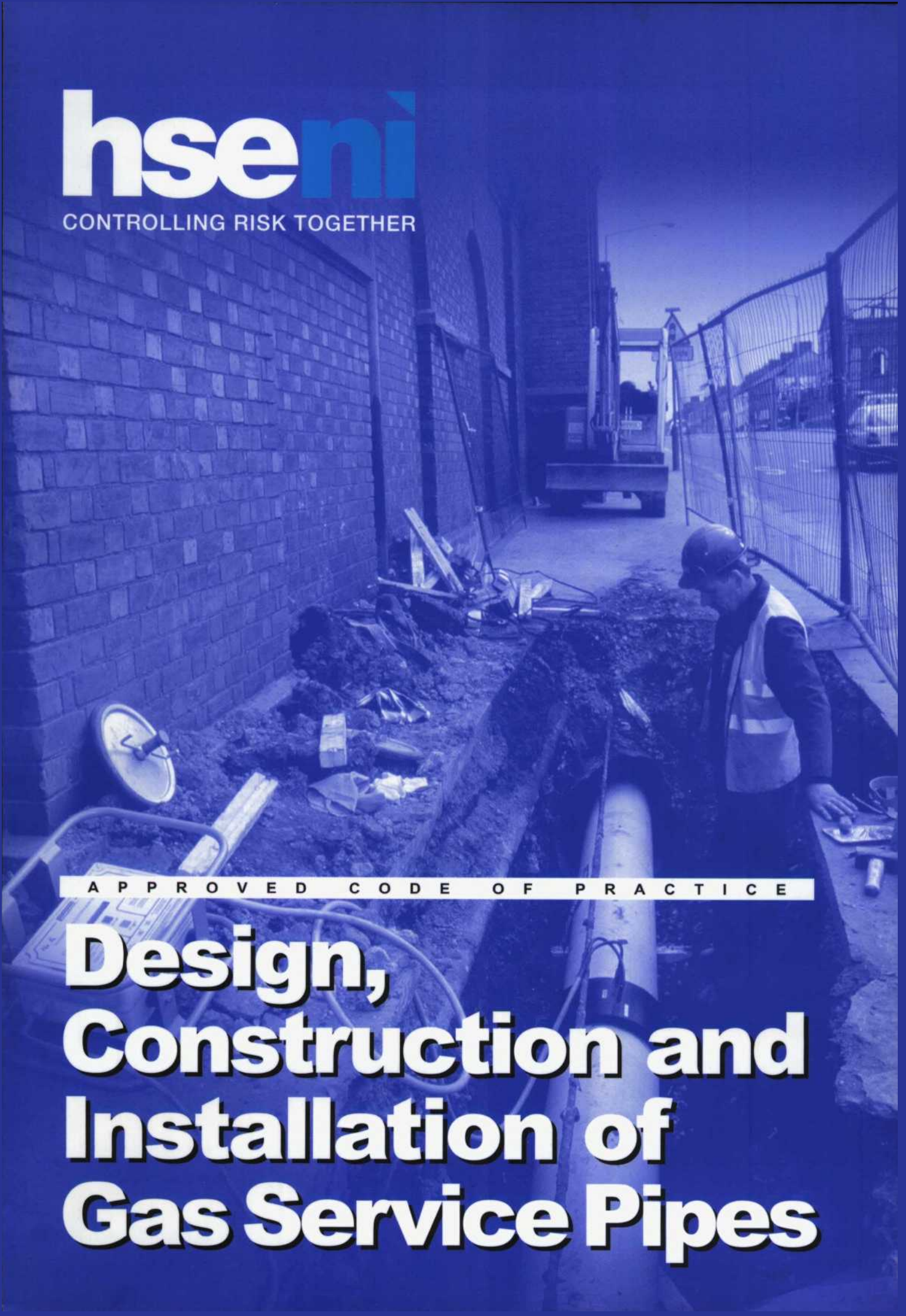


The logo for HSE NI, with 'hse' in white and 'ni' in blue, set against a blue background.

hse ni

CONTROLLING RISK TOGETHER

A blue-tinted photograph of a construction site. A worker in a hard hat and high-visibility vest is standing next to a trench where a large pipe is being installed. A brick wall is on the left, and a fence is on the right. An excavator is visible in the background.

A P P R O V E D C O D E O F P R A C T I C E

Design, Construction and Installation of Gas Service Pipes

The Health and Safety Agency for Northern Ireland was renamed the Health and Safety Executive for Northern Ireland; see the Health and Safety at Work (Amendment) Order (Northern Ireland) 1998 S.I. 1998/2795 NI. 18), Article 3(1). Under that Order, many of the functions of the Department of Enterprise, Trade and Investment (formerly the Department of Economic Development) are now carried out by the Executive.

Design, construction and installation of gas service pipes

Pipelines Safety Regulations (Northern Ireland) 1997

Approved Code of Practice and Guidance

© Crown copyright 1999

*Applications for reproduction should be made to The Stationery Office Ltd.
First published 1999*

General enquiries regarding this publication should be addressed to:

Health and Safety Executive for Northern Ireland,
83 Ladas Drive,
Belfast,
BT6 9FR.

Tel: 028 90 243249

Fax: 028 90 235383

This Code of Practice is based very closely on the Approved Code of Practice issued by the Health and Safety Commission in Great Britain, whose assistance is gratefully acknowledged.

Contents

	Page
Notice of Approval	iv
Introduction	1
PART I	
Introduction	1
Regulation 1	Citation and commencement 1
Regulation 2	Interpretation 2
Regulation 3	Meaning of "pipeline" 2
Regulation 4	Application 7
PART II	
General	7
Regulation 5	Design of a pipeline 7
Regulation 6	Safety systems 8
Regulation 7	Access for examination and maintenance 9
Regulation 8	Materials 9
Regulation 9	Construction and installation 9
Regulation 10	Work on a pipeline 11
Regulation 11	Operation of a pipeline 11
Regulation 12	Arrangements for incidents and emergencies 11
Regulation 13	Maintenance 12
Regulation 14	Decommissioning 12
Regulation 15	Damage to pipeline 12
Regulation 16	Prevention of damage to pipelines 12
Regulation 17	Co-operation 12
Appendix 1	Information on training and qualifications 13
Appendix 2	Summary of legislation 15
Appendix 3	List of related ACoP's, guidance and technical standards etc. 17

Notice of Approval

By virtue of Article 18(1) of the Health and Safety at Work (Northern Ireland) Order 1978 and after consultation in accordance with Article 18(2) of that Order the Health and Safety Agency for Northern Ireland* on 15th April 1997, with the consent of the Department of Economic Development, approved the Code of Practice entitled *Design, construction and installation of gas service pipes*.

The Code of Practice gives practical guidance with respect to the Pipelines Safety Regulations (Northern Ireland) 1997 (S.R. 1997 No. 193), with regard to operational and technical practices in the safe design, construction/installation, operation, maintenance and decommissioning of natural gas service pipes, intended to operate up to a maximum pressure of 7 bar gauge.

Although failure to observe any provision of this Code is not in itself an offence, that failure may be taken by a Court of Law in criminal proceedings as proof that a person has contravened the regulation to which the provision relates. In such a case, however, it will be open to that person to satisfy the Court that he has complied with the regulation in some other way.

The Code of Practice comes into effect on 15 October 1999.

* On 1st April 1999 the Health and Safety Agency for Northern Ireland was renamed the Health and Safety Executive for Northern Ireland.

Introduction

1. Each relevant regulation of the Pipelines Safety Regulations (Northern Ireland) 1997 (S.R. 1997 No. 193) is reproduced, followed by the ACoP which the Health and Safety Agency for Northern Ireland approved under Article 18(1) of the Health and Safety at Work (Northern Ireland) Order 1978 and other guidance on compliance. On 1st April 1999 the Health and Safety Agency for Northern Ireland was renamed the Health and Safety Executive for Northern Ireland. The guidance is set in terms of broad principles. All legislation referred to in this ACoP is published separately.
2. For convenience, the text of the Regulations is included in *italic* type, with the accompanying guidance in normal type and the ACoP in **bold** type.
3. Reference in this Code of Practice to another document does not imply approval by the Health and Safety Executive for Northern Ireland ("the Executive") of that document except to the extent necessary to give effect to this Code of Practice.
4. Words and expressions which are defined in the Health and Safety at Work (Northern Ireland) Order 1978 and the Management of Health and Safety at Work Regulations (Northern Ireland) 1992, have the same meaning in this Code of Practice unless the context requires otherwise. Any reference to standards is a reference to any of the following which are current at the time of the work activity:
 - (a) a British Standard;
 - (b) a relevant standard or code of practice of a national standards body of any member state of the European Union (EU);
 - (c) any relevant international standard recognised for use as a standard in any member state of the EU;
 - (d) a relevant technical specification acknowledged for use as a standard by a public authority of any member state of the EU;
 - (e) traditional procedures of manufacture of a member state of the EU where these are the subject of a written technical description sufficiently detailed to permit assessment of the goods or materials for the use specified;
 - (f) a specification sufficiently detailed to permit assessment for goods or materials of an innovative nature (or subject to innovative processes of manufacture such that they cannot comply with a recognised standard or specification) and which will fill the purpose provided by the specified standard, provided that the proposed standard, code of practice, technical specification or procedure of manufacture provides, in use, equivalent levels of safety, suitability and fitness for purpose to those achieved by the standard to which it is expressed to be equivalent.

Scope

5. The ACoP applies to all service pipe installations with a maximum operating pressure of up to 7 bar gauge which connect to a natural gas distribution main operated by a gas conveyor. Installations will vary in size and relative complexity from small diameter, owner-installed polyethylene services to large diameter steel services, installed by contractors. Services may operate at pressures up to 7 bar and cover a range of diameters and materials. Service pipe installation designers should give due consideration to the operating pressure and required gas flow when applying this ACoP.

Figure 1 (on pages 3-5) illustrates some typical installations.

Part I

Regulation 1

Introduction

Citation and commencement

These Regulations may be cited as the Pipelines Safety Regulations (Northern Ireland) 1997 and shall come into operation on 12th May 1997.

Regulation 2

interpretation

In these Regulations-

"dangerous fluid" has the meaning given by regulation 18(2);

"emergency shut-down valve" means a valve which is capable of adequately blocking the flow of fluid within the pipeline at the point at which it is incorporated;

"the Executive" means the Health and Safety Executive for Northern Ireland;

"fluid" includes a mixture of fluids;

"major accident" means death or serious injury involving a dangerous fluid;

"major accident hazard pipeline" has the meaning given by regulation 18(1);

"operator", in relation to a pipeline, means-

- (a) the person who is to have or (once fluid is conveyed) has control over the conveyance of fluid in the pipeline;*
- (b) until that person is known (should there be a case where at a material time he is not yet known) the person who is to commission or (where commissioning has started) commissions the design and construction of the pipeline;*
- (c) when a pipeline is no longer, or is not for the time being, used, the person last having control over the conveyance of fluid in it;*

"pipeline" shall be construed in accordance with regulation 3;

"territorial waters" has the same meaning as in regulation 2(1) of the Offshore Installations and Pipeline Works (Management and Administration) Regulations (Northern Ireland) 1995(a).

Regulation 3

Meaning of "pipeline"

(1) Subject to the provisions of this regulation, in these Regulations "pipeline" means a pipe or system of pipes (together with any apparatus and works, of a kind described in paragraph (2), associated with it) for the conveyance of any fluid, not being-

- (a) a drain or sewer;*
- (b) a pipe or system of pipes constituting or comprised in apparatus for heating or cooling or for domestic purposes;*
- (c) a pipe (not being apparatus described in paragraph (2)(e)) which is used in the control or monitoring of any plant.*

(2) The apparatus and works referred to in paragraph (1) are-

- (a) any apparatus for inducing or facilitating the flow of any fluid through, or through a part of, the pipe or system;*
- (b) any apparatus for treating or cooling any fluid which is to flow through, or through a part of, the pipe or system;*

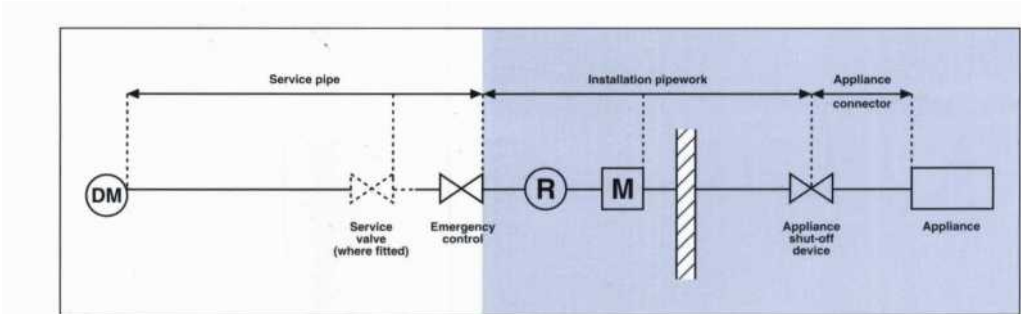
(a) S.R. 1995 No. 340 to which there are amendments not relevant to these Regulations

Figure 1

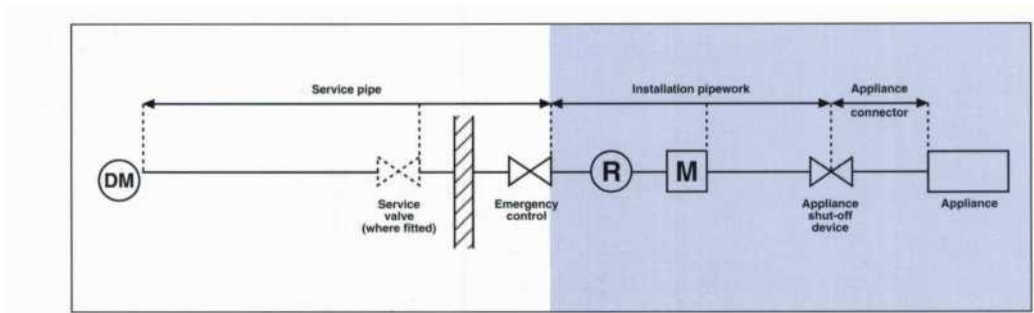
Typical installations

Note: These simplified installation diagrams are only intended for use as an aid to identify and indicate the relative positions of components described in the Gas Safety (Installation and Use) Regulations (Northern Ireland) 1997 (shaded right-hand part of diagrams) and the Pipelines Safety Regulations (Northern Ireland) 1997 (left-hand part).

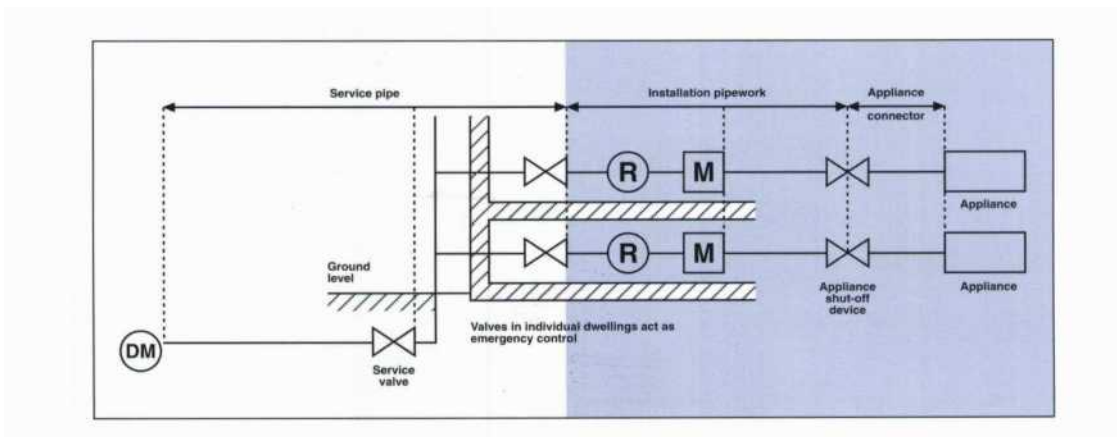
(a) Outside Meter installation



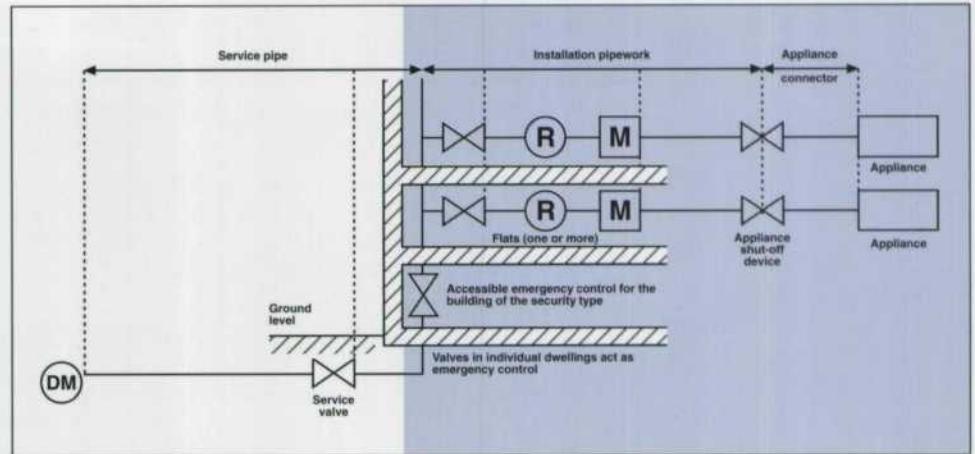
(b) Inside Meter installation



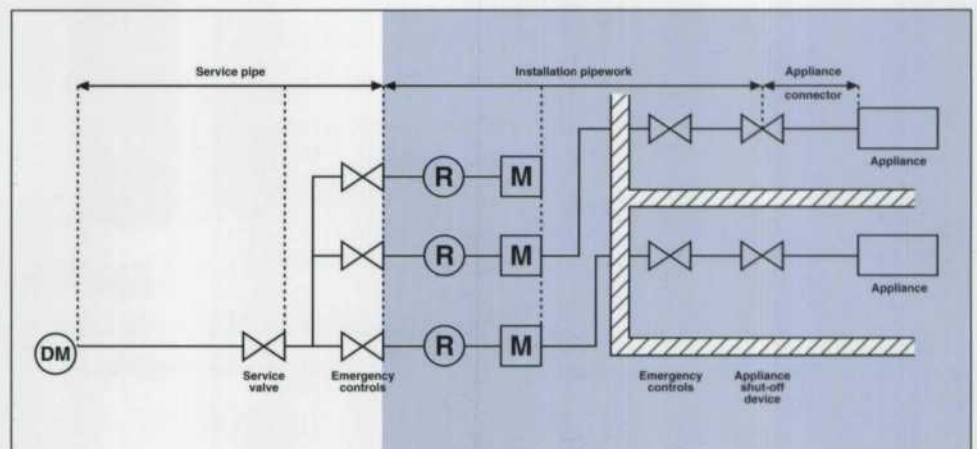
(c)(i) Multi-occupancy installation - external riser



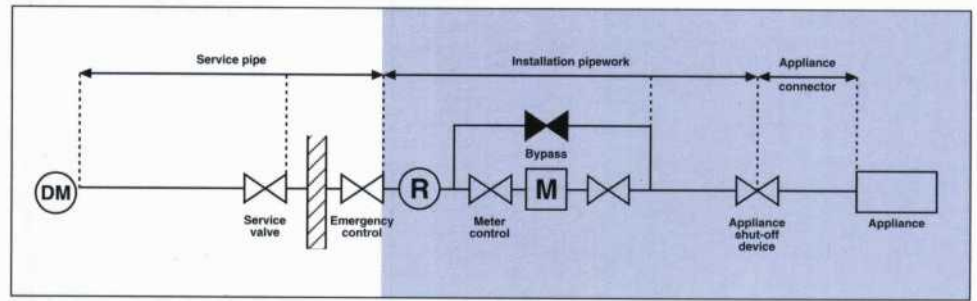
(c)(ii) Multi-occupancy installation - internal riser



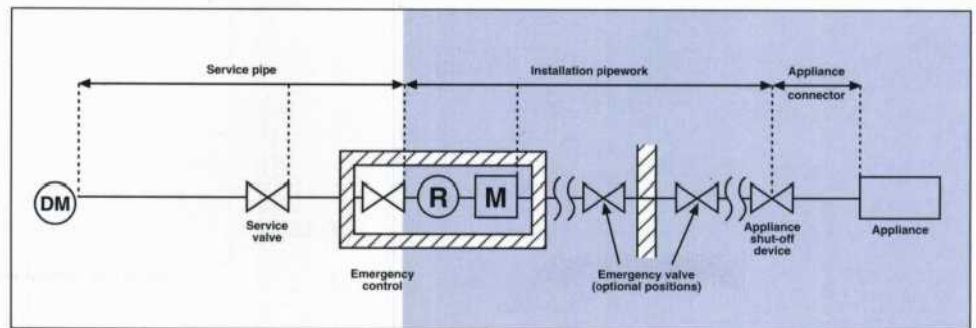
(d) Multi-occupancy installation - remote meters



(e) Meter with bypass, e.g. industrial/commercial



(f) Meter remote from premises, e.g. meter houses



- R Regulator
- M Meter
- DM Distribution main

- (c) *valves, valve chambers and similar works which are annexed to, or incorporated in the course of, the pipe or system;*
- (d) *apparatus for supplying energy for the operation of any such apparatus or works as are mentioned in sub-paragraphs (a) to (c);*
- (e) *apparatus for the transmission of information for the operation of the pipe or system;*
- (f) *apparatus for the cathodic protection of the pipe or system; and*
- (g) *a structure used or to be used solely for the support of a part of the pipe or system.*

(3) For the purpose of paragraph (2)(c) a valve, valve chamber or similar work shall be deemed to be annexed to, or incorporated in the course of, a pipe or system where it connects the pipe or system to plant, an offshore installation or a well.

(4) A pipeline for supplying gas to premises shall be deemed not to include anything downstream of an emergency control.

(5) In this regulation-

"emergency control" means a valve for shutting off the supply of gas in an emergency, being a valve intended for use by a consumer of gas;

"gas" has the same meaning as it has in Part 111 of the Gas (Northern Ireland) Order 1996(a).

Guidance

6. The term "gas conveyor" is not defined in the Regulations. In this ACoP it means a person authorised to convey gas by a licence granted under Article 8, or by an exemption granted under Article 7, of the Gas (Northern Ireland) Order 1996.

7. "Distribution main" means any main through which a supplier or conveyor is for the time being distributing gas and which is not being used only for conveying gas in bulk.

8. "Installation pipework" means any pipework for conveying gas for a particular consumer and any associated valve or other gas fitting. Installation pipework is not covered by these Regulations.

9. "Service pipe" means a pipe for supplying gas to premises from a distribution main, being any pipe between the distribution main and the outlet of the first emergency control downstream from the distribution main.

10. "Service valve" means a valve (other than an emergency control) for controlling a supply of gas, being a valve:

- a) incorporated in a service pipe; and
- b) intended for use by a supplier or conveyor of gas; and
- c) not situated inside a building.

Regulation 4

Application

(1) Subject to paragraph (2), within territorial waters these Regulations shall apply to and in relation to pipelines and activities to which the Offshore Installations and Pipeline Works (Management and Administration) Regulations (Northern Ireland) 1995 apply by virtue of regulation 4(1)(f) of those Regulations.

(2) These Regulations shall not apply to any pipeline or part of a pipeline of a kind which is described in Schedule 1.

(3) In the case of a pipeline to which the Pressure Systems and Transportable Gas Containers Regulations (Northern Ireland) 1991(a) apply, nothing in these Regulations shall require the taking of any measures to the extent that they are for the prevention of danger within the meaning of those Regulations.

Part II

General

Regulation 5

Design of a pipeline

The operator shall ensure that a fluid is not conveyed in the pipeline unless the pipeline has been so designed that, so far as is reasonably practicable, it can withstand-

(a) forces arising from the pipeline's operation;

(b) the fluids that may be conveyed in the pipeline; and

(c) the external forces and chemical processes to which the pipeline may be subjected.

ACOP

Guidance

11. Each service pipe should be designed to convey natural gas safely from the gas distribution main to the main outlet of the emergency control which is immediately upstream of the installation pipework, and in such a way that it is least likely to be affected by third party interference or subject to accidental damage.

12. Each gas conveyor should have conditions and procedures in place for agreeing the design of new service pipes to allow for their safe installation and subsequent addition to his specific network.

13. Technical guidance in the form of recommendations from the institution of Gas Engineers offers standards recognised across the industry, and is published as IGE/TD/4: 1994 Edition 3: *Gas services* and IGE/TD/3: 1992 Edition 3: *Distribution mains*. A site design plan should be prepared by the service pipe installation designer for each service pipe installation and contain as much detail as is required to enable the service pipe installer/contractor to undertake and complete the work safely.

14. Design details should be provided to the gas conveyor responsible for the gas distribution system to which the service pipe will be connected.

15. The amount of detail required is likely to vary at different networks according to local conditions but may include the following:

- a design layout showing the planned location of the connection to the gas distribution main, or other gas service pipe;
- the planned route of the service pipe installation to the premises, including the location of the emergency control, clearly showing the position of the proposed service pipe installation in relation to the foundations of the premises, and that of any void areas;

(a) S.R. 1991 No. 471 to which there are amendments not relevant to these Regulations

- the specification of materials and fittings to be used for the service pipe installation including reference to the relevant standards;
- the planned depth of the gas service pipe installation, including back-fill and support details;
- the specification for any protective sleeving for that section of the service pipe installation which will be placed above ground;
- details and location of other services identified along the route of the proposed service pipe installation, including details of formerly abandoned gas service pipe installations, along with details of any pipe marking arrangements. Advice with regard to identification of ownership of existing apparatus may be obtained from the Department of the Environment;
- qualification and competence requirements for those people to be employed on the installation.

16. Service pipes should be routed so as to minimise the possibility of third party damage. Consideration should be given to the route, the depth of cover, the pipe material and any additional protective measures (such as protective concrete slabs). The route selected should be the shortest route possible, in so far as is reasonably practicable. The service pipe should normally be laid at a minimum depth of 375 mm in private ground and 450 mm in footpaths and highways. Where a lesser depth is proposed, additional protection against third party damage should be considered.

17. The service pipe installation designer should give due regard to any possibility of the accidental connection of service pipes operating at different pressures or to those not conveying natural gas.

18. With regard to the location of other services generally, the service pipe installation designer should have an understanding of the protocols established by the National Joint Utilities Group (NJUG). Details of the current series are listed in Appendix 3, copies of which are available from NJUG Secretariat.

19. The service pipe installation designer should be able to demonstrate competence to undertake each specific assignment, underpinned by a knowledge of relevant legislation, and appropriate technical standards.

20. The service pipe installation designer should be aware of the responsibilities under the Construction (Design and Management) Regulations (Northern Ireland) 1995. Brief details are contained in Appendix 2.

21. The service pipe installation designer and the service pipe installer/contractor should have an understanding of the Street Works (Northern Ireland) Order 1995, and their respective responsibilities under it, particularly in relation to information required by the Department of the Environment as part of the licence application. A brief outline is contained in Appendix 2.

22. Possession of a recognised vocational qualification, coupled with relevant practical experience, would offer a good indication of the competence of an individual service pipe installation designer or installer/contractor. Details of recognised vocational qualifications are listed in Appendix 1.

Regulations 6

Safety systems

The operator shall ensure that a fluid is not conveyed in a pipeline unless the pipeline has been provided with such safety systems as are necessary for securing that, so far as is reasonably practicable, persons are protected from risk to their health or safety.

ACOP

Guidance

23. **Each service pipe should be provided with an appropriately sited emergency control.**
24. The emergency control should be installed in a readily accessible place; if it is situated in a locked compartment, the occupier of the premises and the system operator/supplier should each be provided with keys. For services supplying more than one primary meter it may be necessary to install an additional isolation valve in the service pipe (e.g. for multi-occupancy premises).
25. Responsibility for, and access to, this additional valve should be made clear.
26. The position and status of the primary meter is defined in the Gas Safety (Installation and Use) Regulations (Northern Ireland) 1997. Detailed guidance is contained in the Approved Code of Practice *Safety in the installation and use of gas systems and appliances*.

Regulation 7

Access for examination and maintenance

The operator shall ensure that a fluid is not conveyed in a pipeline unless the pipeline has been so designed that, so far as is reasonably practicable, it may be examined and work of maintenance may be carried out safely.

Guidance

27. The service pipe installation designer, in drawing up plans, should design systems that maintain appropriate distances between services and plant. Detailed guidance on service laying good practice is contained in recommendations published by the Institution of Gas Engineers as IGE/TD/4: 1994 Edition 3. Practical guidance on appropriate distances between services operating adjacently is contained in the NJUG publication No. 7 *Recommended positioning of utilities mains and plant for new works*.

Regulation 8

Materials

The operator shall ensure that a fluid is not conveyed in a pipeline unless the pipeline is composed of materials which are suitable.

ACOP

Guidance

28. **The design plan for the service pipe installation should detail those materials and fittings to be used in its construction, including reference to the appropriate technical standards, required to permit its subsequent safe operation.**
29. The design plan will normally be in accordance with the requirements of the relevant gas conveyer.

Regulation 9

Construction and installation

The operator shall ensure that a fluid is not conveyed in a pipeline (save for the purpose of testing it) unless the pipeline has been so constructed and installed that, so far as is reasonably practicable, it is sound and fit for the purpose for which it has been designed.

ACOP

Guidance

30. **The service pipe should be installed as detailed on the design plan. Where any variation in route or modification in design is proposed, it should be in line with the overall standards and specification agreed at the design stage and, once the installation is completed, the plan should be annotated and dated accordingly.**
31. The installer/contractor should consider the benefits of drawing up a plan of work which might detail:
 - how the work would be tackled, including details of site safety arrangements;

- the arrangements for effecting / agreeing changes to the original design;
 - quality control aspects, including checking materials and parts for fitness for purpose, prior to installation and fitting;
 - arrangement for pre-acceptance checks and pressure tests, including liaison arrangements with the relevant gas conveyor;
 - the system of work for connecting into the service pipe to the appropriate distribution main or other appropriate service pipe installation, including any modification/authorisation requirements of the gas conveyor;
 - the arrangements for lodging design details with the gas conveyor on completion of the installation.
32. The relevant gas conveyor should be given advance notice of the proposed date for the installation to be connected to the gas distribution main to enable inspection to be arranged.
 33. The service pipe installer / contractor has the responsibility for establishing the competence of all workers to be employed on the installation of gas service pipes, and that they have the up-to-date skills and recognised competencies to undertake safely all tasks allocated to them. The service pipe installer/contractor should maintain an adequate record of the competence levels of workers to be employed on the installation, including details of qualifications held and the range of work on the installation that they may be assigned to. Similar arrangements apply to a self-employed worker.
 34. Appendix 1 shows details of recognised vocational qualifications.
 35. Workers who have undergone training in the GD series of qualifications, organised by the Construction Industry Training Board (CITB) in Great Britain, will be issued with registration certificates, bearing recent photographs of individual workers, and recording their respective level of achievement, which will clearly point to those aspects of the work on which they have been assessed. CITB maintains a central record of all current certificates, enabling details to be verified by contractors. It is also able to replace lost certificates on production of satisfactory evidence.
 36. It should be recognised that qualifications are only one indication of competence and that relevant practical experience is also a factor that needs to be considered when assessing an individual worker's ability to do specific tasks.
 37. Installers/contractors who employ others should consider looking at ways of encouraging workers to build up their respective skillbases, through a mixture of directed on-the-job training and encouragement and incentive to attend off-the-job training courses.
 38. Knowledge and general awareness of the relevant legislation and Regulations affecting this area of work is of fundamental importance, as is a practical knowledge of appropriate technical guidance and standards. A summary of some of the key pieces of legislation is contained in Appendix 2. A list of technical guidance is shown in Appendix 3.
 39. The service pipe installer/contractor should be aware of the other services laid alongside the service pipe installation, and know how to excavate the area accordingly.
 40. The National Joint Utilities Group (NJUG), representing the gas, electricity, telecommunications and water industries, has agreed protocols on co-operation and the sharing of information, including the production of guidance documents. Current guidance material is listed in Appendix 3.

41. Practical guidance on avoiding danger from underground services is contained in the Great Britain Health and Safety Executive publication HS (G) 47.

Regulation 10

Work on a pipeline

The operator shall ensure that modification, maintenance or other work on a pipeline is carried out in such a way that the pipeline's soundness and fitness for the purpose for which it has been designed will not be prejudiced.

42. Repairs to gas service pipe installations will be the relevant gas conveyor's responsibility. Where a subsequent modification is proposed to an installed service pipe, the original design plan of each service pipe installation, where available, should be obtained and followed, and where any modification is proposed to the original specification, the design plan should be amended to reflect all agreed changes. The responsibility for holding and retaining such details will rest with the relevant gas conveyor.

43. Additional care needs to be taken when undertaking work on any 'live' service pipe installation, where it is essential that before any work commences, all meters supplied by the service are identified and the consequences of shutting off the supply to end users should be considered. This is particularly important with regard to multi-occupancy premises where additional emergency controls may have been installed covering the whole building or sections of it.

44. Where any work on the service pipe installation requires disconnection, the interruption of supply should be prearranged with all end-users of the service pipe installation. Care should be taken to maintain electrical continuity when disconnecting a gas service pipe installation, perhaps by using a continuity bond. Prior to re-connection of the same service, it should be pressure tested in accordance with the appropriate standards to ensure that it is still fit for purpose.

45. Before recommissioning, all service pipe installations should be purged. Recommissioning should be undertaken in accordance with the Gas Safety (Installation and Use) Regulations (Northern Ireland) 1997.

Regulation 11

Operation of a pipeline

The operator shall ensure that

- (a) *a fluid is not conveyed in a pipeline unless the safe operating limits of the pipeline have been established; and*
- (b) *a pipeline is not operated beyond its safe operating limits,*

save for the purpose of testing it.

Regulation 12

Arrangements for incidents and emergencies

The operator shall ensure that a fluid is not conveyed in a pipeline unless adequate arrangements have been made for dealing with-

- (a) *an accidental loss of fluid from the pipeline;*
- (b) *discovery of a defect in or damage to the pipeline; or*
- (c) *any other emergency affecting the pipeline.*

Regulation 13

Maintenance

The operator shall ensure that a pipeline is maintained in an efficient state, in efficient working order and in good repair.

46. On-going maintenance of gas service pipe installations, once accepted by the gas conveyor, becomes that conveyor's responsibility, and appropriate arrangements should be made to carry out that responsibility.

Guidance

Regulation 14

Decommissioning

(1) The operator shall ensure that a pipeline which has ceased to be used for the conveyance of any fluid is left in a safe condition.

(2) The operator of a pipeline shall ensure that work done in discharge of the duty contained in paragraph (1) is performed safely.

ACOP

47. The gas conveyor should always seal off the redundant service pipe installation to render it safe, and consider removal, wherever practicable. The gas conveyor should consider the need to maintain records of those sections of the service pipe network that he has decommissioned, including details of action taken.

Regulation 15

Damage to pipeline

A person shall not cause such damage to a pipeline as may give rise to a danger to persons.

Guidance

48. Actions arising from third party interference are the main cause of damage to pipelines leading to loss of containment. In many cases the damage to a pipeline by a third party is accidental; it is important that such damage is always reported to the relevant gas conveyor. It should be recognised that the effects of damage are not always immediate and that what may appear insignificant could give rise to a dangerous occurrence.

Regulation 16

Prevention of damage to pipelines

For the purpose of ensuring that no damage is caused to a pipeline, the operator shall take such steps to inform persons of its existence and whereabouts as are reasonable.

ACOP

49. Gas conveyors should make available, on request, clear details of the existence and location of relevant service pipe installations, which they hold records of, to other service operators.

Guidance

50. The gas conveyor should consider the circumstances under which individual customers might need to be made aware of the general location of service pipes and the implications that existence of the same might have for safety and individual responsibility.

Regulation 17

Co-operation

Where there are different operators for different parts of a pipeline, each operator shall co-operate with the other so far as is necessary to enable the operators to comply with the requirements of these Regulations.

information on training and qualifications

(Note: this appendix does not form part of the Code.)

1. Training courses in gas work are offered and undertaken by the industry itself, with off-the-job courses for mains gas, offered through Colleges of Further Education (CFE's) and other training providers. Details of what is available in any particular locality may be obtained from individual CFE's, local offices and training centres of the Training and Employment Agency, and Education and Library Boards. Training arrangements may vary from area to area, and will depend on local requirements and demands, however they will usually offer a balanced programme of on-the-job training, linked to day release/block release. Evening classes may also be available. It is important that whichever training package is selected it meets essential requirements. Formal vocational qualifications are a feature of all courses on offer, many of which have now become National Vocational Qualifications (NVQ's).
2. Not all courses are aimed at new entrants to the industry. Short refresher and updating courses are often available. They are particularly useful for those workers who have lots of practical experience, but no formal qualification, possession of which is likely to facilitate their movement across the industry. Courses designed at updating skills are also available, enabling employers and their employees to keep up to date on technological advances, including the introduction of new and improved standards.
3. Further information can be obtained from:
National Council for Vocational Qualifications (NCVQ)
Construction Employers Federation
Council for the Registration of Gas Installers (CORGI)
Construction Industry Training Board (CITB)
Institution of Gas Engineers (IGE)

Vocational qualifications available

Gas distribution operatives record scheme

4. The scheme is administered by the Construction Industry Training Board (CITB), and offered at several approved training centres in Great Britain. CITB can provide details of this training and would consider providing training in Northern Ireland if there is sufficient demand.
5. The scheme applies to all operatives who are employed under the Working Agreement of the Civil Engineering Construction Conciliation Board, and who are involved at any time in installation, maintenance and repair work within the gas distribution sector.
6. The training courses have been developed to supplement on-the-job training and are designed to enable operatives to work safely and competently. The progressive nature of the scheme allows all operatives in the sector the opportunity to progress through the training programme to qualify as team leaders in either service-laying or mains-laying (or both).
7. The training programme envisages an induction phase for all new entrants to the sector followed by a series of separate training courses, each certificated on successful completion, spread over a period of time dependent on the progress of the individual operative and the needs of the job. The service-laying route consists of GD1, GD2 and GD4; the mains-laying route consists of GD1, GD2, GD3 and GD5.

8. CITB also offers a series of short training courses to support the requirements of the Street Works (Northern Ireland) Order 1995 (S.I. 1995/3210 (N.I. 19)) (the Street Works Order). The Roadman Training Centre at Caulside, Antrim is an accredited training centre under the Street Works Order. The Centre, which is operated by the Department of the Environment for Northern Ireland, has been approved by the City and Guilds to offer training units through which both supervisors and operatives may achieve the qualifications which will be required by the Street Works (Qualifications of Supervisors and Operatives) Regulations (Northern Ireland) 1998 (S.R. 1998 No. 20). Further information on the training requirements of the Street Works Order may be obtained by contacting the Roadman Training Centre on 01849 461138.

9. A booklet containing outline details of each of the training courses, including course content, costs and booking arrangements can be obtained from:
Construction Industry Training Board

17 Dundrod Road
Crumlin
Co. Antrim
BT29 4SR
Tel: 028 90 825466

10. General scheme information can be obtained from:

Civil Engineering Contractors Association
Construction House
56-64 Leonard Street
London
EC2A 4JX
Tel: 0207 608 5060
Fax: 0207 608 5061

NVQ Level 3: public utilities distribution (natural gas)

11. The qualification is comprised of eight compulsory units covering:

- planning distribution systems to meet customer needs;
- preparing and maintaining the site;
- excavating and reinstating the site;
- installing and testing the components of the gas distribution systems;
- commissioning/decommissioning gas distribution systems;
- monitoring/maintaining a safe working environment;
- establishing and maintaining effective working relationships;
- contributing to work organisations and quality development of products and services.

A further unit is optional and not essential to the award of the qualification.

Summary of legislation

(Note: this appendix does not form part of the Code.)

Health and Safety Legislation

Health and Safety at Work (Northern Ireland) Order 1978

1. This order applies to everyone concerned with work activities, ranging from employers, self-employed, and employees, to manufacturers, designers, suppliers and importers of materials for use at work, and people in control of premises. It also includes provisions to protect members of the public. The duties apply both to individual people and to corporations, companies, partnerships, district councils, nationalised industries etc. The duties are expressed in general terms, so that they apply to all types of work activity and work situations. Every employer has a duty to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his or her employees. The principles of safety responsibility and safe working are expressed in Articles 4-10. Employers and the self-employed are required to carry out their undertakings in such a way as to ensure, so far as is reasonably practicable, that they do not expose people who are not their employees to risks to their health and safety, expressed in Article 5(1) and (2). In some areas the general duties have been supplemented by specific requirements laid down in Regulations made under the Order and Regulations containing specific requirements will continue to be made. Specific legal requirements are also laid down in earlier legislation which is still in operation. Failure to comply with either the general requirements of the Order, or the specific requirements found elsewhere, may result in legal proceedings.

2. Although some of the duties imposed by the Order and related legislation are absolute, many are qualified by the words "so far as is practicable" or "so far as is reasonably practicable". If someone is prosecuted for failing to comply with a duty which is qualified by these words, it is up to the accused to show the court that it was not practicable, or reasonably practicable, as appropriate, for him to do more than he had done to comply with the duty.

3. The judgement of what is reasonably practicable means weighing up the seriousness of a risk against the difficulty and cost of removing it.

4. Where the difficulty and cost are high and a careful assessment of the risk shows it to be insignificant, it may be that the action is not necessary although in some cases there are things that have to be done at all costs. No allowance is made for size, nature or profitability of the business.

5. Articles 23-25 provide for improvement and prohibition notices to be issued; Article 31 provides for prosecution and penalties; Article 17 provides for Regulations to be made; Articles 18 and 19 provide for Codes of Practice to be approved, and for their use in criminal proceedings.

Management of Health and Safety at Work Regulations (Northern Ireland) 1992

6. The central feature of these Regulations is the duty which is imposed on employers and self-employed persons to make a suitable and sufficient assessment of the risks to the health and safety of their employees, and non-employees affected by their work. The Regulations also provide that there must be effective planning and review of protective measures, health surveillance, emergency procedures, information and training.

Gas Safety (Management) Regulations (Northern Ireland) 1997

7. These Regulations deal with the safe management of gas, whether in a single system or a network of connected systems. The Regulations make it unlawful for gas to be conveyed in a system or network without a safety case being prepared by the gas conveyor and then accepted by the Executive.

Reporting of Injuries, Diseases and Dangerous Occurrences (Northern Ireland) Regulations 1997

8. These Regulations require employers to notify certain occupational injuries, diseases and dangerous events. Certain gas incidents are reportable by suppliers of gas through fixed pipe distribution systems.

Construction (Design and Management) Regulations (Northern Ireland) 1995

9. These Regulations place duties on clients, designers, planners, supervisors and contractors to take health and safety matters into account and manage them effectively from the planning stages of a construction project through commission and beyond.

Gas Safety (Installation and Use) Regulations (Northern Ireland) 1997

10. These Regulations deal with the installation, maintenance and use of gas systems and appliances in domestic and commercial premises. They place a ban on the domestic storage of natural gas (except in commercially filled cylinders) until appropriate standards and compliance mechanisms are developed. They are also concerned with carbon monoxide (CO) poisoning from poorly installed and/or maintained gas appliances and flues.

Pressure Systems and Transportable Gas Containers Regulations (Northern Ireland) 1991

11. These Regulations apply to those pipelines which constitute a pressure system where the operating pressure is greater than 2 bar gauge.

Other legislation

Gas (Northern Ireland) Order 1996

12. This Order contains licensing arrangements for gas conveyors and suppliers and provides for the establishment of a natural gas supply industry.

Street Works (Northern Ireland) Order 1995

13. This Order makes utilities and other undertakers of works in streets more accountable for their works and requires better standards of reinstatement following the completion of street works. It also aims to reduce the amount of disruption to road users by imposing duties of co-ordination and co-operation between undertakers themselves and also with street authorities. A Street Works Register, to be introduced and maintained by the Department of the Environment for Northern Ireland, will be central in recording and co-ordinating planned street works.

Appendix 3

List of related ACoP's, guidance and technical standards etc.

(Note: this appendix does not form part of the Code.)

Health and Safety Executive for Northern Ireland (HSENI) Approved Codes of Practice

Safety in the Installation and Use of Gas Systems and Appliances 75 HSA 95 The Stationery Office ISBN 0 337 09421 7

Standards of Training in Safe Gas Installation 76 HSA 95 The Stationery Office ISBN 0 337 09420 9

Managing Construction for Health and Safety in Northern Ireland 79 HSA 96 The Stationery Office ISBN 0 337 11232 0

Guidance from the Health and Safety Executive (HSE)

Avoiding danger from underground services HS (G) 47 HSE Books

British Gas guidance

Precautions to be taken when carrying out work in the vicinity of underground gas pipes.

Institution of Gas Engineers (IGE) recommendations

IGE/TD/3: 1992	Edition 3: <i>Distribution mains</i>
IGE/TD/4: 1994	Edition 3: <i>Gas services</i>
IGE/TD/5: 1992	<i>Transport, handling and storage of polyethylene pipes and fittings</i>
IGE/TD/6: 1989	<i>Transport, handling and storage of steel pipe, valves and fittings</i>
IGE/TD/10: 1986	<i>Pressure regulating installations for inlet pressures between 75 mbar and 7 bar</i>
IGE/S.R./10: 1994	<i>Procedures for dealing with escapes of gas into underground plant</i>
IGE/S.R./13: 1993	<i>Use of breathing apparatus in gas transmission and distribution</i>
IGE/S.R./18: 1990	<i>Safe working in the vicinity of gas pipelines, mains and associated installations</i>
Part 1: 1990	<i>Operating at pressures of 2 bar</i>
Part 2: 1994	<i>Operating at pressures not exceeding 2 bar (in easements, the countryside or a public highway) and pressures exceeding 2 bar (in a public highway)</i>
IGE/S.R./19: 1990	<i>External joint repairs in gas distribution systems</i>
IGE/S.R./20: 1998	<i>Recommendations for dealing with reported gas escapes</i>
IGE/S.R./22: 1996	<i>Purging operations for fuel gases in transmission, distribution and storage</i>
IGE/S.R./23: 1996	<i>Venting of natural gas</i>

British Standards Institution (BSI) - technical standards

BS 1179 *Glossary of terms used in the gas industry*

BS 7281 *Specification for polyethylene pipes for the supply of gaseous fuels*

BS 8010 *Code of practice for pipelines*

National Joint Utilities Group (NJUG) recommendations

- NJUG 1 *A brief guide to the New Roads and Streetworks Act 1991* October 1993
- NJUG 4 *The identification of small buried mains and services* April 1995
- NJUG 5 *Model guidelines for the planning and installation of utilities supplies to building developments* May 1993
- NJUG 6 *Service entries to new dwellings on residential estates* September 1984
- NJUG 7 *Recommended positioning of utilities' apparatus for new works on new developments and in existing streets* January 1997
- NJUG 9 *Recommendations for the exchange of records of apparatus between utilities* July 1994
- NJUG 10 *Guidelines for the planning, installation and maintenance of utility services in proximity to trees* (with operative's laminated guidelines card) April 1995
- NJUG 14 *Video Its your life' - damage prevention and individual safety* August 1994
- NJUG 15 *NJUG/Ordnance Survey Service level agreements (technical) for digital map products and services* January 1995

Details from:

The Secretariat
National Joint Utilities Group
30 Millbank
London SW 1 P 4RD
Tel: 0207 963 5720 Fax: 0207 963 5989

Published by **TSO** Ireland and available from:

The Stationery Office

(mail, telephone and fax orders only)

PO Box 29, Norwich, NR3 1GN

Telephone orders/General enquiries: 0870 6005522

Fax orders: 0870 6005533

You can now order books online at **www.tso.co.uk**

The Stationery Office Bookshops

123 Kingsway, London WC2B 6PQ

020 7242 6393 Fax 020 7242 6394

68-69 Bull Street, Birmingham B4 6AD

0121 236 9696 Fax 0121 236 9699

9-21 Princess Street, Manchester M60 8AS

0161 834 7201 Fax 0161 833 0634

16 Arthur Street, Belfast BT1 4GD

028 9023 8451 Fax 028 9023 5401

The Stationery Office Oriel Bookshop

18-19 High Street, Cardiff CF 10 1 PT

029 2039 5548 Fax 029 2038 4347

71 Lothian Road, Edinburgh EH3 9AZ

0870 606 5566 Fax 0870 6065588

The Stationery Office's Accredited Agents
(see Yellow Pages)

and through *good* booksellers

Printed in Northern Ireland by The Stationery
Office Limited

£12.50



www.tso.co.uk

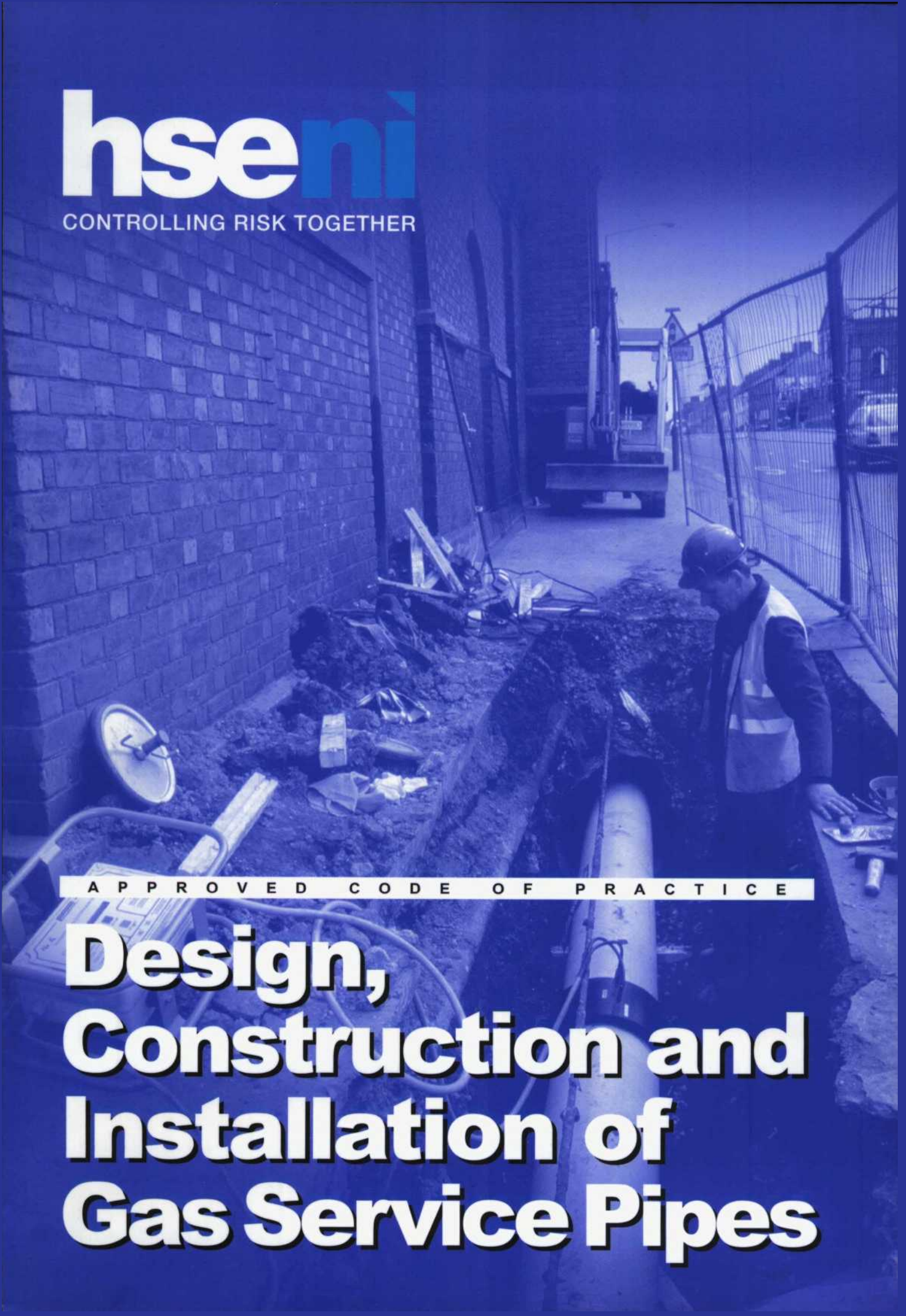
ISBN 0-337-09463-2



The logo for HSE NI, with 'hse' in white and 'ni' in blue, set against a blue-tinted background of a construction site.

hse ni

CONTROLLING RISK TOGETHER

A full-page background image with a blue tint showing a construction worker in a hard hat and high-visibility vest standing next to a deep trench. A large gas service pipe is visible in the trench. In the background, there is a brick wall, a fence, and a piece of construction machinery.

A P P R O V E D C O D E O F P R A C T I C E

Design, Construction and Installation of Gas Service Pipes

The Health and Safety Agency for Northern Ireland was renamed the Health and Safety Executive for Northern Ireland; see the Health and Safety at Work (Amendment) Order (Northern Ireland) 1998 (S.I. 1998/2795 N.I. 18), Article 3(1). Under that Order, many of the functions of the Department of Enterprise, Trade and Investment (formerly the Department of Economic Development) are now carried out by the Executive.

Design, construction and installation of gas service pipes

Pipelines Safety Regulations (Northern Ireland) 1997

Approved Code of Practice and Guidance

* Crown copyright 1999

Applications for reproduction should be made to The Stationery Office Ltd. First published 1999

General enquiries regarding this publication should be addressed to:

Health and Safety Executive for Northern Ireland,
83 Ladas Drive,
Belfast,
BT6 9FR.

Tel: 028 90 243249

Fax: 028 90 235383

This Code of Practice is based very closely on the Approved Code of Practice issued by the Health and Safety Commission in Great Britain, whose assistance is gratefully acknowledged.

	Page
Notice of Approval	iv
Introduction	1
PART I	Introduction
Regulation 1	Citation and commencement 1
Regulation 2	Interpretation 1
Regulation 3	Meaning of "pipeline" 2
Regulation 4	Application 7
PART II	General 7
Regulation 5	Design of a pipeline 7
Regulation 6	Safety systems 8
Regulation 7	Access for examination and maintenance 9
Regulation 8	Materials 9
Regulation 9	Construction and nstallation 9
Regulation 10	Work on a pipeline 11
Regulation 11	Operation of a pipelne 11
Regulation 12	Arrangements for incidents and emergencies 11
Regulation 13	Maintenance 12
Regulation 14	Decommissioning 12
Regulation 15	Damage to pipeline 12
Regulation 16	Prevention of damage to pipelines 12
Regulation 17	Co-operation 12
Appendix 1 □	information on training and qualifications □ 13 □
Appendix 2 □	Summary of Legislation □ 15 □
Appendix 3 □	List of related ACoP's, guidance and technical □ □ 17
	standards etc.

Notice of Approval

By virtue of Article 18(1) of the Health and Safety at Work (Northern Ireland) Order 1978 and after consultation in accordance with Article 18(2) of that Order the Health and Safety Agency for Northern Ireland* on 15th April 1997, with the consent of the Department of Economic Development, approved the Code of Practice entitled *Design, construction and installation of gas service pipes*.

The Code of Practice gives practical guidance with respect to the Pipelines Safety Regulations (Northern Ireland) 1997 (S.R. 1997 No. 193), with regard to operational and technical practices in the safe design, construction/installation, operation, maintenance and decommissioning of natural gas service pipes, intended to operate up to a maximum pressure of 7 bar gauge.

Although failure to observe any provision of this Code is not in itself an offence, that failure may be taken by a Court of Law in criminal proceedings as proof that a person has contravened the regulation to which the provision relates. In such a case, however, it will be open to that person to satisfy the Court that he has complied with the regulation in some other way.

The Code of Practice comes into effect on 15 October 1999.

* On 1st April 1999 the Health and Safety Agency for Northern Ireland was renamed the Health and Safety Executive for Northern Ireland.

Introduction

1. Each relevant regulation of the Pipelines Safety Regulations (Northern Ireland) 1997 (S.R. 1997 No. 193) is reproduced, followed by the ACoP which the Health and Safety Agency for Northern Ireland approved under Article 18(1) of the Health and Safety at Work (Northern Ireland) Order 1978 and other guidance on compliance. On 1st April 1999 the Health and Safety Agency for Northern Ireland was renamed the Health and Safety Executive for Northern Ireland. The guidance is set in terms of broad principles. All legislation referred to in this ACoP is published separately.
2. For convenience, the text of the Regulations is included in *italic* type, with the accompanying guidance in normal type and the ACoP in **bold** type.
3. Reference in this Code of Practice to another document does not imply approval by the Health and Safety Executive for Northern Ireland ("the Executive") of that document except to the extent necessary to give effect to this Code of Practice.
4. Words and expressions which are defined in the Health and Safety at Work (Northern Ireland) Order 1978 and the Management of Health and Safety at Work Regulations (Northern Ireland) 1992, have the same meaning in this Code of Practice unless the context requires otherwise. Any reference to standards is a reference to any of the following which are current at the time of the work activity:
 - (a) a British Standard;
 - (b) a relevant standard or code of practice of a national standards body of any member state of the European Union (EU);
 - (c) any relevant international standard recognised for use as a standard in any member state of the EU;
 - (d) a relevant technical specification acknowledged for use as a standard by a public authority of any member state of the EU;
 - (e) traditional procedures of manufacture of a member state of the EU where these are the subject of a written technical description sufficiently detailed to permit assessment of the goods or materials for the use specified;
 - (f) a specification sufficiently detailed to permit assessment for goods or materials of an innovative nature (or subject to innovative processes of manufacture such that they cannot comply with a recognised standard or specification) and which will fill the purpose provided by the specified standard, provided that the proposed standard, code of practice, technical specification or procedure of manufacture provides, in use, equivalent levels of safety, suitability and fitness for purpose to those achieved by the standard to which it is expressed to be equivalent.

Scope

5. The ACoP applies to all service pipe installations with a maximum operating pressure of up to 7 bar gauge which connect to a natural gas distribution main operated by a gas conveyor. Installations will vary in size and relative complexity from small diameter, owner-installed polyethylene services to large diameter steel services, installed by contractors. Services may operate at pressures up to 7 bar and cover a range of diameters and materials. Service pipe installation designers should give due consideration to the operating pressure and required gas flow when applying this ACoP.

Figure 1 (on pages 3-5) illustrates some typical installations.

Part I

Regulation 1

Introduction

Citation and commencement

These Regulations may be cited as the Pipelines Safety Regulations (Northern Ireland) 1997 and shall come into operation on 12th May 1997.

Regulation 2

interpretation

In these Regulations-

"dangerous fluid" has the meaning given by regulation 18(2);

"emergency shut-down valve" means a valve which is capable of adequately blocking the flow of fluid within the pipeline at the point at which it is incorporated;

"the Executive" means the Health and Safety Executive for Northern Ireland; "

fluid" includes a mixture of fluids;

"major accident" means death or serious injury involving a dangerous fluid;

"major accident hazard pipeline" has the meaning given by regulation 18(1);

"operator", in relation to a pipeline, means-

(a) the person who is to have or (once fluid is conveyed) has control over the conveyance of fluid in the pipeline;

(b) until that person is known (should there be a case where at a material time he is not yet known) the person who is to commission or (where commissioning has started) commissions the design and construction of the pipeline;

(c) when a pipeline is no longer, or is not for the time being, used, the person last having control over the conveyance of fluid in it;

"pipeline" shall be construed in accordance with regulation 3;

"territorial waters" has the same meaning as in regulation 2(1) of the Offshore Installations and Pipeline Works (Management and Administration) Regulations (Northern Ireland) 1995(a).

Regulation 3

Meaning of "pipeline"

(1) Subject to the provisions of this regulation, in these Regulations "pipeline" means a pipe or system of pipes (together with any apparatus and works, of a kind described in paragraph (2), associated with it) for the conveyance of any fluid, not being-

(a) a drain or sewer;

(b) a pipe or system of pipes constituting or comprised in apparatus for heating or cooling or for domestic purposes;

(c) a pipe (not being apparatus described in paragraph (2)(e)) which is used in the control or monitoring of any plant.

(2) The apparatus and works referred to in paragraph (1) are-

(a) any apparatus for inducing or facilitating the flow of any fluid through, or through a part of, the pipe or system;

(b) any apparatus for treating or cooling any fluid which is to flow through, or through a part of, the pipe or system;

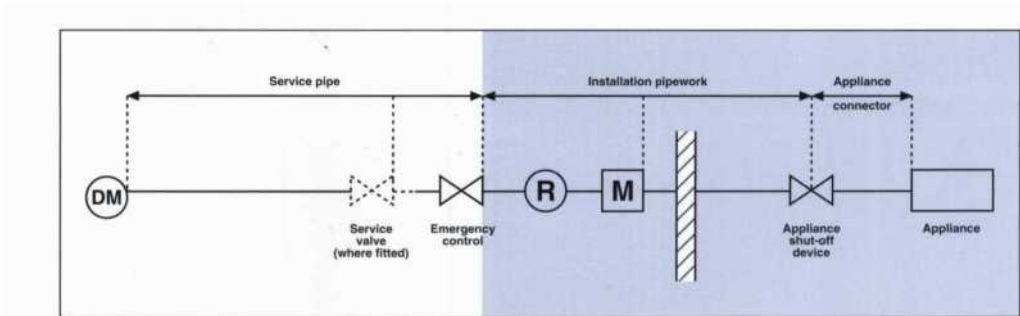
(a) S.R. 1995 No. 340 to which there are amendments not relevant to these Regulations

Figure 1

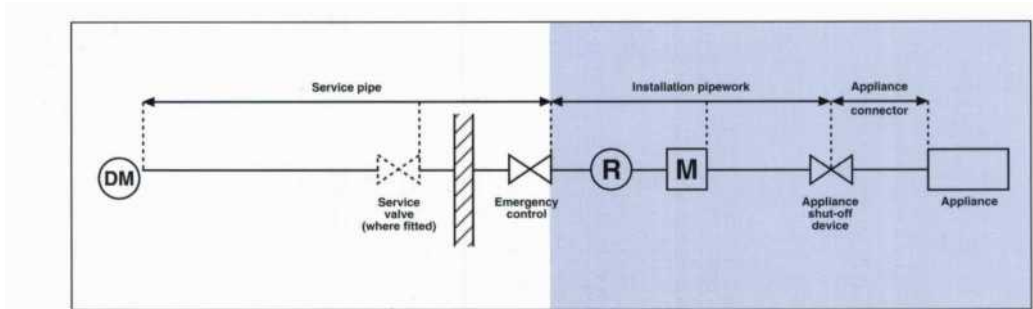
Typical installations

Note: These simplified installation diagrams are only intended for use as an aid to identify and indicate the relative positions of components described in the Gas Safety (Installation and Use) Regulations (Northern Ireland) 1997 (shaded right-hand part of diagrams) and the Pipelines Safety Regulations (Northern Ireland) 1997 (left-hand part).

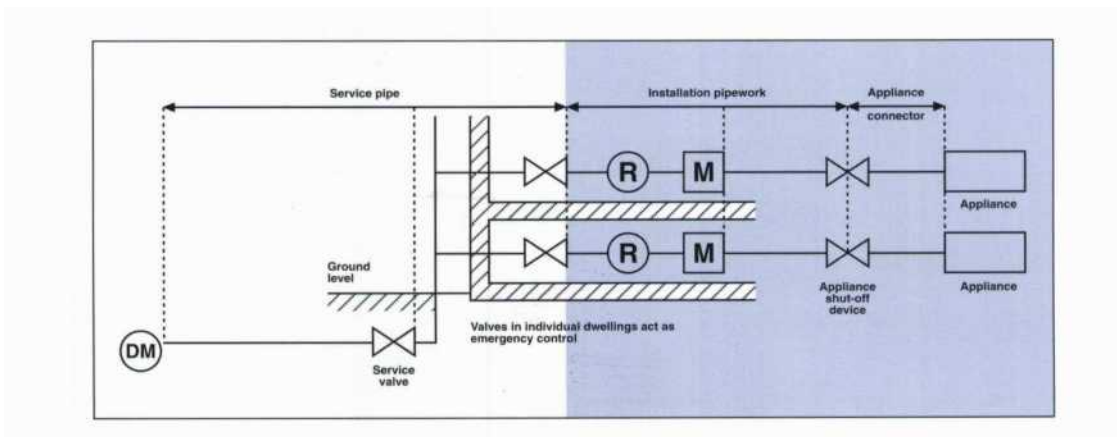
(a) Outside Meter installation



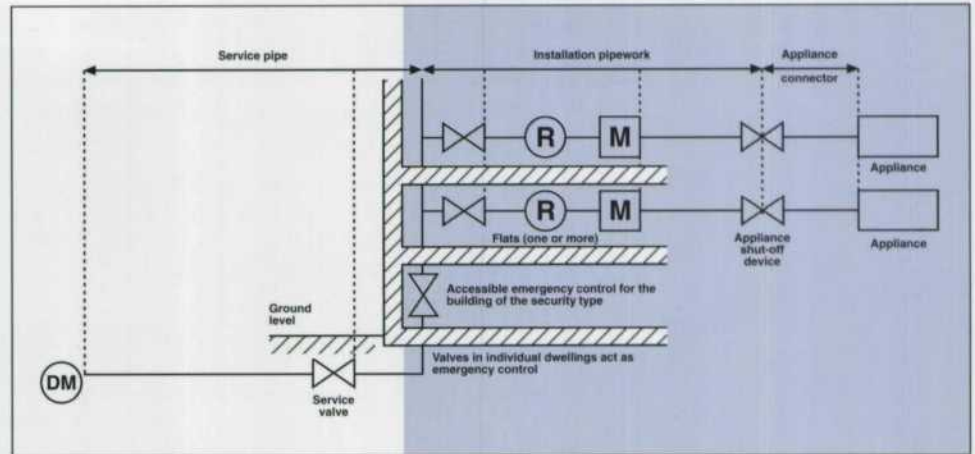
(b) Inside Meter installation



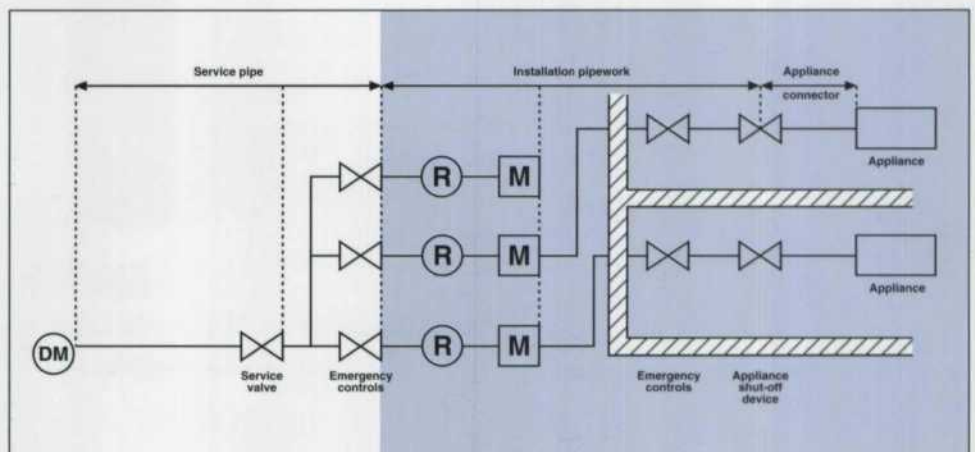
(c)(i) Multi-occupancy installation - external riser



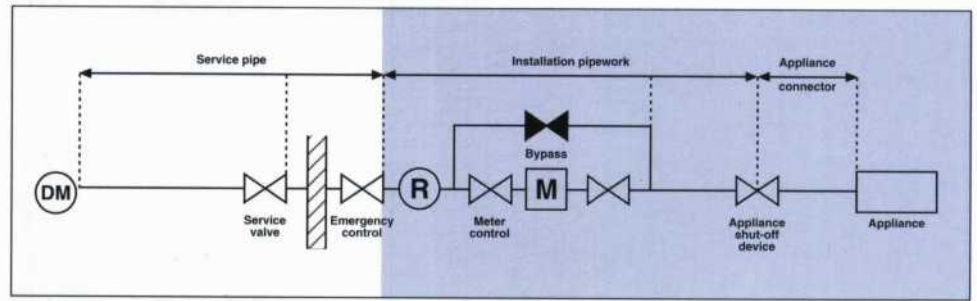
(c)(ii) Multi-occupancy installation - internal riser



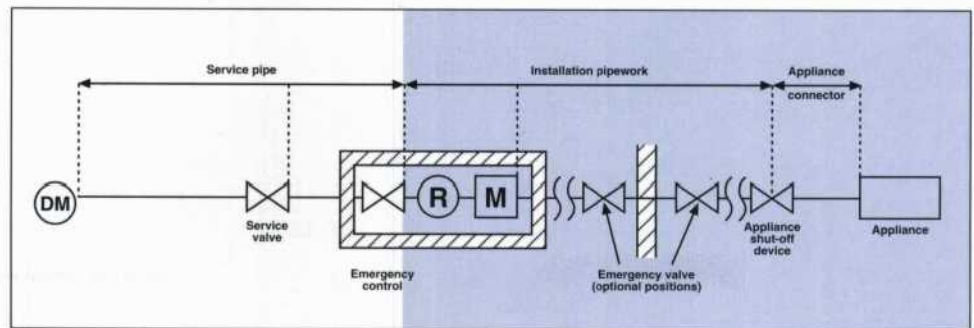
(d) Multi-occupancy installation - remote meters



(e) Meter with bypass, e.g. industrial/commercial



(f) Meter remote from premises, e.g. meter houses



- R Regulator
- M Meter
- DM Distribution main

- c) *valves, valve chambers and similar works which are annexed to, or incorporated in the course of the pipe or system;*
- d) *apparatus for supplying energy for the operation of any such apparatus or works as are mentioned in sub-paragraphs (a) to (c);*
- e) *apparatus for the transmission of information for the operation of the pipe or system;*
- f) *apparatus for the cathodic protection of the pipe or system; and*
- g) *a structure used or to be used solely for the support of a part of the pipe or system.*

- 3. *For the purpose of paragraph (2)(c) a valve, valve chamber or similar work shall be deemed to be annexed to, or incorporated in the course of, a pipe or system where it connects the pipe or system to plant, an offshore installation or a well.*
- 4. *A pipeline for supplying gas to premises shall be deemed not to include anything downstream of an emergency control.*
- 5. *In this regulation-*

"emergency control" means a valve for shutting off the supply of gas in an emergency, being a valve intended for use by a consumer of gas;

Guidance

- 6. The term "gas conveyor" is not defined in the Regulations. In this ACoP it means a person authorised to convey gas by a licence granted under Article 8, or by an exemption granted under Article 7, of the Gas (Northern Ireland) Order 1996.
- 7. "Distribution main" means any main through which a supplier or conveyor is for the time being distributing gas and which is not being used only for conveying gas in bulk.
- 8. "Installation pipework" means any pipework for conveying gas for a particular consumer and any associated valve or other gas fitting. Installation pipework is not covered by these Regulations.
- 9. "Service pipe" means a pipe for supplying gas to premises from a distribution main, being any pipe between the distribution main and the outlet of the first emergency control downstream from the distribution main.
- 10. "Service valve" means a valve (other than an emergency control) for controlling a supply of gas, being a valve:
 - a) incorporated in a service pipe; and
 - b) intended for use by a supplier or conveyor of gas; and
 - c) not situated inside a building.

Regulation 4

Application

(1) Subject to paragraph (2), within territorial waters these Regulations shall apply to and in relation to pipelines and activities to which the Offshore Installations and Pipeline Works (Management and Administration) Regulations (Northern Ireland) 1995 apply by virtue of regulation 4(1)(f) of those Regulations.

(2) These Regulations shall not apply to any pipeline or part of a pipeline of a kind which is described in Schedule 1.

(3) In the case of a pipeline to which the Pressure Systems and Transportable Gas Containers Regulations (Northern Ireland) 1991(a) apply, nothing in these Regulations shall require the taking of any measures to the extent that they are for the prevention of danger within the meaning of those Regulations.

Part II

Regulation

General

Design of a pipeline

The operator shall ensure that a fluid is not conveyed in the pipeline unless the pipeline has been so designed that, so far as is reasonably practicable, it can withstand-

- (a) forces arising from the pipeline's operation;*
- (b) the fluids that may be conveyed in the pipeline; and*
- (c) the external forces and chemical processes to which the pipeline may be subjected.*

ACOP

11. Each service pipe should be designed to convey natural gas safely from the gas distribution main to the main outlet of the emergency control which is immediately upstream of the installation pipework, and in such a way that it is least likely to be affected by third party interference or subject to accidental damage.

Each gas conveyor should have conditions and procedures in place for agreeing the design of new service pipes to allow for their safe installation and subsequent addition to his specific network.

Guidance

12. Technical guidance in the form of recommendations from the Institution of Gas Engineers offers standards recognised across the industry, and is published as IGE/TD/4: 1994 Edition 3: *Gas services* and IGE/TD/3: 1992 Edition 3: *Distribution mains*. A site design plan should be prepared by the service pipe installation designer for each service pipe installation and contain as much detail as is required to enable the service pipe installer/contractor to undertake and complete the work safely.

13. Design details should be provided to the gas conveyor responsible for the gas distribution system to which the service pipe will be connected.

14. The amount of detail required is likely to vary at different networks according to local conditions but may include the following:

- a design layout showing the planned location of the connection to the gas distribution main, or other gas service pipe;
- the planned route of the service pipe installation to the premises, including the location of the emergency control, clearly showing the position of the proposed service pipe installation in relation to the foundations of the premises, and that of any void areas;

(a) S.R. 1991 No. 471 to which there are amendments not relevant to these Regulations

- the specification of materials and fittings to be used for the service pipe installation including reference to the relevant standards;
- the planned depth of the gas service pipe installation, including back-fill and support details;
- the specification for any protective sleeving for that section of the service pipe installation which will be placed above ground;
- details and location of other services identified along the route of the proposed service pipe installation, including details of formerly abandoned gas service pipe installations, along with details of any pipe marking arrangements. Advice with regard to identification of ownership of existing apparatus may be obtained from the Department of the Environment;
- qualification and competence requirements for those people to be employed on the installation.

16. Service pipes should be routed so as to minimise the possibility of third party damage. Consideration should be given to the route, the depth of cover, the pipe material and any additional protective measures (such as protective concrete slabs). The route selected should be the shortest route possible, in so far as is reasonably practicable. The service pipe should normally be laid at a minimum depth of 375 mm in private ground and 450 mm in footpaths and highways. Where a lesser depth is proposed, additional protection against third party damage should be considered.

17. The service pipe installation designer should give due regard to any possibility of the accidental connection of service pipes operating at different pressures or to those not conveying natural gas.

18. With regard to the location of other services generally, the service pipe installation designer should have an understanding of the protocols established by the National Joint Utilities Group (NJUG). Details of the current series are listed in Appendix 3, copies of which are available from NJUG Secretariat.

19. The service pipe installation designer should be able to demonstrate competence to undertake each specific assignment, underpinned by a knowledge of relevant legislation, and appropriate technical standards.

20. The service pipe installation designer should be aware of the responsibilities under the Construction (Design and Management) Regulations (Northern Ireland) 1995. Brief details are contained in Appendix 2.

21. The service pipe installation designer and the service pipe installer/contractor should have an understanding of the Street Works (Northern Ireland) Order 1995, and their respective responsibilities under it, particularly in relation to information required by the Department of the Environment as part of the licence application. A brief outline is contained in Appendix 2.

22. Possession of a recognised vocational qualification, coupled with relevant practical experience, would offer a good indication of the competence of an individual service pipe installation designer or installer/contractor. Details of recognised vocational qualifications are listed in Appendix 1.

Safety systems

The operator shall ensure that a fluid is not conveyed in a pipeline unless the pipeline has been provided with such safety systems as are necessary for securing that, so far as is reasonably practicable, persons are protected from risk to their health or safety.

ACOP

Guidance

23. Each service pipe should be provided with an appropriately sited emergency control.
24. The emergency control should be installed in a readily accessible place; if it is situated in a locked compartment, the occupier of the premises and the system operator/supplier should each be provided with keys. For services supplying more than one primary meter it may be necessary to install an additional isolation valve in the service pipe (e.g. for multi-occupancy premises).
25. Responsibility for, and access to, this additional valve should be made clear.
26. The position and status of the primary meter is defined in the Gas Safety (Installation and Use) Regulations (Northern Ireland) 1997. Detailed guidance is contained in the Approved Code of Practice *Safety in the installation and use of gas systems and appliances*.

Regulation 7

Access for examination and maintenance

The operator shall ensure that a fluid is not conveyed in a pipeline unless the pipeline has been so designed that, so far as is reasonably practicable, it may be examined and work of maintenance may be carried out safely.

Guidance

27. The service pipe installation designer, in drawing up plans, should design systems that maintain appropriate distances between services and plant. Detailed guidance on service laying good practice is contained in recommendations published by the Institution of Gas Engineers as IGE/TD/4: 1994 Edition 3. Practical guidance on appropriate distances between services operating adjacently is contained in the NJUG publication No. 7 *Recommended positioning of utilities mains and plant for new works*.

Regulation 8

Materials

The operator shall ensure that a fluid is not conveyed in a pipeline unless the pipeline is composed of materials which are suitable.

ACOP

Guidance

28. The design plan for the service pipe installation should detail those materials and fittings to be used in its construction, including reference to the appropriate technical standards, required to permit its subsequent safe operation.
29. The design plan will normally be in accordance with the requirements of the relevant gas conveyer.

Regulation 9

Construction and installation

The operator shall ensure that a fluid is not conveyed in a pipeline (save for the purpose of testing it) unless the pipeline has been so constructed and installed that, so far as is reasonably practicable, it is sound and fit for the purpose for which it has been designed.

ACOP

Guidance

30. The service pipe should be installed as detailed on the design plan. Where any variation in route or modification in design is proposed, it should be in line with the overall standards and specification agreed at the design stage and, once the installation is completed, the plan should be annotated and dated accordingly.
31. The installer/contractor should consider the benefits of drawing up a plan of work which might detail:
- how the work would be tackled, including details of site safety arrangements;

- the arrangements for effecting / agreeing changes to the original design;
- quality control aspects, including checking materials and parts for fitness for purpose, prior to installation and fitting;
- arrangement for pre-acceptance checks and pressure tests, including liaison arrangements with the relevant gas conveyor;
- the system of work for connecting into the service pipe to the appropriate distribution main or other appropriate service pipe installation, including any modification/authorisation requirements of the gas conveyor;
- the arrangements for lodging design details with the gas conveyor on completion of the installation.

32. The relevant gas conveyor should be given advance notice of the proposed date for the installation to be connected to the gas distribution main to enable inspection to be arranged.
33. The service pipe installer / contractor has the responsibility for establishing the competence of all workers to be employed on the installation of gas service pipes. and that they have the up-to-date skills and recognised competencies to undertake safely all tasks allocated to them. The service pipe installer/contractor should maintain an adequate record of the competence levels of workers to be employed on the installation, including details of qualifications held and the range of work on the installation that they may be assigned to. Similar arrangements apply to a self-employed worker.
34. Appendix 1 shows details of recognised vocational qualifications.
35. Workers who have undergone training in the GD series of qualifications, organised by the Construction Industry Training Board (CITB) in Great Britain, will be issued with registration certificates, bearing recent photographs of individual workers, and recording their respective level of achievement, which will clearly point to those aspects of the work on which they have been assessed. CITB maintains a central record of all current certificates, enabling details to be verified by contractors. It is also able to replace lost certificates on production of satisfactory evidence.
36. It should be recognised that qualifications are only one indication of competence and that relevant practical experience is also a factor that needs to be considered when assessing an individual worker's ability to do specific tasks.
37. Installers / contractors who employ others should consider looking at ways of encouraging workers to build up their respective skillbases, through a mixture of directed on-the-job training and encouragement and incentive to attend off-the-job training courses.
38. Knowledge and general awareness of the relevant legislation and Regulations affecting this area of work is of fundamental importance, as is a practical knowledge of appropriate technical guidance and standards. A summary of some of the key pieces of legislation is contained in Appendix 2. A list of technical guidance is shown in Appendix 3.
39. The service pipe installer/contractor should be aware of the other services laid alongside the service pipe installation, and know how to excavate the area accordingly.
40. The National Joint Utilities Group (NJUG), representing the gas, electricity, telecommunications and water industries, has agreed protocols on co-operation and the sharing of information, including the production of guidance documents. Current guidance material is listed in Appendix 3.

41. Practical guidance on avoiding danger from underground services is contained in the Great Britain Health and Safety Executive publication HS (G) 47.

Regulation 10

Work on a pipeline

The operator shall ensure that modification, maintenance or other work on a pipeline is carried out in such a way that the pipeline's soundness and fitness for the purpose for which it has been designed will not be prejudiced.

42. Repairs to gas service pipe installations will be the relevant gas conveyor's responsibility. Where a subsequent modification is proposed to an installed service pipe, the original design plan of each service pipe installation, where available, should be obtained and followed, and where any modification is proposed to the original specification, the design plan should be amended to reflect all agreed changes. The responsibility for holding and retaining such details will rest with the relevant gas conveyor.

43. Additional care needs to be taken when undertaking work on any 'live' service pipe installation, where it is essential that before any work commences, all meters supplied by the service are identified and the consequences of shutting off the supply to end users should be considered. This is particularly important with regard to multi-occupancy premises where additional emergency controls may have been installed covering the whole building or sections of it.

44. Where any work on the service pipe installation requires disconnection, the interruption of supply should be prearranged with all end-users of the service pipe installation. Care should be taken to maintain electrical continuity when disconnecting a gas service pipe installation, perhaps by using a continuity bond. Prior to re-connection of the same service, it should be pressure tested in accordance with the appropriate standards to ensure that it is still fit for purpose.

45. Before recommissioning, all service pipe installations should be purged. Recommissioning should be undertaken in accordance with the Gas Safety (Installation and Use) Regulations (Northern Ireland) 1997.

Operation of a pipeline

The operator shall ensure that

(a) a fluid is not conveyed in a pipeline unless the safe operating limits of the pipeline have been established; and

(b) a pipeline is not operated beyond its safe operating limits, save for the purpose of testing it.

Arrangements for incidents and emergencies

The operator shall ensure that a fluid is not conveyed in a pipeline unless adequate arrangements have been made for dealing with-

(a) an accidental loss of fluid from the pipeline;

(b) discovery of a defect in or damage to the pipeline; or

(c) any other emergency affecting the pipeline.

Regulation 11

Regulation 12

Regulation 13

Maintenance

The operator shall ensure that a pipeline is maintained in an efficient state, in efficient working order and in good repair.

46. On-going maintenance of gas service pipe installations, once accepted by the gas conveyor, becomes that conveyor's responsibility, and appropriate arrangements should be made to carry out that responsibility.

Guidance

Regulation 14

Decommissioning

(1) The operator shall ensure that a pipeline which has ceased to be used for the conveyance of any fluid is left in a safe condition.

(2) The operator of a pipeline shall ensure that work done in discharge of the duty contained in paragraph (1) is performed safely.

47. The gas conveyor should always seal off the redundant service pipe installation to render it safe, and consider removal, wherever practicable. The gas conveyor should consider the need to maintain records of those sections of the service pipe network that he has decommissioned, including details of action taken.

ACOP

Regulation 15

Damage to pipeline

A person shall not cause such damage to a pipeline as may give rise to a danger to persons.

48. Actions arising from third party interference are the main cause of damage to pipelines leading to loss of containment. In many cases the damage to a pipeline by a third party is accidental; it is important that such damage is always reported to the relevant gas conveyor. It should be recognised that the effects of damage are not always immediate and that what may appear insignificant could give rise to a dangerous occurrence.

Guidance

Regulation 16

Prevention of damage to pipelines

For the purpose of ensuring that no damage is caused to a pipeline, the operator shall take such steps to inform persons of its existence and whereabouts as are reasonable.

49. Gas conveyors should make available, on request, clear details of the existence and location of relevant service pipe installations, which they hold records of, to other service operators.

50. The gas conveyor should consider the circumstances under which individual customers might need to be made aware of the general location of service pipes and the implications that existence of the same might have for safety and individual responsibility.

ACOP

Guidance

Regulation 17

Co-operation

Where there are different operators for different parts of a pipeline, each operator shall co-operate with the other so far as is necessary to enable the operators to comply with the requirements of these Regulations.

information on training and qualifications

(Note: this appendix does not form part of the Code.)

1. Training courses in gas work are offered and undertaken by the industry itself, with off-the-job courses for mains gas, offered through Colleges of Further Education (CFE's) and other training providers. Details of what is available in any particular locality may be obtained from individual CFE's, local offices and training centres of the Training and Employment Agency, and Education and Library Boards. Training arrangements may vary from area to area, and will depend on local requirements and demands, however they will usually offer a balanced programme of on-the-job training, linked to day release/block release. Evening classes may also be available. It is important that whichever training package is selected it meets essential requirements. Formal vocational qualifications are a feature of all courses on offer, many of which have now become National Vocational Qualifications (NVQ's).
2. Not all courses are aimed at new entrants to the industry. Short refresher and updating courses are often available. They are particularly useful for those workers who have lots of practical experience, but no formal qualification, possession of which is likely to facilitate their movement across the industry. Courses designed at updating skills are also available, enabling employers and their employees to keep up to date on technological advances, including the introduction of new and improved standards.
3. Further information can be obtained from:
National Council for Vocational Qualifications (NCVQ)
Construction Employers Federation
Council for the Registration of Gas Installers (CORGI)
Construction Industry Training Board (CITB)
Institution of Gas Engineers (IGE)

Vocational qualifications available

Gas distribution operatives record scheme

4. The scheme is administered by the Construction Industry Training Board (CITB), and offered at several approved training centres in Great Britain. CITB can provide details of this training and would consider providing training in Northern Ireland if there is sufficient demand.
5. The scheme applies to all operatives who are employed under the Working Agreement of the Civil Engineering Construction Conciliation Board, and who are involved at any time in installation, maintenance and repair work within the gas distribution sector.
6. The training courses have been developed to supplement on-the-job training and are designed to enable operatives to work safely and competently. The progressive nature of the scheme allows all operatives in the sector the opportunity to progress through the training programme to qualify as team leaders in either service-laying or mains-laying (or both).
7. The training programme envisages an induction phase for all new entrants to the sector followed by a series of separate training courses, each certificated on successful completion, spread over a period of time dependent on the progress of the individual operative and the needs of the job. The service-laying route consists of GD1, GD2 and GD4; the mains-laying route consists of GD1, GD2, GD3 and GD5.

8. CITB also offers a series of short training courses to support the requirements of the Street Works (Northern Ireland) Order 1995 (S.I. 1995/3210 (N.I. 19)) (the Street Works Order). The Roadman Training Centre at Caulside, Antrim is an accredited training centre under the Street Works Order. The Centre, which is operated by the Department of the Environment for Northern Ireland, has been approved by the City and Guilds to offer training units through which both supervisors and operatives may achieve the qualifications which will be required by the Street Works (Qualifications of Supervisors and Operatives) Regulations (Northern Ireland) 1998 (S.R. 1998 No. 20). Further information on the training requirements of the Street Works Order may be obtained by contacting the Roadman Training Centre on 01849 461138.

9. A booklet containing outline details of each of the training courses, including course content, costs and booking arrangements can be obtained from:
Construction Industry Training Board

17 Dundrod Road
Crumlin
Co. Antrim
BT29 4SR
Tel: 028 90 825466

10. General scheme information can be obtained from:

Civil Engineering Contractors Association
Construction House
56-64 Leonard Street
London
EC2A 4JX
Tel: 0207 608 5060
Fax: 0207 608 5061

NVQ Level 3: public utilities distribution (natural gas)

11. The qualification is comprised of eight compulsory units covering:

- planning distribution systems to meet customer needs;
- preparing and maintaining the site;
- excavating and reinstating the site;
- installing and testing the components of the gas distribution systems;
- commissioning/decommissioning gas distribution systems;
- monitoring/maintaining a safe working environment;
- establishing and maintaining effective working relationships;
- contributing to work organisations and quality development of products and services.

A further unit is optional and not essential to the award of the qualification.

Summary of legislation

(Note: this appendix does not form part of the Code.)

Health and Safety Legislation

Health and Safety at Work (Northern Ireland) Order 1978

1. This order applies to everyone concerned with work activities, ranging from employers, self-employed, and employees, to manufacturers, designers, suppliers and importers of materials for use at work, and people in control of premises. It also includes provisions to protect members of the public. The duties apply both to individual people and to corporations, companies, partnerships, district councils, nationalised industries etc. The duties are expressed in general terms, so that they apply to all types of work activity and work situations. Every employer has a duty to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his or her employees. The principles of safety responsibility and safe working are expressed in Articles 4-10. Employers and the self-employed are required to carry out their undertakings in such a way as to ensure, so far as is reasonably practicable, that they do not expose people who are not their employees to risks to their health and safety, expressed in Article 5(1) and (2). In some areas the general duties have been supplemented by specific requirements laid down in Regulations made under the Order and Regulations containing specific requirements will continue to be made. Specific legal requirements are also laid down in earlier legislation which is still in operation. Failure to comply with either the general requirements of the Order, or the specific requirements found elsewhere, may result in legal proceedings.

2. Although some of the duties imposed by the Order and related legislation are absolute, many are qualified by the words "so far as is practicable" or "so far as is reasonably practicable". If someone is prosecuted for failing to comply with a duty which is qualified by these words, it is up to the accused to show the court that it was not practicable, or reasonably practicable, as appropriate, for him to do more than he had done to comply with the duty.

3. The judgement of what is reasonably practicable means weighing up the seriousness of a risk against the difficulty and cost of removing it.

4. Where the difficulty and cost are high and a careful assessment of the risk shows it to be insignificant, it may be that the action is not necessary although in some cases there are things that have to be done at all costs. No allowance is made for size, nature or profitability of the business.

5. Articles 23-25 provide for improvement and prohibition notices to be issued; Article 31 provides for prosecution and penalties; Article 17 provides for Regulations to be made; Articles 18 and 19 provide for Codes of Practice to be approved, and for their use in criminal proceedings.

Management of Health and Safety at Work Regulations (Northern Ireland) 1992

6. The central feature of these Regulations is the duty which is imposed on employers and self-employed persons to make a suitable and sufficient assessment of the risks to the health and safety of their employees, and non-employees affected by their work. The Regulations also provide that there must be effective planning and review of protective measures, health surveillance, emergency procedures, information and training.

Gas Safety (Management) Regulations (Northern Ireland) 1997

7. These Regulations deal with the safe management of gas, whether in a single system or a network of connected systems. The Regulations make it unlawful for gas to be conveyed in a system or network without a safety case being prepared by the gas conveyor and then accepted by the Executive.

Reporting of Injuries, Diseases and Dangerous Occurrences (Northern Ireland) Regulations 1997

8. These Regulations require employers to notify certain occupational injuries, diseases and dangerous events. Certain gas incidents are reportable by suppliers of gas through fixed pipe distribution systems.

Construction (Design and Management) Regulations (Northern Ireland) 1995

9. These Regulations place duties on clients, designers, planners, supervisors and contractors to take health and safety matters into account and manage them effectively from the planning stages of a construction project through commission and beyond.

Gas Safety (Installation and Use) Regulations (Northern Ireland) 1997

10. These Regulations deal with the installation, maintenance and use of gas systems and appliances in domestic and commercial premises. They place a ban on the domestic storage of natural gas (except in commercially filled cylinders) until appropriate standards and compliance mechanisms are developed. They are also concerned with carbon monoxide (CO) poisoning from poorly installed and/or maintained gas appliances and flues.

Pressure Systems and Transportable Gas Containers Regulations (Northern Ireland) 1991

11. These Regulations apply to those pipelines which constitute a pressure system where the operating pressure is greater than 2 bar gauge.

Other legislation

Gas (Northern Ireland) Order 1996

12. This Order contains licensing arrangements for gas conveyors and suppliers and provides for the establishment of a natural gas supply industry.

Street Works (Northern Ireland) Order 1995

13. This Order makes utilities and other undertakers of works in streets more accountable for their works and requires better standards of reinstatement following the completion of street works. It also aims to reduce the amount of disruption to road users by imposing duties of co-ordination and co-operation between undertakers themselves and also with street authorities. A Street Works Register, to be introduced and maintained by the Department of the Environment for Northern Ireland, will be central in recording and co-ordinating planned street works.

Appendix 3

List of related ACoP's, guidance and technical standards etc.

(Note: this appendix does not form part of the Code.)

Health and Safety Executive for Northern Ireland (HSENI) Approved Codes of Practice

Safety in the Installation and Use of Gas Systems and Appliances 75 HSA 95 The Stationery Office ISBN 0 337 09421 7

Standards of Training in Safe Gas Installation 76 HSA 95 The Stationery Office ISBN 0 337 09420 9

Managing Construction for Health and Safety in Northern Ireland 79 HSA 96 The Stationery Office ISBN 0 337 11232 0

Guidance from the Health and Safety Executive (HSE)

Avoiding danger from underground services HS (G) 47 HSE Books

British Gas guidance

Precautions to be taken when carrying out work in the vicinity of underground gas pipes.

Institution of Gas Engineers (IGE) recommendations

IGE/TD/3: 1992 Edition 3: *Distribution mains*

IGE/TD/4: 1994 Edition 3: *Gas services*

IGE/TD/5: 1992 *Transport, handling and storage of polyethylene pipes and fittings*

IGE/TD/6: 1989 *Transport, handling and storage of steel pipe, valves and fittings*

IGE/TD/10: 1986 *Pressure regulating installations for inlet pressures between 75 mbar and 7 bar*

IGE/S.R./10: 1994 *Procedures for dealing with escapes of gas into underground plant*

IGE/S.R./13: 1993 *Use of breathing apparatus in gas transmission and distribution*

IGE/S.R./18: 1990 *Safe working in the vicinity of gas pipelines, mains and associated installations*

Part 1: 1990 *Operating at pressures of 2 bar*

Part 2: 1994 *Operating at pressures not exceeding 2 bar (in easements, the countryside or a public highway) and pressures exceeding 2 bar (in a public highway)*

IGE/S.R./19: 1990 *External joint repairs in gas distribution systems*

IGE/S.R./20: 1998 *Recommendations for dealing with reported gas escapes*

IGE/S.R./22: 1996 *Purging operations for fuel gases in transmission, distribution and storage*

IGE/S.R./23: 1996 *Venting of natural gas*

British Standards Institution (BSI) - technical standards

BS 1179 *Glossary of terms used in the gas industry*

BS 7281 *Specification for polyethylene pipes for the supply of gaseous fuels*

BS 8010 *Code of practice for pipelines*

National Joint Utilities Group (NJUG) recommendations

- NJUG 1 *A brief guide to the New Roads and Streetworks Act 1991* October 1993
- NJUG 4 *The identification of small buried mains and services* April 1995
- NJUG 5 *Model guidelines for the planning and installation of utilities supplies to building developments* May 1993
- NJUG 6 *Service entries to new dwellings on residential estates* September 1984
- NJUG 7 *Recommended positioning of utilities' apparatus for new works on new developments and in existing streets* January 1997
- NJUG 9 *Recommendations for the exchange of records of apparatus between utilities* July 1994
- NJUG 10 *Guidelines for the planning, installation and maintenance of utility services in proximity to trees* (with operative's laminated guidelines card) April 1995
- NJUG 14 *Video Its your life' - damage prevention and individual safety* August 1994
- NJUG 15 *NJUG/Ordnance Survey Service level agreements (technical) for digital map products and services* January 1995

Details from:

The Secretariat
National Joint Utilities Group
30 Millbank
London SW 1 P 4RD
Tel: 0207 963 5720 Fax: 0207 963 5989

Published by **TSO** Ireland and available from:

The Stationery Office

(mail, telephone and fax orders only)

PO Box 29, Norwich, NR3 1GN

Telephone orders/General enquiries:

0870 6005522 Fax orders: 0870 6005533

You can now order books online at www.tso.co.uk

The Stationery Office

Bookshops 123 Kingsway.

London, WC2B 6PQ 020 7242

6393 Fax 020 7242 6394 **68-**

69 Bull Street, Birmingham B4

6AD 0121 236 **9696** Fax 0121

236 **9699**

9-21 Princess Street, Manchester

M60 8AS 0161 834 7201 Fax

0161 833 0634 16 Arthur Street.

Belfast BT1 4GD

028 9023 8451 Fax 028 9023

5401 The Stationery Office

Oriel Bookshop 18-19 High

Street, Cardiff CF 10 1 PT

029 2039 5548 Fax 029 2038

4347 71 Lothian Road,

Edinburgh EH3 9AZ 0870 606

5566 Fax 0870 6065588

The Stationery Office's Accredited

Agents (see Yellow Pages)

and through *good* booksellers

Printed in Northern Ireland by The Stationery
Office Limited

£12.50



www.tso.co.uk

ISBN 0-337-09463-2



9 780337 094637