CSDA ROUNDTABLE

Wire Sawing: Tips and Techniques

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INTRODUCTION

In this roundtable, you will learn tips and techniques for wire sawing. It will explore different real-world job scenarios and help participants tackle challenging wire sawing jobs safely and efficiently. Topics covered will include setting up a wire saw, rigging restrictions, removing large blocks, slurry collection, underwater sawing and more.

Wire Sawing Basics
There are two basic techniques for cutting with a sintered wire product. Operators either push it or pull it through a structure. The more pulleys, the more you pull the wire, the more it is going to wear out. As you wear the bead down, you expose more diamond. Plated diamond beads usually have a single layer of diamonds. It is important to remember the following:

- Prepare for a safe cut.
- Know your equipment and your limitations.
- Use larger pulleys.
- Use longer wires and minimize cutting off sections.
- Avoid a tight radius at the end of the cut.
- Shim block as needed to avoid pinching the wire.
- Avoid a 4-corner start if possible.
- Chip the corners and start the wire by hand.
- Avoid excess pressure and wire speed.
- Know when to replace wire connectors.

ROUNDTABLE QUESTIONS

1. What would be your approach for cutting an opening from a 4-foot-thick wall, given the density of the concrete and the limit for the overhead crane is 5 tons? See sketch 1.

Participants in this discussion had different approaches to this particular cutting problem. One group decided that they would first core drill holes since the wires will go down through the hole. One group suggested that the first approach might be to make the vertical cuts while yet another group suggested that it would be easier to make the horizontal cuts first.
Solution:
The first step would be to drill 4 corner wires access holes. Then operators would place the saw on the floor and use a transition bracket to make the first horizontal cuts. Once the horizontal cuts are made, shims would be placed in lower horizontal cuts. Then two vertical cuts would be made at a slight angle to ease block removal.

2. How would you flush cut a heavy motor pedestal and divide it into 10-ton picks? See sketch 2.

For this particular cutting problem, one group decided that first they would drill a hole in the middle of the pedestal. Another group decided that they would flush cut the pedestal with a big horizontal cut since jack plates make the set-up easier when cutting.

Other participants decided to make three vertical cuts on the pedestal with a fat wire on the bottom and skinny wire on the top using a #1 saw. Wire width would range from 8-10mm. 13, 14 and bigger - nice though you can run a fat wire through and put a 9-mm on saw #2 and slide it into this curve. Start saw #2 on the vertical cut and as soon as it is running. Then move saw #1. The first available saw moves up and makes the last cut.

Solution:
144 square feet to make three vertical passes versus only 108 square foot of cutting if you make on horizontal cut and one vertical cut. The 2 cut version will give you the four pieces needed to keep weight below 10 tons per block.

3. How would you cut the top off a pier and provide the collections of water and slurry, using criteria? See sketch 3.

Solutions to this slurry problem varied between each group.

One group decided to try to utilize a lot of cable for the job. They felt that a smaller machine would mean mounting it to the wall to get as close to the cut as possible. Then cuts can be made and directions changed. Workers would remove each piece as soon as it was free.

Another group of participants decided the solution would be to bring out an excavator on a barge. They would mount the machine of the top for the first cut and come down and do a direction change, pull in to the first cut. Then they would take the machine and put it down at this level and pull it through. Come over here and do a direction change. We got rid of this piece and this piece and put the machine down at this level. Slurry was not considered in the solution but the group stated they would dry cut and hope that it rained a lot. Then they could rig a collection solution up and take it off into barrels.

Another solution was to use bursters. First they would make the horizontal cut and then burst out the other cuts. Burst it, expose the steel, burn the steel and continue bursting. Many participants felt that slurry and water is a definite challenge to many jobs. For the removal, some participants decided to use biodegradable foam instead of water since it was easier to collect than water.
Solution:
The solution was to take a saw from one plane to the other. Transition brackets are available. Contractors have two piers to do and they are only 20 feet apart. Put a work platform between both piers and wire saw the horizontal cut with large (11-15 mm) diameter wires adding shims as you go. Then place saw(s) on top of the piers and make vertical cuts with small (9-10 mm) diameter wires.

4. You need to make a large wire cut and are concerned about the wire making it through without failing. What would you do? See sketch 4.

Brand new pad in the middle of America and the contractor needed to cut off the top. This is a job where you are not going to get through this piece of concrete with one wire, as you need to make a 5,000 square foot cut. Various cutting solutions were discussed.

Solution:
Use a local slab saw to make cuts two feet deep, two inches wide. Then with plated wire you can reverse your wire with no problem. There is nothing worse than to get 2/3 of the way through a cut and end up with no diamonds. Don’t try to push your wire to the limit. Save it for the smaller projects.

Now set up 2-4 wire saw machines to make more manageable cuts roughly 25 feet by 50 feet each in size. Position the saws near the left or right corner and only cut on remaining three corners.