



Jesse Marchand

Jesse is the managing editor for *WorkSafe Magazine* and has been working in publishing and journalism for nearly 20 years. In this issue, she covers top climbing cranes (right), hand falling safety (page 7), and an update on research grants (page 12).



Lori Guiton

Lori is the director of Policy, Regulation, and Research at WorkSafeBC. In this issue, she provides a high-level overview of the most recent changes to the Occupational Health and Safety Regulation (page 16).



Marnie Douglas

Marnie is a West Kelowna-based journalist, writer, and communications professional who has written about a variety of subjects for *WorkSafe Magazine*, from exposure control plans to the Paralympics. In this issue, she speaks with WorkSafeBC's Barry Nakahara about emergency preparedness (page 19).

Preventing tower crane collapse



Steve McCollum
Occupational safety officer

Region: Kelowna
Years on the job: 16

Top climbing a tower crane is hazardous work that must only be performed by qualified workers. Failure to follow the manufacturer's instructions may result in a structural failure that puts lives and property at risk. The importance of tower crane safety was brought to the forefront in July 2021, when a tower crane collapsed while being dismantled at a construction site in Kelowna. As a result, five workers were killed, including four workers on the construction site and one worker in an adjacent building. Another worker was injured.

In this "Ask an officer," occupational safety officer Steve McCollum provides an overview of the potential hazard and discusses how to reduce the risk.

Q. What is top climbing?

A. Top climbing is a common way of assembling or dismantling a tower crane on a construction site. A top climbing guide is a structure that is installed around the tower crane's mast. The guide is used to create a gap for adding or removing mast sections.

Q. How does a top climbing guide work?

A. Rollers are located at the middle and bottom of the top climbing guide on all four corners. When the system is weight-balanced, the rollers allow the guide to travel smoothly up and down the mast.

A top climbing guide includes:

- A hydraulic pump and ram
- A climbing device made up of a support shoe and a climbing traverse or cross-member (depending on the manufacturer)

The guide uses these parts to climb up or down the mast. Workers operate the guide manually.

Q. What is the hazard?

A. The mast sections include K-frame assemblies that provide horizontal supports for the climbing device to push on. The ram raises the entire

structure of the tower crane. This creates a gap in the mast that allows a single mast section to be either added or removed.

If the climbing device is placed on a K-frame horizontal support that is too high up the mast structure, the ram can push the top climbing guide too high. In this situation, the rollers in the middle of the top climbing guide may be positioned above the top of the mast structure and be unsupported. This puts the top climbing guide and the upper structure of the crane at risk of collapse.

Q. What do employers and contractors need to know?

- A.** Employers must ensure that the assembly supervisor and the lead hand are experienced and competent in all aspects and each phase of top climbing.

Prime contractors must ensure that employers, supervisors, and workers perform their work in compliance with these requirements.

Employers and prime contractors should request records to confirm the assembly supervisor's and worker's training and experience on the specific make and model of crane.

In some cases, a crane may be operated at the same time and in the same location as other work. In these situations, the employer or prime contractor must organize and coordinate the work of everyone on site so that the crane operation can be carried out safely.

Q. What do workers and supervisors need to know?

- A.** Workers engaged in top climbing activities must be:
- Qualified
 - Provided with the information, instruction, training, and supervision to perform their work safely.

The assembly supervisor and workers must follow the tower crane manufacturer's procedures. These

procedures include placing the climbing device on the appropriate K-frame horizontal support. Instructions and procedures for tower crane assembly, dismantling, or top climbing must be established before such operations begin. The instructions and procedures must be adapted to the site conditions and communicated to all workers involved in top climbing operations.

Q. What does *qualified* mean?

- A.** Under the Occupational Health and Safety Regulation, *qualified* means "being knowledgeable of the work, the hazards involved, and the means to control the hazards, by reason of education, training, experience, or a combination thereof."

Part of determining whether a supervisor and crew are qualified is to find out how much experience they have in erecting and dismantling tower cranes in general, and then specifically for the make and model of crane they are erecting or dismantling on a particular site. Questions you can ask include:

- How long has the supervisor been erecting and dismantling tower cranes?
- How long have they been a supervisor in this capacity?
- How much experience does the crew have?
- What is their experience with this make and model of crane?

Q. Where can I get more information?

- A.** Our website has a safety bulletin that contains this information and a list of legal and regulatory requirements. You can find it by searching for "top climbing a tower crane" at [worksafebc.com](https://www.worksafebc.com). You can also visit [bccranesafety.ca](https://www.bccranesafety.ca) for industry news, information on becoming certified as a crane operator, and more.

Looking for answers to your specific health and safety questions? Send them to us at worksafemagazine@worksafebc.com and we'll consider them for our next "Ask an officer" feature. ☺

WorkSafeBC prevention and investigating officers cannot and do not provide advice on specific cases or issues referenced in this article. WorkSafeBC and *WorkSafe Magazine* disclaim responsibility for any reliance on this information, which is provided for readers' general education only. For more specific information on prevention matters, contact the WorkSafeBC Prevention Information Line at 604.276.3100 or toll-free at 1.888.621.7233.