UPDATE OF NORTH AMERICAN TRENCHLESS MARKET

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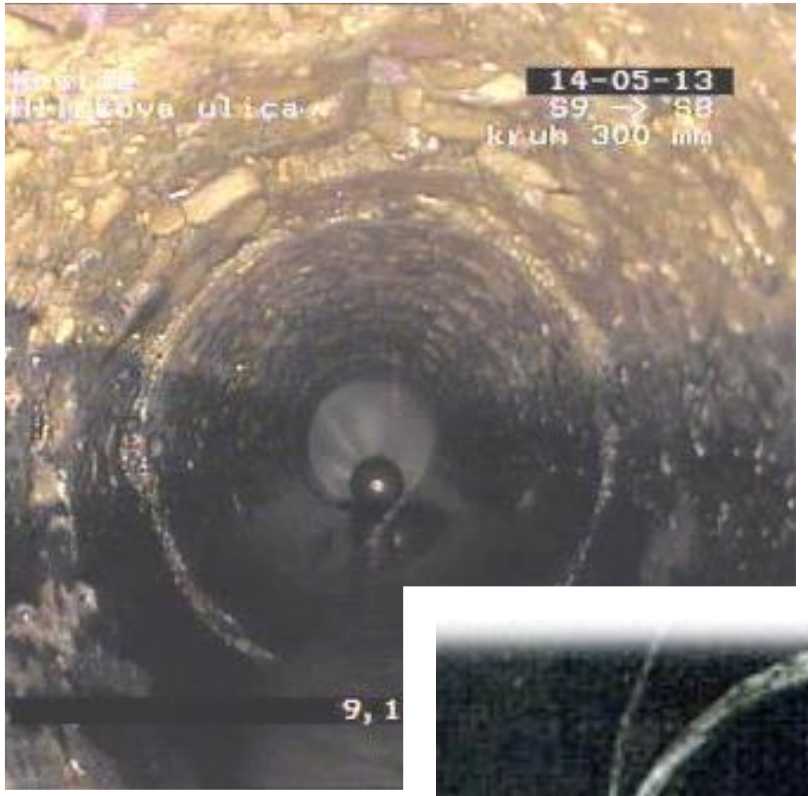
SEWER LINES

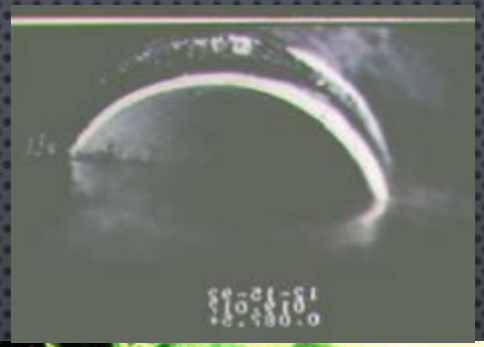
- Offset pipes
- Deterioration
- Root intrusion
- Cracked, leaking
- Under capacity
- Rain infiltration/ inflow

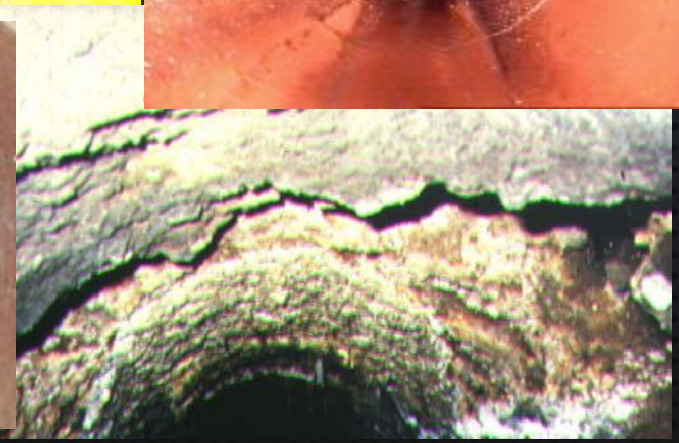


WATER LINES

- ENCRUSTED
- CORRODED
- LEAKING
- UNDER CAPACITY

DEFECTIVE SEWERS





DEFECTIVE WATER PIPES

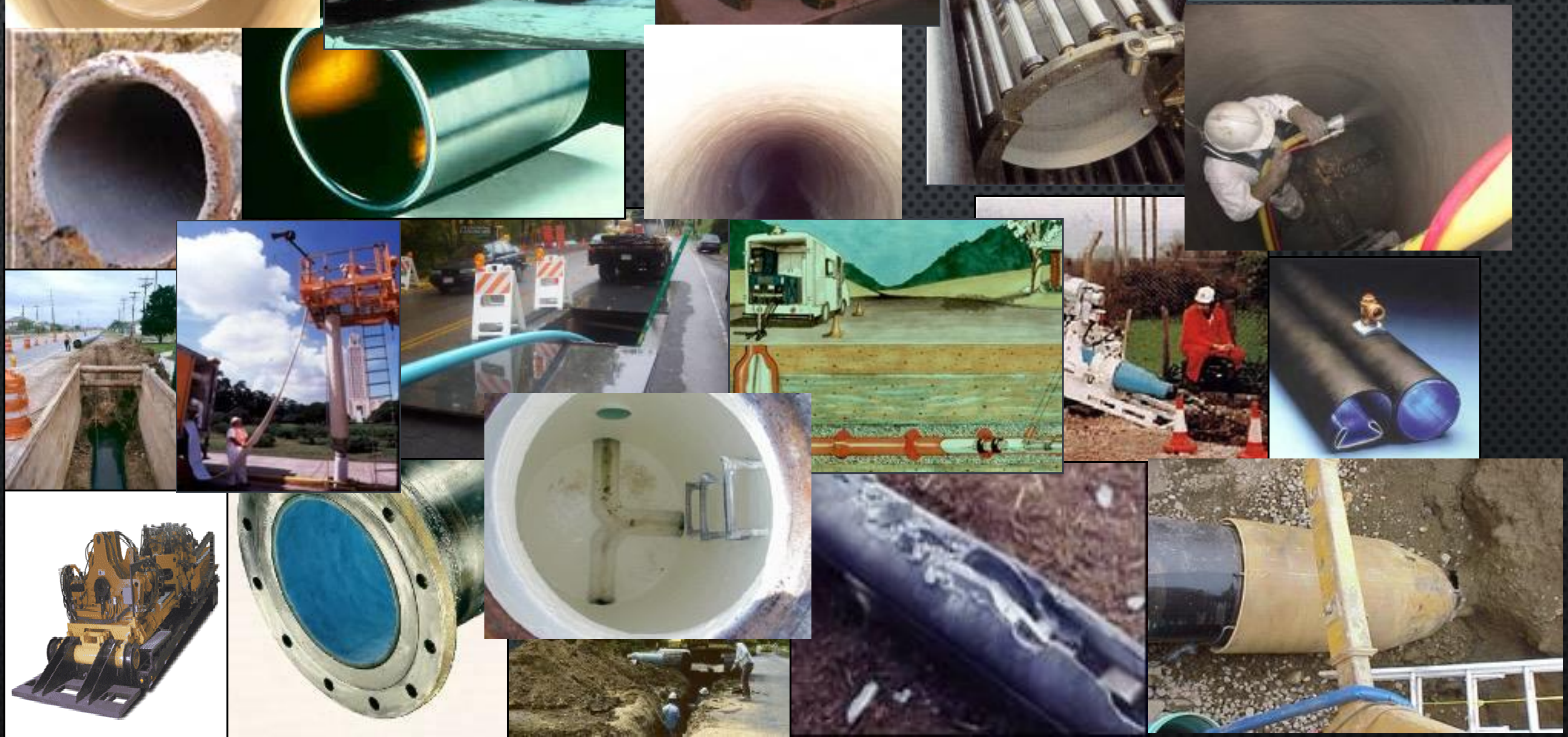




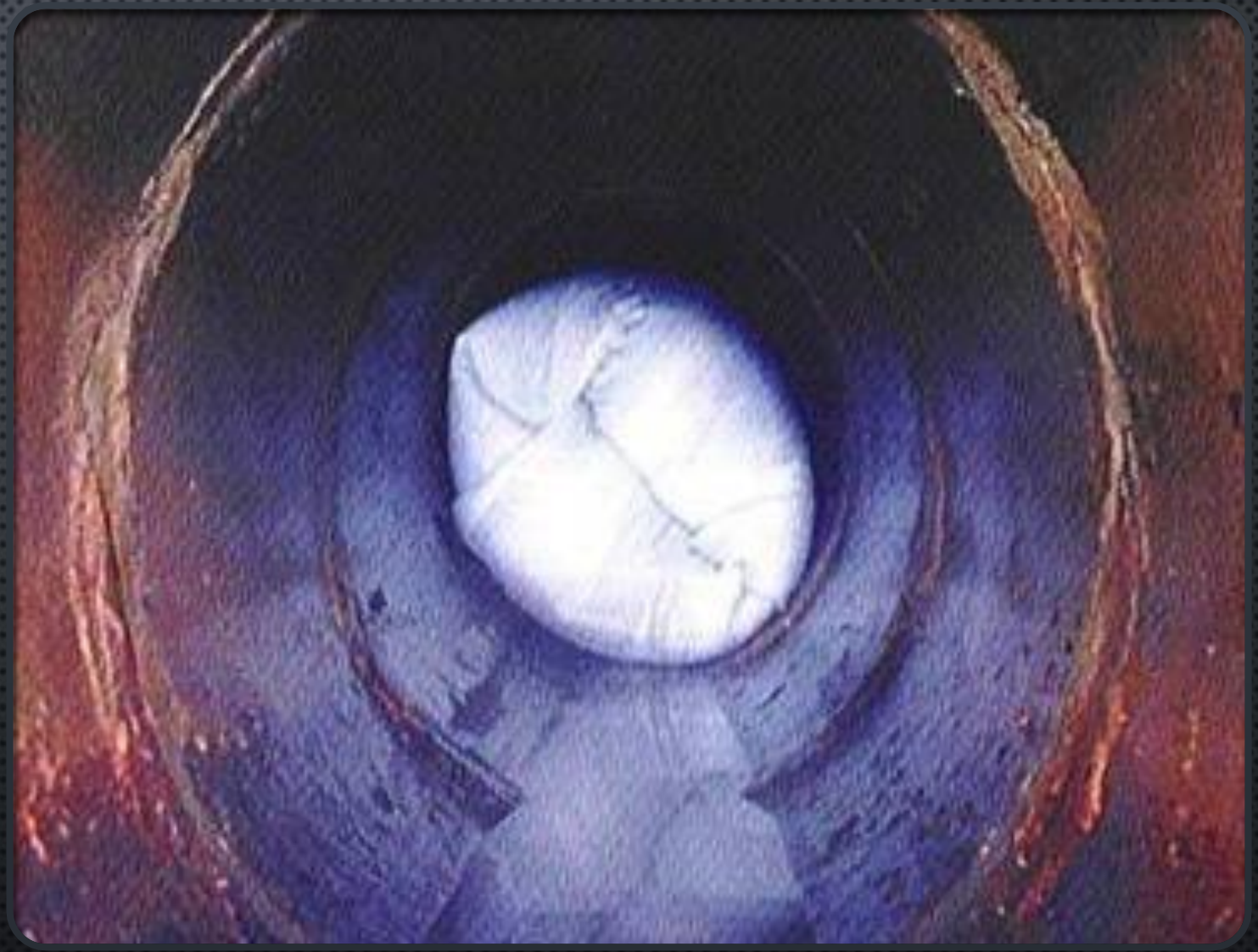


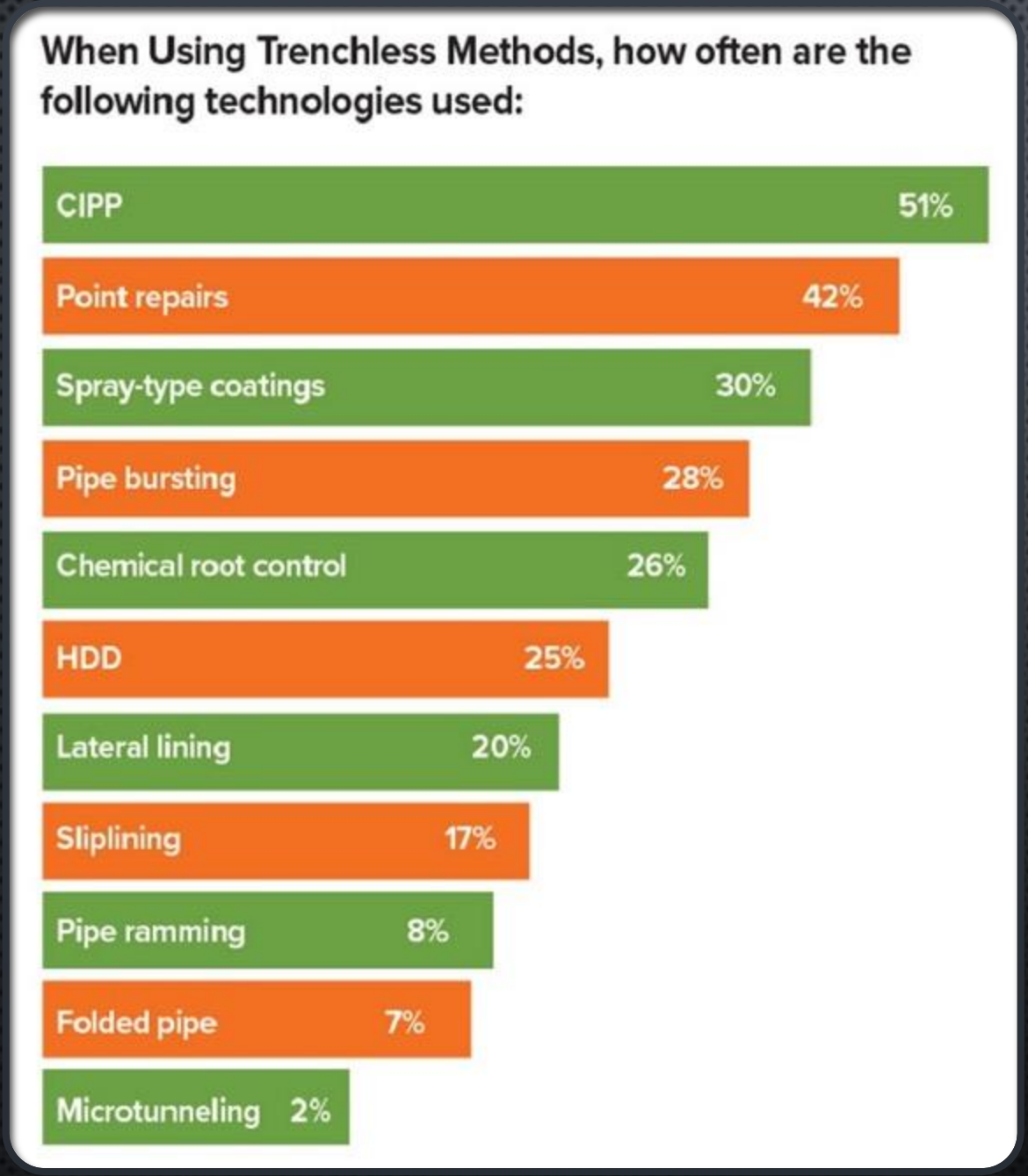


MAIN REHABILITATION METHODS



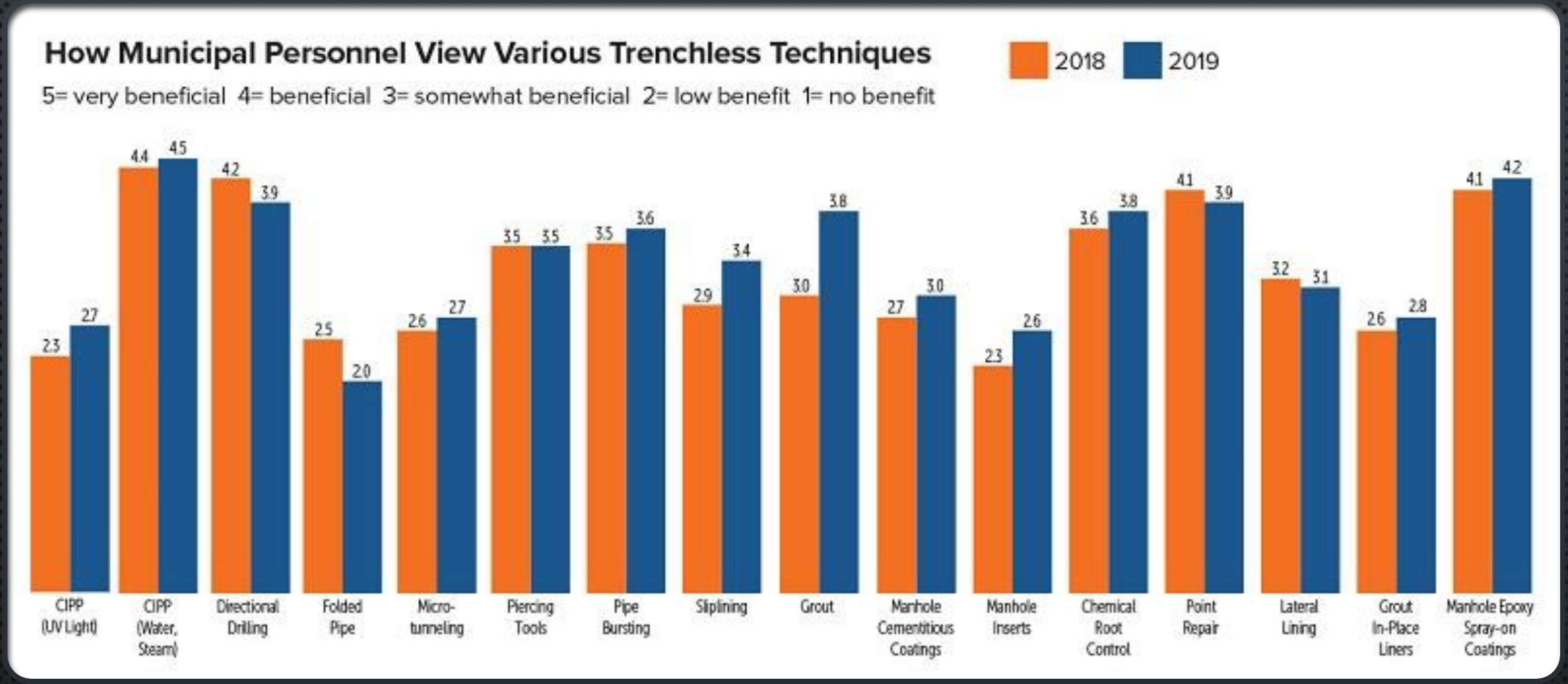
- The Global Cured-In-Place Pipe Market: Highlights, projects the global market will reach $2.49 billion in 2022 (Stratview Research, 2018)
- Major drivers of growth include aging potable and sewage water infrastructure, increased spending by government and utilities on rehabilitation.
- <300mm diameter pipe is projected to remain a primary growth engine for the global CIPP market.





UTILIZATION OF TRENCHLESS METHODS

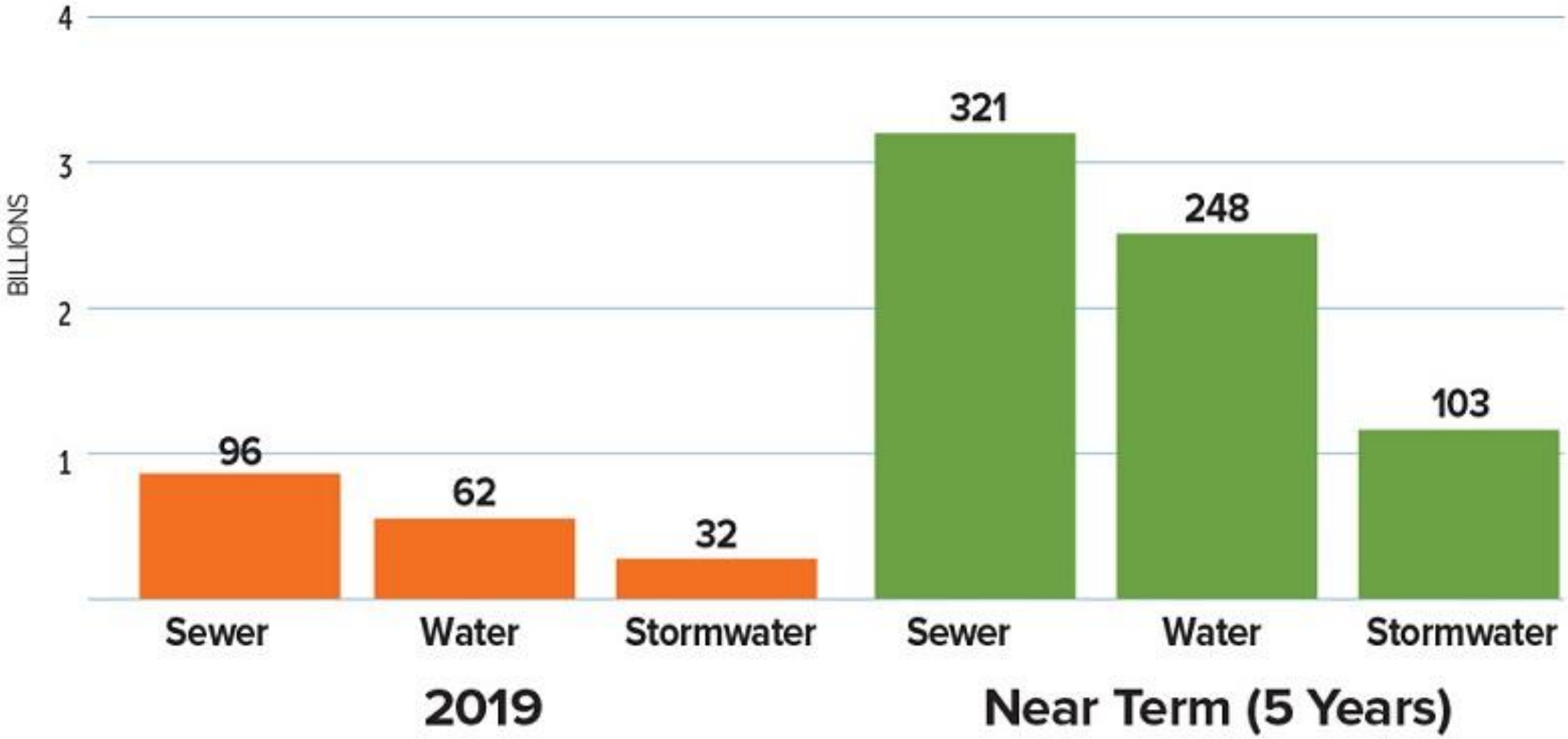
Underground Construction, 2019

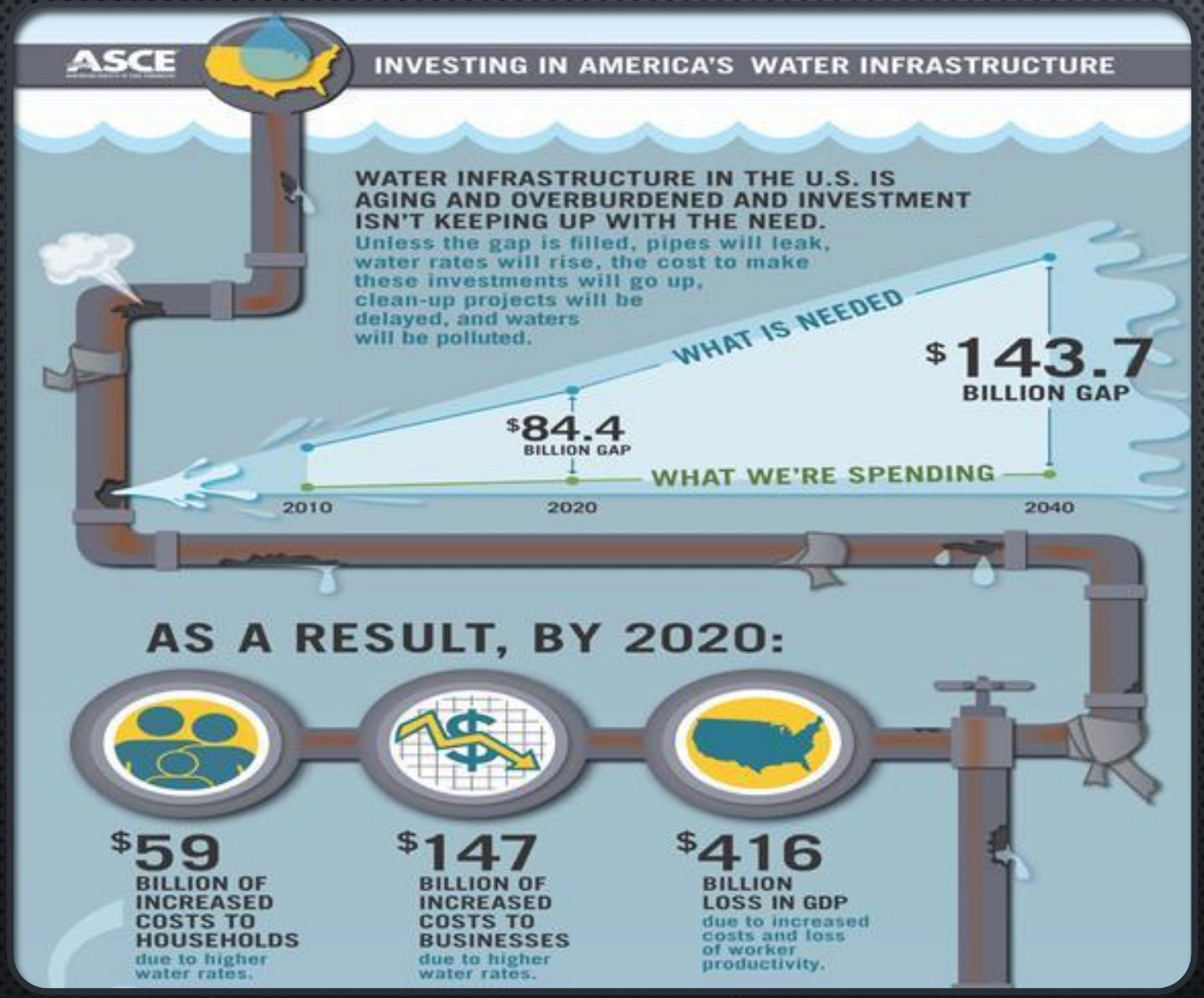


1. CIPP (WATER/STEAM), 2. MANHOLE EPOXY COATINGS, 3. DIRECTIONAL DRILLING

Underground Construction, 2019

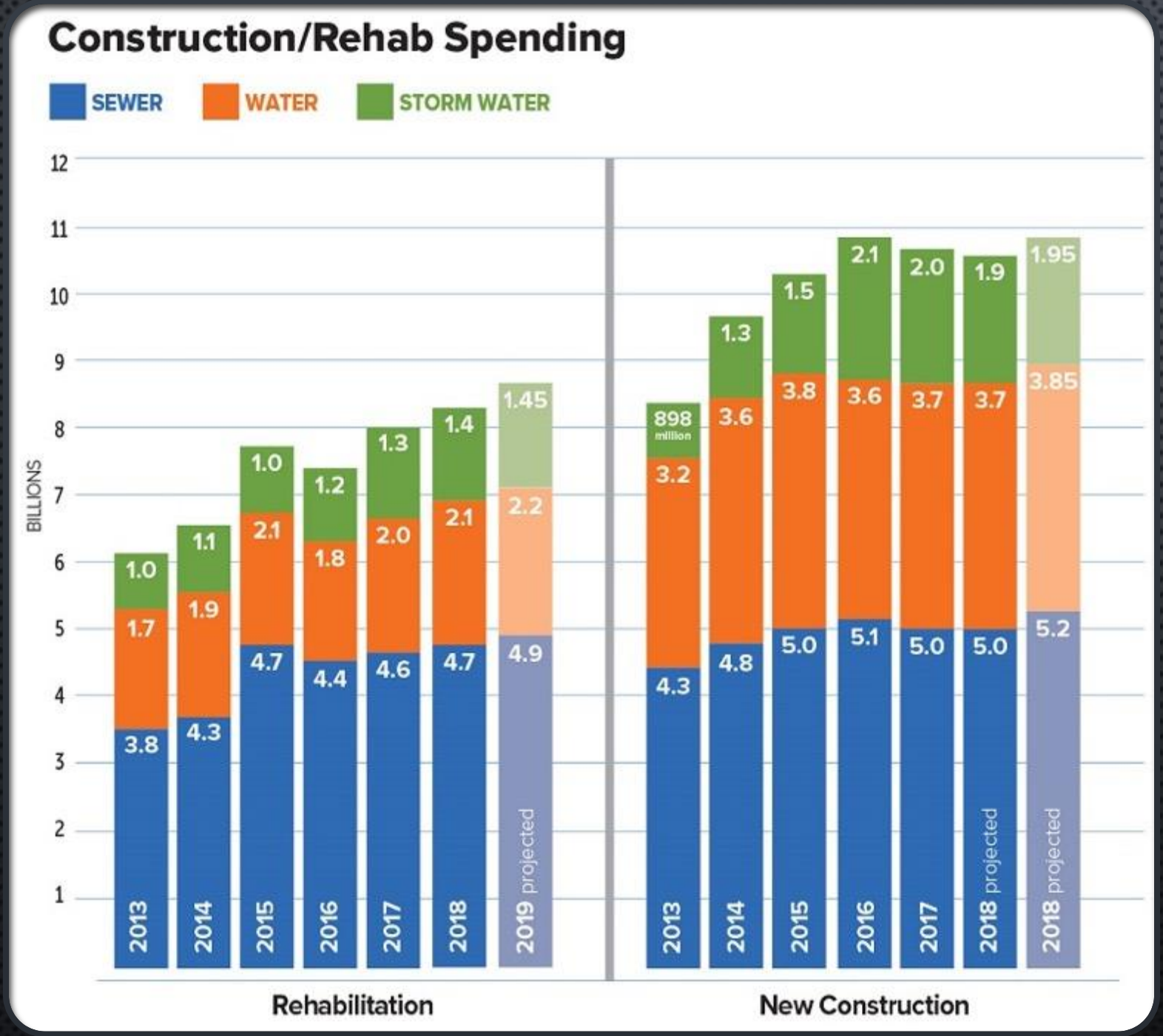
Ideally, how much money is needed to address your immediate near-term needs?





FUNDING ISSUES FOR REHABILITATION

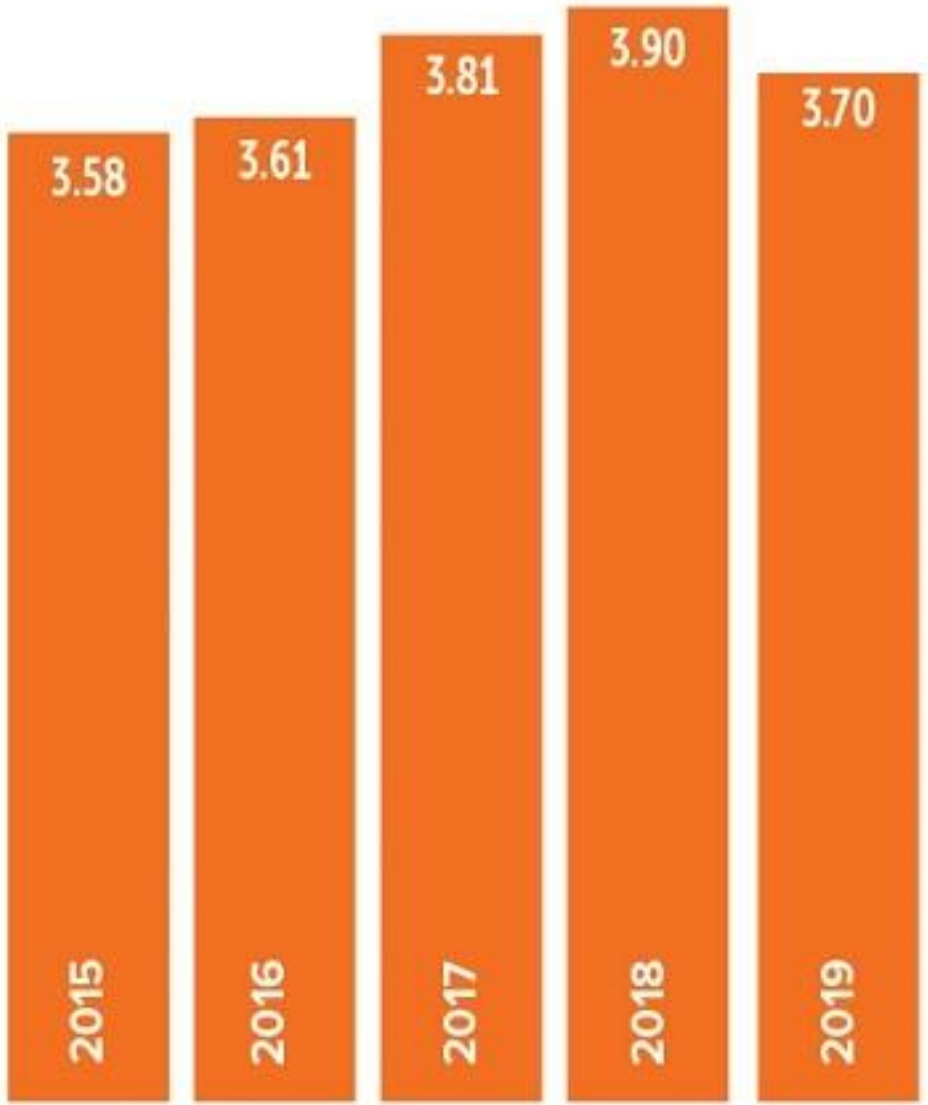
American Society of Civil Engineers



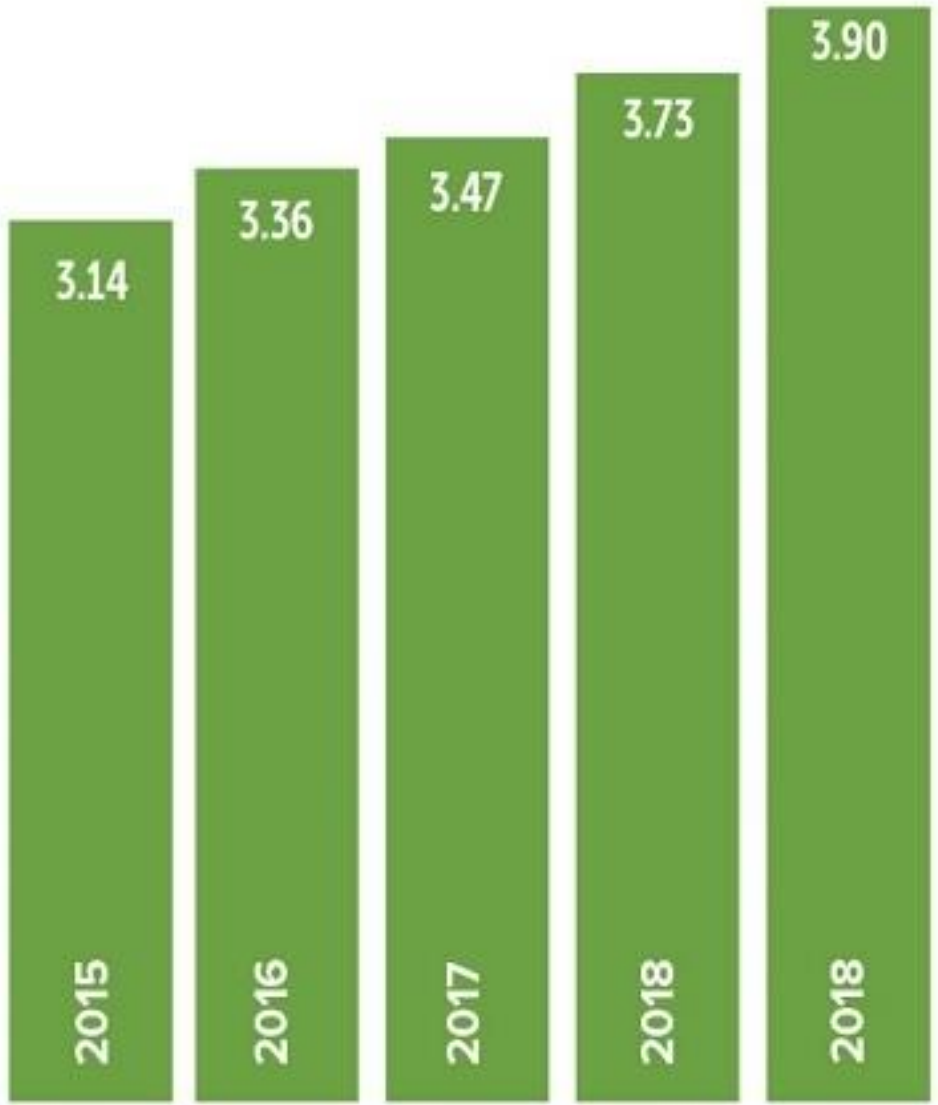
- New installation of sewer infrastructure is projected to increase by 3.7 percent in 2019 to $5.4 billion, with a 3.9 percent increase ($3.85 billion) for water construction
- Sewer rehab is projected at a 4.1 percent growth in 2019, or $4.9 billion, with water getting a 4.5 percent ($2.2 billion) spending boost.
- Projected spending plans for sewer, water and storm water piping infrastructure of $19.75 billion in the United States for 2019, representing an overall increase of 3.7 percent.

Underground Construction, 2019

Personnel Performance Rating (per municipalities)

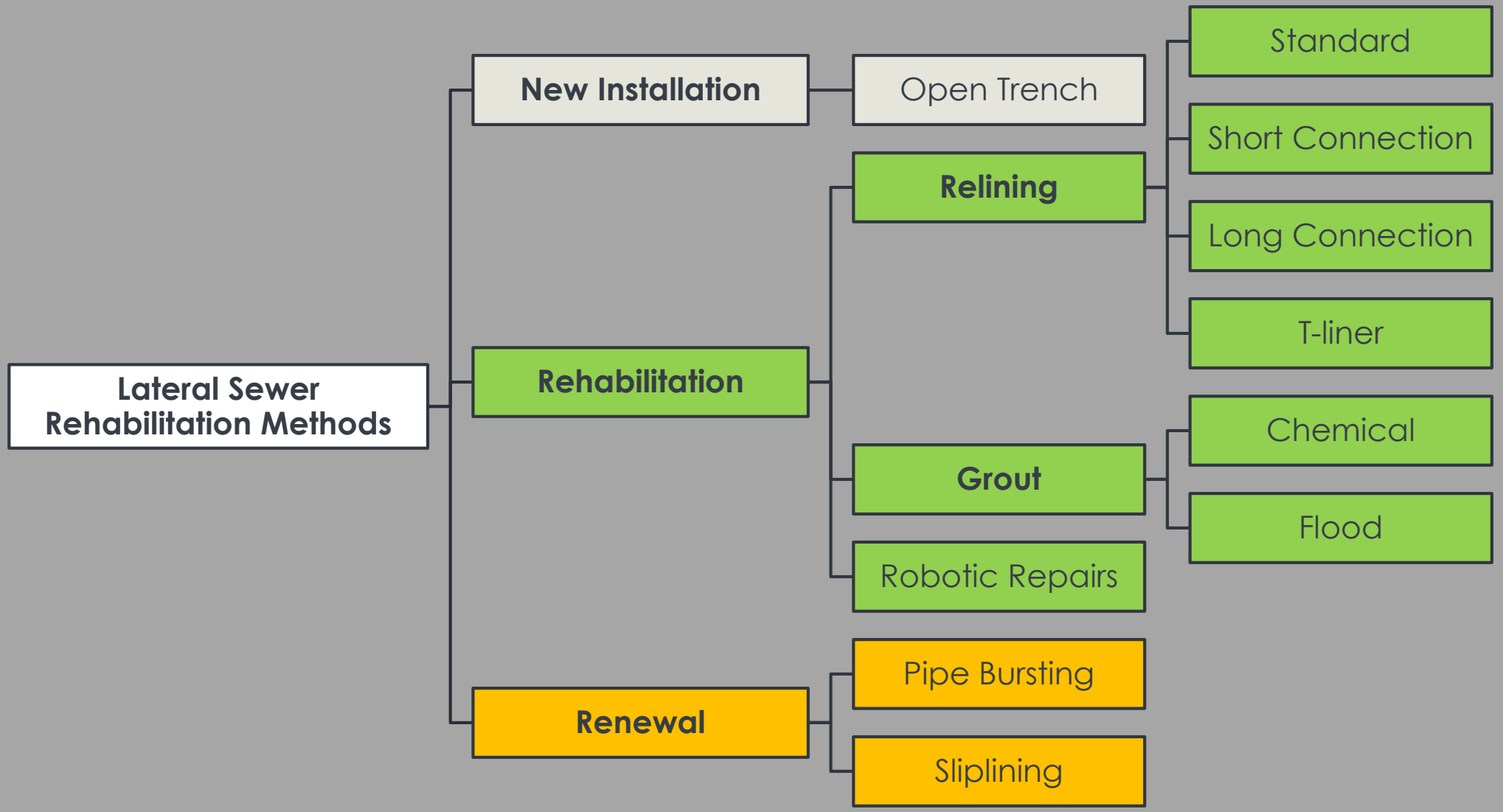


Contractors



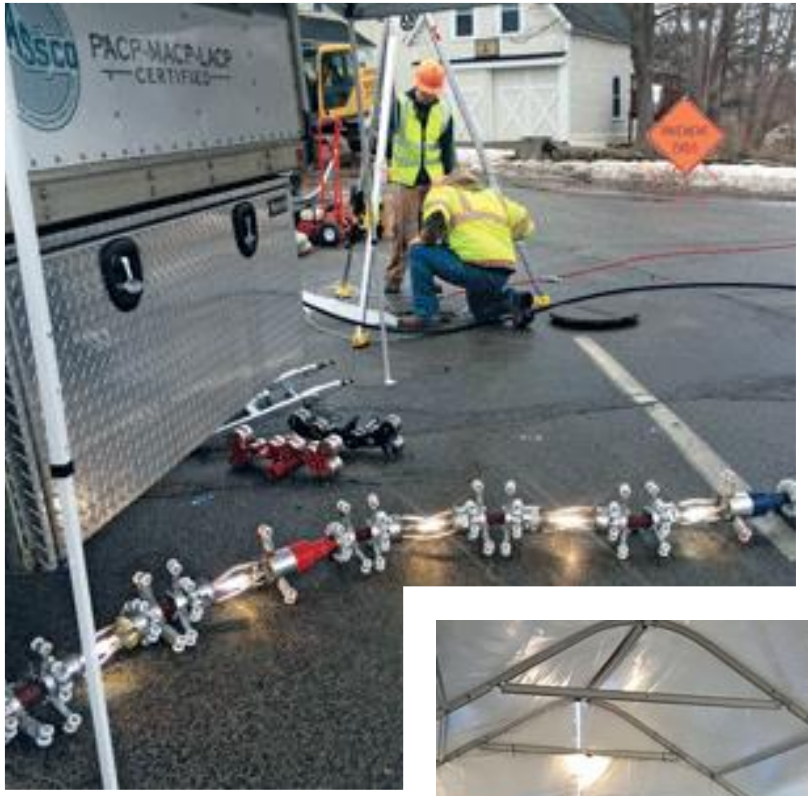
Consulting Engineers

LATERAL REHABILITATION METHODS



CIPP MATERIALS AND CURING

- Polyester resin is expected to remain the most dominant type. This resin impregnates liner materials well and can be cured even when ambient temperatures drop to near or below freezing. It also offers high flexural modulus, low tensile elongation, good chemical resistance and other advantages.
- Vinyl ester resin is likely to experience the highest growth over the next five years, due to its caustic and high-temperature material-resistance properties.
- Steam is projected to remain the most dominant curing method, as it transfers heat faster than in the water-curing process.
- UV curing should have the greatest growth over the next five years. These liners are three to five times stronger than conventional felt CIPP liners.



UV CURING

- Since 1985 in Europe
- 2006 in USA
- UV generated polymerization
  - More controlled
  - more confirmable
  - more consistent
- Faster cure

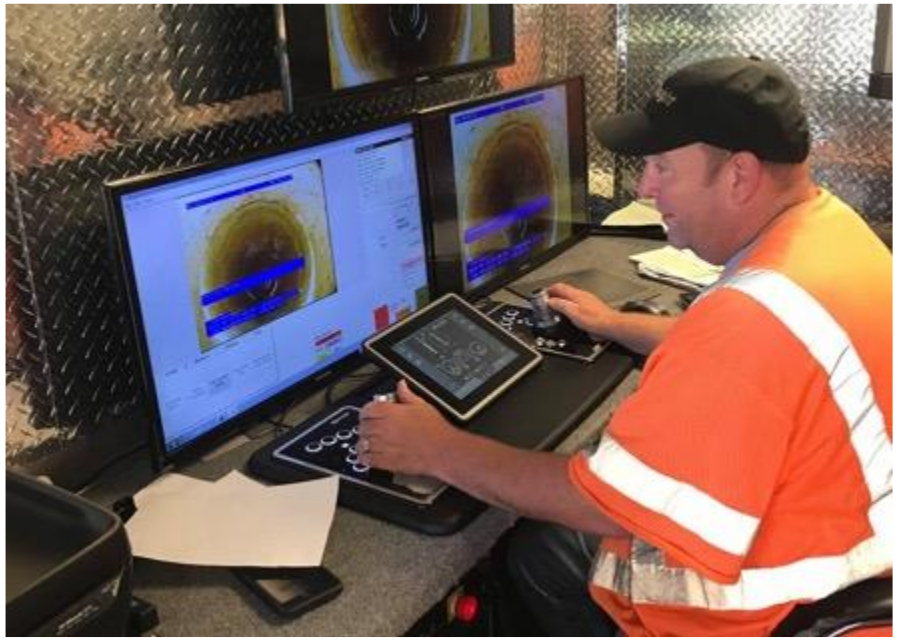
- In Europe and Asia:
- ~70% of liners

- Quality assurance advantages

CIPP MARKETS AND FUTURE

- North America is expected to remain the world's largest CIPP market as it contains most of the pipelines at retirement age and in need of rehabilitation.
- Asia-Pacific is likely to remain the fastest-growing market during the forecast period as various emerging countries in the region have begun implementing CIPP at a faster rate.

PIPELINE CONDITION ASSESSMENT

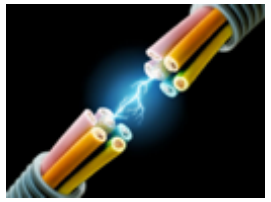


DRINKING WATER REHABILITATION

DRINKING WATER MARKET

- The compound annualized growth rate (CAGR) of the global drinking water pipe repair market is expected to expand at a rate of 7% between 2018 and 2026.
- The global market, as of 2018, is valued at over US$56 billion.
- One major factor contributing to the large number of drinking water pipelines currently in existence around the world, is the growing population.
- The CAGR forecast of the spot assessment and repair segment is likely to increase by more than 6% during this forecasted period due to the demand for drinking water pipe repair .
- Both North America and Asia Pacific are projected to be leaders in the global drinking water pipe repair market due to the increased demand in these regions for safe and clean drinking water.
- As China becomes the strategic center for the development of drinking water pipe repair, the Asia Pacific region is expected to be the more prominent region in this market for the forecasted period and the very near foreseeable future

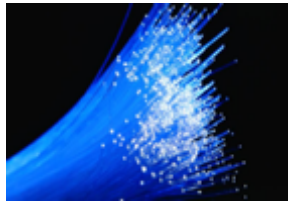
HDD Market Segments



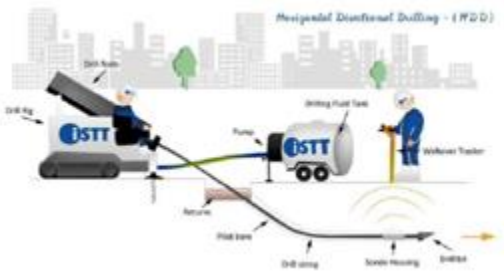
Electrical

Natural Gas

Water

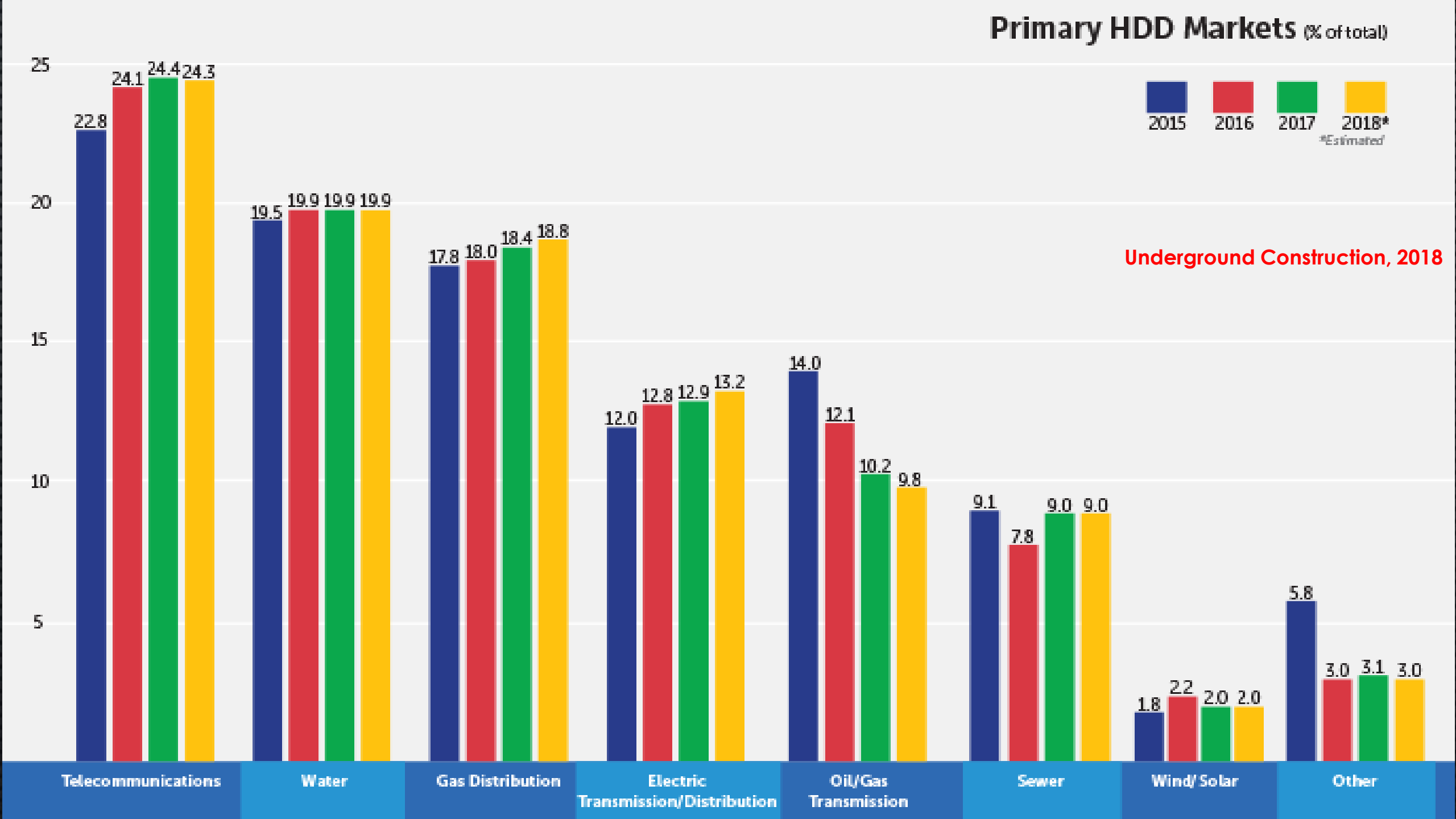


Telecommunications



Oil Product

Wastewater


Primary HDD Markets (% of total)
2015
2016
2017
2018*
*Estimated
Underground Construction, 2018
25
20
15
10
5
22.8
24.1
24.4
24.3
19.5
19.9
19.9
19.9
17.8
18.0
18.4
18.8
12.0
12.8
12.9
13.2
14.0
12.1
10.2
9.8
9.1
7.8
9.0
9.0
1.8
2.2
2.0
2.0
5.8
3.0
3.1
3.0
Telecommunications
Water
Gas Distribution
Electric Transmission/Distribution
Oil/Gas Transmission
Sewer
Wind/Solar
Other

CONCLUSIONS

- The Global Pipeline Rehabilitation market will continue to grow due to aging pipes
- North America and China continue to dominate current and future markets
- Innovation will continue to drive adoption
- Education is key!

CONTACT INFORMATION

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