**{Company Name}**

**JOB HAZARD ANALYSIS – EXCAVATION ACTIVITIES**

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| **Title of Job/Operation:** |
| **Subcontractor:** |
| **Job Number:** |
| **Date:** |
| **Author:** |
| **Project Description:** |

General Notes:

Prior to starting any job, a tool box meeting will be held to discuss the work phases and review the entire job. This includes identifying any hazards and discussing the safest way to complete the job while keeping the BNL population safe and out of harm’s way. Specific tools for the job are selected, sound house-keeping practices are discussed, review SDS specific for this task. Review and sign the work permit, review, and sign the JHA/SWP. Operator’s manual for any powered equipment is available and will be reviewed for proper use and safety. Check tools and GFCI daily before each use.

General Safety Rules to be applied as follows:

1. Effective safety supervision shall be present on the project whenever work is to be performed.
2. All workers must wear high visibility clothing, safety shoes and safety glasses with side shields at all times.
3. The HASP must be available onsite.
4. All employees shall be aware of the procedures in this JHA/SWP and Brookhaven National Lab rules.
5. All employees shall be aware and trained in the chemical hazards communication program (SDS, Right to Know).
6. All SDSs for proposed and used chemicals shall be on file and approved with the BNL supervisor prior to the start of work as per OSHA requirements. Provide training as required by specific SDS.
7. All PPE shall be used in accordance with applicable ANSI standards.
8. Eyewash/Shower stations will comply with current ANSI standards located within 10 seconds but no further than 100 feet from hazardous chemical use areas.
9. All employees shall be effectively trained for the tasks, which they are required to perform.
10. Any injury is to be reported to the supervisor immediately.
11. Maintain proper housekeeping throughout the project.
12. No daisy chaining of extension cords.
13. Protection of BNL population.
14. All personnel involved in this work are required to acknowledge the JHA for this project and sign off on the document.
15. Use approved fuel dispenser can. Post no smoking sign in the area if doing refueling of powered equipment.
16. Operator manual must be present for all equipment on job site.
17. All equipment used such as: ladders, drills, saws, hand tools, extension cords will be inspected daily at a minimum.
18. All work with chemicals shall be performed in accordance with IH report/recommendations prepared by contractor’s IH firm including PPE, monitoring, and reporting. Reporting shall meet BSA requirements.

| **Job Steps or Tasks** | **Hazards** | **Control Measures/Mitigation** |  |  |
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| Area Preparation | Employee Protection  Slips, trips, falls  Uneven surfaces | Physically inspect work areas prior to start of work  Follow good housekeeping practices: create walkways  Assure materials & debris do not block traffic  Keep work areas clean & neat, remove rubbish & debris  Watch where you walk  Be cognizant of your own safe work practices as well as those of your co-workers  Be careful on slopes or wet/muddy areas  Flagmen will be utilized as required for roadway traffic  Appropriate warning signs will be posted  BNL to be notified prior to road & sidewalk closing |
| General Site Security | Unauthorized access by BNL population | Guard against unauthorized access to excavation by erecting fencing around the work area to protect BNL population |
| Working outdoors | Heat Stress  Sunburn  Dehydration  Chiggers & Ticks | Drink plenty of water, and electrolyte drinks as needed  Wear light-colored, cotton clothing  Slow down work rate and increase breaks in hot weather  Use sunscreen  Use Bug Repellant |
| General Material Lifting/Handling | Ergonomic Injury  Impact Injury  Back injury  Muscle pulls  Sprains & strains  Lacerations | Use proper lifting methods, including team lifting when necessary. (Over 80 lb.)  Use mechanical equipment whenever possible  Lift with legs, keep loads close to body, don’t twist while picking up loads  Wear cut-resistant work gloves whenever materials are being handled |
| Use of Hand and Power Tools:  General | Eye injury  Lacerations and hand injuries | Wear eye protection when using hand/power tools which cause flying debris  Eye wash to be immediately available  Tools must be in good condition and used for their intended purpose  Familiarize workers with tool operation  De-energize power equipment prior to changing bits or blades  Wear appropriate hand protection; observe good work practices in ensuring that work gloves are in good condition |
| Use of Hand and Power Tools:  Electric  Cutting/Grinding | Electrical hazards  Metal in eyes & cuts  Improper grounding  Improper operations & maintenance | Wear safety goggles/glasses at all times & proper protective gloves  Face shields over safety glasses  Use properly grounded or double-insulated tools with ground-fault circuit interrupters (GFCI)  Inspect the electrical cords for fraying, cracks, and other damage before use; remove damaged cords from service  Never daisy-chain electrical cords |
| General Tool Safety | Eye injury  Lacerations | Choose the right tool for the task. Inspect tools before & remove defective tool from service |
| Delivery of Material On Site | Hitting people or obstacles on site with truck  Unwanted loss of or shifting load  Backing vehicle striking worker | Drive The Proper Speed Limit (5 MPH) And Constantly Scan For Potential Accidents  Truck driver has been informed and understands the requirements in this document  Driver reads and “signs off” on document  Have proper PPE available for drivers so they can exit the cab to remove/tie down loads  Be sure all items are securely tied and out of harm’s way  Keep loads secure until ready to be removed from the truck. Chock or wedge to prevent rolling of round objects. No use of “cheater bars” on Load Binders allowed  Effective back up alarm and/or flagger to direct truck while backing |
| Delivery of Material On Site (Continued) | Truck/trailer unwanted rolling  Truck getting stuck - Tow cable/chains breaking.  Entering and exit being struck by | Set parking brakes and chock tires  Hazards of trying to pull truck out from being mired  Road signage warning traffic of hazard  Flagmen are to be used when necessary |
| Unloading Trucks | Strains & Struck by  Slips  Nails In The Foot  Tripping | Utilize Proper Rigging And Equipment  Slings and chains must be inspected prior to use, and be designed for the proper lifting capacity of the load  Follow manufacturer’s recommendation on all equipment  Driver will stay clear of unloading and loading operations  All wood scraps, nails, banding must be cleaned up immediately and placed in containers. |
| Work in Confined Space, Welding | O2 deficient atmosphere  Explosive atmosphere | All employees to have BNL confined space training, attendant training, confined space certification form required, attendant required, confined space monitoring required, manhole barriers required  Evaluate atmospheric conditions prior to entry through atmospheric monitoring and provide engineering controls as necessary  Complete certification form and permit, if required, prior to entry  Rigorous control of all materials brought into confined spaces  Utilize proper personal protective equipment  Comply with BNL Confined Space Requirements  Comply with OSHA CFR 1926.21 - (Safety training and education requirements). |
| Concrete Saw Cutting and Drilling | Silica dust inhalation | Use engineering controls and wetting of concrete as a containment method to prevent any dust  When sawing concrete, use saws that provide water to the blade  Use adequate respiratory protection when source controls cannot prevent dust  Utilize proper personal protective equipment as determined by IH Support |
| Excavation  Trenching  Dirt Removal | Hitting buried utilities  Property Damage  Electrocution  Crushing, flying debris  Noise | Completed mark-outs of utilities and excavation permit prior to start of excavation work  Brief workers on digging permit, scope of work, and the need to observe and maintain mark-outs  Inspection and maintenance of utility mark-outs as often as necessary, but never longer than every 30 days  Confirm location of all utilities within excavation area by hand digging  Soft digging (No mechanical means) only within a tolerance/exclusion zone of 2 feet all around utility.  All soils shall be considered Class “C”  Wear proper PPE  Keep appropriate distance for task at hand  Have competent person examine area before work  Keep spoils pile at least three feet from edge of excavation  Keep non-essential personnel away from work activities  All equipment will be inspected by BNL personnel 48 hours prior to using on the job |
| Grading | Struck by  Caught in between  Noise | Ensure that all back up alarms and other safety equipment are working properly. Wear seat belt  Wear safety glasses  Wear hearing protection during operations when required by noise level above 85 dBA  Safety vests to be worn at all times  Keep in sight of operator |
| Deep Excavation | Wall collapse  Engulfment  Undermining of structures | Excavations deeper than 5 ft in depth require an excavation plan. The required excavation plan must be complied with at all times  All excavation egress shall be inspected daily and maintained  Excavate slopes to 1.5 to 1 ratios, (34 ½ Degrees), install trench box when inadequate space is available for sloping  Watch for signs of collapse: tension cracks, ground settlement, water seepage etc.  Safe-off excavation area as required  Do not excavate below foundations or footings of structures  Use shoring or underpinning to protect against collapse of structures |
| Compacting | Wall collapse  Noise  Engulfment | Ensure the vibration does not collapse excavation  Wear appropriate hearing protection if the noise levels require it, above 85 dBA  Have competent person inspect excavation before work starts every day and as often as necessary during the shift or after a rain storm  Ensure backup alarm is working properly  Safety vest are to be worn at all times |
| Dust Control | Breathing & eye irritant  Property damage | Use mechanical, hoses or sprinkler to moisten soil to keep dust under control  Use proper respiratory protection as needed, as determined by IH Support |
| Equipment Operation | Equipment accidents  Struck-by or crushing accidents with ground personnel | Allow only necessary personnel into areas where equipment is operating  Maintain line of sight with operators  Establish and use appropriate hand signals  Daily equipment inspection checklist will be performed each day prior to the use of the equipment  All operator manuals must be with the machine  Bucket and attachments must be grounded when not in use  Only trained and qualified Operators are allowed to run the equipment  Use spotters where high noise levels or poor visibility interfere with an operator's ability to see objects on all sides of the equipment  Utilize safety vests at all times  Swing radius is to be barricaded while working around ground personnel  Keep all personnel out from under loads  Protective systems shall be designed in accordance with OSHA 1926 Subpart P – Excavations  Trench box shall be used when inadequate space is available for proper sloping |
| Equipment to be used | Not knowing equipment  Struck by  Caught in between | Must be trained on use  Follow Manufacturer’s Guidelines  Have Operating Manual on site  Equipment:  Hauling Trucks, 892E Excavator, PC300 Excavator, 450 Pay Loader, 430 Backhoe, D5 Dozer, 320 Bobcat, 250 Bobcat |
| Erosion Control | Contamination  Property damage | Ensure the Erosion Control Plan is followed  Use of engineered controls such as misting of soils to prevent excessive dust migration  Inspect site weekly and after every rain event, and repair all damages as soon as possible |
| Site Maintenance | Personal Injury  Tripping & falling  Property Damage | Be sure all debris & material are stored to avoid tripping hazard  All work areas are kept clean  All work areas are secure from unauthorized access |
| Transportation | Traffic accidents  Crushing | Obey posted speed limits and traffic laws.  Cover loads to minimize the risk of blowing debris.  Do not overload vehicles in weight or volume.  Be sure route is identified and BNL personnel are informed in advance.  When dumping on a stockpile truck drivers must inspect the stockpile for cracks along the edge of slope.  Trucks should dump only in designated area that has been prepared by the construction of a berm, and after a supervisory inspection for signs of instability |
| Concrete placement | Eye and skin injury from splashing concrete | Wear boots, long sleeve shirts, and eye protection  Wear proper eye protection and PPE |
| Reinforcing steel | Impalement | All protruding reinforcing steel, onto and into which workers could fall, shall be guarded to eliminate the hazard of impalement |
| Cranes | Personal injury  Property damage  Struck by  Equipment failure | Pre-Inspection by BNL 48 hours before equipment arrival  Trained and Qualified Operator  Comply with OSHA 1400 - Cranes  Annual Crane Inspection & other required records  Logistics Plan  Daily Pre-Lift Meeting  Daily Checklist  Daily Riggers Checklist  Proper PPE |
| Mobile Equipment | Traffic hazards | Coordination of moving equipment by Supervisor, follow the Manual of Uniform Traffic Control Device requirements (MUTCD) as incorporated by reference OSHA 1926  Only designated personnel allowed in work areas  Set up traffic control devices and signage  Warning signs shall be placed to provide adequate warning of hazards to workers & public |

I have attended the safety orientation tool box meeting where we discussed the phases of the job and any potential hazards, housekeeping, and keeping the BNL population out of harm’s way. We also reviewed the JHA & BNL Work Permit.

I have read and understand the aforementioned JHA recommended job safe procedures and the BNL Work Permit and will follow them throughout this job:

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| **Name** | **Life Number** | **Signature** | **Date** |
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A signed copy of the JHA must be posted while the applicable subcontractor is working on-site and be available to any BNL employee upon request.