


CANCELLED

STATE OF ALASKA  
DEPARTMENT OF LABOR  
DIVISION OF LABOR STANDARDS AND SAFETY

AKOSH Program Directive 92-2

March 4, 1992

To: All AKOSH Staff

From:  Richard Arab, Deputy Director

Subject: 05.170(f), Alaska Construction Code, Requirements for Lift-Slab Construction Operations -- Inspection Procedures and Guidelines

- A. Purpose. This AKOSH Program Directive (PD) establishes policies and provides clarification to ensure uniform enforcement of the Lift-Slab Construction Operations Standard.
- B. References.
1. American National Standard Institute, ANSI A10.9-1983, Safety Requirements for Concrete and Masonry Work.
  2. American National Standard Institute, ANSI A58.1-1982, Minimum Design Loads for Buildings and Other Structures.
  3. American Concrete Institute, ACI 318-89, Building Code Requirements for Reinforced Concrete, and ACI 318R-89, Commentary.
- C. Background. The standard for Lift-Slab Construction Operations, Section 05.170(f) was promulgated on June 26, 1991 and became effective on July 26, 1991.
1. A tragic occurrence on April 23, 1987, at Bridgeport, Connecticut, resulted in the death of 28 workers and injuries to many others. The workers were in the act of erecting a building using the lift-slab method of construction. The collapse resulted in the highest death toll from a construction-related activity in the United States since the 51 deaths in 1978 attributed to the cooling tower collapse at Willow Island, West Virginia.
  2. The knowledge derived from the investigations of the Connecticut collapse mandated that on-going revisions to the lift-slab standard be accomplished.
  3. The revised standard reflects the contributions of the National Institute of Standards and Technology (NIST) formerly the National Bureau of Standards

(NBS), the Advisory Committee on Construction Safety and Health (ACCSH), and the various industry experts who participated in the OSHA rule making activity.

4. A copy of the standard, as adopted, is enclosed. An insert to the Construction Code will be published shortly.

D. Inspection Guidelines. The standard provides requirements for the safe conduct of lift-slab construction operations.

1. The compliance officer shall verify that the lift-slab operations in progress were designed and planned by a Registered Professional Engineer (R.P.E.) experienced in lift-slab construction and that the R.P.E. has provided detailed instructions and sketches prescribing the method of construction. The name of the R.P.E. shall be obtained from the employer's plans (on site) along with the R.P.E.'s registration number which shall be verified with the Chief, Compliance. (Verification can be obtained from the State Professional Engineers Register and shall be retained by the Chief for future reference.)
2. The compliance officer shall determine that plans, designs and methods provided by the R.P.E. for the erection of the structure and the provisions made to ensure the lateral stability of the structure/building are being implemented. Any observed deviations from the plans and designs shall be noted in the inspection case file.
3. In the event that the requirements described in either D.1. or D.2. are not met, a citation of Paragraph 05.170(f)(1) shall be issued.
4. The jacks and the jacking operations shall comply, at a minimum,, with the requirements of 05.170 (f)(2)-(f)(10). Citations shall be issued for deficient equipment or procedures.
5. No employee, except those essential to the jacking operations, is permitted in the building/structure during jacking operations, unless the building has been sufficiently reinforced to ensure integrity during erection.
  - a. Essential employees include, but are not limited to: welders, helpers, trouble shooters and supervisor(s) performing essential functions related to the jacking/lifting and slab securing operations.
  - b. Non-essential employees are prohibited from being anywhere within the building or structure when any floor slab is being jacked/lifted. Any slab suspended by one or more jacks is considered to be in the process of being lifted.

- c. Specific buildings/structures sufficiently reinforced to ensure integrity must be verified by a R.P.E. other than the one who designed and planned the lifting operations. That R.P.E. must have determined (from the implementation of the plans) that, if there is a failure of any one jacking unit, the structure as a whole will remain stable.
  - d. **In the event that non-essential employees are observed within the building or structure during lifting operations** and the employer has not obtained the R.P.E.'s verification of the structural integrity discussed at D.5.c., citations for 05.170 (f)(11) (A) and (B) shall be issued.
  - e. In the event that the construction employer claims to have complied with the Appendix to 05.170 (f), the compliance officer shall obtain verification of such compliance from the employer including the identity and registration number of the reviewing R.P.E. and shall record in the case file the drawing number(s), including the title(s), date(s), and current change letter or number, which presents the precautions taken to ensure the general structural integrity of the slabs during the construction phase.
  - f. ANSI A58.1-1982, Section 1.3, states: "Buildings and structural systems shall possess general structural integrity, which is the quality of being able to sustain local damage with the structure as a whole remaining stable and not being damaged to an extent disproportionate to the original local damage."
6. The compliance officer shall verify that the requirements of 05.170(f)(12) through (f)(16) are accomplished and/or complied with.
- E. Definition. The discussion in the Appendix of the standard requires a further clarification of terms used in the standard.
- 1. Bottom steel/integrity steel means the installation of additional reinforcement such as a grid or rebar steel in the poured slabs near the lower portion of the slab specifically to maintain structural integrity should a failure of a jacking unit occur.
  - 2. Catenary action means that the slab, acting as a beam between columns, will be capable of reacting/transferring the load, created by the loss of a single supporting lift jack or lifting unit to subsequent lifting units, without catastrophic failure.