

DIVISION 00 – BIDDING AND CONTRACT REQUIREMENTSSECTION 000900 – SITE AND CONSTRUCTION SAFETYSCS-1. GENERAL

- A. The Contractor is solely responsible for Construction Safety for the duration of this Contract.
- B. All Contractor's operations shall be in accordance with all applicable safety statutes, requirements and standards, including, but not limited to, the Federal Occupational Safety and Health Administration (OSHA), this document, and applicable sections of the Department of Energy's 10 CFR 851 Worker Safety and Health.
- C. BNL will not tolerate non-adherence to safety requirements under this Contract. Failure to comply will result in BNL's direction to stop work in accordance with BSA LLC, General Terms and Conditions for Construction and Labor Hour Agreements, Article titled: Compliance with 10 CFR 851 and BSA's Worker Safety and Health Program. Non-compliance could also mean the barring of the violating individuals from the BNL Site. Repeated safety violations may also result in a permanent Work Stoppage under the same Article.
- D. A verbal or written Stop Work Order may be imposed by BNL for specific work activities when site conditions are created or exist that pose unacceptable risks or imminent danger. In addition, actions perceived by BNL to be in flagrant disregard of established safety and environmental requirements will be cause for Stop Work actions to be taken. Some examples of justification to take this action, include, but are not limited to the following:
 - 1. Workers who have not attended the BNL-required CVO Orientation Safety Seminar prior to work on BNL property.
 - 2. Failure to follow Contractor's HASP requirements.
 - 3. No BNL-accepted Contractor Safety Representative or Alternate on the work site.
 - 4. Failure to develop or implement the required Phase Hazard Analysis (PHA) plans.
 - 5. No BNL-accepted Contractor's PHA reviewed by all parties involved with such work prior to commencing activities.
- E. BNL reserves the right to refuse access to the Project Site, or require immediate removal from the Project Site, any individual violating or alleged to have violated established site safety or Security regulations.
- F. All debris, or other material or substances that constitutes a hazard, in any form, liquid or solid, shall be cleaned off floors and other walking/working surfaces daily, (indoors or outdoors), or as often as necessary as conditions change/develop.

SCS-2. HEALTH AND SAFETY PLAN (HASP)

- A. The Contractor shall operate the construction site under this contract in accordance with a HASP that has been accepted by BNL.
- B. The Contractor shall prepare and submit a detailed Construction HASP within two (2) weeks of the Contract signing and before the commencement of any physical work on site. The HASP Outline/Template is available on the BNL Construction Safety Subject Area web page, a copy of the Template can also be requested through the BNL Contract Administrator. It is the Contractor's sole responsibility to fully develop an acceptable HASP for submittal to BNL.
- C. The Contractor shall make any revisions and corrections that are noted upon review of the HASP by BNL, and, when accepted, resubmit three (3) printed copies and one (1) electronic copy of the HASP in PDF format to the BNL Technical Representative for distribution.
- D. The HASP shall be revised as necessary to reflect changing hazard conditions.
- E. While an acceptable HASP is a contractual requirement and BNL undertakes to review the same for compliance, BNL is not obligated to accept such program, and neither the initial review nor any subsequent acceptance of the HASP by BNL shall mean that any omission or error contained in the HASP is waived by BNL or shall relieve the contractor of its obligations to conduct the project in an entirely safe manner and in accordance with all applicable safety statutes, requirements and standards.

SCS-3. HASP DOCUMENT ORGANIZATION / REQUIREMENTS

- A. The HASP shall be organized as per the BNL HASP Outline/Template, which provides the minimum requirements for the HASP. The Outline/Template is available on the BNL Construction Safety Subject Area web page, a copy of the Template can also be requested through the BNL Contract Administrator.
- B. Cover page shall include name of Contractor, name of Project, Contract number, revision number, date of revision(s), name and signature of Contractor Safety Representative approving the HASP.
- C. Table of contents listing all Sections and Exhibits.
- D. A brief description of the Project.
- E. Organization chart of Contractor and Subcontractor personnel responsible for implementing the HASP and their duties and responsibilities. The chart shall show the reporting relationship and integration of the Safety Representative and Alternate with all personnel, including top level managers; responsible for implementing the Health and Safety Plan, (HASP), Program. The chart will also show reporting relations of Competent Persons as defined in this section.

- F. The HASP shall include but not be limited to the following information and requirements as applicable to the project:
1. Compliance Letters
 - a. The contractor shall submit a letter or certificate of compliance indicating that the Contractor is aware of, and has reviewed, and will comply with, the safety regulations of the OSHA Standards (29 CFR 1910 & 1926), Standard for Electrical Safety in the Workplace (NFPA 70E), DOE Worker Safety & Health Program (10 CFR 851), F&O Directorate's ES&H Procedures, BNL Standards-Based Management System (SBMS), and all other federal, state and local environmental, safety and health requirements applicable to the scope of work. (Contact the Contract Administer for access to or copies of applicable F&O and SBMS documents for this contract.) The letter shall be signed by an Officer of the Contractor's company that shall include signatures of all Subcontractors, (continuously updated as they are retained by the Contractor).
 - b. A copy of one of the following:
 - 1) A copy of the company record of past injury, accident, fire and property damage experience, including motor vehicle, for the previous two (2) years, Experience Modification Rate (EMR) from Insurance Broker for previous (2) years, and Environmental Citations/Violations received for the last five years, if any, or
 - 2) Contractor's OSHA 300 Logs for the current year and past three years, EMR from Insurance Broker for previous (2) years, and a list of OSHA and Environmental Citations/Violations received for the last three years, if any.
 2. Statement of Accident Prevention Program: Include a thorough description of the Contractor's safety program including, but not limited to, the following as it applies to this Project:
 - a. Personal Protective Equipment (PPE): BNL has PPE requirements for work on the Project. Mandatory items shall be worn at all times as determined through the HASP. These PPE requirements include, but are not limited to:
 - 1) ANSI Compliant Z87.1 – Eye Protection (Mandatory): Grinding, chipping or other similar particle producing operations shall also require a face shield.
 - 2) ANSI Compliant Z89.1 1997 – Head Protection (Mandatory): SEI certified hard hats meeting the requirements for Type I Class E protection shall be properly worn and maintained (i.e., no bump caps or cowboy type hard hats).

- 3) ANSI/ISEA 107-2004, Class 2 Compliant High Visibility Reflective Apparel or Safety Vests (Mandatory): All Contractor employees shall wear flame retardant safety vests that have 360-degree reflective visibility; the front of the vest may be fitted with a transparent plastic pocket, flush mounted, to accommodate the BNL photo ID. The Contractor and all Subcontractors shall utilize safety vests with a label on the front and back identifying them as a "Contractor".
 - a) A specific variance may be granted for not wearing Hi-Vis reflective vests that involves hot work activities i.e. welding, grinding, brazing etc, This variance must be evaluated and authorized, in writing, by BNL. Vests can be obtained from and are manufactured by:
 - (1) The Industries for the Blind of New York State, 296 Washington Avenue Extension, Albany, New York 2203-5316, Tel. (800) 421-9010, Fax (518) 456-3587.
 - 4) ANSI Z41-1991 Compliant Foot Protection (Mandatory): Shoes shall be durable and in good condition without breaks or splits, be at least six inches high, be equipped with a safety toe, and be completely laced or buckled. The shoes shall have defined heels that are no more than one inch high, (sneakers/gym shoes are prohibited). The sole of the footwear shall provide good traction under slippery conditions.
 - 5) Minimal Acceptable Clothing for Construction Work (Mandatory): Long pants, short-sleeved shirts, (4-inch sleeve minimum).
 - 6) Other PPE as required by Contractor's scope of work, HASP, OSHA, DOE, and BNL.
- b. Contractor Safety Representative
- 1) The Contractor shall assign an individual employed by the Contractor as Safety Representative, and one (1) Alternate. The Contractor Safety Representative and Alternate will be responsible for safety on the job site whenever work is being conducted. Representative or Alternate shall be immediately available and present on the Construction Site whenever construction activities are being performed, otherwise work will not be conducted. These individuals shall be named in the HASP.
 - 2) The Contractor shall submit to BNL for acceptance the documentation that describes the qualifications of the proposed candidates for Safety Representative and Alternate for the awarded scope of work. Prior to acceptance, BNL may interview the candidate for Safety Representative or Alternate. The submitted documentation shall include for a 3-year

period, a description of the duties, responsibilities, accomplishments and safety record of preceding assignments from which the candidate has gained effective safety engineering experience. The Contractor shall not change the accepted Safety Representative or Alternate without receiving BNL's acceptance of the replacement. The Safety Representative and Alternate shall be subject to BNL's continuing acceptance.

- 3) A Multi-Discipline Contractor Safety Representative and Alternate shall:
 - a) have completed the "30-Hour OSHA Compliance for the Construction Industry" Outreach construction safety course;
 - b) have a working knowledge of the 29 CFR 1926 construction safety standards and 29 CFR 1910 General Industry standards as referenced by the construction safety standards
 - c) have a working knowledge of the requirements of 10 CFR 851 as they relate to construction safety; and
 - d) demonstrate the ability to effectively supervise and assure the safety of the type of work for which they will be responsible.
 - 4) A Single-Discipline Contractor Safety Representative and Alternate shall:
 - a) have completed the "10-Hour OSHA" Construction Outreach course, and
 - b) demonstrate their ability to effectively supervise the type of work for which they will be responsible.
 - 5) The Contractor Safety Representative shall maintain a daily site Safety Log for all project site safety matters. All safety-related activities including safety deficiencies and corrective actions taken shall be included in the Log. The Log shall be updated and signed daily reflecting safety issues by the designated Safety Representative. This Log shall be maintained on site and be available for BNL's review. It must also accompany the Safety Representative to Project progress meetings for discussion. Whenever the Safety Representative is not present, the responsibilities of maintaining the safety Log shall be that of the assigned Safety Alternate.
- c. Competent Person(s)
- 1) Specific identification of "Competent Person(s)" is per OSHA. The Competent Person(s) qualifications include, but are not limited to, formal Construction Safety Awareness courses taken, applicable to the nature of this Project, and where applicable, the method of accomplishment in a

specific plan, i.e. fall protection, excavation, etc. Competent Person must have had formal, documented training, have knowledge of existing standards, and have authority to take actions deemed necessary.

- a) A “Competent Person” certification is not achieved by successfully completing a 10- or 30-hour Construction Outreach Safety training course. It is through specialized courses of instruction for that particular field or topic.
 - b) A “Competent Person” shall have the authority to stop the work if an unsafe condition develops or an unsafe act is occurring.
- 2) Competent Person(s) shall be designated in the HASP.
 - 3) Competent Person(s) shall be designated by the Contractor’s Safety Representative to oversee safety matters in an individual group performing work at individual work locations. They may be Subcontractor personnel and have other Project responsibilities in addition to their safety function. They shall be familiar with the work being performed, shall have 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”.
 - 4) An interview may be required with BNL to establish their competency and to secure the BNL’s acceptance/concurrence prior to their assignment as a Competent Person.
- d. Inspections: A written program to provide for the frequent (daily), written inspections and reporting of job site conditions relating to safety. These documents shall be available for inspection by BNL upon request.
 - e. Walking and Working Surfaces
 - 1) A written program describing the design, maintenance, protection and inspection of walking and working surfaces in compliance with the fall protection requirements of 29CFR1926 Subpart M.
 - 2) All workers on a working/walking surface 6 feet or more above a lower level shall be protected from falling by a guardrail system, a safety net system, or personal fall arrest system. This 6 feet requirement also applies to Steel Erection. The other requirements of 29CFR 1926 Subpart R apply to Steel Erection.
 - 3) Where a guardrail system is employed, and 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 accepted site-specific fall protection program. The program shall include the designation of the "Competent Person". The Contractor's "Competent Person" shall have been formally trained in ANSI fall protection standards and safety, and have authority to take actions deemed necessary. See Section on "Competent Person(s)" in this section.

f. Contractor/Subcontractor Responsibilities

- 1) The Contractor shall include, and shall require the compliance with, all the applicable safety requirements of this contract in all contracts with all tiers of Subcontractors. The Contractor is totally responsible for the safety performance and compliance of subcontractors of any tier.
- 2) Prior to the start of work, a pre-construction meeting shall be scheduled by the Contractor with his subcontractors to review specific safety requirements of the project, including the HASP. The meeting will also include the following:
 - a) That BNL will not tolerate non-adherence to safety and environmental requirements under this Contract, including the HASP. Failure to comply will result in BNL's direction to stop work in accordance with the Article titled: Compliance with 10 CFR 851 and BSA's Worker Safety and Health Program. Non-compliance could also mean the barring of the violating individuals from the BNL Site. Repeated safety violations may also result in a permanent Work Stoppage under the same Article.
 - b) A verbal or written Stop Work Order may be imposed by BNL for specific work activities when site conditions are created or exist that pose unacceptable risks or imminent danger.
 - c) BNL reserves the right to refuse access to the Project Site, or require immediate removal from the Project Site, any individual violating or alleged to have violated established site safety, environmental, or Security regulations.
 - d) All debris, or other material or substances that constitutes a hazard, in any form, liquid or solid, shall be cleaned off floors and other walking/working surfaces daily, (indoors or outdoors), or as often as necessary as conditions change/develop.

3. Safety Training and Communication
 - a. A written program describing the training employees in the recognition and avoidance of unsafe conditions and in the safety regulations applicable to this Project.
 - b. The conducting of informal “tool box” safety and health training sessions at least weekly for all employees on the worksite. Depending on the size and nature of the project, this may be accomplished in single or multiple sessions and may address different topics for different work crews. Documentation of all “tool box” training sessions shall be prepared by the Contractor and annotated with the date, time, and names of all employees in attendance.
 - c. Provisions through meetings, established contacts, documents or other means, for the mutual exchange of information with Contractor and Subcontractor personnel on:
 - 1) Changes in scope of work
 - 2) Recognized hazards
 - 3) Identified inspection deficiencies
 - 4) Future phases of work
 - 5) Potential problem areas
 - 6) Coordination of crafts/trades
 - d. A written program to ensure that all employees and Subcontractors have been properly trained for the hazards anticipated on this project as specified in the Phase Hazard Analysis. Severe or repetitive safety violations shall be cause for permanent removal from the job site.
 - e. A written program to establish and implement a drug and alcohol-free workplace program.
 - 1) A single violation of this program shall result in the offending individual being removed from the job-site and recommendation for participation in an approved drug abuse assistance or rehabilitation program, and/or reporting to the civil authorities for criminal prosecution. BNL’s Contracting Officer shall be notified in writing within 10 days after receiving notice of an employee's or subcontractor 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.

- 2) The program shall include ongoing mandatory documented drug-free awareness training, intervention procedures, and program enforcement.
 - 3) The program shall include pre-hiring and random and post accident drug and alcohol testing.
 - 4) The program shall identify the individual responsible for implementing this program.
4. Hazard Communication
- a. A written hazard communication program to inform employees and all subcontractor employees of known chemical hazards that may exist in the workplace in compliance with OSHA 29 CFR 1910 Subpart Z. This program shall apply to chemicals known to be present in the workplace in such a manner that employees may be exposed under normal conditions, non-routine tasks, or foreseeable emergencies.
 - b. The program shall address labels and other forms of warning, Material Safety Data Sheets (MSDS) and employee information and training, a listing of hazardous chemicals known to be present in the workplace, methods for informing employees of hazards of non-routine tasks, and methods for informing employees and subcontractor employees of hazards they may be exposed to while working on the Project.
5. Emergencies: Fire, Medical, Environmental and Accidents
- a. A written program for response to emergencies, including emergency notification. The program shall address injury reporting, first aid, notification of BNL emergency and project personnel, and accident and injury investigation. The program shall also address fire protection and prevention, including hot work permits, fire watches, and fire extinguishers, in conformance with 29 CFR 1926 Subparts F and J. The Contractor shall identify and post indoor and outdoor assembly area locations and evacuation routes from the Project Site.
 - b. The Contractor shall have a program to protect the environment, to include spill prevention and response. The contractor is responsible to immediately notify BNL project/safety personnel of all injuries, and to conduct a thorough and timely accident investigation, determine the cause(s), and implement corrective and preventive measures. The Laboratory reserves the right to monitor all such investigations and causal analysis processes for all recordable injuries, and further reserves the right to conduct it's own investigations.

If work is to be performed in the wildland areas, in spring, summer, and/or fall, include this condition. Be sure to retain this clause if project is located in wooded areas.

- c. Wildfire Danger: This work will be performed in a wildland area of BNL, where brush fires are a real concern. The Contractor shall ensure that the conduct of operations minimizes the potential of the occurrence of wildland fires. Preventing the parking of vehicles on grassy areas with engines running, and control of disposal of smoking materials, is the responsibility of the Contractor's Safety Representative. Ensure gasoline-engine-driven portable generators and air compressors are equipped with spark arresters and that personnel are aware of fire break names if calls to the Fire Department [Ext. 2222 or (631) 344-2222] or Direct Connect 173*37738*66 on a Nextel become necessary.
6. Excavations
 - a. A written program is required describing the design, maintenance, protection and inspection of excavations in compliance with 29 CFR 1926 Subpart P. The program shall include the designation of the "Competent Person". The Contractor's Competent Person shall have been formally trained in OSHA excavation standards and safety, and have authority to take actions deemed necessary. See Section on "Competent Person(s)" in this section.
 - b. The Contractor shall submit to BNL for acceptance the documentation that describes the qualifications of the proposed candidate(s) for Competent Person. The program shall ensure all personnel engaged in work within excavations are trained on current project-specific excavation hazards prior to start of each shift.
 - c. The soil at BNL is classified as Class C soil, and the excavation safety program shall comply with the requirements for that soil classification.
 7. Concrete and Masonry Penetrations
 - a. The Contractor shall ensure safe penetration into or through any existing concrete or masonry surface.
 - b. BNL SBMS and F&O Directorate's Policies and Procedures shall be followed, including the completion of appropriate Penetration Permits and the provision and use of utility locating/detecting equipment. The Contractor shall provide trained "Authorized Employees" and shall submit, for MPO review and approval, the name and type of the utility locating/detecting equipment to be used, as well as the names of the trained personnel who will perform the locating task with this equipment and who will execute the penetration work.

- c. Non-aggressive penetrations cannot be executed without first using utility locating/detecting equipment and obtaining approval by MPO.
 - d. Aggressive penetrations cannot be executed without first using utility locating/detecting equipment followed by the completion and approval of a MPO Aggressive Penetration Permit.
8. Electrical Safety
- a. A program is required certifying the safe operating condition, and assuring the proper maintenance of, permanent and/or temporary light, power and electrical equipment, including protective devices (GFCI) for portable electric tools, in conformance with 29 CFR 1926 Subpart K.
 - b. Working on or near energized electrical circuits will only be allowed when all methods available to perform the work in a de-energized state have been evaluated and determined to be infeasible. Working on or near energized conductors is subject to the restrictions and provisions of the Standard for Electrical Safety in the Workplace (NFPA 70E), and MPO Procedure DF-ESH-102 Electrical Safety.
 - c. All Contractor and Subcontractor employees who work on or near energized parts as defined in NFPA 70E shall complete the BNL Electrical Safety 1 Training Course. The course is available on the Web at <http://training.bnl.gov/course/electsaf1>, and is valid for one (1) year. In addition to completing this course, each organization's Electrical Work Supervisor must discuss the "Standard for Electrical Safety in the Workplace" (NFPA 70E) requirements and specific hazard(s) and risk information with their staff. This job briefing shall discuss specific electrical work procedures, protective equipment requirements, and departmental contacts at the local application level. This job level discussion can be informal; however, a record of this briefing shall be documented. The Contractor shall ensure that all employees and subcontractor employees who may be required to "Work On or Near" electrical circuits within the BNL AC Distribution System and all associated equipment are trained and authorized employees. A "trained and authorized employee" is deemed to be an individual who has been qualified in the skills and knowledge related to the service, maintenance, construction and/or operation of electrical equipment and installations, and has received safety training on the hazards involved, including the wearing of the appropriate PPE.
 - d. The Contractor shall provide documentation which clearly indicates the qualifications and training of all employees performing such work.

- e. All Contractor and Subcontractor employees that “Work On or Near” electrical circuits shall have taken and passed a CPR training program that has been accepted by BNL.
 - f. The Contractor will arrange for the issuance of a “Working On or Near” Permit as required by DF-ESH-102 Electrical Safety. The Contractor shall give BNL a minimum of 48 hours notice of any requirement to “Work On or Near” to allow time for the BNL permitting process. “Working On or Near” operations that only involve testing, diagnostic work, and/or service tasks on equipment for voltages less than 600 Volts AC-to-ground may be covered by a Testing, Troubleshooting, and Voltage measuring Electrical Energized Permit, which may also cover the entire project period up to a maximum of one year. Operations involving “Working On or Near” for voltages greater than 50 Volts AC-to-ground may require a specific “Working On or Near” Permit for each work situation required. Work may only proceed when the “Working On or Near” Permit is completed and all parties performing the work have been informed of the hazards involved and the PPE to be worn. An authorized Supervisor from the Contractor who is performing the work and a BNL-designated Manager must sign the permit before any work can be performed.
9. Mobile Equipment Program
- a. A program is required certifying the safe operating condition of, and assuring the proper maintenance of, earth-moving equipment, cranes, vehicles and other such heavy equipment, including an environmental protection spill prevention plan, in conformance with 29CFR 1926 Subparts N and O.
 - b. A Rigging Plan shall be submitted in conformance with 29 CFR1926.251 and the BNL Construction Safety Subject Area as a part of the HASP and in accordance with the conditions noted in the Supplementary Conditions clause, “SHOP DRAWINGS, MANUFACTURERS DATA, AND SAMPLES” whenever this equipment is to be used on Site. Incremental submission of the Rigging Plan is acceptable, but in no case shall be submitted less than four (4) working days prior to any scheduled lift. Acceptance of the Rigging Plan by BNL is required prior to the commencement of any lift.
10. Fall Protection
- a. A written program certifying that all temporary staging, platforms, scaffolding, planking, bracing, scaffold towers and walkway work are to be designed, erected, used, maintained, and dismantled in accordance with OSHA 29 CFR 1926 Subpart L, and BNL SBMS.

- b. The Contractor's Competent Person shall have been formally trained in scaffold standards and safety, and shall assure that all personnel engaged in the erection and/or dismantling of scaffolding meet the definition of a "Competent Person". See Section on "Competent Person(s)" in this section.
 - c. Scaffolds shall be physically tagged as to their condition and verified by the "Competent Person" on a daily basis, when they are being used. The scaffold tagging system shall include:
 - 1) Green Tag: To be placed on all scaffolds at all access points by the designated competent person indicating that the completed scaffold complies with all regulatory requirements.
 - 2) Yellow Tag: To be placed on all scaffolds at all access points by the designated competent person indicating that the scaffolds are structurally sound, 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. Other forms of fall protection are required on all yellow-tagged scaffolds.
 - 3) Red Tag: To be placed on scaffolds by the designated competent person on scaffolds that are damaged, defective, being constructed or dismantled indicating that 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.
 - d. The Contractor's scaffold "Competent Person" shall also assure that all personnel working on or from the scaffolds have been trained in the proper procedures and precautions while using the scaffolding. Tool Box training at the Site is acceptable.
11. Lockout/Tagout Program
- a. A Lock-Out/Tag-Out program shall comply with OSHA 29 CFR 1926.417 and 29 CFR 1910.147, and BNL's LOTO Subject Area.
 - b. Lock-Out/Tag-Out is the required method of control when performing service, maintenance, or construction around any machinery where personnel could be injured by startup of the equipment or release of stored energy. Sources of energy shall include, but not limited to, mechanical (kinetic/potential), electrical, electromagnetic, chemical, thermal, hydraulic, and pneumatic.
 - c. Contractor shall provide his own locks in compliance with the BNL LOTO Subject Area, lockout devices, and red tags for Lock-Out/Tag-Out of energy sources(s). A logbook shall also be maintained and kept in a designated area assigned by BNL.

12. Hot Work (Welding/Cutting & Open Flame Operations)

- a. Proper cutting/welding permits shall be obtained from the BNL 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.
- b. Requirements of the SBMS Fire Safety Subject Area shall be observed.
- c. 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 through 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.

13. Confined Space Entry

- a. When Confined Space Entry is required, the Contractor shall have a written Confined Space Entry Program which complies with OSHA 29 CFR 1910.146 and BNL Confined Space Subject Area (<https://sbms.BNL.gov>).
- 1) The program shall require the "Competent Person" (as defined by OSHA) to:
 - a) Establish procedures and practices for safe entry.
 - b) Have air monitors to check concentration of oxygen, explosive/flammable gases and the specific contaminants of concern (e.g. hydrogen sulfide in sewer utility holes).
 - c) Test and monitor conditions to identify and evaluate hazards.
 - d) Prevent unauthorized entry.
 - e) Station an attendant outside permit spaces during entry.

- f) Post procedures to summon rescuers and prevent unauthorized personnel from attempting rescue.
 - g) Develop a system for preparing, issuing, using, and canceling entry permits.
- 2) Permits are required to include an identification of the confined space, its hazards, a list of authorized entrants, the purpose of their entry, and the date and duration of their permits; the current attendants and entry supervisor; and both the results of tests performed and any measures necessary to isolate the permit space and eliminate or control the hazards. The permit must also describe the acceptable entry conditions, emergency equipment and the means to summon rescue and emergency services.
 - 3) Authorized entrants into confined spaces must be effectively trained to be aware of any hazards they may face and be able to recognize signs and symptoms of exposure. They must also be familiar with any emergency equipment in the confined space.

Include the following clause where industrial hygiene (IH) monitoring is required by the BNL SBMS Subject Areas, as indicated in the ES&H 500A form. Projects that involve work with the conditions listed, during the construction phase, require IH monitoring.

14. Respiratory Protection & Exposure Monitoring

- a. All work on this Project with regard to, and of, the conditions listed must be done within the occupational exposure limits for Industrial Hygiene hazards set in OSHA 29 CFR 1926, 29 CFR 1910, and ACGIH *Threshold Limit Values*® (see BSA LLC, General Terms and Conditions for Construction and Labor Hour Agreements, Article titled: Compliance with 10 CFR 851 and BSA's Worker Safety and Health Program). Compliance with the OSHA Permissible Exposure Limits and American Conference of Governmental Industrial Hygienists (ACGIH) *Threshold Limit Values*® shall be determined by representative personnel exposure monitoring and dosimetry conducted by the Contractor and his Industrial Hygienist. Monitoring shall be continuously performed during the total duration of the hazardous condition. The details of the project's exposure monitoring equipment, methods, and monitoring strategy shall be included in the Contractor's Environmental, Health and Safety Plan. Conditions that require industrial hygiene monitoring include, but are not limited to:
 - 1) Asbestos
 - 2) Beryllium

- 3) Working with Chemicals, Adhesives, or Lead
 - 4) Release of Silica (grinding, drilling, core boring, jackhammering of concrete, masonry, mortar, etc.)
 - 5) Confined Spaces
 - 6) Heat Stress
 - 7) Carcinogens
 - 8) Noise and Hearing Conditions
 - 9) RF/Microwave/Non-Ionizing Radiation
 - 10) Static Magnetic Fields
- b. The Contractor is required to provide qualified monitoring and hazard assessment personnel (per DOE G440.1-3 *Occupational Exposure Assessment*) to conduct all Industrial Hygiene monitoring.
 - c. The Contractor is required to conduct monitoring with calibrated equipment using NIOSH or OSHA approved methods, and to have analysis conducted by an American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing certified laboratory or by National Institute of Standards and Technology (NIST) traceable calibrated direct reading instrumentation. All instrumentation used for surveys shall have been calibrated in compliance with the manufacturer's specification prior to use in the field.
 - d. Copies of all equipment calibration, field sampling sheets, laboratory analysis reports, and hazard assessment evaluation reports are to be provided to MPO, in accordance with the Shop Drawings, Manufacturers Data, and Samples Section above.
15. Phase Hazard Analysis Program
- a. The Phase Hazard Analysis (PHA) shall provide BNL with a defined plan of action for identified hazards and comprehensive prevention methods for exposures to workers, the BNL populous/public, and property. The PHA shall identify the specific tasks to be completed, including access, egress, set-up and breakdown, under all expected or created environmental conditions. It shall include the method of work for 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.

- b. Subcontractors may develop their own PHA's and forward them to the General Contractor for their written approval, who will then forward the PHA's to BNL for acceptance.
- c. The PHA shall be used as the basis for Contract coordination items and safety planning discussions in the Construction Management process.
- d. BNL requires a minimum of 5 working days to review the Contractor's submitted PHA's.
- e. Work shall not proceed on a task until the PHA has been accepted in writing by BNL.
- f. Assistance in developing effective PHA's is available from the BNL Construction Safety Engineering Staff.
- g. All workers shall comprehend the scope of work and safety instructions required to perform the job. All workers employed by the Contractor and all Sub-Contractors shall acknowledge, in writing, that they have read and understood the HASP and all subsequently accepted modifications and PHAs. If workers cannot read or speak English or are hearing impaired, an interpreter shall be provided by the Contractor to ensure that the scope of work, information regarding hazards associated with the work-site, and safety requirements are relayed to them in a manner in which they can understand. The interpreter shall sign that he has explained the plan, and shall be at the work-site whenever these workers are on the job. The accepted HASP and all subsequently accepted modifications and PHAs shall be available at the job site to all Contractor and Sub-Contractor employees for review.

16. Sources of Radiation

- a. Lasers brought onto the BNL site must be reviewed by the BNL Laser Safety Officer. Only lasers which are Class 2, 3A, or 3R, will be permitted on the construction site.
- b. 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 at all times. (Name of Contractor) will have the training documentation on file or it will be readily available.
- c. Areas in which lasers are used will be posted with standard laser warning placards.
- d. Only those devices labeled as Class 2 or 3a, or 3r (no greater than 5 milliwatts) will be used.

- e. Areas in which lasers are used will be posted with standard laser warning placards. These can be obtained from the BNL Laser Safety Officer.
 - f. 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.
 - g. 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.
 - h. Laser unit in operation should be set up above the heads of the employees, when possible.
17. Occupational Medicine Program
- a. A written program describing the comprehensive occupational medicine services provided to each of the Contractor employees and subcontractor employees 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. The services shall be provided by an occupational medicine provider (“OMP”) that:
 - 1) Plans and implements the occupational medicine services
 - 2) Is under the direction of a physician licensed in the state of New York.
 - 3) Is staffed by health care professionals with valid New York State licenses in their respective professions.
 - b. These services shall be fully compliant with all provisions of Section 8 (“Occupational Medicine”) of Appendix A of the Federal Regulation 10 CFR 851.
 - c. The contractor shall provide a written acknowledgement signed by the OMP that the medical surveillance and medical certification to be provided will be in compliance with OSHA, DOE or other statutory or contractual requirements, and will be fully compliant with the provisions of Section 8 (Occupational Medicine) of Appendix A of the Federal Regulation 10 CFR 851.

END OF SECTION 000900