

Guidelines for Managing Openings in Public Roads

Guidelines for the Opening, Backfilling and Reinstatement of Openings in Public Roads



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Guidelines for Managing Openings in Public Roads



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Abstract

This document sets out a summary of the legal framework relating to powers of road authorities, various statutory bodies and private individuals in opening or forming openings in public roads in Ireland. The document prescribes standards in respect of the work of forming openings, backfilling and the reinstatement of road surfaces and the associated materials to be used on all roads other than National Roads. Furthermore the document prescribes procedures and requirements in relation to the use of MapRoad Roadworks Licensing (MRL) and its use for all road openings in public roads other than those carried out by a road authority.

This Document, version 2.1, supersedes the “Guidelines for Managing Openings in Public Roads “, version 2.0, published September 2015, and in turn the earlier “Guidelines for the Opening, Backfilling and Reinstatement of Trenches in Public Roads”, version 1.0, published April 2002, by the then Department of the Environment and Local Government.

Important Notes

This document does not purport to provide a strict legal interpretation of legislation. Although every effort has been made to ensure the completeness and accuracy of its contents, users are advised to use this document carefully. No liability shall attach to the Minister for Transport, Tourism and Sport and/or the Department of Transport, Tourism and Sport arising from any errors within or omissions from the document. The original text of the relevant legislation, which is available on the Irish Statute Book website www.irishstatutebook.ie, should always be consulted if absolute clarity on any provision is sought.

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1. Introduction

1. Introduction

1.1 Background

This document is a revision of the original *'Guidelines for the Opening, Backfilling and Reinstatement of Trenches in Public Roads'* or *'Purple Book'* published by the (then) Department of the Environment and Local Government in 2002. It provides guidance and specifications for excavation and road opening works on public roads, material on the legal background and requirements as well as procedures for the use of the MapRoad Licensing (MRL) System. This document was last amended in September 2015. Since then there have been many changes to overall specifications and standards for openings as well as changes in technologies, work practices and safety and health requirements.

In order to support local authorities in the co-ordination and management of roadworks S.I. No.139 of 2015 extends powers to all local authorities under Section 101D of the Road Traffic Act, 1961, to issue binding directions on the carrying out of roadworks, that were previously only available to the cities and Dublin authorities.

The consenting authority for applications from telecommunications network operators for licences to carry out works on national roads is Transport Infrastructure Ireland (TII). All other applications for licences are processed by the relevant road authority. National roads are shown in Appendix A.1.2.

1.2 MapRoad Licensing (MRL) & The Road Management Office (RMO)

The Department of Transport Tourism and Sport, Transport Infrastructure Ireland (TII) and road authorities have developed and updated existing processes to support efficient processing of road opening licenses. These are set out in this document. In parallel, supporting technologies have been developed to assist applicants in the implementation of the processes described. These technologies are included in the MapRoad Licensing system and include web based processing of applications, payments and notifications along with mobile applications to support notifications, surveys and inspections on site. These functions are being rolled out on an ongoing basis to support the objectives of this document.

Local authorities have also created a shared service, the Road Management Office (www.rmo.ie), to manage various asset management aspects of roads infrastructure. One of the functions assigned to the RMO is the management of road licensing on behalf of the sector. While road authorities retain responsibility for conditioning of individual licences, the Road Management Office shall co-ordinate and centralise the management of payments, insurance and deposits as well as providing a framework for the development of standardised conditioning and charging on behalf of local authorities. The Office will also provide a forum for utilities and road authorities to address common issues and objectives relating to road licensing.

1.3 Necessity of Road Opening Formation/Reinstatement

Road opening reinstatements in public roads typically occur because of continuing improvement and maintenance of infrastructure and services. Examples include large capital projects such as regional water supply schemes, sewerage schemes and telecommunications sector broadband rollout as well as smaller works such as single house connections to existing services in rural areas which may be as short as a few metres or less.

The objectives and specifications set out in this document have been prepared bearing in mind the principle that any new capital installations or any infrastructure maintenance work must not adversely affect existing infrastructure, including roads.

1.4 One Specification

These guidelines set out a single set of specifications for road opening reinstatement for regional and local roads throughout the country. This ensures uniformity of standards and allows organisations such as utility companies and others to better plan their works. It also ensures a consistently high standard of works giving better service to the public and a lower whole life cost for the road opening reinstatement.

This document sets out specifications for use in road opening reinstatements depending on road construction type (bituminous, concrete etc.) and provides recommendations on other relevant aspects of the work.

All road opening reinstatement work on national roads shall be in accordance with Transport Infrastructure Ireland's "Specification for the Reinstatement of Openings in National Roads" and Chapters 6 and 7 of this document do not apply.

1.5 Standards and Specifications

The majority of materials and methods outlined in this document are covered by Transport Infrastructure Ireland's Specification for Road Works. Any reference to an Irish standard or specification, a British or other standard or specification in this document shall be deemed to refer to the latest edition of that publication, unless specifically noted otherwise. Where European standards (EN's/European Norms) are introduced these will take precedence over National Standards.

1.6 Problems Arising

The main problems which manifest themselves in the road pavement and which arise as a result of poor quality road opening reinstatements are:

- i. Settlement
- ii. Irregular longitudinal profile
- iii. Irregular transverse profile
- iv. Ponding and ice formation in the settled area
- v. Surface rupture and potholes
- vi. Surfaces with excessive bitumen (fatting up)
- vii. Protruding or sunken ironmongery
- viii. Ravelling joints

Many of these issues are evident throughout the country and are testament of poor standards and/or poor workmanship in the past. Poor reinstatement can result in potential for accidents, public liability claims and delays in closing the licence. Any necessary subsequent repairs by a road authority of a defective road opening will usually be funded through road maintenance budgets, which seldom command sufficient resources to enable the complete digging out and replacement, which may be required to avoid the requirement for repeated repairs and loss of surface profile.

1.7 Long Term Impact

Even when road openings are carried out to high standards, they typically lower the pavement condition, reduce pavement service life and increase pavement rehabilitation costs due to accelerated repaving requirements. These effects are referred to as Long Term Impact. The onset of this phenomenon will usually be well outside the period for which the capital funding for the infrastructure project has been exhausted and be well outside the period of any guarantee on the reinstatement. The road authority places an appropriate charge for Long Term Impact for each road opening on the Licence Holder.

1.8 Quality Control

It is essential that the Licence Holder manage quality control in regard to the materials being used and the techniques being employed in road opening reinstatement work to at least the same extent as used in other road construction and maintenance activities.

Quality control is addressed in more detail in Chapter 6.

1.9 Safety, Health and Welfare at Work

The process of carrying out an excavation on a public road is regulated by the Safety, Health and Welfare at Work Act 2005 and the Safety, Health and Welfare at Work (Construction) Regulations 2013 and also the Road Safety Infrastructure Directive 2008/96/EC (S.I. No. 472 of 2011).

All those undertaking such works must ensure they have a site specific risk assessment developed and a temporary traffic management plan. As the works come under the remit of the Construction Regulations, the Licence Holder, or agents acting on behalf of the Licence Holder, will normally be the Client as defined in the Regulations. The road authority will not be the Client and therefore will not be responsible for co-ordinating the works, however, as the road authority it reserves the right to inspect the works.

See Chapter 3 for further information on Safety, Health and Welfare at Work.

1.10 Training

It is important that suitably qualified personnel are deployed in the carrying out, inspection, monitoring and certification of the safety and quality aspects of road openings. This includes for the opening, backfilling and reinstatement of road openings. See Section 5.4 for information in relation to the minimum requirements for training in relation to quality.

1.11 Monitoring Works and Maintaining Records

For the purpose of co-ordinating and signing off of works, records should be kept by all statutory undertakers/licence holders. As part of the licensing process, details should be submitted including:-

- Before, during and after records including geo referenced photographs.
- Line, depth, location of proposed and completed infrastructure (including covers and chambers).

The road authority/TII, when dealing with any application for a licence to open a public road, should request that this information and any other relevant details be logged contemporaneously by the

Licence Holder and that these details be furnished to the road authority/TII in a suitable format acceptable to that authority.

1.12 Glossary of Terms

- i. *Applicant*; an individual or an organisation that applies for a licence to open a public road.
- ii. *Licence Holder*; an individual or an organisation that has been granted a licence to open a public road.
- iii. *Guarantee Period*; the period during which the Licence Holder is responsible for maintenance of the road opening after the T5 has been approved.
- iv. *Urban Roads*; are roads with speed-limits less than or equal to 60km/h.
- v. *Rural Roads*; are roads with speed-limits greater than 60km/h.
- vi. *Local Authority & Road Authority*; for the purposes of this document these two terms are interchangeable.
- vii. *Approved Certifier*; All reinstatement works shall be inspected, monitored and certified by an Approved Certifier on behalf of the Licence Holder. The Approved Certifier must have successfully completed the Advanced Level Trench Reinstatement Course.
- viii. *Transport Infrastructure Ireland (TII)/National Roads Authority (NRA)*; For the purposes of this document the term National Roads Authority (NRA) can be taken as meaning Transport Infrastructure Ireland (TII) or vice versa. For the purposes of Telecommunications Infrastructure on National Roads the term road authority shall be taken as also meaning Transport Infrastructure Ireland (TII).
- ix. *Apparatus*; includes any pipe, duct, chamber or conduit.
- x. *Intervention*; Intervention is restoration of a reinstatement which does not comply with the performance standards, to a condition complying with those standards.
- xi. *Temporary Reinstatement*; Temporary Reinstatement is defined as the first stage of a two stage reinstatement procedure where a temporary surface is laid over the backfill layer. This stage is required where the backfill layers are unbound granular in roadways. The temporary surface shall be designed to last for a minimum of six months and must seal and maintain the area of backfill and provide a safe and serviceable surface for vehicles and other road users in accordance with notes and drawings in Chapter 7 of this document. Delay set macadam is not permitted as part of temporary reinstatement.
- xii. *Permanent Reinstatement*; Permanent Reinstatement is defined as the final stage of reinstatement (including removal of any temporary reinstatement) and is completed in accordance with Chapters 6 and 7 of this document.
- xiii. *Short-term surface repair*; This is the use of delay set macadam as reinstatement to facilitate trafficking of the opening for a short period of time. Its use requires approval by the road authority and is always followed by temporary or permanent reinstatement.
- xiv. *Lightly Trafficked Roads*; This is a traffic designation, which a road authority/TII may assign to a roadway. It is based on Annual Average Daily Traffic (AADT) volumes or unique local factors (e.g. sustained high commercial vehicle activity). Lightly Trafficked Roads are roads with a Heavy Commercial Vehicle (HCV) AADT content of less than or equal to 250. This designation, if used, is attached to the road inventory data and is viewable through the MapRoad Licensing (MRL) system.
- xv. *Heavily Trafficked Roads*; This is a traffic designation, which a road authority/TII may assign to a roadway. It is based on AADT volumes or unique local factors (e.g. sustained high commercial vehicle activity). Heavily Trafficked Roads are roads with a HCV AADT content of greater than 250. This designation, if used, is attached to the road inventory data and is viewable through the MapRoad Licensing (MRL) system.

- xvi. *Heavy Duty Locations: These are roads designated by the road authority and are viewable on the MRL system. They include bus lanes, access to certain industrial areas, certain junctions etc.*
- xvii. *Traffic Impact Number: This designation reflects the sensitivity of a roadway to traffic disruption caused by non-emergency road openings and is defined further in Section 4.4.1.*

1.13 Joint Utility/Road Authority Working/User Group

As part of the implementation of the guidelines a user forum will be established to allow for user feedback and dialogue between applicants/licence holders and road authorities. Such a forum will seek to address matters of a significant nature relating to road openings and licensing such as:-

- Guidelines for Managing Road Openings
- Training
- MapRoad Licensing (MRL) system
- Charges and Deposits

The forum should meet at least four times per year unless otherwise agreed by all parties.

2. Legal Frameworks

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In order to excavate a public road a person or body is required to have the relevant powers or permissions. These vary according to the utility sector and are derived from sector specific powers as well as from the Roads Act and Road Traffic Act through the road/local authority. A road opening licence does not entitle the Licence Holder to work in property not on a public road.

This chapter sets out a summary of the legal frameworks relating to the powers of road authorities, utilities and statutory bodies by sector as well as private individuals in forming openings in public roads in Ireland.

2.1 Roads Act 1993

Legislation ➤ Roads Act 1993, Sections 13 (No 14 of 1993)	Appendix. A.3
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In order to carry out an excavation in a public road, a person or body must have the consent of the road authority or must be acting under other specific enabling legislation such as applies to statutory and licenced undertakers. In accordance with the Roads Act 1993, a local authority can issue directions in writing to persons carrying out road works in its functional area. The legal frameworks applying to the Telecommunications, Electricity, Gas and Water Sectors are set out in Sections 2.5 to 2.8 of this document.

Section 13 (6) of the Roads Act, 1993 provides powers whereby a local authority may allow a person or group of persons to carry out maintenance on a local road. This work could also entail opening and backfilling of trenches. Section 13 (10) of the Act prohibits a person from excavating a public road without lawful authority or consent of the road authority.

It is important to note that the road authority may place such restrictions and conditions as it sees fit on the person to whom a consent to open a public road is being granted under the 1993 Act, and furthermore, that the road authority may take action and fill trenches or remove material as it sees fit.

Section 13(10)(b) of the Roads Act, 1993 provides powers whereby a road authority may consent to allow works to be carried out on a road; such permission constitutes a 'road opening licence'. The road authority may attach restrictions and/or conditions to a road opening licence as it deems appropriate. Failure to comply with such restrictions and/or conditions constitutes an offence.

Section 13(10)(c) states that where a person does anything in contravention of Section 13(10)(a), a road authority may remove any defacement, repair any damage, fill in any excavation, remove any material, thing, dung or urine or remove or reduce any hazard, potential hazard, obstruction or interference, and may recover any costs reasonably incurred carrying out such works. (*Section 13(6) and Section 13 (10) text is set out in Appendix A.3*).

It is important to note that in addition to the above all local authorities are empowered to issue binding directions on a range of matters to any person, including statutory undertakers, carrying out roadworks in an authorities' functional areas under Section 101D of the Road Traffic Act, 1961 (as inserted therein by [Section 9](#) of the [Dublin Transport Authority \(Dissolution\) Act, 1987](#)). For the purposes of this document and the MapRoad Licensing System (MRL) such directions shall normally be in the form of a road opening licence with associated conditions.

2.2 Road Traffic Act – Roadworks Control and Co-ordination Powers

<p>Legislation</p> <ul style="list-style-type: none"> ➤ Section 101D Road Traffic Act 1961, (No. 24 of 1961) ➤ Dublin Transportation Dissolution Act 1987 (No. 34 of 1987) ➤ S.I. No. 139/2015 – Road Traffic (Co-ordination of Roadworks) Regulations 2015 	<p>Appendix A.3</p>
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In addition to powers under the Roads Act, all local authorities are empowered to issue binding directions on a range of matters to all persons, including statutory undertakers, carrying out roadworks in the authorities' functional areas. These powers are provided for in Section 101D of the Road Traffic Act, 1961, as inserted by Section 9 of the Dublin Transportation Authority (Dissolution) Act, 1987 and S.I. No. 139/2015 – Road Traffic (Co-ordination of Roadworks) Regulations 2015.

Under this legislation local authorities have the power amongst other things to stipulate and lay down regulations and standards in regard to road openings, particularly relating to:

- (a) Periods during which work may be carried out.
- (b) The manner in which work may be carried out.
- (c) Standards in relation to temporary and permanent reinstatement.
- (d) Provision of security for satisfactory completion.
- (e) Control of traffic.

Statutory Instrument (S.I.) No. 139 of 2015 empowers all local authorities to be able to issue binding directions on a range of matters to any person, including statutory undertakers in relation to the carrying out roadworks in an authorities' functional area. The 2015 Regulations revoke the Road Traffic (Coordination of Roadworks) Regulations 1992 (S.I. No. 323 of 1992) which only designated Dublin, Cork, Limerick, Waterford and Galway City Councils as well as Fingal County Council, South Dublin County Council and Dun Laoghaire-Rathdown County Council. (S.I. No 139 of 2015 and Section 101D of the Road Traffic Act 1961 are set out in Appendix A.)

The terms 'roadworks' and 'emergency roadworks' have the meaning assigned to them in section 101D of the Road Traffic Act 1961 (as inserted by Section 9 of the Dublin Transport Authority (Dissolution) Act 1987):

'roadworks' means repairs, maintenance, alterations, improvements or installations or any other works to, above or under, a public road;

and

'emergency roadworks' means road works, the carrying out of which is immediately required in order to prevent, or reduce the risk of, loss, injury or damage to persons or property.

2.3 Road Safety Infrastructure Directive 2008/96/EC (S.I. No. 472 of 2011)

Legislation	Appendix A1
Road Safety Infrastructure Directive 2008/96/EC (S.I. No. 472 of 2011)	

In its efforts to halve the number of road fatalities by 2010, the EU Commission put forward a proposal for a Directive on Road Infrastructure Safety Management (RISM) to improve safety on roads by ensuring that safety is integrated in all phases of planning, design and operation of road infrastructure in the Trans-European Network. The Directive was approved in 2008 – 2008/96/EC and was transposed into Irish law through Irish Regulation S.I. 472 of 2011.

The Directive applies to roads that are part of the Trans European Network Roads initiative (TERN) – approximately 2,000km. Transport Infrastructure Ireland applies the Directive to all national roads – approximately 5,500 km.

Detailed requirements relating to the implementation of the Directive in Ireland are set out in the Transport Infrastructure Ireland document “Design Manual for Roads and Bridges” (DMRB) on the website www.tiipublications.ie.

The Directive provides for:

- Safety Rankings and Management of the Road Network (HD 15);
- Roadworks Inspections (HD 16);
- Road Safety Inspections (HD 17);
- Road Safety Impact Assessments (HD 18);
- Road Safety Audits (HD 19).

All persons working in relation to these must have received accredited training and be on a register.

2.4 Statutory Undertakers

Legislation
<ul style="list-style-type: none"> ➤ Planning & Development Act 2000. ➤ Roads Act 1993, Section 53. ➤ Road Regulations 1994 (SI No. 119 of 1994).

A large number of road opening operations are carried out by statutory bodies in the provision of essential services to the public such as licenced undertakers in the telecommunications, electricity, gas and water sectors. The operations of these bodies are controlled by separate enabling legislation and details of the legal frameworks applying to each of the above sectors are set out in Sections 2.5 to 2.8 of this document.

The term statutory undertaker is generally used to describe a body or person who is permitted to carry out work on a road, particularly road opening work in performance of its or his/her duty or functions under any Act of the Oireachtas.

Statutory undertakers are defined in the Planning and Development Act 2000 as follows:-

“Statutory Undertaker” means a person, for the time being, authorised by or under any enactment or instrument under an enactment to—

- 1 *construct or operate a railway, canal, inland navigation, dock, harbour or airport,*
 - 2 *provide, or carry out works for the provision of, gas, electricity or telecommunications services,*
- or*
- (c) *provide services connected with, or carry out works for the purposes of the carrying on of the activities of, any public undertaking;*

Statutory Undertakers that have powers to open, dig or excavate a public road are:-

- 1 Network Operators in the Telecommunications Sector;
- 2 Electricity Supply Board/Licensed Undertakers in the Electricity Sector;
- 3 Gas Networks Ireland;
- 4 Uisce Éireann/Irish Water;
- 5 Light Rail Operators.

In conjunction with deregulation of the telecommunications and electricity sectors, other private sector agencies operating under ministerial sanction will be licensed to carry out road opening activities. Other bodies such as the Defence Forces and O.P.W. have some powers in certain situations to work on roads but circumstances and occurrences are rare.

Irish Rail has the power to lay tracks on the public road and construct level crossings under the Railway Clauses Consolidation Acts of 1845, the Railway Clauses Act of 1863 and the Railway Safety Act 2005 Section 5, Schedule 1. In these circumstances, Irish Rail is responsible for the section of road and same is not then part of the “public road”.

Works by State Authorities etc.

Section 53 of the Roads Act provides for the control of works by a state authority, statutory undertaker or a local authority whereby the powers conferred on these bodies to carry out works along, adjoining, in, on, under or over any land comprised in a motorway, busway or protected road otherwise than with the consent of the authority (in the case of a national road) or the Minister (in the case of a regional or local road).

(Section 53 of the Roads Act 1993 is set out in Appendix A.3).

Regulations to give effect to the above were introduced by the Minister under Article 10 of the Road Regulations 1994 (SI No. 119 of 1994). The prescribed works for the purposes of subsection (2) of Section 53 of the Act shall be:

- (a) *The carrying out by any electricity undertaking of development consisting of the construction of overhead transmission or distribution lines for conducting electricity at a nominal voltage of over 20KV;*
- (b) *the carrying out, by Telecom Eireann - The Irish Telecommunications Services Board or by any person to whom a licence under section 111 of the Postal and Telecommunications*

Services Act, 1983 (No. 24 of 1983) has been granted, of development consisting of the provision of-

- (i) overhead telecommunications lines where such lines are attached to poles the height of which exceed 10 metres:*
 - (ii) equipment for transmitting or receiving telecommunications messages from satellites in space where such equipment exceeds 10 metres in height above ground level or where any antenna exceeds 5 metres in width;*
 - (iii) any other telecommunications equipment or apparatus where such equipment or apparatus exceeds 15 metres in height above ground level.*
- (c) The form in Schedule C or a form substantially to the like effect shall be the prescribed form of notice for the purposes of subsection (2) of Section 53 of the Act*

Schedule C with associated notes as mentioned in 2(c) above is set out in Appendix A.2.

2.5 Telecommunications Sector

<p>Legislation</p> <ul style="list-style-type: none"> ➤ Postal and Telecommunications Services Act 1983 ➤ Planning & Development Act 2000 (Section 254) ➤ Communications Regulation Act 2002 ➤ Communications Regulation (Premium Rate Services and Electronic Communications Infrastructure) Act 2010, Section 53 	<p>Appendix A.3</p>
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2.5.1 Regulatory oversight of Telecommunication Operators in Ireland

Telecommunications Companies in Ireland are regulated by the Commission for Communications Regulation (ComReg). ComReg was established on 1 December 2002 under the Communications Regulation Act 2002 to ensure compliance by undertakings with obligations in relation to the supply of and access to electronic communications services, electronic communications networks and associated facilities and the transmission of such services on such networks.

2.5.2 Broad Overview of the Legislation relating to Underground telecommunications infrastructure

The legislation which provides for telecommunication companies or “network operators” to open public roads for the establishment of underground communications infrastructure is the Communications Regulation Act 2002 (2002 Act) and the Communications Regulation (Premium Rate Services and Electronic Communications Infrastructure) Act 2010 (2010 Act). The 2002 Act provides for local authorities to grant consent to telecom operators to open public roads for the establishment of underground communications infrastructure. Under the 2002 Act, local authorities were the sole consent-giving authority in this regard for motorways, national roads, regional roads and local roads. The 2010 Act amended the 2002 Act to designate Transport Infrastructure Ireland as the consenting authority for national roads, which includes motorways. The consenting authority for regional and local roads remains the local authority.

2.5.3 Main elements of the legislation

a. Opening of public road for establishment of underground electronic communications infrastructure.

Licensed undertakers in the telecommunications sector derive their powers relating to excavation and erecting poles and lines along public roads from The Postal and Telecommunications Services Act 1983, The Communications Regulation Act 2002, Part 54, and the Communications Regulation (Premium Rate Services and Electronic Communications Infrastructure) Act 2010, Section 21. (*Part 54 of the 2002 Act and Section 21 of the 2010 Act are set out in Appendix A.3*).

The 2010 Act also provides for specific conditions that may be set by the local authority or TII, without prejudice to any other conditions they may also set. The specified conditions include that any losses and liabilities that the road authority incurs from a third party, which are caused by any act undertaken by the network operator, can be passed on to the network operator.

b. Requirement for communication network operators to obtain Transport Infrastructure Ireland (TII) consent to undertake roadworks on National Roads

The Communications Regulation (Premium Rate Services and Electronic Communications Infrastructure) Act 2010, Section 21 (2) contains a substitute for Section 53 (*Opening of public road for establishment of underground electronic communications infrastructure*) of the Communications Regulation Act 2002 and includes the requirement for communications network operators to obtain TII consent for any proposed roadworks on national roads. (See Appendix A.3).

c. Use of Transport Infrastructure Ireland ducts on National Roads including Motorways

The 2010 Act facilitates TII in making available its ducting on national roads and motorways to network operators. Local authorities remain the consent-giving authority for regional and local roads.

The 2010 Act provides for TII to make a scheme whereby they can impose charges for the use by network operators of ducts on national roads provided by an authority. This is subject to the approval of the Minister of Transport following consultation with the Minister of Finance and the Minister for Communications, Energy and Natural Resources.

Where ducting assets on national roads are provided (and made available) by TII, to a network operator, the authority will not be liable to that network operator for any loss or damage howsoever caused to the electronic communications infrastructure unless it was caused by gross negligence or wilful neglect on the part of the authority. The authority will be allowed to have representatives present during works to supervise compliance.

d. Use of public road for establishment of electronic communications infrastructure overground.

The Communications Regulation Act 2002, Part 54 states as follows:-

54.—(1) Section 254(1) of the Act of 2000 is amended by inserting after paragraph (e) the following paragraph:

(2) A network operator shall be responsible for all costs incurred in the reinstatement of a road to a standard satisfactory to the road authority concerned arising from the opening of the road by the operator for the purpose of—

(a) the establishment of overground electronic communications infrastructure, or

(b) maintenance, repair, replacement or the addition or removal of overground electronic communications equipment.

(3) This section is without prejudice to section 101D of the Road Traffic Act, 1961.

e. Cost apportionment for electronic communications infrastructure relocation due to road improvements.

In terms of cost apportionment, Section 55 of the 2002 Act deals with cost apportionment for relocating electronic communications infrastructure due to road improvements. The 2002 Act provides that, where a road authority undertakes roadworks, it pays to a network operator all reasonable costs incurred by the operator in relocating its infrastructure. This provision is retained in the 2010 Act, with an additional provision that TII will not incur any costs relating to the relocation of network operators' telecoms equipment in ducts on national roads that have been provided and made available by an authority. (See Appendix A.3).

55.—(1) Notwithstanding section 254(4) of the Act of 2000 and subject to this section, where an authority undertakes work for the purposes of improving a public road, it shall pay to a network operator all reasonable costs incurred by the operator in the relocation (except in relation to the relocation of ducts as referred to in subsection (2)) of its electronic communications infrastructure and any associated physical infrastructure necessitated by and directly attributable to that work.

f. Regulations and policy of directions to road authorities.

The Communications Regulation (Premium Rate Services and Electronic Communications Infrastructure) Act 2010, Part 21 (3) replaces Section 56 of the Principal Act. (See Appendix A.3).

56.—(1) The Minister may, with the consent of the Minister for Transport, for the purposes of sections 54(2) and 55, make regulations to establish the basis for the calculation by a network operator of costs reasonably attributable to costs incurred by the network operator as a result of roadworks, and to establish an objective measure of works to be deemed to be improvements to electronic communications infrastructure for the purposes of this Part.

2.6 Electricity Sector

Legislation

- **Electricity (Supply) Act 1927**
- **Electricity (Supply) (Amendment) Act 1932**
- **Electricity (Supply) (Amendment) Act 1935**
- **Electricity (Supply) (Amendment) Act 1941**
- **Electricity Regulation Act 1999**
- **E.C. (Internal Market in Electricity) Regulations 2000**

Electricity supply companies in Ireland are regulated by the Commission for Energy Regulation (CER).

2.6.1 Enabling Power

Licensed undertakers in the electricity sector derive their powers relating to excavation and erecting poles and lines along public roads from the Electricity (Supply) Act 1927 amended by the Electricity (Supply) (Amendment) Act 1935, the Electricity Regulation Act 1999. The E.C. (Internal Market in Electricity) Regulations 2000 also refers.

Under Section 20 (3) of the 1927 Act, the Board may:

(3) Subject to the provisions of this Act, the Board may construct, re-construct, maintain and operate electric generating stations, transformer stations and other stations and places for transforming storing or otherwise dealing with electricity and extend or enlarge the transmission system of the Shannon works and construct, re-construct, maintain and operate such other lines and works as the Board may think fit.

This Section sets out broadly the powers to construct, re-construct and maintain power lines. (These Powers have been extended under Electricity (Supply) Amendment Act 1932 and Electricity (Supply) Amendment Act 1941 both of which can be sourced on the “Irish Statute Book” website www.IrishStatuteBook.ie)

The power in relation to breaking up of a road is set out in Sections 51 and 52 of the 1927 Act and the Board may delegate the power to an Undertaker acting on its behalf.

Section 51 provides:-

51 (1) The Board may whenever it thinks proper lay lines for the transmission and lines for the distribution of electricity along, across or under any street, road, railway or tramway and may for that or any incidental purpose or for any other purpose arising in the course of the exercise or performance of any power or duty conferred or imposed on it by this Act or any other order or regulation made thereunder break up any street, road, railway or tramway.

51 (2) The Board may by order confer on any authorised undertaker power, either generally or for any particular purpose or on any particular occasion and with and subject to such if any, restrictions and conditions as the Board thinks proper, to lay electric lines along, across or under any street, road, railway or tramway whether within or outside the area of supply of such authorised undertaker and for that or any incidental purpose to break up such street, road, railway or tramway.

More specifically however, under Section 52 of the Act, the Board must have prior consultation with the local authority and similar under Section 52, the Board may not authorise any of its undertakers to break up a road without prior consultation.

Section 52 provides:-

52 (1) The Board shall not break up any road without previous consultation with the Local Authority in whose district such road is situate and shall not break up any railway or tramway without previous consultation with the Minister.

52 (2) No order authorising an authorised undertaker to break up any road shall be made by the Board under this Act without previous consultation with the Local Authority in whose district such road is situate, and no order authorising an authorised undertaker to break up any railway or tramway shall be made by the Board under this Act without previous consultation with the Minister.

The Electricity Regulation Act, 1999 amends Sections 51 and 52 (1) of the Principal Act. Under Section 48 of the Electricity Regulation Act, 1999 the power to lay electric lines conferred on the Board “may, with the consent of the Commission [for Electricity Regulation], also be exercised by the holder of an authorisation or the holder of a direct line permission under Section 37 and the said Sections 51 and 52(1) shall apply to the holder of an authorisation or the holder of a direct line permission under the said Section 37 in like manner as they apply to the Board”.

Section 48 provides:-

The power to lay electric lines conferred on the Board by section 51 and section 52(1) of the Principal Act may, with the consent of the Commission, also be exercised by the holder of an authorisation or the holder of a direct line permission under section 37 and the said sections 51 and 52(1) shall apply to the holder of an authorisation or the holder of a direct line permission under the said section 37 in like manner as they apply to the Board.

In addition to these provisions there are obligations on local authorities (among others) to pay the expenses of alterations to the network carried out by the Board, or its authorised undertaker, where those alterations are necessitated by the actions of the local authority or other party.

The general obligation is contained in Section 100 of the 1927 Act which provides:-

If any person does any matter or thing which such person is by or under any statute authorised to do and which necessitates an alteration in any part of any transmission system or of any distribution system for the time being vested in the Board, the Board shall make such alteration, and the expenses incurred by the Board in making such alteration shall be paid to the Board by such person as aforesaid, and the amount of such expenses so to be paid shall, in default of agreement, be fixed by an arbitrator appointed by the Minister.

The application of this general principle to the specific case of alterations to the network necessitated by alterations by local authorities to roads or bridges is contained in Section 77 of the 1927 Act which is now amended through the Electricity Regulation Act, 1999.

Section 44 of the Electricity Regulation Act, 1999 provides for the payment by local authorities of expenses for certain alterations to the electricity infrastructure. The amended section applies to “an authorised undertaker” or a holder of an authorisation under Section 16 [Authorisations to construct or reconstruct a generating station] of the Electricity Regulation Act, 1999 or the holder of a direct line permission under Section 37 of the Electricity Regulation Act, 1999. (Section 44 of the Electricity Regulation Act, 1999 is detailed in Appendix A.3)

The Electricity (Supply) (Amendment) Act 1935 served to clarify the meaning of the power to lay lines to include the erection of poles, posts and other infrastructure.

2.—(1) The power conferred on the Board by sub-section (1) of section 51 of the Principal Act to lay lines for the transmission and lines for the distribution of electricity along or across any street, road, railway, or tramway shall include and be deemed always to have included power to lay such lines above ground at any height and also power to erect, in or on any such street, road, railway, or tramway, such posts, poles, and other erections as the Board shall consider to be necessary or proper for carrying or supporting any such line so laid, and the power conferred on the Board by the said sub-section to break up any street, road, railway, or tramway shall include and be deemed always to have included power to break up any street, road, railway, or tramway for the purpose of erecting therein or thereon such posts, poles and other erections as aforesaid.

Section 3 (1) of the 1935 Act also clarified the use of the word ‘road’ to include ‘street’.

3 (1) Section 52 of the Principal Act shall be construed and have effect and be deemed always to have had effect as if the word “road” included a street.

Under Section 29 of the European Communities (Internal Market in Electricity) Regulations, 2000

“any duty, obligation or requirement on the Board (ESB) under Part VII and Part VIII of the Electricity Regulation Act, 1999 necessary for the discharge of the transmission system

operator's functions shall also be regarded as a duty, obligation or requirement on the transmission system operator.

Any power conferred on the Board under Part VII and Part VIII of the 1999 Act necessary for the discharge of the transmission system operator's functions under the regulations shall be regarded as a power conferred on the transmission system operator and not on the Board other than where it is also necessary for the Board to discharge its functions as transmission system owner in which case the power shall be conferred on both the Board and the transmission system operator.

Any work commenced or being carried out by the Board necessary for the discharge of the transmission system operator's functions under the regulations shall be continued and carried out by the transmission system operator. In the event of a dispute between the transmission system owner and the transmission system operator in the carrying out of their functions under the regulations, the matter in dispute shall be submitted to the Commission for Energy Regulation for decision.

(Section 29 of the European Communities (Internal Market in Electricity) Regulations, 2000 is set out in Appendix A.3).

2.6.2 Summary

The Electricity Supply Board and Licenced Undertakers in the Electricity Sector are obliged only to consult with the road authority.

2.7 Gas Sector

Legislation

- **Gasworks Clauses Act 1847**
- **Gas Act 1976**
- **Gas Amendment Act 1987 (Section 2) Order 1987 (S.I. No 283 of 1987)**
- **Gas (Amendment) Act 2000**

2.7.1 Enabling Power

The gas industry derives its functions and powers from the Gasworks Clauses Act 1847, the Gas Act 1976, the Gas (Amendment) Act 1987 (Section 2) Order 1987 (S.I. No 283 of 1987) and Gas (Amendment) Act, 2000. Section 27 of the Gas Act, 1976, as amended by Section 20 of the Gas (Amendment) Act, 2000 sets out the powers of persons constructing and operating pipelines with regard to construction, maintenance and repair of pipelines.

Under Section 27 (1) (d), persons constructing pipelines in the gas industry may do the following:

27 (1) (d) dig, break or otherwise temporarily close, cross, extend divert or otherwise interfere with or alter any road, railway, navigable waterway, river, stream or other watercourse, bridge, tunnel, culvert, pipe, drain or other thing.

This Section gives power to an authorised undertaker in the gas industry to do work on a road.

2.7.2 Consent

However, under Section 27 (2), the undertaker cannot carry out the works mentioned without the consent of the road authority and the road authority may attach such reasonable conditions as it thinks fit.

27 (2) The Board shall not, in relation to a thing owned by the Commission, a road Authority, a person specified or described in Section 8 (9) of this Act or the Minister or any other Minister of State, exercise a power mentioned in subsection (1) of this

section except with the consent of the Commission, Road Authority, Person or Minister of State concerned and in giving such consent, the Commission, Authority, Person or Minister may attach thereto such reasonable conditions as it or he thinks fit and in addition to the foregoing.

Note in this Section, the ‘road authority’ has the same meaning as in Section 2 of the Local Government Act of 1946.

2.7.3 Summary

The Authorised Undertaker in the gas industry must ‘obtain consent’ from the road authority and the road authority may apply such reasonable conditions as it thinks fit.

2.8 Water Sector

Legislation

- **Water Services Act 2007**
- **Water Services Act 2013**
- **Water Services (No.2) Act 2013**
- **Water Services Act 2014**

The Water Services Act 2007, Section 41, as amended sets out the powers available to a water services authority for the installation of pipes for the purposes of providing or assisting in the provision of water services as follows:-

Installation of pipes.

41.(1) In this section—

“ local road ”, “national road” , “public road” , “regional road” and “road” have the same meaning as in section 2 of the Roads Act 1993 ;

“ pipes ” includes sewers, drains, water mains, distribution systems, service connections or their accessories;

“ ‘road authority’ means—

(a) in the case of a toll road within the meaning of Part V of the Roads Act 1993, the National Roads Authority, and

(b) in all other cases, a local authority within the meaning of the Act of 2001, other than a local authority referred to in Part 2 of Schedule 6 to that Act.”,

(2) A water services authority, or other person acting jointly with it or on its behalf, may, for the purpose of providing or assisting in the provision of water services, carry pipes through, across, over, under or along any public road, or place intended for a public road, or under or over any cellar or vault which may be under the pavement or carriageway of any public road, or from time to time repair, alter, remove or replace the same, subject to the consent of the relevant road authority where the water services authority is not the road authority for that road or place intended for a road.

(3) Any person authorised by a water services authority to provide water services or any person providing water services jointly with or on behalf of that person, may, in respect of the provision of those services, carry pipes through, across, over, under or along a public road, or place intended for a public road, or under or over any cellar or vault which may be under the pavement or carriageway of any public road, or from time to time repair, alter, remove or replace the same, subject to the consent of the road authority for that road.

(4) Subject to any regulations that the Minister may make under subsection (6), a road authority may attach conditions to the granting of any consent under subsection (2) or (3), which shall be binding on the said water services authority or authorised provider of water services or person providing water services jointly with or on behalf of the water services authority or authorised provider of water services as the case may be.

(5) Without prejudice to the generality of subsection (4), conditions attaching to any consent may include—

- (a) the periods during which and times at which works shall be or shall not be carried out,
- (b) the period within which works shall be completed,
- (c) the manner in which works shall be completed,
- (d) requirements and standards in relation to the temporary or permanent reinstatement of a public road following the carrying out of works,
- (e) requirements in relation to giving security, including refundable deposits, as the case may be, for the satisfactory reinstatement of a public road following the carrying out of works,
- (f) requirements in relation to the co-ordination of work with other work being undertaken or proposed by other persons,
- (g) requirements in relation to the control of traffic in the vicinity of works,
- (h) requirements in relation to the supervision and inspection of works by the road authority,
- (i) requirements in relation to the carrying out of additional works,
- (j) requirements in relation to the provision of information to the public as to the extent or nature of the works or the period within which they shall be completed, and
- (k) any other measures considered necessary by the road authority for the protection of human health or the environment, and to facilitate sustainable development.

(6) The Minister may, with the consent of the Minister for Transport, make regulations for the purposes of this section.

(7) Without prejudice to the generality of subsection (6), regulations under this section may include provision for—

- (a) procedures for the administration of the consent process, including in relation to refusal or withdrawal of a consent,
- (b) charges for administration of the consent process,

(c) matters to be taken into consideration by a road authority for the purposes of the consent process,

(d) conditions attaching to a consent,

(e) waiving or substitution of consent procedures in an emergency for the purposes of protecting human health and the environment,

(f) requirements and standards in relation to the reinstatement of roads,

(g) notification and public consultation requirements, or

(h) procedures when consent is refused or withdrawn, or an applicant for consent wishes to make representations in relation to conditions attaching to a consent.

(8) Regulations under this section may make different provisions for applications for consent for different classes of roads.

(9) A requirement to hold a licence under section 254 of the Act of 2000 in respect of works on, under, over or along a public road shall not apply to a person who has obtained the consent of a road authority under this section, in respect of the works to which the consent relates.

(10) A road authority shall have a right of action for relief by way of injunction or declaration from the High Court against any person to restrain any non-compliance or direct any compliance with a requirement of this section, and the Court may grant such order as it sees fit.

(11) For the purposes of this Act, where a person (other than a road authority) claims an interest in or under any road—

(a) it shall be for the person concerned to prove such interest, and

(b) the value of such interest shall be taken to be nil unless it is shown to be otherwise by the person.

(12) Section 182 of the Act of 2000 shall apply to a water services authority for the purposes of this Act, and any references to a local authority in the said section or in Part XIV or related Parts of the Act of 2000 shall be deemed to be a reference to a water services authority for the purposes of this Act.

(13) A water services authority may, by agreement with the water services authority of any adjoining area, cause its pipes to connect with the pipes of that authority in such manner and on such terms and subject to such conditions as may be agreed between the water services authorities.

(14) A water services authority may exercise its powers under this section either within or without its functional area, but where they are exercised in the functional area of another water services authority, the prior agreement of that authority must be obtained.

Water Meters

The Water Services Act 2013 provides for the establishment of Irish Water/Uisce Éireann as a subsidiary of Ervia. Irish Water/Uisce Éireann is now responsible for the installation of water meters for domestic households connected to a public water supply. The Act provides Ervia and Irish Water/Uisce Éireann with the authority to install meters in all domestic properties and provides any of the necessary powers, available to a water services authority under the 2007 Act, that are necessary to meet this objective.

For the purposes of water meter installation the Water Services Act 2013 Section 21 (1) removes the requirement under Section 41 of the Water Services Act 2007 for Ervia or Irish Water (or their contractors) to obtain the consent of road authorities for works on public roads which are being carried out in performance of their functions as a “metering authority” as set out in the 2013 Act.

21.—(1) Section 41 of the Act of 2007 shall apply to the performance by a metering authority of functions in accordance with this Act subject to the deletion, in subsection (2), of the words “subject to the consent of the relevant road authority where the water services authority is not the road authority for that road or place intended for a road”.

(2) For the avoidance of doubt, the provisions of the Planning and Development Act 2000 shall apply to a metering authority as, by virtue of subsection (12) of section 41 of the Act of 2007, they apply to a water services authority.

Service Level Agreements

The Water Service (No.2) Act 2013 at Section 31 also provides that Irish Water/Uisce Éireann may make agreements with local authorities to perform certain specified functions of Irish Water/Uisce Éireann.

2.9 Light Railways

Legislation

- **Transport (Railway Infrastructure) Act 2001**
- **Roads Act 1993**

2.9.1 Responsibility & Liability

A light railway is authorised by a railway order, which is granted by the Minister for Transport. Within the Roads Act 1993, under Section 13 (9) (b), notwithstanding the definition of “road”, nothing in the Act shall be construed as imposing on a road authority any liability, duty or obligation to-

construct or maintain any bridges, tunnels, railway crossings or any other structure which by virtue of any enactment are the responsibility of a railway company or other person.

2.9.2 Consent

Within the Transport (Railway Infrastructure) Act 2001, under Section 63,

(1) A person shall not excavate a public road or part thereof on which there is a light railway without the prior written consent of the road authority concerned and subject to any conditions contained in any such consent.

(2) Before giving its consent under subsection (1), a road authority shall obtain the written views of the Agency and shall consider any written objections or representations made by the Agency and not withdrawn.

(3) A person who contravenes subsection (1) is guilty of an offence and shall be liable on summary conviction to a fine not exceeding €2,000 (£1,575.13) or to imprisonment for a term not exceeding 3 months or to both.

(4) Where a road authority proposes to excavate or close under section 75 of the Act of 1993 a public road or part thereof on which there is a light railway it shall obtain the written views of the Agency and shall consider any written objections or representations made by the Agency and not withdrawn before carrying out any such excavation or closure.

Within the Transport (Railway Infrastructure) Act 2001, under Section 50,

(1) Upon the commencement of a railway order, the railway undertaking shall thereupon be authorised for the purpose of carrying out railway works or the operation, maintenance, repair or improvement of a railway or for any purpose incidental to the purposes aforesaid to-

(a) open, break up and, if necessary, alter the level or route of any public road, or

(b) construct a new road.

(2) The railway undertaking shall not open, break up or alter the level or route of any public road or construct a new road without the prior consent in writing (which shall not be unreasonably withheld) of the road authority in whose functional area the road is situate or, in the case of a new road, to be situate.

(3) A consent under subsection (2) may be given by the road authority subject to such conditions, restrictions or requirements as it thinks fit and specifies in the consent and the railway undertaking shall comply with such conditions, restrictions or requirements (if any).

2.9.3 LUAS - Light Rail System

On a light rail system there are dangers to life and limb that are significantly different from those met elsewhere. Light rail vehicles can travel at speeds up to 70kph, are quiet in operation and cannot steer to avoid obstructions. In addition, exposed overhead lines carry electricity at a dangerous voltage. Accordingly special precautions need to be taken by utilities/operators and other parties carrying out works on, near or adjacent to the LUAS system. The operator may impose restrictions over and above those imposed by Road Authorities. A Code of Practice for parties carrying out works on, near or adjacent to the LUAS system has been drawn up and copies can be obtained from the Operator. The streets affected by the existing LUAS system are deemed to include all side roads extending 25 metres back from a junction with the main road or street with a light rail service. All Directions/Permits/Consents issued to utilities/operators governing works in affected streets will contain a condition placing an onus on the applicant to consult with and obtain the approval of the Light Rail Operator.

3. Legal/Statutory Requirements for Roadworks

3. Legal/Statutory Requirements for Road Openings

3.1 Licences, Consents and Directions

In accordance with the Road Traffic Act (1961) as amended and the Local Government Act (2001) as amended local authorities (road authorities) are empowered to issue binding directions/licences to all persons or organisations that carry out road openings on a public road in their functional area. For the purposes of this document and the MapRoad Licensing (MRL) system these are called licences, that are issued with conditions, that are consistent with these guidelines and are subject to compliance by the applicant. In addition, an instruction issued by a road authority/TII is the same as a direction.

When giving a direction (licence) a road authority/TII shall have regard to:

- The manner in which work may be carried out,
- The need to coordinate, in such a manner as to minimise any disruption of traffic by the roadworks concerned,
- The periods during which and the times at which the roadworks concerned and the other works are carried out,
- The necessity to minimise the disruption to traffic caused by the roadworks concerned and other roadworks,
- The urgency of the need to carry out the roadworks,
- Standards in relation to temporary and permanent reinstatement,
- Provision of security for satisfactory completion,
- Any cost likely to be incurred as a result of the direction.

Directions can be issued in the form of a licence with associated conditions.

3.2 Insurance

3.2.1 Requirements

It is imperative to ensure that proper and adequate insurances are in place to cover the risks involved and to indemnify the road authority/TII while road opening work is being carried out and through to the end of the guarantee period. All persons or bodies that carry out road opening work must be trained and competent as set out in this document. Details of insurance cover required by applicants and Licence Holders are set out in Section 3.2.2 and 3.2.3. The closeout of a road opening licence by the road authority/TII may not relieve the Licence Holder of all legal liability that may arise after the guarantee period. In particular the ending of the guarantee period does not affect the liability of the Licence Holder for latent defects, subject to the Statute of Limitations measured from the date of post works signoff.

3.2.2. Minimum Insurance Cover

The road authority/TII should ensure that the level of insurance cover is sufficient, is extended to cover work on public roads and that the “excess sum” is appropriate to the Licence Holder. Insurances are managed by the Road Management Office (RMO) through the MapRoad Licensing

(MRL) System on behalf of the road authorities/TII. Evidence of the following insurances should be sought:

- i. Public (PL) and Products Liability Insurance, minimum indemnity level must be €6.5m,
- ii. Employers Liability (EL) Insurance, minimum indemnity level must be €13m.

Submission of EL/PL Insurance details by the applicant/Licence Holder to the local authority/TII/RMO must be on the headed paper of the Insurer or Insurance Broker and must include the following information:

- The Insurer (Not Insurance Broker),
- The Insurance Policy Number(s),
- The period of insurance,
- The Business Description on the Insurance must cater for all activities associated with the works,
- The named person/Entity on the Insurance Policy must be the same as the Applicant/Licencee name,
- The Indemnity Level,
- The Insurances must note an indemnity to the list of all road authorities in Ireland and TII for the purposes of road opening works on behalf of the Insured or Third Parties.

The Licence Holder must provide evidence of continuous insurance for the duration of the works and guarantee period. In certain circumstances, such as for large scale works or where there are higher risks, these limits may be increased.

Failure to verify that the required insurances, as set out in the applicable road opening licence, were continuously in place to the end of the guarantee period will result in forfeiture of the reinstatement charge.

3.2.3. Indemnification of Road Authority/Transport Infrastructure Ireland in the case of National Roads.

The Licence Holder shall be solely responsible for and shall indemnify the relevant road authority and Transport Infrastructure Ireland (TII) (in the case of national roads) in respect of any legal liability, loss, claim or proceedings whatsoever arising out of or in connection with death and/or bodily injury to any persons whomsoever and/or loss or damage to any property whatsoever which arises directly or indirectly out of the granting of the road opening licence and all associated works or activities including any installed property save for the negligence of the relevant road authority and/or Transport Infrastructure Ireland (TII) (in the case of national roads).

Without prejudice to the provision in clause 3.2.2 above providing for increase of normal limits on insurances in the case of large scale works where there are higher risks, subject to the prior approval by the road authority the Licence Holder shall take out and maintain Employers Liability and Public Liability insurance with indemnity limits of not less than €13 million and €6.5 million respectively, covering any liability, loss, claim or proceedings in respect the road openings that are the subject of the licence or ancillary to it. Such insurances shall be extended to include a specific indemnity to the road authority and Transport Infrastructure Ireland (TII) (in the case of national roads) and shall be maintained for the duration of the works period and the guarantee period.

In so far as any works or installed property is insured for material damage, the Licence Holder shall present evidence of same whereby such insurance must contain a waiver of subrogation rights in favour of the Roads Authority and Transport Infrastructure Ireland (TII) (in the case of National Roads). Where Material Damage insurance has not been presented or is not in effect, the Licence Holder shall agree and acknowledge that the Roads Authority and Transport Infrastructure Ireland (TII) (in the case of National Roads) will not have any liability for loss or damage to any works or installed property howsoever caused. This will remain in full force for the duration of the road

opening licence and in perpetuity for any installed property and the subsequent alteration, maintenance or repair of installed property.

3.3 Health & Safety

The Safety, Health and Welfare at Work Act 2005 (the 2005 Act), and all other statutory provisions made under the Act, sets out the legal framework for occupational safety and health and is aimed at securing the safety, health and welfare of persons at work.

The process of carrying out an excavation on a public road is regulated by the Safety, Health and Welfare at Work Act 2005 and the Safety, Health and Welfare at Work (Construction) Regulations (2013).

The 2005 Act and associated Regulations place a duty on Employers to make an assessment of the risks to the safety and health of those they employ as well as others who may be affected by the work being undertaken. The assessment should identify the control measures to be taken in order to comply with all relevant safety and health legislation. Systems should be implemented to ensure the effective planning, organising, controlling, monitoring and reviewing of measures put in place to secure safety and health.

When putting control measures in place, organisations need to have regard to the term ‘reasonably practicable’, which, in relation to the duties of an Employer, is defined in Section 2(6) of the 2005 Act to mean that an Employer has exercised all due care by putting in place the necessary protective and preventive measures, having identified the hazards and assessed the risks to safety and health likely to result in accidents or injury to health at the place of work concerned and where the putting in place of any further measures is grossly disproportionate having regard to the unusual, unforeseeable and exceptional nature of any circumstance or occurrence that may result in an accident at work or injury to health at that place of work.

Section 2 of the 2005 Act defines a “place of work” to include any, or any part of any, place (whether or not within or forming part of a building or structure), land or other location at, in, upon or near which, work is carried out whether occasionally or otherwise.

All those undertaking such works must ensure they have appropriate risk assessments developed, communicated to relevant personnel and implemented. Particular attention must be paid to ensure the works are carried out in compliance with the requirements for working on Roads, as per Regulation 97 of the Construction Regulations.

The Licence Holder, or agents acting on behalf of the Licence Holder, will normally be the Client as defined in the Regulations. The road authority will not be the Client and therefore will not be responsible for co-ordinating safety health and welfare, the road authority however, reserves the right to inspect the works.

Further information can be found in the “Guidance for the Control and Management of Traffic at Road Works”, available on the Department of Transport, Tourism and Sport website www.trafficsigns.ie and in the Health and Safety Authority “Guidelines for Working on Roads” document which is available on the Health and Safety Authority website www.hsa.ie.

3.4 Temporary Traffic Management

3.4.1 General Principles of Temporary Traffic Management

In the carrying out of opening works on a public road, it may be necessary to install temporary traffic management measures to facilitate the road works. In doing so there are two main objectives in the planning and design of roadworks activities as follows: -

- i. **Primary objective:** - To maximise the safety of the workforce and all road users.
It is the responsibility of the Licence Holder along with their other obligations arising out of Safety, Health and Welfare at Work legislation to ensure, in so far as is reasonably practicable, the safety of the workforce and all road users.
- ii. **Secondary objective:** - To keep traffic flowing as freely as possible and reduce the impact of the roadworks to a minimum.
The road authority/TII may set requirements for any temporary traffic management plans in respect of the permitted level of impact that the roadworks will have on other road users. Such requirements may specify the use of certain types of traffic management such as: road/lane closure, 2-way traffic, shuttle working etc.

When roadworks affect the safety of other road users, and the road authority/TII is aware that such effects are not being dealt with within the temporary traffic management plan, the road authority/TII can issue instructions on proposed or live plans.

The road authority/TII may also set layout requirements in relation to maximum shuttle lengths, timing, unobstructed road widths, temporary road markings etc. with which the submitted temporary traffic management plan shall conform.

It is the responsibility of the Licence Holder to implement temporary traffic management plan(s) that satisfy: -

- the road authority/TII requirements in relation to the control of traffic in the vicinity of roadworks and
- meet the standards set out in Chapter 8 of the Traffic Signs Manual.

The road authority/TII will not approve, or verify whether submitted traffic management plans meet the standards of Chapter 8 of the Traffic Signs Manual or Safety, Health and Welfare at Work legislation.

3.4.2 Temporary Road Closures

A Licence Holder as part of their licence may require a temporary road closure from the road authority. This is a separate statutory process with a separate application to the road authority. Where a closure is envisaged, it should be considered by the applicant and the road authority during the application process and will be subject to a statutory public consultation and input of An Garda Síochána. It is the Licence Holder's responsibility to ensure that the road opening licence and the Road Closure Order are both valid during the works. The statutory procedures related to road closures, including time-frames, are set out under Section 75 of the 1993 Roads Act and the Regulations published under Statutory Instrument S. I. No. 119 of 1994. Typically, this will be six weeks minimum notice.

A road authority/TII, when dealing with an application or project should be satisfied that a closure is essential for the works having regard to needs of other road users and that alternative options have been considered such as limiting working hours. Road closures can have a serious effect on bus operations, one way street systems, etc. The closure of the road to traffic in one direction only is a similar procedure and requires application to the road authority and public notice as described above.

3.4.3 Role of An Garda Síochána

Two key factors in traffic control are traffic management and enforcement of the law. Traffic management is a responsibility shared between An Garda Síochána and other agencies, whereas traffic law enforcement is almost entirely a function of An Garda Síochána – Traffic Wardens and authorised persons, such as immobilisation services (claspers), have a role in relation to certain illegal parking offences. An Garda Síochána Traffic Corps is dedicated to the enforcement of road traffic legislation and also to aiding the free flow of traffic generally.

Any proposals to use positive traffic control measures are to be notified to An Garda Síochána by the Licence Holder prior to commencement of works. A copy of the template notification form is available in 'Guidance for the Control and Management of Traffic at Roadworks'.

Important Note: An Garda Síochána should be notified immediately if an organisation or individual carrying out road works in accordance with Chapter 8 of the Traffic Signs Manual or this guidance document have concerns regarding traffic behaviour at or in the vicinity of roadworks.

4. Road Opening Licences and Procedures

4 Road Opening Licences and Procedures

4.1 MapRoad Roadworks Licensing (MRL)

The legal framework around the granting of a road opening licence is detailed in Section 2 and 3 of this document. A road opening licence is required in order to carry out an excavation in a public road.

MapRoad Roadworks Licensing (MRL) is the national on-line system for managing road opening licensing. The system supports government strategies in relation to jobs, communication, utilities and development. MRL is supported by the Road Management Office on behalf of all road authorities and TII.

MapRoad Licensing (MRL) shall be used by all stakeholders in relation to road openings including:-

- Road authorities/TII;
- Utility companies;
- Contractors;
- Other bodies involved in the processing of some licences;
- An Garda Síochána.

The functionality of MRL also includes for the central management and co-ordination of financial transactions, monitoring and tracking the performance of both applicants and licensing authorities.

Registration and access to MRL is through the Road Management Office (RMO) website: www.rmo.ie. Registration requires the applicant to satisfy certain minimum requirements relating to Insurances, qualifications etc. MRL provides the necessary functionality for the management of road openings across the state as set out in these guidelines.

4.2 Notification and Licence Types

Road openings vary in size, complexity and location. These variations have different impacts on the road and traffic using it. In order to manage the effect on the road asset and traffic, road authorities use a “T” system of licensing to manage the works in a proportionate manner. Smaller works of lower impact require less processing by road authorities/TII than larger, more complex works. The T system is summarised in the table 4.2 below.

The criteria that determine which licence or notification applies are set out in detail the following sections and the timelines that apply are set out in Section 4.5 and Table 4.6.1.

Applications for telecommunication infrastructure under national roads:

Applications for underground electronic communications/telecommunications infrastructure under national roads are determined separately by TII following statutory consultation (of up to 21 days) with the relevant road authority. The periods set out in Table 4.6.1 do not apply to these applications.

Table 4.2: - 'T' Model Licensing Process

T1 Notification	The T1 is not a licence. It is notification of intent to perform works of <u>high impact</u> due to extent or complexity. The notification is to allow adequate time for consultation, determination, coordination and joint planning between applicant and authority in relation to subsequent licence(s). T2 licence(s) applied for subsequent to the T1 may be subject to reduced approval and works programme notification periods than normal T2(s).
T2 Licence	An application to carry out works of <u>moderate impact</u> due to the location, extent, amount or duration of the work. A T2 licence requires time for approval and works notification unless preceded by a T1 when these periods may be reduced.
T3 Licence	An application to carry out works of <u>low impact</u> due to the location, extent, amount or duration of the work. A T3 licence requires a short application period and does not require a works programme notification.
T4 Notification	A notification of <u>emergency works</u> (as defined under legislation). Notification must occur at the time or as soon as possible after commencement and works must be carried out during a limited time period. This notification fulfils the requirements of legislation and these guidelines when followed by a T5. Once the emergency is addressed on site, a T2 or T3 licence may be subsequently required to complete works that are not of an emergency nature.
T5 Notification	A notification of <u>completion of works carried out under T2, T3 or T4.</u>

4.2.1 T1 Notification [Advance Notification]

A T1 is a notification of intent to perform large or complex road works. The purpose of the T1 is to ensure effective co-ordination and efficient planning of roadworks for both the road authority/TII and utilities. A key element of the T1 process is consultation. **It is strongly recommended that applicants engage with authorities prior to submitting a T1 to determine the structure and over-arching conditions that will attach to the subsequent licences.**

The T1 process will determine the scope of the works (including the maximum limits) and how the licence applications relating to it will be managed.

T1 examples include:

- 'Find and Fix' type contracts for water leak detection and repair,
- Rollout of new telecommunications infrastructure at village/ town level,
- Major capital projects for utilities.

Typically a T1 will be required when, any of the limits are exceeded or criteria are present as set out in table 4.2.1.

A T1 is not a road opening licence and must be followed by one or more T2 application(s) for different elements of the work. Approval and notification periods for T2(s) related to a T1 may be shorter than normal T2(s). The T1 process will determine the number of T2's that will be required.

T2's related to a T1 will typically be managed in accordance with the following guidelines.

- They will be broken down by geographical area or road/route e.g. housing estate(s), townland(s), street(s), Road(s) etc. In most circumstances, these will be broken into applications requiring the same general reinstatement standards and licence conditions.
- They will be broken into different validity periods. In normal circumstances, this will be broken down into areas with the same timing restrictions on the works.
- A maximum total number of openings per subsequent licence(s) will be set.

Table 4.2.1: - T1 Licence Parameters

Parameter	Urban Roads	Rural Roads	Remarks
Total Length (m)	> 100	> 1,000	This will typically include one opening or combination of openings across the area affected by the works.
Total Area (m ²)	> 100	> 1,000	
Duration of works (days)	> 30	> 30	These are site works days, and not the validity period of the licence.
Number of openings	Varies	Varies	See T2 Application.
Presence of Special Engineering Difficulty	Yes	Yes	See 4.4.3
Works affecting the structure of a bridge	Yes	Yes	See 4.4.4
Number of roads or streets affected	> 1	N/A	The number indicated represents typical urban streets. This number may be relaxed for rural roads.
Works affecting signalised junctions	Yes	No	

T1 consultation period is generally a maximum of 90 days. Approval of a T1 notification by the road authority/TII is not a licence to proceed with the works. Subject to agreement with the road authority/TII (and in accordance with the bullet points above) a T2 licence application may be submitted during the course of the T1 consultation period.

4.2.2 T2 Licence [Roadworks Licence]

A **T2** is a licence to perform road works of **significant** impact. Typically a T2 will be required within the ranges set out in Table 4.2.2. Where a T2 application is made as part of a T1, alternative limits may be specified in the T1 conditions.

Table 4.2.2: - T2 Licence Parameters

Parameter	Urban Roads	Rural Roads	Remarks
Total Length L (m)	$10 < L \leq 100$	$100 < L \leq 1000$	This will typically include one opening or combination of openings across the area affected by the works
Total Area A (m ²)	$10 < A \leq 100$	$100 < A \leq 1000$	
Duration of works (days)	$5 < D \leq 30$	$5 < D \leq 30$	These are site works days, and not the validity period of the licence.
Number of openings	> 5	> 5	Engagement with the road authority is recommended where a large number of openings are being applied for as the road authority may request a T1 or a number of T2 applications in these circumstances.
Number of roads or streets affected	1 max	N/A	The number indicated represents typical urban streets. This may be relaxed for rural roads.
Works affecting a roadway with a Traffic Impact of 3, 4 or 5.	Required	Required	See section 4.4.1 for details
Presence of a bridge	required	required	See 4.4.4

A T2 Application must be submitted in advance of the works beginning on site (The **T2 Application Period**) - generally this could be up to 21 days.

Note: For telecommunications works on national roads, TII is the licensing authority. In accordance with legislation, further consultation is required and timelines for applications are therefore increased by up to 21 days.

4.2.3 T3 Licence [Minor/Routine Roadworks Licence]

A T3 is a licence to perform road works of low impact. These are generally minor works that are discreet in nature in low impact locations. Typically a T3 will be permitted in accordance with the limits in table 4.2.3.

Table 4.2.3: - T3 Licence Parameters

Parameter	Urban Roads	Rural Roads	Remarks
Total Length L (m)	$L \leq 10$	$L \leq 100$	This will typically be one opening or combination of a limited number of openings across the area affected by the works.
Total Area A (m ²)	$A \leq 10$	$A \leq 100$	
Duration of works (days)	$D \leq 5$	$D \leq 5$	These are site works days, and not the validity period of the licence.
Number of openings (Road Traffic Impact 0 or 1)	≤ 5	≤ 5	See section 4.4.1 for details.
Number of openings in (Road Traffic Impact 2)	1	1	See section 4.4.1 for details.
Works affecting a roadway with a traffic impact number of 3, 4 or 5.	Not permitted	Not permitted	See section 4.4.1 for details. T2 licence required in these instances.

A T3 licence may be required in the case of non-immediate permanent reinstatement of emergency works.

A T3 Application must be submitted in advance of the works beginning on site (The **T3 application period**) – generally this could be up to 3 days.

Note: For telecommunications works on national roads, TII is the licensing authority. In accordance with legislation further consultation is required and timelines for applications are therefore increased by up to 21 days.

4.2.4 T4 Licence [Emergency Roadworks]

Emergency roadworks are roadworks that are immediately required in order to prevent, or reduce the risk of, loss, injury or damage to persons or property. The person undertaking the roadworks must assess if they reasonably believe the roadworks to be an emergency. In any event, the road authority/TII can issue directions for these works, including directions that such works are not, or are no longer emergency roadworks.

A T4 notification must be submitted to the relevant road authority/TII for emergency roadworks. Ideally this should be prior to commencement of works but not later than 12:00 on the same day (or 12:00 on the following day, if the emergency arises after 12:00), a T4 application must be submitted outlining the details of the works. The T4 Licence Holder is required to maintain the reinstated opening during the **guarantee period** (normally 24 months or 36 months after all licenced works have been completed), and also to comply with directions issued by the road authority/TII during the works period and guarantee period. These applications are only permissible for that part of the works that are emergency in nature.

The road authority/TII can require the applicant to submit a T2 or T3 application if:

- the applicant has only completed temporary reinstatement, or
- the road authority/TII requires further works to be carried out by the applicant, or
- the road authority/TII determines that the works were not an emergency (in addition to imposing financial and other sanctions), or
- further works (not being emergency) are required by the applicant.

When this occurs, the T5 period and guarantee period will be managed through the T2 or T3 process.

4.2.5 T5 Notification [Completion of Roadworks]

All road openings will have a **T5** notification, where the Licence Holder will notify the road authority/TII that all licenced works have been completed. The T5 must be completed by an Approved Certifier. The guarantee period begins on the date that the Licence Holder has submitted a T5, where such T5 has been accepted by the road authority/TII. Where a T5 Notification is not submitted within 90 days following completion of licenced works, financial and other sanctions may be imposed by the road authority/TII. Failure to submit a T5 will not relieve in any way the responsibility or liability of the Licence Holder in relation to the opening, and will result in the Licence Holder maintaining responsibility and liability for the opening for an extended period until the T5 is eventually submitted and accepted by the road authority/TII and the subsequent guarantee period elapses.

4.2.6 Complete T Model System

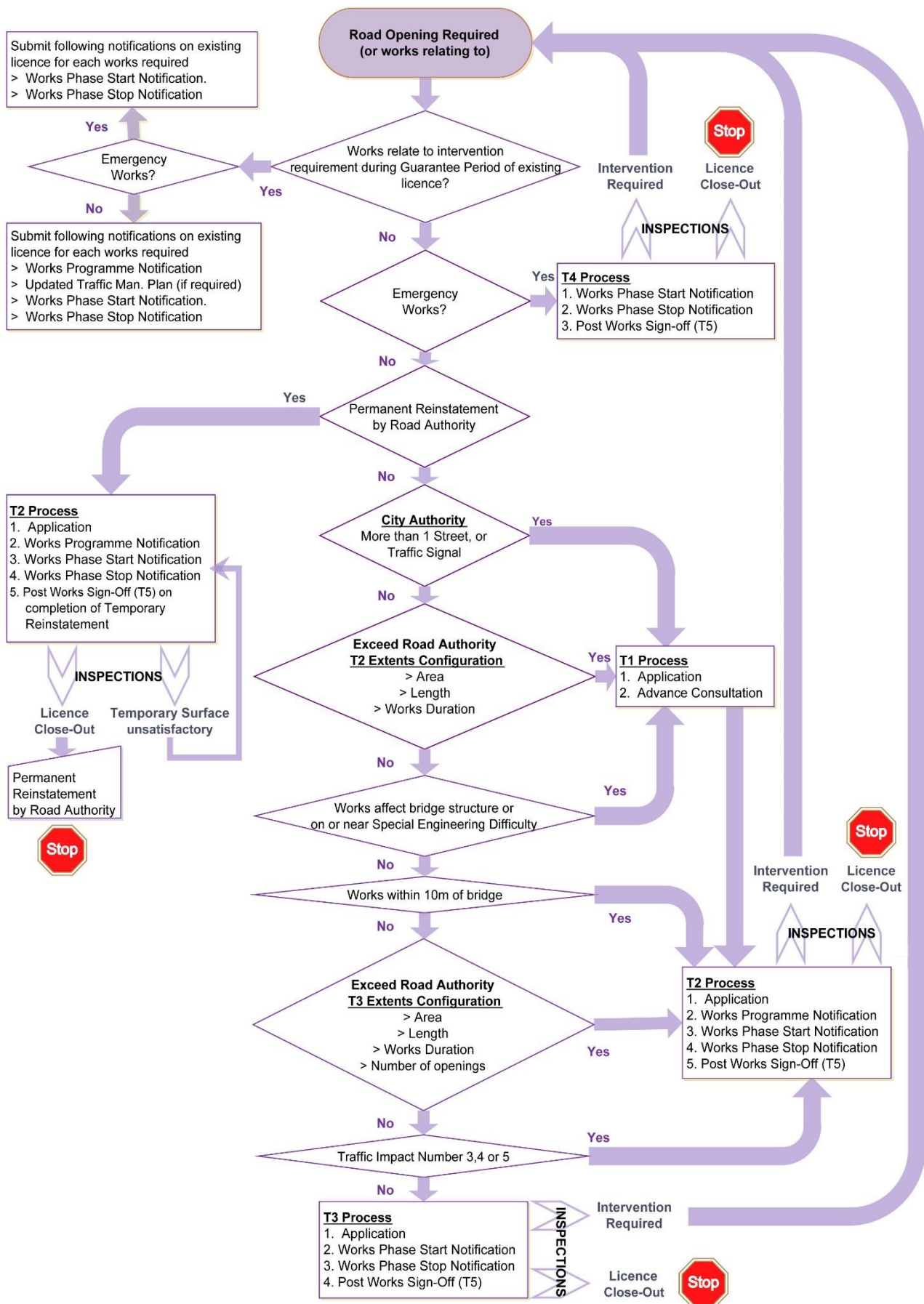
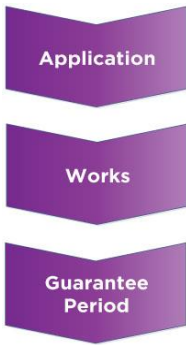


Figure 4.2.6.1



4.3 The Licence Process

The licensing system is set up so that all works relating to the licence are recorded and managed through that licence i.e. a unique licence number. This includes initial application details and cost estimates, all activities during the works, through to intervention works required during the guarantee period. All communications and actions are recorded in MRL under the licence number.

For telecommunications works on national roads TII is the licensing authority. In all other cases the licensing authority is the relevant local authority and an application has to be made to the relevant local authority.

The licence process consists of 3 stages; application, works, & guarantee period.

4.3.1 Application Stage

The first decision an applicant will make is the type of licence to be applied for (see 4.2). During this stage the applicant will supply sufficient information to the road authority/TII such that the application can be considered. The type of information required is outlined in the graphic below.



While considering the application, the road authority/TII can request edits to the information provided (if appropriate) or further information to be supplied so that the application can be considered. The obligation is on the applicant to supply this information to the satisfaction of the road authority/TII within the time limits outlined in section 4.5. The road authority/TII will then consider the application and grant or refuse the application. If granted the road authority/TII will attach relevant conditions and details of charges. The licence is issued once the applicant has accepted the conditions and charges.

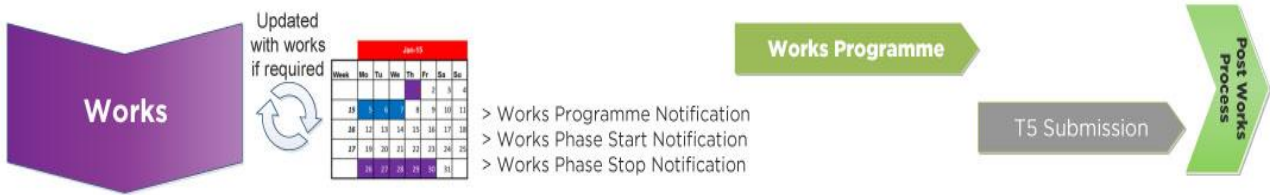
Review of Licence:

Before a licence can be issued, the applicant is presented with the proposed conditions of the licence including charges, reinstatement requirements, timing of the works and other conditions for agreement. This stage is known as the agreement stage in the MRL system.

The conditions should be consistent with the requirements of these guidelines and any circulars issued by the Department of Transport Tourism and Sport from time to time. If an applicant is not satisfied that this is the case, they may request through the system that the authority review the proposed conditions, stating clearly which aspect of these guidelines or circular that the proposed conditions do not comply or are inconsistent with. The road authority will review this submission within seven days and may re-issue the proposed conditions having regard to the submission. The licence will issue once the applicant has accepted the conditions and charges.

4.3.2 Works Stage

Once a licence has been granted, the applicant will become the Licence Holder. The works programme notification must be submitted for a T2 if this has not been submitted at application stage. This programme may be rejected by the roads authority. As works progress, the Licence Holder will be obliged to update the road authority/TII with changes to the work programme as required. At the end of the works stage the Licence Holder will submit a T5 to confirm completion of the licenced works. The works may be subject to a post works inspection by the road authority/TII. This process is described in detail in section 4.5.



4.3.3 Guarantee Period

Unless otherwise decided by the road authority/TII, all works relating to a road opening including works during the guarantee period are the responsibility of the Licence Holder. Standardised conditioning on each licence will place an obligation on the Licence Holder to maintain the reinstatement during the **guarantee period**, and also to comply with directions issued by the road authority/TII.

If works are required during the guarantee period of a licence including works directed by the road authority/TII, the Licence Holder must give works notifications to the road authority/TII. Where the intervention works are not emergency, the Licence Holder must give advance notification to the road authority/TII of the dates and times of the intended works (giving at least 7 days' notice or other set minimum period), and also notify the road authority/TII when on site and when off site.

Where the intervention works are emergency in nature, the Licence Holder must, as soon as possible, give notification when the works are on site and when the works are off site. The road authority/TII has the ability to issue a direction at all times, and the Licence Holder must comply with this, e.g. a direction not to start works on a particular date or to cease works and make the site safe. This direction can also be in relation to the method by which works are to be carried out. This includes complete withdrawal & suspension of a licence. If a road authority/TII needs to carry out intervention works itself, it will be able to do so in addition to attaching financial and other sanctions on the Licence Holder.



At the end of the guarantee period, once the performance requirements have been met, the road authority/TII will close the licence, terminating the obligations and responsibilities of the Licence Holder under the licence. The closure of a road opening licence by the road authority/TII does not relieve the Licence Holder of any legal liability that may arise after the guarantee period. In particular the ending of the guarantee period does not affect the liability of the Licence Holder for latent defects, subject to the Statute of Limitations measured from the date of post works signoff.

4.4 Factors that affect the Licence Process

The following items will affect how a licence is processed within the MapRoad Roadworks Licensing system.

- Traffic impact number
- Roads within their protected period
- Special engineering difficulties (SEDs)

Local authorities may publish specific working hours applicable to each traffic impact number, details of Roads within their protected period and SEDs. These shall be published through either the Local Authority or the RMO and shall be available through the MRL system.

4.4.1 Traffic Impact Number

Road authorities/TII, particularly in urban areas, may rank the road network according to its importance as a strategic traffic route by assigning it a traffic impact number. This ranking, if used, is attached to the road inventory data and is visible through the MapRoad Roadworks Licensing (MRL) system. The traffic impact number is set having regard to the need to minimise the disruption to traffic caused by non-emergency roadworks and is based on the following general guidelines:

Table 4.4.1 Traffic Impact Numbers

Traffic Impact Number	Description
0	No ranking assigned
1	Low Impact – usually all day work permitted.
2	Medium Impact – usually some restrictions such as at school opening or closing times.
3	Medium Impact – usually restrictions at peak hours on weekdays.
4	High Impact – usually daytime restrictions on weekdays.
5	High Impact – usually daytime restrictions and peak hours' restrictions on weekends.

The general restrictions set out in the table above are based on the assumption that the proposed roadworks will interfere with or restrict traffic flow on only one lane of the carriageway. Where the proposed roadworks will interfere with traffic flow on more than one lane, the periods during which roadworks may be carried out may be further restricted. In certain cases there may be a requirement that the roadworks be carried out at the weekend or on a Sunday only. Where it is proposed to carry out roadworks adjacent to schools, colleges, libraries, hospitals, hotels or other publicly-accessed buildings, additional timing restrictions may also be applied.

Certain roads may also have their traffic impact number changed for certain periods annually or have road works prohibited during certain periods. Examples include festivals or “free-flow” periods prior to Christmas.

4.4.2 Protected Period

In order to protect the road authority's investment in roadways and footways, and to minimise disruption caused by roadworks, the road authority/TII will identify recently renewed roadways and footways. The protected period for a renewed surface will be for 5 years (for roadways and macadam footways) and 10 years (for concrete footways).

Protection will be achieved by means of the following:

- a. Making available to licence applicants details of planned future work through MapRoad to:
 - i. encourage applicants to complete works prior to surfaces being renewed,
 - ii. encourage applicants to co-ordinate their works with other applicants, or roadworks taking place.
- b. The Licence Holder carrying out full width/lane/bay reinstatement on a renewed surface in the protected period.
- c. Prohibiting hand laying of reinstatement materials on roadways without the specific permission of the road authority.

- d. For transverse crossings, full width/lane/bay reinstatement is required for a distance of 5m either side of the crossing.

Long term impact charges will not apply when full width/lane/bay reinstatement is carried out.

For the purposes of protected periods a Surface Dressing does not constitute a full width reinstatement unless the structural Asphaltic Concrete (AC) layer is provided over the full width also.

4.4.3 Special Engineering Difficulties

Exceptionally a road authority may designate an individual structure or discrete area as a special engineering difficulty. This designation shall only occur when the carrying out of the road opening will result in special engineering difficulties that cannot be addressed by means of standard conditions, procedures or protocols irrespective of size of excavation.

It is important to note that if damage occurs near a structure there are potentially very serious implications. For example, the collapse of a structure or major loss of a utility service supply, where many people are affected could both result in significant delays to road users and loss of service to that utility while the repairs are carried out.

A special engineering difficulty shall require additional consideration by both the road authority and applicant and shall require a T1 notification. Any areas or locations of special engineering difficulties will be marked on the MRL system.

Special engineering difficulties may include:

- Structures such as retaining walls, quay walls, piers or isolated structures including HT electricity pylons.
- Embankments or cuttings where risk of collapse is significant.
- Known areas of cellars.
- Railway crossings and excavations adjacent to light railways.

4.4.4 Bridges and Culverts

Road openings can negatively affect bridges and culverts in a number of ways including :

- Damage to drainage or ties within the bridge fill.
- Damage to water proofing membranes and coatings.
- Lack of cover resulting in reflective cracking in the pavement.
- Damage to the voussoir, barrel, corbels, spandrel walls etc. due to insufficient clearance.
- Placement of pipes or ducts above the channel restricting flow.
- Inappropriate mounting of pipes, ducts etc. on the outside of bridge structure.

In addition, at a bridge (particularly larger span bridges) capacity for provision of apparatus is limited and is not guaranteed. A number of options are available to address how the apparatus may be placed in the bridge area.

These may include one or more of the following:

- Directional drilling avoiding the bridge.
- Providing a separate structure for the apparatus to achieve the crossing.
- Using existing ducts with the agreement of the road authority/third party owner.
- Sub-ducting.
- Strapping the apparatus to the existing structure subject to the agreement of the road authority/third party owner.
- Providing steel or other ducts with low but adequate cover.

The appropriate option(s) will be site specific and will depend on various factors including the nature of the apparatus, the nature of the bridge etc. The selection of the appropriate solution is solely a matter for the roads authority having consulted with the licence applicant.

Bridges:

The location of bridges may be indicated by the roads authority through the MRL system. Any excavation within 10m of a bridge shall necessitate a T2 licence or a T1 where the solution might affect the structure of the bridge. Any application will be accompanied by proposals to address how the bridge will be protected and where it is proposed to place the apparatus.

Culverts:

The road network contains a large number of culverts and drains that have been constructed over hundreds of years and for which limited records are available particularly outside urban areas. Where a Licence Holder's work uncovers an existing culvert pipe etc. they shall immediately inform the road authority and shall agree with them appropriate remedial measures. The placement of any apparatus or any other thing through or affecting an existing culvert requires the prior permission of the relevant authority or owner.

4.5 Time Periods and Notifications within the Licence Process

In order to carry out works efficiently, the licensing process has a number of notifications and time-periods for responses. These periods are at application stage, works stage and guarantee period and are described below and summarised on Table 4.6.1.

4.5.1 Application Period

This is the maximum period of time within which an applicant will receive the decision of the road authority/TII in relation to a licence application. In many cases the actual response period will be less than this maximum period. The obligation is on the applicant to submit all relevant details associated with the licence application for consideration by the road authority/TII. Where sufficient information is not submitted, the application will be considered invalid and no licence will issue. The road authority/TII is under no obligation to extend the application period if further information is required from the applicant before the licence can be granted. This will normally be 3 months for a T1 notification approval, 14 days for a T2 type licence, and 3 working days for a T3 type licence. This period does not include the works programme notification period (7 days for a T2). Applicants should allow for both periods from the date of application until they wish to start site works.

Note: For telecommunications works on national roads, TII is the licensing authority. In accordance with legislation, further consultation is required and timelines for applications are therefore increased by up to 21 days.

4.5.2 Validity Period

This is the period of time during which licenced works may be carried out subject to 4.5.3. This will normally be 6 months for a T2 and 2 months for a T3 licence. A T4 Notification has a validity period of 48 hours. An approved T1 will normally specify a validity period relevant to the application.

During the validity period of a licence, the Licence Holder must provide up to date programmes and notifications as described below. The road authority/TII has the ability to issue a direction and this must be complied with by the Licence Holder e.g. a direction not to start works on a particular date or to cease works and make the road safe. This includes complete withdrawal & suspension of a licence.

4.5.3 Maximum Duration of Site Works

This is the maximum number of site days that the licenced works will be on site. It includes days where the site impacts on traffic, but site works are not necessarily taking place, e.g. traffic management in place, but no works happening. This will normally be 1 month for a T2, 5 days for a T3, and 48 hours for a T4 type licence.

4.5.4 Works Programme Notification

A works programme notification is required for T2 applications only. The works programme must be submitted by the applicant and approved by the road authority prior to commencement of works. Submission is required a minimum of seven days in advance of works commencement unless a shorter period is agreed with the road authority. The works programme notification details the planned work days, the nature of the works and the site contact details.

4.5.5 Works Phase Start Notification

For T2 and T3 licences, the Licence Holder must submit a works phase start notification before each period of licenced works before 12:30 on the day preceding commencement of the site works. This notification will confirm:

- days on site
- nature of works per day
- contractor carrying out works & contact details
- CSCS Signing, Lighting & Guarding Cardholder on site and contact details

The Licence Holder can update these details. The road authority/TII reserves the right to amend or reject such notifications.

The works phase start notification must be submitted before a valid licence can be printed or viewed (hard copy or electronically) by the Licence Holder.

Where a works phase start notification is not submitted, a licence breach will be recorded and financial or other sanctions may be imposed by the road authority/TII.

4.5.6 Works Phase Stop Notification

The Licence Holder must submit a works phase stop notification to the road authority/TII at the end of each period of licenced works on site. This must normally be submitted before 16:30 on the day following cessation of the site works. This notification will normally confirm the details already outlined in the works programme notification, i.e.

- days on site
- nature of works per day
- contractor carrying out works & contact details
- CSCS Signing, Lighting & Guarding Cardholder on site and contact details

The Licence Holder can update these details. The road authority/TII reserves the right to amend or reject such updates.

Where a works phase stop notification is not submitted following a period of licenced works in accordance with the above, a licence breach will be recorded and financial or other sanctions may be imposed by the road authority/TII.

4.5.7 T5 Notification

The T5 must be submitted by an Approved Certifier to confirm that all licenced works have been completed, the as-built details of those works, and that the required standards and licence conditions have been met. The maximum period of time allowed for submission of the T5 is 3

months measured from the date of works completion on site. The works (and site) remain the responsibility of the Licence Holder until the date a submitted T5 has been accepted by the roads authority/TII.

4.5.8 Post Works Signoff

The post works signoff occurs when the road authority/TII accept the T5 notification submitted. The maximum period of time allowed for post works signoff is 90 days measured from the date of submission of the T5, or after the end of the validity period of the licence, whichever is later. If a T5 is not submitted, then a post works signoff will not be completed.

4.5.9 Guarantee Period

The Licence Holder shall guarantee the reinstatement of the road for a period of 36 months against defects where the depth to the top of apparatus exceeds 1.5 metres. Otherwise a guarantee period of 24 months will apply.

The guarantee period commences on the date that the Licence Holder has submitted a T5 which has been accepted by the road authority/TII.

During the guarantee period defects may be notified (see 5.3.1) which the Licence Holder shall remedy. Where the remedy includes removal of backfill and reinstatement the guarantee period may re-commence for that defective section.

4.5.10 Licence Close Out

At the scheduled end of the guarantee period (or within 90 days either side of that date), if the performance requirements have been met, an Approved Certifier will submit a licence closeout inspection. The licence will be closed if the road authority accepts this inspection. The maximum period of time allowed for the road authority to review this inspection is 90 days measured from the date of submission of licence closeout inspection, or after the scheduled end date of the guarantee period, whichever is later. If a closeout inspection is not submitted, then the licence will not be closed and the licence will continue to remain in the guarantee period. If the road authority rejects this inspection, the licence will remain in the guarantee period. The road authority reserves the right to carry out the closeout inspection itself.

4.6 Road Licence Format

Road opening licences/consents/directions will be presented to the applicant within the following structure. Certain conditions are licence specific while others are standard to all local authorities (for example insurances, notification requirements etc.). Standard conditioning on a licence will require the Licence Holder to work in accordance with the works particulars. Works particulars must be kept up to date by the Licence Holder and include the works programme and details of operations that are happening on site.

The information contained in a licence is summarised in Figure 4.6.1.

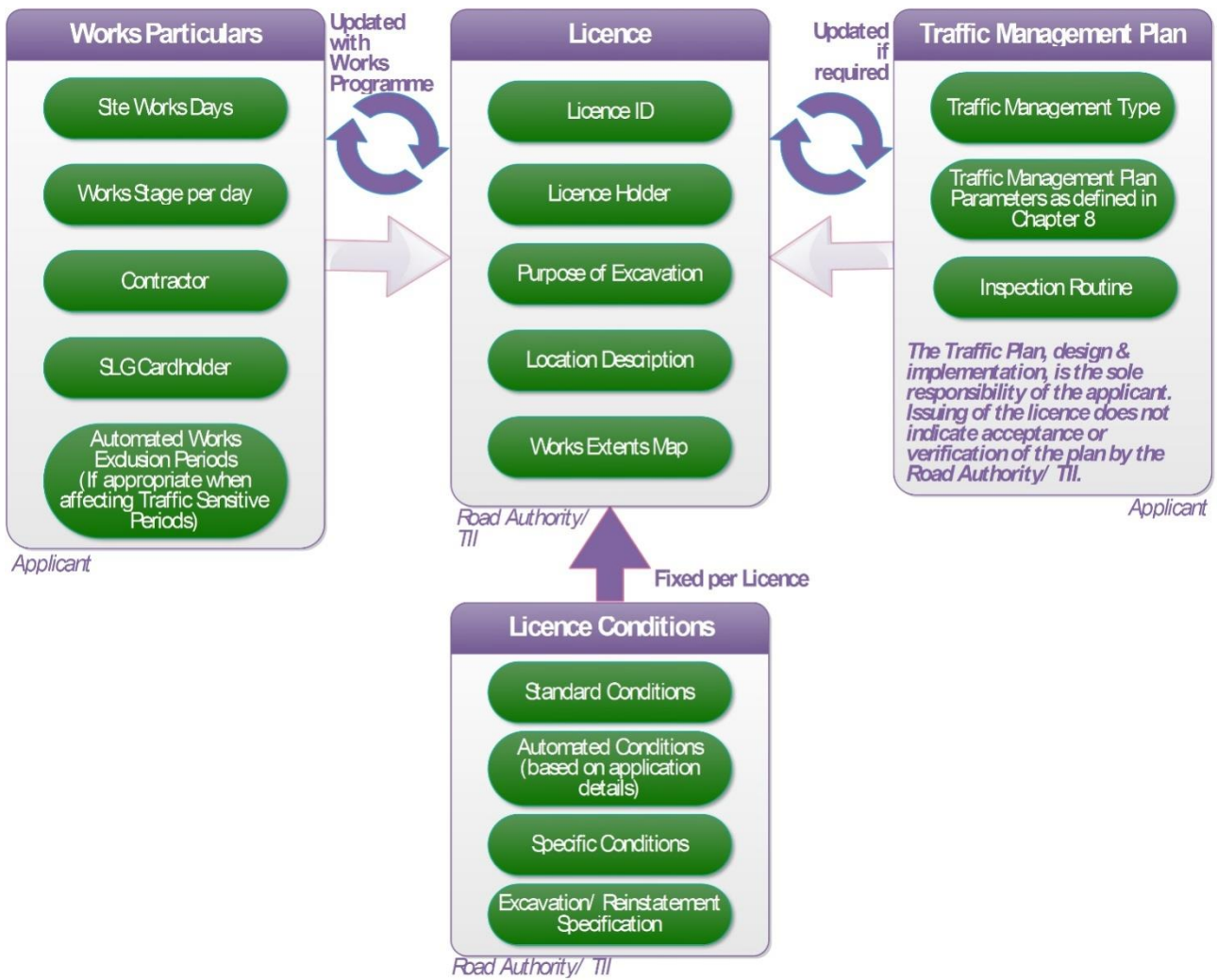


Figure 4.6.1 Format of Road Opening Licence outlining the included information and it's source.

Note: Works particulars can also be submitted at application stage for T2 applications.

The licence and works particulars must be retained on site by the Licence Holder for the duration of the works and the licence must be available for inspection.

Table 4.6.1

"T" Model Timeframes								
T1 Advance Notification	Application (Consultation) Period (maximum)			Validity Period		Licensing of works		
	90 days			1 year		All works must be licenced using the T2 which may be submitted during the course of the T1 consultation period. (Ref: 4.2.1).		
RESPONSIBILITY	Applicant/ Road Authority/TII			Applicant		Applicant		
Licence Type	Application Period (maximum)	Licence Validity Period	Works Programme Notification	Works Phase Start Notification ¹	Maximum Duration of Site Works	Works Phase Stop Notification ¹	T5 Notification (maximum)	Post Works Signoff (maximum)
T2 Roadworks Licence	14 days ²	180 days	7 days	Before 12:30 on preceding day.	30 days	Before 16:30 on day following cessation of works.	90 days	90 days
T3 Minor/Routine Roadworks Licence	3 days ³	60 days	N/A	Before 12:30 on preceding day.	5 days	Before 16:30 on day following cessation of works.	90 days	90 days
T4 Emergency Roadworks Licence	Normally prior to commencement of works (or 12:00). Must be prior to 12:00 on day following the works.	48 hours	N/A	–	48 hours	Before 16:30 on day following cessation of works.	90 days	90 days
RESPONSIBILITY	Road Authority/TII	Applicant	Applicant	Applicant	Applicant	Applicant	Applicant	Road Authority/TII

- Note 1: - May be multiple notifications.
- Note 2: - For a T2 an extended application period of up to 21 days may be required for larger applications.
- Note 3: - The application period for T3 is measured in working days. Other periods are measured in calendar days. For a T3 an extended application period of up to 7 calendar days may be required in certain pre-defined circumstances.
- Note 4: - May require T2 or T3 licence to complete works. See 4.2.4.
- General Note: - The timeframes shown are maximum periods. Where pre-existing timeframes are shorter, they shall continue to apply.
- General Note: - Where permanent reinstatement is to be carried out by the road authority/TII, the requirements by the Licence Holder will be stated within the licence.
- General Note: - For telecommunications works on national roads, TII is the licensing authority. In accordance with legislation further consultation is required and timelines for applications are therefore increased by up to 21 days.

5. Managing Road Openings

5. Managing Road Openings

This chapter sets out the processes and procedures that apply to managing roadworks and reinstatements and outlines the charges that apply.

5.1 Restrictions on Timing of Roadworks

5.1.1 Traffic Impact Number

Traffic impact number, as described in Chapter 4, may be assigned. During certain identified times, works may not be permitted, or may be demobilised to allow normal traffic flow.

5.1.2 Lightly/Heavily Trafficked Roadways and Heavy Duty Locations

The specification used for reinstatement will depend on a number of factors, including (but not limited to) the following as defined in chapter 1:

- *Lightly/Heavily Trafficked Roadways whereby* in some instances the road authority/TII may wish to designate a roadway.
- *Heavy Duty Locations which* are roads designated by the road authority and are viewable on the MRL system. They include bus lanes, access to certain industrial areas, certain junctions etc.

5.1.3 Requirement to Cease Work in the Event of an Emergency

In the event of any unplanned traffic disruption arising in the vicinity of licenced roadworks, such as a traffic accident, emergency works, unacceptable traffic delays etc., the licenced roadworks can only continue where reasonable pedestrian and vehicular traffic flow is still possible. Where reasonable traffic flow cannot be maintained, the Licence Holder must cease works and make available the roadway/footway to traffic. Access for emergency services etc. must be facilitated at all times and any significant road closures/diversions should be notified to each of the emergency services; An Garda Síochána, ambulance and fire brigade.

5.1.4 Direction to Cease Works

On the direction of a member of An Garda Síochána or an authorised employee of the Road Authority/TII, works must be immediately suspended and safe provision made (including secured plating) for pedestrian and vehicular traffic flow. The reasons for directing a cessation of works will be provided.

5.1.5 Notification to Residential Properties and Business Premises

Roadworks that have permission to operate before 08:00hrs and after 20:00hrs, Monday to Friday, and at **all** times during weekends, including public holidays, must be notified to all residential properties and business premises likely to be affected by the works. Each residential property and business premises concerned shall receive a written notification of the intended works and their likely duration from the Licence Holder at least **two days** in advance of commencement of roadworks. The notice shall contain the Licence Holder's contact telephone number and the contact telephone number of the contractor's representative who can be contacted if residents have any queries in relation to the works or if problems arise.

5.1.6 Noisy and Nuisance Works

Road authorities/TII may impose timing restrictions on the hours of operation of roadworks in order to limit the impact of noisy works (e.g. breaking out, saw cutting, operation of pneumatic drills etc.) or nuisance works on affected residential properties or business premises.

5.1.6 Extension of Time

If an extension of time to a previously issued licence is required, the Licence Holder shall make notification via the MapRoad Roadworks Licensing (MRL) system. Granting of extensions is at the discretion of the Authority as follows:

T3 Licence Extensions – Notification required a minimum of 1 day prior to the licence expiry. Extensions may be granted for a maximum of 1 day.

T2 Licence Extensions - Notification required a minimum of 7 days prior to the licence expiry. Extensions may be granted for a maximum of 5 days.

5.1.7 Relaxation of Licence Conditions

In exceptional circumstances such as due to the nature of the roadworks the road authority/TII may relax licence conditions. Such relaxations require the written permission of the road authority/TII.

5.2 Managing Roadworks

5.2.1 Records

In carrying out roadworks, detailed ongoing records should be kept by all Licence Holders relating to the line, depth, location and type of the installed service and shall be available if requested by the Authority. Any submitted information shall be of a suitable scale and dimensioned to provide the required information.

The Licence Holder shall provide digital geo-referenced photographs of the trench and new service: -

- Before the works;
- During the works;
- Following final reinstatement.

Video records may be requested by the road authority/TII in relation to trench reinstatement. In all instances, such details shall be submitted via the MapRoad Roadworks Licensing (MRL) system.

5.2.2 Installation of Additional Ducts/Infrastructure

Having regard to the need to minimise the disruption to traffic caused by related roadworks, the road authority/TII may request a Licence Holder engaged in laying of new underground infrastructure or renewing existing networks to provide additional ducting/infrastructure which on completion will be the property of the road authority/TII. The full costs, including associated costs, of additional ducting/infrastructure, will be borne by the road authority/TII and will be subject to terms and conditions to be agreed in advance with the licence holder.

5.2.3 Suspension/Use of Paid Parking Spaces

Suspension/use of paid parking space(s) associated with roadworks can only be carried out with the prior written consent of the road authority. The onus is on the licence holder to ensure that the parking spaces are secured for the times during which their use is required. Charges for the suspension/use of paid parking spaces will normally apply.

5.2.4 Necessary On-site Documentation

The Licence Holder must ensure that the following documentation is available on-site for inspection by authorised road authority employees or An Garda Síochána at all times:

- A copy of the individual Roadworks Licence including works particulars where works are subject to a T2/T3/T4 application.

- A copy of the traffic management plan.
- Confirmation of temporary road closure from the road authority where applicable.
- A copy of a works method statement where one was requested by the road authority/TII.
- A copy of the written consent from the Garda Síochána for the use of temporary traffic lights/stop-go boards where applicable.

5.3 On-site Monitoring/Inspections

Site inspections form a key element of the process of ensuring quality work and co-ordination of roadworks. The number of inspections will be determined by the road authority and may occur at four distinct times during the licence as follows: -

- i. During the application period and/or prior to works commencing.
- ii. During the Works Stage prior to T5.
- iii. At post works signoff (4.5.8).
- iv. At the end of the guarantee period at licence closeout (4.5.10).

The level of inspections may vary between road authorities and across different licence application types. It may also be a function of the level and quality of certification being carried out by the Licence Holder.

An inspection during the works stage or later will have one of the following outcomes: -

- i. No issues detected.
- ii. Breach of licence condition detected (where a breach is detected, the said licence condition will be referenced, details recorded, action required outlined).
- iii. Defect detected [where a defect is detected, the said defect must be categorised in accordance with section (6.8), details recorded, action required outlined].

Given the volume of roadworks activity it is generally not possible for the road authority/TII to carry out monitoring on all roadworks at all stages. As such Licence Holders are required to play an active part in achieving compliance. A key aim is to ensure a culture of compliance that also allows those who are noncompliant to be easier identified.

Table 5.3

Monitoring	Purpose
<p>During the application period/Prior to the works (at least one such inspection must take place for each T2, T3 and T4 licence)</p>	<ul style="list-style-type: none"> ➤ To identify and check where the works take place as well as to record and photograph the road. ➤ For pre-arranged meetings between the Licence Holder & the road authority/TII. <p>This may be carried out by: -</p> <ol style="list-style-type: none"> i. the applicant/Licence Holder, ii. the road authority/TII, iii. jointly. <p>The road authority/TII may decide on initial pre-arranged meetings with the licence holder on the route prior to any work being carried out. The onus is on the licence holder to bring any existing defects to the attention of road authority/TII prior to the commencement of work.</p>

Monitoring	Purpose
<p>During the Works (a number of such inspections may be required for each T2)</p>	<p>To check that the opening is being reinstated with materials that meet the specification; that appropriate compaction is being achieved including testing of such compaction; that good construction practices are being followed; and that licence conditions are being adhered to.</p> <ul style="list-style-type: none"> ➤ To inspect traffic management arrangements, ➤ To inspect any assets owned/controlled by the road authority/TII, ➤ To investigate any issues reported to the road authority/TII, ➤ For pre-arranged meetings between the Licence Holder & the road authority/TII. <p>This may be carried out by: -</p> <ol style="list-style-type: none"> i. the Licence Holder, ii. the road authority/TII, iii. jointly. <p>The road authority/TII may decide to monitor the site while the works are being undertaken, and such an arrangement will be a normal requirement for T2 type applications within city authorities.</p> <p>During monitoring visits additional areas of damage resulting from the works may be identified. These areas shall also be reinstated by the Licence Holder.</p>
<p>At Post Works Signoff (at least one such inspection must take place for each T2, T3 and T4 licence)</p>	<p>To record a visual inspection of the reinstatement and confirm whether it has been completed in accordance with the standard of reinstatement specified in this document and the TII “Specification for the Reinstatement of Openings in National Roads” (where applicable). This may require further examination to confirm construction standards at the discretion of the road authority/TII.</p> <p>This may be carried out by: -</p> <ol style="list-style-type: none"> i. the Licence Holder’s Approved Certifier (subject to acceptance by the road authority/TII), ii. by the road authority/TII, iii. jointly.
<p>At end of guarantee period (at least one such inspection must take place for each T2, T3 and T4 licence)</p>	<p>To confirm that reinstatement is in an acceptable standard for the road authority to close the licence.</p> <p>The approved certifier must carry out an inspection at this stage.</p> <ol style="list-style-type: none"> i. The road authority may carry out an inspection either separately or jointly with the Licence Holder.

Licence Holders are responsible for the certification, including supporting documentation, for all aspects of the roadworks activity to the road authority/TII. Such certification shall be documented and carried out by a trained and competent Approved Certifier.

The road authority/TII retains the right to undertake tests on materials, compaction etc., and recoup all charges incurred where adverse or negative results are obtained.

Where an Approved Certifier / Licence Holder certifies the post works signoff the following declaration must be made: -

"I certify that the above reinstatement has been completed in accordance with the licence, the "Guidelines for Managing Openings in Public Roads" (Current Edition) or the TII "Specification for the Reinstatement of Openings in National Roads" (where applicable) In the event that existing services have been damaged or interfered with during the course of the works, I certify that the service provider has received written notification and all specified repair works and testing have been completed.

If any remedial works are required during the guarantee period they shall be carried out by the Licence Holder to the requirements of the road authority/TII. If directed by the road authority/TII, the guarantee period will be extended for a further period up to 24/36 months from the date of a Defects Notification or from the date of satisfactory completion of any required remedial works, whichever being the later. This guarantee does not affect the liability of the Licence Holder for Latent Defects, subject to the Statute of Limitations measured from the date of Post Works Signoff.

I confirm that the required insurances are in place as set out in the applicable road opening licence and will remain in place until the end of the guarantee period"

5.3.1 Defects Notification

The Licence Holder has responsibility for ensuring that the works comply with good practice, applicable standards and performance requirements. The road authority/TII may carry out monitoring visits. Where a defect has been detected, a defects notification may issue to the Licence Holder.

The road authority/TII may take into consideration the number of non-compliant defects notifications when processing future applications.

5.3.2 Breach of Condition Notification

The Licence Holder has responsibility to comply with conditions as set out in the licence and this includes the scope and works particulars as set out in the licence. In the event that the road authority/TII are aware of a breach of a prescribed licence condition, a breach of condition notification will issue and failure to act on same will follow the same procedure outlined in 5.3.3.

5.3.3 Corrective Measures

Arising from a defect or breach of condition notification the Licence Holder shall carry out any corrective measures at its own cost. If the road authority/TII determines that the Licence Holder has not carried out the corrective measures within a reasonable time period the road authority/TII reserves the right to take the action itself and shall consider the Licence Holder to be acting without lawful authority.

The road authority/TII may charge/recover the costs associated with carrying out the corrective measures from the Licence Holder. If the road authority/TII determines that it cannot recoup the charges from the Licence Holder, then it can deduct this from any deposit held. The road authority/TII may take into consideration the number of defects or breach of condition notifications when processing future applications and setting security deposits.

5.4 Training and Competency

It is important that suitably qualified personnel are deployed in the carrying out, inspection, monitoring and certification of reinstatements. This includes the opening, backfilling and reinstatement of trenches whereby: -

- i. All persons carrying out road excavation and reinstatement works should be appropriately trained to ensure they have the necessary skills and competencies for such activities and works.
- ii. All roadwork sites should be staffed by at least one person who has successfully completed the Basic Level Trench Reinstatement course. Attendance at the Basic Level Trench Reinstatement course shall be open to all suitable personnel.
- iii. All reinstatement works shall be inspected, monitored and certified by an Approved Certifier who has successfully completed the Advanced Level Trench Reinstatement Course. Attendance at the advanced level course shall be open to those who have successfully completed the Basic Trench Reinstatement course and have an appropriate level of education, training and experience.
- iv. All Approved Certifiers shall be registered on the MapRoad Roadworks Licensing (MRL) system.

5.5 Charges

For a road licence the total overall charge is composed of a number of items as set out Table 5.5. The table also includes brief descriptions of the charge as well as the stage when the charge is applied. Charges/Deposits are further set out in sections 5.5.1 to 5.5.5.

Table 5.5: Charges applied to licence applications/notifications

Charge [Total = 1 + 2 + 3]	Stage Charge Applied
1. Application Charge <i>General administration charge,</i> <i>RMO administration charge,</i> <i>Core inspection charge (set dependent on the level of inspection service provided by the road authority/TII for the licence type)</i>	Application
2. Road Asset Charge <i>a. Reinstatement deposit (refundable subject to satisfactory inspection)</i> <i>b. Road traffic asset deposit (refundable subject to satisfactory inspection)</i> c. Specific Charge <i>Charges to cover costs where the road authority/TII will be required to carry out works as part of the licenced works, or associated with the road authority/TII facilitating the licenced works.</i>	Subject to re-measure at T5
d. Long Term Impact Charge <i>To cover the cost associated with the works reducing the service life of the road.</i>	T5
3. Additional Inspection Charge <i>(Where additional inspections during the works or guarantee period are required in addition to the core inspections).</i> <i>As required, in accordance with proper governance including methodology for reviewing the number of inspections and will involve consultation with applicant.</i>	

Notes: -

- i. Where a road authority is to carry out the reinstatement or other works (e.g. traffic signals or loops) the associated costs of such works shall be charged as a specific charge and the road asset deposit will be reduced accordingly.

- ii. The Road Asset Charge reflects a combination of items 2a to 2d above and in turn reflects the cost of reinstating the opening and carrying out any necessary repairs and the long term impact of the reinstatement on the road. For asset related charges and deposits the overall cost should not exceed the cost to carry out the works.
- iii. Deposit releases are subject to an inspection and sign off. Deposits, however, may be retained as deemed necessary by the road authority to fund repairs.
- iv. All deposits and charges applied to each licence will be visible within MRL.
- v. Where applicants will have on-going works programmes, or high volume programmes, the deposits will be aggregated and capped at an overall level sufficient to ensure licence holders manage their work properly.
- vi. The format of the charges are outlined in Table 5.5.3.

5.5.1 Application Charge

An application charge will apply to all applications (i.e. T2, T3 and T4). The charge will contribute to the cost of administering and recording the proposed works along with determining appropriate specific conditions to be applied to the licence and any necessary site visits required to determine the application and ensure the compliance of the holder with the conditions of the licence.

Additional inspection charges:

Additional licence specific inspection charges may apply for each licence extension of time or additional monitoring requirements during the Works/T5 stage due to non-compliance/performance or significant site specific monitoring of works outside normal working hours.

5.5.2 Road Asset Charge

The road asset charge is a combination of a number of individual elements. Some of the elements are refundable deposits and some are non-refundable charges. Some such as the reinstatement deposit and long term Impact charge are generally applicable at all times and some are applicable as required.

Reinstatement Deposit

The deposit applicable will be based on the estimated cost of permanent reinstatement by road authority/TII. The road authority/TII requires applicants to provide a monetary deposit when applying for a Roadworks Licence.

Where a deposit has been paid, it will be refundable upon satisfactory inspection, completion of the guarantee period and less any outstanding charges accrued. Failure by the Licence Holder to satisfactory complete permanent reinstatement obligations will result in forfeiture of the reinstatement deposit.

A list of deposit requirements, for each roadway and footway surface type across the network, is provided by the RMO on behalf of each road authority/TII. Such charges are all inclusive and their calculation takes into account factors such as temporary traffic management, road impact number, area of excavation etc.

Road Traffic Asset Deposit

Road Traffic Assets are assets relating to the existing road surface/environment that will normally require a deposit by the road authority/TII (unless otherwise conditioned in the licence) where they are affected by the road opening works.

The types of assets, will generally be one of the following categories

1. Road Markings
 - i. Transverse Markings
 - ii. Longitudinal Markings

- iii. Hatched Markings
- iv. Worded/Diagrammatic Markings
- v. Parking Bays
- vi. Reflecting Road Studs
- vii. Pedestrian Crossings/Schools
2. Speed Control Measures
 - i. Ramps/Cushions/Tables
 - ii. Rumble Strips
3. Specialist Surfacing
4. Traffic Signals (including traffic detection loops)
5. Roundabouts
6. Road furniture, including poles & bollards

Where such assets are affected, the road authority/TII can seek to recover the costs associated from the Licence Holder. The formats of these charges are set out in Table 5.5.4. These are normally refundable at T5 stage subject to proper reinstatement of the assets.

5.5.3 Specific Charges

These are charges related to costs where a road authority/TII will be required to carry out works as part of the licenced works, or other costs with the road authority/TII facilitating the licenced works. A non-exhaustive list of such charges is as follows:

- Permanent reinstatement where such reinstatement is being completed by the road authority. This will be dealt with as a specific condition within the licence. The T5 shall be agreed prior to the permanent works taking place.
- Suspension of paid parking – charge associated with the removal/non availability of car parking spaces as a consequence of the works.
- Removal/replacement of “traffic signal loops”.
- Replacement of road markings where such markings are being replaced by the road authority.
- Removal/relocation/replacement of poles, overhead cables and cabinets where these works are being undertaken by the road authority.
- Removal/replacement of specialist surfaces e.g. high friction and coloured surfacing.

It should be noted that some of these charges may also affect Deposits and Long Term Impact Charges. When such charges apply, they will be site specific and explicitly listed in advance.

5.5.4 Long Term Impact Charge

Long Term Impact (LTI) is defined in section 1.7.

For simplicity, the area for calculation of LTI is defined as the area of completed permanent reinstatement. Where an additional area of reinstatement has been undertaken, the area for calculation of LTI will be reduced accordingly subject to verification by Licence Holder.

LTI charges will normally be based on the aggregated costs for the reduction in the life cycle of the pavement as a result of the opening. This excludes routine maintenance such as pothole repair. This will be directly calculated based on the area of the opening. A road authority/TII may define a single charge for long term impact based on individual or grouped surface type across its network.

Current LTI charges will be viewable through the MRL system and published by the RMO. Where excavation or trench works are co-ordinated immediately in advance of a notified road authority/TII roadway/footway renewal programme, or where a full width or full bay reinstatement is carried out

in accordance with section 6.4.3, LTI charges will not apply subject to minimum dimensions and machine laying of road surface.

Note that Surface Dressing does not constitute a full width reinstatement unless the structural / asphaltic concrete layer is provided over the full width.

5.5.5 Managing Charges for High Volume Applicants

All licences will be subject to charges and deposits and these details will be available to all applicants on the MRL system.

To facilitate on-going and high volume applicants the cumulative deposit held will be aggregated and capped at a level sufficient to ensure that the road asset is protected. Where a cap is applied to licences, Road Authorities/TII may seek for the deposit amount to be maintained at the set level to ensure works are carried out properly, because of the possible need to carry out repairs or poor performance by the applicant and to ensure close out of licences.

This charging regime will be managed and available through MRL. Where persistent poor performance occurs the cap may be reviewed or lifted or an applicant/Licence Holder may be frozen from the MRL system.

Table 5.5.3

Long Term Impact Charge/Reinstatement Charge								
Item	Reinstatement Grouping	Reinstatement Classification	LTI Charge (€/m ²)			Reinstatement Charge (€/m ²)		
			< 2m ²	2-10m ²	>10m ²	< 2 m ²	2-10 m ²	>10 m ²
ROAD REINSTATEMENT								
1.1	Verge	Nearest point of trench measured to nearest edge of roadway < 1m from National/Regional Road < 0.5 of paved Local Road						
2.1	Footway/Off Road Cycleway	Precast Concrete Paving Block/Concrete Slab						
2.2	Footway/Off Road Cycleway	Concrete Footway						
2.3	Footway/Off Road Cycleway	Asphalt/Bitumen Macadam Footways						
2.4	Footway/Off Road Cycleway	Modular Paving						
2.5	Footway/Off Road Cycleway	Trench Reinstatement by Licence Holder Modular Paving supplied and laid by road authority						
3.1	Roadway	Precast Concrete Paving Blocks						
3.2	Roadway	Concrete Roadways						
3.3	Roadway	Longitudinal/Small Openings						
3.4	Roadway	Longitudinal/Small Opening on Traffic Sensitive Road/ Heavy Duty Locations						
3.5	Roadway	Longitudinal Opening in Surface Dressed Road						
3.6	Roadway	Transverse Opening in Roadway						
3.7	Roadway	Modular Paving						
3.7	Roadway	Trench/Excavation Reinstatement by Licence Holder Road Pavement supplied and laid by road authority						

Table 5.5.4

Road Traffic Asset Deposits							
Item	Road Traffic Asset	Unit	Fee (€)	Item	Road Traffic Asset	Unit	Fee (€)
Transverse Markings				Special Surfacing			
1.1	STOP LINE (RRM 017)	m		9.1	PAINTED SURFACING	m ²	
1.2	TRAM STOP LINE (RRM 031)	m		9.2	SPECIAL ROAD SURFACING (textured/coloured)	m ²	
1.3	YIELD LINE (RRM 018)	m					
1.4	NO ENTRY LINE (RRM 019)	m					
Longitudinal Markings For double line systems, each line is measured individually.				Traffic Signals (including loops)			
2.1	CONTINUOUS Continuous Centre Line (RRM 001) Continuous Edge Line/School Keep Clear Line (RRM 026/RRM 027/RRM 010/RRM 022/RRM 024 – excluding “Lána Bus” marking/RRM 032) Parking Restrictions (RRM 007/RRM 008 – each line individually measured)	m		10.1	TRAFFIC CONTROL SIGNALS	each	specific
2.2	BROKEN Broken/Warning Centre Line/Lane Lines/Zig-Zag Markings (RRM 002/RRM 003/RRM 023/RRM 028/RRM 025/M 129/M 110/RPC 002)	m		10.2	PEDESTRIAN CROSSING (signal controlled/pelican/toucan)/Cycle Crossing/Flashing Amber Signals	each	specific
				10.3	LEVEL CROSSING SIGNALS	each	specific
Hatched Markings				10.4	TRAM SIGNALS	each	specific
3.1	HATCHING Hatched Markings (includes bounding lines) (RRM 020/RRM 021) School Warden Crossing Point (M 121)	m ²					
Worded/Diagrammatic Markings							
4.1	LETTER ≤1,600MM	letter					
4.2	LETTER >1,600MM	letter					
4.3	LOOK LEFT/RIGHT (M 107L/R)	no.					
4.4	ARROWS/SYMBOLS ≤3.6M length Speed Limit Markings (M 108)	no.					
4.5	ARROWS/SYMBOLS >3.6M length	no.					
Parking Bays							
5.1	PARKING BAY (RRM 011/RRM 012/RRM 016/RRM 013/RRM 014/RRM 015 – not including disabled symbol) Taxi Stands (RRM 029) Loading Bays (RRM 009) Bus Stop (RRM 030)	No. of bays.					
Reflecting Road Studs							
6.1	ROAD STUD (uni or bi)	no.					
Pedestrian Crossings/Schools							
7.1	ZEBRA CROSSING (RPC 001)	m ²					
7.2	PEDESTRIAN LINE for signalised crossing (M 131)	m					
Speed Control Measures							
8.1	RAMP (including marking M 112, - each lane measured separate)	No.					
8.2	YELLOW BAR Markings (M 113)	length of line (m)					

6. *Specifications*

6. Specifications

6.1 Introduction

The minimum recommended specifications for temporary and permanent reinstatements of openings in roads, cycle tracks, footways and grassed areas are set out in this chapter. The diagrams and text describe both the materials to be used and the methods to be adopted. In some instances, circumstances at a particular site may necessitate the use of materials other than those set out in this document, such as in the case of historic pavements, specialised modular materials, high friction surface materials at junctions and pedestrian crossings etc. In such instances, the prior written agreement of the road authority regarding additional requirements for the reinstatement of these materials must be obtained in advance of commencement of trench excavation works. Similarly, any variations in these specifications will require the prior written agreement of the road authority in advance of commencement of the trench excavation works.

Where road-opening works are proposed on a national road, the TII “Specification for the Reinstatement of Openings in National Roads” must be adhered to.

6.2 Pre-Works Investigations

6.2.1 Investigation of Services

Prior to carrying out any excavation for an opening, particularly in a public road, the engineer/contractor in charge of the work, Statutory Undertaker, contractor or private individual should ensure that checks have been carried out to locate any existing pipes and/or apparatus in the ground. In particular, the following should be consulted;

- i. Electricity Supply Board or other licenced undertakers in the electricity sector in the area.
- ii. Network operators in the telecommunication sector,
- iii. Cable television operators,
- iv. Gas Networks Ireland or other licenced undertakers in the gas sector,
- v. Local authority for surface water drainage systems,
- vi. Irish Water/Uisce Éireann for water supply and wastewater infrastructure,
- vii. O.P.W. - Archaeological Site,
- viii. Adjacent property owners likely to be affected,
- ix. Other infrastructure; e.g. LUAS/Irish Rail.

6.2.2 Pre-works Survey

Prior to the works commencing, the applicant must complete a survey of the area to be excavated. This survey must include the following;

- i. Description of the road and general condition of the surface to be excavated,
- ii. Defects on the surface of the area to be excavated and adjacent working zones,
- iii. Details of all road markings, specialist or ornamental surfaces that may be affected by the proposed works,
- iv. Details of parking spaces potentially impacted, either by excavation works or traffic management,
- v. Locations of ironworks directly affected or adjacent to the proposed works,
- vi. Locations of other street furniture directly affected or adjacent to the proposed works,
- vii. Digital geo-referenced photographs of the site and of each of the items above.

This survey work affords an opportunity to establish the need for repairs to areas immediately outside the proposed excavation at time of final reinstatement and also will facilitate agreement at T5 and post works signoff. In any event, a road authority may request a survey as part of the application process.

6.2.3 Ornamental and Historic Surfaces

Where works are proposed in areas of specialist or ornamental surfaces, a pre-works survey must be submitted as part of the application process so that reinstatement requirements can be agreed with the road authority prior to a licence being granted.

Historic surfaces are limited irreplaceable location specific road assets. These surfaces may include limestone or timber setts, antique granite kerbing and flags, coal hole covers etc. Examples of these materials are illustrated in the paving advice note. Paving - *The Conservation of Historic Ground Surfaces 2015*, published by *The Department of Arts, Heritage and The Gaeltacht & Dublin City Council*.

No works can take place on historic surfaces without prior approval from a nominated person in the road authority. Details of requirements for the pre-works survey, lifting, cleaning and storage of historic materials must be agreed with the road authority prior to carrying out any excavation of these surfaces.

6.2.4 Colour Code for Buried Plastic Piping

The NSAI standard for colour coding of buried plastic piping is to be used for all plastic piping and marker tapes used in public roads, with all piping meeting the standards described within that standard. Refer to Table 6.2.1 and Figure 6.2.1 for further details.

The colour codes on marker tapes as set out in Table 6.2.1 are to be incorporated in all trenches in public roads at the depths shown in Standard Drawings numbers 1 - 14.

6.3 General Construction Requirements


























6.3.1 General

- i. For openings on national roads please refer to the TII Specification for the Reinstatement of Openings in National Roads.
- ii. Where reference is made to a standard or specification document, the current edition applies. For Specification for Road Works Series 900 the following edition applies – CC-SPW-00900 March 2011.
- iii. All materials shall be in accordance with the TII Specification for Road Works and any conditions specified in the road opening licence.
- iv. At the discretion of the road authority, if requested, prior to construction, a set of high definition digital photographs/video shall be provided and geo referenced every 20m along the roadway.

6.3.2 Location of Trench/Avoidance of Services

- i. The scope for the works including an excavation “corridor” shall be determined by the Licence Holder in agreement with the road authority before the commencement of construction.
- ii. Road crossings must be at right angles across the carriageway where practicable.
- iii. Longitudinal openings must avoid the wheel track where practicable.
- iv. Careful consideration should be given to the route of service openings where expensive reinstatement may be required (e.g. traffic loops, special surfaces, etc.).
- v. Service boxes or chambers should be located away from road junctions, traffic loops, drainage channels, wheel tracks and cycle lanes as far as practically possible.

Table 6.2.1 Underground Services Colour Coding

Pipe or duct	Colour (Duct/Pipe/Marker Tape)	Recommended colour reference	
Electricity	Red	RAL 3000 to 3002; or BS 5252 red 04 E 53 to 04 E 56	
Public Lighting ¹	Red	RAL 3000 to 3002; or BS 5252 red 04 E 53 to 04 E 56	
Street furniture/signal below 125 Volt	Orange	RAL 2009 to 9011; or BS 5252 orange 06 E 51	
Gas Pipe ²	Yellow with black stripes	BS 5252 yellow 10 E 50 to 10 E 53 BS 5252 black 00 E 53 BS 5252 brown 04 B 27 BS 5252 green 14 E 51 BS 5252 blue 20 E 56 BS 5252 red 06 E 55 BS 5252 orange 08 E 53	
	Yellow with brown stripes		
	Yellow with green stripes		
	Yellow with blue stripes		
	Yellow with red stripes		
	Yellow		
	Black with yellow stripes		
	Orange		
	Black with orange stripes		
Potable Water ³	Black	Black: RAL 9004 to 9005; BS 5252 black 00 E 53 Blue: BS 5252 blue 18 E 51 to 18 E 53; 20 D 44 to 20 D 45; 20 E 53 to 20 E 56. Brown: BS 5252 06 C 37; 06 C 39; 08 C 37; 08 C 39	
	Blue		
	Black with blue stripes		
	Blue with brown stripes		
	Black with stripes (except yellow, orange)		
	Blue with stripes		
Sewer ³	Black	Black: RAL 9004 to 9005; BS 5252 black 00 E 53 Brown: BS 5252 06 C 37; 06 C 39; 08 C 37; 08 C 39	
	Brown		
	Black with brown stripes		
Storm and road drain ³	Black	RAL 9004 to 9005; BS 5252 black 00 E 53	
Telecom/fibre optic smooth external wall duct ⁴ Telecom/fibre optic corrugated duct only – Maximum pipe outside diameter 175mm	Green	RAL 6010 RAL 7047; or BS 5252 grey 00 A 03 to 02 A 03.	
	Grey		
	Any colour except red, yellow or orange		

¹Public lighting and control cables operating at 125 volts and above.

²See I.S. EN 1555-1 and I.S. EN 1555-2.

³See I.S. EN 12201-2.

⁴Some telecom operators use Grey twin wall corrugated duct with DN/OD 110. It is specified as grey, no lighter than 00 A 13 of BS 5252

- Marker Tapes should be used, and be
 - a minimum of 300mm from ground level, or where this is not possible
 - a minimum of 300mm above the crown of the pipe/duct, or where this is not possible
 - as per the Licence Holder's safe construction detail
- Marker Tapes should be a minimum of 125 mm wide or wide enough to cover entire width of ducting underneath (whichever is greater).

Figure 6.2.1 NSAI Summary of Colour Code for Buried Plastic Piping



1 Swift Square, Northwood,
Santry, Dublin 9 D09 A0E4, Ireland
Email: info@nsai.ie
www.nesai.ie / www.standards.ie

Summary of colour code for buried plastic piping

(see Irish Standard 370:2015 – Colour code for buried plastic piping).

WARNING: This code applies to new installations. All users should be aware that a high proportion of existing underground services are in ducts and pipes which do not conform to the colour requirements set out in I.S. 370:2015.



Public lighting
(and control cables operating at 125 volts and above)



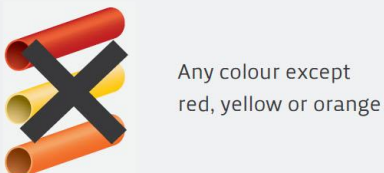
Storm and Road drain
(Smooth external wall duct, corrugated)



Telecom/Fibre optic
(smooth external wall duct)



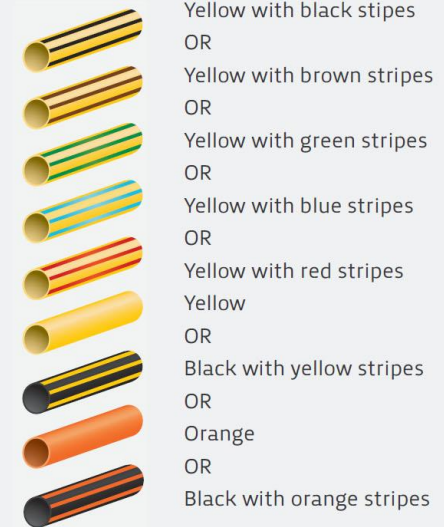
Telecom/Fibre optic
(corrugated duct only – maximum pipe outside diameter 175 mm)



Street furniture
(signal below 125 volt)



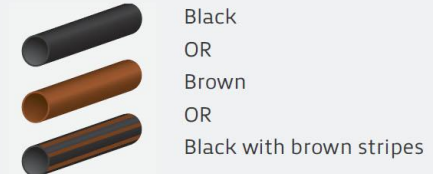
Gas



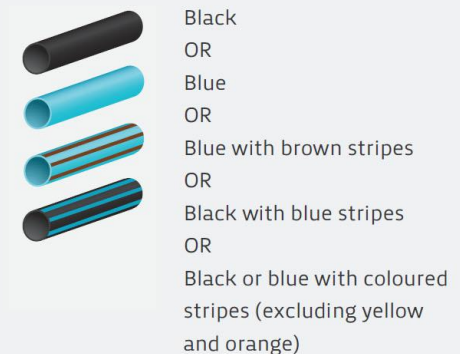
Electricity



Sewer



Potable water



- vi. It is the responsibility of the Licence Holder to locate all existing services, and to safeguard same during construction, including the requirement to provide a CSCS Location of Underground Services qualified operative. The Licence Holder shall be liable for any damages arising and consequential damage to existing services.
- vii. Plans, maps and other relevant information about buried services (particularly gas, water and electricity) should be obtained prior to the commencement of any excavation works. In addition, suitable cable and pipe location devices should be used to confirm, as accurately as possible the location of all services in and around the proposed work area.
- viii. It is the responsibility of the Licence Holder to locate all old brick cellars under footways or carriageways. Under no circumstances should a cellar be damaged.

6.3.3 Cutting the Road

- i. Longitudinal installations and trench excavations shall be straight, of reasonable length and laid out parallel to the centre of the road/footway in so far as practicable. In the case of transverse road or footway crossings, the alignment shall be at right angles to the kerb or property line. Where it is necessary to have an angled or skewed crossing the area of reinstatement shall be extended (See general arrangement drawings in chapter 7).
- ii. In bituminous and concrete road surfaces and footways, the trench lines shall initially be cut using a road saw, concrete saw or equivalent mechanical means to the full depth of the bituminous or concrete material prior to any excavation work. Care should be taken to avoid potential shallow services. For permanent reinstatements, the trimmed edge shall in accordance with Chapter 7.

6.3.4 Excavation Works

General:

- i. It is important to reduce to a minimum the factors which contribute to adjacent road damage. Where a trench is opened in a public road, it is important to support of the excavation as it provides strength to adjacent areas. Some of the factors that may affect this are;
 - Wedge shaped break from surface
 - Earth slip circle
 - Construction traffic wheel/track loads too close to the edge of the trench
 - The ingress of water
- ii. The duration for which the trench is open is an important factor in the subsequent behaviour of the trench. For this reason, the time should be kept to a minimum in order to reduce the risk of failure and consequent damage both within the trench and on the adjacent road surface.
- iii. The use of trench boxes helps to reduce subsequent damage. The use of bulk-head wheel stops for safety reasons will also prevent damage by construction traffic.
- iv. For all excavations, including trenches, a risk assessment should be carried out to determine any risks associated with the activity including the risk of trench collapse. It is essential when carrying out the risk assessment that factors such as the following are considered (non-exhaustive list):
 - Depth of excavation
 - Plant and equipment in the vicinity
 - Type of soil

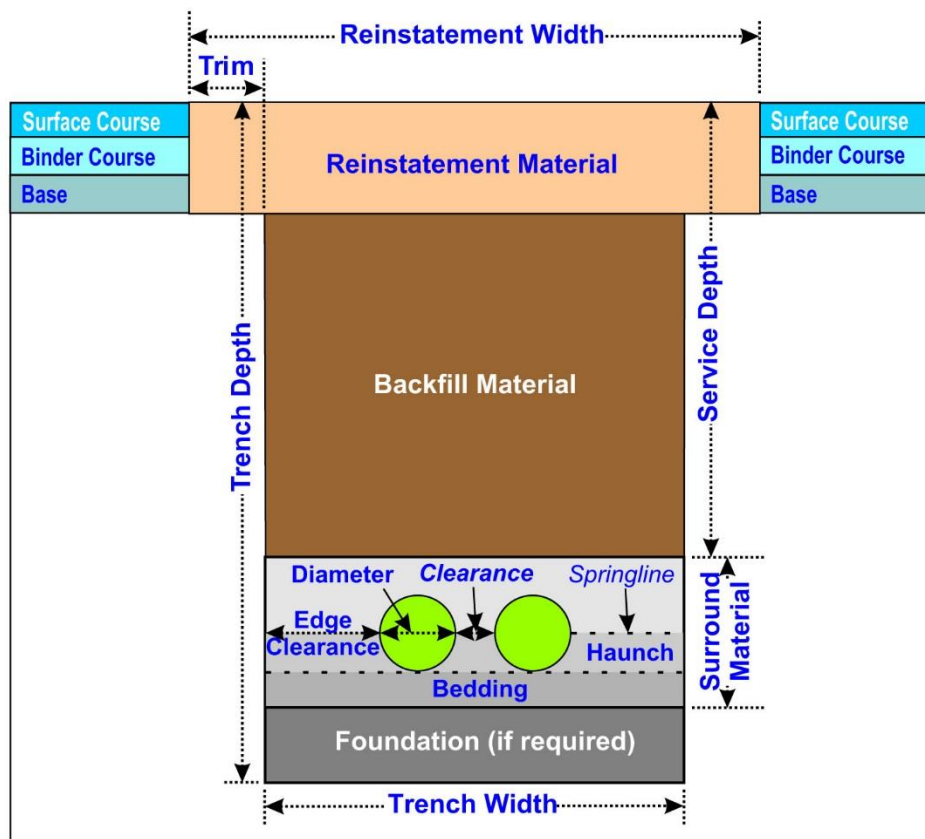
Appropriate safety controls, such as struts, trench boxes, stepping, edge support etc. should be implemented as deemed necessary from the risk assessments. This will minimise the risk of trench collapse.

- v. Any services in the trench that may be damaged by the works shall be supported and protected by the Licence Holder.
- vi. Material in which services are to be laid shall be sufficiently compacted to minimise residual consolidation.
- vii. The base of the trench should be kept free of water, and have sufficient bearing capacity (normally a CBR of 5% is required, but a CBR of 3% is acceptable with proper design) before any reinstatement is undertaken.

6.3.5 Dimensions of an Excavation

Figure 6.3.5 sets out the trench terminology. Reinstatement, backfill, surround, haunching, bedding and foundation materials are shown in figure 6.3.5.

Fig 6.3.5: Trench Terminology



Depth

The depth of a trench comprises a minimum service depth (as set out in Chapter 7) plus the depth of the surround layer (normally specified by the apparatus owner) and any foundation layer if required to ensure an adequate bearing for the trench.

Minimum service depths are specified in Chapter 7.

Width

Widths of trenches should be kept to a minimum consistent with the working space and compaction requirements.

The compaction requirements relate to the size and number of apparatus being installed, the clearance required between apparatus, and the edge clearance required. The normal clearance required for compaction between smooth wall PVC pipes is half the diameter of the apparatus. The normal edge clearance is 150mm. For other types, the clearance should be as per manufacturer's requirements.

For proper compaction the minimum width shall be calculated as: -

- For Diameter $\leq 300\text{mm}$ $W = \text{Sum of Diameter(s)} + \text{Sum of Clearance(s)} + 300\text{mm}$,
- For Diameter $>300\text{mm}$ $W = \text{Sum of Diameter(s)} + \text{Sum of Clearance(s)} + \text{Diameter}$.

Narrower trench widths shall only be permitted subject to the Licence Holder submitting a construction standard/method statement that address the issues arising and approved by the road authority/TII.

- A single 100mm PVC duct will normally require a minimum 450mm trench width (minimum width as per Standard Drawings),
- A double 100mm PVC duct will normally require a minimum 550mm trench width.

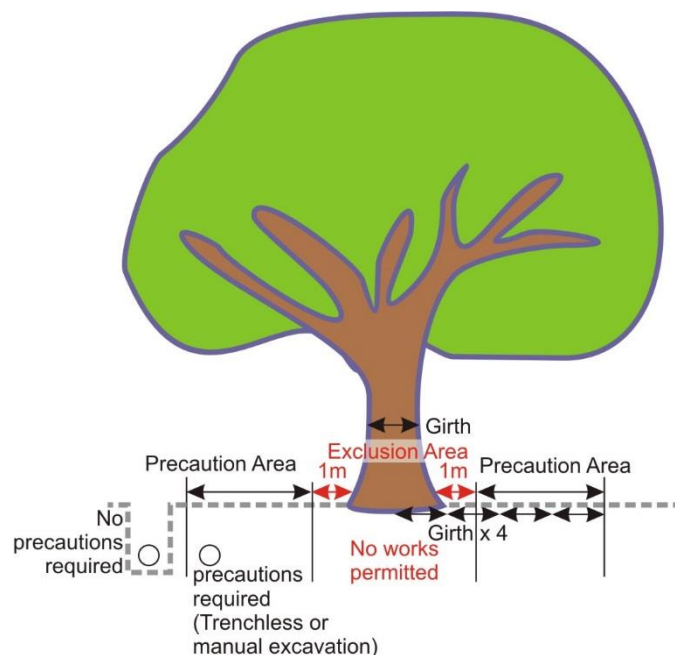
6.3.6 Excavating around trees

When excavating around trees a precaution area must be set out. This area is calculated by measuring the girth (diameter) of the tree at chest height. This measurement is multiplied by 4 to give the radius of the precautionary area measured from the centre of the tree.

Exclusion Area

Excavations should not be undertaken within this area, unless agreed with the local authority. Material, plant and spoil shall not be stored within this zone.

Fig 6.3.6 Excavating around trees



Precautionary Area

The excavation should be set out to avoid this area. Where an excavation passes through the precautionary area, the following methods should be used:

- Dig by hand or use trenchless methods – do not excavate with machinery,
- When hand digging: -
 - Try not to damage fine roots,
 - Do not cut roots greater than 25mm diameter,
 - Where necessary, prune roots using handsaw or secateurs, making a clean cut, and make as small a wound as possible.

Reinstatement around trees

Full compaction of backfill that contains roots would result in damage to the condition of the tree. To avoid damage during reinstatement, the voids around the roots must be backfilled as follows:

- Inert granular materials, mixed with topsoil or sharp sand must be placed around the roots
- If a root barrier is present, it should be reinstated to its original condition
- The use of heavy mechanical plant in the precautionary area should be avoided
- Equipment and materials should not be stored in the precautionary area
- When compacting, ensure that exhaust gases are not discharged directly into nearby hedges

Carless damage to trunks and branches of trees should always be avoided. Do not lean any equipment or materials against trees.

6.3.7 Availability and Use of Steel Plates

Where required, steel plates must be available on site or alternatively provision made to have delivery of steel plates to the site within 30 minutes in sufficient quantity to cover the excavation in its entirety. Where plates are used, they must comply with the following conditions.

- i. The plate/plates must be set in flush with the road surface. They should be fixed to the road surface (to prevent dislodgement) by means of countersunk holding down bolts. A groove is required around each excavation into which the plate shall sit and be fixed.
- ii. They must have a high friction surface.
- iii. Consideration should be given to accidental wheel loading, where appropriate.
- iv. The Licence Holder will be responsible for the structural adequacy and safety of any such plates.
- v. Each plate should be clearly marked with the full name of the contractor so they may be easily identified.
- vi. Any plates used in pedestrian areas, not designed to carry vehicles should be cordoned off to avoid vehicles passing over them.
- vii. The maximum period a plate can remain in place is 4 days, unless prior written approval is received from the road authority.

6.3.8 Geo-Grids and Geo-synthetics

In forming trenches in roads where existing geo-grids are incorporated, the Licence Holder should ensure that the grid is cut prior to excavation and the surface layers should be removed on each side of the trench in order to allow sufficient overlap of replacement geo-grid as per the manufacturer's requirements. The Licence Holder shall comply with any particular requirements the road authority has for excavation and reinstatement of Geo-Grids and Geo-synthetics.

Manufacturers of geo-grids and geo-synthetics have developed strong polyethylene or other types of reinforcement in suitable widths, which can be incorporated into trench repair. They are usually located in the first bitumen bound layer above the backfill material. The use of such materials is acceptable in appropriate circumstances especially in partial reinstatement of old trenches.

If the Licence holder is not informed of the existence of any of the above materials prior to the commencement of works, but encounters them during the works, the road authority must immediately be informed to allow an appropriate reinstatement method to be decided.

6.3.9 Site Management/On Site Storage of Materials and Plant

- i. On approach to the works site, the name of the contractor and the Licence Holder must be clearly displayed with a 24 hour contact number in the Irish and English languages.
- ii. On-site storage of materials, spoil, plant, machinery and vehicles used in connection with any roadworks will only be permitted for the duration of the roadworks provided it does

- not, in the judgement of the road authority, interfere in any way with pedestrian or vehicular traffic flow and it does not constitute a danger to pedestrians or vehicles.
- iii. The storage of any pipes or other materials stored along the public roadway must be kept in a tidy state and must be placed at a safe distance from the carriageway and hard shoulder and in such a manner as to avoid falling/rolling on to the roadway or interfering with or cause a danger to traffic and other road users. The Licence Holder shall make arrangements for the safe storage of materials to the satisfaction of the road authority.
 - iv. Streets and public roadways shall be kept tidy and clean during and on completion of the works.
 - v. All excavated material should be disposed of off-site. No spoil or other materials should be left overnight on site and the site must be left in a clean and tidy condition after working day.
 - vi. Any silting of downstream drainage facilities, whether ditches, pipes or catch pits/sumps which results from the works shall be cleaned out during and on completion of the works.
 - vii. Any damage to drainage facilities, roadside features and furniture which may be disturbed or blocked due to the works undertaken by the Licence Holder shall be replaced with new materials at full cost to the Licence Holder.
 - viii. The Licence Holder shall make good, any damage to other services caused by the execution of the works, at the Licence Holder's own expense to the satisfaction of the appropriate authority, statutory undertaker or individual owner.

6.3.10 Rubber Tyred Excavators/Rubber Tracked Excavators

The use of rubber tyre excavators is obligatory for trenches in public roads. The road surface shall be protected from the jacks of such machines by means of suitable rubber or timber pads or by other such approved means.

Where in exceptional circumstances, for reasons of depth or difficult digging, it is necessary to use steel tracked machinery, prior written consent must be obtained from the road authority. The Licence Holder should ensure and agree with the road authority that the project includes adequate funds to enable subsequent repair of areas outside of the reinstatement width of the trench itself which will be damaged due to the movement of the tracks on the road surface and by machine slewing actions, etc. The road authority may apply special conditions, e.g. deposits, in such cases.

6.4 Backfilling and Reinstatement of Openings

All reinstatement, from the base of the trench to the surface layer, shall be carried out in accordance with the reinstatement notes and drawings in Chapter 7 of this document.

If in doubt as to requirement in any specific case consult with the relevant road authority.

6.4.1 Backfilling

The ultimate performance of the completed opening will be greatly influenced by the manner in which this backfilling operation is carried out. It is vital therefore that the correct backfill materials are used and that the compaction methods employed are in accordance with the best engineering practices.

Supports must be progressively withdrawn as backfilling and compaction progresses and any voids carefully filled. The use of conveyor belt side fillers is desirable.

6.4.2 Backfill and Reinstatement Materials

Only materials described in the drawings and tables in Chapter 7 of this document are deemed acceptable as backfill and reinstatement materials.

6.4.3 Requirement to Undertake Additional Area of Reinstatement

As part of the licence conditions the road authority may require that a full width/lane/bay reinstatement is required where:-

- The section of roadway/footway is within the protected period (see 4.4.2). Transverse flexible surface carriageway crossings require a minimum width of reinstatement to allow for machine laying,
- A section of roadway, prior to excavation, has an associated condition rating of 'No Visible Defects' (rating 10) or 'Minor Surface Defects' (rating 9) See Appendix B.3,
- Works affect a cycleway/cycle track,
- Adjacent sections of roadway/footway have been damaged by construction vehicles involved in undertaking the works.

Full width/lane/bay reinstatement works shall be machine laid with materials used in accordance with TII's Specification for Road Works and use materials and depths of reconstruction to match the existing surface. Permanent reinstatement shall be undertaken immediately or as otherwise defined by the road authority.

Surface Dressing does not constitute a full width reinstatement unless the structural Asphaltic Concrete (AC) layer is provided over the full width.

Betterment

Notwithstanding the above, the road authority may separately agree that the Licence Holder carry out additional areas of reinstatement at an agreed cost to the road authority.

6.5 Compaction

For all materials, compaction shall be carried out in accordance with the requirements set out in this document. Compaction of trench backfill materials shall be carried out in accordance with the following clauses of TII's Specification for Road Works:-

- Clause 802 for granular materials, and
- Series 900 for asphalt concrete, and
- Clauses 821-823 for cement bound materials, and
- Clause 1043 for foamed concrete for backfilling excavations.

Performance of compaction: The road authority may test the performance of Licence Holders compaction methods and backfill compaction. Tests may include establishing California Bearing Ratio or Clegg Impact Value.

6.5.1 Compaction Equipment


a. Introduction

All compaction equipment covered by this reinstatement specification shall comply with the TII Specification for Road Works and be checked, adjusted, maintained and operated in accordance with working practices, maintenance schedules, operating procedures and vibrating frequencies recommended by the equipment manufacturer.

All equipment and operating procedures used for the compaction of all backfill and reinstatement materials laid above the surround to apparatus shall comply with the requirements of this section.


b. Single Drum Vibrating Roller

Vibrating rollers shall be permitted for the compaction of backfill and reinstatement materials, in accordance with the following requirements. Single drum vibrating rollers shall include a mechanical means of applying vibration to the roll. Single-drum rollers without a specific vibration unit shall be considered to be single-drum deadweight rollers and shall not be permitted for reinstatement purposes.

	<p>Approved materials for compaction: Bituminous materials, granular materials. Approval needed from the road authority for use on cohesive materials.</p>
	<p>Approved layer thickness 0 – 125mm</p>
	<p>Operating mass Width of the drum = W Check ID plate for mass = M Mass per Metre = M/W (kg/m) (The kg/m can sometimes be listed on the machine) Minimum = 1,000 kg/m</p>
	<p>Operation:</p> <ol style="list-style-type: none"> 1. Should be operated in the lowest available gear 2. NO vibration for the first pass. FULL vibration for the following passes.


c. Twin Drum Vibrating Roller

Twin-drum vibrating rollers shall include two vibrating rolls. Twin-drum rollers in which only one roll vibrates shall be considered to be single-drum vibrating rollers.

	<p>Approved materials for compaction: Bituminous materials, granular materials. Approval needed from the road authority for use on cohesive materials.</p>
	<p>Approved layer thickness 0 – 125mm</p>
	<p>Operating mass Width of the drum = W Check ID plate for mass = M Mass resting on one drum (D)= M/2 Mass per Metre = D/W (kg/m) (The kg/m can sometimes be listed on the machine) Minimum 600 kg/m</p>
	<p>Operation:</p> <ol style="list-style-type: none"> 1. Should be operated in the lowest available gear 2. NO vibration for the first pass. FULL vibration for the following passes. 3. More effective than single drum, but more difficult to control in small working areas.

d. Vibrating Plate Compactors


Vibrating plate compactors of 1400 kg/m² minimum mass shall be permitted for the compaction of backfill materials

	<p>Approved materials for compaction: Cohesive and granular materials</p>
	<p>Approved layer thickness 0 – 125mm</p>
	<p>Operating mass Width of plate in contact with ground = W Length of plate in contact with ground = L Area of plate (A) = W x L Check mass of plate on ID plate = M Mass per Square Metre = M/A (kg/m²) Minimum 1,400 kg/m²</p>
	<p>Operation:</p> <ol style="list-style-type: none"> 1. Largest plates may be too wide for narrow trenches (without damaging adjacent materials) 2. Vibrating plates should be operated in the lowest available gear/speed (except for the first pass, which should be at the maximum forward speed)


e. Vibrotampers

Vibrotampers shall be permitted for the compaction of backfill materials, in accordance with the following requirements:


1. 50 kg Minimum Nominal Mass
 - i. The width of the foot shall not exceed 5 mm/kg of the nominal mass.
 - ii. The contact length of the foot shall not exceed 350 mm nor be less than 175 mm.
 - iii. The foot contact area shall not exceed 1,000 mm²/kg of the nominal mass.
 - iv. The mass of any extension leg shall not exceed 10% of the nominal mass.
2. 25 to 50 kg Nominal Mass - permitted in areas of restricted access only
 - i. The width of the foot shall not exceed 150 mm.
 - ii. The contact length of the foot shall not exceed 200 mm.

	<p>Approved materials for compaction: Cohesive and granular materials</p>
	<p>Approved layer thickness Not approved for layers of 50 mm or less.</p>
	<p>Operating mass Operating mass of the vibrotamper is on the ID plate on the machine and on the foot. Minimum mass permissible = 50 kg.</p>
	<p>Operation:</p> <ol style="list-style-type: none"> 1. Shoe must hit the ground flat, not on its toe or heel. 2. For cohesive materials, may be operated at reduced speed for the first pass only

f. Hand Rammers/Hand Tampers

	<p>Approved materials for compaction: All materials where larger compactors</p> <ul style="list-style-type: none"> ➤ Cannot access ➤ Are not permitted to access
	<p>Approved layer thickness Fine layers (aggregate size depth)</p>
	<p>Operating mass N/A</p>
	<p>Operation:</p> <ol style="list-style-type: none"> 1. Initial tamping of fine fill material, immediately adjacent to pipes, ducts, street furniture, around standpipes and other isolated fixed features, and at reinstatement edges.

g. Percussive Rammers

	<p>Approved materials for compaction: All materials where larger compactors</p> <ul style="list-style-type: none"> ➤ Cannot access ➤ Are not permitted to access
	<p>Approved layer thickness 0-125mm</p>
	<p>Operating mass Minimum mass 10kg</p>
	<p>Operation:</p> <ol style="list-style-type: none"> 1. Requires compressor to operate 2. Can be used immediately adjacent to pipes, ducts, street furniture, around standpipes and other isolated fixed features, and at reinstatement edges. 3. The contact length of the foot shall not exceed 200 mm.

h. Other Compaction Equipment

Other compaction equipment, including machine-mounted compactors and all other compaction devices not referenced above, may be permitted for the compaction of reinstatement materials, subject to the approval of the road authority.

6.5.2 Use of Compaction Equipment

- i. A single pass of any compaction plant shall be deemed to be completed when the foot, roll or plate of the compactor has impacted the entire surface area of the layer.
- ii. Where the excavation width is more than 50 mm greater than the foot, roll or plate width (i.e. side clearances between the compacting surface and the wall of the excavation exceed 25 mm per side), two or more traverses of the compaction device shall be required to ensure coverage of the entire surface and all shall be deemed to constitute a single pass.
- iii. Compaction plant should be steered along a line offset from that steered on the previous pass so that alternate passes are run close in to each side wall of the excavation.

6.5.3 Lift Thickness for Bound/Unbound Materials

All backfill materials shall be placed in accordance with the relevant series of the TII Specification for Road Works. The compacted thickness of all individual 'lifts' of bound and unbound materials shall be in accordance with Table 6.5.3 below;

Table 6.5.3 Lift Thickness for Bound/Unbound Materials

Material	IS EN 13108 Reference	Compacted Lift Thickness (mm)		
		Minimum at any point	Nominal Lift Thickness	Maximum at any point
Granular Material	N/A	75	100 to 150	200
C25/30 Concrete	N/A	100	As Required	As Required
C32/40 Concrete	N/A	100	As Required	As Required
30/14 HRA	HRA 30/14 F surf 40/60	35	45	50
35/14 HRA	HRA 35/14 F Surf 40/60	45	50	60
10mm PMSMA	SMA 10 surf PMB 65/105 – 60 des	20	25 – 50	55
14mm PMSMA	SMA 14 surf PMB 65/105 – 60 des	30	35 – 50	55
6mm AC*	AC 6 dense surf – 70/100 rec, or 160/220 rec	15	20 - 30	40
14mm AC**	AC 14 close surf – 70/100 rec or 160/220 rec	35	40 – 55	65
20mm AC*	AC 20 dense bin 40/60 rec or 70/100 rec	40	50 – 100	120
32mm AC	AC 32 dense Base 40/60 rec or 70/100 rec	55	70 – 150	165
14mm Porous Asphalt	PA 14 surf PMB des***	25*	30 – 35*	40*

* Only for use in footways, footpaths and cycle tracks.

** Not permitted on high speed roads i.e. roads with a design speed of ≥ 85 km/hr.

*** Where porous asphalt surfaces are encountered refer to S6.4.5 (IS EN 13108 – 7 contain specifications for this group of asphalts and guidance on the appropriate material should be obtained from the road authority).

Bituminous materials should be laid by paver unless there are small or inaccessible areas where hand laying is the only practicable method. Pavers should be used with the minimum of hand raking and making up. The use of automatic levelling devices should be encouraged.

As far as practicable, the paver should work continuously without stopping. Stops can adversely affect the ride quality of the finished pavement. Therefore, there should be sufficient mixed material on site when paving commences to ensure that lack of supply will not stop operations. However, an excess number of delivery vehicles should also be avoided as it can result in congestion on site and an extended time between mixing and laying for each load.

6.5.4 Compaction of Unbound Materials/Bituminous Mixtures

Research has shown that failure to operate and maintain compaction equipment in accordance with manufacturer's schedules and recommended practices is likely to result in inadequate compaction with serious implications for the short term performance of individual structural layers and the long term integrity of the entire reinstatement. All compaction equipment covered by this document must be frequently checked, adjusted and maintained, as necessary, in accordance with the manufacturer's recommended practices in order to ensure that the manufacturer's recommended operating frequency be maintained throughout each compaction operation.

Table 6.5.4 Compaction Requirements for Unbound Materials/Bituminous Mixtures

Type of Compaction Plant	Weight Category	Minimum passes per compacted lift thickness						
		Unbound Material			Bituminous Mixtures			
		100 mm	150 mm	200 mm	40 mm	60 mm	80 mm	100 mm
Vibratory roller; Single Drum	600 - 1000 kg/m	16	NR	NR	10	12	NR	NR
	1000 - 2000 kg/m	6	16	NR	6	10	NR	NR
	2000 - 3500 kg/m	4	6	10	5	7	8	NR
	Over 3500 kg/m	3	5	9	4	6	7	NR
Vibratory roller; Twin Drum	600 -1000 kg/m	6	NR	NR	5	7	NR	NR
	1000 - 2000 kg/m	3	6	NR	4	5	6	8
	2000 - 3500 kg/m	2	3	4	3	4	4	6
Vibrating-plate compactor	1400 - 1800kg/m ²	8	NR	NR	6	NR	NR	NR
	1800 - 2100kg/m ²	5	8	NR	3	5	6	8
Vibro-tamper	50 - 65kg	4	8	NR	NR	NR	NR	NR
	65 - 75kg	3	6	10	NR	NR	NR	NR
	over 75kg	2	4	8	NR	NR	NR	NR
Power Rammer	100 - 500kg	5	8	NR	NR	NR	NR	NR
	over 500kg	5	8	12	NR	NR	NR	NR
Alternative Compaction Plant for Areas of Restricted Access (including small excavations and trenches less than 200 mm width)								
Vibrotamper 25 kg minimum		Minimum of 6 compaction passes			Minimum of 6 compaction passes.			
Percussive Rammer 10 kg minimum		Maximum of 100mm compacted lift thickness			Maximum of 75mm compacted lift thickness.			
1) NR = Not Recommended 2) Twin drum vibrating rollers are preferred for compaction of bituminous mixtures 3) Single drum vibrating rollers are vibrating rollers providing vibration on only one drum 4) Twin drum vibrating rollers are vibrating rollers providing vibration on two separate drums								

Temperature requirements for compaction of bituminous materials are given in Table 6.5.5.

Table 6.5.5 Laying & Rolling Temperatures for Bituminous Materials

Material	Grade Pen	Nominal Size mm	Delivery Temp °C	Rolling Temp °C
Dense surface course macadam	70/100	14/10	115-130	90-100
	160/220	14/10	95-110	75-85
Dense binder/base course macadam	40/60	32/20		105
	70/100	32/20		90
Rolled Asphalt	40/60	35/14	140-155	110

Compaction shall be completed as soon as possible after the material/mixture has been spread and in accordance with the requirements for the individual materials. Full compaction shall be obtained over the full area including in the vicinity of both longitudinal and transverse joints.

The surface of any layer of material shall on completion of compaction and immediately before overlaying, be well closed, free from movement under construction plant and free from ridges, cracks, loose material, pot holes, ruts or other defects. All loose, segregated or otherwise defective areas shall be removed to the full thickness of the layer, and new material laid and compacted.

Compaction of unbound materials shall be carried out by a method specified in Table 6.5.4 above, unless the contractor demonstrates at site trials that a state of compaction achieved by an alternative method is equivalent to or better than that using the specified method. The compaction of hot bituminous mixtures shall be in accordance with BS 594987 and as specified in Table 6.5.4 above.

Pavement quality concrete, laid as the surface slab of road, footway, footpath or cycle track reinstatements, shall be compacted using a proprietary vibrator, selected and operated in accordance with the manufacturer's recommendations. However, proprietary vibrators may be unsuitable for concrete sections less than 100mm wide or less than 0.5 square metres in area. In such cases, as a minimum requirement, all concrete shall be thoroughly tamped by hand.

6.6 Joints, Bonding and Joint Sealing

Stepped joints will be provided in the surface course and binder course to permanent reinstatements. Over banding is permitted on surface courses where a site-specific risk assessment by the Licence Holder has been undertaken. Over banding shall not exceed 3 mm thickness nor 50 mm width and shall achieve a minimum skid resistance value (SRV), or Pendulum Test Value (PTV) of 55.

Whether permanent or temporary reinstatement is applied, all vertical asphalt joints shall be made flush. They shall be cut back to a vertical face using a rotary disc saw which exposes the full thickness of the surface layer, discarding all loosened material and painting the vertical face completely with a thin uniform coating of hot applied bitumen binder of not less than 40/60 pen or cold applied thixotropic bitumen emulsion of similar grade.

The vertical faces of access chamber covers, gullies, kerbs, channels and similar projections against which the asphalt is to abut shall be cleaned and painted with a thin uniform coating of hot applied 40/60 or 70/100 paving grade bitumen or cold applied thixotropic bitumen emulsion of similar grade, before the asphalt is laid.

Horizontal joints between binder and/or surface courses shall be provided with a polymer modified bond coat prior to overlay in accordance with BS 594987 and Series 900 of the TII Specification for Road Works in so far as it applies to the work to be undertaken. Before spraying is commenced, the surface shall be free of all loose material, the surface as a whole shall be dry and any damp areas shall be completely free of standing water.

6.7 Road Assets and Equipment

6.7.1 Road Markings, Specialist or Ornamental Surfaces and Road Studs

In the event of any interference with road markings, coloured surfaces or road studs, the Licence Holder shall either arrange for immediate reinstatement of the road markings, coloured surfaces or road studs by a specialist approved contractor or arrange with the road authority to carry out the works. The cost of such works shall be borne by the Licence Holder. Where the road authority determine that temporary road markings are required due to the duration of the works, then the cost of both the temporary and permanent road markings shall be borne by the Licence Holder.

6.7.2 Traffic Sensors, Loops

Excavations near traffic sensors or loops must be avoided where possible. If unavoidable prior approval is required from the road authority and full cost of replacement shall be borne by the Licence Holder.

6.7.3 Street Furniture

All existing street furniture, bollards, etc. in the carriageways and footways are the property of the road authority. The Licence Holder shall be responsible for any damage or loss caused to said items which may arise out of or as a consequence of their operations during the course of the works, and the full cost of replacing such damaged or missing items shall be payable by the Licence Holder.

6.7.4 Chamber Covers and other Ironwork

- i. All chamber covers and frames shall comply with IS EN 124 standards and bear a certification symbol to comply with this standard. (See Appendix B.4).
- ii. They shall be of non-rock design, have closed keyways and be manufactured from spheroidal cast iron (ductile iron) or similar approved material.
- iii. The cover and frame to be coated in bitumen or similar approved material.
- iv. The frame to be designed to prevent the cover falling into the manhole/chamber.
- v. Chamber cover and frames shall be installed in accordance with Series 500 Chamber Tops and Gully Tops for Road Drainage and services: Installation and maintenance.
- vi. The ownership, maintenance and integrity of manholes/chambers and other ironwork shall remain that of the associated Licence Holder. In addition, the Licence Holder shall be responsible for the 300mm wide strip surrounding the frame or other ironwork.
- vii. The access surround is the width between the fixed feature (access frame) and the point at which a full depth reinstatement can be achieved with a full load transfer. It is therefore important that the surround is constructed to adequately withstand and transfer the applied loads. The area outside the access surround should match existing surface material.
- viii. Where a road authority is required to alter a defective manhole/chamber cover and frame, the full cost of such alterations shall be borne by the Licence Holder.
- ix. All manholes/chambers and frames should be kept a minimum of 500mm from the kerb line and shall not be placed over traffic loops. See general arrangement drawings.
- x. Where ironwork is installed by a statutory undertaker or utility company it must be clearly identifiable with name of the owner/Licence Holder on the cover.

6.8 Quality Control

All materials should be in accordance with the most recent version of the TII 'Specification for Road Works' and the relevant Irish Standards, British Standards and European Standards. Results of all testing undertaken shall be made available to the road authority, on request.

A Licence Holder shall not unreasonably refuse any request by the road authority to inspect and test the goods supplied during manufacture, processing or storage at the premises of the supplier or any third party prior to dispatch and the Licence Holder shall provide the road authority with all facilities reasonably required for inspection and testing. The road authority retains the right to undertake tests on materials, compaction etc., and recoup all charges incurred where adverse or negative results are obtained.

If, as a result of inspection or testing, the road authority is not satisfied that the works comply in all respects with the relevant standards and the road authority so informs the Licence Holder after inspection or testing, the Licence Holder shall take such steps as are necessary to ensure compliance.

The texture depth, Polished Stone Value (PSV) and Aggregate Abrasion Value (AAV) at the running surface of all interim and permanent reinstatements in all roads shall comply with Series 900 & 1000 of the TII Specification for Road Works.

6.8.1 Defects

Notwithstanding the minimum general recipe type specifications relating to materials and methods, the following sets out performance standards to which road surfaces and road profiles should comply in order to be deemed acceptable. These standards apply to temporary and permanent reinstatements in order to determine acceptability. Where performance standards are not met, (i.e. defects during the works or guarantee period), corrective intervention on the part of the responsible Licence Holder is required. The Licence Holder is solely responsible for any loss or damage caused by defects associated with the road opening works.

The road authority may carry out inspections on the performance standards during the works and guarantee periods, including an inspection at the end of the guarantee period. Any defect identified during these inspections will require corrective action on the part of the Licence Holder prior to any take-over of responsibility by the road authority.

There are a number of categories of defects that may result from road opening works. These categories that will be included as part of these inspections are outlined in Table 6.8.1.

It is important to note that the defects outlined are only an indication of the performance of the reinstatement and are not a statement of hazard existence. The road authorities may devise and apply different criteria than those outlined below having regard to their own experience.

Remedial works are required for defects, including exceedance of intervention limits during the guarantee period, such that the defect is corrected or surface performance is brought within the performance limit.

Table 6.8.1 Defects

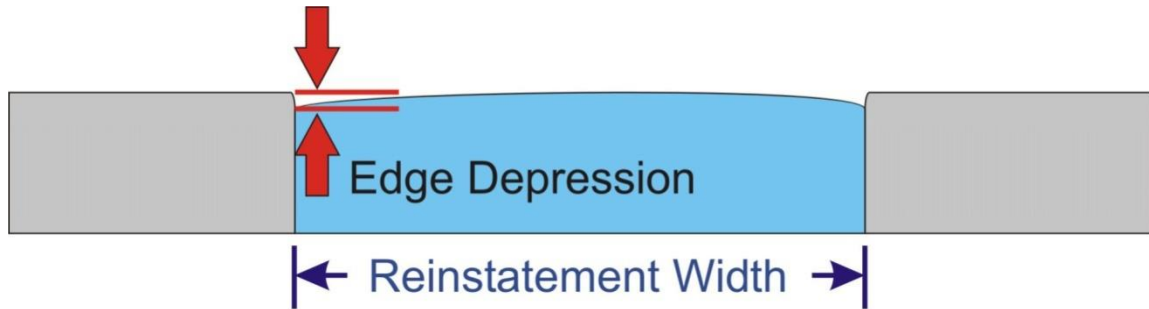
Defect Category	Defect	Description
a. Reinstatement Tolerance (See Section 6.8.2)	Edge Depression	Vertical step at the interface of the reinstatement and the existing surface
	Surface Depression	Depressed area within the reinstatement
	Surface Crowning	Reinstatement is above the mean level of the existing adjacent surface
	Combined Defect	Any combination of Intervention type defects.
	Fixed Feature	Specified tolerance for ironwork/kerbs has been exceeded.
b. Surface Defect	Ravelling	Progressive loss of binder & aggregate chippings from the pavement surface. Common on flexible surfaces.
	Bleeding	Fatting up or excess bituminous material on the pavement surface. Common on flexible surfaces
	Wear and Polishing	Worn surface from traffic wearing off the surface mortar. Common on concrete surfaces.
	Pop-outs	Individual pieces of large aggregate popping out of the surface. Common on concrete surfaces.
	Scaling	Loss of fine aggregate and mortar. More extensive scaling can cause loss of larger aggregate. Common on concrete surfaces.
c. Pavement Deformation	Rutting	Permanent longitudinal deformation in the wheel path caused by traffic loading. Common on flexible surfaces.
	Surface Distortion	Permanent surface deformation (excluding rutting). Common on flexible surfaces.
	Faulting	Difference in elevation across a joint or crack. Common on concrete surfaces
d. Cracks	Alligator Cracking	Series of interconnected cracks forming small, sharp angled polygons ranging in size from about 25mm to 125mm resembling chicken wire. Common on flexible surfaces.
	Edge Cracking and Breakup	<ul style="list-style-type: none"> ➤ Singular/multiple cracking within 300mm of the pavement edge, or ➤ Pavement edge showing considerable breakup, or ➤ Breakup of pavement edge including any mix of potholes, cracking & patching along the pavement edge All common on flexible surfaces
	Other Cracking	<ul style="list-style-type: none"> ➤ Longitudinal cracks parallel to centreline. Common on all surfaces. ➤ Transverse cracks at right angles to the centreline. Common on all surfaces. ➤ Slippage cracking of the road surface. Common on flexible surfaces ➤ Meander cracks are cracks that appear to wander randomly. Common on concrete surfaces ➤ Hairline Cracks are only a few hundred mm long and formed during the curing of the concrete.
	Corner Breaks	Diagonal cracks near the corner of a concrete slab, forming a triangle with a longitudinal and transverse joint. Common on concrete surfaces
	Shattered Slab	Slabs divided into 4 or more pieces with severe damage/faulting/spalling along the crack edges. Common on concrete surfaces.
e. Surface Openings	Potholes	Bowl shaped depressions where part of the pavement has been removed. Common on flexible and concrete surfaces
	Road Disintegration	<ul style="list-style-type: none"> ➤ Loss of road surface ➤ Breakup of road into craters with <50% of the road width available to traffic All common on flexible surfaces.
f. Manholes/Ironwork (Flexible & Concrete surfaces)	Ironwork Level	The level of the ironwork has not been set correctly, or has moved relative to the adjoining pavement level
	Joint Sealing	No joint sealer has been used while installing the ironwork, or the joint sealer has failed
	Failure of adjoining pavement	Defect categories a,b,c,d or e in the immediate vicinity of the ironwork
g. Joints	Joint Seal Damage (Concrete surfaces only)	<ul style="list-style-type: none"> ➤ The joints between concrete slabs have widened, or ➤ Joint sealant has been removed, or ➤ Spalling, where there is a loss of a piece of the concrete pavement from the edges of the joint.

6.8.2 Reinstatement Tolerance

The tolerances as set out below are recommended having regard to safety and achievement of best engineering standards and having regard to practical working limitations.

Edge Depression

An edge depression is a vertical step or trip at the interface of the reinstatement and the existing surface or a trip at the junction between ironwork and reinstatement.



Intervention shall be required where the depth of any edge depression exceeds 5mm over a continuous length of more than 100mm in any direction as shown in Table 6.8.2 below

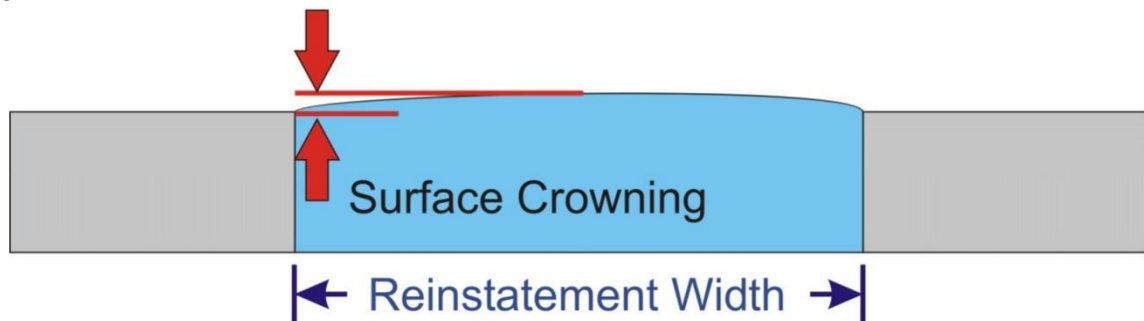
Surface Depression

A surface depression is a depressed area within the reinstatement having generally smooth edges and gently sloping sides forming a shallow dish.



Corrective intervention is required where the depth of any area of surface depression spanning more than 100mm in any plan dimension exceeds the limits shown in Table 6.8.2 below.

Surface crowning is where the reinstatement is above the mean level of the existing adjacent surfaces.



Intervention shall be required where the height of any area of surface crowning spanning more than 100mm in any plan dimension exceeds the intervention shown in Table 6.8.2 below.

Combined Defect

Combined Defect is an area within the reinstatement where any combination of edge depression, surface depression and/or surface crowning, overlap.

Corrective intervention shall be required where the extent of any individual defect, spanning more than 100mm in any plan dimension, exceeds the combined defect intervention limit as outlined in Table 6.8.2.

Table 6.8.2 Intervention Limits

Intervention	Reinstatement Width (mm)						
	≤400	>400 & ≤500	>500& ≤600	>600& ≤700	>700 & ≤800	>800 & ≤900	>900
Edge Depression	5	5	5	5	5	5	5
Surface Depression	8	10	11	13	15	15	15
Surface Crowning	8	10	12	15	15	15	15
Combined Defect	10	10	10	12	12	12	22

Note 1; This table applies to bituminous and concrete surfaces.

Note 2; Longitudinal profile of the reinstated trench/surface shall comply with Series 700 of the TII Specification for Road Works for surface regularity requirements

Fixed Features

All fixed features, such as edgings, channel blocks, drainage fixtures, surface boxes and ironware etc., should be as level and flush as possible with the adjacent surfaces and shall be installed to meet the following level criteria:

- i. Fixed features shall be laid to coincide with the mean level of immediately adjacent surfaces.
- ii. The construction tolerance between the levels of the fixed feature (excluding drainage features) and immediately adjacent surfaces shall not exceed +/- 3mm.
- iii. Drainage features shall be set flush with the adjacent surface and subject to a construction tolerance of not more than 6mm below the level of the adjacent surface. Such apparatus shall not protrude above the adjacent surface.
- iv. At a pedestrian crossing point that is flush with the adjacent surfaces, the kerbs shall be re-laid flush with the adjacent surfaces to a tolerance of 0 to +3mm.

6.9 Alternative Methods

The use of alternative methods for the installation of services can be characterised as either the use of trenchless technologies or micro-trenching. These methods are characterised by either reduced or discrete/individual openings as opposed to continuous trenches. Their use is driven by a mix of reduced impact, cost and by being a more rapid method of construction.

Although alternative methods can have many advantages and may be considered, they also need to be implemented with care, proper planning and investigations as well as the prior written agreement of the road authority. Where excavations arise as a result of the use of such technologies, reinstatements shall be carried out in accordance with this document.

Although the benefits of these methods are clear they do need to be correctly applied in appropriate conditions and subject to agreement with the road authority. However, there are also associated risks. Where damage to road infrastructure or to other utility/third party apparatus occurs these shall be fully repaired following discussion and agreement with the road authority and the other utility/third party. The cost of the repairs shall be borne by the Licence Holder. The road authority will not accept responsibility for any losses or damages arising.

Notwithstanding the nature of the works the provision of infrastructure as well as any associated openings required are subject to a licensing/consent process with the road authority.

Some of the methods are set out as follows: -

6.9.1 Trenchless pipelaying

Trenchless pipelaying is a type of subsurface construction work that requires few trenches or no continuous trenches and is a method the use of which has increased in recent years. It can be defined as "a family" of methods, materials, and equipment capable of being used for the installation of new or replacement or rehabilitation of existing underground infrastructure with minimal disruption to surface traffic, business, and other equivalent activities.

Trenchless construction includes such construction methods as tunneling, micro-tunneling (MTM), horizontal directional drilling (HDD) also known as directional drilling/boring, pipe ramming (PR), pipe jacking (PJ), moleing, horizontal auger boring (HAB) and other methods for the installation of pipelines and cables below the ground with minimal excavation. Large diameter tunnels such as those constructed by a tunnel boring machine (TBM), and drilling and blasting techniques are larger versions of subsurface construction. The difference between trenchless and other subsurface construction techniques depends upon the size of the passage under construction.

These technologies are widely used and there are many advantages to these technologies such as:

- Pipework can be installed either in short, medium or long lengths and either in straight lines/curves
- Minimal disruption to traffic/general public
- Project progress is accelerated
- Works are unaffected by surface obstacles

However care must be taken and preliminary investigations must be carried out by the applicant to ensure existing services are not damaged during these processes; lateral connections to existing pipework are particularly vulnerable.

The method requires considering soil characteristics and the loads applied to the surface. In cases where the soil is sandy, the water table is at shallow depth, or heavy loads like that of urban traffic are expected, the depth of excavation has to be such that the pressure of the load on the surface does not affect the bore. These methods also increase the risk of heaving or bulging on the road surface or in adjacent properties.

In the case of laying, replacing or repairing of services in public roads other methods for executing the works that may be considered are thrust boring, moleing, slip lining or pipe-bursting. Such processes may reduce the hazards associated with the actual execution of the work and if properly executed will avoid or reduce the problem of settlement and road surface repair.

In these circumstances, it will not be practicable to insert marker tape or metal plates as required by this specification. Other clear forms of marking such as marker posts with directional arrows should be installed to protect against accidental interference and to protect the service itself.

Access excavations for these applications can be quite significant and this aspect needs to be taken into account when planning such works. The backfilling and reinstatement of these access

excavations should be carried out in accordance with the guidelines and specifications set out in this document.

6.9.2 Narrow Slot or Micro-Trenching

Because excavating and reinstating the road using a traditional trench can be a time consuming and expensive exercise, micro-trenching has become an increasingly popular method because it can be quicker and cheaper than traditional methods and because it is relatively shallow compared to the traditional methods. The purpose of the micro trench is to provide suitable infrastructure for the installation of micro ducts and cables. Micro trenching reduces the costs associated with traditional trench excavation as it does not penetrate the structural or foundation layers of the road.

This means no granular backfill or extensive re-surfacing, instead backfilling with grout, dense macadam binder or similar materials, which once sealed can be practically invisible. Less excavation means less on-site plant, disturbance and disruption to pedestrians and traffic, with carriageways accessed within a short period of time. This equates to increased safety of the work site and surrounding area.

However, as the cables are shallow this can interfere with road maintenance activity such as resurfacing, the fibre may need to be physically removed from its micro-trench beforehand, and reinstalled afterwards (at the utility's expense), in order to avoid any damage being done to it when the old road surface is milled out.

The surface of the road can move with the weight of the traffic and even quite small movements can be sufficient to crush or otherwise damage cables and ducts. To reduce movement, cables should be carefully installed.

The micro-trenches must have adequate depth and where necessary extra measures are required to ensure water does not penetrate the road base (potentially causing subsidence and long term road damage). No other services or signal loops can be within the depth of the micro-trench along its length. An extensive survey needs to be carried out prior to starting the cutting.

Thus, the use of micro-trenching should be subject to careful planning and surveys beforehand and specific agreement with the road authority.

6.9.3 Mole Ploughing

This method of construction requires the duct/cable to be ploughed into the ground along the edge of a road. As with the other methods there are many advantages such as fewer open excavations, increased productivity (up to 300% over traditional methods) and reduced costs.

Mole ploughing is only recommended in rural areas and along grass verges. Careful planning is required to prevent damage to the road or other infrastructure. Adequate depths must also be achieved.

Mole ploughing uses a ploughing machine to pull a flexible pipe or cable below ground. It is employed in unmade ground and may be used in the verges of roads. The mole plough creates a slit in the surface of the ground, which should not require reinstating provided that the surface profile is restored. However, where connections are made to apparatus installed by mole ploughing techniques, excavations shall be carried out and reinstated in accordance with this reinstatement specification.

Soil displacement moleing or direction drilling and other trenchless methods do not create an excavation and, when carried out in a proper manner, do not require reinstatement (grouting may be required due to oversize drill bit being used, approval from road authority is required if grouting is used). However, reinstatement shall be carried out in accordance with this document at the launch and reception pits and at any intermediate excavations.

7. Reinstatement Drawings & Notes

7. Reinstatement Drawings & Notes

Drawing & Notes Schedule

	General Notes	General Arrangements			Temporary Reinstatement	Permanent Reinstatement
		Location & Layout	Trim Lines	Manholes		
Roadways						
Longitudinal openings excluding unbound surface dressed rural unbound roadways & excluding heavy duty locations.	GN1	GA1	GA3	GA4	SD1	SD4
Longitudinal openings in surface dressed rural unbound roadways	GN1	GA1	GA3	GA4	SD2	SD5
Longitudinal openings at heavy duty locations	GN1	GA1	GA3	GA4	SD1	SD6
Transverse openings	GN1	GA2	GA3	GA4	SD3 !	SD7
Concrete	GN1	GA1/GA2	GA3	GA4	SD1/SD3	SD8
Precast concrete paving blocks	GN1	GA1/GA2	GA3	GA4	SD1/SD3	SD9
Footways						
Asphalt concrete (bituminous macadam)	GN1	GA1/GA2	GA3	GA4	SD10 !	SD11
Concrete	GN1	GA1/GA2	GA3	GA4	SD10 !	SD12
Precast concrete paving block/ concrete slab	GN1	GA1/GA2	GA3	GA4	SD10 !	SD13
Verges/medians/fields/lawns						
Grass verges/medians/fields/lawns	GN1	GA1		GA4		SD14

! = will require permission of the Road Authority to use

General Reinstatement Notes	General Reinstatement Notes GN1
to be read in conjunction with Chapter 6, General Arrangement and Standard Drawings	
<ol style="list-style-type: none"> 1. Compliance with these drawings and details are mandatory. Dependent on circumstances and where drawings provide options/alternatives, road authorities may specify one option only as being applicable. Where a utility has an approved equivalent detail for bedding and surround this may be substituted for the bedding and surround detail shown in the Standard Drawings, provided it is agreed with the road authority in advance. 2. Full width/lane/bay reinstatement works shall be machine laid with materials used in accordance with TII Specification for Road Works and use materials and depths of reconstruction to match the existing surface. <i>Note: Surface Dressing does not constitute full width reinstatement unless the structural Asphaltic Concrete (AC) layer is provided over the full width.</i> 3. On approach to the works site, the name of the contractor and Licence Holder must be clearly displayed with a 24 hour contact number. 4. All works shall have a temporary traffic management plan, which shall be available for inspection on site, and shall comply with the Traffic Signs Manual and health and safety requirements. 5. Prior to any excavation works taking place, the location of all underground and over ground services must be identified and marked by a competent person trained in the use of cable detectors. Contact shall be made with all relevant service providers in this regard. 6. All works and materials shall comply with the TII Specification for Road Works. Series 900 of that specification will be the March 2011 version. All other Series will be to the current version. 7. Excavation on a road should not be closer than 500mm to the kerb line in order to prevent undermining of the adjacent footway. The trench should be located so as to avoid surface joints being located in the wheel track as far as reasonably practicable. 8. All bound (or concrete) edges shall be saw cut to expose the full vertical thickness of each layer prior to excavation. All edges shall be essentially straight, smooth and vertical. 9. Excavations shall be sufficiently protected to avoid harmful effects caused by weather or adjacent wheel loading. 10. Refer to Chapter 6 for requirements on pipe/duct type/colour and marker tape. 11. The method of work shall ensure proper compaction and such compaction may be tested by the road authority. To ensure adequate compaction, minimum clearances must be maintained vertically and horizontally between individual ducts or services installed in a group. 12. CI.808 to be used within 500mm of cement bound materials, concrete pavements, concrete structures or concrete products. Otherwise CI. 804 may be used. Foamed concrete to CI. 1043 may only be used as a bedding material or backfill material with prior approval of the road authority. Cement Bound Granular Mixture B shall have a minimum strength class of C8/10, unless otherwise directed. 13. Where steel plates or other trench covers are used, they must comply with Section 6.3.7. 14. Hand laying of hot bituminous mixtures shall be restricted to the following circumstances: <ol style="list-style-type: none"> i. At the edges of the layers of material and at gullies, manholes and other ironwork. ii. In confined spaces where it is impracticable for a paver to operate. iii. At the approaches to expansion joints at bridges, viaducts or other structures. iv. Transverse reinstatements less than 4 metres in width. v. Longitudinal reinstatements less than 20 metres in length. vi. Surface course reinstatements of longitudinal excavations less than 1 metre in width. vii. Temporary reinstatement <p>The method of laying shall be such that the finished surface is free from dragging, tearing and segregation of the material.</p> 15. All surface course aggregate shall have a minimum PSV of 60 declared unless otherwise specified by the road authority. Temporary surfaces to be managed in accordance with RLS8/2007. 16. Any damage to the road structure or areas adjacent to the opening and resulting from the works shall be repaired and included within the area to be reinstated. 17. Where there are exceptional circumstances not covered by the drawings, the reinstatement specification must be agreed with the road authority. 	

Longitudinal Openings

General Arrangement Drawing GA1

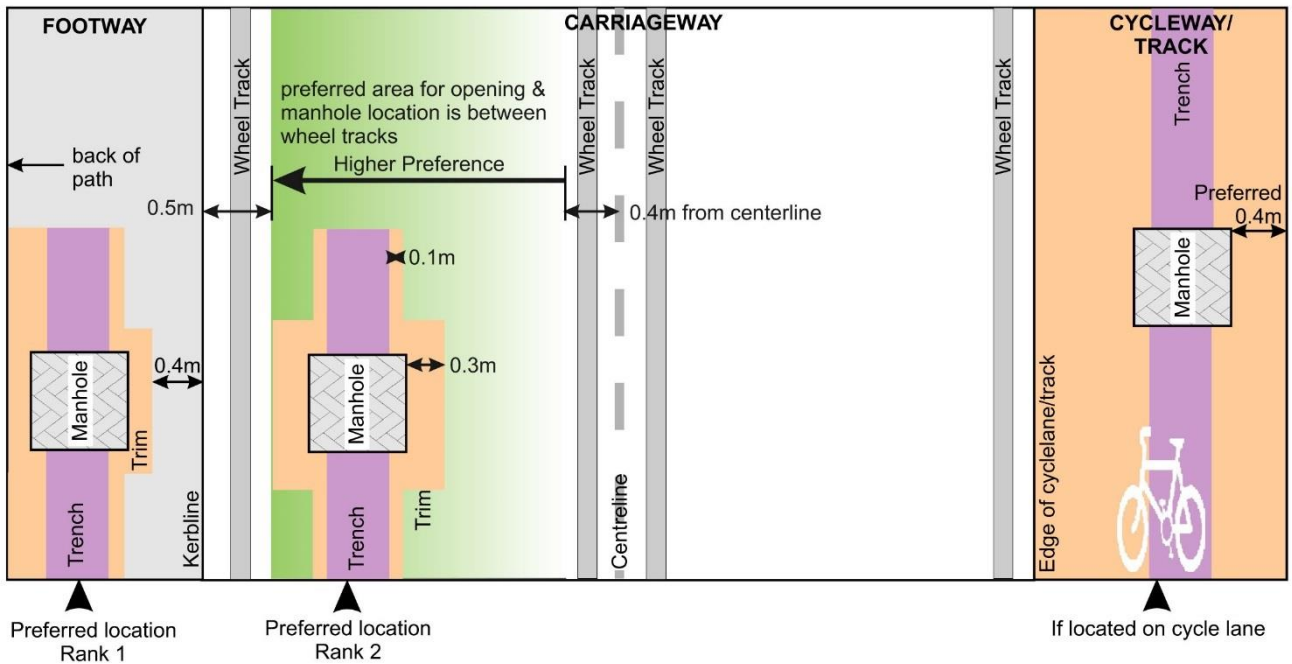
Drawing to be issued/interpreted in conjunction with drawings & notes in Chapter 7

Longitudinal Openings (Urban Scenarios)

Illustration shows footpath = 1.4m.
Footpath less than 1.4m will require full bay reinstatement.
Trenches in footpaths > 1.8m wide should be located 0.4m from back of path

Illustration shows 6m carriageway

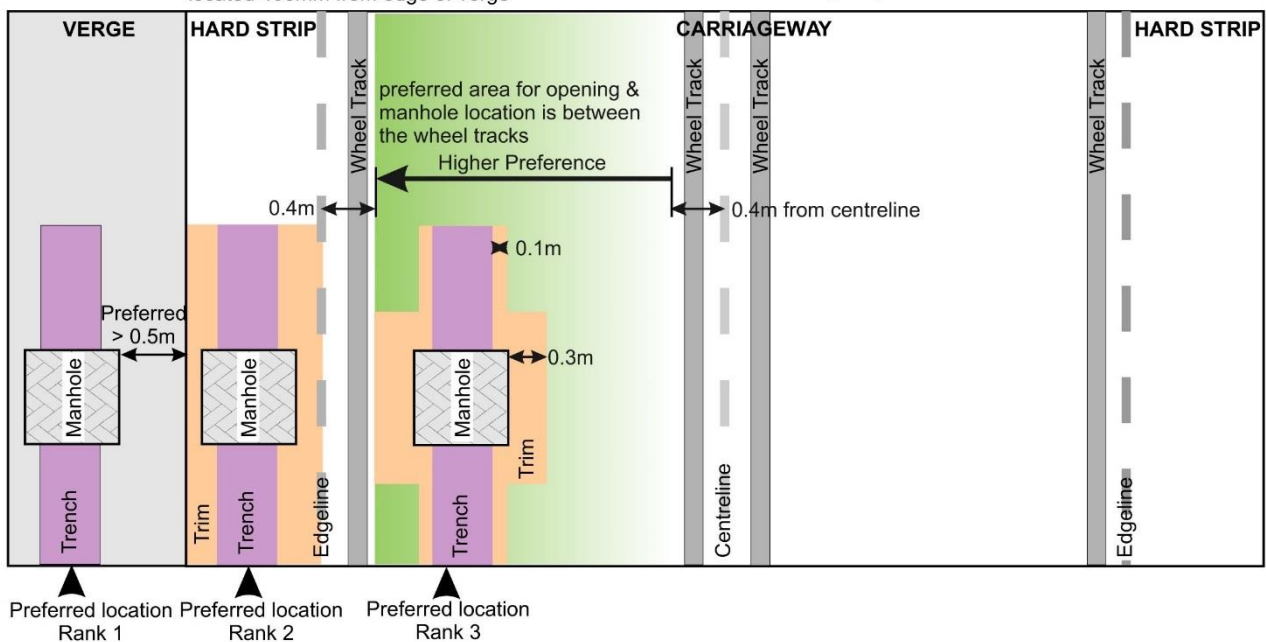
Cycle Lane (on roadway or footway) requires full lane reinstatement



Longitudinal Openings (Rural Scenarios)

1m hard strip shown for illustration.
For hard strip/shoulder > 1.25m, the trench/manhole should be located 400mm from edge of verge

Illustration shows 6m carriageway



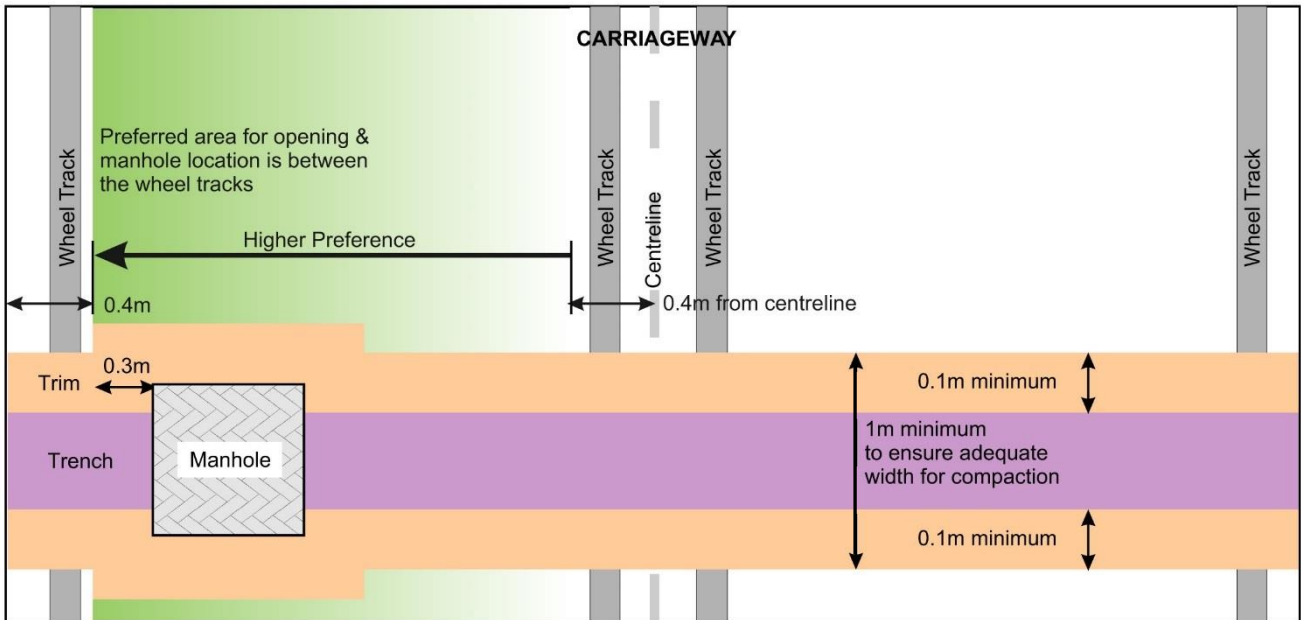
Transverse, Angled and Skewed Openings

**General Arrangement Drawing
GA2**

Drawing to be issued/interpreted in conjunction with drawings & notes in Chapter 7

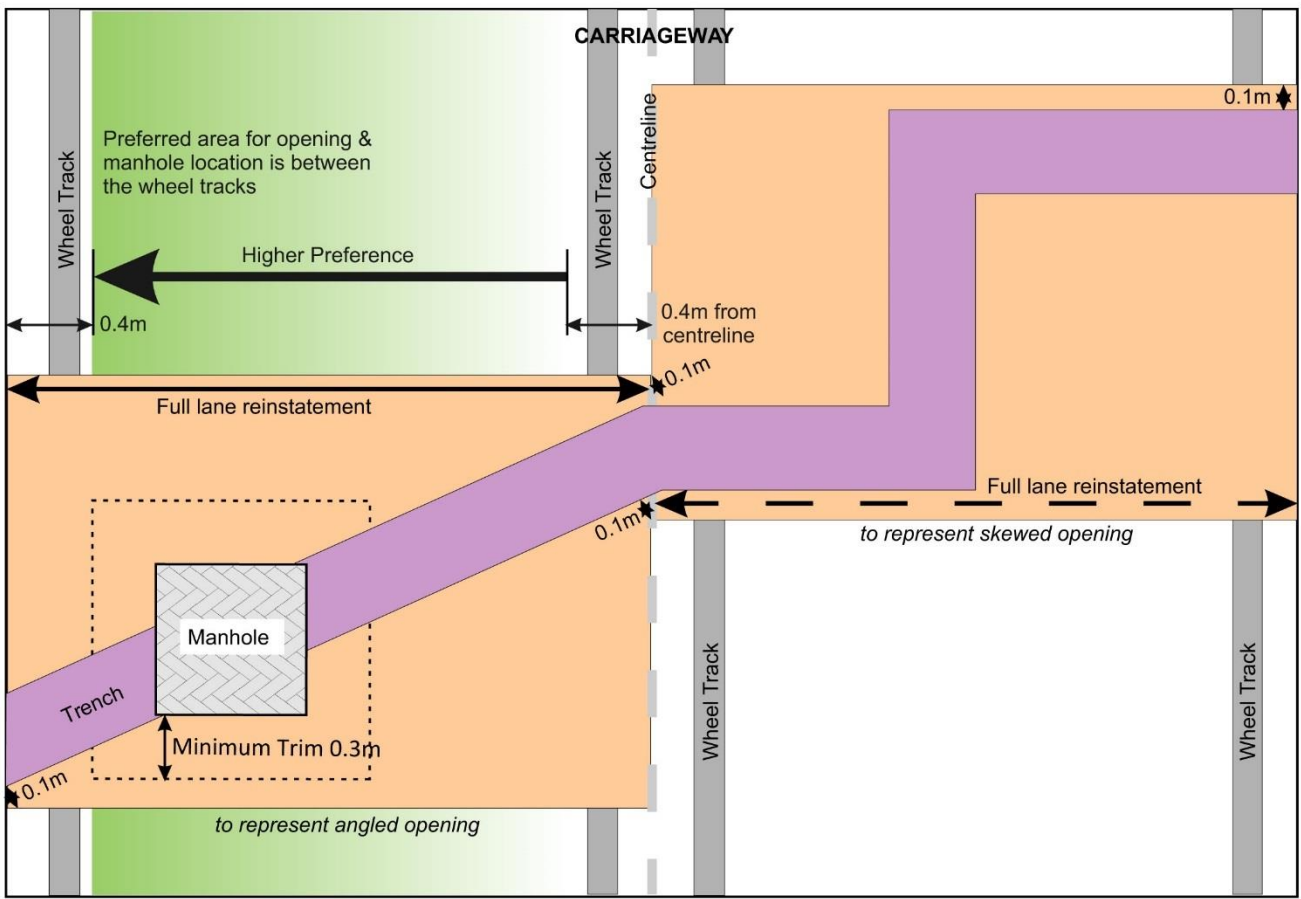
Transverse Opening

Illustration shows 6m carriageway



Angled/Skewed Openings

Illustration shows 6m carriageway

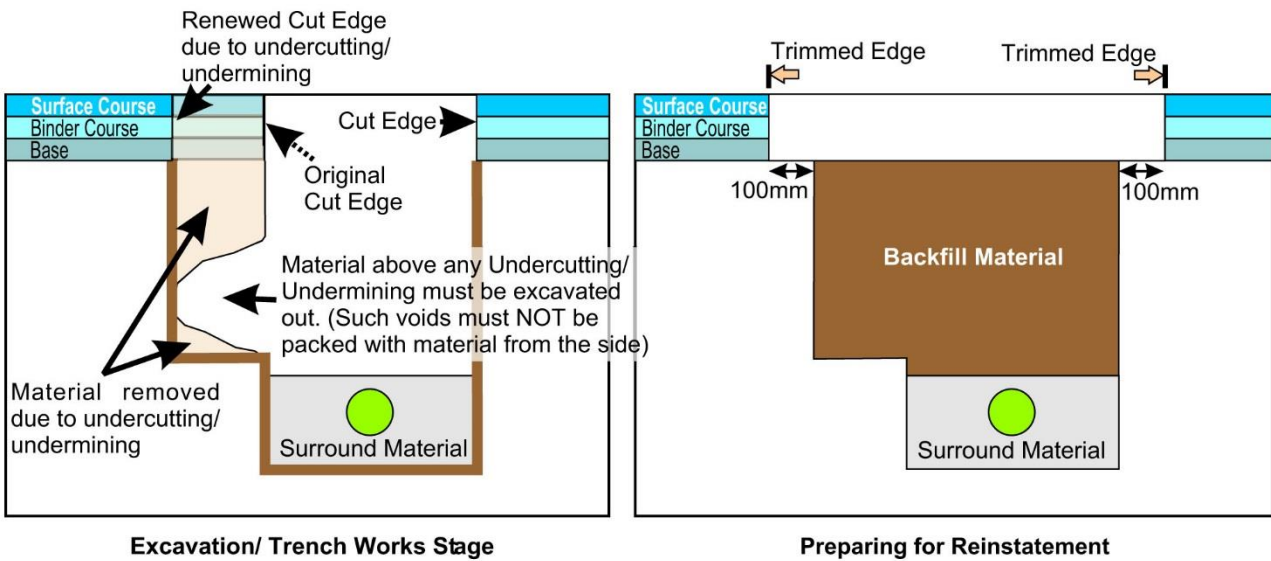


Trim Lines

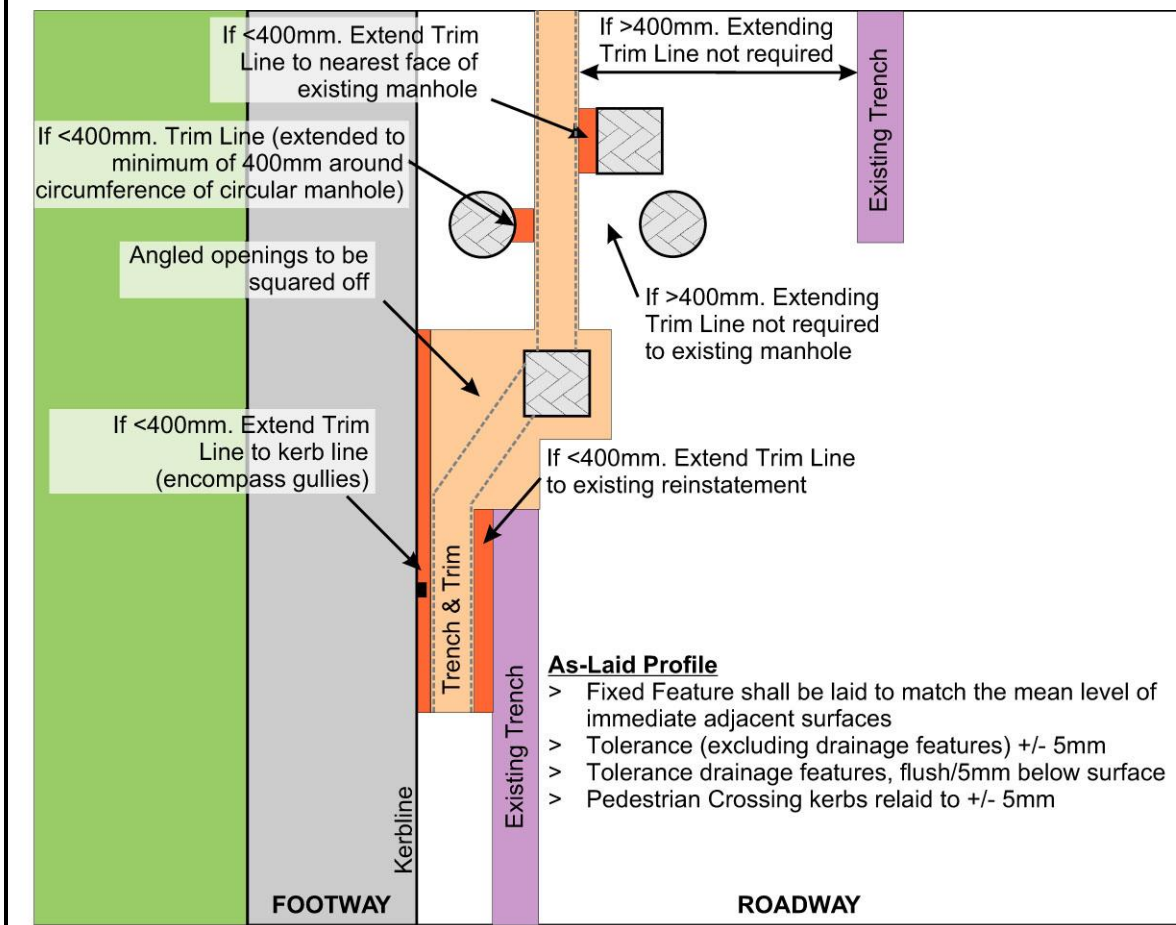
**General Arrangement Drawing
GA3**

Drawing to be issued/interpreted in conjunction with drawings & notes in Chapter 7

Trimming Back



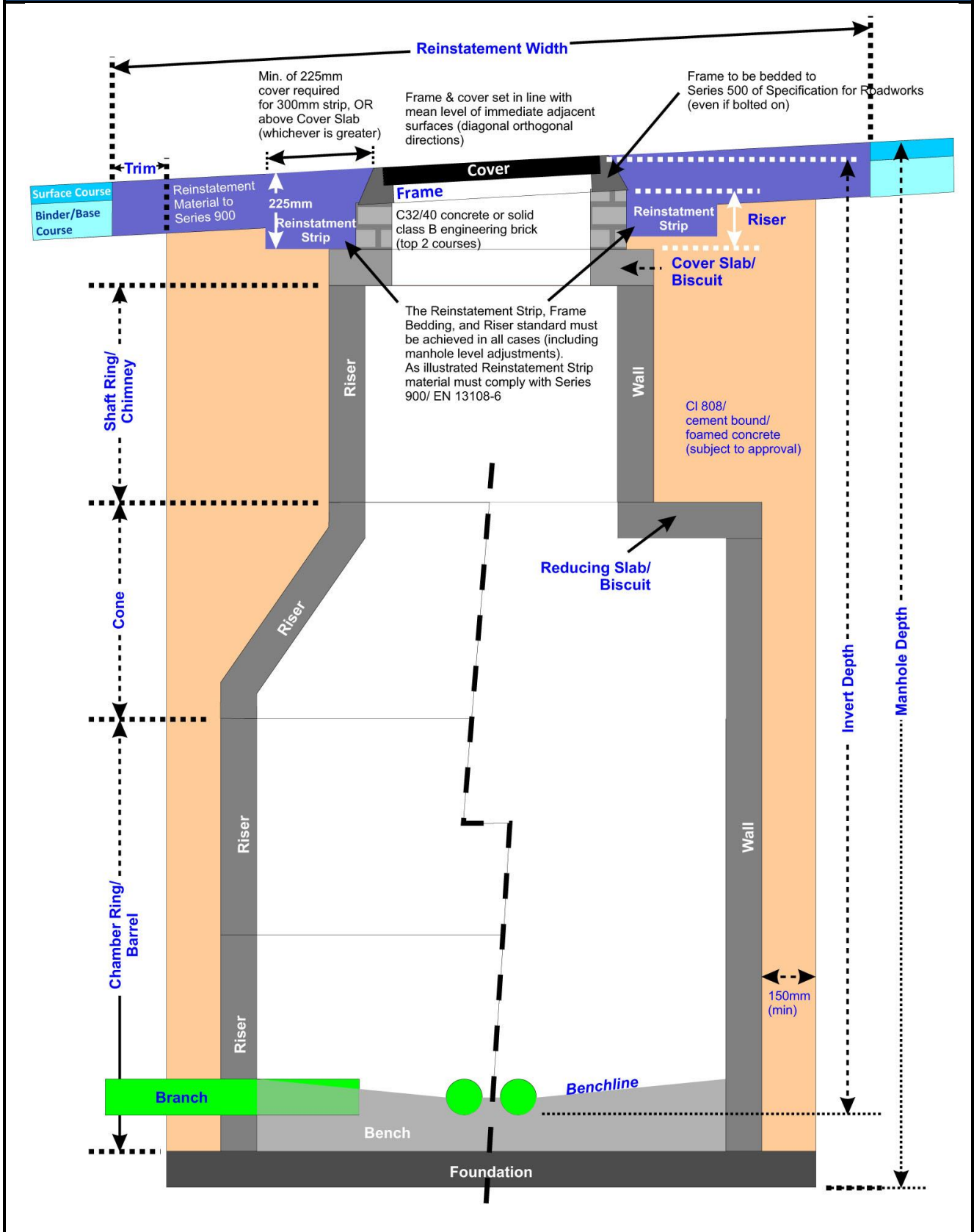
Extending Trim Lines



Manholes

**General Arrangement Drawing
GA4**

Drawing to be issued/interpreted in conjunction with drawings & notes in Chapter 7

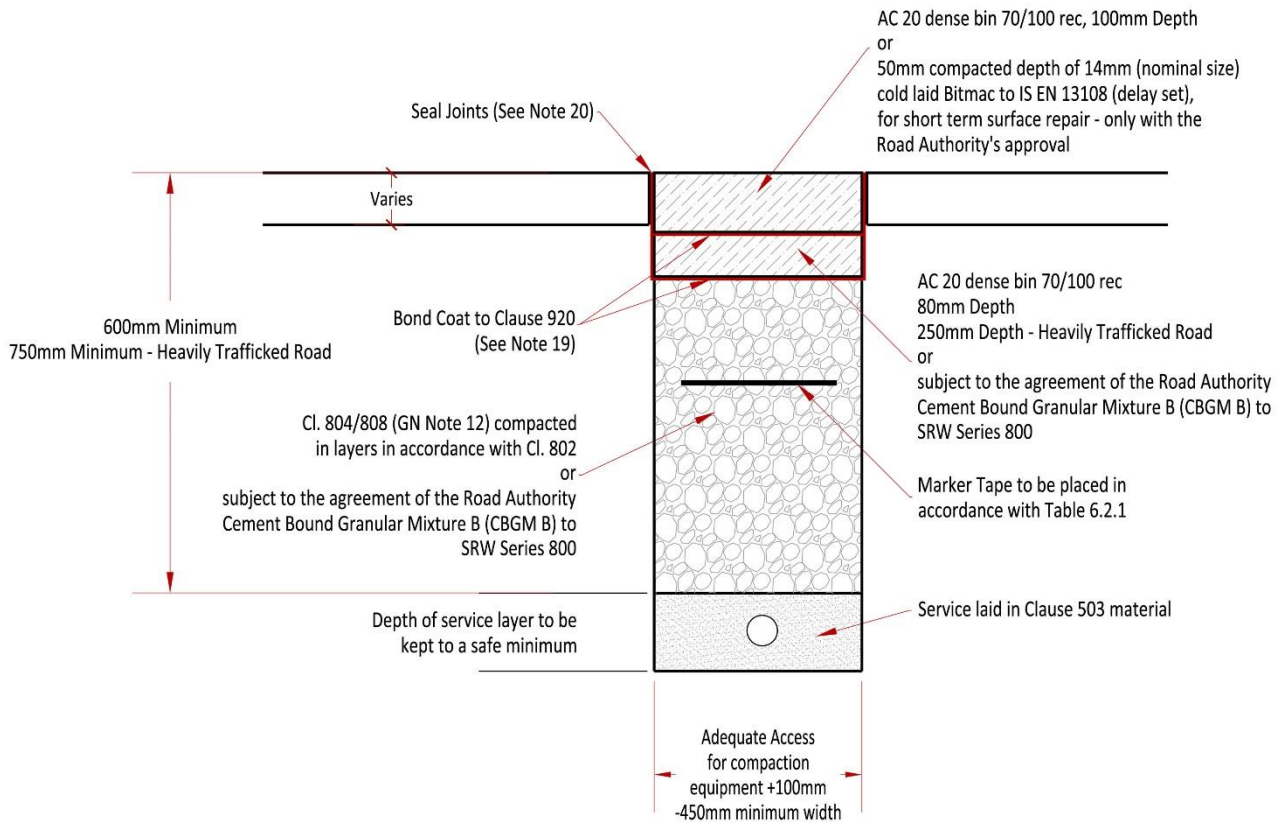


Roadways: Longitudinal Openings

Temporary Reinstatement

Excluding openings in rural unbound roadways with surface dressing

Standard Drawing
SD1



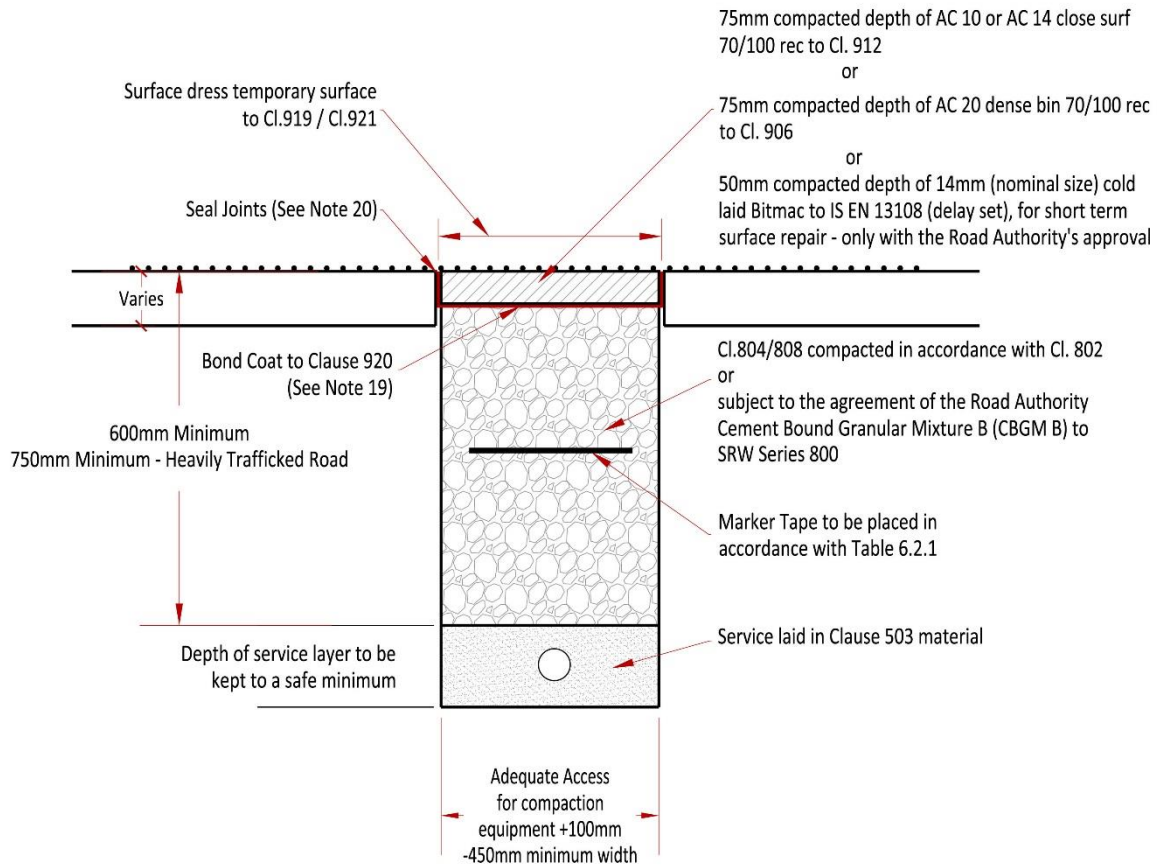
NOTES:

Notes 1-17 listed in General Reinstatement Notes apply.

18. As a minimum the reinstatement layer shall match existing bound AC layers or depths shown.
19. Clause 808 or Cement Bound Granular Material surface to be sprayed per Clause 920 prior to application of Asphalt Concrete Layer.
20. Joint sealer to be a hot 40/60 pen bitumen binder or cold thixotropic bitumen 50 - 70 pen to be applied to all vertical cuts in accordance with B.S. 594987 prior to application of bituminous materials.
21. Licence Holder must maintain temporary reinstatement to a safe and acceptable standard.
22. A minimum depth of cover of 600mm shall be allowed on lightly trafficked roads as directed by the road authority.
23. Temporary road surface warning signs must be used in accordance with the Traffic Signs Manual (Chapter 8) & RLS 8/2007.
24. Refer to Standard Drawings SD4, SD6, SD8 and SD9 for requirements on permanent reinstatement.

Roadways: Longitudinal Openings in Surface Dressed Rural Unbound Roadways Temporary Reinstatement

Standard Drawing SD2



NOTES:

Notes 1-17 listed in General Reinstatement Notes apply.

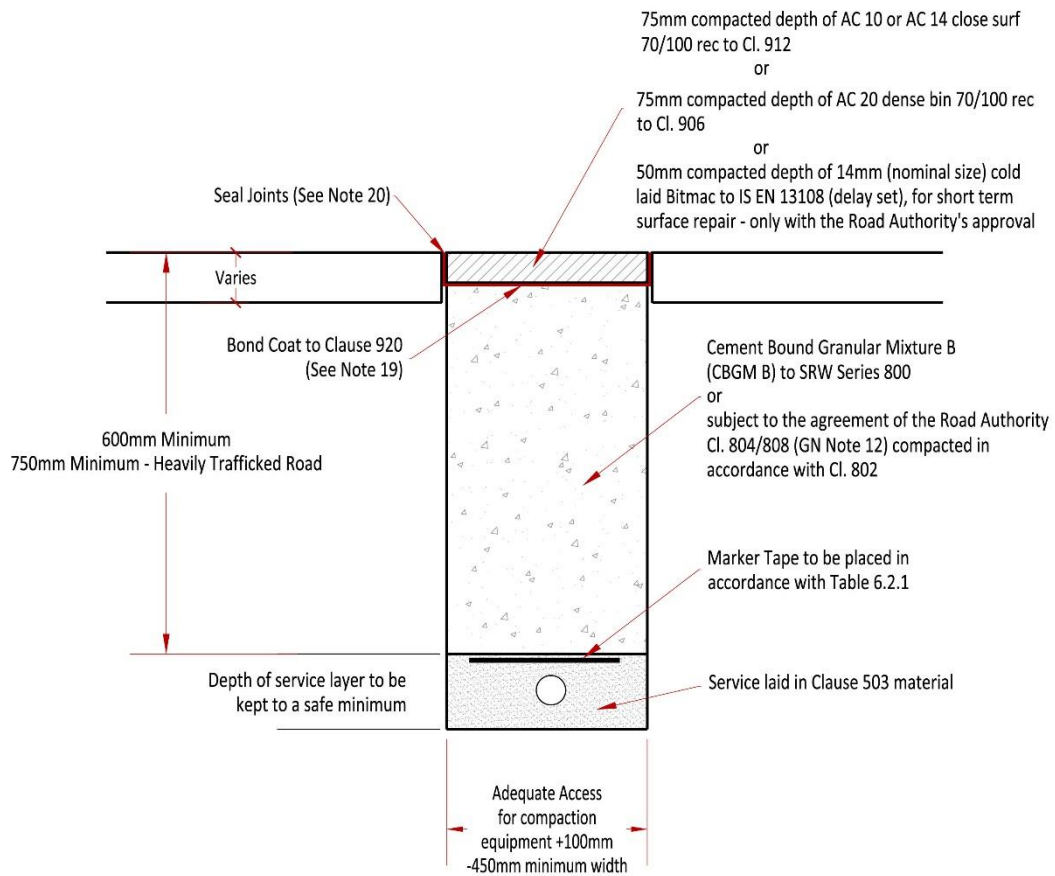
18. As a minimum the reinstatement layer shall match existing bound AC layers or depths shown.
19. Clause 808 surface to be sprayed per Clause 920 prior to application of Asphalt Concrete Layer.
20. Joint sealer shall be a hot 40/60 pen bitumen binder or cold thixotropic bitumen 50 - 70 pen to be applied to all vertical cuts in accordance with B.S. 594987 prior to application of bituminous materials.
21. Licence Holder must maintain temporary reinstatement to a safe and acceptable standard.
22. The reinstatement of surface dressing only applies to the reinstated trench width, unless otherwise directed by the road authority.
23. Temporary road surface warning signs must be used in accordance with the Traffic Signs Manual (Chapter 8) & RLS 8/2007.
24. On highly trafficked roads services must have a minimum cover of 750mm.
25. Refer to Standard Drawing SD5 for requirements on permanent reinstatement.

Roadways: Transverse Openings

Temporary Reinstatement

The use of this standard will require permission from the road authority

Standard Drawing
SD3



NOTES:

Notes 1-17 listed in General Reinstatement Notes apply.

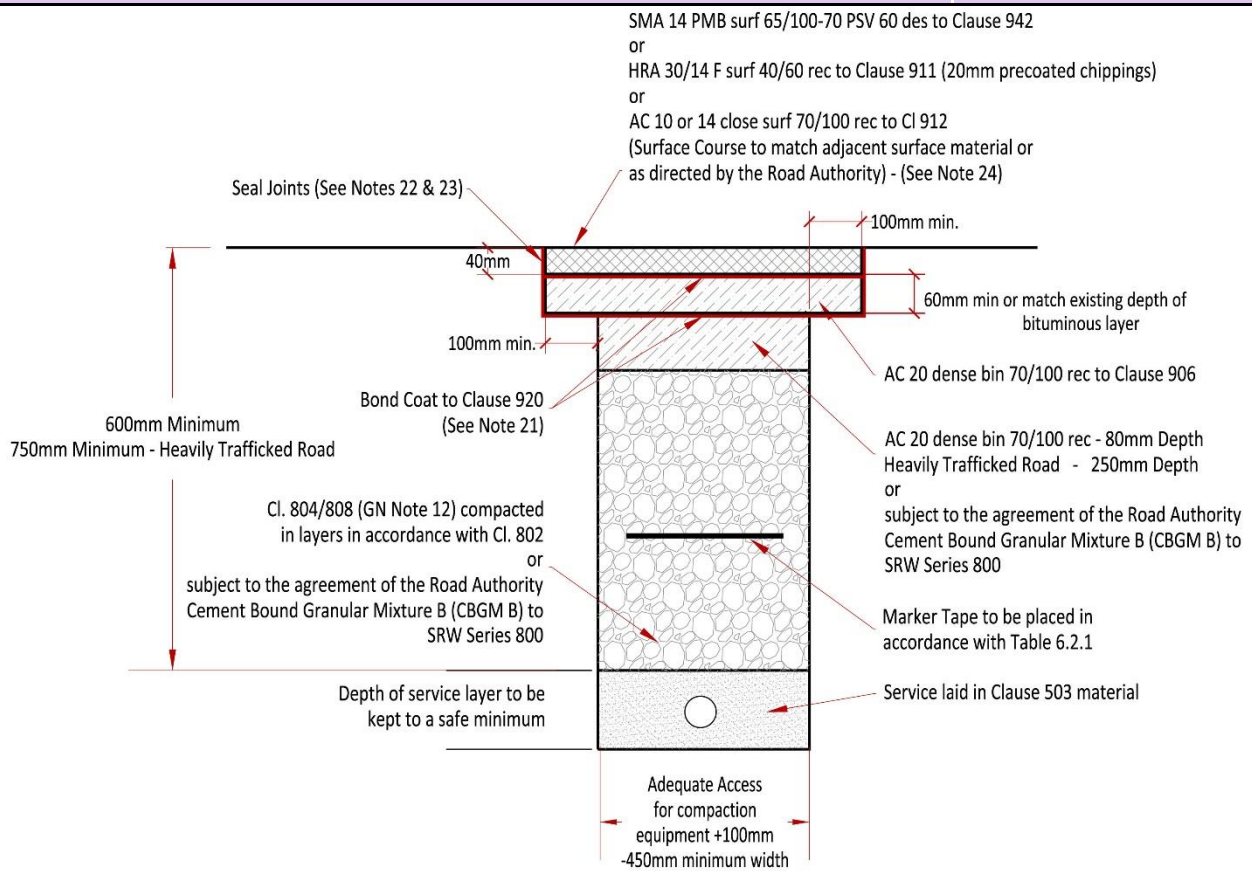
18. As a minimum the reinstatement layer shall match existing bound AC layers or depths shown.
19. Cement Bound Granular Material surface to be sprayed per Clause 920 prior to application of Asphalt Concrete Layer.
20. Joint sealer shall be a hot 40/60 pen bitumen binder or cold thixotropic bitumen 50 - 70 pen to be applied to all vertical cuts in accordance with B.S. 594987 prior to application of bituminous materials.
21. Licence Holder must maintain temporary reinstatement to a safe and acceptable standard.
22. A minimum depth of cover of 600mm may be allowed on lightly trafficked roads as directed by the road authority.
23. Temporary road surface warning signs must be used in accordance with the Traffic Signs Manual (Chapter 8) & RLS 8/2007.
24. Refer to Standard Drawing SD7 for requirements on permanent reinstatement.

Roadways: Longitudinal Openings

Permanent Reinstatement

Excluding openings in rural unbound roadways with surface dressing
Excluding openings at heavy duty locations

Standard Drawing
SD4



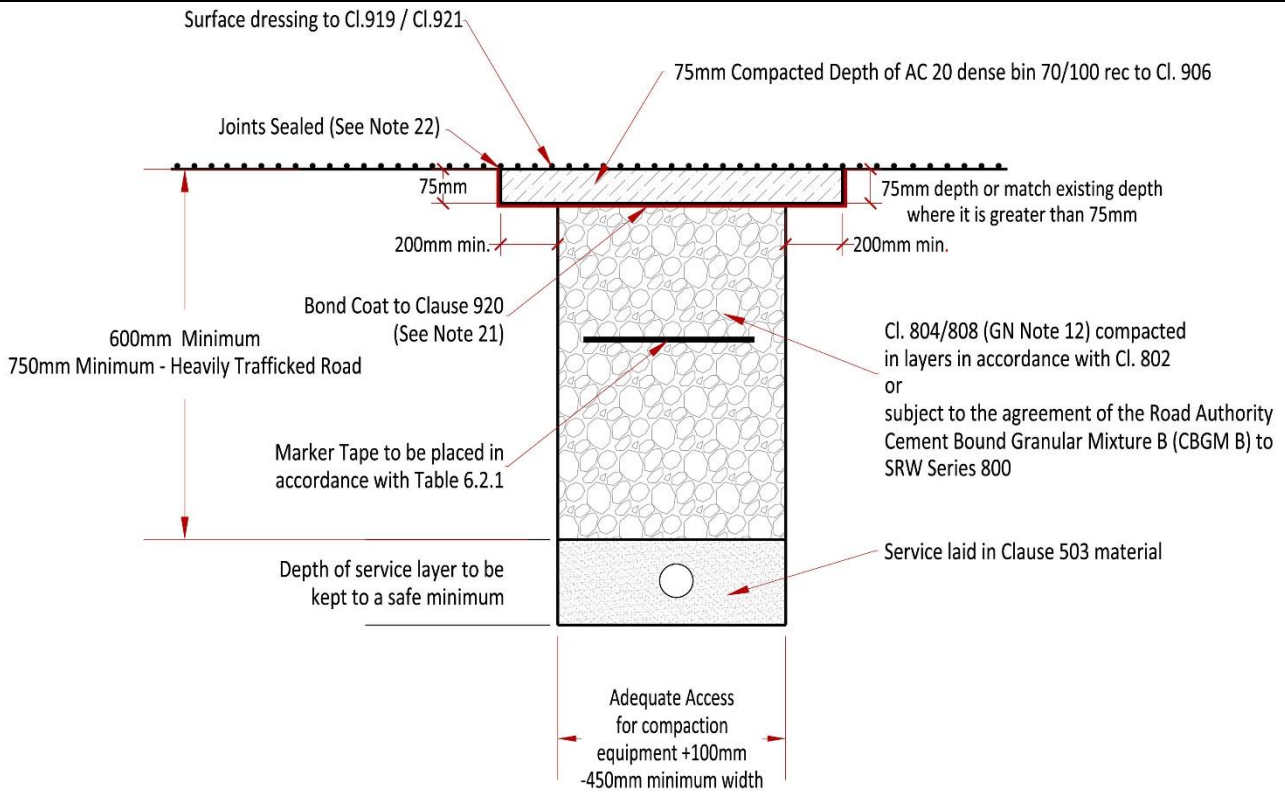
NOTES:

Notes 1-17 listed in General Reinstatement Notes apply.

18. As a minimum the reinstatement layer shall match existing bound AC layers or depths shown.
19. Where a temporary surface has been used, material shall be planed out to the depth specified in this drawing. The new permanent surface shall be machine laid and mechanically compacted with a vibrating roller.
20. Where the trimmed edge of an excavation is within 400mm* of a joint/edge, ironwork or other reinstatement, this trimmed edge shall be extended to include same and the area of reinstatement shall be extended accordingly. (* increase to 800mm where this is pre-existing practice)
21. Clause 808 or Cement Bound Granular Material surface to be sprayed per Clause 920 prior to application of Asphalt Concrete Layer.
22. Joint sealer to be a hot 40/60 pen bitumen binder or cold thixotropic bitumen 50 - 70 pen to be applied to all vertical cuts in accordance with B.S. 594987 prior to application of bituminous materials.
23. Joints sealed with hot bitumen and topped with fine sand/grit to get a minimum 55 skid resistance value as determined by the Portable Skid Resistance Pendulum used in accordance with Road Note 27 and shall not exceed 3mm depth and 50mm width or other method approved by the road authority.
24. Surface course to match existing surfaces unless otherwise directed by road authority.
25. The coarse aggregate in the asphalt concrete surface course shall have a polished stone value of not less than 60.
26. A minimum depth of cover of 600mm shall be allowed on lightly trafficked roads as directed by the road authority.
27. Cycle lane to be reinstated to match existing surface (refer to Chapter 5).

Roadways: Longitudinal Openings in Surface Dressed Rural Unbound Roadways Permanent Reinstatement

Standard Drawing SD5



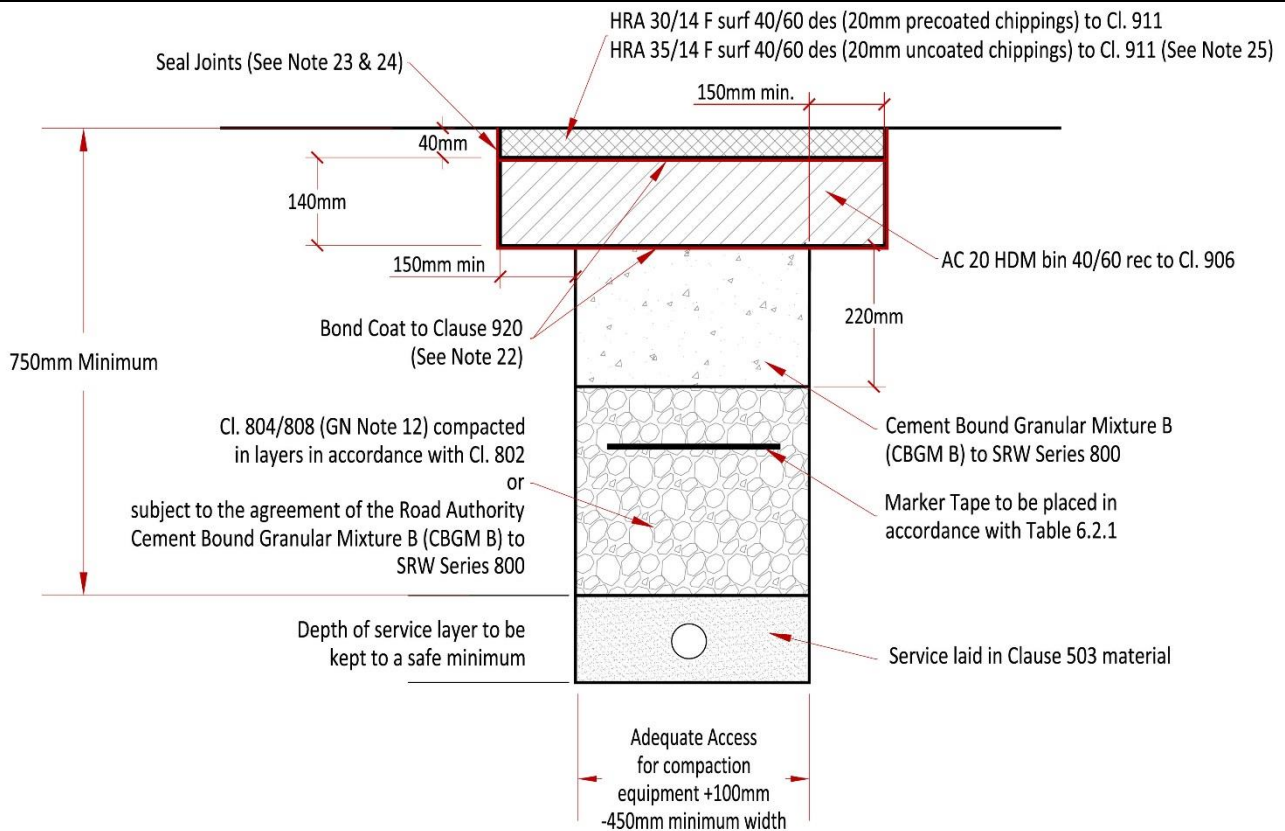
NOTES:

Notes 1-17 listed in General Reinstatement Notes apply.

18. As a minimum the reinstatement layer shall match existing bound AC layers or depths shown.
19. Where a temporary surface has been used, material shall be planed out to the depth specified in this drawing. The new permanent surface shall be machine laid and mechanically compacted with a vibrating roller.
20. Where the trimmed edge of an excavation is within 400mm* of a joint/edge, ironwork or other reinstatement, this trimmed edge shall be extended to include same and the area of reinstatement shall be extended accordingly. (* increase to 800mm where this is pre-existing practice)
21. Clause 808 or Cement Bound Granular Material surface to be sprayed per Clause 920 prior to application of Asphalt Concrete Layer.
22. Joint sealer shall be a hot 40/60 pen bitumen binder or cold thixotropic bitumen 50 - 70 pen to be applied to all vertical cuts in accordance with B.S. 594987 prior to application of bituminous materials.
23. For roads without an Asphalt Concrete surface (e.g. may be Cl. 804 with double Surface Dressing), the road authority may at its discretion permit the temporary reinstatement surface of Asphalt Concrete to be regulated in lieu of excavation and reinstatement; and subsequently surface dressed.
24. Where road widths are greater than 5.5 metres and the works are confined to one half of the road, then the Surface Dressing shall only be applied over a half road width. Where the road widths are less than 5.5 metres, Surface Dressing should be applied over the full road width. *Note: Surface Dressing does not constitute full width reinstatement unless the structural AC layer is provided over the full width.*
18. Regard must be had to the seasonal restrictions affecting Surface Dressing (See IAT Surface Dressing Guidelines).
19. On highly trafficked roads services must have a minimum cover of 750mm.
20. Where required by the road authority the trench may be reinstated with a Cement Bound Granular Material.

Roadways: Longitudinal Openings at Heavy Duty Locations
Permanent Reinstatement

Standard Drawing
SD6



NOTES:

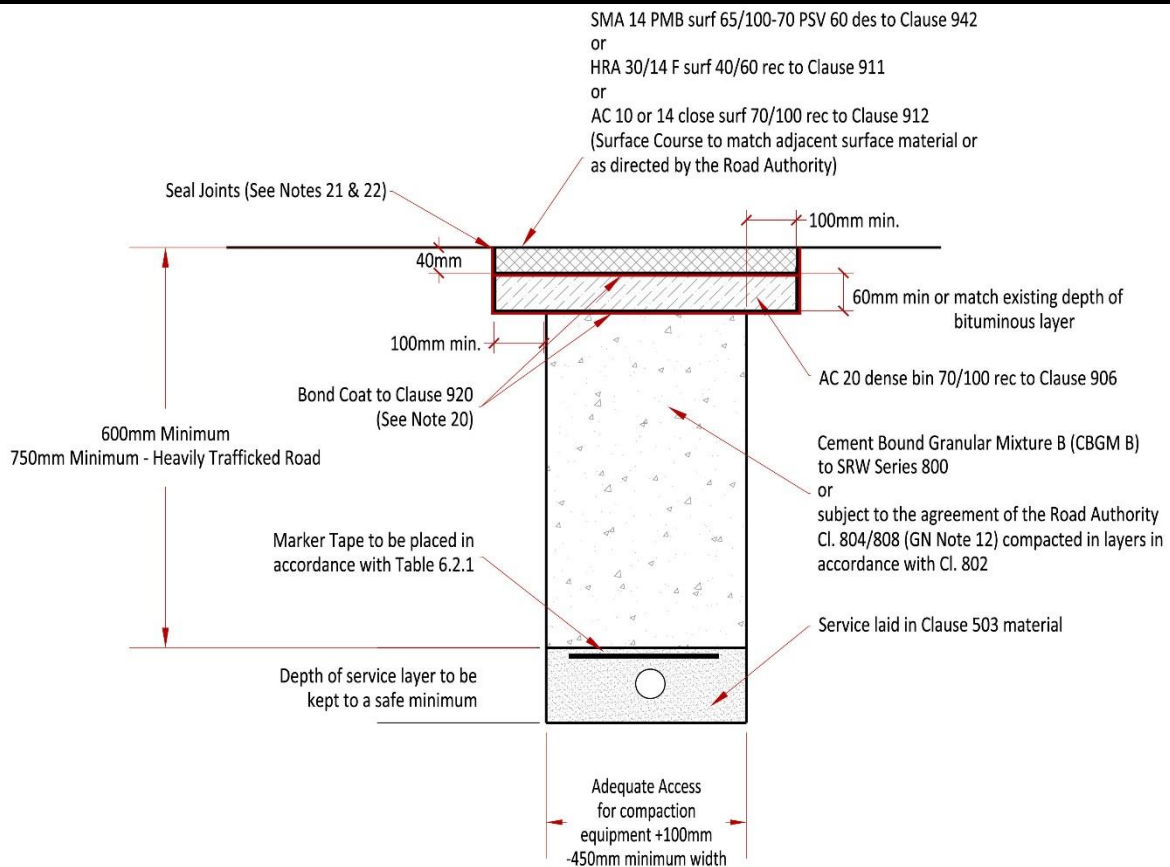
Notes 1-17 listed in General Reinstatement Notes apply.

18. As a minimum the reinstatement layer shall match existing bound AC layers or depths shown.
19. Where a temporary surface has been used, material shall be planed out to the depth specified in this drawing. The new permanent surface shall be machine laid and mechanically compacted with a vibrating roller.
20. The above surface and binder courses and CBGM road base can be replaced by 40mm rolled Asphalt Surface Course to Clause 911 on 60mm deep asphalt concrete base course to Clause 906 on 200mm of asphalt concrete road base (40mm nominal size) to Clause 903.
21. Where the trimmed edge of an excavation is within 400mm* of a joint/edge, ironwork or other reinstatement, this trimmed edge shall be extended to include same and the area of reinstatement shall be extended accordingly. (* increase to 800mm where this is pre-existing practice)
22. Clause 808 or Cement Bound Granular Material surface to be sprayed per Clause 920 prior to application of Asphalt Concrete Layer.
23. Joint sealer to be a hot 40/60 pen bitumen binder or cold thixotropic bitumen 50 - 70 pen to be applied to all vertical cuts in accordance with B.S. 594987 prior to application of bituminous materials.
24. Joints sealed with hot bitumen and topped with fine sand/grit to get a minimum 55 skid resistance value as determined by the Portable Skid Resistance Pendulum used in accordance with Road Note 27 and shall not exceed 3mm depth and 50mm width or other method approved by the road authority.
25. Surface course to match existing surfaces unless otherwise directed by road authority.
26. The coarse aggregate in the asphalt concrete surface course shall have a polished stone value of not less than 60.
27. Cycle lane to be reinstated to match existing surface (refer to Chapter 5).

Roadways: Transverse Openings

Permanent Reinstatement

Standard Drawing
SD7



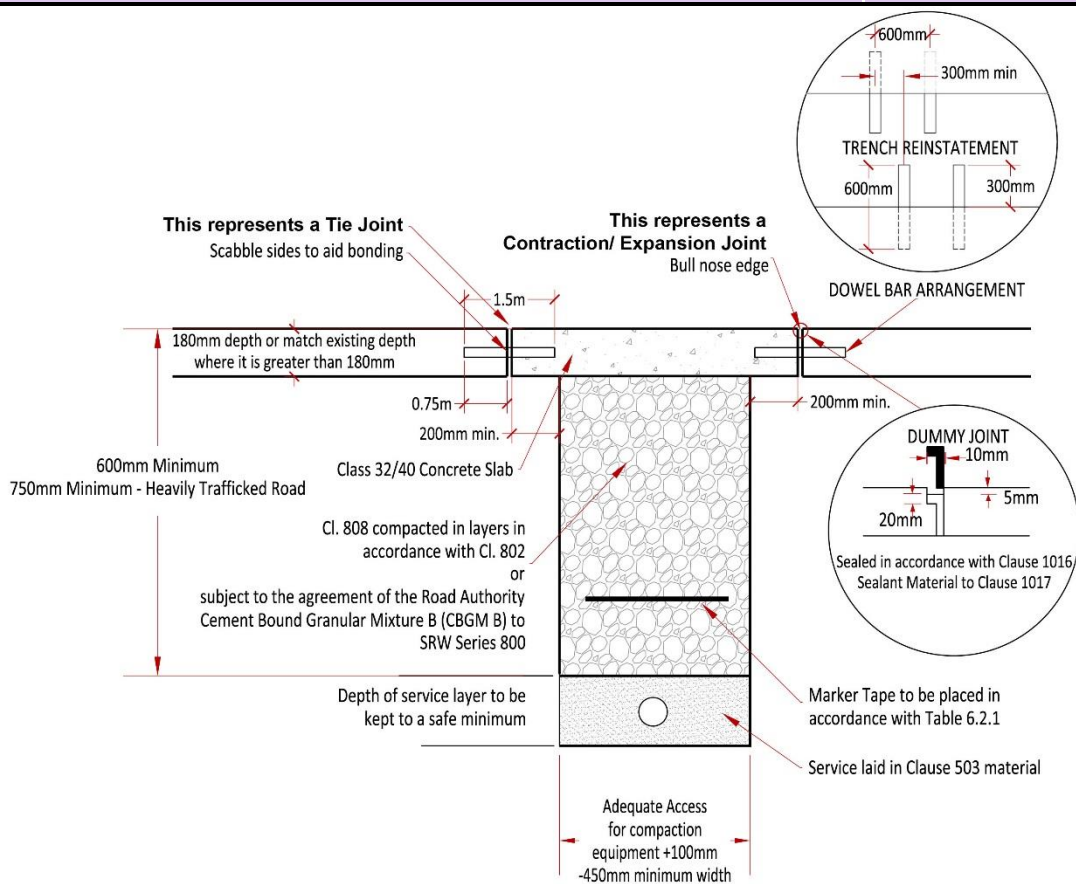
NOTES:

Notes 1-17 listed in General Reinstatement Notes apply.

18. Where a temporary surface has been used, material shall be planed out to the depth specified in this drawing. The new permanent surface shall be machine laid and mechanically compacted with a vibrating roller.
19. Where the trimmed edge of an excavation is within 400mm* of a joint/edge, ironwork or other reinstatement, this trimmed edge shall be extended to include same and the area of reinstatement shall be extended accordingly. (* increase to 800mm where this is pre-existing practice)
20. Cement Bound Granular Material surface to be sprayed per Clause 920 prior to application of Asphalt Concrete Layer.
21. Joint sealer to be a hot 40/60 pen bitumen binder or cold thixotropic bitumen 50 - 70 pen to be applied to all vertical cuts in accordance with B.S. 594987 prior to application of bituminous materials.
22. Joints sealed with hot bitumen and topped with fine sand/grit to get a minimum 55 skid resistance value as determined by the Portable Skid Resistance Pendulum used in accordance with Road Note 27 and shall not exceed 3mm depth and 50mm width or other method approved by the road authority.
23. The coarse aggregate in the surface course Asphalt Concrete shall have a polished stone value of not less than 60.
24. A minimum depth of cover of 600mm shall be allowed on lightly trafficked roads as directed by the road authority.
25. Surface course to match existing surfaces unless otherwise directed by road authority.

**Roadways: Concrete
Permanent Reinstatement**

**Standard Drawing
SD8**



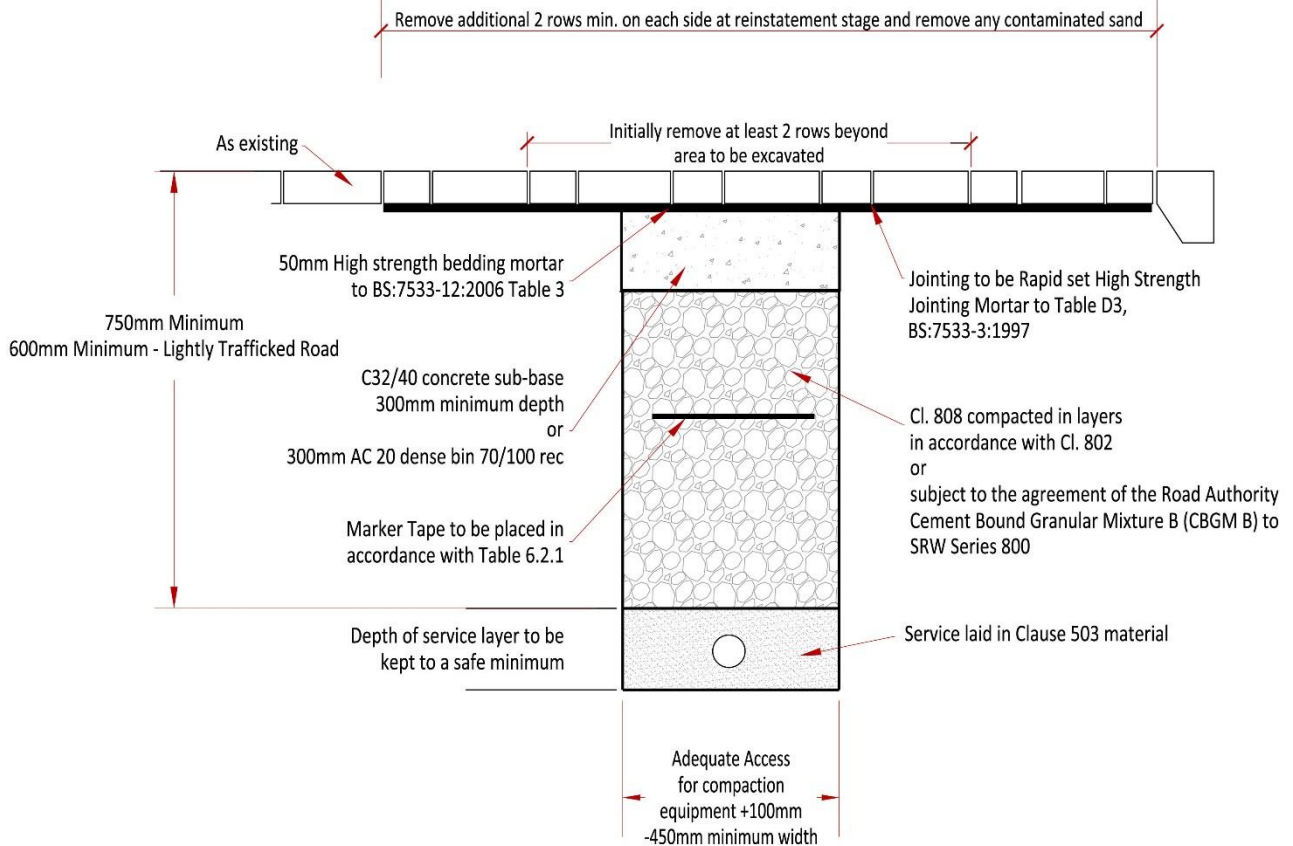
NOTES:

Notes 1-17 listed in General Reinstatement Notes apply.

18. Reinforcing mesh (A393 or similar) shall be used at the discretion of the road authority.
19. Surface finish to be similar to adjoining areas.
20. On heavily trafficked roads services must have a minimum cover of 750mm and the trench must be reinstated with a Cement Bound Granular Material.
21. Where the trimmed edge of an excavation is within 1 metre of a joint/edge, ironwork or other reinstatement, this trimmed edge shall be extended to include same and the area of reinstatement shall be extended accordingly.
22. Joints to be constructed in accordance with Clause 1009 & 1010 with joint filler board, prepared and sealed in accordance with Clause 1016 with sealant in accordance with Clause 1017.
23. All joints that are removed or otherwise damaged must be replaced or reconstructed to a similar design and using equivalent materials.
24. All joints between new and existing surfaces should be dummy joints, topped up with a bitumen sealant.
25. Dowel Bars must comply with Clause 1011, including for 600mm expansion joint dowel bars to be 25mm diameter @ 300mm spacing for slabs up to 239mm thick & 32mm diameter for thicker slabs. For contraction joints in slabs up to 239mm thick, 400mm dowel bars to be 20mm diameter @ 300mm spacing. For thicker slabs, 600mm dowel bars to be 25mm diameter @ 300mm spacing.
26. Tie bars to Clause 1012 to same grade as existing reinforcement 1.5m long fixed at twice the normal spacing midway between existing reinforcement bars so that 750mm \pm 50mm extends each side of the joint & tied to new reinforcement.

Roadways: Precast Concrete Paving Blocks Permanent Reinstatement

Standard Drawing
SD9



NOTES:

Notes 1-17 listed in General Reinstatement Notes apply.

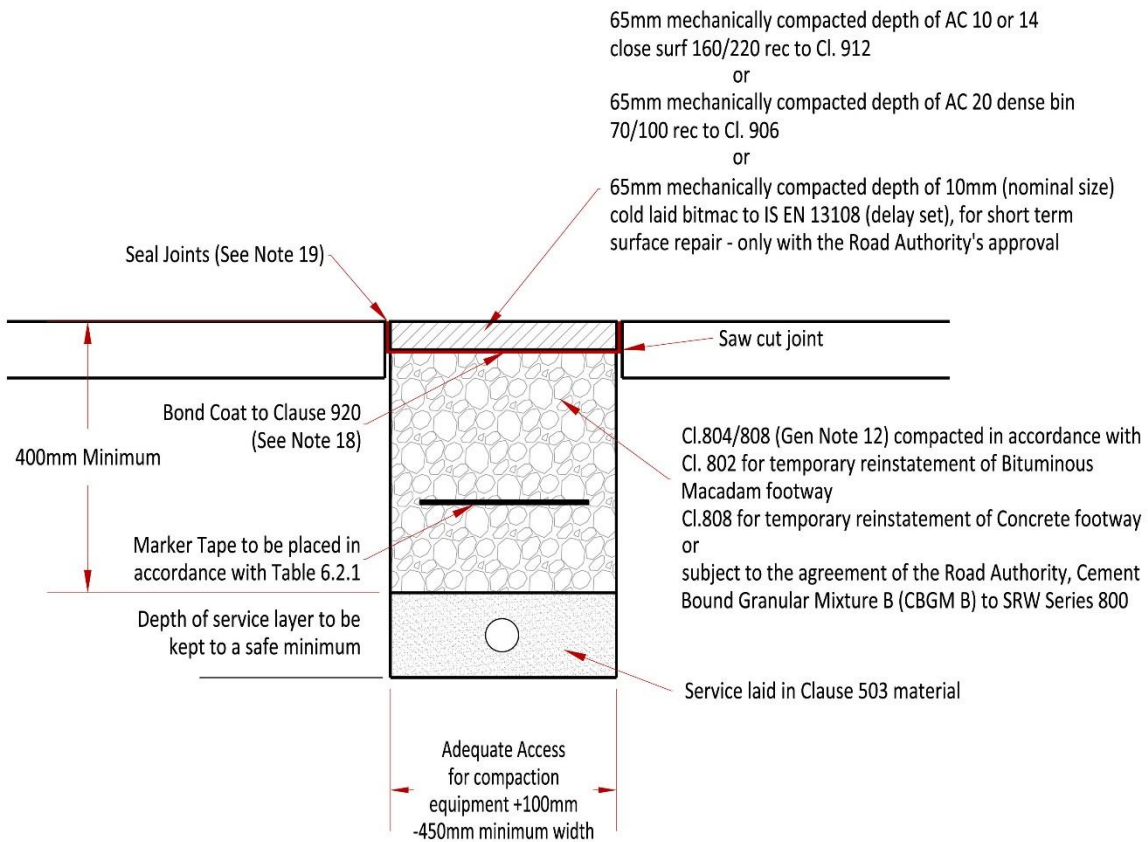
18. Only contractors who have demonstrated competencies in this specialist area shall be approved by the road authority.
19. Road authorities may have additional requirements regarding specialist/enhanced surfaces.
20. Add fresh sand or specialist bedding material and compact with a plate compactor. One pass of plate compactor, then sand and compact with two or three passes to ensure full interlock. Additional sand is spread to stand proud of adjacent sand.
21. Use a slightly cambered profile over width of trench to counter any tendency to settle under traffic/load.
22. Any damaged area adjacent to the opening and resulting from the excavation operation shall be included within the area to be reinstated.
23. Relay blocks as tightly as possible.
24. The difference in level between two adjacent blocks shall not exceed 3mm.
25. All paving materials to match existing.
26. Reinstatement requirements for Antique Materials subject to specific agreement of the road authority.
27. A minimum depth of 600mm shall be allowed on lightly trafficked roads as directed by the road authority.

Footways (Temporary Reinstatement Only)

Temporary Reinstatement

The use of this standard will require permission from the road authority

Standard Drawing
SD10



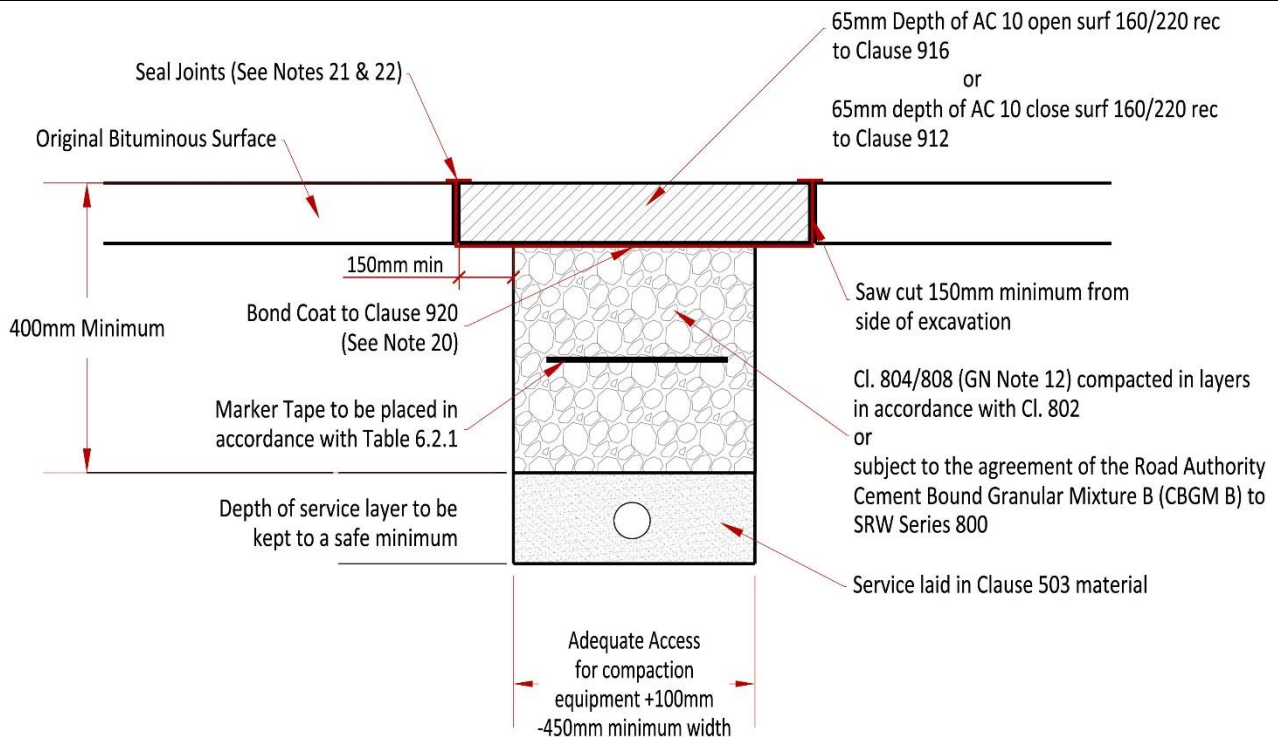
NOTES:

Notes 1-17 listed in General Reinstatement Notes apply.

18. Clause 808 surface to be sprayed per Clause 920 prior to application of Asphalt Concrete Layer.
19. Joint sealer to be a hot 40/60 pen bitumen binder or cold thixotropic bitumen 50 - 70 pen to be applied to all vertical cuts in accordance with B.S. 594987 prior to application of bituminous materials.
20. Where works are in close proximity to trees/tree roots compliance with BS 5837:2012 is required. (See Chapter 6)
21. Refer to Standard Drawings SD11, SD12 and SD13 for requirements on permanent reinstatement.

Footways: Asphalt Concrete (Bituminous Macadam) Permanent Reinstatement

Standard Drawing
SD11



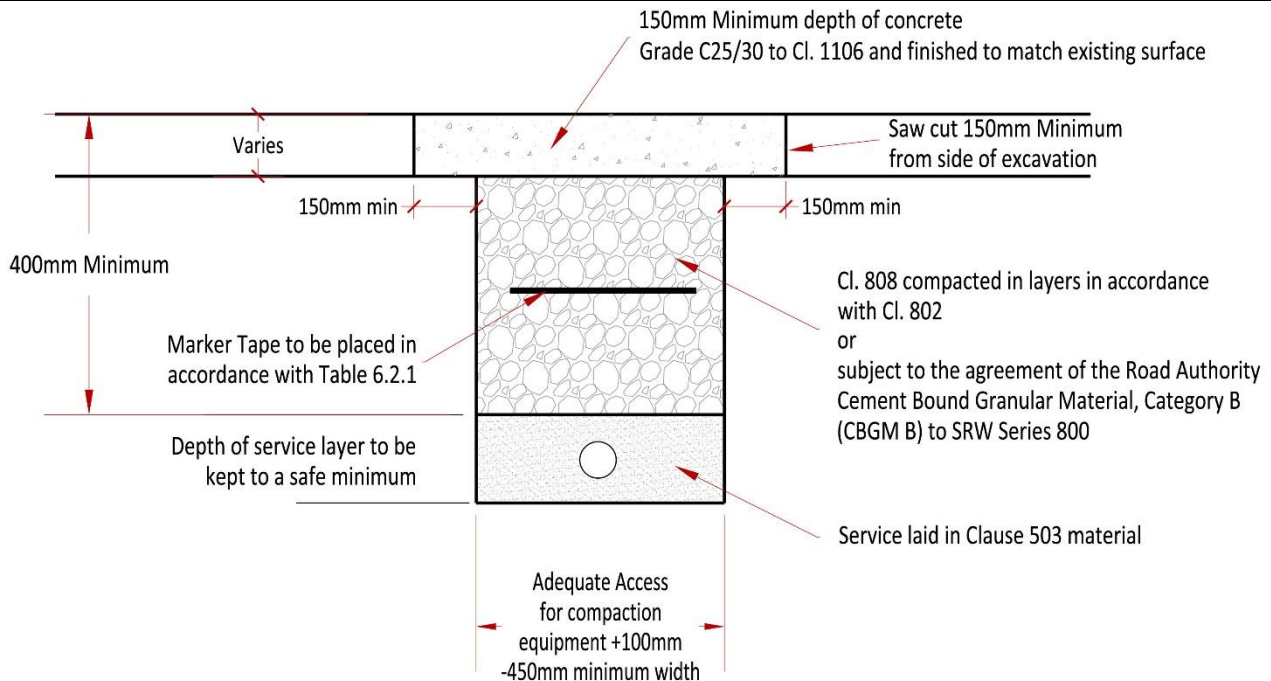
NOTES:

Notes 1-17 listed in General Reinstatement Notes apply.

18. All edges to be saw cut a minimum of 150mm from sides of excavation.
19. Where a temporary surface has been used, material shall be planed out to the depth specified in this drawing. The new permanent surface shall be machine laid and mechanically compacted with a vibrating roller.
20. Clause 808 or Cement Bound Granular Material surface to be sprayed per Clause 920 prior to application of Asphalt Concrete Layer.
21. Joint sealer shall be a hot 50 pen bitumen binder or cold thixotropic bitumen 50 - 70 pen to be applied to all vertical cuts in accordance with B.S. 594987 prior to application of bituminous materials.
22. Joints to be sealed with hot bitumen and topped with fine sand/grit to get a minimum 55 skid resistance value, as determined by the Portable Skid Resistance Pendulum used in accordance with Road Note 27 and shall not exceed 3mm depth and 50mm width.
23. For vehicular accesses the Asphalt Concrete surface shall be 100mm thick. Where the footway may be subject to heavy loads the asphalt concrete shall be to a depth of 150mm similar to roadway.
24. Accesses to commercial premises require standards detailed in Standard Drawing SD4.
25. Where the trimmed edge of an excavation is within 400mm of a joint/edge, ironwork or other reinstatement, this trimmed edge shall be extended to include same and the area of reinstatement shall be extended accordingly.
26. With footways 1.4m wide or less, full width reinstatement is required. In footways exceeding 1.4m wide, the road authority may approve one additional longitudinal joint.
27. Where works are in close proximity to trees/tree roots compliance with BS 5837:2012 is required. (See Chapter 6)

Footways: Concrete Permanent Reinstatement

Standard Drawing
SD12



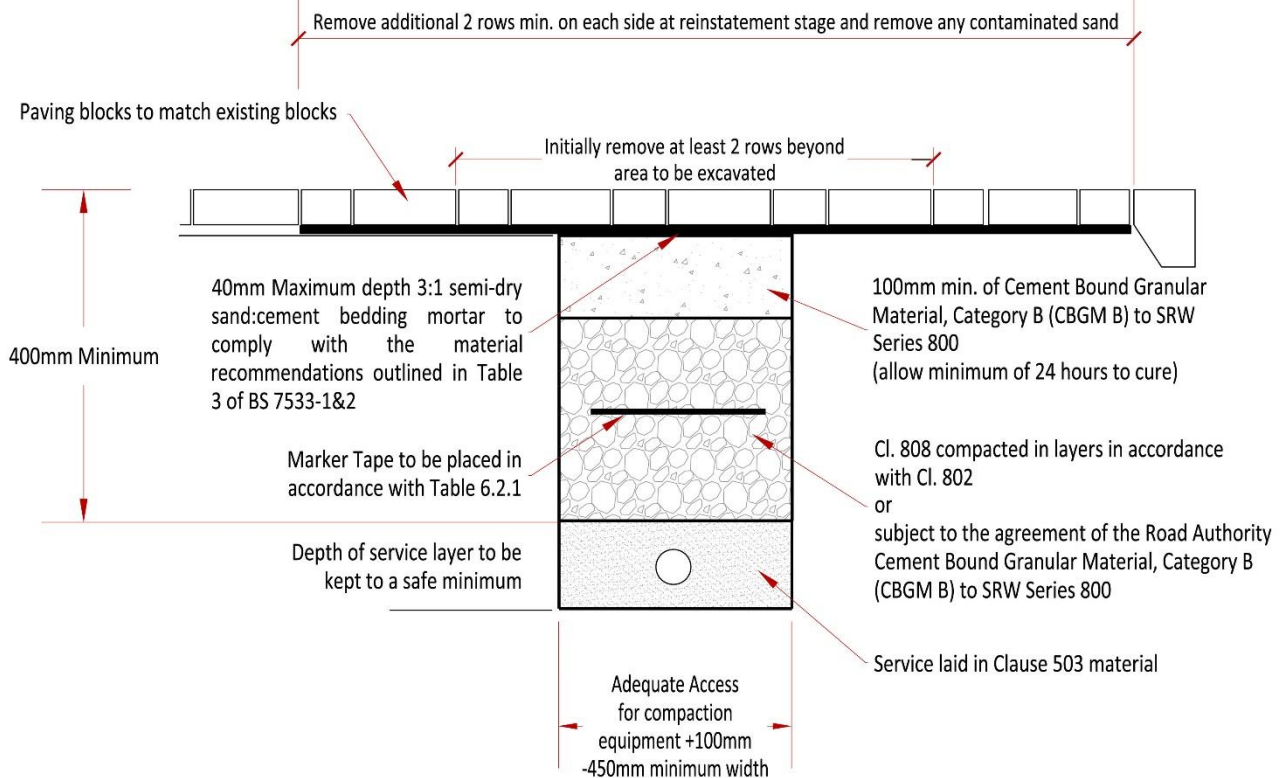
NOTES:

Notes 1-17 listed in General Reinstatement Notes apply.

18. Reinforcing mesh (A142 or similar approved) shall be used at the discretion of the road authority.
19. Apron to be 150mm thick at driveways and 300mm thick at commercial access areas or where the footway may be subject to wheel loads.
20. Minimum concrete depth of 150mm may be reduced to 100mm where footway is separated from carriageway by grass verge or by bollards.
21. With footways 1.4m wide or less, full width reinstatement is required. In footways exceeding 1.4m wide, the road authority may approve one additional longitudinal joint.
22. For transverse openings, additional area of reinstatement is required to the nearest bay joint. A complete bay shall be reinstated where specified by the road authority.
23. Surface finish to be similar to adjoining areas e.g. Soft brushed, printed pattern etc.
24. Expansion joints in accordance with Clause 1106 to be neatly formed in straight lines, at not greater than 3m centres & arranged to coincide with joints in kerbs. Joints shall be formed by inserting a double layer of roofing felt or other approved material, which shall extend for the full depth of the slab & finished off neatly at the surface.
25. Where the footway is recently constructed (i.e. less than 10 years), the full bay must be replaced.
26. Where the trimmed edge of an excavation is within 400mm of a joint/edge, ironwork or other reinstatement, this trimmed edge shall be extended to include same and the area of reinstatement shall be extended accordingly.
27. Where works are in close proximity to trees/tree roots compliance with BS 5837:2012 is required. (See Chapter 6)

Footways: Precast Concrete Paving Block / Concrete Slab
Permanent Reinstatement

Standard Drawing
SD13



NOTES:

Notes 1-17 listed in General Reinstatement Notes apply.

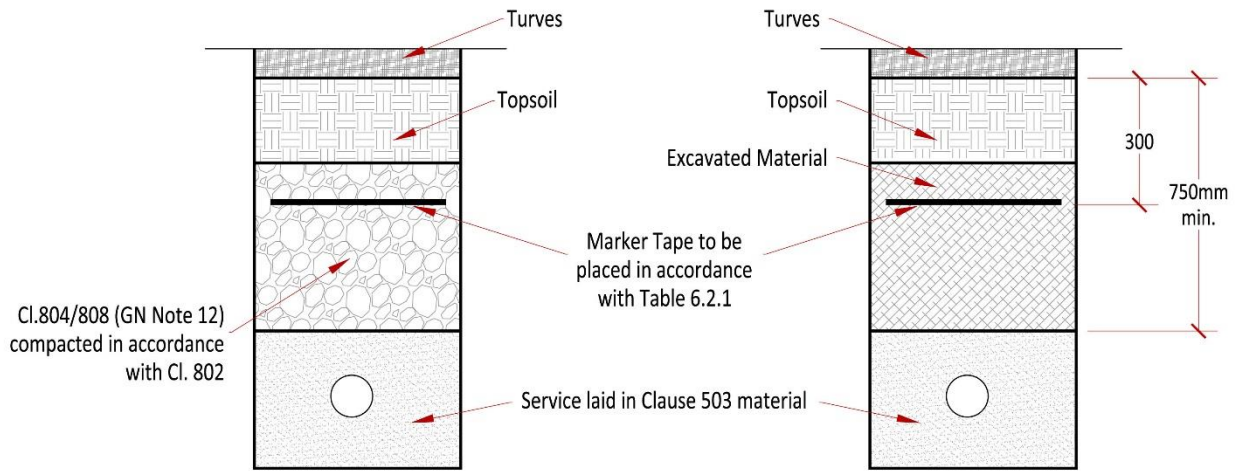
18. Only contractors who have demonstrated competencies in this specialist area shall be approved by the road authority.
19. Road authorities may have additional requirements regarding specialist/enhanced surfaces.
20. Add fresh sand or specialist bedding material and compact with a plate compactor. One pass of plate compactor, then sand and compact with two or three passes to ensure full interlock. Additional sand is spread to stand proud of adjacent sand.
21. Use a slightly cambered profile over width of trench to counter any tendency to settle under traffic/load.
22. Relay blocks as tightly as possible.
23. 2 to 5mm Joints between blocks to be filled with 3:1 sand cement mortar - the sand is to comply with grade F in Table 5 of IS 5.
24. The difference in level between adjacent blocks should not exceed 3mm.
25. Where works are in close proximity to trees/tree roots compliance with BS 5837:2012 is required. (See Chapter 6)

**Grass Verges, Medians, Fields and Lawns
Permanent Reinstatement**

**Standard Drawing
SD14**

To apply when nearest point of trench is within one metre of paved edge of a national or regional road or in the median of a dual carriageway or motorway or within 0.5 metres of paved edge of a local road. In addition, the compacted Clause 808 material shall extend to the road edge.

To apply when nearest point of trench is over one metre from paved edge of a national or regional road or over 0.5 metres from paved edge of a local road.



TRENCH DETAIL IN GRASS MARGINS

NOTES:

Notes 1-17 listed in General Reinstatement Notes apply.

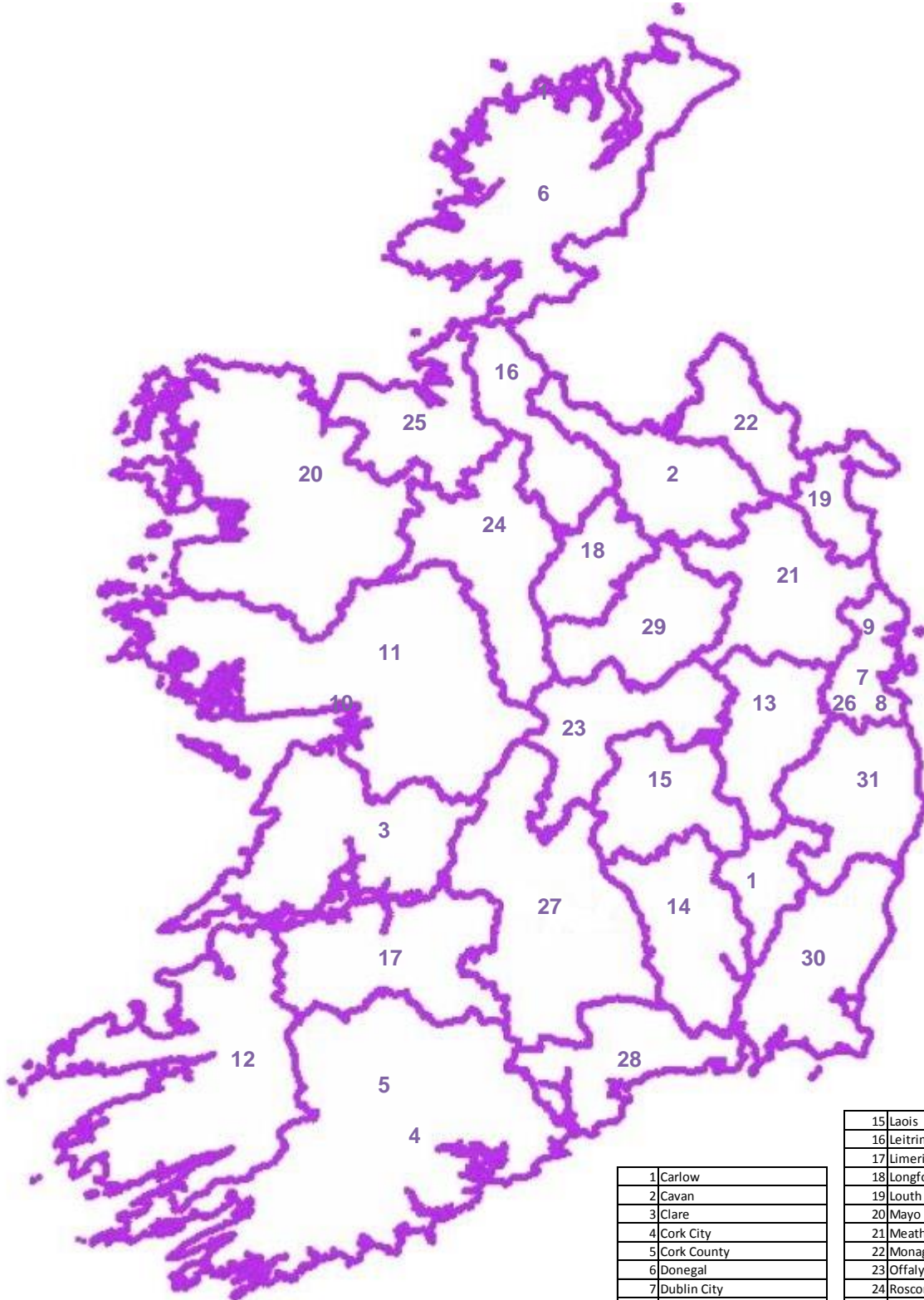
- 18 Prior to excavation, all grass areas are to be cut into turves which are to be carefully stacked and re-used within one week of cutting during the period 1st April to 31st August or within two weeks of cutting during the remainder of the year. Turves not used within these periods shall be regarded as topsoil. Outside of this period or where turves from grass area are not suitable, imported turves approved by the road authority are to be used.
- 19 Where topsoiling and seeding is permitted by the road authority the following shall apply:
 - a. Prior to seeding or turfing, an approved fertilizer shall be evenly distributed on the topsoil at a rate of not less than 100g per sq. metre
 - b. The areas to be grassed shall be covered with topsoil to a minimum depth of 100mm which shall be reduced to a fine tilth, free from stones and debris with any dimension greater than 35mm. The topsoil shall be graded and lightly compacted to 100mm depth or existing depth - whichever is greater. Any upstanding debris or stones exceeding 25mm dimension shall be removed.
 - c. Pay due regard to the season and weather condition before sowing grass seed. Immediately prior to sowing the grass seed, the topsoil shall be reduced to a fine tilth. Sowing the grass seed shall be carried out by an even distribution, using a blend of (per Hectare) 170kg Manhattan Rye Grass and 13kg Dwarf Clover or other mix as specified by the road authority. For slopes in excess of ten degrees, these quantities shall be increased by 50%. The seed shall be covered by lightly raking into the surface of the topsoil. The area shall be watered every second day.
- 20 All drainage channels shall be marked on the carriageway, mapped and shall be fully restored in conjunction with verge reinstatement to ensure that surface water runoff is discharged from the road surface.
- 21 All temporary reinstatement as detailed above shall be carried out immediately after backfilling the trench. When all settlement has taken place or after a three month period, whichever is the greater, the trench shall be topped up with topsoil to its original level.
- 22 Where works are in close proximity to trees/tree roots compliance with BS 5837:2012 is required. (See Chapter 6)

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Appendix A

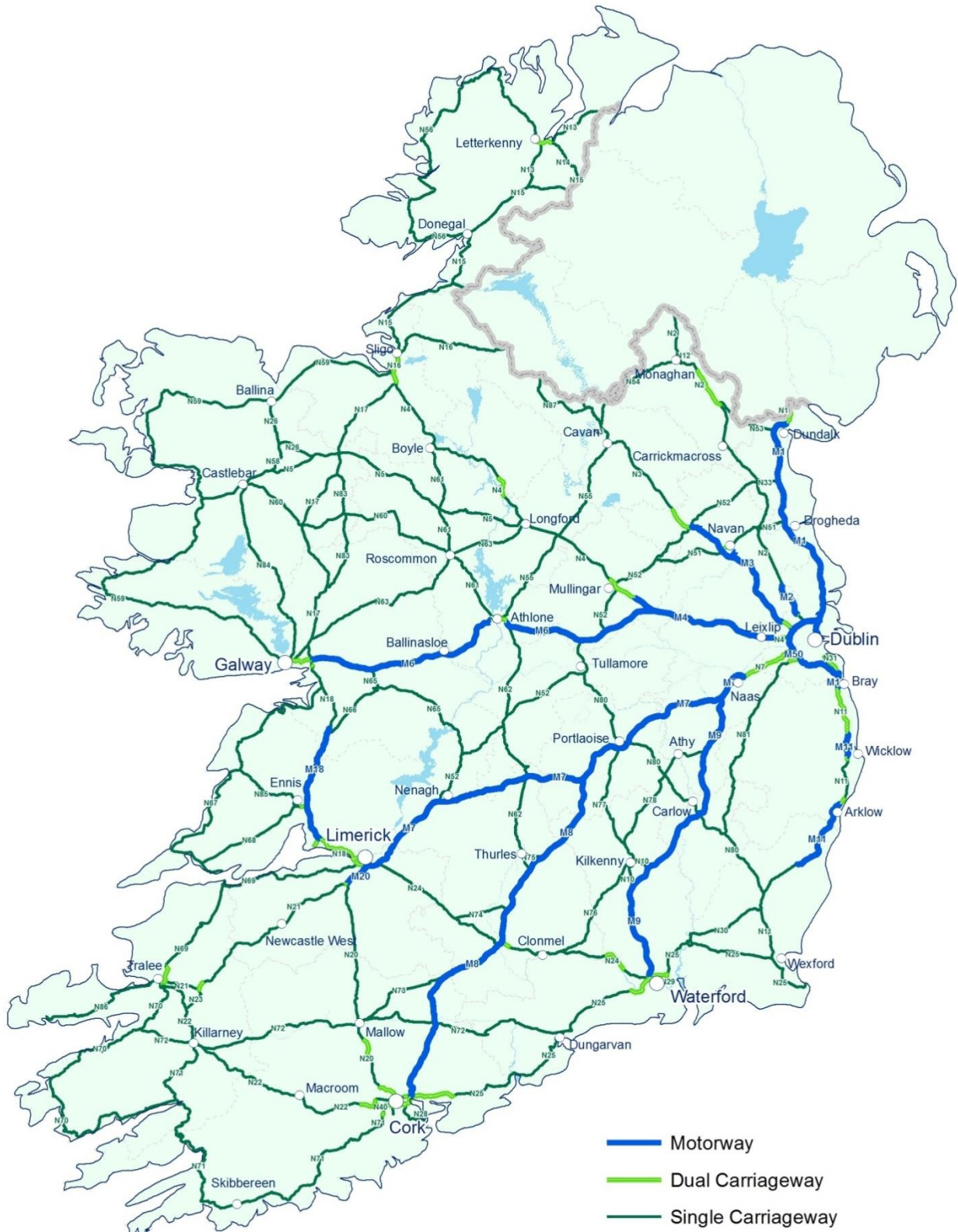
APPENDIX A.1

A.1.1 Local Authorities/Road Authorities



1	Carlow
2	Cavan
3	Clare
4	Cork City
5	Cork County
6	Donegal
7	Dublin City
8	Dun Laoghaire - Rathdown
9	Fingal
10	Galway City
11	Galway County
12	Kerry
13	Kildare
14	Kilkenny
15	Laois
16	Leitrim
17	Limerick City & County
18	Longford
19	Louth
20	Mayo
21	Meath
22	Monaghan
23	Offaly
24	Roscommon
25	Sligo
26	South Dublin
27	Tipperary
28	Waterford City & County
29	Westmeath
30	Wexford
31	Wicklow

A.1.2 National Road Network



APPENDIX A.2

Schedule C

PRESCRIBED FORM OF NOTICE IN RELATION TO THE CARRYING OUT BY STATE AUTHORITIES ETC. OF WORKS AFFECTING MOTORWAYS, BUSWAYS AND PROTECTED ROADS

APPLICATION FOR CONSENT TO CARRY OUT WORKS AFFECTING _____ (1)

In accordance with section 53 of the Roads Act, 1993 _____ (2)
proposes to apply to the National Roads Authority/Minister for the
Environment (3) for consent to carry out the following works-

(4)

A copy of the application may be inspected at _____ between the
hours of _____ and _____ on working days between
_____ 20_____ and _____ 20_____ (5).

Written objections or representations in relation to the application may be
made to _____ (6) before _____ 20_____ (7).

The National Roads Authority/Minister (3) must consider any written
objections or representations received and not withdrawn and may then grant
or refuse to grant consent or grant consent subject to such specified
conditions or restrictions as are considered necessary.

The National Roads Authority/Minister (3) has the discretion to hold an oral
hearing into any written objections or representations received and having
done so must consider the report and any recommendations of a person
holding the oral hearing before making its/his (3) decision.

Notes to Schedule C

- (1) Insert name of motorway, busway or protected road (for example N34 Barrytown By Pass).
- (2) Insert name of State Authority, Statutory Undertaker or Local Authority.
- (3) Delete as appropriate. The National Roads Authority is the appropriate body for motorways etc. which are national roads and the Minister is the appropriate person for roads which are not national roads.
- (4) Insert details of the location of the proposed works and of the works themselves.
- (5) The minimum period for inspection is one month.
- (6) Insert National Roads Authority or Minister for the Environment as appropriate and give full postal address.
- (7) The minimum period for making objections and representations is two weeks from the end of the inspection period.

APPENDIX A.3

2.1 Roads Act 1993

Roads Act 1993

Responsibility of road authorities for the maintenance and construction of public roads.

13. (6) (a) A person or group of persons may, with the consent of a road authority, carry out maintenance works on a local road.
- (b) A consent under paragraph (a) may be given by the road authority subject to such conditions, restrictions and requirements as it thinks fit.
- (c) Where a road authority gives its consent under paragraph (a) and the works have been carried out in a bona fide manner and in accordance with every condition, restriction or requirement specified under paragraph (b)—
- (i) the works shall be deemed to have been carried out by the road authority, and
 - (ii) the person or group (and each member thereof) who carried out the works shall be indemnified by the road authority against all actions and claims howsoever arising in respect of the works and the carrying out of works.
- (d) A road authority may provide materials, plant, equipment and the services of its staff to a person or group carrying out works under this subsection.
13. (10) (a) A person who, without lawful authority or the consent of a road authority—
- i) defaces a public road by writing or by any other means,
 - (ii) damages a public road,
 - (iii) excavates a public road,
 - (iv) (I) places or deposits any material or thing on a public road,
 - (II) permits dung or urine from an animal owned by him or any material or thing which falls from a vehicle owned or used by him, to be left on a public road, or
 - (III) does any other thing, such that the material, thing, dung or urine or the doing of such other thing is a hazard or potential hazard to persons using a public road or obstructs or interferes with the safe use of a public road or the maintenance of a public road shall be guilty of an offence.
- (b) A consent under paragraph (a) may be given by the road authority subject to such conditions, restrictions or requirements as it thinks fit and any person who fails to comply with such conditions, restrictions or requirements shall be guilty of an offence.
- (c) Where a person does anything in contravention of paragraph (a), a road authority may remove any defacement, repair any damage, fill in any excavation, remove any material, thing, dung or urine or remove or reduce any hazard, potential hazard, obstruction or interference and

may recover from such person, as a simple contract debt in any court of competent jurisdiction, any costs reasonably incurred by it.

2.2 Road Traffic Act – Roadworks Control and Coordination Powers

Road Traffic Act 1961 Section 101D (1)

101D.—(1) In this section—

‘local authority’ means—

- (a) the council of a county,
- (b) the corporation of a county or other borough, or
- (c) the council of an urban district

standing prescribed for the time being for the purposes of this section;

‘roadworks’ means repairs, maintenance, alterations, improvements or installations or any other works to, above or under, a public road;

‘emergency roadworks’ means roadworks the carrying out of which is immediately required in order to prevent, or reduce the risk of, loss, injury or damage to persons or property.

- (2) (a) Notwithstanding any other enactment, a local authority may give a direction in writing to any person in relation to the carrying out of roadworks in its functional area.
 - (b) A local authority may, by a direction in writing given to the person to whom a direction was given under this subsection, revoke or amend the latter direction.
 - (c) A direction given to a person under this subsection may apply to all roadworks undertaken by the person or to specified roadworks undertaken by him.
- (3) A direction under subsection (2) of this section may specify:
 - (a) the periods during which and the times at which roadworks shall or shall not be carried out,
 - (b) the period within which roadworks shall be completed,
 - (c) the manner in which roadworks shall or shall not be carried out,
 - (d) requirements and standards in relation to the temporary or permanent reinstatement of a public road following the carrying out of roadworks.
 - (e) requirements in relation to the giving of security for satisfactory reinstatement of a public road following the carrying out of roadworks,
 - (f) requirements in relation to the control of traffic in the vicinity of roadworks.
- (4) When giving a direction under this section, a local authority shall have regard to:
 - (a) the need to co-ordinate, in such manner as to minimise any disruption of traffic by the roadworks concerned, the periods during which and the times at which the roadworks

- concerned and other roadworks (whether or not they are in the functional area of the local authority) are carried out,
- (b) the necessity to minimise the disruption to traffic caused by the roadworks concerned and other roadworks,
 - (c) the urgency of the need to carry out the roadworks, and
 - (d) any cost likely to be incurred as a result of the direction.
- (5)(a) Subsection (2) of this section does not apply to the carrying out of roadworks (being roadworks the carrying out of which would, but for this subsection, be in contravention of a direction or regulations under this section) at any time when the person carrying them out reasonably believes that the roadworks are emergency roadworks,
- (b) Paragraph (a) of this subsection shall not be construed as preventing a local authority from giving a direction under subsection (2) of this section where it is satisfied that the carrying out of the roadworks concerned is not, or is no longer, immediately required in order to prevent or reduce the risk of loss, injury or damage to persons or property.
- (6)(a) The Minister may make regulations for the purpose of giving effect to this section and, without prejudice to the generality of the foregoing, such regulations may contain provisions:
- (i) specifying local authorities and the areas in which they may perform their functions under this section,
 - (ii) requiring advance notice of proposed roadworks, other than emergency roadworks, to be given to the local authority concerned,
 - (iii) requiring notice of emergency roadworks to be given to the local authority concerned as soon as may be after their commencement,
 - (iv) requiring specified information to be given to the local authority concerned regarding—
 - (I) proposed roadworks, or
 - (II) emergency roadworks,
 - (v) specifying time limits for the giving of directions by local authorities,
 - (vi) specifying requirements and standards for the temporary or permanent reinstatement of roadworks,
 - (vii) specifying requirements in relation to traffic control in the vicinity of roadworks.
- (b) Different regulations may be made under this subsection:
- (i) in respect of different local authorities,
 - (ii) in respect of different areas of the functional area of a local authority,
 - (iii) in respect of different types of roadworks,
 - (iv) for different circumstances.

- (7) (a) A person who contravenes a direction or regulation under this section shall be guilty of an offence and shall be liable:
- (i) on summary conviction, to a fine not exceeding £1,000 or, at the discretion of the court, to imprisonment for a term not exceeding 12 months or to both the fine and the imprisonment, or
 - (ii) on conviction on indictment, to a fine not exceeding £50,000 or, at the discretion of the court, to imprisonment for a term not exceeding 5 years or to both the fine and the imprisonment.
- (b) Where an offence under this subsection has been committed by a body corporate and is found to have been committed with the consent or connivance of, or to be attributable to any neglect on the part of, a person, being a director, manager, secretary or other officer of the body corporate, or a person who was purporting to act in any such capacity, that person as well as the body corporate shall be guilty of the offence and be liable to be proceeded against and punished accordingly.
- (c) Section 13 of the Criminal Procedure Act, 1967, shall apply in relation to an offence to which paragraph (a) of this subsection relates as if, in lieu of the penalties provided for in subsection (3) of the said section, there were specified therein the penalties provided for in the said paragraph (a) and the reference in subsection (2) (a) of the said section 13 to the penalties provided for in the said subsection (3) shall be construed and have effect accordingly.
- (8) (a) Local authorities or the Minister shall not be liable for any loss, injury or damage, or any expenditure incurred by another person by reason of the performance or non-performance of their functions under this section.
- (b) Subsection (2) of this section does not apply to the carrying out of roadworks by a local authority.
- (9) In performing its functions a local authority shall—
- (a) have regard to the need to co-ordinate works carried out by it to, above or under, a public road with the carrying out of roadworks by other persons,
 - (b) have regard to the need to minimise traffic disruption,
 - (c) comply with regulations under subsection (6) which are stated therein to apply to local authorities.
- (10) Any bye-laws or directions under section 40 of the Dublin Transport Authority Act, 1986 that are in force immediately before the commencement of the Dublin Transport Authority (Dissolution) Act, 1987, shall continue in force after such commencement, and may be amended or revoked, as if, in the case of bye-laws, they were regulations under this section and, in the case of directions, had been made under this section.”.

Roads Act 1993, (Section 53)

Control of works by a State authority, statutory undertaker or local authority.

- 53.—(1) (a) The powers conferred on any State authority, statutory undertaker or local authority by or under any enactment to carry out works along, adjoining, in, on, under or over any land shall not be exercised by that authority or undertaker in relation to any land comprised in a motorway,

busway or protected road otherwise than with the consent of the Authority (in the case of a national road) or the Minister (in the case of a regional road or a local road).

(b) Paragraph (a) shall not apply to the carrying out by a road authority of any functions assigned to it by or under any enactment (including this Act) relating to the construction or maintenance of public roads.

(c) (i) The carrying out by a State authority, statutory undertaker or local authority of emergency works necessary to eliminate or reduce danger or risk to persons or property or of maintenance works shall not require consent under paragraph (a).

(ii) In subparagraph (i) “maintenance works” includes the inspection, repair, renewal or removal of the works referred to in paragraph (a), but does not include the relocation of those works.

(iii) A road authority may issue a direction to a State authority, statutory undertaker or local authority in relation to the works referred to in subparagraph (i) and the authority or undertaker shall comply with this direction.

(2) The Minister may make regulations providing that before submitting an application for consent under subsection (1) in respect of prescribed works—

(a) a State authority, statutory undertaker or local authority shall publish in one or more newspapers circulating in the area in which the proposed works would be located a notice in the prescribed form—

(i) stating that it is proposed to apply for consent in respect of specified works,

(ii) indicating the times at which, the period (which shall be not less than one month) during which and the place where a copy of the application may be inspected,

(iii) stating that objections or representations may be made in writing to the Authority or the Minister in relation to the granting of consent before a specified date (which shall be not less than two weeks after the end of the period for inspection);

(b) the Authority or the Minister may, having considered any objections or representations made to it or him under paragraph (a) (iii) and not withdrawn, grant or refuse consent or grant consent subject to such conditions or restrictions as it or he considers necessary;

(c) the Authority or the Minister may at its or his discretion cause an oral hearing to be held into any objections or representations made under paragraph (a) (iii) and not withdrawn and shall consider the report and any recommendation of a person conducting such oral hearing before deciding whether to grant or refuse consent.

2.5 Telecommunications Sector

PART 5

Electronic Communications Infrastructure Road Works and Sharing

52.—(1) In this Part, except where the context otherwise requires—

“Act of 2000” means Planning and Development Act, 2000;

“authority” means NRA or a road authority, as the case may be;

“consent” means a consent granted by an authority under section 53(3) or, in the case of emergency roadworks, deemed to be granted under section 53(4);

“duct” means a pipe or tube for the carriage of electronic communications infrastructure;

“electronic communications infrastructure” means any part of an electronic communications network;

“emergency roadworks” means roadworks necessary to eliminate or reduce danger or risk to persons or property;

“land” includes seashore, land covered with water (whether inland or coastal), foreshores and any interest or right in or over land;

“NRAI” means National Roads Authority;

“network operator” means any person who provides or operates an electronic communications network;

“physical infrastructure” means infrastructure which is capable of supporting electronic communications infrastructure including ducts, poles, antennae support structures and rights of way over land, but does not include electronic communications infrastructure;

“physical infrastructure provider” means a network operator or any other person which allows any part of its physical infrastructure to be used by any other network operator for the provision of electronic communications services;

“physical infrastructure sharing” means the sharing of the use of all physical infrastructure for the purpose of providing electronic communications services;

“planning authority” has the meaning assigned to it by the Act of 2000;

“public road” means a national road, regional road or local road;

“road”, “national road”, “regional road” and “local road” have the meanings assigned to them, respectively, by the Roads Act 1993;

“road authority” has the meaning assigned to it by section 2 (inserted by section 11 of the Roads Act 2007) of the Roads Act 1993;

“roadworks” means the opening of a public road or any act or work that requires or causes the closing of a public road or part of a public road, including the opening or closing of a public road or part of a public road for the purposes of opening ducts, for the purpose of the establishment, extension, replacement, repair, removal or maintenance of works on electronic communications infrastructure.

- (2) In this Part a reference to the Commission shall be construed before the establishment day as a reference to the Director.
- (3) For the avoidance of doubt this Part comes into operation on the passing of this Act.
- 53.—(1) A network operator shall not commence or carry out or cause to be commenced or carried out any roadworks unless—
- (a) the operator—
 - (i) has obtained the prior written consent under subsection (3) of—
 - (I) in the case of a national road, the NRA, or
 - (II) in the case of any regional or local road, the road authority, in whose functional area the operator proposes to carry out the roadworks,
 - or
 - (ii) is deemed to have been granted consent under subsection (4), where the roadworks are emergency roadworks,
 - or
 - (b) the network operator or any person engaged by the network operator complies with any conditions contained in the consent.
- (2) A network operator or a person engaged by the network operator who contravenes subsection (1) commits an offence and is liable—
- (a) on summary conviction, to a fine not exceeding €5,000, or
 - (b) on conviction on indictment, to a fine not exceeding €1,000,000.
- (3) Subject to this section and any regulations under section 56(2)—
- (a) the NRA, following consultation, not exceeding 21 days, with the road authority in whose functional area the national road exists, may grant consent to a network operator, upon application to it by the operator, to carry out roadworks on a national road, or
 - (b) a road authority may grant consent to a network operator, upon application to it by the operator, to carry out roadworks on a regional road or local road in the functional area of the road authority, for the purposes of—
 - (i) establishing underground electronic communications infrastructure and any associated physical infrastructure,
 - (ii) extending the underground electronic communications network to parts of the road under which electronic communications infrastructure has not previously been placed by that network operator,
 - (iii) carrying out roadworks on underground electronic communications infrastructure, being maintenance, repair, replacement or the addition or removal of underground electronic communications infrastructure, or
 - (iv) installing electronic communications infrastructure in ducts, which are the responsibility of an authority, on public roads, subject to any conditions contained in the consent.
- (4) Subject to regulations made in respect of emergency roadworks under section 56(2), a consent shall be deemed to be granted where the proposed roadworks are emergency roadworks, subject to any conditions the authority concerned may decide while the emergency roadworks are in

progress or completed. The network operator shall inform the authority concerned as soon as is practicable in advance of the commencement of those roadworks.

- (5) A consent may contain conditions. Any conditions contained in a consent—
- (a) shall not discriminate unfairly between network operators, and
 - (b) shall be consistent with the need for the authority to carry out its functions under this Part and under the Roads Acts 1993 to 2007 and the Road Traffic Acts 1961 to 2007.
- (6) Where an authority proposes to grant consent to a network operator under subsection (3) or a consent is granted under subsection (4), the consent may contain conditions which, without prejudice to any other conditions it proposes to impose on the network operator, may—
- (a) provide that network operators meet any losses, liabilities and costs suffered or incurred by the authority, under contractual arrangements with a third party, where such losses, liabilities and costs arise as a result of any act undertaken by the network operator, under section 53(3) or (4), in relation to electronic communications infrastructure,
 - (b) where ducts on national roads are provided and made available by an authority to a network operator, provide that the authority shall not be liable to that network operator for any loss or damage howsoever caused to the electronic communications infrastructure in those ducts, which is the property of the network operator except for such loss or damage caused by the wilful act or gross negligence of the authority or its agents acting on its behalf, and
 - (c) provide that the authority may have representatives present at work sites for the purpose of determining compliance with any conditions imposed in connection with any act undertaken by the network operator, under a consent issued under section 53(3) or (4), in relation to electronic communications infrastructure.
- (7) An authority granting consent shall notify the network operator, in writing, of the reason for any conditions contained in the consent.
- (8) The NRA, in the case of a national road, following consultation, not exceeding 21 days, with a road authority in whose functional area the national road exists, or a road authority, in the case of regional and local roads in its functional area, may, subject to any regulations under section 56(2), impose charges on network operators—
- (a) for the grant of consents to cover the administrative costs, including costs involved in monitoring compliance with consents, incurred by the authority under this section, and
 - (b) for reasonable costs it may incur in making good long term damage to a public road as a result of road openings carried out by the network operator.
- (9) The NRA, may in the case of national roads, make a scheme which will allow for the NRA to impose charges for the use of ducts, which are provided and made available on those roads by an authority to a network operator, subject to the approval of the Minister for Transport following consultation with the Minister and the Minister for Finance.
- (10) When considering an application for a consent, an authority shall have regard to—
- (a) the existing and potential use and availability of space under the surface of the public road concerned, including—
 - (i) the requirements of the authority in the performance of its functions and responsibilities,
 - (ii) the course and depth of ducts to be laid by the applicant.
 - (iii) the existence of ducts in addition to those which are immediately required by any network operator, and

- (iv) the existence of duct space in addition to that which is reasonably required by any network operator,
 - (b) the safe and efficient operation of the public road,
 - (c) road reconstruction, repair and maintenance costs that may arise as a consequence of the application,
 - (d) the protection of the environment and of amenities including residential amenities,
 - (e) the manner and timing of the reinstatement of the road,
 - (f) any scheme adopted under subsection (11), and
 - (g) any contractual arrangements which an authority may have with a third party.
- (11) The NRA, in the case of national roads, following consultation, not exceeding 60 days, with road authorities, or a road authority, in the case of regional and local roads in its functional area, may formulate and, after public consultation, adopt a scheme setting out its policy regarding—
- (a) the use of underground road capacity, including the rationing of any particular underground spaces below roads,
 - (b) conditions (including restrictions and requirements) that may be imposed by it in relation to the grant of consents, either generally or with respect to specific areas or circumstances,
 - (c) refusal of consent, either generally or with respect to specific areas or circumstances,
 - (d) charges under this Part, and
 - (e) emergency roadworks.
- (12) The Minister for Transport, in consultation with the Minister, may issue guidelines to be followed by an authority in relation to public consultation regarding a scheme drawn up by it under subsection (11).
- (13) An authority shall consult with the Commission before attaching a condition to a consent it proposes to grant requiring the applicant to lay additional ducts.
- (14) Where the holder of a consent fails to comply with any condition attached to a consent, the authority which granted the consent may withdraw the consent.
- (15) Where an authority proposes—
- (a) to refuse to grant consent,
 - (b) to grant consent subject to conditions, or
 - (c) to withdraw a consent granted by it, the authority shall notify the network operator concerned in writing of the proposal and shall include in the notification a statement of the reasons for the proposal and of the right of the network operator to make representations to the authority under subsection (16).
- (16) A network operator may, within 21 days of the receipt by the operator of a notification under subsection (15), make representations to the authority concerned in relation to the proposal.
- (17) Where an authority—
- (a) after consideration of any representations made to it by a network operator under subsection (16), or

(b) does not receive representations from the network operator concerned within the period specified in subsection (16),

decides—

(i) to refuse to grant consent,

(ii) to grant consent subject to conditions, or

(iii) to withdraw its consent, the authority shall, not more than 21 days after the expiration of the period specified in subsection (16), notify the network operator in writing of its decision and shall include in the notification a statement of the reasons for the decision and of the right of the network operator to appeal the decision under subsection (18).

(18) A network operator may, within 28 days of the receipt by the operator of a notification under subsection (17), appeal to the High Court against the decision concerned and the Court may -

(a) confirm the decision,

(b) amend the decision, or

(c) direct the authority to grant the consent or refrain from withdrawing consent, as the case may be.

(19) A network operator shall be responsible for all costs incurred in the reinstatement of a road which the operator has opened for the purpose of—

(a) the establishment of underground electronic communications infrastructure, or

(b) maintenance, repair, replacement or the addition or removal of underground electronic communications infrastructure, to a standard satisfactory to the authority concerned.

(20) The requirement to hold a licence under section 254 of the Act of 2000 in respect of subsection (1)(e) of that section does not apply where a network operator has been granted a consent.

(21) A network operator shall, on a request being made by an authority, provide among other things—

(a) such information as the authority may require in relation to the utilisation of underground electronic communications infrastructure owned or operated by the operator, and

(b) such access to underground electronic communications infrastructure owned or operated by the operator, as may be necessary to enable the authority to exercise its functions under this section.

(22) An authority may apply to the High Court for an order—

(a) by way of injunction, to prohibit any non-compliance, or

(b) by way of *mandamus*, to direct any compliance, with a requirement of this section or the conditions of consent. The Court may grant such order as it sees fit.

(23) This section is without prejudice to section 101D (inserted by the Dublin Transport Authority (Dissolution) Act 1987) of the Road Traffic Act 1961 (which relates to directions given by local authorities to persons carrying out roadworks).

(24) A summary offence under subsection (2) may be prosecuted by—

(a) where the offence relates to a national road, the NRA or the road authority in whose functional area the offence is committed, or

- (b) where the offence relates to a regional or local road, the road authority within whose functional area the offence is committed.

54.—(1) Section 254(1) of the Act of 2000 is amended by inserting after paragraph (e) the following paragraph:

“(ee) overground electronic communications infrastructure and any associated physical infrastructure.”.

(2) A network operator shall be responsible for all costs incurred in the reinstatement of a road to a standard satisfactory to the road authority concerned arising from the opening of the road by the operator for the purpose of—

(a) the establishment of overground electronic communications infrastructure, or

(b) maintenance, repair, replacement or the addition or removal of overground electronic communications equipment.

(3) This section is without prejudice to section 101D of the Road Traffic Act, 1961.

55.—(1) Notwithstanding section 254(4) of the Act of 2000 and subject to this section, where an authority undertakes work for the purposes of improving a public road, it shall pay to a network operator all reasonable costs incurred by the operator in the relocation (except in relation to the relocation of ducts as referred to in subsection (2)) of its electronic communications infrastructure and any associated physical infrastructure necessitated by and directly attributable to that work.

(2) Where ducts, which are provided and made available on a national road by an authority for use by network operators, are required to be moved arising from any works undertaken by an authority to improve the road, then—

(a) the authority shall only cover the costs of relocating the ducts, necessitated and directly attributable to that work,

(b) the network operator or network operators using those ducts shall be responsible for any costs incurred by the operator in the relocation of its electronic communications infrastructure in those ducts necessitated by and directly attributable to that work, and

(c) the NRA shall provide reasonable notice of the roadworks to the network operator concerned.

(3) Where a network operator makes an application for consent under section 53(3), the NRA shall, where it proposes to grant consent to the network operator in respect of the application, inform the network operator of the responsibility imposed on the network operator for relocation costs incurred by the network operator referred to in subsection (2)(b).

(4) Where electronic communications infrastructure and any associated physical infrastructure is replaced or improved by a network operator in the course of relocation due to road improvement, the authority concerned shall pay only the costs directly attributable to work done to electronic communications infrastructure and any associated physical infrastructure as a result of roadworks which would have been incurred if the electronic communications infrastructure and any associated physical infrastructure existing immediately before the road improvement had been relocated.

(5) A network operator shall be responsible to an authority for any costs incurred by the authority where the network operator fails to carry out the relocation of its electronic communications infrastructure in a safe, expeditious and efficient manner.

(6) Where an authority, on an application to it by a network operator to carry out roadworks over, along, on (under section 254 of the Act of 2000) or under (under section 53) a public road, gives the operator notice that the road is due to be improved by the authority within the period of 2 years of the date from which the operator intends to carry out the works, the authority shall not be

responsible for the cost of relocating electronic communications infrastructure or anything connected with the works where the road improvement proceeds within that period.

(7) Where a dispute or difference arises between a network operator and an authority in respect of the cost of the relocation of electronic communications infrastructure, the dispute or difference shall be determined by agreed conciliation procedures between both parties or, in default of such agreement, by arbitration under the Arbitration Acts 1954 to 1998.

56.—(1) The Minister may, with the consent of the Minister for Transport, for the purposes of sections 54(2) and 55, make regulations to establish the basis for the calculation by a network operator of costs reasonably attributable to costs incurred by the network operator as a result of roadworks, and to establish an objective measure of works to be deemed to be improvements to electronic communications infrastructure for the purposes of this Part.

(2) The Minister for Transport may, with the consent of the Minister, for the purposes of section 53 make regulations, in relation to—

(a) any conditions, restrictions or requirements to be made in a consent,

(b) the imposition of charges by authorities.

(c) anything to be contained in schemes under section 53(11), and

(d) emergency roadworks.

(3) The Minister for Transport after consultation with the Minister, may, subject to any regulations under this section, issue policy directions to authorities in connection with the exercise of the powers of authorities under this Part.”.

(4) Section 60(1) of the Principal Act is amended by substituting for paragraph (e) the following:

“(e) by sending it by means of electronic mail or a facsimile machine, to a device or facility for the reception of electronic mail or facsimiles located at the address at which the person carries on business or, if an address for the service of a notification has been furnished by the person, that address, but only if—

(i) the sender’s—

(I) facility for the reception of electronic mail generates a message confirming a receipt of the electronic mail, or

(II) facsimile machine generates a message confirming successful transmission of the total number of pages of the notification,

and

(ii) the notification is also given in one of the other ways mentioned in any of the preceding paragraphs.”.

57.—(1) This section applies to that part of the infrastructure of a physical infrastructure provider which is used to support electronic communications infrastructure and to no other part of the infrastructure.

(2) A network operator has the right to negotiate an agreement to share physical infrastructure with other infrastructure providers and may, upon the commencement of any negotiations, serve notice on the Commission of such negotiations.

(3) The Commission may, on its own initiative, or shall, if so requested by either party, specify the period within which negotiations on physical infrastructure sharing shall be completed.

(4) Where agreement is not reached within the period specified by the Commission under *subsection (3)*, the Commission shall take such steps as are necessary to resolve the dispute in accordance with the procedures referred to in *subsection (6)*.

- (5) With regard to any intervention by the Commission referred to in *subsections (3) or (4)*, the Commission may—
- (a) having carried out a preliminary examination of the matter, decide not to intervene in those negotiations, or
 - (b) discontinue the intervention in those negotiations where the Commission considers that—
 - (i) the request for intervention is trivial or vexatious, or
 - (ii) the person making the request has not taken reasonable steps to reach an agreement on physical infrastructure sharing.
- (6) The Commission shall resolve a dispute referred to in *subsection (4)* in accordance with procedures established and maintained by it and the procedures shall be made available, on a request being made for that purpose, to interested parties free of charge.
- (7) In making a decision in relation to a dispute, the Commission may impose conditions for physical infrastructure sharing and such conditions may include, but not necessarily be limited to—
- (a) conditions in respect of conformity with the relevant standards relating to establishment, operation, maintenance and repair of electronic communications infrastructure and physical infrastructure,
 - (b) compliance with essential requirements or the maintenance of the quality of electronic communications services or both, or
 - (c) rules for the apportionment of the costs of physical infrastructure sharing, and the Commission shall notify, in writing, the network operator and physical infrastructure provider, as appropriate, of the reasons for such conditions.
- (8) The procedures referred to in *subsection (6)* shall include provisions for public consultation during which all interested parties shall be given an opportunity to express their views.
- (9) The Commission, in reaching a decision pursuant to the procedures referred to in *subsection (6)*, shall take into account, *inter alia*—
- (a) the interests of consumers of electronic communications services
 - (b) any requirements imposed by an enactment or instrument made thereunder,
 - (c) the public interest, including traffic control and the protection of the environment and of amenities,
 - (d) the desirability of encouraging the sharing of electronic communications infrastructure,
 - (e) the provision of electronic communications services that are not available at the time of the making of the conditions,
 - (f) the availability of alternatives to the physical infrastructure sharing requested,
 - (g) the need to provide access to the market for electronic communications services to network operators,
 - (h) the need to maintain the security of electronic communications networks and the ability of providers of electronic communications services to use different types of electronic communications infrastructure and physical infrastructure,
 - (i) the nature of the request in relation to the resources available to the network operator or physical infrastructure provider concerned to meet that request,
 - (j) the promotion of competition between electronic communications services providers, and

(k) the need to maintain a universal service.

- (10) In this section, “universal service” means the services which are made available, in accordance with the European Communities (Voice Telephony and Universal Service) Regulations 1999 (S.I. No. 71 of 1999) or any regulations amending or replacing those Regulations, to all consumers of electronic communications services independent of their geographical location.
- 58.—(1) Subject to this section, a network operator, or any person authorised by him or her in that behalf, may lop or cut any tree, shrub or hedge which obstructs or interferes with any physical infrastructure of the network operator.
- (2) Before lopping or cutting any tree, shrub or hedge under this section, a network operator shall give to the landowner or occupier of the land on which the tree, shrub or hedge is standing, notice in writing of its intention to do so and, after the expiration of 28 days from the date of such service, the network operator may lop or cut any tree, shrub or hedge where the landowner or occupier has not already done so.
- (3) A network operator may, upon the expiration of the period contained in the notice served by the operator under *subsection (2)*, enter the land (with or without vehicles) at any reasonable time.
- (4) Where a network operator carries out the cutting or lopping referred to in *subsection (1)*, he or she shall do so in a manner which causes the least damage to property or the environment or amenities.
- (5) Where an occupier or landowner lops or cuts any tree, shrub or hedge under *subsection (2)*, the expense incurred by him or her in so doing shall be paid to him or her on demand by the network operator and the amount of such expenses shall be recoverable from the network operator, in default of agreement, as a simple contract debt in any court of competent jurisdiction.
- (6) A network operator shall not carry out the cutting or lopping of trees in contravention of an order under section 205 (which relates to the preservation of trees, a group of trees or woodlands) of the Act of 2000.
- (7) *Subsection (1)* does not apply to any obstruction of or interference with signals transmitted by means of the radio frequency spectrum.

2.6 Electricity Sector

Electricity Regulation Act, 1999

44.—Section 77 of the Principal Act is hereby amended by the substitution for that section of the following section:

“Payment by local authorities
of expenses of certain alterations.

77.—Whenever a local authority on account of or for the purpose of an alteration to a road or bridge—

- (a) requires an authorised undertaker or a holder of an authorisation under section 16 of the Electricity Regulation Act, 1999, or the holder of a direct line permission under section 37 of the Electricity Regulation Act, 1999, to alter the position or depth of underground electrical wires, mains, or other electrical works or the position of poles or other structures carrying electrical wires or mains or other above ground electrical works, or

- (b) requires the Board to alter the position or depth of any such underground electrical works or the position of any such above ground electrical works as aforesaid belonging to or under the control of the Board, the expenses incurred by such authorised undertaker or holder of an authorisation under section 16 of the Electricity Regulation Act, 1999, or holder of a direct line permission under section 37 of the Electricity Regulation Act, 1999, or by the Board, as the case may be, in complying with such requisition shall be paid to such authorised undertaker or holder of an authorisation under section 16 of the Electricity Regulation Act, 1999, or holder of a direct line permission under section 37 of the Electricity Regulation Act, 1999, or to the Board, as the case may require, by such local authority or, demand as part of the expenses of the maintenance of such road or bridge and the amount of such expenses so to be paid to such authorised undertaker or holder of an authorisation under section 16 of the Electricity Regulation Act, 1999, or holder of a direct line permission under section 37 of the Electricity Regulation Act, 1999, or to the Board shall be fixed by an arbitrator appointed by the Commission for Electricity Regulation established under section 8 of the Electricity Regulation Act, 1999.”.

European Communities (Internal Market in Electricity) Regulations, 2000

Application of certain functions.

29. (1) Any duty, obligation, or requirement on the Board under Part VII and Part VIII of the Act of 1999 necessary for the discharge of the transmission system operator's functions under these Regulations, shall also be regarded as a duty, obligation or requirement on the transmission system operator.
- (2) Any power conferred on the Board under Part VII and Part VIII of the Act of 1999 necessary for the discharge of the transmission system operator's functions under these Regulations shall, to that extent, be regarded as a power conferred on the transmission system operator and not on the Board, other than where it is also necessary for the Board to discharge its functions as transmission system owner in which case that power shall be a power conferred on both the Board and the transmission system operator.
- (3) Any work commenced or being carried out by the Board for the purposes of any duty, obligation or requirement on the Board or in exercise of any power conferred on the Board under Part VII and Part VIII of the Act of 1999 necessary for the discharge of the transmission system operator's functions under these Regulations, shall be continued and carried out by the transmission system operator.
- (4) In the event of a dispute between the transmission system owner and the transmission system operator over any matter in paragraph (1), (2) or (3), the matter in dispute shall be submitted to the Commission for decision. The Commission shall issue directions regarding its decision, as it sees fit, regarding the matter in dispute, and the transmission system owner and the transmission system operator shall comply with such directions.

Appendix B

APPENDIX B.1

Identification of Materials

Product Identification (New Name)	Common Name (Old Name)
Layer/ Material Type	
Surface Course	Wearing Course
Binder Course	Base Course
Base	Road Base
Asphalt Concrete (AC)	Macadam
Bituminous Materials	
SMA 14 PMB surf 65/100-70 PSV 60 des	SMA
HRA 30/14 F surf 40/60 des (20mm pre-coated chippings)	HRA 20mm pre-coated chippings
HRA 35/14 F surf 40/60 des (20mm uncoated chippings)	HRA 20mm uncoated chippings
AC 32 dense/HDM base 40/60 rec	28mm DBM Base Course
AC 20 HDM bin 40/60 rec	20mm Heavy Duty Macadam
AC 20 dense bin 70/100 rec	20mm DBM binder course
AC 10(or 14) close surf 70/100 rec	10/14mm DBM surface course (roadway)
AC 10(or 14) close surf 160/220 rec	10/14mm DBM surface course (footway)
AC 10(or 14) open surf 160/220 rec	10/14mm DBM surface course (footway)
Granular & Cement Bound	
Cl. 804 (804 Material)	804 Material
Cl. 808 (Unbound materials near cement)	Low Soluble Sulphate 804
Cement Bound Granular Mixture B (CBGM B) (Also called HBM – Hydraulically Bound Mixture)	Leanmix
C32/40 Concrete	40N Concrete (Roadway)
C25/30 Concrete	30N Concrete (Footway)

New Product Identification for Bituminous Materials

All bituminous products are identified in the following way:-

Material type	Aggregate size	Grading type	Surf/bin/base	Binder grade/type	Recipe/design/perf
AC	10	dense		40/60	
HRA	14	close	surf	65/100-70	rec
SMA	20	open	bin	70/100	des
	32	HDM	base	160/220	(PSV 60)
		F			
		PMB			

APPENDIX B.2

Materials for use in Overlay Design

The following are the typical layers in a flexible pavement.

- The **subgrade** is the existing ground underlying the pavement. It consists of the native ground from that particular location or imported material if embankment construction is required.
- The **capping** layer, typically consisting of a crushed rock or gravel, acts as a support to the subbase and transfers load to the subgrade. The material is used to improve and protect weak subgrades. The capping should increase the stiffness modulus and strength of the formation. Subgrades with a CBR of 2.5-15% should be improved with a capping layer. Where subgrades have lower CBR values, capping with subbase may be insufficient to support the pavement and additional treatments may be required. Typically subgrades with a CBR of above 15% can be treated with a layer of subbase i.e., no capping is required. The top level of the capping is known as the formation.
- **Subbase**, typically consisting of high quality crushed rock, provides a surface on which paving machinery can lay the bituminous material. It is designed to evenly spread the load caused by the trafficking of the bituminous material above to the layers below. Subbase also allows sub-surface drainage of the pavement.
- The **base** layer is the main structural element of the pavement. It provides most of the load distribution for the pavement and distributes the wheel load stresses to levels with which the subgrade can cope. This layer is designed to resist structural deformation and fatigue cracking.
- The **binder course** layer helps distribute the load of traffic on the surface course above onto the base course and is designed to ensure that the top layer has an even surface on which to be laid.
- The **surface course** is the upper course of the pavement which is in contact with the traffic. It's function is to provide a smooth running surface for traffic. It also transmits the contact stresses resulting from vehicles accelerating and braking to the layers below. The surface course must provide good skid resistance.
- The **geogrid** is used to reinforce pavements over soft soil, particularly pavements in need of rehabilitation over peat. There are options regarding type and its location in a road section, however for the purposes of illustration it is between the binder course and base.

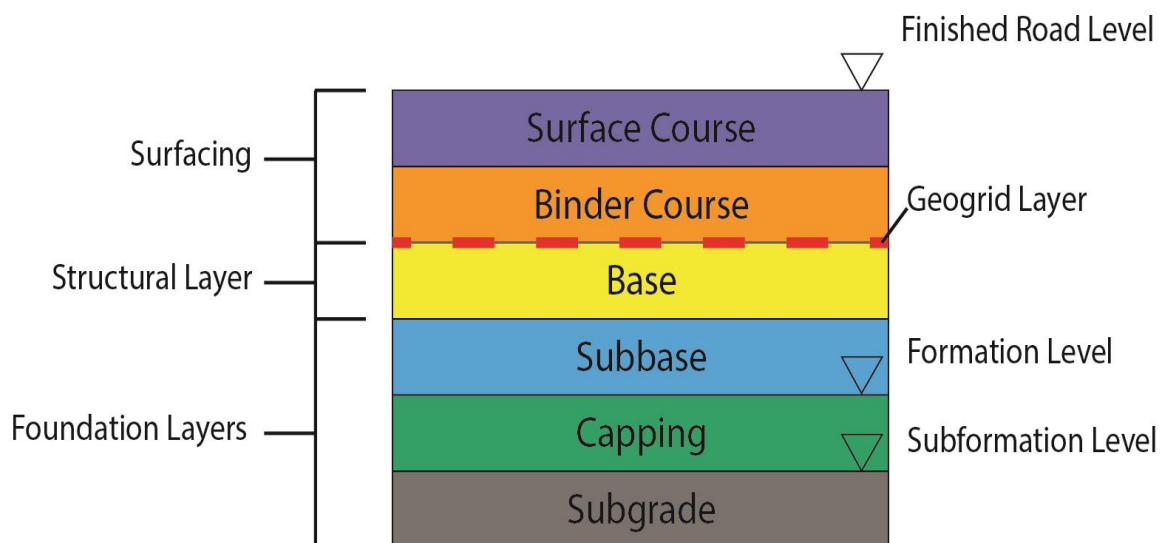


Fig: Typical layers in a Flexible Pavement

APPENDIX B.3

Pavement Surface Condition Index (PSCI) Rating Tables

Urban Flexible Road Table

Overall PSCI Rating	Primary Rating Indicators*	Secondary Rating Indicators*
10	No Visible Defects.	Road surface in perfect condition.
9	Minor Surface Defects¹. Ravelling or Bleeding <u>≤10%</u> .	Road surface in very good condition. Like new.
8	Moderate Surface Defects¹. Ravelling or Bleeding <u>10% to 30%</u> .	Little or No Other defects.
7	Extensive Surface Defects¹. Ravelling or Bleeding <u>≥ 30%</u> .	Little or No Other defects.
6	Moderate Other Pavement Defects^{2,3,4}. Other Cracking ² <u>≤ 20%</u> . Sealed Cracks in Good condition. Some narrow Open Cracks ² (<u>≤ 12 mm</u>). Patching in Good condition ⁴ . Surface Distortion ³ requiring some reduction in speed.	Surface defects ¹ may be present. No structural distress ⁵ .
5	Significant Other Pavement Defects^{2,3,4}. Other Cracking ² <u>≥ 20%</u> . Sealed Cracks in Fair condition. More frequent narrow Open Cracks ² (<u>≤ 12 mm</u>). Patching in Fair condition ⁴ . Surface Distortion ³ requiring reduction in speed.	Surface defects ¹ may be present. Very localised structural distress⁵ (< 5 m ² or a few isolated potholes) may be present.
4	Structural Distress⁵ Present. Rutting, Alligator Cracking or Poor Patching for <u>5% to 25%</u> . Wide Open Cracks ² (<u>≥ 12 mm</u>) with moderate Spalling. Sealed Cracks in Poor condition. Frequent Potholes. Short lengths of Edge Breakup.	Other defects may be present.
3	Significant Areas of Structural Distress⁵. Rutting, Alligator Cracking or Poor Patching for <u>25% to 50%</u> . Many Wide Cracks ² (<u>≥ 12 mm</u>) with severe Spalling. More frequent Potholes. Continuous lengths with Edge Breakup.	Other defects may be present.
2	Large Areas of Structural Distress⁵. Rutting, Alligator Cracking or Very Poor Patching for <u>≥ 50%</u> . Severe Rutting (<u>≥ 50 mm</u>). Extensive Very Poor Patching. Many Potholes.	Pavement badly deteriorated. Very difficult to drive on.
1	Extensive Structural Distress⁵. Severe Deterioration of surface. Pavement Failure. Many large and deep Potholes. Extensive Failed Patching.	Severe Deterioration Virtually undriveable.

Rural Flexible Road Table

Overall PSCI Rating	Primary Rating Indicators*	Secondary Rating Indicators*
10	No Visible Defects.	Road surface in perfect condition.
9	Minor Surface Defects¹. Ravelling or Bleeding <u><10%</u> .	Road surface in very good condition.
8	Moderate Surface Defects¹. Ravelling or Bleeding <u>10% to 30%</u> .	Little or No Other defects.
7	Extensive Surface Defects¹. Ravelling or Bleeding <u>≥ 30%</u> .	Little or No Other defects. Old surface with aged appearance.
6	Moderate Other Pavement Defects². Other Cracking <u>< 20%</u> . Patching generally in Good condition. Surface Distortion requiring some reduction in speed.	Surface defects ¹ may be present. No structural distress ³ .
5	Significant Other Pavement Defects². Other Cracking <u>≥ 20%</u> . Patching in Fair condition. Surface Distortion requiring reduction in speed.	Surface defects ¹ may be present. Very localised structural distress³ (< 5 m ² or a few isolated potholes).
4	Structural Distress³ Present. Rutting, Alligator Cracking or Poor Patching for <u>5% to 25%</u> . Short lengths of Edge Breakup/Cracking. Frequent Potholes.	Other defects may be present.
3	Significant Areas of Structural Distress³. Rutting, Alligator Cracking or Poor Patching for <u>25% to 50%</u> . Continuous lengths with Edge Breakup/Cracking. More frequent Potholes.	Other defects may be present.
2	Large Areas of Structural Distress³. Rutting, Alligator Cracking or Very Poor Patching for <u>≥ 50%</u> . Severe Rutting (<u>> 75mm</u>). Extensive Very Poor Patching. Many Potholes.	Very difficult to drive on.
1	Extensive Structural Distress³. Road Disintegration of surface. Pavement Failure. Many large and deep Potholes. Extensive Failed Patching.	Severe Deterioration. Virtually undriveable.

Concrete Road Table

Overall PSCI Rating	Primary Rating Indicators*	Secondary Rating Indicators*
10	No Visible Defects.	New pavement or recent concrete rehabilitation.
9	Minor Surface Defects¹ (< 10%). Traffic Wear and Polishing in wheelpath. Slight Scaling or Pop-outs.	Recent concrete overlay or joint rehabilitation. Road surface in very good condition.
8	Moderate Surface Defects¹ (10% to 30%). Moderate Surface wear/Polishing, Pop-outs or Scaling Partial loss of joint sealant.	Little or No Other defects.
7	Extensive Surface Defects¹ (> 30%). Extensive Surface Wear/Polishing, Pop-outs or Scaling. A few Linear Cracks ² or Corner Breaks, tight or well-sealed. Partial loss of joint sealant.	Little or No Other defects.
6	Moderate Other Pavement Defects³. Several Linear Cracks ² (some open) or Corner Breaks. Narrow Cracks (≤ 12 mm) or Open Joints with Joint Seal Damage. Patching in Good condition.	Surface defects ¹ may be present. Needs general joint and crack sealing.
5	Significant Other Pavement Defects³. More frequent open Linear Cracks ² (≤ 12 mm) and Corner Breaks, some with broken pieces. Significant Joint Seal Damage, minor faulting (≤ 25 mm) or spalling at joints or cracks. Patching in Fair condition.	Surface defects ¹ may be present. Manhole/ ironworks defect may be present. Needs general joint and crack sealing.
4	Structural Distress Present⁴. Several slabs with wide (≥ 12 mm) Joints or Cracks, moderate spalling, or Faulting (> 25 mm). Corner Breaks with missing pieces or patches. Sealed Cracks in poor condition. Patching with signs of distress.	Other defects may be present. Joint sealant in poor condition.
3	Significant Areas of Structural Distress⁴. Many slabs with wide (> 12 mm) Joints, Cracks and Corner Breaks, severe Spalling or Faulting (> 25 mm). Shattered Slab where no Faulting exists. Patching in Poor condition.	Joints failed. Other defects may be present.
2	Large Areas of Structural Distress⁴. Extensive wide Cracks, severely spalled and patched. Shattered slab with severe Faulting (≥ 25 mm). Extensive Very Poor Patching.	Joints failed. May be difficult to drive on.
1	Extensive Structural Distress⁴. Pavement Failure. Severe Deterioration with many failed slabs. Extensive Failed Patching. Restricted speed.	Severe Deterioration. May be very difficult to drive on.

APPENDIX B.4

Extract from EN124 (ref section 6.7.4)

The appropriate class of manhole covers and frames or gully top to be used depends upon the place of installation. The various places of installation have been divided into groups numbered 1 – 6 as listed below. Figure B5.1 & B5.2 show the location of some of these groups in a road environment. A guide as to which class applies is shown in Table B2.1. The selection of the correct class is the responsibility of the Licence Holder. Where there is doubt the stronger class should be used.

Group	Description
Group 1 (min. Class A 15)	Areas which can only be used by pedestrians or pedal cyclists.
Group 2 (min. Class B 125)	Footways, pedestrian areas and comparable areas, car parks or car park decks.
Group 3 (min. Class C 250)	For gullies installed in the area of the kerbside channels of roads (figure B2.1) which when measured for the kerb edge, extends a maximum of 0.5m into the carriageway and a maximum of 0.2m. into the footway.
Group 4 (min. Class D 400)	Carriageways of roads (excluding pedestrian streets), hard shoulders and parking areas, for all types of road vehicles.
Group 5 (min. Class E600)	Areas imposing high wheel loads, e.g. docks, aircraft pavements.
Group 6 (min. Class F900)	Areas imposing particularly high wheel load, e.g. aircraft pavements.

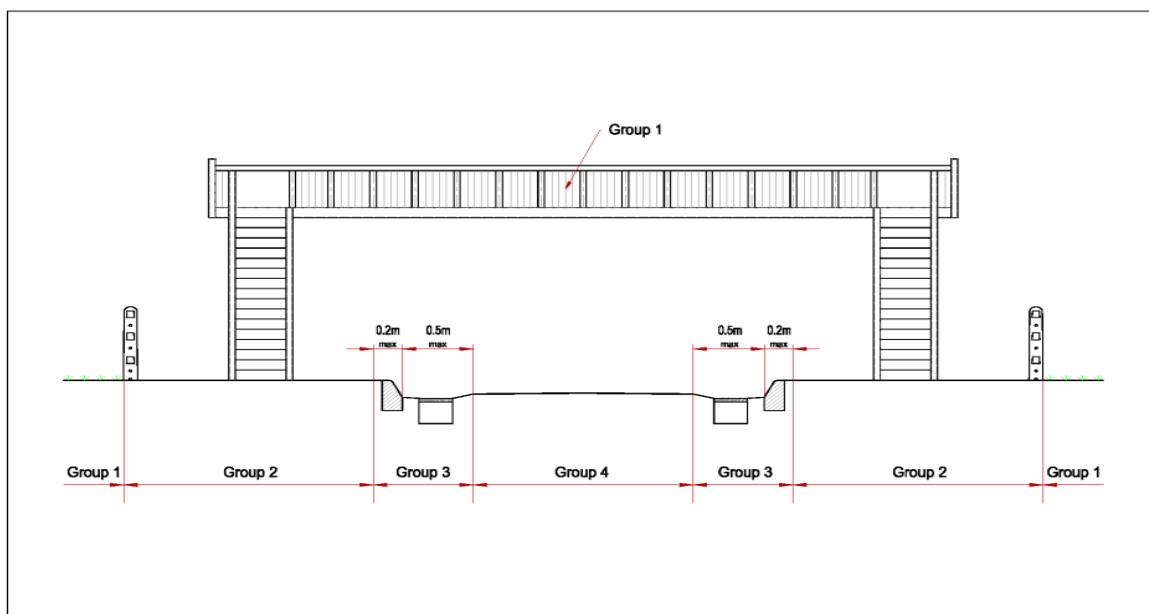


Figure B5.1: Typical highway cross section showing the location of some installation groups

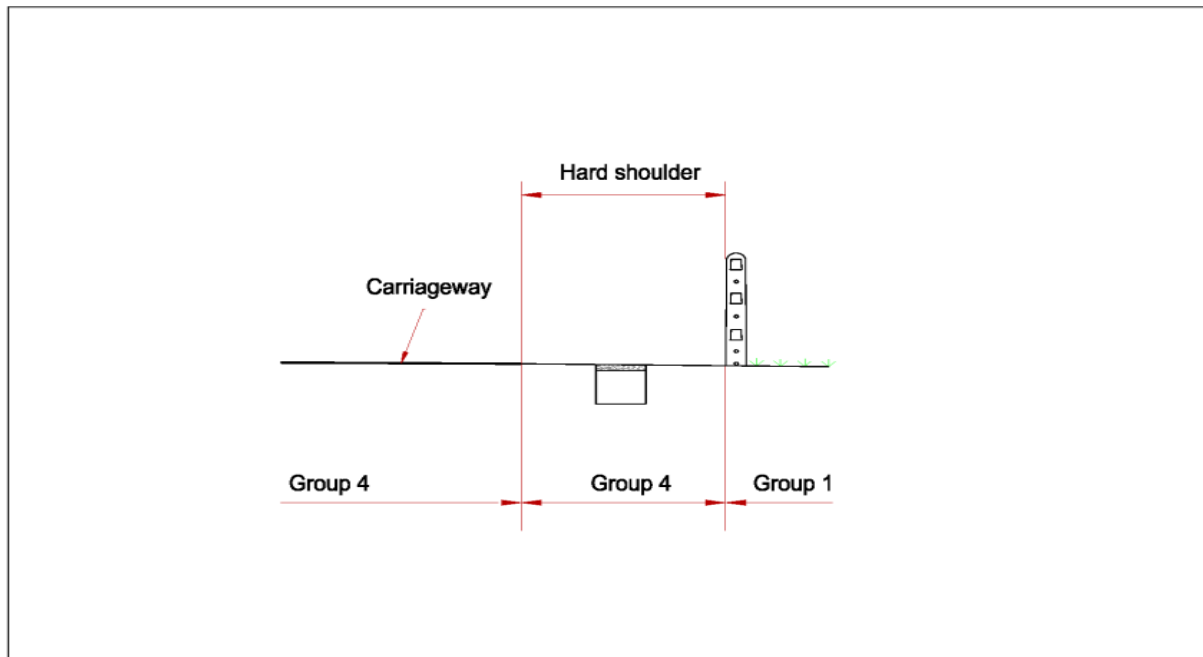


Figure B5.2: Typical detail of a hard shoulder showing the location of some installation groups

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