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| Chubb Exposure Assessment Form Support of Excavation (S.O.E.) |
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|  |  | **Date of Assessment** |       |
|  |  | **Completed By** |       |

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| **Project** |       |
| **Contract Number** |       |
| **Contractor** |       |
| **Supervisor** |       |
| **Activity Start Date**  |       |
| **Expected Completion Date** |       |
| **No. of Workers**  |       |

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| Operation | Item # | Exposure | Mitigation / Controls |
| 1. Drilling solider piles, sheet piling or secant pile through overburden.
 | 1A | Potential damage to underground utilities not properly identified prior to drilling activities. |       |
|  | 1B | Workers being struck by piles or sheet piling when hoisted and positioned into place. |       |
|  | 1C | Off-loading S.O.E material from trailer beds of trucks. |       |
|  | 1D | Workers not utilizing proper means of access and egress onto and off truck beds. |       |
|  | 1E | Improper selection and/or damage of rigging equipment used to hoist material. |       |
|  | 1F | Potential hoisting failures due to improper selection and set up of hoisting equipment (i.e., cranes, hydraulic excavators) and/or exceeding rated lifting capacity of hoisting equipment. |       |
|  | 1G | Impacted alignment of solider piles due to subsurface encumbrance.  |       |
|  | 1H | Worker’s fingers/hands being impinged or crushed when guiding piling under the drill rig. |       |
|  | **1I** | Traffic accidents during delivery of trucks into an out of the construction work zone. |       |
|  | 1J | Worker’s exposed to being struck by drill rig components (i.e., hammer, load lines) when aligning piling into the drill rig. |       |
|  | 1K | Environmental exposures resulting from leakage of hydraulic fluid due to damage drill rig fluid lines. |       |
|  | 1L | Excessive noise level resulting from drilling operation. |       |
|  | 1M | Airborne concentration of concrete dust/silica during rock breaking/excavation. |       |
|  | 1N | If rock removal requires explosive blasting, potential exposures include handling/loading of explosives, misfire of blast, improper storage of explosives, & struck by fly rock. |       |
|  | 1O | Property damage and movement of surrounding structures resulting from drilling, piling, rock chopping and/or blasting. |       |
|  | 1P | Potential damage to underground utilities resulting from SOE related activities. |       |
|  | 1Q | Potential damage to adjacent underground structures including train tunnels resulting from SOE activities.  |       |
|  | 1R | Potential impact to surrounding ground area and structures resulting from de-watering activities. |       |
|  | 1S | Exposure to general-public walking/driving alongside drilling and S.O.E. activities. |       |
|  | 1T | Access and egress necessary for workers as the SOE work progresses. |       |
|  | 1U | Failure to have JHA completed, approved, and reviewed with crew performing the work. |       |
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| 1. Installing timber lagging.
 | 2A | Collapse or undermining of soil below installed lagging, due to excavation not properly shored or protected. |       |
|  | 2B | Crush type accidents to fingers and hands during installation of lagging between solider piles. |       |
|  | 2C | Injury to legs during cutting of timber lagging with chain saw. |       |
|  | 2D | Struck by bundle of lagging during hoisting and landing of material at work area. |       |
|  | 2E | Rigging/ hoisting failure during rigging and hoisting of material due to improper and/or damaged rigging equipment, improper rigging by unqualified person and/or failure of hoisting equipment due to improper equipment selection and set up or exceeding capacity rating of the hoisting equipment. |       |
|  | 2F | Trip/Slip accidents due to congested work area limiting clear pathways for workers. |       |
|  | 2G | Failure to have JHA completed, approved, and reviewed with crew performing the work. |       |
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| 1. Installation of tiebacks.
 | 3A | Utility strikes to unmarked or unidentified utilities prior to drilling of tie backs through the ground. |       |
|  | 3B | Worker struck by tie back rods when positioning ties into drill and wall. |       |
|  | 3C | Rigging failure of hoisted load due to improper selection and/or damage rigging equipment. |       |
|  | 3D | Drill rig stability failure due to poor ground conditions. |       |
|  | 3E | Injury to hands/fingers during handling and positioning of tie rods. |       |
|  | 3F | Workers pinned against or struck by rotating portion of the drill rig.  |       |
|  | 3G | Injury during off-loading of material from trailers resulting from improper means of access and egress of the trailer bed. |       |
|  | 3H | Improper or removed chocking of stacked tie roads when shipping bands are removed, resulting in stacked rods slipping/rolling onto worker’s legs/foot. |       |
|  | 3I | Eye injury during handling and drilling tie backs into position. |       |
|  | 3J | Fall exposures associated with installation of tie backs when working heights of 6 feet or greater are encountered.  |       |
|  | 3K | Failure to have JHA completed, approved, and reviewed with crew performing the work. |       |
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| 1. Install whalers.
 | 4A | Crushing exposures to hands and fingers during handling and positioning of walers. |       |
|  | 4B | Fall exposure to workers installing and welders welding walers once heights reach 6 feet. |       |
|  | 4C | Access and egress from ground level up to the work level of waler for workers. |       |
|  | 4D | Rigging failure during hoisting and positioning of walers along the wall due to improper selection of rigging, damaged rigging equipment and/or rigging of load by unqualified rigger. |       |
|  | 4E | Stability failure of hoisting equipment due to improper selection of equipment, poor ground conditions and/or exceeding rating capacity of the equipment. |       |
|  | 4F | Exposure to welding fumes requiring respiratory protection and face shields. |       |
|  | 4G | Exposure to welding arc flash (arc-eye) to workers in immediate area due to missing welding shields. |       |
|  | 4H | Potential fire ignition resulting from welding and hot works activities. |       |
|  | 4I | Overexertion resulting from improper handling of walers. |       |
|  | 4J | Worker struck by hoisted walers. |       |
|  | 4K | Improper Controlled Access Zone established along the work area below the overhead waler operation. |       |
|  | 4L | Crushing of hands or fingers during handling and positioning of material. |       |
|  | 4M | Failure to have JHA completed, approved, and reviewed with crew performing the work. |       |
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| 1. Install rackers and heel blocks.
 | 5A | Rigging failure during hoisting and positing of rakers resulting from; improper selection of rigging equipment, damaged rigging equipment and /or rigging of load by unqualified rigger.  |       |
|  | 5B | Stability failure of hoisting equipment due to improper selection of equipment, poor ground conditions and/or exceeding rating capacity of the equipment. |       |
|  | 5C | Crushing of hands or fingers during handling and positioning of material. |       |
|  | 5D | Fall exposure to workers at top of rakers when heights of 6 feet or greater occur. |       |
|  | 5E | Stability of raker if not installed as per approved engineered drawings. |       |
|  | 5F | Failure to have JHA completed, approved, and reviewed with crew performing the work. |       |
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| 1. Excavate soil down to subgrade elevation.
 | 6A | Worker’s exposure to being struck by heavy equipment and trucks associated with the excavation operations. |       |
|  | 6B | Access and egress of dump trucks entering and exiting the work site that could result in traffic or pedestrian accidents to the general-public. |       |
|  | 6C | Over loading dump trucks with excavated soil above the water line or capacity of the truck. |       |
|  | 6D | Truck leaving the site with excessive mud in wheel wells and undercarriage that can become dislodged and fall onto roadways. |       |
|  | 6E | Stability and steepness of the earth ramp created for trucks to reach the bottom of the excavation. Earth ramp must be designed and constructed by a qualified person. |       |
|  | 6F | Worker exposures to trucks and equipment if they utilize the earth ramp as a means of access and egress from ground level to excavation depth. |       |
|  | 6G | Access and egress for workers to safely enter and exit the excavation area. At least two means of access and egress is required.  |       |
|  | 6H | Removal of heavy equipment remaining once excavation has reached the subbase and earth ramp is removed. If equipment will be hoisted out of the excavation by cranes or other means, verification, and engineering calculations necessary to ensure the extraction can safely be performed are required. |       |
|  | 6I | Failure to have JHA completed, approved, and reviewed with crew performing the work. |       |
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| 1. Rock excavation and removal requiring mechanical means or blasting.
 | 7A | Silica exposure to workers resulting from airborne concentration of silica dust during drilling/chopping operation. |       |
|  | 7B | Insufficient means of suppressing airborne concentration of dust (i.e., HEPA filter attachment with equipment, wetting down the area).  |       |
|  | 7C | Property damage to surround structures resulting from rock removal operation. Lack of proper pre-construction survey and vibration/movement monitoring of surround structures. |       |
|  | 7D | Slip/trip/fall exposures to workers standing on uneven surfaces resulting from rock outcrop. |       |
|  | 7E | Overexertion resulting from lifting/pushing/pulling of chopped rock. |       |
|  | 7F | Crush type accidents to body parts during handling/working on chopping operation. |       |
|  | 7G | Property damage and worker injuries if explosive blasting operations are required. |       |
|  | 7H | Improper filing for permits with state/city/municipality for blasting operations. |       |
|  | 7I | Improper utilization of a licensed and approved blaster approved by the state/city/municipality.  |       |
|  | 7J | Handling/loading of blasting elements by qualified persons.  |       |
|  | 7K | Improper selection or utilization of blasting procedure. |       |
|  | 7L | Insufficient posting of blasting signage in the area as well as notification to residents in the area. |       |
|  | 7M | Potential for misfire of explosives after the blast. |       |
|  | 7N | Improper or insufficient utilization of blasting mats to mitigate fly rock resulting from the blast. |       |
|  | 7O | Improper storage of unused explosives.  |       |
|  | 7P | Insufficient or lack of pre-construction surveys of structures and vibration/movement monitoring of structures by a qualified third-party engineering firm. |       |
|  | 7Q | Failure to have JHA completed, approved, and reviewed with crew performing the work. |       |
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| 1. Encountering ground water requiring de-watering.
 | 8A | Installation and monitoring of de-watering system not performed by a qualified and experienced firm with expertise in the field. |       |
|  | 8B | Required approval and permits from appropriate agency allowing discharge of treated water into the sewer system. |       |
|  | 8C | Installation of appropriate equipment to treat the removed water required before discharging into sewer systems. |       |
|  | 8D | Monitoring the surrounding ground area with piezometers to measure any draw down or impact to adjacent area due to removal of water. |       |
|  | 8E | Failure to identify and inspect adjacent underground vaults (i.e., Utilities, transit) and surrounding structures documenting pre-condition of those structures prior to the start of the de-watering operation.  |       |
|  | 8F | Failure to have JHA completed, approved, and reviewed with crew performing the work. |       |
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