

**Vermeer**<sup>®</sup>



# INTRODUCTION TO MICROTRENCHING



## Abstract

There's nothing small about planning for microtrenching jobs. While the actual trench might be narrow, there can be a lot to consider before you start a project. You have to understand the process, the cleanup, and the equipment necessary to do the job well. That's what this white paper is for: to help provide you with information you need to know about microtrenching.

## What is microtrenching?

First, let's define exactly what microtrenching is. Microtrenching is a technique where a very narrow trench is cut into the pavement—usually close to the seam—where the road meets the curb. Once the line is laid, a grout compound is used to fill in the trench. The seam is then sealed, which protects the line while restoring the integrity of the road surface. This technique can be done by using a ride-on tractor (like the Vermeer RTX550 ride-on tractor).

These methods work well on fiberoptic or small conduit jobs because they can be more cost-effective and can take less time than other installation methods.

We'll start with the essentials you should know before you take on your first microtrenching project. Refer to your machine's operator's manual for safety messages and further instructions.

## This important information is divided into three areas:

1



The essentials

2



How to backfill the trench and restore the cut

3



How to choose the right vacuum system and cutter wheel



What do you need to know before you create that trench? Well, the essentials include the surface you're trenching, vacuum excavation equipment, the width and depth of the cut and the backfill material. Let's go through each one.

### **Know the surface (and underlayment)**

The type of surface that you'll be working with determines your approach. As you determine the surface, you should also make sure you know what's underneath that surface.

"Knowing the surface helps you know what cutting wheel you will need to order with your microtrencher attachment," explained Ed Savage, Vermeer product manager.

Road surfaces range from asphalt to concrete, which will determine the cutting wheel design that will maximize productivity. Either an MTR12 or MTR16 microtrenching attachment can be used for these applications, depending on the required trench depth.

### **Choose the right vacuum excavation equipment**

After you know what type of material you're cutting, you have to determine what you're going to do with the dry spoil. A connected vacuum system cleanly removes and contains the spoil, allowing you to take it away from the worksite while you're microtrenching. Usually, this is connected through a hose from your microtrenching attachment to the vac.

When it comes to vac systems, you have several options. There are trailer vacs and truck vacs, but they also include a range of models and sizes.

"To make an informed decision, you have to ask yourself how big of a vac you would need for the majority of your projects and how often you want to have to go dump it," said Savage. "That will help you choose which vac equipment to go with."

"Knowing the surface helps you **know what cutting wheel you will need** to order with your microtrencher attachment"



### Know the width and depth of the cut

With your equipment chosen, it's time to think more about the actual trench. How wide and how deep does it need to be? For microtrenching, the actual trench is fairly small. The trench generally ranges from .75-inches to 2.25-inches (1.9-cm to 5.7-cm) wide and up to 16-inches (40.6-cm) deep, which is typically above existing utilities. Knowing the width and depth of the trench can help you prepare for the project and understand what type of production to expect.

"You also should know how many feet of trench you want to cut per day," explained Savage. "That can help you estimate how long the project will take and have the right vac system in place."

Rocksaw attachments also play a key role. Knowing the width and depth helps you decide what attachment you should use. Should you use the microtrencher MTR16 with a maximum trench-cutting depth of 16 inches (40.6 cm) and trench width of 2.25 inches

(5.7 cm)? Or is the rockwheel RW526 with a maximum cutting depth of 26 inches (66 cm) and a cutting width of 4 inches to 6 inches (10.2 cm to 15.2 cm) the better option? Your planning is only as good as the information and equipment you have.

### Prepare your backfill material

After the trench is cut and the product is placed in the trench, all that's left to do is backfill the trench. This requires backfill material, which can be a grout, epoxy or a sealer approved by a local governing body.

Again, this is another important piece of microtrenching projects and requires some preparation to have a plan in place for backfill material. Knowing the width, depth and length of the trench can help you estimate how much backfill material you'll need to complete the job.

For maximum trench cutting

depth of **12** and width of **2.3**  
in (30.4 cm) in (5.8 cm)

**MTR12 microtrencher attachment**

For maximum trench cutting

depth of **16** and width of **2.25**  
in (40.6 cm) in (5.7 cm)

**MTR16 microtrencher attachment**

For maximum trench cutting

depth of **26** and width of **4 - 6**  
in (66 cm) in (10.2 cm - 15.2 cm)

**RW526 rockwheel attachment**



## Part 2



## How to backfill the trench and restore the cut

Picture this: You've dug a trench and installed the utility line or conduit. Everything went well, and now the only thing left to do is backfill the trench and clean up. But what do you fill it with? What's the best way to backfill it? The answer depends on a couple of factors, which we'll talk about below.

### Backfill material options

First, let's talk about the different options. There are two main choices for backfill material: grout and epoxy.

Grout (also known as slurry) is prepared in a grout mixer on the jobsite and then poured into the trench. Obviously, this requires a grout mixer and then an efficient way to pour it into the trench itself.

The other method is epoxy. Preparation for epoxy is a little different than grout because it requires mixing both parts of the epoxy together and filling the trench with it before it starts to set. This needs to be a quick process, so having everything prepared before you mix the epoxy is important.

"Usually, the decision to use grout or epoxy is decided by the governing body or company that you're contracted with, such as the telecom company," explained Ed Savage, Vermeer product manager. "At the end of the day, you want to backfill it with material that you think will best protect the product."

Whether you use grout or epoxy, the important part is you have enough backfill material on hand to adequately fill in all of the trench.

Epoxy

Grout





### Cleanup processes

After you've backfilled the trench, it's time to top it off with some cleanup. How you clean up depends on the surface you're working with.

"If you're trenching in asphalt, one option is to put an asphalt cap on top of the trench after the grout or epoxy has set," said Savage. "That way, you have a similar surface with the rest of the road, which should wear at the same rate over time."

If you're trenching in concrete, then you'll want to make sure that the backfill material you use is level with the rest of the concrete.

In both cleanup processes, the goal is to leave the surface looking like it did before, as much as possible. There's also a backfill blade attachment for Vermeer ride-on tractors to help level and clean up the area as you backfill.

Backfilling the trench, cleaning up the area and restoring the surface is a crucial part of every microtrenching job. Digging the trench and installing the product gets most of the spotlight, but how you restore the cut also says a lot about the quality of your work and your attention to detail. Don't neglect the care it takes to backfill and restore the cut well.



***THE GOAL IS TO LEAVE THE SURFACE  
LOOKING LIKE IT  
DID BEFORE.***



Having the right equipment for the job is an essential part of planning. If you show up with the wrong gear or without enough material, you're losing productivity before you've even started. To help you prepare what you need for each microtrenching job you take on, you'll have to consider the right vacuum system and cutter wheel.

When it comes to vac systems and cutter wheels, there are a lot of options and sizes to choose from. Which one is right for your operation? A breakdown of the different wheels and the considerations for vac systems is needed to help you make an informed decision.

### Vac system considerations

First, let's talk about vac systems. Part of planning every microtrenching project involves figuring out what you're going to do with the dry spoil. A hose from your microtrenching attachment to a connected vacuum excavator can cleanly remove and contain the spoil, allowing you to take it away from the jobsite while you're microtrenching. But in order to do that, you need a vacuum excavator and a system or process in place.

When it comes to vac systems, there are a couple things you should consider:

For microtrenching, you'll want to choose a vac system that has at least 900 cubic feet per minute (cfm) (25.5 m<sup>3</sup>/min). Typically, this will be a trailer vac, like the Vermeer LP SGT vacuum excavator, which has 1,000 cfm (1,699 m<sup>3</sup>/hr).

Keep in mind how far away your dumpsite is. If you have to haul it a long distance, think about upgrading to a bigger spoil tank to lessen the number of trips to the dumpsite.

"This is where process can play a key role," said Ed Savage, Vermeer product manager. "What's your process for taking the spoil tank to the dumpsite and back? How many trips do you want to have to take? These answers can play a large role in deciding how big of a vacuum excavator or spoil tank you'll need."

Having the right equipment for the job is an **essential** part of planning



### Cutter wheel options

When it comes to cutter wheels, you have two main options, but there's variety within those two options and both are compatible with Vermeer ride-on tractors.

First, there's the microtrencher MTR12 attachment. It has a maximum trench cutting depth of 12 inches (30.4 cm) and a width of 2.3 inches (5.84 cm). There are two varieties of the MTR12 attachment to choose from:

**1. Vermeer custom rotary-welded segment – 14 mm .550 tooth.** This Vermeer-patented welded segment wheel has fully machined pockets to allow you to optimize all the tooth angles for maximum performance and tooth life. It's well-suited for cutting asphalt and medium concrete. There are three different sizes of cut to choose from with this cutter wheel: 1.5-inch (3.81-cm) cut, 1.75-inch (4.44-cm) cut and 2-inch (5.08-cm) cut.

**2. Vermeer bolt-on PDC cutter.** This wheel is considered a cutter mount and has 21 mounts on it. It's only recommended to be used for asphalt, not concrete. It comes in two different sizes of cut: 1-inch (2.54-cm) cut or 1.5-inch (3.81-cm) cut.



Then, there's the microtrencher MTR16 attachment. It has a maximum trench cutting depth of 16 inches (40.6 cm) and a width of 2.25 inches (5.7 cm). There are also two varieties of the MTR16 attachment to choose from:

**1) Vermeer custom rotary-welded segment – .550 tooth.** This Vermeer-patented welded segment wheel has fully machined pockets to allow you to optimize all the tooth angles for maximized performance and tooth life. It's well-suited for cutting asphalt and medium concrete. There are three different sizes of cut to choose from (also like the MTR12 attachment): 1.5-inch (3.81-cm) cut, 1.75-inch (4.44-cm) cut and 2-inch (5.08-cm) cut. The difference from the MTR12 is that this one requires more teeth on the wheel and can cut deeper.

**2) Vermeer bolt-on PDC cutter.** This wheel is considered a cutter mount and has 24 mounts on it. It's only recommended to be used for asphalt, not concrete. It comes in two different sizes of cut: 1-inch (2.54-cm) cut or 1.5-inch (3.81-cm) cut.

"Similar to the vac system, pick the size and kind of cutter wheel that will work best for your operation," explained Savage. "Are you working with mostly concrete? Then the segmented wheel might be the right call. Will this job be asphalt? If you're cutting only asphalt, then a PDC wheel would be a good choice." When it comes to vac systems and cutter wheels, there are several different kinds and sizes, but knowing the options that are available can help you make the right decision.



## Conclusion

### Putting it all together

Put all three elements together (the essentials, the cleanup, and the equipment) and you have the building blocks for a microtrenching project. Now you're ready to get to work. Microtrenching can be a difficult job, but hopefully this gives you a good launching point to get started and master the art.

For more information on microtrenching, contact your local Vermeer dealer or visit [vermeer.com](http://vermeer.com).

Watch how microtrenching works at  
[vermeer.com/microtrenching101](http://vermeer.com/microtrenching101)



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