



JOB SAFETY ANALYSIS No: 000100 Revised April 2014
Vacuum Excavation / Working With Known & Unknown Live Power

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)	DATE 4/10/14	<input type="checkbox"/> NEW <input checked="" type="checkbox"/> REVISED	PAGE 1 of 2
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WORK ACTIVITY (Description):

Vacuum Excavation

DEVELOPMENT TEAM	POSITION / TITLE	REVIEWED BY:	POSITION / TITLE
Mike Schmidt	Project Manager		
Dave Ruzich	Safety Manager		

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT (SEE CRITICAL ACTIONS FOR TASK-SPECIFIC REQUIREMENTS)

<input checked="" type="checkbox"/> REFLECTIVE VEST <input checked="" type="checkbox"/> HARD HAT <input type="checkbox"/> LIFELINE / HARNESS <input checked="" type="checkbox"/> SAFETY GLASSES	<input type="checkbox"/> GOGGLES <input checked="" type="checkbox"/> FACE SHIELD <input checked="" type="checkbox"/> HEARING PROTECTION <input checked="" type="checkbox"/> SAFETY SHOES	<input type="checkbox"/> AIR PURIFYING RESPIRATOR <input type="checkbox"/> SUPPLIED RESPIRATOR <input checked="" type="checkbox"/> PPE CLOTHING	<input checked="" type="checkbox"/> GLOVES Cut-resistant <input checked="" type="checkbox"/> Special PPE-FRC's-Double Hearing Protection will be warranted by the use of certain tools or high noise areas
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1JOB STEPS	2POTENTIAL HAZARDS	3CRITICAL ACTIONS TO MITIGATE HAZARDS
1) FLAGGING	<ul style="list-style-type: none"> Contact with live electrical power causing Electrical Shock/Electrocution 	<ul style="list-style-type: none"> “Danger High Voltage” or “Red Danger Tape” flagging shall be installed around perimeter of the vacuum excavation vehicle and “Limited Approach Boundaries” to help prevent step & touch potential electrocution risk. To determine the “Flagging”- Limited Approach Boundaries and the Voltage Range the “Operator” shall follow the NFPA 70E-Table 130.2(C) Approach Boundaries to Live Parts for Shock Protection guidelines. (SEE TABLE 130.2(C)-ATTACHMENT C) Note: For unknown live power, “flagging” shall be installed 6’ (feet) around perimeter of vacuum excavation vehicle until a determination can be made of voltage range and limited approach boundaries for the unknown live power.
2) Vacuum-Excavation Vehicle Set Up	<ul style="list-style-type: none"> (See TSTI) 	<ul style="list-style-type: none"> Operator needs to determine prior to start of set up that all employee’s exposing energized or isolated electrical power have been trained with the use of (EPM’s) Equal Potential Methods by a “Qualified” Train the Trainer. Operator shall treat uncertain as (SSE) “unqualified personnel” “Green Hard Hats on job.
3) Set Up Equal Potential Mats	<ul style="list-style-type: none"> Electrical Shock/Electrocution 	<ul style="list-style-type: none"> Inspect and clean connections with proper tools. 1) Connect Pressure Wand to bond mat. 2) To Boom 3) To Truck All workers within flagged work site must be on a (EPM) ground mat that is electrically bonded to the equipment that is being operated.
4) Inspect for Proper Grounding	<ul style="list-style-type: none"> Electrical Shock/Electrocution 	<ul style="list-style-type: none"> Hook up ground wire to ground strap of cable or copper ground rod
5) Start “Digging” Vacuum Excavating	<ul style="list-style-type: none"> Electrical Shock/Electrocution 	<ul style="list-style-type: none"> Maintain a circular motion with the pressure wand until the “electrical line” has been “Day lighted”. Then use a sweeping motion across line, never allowing pressure wand to become stationary and avoiding contact with line.
6) Contacting underground encased concrete	<ul style="list-style-type: none"> Electrical Shock/Electrocution 	<ul style="list-style-type: none"> Undermining causing a shift in concrete or break causing electrical Shock/Electrocution electrocution. “AVOID” undermining electrical duct bank. You will not need (EPM) equal potential mats unless an opening in concrete exposed any wiring and/or conduit.



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7) Contacting unknown underground lines that are not marked	<ul style="list-style-type: none"> Electrical Shock/Electrocution 	<ul style="list-style-type: none"> “STOP WORK”, re-evaluate job steps and incorporate equal potential grounding mats (EPM's)
8) Moving in and out of “Work Zone”	<ul style="list-style-type: none"> Electrical Shock/Electrocution 	<ul style="list-style-type: none"> When exiting the “Work Zone” the pressure wand and vacuum tube must be removed from the excavation area to ensure electrical connection cannot occur between the underground cable and equipment. Then an all clear to move off the mats.

¹ Each Job or Operation consists of a set of steps. Be sure to list all the steps in the sequence that they are performed. Specify the equipment or other details to set the basis for the associated hazards in Column 2

² A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: **Contact** - victim is struck by or strikes an object; **Caught** - victim is caught on, caught in or caught between objects; **Fall** - victim falls to ground or lower level (includes slips and trips); **Exertion** - excessive strain or stress / ergonomics / lifting techniques; **Exposure** - inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught"

³ Aligning with the first two columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable and quantified terms. Avoid subjective general statements such as, "be careful" or "use as appropriate".