

**WAC 296-155-691 Precast concrete and tilt-up operations.** (1) It must be the responsibility of the contractor to use accessories which are designed to be compatible.

(2) You must know the design capacity of all lifting devices and accessories. You must use the devices and accessories with the appropriate capacity.

(3) Prior to pouring the panels of a tilt-up type construction job, you must draw up a set of plans or job specifications, including lifting procedures.

(a) These plans must be at the job site and made available upon request.

(b) Any changes made in the rigging procedure of a tilt-up panel or slab must provide the same degree of safety as required by the original plans.

(c) The plans or specifications must contain the following information:

(i) The type, size, and location of all lifting inserts.

(ii) The type, size, and location of all brace inserts or fittings for guy wires in each panel and floor or support.

(iii) The size of braces or guys to be used.

(iv) The compression strength which concrete panels must attain prior to being lifted.

(4) You must include the following conditions in the erection process and incorporate them in the design plan:

(a) Braces and all associated components of the bracing system must be designed to incorporate a safety factor of one and one-half to resist any normal stresses to which they may be subjected, including normal high wind velocity pressures for the area.

(b) Precast concrete wall units, structural framing, and tilt-up wall panels must be adequately supported to prevent overturning and to prevent collapse until permanent connections are completed.

(c) Floor braces used to secure panel sections must be placed at an angle of not less than 45 degrees or more than 60 degrees from horizontal when physically possible to install in this manner.

(d) The bracing on all panel sections must be installed in such a manner as to prevent the panel from accidentally rotating.

(e) Each panel section not secured by other means must have a minimum of two braces. The braces must be installed in such a manner as to evenly distribute the load or guy wires, when properly installed, may be used in lieu of stiff leg braces.

(f) If braces are attached to a panel or slab by bolts tightened into inserts installed in holes drilled in concrete, the type of inserts used and method of installation must be such as to develop the required strength to be maintained for the bracing system.

(g) Inserts to be installed for lifting sections of tilt-up precast panels must be designed mechanically to maintain a safety factor of 3.

(h) Lifting inserts which are embedded or otherwise attached to precast concrete members, other than the tilt-up members, must be capable of supporting at least 4 times the maximum intended load applied or transmitted to them.

(i) The compression strength of the concrete must be such that when the proper type, size, and amount of inserts are installed a minimum safety factor of two will be maintained.

(j) Lifting hardware must be capable of supporting at least 5 times the maximum intended load applied or transmitted to the lifting hardware.

(k) You must discard lifting bolts or other lifting devices which have been bent, worn, or are defective.

(l) The upper and lower sections of telescoping type braces must be secured by high tensile steel pins or bolts which provide adequate shear strength and which will positively secure against accidental removal.

(m) You must not alter manufactured products in a manner which would reduce the safe working load to less than its original value.

(n) You must position inserts so that bolts, or lifting devices, when inserted, will be perpendicular to the face on which they are placed.

(5) Design of the panels and layout of the pour must be made in such a manner so that when picking, the top of the panel will be away from the crane. If this is not possible, the contractor must consult with a representative of the department and the crane company involved to determine the procedure to be followed in lifting and placing in its permanent position safely. You must lift and handle panels in such a manner that they will not strike the hoisting equipment, in case of failure.

(a) Physical stops must be provided which will prevent the bottom edge of a panel being set from slipping off the edge of its supporting structure.

(b) You must not set tilt-up panels when there is a possibility that wind velocity would create a hazardous condition.

(c) You must designate a qualified signalperson and they must consult with the crane operator on lifting procedures prior to making the pick. The signalperson must be located in such a position during the pick of the panel that they can observe both the crane operator and the employees working in the immediate area.

(d) During the lifting process, workers must keep clear of the under side of the panel.

(e) You must keep people not involved in the lifting process clear of the hazardous area near where panels are being raised, moved or placed.

(f) If braces must be removed temporarily during construction, you must provide other effective means to safely support the panel during the interim period.

(g) You must properly brace or otherwise secure each panel prior to removal of the hoisting equipment.

(h) You must properly shore short panels or sections not otherwise supported by floor, footings, columns or other structure.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 16-09-085, § 296-155-691, filed 4/19/16, effective 5/20/16. Statutory Authority: Chapter 49.17 RCW. WSR 94-15-096 (Order 94-07), § 296-155-691, filed 7/20/94, effective 9/20/94; WSR 90-17-051 (Order 90-10), § 296-155-691, filed 8/13/90, effective 9/24/90; WSR 89-11-035 (Order 89-03), § 296-155-691, filed 5/15/89, effective 6/30/89.]