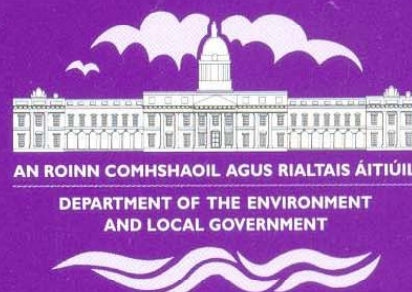


Guidelines for the Opening, Backfilling and Reinstatement of Trenches in Public Roads

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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 trenches in public roads in Ireland. The document prescribes standards in respect of the work of forming trenches, backfilling and the reinstatement of road surfaces and the associated materials which should be used. Furthermore, suggested formats of application forms for, and computerised records of, such works are set out.

Acknowledgement

The Department of the Environment and Local Government wishes to acknowledge the role of the Working Group involved in preparing and drafting this document. The members of the group are listed hereunder:

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The Department also notes the fact that the various statutory and other organisations represented at the Dublin Transportation Offices’s “Utilities Group” and also the NRA have endorsed the contents of this document.

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PART 1

1.1 Necessity of Trench Formation/Reinstatement

Trench reinstatements in public roads are a necessary ongoing phenomenon as a result of continuing improvement and maintenance of infrastructure and services. These works comprise projects varying in size from those in conjunction with large capital projects such as Regional Water Supply Schemes, Sewerage Schemes and Telecommunications Sector Broad Band rollout to single house connections to existing services in rural areas which may be as short as a few metres or less.

Many of the defective road surfaces, particularly in the built-up and serviced areas of our towns and villages are a result of poor trench reinstatement in the past when capital schemes and other works were originally installed.

The principles 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 should not adversely affect existing infrastructure including roads.

1.2 One Specification

It is desirable that a single set of specifications for trench reinstatement be adopted throughout the Country. This will ensure uniformity of standards and allow utility groups and others to better plan their works. It will also ensure a higher standard of repair thereby providing a better service to the public and a lower whole life cost for the trench reinstatement and service.

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

1.3 Standards and Specifications

The majority of materials and methods outlined in this document are covered by the National Roads Authority 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. Where European standards (EN's/European Norms) are introduced these will take precedence over National Standards.

1.4 Problems Arising

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

-
1. Settlement
 2. Irregular longitudinal profile
 3. Irregular transverse profile
 4. Ponding and ice formation in the settled area
 5. Surface rupture and potholes
 6. Surfaces with excessive bitumen (fatting up)
 7. Protruding ironmongery

Many of these phenomena are evident throughout the country and are testament of poor standards and/or poor workmanship in the past. The consequences of the problems of settlement and irregularity as outlined above can be very serious and lead to:

1. Road accidents
2. Public liability claims
3. Damage to services
4. Waste of public resources.

Any necessary subsequent repair of a defective trench will usually be funded through road maintenance budgets which are limited and as such, will seldom command sufficient priority to enable the complete digging out and replacement which may be required and will thus be likely to be confined to the surface layers only. This, in itself, creates its own problems in that repeated multiple “pothole type” repairs to trench reinstatements will inevitably lead to fatting up and loss of surface profile.

1.5 Long Term Damage

In the normal sequence of events following temporary and permanent reinstatement it has been observed that many trenches exhibit further long term settlement in the 7 - 10 year timeframe following the formation of a trench in the road. This phenomenon is known as long term damage caused by further ongoing settlements and collapse of any bridging which is not always practicable to fully eliminate at the temporary back filling and permanent reinstatement stages.

The onset of the manifestation of this phenomenon will usually be well after the capital funding for the infrastructure project has been exhausted and be well outside the period of any guarantee on the reinstatement. This may be dealt with by the Road Authority placing an appropriate charge for long term damage on the project or road opening licensee/undertaker.

1.6 Quality Control

It is essential that quality control be exercised in regard to the materials being used and the techniques being employed in trench reinstatement work to at least the same extent as used in other road construction and maintenance activities. Sampling and testing schedules are set out in the specification/quality control paragraphs of Part II of this document. Plant utilised in trench reinstatement work should be regularly checked and properly maintained.

Training of personnel in the proper methods to be employed and follow-up inspections of the work in progress is also essential.

1.7 Training

It is considered essential that all Road Authority Staff involved in trench reinstatement work including Engineers, General Services Supervisors and General Operatives should be trained in the entire process of trench reinstatement. The Senior Engineer in the Road Section of each Local Authority area should ensure that this training is put in place.

Private and Statutory Undertakers should also be appraised of the requirement for training and should certify that their staff and agents have been suitably trained.

1.8 Strutting and Trench Boxes

A crucial stage which affects the subsequent behaviour of the restored trench occurs during the period for which the excavated trench is opened. During this time, movement and earth slips of the trench sides can take place due to self-weight of the adjacent material and due to passing traffic. This can have an effect on areas of roadway well removed from the excavation.

For these reasons, it is essential that the duration of openings is kept to a minimum and that strutting should be provided (a) in all cases where there is a danger of collapse, and (b) in all cases where the depth is greater than 1.2m.

Safety requirements may also stipulate the need for strutting and these may take precedence over the above.

1.9 Thrust Boring/Moling/Sliplining and Pipe-Bursting

In the case of laying, replacing or repairing of services in public roads, consideration should be given to the possibility of executing the works by way of Thrust Boring, Moling, Slip lining or

Pipe-Bursting. Such processes 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. However, 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 in accordance with the guidelines and specifications set out in this document.

1.10 Geo-Grids And Geosynthetics

Manufacturers of geo-grids and geosynthetics 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 unbound granular material or lean mix concrete. The use of such materials is acceptable in appropriate circumstances especially in partial reinstatement of old trenches such as referred to below.

In forming trenches in roads where existing geo-grids are incorporated, the licensee 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 manufacturers requirements.

1.11 Full Width Reinstatement / Final Restoration / Reconstruction Option

At the time when final reinstatement is due to be undertaken, the Road Authority, depending on the degree of settlement and effectiveness of the backfilling, compaction and temporary reinstatement and depending on the condition of the surrounding road, may decide to carry out a full width repair. In these circumstances, the Road Authority may decide to carry out the more comprehensive full width restoration/reconstruction, though not necessarily to the same standard as the final reinstatement specification shown in standard drawings (1 - 16) of this document. This is a decision for the Road Authority and may depend also on many factors such as improvement or maintenance programmes/cycles on the road in question and on the remaining length of the particular road which is unaffected by the trench reinstatement.

1.12 Reinstatement of Old Trenches

In the reinstatement of old trenches which are showing signs of deterioration/settlement at the surface, it is sometimes necessary to excavate the backfilling material - which frequently in the past

comprised of the excavated sub-grade materials such as clay - and to rebuild the entire depth with appropriate material such as Clause 804 type material, lean mix concrete or foamed concrete (as specified in the NRA Specification for Road Works).

In certain other cases on older trenches, it may not be necessary to excavate the full depth of the original trench and it is a matter of engineering judgment, experience and observation of the opened excavation as to how much material from the old trench is to be removed and discarded. In these circumstances, reliance on the principles, procedures and materials (including compaction) as set out in this document for the actual depth being replaced will ensure the greatest probability of success.

1.13 New / Innovative Technology

It is not the intention of this document to prevent the use of new technology, which may be devised for use in trench reinstatement work. Wherever such new technology or new methods are considered appropriate and where same would constitute a divergence from the principles or prescriptions set out in this document these should only be used with the prior written approval of the Senior Road Engineer in the Local Authority.

2.1 General

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. 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) prohibits a person from defacing, damaging or excavating a public road without lawful authority or consent of the Road Authority. The relevant Sections are quoted below:

- 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.

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

2.2 Legislation

Prior to 1993, road openings were generally enabled and controlled by Road Authorities under the Summary Jurisdiction Act of 1856 (Section 9) and the Public Health Acts Amendment Act 1907 (Section 29).

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 and Electricity Sectors and Bord Gáis Éireann. The operations of these bodies are controlled by

separate enabling legislation and the main provisions of these Acts are set out in Paragraphs 2.3 – 2.6 Paragraph 2.7 sets out limitations on the actions of Statutory Undertakers in certain areas.

2.3 Statutory Undertakers

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 Local Government Planning and Development Act 1963 as:-

“Statutory Undertaker” means a person authorised by a British or Saorstát Éireann statute or an Act of the Oireachtas or an order having statutory force to construct, work, or carry on a railway, canal, inland navigation dock, harbour, gas, electricity, or other public undertaking.

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

Eircom/Licensed Undertakers in the Telecommunications Sector

Electricity Supply Board/Licensed Undertakers in the Electricity Sector

The Gas Board

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, O.P.W. do 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 Section 9 of the Transport Act 1958. In these circumstances, Irish Rail became responsible for the section of road and same is not then part of the “public road”.

2.4 Powers of Licenced Undertakers in the Telecommunications Sector

2.4.1 Enabling Power

Licenced 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 and The Telegraph Act 1863. Section 2 of the 1863 Act states:

- 2 (1) This act shall apply to every company to be hereinafter authorised by any enactment to construct or maintain telegraphs.**

The 1863 Act provides under Section (6) that:

Subject to the restrictions and provisions hereinafter contained, the Company may execute works as follows:

- (1) they may place and maintain a telegraph under any street or public road, and may alter or remove the same:**
- (2) They may place and maintain a telegraph over, along and across any street or public road, and place and maintain posts in or upon any street or public road, and may alter or remove the same:**
- (3) They may, for the purposes aforesaid, open or break up any street or public road, and alter the position thereunder of any pipe (not being a main) for the supply of water or gas:**
- (4) They may place and maintain a telegraph and posts under, in, upon, over, along, or across any land or building, or any railway or canal, or any estuary or branch of the sea, or the shore or bed of any tidal water, and may alter or remove the same:**

Provided always, that the Company shall not be deemed to acquire any right other than that of user only in the soil of any street or public road under, in, upon, over, along, or across which they place any work.

In relation to carrying out works along public roads, Licenced Undertakers in the Telecommunications Sector are bound, mainly by the 1863 Act which sets some limitations and provides for certain procedures to be followed.

Section 10 (1863 Act) provides:-

“Where the Company intends to proceed with the placing of a telegraph under, over, along or across or a post in or upon a street or public road, the depth course and position at and in which the same is to placed shall be settled between the company and the following bodies”:-

- The body having control of the street or public road.
- The body having control of the sewerage or drainage thereunder.

There are provisions under the Telegraph (Arbitration) Act 1909 and Sections 3, 4, 5, 6 and 7 of the 1878 Telegraph Act for dealing with disputes in such matters.

Licenced Undertakers in the Telecommunications Sector must give notice of their intention to open or break up a street or public road and specify the depth course and the timing of such work. Ten days notice is required for underground work and five days notice for overground work (except in the case of emergency):

Subject to any special stipulations made with a Company by the body having the control of a street or public road, and to, any determinations, orders, or directions of the justices, or Sheriff as aforesaid, where the Company proceeds to open or break up a street or public road, the following provisions shall take effect:-

“Restrictions as to the opening of Streets and Public Roads. A.D. 1863”

1. The Company shall give to the bodies between whom respectively and the Company the depth, course, and position of a telegraph under such street or public road are herein-before required to be settled or determined, notice of their intention to open or break up such street or public road, specifying the time at which they will begin to do so, - such notice to be given, in the case of an underground work, ten days at least, and in the case of an above ground work, five days at least, before the commencement of the work; except in case of emergency, in which case notice of the work proposed shall be given as soon as may be after the commencement thereof:

It is noteworthy that the Act presumes that there may be “special stipulations” placed on the Company by the Road Authority.

Work on public roads by Licenced Undertakers in the Telecommunications Sector may be supervised by the Road/Sanitary Authority and the cost of such supervision may be charged to the Board:

2. The Company shall not (save in case of emergency) open or break up any street or public road, except under the superintendence of the bodies to whom respectively notice is by the present section required to be given, unless such bodies respectively refuse or neglect to give such super-intendence at the time specified in the notice for the commencement of the work, or discontinue the same during the work.

“Streets and Public Roads to be opened only after notice and under superintendence”

3. The company shall pay all reasonable expenses to which such bodies respectively may be put on account of such superintendence.

Section 15 (1863 Act) provides that where a body having the control of any street or public road resolves to “alter the line or level of any portion of such street or road under, in, upon, over, along or across which any work of the company.....is placed”, the Post Office (now Eircom or Licenced Undertakers in the Telecommunications Sector) shall be obliged, on receiving one months notice of that alteration and at the expense of the Post Office (now Eircom or Licenced Undertakers in the Telecommunications Sector), to remove such work and to replace it in such a position and manner as is required by the Local Authority. This section only applies where the line or level of the street is altered and does not therefore apply to road repairs, but does apply to road widening.

In practice, the application of Section 15 has been modified by two Government Circulars of 1st January 1925 and 25th April 1955. They provide that where a road improvement scheme is grant aided, then the expense incurred by Post Office in moving its plant as a result of the road improvements should be charged against the grant and paid directly by the Local Authority to the Post Office.

The Telecommunications (Infrastructure) Bill, 1999 contains provisions whereby in relation to public roads it is proposed to give road authorities a greater degree of control over the opening of public roads in their area by introducing a system whereby network operators will require the consent of the road authority prior to carrying out roadworks for the purpose of establishing underground telecommunications infrastructure.

Under Section 18 of the 1863 Act, Licenced Undertakers in the Telecommunications Sector are obliged to backfill and make good the road and restore same to as good a condition as pertained

prior to the road being opened up. The Undertaker must ensure any opening is fenced and watched and properly lighted at night.

Section 18 provides:-

18. Subject to any such special stipulations as aforesaid, after the Company has opened or broken up a street or Public Road they shall be under the following further obligations:-

“Streets and Public Roads to be restored and kept in repair for six months”.

- 1. They shall, with all convenient speed, complete the work on account of which they opened or broke up the same, and fill in the ground, and make good the surface, and generally restore the street or public road to as good a condition as that in which it was before being opened or broken up, and carry away all rubbish occasioned thereby:**
- 2. They shall in the meantime cause the place where the street or public road is opened or broken up to be fenced and watched, and to be properly lighted at night:**
- 3. They shall pay all reasonable expenses of keeping the street or public road in good repair for six months after the same is restored, as far as such expenses may be increased by such opening or breaking up:**

If the Company fails to comply in any respect with the provisions of the present section, they shall for each such offence (without prejudice to the right of any person to enforce specific performance of the requirements of this Act, or to any other remedy against them) be liable to a penalty not exceeding

Furthermore Licenced Undertakers in the Telecommunications sector are obliged to pay all reasonable expenses of keeping the road in good repair for six months after same is restored - in as far as such expenses are increased by the road opening.

Section 19 of the 1863 Act permits the Road Authority to backfill and repair road openings in cases where it is deemed expedient to do so and to charge the Undertaker the costs involved.

Section 19 provides:-

19. Whenever the permanent surface or soil of any street or public road is broken or opened by the Company,

“Power to Street or Road Authorities to

it shall be lawful for the body having the control of the street or road, in case they think it expedient so to do, to fill in the ground, and to make good the pavement or surface or soil so broken up or opened, and to carry away the rubbish occasioned thereby, instead of permitting such work to be done by the Company and the costs and expenses of filling in such ground, and of making good the pavement or soil so broken up or opened, shall be repaid on demand to the body having the control of the street or road by the Company and in default thereof may be recovered by the body having the control of the street or road from the company as a penalty is or may be recoverable from the Company.

execute works and charge the expenses to the Company”

This Section gives power to the Road Authority to carry out backfilling and reinstatement work on trenches and pavement which have been opened by Licenced Undertakers in the Telecommunications Sector in situations where it sees fit or expedient to do so at the expense of the Licenced Undertaker in the Telecommunications Sector.

Section 20 of the 1863 Act set restrictions on Licenced Undertakers in the Telecommunications Sector when excavating in a public road having regard to passage of traffic. The general rule would appear to be that such Undertakers may close up to one-third of the street width but in cases where the street or road is not wide enough, the works length shall not exceed fifty yards.

Section 20 provides:-

20. The Company shall not stop or impede traffic in any street or public road, or into or out of any street or public road, further than is necessary for the proper execution of their works. They shall not close against traffic more than one-third in width of any street or public road, or of any way opening into any street or public road, at one time; and in case two-thirds of such street or road are not wide enough to allow two carriages to pass each other, they shall not occupy with their works at one time more than fifty yards in length of the one-third thereof, except with the special consent of the body having the control thereof.

2.4.2 Summary

Licenced Undertakers in the Telecommunications sector must “settle” with the Road Authority and Sanitary Authority while operating under the Telegraph Act, 1863, and the Postal and Telecommunications Services Act, 1983, the depth, course and position of the proposed service or

duct. The Local Authority may place stipulations on these aspects. The Undertaker must pay all reasonable expenses of repair for six months.

The Local Authority may carry out backfilling and reinstatement work to make good the pavement at the expense of Licenced Undertakers in the Telecommunications Sector where the Local Authority deems it expedient so to do.

The Telecommunications (Infrastructure) Bill 1999 being formulated and processed through Oireachtas may alter the powers of the Local Authority to direct Licenced Undertakers in the Telecommunications Sector.

2.5 Powers of Licenced Undertakers in the Electricity Sector

2.5.1 Enabling Power

Licenced 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 and the Electricity (Supply) (Amendment) Act 1935.

The Electricity Regulation Act 1999 and the E.C. (Internal Market in Electricity) Regulations 2000 also refer.

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.

The power in relation to breaking up of a road is set out in Sections 51 and 52 of the 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 similarly 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”.

**Construction of
by sections 51 and
52(1) of Principal Act**

**48.- 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:-

100 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.

Amendment of section 77 of Principal Act.

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 on 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.”

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 erections.

2 (1) The power conferred on the Board by subsection (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 subsection 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.

“Amendment of Section 51 of the Principal Act “.

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.

“Amendment of Section 52 of the Principal Act”

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 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 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 Electricity Regulation for decision.

Section 29 provides:-

-
- 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 Electricity Regulation) 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."

2.5.2 Summary

The Electricity Supply Board and Licenced Undertakers in the Electricity Sector are obliged only to 'consult' with the Road Authority.

2.6 The Natural Gas Industry

2.6.1 Enabling Power

The Gas Industry derives its functions and powers from the Gasworks Clauses Act 1847, the Gas Act 1976 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.

2.6.2 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 the Section 2 of the Local Government Act of 1946. This has been amended in the 1993 Road Act to include the National Roads Authority.

2.6.3 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.

2.7 Limitation of Statutory Undertakers

2.7.1 Works By State Authorities etc.

Section 53 of the Roads Act 1993 limits the powers of State Authorities, Statutory Undertakers and Local Authorities in carrying out works on Motorways, Busways or a protected road other than with the consent of the Authority (i.e. National Roads Authority in the case of a National Road) or the Minister (in the case of a Regional or Local Road).

Section 53 states:

- 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). *Control of works by a State Authority, Statutory Undertaker or Local Authority.*
- (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.

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.**

(2) 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 (and its associated notes) as mentioned at (2) above is set out overleaf at the end of this chapter (2.7).

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 _____ 19____ and ____19____ (5).

Written objections or representations in relation to the application may be made to _____ (6) before _____ 19____ (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.

2.8 “Designated Authorities”

2.8.1 Dublin Transportation Dissolution Act 1987

Under Section 101D of the Road Traffic Act, 1961, as inserted by Section 9 of the Dublin Transportation Authority (Dissolution) Act, 1987 designated authorities are empowered to issue binding directions on a range of matters to any person, including statutory undertakers, carrying out roadworks in authorities’ functional areas.

Dublin Transport Authority (Dissolution) Act, 1987 [No. 34]

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 of 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/ 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 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.”

2.8.2 Summary

Under this legislation a Local Authority has 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.

The Road Traffic (Coordination of Roadworks) Regulations 1992 (S.I. No. 323 of 1992) were introduced in 1992. The purpose of these regulations is to designate Dublin Corporation, Cork Corporation, Limerick Corporation, Waterford Corporation, Galway Corporation, Fingal County Council, South Dublin County Council and Dun Laoghaire Rathdown County Council as local authorities for the purpose of section 101D of the Road Traffic Act, 1961 (as inserted by section 9 of the Dublin Transportation Authority (Dissolution) Act, 1987). This enables these local authorities to exercise functions under section 101D and in particular to issue directions to persons undertaking road works on public roads in their functional areas in relation to such matters as timing of road works and the manner in which road works are carried out. These regulations revoke the Road Traffic (Co-ordination of Roadworks) Regulations, 1988 (S.I. 220 of 1988) which designated Dublin local authorities only.

The power to designate a Local Authority under this Act rests with the Minister for the Environment and Local Government. Local Authority staff dealing with road openings in any specific area should be aware as to whether or not the Authority is designated under the Act for the purpose of controlling road works.

3.1 Requirements

The Local Authority, as Road Authority has ultimate responsibility for works as carried out on the road and by the issue of licences for road openings, may in some circumstances be joined in any legal action against the Licencee or Statutory Undertaker. For this reason, it is imperative to ensure that proper and adequate insurances are in place to cover the risks involved and to indemnify the Local Authority when road opening work is being carried out and during any period of maintenance on the trench repair. Many Operators carrying out road opening work may not be experienced in dealing with live traffic situations.

The Designated Local Authority Officer dealing with the road opening, whether in a supervisory capacity or in processing an application for same, 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 licensee/contractor. The overall level of indemnity required should be established and up to date advice on this aspect can be obtained from Irish Public Bodies Mutual Insurances Ltd.

Evidence of the following insurances should be sought:

- i. Public Liability Insurance.
- ii. Employers Liability Insurance.
- iii. Motor Insurance on Vehicles/Plant.

3.2 Categories of Road Opening Undertakers

(i) Local Authority Direct Labour

For direct labour Local Authority work, the normal Local Authority insurances operate. The Designated Local Authority Officer should be satisfied that any hired plant with drivers working on the public road has its own appropriate insurances and that the Local Authority is indemnified.

(ii) Local Authority Capital Contracts

For Local Authority contracts such as large Road and Sanitary Schemes, the insurances will normally be checked and approved by the Local Authority Insurers (Irish Public Bodies Mutual Insurances Ltd. or other) prior to the signing of the contract. The designated Local Authority Officer responsible for the scheme or for issuing of licenses should satisfy

himself/herself that this has been done, that the insurances have not lapsed, and that indemnities and the levels of cover etc. are deemed adequate.

(iii) *Group Schemes*

For Group Water Supply and Sewerage Schemes, special arrangements have been put in place as per Department of the Environment Circular G.W.27. This document sets out the following:

- (a) The scheme contractor should have insurance for
 - (i) Employers Liability,
 - (ii) Public Liability and
 - (iii) Motor Vehicles and Plant.

The above policies should extend to provide an indemnity to the Trustees as Principals.

- (b) The Trustees should arrange Public Liability insurance. Employers Liability insurance should be arranged if the trustees have employees.
- (c) The Local Authority will arrange the Public Liability cover as mentioned at (b) above for work on or off the public road carried out by a Contractor on behalf of the group subject to the approval of the Contractors Public Liability insurance by the Local Authority insurers.
- (d) The Group Trustees are recommended to take out Personal Accident insurance and insurance of materials equipment and works against fire, theft, storm and tempest.
- (e) Local Authorities will also arrange Public Liability insurance for groups making road openings for additional connections to completed group schemes. This can either be provided by extension of the original Public Liability (if it is still in place) or by the issue of a separate policy.

Note: The provision of cover in relation to a group scheme or a road opening cover to an individual is for the extent of the work as described in the original scheme only and is for the period of the contract up to the time the permanent reinstatement is carried out by the Local Authority. Subsequent connections therefore require a new licence and separate insurance cover.

(iv) *Private Individuals*

For private individuals who are permitted to form trenches/excavate in the public road, in most cases, the Local Authority will arrange the Public Liability insurance. An appropriate charge is made for this service. It is important to advise the individuals involved that the insurance will not operate unless Statutory/Licenced Undertakers are contacted in order to determine the location of any underground apparatus/cables etc. prior to carrying out of the excavation work. No excavation work should be carried out until the Statutory or Licenced Bodies have clearly indicated the location of any underground pipes or cables. The individual should be obliged to ensure that any agents carrying out work on his behalf such as a Building Contractor or Machinery Hire Contractor has adequate Public Liability, Employers Liability and Motor/Plant insurances.

(v) *Large Private Sector Contracts*

For all private sector projects, the Designated Local Authority Officer dealing with an application should ensure that Public Liability, Employer's Liability, and vehicle/plant insurances are in place. No road opening licence should be issued to the Contractor without evidence of the Contractor's public liability policy which should extend to indemnify the Local Authority. The Contractor should be required to produce evidence that the appropriate inquiries as to location of underground pipes and cables have been made with the Statutory/Licenced Undertakers.

(vi) *Statutory Undertakers*

The Designated Local Authority Officer should ensure that all Statutory Undertakers or Licenced Undertakers in the Telecommunications and Electricity Sectors present details of their Public Liability and Plant Insurances which should extend to indemnify the Local Authority. Irish Public Bodies Mutual Insurances Ltd. (or other Local Authority Insurers) will inspect the liability insurances of the Undertakers on request.

Note 1: The provision of signs to Individuals or Private Contractors for the purpose of warning the general Road User in relation to trench openings and reinstatement work and/or diversionary routes is a matter for each Local Authority. However, in providing such signs and assistance, a Road Authority should consider the legal and insurance implications relating to subsequent responsibility in the event of inadequate signposting at the site viz a viz the specified range as per the requirements of the Traffic Signs Manual. A Road Authority should ensure that the full range of such signs is available to the Private

Individual or Contractor in any case where it has decided to assist in the operation.

Note 2: In the context of deregulation of the Telecommunications and Electricity Sectors the Local Authority should, when dealing with any application for a licence to open a public road, stipulate or request (as the legislation allows) that the precise location, depth, line, date of installation and any other relevant details be logged contemporaneously by the licensee/undertaker and that these details be furnished to the Road Authority in a suitable format acceptable to that Authority.

(See Chapter 5 – Computerised Records of Road Openings).

4.1 Current Practices

There are a number of differing procedures in place in various Local Authorities for dealing with licencing and reinstatement of Road Openings.

4.2 Statutory Undertakers

The following three procedures are used in various circumstances with Statutory/Licensed Undertakers.

- (i) The majority of Authorities allow the Statutory Undertakers or other Licencees to carry out the work and to install or repair the service and then to carry out temporary road reinstatement. The Local Authority after a period, on request, undertakes the final reinstatement and assumes responsibility for the trench thereafter. The Statutory Undertaker is billed for the cost of the permanent reinstatement. Contractors and other Licencees usually pay in advance prior to the issue of Road Opening Licence.
- (ii) A second procedure utilised by some Local Authorities in the case of Statutory/ Licensed Undertakers and which relies on Ministerial Indemnity contained in the enabling legislation controlling the Statutory/Licensed Undertaker is to allow the Undertaker to carry out its works including temporary and final reinstatement. This procedure is less common. The procedure is considered to exonerate the Local Authority from any responsibility for the trench thereafter on the grounds that it has not been involved in the work and that the ultimate responsibility rests with the relevant Minister.
- (iii) A third procedure is that whereby Local Authorities make specific agreements with the Statutory Undertakers or other Licencees spelling out procedures and standards which may include temporary reinstatement only or temporary and final reinstatement to be carried out by the Statutory Undertaker/Licencee. Under this system, it is agreed between the Local Authority and the Statutory Undertaker/Licencee as to the timing of the takeover of responsibility for the trench reinstatement by the Local Authority subject to satisfactory standards. This procedure may also incorporate the concept of a guarantee period on the final reinstatement as referred to in Section II (Reinstatement Specifications) of this document.

4.3 Private Individuals - Group Schemes

A fourth procedure is that whereby the Local Authority carries out both the temporary and final reinstatement.

This procedure is applied in some cases where it would be impractical for private individuals to obtain the small quantities of repair material required to comply with the Specification or by special arrangement with Group Schemes and others.

4.4 Licences

In issuing licences to persons or bodies to open a Public Road, the Road Authority should always stipulate that the Licencee carries out a check with Statutory/Licensed Undertakers to ensure that apparatus already in the road is identified, in order to reduce the likelihood of damage to the existing infrastructure and for safety reasons.

4.5 Procedures - Sequence of Events

Flow charts of recommended sequences of actions and procedures to deal with road opening procedures as described above, are set out in Figures 4.1 to 4.4.

Figure 4.1

**Statutory/Licenced Undertaker/Licencee carries out temporary reinstatement.
Road Authority carries out permanent reinstatement**

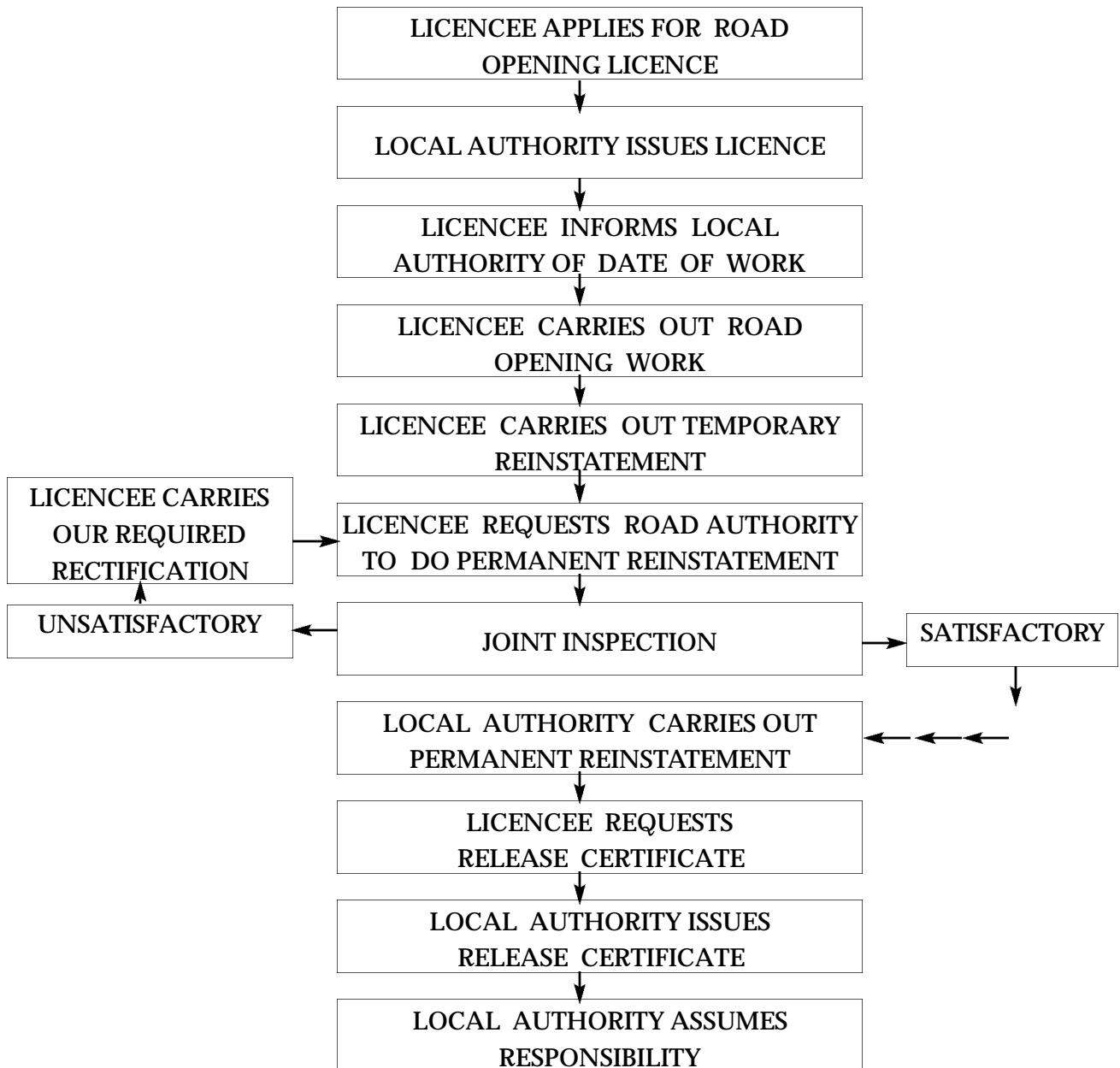


Figure 4.2

Statutory/Licenced Undertaker carries out temporary and permanent reinstatement with no agreement on takeover of responsibility by Local Authority.

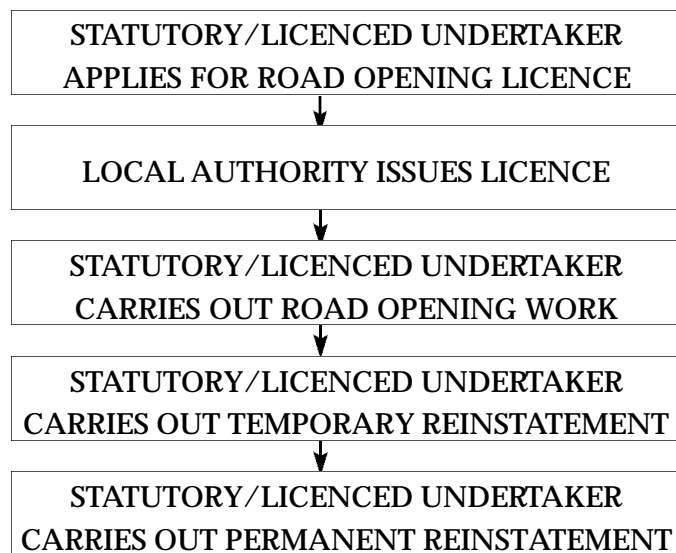


Figure 4.3

Statutory/Licensed Undertaker/Licencee carries out temporary and permanent reinstatement under agreement on timing and standards for final takeover.

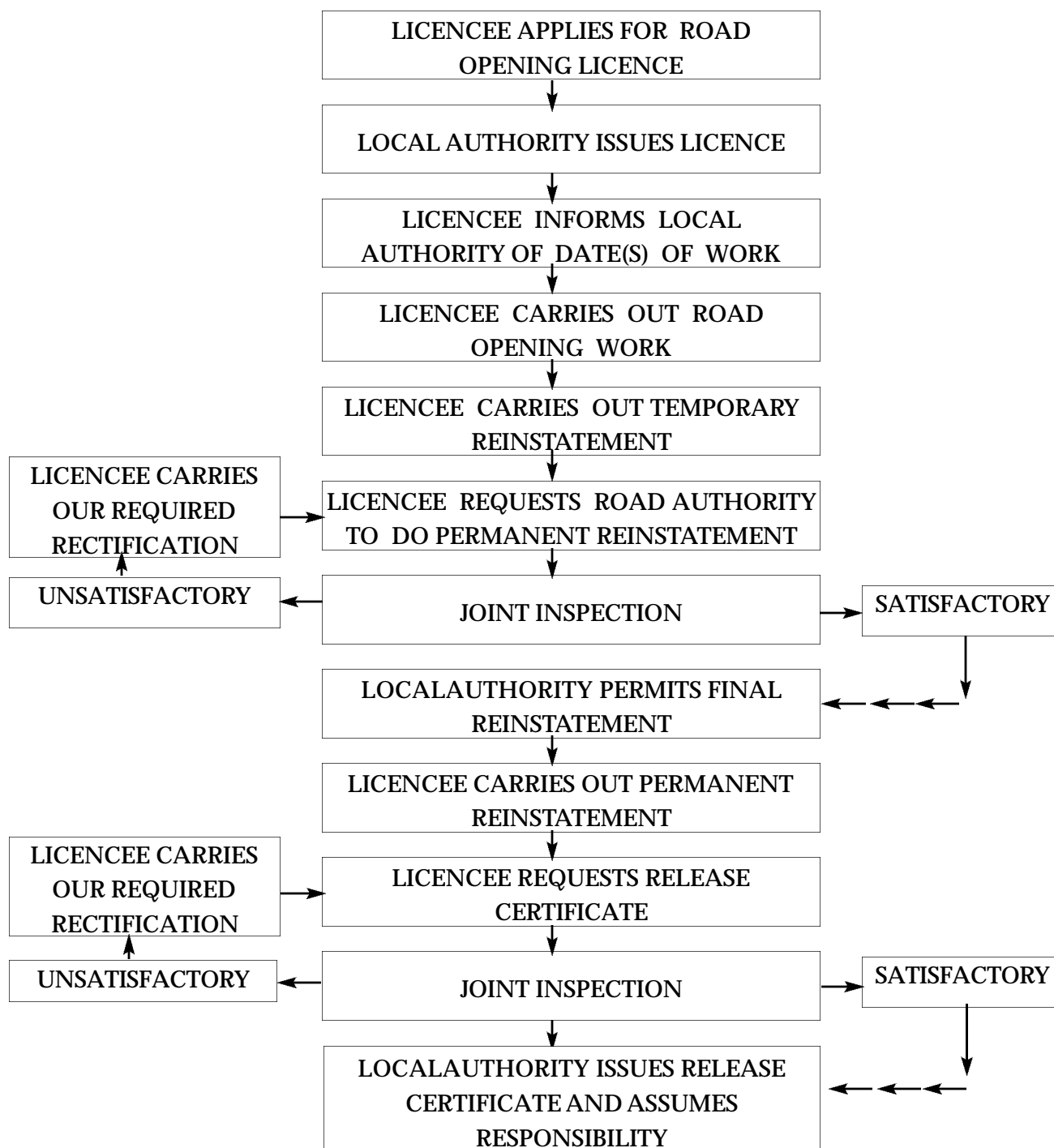
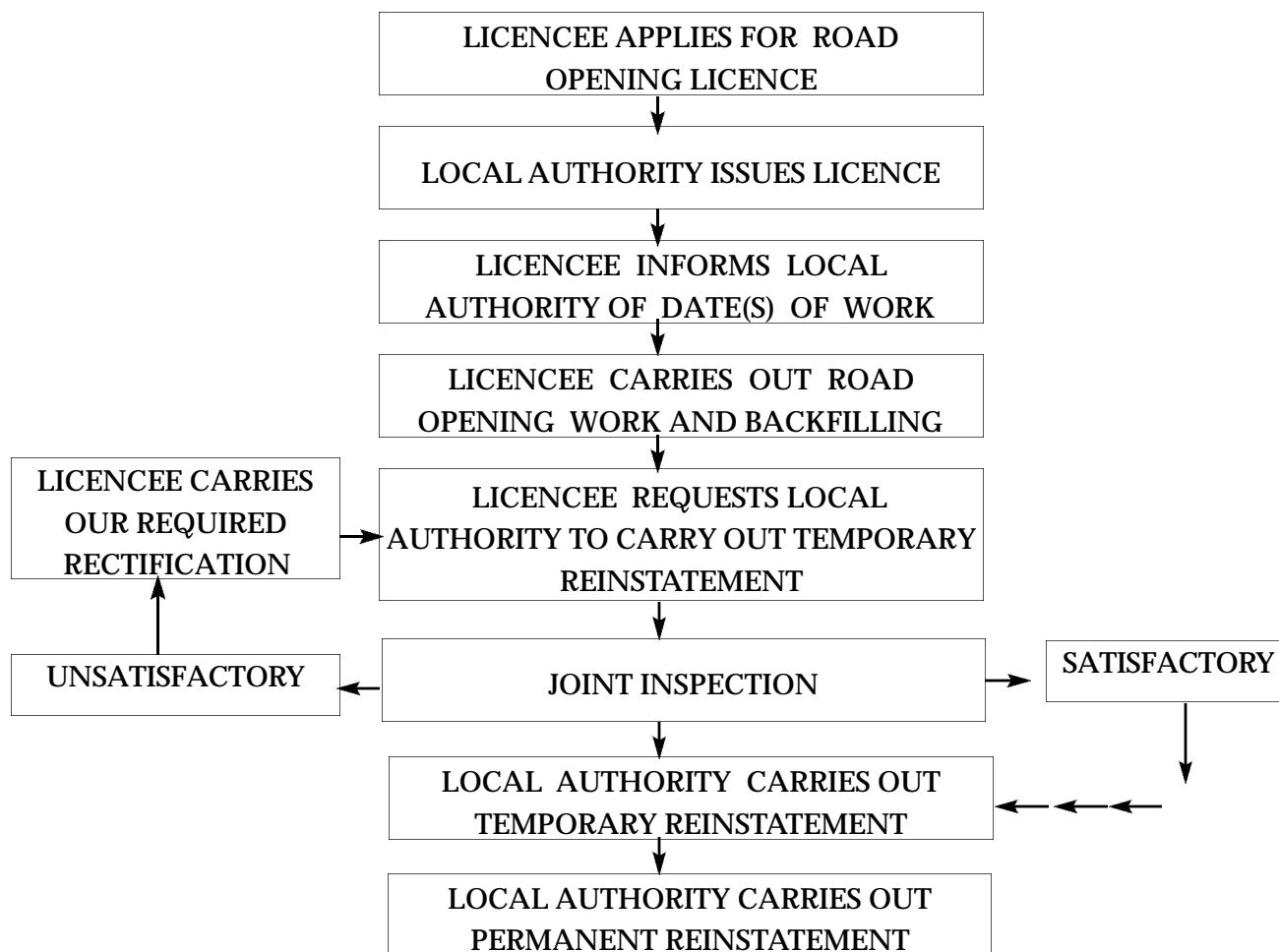


Figure 4.4

**Road Authority carries out temporary and permanent reinstatement
(Group scheme and Private Individuals).**



4.6 Temporary Road Closures

It may sometimes be necessary to arrange for temporary closure of the public road in order to facilitate trench formation and reinstatement works whether by the Local Authority or Private Individual, Contractor or Statutory Undertaker. The statutory procedures related to such road closures are set out under Section 75 of the 1993 Roads Act and the Regulations published under Statutory Instrument S. I. No. 119 of 1994 as laid down by the Minister for the Environment and Local Government. The desirable period of advance notice which the Road Authority should be given is 28 days (14 days absolute minimum with use of advertisements in national papers).

The powers of Statutory Undertakers do not generally extend to such temporary road closures.

The Road Authority Engineer dealing with the application or project should be satisfied that the closure is essential for the works and not just to make things more convenient for the Contractor. Consideration should be given to the alternative of using temporary traffic signals in place of a road closure. It should also be borne in mind that road closures can have a serious effect on bus operations, one way street systems, milk collection routes 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.

The service requiring the road closure should submit a map showing the section of the road to be closed and should state the period for which the closure is required. Further extensions of time, if necessary, will require the same periods of notice to be given. It is therefore preferable to overestimate rather than to underestimate the duration of closure in the first instance. The Licencee should be required to inform the Road Authority of the date when the closure ends.

Adequate signposting of the road closure and of alternative routes should be agreed with the Road Authority and should be provided by the Licencee.

The Licencee shall be responsible for provision of all traffic control and diversion signs.

Note: The provision of signs to Individuals or Private Contractors for the purpose of warning the general Road User in relation to trench openings and reinstatement work and/or diversionary routes is a matter for each Local Authority. However, in providing such signs and assistance, a Road Authority should consider the legal and insurance implications relating to subsequent responsibility in the event of inadequate signposting at the site viz a viz the specified range as per the requirements of the Traffic Signs Manual. A Road Authority should ensure that the full range of such signs is available to the Private Individual or Contractor in any case where it has decided to assist in the operation.

4.7 Procedures - Applications For Road Openings

It is considered appropriate that a single application form be adopted to cover road opening licence applications, from whatever source.

A suggested format is set out in Figures 4.5 (a), (b) and (c). The form makes provision for the necessary information fields to be filled in by the Applicant and also ensures that the Applicant is advised on insurance aspects and other details. The form is available in an Access database format.

Figure 4.5 (a)

LOCAL AUTHORITY: _____

APPLICATION FOR LICENCE FOR OPENINGS TO ROADS FOOTWAYS AND VERGES

SECTION A: *TO BE COMPLETED BY THE APPLICANT*

Applicant Name _____

Applicant Address _____

Contact Telephone No. day _____ night _____

Planning Register No. _____

Location of Proposed Opening(s) _____

_____ (Attach Map)

Purpose of Opening _____

- **Breaches of the directions incorporating this application may result in a prosecution.**
- **The application pertains only to openings and not to services.**
- **The application is valid only when all four sections A, B, C, & D are signed/completed**

I/We hereby agree to:

- Fully investigate existing Utilities and obtain from the appropriate Bodies separate permission for any disturbances.
- Properly light, watch and fence the works.
- Take all proper precautions to prevent harm to persons and property.
- Maintain safe and smooth flow of pedestrian and vehicular traffic past the works.
- Restore and maintain the roadway and/or footway to the specification of the Local Authority.
- Be responsible for the maintenance of the opening for a period of two months after written notification of completion or as otherwise agreed in writing by the Local Authority.
- Remove all excess material.
- Have a copy of this Consent available for inspection on site.
- Notify the Local Authority one week before work commences.

Figure 4.5 (a) (continued)

- Notify the Local Authority when reinstatement has been completed.
- **For Contractors** – Indemnify and save harmless the Local Authority, in respect of all claims, proceedings, liabilities, losses or expenses of whatever nature, howsoever arriving in connection with the activities covered by this application, with minimum indemnity of £5,000,000 for any one claim. The period of cover shall be that of the duration of the works and the maintenance period.
- **For Private Individuals** - Pay the appropriate fee for Public Liability Insurance to the Local Authority.
- Take charge of the defence of any proceedings as aforesaid at the request of the Local Authority.

Signed: _____ Date: _____ 20...

Figure 4.5 (b)

SECTION B: FEE CALCULATION

The following fee is levied to cover the cost of permanently reinstating the opening inclusive of long term damage. The dimensions are those of the opening plus 75mm all around.

Dimensions	Length	Width	Surface Type	Rate	Fee
				Total Fee	

Payment received Signed: _____ Date: _____

Cash Office Receipt Number: _____ Date: _____

Licence Reference Number: _____

SECTION C: DIRECTIONS

Reinstatement to be carried out in accordance with Drawing No.(s)

*

*To be completed by Engineer.

Signed: _____

SECTION D: INSURANCE DETAILS

Insurance Company: _____	Policy No.: _____
Level of Public Liability Cover: _____	Expiry Date: _____
Indemnification of Local Authority provided (Yes/No.) _____	

Private Individual/Group Scheme-

Fee for Insurance Paid to Local Authority (Yes/No) _____

Signature of Applicant: _____

Signed for Local Authority: _____ Date: _____

Figure 4.5 (c)

The following notices must be sent to the Director of Services/County Engineer's Office:

Notice A: One week in advance of starting.

Road Opening at: _____ Ref No. _____

Name & Address: _____

The above road opening will be undertaken on: _____

Signed: _____

Notice B: On completion of the works.

Road Opening at: _____ Ref No. _____

The above road opening was completed on: _____

Signed: _____

There is a need to ensure that all road openings are properly recorded. It is considered that amongst other things, such information would be of benefit in planning new works along the affected road, street or footpath and would also ensure accurate records for billing purposes, follow up control purposes and in defending public liability claims.

The Local Government Computer Services Board has identified Road Openings/Trench Reinstatements as a work system/data set to be computerised in its interim report and recommendations on Local Authority Business Area Analysis. (1991).

A computer database capable of being linked to a MAPROAD or other Pavement Management System is considered appropriate. Such a system would impose its own disciplines on the Local Authority Organisation by ensuring that key aspects of information are properly recorded at various stages of the process such as precise location, date of temporary reinstatement and date of final reinstatement etc. The system would also impose a responsibility on the Road Authority to ensure that the work of trench repair and the completion of records is properly followed up and carried out.

In advance of such a comprehensive system, each Road Authority should ensure that it has a system of recording and entering the information on trenches in Public Roads for future incorporation. The information required should be compiled on the application form and should be computerised for each and every road opening including those carried out by private individuals, Local Authority and Statutory Undertakers. A recommended format in Microsoft Access is set out in Figure 5.1. The format includes a routine of flagging trenches which have been opened in the public road but for which final reinstatement has not been certified by the Road Authority.

Figure 5.1

Road No:	_____	Surfacing Type	_____	Rd Class	_____
Applicant:	_____	Date of Opening:	_____	Date of Temporary Restoration:	_____
Date of Application:	_____	Date of Final Restoration:	_____		
Townland:	_____	Map Attached:	_____		
Location Description:	_____ _____ _____				
Roadway Length (m)	_____	Footway Length	_____	Grass Margin Length	_____
Roadway Width (m)	_____	Footway Length	_____	Grass Margin width	_____
Cost of Temporary Rest:	_____	Supervisor on Site:	_____		
Cost of Permanent Rest:	_____	Final Inspection by:	_____		
Purpose of Opening:	_____ _____ _____				
Depth of Pipe/Service (mm):	_____	Type of Backfilling:	_____		
Diameter of Pipe/Service:	_____	Type of Temp surface	_____		
Marker Tape Type:	_____	Type of final Surface:	_____		
Certified Satisfactory Completion		Engineer:	_____		
		Date:	_____		

Part II

6.1 Introduction

The minimum recommended specifications for temporary and permanent reinstatements of trenches in roads, cycle tracks, footways and grassed areas are set out in this chapter. The diagrams and text describe both the materials to be incorporated in the works and the methods to be adopted. In some instances, special 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 high skid resistant materials at junctions and pedestrian crossings etc. Any variations in these specifications must obtain the prior written agreement of the Road Authority in advance of commencement of the trench excavation works.

6.2 General Principles of Reinstatement

The reinstatement of any surface shall be completed so that all edges of the reinstatement are flush with the adjacent surfaces and the reinstatement shall not show any significant depression in between.

Definitions:

(i) Intervention:

Restoration of a reinstatement which does not comply with the performance standards to a condition which does comply.

(ii) Temporary Reinstatement

The placing and compaction of the surface layers and backfill materials (as per Drawings Nos. 1 - 16) of a trench (and its surrounding area) which has been excavated, to provide a sealed running surface for pedestrian and/or vehicular traffic for a period to allow for subsequent material settlement/movement (within the tolerances as set out in this document) in the trench backfilling or other trench constituents and in the surrounding area of the trench.

(iii) Permanent Reinstatement

The removal of any temporary reinstatement materials and the placing and compaction of the surface layers (as per Drawings Nos. 1 - 16) of a trench (and its surrounding area) which has been excavated and backfilled to provide a sealed running surface for

pedestrian and/or vehicular traffic following a period during which temporary reinstatement has been carried out and allowed to settle (or immediately following backfilling in the case of certain permitted proprietary materials such as foamed concrete or air entrained concrete). Such permanent reinstatement should be identifiably deemed permanent or agreed as being permanent by the Authority having ultimate responsibility for the reinstatement.

(iv) Guarantee Period:

If a guarantee period is called for in the licence or agreement the Undertaker shall ensure that the temporary reinstatement conforms to the prescribed standards until the permanent reinstatement is completed and that the permanent reinstatement conforms to the prescribed standard throughout the guarantee period. The guarantee period shall begin from the date on which the Road Authority receives written notification from the Undertaker that the permanent reinstatement has been completed and should continue for a minimum of 2 years. Where it is necessary to re-excavate a reinstatement to carry out an engineering investigation or to repair a defect, the reinstatement shall be deemed to be new and the guarantee period shall begin again.

The Road Authority should be satisfied as to the competence and financial standing of any Contractor allowed to carry out trench reinstatements under guarantee.

6.2.1 Investigation of Services

Prior to carrying out any excavation for a trench, 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:

1. Electricity Supply Board or other licenced undertakers in the Electricity Sector in the area.
2. Eircom or other licenced undertakers in the Telecommunication Sector.
3. Bord Gais Eireann or other licenced undertakers in the Gas Sector.
4. Local Authority
 - (a) Water Supply
 - (b) Sewerage
 - (c) Surface Water Drainage.

-
5. Local Piped Television Company.
 6. O.P.W. - Archaeological Site.
 7. Adjacent Property Owners likely to be affected.

6.2.2 Survey

Prior to any excavation in a road or footway, the area to be excavated should be surveyed by the Road Authority to establish the condition of the road/footway.

All defects in the general area of the proposed excavation should be recorded. This should afford an opportunity to establish the need for repairs to areas immediately outside the proposed excavation at time of final reinstatement and also will help to avoid contention when permanent reinstatement is carried out.

This survey offers an opportunity to examine the proposed works in detail and will allow adjustments to the line of excavation as may be considered necessary. It is desirable, where practicable, to have road crossings at right angles across the carriageway and to ensure that any service boxes are located away from road junctions.

6.3 Construction Requirements

6.3.1 General

1. The precise line of the pipeline shall be agreed between the Contractor and the Road Authority before the commencement of construction.
2. Contractor will cause to make good, damage to other services caused by the execution of the works at the Contractors own expense to the satisfaction of the appropriate Authority, Statutory Undertaker or Individual Owner.
3. Existing services in roads shall be wrapped in 12mm neoprene rubber, or similar, before backfilling.
4. It is the responsibility of the Contractor to locate all existing services, and to safeguard same during construction. The Contractor shall be liable for any damages arising and consequential damage to existing services.

-
5. Statutory Undertakers and service providers shall submit an as constructed drawing/map to the Local Authority Roads Department detailing the line and depth of the installed apparatus when work has been completed. Details of dates of excavation/temporary reinstatement and final reinstatement shall also be provided including confirmation in writing by a competent person acceptable to the Road Authority that the trench reinstatement complies in full with this Specification. (The Access database format is set out in chapter 5 and is the appropriate format for submission of such information with at least 1 hard copy signed by the appropriate Engineer).
 6. Streets and public roadways shall be cleaned and swept both during and after the installation work.
 7. Any silting of downstream drainage facilities, whether ditches or pipe or catch pits/sumps which results from the works shall be cleaned out as part of the site clean up.
 8. Any damage to storm drainage facilities and roadside features and furniture which may be disturbed or blocked due to the works undertaken by the Licencee/Utility shall be replaced with new materials by the Licencee/Utility.
 9. In the event of any interference with road markings, the Licencee/Utility shall arrange for immediate replacement with temporary markings and arrange with the Road Authority to have permanent markings restored in conjunction with final trench reinstatement. Cost of any replacement road markings shall be borne by the Licencee/Utility.
 10. At the discretion of the Road Authority, if requested, prior to commencing any trench in a public road, a set of colour photographs 5" x 7" will be required every 20 metres along the roadway (or other spacing and location as may be specified). Such set of photographs shall be taken utilising a 35mm camera and prints shall be provided in albums which are catalogued and cross referenced.
 11. Street surfaces shall be cleaned at the end of each days work with a power brush or other approved means.
 12. Any pipes or other materials stored along the public roadway 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.
 13. No excess material shall be disposed of along the public roadway.

-
14. All crushed rock backfill material shall be compacted to 95% of maximum density (Modified Proctor).
 15. Longitudinal installations and trenches should be laid out parallel to the centre line of the road in so far as practicable.

6.3.2 Surface Water Drainage

In the case of any road opening, whether by Private Individual, Contractor, Statutory Undertaker or Local Authority, any surface water drainage system disturbed during excavation must be notified to the Road Department of the Local Authority and reinstated to the satisfaction of that Authority.

6.3.3 Special Case – Porous Asphalt/Macadam Surfaces

In the case of trench formation where there is a bituminous surface layer/wearing course of porous asphalt, porous macadam or other permeable material designed to act as a conduit for surface water and discharge it to the side or to an edge drain special reinstatement requirements will be necessary. In such circumstances it will be necessary to remove and reinstate the full width of such porous material draining to and across the trench from the crown or high point to the discharge point unless otherwise specified or agreed with the Road Authority in writing in advance.

6.4 Identification Markers

6.4.1 Marker tapes

Distinctive marker tapes are to be provided over all underground services including those for which the Local Authority is itself responsible viz. water, surface water and sewerage.

The following colour codes on marker tapes are to be incorporated in all trenches in public roads at the depths shown in Drawings Numbers 1 - 16.

Marker Tape Colour

1.	Electricity	_____	yellow
2.	Telecommunications	_____	green
3.	Gas	_____	red
4.	Water Supply	_____	blue
5.	Sewerage	_____	brown
6.	Surface Water	_____	white/blue
7.	Cable T.V.	_____	red, blue, green, chevron.
8.	Unspecified (Other than 1 - 7 above)		Black/white

Tapes should be a minimum 125mm wide.

6.4.2 Metal Plates

Metal plates should be included with all non metallic ducting/services e.g. asbestos, concrete or PVC watermains, gas mains etc. in order to assist in subsequent location of the service by means of metal detector. This will be of particular benefit in effecting emergency repairs. The recommended spacing for such plates is at 25 metre intervals and over each connection point not characterised by a junction box/manhole or other visible feature, the plates should be a minimum 125mm x 125mm - preferably galvanised. Depth of installation should usually be 300mm. The option of placing a continuous metal strip or wire to enable subsequent location as an alternative to metal plates is also acceptable.

6.5 Rubber Tyred Excavators/Tracked Excavators

The use of rubber tyred 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, with the prior written consent of the Road Authority for reasons of depth or difficult digging, it is necessary to utilise tracked machinery, the Engineer in the case of direct Local Authority works, or Licencee in other cases should ensure and agree with the Local 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.

6.6 Cutting the Road Surface

In bituminous and concrete road surfaces and footways, the trench lines shall initially be cut utilising a concrete saw or equivalent mechanical means to the full depth of the bituminous or concrete material prior to any excavation work. This helps to reduce the overbreak at the excavation stage and to keep the upper road pavement layers adjacent to the trench intact.

It is important to reduce the factors which contribute to adjacent road damage to a minimum. Where a trench is opened in a public road, the continuum of the unbound material in compression which provides strength to adjacent areas is removed and its sides are subjected to stresses from various sources, such as:

1. Wedge shaped break from surface.
2. Earth slip circle.
3. Traffic wheel load too close to the edge of the trench.
4. Construction traffic wheel/track loads.

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.

The use of trench boxes as described in Chapter 1 also helps to reduce subsequent damage. The use of bulk-head wheel stops for safety reasons will also prevent damage by construction traffic.

6.7 Backfilling

Following the excavation of a new road trench, and laying or repair of utility apparatus, trench reinstatements commence with a backfilling operation. The ultimate performance of the restored trench 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 utilised 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.

6.8 Compaction

The material shall be compacted in layers by mechanical means in accordance with the National Roads Authority's Specification for Road Works, using either Vibratory Rollers with mass per unit width not exceeding 2300kg, or Vibro Tamper or Vibrating Plate compactors. No mechanical compaction is permitted within 400 millimetres vertically of the crown of pipes and this material should be placed and compacted utilising manual means. Material below and adjacent and around the sides of pipe installation however should be mechanically compacted.

Proper compaction of the material is vital. Compaction plant should be selected carefully to give the best results on the material used. Specialised equipment can sometimes be required for narrow trenching or restricted sites but the following plant is likely to be the most commonly used means of compaction for the majority of reinstatement.

HAND RAMMER	<p>used for the compaction of all material where access is severely restricted, e.g. around underground services or street furniture.</p> <p>should not be used as a substitute for mechanical compaction equipment.</p>
VIBRO TAMPER	<p>easily transported and handled and especially suitable for narrow trench-work.</p> <p>delivers between 450 and 650 blows per minute through a small plate to effect compaction.</p> <p>is not recommended for the compaction of base or wearing course materials.</p>
VIBRATING ROLLER	<p>the preferred method of compaction of bituminous materials.</p> <p>may be single or twin drum.</p> <p>not suitable in small and/or narrow excavations with restricted access.</p>
VIBRATING PLATE	<p>available in a range of weights and sizes of plate.</p> <p>suitable for compaction in trenches.</p> <p>can be used for bituminous materials but will not give a good surface finish.</p>

It is not acceptable to place the backfill material and compact at a later stage when other layers have been placed, or compact excessive depths from the surface of the trench. Such a practice generally gives rise to excessive post-construction settlements and should not be permitted.

Compaction of trench backfill materials shall be carried out in accordance with the following clauses of the N.R.A. Specification for Road Works:-

Clause 802 for granular materials, and
Clause 1035 for cement bound materials, and
Clause 1043 for foamed concrete for backfilling excavations.

6.9 Permanent Reinstatement

The temporary surface shall be completely removed to the depth specified in the relevant Drawing. The exposed surface shall be regulated with the same material and thoroughly compacted in accordance with the National Roads Authority's Specification for Road Works. The remainder of the permanent reinstatement work shall be in accordance with the Standard Drawings.

6.10 Intervention Criteria/Tolerances

Notwithstanding the minimum general recipe type specifications relating to materials and methods, the following paragraphs set out performance standards to which road surface profiles should comply in order to be deemed acceptable. These criteria apply to temporary and permanent reinstatements in order to determine acceptability. Exceedance of any of these parameters during the period of temporary reinstatement requires corrective intervention on the part of the responsible road opening Licencee. Exceedance of such parameters in the specified period subsequent to the permanent reinstatement where such has been carried out by the Statutory Undertaker or other Licencee under guarantee also requires corrective action on the part of the road opening Licencee prior to any take-over of responsibility by the Road Authority.

Furthermore any defects such as crocodile cracking or potholes as outlined in An Foras Forbatha Publication RC 337 require corrective intervention.

Where intervention is required and carried out, the specified period for temporary and/or permanent reinstatement shall recommence.

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.

It is important to note that intervention limits are only an indication of the performance of the reinstatement and are not a statement of hazard existence. Furthermore Local Authorities may devise and apply more stringent criteria than those outlined below having regard to their own experience.

6.10.1 Recommended Criteria:

Edge Depression

Corrective intervention shall be required where the depth of any edge depression exceeds the limits shown in Tables 6.1, 6.2, and 6.3 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 exceeds the limits shown in Tables 6.1, 6.2 and 6.3.

Surface Crowning

The upstand of the reinstatement above the level of the existing adjacent surfaces spanning more than 100mm in any plan dimension shall not exceed the limits shown in Tables 6.1, 6.2 and 6.3.

Fixed Features

The maximum allowable tolerance between the levels of fixed features including concrete products and ironware shall not exceed $\pm 6\text{mm}$.

Table 6.1 Concrete Footpaths

Intervention	Reinstatement Width (mm)								
	Up to 400	nom 450	nom 550	nom 650	nom 750	nom 850	nom 950	nom 1000	>1000
Edge Depression	5	5	5	5	5	5	5	5	5
Surface Depression	4	4	5	6	7	8	9	10	10
Surface Crowning	4	4	5	6	7	8	9	10	10

Table 6.2 Concrete Roads

Intervention	Reinstatement Width (mm)								
	Up to 400	nom 450	nom 550	nom 650	nom 750	nom 850	nom 950	nom 1000	>1000
Edge Depression	6	6	6	6	6	6	6	6	6
Surface Depression	8	8	10	10	10	10	10	10	10
Surface Crowning	8	9	10	10	10	10	10	10	10

Table 6.3 Flexible/Composite Roads and Footpaths

Intervention	Reinstatement Width (mm)								
	Up to 400	nom 450	nom 550	nom 650	nom 750	nom 850	nom 950	nom 1000	>1000
Edge Depression	5	5	5	5	5	5	5	5	5
Surface Depression	8	9	11	13	15	15	15	15	15
Surface Crowning	8	9	11	13	15	15	15	15	15

6.11 Safety/Signposting of Works

The arrangement of signs and other safety aspects at trench reinstatement works should be in accordance with the Traffic Signs Manual as published by the Department of Environment.

The full range of signs shall be maintained in place until such time as the temporary reinstatement has been completed and also during the permanent reinstatement works.

Before temporary traffic lights are permitted timings, which should normally not exceed 3 minute whole cycle duration, should be agreed with the Road Authority in advance of commencement of the work. Whole cycle durations in excess of 5 minutes shall not be permitted.

6.12 Quality Control

All materials should be in accordance with the most recent version of the National Roads Authority's 'Specification for Road Works' and the relevant Irish Standards, British Standards and

European Standards. As the quantities of materials used in trench reinstatement will generally be quite small, special care will be required to ensure compliance with specification. Additional testing of materials will often be required. Ongoing measurements to establish compliance with the performance criteria should also be carried out. The schedule of sampling and testing set out in Table 6.4 is recommended in cases involving a minimum of 100 tonnes of bitumen bound materials or cement bound materials and/or 200 tonnes of granular unbound materials. On jobs involving quantities less than the above the commencement samples and minimum rate should apply, except where the Engineer is satisfied from experience of the source of the material and the consistency of quality from the particular supplier.

Table 6.4 Testing Schedule

Granular/crushed rock materials (including Clause 804 and Wet Mix)	
Sampling Rate	1 at commencement of works and 1 per 200 tonnes thereafter
Test for	Grading (Wet grading required), Moisture content and Liquid limit
Bituminous Materials	
Sampling Rate	1 at commencement and thereafter 1 per 100 tonnes
Test for	Binder Content, Viscosity, Penetration, Grading, Temperature (twice daily) Also check delivery, laying and rolling temperatures
Bituminous Emulsion	
Sampling Rate	1 per tanker delivery
Test for	To comply with the requirements of the DOE Specification for Surface Dressing
Concrete Materials	
Sampling frequency	1 per 20 tonnes
Test for	Cube Strengths and Slump
Establish	Quality performance at Manufacturing Plant including current margins, cement content and source/quality of aggregates

These rates may be increased at the discretion of the Engineer depending on results and on site circumstances

6.13 Method of Reinstatement:

The reinstatement shall be carried out in accordance with the Specifications as set out in the Reinstatement Drawing Notes and Reinstatement Drawings Numbers 1 – 16.

If in doubt as to requirement in any specific case consult with the Senior Engineer in the Local Authority or his/her Representative.

1. All works shall be in accordance with the N.R.A *Specification for Road Works* and any conditions specified in the Road Opening Licence.
2. Control and signposting of roadworks shall be in accordance with the *Traffic Signs Manual* (Department of the Environment) and any specific conditions contained in the Road Opening Licence.
3. Excavations shall be sufficiently protected to avoid harmful effects of adjacent wheel loading from both traffic and construction vehicles and to prevent undermining of the adjacent pavement.
4. If undermining of the adjacent pavement occurs, it must be cut back 75mm beyond the edge of the collapse along the whole of that section of excavation to maintain a straight edge parallel to the original excavation.
5. The specification for buried services shall be appropriate to sustain the relevant traffic loading at the depth of cover of the installed service.
6. A minimum 50mm clearance is required vertically and horizontally between individual ducts or services installed in a group.
7. Material in which services are to be laid shall be sufficiently compacted to prevent the occurrence of residual consolidation.
8. **Temporary Reinstatement** is defined as the first stage of a two-stage reinstatement procedure where a D.B.M. temporary wearing course is laid over a sub-base of a granular rather than cement bound material. The wearing course shall be designed to last for a minimum consolidation period 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.
9. **Permanent reinstatement** is defined as the second stage of a two-stage reinstatement procedure where the temporary reinstatement is removed and the permanent pavement reinstatement is completed.
10. **Immediate permanent reinstatement** is defined as a one-stage reinstatement procedure where a cement bound material rather than a granular material is used as a sub-base to make up the level to the base of the road pavement and the reinstatement is completed. Immediate permanent reinstatement must be completed within two weeks of completion of the sub base.

11. Granular material shall be to Cl.804 (which is Granular Material Type B) or to Cl.806 wet-mix macadam and shall be compacted in layers not exceeding 150mm and in accordance with Cl.802. Granular material may not be used where a Road Authority specifies Immediate Permanent Reinstatement.
12. Cement bound material shall be to Cl.1038 or Cl.1039 for lean mix concrete or Cl.1043 for foamed concrete.
13. 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. Failure to meet these requirements shall cause the area of reinstatement to be extended.
14. All edges of excavated areas on concrete or bituminous footways and roadways shall be saw cut to form trimmed edges. For permanent reinstatements, a trimmed edge shall be a minimum of 100mm from the firm edge of the excavation.
15. Excavation on a road shall not be closer than 300mm to the kerbline in order to prevent undermining of the adjacent footway.
16. Service boxes or chambers shall be located away from road junctions as far as practically possible. The final locations and sizes of service boxes or chambers shall be subject to prior written approval from the Road Authority.
17. Careful consideration should be given to the route of service openings where expensive reinstatement may be required (e.g. traffic loops, special surfaces, etc.).
18. The use of a backhoe is assumed for mechanical excavation. The use of other means of mechanical excavation (e.g. trencher/top cutter) shall be subject to prior written approval from the Road Authority. The use of rubber tyred excavators is required for trenches in public roads.
19. Temporary direction signs and/or road markings required for the roadworks must be in place at all times during the work and must be removed immediately following completion of the work.
20. (a) Where road markings are removed or damaged a record of the layout and locations shall be taken by the utility/company in order to facilitate their reinstatement upon completion of the works.

All road markings shall be reinstated by the appropriate utility/company immediately after permanent reinstatement is completed. The road marking shall be carried out by a reputable lining contractor approved by the Road Authority

- (b) Where coloured surfaces or anti-skid surfaces are damaged they must be reinstated by the utility/company as part of the permanent reinstatement. Full width reinstatement must be carried out to the Road Authority's specifications.

21. Where steel plates are used they must comply with the following:

- The plates must be set in flush with the road surface
- **They must have an anti-skid surface.**
- The plates shall be fixed to the road surface (to prevent dislodgement) by means of countersunk holding down bolts. A groove is required to be made around each excavation into which the plate shall sit and be fixed.
- Consideration should be given to accidental wheel loading, where appropriate.
- The utility/company and its contractor will be responsible for the structural adequacy and safety of any such plates.

22. Road Authorities may specify minimum cover of 750 mm to services on **Non-Estate Roads**.

23. The use of compacted sand (in lieu of Clause 503 material or foam concrete) to surround service pipes shall be subject to the prior written approval of the Road Authority.

Drg. No.**Footways**

- 1 *Temporary Reinstatement - Footways*
- 2 **Permanent & Immediate Permanent** Reinstatement - Concrete Footways
- 3 **Permanent & Immediate Permanent** Reinstatement - Bituminous Macadam Footways
- 4 **Permanent & Immediate Permanent** Reinstatement - Precast Concrete Slab Footways
- 5 **Permanent & Immediate Permanent** Reinstatement - Precast Concrete Paving Block

Footways**Verges**

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

Roadways

- 7 *Temporary Reinstatement - Longitudinal Openings in Roadways*
- 8 *Temporary Reinstatement (Pavement) - Transverse Openings in Roadways*
- 9 **Permanent & Immediate Permanent** Reinstatement - Longitudinal Openings in Roadways with Surface Dressing (or Surface Dressing combined with a Bituminous Course) on a Granular Roadbase only
- 10 **Permanent & Immediate Permanent** Reinstatement - Concrete Roadways
- 11 **Permanent & Immediate Permanent** Reinstatement - Roadways with Bituminous Wearing Courses on Leanmix or DBM Roadbases
- 12 **Permanent & Immediate Permanent** Reinstatement - At Heavy Duty locations in Roadways as required by the Road Authority
- 13 **Permanent & Immediate Permanent** Reinstatement - Roadways with Precast Concrete Paving Blocks
- 14 Reinstatement of Carriageways of National roads
- 15 Reinstatement of Transverse Opening in Roadways
- 16 Reinstatement of Roadways with a Porous Asphalt Wearing Course

TEMPORARY REINSTATEMENT - FOOTWAYS

STANDARD DRAWING
No. 1

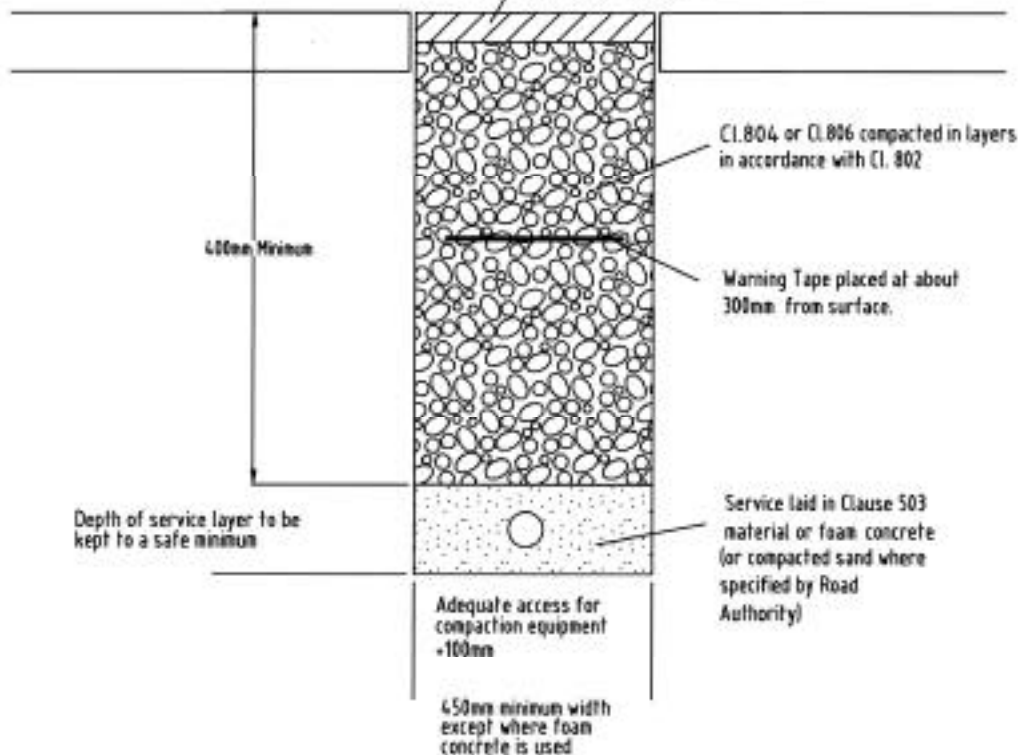
50mm compacted depth of 10 or 14mm (nominal size)
DBM to Cl. 912

or

50mm compacted depth of 20mm (nominal size) D.B.M. to
clause 906

or

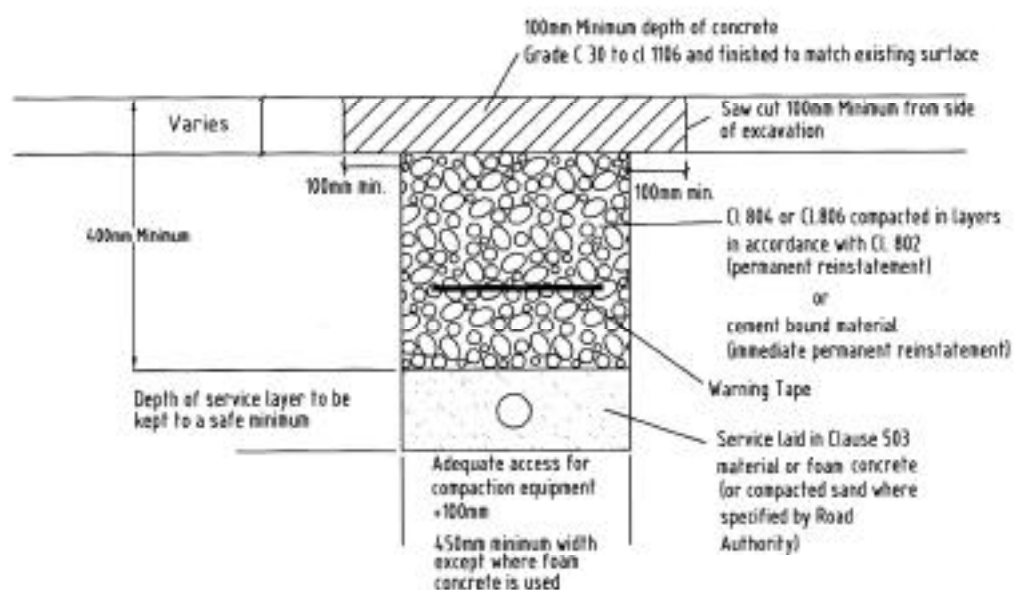
50mm compacted depth of 10mm (nominal size) cold laid
bitmac to B.S. 4987 (delayed set) - only with the road
authority's approval.



- NOTES:-
1. All edges of excavated area to be saw cut to the full cut depth.
 2. Pea gravel / Clause 503 material shall be compacted so that no residual consolidation will occur.

PERMANENT & IMMEDIATE PERMANENT REINSTATEMENT
- CONCRETE FOOTWAYS

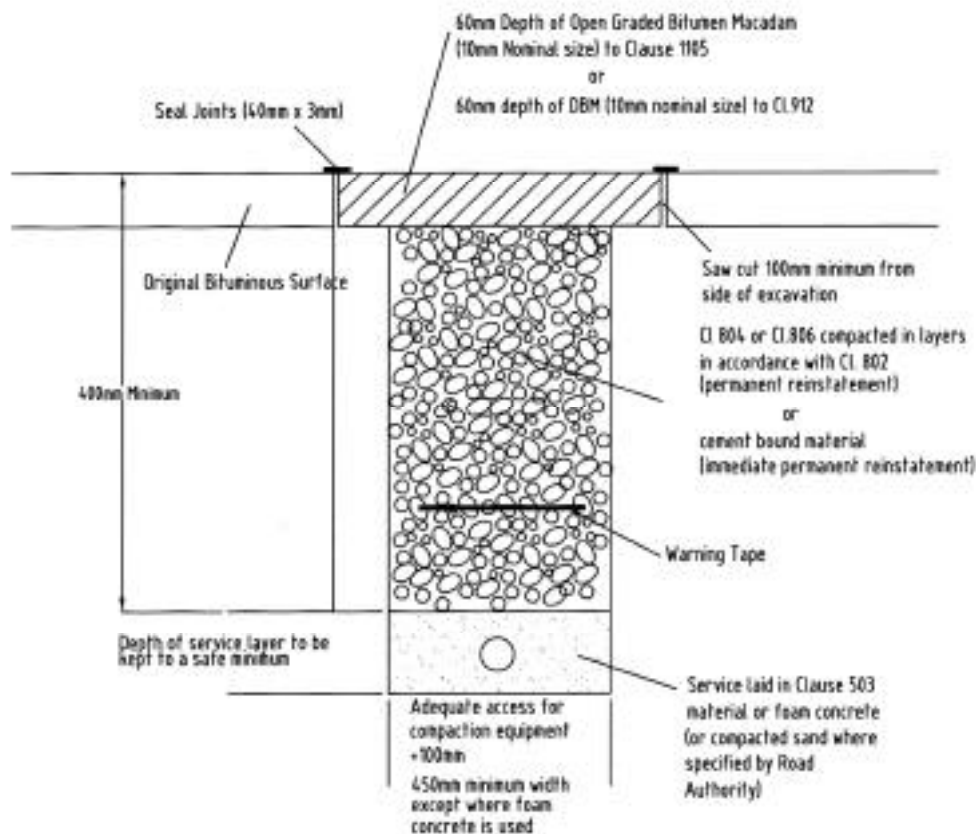
STANDARD DRAWING
No. 2



- NOTES:-
1. Reinforcing mesh (A 142 or similar approved) shall be used at the discretion of the Road Authority Engineer.
 2. Apron to be 150mm thick at driveways and 200mm thick at commercial access areas or where the footway may be subject to wheel loads.
 3. Surface finish to be similar to adjoining areas e.g. Soft brushed, printed pattern etc.
 4. Any damaged area adjacent to the opening and resulting from the excavation operation shall be included within the area to be reinstated.
 5. Expansion joints in Flexcell or other approved material to be neatly formed in straight lines at 3000mm (max) centres.
 6. A complete bay shall be reinstated where specified by the Road Authority.
 7. 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.

PERMANENT & IMMEDIATE PERMANENT
REINSTATEMENT - BITUMINOUS MACADAM FOOTWAYS

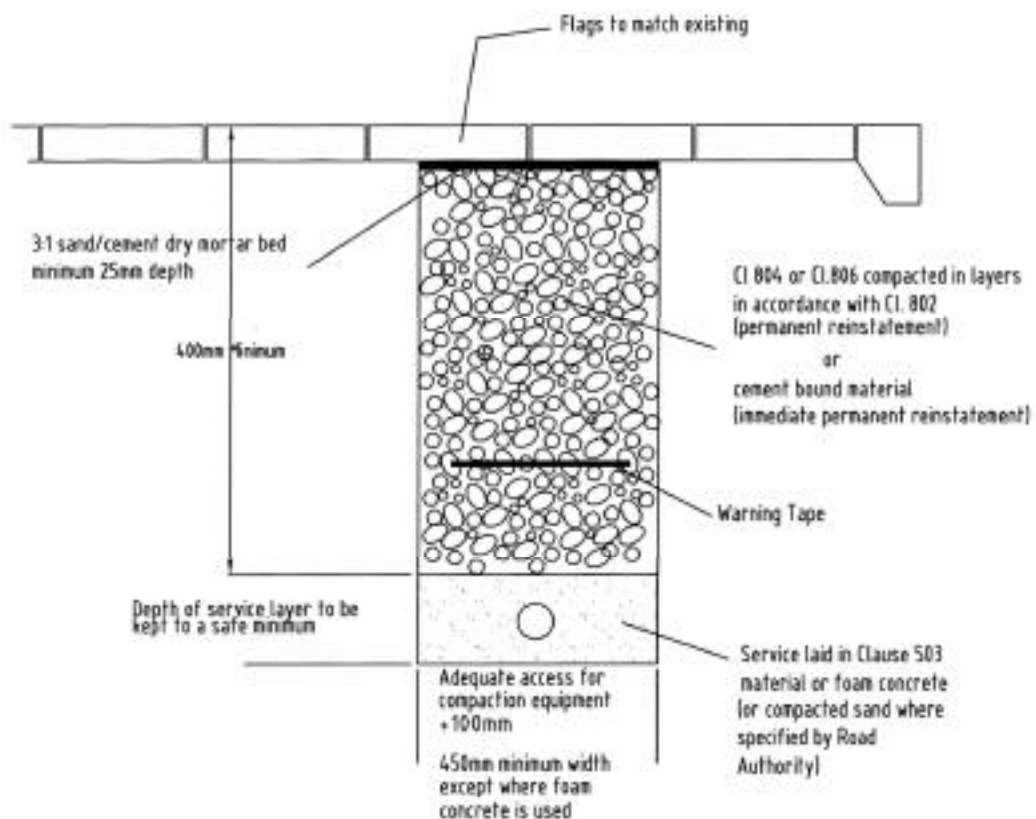
STANDARD DRAWING
No. 3



- NOTES:-
1. All edges to be saw cut a minimum of 100mm from sides of excavation.
 2. 100 C hot bitumen binder 50 pen or cold thixotropic bitumen 50 - 70 pen to be applied to all vertical cuts in accordance with B.S. 594 prior to application of bitumen macadam.
 3. 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 thickness and 40mm width.
 4. For domestic driveways the macadam surface shall be 75mm thick. For commercial access areas or where the footway may be subject to heavy loads the macadam surface shall be 100mm thick.
 5. Any damaged area adjacent to the opening and resulting from the excavation operation shall be included within the area to be reinstated.
 6. 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.
 7. The surface of lean mix shall be sprayed according to CL920 prior to application of bituminous macadam.

PERMANENT & IMMEDIATE PERMANENT REINSTATEMENT
- PRECAST CONCRETE SLAB FOOTWAYS

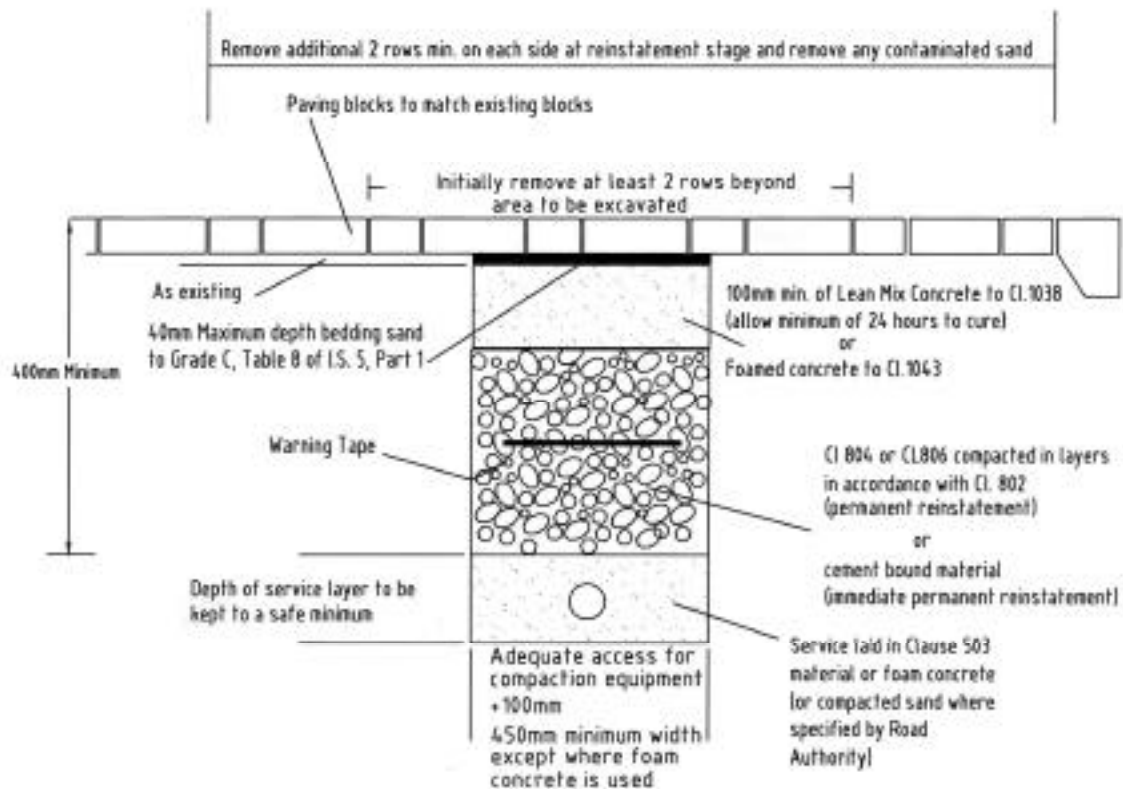
STANDARD DRAWING
No. 4



- NOTES:-
1. 3mm joints between flags to be grouted and finished flush with 3:1 sand/cement dry mortar bed (proportions by volume), Sand to Grade F of I.S. 5 Part 1.
 2. The difference in level between two adjacent flags shall not exceed 3mm.
 3. Only full flags to be used for permanent works. Part or cut flags shall only be used with the prior approval of the Road Authority Engineer.
 4. Any flag (in whole or in part) which is within the zone of influence of the excavation shall be removed and reset. The edge of the zone of influence is defined as 100mm outside the firm edge of the excavation.

PERMANENT & IMMEDIATE PERMANENT REINSTATEMENT
- PRECAST CONCRETE PAVING BLOCK FOOTWAYS

STANDARD DRAWING
No. 5

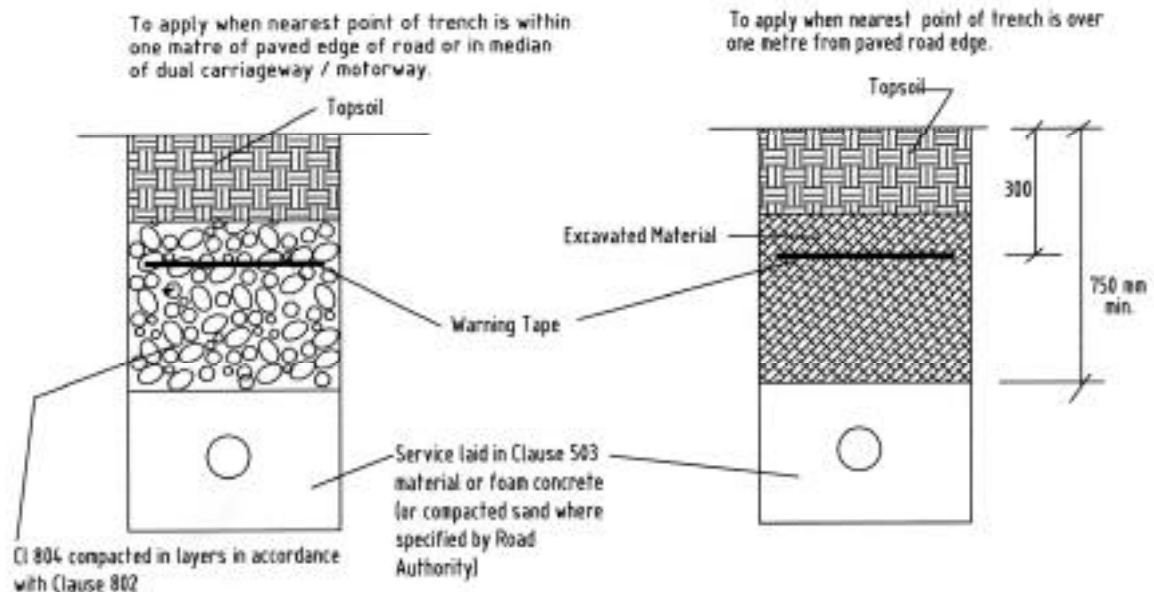


NOTES:-

1. Add fresh sand and compact with a plate compactor. Additional sand is spread to stand proud of adjacent sand.
2. Use a slightly cambered profile over width of trench to counter any tendency to settle under traffic/load.
3. Relay blocks as tightly as possible.
4. One pass of plate compactor, then sand and compact with two or three passes to ensure full interlock.
5. 2 to 5mm Joints between blocks to be filled with sand to Grade F of I.S. 5 Part 1.
6. The difference in level between adjacent blocks should not exceed 3mm.

PERMANENT REINSTATEMENT
GRASS VERGES, MEDIANS, FIELDS AND LAWNS

STANDARD DRAWING
No. 6



TRENCH DETAIL IN GRASS MARGINS

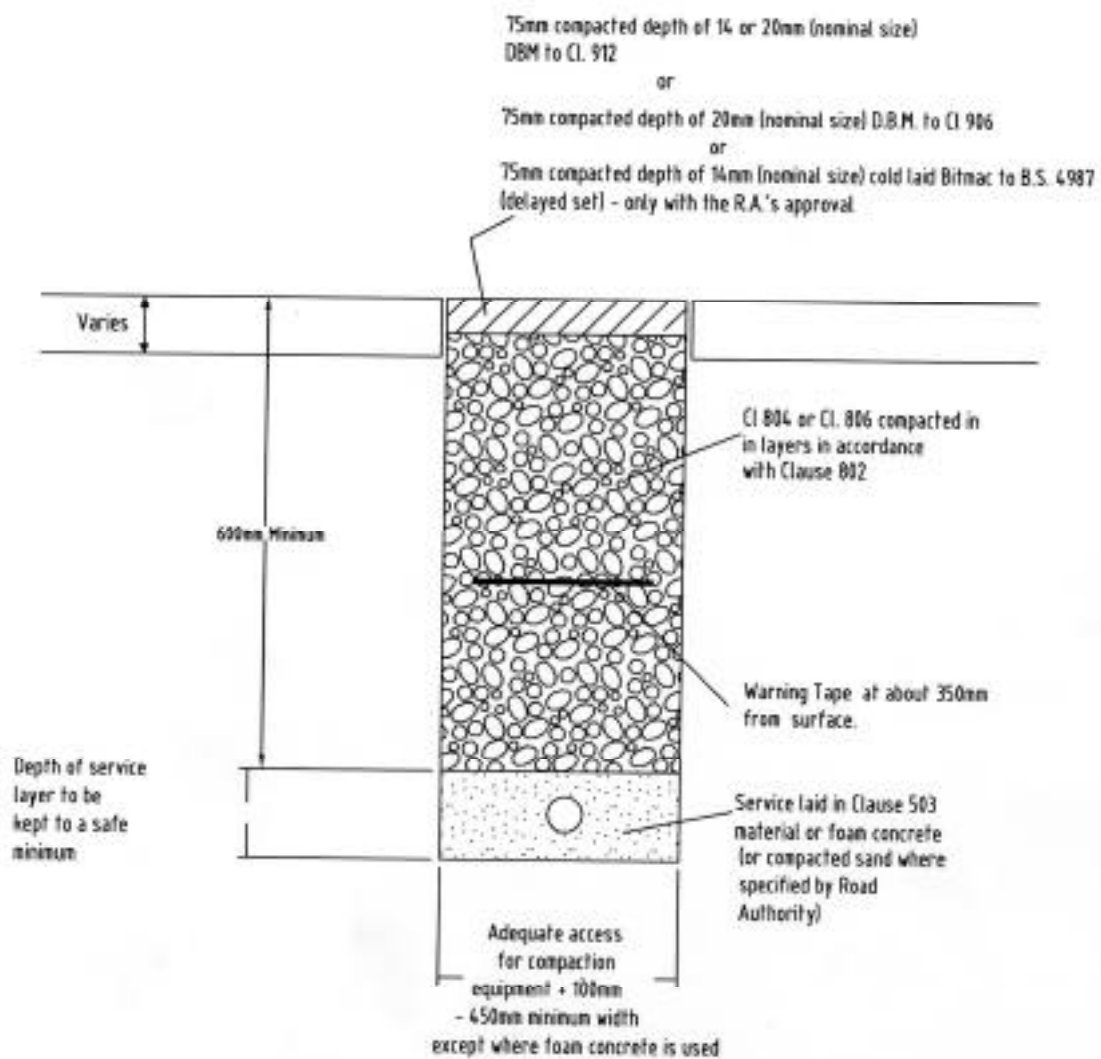
NOTES:-

1. 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.
2. 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
3. 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 thickness or existing thickness - whichever is greater. Any upstanding debris or stones exceeding 25mm dimension shall be removed.
4. 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.
5. 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.

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.

TEMPORARY REINSTATEMENT
LONGITUDINAL OPENINGS IN ROADWAYS

STANDARD DRAWING
No. 7



NOTES:

1. All edges of excavated area to be saw cut prior to excavation

TEMPORARY REINSTATEMENT (Pavement)
TRANSVERSE OPENINGS IN ROADWAYS

STANDARD DRAWING
No. 8

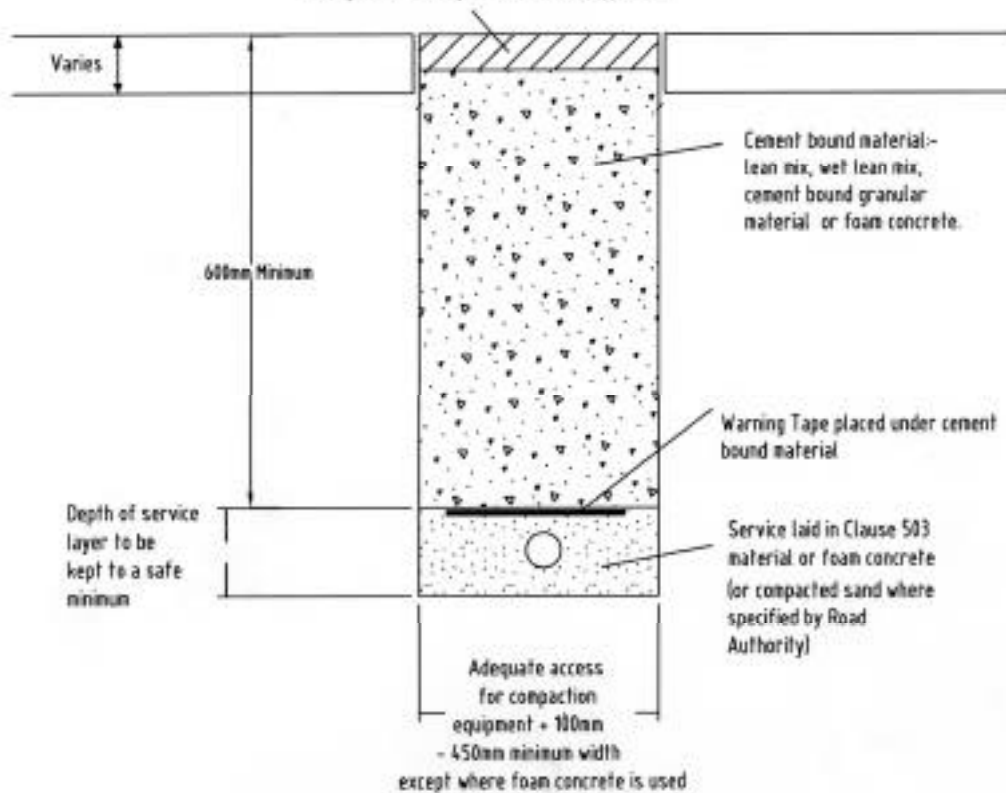
75mm compacted depth of 14 or 20mm (nominal size)
DBM to C.I. 912

or

75mm compacted depth of 20mm (nominal size) D.B.M. to C.I. 906

or

75mm compacted depth of 14mm (nominal size) to B.S. 4987
(delayed set) - only with the R.A.'s approval

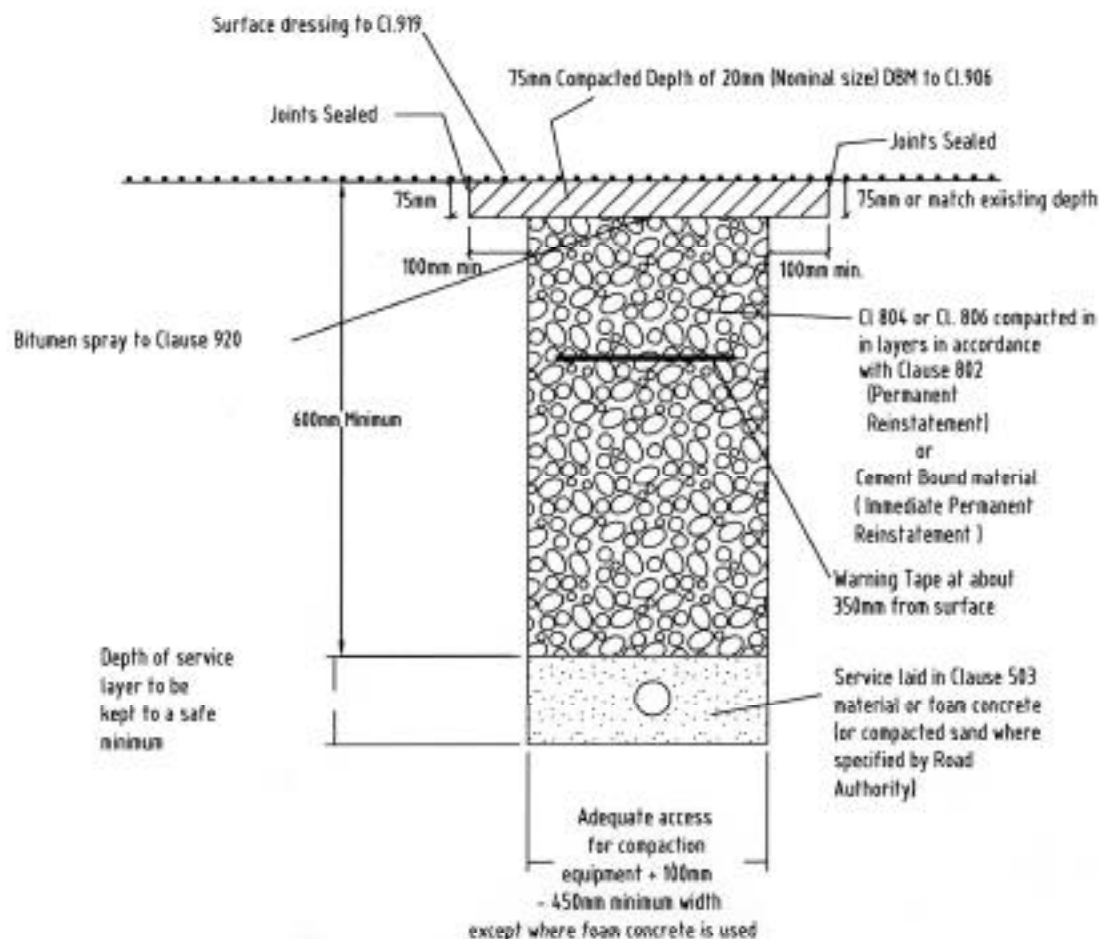


NOTES:

1. All edges of excavated area to be saw cut prior to excavation.

PERMANENT & IMMEDIATE PERMANENT REINSTATEMENT -
 LONGITUDINAL OPENING IN ROADWAY WITH SURFACE DRESSING (OR
 SURFACE DRESSING COMBINED WITH A BITUMINOUS COURSE) ON A
 GRANULAR ROADBASE ONLY

STANDARD DRAWING
 No. 9

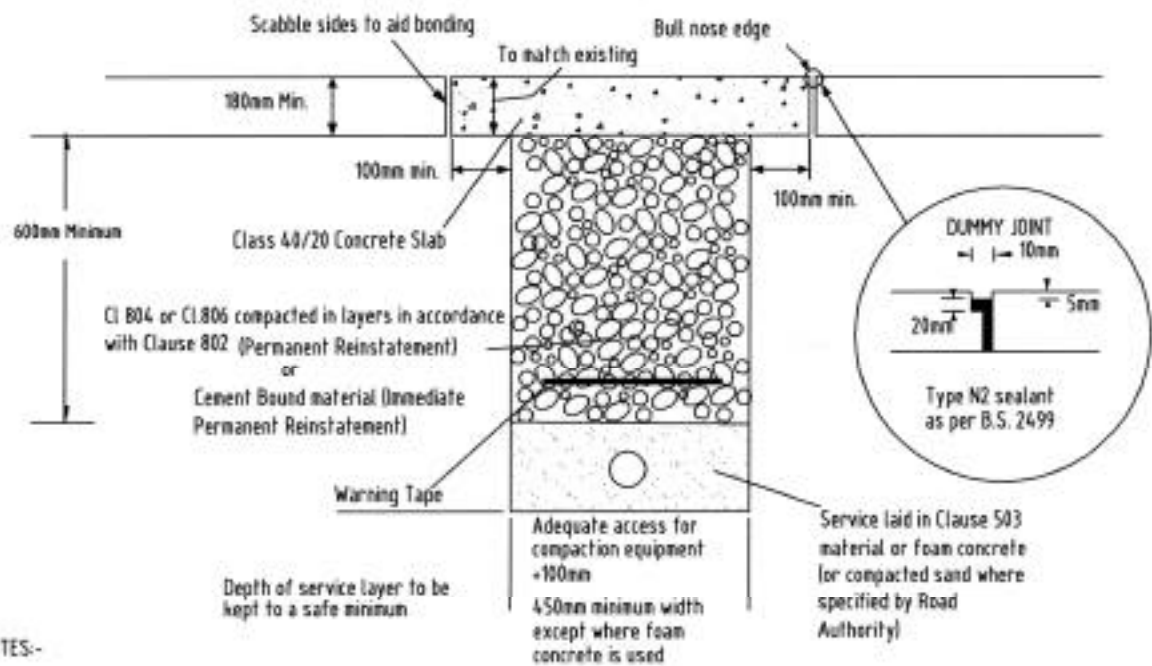


NOTES:

1. All edges of excavated area to be saw cut prior to excavation.
2. 100 C hot bitumen binder 50 pen or cold thixotropic bitumen 50 - 70 pen to be applied to all vertical cuts in accordance with B.S. 594 prior to application of bituminous materials.

PERMANENT & IMMEDIATE PERMANENT REINSTATEMENT -
CONCRETE ROADWAYS

STANDARD DRAWING
No. 10

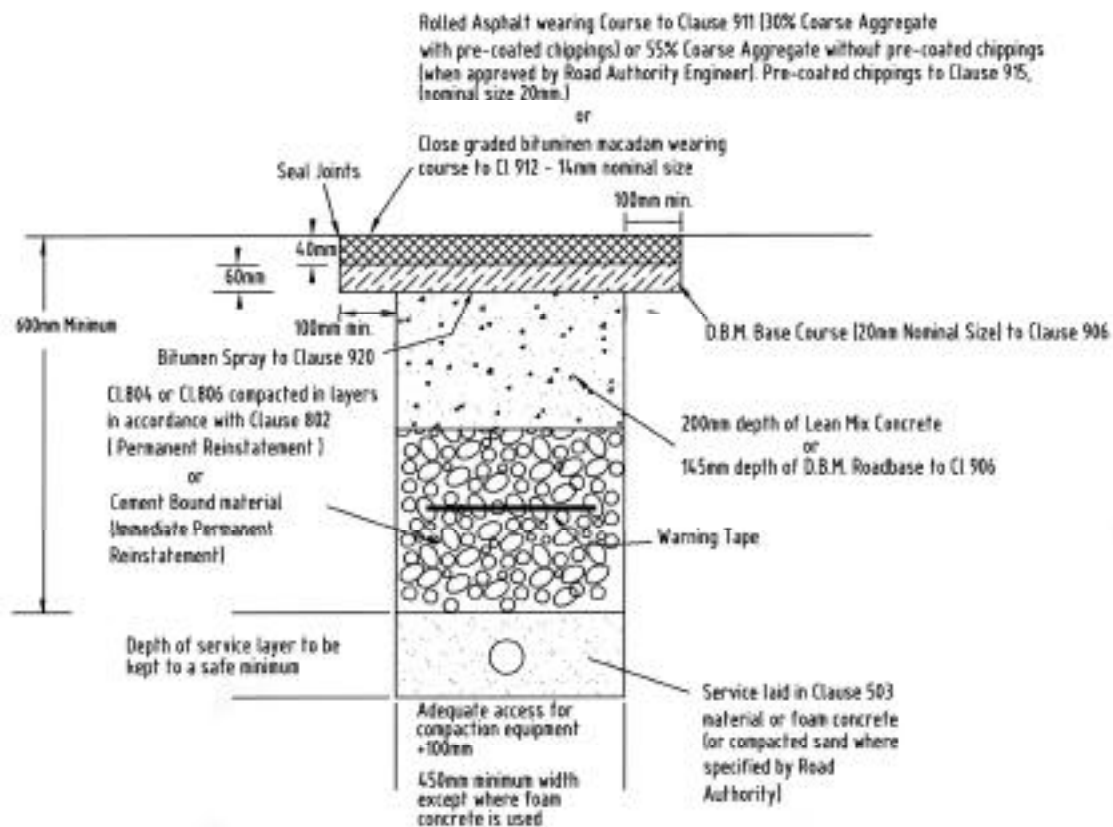


NOTES:-

1. Reinforcing mesh (A252 or similar) shall be used at the discretion of the Road Authority Engineer.
2. All edges to be saw cut to a minimum depth of 180mm in unreinforced concrete and 50mm in reinforced concrete.
3. Surface finish to be similar to adjoining areas.
4. Any damaged area adjacent to the opening and resulting from the excavation operation shall be included within the area to be reinstated.
5. 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.
6. Existing expansion joints to be constructed as 12mm expansion joints consisting of Flexcell material sealed with N2 type sealant as per B.S. 2499.
7. All joints that are removed or otherwise damaged must be replaced or reconstructed to a similar design and using equivalent materials.
8. All joints between new and existing surfaces should be dummy joints, topped up with a bitumen sealant.

PERMANENT & IMMEDIATE PERMANENT
REINSTATEMENT – ROADWAYS WITH BITUMINOUS
WEARING COURSES ON LEANMIX OR DBM ROADBASES

STANDARD DRAWING
No. 11

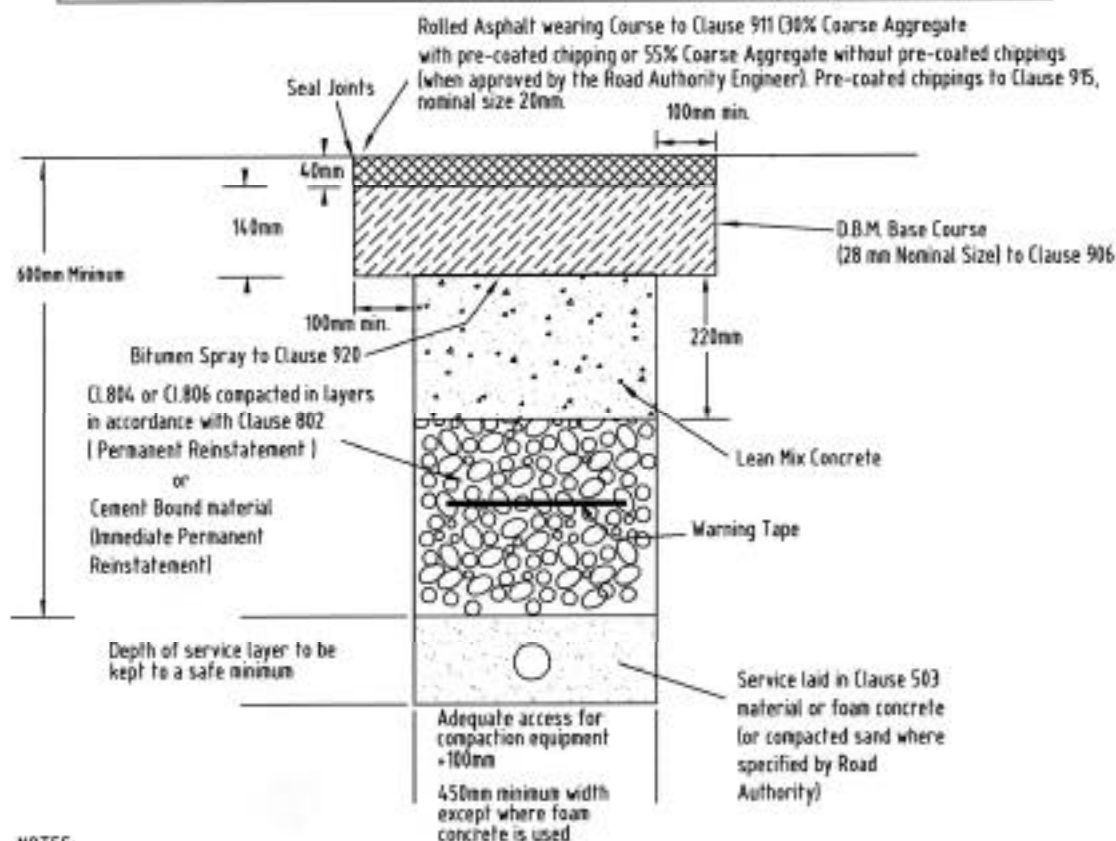


NOTES:

1. Form a second saw cut 100mm deep at a min. of 100mm from sides of excavation prior to permanent reinstatement. Where any trim lines are within 400mm of the road edge, joint, other reinstatement, or ironwork, the trim line should be extended to the interface of such situations.
2. Lean mix surface to be sprayed per Clause 920 prior to application of basecourse macadam.
3. 100 C hot bitumen binder 50 pen or cold thixotropic bitumen 50 - 70 pen to be applied to all vertical cuts in accordance with B.S. 594 prior to application of bituminous materials.
4. Joints sealed with hot bitumen and topped with fine sand / grit to get a minimum SS skid resistance value as determined by the Portable Skid Resistance Pendulum used in accordance with Road Note 27 and shall not exceed 3mm thickness and 25mm width.
5. Wearing course to match existing surfaces unless otherwise directed by Road Authority Engineer.

PERMANENT & IMMEDIATE PERMANENT REINSTATEMENT -
AT HEAVY DUTY LOCATIONS IN ROADWAYS
AS REQUIRED BY THE ROAD AUTHORITY

STANDARD DRAWING
No. 12

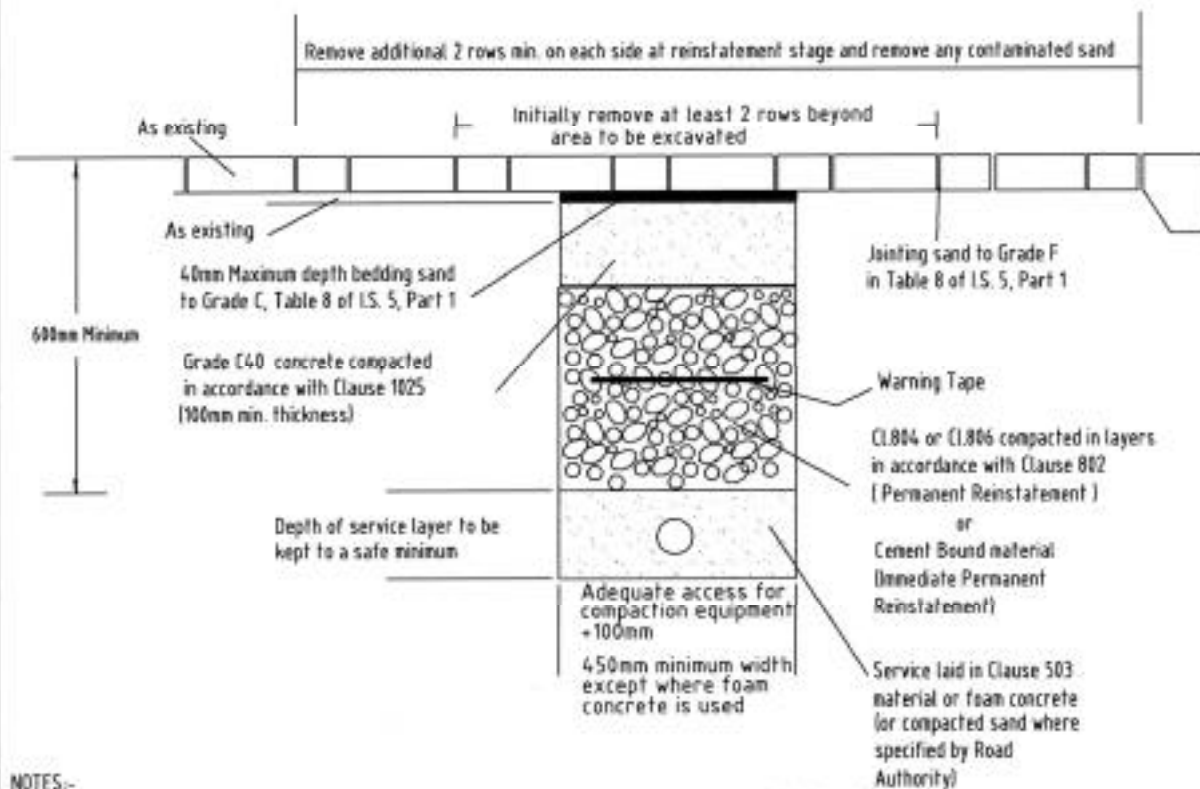


NOTES:

1. The above wearing course and road base can be replaced by 40mm rolled Asphalt Wearing Course to Clause 911 on 60mm deep D.B.M. base course to Clause 906 on 200mm of D.B.M. road base (40mm nominal size) to Clause 903.
2. Form a second saw cut 100mm deep at a min. of 100mm from sides of excavation prior to permanent reinstatement. Where any trim lines are within 400mm of the road edge, joint, other reinstatement, or ironwork, the trim line should be extended to the interface of such situations.
3. Lean mix surface to be sprayed per Clause 920 prior to application of basecourse macadam.
4. 100 C hot bitumen binder 50 pen or cold thixotropic bitumen 50 - 70 pen to be applied to all vertical cuts in accordance with B.S. 594 prior to application of bituminous materials.
5. 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 thickness and 25mm width.
6. Wearing course to match existing surfaces unless otherwise directed by the Road Authority Engineer.

PERMANENT & IMMEDIATE PERMANENT REINSTATEMENT -
ROADWAYS WITH PRECAST CONCRETE PAVING BLOCKS

STANDARD DRAWING
No. 13



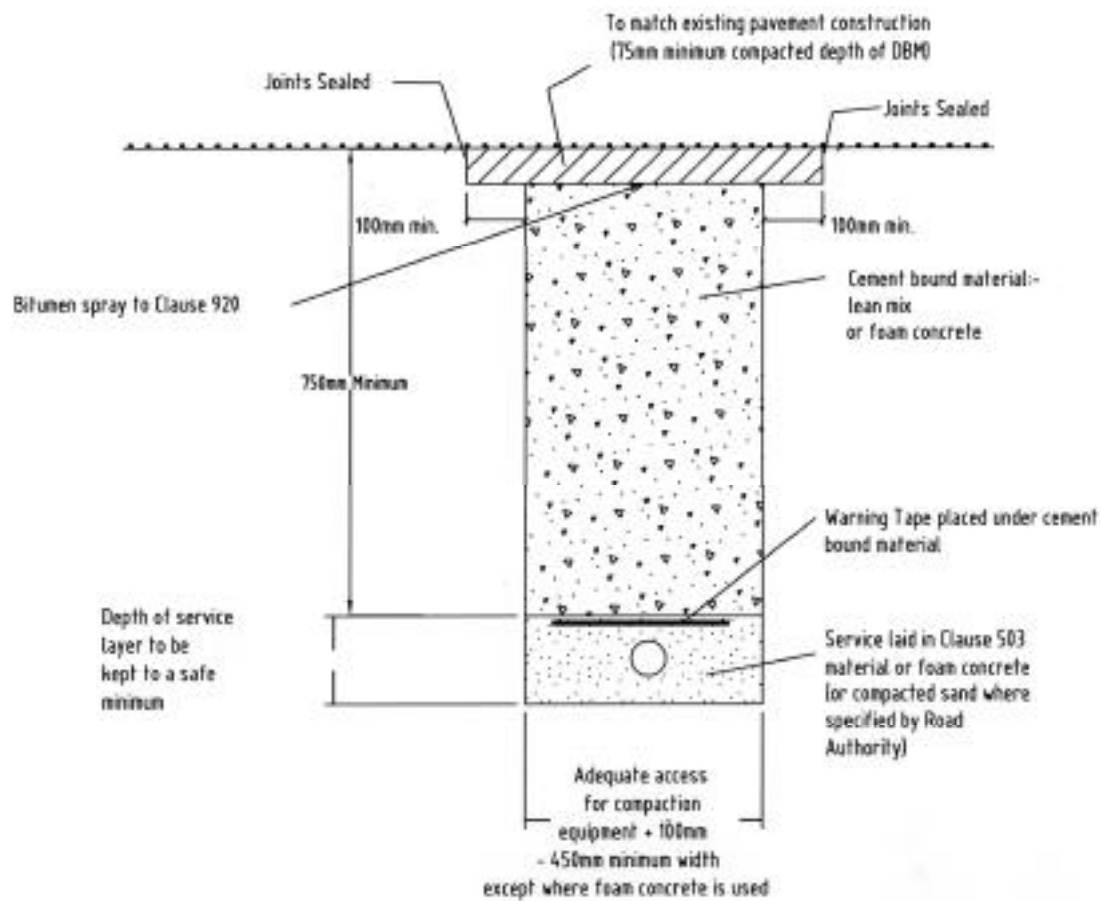
NOTES:-

1. Add fresh sand and compact with a plate compactor. Additional sand is spread to stand proud of adjacent sand.
2. Use a slightly cambered profile over width of trench to counter any tendency to settle under traffic/load.
3. Relay blocks as tightly as possible.
4. One pass of plate compactor, then sand and compact with two or three passes to ensure full interlock.
5. 2 to 5mm joints between blocks to be filled with sand to Grade F of IS. 5 Part 1.
6. The difference in level between two adjacent blocks shall not exceed 3mm.

REINSTATEMENT OF CARRIAGEWAYS OF NATIONAL

ROADS

STANDARD DRAWING
No. 14

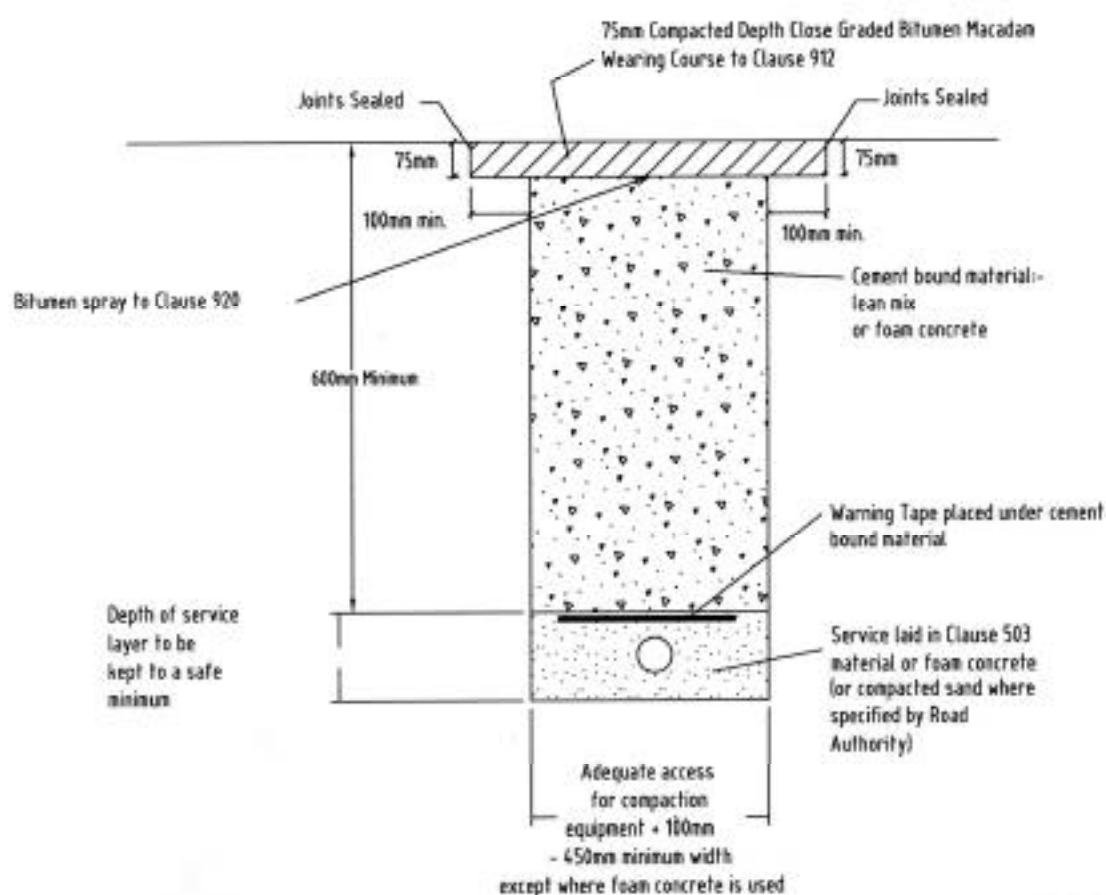


NOTES:

1. All edges of excavated area to be saw cut prior to excavation.

REINSTATEMENT OF TRANSVERSE OPENING IN ROADWAYS

STANDARD DRAWING
No. 15

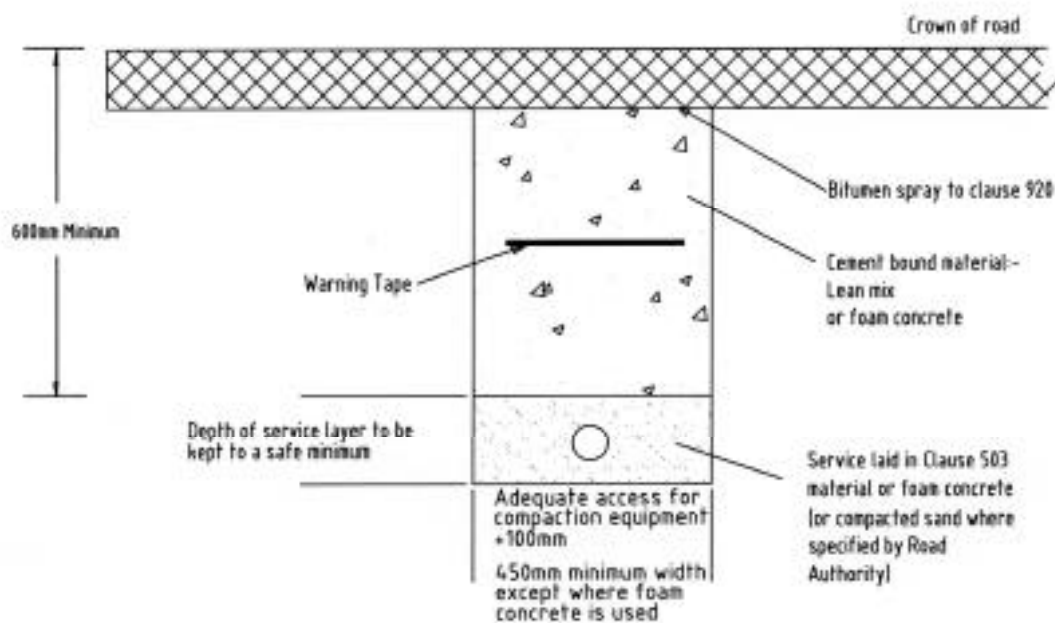


NOTES:

1. All edges of excavated area to be saw cut prior to excavation.
2. All works to be in accordance with the NRA Specification for Road Works.
3. Control and signposting of roadworks should be in accordance with Traffic Signs Manual as published by the Department of the Environment.

REINSTATEMENT OF ROADWAYS WITH A POROUS
ASPHALT WEARING COURSE

STANDARD DRAWING
No. 16



NOTES:- 1. All edges of excavated areas to be saw cut prior to excavation.