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Naval Facilities Engineering Command, Atlantic

Safety Lessons Learned Accident Abstract

Accident Type: Equipment/Mtr Veh/Mat handling
Injury: Compound Fracture of left leg
Damage: Personal only/no equipment
Type of Work: Excavation/Compaction
Equipment: Mini Excavator

DESCRIPTION OF THE ACCIDENT: Employee struck by falling vibratory plate tamper attached by chains used as lifting slings on the bucket of mini excavator

DIRECT CAUSE: Improper of rigging attachment. Employee working under load.

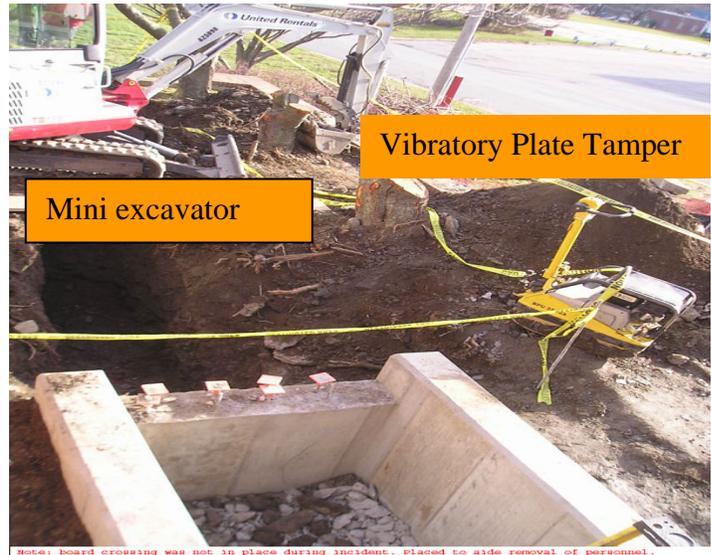
INDIRECT CAUSE: Improper rigging attachment. Improper safety work procedures. Contractor unaware/not following changes to EM-385 section 16N concerning excavators and lifting requirements.

ROOT CAUSE:

- Failure to follow safety procedures in EM-385 16N for excavators.
- Using machinery or equipment not IAW manufacturer's instructions and recommendations

LESSONS LEARNED:

- Contractor did not follow 16.A.04 c. Machinery and equipment shall be operated in accordance with the manufacturer's instructions and recommendations
- Contractor failed to follow EM-385 3 Nov. 2003 Safety and Health Requirements paragraph 4 b which requires contractors to comply with the latest version of EM-385-1-1 (including interim changes) that is in effect on the date of solicitation. Prior to making an offer, bidders should check the HQUSACE Safety and Occupational Health web site for the latest changes. http://www.hq.usace.army.mil/soh/hqusace_soh.htm
- No AHA specific to the transporting or hoisting operation prepared
- No operational test conducted
- Employee working under load
- New changes attached to following pages



New Section 16N is HYDRAULIC EXCAVATORS, WHEEL LOADERS, TRACK LOADERS AND BACKHOE/LOADERS USED TO TRANSPORT OR HOIST LOADS WITH RIGGING.

Insert the following SECTION 16.N into SECTION 16. MACHINERY AND MECHANIZED EQUIPMENT:
16. N HYDRAULIC EXCAVATORS, WHEEL LOADERS, TRACK LOADERS AND BACKHOE / LOADERS USED TO TRANSPORT OR HOIST LOADS WITH RIGGING

16. N.01 When hydraulic excavating equipment (See Appendix T) is to be used to transport or hoist loads utilizing hooks, eyes, slings, chains, or other rigging the following requirements shall apply:

(a) Operations involving the use of hydraulic excavating equipment and rigging to transport or hoist loads require different operator skills and considerations than the standard excavating operations routinely performed with hydraulic excavating equipment. **An AHA specific to the transporting or hoisting operation shall be prepared. The AHA shall include, but not be limited to:**

- (1) Written proof of qualifications of equipment operators, riggers, and others involved in the transporting and hoisting operations;
- (2) Performance of the operational test described in 16.N.01 (b);
- (3) Proper operating procedures in accordance with the equipment manufacturers operating manual;
- (4) Proper use and on site availability of manufacturer's load rating capacities or charts;
- (5) Proper use of rigging, including positive latching devices to secure the load and rigging;
- (6) Inspection of rigging;
- (7) Use of tag lines to control the load;
- (8) Communications;
- (9) Establishment of a sufficient swing radius (equipment, rigging and load) and
- (10) Stability of surfaces beneath the hydraulic excavating equipment.

(b) An operational test with the selected hydraulic excavating equipment will be performed in the presence of the GDA. The operational test shall consist of a demonstration that the test load and selected rigging can be safely lifted, maneuvered, controlled, stopped, and landed. The operational test shall be representative of the complete cycle of the proposed transporting or hoisting operation, including configuration, orientation and positioning of the excavating equipment and the use of identical rigging. The test load shall be equivalent to the maximum anticipated load, but shall not exceed 100% of the manufacturer's load rating capacity for the excavating equipment as configured. Written documentation of the performance of the operational test outlining test procedures and results shall be maintained at the on-site project office.

(c) All rigging and rigging operations shall comply with the requirements of **SECTION 15 RIGGING**. Hooks, eyes, slings, chains or other rigging shall not be attached to or hung from the teeth of a bucket during the transporting or hoisting of a load by hydraulic excavating equipment.

(d) After the completion and acceptance of an operational test described in 16.N.01 (b), if repairs, major maintenance or reconfiguration are required to be performed on the hydraulic excavating equipment or attachments, another operational test as described in 16.N.01 (b) shall be performed to demonstrate that the completed repairs are satisfactory and that the test load and selected rigging can be safely lifted, maneuvered, controlled, stopped, and landed.

16. N.02 Loads shall be lifted the minimum height necessary to clear the ground or other obstacles and carried as low as possible when the equipment is traveling.

16. N.03 Loads shall not be lifted over personnel.

16. N.04 Adequate clearances shall be maintained from electrical sources. **See Section 11.**

16. N.05 Hydraulic excavating equipment shall not be used to hoist personnel. The riding of personnel on loads, hooks, hammers, buckets or any other hydraulic excavating equipment attachment is prohibited.

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