be entered unless a confined space entry permit has been completed, signed, and approved, and all participating personnel are trained in confined space entry procedures, including safety, and rescue procedures. All potential hazards of confined space may not be addressed by this hazard assessment, and health and safety plan.
☒	Cutting Tools	Stay clear of contractors' cutting tools, especially saws and torches. Be aware that cutting operations could create other hazards, such as falling objects, or shifting materials, etc. Safety glasses should be worn while using cutting tools. Spark-proof tools should be used when working in areas of potential explosive or flammable conditions. Fixed-open blade knives are prohibited.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☒	Demolition Activities	Stay clear of walls, ceilings, roofs, etc., as they are being demolished.
☒	Demolition Debris	Demolition material should only be handled by appropriate equipment because of sharp points, edges, etc. Demolition material may also pose a trip hazard, fall, or puncture hazard, so avoid walking or climbing on debris piles, etc.
☒	Drums	If drums are used on-site, they should be clearly labeled with the name of the contents and the appropriate label. Drums should only be handled with the appropriate equipment. Drums discovered during excavations, etc., shall not be opened or moved until appropriate identification can be performed. At a minimum, Level B protection is required for sampling any unlabeled drums discovered during remediation procedures.
☒	Dust/Particulates (Particulates Not Otherwise Regulated) (PNOR) (OSHA PEL = 15 mg./m^3, total) (OSHA PEL = 5 mg./m^3, respirable)	For general dust, work should be performed up-wind if possible. If conditions warrant it, monitoring should be done with a PM-10. Monitoring should occur at least 3 times per day, and every time re-entering the site. Readings should be taken downwind from the work area or inside the equipment as indicated by the conditions on site. If the OSHA PEL is exceeded, or is likely to be exceeded, engineering or administrative controls should be used, or a dust respirator must be worn. For hazardous dusts, a detailed air monitoring plan and a respiratory protection plan should be developed for the site activities.
☐	Elevated Work	For any construction work activities elevated 6 feet or more, or other non-construction activities elevated 4 feet or more, fall protection must be provided. Caution should be taken on catwalks and ladders because of potential slippery conditions, or the potential for footwear to catch on the surfaces.
☐	Energized Sources (electrical equipment or hookups, lines, etc.,) (Lockout/Tagout)	Contractors for all electrical activities, and any facility equipment with moving parts should follow proper lock-out/tag-out procedures, and only properly trained employees will perform the work. Employees will not perform any lock-out/tag-out activities unless personnel are properly trained in lockout/tagout procedures. Heed any caution signs or labels.
☒	Equipment Exhaust	Equipment exhaust should be ventilated away from the work area while drilling inside structures. Industrial fans can be used to move exhaust out of the area.
☒	Ergonomic Issues (job hazard analysis)	Ergonomic hazards will be addressed on a site-specific basis once mobilization to the field has occurred. Workstations will be evaluated on an individual basis.
☒	Evening Work	If work is performed during the evening hours, work shall be limited by the availability and the quality of artificial lighting. Care should also be taken to avoid slip, trip, and fall hazards that are not as easy to identify during low light conditions.
☒	Excavations	Stay clear of excavation walls. INVENTUM personnel will not enter an excavation, in accordance with 1926 Sub Part P. Subcontractor must provide a Competent Person on site, if one is required by the planned activities. Side cuts should conform to 1926 Subpart P requirements, or shoring should be used. All open excavations should be secured using traffic cones, barrier tape, or barricade signs stating “Do Not Enter Excavations”, especially if left open overnight.
☐	Explosives	Be aware of potential explosive materials and how to identify them. No smoking is allowed on-site or near where potential explosive materials may be present.
☐	Facility Conveyors (product or waste lines)	Stay clear of facility conveyors, product process lines, and waste disposal lines. Be aware of any client-specific health and safety requirements to work in these areas.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☒	Facility Equipment/Machinery	Be aware of active and moving client equipment on site.
☒	Facility Piping - aboveground	Stay clear of aboveground pipes. Client is responsible to identify all applicable aboveground facility pipes prior to any work activities in the area. Pipes can be overhead hazards, or trip hazards. Pipes can be hazardous because of the material flowing through them, such as steam, natural gas, toxic chemicals, etc. Some pipes are also coated with hazardous material such as asbestos.
☒	Facility Piping - belowground	Client is responsible to identify all applicable underground facility pipe locations prior to any subsurface activities.
☐	Fall Hazard	Proper tie-off, harnesses, railings, etc. should be used when performing work on ladders, scaffolding, man-lifts, or on the roof of buildings, etc. Stay clear of the edges of pits, trenches, quarries, etc.
☒	Falling Objects	Be aware of any potential falling objects or materials on site. Stay clear of any areas identified as potential falling object areas.
☒	Fences	Be aware of fences in disrepair that may be trip hazards or may have materials that could cause punctures or cuts. Use caution when crossing over or under fences.
☒	Field Equipment	If field equipment is heavy or awkward to carry, get assistance or use carts to help move around the site.
☒	Field Vehicle	Inventum personnel shall follow all applicable state and federal traffic laws while traveling to and from the site, and while working on the site. In particular, the following laws should be followed: speed limits, parking restrictions, use of wipers and lights during precipitation events, limiting cell phone use, etc. It is the responsibility of the driver to verify that all safety equipment on the vehicle is working properly before driving the vehicle. In particular, the following items should be checked: tire pressure, tire tread, windshield wipers, windshield washer, headlights, tail lights, brake lights, spare tire, fire extinguisher, first aid kit, etc.
☒	Fire Hazards	Eliminate sources of ignition in work areas that have ignitable materials. Provide an ABC fire extinguisher in close proximity to the support zone.
☒	Flooded Areas	Do not drive through flooded areas or standing water. Do not wade into moving water, or water deeper than 2 feet without adequate assistance.
☒	Flying Debris/ Eye Injuries	Be aware of any flying debris on site and wear protective eyewear when necessary.
☒	Fork Lifts	Be aware of forklift patterns and stay clear of those routes.
☒	Hand Tools	Use only the appropriate tool for the task at hand. Use the tool(s) as designed, described, and intended by the manufacturer.
☒	Heat Stress	The work schedule may be modified if the ambient temperature is more than 80° F. Take breaks as necessary, and drink plenty of fluids. If necessary, wear sunscreen and sunglasses on bright days. Monitor site personnel for signs of heat stress symptoms (heat rash, heat cramps, heat exhaustion, or heat stroke).

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☒	Heavy Equipment	Contractor is responsible for safe operation of equipment. All mobile heavy equipment must have a functioning backup alarm, and operators must comply with equipment manufacturer's instructions. Maintain proper distance and remain in line of sight of operator and out of reach of equipment. Isolate equipment swings, if possible. Make eye contact with the equipment operator before approaching the equipment. Understand and review hand signals, and wear orange safety vest, if necessary.
☒	Heavy Lifting	Use proper lifting procedures and equipment when handling heavy objects such as drums, manhole covers, tank covers, etc.
☒	High Pressure Gas Lines, etc.	Be aware of high-pressure gas lines and follow approved safety precautions when working with or around the lines.
☐	Highway Traffic	Traffic control within the right-of-way will be in accordance with the WDOT "Work Zone Safety – Guidelines for Construction, Maintenance, and Utility Operations" procedures. Work may be restricted within specific lanes during peak traffic times. Verify peak traffic times, and review planned activities with the WDOT, so that appropriate lane closures can be coordinated.
☒	Housekeeping	All field vehicles, job trailers, and field offices will be properly cleaned and organized to prevent cluttered work and storage areas.
☐	Hunters/Firing Range, etc.	Be aware of surrounding activities that may involve hunting, firearms, etc. that may not be in your immediate area, but could create an unsafe work environment.
☒	Ice (thin)	When project activities include either crossing ice or working directly on the ice, a detailed plan should be developed that will be used to continually evaluate the ice conditions, and to determine when work should be terminated due to unsafe conditions. All staff working on the ice will wear an appropriate and approved personal floatation device. Other emergency equipment such as ropes, a throwable floatation device, a means to warm a wet and cold worker, etc. must be available. A buddy system should also be used for this type of work, such that one person is always on shore or at least on previously determined safe ice.
☒	Insects (ticks, bees, spiders, etc.)	Site workers with known allergies to insect bites should carry their own medication. In case of emergencies, inform fellow workers of any severe allergies. Use insect repellant as necessary, and as specifically allowed on site. If possible, wear long-sleeved shirts and pants. If appropriate, check for ticks at the end of each day. Have other appropriate first aid supplies handy for bites.
☒	Stakeholders	Be aware of the potential for irate neighbors or outsiders that may interfere with work activities, or that may potentially damage equipment or on-site materials, etc.
☐	Ladders	Ladders should only be used if they are in good condition, conform to OSHA requirements, and if they will be used in an appropriate manner. Be especially cautious of slipping on ladders when the ladder or footwear is wet or dirty.
☐	Landfill Gas (Methane, CO2, Hydrogen Sulfide)	Avoid breathing gas, especially in low oxygen areas (simple asphyxiant). Potentially flammable and explosive, so keep ignition sources away from gas. Explosive conditions of LEL >5% in a work area should be ventilated as soon as possible, or the area should be evacuated.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☐	Leachate (Municipal Solid Waste (MSW))	MSW leachate may contain hazardous biological substances, so avoid physical contact with leachate and, if possible, stay up-wind. If contact is made with leachate, wash affected areas thoroughly with soap and water. If boots contact leachate, they should be thoroughly washed with soap and water also.
☒	Lead	Wear gloves when in contact with lead contaminated soil, etc. Thoroughly wash hands and arms when daily work is completed.
☒	Long Hours/Fatigue	Long work hours can lead to fatigue, and fatigue can lead to the physical inability to perform the work in a safe manner, or travel to or from, a work site in a safe manner. If long work hours are scheduled, or if the scheduled work takes longer than planned, field staff should determine if fatigue is, or will be, an issue. Field staff should evaluate whether they are able to complete the work in a safe manner, or whether they are able to travel in a safe manner. If fatigue is an issue, appropriate breaks should be planned or taken, including overnight stays when necessary.
☒	Material Handling	Move containers and heavy material only with the proper equipment, and secure them to prevent dropping, falling, or loss of control during transport. Stay clear of material handling operations, especially near slopes. Do not stand down the slope from equipment, supplies or materials being moved above on the slope, or being deployed onto the slope.
☒	Material Storage	Stored material may be a falling hazard, or a crush hazard. Do not stand adjacent to materials stacked up, such as pipes, geosynthetic rolls, etc., or in the area of deployment.
☐	Methane Gas (Landfill Gas)	Explosive conditions (5% LEL) will be ventilated, if encountered, prior to working in an area. Methane is a simple asphyxiant.
☐	Mine or Quarry	No work shall be performed within 15 feet (or other designated client setback, whichever is greatest) of the mine or quarry walls. Be aware of the potential for falling rocks or slope failures.
☐	Municipal Solid Waste (MSW)	MSW may contain hazardous biological substances, so avoid physical contact, and if possible, stay up-wind. Wear appropriate PPE, such as gloves, safety shoes, and safety glasses. Wash hands, arms, and face after working near MSW. Reusable PPE and equipment should be thoroughly decontaminated after exposure to MSW. MSW may also contain sharp objects with the potential to puncture PPE.
☒	Natural Gas	Natural gas is flammable and explosive. Keep ignition sources away from gas sources. Use spark-proof tools when working with gas lines, etc.
☒	Noise	Hearing protection must be worn when noise levels exceed 85 dBA in the work area. If you need to raise your voice to be heard at the work site, then hearing protection should be worn. Hearing protection will be worn near drill rigs.
☒	Overhead Hazards	Pay attention to overhead equipment, piping, and structures. A hard hat must be worn at all times when overhead hazards are present on site including the operation of a drill rig.
☒	Pedestrian Traffic (public, client, workers)	Be aware of pedestrian traffic patterns and, route traffic around the exclusion zone(s), as necessary, to avoid distractions and the potential for exposures or accidents. Use appropriate barricades and caution tape to mark work areas.
☒	Poisonous Plants	Be able to identify any local poisonous plants and avoid them if possible or wear protective clothing as necessary. When removing potentially exposed clothing or PPE, the clothing or PPE should be carefully and thoroughly washed or decontaminated.
☒	Portable Heaters	Be aware of portable heater locations and stay a safe distance from them.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☒	Power Washing Equipment	Stay clear of the power washing nozzles and equipment.
☒	Propane Tanks	Be aware of propane tank locations, and any gas lines leading to or from the tanks.
☐	Radiation (ionizing)	Exposure to ionizing radiation can be controlled by one of three methods: time, distance, or shielding. Limit your time near the radioactive source. Keep your distance from the radioactive source. Shield yourself from the radioactive source with appropriate shielding material. If the radioactive source(s) are from INVENTUM equipment, the INVENTUM employee using the equipment needs required training to use the equipment and must be monitored using a dosimeter badge.
☐	Rock Blasting	Contractor is responsible for following safe blasting protocol. Heed all contractor warnings at time of blasting and stay well clear until safe to return to area, as indicated by the contractor.
☒	Sample Preservative Chemicals:	Wear safety glasses and nitrile gloves when adding preservative chemicals to sample bottles or vials. Have clean wash water nearby.
☐	Scaffolding	Stay clear of scaffolding. Be aware of the OSHA safety requirements for using constructing and scaffolding.
☒	Severe Weather	Work may be suspended if dangerous weather conditions (lightning, tornadoes, high winds, heavy rain, freezing rain, etc.) occur. Be aware of changing weather conditions and be prepared to take shelter as necessary. Potential shelters should be identified prior to beginning work.
☒	Sharp Objects	Wear appropriate gloves when handling sharp objects or use appropriate equipment to move objects.
☒	Slippery Ground/Surfaces	Exercise caution, especially on slopes, field trailer floors and stairs, after a precipitation event. Use slip resistant boots or implement surface preparations to eliminate the slippery nature of the surface prior to accessing the area. Spill control measures and general housekeeping should be utilized to help prevent slipping on wet floors, wet pavement, and general work areas.
☒	Slips, Trips, and Falls:	Maintain clear walkways for work areas.
☒	Snakes	Be aware of the potential for snakes in the area and wear snake boots, snake chaps, gaiters, or leggings as needed.
☒	Steam Cleaning Equipment	Stay clear of the steam cleaning nozzles and equipment.
☐	Steel Erection	All materials, equipment, and tools, which are not in use while aloft, shall be secured against accidental displacement. The controlling contractor shall bar other construction processes below steel erection unless overhead protection for the employees below is provided. Employees engaged in steel erection activities on a walking/working surface with an unprotected side or edge more than 15 feet above a lower level shall be protected from fall hazards by guardrail systems, safety net systems, personal fall arrest systems, positioning device systems or fall restraint systems.
☐	Steep Slopes or Banks	Pay attention to footing and walking. Stay a safe distance from unstable or extremely steep slopes. Wear appropriate footwear. Be aware of potential slope or bank failures. Heavy equipment should not be operated on or near unstable slopes or banks.
☒	Strong Nuisance Odors	Strong odors should be ventilated before entering a work area, or a respirator shall be worn as needed.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☒	Sunburn	For extended periods of time outdoors on sunny days, sunglasses, long-sleeved shirts and long pants should be worn to help prevent sunburn and eye problems. Wear sunscreen as appropriate for the project.
☐	Surface Water	Working next to or on, bodies of water shall be done using the buddy system. Staff shall wear USCG-approved personal floatation devices when on or adjacent to bodies of water.
☒	Terrain	Uneven or steep terrain can cause hazardous conditions for walking and transporting equipment around the site. Site personnel should use caution when working on uneven surfaces, and they should avoid working down-slope from heavy equipment, or materials being moved or stored.
☒	Traffic (client, contractors, public, semi-trucks, forklifts, etc.)	Obey all posted speed limits. Park in designated areas only. Be aware of traffic patterns on site, and during access to the site. Use orange traffic cones and barrier warning tape, as needed, or if within 25 feet of the right-of-way. INVENTUM personnel must wear orange safety vests when working in or near traffic areas. Class 2 traffic vests are required with traffic speeds 25 mph or higher. Class 3 traffic vests are required with traffic speeds 50 mph or higher.
☐	Trains/Railroad Tracks	Be aware of any train activities on the site, entering or leaving the site, or immediately adjacent to the site. Do not walk between the rails or on the railroad ties. When driving, stop at all railroad crossings, even if they are unmarked, and look in both directions before proceeding across the tracks.
☒	Transporting Hazardous Materials	INVENTUM personnel who transport hazardous materials shall have the required DOT training prior to transporting materials, and will comply with all applicable DOT regulations and requirements for labeling, packaging, etc.
☐	Tree Cutting	Stay clear of tree cutting activities.
☒	Trenching	INVENTUM personnel will enter trenches in accordance with 1926 Sub Part P. Be aware that some trenching conditions may result in a confined space condition.
☒	Trip Hazards (wires, cords, hoses, debris, corn stubble, uneven surfaces, etc.)	Temporary wires, cords, hoses, etc., should be properly located, marked, and protected to help prevent tripping and disruption to work activities. Trip hazards are particularly a problem early in the morning, late in the day, or under other poor lighting conditions.
☒	Underground Storage Tanks (USTs) (Septic Tanks)	If any unknown USTs are encountered, drilling or excavations will be terminated in that location until a new scope of work, Risk Assessment and Health & Safety Plan can be developed.
☒	Uneven Surfaces	Be aware of uneven walking or driving surfaces and exercise caution when moving around the site.
☒	Utilities – Overhead (electrical, telephone, cable TV, etc.)	A subcontractor, the client, or INVENTUM will locate and identify all overhead utilities. The owner or client will be responsible for identifying all applicable overhead utilities, product lines, pipes, and aboveground tanks. A minimum clearance of 20 feet must be maintained between equipment and overhead utility lines.
☒	Utilities – Underground (electric, gas, telephone, water, storm sewer, sanitary sewer, cable TV, etc.)	A subcontractor, the client, or INVENTUM will call Digger's Hotline to locate all underground utilities. The owner or client will be responsible for marking all applicable on-site underground utilities, product lines, pipes, and tanks.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☐	Waterways	Exercise caution near, around, or in waterways. Harnesses should be worn when working in, or within 4 feet of, the waterway, especially when attempting to sample from shore or a boat or barge. All applicable laws and regulations will be followed when navigating a boat or barge to and from a work site.
☒	Welding Tools	Stay clear of welding operations, and do not look directly at the welding process without appropriate eyewear and shield.
☐	Traffic Control	Traffic Control: Traffic control within the right-of-way will be in accordance with the local Public Right-of-Way Agency. Work may be restricted within specific lanes during peak traffic times. Verify peak traffic times and review planned activities with the local Public Right-of-Way Agency, so that appropriate lane closures can be coordinated.

Proposed Date(s) of Inventum Work: TBD

ON-SITE PROJECT TEAM MEMBER	ON-SITE PROJECT RESPONSIBILITIES
John Black	Inventum Site Health and Safety Representative (Supervisor); Remedial Contractor Oversight
Todd Waldrop	Inventum Site Health and Safety Representative (Supervisor); Remedial Contractor Oversight
James Edwards	Inventum Site Health and Safety Representative (Supervisor); Remedial Contractor Oversight

Any required construction/demolition activities: ☒ No ☐ Yes If Yes, complete Section 1

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

1. Construction Tasks: work tasks to be performed by Inventum staff or Inventum subcontractors

Civil

- ☐ Sewer (utility)
- ☐ Water (utility)
- ☐ Electric (utility)
- ☐ Communications (utility)
- ☐ Siding
- ☐ Roofing
- ☐ Drywall
- ☐ Flooring
- ☐ Ceilings
- ☐ Casework
- ☐ Masonry
- ☐ Escalator

- ☐ Steel (erection)
- ☐ Pre-cast (erection)
- ☐ Concrete (erection)
- ☐ Re-bar
- ☐ Elevator
- ☐ Fireproofing
- ☐ Windows
- ☐ Landscaping
- ☐ Painting
- ☐ Insulation
- ☐ Doors
- ☐ Finish Concrete

Mechanical

- ☐ Insulation
- ☐ Millwright
- ☐ Fire Protection
- ☐ Boiler
- ☐ Industrial Ventilation
- ☐ Steel Fabrication/Erection

Other

- ☐ Electrical
- ☐ Demolition (attach a detailed "Demolition Plan")

- ☐ Others
- ☐ Others
- ☐ Others

Estimated Direct-Hire Inventum Employees:

Home Office: ☐ Not Applicable ☐ Specify:

Craft Labor: ☐ Not Applicable ☐ Specify:

Craft	Quantity
Craft	Quantity

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

2. Applicable Safety Standards or Regulations:

☒ Federal OSHA ☐ State OSHA ☐ Owner/Client

Specific Standards:	29 CFR 1910 (OSHA)	29 CFR 1926 (Other Regulations)
☒ Medical Services and First Aid	1910.151	1926.50
☒ Hazard Communication (HAZCOM)	1910.1200	1926.59
☒ Lead Exposure	1910.1025	1926.62
☒ HAZWOPER	1910.120	1926.65
☒ Personal Protective Equipment (PPE)	1910.132-138	1926.95-107
☒ Respiratory Protection	1910.134	1926.103
☒ Ventilation	1910.94	1926.57
☒ Noise Exposure	1910.95	1926.52
☐ Illumination	N/A	1926.56
☐ Fire Protection	1910.157	1926.24 and 150-155
☐ Sanitation	1910.141	1926.51
☐ Materials Handling (rigging, etc.)	1910.176	1926.250-251
☐ Welding/Cutting	1910.251-255	1926.350-354
☐ Lockout/Tagout	1910.147	1926.417
☐ Electrical (flexible cords, etc.)	1910.305	1926.400-449
☐ Scaffolding	1910.28-29	1926.450-454
☐ Fall Protection (elevated work)	1910.23-29, 1910.66-68	1926.104-107; 500-503
☐ Ladders/Stairways	1910.25-27	1926.1050 and 1060
☐ Cranes, Derricks, Hoists, Elevators, etc.	1910.179-181	1926.550-555
☐ Aerial Lifts	1910.66-68	1926.556
☒ Earthmoving Equipment	N/A	1926.602
☐ Powered Industrial Trucks (forklifts)	1910.178	1926.602
☒ Excavations and Trenching	N/A	1926.650-652
☐ Concrete and Masonry	N/A	1926.700-706
☐ Steel Erection	N/A	1926.750-761
☒ Demolition	N/A	1926.850-860
☒ Asbestos	1910.1001	1926.1101
☐ Confined Space Entry	1910.146	1926.21

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

☐ Commercial Diving	1910.401-441	1926.1071-1092
☒ Compressed Gases	1910.101-105	N/A
☐ Ionizing Radiation	1910.1096	1926.53
☐ Benzene	1910.1028	1926.1128
☐ Cadmium	1910.1027	1926.1127
☒ Tools - Hand and Power	N/A	1926.300-307
☐ Blasting and Using Explosives	N/A	1926.900-914

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

3. Training Required

(* required for all "Type 3" sites; but minimum recommended)

Check "A" if training required for everyone, and check "T" if training required for specific task.

A	T	SUBJECT	REFERENCE	
			29 CFR 1910	29 CFR 1926 or Other
☐	☒	HAZWOPER 40 hour*	1910.120	1926.65
☐	☐	3-Day HAZWOPER Supervised On-Site*	1910.120	1926.65
☐	☒	8-Hour HAZWOPER Refresher*	1910.120	1926.65
☐	☐	8-Hour Supervisor HAZWOPER*	1910.120	1926.65
☐	☒	First Aid, CPR*	1910.151	1926.23,.50
☐	☒	Respiratory Protection	1910.134	1926.103
☐	☐	Confined Space ☐ Permit attached	1910.146	1926.21
☐	☐	Mine Safety (MSHA)	N/A	30 CFR 48.8
☐	☐	Lockout/Tagout ☐ Permit attached	1910.147	1926.417
☒	☐	Bloodborne Pathogens	1910.1030	N/A
☒	☐	Noise Exposure	1910.95	1926.52
☐	☒	Competent Person	N/A	1926.32,.450,.650
☐	☐	Construction Health and Safety OSHA 10-Hour	N/A	1926.21
☐	☐	Demolition	N/A	1926.850
☐	☒	Excavations ☐ Permit attached	N/A	1926.650-652
☐	☐	Electrical Work	1910.332	1926.400-.449
☐	☐	Ladders/Stairways	N/A	1926.1050-1060
☐	☐	Scaffolding	1910.28	1926.450-454
☐	☐	Fall Protection	1910.23-29; 1910.66-68	1926.104,.501
☐	☐	Commercial Diving	1910.410	1926.1071-1092
☐	☐	Hot Work ☐ Permit attached	1910.251-255	1926.350
☐	☐	Lead Awareness	1910.1025	1926.62
☐	☐	Asbestos Awareness	1910.1001	1926.1101
☐	☐	Cadmium	1910.1027	1926.1127
☐	☐	Benzene	1910.1028	1926.1128
☐	☐	Ionizing Radiation	1910.1096	1926.53; 10 CFR 19.12
☐	☐	Troxler or NITON Gauge User	1910.1096	10 CFR 19.12
☐	☐	Radiation Safety Program	1910.1096	10 CFR 20.1101
☐	☐	Hazard Communication (HAZCOM)	1910.1200	1926.59
☐	☒	DOT Hazardous Materials Shipping	1910.1201	49 CFR 172.704

Client-specific training: ☒ Not Applicable ☐ Specify

Site-specific orientation: ☒ Not Applicable ☐ Specify

Competent person: ☐ Not Applicable ☒ John Black, Todd Waldrop, Peter Zaffram

Direct-hire employee training/certification: ☒ Not Applicable ☐ Specify

4. Medical Surveillance

Surveillance Required: * required for all "Type 3" sites; baseline is minimum recommended
** Specify frequency below

	29 CFR 1910	29 CFR 1926 or Other
☒ HAZWOPER Physical - Baseline*	1910.120	1926.65
☒ HAZWOPER Physical – Annual	1910.120	1926.65
☐ HAZWOPER Physical - Biennial*	1910.120	1926.65
☐ OSHA Respiratory Protection Questionnaire	1910.134	1926.103
☐ Respiratory Certification Exam	1910.134	1926.103
☐ Arsenic (urine) **	1910.1018	N/A
☐ Asbestos **	1910.1001	1926.1101
☐ Cadmium (blood) **	1910.1027	1926.1127
☐ Lead/ZPP (blood) **	1910.1025	1926.62
☐ Mercury (blood) **	N/A	N/A
☐ PCB **	N/A	N/A
☐ Vinyl Chloride **	1910.1017	1926.117
☐ Hepatitis B Vaccine (series) **	1910.1030	N/A
☐ Tetanus/Diphtheria	N/A	Stay Current
☐ Stress Test	N/A	Only as requested
☐ Visual Acuity Test	N/A	Only as requested
☐ Hearing Test (Audiometry)	N/A	Only as requested
☐ Pulmonary Function	N/A	Only as requested

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

Client-specific drug testing:	☒ Not Applicable	☐ Specify
Client-specific medical monitoring[1]:	☒ Not Applicable	☐ Specify
Site-specific medical monitoring:	☒ Not Applicable	☐ Specify
**Frequency of medical monitoring:	☒ Not Applicable	☐ Specify

5. Personal Protective Equipment (PPE)

Based on evaluation of potential hazards, the following levels of personal protection have been designated for the applicable work tasks:

Specific Inventum Job Task or Function	Minimum Level of Protection
Task 1 – Site Management and Oversight	☒ D
Level D: safety glasses (ANSI), safety shoes (ANSI), ear plugs (ANSI); safety vest (ANSI)	
Task 2 – Shallow Soil Sampling	☒ D ☐ C ☐ B ☐ A
Level D: safety glasses (ANSI), safety shoes (ANSI), ear plugs (ANSI); safety vest (ANSI), nitrile gloves,	
Task 3 – Subsurface Soil Sampling	☒ D ☐ C ☐ B ☐ A
Level D: Hard hat, safety glasses (ANSI), safety shoes (ANSI), nitrile gloves	
Task 4 –Monitoring Well Installation	☒ D ☐ C ☐ B ☐ A
Level D: Hard hat, safety glasses (ANSI), safety shoes (ANSI), nitrile gloves	
Task 5 – Groundwater Monitoring and Sampling	☒ D ☐ C ☐ B ☐ A
Level D: safety glasses (ANSI), safety shoes (ANSI), ear plugs (ANSI); safety vest (ANSI)	
Task 6 – Demolition Monitoring	☒ D ☐ C ☐ B ☐ A
Level D: safety glasses (ANSI), safety shoes (ANSI), ear plugs (ANSI); safety vest (ANSI)	
Task 7 – Soil Excavation and Solidification	☒ D ☐ C ☐ B ☐ A
Level D: Hard hat, safety glasses (ANSI), safety shoes (ANSI), nitrile gloves	

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

Criteria for changing protection levels are as follows:

EVACUATION[2] or PROTECTION LEVEL CHANGE[3] CRITERIA	APPROVALS REQUIRED [1] OSC
Site Evacuation Plan: ☒ Not Applicable ☐ Specify or Attach Plan:	
Change to Level D when: ☐ Not Applicable ☒	☒N/A All site work in Level D
Change to Level C when: ☒ Not Applicable ☐ dust levels exceed 2.5 mg/m^3 in the breathing zone continuously for 5 minutes.	☒ No work will be conducted in Level C. Site work will stop, controls reevaluated, and HASP updated as necessary
Change to Level B when: ☒ Not Applicable ☐ Specify	☒ Inventum will not conduct any work in Level B.
Change to Level A when: ☒ Not Applicable ☐ Specify	☒ Inventum will not conduct any work in Level A. ☒

[1] OSC: Office Safety Coordinator

[2] General Recommendations: Evacuate the area when LEL readings are >10% LEL in the atmosphere, or when PID readings are greater than the PEL in the breathing zone.

[3] General Recommendation: To Level C when PID readings are greater than the PEL in the breathing zone. To Level B or A only after detailed evaluation and planning.

Note: Changes to the level of protection shall be made only after the required approvals are obtained. All changes shall be recorded in the field log and reported to the Project Manager as soon as possible. Inventum's goal is to avoid using respiratory protection unless it is absolutely necessary or required. Administrative controls or engineering controls should always be considered as a means to reduce potential exposures, before PPE is required or considered.

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

6. Air Monitoring [1]

The following monitoring instruments shall be used on site to measure airborne contaminant concentrations in either the breathing zone, or as part of the overall site Air Monitoring Plan (attach detailed plan):

MONITORING EQUIPMENT	LOCATION OF MONITORING	FREQUENCY OF MONITORING	ACTION LEVELS
☐ Combustible Gas Indicator	☐ N/A ☐ Monitoring Plan Attached ☐ Confined Space ☐ Manhole	☐ Continuously when potential combustible gases or lack of oxygen are suspected. ☐ Specify	5-10% LEL: continue with caution > 10 % LEL: evacuate the area ☐ Specify
☐ O2 Monitor ☐ CO Monitor ☐ H_2S Monitor	☐ N/A ☐ Confined Space ☐ Manhole – monitor oxygen, carbon monoxide, hydrogen sulfide , and lower explosive limit	☐ Continuously when excess oxygen (>22.5%) or lack of oxygen (<19.5%) are suspected. ☐ Test atmosphere prior to entry and continuous during confined space entry.	< 19.5% Oxygen: evacuate the area; supplied air may be needed. > 22.5% Oxygen: evacuate the area; potential fire hazard. ☐ Specify
☐ Colorimetric Tubes Type: Type: Type:	☐ N/A ☐ Specify ☐ Sample Container ☐ Confined Space ☐ Specify	☐ Periodically during sampling for analytical purposes only. ☐ Whenever noticeable odor is present. ☐ Specify	☐ Specify
☒ PID Lamp Needed: ☐ 9.8 eV ☒ 10.6 eV ☐ 11.7 eV Calibration Gas: Isobutylene Correction Factor:	☒ Personal Monitoring ☒ Sample Container ☐ Confined Space ☐ Specify	☒ Periodically during sampling for analytical purposes only. ☒ Continuously within the employee breathing zone. ☐ Specify ☐ Specify	☒ None. ☒ >5 ppm above background in breathing zone for 5+ min. Stop work and reevaluate potential sources and controls.
☐ FID	☐ N/A ☐ Specify	☐ Specify	☐ Specify
☒ Personal Dust Monitor	☐ N/A ☒ Personal Monitoring in Breathing Zone (Task 2 - 6 only)	☒ Continuously within the employee breathing zone	☒ >2.5 mg/m3 at work perimeter for 15 min sustained. Stop work and apply dust controls

☒Other: Perimeter Monitoring	☒ Perimeter Air Monitoring in accordance with the CAMP	☐ Specify	☐ Specify
☐Laboratory Supported ☐Personal ☐Area ☒Perimeter	☐ N/A ☐ Specify Employee breathing zone	☐ Specify continuous	☒ When visible dust is present apply dust control measures (water spray) until abated.

(1) Whenever air monitoring is required to be performed, a detailed Air-Monitoring Plan should be developed and attached to the HASP. The plan should include Monitoring Locations, Frequency of Readings, and any Action Levels being used to control the work site.

Air Monitoring Plan

A visual assessment of dust levels will be used continuously during the work along with personal employee monitoring and perimeter air monitoring in accordance with an approved CAMP.

Dust production during monitoring well installation and soil sampling is not anticipated due to the typical moisture content of the soil.

This level of nuisance dust is visually observable. If dust is observable continuously in the breathing zone for 5 minutes, dust control methods will be used (*e.g.*, water spray will be applied) until dust is abated. Work will be temporarily discontinued until dust is reduced to acceptable levels within the breathing zone. Should particulate levels above the action level be a continual problem, relevant field personnel will reassess the situation with the project manager.

Action levels and required actions with respect to perimeter air monitoring for VOCs and particulates will be followed in accordance with an approved CAMP.

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

7. Site Controls and Work Zones (describe in detail)

Facility Alarms or Signals: ☒ Not Applicable ☐ Specify

Work Permits Required: ☒ Not Applicable ☐ Specify

Work Traffic Issues: ☒ Not Applicable ☐ Specify

Parking Issues: ☒ Not Applicable ☐ Specify

Railway Traffic Issues: ☒ Not Applicable ☐

Support Zone(s):

☒ Field vehicle ☐ Job Trailer On Site ☒ Other: Undemolished buildings

Contamination Reduction Zone(s):

☒ Field vehicle ☐ Facility restroom/utility room ☐ Other:

Exclusion Zone(s):

☒ Area immediately surrounding work area ☐ Other:

Site Entry Procedures:

☒ Notify Site Safety Contact Representative.

☒ Read HASP Plan and sign Acknowledgment Statement.

☒ Check in with the facility contact person. ☐ Check in with owners full time site representatives.

☐ Check in with facility security guard. ☐ All visitors must check in and sign visitor logbook in guard house.

☒ Wear proper personal protective equipment.

☐ Attend facility orientation. ☐

☒ Conduct daily safety meeting (document).

☐ Other: Confined space – do not enter the confined space if LEL >10%, oxygen <21% or >23.5%, carbon monoxide >35 ppm, or hydrogen sulfide >7 ppm. Exit the confined space if the atmospheric conditions become hazards as noted.

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

Decontamination Procedures:

Personnel: (specify)	Work will be performed in Level D or Modified Level D, and minimal contamination is expected. Follow standard decontamination procedures, and good personal hygiene. Disposable PPE should be removed, contained, and disposed in an appropriate manner. Prior arrangements should be made if disposal is planned for at the project site. Site workers should plan and stage for wash water and soap at the site, prior to beginning the work. Site workers should wash hands and any exposed skin extremely well with soap and water, prior to leaving the contamination reduction zone, eating, drinking, driving, or leaving the site. Any soiled or contaminated clothing should be removed and handled appropriately, by either washing as soon as possible, or if necessary, disposing. Soiled or contaminated clothing should be carefully bagged prior to disposal or washing, to reduce potential exposure.
Equipment: (specify)	Site workers should plan and stage for the appropriate decontamination method at the site prior to beginning the work. Any contaminated single-use disposable equipment or PPE should be appropriately containerized and disposed as soon as possible in an appropriate manner. Prior arrangements should be made if disposal is planned for at the project site. Contaminated equipment or PPE that will be re-used should be handled and cleaned while wearing the appropriate PPE. Typically, equipment is decontaminated using Alconox soap and deionized water.

Disposal of Investigation-derived Material:

☒ Leave on site for disposal. Location TBD ☐ Other:

Work Limitations (time of day, buddy system, etc.):

☐ Buddy system required for some tasks.

☒ Work will be performed during daylight hours only.

☐ Work will be performed using artificial light.

Describe or attach a lighting plan: A lighting plan is attached.

☒ No eating, drinking, or smoking in contamination reduction zone(s) or exclusion zone(s).

☒ When temperatures are either above 80°F or below 20°F, work schedules may be modified.

☒ Other site-specific limitations:

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

Radiation Safety:

- ☒ Radiation information is not applicable to this project.
- ☐ Notify RSO.
- ☐ Wear dosimeter badge when handling gauge.
- ☐ Post applicable radiation signs and documents.
- ☐ Post emergency numbers.
- ☐ Provide at least two lock systems for overnight storage.
- ☐ Maintain storage at least 15 feet from full-time workstations.
- ☐ Block, brace, and securely lock the gauge during “all” transportation.
- ☐ Limit “public” exposure to gauge while in use.
- ☐ Provide sketch of gauge storage to RSO.

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

Acknowledgment Statement:

As an employee of Inventum, I have reviewed the Hazard Assessment (HA)/Health & Safety Plan (HASP). I hereby acknowledge that I have received the required level of training and medical surveillance as necessary, that I am knowledgeable about the contents of this site-specific RA/HSP, and that I will use personal protective equipment (PPE) and follow procedures specified in the HASP.

Signatures of Inventum Site Personnel:

	Date:	
	Date:	
	Date:	
	Date:	
	Date:	
	Date:	
	Date:	
	Date:	
	Date:	
	Date:	
	Date:	
	Date:	

INVENTUM SAFETY OBSERVATION FORM

Revised March 2019

Location/Project Name: _____	**Date:** _____
Observer Name: _____	
Observee Name: _____	**Time:** _____
Task Observed	
Description of Task Observed and Background Information	
Positive Comments	

INVENTUM SAFETY OBSERVATION FORM

Revised March 2019

Conclusions / Why the Questionable Items Occurred?

Feedback Session Conducted By: _____ **Date:** _____

Name of Observee's Supervisor: _____ **Time:** _____

At-Risk Observations/Root Cause Analysis

Personal Factor:
(1) Lack of skill or knowledge
(2) Correct way takes more time/requires more effort
(3) Shortcutting standard procedures is rewarded or appreciated
(4) In past, did not follow procedures or acceptable practices and no incident occurred

Job Factor:
(5) Lack of or inadequate operational procedures or work standards
(6) Inadequate communication of expectations or work standards
(7) Inadequate tools or equipment

At-Risk Observation #	Root Cause Analysis #	Solution(s) To Prevent Potential Incident from Occurring	Person Responsible	Agreed Due Date	Date Completed

Results of Verification (were solutions done?) and Validation (were solutions effective?)

Reviewed by (PM/Supervisor): _____ **Date:** _____

Approved by (Practice Safety Leader): _____ **Date:** _____

INVENTUM SAFETY OBSERVATION FORM

Revised March 2019

PERSONAL PROTECTIVE EQUIPMENT	Safe	At-Risk	Comments
1. Hearing Protection (e.g., Ear Plugs)			
2. Head Protection (e.g., Hard Hat)			
3. ANSI Rated Eye Protection (e.g., Safety Glasses)			
4. Hand Protection (e.g., Kevlar Gloves)			
5. Foot Protection (e.g., Safety Shoes)			
6. Respiratory Protection			
7. Fall Protection Inspected (e.g., Harness)			
8. ANSI Rated Reflective Vest/High Visibility Clothing			
9. Other (Specify)			
BODY USE AND POSITIONING	**Safe**	**At-Risk**	**Comments**
10. Correct Body Use and Positioning When Lifting/Pushing/Pulling			
11. Pinch Points/Moving Equipment - Hands/Body Clear			
12. Mounts/Dismounts Using 3-Points of Contact			
13. Other (Specify)			

INVENTUM SAFETY OBSERVATION FORM

Revised March 2019

WORK ENVIRONMENT	Safe	At-Risk	Comments
14. Work/Walk Surface Free of Obstructions (e.g., Tripping Hazards)			
15. Housekeeping/Storage			
16. Defined and Secured (e.g., warning devices, barricades, cones, flags)			
17. Suspended Load, Swing Radius & Lift Area is Barricaded			
18. Safety Shutdown Devices			
19. Proper Storage & Labeling /Disposal of Sample & Waste Materials			
20. Cylinders Stored Upright, Secured, & Caps in Place			
21. Manhole/vault Inspected for Hazards			
22. Other (Specify)			

INVENTUM SAFETY OBSERVATION FORM

Revised March 2019

OPERATING PROCEDURES	Safe	At-Risk	Comments
23. Job Planning (HASP reviewed, JSAs, etc.)			
24. Fire Extinguishers Accessible and Inspections Current			
25. Work Permit/Authorization to Work (Hot, Cold, LOTO, Confined Space)			
26. JSA Reviewed & Followed			
27. Hazard Assessment - Hazard Hunt			
28. Interfaces with Other Functions (awareness with other personnel on site)			
29. Operators Looking Behind Prior to Backing Up			
30. Operators Wearing Seat Belts While Operating Equipment			
31. Subsurface Structures Identified			
32. Proper Trench Protective Equipment in Place			
33. Adequate Egress Is Available for Excavation & Trench (within 25 ft. if depth is <4 ft.)			
34. All Materials Set Back at Least 2 Feet From Edge of Trench/Excavation			
35. Other (Specify)			

INVENTUM SAFETY OBSERVATION FORM

Revised March 2019

TOOLS/EQUIPMENT	Safe	At-Risk	Comments
36. Hand Tools (Proper Equipment Selection, Condition, and Use)			
37. Power Tools (Proper Equipment Selection, Condition, and Use)			
38. Equipment, Including Heavy (Proper Equipment Selection, Condition, and Use)			
39. Hoses Inspected			
40. Required Monitoring Equipment Calibrated & Used			
41. Ladders Set up Correctly & Inspected			
42. Right Tools for the Job are Available and in Good Condition - No Fixed Open Blade Knives (FOBKs)			
43. Other (Specify)			
Total #	0	0	

Daily Hazard Review Topic and Sign-In:

Daily Review Topic	Date

Acknowledgment Statement:

As an affected employee of Inventum Engineering, I hereby acknowledge that I have reviewed the contents of this site-specific HSP and the daily safety meeting topic, and that I will use the applicable personal protective equipment (PPE) and follow the procedures specified in the HASP.

Signatures of all onsite Inventum Personnel, including Direct-Hires (Required):

_____ Date: _____

_____ Date: _____

_____ Date: _____

_____ Date: _____

_____ Date: _____

_____ Date: _____

_____ Date: _____

_____ Date: _____

_____ Date: _____

_____ Date: _____



Safety, Environmental Stewardship, Innovative Solutions

OSC Health, Safety & Environmental

Corporate Policies & Procedures

Corporate Headquarters:

140 Lee Street, Suite 200

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2025 Revision 1 – Updated 6/20/25

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OSC Statement of Policy

Ontario Specialty Contracting, Inc. (OSC) is committed to providing a place of employment that is free from recognized safety and environmental hazards. This Policy Statement is the basis for the Company's Health, Safety & Environmental management process and is communicated to all employees, customers, vendors and subcontractors. It is considered equally as important as any other primary business objectives.

The OSC HSE philosophy is simple: while performing our work, our primary concern is the health and welfare of the people involved and the protection of assets and the environment.

NO JOB IS SO IMPORTANT THAT WE CANNOT TAKE THE TIME TO DO IT SAFELY AND WITHOUT CONSEQUENCE TO THE ENVIRONMENT.

The HSE Management System (HSEMS) outlines how we identify hazards and how to eliminate them or provide a means to minimize risk. The HSE management process is intended to demonstrate to OSC management, appropriate regulatory agencies, customers and other interested parties, that equipment and operations associated with the performance of work are capable of being utilized without undue risk to those involved or the environment.

We believe that incidents are caused by conditions and behaviors and, therefore, can be prevented. The safety and health of individuals involved in operations, the protection of assets and the environment is everyone's responsibility. Employees at all levels of the company are accountable and responsible for preventing job related illnesses and injuries as well as equipment and environment losses through the diligent and consistent application of the HSE management process. Employee HSE performance is considered in decisions affecting promotions, salary actions and continued employment.

Paul Mulvey

Paul Mulvey
Corporate Director of HSE

John Yensan

John W. Yensan
President & CEO

1.0 INTRODUCTION

At OSC we believe that our employees are our most valuable resource - which is why safety is so important to us. Safety is the core competency in OSC's success, profitability and continued existence. Our company's primary and constant objective in everything we do is to achieve zero injuries.

The OSC Safety Program is a people-based safety process where all employees are active participants in a fully integrated behavior-based safety system that focuses on what promotes safe work behavior. Simply having only rules to manage safety is not a very effective method for promoting safe work behavior. Rule based programs tend to create a work force of blind rule followers which can be very dangerous when the rules do not apply and following them creates a hazard or a work culture where obeying safety rules is based on convenience. Safety rules alone do not keep workers safe; thinking, involved and responsible employees do. OSC's program is designed to first assure all employees are effectively trained in the current applicable government regulations and industry best safety practices and then to involve all employees at every level for hazard identification, recognition, protection and accountability (developing safe work methods, procedures and hazard controls). All workers are active participants in the safety improvement process through involvement in the following key program elements:

- Safety Task Analysis Card and Safe Work Observations (STAC)
- Activity Hazard Analysis (aka Job Safety Analysis)
- Project Safety Management (Please See Section 2.4 HSE Responsibilities)
- Peer Inspection, Auditing and Training
- Incident Investigation and Reporting
- Daily Morning Safety Briefs
    - ✓ Review of Scheduled Tasks & Protective Measures
    - ✓ Safety Updates, Information Exchange & Worker Coordination
    - ✓ Team Observations from STAC
- Safety Rewards and Recognition
- Employee Performance Review
    - ✓ Self-Assessment
    - ✓ Superintendent Assessment with Safety as a major component

The objective of this program and procedures manual is to provide the minimum requirements to protect the health and safety of OSC employees and subcontracted personnel, OSC facilities/equipment and to prevent releases to the environment. This program manual is

available for all employees to review. The elements of this program include but are not limited to: education and training programs, medical surveillance programs, general construction standard operating procedures, policies, safety task analysis and safe work observations (STAC), documentation and record retention requirements. Site-specific program details, air monitoring, emergency response procedures, site task-specific work procedures, spill prevention plans, and evacuation procedures are developed for each project under separate cover (Site Specific Health and Safety Plans).

1.1 HSE Program

As part of our commitment to provide a safe and healthy workplace that ensures compliance with all applicable regulations and company policy, as well as to promote continuous HSE performance; we have instituted a formal HSE process. An important aspect of the implementation of this process is employee participation where each employee understands the following:

- All employees have the authority to stop work at any time for safety concerns. "If you see it" you are responsible for taking proper action (reporting, corrective action and stopping work).
- Management is committed to preventing incidents through leadership, training, motivation and recognition. The natural response to place blame is replaced with focusing efforts on the solution that eliminates unsafe conditions and promotes safe behaviors. Any undesired incident represents failure in the safety program.
- Each employee is expected to immediately report any unsafe conditions or potential unsafe situations to their Superintendent.
- No employee shall undertake a task until they have been properly trained, mentored and authorized (by supervision) to perform the task.
- If an employee suffers a work-related injury or illness, even a slight one, they shall report it at once (the day it occurs or is realized).
- Each employee is expected to understand and follow all company HSE policies and procedures as well as participate in the improvement process.

For any questions concerning OSC's HSE Program, or any other HSE issues, contact the Site Superintendent, HSE Personnel or the Project Manager.

OSC President & CEO John W. Yensan, (716) 583-4400, jyensan@oscinc.com
OSC Corporate Director HS&E Paul Mulvey, (702) 677-2967, pmulvey@oscinc.com

2.0 HSE OVERVIEW

This program provides guidelines for selected HSE procedures. The goal is to provide procedures primarily related to site-specific work. The omission of other procedures does not imply their lack of importance. Rather, it reflects that the focus here is on site-specific hazards and the proper protective measures for those hazards.

The Corporate HSE Team and Director have full responsibility for the execution of the Company's HSE Program. Should a potential problem arise in planning or execution, each Project Manager involved has the responsibility to see that proper and effective action is taken. Any safety-related matter which cannot be resolved by the Project Manager will be referred to the Corporate HSE Team.

Supervision is responsible for employees assigned to projects and for the protection of all facilities, equipment, tools, etc. that are furnished for the performance of their project.

2.1 OSC Responsibilities

- Identify a Site Health & Safety Officer (SHSO) who will be responsible for any HSE issues on-site.
- Assure that no employee is exposed to conditions that are unsanitary, hazardous, unsafe or dangerous to their health.
- Maintain a process designed to prevent incidents.
- Ensure that all equipment and machinery are safe to operate or identified as unsafe and removed from service and tagged or locked to be inoperable.
- Ensure that only trained and proficient personnel are operating any equipment.
- Provide any equipment, protective clothing and respiratory protection as is necessary to ensure worker safety.
- Provide all required training to ensure that employees are able to complete assigned tasks in a safe, responsible manner.

2.2 Superintendent Responsibilities

- The Superintendent must have a thorough knowledge and understanding of the regulations associated with the work. They must be familiar with the hazards associated with the work and explain this to their crew, as necessary, to ensure HSE performance.

They shall assess the jobsite, define any and all potential HSE related problems and implement corrective actions and/or the necessary precautions.

- The Superintendent is responsible for identifying and providing necessary personal protective equipment (PPE) and assuring that employees are trained in how to use it. After issuing the equipment, the Superintendent must make sure that the workers use it whenever necessary.
- The Superintendent is responsible for barricading the area to isolate it from the non-work area. Barricades should also keep the general public out of the work area as well, assuming the public is typically curious, and a construction/demolition site is considered an attractive nuisance.
- Site maintenance is also the Superintendent's responsibility. Sites that are cluttered or dirty can lead to incidents. *A site that is maintained in a clean and orderly fashion will impress personnel to follow the example in their own work habits.*
- The Superintendent is responsible for assuring that the following safety corrective measures are implemented in a timely manner including, but not limited to: safety audits, incident investigations and project safety committee recommendations.
- The Superintendent is responsible for ensuring that all hazardous chemicals have an SDS on-site. These must be placed in an accessible location on the jobsite. Examples of these chemicals include spray paints, special lubricants for rented machinery, and starting fluids.
- Many jobsites will require some sort of air monitoring or personnel monitoring. The documentation generated during air monitoring could be valuable if there is ever a question about incidental exposure or the causes of an incident. The Superintendent should ensure that all documentation is complete and correct.
- The Superintendent is responsible for the waste removal at each site. When any type of hazardous material or asbestos or demolition debris is taken off-site, a manifest or bill of lading must be completed and signed by the Superintendent. The paperwork is important for both the contract specifications and legal requirements. In most cases, the material is not our property and, therefore, it must be recorded that the material is not in our hands and has been disposed of properly.
- Each Superintendent is required to maintain a project log. It shall include any issues and corrective actions.
- The Superintendent is responsible for staging the first aid kits, making sure that they remain stocked and informing all personnel of their locations.
- The Superintendent is responsible for identifying and supplying required firefighting equipment, checking it and informing all personnel of the locations.

- The Superintendent is responsible for notifying all other contractors on-site of the nature of the work, shift times, hazardous materials, locations of SDS's and any other information they may need to protect their workers.
- The Superintendent is responsible for posting the emergency phone numbers to be used for fire or medical emergencies and for notifying all personnel where they are located.
- In cases where hazardous materials are being handled, the Superintendent is responsible for notifying the local fire and police departments and communicating when access is restricted and other issues that may be encountered in case of emergency.
    - ✓ All issues should be entered in the log by the Superintendent and include the time and persons informed and all other pertinent information. This information is helpful for the purpose of HSE assurance and confirmation of protocols and procedures in the event of an incident or questions that might arise pertaining to the site.
- The Site Superintendent is responsible for posting the required paperwork and signs at the site office.
- The Superintendent is responsible for reviewing the site and developing Fire Prevention Plans and Site Emergency Plans. These plans shall be explained to all site personnel in a manner that each person understands. The plans should be posted so that all employees have access to them.
- The Superintendent has the authority to enforce the HSE regulations and remove anyone from the project, or work site, that does not comply. For any employee that chooses not to comply with company policy, a progressive disciplinary process will be followed depending on the severity of the infraction including, but not limited to:
    - Verbal warning for the first offense;
    - Issuance of a signed and dated written notice for the second offense; and
    - Time off without pay, with the possibility of dismissal, for the third offense.

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2.3 Employee Responsibilities

- Comply with all federal, state, local regulations, OSC Policies & Procedures and Client requirements.
- Follow all instructions from immediate Supervisors.
- Use only OSC approved personal protective clothing, equipment and devices.

- Report all incidents, injuries, illnesses and near misses immediately.
- Responsible and authorized to stop work for safety – which includes the employee's assigned tasks as well as the tasks of others. "*If you see it, you own it.*"

2.4 HSE Responsibilities

HSE personnel are responsible for interpreting applicable federal, state, local regulations, client rules and procedures applicable to the work. They have no authority to waive or alter regulations or permit violations by others. As a minimum, they are responsible for:

- Anticipate the potential hazards of each worksite and develop plans to mitigate or minimize the hazards.
  - ✓ Enlist the participation of employees working on-site.
- Expedite corrective action to remedy unsafe acts and/or unsafe conditions.
- Work with the Site Superintendent to investigate all incidents, injuries, illnesses and near misses immediately.
- Assist in clarifying all applicable work practices, procedures, rules and regulations to employees as needed.
- Ensure that employees understand their accountability relative to HSE issues.
- Enforce all HSE rules and regulations company-wide, as well as those involved in the various projects' scope of work.
- Trending project STAC data and safe work observations for review and analysis to help improve the safety process (hazard recognition and protective methods).
- Development and reporting of project safety performance (leading and lagging indicators) and establishment of new project goals for improvement and the methodology involved to achieve those goals.
- Participation in project safety communication for each project to include field personnel, Site Superintendents, Project Managers and subcontractor's Safety Representatives. The OSC project SHSO will serve as the point of communication.
  - ✓ Hold Safety Communication Meetings to review site safety performance, improvement measures and achievements.
  - ✓ Share safety developments from each project with all sites – including, but not limited to: incidents, improvement measures, best practices, safety data trends, employee awards and recognition.

2.5 Pre-Project Hazard Evaluation

Prior to site mobilization, site supervisors, HSE, and/or management will conduct an evaluation of the site. The review should include any information available concerning the site conditions, known or assumed hazards, potentially hazardous waste issues, etc. Observations will be documented, and the information communicated to the site personnel along with the proper precautions to be used when dealing with these hazards.

A Pre-project Hazard Survey, as well as a review of sampling results, will be performed. A Job Safety Analysis (JSA) shall be developed for all definable tasks of the work. The JSA(s) shall include initial exposure assessment for the specific tasks; the hazards identified for each task; and the proper protective measures including Personal Protective Equipment (PPE), training, equipment, and conditional requirements. Applicable JSA(s) shall be reviewed and acknowledged prior to commencing work by employees and will be updated as conditions change, or improvement measures are recognized and implemented.

2.5.1 Pre-Project Hazard Evaluation Procedure

The following are "high risk" tasks for which OSC has developed standard procedures and JSAs which will be amended according to actual conditions/procedures. The Site Superintendent shall be responsible for reviewing all work tasks and deciding when an amendment is necessary or recommended. The SHSO and/or Corporate HSE Team will be consulted with questions that may arise.

2.5.1.1 High Risk Task Identification

The list of “high risk” tasks includes, but is not limited to:

- Working with any health hazard substances, i.e.: Asbestos, Lead, Mercury, Silica, Vinyl Chloride;
- Working with any hazardous materials or corrosive chemicals that could pose a serious health risk or environmental concern, i.e.: caustic soda, sulfuric acid, hydrazine, PCBs etc.;
- Cutting or Torching;
- Handling contaminated soil and/or water;
- Working in a confined space;
- Demolition of any structure;
- Working on or near water where there is a risk of drowning;

- Work involving other organizations, and/or contractors or subcontractors, that has potential for miscommunication that would lead to unsafe conditions;
- Engineered scaffolding and/or shoring; and
- Hoisting and/or lifting.

NOTE: A JSA is <u>mandatory</u> for hazard identified tasks – not just the high hazard tasks noted above.

2.5.1.2 JSA Preparation

The JSA must be written as a formal document using the form in each project HASP. The JSA must remain on the site until the project is completed and updated as conditions change. It must be kept in the project file for record keeping once the project is finished.

All Superintendents involved in performing the job and the on-site Site Safety Officer (SSO), must be involved in preparing the JSA. Trained and experienced workers shall be included in preparing the JSA.

When an operation involves more than one crew/shift, or another contractor or Owner, then all parties will have input in the development and approval of the JSA.

The Site Superintendent or SHSO will review the JSA with all involved workers before the job starts and at the start of each shift. Employees are expected to raise any concern with the task not adequately addressed in the JSA so it may be properly amended. Each employee assigned to the task must sign and acknowledge the JSA. Subsequent changes to a JSA must be presented to and acknowledged/signed by the crew.

The Corporate HSE Team will be responsible for ensuring that proper training in hazard identification and JSA development is provided to all Superintendents, SHSO's and employees. Training will be provided in the Annual Safety Refresher Classes provided to all OSC field employees.

2.6 Subcontractor Responsibilities

Subcontractors have HSE responsibilities and duties on the jobsite. Failure to follow all federal, state, local regulations, OSC and/or client requirements could be considered a breach of contract. Permission and special instructions related to the HSE issues and security of the job site must be

agreed upon before beginning work in any area on-site. In addition, prior to starting work, all insurance certificates and/or other permits required shall be on file in the Site Field Office.

Each subcontractor shall maintain a program consistent with the project HSE requirements, complying with the following:

- Furnishing approved personal safety equipment for employees such as hard hats, eye protection and safety belts;
- Providing training, instruction and monitoring for personal protective equipment to work in hazardous locations or perform special projects;
- Giving instructions to all employees as to the nature of the work, hazards of the job, use of protective equipment, safety rules and site rules under which they will work;
- Reporting all incidents and injuries immediately, filling out any required reports or records and transporting injured employees;
- Following the jobsite housekeeping rules dealing with proper disposal and storage of debris or materials;
- Fire Prevention: Keeping combustibles and flammable materials protected from fire – including combustible and flammable liquids in approved safety containers, and storage cabinets, and stored in specific areas as assigned with proper firefighting equipment;
- Providing fire extinguishers to protect their own equipment including rentals, trucks, forklifts, materials, buildings, storage and work areas;
- Ensuring that all scaffolds, work platforms or open-sided floors are protected with handrails and toe boards and that all personal fall protection is used for work being performed above six (6) feet where other fall protection controls (hand rails) are not provided;
- Ensuring that any trench, cut or hole over five (5) feet deep will be properly shored, sloped or otherwise protected and that access to and from such areas is provided within 25 feet of where employees are working;
- Ensuring that all trucks, cranes, dozers and other mobile equipment is parked in designated areas and locked or otherwise secured after normal working hours;
- Monitoring and/or ventilating any work areas, and confined or enclosed spaces, for oxygen and/or hazardous gas before employees are allowed to enter – identifying and marking these areas and maintaining proper access, along with instructing employees as to the hazards and proper working procedures in such areas;
- Blocking off, or barricading, any work area that presents a hazard – such as overhead work areas or open holes;

- Providing the proper protection for slag and/or sparks in the area under, or close to, welding, cutting or hot work being performed;
- Properly erecting and providing fire protection for all outside buildings, trailers, tool rooms, fabrication shops or other buildings; and
- Listing and filing an SDS for any hazardous chemical used in the performance of the work and instructing employees in the proper use and/or disposal of said hazardous material.

3.0 MEDICAL SURVEILLANCE PLAN

Medical surveillance is the collection and analysis of personal health data to look for exposures that may be occurring in the workplace. It is required for certain contaminates, such as lead, asbestos, that may be located at hazardous waste sites.

3.1 Administrative Duties

OSC has established a Medical Surveillance Program to monitor workers' health and fitness when they are exposed to excessive noise, respiratory hazards, toxic substances, etc.

The OSC Corporate HSE Team is responsible for developing and maintaining this program. The program shall be updated at least annually or as warranted by change in governing regulations and/or the development of new effective industry recognized best practices as well as other recognized safety improvement measures. All managers and affected employees shall be made aware of program changes as this Corporate HSE Manual is updated.

Program training shall be documented with the OSC Safety Training attendance or declaration form (Please See the Attachments). A copy of the program can be reviewed by employees. Copies are available at the project field offices and the home corporate office located at 140 Lee Street, Suite 200, Buffalo, NY 14210.

3.2 Medical Evaluations

In certain workplace situations (i.e. exposure above action level), medical monitoring is required. Medical examinations may be part of this program. At OSC, examinations are given:

- **Pre-Employment**: Prior to job assignment and as per project requirements and/or as frequent as a physician deems necessary.
- **Reassignment:** Prior to reassignment to an area where medical examinations are required (exposure assessments and controls).

- **Exposure:** As soon as possible for employees becoming ill from exposure to hazardous substances during an emergency or who develop signs or symptoms of overexposure from hazardous substances.
- **Return to Work:** Employees returning to work following a lost time Illness or injury will be examined by a qualified physician who must certify that the employee is able to return to work. A written certification, signed by the physician, must be presented to the Corporate HSE Team prior to returning to work.

Specific hazards and hazardous materials that typically have a medical surveillance requirement include the following (Note: this is not meant as a complete list - other hazardous materials not given may require surveillance as determined by the initial exposure assessment).

Acrylonitrile	Coke Oven Emissions	4, 4' Methylenedianiline (MDA)
Asbestos (General Industry & Construction)	Compressed Air Environments	Methylene Chloride
Benzene	Cotton Dust	Noise & Hearing Conservation
Bloodborne Pathogens	1, 2-Dibromo, 3-Chloropropane	Respiratory Protection
1, 3-Butadiene	Ethylene Oxide	Silica, Crystalline
Cadmium	Formaldehyde	Tuberculosis
13 Carcinogens	HAZWOPER	Vinyl Chloride
Hexavalent Chromium	Lead	

The examining physician plays an important role in OSC's medical monitoring program. Exams are performed under the supervision of a licensed physician, without cost to the employee, without loss of pay and at a reasonable time and place.

- ✓ OSC provides the examining doctor with a work description, including the need to wear any required personal protective equipment under conditions that may be expected at the work site.

- ✓ Following any medical exams, the OSC Corporate HSE Team Medical Monitoring Administrator receives a written opinion from the physician that contains the following:
  - The results of the medical examination and any detected medical conditions that would place the employee at an increased risk from exposure;
  - Any recommended limitations on the employee or upon the use of personal protective equipment;
  - A statement that the employee has been informed by the physician of the results of the medical examination; and/or
  - A statement from the physician to OSC that the employee is fit to perform the duties of the position they have been employed for.

3.3 Substance Abuse Policy and Employee Screening

OSC maintains a drug and alcohol-free workplace. The use, possession, manufacture, sale or distribution of alcohol or illegal drugs is prohibited on OSC or client property. Reporting for work "under the influence" is also prohibited. OSC conducts pre-employment, post-accident, reasonable suspicion and random substance abuse testing (Random DOT Testing for CDL license holders only). All employees, at a minimum, are given breath alcohol and NIDA 10 panel drug screen test as part of the Annual Medical Physical.

Any employee under the influence of intoxicants or controlled substance drugs, other than those that are legally prescribed, is not permitted to work and may be subject to termination. A worker on prescribed medication with side effects that could jeopardize his/her or other's safety, must inform their supervisor for re-assignment. If a supervisor suspects an employee is "under the influence", then the supervisor must immediately stop the employee from working and contact the OSC Corporate HSE Team Director. The Director will then make arrangements for employee testing. If the employee is medically deemed to be "under the influence" once they have undergone testing, this will be grounds for disciplinary action, including termination.

NIDA 10 PANEL TABLE

SYMBOL	TARGET DRUG	CONC.
THC	MARIJUANA	50 ng/ml
COC	COCAINE	300 ng/ml
PCP	PHENCYCLIDINE	25 ng/ml
MOR	OPIATES	2000 ng/ml
MET	METHAMPHETAMINE	1000 ng/ml
MTD	METHADONE	300 ng/ml
AMP	AMPHETAMINE	1000 ng/ml
BAR	BARBITURATES	300 ng/ml
BZO	BENZODIAZEPINES	300 ng/ml
TCA	TRICYCLIC ANTIDEPRESSANTS	30 ng/ml

3.4 Emergency Medical Procedures

During the mobilization phase of any OSC project, Emergency Response Procedures will be developed; and an Emergency Contact Form will be completed and posted in each job trailer to facilitate emergency procedures in the event of an incident.

3.4.1 First-Aid and Medical Treatment

- Employees should all be proficient in First Aid – especially in the treatment of traumatic shock, application of artificial respiration and the control of bleeding.
  - ✓ On every project, there will be at least one employee trained in First Aid and CPR per the American Heart Association and/or American Red Cross programs. This training will be updated as required by the certifying agency.
  - ✓ All OSC HSE personnel assigned to a jobsite are trained in CPR and First Aid.

  PLEASE NOTE: Detailed instruction for first aid treatment and bloodborne pathogens is not included in this document as such information is readily available from other sources, such as the American Red Cross textbook on First Aid Training.

- First aid supplies are furnished based upon the recommendation of OSHA, and they are easily accessible when required.
  - ✓ The First Aid Kits consist of supplies in a weather-proof container containing individually sealed packages.
  - ✓ The quantity and contents of the kit are based on the OSHA recognized items per man, and they should be inventoried by the supervisor before being sent out to each jobsite and at least once weekly on the jobsite to ensure that any used items are replaced.
  - ✓ First Aid Kit inspection is a regular audit item for OSC projects – initial, ongoing and final phase audits and inspections.
  - ✓ Each employee is required to learn to use this equipment so that they can render treatment when needed.
  - ✓ With the exception of minor injuries, the OSC Corporate HSE Team must be contacted if further support is required.

- On ALL OSC projects, the Site Health and Safety Plan will identify the nearest urgent care and emergency facilities and map out the locations, route of travel and phone number so that all employees have access to this information.

- ✓ This information will be at a designated location easily accessible to all site personnel. The Site Superintendent and SHSO will instruct all personnel on the location of the emergency information/routes making certain that everyone has a clear understanding of what is expected during a time when medical care may be required.

3.5 Injury Management

The purpose of this program is to provide the necessary support for employees to return to productive employment as quickly, and as safely, as possible following a work-related injury or illness. Whenever possible, injured employees that, under a medical professional's direction, cannot perform their regular duties, will be provided with alternative work tasks (i.e., light duty) or an amended work schedule. This applies to temporary and full-time OSC employees.

The following procedure is to be followed in cases where an employee has, or may have, been injured on the job or there is significant property damage. In the case of serious employee injury (i.e. significant blood loss, unconsciousness, head trauma), the following steps are to be followed after immediately providing rescue and life-saving procedures:

1. Notify the SHSO and Site Superintendent who will, if necessary, contact emergency medical/rescue service (by dialing 911).
2. The SHSO, or the Site Superintendent, will then call the Corporate HSE Team Director at (702) 677-2967 to provide information regarding the incident.
   - ✓ Depending on the circumstances, the Corporate HSE Team Director will contact either the local Urgent Care, Emergency Care or MEDCO to help make the determination as to the appropriate response (i.e.: additional medical diagnosis, treatment, etc.)
3. In the event that the Corporate HSE Team Director is not available, the SHSO or Site Superintendent will call OSC President, John Yensan, at (716) 583-4400; and he will advise if it is necessary to contact MEDCO at (800) 775-5866; HealthWorks WNY at 716-447-6474 or the local occupational health service that is designated in each project's Site Health & Safety Plan, for medical consultation.
4. Once the SHSO or Site Superintendent has taken the above steps to determine the best course of action, then the Project Manager needs to be notified of the incident.

For incidents involving only property damage and not injury, follow the steps above for a determination as to whether substance abuse testing is necessary. Following injury diagnosis or

treatment, OSC will place, if feasible, an employee on light or alternate duty to accommodate medically prescribed restrictions. Amendment of the work schedule and job rotation will also be prescribed as necessary. This temporary condition may continue as long as the employee is medically restricted and as long as the company is able to accommodate the employee.

3.6 Recordkeeping

Medical, training, background investigation, and personal air monitoring records for OSC employees are maintained in the HSE Office located at the Corporate Headquarters at 140 Lee Street, Suite 200, in Buffalo NY. Access to these records is limited to the OSC Corporate HSE Team Director and the OSC Corporate HSE Team Medical/Certifications Administrator. These records include, but are not limited to:

- The name and date of birth of each employee;
- Any physician's written opinions, recommended limitations and results of examination and tests;
- Any employee medical complaints related to exposure to hazardous substances;
- A copy of the information provided to the examining physician by the employer, with the exception of the standard and its appendices; and
- Any criminal background data collected with the employee's approval.

We have established and maintain, for each employee, an accurate record of exposure monitoring results and any medical consultation and examination, including tests or physician medical opinions, in accordance with OSHA's rule governing access to employee exposure and medical records, 29 CFR 1910.1020.

In order for employees to get a copy of their personal medical and exposure records they (or a designated representative) must submit a written request to the OSC Corporate HSE Team describing the record(s) of interest, work location associated with the information (i.e. project site), and approximate date of the record. Copies of the record(s) will be provided free of charge within 15 days or a reasonable time period.

4.0 TRAINING PROGRAM & FIT FOR DUTY

The OSC Corporate HSE Team is responsible for overall management of the OSC Training Program, its review and updates (minimum annually). OSC requires that employees be trained and educated in the recognition of hazards in the workplace and the proper protective measures that shall be taken against those hazards (proper personal protective equipment to be used, safe

work procedures, engineering and administrative controls). Job competency is discussed at orientation to assure the employee has the proper knowledge and skills to perform his job safely and effectively. In addition, all employees are evaluated by a licensed medical professional prior to commencing work to ensure that they are physically fit to perform the physical requirements of their job. This exam includes a general fit for duty physical, substance abuse testing (NIDA 10 Panel Drug and Alcohol), audio testing, OSHA health history review & respirator clearance, OSHA asbestos health history review (if necessary), chest x-ray, blood lead & zpp testing and a complete blood count. All employees' activities and behaviors shall be monitored by their supervisors to determine if the employee should be removed from the work task and/or site. See previous section 3.3 Substance Abuse Testing.

Upon an individuals' initial employment with OSC, they will receive safety training concerning recognized potential hazards and associated protective measures for their jobs. The training, at a minimum, shall be in compliance with required governing regulation and standards and industry recognized best practices which include federal as well as state licensing requirements for specified tasks (i.e. asbestos, lead abatement with exposure greater than established PEL). Training will be conducted initially at the time of hire, or job transfer, prior to the start of work; and refresher training will be conducted at least annually, or sooner, as warranted by updates, inspection, audit or incident investigation recommendations and/or other improvement measures. All employees and subcontractor employees with less than three (3) months' experience are subject to policies and procedures as established under the Short Service Program that is a part of this manual.

As part of the initial interview process, it is determined whether a potential employee is capable of speaking and/or understanding the English language. This is then re-evaluated during employee orientation to ensure that the employee is able to understand any training that is required as well as any verbal instructions from the SHSO and Site Superintendent.

All training shall be documented, and the records are maintained at the OSC Corporate Headquarters. The list below is a summary of the basic training topics covered for new hires. These same topics are covered again at the beginning of each project and, at a minimum, reviewed annually.

- Overview of OSC's Corporate HASP
  - ✓ Each employee entering a new jobsite is required to go through the entire Site HASP and sign-off stating that the HASP has been reviewed and understood. This is then kept in the project records.

- OSC Medical Surveillance
- OSC Substance Abuse Policy
- OSC Disciplinary Policy
- OSC's STAC Program
- Personal Protective Equipment (PPE) / Respirator Use
- Asbestos, Silica & Lead Awareness
- Employee Responsibility and Authority to Stop Work
- Hazard Communication
- Fall Protection
- Fire Protection
- Electrical Safety
- Ladders
- Ergonomics & Material Handling

This list is not intended as a complete list but an example. Additional topics are included depending on the type of project, scope of work, hazards identified and the specific job duties of the employee being hired or assigned to a specific project.

4.1 Hazard Communication

OSHA Standard 29 CFR 1910.1200 "Hazard Communication" requires that all employees handling or using chemicals which may be hazardous be advised and informed as to the hazard potential associated with those materials. A current, printed copy of the OSC Hazard Communication Program will be located at each jobsite/trailer, and **ALL** employees will be aware of its' location. The Program, at a minimum, contains the following information:

- Definition, purpose, location and availability of Material Safety Data Sheets (MSDS) and Safety Data Sheets (SDS);
- How to read a Material Safety Data Sheet/Safety Data Sheet and Labeling; and
- Training.

4.2 HSE Fit for Duty Program

All OSC employees are to participate in the HSE Fit for Duty Program as required. The purpose of the Program is to ensure that employees are physically fit and trained to perform their work safely and efficiently. Key elements of the Fit for Duty Program require:

- Passing a Fit for Duty Exam performed by a licensed medical professional,
- Passing Substance Abuse Testing (NIDA 10 Panel Drug Test and Alcohol Screening),

- Completion of the OSC Basic Safety Orientation and assessment by a member of the OSC Corporate HSE Team upon hire, or SHSO / Site Supervisor if assigned to a new project,
- Employee understanding of his/her authority and responsibility to stop work for themselves, as well as others, for any recognized unsafe conditions, including physical fatigue where the employee is too tired to perform a task safely, and
- Employees will need to demonstrate their knowledge of procedures and competence prior to commencement of work. Skills will be assessed by either a member of the HSE Team, a Project Manager or a Team Member on-site that has been deemed competent to assess skill level based on their training certifications and years of experience.
    - ✓ Competency will be noted and acknowledged by both the employee and OSC personnel verifying the competency on the OSC New Employee Orientation Form.
    - ✓ All newly hired personnel are required to provide all training certifications previously obtained for the OSC Corporate HSE Team to review and file in the employee's records at the Corporate Office. Any additional training necessary, in order for the employee to qualify for the tasks they are being hired for, will be arranged at that time; and the HSE Team will need to receive those certifications prior to the employee commencing work.
    - ✓ Any additional training employees receive will be performed either by professional services (i.e., HAZWOPER, Asbestos Handler/Supervisor etc.) or an HSE Team member or Competent Person and the certification records will be filed in the employee's records at the Corporate Office, with certifications on-site to meet jobsite requirements.

In addition, the OSC Corporate HSE Team, SHSO and/or Site Supervisor will ensure employees have a thorough knowledge of hazards that may exist in their workplace and the proper protective measures that should be taken in accordance with federal, state and local requirements and industry established safe work practices (consensus standards i.e. NFPA, NEC, ANSI, NIOSH).

4.2.1 Daily Safety Briefings

Prior to starting work, a daily morning Safety Brief shall be conducted at each jobsite to refresh employees in safety subjects as well as to address site-specific conditions; planned activities for the day, associated hazards and protective measures; proper PPE, work procedures and controls (i.e. Lockout, Tagout, Tryout, air gapping, pre-inspection, controlled work zones, personal fall arrest systems, alarms, air monitoring, etc). Safety Briefs shall be conducted daily by either the

Site Safety Officer or Superintendent. Each daily brief shall cover the work tasks for the day and the required protective measures.

4.3 Respiratory Protection

All persons required to wear respirators will receive training to include, at a minimum:

- Past monitoring results;
- Limitations and capabilities of the respirator selected;
- How the respirator works;
- Inspection of the respirator;
- Donning the respirator and checking its fit;
- Actual handling, wearing and fit testing of the respirator in normal and test atmospheres;
- Respirator maintenance and storage; and
- Respirator fit testing procedures.

4.4 Personal Protective Equipment (PPE)

All persons required to use PPE will receive training to include, at a minimum:

- Requirements for body, head and eye protection;
- Requirements for work clothing;
- Heat stress factors relating to operating equipment;
- Limitations and capabilities of equipment;
- How equipment works;
- Inspection of equipment;
- Actual wearing of equipment; and
- Maintenance and storage procedures.

4.5 Confined Space Entry

All persons required to work in confined spaces will receive training to include, at a minimum:

- Entry Permit System,
- Entry and rescue procedures,
- Use of safety equipment,
- Use of respirators,
- Prohibited practices,
- Rescue procedures,
- Work practices as described in the Confined Space Entry Plan, and
- Monitoring program.

Affected personnel will be made aware of hazards associated with confined spaces. Prior to entering a confined space, all employees will review the Confined Space Entry Permit including the specific hazards of each confined space.

4.6 Medical Services

All employees potentially exposed to hazardous materials or substances will be made aware of the following:

- Pre-employment examinations,
- Periodic examinations,
- Post-termination examinations,
- Location of medical records,
- Access to medical records,
- Emergency Services, and
- Monitoring programs.

4.7 Asbestos, Lead and Hazardous Waste Training

Specialized training is required for workers exposed to specific hazardous materials at, or above, Permissible Exposure Limit (PEL).

4.7.1 Asbestos Training

OSC will ensure that all employees potentially exposed to airborne asbestos fibers at or above PEL will receive, at a minimum, the state-specific licensing/accreditation requirements for asbestos handlers and supervisors. These employees will receive eight (8) hours of annual refresher training thereafter. Written materials related to training program will be readily available to affected employees.

4.7.2 Lead Training

Specialized training is also required for workers and supervisors who may be exposed to lead. OSC will ensure that all employees potentially exposed to lead will receive hazard awareness training prior to any potential exposure. These employees will then receive refresher training as needed.

4.7.3 Hazardous Waste

Training is required for workers and supervisors who may come in contact with hazardous waste. OSC will ensure that all employees potentially exposed to hazardous waste, will receive a

minimum of 40 hours of initial training (HAZWOPER) prior to any potential exposure. Supervisors will receive an additional 8 hours of initial training. All employees working with hazardous waste will receive annual refresher training as required by 1910.120 but not less than an equivalent 8-hours. Specific HAZWOPER training by job function is as described below.

4.7.3.1 First Responder Awareness Level

Employee shall have sufficient training or sufficient experience to have:

- ✓ An understanding of what hazardous substances are and the risks associated with them in an incident.
- ✓ An understanding of the potential outcomes associated with an emergency created when hazardous substances are present.
- ✓ The ability to recognize the presence of hazardous substances in an emergency.
- ✓ An understanding of the role of the first responder awareness individual.

4.7.3.2 First Responder Operations Level

Employee shall have received at least 8 hours of training or have had sufficient experience to have:

- ✓ Knowledge of the basic hazard and risk assessment techniques.
- ✓ Knowledge of how to select and use proper personal protective equipment (PPE) provided to the first responder operational level.
- ✓ An understanding of the basic hazardous materials terms.
- ✓ Knowledge of how to perform basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available with their unit.
- ✓ Knowledge of how to implement basic decontamination procedures.
- ✓ An understanding of the relevant standard operating procedures and termination procedures.

4.7.3.3 Hazardous Materials Technician

Employee shall have received at least 24 hours of training equal to the first responder operations level and, in addition:

- ✓ Know how to implement OSC's Emergency Response Plan.
- ✓ Know the classification of known and unknown materials via field instruments and equipment.
- ✓ Have the ability to function within an assigned role.

- ✓ Know how to select and use proper specialized chemical Personal Protective Equipment (PPE).
- ✓ Understand hazard and risk assessment techniques.
- ✓ Have the ability to perform advance control, containment and/or confinement operations.
- ✓ Understand and implement decontamination procedures.
- ✓ Understand basic chemical and toxicological terminology and behavior.

Employees who are trained in accordance with the plan shall receive an annual refresher on, or before, the initial training date of expiration. A record of methods used is kept on-site for projects the employee is currently working on and also in the employee's training records located in OSC's Corporate Offices in Buffalo, NY.

4.8 Site-Specific Training

Prior to the start of a project, a Pre-project Meeting will be conducted. Employees will be made aware of the following information, at a minimum, regarding know or potential hazards identified at the site. This training is documented, and the training documents are stored on-site along with the Site-Specific HASP, employee training records, SDS and any other information pertinent to the jobsite. Training includes, but may not be limited to:

- Results of the Demolition Engineering Survey,
- Results of asbestos, lead and/or other hazardous materials requiring a formal survey,
- Results of the Supervisors site inspection,
- Nature of the work on-site and anticipated hazards,
- Work-site layout, and
- Special rules and requirements pertaining to the specific jobsite.

5.0 ENVIRONMENTAL MONITORING PLAN

Personal, work area and perimeter monitoring strategies shall be devised to identify what PPE, engineering, and administrative controls are required for a specific project. Monitoring will be conducted and documented by HSE personnel to assure that appropriate PPE, engineering, and administrative controls are in place to protect the workers, the general public, and the environment. Monitoring will be conducted based on the known or potential chemical and physical hazards on-site. Monitoring may include asbestos monitoring, lead surveillance monitoring, and monitoring for explosive gases. The type and frequency of monitoring will be

determined on a case-by-case basis. Task-based monitoring will be detailed in the Job Safety Analysis (JSA).

The Project Manager and HSE personnel will ensure appropriate monitoring equipment is available prior to commencing work at the site. The instruments will be operated only by competent personnel trained in the care, calibration, operation, and limitations of the equipment. All instruments will be inspected regularly and calibrated per manufacturer's specifications and will then be field calibrated to determine background concentrations prior to use.

Sampling will be performed with said samples analyzed using published methodologies that have been validated by OSHA or NIOSH. Action level contaminant concentrations are based on 50 percent of the OSHA PEL or ACGIH TLV for each contaminant. If air samples indicate that personal exposures are greater than the action levels, then personal protection, engineering and administrative controls will be reviewed according to the procedures outlined below.

5.1 Air Monitoring Procedures

- ✓ Check and record calibration before, and after, use each day. Ensure that all instruments are calibrated and operated in accordance with the manufacturer's specifications, and confirm that equipment manuals for all monitoring instruments are present on-site during all operations.
- ✓ Note weather conditions.
- ✓ Collect and record a background reading on each air monitoring instrument to be used at day's start in an area free of site-generated airborne contaminants. This area will be located upwind of the work area.
- ✓ Determine and record ambient levels within the contaminated work areas prior to the initiation of operations.
- ✓ Report ambient conditions periodically.
- ✓ Check and record breathing zone levels during remediation and/or abatement activities.
- ✓ Check and record levels at the perimeter of the work zone if elevated concentrations are detected in the workers' breathing zone.
- ✓ Check and record levels following completion of any intrusive work by monitoring upwind and downwind locations at the edge of the work zone.
- ✓ Check and record airborne particulate levels periodically by monitoring upwind and downwind locations at the edge of the work zone.

- ✓ Check and record daily (pre/post work) outside exclusion zone ambient air readings by monitoring upwind and downwind locations at the edge of the work zone.

Air Monitoring Reports/Logs will be made available to any regulatory personnel and/or Engineer upon request. The Air Monitoring Report/Log will indicate the locations, time, type and value of each reading and/or sampling event.

PROGRAM AND PROCEDURE ATTACHMENTS

STANDARD PROGRAM DEFINITIONS

DEFINITIONS

1. **Accepted Engineering Practices** - Those requirements, which are compatible with standards of practice required by a registered professional engineer
2. **Aluminum Hydraulic Shoring** - Is a pre-engineered shoring system comprised aluminum hydraulic cylinders (cross braces) used in conjunction with vertical rails (uprights) or horizontal rails (whalers). The system is designed specifically to support the sidewalls of an excavation and prevent cave-ins
3. **Anchorage** - A secure point of attachment for lifelines, lanyards or deceleration devices
4. **ANSI** - American National Standards Institute
5. **Approved** - Sanctioned, endorsed, accredited, certified, or accepted as satisfactory by a duly constituted and nationally recognized authority or agency including OSC, its clients or client representatives as specified
6. **Authorized Person** - A person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the jobsite.
7. **Attendant** – Authorized and trained confined space employee assigned by the confined space supervisor who is responsible to stay top side, at confined space entry point and monitor entrant status as well as confined space
8. **Bell-Bottom Pier Hole** - A type of shaft or footing excavation, the bottom is made larger than the cross section above to form a belled shape
9. **Benching** - A method of protecting employees from cave-ins by excavating the sides to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between the levels
10. **Body belt (Safety Belt)** – A strap with means both for securing it above the waist and for attaching it to a lanyard, lifeline, or deceleration device
11. **Body Harness** - Straps which may be secured above the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system
12. **Buckle** - Any device for holding the body belt or body harness closed around the employee
13. **Cave-In** - The separation of a mass of soil or rock material from the side of an excavation or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation by falling or sliding in a quantity that may be sufficient to entrap, bury, or injure and immobilize a person

14. **Confined Space** - Is any space having the following characteristics:
    - ✓ The space is large enough that it can be bodily entered;
    - ✓ The space has restricted means of entry and exit; and
    - ✓ The space is not designed for continuous human occupancy;
    - ✓ NOTE – SEE ALSO DEFINITION FOR PERMIT REQUIRED CONFINED SPACE.
15. **Entrant** – Employee who is authorized and trained to enter and perform designated confined space work
16. **Entry Supervisor** – Competent authorized person responsible for supervision of confined space work
17. **Competent Person** – Someone who is capable of identifying existing and predictable hazards in the surroundings or working conditions, which are unsanitary, hazardous, or dangerous to employees. A competent person has the ability and authority to take prompt corrective measures to eliminate the previously mentioned conditions
18. **Connector** - A device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabiner, or it may be an integral component of part of the system (such as a buckle or dee-ring sewn into a body belt or body harness, or a snap-hook spliced or sewn to a lanyard
19. **Controlled Access Zone (CAZ)** - An area in which certain work (e.g., overhand bricklaying, decontaminating, abating, and other task specific work) may take place without the use of guardrail systems, personal fall arrest systems, or safety net systems and access to the zone is controlled for safety
20. **Cross Braces** - The horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or Wales
21. **Dangerous Equipment** - Equipment (such as pickling or galvanizing tanks, degreasing units, machinery, electrical equipment, and other units) which, as a result of form or function, may be hazardous if an employee falls onto.
22. **Deceleration Device** - Any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., which serves to dissipate energy from a fall from the wearer
23. **Deceleration Distance** - The additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body belt or body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop
24. **"Defect"** - Any characteristic or condition which tends to weaken or reduce the strength of the tool, object, or structure of which it is a part

25. **"Designated Person"** - "Authorized Person" as defined in use
26. **Employee** - A worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies
27. **Equivalent** - Alternative designs, materials, or methods to protect against a hazard which the employer can demonstrate and will provide an equal or greater degree of safety for employees than the methods, materials or designs specified in the standard
28. **Faces or Sides** - The vertical or inclined earth surfaces formed as a result of the excavation
29. **Failure** - Is the breakage, displacement, or permanent deformation of a structural member or connection that would reduce its structural integrity and its support and protective capabilities
30. **Fire Resistance** - So resistant to fire that, for specified time and under conditions of a standard heat intensity, it will not fail structurally and will not permit the side away from the fire to become hotter than a specified temperature. For purposes of this part, fire resistance shall be determined by the Standard Methods of Fire Tests of Building Construction and Materials, NFPA (National Fire Protection Association) 251-1969
31. **Flammable** - Capable of being easily ignited, burning intensely, or having a rapid rate of flame spread
32. **Flammable Liquid** - Any liquid having a vapor pressure not exceeding 40 pounds per square inch (absolute) at 100 ºF (37.8 ºC) and having a flashpoint at or below 199.4 ºF (93 ºC). Flammable liquids are divided into four categories as follows:
    - ✓ Category 1 shall include liquids having flashpoints below 73.4 ºF (23 ºC) and having a boiling point at or below 95 ºF (35 ºC).
    - ✓ Category 2 shall include liquids having flashpoints below 73.4 ºF (23 ºC) and having a boiling point above 95 ºF (35 ºC).
    - ✓ Category 3 shall include liquids having flashpoints at or above 73.4 ºF (23 ºC) and at or below 140 ºF (60 ºC).
    - ✓ Category 4 shall include liquids having flashpoints above 140 ºF (60 ºC) and at or below 199.4 ºF (93 ºC).
33. **Flash Point** - The temperature at which it gives off vapor sufficient to form an ignitable mixture with the air near the surface of the liquid or within the vessel used as determined by appropriate test procedure and apparatus as specified below
34. **Free Fall** – The act of falling before a personal fall arrest system begins to apply force to arrest the fall

35. **Free Fall Distance** – Means the vertical displacement of the fall arrest attachment point on the employee's body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance and lifeline/lanyard elongation but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur
36. **Free Rigging** – Unsecured rigging, not positive attached with locking connections
37. **Guardrail System** - A barrier erected to prevent employees from falling
38. **Hazardous Atmosphere** - Is an atmosphere that may be harmful, cause death, illness, or injury by being explosive, poisonous, flammable, corrosive, oxidizing, irritating, or toxic.
39. **Hole** – In reference to fall protection means a gap or void 2 inches or more in its leas dimension in a floor, roof, or other walking working surface
40. **Infeasible** - Means that it is impossible to perform
41. **Kick Out** - Is the accidental release or failure of a cross brace.
42. **Lockout-tagout (LOTO) or Lock and Tag** - Is a safety procedure which is used in industry and research settings to ensure that dangerous machines are properly shut off and not started up again prior to the completion of maintenance or servicing work. It requires that hazardous power sources be "isolated and rendered inoperative" before any repair procedure is started. "Lock and tag" works in conjunction with a lock usually locking the device or the power source with the hasp, and placing it in such a position that no hazardous power sources can be turned on. The procedure requires that a tag be affixed to the locked device indicating that it should not be turned on
43. **Leading Edge** - The edge of a floor, roof, or formwork for a floor or other walking/working surface (such as the deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed. A leading edge is considered to be an "unprotected side and edge" during periods when it is not actively and continuously under construction
44. **Lifeline** - A component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components
45. **Liquefied Petroleum Gas** - Any material which is composed predominantly of any of the following hydrocarbons, or mixtures of them, such as propane, propylene, butane (normal butane or iso-butane), and butylenes
46. **Low-Slope Roof** - A roof having a slope less than or equal to 4 in 12 (vertical to horizontal)

47. **Material Safety Data Sheet (MSDS) or Safety Data Sheet (SDS)** - A Material Safety Data Sheet or Safety Data Sheet is a document from the material manufacturer that provides specific identification information, ingredients and hazards, physical data, fire and explosion information, reactivity data, health hazard information, spill risk and disposal procedures, special protection information, and special precautions
48. **National Institute of Occupational Safety and Health (NIOSH)** - Institute which develops safety standards and specifications which the Occupational Safety and Health Act (OSHA) frequently reference
49. **Opening** - A gap or void 30 inches (76 cm) or more high and 18 inches (48 cm) or more wide, in a wall or partition, through which employees can fall to a lower level
50. **Overhand Bricklaying and Related Work** - The process of laying bricks and masonry units such that the surface of the wall to be jointed is on the opposite side of the wall from the mason, requiring the mason to lean over the wall to complete the work. Related work includes mason tending and electrical installation incorporated into the overhand bricklaying process
51. **Permit Required Confined Space** – A confined space as previously defined that also may have a potential life threatening hazard;
    - ✓ The space contains, or has the potential to contain, a hazardous atmosphere, defined as oxygen below 19.5% or above 23.5%, combustible vapors above 10% LEL, or high toxic concentrations which may cause death, incapacitation, or an impaired ability to self-rescue;
    - ✓ The space contains a material that may engulf an entrant;
    - ✓ The space has an internal configuration that may trap or asphyxiate entrants; and/or
    - ✓ The space contains any other serious health and life threatening safety hazard.
52. **Protective System** - A method of protecting employees from hazards as specified such as cave-ins, materials that could roll or fall into the excavation or excavation face, collapse of adjacent structures. They include support systems, sloping and benching systems, shield systems, and other systems, which provide necessary protection
53. **Personal Fall Arrest System (PFAS)** - A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, full body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these
54. **Personal fall Restraint System (PFRS)** - A system used to prevent an employee from fall where there is a free fall. It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these
55. **Portable Tank** - A closed container having a liquid capacity more than 60 U.S. gallons, and not intended for fixed installation

56. **Positioning Device System** - A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning
57. **Qualified Person** – Person by means of recognized specialized education (license, degree, certification – i.e. "Professional Engineer, Licensed Electrician"), training and experience which demonstrates expertise for a specific field
58. **Ramp** - An inclined walking or working surface used to gain access to one point from another and is constructed from earth or structural materials like wood or steel.
59. **Registered Professional Engineer** - A professional engineer registered in the state where the work is to be performed
60. **Rope Grab** - A deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking, or both
61. **Rigging** – Equipment (slings, hooks, shackles, chains, wire rope, pins, spreader bars, hoisting nets and bags, etc.) used to secure items for hoisting and lifting equipment (crane, forklift, earth moving equipment slings)
62. **Safety Can** - An approved closed container, of not more than 5 gallons capacity, having a flash-arresting screen, spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure
63. **Safety Committee** - Committees composed of the field employees,, superintendents and field safety representatives (Includes Subcontractor as well as OSC representatives). The purpose of the safety committee is to provide an open forum where safety issues and concerns can be openly addressed; recent incidents, near misses, corrective actions as well as opportunities for site and program improvement
64. **Safety-Monitoring System** – A safety system in which a competent person is responsible for recognizing and warning employees of fall hazards
65. **Self-Retracting Lifeline/Lanyard** - A deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which, after onset of a fall, automatically locks the drum and arrests the fall
66. **Sheeting** - When used in reference to excavation protective systems, it is the member of a shoring system that retains the earth in position and is supported by other members of the shoring system
67. **Shield (Trench Box, Trench Shield)** - Is a structure that is able to withstand the forces of a cave-in. Shields can be permanent structures that can be designed to be portable and moved along as the work progresses, pre-manufactured, or job-built in accordance with 1926.652 (c)(3)

68. **Shoring (Shoring System)** - Is a structure such as a metal hydraulic, mechanical, or timber shoring system that supports the sides of an excavation and is designed to prevent cave-ins
69. **Sloping (Sloping System)** - Excavation to form sides of an excavation that are inclined away from the excavation. The angle of incline required to prevent a cave-in varies with differences in factors such as the soil type, environmental conditions of exposure, and application of surcharge loads
70. **Snap-hook** - Means a connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snap-hooks are generally one of two types
71. **Stable Rock** - Is a solid mineral material that can be excavated with vertical sides and will remain intact while exposed
72. **Structural Ramp** - Is a ramp made of steel or wood and usually used for vehicle access. Soil or rock ramps are not considered structural
73. **Support System** - Is a structure such as underpinning, bracing or shoring which provides support to an adjacent structure, underground installation, or the sides of an excavation
74. **Tabulated Data** - Are tables and charts approved by a registered professional engineer and used to design and construct a protective system
75. **Trenches** - Are a narrow excavation, in relation to length, made below the surface of the ground. Generally, the depth is greater than the width, but the width of a trench measured at the bottom is not greater than 15 feet. If forms or other structures are installed or constructed in an excavation and reduce the dimension from the structure to the side to 15 feet or less the excavation is considered a trench
76. **Uprights** - Are vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not come in contact with each other. Uprights in contact with each other are sheeting
77. **Vapor Pressure** - Means the pressure, measured in pounds per square inch (absolute), exerted by a volatile liquid as determined by the "Standard Method of Test for Vapor Pressure of Petroleum Products (Reid Method)
78. **Wales** - Are horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the shoring system or earth

ASBESTOS PROGRAM

PURPOSE

To assure all asbestos work is completed wthout injury or adverse impact to the environment.

PERSONNEL RESPONSIBILITIES

Corporate Director – Health, Safety & Environment

Responsible for assuring this program is reviewed and updated as necessary (product changes and updates, regulatory updates, program performance improvements). The program shall be as a minimum reviewed and updated annually.

Managers and Supervisors

Responsible for assuring their projects/operations and employees are in compliance with the requirements of this program (training, application, practice and procedures).

Employees

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor).

Subcontractors

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor).

- NOTE – All employees have the authority and responsibility to stop work for safety concerns. “If you see it, you own it”.

DEFINITIONS

1. **Abatement** – Procedures to control fiber release from asbestos containing building material. This includes encapsulation, enclosure, and removal.
2. **Air Monitoring** – The process of measuring the fiber content of a specific column of air in a stated period of time.
3. **Airlock** – A system for entering or exiting, without permitting air movement, the decontamination unit, typically consisting of two curtained doorways, at least 3 feet apart.
4. **Amended Water** – Water to which a surfactant has been added. The surfactant shall be a 50/50 mixture of polyethylene ether and polyethylene ester, or equivalent, mixed in a proportion of 1 fluid ounce to 5 gallons of ater or a specified by the manufacturer.

5. **Asbestos Control Area** – A temporary, fabricated physical barrier that seperates the asbestos removal area from the non-work area, designed to maintain a negative air pressure within the fabricated structure with respect to the outside area.
6. **Authorized Visitor** – The building owner or a representative of any regulatory or other agency having jurisdiction over the project.
7. **Building Owner** – The actual owner or his authorized representative.
8. **Clean Room** – An uncontaminated area, which is part of the worker decontamination enclosure system, with provisions for storage of workers' street clothes and protective equipment.
9. **Curtained Doorway** – A device to allow entering and exiting from one room to another while permitting minimal air movement between the rooms. This is typically constructed by placing two overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway and then securing the vertical edge of one sheet along one side of the doorway and the other on the opposite side of the doorway. Two curtained doorways spaced a minimum of three (3) feet apart from an airlock.
10. **Decontamination Enclosure System** – A series of connected rooms, with airlocks between any two adjacent rooms, for the decontamination of workers, material, or equipment.
11. **Encapsulant (Sealant)** – Liquid material which can be applied to asbestos-containing materials and which controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging Encapsulant) or by penetrating into the material and binding its components together (penetrating Encapsulant).
12. **Enclosure** – All procedures necessary to complete the sealing of asbestos containing materials behind fabricated, airtight, impermeable, or permanent barriers.
13. **Equipment Decontamination Enclosure System** – A decontamination enclosure system for materials and equipment, typically consisting of a designated section of the work area, a washroom, a holding area, and an uncontaminated area.
14. **Equipment Room** – A contaminated room that is part of the worker decontamination enclosure system that provides for storage of contaminated clothing and equipment.
15. **Fixed Object** – A unit of equipment or furniture which cannot be removed from the work area.
16. **HEPA Filter** – A High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in length.
17. **HEPA Vacuum Equipment** – A High Efficiency Particulate Air (HEPA) filtered vacuum cleaner with a filter capable of traping and retaining 99.97% of asbestos fibers greater than 0.3 microns in length.

18. **Holding Area** – A room between the washroom and the uncontaminated area in the equipment decontamination enclosure system, seperated from other rooms by an airlock.
19. **Moveable Object** – A unit of equipment or furniture which can be removed from the work area.
20. **Negative Air Pressure Equipment** – A local exhaust system capable of maintaining constant low velocity airflow in through the decontamination enclosure system and out of the work area. Air exchange should be at a rate of 4 complete air changes per hour.
21. **Personal Decontamination Enclosure System** – A decontamination enclosure system for workers and equipment, typically consisting of a designated section of the work area, an equipment room, a shower room, and an uncontaminated clean room.
22. **Phase Contrast Microscopy (PCM)** – An analytical method of determining concentrations of asbestos fibers in a stated period of time.
23. **Removal** – All herein specified procedures necessary to strip all applied asbestos containing materials from the designated areas and to dispose of these materials at an approved site.
24. **Shower Room** – A room between the clean room and the equipment room in the worker decontamination enclosure systems, with hot and cold running water, that is suitably arranged for complete showering during contamination. The shower room has airlocks at either end seperating the clean room from the contaminated or work area.
25. **Surfactant** – A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation.
26. **Transmission Electron Microscopy (TEM)** – An advanced method for measuring airborne asbestos or determining asbestos concentrations in non-friable, organically bound material.
27. **Washroom** – A room between the work area and the holding area in the equipment decontamination enclosure system. An airlock seperates the washroom.
28. **Wet Cleaning** – The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops or other cleaning tools, which have been dampened with water, and afterward disposing of these cleaning tools as asbestos contaminated waste.
29. **Worker Decontamination Enclosure System** – A decontamination enclosure system for workers typically consisting of a clean room, a shower room, and an equipment room.

WARNINGS

OSC is aware that exposure to asbestos fibers, without proper protection measures, has been determined to significantly increase the possibility of contracting asbestos related disease: lung cancer, certain gastrointestinal cancers, mesothelioma, and asbestosis. Care must be taken to avoid causing the release of asbestos fibers into the atmosphere so that they are not inhaled or ingested. The OSHA regulation 29 CFR 1926.1101 has set standards for permissible exposure to airborne concentrations of asbestos fibers, methods of compliance, personal protective equipment and other measures that must be taken when working with or in proximity to asbestos in the U.S., its territories, possessions, and remote operating locations. OSC shall reduce and maintain exposures at lower, reasonably achievable levels and in all cases shall comply with applicable federal, state, and local standards or request variances from such standards.

EMPLOYEE PHYSICALS

OSC shall provide, for all employees, at no charge to the worker, a physical examination by a qualified physician prior to initiation of work. Physicals shall comply with applicable federal, state, and local regulations, assure the qualifications of physicians to be used; or other aspects of physical examination for asbestos workers. The results of the physicals shall be maintained by the Director of HS&E. Fit for duty statements may be submitted to the owner's representative or their designated representative for their files, if requested.

Only a licensed physician who is familiar with asbestos disease issues and who has been provided with copies of the applicable medical surveillance sections of federal, state, and local asbestos regulations shall make the final determination as to appropriate diagnostic measures, testing frequencies, and other matters in each individual case and may make the determination that an employee shall not be allowed to perform asbestos work because of smoking habits, existing impairment, etc.

HEALTH HAZARD TRAINING

The purpsoe of this training is to inform all employees about the hazards of asbestos in the work place. How harmful it can be, how to eliminate the hazards, and how to minimize the risk of exposure to it. All employees as a minimum shall have asbestos awareness training prior to start of work. Employees who have potential to be exposed to air born concentrations of asbestos at levels equal or above the OSHA established PEL shall as a minimum have training as outlined in the Environmental Protection Agencies. OSC shall use only personnel who are trained in asbestos removal in accordance with generally accepted industrial hygiene practice and applicable regulations.

OSC shall hold a meeting at job sites after all the fit for duty statements have been provided to the owner's representative and all the employees have been moved to the job site.

Attendance at the meetings shall be mandatory for all OSC employees and anyone designated by the owner's representatve. Attendance shall be documented and a copy provided to the owners representative. During this meeting, OSC shall provide, at a minimum, training in the following areas:

- ✓ Asbestos Abatement Worker Protection;
- ✓ Proper use, wear, fitting, and care of half face piece and full face piece respirators and supplied air respirator equipment;
- ✓ Respiratory fit testing copy sheet shall be signed;
- ✓ The particular details of the present job site's air lock doors' set-up and all procedures to be followed for entry and exit to and from the work area, emphasizing the importance of the warning signs, plastic barriers, and air locks;
- ✓ Project established emergency and fire exits from the work area with emphasis that emergency procedures shall have priority over decontamination procedures; and
- ✓ Where to find the emergency telephone numbers for the site and the map to the hospital.

PERSONAL/ENVIRONMENTAL AIR SAMPLING

- ✓ Laboratory Qaulifications - All analytical laboratory analysis for asbestos conducted for this project shall be done by a laboratory with an established and ongoing quality assurance program which includes, at a minimum, participation in the Proficiency Analytical Testing (PAT) program for air samples analyses and in the National Voluntary Laboratory Accreditation Program (NVLAP). Such QA program shall indicate that the laboratory is proficient in the analyses it conducts, as gauged by applicable standards of the AIHA, EPA, OSHA, or other generally accepted consensus standards or regulatory requirements.
- ✓ Air Monitoring Personnel - As necessary, a certified asbestos air sampling firm will be retained by OSC for environmental and personal air monitoring and they shall employ a competent technician to conduct all air monitoring for airborne asbestos and dusts in and around the project work area.
- ✓ Personnel Monitoring Strategies have been devised to ensure that the identification of areas for which PPE, engineering, and administrative controls are required. Monitoring and documentation will be conducted by the SHSO to confirm that the levels of PPE, engineering, and administrative controls are adequate to protect the workers. Monitoring will be conducted based on the known or suspect chemical and physical hazards on-site.

- ✓ Monitoring may include asbestos monitoring, lead surveillance monitoring, and monitoring for explosive gases. The type and frequency of monitoring will be determined on a case by case basis.
- ✓ The Project Manager and SHSO will ensure that an adequate supply of the appropriate monitoring equipment is available prior to commencing work at the site. The instruments will be operated only by persons with appropriate training in the care, calibration, operation, and litations of the equipment. All instruments will be inspected regularly and field calibrated.
- ✓ Sampling will be performed and samples will be analyzed using published methodologies that have been validated by OSHA or NIOSH.
- ✓ Action level contaminant concentrations are based on 50 percent of the OSHA PEL or ACGIH TLV for each contaminant. If air samples indicate that personal exposures are greater than the action levels, then personal protection, engineering, and administrative controls will be reviewed according to the procedures outlined below.

AIR MONITORING PROCEDURE

Air monitoring will be conducted in accordance with the following subsections by the SHSO or by a designated technician as follows:

- ✓ Check and record calibration before amd after use each day. All instruments will be calibrated and operated in accordance with manufacturer's specifications. Equipment manuals for all monitoring instruments with be present on-site during all operations.
- ✓ Check and record breathing zone levels during remediation and/or abatement activities.
- ✓ Sample the breathing zone of 25% of the work force on a dailty basis until the completion of the project. Samples will be sent to the laboratory as soon as feasible. Results shall be made available to the employees within 24 hours of receipt.
- ✓ Air monitoring reports/logs will be made available to involved regulatory personnel and/or an engineer upon request. The air monitoring report/log will indicate the location, time, type, and value of each reading and/or sampling event.

SECURITY

OSC shall provide for adequate security to ensure that no unauthorized persons enter the contaminated area. Walls and locked doors are adequate security.

NOTIFICATIONS

OSC shall notify the appropriate state agency and the EPA at least ten (10) working days prior to the commencement for the abatement activities.

WORKER PROTECTION

OSC will ensure that its employees are adequately protected in accordance with generally accepted industrial hygiene practice and federal, state, and local regulations. OSC shall ensure that asbestos contamination is completely confined to the work area using a combination of approved work area enclosures (including glove bags), work practices, wetting/sealing agents, and HEPA-filtered ventilation.

At a minimum, all personnel within an asbestos enclosure shall wear polypropylene or similar disposable clothing, hard hats, gloves and half face P-100 filters. In addition, OSC shall provide/set up proper employee decontamination areas and change facilities at the job site. Such facilities shall be self-contained and designed to avoid contamination of the area or embarrassment to bystanders.

Any time that employees are exposed to fall hazards or leading edge hazards, the SHSO will install protection or provide fall protection to prevent any personnel from fallng suring the course of project. The SHSO will attempt to limit these exposures with proper project planning. If at any time employees can not be kept from fall hazards or leading edges, employees will be issued and will use proper fall protection. Fall protection is required when employees work four feet or more above the next lowest level. All personnel will utilize fall protection whenever on a straight ladder.

MATERIALS AT ASBESTOS SITE

- ✓ **Materials** - All materials will be in the original packages, containers, bundles, etc., bearing the name of the manufacturer and the brand name.
- ✓ **Storage** - All materials subject to damage will be stored off the ground (floor), away from wet or damp surfaces, and under cover
- ✓ **Damage** - Damaged or deteriorating materials shall not be used and these shall be removed from the premises and properly disposed.
- ✓ **Plastic** - Six (6) and four (4) ml polyethylene sheeting and six (6) ml bags shall be used.
- ✓ **Amended Water** - Amended water that meets the following mixture requirements shall be used. At least one ounce wetting agent in every five (5) gallons of water with the wetting agent consisting of equal amounts of polyethylene ester and polyethylene ether.
- ✓ **Surface Encapsulant** - OSC shall use surface encapsulants that meet applicable EPA standards.
- ✓ **Tape** - OSC shall use tape capable of sealing joints of adjacent sheets of plastic, and also for attachment of plastic sheet to finished or unfinished surfaces or dissimilar materials. This should be capable of adhering under both dry and wet conditions, including use of amended water.

- ✓ **Spray Adhesive** - OSC shall use spray adhesive capable of adhering the plastic sheeting to finished or unfinished surfaces of dissimilar materials and also under both dry and wet conditions.
- ✓ **Impermeable Containers** - Impermeable containers shall be suitable to receive and hold any asbestos containing or contaminated materials until disposal at an acceptable disposal site. The containers shall be air tight and not penetrable by water. OSC shall label the containers in accordance with all applicable federal, state, and local regulations.
- ✓ **Warning Signs and Labels** - OSC shall provide warning signs and labels as specified in type and location.
- ✓ **Vacuum** - OSC shall use only HEPA type vacuum cleaners and vacuum devices.
- ✓ **Tools** - OSC shall provide tools for asbestos removal and encapsulation procedures. These tools shall be suitable for use inside the confines of the asbestos contained environment and be able to be decontaminated at the end of the job. Tools used inside the work area to clean or pick up waste material from plastic shall be made of rubber so as not to tear the plastic.
- ✓ **Negative Air Pressure Equipment** - OSC shall provide HEPA filtration systems equipped with filtration equipment in compliance with ANSI Z9.2-79, local exhaust ventilation. The equipment shall be configured as per recommendation of Appendix J, EPA 560/ 5-85-024.
- ✓ **Water Filtration Equipment** - OSC shall provide final filtration for wastewater. Final filter grade shall be five-(5) micron.

SIGNS

OSC shall provide and post a 20” x 14” manufactured warning signs at each entrance to the work area.

- ✓ **DANGER**
- ✓ **CONTAINS ASBESTOS FIBERS**
- ✓ **AVOID CREATING DUST CANCER AND LUNG DISEASE HAZARD**
- ✓ **BREATHING AIRBORNE ASBESTOS, TREMOLITE, ANTHOPHYLLITE,**
- ✓ **OR ACTINOLITE FIBERS IS HAZARDOUS TO YOUR HEALTH**

OSC is responsible for ensuring compliance with all regulations noted, and posting warning signs.

Caution labels shall be provided and affixed to all bags and containers filled with asbestos waste material.

Disposal containers shall be labeled with four labels with text as follows

First Label:

- ✓ **CAUTION**
- ✓ **CONTAINS ASBESTOS FIBERS**
- ✓ **AVOID OPENING OR BREAKING CONTAINER**
- ✓ **BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH**

Second Label: Provide in accordance with 29 CFR 1910.1200(f) of OSHA's Hazard Communication Standard:

- ✓ **DANGER**
- ✓ **CONTAINS ASBESTOS FIBERS**
- ✓ **AVOID CREATING DUST CANCER AND LUNG DISEASE HAZARD**
- ✓ **BREATHING AIRBORNE ASBESTOS, TREMOLITE, ANTHOPHYLLITE,**
- ✓ **ACTINOLITE FIBERS IS HAZARDOUS TO YOUR HEALTH**

Third Label: Provide in accordance with U.S. Department of Transportation regulation on hazardous waste marking, 49 CFR parts 171 and 172. Hazardous Substances: Final rule. Published November 21, 1986 and revised February 17, 1987:

- ✓ **RQ HAZARDOUS SUBSTANCE**
- ✓ **SOLID, NUMBERS. ORME, NA 9188 (ASBESTOS)**

Fourth Label: (NESHAP) Owner, address, and originating location of Asbestos-Containing Material.

PROTECTION OF NON-WORK AREA

- ✓ In performimg the work, OSC shall prevent building areas other than the work area from becoming contaminated with asbestos-containing dust or debris by use of plastic sheeting, negative air machinery, and additional engineering controls are required.
- ✓ Should areas outside the work area become contaminated with asbestos containing dust or debris, OSC shall be responsible for cleaning these areas in accordance with the procedures indicated in this specification.
- ✓ OSC shall perform a daily wet cleaning of any area outside the sealed work area which becomes visibly contaminated with airborne or tracked in dust or other debris as a consequence of work performed on that day.

REMOVAL PROCEDURE

- ✓ Prior to removal of any asbestos, OSC personnel shall spray asbestos material with amended water, using spray equipment capable of providing a “mist” application to reduce the release of fibers. OSC will saturate the material sufficiently to wet it to the substrate witout causing excess dripping. OSC shall spray the asbestos material repeatedly during the work process, to maintain set conditions and to minimize asbestos fiber dispersion.
- ✓ During asbestos removal operations, OSC shall make deliberate efforts to handle the asbestos material carefully. OSC shall not cause any unnecessary agitation of the loose material. OSC shall avoid using removal tools that have high cutting-tip speeds or blasting characteristics.
- ✓ Drop cloths will be utilized under the abatement area below any non-friable exterior material. Drop cloths will typically extend 10 feet from the area except for second story removals when the drop cloth will extend 20 feet. At the conclusion of the exterior abatement the drop cloths will be folded and disposed of as asbestos waste.
- ✓ OSC shall ensure that the disposal containers are sealed and labeled as required by all applicable regulations.
- ✓ OSC shall ensure that all surfaces from which asbestos has been removed are wet brushed and sponged, or cleaned by an equivlent method, to remove all visable material. During this work, the surfaces being cleaned shall be kept wet.
- ✓ After they are dry, OSC shall visually inspect the surface from which the asbestos material has been removed. If any suspect asbestos laden material appears on any surface in the work area, OSC shall repeat the procedure of paragraph 12.

DECONTAMINATION OF WORK AREA

OSC shall commence the work area decontamination only after ensuring the following have been completed:

- ✓ All accumulated waste material resulting from the removal of asbestos has been properly sealed and removed from the work area; and
- ✓ OSC shall visually inspect the work area to ensure that all suspect asbestos containing material has been removed and properly disposed.

An OSC representative will conduct a thorough visual inspection of the work area to ensure that all suspect asbestos containing material has been removed and properly disposed and the area is clean and dust free. If any suspect asbestos contaminated dust remains in the work area, OSC personnel will be directed to perform a thorough re-cleaning. After satisfactory completion of the visual inspection work the IH (or designee) shall collect air samples throughout the work area. Samples taken will conform to all applicable federal, state, and local regulations and with generally accepted industrial hygiene practice. Upon satisfactory completion of the above, the work area will be cleaned for unrestricted entry.

RECORD KEEPING

The following records will be maintained at the on-site office trailer and at OSC's corporate office located in Buffalo, New York:

- ✓ Copies of all Asbestos related correspondence;
- ✓ Copies of Asbestos Entity License;
- ✓ Copies of all worker certifications, fit tests and fit for duty statements;
- ✓ Name and address of the disposal facility;
- ✓ Methodology and results of all air sampling;
- ✓ Name and address of the air sampling consultant;
- ✓ Name and address of the air sampling laboratory;
- ✓ Incident investigation forms;
- ✓ Medical and fire emergency procedures;
- ✓ Copies of all bills of lading; and logs of all regulatory and owner inspections.

CONFINED SPACE ENTRY

INTRODUCTION AND PURPOSE

The purpose of this program is to establish procedures for working safely in confined spaces. *It is intended for confined space work as it applies to OSHA regulations for construction.*

This program shall be reviewed annually or sooner as warranted by change in regulations, equipment updates, incident investigations, and inspections findings as well as other improvement measures. Prior to issuing a new entry permit under the program, previous cancelled permits performed within the last 12 months shall be reviewed for opportunities to improve the program and assure employees are properly protected. The Corporate HSE Team Director is responsible for leading the review, updating the program and managing the retraining of employees. The following guidelines outline the minimum acceptable criteria to be utilized for all confined space entry. Projects requiring confined space entry must be reviewed thoroughly by the appropriate HSE personnel.

Personnel entering and working in confined spaces will be required to adhere to the OSC and client Permit-Required Confined Space requirements. Personnel will be instructed in the applicable regulations as part of the employee training program. The Site Health & Safety Officer (SHSO) will be responsible for reviewing the safe work protocol with field team members before commencing confined space entry. The review shall provide all confined space workers the opportunity to review and clearly understand the permit requirements and planned procedures which includes assuring all equipment required is functioning properly for performing confined space work safely (i.e. extraction unit inspected, rescue measures in place, air monitor pre-calibration results acceptable, monitor functional, monitoring results acceptable to all workers).

NOTE: No confined space work shall be performed until all workers are satisfied that everything is in order for safe confined space entry ("…All employees have the authority to stop work at any time for safety concerns…").

DEFINITIONS

1. **Authorized Person** - means a person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the jobsite.
2. **Attendant** - Authorized and trained confined space employee assigned by the confined space supervisor who is responsible to stay top side, at confined space entry point and monitor entrant status as well as confined space conditions (See Attendant Responsibilities).

Confined space IS ANY SPACE having the following characteristics:

- ✓ The space is large enough that it can be bodily entered,
- ✓ The space has restricted means of entry and exit, and
- ✓ The space is not designed for continuous human occupancy.

3. **Permit Required Confined Space** – A confined space as previously defined that also may have a potential life-threatening hazard including, but not limited to:
    - The space contains, or has the potential to contain, a hazardous atmosphere, defined as oxygen below 19.5% or above 23.5%; combustible vapors above 10% LEL; or high toxic concentrations which may cause death, incapacitation or an impaired ability to self-rescue;
    - The space contains a material that may engulf an entrant;
    - The space has an internal configuration that may trap or asphyxiate entrants; and/or
    - The space contains any other serious health and life-threatening hazard.
4. **Competent Person** – A person who is capable of identifying existing and predictable hazards in the surroundings or working conditions, which are unsanitary, hazardous, or dangerous to employees. A competent person has the ability and authority to take prompt corrective measures to eliminate the previously mentioned conditions.
5. **Entrant** – An employee who is authorized and trained to enter and perform designated confined space work.
6. **Entry Supervisor** – A competent authorized person responsible for supervision of confined space work (See Also Supervisor Responsibilities and Training).

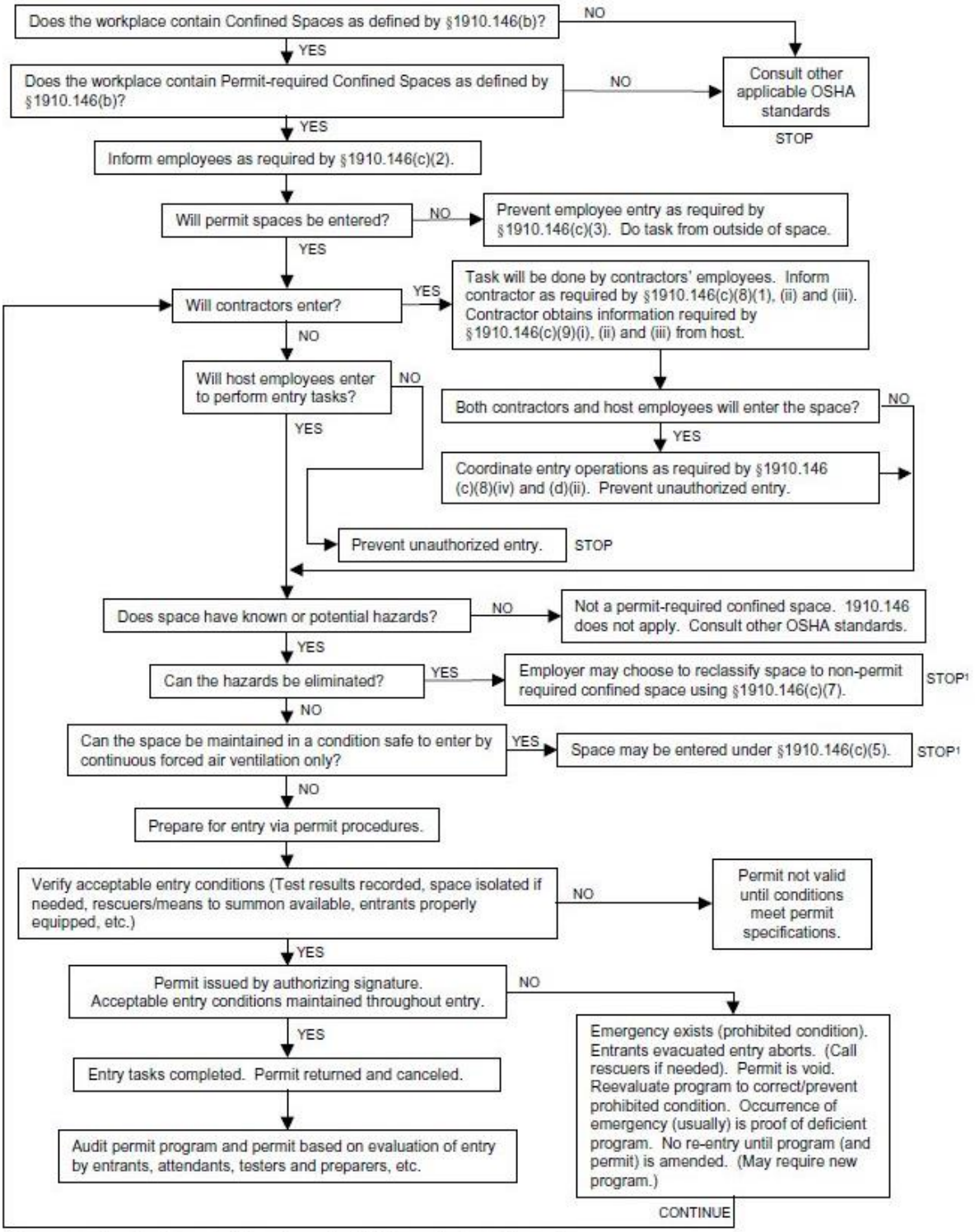
PRCS EVALUATION PROCEDURES AND DECISION FLOW CHART

Permit-Required Confined Space (PRCS)

OSHA defines a Permit-Required Confined Space (PRCS) as having one or more of the following hazards:

- ✓ The space contains, or has the potential to contain, a hazardous atmosphere, defined as oxygen below 19.5% or above 23.5%; combustible vapors above 10% LEL; or high toxic concentration which may cause death, incapacitation or an impaired ability to self-rescue;
- ✓ The space contains a material that may engulf an entrant;
- ✓ The space has an internal configuration that may trap or asphyxiate entrants; and/or

FIGURE 1 - 29 CFR 1910.146 Permit-Required Confined Spaces Standard



[1]Spaces may have to be evacuated and re-evaluated if hazards arise during entry

When appropriate, PRCSs shall be identified with a sign reading:

DANGER
PERMIT-REQUIRED CONFINED SPACE
DO NOT ENTER



The above sign will be prominently posted on-site by the SSO in the immediate vicinity of the PRCS to inform personnel of the existence and location of and the danger posed by the PRCS.

Entry into a PRCS requires special training, rescue procedures, and a confined space entry permit.

Non-Permit Required Confined Space

OSHA defines a non-permit required confined space as a PRCS in which all serious hazards have been eliminated. Non-permit required confined spaces shall be reevaluated by the SSO using the "Permit Required Confined Spaces Standard Flow Chart " (Figure 1) whenever they or their characteristics change in a way that could lead to reclassification as a PRCS.

Personnel Responsibilities (Also refer to Section 2.0 of the Corporate HASP for Additional Info)

1. *Entry Supervisors* – OSC shall designate an Entry Supervisor to oversee confined space entry and ensure that all personnel engaged in PRCS entry operations comply with this procedure. Entry Supervisors shall:
    - ✓ Verify that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
    - ✓ Terminate the entry and cancel the permit when the entry operations covered by the entry permit have been completed or whenever a condition that is not allowed under the entry permit arises in or near the PRCS.
    - ✓ Verify that rescue services are qualified and available and that the means for summoning them are operable.
    - ✓ Remove unauthorized individuals who enter, or who attempt to enter, the PRCS during entry operations.
    - ✓ Determine, at intervals dictated by the hazards and operations performed within the PRCS and whenever responsibility for a PRCS entry operation is transferred,

that entry operations are consistent with terms of the entry permit and acceptable entry conditions are maintained.

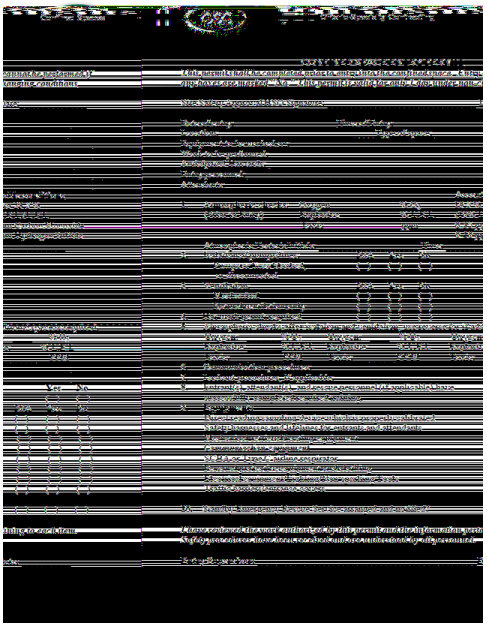
2. *Attendants* – The Entry Supervisor shall designate a qualified attendant for each PRCS entry operation. To be qualified, an attendant must know the hazards that authorized entrants may encounter during entry – including information on the mode, signs and symptoms and consequences of exposure – and must be aware of behavioral effects or symptoms of hazard exposure. Attendants ***shall****:*
   - ✓ Remain outside the PRCS during entry operations until relieved by another attendant;
   - ✓ Warn unauthorized entrants that they must stay away from the PRCS or that they must immediately exit if they have entered the PRCS;
   - ✓ Inform authorized persons and the Entry Supervisor if unauthorized persons have entered the PRCS;
   - ✓ Continuously maintain an accurate count of authorized entrants in the PRCS and ensure that the means used to identify authorized entrants are accurate;
   - ✓ Communicate with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the PRCS;
   - ✓ Monitor activities inside and outside the PRCS to determine if it is safe for entrants to remain in the PRCS;
   - ✓ Immediately order evacuation of the PRCS if the attendant detects a prohibited condition, the behavioral effects of hazard exposure in an authorized entrant, or a situation outside the PRCS that could endanger the authorized entrants, of if they cannot effectively and safely perform any of their duties and responsibilities; and
   - ✓ Perform non-entry rescues as specified by the Confined Space Entry Permit and summon rescue and other emergency services as soon as it is determined that authorized entrants may need assistance to escape from PRCS hazards.

   *Attendants **shall not**, under any circumstances:*
   - Monitor more than one occupied PRCS at any given time,
   - Perform any duty that might interfere with their primary duty to monitor and protect the authorized entrants, or
   - Enter into the PRCS for rescue purposes.

3. *Authorized Entrants* – Authorized PRCS entrants shall be identified on each Confined Space Entry Permit. Authorized entrants shall:
   - ✓ Know the hazards – including information on the mode, signs, symptoms and consequences of exposure;

- ✓ Properly use PPE provided for PRCS entry;
- ✓ Communicate with the attendant as necessary so the attendant can monitor entrant status and alert entrants of any need to evacuate the PRCS; and
- ✓ Evacuate the PRCS and alert the attendant whenever they recognize any warning sign or symptom of exposure to a dangerous situation, detect a prohibited condition, or if the attendant or entry supervisor orders evacuation or an evacuation alarm is activated.

TRAINING



All employees shall be instructed not to enter PRCSs without the proper permit and without following the procedures and practices outlined in this SOP and the Confined Space Entry Permit. Training of all affected and authorized employees shall be conducted initially at the time of hire, job transfer and thereafter as a minimum annually or sooner as warranted by regulatory change, program and equipment updates, incident/audit recommendations as well as improvement measures. Note – all confined space training for all authorized personnel (entrants, supervisor's attendants and rescue personnel) shall be site specific for the specific confined space and work required which includes multiple trade and subcontractor training including coordination of duties. This site and task specific confined space training shall be documented by the associated confined space JSA (Job Safety Analysis) for the job and its training attendance sheet. Copies of training shall be kept on file at field office and corporate office located at 140 Lee Street, Buffalo, New York.

Employees who are required to enter PRCS, or act as an attendant or entry supervisor, shall be trained to the understanding, knowledge, and skills necessary for the safe performance of their assigned responsibilities and duties. These employees also must be familiar with the kinds of hazards they might face during entry and understand the modes, signs and symptoms, and consequences of exposure. All trained confined space personal (team members = entrant, supervisor & attendants) shall, for every confined space entry, be required to review the Confined Space Permit requirements and work procedures prior to commencing work. Review shall include monitor calibration, initial monitor readings as well as any prior canceled confined space work permits for that particular space. No work shall commence until all confined space team members are confident conditions are safe for entry, procedures, equipment and conditions are

safe for entry (O2= 19.5 – 23.5 %, CO, LEL, H2S and VOC = 0). ***All employees have the authority to stop work at any time for safety concerns.***

The following training will be conducted:

1. Before an employee is first assigned confined space duties (initial training),
2. Before a change in assigned duties,
3. Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained, and
4. Whenever project management, involved regulatory officials, or the project engineer has reason to believe that there are inadequacies in knowledge or use of these procedures.

Entrants will receive training on:

- The methods used to communicate with attendants and the means attendants will use to notify the entrant of an emergency,
- The operation of any specialized equipment the entrant is expected to use, including monitoring and rescue equipment, and
- Evacuation signals and procedures and the need for entrants to notify the attendant and evacuate the PRCS if they detect any dangerous condition.

Attendants will receive training on:

- Procedures for monitoring inside and outside the PRCS and in recognizing conditions that might be hazardous to entrants;
- Procedures for communicating with entrants;
- Procedures for evacuating entrants from the PRCS, under what conditions evacuation is required, and how to call for emergency medical/rescue support;
- Procedures for controlling access to the PRCS and to warn unauthorized people away from the space;
- Their responsibility to remain outside the PRCS during entry unless they are relieved by another attendant; and
- Non-entry rescue procedures.

Entry Supervisors will receive training on:

- Verifying that the Confined Space Entry Permit has been completed properly,
- Procedures for verifying that all tests specified by the permit have been conducted,
- Requirements for verifying that all procedures and equipment specified by the permit are in place before allowing entry to begin,
- Procedures for determining if conditions are acceptable for entry,
- Authorizing entry operations, and

- Terminating entry.

The above training will be conducted:

- ✓ Before the employee is first assigned confined space duties (initial training);
- ✓ Before a change in assigned duties;
- ✓ Whenever there is a change in permit space operations that presents a hazard about, which an employee has not previously been trained; and
- ✓ Whenever project management, involved regulatory officials, or the project engineer has reason to believe that there are inadequacies in knowledge or use of these procedures.

All training shall be documented and will include the names of the personnel presenting and receiving the training and the dates of training. Training certification documentation will be maintained as part of the project file and in individual personnel files.

PRCS ENTRY PROCEDURE

Atmospheric Testing

Before an employee enters any confined space, the Entry Supervisor will test the internal atmosphere with a calibrated, direct-reading instrument to determine if acceptable entry conditions exist for the following conditions in the order given.

CONDITION	ACCEPTABLE PARAMETER(S)
Oxygen Content	Above 19.5% and Below 23.5%
Flammable Gases and Vapors	Less than 10% LEL
Potential Toxic Air Contaminants	Below Action Levels for Selected PPE

Continuous systems which cannot be isolated (i.e. sewers) or activities which generate significant airborne contaminants (i.e. welding) will be continuously monitored during entry – even when forced mechanical ventilation is used and has been shown to maintain an acceptable atmosphere. Air monitoring shall be continuous while ventilation is supplied.

Entry Procedure

The SHSO will utilize the "PRCS Evaluation Procedures and Decision Flow Chart" (Figure 1 on Page 3 of this document) to verify the presence of a PRSC. If it is determined that a PRSC does exist, the SHSO will review confined space entry procedures with entry personnel; post OSHA-required danger signs at entrances to the PRCS and notify site personnel of PRCS locations;

notify off-site rescue/emergency response services of the required PRCS and prepare a Confined Space Entry Permit.

Hazard Elimination or Control

The SHSO will determine if hazards can be controlled with continuous forced mechanical ventilation or eliminated by removing potential sources of air contaminants by using proper shoring or sloping, installing standard guardrails, locking out electrical systems, or using some other approved method. If potential hazards can be eliminated, then the PRCS may be reclassified as a non-permit confined space. If potential hazards are controlled with continuous forced mechanical ventilation, then the Non-PRCS Entry Procedure can be used.

Confined Space Entry Permit

The Entry Supervisor will be responsible for completing the Confined Space Entry Permit (Sample in . All items on the permit MUST be completed. Before signing the permit, the Entry Supervisor MUST verify:

- ✓ All entry personnel are aware of the specific hazards associated with the PRCS;
- ✓ All necessary safety equipment and materials are in place;
- ✓ The emergency response procedures, including non-entry rescue, are in place; and
- ✓ Pre-entry air monitoring results indicate acceptable entry conditions.

**NOTE: Only one permit at a time may be used for PRCS entry.

Pre-Entry Briefing (Complete Review and Participation by ALL for Assurance)

The Entry Supervisor will conduct a Pre-Entry Briefing with attendants and authorized entrants to discuss the requirements of the permit and to ensure that all involved personnel understand their responsibilities and the specific hazards associated with the PRCS. A Pre-Entry Briefing will be conducted once for each attendant and authorized entrant prior to entry and whenever new hazards are identified. The space shall be re-evaluated whenever there is a reason to believe conditions have changed or if any confined space worker (supervisor, entrant, attendant or rescue personnel) feel it is warranted – whether for suspected changes or reassurance. *ALL employees have the authority to stop work and cancel the permit for any safety concern.* Entrants, or their representatives, shall be given the opportunity to participate in, and review, calibrated air monitoring data before entry. Air monitoring/testing shall be continuous when ventilation is applied.

Entry Authorization

The Entry Supervisor will sign the Confined Space Permit AFTER:

1. The permit has been completed,

2. Safety equipment is in place,
3. Air monitoring results are acceptable,
4. The Pre-Entry Briefing has been conducted, and
5. Rescue procedures have been established.

Once the permit has been signed:

- ✓ Entrants will don all necessary safety and rescue equipment;
- ✓ The permit will be posted at, or near, the PRCS entrance; and
- ✓ Entry will begin.

~~Confined Space Entry Permit Expiration and Cancellation~~

Each Confined Space Entry Permit will be valid for only ~~one~~ (1) shift. Permits will be cancelled if:

- A new hazard is identified or encountered,
- An entrant is seriously injured and requires evacuation and/or rescue, or
- A change in the scope of the work requires new activities which may create previously unanticipated hazards that may cause serious injury or death.

Expired and cancelled permits must be returned to the Site Superintendent who will file and maintain them with the project documents. Re-issuance of expired or cancelled permits will be as specified above.

~~Non-PRCS Entry Procedure~~

The following procedure may be utilized *only* if ~~ALL~~ of the following conditions have been met:

- ✓ The only serious hazard that cannot be eliminated is an actual or potential hazardous atmosphere,
- ✓ Continuous forced ventilation is sufficient to prevent a hazardous atmosphere, and
- ✓ Monitoring data is available to support the adequacy of ventilation.

If the conditions of this non-PRCS Entry Procedure can be met, then the entry permit, attendant and rescue procedures (except for non-entry rescue) specified in this SOP are not required. It is necessary, however, to complete a confined Space Entry Permit prior to entry. The permit will document that the space has been classified as a non-PRCS.

****CONTINUOUS AIR MONITORING AND NON-ENTRY RESCUE IS REQUIRED DURING NON-PRCS ENTRY****

All non-PRCS entrants will be required to have completed PRCS training, comply with all other applicable site safety regulations and adhere to the following procedure:

1. Eliminate conditions making it unsafe to remove an entrance cover prior to removing the cover (i.e. use non-sparking tools).

2. Set up barriers around the opening to prevent adjacent work activities from endangering entrants.
3. Conduct Pre-Entry Air Monitoring.
4. Set up forced mechanical ventilation if a hazardous atmosphere is encountered or anticipated. Continue ventilation for as long as entrants are in the space.
5. Evacuate entrants if a hazardous atmosphere develops and implement corrective actions to prevent recurrence.
6. Check the Non-PRCS box on the Confined Space Entry Permit and document the date of entry, location of the space, description of the work to be conducted within the space and pre-entry air monitoring results. The person authorizing the Non-PRCS procedure will sign the permit in the space provided.

RESCUE/EMERGENCY PROCEDURES

~~On-Site Rescue/Emergency Response Teams~~

Each member of the On-Site Rescue/Emergency Response Team shall:

- ✓ Be provided with, and trained in the proper use of, PPE and equipment necessary for making rescues from PRCS(s), and
- ✓ Receive the same level of training as authorized entrants and be trained in basic first aid and CPR. Provisions shall be made so that whenever the team is "*on call*", at least ~~two~~ (2) members of the team will have current certification in first aid and CPR.

~~Off-Site Rescue and Emergency Services~~

Off-site rescue/emergency service personnel will be alerted prior to entry and informed by the SHSO of the hazards they may confront if called on to perform rescue. The rescue/emergency service personnel will be provided access to all permit spaces from which rescue may be necessary so that the emergency responders can develop appropriate rescue plans and conduct rescue operations.

~~Non-Entry Rescue Procedures~~

To facilitate non-entry rescues, retrieval systems or methods will be used whenever an authorized entrant enters a PRCS, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant.

Each authorized entrant will use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near the shoulder level or above the entrant's head. Wristlets may be used in lieu of the chest or full body harness if it can be demonstrated that the use of such a harness is not feasible or creates a greater hazard and that the use of the wristlets is the safest and most effective alternative.

Retrieval lines will be attached to a mechanical device or fixed point outside the permit space in such a manner that rescues can begin as soon as the rescuer becomes aware that rescue is necessary. The mechanical device will be ready to retrieve personnel from vertical any PRCS more than five (5) feet deep.

DISTRACTED DRIVING POLICY

DISTRACTED DRIVING AWARENESS

What is distracted driving? Any activity that could divert a person's attention away from the primary task of driving. There are three main types of distractions:

- ✓ Visual – taking your eyes off road
- ✓ Manual – taking your hands off the wheel
- ✓ Cognitive – taking your mind off the task of driving. All distractions endanger the driver, passenger and bystander safety. These types of distractions include:
    - Texting, using cell phone or smart phone, using a navigation system
    - Adjusting any media devices (such as radio, MP3 player)
    - Eating and drinking
    - Talking to passengers

OSC REQUIREMENTS

OSC prohibits the use of all hand held mobile devices while operating a motor vehicle on company business. This includes hands free mobile devices. Cell phone use, talking, texting, and surfacing the internet while driving are prohibited while driving. Driving safely requires the motor vehicle operator be focused on driving with no unnecessary distractions. Pulling over and parking at a safe location before using your hand held device is always the safest method. Employees are expected to avoid other distractions, such as adjusting a GPS, map reading, eating or drinking.

KEY FACTS & STATISTICS

- ✓ 3,331 people were killed in crashes involving a distracted driver in 2011, and an additional 387,000 people were injured.
- ✓ Drivers who use hand-held devices are 4 times more likely to get into crashes serious enough to injure themselves
- ✓ Text messaging creates a crash risk 23 times worse than driving while not distracted
- ✓ Driving while using a hand held cell phone reduces the amount of brain activity associated with driving by 37%
- ✓ Hands-free cell phones are not much safer than hand-held phones
- ✓ About 9 percent of all drivers are talking on cell phones at any given daylight moment

Driver Authorization Policy

Policy Statement:

Ontario Specialty Contracting, Inc. (OSC) recognizes the importance of ensuring the safety of our employees, clients, and the public when operating vehicles and equipment for the benefit of the company, whether they are company or personally owned. Therefore, this Driver Authorization Policy outlines the requirements and procedures for being an authorized driver for the company.

Driver Eligibility:

All employees who are required to operate vehicles and equipment as part of their job responsibilities must meet the following eligibility criteria:

- Possess a valid driver's license appropriate for the type of vehicle they will be operating.
- Maintain a clean driving record, free of any major violations such as DUI convictions, reckless driving, or multiple at-fault accidents.
- Meet any additional requirements set forth by relevant regulatory agencies.

Application Process:

Employees seeking authorization to operate vehicles and equipment for the company must submit a completed Motor Vehicle Record (MVR) Authorization with Alcott HR. The application shall include:

- Personal information, including:
  - First Name
  - Middle Name (if applicable)
  - Last Name
  - Contact Email
- Copy of valid driver's license.
- Consent to pull the employee's Motor Vehicle Record (MVR) at least annually.

Motor Vehicle Record Check:

An annual review of each employee's Motor Vehicle Record (MVR) will be conducted to ensure ongoing compliance with the driver eligibility criteria outlined in this policy. The MVR check will include a review of:

- Driving history, including any traffic violations, accidents, or license suspensions.
- Verification of the validity and status of the employee's driver's license.

Authorization Decision:

Upon completion of the MVR check, OSC will make a decision regarding the employee's authorization to operate vehicles and equipment for the company. Authorization may be granted, denied, or revoked at any time based on, but not limited to the following factors:

- Compliance with eligibility criteria outlined in this policy.
- Results of the annual MVR check.
- Any other relevant information or considerations.

Ongoing Compliance:

Authorized drivers are responsible for maintaining ongoing compliance with the requirements outlined in this policy, including:

- Promptly reporting any changes to their driving status, such as new violations or license suspensions.
- Notifying OSC immediately if their driver's license becomes invalid or is revoked for any reason.
- Adhering to all applicable traffic laws and safe driving practices while operating vehicles and equipment for the company.

Enforcement and Consequences:

Non-compliance with this policy may result in disciplinary action, up to and including termination of employment. OSC reserves the right to enforce consequences based on the severity and frequency of violations, in accordance with applicable laws and company policies.

Policy Review:

This Driver Authorization Policy will be reviewed periodically to ensure its effectiveness and compliance with relevant laws and regulations. Any updates or revisions to the policy will be communicated to all employees in a timely manner.

Contact Information:

For questions or concerns regarding this policy, employees should contact Paul Mulvey, OSC Corporate Director of HSE or Donna Varney, Alcott HR Business Partner

ELECTRICAL SAFETY AND ASSURED GROUNDING

PURPOSE

To prevent shock, electrocution, arc flash, and property damage from potential exposure to energized or defective circuits.

SCOPE

Electrical equipment MUST be de-energized (see OSC Lockout/Tagout program) prior to maintenance. Exposed de-energized circuits must be treated as though energized. OSC personnel may not work on energized equipment without a specific AHA which details training, procedures, conditions, and equipment necessary to safely do so. Ground Fault Interrupter's (GFI's) must be used on all extension cords.

- ✓ Specific Responsibilities;
- ✓ Procedures:
  - Safe Work Practices;
  - Assured Grounding Program, Ground Fault Circuit Interrupters;
  - Corded Tools, Flexible Extension Cords, Wiring, and Plugs;
  - Protection of Employees;
  - Passageways, and Open Spaces;
  - Qualification and Limited Approach Boundaries;
  - Batteries and Battery Charging;
  - Installation; and
  - Training

SPECIFIC RESPONSIBILITIES

SITE SUPERVISOR

To ensure that all individuals working near unprotected energized circuits review this program; to ensure that all affected employees are trained in the safe work practices, and that each affected employee understands the content of this program. Notify the owner of unique hazards that may arise from OSC work and what precautionary measures and controls are to be put in place.

EMPLOYEES/SUBCONTRACTORS/VISITORS

Understand and abide by all applicable training, comply with all signage, advise appropriate personnel of deficiencies in the program and/or new hazards on site, and follow all Health and Safety rules at the facility and meet all the health and safety requirements of their contracts. Unqualified employees shall not enter electrical hazard areas or perform work unless they are qualified, by OSC, to do so.

PROCEDURES

SHOCK PREVENTION AND SAFE WORK PRACTICES

If handling or adjustment of equipment is required, it must be done with the power turned off. When it is necessary to work on or near equipment having exposed or live electrical circuitry it may only be done by a qualified person as described herein and with the following precautions:

- ✓ Do not work alone. Another person familiar with POWER OFF controls must be in the immediate vicinity and available in case of emergency. No OSC employee may work on live circuits that carry over 480 volts; This work must be done by a qualified third party;
- ✓ Do not wear rings, wristwatches, chains, bracelets, metal cuff links, metal-rimmed eyeglasses, or any other electrically conductive article;
- ✓ Use only insulated tools and meters. Portable ladders must be non-conductive side rail type (fiberglass);
- ✓ Read and understand instructions before using unfamiliar equipment;
- ✓ Be certain that controls are set correctly, and that proper capacity test instruments and insulated probes are used. Meters and equipment must always be examined for cracks or other faults before being used;
- ✓ Avoid contacting ground potential (metal floor strips, machine frames, interlocks, etc.). Use suitable rubber mats (purchased locally) if necessary. Ground-fault circuit interrupters (GFCI) and isolation transformers are necessary in some cases;
- ✓ A specific Activity Hazard Analysis (AHA) must be prepared for wet areas and work on grounded surfaces (metal, concrete) that conduct electricity. Electrical safety shoes and other insulating devices must be used. Conductive clothing must not be worn unless covered with an adequate insulator; and
- ✓ Varying means of communicating electrical hazards shall be employed to assure effectiveness. Such means include safety signs and tags, barricades, and attendants. Safety signs must meet the requirements of ANSI Z535 Table 130.7(F). Barricades must be used in conjunction with safety signs and never by themselves. Any technique used must not increase the potential for employee injury.

Only a qualified employee will be permitted to work, conduct tests, or troubleshoot within a designated Limited Approach Boundary (LAB):

- ✓ Prior to working in a Lab, an arc flash risk assessment must be prepared which details the electrical hazards and whether the equipment can be de-energized. All team members must review and conform with the risk assessment requirements;

- ✓ An Energized Equipment Work Permit will be prepared detailing work to be done, equipment, procedures, insulating shields/barriers, PPE and employees performing work. The permit must be reviewed and signed by each affected employee, and acknowledged by the owner;
- ✓ All insulating PPE must conform to NFPA 70E 130.7(D)(14) and be inspected prior to use, immediately after any incident, and as follows; 1) Blankets-before first issue/every 12 months thereafter, 2) Gloves-before first issue and every 6 months, 3) Sleeves before first issue and every 12 months. Covers and Line hose shall be tested if insulating value is suspect.
- ✓ All test instruments, equipment and accessories must be rated for the circuits and equipment to which they will be connected and verified in proper working condition before and after any voltage measurements are performed;

Before work is begun, it will verified by inquiry, or direct observation, or by instruments, whether any part of an energized electric power circuit, exposed or concealed, is so located that the performance of the work may bring any person, tool, or machine into physical or electrical contact with the electric power circuit.

Note: Proper warning signs will be posted and maintained where such a circuit exists. Employees will be advised of the location of such lines, the hazards involved, and the protective measures to be taken.

Only employees having training, equipment (tools and meters), and designated as qualified shall be allowed within LAB areas.

ASSURED GROUNDING AND GROUND FAULT CIRCUIT INTERRUPTERS (GFCI), FLEXIBLE EXTENSION CORDS, WIRING, AND PLUGS

- ✓ Ground fault circuit interrupters (GFCI) are an essential protective device that shall be utilized to supplement the assured grounding program. GFCI's shall be used with all corded 120 volt single phase tools and 120 volt single phase power sources. All employees shall be trained in their proper use and inspection
- ✓ GFCI's shall be plugged in at the source and inspected/tested prior to each use, defective GFCI's shall be discarded and replaced with a properly operating GFCI
- ✓ All power sources (receptacles), power cords and corded tools shall be inspected for assured grounding initially prior to use and thereafter as a minimum monthly to assure proper ground (assured ground/continuity) and wiring (neutral and hot). These inspections shall be conducted by a company authorized and qualified person. Acceptable cords, tools and receptacles which pass inspection shall be marked with the designated colored electric tape for that month (color assignments for each month shall be determined by the Site Safety Officer). In no case shall red, white, green or black

electric tape be used. Tape shall be applied to the cord male and female cord end and not the cord. Tape for receptacles shall be applied directly above the receptacle. A documented list shall be maintained of items inspected indicating description of item, location, inspection findings and corrective measure taken if required. The marking is to provide a visual aid to identify inspected verses uninspected items. Defective receptacles, power cords and tools shall be taken out of service immediately and replaced. Note – double insulated tools that have power cords with no ground shall not be excluded from this inspection. The tool, cord, cord end and wiring (Neutral and Hot) shall be inspected. Although double insulated these tools shall only be used with a protected GFCI power source. See also Wiring Design and Protection Section of this program.

- ✓ Flexible cord shall not be used if spliced unless suitable molded or vulcanized splices are properly made, the insulation is equal to the cable being spliced, and wire connections are soldered
- ✓ Worn or frayed electric cords or cables shall not be used
- ✓ Temporary lights shall not be suspended by their electric conductor cords unless cords and lights are designed for this means of suspension
- ✓ Flexible cords and cables shall be protected from damage. Sharp corners and projections shall be avoided. Flexible cords and cables may pass through doorways or other pinch points if protection is provided to avoid damage
- ✓ Electric cords and cables in work areas and walkways shall be located to minimize hazards for all personnel
- ✓ Extension cords shall not be fastened with staples, hung from nails or suspended by wire
- ✓ A plug should never be disconnected by yanking the cord. The plug itself should be grasped
- ✓ A plug should never be modified by bending or removing the blades. When plug blades or prongs are bent, lose or missing, the device should be replaced.
- ✓ In existing installations, no changes in circuit protection will be made to increase the load.

PASSAGEWAYS AND OPEN SPACES

- ✓ Barriers or other means of guarding will be provided to ensure that work space for electrical equipment will not be used as a passageway during periods when energized parts of electrical equipment are exposed
- ✓ Working spaces, walkways, and similar locations will be kept well lighted and clear of cords so as not to create a hazard to employees
- ✓ Sufficient access and working space will be provided and maintained around all electrical equipment in order to allow for safe operation and maintenance of such equipment

- ✓ Materials shall not be placed or stored in front of circuit boxes
- ✓ A minimum of thirty (30) inches must be maintained from the outside of the circuit box to any materials or equipment
- ✓ When parts that are normally enclosed are exposed for inspection or servicing, the working space, if in a passageway or general open space, will be guarded and well lighted.
- ✓ At least one (1) entrance will be provided to give access to the working space around electric equipment
- ✓ Where there are live parts normally exposed on the front of switchboards or motor control centers, the working space in front of such equipment will not be less than three (3) feet.
- ✓ The minimum headroom of working spaces around service equipment, switchboards, panel boards, or motor control centers will be six (6) feet three (3) inches.
  Note: Live parts will be guarded in accordance with 29CFR1926.403.
- ✓ Over 220 volts, but less than 480 volts nominal: Electrical installations having exposed live parts will be accessible to qualified persons only and will comply with the applicable provisions of 29CFR1926.403
- ✓ When working near overhead lines the minimum approach distances in Table S5 must be maintained by personnel, vehicles, and mechanical equipment. If this cannot be accomplished the power authority must be contacted and the line de-energized. If the line cannot be de-energized or moved OSC are not permitted to perform the work.

EQUIPMENT

- ✓ It is imperative that all equipment be maintained in the proper working order. If ANY shock is received by a piece of equipment immediately remove the equipment from service and tag "DO NOT USE - DEFECTIVE" and DO NOT RETURN THE EQUIPMENT TO SERVICE UNTIL THE PROBLEM IS MITIGATED!
- ✓ Electrical equipment shall not be used unless the manufacturer's name, trademark or other descriptive marking, by which the organization responsible for the product may be identified, is placed on the equipment, and unless other markings are provided which give voltage, current, wattage or other ratings as necessary. The marking shall be durable enough to withstand the environment involved
- ✓ Listed, labeled or certified equipment shall be used in accordance with included instructions
- ✓ All conductors used for general wiring shall be insulated. The conductor installation shall be suitable for the voltage, operating temperature, and location of use. Insulated conductors shall be distinguishable by appropriate color or other means as being grounded conductors, ungrounded conductors, or equipment grounding conductors.

- ✓ Conductors shall be spliced or joined with splicing devices designed for the use or by brazing, welding, or soldering with a fusible metal or alloy. Soldered splices shall first be so spliced or joined as to be mechanically and electrically secure without solder and then soldered. All splices and joints and the free ends of conductors shall be covered with an insulation equivalent to that of the conductors or with an insulating device designed for the purpose
- ✓ Parts of electric equipment which in ordinary operation produce arcs, sparks, flames, or molten metal shall be used
- ✓ Receptacles, cord connectors, and attachment plugs (caps) shall be approved, concealed contact type with a contact for extending ground continuity. They shall be constructed so the plug may be pulled out without leaving any live parts exposed
- ✓ Receptacles shall be of a type that plugs of different voltages, frequencies, or types of current (AC or DC) cannot be used
- ✓ Extension cord sets used with portable electric tools and appliances shall be of three (3) wire types and shall be designed for hard or extra-hard usage. Flexible cords used with temporary and portable lights shall be designed for hard or extra-hard usage
- ✓ Plugs shall be able to withstand rough use and have a cord grip to prevent strain on the terminal screws
- ✓ All temporary lights shall have covered bulbs or deep recessed sockets
- ✓ Any equipment purposely operated out of the manufacturer's recommendations is grounds for dismissal
- ✓ Power tools or spark producing tools will NEVER be used in potentially explosive or flammable atmospheres
- ✓ Power tools will not be used in damp or wet areas unless specifically designed for those areas
- ✓ Equipment intended to break current will have an interrupting rating at system voltage sufficient for the current that must be interrupted
- ✓ Parts of electric equipment which in ordinary operation produce arcs, sparks, flames, or molten metal will be enclosed or separated and isolated from all combustible material
- ✓ Marking of equipment will be of sufficient durability to withstand the environment involved
- ✓ Each disconnecting means for motors and appliances will be legibly marked to indicate its purpose, unless located and arranged so the purpose is evident
- ✓ Each service, feeder, and branch circuit, at its disconnecting means or over current device, will be legibly marked to indicate its purpose, unless located and arranged so the purpose is evident
- ✓ These markings will be of sufficient durability to withstand the environment involved. All electrical conductors and equipment must be of an approved type.

MAINTENANCE

- ✓ All wiring components and utilization equipment in hazardous locations will be maintained in a dust-tight, dust-ignition-proof, or explosion-proof condition, as appropriate. Do not use the equipment if there are loose or missing screws, gaskets, threaded connections, seals, or other impairments to a tight seal.
- ✓ Environmental Deterioration of Equipment - Unless identified for use in the operating environment, no conductors or equipment will be located:
    1. In damp or wet locations;
    2. Where exposed to gases, fumes, vapors, liquids, or other agents having a deteriorating effect on the conductors or equipment; or
    3. Where exposed to excessive temperatures.

BATTERIES AND BATTERY CHARGING

- ✓ General:
    1. Face shields, aprons, and rubber gloves will be provided for workers handling acids or batteries;
    2. Facilities for quick drenching of the eyes and body will be provided within five (5) feet of battery handling areas; and
    3. Facilities will be provided for flushing and neutralizing spilled electrolyte and for fire protection.
- ✓ Charging:
    1. Battery charging installations will be located in well ventilated areas designated for that purpose;
    2. Charging apparatus will be protected from damage by traffic; and
    3. When batteries are being charged, the vent caps will be kept in place to avoid electrolyte spray. Vent caps will be maintained in functioning condition.
- ✓ Batteries cannot be disposed of as a burnable unit
- ✓ Wet or Storage Batteries:
    1. Because of the use of acids or electrolyte solutions, several hazards, all of which must be considered as dangerous, are introduced by the wet or storage battery. Acid or alkali electrolytes cause burns on the skin, severe eye injury, damage clothing, and may present explosion hazards from the emitted hydrogen gas. No smoking is permitted in any storage battery installation, crib, charging, or repair areas; and

2. To prevent arcing when removing or installing battery leads, the load should be removed from the circuit first, if possible, away from the battery cells. Larger batteries may have high energy (greater than 240 volt-amperes).

✓ Dry Cell Batteries:

1. Dry cell batteries should not be exposed to excessive heat. This can cause them to explode since a gas is generated.

✓ Rechargeable Dry Cells:

1. Nickel cadmium batteries, commonly called "NiCad" batteries, should be enclosed in a ventilated chamber for heat dissipation and containment if there is an explosion; and
2. Nickel cadmium and other rechargeable, sealed dry cells may explode if charged at an excessive current rate, or if disposed of in a fire. Never exceed the manufacturer's specifications or disregard safety measures.

WIRING AND DESIGN PROTECTION

✓ Use and Identification of Grounded and Grounding Conductors.

1. A conductor used as a grounded conductor will be identifiable and distinguishable from all other conductors. A conductor used as an equipment grounding conductor will be identifiable and distinguishable from all other conductors;
2. No grounded conductor will be attached to any terminal or lead so as to reverse designated polarity; and
3. A grounding terminal or grounding-type device on a receptacle, cord connector, or attachment plug will not be used for purposes other than grounding.

✓ Branch Circuits - Ground-Fault Protection

1. Any and all 120-volt, single-phase, 15 and 20 ampere receptacle outlets on construction sites, which are not a part of the permanent wiring of the building or structure and are in use by employees, will have approved ground-fault circuit interrupters for personnel protection. Receptacles on a two (2) wire, single-phase portable or vehicle-mounted generator rated not more than five (5) kW, where the circuit conductors of the generator are insulated from the generator frame and all other grounded surfaces, need not be protected with ground-fault circuit interrupters;
2. Branch circuit, feeder, and service conductors rated 600 volts, nominal, or less and run outdoors as open conductors will be in compliance with 29CFR1926.04;

3. Means to disconnect all conductors in a building or other structure will be in compliance with 29CFR1926; and
4. Over-current protection
    a. The requirements in 29CFR1926.03 apply to overcurrent protection of circuits rated 600 volts, nominal, or less; and
    b. Over 600 volts, nominal. Feeders and branch circuits over 600 volts, nominal, will have short-circuit protection.

✓ The following systems which supply premises wiring will be grounded:

1. All three (3) wire DC systems will have their neutral conductor grounded;
2. Two (2) wire DC systems operating at over 50 volts through 300 volts between conductors will be grounded unless they are rectifier-derived from an AC system complying with 29CFR1926.303 of this section;
3. AC circuits, less than 50 volts. AC circuits of less than 50 volts will be grounded if they are installed as overhead conductors outside of buildings or if they are supplied by transformers and the transformer primary supply system is ungrounded or exceeds 150 volts to ground;
4. AC systems, 50 volts. AC circuits of less than 50 volts will be grounded if they are installed as overhead conductors outside of buildings or if they are supplied by transformers and the transformer primary supply system is ungrounded or exceeds 150 volts to ground under any of the following conditions, unless exempted by part (v) of this section:
    a. If the system can be so grounded that the maximum voltage to ground on the underground conductors does not exceed 150 volts;
    b. If the system is nominally rated 480Y/277 volt, three (3) phase, four (4) wire in which the neutral is used as a circuit conductor;
    c. If the system is nominally rated 240/120 volt, three (3) phase, four (4) wire in which the midpoint of one (1) phase is used as a circuit conductor; or
    d. If a service conductor is uninsulated.

5. AC systems of 50 volts to 1000 volts are not required to be grounded if the system is separately derived and is supplied by a transformer that has a primary voltage rating less than 1000 volts, provided all of the following conditions are met:
    a. The system is used exclusively for control circuits;
    b. The conditions of maintenance and supervision assure that only qualified persons will service the installation;
    c. Continuity of control power is required; and
    d. Ground detectors are installed on the control system.

Portable and vehicle-mounted generators:

1. Under the following conditions, the frame of a portable generator need not be grounded and may serve as the grounding electrode for a system supplied by the generator:
    a. The generator supplies only equipment mounted on the generator and/or cord-and plug-connected equipment through receptacles mounted on the vehicle or on the generator;
    b. The non-current-carrying metal parts of equipment and the equipment grounding conductor terminals of the receptacles are bonded to the generator frame.

2. Under the following conditions the frame of a vehicle may serve as the grounding electrode for a system supplied by a generator located on the vehicle:
    a. The frame of the generator is bonded to the vehicle frame;
    b. The generator supplies only equipment located on the vehicle and/or cord-and plug-connected equipment through receptacles mounted on the vehicle or on the generator;
    c. The non-current-carrying metal parts of equipment and the equipment grounding conductor terminals of the receptacles are bonded to the generator frame; and
    d. The system complies with all other provisions of this section.

3. A neutral conductor will be bonded to the generator frame if the generator is a component of a separately derived system. No other conductor need be bonded to the generator frame.

✓ For AC premises wiring systems, the identified conductor will be grounded.

- ✓ Grounding connections:
    1. For a grounded system, a grounding electrode conductor will be used to connect both the equipment grounding conductor and the grounded circuit conductor to the grounding electrode. Both the equipment grounding conductor and the grounding electrode conductor will be connected to the grounded circuit conductor on the supply side of the service disconnecting means, or on the supply side of the system disconnecting means or over current devices if the system is separately derived; and
    2. For an ungrounded service-supplied system, the equipment grounding conductor will be connected to the grounding electrode conductor at the service equipment. For an ungrounded separately derived system, the equipment grounding conductor will be connected to the grounding electrode conductor at, or ahead of the system disconnecting means or over current devices.
- ✓ The path to ground from circuits, equipment, and enclosures will be permanent and continuous.
- ✓ Supports, enclosures, and equipment to be grounded:
    1. Supports, enclosures for conductors. Metal cable trays, metal raceways, and metal enclosures for conductors will be grounded, except that:
        a. Metal enclosures such as sleeves that are used to protect cable assemblies from physical damage need not be grounded; and
        b. Metal enclosures for conductors added to existing installations of open wire, knob-and-tube wiring, and nonmetallic-sheathed cable need not be grounded if all of the following conditions are met:
            - ✓ Runs are less than 25 feet;
            - ✓ Enclosures are free from probable contact with ground, grounded metal, metal laths, or other conductive materials; and
            - ✓ Enclosures are guarded against employee contact.
    2. Metal enclosures for service equipment will be grounded;
    3. Exposed non-current-carrying metal parts of fixed equipment which may become energized will be grounded under any of the conditions described in 29CFR1926.304;
    4. Equipment connected by cord and plug. Under any of the conditions described in paragraphs (I) through (iii) below, exposed non-current-carrying metal parts of cord- and plug-connected equipment which may become energized will be grounded;

If in a hazardous (classified) location (see 29CFR1926.407):

a. If operated at over 150 volts to ground, except for guarded motors and metal frames of electrically heated appliances if the appliance frames are permanently and effectively insulated from ground; and
b. If the equipment is one of the types listed in paragraphs one (1) through five (5) of this section. However, even though the equipment may be one of these types, it need not be grounded if it is exempted by paragraph six (6) below:
    - ✓ Hand held motor-operated tools;
    - ✓ Cord-and plug-connected equipment used in damp or wet locations or by employees standing on the ground or on metal floors or working inside of metal tanks or boilers;
    - ✓ Portable and mobile X-ray and associated equipment;
    - ✓ Tools likely to be used in wet and/or conductive locations;
    - ✓ Portable hand lamps; and
    - ✓ Listed or labeled portable tools and appliances protected by a system of double insulation, or its equivalent, need not be grounded. If such a system is employed, the equipment will be distinctively marked to indicate that the tool or appliance utilizes a system of double insulation.

TRAINING

NON-QUALIFIED PERSONNEL

Those employees not specifically trained and designated as “qualified” are considered non-qualified but must be trained in the awareness and safety provisions contained in this section.

QUALIFIED PERSONNEL

Qualified employees must receive training detailing hazards of working in Limited Approach Boundary areas, how to identify, inspect and use insulating PPE and tools, and arc flash and shock protections. To be qualified and employee must be both trained and designated by OSC. Qualification training and designation shall be repeated at intervals not to exceed 3 years.

ALL PERSONNEL

- ✓ Any employee found not complying with safe work procedures and this program must undergo re-training before working in electrical hazards areas.
- ✓ Copies of training and designation of qualified employee's certification will be kept for the duration of employment.

PROGRAM REVIEW

This program and its field implementation shall be reviewed as part of the company's required performance audit. Each project, where this program is applicable, will be assessed for conformance as part of the routine safety audit but shall not be less than annually. Deficiencies in application of the electrical safety program shall be corrected immediately.

ERGONOMICS

PURPOSE

To assure all employees are aware of the hazards and preventive measures for back strains and cumulative trauma disorders (CTD's); carpal tunnel, tendonitis, trigger finger and other muscle skeletal disorders caused.

PERSONNEL RESPONSIBILITIES

Corporate Director – Health, Safety & Environment

Responsible for assuring this program is reviewed and updated as necessary (product changes and updates, regulatory updates, program performance improvements). The program shall be at a minimum reviewed and updated annually.

Managers and Supervisors

Responsible for assuring their projects/operations and employees are in compliance with the requirements of this program (training, application, practice and procedures).

Employees

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor).

Subcontractors

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor).

- NOTE – All employees have the authority and responsibility to stop work for safety concerns. "If you see it, you own it".

DEFINITIONS

1. **Cumulative Trauma Disorders (i.e. carpal tunnel, trigger finger, tendonitis etc.)** – Repetitive motion injuries that can affect bones, muscles, tendons, nerves and other anatomical features. It develops when micro traumas or minute injuries occur repeatedly from overuse or miss use of a body part.
2. **Tendonitis** – Cumulative trauma disorder caused by repetitive sliding of the tendon over a bone which causes irritation and inflammation. Overtime those micro traumas cause serious pain and injury.

3. **Musculoskeletal Disorders** – Repetitive motion injuries that affect muscles and bones which can lead to body deformation.
4. **Trigger Finger** – Locking of fingers in a curled position as a result of repetitive damage to the flexor tendons from direct trauma or repetitive stress.

BACK STRAINS AND CTD PREVENTION

Back injuries are commonly associated with Manual Material Handling (MMH) activities (lifting, placing and carrying). It is probably fair to say that every worker who lifts or does other manual handling tasks is at risk for musculoskeletal injury. Lower back injury is the most likely kind of injury. Likewise cumulative trauma injuries are common with repetitive motion activities (RMA's) where stiffness in joints is initially noticed; i.e. stiffness from constant squeezing and gripping (trigger finger, tendonitis) or flexing of the wrist (carpal tunnel syndrome). It is important that workers are aware of typical causes of these injuries, early signs and symptoms and how to prevent them. People can reduce the number and the severity of back strains and CTD's substantially by using safe work practices. To prevent occupational back injuries and CTD's is essential to identify the factors that make the worker more susceptible to injury or that directly contributes to injury.

When efforts to prevent injuries focus on only one risk factor, they do not significantly reduce the injury rate. A more successful approach, such as the one offered by ergonomics, combines knowledge of engineering, environment, and human capabilities and limitations. The following aspects should be considered:

- ✓ Organization of work flow;
- ✓ Job design/redesign, including environment; replacing manual processes with mechanical processes, avoiding repetitive manual processes, breaking the routine and taking additional breaks with repetitive tasks; i.e. utilize lifting equipment and carts, replace manual hand tool with cordless screw gun, switching hands and give the dominate hand a break, changing work position, rotating tasks with others;
- ✓ Pre-placement procedures, where necessary; and
- ✓ Training.

Often, poor organization and planning of the work flow results in needless or repeated handling of the same object. When articles are temporarily stored in one place, moved to another, stored again, and moved again, a more efficient work flow can eliminate many potentially harmful MMH tasks and RMA's. Each task involving heavy lifting must be assessed using the following concepts before manual lifting is permitted;

The design or redesign of jobs involving MMH and RMA's should be approached in the following stages:

- ✓ Eliminate heavy MMH & RMA's;
- ✓ Provide mechanical lifting devices and other engineered controls when possible;
- ✓ Reduce stressful body movements; and
- ✓ Improve environmental conditions.

It may be difficult to entirely eliminate all MMH and RMA's but the number can be substantially reduced. Consider using powered or mechanical handling systems if eliminating MMH tasks is not possible. Mechanical aids lower the risk for back injury substantially by reducing the physical effort required to handle heavy objects.

Manual handling such as lifting and carrying can be easier and safer if mechanized by using lift tables, conveyers, yokes, or trucks. Gravity dumps and chutes can help in disposing of materials. Mechanical aid also reduces the need to select workers for the task, but it is essential that the worker is properly trained in the safe use of the available equipment.

If mechanical aids cannot eliminate manual handling, decrease the MMH demands. There are several ways to achieve this:

- ✓ Decrease the weight of handled objects to acceptable limits;
- ✓ Reduce the weight by assigning two people to lift the load or by splitting the load into two or more containers. Using light plastic containers also decreases the weight of the load;
- ✓ Change the type of MMH movement lowering objects causes less strain than lifting, pulling objects is easier than carrying and pushing is less demanding than pulling;
- ✓ Change the work area layouts by reducing the horizontal and vertical distances of lifting, which substantially lowers MMH demands and reducing the travel distances for carrying, pushing, or pulling also decreases work demands;
- ✓ Assign more time for repetitive handling tasks. This reduces the frequency of handling and allows more work/rest periods; and
- ✓ Alternate heavy tasks with lighter ones to reduce the build-up fatigue.

It is important that the design of MMH allows the worker to do tasks without excessive bending and twisting. These body motions are particularly dangerous and can cause back injury even when not combined with handling loads. To reduce stressful body movements in MMH:

- ✓ Provide all materials at a work level that is adjusted to the worker's body size;
- ✓ Eliminate deep shelves to avoid bending;
- ✓ Ensure sufficient space for the entire body to turn;
- ✓ Locate objects within easy reach;
- ✓ Ensure that there is a clear and easy access to the load;

- ✓ Use slings and hooks to move loads without handles;
- ✓ Balance contents of containers;
- ✓ Use rigid containers; and
- ✓ Change the shape of the load so the load can be handled close to the body.

The design of the work environment is an important element of back injury prevention. To improve the work environment to reduce the risk of MMH-related injury:

- ✓ Keep the temperature of the working area between 18°C and 21°C when practical;
- ✓ In extreme cases that require heavy MMH in temperatures above 30°C, rest periods or light work load tasks may account for 75 percent of the work time to ensure an adequate work/rest schedule;
- ✓ Wear properly designed clothing to decrease the heat absorption by the body and to increase evaporation, particularly important people required to work in a high temperature environment;
- ✓ Encourage the use of proper protective clothing for people working in a cold environment to protect the worker from hypothermia and to preserve dexterity needed for safe work;
- ✓ Illuminate the work area for MMH tasks at the level of 200 lux;
- ✓ Use task lights or other additional light sources to improve the ability to see clearly where the MMH requires fine visual discrimination;
- ✓ Use angular lighting and color contrast to improve depth perception, which helps the worker where MMH involves climbing stairs or moving in passageways;
- ✓ When the MMH tasks are done outdoors, the temperature conditions including the humidex (in hot weather) or wind-chill factor (in cold weather) have to be monitored very closely;
- ✓ Reduce MMH tasks by half when the temperature exceeds 28°C;
- ✓ Stop MMH when the temperature exceeds 40°C;
- ✓ Restrict MMH to the minimum possible when the wind-chill drops below -25°C; and
- ✓ Stop MMH when wind-chill drops to -35°C.

More details about working and doing MMH activities in hot and cold environments are available in CCOHS publications Groundskeepers Safety Guide and Cold Weather Worker's Safety Guide.

PRE-PLACEMENT SCREENING

The objective of pre-placement screening is to select individuals less likely to be injured in work involving MMH.

One way in which pre-placement screening may be justified as a preventive measure is where a job involves heavy MMH in an unpredictable and uncontrollable environment. Examples of these are firefighting, mine and water rescue, and police work. Even here, the selected tests should closely reflect with the anticipated requirements of the job. By far the best pre-selection method, if one must be used, is performance of the actual task.

TRAINING

There is little evidence to indicate that training alone reduces the number of MMH injuries. When combined with work design, training is an important element in the prevention of injuries. Proper training also shows the worker how to actively contribute to the prevention of injuries. A good training program should:

- ✓ Make the worker aware of the hazards of MMH;
- ✓ Demonstrate ways of avoiding unnecessary stress; and ‘
- ✓ Teach the worker to handle materials safely.

Instruction on how to lift “properly” is the most controversial issue concerning training in MMH. There is no single correct way to lift because lifting can always be done in several ways. Because of this, on-site, task specific training is essential. In fact, it is sometimes safer to allow the worker to use common sense acquired by experience rather than to force new biomechanical procedures. There are, however, some general lifting rules:

- ✓ Prepare to lift by warming up the muscles;
- ✓ Stand close to the load, facing the way you intend to move;
- ✓ Use a wide stance to gain balance
- ✓ Ensure a good grip on the load;
- ✓ Keep arms straight;
- ✓ Tighten abdominal muscles;
- ✓ Tuck chin into the chest;
- ✓ Initiate the lift with body weight;
- ✓ Lift the load close to the body;
- ✓ Lift smoothly without jerking;
- ✓ Avoid twisting and side bending while lifting; and
- ✓ Do not lift if you are not convicted that you can handle the load safely.

It is also important that workers:

- ✓ Take advantage of rest periods to relax tired muscles to prevent fatigue from building up; and
- ✓ Report discomforts experienced during work to help to identify hazards and correct working conditions.

Finally, there is an aspect of training that cannot be overlooked if training is to be part of an effective prevention program.

Workers should be educated that muscles, tendons, and ligaments are not prepared to meet the physical stress of handling tasks when they are not "warmed up." They are more likely to pull, tear, or cramp when stretched or contracted suddenly under such conditions. This is painful enough by itself. This can lead to more serious and permanent injury if physically stressful work is continued. Warming up and mental readiness for physically demanding tasks is important for any kind of MMH, but particularly for occasional tasks where the worker is not accustomed to handling loads. Workers are more likely to have "ready-to-go" attitude for the task ahead when they understand that other preventive measures are also tired.

EXCAVATION SAFETY PROGRAM

PURPOSE

This Excavation Safety Program has been developed to protect employees from safety hazards that may be encountered during work in trenches and excavations. This program is intended to assure that:

- ✓ Employees who perform work in excavations are aware of their responsibilities and know how to perform the work safely
- ✓ OSC has appointed one or more individuals within the company to assure compliance with the requirements of this program
- ✓ The responsibilities of each Site Health and Safety Officer (SHSO), and workers, are clearly detailed
- ✓ All persons involved in excavation and trenching work have received appropriate training in the safe work practices that must be followed when performing this type of work

DEFINITIONS

1. **Accepted Engineering Practices** - Requirements, which are compatible with standards of practice required by a registered professional engineer
2. **Aluminum Hydraulic Shoring** - Is a pre-engineered shoring system comprised aluminum hydraulic cylinders (cross braces) used in conjunction with vertical rails (uprights) or horizontal rails (whalers). The system is designed specifically to support the sidewalls of an excavation and prevent cave-ins
3. **"ANSI"** - American National Standards Institute
4. **"Approved"** - Sanctioned, endorsed, accredited, certified, or accepted as satisfactory by a duly constituted and nationally recognized authority or agency including OSC, its clients or client representatives as specified
5. **"Authorized person"** - A person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the jobsite
6. **Bell-Bottom Pier Hole** - A type of shaft or footing excavation, the bottom is made larger than the cross section above to form a belled shape
7. **Benching** – A method of protecting employees from cave-ins by excavating the sides to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between the levels.
8. **Cave-In** - The separation of a mass of soil or rock material from the side of an excavation or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation by falling or sliding in a quantity that may be sufficient to entrap, bury, or injure and immobilize a person.

9. **Competent Person** - Is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions, which are unsanitary, hazardous, or dangerous to employees. A competent person has the ability and authority to take prompt corrective measures to eliminate the previously mentioned conditions
10. **Confined Space** - The purpose of the excavation standard is defined as one having:
    - ✓ Limited access and egress
    - ✓ Ventilation, which could produce or contain a hazardous atmosphere
    - ✓ Is not designed for continuous human occupancy
    - ✓ Is deeper than four (4) feet
11. **Cross Braces** - Are the horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or Wales
12. **"Defect"** - Any characteristic or condition which tends to weaken or reduce the strength of the tool, object, or structure of which it is a part.
13. "**Designated Person"** - Means "authorized person" as defined in paragraph
14. **Faces or Sides** - Are the vertical or inclined earth surfaces formed as a result of the excavation
15. **Failure** - Is the breakage, displacement, or permanent deformation of a structural member or connection that would reduce its structural integrity and its support capabilities
16. **Hazardous Atmosphere** - Is an atmosphere that may be harmful, cause death, illness, or injury by being explosive, poisonous, flammable, corrosive, oxidizing, irritating, or toxic
17. **Kick Out** - Is the accidental release or failure of a cross brace
18. **Lockout-Tagout (LOTO) or Lock and Tag** - Is a safety procedure which is used in industry and research settings to ensure that dangerous machines are properly shut off and not started up again prior to the completion of maintenance or servicing work. It requires that hazardous power sources be "isolated and rendered inoperative" before any repair procedure is started. "Lock and tag" works in conjunction with a lock usually locking the device or the power source with the hasp, and placing it in such a position that no hazardous power sources can be turned on. The procedure requires that a tag be affixed to the locked device indicating that it should not be turned on.
19. **NIOSH (National Institute of Occupational Safety and Health)** - Institute which develops safety standards and specifications which the Occupational Safety and Health Act (OSHA) frequently reference.
20. **Protective System** - A method of protecting employees from hazards as specified such as cave-ins, materials that could roll or fall into the excavation or excavation face, collapse of adjacent structures. They include support systems, sloping and benching systems, shield systems, and other systems, which provide the necessary protection.

21. **Ramp** - An inclined walking or working surface used to gain access to one point from another and is constructed from earth or structural materials like wood or steel
22. **Registered Professional Engineer** - Is a professional engineer registered in the state where the work is to be performed
23. **Sheeting** - Is the member of a shoring system that retains the earth in position and is supported by other members of the shoring system.
24. **Shield (Trench Box, Trench Shield)** - Is a structure that is able to withstand the forces of a cave-in. Shields can be permanent structures that can be designed to be portable and move along as the work progresses, pre-manufactured, or job-built in accordance with 1926.652 (c)(3).
25. **Shoring (Shoring System)** - Is a structure such as a metal hydraulic, mechanical, or timber shoring system that supports the sides of an excavation and is designed to prevent cave-ins
26. **Sloping (Sloping System)** - Excavation to form sides of an excavation that are inclined away from the excavation. The angle of incline required to prevent a cave-in varies with differences in factors such as the soil type, environmental conditions of exposure, and application of surcharge loads.
27. **Stable Rock** - Is a solid mineral material that can be excavated with vertical sides and will remain intact while exposed.
28. **Structural Ramp** - Is a ramp made of steel or wood and usually used for vehicle access. Soil or rock ramps are not considered structural
29. **Support System** - Is a structure such as underpinning, bracing or shoring which provides support to an adjacent structure, underground installation, or the sides of an excavation
30. **Tabulated Data** - Are tables and charts approved by a registered professional engineer and used to design and construct a protective system
31. **Trenches** - Are a narrow excavation, in relation to length, made below the surface of the ground. Generally, the depth is greater than the width, but the width of a trench measured at the bottom is not greater than 15 feet. If forms or other structures are installed or constructed in an excavation and reduce the dimension from the structure to the side to 15 feet or less the excavation is considered a trench.
32. **Uprights** - Are vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not come in contact with each other. Uprights in contact with each other are sheeting.
33. **Wales** - Are horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the shoring system or earth.

ASSIGNMENT OF RESPONSIBILITY

In administering the Excavation Safety Program, OSC will:

- ✓ Monitor the overall effectiveness of the program.
- ✓ Provide atmospheric testing and equipment selection as needed.
- ✓ Provide personal protective equipment as needed.
- ✓ Provide protective systems as needed.
- ✓ Provide training to affected employees and supervisors.
- ✓ Provide technical assistance as needed.
- ✓ Preview and update the program on at least an annual basis, or as needed.

PROGRAM MANAGER

The acts as the competent person for OSC in reference to this project plan/ program, and must assure that:

- ✓ The procedures described in this program are followed;
- ✓ Employees entering excavations or trenches are properly trained and equipped to perform their duties safely; and
- ✓ All required inspections, tests, and recordkeeping functions have been performed.

EMPLOYEES

All employees, including contractor personnel, who work in or around excavations, must comply with the requirements of this program. Employees are responsible for reporting hazardous practices or situations to OSC management, as well as, reporting incidents that cause injury to themselves or other employees to the SHSO.

TRAINING

TRAINING SCHEDULE

- ✓ All personnel involved in trenching or excavation work shall be trained in the requirements of this program by the SHSO, with assistance from the appropriate supervisors
- ✓ Training shall be performed before employees are assigned duties in excavations
- ✓ Retraining will be performed when work site inspections indicate that an employee does not have the necessary knowledge or skills to safely work in or around excavations, or when changes to this program are made

- ✓ Training records will be maintained by the Corporate Health, Safety and Environmental Director (DIRECTOR, HS&E) with copies kept in the project files, and shall include:
    - date of the training program;
    - name(s) of the instructor(s) who conducted the training;
    - a copy of the written material presented; and
    - name(s) of the employee(s) who received the training

TRAINING COMPONENTS

The training provided to all personnel who perform work in excavations shall include:

- ✓ The work practices that must be followed during excavating or working in excavations;
- ✓ The use of personal protective equipment that will typically be required during work in excavations, including but not limited to safety shoes, hardhats and, if required, fall protection devices;
- ✓ Procedures to be followed if a hazardous atmosphere exists, or could reasonably be expected to develop, during work in an excavation;
- ✓ The OSHA Excavation Standard, 29 CFR 1926, Subpart P;
- ✓ Emergency and non-entry rescue methods and the procedure for calling rescue services; and
- ✓ OSC policy on reporting incidents that cause injury to employees.

TRAINING DUTIES OF A PROGRAM MANAGER

The Program Manager (DIRECTOR, HS&E) and SHSO shall receive the training detailed in this program as well as training on the requirements detailed in the OSHA Excavation Standard. The Program Manager or SHSO shall:

- ✓ Coordinate, actively participate in, and document the training of all employees affected by this program;
- ✓ Ensure on a daily basis, or more often as detailed in this program, that worksite conditions are safe for employees to work in excavations;
- ✓ Determine the means of protection that will be used for each excavation project;
- ✓ Ensure, if required, that the design of a protective system has been completed and approved by a registered professional engineer before work begins in an excavation; and
- ✓ Make available a copy of this program and the OSHA Excavation Standard to any employee who requests it.

EXCAVATION REQUIREMENTS

UTILITIES AND PRE-WORK SITE INSPECTION

Prior to excavation, the site shall be thoroughly inspected by the Site Superintendent, Project Manager and/or SHSO to determine if special safety measures must be taken.

SURFACE ENCUMBRANCES

All equipment, materials, supplies, permanent installations (i.e., buildings or roadways), trees, brush, boulders, and other objects at the surface that could present a hazard to employees working in the excavation shall be removed or supported as necessary to protect employees and reduce “surcharge loading” on the Excavation/Trench edge[s].

UNDERGROUND INSTALLATION

The location of sewer, telephone, fuel, electric, water, or any other underground installations or wires that may be encountered during excavation work shall be determined and marked prior to opening an excavation. Arrangements shall be made as necessary by the Site Superintendent and/or SHSO with the appropriate utility entity for the location, protection, removal, shutdown, or relocation of underground installations.

If the utility company does not respond within 24 hours and it is not possible to establish the exact location of these installations, the work may proceed with caution if detection equipment or other safe and acceptable means are used to locate the utility. *[Hand digging may be required].

Excavation shall be done in a manner that does not endanger the underground installations or the employees engaged in the work. Utilities left in place shall be protected by barricades, shoring, suspension, or other means as necessary to protect employees.

PROTECTION OF THE PUBLIC

Barricades, walkways, lighting and posting shall be provided as necessary for the protection of the public prior to the start of excavation operations.

- ✓ Guardrails, fences, or barricades shall be provided on excavations adjacent to walkways, driveways, and other pedestrian or vehicle thoroughfares. Warning lights or other illumination shall be maintained as necessary for the safety of the public and employees from sunset to sunrise
- ✓ Wells, holes, pits, shafts, and all similar hazardous excavations shall be effectively barricaded or covered and posted as necessary to prevent unauthorized access. All temporary excavations of this type shall be backfilled as soon as possible

- ✓ Walkways or bridges protected by standard guardrails shall be provided where employees and the general public are permitted to cross over excavations that are 6 feet or more in depth. Where workers in the excavation may pass under these walkways or bridges, a standard guardrail and toeboard shall be used to prevent the hazard of falling objects. Information on the requirements for guardrails and toeboards may be obtained by contacting the SHSO.

PROTECTION OF EMPLOYEES

Stairs, ladders, or ramps shall be provided at excavation sites where employees are required to enter trench excavations over four (4) feet deep. The maximum distance of lateral travel (along the length of the trench) from the point of work necessary to reach the means of egress shall not exceed 25 feet in either lateral direction.

(i.e.: If a Trench is 200 feet long and work is being done at the 100 foot or center location, a ladder is needed on both sides of the work area at a distance of 25 feet).

- ✓ Structural Ramps (used only on specific projects)
  - Structural ramps used solely by employees as a means of access or egress from excavations shall be designed by a competent person. Structural ramps used for access or egress of equipment shall be designed by a person qualified in structural design, and shall be constructed in accordance with the design
  - Ramps and runways constructed of two or more structural members shall have the structural members connected together to prevent movement or displacement
  - Structural members used for ramps and runways shall be of uniform thickness.
  - Cleats or other appropriate means used to connect runway structural members shall be attached to the bottom of the runway or shall be attached in a manner to prevent tripping
  - Structural ramps used in place of steps shall be provided with cleats or other surface treatments on the top surface to prevent slipping
- ✓ Ladders
  - When portable ladders are used, the ladder side rails shall extend a minimum of three (3) feet above the upper surface of the excavation
  - Ladders shall have nonconductive side rails if work will be performed near exposed energized equipment or systems
  - Two or more ladders, or a double-cleated ladder, will be provided where 25 or more employees will be conducting work in an excavation where ladders serve as the primary means of egress, or where ladders serve two-way traffic

- Ladders will be inspected prior to use for signs of damage or defects. Damaged ladders will be removed from service and marked with “Do Not Use” until repaired or destroyed.
- Ladders shall be used only on stable and level surfaces unless secured from movement. Ladders placed in any location where they can be displaced by workplace activities or traffic shall be secured, or barricades shall be used to keep these activities away from the ladders.
- Non self-supporting ladders [extension ladders] shall be positioned so that the foot of the ladder is one-quarter of the working length away from the support.
- Employees are not permitted to carry any object or load while on a ladder that could cause them to lose their balance and fall.

EXPOSURE TO VEHICULAR TRAFFIC

Employees exposed to vehicular traffic shall be provided with, and shall wear; warning vests or other suitable garments marked with or made of reflective or high-visibility material. Warning vests worn by flagmen shall be Lime Green, and shall be reflective material if worn during night work. Emergency lighting, such as spotlights or portable lights, shall be provided as needed to perform work safely.

EXPOSURE TO FALLING LOADS

No employee is permitted underneath loads being handled by lifting or digging equipment. Employees are required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles provide adequate protection for the operator during loading and unloading operations.

WARNING SYSTEM FOR MOBILE EQUIPMENT

A warning system shall be used when mobile equipment is operated adjacent to the edge of an excavation if the operator does not have a clear and direct view of the edge of the excavation. The warning system shall consist of barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.

HAZARDOUS ATMOSPHERES

The SHSO will test the atmosphere in excavations over four (4) feet deep if a hazardous atmosphere exists or could reasonably be expected to exist. A hazardous atmosphere could be expected, for example, in excavations in landfill areas, areas where hazardous substances are stored nearby, or near areas containing gas pipelines.

- ✓ Adequate precautions shall be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions include providing proper respiratory protection or forced ventilation of the workspace.
- ✓ Forced ventilation or other effective means shall be used to prevent employee exposure to an atmosphere containing a flammable gas in excess of ten (10) percent of the lower flammability limit of the gas
- ✓ When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, continuous air monitoring will be performed by the SHSO or their designee. The device used for atmospheric monitoring shall be equipped with an audible and visual alarm.
- ✓ Atmospheric testing will be performed using a properly calibrated direct reading gas monitor. Direct reading gas detector tubes, Quad meter or other acceptable means may also be used to test potentially toxic atmospheres.
- ✓ Each atmospheric testing instrument shall be calibrated by the SHSO on a schedule and in the manner recommended by the manufacturer. In addition:
    - Any atmospheric testing instrument that has not been used within 30 days shall be recalibrated prior to use
    - Each atmospheric testing instrument shall be calibrated at least every six (6) months

Each atmospheric testing instrument will be field checked immediately prior to use to ensure that it is operating properly.

PERSONAL PROTECTIVE EQUIPMENT

- ✓ All employees working in trenches or excavations shall wear approved hardhats and steel-toed shoes or boots
- ✓ Employees exposed to flying fragments, dust or other materials produced by drilling, sawing, sanding, grinding, and similar operations shall wear approved safety glasses with side shields
- ✓ Employees performing welding, cutting, or brazing operations, or are exposed to the hazards produced by these tasks, shall wear approved spectacles or a welding face shield or helmet, as determined by the SHSO
- ✓ Employees entering bell-bottom pier holes or other similar deep and confined footing excavations shall wear a harness with a lifeline securely attached to it. The lifeline shall be separate from any line used to handle materials and shall be individually attended at all times while the employee wearing the lifeline is in the excavation.

- ✓ Employees shall wear, as determined by the SHSO, approved gloves or other suitable hand protection as required by the work and/or potential exposure
- ✓ Employees using, or working in, the immediate vicinity of hammer drills, pile/sheeting drivers, masonry saws, jackhammers, or similar high-noise producing equipment shall wear suitable hearing protection, as determined by the SHSO and outlined in the Site HASP
- ✓ Each employee working at the edge of an excavation six (6) feet or more deep shall be protected from falling. Appropriate Fall Protection may include guardrail systems, fences, barricades, covers, or a tie-back system meeting OSHA requirements, as determined by the SHSO
- ✓ Emergency rescue equipment, such as a breathing apparatus, a safety harness and line and a basket stretcher, shall be readily available where hazardous atmospheric conditions may exist or develop during work in an excavation. This equipment shall be attended when in use. Only personnel who have received approved training and have appropriate equipment shall attempt retrieval that would require entry into a hazardous atmosphere. If entry into a known hazardous atmosphere must be performed, then the SHSO shall be given advance notice so that the hazards can be evaluated and rescue personnel placed on standby if necessary

WALKWAYS AND GUARDRAILS

Walkways shall be provided where employees or equipment are permitted to cross over excavations. Guardrails shall be provided, to provide protection from falling hazards, where walkways, accessible only to on-site project personnel, are six (6) feet or more above lower levels.

PROTECTION FROM WATER ACCUMULATION HAZARDS

- ✓ Employees are not permitted to work in excavations that contain or are accumulating water unless precautions have been taken to protect them from the hazards posed by water accumulation. Precautions may include special support or shield systems [Trench Boxes] to protect from cave-ins, water removal to control the level of accumulating water, or use of safety harnesses and lifelines.
- ✓ If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operation shall be monitored by a person trained in the use of that equipment.
- ✓ If excavation work interrupts the natural drainage of surface water (such as streams), then diversion ditches, dikes, or other suitable means shall be used to prevent surface

water from entering the excavation. Precautions shall also be taken to provide adequate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains or freeze-thaw cycles shall be re-inspected by the SHSO after each rain incident to determine if additional precautions, such as special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of safety harnesses and lifelines, should be used. *LOGS OF EVERY INSPECTION MUST BE KEPT

- ✓ The SHSO shall inform affected workers of the precautions or procedures that are to be followed if water accumulates or is accumulating in an excavation.

STABILITY OF ADJUSTMENT STRUCTURES

The SHSO, Project Engineer, Superintendent or Project Manager will determine if the excavation work could affect the stability of adjoining buildings, walls, sidewalks, or other structures.

- ✓ Support systems (such as shoring, bracing, or underpinning) shall be used to assure the stability of structures and the protection of employees where excavation operations could affect the stability of adjoining buildings, walls, or other structures.
- ✓ Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees shall not be permitted, except when:
    - a support system, such as underpinning, is provided to ensure the safety of employees and the stability of the structure;
    - the excavation is in stable rock;
    - a registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity; or

- a registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees.

- ✓ Sidewalks, pavements, and appurtenant structures shall not be undermined unless a support system or other method of protection is provided to protect employees from the possible collapse of such structures.
- ✓ Where review or approval of a support system by a registered professional engineer is required, the SHSO shall secure this review and approval in writing before the work begins.

PROTECTION FROM FALLING OBJECTS AND LOOSE ROCKS OR SOIL

- ✓ Adequate protection shall be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection shall consist of:
  - scaling to remove loose material;
  - installation of protective barricades, such as wire mesh or timber, at appropriate intervals on the face of the slope to stop and contain falling material; or
  - benching sufficient to contain falling material.
- ✓ Excavation personnel shall not be permitted to work above one another where the danger of falling rock or earth exists.
- ✓ Employees shall be protected from excavated materials, equipment, or other materials that could pose a hazard by falling or rolling into excavations.

- ✓ Protection shall be provided by keeping such materials or equipment at least two (2) feet from the edge of excavations, by use of restraining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary.
- ✓ Materials and equipment may, as determined by the SHSO, need to be stored further than two (2) feet from the edge of the excavation if a hazardous “Surcharge” loading condition is created on the face of the excavation.
- ✓ Materials piled, grouped, or stacked near the edge of an excavation must be stable and self-supporting and not produce excessive surcharge loading.

INSPECTION BY PROGRAM MANAGER

The Corporate Director, HS&E (Program Manager) or the SHSO shall conduct daily inspections of excavations, adjacent areas, and protective systems for evidence of a situation that could result in possible cave-ins, failure of protective systems, hazardous atmospheres, or other hazardous

conditions. An inspection shall be conducted by the SHSO prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard-increasing occurrence. These inspections are only required when the trench will be, or is, occupied by employees and a Log of EVERY inspection must be kept.

Where the SHSO finds evidence of a situation that could result in a possible cave-in, failure of protective systems, hazardous atmosphere, or other hazardous conditions, exposed employees shall be removed from the hazardous area until precautions have been taken to assure their safety.

The SHSO shall maintain a written log of all inspections conducted. This log shall include the date, work site location, results of the inspection, and a summary of any action taken to correct existing hazards.

PROTECTIVE SYSTEM REQUIREMENTS

PROTECTION OF EMPLOYEES

Employees in an excavation shall be protected from cave-ins by using either an adequate sloping and benching system or an adequate support or protective system (ie: Trench Boxes or Shoring). The only exceptions are:

- ✓ excavations made entirely in stable rock; or
- ✓ excavations less than five (5) feet in depth where examination of the ground by the SHSO provides no indication of a potential cave-in.

Protective systems shall be capable of resisting all external loads that could reasonably be expected to be applied to the system.

DESIGN OF SLOPING AND BENCHING SYSTEMS

The slope and configuration of sloping or benching systems shall be selected and constructed by the SHSO or other Competent Person in accordance with the following options:

- ✓ Allowable configurations and slopes
    - Excavations shall be sloped at an angle no steeper than one and one-half (1 ½) horizontal to one (1) vertical (34 degrees measured from the horizontal) which is Type C soil, unless one of the options listed below is used.

- Slopes shall be properly excavated depending on soil type as shown in 29 CFR 1926, Subpart P, Appendix B.

✓ Determination of slopes and configurations using 29 CFR 1926, Subpart P, Appendices A and B

✓ The maximum allowable slopes and allowable configurations for sloping and benching systems shall meet the requirements set forth in these appendices.

DESIGNS USING OTHER TABULATED DATA

✓ The design of sloping or benching systems may be selected from, and shall be constructed in accordance with, other tabulated data, such as tables and charts. The tabulated data used must be in written form and include the following:

- Identification of the factors that affect the selection of a sloping or benching system.
- Identification of the limits of the use of the data, including the maximum height and angle of the slopes determined to be safe.
- Other information needed by the user to make correct selection of a protective system.
- At least one copy of the tabulated data that identifies the registered professional engineer who approved the data shall be maintained at the jobsite during construction of the protective system. After that time, the data may be stored off the jobsite, and shall be maintained by the SHSO or DIRECTOR, HS&E.

DESIGN BY A REGISTERED PROFESSIONAL ENGINEER

✓ Sloping or benching systems designed in a manner other than those described in the preceding three options shall be approved by a registered professional engineer.

✓ Designs shall be in written form and shall include at least the following information:

- the maximum height and angle of the slopes that were determined to be safe for a particular project; and
- the identity of the registered professional engineers who approved the design.
- At least one copy of the design shall be maintained at the jobsite while the slope is being constructed. After that time, the design may be stored off the jobsite, and shall be maintained by the SHSO or DIRECTOR, HS&E.

DESIGN OF SUPPORT, SHIELD, AND OTHER PROTECTIVE SYSTEMS

- ✓ The design of support systems, shield systems, and other protective systems shall be selected and constructed by the SHSO, Registered Engineer, Project Superintendent or other Competent Person in accordance with the following requirements:
  - Designs using 29 CFR 1926, Subpart P, Appendices A, C and D
  - Timber shoring in trenches shall be designed in accordance with the requirements of the OSHA guidelines.
  - Any Excavation 20 feet or more in depth requires a Registered Engineers design and/or approval regardless of the system selected for use
- ✓ Aluminum hydraulic shoring shall be designed in accordance with the manufacturer's tabulated data or the requirements of the OSHA guidelines.

DESIGNS USING MANUFACTURER'S TABULATED DATA

- ✓ Support systems, shield systems, and other protective systems designed from manufacturer's tabulated data shall be constructed and used in accordance with all specifications, recommendations, and limitations issued or made by the manufacturer.
- ✓ Deviation from the specifications, recommendations, and limitations issued or made by the manufacturer shall be allowed only after the manufacturer issues specific written approval.
- ✓ Manufacturer's specifications, recommendations, and limitations, as well as the manufacturer's written approval to deviate from the specifications, recommendations, and limitations, shall be kept in written form at the jobsite during construction of the protective system(s). After that time, the information may be stored off the jobsite, and shall be maintained by the DIRECTOR, HS&E or SHSO.

DESIGNS USING OTHER TABULATED DATA

- ✓ Designs of support systems, shield systems, and other protective systems shall be selected from and constructed in accordance with tabulated data, such as tables and charts.
- ✓ The tabulated data shall be in written form and shall include all of the following:
  - identification of the factors that affect the selection of a protective system drawn from such data;
  - identification of the limits of the use of such data; and
  - information needed by the user to make a correct selection of a protective system from the data.

- ✓ At least one written copy of the tabulated data, which identifies the registered professional engineer who approved the data, shall be maintained at the jobsite during construction of the protective system. After that time, the data may be stored off the jobsite, and shall be maintained by the DIRECTOR, HS&E or SHSO.

DESIGNED BY A REGISTERED PROFESSIONAL

- ✓ Support systems, shield systems, and other protective systems designed in a manner other than the preceding three options shall be approved by a registered professional engineer.
- ✓ Designs shall be in written form and shall include:
  - a plan indicating the sizes, types, and configurations of the materials to be used in the protective system; and
  - the identity of the registered professional engineer who approved the design.
- ✓ At least one copy of the design shall be maintained at the jobsite during construction of the protective system. After that time, the design may be stored off the jobsite, and shall be maintained by the DIRECTOR, HS&E or SHSO.

MATERIALS AND EQUIPMENT

- ✓ Materials and equipment used for protective systems shall be free from damage or defects that might affect their proper function.
- ✓ Manufactured materials and equipment used for protective systems shall be used and maintained in accordance with the recommendations of the manufacturer, and in a manner that will prevent employee exposure to hazards.
- ✓ When materials or equipment used for protective systems are damaged, the SHSO or Superintendent shall ensure that these systems are examined by a competent person to evaluate suitability for continued use. If the competent person cannot assure that the

material or equipment is able to support the intended loads or is otherwise suitable for safe use, then such material or equipment shall be removed from service. The material or equipment shall then be evaluated and approved by a registered professional engineer before being returned to service.

INSTALLATION AND REMOVAL OF SUPPORTS

GENERAL

- ✓ Members of support systems shall be securely connected together to prevent sliding, falling, kick-outs, or other potential hazards.
- ✓ Support systems shall be installed and removed in a manner that protects employees from cave-ins, structural collapses, or from being struck by members of the support systems.
- ✓ Individual members of the support systems shall not be subjected to loads exceeding those that they were designed to support.
- ✓ Before temporary removal of individual support members begins, additional precautions shall be taken as directed by the SHSO, Superintendent or Engineer to ensure the safety of employees (i.e., the installation of other structural members to carry the loads imposed on the support system).
- ✓ Removal of support systems shall begin at, and progress from, the bottom of the excavation. Members shall be released slowly. If there is any indication of possible failure of the remaining members of the structure or possible cave-in of the sides of the excavation, the work shall be halted until it can be examined by the SHSO, Superintendent, Engineer or other Competent Person.
- ✓ Backfilling shall progress in conjunction with the removal of support systems from excavations.

ADDITIONAL REQUIREMENTS

- ✓ Excavation of material to a level no greater than two (2) feet below the bottom of the members of a support system is allowed, but only if the system is designed to resist the forces calculated for the full depth of the trench. There shall be no indications of a possible loss of soil from behind or below the bottom of the support system while the trench is open.

- ✓ Installation of a support system shall be closely coordinated with the excavation of trenches.

SLOPING AND BENCHING SYSTEMS

- ✓ Employees are not permitted to work above other employees in the faces of sloped or benched systems, except when employees at lower levels are protected from the hazards of falling, rolling, or sliding material or equipment.

SHIELD SYSTEMS

GENERAL

- ✓ Shield systems shall not be subjected to loads that are greater than those they are designed to withstand.
- ✓ Shields shall be installed in a manner that will restrict lateral or other hazardous movement of the shield and could occur during cave-in or unexpected soil movement.
- ✓ Employees shall be protected from the hazard of cave-ins when entering or exiting the areas protected by shields. *THEY MUST ENTER BY MEANS OF A LADDER THAT IS PLACED INSIDE THE TRENCH BOX(ES)
- ✓ Employees are not permitted in trenches when shields are being installed, removed, or moved vertically.

ADDITIONAL REQUIREMENTS

- ✓ Excavation of material to a level no greater than two (2) feet below the bottom of the shield system is allowed, but only if the system is designed to resist the forces calculated for the full depth of the trench.
- ✓ There shall be no indications of a possible loss of soil from behind or below the bottom of the shield system while the trench is open.

ACCIDENT INVESTIGATIONS

All incidents that result in injury to workers, as well as near misses, regardless of their nature, shall be reported and investigated. Investigations shall be conducted by the SHSO as soon after an incident as possible to identify the cause and means of prevention to eliminate the risk of reoccurrence.

In the event of such an incident, the Excavation Safety Program shall be reevaluated by the SHSO to determine if additional practices, procedures, or training are necessary to prevent similar future incidents.

CHANGES TO PROGRAM

Any changes to the Excavation Safety Program shall be approved by DIRECTOR, HS&E, Project Manager or Engineer, and shall be reviewed by a qualified person as the job progresses to determine additional practices, procedures, or training needs necessary to prevent injuries. Affected employees shall be notified of procedure changes, and trained if necessary. A copy of this program shall be maintained at the jobsite by the SHSO.

FALL PROTECTION PROGRAM

INTRODUCTION & PURPOSE

To prevent falls when working from elevated surfaces. This document is primarily intended to provide fall protection methods for protecting and informing (training) all employees whose job duties would expose them to fall hazards. All activities where a fall hazard exists appropriate (company approved) Fall Protection Systems shall be utilized to prevent injury. It is the company's policy that 100% tie-off shall be used whenever feasible. This program shall be reviewed and updated as a minimum annually or as conditions warrant (equipment changes, regulatory changes and recognized improvement/best practices) by the Corporate Director, HS&E. Likes fall protecting is required for all employees whose work could expose them to a potential fall. Fall protection training shall be updated as a minimum annually or sooner as situations warrant (equipment changes, regulatory changes, audit/inspection recommendations and recognized improvement/best practices).

REGULATORY AUTHORITY FOR IMPLEMENTATION OF FALL PROTECTION

The Occupational Safety and Health Act under 29 CFR, Subpart M establishes requirements relating to Fall Protection. In response to the regulatory mandate, the company has developed and will maintain this Fall Protection program to provide proper and safe procedures for all applicable employees.

RESPONSIBILITY - (Managers Commitment)

Managers or their designee shall instruct all appropriate employees in the safety significance of the Fall Protection Program and/or procedures. In addition, consideration shall be given to the critical importance of these procedures by ensuring that the applicable provisions of the Fall Protection Program are known, understood, and strictly adhered to by all employees. Strict enforcement of this program is required as a condition of employment. Any variations from these set procedures shall be considered a work rule violation and because of the serious nature of this program, disciplinary action will be taken in accordance with the disciplinary guidelines contained in these procedures.

DEFINITIONS APPLICABLE TO THIS SECTION

1. **Anchorage -** A secure point of attachment for lifelines, lanyards or deceleration devices
2. **Body Belt** (NOTE - Safety Belt for Positioning & Restraint Only, Not for Fall Arrest Protection) - A strap with means both for securing it about the waist and for attaching it to a restraining device

3. **Body Harness -** Straps which may be secured about the employee in a manner that will distribute the fall arrest forces over a least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system.
4. **Buckle -** Any device for holding the body belt or body harness closed around the employee's body
5. **Connector -** A device which is used to couple (connect) parts of the personal fall arrest system and positioning device system and positioning device systems together. It may be an independent component of the system, such as a carabiner, or it may be an integral component of part of the system, (such as a buckle or dee-ring sewn into a body belt or body harness, or a snap-hook spliced or sewn to a lanyard or self-retracting lanyard).
6. **Controlled Access Zone (CAZ) -** An area in which certain work (e.g. overhand bricklaying) may take place without the use of guardrail systems, personal fall arrest systems, or safety net systems and access to the zone is controlled.
7. **Dangerous Equipment -** Equipment (such as pickling or galvanizing tanks, degreasing units, filtering , pumping, cleaning machinery, electrical equipment, and other units) which, as a result of form or function, may be hazardous to employees who fall onto or into such equipment
8. **Deceleration Device -** Any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.
9. **Deceleration Distance -** The additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body belt or body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.
10. **Equivalent -** Alternative designs, materials, or methods to protect against a hazard which the employer can demonstrate will provide an equal or greater degree of safety for employees than the methods, materials or designs specified in the standard
11. **Failure -** Load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded
12. **Free fall -** The act of falling before personal fall arrest system begins to apply force to arrest the fall.

13. **Free Fall Distance -** The vertical displacement of the fall arrest attachment point on the employee's body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.
14. **Guardrail System -** A barrier erected to prevent employees from falling to lower levels
15. **Hole -** A gap or void 2 inches (5.1 cm) or more in its least dimension, in a floor, roof, or other walking/working surface
16. **Infeasible -** It is impossible to perform the construction work using a conventional fall protection system (i.e. guardrail system, safety net system, or personal arrest system) or that it is technologically impossible to use any one of these systems to provide fall protection
17. **Lanyard -** A flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage
18. **Leading Edge -** The edge of a floor, roof, or formwork for a floor or other walking/working surface (such as the deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed. A leading edge is considered to be an **"unprotected side and edge"** during periods when it is not actively and continuously under constructed.
19. **Lifeline -** A component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest systems to the anchorage.
20. **Low-Slope Roof -** A roof having a slope less than or equal to 4 in 12 (vertical to horizontal).
21. **Lower Levels -** Those areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.
22. **Mechanical Equipment -** All motor or human propelled wheeled equipment used for roofing work, except wheelbarrows and mop carts
23. **Opening -** A gap or void 30 inches (76 cm) or more high and 18 inches (48 cm) or more wide, in a wall or partition, through which employees can fall to a lower level.

24. **Overhand bricklaying and related work (piece wall structures, i.e. retaining walls, sand bag walls, etc.) -** The process of laying bricks and masonry units such that the surface of the wall to be jointed is on the opposite side of the wall from the mason, requiring the mason to lean over the wall to complete the work. Related work includes mason tending and electrical installation, incorporated into the brick wall during the overhand bricklaying process.
25. **Personal Fall Arrest System (PFAS) -** System used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations. NOTE - use of a body belt for fall arrest is prohibited.
26. **Personal Fall Restraint System** – System used to eliminate employee travel to a free fall situation. Permits no free fall by tie off utilizing harness from PFAS and fixed restraining lanyard/line or retractable lanyard that limits travel of employee to fall edge
27. **Positioning Device System -** A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.
28. **Rope Grab -** A deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking, or both.
29. **Roof -** The exterior surface on the top of a building. This does not include floors or form work which, because a building has not been completed, temporarily become the top surface of a building
30. **Roof Work -** The hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheet metal, and vapor barrier work, but not including the construction of the roof deck.
31. **Self-retracting Lifeline / lanyard -** A deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which, after onset of a fall, automatically locks the drum and arrests the fall.

32. **Snap-hook -** A connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. Snap-hooks are generally one of two types:
    a. The locking type with a self-closing, self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection; or
    b. The non-locking type with a self-closing keeper which remains closed until pressed open for connection or disconnection. NOTE THIS TYPE IS PROHIBITED FROM USE AND SHALL BE IMMEDIATELY DESTROYED AND DISCARDED. the use of a non-locking snap-hook as part of personal fall arrest systems and positioning device systems is prohibited.
33. **Steep Roof -** A roof having a slope greater than 4 in 12 (vertical to horizontal)
34. **Toe board -** A low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel
35. **Unprotected Sides and Edges -** Any side or edge (except at entrances to points of access) of a walking/working surface, e.g., floor, roof, ramp, or runway where there is no wall or guardrail system at least 39 inches (1.0 m) high
36. **Walking/Working Surface -** Any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, form work and concrete reinforcing steel but not including ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.
37. **Warning Line System -** A barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect employees in the area.
38. **Work Area -** That portion of a walking/working surface where job duties are being performed

GENERAL REQUIREMENTS

It shall be determined if the walking/working surfaces on which employees are to work, have the strength and structural integrity to support employee's safety. Supervisor/competent person shall have the responsibility of continually monitoring this to ensure employee's safety.

No employee shall be permitted on a walking/working surface with an unprotected side or edge which is six feet (1.8 m) or more above a lower level without protection from falling by the use of guardrails, safety nets, or personal fall arrest systems. Examples include, but are not limited to; high burning, aerial platform work, vessel/tank inspection, purging and cleaning, barrier/containment wall work, elevated earth structure with slopes or any elevated work which has fall potential.

The criteria for these systems are described within this document under the section titled, **"Standardization Requirements for Fall Protection."**

In the event that this work place situation should arise, employees shall be required to inform their immediate supervisor at once.

No employee shall be permitted to construct a leading edge six feet (1.8 m) or more above lower levels without being protected by guardrails, safety nets, or personal fall arrest systems.

The criteria for these systems are described within this document under the section titled, **"Standardization Requirements for Fall Protection."**

In the event that this work place situation should arise, employees are required to inform their immediate supervisor at once.

No employee shall be permitted on a walking/working surface where leading edges are under construction who is not engaged in the leading lead work six feet (1.8 m) or more above the lower level without being protected by guardrails, safety nets, or personal fall arrest systems.

The criteria for these systems are described within this document under the section titled, **"Standardization Requirements for Fall Protection."**

In the event that this work place situation should arise, employees are required to inform their immediate supervisor at once.

No employee performing overhand brick laying includes any type of piece by piece (sandbags, blocks, etc.) wall building (i.e. retaining/protective walls) and related work 6 feet (1.8 m) or more above lower levels, without being protected by guardrail systems, safety net systems, personal fall arrest systems or in a controlled access zone. No employee shall be permitted to reach more than ten inches (25 cm) below the lower level of the walking/working surface on which they are working without being protected from falling by a guardrail, safety net, or personal fall arrest systems. Note: Bricklaying operations performed on scaffolds are regulated by Subpart L – Scaffolds of this part.

The criteria for these systems are described within this document under the section titled, **"Standardization Requirements for Fall Protection."**

In the event that this work place situation should arise, employees are required to inform their immediate supervisor at once.

No employee shall be permitted on, at, or near wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is six feet (1.8 m) or more above lower levels and the inside bottom edge of the wall opening is less than thirty-nine inches (1.0 m) above the walking/working surface without protection from falling by the use of guardrails, safety nets, or personal fall arrest systems.

The criteria for these systems are described within this document under the section titled, **"Standardization Requirements for Fall Protection."**

In the event that this work place situation should arise, employees are required to inform their immediate supervisor at once.

No employee shall be permitted in a hoist area where the walking/working surface is six feet (1.8 m) or more above the lower level without being protected by the use of guardrails, safety nets, or personal arrest system. If guardrail systems, chain, gate or guardrails are in place and any portion thereof are removed to facilitate the hoisting operation and the employee must lean through the access opening or out over the edge of the access opening, that employee shall be protected from falling hazards by a personal fall arrest systems.

The criteria for these systems are described within this document under the section titled, **"Standardization Requirements for Fall Protection."**

In the event that this work place situation should arise, employees are required to inform their immediate supervisor at once.

No employee shall be permitted on a walking/working surface where there is a danger of falling through holes, (including skylights), more than six feet (1.8 m) above lower levels without being protected by personal fall arrest systems, covers, or guardrails systems erected around such holes.

The criteria for these systems are described within this document under the section titled, **"Standardization Requirements for Fall Protection."**

In the event that this work place situation should arise, employees are required to inform their immediate supervisor at once.

No employee shall be permitted on a walking/working surface where there is a tripping in or stepping into or through and/or objects falling through holes, (including skylights), without adequate covers, guardrails, safety nets, or personal fall arrest systems in place.

The criteria for these systems are described within this document under the section titled, **"Standardization Requirements for Fall Protection."**

In the event that this work place situation should arise, employees are required to inform their immediate supervisor at once.

In the event a hazard from falling objects would arise, **all exposed employees** will be required to wear a hard hat.

In the event that this work place situation should arise, employees are required to inform their immediate supervisor at once.

The following measures shall also be implemented:

- ✓ Erect toe boards, screens, or guardrail systems;
- ✓ Erect a canopy structure; and
- ✓ Barricade the area and prohibit employee access.

No employee shall be permitted on a ramp, runway, or other walkway where the surface is six feet (1.8 m) above the lower level without protection from a guardrail systems, safety nets, or personal fall arrest systems.

The criteria for these systems are described within this document under the section titled, **"Standardization Requirements for Fall Protection."**

In the event that this work place situation should arise, employees are required to inform their immediate supervisor at once.

SPECIAL CONDITIONS AND APPLICATIONS

No employee shall be permitted at the edge of any retaining wall, dyke, dam, containment system, vessel or other similar structures where the next lowest level is greater than 6 feet or less in cases where a fall could result in falling into hazards (drowning & chemical hazards, process hazards) or on an something that could cause injury or death (impalement, hazardous objects, etc.).

The criteria for these systems are described within this document under the section titled, **"Standardization Requirements for Fall Protection."**

No employee shall be permitted at the edge of an excavation six feet (1.8 m) or more in depth where there is plant growth or other visual barrier without being protected from falling by guardrail systems, fences, or other barricades.

The criteria for these systems are described within this document under the section titled, **"Standardization Requirements for Fall Protection."**

No employee shall be permitted at the edge of a well, pit, shaft and/or similar excavation six feet (1.8 m) or more in depth without protection from falling by guardrail systems, fences, barricades, or covers.

The criteria for these systems are described within this document under the section titled, **"Standardization Requirements for Fall Protection."**

In the event that this work place situation should arise, employees are required to inform their immediate supervisor at once.

No employee shall be permitted on the face of form work or reinforcing steel without being protected from falling six feet (1.8 m) or more to lower levels by personal fall arrest systems, safety net systems, or positioning device system.

The criteria for these systems are described within this document under the section titled, **"Standardization Requirements for Fall Protection."**

In the event that this work place situation should arise, employees are required to inform their immediate supervisor at once.

No employee shall be permitted to work above dangerous equipment without being protected from falling into or onto the dangerous equipment by equipment guards, guardrails, safety nets, or personal fall arrest systems.

The criteria for these systems are described within this document under the section titled, **"Standardization Requirements for Fall Protection."**

In the event that this work place situation should arise, employees are required to inform their immediate supervisor at once.

No employee shall be permitted to construct, including any related operation of precast concrete members, (including but not limited to the erection of wall panels, columns, beams, floors, and roof tees) without being protected from falling by guardrails, safety nets, or personal fall arrest systems.

The criteria for these systems are described within this document under the section titled, **"Standardization Requirements for Fall Protection."**

In the event that this work place situation should arise, employees are required to inform their immediate supervisor at once.

WORK PERFORMED ON LOW SLOPED ROOFS

No employee shall be permitted to become engaged in activities on low sloped roofs without unprotected sides and edges six feet (1.8 m) or more above lower level without being protected from falling by guardrail, safety net, personal fall arrest system, or a combination of:

- ✓ Warning line system and guardrail system;
- ✓ Warning line system and safety net system;
- ✓ Warning line system and personal fall arrest system;
- ✓ Irregular, Non-Rectangular Shaped Roofs.

WORK PERFORMED ON STEEP ROOFS

No employee shall be permitted to work on a steep roof with unprotected sides and edges six feet (1.8 m) or more above lower levels without being protected from falling by guardrail systems with toe boards, safety net systems, or personal fall arrest systems.

STANDARDIZATION REQUIREMENTS FOR FALL PROTECTION SYSTEMS, CRITERIA AND PRACTICES

There may be situations where a fall hazard may be unique or **"one of a kind."** In this situation, the supervisor (competent person) is ultimately in the best position based upon his/her knowledge of the construction and/or configuration of the hazard, to judge or determine if any additional/alternative protection or protective measures need to be taken.

In the event that this work place situation should arise, employees are required to inform their immediate supervisor at once.

A Fall Protection Plan shall be implemented as outlined within this document under the section titled, **"Alternative Measures."**

All other Fall Protection Systems shall meet the following criteria, and shall be installed prior to the employee beginning work that necessitates the Fall Protection.

GUARDRAIL SYSTEMS

To ensure the integrity of all guardrail systems for use as Fall Protection, the construction and configuration shall meet the following minimum criteria set forth below:

- ✓ Top edge of top rails, or equivalent guardrail system members, shall be 43 inches (1.1 m) plus or minus 3 inches (8 cm) above the walking/working level. When conditions warrant, the height of the top edge may exceed the 45-inch height, provided the guardrail system meet all other criteria outlined by this section

NOTE: When employees are using stilts, the top edge height of the top rail, or equivalent member, shall be increased an amount equal to the height of the stilts.

  - ✓ Midrails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members shall be installed between the tip edge of the guardrail system and the walking/working surface when there is no wall or parapet wall at least 21 inches (53 cm) high
  - ✓ Midrails, when used, shall be installed at a height midway between the top edge of the guardrail system and the walking/working level
  - ✓ Screens and mesh, when used, shall extend from the top rail to the walking/working level and along the entire opening between top rail supports
  - ✓ Intermediate members (such as balusters), when used between posts, shall be not more than 19 inches (48 cm) apart
- ✓ Other structural members (such as additional midrails and architectural panels) shall be installed such that there are no openings in the guardrail system that are more than 19 inches wide
- ✓ Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds applied within 2 inches of the top edge, in any outward or downward direction, at any point along the top edge

- ✓ When the 200 pound load is applied in a downward direction, the top edge of the guardrail shall not deflect to a height less than 39 inches (1.0 m) above the walking/working level
- ✓ Midrails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members shall be capable of withstanding, without failure, a force of at least 150 pounds applied in any downward or outward direction at any point along the midrail or other member
- ✓ Guardrail systems shall be so surfaced as to prevent injury form punctures or lacerations, and to prevent snagging of clothing
- ✓ The ends of all top rails and midrails shall not overhang the terminal posts except where such overhang does not constitute a projection hazard
- ✓ Steel banding and plastic banding shall not be used as top rails or midrails
- ✓ Top rails and midrails shall be at least one-quarter inch nominal diameter or thickness to prevent cuts and lacerations. If wire rope is used for top rails, it shall be flagged at not more that 6-foot intervals with high-visibility material
- ✓ When guardrail systems are used at hoisting areas, a chain or removable guardrail section shall be placed across the opening between guardrail sections when hoisting operations are not taking place
- ✓ When guardrail systems are used at holes, they shall be erected on all unprotected sides or edges of the hole
- ✓ When guardrail systems are used around holes used for the passage of materials, the hole shall have not more than two sides provided with removal guardrail sections to allow the passage of materials. When the hole is not in use, it shall be closed over with a cover, or a guardrail system shall be provided along all unprotected sides or edges
- ✓ When guardrail systems are used around which are used as points of access (such as ladderways), they shall be provided with a gate, or be so offset that a person cannot walk directly into the hole
- ✓ Guardrail systems used on ramps and runways shall be erected along each unprotected side or edge
- ✓ Manila, plastic or synthetic rope being used for top rails or midrails shall be inspected as frequently as necessary to ensure that it continues to meet the strength requirements
- ✓ Guardrail systems when used as falling object protection, shall have all openings small enough to prevent passage of potentially falling objects

TOEBOARDS

In the event that employees need additional protection from falling objects toeboards shall be installed. To ensure the integrity of all toeboards, they shall be constructed to meet the following minimum criteria set forth below:

- ✓ Toeboards, when used as falling object protection, shall be erected along the edge of the overhead walking/working surfaces for a distance sufficient to protect employees below;
- ✓ Toeboards shall be capable of withstanding without failure, a force of at least 50 pounds applied in any downward or outward direction at any point along the toe board;
- ✓ Toeboards shall be a minimum of 3 ½ inches (9 cm) in vertical height from their top edge to the level of the walking/working surface. They shall be solid or have openings not over 1 inch (2.5 cm) in greater dimension. They shall have not more than ¼ inch (0.6 cm) clearance above the walking/working surface; and
- ✓ Where tools, equipment, or materials are piled higher than the top edge of a toeboard, paneling or screening shall be erected from the walking/working surface or toeboard to the top of a guardrail system's top rail or midrail, for a distance sufficient to protect employees below.

COVERS

In the event that employees need additional protection from falling through holes, covers shall be installed. To ensure the integrity of all covers, they shall meet the following minimum criteria set forth below:

- ✓ Covers located in roadways and vehicular aisles shall be capable of supporting, without failure, at least twice the maximum axle load of the largest vehicle expected to cross over the cover;
- ✓ All covers shall be capable of supporting, without failure, at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time;
- ✓ All covers shall be secured when installed so as to prevent accidental displacement by the wind, equipment, or employees; and
- ✓ All covers shall be color coded or they shall be marked with the word **"HOLE"** or **"COVER"** to provide warning of the hazard.

Note: This provision does not apply to cast iron manhole covers or steel grates used on streets or roadways.

SAFETY NETS

- ✓ To ensure the integrity of any safety net system used as fall protection, safety nets shall be inspected at least once a week for wear, damage, and other deterioration. In addition, they shall be drop tested at the jobsite after initial installation and before being used, or at any time the safety net system is relocated and/or repaired. If the safety net system is left in one place it shall be tested at six month intervals. Defective nets shall not be used.
- ✓ The most recent certification of inspection and drop test for each net and net installation shall be kept up to date and available at each jobsite.

Please see the following documents:

- ✓ Safety nets shall be installed as close as practicable under the walking/working surfaces on which employees are working, but in no case more than 30 feet (9.1 m) below such level. The potential fall area from the walking/working surface to the net shall be unobstructed.

Safety nets shall extend outward from the outermost projection of the work surface as follows:

Vertical distance from working level to horizontal plane of net	Minimum required horizontal distance of outer edge of net from the edge of the working surface
Up to 5 feet	8 feet.
More than 5 feet up to 10 feet	10 feet.
More than 10 feet	13 feet.

- ✓ Safety nets shall be installed with sufficient clearance under them to prevent contact with the surface or structures below when subjected to an impact force equal to the drop test.
- ✓ Safety nets and their installations shall be capable of absorbing an impact force of a drop test consisting of a 400 pound bag of sand 30 inches in diameter from the highest walking/working surface at which workers exposed, but not less than 42 inches above the level **"before being used as a fall protection system"**, whenever relocated, after major repair, and at 6 month intervals if left in one place.
- ✓ Items that have fallen into safety nets including – but not restricted to, materials, scrape, equipment, and tools – must be removed as soon as possible and at least before the next work shift

SAFETY NET WEEKLY INSPECTION
Date: _____ Time: _____
Competent person performing inspection: _____ (Signature)
Manufacturer of Safety Net/Model/Serial Number: _____
Has safety net been modified and/or repaired? ☐Yes ☐No If Yes, When: _____
SAFETY NET DROP TEST Date: _____ Time: _____
Competent person performing test: _____ (Signature)
Manufacturer of Safety Net: _____
Has this net been modified and/or repaired? ☐Yes ☐No
If Yes, When: _____
Environmental conditions at time of test: _____
Vertical distance from walking/working level to horizontal plan of safety net: _____ feet.
Drop test medium _____ 400 pound bag of sand 30 ± 2 inches in diameter
Vertical distance from the surface to the horizontal plan of the Safety Net that the test medium was dripped: _____ feet
Remarks following test: ☐Pass ☐Fail Repairs or modifications made following the drop test:

_____

<u>If for any reason all or part of the safety net did not meet or pass the drop test, no employee shall be permitted on the walking/working surface until it is retested.</u>

PERSONAL FALL ARREST SYSTEMS

Whenever possible fall restraint/prevention shall be used before fall arrest. All equipment used for fall restraint and/or fall arrest shall be inspected prior to each use following the guidelines provided herein.

To ensure the integrity of any Personal Fall Arrest Systems, the Personal Fall Arrest Systems and its use shall comply with the following provisions set forth below:

- ✓ Connectors shall be dropped forged, pressed or formed steel, or made of equivalent materials;
- ✓ Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of the system;
- ✓ Dee-rings and snap-hooks shall have a minimum tensile strength of 5,000 pounds;
- ✓ Dee-rings and snap-hooks shall be proof-tested to a minimum tensile load of 3,600 pound without cracking, breaking, or taking permanent deformation;

- ✓ Snap-hooks shall be sized to be compatible with the member to which they are connected, to prevent unintentional disengagement of the snaphook by depression of the snap-hook keeper by the connected member, or shall be a locking type snaphook designed and used to prevent disengagement of the snap-hook by the contact of the snaphook keeper by the connected member;
- ✓ On suspended scaffolds or similar work platforms which horizontal lifelines which may become vertical lifelines, the devices used to connect to a horizontal lifeline shall be capable of locking in both directions on the lifeline;
- ✓ Horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two;
- ✓ Lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds;
- ✓ Lifelines shall be protected against being cut or abraded;
- ✓ Self-retracting lifelines and lanyards which automatically limit free fall distance to 2 feet (0.61 m) or less shall be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device with the lifeline or lanyard in the fully extended position;
- ✓ Self-retracting lifelines and lanyards which do not limit free fall distance to 2 feet (0.61 m) or less, rip-stitch lanyards, tearing and deforming lanyards shall be capable of sustaining a minimum tensile load of 5,000 pounds applied to the device with the lifeline or lanyard in the fully extended position; and
- ✓ Ropes and straps (webbing) used in lanyards, lifelines, and strength components of body harnesses shall be made from synthetic fibers.

Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee attached, or shall be designed, installed, and used as follows:

- ✓ As part of a complete personal fall arrest system which maintains a safety factor of at least two; and
- ✓ Under the supervision of a qualified person.

Personal fall arrest systems, when stopping a fall, shall:

- ✓ Limit maximum arresting force on an employee to 900 pounds when used with a body belt;
- ✓ Limit maximum arresting force on an employee to 1,800 pounds when used with a body harness;
- ✓ Be rigged such that an employee can neither free fall more than 6 feet (1.8 m), nor contact any lower level;
- ✓ Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet (1.07 m);

- ✓ Have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 6 feet (2.8 m), or the free fall distance permitted by the system, whichever is less;

Note: - If the system is used by an employee having a combined tool and body weight of 310 pounds (140 kg) or more, then the system shall be modified to provide proper protection for such heavier weights.

- ✓ The attachment point of the body harness shall be located in the center of the wearer's back near shoulder level, or above the wearer's head;
- ✓ Body harnesses, and components shall be used only for employee protection (as part of a personal fall arrest system or positioning device system) and not to hoist materials;
- ✓ Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and determined by a competent person to be undamaged and suitable for reuse;
- ✓ Provisions for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves;
- ✓ All employees shall be required to inspect prior to use of personal fall arrest systems for wear, damage and other deterioration, and defective components shall be removed from service;
- ✓ Personal fall arrest systems shall not be attached to guardrail systems, nor shall they be attached to hoists, except as specified in this policy;
- ✓ When a personal fall arrest system is used at hoist areas, it shall be rigged to allow the movement of the employee only as far as the edge of the walking/working surface;
- ✓ Positioning Device Systems;
- ✓ To ensure the integrity of any positioning device system, the positioning device system, and its use shall comply with the following minimum provisions set forth below;
- ✓ Positioning devices shall be rigged such that an employee cannot free fall more than 2 feet (.9 m);
- ✓ Positioning devices shall be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or 3,000 pounds, whichever is greater;
- ✓ Connectors shall be drop forged, pressed or formed steel, or made of equivalent materials;
- ✓ Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of this system;
- ✓ Connecting assemblies shall have a minimum tensile strength of 5,000 pounds;
- ✓ Dee-rings and snap-hooks shall be proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or taking permanent deformation;

- ✓ Snap-hooks shall be sized to be compatible with the member to which they are connected to prevent unintentional disengagement of the snap-hook by depression of the snap-hook keeper by the connected member, or shall be a locking type snap-hook designed and used to prevent disengagement of the snap-hook by the contact of the snap-hook keeper by the connected member;
- ✓ All employees shall be required to inspect prior to use any positioning device system for wear, damage, and other deterioration, and defective component shall be removed from service; and
- ✓ Harnesses and components shall be used only for employee protection (as part of a personal fall arrest system or positioning device system) and not to hoist materials.

WARNING LINE SYSTEMS

Warning lines may be used only on low-sloped roofs when doing roof and in conjunction with other acceptable fall protection. To ensure the integrity of any warning line system, the warning line system, and its use shall be constructed to meet the following minimum criteria set forth below:

- ✓ The warning line shall be erected around all sides of the roof work area;
- ✓ When mechanical equipment is not being used, the warning line shall be erected not less than 6 feet (1.8 m) from the roof edge;
- ✓ When mechanical equipment is being used, the warning line shall be erected not less than 6 feet (1.8 m) from the roof edge which is parallel to the direction of mechanical equipment operation, and not less than 10 feet (3.1 m) from the roof edge which is perpendicular to the direction of mechanical equipment operation;
- ✓ Points of access, materials handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines; and
- ✓ When the path to a point of access is not in use, a rope, wire, chain, or other barricade, equivalent in strength and height to the warning line, shall be placed across the path at the point where the path intersects the warning line erected around the work area, or the path shall be offset such that a person cannot walk directly into the work area.

Warning lines shall consist of ropes, wires, or chains, and supporting stanchions erected as follows:

- ✓ The rope, wire, or chain shall be flagged at not more than 6 foot (1.8 m) intervals with high-visibility material;
- ✓ The rope, wire, or chain shall be rigged and supported in such a way that its lowest point (including sag) is no less than 34 inches (.9 m) from the walking/working surface and its highest point is no more than 39 inches (.9 m) from the walking/working surface;

- ✓ After being erected, with the rope, wire, or chain attached, stanchions shall be capable of resisting, without tipping over, a force of at least 16 pounds applied horizontally against the stanchion, 30 inches (.8 m) above the walking/working surface, perpendicular to the warning line, and in the direction of the floor, roof, or platform edge;
- ✓ The rope, wire, or chain shall have a minimum tensile strength of 500 pounds and after being attached to the stanchions, shall be capable of supporting, without breaking, the loads applied to the stanchions;
- ✓ The line shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over;
- ✓ No employee shall be allowed in the area between a roof edge and a warning line unless the employee is performing roofing work in that area;
- ✓ Mechanical equipment on roofs shall be used or stored only in areas where employees are protected by a warning line system, guardrail system, or personal fall arrest system; and
- ✓ Warning lines meeting the above criteria may be used on other than roofs when erected at least 15 feet from an unprotected edge (i.e., floors below roof level).

CONTROLLED ACCESS ZONES

To ensure the integrity of all controlled access zones used to control access to areas where leading edge and other operations are taking place, the controlled access zone shall conform to the following minimum provisions:

- ✓ The controlled access zone shall be defined by a control line or by any other means that restricts access;
- ✓ When control lines are used, they shall be erected not less than 6 feet (1.8 m), nor more than 25 feet (7.7 m) from the unprotected or leading edge; except when erecting precast concrete members;
- ✓ The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge;
- ✓ The controlled line shall be connected on each side to a guardrail system or wall;

Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:

- ✓ Each line shall be flagged or otherwise clearly marked at not more than 6-foot (1.8 m) intervals with high-visibility material;

  Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches (1 m) from the walking/working surface and its highest point in not more than 45 inches (1.3 m), (when overhand bricklaying operations are being performed) from the walking/working surface;

- ✓ On floors and roofs where guardrail systems are not in place prior to the beginning of work, controlled access zones shall be enlarged, as necessary, to enclose all points of access, material handling areas, and storage areas; and
- ✓ On floors and roofs where guardrail systems are in place, but need to be removed to allow leading edge work to take place, only that portion of the guardrail necessary to accomplish that day's work shall be removed and PFAS or PFRS shall be utilized where fall exposure may exist.

EQUIPMENT INSPECTIONS

All fall protection equipment shall be expected at least annually by a competent person and prior to each use. A record of each inspection shall be made and kept in the job trailer for verification and audit purposes.

Inspections will be carried out as provided in the following guide which shall be available with the equipment in each job trailer.

Harness

- ✓ Must be inspected before every use by user and once per year by competent person Inspect for damage including wear, tear, cuts, corrosion, and deterioration. Throw out if used in a fall
- ✓ Guardian & French Creek harness must be discarded if older than 5 years after put in service
- ✓ Never write on harness webbing. Fibers are damaged by ink solvents. Discard if written on
- ✓ If used for fall arrest make sure harness fits properly and has trauma straps

Tether/lanyard

- ✓ No knots
- ✓ No damage including cuts, abrasion, "powdered" webbing, discoloration, or deterioration
- ✓ Connectors must be locking type and must freely operate. Check for cracks, deformation, pitting, burrs, lose parts. Make sure the connector matches the use
- ✓ For shock absorber lanyards check for previous fall exposure and remove from service if so
- ✓ Make sure label is legible and proper SLR is used. Never use an SLR for fall restraint and always use an SLR-LE for leading edge work
- ✓ Pull lifeline sharply to make sure brake engages
- ✓ Play out full length of lifeline and check for damage. Discard if damaged, corroded, etc.
- ✓ Check connectors for damage and discard if damaged
- ✓ Make sure the visual indicator has not been engaged, discard if it has been

USE FALL RESTRAINT WHENEVER POSSIBLE BEFORE FALL ARREST!!!

FATIGUE MANAGEMENT PROGRAM

PURPOSE

Fatigue has been identified as a contributory factor in many work accidents. The following aims to give some information about the risks associated with fatigue and some guidance on how to avoid, manage and control fatigue so that workers are less likely to be harmed by the effects. All employees shall receive training concerning fatigue management, initially at the time of hire and thereafter as a minimum annually. Likewise this program shall be reviewed at least annually by Corporate Safety for effectiveness.

FATIGUE FACTORS

- ✓ Duration of shifts, time off between shifts and changes to shift patterns
- ✓ Ability to sleep on rest days, the quality of sleep, and sleeping disorders
- ✓ Commuting time to/from workplace. Effects (sleepiness) of melatonin release with darkness, driving and working at night
- ✓ Workload & responsibilities, different mental and/or physical task demands, role and main activities performed throughout a shift
- ✓ Impact of second jobs and personal activities
- ✓ Scheduling and quality of rest breaks during a shift
- ✓ Cold starts and inadequate recovery times
- ✓ Attitudes to work/motivation and dealing with stress in life
- ✓ The working environment encourages fatigue rather than alertness (warm, dark, comfortable, silent)

PREVENTION – WORKER RESPONSIBILITIES

- ✓ Always take scheduled breaks for water, rest and food. Minimum one 15 minute break every 3 hours, minimum one half hour break after 6 hours (rest/water/meal, i.e. lunch). Actual shift/work day should not exceed 14 hours which includes breaks. Likewise, a mandatory full day break (24 hours no work/day off) after 5 full 12 hour shifts or 60 hours. Note, in some cases additional and more frequent breaks should be taken depending on task including job rotation (heavy physical requirements i.e. jack hammering, moderate to heavy repetitive lifting (25 – 50 lbs.) and working conditions (extreme heat and cold environments, noisy environments >85 db, environments requiring respirator use, repetitive motions, awkward positions)
- ✓ Get 8 hours sleep before starting work and try to sleep at the same time each day
- ✓ Find a healthy balance between work and personal life
- ✓ Always seek medical advice about sleep disorders

- ✓ All employees shall receive initial fatigue management training at the time of hire and annually thereafter or sooner as warranted by program updates, employ requests, inspection, audit or incident recommendations
- ✓ Avoid chronic use of over the counter or prescription medication that may impair a worker from working safely
- ✓ Employees are responsible for notifying their supervisor if they are fatigued to the point of not being able to perform their duties safely
- ✓ All employees have the authority to stop work whenever safety is a concern which includes fatigue which can impair a workers ability to work safely. If fatigue is a concern report it to your supervisor so appropriate action can be taken to correct the issue

PREVENTION – MANAGER AND SUPERVISOR RESPONSIBILITIES

- ✓ Ensure the availability of adequate rest breaks and time off between shifts
- ✓ Rotate jobs to avoid repetition and maintain awareness. Maintain Staff work balance to help control worker fatigue
- ✓ Analysis of work task routinely to control fatigue. Engineering controls and work schedules to prevent fatigue, job variation, including rotation, frequent breaks
- ✓ Monitor workers for signs of fatigue (lethargic behavior, diminished physical abilities, sleepiness). Relieve workers of duties to get adequate rest when signs of fatigue are exhibited or reported by employees
- ✓ Assure all employees are properly trained (initially at time of hire and at a minimum annually thereafter) in fatigue management; hazard recognition, signs, symptoms and protective and control measures
- ✓ The hazards of fatigue and proper fatigue management are included with every Activity Hazard Analysis; analysis of work task to control fatigue, use of ergonomic friendly equipment and tools to reduce stressors which contribute to fatigue.

CONCLUSION

- ✓ Fatigue is the condition of being physically or mentally tired or exhausted
- ✓ When you're fatigued your attention to detail and hazard awareness is compromised which could cause you to make errors in judgment or affect your reaction time to a hazard. Your mind or eyes can be off the task and you can make a critical error or have a near-miss incident. If you recognize the effects of fatigue in yourself, or others, stop what you are doing and raise your concerns with your immediate supervisor.
- ✓ All employees have a duty to take reasonable care of their own health and safety and that of other people, who may be affected by their activities at work.

FIRE PROTECTION PROGRAM

PURPOSE

To assure all OSC operations are safe from fire incidences that could cause injury or property damage and all locations are properly prepared in a fire emergency. This program shall be reviewed and updated annually or sooner as warranted by audit/inspection recommendations, incident investigation, regulation and equipment change or other improvement measure recommendations.

PERSONNEL RESPONSIBILITIES

Corporate Director – Health, Safety & Environment

Responsible for assuring this program is reviewed and updated as necessary (product changes and updates, regulatory updates, program performance improvements). The program shall be as a minimum reviewed and updated annually.

Managers and Supervisors

Responsible for assuring their projects/operations and employees are in compliance with the requirements of this program (training, application, practice and procedures).

Employees

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor). NOTE – All employees have the authority and responsibility to stop work for safety concerns. “If you see it, you own it”.

Subcontractors

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor). NOTE – All employees have the authority and responsibility to stop work for safety concerns. “If you see it, you own it”.

DEFINITIONS

1. **Closed Container** - A container so sealed by means of a lid or other device that neither liquid nor vapor will escape from it at ordinary temperatures
2. **Combustion** - Any chemical process that involves oxidation sufficient to produce light or heat

3. **Fire Resistance** - So resistant to fire that, for specified time and under conditions of a standard heat intensity, it will not fail structurally and will not permit the side away from the fire to become hotter than a specified temperature. For purposes of this part, fire resistance shall be determined by the Standard Methods of Fire Tests of Building Construction and Materials, NFPA (National Fire Protection Association) 251-1969
4. **Flammable** - Capable of being easily ignited, burning intensely, or having a rapid rate of flame spread
5. **Flammable Liquid** - Any liquid having a vapor pressure not exceeding 40 pounds per square inch (absolute) at 100 ºF (37.8 ºC) and having a flashpoint at or below 199.4 ºF (93 ºC). Flammable liquids are divided into four categories as follows:
    - **Category 1** - includes liquids having flashpoints below 73.4 ºF (23 ºC) and having a boiling point at or below 95 ºF (35 ºC)
    - **Category 2** - includes liquids having flashpoints below 73.4 ºF (23 ºC) and having a boiling point above 95 ºF (35 ºC)
    - **Category 3** - includes liquids having flashpoints at or above 73.4 ºF (23 ºC) and at or below 140 ºF (60 ºC)
    - **Category 4** - includes liquids having flashpoints above 140 ºF (60 ºC) and at or below 199.4 ºF (93 ºC)
6. **Flash Point of the Liquid** - The temperature at which it gives off vapor sufficient to form an ignitable mixture with the air near the surface of the liquid or within the vessel used as determined by appropriate test procedure and apparatus as specified below
7. **Liquified Petroleum Gases, LPG and LP Gas** - Includes any material which is composed predominantly of any of the following hydrocarbons, or mixtures of them, such as propane, propylene, butane (normal butane or iso-butane), and butylenes
8. **Portable Tank** - A closed container having a liquid capacity more than 60 U.S. gallons, and not intended for fixed installation
9. **Safety Can** - An approved closed container, of not more than 5 gallons capacity, having a flash-arresting screen, spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure.
10. **Vapor Pressure** - The pressure, measured in pounds per square inch (absolute), exerted by a volatile liquid as determined by the "Standard Method of Test for Vapor Pressure of Petroleum Products (Reid Method)

FIRE PREVENTION – HOUSEKEEPING

- ✓ Regular inspections of project sites shall be conducted at a minimum weekly to for fire prevention; proper storage of flammables, combustibles, ignition sources elimination and control
- ✓ Good housekeeping must be maintained at all work areas and vehicles
- ✓ Combustible materials, such as oil soaked rags, wastes and shaving must be kept in metal containers with self-closing lids or in an area far removed from any other flammable materials. All containers should be emptied as soon as possible
- ✓ Paper and other combustible material shall not be allowed to accumulate. Weeds and other vegetation shall not be permitted to grown in or around equipment storage areas
- ✓ Flammable liquids such as gas, kerosene, benzene, naphtha, paints, lacquer thinner, or solvents may not be used for cleaning purposes unless approved methods are employed for their safe use
- ✓ All solvents and flammable liquids must be kept in UL listed-type, properly labeled, safety cans (self closing lid and equipped with flash arrestor)
- ✓ When pouring or pumping gasoline or other flammable fuels/solvents from one container to another, metallic contact shall be maintained between the receiving and pouring containers at all times, or bond with a bonding wire connected to each. When refueling, engines must be cut off
- ✓ Employees shall not smoke in close proximity to flammable liquids, gases or explosives, either on property occupied by the Company or elsewhere. Smoking must be designated areas only
- ✓ No smoking is allowed in areas designated as no smoking areas. All lighters and matches should be left in the truck to avoid the unconscious accidental usage while in a hazardous atmosphere. Smoking is designated to "no-smoking" areas and is subject to disciplinary action
- ✓ No more than 25 gallons (five 5 gallon cans) can be stored at a site in any one single area outside of a UL approved flammable storage cabinet. Flammable storage cabinets shall be properly located (away from ignition and heat, and protected from damage) installed, vented and kept secure per the MFG's, NFPA and OSHA requirements

- ✓ Bulk storage of combustible and flammable liquids in excess of 100 gallons shall require a site specific bulk storage protection plan be developed by a qualified person. The plan shall meet the OSHA and NFPA requirements for bulk storage and use. Bulk storage plans shall detail, frequency of inspections (prior to use weekly at close of week), documentation requirements, design specifications and placement of tanks (double wall or spill containment/weather containment, grounding and fill alarm, security lockable, etc.), location, traffic protection (barricades), use and tank, maintenance, filling, refueling procedures, fire protection (minimum clearly visible/accessible 20lb ABC dry chemical fire extinguisher not less than 25 feet away not more than 75 feet away from storage tank) and hazard warning sign requirements.

FIRE PROTECTION – EXTINGUISHERS

Properly selected and maintained firefighting equipment is an essential part of fire prevention. Extinguishers must be located at easily accessible places and each employee must know how to inspect and properly operate each extinguisher. Training shall be completed at the time of hire, at the beginning of each project and thereafter at least. As a minimum at least one 10 lb ABC dry chemical fire extinguisher shall be available within 75 ft of any work area (line of sight) to assure adequate coverage (one 10 lb ABC extinguisher for every 3000 square feet). Extinguishers must be regularly inspected monthly or sooner as warranted by requirements; physical inspection, no visible signs of damage, pin is in trigger keeper to prevent accidental discharge, extinguisher 180 degree rotation is performed for dry chemical extinguishers to assure dry suppressant is loose. In sections shall be documented on the extinguishers attached inspection tag. All portable dry chemical extinguishers shall at a minimum be tested annually and serviced per the MFG's, NFPA and OSHA guidelines; pressure tested, refilled and weighed, with documented inspection affixed to each extinguisher.

HAND & POWER TOOLS

PURPOSE

The purpose of this program is to provide guidelines that assure the employee's safe use of hand and power tools. All employees shall be trained in the proper inspection and use of hand and power tools as prescribed by the manufacturer.

PERSONNEL RESPONSIBILITIES

Corporate Director – Health, Safety & Environment

Responsible for assuring that this program is reviewed and updated, as necessary (product changes and updates, regulatory updates, program performance improvements). At a minimum, the program will be reviewed and updated annually.

Managers and Supervisors

Responsible for ensuring that their projects/operations and employees are in compliance with the requirements of this program (training, application, practice and procedures).

Employees

Responsible for following all policies and procedures as required by this program, as well as report any perceived program deficiencies (violations and errors), or improvement measures, to their supervisor.

- **NOTE – All employees have the authority and responsibility to stop work for safety concerns. "If you see it, you own it".**

Subcontractors

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors), or improvement measures, to their superior.

DEFINITIONS

1. **Hand Tools** – A small device operated by hand to perform, or facilitate, manual or mechanical work. Examples include: hammers, wrenches, pliers, side cutters, pry bar, screw drivers, utility knives, chisels, punches, drills, saws and clamps.
2. **Electric Power Tools** – A tool that is powered by electricity.
3. **Pneumatic Power Tools** – A tool that is powered by air.

PROCEDURES

Hand Tools

1. Inspect each tool prior to use. Never use defective tools!
2. Tools will be used as per the product manufacturers designed use. Never use "cheaters" to increase capacity (pipe handle extensions to increase leverage).
3. Impact tools (chisels, star drills, and iron wedges) tend to "mushroom" and create flying spalls unless dressed.
4. Wooden handles on hammers and axes must be free of splinters and cracks and must sit securely in the head.
5. Dull cutting tools will cut you more easily than sharp ones.

Electric Power Tools

1. Tools will be inspected daily before starting work. Never use defective tools!
2. Portable electric equipment and tools must be grounded if they are not "double insulated" in type.
3. Inspect all electric cords and tools prior to use and remove any that are damaged from use.
4. Never carry or lower an electric tool by the cord.
5. Never yank the cord to disconnect it from the receptacle.
6. Never carry a plugged in tool while your finger is on the switch.
7. Loose clothing can become caught in moving parts.
8. Electrical cords must be unplugged before adjusting electric tools.
9. Proper guards and shields must be maintained on all power tools.
10. Machines must be shut down before adjusting, servicing, or repairing to prevent incidental starting. This may require lock out and tagging.
11. Secure work in a set of clamps or a vise to allow two free hands for operation.
12. All AC corded 120/110 Volt power tools shall be powered through a inspected, tested and fully functional Ground Faulty Circuit Interrupter (GFCI).

Pneumatic Power Tools

1. Air supply to pneumatic tools must be shut off and expunged before disconnecting.
2. Eye protection and ear protection is required when using pneumatic tools.
3. Ensure hoses are securely attached to equipment before start up.
4. Safety clips must be fully engaged prior to equipment start up.

HEAT/COLD STRESS

PERSONAL RESPONSIBILITIES

Corporate Director – Health, Safety & Environment

Responsible for assuring this program is reviewed and updated as necessary (product changes and updates, regulatory updates, program performance improvements). The program shall be at a minimum reviewed and updated annually.

Managers and Supervisors

Responsible for assuring their projects/operations and employees are in compliance with the requirements of this program (training, application, practice and procedures).

Employees

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor).

Subcontractors

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor).

- NOTE – All employees have the authority and responsibility to stop work for safety concerns. "If you see it, you own it".

The Site Health and Safety Officer (SHSO) will be responsible for implementing the following program when the ambient air temperatures either exceeds 75^{o}F or falls below 35^{o}F.

The SHSO will visually monitor personnel for signs of heat/cold overexposure such as weakness, dizziness, fainting, nausea, headaches, cool and clammy skin, profuse sweating, slurred speech, weak pulse, and dilated pupils.

HEAT/STRESS PROCEDURE

Site personnel who wear protective clothing that allows body heat to be accumulated can cause an elevation of the body temperature. Heat cramps, heat exhaustion, and heat stroke can be experienced, which, if not remedied, can threaten life or health. Therefore, a current edition of the American Red Cross Standard – First Aid Book or equivalent will be maintained on site at all times so that the SHSO and site personnel will be able to recognize symptoms of heat emergencies and be capable of controlling the problem.

When protective clothing is worn, especially Levels A, B, and C, the suggested guidelines for ambient temperature and maximum wearing time per excursion are:

Ambient Temperature (°F)	Maximum Wearing Time per Excursion (Minutes)
Above 90	15
85 to 90	30
80 to 85	60
70 to 80	90
60 to 70	120
50 to 60	180

One method of measuring the effectiveness of employees' rest recovery regime is by monitoring the heart rate as follows:

- ✓ During a 3-minute period, count the pulse rate for the last 30 seconds of the first minute, the last 30 seconds of the second minute, and the last 30 seconds of the third minute;
- ✓ Double the count; and
- ✓ If the recovery pulse rate during the last 30 seconds of the first minute is at 110 beats/minute or less and the deceleration between the first, second, and third minutes is at least 10 beats/minute, the work recovery regime is acceptable. If the employees' rate is above the specified amount, a longer rest period is required, accompanied by an increased intake of fluids.

In the case of heat cramps or heat exhaustion, water and "Gatorade" or its equivalent is suggested as part of the treatment regime. The reason for this type of liquid refreshment is that such beverages will return much needed-electrolytes to the system. Without these electrolytes, body systems cannot function properly, therefore increasing the represented health hazard.

This liquid refreshment will be stored in a cooler at the edge of the decontamination zone in plastic squeeze bottles. The plastic bottles will be marked with individual's names. Disposable cups with lids and straws may be used in place of the squeeze bottles. Prior to drinking within the decontamination zone, the project personnel shall follow the following decontamination procedures:

- ✓ Personnel shall wash and rinse their outer gloves and remove them;
- ✓ Personnel shall remove their hard hats and respirators and place them on the table;
- ✓ Personnel shall wash and rinse their faces and hands;
- ✓ Personnel shall carefully remove their personal bottle or cup from the cooler to ensure that their outer clothes do not touch the other bottles and cups;

- ✓ The used bottle or cup will not be returned to the cooler, but instead placed in a receptable or container to be cleaned or disposed of; and
- ✓ Personnel shall put respirators and hard hats back on and use a new pair of disposable gloves prior to re-entering the hazardous zone.

When personnel are working in situations where the ambient temperatures and humidity are high—and especially in situations where protection Levels A, B, and C are required—the SHSO must:

- ✓ Ensure that all employees drink plenty of fluids (water, "Gatorade" or its equivalent);
- ✓ Ensure that frequent breaks are scheduled so overheating does not occur; and
- ✓ Revise work schedules, when necessary, to take advantage of the cooler parts of the day (i.e., 5:00 a.m. to 1:00 p.m., and 6:00 p.m. to nightfall).

COLD STRESS PROCEDURE

Susceptibility to cold and injury varies from person to person. "Table 1" summarizes some of the factors involved in cold stress.

Factors Involved in Cold Stress

Environmental	Personal Characteristics	Other
✓ Temperature ✓ Wind ✓ Humidity	✓ Age ✓ Weight ✓ Fitness ✓ Impaired Circulation ✓ Previous Cold Injury ✓ Acclimatization to Cold	✓ Clothing ✓ Physical Activity ✓ Fatigue ✓ A Worker's use of Medication(s) ✓ Consumption of Alcohol or use of Nicotine

If workers are or may be exposed to conditions that could cause hypothermia or cold-related injury, a risk assessment should be performed to determine areas and tasks where the workers may be at risk. The potential for accidental exposure to cold conditions should be included.

1. Environmental Measures

- **a.** Temperature and wind conditions at the work site should be known e.g. weather report on the radio and/or current, weather office information
- **b.** Steps should be taken to protect workers from wind and slippery surfaces. The combination of low temperatures and winds that are even more moderate can quickly create dangerous working conditions. The walkways must be kept ice-free
- **c.** Ensure that heated rest areas such as a truck cab, tent or hut are available

2. Work Practices

A schedule of regular rest breaks should be established to allow workers to warm up. These breaks should not be less than ten (10) minutes in length and should be taken in a heated area. Returning to work while damp and sweaty may result in rapid chilling. The following recommended work practices should be followed:

Under conditions of continuous work in the cold:

- **a.** Heated warming shelters (tents, trailers, rest rooms, etc.) should be provided. Workers should be encouraged to use these at regular intervals, the frequency of use depending on the severity of environmental exposure;
- **b.** When entering the heated shelter, outer and middle clothing layers (as necessary) should be removed to prevent overheating and to permit dampness to evaporate. A change of dry clothing may be necessary;
- **c.** Warm fluids should be consumed at the work site to provide energy, warmth, and replace fluids lost during work. Significant fluid loss can occur in the cold due to sensible and insensible sweating, breathing, and the extra energy requirements of working in the cold. Dehydration in the cold is a serious concern, increasing a worker's susceptibility to hypothermia; and
- **d.** The onset of severe shivering, the feeling of excessive fatigue, drowsiness, irritability or euphoria are indicators for immediate return to shelter.

The following additional precautions apply at colder temperatures:

- e. Workers should be under constant protective observation by a coworker or coordinator;
- **f.** Work rate should not be high enough to cause sweating. If heavy work must be performed, rest periods should be provided;
- **g.** No employees should be permitted to work full-time in the cold until they have acquired the required protective clothing;
- **h.** Weight and bulkiness of clothing should be included in estimating required work performance; and
- **i.** Workers should be appropriately trained.

3. Personal Measures

a. Diet

Workers have increased energy requirements when working in the cold. Consider adding additional wholesome foods to the diet such as pasta, potatoes, rice, dairy products, nuts, meat and salmon. Light snacks and warm fluids should be taken during rest breaks.

Alcohol must not be consumed while working on the job. Alcohol consumption produces a deceptive feeling of warmth and may contribute to dehydration and impairment judgement.

b. Dressing For The Cold

To stay warm in the cold:

1. Clothes must be layered to manage moisture and keep dry;
2. Insulating layers must trap air to stay warm; and
3. The worker must be protected from the wind and weather.

To remain comfortable as weather and work conditions change, clothing layers should be added or removed, or ventilation openings in clothing opened or closed to remain comfortable. Clothing layers should be managed to remain comfortably warm.

Every effort must be made to avoid sweating and becoming damp. Clothing selections are normally made on the basis of staying warm while inactive. Consider the work to be performed and the weather conditions, then recommend workers dress in those layers while they remain comfortably warm. If clothing layers do become damp and remain that way, workers should be prepared to replace them before becoming chilled and hypothermic. If a worker is sweating, their clothing is probably too warm for the conditions and tasks being performed.

The following approach of using three (3) clothing layers – inner, middle and outer – is applicable to all situations. Our work generally doesn't require employees to wear fire resistant or anti-static clothing, however, the recommended synthetic fabrics may not be appropriate for situations requiring clothing with fire resistant or anti-static properties. If required, FR clothing next to the skin must be made of non-melting natural fibers such as wool or silk or an acceptable fire retardant material. The general practices described below should be followed; recognizing that the fabrics selected may be limited by specific, special work applications.

Inner Layer

The first layer of clothing should manage moisture by moving perspiration away from the skin to keep the worker dry and comfortable.

- ✓ Avoid cotton, especially in long underwear and socks. Once cotton is wet, whether through perspiration, rain, or snow, it loses all insulating properties.

- ✓ For long underwear, brands made of synthetic fibers (e.g. polyester, polypropylene, etc.), silk, or wool retain body heat when wet and transfers perspiration to outer clothing layers for evaporation, leaving the body dry. Many types of long underwear are available in varying thickness' or weights depending upon intended activity level and weather conditions. Select an appropriate style and thickness of long underwear.

Middle Layer

The second layer or middle layer(s) should trap warm air escaping from the body and hold it in open spaces within the layer(s) to keep the worker warm and insulated. Workers should wear several thin layers of clothing rather than one heavy garment. Layers can be added or removed, depending upon weather and activity level.

- ✓ Select lightweight clothing that provides freedom of movement. Multiple middle layers give a worker the ability to tailor their need for warmth based on environmental temperature and activity level.
- ✓ Look for middle layers that can be added or easily removed. Zippered neck openings and zipper neck leggings allow for ventilation
- ✓ A down vest or jacket may be an appropriate middle layer

Outer Layer

The outer layer should provide protection from the wind, rain, sleet, snow and identified workplace hazards. It should also keep cold air and moisture from penetrating the middle layer(s). Breathable fabrics may or may not be necessary. Selection of windproof garments is a critical feature of an outer layer used in the cold outdoors.

- ✓ Two-way, zippered front openings can be used to regulate heat load and ventilate the body
- ✓ An outer layer having armpit zippers can be helpful in providing ventilation
- ✓ Windproof pants or "wind pants", fully zippered from ankle to hip, can be added or removed without footwear having to be removed
- ✓ Jackets with hoods offer an additional layer of protections for the head. Newer hood designs provide unimpeded views and free movement
- ✓ Cotton twill made water and windproof may be an alternative

The extremities must also be protected.

Hand Protection

Mittens keep hands warmer than gloves since fingers are together. With gloves, fingers are separated, losing heat from one another. Depending on the task at hand, mittens may not be the most practical choice as finger dexterity is limited.

- ✓ Have workers wear thin glove liners under gloves or mittens. Liners need need not be removed when removing the gloves.

- ✓ Removable glove and mitten liners can be replaced and dried when they become damp.
- ✓ New mitten styles include three-finger “lobster claws” which keep fingers warm yet offer good dexterity.
- ✓ Windproof over-mitts offer additional hand protection without adding significant bulk.

Head Wear

Up to 50 percent of body heat is lost through the head. A hat, hard hat liner or other head protection must be worn in the cold.

- ✓ Avoid cotton and use synthetic fabrics, fur or wool instead.
- ✓ Workers must use an appropriate hard hat liner to reduce heat loss when wearing a hard hat.
- ✓ Select a hat appropriate for the weather conditions and activity level. Consider thickness, extent of head coverage (e.g. open faced or full balaclava, ear coverage, etc.), ability to protect from the wind, effect on vision/hearing, and ability to fit into or over protective headwear if required.
- ✓ A face mask and eye protection may be necessary under some circumstances.

Footwear

Warm, insulated safety footwear is essential. Boots should have thick soles for insulation while standing in snow or on cold concrete. Footwear selection should be based on the work being performed, the surfaces on which the worker will work, and the weather conditions to which the worker will normally be exposed. Tight-fitting boots reduce circulation and can make feet feel cold.

Footwear should be sized so that it will accommodate an extra layer(s) of socks. A synthetic sock liner worn beneath a synthetic blend or wool outer sock directs moisture away from the skin, keeping feet drier and warm.

Worker Training

Workers potentially exposed to cold weather exposure shall be instructed in health and safety procedures appropriate to the tasks and environment in which those tasks are performed. This instruction will be conducted as needed and shall include:

- ✓ Proper re-warming procedures and appropriate first aid treatment;
- ✓ How to dress for the cold; and
- ✓ Recognition of frost nip and frostbite.

HEAVY EQUIPMENT SAFETY

PURPOSE

The purpose of this program is to assure safe operation of heavy equipment per the manufacturers guidelines. Likewise, all affected ground personnel shall train in the proper safe practices and procedures when working around heavy equipment.

PERSONNEL RESPONSIBILITIES

Corporate Director – Health, Safety & Environment

Responsible for assuring this program is reviewed and updated as necessary (product changes and updates, regulatory updates, program performance improvements). At a minimum, the program will be reviewed and updated annually.

Managers and Supervisors

Responsible for assuring their projects/operations and employees are in compliance with the requirements of this program (training, application, practice and procedures).

Employees

Responsible for following all policies and procedures as required by this program as well as reporting any perceived program deficiencies (violations and errors) or improvement measures to their supervisor). All incidents (near miss, injuries, property damage) shall be reported immediately to the supervisor. NOTE – All employees have the authority and responsibility to stop work for safety concerns. "If you see it, you own it".

DEFINITIONS

1. **Heavy Equipment** –Heavy duty powered vehicles specially designed for executing construction tasks which typically include, but are not limited to earth moving equipment; excavators, loaders, bulldozers, compactors and rollers.
2. **Operator** – A person who is trained and authorized to operate equipment.
3. **Ground Personnel** – Employees who are on the ground working near or around heavy equipment

GROUND PERSONNEL RULES AND PROCEDURES (Laborers, Supervisors, Non-Operators)

- Always ensure that you make eye contact with the operator before approaching a piece of heavy equipment
- Never walk under a boom or load when hoisting, lowering, crawling, and turning
- Keep hands clear of cables, feeding drums and sheaves
- Be aware of the locations of all pieces of equipment on a site
- Do not walk up to equipment that is moving
- Stay out of the swing radius of a piece of equipment unless you have the permission of the operator
- Only the operator is allowed to ride on a piece of heavy equipment

OPERATOR RULES AND PROCEDURES (Equipment Operators)

- ✓ Ensure that each piece of equipment is operating properly and report all defects to your supervisor
- ✓ The maintenance of each piece of heavy equipment is the responsibility of the operator using that piece of equipment
- ✓ Never backup without ensuring the path is clear of equipment and personnel
- ✓ Never swing a load over ground personnel
- ✓ Be sure that all slings, hooks, and ties are properly placed and secured before lifting a load
- ✓ The operator shall only take signals from one person
- ✓ Keep steps on the machine free of dirt, grease and oil
- ✓ The operator will not overload buckets or brooms
- ✓ Seat belts must be worn where provided during all operations
- ✓ Ensure all glass and mirrors are clean before starting operations
- ✓ Tag lines must be used on all lifts and it is important to ensure tag lines are long enough before starting the lift
- ✓ All equipment must have charged and inspected fire extinguishers
    - Unless deemed to be more of a hazard such as on certain skid steer units.
- ✓ Ensure that grapples only pick up long materials when square to the load
- ✓ Keep the cab clear of debris, dirt and coffee cups

HEXAVALENT CHROMIUM PROGRAM

INTRODUCTION

Hexavalent Chromium (CrVI)) is a heavy metal component of stainless steel. Stainless steel is widely used in industrial processes because of its resistance to corrosion.

The fume from welding processes may contain compounds of chromium, including hexavalent chromium, and of nickel. The composition of the base metals, the welding materials used, and the welding processes affect the specific compounds and concentrations found in the welding fume.

The major concern in the industry is the potential for overexposure from fumes created by welding or plasma cutting on stainless steel pipe and ducts, dust from grinding on stainless steel and from skin exposure. In most applications, engineering controls such as using localized exhaust ventilation and good welding work practices will mitigate the chances of overexposure. Respiratory protection will be required when adequate ventilation is not achievable.

POLICY

It shall be the policy of OSC to implement the various requirements of the Chromium Exposure Regulation as required by the U.S. Department of Labor, Occupational Safety and Health Administration § 1910.1026.

The OSC Chromium Exposure Plan applies to all construction work where an employee may be occupationally exposed to chromium. All work related to construction, alteration or repair is included. Under this plan, construction is to include, but not limited to the following: Fumes and emissions from welding processes including pre and finish activities (grinding, filing and sanding).

All potentially affected employees shall receive training at the time of hire and thereafter prior to the start of each job where ever exposure may occur or when program changes warrant but as a minimum refresher training shall be at least annually. Training and PPE shall be provided by the company at no expense to the employee as previously defined by the companies training policy. Likewise employees who are exposed to levels above PEL in any 30 day work period per year or have the potential to be exposed for the same period each year shall be subject to the medical surveillance program which shall require initial medical exam and blood screening prior to the start of work, every three months for the job with exposure and at the end of the job to assure protective measures; engineering and administrative controls (regulated work area), PPE and hygiene facilities;(decontamination trailer for changing clothes and washing up) are effective in preventing exposure (see section 3 medical surveillance plan).

HEALTH EFFECTS OF OVER-EXPOSURE TO FUMES CONTAINING CHROMIUM AND NICKEL

- ✓ Depending upon the level of exposure, Hexavalent Chromium can irritate the nose, throat and lungs, leading to nasal ulcers, lung cancer, and can cause skin rashes, skin ulcers and permanent eye damage
- ✓ Stainless Steel contains nickel and chromium. Nickel can cause asthma. Nickel and Chromium can cause cancer. Chromium cancer may not show up for 10 to 40 years.
- ✓ Similar to the effects produced by fumes from other metals
- ✓ Can cause symptoms such as runny nose, sneezing, coughing, sores in nose and on skin, nausea, headaches, dizziness, and respiratory irritation
- ✓ Some persons may develop sensitivity to chromium or nickel which can result in dermatitis or skin rash. Prolonged skin contact can result in dermatitis and skin ulcers. Some workers develop an allergic sensitization to chromium. In sensitized workers, contact with even small amounts can cause a serious skin rash. Kidney damage has been linked to high dermal exposures.
- ✓ Chromium can irritate the nose, throat, and lungs. Repeated or prolonged exposure can damage the mucous membranes of the nasal passages and result in ulcers. In severe cases, exposure causes perforation of the septum (the wall separating the nasal passages).
- ✓ Direct eye contact with chromic acid or chromate dusts can cause permanent eye damage

EXPOSURE LIMITS

The U.S. Department of Labor establishes maximum limits of exposure to chromium for all workers covered, including a Permissible Exposure Limit and Action Level. The Permissible Exposure Limit, or PEL sets the maximum exposure limit for workers to chromium. The exposure limits for Hexavalent Chromium are as follows:

- ✓ .5 micrograms per cubic meter (µg/m3) of air – When airborne concentrations are at or below this level, the standard is not applicable;
- ✓ 2.5 micrograms per cubic meter (µg/m3) of air – When airborne concentrations are at or above 2.5 micrograms per cubic meter (µg/m3) of air (this is the Action Level), but under 5 micrograms per cubic meter (µg/m3) of air, employers are required to implement certain measures to protect workers from over exposure; and
- ✓ 5 micrograms per cubic meter (µg/m3) of air – Airborne concentrations above this level require compliance with more comprehensive requirements of the standard.

EXPOSURE ASSESSMENT

Whenever Hexavalent Chromium exposure is possible an initial exposure assessment shall be conducted. Exposure assessment shall be conducted on all tasks where exposure is possible (grinding, torching, welding). Exposure assessment shall be conducted for each task for at least 1 full 8 hour shift. Task that are most likely to cause the highest exposures shall be selected for sampling. Sampling shall be performed utilizing portable pumps equipped with cassettes setup for air monitoring Hexavalent Chromium (Personal pump attached to worker with hose and cassette in breathing zone). During the initial exposure assessment period all workers who have potential exposure shall as a minimum be required to wear respiratory protection with a protection factor of 1000 or more. This requirement shall not end until the assessment is complete and monitoring results warrant a down grade in PPE. Exposure assessment results shall be posted immediately upon receipt from lab and reviewed with all affected employees. Periodic air monitoring shall continue to assure conditions have not changed. Change in methods, environmental/physical conditions, work period or employee concern are all reasons for conducting additional monitoring. Note: unless negative exposure is established personal air monitoring shall be conducted at least daily per shift.

ACTION LEVEL

Action Level is the level at which OSC will begin compliance activities. The Action level, regardless of respirator use, for chromium in this program is an airborne concentration of 50 micrograms per cubic meter as calculated as an 8-hour Time Weighted Average (TWA).

COMPLIANCE PROGRAM

Prior to each job where employee exposure exceeds the PEL, OSC will establish a program to reduce employee exposure to the PEL or below. The compliance program will provide the following:

- ✓ A description of each activity in which chromium is emitted;
- ✓ Specific plans to achieve compliance and engineering plans where engineering controls are required;
- ✓ Information on the technology considered meeting the PEL;
- ✓ Air monitoring data that document the source of chromium emissions;
- ✓ A work practice program including regulations for the use of protective work clothing, equipment, good housekeeping and hygiene guidelines; and
- ✓ An employee should report to their foreman and OSC Safety Director if they feel:
  - They have been exposed to at or above safe levels
  - Experience symptoms of exposure
  - Are exposed to an emergency situation to an uncontrolled release.

ENGINEERING CONTROLS

- ✓ Ventilation such as local exhaust systems that capture airborne Cr(VI) near its source and remove it from the workplace
- ✓ Local exhaust or shop fans to extract fumes from work areas
- ✓ Dust collection systems with HEPA filters
- ✓ Substitute less toxic material or a process that results in lower exposures for a process that causes higher exposures
- ✓ Isolation such as placing a barrier between employees and source of exposure

SAFE WORK PRACTICES CONTROLS

Safe work practices require maintenance of separate hygiene facilities (change rooms, showers, hand wash facilities and lunch areas), and require proper housekeeping practices.

HOW TO PROTECT AGAINST OVER-EXPOSURE

- ✓ Use enough ventilation or exhaust at the arc or both to keep fumes and gases from your breathing zone and general area
- ✓ Use localized exhaust ventilation to remove fumes and gases at their source in still air. Keep the exhaust trunk / hood as close to the fume source as possible in order to keep fumes and gases from your breathing zone
- ✓ Use air blowers to draw fumes away from you and your immediate work area
- ✓ If ventilation is questionable, use air sampling to determine the need for corrective measures
- ✓ OSHA says you must remove all paint and solvents before welding or torch cutting. Follow written instructions. Make sure all residues are removed
- ✓ Use the safest welding method for the job. Stick welding makes much less fume than flux core welding. Tig welding reduces Cr(VI) emissions by 90%
- ✓ Use welding rods that produce a low fume. 90% of the fume can come from the rod. Larger diameter rods produce much higher emissions than electrodes of smaller diameter. Welding guns that extract fumes can capture 95% of the fume
- ✓ In a confined space, follow all the OSHA confined space rules – like air monitoring, not storing torches in the space, and ventilation
- ✓ Do not breathe fumes and gases. Keep your head out of the smoke plume
- ✓ Use proper Protective Protection Equipment
- ✓ Position your welding hood so that fumes will not rise up under it and into your breathing zone
- ✓ If the ventilation is not adequate, such as confined spaces, respiratory protection is required

- ✓ When respiratory protection is required (> PEL and initial exposure assessments), be sure that you have the required training and proper respirator before starting work
- ✓ Implement good housekeeping procedures. Keep area as free as practicable of accumulations of chromium dust and buildup
- ✓ Vacuums with HEPA filters should be used to keep dust emissions at a minimum
- ✓ Do not blow dust from clothing with air hose. Doing so can embed the dust particles into your skin and eyes and expose others to airborne particles
- ✓ Wash hands and face at the end of every shift and before eating, drinking, smoking, chewing gum, applying cosmetics or using the bathroom
- ✓ Never eat or drink in areas where Hexavalent Chromium may come in contact with your food, skin or eyes
- ✓ Keep exposure as low as possible

PROTECTIVE CLOTHING AND EQUIPMENT

OSC will provide and ensure the proper use of personal protective equipment where employees are exposed to chromium above the PEL.

- ✓ Wear long-sleeved shirt, welding jacket or welding sleeves
- ✓ Wear long pants
- ✓ Tyvek suits if necessary
- ✓ Wear welding gloves
- ✓ Wear safety glasses or goggles
- ✓ Wear a face shield over eye protection when grinding
- ✓ Wear a welding helmet over eye protection when welding
- ✓ Wear appropriate respirator when needed

RESPIRATORS

When engineering and administrative controls do not reduce hazards below the OSHA's permissible exposure level (PEL), employees must wear respirators. OSC will provide respiratory protection for the employee, and must ensure that the respirator is used when:

- ✓ Employee exposure to chromium exceeds the PEL.
- ✓ The employee requests a respirator.
- ✓ Employees must be medically evaluated and respirator fit tested before being issued and wearing a respirator

RECORD KEEPING

OSC will establish and maintain an accurate record of all monitoring and other data used to conduct employee exposure assessments. Effective management of worker safety and health protection is a decisive factor in reducing the extent and severity or work related injuries and illnesses and their related costs. OSC is committed to this process.

TRAINING

OSC has established a training program to educate our employees of this hazard. This topic is also included in the OSC Employee initial hire orientation, at the beginning of every project where exposure is a concern or as a minimum annually.

HOISTING, RIGGING AND CRANES

PURPOSE

To assure all rigging and hoisting operations are completed safely without injury and incident.

CRANES

These are to ensure all rigging and hoisting activities are completed safely without incident and in compliance with all recognized industry accepted consensus standards and Federal requirements as per OSHA CFR 1926 (subpart CC and subpart N).

INSPECTIONS

Before each use, it is the operator's responsibility to thoroughly inspect their equipment. Monthly or periodic inspections will be performed and records maintained of all inspections and maintenance activities. All inspections will be carried out by a qualified person with a thorough knowledge of the equipment involved. Inspections will be performed according to the guidelines included at the end of this section.

LOAD CHARTS

Every crane must be equipped with a load chart posted in the operator's control station. The chart must include nameplate identification information; load ratings for the boom at all stated operating radii or angles for different counterweights, boom lengths, and types; and jib ratings, along with the method for calculating boom job ratings.

HAND SIGNALS

An authorized signalman should be appointed to work with the operator. The operator should take directions, using standard hand signals or approved electronic communication equipment, only from the designated signalman. Hand signal instructions will be posted on the jobsite. If an operator losses sight or communication with the signalman, he should stop operation immediately.

LOAD WEIGHT

The load weight is the single changing variable in mobile crane operation. Its effects should never be overlooked. It is very important to determine the weight of any load before rigging and to make allowances for unknown factors. Rigging equipment must be included in the load weight. When approaching the upper 25 percent of the crane's rated capacity, it is a good idea to measure the load radius. The crane outriggers should always be used for lifting.

DEMOLITION BALL

- When a crane is being used with a demolition ball, the weight will not exceed 50 percent of the safe load of the boom at maximum length and angle of operation, or 25 percent of the nominal breaking strength of the supporting line, whichever is less. The boom swing must not exceed 309 degrees from the center line (front to back) of the crane mounting. ***The load line and swivel type attachment must be checked at least twice daily.***
- The demolition ball will be attached to the load line with a swivel type connection to prevent twisting of the load line. It will be attached by positive means in such a manner that the ball cannot become disconnected by slack in the load line or other causes. The use of tires for the swivel connection will be prohibited. ***Under no circumstances will a person be allowed to ride on or work from a demolition ball.***
- The use of a clamshell bucket may present special problems. The operator should be ready to release the closing line if an overly heavy weight is bitten off. When using a clamshell bucket, special care must be taken by workers to stay clear of debris hanging out or falling from the bucket. ***Never work under a suspended load.***
- All equipment, ropes, and slings must be in good condition, free of kinks or bends, and/or exposed to corrosives, rusting or welding operations. If defects are found during inspection, the equipment must be destroyed or tagged and removed from the project for repair. ***The working capacity of all rigging equipment should be known prior to its use, and it should never be exceeded.***

ELECTRICAL HAZARDS

The problem of cranes and electrical hazards simply cannot be overstated. Electrocution is the largest cause of crane fatalities. Live power lines have areas called the "absolute limit of approach." ***No exceptions to the rule prohibiting entry into this area can be made unless the line has been insulated or de-energized.***

LINE RATING	CRANE OR LOAD TO LINES MINIMUM CLEARANCE
< 50 KV	10 feet
> 50 KV	10 feet plus 0.4 inches for KV over 50, or twice the length of line insulator

- An authorized and trained signalman must be assigned to warn the operator when he is nearing the limit of approach. The operator must be notified when he is within a boom's length of the limit. ***The limit of approach can never be compromised.***
- ***Except in certain emergencies, the operator must never leave the crane while a load is suspended.***
- When elevating personnel, only personnel baskets will be used. ***All employees entering a personnel basket for the purpose of being elevated must wear safety belts tied off securely to the safety cable above them.***
- If, despite all precautions, the crane makes contact with a live circuit, the operator should stay in the cab. All personnel must stay away from the machine, its load, and the surrounding area which will be charged. The operator can try, by himself, to back the crane away from the power line, or to lower the boom and then move away from the line. ***If the operator is forced to leave the machine, he must jump completely clear of it with his/her feet together.***

STEPPING DOWN OR ALLOCATING ANY PART OF YOUR BODY TO TOUCH THE MACHINE AND GROUND AT THE SAME TIME COULD RESULT IN ELECTROCUTION.

RIGGING, HOISTING EQUIPMENT AND CRITICAL LIFT PLANS

- ✓ All rigging shall be completed by a qualified and trained rigger. Only ANSI rated rigging with positive locking connections shall be used. No load shall exceed 75% of the lifting capacity of the hoisting equipment or any of its rigging components.
- ✓ Slings shall never be used in a configuration greater than 90 degrees.
- ✓ All hoisted loads greater than 25,000 lbs. require an approved written critical lift plan.
- ✓ Critical lift plans shall be developed by a qualified person and contain the following:
    1. MFG Specifications for lifting equipment – lifting capacity, maximum radius, top height, equipment limits, warning devices, inspection, and service requirements;
    2. Recent annual and current certified inspection;
    3. Rigging manufactures, lifting specifications, including certified test results;
    4. Diagram/footprint of proposed lift, showing required height, radius, and lifting capacity/limits for lift;
    5. Weight of item hoisted;
    6. Lift calculations;
    7. Activity Hazard Analysis for proposed lift; and
    8. Training Records/Certifications and Licenses for Crane/Equipment Operator, Rigger and Flagger.

- ✓ All hoisting equipment shall be inspected by a qualified person prior to use.
- ✓ The weights to be handled must be known before proceeding.
- ✓ A shackle will be used to hold two or more eyes of a choker in a hook.
- ✓ All hooks must have a safety latch.
- ✓ Do not rig from a structural member until it has been ascertained that the member will support the load.
- ✓ Use only rigging equipment designed for the intended use.
- ✓ Hooks, shackles, chain hoists, beam clamps, and all rigging equipment will be inspected prior to use.
- ✓ Rigging equipment must never be used to handle loads beyond its rated capacity. Riggers must know the capacity and proper use of handling the device-crane, forklift, chain fall, come-a-long, clamp, choker, and shackle-before proceeding.
- ✓ Tag lines must be used to control loads. Unsecured and unattended loads must not be left suspended.
- ✓ No part of the body will be allowed below a suspended load. Never raise or swing a load over people.
- ✓ The load chain must not be wrapped around the load.
- ✓ Softeners should be used where possible to obtain a “bite” on the material being rigged.
- ✓ All protruding nails and wires must be removed or bent over. Flush and ragged metal edges must be protected before material is handled.
- ✓ Fiber rope-manila and synthetics-must not be used in or near operations involving the use of corrosive substances and will be visually inspected before each use for excessive broken fibers, wear, and deteriorated strands.
- ✓ Wire rope must not be used on hoisting equipment if:
    - It is exposed to fire or extreme heat,
    - It is burned from contact with electricity,
    - The normal rope diameter is visibly reduced,
    - Heat damage or weld splatter is noticed,
    - More than 10 percent of the wires are broken in one lay,
    - One or more strands are broken,
    - Three or more wires are broken in any one strand of rope lay,
    - Considerable corrosion exists in the valleys between strands, and/or
    - If severely kinked, crushed, bird-caged, or unraveled sections of rope exist in any section of the rope.

EQUIPMENT INSPECTIONS

All lifting/hoisting equipment shall be expected at least annually by a competent person and prior to each use. A record of each inspection shall be made and kept in the job trailer for verification and audit purposes.

Inspections will be carried out as provided in the following guide, which shall be available with the equipment in each job trailer.

INSPECT PRIOR TO USE – EVERY PIECE MUST HAVE KNOWN RATED CAPACITY

Wire Rope

1. No knots or kinks or crushed areas, or other permanent deformity.
2. The protruding strand ends must be covered.
3. The wire rope clips must be used per OSHA table H-2, 1926.251 (see below).
4. In any 8-diameter length there must not be more than 10% broken strands.

Webbing

1. Make sure there are no knots.
2. Make sure there is no damage including cuts, abrasions, “powdered” webbing, discoloration, or deterioration.
3. No sharp edges must come in contact with the webbing when under the load.
4. Webbing slings, chokers, etc. may not be used in the presence of chemicals or fumes where they may become damaged during use.

Chain

1. Wear in each link must be less than OSHA table H-1, 1926.251 (see below).
2. There should be no stretched or otherwise deformed links.
3. Only use 80 Grade (alloy) or better for lifting. 70 Grade or less is for binding (plated).

Hooks

1. They must have a stamped rating (80 Grade or better for lifting; usually colored).
2. No deformity or other damage, safety hasp must not be damaged and properly functioning.

Slings

1. Load ratings must be known for each lifting angle that will be used.

Choker/Hitch

1. It must have a load rating for configuration.

Table H -1. MAXIMUM ALLOWABLE WEAR AT ANY POINT OF THE LINK

Chain Size (Inches)	Maximum Allowable Wear (Inch)
1/4”	3/64”
3/8”	5/64”
1/2”	7/64”
5/8”	9/64”
3/4"	5/32”
7/8”	11/64”
1”	3/16”
1 1/8”	7/32”
1 1/4"	1/4"
1 3/8”	9/32”
1 1/2"	5/16”
1 3/4"	11/32”

Table H -2. NUMBER AND SPACING OF U-BOLT WIRE ROPE CLIPS

Improved Plow Steel, Rope Diameter (Inches)	Number of Clips		Minimum Spacing (Inches
	Drop Forged	Other Material	
1/2”	3	4	3”
5/8”	3	4	3 3/4"
3/4"	4	5	4 1/2"
7/8”	4	5	5 1/4"
1”	5	6	6”
1 1/8”	6	6	6 3/4”
1 1/4"	6	7	7 1/2"
1 3/8”	7	7	1 1/4"
1 1/2"	7	8	9”

HYDROGEN SULFIDE (H2S) AWARENESS

PURPOSE

The purpose of this program is to ensure workers are aware of the potential hazards that exist with Hydrogen Sulfide gas; when and where typical exposure can occur (recognition, testing/air monitoring), proper protective measures (PPE, Work Procedures & Monitoring) and First Aid (recognition, signs, symptoms, exposure limits and First Aid). In every case no work shall be performed when H2S is detected in any concentration until sufficient engineering controls are in place to assure levels are at zero.

Hydrogen sulfide presents a potential hazard to workers at projects sites where the hazard can exist. It usually occurs as an unwanted by-product and can result in worker exposure in many different instances. To ensure protection against exposure to hydrogen sulfide workers must be aware of its properties, how it affects the body and what to do in emergency situations. The Safety and Health Manager shall ensure that all personnel who will be working at the job site will be properly trained in Hydrogen sulfide awareness and contingency procedures.

SCOPE AND RESPONSIBILITIES

This Program is applicable to all projects and operations that are being conducted in work areas which are known or could reasonably be expected to contain H2S or could produce SO2, in such concentrations that upon release could constitute a hazard to human life. The requirements and minimum standards of this program do not apply when operating in work areas where H2S is presently known not to be present or cannot reasonably be expected to be present in concentrations of 100 parts per million (ppm) or more in the gas stream. Strict adherence to the Company's Confined Space Entry Program shall be observed when employees will be working inside tanks, vessels or in other situations that fall into the Confined Space Entry Program. Employees shall be trained per the requirements of CFR 1910.146(g).

The Corporate Safety Director is responsible for reviewing and updating this program as a minimum annually to ensure compliance and effectiveness. All company personnel required to follow the program guidelines as given and shall be trained in H2S awareness at the initial time of hire, whenever the program or procedures are amended and at least annually thereafter.

HYDROGEN SULFIDE

Hydrogen sulfide exposures usually occur during the drilling for or production of natural gas, crude oil and petroleum products. Hydrogen sulfide is also produced by the putrefaction of organic matter which may accumulate in sewers, manholes, sewage treatment plants or storage pits where decay for organic matter can occur (confined spaces, landfills, holding tanks, water wells & refineries). Well drillers and tunnel workers, as well as miners, may be exposed when underground pockets of hydrogen sulfide are encountered. Hydrogen sulfide may be used in the manufacture of inorganic sulfides, sulfuric acid and mercaptans.

CHARACTERISTICS

Hydrogen sulfide (H2S) is a colorless gas with a powerful nauseating smell of rotten eggs. The odor is a poor warning property because hydrogen sulfide exposure quickly deadens the sense of smell. The gas is heavier than air and may collect in low areas such as sewers, pits, tunnels or gullies. High airborne levels of hydrogen sulfide (between 4.3 and 46.0 percent of gas by volume in the air) may catch fire if there is a source of ignition. If the gas is burned, toxic products such as sulfur dioxide will be formed. Hydrogen sulfide is incompatible with oxidizing agents, such as nitric acid and chlorine trifluoride, and may react violently or ignite spontaneously.

HEALTH EFFECTS ON THE BODY

Hydrogen sulfide is extremely toxic. It may cause death instantaneously in high airborne concentrations. Low levels may be extremely irritating to the lungs, nose, throat and eyes.

Hydrogen sulfide can be detected by smell at levels as low as 0.13 parts hydrogen sulfide per million parts air (ppm). Odor cannot be used as a warning because the gas can deaden the sense of smell within 2 to 15 minutes in exposures of approximately 100 ppm. A single breath of hydrogen sulfide at about 1000 ppm may paralyze the respiratory system and result in coma and death. Convulsions may also occur. Prolonged exposure at about 250 ppm hydrogen sulfide may cause the lung tissue to swell and fill up with water (pulmonary edema).

This effect may occur after the exposed worker recovers from the irritant effects of the gas. Exposures of 20 to 50 ppm hydrogen sulfide for one hour may cause inflammation of the cornea and the delicate lining of the eye and eyelid (a condition called keratoconjunctivitis). Exposures for long periods at 50 ppm may cause severe irritation of the nose, throat and lungs. Workers exposed to lower concentrations of hydrogen sulfide may develop headaches, eye disorders and chronic bronchitis.

H2S is classed as a chemical asphyxiate, similar to carbon monoxide and cyanide gases. It inhibits cellular respiration and uptake of oxygen, causing biochemical suffocation. Typical exposure symptoms include:

LOW	0 - 10 ppm	Irritation of the eyes, nose and throat
MOD	10 - 50 ppm	Headache Dizziness Nausea and vomiting Coughing and breathing difficulty
HIGH	50 - 200 ppm	Severe respiratory tract irritation Eye irritation / acute conjunctivitis Shock Convulsions Coma Death in severe cases
SPECIAL PPE	Potential Exposures Greater than 0 ppm	Respiratory protection Full Face Supplied Air or SCBA Medical Clearance and Training for Level B Respiratory Protection

PROCEDURES

No work shall be performed in H2S environments. Initial hazard assessment shall be conducted by the designated competent person (Supervisor) to ensure work area is free of H2S and LEL prior to entering work space. All work shall be performed as supervised by the competent person. Air monitoring shall be conducted initially at the entry and ground level of the work area for H2S, LEL, CO, and O2. Air monitoring shall be conducted by a trained air technician; monitor calibrated per the MFG specifications daily prior to use. Air shall be samples utilizing external probe, hose and pump so physical entry into the space is not required. Duration of air monitoring shall be a minimum of 30 minutes or greater (time required to adequately test the complete work area).

Air monitoring results shall be documented initially and every 15 minutes thereafter (See HASP Confined Space Procedures). Acceptable measurements for H2S and LEL is 0, CO < 35 PPM, and O2 between 19.5% - 23%.

Until negative exposure has been verified all special precautions shall be taken in and near the work area to eliminate any potential ignition source that could cause a fire; sparks, extreme heat, flame in the work area.

If air monitoring results are acceptable physical entry may proceed and work may begin. Air monitoring shall be conducted continuously while space is occupied. Work stops and space is evacuated with unacceptable readings. If readings are not acceptable engineering controls shall be established to remove air contaminants and pump in fresh clean air; add local exhaust and remove containments.

INCIDENT INVESTIGATION

PURPOSE

The purpose of this program is to assist supervision in determining the root cause of work related injuries. This program will also be followed in the event of "near misses," or incidents that may have occurred if conditions had been slightly different.

All incidents are a result of conditions and behaviors and therefore are preventable. By analyzing the investigation information and taking corrective action, similar and perhaps more severe incidents may be prevented. The purpose of the investigation is not to blame anyone, but to determine how and why the incident occurred and what measures can be implemented to prevent similar events from occurring.

An incident is an unplanned event or condition, some of which result in personal injury, releases to the environment or property damage. Investigate all incidents regardless of how minor the outcome may seem. Incidents are part of a broad group of events that adversely affect the completion of a task.

PERSONNEL RESPONSIBILITIES

Corporate Director – Health, Safety & Environment

Responsible for reviewing all incident reports as well as supporting implementation of corrective measures and that this program is reviewed and updated as required. At a minimum, the program will be reviewed and updated annually.

Managers and Supervisors

Responsible for assuring their projects/operations and employees are in compliance with the requirements of this program and that corrective actions are implemented. All incidents (near miss, injuries, property damage) shall be reported immediately to the Supervisor and Corporate Director of HS&E.

Employees

Responsible for following all policies and procedures as required by this program as well as reporting any perceived program deficiencies (violations and errors) or improvement measures to their supervisor). All incidents (near miss, injuries, property damage) shall be reported immediately to the supervisor. NOTE – All employees have the authority and responsibility to stop work for safety concerns. "If you see it, you own it".

DEFINITIONS (Refer To Standard Program Definitions):

INCIDENT PREVENTION

Incidents are usually complex having several, if not many conditions and behaviors that can be causes. A detailed analysis will normally reveal three cause levels: basic, indirect, and direct.

An incident results when a person or object receives an amount of energy or hazardous material that cannot be absorbed safely. This energy or hazardous material is the direct cause of the incident. The direct cause is usually the result of one or more unsafe acts, unsafe conditions, or both. Unsafe acts and conditions are the indirect causes or symptoms. In turn, indirect causes are usually traceable to poor management policies and decisions, or to personal or environmental factors; these are the basic causes.

In spite of their complexity, most incidents are preventable by eliminating one or more causes. Incident investigations determine not only what happened, but also how and why. The information gained from these investigations can prevent recurrence of similar or perhaps more disastrous incidents. Incident investigators are interested in each event as well as in the sequence of events that lead to an incident. Type is also important to the investigator. The recurrence of incidents of a particular type or those with common causes indicates areas needing special prevention emphasis.

FACT FINDING

- Gather evidence from many sources during an investigation
- Get information from witnesses and reports as well as by observation
- Interview the witnesses as soon as an incident has occurred
- Inspect the site before any changes occur
- Take photographs and make sketches of the scene
- Record all pertinent data on maps
- Get copies of all reports

CHANGE ANALYSIS

As its name implies, this technique emphasizes change. To solve a problem, an investigator must look for deviations from the norm; consider all problems to result from some unanticipated change; and make an analysis of the change to determine its causes. The following steps are helpful when using this method:

- ✓ Define the problem (What happened?);
- ✓ Establish the norm (What should have happened?);
- ✓ Identify, locate, and describe the change (What, where, when, to what extent?);
- ✓ Specify what was and what was not affected;
- ✓ Identify the distinctive features of the change;
- ✓ List the possible causes; and
- ✓ Select the most likely causes.

REPORT OF INVESTIGATION

Special report forms are available. Such reports include a cover page, a commentary or narrative portion, a discussion of probable causes, and a section on conclusions and recommendations.

INTERVIEWS

After interviewing all witnesses, the interviewer should analyze each witnesses' statement. He may wish to re-interview one or more witnesses to confirm or clarify key points. While there may be inconsistencies in witnesses' statements, investigators should assemble the available testimony into a logical order.

CORRECTIVE ACTIONS

Investigations are an effort to prevent a similar or perhaps more disastrous sequence of events. Most incident investigations follow formal procedures. There are a number of procedures such as change analysis, 5-why, and fishbone. The end results is always corrective action, and whatever techniques determine proper corrective action, is good.

Besides identifying corrective actions, the final report must also specify implementation dates and responsible parties. Confirmation of implementation should also be included.

RECORD KEEPING

29 CFR 1904; Recording and Reporting Occupational Injuries and Illnesses

- ✓ OSHA 301 Form (Incident Report – Document # INC-01-07)
- ✓ OSHA 300 Logs (Past and Present Logs Located in the OSC Corporate Office)

JOURNEY MANAGEMENT PROGRAM

PURPOSE

The purpose of the OSC Journey Management Plan (JMP) is to set expectations for the safe operation of motor vehicles used in the transport of employees to and from the job site. As such this document defines practices which will minimize risk and prevent losses associated with travel-related incidents including injuries to drivers, passengers and pedestrians, damage to vehicles and damage to third party property. By communicating potential safety risks before mobilizing to a site, visitors will be able to prepare for and avoid potential hazards.
The Journey Management Plan shall be reviewed by all affected employees prior to travel.

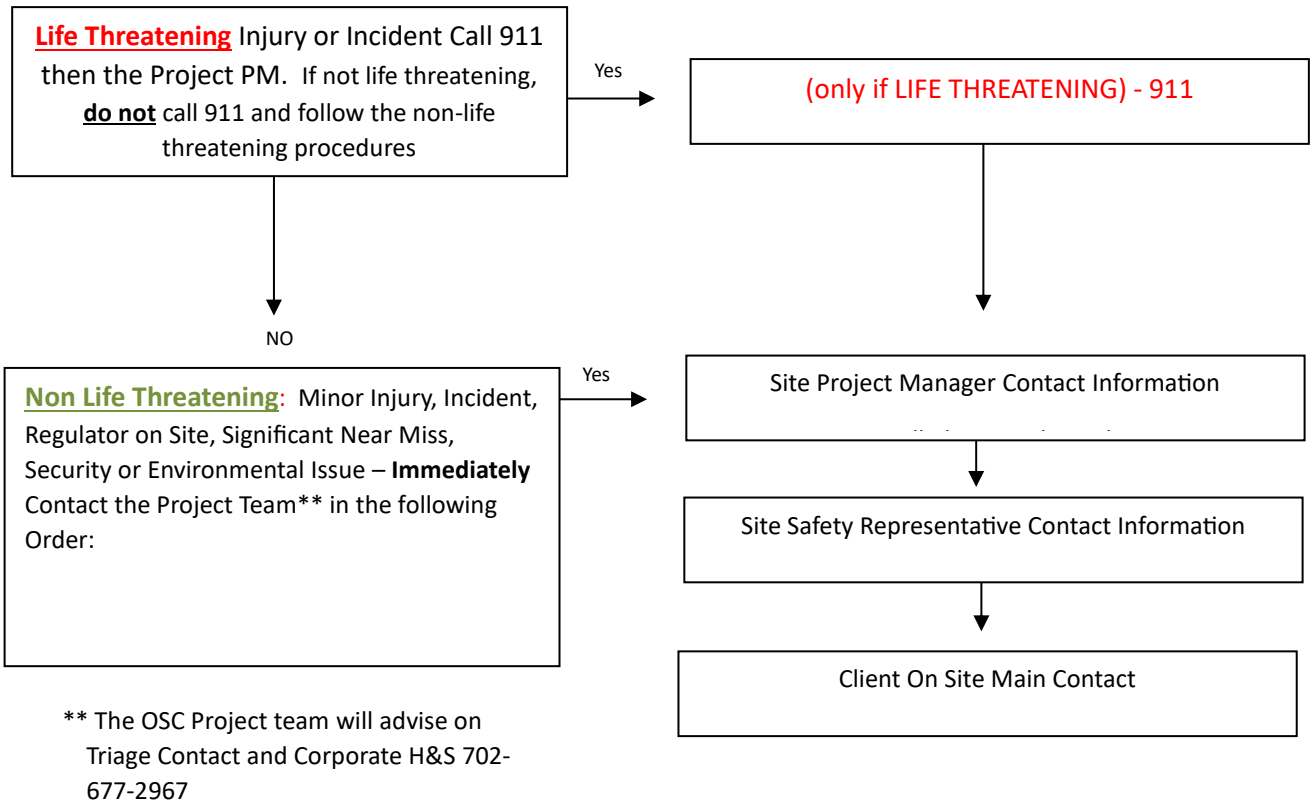
ADDRESSES AND TELEPHONE NUMBERS

LOCATION	PHYSICAL ADDRESS	TELEPHONE NUMBERS
Origin	City and State	Project Contact Phone Number
(Insert) Project Name	(Insert) Physical Address	(Insert) Name of Primary Contact Phone Number Office Location Address

RESPONSIBILITIES

REPORTING

The Project Manager or designee is responsible for ensuring that employees and subcontracted employees traveling to the work site are provided a copy of this JMP, driving directions, and safety rules for review and assistance in planning their trip to the site. If there are any issues, concerns, unsafe acts or conditions, incidents, near misses, regulatory questions, please contact use the following reporting tree:



** The OSC Project team will advise on Triage Contact and Corporate H&S 702-677-2967

JOURNEY PLAN

Driving Directions, Map and Meeting Point at Project

(INSERT HERE) **N**

GENERAL HAZARDS

- ✓ Drivers first time to the site and unfamiliar with the area
- ✓ Chemical, electrical, and biological (ticks, snakes) risks at the site
- ✓ Traveling between 2-6am when you have the lowest body temperature, maximum sleepiness, poorest performance (mental and physical)
- ✓ Travel between 3-5 pm when you have high sleepiness and it is hard to stay vigilant.
- ✓ vehicular travel on freeways, city streets and rural roads
- ✓ vehicular travel on gravel/dirt roads,
- ✓ backing of vehicles
- ✓ changing weather conditions
- ✓ construction / work zones
- ✓ secure goods/cargo being transported and only carry
- ✓ long work day/travel can raise the risk of a crash due to fatigue to an unacceptable level
- ✓ windy rural roads

SAMPLE JOURNEY PLAN

Journey Management Plan	**Destination: Bayer Crop Science, Institute West Virginia**	
☐ OSC Employees ☒ and/or Sub-contractor Employees	Convoy?: ☒ Yes ☐ No - Leader: Justin Romanow Meeting/rest points: Power Plant Gate	Has an Emergency Response Plan been prepared? ☒ Yes ☐ No Who is responsible for emergency response to this journey? OSC
Pre-trip planning meeting held? ☒ Yes Date 5/31/12 ☐ No	Security / Escort Requirements? ☒ Yes ☐ No - If Yes, explain: Escort needed on Site by CH2MHill	**Origin to Arrival Distance:** ~250 miles **Driving job/tasks:** Drive to the facility fo visit.
Driver: Don Wall Company: OSC Phone: 443-463-5527 **Alternate Driver:** No	**Journey Manager:** Bill Fleck Company: OSC Phone: 716-560-7542	**Emergency Contact:** Jim Bentley Company: OSC Phone: 443-271-5433
Insurance details/contacts– all vehicles? ☒ Yes ☐ No **Is the driving license valid for the vehicle driver / country?** ☒ Yes ☐	**Preventative Maintenance Check Completed Each Day** ☒ Yes ☐ No **Vehicle Suitable for the Trip/Road Conditions?** ☒ Yes ☐ No Any item identified as needing attention must be noted on the inspection form and brought to the supervisor's attention immediately.	
Is the another way to achieve trip's Objective (Transportation Co. etc?) ☐ Yes ☒ No	**Is this trip necessary?** ☒ Yes, for Site Visit ☐ No	**Is defensive Driver Training for the Driver(s) valid?** ☒ Yes ☐ No
Does this journey require night driving? ☐ Yes ☒ No (if yes describe controls to minimize risk)	**Phone Service** (Satellite phone, etc.?): Verizon works at the site, T-Mobile has limited to no service.	Is each vehicle equipped with all conducted for all vehicles? ☒ Yes ☐ No
Vehicle(s): Personal Type Suitable for Site: ☒ Yes ☐ No	**Passengers**: None	**Job Safety Analysis Complete?** Yes
Trailer?: ☐ Yes ☒ No	Park so first movement is forward? ☒ Yes ☐ No	Informed to us Spotters onsite? ☒ Yes ☐ No
Weather: Temperature: 70° & partly cloudy Dry? ☒ Windy? ☐ Rain? ☐ Snow? ☐ Fog? ☒ Dust? ☒	**Road Conditions** Sealed? ☒ Yes ☐ No Pot-holed/rough? ☒ Yes ☐ No Mixed (<50% sealed)? ☒ Yes ☐ No	Hours on duty: 2 hrs Planned journey travel: 7.5 hrs Total hours on duty*: **9.5 hrs** (* Must be less than 14 hrs)

Route Destination / / Rest Areas	Arrival Time	Departure Time	Rest Break?	Is Contact Required?	Known hazards / weather / road conditions to destination / rest area
Departure: 6/4/12 Rising Sun, Maryland		06:00		No, unless delay	Morning sun glare.
Break: 6/4/12 I-76W mile post 202.5, Service Plaza Blue Mountain	08:00	08:15	15 minutes	Yes, A. Long	Windy/gravel roads near the site.
Arrival: 6/4/12 Homer City Power Plant Guard Booth to meet OSC / Escort to the Site	11:00	13:00?	No	Yes, A. Long	Road is gravel/pot holes – drive cautiously. Multiple hazards at the Site, must be escorted onto site by OSC and oriented upon arrival.
Institute, WV	15:30	?			

Did the trip go as planned, if not, why (Use Reverse for Additional Space)**?**

All vehicle accidents and other associated events shall be reported immediately to OSC project management according to the reporting structure and the employee's supervisor. Failure to report an accident will be subject to standard progressive discipline. A written report shall be filed within 24 hrs of the incident.

PPE Needed at the Site: Standard Level D PPE, Long Sleeves and Long Plant, Wear bug spray with Deet, Hard Hat, Safe (6" support), Traffic Safety Vest, Safety Glasses.

Driver Signature: (unless driver is also the Journey Manager):

DRIVING LIFE SAVING RULES

1. No alcohol or drugs while working or driving - Using alcohol, illegal drugs and misusing legal drugs or other substances will reduce your ability to do your job safely
    a. Always inform your Supervisor or the Person in Charge if you are taking medicine that may have an effect on your performance
    b. If in doubt, always check with your Supervisor or the Person in Charge who may seek medical advice
    c. Not use, keep, sell or distribute illegal drugs
    d. Intervene if you see a case of alcohol or drugs abuse
2. While driving, be proactive, be defensive, drive to survive, do not use your phone & do not exceed speed limits
    a. Speeding or using your phone while driving increases the risk of losing control of your vehicle.
    b. If you are a Driver you should:
        i. Not use a mobile phone or pager, send or read a text message, or use a hands-free mobile phone device
        ii. Stay at or below the maximum allowable speed for the road you are driving on as indicated by road signs or Journey Management instructions
        iii. Drive during daylight hours whenever possible. Avoid driving in adverse weather conditions.
        iv. Stay alert! Do not drive if you are sleepy. Take rest breaks if necessary.
        v. Adjust your speed to the prevailing conditions
        vi. Drive defensively, observe a safe following distance (3 second plus rule), scan the road ahead and use “the what if strategy” for anticipating hazards (have a plan B action to avoid the “what if” happens.
    c. If you are a Passenger you should:
        i. Intervene if a Driver is using a phone in a moving vehicle
        ii. Intervene if a Driver is exceeding the maximum allowable speed

3. Wear your seatbelt: A seatbelt protects you from injury in the event of an incident while driving and keeps you safe.
    a. Includes, for example, safety belts in (rental) cars, taxis, (mini) buses, trucks, cranes, or forklift trucks, and involves persons in moving vehicles when engaged on Client business.
    b. Exceptions include vehicles where only lap seatbelts are available or in public transport where seat belts are not available.
    c. You (Drivers and Passengers) should:
        i. Always use a 3-point seatbelt (please note exceptions above
        ii. Check that your seatbelt works properly
        iii. Keep your seatbelt properly fastened while in a moving vehicle
        iv. Check that everyone in the vehicle is wearing a seatbelt properly before starting to drive
        v. Intervene when your fellow passengers are not wearing seatbelts properly
4. Follow prescribed Journey Management Plan: A Journey Management Plan is a plan for you as a Driver that will help you to travel and arrive safely.
    a. If you are a Driver you should:
        i. Confirm if a Journey Management Plan is required before starting the journey. Consider alternate modes of travel other than driving (Plane, Train, Bus). Likewise consider if meeting can be done without any travel, i.e. conference call over the phone.
        ii. Discuss the Journey Management Plan with the authorised person
        iii. Understand the Journey Management Plan before starting the journey
        iv. Comply with the duty, driving and rest hours specified in the Journey Management Plan
        v. Follow the route specified in the Journey Management Plan
        vi. Always tell the authorised person immediately if changes occur
    b. If you are the Supervisor or Person in Charge you should routinely:
        i. Check that the Journey Management Plan is in place and being followed
        ii. Check that the Driver understands and complies with the Journey Management Plan

5. Inspect your vehicle prior to driving
    a. Exterior Physical Walk Around Inspection Key Items: Tires, lights (front, rear & running (if any)), windshield/glass, belts, wires, overall vehicle physical condition, signs of leaks, underbody & exhaust, hitches, trailer and lights (if applicable).
    b. Operational controls, signals and safety devices; steering, lights, signals, emergency signal, horn, brakes, defroster, ignition, radio, safety belts, driver seat and mirror adjustment.
    c. Required Documentation – license, inspection, registration and insurance current.
    d. Road Safety Kit containing Jumper Cables, First Aid Kit, Blanket, Flashlight and Emergency Light Flasher, Road Flares and or reflective traffic triangles.

LADDERS AND SCAFFOLDING

PURPOSE

To assure proper and safe use of ladders and scaffolds without incident and injury at all OSC locations. Training for all employees will be conducted at the time of hire, prior to the start of the project.

PERSONAL RESPONSIBILITIES

Corporate Director – Health, Safety & Environment

Responsible for ensuring this program is reviewed and updated as necessary (product changes and updates, regulatory updates, program performance improvements). At a minimum, the program will be reviewed and updated annually.

Managers and Supervisors

Responsible for assuring their projects/operations and employees are in compliance with the requirements of this program (training, application, practice and procedures).

Employees

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor.

Subcontractors

Responsible for following all policies and procedures as required by this program, as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor.

- **NOTE – All employees have the authority and responsibility to stop work for safety concerns. "If you see it, you own it".**

LADDERS

GENERAL

Ladders must be inspected prior to use. If found defective, they must be taken out of service and tagged as ***"Dangerous, Do Not Use."***

1. Metal ladders are electrical conductors and will not be used near wiring.
2. Wood ladders must be painted with only varnish. Opaque materials are not to be used.

3. Do not overreach while working from a ladder. Keep belt buckle between rugs.
4. Face the ladder and use both hands while climbing or descending a ladder. Tools and materials must be hauled up with the use of a hand line or belt carrier.
5. Only manufacturer's approved hooks, or those certified by a professional engineer, are acceptable.
6. Exercise care when working from ladders, or when placing or carrying ladders, to prevent injury to other employees.
7. Lock, or bolt, the door when it is necessary to place a ladder in front of or over a doorway.
8. Barricade the area, or position a workman in front of the ladder, when it is necessary to place it in an aisle or any location where there is a possible danger of it being struck by another person or object.

STRAIGHT LADDERS

1. Select ladders of proper length for the work. Ladders will never be used that have been spliced together. Makeshift extensions are dangerous, and their use is prohibited.
2. Use only ladders with safety feet or sharp spurs. Where the ladders appear insecure, lash the top to a fixed support. This is particularly advisable with long ladders or where there is a possibility of the ladder slipping, shifting position or being bumped.
3. When used to access an elevated work level, the ladder must extend at least three feet beyond the supporting object.
4. Carry the ladder by placing the upper rail on the shoulder and the bottom rail resting against the body. The end with the safety feet or spurs should be in front and elevated above the horizontal. Heavy ladders should be carried horizontally, in like manner, by two people-the first man placing his arms through the first two rungs.
5. Set the ladder on a secure footing. Ladders with spurs shall not be used on metal floor plates, cement floor or other smooth surfaces.
6. Place the base of the straight ladder so that a one to four (1-4) lean ratio, from the vertical, is established in order to obtain a safe working angle.
7. Face the ladder going up or down. Maintain three points of contact on the ladder.
8. Keep hands free for use in climbing up and down the ladder. Small articles should be carried in pockets or on a tool belt. Larger articles should be lifted to, or lowered from, elevated positions by hand lines.
9. Shut down the machine tools before working overhead on a ladder.
10. Securely lash or fasten ladders to prevent displacement.

11. Keep ladders clean and free from dirt and paint which may conceal defects. Rungs and steps are to be kept free of oil, grease, and debris.
12. Avoid using ladders in a strong wind, except in emergencies and then only when they are securely lashed or tied in position.
13. Never use ladders for platforms, walk boards, or shoring.
14. Ladders will only be utilized by one person at a time.
15. After the extension section has been raised to the desired height, the safety dogs or latches must be engaged and the extension rope secured to a rung on the base section of the ladder before use.
16. Extension ladder sections are not to be used separately.

STEP LADDERS

1. Step ladders will be equipped with a metal spreader, or locking device of sufficient size and strength, to securely hold the front and back sections in open position.
2. Open a step ladder fully before mounting. Step ladders are never to be used as straight ladders and the top platform of a step ladder is not mounted.
3. Step ladders will only be utilized by one person at any one time.
4. Never stand on the top or first step below the top of a step ladder or as indicated.
5. Step ladders must be tied off when they are used close to the edge of an elevated platform, roof, floor opening, or when they exceed eight feet in height.

SCAFFOLDING

Scaffolds and swing stages must be used whenever needed and erected by, or under, the direction of an experienced and competent person. All scaffolding erection and adjustments will be performed only under the direction of a competent person. Generally, OSC does not erect or dismantle scaffolding. Personnel required to work on scaffolding shall be trained and authorized to do so. Training shall be documented with the specific Activity Hazard Analysis required for the job.

The following work practices will be adhered to at all times:

1. Scaffolds, manlifts and swing stages must be inspected before each use to ensure their good condition and adherence to all regulations. Tagging may be used as required at the job site.
2. All scaffolds higher than 10 feet must have adequate guardrails, “midrails and toe boards.”
3. Access to and from a scaffold or swing stage will be by stairs, runway ramps, or secured ladders. These must be kept clear of obstructions.

4. The swing stage stirrups must be clamped to the float with U-bolts only.
5. Electrically operated scaffolding will be inspected by a competent person before use.
6. All of the safety chains must be hooked up during use.
7. Personnel must wear properly rigged fall restraint (not fall arrest) on scaffold platforms not equipped with standard handrails or completed decking.
8. No one will ride a rolling scaffold while it is being moved, or rocked, or otherwise caused to move while workers are on it. No one should move a rolling scaffold without removing and/or securing all tools.
9. Scaffold handrails, mid-rails, or brace members should not be climbed—use ladders for access.
10. All scaffolds must be erected level and plumb on a firm base.
11. Scaffolds that are three or more times higher than the smallest base dimension will be secured to the building or structure at the second lift and every other lift thereafter. Running scaffolds will be secured every 30 feet horizontally at the same intervals.
12. All scaffold platforms must be equipped with the standard 42-inch-high rigidly secured handrails, mid-rails, and toe boards and should be completely decked with safety planks or manufactured scaffold decking.
13. Do not ever exceed safe working loads on scaffolds.
14. Do not rig from scaffold handrails or braces.
15. Scaffolds or safety planks should not be used for skids, ramps, runways, or purposes other than scaffold decking.
16. No scaffold, manlift, or swing stage will be loaded in excess of the load for which it is designed and constructed to bear, and loads will be distributed so as not to create localized stress loads in excess of the designed specifications.
17. Scaffold planks will extend over their end supports not less than six (6) inches or more than 12 inches.
18. Scaffold planking will be overlapped a minimum of 12 inches or secured from movement.
19. Railings and toe boards will be installed on all open sides and ends of platforms more than 10 feet above the floor, except where entirely within the interior of a building and covering the entire floor area of any room therein and not having any side exposed to a hoist way, elevator shaft, stairwell, or other floor opening, needle-beam scaffolds and floats in use by structural iron workers.
20. There will be a screen with ½-inch maximum openings between the toe board and the guardrail where persons are required to work or pass under the scaffold.

LEAD PROGRAM

PURPOSE

OSHA finds that risks associated with lead are magnified by improper and uninformed manners in which lead (materials) are handled. Improper design, implementation, or inspection of projects involving lead creates unnecessary health and safety hazards which are detrimental to the employees and citizens involved with the work.

The purpose of this policy and program is to reduce lead related hazards by conducting proper training, before exposure to lead materials by personnel needing to design, implement, inspect, or perform duties on projects which contain potential exposure to lead.

PERSONNEL RESPONSIBILITIES

Corporate Director – Health, Safety & Environment

Responsible for assuring this program is reviewed and updated as necessary (product changes and updates, regulatory updates, program performance improvements). At a minimum, the program will be reviewed and updated annually.

Managers and Supervisors

Responsible for assuring their projects/operations and employees are in compliance with the requirements of this program (training, application, practice and procedures).

Employees

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor).

- NOTE – All employees have the authority and responsibility to stop work for safety concerns. “If you see it, you own it”.

Subcontractors

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor.

DEFINITIONS (Refer To Standard Program Definitions):

INORGANIC LEAD (General Description and Characteristics)

- "Inorganic lead" is defined as lead oxides, metallic lead and lead salts, including organic salts such as lead sump products and lead arsenate. This guideline summarizes pertinent information about inorganic lead for workers and employers. Recommendations may be superseded by new developments in this field; therefore, readers are advised to regard these recommendations as general guidelines.
- Inorganic lead enters the body primarily through the respiratory tract by the inhalation of fumes, dust, or mist. A secondary, but not significant, means its entry through the gastrointestinal tract. This occurs by the swallowing of lead particles trapped in the upper respiratory tract or introduced into the mouth on food, tobacco, fingers, and other objects.
- Inorganic lead compounds are not absorbed through the skin. Many of the organic lead compounds, however, are absorbed through the intact skin.

TYPE OF WORK

Workers involved in the following types of work are at risk for lead exposure:

- ✓ Demolition or salvage of structures;
- ✓ Removal of lead materials;
- ✓ Construction, alteration, repair or renovation of structures, substrates or portions; and
- ✓ Installation, cleanup, transportation, disposal, storage, or containment of materials and maintenance operations.

LEAD RELATED TASKS

Lead related tasks include:

- Abrasive blasting;
- Welding, cutting and burning on steel structures;
- Lead burning or torch melting or fusing of lead;
- Manual scraping and sanding associated with paint removal;
- Manual demolition of structures coated with lead based paint;
- Heat gun application to melt lead paint; and
- Cleanup activities where dry expendable abrasives are used.

HEALTH HAZARD INFORMATION

ROUTES OF EXPOSURE

Inorganic lead may cause adverse health effects following exposure via inhalation or ingestion. In animals tested, an increase of fetal mortality and malformation of the posterior and urogenital and intestinal tracts were noted in the offspring. In humans, cases of peripheral neuropathy with paralysis of the muscles of the wrists and ankles; decreased red blood cell life and kidney function as well as kidney disease have been logged as being caused by exposure to lead via inhalation and ingestion. Lead can accumulate in the soft tissues and bones with the highest accumulation in the liver and kidneys. The elimination of lead from the body is extremely slow. Lead can penetrate the placental barrier, resulting in neurological disorders in infants.

SIGNS AND SYMPTOMS OF EXPOSURE

- Short term or acute exposure to inorganic lead can cause decreased appetite, insomnia, headache, muscle and joint pain, colic, and constipation.
- Long term or chronic exposure to inorganic lead can cause weakness, weight loss, nausea, vomiting, constipation, blue-black dot-like pigmentation on the gums ("lead line"), severe headache and abdominal cramps, delirium, convulsions, and a coma.

EXPOSURE LIMITS

- ✓ The current Occupational Safety and Health Administration Permissible Exposure Limit (PEL) for inorganic lead are 0.05 milligrams of lead per cubic meter of air (50 ug/m^3) as a Time Weighted Average (TWA) concentration over an eight hour work shift. The National Institute of Occupational Safety and Health (NIOSH) Recommended Exposure Limit (REL) is 0.10 milligrams per cubic meter as a TWA for up to a ten hour work shift, forty hour work week. The American Conference of Governmental Industrial Hygienist (ACGIH) Threshold Limit Value (TLV) is 0.15 milligrams per cubic meter as a TWA for a normal eight hour work day in a forty hour work week.
- ✓ If employee exposure to lead will be longer than an eight hour work shift, then the PEL must be calculated using the following formula:
    - (ug/m^3)=400 divided by hours worked in a day, so that in a ten hour work shift, the PEL for the lead according to OSHA would be 40 ug/m^3.

EXPOSURE ASSESSMENT & MONITORING

- ✓ In accordance with OSHA Guidelines regarding the use of lead in the work atmosphere (29 CFR 1926.62), initial determinations must be made to determine if any employee may be exposed to lead at or above the Action Level (Action Level for lead is 0.03 mg/m^3 or 30 ug/m^3). Also, employees in an area where there is a potential exposure to airborne lead at any level must be informed of the danger of using lead. Thirdly, a copy of 29 CFR 1926.62 and its appendices must be made readily available to all employees who have a potential exposure to airborne lead at any level.
- ✓ OSC will obtain objective data on the extent of lead exposure at the job site and monitor the lead exposure.
- ✓ OSC must determine the exposure limits through sampling for all tasks which involve exposure to lead. Employees must be protected from potential lead exposure during the lead exposure assessment period. This may be accomplished by providing the proper protection during the exposure assessment period following the criteria set forth in CFR 1926.62(d) (2) or by using data from a previously monitored project where the data obtained in the last 12 months, was acquired on a project with conditions that closely resemble the process, type of material, control methods, work practices, and environmental conditions of the current project.

DETERMINATION

A positive or negative determination must be made as to whether there is the possibility that any employee may be exposed to lead at or above the action level. The determination can be made either by sampling for exposure assessment, or by using a previous, similar job documentation as a model.

NEGATIVE DETERMINATION

- ✓ If the determination is made that no employee is exposed to airborne concentrations of lead at or above the action level, then a written record of this negative determination will be created including date of determination, location within the work site, and the name and social security number of each employee being monitored. If the initial determination reveals that the employee exposure is below the action level then no further monitoring is required unless there is a change in the equipment, process, control, personnel, or tasks for that specific work site.

POSITIVE DETERMINATION

- ✓ If the results prove positive and there is exposure at or above the action level and below the PEL, then monitoring must occur at least every six (6) months. Monitoring will continue at the required frequency until two (2) consecutive samples taken seven (7) days apart are below the action level. At this time, the monitoring can stop unless there is a change in equipment, process, control, personnel, or tasks for that specific work site.
- ✓ If the initial determination reveals that the employee exposure is above the PEL, monitoring should be done at least quarterly. The monitoring should continue at this frequency until two consecutive samples, taken seven (7) days apart are below the PEL.
- ✓ Airborne exposure levels will be made by "breathing zone" air sampling of individuals involved in activities that potentially present exposure to inorganic lead. Samples will be collected which are representative of the exposure for each employee wo may be exposed to lead. Initial monitoring will be conducted to determine the frequency of further sampling.
- ✓ Employees will be notified of sample results which represent the employee's exposure in writing within five (5) working days. Whenever the results indicate that the representative employee exposure is at or above the PEL, the employee shall receive a written statement that the employee's exposure was at or above that level. A description of the corrective action which will be taken to reduce exposure will also be included in the written statement to employees.
- ✓ All areas potentially releasing airborne inorganic lead will be regulated. Limited access will be enforced in a manner that will minimize the number of persons authorized to enter the area(s).

METHODS OF COMPLIANCE

Engineering, work practice, and administrative controls will be utilized to reduce and maintain employee exposure to lead to reduce employee exposure to the lowest feasible level. Once these measures are taken, then the use of respiratory protection will be utilized to provide further protection. A compliance program will be written for each job site which will include:

- ✓ A description of each activity in which lead will be emitted;
- ✓ Description of the means in which any controls will be utilized to limit exposure;
- ✓ Any technology which will be utilized to meet the PEL; and
- ✓ Any monitoring data which documents lead emissions, schedule, and has a work practice program.

The written program will be made available to any employees, along with copies of the 1926.62 standard along with all appendices.

CONTROL METHODS

Feasible engineering controls and work practices will be implemented to reduce occupational exposure to inorganic lead. Engineering plans and studies will be conducted should levels of personal exposures exceed the action level of 0.03 mg/m^3. If the action level is reached, the employer will install engineering controls and institute work practices on the quickest feasible schedule.

RESPIRATORY PROTECTION

- ✓ OSC will ensure that respirators are used when the action level is realized and monitoring results indicate that control methods and supplemental work practices do not yet sufficiently reduce exposure to or below the Permissible Exposure Limit.
- ✓ Respirators must be used when the employee's exposure to lead may exceed the PEL. Respirators are also required when work operations and work practice controls are not sufficient to reduce employee exposure to or below the PEL. Respirators will be provided to any employee who requests one.
- ✓ Where respirators are required, OSC will provide to their employees the appropriate respirator or combination of respirators from Table I (taken from 29 CFR 1926.62)
- ✓ Respirators specified for higher concentrations can be used for lower concentrations of lead
- ✓ Full face piece is required of the lead aerosols that cause eye or skin irritation at the use concentrations
- ✓ A high efficiency particulate air filter (HEPA) means a filter that is 99.97 percent efficient against particles of 0.3 micron size or larger.

Table I:

Airborne Concentration of Lead or Condition of Use	Required Respirator
Not in Excess of 500 ug/m^3	½ mask air purifying respirator with high efficiency filters, ½ mask supplied air respirator operated in demand (negative pressure) mode **This is the minimum OSC requirement for any hot work on a lead-painted surface.**
Not in Excess of 1,250 ug/m^3	Loose fitting hood or helmet powered air purifying respirator with high efficiency filters
Not in Excess of 2,500 ug/m^3	Full face piece air purifying respirator with high efficiency filters, tight fitting powered air purifying respirator with high efficiency filters, full face piece supplied air respirator operated in demand mode, ½ mask or full face piece supplied air respirator operated in a continuous-flow mode, ½ mask supplied air respirator operated in pressure demand or other positive pressure mode
Not in Excess of 50,000 ug/m^3	Full face piece supplied air respirator operated in pressure demand or other positive-pressure mode
Not in Excess of 100,000 ug/m^3	Full face piece SCBA operated in pressure demand or other positive pressure mode

PROTECTIVE CLOTHING

Whenever the employee is exposed to lead above the PEL, without regard to the use of respirators, or where employees are exposed to lead compounds which may cause skin or eye irritation (i.e., lead arsenate and lead azide), OSC shall provide, at no cost to the employee, the proper protective clothing. OSC will ensure that the employees use the appropriate protective clothing and equipment. OSC will make sure that the equipment is utilized in the proper manner to ensure additional protection. Types of protection may include:

- ✓ Gloves;
- ✓ Hard Hats;
- ✓ Coveralls;
- ✓ Shoes;
- ✓ Disposable Over Boots;
- ✓ Face Shields
- ✓ Googles and/or
- ✓ Other Appropriate Protective Equipment.

OSC will provide the protective equipment in a clean and dry condition. The cleaning, laundering and disposal of such equipment will also be provided by OSC. All protective clothing must be removed at the completion of the work shift in the change areas provided at the job site. The laundering facility, if applicable, must be notified that the garments contain lead material and must be notified not to shake or dust off clothing and to dispose of lead contaminated wash water in accordance with all applicable laws and regulations.

HOUSE KEEPING

All surfaces shall be maintained as free as is practical of accumulations of lead. Surfaces where lead accumulates should be promptly cleaned with the use of a vacuum or other method which will minimize the likelihood of the lead becoming airborne. Shoveling, dry or wet sweeping and brushing is only permitted when vacuuming or other equally effective methods have been tried and found to be not effective in such application. Vacuums used in housekeeping and protective clothing gross decontamination procedures, should have HEPA filters used and should be emptied in a manner which minimizes reentry of the lead dust into the workplace.

HYGIENE FACILITIES AND PRACTICES

In areas where exposure to lead is above the PEL, without regard to respirators, no employee is permitted to consume any food, beverage, or tobacco products. Employees must wash their hands and face prior to eating, drinking, smoking, or applying cosmetics.

EATING FACILITIES

OSC will provide lunchroom facilities or eating areas for employees who are exposed to airborne concentrations of lead over the PEL. The lunchroom or eating areas will be as free of lead contamination as possible. The lunchroom areas and eating facilities should not be entered by employees who are wearing contaminated protective clothing.

CHANGING ROOMS

Employees whose exposure is at or above the PEL, without regard to the use of respirators, will be provided with a clean changing area, which will be equipped with separate storage facilities for protective work clothes and equipment from street clothes to ensure that there is no cross contamination. When feasible, shower facilities may also be provided to those employees who are exposed to airborne lead over the PEL.

OSC will provide facilities for employees working in areas where exposure, without regard to the use of respirators, is above the PEL to vacuum their protective clothing and clean or change their shoes worn in such areas before entering changing rooms, lunchrooms, or shower rooms.

HAND WASHING FACILITIES

OSC will provide adequate hand washing facilities for use by employees exposed to lead. Where showers are not provided, employees must wash their hands and faces at the end of each work shift.

SHOWERS

OSC will ensure that employees who are working in regulated areas at or above the PEL, or who are subject to the possibility of skin or eye irritation from lead, shower at the end of the work shift.

MEDICAL SURVEILLANCE

PERIODIC EXAMINATIONS

OSC will provide examinations at least annually for each employee for whom a blood sampling test conducted anytime during the preceding 12 months indicated a blood level at or above 40ug/100g.

OSC will make available all medical records to employees who are occupationally exposed to lead on any day at or above the action level. Initial medical monitoring consists of biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyrin levels.

If the employee may be exposed to lead at or above the action level for 30 days or more in a consecutive 12 month period, then monitoring must occur at least every two (2) months for the

first six (6) months and every six (6) months thereafter. If the employee has had previous exposure or prior testing show that there is an elevation in the blood lead level, then a different monitoring frequency will apply. Within five (5) working days after receipt of biological monitoring results, the employee will be notified, in writing, of his blood lead level.

Medical examinations and consultations for employees whose blood sampling results indicated a blood lead level at 40 ug/dl or above shall occur at least annually. If an employee develops any signs or symptoms associated with lead intoxication, a medical examination shall be provided immediately.

OSC will select the initial physician who will conduct any medical examination or consultation. The employee may designate a second physician to review any medical findings or determinations from the initial physician and to conduct such exams or consultations.

No OSC employee is permitted to engage in the prophylactic chelating. This practice is only to be done by the direction of and under supervision of a physician.

MEDICAL REMOVAL PROTECTION

The requirement that an employer provides medical removal protection benefits means that, as long as the job the employee was removed from continues, the employer shall maintain the total normal earnings, seniority and other employment rights and benefits of an employee. This includes the employee's right to his or her former job status as though the employee had not been medically removed from the employee's job or otherwise medically limited.

An employee shall be removed from the job site if that employee has been exposed to lead at or above the action level and on each occasion that a periodic and follow up blood sampling test conducted indicates the employee's blood level to be at or above 50 ug/dl, or if the final medical determination results in a medical finding, determination, or opinion that the employee has developed a medical condition which places the employee at an increased risk of material impairment from exposure to lead.

For an employee who was removed based on high blood lead levels, that employee may be returned to work when two (2) consecutive blood sample results indicate that the employees blood level is at or below 40 ug/dl.

For an employee who was removed due to final medical determination, that employee may be returned to work when a subsequent final medical determination results in a medical finding, determination, or opinion that the employee no longer has a detected medical condition which places the employee at increased risk from material impairment to health from exposure to lead.

RECORD KEEPING

An accurate record of all monitoring and other data used in conducting employee exposure assessments shall be recorded. Exposure monitoring records should include the following information:

- ✓ Description of sampling and analytical methods used;
- ✓ Type of respiratory protection worn;
- ✓ Name, social security number, and job classification of the employee monitored and all other employees which monitoring is supposed to represent; and
- ✓ Environmental conditions/variables.

An accurate record of all employee medical surveillance shall also be established and maintained. This record shall include:

- ✓ Name, social security number, job duties of that employee;
- ✓ Copy of physicians written opinions;
- ✓ Results of any airborne monitoring done on or for that employee and provided to the physician; and
- ✓ Any employee medical complaints related to lead exposure.

The medical record data must be maintained by either the employer or physician in accordance with the 29 CFR 1910.1020. Medical record keeping is also required for employees who are removed from their job due to lead exposure.

SIGNS

OSC will utilize all signs by other statutes regulations or ordinances in addition to or in combination with signs required by 1926.62. No signs near the signs required by this regulation shall contradict this one. Signs required by this section should be kept illuminated and cleaned as necessary so that they are readable.

OSC shall post signs demarcating regulated areas reading (or similar):

DANGER
LEAD WORK AREA
MAY DAMAGE FERTILITY OR THE UNBORN CHILD
CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM
DO NOT EAT, DRINK OR SMOKE IN THIS AREA

EMPLOYEE INFORMATION AND TRAINING

OSC will provide training for all employees subject to lead exposure. Training shall communicate information regarding the OSHA lead standard, including information regarding warning signs, labels, and MSDS/SDS. Employees will be made aware that copies of this plan along with the 1926.62 standard and appendices are available for their use and information.

The training program will be provided at the time of initial assignment for those subsequently covered by this provision, and will be repeated at least annually. The training will ensure that each employee is informed of the following:

- ✓ The standard and its penalties;
- ✓ The nature of the operations which could result in exposure to lead above the action level;
- ✓ The engineering controls and work practices associated with the employee's job assignment;
- ✓ The purpose, proper selection, fitting, use, and limitations of respirators;
- ✓ The purpose and description of the medical surveillance program and medical removal protection plan;
- ✓ Information on the adverse health effects associated with excessive exposure to lead; and
- ✓ Instructions to employees that chelating agents should not be used unless under the direction and supervision of a physician.

Employees must receive a copy of the standard.

OSC DISCIPLINARY POLICY

PURPOSE

Each employee is expected to follow the OSC Company Rules and Policies, the policies of all federal and state agencies, all local regulations and the policies of the Owner for whom the work is being done. In order to ensure a safe and healthy workplace, OSC incorporates a Disciplinary Policy to ensure compliance to all rules and regulations. Any questions regarding OSC's Disciplinary Policy should be directed to OSC's Corporate Director – Health, Safety & Environment.

RESPONSIBILITIES (Please also refer to the "Responsibilities" Sections in Section 2.0 of this Manual)

Corporate Director – Health, Safety & Environment

The OSC Corporate Director of Health, Safety & Environment is responsible for assuring this policy is reviewed and updated as necessary. The policy shall be, at a minimum, reviewed and updated annually.

Managers & Supervisors

OSC Managers and Supervisors are responsible for assuring that their projects and operations, as well as personnel, are in compliance with the requirements of this policy.

Employees

OSC employees are responsible for following all company policies and procedures as required and reporting any deviation from this policy to Management and Supervisors.

Subcontractors

All subcontractors are responsible for following all policies and procedures as required.

PROCEDURES

Employees are subject to a ***progressive counseling process***, if considered insubordinate, that will result in the following (or similar to):

- First Violation: Warning
- Second Violation: Mandatory three (3) day work suspension without pay
- Third Violation: Termination.

In each case, the employee will be provided written notice. A copy of the notice will be issued to the employee's Project Manager, as well as the appropriate HSE Personnel, and filed in the employee's personnel file located at the OSC Corporate Office.

When issuing a notice, the issuing party (Project Manager and/or Supervisor) will:

- ✓ Meet with the employee(s) in order to discuss the performance issue,
- ✓ Inform the individual(s) of the issue and the corrective action to be taken,
- ✓ Complete the written notification in its entirety, and
- ✓ Issue copies as directed on the notification form.

Nothing in this Disciplinary Policy prohibits the immediate dismissal, or removal from the jobsite, of any employee whose conduct constitutes a compromise of HSE requirements which could cause serious danger to the employee, their co-workers, any property and equipment and/or any other employees.

SUPERVISOR'S ACCOUNTABILITY

Site supervisory personnel will be judged by the same rules as field employees and bear the responsibility for overall site conditions.

Project Managers, HSE personnel and other company officials will make physical inspections of the job sites. If an inspection of activities and areas indicates findings demonstrating overall lack of commitment to company HSE goals, the Project Superintendent and/or Foreman will be issued a written warning.

- Two (2) written warnings will be considered cause for disciplinary lay-off or demotion.
- Three (3) written warnings will be considered cause for dismissal.

Failure to institute corrective action shall be considered insubordination and could be cause for dismissal. It is required that the suspension and termination process is completed under the direction of the Project Manager.

EMERGENCY RESPONSE AND CONTINGENCY PLAN

PURPOSE AND INTRODUCTION

The purpose of this Emergency Response and Contingency Plan is to provide an organized group with an action plan for efficient response in any emergency situation. Site-specific plans shall be developed for each project location identifying the following:

- The Distinct Evacuation Alarm used to signal personnel.
- The Communication Method for directions (i.e. radio, voice, public announcement) and specific Project Personnel Responsibilities.
- An Evacuation Route Diagram, including assembly points, that also lists emergency contact names and phone numbers. These diagrams shall be posted at all occupied work areas and will indicate the present location at the jobsite.
- The Egress, Emergency Lighting and Directional Signs for safe entry and exit (all entry/exits and paths to and from). These shall be inspected daily and documented weekly.

Special Notes:

1. The Emergency Response and Contingency Plan will indicate the frequency of documented practice evacuation drills which should occur, at a minimum, monthly as well as yearly and as site conditions change which would make the current Plan obsolete.
2. In many cases, depending on the type of project and the phase, the typical inspection and maintenance for building emergency lighting and egress signs does not apply because there are no occupied buildings. This is primarily the case with Demolition and Environmental Remediation projects.

REMEMBER:

*****In ALL cases, the PRIMARY GOAL IS TO EVACUATE THE BUILDING QUICKLY AND SAFELY! There is NO critical process within any OSC operation that requires personnel to stay and not evacuate when signaled.*****

OSC's written Emergency Response and Contingency Plan, as well as the Site-Specific Plans, are available to all employees, subcontractors and visitors for review. These Plans shall be reviewed, verbally and in writing/read, by the employee at the time of hire and each time the employee is transferred to a new jobsite or a new project is started. The Emergency Response and Contingency Plan should also be reviewed at least annually or as warranted by responsibility changes, procedure changes, job conditions, inspection/incident recommendations and/or other improvements. When there are less than 10 employees, the

Emergency Response Plan can be communicated orally. Training shall also include orderly practice evacuations with the distinctive alarm.

PERSONNEL RESPONSIBILITIES

Corporate Director – Health, Safety & Environment

Responsible for assuring that the Emergency Response and Contingency Plan is reviewed and updated as necessary for such things as product changes and updates, regulatory updates and Plan performance improvements. At a minimum, it is the Corporate Director's responsibility to perform these updates annually.

Project Managers and Supervisors

Responsible for assuring that their projects/operations, and employees, are in compliance with the requirements of the Emergency Response and Contingency Plan. This includes training, application, practice and procedures.

Employees

Responsible for following all policies and procedures as required by the Emergency Response and Contingency Plan, as well as report any perceived Plan deficiencies, violations and errors, or improvements to their Supervisor.

Subcontractors

ALL Subcontractors are responsible for following all policies and procedures as required by the Emergency Response and Contingency Plan as well as report any perceived deficiencies, violations and errors, or improvement measures to their Supervisor.

- *NOTE: ALL employees and subcontractors have the authority and responsibility to stop work for safety concerns. "IF YOU SEE IT, YOU OWN IT"!*

PLAN OBJECTIVES

1. **Safeguard Project Personnel and Property**
2. **Protect the General Public and Neighboring Areas**
3. **Resume Normal Operations as Soon as Possible**

PROCEDURES

In the event of a fire or sudden release of contaminants, OSC personnel will quickly evacuate the area impacted. OSC's Emergency Response and Contingency Plan presents procedures that will be followed in case of an injury or in case OSC observes and emergency unrelated to the field work.

- ✓ The Site Health and Safety Officer (SHSO) will identify and arrange for emergency medical assistance. The location, telephone number and transportation capabilities of the nearest emergency medical facilities are an integral part of the Site Health and Safety Plan. For particularly hazardous operations, on-site medical assistance should be considered or the nearest medical facility alerted.
- ✓ In the event of any emergency associated with the project, OSC will - *without delay* – alert the Owner's Representative and institute whatever measures which may be necessary to prevent any repetition of the conditions or actions leading to, or resulting in, the emergency.
- ✓ In the event of an incident resulting in a spill on public roadways or travel ways, OSC will employ an independent emergency response company approved by the Owner's Representative. OSC will be liable for all costs associated with the cleanup of spills. *The Owner's Representative will direct the emergency response company in the event of a spill.*
- ✓ In the event of an OSC site incident, the SHSO (or designee) will assume incident command and shall do so until mutual aid, or additional trained personnel, arrive on-site. The injured, or ill, person will be transferred to the medical facility that is designated in the Site-Specific Emergency Response Plan.
- ✓ When an evacuation is necessary, all field team members will go the refuge area specific to the project. The Site-Specific Emergency Response and Contingency Plan shall identify the refuge areas for contractor personnel in the event of an evacuation.
- ✓ For emergency situations, oral or hand safety signals will be established by the SHSO. These should be developed, reviewed and made available to personnel for all phases of operation *before* going on-site. This will ensure quick communications for use during adverse or emergency situations.

If an emergency develops at the site, the discoverer will take the following course of action:

1. Notify the proper emergency services (fire, police, ambulance etc.) for assistance,
2. Notify other affected personnel at the site,
3. Contact the Client Representative to inform them of the incident as soon as possible, and
4. Prepare a summary report of the incident for the Client Representative.

EMERGENCY EQUIPMENT REQUIRED ON-SITE

OSC will provide appropriate emergency equipment, including an approved industrial-type First Aid Kit. A 20-pound, ABC Rated, fire extinguisher shall be maintained in each work area of the site. Emergency retrieval equipment will be provided for each confined space entry.

LOCAL EMERGENCY RESOURCES (For additional information refer to Site-Specific HASP)

- Ambulance
- Fire Department
- Police

} **DIAL 911**

PLEASE REFER TO THE SITE-SPECIFIC EMERGENCY RESPONSE AND CONTINGENCY PLAN LOCATED IN THE SITE-SPECIFIC HASP FOR NUMBERS TO THE LOCAL HOSPITAL EMERGENCY ROOM

OSC EMERGENCY CONTACTS

- Corporate Office: (716) 856-3333
- Corporate Director HS&E (702) 677-2967 (on call 24 hours/7 day a week)

Additional emergency contacts are listed in the contact list of every Site-Specific HASP

TYPES OF EMERGENCIES

1. **Controllable**: Minor fire, mechanical problem or any other disturbance from normal operation that affects the immediate area.
2. **Minor**: A condition that could endanger life and property on the project site that requires outside help for correction or control, but generally *can be contained*.
3. **Major**: Any condition *deemed at the time uncontrollable* that could endanger life and property on the project site as well as adjacent properties. *Requires considerable outside help*.

HSE RESPONSIBILITIES IN AN EMERGENCY

In the event of a release, the OSC Corporate Director – Health, Safety & Environment (or a designee), in conjunction with other trained personnel, will determine whether there has been any exposures to personnel. The Director will also attempt to determine the level of exposure where feasible.

The OSC Corporate Director – Health, Safety & Environment will then consult with physicians and other technical experts, such as a certified industrial hygienist, to determine if any health effects are to be expected. If appropriate, medical treatment will be recommended to those individuals that may have suffered exposure.

REPORTING AN EMERGENCY

<u>Reporting a CONTROLLABLE Emergency</u>

Project personnel will notify Health & Safety personnel of the incident.

<u>Reporting a MINOR Emergency</u>

Project personnel will notify Health & Safety personnel who will *immediately* notify the Project Superintendent with the following information:

- Name,
- Location of Emergency,
- Description of the Problem,
- Statement as to whether the Fire Department is needed, and
- Statement as to whether additional personnel are needed.

Once notified, the Project Superintendent will react as follows depending on the situation:

- ✓ Call the Fire Department,
- ✓ Call Rescue Personnel,
- ✓ Call the Police, and/or
- ✓ Call the Contracted Emergency Response Coordinator.

SITE EMERGENCY RESPONSE TEAM

Every jobsite with have a Site Emergency Response Team consisting of the following:

- INITIAL INCIDENT COMMANDER: Generally filled by the Site Superintendent or SHSO
- PROJECT COORDINATOR: Generally filled by the jobsite Foreman
- TRAINED HSE PERSONNEL: Filled by the SHSO (or designee with proper training)

This Team is also responsible for maintaining the Emergency Response and Contingency Plan, keeping the Emergency Call-in List updated and contacting the OSC Corporate Director – Health, Safety & Environment in any emergency situation.

FUNCTIONS OF EMERGENCY TEAM MEMBERS

The Initial Incident Commander is in charge of the major emergency until additional trained personnel (i.e. Mutual Aid Personnel, EMS, Fire Dept. etc.) arrive on-site and relieve the OSC Initial Incident Commander. Upon the arrival of additional emergency personnel, the Initial Incident Commander will review and update conditions of the emergency with the Contracted Emergency Response Coordinator. It will be at this point in time that OSC's Initial Incident Commander will turn the authority of command over to the Contracted Emergency Coordinator.

<u>INITIAL INCIDENT COMMANDER</u>

- Coordinates response activities with appropriate personnel
- Responsible for the overall direction of the emergency staff
- Arranges for notification of appropriate individuals in case of injury
- Acts in advisory capacity on policy matters
- Provides technical data and advice at the time of an emergency

- Pre-informs appropriate local government officials of the safety aspects of the remedial activities
- During an emergency, will act as a liaison with government agencies
- Contacts park officials and other government agencies
- Will minimize all contact with the public
- Depending on the wind conditions, will coordinate notification of neighboring plants and residents with the local authorities
- Ascertains the extent of air and sewage contamination and notifies the proper authorities

PROJECT COORDINATOR

- Coordinates with police authorities with respect to notification of neighbors
- Arranges, and provides, for equipment and materials needed to cope with emergency conditions including showers, eye wash stations, firefighting equipment capable of extinguishing chemical fires, first aid supplies and construction equipment
- Directs on-site inquiries from the public to the appropriate individuals
- Notifies the Contracting Officer of any scheduled meetings with local government officials

TRAINED HSE PERSONNEL (SHSO)

- Responsible for the safety of personnel at the emergency scene
- Recommends the proper protective clothing and equipment as well as proper firefighting techniques
- Tests downwind areas for levels of chemicals
- Coordinates medical personnel and rescue work
- Maintains contact with the Field Office
- Establishes and maintains crowd control until local authorities arrive
- Maintains a current inventory (number of units) of protective clothing and equipment that is available at the project site, making sure that the Manufacturer's specification information is in the Field Office for the various types of clothing and equipment that are available on-site for emergencies.

EMERGENCY COMMUNICATIONS

A distinctive alarm system shall be used to give a signal to all personnel in the event of an emergency. A portable Air Horn will be located at each working site and at the OSC Field Office. This horn will be sounded in case of an emergency. Additionally, all OSC Emergency Response Personnel will be equipped with two-way radios.

EMERGENCY SITUATION	AIR HORN RESPONSE
Personal Injury	4 Short Blasts (2 or 3 seconds)
Emergency Requiring Site Evacuation	2 Short Blasts

EVACUATION ROUTES AND PROCEDURES

Each OSC jobsite will have a wind direction indicator (i.e. small flags or ribbons, etc.). If informed to evacuate the site, all personnel in the immediate vicinity shall proceed at right angles to the wind direction to pre-selected upwind assembly areas. At the refuge area, the SHSO will take a head count and compare it against the logbook to ensure that all personnel have been evacuated.

The SHSO will also determine if the refuge area chosen is outside the influence of the emergency situation. If not, the SHSO will redirect the group to a new area. Prior to re-entry of the project site after evacuation, the SHSO will conduct an evaluation to determine the type of protective clothing and equipment necessary to address the potential hazards.

EMERGENCY INCIDENT REPORT

An Emergency Incident Report will be reviewed by the OSC Corporate Director – Health, Safety & Environment and maintained with the Project Files and also filed in the OSC Corporate Office where other HSE & Personnel Records are filed. The report will include, but not be limited to: the nature of the problem; the time, location and areas affected; the manner and methods used to control the emergency; any sampling and/or monitoring data; the impact, if any to the surrounding community and the corrective actions necessary to minimize future occurrences.

NOTE: Within eight (8) hours after the death of any employee from a work-related incident, or the in-patient hospitalization of three or more employees as a result of a work-related incident; the OSC Corporate Director – Health, Safety & Environment shall report (orally) the fatality/multiple hospitalizations by telephone, or in person, to the Area Office of the Occupational Safety and Health Administration (OSHA), US Department of Labor, that is nearest to the site of the incident. The OSHA toll-free central telephone number is: **1-800-321-OSHA.**

EMERGENCY PLAN POSTING

All emergency plans will be posted at the project site.

EMERGENCY INVENTORY

In addition to those items specified elsewhere, the SHSO will ensure that the following inventory of equipment and protective clothing is available in the event of emergencies.

- Washable Coveralls,

- Outer Gloves,
- Inner Gloves,
- Face Shields,
- Safety Glasses,
- Respirators,
- Disposable Coveralls,
- Outer Boots,
- Hard Hats, and
- Rain Suits.

MASTER PHONE LIST

The master phone list will be prominently posted at OSC's Field Office.

INCIDENT RESPONSE FOR PERSONAL INJURY INCIDENTS

Physical injuries can range from a sprained ankle to a compound fracture – or from a minor cut to massive bleeding. For less serious injuries, treatment may be given in the field by any First Aid/CPR trained personnel. For more serious injuries, additional assistance may be required in the field or at a medical facility. Trained personnel will assess the injury and consult, by phone, with a physician, if necessary. If hospitalization is required, the SHSO will notify the Project Superintendent, who will arrange for an ambulance. Anyone on-site can initiate the Emergency Response Process (most commonly by dialing 911).

If soiled clothing cannot be removed, the injured person will be wrapped in blankets for transportation to the hospital. The hospital shall put into effect a contingency plan for providing emergency treatment for a person who may have contaminated clothing or chemical contamination on their body.

PERSONAL PROTECTIVE EQUIPMENT

PURPOSE

To assure proper selection, safe use and maintenance for Personal Protective Equipment (PPE) as required by the OSHA 1926 Construction Standards including Subpart C (1926.28), Subpart E (1926.95-.96 and 1926.100-1926.107) as well as 1910 General Industry Standards, which OSHA has referenced as applicable to the Construction Industry (1910.132(b); 1910.132(c); 1910.136(y). All employees, subcontractors and visitors shall be trained in the proper selection. All safe use and maintenance of Personal Protective Equipment (PPE) is required at all OSC locations and project sites. PPE training shall be conducted initially at the time of hire, job transfer, at the start of a new project (project orientation). Also, thereafter annually or sooner as warranted by product change, PPE change and/or if the employee demonstrates improper use or lack of use and understanding. The use of employee-owned PPE is prohibited. All PPE shall be purchased by the company for the employees to insure adequacy. Selected PPE shall be fitted to each affected employee. The company is responsible for assuring adequacy of the PPE selected, its use and maintenance as necessary.

PERSONAL RESPONSIBILITIES

Corporate Director – Health, Safety & Environment

Responsible for assuring this program is reviewed and updated as necessary (product changes and updates, regulatory updates, program performance improvements). At a minimum, the program will be reviewed and updated annually.

Managers and Supervisors

Responsible for assuring their projects/operations and employees are in compliance with the requirements of this program (training, application, practice and procedures).

Employees

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor.

Subcontractors

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor).

- **NOTE – All employees have the authority and responsibility to stop work for safety concerns. "If you see it, you own it".**

DEFINITIONS

1. **Air-Purifying Respirator** – A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.
2. **The American National Standards Institute (ANSI)** – The American National Standards Institute (ANSI) is a non-profit organization that oversees the development of voluntary consensus standards for products, services, processes, systems and personnel in the United States. OSHA typically requires all PPE rigging to meet ANSI standards.
3. **Assigned Protection Factor (APF)** – The workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by this selection.
4. **Atmosphere-Supplying Respirator** – A respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere and includes Supplied-Air Respirators (SARs) and Self-Contained Breathing Apparatus (SCBA) units.
5. **Body Belt** – A strap with means both for securing it above the waist and for attaching it to a restraining device. This is a safety belt for positioning and restraint only, not for fall arrest protection.
6. **Body Harness** – A strap which may be secured above the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system.
7. **Containment** – A material which by reason of its action upon, within, or to a person is likely to cause physical harm.
8. **Canister or Cartridge** – A container with a filter, sorbent, catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.
9. **Lanyard** – A rope that is suitable for supporting one person. One end is fastened to a safety belt or harness and the other end is secured to a substantial object or a safety line.
10. **Lifeline** – A rope that is suitable for supporting one person, to which a lanyard, safety belt or harness is attached.
11. **Radiant Energy** – A certain type of energy that travels outward in all directions from its sources.
12. **Safety Belt** – A device, usually worn around the waist for fall resistance, which by reason of its attachment to a lanyard and lifeline or a structure, will prevent a worker from free falling. This is prohibited for fall arrest use.

13. **National Institute of Occupational Safety and Health (NIOSH)** – An institute which develops safety standards and specifications that the Occupational Safety and Health Act (OSHA) frequently references.
14. **NR Rating** – A Noise Reduction Rating that is given for hearing protection. It indicates a level of protection provided in decibels. An example is NR22 = effective noise reduction of 22 decibels for given exposure. If ambient noise levels were 92 decibels, then hearing protection with a noise reduction rating of NR22 would reduce the noise level to 72 decibels.
15. **Demand Respirator** – An atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.
16. **Emergency Situation** – Any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.
17. **Employee Exposure** – Exposure to the concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.
18. **End-Of-Service-Life Indicator (ESLI)** – A system that warns the respirator user that it is approaching the end of adequate respiratory protection. For example, that the sorbent is approaching saturation or is no longer effective.
19. **Escape-Only Respirator** – A respirator that is intended to be used only for emergency exits.
20. **Filter or Air Purifying Element** – A component used in respirators to remove solid or liquid aerosols from the inspired air.
21. **Filtering Facepiece** (**Dust Mask**) – A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.
22. **Fit Factor** – A quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.
23. **Fit Test** – The use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.
24. **Helmet** – A rigid respiratory inlet covering that also provides head protection against impact and penetration.
25. **High Efficiency Particulate Air (HEPA) Filter** – A filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

26. **Hood** – A respiratory inlet covering that completely covers the head and neck. It may also cover portions of the shoulders and torso.
27. **Immediately Dangerous to Life or Health (IDLH)** – An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.
28. **Interior Structural Firefighting** – The physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures, which are involved in a fire situation beyond the incipient stage.
29. **Loose-Fitting Facepiece** – A respiratory inlet covering that is designed to form a partial seal with the face.
30. **Maximum Use Concentration (MUC)** – The maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator, and it is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC can be determined mathematically by multiplying the assigned protection factor specified for a respirator by the required OSHA permissible exposure limit, short-term exposure limit, or ceiling limit. When no OSHA exposure limit is available for a hazardous substance, an employer must determine an MUC on the basis of relevant available information and informed professional judgement.
31. **Negative Pressure Respirator (Tight Fitting)** – A respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.
32. **Oxygen Deficient Atmosphere** – An atmosphere with an oxygen content below 19.5% by volume.
33. **Physician or Other Licensed Health Care Professional (POLHCP)** – An individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by paragraph (e) of this section.
34. **Positive Pressure Respirator** – A respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.
35. **Powered Air-Purifying Respirator (PARR)** – An air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.
36. **Pressure Demand Respirator** – A positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.
37. **Qualitative Fit Test (QLFT)** – A pass/fail test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

38. **Quantitative Fit Test (QNFT)** – An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.
39. **Respiratory Inlet Covering** – The portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with a nose clamp.
40. **Self-Contained Breathing Apparatus (SCBA)** – An atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.
41. **Service Life** – The period of time that a respirator, filter, sorbent, or other respiratory equipment provides adequate protection to the wearer.
42. **Supplied-Air Respirator (SAR) or Airline Respirator** – An atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.
43. **Tight-Fitting Facepiece** – A respiratory inlet covering that forms a complete seal with the face.
44. **User Seal Check** – An action conducted by the respirator user to determine if the respirator is properly seated on the face.

REQUIREMENTS FOR PERSONAL PROTECTIVE EQUIPMENT (PPE)

CLOTHING

With a few exceptions, no special clothing is required for general work on most projects. Clothing should be sturdy, well fitting, and suitably protective. For example, long sleeves are better than short sleeves. All employees must wear an outer shirt or equivalent. No muscle shirts are permitted!

OSC provides personal protective clothing and equipment that is designed and approved for specific hazards for the employees' protection and mandatory use. For work, which may involve particular hazards such as exposure to chemicals or harmful materials, special personal protective clothing and equipment will be supplied.

EYE AND FACE PROTECTION

Employees will be provided with eye and face protection. Additional items, including face shields or mono googles, will be issued when the hazard warrants its use. The use of contact lenses is discouraged, particularly in those instances where work assignments require googles/eye protection, such as in areas where acid or caustics are present.

HEAD PROTECTION

Head injuries are caused by falling or flying objects and/or by bumping the head against a fixed object. Head protection, in the form of protective hats, must do two things—resist penetration and absorb the shock of a blow. This is accomplished by making the shell of the hat out of a material hard enough to resist the blow, and by utilizing a shock-absorbing lining composed of headband and crown straps to keep the shell away from the wearer's skull. Protective hats are also used to protect against electrical shock.

In 1997, a new ANSI standard was introduced that eliminates the old hard hat classifications. The old designations for hats (Type 1) and caps (Type 2) are no longer used. The old classifications are also a thing of the past. The classes A,B, and C are gone and in their places you find Class G,E, and C. The following tables show the new types and classes.

Type	**Impact**
1	Helmets are intended to reduce the force of impact resulting from a blow only to the top of the head.
2	Helmets intended to reduce the force of impact resulting from a blow which may be received off center or to the top of the head.
Electrical Class	
G (General)	Class G helmets are intended to reduce the danger of contact exposure to low voltage conductors. Test samples are proof-tested at 2200 volts (phase to ground). However, this voltage is not intended as an indication of the voltage at which the helmet protects the wearer.
E (Electrical)	Class E helmets are intended to reduce the danger of exposure to high voltage conductors. Test samples are proof-tested at 20,000 volts (phase to ground). However, this voltage is not intended as an indication of the voltage at which the helmet protects the wearer.
C (Conductive)	Class C helmets are not intended to provide protection against contact with electrical conductors.

HEARING PROTECTION

Exposure to high noise levels is a potential hazard associated with the operation of heavy equipment, power tools, generators, compressors, pumps, and similar activities. Exposure to intermittent high noise levels exceeding accepted standards might result in hearing loss.

Whenever noise levels are measured or anticipated to exceed a time-weighted average (TWA) level of 60 decibels as measured on the A scale (DBA), worker protection against the effects of noise exposure will be required in accordance with 29 CFR 1926.52 and 1926.101 as appropriate. At times double protection might be required.

The following OSHA permissible exposure table shall be used to initially determine the use of hearing protection devices. Minimally, all employees subjected to impact or instantaneous noise levels greater than 140 DB shall be required to use hearing protection.

Duration Per Day (In Hours)	Sound Level DBA – Slow Response
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
.5	110
.25 or less	115

Sound suppression devices will be utilized on pneumatic, gasoline, and diesel-powered construction equipment and pneumatic tools as available to maintain noise exposure levels below the limits specified above (29 CFR 1926) or as determined through actual noise level measurements. If noise exposures are suspected of exceeding those levels, then formal noise exposure monitoring, using OSHA approved noise dosimeter, will be conducted. If any measured exposure exceeds the OSHA allowable (90 DB TWA-hr.) hearing protective PPE shall be required. Engineering and administrative controls will be applied before PPE.

If administrative and engineering controls fail to reduce exposure to below 90 DBA TWA 8-hr., appropriate hearing protection will be provided, and the work area or equipment will be posted with warning signs to alert workers of the requirements for hearing protection. Furthermore, a hearing conservation program will be put in place to assure employees are not exposed above the OSHA limit.

A variety of hearing protectors—plugs and muffs—are available to employees. Hearing protection will be provided and may be used on a voluntary basis. OSC provides the following:

1. **Formable Plugs** – A plug that is rolled and compressed into a very thin cylinder. While compressed, insert the plug well into the ear canal and then reach around the head to pull the ear outward and upward during insertion.
2. **Earmuffs** – A type of earmuff that fully encloses the ears to seal against the head. A person should adjust the headband so the cushions exert even pressure around the ears and then hair should be pulled back and out from beneath the cushions.

Formable plugs and earmuff cushions must be kept clean and free from material that can irritate the ear canal. Formable plugs and earmuff cushions must be kept clean and free from material that can irritate the ear canal. Formable plugs are disposable and earmuff cushions must be washed in a mild detergent and warm water. Discard plugs if they harden, or do not return to their original size and shape. Ear muff cushions normally need replacing whenever they become stiff, cracked, or do not seal.

FOOT PROTECTION

Footwear will consist of shoes which have a substantial sole and upper support made of a liquid resistant material such as leather or rubber. Hard or steel toed shoes are required. Foot guards are required when using a pneumatic tamper or concrete breaker. Cloth-type fabric (i.e., tennis shoes), sandals, open toes, or soft-soled shoes are not acceptable. Safety footwear is classified according to its ability to meet minimum requirements for both compression and impact tests. These requirements and testing procedures may be found in the American National Standards Institute (ANSI) Z41-1999 and ASTM F-2412-2005.

GENERAL

Personal Protective Equipment (PPE) will be selected, used, maintained, and stored in accordance with 29 CFR 1910 Subpart I, 29 CFR 1926 Subpart E, and the manufacturer's recommendations. Engineering, administrative, and/or work practice controls will be implemented where feasible, rather than relying exclusively on PPE.

Standard protective equipment (i.e., general construction safety attire) is to be worn at all times by all personnel at the site. This includes:

1. Safety glasses with permanently mounted side shields or mono goggles in chemical areas;
2. Safety boots; and
3. A hard hat.

DESCRIPTION OF LEVELS OF PROTECTION

PPE will be used when the project and support activities involve known or suspected atmospheric contamination; when vapors, gases, or particulate may be generated by site activities; or when direct contact with skin-affecting substances may occur. Full facepiece respirators protect the lungs, gastrointestinal tract, and eyes against airborne toxicants. Chemical resistant clothing protects skin from contact with destructive and absorbable chemicals.

The specific levels of protection and necessary components for each have been divided into four categories according to the degrees of protection afforded:

Level A: Should be worn when the highest level of respiratory, skin, and eye protection is needed.

The Level A PPE ensemble includes a self-contained breathing apparatus inside a fully encapsulating, airtight, vapor tight, and chemical protective suit. Only specially trained and qualified individuals may do Level A, and usually only under emergency conditions.

Level B: Should be worn with the highest level of respiratory protection, but a lesser level of skin protection is needed.

The Level B PPE ensemble includes a full-face positive pressure SCBA or air respirator equipped with a 5-minute escape capability; work cloths; chemicals over boots; inner and outer latex gloves; chemical resistant work gloves; a hard hat; and work boots. Hearing protection shall be utilized as directed by the SHSO.

Level C: Should be worn when the criteria for using air-purifying respirators are met, and a lesser level of skin protection is needed.

The Level C PPE ensemble includes work clothing as dictated by weather; coated PVC Tyvek coveralls; inner and outer latex gloves; chemical resistant work gloves; a full or half-face air-purifying respirator with an organic vapor acid gas cartridge/filter; a hard hat; booties; work boots; and safety glasses. Hearing protection (earplugs) shall be worn as directed by the SHSO.

Level D: Level D provides minimal protection against chemical hazards. It is normally worn only as a wok uniform and not in any area of significant respiratory or skin contact hazards.

The Level D PPE ensemble will include work clothing as dictated by weather; a hard hat; work gloves (as directed by the SHSO based on work task); work boots; and safety glasses. Hearing protection (ear plugs) will be worn as directed by the SHSO. Level D Modified includes the aforementioned latex gloves and if directed by the SHSO, coated PVC Tyvek coveralls.

Modifications of these levels are permitted by the SHSO and routinely employed during site work activities to maximize efficiency. Likewise, the type of chemical protective ensemble will depend upon contaminants, concentration, and extent of contact.

SELECT AND USE OF PPE

Selection and use of PPE is based on the performance characteristics of the PPE and task or site-specific hazards.

The minimum levels of PPE identified in Table 3 may be changed by the SHSO in consultation with the Corporate Director of HSE and Project Engineer based on field reconnaissance, results of site monitoring or additional hazard analysis.

MAINTENANCE AND STORAGE

The assigned PPE shall be maintained and stored in a clean and sanitary manner. Adequate facilities and supplies for cleaning, maintenance, storage, and the issue of PPE, including respiratory protection, will be provided at the project site.

INITIAL LEVELS OF PROTECTION

The minimum levels of PPE for site-specific work tasks are defined in Table 3, below:

Work Task (Table 3)	Anticipated Protection Level [1,2]
Mobilization/Site Set-Up	Non-Hazardous, General Construction Safety Attire
Access and Haul Road Improvement/Maintenance	Non-Hazardous, General Construction Safety Attire
Asbestos Removal	Level C with Half-face APR with HEPA cartridges, Upgrade to Full-Face APR if levels are >1 fiber/cc, Full-Face APR is good up to 5 fibers/cc
Removal/Handling Hazardous Chemicals (If Residual Product is Encountered in Existing Equipment or Lines)	To Be Determined
Mechanical Demolition	Modified Level D
Select Pipe Removal	Modified Level D
Confined Space Entry (If Required)	Level B or Level C (Based on Air Monitoring Results)
Lead Abatement (If Required)	Level C (Respiratory Protection to be determined per risk assessment)
Work in Restricted NORM Areas	See Section 4.2.4, Item G
General Site Cleanup/Work Area Restoration	Non-Hazardous, General Construction Safety Attire

NOTES:

1. Specific requirements of protection levels (e.g., B, C, Modified D, D) are detailed in Section 8.1.1 of this HASP.
2. Alternate protection levels will be used if monitoring indicates that conditions are appropriate, or the SHSO and the Owner's Representative agree that there is a reduced or increased potential of exposure.

Appropriate training shall be provided to PPE users. Training shall be documented as required by 29 CFR 1910.132

RESPIRATORY PROTECTION

Following the implementation of all engineering controls and work practices to limit exposure, employees may be required to use respiratory protection to reduce their exposure to airborne hazardous substances.

Table 3 addresses the need for respiratory protection and who should wear it. The standard requirements that determine the selection and use of respirators depend on the site and hazards present, but respirators for emergency use will always be available.

Employees must only use respirators that are approved by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH) and adhere to the regulatory requirements set forth by the Occupational Safety and Health Administration (OSHA) in 29CFR1910.134 and 29CFR1926.103.

Respirators must be cleaned, disinfected, maintained, inspected, and stored pursuant to 29CFR1910.134, OSC's Corporate Health and Safety Program, and as described herein.

MEDICAL CLARENCE / FIT TESTING

All employees assigned to tasks where they must wear a respirator and have prior medical clearance. Fit test records and employee medical documentation will be maintained on-site by HSE personnel. This information will be available for inspection upon request. Medical limitations and restrictions will be strictly enforced and only those employees having successfully completed fit testing shall be permitted to use a respirator.

RESPIRATOR TRAINING

Any employee who may be required to wear a respirator will receive training from the SHSO on the use, maintenance and inspection of respirators. Training shall be documented, and records will be maintained on-site and will be available for inspection upon request.

RECORD KEEPING

All records required by 29 CFR 1910.134 and any other regulations, company policy or client requests will be maintained on-site with official records maintained at the Corporate Offices.

INSPECTION

All respirators to be used on a job will be inspected by the employees prior to using them. Respirators will be inspected for damage before and after each use. Each employee, after training, will be responsible for inspection.

The following will be inspected:

- Tightness of connections;
- Face piece;
- Headbands;
- Inhalation valve;
- Cartridge or filter fittings;
- Pliability of rubber or elastic parts; and
- Signs of deterioration.

Any malformation, distortion, missing parts, or cracks in the respirator will cause the respirator to be deemed useless until a qualified technician properly repairs the respirator. If necessary, a new respirator will be issued.

CLEANING AND DISINFECTION

Reusable respirators will be cleaned after each use either by the employees or a person assigned to the decontamination of PPE. The steps required to clean a respirator after use includes:

1. Removing the cartridges and headbands.
2. Disassembling all respirator parts.
3. Washing all respiratory parts except headbands in a cleaner disinfectant solution or in soap and hot (100^{O}F) water.
4. Rinsing them completely in clean, warm water to remove all traces of detergent and disinfectant.
5. Air-drying them in a clean and sanitary area.
6. Re-assembling the respirator.
7. Storing the cleaned respirator in a sealed bag to protect it against dust, sunlight, extreme temperature, moisture or abrasives.
8. Performing any necessary maintenance.

Qualified personnel will conduct respirator maintenance in accordance with the manufacturer's recommendations.

STORAGE

Respirators will be stored in a sealed bag to protect against dust, sunlight, extreme temperature, moisture or abrasives. Inhalation holes will be covered with duct tape (or equivalent) immediately after leaving a contaminated area. The tape will be left on until the

respirator is donned for the next entry into a contaminated area. This tape will prevent any contaminants from being dislodged from the cartridge.

Respirators should be packed or stored so that the face piece and exhalation valve will rest in a normal position and function will not be impaired by the elastic setting in an abnormal position. The respirator shall not be hung to store or air-dried by the straps.

STANDARD PROCEDURES FOR USE OF RESPIRATORS

Each employee will adhere to the following Standard Operating Procedures (SOPs) for respirator use:

1. Carefully inspect the respirator using the procedures prior to entering potentially contaminated work areas.
2. Remove duct tape from cartridge prior to entering potentially contaminated work areas, if applicable.
3. Conduct positive and negative pressure leak tests each time a respirator is donned, as follows:
    - **Positive Pressure Leak Test** - Close off the exhalation valve with your hand and then breathe into the mask. The face-to-face piece seal is satisfactory if some pressure can be built up inside the mask and sustained.
    - **Negative Pressure Leak Test** - Close off the inlet openings of the cartridge with the palm of your hand, inhale gently so that a vacuum occurs inside the mask and then hold your breath for 10 seconds. If the vacuum is sustained and no inward leakage is detected, the respirator fits properly.
4. Do not remove the respirator in contaminated areas. In the event of a medical emergency or if breathing becomes difficult, remove respirator and immediately leave or remove the injured person(s) from the contaminated work area.
5. Wear a respirator with straps inside disposable garments in order to maintain respiratory protection during personnel decontamination/contaminated garment removal.

POWERED INDUSTRIAL FORK TRUCK PROGRAM

PURPOSE

To assure Industrial Fork Truck use is performed safely without incident and in compliance with Federal OSHA regulations under the applicable 1926 Construction and 1910 General Industry Standard. This program shall be reviewed annually for effectiveness and compliance or sooner as warranted by change in conditions (regulatory change, equipment change, inspection/audit recommendations, incident investigation findings or other realized improvement measures).

PERSONNEL RESPONSIBILITIES

Corporate Director – Health, Safety & Environment

Responsible for assuring this program is reviewed and updated as necessary (product changes and updates, regulatory updates, program performance improvements). The program shall be as a minimum reviewed and updated annually.

Managers and Supervisors

Responsible for assuring their projects/operations and employees are in compliance with the requirements of this program (training, application, practice and procedures).

Employees

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor).

Subcontractors

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor).

- NOTE – All employees have the authority and responsibility to stop work for safety concerns. “If you see it, you own it”.

Training of all authorized employees shall be conducted by an authorized OSC instructor at the time of hire and there after an operator performance review shall be required for each authorized operator. Frequency of operator review may be sooner if warranted by change in conditions. Operators who fail the review shall be required to retake and successfully complete another Forklift training class for the type of lift(s) they are operating. Operator license shall be issued for each successfully trained authorized operator, noting date of issue, name of operator, name of instructor and type of equipment authorized to operate. Training records shall be maintained at the local project field office and corporate office for review.

PROCEDURES

For the protection of all persons involved with OSC projects, the following rules apply for use of powered industrial trucks or forklifts:

- ✓ Only authorized persons shall be permitted in the cab or on the equipment. Only those designated persons who are trained and qualified shall operate a powered industrial truck. Unauthorized employees shall be advised of this policy rule in their required safety training;
- ✓ Industrial trucks shall be examined daily before being placed in service. Operator manual available and current with lift. The vehicle shall not be placed in service if any condition is found that would adversely affect safety. Documented lift inspections - All fork trucks shall be inspected daily prior use by the authorized operator per the MFG lift specifications. Defective equipment shall be tagged out not to use at the control and locked out (key removed and secured);
- ✓ Only trained and authorized employees are permitted to perform refueling and charging of forklifts. All refueling and charging shall be performed in a designated area that is designed for safe refueling and charging per the MFG specifications as it applies to the particular each specific lift. Smoking is prohibited in refueling and charging areas;
- ✓ ANSI approved eyewash station shall be readily available in the immediate lift charging area;
- ✓ A minimum 20 lb ABC dry chemical fire extinguisher shall be readily available and maintained at refueling and charging stations (within 75 feet not less than 25 feet);
- ✓ No additional unauthorized passengers are permitted to ride on the lift truck other than the authorized operator;
- ✓ Lift operators shall wear seat belts as equipped and required by MFG during lift operation;
- ✓ Cell phone use is prohibited when operating fork trucks;
- ✓ Wheels of trailer shall choked and trailer breaks locked when loading and unloading trucks;
- ✓ Dock levelers shall be inspected and secured prior to loading and unloading trailers;
- ✓ Floor and ground loading shall be assessed for proper capacity and lift use by the site competent person prior to authorizing lift use. Load rating for floors shall be posted;
- ✓ Industrial trucks shall not be altered unless approved by the truck manufacturer;
- ✓ All fork trucks shall be equipped as a minimum with 1 fully charged 5 lb ABC dry chemical extinguisher.;
- ✓ Load limits, as specified by the manufacturer, shall not be exceeded under any circumstances;

- ✓ Operating and maintenance procedures, as specified by the manufacturer, shall be followed;
- ✓ Any power-operated industrial truck not in safe operating condition shall be removed from service. Authorized personnel shall make all repairs;
- ✓ No load shall be lifted until its weight has been determined;
- ✓ Free rigging (unsecured, non-locking connections) to the forks for hoisting is prohibited. Only approved pre-engineered hoisting attachments with positive locking connections that are per the MFG specifications can be used with forklifts for hoisting. All rigging shall be performed by a competent rigger;
- ✓ Operation of fork trucks in hazardous atmospheres is prohibited;
- ✓ Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads that cannot be centered;
- ✓ Trucks shall not be driven up to anyone standing in front of any fixed object;
- ✓ No person shall be allowed to stand or pass under the elevated portion of any truck, whether loaded or empty;
- ✓ When a truck is left unattended, out of view or is located more than 25 feet away, the load engaging means shall be fully lowered to ground/floor level, controls shall be neutralized, power shut off and brakes set. Wheels shall be blocked if on an incline;
- ✓ The truck operator shall be required to look in the direction of, and keep a clear view of, the path of travel;
- ✓ When ascending or descending grades in excess of ten degrees, loaded trucks shall be driven slowly with the load upgrade;
- ✓ No truck shall be operated with a leak in the fuel system until the leak has been corrected;
- ✓ Truck operators shall exercise extreme caution when in close proximity to energized lines or equipment. The operator shall maintain minimum 15 feet of clearance from the energized source;
- ✓ Carbon fuel powered lifts shall be operated in a well ventilated area. Air monitoring for CO to assure levels are within acceptable levels shall be conducted (0 – 35 PPM); and
- ✓ An activity hazard analysis (AHA) identifying the hazards and protective measures for site specific lift use shall be developed for operators and ground personnel for every definable feature of work involving forklift use. AHA shall be reviewed prior to starting task with all authorized and affected employees. Copy of signed training review by instructor and participants shall be kept on file in the project field office and at the home corporate office in Buffalo.

SAFETY TASK ANALYSIS CARD/BBS SAFE WORK OBSERVATIONS

PURPOSE

The OSC STAC card process is a proactive system that is an integral part of the company's safety process management and behavioral based safety program. The card is an employee tool for identifying and reporting safety concerns as well as safe work observations.

PERSONNEL RESPONSIBILITIES

Corporate Director – Health, Safety & Environment

Responsible for assuring this program is functioning as intended and updated as necessary. At a minimum, the program will be reviewed and updated annually.

Managers and Supervisors

Responsible for assuring this program is implemented on their projects/operations; that safety concerns raised by employees are addressed; that safety improvements recommended by employees are made and that employee incentives are applied in line with OSC intentions.

Employees

Responsible for honestly and accurately completing the program forms (i.e., STAC) and be open to suggestions for improving their own safety performance. A minimum of one STAC shall be completed per week.

STAC CARDS ARE INTENDED TO:

- Provide peer BBS safe work observations and information for additional hazard assessment, awareness, employee recognition and rewards (safety incentives for employees participating in the STAC process);
- Help individual employees identify the specific hazards and protective measures for their assigned daily work activities and conditions;
- Provide additional reinforcement and awareness of the hazards they are exposed to and the proper protective measures that should be used;
- Provide data for developing process improvements; and
- Provide a supplemental reporting means for safety concerns.

The STAC is a pre-printed, bi-fold card that is intended to be completed by an employee prior to starting a new task or when conditions change. It is also intended to encourage employees to intervene when they observe their co-workers in hazardous situations. When properly implemented, the STAC process should support project management in addressing potential hazards before an injury occurs.

STAC PROCESS

The STAC is designed to be an as-needed, ongoing tool for observing workplace conditions and behaviors. A MINIMUM of 1 STAC PER WEEK FROM EACH EMPLOYEE SHALL BE SUBMITTED.

The STAC will be used by OSC employees and supervisors at the job-site to identify new conditions and potential hazards. STAC's will be used in addition to Safe Work Permits and/or approved work procedures.

Use of the STAC is determined by both employees and project management (i.e., Superintendents, HSO's and Project Managers). Employees completing and submitting properly completed STAC's will automatically be eligible for program incentives. There are no employee disciplinary actions associated with not submitting a STAC although minimal participation is required. Likewise for project management, incentives are in place to encourage implementation of the STAC process. While previous versions of the STAC process, which required participation, did improve the company safety culture; the changes in this version of the program are intended to continue the improvement.

STAC cards will be provided for each project. The cards are to be distributed to employees with instructions to hand the card in when completed, at the end of each week. The HSO will give a new card when one is turned in. Employees do not have to put their name on the card if they wish to be anonymous, however, this will not be included in the monthly participation incentive.

SHORT SERVICE PROGRAM

PURPOSE

To prevent work related injuries and illnesses to new hires and temporary workers. The supervisors and co-workers must be able to readily identify Short Service Employee participants. OSC Management will assign experienced employees to over see the daily activities of those assigned to the SSE Program.

SCOPE

- ✓ Applies to all OSC operations; shop as well as field operations
- ✓ Applies to all newly hired OSC employees (regardless of experience), temporary agency personnel or our independent contractors working on company or client locations/ facilities

DEFINITIONS

1. **Short Service Employee (SSE)** – An employee or sub-contractor employee with less than six months experience in the same job or with his/her present employer
2. **Mentor** – An experienced employee, who has been assigned to help and work with a new Short Service Employee by his/her supervisor

RESPONSIBILITIES

- Managers and Supervisors shall ensure that this program is implemented and followed
- OSC supervision shall monitor its employees, including SSE personnel, for HES awareness. If, at the end of the six-month period, the SSE has worked safely, adhered to HES policies and has no disciplinary actions, the SSE identifier may be removed at the discretion of OSC Management. OSC Management shall require any employee that does not complete the six-month period violation free to get retrained and safety approval prior to returning the employee to the program.
- OSC Project Managers shall manage its sub-contractors in alignment with this process
- All affected Employees shall follow the requirements of this program
- The Director of HS&E is responsible for reviewing the program annually for effectiveness and revising it as required for improvements.

PROCEDURE

- Supervisors will assure that all new, transferred and temporary employees shall have successfully completed the OSC Safety Orientation process and have a complete knowledge of the expectations for their job
- SSE may never be allowed to work alone
- Supervisors will identify all employees and temporary personnel with less than 180 days of service, or those employees they desire to return to a mentoring status for improvement in job and/or safety performance. Any SSE subject to safety disciplinary action during the initial 180 days will repeat the mentoring program or shall be dismissed for poor performance.
- Short Service Employee participants will wear high visibility (orange) SSE decal to help identify them
- Mentors will set the proper safety example for any SSE assigned them
- All subcontractors must have in place some form of the mentoring process, acceptable to management, designed to provide guidance and development for SSE personnel. A mentor can only be assigned one SSE per crew and the mentor must be onsite with the SSE to be able to monitor the SSE.
- Prior to the job mobilization the OSC project manager will communicate to the client, contractor contact and on-site supervisor all jobs containing SSE personnel. The project coordinator, contractor contact or on-site supervisor will determine approval status of the crew makeup.
- Mentors will converse daily with those persons assigned to them, preferably at the start of the day. This will be in addition to other tailgate or daily safety meetings held in the work area.
- Managers and the Safety Department will randomly audit for process compliance. This will involve interviewing employees in the Short Service Employee program (documentation is not required).
- A single person crew cannot be an SSE and crew sizes of less than five shall have no more than one SSE.

SILICA PROTECTION

SILICA PROTECTION

Crystalline silica is a common mineral found in sand, concrete, brick, block, stone and mortar. It is not always present and not in the same concentration. The most hazard is presented when it is in respirable form.

Respirable crystalline silica – very small particles typically at least 100 times smaller than ordinary sand found on beaches or playgrounds – is generated by high-energy operations like cutting, sawing, grinding, drilling and crushing stone, rock, concrete, brick, block and mortar, or when abrasive blasting with sand.

Potential health impacts of breathing in silica dust include;

- ✓ Lung cancer;
- ✓ COPD;
- ✓ Kidney disease;
- ✓ Silicosis; and
- ✓ Immune system effects.

OSHA has two (2) limits associated with managing risk from silica exposure on the job. The permissible exposure limit (PEL) and the action level (Al). The PEL is the maximum allowable exposure that isn't expected to result in an increase of harmful impacts. The Al is the concentration at which exposure controls and other requirements must be implemented. The concentrations are:

- ✓ PEL: 50 micrograms per cubic meter of air (50 ug/m3) as an 8-hour time weighted average (TWA); and
- ✓ Al: airborne concentration of 25 ug/m3 as an 8-hour TWA.

The primary means of controlling silica exposure is by controlling dust released from activities known to generate respirable silica dust. The controls to be used are in turn dependent on the work practice generating the dust, the location of the work (inside or outside), and the duration of the task. When work controls are insufficient for keeping exposures below the PEL, respiratory protection, in the form of an air-purifying respirator (APR) will be required.

The control methods for tasks commonly performed by OSC are described below and are based on OSHA requirements. Actual implementation of the company silica program will be detailed in each case via the task AHA/JSA. Furthermore, employees with the potential for silica exposure must be enrolled in the OSC medical surveillance program for silica work and the respirator program if exposure above the Al are anticipated.

Equipment/ Task	Control Methods	Required Respirator/APF	
		< 4 hrs./shift	>4 hrs./shift
Handheld power saw (any blade dia)	Use saw equipped with integrated water system that continuously feeds water to blade. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • When used outdoors • When used indoors/enclosed	None APF 10	APF 10 APF 10

Equipment/ Task	Control Methods	Required Respirator/APF	
		< 4 hrs./shift	>4 hrs./shift
Walk-behind saws	Use saw equipped with integrated water system that continuously feeds water to blade. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • When used outdoors • When used indoors/enclosed	None APF 10	None APF 10

Equipment/Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours/shift	> 4 hours/shift
(xvii) Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (e.g., hoe-ramming, rock ripping) or used during demolition activities involving silica-containing materials	Operate equipment from within an enclosed cab.	None	None
	When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions.	None	None

Equipment/Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours/shift	> 4 hours/shift
(xvi) Crushing machines	Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated (e.g., hoppers, conveyers, sieves/sizing or vibrating components, and discharge points). Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions. Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote control station.	None	None

SUBCONTRACTOR RISK MITIGATION PLAN

PURPOSE

The purpose of this plan is to help ensure subcontractors with low safety program assessments (grades < "C") meet the safety standard established for the project (zero incidents).

SCOPE

This plan shall cover the following risk mitigation elements:

a. Subcontractor Site Specific Training and Orientation;
b. Daily Morning Safety Brief;
c. Subcontractor Task/Risk Analysis; and
    - Activity Hazard Analysis
    - Safety Task Analysis Cards (STAC) and Behavioral Based Safe Work Observations
d. Responsibilities.

SUBCONTRACTOR TRAINING AND ORIENTATION

SITE TRAINING

- ✓ All subcontractors shall be provided with the training required to comply with the project HASP
- ✓ Copies of all training documentation (training certificates & attendance rosters) shall be stored and maintained onsite by the SHSO and will be made available for inspection upon request. Training documentation will be kept in an organized manner that shows that each individual worker has the proper training to be onsite

HSE PREREQUISITE TRAINING

All personnel working onsite must have the following:

- ✓ Successfully completed an initial OSHA 40 Hour HAZWOPER training (Hazardous Waste Operations and Emergency Response) and if the initial 40 Hour training is greater than 1 year then an 8 hour HAZWOPER refresher training shall be completed prior to performing field work at the project site; and
- ✓ Medical clearance for respirator use, fit test and training for the type of respirator required.

SITE SPECIFIC TRAINING

Documented site orientation training will be provided by the SHSO for the following topics:

- ✓ OSC Project Site Specific Orientation & HASP Review;
- ✓ Job Safety Analysis & Safe Work Procedures (JSA/AHA Review);
- ✓ OSC Behavior Based Safety (BBS) & Safety Task Analysis Card Process (STAC Cards, BBS Observations, Trending & Use);
- ✓ Hazard Communication and Project Hazard Awareness Training;
- ✓ PPE Requirements;
- ✓ Decontamination Procedures;
- ✓ Demolition Procedures;
- ✓ Site Security Requirements;
- ✓ Heat/Cold Stress (Signs, Symptoms, Protective Measures and Monitoring);
- ✓ Ladders, Stairs, Scaffolds and Powered Aerial Platforms;
- ✓ Fall Protection;
- ✓ Traffic Control (Personnel, Equipment, Trucks and Railway);
- ✓ Heavy Equipment Operation (Authorized, Unauthorized);
- ✓ Powered Industrial Fork Truck Operation (Authorized, Unauthorized);
- ✓ Lockout/Tagout (Plant Procedures – Locks Tags and Lock Boxes);
- ✓ Incident Reporting;
- ✓ Emergency Response (Medical, Fire, Weather, Signals and Procedures);
- ✓ Available Emergency Services;
- ✓ Respirator Use, Maintenance and Inspection (When Required);
- ✓ Excavation Hazards and Protective Measures;
- ✓ Confined Space;
- ✓ Dust, Erosion and Sediment Control; and
- ✓ Noise Control Measures.

DAILY MORNING SAFETY BRIEF

All subcontractor employees shall be required to attend a daily morning safety brief prior to starting work. Attendance at all safety meetings will be documented and kept on file in the OSC field office.

Prior to the beginning of each work task and/or each work day, all involved workers will be required to attend a safety meeting to review task-specific health and safety requirements pertinent to the days tasks (JSA/AHA review – job hazards and protective measures).

Topics discussed at the morning meetings include, but are not limited to:

- ✓ JSA/AHA – review for all definable features of work;
- ✓ STAC/BBS observations and trends;
- ✓ Previous days "safe work observations" and recommendations;
- ✓ Audit/Inspection findings and recommendations for improvement;
- ✓ Analytical data (material sampling and air monitoring results);
- ✓ Project employee recognition and rewards;
- ✓ Necessary training requirements and site work rules;
- ✓ Changes in work practices and/or work conditions;
- ✓ Precaution and work practices for scheduled site activities;
- ✓ New or modified site wide procedures or requirements;
- ✓ Incident alerts;
- ✓ Discussion of potential hazards or hazardous operations;
- ✓ Procedures on restricted areas;
- ✓ Equipment rules and requirements;
- ✓ Restrictions on the handling of materials;
- ✓ PPE requirements; and
- ✓ Delegation of responsibility (emergency backup personnel, competent persons, etc.).

SUBCONTRACTOR TASK/RISK ANALYSIS (AHA AND STAC CARDS)

An Activity Hazard Analysis (AHA) shall be developed for every definable feature of work and reviewed by workers prior to starting the task. The AHA shall break jobs down into their individual step by step tasks defining the potential hazard of each task and the proper protective measures (Safe Methods and required PPE). AHA's shall be modified as warranted by safe work observations, audits, incident investigations and improvement measures.

Likewise, to promote individual hazard awareness and involvement, each subcontractor employee shall be required to complete and maintain a daily Safety STAC Card for the work week. As jobs are assigned, the subcontractor employee evaluates and defines new tasks, equipment to be used and associated hazards and protective measures. At least one BBS safe work observation per week shall be completed on the card and turned in.

SPECIFIC RESPONSIBILITIES

Project management shall be responsible for monitoring work daily to assure compliance with the Subcontractor Risk Mitigation Plan. Likewise, the Corporate Director of Health, Safety & Environment is responsible for conducting periodic audits on the site to ensure project compliance and effectiveness of the plan.

The Project Safety Officer is responsible for overall administration of the Subcontractor Mitigation Plan which includes, but is not limited to the following:

- ✓ Act as a point of contact for all subcontractor site health and safety concerns for the project;
- ✓ Conduct an initial project safety orientation training as required;
- ✓ Review submitted AHA's for approval and update as required;
- ✓ Manage the OSC STAC card process (distribution, training and review) and BBS observations – conduct, collect and trend BBS observations data and incorporate findings into the daily safety process; report observations in the daily safety meetings and update JSAs/AHAs and training accordingly;
- ✓ Conduct the daily morning safety briefs as well as other project HSE meetings;
- ✓ Maintain separation of the exclusion zone (dirty) from the support zone (clean) areas. This includes worker authorization for entry and restrictions; and
- ✓ Supervising any additional subcontractor HSE requirements that are required for this project.

The SHSO will monitor the jobsite health and safety work performance daily to ensure compliance with the project HASP and Subcontractor Mitigation Plan. Any HSE violations will be promptly corrected and reported to the subcontractor's immediate Supervisor and OSC's Project Manager. All observed violations will be explained to the perpetrator and reviewed at the following safety meeting. Violations of the site HSE regulations will be grounds for disciplinary action, which could lead to the removal of a subcontract worker and/or expulsion of the subcontractor from the site.

WELDING, CUTTING AND BURNING

PURPOSE

To assure all welding, cutting and burning activities are completed safely without injury and incident.

PERSONAL RESPONSIBILITIES

Corporate Director – Health, Safety & Environment

Responsible for assuring this program is reviewed and updated as necessary (product changes and updates, regulatory updates, program performance improvements). The program shall be at a minimum reviewed and updated annually.

Managers and Supervisors

Responsible for assuring their projects/operations and employees are in compliance with the requirements of this program (training, application, practice and procedures).

Employees

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor).

Subcontractors

Responsible for following all policies and procedures as required by this program as well as report any perceived program deficiencies (violations and errors) or improvement measures to their supervisor).

- NOTE – All employees have the authority and responsibility to stop work for safety concerns. "If you see it, you own it".

WELDING OPERATIONS

- Whenever possible, objects to be heated or welded should be moved to an area free of hazards. If materials cannot be relocated, the area must be free of combustible materials, flammable and combustible liquids, and debris of all kinds.
- A permit will be issued to address hot work
- All exposed combustible materials below welding areas must be removed to a safe location, covered with a fire retardant material, or protected by containing all spark and slag.
- A 2lb ABC rated or larger dry chemical fire extinguisher will be provided and located within 30 feet of any welding or hot work operation.
- No welding is to be done or in any closed vessel, tank, line, or confined space unless it has been decontaminated, tested, and permit issued.

- Welding machines shall be grounded. When grounding to building components, paint must be removed to assure proper ground. Good electrical contact shall be maintained: sparking, arcing, or heating are evidence of poor ground and will not be allowed. The ground cable shall be capable of carrying the maximum electrical output of the welding unit. The use of frayed or broken cables is prohibited.
- Full face welding mask with no less than a number eleven- density lens is required for all welding operations

CUTTING AND BURNING

- The user must inspect all leads, grounds, clamps, welding machines, hoses, gauges, torches, and cylinders before they are put into operation.
- All fittings, couplings, and connections are to be leak-free. Testing will be done with soap and water
- All burning rigs must be broken down with regulators and removed. Protective caps screwed down hand tight prior to vehicular transportation
- Gas cylinders must be secured vertically to an adequate support while in use
- Burning goggles with no less than a number five density lens with plastic cover plates on both sides are required for all gas burning operations
- Ventilation shall be provided during all cutting or burning operations. At a minimum, the operator shall work with the wind at his back to allow fumes to move away from him.
- It is corporate policy that all burners may be exposed to lead fumes. Respiratory protection and personal sampling is required during all burning and cutting operations.

COMPRESSED GAS

GENERAL

- Use only hoses and couplings designed to handle compressed air and inspect them before each use. Chicago or similar type couplings will be secured by metal fasteners where holes are provided
- Cylinders that are heavy or difficult to carry by hand may be rolled on their bottom edge. NEVER DRAG THEM!
- All cylinders shall be transported in an upright position with the protective caps securely screwed on. All such cylinders shall be chained to a brace welded to the vehicle.
- Do not use cylinders for rollers, supports or any purpose other than containing gas.
- When cylinders are empty, close valves and replace valve protection caps. Clearly write “EMPTY” or “MT” in chalk cylinders that are to be returned to the vendor, or use the appropriate tags.
- Always consider cylinders as full, and handle them with the proper care

- All hoses, couplings and connections shall be inspected prior to use. Testing of couplings and connections shall be with liquid soap and water, or a similar method, to check for bubbling of leaking gas.
- Only hoses and couplings designed to be used with compressed gases shall be used
- Oxygen shall not be used as a substitute or in place of other gases. Cleaning, purging, pressurizing or operating pneumatic equipment with oxygen is prohibited.
- Regulators, hoses, couplings, and connections shall be kept grease and oil free
- Oxygen cylinders or cylinders containing oxidizing gases should not be stored within 35 feet of combustible materials or other cylinders containing flammable gases. If the area does not permit, the cylinders should be separated by a fire resistant partition at least 5 feet high with a fire resistant rating of at least 60 minutes.
- Cylinders should be stored on a level, fireproof floor. Use cylinders in an upright position, ensuring that they are firmly secured with a dedicated chain against being knocked over
- To prevent rusting, cylinders stored in the open should be protected from contact with the ground and against extremes of weather – i.e., accumulations of ice and snow in winter and continuous direct rays of the sun in the summer.

CYLINDER USE

- Open cylinder valves slowly. A cylinder not provided with a hand wheel valve should be opened with a spindle key or other tool provided by the supplier. DO NOT USE A PIPE WRENCH!
- Before making a connection to a cylinder valve outlet, “crack” the valve for an instant to clear the opening of particles of dust and dirt. Always point the valve and opening away from the body and not toward anyone else.
- Never crack a fuel gas cylinder valve near other welding work or near sparks, flames, or other possible ignition sources
- Use regulators and pressure gauges only with gases for which they are designed and intended. Do not attempt to repair or alter cylinders, valves, or attachments
- Unless the cylinder valve has first been closed tightly, do not attempt to stop a leak between the cylinder and the regulator by tightening the union nut.
- Do not let sparks, molten metal, electric currents, excessive heat, or flames come into contact with the gas cylinder
- Never crimp, couple or uncouple a pressurized hose. Shut off valve and bleed down hose. All hoses exceeding ½ inch inside inside diameter will have a safety device at the source of supply or a branch line to reduce pressure in case of hose failure.

LEAKING CYLINDERS

Leaking fuel gas cylinders should be taken out of use immediately and handled as follows:

- ✓ Close the valve and take the cylinder outdoors well away from the ignition source;
- ✓ Properly tag the cylinder and notify the supplier;
- ✓ A regulator attached to the valve may be used to temporarily stop a leak through the valve seat;
- ✓ If the leak occurs at a fuse plug or other safety device, take the cylinder outdoors well away from any source of ignition, open the cylinder valve slightly and permit the fuel gas escape slowly;
- ✓ Post warnings against approaching with lighted cigarettes or other sources of ignition;
- ✓ Properly notify the supplier and follow the instructions for returning the cylinder; and
- ✓ Tag the cylinder as "DEFECTIVE."

FIRE CONSIDERATIONS

- Emergency plans will be developed to include alternate exits in emergency situations. These must be familiar to all personnel entering the work area.
- Perform a pre-work survey to determine potential fire hazards, sources of ignition, hot spots and potential exits
- Protective clothing will burn and/or melt
- Ensure all sources of ignition are removed from the work area. Pilot lights are prime examples
- Locate hot spots such as transformers and switch panels
- Cut off supply stream lines, heaters and radiators
- Check the other side of the wall and floor below when using a cutting torch
- Post a fire watch when cutting, have a fire extinguisher at hand, and do not use CO_2 when in a confined space
- Remove all chemicals, flammable liquids and heat sensitive materials
- Keep trash and debris to a minimum and/or eliminate it
- Mark exit ways with directional arrows
- Properly illuminate exits and exit ways
- Post emergency phone numbers at a prominent location
- Type "ABC" fire extinguishers are to be used in all work areas
- Pressurized water is preferred in enclosed or confined areas
- All fire extinguishers are to be checked weekly. Anyone discharging a fire extinguisher—accidentally or on purpose—shall inform the supervisor

Appendix B – Quality Assurance Project Plans

INVENTUM ENGINEERING, P.C.

Quality Assurance Project Plan

3125 Highland Avenue

BCP Site #C932169

3219 and 3301 Highland Avenue

Niagara Falls, NY

September 2025

441 CARLISLE DRIVE
SUITE C
HERNDON, VA 20170
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1 Introduction

The purpose of this Quality Assurance Project Plan (QAPP) is to serve as a guidance document during implementation of the Remedial Investigation Work Plan (RIWP) and proposed Interim Remedial Measures (IRMs) for the 3125 Highland Avenue Brownfield Cleanup Program Site (BCP Site) located at 3219 and 3301 Highland Avenue, Niagara Falls, NY (NYSDEC Site No. C932169).

This QAPP is designed to provide an overview of Quality Assurance/Quality Control (QA/QC) procedures. Specific methods and QA/QC procedure for chemical testing of environmental samples obtained from the site as part of the Site Management.

An Inventum Engineering, P.C. (Inventum) Project Manager will be responsible for verifying that QA procedures are followed during the investigation and analysis. This will provide for the valid collection of representative samples. The Project Manager will be in direct contact with the analytical laboratory to ensure that holding times and other QA/QC requirements are met. The selected laboratory will be responsible for overseeing analytical QA/QC activities.

The estimated number of environmental samples and corresponding analytical parameters/methods that will be collected in accordance with the RIWP and IRMWP are provided in Table 1 below. Additional samples may be collected as necessary.

Table 1 – Analytical Parameters and Methods

Parameter	EPA Method Reference	Soil	Groundwater	Soil Gas
Target Analyte List Metals	6010C	69	10	
Target Analyte List Metals (Dissolved)	6010C		10	
Mercury	7470A	69	10	
Mercury (Dissolved)	7470A		10	
Target Compound List Volatile Organic Compounds	8260C	68	10	
Volatile Organic Compounds	TO-15			5

Parameter	EPA Method Reference	Soil	Groundwater	Soil Gas
Target Compound List Semi-Volatile Organic Compounds	8270D	69	10	
Cyanide	9010	15		
Pesticides	8081	15		
Herbicides	8151	15		
Polychlorinated Biphenyls	8082	15		
1,4 Dioxane	8270 SIM		10	
PFAS	1663A	15	10	
TCLP Lead	1311/6010	42		
Field Duplicates		1 per 20 samples	1 per 20 samples	1 per 20 samples
MS/MSD		1 per 20 samples	1 per 20 samples	
Trip Blanks	8260	One per Volatile Shipment	One per Volatile Shipment	
Rinsate (Equipment) Blanks	All Above Parameters	1 per 20 samples if equipment is decontaminated/reused	1 per 20 samples if equipment is decontaminated/reused	

The analytical laboratory utilized will be a certified NYSDOH ELAP laboratory for the appropriate categories. The laboratory QA Manager will be responsible for performing project-specific audits and overseeing the quality control data generated.

2 Data Quality Objectives

Data Quality Objectives (DQOs) are qualitative and quantitative statements which specify the quality of data required to support the investigation of the Site. DQOs focus on the identification of the end use of the data to be collected. The project DQOs will be achieved utilizing the definitive data category, as outlined in Guidance for the Data Quality Objectives Process, EPA QA/G-4 (September 1994). All samples will provide definitive data, which are generated using rigorous analytical methods, such as the reference methods approved by the United States Environmental Protection Agency (USEPA). The

purpose of this investigation is to establish a baseline of current conditions in order to aid in the development of an Alternatives Analysis (AA) for the BCP Site.

Within the context of the purpose stated above, the project DQOs for data collected during the investigation are:

- To assess the current nature and extent of contamination in environmental media at the site above applicable Standards, Criteria, and Guidelines.

2.1 QA Objectives for Chemical Data Management

Sample analytical methodology for the media sampled and data deliverables will meet the requirements in the most recent NYSDEC Analytical Services Protocol (ASP). Laboratories will be instructed that completed Sample Preparation and Analysis Summary forms are to be submitted with the analytical data packages. The laboratory will also be instructed that matrix interferences must be cleaned up, to the extent practicable. The laboratory will be instructed to report all non-detect values to the method detection limit (MDL) and obtain reporting limits below the applicable standard/guidance value for each contaminant in all media. In order to achieve the definitive data category described above, the data quality indicators of precision, accuracy, representativeness, comparability, and completeness will be measured during offsite chemical analysis.

2.1.1 Precision

Precision examines the distribution of the reported values about their mean. The distribution of reported values refers to how different the individual reported values are from the average reported value. Precision may be affected by the natural variation of the matrix or contamination within that matrix, as well as by errors made in field and/or laboratory handling procedures. Precision is evaluated using analyses of a laboratory matrix spike/matrix spike duplicate (for organics) and matrix duplicates (for inorganics), which not only exhibit sampling and analytical precision, but indicate analytical precision through the reproducibility of the analytical results. Relative Percent Difference (RPD) is used to evaluate precision. RPD criteria must meet the method requirements identified in QAPP Section 6.1.

2.1.2 Accuracy

Accuracy measures the analytical bias in a measurement system. Sources of error are the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analysis techniques. These data help to assess the potential concentration contribution from various outside sources. The laboratory objective for accuracy is to equal or exceeds the accuracy demonstrated for the applied analytical methods on samples of the same matrix. The percent recovery criterion is used to estimate accuracy based on recovery in the matrix spike/matrix spike duplicate and matrix spike blank samples. The spike and spike duplicate, which will give an indication of matrix effects that may be affecting target compounds is also a good gauge of method efficiency.

2.1.3 Representativeness

Representativeness expresses the degree to which the sample data accurately and precisely represent the characteristics of a population of samples, parameter variations at a sampling point, or environmental conditions. Representativeness is a qualitative parameter, which is most concerned with the proper design of the sampling program or sub-sampling of a given sample. Objectives for representativeness are defined for sampling and analysis tasks and are a function of the investigative objectives. The sampling procedures have been selected with the goal of obtaining representative samples for the media of concern.



2.1.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. A DQO for this program is to produce data with the greatest practicable degree of comparability. This goal is achieved through using standard techniques to collect and analyze representative samples and reporting analytical results in appropriate units. Complete field documentation will support the assessment of comparability. Comparability is limited by the other parameters (e.g., precision, accuracy, representativeness, completeness, comparability), because only when precision and accuracy are known can data sets be compared with confidence. In order for data sets may be comparable, it is imperative that contract-required methods and procedures be explicitly followed.

2.1.5 Completeness

Completeness is defined as a measure of the amount of valid data obtainable from a measurement system compared to the amount that was expected to be obtained under normal conditions. It is important that appropriate QA procedures be maintained to verify that valid data are obtained in order to meet project needs. For the data generated, a goal of 90% is required for completeness (or usability) of the analytical data. If this goal is not met, then NYSDEC, Inventum, and the 3125 Highland Avenue BCP Site project personnel will determine whether the deviations might cause the data to be rejected.

3 Sampling Locations, Custody, Holding Times, and Analysis

Sample locations are discussed in the RIWP. Procedures for chain of custody, holding times and laboratory analyses shall be followed as per SW-846 and as per the laboratory's Quality Assurance Plan. All holding times begin with validated time of sample receipt (VTSR) at the laboratory. The laboratory must meet the method required detection limits which are referenced within the EPA Methods (QAPP Table 1).

4 Calibration Procedures and Frequency

In order to obtain a high level of precision and accuracy during sample processing procedures laboratory instruments must be calibrated property. Several analytical support areas must be considered so the integrity of standards and reagents is upheld prior to instrument calibration. The following section describe the analytical support areas and laboratory instrument calibration procedures.

4.1 Analytical Support Areas

Prior to generating quality data, several analytical support areas must be considered; these are detailed in the following paragraphs.

- Standard/Reagent Preparation - Primary reference standards and secondary standard solutions shall be obtained from National Institute of Standards and Technology (NIST), or other reliable commercial sources to verify the highest purity possible. The preparation and maintenance of standards and reagents will be accomplished according to the methods referenced. All standards and standard solutions are to be formally documented (i.e., in a logbook) and should identify the supplier, lot number, purity/concentration, receipt/preparation date, preparers name, method of preparation, expiration date, and any other pertinent information. All standard solutions shall be validated prior to use. Care shall be exercised in the proper storage and handling of standard solutions (e.g., separating volatile standards from nonvolatile standards). The laboratory shall continually monitor the quality of the standards and reagents through well documented procedures.



- Balances - The analytical balances shall be calibrated and maintained in accordance with manufacturer specifications. Calibration is conducted with two Class AS" weights that bracket the expected balance use range. The laboratory shall check the accuracy of the balances daily and they must be properly documented in permanently bound logbooks.

- Refrigerators/Freezers - The temperature of the refrigerators and freezers within the laboratory shall be monitored and recorded daily. This will verify that the quality of the standards and reagents is not compromised, and the integrity of the analytical samples is upheld. Appropriate acceptance ranges (2 to 6°C for refrigerators) shall be clearly posted on each unit in service.

- Water Supply System - The laboratory must maintain a sufficient water supply for all project needs. The grade of the water must be of the highest quality (analyte-free) in order to eliminate false-positives from the analytical results. Ultraviolet cartridges or carbon absorption treatments are recommended for organic analyses and ion-exchange treatment is recommended for inorganic tests. Appropriate documentation of the quality of the water supply system(s) will be performed on a regular basis.

4.2 Laboratory Instruments

Calibration of instruments is required to verify that the analytical system is operating properly and at the sensitivity necessary to meet established quantitation limits. Each instrument for organic and inorganic analyses shall be calibrated with standards appropriate to the type of instrument and linear range established within the analytical method(s). Calibration of laboratory instruments will be performed according to specified methods.

In addition to the requirements stated within the analytical methods, the contract laboratory will be required to analyze an additional low-level standard at or near the detection limits. In general, standards will be used that bracket the expected concentration of the samples. This will require the use of different concentration levels, which are used to demonstrate the instrument's linear range of calibration.

Calibration of an instrument must be performed prior to the analysis of any samples and then at periodic intervals (continuing calibration) during the sample analysis to verify that the instrument is still calibrated. If the contract laboratory cannot meet the method required calibration requirements, corrective action shall be taken as discussed in QAPP Section 7. All corrective action procedures taken by the contract laboratory are to be documented, summarized within the case narrative, and submitted with the analytical results.

5 Internal Quality Control Checks

Internal QC checks are used to determine if analytical operations at the laboratory are in control, as well as determining the effect sample matrix may have on data being generated. Two types of internal checks are performed and are described as batch QC and matrix-specific QC procedures. The type and frequency of specific QC samples performed by the contract laboratory will be according to the specified analytical method and project specific requirements. Acceptable criteria and/or target ranges for these QC samples are presented within the referenced analytical methods.

QC results which vary from acceptable ranges shall result in the implementation of appropriate corrective measures, potential application of qualifiers, and/or an assessment of the impact these corrective measures



have on the established data quality objectives. Quality control samples including any project-specific QC will be analyzed are discussed below.

5.1 Batch QC

Method Blanks - A method blank is defined as laboratory-distilled or deionized water that is carried through the entire analytical procedure. The method blank is used to determine the level of laboratory background contamination. Method blanks are analyzed at a frequency of one per analytical batch.

Matrix Spike Blank Samples - A matrix spike blank (MSB) sample is an aliquot of water spiked (fortified) with all the elements being analyzed for calculation of precision and accuracy to verify that the analysis that is being performed is in control. An MSB will be performed for each matrix and organic parameter only.

5.2 Matrix-Specific QC

Matrix Spike Samples - An aliquot of a matrix is spiked with known concentrations of specific compounds as stipulated by the methodology. The matrix spike (MS) and matrix spike duplicate (MSD) are subjected to the entire analytical procedure in order to assess both accuracy and precision of the method for the matrix by measuring the percent recovery and relative percent difference of the two spiked samples. The samples are used to assess matrix interference effects on the method, as well as to evaluate instrument performance. MS/MSDs are analyzed at a frequency of one each per 20 samples per matrix.

Matrix Duplicates - The matrix duplicate (MD) is two representative aliquots of the same sample which are prepared and analyzed identically. Collection of duplicate samples provides for the evaluation of precision both in the field and at the laboratory by comparing the analytical results of two samples taken from the same location. Obtaining duplicate samples from a soil matrix requires homogenization (except for volatile organic compounds) of the sample aliquot prior to filling sample containers, in order to best achieve representative samples. Every effort will be made to obtain replicate samples; however, due to interferences, lack of homogeneity, and the nature of the soil samples, the analytical results are not always reproducible.

Rinsate (Equipment) Blanks - A rinsate blank is a sample of laboratory demonstrated analyte free water passed through and over the cleaned sampling equipment. A rinsate blank is used to indicate potential contamination from ambient air and from sample instruments used to collect and transfer samples. This water must originate from one common source within the laboratory and must be the same water used by the laboratory performing the analysis. The rinsate blank should be collected, transported, and analyzed in the same manner as the samples acquired that day. Rinsate blanks for nonaqueous matrices should be performed at a rate of 10 percent of the total number of samples collected throughout the sampling event. Rinse blanks will not be performed on samples (i.e., groundwater) where dedicated disposable equipment is used.

Trip Blanks - Trip blanks are not required for nonaqueous matrices. Trip blanks are required for aqueous sampling events. They consist of a set of sample bottles filled at the laboratory with laboratory demonstrated analyte free water. These samples then accompany the bottles that are prepared at the lab into the field and back to the laboratory, along with the collected samples for analysis. These bottles are never opened in the field. Trip blanks must return to the lab with the same set of bottles they accompanied to the field. Trip blanks will be analyzed for volatile organic parameters. Trip blanks must be included at a rate of one per volatile sample shipment.

6 Calculation of Data Quality Indicators

6.1 Precision

Precision is evaluated using analyses of a field duplicate and/or a laboratory MS/MSD which not only exhibit sampling and analytical precision but indicate analytical precision through the reproducibility of the analytical results. RPD is used to evaluate precision by the following formula:

$$RPD = \frac{(X1 - X2) \times 100\%}{[(X1 + X2)/2]}$$

Where:

X1= Measured value of sample or matrix spike

X2= Measured value of duplicate or matrix spike duplicate

Precision will be determined through the use of MS/MSD (for organics) and matrix duplicates (for inorganics) analyses.

6.2 Accuracy

Accuracy is defined as the degree of difference between the measured or calculated value and the true value. The closer the numerical value of the measurement comes to the true value or actual concentration, the more accurate the measurement is. Analytical accuracy is expressed as the percent recovery of a compound or element that has been added to the environmental sample at known concentrations before analysis. Analytical accuracy may be assessed through the use of known and unknown QC samples and spiked samples. It is presented as percent recovery. Accuracy will be determined from matrix spike, matrix spike duplicate, and matrix spike blank samples, as well as from surrogate compounds added to organic fractions (i.e., volatiles, semi volatiles, PCB), and is calculated as follows:

$$\text{Accuracy (\%R)} = \frac{(Xs - Xu) \times 100\%}{K}$$

Where:

Xs- Measured value of the spike sample

Xu- Measured value of the unspiked sample

K - Known amount of spike in the sample

6.3 Completeness

Completeness is calculated on a per matrix basis for the project and is calculated as follows:

$$\text{Completeness (\%C)} = \frac{(Xv - Xn) \times 100\%}{N}$$

Where:

Xv- Number of valid measurements

Xn- Number of invalid measurements

N - Number of valid measurements expected to be obtained

7 Corrective Actions

Laboratory corrective actions shall be implemented to resolve problems and restore proper functioning to the analytical system when errors, deficiencies, or out-of-control situations exist at the laboratory. Full documentation of the corrective action procedure needed to resolve the problem shall be filed in the project records, and the information summarized in the case narrative. A discussion of the corrective actions to be taken is presented in the following sections.

7.1 Incoming Samples

Problems noted during sample receipt shall be documented by the laboratory. The Inventum Project Manager shall be contacted immediately for problem resolution. All corrective actions shall be documented thoroughly.

7.2 Sample Holding Times

If any sample extraction and/or analyses exceed method holding time requirements, the Inventum Project Manager shall be notified immediately for problem resolution. All corrective actions shall be documented thoroughly.

7.3 Instrument Calibration

Sample analysis shall not be allowed until all initial calibrations meet the appropriate requirements. All laboratory instrumentation must be calibrated in accordance with method requirements. If any initial/continuing calibration standards exceed method QC limits, recalibration must be performed and, if necessary, reanalysis of all samples affected back to the previous acceptable calibration check.

7.4 Reporting Limits

The laboratory must meet the method required detection limits listed in NYSDEC ASP, 10/95 criteria. If difficulties arise in achieving these limits due to a particular sample matrix, the laboratory must notify Inventum personnel for problem resolution. In order to achieve those detection limits, the laboratory must utilize all appropriate cleanup procedures in an attempt to retain the project required detection limits. When any sample requires a secondary dilution due to high levels of target analytes, the laboratory must document all initial analyses and secondary dilution results. Secondary dilution will be permitted only to bring target analytes within the linear range of calibration. If samples are analyzed at a secondary dilution with no target analytes detected, the Project Manager will be immediately notified so that appropriate corrective actions can be initiated.

7.5 Method QC

All QC method-specified QC samples shall meet the method requirements referenced in the analytical methods. Failure of method-required QC will result in the review and possible qualification of all affected data. If the laboratory cannot find any errors, the affected sample(s) shall be reanalyzed and/or re-extracted/redigested, then reanalyzed within method-required holding times to verify the presence or absence of matrix effects. If matrix effect is confirmed, the corresponding data shall be flagged accordingly using the flagging symbols and criteria. If matrix effect is not confirmed, then the entire batch of samples may have to be reanalyzed and/or re-extracted/redigested, then reanalyzed. Inventum shall be notified as soon as possible to discuss possible corrective actions should unusually difficult sample matrices be encountered.



7.6 Calculation Errors

All analytical results must be reviewed systematically for accuracy prior to submittal. If upon data review calculation and/or reporting errors exist, the laboratory will be required to reissue the analytical data report with the corrective actions appropriately documented in the case narrative.

8 Data Reduction, Validation, and usability

8.1 Data Reduction

Laboratory analytical data are first generated in raw form at the instrument. These data may be either in a graphic or printed tabular format. Specific data generation procedures and calculations are found in each of the referenced. Analytical results must be reported consistently. Identification of all analytes must be accomplished with an authentic standard of the analyte traceable to NIST or USEPA sources. Individuals experienced with a method's particular analysis and knowledgeable of requirements will perform data reduction.

8.2 Data Validation

Data validation is a systematic procedure of reviewing a body of data against a set of established criteria to provide a specified level of assurance of validity prior to its intended use. All analytical samples collected will receive a data review by Inventum. All analytical samples will also receive a third-party verification and validation based on completeness and compliance checks of sample receipt conditions and both sample-related and instrument-related QC results. In addition, a minimum of 10 percent of the samples will also receive third-party recalculations checks and review of actual instrument outputs. A third-party Data Usability Summary Report (DUSR) will be prepared for all samples collected during the RI. Inventum personnel may recommend further third-party validation if significant deviations and problems with the analytical data are uncovered during completion of the work.

The methods as well as the general guidelines presented in the following documents will be used during the data review USEPA Contract Laboratory Program (CLP) Organic Data Review, SOP Nos. HW-6, Revision #11 and USEPA Evaluation of Metals Data for the Contract Laboratory Program based on 3/90, SOW, Revision XI. These documents will be used with the following exceptions:

- Technical holding times will be in accordance with NYSDEC ASP, 10/95 edition.
- Organic calibration and QC criteria will be in accordance with NYSDEC ASP, 10/95 edition. Data will be qualified if it does not meet NYSDEC ASP, 10/95 criteria.

Where possible, discrepancies will be resolved by the project manager (i.e., no letters will be written to laboratories).

Category B deliverables will be provided for all samples collected to delineate the nature and extent of contamination. Electronic Data Deliverables (EDDs) consistent with the most recent NYSDEC Environmental Information Management System (EIMS) format will be included with the deliverables and will be uploaded to the EIMS.

9 References

- Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Quality Assurance Manual, Final Copy, Revision I, October 1989.

- National Enforcement Investigations Center of USEPA Office of Enforcement. NEIC Policies and Procedures. Washington: USEPA.
- New York State Department of Environmental Conservation (NYSDEC). 1995. Analytical Services Protocol, (ASP) 10/95 Edition. Albany: NYSDEC.

Appendix C – Community Air Monitoring Program

INVENTUM ENGINEERING, P.C.

Community Air Monitoring Plan

3125 Highland Avenue

Brownfield Cleanup Program Site No. C932169

3219 and 3301 Highland Avenue

Niagara Falls, New York

September 2025

441 CARLISLE DRIVE
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Appendix B – Special CAMP Requirements

1 Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at the 3125 Highland Avenue Site Brownfield Cleanup Program (BCP) Site, located at 3219 and 3301 Highland Avenue, Niagara Falls, New York. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required.

- *The 3125 Highland Avenue BCP Site will have intermittent activity. The CAMP will be activity specific. If there are detections at the downwind station, additional monitoring requirements will be considered*[1].

Depending upon the proximity of potentially exposed individuals, more stringent monitoring, or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH and are provided for reference as Appendix B.

- *There are no sensitive receptors on the property. Depending on wind direction; the closest residence is 1,000 feet east of the proposed activity boundary and more than 200 feet west of the activity boundary. There will be no on-site workers not directly involved with the subject work activities within 20 feet. Industrial/Commercial use properties are north and south of the proposed activities.*

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

2 Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

[1] The text in *italic font* are comments inserted by Inventum Engineering in addition to the standard CAMP Template.

- *VOC and particulate monitoring will be incorporated into the RI and IRM activities.*

  Continuous monitoring will be required for all ground intrusive activities during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

  Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

- *During demolition and excavation activities, up- and downwind stations will be in place. During sampling, periodic monitoring will be implemented with hand-held instruments.*

3 VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

5. The NYSDEC and NYSDOH project managers for the Site will be notified within 24-hours by phone or email if there is an exceedance of the VOC action level of 25 ppm at the perimeter of the work area as described within Section 3. The notification shall include a description of the control measures implemented to prevent further exceedances.

4 Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for New York State (DEC and NYSDOH) and County Health personnel to review.

4. Should the action level of 150 mcg/m3 above the upwind monitoring concentration be exceeded after corrective actions are taken, work must stop and NYDEC and NYSDOH project managers for the Site must be notified within 24-hours by phone or email. The notification shall include a description of the control measures implemented to prevent further exceedances.

Appendix A-1
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;

(b) Measurement Ranges: 0.001 to 400 mg/m^3 (1 to 400,000 :ug/m^3);

(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m^3 for one second averaging; and +/- 1.5 g/m^3 for sixty second averaging;

(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);

(e) Resolution: 0.1% of reading or 1g/m^3, whichever is larger;

(f) Particle Size Range of Maximum Response: 0.1-10;

(g) Total Number of Data Points in Memory: 10,000;

(h) Logged Data: Each data point with average concentration, time/date and data point number

(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;

(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;

(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;

(l) Operating Temperature: -10 to 50^o C (14 to 122^o F);

(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m^3 (15 minutes average). While conservative, this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m^3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m^3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m^3 above the upwind monitoring concentration be exceeded after corrective actions are taken, work must stop and DER and DOH must be notified within one hour. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential-- such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads and demolitions;

(b) Wetting equipment and excavation faces;

(c) Spraying water on buckets during excavation and dumping;

(d) Hauling materials in properly tarped or watertight containers;

(e) Restricting vehicle speeds to 10 mph;

(f) Covering excavated areas and material after excavation activity ceases; and

(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m^3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

Appendix B – Special CAMP Requirements

Attachment A

Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures

When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure(s). Depending upon the nature of contamination, chemical-specific colorimetric tubes of sufficient sensitivity may be necessary for comparing the exposure point concentrations with appropriate pre-determined response levels (response actions should also be pre-determined). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.

- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 mcg/m^3, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 mcg/m^3 or less at the monitoring point.

- Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be monitored. Response levels and actions should be pre-determined, as necessary, for each site.

Special Requirements for Indoor Work With Co-Located Residences or Facilities

Unless a self-contained, negative-pressure enclosure with proper emission controls will encompass the work area, all individuals not directly involved with the planned work must be absent from the room in which the work will occur. Monitoring requirements shall be as stated above under "Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures" except that in this instance "nearby/occupied structures" would be adjacent occupied rooms. Additionally, the location of all exhaust vents in the room and their discharge points, as well as potential vapor pathways (openings, conduits, etc.) relative to adjoining rooms, should be understood and the monitoring locations established accordingly. In these situations, it is strongly recommended that exhaust fans or other engineering controls be used to create negative air pressure within the work area during remedial activities. Additionally, it is strongly recommended that the planned work be implemented during hours (e.g. weekends or evenings) when building occupancy is at a minimum.

Appendix D – Pre-demolition Inspection Form

Building Demolition Inspection Form

3125 Highland Avenue

BCP Site #C932169

Niagara Falls, NY

Building Number: Click or tap here to enter text.
Building Name: Click or tap here to enter text.
Permit Number: Click or tap here to enter text.

Start Date: Click or tap here to enter text. **Completion Date:**
NY DEC Notification Date: Click or tap here to enter text.

Approvals

HASP updated: Click or tap here to enter text.
NESHAP Notification Date: Click or tap here to enter text.
Landfill: Click or tap here to enter text.
Landfill Notification Date: Click or tap here to enter text.
(notification required for each building wastes stream)
Permits issued: Click or tap here to enter text. **Permit Date:**Click or tap here to enter text.

Regulated Building Materials

Were Asbestos Containing Building Materials (ACM) present: Click or tap here to enter text.
If so, have all ACM been removed and clearance inspection completed: Click or tap here to enter text.
DOL Notification Date (for controlled demolition with ACM in place): Click or tap here to enter text.
Have all Universal Waste, containers, or other regulated contents been removed: Click or tap here to enter text.
If present, have all potential PCB containing equipment has been sampled and removed: Click or tap here to enter text.

Utilities

List utilities entering/leaving the building: Click or tap here to enter text.
Have all utilities entering/leaving the building been decommissioned: YES.
Utility decommissioning completion date: Click or tap here to enter text.

Building Structure Category:

(1) not suitable for use as fill, (2) designated for controlled demolition because of current structural conditions or due ACM integrated with building materials, (3) impacted by identified site contamination which cannot be reasonably be cleaned for use as fill, (4) safety hazards.

Work Zone Delineation Check List

Utilities and utility protection: Click or tap here to enter text.
Fall radius defined: Click or tap here to enter text.
Laydown Areas (Waste, recyclable materials, equipment): Click or tap here to enter text.
Staff parking and break areas:Click or tap here to enter text.

CAMP Requirements

Monitoring station confirmed prior to Demolition: Click or tap here to enter text.
Type and frequency of monitoring: Click or tap here to enter text.

Attach Monitoring Reports

SWPPP Requirements

Dust control plan in place: Click or tap here to enter text.

Dust control methods: Click or tap here to enter text.

If needed, water control plan: Click or tap here to enter text.

Truck wash station in place: Click or tap here to enter text.

Process Piping

Was any process piping present: Click or tap here to enter text.

If so, list inspections prior to management: Click or tap here to enter text.

List disposition of process piping containing residuals, list how the waste and any residuals were managed: Click or tap here to enter text.

Energetic Materials

Did the demolition plan include the use of Energetic Materials: Click or tap here to enter text.

What were the dates of use?Click or tap here to enter text.

Where there any CAMP excursions at the property line on those dates?Click or tap here to enter text.

Material Management

To the extent practicable and safe, materials will be segregated in accordance with their material composition, including but not limited to:

1. **Construction and Demolition (C&D) Debris**
2. **ACM debris**
3. **Potentially mixed waste (ACM and potentially Characteristically Hazardous Materials)**
4. **Brick and Concrete**
5. **Structural Steel**
6. **Non-ferrous metal**
7. **Pipe (process and utility shall be segregated)**
8. **Equipment and machinery**

List generated material categories and disposal facility or fill location for each:

Material Category	Disposal Facility or Onsite Location (Grid #)	Roll-off / truck loads	Manifest / Bill of Loading Included

Attachments:

1. **Permits**
2. **Photo Log**
3. **Air Monitoring Reports**
4. **Shipment log for all material categories that were transported from property**
5. **Fill Log, key to Site Grid, for all materials used as fill on the property**
6. **Sample log for all analytical testing conducted**

Appendix E – Hot Work Permit

Hot Work Permit

Project Name: _____ Project #: _____

Date and start time issued: _____ Expiration Date/Time: _____

Hot Work: ❑ Internal Combustion Engines ❑ Hot Tapping

❑ Sparking ❑ Work on Live Equipment ❑ Welding/Burning ❑ Other

Scope of Work: _____

What equipment preparation is required? (i.e., lockout/tagout, blinding pipes)

_____

Is any area cleanup required? _____ Explain: _____

_____

Is work area ventilation required? _____ What Type? _____

Is fire equipment required? _____ What Type? _____

What methods are to be employed to control sparks? _____

What type of firewatch is required, if any? _____

What periodic air/gas testing is required? _____

What continuous air/gas testing is required? _____

What instruments are required? _____

Where should the continuous air monitor(s) be placed?

What PPE is required? _____

Who must be notified each time work commences? _____

Special Instructions: _____

Signatures: Site Supervisor: _____

Site Safety Officer: _____

Client Representative (if required): _____

Appendix F – ACM and Universal Hazardous Waste Survey

ACS, Inc.

ASBESTOS SAMPLING
UNIVERSAL WASTES

Location:

Offices, Boiler Room and Warehouses
Tulip Corporation
3125 Highland Ave.
Niagara Falls NY 14305

Conditions as of June 2021 and June 2025

Prepared For:

OSC
140 Lee Street
Buffalo NY

Prepared by:

Advance Contracting Services
PO Box 986
Grand Island NY 14072
advancedcss1976@gmail.com

NYSDOL Asbestos License # 115026

ACS, Inc.

Advanced Contracting Services, was retained to perform asbestos sampling.

The purpose of the sampling was to determine the presence, location and quantity of ACM (asbestos containing materials), at the above referenced location. As defined by the property owners specific scope of work for the project. This survey includes the following:

- *Identification of suspect asbestos containing materials.*
- *Sampling and analysis of suspect materials.*
- *Identification of the location, approximate quantity, friability of confirmed asbestos containing materials.*

There was limited access to interior property should be a controlled demolition

ASBESTOS CONTAINING MATERIALS (ACM)
Polarized Light Microscopy (PLM) and, where required, Transmission Electron Microscopy (TEM) revealed asbestos in the following analyzed samples

Homogeneous Material	,pproximate Quantity and Location of ACM		Friability	Asbestos
Pipe Insulation	*12001f*	*Boiler House*	***Yes***	***Yes***
Pipe Insulation	*3501f*	*Exterior*	***Yes***	***Yes***
Pipe Insulation	*22001f*	*Warehouses*	***Yes***	***Yes***
Duct Coating	*480sf*	*Exterior Coating*	*No*	***Yes***
Duct Insulation	*250sf*	*Boiler*	***Yes***	***Yes***
Boiler Insulation	*3600sf*	*Boiler*	***Yes***	***Yes***
Tank Coating	*900sf*	*Exterior*	*No*	***Yes***
Transit Panels	300sf	*Interior warehouse*	*No*	***Yes***
Transit Walls	*7500sf*	*Exterior*	*No*	***Yes***
Flooring		*Bathroom*	*No*	*No*
Window Glazing	*100sf*	*Exterior*	*No*	***Yes***
Roof I	*27,000sf*	*Exterior*	*No*	***Yes***
Roof2		*Exterior*	*No*	***Yes***
Roof3		*Exterior*	*No*	***Yes***
Roof4		*Exterior*	*No*	***Yes***

ACS, Inc.

Brick /Mortar		*Exterior Stack*	*No*	*No*
Plaster		*Office Building*	*No*	*No*
Plaster			*No*	*No*
Plaster			*No*	*No*
Pipe Insulation	350lf	*Office*	*Yes*	*Yes*
Ceiling tile			*No*	*No*
Ceiling tile			*No*	*No*
Floor tile /mastic	6,000sf	*1st floor*	*No*	*Yes*
Floor tile /mastic	12,000sf	*2nd floor*	*No*	*Yes*
Glazing	100sf	*Exterior Windows*	*No*	*Yes*
Glazing			*No*	*Yes*
Roof			*No*	*Yes*
Roof			*No*	*Yes*
Roof			*No*	*Yes*
Roof			*No*	*Yes*
Roof			*No*	*Yes*
Roof Tar			*No*	*No*
Roof Tar			*No*	*No*

ACS, Inc.

Universal Waste Materials

During the site investigation the following materials to be considered universal waste.

- Fluorescent Lamps
- Mercury Containing Thermostats, and Bulbs
- PCB/DEHB Light Ballasts & Transformers
- CFC
- Paints
- Oil

Material Identified	*Location*	*Description*	*Approximate Quantify*
Fluorescent Bulbs	*Throughout*	*Standard Fixtures 4'*	*1620 each*
PCB Ballasts	*Throughout*	*Standard Fixtures*	*650each*
Mercury Devices	*Boiler rm*	*Thermostat Bulbs*	*10 each*
Air Compressor Oil	*Boiler Rm*	*Compressor*	*30 Gallons*
Paints	*Boiler Rm*	*Misc Paints*	*65 Gallons*
CFC	*Boiler Rm*	*Air Dryer*	*2 Gallon*

ACS, Inc.

GENERAL CONDITIONS OF INSPECTION

Any reported quantities found in this report, if applicable, are field approximations of materials in accessible areas only and should be field verified prior to abatement. This report is not designed to serve as a specification for abatement. Please, find enclosed the laboratory analytical results and chain of custody documentation.

The sampling of building materials were at the owners direction and based upon the scope of work they intend to complete.

Only accessible materials in areas to be impacted by renovation/demolition activities were sampled as part of this report. Any materials found within the scope of work and not specifically accounted for with applicable sampling in this report should be presumed to contain asbestos and treated accordingly until sampled and proven otherwise, including but not limited to; below grade materials, sub-flooring under installed existing flooring and materials and insulation within walls and above fixed and suspended ceiling systems, if applicable

Any included laboratory results, if applicable, are submitted pursuant to ACS Services current terms and conditions of sale, including the company's standard warrant and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted.

This report is based on the condition and contents present at the above referenced location at the time of inspection.

ACS, Inc.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2025
Issued April 01, 2024
Revised June 28, 2024

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE
Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MS. AMY L. DEMBSKI *NY Lab Id No: 12161*
ACS LABS, LLC
3225 GRAND ISLAND BOULEVARD UNIT 7
GRAND ISLAND, NY 14072

is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved subcategories and/or analytes are listed below:

Miscellaneous

Asbestos in Friable Material	Item 198.1 of Manual
	EPA 600/M4/82/020
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	Item 198.4 of Manual

Serial No.: 69457

Property of the New York State Department of Health. Certificates are valid only at the address shown and must be conspicuously posted by the laboratory. Continued accreditation depends on the laboratory's successful ongoing participation in the Program. Consumers may verify a laboratory's accreditation status online at https://apps.health.ny.gov/pubdoh/appLinks/wcelappublicweb/, by phone (518) 485-5570 or by email to elap@health.ny.gov.

Page 1 of 1

WE ARE YOUR DOL

New York State Department of Labor

DIVISION OF SAFETY & HEALTH LICENSE AND CERTIFICATE UNIT, STATE OFFICE CAMPUS, BLDG. 12, ALBANY, NY 12226

ASBESTOS HANDLING LICENSE

Advanced Contracting Services, Inc.
P.O. Box 986, Grand Island, NY, 14072

License Number: 407808
License Class: RESTRICTED
Date of Issue: 06/10/2024
Expiration Date: 06/30/2025
Duly Authorized Representative: Raj Chopra

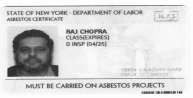
This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. This license verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.

Amy Phillips, Director
For the Commissioner of Labor

EXCELSIOR

BH 438 (12/21)



ACS, Inc.

Boiler/Warehouse ASBESTOS ROOFING 27,000sf



Office Asbestos Roofing 12,600sf



PO Box 986 Grand Island NY 14072 (716) 480-2125 *advancedcss1976@gmail.com*

ACS, Inc.



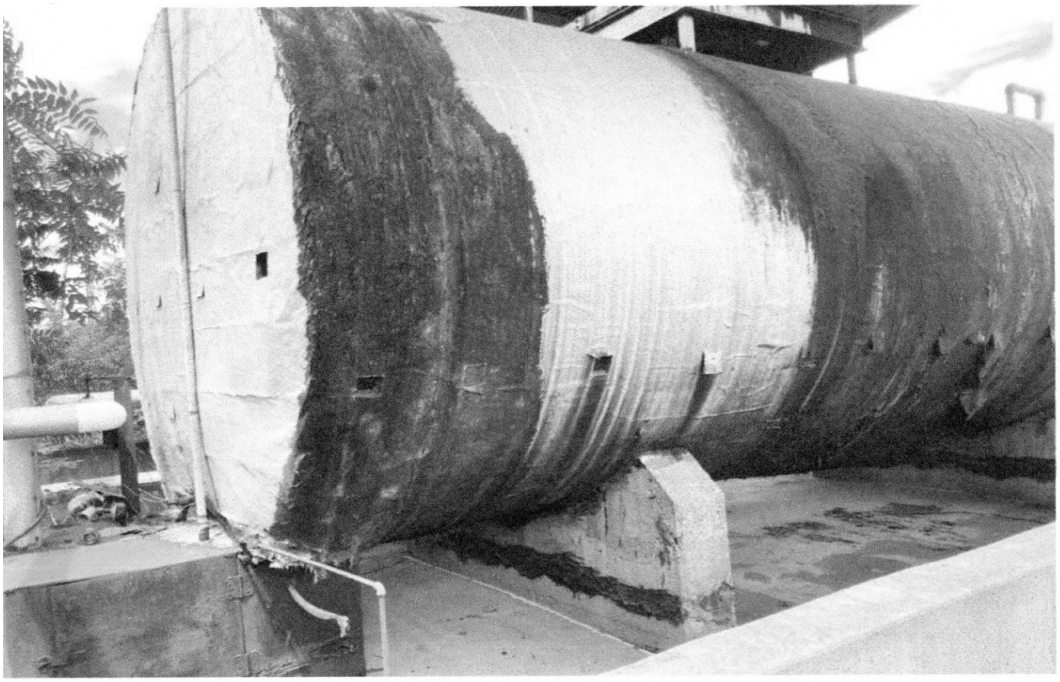
Exterior Duct Coating



Transit Building in Warehouse

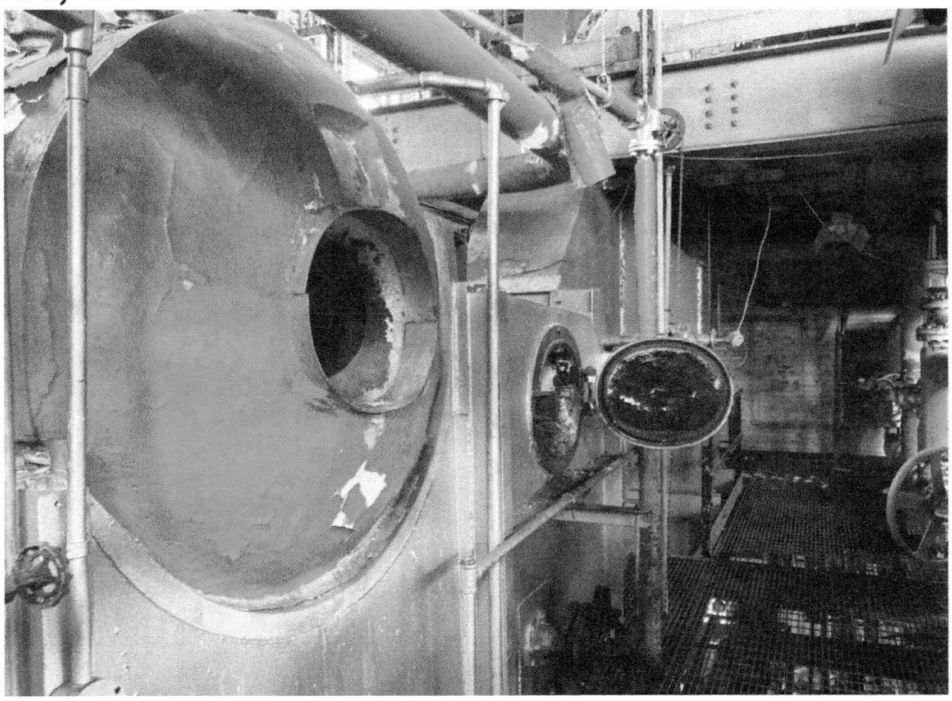
PO Box 986 Grand Island NY 14072 (716) 480-2125 *advancedcss1976@gmail.com*

ACS, Inc.



Exterior Tank Coating

ACS, Inc.

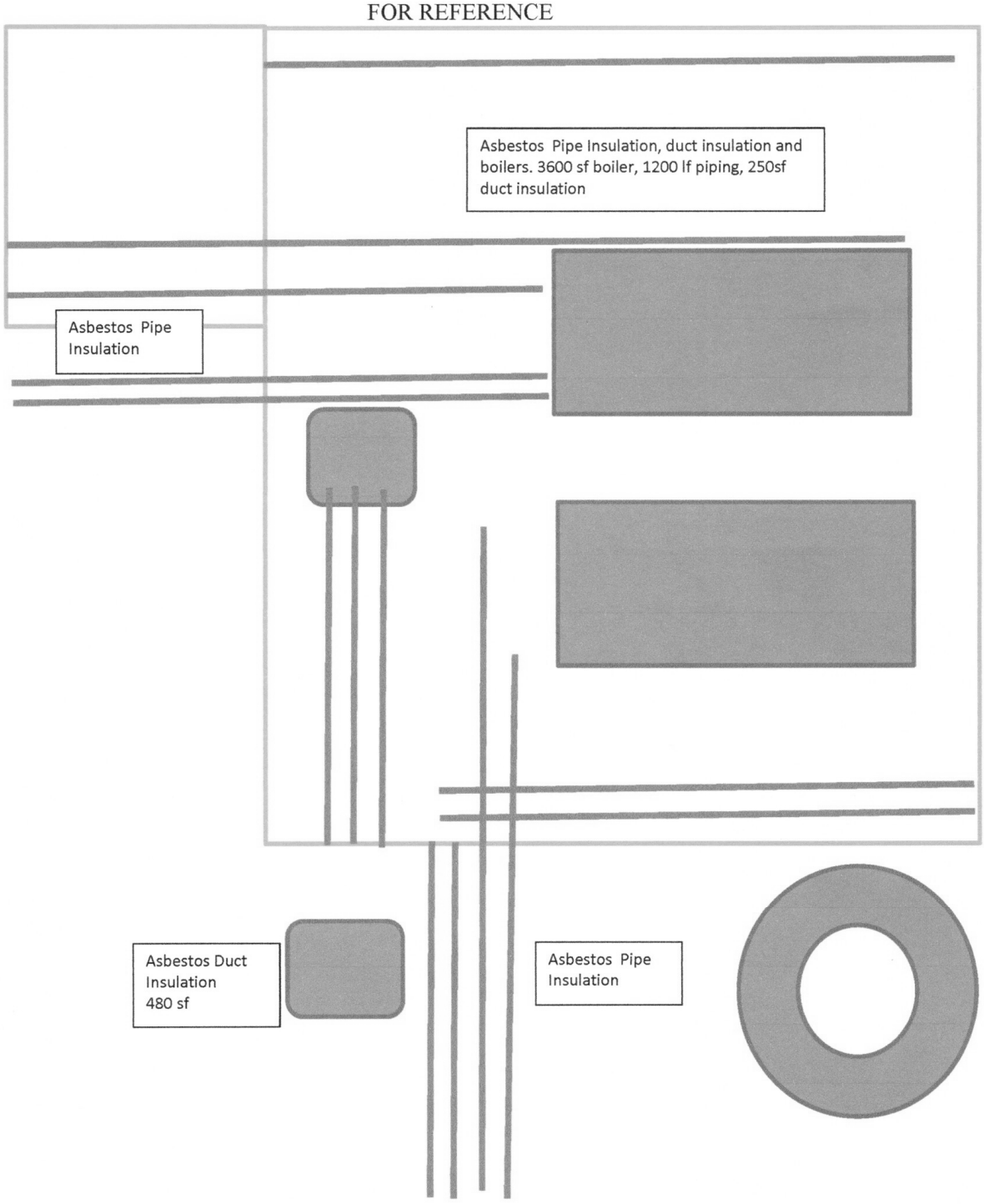


Boilers

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ACS, Inc.

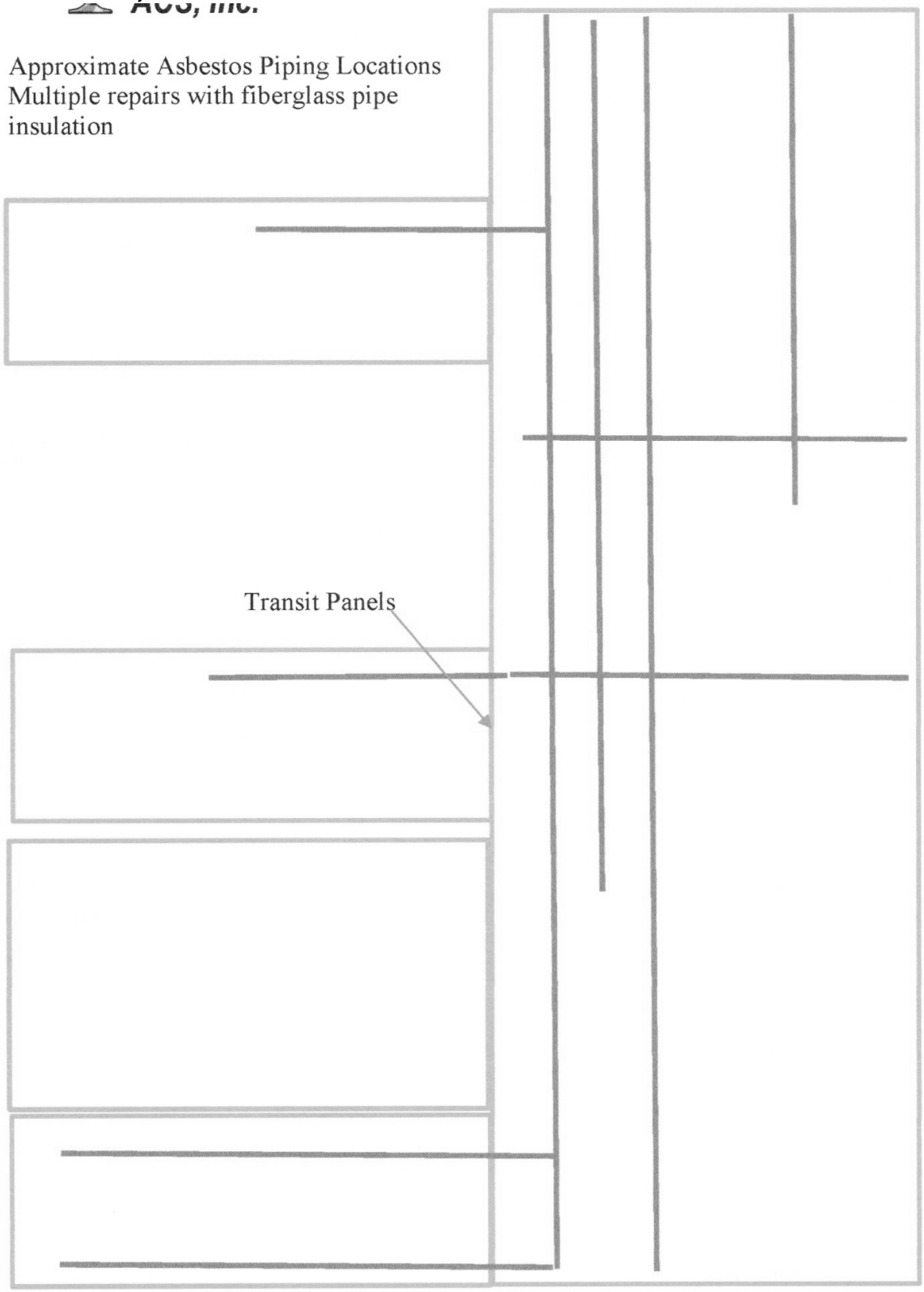
FOR REFERENCE



PO Box 986 Grand Island NY 14072 (716) 480-2125 *advancedcss1976@gmail.com*

ACS, Inc.

Approximate Asbestos Piping Locations
Multiple repairs with fiberglass pipe insulation



PO Box 986 Grand Island NY 14072 (716) 480-2125 *advancedcss1976@gmail.com*

PARADIGM
ENVIRONMENTAL SERVICES, INC.
1430-B Millersport Hwy., Williamsville, NY 14221 (Office) 716.775.5777

PLM & TEM BULK ASBESTOS ANALYSIS REPORT
via NYSDOH ELAP Method 198.1, 198.4 and 198.6

Client: Advanced Contracting Services
Location: Tulip
Job No: 1410-21B

Sample Date: 6/22/2021
Sample Received Date: 6/22/2021

Client ID	Lab ID	Sampling Location	Description	PLM Asbestos Fibers Type & Percentage	PLM Total Asbestos	NOB	TEM Asbestos Fibers Type & Percentage	TEM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage	Non-Fibrous Matrix Material %
1	12006	Pipe	White Fibrous Pipe Insulation	Chrysotile 33%	33%		Not Required	N/A	None Detected	67%
2	12007	Pipe	White Fibrous Pipe Insulation	Chrysotile 31%	31%		Not Required	N/A	None Detected	69%
3	12008	Boiler	Gray Fibrous Boiler Insulation	None Detected	0%		Not Required	N/A	Mineral Wool 10%	90%
4	12009	Boiler	Gray Fibrous Boiler Insulation	None Detected	0%		Not Required	N/A	Mineral Wool 10%	90%
5	12010	Boiler	Tan Boiler Debris	None Detected	0%		Not Required	N/A	None Detected	100%
6	12011	Boiler	Gray Fibrous Boiler Drum	Chrysotile 33%	33%		Not Required	N/A	None Detected	67%
7	12012	Boiler	Gray Fibrous Boiler Drum	Chrysotile 50%	50%		Not Required	N/A	None Detected	50%
8	12013	Outside Duct	Black Fibrous Duct	Chrysotile 11%	11%	V	Not Required	N/A	None Detected	89%
9	12014	Outside Tank	Blank Tank	Chrysotile 7.1%	7.1%	V	Not Required	N/A	None Detected	92.9%
10	12015	Floor - Bathroom	Black/Brown Floor	Inconclusive No Asbestos Detected	0%	V	None Detected	<1.0%	None Detected	100%

KEY TO NOB COLUMN SYMBOLS
No Symbol in the NOB column denotes sample analyzed by ELAP Method 198.1 (PLM).
V NOB (non-friable organically bound)denotes material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
V̂ denotes material analyzed by ELAP Method 198.6 (PLM) per NYSDOH. This Method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite.
 # denotes friable material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
X denotes sample prepped only by ELAP Method 198.6.
**** Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials.**
N/A - Not Applicable
Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.

PLM Bulk Asbestos Analysis by New York State Department of Health, ELAP Method 198.1 ,198.4 and 198.6 ("Polarized Light Microscopy and Transmission Electron Microscopy Identifying and Quantitating Asbestos in Bulk Samples and in Non-Friable Organically Bound Bulk Samples.")or EPA 600/M4-82-020 per 40 CFR 763.

ELAP ID No.: 11955

PLM Date Analyzed: 6/24/2021
PLM Analyst: A. Maciejewski
Microscope: *Olympus BH-2 #241709*

TEM Date Analyzed: 6/24/2021
TEM Analyst: A. Dembski
Microscope: *Hitachi 600 AB*

Laboratory Results Approved By:
Asbestos Technical Director or Designee Amy Dembski

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PARADIGM
ENVIRONMENTAL SERVICES, INC.
1430-B Millersport Hwy., Williamsville, NY 14221 (Office) 716.775.5777

PLM & TEM BULK ASBESTOS ANALYSIS REPORT
via NYSDOH ELAP Method 198.1, 198.4 and 198.6

Client: Advanced Contracting Services
Location: Tulip
Job No: 1410-21B

Sample Date: 6/22/2021
Sample Received Date: 6/22/2021

Client ID	Lab ID	Sampling Location	Description	PLM Asbestos Fibers Type & Percentage	PLM Total Asbestos	NOB	TEM Asbestos Fibers Type & Percentage	TEM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage	Non-Fibrous Matrix Material %
11	12016	Glazing	White Glazing	Inconclusive No Asbestos Detected	0%	√	Anthophyllite 5.5%	5.5%	None Detected	94.5%
12	12017	Glazing	Gray Glazing	Inconclusive No Asbestos Detected	0%	√	Chrysotile 5.0%	5.0%	None Detected	95%
13	12018	Outside Wall	Gray Fibrous Wall	Chrysotile 13%	13%		Not Required	N/A	None Detected	87%
14	12019	Roof	Black Fibrous Roof	Chrysotile 17%	17%	√	Not Required	N/A	None Detected	83%
15	12020	Roof	Black Fibrous Roof	Chrysotile 17%	17%	√	Not Required	N/A	None Detected	83%
16	12021	Roof - 2	Black Roof	Chrysotile 7.2%	7.2%	√	Not Required	N/A	None Detected	92.8%
17	12022	Roof	Black Roof	Chrysotile 7.5%	7.5%	√	Not Required	N/A	None Detected	92.5%
18	12023	Roof - 3	Black Fibrous Roof	Chrysotile 15%	15%	√	Not Required	N/A	None Detected	85%
19	12024	Roof	Black Fibrous Roof	Chrysotile 12%	12%	√	Not Required	N/A	None Detected	88%
20	12025	Roof - 4	Black Roof	Chrysotile 7.5%	7.5%	√	Not Required	N/A	None Detected	92.5%

KEY TO NOB COLUMN SYMBOLS
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PLM Bulk Asbestos Analysis by New York State Department of Health, ELAP Method 198.1 ,198.4 and 198.6 ("Polarized Light Microscopy and Transmission Electron Microscopy Identifying and Quantitating Asbestos in Bulk Samples and in Non-Friable Organically Bound Bulk Samples.")or EPA 600/M4-82-020 per 40 CFR 763.

ELAP ID No.: 11955

PLM Date Analyzed: 6/24/2021
PLM Analyst: A. Maciejewski
Microscope: *Olympus BH-2 #241709*

TEM Date Analyzed: 6/24/2021
TEM Analyst: A. Dembski
Microscope: *Hitachi 600 AB*

Laboratory Results Approved By:
Asbestos Technical Director or Designee Amy Dembski

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PARADIGM
ENVIRONMENTAL SERVICES, INC.
1430-B Millersport Hwy., Williamsville, NY 14221 (Office) 716.775.5777

PLM & TEM BULK ASBESTOS ANALYSIS REPORT
via NYSDOH ELAP Method 198.1, 198.4 and 198.6

Client: Advanced Contracting Services
Location: Tulip
Job No: 1410-21B

Sample Date: 6/22/2021 **Sample Received Date:** 6/22/2021

Client ID	Lab ID	Sampling Location	Description	PLM Asbestos Fibers Type & Percentage	PLM Total Asbestos	NOB	TEM Asbestos Fibers Type & Percentage	TEM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage	Non-Fibrous Matrix Material %
21	12025	Roof	Black Roof	Chrysotile 7.9%	7.9%	√	Not Requred	N/A	None Detected	92.1%

KEY TO NOB COLUMN SYMBOLS
No Symbol in the NOB column denotes sample analyzed by ELAP Method 198.1 (PLM).
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 # denotes friable material analyzed by ELAP Method 198.6 (PLM) and 198.4 (TEM) as noted.
X denotes sample prepped only by ELAP Method 198.6.
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N/A - Not Applicable
Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.

PLM Bulk Asbestos Analysis by New York State Department of Health, ELAP Method 198.1 ,198.4 and 198.6 ("Polarized Light Microscopy and Transmission Electron Microscopy Identifying and Quantitating Asbestos in Bulk Samples and in Non-Friable Organically Bound Bulk Samples.")or EPA 600/M4-82-020 per 40 CFR 763.

ELAP ID No.: 11955

PLM Date Analyzed: 6/24/2021
PLM Analyst: A. Maciejewski
Microscope: *Olympus BH-2 #241709*

TEM Date Analyzed: N/A
TEM Analyst: N/A
Microscope: *N/A*

Laboratory Results Approved By:
Asbestos Technical Director or Designee Amy Dembski

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1410-21B

ACS
PO Box 986 Grand Island NY 14072
(716) 480-2125 advancedcss1976@gmail.com

ASBESTOS ANALYSIS REQUEST AND CHAIN OF CUSTODY

Tulip

Location

24hr (48hr) 72hr 5day

Sample #	Material Description	Quantity	Location	Lab Use
1	Pipe Insul			12006
2	Pipe Insul			-07
3	Boiler Insus			-08
4	Boiler Ins-s			-09
5	Boiler Debris			-10
6	Boiler Drum			-11
7	Boiler Duct			-12
8	Outside Duct			-13
9	Outside Tank			-14
10	Floor - Bathroom			-15
11	Glazing		Boiler	-16
12	Glazing		Warehouse	-17
13	Outside Wall			-18
14	Roof -1			-19
15	Roof			-20

Comments /Special Instructions

Sampled by	date	time	Received by	date	time
	6-22-21		Amy Dumbo	6/22/21	1310

1410-21B

ACS
PO Box 986 Grand Island NY 14072
(716) 480-2125 advancedcss1976@gmail.com

ASBESTOS ANALYSIS REQUEST AND CHAIN OF CUSTODY

Tulsa — 24hr 48hr 72hr 5day

Location

Sample #	Material Description	Quantity	Location	Lab Use
16	Roof 2			12021
17	Roof			-22
18	Roof 3			-23
19	Roof			-24
20	Roof 4			-25
21	Roof			-26
7				
8				
9				
10				
11				
12				
13				
14				
15				

Comments /Special Instructions

Sampled by | 6-22-21 date | time | Received by Amy Dambach | 6/22/21 date | 1310 time

ERA Analytical, LLC

3225 Grand Island Boulevard, Unit 7, Grand Island, NY 14072 Phone - 716.453.1505

PLM and TEM Bulk Asbestos - NYSDOH ELAP Methods 198.1, 198.4 and 198.6

Client: ACS
Location: Tulip

Job Number: 1176-25
Page Number: 1 of 5

Sample Date: 5/15/2025

Sample Received Date: 5/16/2025

Client ID	Lab ID	Sampling Location	Sample Color and Description	Sample Type	PLM Asbestos Type & Percentage	PLM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage		TEM Asbestos Type & Percentage	TEM Total Asbestos	Non-Fibrous Matrix Percentage
1	11226A	Plaster	White Plaster	Friable	No Asbestos Detected	0.0%	N/A	0.0%	N/A	N/A	100.0%
1	11226B	Plaster	Gray Plaster	Friable	No Asbestos Detected	0.0%	N/A	0.0%	N/A	N/A	100.0%
2	11227A	Plaster	White Plaster	Friable	No Asbestos Detected	0.0%	N/A	0.0%	N/A	N/A	100.0%
2	11227B	Plaster	Gray Plaster	Friable	No Asbestos Detected	0.0%	N/A	0.0%	N/A	N/A	100.0%
3	11228A	Plaster	White Plaster	Friable	No Asbestos Detected	0.0%	N/A	0.0%	N/A	N/A	100.0%
3	11228B	Plaster	Gray Plaster	Friable	No Asbestos Detected	0.0%	N/A	0.0%	N/A	N/A	100.0%
4	11229	Pipe Insulation	Gray Pipe Insulation	Friable	Amosite 80%	80.0%	N/A	0.0%	N/A	N/A	20.0%
5	11230	Ceiling	Gray Ceiling Tile	NOB	Inconclusive No Asbestos Detected	0.0%	N/A	0.0%	No Asbestos Detected	0.0%	100.0%
6	11231	Ceiling	Gray Ceiling Tile	NOB	Inconclusive No Asbestos Detected	0.0%	N/A	0.0%	No Asbestos Detected	0.0%	100.0%
7	11232	Floor Tile	Gray Floor Tile	NOB	Chrysotile 8.2%	8.2%	N/A	0.0%	Not Required	N/A	91.8%

N/A - Not Applicable

* Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if these materials can be considered or treated as non-asbestos containing.

ELAP ID #12161

PLM Date Analyzed: 5/20/25 - 5/21/25
PLM Analyst: A. Dembski
Microscope: Olympus BH-2 #212311

Results Approved By:

TEM Date Analyzed: 5/22/2025
TEM Analyst: A. Dembski
Microscope: Hitachi 600 AB #45-05

Asbestos Technical Director
Amy Dembski

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Bulk asbestos analysis performed by NYSDOH ELAP Methods 198.1 'Polarized Light Microscope Methods for Identifying and Quantitating Asbestos in Bulk Samples', 198.4 'Transmission Electron Microscope Method for Identifying and Quantitating Asbestos in Non-Friable Organically Bound Bulk Samples', and 198.6 'Polarized Light Microscope Method for Identifying and Quantitating Asbestos in Non-Friable Organically Bound Bulk Samples'

ERA Analytical, LLC

3225 Grand Island Boulevard, Unit 7, Grand Island, NY 14072 Phone - 716.453.1505

PLM and TEM Bulk Asbestos - NYSDOH ELAP Methods 198.1, 198.4 and 198.6

Client: ACS
Location: Tulip
Job Number: 1176-25
Page Number: 2 of 5

Sample Date: 5/15/2025
Sample Received Date: 5/16/2025

Client ID	Lab ID	Sampling Location	Sample Color and Description	Sample Type	PLM Asbestos Type & Percentage	PLM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage		TEM Asbestos Type & Percentage	TEM Total Asbestos	Non-Fibrous Matrix Percentage
8	11233	Mastic	Black Mastic	NOB	Chrysotile 6.1%	6.1%	N/A	0.0%	Not Required	N/A	93.9%
9	11234	Floor Tile	Gray Floor Tile	NOB	Chrysotile 9.0%	9.0%	N/A	0.0%	Not Required	N/A	91.0%
10	11235	Mastic	Black Mastic	NOB	Inconclusive Trace Chrysotile Detected	<1.0%	N/A	0.0%	Chrysotile 3.3%	3.3%	96.7%
11	11236	Glazing	White Glazing	NOB	Inconclusive No Asbestos Detected	0.0%	N/A	0.0%	Chrysotile 1.2%	1.2%	98.8%
12	11237	Glazing	White Glazing	NOB	Inconclusive No Asbestos Detected	0.0%	N/A	0.0%	Chrysotile 1.9%	1.9%	98.1%
13	11238	Roof	Black Roof	NOB	Inconclusive No Asbestos Detected	0.0%	N/A	0.0%	No Asbestos Detected	0.0%	100.0%
14	11239	Roof	Black Roof	NOB	Inconclusive No Asbestos Detected	0.0%	N/A	0.0%	No Asbestos Detected	0.0%	100.0%
15	11240	Roof	Black Roof	NOB	Chrysotile 32%	32.0%	N/A	0.0%	Not Required	N/A	68.0%
16	11241	Roof	Black Roof	NOB	Chrysotile 43%	43.0%	N/A	0.0%	Not Required	N/A	57.0%
17	11242	Roof	Black Roof	NOB	Chrysotile 56%	56.0%	N/A	0.0%	Not Required	N/A	44.0%

N/A - Not Applicable

* Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if these materials can be considered or treated as non-asbestos containing.

ELAP ID #12161

PLM Date Analyzed: 5/20/25 - 5/21/25
PLM Analyst: A. Dembski
Microscope: Olympus BH-2 #212311

Results Approved By:

TEM Date Analyzed: 5/22/2025
TEM Analyst: A. Dembski
Microscope: Hitachi 600 AB #45-05

Asbestos Technical Director
Amy Dembski

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Bulk asbestos analysis performed by NYSDOH ELAP Methods 198.1 'Polarized Light Microscope Methods for Identifying and Quantitating Asbestos in Bulk Samples', 198.4 'Transmission Electron Microscope Method for Identifying and Quantitating Asbestos in Non-Friable Organically Bound Bulk Samples', and 198.6 'Polarized Light Microscope Method for Identifying and Quantitating Asbestos in Non-Friable Organically Bound Bulk Samples'

ERA Analytical, LLC

3225 Grand Island Boulevard, Unit 7, Grand Island, NY 14072 Phone - 716.453.1505

PLM and TEM Bulk Asbestos - NYSDOH ELAP Methods 198.1, 198.4 and 198.6

Client: ACS
Location: Tulip
Job Number: 1176-25
Page Number: 3 of 5

Sample Date: 5/15/2025
Sample Received Date: 5/16/2025

Client ID	Lab ID	Sampling Location	Sample Color and Description	Sample Type	PLM Asbestos Type & Percentage	PLM Total Asbestos	PLM Non-Asbestos Fibers Type & Percentage		TEM Asbestos Type & Percentage	TEM Total Asbestos	Non-Fibrous Matrix Percentage
18	11243	Roof	Black Roof	NOB	Chrysotile 38%	38.0%	N/A	0.0%	Not Required	N/A	62.0%
19	11244	Tar	Black Tar	NOB	Inconclusive No Asbestos Detected	0.0%	N/A	0.0%	No Asbestos Detected	0.0%	100.0%
20	11245	Tar	Black Tar	NOB	Inconclusive No Asbestos Detected	0.0%	N/A	0.0%	No Asbestos Detected	0.0%	100.0%

N/A - Not Applicable

* Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if these materials can be considered or treated as non-asbestos containing.

ELAP ID #12161

PLM Date Analyzed: 5/20/25 - 5/21/25
PLM Analyst: A. Dembski
Microscope: Olympus BH-2 #212311

Results Approved By: Amy Dembski

TEM Date Analyzed: 5/22/2025
TEM Analyst: A. Dembski
Microscope: Hitachi 600 AB #45-05

Asbestos Technical Director
Amy Dembski

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11226

ACS

ASBESTOS ANALYSIS REQUEST AND CHAIN OF CUSTODY

Location: Tulip 24hr (48hr) 72hr 5day

Client: DSC Purpose: Fire. Flood Remodeling. Permit Demolition Property OSHA Friable

Sample #	Material Description	Quantity	Location	Lab Use
1	Plaster			11226AB
2	Plaster			-27AB
3	Plaster			-28AB
4	Pipe Ins			-29
5	Ceiling			-30
6	Ceiling			-31
7	FT/~~Mas~~			-32
8	Mastic			-33
9	FT			-34
10	Mastic			-35
11	Glazing			-36
12	Glazing			-37
13	Roof		Shingle	-38
14	Roof			-39
15	Roof			-40

Comments /Special Instructions

Office

Sampled by	date	time	Received by	date	time
	5/15/25		Caleb Mercy	5/16	715

PO Box 986 Grand Island NY 14072 (716) 480-2125 advancedcss1976@gmail.com

1176

ACS

ASBESTOS ANALYSIS REQUEST AND CHAIN OF CUSTODY

Location: Tulip 24hr (48hr) 72hr 5day

Client: _____ Purpose: Fire. Flood Remodeling. Permit Demolition Property OSHA Friable

Sample #	Material Description	Quantity	Location	Lab Use
16	Roof.			11241
17	Roof			-42
18	Roof			-43
19	Tar			-44
20	Tar			-45
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Comments /Special Instructions

Sampled by BM 5/15/25 _____ _____ Received by _____ _____ _____

Sampled by | date | time | Received by | date | time

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