



Locating & Marking

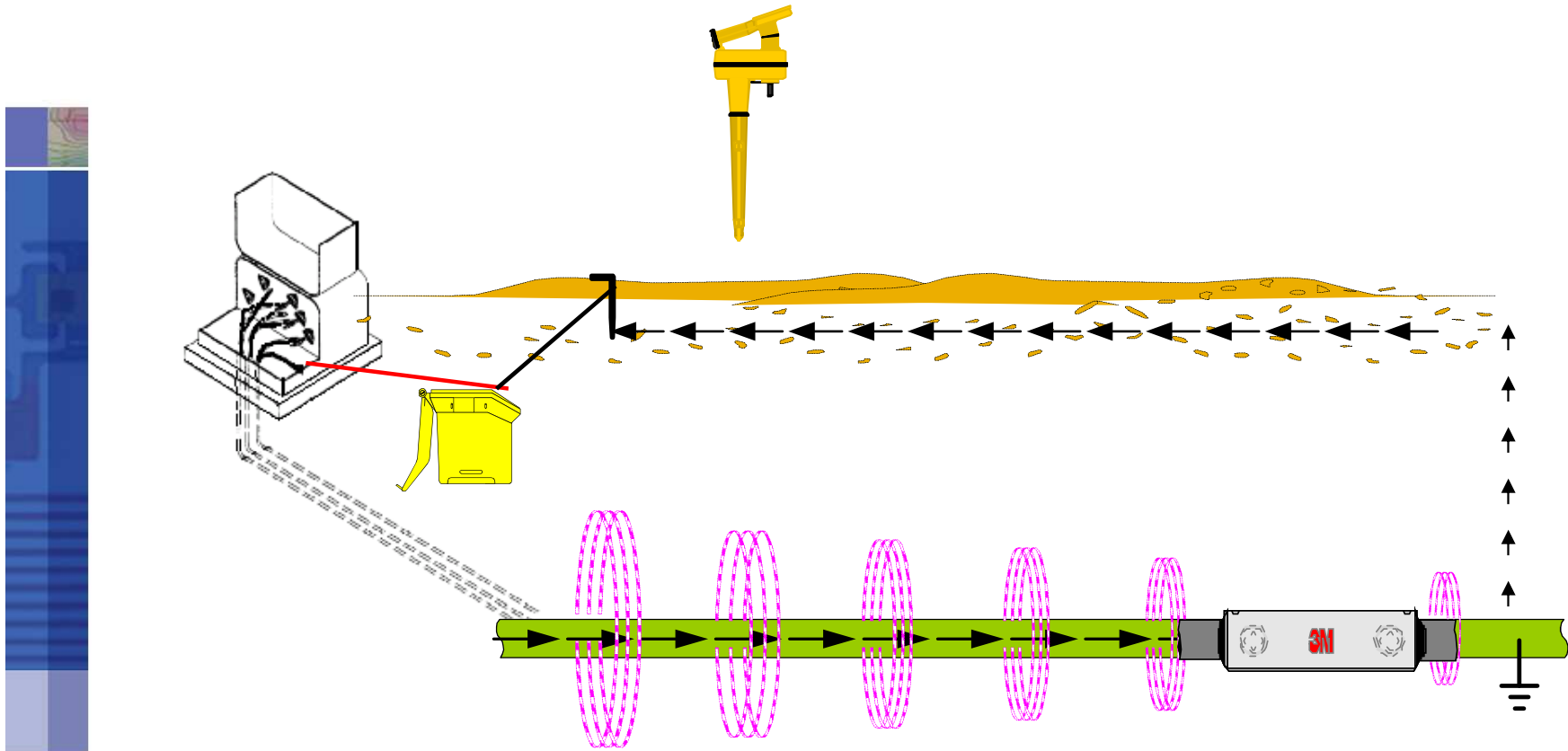
Overview

Dynatel Strengths

- 30+ years experience in locating
- Inventors of Electronic Marking System EMS
- Experienced design team
- 18 Patents in Locating Field
- Our strengths
 - Ground fault locating accuracy
 - Electronic marking system & EMS-ID
 - Reliability – warranty returns
 - Ruggedness in harsh environments
 - Ergonomic design
 - Accurate and quick locates

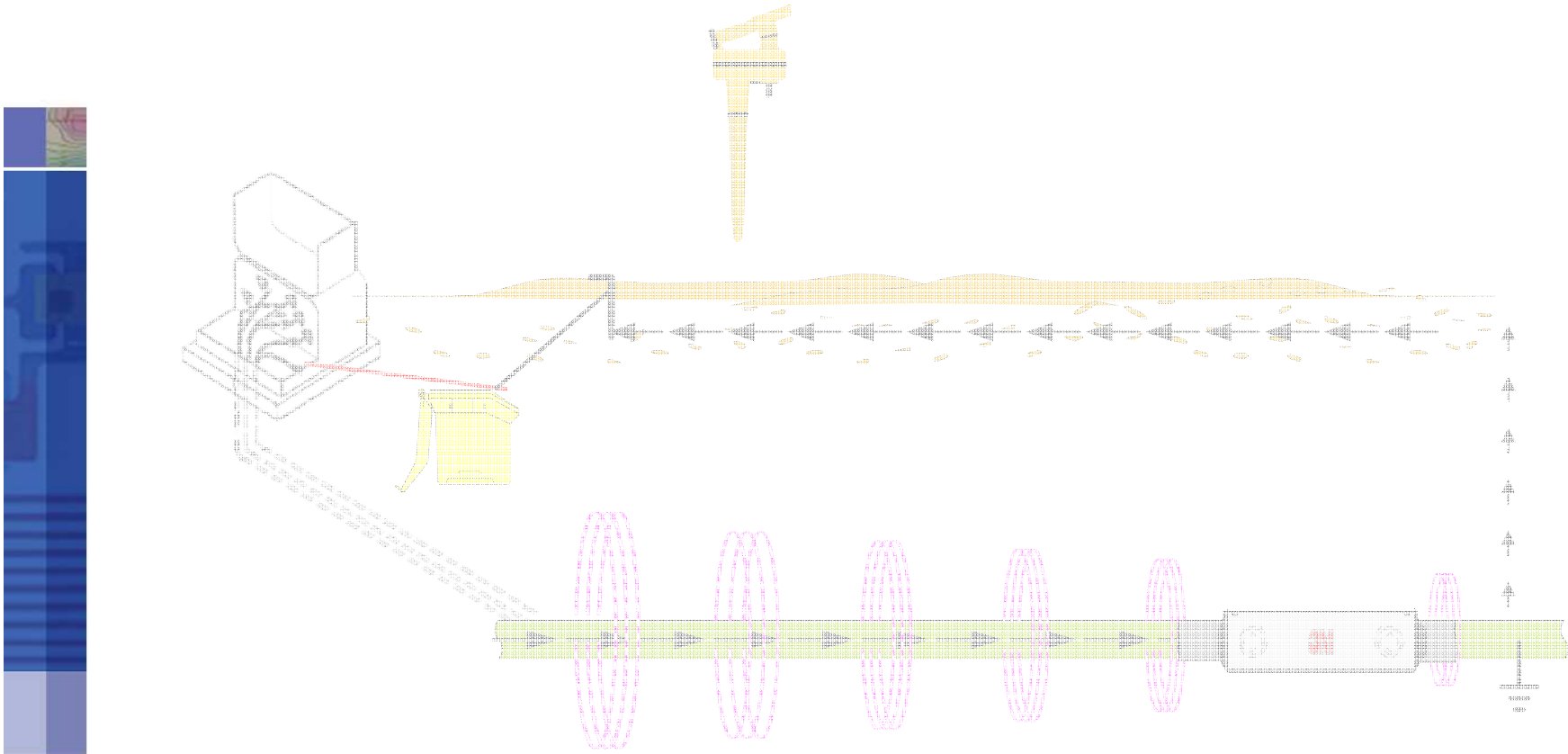


What is Locating?



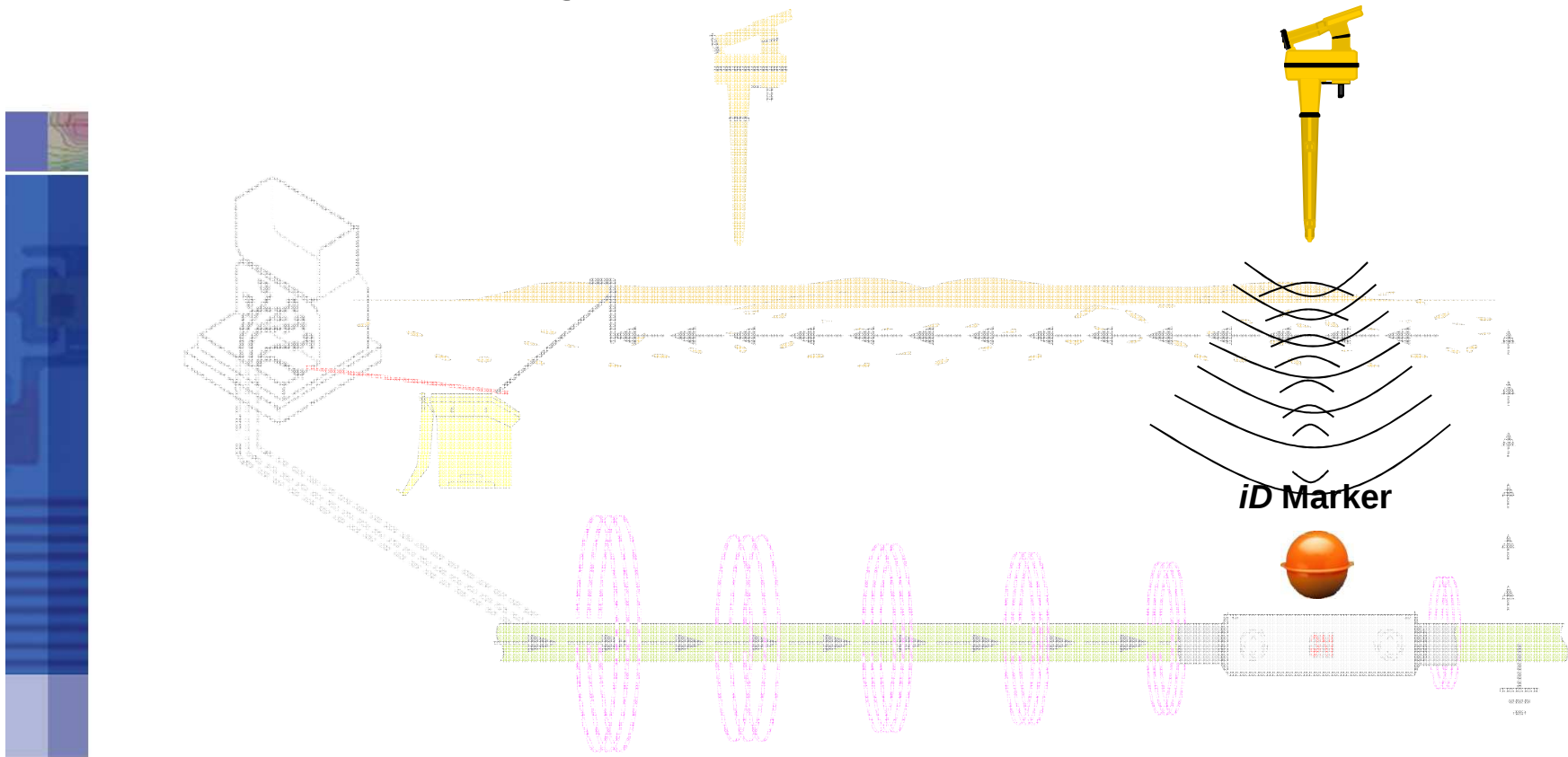
3M Locating & Marking provides solutions for locating, fault finding, and accurate RFID marking of pipes/cables to ensure safety, quickly restore outages, minimize operating costs and efficiently manage buried assets.

What is Marking?



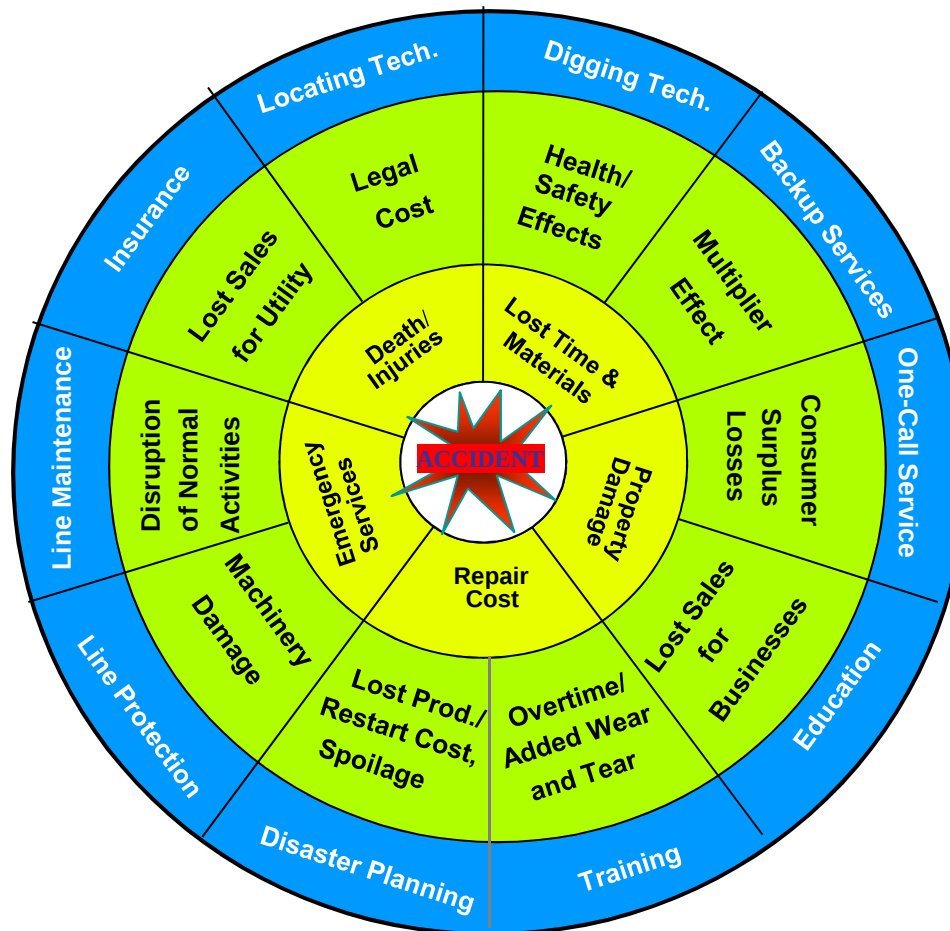
3M Locating & Marking provides solutions for locating, fault finding, and accurate RFID marking of pipes/cables to ensure safety, quickly restore outages, minimize operating costs and efficiently manage buried assets.

What is Marking?



3M Locating & Marking provides solutions for locating, fault finding, and accurate RFID marking of pipes/cables to ensure safety, quickly restore outages, minimize operating costs and efficiently manage buried assets.

Cost of Prevention vs. Cost of Accidents



Prevention Costs

- Training/Education
- One Call
- Insurance
- Construction with As-Builts
- Line Maintenance
- Disaster Planning
- Backup Services

Electronic Marking - Top 3 Applications

■ Maintenance

- *Those needed for maintenance, typically where maintenance has been performed or future maintenance is expected to be performed.*

■ Construction Access

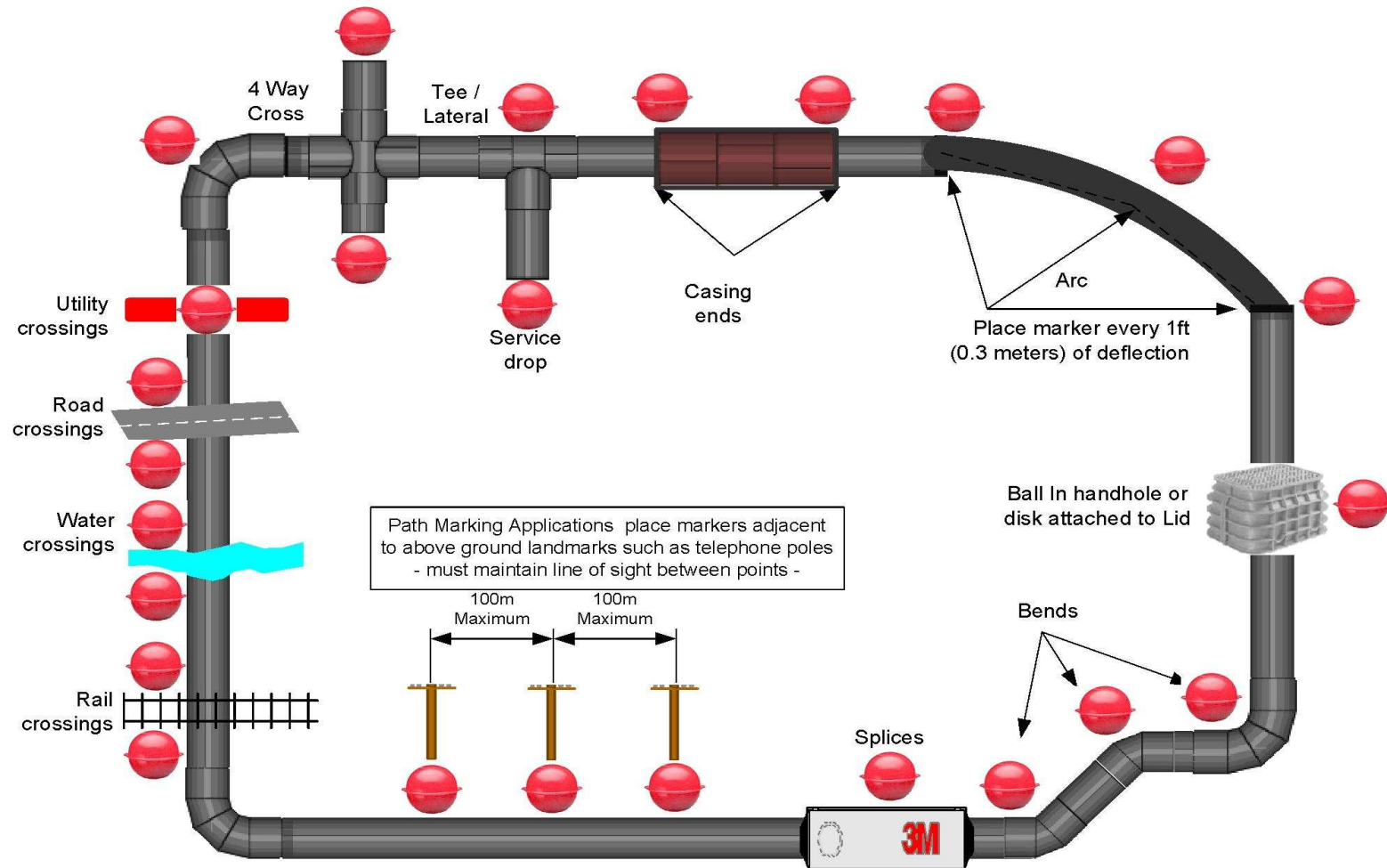
- *Points that need to be accessed for future construction, the highest volume application is points where future facility expansion needs to connect into such as service stub connection points.*

■ Damage Avoidance

- *To indicate the location of a Lateral or Tee where the direction of the facility may change or branch out. Laterals often cross over (or under) other facilities and in a right of way and are at risk of damage when new facilities are installed. To prevent damage to these service laterals, their position must be known before excavation begins.*



Power Utility Marking

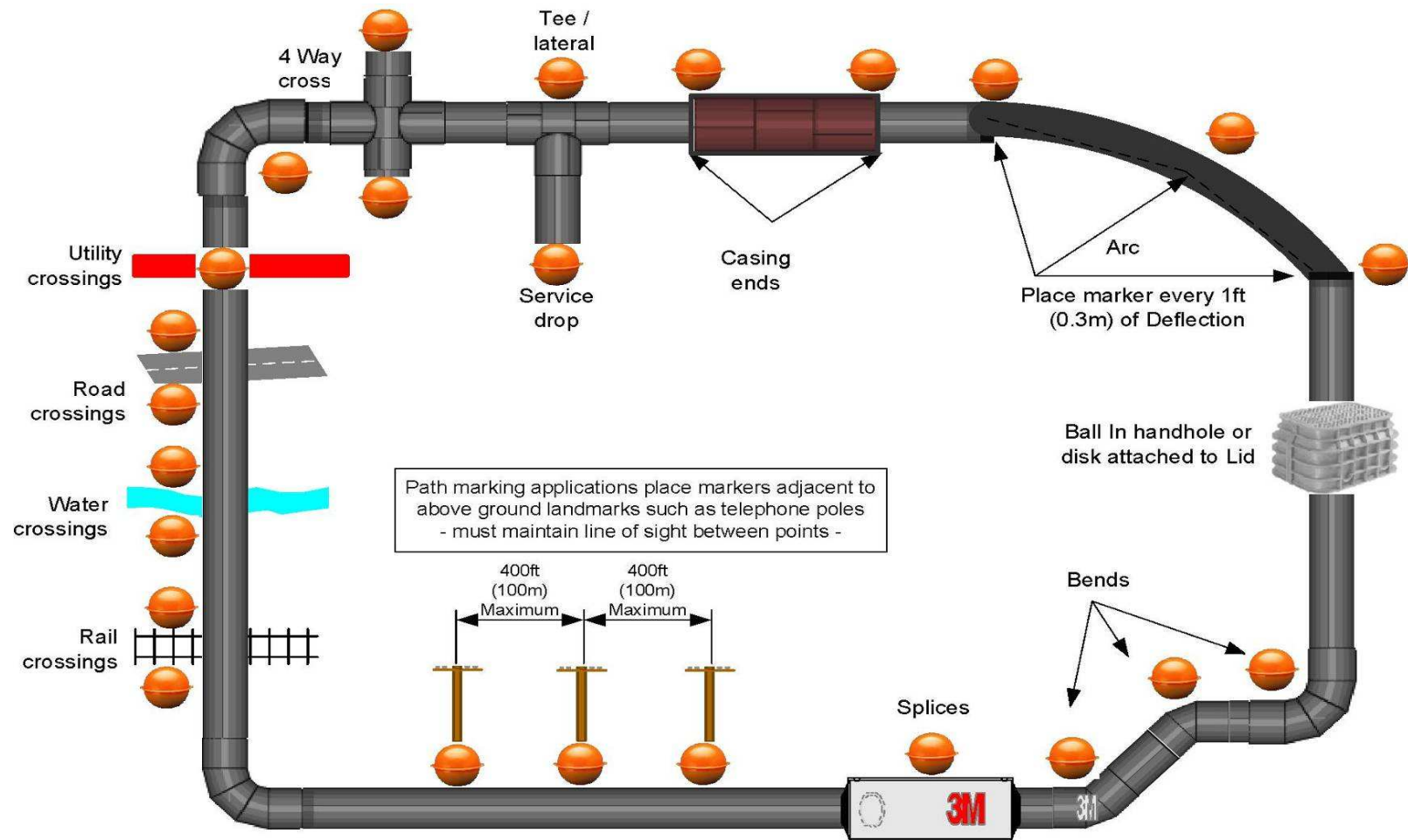


Crossings
- Water
- Major roads
- Rail

Service Stubs & Drops
All Types of Splices
Repair Splices
Transition Splices

Breakouts, Laterals & Tees
Empty Conduit Banks & Openings
Fiber Optic Lines
Handholes and Manholes

Communications Network Marking

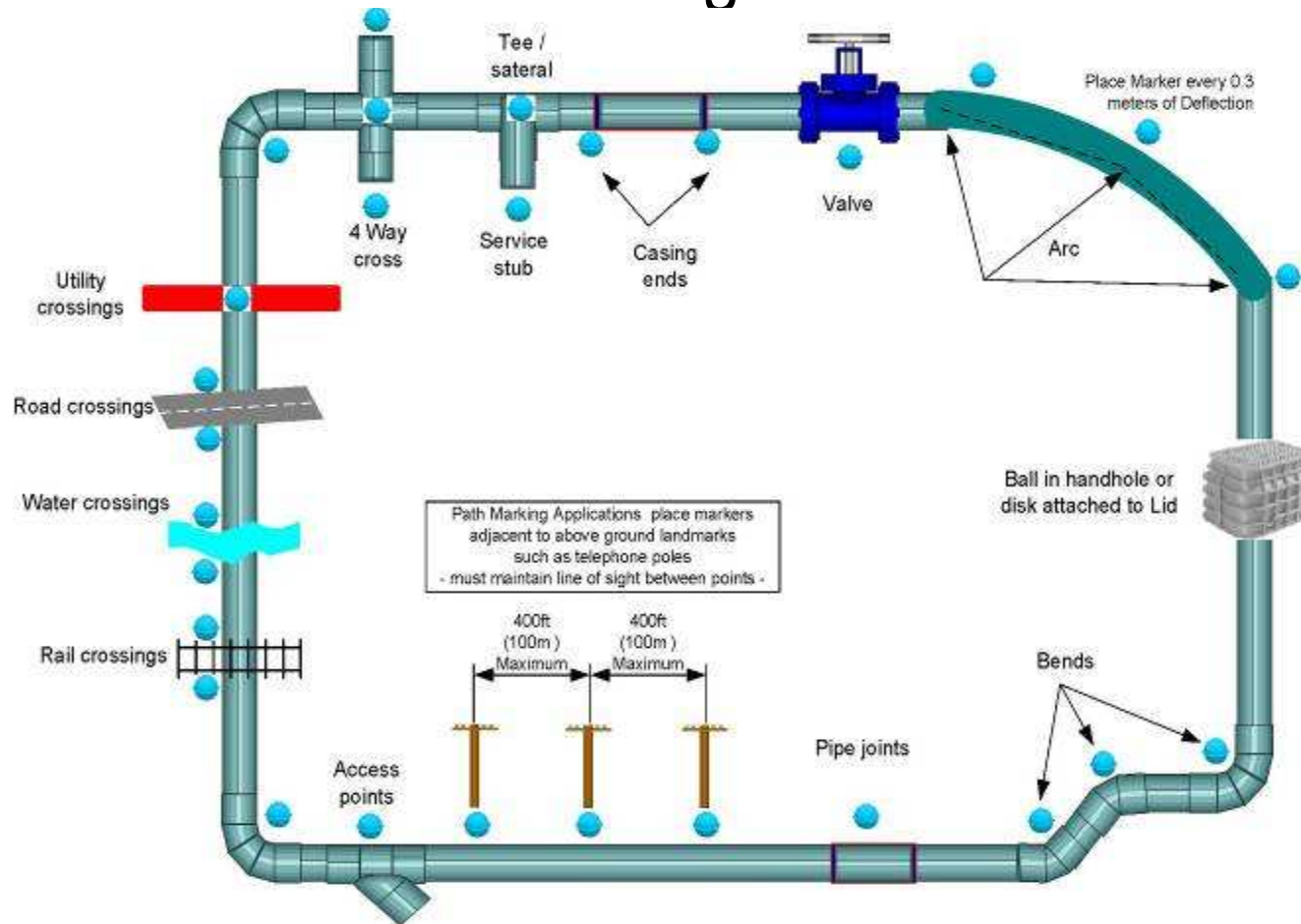


Crossings
- Water
- Major roads
- Rail

Service Stubs & Drops
All Types of Splices
Repair Splices
Transition Splices

Breakouts, Laterals & Tees
Empty Conduit Banks & Openings
Fiber Optic Lines
Handholes and Manholes

Water Infrastructure Marking



Crossings

- Water
- Major roads
- Rail
- Other Utilities

Service Stubs

- Repair Points
- Squeeze points
- Valves
- Valve Boxes

Non-metallic pipe

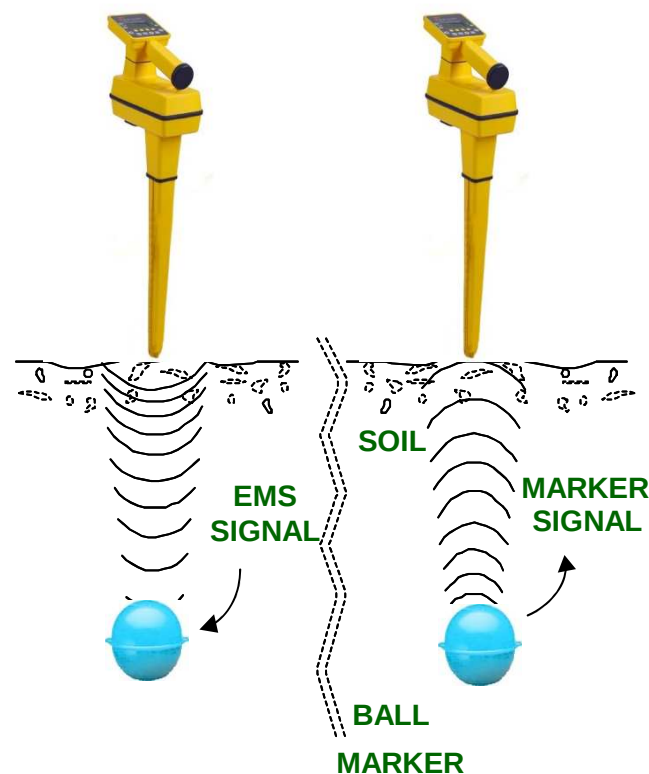
- Path on straight sections
- Bends & Arcs
- Depth Changes
- Laterals / Tee's

Annode Electrodes,

- Test points for CPS/CPM
- Encasement ends
- Access points

Electronic Marking - Facts

- 25 Million markers WW
- 30+ years of experience
- Independent from the Utility it marks
- RFID Marking
- No Battery needed
- Positive Identification
- Accurate Location
- 30+ Year Lifetime
- Enhanced Asset Mgt.



RFID Marker Capabilities

ID Marker

Select the type of Templates to Create/Edit

☒ ID Marker Templates ☐ Trace Templates

Template Name : P Splice Mulder.utl Browse

Favorite User List : Power ▼

LABELS	DESCRIPTION
Company	Mulder
App	Power
Descrptn	Splice
Type	Phase A
Date	21/01/10 D/M/Y
Location	Manhole

Memory usage for this template : 10 % Remaining

Clear Save As Download Template(s)

GPS/iD Marker Utility

Glossary Language : English ▼

Set up Favorite User List Create/Edit Templates Read/Write Xfer Read/Written Mkr data Help

Template Name : P Splice Mulder.utl Browse

Device :

Selected Template

LABEL	DESCRIPTION
Company	Mulder
App	Power
Descrptn	Splice
Type	Phase A
Date	21/01/10 D/M/Y

Setup Options

Utility : Telephone ▼

☒ Overwrite Old Marker Data

☐ Permanently Lock Marker Data

Specify Location to Log Data : C:\Program Files\3M\Dynatel Locator PC Tools\MarkerRecord Browse

Marker Data / Status

Serial ID	Model	"Blank" Marker	SignalLevel	Data Errors	Lock

Enter No. of Markers In Fixture : 10 Total Markers Read : 0 Total Markers Written : 0

Read Only Read and Write

Exit

- PC software exports real time data
- Path traces and scans for marker simultaneously





Locating & Marking

Locator Products

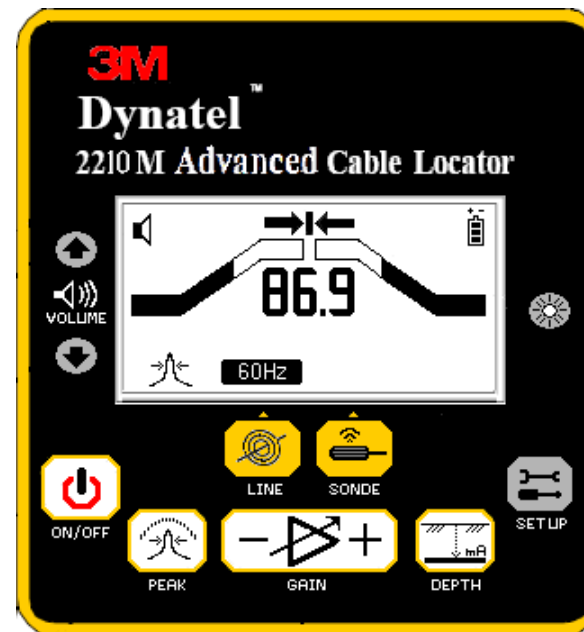
1420E-ID Marker Locator

- Standalone Marker Locator
- Locate all Passive Markers
- Reads/Writes Capabilities
- Light weight
- Marker Depth Estimation
- Field Upgradeable Software
- Help menu
- GPS Interface



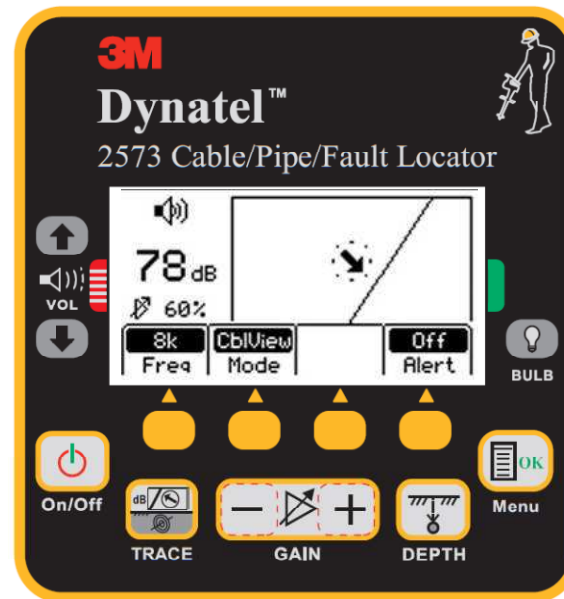
2220M Pipe Locator

- Pipe and Cable Locator
- Two active Frequencies - *8kHz and 82kHz*
- Enhanced Induction Performance
- Large High Resolution Display
- 6 Antenna Design
- Highest Sensitivity
- Great Depth Accuracy
- Light Weight



2550M/2573M-ID Locator

- Cable, Fault and Marker Locator
- 6 Active Frequencies w. Enhanced Pipe Locating
- Intuitive Trace View Mode
- 6 Antenna Design
- Highest Sensitivity
- Great Depth Accuracy
- Help menu
- GPS Interface





Marker Products



Electronic Marking System

Near Surface
• 60cm depth



RFID Option

Ball Marker
• 1,5m depth



RFID Option

Disk Marker
• 1,5m depth



RFID Option

Vault Marker
• 1,5m depth



Mid Range
• 1,8m depth



Full Range
• 2,4m depth



RFID Option



Telephone

Gas

CATV

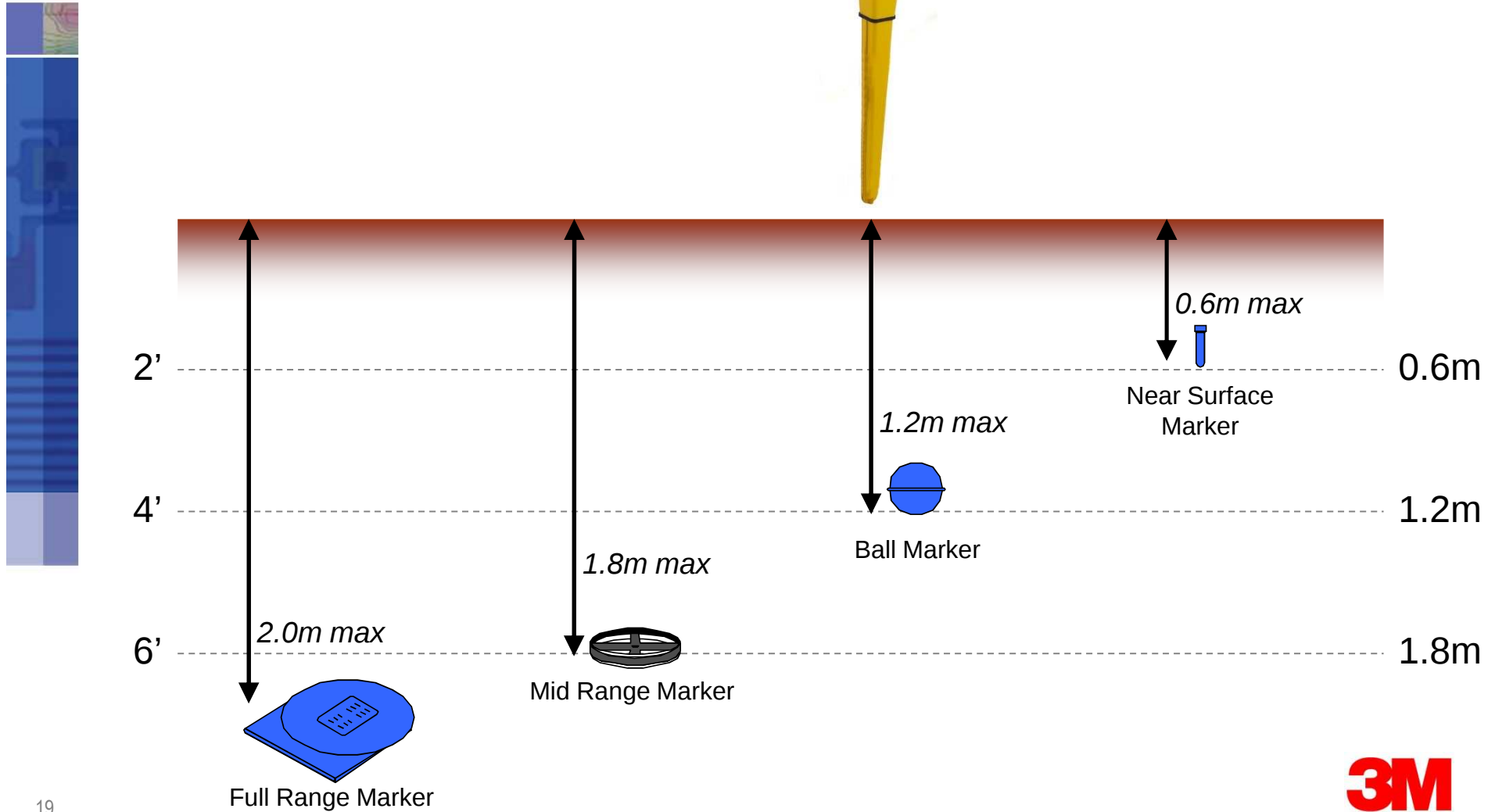
Power

Water

Wastewater

GP/Rec Wtr

Marker Read Ranges



Ball Marker Technology

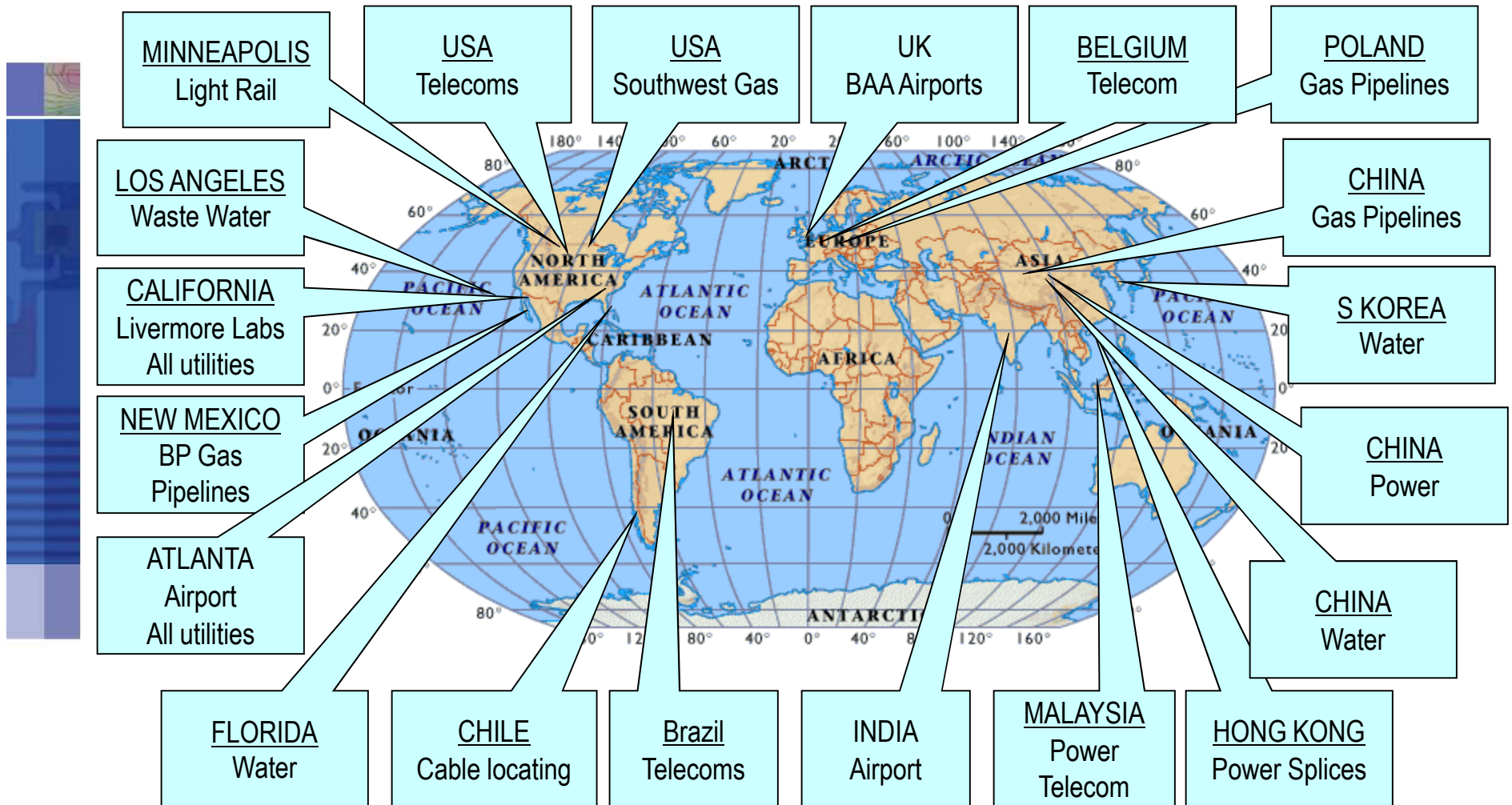




Customer Applications

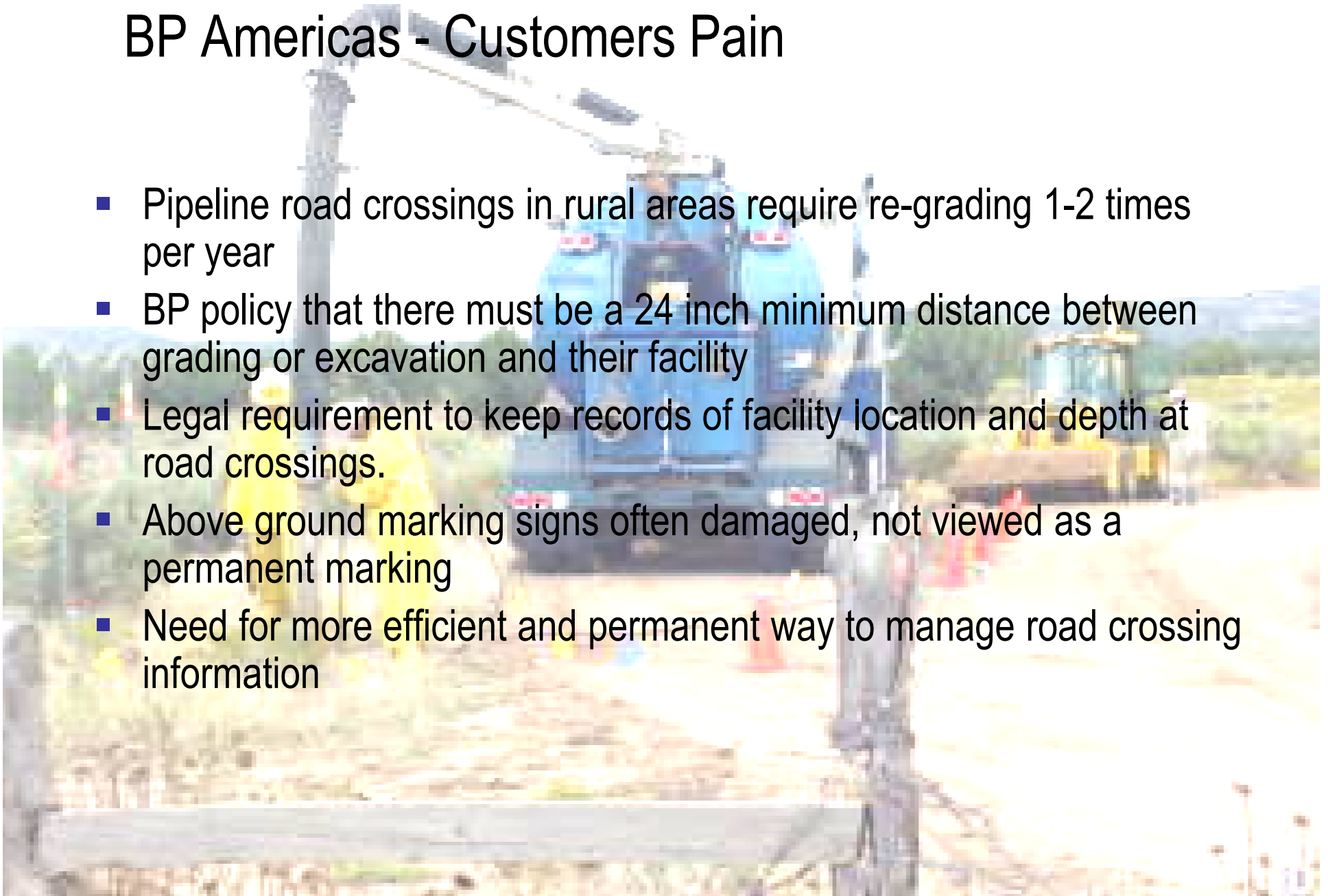
25 Million 3M Markers Worldwide

Numerous Global Case Studies

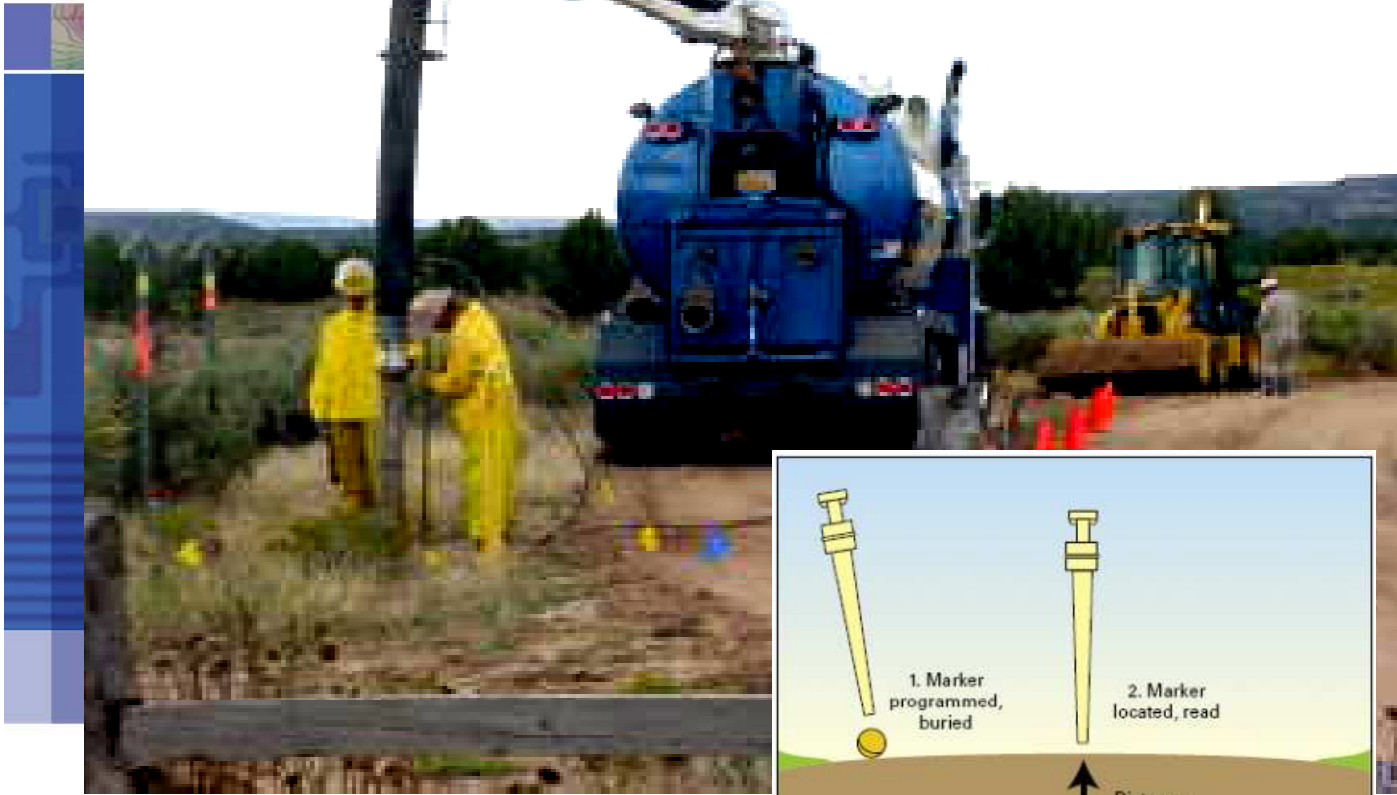


BP Americas - Customers Pain

- Pipeline road crossings in rural areas require re-grading 1-2 times per year
- BP policy that there must be a 24 inch minimum distance between grading or excavation and their facility
- Legal requirement to keep records of facility location and depth at road crossings.
- Above ground marking signs often damaged, not viewed as a permanent marking
- Need for more efficient and permanent way to manage road crossing information



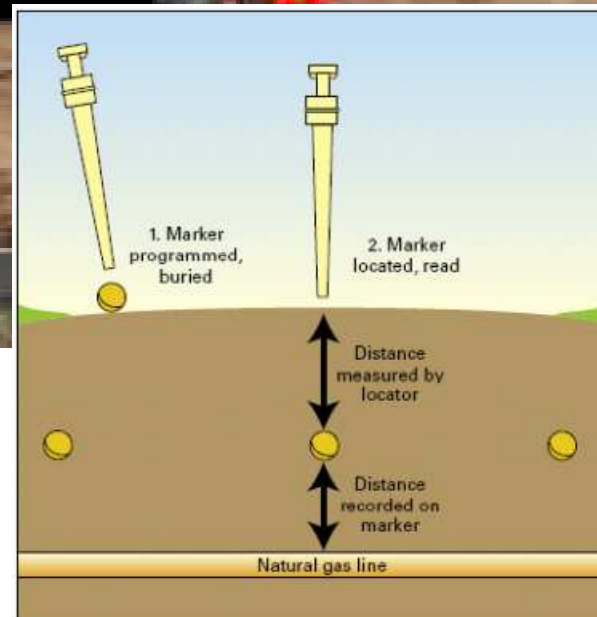
BP Road Crossing Application



Expose
Facility at
7 ft depth



Backfill to
4 ft &
place marker



GPS/GIS Implementation Overview

- Flexible integration solutions



Marking water tees, hydrants & boundary boxes

Presented by Thames Water at Mapping The Underworld Seminar #2



Fitting radio frequency identifier tags to valves and other buried plant can quickly guide repair crews to problem spots ahead of disastrous collapses.

Ben reported on TW's move from recording the relative position of its assets to absolute accuracy, a programme that has taken two years. To achieve this, they do not just rely on GPS (in London the hit rate is only about 60% anyway) but use other technology, such as total stations, aided by radio frequency identification tags on valves and buried plant that can be easily picked up after backfill to a depth of 1.5 metres. Darlow also told us

<http://www.mappingtheunderworld.ac.uk/workshops/buried%20assets%20workshop.pdf>

Marking water tees, hydrants & boundary boxes



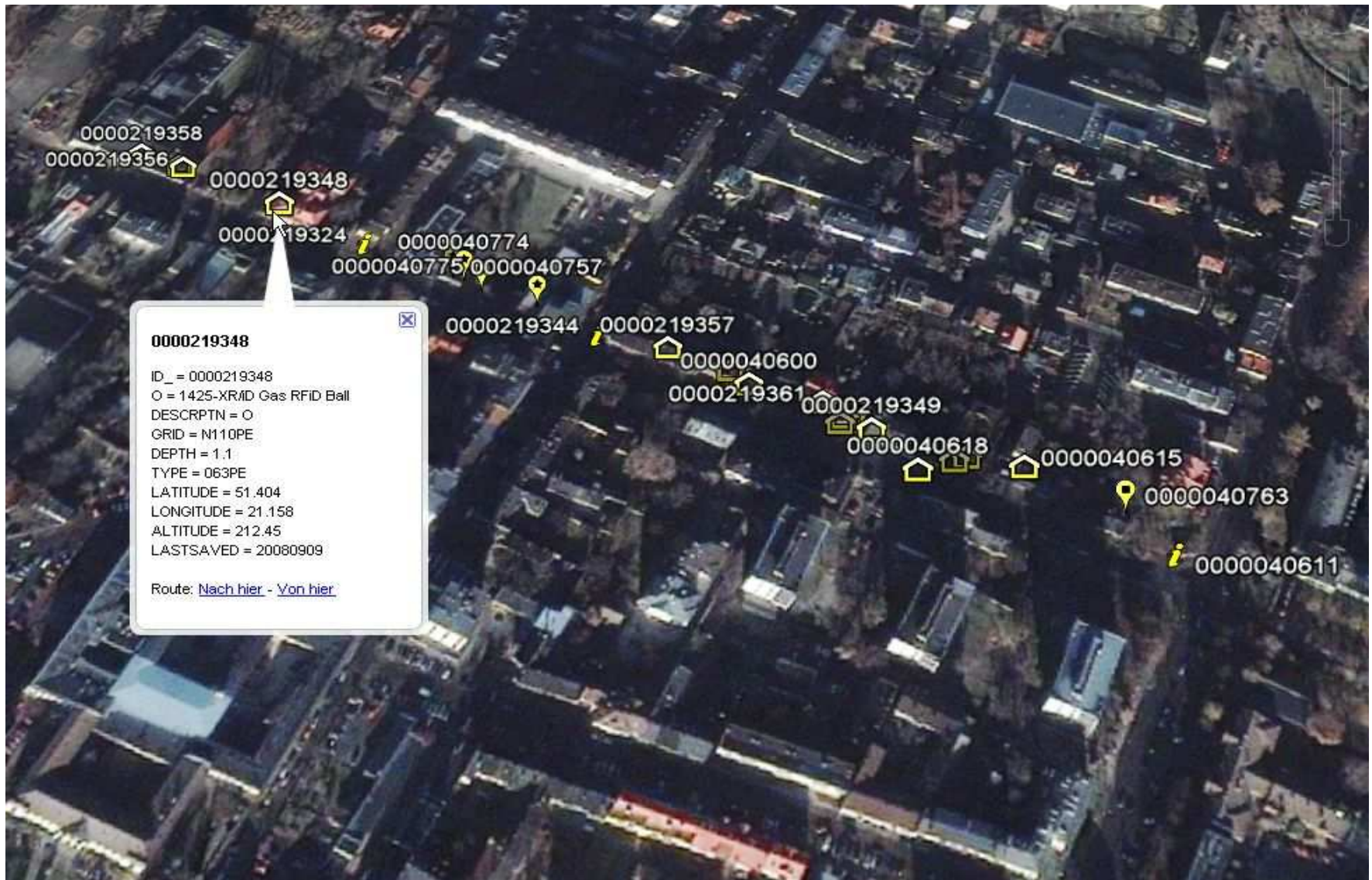
Gas Pipelines – Poland



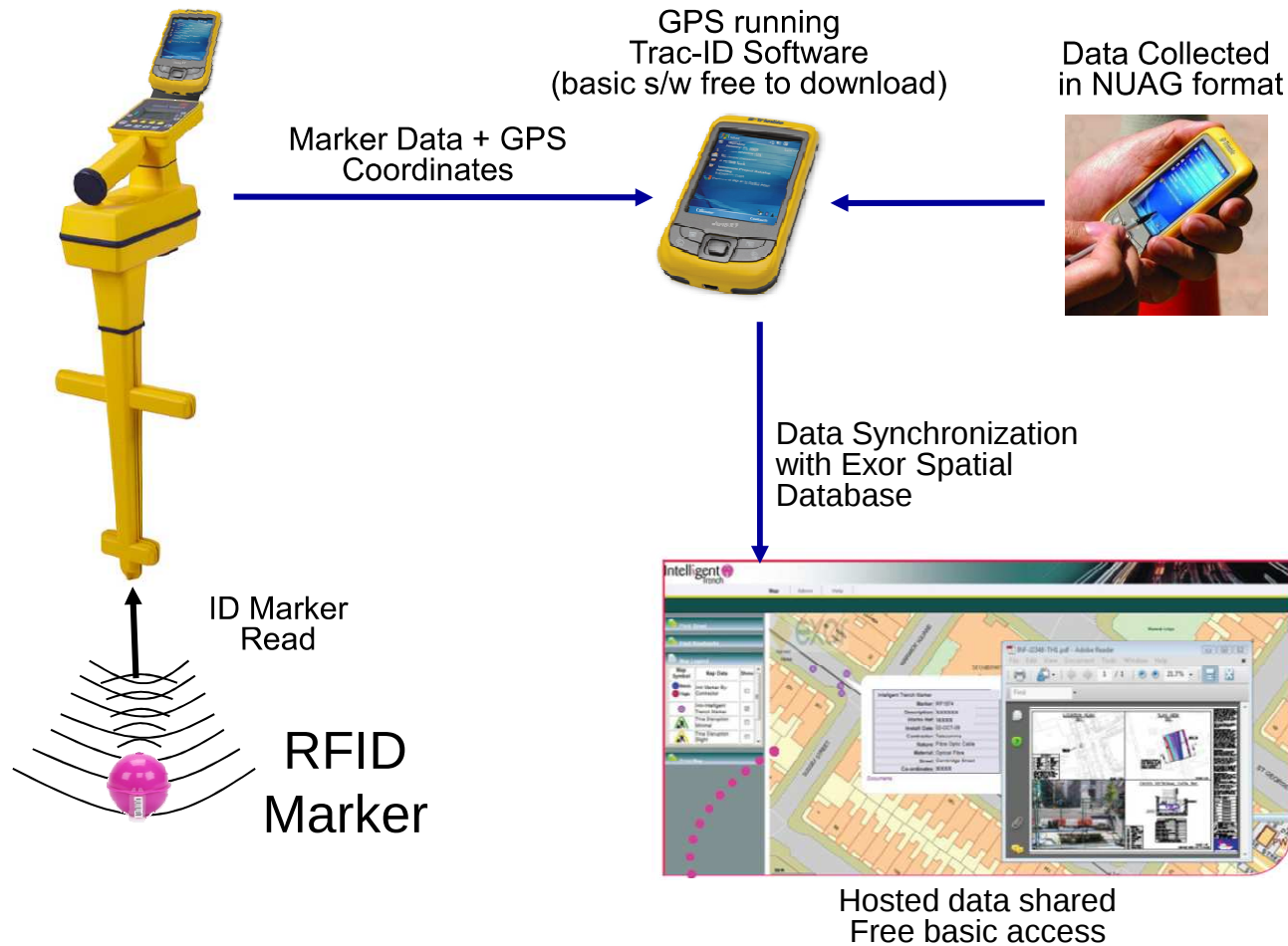
Gas Line Rehabilitation - Poland



Gas Line Rehabilitation - Poland



“Intelligent Trench” - UK Implementation



"Intelligent Trench" - UK Implementation

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UK

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Intelligent Trench at Whitehall

Intelligent Trench markers in place at Whitehall, Westminster, London, UK showing data collected according to NUAG guidelines and shared by Intelligent Trench.

Intelligent Trench is enabled by 3M, Exor, Infotec and Trac-ID

www.intelligenttrench.co.uk

73 views - Public

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ID#052 3115

ASSET TYPE Water - Joint + T Piece

DEPTH 47cm

DESCRIPTION Pipe Joint

MATERIAL Plastic

SHAPE Round

Intelligent Trench

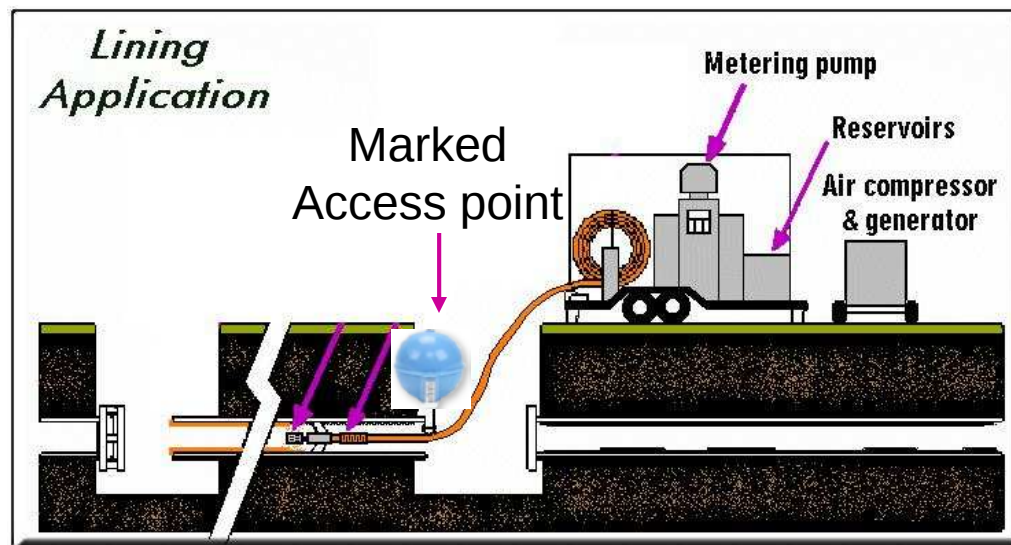
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Water Pipe Rehabilitation - NL



- Pipe Rehabilitation Program using 3M eWood coating technology
- First In-Situ pilot planned in 2010
- Addition with L&M products for Electronic Marking
- Plan to mark all access points for In-situ as well as all other critical points for new constructions.



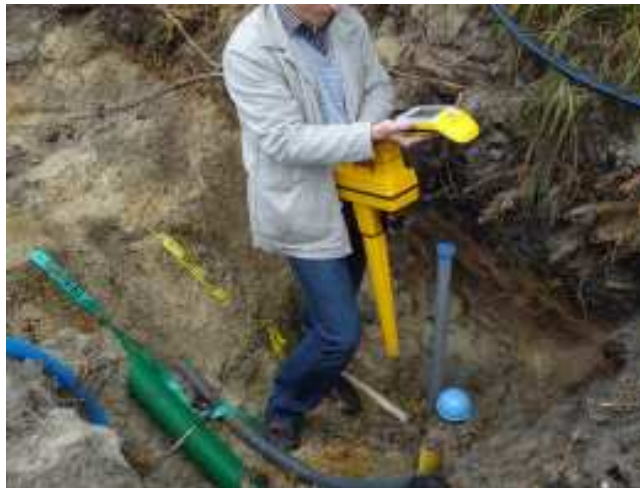
Markers for new construction.



RFID
Full Range
Marker



RFID Ball
Marker

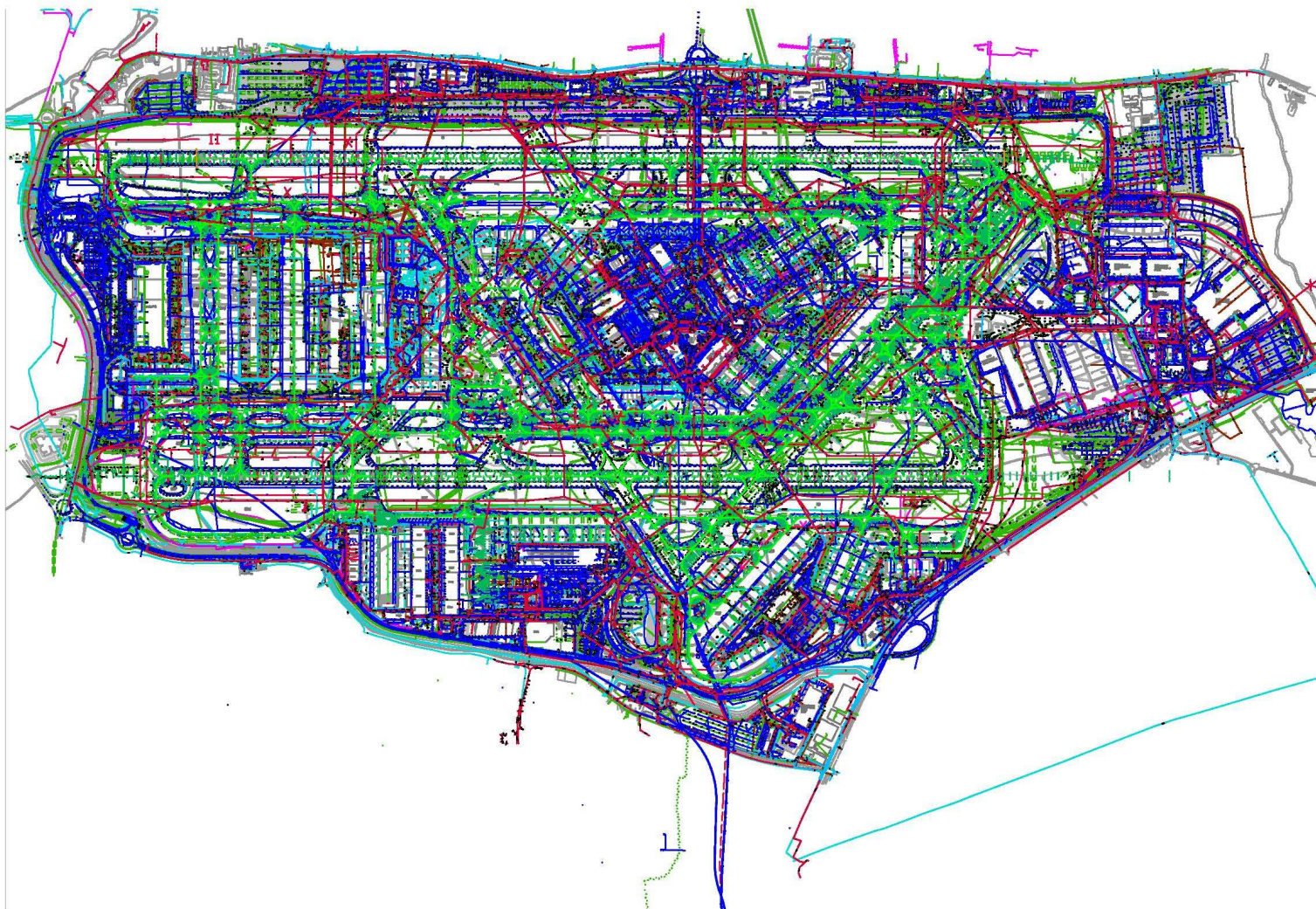


Mapping
with
GPS

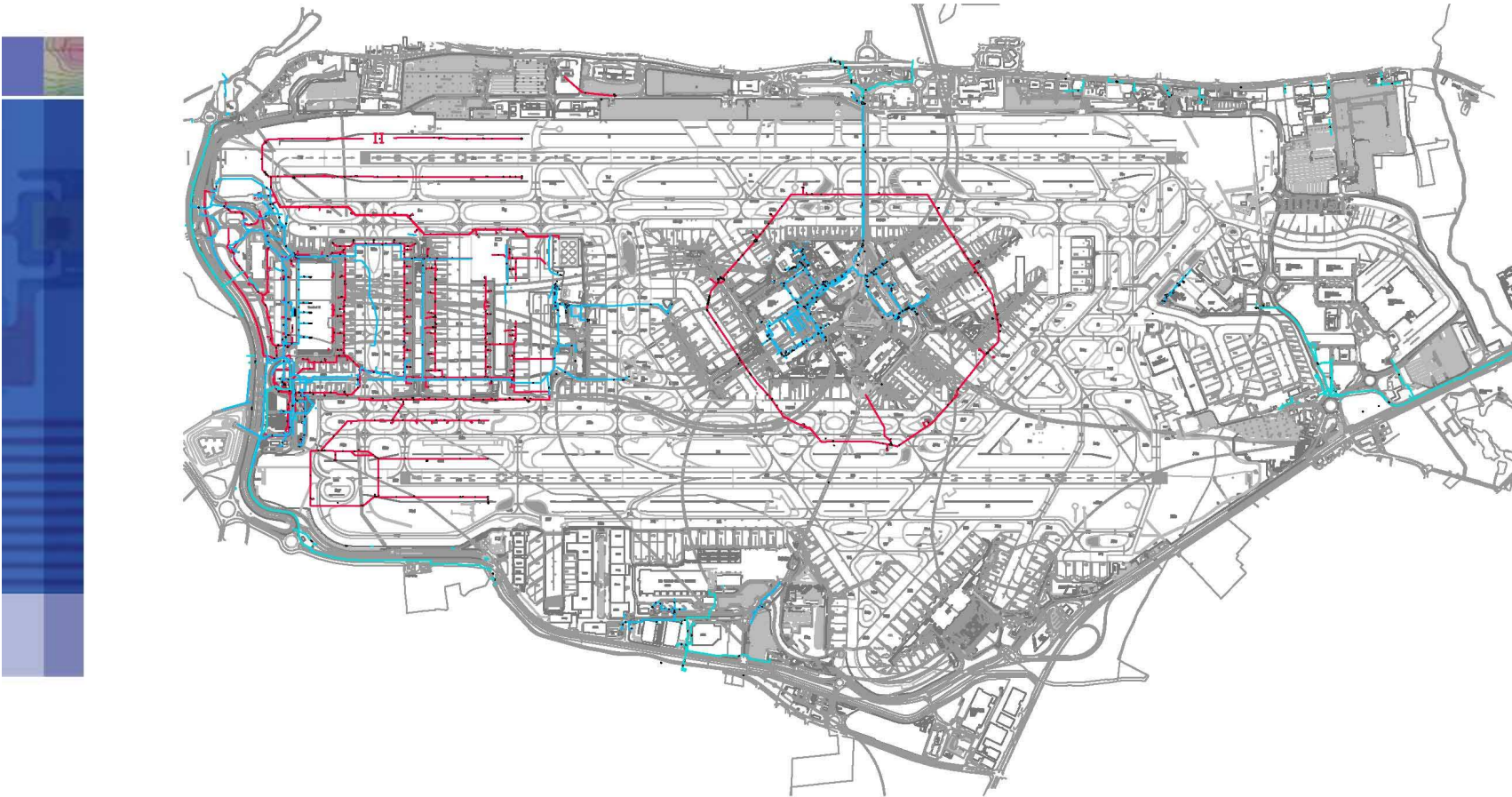
Marker Data
on map



Heathrow Airport - UK



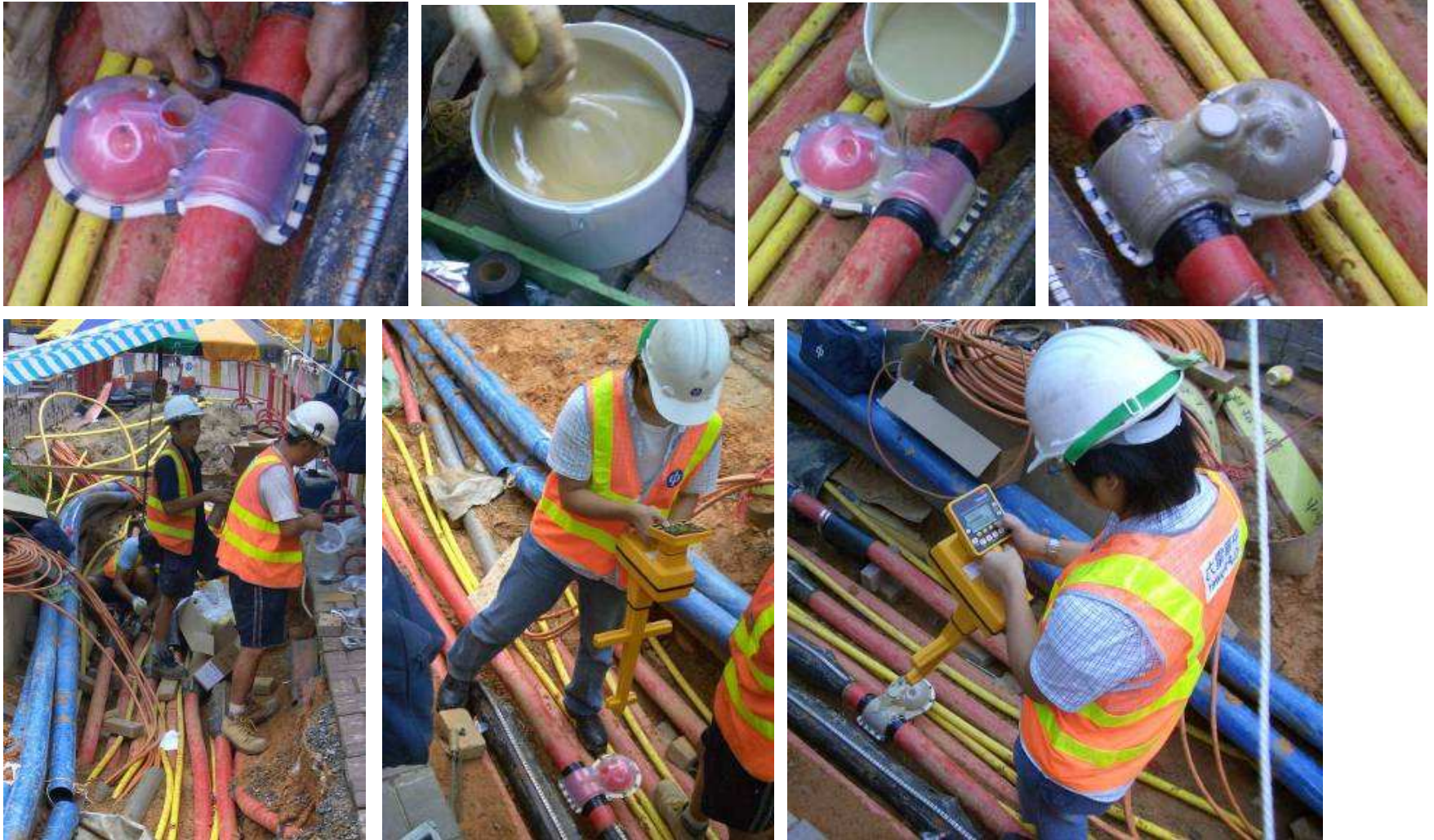
Heathrow Airport – Untraceable Services



Heathrow Airport – Customized EMS Terms



Power Splice – Hong Kong



Power Utility Marking - China



3M Track and Trace Solutions

Electronic Marking Products

Questions?



3M