



Micro-/Macro-Trenching Opportunities for Fiber Installation Ed Savage and Brandon Wagner, Vermeer Corporation



Agenda

- Micro/macro trenching vs. HDD and when to use each method
- Define Micro/Macro trenching and equipment involved
- Where these technologies have been used



Micro/macro trenching vs. HDD

- Urban areas have become more and more congested with existing utilities
- Installing at shallower depths and more open right of ways
- Speed of install (lack of obstacles)
- Jobsite cleanliness



Micro-Trenching Defined

- minimally obtrusive installation process by which a narrow and relatively shallow trench is cut in an asphalt roadway, intended to safely house fiber-optic cable and conduit.
 - Cut is often made in the seam between the asphalt roadway and concrete curb / apron
 - Cuts can also be made in the seams of sidewalks, behind curb seams, and tight alleyways
- Trench dimensions range from 1.0" - 2.25" (25 - 57 mm) wide and 8" - 16" (20 - 41 cm) deep, which is typically above existing utilities.





Micro-Trenching Defined

- Simultaneously, a connected vacuum system removes and contains the dry and dusty spoil away from the work site.
- After the conduit pipe is laid, a grout compound approved by the local governing body is used to backfill the trench, returning structural integrity to the roadway.
- A sealer may then be used to finish the cut flush with the surface





Micro-Trenching System

- Ride-on utility tractor with Micro-trencher attachment
- Cutting wheel
- Vacuum





Cutting Tooling

- There are a wide range of cutter wheel configurations to meet project specifications and contractor preference
- Key answers needed to credibly advise a cutter set-up
 - Project specifications (length, width, depth)?
 - Road composition (asphalt, concrete paving etc)
 - Description of road base (rock, crush limestone, sand, large aggregate)?





Cutting Tooling-Integral wheel

- Description
 - Welded tooth pocket with replaceable teeth
- Intended use
 - 6” (15 cm) depth or less of asphalt only
- Advantages
 - Cost-effective reversible tooth design offers two cutting edges
 - When one edge is worn, simply flip the tooth to access the other, new cutting edge
 - Cutting wheel should also be flipped to maximize pocket life
 - Re-usable wheel
 - Maintains the advantage of a narrow cut with replaceable teeth





Cutting Tooling – HD Rotary

- Description
 - Welded segment compatible with rotary-style cutter teeth
- Intended use
 - Asphalt & concrete
- Advantages
 - Rugged design for cutting wider trenches
 - Serviceable Wheel
 - High quality of cut





Cutting Tooling – PDC

- Description
 - Welded segment compatible with rotary-style cutter teeth
- Intended use
 - Asphalt & concrete
- Advantages
 - Rugged design for cutting wider trenches
 - High quality of cut



Macrotrenching

- Capability of installing up to 3 in. product in a road cutting setting
 - Long haul fiber
 - Downtown
- Productivity focus by cleaning the trench
 - Dust mitigation
- Utilizing a higher horsepower machine for stronger cutting action
- Higher capacity vacuums to stay on jobsite longer





Micro vs. Macro

Micro	Macro
Depth 8-16 in.	Depth 16-30 in.
Width 1-2 in.	Width 2-3 in
Asphalt over traditional sub base streets	Heavy duty street composition
Smaller turning radius is desired	Long haul straighter cuts
Smaller equipment footprint	Larger footprint
Vacuum spoil handling or side discharge	Vacuum spoil handling only



Where these technologies have been used





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Questions?