

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

Trenchless techniques



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



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Communication 1753***

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CONTENTS

SECTION	PAGE	
1	Introduction	1
2	Scope	3
3	Legal and Allied Considerations	4
	• 3.1 General	4
	• 3.2 Primary legislation	4
	• 3.2.1 Control of Pollution Act (COPA)	4
	• 3.2.2 Environmental Protection Act (EPA)	5
	• 3.2.3 Health and Safety at Work etc. Act (HSWA)	6
	• 3.2.4 New Roads and Street Works Act (NRSWA)	6
	• 3.2.5 Traffic Management Act (TMA)	7
	• 3.3 Secondary legislation	7
	• 3.3.1 Confined Spaces Regulations (CSR)	7
	• 3.3.2 Construction (Design and Management) Regulations (CDM)	7
	• 3.3.3 Construction (Head Protection) Regulations (CHPR)	8
	• 3.3.4 Control of Noise at Work Regulations (CNWR)	8
	• 3.3.5 Control of Substances Hazardous to Health Regulations (COSHH)	8
	• 3.3.6 Electricity at Work Regulations (EWR)	8
	• 3.3.7 Lifting Operations and Lifting Equipment Regulations (LOLER)	9
	• 3.3.8 Management of Health and Safety at Work Regulations (MHSWR)	9
	• 3.3.9 Manual Handling Operations Regulations	9
	• 3.3.10 Personal Protective Equipment at Work Regulations	10
	• 3.3.11 Pipelines Safety Regulations (PSR)	10
	• 3.3.12 Pressure Systems Safety Regulations (PSSR)	10
	• 3.3.13 Provision and Use of Work Equipment Regulations (PUWER)	10
	• 3.3.14 Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)	11
	• 3.3.15 Supply of Machinery (Safety) Regulations (SMSR)	11
	• 3.4 European standards	11
4	Preparation of a safety plan	12
	• 4.1 Introduction	12
	• 4.2 Construction phase plan	12
	• 4.3 Information	13
	• 4.3.1 General	13
	• 4.3.2 Site survey	13
	• 4.4 Operational issues relevant to the preparation of a safety plan for all techniques	14
	• 4.4.1 General issues	14
	• 4.4.2 Ground conditions	15
	• 4.4.3 Underground obstructions	16
	• 4.4.4 Bore route plans	16
	• 4.4.5 Special engineering difficulties	16

	• 4.4.6 Water supply licence	17
5	Generic health, safety and environmental issues	18
	• 5.1 Emergency procedures	18
	• 5.1.1 General	18
	• 5.1.2 Fire precautions	18
	• 5.1.3 Procedures in the event of utility network strike	18
	• 5.1.4 Procedures in the event of flooding	19
	• 5.2 Workforce considerations	19
	• 5.2.1 Health	19
	• 5.2.2 Welfare	19
	• 5.2.3 Avoidance of accidents	20
	• 5.2.4 First aid	20
	• 5.2.5 General	20
	• 5.2.6 Site access	21
	• 5.2.7 Control of substances that may be hazardous to health	21
	• 5.2.8 Fuels and oils for the operation of powered plant	22
	• 5.2.9 Soil lubricants and stabilisers	23
	• 5.2.10 Polymers as drilling fluids and as an additive to bentonite	23
	• 5.2.11 Grouts and drilling fluid thinners	23
	• 5.2.12 Resins used in lining techniques	23
	• 5.2.13 Manual handling	24
	• 5.2.14 Noise	24
	• 5.2.15 Vibration	24
	• 5.2.16 Health surveillance	24
	• 5.3 Public safety	25
	• 5.3.1 General	25
	• 5.3.2 Equipment and materials	25
	• 5.4 Electrical safety	26
	• 5.4.1 Electrical cable strike safety system	26
	• 5.4.2 Explosion protection of electrical equipment	26
	• 5.4.3 Work on or with electrical equipment	26
	• 5.5 Lifting appliances and equipment	26
	• 5.6 Maintenance of plant, machinery and power tools	27
	• 5.6.1 General	27
	• 5.6.2 Equipment conformity	28
	• 5.6.3 Pneumatic and hydraulic equipment	28
	• 5.7 Gas monitoring	30
	• 5.8 Excavations and earthworks	31
	• 5.8.1 General	31
	• 5.8.2 Excavations	31
	• 5.9 Operations in confined spaces	33
	• 5.10 Protective clothing	33
6	Risk assessment	35
	• 6.1 Safe workplace, safe persons and safe systems of work	35
	• 6.1.1 General	35
	• 6.1.2 Safe workplace	35
	• 6.1.3 Safe persons	35
	• 6.1.4 Safe systems of work	36

7	Site operations	37
	• 7.1 Site operational plan	37
	• 7.1.1 General	37
	• 7.1.2 Location of buried services	37
	• 7.1.3 Use of laser survey equipment	38
	• 7.2 Site operational procedures	39
	• 7.2.1 Information, instruction, roles and responsibilities	39
	• 7.2.2 Health and safety	39
	• 7.3 Horizontal Directional Drilling (HDD)	41
	• 7.3.1 General	41
	• 7.3.2 Operational activities	43
	• 7.4 Impact moling	53
	• 7.4.1 General	53
	• 7.4.2 Operational activities	54
	• 7.5 Auger boring and rotary drilling	57
	• 7.5.1 General	57
	• 7.5.2 Operational activities	57
	• 7.6 Micro-tunnelling	58
	• 7.6.1 General	58
	• 7.6.2 Operational activities	58
	• 7.7 Pipe ramming and pipe jacking	59
	• 7.7.1 General	59
	• 7.7.2 Operational activities	60
	• 7.8 Pipe splitting and pipe bursting	61
	• 7.8.1 General	61
	• 7.8.2 Operational activities	62
	• 7.9 Refurbishment of pipes using lining techniques	66
	• 7.9.1 General	66
	• 7.9.2 Operational activities	67
	• 7.10 Internal pipe repair systems	70
	• 7.10.1 General	70
	• 7.10.2 Operational activities	70
8	Records and reporting	72
9	Training and accreditation	74
APPENDIX		
1	Glossary, acronyms, abbreviations and units	76
2	References	78
3	Reference organisations	82
4	Trenchless techniques, hazards and model risk assessment	84
5	Example of pre-moling checklist	89
6	Example of pre-bursting checklist	90
7	Permit to drill	91
8	High pressure cleaning	92

9	Pipe inspection	95
10	Blast cleaning operations	97

FIGURE

1	Illustration of pilot bore operation	49
2	Illustration of pullback operation	51
3	Impact moling	54
4	Auger boring	57
5	Installing pipes by micro-tunnelling	58
6	Installing pipes by pipe ramming	60
7	On-line pipe replacement by pipe bursting	62
8	Pipe lining – start of inversion	66
9	Pipe lining – completion of inversion	66
10	Sprayed internal pipe lining	70

TABLE

1	Recommended relationship between the product diameter and reamed diameter	50
2	Hazards from soil conditioners	85
3	Risk assessment for travelling to site	88

SECTION 1 : INTRODUCTION

- 1.1 IGE/SR/26, Communication 1662, entitled Horizontal Directional Drilling and Impact Molding, 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.