Tips for Your Next Crane Job

Mark Chisholm, CTSP

The author performing a "V-cut." The purpose is to enable the section to be severed yet remain still until you are ready to lift it. All photos courtesy of the author. »

After decades of working with cranes, I have learned some simple techniques and tips that help me gain safety and add productivity to nearly every job. One necessary ingredient that will solely rely on you is deciding when to use these tips. Tips are great to have in your arsenal, but success is shaped by knowing when to use them and when they should be left on the sidelines. The best of the best have a knack for breaking out complex solutions when needed, yet they also know when to use the most basic ones. If you want to be your best, you will have to gain this skill, too!

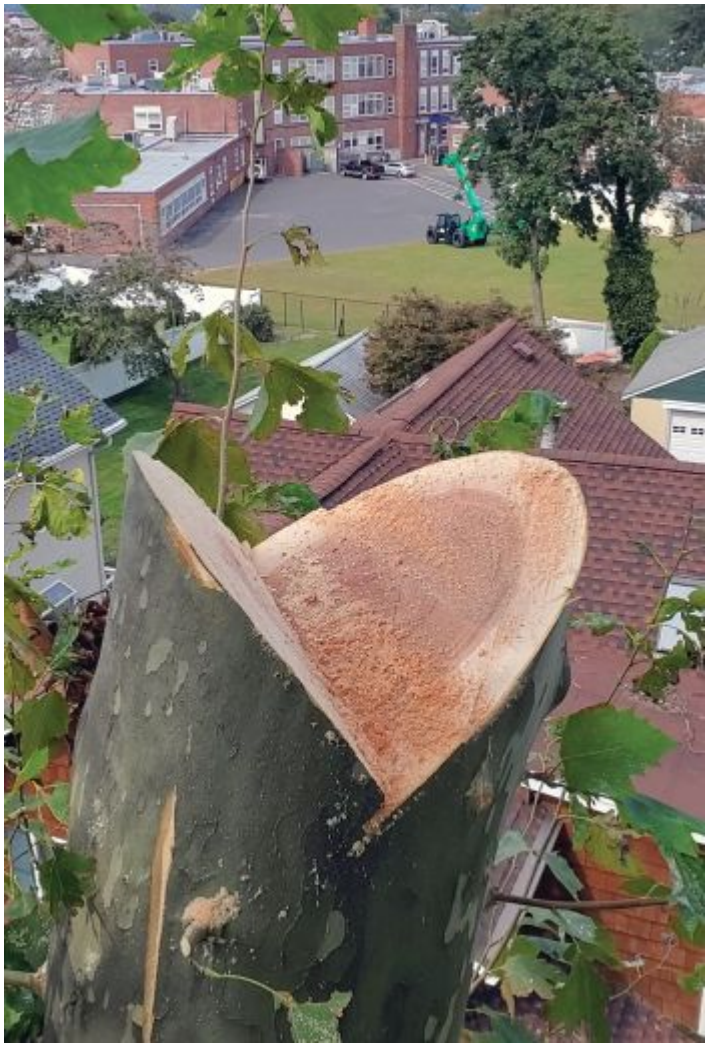
An example that illustrates this perfectly are the choices in cutting.

Making the cut

If you have heard me lecture or watched me work, you know I use many cutting solutions to get the job done. One of the more complex strategies would be the use of what I call the "V-cut." It refers to making an angular cut on one side of a section you are removing, roughly halfway through, then doing a cut that mirrors it on the opposite side until the two cuts bisect. The purpose? To enable the

section to be severed yet remain still until you are ready to lift it. Each angular cut works as an antagonist to the other to keep the piece locked in place until the operator lifts it.

Some may see this and think this is a great way to perform every single cut and add more safety to every operation. They may have something of an argument here. However, I prefer not to limit myself to any one method, as you can gain more efficiency without sacrificing safety with other options in low-risk scenarios, like when picking a vertical piece. If the risk of moving or twisting is on the low end, I would rather use the fastest method to make the cut and cut straight through in one motion. The truth is, I use this cut more than any other. Again, it is knowing what to use and when to use it that will get the job done more effectively.



The end result of a V-cut. »

A similar-looking cut to the V-cut is what I call a “wall cut.” The difference here is that only one cut is angular and steep like in the V-cut; the other is straight horizontal. This cut was the origin of the V-cut, in that the first time I ever used this cut was to create a barrier, or “wall,” between the piece I was cutting and me. I started cutting on the side opposite my climbing position and cut two-thirds of the way through, then made a very steep cut from my side toward the first cut until they met, and the piece was separated. If the tendency was for the piece to push toward me, the wall would block it and allow me to move before we completed the lift.

Modify as needed

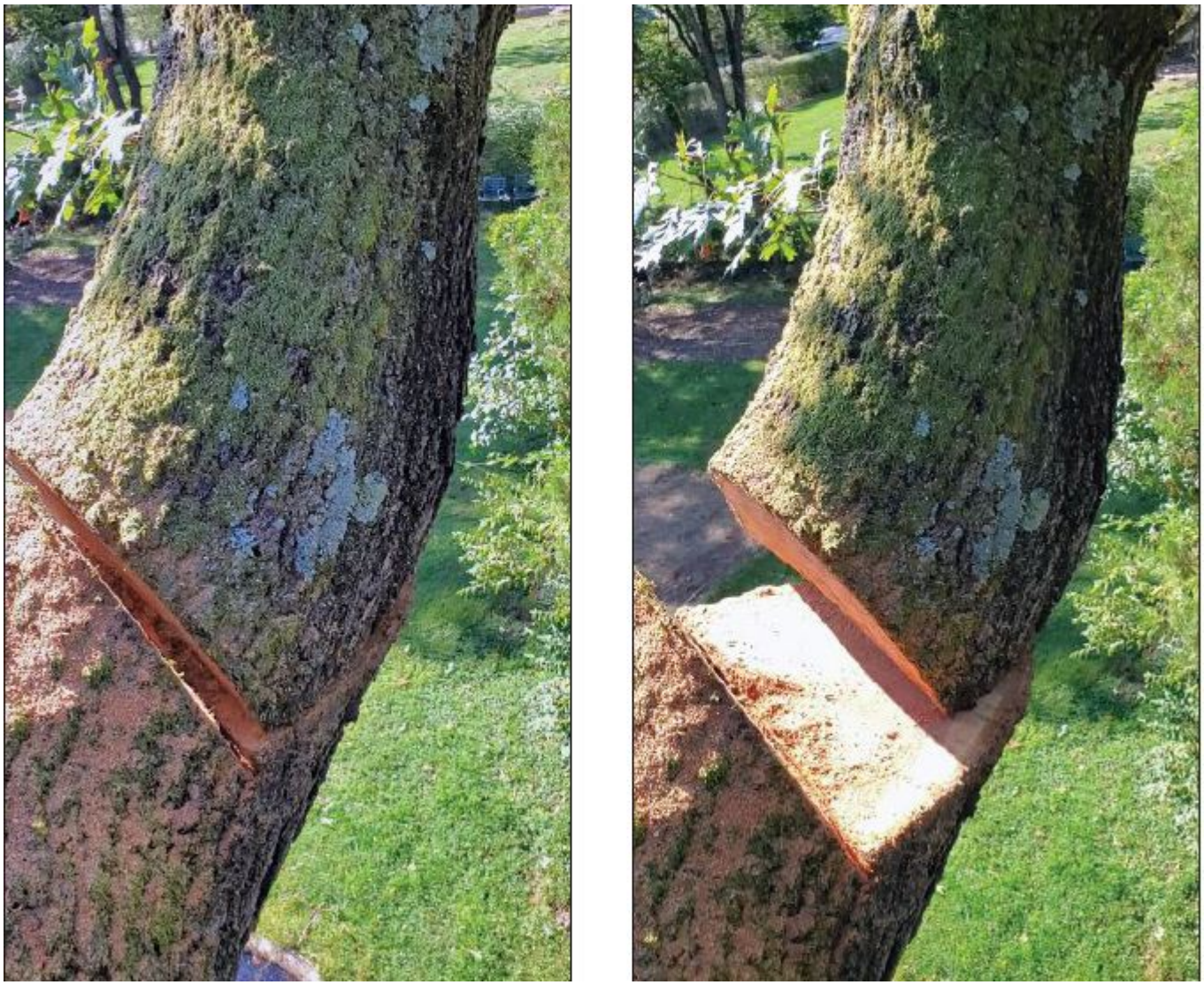
Another great skill to perfect is the ability to modify a technique to enable its use elsewhere or in a different fashion. One cut that is similar yet different from the V-cut is a “ledge cut.” A ledge cut is a modified V-cut where the goal is the same, but the risk of motion has changed.

In this scenario, the risk of motion is that the butt would drop off the cut, which could create a dynamic drop and shock-load the crane, endanger the climber and/or possibly strike a target. To eliminate this, we use a horizontal undercut to create this “ledge” to keep the piece from dropping

when the cut is complete. I use this mainly for horizontal pieces and do not limit this to crane work, but will bring it into the field of rigging with ropes as well (see "Let's Talk Rigging," *TCI*, July 2020).

Choosing our rigging

We have choices to make in sling selection, too. There are a wide array of sling types and materials to choose from. When I started doing crane work, the selection of rigging, sling and hardware configurations was limited mostly to eye-and-eye chokers made of uniform lengths of nylon or steel cable. This made balancing the load challenging at best, and often nearly impossible. The irregular shapes of the loads meant that when we only used one or two of these chokers, the section would likely move and sometimes even roll or flip. There have been countless accidents caused by this force of dynamic movement overloading the crane or stressing and damaging the boom.



The ledge cut uses a horizontal undercut to create a "ledge" to keep the piece from dropping when the cut is complete. »

A simpler, more adaptable system to balance loads was needed, and fully adjustable slings were developed. These are available in rope and a steel-chain configuration, where a hook grab is used to adjust the length. Chain can be heavy and a bit difficult to work with though, so I prefer the dead-eye sling made from synthetic fiber like the Crane Kit by Teufelberger. When I designed this kit, the goal was to have fully adjustable slings that were lightweight, low stretch and easy to tie and untie

because they stayed round under tension. The slings are made with a polyester-covered Dyneema core with a urethane, colored coating to ensure longevity, and have a protective sleeve covering the eye and OSHA-rating labels on the throat of each.

There are a wide array of sling types and materials to choose from. The Teufelberger Crane Kit, shown here, includes slings designed to be lightweight and fully adjustable, with a low-stretch Dyneema core. The slings shown are all the same. »

The reason these slings are so groundbreaking is that they allow a rigger to quickly capture the center of gravity of any shaped tree or section. As any rigger knows, there is immense pressure to rig quickly, making balancing extremely stressful. But by using two or more fully adjustable-length slings, the rigger simply places the hook in the center of the mass and then, with equal tension, ties the slings at the desired height using an approved hitch (i.e., cow hitch). Using this system means that when cut, the section will move only minimally, if at all, and will have almost no chance of rolling or flipping, thereby reducing the risk of a shock-load to the crane.

The development of fully adjustable crane slings made for a simpler, more adaptable system to balance loads. »

Some will assess the use of these slings as being slower than a simple choker, since you have to tie and untie the slings each time. But, as with any method, efficiency comes with time. One huge benefit to using these slings is that you never have to adjust them after they are secured. This is as opposed to a fixed-length sling, which often needs to be moved one or more times to get the tension right before a cut is made or taken off and moved up or down, or even requires an added wrap here and there. Skipping these steps will result in a more efficient process and eliminate unnecessary movement that can occur when all slings are not tensioned properly. It is in this moment that you realize how efficient dead-eye slings truly are.

Again, it is up to the user to know when and where to use what method. I personally prefer to use the Crane Kit for most of my irregular picks and then use simple nylon, round slings with shackles for more uniform vertical picks and wood sections. I will never limit myself to using just one method or even a certain number of slings, because it does just that, limits you.

Estimating weight

It is absolutely crucial that we estimate the weight of the load accurately before we make the cut. Part of this process must include a safety factor to allow for errors, as we all make them!

If you are new to crane work, then you should rely on a trainer, or measure and calculate every single pick and use a safety factor of no more than 50%. This means your goal is to make a cut where the weight of the piece, including any allowances for movement, will never cross above 50% of the rated capacity of the crane at the given radius. This safety factor will help protect you from a catastrophic event when you miscalculate a lift.

How do we measure and calculate? By using a log tape, with a diameter reading on one side, and referencing a greenlog weight chart. The one I use, created by Mark Adams, is on my website, www.TreeBuzz.com, under "Article Archives." With these tools, we can measure the diameter and length of a section and use the chart to find the weight per linear foot for the given species of tree and determine the right place to make the cut. And don't forget to include your safety factor!

Plan your cuts

Too often I see climbers and bucket operators alike rushing into a cut without a plan. This will eventually prove to be a problem when the saw cannot make the entire cut from one position and you are left to track down a miss in a hard-to-reach place. When this happens, the cutter will be in a more vulnerable position during the release, thus adding stress and risk. Instead, plan your cut so that you begin in the vulnerable place and finish in the most comfortable and confident position possible. This will keep you out of the strike zone when and if movement occurs.

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Conclusion

Crane work, like any discipline in arboriculture, requires a lot of skill. These disciplines take time and dedication to learn and perfect, and the risks surrounding amateur work are too great. The best advice I can give is to do your homework before attempting new tasks – and even throughout your

entire career – so that you never become complacent or miss an opportunity to learn and grow. With an open mind and an unquenchable thirst for improvement, we can work to become our best.

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