North Yorkshire County Council

HIGHWAYS AND TRANSPORTATION DEPARTMENT

Your Reference:

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24 July 1995

Dear Sir

SPECIFICATION FOR HOUSING AND INDUSTRIAL ESTATE ROADS AND PRIVATE STREET WORKS - 2ND EDITION

The second edition of the Specification for Housing and Industrial Estate Roads and Private Street Works has been produced and it supersedes the first edition printed in December 1985.

The format of the new guide is such that future full publications of the document will not be necessary and that addenda and/or new pages will be issued as necessary to take into account any new developments or changes in government guidelines. A charge will be made to cover printing and packaging.

If you wish to receive these revisions I shall be pleased if you will fill in the enclosed form. This will place you on a database from which I will be able to ensure that updates are sent.

Yours faithfully

TEAM LEADER
DEVELOPMENT CONTROL

My Ref: 70/220

NORTH YORKSHIRE COUNTY COUNCILS
SPECIFICATION FOR HOUSING AND INDUSTRIAL ESTATE ROADS
AND PRIVATE STREETWORKS – 2nd EDITION

I wish to be sent update pages of the Specification as and when they become available. I understand that I will be notified of your reasonable costs in printing and postage in this matter.

Name: _____

Address: _____

_____

_____

_____

Signed: _____

Date: _____

To: Development and Control Section
Environmental Services
County Hall
NORTHALLERTON
DL7 8AH

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APPENDICES

1.0 PRELIMINARIES

This specification applies to prospective Developers when constructing estate roads. Constructional details are generally based on the requirements of the Department of Transport Specification for Highway Works and on the requirements of DMRB Vol 7 "Structural Design of New Road Pavements" including any subsequent Amendments. Any points which may arise and which are not fully covered shall be determined by the County Surveyor. In Conservation Areas, alternative materials may be permitted subject to the written approval of the Engineer.

This Specification shall apply to any carriageway, footway, margin, verge, footpath, surface water highway drainage system, service provisions and street lighting being constructed or installed as part of a residential or industrial development and which the Highway Authority will adopt as a highway maintainable at the public expense.

1.01 DEFINITIONS

The Council:
means the **North Yorkshire County Council** or its agent authorities listed below:-

Harrogate Borough Council
Scarborough Borough Council
York City Council

The Engineer:
means the County Surveyor of the North Yorkshire County Council or in the cases of Harrogate and Scarborough, the Director of Technical Services and for York the Director of Engineering Services.

The Developer:
means the person or company by or on whose behalf the works are carried out.

The Works:
means all construction under, forming part of, or servicing the street to be adopted as a highway maintainable at the public expense.

1.02 APPROVED DRAWINGS

The whole of the works shall be carried out in conformity with the plans, sections and detailed drawings approved by the Engineer. No amendment shall be made to the approved drawings except with the written agreement of the Engineer. A copy of the approved drawings and this specification shall be available on the site at all times.

1.03 DESIGN OF THE WORKS

The design of the works shall be the responsibility of the Developer who should have due regard to the advice in this document, the current Department of Transport and Transport Research Laboratory recommendations and reports and to the current practices of the Engineer's Department. If in doubt as to the standard to be applied in any particular case the Developer is advised to consult the Engineer at an early stage of the design. Residential developments shall be laid out in accordance with the Residential Highway Design Guide.

1.04 DESIGN OF ROAD LIGHTING

Developers are to ensure that any road lighting design shall satisfy either BS 5489 PART 2 1987; or PART 3 1989. Developers are recommended to consult with the Council's Road Lighting Engineer at an early design stage. Section 7.0 gives general guidance on specifications of equipment, and electricity supply arrangements for road lighting.

1.05 DIMENSIONS

Unless stated to the contrary, the thickness of material described, in this Specification, shall mean the finished or compacted thickness.

1.06 STANDARDS

01 Works, goods and materials shall comply with the standards specified in this document.

02 In all cases the British Standards referred to in this Specification shall be the respective editions current at the date of **commencement** of construction incorporating all British Standards Institution amendments current on that date.

03 Where appropriate, materials shall be marked with the licence number or BSI kite mark.

04 Except where the specified Standard implements or is technically equivalent to a Harmonised European Standard or to a European Standard adopted for use within the European Communities after 31 December 1985, any requirement for goods or materials to comply with the specified standard shall be satisfied by compliance with;

i. a relevant standard or code of practice of a national standards body or equivalent body of any member state of the European Communities; **or**

ii. a relevant international standard recognised for use in any member state of the European Communities; **or**

iii. a relevant specification acknowledged for use as a standard by a public authority of any member state of the European Communities; **or**

iv. traditional procedures of manufacture of any member state of the European Communities where these are the subject of a written technical description sufficiently detailed to permit assessment of the goods or materials for the use specified; **or**

v. a European Technical Approval (ETA) issued in accordance with the Construction Products Directive 89/106/EEC (or, until procedures are available for the issue of ETAs, a specification sufficiently detailed to permit assessment) for goods or materials of an innovative nature or subject to innovative processes of manufacture and which fulfill the purpose provided for by the specified standard

provided that the proposed standard, code of practice, specification, technical description or European Technical Approval provides, in use, levels of safety, suitability and fitness for purpose equivalent to those required by the specified standard in so far as they are not inconsistent with the 'Essential Requirements' of the Construction Products Directive (89/106/EEC). This clause applies also to works only in so far as the means of carrying out such works are indivisibly associated with the goods or materials for which an alternative standard, code of practice, specification or technical description is proposed.

1.07 QUALITY ASSURANCE SCHEMES

01 Where any work, goods or materials to be used in the Works are the subject of a quality management scheme or product certification scheme listed in Appendix B only work, goods or materials conforming with such a scheme shall be used and the Developer shall in each case submit to the Engineer a copy of the certificate of conformity affirming compliance with the scheme, unless the goods or materials bear a prescribed certification mark.

02 The requirement for any goods or materials to be manufactured or supplied subject to a quality management scheme or product certification scheme listed in Appendix B shall be satisfied by compliance with an equivalent quality management scheme or product certification scheme of any member state of the European Communities, provided that the proposed scheme is designed to ensure in use levels of safety, suitability and fitness for purpose equivalent to those provided for by the scheme specified. this sub-clause applies also to

works only in so far as the means of carrying out such works are indivisibly associated with the goods or materials for which an alternative quality management scheme or product certification scheme is proposed.

1.08 BRITISH BOARD OF AGRÉMENT ROADS AND BRIDGES CERTIFICATES

01 Where any work, goods or materials are required to have a British Board of Agrément Roads and Bridges Certificate, only works goods or materials so certified shall be used and the Developer shall in each case submit to the Engineer a copy of the certificate. Types of work, goods and materials subject to such requirements are listed in Appendix C.

02 The requirement for types of goods or materials listed in Appendix C to have a British Board of Agrément Roads and Bridges Certificate shall be satisfied by goods or materials having an equivalent Agrément certificate issued in any member state of the European Communities, provided that the goods or materials covered by such certificate offer in use levels of safety, suitability and fitness for purpose equivalent to those incorporated in the British Board of Agrément Roads and Bridges Certificate. This sub-clause applies also to works only in so far as the means of carrying out such works are indivisibly associated with the goods or materials for which an alternative Agrément certificate is proposed.

1.09 SAMPLES

01 Before commencing the works, the Developer shall deposit with the Engineer samples of any materials the Engineer may require. The Developer shall obtain approval to the samples before commencing the work or during the course of the works prior to the materials being used. The materials used must be at least equal in every respect to the approved samples. The Engineer may at his discretion from time to time require the Developer to provide material samples free of charge for testing as the Engineer may direct.

02 Materials bearing the British Standard Kite Mark will not generally require initial or routine sampling and testing. A list of materials subject to Kite Mark certification is contained in Appendix B.

1.10 TESTING

01 The Developer shall be responsible for the payment of all charges for tests on materials and in the event of failure he shall replace any faulty materials.

02 A copy of the Engineer's required testing schedule is available on request.

1.11 CONDEMNED MATERIALS

Any materials condemned by the Engineer as unfit for use in the works shall be removed from the site immediately.

1.12 FACILITIES FOR TESTS ON MATERIALS

The Developer, shall, when required, grant every facility to the Engineer for taking such samples, cores, specimens and carrying out any other test on site. He shall provide all attendance and samples, cores and specimens and make good after the tests free from charge.

1.13 STATUTORY UNDERTAKERS APPARATUS

01 The Developer shall take all necessary measures required by the Engineer or Statutory. Undertaker for the protection of existing mains, pipes, cables and other apparatus during the progress of the works and shall ensure that all requisite notice is given to the Statutory Undertaker for the protection concerned.

02 Where new mains are to be laid within the works the relative positions in footpaths and footways are to be in accordance with the recommendations set out in the National Joint Utilities Group Publication "Provision of Mains and Services by Public Utilities on Residential Estates". See Standard Detail No.D1.

1.14 CLEANLINESS OF THE HIGHWAY

01 All public highways including carriageways, footways, footpaths, bridleways and verges used by the Developer shall be kept clean, free from dust, mud and debris of any description to the satisfaction of the highway authority or the police.

02 The Developer shall employ such equipment, mechanical or otherwise, as is necessary to clean the highway and/or the wheels of vehicles.

03 The Developer's attention is drawn to Sections 148 and 149 of the Highways Act, 1980.

1.15 NOTIFICATION OF COMMENCEMENT OR RECOMMENCEMENT OF WORKS

The Developer shall inform the Engineer in writing at least seven days prior to the works commencing on site. If the works on site are to be stopped for a period exceeding 10 working days then the Developer shall inform the Engineer of his intentions to stop work and shall also give at least 3 days notice in writing of his intention to restart.

1.16 NOTIFICATION OF WORK REQUIRING INSPECTION

01 The Developer shall give the Engineer at least 48 hours notice of his request for the inspection of any work which is to be covered during weekday construction.

02 The Developer shall give the Engineer at least 4 days notice of any proposed weekend working.

03 Failure to give such notice could result in the requirement for the later exposure of the work and its removal if this is considered by the Engineer to be necessary.

1.17 QUALITY OF WORKMANSHIP

Where appropriate British Standard Specifications or British Codes of Practice or equivalent lay down standards or workmanship, these are to be recognised as the minimum acceptable standards. Where standards do not exist the workmanship throughout shall be to the minimum good practice of the respective trade or class.

1.18 QUALITY OF MATERIALS

All materials for use in the works shall, unless otherwise specified, comply with the latest relevant Specifications of the British Standards Institution or equivalent hereinafter referred to as the B.S.

1.19 TEMPORARY TRAFFIC SIGNS

01 The Developer shall erect, maintain and, where appropriate, light all traffic signs and traffic control signals necessary for the direction and control of traffic on the site and on the approaches to the site . The signs shall conform to the current Traffic Signs Manual, Chapter 8 "Traffic Safety Measures and Signs for Roadworks and Temporary Situations", 1991 (published by HMSO). The signs shall be reflectorised and be kept clean and legible at all times.

02 The developer is reminded that Chapter 8 states:-

"Highway Authority contractors and Statutory Undertakers have a civil law liability to warn road users of obstructions on the highway caused in connection with road works.

03 In the event of single way traffic becoming necessary on the approaches to the site the Developer shall submit his proposals for the control of the traffic to the Engineer with a minimum of seven days notice. No interruption to the two way flow of traffic shall commence without the written approval of the Engineer to the traffic control proposals.

1.20 SITE SAFETY

01 The Developer shall take full responsibility for the adequate stability and safety of all site operations and methods of construction which shall comply fully with the current requirements of the Health & Safety at Work Act (1974) and other subsequent documents.

02 The Developer shall ensure that all excavations on the site and on the approaches to the site are correctly signed, fenced and supported at all times.

03 Any request by a developer to take advantage of superior ground conditions may be considered where significant increases in CBR are available. Any such request must be accompanied by an approved site investigation report and will, if approved, require additional Engineer supervision with consequent additional costs.

1.21 UNDERSTANDING OF THE SPECIFICATION

If the Developer is unclear as to the meaning or intent of any item of this specification he should consult the Engineer and obtain a decision prior to work proceeding. A copy of the Specification should be made available on site by the Developer at all times.

1.22 SETTING OUT OF THE WORKS

The lines and levels of formation, drainage and carriageway shall be carefully set out and frequently checked by the Developer to ensure the correct widths, gradients and cross-sections are everywhere obtained.

1.23 COMPLETION OF THE WORKS

The Developer shall inform the Engineer in writing when the works are completed following which an inspection will be made and if appropriate, a completion date agreed by the Engineer.

1.24 PERIOD OF MAINTENANCE

01 After the agreed completion date of the works, a period of maintenance shall elapse before the adoption of the works is considered by the Engineer. The period of maintenance shall normally be twelve months but in exceptional circumstances this may be lengthened or shortened at the Engineer's discretion.

02 The Developer is responsible for making good at his own expense any defects or damage arising during the period of maintenance.

1.25 ACCESS TO NEW PROPERTIES

01 Private driveways must be designed to provide a satisfactory connection with the highway without any alteration to the footway shown on Standard Detail B7.

02 Developers are required by the terms of their Section 38 Agreement (Highways Act, 1980) to provide a carriageway and footway constructed at least to basecourse macadam level or its equivalent and road lighting from an adopted public highway up to and including the frontage of any completed property prior to its occupation.

1.26 SITE INVESTIGATION

01 Where requested by the Engineer the Developer shall undertake a Site Investigation, carried out by a competent Site Investigation Company to provide adequate information for the design of adoptable areas.

02 The Developer shall supply to the Engineer an analyst's report on the sulphate content of the site's sub-grade and its classification in accordance with BRE Digest 363.

03 Any request by a developer to take advantage of superior ground conditions may be considered where significant increases in the CBR are available. Any such request should be supported by an approved site investigation report and, if approved, will require additional supervision by the Engineer and consequent additional charges.

1.27 OPENINGS IN THE HIGHWAY

The Developer should note that when it is necessary to make any connection or break into any highway outside the site boundary, then Section 50 of the New Roads and Streetworks Act 1991 will apply. A licence will have to be obtained from the Highway Authority and the prescribed fee paid. This licence and the inspection fee are additional to payments made in connection with Section 38 Agreements.

2.0 DRAINAGE AND SERVICE DUCTS

2.01 PIPES FOR DRAINAGE

Pipes for drainage shall comply with Table 2.01. Pipes and fittings other that those included in Table 2.01 shall be permitted provided that they hold a current British Board of Agrément Roads and Bridges Certificate stating that they are a suitable alternative for the usage specified in Table 5/1 of the Specification for Highway Works.

TABLE 2.01 : PIPES FOR DRAINAGE

Material	Usage	Standard	Particular Requirements
Vitrified Clay	Foul Drains	BS 65 or BS EN 295	"Normal" pipes as defined in BS 65
	Surface Water Drains	BS 65 or BS EN 295	"Normal" or "Surface Water" pipes as defined in BS 65
	Filter Drains	BS 65	Unperforated not exceeding 2.0 m in length with spigot and socket open joints or perforated with flexible mechanical joints.
Concrete	Foul and Surface Water Drains	BS 5911: Part 100 (ordinary reinforced or unreinforced)	
	Surface Water Drains	BS 5911: Part 110	Partly watertight joints to be used.
	Filter Drains	BS 5911: Part 114 (Porous Pipes) BS 5911: Part 110 (Ogee Pipes)	 Perforated pipes in accordance with the specification.
PVC-U (Unplasticised Poly Vinyl Chloride)	Foul & Surface Water Drains	BS 4660 or BS 5481	
	Filter Drains	BS 4660 or BS 5481	Perforations with not less 1000 mm^2 of holes per metre. than The perforations shall not reduce the pipe stiffness by more than 5%. Circular perforations not greater than 10 mm nor less than 3 mm in dia. or rectangular slots not greater than 4 mm not less than 0.6 mm in width.

continued

TABLE 2.01 Continued

Material	Usage	Standard	Particular Requirements
Plastics	Surface Water Drains	BS 4962	Unperforated with watertight joints and with an ultimate pipe stiffness of (STES) In excess of 1400 N/m² and a resistance to impact complying with BS 4962 except that the striker used in the test shall have a mass of 1 kg and a 25 mm hemispherical radius.
	Filter Drains	BS 4962	As Above
	Subsoil Field Drains	BS 4962	

2.02 JOINTING OF PIPES

01 Rigid joints shall mean joints made solid by caulking the sockets, or bolting together flanges integral with the pipes. Flexible joints shall mean joints made with deformable rings or gaskets held between pipe spigots and sockets, sleeves or collars.

02 Joints in surface water drains shall be watertight complying with Sub-Clause 3 of this Clause or partly watertight complying with Sub-Clause 4 of this Clause. Foul drains shall have watertight joints. Filter drains shall have joints complying with Sub-Clause 6 of this Clause. Ducts need not have watertight joints.

03 Watertight joints shall comply with the appropriate British Standards, the manufacturer's instructions and the following:-

i Rigid joints shall be used only with the approval of the Engineer. Spigots and sockets or rigid joints may be caulked with tarred rope yarn or equivalent and the socket completely filled with mortar designation (i) complying with Clause 8.04 a fillet of mortar being worked around the socket extending for a length of not less than 50mm from the face of the socket. Iron pipes with open sockets shall have rigid joints caulked with lead wool or equivalent.

ii Joints in UPVC pipes shall not be made with plastic solvent.

iii Flexible mechanical joints may be used with surface water pipes complying with BS 65 provided that the performance requirements of BS 65 are fulfilled.

iv Joints for cast iron pipes to BS 437 shall comply with BS 6087.

v Joints in plastic pipes to BS 4962 shall comply *with BS 4962.*

04 Partly watertight joints for surface water drains shall be British Standard joints or non-British Standard Joints. Push fit joints shall have a register to ensure that the pipe is fully pushed into the joint.

05 Joints in pipes for filter drains shall comply with the appropriate British Standard and with the following.

i. Non-porous and unperforated concrete and clay pipes with spigot and socket, rebated or ogee joints shall be laid with unsealed joints and with a gap of 10mm between the end of the pipe and the inner end of the socket or rebate. The pipes shall be supported with tarred rope yarn or equivalent flexible jointing material within the sockets over the lower third of the circumference so that there are no vertical steps between one pipe and another. Such pipes shall only be used with Type B filter material.

ii. The ends of perforated, castellated or porous concrete pipes with rebated joints and perforated clayware pipes with rebated or with flexible sleeve joints shall be pushed tightly together. The width of slots measured along the length of the pipeline formed by jointing castellated pipes shall not exceed 10mm.

iii. Perforated or slotted UPVC pipes with spigots and sockets or sleeves may be dry-jointed or jointed as described in Sub-Clauses 03 and 04 of this Clause.

iv. Other perforated pipes shall be jointed as unperforated pipes of the same material.

06 Joints in pipes for service ducts shall comply with the appropriate British Standard and with the following:-

i. Pipes for ducts shall be jointed so that no silt, grit, grout or concrete surround is able to enter the duct. Pipes with push-fit joints shall have a register to ensure that the pipe is fully pushed into the joint.

ii. Joints in pipes to BS 3506 or BS 3505 shall comply with BS 4346 Part 2.

2.03 PIPE BEDDING MATERIAL FOR SURFACE WATER AND SUB-SOIL DRAINS

Unless otherwise approved, materials for pipe bedding or surround shall be a granular material, natural crushed gravel or rock. The water soluble sulphate content shall not exceed 1.9 g of sulphate (expressed as SO^3) per litre when tested in accordance with BS 1377 Part 3 and the material shall be graded within the following range:-

TABLE 2.03 :PIPE BEDDING MATERIAL

BS SIEVE SIZE	PERCENTAGE BY MASS PASSING
37.5 mm	100
20.0 mm	95-100

2.04 BACKFILLING MATERIAL FOR SUB-SOIL DRAINS

Sub-soil drains shall be surrounded and back filled with free draining filter material in accordance with the specification for Type B filter material in the Department of Transport Specification for Highway Works and graded as to the table given below.

TABLE 2.04 : TYPE B FILTER MATERIAL

BS SIEVE SIZE	PERCENTAGE BY MASS PASSING
63 mm	100
37.5 mm	85-100
20 mm	0-25
10 mm	0-5

2.05 DUCTS

Service Ducts shall have a smooth internal bore without any sharp edges to the ends of the pipes. They shall be constructed of any of the materials in Table 2.05 and shall be bedded and surrounded with a minimum of 100mm of class ST4 concrete to BS 5328.

TABLE 2.05 : PIPES FOR DUCTS

MATERIAL	STANDARD	PARTICULAR REQUIREMENTS
Vitrified Clay	BS 65	Plain ended self aligning flexible sleeve jointed with internal ends radiused to 3 mm minimum.
Iron	BS 4772 (Ductile Iron)	
PVC-U	BS 4660 or BS 5481 or BS 3505 (Class C) or BS 3506 (Class C)	When pipes to BS 3505 (Class C) or BS 3506 (Class C) are used, joints shall comply with BS 4346: Part 2

2.06 SUB-SOIL DRAINS

01 A proper trapped system of sub-soil drainage must be constructed where:-

i the winter height of the water table is within 600mm of the formation level;

or

ii the sub-soil is unstable because it is waterlogged;

or

iii springs, drains or watercourses are encountered;

or

iv there is likelihood of water running off or out of adjacent land, particularly land at a higher level.

02 Sub-soil drains shall be accurately laid true to line and level. The gradients shall be sufficient to produce a self cleansing velocity of 0.75 metres per second with the pipe running at full bore.

03 Drains shall be properly linked with junction pipes and discharged into trapped catchpits, sump manholes or trapped road gullies with a minimum sump depth of 300mm before discharging into the surface water drainage system.

2.07 EXCAVATION FOR DRAINS

01 Trenches shall be excavated to sufficient depth and width to enable the pipe to be laid together with the specified bedding or concrete surround. They shall be of width not exceeding the outside diameter of the pipe plus 600mm nor less than the outside diameter of the pipe plus 300mm unless approved in writing by the Engineer.

02 Trench sides shall be adequately supported at all times and, unless otherwise approved by the Engineer, they shall not be battered. The supports shall be left in pits or trenches where required by the Engineer.

03 Soft spots in the bottom of drainage excavation shall be removed and the resulting void immediately backfilled with approved backfilling material.

04 The Developer shall make good with an approved backfilling material:-

i any additional excavation at or below the bottom of the drainage trenches if the trench bottom has become soft or otherwise unsuitable for the construction of the pipeline.

ii any excavation greater than the net volume required for the drainage works below the upper level of any pipe surround.

2.08 BEDDING, LAYING AND SURROUNDING OF PIPES

01 Immediately following the excavation of the trench the pipes shall be laid and jointed on the pipe bed. Pipes shall be laid so that each one is in contact with the bed throughout the length of the barrel. The bed shall be cut away and removed at each socket or sleeve in the case of socketed or sleeved jointed pipes to give a clearance of at least 50mm so that the socket or sleeve does not bear on the bed. Brick or other hard material shall not be used as temporary support.

02 Except where a concrete bed and surround is specified, pipe bedding material shall be a granular material complying with Clause 2.03.

03 After jointing the pipes the bedding shall be brought up equally on both sides of the pipe to the level of the centre of the pipeline. Only after inspection and testing, as required by the Engineer, shall the bedding material be brought to a level 150mm above the top of the pipe collars. The remainder of the trench shall then be backfilled with backfill material as specified in Clause 2.11.

04 Where a concrete bed and surround is specified it shall be Class ST4 concrete to BS 5238 to a minimum thickness of 150mm. The pipes shall be laid on

approved pre-cast concrete blocks 150mm square in section and to a length equal to the diameter of the pipe laid across the trench, two blocks per pipe. The pipes shall be laid on these blocks and where necessary wedged in position using hard wood wedges.

05 After jointing and testing has been completed, the concrete surround shall be placed and well vibrated with an approved poker vibrator for the full width of the trench so that there is a minimum thickness of 150mm of concrete above, below and at either side of the pipe.

06 Care must be taken to avoid the pipes floating in the vibrated concrete and the finished cross section of surround shall be square.

07 Where a concrete bed and surround is used the backfill operation shall be completed after the concrete has hardened.

08 Where a concrete bed and surround is used with a pipeline having flexible joints, a compressible board or a pre-formed joint filler shall be placed in contact with the end of the socket at a pipe joint and shall extend through the full thickness of any concrete in contact with the pipe. Such joints in any concrete bed or surround shall be at intervals not exceeding 5 metres except where the joints in the pipes exceeds 5 metres when they shall be at each pipe joint.

09 Unless otherwise approved in writing by the Engineer, all surface water pipes shall have a minimum cover of 1.2 metres from the finished surface. A 150mm concrete bed and surround shall be provided for pipes within the adoptable highway with less than 1.2 metres cover from the finished surface. Except for gully connections any concrete surround must not encroach within the sub-base of the road construction.

2.09 CONNECTING TO EXISTING SEWERS, DRAINS AND MANHOLES

01 Where required, existing sewers and drains shall be properly extended, connected and jointed to new sewers, culverts, drains or channels. All such connections shall be made during the construction of the new main sewer, drain or other work and their positions recorded by the Developer who shall hand to the Engineer a copy of the record as the work is completed.

02 Where pipe connections are made to a brick sewer, concrete culvert, stone built or lined channel, the pipes shall be well and tightly built into the concrete, brick or masonry work and be so placed as to discharge at an angle not greater than 60° to the direction of flow of the sewer, drain or channel and with the end of the pipe carefully cut to the necessary angle. All special connecting pipes shall be true and properly jointed.

03 Before entering or breaking into an existing sewer or drain, the Developer shall give notice of his intention to do so to the authority responsible for the pipeline to which the connection is to be made. The Developer is reminded of his responsibility for complying with the requirements of the Health & Safety at Work Act.

2.10 JUNCTIONS

Junctions shall be formed using purpose made 45° oblique junctions of appropriate size. Where connections are to be made to an existing pipe, purpose made saddles are to be used provided that no internal projections greater than 5mm remain. They shall be properly mortared in, ensuring no mortar enters the main pipeline, and the whole surrounded with 150mm of Class ST4 concrete to BS 5238. Where necessary a pipe shall be removed from the main line and replaced with an approved purpose made junction pipe.

2.11 BACKFILLING OF TRENCHES

01 Backfilling shall, wherever practicable, be undertaken immediately pipe laying operations have been completed. Backfilling shall not, however, be commenced until the works to be covered have achieved a strength sufficient to withstand all loading imposed thereon and the pipe laying has been approved.

02 Backfilling around manholes and other structures shall be undertaken in such a manner as to avoid uneven loading.

03 Filling material shall be deposited in layers not exceeding 250mm loose depth and compacted to form a stable backfill. Where the excavations have been supported and the supports are to be removed, these, where practicable, shall be withdrawn progressively as backfilling proceeds in such a manner as to minimise the danger of collapse and to ensure complete backfilling of the excavation.

04 Sub-soil drain trenches shall be backfilled with Type B Filter Material as specified under Clause 2.04.

05 Trenches within the adoptable highway shall be backfilled with Type 1 Sub-base material as Clause 4.04.

06 Trenches outside the adoptable highway shall be backfilled with Selected excavated material approved by the Engineer where it is at a moisture content near to the optimum moisture content or with Type 1 sub-base to Clause 4.04.

07 Backfilling of trenches shall be carried out in layers not exceeding 250mm and thoroughly compacted with an approved trench vibrating plate compactor or a power rammer to the Engineer's satisfaction.

2.12 MANHOLE CONSTRUCTION

01 Manholes shall normally be constructed using pre-cast concrete sections manufactured to BS 5911 part 200 and constructed in accordance with the Standard Details Series C.

TABLE 2.20 : MINIMUM CHAMBER DIAMETERS OF PRECAST CONCRETE MANHOLES

NOMINAL BORE OF SEWER (mm)	CHAMBER OF DIAMETER (mm)
Less than 375	1200 reducing to 1050 where the depth to soffit is 1.35m to 1.5 m
375-450	1350
500-700	1500
750-900	1800

02 The sizes above are the minimum. If two pipes enter the manhole, the chamber size shall be sufficient to accommodate adequate benching.

03 Foundations to manholes shall be formed with 225mm thickness of Class ST4 concrete to BS 5328.

04 Inverts shall be formed of half channel vitrified clayware for pipe sizes up to and including 300mm laid true to falls. For pipe sizes greater than 300mm, channels shall be formed in 38mm of granolithic concrete. The benchings shall be constructed in Class ST4 concrete to BS 5328, properly shaped and finished in 38mm of granolithic concrete.

05 Brickwork shall be built with bricks to Clause 2.23 in mortar to Clause 9.04, in English bond. The joints of brickwork where exposed shall be finished with a neat flush joint as work proceeds. The ends of all pipes shall be neatly built into the brickwork and finished flush with mortar to Clause 9.04.

06 Where the depth of invert of manholes exceeds 900mm below the finished surface of the carriageway or adjacent ground, steps shall be built in as specified in BS 1247 Parts 1 and 2 and BS 5911 Part 200, unless shown otherwise on the drawings.

07 Manholes shall be surrounded with 150mm Class ST4 concrete to BS 5238 and the remaining excavation filled with material complying with Clause 2.11 which shall be adequately compacted.

08 All manholes for foul sewers and drains shall be watertight on completion.

09 Manhole covers and frames shall be supplied in accordance with Clause 2.13. Frames for manhole covers shall be set in cement mortar to Clause 8.05. Two sets of keys shall be delivered to the Engineer for each type of key way in covers supplied.

10 On any pipeline the two pipe joints nearest the manhole must be flexible. The nearest joint shall not be more than 300mm from the manhole wall.

11 Shallow manholes can be constructed with Class B Engineering bricks in accordance with the Standard Details Series C up to a maximum of 1.5 metres.

2.13 MANHOLE COVERS AND FRAMES

01 Manhole tops shall be kitemarked ductile iron complying with the relevant requirements of BS EN 124.

02 For use in carriageways, Class D400 manhole tops shall be provided to BS EN 124.

03 In footways and verges where vehicular overrunning will not occur, Class B125 (single seal 600mm x 450mm clear opening size) manhole tops shall be provided to BS EN 124. In all other cases tops to clause 02 above shall be used.

2.14 MANHOLE STEPS

Steps for manholes and other chamber shall comply with the relevant requirements of BS 1247 Part 1 or 2.

2.15 GRANOLITHIC CONCRETE

01 Aggregates shall comply with BS 882. Fine aggregate shall be sand resulting from the natural disintegration of rock. Crusher run fines are not acceptable.

02 Granolithic concrete shall consist of two parts of 10mm granite or whinstone chippings and one part of sand to one part of Portland cement by weight or 0.035m³ of dry sand and 0.07m³ of coarse aggregate to 50 kg of Portland cement.

2.16 GULLIES

01 Gully pots shall have a minimum diameter of 375mm and a minimum depth of 750mm and be trapped with a 150mm diameter outlet.

02 Permanent concrete gullies shall comply with BS 5911 Part 2.30

03 In-situ concrete gullies shall be formed with permanent shuttering (plastic gully pot liners) which shall have a current British Board of Agrément Roads and Bridges Certificate.

04 All gullies shall be surrounded with 150mm minimum thickness of Grade ST 4 concrete to BS 5328.

2.17 GULLY COVERS, GRATINGS AND FRAMES

01 Gully tops shall be kitemarked ductile iron complying with the relevant requirements of BS EN 124.

02 For use in carriageways and footways or verges Class C250 (captive hinge 325mm x 312mm clear opening size) gully tops shall be provided to BS EN 124.

03 All gully gratings and frames shall be so fixed as to be 5mm below the surface of the road channels, carriageway or footway surface.

2.18 GULLY CONSTRUCTION

01 Gully pots to Clause 2.16 shall be set on a foundation of 150mm thick Class ST4 concrete to BS 5328 and haunched around the bottom. When the base concrete has set, backfilling shall be carried out using 150mm of Class ST4 concrete to BS 5238 to the top of the gully pot. The remainder of the backfilling shall be in appropriate road pavement materials except where mechanical compaction of granular sub-bases is impracticable, Class ST4 to BS 5328 concrete shall be used.

02 The gully grating and frames shall then be seated on two to four courses of Class B engineering bricks bedded on cement mortar in Clause 9.04 on top of the pot and haunched with mortar as required.

03 Junction pipes which are laid, but not immediately connected, shall be fitted with temporary stoppers and seals and the positions of all such junctions shall be clearly defined by means of stakes or tracing wires properly marked or labelled. With the Engineer's approval, saddles may be used to form junctions, in accordance with Clause 2.09. Junction pipes shall be manufactured of the same type and class of material as the remainder of the pipes in the run or shall be in accordance with the manufacturers' recommendations.

2.19 GULLY SPACING

01 The spacing of gullies will depend on the width and gradient of the carriageways and footways but as a general guide the spacing shall not exceed 35 metres on a cambered carriageway.

02 Gullies shall be so placed at low points and at or near to tangent points of junctions in order to prevent ponding and water spilling from one carriageway into another. Double gullies shall be provided at low points.

2.20 HYDRANTS

Hydrants, hydrant boxes and covers shall comply with the relevant requirements of BS 750 and be so fixed as to be flush with the carriageway or footway surface.

2.21 HAND RAILS

Mild steel tube and solid mild steel bar for hand rails and standards shall comply with the relevant requirements of BS 1387 and BS 4360 respectively. After manufacture, mild steel hand rails and standards shall be hot dip galvanised in accordance with BS 729.

2.22 LADDERS

Mild steel ladders for vertical fixing shall comply with the relevant requirements of BS 4211. After fabrication, mild steel ladders shall be hot dip galvanised in accordance with BS 729.

2.23 BRICKS

Bricks shall be solid type Class B Engineering, complying with BS 3921. The shape and dimensions of special bricks shall comply with the relevant requirements of BS 4729.

2.24 MORTAR

Cement mortar for brickwork shall be in accordance with Clause 9.04.

2.25 EXISTING LAND DRAINS

Existing land drains and springs severed by construction shall be connected into the surface water drainage system via a trapped catchpit.

2.26 TESTING AND CLEANING OF PIPES

01 All foul sewers, drains and surface water drains with watertight joints shall be tested as directed by the Engineer, in sections (eg between manholes), before the pipes are covered by means of the air test or the water test as described in the Department of Transport Specification for Highway Works Clause 509. Before testing, the ends of the pipeline to be tested, including those of short branches, shall be plugged and sealed to the satisfaction of the Engineer. Any section not passing any of the tests shall have the defects made good and shall be re-tested.

02 All drains and service ducts less than 350mm diameter shall be checked by drawing a mandrel through each completed length of pipe unless an alternative method of checking is agreed by the Engineer.

03 On completion of the works, or earlier if the Engineer agrees, all manholes and drains other than french drains, shall be flushed from end to end with water and left clean and free from obstruction.

3.0 EARTHWORKS

3.01 SITE CLEARANCE

Trees and hedges shall where necessary be removed from the site of the works, the roots shall be completely grubbed out and the resultant hole filled and compacted to the satisfaction of the Engineer.

3.02 REMOVAL OF VEGETABLE SOIL

Before depositing any filling, all turf and vegetable soil under the works shall be excavated and removed to stock-piles.

3.03 GENERAL EXCAVATION

01 Where sub-soil has to be removed to reach the approved levels it shall be excavated in a manner that the formation undergoes the minimum possible disturbance. The formation for the roadworks shall be prepared for the full width of the carriageway and footways and the sub-grade shall wherever possible be compacted at its natural moisture content by four passes of a smooth-wheeled roller having a mass per metre width of roll of 4.4 tonnes to 6.0 tonnes.

02 Where in the opinion of the Engineer the sub-grade is of poor quality he may require the removal of further material and its replacement by an approved general fill which shall be compacted in layers not thicker than 225 mm in accordance with Table 4.06 of the compaction requirements for granular materials.

03 Separation membranes shall be provided when required by the Engineer before filling on soils of low bearing strength. The Membrane/ Geotextile shall be positioned below the level of ducts etc for public utilities services to avoid subsequent damage.

04 The Developer must ensure that the excavation is kept free from water during the progress of the Works and provide permanent land drainage if required to do so by the Engineer.

3.04 GENERAL FILL MATERIAL

01 Material for general filling may consist of approved broken bricks, stone, slag, gravel or sound broken concrete free from soft brick, dust, dirt, ashes, wood, metal, plaster or other extraneous matter, organic or inorganic impurities (eg sulphur, lime).

02 Unless otherwise stated general fill material shall be well graded from 100 mm down and shall produce a well consolidated mass on compaction. It shall be compacted in layers not thicker than 225 mm in accordance with Table 4.06 of the compaction requirements for granular materials.

03 Where any approved fill is used adjacent to concrete structures it shall be certified to have a water soluble sulphate content not exceeding 1.9 g per litre when tested in accordance with BS 1377 Part 3.

3.05 MEMBRANE/GEOTEXTILE BELOW PAVEMENT CONSTRUCTION

01 The membrane/geotextile shall be capable of sustaining a tensile force equal to 2Kn/m at 5% axial strain.

02 Where the geotextile/membrane requires to be overlapped adjacent sheets or strips shall overlap by a minimum of 300 mm.

03 The layer of material on which the geotextile is to be placed shall not have protrusions or sharp projections which are likely to damage the geotextile/membrane during installation or in service.

04 The method of installation shall ensure that the geotextile/membrane is in continuous contact with the surface on which it is to be placed and the geotextile/membrane shall not be stretched or bridged over hollows or humps.

05 Operation of construction plant directly on the installed geotextile/ membrane will not be permitted and its covering with fill material shall take place immediately after its laying.

4.0 ROAD PAVEMENT MATERIALS

4.01 CARRIAGEWAY SHAPE AND TOLERANCES

01 Prior to carrying out any carriageway construction the Developer shall provide on site:-

i. A substantial straight edge 3 m long.

ii. A substantial template cut to the finished profile of the road and long enough to rest on the carriageway kerbs. Templates shall be made of sound timber and have a depth of at least 150 mm and thickness of at least 40 mm.

The finished levels of the various layers of road construction shall be measured from the template placed in position on the kerbs.

02 The acceptable tolerances for the various layers are as follows:-

Formation	+20 mm	-30 mm
Capping Layer	+20 mm	-30 mm
Sub-base	+20 mm	-30 mm
Road Base	+10 mm	-30 mm
Basecourse	+6 mm	-6 mm
Wearing course	+6 mm	-6 mm

Where any tolerances are exceeded the area shall be made good as required by the Engineer.

03 The surfaces of basecourse and wearing course shall be tested for irregularities at points decided by the Engineer, with a 3 m straight edge placed parallel with or at right angles to the centre line of the road. The maximum allowable deviation of the surface below the straight edge shall be:-

for wearing course	3 mm
for basecourse	6 mm

4.02 FORMATION

01 For the avoidance of doubt in this specification "formation" refers to the top of existing ground prior to the laying of any pavement construction material.

02 Preparation and surface treatment of the formation shall be carried out only after completion of all sub-grade drainage.

03 Trenches in the construction of ducts, gully connections and public utilities shall be filled with Type 1 sub-base material in layers not exceeding 225 mm and thoroughly compacted with an approved trench vibrating plate compactor or power rammer to the Engineer's satisfaction.

04 The prepared formation shall be sound, free from soft areas, water, mud and slurry, within the tolerance shown and shall unless otherwise agreed by the Engineer have been compacted by at least four passes of a smooth-wheeled roller having a mass per metre roll of 4.4 tonnes to 6.0 tonnes.

05 Construction traffic shall not run on the formation so that damage is caused and any damage which may be caused shall be made good as directed by the Engineer. The Developer must arrange his work such that the formation is covered by a capping layer immediately following approval by the Engineer.

4.03 CAPPING LAYER

01 The capping layer shall be well graded granular natural sands, gravels, crushed rock, crushed concrete, well burnt shales or other material approved by the Engineer.

02 All material used shall pass a 125 mm BS sieve but not more than 12% of the material shall pass a 63 micron BS sieve. The wet 10% fines value of the material shall not be less than 30 kN when tested in accordance with BS 812.

03 The material shall be compacted to the requirement of Clause 4.06 at a moisture content, within the range of optimum moisture content to optimum moisture content -2%, determined in accordance with BS 1377 Part 2 to give a 200 mm compacted thickness.

04 Material used within 450 mm of the surface of the road shall not be frost susceptible as defined by the test described in BS 812 Part 124 and the Department of Transport Specification for Highway Works and the material shall be deemed to be none frost susceptible if in the tests the heave is less than 15 mm.

4.04 GRANULAR SUB-BASE MATERIAL TYPE 1

01 Type 1 granular material shall be crushed rock, crushed slag, crushed concrete or well burnt non plastic shale. The material shall be well graded and lie within the following grading limits:

TABLE 4.04 : TYPE 1 SUB-BASE

BS SIEVE SIZE	PERCENTAGE BY MASS PASSING
75.0 mm	100
37.5 mm	85-100
10.0 mm	40-70
5.0 mm	24-45
600 µm	8-22
75 µm	0-10
The particle size shall be determined by the washing and sieving method of BS 812 Part 103.	

02 The material passing the 425 µm BS sieve shall be non-plastic as defined by BS 1377 and tested in compliance therewith.

03 The material shall be laid and compacted to the requirements of Clause 4.06 without drying out or segregation.

04 The material shall have a 10% fines value of 50kN or more when tested in a soaked condition in compliance with BS 812 Part III.

05 No aggregate shall have a soundness value less than 65% when tested in accordance with BS 812 Part 121.

06 The aggregate shall not have a water Soluble Sulphate Content exceeding 1.9g Sulphate (expressed as SO_3/per litre) when tested in accordance with BS 1377 Part 3.

07 The approved sub-base shall be placed, spread to the correct thickness and compacted to the satisfaction of the Engineer in accordance with the table in Clause 4.06. If in the opinion of the Engineer further compaction is required, the Developer shall arrange for this to be undertaken to the Engineer's satisfaction.

08 Material used within 450 mm of the surface of the road shall not be frost susceptible as defined by the test described in BS 812 Part 124 and the Department of Transport's Specification for Highway Works. The material shall be deemed to be none frost susceptible if in the tests the heave is less than 15mm.

4.05 CARRIAGEWAY CONSTRUCTION THICKNESSES

01 Unless otherwise specified the thicknesses given im Table 4.05 shall be the minimum compacted thickness of sub-base, base-course and wearing course for varying widths of carriageway

TABLE 4.05 : CARRIAGEWAY CONSTRUCTION THICKNESSES

CARRIAGEWAY WIDTH	CAPPING LAYER (mm)	SUB BASE (mm)	ROADBASE (mm)	BASECOURSE (mm)	WEARING COURSE (mm)
7.3 m	200	350	90	55	45
6.0 m	200	350	90	55	45
5.5 m	200	300	90	55	45
5.0 m	200	300	90	55	45

02 The above figures are based upon a CBR above 2%. Where this CBR is not achieved the developer will be expected to carry out measures to accommodate the poor ground conditions, these measures shall be approved by the Engineer. The developer may be requested to carry out CBR tests to verify the CBR on site.

03 When requested by the Engineer the pavement shall be designed in accordance with DMRB Vol 7 and the material thicknesses adjusted accordingly.

4.06 COMPACTION REQUIREMENTS FOR GRANULAR MATERIALS

01 The mass per 1.0 m width of roll is the total weight on the roll divided by the total roll width. In the case of a smooth-wheeled roller having more than one axle, the assessment is based on the highest value axle.

02 The requirements for vibratory rollers are based on the use of the lowest gear on a self propelled machine and a towing speed of 1.5 to 2.5 kph for a towed machine. If higher gears or speeds are used an increased number of passes shall be made in proportion to the increase in the speed of travel.

03 Vibratory rollers shall be operated with their vibration mechanism operating only at the manufacturer's recommended frequency. All such rollers shall be equipped with a means of indicating automatically the frequency at which the vibration is given. Vibratory rollers not vibrating shall be treated as smooth wheeled rollers.

TABLE 4.06

Type of Compaction Plant	Category:- (mass per metre width of roll)	Number of passes for :-		
		Not greater than 110mm thickness	Not greater than 150mm thickness	Not greater than 225mm thickness
Smooth Wheeled roller	2700-5400kg	16	Unsuitable	Unsuitable
	over 5400kg	8	16	Unsuitable
Vibrating roller	700-1300kg	16	Unsuitable	Unsuitable
	1300-1800kg	6	16	Unsuitable
	1800-2300kg	4	6	10
	2300-2900kg	3	5	9
	2900-3600kg	3	5	8
	3600-4300kg	2	4	7
	4300-5000kg	2	4	6
	over 5000kg	2	3	5
Vibrating plate compactor	mass per unit area of base plate (kg/m^2)			
	1400-1800	8	Unsuitable	unsuitable
	1800-2100	5	8	unsuitable
	over 2100	3	6	10

04 Vibrating-plate compactors are machines having a baseplate to which is attached a source of vibration consisting of one or two eccentrically-weighted shafts.

05 The static pressure under the plate is calculated by dividing the total working mass of machine by the area of contact with the compacted soil in m2. Vibrating-plate compactors shall normally be operated at travelling speeds of less than 1.0 kph, if higher speeds are necessary the number of passes shall be increased in proportion to the increase in the speed of travel.

4.07 COLD WEATHER WORKING FOR GRANULAR MATERIALS

01 No material in a frozen condition shall be incorporated in the works but shall instead be retained on the site for use if suitable when thawed.

02 Materials for use in road pavements shall not be laid on any surface that is frozen or covered with ice.

4.08 HOT ROLLED ASPHALT WEARING COURSE

01 Hot Rolled Asphalt wearing course shall be used in the following locations:-

a All industrial estate roads.
b Residential estate roads with a road width of 7.3 metres or greater.
c Junctions when requested by the Engineer.
d Other locations when requested by the Engineer

02 Hot Rolled Asphalt wearing course shall comply with BS 594 Part 1 for wearing course recipe mixtures, Schedule A. The binder shall be 50 pen bitumen complying with BS 3690 Part 1. The course aggregate content shall be 30% by mass of total mix and shall have a PSV of not less than 45.

03 20 mm nominal size coated chippings shall have a PSV of not less than 60 unless a higher value is requested by the Engineer.

04 Coated chippings shall be uniformly spread at a rate of 10-12 kg/m^2 and rolled into the wearing course so that they are effectively held.

4.09 SPECIFICATION FOR COATED MACADAM FOR CARRIAGEWAYS

01 Materials used for roadbase, basecourse and wearing course are to conform with BS 4987 Part 1 with the exception that limestone aggregate shall only be used for roadbase.

02 Roadbase material to the BS Clause 5.2 shall be a 28 mm nominal size dense roadbase using 100 pen bitumen binder giving a compacted thickness of 90 mm.

03 Basecourse material to the BS Clause 6.5 shall be a 20 mm nominal size dense basecourse using a 100 pen bitumen binder giving a compacted thickness of 55 mm. Limestone aggregate shall not be used.

04 Wearing course material to the BS Clause 7.3 shall be 14 mm nominal size close graded wearing course using 100 pen bitumen binder giving a compacted thickness of 45 mm. The material must not be fluxed and limestone aggregate shall not be used.

4.10 COLOURED FLEXIBLE WEARING COURSES

01 Red coloured flexible wearing courses shall be provided at the approval of the Engineer and in accordance with the following sub-clauses. Other coloured flexible wearing courses shall be subject to the approval of the Engineer.

02 **Hot Rolled Asphalt Wearing Course**
red Coated chippings shall be uniformly spread at a rate of 10-12 kg/m^2 and rolled into the wearing course so that they are effectively held. Binder coating of the chippings shall be effected by the use of a transparent resin at an application of 1.5 + 0.3% by mass or a pigmented bitumen binder at an application of 1.8 + 0.3% including 2% + 0.5% by mass of inorganic red oxide.

03 **Coated Macadam Wearing Course**

a: Red pigment (inorganic red oxide) shall replace natural filler at 5 + 0.5% by mass of the total mixture.

b: Red aggregate shall be incorporated within the mixture.

4.11 REGULATING COURSE

The material shall conform with BS 594 Part 1 or BS 4987 Part 1 and shall be as determined by the Engineer.

4.12 TACK COAT

Prior to laying subsequent layers of bituminous material the surface shall be thoroughly cleaned and a tack coat of bitumen emulsion Class K1-40 to BS 434 shall be applied at a rate of 0.4 to 0.6 litres per square metre to any bituminous surface that has been left uncovered for more than three days.

4.13 LAYING OF BITUMINOUS MATERIALS FOR CARRIAGEWAYS

01 Laying of road base material shall not proceed until the channel and/or kerb has been laid to the approved line and level and suitably haunched to the satisfaction of the Engineer. The level of the sub-base must be approved by the Engineer to the tolerance of Clause 4.01.

02 Unless otherwise approved by the Engineer, all bituminous material shall be laid with an approved mechanical spreader capable of applying initial compaction.

03 Hand laying will only be permitted in confined spaces where it is impractical for a mechanical paver to operate.

04 Hand raking of wearing course material which has been laid by mechanical means or the addition of such material by hand spreading to the paved area for adjustment of level will only be permitted at the edge of material layers and at gullies and manholes.

05 All work, whether hand laid or machine laid, shall comply in all respects with the recommendations for laying contained in BS 594 Part 2 or BS 4987 Part 2. Tolerances on the finished surface shall be in accordance with Clause 4.01.

06 Final compaction to Hot Rolled Asphalt wearing course shall be carried out using a 8 to 10 tonne dead weight smooth-wheeled roller.

07 Final compaction to Bitumen Macadam wearing course shall be carried out using a 8 to 10 tonne dead weight smooth-wheeled roller or equivalent mass vibrating roller.

4.14 JOINING INTO EXISTING CONSTRUCTION

Where any new carriageway joins an existing carriageway, the existing carriageway shall be cut back to the satisfaction of the Engineer, tack coated and the levels adjusted to the Engineer's satisfaction.

4.15 WORKING IN ADVERSE WEATHER CONDITIONS WITH BITUMINOUS MATERIAL

01 Laying of materials containing bitumen binders, shall cease if the temperature of the surface to be covered is at or falls below 2°C. Where however, the surface is dry, unfrozen and free from ice, laying may proceed at temperatures at or above -1°C on a rising thermometer.

02 Laying of bituminous materials shall be avoided as far as practicable during wet weather and shall be suspended when free standing water is present on the surface.

03 Hot Rolled Asphalt wearing course shall not be laid when the air temperature is less than 5°C.

4.16 CONCRETE BLOCK PAVING

01 Concrete block paving may be used as a carriageway surface in culs-de-sac and for footways or decorative areas.

02 Concrete block paving shall be constructed in accordance with BS 6717 Parts 1 and 3 together with any additional requirements in these Clauses. In general the concrete block paving will replace the macadam basecourse and wearing course and the overall pavement thickness shall be as determined in Table 4.05 for the appropriate road width.

03 The blocks shall be rectangular 100 mm x 200 mm and 80 mm thick, to a colour or colours previously agreed with the Engineer. They shall be laid in a herringbone pattern on 30 mm compacted thickness of sand as specified in BS 6717 Part 3.

04 The sand shall be laid on a roadbase of 28 mm nominal size dense roadbase to BS 4987 Part 1 Clause 5.2 using 100 pen bitumen binder giving a compacted thickness of 90 mm. All other construction layers shall be as Table 4.05.

05 Block paved carriageways shall be laid with a 1 in 40 crossfall unless agreed otherwise by the Engineer.

4.17 LAYING OF CONCRETE BLOCK PAVING

01 The acceptable tolerance for the laid surface of blocks shall be ±6 mm with a maximum relative difference between adjacent blocks of 2 mm. The acceptable tolerances for capping layer, sub-base and roadbase shall be as Clause 4.01.

02 All block cutting shall be done using a purpose made block splitter or saw and the minimum size of laid block shall be 33% of a full block. The bond shall be broken as necessary to accommodate the minimum cut block size.

03 Full edge restraint must be provided prior to the laying of the blocks.

04 Where block paving abuts a macadam surface an approved form of channel edge support shall be provided set flush into the surface of the block paving. Where the block paving adjoins manhole frames, gully frames etc the blocks shall be neatly cut and may require to be set in coloured cement mortar. The use of in-situ concrete infill is not acceptable.

4.18 JOINT SEALANTS

01 Joint seals shall consist of hot or cold applied sealants.

02 Hot applied sealants shall be Type N1 or Type F1 complying with BS 2499 Part: 1.

03 Cold applied sealants shall be Type N complying with BS 5212 : Part 1 or gunning grade cold applied plasticised bituminous rubber sealant or gunning grades of two part polysulphide sealants complying with BS 4254 may be used. Alternatively polyurethane based sealing compounds may be used provided their performance is not inferior to BS 4254 material.

5.0 KERBS, FOOTWAYS AND PAVED AREAS

5.01 KERBS AND CHANNELS

All kerbs and channels irrespective of type shall be laid, bedded and backed in accordance with Clauses 5.08 and 5.09 and be laid to a flowing alignment to the satisfaction of the Engineer. Longitudinal falls less than 1 in 200 will not be acceptable.

5.02 PRECAST CONCRETE KERBS AND CHANNELS

01 Precast concrete kerbs shall be 125mm x 255mm half battered and shall comply with BS 7263 Part 1, and shall be hydraulically pressed. Precast concrete radius kerbs shall be used on radii not exceeding 12.0m.

02 Precast concrete dropped vehicular crossing kerbs shall be 125mm x 175mm and shall comply with BS 7263 Part 1 except dimensionally and shall be hydraulically pressed. Dropper kerbs shall comply with the British Standard.

03 Precast concrete channels shall be 150mm x 150mm and shall be hydraulically pressed and manufactured in accordance with BS 7263 Part 1 except dimensionally.

04 Precast concrete channels laid to a radius not exceeding 12m shall not exceed 450mm long.

05 Where a tilted precast concrete channel is required a manufactured proprietary tilted channel of cross sectional dimensions 150mm x 125mm shall be used.

5.03 NATURAL STONE KERBS

Natural stone kerbs shall comply with BS 435 and be igneous rock of size 200mm x 150mm x 75mm. Samples shall be submitted to and approved by the Engineer prior to their use and the kerbs used shall be equivalent or superior to the approved sample.

5.04 PRECAST CONCRETE BLOCK KERBS & CHANNELS

Precast concrete blocks used for kerbs and channels shall comply with BS 6717 Part 1. They shall be laid and bedded in accordance with Clauses 5.08 and 5.09.

5.05 SETTS

Setts for use as decorative areas, rumble strips or highway boundary definition shall be natural stone granite, whinstone or York stone. Samples shall be submitted to and approved by the Engineer prior to their use and the setts used shall be equivalent or superior to the approved sample.

5.06 BLUE BRICK CHANNELS

Where approved by the Engineer, a Staffordshire blue brick channel complying with the requirements of BS 3921 for Class A Engineering bricks may be used. It shall be laid as shown on Standard Detail B4 on a concrete foundation bedded and pointed in a 3:1 cement mortar as specified in Clause 9.04 for brickwork.

5.07 BLOCK PAVING CHANNELS

Where approved by the Engineer, approved concrete paving blocks may be used as channels only where a block paving surface is being used. They shall be laid in stretcher bond on bedding sand as specified in clauses 4.15 and 4.16. The channel shall be laid to a level 5mm below the finished edge of carriageway level. Block channels will not be approved for longitudinal gradients less than 1 in 100.

5.08 KERB AND CHANNEL FOUNDATION

01 Typical sections giving full details of the foundation and backing are shown in Standard Details Series B.

02 The concrete foundation shall be formed on the compacted sub-base to a minimum thickness of 150mm. Soundly fixed formwork or shuttering shall be used and the Class ST2 concrete to BS 5328 shall be compacted to produce a dense foundation free from honeycombing. The minimum period between concreting and the removal of the formwork or shuttering shall be 24 hours.

5.09 KERB LAYING

01 Kerbs shall be laid on a concrete foundation as specified in Clause 5.08. They shall be laid butt jointed on a maximum 25mm thick bed of semi-dry 3:1 cement mortar to Clause 9.04. Any surplus bedding material shall be thoroughly cleaned off and the foundation wetted if necessary prior to the placing of the backing concrete. The backing of ST2 concrete to BS 5328 shall be placed in

a soundly fixed road form or shutter and thoroughly compacted to produce a concrete dense and free from honeycombing to the section as shown on Standard Details Series B.

02 Kerbs shall be laid true to line and level in a flowing alignment and shall not be backed until they have been inspected and approved by the Engineer.

5.10 CHANNEL LAYING

01 Channels shall be laid true to line and level. A minimum gradient of 1 in 150 is required to achieve satisfactory drainage. Proprietary tilted channels shall be used for all gradients flatter than 1 in 150.

02 Channels to Clause 5.02 shall be laid on a concrete foundation as specified in Clause 5.08. They shall be laid in a broken joint bond with the kerbs, butt jointed and on a maximum thickness of 25mm of semi-dry 3:1 cement mortar.

5.11 PREPARATION OF FORMATION TO FOOTPATHS AND OTHER PEDESTRIAN AREAS

01 During the course of the works the Developer must keep these formations free of water.

02 These formations shall be properly shaped and compacted with an approved smooth-wheeled roller of 2.0 tonnes to 3.0 tonnes mass or an equivalent approved vibratory roller. Any depressions in these formations shall be filled with approved sub-base material and compacted to the Engineer's satisfaction before further materials are deposited thereon. These formations should then be treated with an approved granular total weedkiller in accordance with Clause 10.6 to the satisfaction of the Engineer to ensure that no weed growth disturbs subsequent construction.

5.12 BASE TO FOOTWAYS AND FOOTPATHS

01 After the formation has been inspected and approved by the Engineer the required compacted thickness of Type 1 sub-base material in accordance with Clause 4.04 shall be spread evenly and thoroughly compacted with an approved smooth-wheeled roller of 2.0 tonnes to 3.0 tonnes mass or an approved vibratory roller of equivalent rating.

02 The compacted thickness of sub-base material to footways and footpaths on residential estate roads shall be 150mm.

03 Footways adjacent to industrial estate roads shall have an increased thickness of sub-base in accordance with Standard Detail A2.

5.13 COATED MACADAM TO FOOTWAYS AND FOOTPATHS

01 Basecourse shall consist of 50mm compacted thickness of 20mm nominal size dense basecourse macadam to BS 4987 Part 1 Clause 6.5 using a 200 pen bitumen binder.

02 Wearing course shall consist of 20mm compacted thickness of 6mm nominal size dense graded macadam to BS 4987 Part 1 Clause 7.5.

03 After the sub-base has been approved by the Engineer the basecourse to Clause 5.13.01 shall be evenly spread and thoroughly compacted to a thickness of 50mm in accordance with Clause 5.13.06. When completed the basecourse surface shall be to a true profile line and level and to a tolerance of ± 6mm.

04 Prior to the laying of the wearing course the surface of the basecourse shall be thoroughly cleaned and an approved bitumen emulsion tack coat to Clause 4.11 applied where the basecourse has been left uncovered for more than three days.

05 The wearing course to Clause 5.13.02 shall be evenly spread and thoroughly compacted in accordance with Clause 5.13.06 to a compacted thickness of 20mm. When completed the surface shall be to a true profile line and level and to a tolerance of ± 6mm.

06 Compaction shall be carried out with an approved smooth-wheeled roller of 2.0 tonnes to 3.0 tonnes mass or an approved vibratory roller of equivalent rating to give the specified compacted thicknesses.

07 The surface of basecourse and wearing course shall be tested for irregularities at points decided by the Engineer with a 1.5m straight edge placed parallel with or at right angles to the footway edges. The maximum deviation of the surfaces below the straight edge shall be:-

for wearing course	3mm
for basecourse	6mm

Where these allowable deviations are exceeded the area shall be made good as required by the Engineer.

5.14 CONCRETE BLOCK PAVING TO FOOTWAYS AND FOOTPATHS

01 In footways and footpaths where vehicular overrunning will not occur concrete blocks shall be 60mm thick 100mm by 200mm rectangular blocks. In all other cases 80mm thick rectangular blocks shall be used. The blocks shall be to a colour or colours previously agreed with the Engineer and shall be laid in a herringbone pattern on 50mm compacted thickness of sand as specified in BS 6717 Part 3.

02 Concrete block paving to footways and footpaths shall be laid in accordance with Clause 4.16.

5.15 FLAGGING TO FOOTPATHS AND FOOTWAYS

01 The use of precast concrete flags will generally only be acceptable in conservation areas or other areas of landscape importance or adjacent to existing flagged areas.

02 Pre-cast concrete flags shall be hydraulically pressed and shall comply with the requirements of BS 7263 Part 1. All aggregates shall comply with BS 882. The flags shall generally be 450mm x 450mm x 70mm thick. The use of 63mm thick flags of a uniform width of 600mm, a minimum length of 450mm and a maximum length of 900mm will be permitted to tie in with existing flagged areas.

03 All flags shall have a foundation of 150mm compacted thickness of Type 1 Sub-base material to Clause 4.04.

04 All 450mm x 450mm square flags on 50mm compacted thickness of sand as specified in BS 6717 Part 3.

05 All 600mm wide flags shall be bedded and pointed in cement mortar to Clause 9.04.

06 The flagging shall be laid at right angles to the kerb and joints must be broken in each course and properly radiated to the kerbing laid to radius. Where the radius is less than 12 metres the flags shall be radially cut on both edges to the required line. Care must be taken to ensure a neat fit around all surface boxes and obstructions. Flags are to be laid close jointed, ie with a 2mm to 4mm joint. the joint shall have concreting sand or crushed rock fines compatible with grade f of BS 882 brushed into the joints. further sand shall be brushed into the joints after the flags have compacted down into the bedding material.

07 Where a flagged footway is used a concrete block paved vehicular crossing shall be constructed.

5.16 TACTILE PAVING

01 Tactile paving in accordance with Department of Transport Disability Unit Circular 1/91(Final) shall be used at pedestrian crossing points to identify the existence of a flush dropped kerb and an appropriate place to cross.

02 In accordance with the recommendations red tactile paving shall only be used at controlled crossing places, ie pelican and zebra crossings and light signalled crossings with a pedestrian phase. Elsewhere the tactile surface shall be buff or in such a colour which provides a contrast with the footway surface material.

03 The tactile surface itself can help some visually impaired pedestrians to align themselves in the correct direction of travel in order to locate the threshold of the crossing place. The surface should therefore be laid to ensure that the domes are in line with the direction of travel. Standard Detail B6.

04 The width of the crossing point will need to be determined according to local circumstances, but it should never be less than 1.2m wide.

05 The paving units shall have a foundation of 150mm compacted thickness of Type 1 Sub-base material to Clause 4.04 and shall be bedded on 50mm compacted thickness of sand as specified in BS 6717 Part 3.

06 The paving units shall be hydraulically pressed and shall comply with the requirements of BS 7263 Part 1. All aggregates shall comply with BS 882.

5.17 EDGINGS

Edgings shall be pre-cast hydraulically pressed concrete 50mm x 150mm flat topped, manufactured and complying in all respects to BS 7263 Part 1. Edgings shall be laid true to line and level in a smooth alignment on a foundation of Class ST2 concrete to BS 5328 as shown in Standard Detail B5. Edgings shall not be backed until inspected and approved by the Engineer.

6.0 ROAD MARKINGS AND TRAFFIC SIGNS

6.01 GENERAL

All traffic signs used (including reflectors and road markings), whether permanent or temporary shall be of the size, shape, colour and type prescribed for that use in the Traffic Signs Regulations and General Directions 1994 (SI 1994/1519) and subsequent amending regulations.

6.02 PERMANENT TRAFFIC SIGNS

01 Sign plates shall be constructed from sheet aluminium or extruded aluminium and extruded plank sections. They shall conform to BS 873 and BS 581 Part C.

02 Unless otherwise stated all sign faces shall be Class 1 retroflective and shall carry a ten year guarantee from the Manufacturer. The rear faces of signs shall have a 5 year guarantee. All signs shall comply with BS 873 Part C and should be supplied by a recognised Road Traffic Sign Supplier being part of the ARTSM.

03 All signs shall be erected on tubular steel posts which shall be hot dipped galvanised in accordance with BS 729. Where the sign is to be erected on a single post the post shall have a square baseplate fabricated from 4.75 mm thick steel plate welded to the base of the post. The area of the baseplate shall not be less than that specified in BS 873: Part 7. Post caps shall be manufactured from plastics.

04 Compartments for electrical equipment shall for posts less than 140 mm diameter be wide base posts with 168 mm diameter base section and 76 mm to 114 mm diameter shafts. For posts 140 mm diameter or greater root boxes attached to sign posts shall be used.

05 Where luminaries are shown as not being mounted on the posts supporting the traffic sign an additional stub post will be required for each luminaire, attached to the rear of the sign frame to take the luminaire, together with the necessary plastic conduit between stubs and outer posts.

06 Two sets of keys shall be provided for each type of lock on traffic signs housings.

07 Foundations to signs shall be constructed in accordance with Standard Details G1 and G2.

6.03 ELECTRICITY SUPPLY PROVISION TO ILLUMINATED SIGNS

01 Each column shall have a 240 volt 50 cycle continuous supply of electricity provided. That supply shall be transmitted via a direct connection to the Regional Electricity Company's underground or overhead distribution system. All service connections will remain the responsibility of the Regional Electricity Company for their on-going repair and maintenance. It is strongly recommended that the Regional Electricity Companies be consulted at the earliest opportunity.

02 In the event that the Regional Electricity Company is unable to provide a direct underground service connection from its existing network, an alternative method of supply will be necessary. It may be possible for the Regional Electricity Company to provide a single service connection to either a street lamp or a control cubicle/pillar, from which a fused looped electrical distribution system could then be derived. Such a fused loop electrical distribution system must be designed and constructed in accordance with all current legislation and regulations. The responsibility for its provision, its testing, and the recording of those results, rests with the Developer.

03 The Developer is required to submit to the Council, a copy of the proposed private distribution network, its electrical characteristics, for approval, prior to installation.

04 The Developer shall retain all relevant information of the as laid cable routes, their depth , and their test readings for onward transmission to the Council, at or before the date of the adoption of the streetworks.

6.04 TEMPORARY TRAFFIC SIGNS

Any design required for temporary traffic signs shall be carried out by the Contractor and submitted to the Engineer for approval.

6.05 PERMANENT WHITE ROAD MARKINGS

01 Unless otherwise requested by the Engineer permanent white road markings shall comply with the requirements of the following clauses.

02 The material type shall be thermoplastic material complying with BS 3262: Part 1: Class A and shall be either sprayed, extruded or screed applied.

03 All markings shall be reflectorised.

04 Road markings shall be laid in accordance with BS 3262 Part 3.

6.06 PERMANENT YELLOW ROAD MARKINGS

01 Unless otherwise requested by the Engineer permanent yellow road markings shall comply with the requirements of the following clauses.

02 The material type shall be thermoplastic material complying with BS 3262: Part 1: Class A and shall be either sprayed, extruded or screed applied.

03 The colour of the marking shall be as follows:-

Generally	Lemon	to BS381c No 355
In conservation and environmentally sensitive areas		
	Primrose	to BS381c No 310

04 Road markings shall be laid in accordance with BS 3262 Part 3.

6.07 DIMENSIONAL TOLERANCES FOR PERMANENT ROAD MARKINGS

The length and width of road markings shall be as specified with a permitted tolerance as follows:-

Length	+10%	-5%
Width	+10%	-5%

6.08 TEMPORARY ROAD MARKINGS

01 All temporary road markings shall be reflectorised.

02 Proprietary prefabricated temporary road marking material shall only be used on the types of surfaces recommended by the Manufacturer and approved by the Engineer. Materials which are only available in 100 mm and 150 mm wide strips shall not be used to form warning arrows etc.

6.09 PERMANENT REFLECTING ROAD STUDS

01 Reflecting road studs to BS 873 Part 4 shall be selected from those which have received Statutory Type Approval.

02 Road studs shall be fixed in strict accordance with the manufacturers instructions.

03 Only one type of stud shall be used in a particular location in any one carriageway.

6.10 STREET NAME PLATES

Street Name Plates to the approval of the appropriate District Council shall be designed and installed by the Developer in accordance with Department of Transport, `Circular Roads 3/93' "Street Name Plates and the Numbering of Premises" and to the satisfaction of the Engineer.

7.0 ROAD LIGHTING AND ELECTRICAL EQUIPMENT

7.01 GENERAL

The developer shall be responsible for the replacement of any defective equipment on the installed lighting system, until the street works are adopted. The Council will be responsible only for the recurring energy charges and routine maintenance of the installed lighting, from the date of satisfactory connection and operation. Routine maintenance comprises:-

a) Replacement of lamps which have failed in service.
b) Execution of minor repairs, (e.g fuse replacement, refit loose door.)
c) Examining and cleaning lighting fittings at yearly intervals.

7.02 EXTENSION OF EXISTING DEVELOPMENT

01 Where a development is to be extended, it may be that for continuity of appearance the lighting equipment required should be identical to that equipment which is adjacent and existing. In such cases, the equipment specification listed may be amended by the Engineer after taking into account other related factors.

02 In areas of national or local interest, i.e. Conservation or Preservation Areas, and areas of rare architectural and amenity value, the Engineer may vary the standard lighting specification.

7.03 COMPLIANCE OF REGULATIONS

All apparatus, materials and works shall comply with the current editions of the requirements of the Institute of Electrical Engineers, Electricity at Work Regulations 1990, the Regional Electricity Company, and the Council.

7.04 DESIGN OF EQUIPMENT

All apparatus shall be designed to ensure satisfactory operation under atmospheric conditions prevailing at site.

7.05 CODES AND SPECIFICATIONS

Reference shall be made to the relevant Codes of Practice and Specifications in so far as they apply to the work. The following list is a guide only and is not necessarily exhaustive.

7.06 CODES OF PRACTICE

CP 231	Painting
CP 1006	General Aspects of Radio Interference Suppression
CP 1013	Earthing
ASLEC	Erection of Street Lighting Equipment
ILE	Technical Reports 7,9,10 & Data sheets 1 to 10.
The Electricity Council	Engineering Recommendation G39/1.(see 4.1 hereof)

7.07 BRITISH STANDARD SPECIFICATIONS

BS 88 Cartridge fuse of voltage rating up to 600 volts

BS 646	Cartridge fuse links for AC and DC service
BS 729	Zinc coatings on iron and steel articles
BS 800	Limits of radio interference
BS 873	Construction of road traffic signs
BS 1362	Cartridge fuse links for use in plugs
BS 2451	Chilled iron shot and grit
BS 2569	Sprayed metal coating Part I
BS 3042	Standard test fingers and probes
BS 3143	Road danger lamps
BS 3416	Bitumen coating solutions for cold application
BS 3677	Schedule of fluorescent mercury discharge lamps
BS 3767	Schedule of sodium discharge lamps
BS 4017	Capacitors
BS 4533	Electric luminaires
BS 4553	PVC insulated split concentric cables with copper conductors for electricity supply
BS 4652	Metallic Zinc - Rich Priming Paint
BS 4782	Ballasts for high pressure mercury vapour and low pressure sodium vapour discharge lamps
BS 4800	Paint colours for building purposes
BS 4987	Coated Macadam for roads and other paved areas
BS 5419	Isolators
BS 5489	Code of Practice for Road Lighting
BS 5493	Protection of Iron and Steel Structures from Corrosion
BS 5649	Concrete Aluminium and Steel Street Lighting columns
BS 6004	PVC insulated cables (non-armoured) for electric power and lighting
BS 6193	1988 - High pressure sodium lamps
BS 6234	Polythene insulation and sheath of electric cables
BS 6346	PVC insulated cables for Electricity Supply
BS 6360	Aluminium Conductors in insulated cables
BS 5972	Photo Electric Cells
BS 5750	Quality Systems

7.08 COLUMNS GENERAL

01 Columns shall provide a mounting height of 5 metres, 6 metres or 8 metres above the finished carriageway level.

02 Columns shall have access doors, which shall face into the highway, fitted to the base compartment, with an approved triangular drive locking arrangement.

03 Columns shall be to BS 5649

04 Columns shall have an earth bonding stud facility of reasonable mechanical size and appropriate brass washers and nuts, in the base compartment. For steel columns, there shall be a similar earth bonding stud facility as part of the base compartment door assembly. Both of which shall be reasonably accessible.

05 The base compartment doors shall be tamperproof, close fitting, either flush or surface mounted.

06 A non hygroscopic baseboard shall be fitted to the base compartment, of adequate size to receive service terminations and control equipment.

07 Where a bracket is required, it shall provide the specified outreach, suitable lantern spigot and match the column.

08 At the joint of the column shaft and bracket, all seals and securing devices shall be fitted in accordance with the column manufacturer's recommendations.

7.09 CONCRETE COLUMNS

01 Concrete columns of 5 or 6 metre mounting height, having brackets or post top facility may be required.

02 They shall have reinforced and prestressing wires included, and have a smooth ground finish.

7.10 STEEL COLUMNS

01 Steel columns of 5,6 or 8 metre mounting height, having brackets or post top facility may be required.

02 They shall be hot dipped galvanised to BS 729 and have a black bitumen coated planting depth.

7.11 LANTERNS

All lanterns shall comply with BS 4533. Side entry lanterns shall have a lamp enclosure with a preferred IP 65 rating. Post top lanterns shall have a lamp enclosure providing not less than IP 44 rating. Where gear is fitted in the lantern it shall be within an enclosure having not less than IP 54 rating. For mercury lamps, 3 pin BC lampholders are preferred. All lampholders shall be wired with heat resistant flexible cords. Lanterns with integral control gear, and sockets for photo electric cells shall be supplied.

7.12 CONTROL GEAR

01 All electrical control gear shall comply with the relevant British Standard and be "Kite Marked".

02 Chokes and transformers are to be of the solid filled type, totally enclosed with all tappings being brought to suitably marked terminals, to which supply, capacitor, and lamp connections can be made. Chokes and/or transformers shall be suitable for the lamp they are to operate.

03 Capacitors shall be totally enclosed, proof against condensation, fitted with safety leaks and sealed in insulated sleeves. They shall be offered in suitable sizes to maintain a minimum power factor correction of 0.85 lagging when used in the lamp circuit. Appropriate fixing clips and earthing terminals shall be provided.

04 Isolators shall be switched fused, double pole in operation, comply with BS 5419 and be inserted in the circuit between the incoming supply termination and the lamp's control gear. The fuse shall be to BS 88 and of an approved capacity.

05 Fused cut out terminations installed on private cables shall provide a double pole fused termination for the incoming supply, which will become the County Council's responsibility. Those used by the REGIONAL ELECTRICITY COMPANY on its own cables may also be of this type, and remain the Company's responsibility.

7.13 PHOTO ELECTRIC CELLS

01 Photo electric cells shall be to BS 5972, of single piece construction, suitable for direct fitment to the socket mounted in the lantern canopy.

02 The photo cell sensor shall be a sealed and filtered photo diode.

03 The cell shall be sealed against the ingress of moisture and shall be contained in a strong impact resistant housing, the surface of which shall be non-oxidising and impervious to discolouration by dirt or soot. The switch contact load rating shall not be less than 4.5 amp inductive. The switch ON level shall be as specified and the ON/OFF switching differential shall be no greater than 1:0.5. In the event of a fault occurring in the control circuit, the cell shall be "Fail safe" (ie. the controlled lamps shall be switched ON). Where a lantern will be one of a pair mounted on a double arm bracket, one cell shall control both lanterns if total load does not exceed switch contact capacity.

7.14 LAMPS

Lamps shall be to the current British Standard Specification. Mercury Vapour lamps shall have 3 pin bayonet caps and the approved Vanadate phosphor coatings. Low pressure sodium lamps shall have 2 pin Bayonet caps and be of the "U" tube construction. Sodium reservoirs shall be provided along the limbs of the arc tube. High pressure Sodium lamps shall have a screw type lamp cap.

7.15 ERECTION WORK

The erection and wiring of all lighting columns shall be carried out in accordance with Codes of Practice issued by The Association of Street Lighting Erection Contractors. A list of recommended contractors can be obtained from the Council upon request by the Developer. Failure to do so may result in excessive remedial works being necessary before street works adoption. These will be the Developer's responsibility.

7.16 COLUMN NUMBERING

All street lighting columns shall have a designated number attached or applied to the column. This number shall be placed on a rectangular YELLOW background 200mm x 100mm for one or two digits, or 300mm x 100mm for three digits. Each numeral or letter shall be 75mm in height, in BLACK. The background and number shall be located on the face of the column which faces oncoming motorists on the L.H.S of the road. The background and number shall be 1.5 metres above carriageway level. The number will be allocated to the column by the Council on request from the Developer.

7.17 ELECTRICITY SUPPLY PROVISION

01 Each column shall have a 240 volt 50 cycle continuous supply of electricity provided. That supply shall be transmitted via a direct connection to the Regional Electricity Company's underground or overhead distribution system. All service connections will remain the responsibility of the Regional Electricity Company for their on-going repair and maintenance. It is strongly recommended that the Regional Electricity Companies be consulted at the earliest opportunity.

02 In the event that the Regional Electricity Company is unable to provide a direct underground service connection from its existing network, an alternative method of supply will be necessary. It may be possible for the Regional Electricity Company to provide a single service connection to either a street lamp or a control cubicle/pillar, from which a fused looped electrical distribution system could then be derived. Such a fused loop electrical distribution system must be designed and constructed in accordance with all current legislation and regulations. The responsibility for its provision, its testing, and the recording of those results, rests with the Developer.

03 The Developer is required to submit to the Council, a copy of the proposed private distribution network, its electrical characteristics, for approval, prior to installation.

04 The Developer shall retain all relevant information of the as laid cable routes, their depth , and their test readings for onward transmission to the Council, at or before the date of the adoption of the streetworks.

7.18 APPLICATIONS FOR ELECTRICITY SUPPLY

The Developer shall be responsible for making the application for and provision of the electricity supply and all necessary arrangements and payments. The Developer shall submit appropriate test notices to the Regional Electricity Company, in accordance with that supplier's terms and conditions.

7.19 COMMISSIONING OF EQUIPMENT

The Developer shall be responsible for all necessary arrangements to commission the lighting column once the Regional Electricity Company has provided a supply of electricity. The Developer shall, on completion of the satisfactory commissioning of the lighting column, notify the Council of the date it was put into operation. Failure to do so could result in the Developer receiving the accounts for the energy consumed by the connected lighting columns.

7.20 INSPECTION OF EQUIPMENT PRIOR TO ADOPTION

The Council reserves the right to inspect the completed lighting installation before the streetworks and street lighting equipment is adopted. The developer will be responsible for providing, by arrangement, all suitable and necessary equipment to afford access to the lighting columns and fittings, which could include a hydraulic access platform.

7.21 EQUIPMENT CURRENTLY ACCEPTED

A schedule of equipment currently accepted is included in Appendix D.

8.0 CONCRETE

8.01 CONCRETING SAND

Concreting sand shall comply with BS 882 for fine aggregates.

8.02 WATER FOR CONCRETE MIXES

Mains water only shall be used.

8.03 AGGREGATES FOR CONCRETE

Aggregates for concrete shall consist of naturally occurring sand, gravel or stone, crushed or uncrushed or a combination of both complying with BS 882.

8.04 CEMENT FOR CONCRETE MIXES

All cement for concrete mixes shall be in accordance with BS5328 Part 1.

8.05 CONCRETE MIXES

01 All concrete shall be supplied to site Ready Mixed from a quality assured supplier in accordance with Appendix B.

02 All concrete mixes shall be Standard Mixes as defined in BS 5328 Part 1 and listed in Table 8.05 below

03 concrete shall be designed in accordance with the Sulphate classification determined in accordance with BRE Digest 363 as detailed in Clause 1.26.

TABLE 8.05

CLASS	NOMINAL SIZE OF COARSE AGGREGATE (mm)	MAXIMUM SLUMP mm
ST1	20	125
ST2	20	75
ST4	20	75

8.06 AIR ENTRAINED CONCRETE

Where requested by the Engineer Air Entrained Concrete shall be a Designated Mix reference PAV1 to BS 5328 Part 2. It shall have a 20mm nominal size coarse Aggregate and a 75mm slump. It shall be delivered to site ready mixed.

8.07 CONCRETE PLACING AND COMPACTION

01 Concrete shall be so transported and placed to avoid contamination, segregation or loss of constituent materials.

02 All formwork and reinforcement shall be free from dirt, standing water, snow, or ice.

03 Concrete shall not be placed until approval of formwork or the foundation has been given by the Engineer. Concreting must then be started within 24 hours or further approval must be sought. Fresh concrete shall not be placed against in-situ concrete which has been in position for more than 30 minutes. Concrete shall be laid and compacted as specified within 30 minutes of its discharge from the mixer and unless otherwise agreed by the Engineers shall not be dropped into place from a height exceeding 2 m.

8.08 CONCRETING IN COLD WEATHER

01 Concreting at ambient temperatures below 3°C may be carried out only if the following conditions are met:-

(a) the aggregates and water used in the mix shall be free from snow, ice and frost.

(b) Before placing the concrete, the formwork shall be free from snow, ice and frost and shall be at a temperature above 0°C.

(c) The initial temperature of concrete at the time of placing shall be at least 5°C.

02 Precautions to prevent the temperature of any concrete falling to 0°C during the first five days of placing shall be provided to the satisfaction of the Engineer.

8.09 CONCRETE CURING

Concrete shall be protected for seven days against harmful effects of weather including rain, wind, sun and frost and from drying out. The method of protection used shall be subject to the approval of the Engineer.

8.10 CONSTRUCTION JOINTS

The joint shall be formed by introducing a lath 25 mm square against the face of the formwork. The joints shall be arised as before and sealed. The remaining depth of concrete shall be roughened in order that the two faces adhere.

8.11 SURFACE FINISH

Concrete shall be uniformly levelled and screeded. After concrete has hardened sufficiently the surface shall have an even lightly brushed finish applied to the Engineer's satisfaction.

8.12 SAMPLING AND TESTING

Sampling and testing of concrete shall be in accordance with BS 1881.

8.13 ROUND BAR REINFORCEMENT

Carbon steel for the reinforcement of concrete shall comply with BS 4449.

8.14 MESH REINFORCEMENT

Steel wire mesh reinforcement shall comply with BS 4483. Where required as a bottom reinforcement in surface water drain trenches it shall be 5.55 kg/m^2 ref. C.636.

8.15 TYING WIRE

Tying wire shall be 1.2 mm diameter (No. 18 gauge) stainless steel wire.

8.16 WATERPROOF UNDERLAY

Waterproof underlay shall be approved 125µm impermeable plastic sheeting. Where an overlap of plastic sheeting is required this shall be at least 300mm.

8.17 FORMWORK

01 Formwork shall include all temporary or permanent forms required for forming concrete, together with all temporary supports. It shall be so constructed that there shall be no loss of material from the concrete. After hardening the concrete shall be in the position and of the shape, dimensions and surface finish required by the Engineer.

02 All formwork shall be designed by the Developer and approved by the Engineer.

9.00 MISCELLANEOUS ITEMS

9.01 CEMENT FOR MORTAR

01 All cement shall be from an approved BSI Kitemark source in accordance with Appendix B.

02 Portland Cement shall comply with the requirements of BS 12.

03 Sulphate Resisting Portland Cement shall comply with BS 4027.

9.02 CEMENT STORAGE

01 All the cement shall be delivered to the site in the original sealed bags of the manufacturer and stored in a dry, weatherproof shed with a raised wooden floor, or other building approved by the Engineer.

02 Any cement that shall become adversely affected by damp, or other causes, shall at once be removed from the site.

03 Each consignment of cement shall be kept separate, identified and used in order of delivery.

9.03 BUILDING SAND

Building sand shall comply with BS 1200.

9.04 CEMENT MORTAR

01 Cement mortar for brickwork or bedding ironwork shall consist of one part by volume of Portland cement to three parts by volume of clean building sand.

02 Cement mortar for kerb, channel and flag bedding shall be semi-dry one part by volume of Portland cement to three parts by volume of concreting sand.

03 All mortar shall be mixed thoroughly using a concrete mixer on site until of uniform colour and shall not be re-mixed or used after a period of 1 hour has elapsed since mixing.

04 Admixtures shall not be used without the written approval of the Engineer.

9.05 CEMENT GROUT

Cement grout shall consist of one part by volume of cement to 1½ parts by volume of water and shall be used within 1 hour of mixing.

10.0 LANDSCAPING

10.1 TOPSOIL

01 Topsoil shall comply in all respects with British Standard 3882 (1994) and shall be to the approval of the Engineer. As a general guide the approved topsoil will be good quality, medium loam of good heart, free from large stones (over 50 mm) and not more than slightly stony and slightly acid to neutral reaction (BS Classification). This quality of topsoil must be maintained throughout the works.

02 For topsoil areas to be seeded or turfed the depth of topsoil must not be less than 150 mm. Areas intended for shrub planting must have a topsoil depth not less than 300 mm. If locations for trees over 1000 mm tall are identified on site a pit must be prepared 1000 mm x 1000 mm x 600 mm deep into which is placed topsoil.

10.2 MULCH

01 Where bark mulch is appropriate this must be from an approved source and should consist of matured conifer bark at least 75% of which should be within 50-70 mm particle size and should contain a minimum of wood particles. The bark is to be pest, disease and weed free. Mulch of this nature should be applied at a depth not less than 70 mm.

02 Where other mulch products are appropriate these should be obtained from approved Suppliers and applied in accordance with the Manufacturer's instructions and with the approval of the Engineer.

10.3 TREES AND SHRUBS

01 All nursery stock must comply with BS 3936 (1992) and all plant supply and handling must comply with appropriate codes of practice currently in force and recognised by the landscape and nursery stock industries.

02 All stock must be healthy and grown according to their intended use. Planting shall be carried out to ensure successful establishment of the plant and any damaged roots or shoots must be cut back to sound material.

03 Bareroot trees and shrubs shall only be planted during the season 31 October to 31 March and when the soil is in a friable condition. Containerised stock can be planted at any time except in extremely dry conditions. Planting must not be carried out when the ground is frozen or snow covered.

04 All trees over 1.0 m tall must be supported by a suitable stake, spacer block and tree tie.

05 Shrub and trees species must be approved by the Engineer and a representative sample is included in Appendix D The Schedule of Shrubs.

10.4 GRASS SEED

01 Seed should be good quality of appropriate composition and obtained from approved suppliers. Sowing must only be carried out at the appropriate time of year and when weather and soil conditions are suitable.

02 **High Frequency Maintenance Areas (Urban Situations)**

A suitable mix of grass seed species for these areas will typically contain Chewings Fescue, Creeping Red Fescue and Highland Browntop Bent but no Ryegrass. The spread rate shall be 25-30 g/m².

03 **Low Frequency Maintenance Areas (Rural Situations)**

A suitable mix of grass seed species for these areas will typically contain Perennial Ryegrass, Creeping Red Fescue and Highland Browntop Bent. The spread rate shall be 25-35 g/m².

10.5 TURFING

01 Turf must comply with BS 3969 (1990). Turf laying must not be carried out on extremely dry or water logged ground nor during frost or snow.

02 Turves must be laid stretcher bond with a maximum stagger and closely butted, or in accordance with the suppliers' instructions if turves of a non tradition nature are used.

03 Grass species mixes for the turves must be appropriate to the location in which they are to be used (see Grass Seed).

10.6 HERBICIDES

01 The herbicides for use in footway construction must give total weed control and shall be of a granular nature. The active ingredient must be approved by the Engineer (see Herbicide Schedule). The herbicide must be used and applied in accordance with the Manufacturer's instructions and relevant Health and Safety Legislation.

02 The herbicides for use after pavement construction and in areas of other weed control must be a total weed control product and approved for use in those situations. The active ingredient must be approved by the Engineer. The herbicide must be used and applied in accordance with the Manufacturer's instructions and relevant Health and Safety Legislation.

03 Use of any other pesticide products must be at the approval of the Engineer.

TABLE 10.6 : HERBICIDE SCHEDULE

ACTIVE INGREDIENTS	EXAMPLE OF PRODUCT NAME (This does not preclude other equivalent products)	PESTICIDES REG. NO.
Dalapon & Dichlobenil	Fydulan G	00958
Dichlobenil	Casoron G Prefix D	00448 01631
Glyphosate	Round Up Stirrup	01828 04174
Imazapyr	Arsenal Arsenal 50	02904 04070

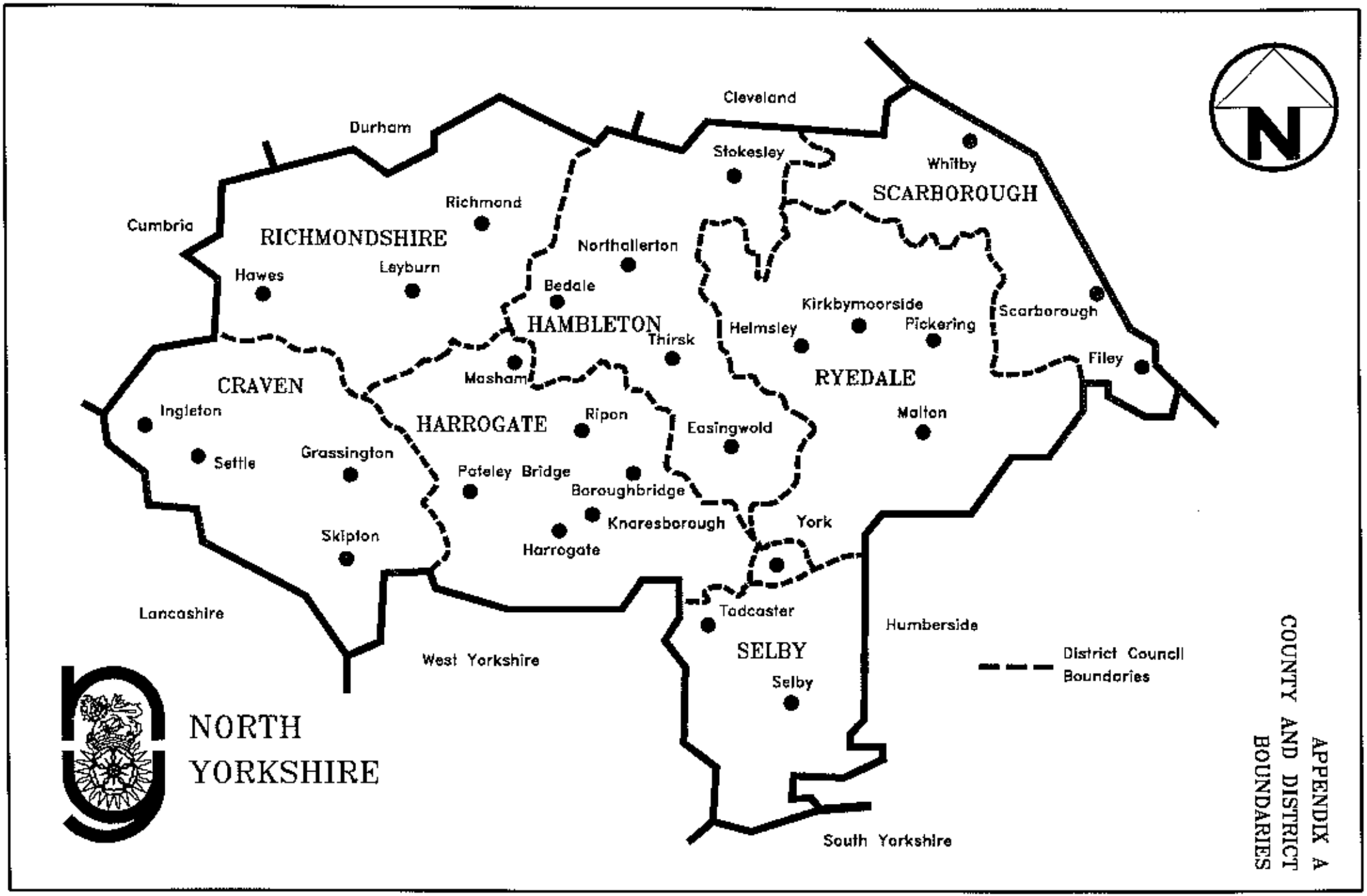
10.7 FERTILISER

Fertiliser shall consist of an approved compound containing not less than NPK 1:1½:1 (10%, 15%, 10%) and be applied in accordance with the Manufacturer's instructions.

10.8 MAINTENANCE

01 Maintenance of plant material must be carried out to ensure successful establishment of the stock. Appropriate maintenance should include weed control, pruning, and other routine maintenance.

02 All other maintenance should be carried out to the satisfaction of the Engineer.



APPENDIX A
COUNTY AND DISTRICT BOUNDARIES

APPENDIX B

PRODUCT CERTIFICATION SCHEMES

The following is the list of accepted product certification schemes referred to in Clause 1.08.

1.0 MARKED SCHEMES

1a) Kitemark

Certification Body: BSI Quality Assurance
PO Box 375
Milton Keynes
MK14 6LL

BS N°	Title
12(08/96)	Specification for Portland Cement. (QGN 24/386).
65	Specification for vitrified clay pipes, fittings and ducts.
146(08/93)	Specification for Portland blastfurnace cements. (QGN 24/386).
(BS)EN295	Vitrified clay pipes and fittings and pipe joints for drains and sewers.
497	Specification for manhole covers, road gully gratings and frames for drainage purposes.
1247	Manhole steps. Part 1: Specification for galvanized ferrous or stainless steel manhole steps. Part 2: Specification for plastics encapsulated manhole steps.
1370(10/93)	Specification for low heat Portland cement. (QGN 24/386).
2818	Ballasts for tubular fluorescent lamps.
3262	Hot-applied thermoplastic road marking materials.
3506	Unplasticised PVC pipe for industrial purposes.
3656	Specification for asbestos-cement pipes, joints and fittings for sewerage and drainage.
3921(08/93)	Specification for Clay Bricks.
4017	Specification for capacitors for use in tubular fluorescent high pressure mercury and low pressure sodium vapour discharge lamp circuits.
4027(08/93)	Specification for sulphate-resisting Portland cement. (QGN 24/386).
4246(03/93)	Specification for high slag blastfurnace cement. (QGN 24/386).
4346	Mechanical joints and fittings principally of unplasticised PVC.

BS N°	Title
4660	Unplasticised PVC underground drain pipe and fittings.
4772	Specification for ductile iron pipes and fittings.
4782	Ballasts for discharge lamps (excluding ballasts for tubular fluorescent lamps).
4962	Specification for plastic pipes for use as light sub-soil drains.
5178	Prestressed concrete pipes for drainage and sewage.
5481	Specification for unplasticised PVC pipes and fittings for gravity sewers.
5911	Precast concrete pipes, fittings and ancillary products. Part 2: Specification for inspection chambers and street gullies. Part 3: Specification for pipes and fittings with ogee joints. Part 100: Specification for unreinforced and reinforced pipes and fittings with flexible joints. Part 200: Specification for unreinforced and reinforced manholes and soakaways of circular cross section.
6044	Pavement marking paints.
6087 (08/93)	Specification for flexible joints for grey or ductile cast iron drainpipes and fittings (BS 437) and for discharge and ventilating pipes and fittings (BS 416).
6088	Solid glass beads for use with road marking compounds and for other industrial uses.
6588 (08/93)	Specification for Portland pulverized fuel-ash cements. (QGN 24/386).
6677 (08/93)	Clay and Calcium Silicate Pavers for flexible Pavements Part 1 Specification for Pavers.

1b) Safety Mark

Certification Body: BSI Quality Assurance
PO Box 375
Milton Keynes
MK14 6LL

BS N°	Title
3772	Starters for fluorescent lamps.
4533	Electric luminaries.

1c Other Marked Schemes

1ci) Electric Cables

Certification Body: British Approvals Service for Cables (BASEC)
360 Silbury Boulevard
Milton Keynes
MK9 2AF

BS N°	Title
6004	Specification for PVC-insulated cables (non-armoured) for electric power and lighting.
6346	Specification for PVC-insulated cables for electric supply.

1cii) Reinforcing and Prestressing Steel

Certification Body: United Kingdom Certification Authority for
Reinforcing Steels (CARES)
Oak House
Tubs Hill
Sevenoaks
Kent TN13 1BL

BS N°	Title
4449	Specification for carbon steel bars for the reinforcement of concrete.
4466	Specification for bending dimensions and scheduling of reinforcement for concrete. (Except that the contractor or the manufacturer of precast concrete products may opt to obtain straight bars from a firm within the Scheme and cut and bend them on the site or at the precasting works respectively provided the levels of inspection and quality assurance specified in BS 4466 are maintained.)
4482	Specification for cold reduced steel wire for the reinforcement of concrete.
4483	Specification for steel fabric for the reinforcement of concrete.
5896	Specification for high tensile steel wire strand for the prestressing of concrete.

NON-MARKED SCHEMES

2a) Ready Mixed Concrete(08/93)

Certification Bodies: The Quality Scheme for Ready Mixed Concrete Ltd
3 High Street
Hampton
Middlesex TW12 2SQ

BSI Quality Assurance
PO Box 375
Milton Keynes MK14 6LL

Specification: The supply of ready mixed concrete shall comply with the Specification for Highway Works.

BS N°	Title
882	Specification for aggregates from natural sources for concrete.
1014	Specification for pigments for Portland cement and Portland cement products.
1047	Specification for air-cooled blastfurnace slag aggregate for use in construction.
1305	Specification for batch type concrete mixes.
1881	Testing concrete. Part 106: Methods for determination of air content of fresh concrete.
3148	Methods of test for water for making concrete (including notes on the suitability of the water).
3797	Specification for lightweight aggregates for masonry units and structural concrete.
3892	Pulverised-fuel ash. Part 1: Specification for pulverised-fuel ash for use as a cementitious component in structural concrete.
5075	Concrete admixtures. Part 1: Specification for accelerating admixtures, retarding admixtures and water reducing admixtures. Part 2: Specification for air-entraining admixtures. Part 3: Specification for superplasticising admixtures.

BS N°	Title
5328	Concrete. Part 1: Guide to specifying concrete. Part 2: Methods for specifying concrete mixes. Part 3: Specification for the procedures to be used in producing in producing and transporting concrete. Part 4: Specification for the procedures to be used in sampling, testing and assessing compliance of concrete.
6699	Specification for ground granulated blastfurnace slag for use with Portland cement.

APPENDIX C

BRITISH BOARD OF AGRÉMENT ROADS AND BRIDGES CERTIFICATES

Approval Body: British Board of Agrément
PO Box 195
Graston
Watford
Herts WD2 7NG

Types of work, goods or materials for which proprietary products are required to have a British Board of Agrément Roads and Bridges Certificate are as follows:

Description	Specification Clause
Pipes for drainage and/or service ducts other than those listed in Tables 5/1 and 5/2	2-
Permanent shuttering for road gullies	2-
Fin drains and constituent materials for edge of pavement drainage	2-

Details of products conforming with the above requirements are listed in the Index of Current BBA Publications which may be obtained from the Publications Department, British Board of Agrément.

APPENDIX D

ROAD LIGHTING: EQUIPMENT CURRENTLY ACCEPTED

PRESTRESSED CONCRETE COLUMNS.

* **5 METRE POST TOP**
STANTON BONNA PLC:
type 2005PT, with 75 x 75mm spigot.

* **5 METRE WITH BRACKET**
STANTON BONNA PLC:
type 2005CS, having 0.75 metre bracket outreach.

* **6 METRE WITH BRACKET**
STANTON BONNA PLC:
type 1806 having 1.0 metre bracket outreach.

STEEL (TUBULAR OR FOLDED SHEET) COLUMNS.

* **5 METRE POST TOP**
To BS 5649 with 1.5 "K" factor and 75 x 75mm spigot.

* **5 METRE WITH BRACKET**
To BS 5649 with 1.5 "K" factor and 0.75 metre bracket outreach.

* **6 METRE WITH BRACKET**
To BS 5649 with 1.5 "K" factor and 1.0 metre bracket outreach.

* **8 METRE WITH BRACKET**
To BS 5649 with 1.5 "K" factor and 1.5 metre bracket outreach.

STEEL (MID HINGED) COLUMNS.

* **4.7 METRE POST TOP**
STAINTON METAL LTD:
type LEVEN, with 75 x 75mm spigot.
CONCRETE UTILITIES LTD:
small mid hinged type with 75 x 75mm spigot.

* **4.7 METRE WITH BRACKET**
STAINTON METAL LTD:
type LEVEN, with 0.3 metre bracket.

LANTERNS (POST TOP), 35 WATT SODIUM.

THORN LTD	QG6PB1035.4A	(base)
	QG6F	(canopy)
	QG6M	(bowl)
SIEMENS LTD	PTBTL35N	(Z5698MK)

LANTERNS (SIDE ENTRY) 35 WATT SODIUM.

SIEMENS LTD	SRL35AN	(Z9582MK)

LANTERNS (SIDE ENTRY) 55 WATT SODIUM.

SIEMENS LTD	SRL55AN	(Z9538MK)

LANTERNS (SIDE ENTRY) 90 WATT SODIUM.

PHILIPS LTG LTD MA90/GO*1S.

LANTERNS (SIDE ENTRY) 80 WATT MERCURY.

URBIS LTD ZX 1 "SEALSAFE"

PHOTO ELECTRIC CELLS.

ROYCE THOMPSON ELECTRIC LTD
RTE ER5N, calibrated to 70 Lux "ON".
FKI CABLEFORM LTD
type SS5, calibrated to 70 Lux "ON".

ISOLATORS.

CHARLES MANUFACTURING LTD
type LSI 02/SF.
TOFCO SMK LTD
type MDPI/32/F1, two hole fixing and sleeve.

FUSED CUT OUT TERMINATIONS.

TOFCO SMK LTD type F144/DP.

APPENDIX E

APPROVED PLANTING

SCHEDULE OF SHRUBS FOR GROUND COVER PLANTING IN VERGES

BOTANICAL NAME	COMMON NAME	HEIGHT (m)
Berberis candidula	Barberry Family	0.5
Berberis thundergii "Atropurpuren Nana"		0.5
Calluna (in variety)	Ling	0.5
Ceanothus prostratus		0.5
Cornus canadensis	Creeping Dogwood	0.3
Cotoneaster dammeri	Cotoneaster family	0.5
Cotoneaster horizontalis		0.5
Cotoneaster microphyllus		0.5
Cotoneaster salicifolius "Repens"		0.5
Cotoneaster "Skogholm"		0.5
Cytisus x beanii	Broom Family	0.3
Cytisus x kewensis		0.5
Erica (in variety)	Heather	0.5
Euonymus fortunei "Radicans" (in variety)		0.5
Gaultheria srocumbens	Checkerberry	0.3
Genista sydia		0.5
Genista hispanica	Spanish Gorse	0.5
Hebe albicans	Shrubby Veronica Family	0.5
hebe armstrongii		0.5
Hebe "Carl Teschner"		0.5
Hebe pinguifolia "Pagei"		0.3
Hedera canariensis (in variety)	Canary Island Ivy	0.3
Hypericum calycinum	Rose of Sharon	0.5
Juniperus communis "Honrbrookii"	Juniper Family	0.5

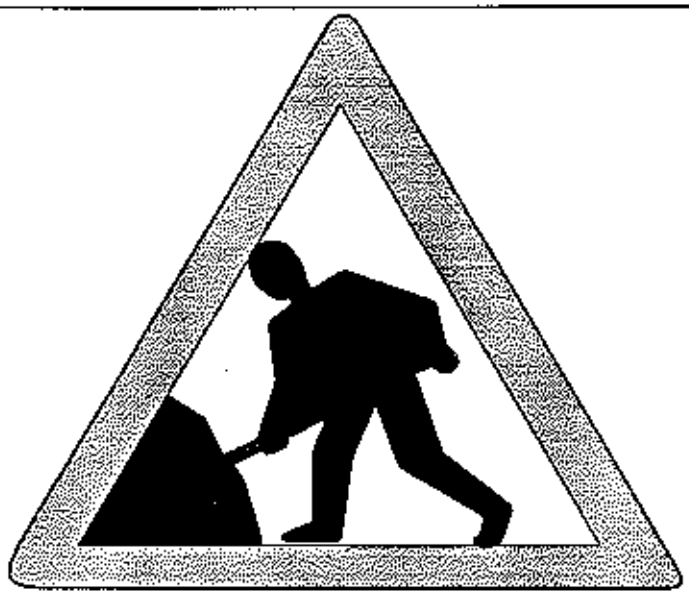
SCHEDULE OF SHRUBS FOR GROUND COVER PLANTING IN VERGES continued

Juniperus horizontalis		0.5
Lavandula spica "Hidcote"	Lavender	0.5
Pachusandra terminalis		0.5
Roas "Max Graf"		0.5
Vinca major (in variety)	Greater Periwinkle	0.3
Vinca minor (in variety)	Lesser Periwinkle	0.3

SUGGESTED TREES FOR PLANTING IN RESIDENTIAL HIGHWAY VERGES

NARROW VERGES upto 3m wide	
Betula pendula	(Silver Birch)
Crategus lavigata	(Hawthorn)
Prunus padus	(Wild Cherry Gem)
Sorbus intermedia	(Swedish Whitebeam)
Sorbus aucuparia	(Rowan)

WIDE VERGES upto 6m wide	
Acer lobelii	(Lobel's Maple)
Alnus cordata	(Alder)
Tilia euchlora	(Lime)



SO YOU WANT TO DIG

A GUIDE FOR MEMBERS OF THE PUBLIC WISHING TO UNDERTAKE WORKS WHICH WILL INVOLVE EXCAVATION IN THE PUBLIC HIGHWAY IN THE COUNTY OF NORTH YORKSHIRE

PUBLISHED BY
THE HIGHWAYS AND TRANSPORTATION DEPARTMENT
NORTH YORKSHIRE COUNTY COUNCIL

Leaflet No.1
General Information

Are you a property owner, or tenant and do you wish to carry out works associated with your property which involves excavating in a street? If so you will require the permission of the Street Authority and the owner of the land on which the street is built where this is not also the Street Authority.

IT IS AN OFFENCE TO EXCAVATE IN THE HIGHWAY WITHOUT AUTHORITY

To assist you in negotiating the maze of legislation which affects the act of excavation in the public highway a series of leaflets has been developed, this being the first. You are advised to read this leaflet carefully. It provides a general overview of the procedures to be followed, and aims to avoid unnecessary mistakes which could cause delays.

To begin it is useful to be aware of some important definitions:

"Street"

Section 48 of the New Roads and Street Works Act 1991 defines a **"Street"** as:

a.Any highway, road, lane, footway, alley or passage.

b.Any square or court

c.Any land laid out as a way.

In general it can be assumed that the street is the highway and comprises:

a.The carriageway(the running surface for vehicles)

b.The footways

c.Any verges out to a distinct boundary line such as a hedge, garden wall or building line.

It will not necessarily include village greens or open plan gardens. If there is any doubt, a definitive answer can be obtained from the nearest Divisional/Agency Office (see the section "Who to contact" on page 3).

"Street Authority"

Section 49 of the New Roads and Street Works Act 1991 defines a **"Street Authority"** as:

a.If the street is maintainable at public expense the **"Street Authority"** is the Highway Authority.(In North Yorkshire that is North Yorkshire County Council. Due to the size of the County management of the Highways is delegated to 8 Divisional Offices and 3 Agents. Points of contact are shown on pages 3 & 4 of this leaflet.

b.If the street is not maintainable at public expense, the **"Street Authority"** is the Street Manager.(ie. the body or person responsible to the public for the maintenance or repair of that street). If no such body or person exists, it is the body or person having the management or control of the street.

"Undertaker"

The only persons or organisations who may excavate in the street are those who possess the status of "Undertaker". The following persons or organisations are Undertakers:

a.**Statutory Undertakers are:**
organisations who are empowered by virtue of a **Statutory Instrument** with providing an essential service (Electricity Companies, Gas Companies, Water Companies etc).

or

who are empowered by virtue of a **Licence** issued by the Secretary of State for Trade and Industry with providing a service (Communications Companies, Cable Television Companies etc).

c.**Private Undertakers are:**
persons or companies who are **owners or occupiers of premises.** They may be given status or possess status as of right, which enables them to perform, or have performed on their behalf, works in the street for a specific purpose in a specific place. For you to excavate in the street you would have to be, or become, a Private Undertaker.

An Undertaker may carry out the works, if he/she is duly qualified, or employ another person, who is duly qualified, to act on their behalf in performing the works. However legal responsibility for the conduct of the works is that of the Undertaker and that legal responsibility cannot be delegated to a contractor. Serious consideration should be given to employing a reputable, experienced, qualified contractor at an early stage.

How do you become an Undertaker?

Look at the flow diagram (Figure 1a) below, starting from the box "SO YOU WANT TO DIG" read the 4 boxes and identify which purpose most fits your requirements. Is it:

a.**To install a new private apparatus.** For an apparatus to be regarded as private it must be the property of the current owner or occupant of the premises which it is to serve, and once installed it must remain in the ownership of the owner or occupant of the premises. See Leaflet No.2.

b.**To install a new private sewer connection.** It is accepted practice for the sewer connection from a property to be owned by the owner or occupant of the premises. In addition it states in the "Water Industries Act 1991" that the owner or occupant of a premises has a Right to connect to the public main for the purposes of disposing of foul water and surface water; it specifically precludes the disposal of waste from a commercial process for which special licences are required. Connection to the main may only occur with the written consent of the Sewer Authority, usually the District Council. See Leaflet No.3.

c.**To carry out investigatory works, trial holes, foundation inspections etc.** You will only be granted permission to excavate for this purpose if you can fully justify the need. This permission will not be granted to enable an individual to excavate and reinstate for the purpose of installing another undertaker's apparatus. See Leaflet No.4.

d.**To inspect maintain repair or replace an existing private apparatus or sewer.** It is a legal requirement that the owner of an apparatus shall maintain that apparatus in a safe and serviceable condition, and consequently the owner has a legal obligation to excavate, when necessary, to inspect, maintain, repair or replace such apparatus.See Leaflet No. 5.

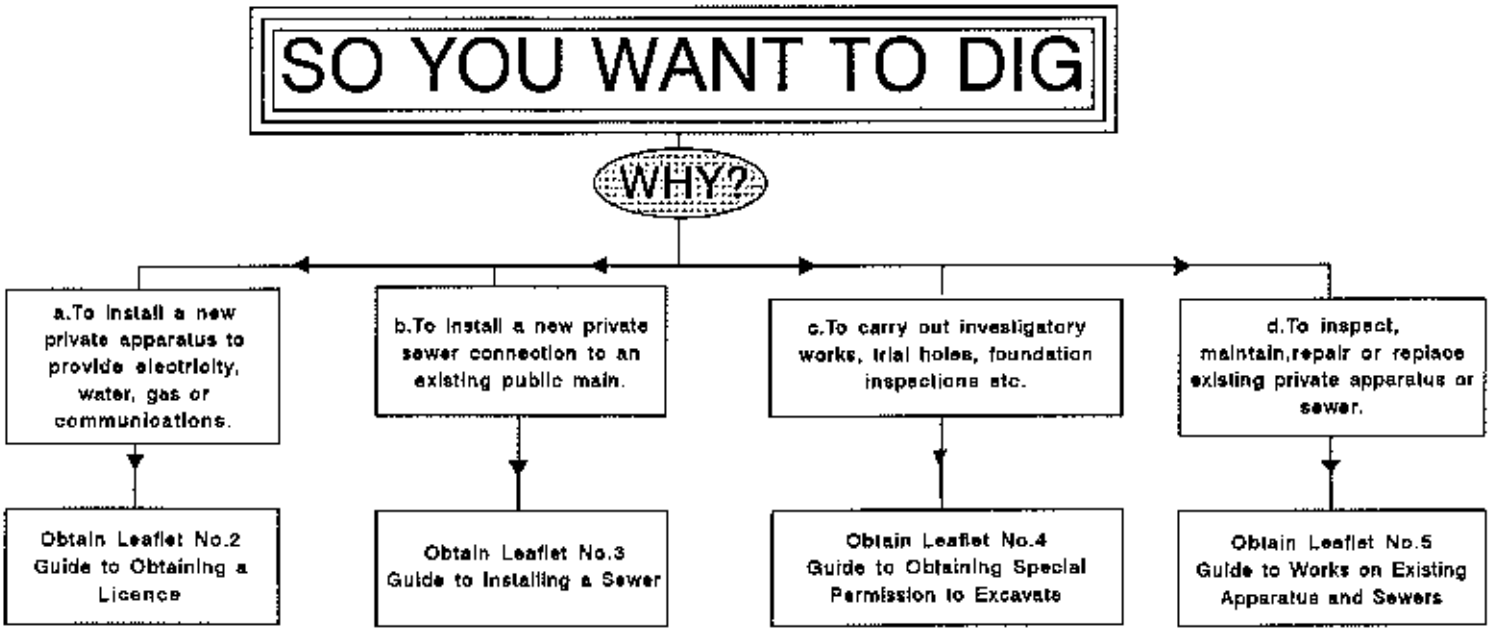


Figure 1a.Purpose of Excavation

Having selected the line obtain the appropriate leaflet. It will provide guidance regarding your powers and the obligations associated with the specific type of works which you wish to execute.

Accredited Supervision

Once you have become an Undertaker you will have certain powers related to the works which you wish to perform or wish to have performed on your behalf, but it is to be noted that you will also have incurred a number of obligations. Many of these obligations are statutory requirements and failure to fulfil them may result in prosecution.

One of those obligations is to ensure that the works are supervised by an Accredited Supervisor. You are advised to employ such a person at an early stage. He/she will be familiar with the requirements of the Act and will be able to assist in making sure that the other obligations are met. A "Directory of Accredited Supervisors" is maintained by North Yorkshire County Council; copies are held at all Highways Divisional Offices and at the Offices of Harrogate Borough Council, Scarborough Borough Council and York City Council and is available for viewing during normal office hours.

PLEASE NOTE THAT THE DIRECTORY IS PURELY A LIST OF PERSONS WHO ARE ACCREDITED SUPERVISORS OR COMPANIES WHICH EMPLOY ACCREDITED SUPERVISORS AS DEFINED BY THE NEW ROADS AND STREET WORKS ACT 1991.
IT IS NOT A GUARANTEE OF COMPETENCE OR APPROVAL.

Indemnity

As an Undertaker you indemnify the Highway Authority(North Yorkshire County Council) against all and any claim made by a third party in connection with any aspect of your works. Although there is no legal requirement to obtain insurance you are strongly advised to do so. The value of such insurance is a matter for you but the County Council when employing contractors requires a minimum of £5 million cover. Your liability for the works is for a period of 2 years(3 years in the case of deep excavations). You also have an ongoing liabilty for the apparatus and should it fall and cause injury to another person or damage to another person's property you may be held accountable.

Who to Contact

There are 8 Divisional Offices and 3 Agencies within North Yorkshire. Each has responsibility for the management of highways within a certain geographical area. Any questions regarding works in the highway should be directed at the office in whose geographical area it is planned to perform the works. Listed below are their respective contact details.

Divisional Offices

North Yorkshire County Council
Highways and Transportation Department
No. 1 Divisional Office
18 Green Howards Road
Richmond
North Yorkshire
DL10 4NR
Tel:01748 823323 Fax:01748 850336

North Yorkshire County Council
Highways and Transportation Department
No. 2 Divisional Office
Norby Depot
Thirsk
North Yorkshire
YO7 1BN
Tel:01845 522138 Fax:01845 522603

North Yorkshire County Council
Highways and Transportation Department
No. 3 Divisional Office
The Garth, White Leys Estate
Whitby
North Yorkshire
YO21 3PD
Tel:01947 604530 Fax:01947 820314

North Yorkshire County Council
Highways and Transportation Department
No. 4 Divisional Office
Manor Vale
Kirkbymoorside
North Yorkshire
YO6 6EG
Tel:01751 431248 Fax:01751 432973

North Yorkshire County Council
Highways and Transportation Department
No. 5 Divisional Office
Croft House, Carleton Road
Skipton
North Yorkshire
BD23 2BG
Tel:01756 794816 Fax:01756 700398

North Yorkshire County Council
Highways and Transportation Department
No. 6 Divisional Office
Station View, Starbeck
Harrogate
North Yorkshire

Tel:01423 883502 Fax:01423 881084

North Yorkshire County Council
Highways and Transportation Department
No. 7 Divisional Office
Ox Carr Lane, Strensall
York
North Yorkshire
YO3 5TD
Tel:01904 490263 Fax:01904 491372

North Yorkshire County Council
Highways and Transportation Department
No. 8 Divisional Office
Canal Road, Selby
North Yorkshire
YO8 0AG
Tel:01757 702441 Fax:01757 701478

Agency Offices

Harrogate Borough Council
Department of Technical Services
Knapping Mount, West Grove Road
Harrogate
North Yorkshire
HG1 2AE
Tel:01423 500600 Fax:01423 530982

Scarborough Borough Council
Director of Technical Services
Town Hall, St Nicholas Street
Scarborough
North Yorkshire
YO11 2HG
Tel:01723 372351 Fax:01723 354979

York City Council
Directorate of Development Services
9 St Leonard's Place
York
YO1 2ET
Tel:01904 613161 Fax01904 670739

Look at the diagram below (Figure 1b) It is a representation of North Yorkshire indicating the limits of responsiblity for each office listed above. The numbers in squares identify the Division and the double black circles indicate the location of the Divisional Office. The black irregular patches indicate the 3 Agencies(Harrogate, Scarborough and York).

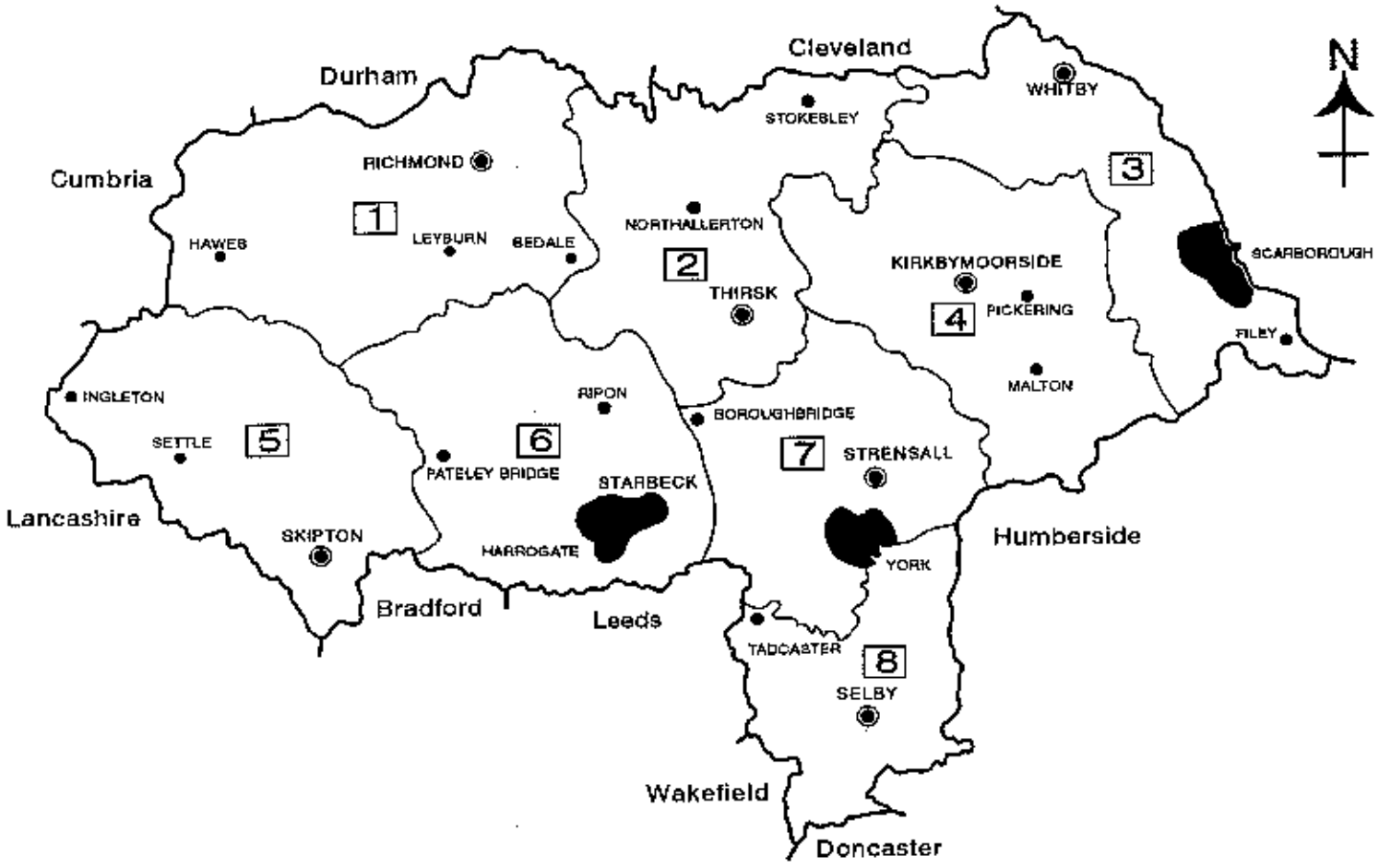


Figure 1b.Who to Contact

BIBLIOGRAPHY

The following documents are HMSO publications and provide the source information for the production of "So You Want To Dig". All are available from good bookshops.

Document Title	ISBN Number
New Roads and Street Works Act 1991	0-10-542291-6
Code of Practice for the Co-ordination of Street Works and Works for Road Purposes and Related Matters	0-11-551162-8
Code of Practice for Inspections	0-11-551148-2
Specification for the Reinstatement of Openings in Highways	0-11-551143-1
Safety at Street Works and Road Works a Code of Practice	0-11-551144-X

The following leaflets comprise the series "So You Want to Dig" and can be obtained from any Highways Department Divisional Office or Agency Office.

Leaflet 1. General Information

Leaflet 2. Guide to Obtaining a Licence

Leaflet 3. Guide to Installing a Sewer

Leaflet 4. Guide to Obtaining Special Permission to Excavate

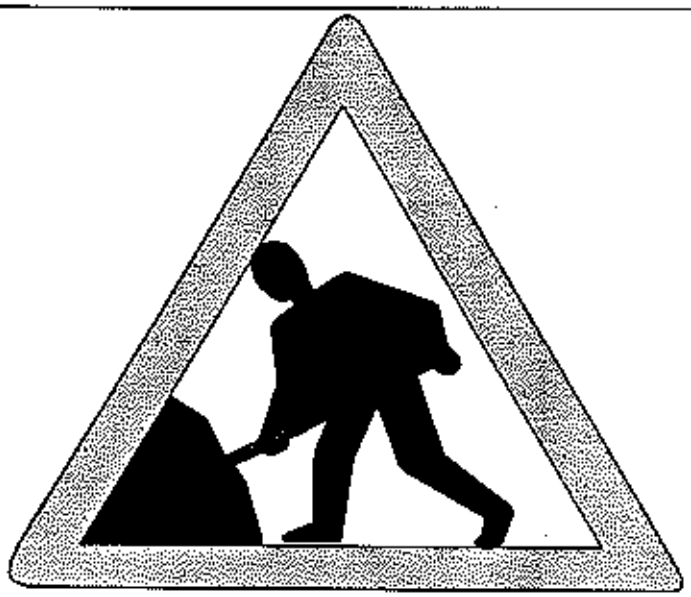
Leaflet 5. Guide to Working on Existing Apparatus and Sewers

Leaflet 6. Guide to Notification, Performance and Registration of the Works

Leaflet 7. Guide to Charges and Fees

The following document can be viewed at any Highways Department Divisional Office or Agency Office.

Leaflet 8. Directory of Accredited Supervisors



SO YOU WANT TO DIG

A GUIDE FOR MEMBERS OF THE PUBLIC WISHING TO UNDERTAKE WORKS WHICH WILL INVOLVE EXCAVATION IN THE PUBLIC HIGHWAY IN THE COUNTY OF NORTH YORKSHIRE

PUBLISHED BY
THE HIGHWAYS AND TRANSPORTATION DEPARTMENT
NORTH YORKSHIRE COUNTY COUNCIL

Leaflet No.2
Guide to Obtaining a Licence

A private apparatus is defined as, any pipe, duct, cable or wire installed by, or on behalf of, an owner or occupant of a premises and which after installation will remain the property and responsibilty of the owner or occupant of the premises served by the apparatus.

To be empowered to install a private apparatus the owner or occupant of the premises must be duly licenced for the installation of that apparatus.

A licence is a legally binding agreement between the Licensee and the Highway Authority. It bestows upon the Licensee the status of "Undertaker". This status provides the Licensee with a number of powers and obligations. Abuse of those powers or failure to fulfil those obligations may result in the licence being revoked and the apparatus being removed or disabled at the licensees expense. It may also render the licensee liable to prosecution.

What are your powers?

A licence once issued empowers the Licensee to:

a.Install, or have installed on his/her behalf, the specific apparatus identified in the licence at the location identified in the licence.

b.Retain and use such apparatus for the purpose specified in the licence.

c.Thereafter to inspect, maintain, repair or replace as necessary such apparatus in order to permit its continued use.

d.Break open the street and obtain access to the street in the position specified in the licence in pursuance of these powers.

What are your obligations?

A licence once issued obliges the Licensee to:

a.Pay the necessary inspection charges for each and every occasion when works occur.(for the appropriate charges see the current issue of Leaflet No.7). In addition in the Harrogate Agency area a bond or deposit may also be required, details of which can be obtained from the Director of Technical Services at Harrogate Borough Council

b.Issue the necessary notifications of works, for each and every occasion when works occur, in accordance with the procedures laid down in the New Roads and Street Works Act 1991 and outlined in Leaflet No.6.

c.Ensure that the execution of the works, for each and every occasion when works occur, is performed in a satisfactory manner with particular regard to the Code of Practice "Safety at Street Works and Road Works".

d.Ensure the works are performed, for each and every occasion when works occur, under the supervision of an Accredited Supervisor in accordance with Section 67 of the Act. A "Directory of Accredited Supervisors" is held at all Divisional/Agency Offices and may be viewed during normal working hours.

e.Indemnify the Highway Authority against all and any claim made by a third party in connection with any aspect of the works.

f.Ensure that the highway is permanently reinstated, for each and every occasion when works occur, to the satisfaction of the Divisional/Agency Engineer and that such permanent reinstatement shall be guaranteed for a period of not less than 2 years from the date of reinstatement (3 years in the case of excavations in excess of 1.5 metres). The standard of reinstatement to be in accordance with the "Specification for Reinstatement of Openings in Highways". It is permissable to perform an Interim Reinstatement, this must be replaced by the Permanent Reinstatement in a period not exceeding 6 months.

g.Once installed, to maintain the apparatus in a serviceable condition until such time as the apparatus is removed.

h.To notify the Highway Authority in writing prior to any transfer of ownership of the apparatus or the property which it serves.

i.To notify any person to whom title for the apparatus, or the property which it serves passes, of the obligations herein stated.

j.To provide, as and when requested by any person having reasonable cause, information regarding the location of the apparatus. Such information to be provided within 10 working days of request.

How do you obtain a licence?

Look at the flow diagram (Figure 2a) below, this will guide you through the licencing process.

Start at the top left and read each box in turn, the shaded boxes are questions which can be answered yes or no. If you reach the "Yes" box you may proceed, if you are led to the STOP sign you may not proceed.

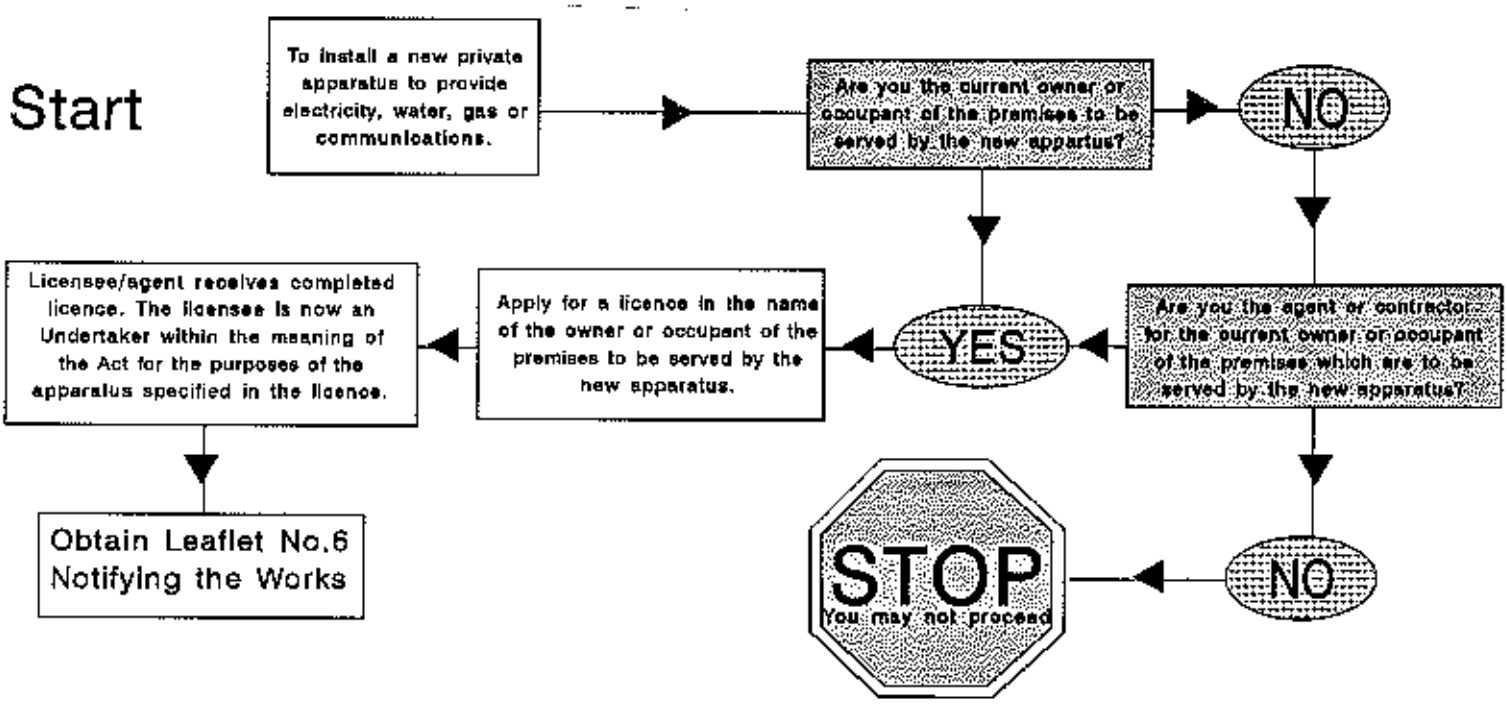


Figure 2a.Private Apparatus

Action 1. You are to complete Part 1 of the attached application form, and submit it, along with a location diagram, showing the proposed alignment of the apparatus, and a cheque for the administration charge (see Leaflet No.7 for current charges), to the Divisional/Agency Office responsible for the street in which the works are to take place. .

Action 2. The Divisional/Agency Office will complete part 2 of the application form.

Action 3. The Divisional/Agency Office will notify all Undertakers and Licence Holders who may be affected by your proposed works of the intention to issue a licence, at the same time asking them to provide copies of existing records showing the location of their apparatus.

This notification provides the opportunity for the affected Undertakers or Licence Holders to advise the potential licensee of the safety hazards involved with their apparatus, any protective measures necessary to prevent damage to that apparatus or suggest to the Highway Authority any special conditions which should be applied to the licence. The Statutory Undertakers and other Licence Holders are required to respond to these enquiries within a Statutory Period (10 working days), if they fail to respond within that time it will be presumed that they have no objection to the issue of a licence.

Action 4. At the end of the Statutory Period a licence will be prepared and sent to the applicant for signature. The applicant is advised to read the document carefully as the terms are legally binding. Failure to comply with the

terms of the licence could result in it being revoked and the apparatus being rendered unserviceable, at your expense.

Action 5. Having read and signed the licence you are to return it for completion. The licence will be signed on behalf of the County Council, the original will be retained and a copy returned to you for your records. Once you have received your copy of the completed licence you are a Licensee and as such an Undertaker within the meaning of the New Roads and Street Works Act 1991. You are now licenced to place and retain the apparatus specified in your licence in the location specified in the licence and thereafter inspect, maintain, adjust, repair, alter or renew that apparatus. In short

YOU ARE A PRIVATE UNDERTAKER

Please note this does not mean that you may now rush out and dig a hole. As an Undertaker you are required to formally Notify the works. How this is to be done is outlined in Leaflet No.6.

BIBLIOGRAPHY

The following documents are HMSO publications and provide the source information for the production of "So You Want To Dig". All are available from good bookshops.

Document Title	ISBN Number
New Roads and Street Works Act 1991	0-10-542291-6
Code of Practice for the Co-ordination of Street Works and Works for Road Purposes and Related Matters	0-11-551162-8
Code of Practice for Inspections	0-11-551148-2
Specification for the Reinstatement of Openings in Highways	0-11-551143-1
Safety at Street Works and Road Works a Code of Practice	0-11-551144-X

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Leaflet 1. General Information

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Leaflet 8. Directory of Accredited Supervisors

Application to Install and Retain a Private Apparatus in a Publicly Maintainable Highway

Part 1

To:	
	Post Code:

Applicant Details	Name: Name of Person or Persons in whose name licence is to be issued.
Full Adress	Post Code:
Is correspondence to be sent to the Licensees Agent	Yes/No — If Yes complete agent details below
Agent Details	Name:
Full Adress	Post Code:

Apparatus Details	Purpose:
Brief Description of Apparatus (including material, diameter/size etc)	

Location Details	Position	Method	Length	Depth
Street Name	Carriageway	Thrust Bore/Open Trench	metres	metres
Town Name Post Code	Footway	Thrust Bore/Open Trench	metres	metres
Ordnance Survey Grid Reference	Verge	Thrust Bore/Open Trench	metres	metres

Please provide a licence in accordance with Section 50 of the New Roads and Street Works Act 1991 to install and maintain the apparatus detailed above in the location detailed above.

Find attached a plan showing the intended location of the apparatus and a cheque in respect of the licence administration charge as detailed in Leaflet No.7

I understand that the location of the apparatus may have to be changed subject to the results of the statutory enquiries which will be made by the Highway Authority.

Signature _____

Application to Install and Retain a Private Apparatus in a Publicly Maintainable Highway

Part 2

Enquiries(External)

Utility	Date of Letter	Date of Response	Remarks
Electric			
British Gas			
Water			
Sewerage			
British Telecom			
Mercury			
Energis			
National Grid			
Drainage Board			
Other			
Other			

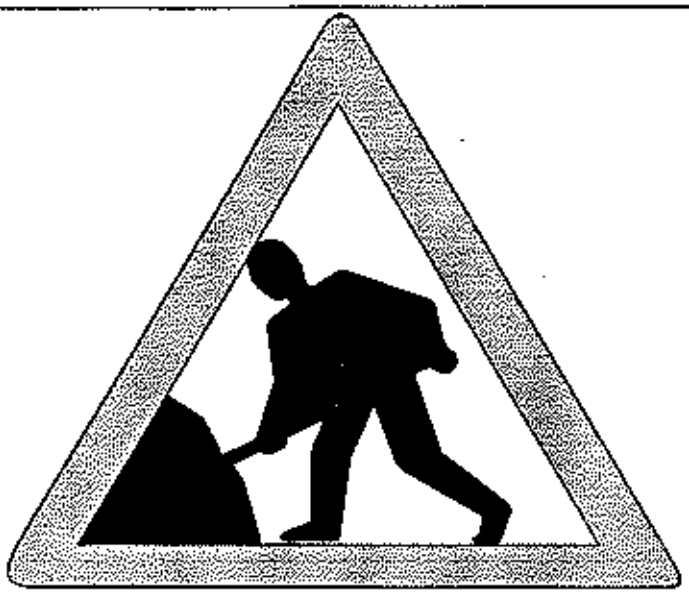
Enquiries(Internal)

Utility	Date of Letter	Date of Response	Remarks
Client Unit			
Trunk Road Tm			
Area Traffic			
Road Lighting			
Archeology			
Other			

Provisions to be added to standard licence:

Standard Charges	Fee	VAT
Administration Paid at time of application		
Inspection to be paid at time of issuing Form N and calculated in accordance with method shown in Leaflet No.7		

Date application passed to County Hall:



SO YOU WANT TO DIG

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PUBLISHED BY
THE HIGHWAYS AND TRANSPORTATION DEPARTMENT
NORTH YORKSHIRE COUNTY COUNCIL

Leaflet No.3
Guide to Installing a Sewer

Section 106 of The Water Industries Act 1991 states that the Owner or Occupier of a property has a RIGHT to connect to a Public Main for the purpose of discharging foul water and surface water. It specifically precludes the discharge of commercial waste, e.g. liquid from a manufacturing process.

The effect of this section of the Water Industries Act is to bestow upon the owner or occupier of a premises the status of "Undertaker". This status provides the owner or occupier with a number of powers and obligations. Abuse of those powers or failure to fulfil those obligations may prove costly and in some cases may lead to prosecution.

What are your powers?

An owner or occupier of a premises is empowered to:

a.Install, or have installed on his/her behalf, a pipe or pipes in the Highway specifically to discharge surface water and domestic foul water into the nearest public sewer, subject only to the permission of the Sewer Authority responsible for that sewer to connect to the public main, permission which cannot be unreasonably withheld.

b.Retain and use such sewer for the purpose authorised by the Sewer Authority.

c.Thereafter to inspect, maintain, repair or replace as necessary the sewer in order to permit its continued use.

d.Break open the street and obtain access to the street in pursuance of these powers.

What are your obligations?

An owner or occupier of a premises exercising his/her powers to install a sewer is obliged to:

a.Pay the necessary inspection charges, for each and every occasion when works occur.(for the appropriate charges see the current issue of Leaflet No.7) In addition in the Harrogate Agency area a bond or deposit may also be required, details of which can be obtained from the Director of Technical Services at Harrogate Borough Council.

b.Issue the necessary notifications of works, for each and every occasion when works occur, in accordance with the procedures laid down in the New Roads and Street Works Act 1991and outlined in Leaflet No.6.

c.Ensure that the execution of the works, for each and every occasion when works occur, is performed in a satisfactory manner with particular regard to the Code of Practice "Safety at Street Works and Road Works".

d.Ensure the works are performed, on each and every occasion when works occur, under the supervision of an Accredited Supervisor in accordance with Section 67 of the Act. A "Directory of Accredited Supervisors" is held at all Divisional/Agency Offices and may be viewed during normal working hours.

e.Indemnify the Highway Authority against all and any claim made by a third party in connection with any aspect of the works.

f.Ensure that the Highway is permanently reinstated, for each and every occasion when works occur, to the satisfaction of the Divisional/Agency Engineer and that such permanent reinstatement shall be guaranteed for a period of not less than 2 years from the date of reinstatement (3 years in the case of excavations in excess of 1.5 metres). The standard of reinstatement is to be in accordance with the "Specification for Reinstatement of Openings in Highways". It is permissable to perform an Interim Reinstatement but this must be replaced by the Permanent Reinstatement in a period not exceeding 6 months.

g.Once installed, to maintain the sewer in a serviceable condition until such time as the sewer is removed.

h.To notify the Highway Authority in writing prior to any transfer of ownership of the sewer or the property which it serves.

i.To notify any person to whom title for the sewer, or the property which it serves passes, of the obligations herein stated.

j.To provide, as and when requested by any person having reasonable cause, information regarding the location of the sewer. Such information to be provided within 10 working days of request.

What must you do?

Look at the flow diagram (Figure 3a) below, this will guide you through the steps to be taken:

Start at the top left and read each box in turn, the shaded boxes are questions which can be answered yes or no. If you reach the "Yes" box you may proceed, if you are led to the STOP sign you may not proceed.

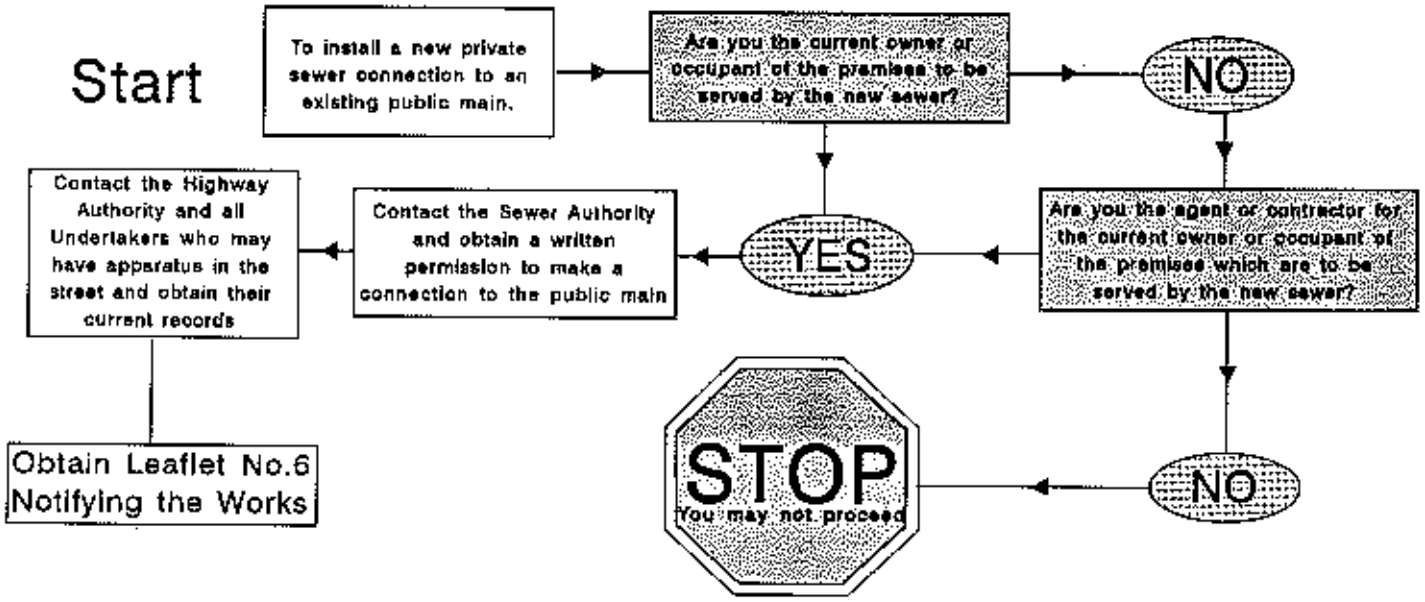

Figure 3a.Private Sewer

Action 1. Contact the Sewer Authority and obtain formal written permission to connect the premises to the public main. This permission cannot be unreasonably withheld but may involve charges imposed by the Sewer Authority. Once you have obtained this permission you will be able to identify where the sewer is, and select a provisional route between the premises to be served and the main.

Action 2. Having selected the route you must contact the Highway Authority and all those Statutory Undertakers and Private Undertakers whose apparatus may be affected by your intended works and advise them of your intentions. At the same time you are advised to request copies of their plans showing the location of their apparatus, and any safety instructions (these should be provided free of charge). The Highway Authority's Divisional/Agency Office will be able to provide a list of addresses appropriate to the site of your planned works.

With this information it may be appropriate to reassess your route.

Please note this does not mean that you may rush out and dig a hole. As an Undertaker you are required to formaly Notify the works. How this is to be done is outlined in Leaflet No.6.

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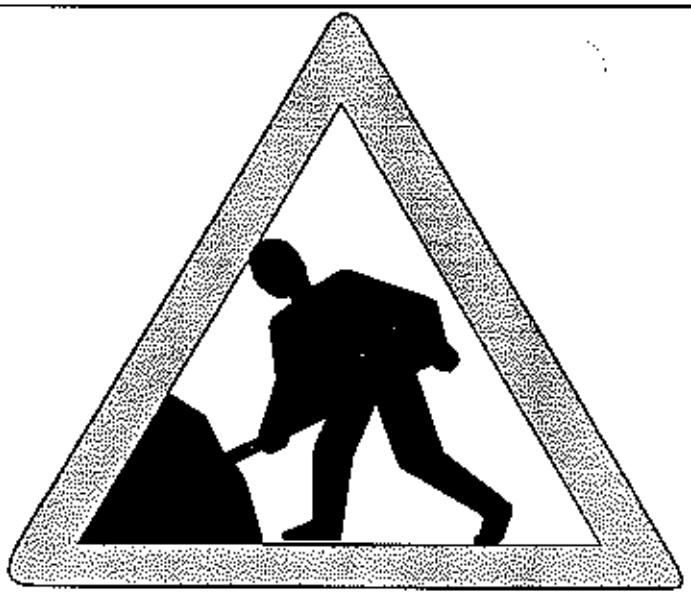

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Leaflet No.4
Guide to Obtaining Special Permission to Excavate

If you are not an Undertaker as defined under Section 50 of the New Roads and Street Works Act 1991 or under Section 106 of the Water Industries Act 1991 but have reason to excavate in the Highway you should contact the Divisional/Agent Office responsible for the site of the intended works and discuss your intentions. If your purpose is reasonable and necessary a "Permission" may be granted under Section 171 of the Highways Act 1980. This permission allows a one time excavation for the following purposes:

a.Investigatory Works to identify soil conditions.

b. Investigatory Works to identify the alignment of unrecorded apparatus.

c.Investigatory works to identify a fault with a structure close to the Highway Boundary which cannot be investigated in any other way. The permission would normally be extended to the necessary works if repairs to the structure were confirmed.

A "Permission" granted under Section 171 of the Highways Act 1980 is a legally binding agreement between the Applicant and the Highway Authority. It bestows upon the Applicant the status of "Undertaker". This status provides the Applicant with a number of powers and obligations. Abuse of those powers or failure to fulfil those obligations may result in prosecution.

What are your powers?

A person granted a "Permission" is empowered to:

a.Excavate in the Highway for the specific purpose stated in the Permission.

b.Break open the street and obtain access to the street in pursuance of these powers.

What are your obligations?

A person exercising his/her powers granted in a Permission is obliged to:

a.Pay the necessary inspection charges.(for the appropriate charges see the current issue of Leaflet No.7) In addition in the Harrogate Agency area a bond or deposit may also be required, details of which can be obtained from the Director of Technical Services at Harrogate Borough Council.

b.Issue the necessary notifications of works in accordance with the procedures laid down in the New Roads and Street Works Act 1991 and outlined in Leaflet No.6.

c.Ensure that the execution of the works is performed in a satisfactory manner with particular regard to the Code of Practice "Safety at Street Works and Road Works".

d.Ensure the works are performed under the supervision of an Accredited Supervisor in accordance with Section 67 of the Act. A "Directory of Accredited Supervisors" is held at all Divisional/Agency Offices and may be viewed during normal working hours.

e.Indemnify the Highway Authority against all and any claim made by a third party in connection with any aspect of the works.

f.Ensure that the Highway is permanently reinstated, for each and every occasion when works occur, to the satisfaction of the Divisional/Agency Engineer and that such permanent reinstatement shall be guaranteed for a period of not less than 2 years from the date of reinstatement (3 years in the case of excavations in excess of 1.5 metres). The standard of reinstatement to be in accordance with the "Specification for Reinstatement of Openings in Highways". It is permissable to perform an Interim Reinstatement, this must be replaced by a Permanent Reinstatement in a period not exceeding 6 months.

g.Assignment of legal responsibility for the works to another party is not permitted.

What must you do?

Look at the flow diagram (Figure 4a) opposite, this will guide you through the steps to be taken:

Start at the top left and read each box in turn. The shaded boxes are questions which can be answered yes or no. If you reach the "Yes" box you may proceed, if you are led to the STOP sign you may not proceed.

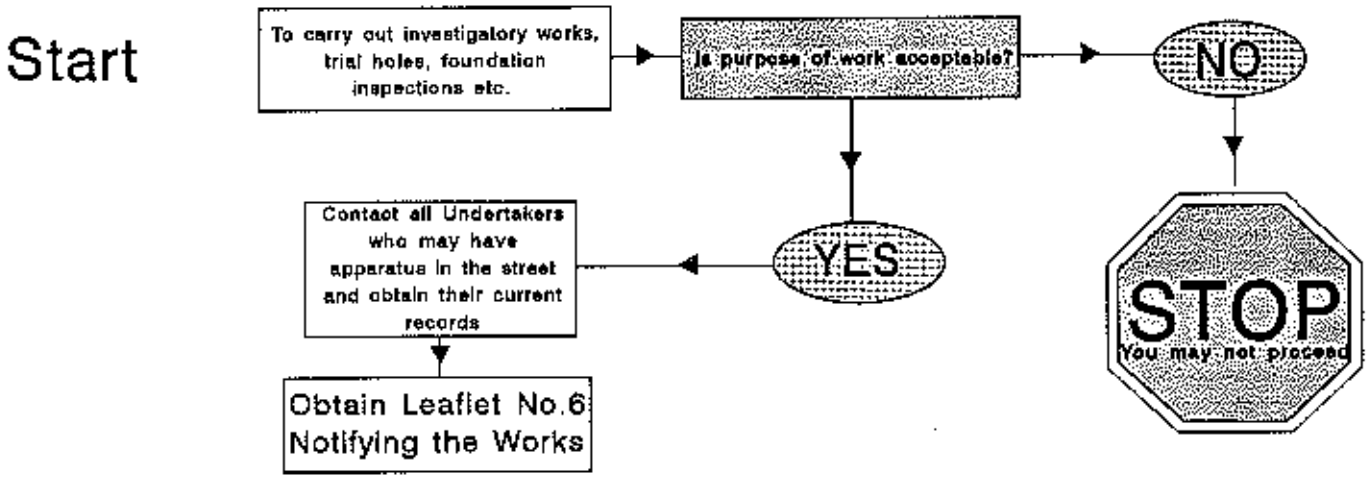

Figure 4a.Special Permission

Action 1.Write to the Divisional/Agency Engineer outlining your proposal, stating specifically the reason for the works and why it cannot be performed without excavation in the highway. Your proposal letter is to be accompanied by a cheque for the administration charge (see Leaflet No 7 for current charges). The Divisional/Agency Engineer will consider your proposal and either grant or refuse permission. He may ask to discuss the matter face to face either at his office or on site before he makes his decision. If permission is granted proceed to Action 2.

Action 2.You are to contact all those Statutory Undertakers and Private Undertakers whose apparatus may be affected by your intended works and advise them of your intentions. At the same time you are advised to request copies of their plans showing the location of their apparatus, and any safety instructions (these should be provided free of charge). The Divisional/Agency Office will be able to provide a list of addresses appropriate to the site of your planned works. With this information it may be appropriate to amend your proposal to the Divisional/Agency Engineer.

YOU ARE A PRIVATE UNDERTAKER

Please note this does not mean that you may rush out and dig a hole. As an Undertaker you are required to formally Notify the works. How this is to be done is outlined in Leaflet No.6.

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Leaflet No.5
Guide to Working on Existing Apparatus and Sewers

As the owner of an apparatus or a sewer which already exists in the public highway you are an Undertaker, either as defined under Section 50 of the New Roads and Street Works Act 1991 or as defined under Section 106 of the Water Industries Act 1991. You are therefore under an ongoing obligation, as detailed in Section 81 of the New Roads and Street Works Act 1991, to maintain your apparatus or sewer in a safe and serviceable condition. As a consequence it may be necessary, from time to time, to inspect, maintain, repair, or even replace the apparatus or sewer.

What are your powers?

As an Undertaker you are empowered to:

a.Inspect, maintain, repair or replace, as necessary, your apparatus/sewer in order to permit its continued use.

b.Break open the street and obtain access to the street in pursuance of this power.

What are your obligations?

As an Undertaker requiring to excavate in the highway in order to inspect, maintain, repair or replace your existing apparatus, you are under the following obligations:

a.Pay the necessary inspection charges for each and every occasion when works occur.(for the appropriate charges see the current issue of Leaflet No.7) In addition in the Harrogate Agency area a bond or deposit may also be required, details of which can be obtained from the Director of Technical Services at Harrogate Borough Council.

b.Issue the necessary notifications of works, for each and every occasion when works occur, in accordance with the procedures laid down in the New Roads and Street Works Act 1991and outlined in Leaflet No.6.

c.Ensure that the execution of the works, for each and every occasion when works occur, is performed in a satisfactory manner with particular regard to the Code of Practice "Safety at Street Works and Road Works"

d.Ensure the works are performed, for each and every occasion when works occur, under the supervision of an Accredited Supervisor in accordance with Section 67 of the Act. A "Directory of Accredited Supervisors" is held at all Divisional/Agency Offices and may be viewed during normal working hours.

e.Indemnify the Highway Authority against all and any claim made by a third party in connection with any aspect of the works.

f.Ensure that the Highway is permanently reinstated, for each and every occasion when works occur, to the satisfaction of the Divisional/Agency Engineer and that such permanent reinstatement shall be guaranteed for a period of not less than 2 years from the date of reinstatement (3 years in the case of excavations in excess of 1.5 metres). The standard of reinstatement is to be in accordance with the "Specification for Reinstatement of Openings in Highways". It is permissable to perform an Interim Reinstatement but this must be replaced by the Permanent Reinstatement in a period not exceeding 6 months.

g.To maintain the apparatus/sewer in a serviceable condition until such time as the apparatus/sewer is removed.

h.To notify the Highway Authority in writing prior to any transfer of ownership of the apparatus/sewer or the property which it serves.

i.To notify any person to whom title for the apparatus/sewer, or the property which it serves passes, of the obligations herein stated.

j.To provide, as and when requested by any person having reasonable cause, information regarding the location of the apparatus/sewer. Such information to be provided within 10 working days of request.

What must you do?

Look at the flow diagram (Figure 5a) opposite, this will guide you through the steps to be taken:

Start at the top left and read each box in turn. The shaded boxes are questions which can be answered yes or no. If you reach the "Yes" box you may proceed, if you are led to the STOP sign you may not proceed.

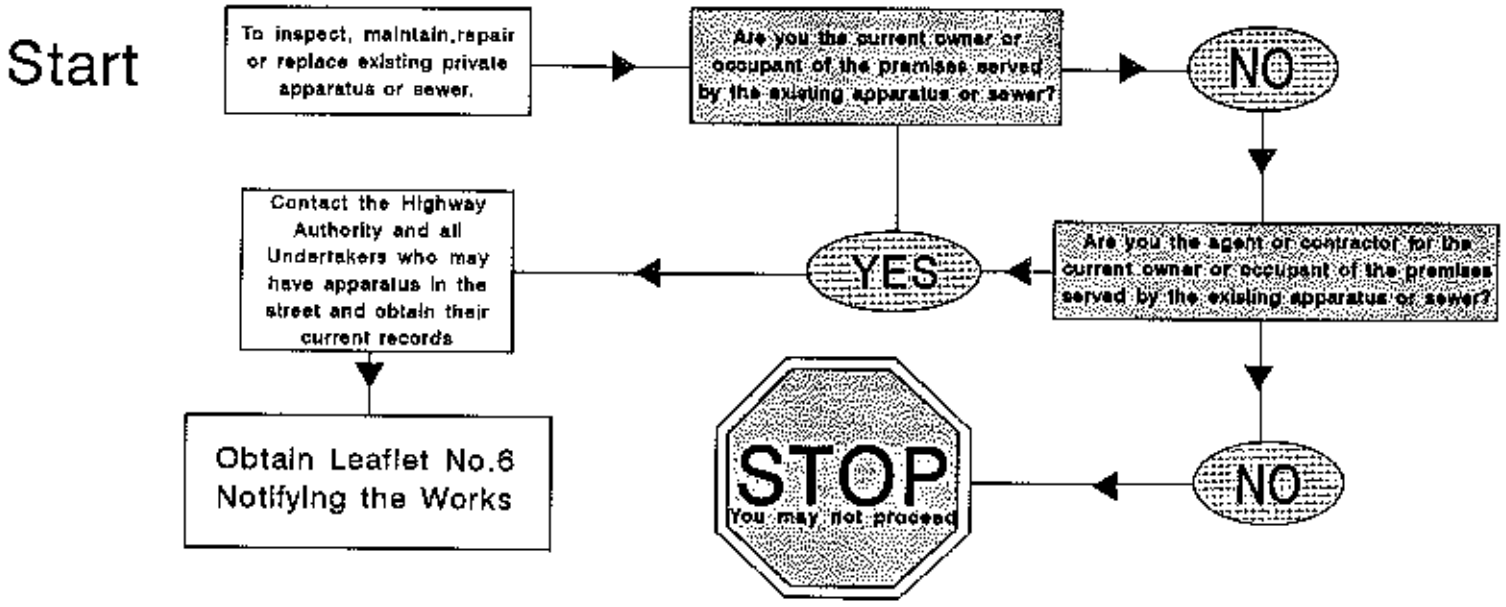

Figure 5a.Existing Apparatus

Please note this does not mean that you may rush out and dig a hole. As an Undertaker you are required to formally Notify the works. How this is to be done is outlined in Leaflet No.6.

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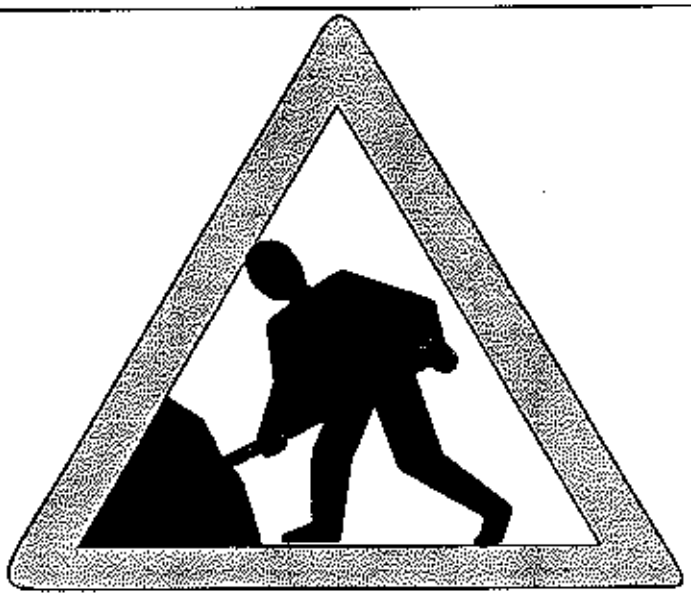

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Leaflet No.6
Guide to Notification, Performance and Registration of the Works

As an Undertaker you will now wish to perform, or have performed on your behalf, the works. It should be noted that much of what follows could reasonably be delegated to your Accredited Supervisor, although the legal responsibility remains with the you as the Undertaker.

What must you do?

Look at the flow diagram (Figure 6a) below, this will guide you through the steps to be taken:

Start at the top left, read each box in turn, the shaded boxes are questions which can be answered yes or no. If you reach the "Yes" box you may proceed.,

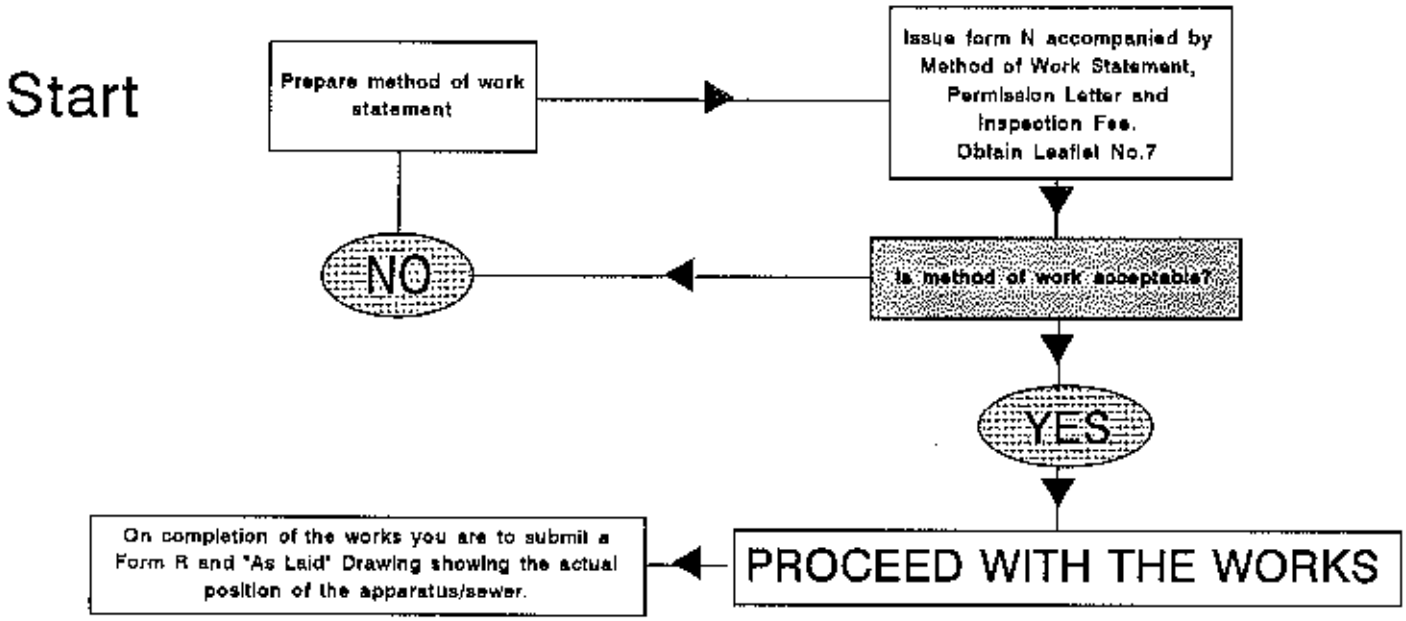


Figure 6a.The Works

Method of Work

A Method of Work Statement is a requirement imposed by North Yorkshire County Council's Highways and Transportation Department upon Private Undertakers, and provides evidence that the work is planned to be performed in a satisfactory manner. It is expected that it will be prepared by the Accredited Supervisor associated with the works. It will be presented to the Highways Divisional/Agency Office along with the formal Notification and the Inspections Fee. The Method of Work Statement is to include as a minimum requirement of the following:

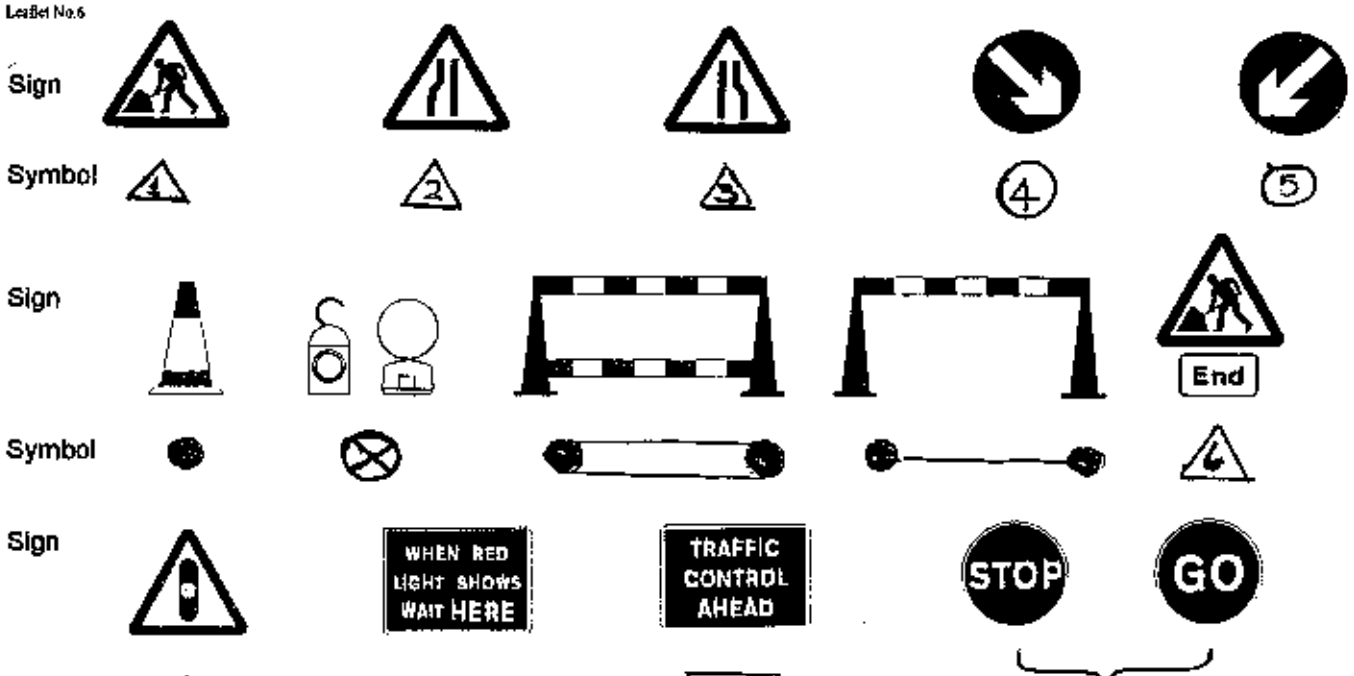
a.A brief explanation of the methods to be used to locate the position of buried pipes and cables, and action on locating apparatus which was not marked on any of the records provided by other Undertakers.

b.A list of telephone numbers where the Undertaker or his representative can be contacted 24 hours per day during the active phase of the works, and during Office hours after reinstatement of the works.

c.Reinstatement Specification. Must at least identify appropriate Appendix from "Specification for the Reinstatement of Openings In Highways".

d.If the works are to be executed at any time other than during normal working hours, a list of working times. Normal working hours are regarded as 08.00 to 17.00 Monday to Friday excluding Bank Holidays.

e.A plan showing the layout of the site and indicating the position of all necessary signs and guards which will be in place to protect the public from the works, including mandatory information boards. The Act places particular emphasis on the protection of pedestrians and the disabled. Where the works are to be performed in stages additional plans are to be provided for each stage. It is suggested that the Key shown on the facing page be used to indicate the signs and guards used. **Where a greater variety of signs than those shown here is needed to correctly sign the works additional symbols are to be used. The author should include a key to identify those symbols.**



Notification

The works are to be formally notified a minimum of 7 days prior to the commencement of works or such other period as specified by the Divisional/Agency Engineer. Notification is to consist of:

a.A duly completed Form N.(blank copy attached).

b.A copy of any "Written Permission" such as from the District Council for the installation of a sewer.

c.Method of Work Statement.

d.A cheque for the appropriate inspection fee. In addition in the Harrogate Agency area a bond or deposit may also be required, details of which can be obtained from the Director of Technical Services at Harrogate Borough Council

On receipt of the notification the Divisional/Agency Engineer will examine the Method of Work Statement and if it is not acceptable the undertaker or his representative will be advised by telephone within 3 working days. Until such time as an acceptable method of work is provided the works may not proceed.

If no objection is raised by the Divisional/Agency Engineer the works may proceed in accordance with the dates and times specified in the Form N and in the way outlined in the Method of Work Statement. A confirmation of approval will be forwarded by post.

The works

The works are to commence on the date specified in the Form N. During the progress of the work there will be at least one visit by a Highways Inspector. He will be aware of the content of the Method of Work Statement and will be looking to see that the works are being performed in accordance with it and whether, now that the works are in progress, any additional measures need to be adopted. He will advise the staff on site of any changes that need to be made and ensure that they are implemented. He will also be looking at the materials on site and the safe use of tools and plant.

Reinstatement and Registration

At the end of the works the Highway is to be reinstated. This reinstatement may be either Interim or Permanent.

If the permanent option is adopted the Undertaker or his representative is to Register the works using a Form R (blank copy attached) accompanied by a plan showing the exact location of the apparatus/sewer as laid. For a

Permanent Reinstatement the guarantee period is 2 years(3 years in the case of excavations in excess of 1.5 metres in depth).

If the Interim option is adopted the Undertaker or his representative is to Register the works using a Form R (blank copy attached) accompanied by a plan showing the exact location of the apparatus/sewer as laid. The Interim Reinstatement must be replaced by a Permanent Reinstatement within 6 calendar months. The works to alter the Interim Reinstatement to Permanent Reinstatement is to be notified in the same manner as described above. No Inspection Fee is liable but a second Form R is to be issued to Register the Permanent Reinstatement.

Registration in all cases is to be dispatched to the Divisional/Agency Office within 1 day of reinstatement and triggers the beginning of the guarantee period.

Inspections/Defects

A Highways Inspector will visit the works within 1 month of Registration, again 6-9 months after Registration and 1 month before the end of the guarantee period. If at any of these inspections the reinstatement is found to be unsatisfactory in accordance with the "Specification for the Reinstatement of Openings in Highways" a Defect Procedure will be triggered. Look at the flow diagram (Figure 6b) below, this will guide you through the Defect Procedure.

Start at the top left, read each box in turn, the shaded boxes are questions which can be answered yes or no. This will lead in turn to other boxes. It should be noted that some boxes are double lined, where this occurs the Undertaker is liable to a Statutory Charge for the inspection or a Recharge for Emergency Works performed by the Division/Agency (see Leaflet No.7 for current level of charges).

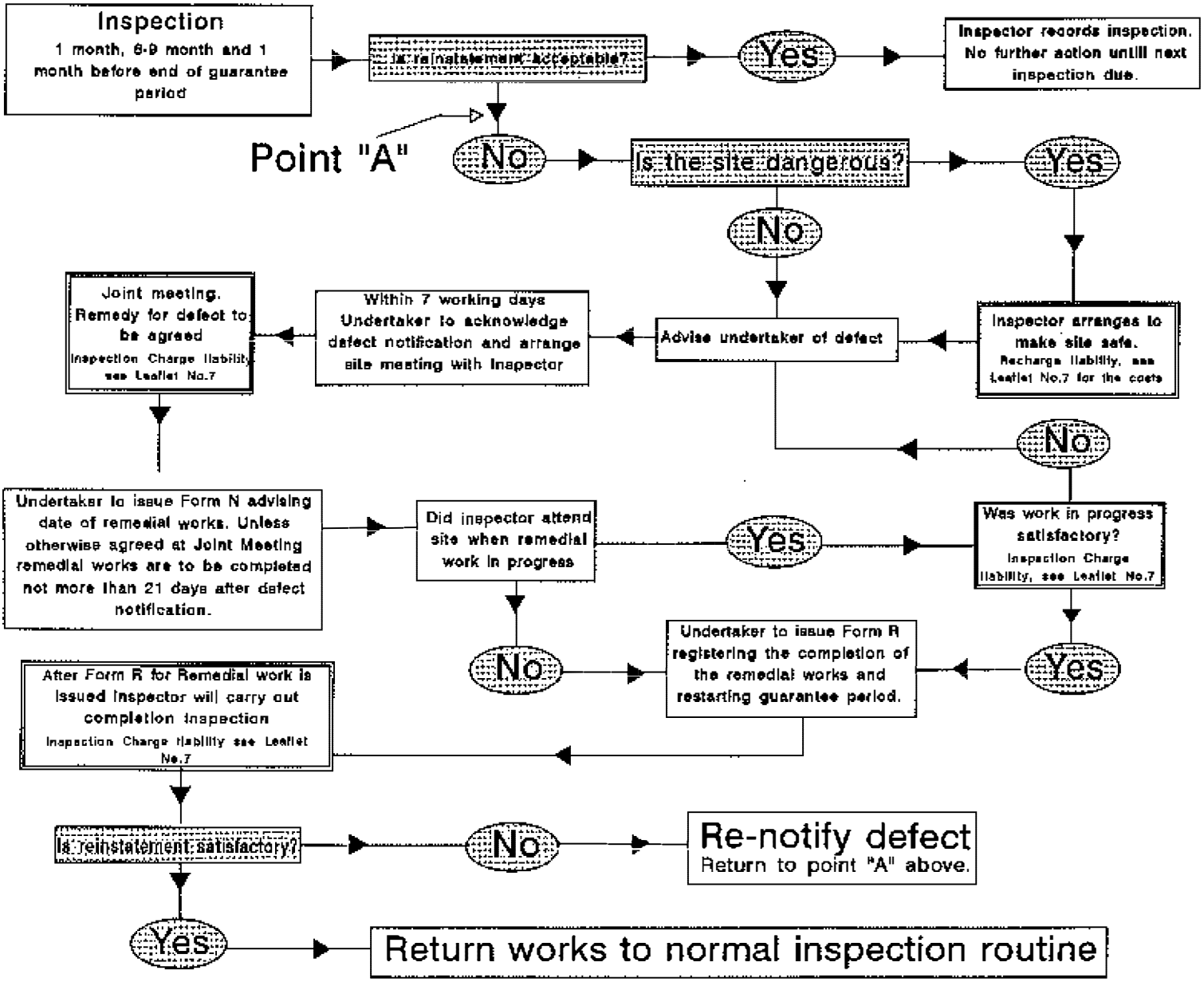


Figure 6b. Defect Procedure

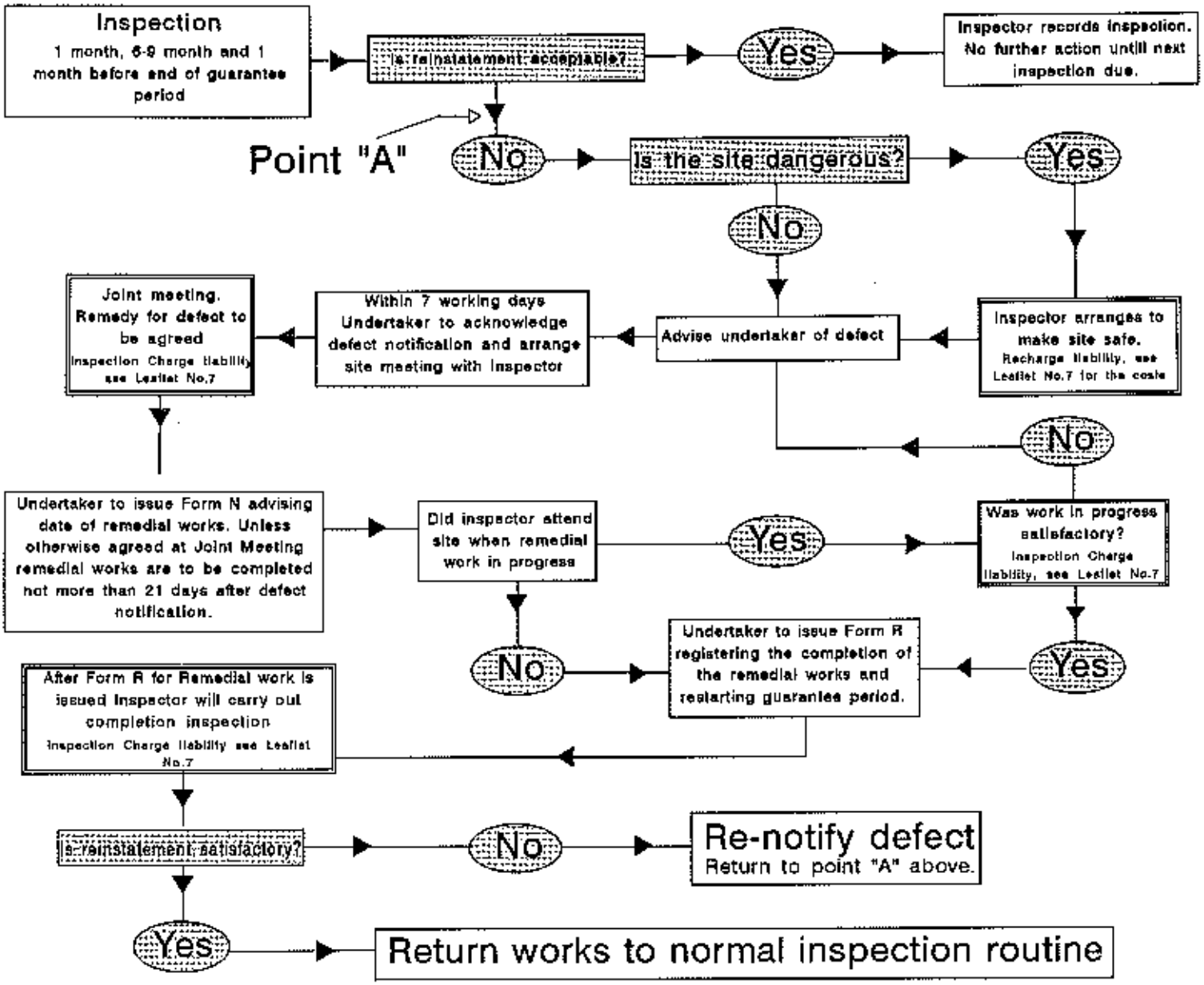


Figure 6b. Defect Procedure

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Specification for the Reinstatement of Openings in Highways	0-11-551143-1
Safety at Street Works and Road Works a Code of Practice	0-11-551144-X

The following leaflets comprise the series "So You Want to Dig" and can be obtained from any Highways Department Divisional Office or Agency Office.

Leaflet 1. General Information

Leaflet 2. Guide to Obtaining a Licence

Leaflet 3. Guide to Installing a Sewer

Leaflet 4. Guide to Obtaining Special Permission to Excavate

Leaflet 5. Guide to Working on Existing Apparatus and Sewers

Leaflet 6. Guide to Notification, Performance and Registration of the Works

Leaflet 7. Guide to Charges and Fees

The following document can be viewed at any Highways Department Divisional Office or Agency Office.

Leaflet 8. Directory of Accredited Supervisors

Form **N**

NEW ROADS AND STREET WORKS ACT 1991
NOTICE OF WORKS INCLUDING RESPONSES
PRIVATE UNDERTAKER

FROM

TO

PURPOSE			
Notice		Follow Up Notice	
Street Authority Response		Other Response	
Highway Authority Works Reference Number			
Highway Authority Licence Number (If Applicable)			
Senders File Reference			
Other Reference			

Date of Issue of this Notice	Date	Month	Year
Time of Issue(only applicable for emergencies)			
Start Date of Works	Date	Month	Year
Expected Completion Date of Works	Date	Month	Year

NOTICE PERIOD	Emergency Works	Normal Works	Remedial Works
	Within 2 Hours of Commencement of Works (Only applies where injury or serious damage will result)	7 Working Days (OR SUCH OTHER PERIOD AS MAY BE SPECIFIED BY THE DIVISIONAL/AGENCY ENGINEER)	7 Working Days (OR SUCH OTHER PERIOD AS MAY BE SPECIFIED BY THE DIVISIONAL/AGENCY ENGINEER)

Special Engineering Difficulty	Yes/No	Has Relevant Authority Approved the Works	Yes/No	Name of Approving Authority	

LOCATION

Description or House Name or Number

Street Name

Local Area Name

Post Code

National Grid Reference

PURPOSE

ATTACHMENTS

Place a "✓" in the box to indicate those items which are attached.

- A 1:10000 Scale Plan of Area ☐
- A Letter of Authority(if applicable) ☐
- A Method of Work Statement ☐
- A Cheque in Respect of Inspection Fees ☐

ACCREDITATION AND DECLARATION

Name of Accredited Supervisor _____ Scotvec Registration Number _____

I, _____ Being the Private Undertaker for these works , am fully aware of my obligations and duties under the New Roads and Street Works Act 1991

Signature _____

Form
R

NEW ROADS AND STREET WORKS ACT 1991
REGISTRATION OF WORKS
PRIVATE UNDERTAKER

FROM

Has Form N been sent	Yes/No
Are there any continuation sheets, if yes state number	
Highway Authority Works Reference Number	
Highway Authority Licence Number (If Applicable)	
Senders File Reference	
Other Reference	

TO

Are all works on originating Form N now complete	Yes/No
If yes state number of actual inspection units	

LOCATION

Description or House Name or Number

Street Name

Local Area Name

Post Code | | | | | | | |

National Grid Reference | | | | | | | | | |

PURPOSE OF WORKS
Brief Description in words.

ATTACHMENTS
As Laid Drawing Showing Finished Position of Apparatus/Sewer

Place a "✓" in the box to indicate drawing attached.

REINSTATEMENT CLOSING DIMENSIONS

GUARANTEE START DATE

Item	Location	Length (M)	Width(M)	C.F or V	Deep	Interim date	Interim month	Interim Year	Permanent date	Permanent month	Permanent year

ACCREDITATION AND DECLARATION

Name of Accredited Supervisor _____ Scotvec Registration Number _____

I, Being the Private Undertaker for these works , am fully aware of my obligations and duties under the New Roads and Street Works Act 1991

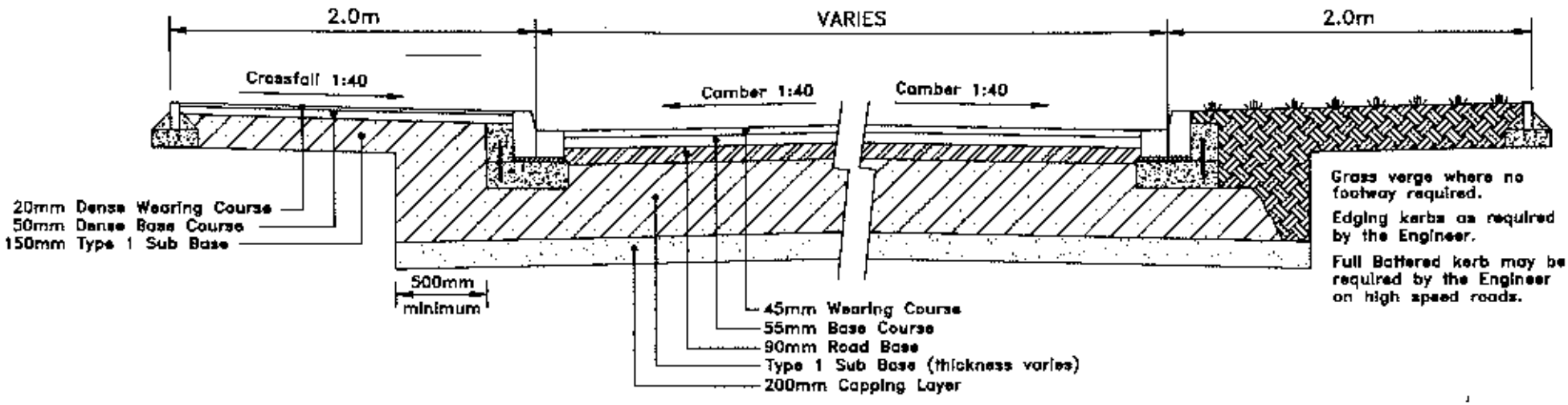
Signature _____

STANDARD DETAILS

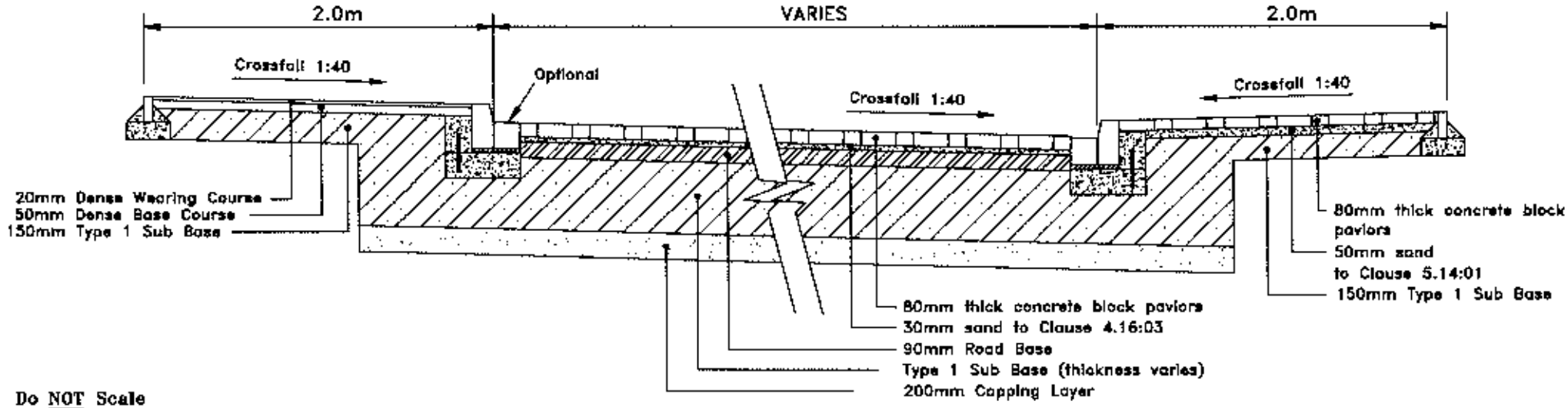
A1	RESIDENTIAL ESTATE ROADS	TYPICAL CROSS SECTION
A2	INDUSTRIAL ESTATE ROADS	TYPICAL CROSS SECTION
A3	RESIDENTIAL ESTATE ROAD	SHARED SURFACE DETAIL BLOCK PAVED CONSTRUCTION
B1	PRECAST CONCRETE KERB UNIT	
B2	PROPRIETARY KERB UNIT	
B3	PROPRIETARY KERB UNIT	
B4	CONSERVATION KERB UNIT	
B5	PRECAST EDGING UNIT	
B6	PRECAST CROSSING POINT	USE OF TACTILE PAVING
C1	PRECAST CONCRETE MANHOLE	DEPTH 1.35m TO 3.0m
C2	PRECAST CONCRETE MANHOLE	DEPTH 1.0m TO 1.35m
C3	BRICK MANHOLE	SHALLOW UPTO 1.0m
C4	BRICK MANHOLE	DEPTH 1.0m TO 1.5m
C5	PRECAST CONCRETE ROAD GULLY	
C6	INSITU CAST CONCRETE ROAD GULLY	
C7	BEDDING DETAILS	SURFACE WATER AND SUB SOIL DRAINS
D1	DISPOSITION OF MAINS IN STRAIGHT ROUTES ON RESIDENTIAL ESTATE ROADS	
D2	TURNING HEADS LAYOUT FOR RESIDENTIAL ESTATES	
D3	TURNING SPACE REQUIREMENT FOR RIGID VEHICLES	
D4	TURNING SPACE REQUIREMENTS FOR ARTICULATED VEHICLES	
D5	BANJO TURNING HEAD TO CATER FOR THE FORWARD TURNING ONLY OF ARTICULATED AND DRAWBAR TRAILER HGV's	

E1	CONCRETE FIELD CROSSING
E2	CONCRETE FARM CROSSING AND RURAL INDUSTRIAL ACCESS
E3	CONCRETE RURAL QUARRY CROSSING AND MAJOR INDUSTRIAL ACCESS
E4	BLOCK PAVED FIELD CROSSING
E5	BLOCK PAVED RURAL INDUSTRIAL ACCESS
E6	FOOTWAY CROSSING DETAIL
E7	URBAN INDUSTRIAL CROSSING
E8	BLOCK PAVED VERGE CROSSING FOR RURAL DWELLINGS
E9	CONCRETE VERGE CROSSING FOR RURAL DWELLING
F1	SITING OF ROAD LIGHTING COLUMNS
G1	TRAFFIC SIGN ERECTION DETAILS (SINGLE POST)
G2	TRAFFIC SIGN ERECTION DETAILS.(DOUBLE POST)

BITUMINOUS CONSTRUCTION



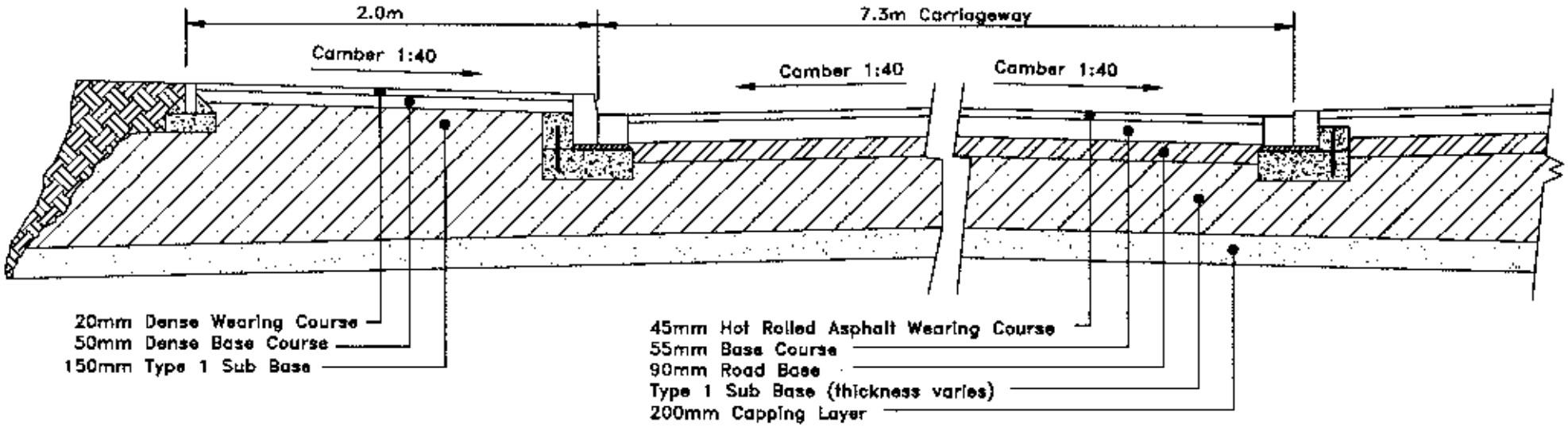
BLOCK PAVED SURFACING



Do NOT Scale

North Yorkshire County Council Highways & Transportation Department	Residential Estate Roads – Typical Cross Sections	DATE	DRAWING NO.	Rev.
		22/6/95	A1	

A1

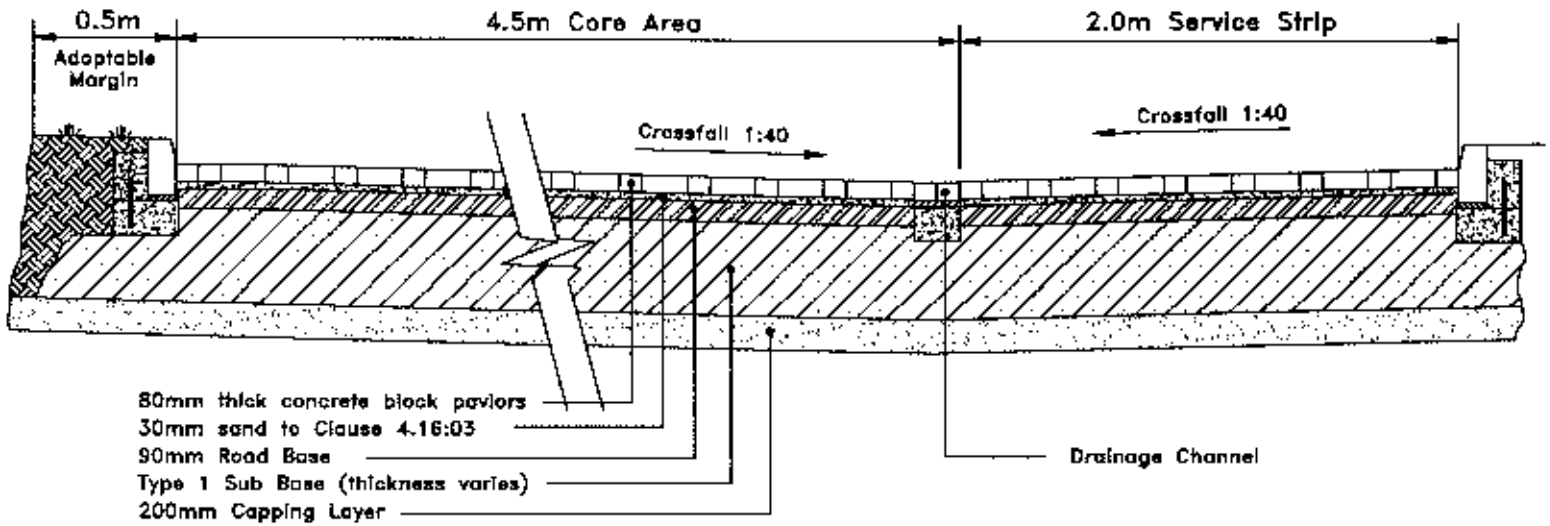


Do NOT Scale

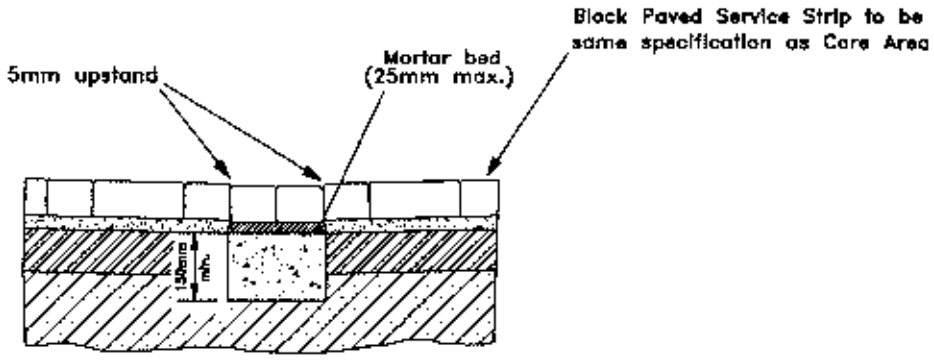
North Yorkshire County Council Highways & Transportation Department	INDUSTRIAL ESTATE ROAD – TYPICAL CROSS SECTION	DATE	DRAWING NO.	Rev.
		22/6/95	A2	

A2

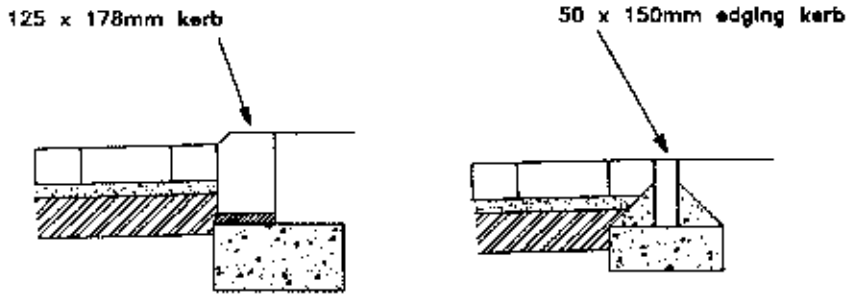
TYPICAL CROSS SECTION



DRAINAGE CHANNEL DETAIL



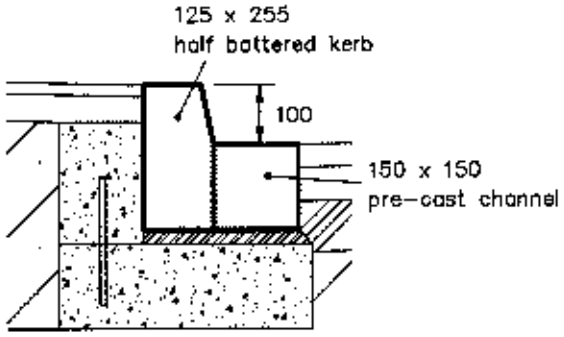
ALTERNATIVE KERB DETAILS



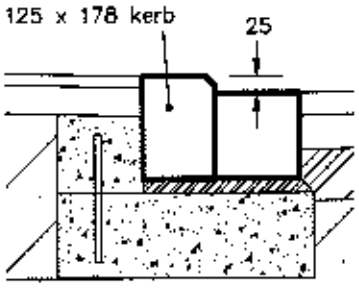
Do NOT Scale

North Yorkshire County Council Highways & Transportation Department	Residential Estate Road – Shared Surface Detail Block Paved Construction	DATE	DRAWING NO.	Rev.
		27/6/95	A3	

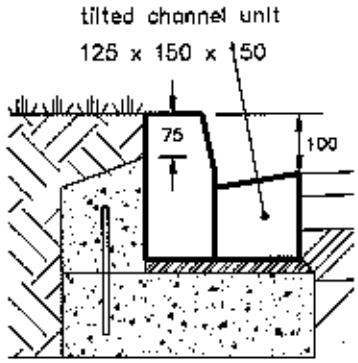
A3



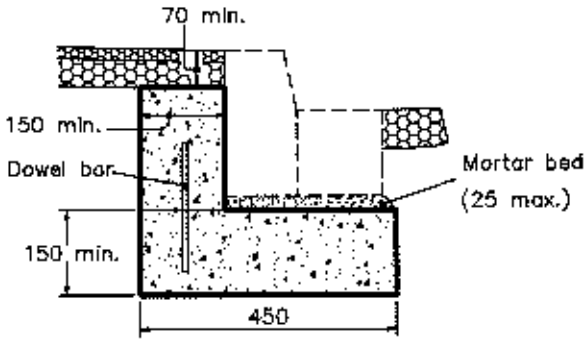
Standard pre-cast concrete kerb and channel



Dropped kerb & channel



Standard pre-cast concrete kerb and proprietary tilted channel



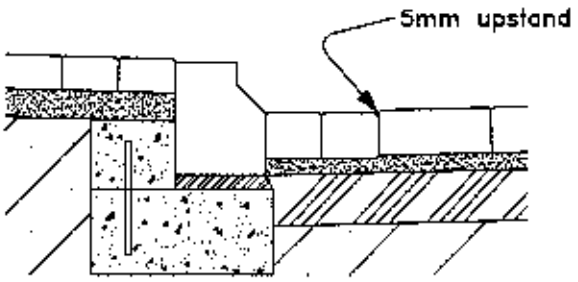
Kerb foundation and backing detail

NOTES

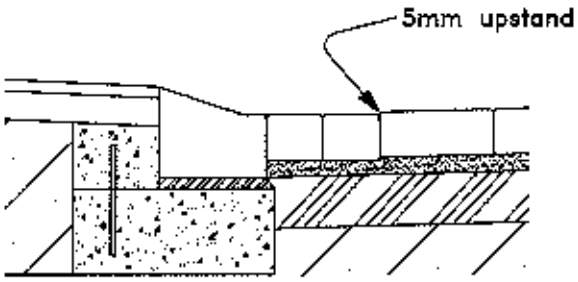
1. Channels on high side may be ommitted where road is on crossfall.
2. Dropped kerbs shall be used at driveway crossings of footway and verges.
3. Proprietary transition kerb units shall be used at driveways and footway crossings.
4. Where carriageway longitudinal gradient is flatter than 1 in 150 propriety tilted channels shall be used.
5. Where grass is used immediately behind a kerb, the kerb backing shall be lowered and chamfered to encourage grass growth.
6. The concrete foundation and kerb backing shall be Class ST2 concrete laid in accordance with Clause 5.08.
7. Mortar bedding shall comply with Clause 9.04.
8. Dowel bars shall be of mild steel, 220mm x 10mm diameter and placed at 0.6 metre intervals.
9. Kerbs and channels shall be hydraulically pressed and comply in all respects to BS 7263 PART 1.
10. Kerbs shall be laid true to line and level in a flowing allignment and shall not be backed up until inspected and approved by the Engineer.

(All dimensions in millimetres) Do Not Scale

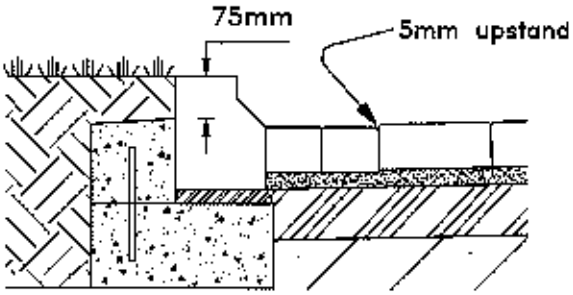
North Yorkshire County Council Highways & Transportation Department	PRECAST CONCRETE KERB UNIT VARIATIONS	DATE	DRAWING NO.	Rev.
		1/6/95	B1	



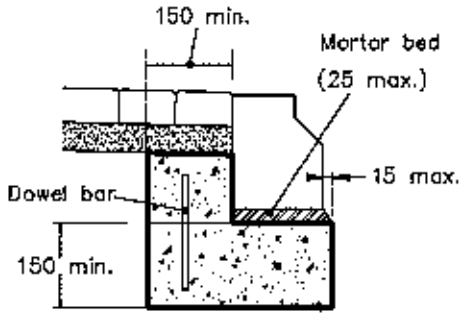
Proprietary kerb unit with block pavior channel, block paved carriageway and footway



Proprietary dropped kerb unit with block pavior channel, block paved carriageway and footway



Proprietary kerb unit, block pavior channel, block paved carriageway and grass service verge.



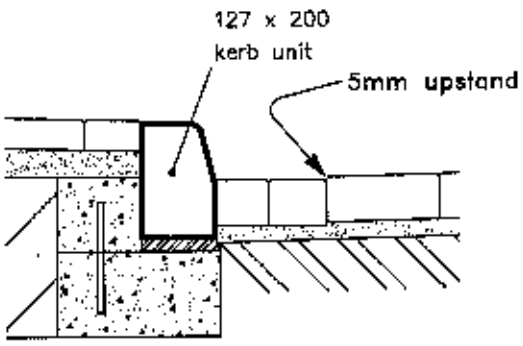
Kerb foundation and backing detail

NOTES

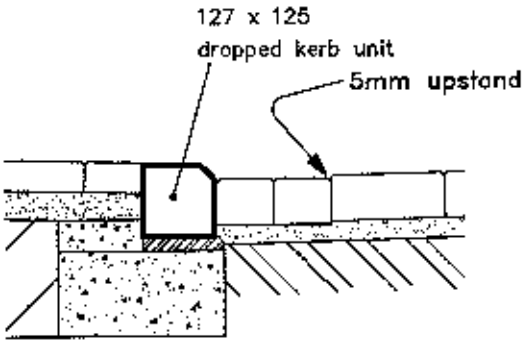
1. Dropped kerb units to be used at driveway crossings of the footway and verges.
2. Proprietary transition kerb units shall be used at driveway and footway crossings.
3. Where the carriageway longitudinal gradient is flatter than 1 in 100, block paving and channels shall NOT be used. In these instances a standard kerb unit with a proprietary tilted channel and flexible construction shall be used.
4. Where grass is used immediately behind a kerb, the kerb backing should be lowered and chamfered to encourage grass growth.
5. The concrete foundation and kerb backing shall be Class ST2 concrete laid in accordance with Clause 5.08.
6. Mortar bedding shall comply with Clause 9.04.
7. Dowel bars shall be of mild steel, 220mm x 10mm diameter and placed at 0.6 metre intervals.
8. All proprietary kerb and block paving units shall be to approved by the Engineer.
9. Kerbs shall be laid true to line and level in a flowing alignment and shall not be backed up until inspected and approved by the Engineer.

(All dimensions in millimetres) Do Not Scale

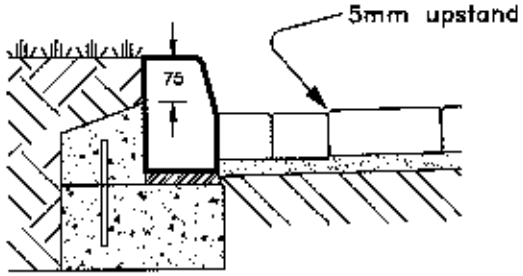
North Yorkshire County Council Highways & Transportation Department	PROPRIETARY KERB UNIT	DATE	DRAWING NO.	Rev.
		1/6/95	B2	



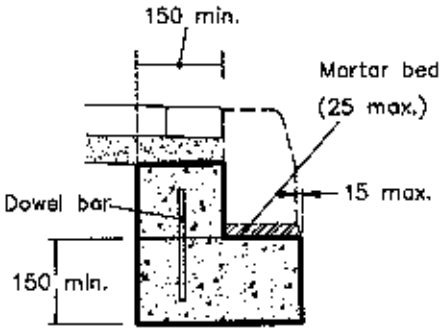
Proprietary pre–cast concrete kerb with block pavior channel



Proprietary dropped kerb with block pavior channel



Kerb detail showing grass verge



Kerb foundation and backing detail

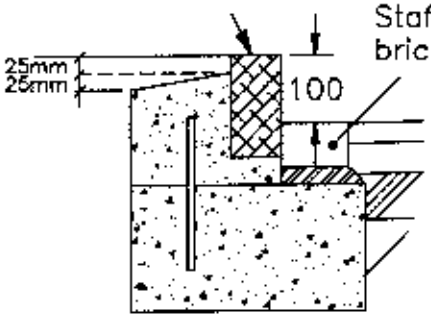
NOTES

1. Dropped kerb units to be used at driveway crossings of footways and verges.
2. Proprietary transition kerb units shall be used at driveway and footway crossings.
3. Where the carriageway longitudinal gradient is flatter than 1 In 100, block paving and channels shall NOT be used. In these instances a standard kerb unit with a proprietary tilted channel and flexible construction shall be used.
4. Where grass is used immediately behind a kerb, the kerb backing should be lowered and chamfered to encourage grass growth.
5. The concrete foundation and kerb backing shall be Class ST2 concrete laid in accordance with Clause 5.08.
6. Mortar bedding shall comply with Clause 9.04.
7. Dowel bars shall be of mild steel, 220mm x 10mm diameter and placed at 0.6 metre intervals, – except at driveway crossings.
8. All proprietary kerb and block paving units shall be approved by the Engineer.
9. Kerbs shall be laid true to line and level in a flowing alignment and shall not be backed up until inspected and approved by the Engineer.

(All dimensions in millimetres) Do Not Scale

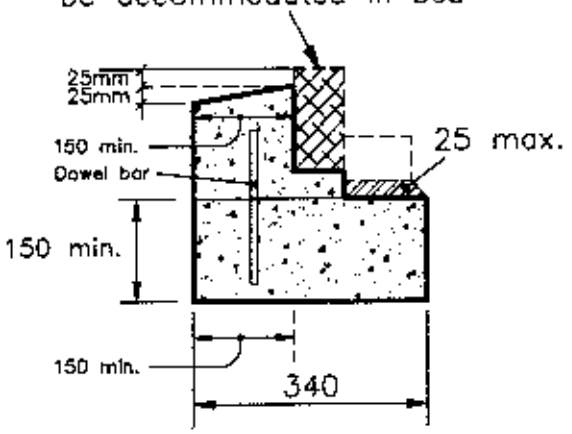
North Yorkshire County Council Highways & Transportation Department	PROPRIETARY KERB UNIT	DATE	DRAWING NO.	Rev.
		1/6/95	B3	

Granite Sett, nominal size
200 x 150 x 75

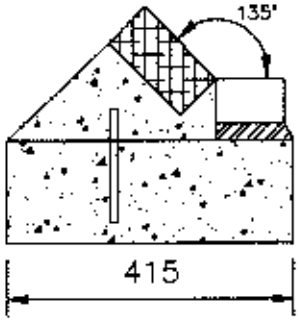


Typical kerb detail.

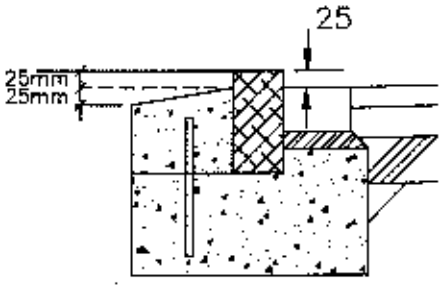
Variation in sett height to be accommodated in bed



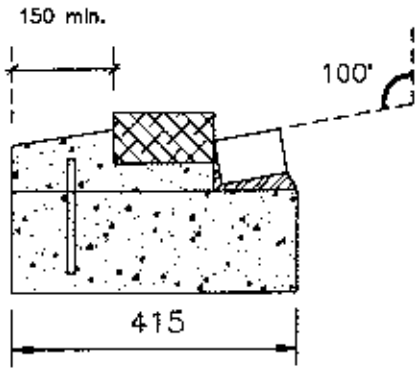
Typical kerb detail.



Kerb set at 135° to carriageway



Dropped kerb detail.



Alternative dropped kerb detail with tilted channel

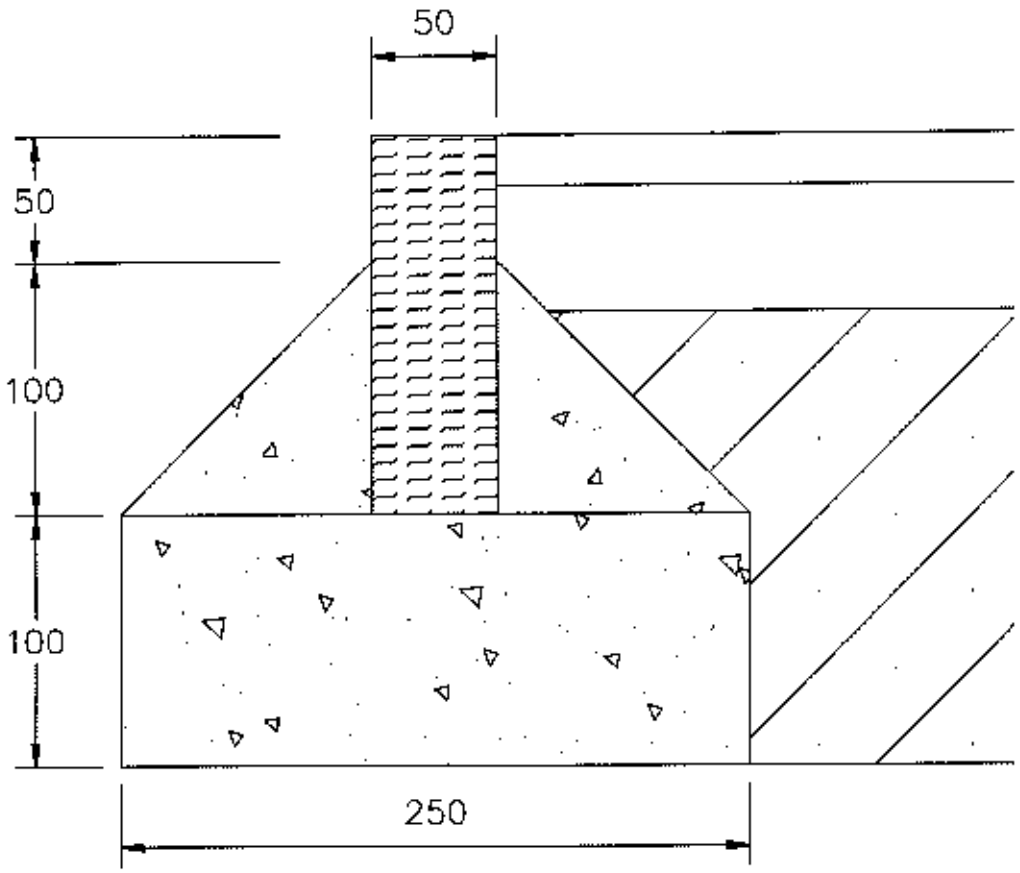
NOTES

1. The concrete foundation and backing to setts and blocks shall be Class ST2 concrete in accordance with Clause 5.08.
2. Mortar bedding and joints between setts and channels shall comply with Clause 9.04. Its colour shall be consistent throughout.
3. Dowel bars shall be of mild steel, 220mm x 10mm dia. and placed at 0.6 metre intervals.
4. The transition from full face to a dropped kerb crossing shall be carried out over a one metre length.
5. Where the carriageway longitudinal gradient is flatter than 1 in 150, the channel block shall be tilted at an angle of 10 degrees from the horizontal.
6. Kerbs shall be laid true to line and level in a flowing alignment and shall not be backed up until inspected and approved by the Engineer.

(All dimensions in millimetres)

Do NOT Scale

North Yorkshire County Council Highways & Transportation Department	Conservation Type Kerb Unit	DATE	DRAWING NO.	Rev.
		23/6/95	B4	

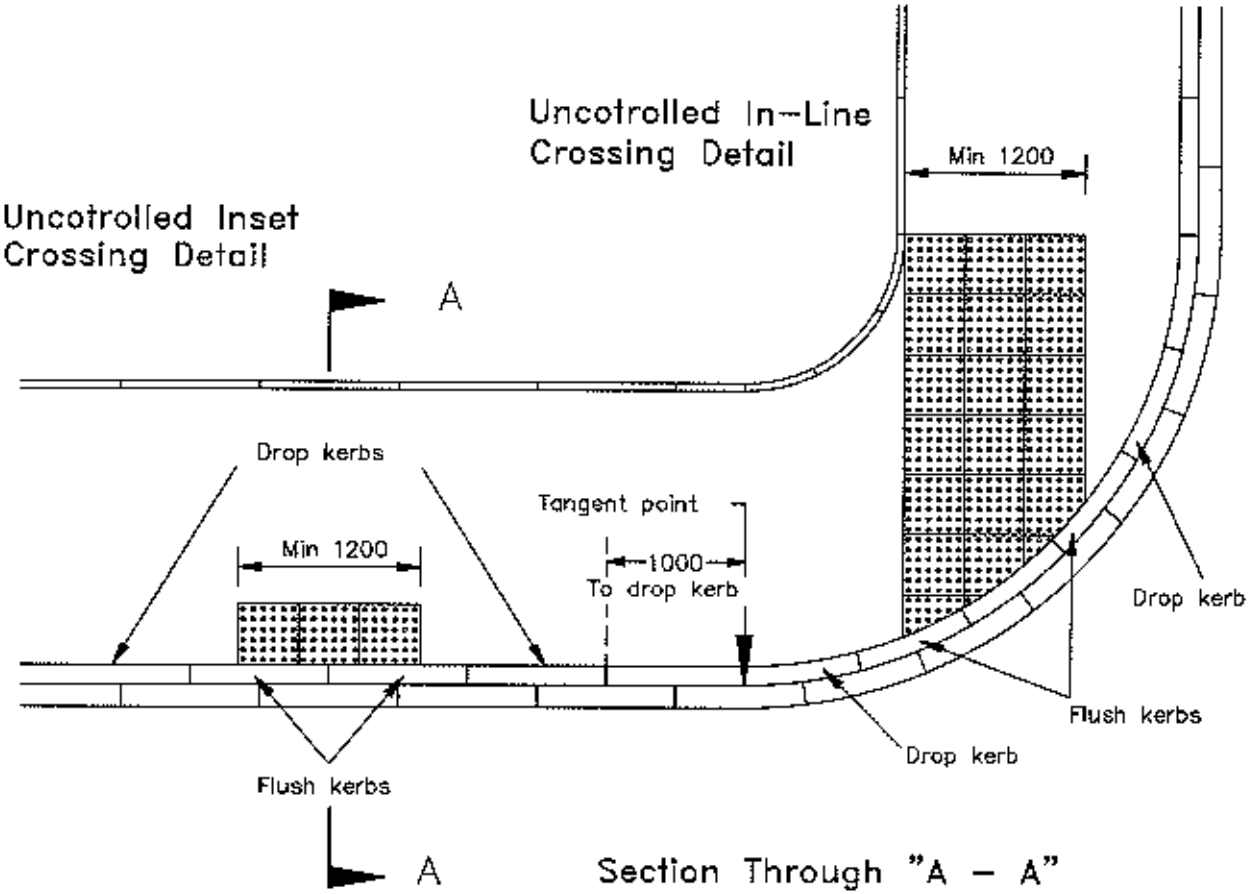


NOTES

1. Edgings shall be pre-cast hydraulically pressed concrete 50mm x 150mm flat topped, manufactured and complying in all respects to BS 7263 Part1.
2. The foundation for edgings shall be formed with Class ST2 concrete to BS 5328.
3. Edgings shall be laid true to line and level and shall not be backed until inspected and approved by the Engineer.

(All dimensions in millimetres) Do Not Scale

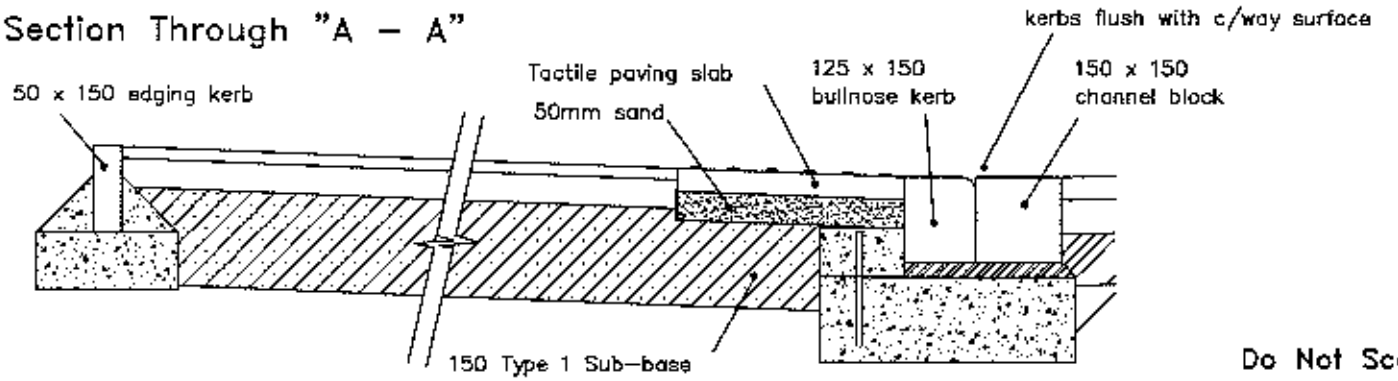
North Yorkshire County Council Highways & Transportation Department	PRECAST EDGING KERB DETAIL	DATE	DRAWING NO.	Rev.
		1/6/95	B5	



NOTES

1. Tactile paving shall be used at pedestrian crossing points to identify the existence of a flush dropped kerb and an appropriate place to cross.
2. The use of tactile paving shall be in in accordance with Clause 5.16 and the recommendations given in Disability Unit Circular 1/91 published by the Department of Transport.
3. Crossing points should be laid out directly opposite each other with domes aligned to the direction of the crossing.
4. At busy locations the developer may be required to take the tactile slabs to the back of the footway.
5. The paving slabs to be bedded on 150mm sand with a foundation of 150mm Type 1 Sub-base.

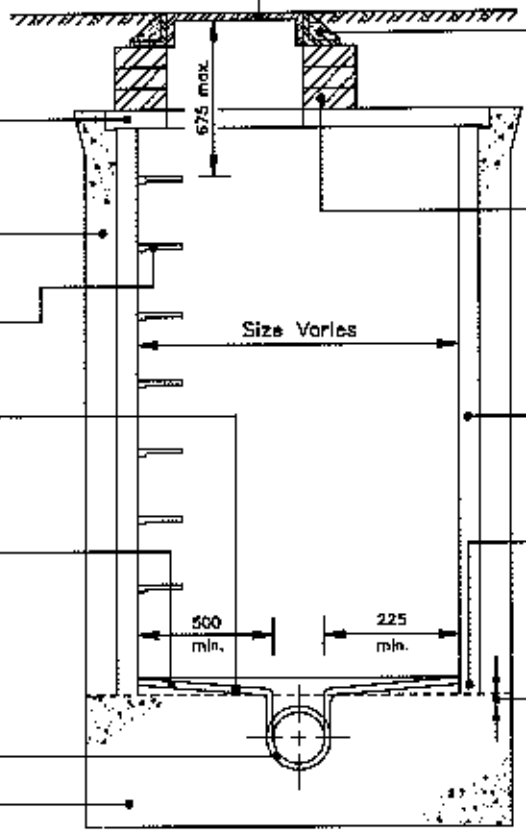
Section Through "A – A"

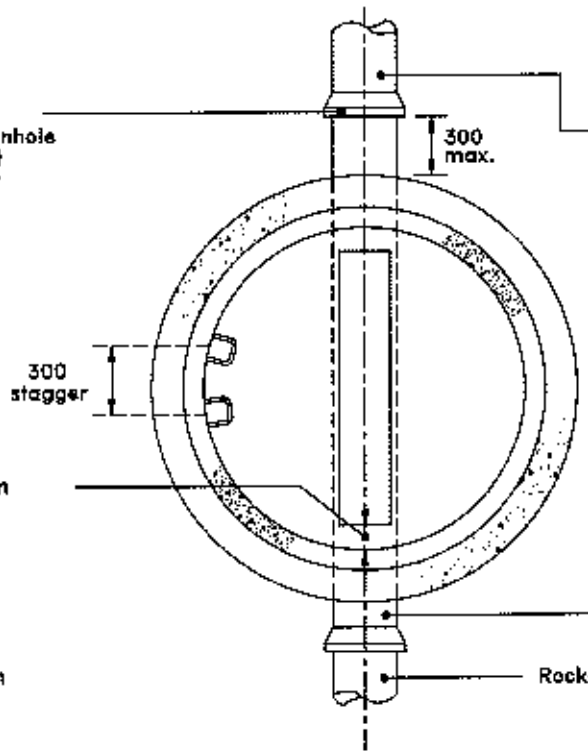


(All dimensions in millimetres)

Do Not Scale

North Yorkshire County Council Highways & Transportation Department	PEDESTRIAN CROSSING POINT	DATE	DRAWING NO.	Rev.
		1/6/95	B6	





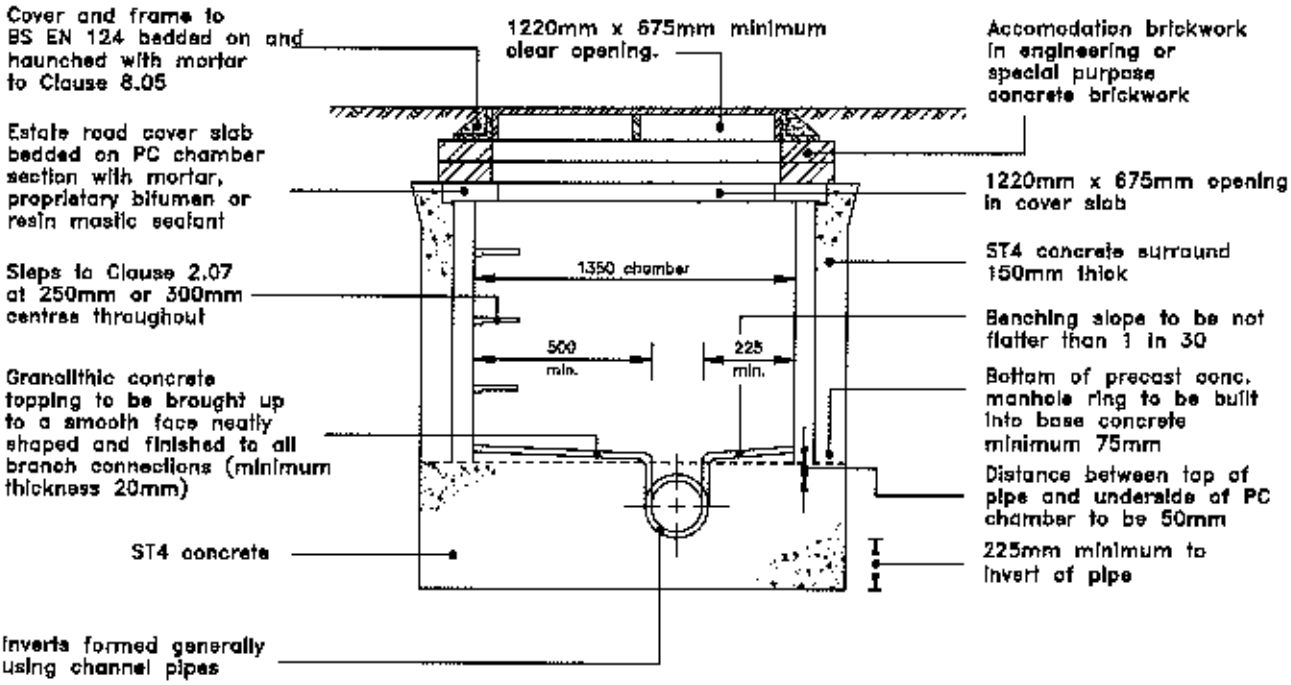
Pipe Dia. (mm)	Rocker Pipe Length (m)
150–450	0.5–0.75
451–750	0.75–1.0
>750	seek guidance

Toe holes to be provided in benching of drain greater than 450mm dia. for access to invert

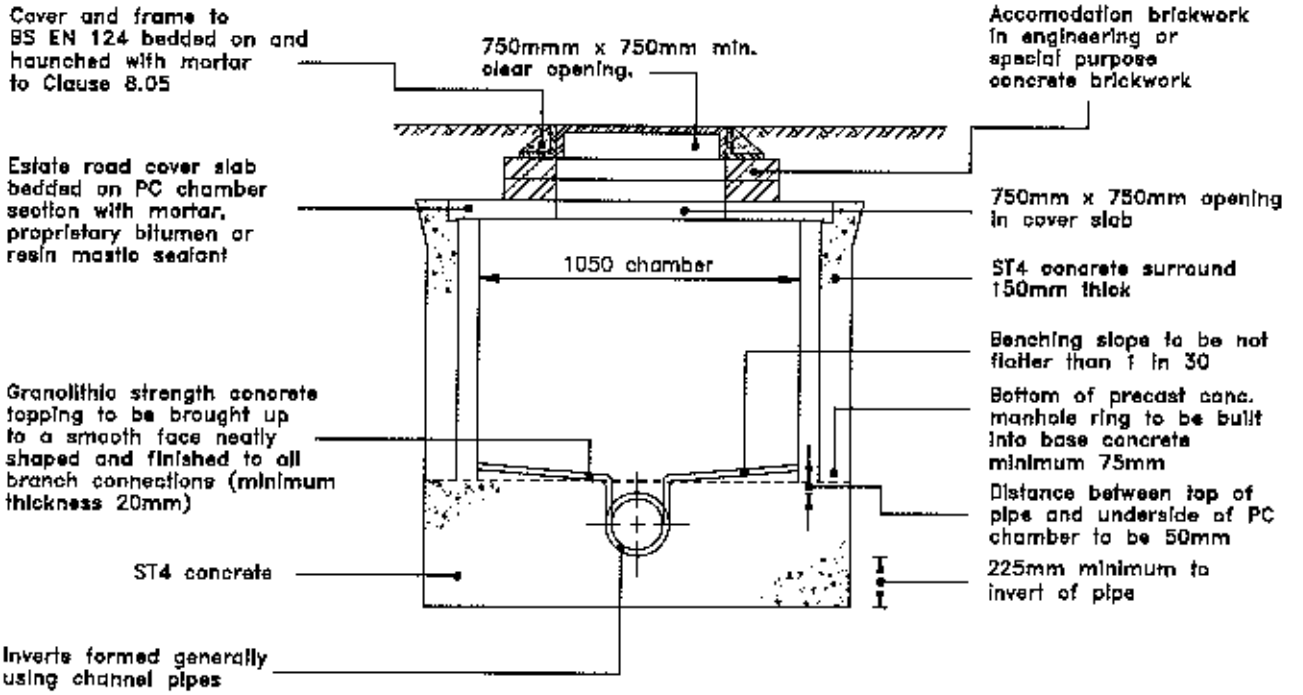
(All dimensions in millimetres – Do Not Scale)

North Yorkshire County Council Highways & Transportation Department	PRECAST CONCRETE MANHOLE (DEPTH TO SOFFIT 1.35 TO 3.0M)	DATE	DRAWING NO.	Rev.
		1/6/96	C1	

DEPTH TO SOFFIT 1.0 TO 1.35m

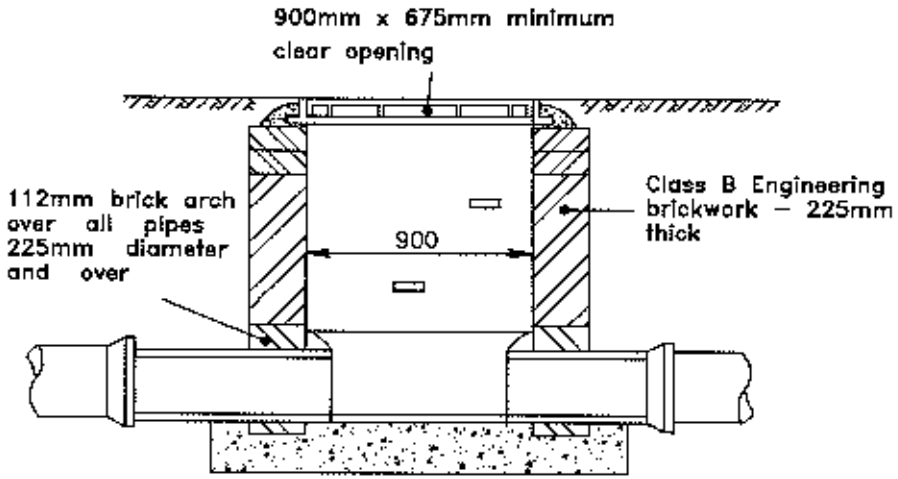


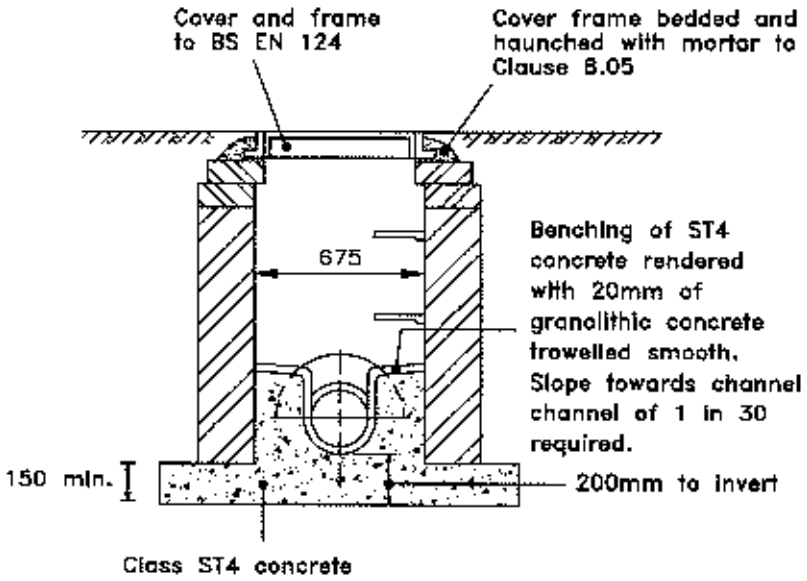
DEPTH TO SOFFIT LESS THAN 1.0m

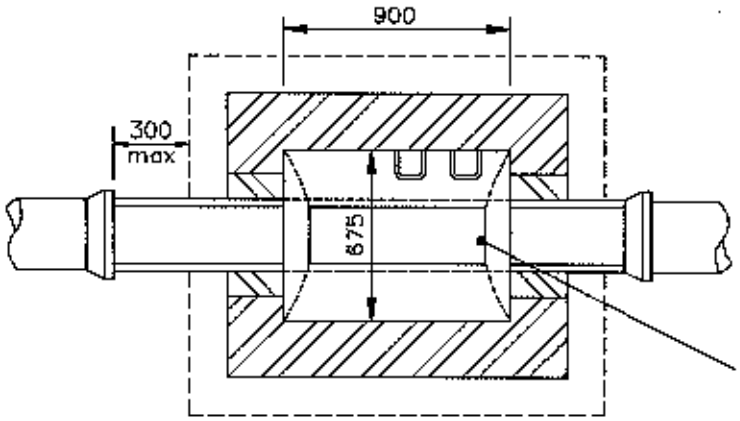


(All dimensions in millimetres – Do Not Scale)

North Yorkshire County Council Highways & Transportation Department	PRECAST CONCRETE MANHOLE SHALLOW DEPTHS	DATE	DRAWING NO.	Rev.
		1/6/95	C2	







Pipe joint with channel to be located inside face of chamber

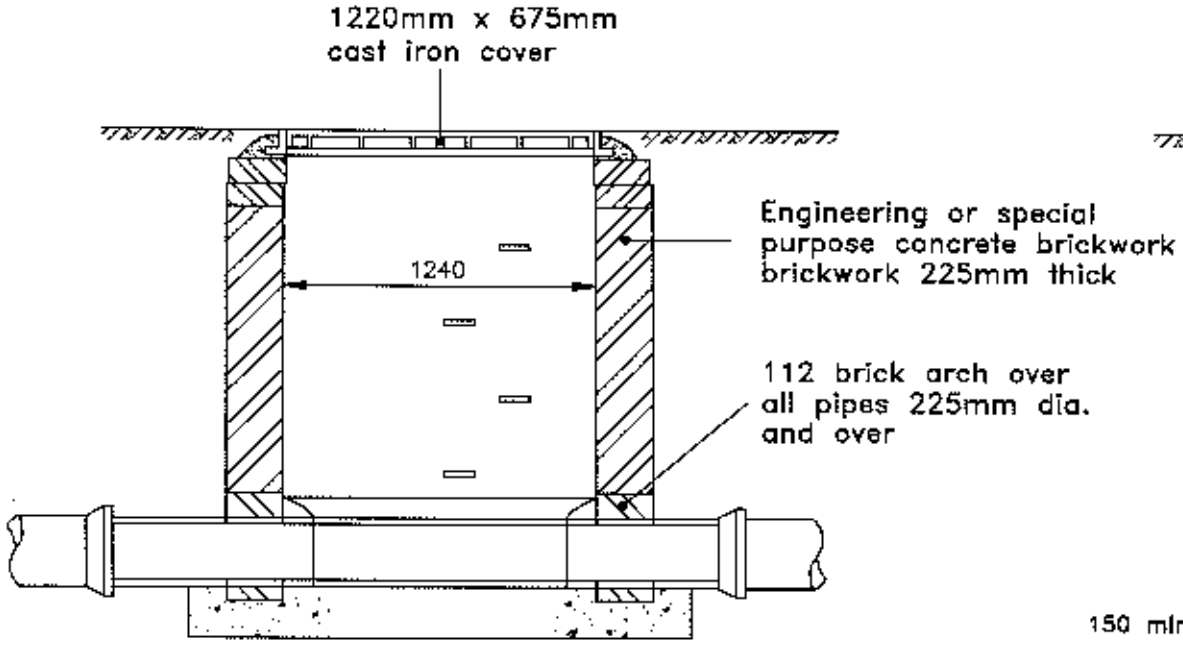
Internal dimensions of chamber normally 900mm x 600mm (as clear opening of frame but chamber width should be increased for pipes larger than 150 dia. to give 225mm benching each side and the brickwork corbelled down to suit cover

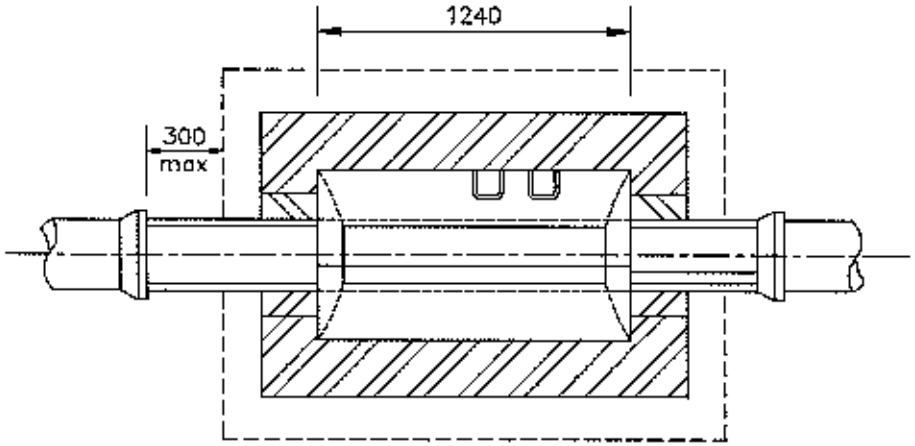
Pipes entering manholes shall have a flexible joint within 600mm of the inside face of the manhole joining with a short 'rocker' pipe

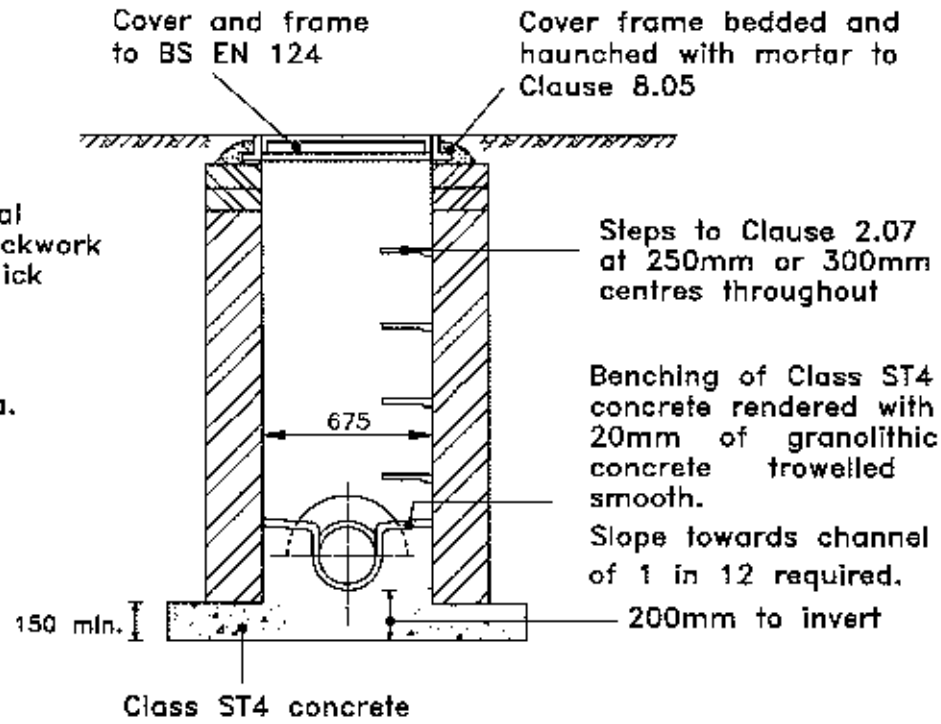
(All dimensions in millimetres – Do Not Scale)

North Yorkshire County Council Highways and Transportation Department	DRAINAGE – BRICK MANHOLE (UP TO 1.0m)	DATE	DRAWING NO.	Rev.
		1/6/95	C3	

C3







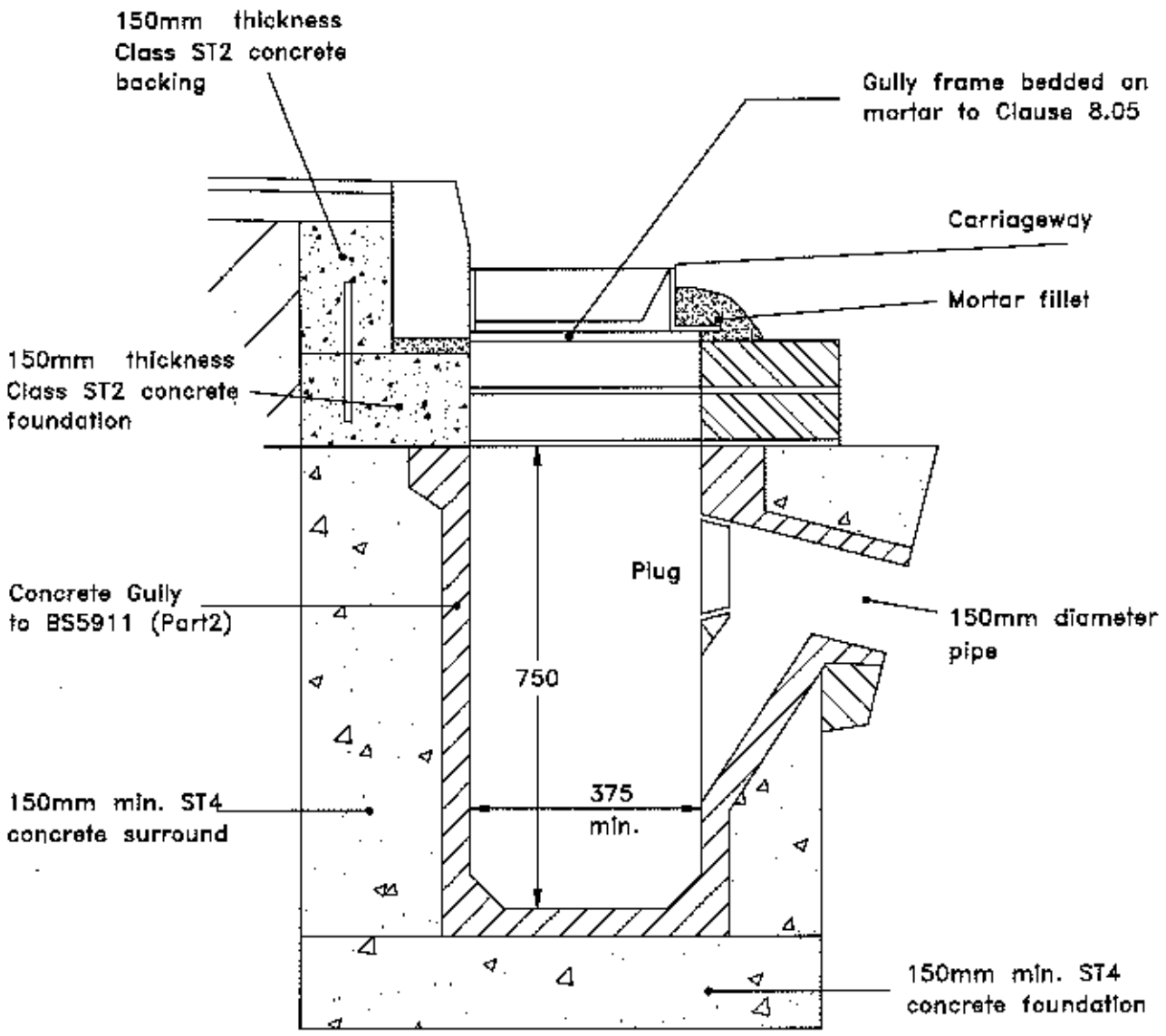
Internal dimensions of chamber normally 1200mm x 675mm (as clear opening of frame), but chamber width should be increased for pipes larger than 225mm dia. to give 225mm benching each side and the brickwork corbelled down to suit cover

Pipes entering manholes shall have a flexible joint within 600mm of the inside face of the manhole joining with a short 'rocker' pipe

(All dimensions in millimetres – Do Not Scale)

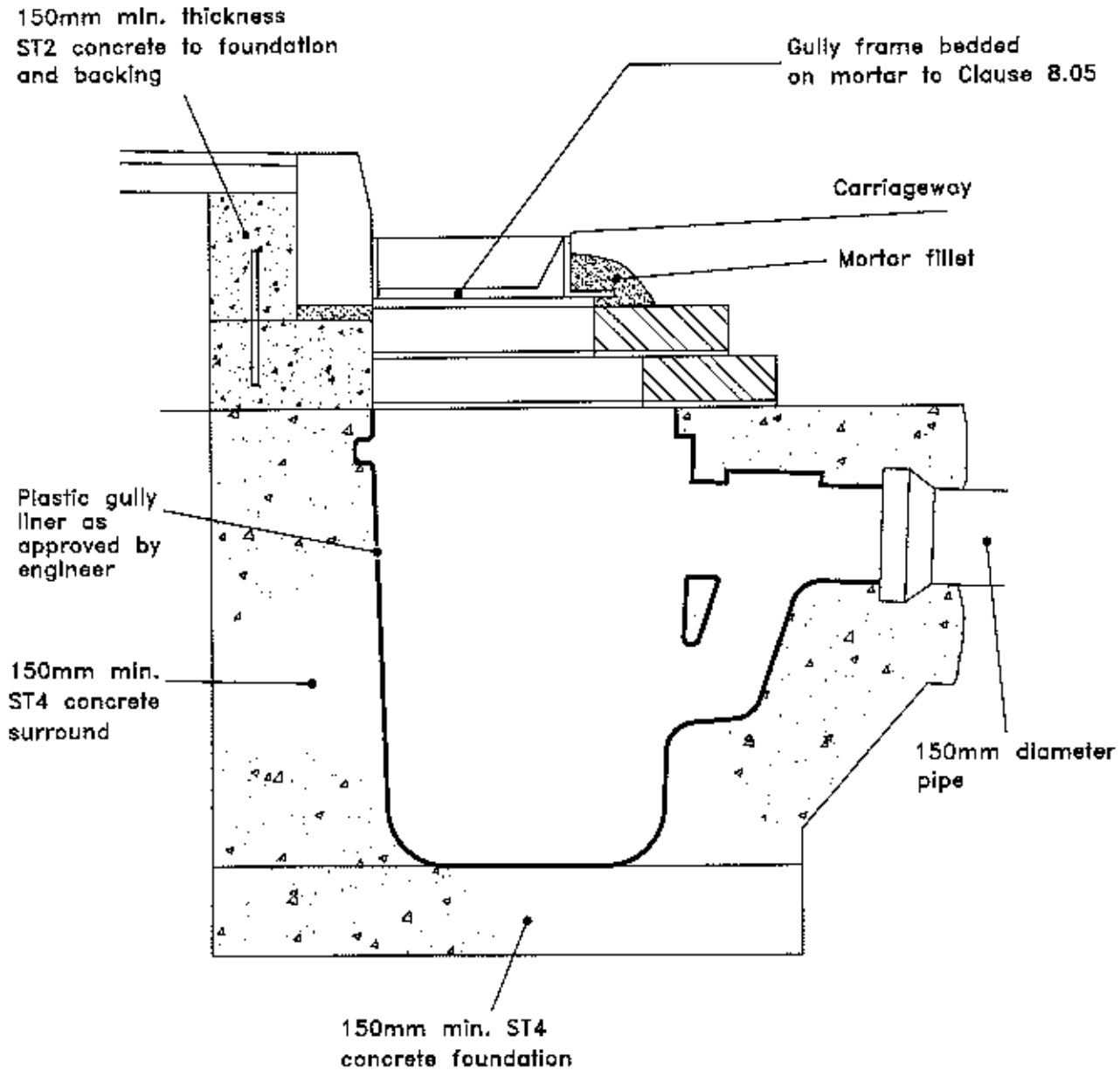
North Yorkshire County Council Highways and Transportation Department	DRAINAGE – BRICK MANHOLE (1.0m to 1.5m)	DATE	DRAWING NO.	Rev.
		1/6/95	C4	

C4



(All dimensions in millimetres – Do Not Scale)

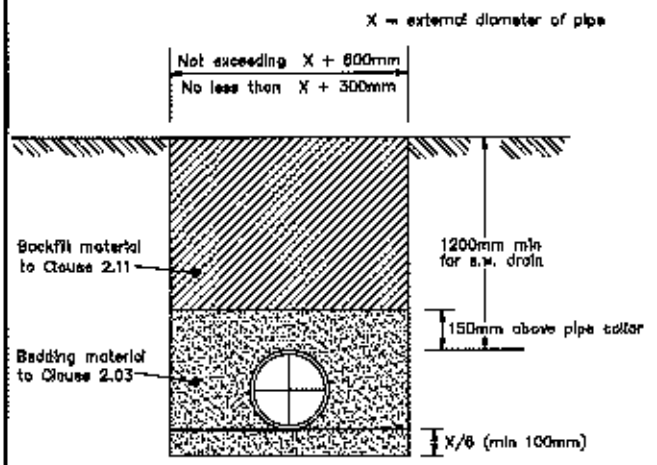
North Yorkshire County Council Highways & Transportation Department	PRECAST CONCRETE ROAD GULLY	DATE	DRAWING NO.	Rev.
		1/6/95	C5	



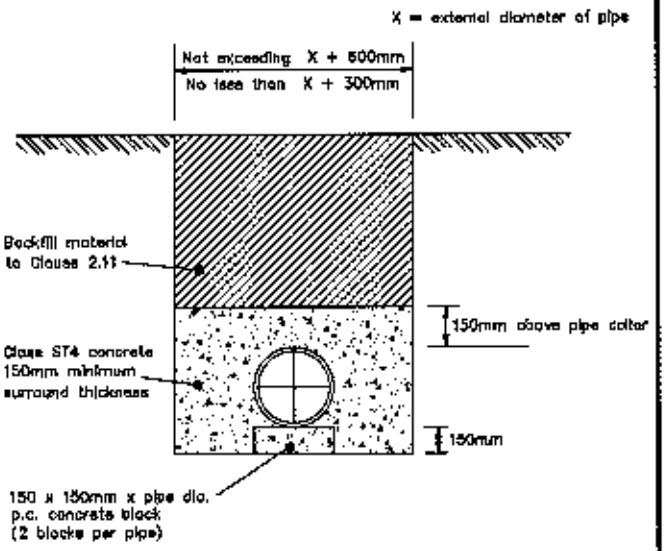
(All dimensions in millimetres – Do Not Scale)

North Yorkshire County Council Highways & Transportation Department	IN SITU CAST CONCRETE ROAD GULLY	DATE	DRAWING NO.	Rev.
		1/6/95	C6	

Granular Bed Detail



Concrete Bed Detail



1. Trenches shall be excavated in accordance either Clause 2.07. Unless otherwise approved by the Engineer, all surface water pipes shall have a minimum cover of 1.2 metres from the finished surface.

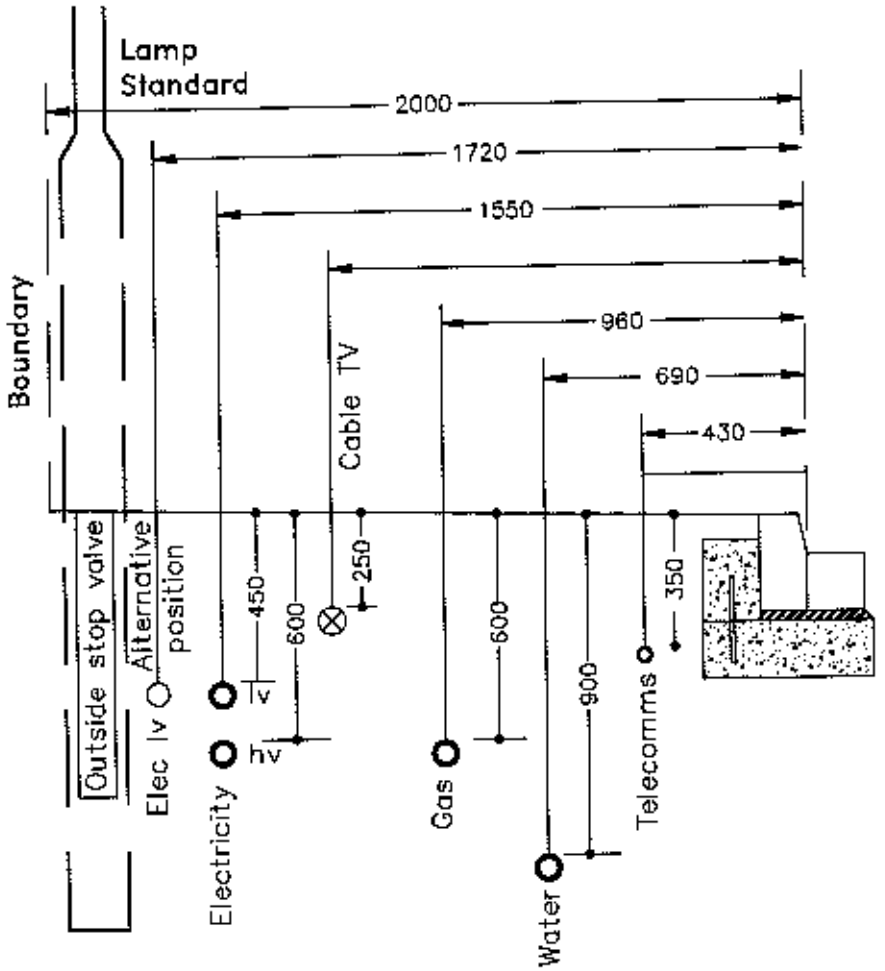
2. Immediately following the excavation of the trench the pipes shall be laid and jointed on the pipe bed. The bedding, laying and surrounding of pipes shall be in accordance with Clause 2.08. Except where a concrete bed and surround is specified pipe bedding and surround materials shall be a granular material, natural crushed gravel or rock, in accordance with Clause 2.03.

3. Backfilling of trenches shall, wherever practicable, be undertaken immediately pipe laying operations have been completed in accordance with Clause 2.11.
   Sub soil drain trenches shall be backfilled with Type B Filter Material as specified under Clause 2.04.
   Trenches within the adoptable highway shall be backfilled with Type 1 Sub-base material as Clause 4.04. Trenches outside the adoptable highway shall be backfilled with selected excavated material approved by the Engineer where it is at a moisture content near to the optimum moisture content or with Type 1 Sub-base to Clause 4.04.

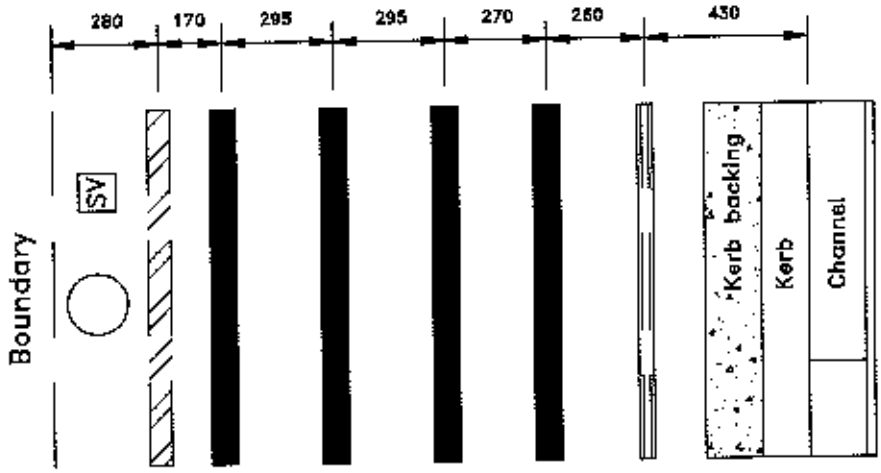
Do Not Scale

North Yorkshire County Council Highways & Transportation Department	BEDDING DETAILS FOR SURFACE WATER AND SUB-SOIL DRAINS	DATE	DRAWING NO.	Rev.
		1/6/95	C7	

SECTION



PLAN



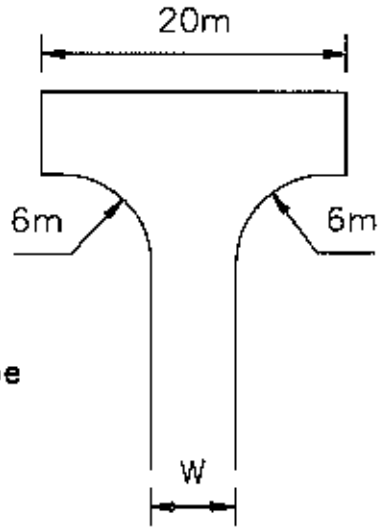
DIMENSIONS IN MILLIMETRES

NOTES

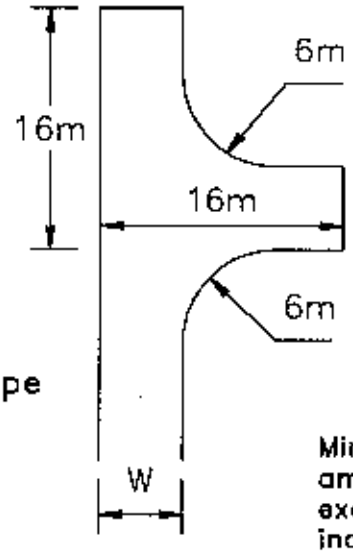
1. The layout of Mains is generally in accordance with the "Report of Joint Committee on Location of Underground Services" published by the Institution of Civil Engineers.
2. The dimensions shown represent the preferred arrangement in straight routes on residential estates. Variations may be necessary at curves and changes of gradient.
3. The space allocated is considered to be the absolute minimum and in certain circumstances e.g. where both h.v. and l.v. cables are laid, the l.v. cable will be laid in the alternative position and additional width may be required.
4. Where services are to be connected to gas mains, a minimum distance of 2.0m is required between the building line and the centre line of the main.

North Yorkshire County Council Highways & Transportation Department	DISPOSITION OF MAINS IN STRAIGHT ROUTES ON RESIDENTIAL ESTATES.	DATE	DRAWING NO.	Rev.
		1/6/95	D1	

(I) Basic Dimensions and Layouts

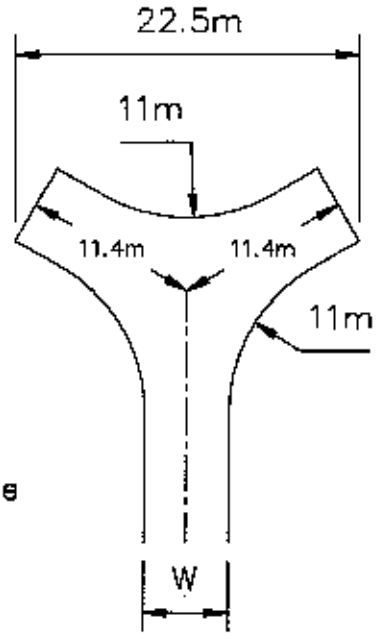


'T' Type



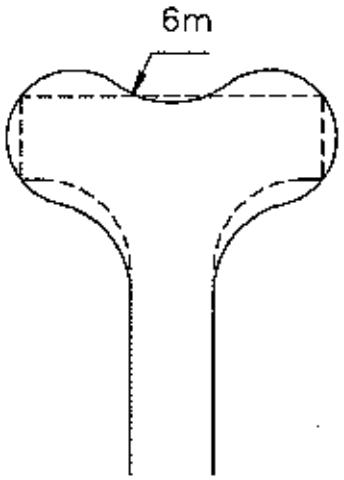
'Key' Type

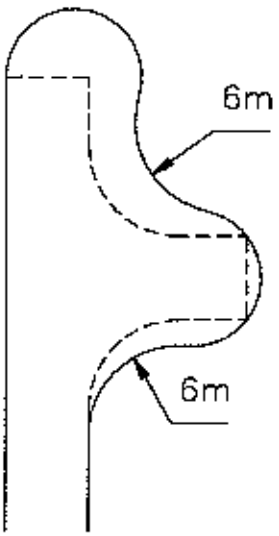
Minimum kerb radius to amorphous shapes 4.5m except where otherwise indicated.

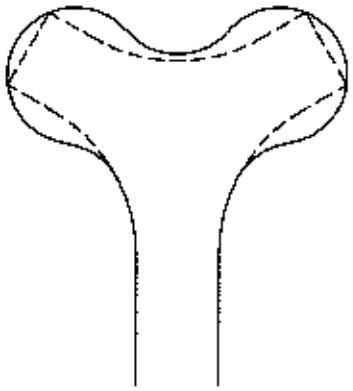


'Y' Type

(II) Acceptable Variations

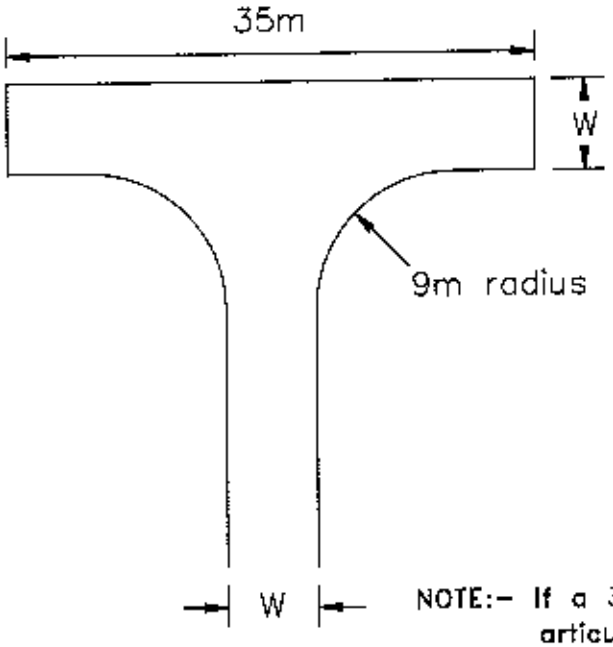






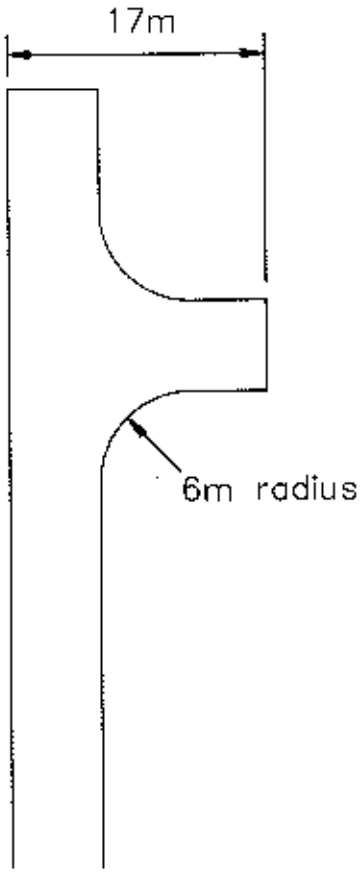
North Yorkshire County Council Highways & Transportation Department	TURNING HEADS – LAYOUTS FOR RESIDENTIAL ESTATES	DATE	DRAWING NO.	Rev.
		1/6/95	D2	

'T' Type



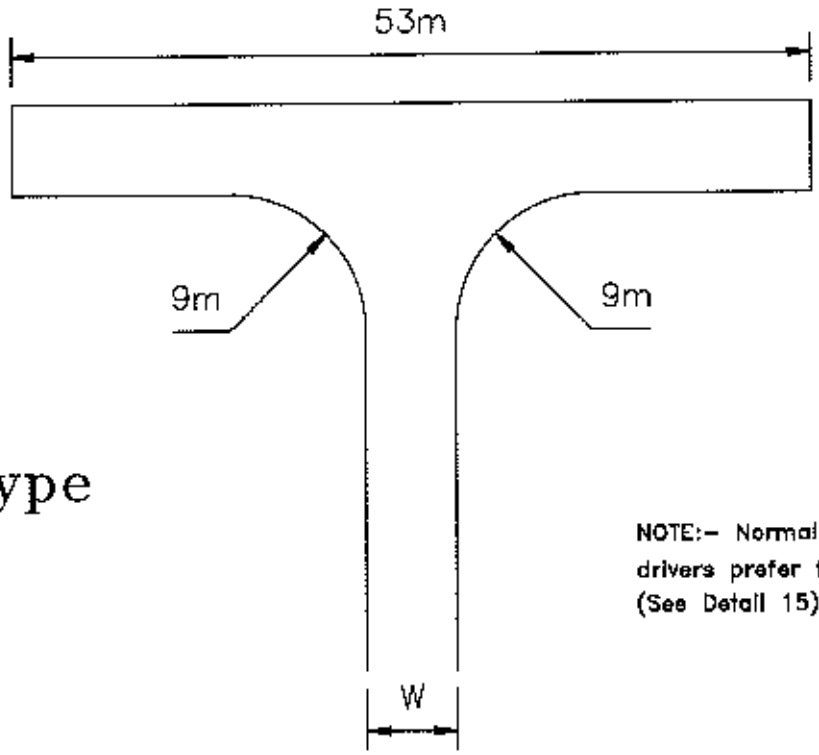
NOTE:- If a 35m hammerhead is used, articulated vehicles will not be able to use it.

'Key' Type



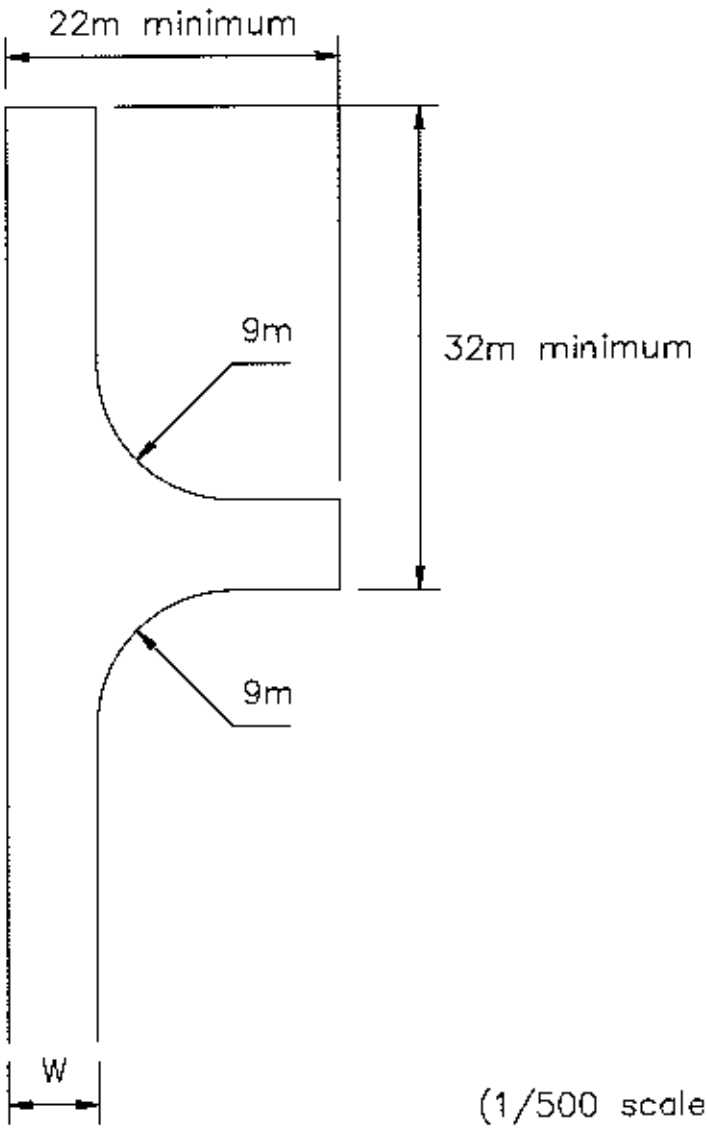
Scale : 1/500

North Yorkshire County Council Highways & Transportation Department	TURNING SPACE REQUIREMENTS FOR RIGID VEHICLES	DATE	DRAWING NO.	Rev.
		1/6/95	D3	



'T' Type

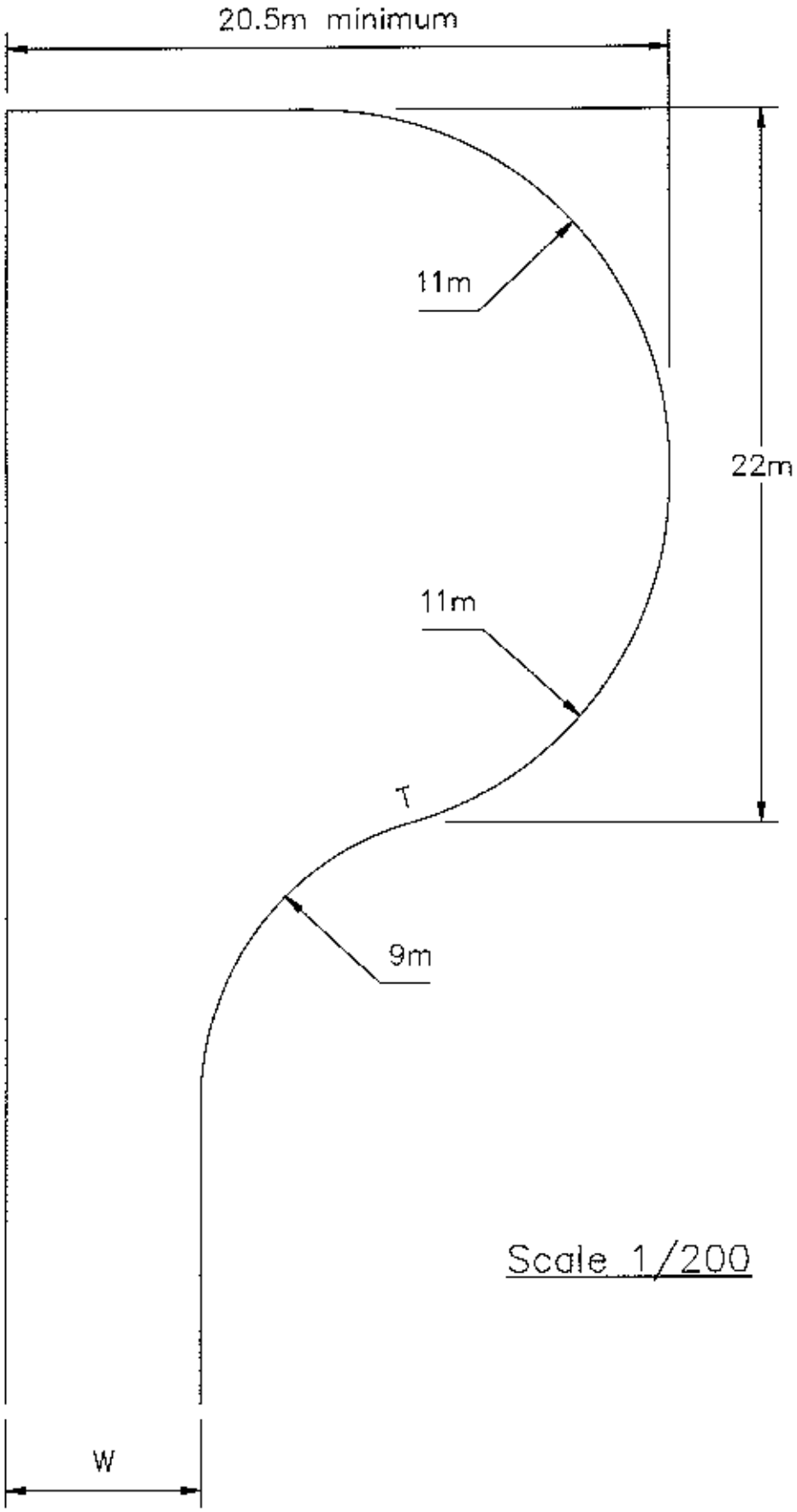
NOTE:- Normally articulated vehicle drivers prefer forward gear U-turns (See Detail 15)



'Key' Type

(1/500 scale)

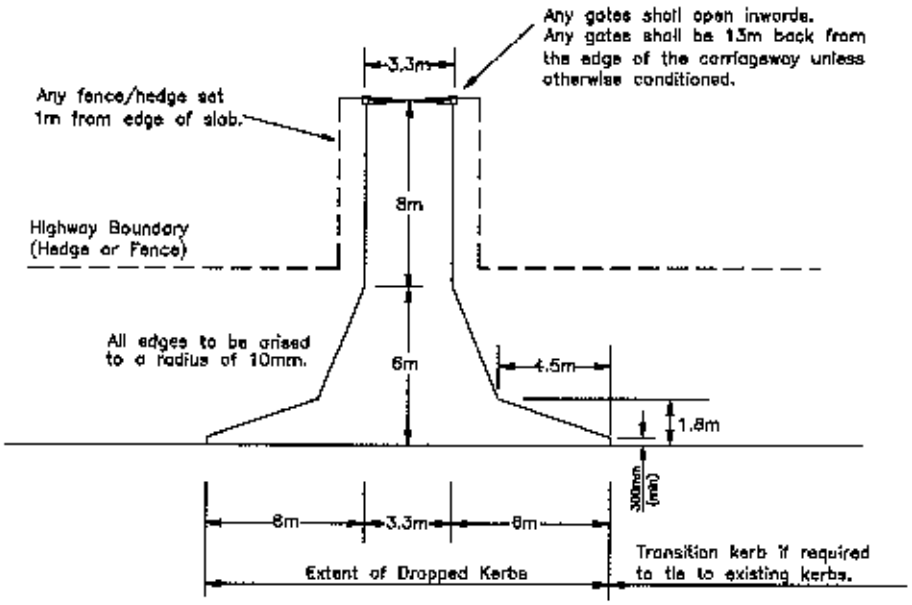
North Yorkshire County Council Highways & Transportation Department	TURNING SPACE REQUIREMENTS FOR ARTICULATED VEHICLES	DATE	DRAWING NO.	Rev.
		1/6/95	D4	



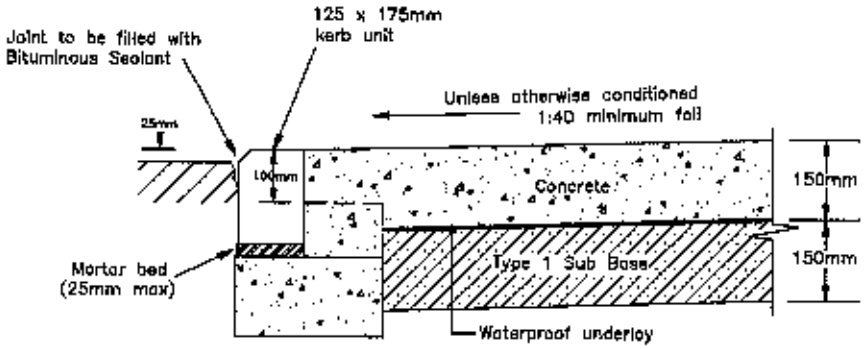
Scale 1/200

North Yorkshire County Council Highways & Transportation Department	BANJO TURNING HEAD TO CATER FOR THE FORWARD TURNING ONLY OF ARTICULATED AND DRAWBAR TRAILER HGV'S	DATE	DRAWING NO.	Rev.
		1/6/95	D5	

Plan View



Section Through Kerb



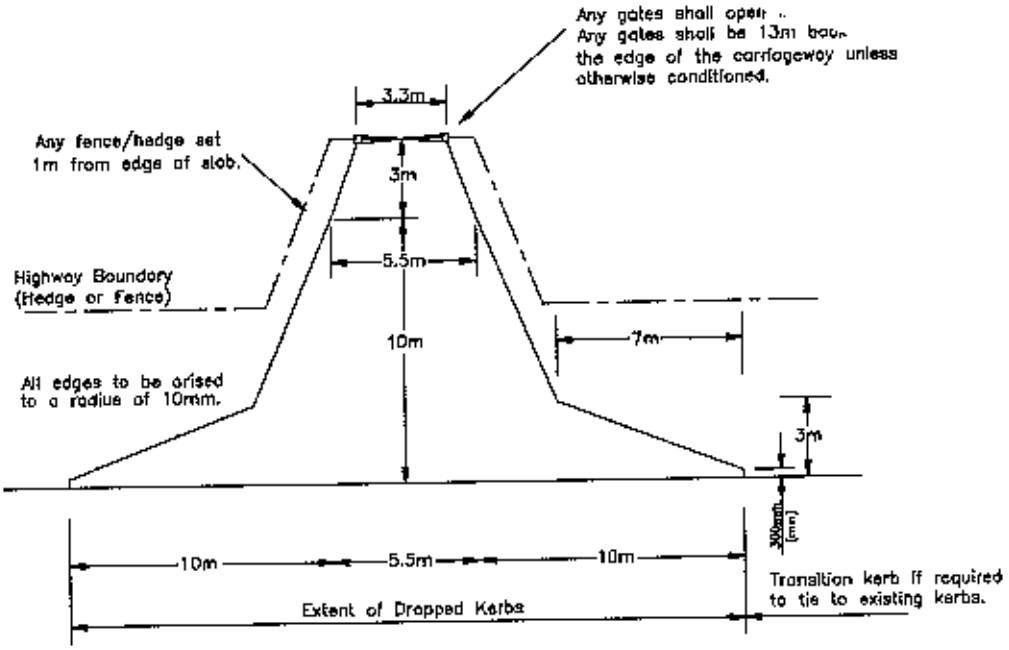
NOTES

1. Air Entrained Concrete shall be a designated mix reference PAV1 to BS 5328 Part 2. It shall have a 20mm nominal size coarse Aggregate and a 75mm slump. It shall be delivered to site ready mixed.
2. All concrete shall be placed in approved formwork.
3. Concrete to have a tamped finish.
4. Construction joints shall be parallel to carriageway and no closer than 1.8m to edge of carriageway.
5. Construction joints shall be formed by introducing a lath 25mm square against the face of the formwork. The joints shall be arised and sealed. The remaining depth of concrete shall be roughened in order that the two faces adhere.
6. Concrete shall not be laid at ambient temperatures below 3°C.
7. Concrete shall be so transported and placed to avoid contamination, segregation or loss of constituent materials. All formwork shall be free from dirt, standing water, snow or ice. Concrete shall not be placed until the approval of formwork and the foundation has been given by the Engineer. Concreting must then be started within 24 hours or further approval must be sought. Fresh concrete shall not be placed against in-situ concrete which has been in position for more than 30 minutes. Concrete shall be laid and compacted as specified within 30 minutes of its discharge from the mixer and unless otherwise agreed by the Engineer shall not be dropped into place from a height exceeding 2m.
8. Waterproof underlay shall be approved 125 micrometres impermeable plastic sheeting. Where an overlap of plastic sheeting is required this shall be at least 300mm.
9. Concrete to be cured for a minimum of 24 hours before vehicular use.

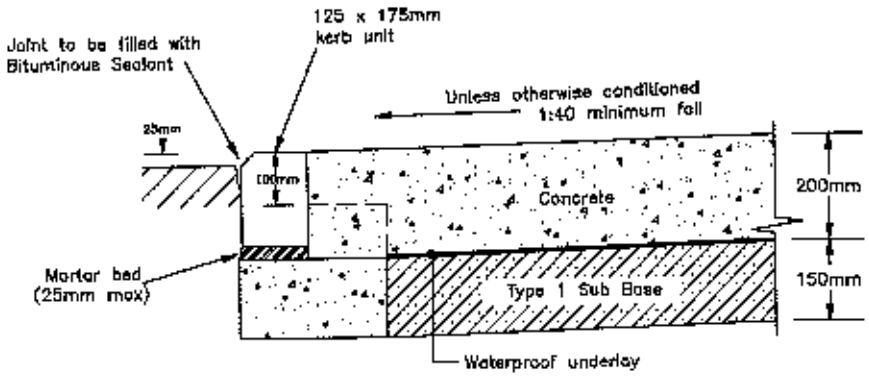
Do Not Scale

North Yorkshire County Council Highways & Transportation Department	CONCRETE FIELD CROSSING	DATE	DRAWING NO.	Rev.
		1/6/95	E1	

Plan View



Section Through Kerb



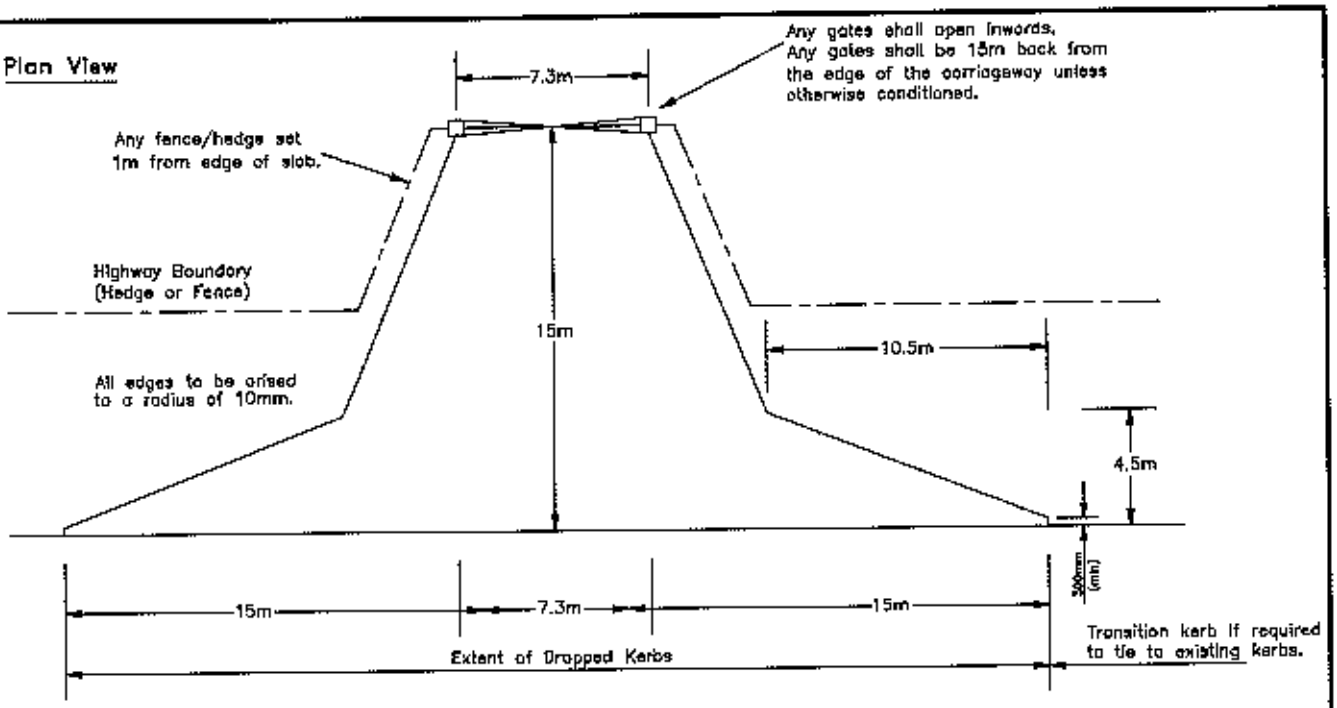
NOTES

1. Air Entrained Concrete shall be a designated mix reference PAV1 to BS 5328 Part 2. It shall have a 20mm nominal size coarse Aggregate and a 75mm slump. It shall be delivered to site ready mixed.
2. All concrete shall be placed in approved formwork.
3. Concrete to have a tamped finish.
4. Construction joints shall be parallel to carriageway and no closer than 3m to edge of carriageway.
5. Construction joints shall be formed by introducing a lath 25mm square against the face of the formwork. The joints shall be arised and sealed. The remaining depth of concrete shall be roughened in order that the two faces adhere.
6. Concrete shall not be laid at ambient temperatures below 3°C.
7. Concrete shall be so transported and placed to avoid contamination, segregation or loss of constituent materials. All formwork shall be free from dirt, standing water, snow or ice. Concrete shall not be placed until the approval of formwork and the foundation has been given by the Engineer. Concreting must then be started within 24 hours or further approval must be sought. Fresh concrete shall not be placed against in-situ concrete which has been in position for more than 30 minutes. Concrete shall be laid and compacted as specified within 30 minutes of its discharge from the mixer and unless otherwise agreed by the Engineer shall not be dropped into place from a height exceeding 2m.
8. Waterproof underlay shall be approved 125 micrometres impermeable plastic sheeting. Where an overlap of plastic sheeting is required this shall be at least 300mm.
9. Concrete shall be cured for 24 hours before vehicular use.

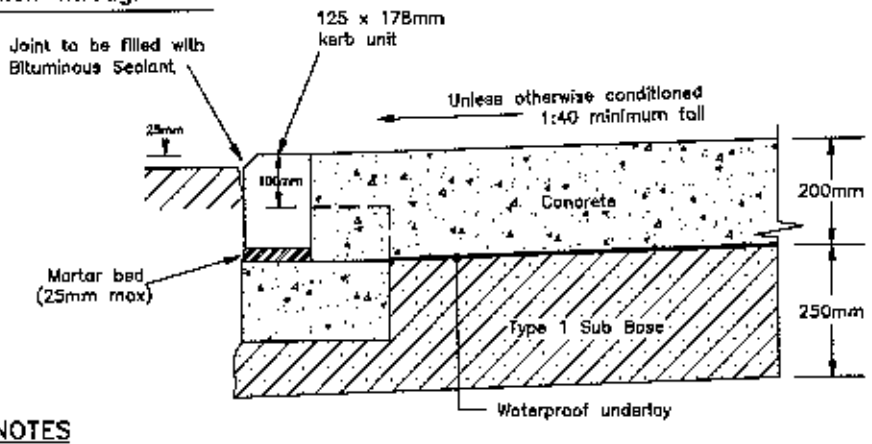
Do Not Scale

North Yorkshire County Council Highways & Transportation Department	CONCRETE FARM CROSSING RURAL INDUSTRIAL ACCESS	DATE	DRAWING NO.	Rev.
		1/6/95	E2	

Plan View



Section Through Kerb



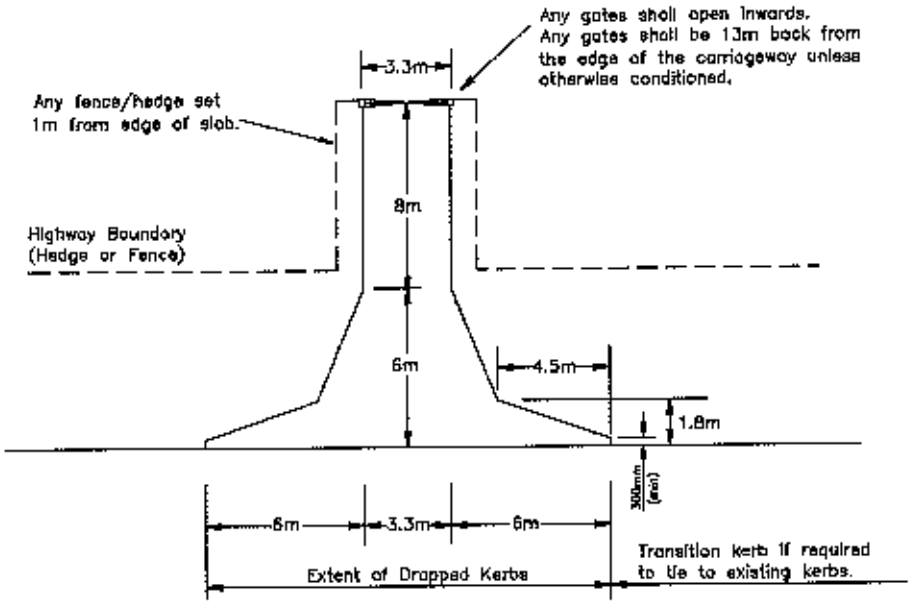
NOTES

1. Air Entrained Concrete shall be a designated mix reference PAV1 to BS 5328 Part 2. It shall have a 20mm nominal size coarse Aggregate and a 75mm slump. It shall be delivered to site ready mixed.
2. All concrete shall be placed in approved formwork.
3. Concrete to have a tamped finish.
4. Construction joints shall be parallel to carriageway and no closer than 4.5m to edge of carriageway.
5. Construction joints shall be formed by introducing a lath 25mm square against the face of the formwork. The joints shall be arised and sealed. The remaining depth of concrete shall be roughened in order that the two faces adhere.
6. Concrete shall not be laid at ambient temperatures below 3°C.
7. Concrete shall be so transported and placed to avoid contamination, segregation or loss of constituent materials. All formwork shall be free from dirt, standing water, snow or ice. Concrete shall not be placed until the approval of formwork and the foundation has been given by the Engineer. Concreting must then be started within 24 hours or further approval must be sought. Fresh concrete shall not be placed against in-situ concrete which has been in position for more than 30 minutes. Concrete shall be laid and compacted as specified within 30 minutes of its discharge from the mixer and unless otherwise agreed by the Engineer shall not be dropped into place from a height exceeding 2m.
8. Waterproof underlay shall be approved 125 micrometres impermeable plastic sheeting. Where an overlap of plastic sheeting is required this shall be at least 300mm.
9. Concrete shall be cured for 7 days before vehicular use.

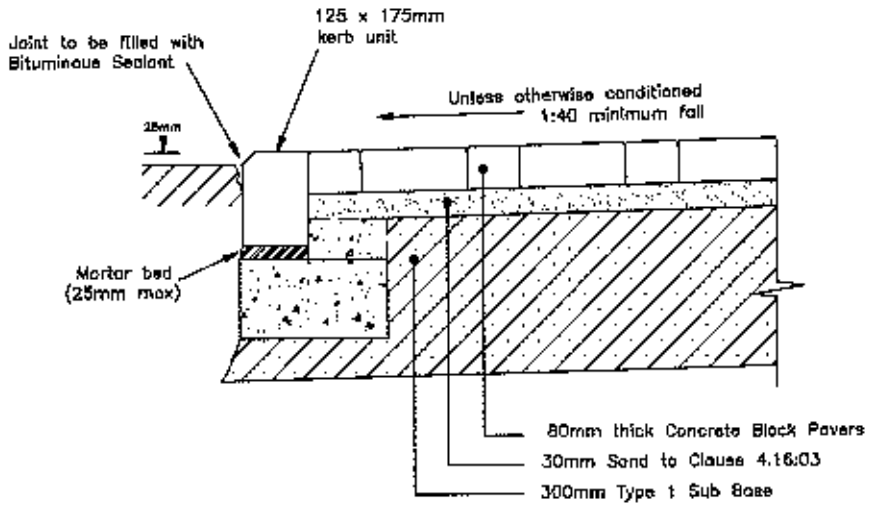
Do Not Scale

North Yorkshire County Council Highways & Transportation Department	RURAL QUARRY & MAJOR INDUSTRIAL CONCRETE ACCESS	DATE	DRAWING NO.	Rev.
		1/6/95	E3	

Plan View



Section Through Kerb



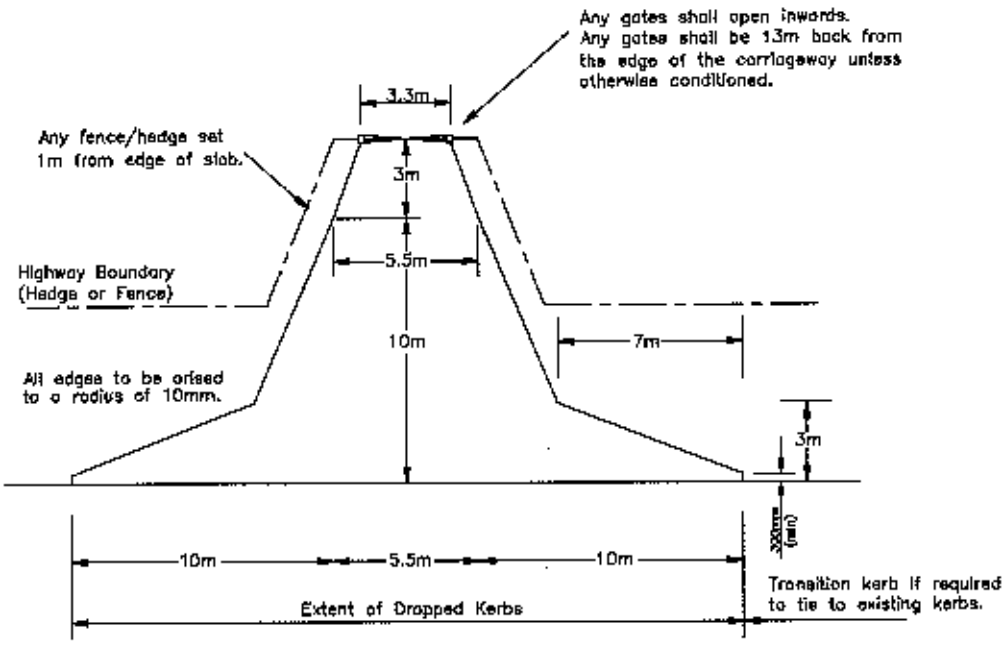
NOTES

1. Concrete Block Paving shall be constructed in accordance with BS 6717 Parts 1 & 3 together with any additional requirements in these Clauses.
2. The blocks shall be rectangular 100mm x 200mm and 80mm thick, to a colour or colours previously agreed with the Engineer. They shall be laid in a herringbone pattern on a 30mm compacted thickness of sand as specified in BS 6717 Part 3.
3. All block cutting shall be done using a purpose made block splitter or saw and the minimum size of laid blocks shall be 33% of a full block. The bond shall be broken as necessary to accomodate the minimum cut block size.

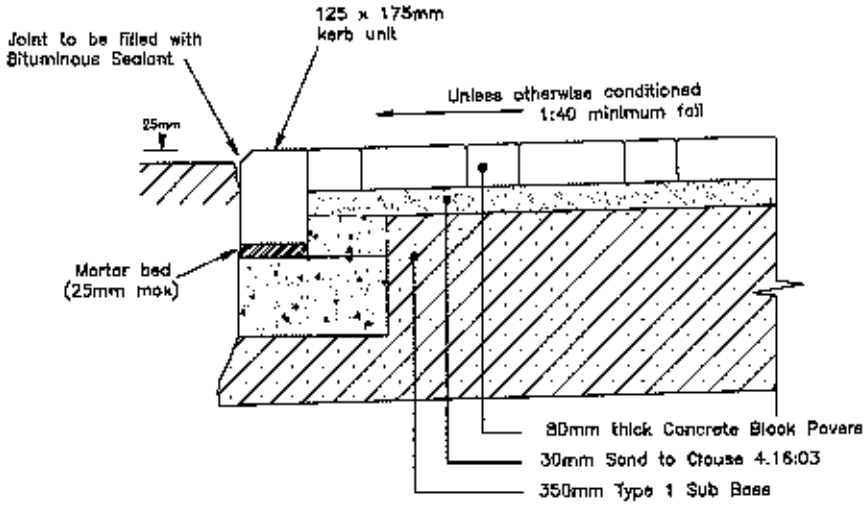
Do Not Scale

North Yorkshire County Council Highways & Transportation Department	BLOCK PAVED FIELD CROSSING	DATE	DRAWING NO.	Rev.
		1/6/95	E4	

Plan View



Section Through Kerb



NOTES

1. Concrete Block Paving shall be constructed in accordance with BS 6717 Parts 1 & 3 together with any additional requirements in these Clauses.

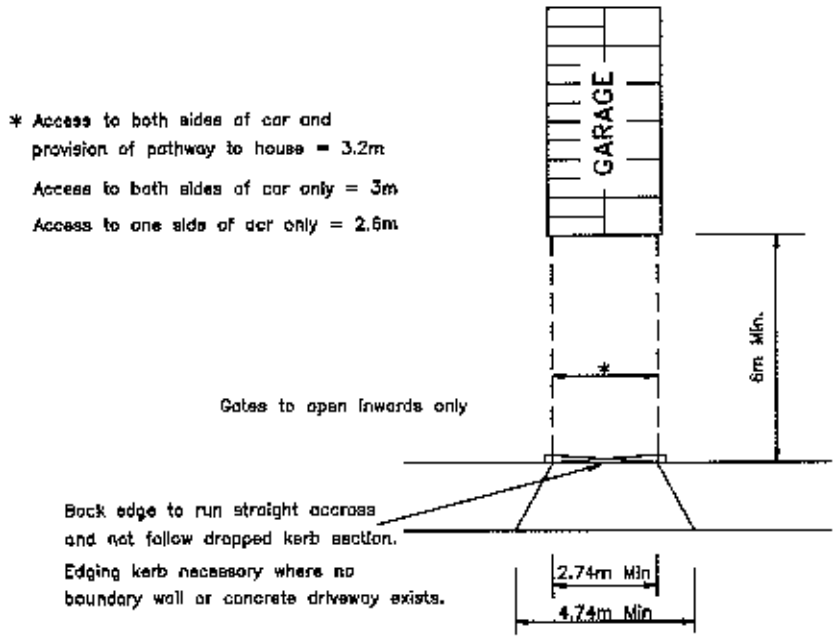
2. The blocks shall be rectangular 100mm x 200mm and 80mm thick, to a colour or colours previously agreed with the Engineer. They shall be laid in a herringbone pattern on a 30mm compacted thickness of sand as specified in BS 6717 Part 3.

3. All block cutting shall be done using a purpose made block splitter or saw and the minimum size of laid blocks shall be 33% of a full block. The bond shall be broken as necessary to accomodate the minimum cut block size.

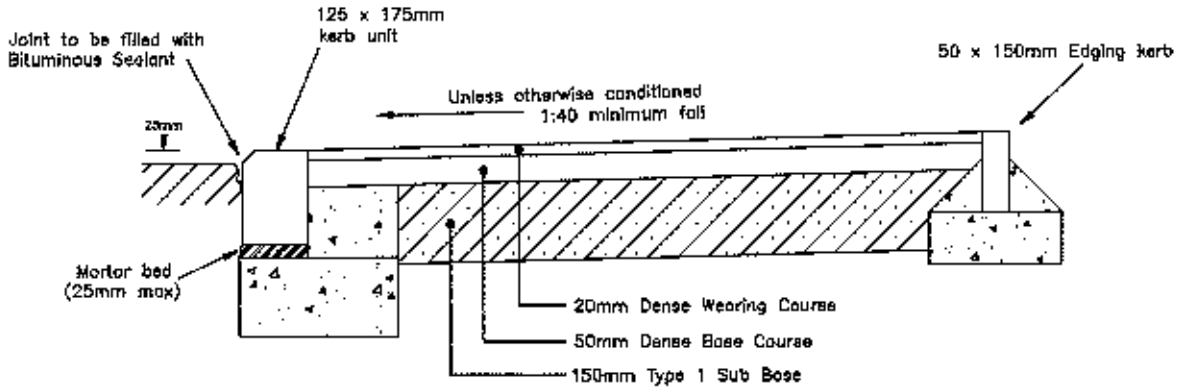
Do Not Scale

North Yorkshire County Council Highways & Transportation Department	BLOCK PAVED RURAL INDUSTRIAL ACCESS	DATE	DRAWING NO.	Rev.
		1/6/95	E5	

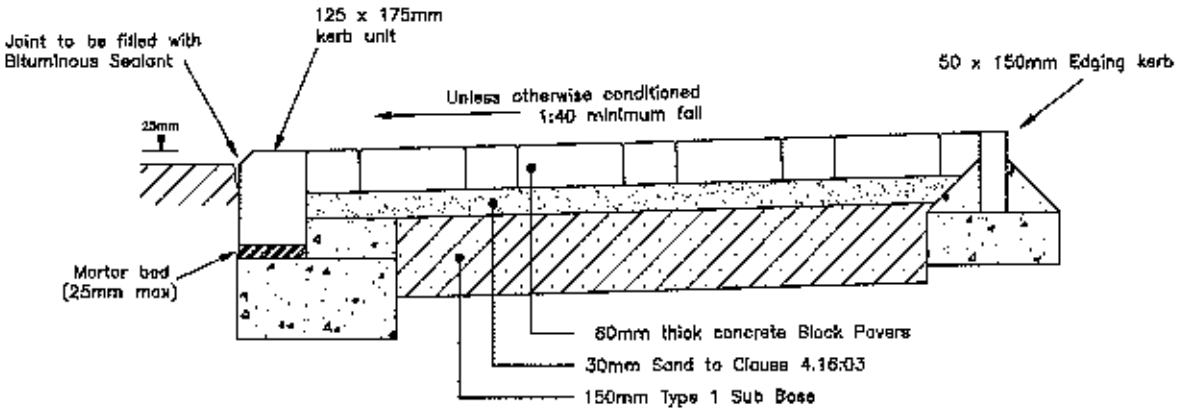
Plan View



Section Through Macadam Crossing

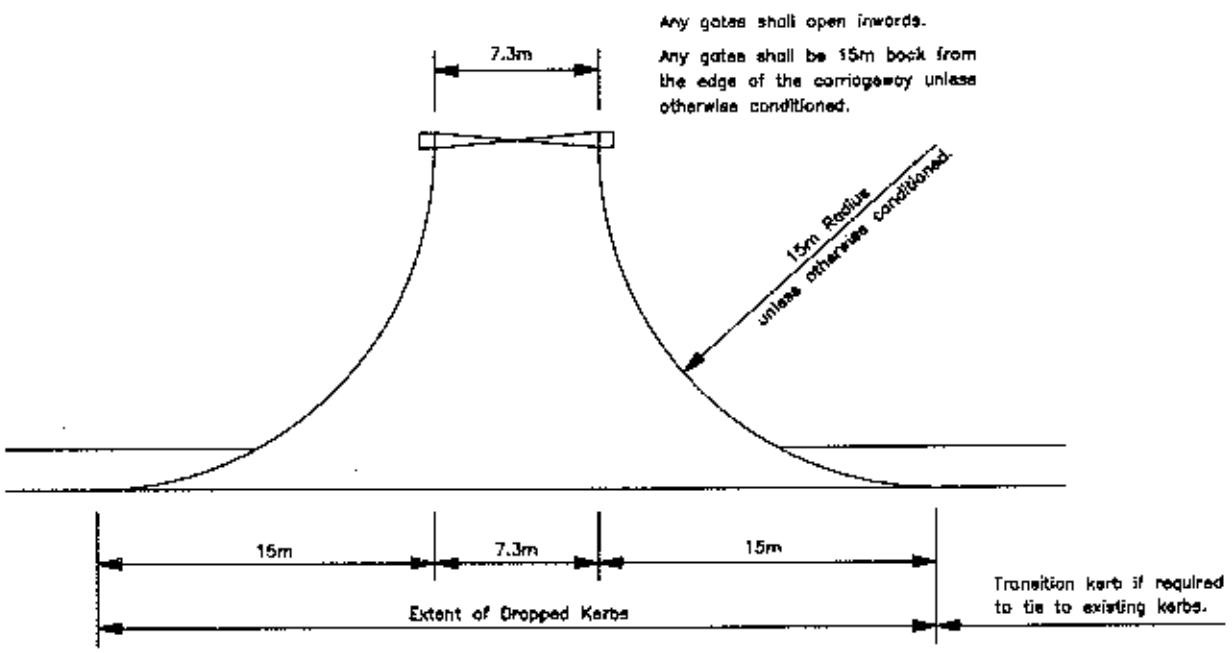


Section Through Block Paved Crossing

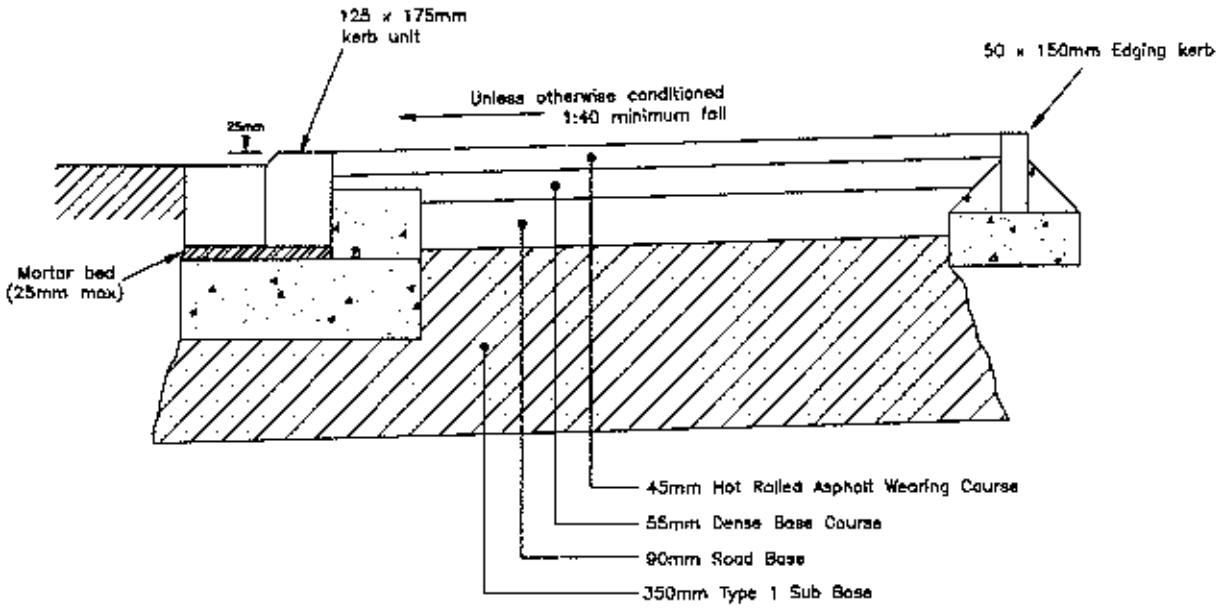


Do Not Scale

North Yorkshire County Council Highways & Transportation Department	FOOTWAY CROSSING DETAIL	DATE	DRAWING NO.	Rev.
		1/6/95	E6	



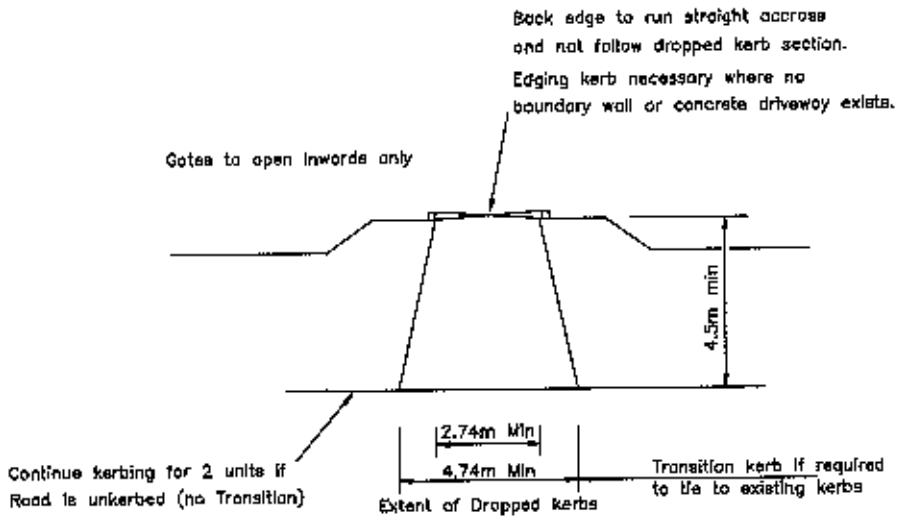
Section Through Crossing



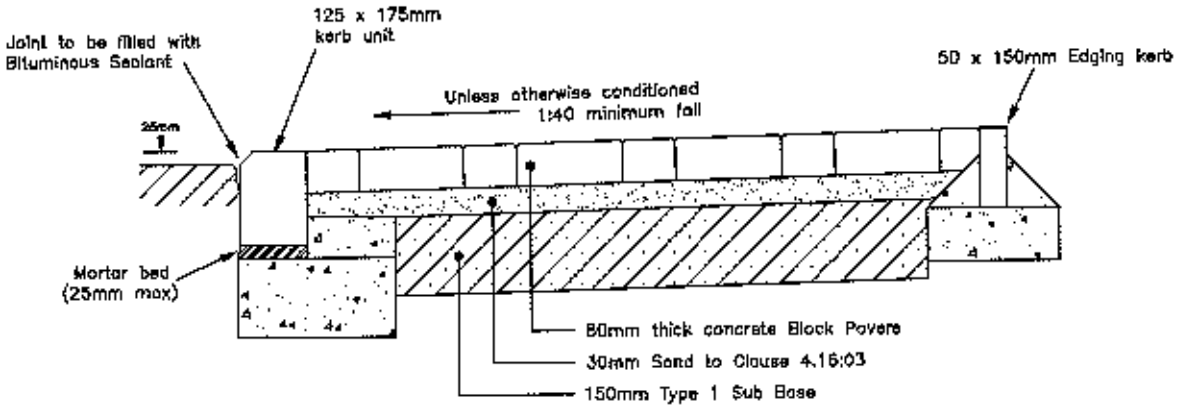
Do Not Scale

North Yorkshire County Council Highways & Transportation Department	URBAN INDUSTRIAL CROSSING	DATE	DRAWING NO.	Rev.
		23/6/95	E7	

Plan View



Section Through Block Paved Crossing



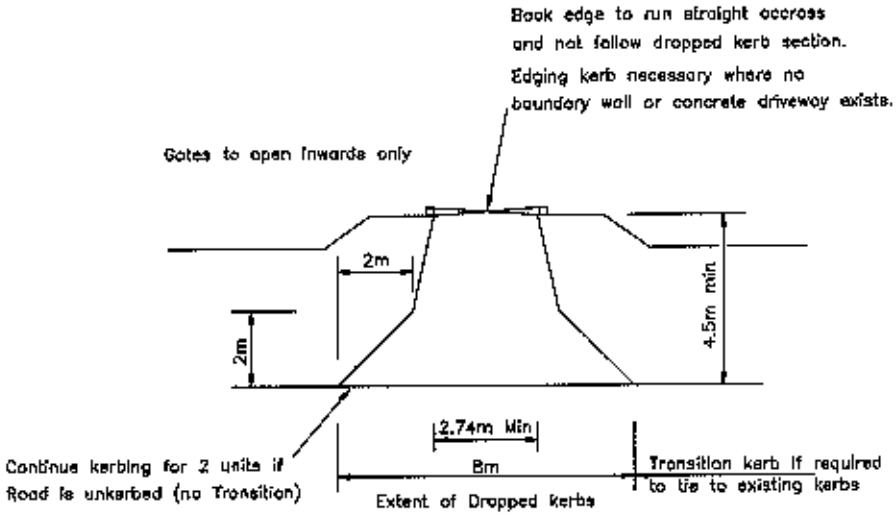
NOTES

1. Concrete Block Paving shall be constructed in accordance with BS 6717 Parts 1 & 3 together with any additional requirements in these Clauses.
2. The blocks shall be rectangular 100mm x 200mm and 80mm thick, to a colour or colours previously agreed with the Engineer. They shall be laid in a herringbone pattern on a 30mm compacted thickness of sand as specified in BS 6717 Part 3.
3. All block cutting shall be done using a purpose made block splitter or saw and the minimum size of laid blocks shall be 33% of a full block. The bond shall be broken as necessary to accomodate the minimum cut block size.

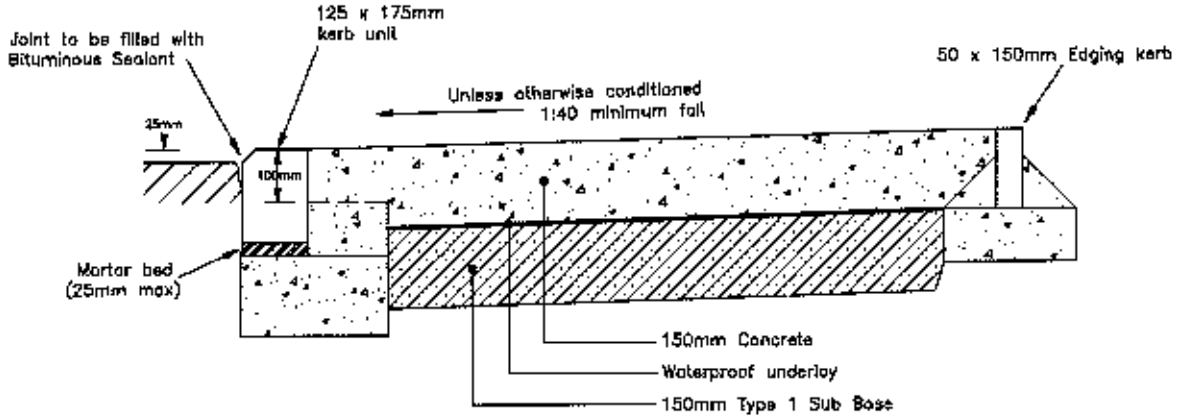
Do Not Scale

North Yorkshire County Council Highways & Transportation Department	BLOCK PAVED VERGE CROSSING RURAL DWELLING	DATE	DRAWING NO.	Rev.
		1/6/95	E8	

Plan View



Section Through Kerb



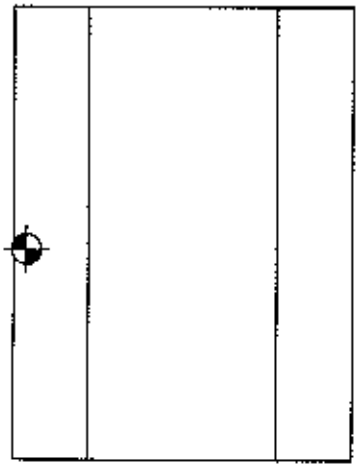
NOTES

1. Air Entrained Concrete shall be a designated mix reference PAV1 to BS 5328 Part 2. It shall have a 20mm nominal size coarse Aggregate and a 75mm slump. It shall be delivered to site ready mixed.
2. All concrete shall be placed in approved formwork.
3. Concrete to have a tamped finish.
4. Construction joints shall be parallel to carriageway and no closer than 1.8m to edge of carriageway.
5. Construction joints shall be formed by introducing a lath 25mm square against the face of the formwork. The joints shall be arised and sealed. The remaining depth of concrete shall be roughened in order that the two faces adhere.
6. Concrete shall not be laid at ambient temperatures below 3°C.
7. Concrete shall be so transported and placed to avoid contamination, segregation or loss of constituent materials. All formwork shall be free from dirt, standing water, snow or ice. Concrete shall not be placed until the approval of formwork and the foundation has been given by the Engineer. Concreting must then be started within 24 hours or further approval must be sought. Fresh concrete shall not be placed against in-situ concrete which has been in position for more than 30 minutes. Concrete shall be laid and compacted as specified within 30 minutes of its discharge from the mixer and unless otherwise agreed by the Engineer shall not be dropped into place from a height exceeding 2m.
8. Waterproof underlay shall be approved 125 micrometres impermeable plastic sheeting. Where an overlap of plastic sheeting is required this shall be at least 300mm.
9. Concrete to be cured for a minimum of 24 hours before vehicular use.

Do Not Scale

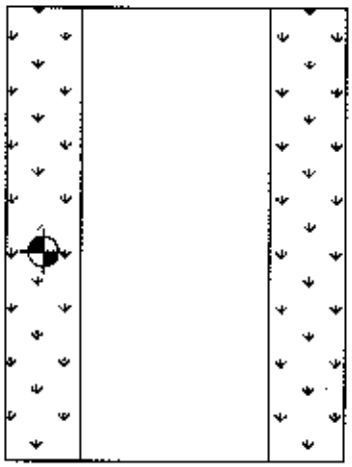
North Yorkshire County Council Highways & Transportation Department	CONCRETE VERGE CROSSING RURAL DWELLING	DATE	DRAWING NO.	Rev.
		1/6/95	E9	

1. Standard 2.0m Footway.



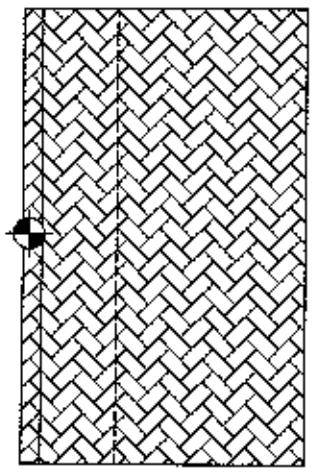
Street Lighting Column to be sited at back edge of footway and be contained within footway boundary.

2. Standard 2.0m Grass Service Strip.



Street lighting column to be sited 1 metre back from kerb edge in grass service strip.

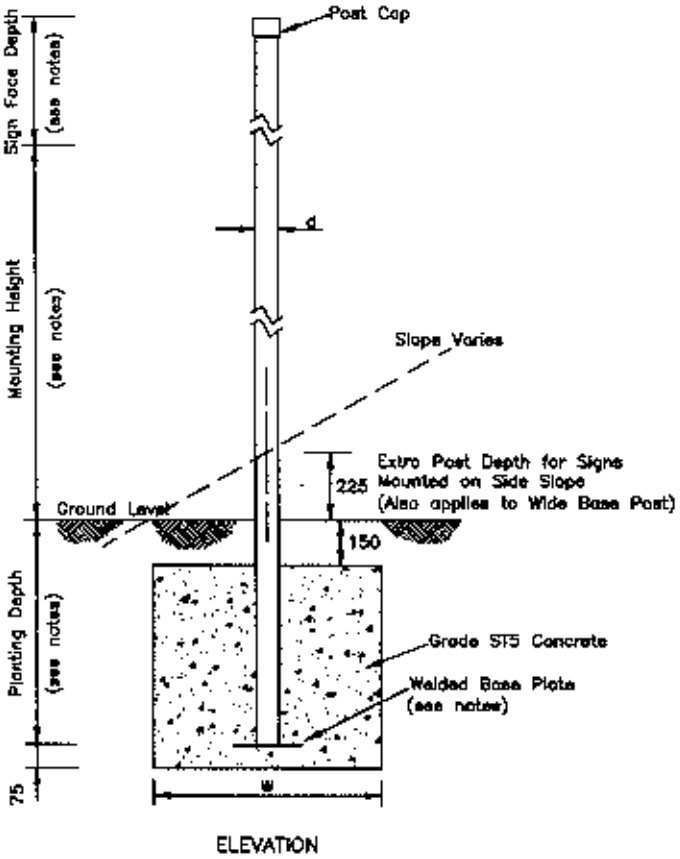
3. Shared Surface With 0.5m Margin.



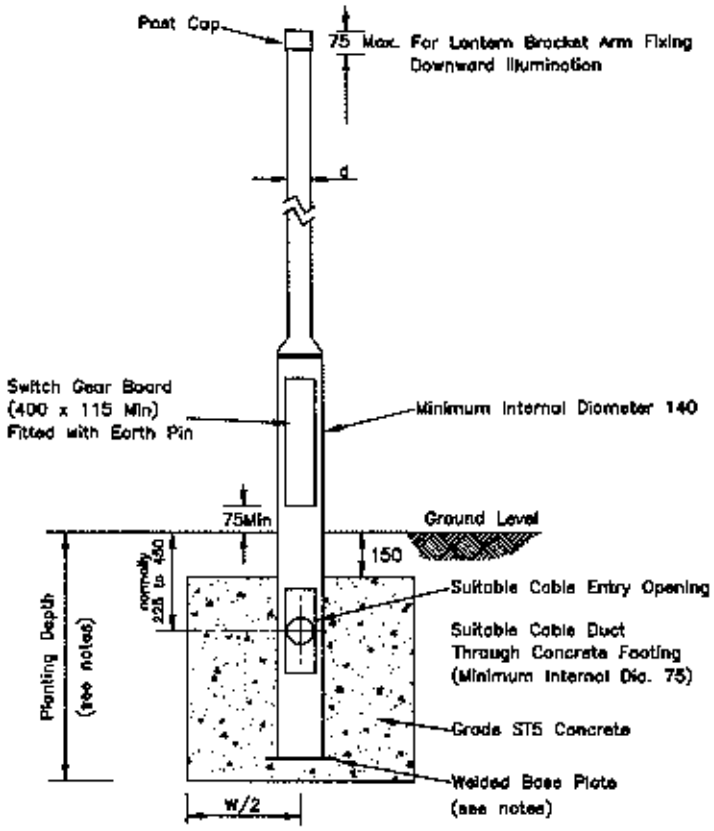
Street lighting column to be sited at back edge of 0.5m margin and be contained within margin.

Do Not Scale

North Yorkshire County Council Highways & Transportation Department	SITING OF ROAD LIGHTING COLUMNS	DATE	DRAWING NO.	Rev.
		1/6/95	F1	



ELEVATION



ELEVATION OF WIDE BASE POST
FOR USE ON ILLUMINATED SIGNS

NOTES :-

1. Height & depth dimensions to be specified in Traffic Sign schedules.
2. Welded base plates shall be 225x225x4.75 or 350x350x4.75 where required, to be specified in Traffic Sign schedules.
3. All posts to have approved post caps. Top of post to be level with top of signboard unless otherwise specified by the Engineer.
4. Care should be taken during excavation to avoid damage or movement to pipe runs or other services. Split ducts will be used for protecting services in foundations.
5. Posts to be erected vertically and groups to be in a straight line with tops level. Posts shall be suitably braced for three days after sockets have been fitted to prevent movement. Surface above sign foundation to be topsoiled or surfaced to conform to the standard of the surrounding materials.
6. A clearance of at least 600mm between the kerb face and the projecting edge of the sign shall be provided. Signs to be erected at an angle of 95° away from the kerb line to avoid specular reflection.
7. Service door on illuminated sign shall be facing away from the carriageway where possible (min. size 875x125), locking door suitably weather proofed to prevent any ingress of water.

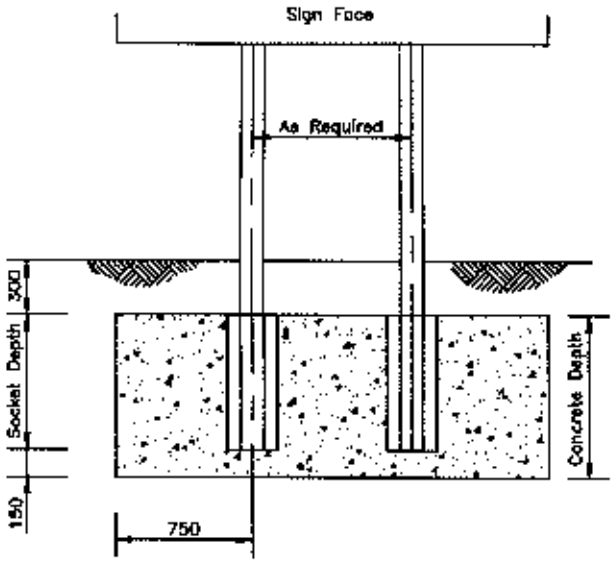
POST DIAMETER 'd'	POST DEPTH BELOW GROUND LEVEL		MINIMUM CONCRETE SURROUND DIAMETER 'W'
	ON LEVEL GROUND	ON 1 in 2 SLOPE	
75	750	1000	750
114	1050	1300	1100

Do NOT Scale

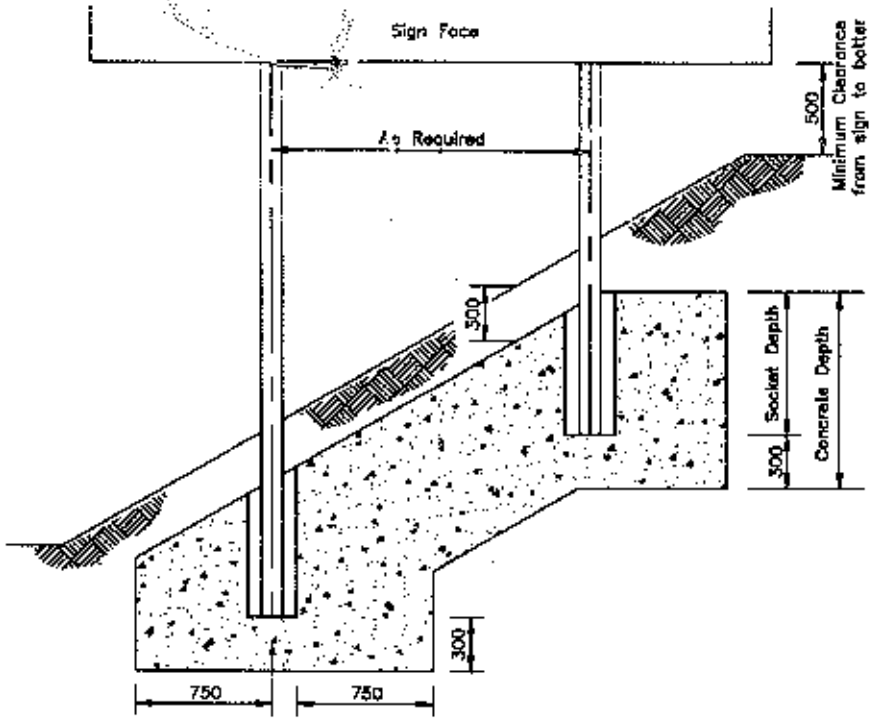
All Dimensions in millimetres

North Yorkshire County Council Highways & Transportation Department	Traffic Sign Erection Details – Single Post	DATE	DRAWING NO.	Rev.
		1/6/95	G1	

G1



SIGN ON LEVEL SITE



SIGN ON EMBANKMENT AND IN CUTTING

POST SECTION				CONCRETE FOUNDATION			POST SOCKET		POST DEPTH BELOW GROUND mm
OUTSIDE DIAMETER (mm)	(in.)	THICKNESS SWG	(mm)	LENGTH mm	CONCRETE DEPTH LEVEL SITE	1 in 2 SLOPE	DIAMETER mm	STANDARD DEPTH mm	
114	(4 1/2)	7G	(4.5)	1350	900	1050	275	750	1050
140	(5 1/2)	5G	(5.4)	1650	1050	1200	300	900	1200
168	(6 5/8)	5G	(5.4)	1950	1075	1225	325	925	1225
194	(7 5/8)	6G	(4.9)	2150	1100	1250	350	950	1250
219	(8 3/8)		(5.9)	2350	1150	1300	375	1000	1300
89	(3 1/2)	8G	(4.0)	1100	900	1050	250	750	1050

NOTES :-

1. All posts to have approved post caps. Top of post to be level with top of signboard unless otherwise specified by the Engineer.
2. Care should be taken during excavation to avoid damage or movement to pipe runs or other services. Split ducts will be used for protecting services in foundations.
3. Posts to be erected vertically and groups to be in a straight line with tops level. Posts shall be suitably braced for three days after sockets have been fitted to prevent movement. Surface above sign foundation to be topsoiled or surfaced to conform to the standard of the surrounding materials.
4. A clearance of at least 600mm between the kerb face and the projecting edge of the sign shall be provided. Signs to be erected at an angle of 95° away from the kerb line to avoid specular reflection.
5. Service door on illuminated sign shall be facing away from the carriageway where possible (min. size 875x125), locking door suitably weather proofed to prevent any ingress of water.

Do NOT Scale

All Dimensions in millimetres

North Yorkshire County Council Highways & Transportation Department	Traffic Sign Erection Details – Double Post	DATE	DRAWING NO.	Rev.
		1/6/95	G2	

G2