A construction worker wearing a yellow hard hat and safety vest is standing in a trench next to a large, blue trench box. The trench box has a sign on its side that reads "EFFICIENCY PRODUCTION" and "800-552-8800". The background shows a construction site with earth and other equipment.

A SURVIVAL GUIDE FOR UTILITY INSTALLATION

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Why a Survival Guide?

As every contractor can testify, “working harder” and “working smarter” are certainly not synonymous, especially when it comes to bottom line profitability.



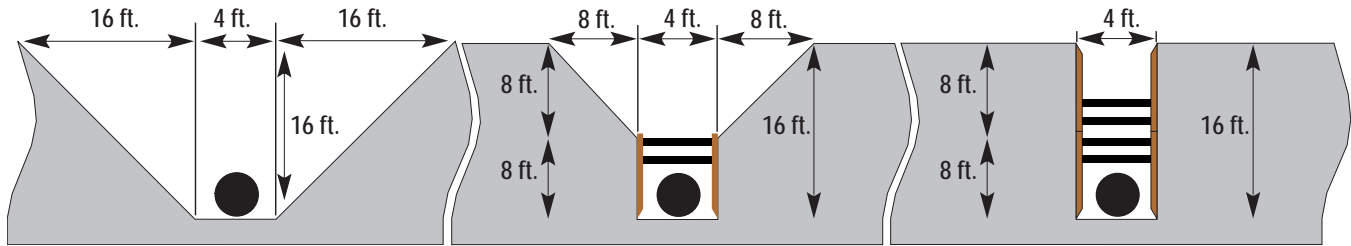
Without a trench shield, the slope required for this excavation would close most of the road and adjacent sidewalk.

As the underground utility industry has grown and expanded over the last 50 years, many utility contractors have also expanded their businesses by adding more workers, new excavators, and other equipment. The industry has also seen tremendous growth as new

contractors enter the industry bringing with them new ideas on how to install utility pipe. There are more contractors competing for fewer projects.

Technology has also impacted the industry in a big way. In recent years, new pipe materials have been developed, new and more accurate lasers have been invented, and new and improved shoring techniques and equipment have been engineered and implemented.

However, as much as the utility industry changes, some things always remain the same: low job costs are critical to success; cost over-runs can spell disaster; and an inefficient operation can negatively impact a contractor’s ability to make payroll, pay bills, and literally survive in business.



	SLOPING				ONE 8' TRENCH BOX				STACKED 8' TRENCH BOXES			
	Qty.	Units	Cost/unit	Total cost	Qty.	Units	Cost/unit	Total cost	Qty.	Units	Cost/unit	Total cost
Saw-cut asphalt	800	LF	\$2.22	\$1,776	800	LF	\$2.22	\$1,776	800	LF	\$2.22	\$1,776
Remove 3" asphalt and 8" gravel base	1,666	Sq. Yd.	\$5.89	\$9,813	1,134	Sq. Yd.	\$5.89	\$6,679	289	Sq. Yd.	\$5.89	\$1,702
Excavate soil and haul away	5,096	Cu. Yd.	\$4.21	\$21,454	2,420	Cu. Yd.	\$4.21	\$10,188	1,540	Cu. Yd.	\$4.21	\$6,483
Backfill with sand	5,096	Cu. Yd.	\$7.87	\$40,106	2,420	Cu. Yd.	\$7.87	\$19,045	1,540	Cu. Yd.	\$7.87	\$12,120
Replace 8" gravel base	1,666	Sq. Yd.	\$6.76	\$11,262	1,134	Sq. Yd.	\$6.76	\$7,666	289	Sq. Yd.	\$6.76	\$1,954
Replace 3" asphalt	1,666	Sq. Yd.	\$17.91	\$29,838	1,134	Sq. Yd.	\$17.91	\$20,310	289	Sq. Yd.	\$17.91	\$5,176
Trench shield rental				\$0	1		\$290	\$290	2		\$290	\$580
Totals				\$114,249				\$65,955				\$29,791

Data represents quantities for 400 LF of pipe laid at 16' deep. Prices are from MI-DOT weighted average price report of May-June 2016. Pricing represents snapshot of one day's work & is meant to show the drastic difference in material use more than the unit prices. These particular unit prices are inflated as they do not take into account average production and/or other factors and are intended for comparison only. The inclusion of only the units and not the prices may convey the point sufficiently.

Put simply, the underground utility construction industry is now too competitive for any contractor unwilling or unable to adapt and change with the times.

Overcoming the misconception about productivity and profits

When the question was asked to a number of utility construction foremen: “What one thing determines whether or not your crew was successful and profitable on any given day?” The majority of crew foremen answered, “The amount of pipe we put in that day.” This response certainly comes as no surprise. Underground utility construction is a highly competitive industry, and many in the industry are indoctrinated with the concept that “high productivity” equals “high profits.”

This mind-set is simply not altogether true! Underground contractors have literally spent millions of dollars on cost over-runs that could have been avoided if the crew foreman or job superintendent focused on beating their established job cost rather than just obtaining high pipe production.



When installing a new water main across rural Texas, nothing prevented this contractor from open-cutting and sloping...except the time and money needed to excavate the excess dirt.

Continues Back Page →

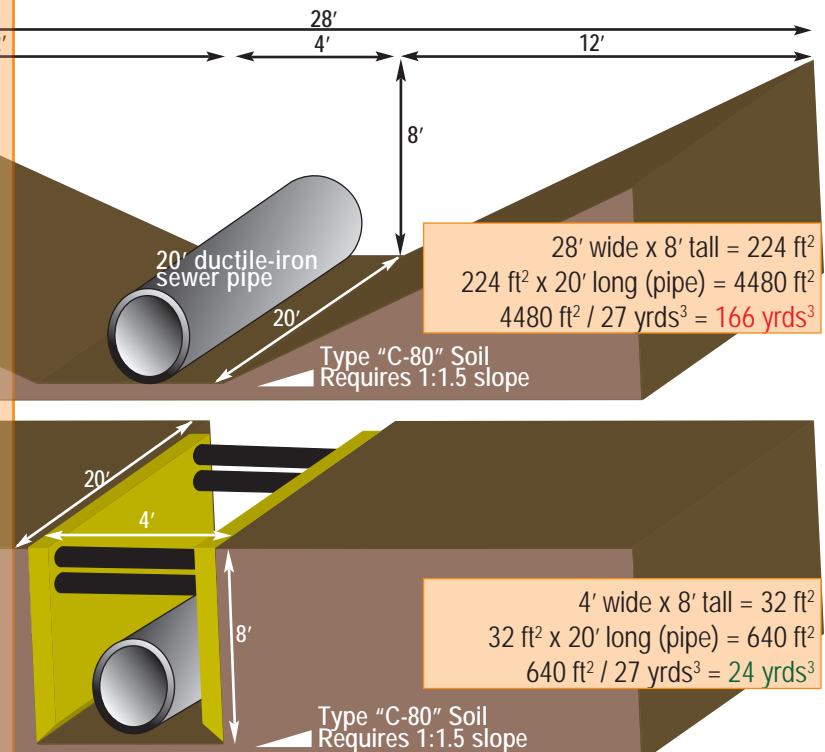
Trench boxes advantage for common excavations too

Trench boxes are more common for deep excavations, such as 16 ft. deep. But most applications don't require such deep trenches. What's the advantage of bothering with a trench box just to lay new sewer pipe 8 ft. deep?

For excavations in fairly stable Type-B soil, it may be faster and easier to open-cut and slope or bench to 8 ft. deep. But how often does a contractor encounter Type-B soil? Most contractors don't bother testing soil and just assume that the condition is the worst, Type C-80 soil. According to OSHA trench standards, that requires an 8 ft. deep trench to be sloped back on a 1:1.5 slope. That's 12 ft. on both sides of the trench!

In this scenario, the contractor would need to move 166 yds³ of dirt, just to lay one (20 ft.) stick of ductile-iron sewer pipe! That's a lot of time for the pipe laying crew to wait while the excavator operator prepares a safe trench for them.

Once again, trench shielding dramatically decreases the amount of dirt that must be moved. One 8 x 20 ft. trench box can reduce the excavation to just 24 yds³ of dirt.



→ Continued from Inside:

Develop an early warning system to prevent cost over runs

The profit a contractor earns on any utility installation project depends a great deal on the ability of the crew foreman and other supervision to be cost effective, not just “pipe productive.” There are a number of items on any utility job that should raise a red flag as having the potential to create cost over-runs. These items include:

- Excessive excavating due to trench sloping
- Trucking excavated material from the job site
- Importing specified trench backfill material
- Excessive crew “down time” due to waiting for bedding stone or damage to existing utilities
- Roadway and lawn restoration
- Pipe testing and leak repair
- Documenting sewer lead locations

A Survival Guide for Utility Installation

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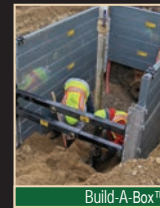
Slide Rail System



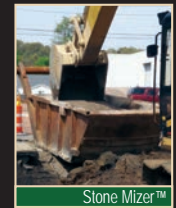
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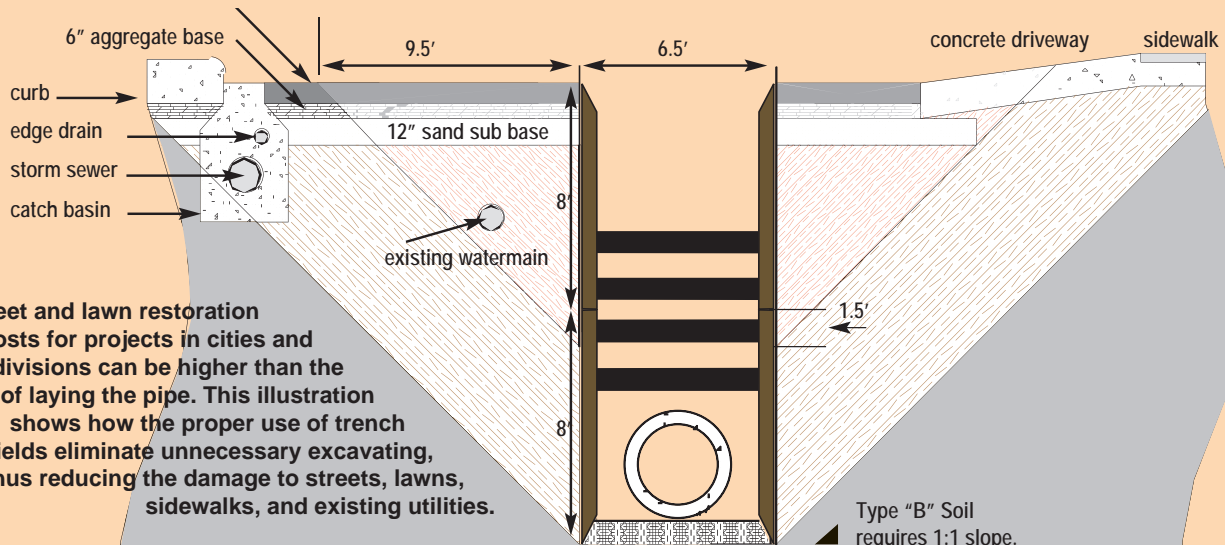
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Trench Shielding Impact on Restoration Costs:



Street and lawn restoration costs for projects in cities and subdivisions can be higher than the cost of laying the pipe. This illustration shows how the proper use of trench shields eliminate unnecessary excavating, thus reducing the damage to streets, lawns, sidewalks, and existing utilities.