

# Highway Requirements Part 5

## 1. INTRODUCTION

This part of Highway Requirements for Development gives details of the specification adopted, construction thicknesses and permitted materials for estate roads being constructed within Leicestershire. These are followed by a number of standard detail drawings which relate specifically to this document and which are additional to the County Council's Standard Drawings booklet, a copy of which is provided. Supervision of estate road construction is carried out by the appropriate Divisional Surveyor or District Engineer and any queries concerning the requirements for construction should be addressed to them in the first instance. A list of contact addresses and telephone numbers is included at the back of this book

## 2. SPECIFICATION

Unless otherwise stated, all roadworks shall comply with the Specification for Highway Works published by the Department of Transport.

## 3. DESIGN THICKNESSES

Table 5.1 on page 2 gives the required minimum design thicknesses and permitted alternative materials for the various standard road types.

Capping layer and sub-base provide the working platform for construction traffic upon which the carriageway is constructed. Capping layer is used where ground conditions are poor and will form the first layer in the road construction. It can be made up of any selected granular material, or combination of materials, other than unburnt colliery spoil and must meet the grading requirements given in Table 6.1 of the Specification for Highway Works. One example of the material which passes this grading requirement is 125mm. down crushed stone. The appropriate Divisional Surveyor or Agent Authority will be able to advise on other suitable materials which may be locally available. In all cases they must approve the material to be used before laying commences.

For all roads types, the following thicknesses of sub-base and capping layer should be used, depending upon the C.B.R... value of the subgrade:-

<b>CBR</b>	<b>613</b>	<b>Thickness</b>	<b>803 GSB</b>
<b>Value</b>	<b>Capping</b>		<b>Type 1</b>

<2%	600 mm.	plus	150 mm.
2%-5%	350 mm.	plus	150 mm.
5%-15%			225 mm.

Geotextiles may be used in accordance with clause 609 of the Specification for Highway Works where ground conditions are poor, subject to the prior approval of the Divisional Surveyor or Highways Agent.

**TABLE 5.1 DESIGN THICKNESSES**

	<u>TYPE A</u>	<u>TYPE B</u>	<u>TYPE C</u>	<u>TYPES D, E &amp; F</u>	<u>Industrial Estate Roads</u>
	<b>District or Local Distributor Roads</b>	<b>Collector Roads</b>	<b>Access Roads</b>	<b>All shared Surfaces</b>	<b>(Major and Minor)</b>
<b>Wearing Course</b>	Rolled Asphalt 40 mm. Cl.910	Rolled Asphalt 40 mm. Cl.910	Dense Bitumen Macadam 30 mm. Cl.912	Block Paving Construction See Section 4	Rolled Asphalt 40 mm. Cl.910 (See Note 1)
<b>Basecourse</b>	Rolled Asphalt 60 mm. Cl.905 or Dense Bitumen Macadam 60 mm.	Rolled Asphalt 60 mm. Cl.905 or Dense Bitumen Macadam 60 mm.	Dense Bitumen Macadam 60 mm. Cl.906		Rolled Asphalt 60 mm. Cl.905 or Dense Bitumen Macadam 60 mm. Cl.906 (100 pen

	CI.906 (100 pen bitumen)	CI.906 (100 pen bitumen)			bitumen)
<b>Roadbase</b>	150 mm.  Dense Bitumen  Macadam  CI.903  or  150 mm.  Wet Lean  Concrete  CI.1030	100 mm.  Dense Bitumen  Macadam  CI.903  or  150 mm.  Wet Lean  Concrete  CI.1030	100 mm.  Dense Bitumen  Macadam  CI.903  or  150 mm.  Wet Lean  Concrete  CI.1030		150 mm.  Dense Bitumen  Macadam  CI.903  or  150 mm.  Wet Lean  Concrete  CI.1030
<b><u>NOTES:-</u></b>					
<p>1. Block Paving Construction is an acceptable  Alternative for industrial estate roads.</p> <p>2. For road types B and C, if DBM roadbase is used the sub-base thickness shall be increased by 50 mm. above that normally required.</p>			<p>• Limestone aggregates shall not be used in any surfacing materials in the carriageway wearing course.</p> <p>4. Following surfacing, DBM wearing course shall be blinded with bituminous grit.</p>		

#### 4. BLOCK PAVING

The County Council is shortly to publish a separate booklet concerning the use of concrete block paving which will be incorporate into this document when it becomes available. In the interim period the advice of the relevant

Divisional Surveyor or Agent Authority should be sought on an individual site basis. Details of the entry ramps to shared surface roads, the interim ramps or raised junctions and the "narrowing" type width restriction are included in the standard drawings that follow

## 5. GULLY SPACING

Gully spacings shall be calculated from the table below:-

Carriageway Gradient	1/150	1/100	1/80	1/60	1/40	1/30	1/20	1/15
Carriageway and footway Area drained per gully (sq. metres)	160	170	180	200	240	280	340	340

## 6. DRAINAGE TRENCHES IN CARRIAGEWAY BACKFILL

All drainage trenches in the carriageway shall be backfilled with granular sub-base type 1 in accordance with the Standard Drawings.

## 7. STREET LIGHTING

The Developer is to provide, in working condition, an approved street lighting installation in accordance with the Department of Transport Specification for Highway Works Part 4 and the general specification of equipment in accordance with the data sheet issued for each estate design. The County Council or its agent will design the street lighting scheme and the East Midlands Electricity Board will provide the electrical service connections. Once the lights have been commissioned, the County Council or its agent will carry out the routine maintenance of the installation on roads which are to be adopted.

## 8. GRASS SEED TO VERGES

The following mixture of seed shall be used to produce a low maintenance verge grass:-

30% Chewing Fescue

30% Slender Creeping Red Rescue  
20% Smooth Stalked Meadow Grass  
10% Hard Fescue  
10% Browntop Bent

## **9. STANDARD CONDITIONS APPLYING TO THE CONSTRUCTION OF ESTATE ROADS**

**9.** Throughout these conditions the term "The Engineer" shall mean the Director of Planning and Transportation of the Leicestershire County Council or other such Engineer appointed by the appropriate Agent Authority. These conditions shall apply to all new estate roads which are intended to become highway maintainable at public expense.

**10.** The construction of all roads, footways, verges and surface water drains shall be to the complete satisfaction of the Engineer and, unless otherwise agreed in writing by the Engineer, shall comply with these Standard Conditions, this Specification and the Standard Drawings.

**11.** The Engineer shall be notified in writing at least seven days prior to the commencement of any work and in the event of work being suspended for any reason, similar notification shall be given of operations being restarted. All necessary notices under the Public Utilities Streetworks Act shall have been served and all the necessary permits obtained prior to the commencement of any work.

**12.** The Engineer or his representative shall be given unhindered access to any may visit the works in progress at all times. Such visits in no way absolve the Developer from his responsibility for supervising the work and ensuring that it is carried out in accordance with these Standard Conditions, this Specification and the Standard Drawings.

**13.** So far as is practicable, the Developer shall ensure that all services are laid under carriageways or ducts provided for them, before the roadbase is laid. Provision may need to be made in certain areas within Leicestershire for ducts for cable television to be laid.

**14.** The wearing course to carriageways and footways shall not be laid until all building works on the site are substantially completed. Where, at the discretion of the Engineer, the wearing course is laid in advance of the substantial completion of building works, any repairs to such damage as may occur will be the responsibility of the Developer. Where any 100 metre length of footway surfacing has more than 30% of its area taken up by permanent reinstatements, the whole length shall be resurfaced prior to adoption.

- 15.** All visibility splays at entrances to the estate from the Highway shall be cleared to ground level before any work commences and until the road is adopted shall be kept free from obstructions at all times.
- 16.** Where it is necessary to carry out any works within the boundaries of an existing highway this shall not be done without the prior approval of the Engineer. The Developer shall obtain a permit to carry out such works, or shall enter into an agreement under Section 278 of the Highways Act 1980 where major works are concerned. Any obstruction to the highway shall be restricted to the narrowest possible limits and unless other measures are approved by the Engineer, adequate space shall be left at all times for the passage of traffic and pedestrians. At least seven days notice in writing shall be given to the Engineer prior to the commencement of any work involving obstruction to an existing highway. Arrangements for the signing and control of traffic shall be in accordance with Chapter 8 of the Traffic Signs Manual and the cost of the provision of all temporary traffic signals, road signs, etc. shall be borne solely by the Developer.
- 17.** Where public highways are used for direct access to the development, the necessary warning signs shall be erected and the roads and footways shall be at all times maintained in a clean and safe condition any damage shall be made good without delay, all to the satisfaction of the Engineer.
- 18.** The Engineer may call for representative samples of any material used in the works for inspection, analysis or tests. The costs of all such tests, etc., including CBR tests where necessary, shall be borne by the Developer.
- 19.** The Highway Authority is in no way whatsoever responsible for the arrangement of consents or wayleaves to enable the execution of any particular work and all such must be arranged directly with the owners or occupiers of property affected by the works.
- 20.** Before any property is occupied, the roads, footways and footpaths serving it shall be brought up to at least base course level, and any street lighting shall be operational.
- 21.** Where it is necessary to obtain temporary access to the site from a public highway, the consent of the Engineer shall be obtained in advance, together with his approval of the method of working any necessary temporary signing and the routing of any heavy construction traffic to the site.
- 22.** The Developer shall ensure that during development (at the discretion of the Engineer) and prior to adoption, the following works are carried out at frequent intervals:-
- i) All roads and footpaths are swept.
  - ii) All gullies are emptied and cleansed.

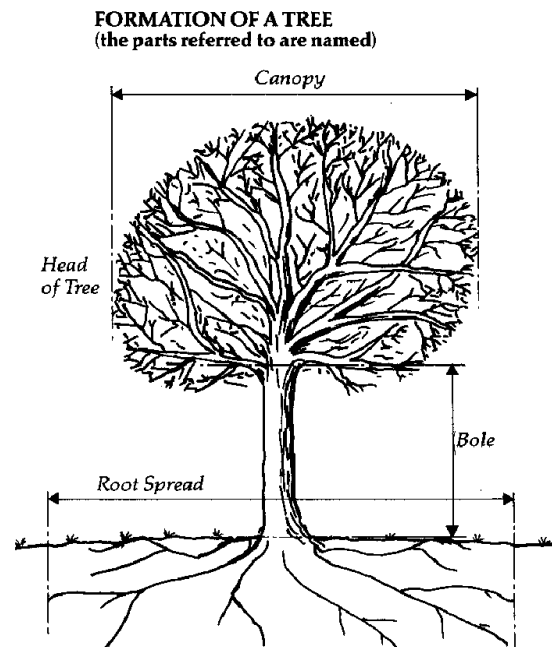
iii) All grass verges and other grasses areas included in the Section 38 Agreement are mown and kept clear of grass cuttings and weeds.

iv) So far as possible all roads and footpaths are kept clear during periods of snow.

**23.** Insofar as is practicable, the Developer shall ensure that services are laid within the footways or service reservations in the positions and depths indicated in Drawing No. HRD 06.

## **24. THE PRESERVATION OF TREES IN CONNECTION WITH ROADWORKS**

**24.** Engineer is most anxious for as many trees as possible to be retained where roadworks are carried out. A large number of trees are being felled annually in connection with all kinds of development and it is considered important that as many healthy trees as possible should be preserved. New planting can take many years until it becomes effective and has much amenity value. If semi-mature or mature trees having a good expectation of life can be retained, they are of far greater value. Everything that can be done to preserve such trees should therefore be done. However, to ensure a reasonable chance of success, measures must be thorough; it is a waste of time and money to take half-hearted measures.



## **25. ROOT SPREAD**

It is recommended that the root spread should be taken to be the height of the tree plus one third.

## **26. PROXIMITY OF TREES TO EARTHWORKS**

When earthworks have to take place close to trees, a general assessment shall be carried out on the site to evaluate the physical conditions of the soil, type and health of trees, etc. It is recommended that no more than 25% of the roots should be removed and that in no circumstances should any excavation or cutting of roots be within 4.5 metres of the bole.

## **27. STABILITY**

Care must be taken that an excavation will not reduce the stability of any trees. An assessment should also be made of the wind velocity from various directions with a view to noting in particular wind funnels between buildings and deflections from buildings and their effect on stability.

## **28. HEALTH**

Construction activities can affect very seriously the health of trees and it is recommended that:-

- a) Compaction of the soil around trees is avoided and all temporary access routes near trees are constructed of sleepers and are not within 4.5 metres of the bole,
- b) The following are prohibited within the area of root spread:-
  - i) storage of materials including soil,
  - ii) spillage of fluids of any nature.
- c) The bases of any temporary site offices near to trees are elevated above ground level to allow the circulation of air under them and are not sited within 4.5 metres of the bole,
- d) Proper care of the trees is taken during construction, by the erection of substantial fencing and that branch thinning is carried out to balance any reduction in the root system,
- e) An adequate supply of air and water gets to the roots of the trees as a result of proper cultivation.



## **29. WATER TABLE – MAINTENANCE**

It is recommended that:-

a) The level of the water table should be determined before the start of construction by means of boreholes. Should the works involve the lowering of the water table near trees which are to be preserved, consideration should be given to some form of artificial irrigation.

b) Temporary excavations in the vicinity of trees should be backfilled with the excavated materials and in the correct soil sequence as soon as possible.

**30.** After construction has been completed a temporary or perched water table may develop during the winter months, often where the sub-soil is an impermeable clay. This may result in "crown die-back" and it is recommended that adequate drainage should be provided to cope with periods of heavy rainfall and that adequate means of irrigation are installed as recommended in paragraph 31.

**31.** Adequate irrigation must be provided for periods of drought and it is recommended that where there is a risk that on completion of the works there will not be an adequate depth of soil to contain sufficient moisture to overcome a period of drought, a permanent system of irrigation be installed.

## **32. SOIL FERTILITY**

This is dependent on the physical condition of the soil and an assessment of the soil structure should be made on site. The access of air and water to the roots is as important as an application of plant nutrients. It is therefore recommended that on completion of the works the physical structure of the soil should be improved by careful cultivation, followed by a good mulch, followed by a fallow period of at least six months for the purpose of cultivation and good aeration before grassing.

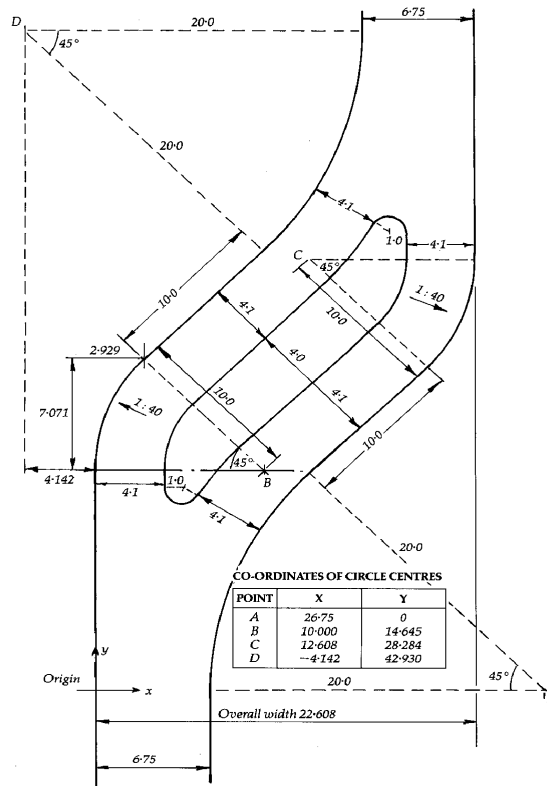
## **33. FEEDING OF OLD ESTABLISHED TREES**

Although the feeding of old established trees is seldom justified, it is often necessary to restore the natural conditions of the soil after completion of the works.

## **34. PROTECTIVE FENCING**

It is advisable to provide protection for trees prior to any roadwork's taking place. It is therefore recommended that a strong protection fence is erected at an adequate distance from the tree wherever this is possible. This will aid in preventing damage to the root system by excavation, tipping material onto the root spread and damage to the head of the tree by construction plant. Such fencing is now included in the Bill of Quantities for all road construction contracts in Leicestershire.

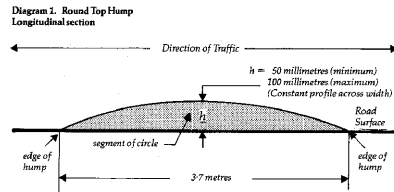
## HRD 01 "CHICANE" TYPE SPEED REDUCTION FEATURE- SETTING OUT



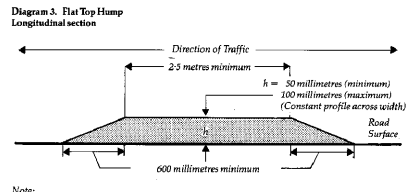
### NOTES

For up to date dimensions please consult the latest edition of the County Councils standard drawings which are also available on the County Council's website.

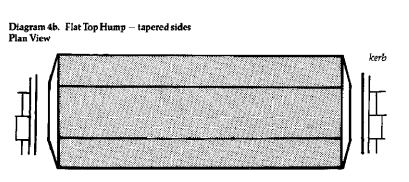
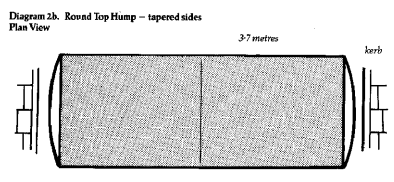
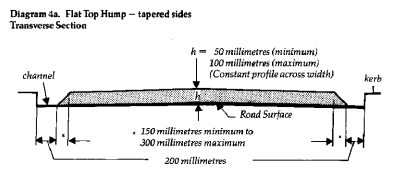
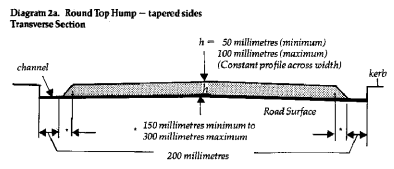
## HRD 02 ROAD HUMPS



Note:  
This hump normally extends across the road from kerb to kerb.  
A permitted variant is given in diagram 2a below.



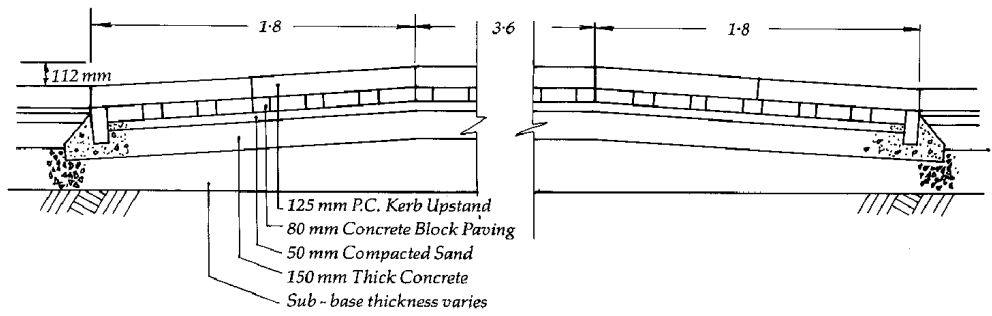
Note:  
This hump normally extends across the road from kerb to kerb.  
A permitted variant is given in diagram 4a below.



**NOTES**

For up to date dimensions please consult the latest edition of the County Councils standard drawings which are also available on the County Council's website.

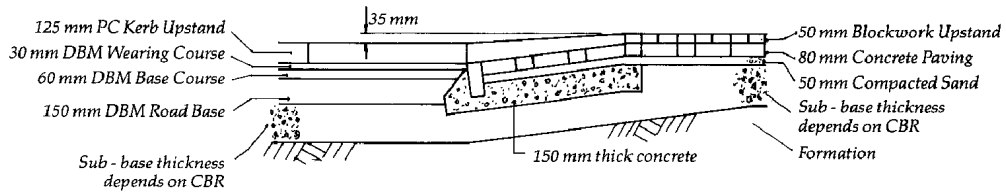
**HRD 03 "NARROWING" TYPE SPEED REDUCTION FEATURE - LONG SECTION**



**NOTES**

For up to date dimensions please consult the latest edition of the County Councils standard drawings which are also available on the County Council's website

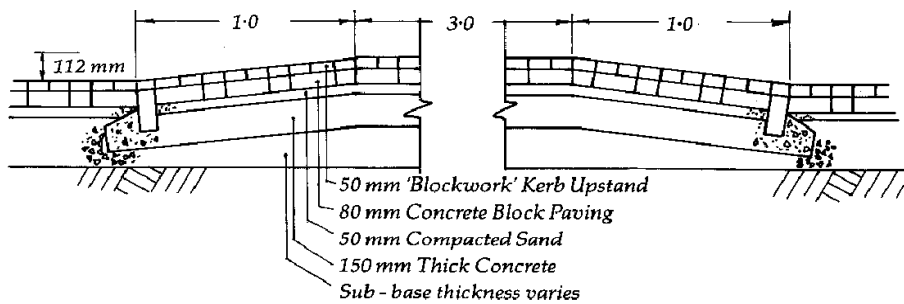
## HRD 04 RAMP DETAIL AT ENTRY TO SHARED SURFACE



### NOTES

For up to date dimensions please consult the latest edition of the County Councils standard drawings which are also available on the County Council's website.

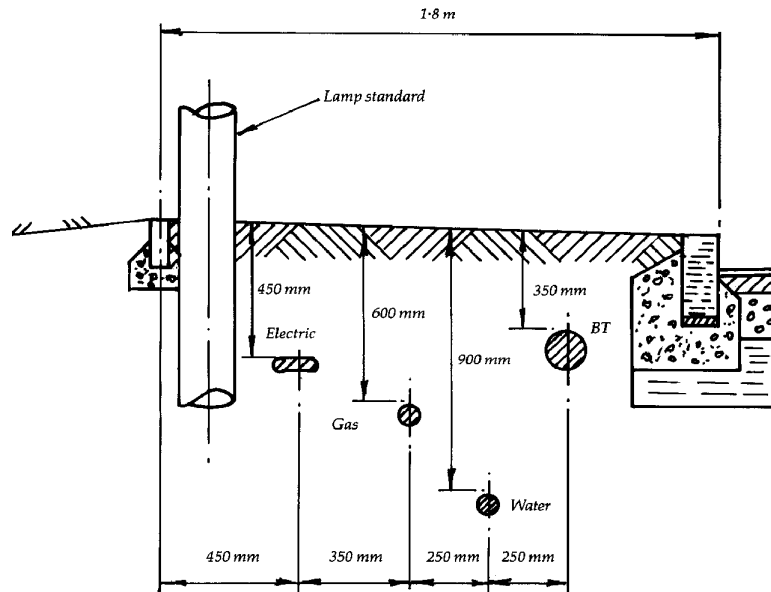
## HRD 05 INTERMEDIATE RAMP DETAIL IN SHARED SURFACE



### NOTES

For up to date dimensions please consult the latest edition of the County Councils standard drawings which are also available on the County Council's website.

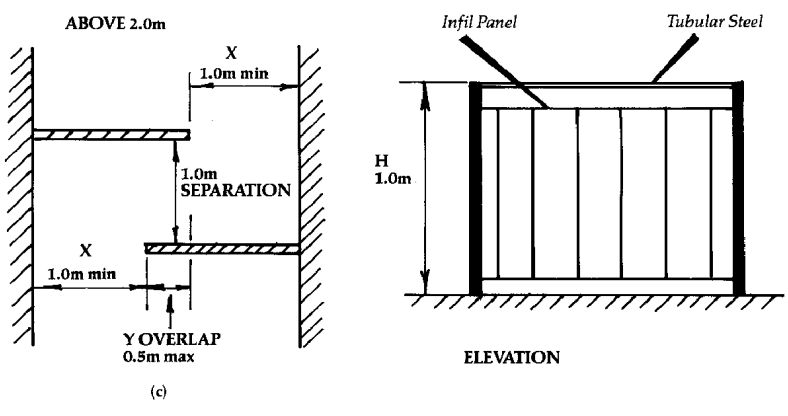
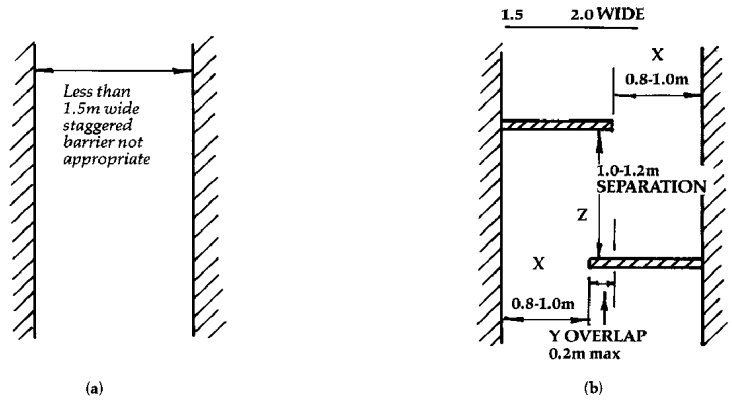
## HRD 06 DISPOSITION OF LIGHTING AND PUBLIC UTILITY SERVICES UNDER FOOTWAYS



## NOTES

For up to date dimensions please consult the latest edition of the County Councils standard drawings which are also available on the County Council's website.

## HRD 08 STAGGERED BARRIERS ON FOOTPATHS



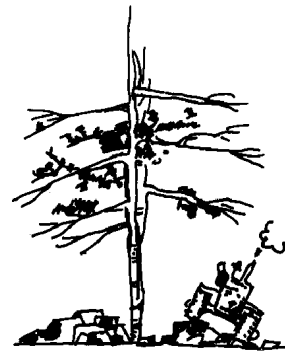
**NOTES**

For up to date dimensions please consult the latest edition of the County Councils standard Drawings which are also available on the County Council's website.

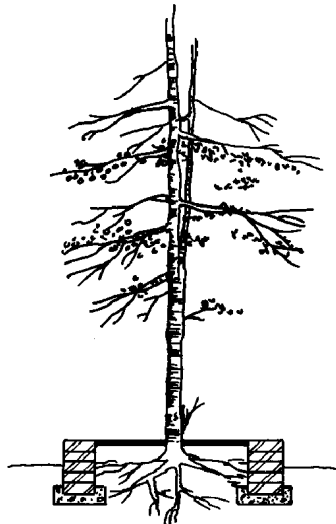
## HRD 07 PROTECTION AND PRESERVATION OF TREES



Existing trees to be preserved should be fenced with chestnut paling to keep all traffic and excavations well clear of the root system which extends to the full span of the tree.

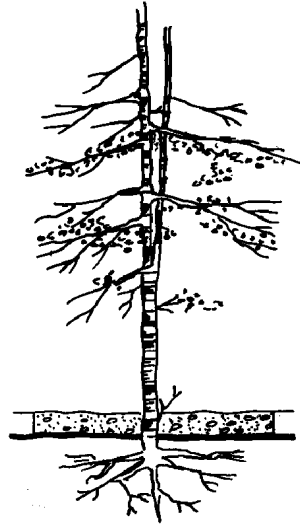


- No traffic over root system.
- No excavations deposited over root system or trees will die due to suffocation.
- No excavation within tree span.
- No drain trenches cutting roots.



**LEVELS REDUCED**  
The above procedure is suitable for deep rooted trees only, assuming that there is no drastic change in water level, e.g. sycamore, lime, plane, birch. Unsuitable for shallow rooting species such as beech, scots pine, ash and willow.

PRESERVATION



**LEVELS RAISED**  
Porous filling around the base of the tree allows roots to breathe. This method can be applied to most species with the exception of beech. The change in level should not exceed two feet.

### NOTES

For up to date dimensions please consult the latest edition of the County Councils standard drawings which are also available on the County Council's website.