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Microtrenching Standards
Board of Supervisors Work Session

June 11th, 2025

Meeting Objectives & Goals

- Overview of Microtrenching, Discuss Advantages and Disadvantages
- Discuss Proposed New Microtrenching Standards
- Discuss Industry Feedback received so far
- Discuss Next Steps and Timeline for Potential Adoption
- Solicit feedback from the Board of Supervisors

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What is Microtrenching?

- Microtrenching is a method for deploying fiber that cuts thin, shallow channels into pavements, or existing joints, in lieu of wider, deeper trenches or bores. Microtrenching enables the deployment of underground fiber in trenches that are narrower, shallower, and completed faster than typical open trenches or underground bores. Micro trenches are typically 0.5” to 4” wide and between 10” and 24” deep. The trench is typically backfilled with a low strength flowable concrete and then sealed with an asphalt seal coat.

Why the Demand for Microtrenching?

- **Before 2020 (Pre-Pandemic)**
  - Remote work was uncommon compared to today
  - Broadband demand was growing predictably and steadily.
  - Materials, installation equipment, and labor were readily available.
- **After 2020 (Post-Pandemic)**
  - Demand for Broadband has increased tremendously due
  - Fiber industry faced resource constraints to meet new demand.
  - Federal Broadband Equity Access and Deployment (BEAD) Program.

To meet the growing consumer demand for high speed internet access, an unprecedented level of fiber deployment is needed.

Why is Pinal County Considering Adopting Standards?

- Pinal County currently has no microtrenching standards.
- Existing state of practice is a mixture of various ideas and techniques. Most jurisdictions have no standards and/or currently do not allow mictrotrenching.
- The demand for broadband and the use of microtrenching to meet that demand will continue to increase.
- The industry desires modern solutions to improve service connectivity at competitive prices.
- Pinal County desires to be proactive in adopting its own standards. This ensures roadways are protected for the benefit of the public while also accommodating the needs of the industry.

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Microtrenching Advantages and Disadvantages

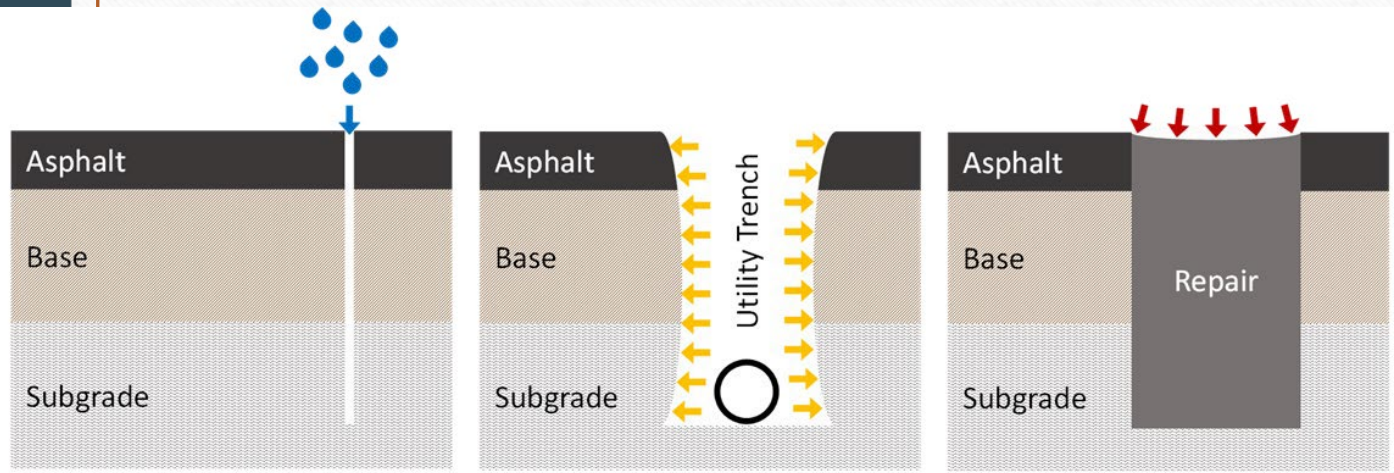
Challenges with Microtrenching

- Inappropriate application – Use on non-asphalt roadways
- Non-continuous construction (i.e. each step of construction split into phases)
- Quality control – mastic/sealer surface treatments may fail
- Shallower depth presents new risks and maintenance challenges to roadways.
- Typical contractors do not expect a utility line shallower than 3ft



Impact of Pavement Cuts

- **Surface Cracking and Deformation** - Stress Concentration
- **Base and Subbase Damage** - Material Displacement/Uneven Support, Load Bearing Capacity Reduction
- **Soil Settlement and Compaction** - Settlement over time, Potholes/Sagging/Depression
- **Edge Failure and Raveling** - Reduction in Lateral Load Transfer, Erosion/Raveling
- **Drainage Disruption** - Water Accumulation, Pothole Formation
- **Surface Layer Degradation** - Bond Weakening Between Layers



1. Increased Water Access to Pavement Structure

2. Reduced Lateral Support

3. Increased Surface Roughness

Challenges with Microtrenching







Challenges with Microtrenching

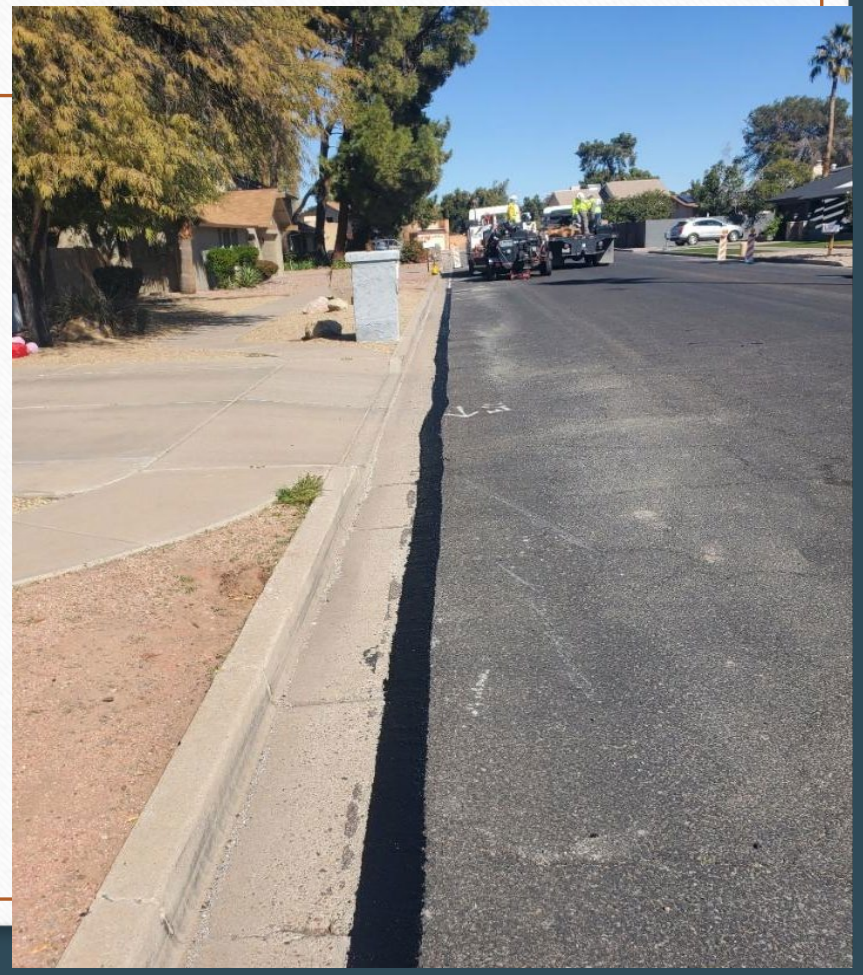






Advantages of Microtrenching

- Quicker installation
  - Up to 80% faster than traditional installation methods
- Less impact on traffic and the public
  - Traffic Control can be removed daily/nightly
- Lower installation costs
- Less likely to hit or conflict with existing utilities



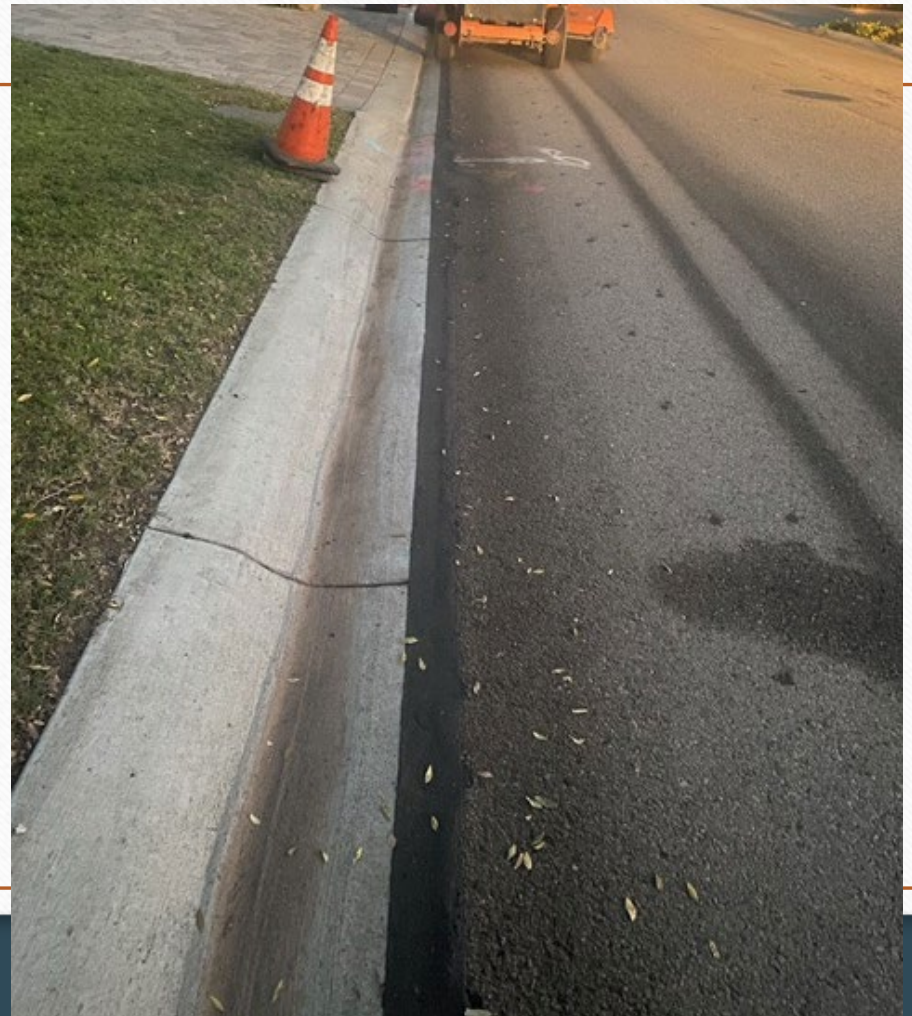
Microtrenching versus Other Methods

Method	Spoil Creation	Distance Covered per Day	Maximum Depth (in)	Utility Strikes per Mile**	Description/Notes
Microtrenching	Low	2,000 - 3,000 feet	16” – 24”	0.03	Narrow, shallow trench cut with a saw
Directional Bore/HDD	Low	500 - 1,000 feet	48” – 120”	0.11	Drilling a horizontal hole that is replaced with conduit. Requires a bore pit.
Plow/Vibratory Plow	Medium	3,000 - 5,000 feet	48”	0.29	Used in dirt areas, a large saw cuts a trench into the ground
Conventional Trench	High	250 - 500 feet	48”+	13.97	Involved digging a deep, linear trench with a trencher or excavating machine.
Missile Bore	High	500 - 1,000 feet	24” – 48”	0.05	Horizontal, underground pneumatic impact boring. Requires bore pits.

*Source: Fiber Broadband Association

Successful Microtrenching Examples







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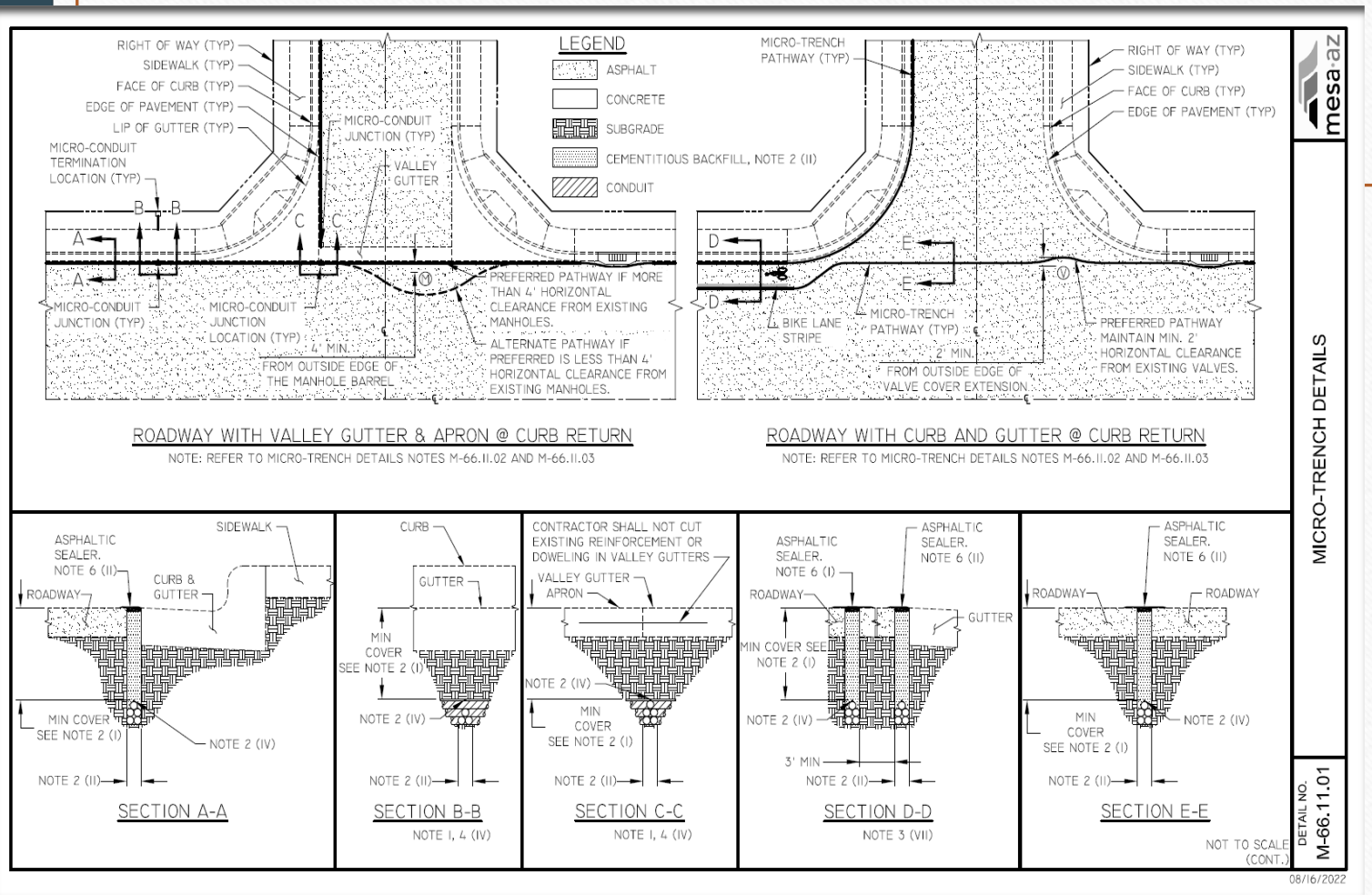
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Microtrenching Standards

Standards From Other Agencies

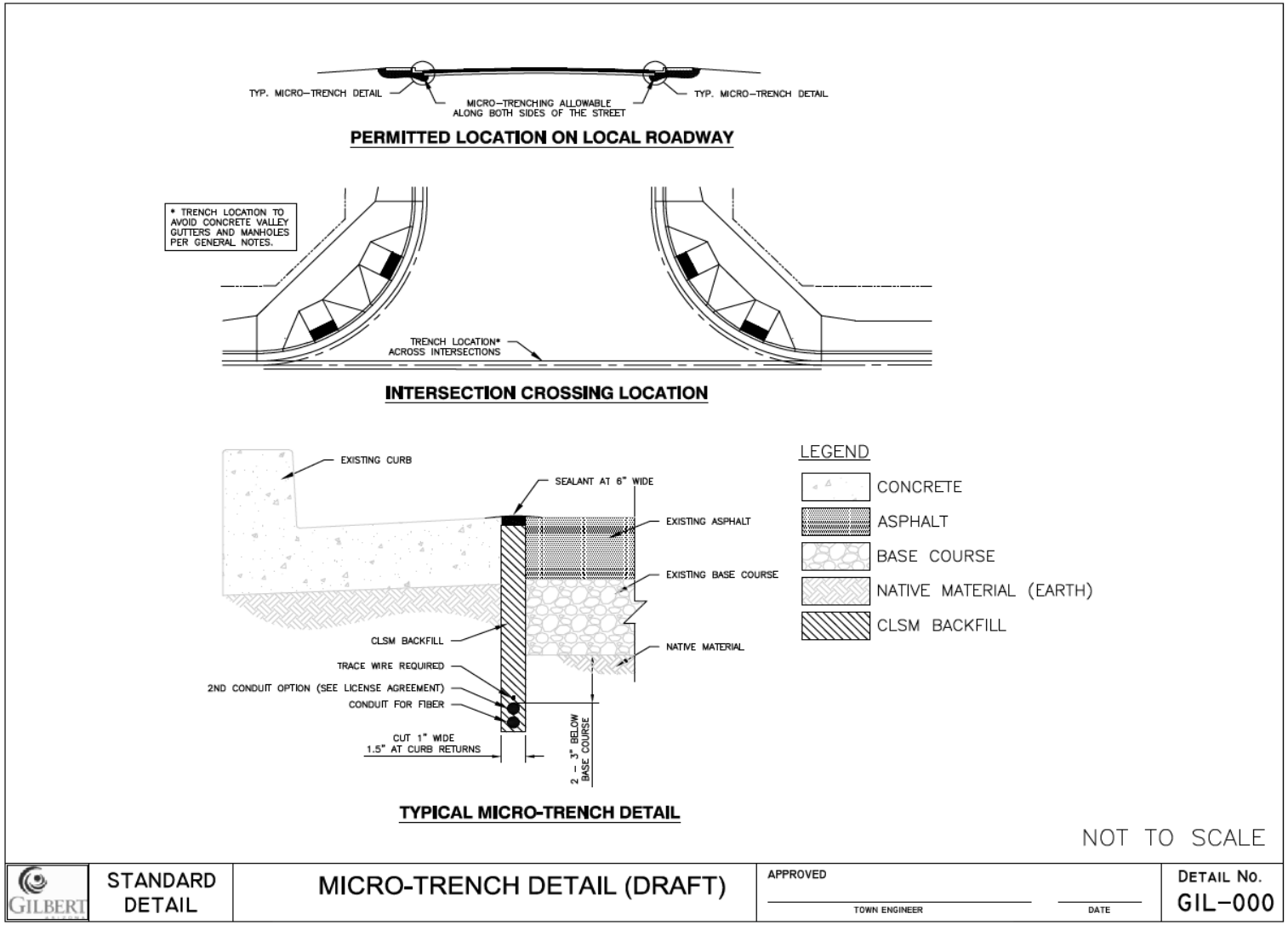
- City of Mesa (Most comprehensive)
- Town of Gilbert (Draft)
- City of Scottsdale (Expired/Repealed)
- ADOT (Not an adopted standard)
- Maricopa County (Planned Adoption 2025)
- Maricopa Association of Governments (MAG)
  - None (Technical Working Group convened on 03/25/2025)

City of Mesa Detail (Updated)



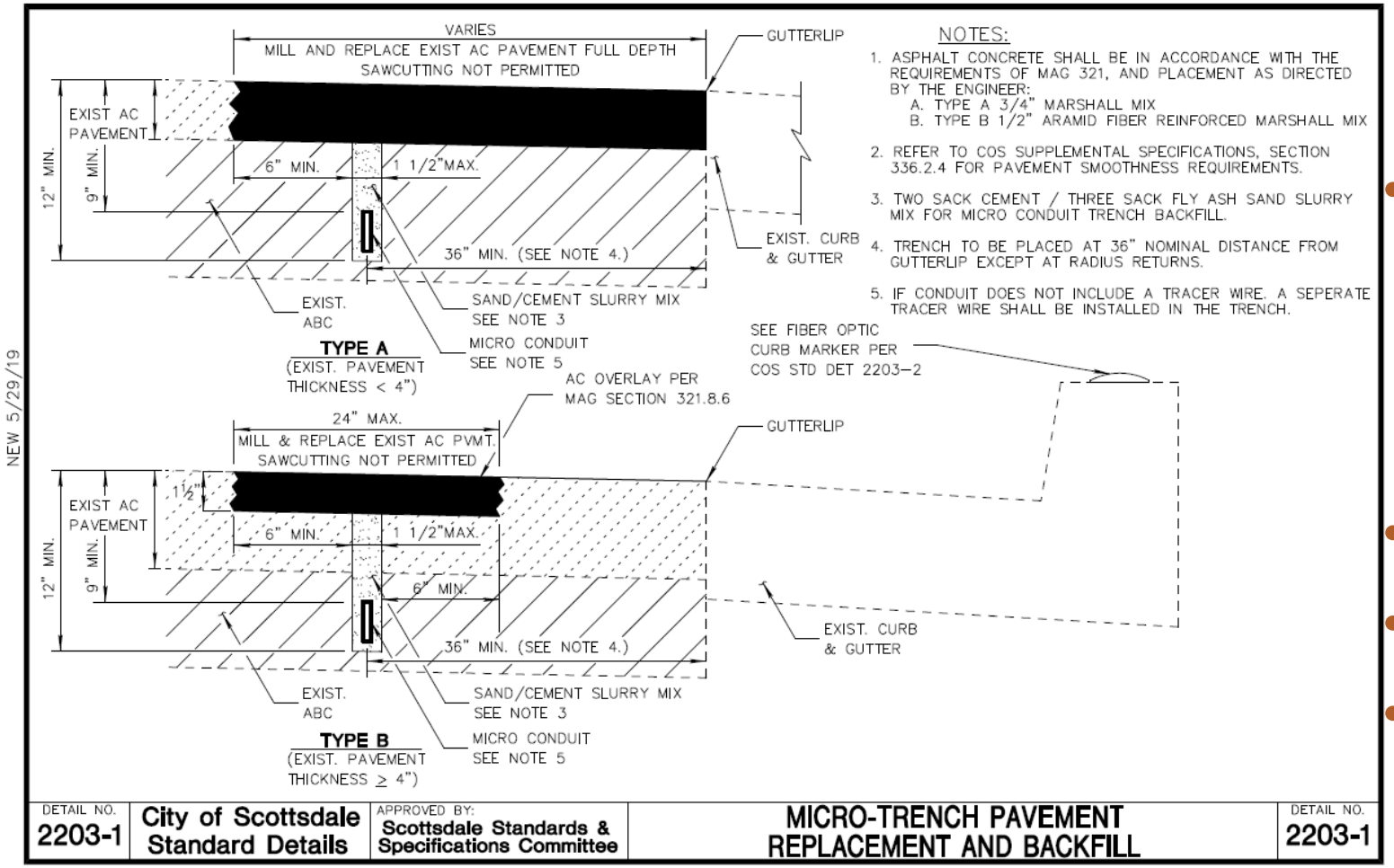
- **2.5” WIDE TRENCH AT THE LIP OF GUTTER OR AT AN ALTERNATIVE LOCATION APPROVED BY CITY**
- **10” MINIMUM COVER FOR ARTERIAL STREETS**
- **6” MINIMUM COVER FOR COLLECTOR AND RESIDENTIAL STREETS**
- **CONCRETE STRUCTURES (SIDEWALK, DRIVEWAY, ETC.) EXCLUDED**

Town of Gilbert (Draft)



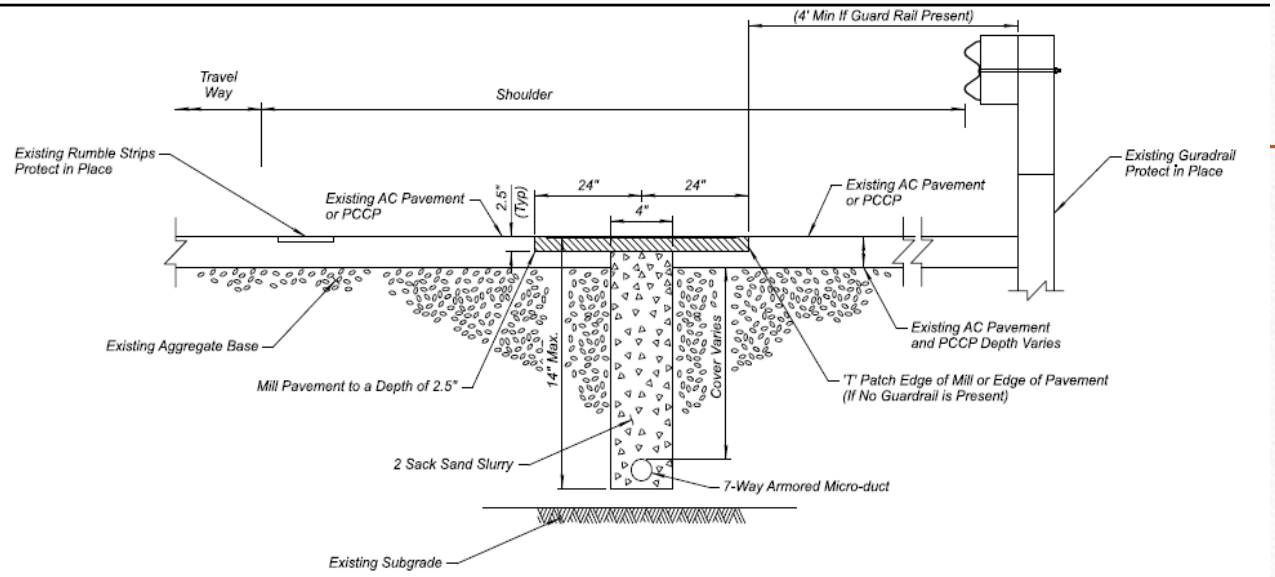
- 1-1.5” WIDE TRENCH AT LIP OF GUTTER OR AT AN ALTERNATIVE LOCATION APPROVED BY CITY
- 2-3” BELOW ROAD BASE COURSE
- CLSM BACK FILL
- 6” ASPHALT SEALANT

City of Scottsdale (Expired)



- 1.5” WIDE TRENCH 36” FROM LIP OF GUTTER OR AT AN ALTERNATIVE LOCATION APPROVED BY CITY
- 9” MINIMUM COVER
- 12” MAXIMUM DEPTH
- 24” WIDE MINIMUM PAVEMENT REPLACEMENT

ADOT Details (Not an Adopted Standard)



ITS TRUNKLINE UNDER ASPHALTIC CONCRETE PAVEMENT, OR PCCP IN THE SHOULDER

NOTES:

1. Excess spoil materials shall be removed offsite or placed in a location approved by the Engineer the same day as conduit installation.
2. The micro-trench shall have a maximum depth of 14 inches.
3. Conduit shall not exceed 360-degrees of cumulative bending between adjacent pull boxes.
4. Trench only where shown on plans or approved by the Engineer.
5. Sweep and remove debris from work area after completion.
6. New pavement shall be clean and level with no noticable transition to the existing pavement by vehicular traffic.
7. Existing rumble strips and edge line striping shall be protected in place.
8. The micro-trench width shall not exceed 4 inches.
9. The micro-trench shall be backfilled with 2 sack sand slurry in both asphaltic concrete and PCCP areas.
10. New AC pavement shall be per Section 409 of the Standard Specifications.
11. Penetrating epoxy crack sealer shall be applied over the backfilled micro-trench 6 inches on both sides of the trench centerline in area of PCCP.
12. Contractor to verify depth/cover over existing box culverts prior to construction.

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- 4” WIDE TRENCH
- 2.5” ASPHALT T-TOP REPLACEMENT
- 14” MAXIMUM DEPTH
- 2 SACK SLURRY BACKFILL
- 48” FROM EDGE OF PAVEMENT

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Proposed Draft Microtrenching Standards

Key Components & Specifications (Draft)

- One microtrench each side of the road (maximum)
- With Curb & Gutter – Preferred location between 6” and 18” from lip of gutter
- With No curb and Gutter – Locate minimum 24” from edge of pavement
- Minimum 1” to Maximum 4” wide trench
- Minimum 16” to Maximum 24” deep, up to two conduits per trench.
- Top of conduit to be no shallower than 12” deep

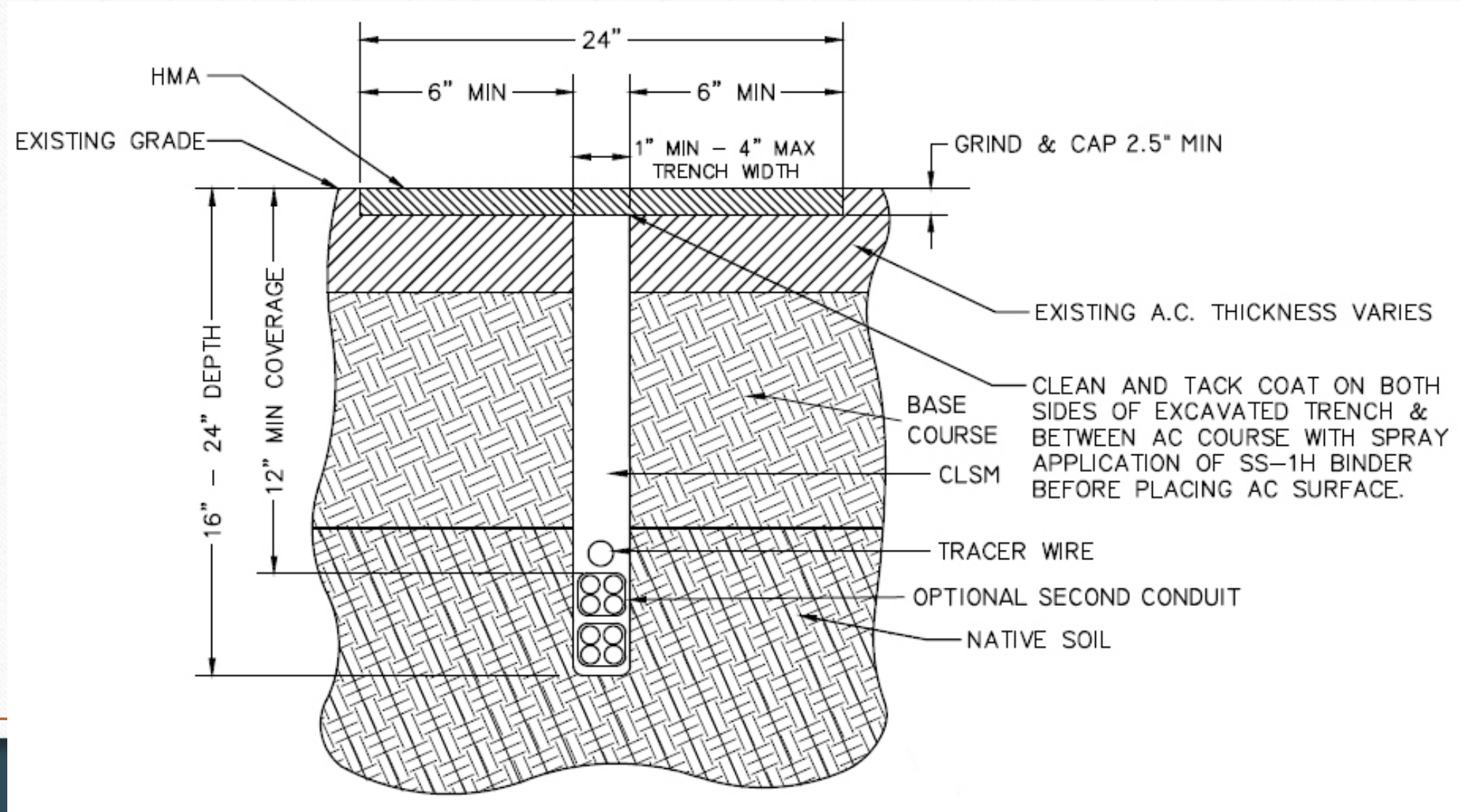
Key Components & Specifications, continued (Draft)

- Backfill with flowable CLSM (2 sack slurry)
- Cover with MAG T-top patch, Asphalt 24” wide, 2.5” thick minimum to edge of concrete. Requires Tack Coat.
- Road crossings to be perpendicular to road
- To be used only for telecommunications conduits
- Tracer wire required in microtrench.

Key Components & Specifications, continued (Draft)

- Avoid manholes, 4ft separation minimum
- Avoid valves and survey monuments, 2ft separated minimum
- Avoid placement in wheel path or in bike lane on arterial roadways.
- Avoid conflicts with roadway striping and rumble strips
- Service laterals to be placed under curb, gutter, & sidewalk.
- Intersections crossing may require traditional boring
- Vaults/Pedestals to be behind sidewalk (in PUE). If no PUE, locate at edge of ROW

Example Detail Drawing (Draft)



Permitting, Inspection, & Compliance Protocols (Draft)

- Advanced public notification required.
- Construction/implementation should occur in one continuous operation (i.e. a train). No phased construction or implementation on a step-by-step basis allowed.
- Permits to be for logically sized projects (i.e. one neighborhood per permit).
- Nightwork may be required on arterial roadways, if allowed at all.

Pavement Cut Ordinance (Ordinance #122818-AD18-010)

- New or Recently Reconstructed Roads
  - Within one year of new pavement - No Pavement cuts allowed (not even potholes). Any pavement cuts may void our warranty on the new road.
  - Between one and two years of new pavement - Pay a per square yard fee and apply a minimum 2" asphalt mill and overlay the full width of the street.
- Recently Maintained or Preserved (Slurry/Fog seal) Roads
  - Within one year - Pay a per square yard fee and slurry/fog seal (width of half-street) and restriping of the road (if currently striped).

Additional Challenges/Considerations

- All other alternatives must be considered first (use of PUE, traditional methods, etc)
- Multiple microtrenches/users
- Blue stake notification
- Accommodations for Bike Lines/Vehicle Wheel Path
- Service Laterals (Under vs Through sidewalks)
- Existing Roadway conditions: Chip-seal (ARDP), poor quality roads, etc)
- Amendments/Revisions to License Agreements

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Industry/Agency Feedback

May 12th, 2025 Stakeholder Meeting

- Requested input on practicality/feasibility of proposed standards
- Industry experience and best practices
- Suggestions for improvement – What would help industry?
- Industry challenges
- Concerns about costs, implementation, consistency (or lack thereof) with nearby agencies

Feedback Received to Date (Industry)

- Requests shallower depth than proposed to increase installation rate. Deeper installation costs more and is slower.
- Preference is to be against the curb not away from the curb. Companies that have had experience with this believe these provides better results and is less likely to result in pavement damage.
- Concerns about the cost of a T-Top Patch – several companies noted that this would make microtrenching cost prohibitive

Feedback Received to Date (Agencies)

- General hesitancy to allow microtrenching due to shallow placement and potential long term damage to pavement
- If accepted, should be limited to local or residential streets
- If accepted, should require mill/overlay or asphalt patch to prevent water infiltration
- Most agencies agree that license agreements need to be updated/amended to account for risks associated with microtrenching

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Next Steps, Timeline, & Adoption

Next Steps

- Further refine standards based on:
  - Industry & Agency feedback
  - Board of Supervisors feedback
- Development comprehensive details (drawings) and specifications.

Process/Adoption Timeline

- May 12th, 2025 – Initial Stakeholder Meeting (Introduction)
- June 11th, 2025 – Board of Supervisors Work Session
- June 16th, 2025 – Publish NOH, Start of 30-Day Comment Period
- July 22nd, 2025 – End of Comment Period, Publish Final Standards
- August 6th, 2025 – Board of Supervisors Adoption & Public Hearing

Microtrenching Standards Website

- All documents will be posted to Pinal County's website:
- Review the draft documents
- Provide feedback & comments
- Subscribe to updates

https://cleargov.com/arizona/pinal/county/projects/17026/microtrenching-standards

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Q & A

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Project Webpage

https://cleargov.com/arizona/pinal/county/projects/17026/microtrenching-standards

Comments & Feedback

https://bit.ly/3EYnNxS