SUBJECT AREA CONTENT

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Management System: Worker Safety and Health

Subject Area: Construction Safety

VIEW/PRINT ALL (No Exhibits and Forms)

Effective Date: **Feb 8, 2017** (Rev 5.6) Periodic Review Due: **Feb 8, 2022**	Subject Matter Expert: Tom Conrad	Management System Executive: Ed Nowak	Management System Steward: Gail Mattson

Introduction

This subject area describes the procedures for performing construction according to environment, safety, and health requirements.

It contains procedures for BNL and non-BNL staff to follow. This subject area describes requesting and designing construction projects; reviewing and approving the health and safety plan; evaluating and inspecting construction projects; and closing out construction projects.

Contents

Section	Overview of Content (see section for full process)
1. Requesting and Designing Construction Projects	• Submit work requisition for project. • Review proposed scope of work. • Send specifications for project for review. • Define scope of work.
2. Reviewing and Approving the Health and Safety Plan	• Create and submit Health and Safety Plan. • Review and accept plan. • Issue notices to proceed.

3. Evaluating and Inspecting Construction Projects	• Inspect job sites. • Notify Contractor of deficiencies. • Maintain records of inspections. • Report all accidents, injuries, illnesses, environmental hazards, imminent danger, and near misses immediately.
4. Closing Out Construction Projects	• Collect and summarize data on Contractor's performance. • Forward data to PPM.
5. Acceptable Fall Protection Alternative to Guardrails and Warning Lines for Roofing Work at BNL	• Review and select alternatives from exhibit. • Submit Alternative Fall Protection Plan to Construction Safety Engineer. • Conduct work in accordance with accepted Alternative Fall Protection Plan.

Definitions

Exhibits

Acceptable Fall Protection Alternative to Guardrails and Warning Lines for Roofing Work at BNL

Forms

Contract ES&H Compliance Checklist
Contractor Evaluation Form
Health and Safety Plan Outline/Template

Training Requirements and Reporting Obligations

This subject area does not contain training requirements.

This subject area does not contain reporting obligations.

External/Internal Requirements

Requirement Number	Requirement Title
10 CFR 830, Subpart A	Energy, Nuclear Safety Management, Quality Assurance Requirements

29 CFR 1910	Labor/Occupational Safety and Health Standards
29 CFR 1926	Labor/Safety and Health Regulations for Construction
40 CFR 763	Protection of the Environment/Asbestos
ASSE A 10.3; ANSI/ASSE A 10.3 (1970) [IBR 29 CFR 1926.302]	Safety Requirements for Explosive-Actuated Fastening Tools [IBR 29 CFR 1926.302]
BSA Contract No. DE-SC0012704 - Clause C.4	Statement Of Work
BSA Contract No. DE-SC0012704 - Clause I.131 (DEAR 970.5223-1)	INTEGRATION OF ENVIRONMENT, SAFETY, AND HEALTH INTO WORK PLANNING AND EXECUTION (DEC 2000)
BSA Contract No. DE-SC0012704 - Clause I.51	Hazardous Material Identification And Material Safety Data (jan 1997) (alt 1 Jul 1995)
DOE-STD-1090-07	Hoisting and Rigging
O 414.1D Admin Chg 1 (May 8, 2013)	Quality Assurance
SAE J397-1969 [IBR 29 CFR 1926.1001]	Deflection Limiting Volume-Protective Structures Laboratory Evaluation: Critical Zone Characteristics and Dimensions for Operators of Construction and Industrial [IBR 29 CFR 1926.1001]

References

29 CFR 1926, Construction Industry Regulations

BNL Supplier Performance Rating System (SPRS), Procurement & Property Management (PPM) website

Confined Spaces Subject Area

Add Construction Safety Checklist Findings database (*Limited Access), Safety and Health Services Division website

Construction Safety Checklist, Safety and Health Services website

ESH Guide: Construction Safety, Safety and Health Services Division website

Fire Safety Subject Area

Procurement Operations Manual Chapter VI - Construction Procurements, Procurement & Property Management (PPM) website

Stop Work Subject Area

Work Planning and Control for Experiments and Operations Subject Area

*Access Limited to BNL Staff and Authorized non-BNL Staff

Standards of Performance

Managers shall ensure that scopes of work properly consider all elements of the Laboratory's operational priorities.

All staff shall clearly and completely specify appropriate requirements for purchased goods and services consistent with project needs.

Managers shall analyze work for hazards, authorize work to proceed, and ensure that work is performed within established controls.

All staff and users shall identify, evaluate, and control hazards in order to ensure that work is conducted safely and in a manner that protects the environment and the public.

All staff and guests shall promptly report accidents, injuries, ES&H deficiencies, emergencies, and off-normal events in accordance with procedures.

| SBMS Home Page | Subject Areas | Changes |

Questions/Comments Disclaimer

https://sbms.bnl.gov/sbmsearch/subjarea/117/117_SA.cfm

PROCEDURE: REQUESTING AND DESIGNING CONSTRUCTION PROJECTS

Management System: Worker Safety and Health		
Subject Area: Construction Safety		
1. Requesting and Designing Construction Projects		
Effective Date: **Feb 8, 2017**	Subject Matter Expert: Tom Conrad	Management System Executive: Ed Nowak

Applicability

This information applies to Departments/Divisions who use construction contractors.

Required Procedure

Step 1	The Department/Division designates a BNL Contact (Project Engineer or Principal Investigator) to oversee all aspects of the operation, from initial request through final delivery and closeout.
Step 2	The BNL Contact submits a work requisition for the project in accordance with the Work Planning and Control for Experiments and Operations Subject Area.
Step 3	The BNL Contact uses the exhibit Contract ES&H Compliance Checklist to determine if the Department/Division can manage the work requisition, or if an outside contractor is required for the project.
Step 4	The BNL Contact reviews the proposed scope of work using the Work Planning and Control for Experiments and Operations Subject Area.
Step 5	The Work Control Coordinator oversees the review process. Reviewers may include the Building Manager, ES&H Coordinator, Training Coordinator, Environmental Compliance Representatives, and Facility Safety Representative.
Step 6	The BNL Contact sends specifications for projects involving construction, demolition, remediation, alteration, repair, or maintenance of a facility or site to the SHSD Review Coordinator, Construction Safety Engineer, the appropriate Department/Division Design Reviewers, and others as appropriate for review. All requests for goods or services must incorporate any special ES&H requirements of the contractor or vendor.

Step 7	The BNL Contact defines the scope of work with sufficient detail to provide reviewers and support personnel with a clear understanding of what is needed, expected, and required. This may include • The type of work to be performed; • The method(s) for accomplishing the task(s); • Location of work; • Defined contract limits; • Allowed access routes; • Hazardous materials or conditions that may be encountered; • Any sensitive or vulnerable Laboratory operation or infrastructure that may be affected.
Step 8	The BNL Contact ensures that minimum ES&H competency and Health and Safety Plan requirements for contractors are included in the specification to qualify contractors for award. Competency requirements must be consistent with the project, facility, job, and task-specific analyses listed above.
Step 9	The Procurement & Property Management Division issues the solicitation in accordance with the Procurement Operations Manual Chapter VI - Construction Procurements, which takes into account past performance of prospective bidders.

References

Procurement Operations Manual Chapter VI - Construction Procurements, Procurement & Property Management (PPM) website

Work Planning and Control for Experiments and Operations Subject Area

PROCEDURE: REVIEWING AND APPROVING THE HEALTH AND SAFETY PLAN

Management System: Worker Safety and Health		
Subject Area: Construction Safety		
2. Reviewing and Approving the Health and Safety Plan		
Effective Date: **Feb 8, 2017**	Subject Matter Expert: Tom Conrad	Management System Executive: Ed Nowak

Applicability

This information applies to non-BNL staff creating Health and Safety Plans and BNL staff reviewing and approving them.

Required Procedure

Step 1	After the contract is awarded, the Contractor must create a Health and Safety Plan (HASP) and submit it to the BNL Contact for review by the Construction Safety Engineer. The HASP must address all applicable sections in OSHA 29 CFR 1926 Safety and Health Regulations for Construction and DOE 10 CFR 851 Worker Saferty & Health Plan. See the exhibit Health and Safety Plan Outline/Template for an example of an acceptable plan.
Step 2	The BNL Contact submits the HASP to the Construction Safety Engineer for review by the appropriate BNL ESH professionals.
Step 3	If the review by ESH indicates the HASP is acceptable, the Construction Safety Engineer notifies the BNL Contact that the document is acceptable. The Construction Safety Engineer retains the record copy of the accepted HASP.
Step 4	If the review by ESH indicates the HASP is not acceptable, the Construction Safety Engineer identifies any errors or omissions that must be addressed and requests the BNL Contact provide additional or clarifying information.
Step 5	

	If the HASP has been rejected, the BNL Contact requests any additional information from the contractor and resubmits the revised HASP to the Construction Safety Engineer.
Step 6	When the HASP has been accepted: • For projects managed by the Modernization Project Office (MPO), the BNL Construction Supervisor issues a "Notice to Proceed" to the Contractor. • For other projects, the BNL Contact notifies the Contractor to proceed.

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Questions/Comments Disclaimer

https://sbms.bnl.gov/sbmsearch/subjarea/117/117_pro2.cfm

PROCEDURE: EVALUATING AND INSPECTING CONSTRUCTION PROJECTS

Management System: Worker Safety and Health		
Subject Area: Construction Safety		
3. Evaluating and Inspecting Construction Projects		
Effective Date: **Feb 8, 2017**	Subject Matter Expert: Tom Conrad	Management System Executive: Ed Nowak

Applicability

This information applies to BNL staff and non-BNL staff evaluating and inspecting construction projects.

Required Procedure

Step 1	The Sponsoring Department/Division or designee periodically inspects job sites to verify project ES&H performance is consistent with contractual obligations and the Contractor's Health and Safety Plan. Complete the Construction Safety Checklist and record the results in the Add Construction Safety Checklist Findings database* on the ESH Guide: Construction Safety page, Safety and Health Services Division website. **Note:** The frequency of inspections must be adequate to represent the effectiveness of the contractor's ability to manage the job safely. **Note:** The checklist provides guidance to the inspector and includes many of the requirements contained in the OSHA regulations. The inspector should be aware of all safety requirements for the project being inspected, and should document all infractions on this form.
Step 2	The BNL Contact/Field Inspector notifies the Contractor's Construction Foreman or the Safety Representative identified in the Health and Safety Plan of deficiencies. Give completed copies of the Construction Safety Checklist to the Foreman. The BNL Contact retains the record copy in the project files. **Note:** Minor safety violations should be corrected immediately. Violations, which pose an immediate danger to life or health, property, or the environment, may require an immediate stop work. See Stop Work Subject Area.
Step 3	During active construction, the Contractor Safety Representative

	• Inspects the job site daily and during major evolutions or events, e.g., critical lifts, major rain or snowstorms, to identify hazards and instances of noncompliance with project ES&H requirements; • Maintains records of daily inspections. Records must be kept of hazards and the corrective actions taken. **Note:** Imminent danger, unforeseen events, or failure to adequately correct identified safety deficiencies on time is cause for a Stop Work Order to be issued on part or the entire project. The Stop Work Order can only be lifted when the contractor has prevented or controlled the identified hazards, and corrected the ES&H management system deficiencies that allowed them to occur. See Stop Work Subject Area.
Step 4	The BNL Contact/Field Inspector notifies the appropriate ESH Directorate personnel (Construction Safety SME, Construction Safety Engineer) of significant changes in work schedules which may affect any radiological or industrial hygiene monitoring of the job.
Step 5	Staff must report all accidents, injuries, illnesses, environmental hazards, imminent danger, and near misses to the appropriate BNL authority immediately. • Immediately notify BNL Emergency Services (dial 911 or extension 2222 from a Laboratory phone; otherwise 344-2222 from an off-site or cellular phone) for fire, accidents involving injury, illness, or property damage, injury or illness of unknown origin, any quantity of pollutant spilled, the suspicion or discovery of munitions. Also, notify the BNL Contact. • Report all imminent dangers and near misses to the BNL Contact immediately.

References

Add Construction Safety Checklist Findings database (*Limited Access), Safety and Health Services website

Construction Safety Checklist, Safety and Health Services website

ESH Guide: Construction Safety, Safety and Health Services Division website

Stop Work Subject Area

*Access Limited to BNL Staff and Authorized non-BNL Staff

PROCEDURE: CLOSING OUT CONSTRUCTION PROJECTS

Management System: Worker Safety and Health
Subject Area: Construction Safety
4. Closing Out Construction Projects

Effective Date: **Feb 8, 2017**	Subject Matter Expert: Tom Conrad	Management System Executive: Ed Nowak

Applicability

This information applies to BNL staff closing out construction projects.

Required Procedure

Step 1	The BNL Contact/designee collects data on the contractor's performance during each phase of the project, and summarizes the data at the end of the project. Data includes the • Seriousness of violations; • Responsiveness of the contractor; • Effectiveness of the contractor's ES&H management system.
Step 2	The BNL Contact/designee with the help of other BNL staff involved with the project completes a Contractor Evaluation Form. Forward this form to Procurement & Property Management (PPM) (record copy), Facilities and Operations, Environment, Safety and Health Training and Qualifications, the project file, and the Construction Safety Engineer. As an alternative to using the Contractor Evaluation Form, the Project Manager can request that PPM initiate a "Report Card" per their procedures. See the BNL Supplier Performance Rating System (SPRS).
Step 3	The BNL Contact/designee reports the data to PPM throughout the project, and at the project's closeout. **Note:** PPM uses this data to qualify organizations for award of future contracts.

References

BNL Supplier Performance Rating System (SPRS), Procurement & Property Management (PPM) website

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Questions/Comments Disclaimer

https://sbms.bnl.gov/sbmsearch/subjarea/117/117_pro4.cfm

PROCEDURE: ACCEPTABLE FALL PROTECTION ALTERNATIVE TO GUARDRAILS AND WARNING LINES FOR ROOFING WORK AT BNL

Management System: Worker Safety and Health		
Subject Area: Construction Safety		
5. Acceptable Fall Protection Alternative to Guardrails and Warning Lines for Roofing Work at BNL		
Effective Date: **Feb 8, 2017**	Subject Matter Expert: Tom Conrad	Management System Executive: Ed Nowak

Applicability

This information applies to BNL staff and non-BNL staff using alternative fall protection for roofing work at BNL construction projects.

Required Procedure

Step 1	The Contractor or BNL organization wishing to propose alternative fall protection for roofing work at BNL construction projects reviews the permitted alternatives in the exhibit Acceptable Fall Protection Alternative to Guardrails and Warning Lines for Roofing Work at BNL.
Step 2	The Contractor or BNL organization wishing to propose alternative fall protection for roofing work at BNL construction projects drafts an Alternative Fall Protection Plan and submits it to the Construction Safety Engineer for acceptance. **Note:** Work may not begin until the Alternative Fall Protection Plan has been accepted, in writing, by the Construction Safety Engineer.
Step 3	The Contractor or BNL organization conducts their work in compliance with the accepted Alternative Fall Protection Plan.

EXHIBIT: ACCEPTABLE FALL PROTECTION ALTERNATIVE TO GUARDRAILS AND WARNING LINES FOR ROOFING WORK AT BNL

Management System: ***Worker Safety and Health***

Subject Area: ***Construction Safety***

Acceptable Fall Protection Alternative to Guardrails and Warning Lines for Roofing Work at BNL

Effective Date:**Feb 08, 2017**

The exhibit Acceptable Fall Protection Alternative to Guardrails and Warning Lines for Roofing Work at BNL is provided as a Word file.

https://sbms.bnl.gov/SBMSearch/subjarea/117/117_Exh6.cfm

Acceptable Fall Protection Alternative to Guardrails and Warning Lines for Roofing Work at BNL

As discussed at the meeting held at BNL on June 17, 2009, the following may be acceptable to BNL when submitted in a Contractor Fall Protection Plan to address the situation where a guard rail system **must be** removed to perform roofing work in the area around the guard rails, leaving an unprotected roof edge. This would only apply to low-sloped roofs. This may be acceptable only in the case where it is **infeasible** to provide other means of fall protection, such as safety nets, catch platforms, personal fall arrestment or personal fall restraint systems.

1.0 Alternatives to Fall Protection Systems

1.1 When conventional fall protection systems are infeasible or create a greater hazard, a Fall Protection Plan is developed and alternative fall protection systems (such as warning-line systems or controlled access zones) are used.

1.2 When a Fall Protection Plan is written where "conventional fall protection" is not feasible and/or creates a greater hazard, the plan must have written acceptance by the BNL Project Engineer, (before submitting to BNL ES&H).

2.0 Warning Lines

2.1 A warning-line system (WLS) consists of a rope, wire rope, cable or chain with supporting posts, visibly marked every 6 feet, erected no less than 34 inches in height, with the highest point being no greater than 39 inches above the walking/working surface and not less than 6 feet from the roof's edge. The warning line and posts are capable of resisting, without tipping over, at least 16 pounds of force applied horizontally against the post.

2.2 Attach the warning line at each post in such a way that pulling on the line between posts does not result in the line going slack in an adjacent section.

2.3 Connect points of access, material handling areas, and hoisting areas to the work area by an access path that is formed by 2 warning lines.

2.4 DO NOT allow any employee to enter the area between the warning line and the roof's edge, unless the employee is performing work in that area and is closely observed. Designated employees working in the area between the warning line and the roof edge are distinguished from other members of the work crew by wearing highly visible and distinctive apparel. This apparel is to be worn only when working in this area.

2.5 Warning Line Systems are used only for roofing work, on Low-sloped roofs (less than 50-feet in width), with an unprotected edge/side, at or above six feet from the next level.

3.0 Safety Monitoring Systems

NOTE: *Safety monitors may only be used for employees engaged in roofing work and will be completely documented in the Contractor required Phase Hazard Analysis (PHA) as to why it is necessary. The PHA will need written concurrence of the BNL manager directing the work who will be responsible for the decision to allow this method.*

3.1 Safety monitoring systems are used to establish a controlled access zone to limit access to authorized workers as follows:

- Mark and barricade the controlled access zone with a warning line no closer than 6 feet to an unprotected edge.
- Mark the controlled access zone as specified in Section 3.1
- Do not allow the warning line to be strung near the unprotected edge except at an access point such as a ladder.
- No employee is allowed to enter the area between the warning line and the roof's edge, unless the employee is performing work in that area and makes visual contact with the safety monitor and receives their acknowledgement when he/she is ready to either enter or exit the protected zone.

Employees working in the area between the warning line and the roof edge are distinguished from other members of the work crew by wearing highly visible/distinctive apparel. This apparel is only worn when working in this area.

3.2 Safety monitors are designated by the employer as "competent persons" which means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions, which are unsanitary, hazardous, or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them.

3.3 Assigned safety monitors:

- Are physically located on the same level as the workers.
- Are located close enough to the workers to watch the work and provide clear verbal warnings to them about a fall hazard or an unsafe act.
- Are distinguishable from other workers by wearing vests, other distinctive readily identifiable clothing, and different-colored hardhats.
- Can monitor 6 workers or fewer.
- Have no other assignment except to observe the workers and their activity.
- Shall be able to keep visual contact with all exposed employees at the same time.
- If the safety monitor cannot effectively perform the entire requirements listed above, the safety monitoring system cannot be used.

4.0 Protocol for "Limited Roof Edge Work"

When specifically requested by the contractor, BNL may find the following acceptable for unprotected roof edge work, and in addition to the other requirements listed above, (this procedure is only to be considered for <u>enhanced worker awareness only</u>. This protocol, (if allowed), would consist of the following:

4.1 Unprotected Roof Edge Marking

- Pennant Flagging, A string of triangle pennants, 8-mil gauge virgin polyethylene material, double sewn on white plastic covered, high strength, sag-resistant rope.
- The pennants would be tied securely between each end of the closest existing temporary guardrails so that selected sections of the temporary guardrails can be removed to allow work against the open-sided edge. The pennants would be tied to the top part of the closest post of the remaining temporary guardrails, strung across the created opening and then the pennant line will be tensioned to prevent undesirable/excessive sagging.
- This will enable the allowed roofing workers to access the edge of the roof to perform required work, yet still have a visual warning device at the edge of the roof line. (*This is not a suitable form of Fall Protection, just an additional warning method to alert the workers*).

4.1 Limited Worker Exposure

- In no case will guardrail removal be more than one half of a shift's worth of work
- This procedure is limited to a total of 4 persons, including the dedicated monitor.

Examples of Suitable Pennant Type Flagging

OSHA mandates warning lines to ensure workers' safety. These lines create an addition visual perimeter in proximity to danger areas, (roof edge).

FORM: CONTRACT ES&H COMPLIANCE CHECKLIST

Management System: ***Worker Safety and Health***

Subject Area: ***Construction Safety***

Contract ES&H Compliance Checklist

Effective Date:**Feb 08, 2017**

The Contract ES&H Compliance Checklist is provided as a Word file.

The only official copy of this file is the one on-line in SBMS.

Before using a printed copy, verify that it is the most current version by checking the *effective date*.

Questions/Comments Disclaimer

https://sbms.bnl.gov/SBMSearch/subjarea/117/117_Exh2.cfm

CONTRACT ES&H COMPLIANCE CHECKLIST

Project Title: _____ Requesting Dept: _____

Contract No.: _____(Req.No.) Responsible Mgr.: _____

Mitigating Measure	Responsible Dept/Div		Not Applicable
	Requestor	Plant Engineering	
1. Design review for compliance with the Engineering Design Subject Area	☐	☐	☐
2. Design review for technical code compliance	☐	☐	☐
3. Design review for compliance with BNL Design Standards	☐	☐	☐
4. Contractor Qualification for Award	☐	☐	☐
5. Prebid & preconstruction ESH briefing	☐	☐	☐
6. Contractor/Vendor ESH Plan review	☐	☐	☐
7. Coordination & issuance of Notice to Proceed	☐	☐	☐
8. Contractor/Vendor Orientation Training & ID Badging	☐	☐	☐
9. Off-site equipment (crane, dozer, etc.) inspection	☐	☐	☐
10. Verification of other required training/qualifications	☐	☐	☐
11. Coordination/provision of permits	☐	☐	☐
11a. Digging Permit	☐	☐	☐
11b. Concrete Penetration Permit	☐	☐	☐
11c. Welding/Burning Permit	☐	☐	☐
11d. Confined Space Permit	☐	☐	☐
11e. Electrical Working Hot Permit	☐	☐	☐
11f. Fire Protection/Detection Impairment	☐	☐	☐
11g. Rad Work Permit (must “x” Box 17)	☐	☐	☐
11h. Environmental Permit (wetlands, NESHAPS, SPDES, etc.)	☐	☐	☐
11i. Other Permit: _____	☐	☐	☐
12. Coordinate Lock Out / Tag Out Services	☐	☐	☐
13. Review of Contractor/Vendor Rigging Plan	☐	☐	☐
14. Regular ESH inspection of contractor activity & issue safety reports	☐	☐	☐
15. Technical oversight/review of contractor performance	☐	☐	☐
16. Witnessing contractor tests (specify): _____	☐	☐	☐
17. Coordinate HP support	☐	☐	☐
18. Coordinate scheduling of work with Contractor & Bldg. Mgr.	☐	☐	☐
19. Coordinate required system shutdowns	☐	☐	☐
20. Incremental Phase Hazard or Change Order ESH Review	☐	☐	☐
21. Contractor Performance Evaluation at 50% & 100%	☐	☐	☐
22. Enter data into Contractor data base	☐	☐	☐

This checklist to be part of Work Permit provided by requesting Department/Division for this activity.

Comments: _____

Requesting Manager: Date:

FORM: CONTRACTOR EVALUATION FORM

Management System: ***Worker Safety and Health***

Subject Area: ***Construction Safety***

Contractor Evaluation Form

Effective Date:**Feb 08, 2017**

The Contractor Evaluation Form is provided as a Word file.

https://sbms.bnl.gov/SBMSearch/subjarea/117/117_Exh1.cfm

BROOKHAVEN NATIONAL LABORATORY

CONTRACTOR EVALUATION FORM

Contractor Name: _____ **Project Title:** _____
Original Contract Amt: _____ **Final Contract Amt:** _____
Type of Work: _____ **Job No.:** _____
Task Order # _____ **% Complete @ Evaluation:** _____
Contract No.: _____ **BNL Project Manager:** _____
Purchase Order #: _____ **Notice to Proceed Date:** _____
Date of Award: _____ **Actual Completion Date:** _____
Scheduled Completion Date: _____

Place an X in Applicable Score for Each Element

Performance Element	Superior	Satisfactory	Marginal	Unsatisfactory	N/A*
Quality of Work					
Timely Performance					
Effectiveness of Management					
Technical Knowledge					
Compliance with Safety Standards					
Compliance with Environmental Regulations					
Access and Response of Field Personnel					
Paperwork Submittals					
Coordination with Trades and Subcontractors					
Job-site Housekeeping					
Compliance with Labor Standards					

Do not use Not Applicable (N/A) for 100% completion evaluations.

	Superior	Satisfactory	Marginal	Unsatisfactory
Overall Evaluation				

Comments: Explain reasons for any Superior or Unsatisfactory ratings. Use additional page if needed.

☐ **Place an "x" in box if additional page is used**

Evaluation Committee	Print Name	Life Number	Signature	Date
Construction Supervisor				
Lead Engineer/ Architect / PC				
Lead Inspector				
Construction Safety Specialist/Construction Safety Engineer				
Contract Administrator				

Distribution: P&PM (original), F&O ESHT&Q, Project File, CSE

FORM: HEALTH AND SAFETY PLAN OUTLINE/TEMPLATE

Management System: ***Worker Safety and Health***

Subject Area: ***Construction Safety***

Health and Safety Plan Outline/Template

Effective Date:**Feb 08, 2017**

The Health and Safety Plan Outline/Template is provided as a Word file.

The only official copy of this file is the one on-line in SBMS.

Before using a printed copy, verify that it is the most current version by checking the *effective date*.

Questions/Comments Disclaimer

https://sbms.bnl.gov/SBMSearch/subjarea/117/117_Exh3.cfm

(NAME OF COMPANY)

HEALTH AND SAFETY PLAN (HASP)

Name of Project: _____

Project Location: _____

Contract Number: _____

Job Number: _____

Date Awarded: _____

HASP Revision Number: _____

BSA Contact Person: _____

Plan Reviewed and Approved by Contractor's Designated Safety Representative:

_____

Signature **Date**

Effective June 1, 2012

BSA ES&H CONSTRUCTION SAFETY

Revision 3

CONSTRUCTION – as defined in DOE CFR 10 851

Construction means any combination of erection, installation, assembly, demolition, or fabrication activities involved to create a new facility, or to alter, add to, rehabilitate, dismantle, or remove an existing facility. It also includes the alteration and repair (including dredging, excavating, and painting) of buildings, structures, or other real property, as well as any construction, demolition, and excavation activities conducted as part of environmental restoration or remediation efforts.

The construction contractor means the lowest tiered contractor with primary responsibility for the execution of all construction work described within a construction procurement or authorization document (e.g., construction contract, work order).

The construction project refers to the full scope of activities required on a construction worksite to fulfill the requirements of the construction procurement or authorization document.

The construction worksite is the area within the limits necessary to perform the work described in the construction procurement or authorization document. It includes the facility being constructed or renovated along with all necessary staging and storage areas, as well as adjacent areas subject to project hazards.

Contractor means any entity, including affiliated entities such as a parent corporation, under contract with DOE, or a subcontractor at any tier, that has responsibilities for performing work at a DOE site in furtherance of a DOE mission.

HASP TABLE OF CONTENTS

Note: If a specific section of this HASP does not in any way apply to your contract scope of work, insert at the top of that specific section the following heading:

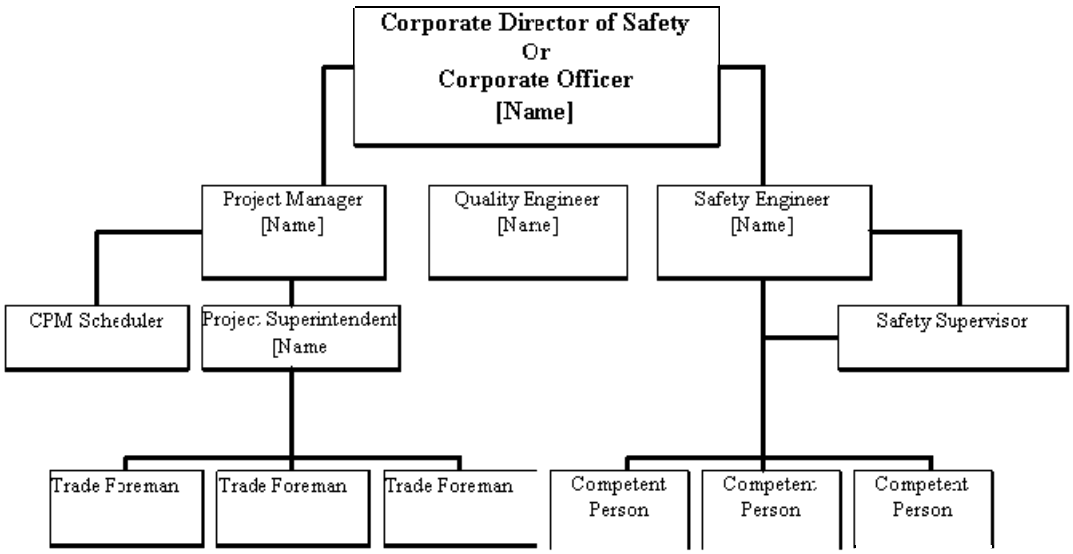
"This specific section does not apply to this contract work"

Insert a Brief Description of the Project Scope of Work Here

ORGANIZATIONAL CHART

Insert an organizational chart of contractor and subcontractor personnel responsible for implementing this HASP. This chart shall show the reporting relationship and integration of the Safety Representative/Alternate/Competent Persons with all personnel, including top level managers and field supervision responsible for implementing this HASP.

Insert Here – Example Below



Section 1: ***COMPLIANCE LETTER***

(COMPANY NAME OR LETTERHEAD)

Date: _____
Brookhaven National Laboratory
Bldg. 650T
Upton, N.Y. 11973
Attn: Designated BSA Representative

Dear**:** _____

In conformance with the requirements of the construction documents for the above project, copies of the following information (**as a minimum)** are submitted on our company's construction Health and Safety Program (HASP)**:**

- Record of contractor's previous (2) years total loss history
- Record of injuries and accidents for the current and previous past 3 years (OSHA 300 logs)
- Insurance experience modification rate for the past two years
- OSHA and environmental compliance records (if applicable) for past five years, including fines, Administrative Consent Orders, and Notices of Violations.

Brookhaven National Laboratory (BNL) (operated by BSA) is an ISO 14001 registered organization. All construction and environmental work shall conform to the applicable requirements of this program***. (Insert Company Name),*** its employees and subcontractors shall follow the applicable Occupational, Safety and Health Administration (OSHA) standards, New York State (NYS) Industrial Code Rules, Department of Energy (DOE) 10 CFR, 851 Directives, and the BSA requirements listed in its Standards Based Management System (SBMS) https://sbms.BSA.gov/ pertaining to: Work Planning and Control for Operations, Emergency Response/Spill Response, Waste Management (radiological, hazardous, mixed, medical, industrial), Chemical Handling and Use, Resource Conservation Recovery Act (RCRA), (OSHA), Land Use Restrictions (Wetlands, Pine Barrens, Endangered Species), Liquid Effluents. If this HASP is amended, i.e. changes in scope of work, new materials or processes, or as new information dictate, BSA **shall** review and accept those changes prior to implementation.

(Insert Company Name), its employees and subcontractors shall comply with all the applicable requirements established in the OSHA standards, Department of Energy (DOE) Directives, New York State (NYS) Industrial Code Rules, SBMS https://sbms.bnl.gov/. Environment, Safety and Health Standards of the SBMS are located at: https://BSA.gov/SBMSearch/LD/ld08/ld08t011.htm for review and use. Where the requirements specified in the BSA SBMS exceed the requirements of the OSHA standards, the BSA requirements shall take precedence. External web link: http://public.bnl.gov/docs/sbms

Article 53 in the current Contract Terms and Conditions (6-12-12) contains: Material and Workmanship, Part (d), "All work under this Agreement shall be performed in a skillful and workmanlike manner. BSA may require, in writing, that the Contractor removes from the work any employee BSA deems incompetent, careless, or otherwise objectionable."

- This shall also apply to any contractor's or sub-contractor's manager, supervisor or other person in charge of the work, who knowingly requires, condones, coerces, directs, asks, or allows employees to work in or around unsafe acts or conditions and, as a result, shall be immediately and permanently removed from BNL property for cause.

BSA shall provide all appropriate permits required by these standards. ***(Insert Company Name)*** shall verify that these permits are current for the scope of work, and updated, with appropriate approvals, to reflect any changes to the scope of work, and shall abide by the requirements of the permit.

This letter also certifies that ***(Insert Company Name)*** has read and is aware of, understands and shall comply with the safety regulations of the DOE 10 CFR 851, OSHA Standard 29 CFR 1926 and 29 CFR 1910.

In addition, ***(Insert Company Name)*** understands that the Standards Based Management System (SBMS) is available on-line at http://public.bnl.gov/docs/sbms for our review and use, and we shall comply with applicable safety requirements for this project.

Sincerely,

_____
Company Owner/President/CEO

_____
Date

Section 2: ***STATEMENT OF ACCIDENT PREVENTION PROGRAM***

(COMPANY NAME OR LETTERHEAD)

Re: Contract No: _____

Job Title: _____

Job No: _____

Bldg. No: _____

Project Superintendent: _____

Phone Numbers: Onsite: _____ Off Site: _____

[Insert a description of your company's site specific safety program policy statement here]:

Example of a Program Policy Statement: A safe and healthful place of employment is a basic right of every working person. Exposure to unsafe conditions, no matter who created them, is unacceptable. Therefore, accident prevention measures shall be integrated with all operating functions.

A safe and healthful place of employment, free of known hazards, can exist and be maintained only if both supervisory and non-supervisory personnel participate in and support the safety and health program by working with whoever is designated as being responsible for overseeing safety and health conditions on the job site. Employees shall report all safety concerns/ conditions to the contractor's Safety Representative or Alternate.

For each jobsite there shall be a Safety Representative and at least one Safety Alternate.

Name of Safety Representative: _____

Name of Safety Alternate: _____

The Safety Representative or the Alternate shall be responsible to implement the contractor's Health and Safety Program (HASP), and shall:

1. Understand that BSA will not tolerate non-adherence to safety requirements under this Contract. Failure to comply will result in BSA's stopping work in accordance with Article 43 (h) in the BSA Contract Terms and Conditions. Non-compliance could also mean the barring of the violating individuals from the BSA site. Repeated safety violations may also result in a Termination for Default under Article 61and 64, (6-12-12) of the BSA Contract Terms and Conditions.

2. Prior to the start of work each day on a jobsite, carefully evaluate the site for any unsafe conditions and take appropriate steps to eliminate employee exposure.

3. Perform assessments of craft technical skills to safely perform the assigned work tasks.

4. Prior to the initiation of any work tasks by employees, evaluate the known or anticipated hazards of that work task, and instruct all the affected employees as to the site and job-specific hazards. As job tasks change, and/or the work scope modified, site and job-specific instructions (PHAs/SWPs) must be reviewed and modified as required to prevent injuries and accidents.

5. As a minimum, conduct a documented weekly Safety Toolbox Meeting with all affected employees. An example of a target audience should include workers directly involved in the project: BSA Construction Inspector, ES&H Representative, MPO Project Management, Radiological Control Division, Facility Complex Manager, etc.

6. At a minimum, continuously inspect and monitor the jobsite daily to maintain a safe and healthy worksite. Such inspections shall be fully documented using an effective safety and health checklist,

noting any discrepancies or deficiencies, and all the corrective actions taken. Include in this HASP, a descriptive outline template of the program for daily inspections and reporting of jobsite conditions. The program shall include:

- the name of the person responsible for conducting the inspections,
- the frequency of the inspections,
- the reporting of unsafe acts or conditions, and
- the corrective action(s) taken to prevent or control the unsafe act or condition.

Daily inspections shall be performed and documented by the Safety Representative or Alternate during active construction, and periodically during shutdowns, to ensure that the site signage/barricades/fences or barriers are properly installed and maintained at all times, etc., and especially are able to withstand the rigors of adverse weather conditions, (e.g., heavy winds/rain).

7. Periodically review and update this checklist with additional items that were originally not included, but later identified during the worksite inspection.

8. Ensure that first aid and emergency services are available when required. Brookhaven National Laboratory (BSA) shall provide emergency services (fire, medical, and spill response) for any emergencies arising while on the Laboratory property, and shall provide emergency medical transportation. All construction personnel shall use the BSA emergency phone number extension 2222 or 911 (from any BSA phone) or (631)-344-2222 (from a cellular phone) and immediately notify the BSA Project Management Representative in the event of any emergency. Minor injuries are those that are treatable by first aid only. First aid kits must be properly maintained and stocked so as to be immediately available for personal injuries. The contractor shall maintain a First Aid Injury Log where the first aid kit(s) are located. The First Aid Log sheets shall be turned in monthly to the contractor's project office for recordkeeping purposes. All other injuries (beyond basic first aid) shall be reported to BSA's Occupational Medicine Clinic for evaluation and treatment or to BSA's Laboratory Protection Division's Fire Rescue Group.

9. Investigate all accidents or near-miss accidents and take appropriate steps to eliminate the cause of the accident before work is resumed. All such incidents and the follow-up treatment shall be documented and reported immediately to the BSA Project Manager and BSA Construction Inspector for required additional notifications.

10. Inform all employees of the location and availability of the company's written Hazard Communication Program that is required to be on the jobsite. The document must include copies of all Material Safety Data Sheet (MSDS) for hazardous materials (Hazmat) used on the jobsite by the company. All hazardous materials must be stored so as to prevent any spills to the environment. In the event of a spill, the contractor must immediately notify the BSA Construction Inspector and Project Manager. The clean-up of Hazmat spills may only be performed by Hazmat trained employees. BSA maintains a trained Spill Response Team and reserves the right to decide who may clean up the spill. BSA also reserves the right to charge the contractor for any and all spill cleanup costs including, but not limited to, labor, materials, disposal and administrative costs associated with the spill.

11. Make readily available for all employees copies of 29 CFR 1910.1020, "Employee Access to Exposure and Medical Records," (which includes MSDS and employee exposure records).

12. Conduct (minimally) annual refresher training or more frequent training as required by regulations for employees. The contractor must designate the person responsible for keeping all training records. The contractor's employees or their authorized representatives shall have the right to have access to the training records upon request.

13. Ensure that all personnel (workers, vendors or visitors) as a minimum wear, the following personal protective equipment (PPE) and hi-visibility clothing:
    a. Approved head protection - ANSI Z89.1 (hard-hat required for all construction areas)
    b. Approved foot protection - ANSI Z41 PT
    c. Approved safety glasses with side shields – ANSI Z87 compliant
    d. Long pants suitable for a construction worksite (no shorts or cutoffs allowed)
    e. Shirts with sleeves that cover the shoulders (no tank tops or cut-off shirts)

f. Hi-visibility reflective vests or other suitable, clean hi-visibility apparel, - ANSI/ISEA 107, Class 2 compliant

14. Ensure that all workers on the job site are fit for duty, and properly wear the required (and any additional) personal protective equipment appropriate for their particular task as defined in the task specific Phase Hazard Analysis or Safe Work Plan (PHA/SWP), effectively written for the specific task work to be done.

15. Project Safety Orientation: The contractor Safety Representative shall effectively develop a site specific Orientation Program and, prior to starting work, instruct each contractor/subcontractor employee on the details of the company's Worker Job Safety Orientation for this project. Each contractor employee of every tier must understand and sign off on the Worker Job Safety Orientation for this project, and this document must be available at the job site at all times for review by BSA.

16. The Safety Representative or the alternate shall be present and available on the worksite whenever physical work is in progress, either by the general contractor or by subcontractors of any tier, vendors, visitors or material delivery persons. "In the absence of activity on the construction worksite during a lunch break, there is no need for the presence of a designated Safety Representative. However, if construction continues during the designated representative's lunch break, the contractor must ensure that another representative is designated and present onsite."

Safety Representative and Alternate's Training and Qualifications:

Competence commensurate with the responsibility: candidates for Safety Representative and Alternate personnel shall possess the verifiable experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities. A Safety Representative's or Safety Alternate's qualifications are not satisfied just by just successfully completing a 30-hour Construction Outreach Safety Training course. It is through similar construction safety management experience and specialized training courses of instruction for that particular type of work to be done on the project. The contractor shall submit in writing, signed by the owner/president of the company, a statement of the Safety Representative's and Alternate's authority and responsibilities.

A summary/resume of the Safety Representative's and Alternate's level of training and relevant qualifications (as deemed appropriate solely by BSA for this project/job) is also included for BSA Modernization Project Office (MPO) and ES&H Construction Safety Office acceptance. The individuals are trained and fully knowledgeable in ES&H requirements of the project for which he or she shall be responsible. A documented 5-year history of progressive safety experience and qualifications shall be submitted for the persons who will manage the contractor's safety program. Once accepted by BSA MPO and ES&H Construction Safety organizations, in the event that a change to the Safety Representative or Alternate is warranted, the change shall be submitted in writing to the BNL Project Manager five (5) working days prior to the change date.

The ES&H Construction Safety Engineer may accept other relevant safety certifications or prior BNL experience as a Safety Representative or Alternate and safety training in lieu of the full 5-year requirement. The construction Safety Representative and Alternate shall be familiar, and have prior experience, with the type and scope of work being performed. They also have the qualifications to be eligible for membership in the American Society of Safety Engineers (ASSE). The contractor shall submit a verified resume on contractor's letterhead documenting the qualifications of the proposed candidate to the ES&H Construction Safety Engineer for approval. Prior to acceptance, the ES&H Construction Safety Engineer shall interview the candidate Safety Representative and Alternate. The resume shall include a description of the duties, responsibilities, accomplishments and safety record of preceding assignments for a 5-year period from which the candidate has gained relevant safety-engineering experience. Replacement Safety Representatives or Alternates are subject to the same qualification, experience, review and acceptance requirements as initial Safety Representatives or Alternates. The decision to accept or reject the contractor's proposed candidates by the BNL interview panel is final. The contractor shall submit the following documentation for review and acceptance by BSA in support of the proposed candidate:

- Professional certifications, for example CSP, CSM, CIH, ASP, etc.

- Curriculum vitae detailing work experience and ES&H responsibilities on projects of similar type and scope for the previous five years, at a minimum
- Successful prior experience working at BNL as a Safety Representative or Alternate
- Evidence of relevant construction safety training starting with a basic minimum of the 30-hour OSHA Outreach training
- Proof of prior Competent Person or Qualified Person status for similar work attained by the proposed Safety Representative or Alternates
- Trade union, training organizations or other certificates of relevant training documents
- Additional training may be required for specific hazards for Competent Persons
- Membership in a professional safety society
- An interview with the contractor submitted candidates for Safety Representative, Alternates and Competent Persons may be required with BSA MPO & ES&H safety personnel to establish the level of the candidates' competency and to secure BSA's acceptance/concurrence prior to their assignment as a safety representative or alternate. This status is subject to continuing approval by BSA.

Designation of the contractor's/subcontractor Competent Person

Identify specific qualifications of all contractor designated "Competent Persons" (per OSHA), including, but not limited to, formal Construction Safety Awareness courses taken that apply to the nature of this project. Also identify the method of accomplishment at that particular work site, i.e. fall protection, excavation, respiratory protection, confined space, LOTO, etc., where applicable. The Competent Person must have had formal, documented training, have knowledge of existing standards, and have authority to take actions deemed necessary.

- Suitability for Competent Person status shall be investigated and approved in writing by the contractor's Safety Representative to oversee safety matters of an individual group performing work at individual work locations.
- Competent Persons shall be designated with their names included in this HASP. As the work progresses, the list will be updated as necessary.
- They may be subcontractor personnel and have other project responsibilities in addition to their Competent Person safety function.
- They shall be familiar with the work being performed, shall have documented appropriate OSHA related training, be familiar with the hazards to be encountered at the particular work site, and shall be capable of being designated as the OSHA defined Competent Person.
- They shall have the authority to immediately stop the work if an unsafe condition develops or an unsafe act is occurring.
- An interview may be required with BSA MPO and ES&H safety personnel to establish their competency and to secure the BSA's acceptance/concurrence prior to their assignment as a Competent Person.

Note: A Competent Person certification is not only achieved by successfully completing a 30-hour Construction Outreach Safety training course, it is also through specialized training courses and experience for that particular field or topic.

Operations requiring a company designated Competent Person:

- Lock-out/tag-out (LOTO)
- Working on live electrical circuits
- Ladders and scaffolds
- Excavations and trenches
- Roofing work
- Lift slab operations
- Steel erection
- Equipment inspection/operation
- Oxygen-fuel gas welding equipment use
- Confined spaces
- Material handling/forklift operation/rigging/signaling
- Fall protection
- Respiratory protection

- Noise measurement/monitoring
- Hazardous chemicals and wastes
- Lead
- Asbestos
- Cranes, rough terrain forklifts and other lifting machines, devices or equipment

I warrant that the proposed safety representative and alternates possess sufficient training and prior experience to fully comply with the above listed BNL requirements. Attached is a copy of those individuals' training completion certificate(s) and documented relevant similar experience on a project of this size and of the complexity of the work to be performed.

_____
Company Owner/President/CEO

Date: _____

***Section 3*:** **CONTRACTOR/SUBCONTRACTOR RESPONSIBILITIES**

(COMPANY NAME OR LETTERHEAD)

The following summarizes the responsibilities of the ***(Insert Company Name)*** as the general contractor and any subcontractors of any tier hired by the contractor during the course of this project:

***CONTRACTOR RESPONSIBILITIES*:**

- General contractors shall retain sole responsibility for the safety of his/her personnel and all subcontractor personnel.
- Immediately stop and rectify any and all conditions that are found to be unsafe, unsanitary or present a danger to any persons or property.
- Issue a "Stop Work" for those events which pose an immediate or imminent danger to personnel, environment or property. All Stop Work orders shall be reported to the BSA construction inspector.
- A written follow-up report shall be issued detailing the actions taken to rectify any and all unsafe conditions.
- Effective coordination of work activities with subcontractors shall take place to ensure all work proceeds in accordance with applicable safety requirements.
- BSA construction inspector and subcontractors shall be notified of any recognized hazards, potential problem areas and special safety requirements.
- Provide and maintain a complete, up-to-date, inventory of MSDS for chemicals and products used in the work process not only by the general contractor but, by all their subcontractors.
- Establish, maintain and administer complete and accurate records of construction site hazard inventory information, hazard assessments, exposure measurements, and exposure controls, including a daily, written inspection of the site. Copies of all Industrial Hygiene (IH) monitoring reports/results shall be forwarded to BSA IH for review. Coordination of all pertinent certifications, training and record-keeping shall take place and be made available to BSA for review upon request.
- Review known or potential safety hazards, new or changed construction activities, etc., with personnel that could be in any way affected by the ongoing work.
- An open and continuous line of communication shall be maintained between the contractor and subcontractors to identify, discuss, and abate any unsafe acts or conditions that arise or may arise in the course of this project. If this project is an MPO managed project, these findings shall be presented at the scheduled project meetings.
- Secure and protect, as necessary, all construction areas for materials, tools or equipment from theft or damage.
- Monitor fugitive dust and require the use of effective control methods to prevent its release into the surrounding environment or atmosphere.
- Provide and maintain silt fence where required, et al.

SUBCONTRACTOR RESPONSIBILITIES:

- Retain full responsibility for the safety of their personnel under its control.
- Indicate acceptance of the general contractor's HASP before starting work on the site and sign off on the HASP before starting work on the site.
- Review known/possible safety hazards, construction activities, etc., with their personnel.
- Issue a Stop Work order for those events which pose an imminent danger to personnel, environment, or property. All Stop Work orders shall be reported to the general contractor and the BSA construction inspector.
- Ensure that their supervisors and workers understand all necessary precautions to be taken and see that these precautions are properly carried out.

- Provide and maintain inventory of MSDS for chemicals and products used in the work process.
- Make regular inspections of hand and power tools, machinery and equipment prior to daily use in all phases of construction activities. Review operator manuals for relevant safety information before operating power tools, machinery or equipment. Maintain these manuals on the project site, making them available for worker access.
- Immediately correct any safety deficiencies when they are identified and/or notification is given.
- Immediately inform the general contractor and general contractor Safety Representative of any and all unsafe conditions or unsafe acts discovered or observed.
- Secure and protect subcontractor property as necessary for all construction materials, tools or equipment from theft or damage.
- Monitor fugitive dust and require use of effective control methods to prevent its release into the surrounding environment or atmosphere.

TRAINING AND EDUCATION:

- Effective safety oriented signs and posters (including those required by NY Sate and OSHA) shall be properly posted and clearly visible at various locations around the job site, including the designated entrance to the project site.
- The Safety Representative or Alternate shall ensure that all personnel and subcontractors have been properly trained for the hazards anticipated on this project as specified in Section 16, *Phase Hazard Analysis/Safe Work Plans (PHA/SWP).*
- Document that every new or re-hired personnel shall be effectively instructed in construction safety policies, regulations and procedures for the project prior to the start of work, for their own safety and the safety of all those working at the job site.
- Avoid recognized potential hazardous situations during the activities planned for the workweek shall be addressed at weekly Toolbox talks, or more frequently if necessary. Any new safety procedures, PHAs/SWPs, and safety updates shall be discussed at these talks. A safety-conscious attitude shall be emphasized and reinforced.
- As each new task of construction begins, specified in Section 16, PHA/SWP, comprehensive, detailed, task-specific PHAs/SWPs shall be developed and submitted for acceptance by ES&H Construction Safety a minimum of 7 days ahead of the scheduled activity start. Work on that task shall not start until the PHA/SWP has been accepted by BSA ES&H Safety. A safety awareness meeting shall be held for all personnel and subcontractors involved or affected by that new aspect of work. All affected employees shall review and acknowledge the PHA/SWP with their signature. The PHA/SWP shall be kept immediately available at the work location for review by BSA.
- Proper steps shall be taken to correct non-compliance and all personnel for not practicing appropriate safety measures and procedures.
- An incorrect safety practice/procedure shall be immediately communicated to the responsible person.
- The Safety Representative or Alternate shall ensure that the person has a clear understanding of the corrective action to take and the possible consequences if those measures are not followed (Contractor's Disciplinary Policy).
- Intentional, severe or repetitive safety violations shall be cause for permanent removal from the job site by the contractor or by BSA.
- The Safety Representative shall maintain all regular and/or special training records and education documentation on file. These files shall be continuously updated and be available for BSA inspection upon request.

DRUG-FREE WORKPLACE POLICY STATEMENT

(COMPANY NAME OR LETTERHEAD)

Drug-Free Workplace Policy Statement:

The unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace. A single violation of such prohibition shall result in the offending individual being removed from the job-site with the recommendation that the individual participate in an approved drug abuse assistance or rehabilitation program, and/or being reported to the civil authorities for criminal prosecution.

All employees shall abide by the rules of this program, and they shall notify the employer in writing of the employee's conviction under a criminal drug statute for a violation occurring in the workplace no later than 5 days after such conviction.

Program Elements:

Ongoing drug-free awareness training program includes:

1. Mandatory, documented participation by all employees as outlined on the following page

2. Classroom and/or toolbox discussions shall include:

    - The dangers of drug abuse in the workplace
    - Distribution and discussion of the contractor's policy of maintaining a drug-free workplace
    - Any available drug counseling, rehabilitation and employee assistance programs
    - The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace

3. Intervention procedures - employee and supervisor:
    - Identification - signs and symptoms
    - Corrective action

4. Personnel actions - program enforcement, disciplinary options, and employee assistance
    - Legal or criminal actions
    - Disciplinary actions up to and including termination
    - Drug abuse or rehabilitation program

5. Brookhaven National Laboratory's Contracting Officer (BSA) shall be notified in writing within 10 days after receiving notice of an employee's conviction under a criminal drug statute for a violation occurring in the workplace. Notification shall include the position title of the employee and the appropriate personnel action to be taken within 30 days under the requirements of this program.

_____

Company Owner/President/CEO:

_____

Date:

DRUG-FREE WORKPLACE REQUIREMENTS – REQUIRED DISCUSSION WITH ALL NEW EMPLOYEES

Project: _____

Location: _____

Date: _____

Instructor: _____

(Insert Company Name) strictly prohibits the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance including alcohol. A single violation of such prohibition shall result in the offending individual being removed from the BSA job-site with the recommendation of participation in an approved drug abuse assistance or rehabilitation program, and/or reporting to the civil authorities for criminal prosecution. Counseling, rehabilitation and assistance are available through this company. For further information, contact your immediate supervisor.

All employees shall abide by the rules of this program and shall notify ***(insert Company Name)*** in writing of the employee's conviction under a criminal drug statute for a violation occurring in the workplace no later than 5 days after such conviction.

Personnel should be alert for abnormal behavior and are required to report their observations to the appropriate supervisory personnel. Should the behavior create or have the potential to create a hazard to personnel, property or the environment, affected personnel have the right to Stop Work on that activity.

Substance and alcohol abuse shall not be tolerated in the workplace. It contributes to unsafe, unproductive work, and may result in adverse action against you personally by company and legal authorities.

List of attendees trained: (**To be continuously updated and maintained in the project file**)

TOOL BOX TOPIC #1 - OUTLINING TASKS, HAZARDS and CONTROL MEASURES

Worker Safety Toolbox Topic Meetings

Worker Safety Toolbox Topic Meetings shall be held no less than once each week. Each contractor employee and subcontractor working at the site shall attend these meetings.

An employee failing to attend a Toolbox Topic Meeting shall not be permitted to perform any work that requires safety precautions that were discussed in the meeting until the employee has received the same instruction.

The contractor should notify BSA at least 1 week in advance of each scheduled Toolbox Topic Meeting. A record of each meeting, including the topics covered and a signed list of attendees shall be prepared by the Safety Representative or Alternate and transmitted to the BSA Project Engineer within 3 working days after the meeting was conducted.

Each Toolbox Topic Meeting shall include instruction and discussion of safe working methods, review of PHAs/SWPs, MSDSs, and applicable rules required for the safe performance of the work scheduled during the one-week period following the meeting. BSA reserves the right to direct the contractor to cover additional information.

The Toolbox Topic Meeting may be conducted by the Safety Representative, the contractor supervisor or by a supervisor of the subcontractor. The Safety Representative shall approve the content of each subcontractor Worker Safety Toolbox Topic Meeting.

Selecting Tool Box Topics Guidelines:

Use common sense in selecting a pertinent topic. You wouldn't want to present "Dressing for Winter Work" in the middle of summer. "Heat Exhaustion/Sunstroke" is more appropriate to the season. Failure on management's part to select an appropriate topic to present will result in uninterested workers, a waste of everyone's time and a loss of credibility on the part of company management.

Observe job safety techniques. Focus on what is important (and mandatory). Listen to and follow up on employee recommendations. Identify what poor work practices are causing potential injuries or accidents on the job. Plan for and schedule out for a month so you have time to research and possibly modify your company policy to make it more effective.

Recognizing Unsafe Conditions

Recognizing unsafe conditions or hazards in the workplace is not just a management responsibility. It is everyone's responsibility, from the most junior employee to the company president, to identify hazards and make suggestions on how to fix the problem. "If you see something, say something!"

Guide for Discussion

Help develop and/or participate in the review of the specific Phase Hazard Analysis/Safe Work Plan for the task.

Causes of unsafe conditions or actions*:*

- Taking an unsafe position
- Lack of skill or knowledge, or failure to apply skill or knowledge
- Poor housekeeping, cluttered work area
- Horseplay
- Congested, poorly lit, sloppy material storage areas
- Careless handling of materials
- Improper or defective tools being used
- Lack of machine guarding or failure to install/maintain warning systems
- Lack of or failure to wear the proper personal protection equipment (PPE)
- Weather conditions – high winds, snow and ice, lightning

- Worker not dressing properly for the job to be done
- Failure to follow instructions
- Inattention to surroundings and to identify the existing hazards in the work area
- Taking an unsafe position while on a ladder or other improper use of a ladder
- Poor attitude towards the safety effort/program
- Failure to learn or follow the manufacturer's requirements for the proper operation of tools or equipment
- Taking chances or shortcuts
- Worker's physical condition or limitations, not being "fit for duty"
- Lack of effective safety supervision monitoring the work

Steps to take once an unsafe condition is found:

- If possible, correct the condition yourself immediately
- Stop, and then report any serious/major unsafe conditions or worker acts to the appropriate company authority
- Follow-up – report the condition again if it is not corrected

Remember: There are three steps to follow in recognizing unsafe conditions:

- Look for trouble (the unsafe condition),
- Report it or fix it (if you can), and
- Act to prevent it from happening again.

Additional Discussion Notes that are Specific to this BSA Project:

NOTE: Always promote a discussion on any of the topics covered in the Worker Safety Tool Box Meetings. Should any question arise that you cannot answer, don't hesitate to contact your employer. Don't just read from a piece of paper without showing any enthusiasm or interest, you must actively demonstrate to the workers that you believe in the Company Safety Program.

(INSERT COMPANY NAME)

Example - HAZARD COMMUNICATION PROGRAM

1. ***Purpose***
   The purpose of this Hazard Communication Program is to inform ***(insert Company Name)*** employees and all sub-contractor employees of known chemical hazards that may be brought into or exist in the workplace as per OSHA Subpart Z, §1910.1200.

2. ***Application***
   This program applies to chemicals brought onto BNL property or known to be present in the workplace in such a manner that employees may encounter or be exposed to under normal working conditions, non-routine tasks, or foreseeable emergencies.

   This Hazard Communication Program relies on Material Safety Data Sheets (MSDS) from suppliers for purposes of hazard determination.

3. ***Program Summary***

   The major elements of this written program are as follows:
   a) If a general contractor has subcontractors, appoint/establish a Hazard Communication Program Coordinator to synchronize the work activities of those lower tiered contractors who are creating hazards while working with hazardous chemicals and physical agents with other lower tier contractors whose employees are being exposed to chemical hazards and physical agents associated with the work.
   b) Labels and other forms of worker warning measures
   c) MSDS from suppliers of the product
   d) Required employee information and training
   e) Maintain current list of hazardous chemicals known to be present in the workplace
   f) Methods for informing employees of hazards of non-routine tasks
   g) Methods for informing contractor employers of hazards their employees may be exposed to while working for ***(company name).***

4. ***Labels and Other Forms of Warning***

   Each container of hazardous chemicals shall be labeled, tagged, or otherwise marked with:
   a) The identity of the hazardous chemicals (or chemicals)
   b) Appropriate hazard warnings

   Labels and other forms of warning shall be legible and in English, and shall be prominently displayed or readily available in the work area during each shift.

5. ***Material Safety Data Sheet***

   A Material Safety Data Sheet shall be kept for each hazardous chemical known to be present or that will be used in the workplace and provided with BNL PHA/SWPs for a review of compliance with the MSDS information they contain.

   MSDS are kept by ***(name and location)*** and are readily accessible to employees during each work shift.

   (Name and job title) is responsible for maintaining the MSDS inventory in a complete and up-to-date manner.

   When work is shipped off-site to vendors, copies of MSDS for any known hazardous chemicals included as part of the products shipped shall be passed along to the vendor. Additionally, all Hazmat shipments going off site must be in compliance with U.S. Department of Transportation shipping regulations.

6. ***Training and Information***

a) All employees shall be trained according to the contractor's written Hazard Communication Training Plan that is part of this company's overall Hazard Communication Program.
b) Training shall extend to non-routine tasks, as necessary, and to foreseeable emergencies.
c) All contractor and subcontractor employees working at BNL shall be retrained annually and on any revisions made to this program. Documentation will be continuously maintained.
d) Contractors must choose chemicals that are the least hazardous if there are alternatives. The use of Environmentally Preferable Products (Green Cleaners/Buckeye Floor Cleaners) is required by Executive Order 13514.

(INSERT COMPANY NAME)

Example - HAZARD COMMUNICATION TRAINING PROGRAM

1. *Initial Assignment Information and Training:*

a) ***(Insert name and job title)*** shall train new employees in hazard communication and protection procedures as part of their site-specific orientation before the new employees begin work on the site.
b) ***(Insert name and job title)*** is responsible for training all affected employees whenever new hazardous chemicals are introduced into the workplace. This responsibility extends to provide additional training, as required, for existing employees reassigned into new positions or new work areas.
c) All current employees shall be retrained in the elements of ***(insert Company Name)*** Hazard Communication Program by ***(insert contract start date)***.

2. *Curriculum for Hazard Communication Orientation/Training:*

a) All employees shall be provided with the following information:
   1) Employees shall be informed that ***(Company Name)*** is required by Federal law to have a chemical Hazard Communication Program.
   2) Employees shall be informed of the details of ***(Company Name)*** chemical Hazard Communication Program including:
      - The location and ready availability of a list (MSDS) of all hazardous chemicals used by the company on this project
      - A list of all hazardous chemicals known to be present in the work area is kept at ***(location)*** and is available for review by employees during each work shift
      - The location and ready availability of MSDS for hazardous chemicals used within the company
      - Specific operations or tasks in the employees' work areas that use hazardous chemicals

b) All employees shall receive effective training as follows:
   1) Employees shall be trained in methods and observations to detect the presence of hazardous chemicals they may come in contact with.
   2) Employees shall be trained regarding the specific physical and health hazards of known hazardous chemicals in the employees' work areas.
   3) Employees shall be trained in protective measures including the specific use of personal protective equipment, and protective measures implemented by ***(company name)***, including work procedures.
   4) Employees shall be trained in understanding, interpreting and using hazard information provided on labels and in MSDS.
   5) Employees shall be trained in hazards of welding fumes and the protective measures needed.

3. *Training Program Completion:*

All ***(Company Name)*** employees are required to successfully complete the ***(Company Name)*** Hazard Communications Training Program. Employees are required to follow safe and healthy work practices as a condition of employment. A card or certificate showing program completion will be issued to the worker as proof of company required training; copies will be kept on the jobsite.

4. *Non-Routine Tasks:*

Training for hazard protection during non-routine tasks is the responsibility of the ***(insert supervisor name or other job title)*** and shall be provided as needed.

5. *Foreseeable Emergencies*:

Training for hazard protection during foreseeable emergencies (such as site emergencies, fires, floods, spills, etc.) shall be provided to all affected employees as part of their general safety training.

6. *Sub-Contractor Employees:*

The employer of sub-contractors required to work on this project shall be informed of the required Hazard Communication Program. While the sub-contractor is responsible for their own employees' training, ***(Company Name)****, who is the controlling contractor,* shall monitor compliance and, if necessary, attempt to answer sub-contractor employees' questions about workplace hazards.

The MSDS and list of hazardous materials shall be immediately available to sub-contractor employees as well.

REFERENCES:

29 CFR 1910.1200 – *Hazard Communication Program*

HAZARD COMMUNICATION TRAINING - SESSION ACKNOWLEDGEMENT SHEET

LOCATION: _____
GIVEN BY: _____
JOBSITE: _____

- I know where Material Safety Data Sheets for my work are kept.
- I understand the safe work procedures and precautions to be taken when working with these products, including the required use of protective equipment identified in the MSDS.
- I know where emergency supplies are kept (spill kits).
- I know where the emergency phone number and hazard communication information are posted.
- I am aware that I have the right to review copies of the hazardous chemical list, the company's written programs and MSDS's before using the product or chemical.
- I will inform my supervisor upon discovery of any identified chemical or product hazards.

NAMES: (To be updated on a continuous basis from the first day of the project)	**EMPLOYEE SIGNATURE AND DATE TRAINED**

Example - ***Required*** **LIST OF HAZARDOUS CHEMICALS KNOWN TO BE PRESENT ON THIS PROJECT**

NOTE: A Material Safety Data Sheet (MSDS) is on file for each substance on this list. Details of specific physical and health hazards, as well as protective measures, can be found on the MSDS for individual chemicals. Typical chemicals routinely used by the contractor should be listed for the initial HASP submittal.

Substance Name	Supplier/Source	Comments
Unleaded gasoline	Mobil/Exxon	Highly flammable, must be kept in approved safety cans and have secondary containment.
Lubri -Plate multi grease	Lubri-Plate Company	Any spills must be reported to BSA on x2222 and cleaned up by trained personnel.
Diesel oil	Mobil/Exxon	Bulk storage must have secondary containment.
Motor oil	Mobil/Exxon	Keep containers tightly sealed within secondary containment and dispose of properly.
Various welding rods	Hobart Industries	Welding fumes are known to be hazardous to health and require a respirator, adequate ventilation, or both.

Section 6: ***EMERGENCIES: FIRE, MEDICAL, ENVIRONMENTAL & ACCIDENT INVESTIGATION***

(COMPANY NAME OR LETTERHEAD)

***Hazard Control and Implementation Guidelines/Checklists*:**

The Safety Representative or Alternate shall assume responsibility and ensure that the following guidelines are adhered to for the safeguard of all personnel and the environment:

A. ***First Aid and Medical Attention:***

- The Safety Representative or Alternate shall maintain an adequate sized first aid kit onsite.
- The Safety Representative or Alternate shall inform the BSA Project Manager of all injuries immediately.
- For all injuries and illnesses beyond basic first aid, the Safety Representative or Alternate shall immediately report them to Brookhaven National Laboratory's Occupational Medicine Clinic or BSA Laboratory Protection Division Fire Rescue personnel for treatment at extension 2222 or 911. If calling from a phone not part of the BSA system, i.e., cellular phone, (631) 344-2222 must be dialed.
- Notification of the injury shall also be made to the Safety & Health Services Division, BSA Construction Inspector, MPO ESHTQ and DOE, by the BSA Project Manager.
- The Safety Representative or Alternate shall ensure that all project personnel are properly trained on site- and facility-specific emergency information.
- Only qualified BSA Laboratory Protection Division Fire Rescue Group personnel shall provide emergency services and medical transportation.

B. ***Fire Protection and Prevention:***

- Fire extinguishers shall be provided and properly maintained at strategic locations around the job and inspected on a monthly basis per NFPA 10 and BSA Requirements.
- Unencumbered free access to all fire hydrants on the job site shall be maintained.
- Fire protection equipment shall be provided during any construction activities that may pose a fire hazard, i.e. welding, open flame, cutting and welding, powered equipment etc., and there shall be one suitable fire extinguisher for each activity. Fire extinguisher locations shall be visibly marked.
- ***(Insert Company Name)*** shall provide fire protection equipment (a minimum of one fire extinguisher for each 1,500 sq. ft. of floor space).
- All necessary BSA permits, i.e. welding, cutting, grinding, spark producing etc., shall be obtained and a fire watch program shall be in effect as is required.
- There shall be one fire watch assigned for each open flame operation with no other duties assigned to the person on the fire watch.
- In case of any fire, notify the Safety & Health Services Division, BSA Construction Inspector immediately after notification of the Fire Rescue Group.
- Within **2-hours** of an emergency incident, the Safety Representative shall submit a written report to BSA Modernization Project Office (MPO). The report shall include, as best as can be determined within the two hour period, the following information:
  - Type and cause of injury, fire or other emergency
  - Suspected, or actual cause of the fire
  - Planned remedial action to prevent any future occurrences
  - Nature and outcome of any and all injuries not only to personnel, but also to equipment and the project itself

C. ***Environmental Protection:***

- The use of secondary containment for spill intervention shall be implemented when applicable.
- There shall be proper storage and handling of hazardous materials (all MSDS sheets inclusive).
- There shall be proper documentation of operations, maintenance and repair of equipment.

- Leaking or loose fluid retention systems shall be identified and documented via the daily equipment inspection report form.
- Roller compacted aggregates, concrete or blacktop, shall be used as the surface for overnight parking of motorized vehicles or equipment, site storage of vehicles or internal combustion powered equipment that have the potential to leak.
- ***(Company Name)*** shall remove all unused chemicals when no longer needed, or at the completion of project and before departing the BSA site.
- Provide for and continuously maintain silt fences where required.
- In the case of a fire, medical emergency, spill response or any other arising emergency, the BSA Laboratory Protection Division shall be immediately contacted by dialing the following number(s):
    - Dial 2222 or 911 from any BSA phone
    - Dial (631)344-2222 from a phone not part of the BSA system i.e., cellular phone or other outside lines
- Immediately after notifying the BSA Laboratory Protection Division, contact the Safety & Health Services Division and the BSA Construction Inspector.

D. ***Site Emergency Signals:***

- **Building Fire Alarm Bells:**

    - Any activation of fire alarms
    - Evacuate the building immediately and report to the outdoor assembly area

- **Site Sirens:**

    - **Continuous** sounding of the site sirens for 5 minutes: proceed immediately to the designated indoor assembly area and await further instructions, which may include the nature of the emergency, the type, sequence and the routes for evacuation.
    - **Intermittent** sounding of the site sirens for 5 minutes: evacuate the site immediately**.**
    - **(Company Name)** shall establish an effective means of alerting workers to any emergencies.

E. ***Assembly Areas, Evacuation Zones and Routes:***

The contractor is to identify and post indoor and outdoor assembly area locations and evacuation routes from the project site.

F. ***Conducting Accident Investigations:***

If one or more persons require medical treatment beyond first aid, and/or reportable damage to the environment or property has occurred, the contractor shall immediately notify the BSA Laboratory Protection Division. After notifying BSA Laboratory Protection Division, contact the Safety & Health Services Division and the BSA Construction Inspector as soon as possible.

- ***Preserving the Scene***

  Once any injured have been attended to, the contractor will immediately secure and preserve the accident scene to the greatest extent possible. Preserving the scene means leaving everything within the vicinity of the accident untouched, to the extent possible. Securing and isolating the scene of an incident protects people from any remaining hazards, prevents the scene from being disturbed or altered, and prevents items from being removed from, or relocated within, the incident scene so that an accurate reconstruction of events is possible. A scene is generally secured by such means as:

    - Cordoning the area off with rope, tape or barricades
    - Locking doors and gates
    - Posting warning signs
    - Using a log to document who can enter the area and their justification for entry
    - Posting guards to control and limit access

The contractor will maintain the security of the scene until BSA's Laboratory Protection Division and other qualified responders and Subject Matter Experts can assume control of the scene of an accident/incident.

- ***Interviews***

  The Accident Investigator or Competent Person will need to begin interviewing involved parties and witnesses as quickly as possible after the event to collect facts, construct a timeline and clarify critical elements. The contractor shall identify all witnesses to the accident and ensure that any uninjured parties are available for interview.

  If any witnesses are injured or in obvious distress, be sympathetic and do not cause additional distress in order to find out what happened. Instead, diplomatically collect written names and contact information and provide these to the Accident Investigator or Competent Person.

(COMPANY NAME OR LETTERHEAD)

EXAMPLE - *COMPETENT PERSON QUALIFICATION SUBMISSION FOR EXCAVATIONS*

(Insert name)_____ is the designated, qualified, Competent Person responsible for excavation safety on:

Job Title: _____ Bldg #: _____ Job #_____

(Insert name) is effectively trained, qualified by documented experience, and fully knowledgeable in excavation hazards, OSHA excavation safety standards, and BSA SBMS safe working requirements.

(Insert name) is responsible for identifying excavation hazards and has the immediate authority to take all precautions necessary to protect personnel, property and the environment.

The qualified Competent Person shall be responsible for:

- Developing and implementing the contractor's project-specific excavation plan,
- Making frequent, documented, daily physical inspections to verify proper implementation,
- Taking all precautions necessary, up to and including work stoppage,
- Advising BSA and workers on any required changes to the excavation plan,
- Briefing all affected workers on current project-specific excavation hazards prior to start of shift,
- Securing and clearly protecting/marking the area during working and non-working hours,
- Maintaining any opened excavation in a safe condition at all times, and
- Preventing flagrant violation of excavation safety requirements by workers that will result in termination.

Proof of Competent Person training and past experience must be provided to BSA.

_____ _____

Company Owner/President/CEO Date

Note: If excavations will be within the Scope of Work for the project, a detailed, site-specific written excavation plan shall be developed by a Competent Person and submitted to BSA ES&H Construction Safety for acceptance prior to start of any excavation work. Some elements of an effective plan shall include as a minimum:

EXCAVATION PLAN

- Brookhaven National Laboratory has categorized all soil on site as Class C (non-cohesive, previously disturbed).

- All cave-in protection shall conform to the applicable OSHA requirements for Class C soil. Benching is not permitted under any circumstances.

- Methods intended for supporting existing utilities and maintaining surface encumbrances such as roadways, sidewalks, and other anticipated surface encumbrances are defined herein.

- A contingency plan for notifying the Modernization Project Office (MPO), Long Term Response Action (LTRA) Group, and the Laboratory Protection Division upon suspicion or discovery of any contaminated soils, live munitions or other materials shall be implemented.

- For excavations that are less than four feet (48 inches), if a daily documented physical examination of the ground by the qualified Competent Person provides no indication of any potential cave-in or soil movement, shoring or sloping is not required **providing soil conditions do not change**.

- Where the Competent Person determines there is **any** risk of a potential cave-in, and sloping is to be used solely as cave-in protection, the slopes shall be no greater than one to one and one-half rise to run, or approximately 34 degrees from the horizontal. Note: Class C soil cannot be benched.

- Satisfactory lumber/timber shall be used (i.e. badly cracked/broken timber shall not be used for bracing or support of excavations).

- An adequate number of ladders shall be present in the excavation for access. OSHA requires no more than 25 feet of lateral travel between ladders. Ladders must extend 36 inches above the top surface of the excavation and be used in accordance with the manufacturer's instructions.

- Suitable ramps or bridges must be installed whenever personnel have to cross over an open trench or excavated area.

- Excavated materials shall be placed a minimum of three feet away from excavation cut in order to decrease additional loading on the support system, as well as decrease the potential for excavated material to slough off into the open cut.

- Daily, documented inspections of the excavation shall be done by Competent Person to monitor the condition of the support system.

- A plan for proper de-watering and an excavation plan that fully describes the method used to protect workers from cave-in shall be submitted for review and acceptance by BSA.

- Proper permits shall be filled out and approved before beginning work (i.e. digging, confined space entry, etc.)

- There shall be adequate, effective barricading, including warning lights, to eliminate the potential of vehicles, or personnel on foot or on bicycles, from straying into, or making unauthorized entry into the excavated site. To prevent unauthorized entry, the barricades will be maintained on a daily basis.

- A rigging plan for materials in and around the excavation shall be submitted for review and BSA approval.

- Earth ramps shall be constructed in soil so that persons can exit the excavation while walking and standing upright. No ramp or walkway shall be inclined more than a slope of one vertical to three horizontal (20 degrees above the horizontal).

Cave-in Protection Equipment:

- Cave-in protection equipment shall be provided at no more than four feet in depth, possibly less, depending on the soil conditions and the way the excavation or trench is being maintained. Daily documented examination of the soil/ground conditions (as often as is necessary) by a Competent Person determines that no indication of a potential cave-in or soil movement is evident.

- For excavations greater than 20 feet in depth, the protective systems shall be designed, stamped and approved by a registered professional engineer with a specialty in soil mechanics. Where shoring, shielding or systems other than sloping are proposed, there shall be a submittal of manufacturer's or engineer's data on the system to be used, the depths of the excavations where it shall be applied, and the system configurations to be utilized.

- The soil for this project is type Class C. All cave-in protection shall conform to the applicable OSHA requirements for Class C soil. Cave-in protection systems shall be submitted to the Modernization Project Office for acceptance prior to any work being performed in the excavation or trench.

- Sloping angle of Class C soil shall be at 34 ½ degrees (1 to 1 ½) or less.

- Failure to have an effective qualified, Competent Person present during excavation work will result in the work being stopped and/or the Competent Person status being revoked by BSA MPO or ES&H Construction Safety personnel.

REFERENCES:

29 CFR 1926 Subpart P - Excavations

Section 8: ***CONCRETE, MASONRY PENETRATIONS & DEMOLITION OPERATIONS***

(COMPANY NAME OR LETTERHEAD)

PERMITS:

- All concrete and masonry penetrations shall be performed in accordance with Facilities & Operations Directorate DF-ESH-803 "Concrete and Masonry Penetrations," which requires that a completed permit be in place at the jobsite prior to penetrations being made.
- A Lock-out/Tag-out Program shall be submitted and accepted if utilities must be shut down to safely perform the work.
- There are multiple hazards associated in the scope of many construction activities. One such known hazard is the generation of respirable dusts, i.e. silica, during horizontal, vertical concrete or masonry penetrations. The need for respiratory protection shall be carefully evaluated and documented for use by the contractor's Industrial Hygiene group prior to and during these and other hazard creating activities throughout the course of a project.
- Prior to permitting employees to start demolition operations, an engineering survey of the structure shall be made by a Competent Person to determine the condition of the structure in its entirety, and the possibility of unplanned collapse of any portion of the structure. Any adjacent structure where employees may be exposed shall also be surveyed. The contractor/subcontractor shall have written evidence that such a survey has been performed.
- All electric, gas, water, steam, sewer, and other service lines shall be shut off, capped, or otherwise controlled, outside the building line before demolition work is started. In each case, any utility company which is involved shall be notified in advance.
- If it is necessary to maintain any power, water or other utilities during demolition, such lines shall be temporarily relocated, as necessary, and protected.
- It shall also be determined if any type of hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances, have been used in any pipes, tanks or other equipment on the property. When the presence of any such substances is apparent or suspected, testing and purging shall be performed and the hazard eliminated before demolition is started.
- Where a hazard exists from fragmentation of glass, such hazards shall be removed.
- Where a hazard exists to employees falling through wall openings, the opening shall be protected to a height of approximately 42 inches.
- All floor openings not used as material drops shall be covered over with material substantial enough to support the weight of any load which may be imposed. Such material shall be properly secured to prevent its accidental movement.
- During demolition, continuing inspections shall be made by a Competent Person as the work progresses to detect hazards resulting from weakened or deteriorated floors, walls, or loosened material. No employee shall be permitted to work where such hazards exist until they are corrected by shoring, bracing, or other effective means.

REFERENCES:

29 CFR 1926 Subpart Q – Concrete and Masonry
29 CFR 1926 Subpart T - Demolition

Section 9: ***ELECTRICAL SAFETY***

(COMPANY NAME OR LETTERHEAD)

ELECTRICAL SAFETY PROGRAM & SAFEGUARD CHECKLIST:

- Electrical dangers and improper electrical conditions, when observed, shall be corrected immediately
- All electrical equipment is NRTL listed for intended use
- Equipment is not modified
- Use of the following equipment is prohibited by all personnel:
  - Metal ladders used while performing energized electrical work
  - Damaged or defective equipment, such as frayed extension cords, missing grounding pins, etc.

Not using equipment as designed or required by the manufacturer (such as daisy-chaining of electrical cords, indoor use only component being used outdoors, not protecting cords from physical damage, cuts, nicks or scrapes, pinch points, run through doorways, improperly strung in corridors, i.e., temporary wiring) shall not contact metal objects of any type unless designed for the wiring, lying on floors and/or being run over by equipment, etc.

- All personnel shall be protected from such electrical hazards:
  - Exposed live electrical parts
  - Ungrounded electrical equipment (double insulated tools are acceptable)
  - Unprotected electrical cords (ground not continuous)
  - Non-GFCI protected equipment
- Daily tests and inspections by a qualified person on the following construction equipment shall be made to ensure it is safe, free from defects and functioning properly as intended:
  - Lighting and illumination equipment
  - Power and electrical equipment
  - Portable and fixed GFCIs
  - Portable electric tools, powered equipment and cords
  - Extension cords, physical condition and proper size conductors
- Safety Representatives or Alternate shall ensure that all project personnel are instructed to inspect power tools prior to each use to ensure tools are in proper operating condition before use and to immediately tag out and remove all equipment found to be defective for repair or replacement.
- A Control Zone shall be utilized to protect personnel who could accidentally encounter exposed energized components because of a lack of knowledge or awareness of the hazards.
- Personnel who may be exposed to hazards resulting from contact with, or arc flash from, energized circuits while working within a Control Zone shall be protected by the following:
  - Training for all tasks in accordance with appropriate procedures
  - Lock-out and tag-out
  - Electrical safety
  - Breaker and switch operation
  - Suitable barricade, signs
  - Use of personal protective equipment appropriate for the specific task
- Equipment failure shall be prevented by proper maintenance and inspection of all electrical equipment and other equipment/tools coming into contact with electric equipment/sources.

REFERENCES:

29 CFR 1926 Subpart K – Electrical Safety 29 CFR 1910 Subpart S – Electrical Safety NFPA 70E – Standard for Electrical Safety in the Workplace

EXAMPLE OF PERIODIC INSPECTION CHECKLIST

DATE OF INSPECTION ___/___/___ TIME OF INSPECTION _____

NAME OF INSPECTOR _____

NAME OF EMPLOYEE BEING INSPECTED _____

DATE OF ORIGINAL TRAINING ___/___/___

DEPARTMENT WHERE WORKING _____

MACHINE OR EQUIPMENT _____

DEVIATIONS OR INADEQUACIES OBSERVED DURING THE INSPECTION:
_____
_____
_____

REVIEW CONDUCTED OF EMPLOYEE'S RESPONSIBILITIES? Yes___ No___

INITIAL TRAINING TO BE REPEATED? Yes___ No___

THE SIGNATURES BELOW CERTIFY THAT A PERIODIC INSPECTION HAS BEEN PERFORMED, AND COMPLETED.

INSPECTOR_____ EMPLOYEE_____

EXAMPLE OF SAFETY MASTERCARD

Name of Equipment**:** _____ Operator: _____
Job Requested by: _____ Department: _____
Ready for Service Check-Off**:** _____

Job Description: _____
_____
_____
Reason for Job**:** _____
_____

Operations: _____
_____

Operations Lock No.	Location of Lock/Tag w/Hasp	Lock-out or Tag-out	Test Isolation	Job Complete Signoff

Serviceperson: _____

Example -TESTING, TROUBLESHOOTING, AND VOLTAGE MEASURING ELECTRICAL WORK PERMIT

Contractor: **Permit # 2011-1**

PART I: TO BE COMPLETED BY THE REQUESTER:

(1) Description of circuit/equipment/job location: Various electrical equipment with a listed Hazard/Risk Category up to 1

(2) Description of work to be done: LOTO, testing, troubleshooting, or diagnosing equipment

(3) Justification of why the circuit/equipment cannot be de-energized or the work deferred until the next scheduled outage: Testing, troubleshooting, diagnosing, and zero-voltage testing are required to be performed energized. BSA Supervisor must be notified prior to work

_____ _____
Company President Date

PART II: HAZARD ANALYSIS:

(1)

Detailed job description procedure to be used in performing the above detailed work: Notify affected workers, LOTO all sources of hazardous energy unnecessary to complete work, cordon off work area, while wearing PPE listed below perform work to complete task,

(2) Description of the Safe Work Practices to be employed: ☐ LOTO ☒ Reason not to LOTO Work is required to be performed energized

(3)

Flash Boundary	4 ft.	Flash Hazard	1	Working Distance	18”
Shock Hazard	Up to 480 volt	Limited Approach Restricted Approach Prohibited Approach	3’5” Avoid contact	Glove Class	00

(4) Protective Equipment

☐ None	☒ Earplugs	☒ Leather Gloves as required	☒ Leather Shoes as needed
☐ Cotton Clothing	☐ Face shield	☒ Voltage-rated Gloves	☐ Voltage-rated Shoes
☒ Fr Clothing	☐ Flash suit	☒ Hard Hat	☒ Safety Glasses

(5) Means employed to restrict the access of unqualified persons from the work area: barrier tape, barricade, or attendant

_____

PART III: APPROVAL(S) TO PERFORM THE WORK WHILE ELECTRICALLY ENERGIZED:

_____ _____
Group Leader/Job Supervisor/Company President Date

PART IV: WORK

Job Briefing must be performed, including discussion of any job-related hazards to include:
Daily pre-work briefing
Post work feedback during weekly toolbox

PART V: The following AUTHORIZED WORKERS are Qualified Persons trained in emergency procedures per NEC 70E:

Name	**Life #**	**Name**	**Life #**
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

_____ _____
Authorizing Supervisor/Company President Date

Supervisor acknowledges the above personnel are properly trained, knowledgeable and experienced to work under the permit.

Forward a copy to BSA contact.

Example - TESTING, TROUBLESHOOTING, AND VOLTAGE MEASURING ELECTRICAL WORK PERMIT

Contractor: **Permit # 2011-2**

PART I: TO BE COMPLETED BY THE REQUESTER:

(1) Description of circuit/equipment/job location: Various electrical equipment with a labeled Hazard/Risk Category up to 2* or, if there is no arc flash hazard label, tasks on attached list with a Hazard/Risk Category #2

(2) Description of work to be done: LOTO, testing, troubleshooting, or diagnosing equipment

(3) Justification of why the circuit/equipment cannot be de-energized or the work deferred until the next scheduled outage: Testing, troubleshooting, diagnosing, and zero-voltage testing are required to be performed energized. BSA Supervisor must be notified prior to work.

_____ _____
Company President Date

PART II: HAZARD ANALYSIS:

(1)

Detailed job description procedure to be used in performing the above detailed work: Notify affected workers, LOTO all sources of hazardous energy unnecessary to complete work, cordon off work area, while wearing PPE listed below perform work to complete task.

(2 Description of the Safe Work Practices to be employed: ☐ LOTO ☒ Reason not to LOTO Work is required to be performed energized

(3

Flash Boundary	4 ft.	Flash Hazard	2*	Working Distance	18”
Shock Hazard	Up to 480 V	Limited Approach Restricted Approach Prohibited Approach	3’5” 1’-0” 0’-1”	Glove Class	00

(4 Protective Equipment)

☐ None	☒ Earplugs	☒ Leather Gloves	☒ Leather Shoes
☐ Cotton Clothing	☒ Face shield	☒ Voltage-rated Gloves	☐ Voltage-rated Shoes
☒ Fr Clothing	☐ Flash suit	☒ Hard Hat	☒ Safety Glasses/Goggles
	☒ Balaclava		

(5 Means employed to restrict the access of unqualified persons from the work area: barrier tape, barricade, or attendant

_____

PART III: APPROVAL(S) TO PERFORM THE WORK WHILE ELECTRICALLY ENERGIZED:

_____ _____
Group Leader/Job Supervisor/Company President Date

PART IV: WORK

Job Briefing must be performed including discussion of any job-related hazards to include:
Daily pre-work briefing
Post work feedback at weekly toolbox

PART V: The following AUTHORIZED WORKERS are Qualified Persons trained in emergency procedures per NEC 70E:

Name	**Life #**	**Name**	**Life #**
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

_____ _____
Authorizing Supervisor/Company President Date

Supervisor acknowledges the above personnel are properly trained, knowledgeable and experienced to work under the permit. Forward a copy to BSA contact.

Example - TESTING, TROUBLESHOOTING, AND VOLTAGE MEASURING ELECTRICAL WORK PERMIT

Contractor: **Permit # 2011-3**

PART I: TO BE COMPLETED BY THE REQUESTER:

(1) Description of circuit/equipment/job location: Various electrical equipment with a labeled Hazard/Risk Category up to 4 or, if there is no arc flash hazard label, tasks on attached list with a Hazard/Risk Category 4

(2) Description of work to be done: LOTO, testing, troubleshooting, or diagnosing equipment

(3) Justification of why the circuit/equipment cannot be de-energized or the work deferred until the next scheduled outage: Testing, troubleshooting, diagnosing, and zero-voltage testing are required to be performed energized. BSA Supervisor must be notified prior to work.

_____ _____
Company President Date

PART II: HAZARD ANALYSIS:

(1) Detailed job description procedure to be used in performing the above detailed work: Notify affected workers, LOTO all sources of hazardous energy unnecessary to complete work, cordon off work area, while wearing PPE listed below perform work to complete task,

(2) Description of the Safe Work Practices to be employed: ☐ LOTO ☒ Reason not to LOTO Work is required to be performed energized

(3)

Flash Boundary	4 ft.	Flash Hazard	4	Working Distance	18”
Shock Hazard	Up to 480 V	Limited Approach Restricted Approach Prohibited Approach	3’-6” 1’-0” 0’-1”	Glove Class	00

(4) Protective Equipment

☐ None	☒ Earplugs	☒ Leather Gloves	☒ Leather Shoes
☐ Cotton Clothing	☐ Face shield	☒ Voltage-rated Gloves	☐ Voltage-rated Shoes
☒ Fr Clothing	☒ Flash suit	☒ Hard Hat	☒ Safety Glasses/Goggles
	☐ Balaclava	☒ double-layer switching hood	

(5) Means employed to restrict the access of unqualified persons from the work area: barrier tape, barricade, or attendant

PART III: APPROVAL(S) TO PERFORM THE WORK WHILE ELECTRICALLY ENERGIZED:

_____ _____
Group Leader/Job Supervisor/Company President Date

PART IV: WORK

Job Briefing must be performed including discussion of any job-related hazards to include:
Daily pre-work briefing
Post work feedback at weekly toolbox

PART V: The following AUTHORIZED WORKERS are Qualified Persons trained in emergency procedures per NEC 70E:

Name	**Life #**	**Name**	**Life #**
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

_____ _____
Authorizing Supervisor/Company President Date

Supervisor acknowledges the above personnel are properly trained, knowledgeable and experienced to work under the permit. Forward a copy to BSA contact.

Section 10: ***MOBILE EQUIPMENT AND MATERIAL HANDLING PROGRAM***

(COMPANY NAME OR LETTERHEAD)

SAFE OPERATION AND MAINTENANCE:

This applies to all power-operated equipment when used in construction. Prior to the use of motor vehicles or any mobile equipment on BSA property, this plan shall be discussed with all employees, including affected subcontractor employees, concerning the Scope of Work to be accomplished, and the methods to accomplish that work safely as effectively outlined in the task specific Phase Hazard Analysis (PHA) or Safe Work Plan (SWP).

The qualified Supervisor, Foreman or the Safety Representative shall verify that all vehicles and mobile equipment have been inspected and properly maintained at the **beginning of each shift** to assure all parts, equipment and accessories, including Operator Manuals, decals and warning labels affecting safe operation, are legible and in proper operating condition, and free from defects. Inspection and maintenance shall include:

- Compliance with all manufacturer procedures applicable to the operational functions of equipment, including its use with attachments
- Operator license, certification or other documented qualifications
- Safety devices: backup alarms, equipment warning horn
- Rollover protective structures (ROPS)
- Installed equipment and lighting
- Cab glass
- Fluid levels, working gauges
- Warning signs, legible decals or labels, controls marked
- Leak/spill containment and cleanup equipment, procedures and training
- Service brakes, parking brake
- Restraint devices (seat belts available and worn)
- Traffic safety requirements
    - Spotters/signal person
    - Suitable portable fire extinguisher(s)
    - Cones/barricades/berms/stop logs
    - Trained flagging personnel
    - Traffic warning and information signs cited by OSHA and specified by the Manual Uniform Traffic Control Devices (MUTCD)
    - Emergency signals
    - Work Plan, PHA or SWP
    - Operator's Manual
    - Traffic Diversion Plan (Maintenance of Traffic).
    - Approvals from local authorities and agencies

All defects shall be corrected before placing vehicle/equipment into service. Operations must not begin unless all of the devices listed in this section are in proper working order. If a device stops working properly during operations, the operator must safely stop operations. If any of the devices listed in this section are not in proper working order, the equipment must be taken out of service and operations must not resume until the device is again working properly.

Employees shall not operate vehicles or mobile equipment with an obstructed view to the rear without a reverse signal alarm distinguishable from the surrounding noise level unless a qualified signal person signals that it is safe to do so.

THE OPERATOR SHALL IMMEDIATLEY STOP THE VEHICLE OR MOBILE EQUIPMENT IF HE/SHE LOSES SIGHT OF THE SIGNAL PERSON

All vehicles and equipment shall be maintained in a leak free condition. Effective secondary containment methods shall be employed to prevent any leakage into/onto soil. Fittings and hoses shall be inspected daily before use for physical damage, tightness, proper seal, deterioration, or loss of leak-tight integrity.

All personnel shall know the emergency stop signal and shall use it in the event of, or potential for, imminent danger or a violation of a radiological requirement. When feasible, ground personnel, spotters, flaggers, supervisors, and safety representatives, shall carry air horns as an established emergency stop signal for all equipment.

Every attempt shall be made to establish and maintain mobile equipment operations a safe distance away from ground personnel or other equipment that may be put in danger by the operation of mobile equipment. Safe work zones shall be established to prohibit personnel from being within the range of motion of equipment, material being manipulated or carried by equipment, or material or structures that could potentially become entangled or disturbed by equipment. In any area, personnel shall not approach equipment from within the range of motion defined above without the operator's knowledge and consent by eye contact being made and acknowledged.

If required to work within the range of motion of equipment or materials, affected personnel shall attend daily toolbox discussions/briefings with operators to define the day's plan for accomplishing the work, and individual responsibilities and work locations. Methods for maintaining communication via visual contact, hand signals, and the use of air horns shall be established for, and understood by, all affected personnel. Personnel working within the range of motion of equipment or materials shall maintain effective communication with equipment operators at all times as discussed at the daily toolbox meeting. All personnel exposed to any mobile equipment or vehicles of any type or at any time, shall wear required high visibility clothing.

Machinery, equipment, components or parts thereof, which are suspended or held aloft, shall be substantially blocked to prevent falling or shifting while personnel are working on, around, or between them. Vehicles and equipment shall be maintained and repaired at our company shop, never on the customer's property. Buckets, forks and other attachments shall be grounded when parked and not being used.

Equipment or rigging components shall not be modified without the manufacturer's written consent of which a copy will then be maintained on the job site for review by BSA.

Free rigging off the tines/forks of forklifts is a violation of OSHA requirements and is prohibited.

Suspect Counterfeit Items:

Suspect/counterfeit rigging components are a known hazard in the construction industry. All rigging gear brought onto the BSA site shall be inspected by the BSA Hoisting and Rigging Inspector before being placed into initial service, and by a qualified person on a regular basis thereafter.

All rigging gear (hoists, slings, hardware, strong backs, positioners, etc), shall be designed, constructed, marked, tested and inspected as per the applicable OSHA, ASME and DOE requirements. At a minimum, the markings shall include the name or trademark of the manufacturer, working load limit (WLL) and/or size.

The general contractor is solely responsible for instructing their sub-contractors and material supply vendors involved with rigging operations of these requirements and ensuring that they are followed.

The sub-contractor is responsible for inspecting and maintaining their equipment in a safe and working condition.

If there are any questions contact the BSA Hoisting and Rigging Inspector at (631) 344-5456.

REFERENCES:

29 CFR 1926 Subpart O – Motor Vehicles, Mechanized Equipment, and Marine Operations

Note: If hoisting and rigging will be within the Scope of Work for the project, a detailed, site-specific rigging plan shall be developed by a qualified person and submitted to the BSA Hoisting and Rigging Inspector for review and acceptance at least 4 working days prior to the planned lift. All lifting equipment and operations must be conducted in accordance with applicable ANSI standards and DOE and OSHA requirements. Some elements of an effective plan shall include as a minimum:

EXAMPLE - *RIGGING PLAN WORKSHEET*

(INSERT NAME OF CONTRACTOR)

Brookhaven National Laboratory
Rigging Plan Worksheet

Building No.:	**Work Location:**
Job No.:	**Project Title:**
Project Engineer:	

Mobile Crane Operations:
Descriptive Drawing - Sketch with measurements of pre- and post-lift locations, any encumbrances/clearances, crane capacities at working radius, impact on utilities (contact MMC at ext. 2468). Include protective measures where required.

Crane Operators:
Licensed by the **NYS Dept of Labor,** or a **Nationally Recognized Certifying Organization,** recognized by Federal OSHA (i.e. NCCCO, CIA), qualified for the specific type of equipment to be used.

Mobile Crane Inspection Documentation:
Include copies of the crane load charts (as planned set up), plus documentation of latest crane inspections (annual and monthly), along with rigging plan.

Total Weight of Lift: (includes load weight, all rigging equipment, and load block)

Description of Material to be Lifted w/Dimensions & Center of Gravity:

Tag lines and locations of attendants:

Pre-lift Meeting: Documented, attendees, content

Qualified Signal Person: (CFR 1926.1428)

Designated Person in Charge: (PIC)

Communication and Signals (CFR 1926.1419-20-21): Hand signals, emergency signal, voice communication

Describe Method of Accomplishment: Provide a written description of the operation. All lifting operations must be conducted in accordance with ANSI standards and the DOE and OSHA requirements.

REFERENCE:

29 CFR 1926 Subpart H – Material Handling, Storage, Use and Disposal

EQUIPMENT LIST						
Equipment	**Type**	**Quantity**	**Dimensions**	**Capacity (WLL)**	**Configuration (hitch used)**	**Weight of Lift**
Slings:						
Rigging hardware (shackles, eyebolts, rings, etc.):						
Below the hook lifting devices (spreader bars, vacuum /magnetic lifters, etc.)						
Manual chain hoists (come-alongs, load positioning device):						
Mobile crane						
Cribbing/ shoring/ matting:						
Transportation vehicles:						
Roller/skates:						
Jacks:						
PPE/HazMat:						

I, _____, ensure that all rigging hardware and slings will be in accordance with OSHA, ASME and DOE-STD-1090 requirements for design, inspection and load test.

Submitted By:	Date Submitted:
Approved (circle one): Yes No	Reviewed By:

Reason for Rejection:

_____
_____
_____

Example - **REQUIREMENTS FOR A SITE-CLEARING PLAN**

The following must be included when developing a site-clearing plan:

Person in Charge (PIC)

- Name
- Phone or pager numbers
- Documented qualifications and experience include any safety training received

Daily pre-clearing site evaluation

- Existing encumbrances, appurtenances or other obstacles
- Changes in site conditions or other trade activities
- Installation and continuing maintenance of silt fences throughout project

Coordination with other trades

- Site access control, area marked, fenced, or otherwise identified

Communication and signals

- Hand signals (see chart)
- Emergency signal
- Voice communication

Equipment inspection and maintenance - inspect equipment daily or before each use for safety guards and features in good condition and working order; i.e. kickback protection ROPS/FOPS, PPE, alarms, seatbelt, vehicle horns, service brakes, parking brake, cab glass, etc.

Training – initial, ongoing, weekly toolbox talks, daily operations plan

Requirements:

- Descriptive drawing - sketch of the site to be cleared showing beginning and ending locations or areas of concentration, direction of work to progress, locations of clearing operations (generic if no unusual circumstances expected, or specific for areas requiring operational changes to accommodate existing or future obstacles or site conditions), safe working distances or radii, material handling/trucking routes (generic and specific), traffic signs as stipulated in the Manual Uniform Traffic Control Devices (MUTCD), material staging and processing areas, silt fences, telephone, sanitation supplies, lunch/break areas

- Describe means and methods of accomplishment - A written description of the operations, the personnel performing them and their sequence, i.e. felling, limbing, bucking, skidding, chipping, loading, cabling, etc., is attached. All clearing operations must be conducted in accordance with ANSI and OSHA requirements.

Example - SITE-CLEARING PLAN WORKSHEET

(INSERT NAME OF CONTRACTOR)

Building No.:	Job No.:
Project Title:	Location

Note: All tree felling, cutting, handling, and chipping operations shall be conducted in accordance with applicable ANSI Z133.1 2006 standards and OSHA 1910.266(h)(2) requirements.

Equipment List						
Equipment List	**Type**	**Qty.**	**Operator(s)**	**Capacity**	**Configuration**	**Load**
Saws						
Loaders						
Skidders						
Chippers						
Trucks						
Transport Vehicles						
Slings/Cables/Rigging Components						
Other						

I, (Insert name) ensure that all rigging hardware and slings will be in accordance with the OSHA, ASME and BSA Lifting Safety Subject Area requirements for Inspection and Load Test.

Submitted By:	Date Submitted:
Approved (circle one): Yes No	Reviewed By:

Reason for Rejection:

_____
_____
_____
_____

Section 11: ***FALL PROTECTION***

(COMPANY NAME OR LETTERHEAD)

Note: If conventional fall protection measures cannot be used (i.e. guardrails, safety nets, catch platforms or Personal Fall Arrest System), then a site-specific written Fall Protection Program shall be developed by a qualified person and submitted to BSA for review and acceptance prior to commencement of working at heights 6' and above. Some elements of an effective plan shall include as a minimum:

General:

- Each employee on working/walking surfaces 6-feet **or more** above a lower level shall be protected from falling by **a conventional guardrail system, catch platforms, a safety net system, or Personal Fall Arrest System**. Where a guardrail system is employed, and if a controlled access zone has been established for leading edge work, the control line may be used in lieu of a guardrail system along the edge that parallels the leading edge as described in the written and BSA accepted, site- and task-specific Fall Protection Program.

- Guardrails shall be constructed at all floors, wall openings, or roof openings if these openings cannot be covered. Guardrails shall be constructed at all elevator shafts and stairwells.

- All fall protection equipment in use shall be inspected daily before use by either the trained user or a competent person.

Observe any possibilities of elevated falls from:

Ladders:

- Ladders shall be used only in accordance with manufacturer's instructions. Users shall face the ladder when climbing, desending or working from the ladder.

- There shall be careful observation of, and advising, all personnel on proper use of ladders, slope of ladders, height above elevation levels, safe position of the worker and conditions of ladders.

- Ladders used shall be properly inspected by a qualified person to make sure that the following conditions are not encountered:
  - Broken or bent rungs, missing steps, safety feet, or other ladder components
  - Improperly secured, placement or erection of ladder
  - Improper ladders used (i.e. using metal ladders for electrical work)
  - Poorly constructed job-made ladders
  - Ladder not used in accordance with the manufacturer's instructions
  - Painted surfaces which cover up defects
  - Warning and informational decals missing or not legible
  - Extension ladder components separated (unless specifically allowed by the manufacturer)

- Use of ladders with broken/missing rungs or steps, broken/split side rails or other faulty or defective construction is prohibited. If ladders are defective, they shall be tagged and marked "Do Not Use" and promptly destroyed or removed from the site.

- Ladders shall extend at least 36", (3 ft.), above the landing or exit point and shall be tied-off or otherwise secured to prevent accidental displacement. To minimize fall exposures, use of ladder extensions are encouraged. Step ladders shall only be used in the full open position with side brackets locked.

- For job-made (not commercially purchased) ladders, the following criteria shall be included in their construction, as specified by OSHA:

- Width of single cleat ladders shall be between 15 and 20 inches.
- Cleats shall be uniformly spaced, 12 inches, top to top. Filler blocks must be used between the cleats. No nail shall be subjected to a direct pull.
- A nominal dimension of two-inch by four-inch lumber shall be used for side rails up to 16 feet long.

Scaffolds: **(Attach the completed Scaffold Training Session Acknowledge Sheet to this HASP)**

- Scaffolds shall be plumbed level, properly erected, maintained, and guarded; working surfaces shall be fully planked and equipped with guardrails, and set on sound, rigid footing. Toe boards are required on walking/working surfaces where there is a potential for tools, materials and/or equipment to roll or fall off.

- All scaffolds used on this job shall be designed by ***(name of competent and qualified person)*** and constructed and loaded in accordance with that design.

- Each employee who accesses or works on the scaffold shall be instructed by a trained Competent Person to recognize the known hazards associated with the type of scaffold in use, and to understand the procedures to control or minimize those hazards. Training shall be documented with the records continuously updated as necessary, and maintained on the project available for BSA inspection.

- Employees who are observed/discovered standing on guardrails, or tied off to unapproved guardrails, other unsuitable components or objects, will be immediately terminated for cause (zero tolerance).

- ***(Company name)*** shall have each employee who is involved in erecting, disassembling, moving, operating, repairing, modifying, maintaining, or inspecting a scaffold trained by ***(name of competent and qualified person)*** to recognize any known hazards associated with that work.

- Scaffolds and scaffold components shall be inspected for visible defects by a Competent Person before assembly, and then before each work shift, after any modification or repair, and after any occurrence which could affect a scaffold's structural integrity. Suitable weather resistant tags shall be affixed to the scaffold showing proof of construction status and daily inspections. The scaffold tagging system shall include:

    - Green Tag: To be placed on scaffolds by the designated Competent Person at all access points to show that the completed scaffold complies with all regulatory requirements.

    - Yellow Tag: To be placed on all scaffolds that are structurally sound by the designated Competent Person, but an accessory such as a handrail cannot be installed due to the location of the scaffold, or the nature of the work to be performed. Fall protection is required on all yellow-tagged scaffolds.

    - Red Tag: To be placed by the designated Competent Person on scaffolds that are damaged, defective, being constructed or dismantled where no access is permitted by personnel not authorized to erect, dismantle or make repairs to scaffolds and in a visible location, preferably at the access points. For this project, the type of scaffold to be used is ***(insert the type of scaffold)*** and it conforms to the requirements of ***(insert appropriate 29 CFR 1926 Subpart L Section).***

Scissors Lifts and Aerial Lifts: Supported Work Platforms

Aerial lifts and scissors lifts are commonly used in construction to lift workers to an elevated work position. Proper operation and use of aerial lifts and scissors lifts can make completion of tasks at elevation safer and more efficient. However, failure to properly inspect and/or unsafe use and operation of aerial lift and scissors lift work practices can result in serious injury.

There are two different standards that cover these machines.

- Scissors lifts are covered in the OSHA Subpart L 1926.452(w) Standards as a mobile elevating scaffold, whereas,
- Aerial lifts have their own Standard (1926.453). This standard can also be found under Subpart L and has been developed separately due to the high consequence of improper use. In addition, this standard specifically outlines general, operating, maintenance, inspection and training requirements governing safe aerial lift use.

One of the most important elements of the aerial lift or scissors lift safety standards is operator training. All aerial lift/scissors lift operators are required to successfully complete an Operator Training Program for the particular model of the aerial lift or scissors lift they intend to operate prior to operating the machine.

Aerial Lift or Scissors Lift Operator

The following are some of the responsibilities of the operator:

- Attend Aerial Lift/Scissors Lift Training, pass a written examination if required, and demonstrate proficiency during a practical exercise with the aerial lift/scissors lift in operation,
- Understand and adhere to requirements of the Scissors Lift (1926,452(w),
- Understand and adhere to requirements of the Aerial Lift Standard (1926.453),
- Understand hazards specific to aerial lifts and scissors lifts,
- Ensure modifications are not made to aerial lifts/scissors lifts without manufacturer's prior specific written approval,
- Perform and document aerial lift/scissors lift pre-use safety check prior to each use as required by the manufacturer as described in the operator's manual,
- Perform lift work area inspection prior to aerial lift/scissors lift use (look up for overhead obstructions),
- Immediately report any damage or irregularities of lift operation to your supervisor,
- Immediately report worn personal fall arrest system components to supervisor, and
- Conduct a work area ground inspection prior to using the aerial lift/scissors lift.

Aerial lift bucket working surfaces:

- Workers shall always stand firmly on the floor of the basket and shall not sit or climb on the edge of the basket.
- Workers should NEVER attempt to climb outside of the basket or over extend the upper body beyond the railing of the basket.
- Workers may only perform work in areas which can be reached from inside the basket of the lifting device.
- Aerial lifts may not be used in combination with other devices such as ladders, planks or scaffolding.
- Workers must wear a properly fitted body harness and be tied off to a suitable anchorage point on the lift when using an aerial lift at any elevation of the basket or movement of the machine.

Scissors lift platform working surfaces:

- Workers shall always stand firmly on the floor of the platform and shall not sit or climb on the guardrails or the toe boards of the platform.
- Platforms must be fully enclosed with guardrails and safety chains in place, or fall protection equipment is required to be worn.

EXAMPLE - *SCAFFOLD TRAINING SESSION ACKNOWLEDGEMENT SHEET*

LOCATION: _____
GIVEN BY: _____
JOBSITE: _____

- I understand the nature of electrical hazards, fall hazards, and falling object hazards in the work area.
- I understand the correct procedures for dealing with electrical hazards and for erecting, maintaining, and disassembling the fall protection systems and falling object protection systems being used.
- I understand the proper use the scaffold and the proper handling of material on the scaffold.
- I am aware of the maximum intended load and the load carrying capabilities of the scaffold.

NAME **(To be continuously updated, add more sheets as necessary)**	**DATE**

REFERENCES:

29 CFR 1926 Subpart L	Scaffolds
29 CFR 1926 Subpart M	Fall Protection
29 CFR 1926 Subpart X	Stairways and Ladders

SECTION 12: *LOCK-OUT/TAG-OUT PROGRAM*

POLICY:

This document defines lock-out/tag-out, lists specific procedures to follow to properly lock-out/tag-out, defines responsibility for lock-out/tag-out, and shows the importance of both education and discipline in these procedures.

INTRODUCTION:

Lock-out/tag-out (LOTO) refers to specific practices and procedures to safeguard employees from injury due to the unexpected energization or startup of machinery and equipment, or the release of hazardous energy during operations, service, or maintenance activities. BSA SBMS LOTO Subject Area must be followed.

These include:

- Gravity
- Electrical
- Mechanical
- Chemical
- Hydraulic
- Pneumatic
- Thermal
- Radiological

RESPONSIBILITY:

It is the responsibility of the ***(name of responsible individual)*** to implement and enforce the lock-out/tag-out program, as well as provide the necessary equipment to comply with all respects of all procedures. Transferred employees shall be instructed by their supervisor in the purpose and use of lock-out/tag-out procedures. Supervisors shall be responsible for developing and implementing the specific lock-out/tag-out procedures.

1. Verify that contractor/subcontractor employees installing LOTO are trained per BSA SBMS and are authorized to do so.

2. No locks or tags shall be removed from equipment without first consulting the BSA Project Manager.

3. For a lock-out/tag-out that is transferred from one shift to the next, it shall be the responsibility of the craftsmen involved to remove the appropriate lock and replace it with a new one.

4. If more than one individual is required to lock-out or tag-out equipment, each person shall place his or her own lock or tag on the affected equipment in such a way as to be certain the equipment is locked out. If the affected equipment cannot accept multiple locks or tags, a multiple lock-out or tag-out hasp shall be used.

5. Keep an up-to-date LOTO Log Book.

6. Assure proper testing equipment is used.

7. Assure proper PPE is worn during LOTO process.

EQUIPMENT:

Equipment shall consist of the following:

1. Padlocks – Master brand only with a red band. Provide sufficient quantities of padlocks, each lock to have an individual key ***(name of responsible individual)***.

2. Multiple lock tongues and lock boxes are to be used in case more than one person or group is involved in a job.

3. Danger/Warning tags and logbook are to be used whenever lock-out/tag-out is used to control hazardous energy. Tags shall be compliant with ANSI 535.5 and the logbook compliant with the BSA SBMS.

4. LOTO equipment shall be distributed and controlled by ***(name of responsible individual)***.

WHEN TO LOCK-OUT/TAG-OUT:

Lock-out/tag-out procedures shall be used anytime there is a potential danger of injury from an unexpected release of energy.

In Section 16 of the Phase Hazard Analysis/ Safe Work Plan, contractors of any tier must identify specific hazardous energy sources and their controls.

A LOCK-OUT is simply a locking device, such as a padlock, placed on a power source to prevent the release of hazardous energy that could set a machine in motion or otherwise endanger an employee working on the machine. Locks may be used with a lock-out device that holds an energy control point, such as a switch, lever or valve, in the off position, making it impossible to operate.

A TAG-OUT is a written warning (tag or sign) telling all others not to operate a switch or valve that could release hazardous energy or set a machine in motion. The tag-out is placed prominently on the switch or lever so as not to be missed.

LOCK-OUT/TAG-OUT PROCEDURES:

The following are specific procedures to be followed for lock-out/tag-out:

1. ***(Name of responsible individual)*** shall contact the BSA project contact person for information of known hazards related to the contractors work.

2. ***(Name of responsible individual)*** shall discipline workers when informed of observed violations of lock-out/tag-out by BSA contact person.

3. ***(Name of responsible individual)*** shall identify all lock-out/tag-out qualified persons who are trained and knowledgeable in the requirements of lock-out/tag-out and trained to recognize and avoid the hazards that might be present.

4. ***(Name of responsible individual)*** shall train unqualified persons on the requirements of the lock-out/tag-out procedures for unqualified persons.

5. **(*Name of authorized individual)*** shall be authorized by company for testing <600 volts on energized equipment or conductors in writing, and a written copy given to the BSA contact Person.

Note: Only the immediate BSA contact person (supervisor) and 2 knowledgeable persons are to authorize emergency removal of an existing lock or tag. An attempt must be made to notify the individual who applied the tag. After removal, the tag must be signed by the 3 individuals and logged. Anyone who removes a tag or lock without proper authorization is subject to immediate termination.

6. Equipment startup: ***(name of responsible individual)*** shall make a final safety check before restarting equipment to be certain it is safe to operate, and will make sure of the following:

   a. All tools and other items have been removed
   b. All machine guards are returned to their proper position
   c. All electric, hydraulic, pneumatic or other systems are properly reconnected
   d. All employees are clear of equipment

e. Work has been inspected by the BSA Electrical Inspector

Many of the lock-out/tag-out procedures appear to be common sense, and they are. Following them will ensure safe operation calibration, maintenance and repair of equipment and/or processes, without dangerous surprises or injury.

REFERENCES:

29 CFR 1910.147	Control of Hazardous Energy (Lock-out/Tag-out)
29 CFR 1926.417	Lock-out and Tagging of Circuits
NFPA 70E	Standard for Electrical Safety in the Workplace
BSA SBMS	LOTO Requirements

Section 13: *HOT WORK, WELDING, CUTTING, GRINDING, OPEN FLAME OPERATIONS*

(COMPANY NAME OR LETTERHEAD)

HOT WORK PERMIT:

- Proper cutting/welding permits shall be obtained from the BSA construction inspector. The contractor will participate in the review for the permit and comply with all requirements on the permit. Cease operations if permit conditions cannot be met.

- Requirements of the BSA SBMS Fire Safety Subject Area shall be observed.

Hot Work Permits are required for:

1. Welding and allied processes
2. Heat treating by use of open flame
3. Grinding
4. Thawing pipe by open flame or resistance from electrical current flowing though the pipe
5. Powder-driven anchors
6. Hot riveting
7. Thermite welding
8. Brazing, braze welding, silver solder and soldering
9. Similar applications producing or using a spark, flame, or heat

(**Company Name**) is responsible for:

- Preventing fires in all areas of the Laboratory complex
- Assessing the risk from fire within individual work areas by use of a PHA/SWP
- Ensuring safe egress from facilities
- Installing, inspecting, and maintaining fire suppression, fire detection, fire walls and fire doors
- Designing, installing, modifying, and documenting fire detection and suppression systems
- Minimizing the chance of a fire started by or accelerated with the use of flammable or combustible liquids, pyrophoric materials and combustible metals, hydrogen, and oxidizers
- Proper separation, securing and storage of gas cylinders

- Notification shall be made to the BSA Laboratory Protection Division Fire Rescue Group and a permit obtained 24 hours prior to work commencing.

- A dedicated, trained, fire watch and the suitable fire extinguisher for the cutting/welding operation shall be provided and maintained until 60 minutes after the hot work is completed (or as specified on the Hot Work Permit for the job). This includes break and lunch periods. For a complete listing of required precautions, consult the Hot Work Permit. If there is a need to resolve conditions, contact the BSA Construction Inspector for assistance.

- Maintain proper PPE compliance during all hot work operations.

- Compressed gas cylinders shall be transported and used in portable welding carts with the cylinders securely chained to the cart. Valve protector caps shall be in place except when the cylinders are in use. Stored compressed gas cylinders (full or empty) shall be chained or secured in an upright position to a firm base and protected from potential sources of heat. An operable dry chemical fire extinguisher rated not less than 2 ¾ pounds of chemical shall be mounted on each portable welding cart in use.

- Compressed fuel cylinders shall be stored at least 20 feet from oxygen cylinders unless separated by a noncombustible wall at least five feet in height. Compressed gas cylinders and liquid petroleum cylinders shall be properly identified and have a valid hydrostatic test date noted on or attached to the cylinder.

- Welding, cutting and heating of metals can generate fumes known to be hazardous to health. Suitable mechanical ventilation or respiratory protective equipment shall be provided to protect workers from exposure to zinc, lead, cadmium, chromium, and beryllium, and other toxic gases.

- General mechanical or local exhaust ventilation shall be provided whenever welding, cutting or heating is performed in a confined space.

Respiratory Protection

- Mechanical ventilation - general or local exhaust systems
- Air purifying or supplied air respirator
- May be integral with welding hood
- Respirator use must include implementation of Respiratory Protection Program (see ANSI Z88.2-1969)
- Written procedures on selection and use
- Medical evaluation
- Respirator training and fit testing
- Respirator inspection, cleaning, storage
- Workplace IH surveillance/data to be submitted to BNL for review

Example of the daily checklist required to be completed by the contractor if not using a Hot Work Permit:

Daily Checklist to Review Area for Fire Prevention During Welding, Cutting, and Other Hot Work

Supervisor completing the checklist:_____ **Date** _____

Item	Yes	No	N/A
All combustibles must be relocated at least 35 ft in all directions from the work site and the following criteria also must be met:			
Where the combustible materials, such as paper clippings, wood shavings, or textile fibers, are on the floor, the floor is swept clean for a radius of 11 m (35 ft).			
Ducts and conveyor systems within 35 ft that might carry sparks to distant combustibles are shielded, or shut down, or both			
Combustible floors (except wood on concrete) within 35 ft are kept wet, covered with damp sand, or protected by noncombustible or fire-retardant shields			
If relocation is impractical, combustibles are protected with fire-retardant covers or otherwise shielded with metal or fire-retardant guards or curtains			
Where floors have been wet down, personnel operating are welding equipment or cutting equipment are protected from possible shock			
If hot work is done near walls, partitions, ceilings, or roofs of combustible construction, fire retardant shields or guards should be used to prevent ignition of pipes or other metal that are in contact with combustible walls, partitions, ceilings, roofs, or other combustibles. Hot Work should not be done if the work is close enough to cause ignition by heat conduction unless the following criteria are met:			
a) Precautions are taken to prevent ignition of combustibles on the other side by relocating the combustibles.			
b) If it is impractical to relocate combustibles, a fire watch is provided on the side opposite from where the work is being performed			
Hot work must not be attempted on a partition, wall, ceiling, or roof that has a combustible covering or insulation, or on walls or partitions of combustible sandwich-type panel construction			
Fully charged and operable fire extinguishers that are appropriate for the type of possible fire are available immediately at the work area			
During hot work, consideration and special precautions are to be taken to avoid accidental operation of automatic fire detection or suppression systems due to the proximity of the hot work. Special extinguishing systems, sprinklers, or detection systems may require impairment.			
Nearby personnel are suitably protected against dangers such as heat, sparks, and slag			
Changes in local conditions may affect the length of the period for which the hot work permit is valid. Review local conditions after any changes. Changes affecting the above stated criteria should result in work ceasing until a new permit is issued			
Upon review of the hot work, with a knowledgeable Work Planner and concurrence of the person issuing the Hot Work Permit, the 4-hour final monitor requirement may be modified based on circumstances using a graded approach. This is to be noted in the “Other Precautions Are” of the Hot Work Permit.			

REFERENCES:

29 CFR 1926 Subpart J	Welding and Cutting
BSA SBMS	Fire Safety Subject Area

Section 14: ***CONFINED SPACE ENTRY***

(COMPANY NAME OR LETTERHEAD)

DEFINITION OF A CONFINED SPACE:

A confined space meets the following physical characteristics:

1. Is large enough and so configured that personnel can bodily enter and perform assigned work
2. Has limited or restricted means for entry or exit (e.g., tanks, vessels, silos, storage bins, hoppers, vaults, and pits)
3. Is not designed for continuous personnel occupancy

Confined Space Entry:

Entry into confined spaces shall be in accordance with Brookhaven National Laboratory SBMS Subject Area – Confined Spaces**.**

The BSA SBMS Subject Area provides procedures for ensuring safe work at BSA for all personnel who enter confined spaces. It describes the requirements for safe entry, work, and exit of personnel assigned to work in confined spaces. These requirements apply to all BSA staff and non-BSA staff, including outside contractors.

This subject area describes restrictions and requirements for entry certification and confined space entry permits for compliance with 29 CFR 1926 Subpart AA, **Confined Spaces in Construction**. For F&O Directorate-managed projects, the Modernization Project Office (MPO) shall provide all permits for confined space entry.

BSA's Laboratory Protection Fire Rescue Group shall provide emergency response and shall be notified whenever there is an entry into a permitted confined space.

Section 15: ***RESPIRATORY PROTECTION AND EXPOSURE MONITORING***

(COMPANY NAME OR LETTERHEAD)

RESPIRATORY PROTECTION:

- Respirators, applicable and suitable for the purpose intended, shall be provided by the employer when such equipment is necessary to protect the health of the employee.
- The employer is responsible for providing a Competent Person for respiratory protection and establishing and maintaining a Respiratory Protection Program, including methods of cleaning and sanitizing respirator face pieces that are not considered disposable, in accordance with OSHA regulations.
- There are hazards associated in the scope of many construction activities. One such hazard is the generation of respirable dusts, i.e. silica during horizontal concrete drilling. Respiratory protection shall be evaluated for use by the contract Industrial Hygiene group during these and other activities throughout the course of a project.
- Use of a half or full face elastomeric respirator requires notification to the BSA Pproject Manager, who will distribute to the BSA Respiratory Program Administrator and the BSA Construction Safety Engineer on the BSA form, two weeks in advance of the intended respirator use start date.
- https://sbms.bnl.gov/sbmsearch/subjarea/119/119_Pro5.cfm
- Clean reusable respirators in a manner that meets the requirements in the OSHA Respirator Standard 29 CFR 1910.134 Appendix B-2.

If sufficient data is available to support the supposition that real-time monitoring is not necessary, i.e., data exists from a previous job or in peer-reviewed literature, to show that neither the ACGIH or OSHA exposure limits are exceeded, then such data must be included with this Health and Safety Plan, and reviewed and accepted by either the BSA Industrial Hygiene Group or the employer's safety and health and professional responsible for Industrial Hygiene monitoring.

EXPOSURE MONITORING PROGRAM:

All work on the project shall be done within the occupational exposure limits for Industrial Hygiene hazards set in OSHA 29CFR1926, 29CFR1910, and American Conference of Governmental Industrial Hygienists (ACGIH) *Threshold Limit Values*® (TLV) (including, but not limited to, chemical, lead, silica, asbestos, beryllium, noise, non-ionizing radiation, and heat stress hazards on the project). Compliance with the OSHA Permissible Exposure Limits and ACGIH *Threshold Limit Values*® shall be determined by representative personnel exposure monitoring and dosimetry conducted by the employer or their representative. The details of the project's exposure monitoring equipment, methods, and monitoring strategy are included in this Health and Safety Plan.

The employer will provide for qualified monitoring and hazard assessment personnel to conduct all Industrial Hygiene monitoring. In addition, personnel who conduct exposure monitoring on workers who handle, disturb, or remove friable asbestos containing material will maintain NYSDOL Industrial Code Rule 56 and USEPA required training and certification for Project Monitor. Copies of all monitoring personnel certifications are included as part of this Health and Safety Plan

The employer will conduct monitoring of calibrated equipment using National Institute of Occupational Safety and Health (NIOSH) or OSHA approved methods, and have analysis conducted by an American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing certified laboratory or by National Institute of Standards and Testing (NIST) traceable calibrated direct reading instrumentation. All Instrumentation used for surveys shall be calibrated in compliance with the manufacturer's specification prior to use in the field.

BNL Expectations for Industrial Hygiene Monitoring of Construction, Renovation and Demolition Projects by Contractors/Sub-contractors

1. **Exposure monitoring results are compared to DOE required occupational exposure limits (OEL) - TWA-8, STEL, Ceilings, Action Levels, and Excursion Limits.**
   The contractor/sub-contractor compares sampling results to DOE mandated occupational exposure limits:
   - OSHA Permissible Exposure Limits (PEL),
   - 2005 ACGIH Threshold Limits Values (TLV), and
   - 10 CFR 850 (Beryllium).

2. **Exposure monitoring covers all hazards.**
   Contractor/sub-contractors must characterize the exposure of workers to chemical, physical and biological hazards to ensure compliance with the OELs. The contractor is to conduct sufficient sampling and analysis to meet the DOE Worker Safety and Health Plan regulation:

> *10 CFR 851.21 Hazard identification and assessment.*
> *(a) Contractors must establish procedures to identify any existing potential workplace hazards and assess the risk of associated workers injury and illness. Procedures must include methods to: (1) Assess worker exposure to chemical, physical, biological, or safety workplace hazards through appropriate workplace monitoring; (2) Document assessment for chemical, physical, biological, and safety workplace hazards using recognized exposure assessment and testing methodologies and using of accredited and certified laboratories; (3) Record observations, testing and monitoring results.*
>
> *Appendix A*
> *6. Industrial Hygiene - Contractors must implement a comprehensive industrial hygiene program that includes at least the following elements:*
> *(a) Initial or baseline surveys and periodic resurveys and/or exposure monitoring as appropriate of all work areas or operations to identify and evaluate potential worker health risks*….

Sampling is to be done for hazards including (but not limited to): chemicals (solvents, cleaners, paints, etc.), silica (concrete cutting & abrading, sand blasting), asbestos, lead, beryllium, welding & cutting fumes, bituminous asphalt & built-up roofing vapors, non- ionizing radiation, noise, and confined space entry.

Noise Monitoring: Provide Type 1 or 2 dosimeter worn by the worker (Frequency weighting: A; Time constant: Slow) with capacity to simultaneously measure both of the following:				
	Criterion (Exposure Limit)	Exchange Rate (Doubling)	Threshold (cut-off)	Exposure Limit Reference
OSHA	90 dBA	5 dBA	80 dBA	29CFR1910.95; 29CFR1926.52
ACGIH	85 dBA	3 dBA	80 dBA	2005 TLV & BEI- Physical Agents

Chemical Monitoring: Provide sampling device(s) worn by the worker with capacity to measure all of the following:		
	Exposure Limits	Exposure Limit Reference
OSHA	PEL as TWA-8; Ceiling; Peak	29CFR1910.1000-1052; 29CFR1926.55
ACGIH	TLV as TWA-8; STEL; Ceiling	2005 TLV & BEI booklet- Chemical Substances

Physical Agents (e.g. Non-Ionizing Radiation; Thermal): Provide area survey meter(s) or personnel dosimeter(s) with capacity to measure all of the following:

	Exposure Limits	Exposure Limit Reference
OSHA	10MHz-100GHz Non-Ionizing; Laser	29CFR1910.97; 29CFR1926.54
ACGIH	0Hz – 300 GHz Non-Ionizing	2005 TLV & BEI - Physical Agents
	180 nm- 3000mm l light	2005 TLV & BEI - Physical Agents
	Thermal Stress- cold/ heat	2005 TLV & BEI -

3. An adequate Exposure Monitoring Plan is maintained.

The contractors/sub-contractors must prepare and maintain an exposure monitoring plan using a monitoring strategy consistent with AIHA and NIOSH guidelines. The monitoring plan needs to address:

- Hazardous operations,
- Anticipated exposure concentration for each operation,
- PPE worn until exposure is characterized,
- PPE worn in lieu of sampling,
- Date/periodicity and duration of sampling,
- Sample method number # and number of samples planned
- Any negative exposure assessments used in lieu of sampling corresponding to appropriate operations.

4. Exposure monitoring and analysis is conducted and analyzed by qualified and competent personnel.

Contractors/sub-contractors must use qualified personnel to conduct exposure assessments that meet the following minimum criteria:

- Personnel who conduct exposure monitoring have adequate training, expertise and experience. Submit the resume of all sampling personnel to BNL for review.
- All sampling is supervised by a person certified by the American Board of Industrial Hygiene (ABIH) in Comprehensive Practice (i.e. a Certified Industrial Hygienist). Sampling data and reports are approved by a Certified Industrial Hygienist. If person supervising the sampling is not a CIH, BNL Safety & Health Services Division is to review the qualifications and work history of the person supervising the sampling.
- Air samples on asbestos abatement projects covered under 29CFR1926.1101 are taken by a person certified as an EPA Project Monitor. Bulk asbestos samples are taken by a person certified as an EPA Asbestos Inspector.
- Samples are collected using a NIOSH NMAM, OSHA SLC, or other recognized method.
- Chemical samples are analyzed by a laboratory that meets the appropriate Proficiency Analytical Testing program (IHPAT, EMPAT, ELPAT, BAPAT, BePAT) of the American Industrial Hygiene Association (AIHA).
- Asbestos samples (PLM and TEM) are analyzed by a laboratory that meets NVLAP
  - asbestos fiber analysis accreditation.

5. A Sampling Report(s) is prepared to fully identify the events sampled, sampling methodology and results.

Contractors/sub-contractors are to prepare a sampling report of exposure monitoring that addresses the following details of exposure monitoring events:

a. Description the Event	
First and last name, and BNL Life Numbers	Building
Supervisor	Location of work
Organization name performing work	Hazard (what was sampled/measured)
Date of sampling	Indoors/outdoors location of sample

Time of day	Worker location relative to hazard source
Task done	By-stander Representation by sample
Task frequency	Compounding environmental factors
Task normalcy - (i.e. typical, unusual, emergency)	Exposure pattern normalcy - (i.e. typical, unusual, emergency)

b. Sampling Parameters and Analysis Technique
Sample location (breathing zone, fixes, etc.)
Exposure sampling period - sample duration- Time On/ Time Off
Method (agency & method #)
Sampling media and equipment (pumps model and media type, size, lot number, etc.)
Laboratory (performing analysis)
Laboratory analysis results
Direct reading meter (model, serial number, calibration date)
Direct reading meter results (field sheet, dosimeter log, etc.)

c. Analysis of Compliance:
Exposure controls in place at time of sampling (including type of PPE and respirator)
OEL values (ACGIH and OSHA)
Relevance of measured exposure to OELs - does sampling indicate compliance
Worker protection status & future needs - are conditions safe, are changes needed
Need for new/more control measures (including PPE)
Need for medical surveillance
Need for new or additional training

6. Exposure monitoring records/documentation are to be submitted to BNL.

The contractor is to maintain the original versions of the following and submit paper or electronic copies to the BNL Project Manager (Building 134) and to the BNL IH Laboratory (Building 120):

- Field Sampling Sheets/forms/records
- Direct reading meter result sheets
- Sorbent/filter sampling records
- Bulk sample records
- Surface wipe sample records
- Chain of Custody (documenting control of samples from field to analytical laboratory)
- Analytical laboratory analysis report
- Photos, sketches, diagrams made of sampling
- Documents that pertain to worker notification of exposure
- Sampling reports

7. Negative exposure assessment (NEA) reports may be prepared in lieu of sampling when sufficient document for an exclusion exists.

When quantitative monitoring on previous operations has determined employee exposure to be less than Occupational Exposure Limits (i.e. no worker exposures above all ACGIH & OSHA TWA-8, STEL, Ceilings, Action Levels, and Excursion Limits) and the operation is repeated under identical circumstances of work patterns, work methods, work controls, work duration and environmental factors, a negative exposure assessment (NEA) may be generated and used in lieu of exposure monitoring, providing the following are met:

- The sampling data was obtained using a sampling device worn on the worker's body in the manner that represents the likely route of exposure (e.g. in the breathing zone for inhalation hazards, by the ear for noise hazards, and on the body facing the source for non-ionizing radiation sources.) A Fixed Breathing Zone Sample (chemical) or Area noise monitor may only have been used for determining a NEA when the only feasible sampling technique is not

portable and cannot be worn by the worker. The samples must have measured worker exposure potential at the location where workers were located during exposure. Area samples alone are not an adequate basis for a NEA.

- A NEA cannot be based on sampling data that is more than 24 months old. Data cannot exceed 12 months for an asbestos abatement NEA covered under 29CFR1926.1101. An existing NEA, which is based on sampling data that was generated more than 24 months before, is acceptable if the operation has not changed, at least one new sampling event is monitored, and the result is consistent with previous results.
- When a published study presents data that is identical to an exposure scenario that will occur at BNL, that study can be used to make a NEA. However, at least one additional sampling event must be monitored at BNL and the results must be consistent with published data. Every 12 months at least one additional sampling event must be monitored and the results must be consistent with previous results.

Environmental Metering

The following are minimum requirements for meters to be used by the contractor. The meters shall be calibrated and maintained in calibration for the duration of the project (until substantial completion) by the contractor. Metering equipment shall comply with the latest ANSI/ISA/IEC Standards.

1). Digital multi-gas meter specification for the following gases:

a) Hydrogen Sulfide with the range of 0.0 -100.0 ppm and operating temperatures of - 4.0° F to 122.0° F
b) Carbon Monoxide with range of 0.0 – 500.0 ppm
c) Oxygen with the range 0.0 to 25.0%
d) Combustible gases with range of 0.0 to 100% LEL

This meter shall conform to ANSI/ISA 12.13.01 for use in hazardous location for Class 1, Div. 1, Group A, B, C, & D.

2). Digital light meter operation at range of 0.0 to 100 fc – readings shall be in foot-candles and corresponding lumens.

3). Digital noise meter operation at range of 0.0 to 140.0 dB(A) – the meter shall conform to IEC 651 and ANSI 51.4 type 2 accuracy: +/- 1.5 dB(A). The meter shall conform to ANSI 51.4 -1971 or 51-1983 as amended.

Copies of all equipment calibration, field sampling sheets, laboratory analysis reports, and hazard assessment evaluation reports shall be submitted to BSA within 5 days after the receipt of results from analytical laboratories, or within 5 days after analysis by direct reading instruments, meters, or monitors.

The monitoring equipment to be used on this project is listed on the attached table below.

Dust, gas, mist, and fume surveys shall be conducted as frequently as necessary to determine the adequacy of control measures.

Control of harmful airborne contaminants shall be, insofar as feasible, by engineering controls.

Example - CONTRACTOR'S EXPOSURE MONITORING EQUIPMENT LOG

Name of Equipment	Model Number	Serial Number	Calibration Date	Name of Technician Authorized to Operate the Equipment

POTENTIAL WORKER EXPOSURE - **MONITORING STRATEGY**

Construction Activity	Substance Being Monitored	Initial Monitoring Frequency	Subsequent Monitoring Frequency	Monitoring Equipment

Example of MONITORING CONTROLS FOR THE TYPE OF WORK

Work Phase	Work Activities of Concern	Potential Airborne Hazard(s)	Sampling/Monitoring	Exposure Prevention & Control Methods
Interior Demolition	Saw Cutting of Concrete Jackhammering	Crystalline Silica Respirable Dust Noise	Crystalline Silica Air Sampling Respirable Dust Air Sampling Noise Monitoring	**Saw Cutting and Jack Hammering of Concrete** Review MSDS(s), product labels, and "Probable Uses of Silica List" to determine if crystalline silica is present or likely to be present in materials to be used/demolished. Implement all feasible engineering, administrative controls, and work practices, to reduce/eliminate employee exposure. Utilize water injection and misting during saw cutting and jack hammering of concrete to reduce/mitigate dust generation. Ensure all required elements of a Respiratory Protection Program are in place n accordance with OSHA 29CFR 1910.134 (i.e. medical evaluations, training, fit testing). Utilize NIOSH-approved air purifying respirators (APRs), with high-efficiency particulate air filters. Perform initial industrial hygiene air sampling for crystalline silica/respirable dust to determine ce/employee concentrations. Assess air testing results, and if necessary, implement additional engineering and/or rative controls and work practices to reduce employee exposure to within le limits. Assess air testing results, and if necessary, increase or decrease level of respiratory protection, based on results. Conduct routine air sampling to ensure effectiveness of control methods. Ensure all required elements of a Hearing Conservation Program (i.e. employee training, tric testing, hearing protection devices, etc.) are in place in accordance with OSHA 910.95. Issue Hearing protection Devices (HPDs) to reduce occupational noise s, ensure employees wear HPDs properly. Perform personal and area noise monitoring to determine workplace/employee levels. Assess noise testing results, and if necessary, implement engineering nd/or administrative controls to reduce employee noise exposure to within acceptable limits. Perform routine industrial hygiene personal and area noise monitoring to ensure continued effectiveness of workplace control methods.

Work Phase	Work Activities of Concern	Potential Airborne Hazard(s)	Sampling/Monitoring	Exposure Prevention & Control Methods
Construction	Metal Framing Drywall Installation	Crystalline Silica Respirable Dust Fiberglass Noise	Crystalline Silica Air Sampling Respirable Dust Air Sampling Noise Monitoring	**Metal Framing and Drywall Installation** Ensure all required elements of a Hearing Conservation Program (i.e. employee training, audiometric testing, hearing protection devices, etc.) are in place in accordance with OSHA 29CFR1910.95. Issue Hearing protection Devices (HPDs) to reduce occupational noise exposures, ensure employees wear HPDs properly. Perform personal and area noise monitoring to determine workplace/employee levels. Assess noise testing results, and if necessary, implement engineering and/or administrative controls to reduce employee noise exposure to within acceptable limits. Perform routine industrial hygiene personal and area noise monitoring to ensure continued effectiveness of workplace control methods. Ensure all required elements of a Respiratory Protection Program are in place in accordance with OSHA 29CFR 1910.134 (i.e. medical evaluations, training, fit testing) Utilize N95 NIOSH Approved N95 respirator for insulation installation and cutting and drywall sanding. Perform initial industrial hygiene air sampling for crystalline silica/respirable dust to determine workplace/employee concentrations. Assess air testing results, and if necessary, implement additional engineering and/or administrative controls and work practices to reduce employee exposure to within acceptable limits. Assess air testing results, and if necessary, increase or decrease level of respiratory protection, based on results. Conduct routine air sampling to ensure effectiveness of control methods.
	Painting			**Painting** Review MSDS(s) for paints. Painting Phase Hazard Analysis conducted by contractor states paint is Non-Hazardous and respiratory protection is not necessary during application. Ensure all required elements of a Respiratory Protection Program are in place in accordance with OSHA 29CFR 1910.134 (i.e. medical evaluations, training, fit testing). Utilize NIOSH-approved N95 air purifying respirator when sanding painted surfaces. Refer to MSDS for paint for selection of proper respirator for paint mixing.
	Sheet Vinyl Flooring Metal Casework/Epoxy Resin Roof Patching - Exterior			**Sheet Vinyl Flooring, Cement Based Patching and Adhesive, Epoxy Resin, and Cold Bituminous Roofing** Review MSDS(s) for vinyl flooring work, cement patching and adhesive, epoxy resin, and cold bituminous roofing materials to determine if respiratory protection is necessary during application. If respiratory protection is required, implement all elements of a respiratory protection program in accordance with OSHA 29CFR 1910.134. If MSDS indicates that respiratory protection is necessary utilize NIOSH approved respirators in accordance with MSDS. Ensure adequate ventilation at all times.

Work Phase	Work Activities of Concern	Potential Airborne Hazard(s)	Sampling/Monitoring	Exposure Prevention & Control Methods
Plumbing	Cutting and Gluing PVC	VOCs	VOC Sampling	**Cutting and Gluing PVC** Review MSDS(s) for PVC glue, to determine if/what types of VOC's are present. If present, assess and implement all feasible engineering, administrative controls, and work practices, to reduce/eliminate employee exposure.
	Cutting and Soldering Pipe	Metal Fume	Metals Fume Sampling	If respiratory protection is required per MSDS, implement all elements of a respiratory protection program in accordance with OSHA 29CFR 1910.134 Refer to MSDS for PVC glue for selection of proper respirator. Ensure adequate ventilation at all times when applying PVC glue.
	Drilling of Anchors	Nuisance Dust Noise	Noise Monitoring	Perform VOC air sampling if necessary to ascertain workplace concentrations. **Cutting and Soldering of Copper Pipe** Review MSDS(s) for solder to be used, to determine if metals or other hazardous ingredients. If metals or other hazardous ingredients are present, assess and implement all feasible engineering, administrative controls, and work practices, to reduce/eliminate employee exposure. If respiratory protection is required per MSDS, implement all elements of a respiratory protection program in accordance with OSHA 29CFR 1910.134 Refer to MSDS for solder for selection of proper respirator. Ensure adequate ventilation at all times. Perform metal fume air sampling if necessary to ascertain workplace concentrations. **Drilling of Anchors** Utilize misting techniques to reduce dust generation Utilize NIOSH approved N95 respirators as needed to reduce employee exposure. Ensure all required elements of a Hearing Conservation Program (i.e. employee training, audiometric testing, hearing protection devices, etc.) are in place in accordance with OSHA 29CFR1910.95. Issue Hearing protection Devices (HPDs) to reduce occupational noise exposures, ensure employees wear HPDs properly. Perform personal and area noise monitoring to determine workplace/employee levels. Assess noise testing results, and if necessary, implement engineering and/or administrative controls to reduce employee noise exposure to within acceptable limits. Perform routine industrial hygiene personal and area noise monitoring to ensure continued effectiveness of workplace control methods.

Work Phase	Work Activities of Concern	Potential Airborne Hazard(s)	Sampling/Monitoring	Exposure Prevention & Control Methods
HVAC	Sheet metal Cutting Duct Sealant Ductwork Installation Drilling of Anchors	VOCs Nuisance Dust Nuisance Dust Noise	VOC Sampling Noise Monitoring	**Duct Sealant** Review MSDS(s) for duct sealant product, to determine if VOCs or other hazardous ingredients are present. If present, assess and implement all feasible engineering, administrative controls, and work practices, to reduce/eliminate employee exposure. If respiratory protection is required per MSDS, implement all elements of a respiratory protection program in accordance with OSHA 29CFR 1910.134 Refer to MSDS for duct sealant for selection of proper respirator. Ensure adequate ventilation at all times when applying duct sealant. Perform VOC air sampling if necessary to ascertain workplace concentrations. Drilling of Anchors Utilize misting techniques to reduce dust generation Utilize NIOSH approved N95 respirators as needed to reduce employee exposure. Ensure all required elements of a Hearing Conservation Program (i.e. employee training, audiometric testing, hearing protection devices, etc.) are in place in accordance with OSHA 29CFR1910.95. Issue Hearing protection Devices (HPDs) to reduce occupational noise exposures, ensure employees wear HPDs properly. Perform personal and area noise monitoring to determine workplace/employee levels. Assess noise testing results, and if necessary, implement engineering and/or administrative controls to reduce employee noise exposure to within acceptable limits. Perform routine industrial hygiene personal and area noise monitoring to ensure continued effectiveness of workplace control methods.

Work Phase	Work Activities of Concern	Potential Airborne Hazard(s)	Sampling/Monitoring	Exposure Prevention & Control Methods
Electrical	Drilling of Anchors	Nuisance Dust Noise	Noise Monitoring	**Drilling of Anchors** Utilize misting techniques to reduce dust generation Utilize NIOSH approved N95 respirators as needed to reduce employee exposure. Ensure all required elements of a Hearing Conservation Program (i.e. employee training, audiometric testing, hearing protection devices, etc.) are in place in accordance with OSHA 29CFR1910.95. Issue Hearing protection Devices (HPDs) to reduce occupational noise exposures, ensure employees wear HPDs properly. Perform personal and area noise monitoring to determine workplace/employee levels. Assess noise testing results, and if necessary, implement engineering and/or administrative controls to reduce employee noise exposure to within acceptable limits. Perform routine industrial hygiene personal and area noise monitoring to ensure continued effectiveness of workplace control methods.

Section 16: SAFE WORK PLAN (SWP)/PHASE HAZARD ANALYSIS (PHA) PROGRAM

INTRODUCTION:

(SWP or PHA Defined)
A SWP/PHA is the step-by-step breakdown of a task. With each step, the hazard risks and precautions are identified. A SWP/PHA is frequently conducted using a three column document in which the first column is the task, the second is the known hazards which may potentially be encountered and the third column the precautions to take to avoid the hazard risk. Usually included in, attached to, or referenced by the Health and Safety Plan (HASP).

A SWP or PHA is an effective, in-practice, written work plan which identifies the definable, job-specific work tasks to be completed, including access/egress and set-up/breakdown under all **expected or created** environmental conditions. Also included is the method of work for safely completing these tasks, associated work hazards, and the corresponding equipment and methods that will be used to prevent loss to **persons or property** for all contracted work, including that of subcontractors who will develop their own SWPs or PHAs and forward them to the general contractor for their written review and approval, who will then forward the SWPs or PHAs to BSA's Project Manager or Engineer, who will forward them to the MPO and ES&H Construction Safety for review and acceptance.

The SWP/PHA document shall provide BSA with a defined plan of action for identified known hazards and comprehensive prevention/control methods for exposures to workers, the BSA populous/public, and property. SWPs/PHAs shall address all foreseeable exposures to employees, the BSA populous/public, and property for the contract work, including all tiers of subcontractors. The SWP/PHA shall be used as the basis for contract coordination items and safety planning discussions in the construction management process.

The SWP or PHA is intended to identify tasks to be done in each phase of the project, then breaking down to task specific hazards associated with work tasks in each of those phases, and to effectively **detail** the mitigation and prevention measures/controls to be taken to prevent injuries, property damage, and environmental damage. For example, if the project requires working from elevations, a detailed description of the fall protection measures, including the type of equipment used, which will be taken. If respiratory protection is required, the type of respirator must be listed. **It is not sufficient to just say, for example, "Comply with all OSHA regulations, or to say, comply with Subpart L."**

The contractor shall submit a SWP/PHA document to BSA for each definable work task activity at least one week (7 days) prior to the intended start of that activity (sample SWP/PHA documents are included). If the SWP/PHA does not adequately address all expected, known, or foreseeable hazards posed by the work, BSA ES&H Construction Safety Office will require clarification or additional planning to ensure that the work tasks proceed safely. Work shall not begin until the SWP/PHA has been submitted and accepted by BSA ES&H Construction Safety Office. If required/requested by BSA, a contractor developed presentation of the means and methods of the work task to be done is to be made to BSA by the competent person(s) involved, showing how the plan will be implemented, **effectively communicated to the workers, and properly carried out** to the satisfaction of the BSA ES&H Construction Safety Office.

Where powered, special or heavy equipment will be used, the contractor must specify in the SWP/PHA the type of equipment to be used, e.g., front-end loader, man lift, concrete finishing equipment, etc. The contractor must research available information for each specialized piece of equipment, including operating manuals, manufacturer's web sites, etc., and address those hazards identified by the manufacturer of the equipment. If available prior to the start of the project, the contractor must supply to the BSA Construction Safety Engineer that portion of the equipment-operating manual, or other reference material, which discusses the safety precautions for that particular piece of equipment.

In the identification phase of the hazard identification and control process, the contractor will conduct surveys, interview workers, conduct inspections, and review records to determine the presence of potential hazardous conditions or program weaknesses. Analysis goes a step beyond mere identification. Not only do we want to determine if hazards do exist, we want to know the negative impact that program

weaknesses and hazards have on the workplace and what must be accomplished to eliminate or reduce that impact.

Upon request, BSA MPO and ES&H Construction Safety Office will provide contractors with initial basic training in the development of required SWPs/PHAs.

Below is an example of a typical partial list of recognized construction project hazards. It is intended that the contractor develop his own list for the specific project they are working on.

Sample listing of task-specific activities that are considered to require SWPs/PHAs being developed.

Work Related Hazards

Temporary construction
Cranes & other powered, mobile equipment
Hand and power tools
Compressed gases
Flammables
Hazardous chemicals/products/spills
Fire
Lock-out/Tag-out
Falls from elevation
Weather conditions
Slips, trips and falls
Material delivery & handling
Cutting/grinding/chipping
Roofing work
Ladder and scaffold work
Unsafe acts (other)
Placement of warning signs
Operating powered equipment
Tree felling and clearing and grubbing
Respiratory protection
Equipment inspection
Concrete placement & formwork
Lifting and carrying
Training for new tasks
Signals, backup alarms, flaggers
Being fit for duty
Use of required PPE

Site Configuration Hazards

Mobilization/access/egress
Loading and unloading of equipment and materials
Protection of the BSA populous
Locating and support of utilities
Excavations
Falling objects
Flying objects
Housekeeping/site cleanup
Noise damage
Maintenance & protection of traffic
Temporary electric
Confined spaces
Operating energized equipment
Demolition activities
Unsafe conditions (other)
Underpinning/pile driving/shoring
Worker vehicle parking
Struck by, caught in between
Walking and working surfaces

SAFE WORK PLAN (SWP)/PHASE-HAZARD ANALYSIS (PHA)

(COMPANY NAME OR LETTERHEAD)

SWPs/PHAs are required to be completed for submittal and BSA acceptance. Each separate phase of the work is to be broken down to definable task specific activities. The purpose is to determine/indicate the known hazards that potentially shall be encountered and the prevention and mitigation controls which shall be put in place.

EXAMPLE ONLY

Work Phase Specific Task	Recognized or Known Hazards	Prevention/Controls
Mobilization and staging		
Site clearing		
Site grubbing		
Dust control		
Excavation/ utility work		
Backfilling		
Compacting		
Grading		
Road bed stone placement		
Building demolition		
Asphalt placement		
Temporary electric/all types		
Foundation demolition		
Plumbing work		
Concrete/masonry		
Interior rehab/all types		
Electrical/all types		
Mechanical work/all types		
Utility work		
Flooring/all types		
HVAC		
Masonry/exterior work		
Building siding		
Interior finish work/all types		
Road work - maintenance of traffic		
Roofing/all types		
Crane work/rigging		
Structural steel/rebar work		
De-mobilize		

Example of some known, specific, BSA SITE HAZARDS AND CONTROL MEASURES
Contractor must develop their own individual task specific SWPs/PHAs

SCOPE of WORK	LOCATIONS	TRADES INVOLVED	HAZARDS	WORKER PROTECTION (PPE)	PUBLIC PROTECTION	CONSTRUCTION MEANS & METHODS
Steel Remediation, Concrete Remediation, Scaffolding and Fireproofing	Lab rooms	Iron Workers Masons Carpenters Laborers	Fall Fire Trains Electrical Scaffold Erection Hazardous Material Site Control Site Access	Eye & Face Protection Personal Fall Protection Hearing Protection Respiratory Protection Head Protection	BSA Contract Specifications OSHA 29 CFR 1910 & 1926, DOE CFR 10, 851	Abrasive Grinding Air Tools Compressed Gas Concrete & Masonry Housekeeping Illumination Scaffolds Steel Erection Welding, Cutting & Heating
CCTV System, Dynamic Signage, PA System	Lab rooms Communication Room Hallways Basement	Electricians Laborers	Fall Electrical Site Control Site Access	Eye & Face Protection Personal Fall Protection Hearing Protection Respiratory Protection Head Protection	Specific Submittal on Public Protection for Working Areas and Notification of Proper Passage for Public, Contract Specifications	Air Tools Housekeeping Ladders Scaffolds Electrical Work Practice Hand Tools
Electrical Installation	Rooms and Hallways	Electricians Laborers	Fall Electrical Site Control Site Access	Eye & Face Protection Personal Fall Protection Hearing Protection Respiratory Protection Head Protection	Specific Submittal on Public Protection for Isolation of Working Areas and Notification of Proper Passage for Public Contract Specifications	Power Tools Hand Tools Scaffolds Ladders Housekeeping
Asbestos Removal	Mechanical rooms and Pipe Insulation	Asbestos Handlers Carpenters Laborers	Hazards Materials and Containment Ladders and Scaffolds Site Control	Personal Fall Protection Respiratory Protection Eye and Face Protection Head Protection Special clothing	Specific Submittal on Public Protection for Isolation of Working Areas and Notification of Proper Passage for Public, Contract Specifications	Asbestos Containment Scaffolds Ladders Hand Tools

*Example of a **SAFE WORK PLAN/PHASE HAZARD ANALYSIS***		
THESE INDIVIDUAL TASKS OR ITEMS ARE APPLICABLE TO BSA CONSTRUCTION CONTRACTS		
PRINCIPAL STEPS/TASKS	**POTENTIAL HAZARDS**	**RECOMMENDED CONTROLS**
1. Administration of construction contracts a) General	1. Employee unqualified for or unfamiliar with assigned duties	All persons shall be physically and emotionally qualified for performing the duties to which they are assigned. (Fit for Duty & fully trained.)
	2. Untreated injuries	First aid kits shall be available in ratio of 1 to 25 persons or less and shall be waterproof and sterile with easy access from all workers.
	3. Unsanitary conditions	1. An adequate supply of drinking water shall be supplied from sources approved by Federal, State, or local health authorities. 2. Toilet facilities shall be provided at each construction job site in the ratios shown: No. of Employees — Min. Facilities 20 or less — 1 20 or more — 1 toilet seat & 1 urinal per 40 workers 200 or more — 1 toilet seat & 1 urinal per 50 workers 3. Washing facilities shall be provided as needed to maintain healthful and sanitary conditions. Eyewash will be provided.
b) Physical qualifications of employee	Physically unfit employees creating hazard for themselves and others	All persons shall be physically and emotionally qualified for performing the duties to which they are assigned. Some factors to be considered in making work assignments are strength, endurance, agility, coordination, and visual and hearing acuity.
c) Personal protective apparel and safety equipment	Improper protection for employee	Required personal protective devices shall be identified to the workers and used as required when engaged in their Craft or Trade.
d) Poisonous and harmful substances	Exposure to harmful substances	All dusts, mists, fumes, gases, or other atmospheric contaminants in areas where persons are employed shall first be brought within acceptable limits by engineering controls such as ventilation, enclosure, or filtration. If this is not feasible, then administrative controls such as duration of exposure shall be used. When this method is not feasible, protective equipment shall be provided. Acceptable limits shall be those recommended in the latest edition of “Threshold Limit Valves” by the American Conference of Governmental Industrial Hygienists.
e) Lighting	Improper lighting	Offices, stairways, passageways, construction roads and work areas shall be lighted while work is in progress by at least the minimum standards. - 10 Foot candles in work areas.

f) Signals, warning signs, signaling	Poor signals and unmarked hazards	1. A uniform standard signal system shall be used in all operations. 2. Hand signals for crane operations shall conform to ANSI B30 series. 3. Traffic flagging procedures shall meet ANSI D6.1. Manual on Uniform Traffic Control Devices for streets and highways. 4. Warning signs shall be placed to provide adequate warning of hazards to workers and the public.
PRINCIPAL STEPS/TASKS	**POTENTIAL HAZARDS**	**RECOMMENDED CONTROLS**
g) Material handling, storage and disposal	Unsafe material handling, storage, and disposal	1. Material in bags, containers, bundles, pallets, or stored in tiers shall be stacked, blocked, interlocked, and limited in height so that it is stable and secured against sliding or collapse. 2. Access ways shall be kept clear. 3. Flammable liquids in a storage building shall be in a “No Smoking” area. 4. Handling of materials should be in accordance with safety recommendations for that particular material. 5. Disposal of all waste materials shall be in accordance with Federal, State, and local laws and more specific with guidance from the Environmental Protection Agency.
h) Fire prevention	Fires	Recommendations of NFPA and all BSA regulations shall be complied with in addition to the local building codes.
i) Fire protection	Inadequate firefighting equipment	Portable fire extinguishers shall be provided where needed and inspected and maintained in accordance with NFPA 10 - Portable Fire Extinguishers.
j) Welding and cutting	Injury or fire from welding and cutting operations, Respiratory protection requirements	All welding and cutting equipment and operations shall be in accordance with standards and recommended practices of the American Welding Society, Safety in Welding and Cutting, ANSI Z49.1 and the recommendations of NFPA as well as the BSA SBMS site specific requirements.
k) Electrical wiring and apparatus	Improper wiring	1. All electrical wiring and equipment shall be of a type listed by UL or Factory Mutual Engineering Corp for the specific application. 2. No “daisy chaining” of electrical cords is permitted.
l) Hand and power tools	Improper use of hand and power tools	All hand tools shall be in good repair and used only for the purpose for which designed. Defective tools shall be tagged out and removed from service.
m) Ropes, slings, chains, and hooks	Improper use of rope, slings, chains, and hooks could result in equipment or personal injury	1. The use of rope, slings and chains shall be in accordance with the safe recommendations of their manufacturer, OSHA and the equipment manufacturer and BSA when used in conjunction therewith. 2. Rigging equipment shall not be loaded in excess of its recommended safe working load as prescribed in latest edition of ANSI B 30.9. Defective or questionable rigging components shall be identified, tagged and removed from the work site.

n) Machinery and mechanized equipment	Improper and unsafe use of machinery and mechanized equipment	1. Before any machinery or mechanized equipment is placed in use, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition. 2. Qualified persons shall maintain and operate equipment in a safe manner that is consistent with the manufacturer's recommendations.
PRINCIPAL STEPS/TASKS	**POTENTIAL HAZARDS**	**RECOMMENDED CONTROLS**
o) Motor vehicles	Improper use	1. "Motor Vehicle" shall mean any vehicle propelled by a self-contained power unit. 2. Every person shall possess a permit valid for the equipment being operated. 3. No vehicle shall be driven at a speed greater than reasonable and proper, with due regard for weather, traffic, intersection's width, character of the roadway, type motor vehicle, and any other existing condition.
p) Ramps, runways, platforms, scaffolds and towers	Unsafe work access platforms	All temporary trestles, ramps, scaffolds and similar load bearing structures shall be in compliance with OSHA 1910 and 1926 Requirements.
q) Excavations	Injury to personnel or equipment caused by ground movement	The sides of all excavations in which employees are exposed from moving ground, regardless of depth, shall be guarded by a shoring system, sloping of the ground, or other equivalent, effective means.
r) Access facilities	Unsafe access to work areas	1. Safe access shall be provided to all work areas. 2. Safe access ladders shall conform to the latest edition of the Safety Codes for Portable Wood Ladders, portable metal ladders, fixed ladders, and job-made ladders by ANSI.
2. Administration of contract a. General	1. Employee unqualified for or is unfamiliar with assigned duties or not physically suitable for the assigned work	All persons shall be physically and emotionally fit for duty, qualified and effectively trained for performing the duties to which they are assigned.
	2. Equipment not transported securely	1. Tools, materials, and equipment subject to displacement or falling shall be adequately secured.
b) Housekeeping/clean-up	1. Tools/materials/trash or debris presenting physical hazard	1. Tools, materials, extension cords, hoses, or debris shall not cause tripping or other hazard. 2. Walkways, runways, and sidewalks shall be kept clear of obstructions.
	2. Electrical hazard from equipment etc.	Portable tools and equipment shall be grounded by a multi-conductor cord having an identified grounding conductor and a multi-contact polarized plug-in receptacle. GFCI's shall be used on all temporary Power Circuits.
c) Clean-up/loading/unloading, maintenance of traffic work	1. Working in proximity to vehicular traffic	Persons exposed to vehicular traffic shall always wear vests, belts or apparel marked with a reflectorized or high visibility material. Stop/Slow Signs shall be used to direct traffic. Red flags are not permitted.

	2. Inadequate or unsafe clothing	Employees shall wear clothing suitable for the weather and work conditions. The minimum shall be short sleeve shirt with 4" sleeve, long trousers, and leather or other protective work shoes or boots. Canvas, tennis, or deck shoes are not acceptable.
	3. Contamination of water (cleaning solutions, pesticides, insecticides, etc.)	Contamination or pollution of any river, stream, soil or public water is prohibited. Required slit barriers shall be effectively installed and maintained as originally installed.
	4. Insects, vermin, rodent or bird droppings	Protection against hazards involving insects, vermin, rodent or bird droppings shall include: a. Accepted first aid remedies. b. Instruction in recognition and identification.
PRINCIPAL STEPS/TASKS	**POTENTIAL HAZARDS**	**RECOMMENDED CONTROLS**
	5. Poisonous plants	In areas where employees are exposed to poison ivy, oak, sumac, or other poisonous plants, the following protective measures, as pertinent, shall be provided: a. Appropriate protective clothing, gloves, etc. b. Accepted first aid remedies for treatment. c. instruction in recognition and identification
	6. Unattended machinery	Machinery or equipment requiring an operator shall not be permitted to run unattended.
	7. Unsafe operation of machinery or equipment	Machinery or equipment shall not be operated in a manner that will endanger persons or property nor shall the safe operating speeds or loads be exceeded.
	8. Repairs to machinery or equipment in field subject to traffic hazard	All repairs to machinery or equipment shall be made at a location which will provide protection from traffic.
	9. Traffic hazard presented by machinery or equipment	No vehicle shall be stopped, parked, or left standing on any road, parking lot or adjacent thereto or in any area in such a manner as to endanger the vehicle, other vehicles, equipment, personnel, or the public using or passing that road, parking lot or area.
	10. Unattended vehicle with motor running	No vehicle shall be left unattended until after the motor has been shut off.
d) Equipment or slow moving vehicle in roadways or travel ways	1. Slow-moving vehicle or tractor	The slow-moving vehicle emblem shall be used on vehicles or equipment which, by design, or move at 25 m.p.h. or less on BNL roads.
	2. Storage of fuel	All tanks, containers, and pumping equipment used for the storage or handling of flammable and combustible liquids shall be listed by U.L. and meet OSHA requirements.
	3. Unqualified employee handling hazardous materials	All storage, handling, or use of flammable and combustible liquids shall be under the supervision of qualified persons.
	4. Defective tools	Tools having defects that will impair their strength or render them unsafe shall be tagged and removed from service.

	5. Defective power tools	1. Power tools shall be inspected, tested, and determined to be in safe operating condition prior to use. 2. Continued periodic inspection shall be made to assure safe operating condition and proper maintenance.
	6. Unsafe machinery or equipment	Before any device, tool, machinery or mechanized equipment is placed in use, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.
	7. Guards on hand operated and powered equipment	Hand operated and power operated equipment shall have guards fully in place that protect the operator, before operating the machine. The operator's manual shall be with the machine or equipment.

Section 17*:* ***SOURCES OF RADIATION***

(COMPANY NAME OR LETTERHEAD)

LASERS:

Only lasers which are Class 2, 3A, or 3R, will be permitted on the construction site.

- Only qualified and trained employees will be assigned to install, adjust, and operate laser equipment. Proof of qualification of the laser equipment operator will be available and in possession of the operator/end user at all times. **(*Name of Contractor*)** will have the training documentation on file or it will be readily available.

- Areas in which lasers are used will be posted with standard laser warning placards.

- Only those devices labeled as Class 2 or 3A, or 3R (less **than 5 milliwatts**) will be used.

- Approval of higher powered devices (>5 mW) must be approved by the BSA Laser Safety Officer.

- Never intentionally stare into the laser beam.

- Never intentionally aim the beam at oneself or another person, particularly in the facial area.

- The beam will be turned off when not in use.

- Mirror-like surfaces will be avoided when directing the laser beam. A reflected beam can act like a direct beam on the eye.

- Areas in which lasers are used will be posted with standard laser warning placards. These can be obtained from the BSA Laser Safety Officer.

- Beam shutters or caps will be utilized, or the laser turned off, when laser transmission is not actually required. When the laser is left unattended for a substantial period of time, such as during lunch hour, overnight, or at change of shifts, the laser will be turned off. Consideration to best mitigate laser beam transmissions to passing motorists will be evaluated.

- When it is raining or snowing, or when there is dust or fog in the air, the operation of laser systems will be prohibited where practicable; in any event, employees will be kept out of range of the area of the source and target during such weather conditions.

- Laser unit in operation should be set up above the heads of the employees, when possible.

IONIZING RADIATION SOURCES:

The BSA Radiological Control Division must be notified a minimum of 5 days in advance when any device or equipment containing radioactive material will be brought to the site.

Contractor(s) or subcontractor(s) who use the device(s) or equipment to perform work at BSA shall provide documentation indicating they are authorized (e.g., State or NRC Radioactive Materials License) to posses and use the device(s) or equipment.

Use of the device(s) or equipment shall be conducted in accordance with all aspects of the Work Planning and Control Standards Based Management System subject area. BSA must be notified in advance of all sources of ionizing radiation (e.g., Soil Density Gauges, Troxler Density Gauges, Radiography Sources, etc.) brought to the site. Contractors who use these sources in the performance of work at BSA shall demonstrate that they are properly licensed by the State of New York to own and use these sources. These sources shall be used and controlled consistent with the BSA Radiological Control Manual.

REFERENCES

29 CFR 1926.53 and 1926.54 BSA SBMS Requirements

Section 18: **OCCUPATIONAL MEDICINE PROGRAM**

(COMPANY NAME OR LETTERHEAD)

To ensure the continued health of our employees, ***(insert name of contractor)*** maintains a comprehensive Occupational Medicine Program. This program is under the direction and control of ***(insert name of certified Occupational Medicine Physician)*.**

CONTRACTOR RESPONSIBILITIES:

(Company Name) provides comprehensive occupational medicine services to each of its employees, or workers under his control, who

- work at BNL for 30 or more days in a 12 month period; or
- work for any length of time at BNL and are required by statute to be enrolled in a medical or exposure monitoring program

(Company Name) affirms that these services are fully compliant with all provisions of Section 8 ("Occupational Medicine") of Appendix A of the Federal Regulation 10 CFR 851 including the following provisions:

Services are provided by an occupational medicine provider ("OMP") that:

- Plans and implements the occupational medicine services
- Is under the direction of a physician licensed in the State of New York
- Is staffed by healthcare professionals with valid New York State licenses in their respective professions

Occupational Medicine Provider Information

OMP Name: _____

Address: _____

Phone #:_____ **Fax #:**_____

The OMP determines the content of the worker health evaluations in accordance with current sound and acceptable medical practices and all pertinent statutory and regulatory requirements.

At a minimum, these services include:

- Medical surveillance and medical certification examinations in compliance with all OSHA, DOE or other statutory or contractual requirements for such examinations applicable to the work to be performed and the type and level of workplace exposures. Frequency of such examinations to be determined by statute, contractual requirement or best medical practice as determined by the OMP.
- Prior to the employee's 30th day of work at BNL, an occupational medical examination shall be conducted for workers involved in physically demanding tasks which involve potential exposure to workplace hazards, or exposure to adverse environmental conditions.
- Evaluation at the time of potentially work-related illness, potentially harmful exposure or injury at BNL to determine work-relatedness, any need for medical restrictions or work removal, and referral for definitive care, if indicated.
- Return-to-work evaluations where a worker has been absent for 5 or more workdays due to illness or injury.
- Restricted duty as medically indicated.

- Creation and retention of a medical record that complies fully with all requirements specified in paragraph 8(f) of Appendix A 10 CFR 851 for each employee for whom the OMP has provided occupational medicine services.
- Verbal and written communication to each employee as to the purpose, nature and results of all medical evaluations and tests performed, and documentation of this communication in the medical record.
- Timely submittal of the results of health evaluations to BSA where such information will facilitate the mitigation of worksite hazards. Such communications will not include the release of confidential, personally-identifiable medical information, other than in exceptional instances where there is a compelling, overriding public health or public safety need.

The following occupational medicine services are also provided by the OMP, except where the OMP determines that they are not applicable or not feasible. Such a determination is documented in writing for each service that will not be provided, with sufficient explanation:

- Participation in worker protection teams, as well as worker safety and health team meetings and committees as defined, respectively, in paragraphs 8 (e)(2) and 8(d)(3) of 10 CFR 851.
- Case management of ill or injured workers to facilitate rehabilitation and safe return to work.
- A health promotion program to include disease and risk factor screening for the major causes of morbidity and mortality within the employee population, if determined to be cost effective. If deemed not cost effective, the OMP's decision and its basis must be documented in the outline of comprehensive occupational medicine services.
- ***(Company name)*** health and disability insurance claims data (pre-identified) is used by the BSA OMP in determining the major causes of morbidity and mortality within ***(Company name)*** workforce, if such information is available to ***(company name).***
- Cost effectiveness to be judged by available evidence, published medical studies, demonstration projects at other institutions or internal analyses.
- Review and approval of the medical and behavioral aspects of ***(company name)*** - sponsored or ***(company name) -*** supported (if they exist).
  - Employee Assistance Programs (EAPs)
  - Alcohol and substance abuse rehabilitation programs; and
  - Wellness programs
- If the work requires immunization, a hazardous waste program, or involves exposure to blood-borne pathogens, the OMP shall review the medical aspects to assure their conformance to applicable guidelines.

(Company name) provides to the OMP:

- Access to information (de-identified) from health, disability and other insurance plans appropriate for determining the major causes of morbidity and mortality among the contractor's employees.
- Information on the physical demands and working conditions that is associated with each contractor employee's job.
- Employee job-task and hazard analysis information, including actual or potential work-site exposures of each employee. BSA will provide potential radiological hazard exposure information if applicable.

- Notification when an employee has been absent because of an injury or illness for more than 5 consecutive workdays.
- Referral of employees about whom the supervisor has concerns regarding ability to safely perform job duties.
- The opportunity to participate in worker protection teams, as well as worker safety and health team meetings and committees (where applicable).

BSA RESPONSIBILITIES:

BSA will provide the ***(company named)*** OMP upon request with:

- Access to pre-existing work-site hazard information, e.g., chemical, radiological, biological, asbestos.
- Access to the workplace for evaluation of job conditions and issues relating to workers' health.
- Information or materials requested by the ***(company name)*** or OMP to assist the OMP in developing occupational medicine services. This information and materials may include relevant portions of BSA's Worker Safety and Health Program, BSA policies, procedures and forms, as well as consultation with relevant BSA health, safety and occupational medicine personnel.
- Chapter 8 of Appendix A of 10 CFR 851 and its implementation guide DOE G 440.1-8

For work performed at BNL, the ***(company name)*** is covered under BSA's site emergency plan, and may be asked by BSA to provide information relevant to the plan, or to assist in developing a portion of the plan.

REFERENCES:

Code of Federal Regulation – 10 CFR 851 - Worker Safety and Health
BSA SBMS Requirements

Example - **ACCEPTABLE PHYCIAN'S ACKNOWLEDGEMENT FORM (submit the completed physician's acknowledgement along with this HASP)**

I, _____ affirm that the services which I provide are
(Name of Physician)
fully compliant with the provisions of Section 8 (Occupational Medicine) of Appendix A of the Federal Regulation 10 CFR 851 including the following:

- Plan and implementation of the occupational medicine services.
- I am a physician licensed in the State of New York.
- My office is staffed with health care professionals with valid New York State licenses in _____, _____, and _____.
- I will provide medical surveillance and medical certification in compliance with OSHA, DOE or other statutory or contractual requirements.

_____ _____
(Signature of OCC. MED. Physician) (Date)

DEFINITIONS

Definition: Construction Safety

Term	Definition
BNL Contact	A BNL employee responsible for overseeing the work performed by the contractor and for determining whether the contractor employee(s) require BNL site-specific training or be assigned an escort.
contractor	An organization or individual (contractor, sub-contractor, consultant on a Personal Services Agreement, or vendor) that performs work or provides a service, under contract to the Laboratory other than for on-site services, such as the cafeteria, service station, child development center, and the credit union.
field inspector	The BNL employee or designated representative performing an inspection of a BNL construction site.
imminent danger	Any condition or act that may cause death, serious injury or illness, significant property or environmental damage, and has a high probability of causing an accident or loss before corrective action can be taken through normal administrative channels.
inspections	Direct field observations performed to verify and document contractor compliance, identify unacceptable conditions or acts, and follow the effectiveness of corrective actions.
Sponsoring Department/Division	The Department or Division initiating a request for goods or services, and ultimately responsible for oversight of the contractor/vendor working for BNL
Stop Work Order	Contractual order to stop construction activities to prevent unacceptable risk or loss.