

JOB HAZARD ANALYSIS		CLIENT LOGO HERE
<b>20141219.1:</b> 20170410-006		
<b>Task:</b> Asbestos-Cement Pipe Removal	<b>Date:</b> 04/13/2017	
<b>Department:</b> Water Department	<b>Analysis Developed By</b> ehsInc	
<b>Location(s):</b>	<b>Analysis Reviewed By:</b>	
<b>Person(s) Performing This Job:</b>	<b>Supervisor:</b>	
<b>Job Start Date:</b> 04/13/2017	<b>Duration:</b>	

Task/Step	Potential Hazards	Recommended Safe Job Procedures
1. Set up TTC	1. Automobiles and light trucks	Follow procedures for proper TTC for streets
2. Mark utilities	1. Automobiles and light trucks	Call dig alert for marking utilities
3. Use backhoe to excavate site	1. Excavations/trenches	Dig site to locate asbestos-cement pipe. Use backhoe to break any concrete, hand dig to expose the asbestos-cement pipe
		
4. Install shoring as needed	1. Excavations/trenches	Follow procedures for installing shoring
5. Shutdown water & apply LOTO	1. Utilities - underground (power, natural gas, water, etc.)	Shutdown water that runs to the cement pipe to be removed.
6. Don PPE	1. Automobiles and light trucks	Workers must wear Tyvek suits, gloves, hard hats, steel toe boots, boot covers, and half-face respirators with HEPA filter p100 cartridges.
7. Cut asbestos cement pipe	1. Construction materials (wet cement, epoxy resins, cement dust, alcohols, lime, toluene, metalworking fluids,	Wet asbestos pipe continually with amended water prior to disturbing the asbestos using a Hudson sprayer, using a pipe cutting tool cut the asbestos cement pipe. Workers use hammer & chisel to pop

Task/Step	Potential Hazards	Recommended Safe Job Procedures
	turpentine, paints, xylene adhesives) 2. Hand tools 3. Power tools (electric, gas, hydraulic, pneumatic) 4. Excavations/trenches	cement pipe off after the cut. Remove water from the trench using a pump to prevent trench collapse
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8. Remove Hydrant/pipe	1. Earthmoving equipment (dozers, graders, excavators, trenchers, rollers, compactors, backhoe, skip loader) 2. Elevated loads 3. Ergonomic hazards 4. Excavations/trenches	Rig the lifting chain from the hydrant to the backhoe. The signal person will guide the operator using both hand signals and audible instructions. Keep all personnel away from the elevated load.
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9. Wrap Asbestos Containing Material	1. Earthmoving equipment (dozers, graders, excavators, trenchers, rollers, compactors, backhoe, skip loader) 2. Elevated loads 3. Construction materials (wet cement, epoxy resins, cement dust, alcohols, lime, toluene, metalworking fluids, turpentine, paints, xylene adhesives) 4. Automobiles and light trucks	Set the elevated AC-pipe and hydrant on two sheets of 6 mil polyethylene sheeting or equivalent. Carefully break the ductile iron pipe without disturbing the AC-pipe. Wet all asbestos containing material and wrap in 2 sheets of 6mil poly sheeting. Asbestos waste shall be taken back to the yard and placed in the asbestos waste bin.
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<b>Task/Step</b>	<b>Potential Hazards</b>	<b>Recommended Safe Job Procedures</b>
10. Remove disposable PPE	1. Construction materials (wet cement, epoxy resins, cement dust, alcohols, lime, toluene, metalworking fluids, turpentine, paints, xylene adhesives)	Remove all disposable PPE(Tyvek suit, gloves, boot covers)all disposable PPE must be double bagged and disposed of as asbestos waste.
11. Clean all reusable PPE & tools	1. Hand tools 2. Construction materials (wet cement, epoxy resins, cement dust, alcohols, lime, toluene, metalworking fluids, turpentine, paints, xylene adhesives)	Clean all reusable PPE(Hard hat, respirator, safety glasses,) and all tools that were used to remove asbestos pipe using HEPA vacuum with brush attachment & wet microfiber cloths. Reusable PPE should be stored in a sealed container when not in use.

### POTENTIAL PHYSICAL HAZARDS OF THIS JOB

<b>Hazards</b>	<b>Prob. Sev.</b>	<b>Consequences</b>
Automobiles and light trucks		Awkward or static position
Construction materials (wet cement, epoxy resins, cement dust, alcohols, lime, toluene, metalworking fluids, turpentine, paints, xylene adhesives)		Caught in or between a stationary/moving object Collision between moving vehicles and/or equipment
Earthmoving equipment (dozers, graders, excavators, trenchers, rollers, compactors, backhoe, skip loader)		Excessive lifting, twisting, pushing, pulling, reaching, or bending Exposure (inhaling, swallowing, or absorbing) to harmful levels of gasses, vapors, aerosols, liquids, fumes, or dust)
Elevated loads		Exposure to excessive noise (damage to hearing)
Ergonomic hazards		Exposure to excessive vibrations
Excavations/trenches		Falling (< 6 feet), tripping or slipping
Hand tools		Fatigue
Heavy manual lifting/moving		Overexertion
Noise (Sound Pressure Level), dBA		Overturning equipment
Power tools (electric, gas, hydraulic, pneumatic)		Penetration by sharp object
Utilities - underground (power, natural gas, water, etc.)		Struck by falling or flying object
Vibration		Struck by moving vehicle or equipment Trench cave in

**POTENTIAL CHEMICAL HAZARDS OF THIS JOB**

<b>Chemical Hazards</b>	<b>Description/Health Hazards</b>
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**HAZARD CONTROL MEASURES USED FOR THIS JOB**

<p><b>Administrative Controls:</b>                  Certified operators                  Lifting techniques (safe lifting)                  Lockout/Tagout                  Management of change                  Material handling procedures                  Procedures and/or guidelines (job or activity)                  Safety Data Sheets (SDS)                  Safety meeting (pre-job)                  Signage                  Trained personnel                  Underground utilities (e.g., use Dig Alert, Dig-Safe)                  Use defensive driving skills                  Work practices</p>	<p><b>Required Training:</b>                  Asbestos Cement Pipe Worker                  Backhoe/Front End Loader Training                  Energy isolation (lock-out/tag-out)                  Excavation &amp; Trenching                  Hazardous materials                  Hazardous waste operations (HAZWOPER)                  Hearing protection                  Personal protective equipment (PPE)                  Tools</p>
<p><b>Engineering Controls:</b>                  Roll-over protection</p>	<p><b>Required PPE:</b>                  Air-purifying respirator - see step-by-step instructions for cartridge type                  Boot covers                  Boots - Steel toe and shank, appropriate soles                  Clothing - long pants                  Clothing - long sleeve shirt                  Face protection                  Gloves - work gloves                  Gloves inner - chemical-resistant                  Hard hat                  Hearing protection                  Respirator                  Rubber boots                  Safety glasses                  Side shield                  Tyvek Suit</p>
<p><b>Required Permit(s):</b>                  Energy Isolation                  Excavation and Trenching</p>	<p><b>Other Information:</b></p>

JSABuilder chemical Description/Health Hazards is from the CAMEO database maintained by the U.S. EPA, NOAA, and the U.S. Coast Guard (www.cameochemicals.noaa.gov). The creator of this JSA is responsible for any edits to this information.

Probability	Severity
1 - Low	1 - Low
2 - Medium	2 - Medium
3 - High	3 - High