

HAZARD ALERT

TANDEM LIFT WEIGHT LIMITS CANNOT BE IGNORED



Considerable damage and expense was incurred, and two highway construction workers were injured, during a complex tandem lift involving two cranes. A 90-foot lattice boom collapsed when the work radius and weight capacity of a crane to lift a 40-foot concrete beam was miscalculated. The cause of the accident was failure to stay within the crane's safe operating limits.

One side of the beam had already been raised when the operator of the second crane was instructed to raise his end of the concrete beam. Movement of the load caused the back end of the first crane carrier to rise about 3.6 m in the air. The beam was quickly lowered to the ground causing the lattice boom to strike the capbeam. This resulted in the crane carrier dropping back on its wheels, thereby creating a spring action in the boom. The boom fell backwards, hit the crane cab and collapsed onto a nearby truck. Five workers in the immediate vicinity could have suffered severe or fatal injuries.

An investigation concluded that proper planning and procedure was not in place at the time of the accident.

Recommended Preventive Action

1. Lifts involving two or more cranes are complex operations requiring considerable skill and planning. As a result, multiple crane lifts (or tandem lifts) must be planned and carried out under the supervision of a competent person.
2. The competent person must develop and communicate a detailed lift plan which contains, but is not limited to, the following:
 - Crane positioning
 - Rigging
 - Lift sequence
 - Movement of the load (the longest radius of each crane for the complete operation must be measured exactly)
 - Load weight and distribution
 - Boom lengths and angles
 - Environmental considerations
 - Rated capacity of each crane for the whole operation (no crane should be loaded to more than 75% of its net capacity).
3. Boom angle indicators are required on all mobile cranes, but they must not be relied upon for accuracy in critical lifts such as tandem lifts. A Load Moment Indicator (LMI) gives an accurate angle as well as loading throughout the lift.
4. According to section 207(2)(e) of Regulation 91-191 under the Occupational Health and Safety Act, an employer must ensure that a mobile crane is operated as per CSA Z150-98 "Safety Code for Mobile Cranes". The standard contains many provisions such as those outlined above that must be followed when operating a crane in the province of New Brunswick. To obtain a copy of the standard, contact the Canadian Standards Association.
5. "Mobile Crane Manual", published by the Construction Safety Association of Ontario, is also a great resource that contains a significant amount of information (including information on multiple crane lifts) on the safe operation of cranes. To obtain a copy, contact the New Brunswick Construction Safety Association.