37TH INTERNATIONAL NO-DIG FLORENCE 2019

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UNI/ IATT PdR - Guideline on Low Environmental Impact Underground Infrastructure Technology

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**UNI(Ente normatore Italiano)

MARKET DRIVE AND NEEDS

Market to grow needs at least two main tools:

- **1- Guideline for no- dig technology**
- **2- Price list (See DEI – Chapter 6)**

A NEW TOOL : PDR (BEST PRATICES)

FOR THIS PURPOSE:

A new tool for innovative and fast- moving changing markets has been created, named as follows:

UNI/PdR - Reference best Practice -"Prassi di Riferimento“

A BIG CHANCE FOR IATT

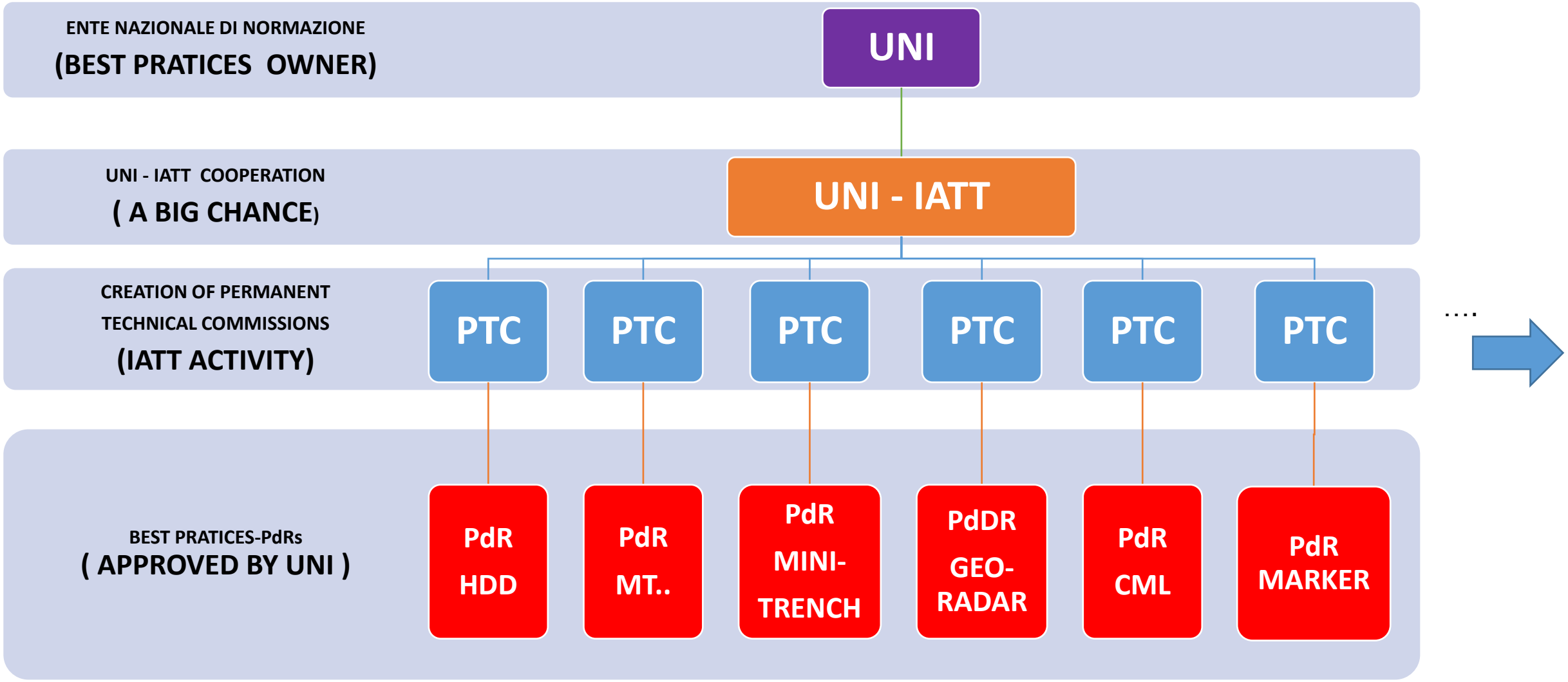
IATT seized the opportunity of developing a series of References Best Practice in various sectors of trenchless technology in agreement with UNI, making use at all times of a Permanent Technical Commission (PTC) created from within its own associated members.

Best practices are elaborated on the basis of a rapid sharing process, through its authors and other experts in the sector. and with final approval by a joint IATT-UNI technical commission;

PTC are organized for different technology;

Main result of the work are the PdRs and others (see price list)

PdR CREATION

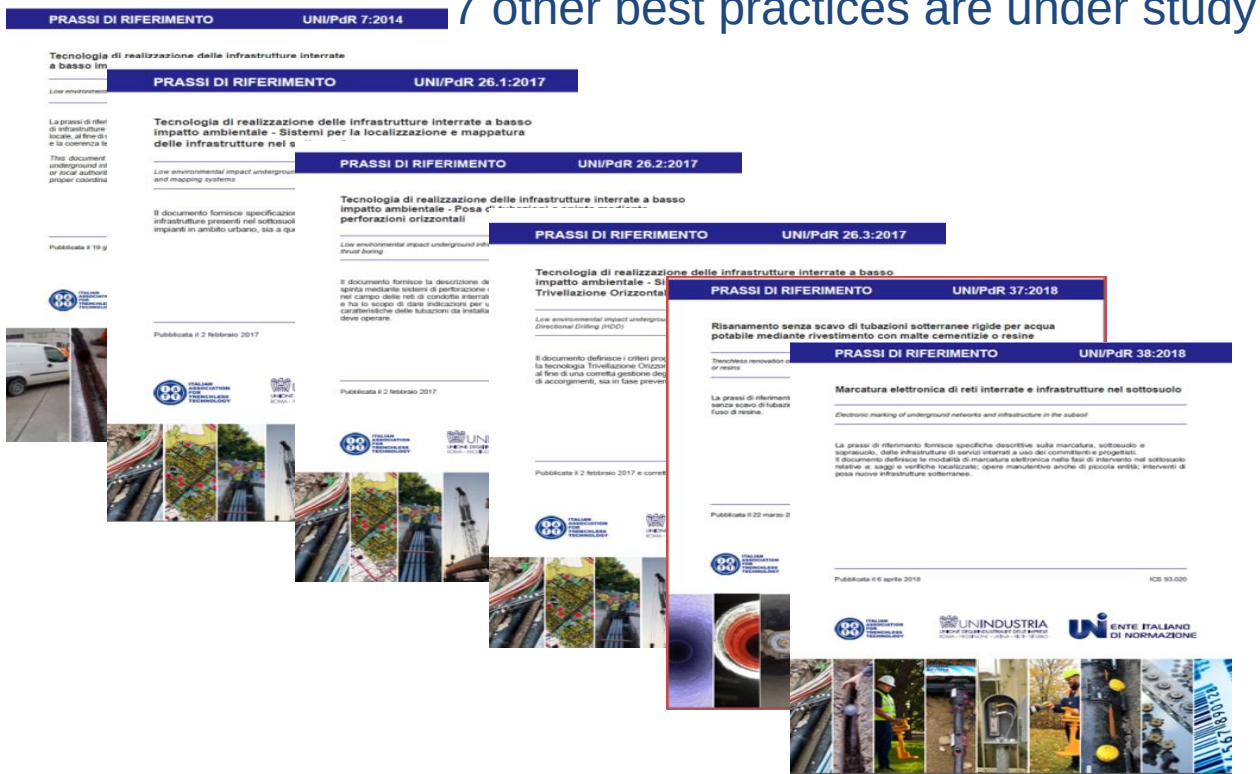


IATT – UNI JOINT ACTIVITY

Results of the UNI-IATT collaboration through the PTC (Permanent Technical Commission) tool:

A series of 6 best pratices that have been already published (in Italian and English language)

7 other best practices are under study and publication



UNI/PdR	Soggetto	Download
UNI/PdR 7:2014	Minitrench	6.046
UNI/PdR 26.1:2017	Georadar	1.064
UNI/PdR 26.2:2017	Horizzontal thrust boring (M T ….)	1060
UNI/PdR 26.3:2017	HDD	1048
UNI/PdR 37:2018	Lining with Cement mortars or resins	223
UNI/PdR 38:2018	Electronic marking	352
	Total	9.793

STRUCTURE OF THE PdR

The UNI/PdRs are structured according to the following path :

I know the technique
I know the installation environment

I KNOW (the contest)

I am able to choose the most suitable technique
I know my project inputs

I CHOOSE (the technology)

Definition of the design phases, identification of the necessary documents to be produced

I DESIGN (design addresses)

The site of its various components is illustrated. The components necessary for the execution of the works are described

I DO AND CHECK (on site)

UNI/PdR 7:2014 published on 19 June 2014 – “Mini-trenching Systems”

Downloads: 6.046

PRASSI DI RIFERIMENTO UNI/PdR 7:2014

Tecnologia di realizzazione delle infrastrutture interrate a basso impatto ambientale - Sistemi di minitrincea

Low environmental impact underground infrastructure technology - Mini-trenching systems

La prassi di riferimento fornisce specificazione descrittiva delle pratiche attuate per la realizzazione di infrastrutture interrate mediante tecnologia di minitrincea, per ogni soggetto operatore o Ente locale, al fine di una corretta gestione degli interventi nel sottosuolo, attraverso il loro coordinamento e la coerenza tecnica degli stessi.

This document provides a descriptive specification of the practices implemented in deploying underground infrastructures with the aid of mini-trenching technology, for use by single operators or local authorities, aimed at ensuring works below ground level are managed correctly, through proper coordination and verification of technical consistency.

Pubblicata il 19 giugno 2014 ICS 93.020

ITALIAN ASSOCIATION FOR TRENCHLESS TECHNOLOGY

UNINDUSTRIA UNIONE DEGLI INDUSTRIALI E DELLE IMPRESE DI ROMA • FROSINONE • RIETI • VITERBO

UNI ENTE ITALIANO DI NORMAZIONE

UNI/PdR 7:2014 published on 19 June 2014 – “Mini-trenching Systems”

UNI/PdR describes:

- methods for realising infrastructures (pipes and/or cables) with the use of mini-trenching technology;
- working phases;

- methods for implementing mini-trenches in detail in installing telecom cable networks, electrical power grids such as street lighting and traffic signalling systems;
- materials to be used in the backfill phase;
- type of machines to be used in the various working phases: digging, cleaning, backfill, in urban and extra –urban areas.

UNI/PdR 26.1:2017 “Underground Infrastructure Locating and Mapping Systems”

Downloads: 1.064

PRASSI DI RIFERIMENTO UNI/PdR 26.1:2017

Tecnologia di realizzazione delle infrastrutture interrate a basso impatto ambientale - Sistemi per la localizzazione e mappatura delle infrastrutture nel sottosuolo

Low environmental impact underground infrastructure technology - Underground infrastructure locating and mapping systems

Il documento fornisce specificazione descrittiva delle modalità con cui localizzare e mappare le infrastrutture presenti nel sottosuolo in maniera non distruttiva. Il documento è applicabile sia agli impianti in ambito urbano, sia a quelli in ambito extraurbano.

Pubblicata il 2 febbraio 2017 ICS 93.020

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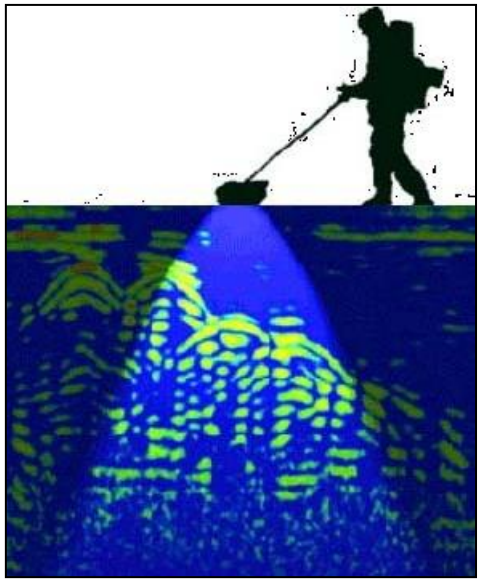
UNI/PdR 26.1:2017 “Underground Infrastructure Locating and Mapping Systems”

The best practice:

•Provides a complete picture of the methods used to locate and map underground infrastructure in urban and extra-urban systems;

•Defines the minimum required performance, with reference to the various levels of quality and application - (HDD, minitrench);



. Describes investigation tools (special attention to Georadar/GPR systems);

• Defines the levels of mapping of underground infrastructures (Class:A,B,C,D)

A specific section represents the minimum quality levels required (obligatory or optional) according to the application.

UNI/PdR 26.2:2017 “Laying pipes by means of Horizontal Thrust Boring”

Downloads: 1.060

PRASSI DI RIFERIMENTO UNI/PdR 26.2:2017

Tecnologia di realizzazione delle infrastrutture interrate a basso impatto ambientale - Posa di tubazioni a spinta mediante perforazioni orizzontali

Low environmental impact underground infrastructure technology - Laying pipes by means of horizontal thrust boring

Il documento fornisce la descrizione delle pratiche attuate per la posa in opera di tubazioni a spinta mediante sistemi di perforazione orizzontali. Essa è destinata a tutti i soggetti che operano nel campo delle reti di condotte interrate, quali società o enti di gestione, progettisti, costruttori, e ha lo scopo di dare indicazioni per una corretta scelta dei sistemi di posa in funzione delle caratteristiche delle tubazioni da installare e delle caratteristiche ambientali e geologiche in cui si deve operare.

Pubblicata il 2 febbraio 2017 ICS 93.020

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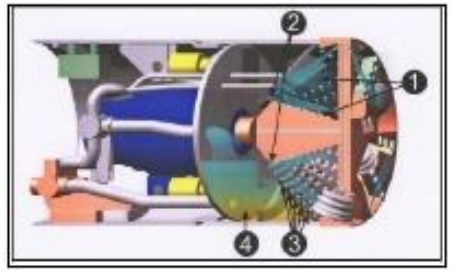
UNI/PdR 26.2:2017 “Laying pipes by means of Horizontal Thrust Boring”

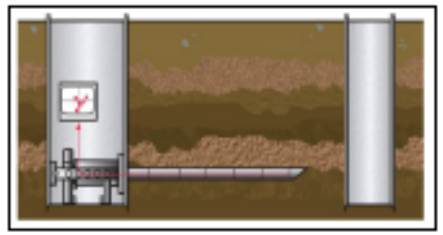
Main points:

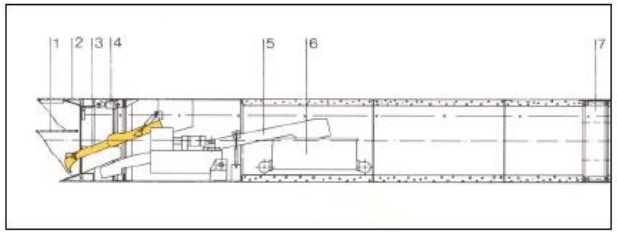
- Geognostic investigation
- Non “steerable horizontal drilling”, such as: Pipe Ramming, Auger Boring, Piercing Tool and Down the Hole Hammer
- “Steerable horizontal drilling”, such as: Open Shield, Closed Shield, Micro-tunnelling, Pilot System and Direct Pipe
- Comparison between various technologies to define their applicability
- Pipes and joints must have appropriate characteristics to enable usage
- Site description



Microtunnelling


Augher boring


Pilot System



Steerable Open Shield

UNI/PdR 26.3:2017 “Directional Drilling Systems: Horizontal Directional Drilling (HDD)”

Downloads: 1.048

PRASSI DI RIFERIMENTO UNI/PdR 26.3:2017

Tecnologia di realizzazione delle infrastrutture interrate a basso impatto ambientale - Sistemi di perforazione guidata: Trivellazione Orizzontale Controllata (TOC)

Low environmental impact underground infrastructure technology - Directional Drilling Systems: Horizontal Directional Drilling (HDD)

Il documento definisce i criteri progettuali per la posa di infrastrutture dei servizi a rete impiegando la tecnologia Trivellazione Orizzontale Controllata (TOC), per ogni soggetto pubblico e/o privato, al fine di una corretta gestione degli interventi nel sottosuolo, attraverso l'applicazione di una serie di accorgimenti, sia in fase preventiva sia in corso d'opera e in chiusura cantiere.

Pubblicata il 2 febbraio 2017 ICS 93.020

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ENTE ITALIANO DI NORMAZIONE

UNI/PdR 26.3:2017 “Directional Drilling Systems: Horizontal Directional Drilling (HDD)”

Main points described:

- To clarify the applicability and feasibility of HDD and its relative design and operational procedures.
- The preliminary investigations needed to study the feasibility and the design of HDD are set out in detail.
- Various operative phases of HDD are explained (pilot ...).
- The design phase of the HDD with the definition of the drilling profile, relative entry and exit angles and the necessary overbend in preparation for the operational pull-back phase are set out in detail.
- Material to be used (length, diameter)
- Drilling tools

UNI/PdR 37:2018 Trenchless renovation of rigid underground pipes delivering drinking water by lining with cement mortars or resins

DOWNLOADS:223

PRASSI DI RIFERIMENTO UNI/PdR 37:2018

Risanamento senza scavo di tubazioni sotterranee rigide per acqua potabile mediante rivestimento con malte cementizie o resine

Trenchless renovation of rigid underground pipes delivering drinking water by lining with cement mortars or resins

La prassi di riferimento fornisce specifiche descrittive relativamente alle tecniche di risanamento senza scavo di tubazioni rigide per acqua potabile mediante l'uso di malte cementizie o mediante l'uso di resine.

Pubblicata il 22 marzo 2018 ICS 93.020

ITALIAN ASSOCIATION FOR TRENCHLESS TECHNOLOGY

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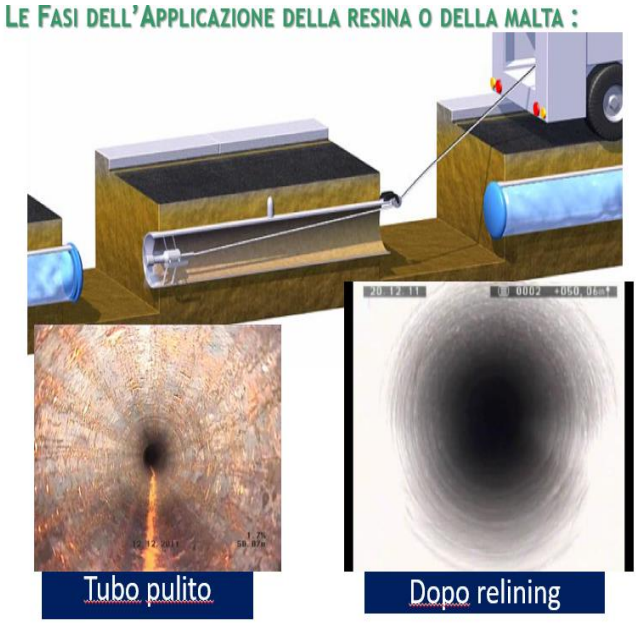
UNI/PdR 37:2018

Trenchless renovation of rigid underground pipes delivering drinking water by lining with cement mortars or resins

The PdR describe the renovation procedure of water networks through no-dig technology, using sprays of various types of material which are compatible with drinking water, such as: epoxy resins, polyurea resins and cement mortars.

Field of applications

The Technology is applicable for rehabilitation of drinking water networks



Structure of PdR

Cap. 1-3: terms and definitions

Cap.4-7: explain the context of applications

Cap.8-12: final tests and quality control procedures

UNI/PdR 38:2018
Electronic marking of underground networks and infrastructures

DOWNLOADS: 352

PRASSI DI RIFERIMENTO UNI/PdR 38:2018

Marcatura elettronica di reti interrate e infrastrutture nel sottosuolo

Electronic marking of underground networks and infrastructure in the subsoil

La prassi di riferimento fornisce specifiche descrittive sulla marcatura, sottosuolo e soprasuolo, delle infrastrutture di servizi interrati a uso dei committenti e progettisti.
Il documento definisce le modalità di marcatura elettronica nelle fasi di intervento nel sottosuolo relative a: saggi e verifiche localizzate; opere manutentive anche di piccola entità; interventi di posa nuove infrastrutture sotterranee.

Pubblicata il 6 aprile 2018 ICS 93.020

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UNI ENTE ITALIANO DI NORMAZIONE

UNI/PdR 38:2018
Electronic marking of underground networks and infrastructures

The reference practice describes the detection techniques of underground networks and provides a guide line for the correct electronic marking of infrastructures.

Surface markers

Fields of application

The practice applies to underground networks

Strutture OF PdR

Chap. 1-4: Terms and definitions
Cap.5 [I Know]: Detection techniques
Cap.6 [I design]: Electronic marking method

Underground markers

IATT – UNI join activity

Results of the UNI-IATT collaboration through the PTC (permanent technical commission) tool:

•A series of 6 best practices that have been already published (in Italian and English language)

•7 other best practices are under study and publication

1- Methods for installing optical fibres in existing infrastructures.

By the term "Methodologies for the use of existing infrastructures",

we mean a series of systems and techniques that allow the laying of the optical fibre in the networks of existing underground utilities

(e.g. gas pipelines, aqueducts, telecommunications, energy, sewers, etc.) with use of trenchless technologies where needed.

PdR under study and publication

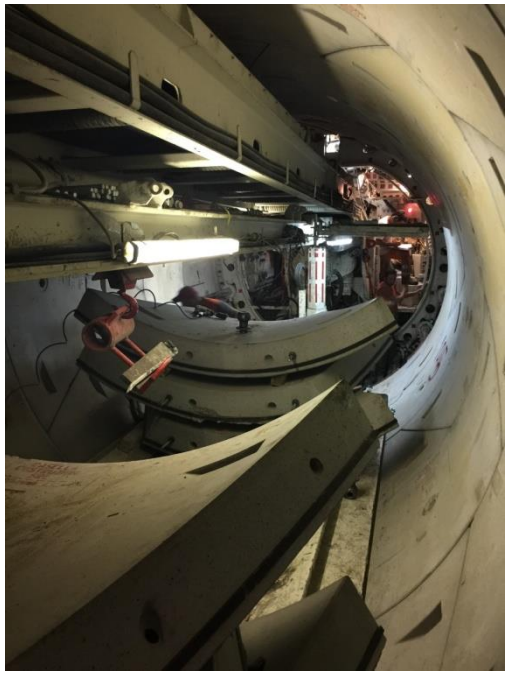
2- Relining with plastic pipes, flexible impregnated tubes, adhesive-backed hoses and circular woven reinforced textile, for pressure fluids.

Slip liner

U liner

PdR under study and publication

3- TBM with erected segments installation



4- Pneumatic vacuum systems technology

PdR under study and publication

5- Criteria for the qualification of companies operating in the No-Dig sector

6- Profile of a Trenchless Manager

7- Lining of pressure pipes for delivering drinking water using trenchless CIPP (Cured In Place Pipe) techniques (under study)

FEEDBACK FROM THE FIELD

STRONG SUPPORT TO THE FOLLOWING ACTIVITIES:

- ✓DESIGNERS
- ✓PROCUREMENT / TENDERS
- ✓PROJECT MANAGER
- ✓CONSTRUCTION MANAGER
- ✓CONTROLLER

CONCLUSIONS

- To supply a fast response to the market demand through an agreement between UNI and IATT by the creation of a Technical Permanent Commission (TPC) a new tool, called PdR, has been developed.
- Such a PdR (References Best Practices) goes forward to promote technical transfer and innovation.
- Due to the great interest demonstrated from the market (designer, users, construction companies), IATT will continue to develop Best Practice to cover the entire world of no- dig technologies.

REMEMBER: YOU CAN DOWNLOAD THE UNI-PDR FREE OF CHARGE

http://www.uni.com/index.php?option=com_content&view=article&id=2573&Itemid=2460

THANK YOU FOR YOUR ATTENTION
THANKS TO THE TPC TEAM LEADER

F. Esposto
Coordinator of IATT Permanent Technical Commissions