

December 21, 2008
PILE INSTALLATION WITH EXCAVATOR
Purpose/Application

Piling installation is utilized in oil and gas construction for building foundations, process equipment foundations and pipe supports. Steel piles are either pipe piles or some sort of beam section (like an H-pile). Driving piles, as opposed to drilling shafts, is advantageous because the soil displaced by driving the piles compresses the surrounding soil, causing greater friction against the sides of the piles, thus increasing their load-bearing capacity

PPE

- Safety Glasses
- Steel toed boots
- Hard hat
- Hearing protection

TRAINING

- Orientation

TOOLS/EQUIPMENT

#	Job Steps	Hazards	Control Measures
1	Complete all Ground Disturbance Requirements	Contact with underground facility, fire/explosion, electrocution	<ul style="list-style-type: none"> ▪ Complete Ground Disturbance Checklist "Schedule A" ▪ Ensure personnel have been trained in Ground Disturbance Level II
2	Conduct a Pre-Job Safety meeting	Miscommunication	<ul style="list-style-type: none"> ▪ Ensure all personnel on site are involved in the meeting. Discuss the job steps, all associated hazards and hazard controls. ▪ Identify the signalmen for the job.
3	Visually inspect all equipment, slings, clevises that will be used for moving pipe	Falling objects, defective tools and equipment	<ul style="list-style-type: none"> ▪ Visually inspect all equipment to be involved in the task. ▪ Remove, repair or replace all deficient tools and equipment.
4	Offload the piles on Location: Set piles down on skids to allow easy sling attachment and removal	Pinch points, slips trips	<ul style="list-style-type: none"> ▪ Watch pinch point locations and use tag lines. ▪ Watch footing and avoid walking backwards.

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5	Prepare the excavator and tamper attachment: Install the attachment and driving plate, ensure that the bolts are tight and that the hydraulic lines are secure		<ul style="list-style-type: none"> ▪ Do not approach the attachment area until the operator has it in position and has locked out the hydraulics
6	Rig and lift pile, set down vertically on the driving location and position the tamper "stub" inside the pile: Place 2 1" slings on the pile, choked and on opposite sides of the pile Attach the slings to the tamper using clevises Slowly lift and drag the pile into position and set it on the driving location, taking care not to swing the pile.	Pinch points, falling object, hit by swinging object	<ul style="list-style-type: none"> ▪ Use two people to hold and balance the pile vertically until the stub is inserted. ▪ If the pile needs to be lifted off the ground and moved a tag line is to be used when moving the pile.
7	Level the pile and position the signal men: <ul style="list-style-type: none"> ▪ The pile needs to be leveled in both directions, using a level ▪ Once the pile is level, the two signal men will position themselves at 90° from each other, outside the Danger Zone radius and in plain sight of the operator. One will be positioned in line from the pile to the cab, the other will be located on the cab side of the excavator. ▪ Only signal men will give direction to the operator as the pile is being driven to keep it level and straight 		

#	Job Steps	Hazards	Control Measures
8	<p>Engage the tamper to drive the pile, keeping it level during entry:</p> <ul style="list-style-type: none"> ▪ Continue driving until depth and / or refusal requirements are met 	Crush injury, noise	<ul style="list-style-type: none"> ▪ No one is to enter the Danger Zone area while the tamper is engaged. ▪ The operator will lock out hydraulics when the workers need to enter the Danger Zone to check level and detach slings ▪ Workers must wear hearing protection when working around the driving operation.
9	<ul style="list-style-type: none"> ▪ Deviation 1: The pile hits complete refusal and the slings cannot be reached for detachment from the ground: ▪ If the slings can be reached standing on a step ladder, steady the ladder and climb up to release the slings. ▪ If a ladder is not a feasible means to detach the slings, utilize a cold cutter or an oxygen/acetylene torch to cut the pile off at a predetermined elevation, lift the top section away and set it on the ground. Then detach the slings. 	<p>Fall from a height</p> <p>Injury from moving equipment</p> <p>Damage to pile from moving equipment</p>	<ul style="list-style-type: none"> ▪ Document the scope change on the daily tailgate ▪ Prepare and review a task hazard analysis to determine how to detach the slings, using either of the 2 identified options ▪ Extension ladders may not be used to climb because they would be rested against a round pile and may roll or slip under weight. ▪ During cutting operations make sure that there is no load on the pile (side or vertical) and that the hydraulics on the excavator are locked out during cutting.

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10	<ul style="list-style-type: none"> ▪ Deviation 2: The pile does not meet refusal requirements and needs to be extended: ▪ Detach the tamper and rig onto next pile section ▪ Bevel the driven section of pile below the defects caused by driving, bevel the new section as well ▪ Lift the new section into place and use line up clamps to secure the new section to the driven pile ▪ Complete a full penetration weld, use multiple passes if required ▪ Allow the weld to cool prior to resuming driving ▪ Position the tamper stub into the new section of piling, repeat steps 7 and 8 	Pinch points	<ul style="list-style-type: none"> ▪ Prepare and review a Task Hazard Analysis for Welding, Cutting and Grinding ▪ Document the scope change on the daily tailgate

Additional Precautions:



REFERENCE/REGULATIONS

- Alberta OHS Code:
- Part 6, Cranes, Hoists and Lifting Devices
- Part 19, Power Mobile Equipment
- SWP 10 Noise
- SWP 45 Operating Facilities
- SWP 24 Over Head Power lines
- CF-S-15 Ground disturbance checklist (HSEMS Manual)

Developed by: 1. _____ 2. _____ Date: _____
3. _____ 4. _____

Revised by: 1. Angie Anton 2. _____ Date: December 21, 2008
