IGEM
Institution of
Gas Engineers & Managers

***IGEM/SR/28 Edition 2***
***Communication 1753***

# *Trenchless techniques*


*Founded 1863*
*Royal Charter 1929*
*Patron: Her Majesty the Queen*

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Price Code: C5S

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ISBN 978 1 905903 28 3
ISSN 0367 7850
Published by the Institution of Gas Engineers and Managers

Previous Publications:
Communication 1662 (1999) – 1st Edition (IGE/SR/26)
Communication 1680 (2002) – 1st Edition (IGE/SR/28)

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**FIGURE**



**TABLE**

# SECTION 1 : INTRODUCTION

1.1 IGE/SR/26, Communication 1662, entitled Horizontal Directional Drilling and Impact Moling, was first published by the Institution of Gas Engineers and Managers (IGEM) in 1999. IGE/SR/28, Communication 1680, entitled Trenchless Techniques was first published by the Institution of Gas Engineers and Managers (IGEM) in 2002. This Standard, IGEM/SR/28 Edition 2, supersedes Communications 1662 and 1680 which are now obsolete.

1.2 This Standard has been drafted by a Panel appointed by IGEM's Gas Transmission and Distribution Committee and published by the authority of the Council of IGEM.

1.3 This Standard provides requirements to those responsible for the planning of trenchless technology works, the operation of equipment and the application of processes used to carry out work.

1.4 The advantages of trenchless techniques are in the ability to install new, and replace or renovate existing underground utilities and services with minimal disturbance to the surface or damage to other buried services, thereby reducing above-ground activities and eliminating the need for costly and disruptive reinstatement. These advantages open up opportunities for installation in difficult or otherwise prohibitive expensive locations, for example:

- beneath highways, access ways to plant and other surfaced areas
- beneath railways
- beneath water courses, estuaries and lakes
- at sites of special scientific interest (SSI)
- beneath structures and plant installations.

1.5 This Standard draws attention to those aspects of the examination, lining, repair and installation of underground duct, pipe, cable and service tunnels, using trenchless equipment and techniques which could put operators and persons working nearby and members of the public at risk, or could lead to damage and disruption of existing services, for example:

- effects of collateral damage to adjacent buried plant and services
- damage in respect of heave or shrinkage of the ground surface.

1.6 This Standard makes use of the terms "must," "shall" and "should" when prescribing particular requirements. Notwithstanding Sub-Section 1.8:

- the term "must" identifies a requirement by law in Great Britain (GB) at the time of publication
- the term "shall" prescribes a procedure which, it is intended, will be complied with in full and without deviation
- the term "should" prescribes a procedure which, it is intended, will be complied with unless, after prior consideration, deviation is considered to be acceptable.

Such terms may have different meanings when used in legislation, or Health and Safety Executive (HSE) Approved Codes of Practice (ACoPs) or Guidance, and reference needs to be made to such statutory legislation or official guidance for information on legal obligations.

1.7 The primary responsibility for compliance with legal duties relating to health and safety at work rests with the employer. The fact that certain employees, for example "responsible engineers" are allowed to exercise their professional judgement does not allow employers to abrogate their primary responsibilities.

Employers must:

- have done everything to ensure, so far as is reasonably practicable, that there are no better protective measures that can be taken other than relying on the exercise of professional judgement by "responsible engineers"
- have done everything to ensure, so far as is reasonably practicable, that "responsible engineers" have the skills, training, experience and personal qualities necessary for the proper exercise of professional judgement
- have systems and procedures in place to ensure that the exercise of professional judgement by "responsible engineers" is subject to appropriate monitoring and review
- not require "responsible engineers" to undertake tasks which would necessitate the exercise of professional judgement that is not within their competence. There should be written procedures defining the extent to which "responsible engineers" can exercise their professional judgement. When "responsible engineers" are asked to undertake tasks which deviate from this they should refer the matter for higher review.

1.8 Notwithstanding Sub-Section 1.6, this Standard does not attempt to make the use of any method or specification obligatory against the judgment of the responsible engineer. Where new and better techniques are developed and proved, they should be adopted without waiting for the modification of this Standard. Amendments to this Standard will be issued when necessary and their publication will be announced in the Journal of IGEM and other publications as appropriate.

1.9 It is now widely accepted that the majority of accidents in industry generally are in some measure attributable to human as well as technical factors. People who initiated actions that caused or contributed to accidents might have acted in a more appropriate manner to prevent them.

To assist in the control of risk and proper management of these human factors, due regard should be taken of HSG48.

1.10 Requests for interpretation of this Standard in relation to matters within its scope, but not precisely covered by the current text, should be addressed to Technical Services, IGEM, IGEM House, High Street, Kegworth, Derbyshire, DE74 2DA or email to technical@igem.org.uk. Such requests will be submitted to the relevant Committee for consideration and advice, but in the context that the final responsibility is that of the engineer concerned. If any advice is given by or on behalf of IGEM, this does not imply acceptance of any liability for the consequences and does not relieve the responsible engineer of any of their obligations.

1.11 This Standard was published in May 2011.

# SECTION 2 : SCOPE

2.1 This Standard addresses health, safety and environmental matters associated with the following trenchless disciplines:

- horizontal directional drilling (HDD)
- impact moling
- auger boring and rotary drilling
- micro-tunnelling (up to 1 m diameter)
- pipe ramming and pipe jacking
- pipe splitting and pipe bursting
- refurbishment of pipes using lining techniques
- internal pipe repair system(s).

*Note: Guidance on high pressure cleaning, pipe inspection and blast cleaning operations are given in Appendices 8, 9 and 10 respectively.*

2.2 This Standard gives requirements and is not, intended to relate to the specific performance capabilities of any particular system. Manufacturers' safety and operational manuals need to be available and those more detailed safety and operational procedures implemented.

*Note: It is not feasible to provide definitive dimensional guidance on the depth, diameter and length of a bore, as these dimensions vary dependent on the equipment used and site-specific conditions. Therefore, it is essential that the equipment manufacturer's guidelines are followed in their entirety.*