Atlantic Division, Naval Facilities Engineering Command

Accident Abstract

Accident Type:	**Structural Failure**
Injury:	**Long term disability**
Type of work:	**Precast Concrete**
Equipment:	**Aerial lift platform (JLG)**

Description of the Accident:

A 17'6", 8,250 lb., precast element was repositioned to correct an alignment deficiency. The precast element was raised using a crane and reattached with permanent connections. Later that day two workers in an aerial lift work platform were injured when the repositioned element fell from its resting place striking the man basket causing one worker to fall. The second worker in the basket was able to gain control and bring the basket to the ground level.

Direct Cause:

1) The precast element was not installed or manufactured in accordance with approved shop drawings. The element was eccentrically loaded relying on critical tie back connections. When the element was repositioned the shims were not placed in the required location causing excessive stress on the connection points.
2) The element was not manufactured with the required number of embed studs. The shop drawings called for three studs to be installed on the embed during casting at the plant. The failed element had only two. The concrete coverage over the embed studs of the failed element was also deficient.

Contributing Factors:

1) The original subcontractor for the installation of the precast elements had installed approximately 95% of the elements for the project but was unable to complete the work. A second subcontractor was hired by the prime contractor but a new preparatory inspection meeting was not conducted.
2) The shop drawings did not emphasis the critical nature of the shim placement for the connection during the erection process.
3) Neither employee working in the personnel basket were wearing the required approved fall protection system.

Lessons Learned:

Precast elements should be designed to minimize eccentric forces by equalizing weight distribution placed on connection points. When there is a change in subcontractor, even though the phase of work has not changed, quality control guidelines require that an additional preparatory inspection meeting be held. Quality control at precast manufacturers plants should be

evaluated to ensure adequate control measures are in place to ensure the elements are built in accordance with approved shop drawings.

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