



**Structure, Tower &
Antenna Council**
Conseil des structures,
pylônes et antennes

STAC Talks: Rescue at 400'+

(Discussion Notes)



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STAC is a non-profit Council of the Canadian Wireless Telecommunications Association, representing and providing a collaborative forum for Canadian wireless communications carriers, tower owners/operators, tower and rooftop equipment engineering service suppliers, and wireless communication facilities construction and maintenance contractors.

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Published in Canada.

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August, 2016

STAC Talks: Rescue at 400'+

Question: What options are available for rescue on towers that are 400' or taller in height? A pre-job rescue plan is required, but standard two-man rescue kits are no longer sufficient at this height.

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General Reminder:

All rescue options require regular instruction to ensure employees are properly trained on how to use the specific rescue system. The rescue system must apply to the type of work that you are doing.

Opinion 1:

Gord Lyman:

Most off-the-shelf rescue systems can extend to a maximum of 400 feet, as this covers most work scenarios. To rescue above 400 feet, you can use a second similar system to transfer to, or design/plan an alternate system that is specific to the job being completed.

Anonymous STAC Member:

Our instructors teach to have a second full rescue system available and to transfer the patient to the second system prior to the end of the first system. Ensure the rope end of both systems have an eyelet sewn into the rope to act as a stopper for the rescue device, we order our ropes with this (a figure 8 knot will work as well, but an eyelet is better).

Part of the rescue training is to practice this procedure.

Hervé Landreville:

Stacking kits would mean that we have readily available two or more kits (heavy and cumbersome to carry) or that the rescuer must reset and move down to restart the rescue, it would mean that the victim will stay suspended for a long time and the orthostatic intolerance or harness hang syndrome is the "swords of Damocles" hanging over the head of our victim, so time is crucial.

Gord:

If you do not want to double the system, then you can use a longer descent rope. The load on the rope is static so the stretch in the rope is controlled.

The switch on two systems will not take very long with well-trained crews.

The biggest challenge in rescue is for a two-person crew. In most cases the only way to control the rescued person is go with them on the system which doubles the load.



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Hervé:

I agree with Gordon, a well-trained team could perform the transfer efficiently. But the industry reality is that most climbers do not refresh often; in fact, most trainees will only perform rescue drills during training.

If there are more than three people on site, there is no problem using any system and I think that each company should have the latitude of choosing the system they prefer, as long as they respect a set of standards (NFPA, CE, CSA...) and that their system is adapted to achieve the three types of rescue proposed by Clay (below): R1= Self Rescue, R2= Belay/assisted, R3= Pickoff.

Anyway, the choice of the rescue method will always depend on the amount of available bodies, the weather, the rescue height, the victim situation and so on... We all understand that a big problem arises when there is only a two-man crew on site and for this situation whatever the rescue method used it will be a long and difficult rescue. The rescuer may have to start from the ground and set up everything on his way up.

In rope rescue, we always use semi-static NFPA 1983 and CE EN 1891 type A to respect the manufacturer recommendation of control descent devices used in rescue, so stretch was never an issue single or double rope.

Opinion 2:

Clay Parchewsky:

Rescues at heights in excess of 400' must have a written rescue plan and the equipment to do it. Company policy and procedures can have an important role too.

The easiest way is to get a longer rope in your rescue plan. The typical 'rescue kit' can be used but it needs to be used multiple times.

Towers +400' with your typical kit can achieve successful rescue/evac if you follow the chart below (see next page).

Although the trend is more crew members, the easier the rescue. The smaller the crew and higher the structure, the rescue scenario is more sensitive.

Rescue above 400 feet becomes very tricky with only two-person crews, and requires them to set up a pre-rescue system before starting work on the tower above this height.

I recommend that any jobs on towers that are more than 400 feet high should have a minimum of three people in their crews.

There are three types of rescue:

1. Self-rescue: controlled descent during which the tower worker gets back to the tower themselves and lowers themselves to the ground
2. Belay/assisted rescue to the ground: victim is lowered to the ground through a controlled-descent device and the tagging method
3. Pickoff/two-person descent: controlled descent with both the victim and rescuer lowered to the ground together



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Tower/ Structure Height	Documented Rescue Plan	Rescue Equipment	Crew size	Rescuers	Rescue Method
< 200'	YES	Standard Kit	2	1	R1, R3
< 200'	YES	Standard Kit	3+	2 or more	R1, R2, R3
< 400'	YES	Standard Kit	2	1	R1, R3
< 400'	YES	Standard Kit*	3+	2 or more	R1, R2, R3
400'+	YES	Standard Kit	2	1	NOT RECOMMENDED**
400'+	YES	Standard Kit*	2	1	R1, R3
400'+	YES	Standard Kit*	3+	2 or more	R1, R2, R3
Rescue Method	R1= Self Rescue R2= Belay/ assisted R3= Pickoff/ two-person descent				
Standard Kit	400' Rope/Type 3 descender/ connectors/ slings/ bags/ pulley/ 4:1 mech advantage				
Standard Kit*	Rope length times 2 of the structure +10%				

Opinion 3:

Hervé:

Fortunately, a manufacturer has made available a very easy and simple system to use. It's rated for up to 1640 ft. (500 m) height for one user, 575 ft. (175 m) for two users. [This type of Rescue and Descent Device] can be used for rescue/belay and pickoff. For a long top rescue; it would be necessary to use a tag line to make sure the victim will not get tangled in the tower, structure, antenna, guy wires or ice guard...

This rescue scenario requires the rescuer to stay up, thus a ground man is needed, they must have a good communication system and get trained, of course.

Gord:

This is a nice system but may not be cost effective.

If you do not want to double the system, then you can use a longer descent rope. The load on the rope is static so the stretch in the rope is controlled. The switch on two systems will not take very long with well-trained crews.

The biggest challenge in rescue is for a two-person crew. In most cases the only way to control the rescued person is to go with them on the system which doubles the load.

Hervé

[This system] is cheaper than any rope solution I have seen on the market and can be used for top rescue (belay) and accompanied descent (Pickoff). Again, stack kits are cumbersome, costly, hard to manage at height and they will need to be strategically placed in the tower.