

SAFE, EASIER, ECONOMICAL - SEE

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ABSTRACT

How do you measure the highwall? Why do you even need to know the highwall measurement? Why is it important? The importance of this measurement is to help keep a level floor and to help control vibration. Nevertheless, since most of us are not mountain climbers, there must be a safe and easy way to make an accurate highwall measurement. So with these factors in mind, how do you make your measurement?

There are a couple of ways. The first is to purchase an expensive survey instrument and the training that is needed to use that instrument. The second, a least expensive way, but 95% as accurate, is the *drop-a-line method*. No, I do not mean going near or leaning over the edge, or dropping a line from the top of the highwall and shimming down the face with a tape in your hand. My system is quite simple and not very expensive, but as I stated before, quite accurate.

I made a *fishing pole* of ½" aluminum conduit with 300 feet of fiberglass tape on a reel with a one pound lead weight. When the lead weight reaches the bottom, subtract the length of the pole and the height of the support leg from the total measurement and wow-la, you have your measurement. The beauty of this type of system is that the employee is not near the edge, he is a safe distance away, yet the needed measurement is able to be taken with a non-conductive piece of equipment that cost about \$100.00. It is easy to use, always at hand, and that makes this system a system that will be used.

The use of a survey instrument, of course, is the most accurate, but the biggest draw back I can see, is the danger of falling rocks if your are near the face. Why invite the possibility of an accident? Another factor is the cost and maintenance of such a costly and delicate instrument. You are more likely not to have that instrument on the drilling rig, not close at hand, which means time wasted while someone has to go get the instrument and set it up, besides the needed training on the use of it. As I see it, safer, easier and economical is better in this case, because it is almost as accurate as an instrument costing a few thousand dollars.

How do you measure the highwall? Why do you even need to know the highwall measurement? Why is it important? These are questions that a lot of novices in the industry ask. Even I wondered why that was *so* important. After a few years in the industry, you soon learn the reason why. Several important reasons for this measurement is to help keep

a level floor, maintain the quality of the stone and control drainage. It also helps to reduce load out and haulage equipment cost. It helps in controlling vibration. How? It helps prevent short holes, which when blasted, can cause toes at the face which could cause problems the next time you are drilling and blasting. Or too much sub drill can cause explosives to try and move stone below grade, which it usually doesn't have enough explosives in the sub-drilled area and this increases vibrations and complaints. Nevertheless, since most of us are not mountain climbers, there must be a safe and easy way to make an accurate highway measurement. So with these factors in mind, how do you take your measurements?

There are several ways to get this measurement. The first is to purchase an expensive survey instrument and the training that go with that purchase. The second, a least expensive way, but 95% as accurate, is the *drop-a-line method*. No, I do not mean going near or leaning over the edge, or dropping a line from the top of the highway and shimming down the face with a tape in your hand. My system is quite simple and inexpensive, but as I stated before, quite accurate.

I made a *fishing pole* of non sparking ½" aluminum conduit with a 300 - foot of fiberglass tape on a standard open bale reel with a one pound lead weight. The reel is mounted onto a 36" length of conduit with two (2) clamps, similar to what is used to install a reel on a fishing pole. The tape is threaded thru a pulley assembly at the end which is threaded onto the end of the pipe. I made three different lengths of extensions in three, four, and six foot sections of pipe. This way you can screw together what every length pipes you want so that you can keep a safe distance from the edge of the highwall. Then thread the pulley assembly onto the end of the last pipe and you are ready to use the measuring pole. I also made a piece of pipe with a fitting that slides down the pipe to help support the extra footage of pipe, because it is hard to balance and read the tape.

Now you are ready to take your measurement of the highwall. The way I do it is, go to the area where I want to take my measurement, release the tape over the edge of the highwall. I have even attached a mirror onto the threaded pulley assembly so that I can see when it reaches the bottom without looking over the edge. When the lead weight reaches the bottom, subtract the length of the pole and the height of the support leg from the total measurement and you have your measurement. This will give you the height of the highwall. The beauty of this type of system is that the employee is not near the edge, he is a safe distance away, yet the needed measurement is able to be taken with a non-conductive piece of equipment that costs about \$100. It is easy to use, always at hand, and that makes this system a system that will be used.

The use of a survey instrument, of course, is one of the most accurate, but the biggest drawback, is the danger of falling rocks as you work near the face. Why invite the possibility of an accident? Another factor is the cost and maintenance of such a costly and delicate instrument. You are more likely not to have that instrument on the drilling rig, not close at hand, which means time wasted while someone has to go get the instrument and set it up, besides the needed training on the use of it. As I see it, safer, easier and economical is

better in this case, because it is almost as accurate as a survey instrument costing a few thousand dollars.

In July, our area in Illinois received over 12 inches of rain. The flooding that occurred was tremendous. The river that runs by the the quarry flooded the quarry with about 85 feet of water. We used this method to measure the amount of water that the pumps pumped out. We ran the pumps 24 hours a day and we took measurements morning and night. I selected the place that I wanted to take my measurements from, stood a safe distance from the highwall and dropped the line. I placed a float on the end, and this gave me a fairly accurate measurement of how much water the pumps pumped out. It took us about one month to pump the water down. This system can be adapted to various situations. One just has to use his mind and imagination.