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| connellylogo | **Job Safety Analysis Worksheet** |  |

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| **Contractor:** | Connelly & Associates, INC. |  | **Date:** | **5/1/12** | |  | | **Job Number:** | | Yes No | | |
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| **Team Name:** |  |  |  | | | |  | **Job Name:** | |  | | |
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| **Team Leader:** |  |  | **JSA team members:** | | **Name** | | | **Initials** | **Name** | | | **Initials** |
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| Description of work: | Well Installation Via Hollow Stem Auger |  | | |  | | |  |  | | |  |
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| Activity List the tasks required to perform the activity in the sequence they are carried out. | Hazards Against each task list the hazards that could cause injury when the task is performed. | Risk control measures List the control measures required to eliminate or minimize the risk of injury arising from the identified hazard. | Severity Ranking |
| 1. Hand clear down to required depths for critical/non-critical zones. Use jack hammer or a saw (do not use the auger) to breakup asphalt and post hole diggers to reach a desired depth. | Noise hazard from jack hammer  Back injury from jack hammer or post hole diggers.  Flying debris from jack hammer.  Lacerations from saw cutting. | Only properly trained personnel are permitted to operate power equipment. Use proper hand and body positioning while using the saw and/or jackhammer.  Use proper technique with post hole diggers.  Wear safety glasses to protect eyes from debris; Wear ear plugs or earmuffs to protect hearing. |  |
| 2. Begin drilling using hollow stem augers. | Back injury may occur from lifting augers.  Head injury may also occur from contact with augers and or other metal parts on the rig. Noise Hazards | Use mechanical lifting devices whenever possible. Use proper lifting technique.  Wear hardhat at all times. Wear hearing protection at all times while near drill rig. |  |
| 3. Attaching the augers using bolts. | Pinch points may occur while attaching the augers on or removing them. | Use hand tools or other mechanical means to position augers. Wear leather gloves to protect hands from lacerations and abrasions; use ratchet cautiously when tightening bolts. |  |
| 4. Shovel soil cuttings. | Back injury may occur. | Use proper shoveling technique and/or get someone to assist with the lifting. |  |
| 5. Place soil cuttings in 55-gallon drums or stockpile for disposal. | Back injury may occur. | Use powered fork lift to move drums if available. Use drum cart/dolly if mechanical means not available; Use proper back injury prevention techniques when lifting or moving drums. Move drums by hand only when on solid ground. |  |
| 6. Cut PVC pipe to desired length where the well casing will be at the ground surface. | Lacerations  Pinch point from saw | Keep hands clear from saw blade. Ensure proper guards are intact on powered saws. Wear leather gloves to reduce abrasions and lacerations. |  |
| 7. Fill augers with water. | Slip hazard, especially under freezing conditions during the winter season. | Avoid spilling the water.  Have salt available to melt ice during the winter months. |  |
| 8. Knock out plug with split spoon or well casing. | Slip hazard, especially under freezing conditions during the winter season. | Avoid spilling the water.  Have salt available to melt ice during the winter months. |  |
| 9. Clear heaved sand or soil from the augers with a 3" split spoon. | Back injury may occur from lifting sand bags which may weigh from 50-100lbs. | Use proper lifting technique. Use wheelbarrow, hand trucks, or carts to transport. |  |
| 10. Insert the well casing into the augers via a hooking mechanism located on the drill rig. | Head injuries from object being lifted. | Use mechanical lifting device; Use proper lifting technique if lifting is necessary Stay clear of the hoisted object. Wear hard hat at all times |  |
| 11. Fill annular space with uniform gravel/sand pack to no less than 2" above the well screen. | Back injury may occur from lifting the filter sand/gravel bags which may weigh from 50-100lbs.  Dust inhalation. | Use proper lifting technique. Use wheelbarrow to transport the sand bags or use a second set of hands. Stand upwind while filter material is been poured into the augers. Don dust mask or HEPA filtered respirator if dust control methods are not effective |  |
| 12. Fill hole with bentonite pellets after fill has been poured up to a minimum of about 2' about the well screen. | Back injury may occur.  Inhalation of Dust  -Skin irritation | Use proper lifting techniques. Stay up wind while bentonite is being poured between the well casing and the borehole.  -Wear leather gloves to prevent skin contact |  |
| 13. Fill the annular space with cement and/or bentonite grout from the top of the bentonite seal to the ground surface. | -Back injury may occur.  -Noise  -Inhalation of dust | -Wear leather gloves to prevent skin contact  -Use carts, hand-trucks, and wheel barrows to move materials. Stay up wind while bentonite pellets are being poured into the annular space within the borehole. Wear earplugs; leather gloves; and safety glasses.  -Wear hearing protection    -Stand upwind while filter material is been poured into the augers. |  |
| 14. Place manhole over well head and create cement pad to hold the manhole in place. | -Cement dust inhalation  -Skin irritation from concrete  -Back injury | -Stay up wind while pouring the cement. Don dust mask or HEPA filtered respirator if dust control methods are not effective.  -Wear long-sleeve shirts, nitrile gloves to prevent skin contact  -Use proper lifting techniques; request assistance in lifting heavy objects or materials; use mechanical devices (carts, wheel barrows, hand-truck) to carry bags of cement. |  |
| 15. Clean-up and depart site. | On-site traffic hazards.  Water related slips and falls.  Icy conditions during the winter months. | Remove water by sweeping, squeegee, pumping, or other acceptable removal technique Remove ice promptly with hand tools and salt.Exit site in a safe manner. |  |