



North

Yorkshire County Council

Environmental Services

ENVIRONMENTAL ENHANCEMENT

Traffic Management, Road Safety, Passenger Transport, Rights of Way, Heritage, Minerals and Waste Planning

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County Hall, Northallerton
North Yorkshire DL7 8AH
Tel: 01609 780780
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19 October 1998

Dear Sir

RESIDENTIAL HIGHWAY DESIGN GUIDE - 2ND EDITION

This second edition of the Residential Highway Design Guide supersedes the Design Guide which was published in 1985.

The format of the new guide is such that future full publications of the document will not be necessary and that addendums 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.

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Yours faithfully


GROUP ENGINEER

Mike Moore, Director

Chris Mills, Head of Environmental Enhancement

Serving England's Largest County

My Ref 70/220

NORTH YORKSHIRE COUNTY COUNCILS
RESIDENTIAL HIGHWAY DESIGN GUIDE - 2nd EDITION

I wish to be sent update pages of the Residential highway design guide 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: _____

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

Residential Highway Design Guide

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1.0 Introduction

1.1 INTRODUCTION

01 This Design Guide updates the Residential Highway Design Guide published in 1985 to take into account the recommendations of Design Bulletin 32 "Residential Roads and Footpaths" (Second Edition). It also takes into account the findings of a survey carried out by Buchanan & Partners in 1992 of residents on recently completed housing estate roads.

02 North Yorkshire has an attractive and varied built environment. The County Council and District Councils, who are involved in the future planning and control of development in the County are concerned to ensure that this quality of environment is maintained and enhanced for the benefit of residents and visitors. Residential developments throughout the County should reflect this aim to maintain and enhance the environment.

03 The planning of roads and footways has a major impact on the character, quality and safety of residential areas. The layout and design of these roads and footways must consequently be an integral part of the overall design concept for any development. The design of these roads and footways should:

- * Provide sufficient space for safe movements by all road users particularly cyclists, pedestrians and disabled persons
- * Control the speed of vehicles
- * Provide sufficient space to turn all vehicles within the highway
- * Allow for the parking of vehicles
- * Provide for statutory and other services
- * Enhance and compliment the existing landscape

04 This Design Guide provides guidance on layouts acceptable to the County and District Councils which should ensure that successful layouts are designed to satisfy the above criteria and meet the needs of all interested parties. It should be read in conjunction with the 'North Yorkshire County Council Specification for Housing and Industrial Estate Roads and Private Street Works'.

1.2 USE OF THE GUIDE

01 Although predominantly rural the County exhibits a wide range of diverse development opportunities. It is therefore inappropriate to attempt to provide comprehensive advice on all likely eventualities. This guide accordingly concentrates its detailed guidance on those situations which are most likely to be encountered in the County. The advice is most appropriate for rural or suburban situations but for those wishing to develop in urban centres and the County's historic towns reference should be made to Section 7 prior to reading any other section.

02 Detailed design requirements for the various road types are given in Part 3. Typical illustrations of the road types available to suit different circumstances and requirements are in Part 4. The standards should not be regarded as inflexible regulations. The layouts illustrated in Part 4 show that there are a great variety of ways in which the road types can be used, the illustrations are only some of the possible applications of the standards and the layout adopted for a particular site will of necessity vary to suit the circumstances.

03 Used imaginatively the standards should be seen as enabling and encouraging attractive housing layouts of individual character.

04 The remainder of the guide provides detailed advice on landscape design, development in conservation areas, the accommodation of public utilities and services, and procedures for the adoption and maintenance of highways.

1.3 MONITORING AND UPDATING

01 This document has been prepared by a working party containing both Planning Officers and Highway Engineers. Monitoring of the document will be a continuous process with the working party noting comments co-ordinated through the County Council's Highways Department.

02 Where it is considered necessary, as a result of the monitoring process, the document will be updated and amendments issued. Users are recommended to ensure that the 'Update Registration Form' in the front of the document is completed and returned.

2.0 Approach to Road Design

2.1 ROAD HIERARCHY

01 The full road hierarchy within North Yorkshire comprises: PRIMARY DISTRIBUTOR ROADS, DISTRICT DISTRIBUTOR ROADS, LOCAL DISTRIBUTOR ROADS and RESIDENTIAL ACCESS ROADS. This Guide is only concerned with the lower categories of this hierarchy as they will occur within new developments. The Guide is therefore concerned with:

* **LOCAL DISTRIBUTOR ROADS**

These are roads, generally without direct access to properties, which in larger developments connect the new residential access road network to the existing distributor road network.

* **RESIDENTIAL ACCESS ROADS**

These are roads which link dwellings and parking areas to the distributor road network and provide access to those dwellings. The different categories are:-

MAJOR ACCESS ROAD

MINOR ACCESS ROAD

INFORMAL ACCESS ROADS

ACCESS COURTS

MINOR ACCESS WAYS

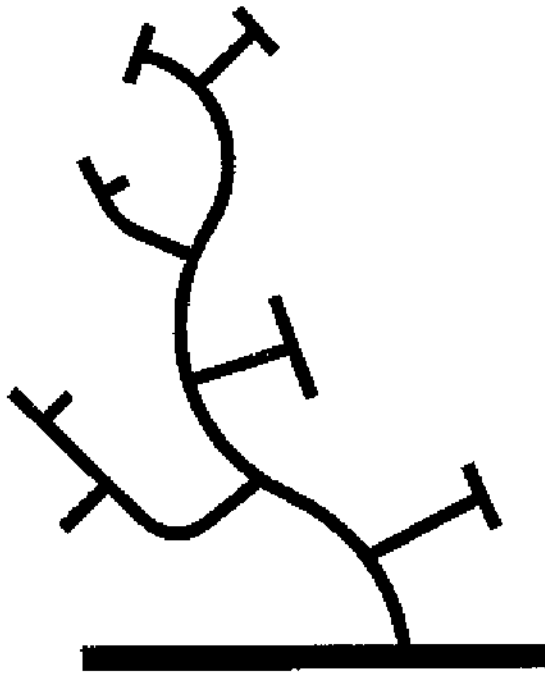
02 Details of all types of estate roads are discussed in Section 3. Where higher categories of roads are necessary the developer should discuss the design requirements with the Highway Authority.

03 Housing sites in North Yorkshire are typically small so that the need for local distributor roads will not arise in most cases. Therefore the guidance given below focuses on the design of residential access roads.

04 The layout and design of roads and footpaths **must be an integral part of the overall design concept**. The approach adopted by this Guide is not to present a rigid set of rules to be followed in the design of residential layouts or to present standard layouts that can be applied 'off the peg' to developments in North Yorkshire. Rather it advises on objectives and principles while indicating minimum standards to be met where necessary.

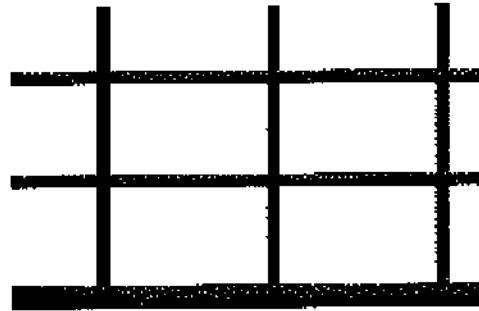
2.2 PRINCIPLES OF ESTATE ROAD AND FOOTPATH LAYOUT

01 Residential roads are required to fulfil a number of functions. In addition to movement by pedestrians, cyclists and vehicles, they provide space for parking vehicles, access to property, routes for statutory services and are often used as play space by children. They also form a major part of the visual environment within housing areas.



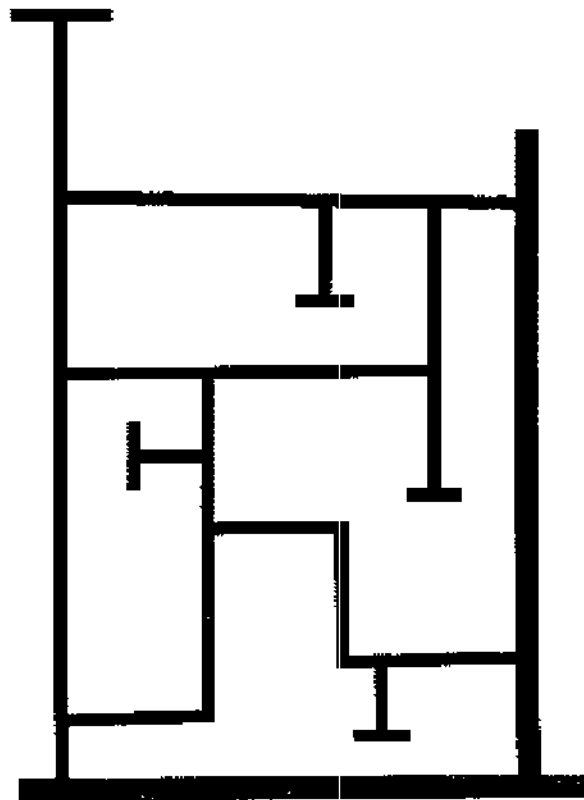
TREE-LIKE GRID

FIGURE 2.1



THEORETICAL GRID

FIGURE 2.2



GRID-LIKE LAYOUT

FIGURE 2.3

02 The Planning Authority, in approving layouts, will need to take into consideration the interests of the following parties in how roads are laid out:

- * **RESIDENTS** require convenient access to their property for themselves, visitors and service vehicles, a safe and attractive environment and security for their property and vehicles;
- * **THE LOCAL HIGHWAY AUTHORITY** will be concerned that the above requirements are met effectively and safely and that areas proposed for adoption will be safe and economical to maintain;
- * **STATUTORY UNDERTAKERS** require that the installation and maintenance of their services be economical and convenient.
- * **HOUSEBUILDERS** want layouts that permit their site to be developed efficiently economically and in a manner that enhances the marketability of their houses.
- * **THE POLICE** who want to create a safe and secure layout.
- * **THE FIRE AND RESCUE SERVICE** who require reliable access at all times to deal with incidents, particularly those involving rescues.

03 In general, the above objectives are likely to be met if the principles of design set out below are followed. On occasions there will be conflicts between objectives which can only be resolved with reference to the particular circumstances of each site.

04 Road layouts should be designed to keep both speeds and traffic flows low in the vicinity of houses by adopting the following principles:

- * Sections of road over which vehicle speeds are unrestrained should be limited to a length appropriate to the intended design speed of vehicles by the use of short culs-de-sac or loops, by the positioning of junctions or by the incorporation of specific speed restraint measures;
- * The number of dwellings accessed from each individual section of road should be appropriate to the type of road (see Section 3);
- * Major generators of traffic should be accessed from distributor roads rather than from access roads;
- * The use of residential roads by non-access traffic should be discouraged. The means of achieving this will depend on the circumstances of the site and the likelihood of any such traffic being attracted. Where use by non-access traffic is expected to be low, simply designing for low speeds may be sufficient, whereas if there is a high risk of 'rat running', then network layouts providing only indirect or tortuous routes will be necessary;

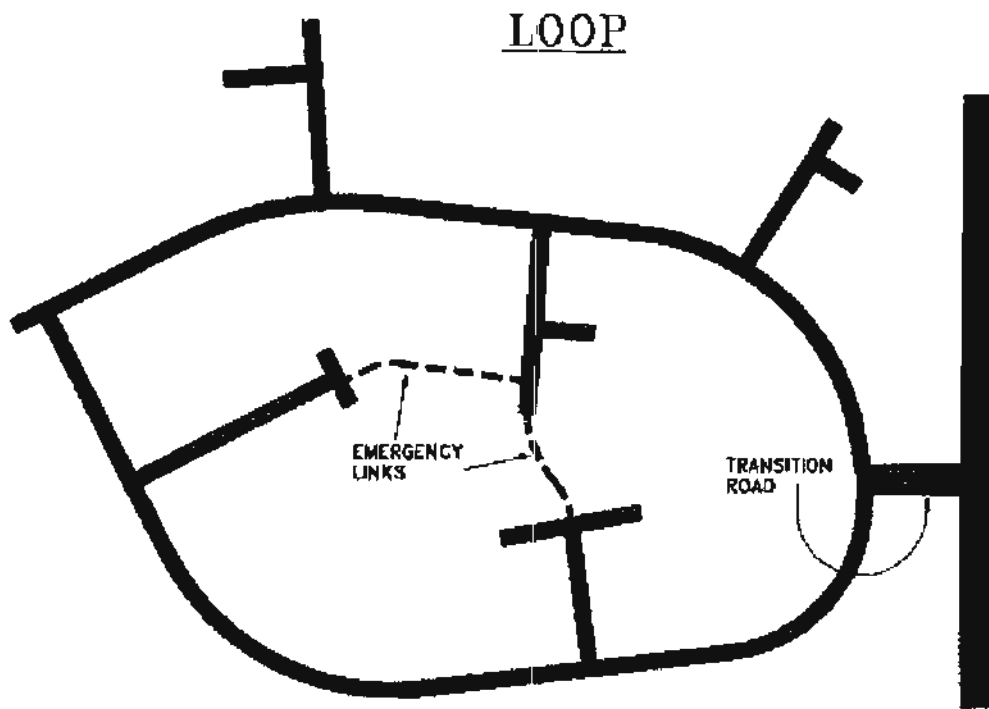


FIGURE 2.4

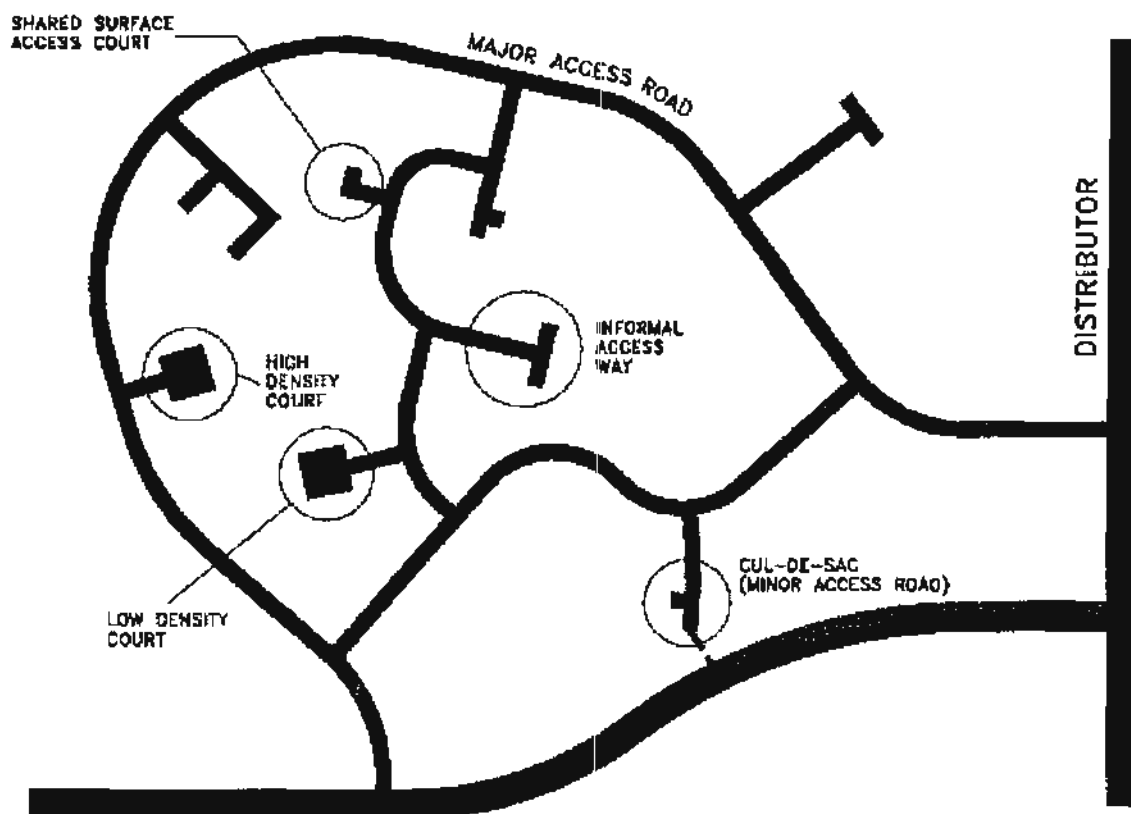


FIGURE 2.5

* As far as is consistent with other objectives such as excluding non-access traffic, layouts should provide as many routes through a development as practical to spread traffic flows and to keep flows on individual access roads low.

05 The use of a network of routes through a development will also assist in providing the most direct practical routes between the distributor network and individual properties and, in larger developments, between different parts of the development. This will provide convenient access for residents, visitors and deliveries. In the application of this principle other objectives such as the exclusion of non access traffic has also to be considered. Where non access traffic will be attracted this must be accommodated in the design of the road. Information on traffic generation can be obtained in the North Yorkshire County Council Parking Design Guide.

06 The appropriate structure for an access road layout will depend on site characteristics such as size, shape, highway frontage, topography and landscape features. Previous design guidance has encouraged the 'treelike' structure based on culs-de-sac and curvilinear road alignments shown in Figure 2.1. This type of layout can work well for smaller sites. On larger sites, however, 'tree' layouts can be confusing and cause difficulties for movement around the estate for deliveries and servicing. In such cases, a 'theoretical grid' approach to the layout shown in Figure 2.2 has advantages over a 'tree' structure in meeting the above objectives. However, in practice the grid shown in Figure 2.2 will not satisfy other design criteria and a layout based on Figure 2.3 will be more acceptable.

Figure 2.4 shows how a 'treelike' layout can be amended to provide a short length of transition road and loops where only a single access point can be provided.

Figure 2.5 shows how a 'treelike' layout can be combined with a 'grid' layout to give a desirable type of road layout.

The appropriate layout for an estate road will therefore be site specific, reflecting what is desirable and practical on each site while following as far as practicable the principles set down in this document.

07 All elements of layout design, including the alignment, cross-section and surface treatment of roads and footways, landscaping and the relationship between buildings and roads, should be co-ordinated to give a clear message to drivers and other users as to the function of individual roads and how they are expected to proceed. This is particularly important with regard to distinguishing traffic routes from residential roads and identifying shared pedestrian/vehicle access ways. Adoption of this principle will enhance safety and help to provide some variety of layout within larger schemes.

08 Lengths of estate road without frontage development should be kept to a minimum. As well as being uneconomic in terms of the use of space, such roads tend to be visually unattractive elements of residential developments. This situation can be avoided by ensuring that traffic flows on estate roads are kept sufficiently low.

2.3 SECURITY

- 01 Security of property, private areas, vehicles, and personal movement is a major issue for residents and must be a primary concern in layout design. Security will be enhanced by:
- * Designing to provide 'natural' surveillance of roads, footpaths/cyclepaths, play areas and parking areas from adjacent properties;
 - * Providing adequate levels of estate lighting;
 - * Avoiding enclosed spaces and 'blind spots' in the layout;
 - * Using appropriate landscaping
 - * Designing housing groups as identifiable elements where local access predominates and extraneous movement by vehicle and on foot is minimised or precluded.
- 02 The last principle above complements others relating to vehicle flows and speeds. However, it can sometimes conflict with the principle of providing convenient and direct access for vehicles, pedestrians and cyclists within residential areas.
- 03 One common instance of this conflict relates to the practice of connecting cul-de-sac heads with pedestrian/cycle routes. These links can be beneficial to pedestrian and cyclists where the routes along the road network would be indirect and inconvenient. They can also provide for emergency access where appropriate.
- 04 However the links are sometimes perceived by residents and police as reducing security by providing 'escape routes' and in many areas residents ask for such links to be closed. Early consultation with crime prevention officers of the police will identify the crime potential with regard to specific development proposals, and hence the risks associated with this and other layout features. Careful design will be required to overcome the perceived disbenefits with regard to security and produce safe, convenient and attractive pedestrian and cycle links.
- 05 Housing layouts must take full account of the access needs of the emergency services, as established through consultation. Access for emergency services will be of particular concern in determining the need for alternative access to culs-de-sac, the provision of access to property not directly accessible by vehicle, and in the design of speed restraint measures.
- 06 Not all parking will take place within individual curtilages. Research has shown that casual visitors, a substantial proportion of regular visitors and, at times, residents, will park their vehicles on-street. Delivery and service vehicles will invariably be parked on-street. **Layouts must therefore allow for a realistic level of on-street parking and ensure that such parking takes place in a manner that is safe and with the least intrusion into the residential environment.** Areas intended for parking must be convenient for the properties they are intended to serve if they are to work properly.

- 07 The provision of on street parking should be in addition to the off street parking provision required in accordance with the North Yorkshire County Council Parking Design Guide. Further information regarding on and off street parking is contained in Sections 4.10, 4.11, and 4.12.

2.4 CONSULTATION

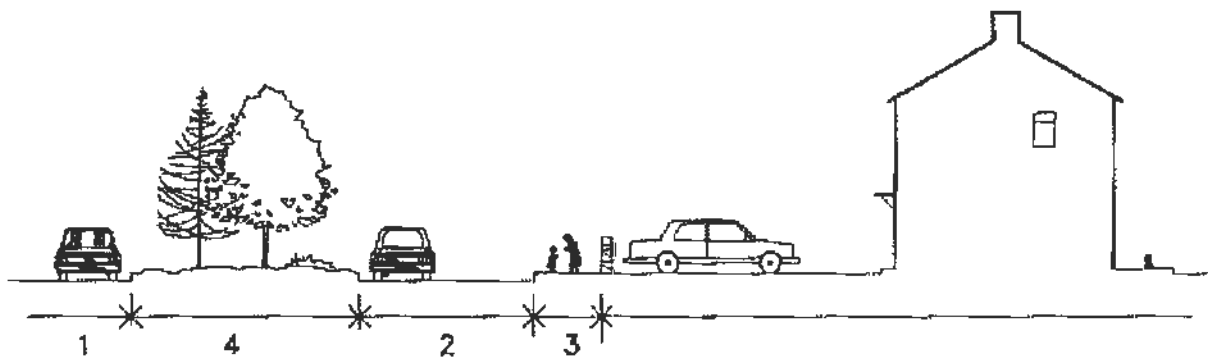
- 01 There are a number of bodies with an interest in housing layout who can provide valuable guidance and assistance in the design process. The importance of early consultation with such bodies is stressed. In addition to consultation with the District Council on the overall design brief for the site, the following organisations can provide useful guidance at an early stage in the development of road and footpath layouts:-

- * North Yorkshire County Council and its Agents (the Local Highway Authority and Public Transport Authority);
- * Local Bus Operators;
- * The Police ('Secured by Design' programme);
- * Statutory Undertakers;
- * Fire and rescue Service.

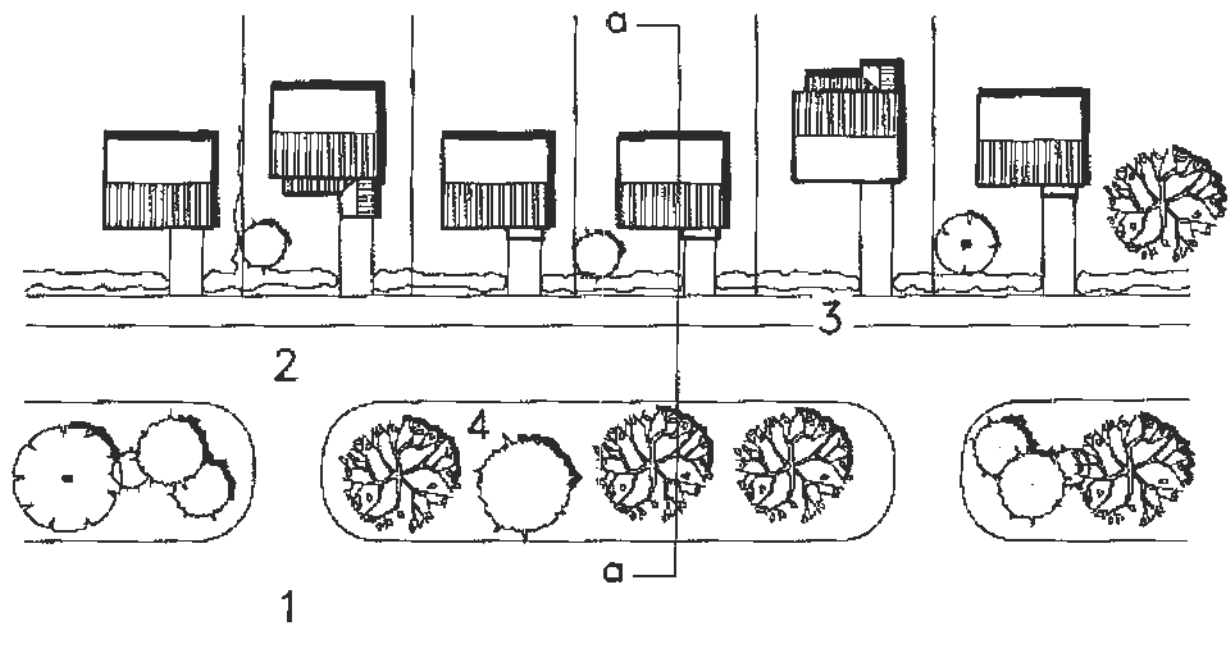
3.0 Standards for Road Design

3.1 LOCAL DISTRIBUTOR ROADS

- 01 **Local Distributor Roads** are roads within larger developments carrying higher traffic flows and generally without direct access to properties.
- 02 A **Local Distributor Road** will be required where a residential access road would serve, directly or indirectly, over 400 dwellings. Direct access to individual dwellings will not normally be permitted, although access to grouped parking areas may be permitted, subject to limitations on the number and spacing of junctions. Local Distributor Roads should have two points of access.
- 03 **Local Distributor Roads** are designed to facilitate traffic movement and the motorist generally enjoys priority although the safe movement of pedestrians is still catered for. They will generally be designed to restrain vehicle speeds to 30mph through the alignment of the road and the use of roundabouts at significant junctions. At particular locations, such as outside schools, restraint of speeds to 20 mph may be appropriate and the use of design measures such as raised junctions and speed tables may be considered. Any speed restraint measures on Local Distributor Roads must take into account the requirements of buses and the emergency services.
- 04 Where a Local Distributor Road is required, its appearance and security can be enhanced by providing housing fronting onto it but accessed by an access road parallel to but separate from the distributor road as shown in Figure 3.1.



Section a-a



Schematic plan

- Key:
- 1. Distributor Road
 - 2. Local Access Road
 - 3. Footpath
 - 4. Landscape reserve

Figure 3.1

05 BASIC DESIGN REQUIREMENTS : LOCAL DISTRIBUTOR ROADS

NUMBER OF DWELLINGS:

over 400

CARRIAGEWAY WIDTH:

6.5m minimum. 7.3m may be required where traffic types dictate.

CENTRE LINE RADIUS:

60m minimum. Care will be needed in positioning junctions to ensure that the combination of curving alignment and visibility splays does not sterilise excess land

FOOTWAY WIDTH:

2 no at 2.0m minimum. Segregated from the carriageway by verges.

VERGE WIDTH:

2no at 1.5m minimum. A variable width is recommended for visual interest and to provide opportunities for landscaping. Verges shall be 3.0m minimum width where no footway is provided.

GRADIENT:

6 % maximum. At junctions as Appendix F

JUNCTION SPACING:

same side	60m
opposite sides	35m

JUNCTION RADII:

see appendix D

SIGHT LINES:

see appendix A & B

WIDENING ON BENDS:

see appendix E

PEDESTRIAN CROSSINGS:

see section 4.7

DRAINAGE:

see section 8.1

PLANTING:

see section 5

CYCLEWAYS:

Where local conditions require them, particularly to schools shopping or employment areas.

BUSES:

Lay-bys should be provided at bus stops.

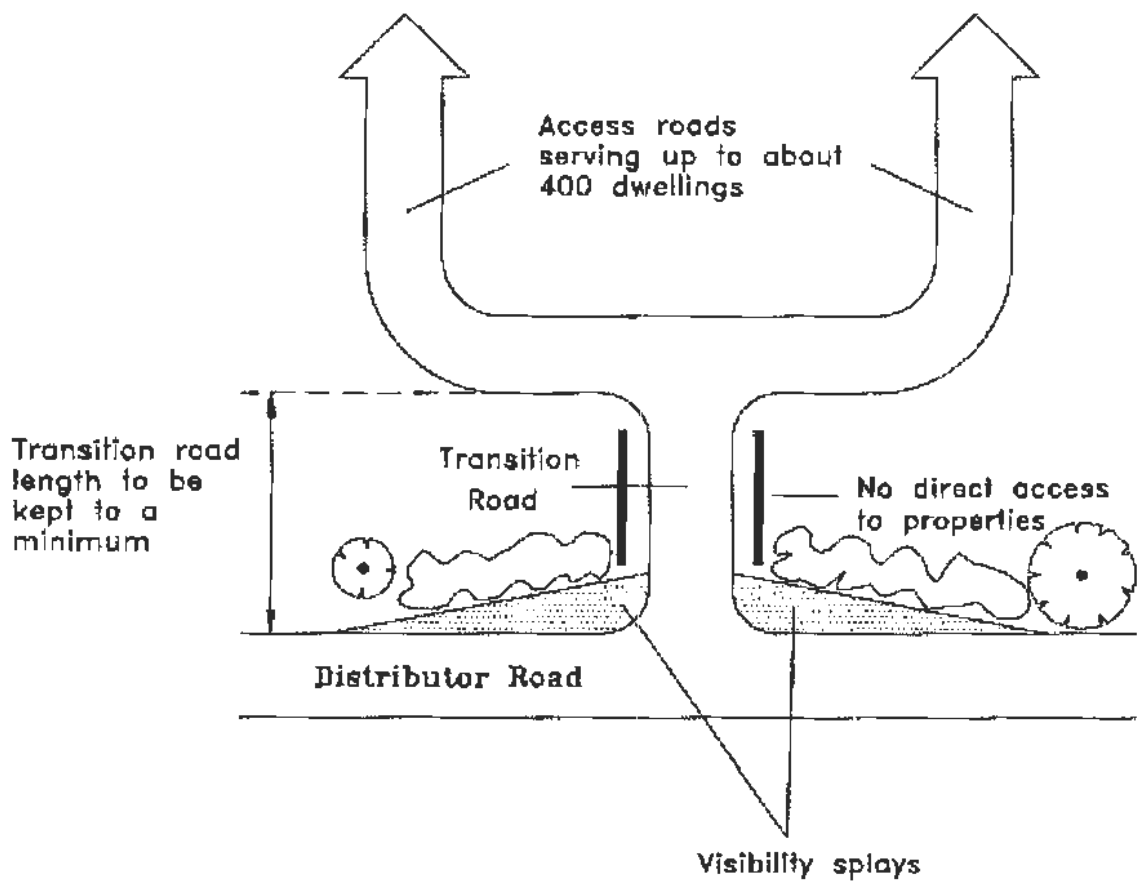
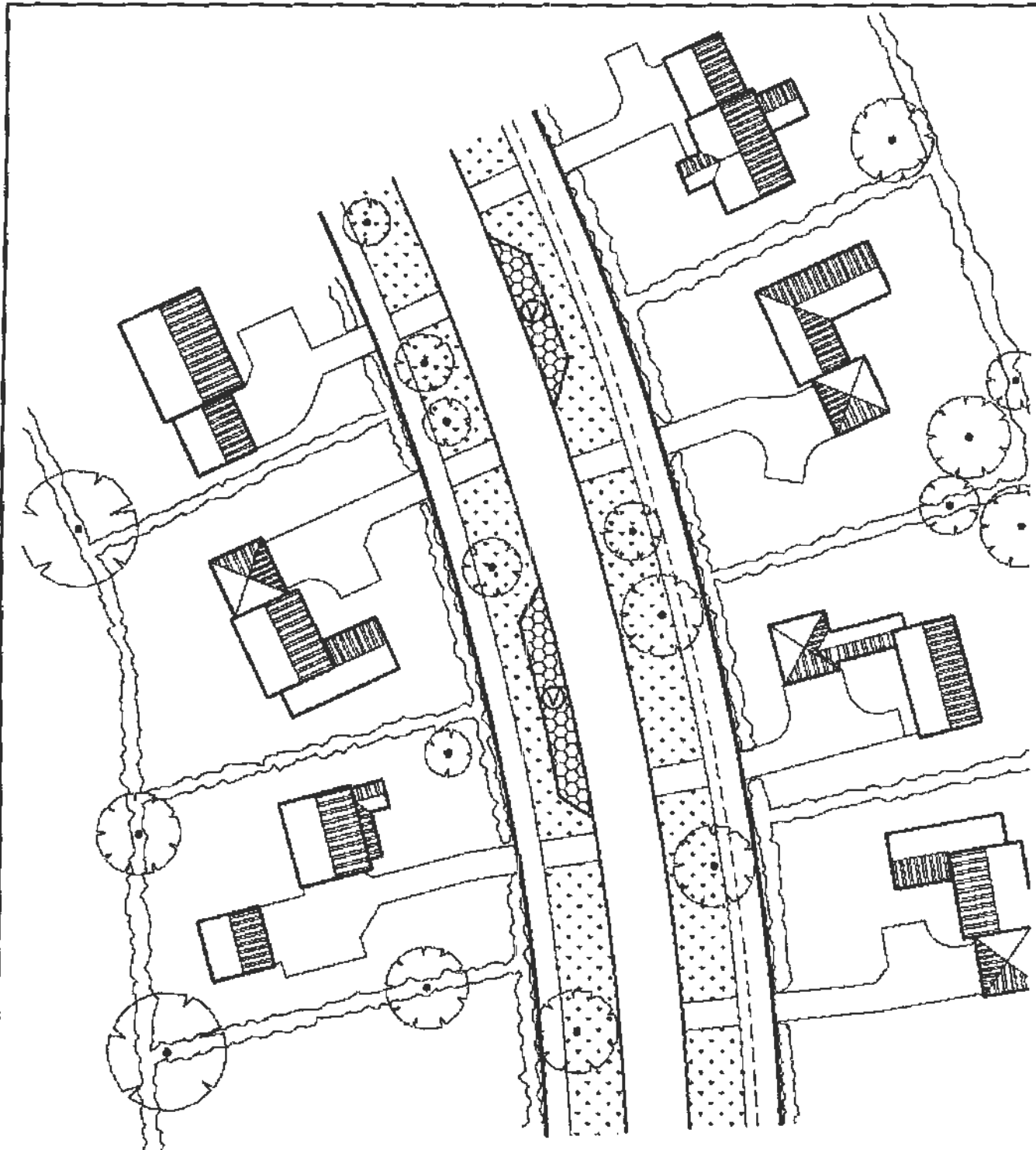


FIGURE 3.2

3.2 **TRANSITION ROADS**

- 01 **Transition Roads** are short lengths of non-frontage access roads that connect the **Residential Access Road** network to the **Distributor Road** network where the access road system serves over 100 dwellings and it is impractical to provide two links to the distributor road network as shown in Figure 3.2. As Transition Roads are short a carriageway width of 6.0 metres is acceptable. If, for particular site-specific reasons, long Transition Roads are proposed, then a 6.5 metre carriageway may be required.
- 02 In other respects their design characteristics are as for **Local Distributor Roads**.






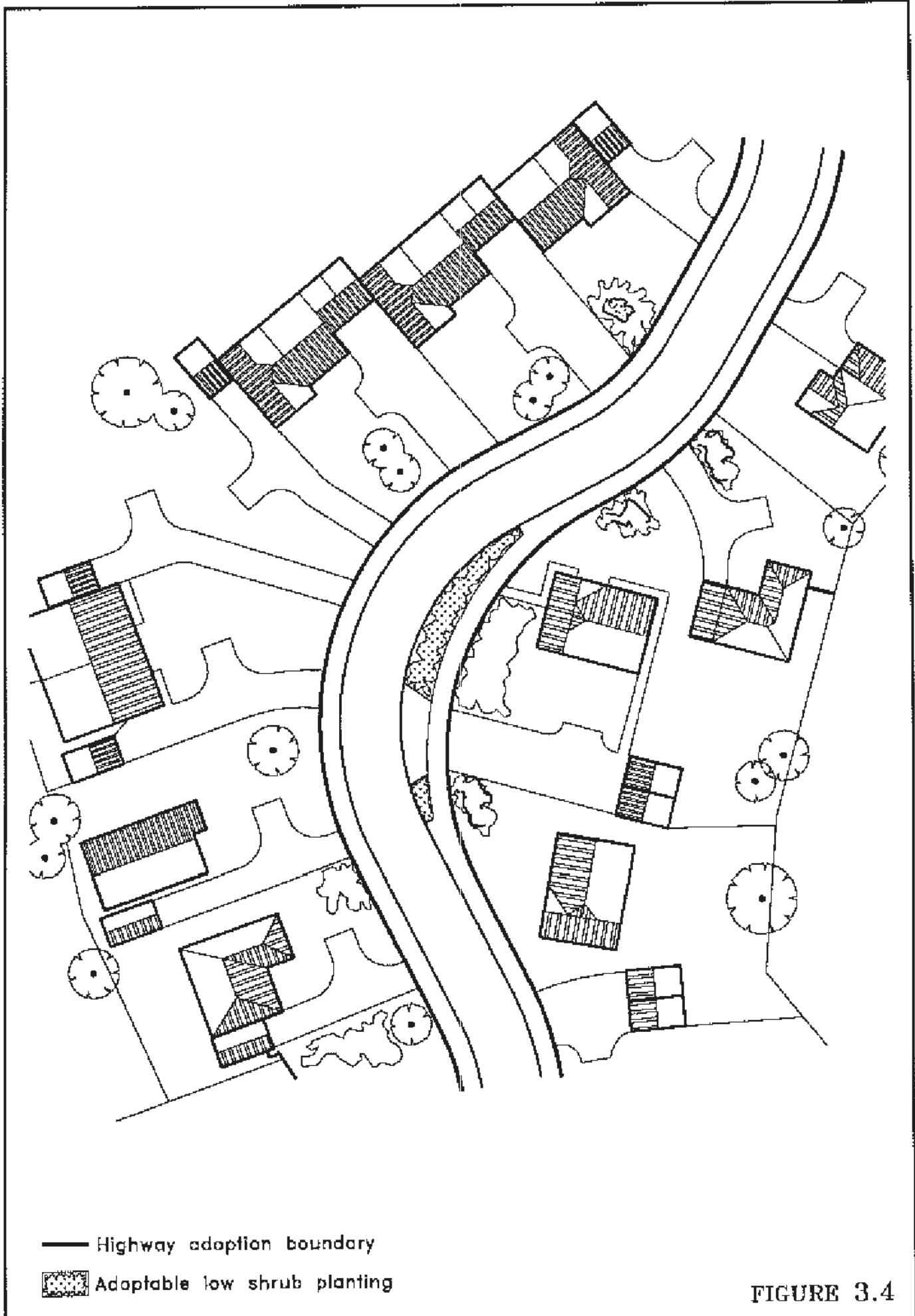
-  Visitor Parking
-  Highway adoption boundary
-  Highway verge

FIGURE 3.3

3.3 MAJOR ACCESS ROADS

- 01 **Major Access Roads** serve between 100 and 400 dwellings, they provide direct access to property and are intended to cater for access traffic only. In their layout, the needs of safety, security, and the creation of an attractive environment predominate over the needs of moving traffic.
- 02 **Major Access Roads** should preferably have two points of access or if a second point of access is not available a **Transition Roads** should be provided. For properties accessed directly from Major Access Roads, serving more than 200 dwellings or within 200 metres of a junction with a Local Distributor Road, space for turning a car may be requested within the cartilage.
- 03 Generally Major Access Roads layouts should be such that they do not form an attractive through route and vehicle speeds are restrained. Design speeds should generally aim for 20 mph, however, on some longer layouts 30 mph may be appropriate where the lower speed would give unacceptably long access times. Generally design for 30 mph should be considered where vehicles would have to travel over a kilometre (0.62 miles) by '20 mph' roads.
- 04 Target speeds will be achieved by keeping lengths of road without speed restraints to the lengths shown in section 4.1. Except for speed restraint bends the full range of speed restraint measures are available on Major Access Roads. Urban design considerations will, however, be important in determining the appropriate measures for specific locations.
- 05 It is accepted that where frontage road access is provided on-street parking will often occur. The requirement for a minimum carriageway width of 5.5 metres in Table 3.1 is designed to allow for this. Where there is no direct access to property, or for other reasons it can be demonstrated that on-street parking will not take place, widths may be reduced. Where more than 300 dwellings are served by a Major Access Road on-street parking should be provided clear of the carriageway.
- 06 Indicative layouts for Major Access Roads are shown in Figure 3.3 and Figure 3.4.



— Highway adaption boundary
 [Stippled Box] Adaptable low shrub planting

FIGURE 3.4

07 BASIC DESIGN REQUIREMENTS : MAJOR ACCESS ROADS

NUMBER OF DWELLINGS:

100 to 400

CARRIAGEWAY WIDTH:

5.5m minimum. 6.0m where a bus route may be provided. 3.0m at single carriageway throttles

CENTRE LINE RADIUS:

20m minimum

FOOTWAY WIDTH:

2 no at 2.0m minimum

VERGES:

May be required for roads serving over 300 dwellings. On roads serving fewer dwellings verges will not normally be required for Highway purposes except to provide visibility.

GRADIENT:

7%. At junctions as appendix F

JUNCTION SPACING:

same side	30m
opposite sides	15m

JUNCTION RADII

see appendix D

SIGHT LINE:

see appendix A & B

WIDENING ON BENDS:

see appendix E

PEDESTRIAN CROSSINGS:

see section 4.2.13

DRAINAGE:

see section 8.1

PLANTING:

see section 5

CYCLEWAYS:

Where local conditions require them.

CASUAL OFF STREET PARKING PLACES:

At properties where the road serves more than 300 dwellings.

ON PLOT TURNING SPACES:

At properties where the road serves more than 200 dwellings or within 200m of a Local Distributor Road.

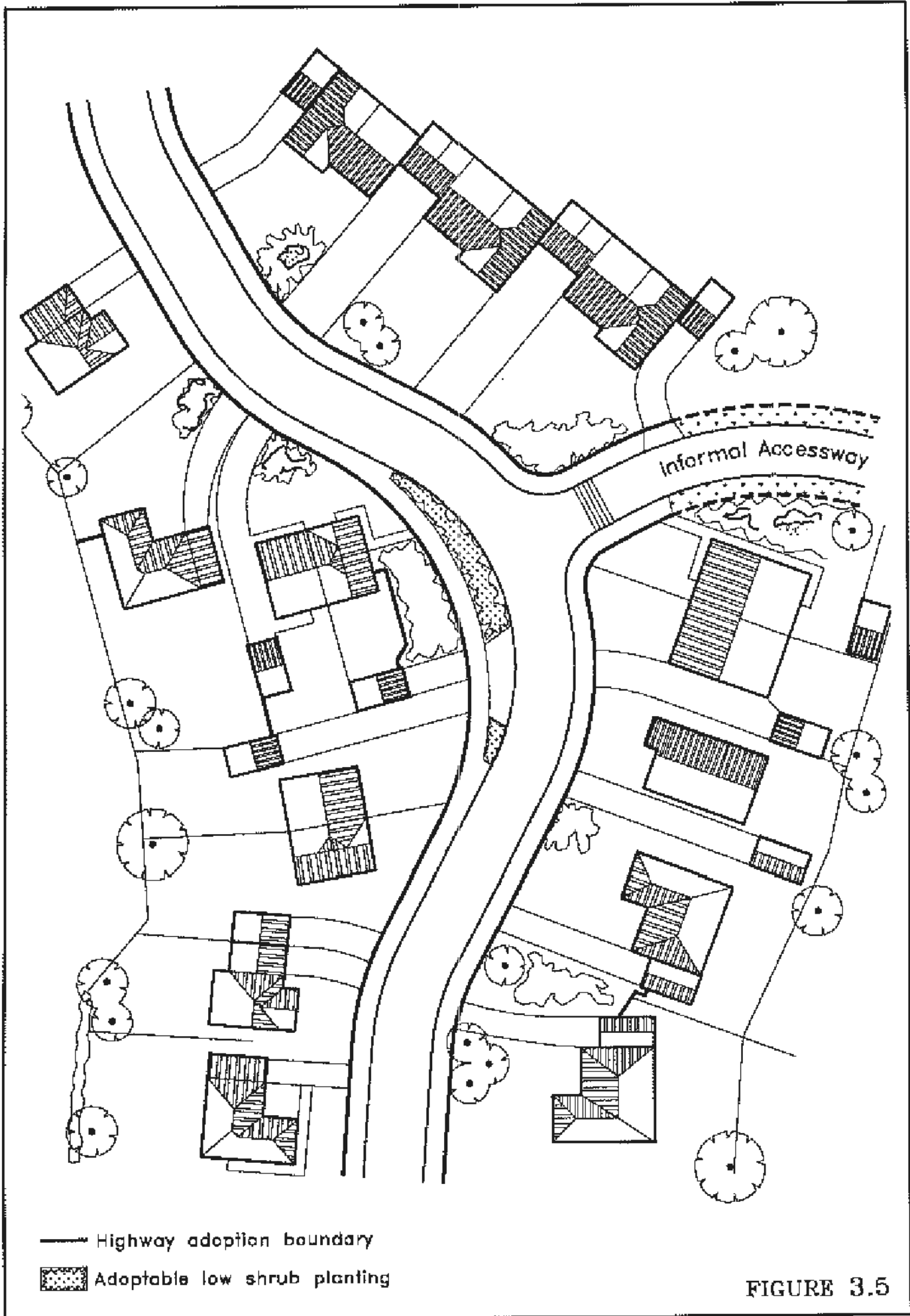


FIGURE 3.5

3.4 MINOR ACCESS ROADS

- 01 **Minor Access Roads** serve up to 100 dwellings as a loop or cul-de-sac. For any cul-de-sac serving more than 50 dwellings, an alternative access for emergency use should be provided. For other culs-de-sac an emergency link may be provided where this can be accommodated within the layout proposed.
- 02 **Minor Access Road** layouts should be such that vehicle speeds are restrained to around 20mph.
- 03 The minimum width for minor access roads where there is no frontage access should be 4.8 metres, or 4.1 metres where less than 25 houses are served. Carriageway widths should not be reduced below 5.5 metres within 20 metres of junctions with Local Distributor Roads or Major Access Roads.
- 04 In certain circumstances where there is minimal pedestrian demand along one side of a road it may be possible to substitute a service verge for one footway as shown in Figure 3.6.
- 05 Illustrative layouts for Minor Access Roads are shown in Figure 3.5, Figure 3.6 and Figure 3.7.

06 BASIC DESIGN REQUIREMENTS : MINOR ACCESS ROADS

NUMBER OF DWELLINGS:

upto 100

CARRIAGEWAY WIDTH:

generally 5.5m except as described in 3.4.03

CENTRE LINE RADIUS:

20m minimum other than at speed control bends

FOOTWAY WIDTH:

2 no at 2.0m. For less than 25 dwellings it may not be necessary to provide 2 footways.

VERGES:

2.0m where only one footway is provided and normally planted with low ground cover to Appendix H. Otherwise only normally required for Highway purposes to provide visibility.

GRADIENT:

7%. At junctions as appendix F

JUNCTION RADI:

see appendix D

SIGHT LINES

see appendix A B & C

WIDENING ON BENDS

see appendix E

DRAINAGE

see section 8.1

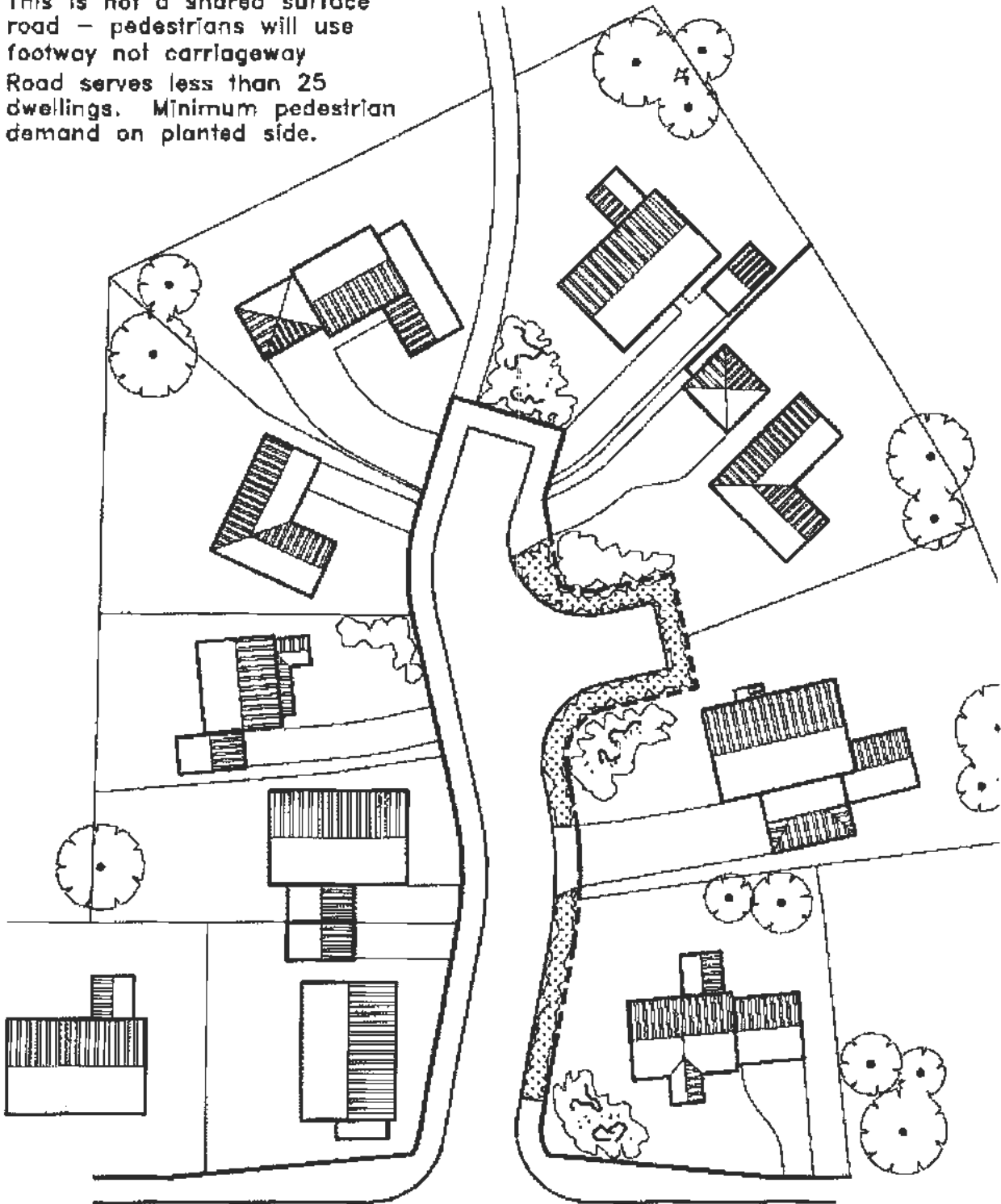
PLANTING

see section 5

NOTES

This is not a shared surface road – pedestrians will use footway not carriageway
Road serves less than 25 dwellings. Minimum pedestrian demand on planted side.

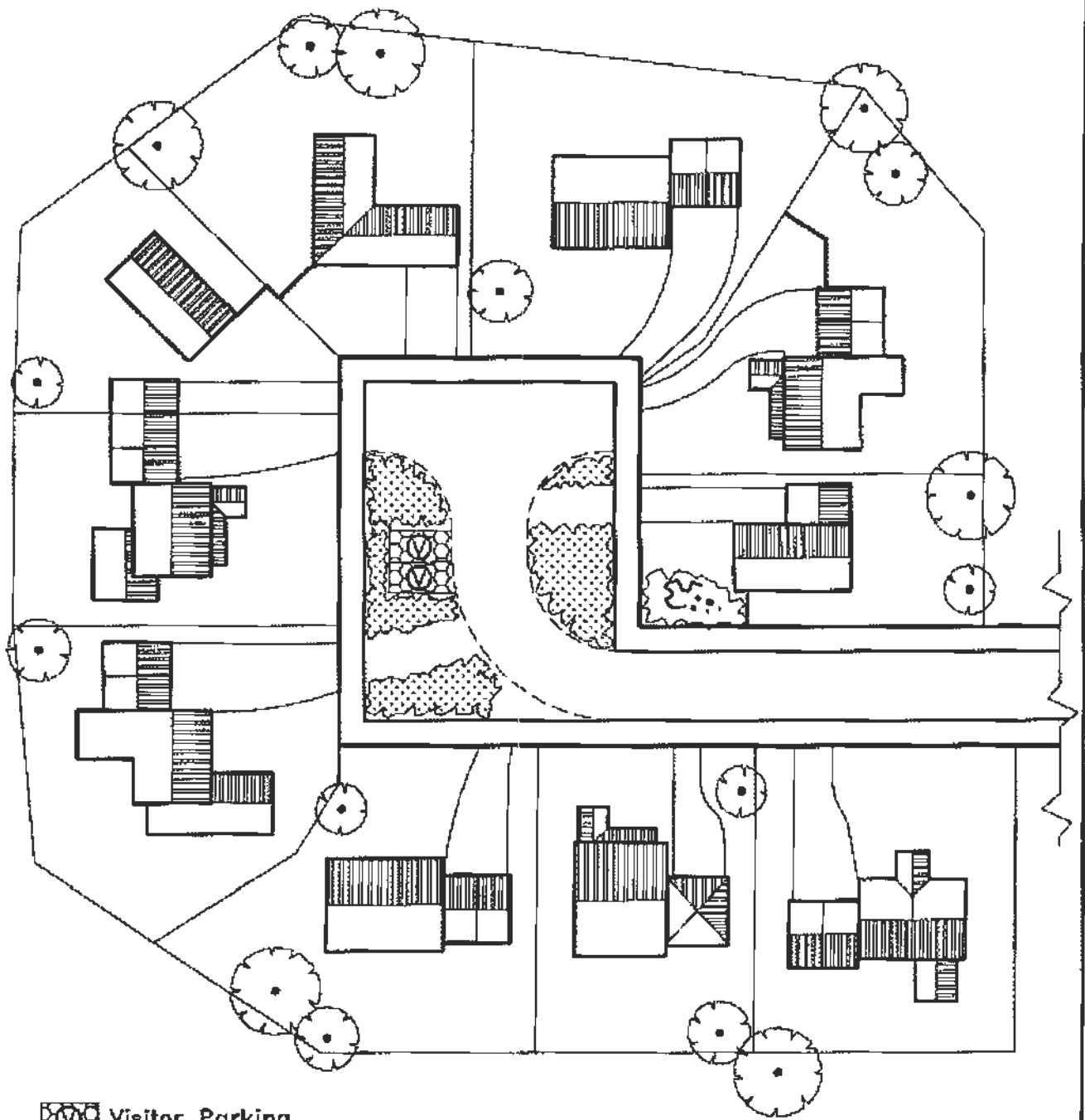
FOOTWAY LINK



— Highway adoption boundary

▨ Adoptable service verge with low shrub planting

FIGURE 3.6






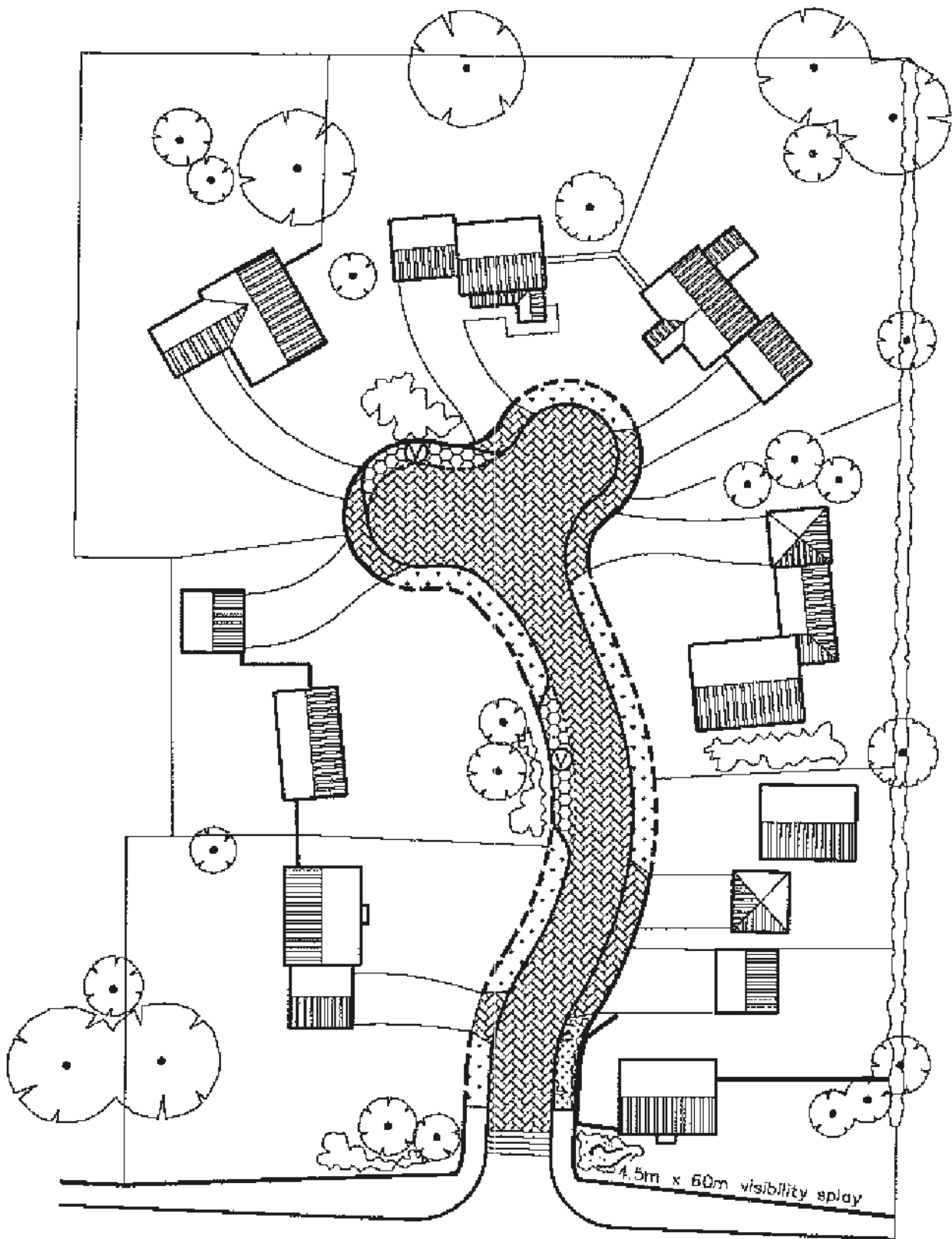
-  Visitor Parking
-  Highway adoption boundary
-  Adoptable low shrub planting

FIGURE 3.7

3.5 **INFORMAL ACCESS ROADS**

- 01 A shared surface is provided for use by pedestrians and vehicles. **Informal Access Roads** are dominated by soft landscaping and suited to low density development with buildings set back from the road.
- 02 **Informal Access Roads** are suitable for serving up to 25 dwellings as a cul-de-sac. Designs must restrict vehicle speeds to well below 20 mph.
- 03 The transition from access road to Informal Access Road must be made abundantly clear to drivers, usually by the introduction of a shallow level change at the entrance to the shared pedestrian/vehicle surface and by the use of distinctive surfacing. The detail of an entrance to a shared surface is shown in Figure 3.9a
- 04 The shared surface is flanked by a 2.0 metre wide adoptable service verge. The shared pedestrian/vehicle surface should be a variable width between a minimum of 4.5 metres and a maximum of 6.5 metres. Casual parking should be provided within the wider sections clear of the 4.5 metre core area. The width of shared surfaces adjacent to accesses to properties must be sufficient to permit vehicles to manoeuvre to and from those accesses, taking into account the alignment of the shared surface and location of parking. The width required will also depend on the kerb radii, driveway width and location of any gateways at the entrance to the access.
- 05 Where landscaping is provided within an adoptable service verge it will be required to be of a high quality; dense, low shrub planting may be appropriate. Guidance on landscape design is given in Section 5. Details of planting must be approved by the Highway Authority. Planting by individual householders will **not** be acceptable. A list of approved species for planting within the highway is contained in Appendix H.
- 06 It is not appropriate to provide formal footways adjacent to the shared surface of an Informal Access Road and therefore any road where footway links are required will need to be designed as Minor Access Road.
- 07 Illustrative layouts are shown in Figure 3.8







-  Visitor Parking
-  Highway adoption boundary
-  Adoptable service verge
-  Adoptable low shrub planting

FIGURE 3.8

08 BASIC DESIGN REQUIREMENTS : INFORMAL ACCESS ROADS

NUMBER OF DWELLINGS:

Upto 25

CARRIAGEWAY WIDTH:

Varies between 4.5m minimum & 6.5m maximum.

CENTRE LINE RADIUS:

10m minimum

FOOTWAYS:

Not acceptable.

ADOPTABLE SERVICE VERGES:

2 no at 2.0m.

GRADIENT:

10%. At junctions as appendix F

JUNCTION RADII

see appendix D

SIGHT LINES

see appendix A B & C

WIDENING ON BENDS

see appendix E

ENTRANCE DETAIL

see figure 3.10a

DRAINAGE

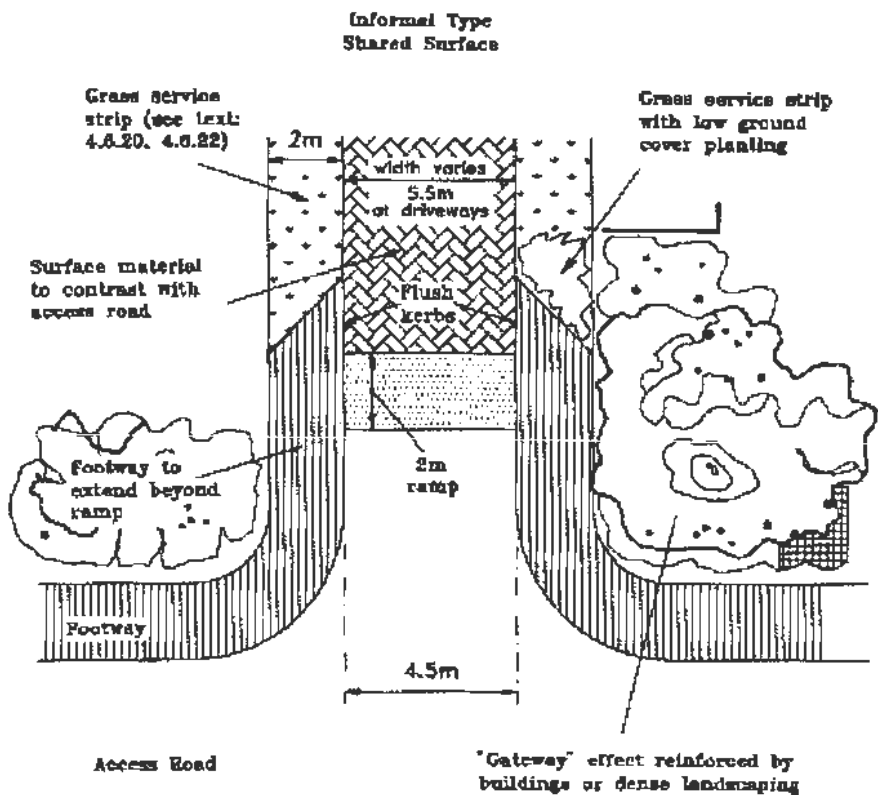
see section 8.1

PLANTING

see section 5

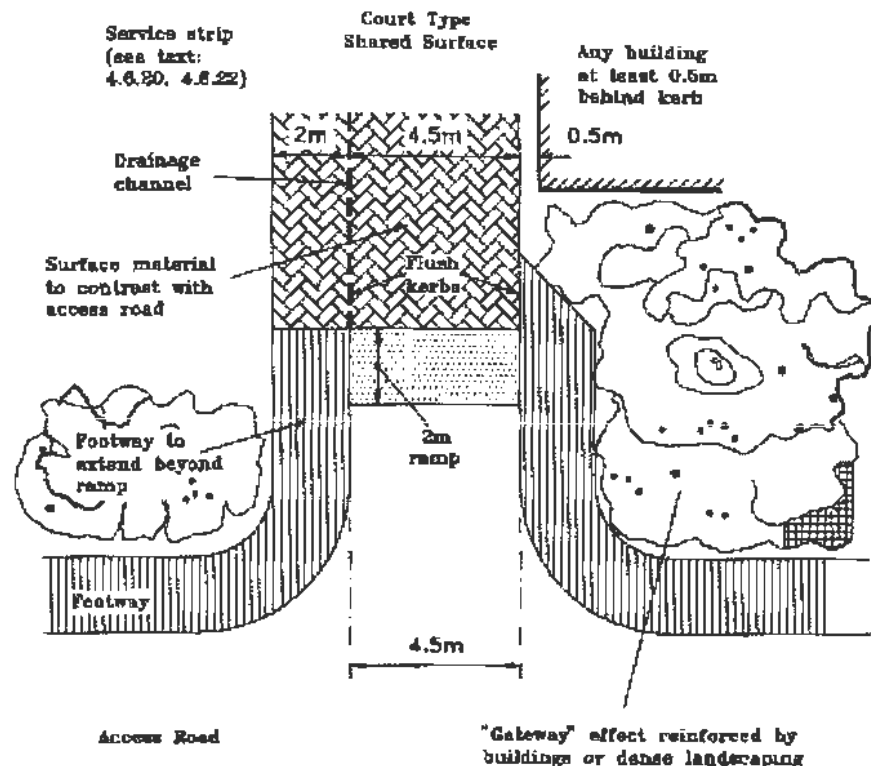
DESIGN SPEED:

Less than 20mph.



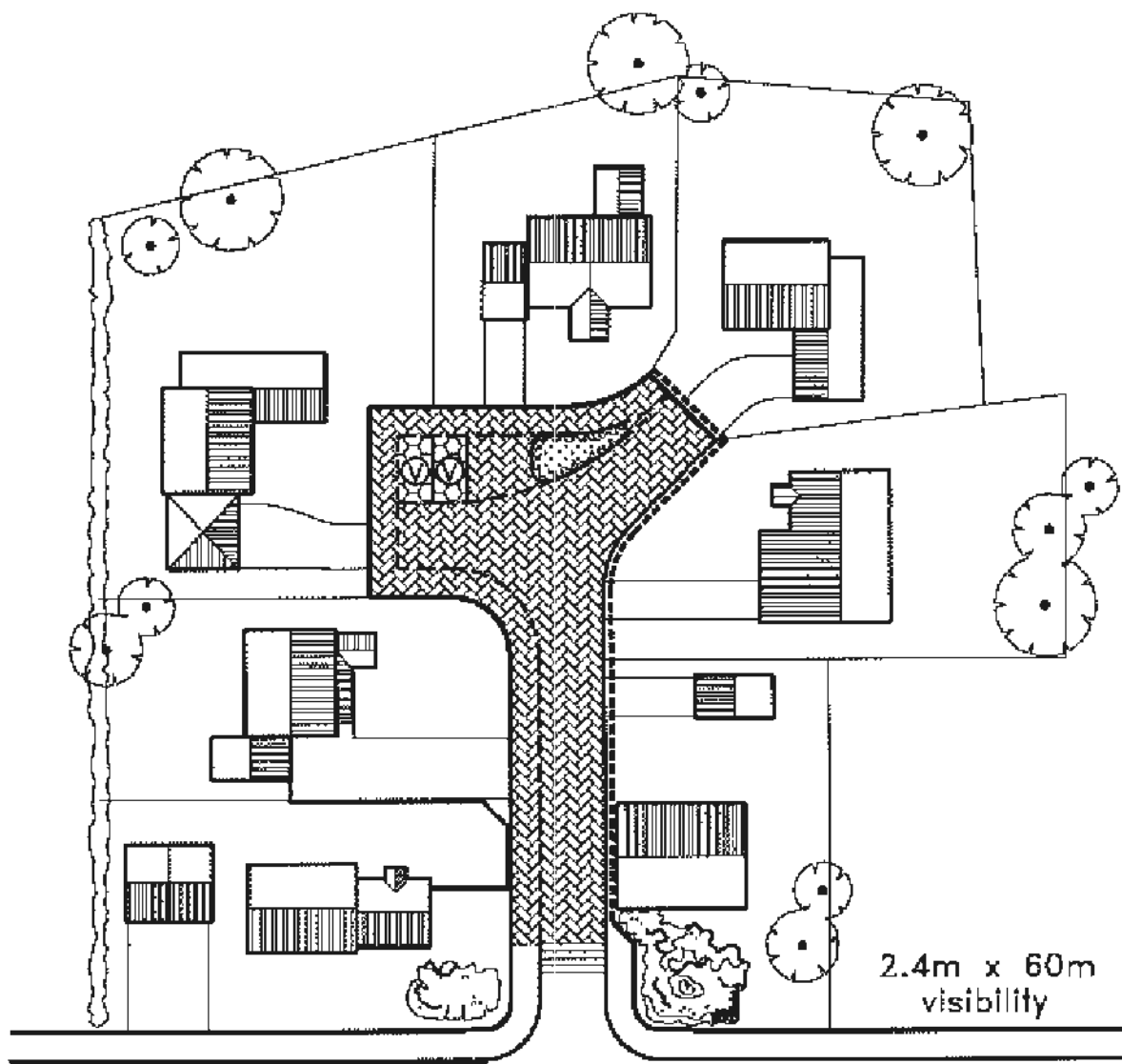
Informal Access Road Entrance

FIGURE 3.9a



Informal Access Court Entrance

FIGURE 3.9b



Visitor Parking

— Highway adoption boundary



Adoptable low shrub planting

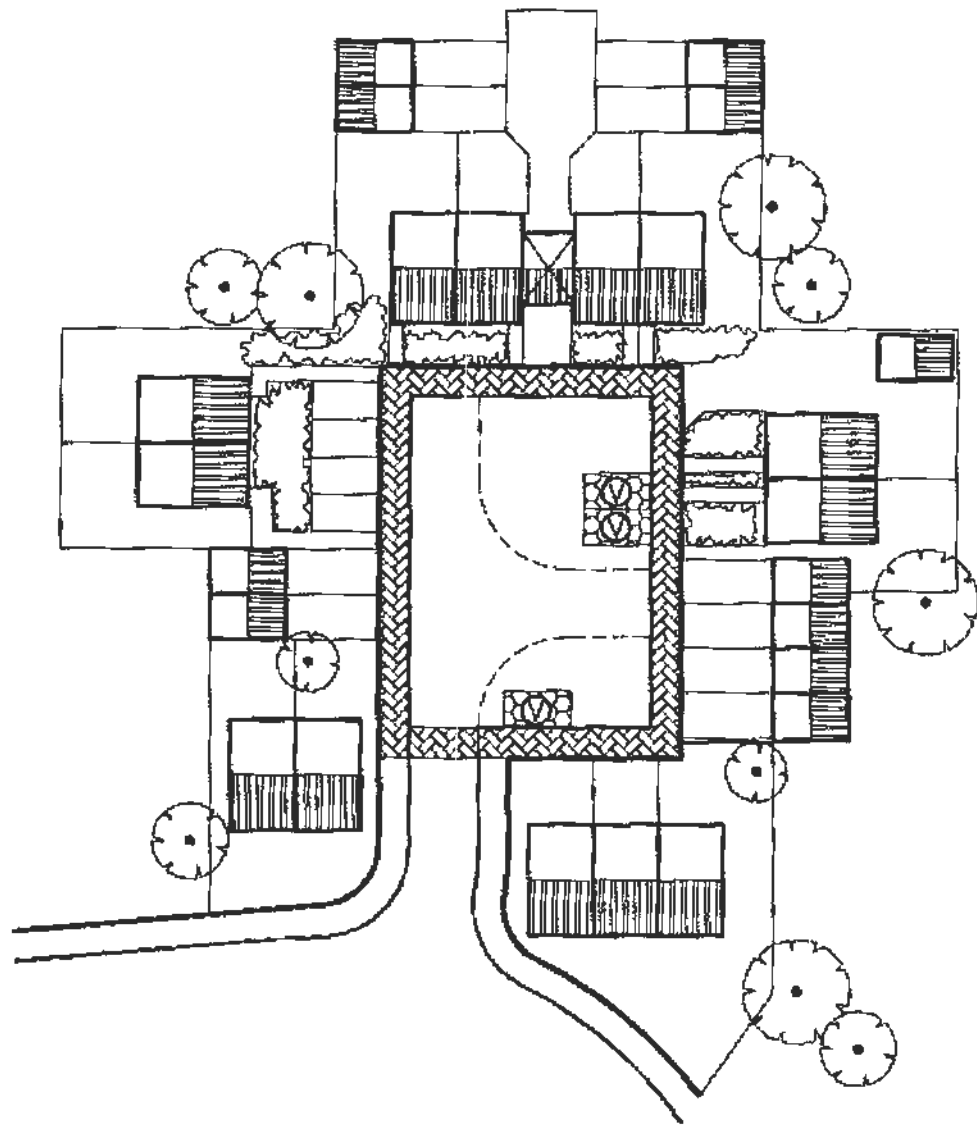
FIGURE 3.10

3.6 ACCESS COURTS

- 01 The **Access Court** has a shared surface for use by pedestrians and vehicles. It is suited to higher density developments, particularly infill sites. Buildings and hard landscaping dominate. Careful consideration needs to be given to how and where parking is provided and surface materials chosen to delineate the functions of different parts of the highway.
- 02 **Access Courts** are suitable for serving up to 25 dwellings as a *cui-de-sac*. Designs must restrict vehicle speeds to well below 20 mph.
- 03 The transition from access road to Access Court must be made abundantly clear to drivers, usually by the introduction of a shallow level change at the entrance to the shared surface and by the use of distinctive surfacing. The detail of an entrance to a shared surface is shown in Figure 3.9b.
- 04 The shared surface should comprise a core area of minimum width 4.5 metres and a 2.0 metre service strip contiguous to the core area but delineated from it by a drainage channel. Casual parking and in some layout forms, communal residents' parking must be kept clear of the core area.
- 05 In all cases a 0.5m clearance strip must be provided between the highway edge and the wall of any dwelling (to accommodate foundations and householder services). Boundary walls are acceptable immediately adjoining the highway.
- 06 It is not appropriate to provide formal footways adjacent to the shared surface of an Access Court and therefore any road where footway links are required will need to be designed as Minor Access Road.
- 07 The **ACCESS COURT** may take many forms. Indicative layouts are illustrated in Figure 3.10 and Figure 3.11.

08 BASIC DESIGN REQUIREMENTS

NUMBER OF DWELLINGS	Upto 25
CARRIAGEWAY WIDTH	6.5m (4.5m +2.0m)
FOOTWAYS	Not appropriate
CENTRE LINE RADIUS	10m minimum
GRADIENT	10%. At junctions as appendix F.
JUNCTION RADIUS	see appendix D
SIGHT LINES	see appendix A B & C
WIDENING ON BENDS	see appendix E
ENTRANCE DETAIL	see Figure 3.9b
DRAINAGE	see section 8.1
PLANTING	see section 5
DESIGN SPEED	less than 20mph
VERGES	these are not generally required.





-  Visitor Parking
-  Highway adoption boundary

FIGURE 3.11

3.7 MINOR ACCESS WAYS

- 01 The surveys carried out by Buchanan & Partners showed the unpopularity with residents of shared private drives, with access problems caused by inconsiderate parking along them being a particular source of complaint. To overcome this problem this Guide introduces the concept of the adoptable **Minor Access Ways** which the Councils wish to promote in preference to the shared private drive.
- 02 **Minor Access Ways** are similar in layout to Informal Access Roads . They may connect to an Access Road or Informal Access Roads. They should have the following characteristics:-
- * serve up to five dwellings
 - * be no more than 25 m long
 - * have a width of 4.5 m
 - * have sufficient on-plot parking for residents and visitors
 - * provide at least one parking space for deliveries/casual callers, that space to be convenient for all dwellings served and clear of the driveway or turning area
 - * provide a turning head for cars (see Appendix G2).
 - * provide approved lighting
 - * provide an adoptable surface water outfall
- 03 **Minor Access Ways** can be used where, in their absence, because of the shape of a site, parts of the site could not be developed or could only be developed with shared private drives. They are not intended for widespread use in layout design, nor to be used as an expedient to increase the numbers of houses accommodated on a site. In general **Minor Access Ways** will be preferred to **Shared Private Drives**.
- 04 An illustrative layout is shown in Figure 3.12.

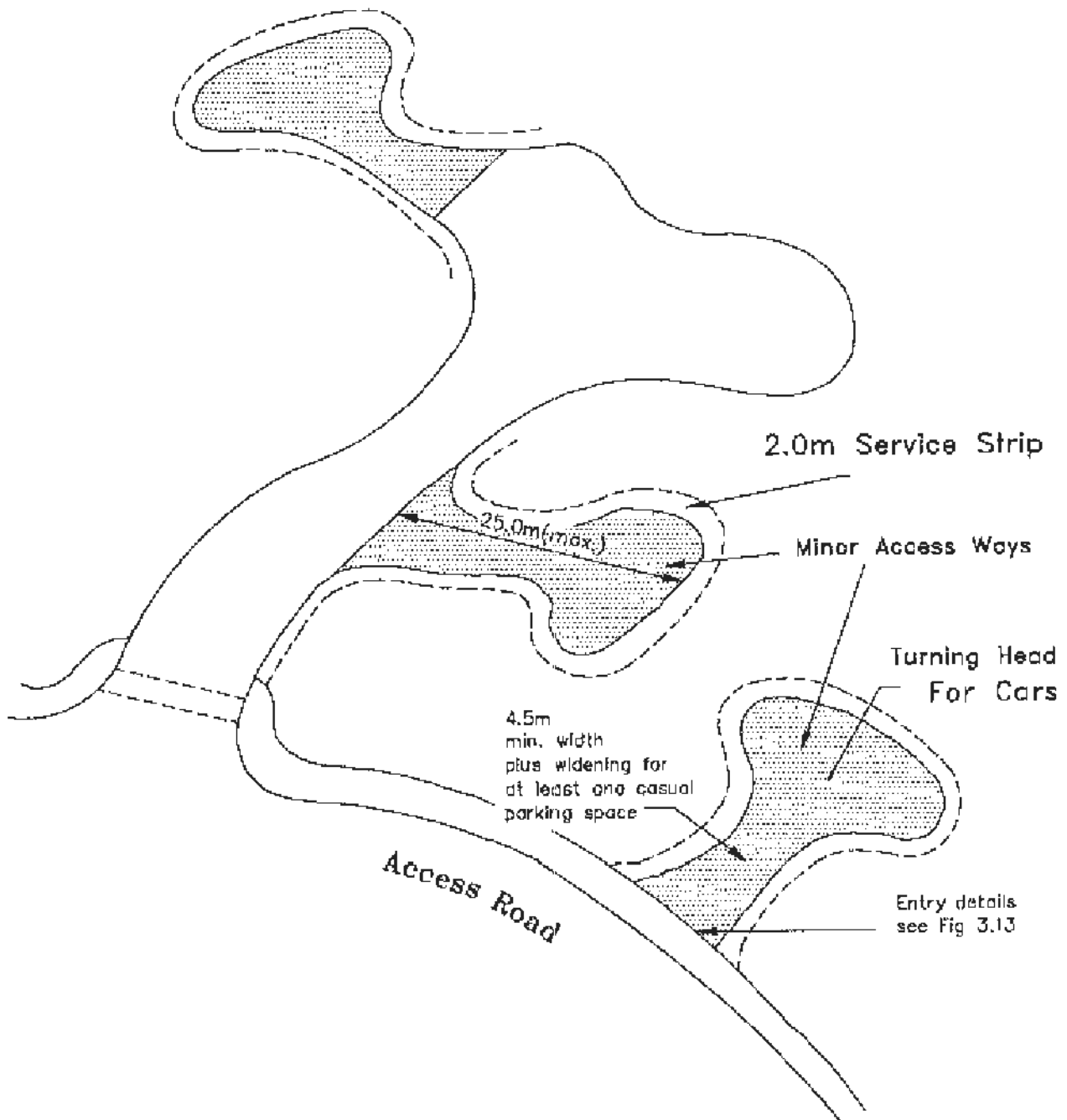
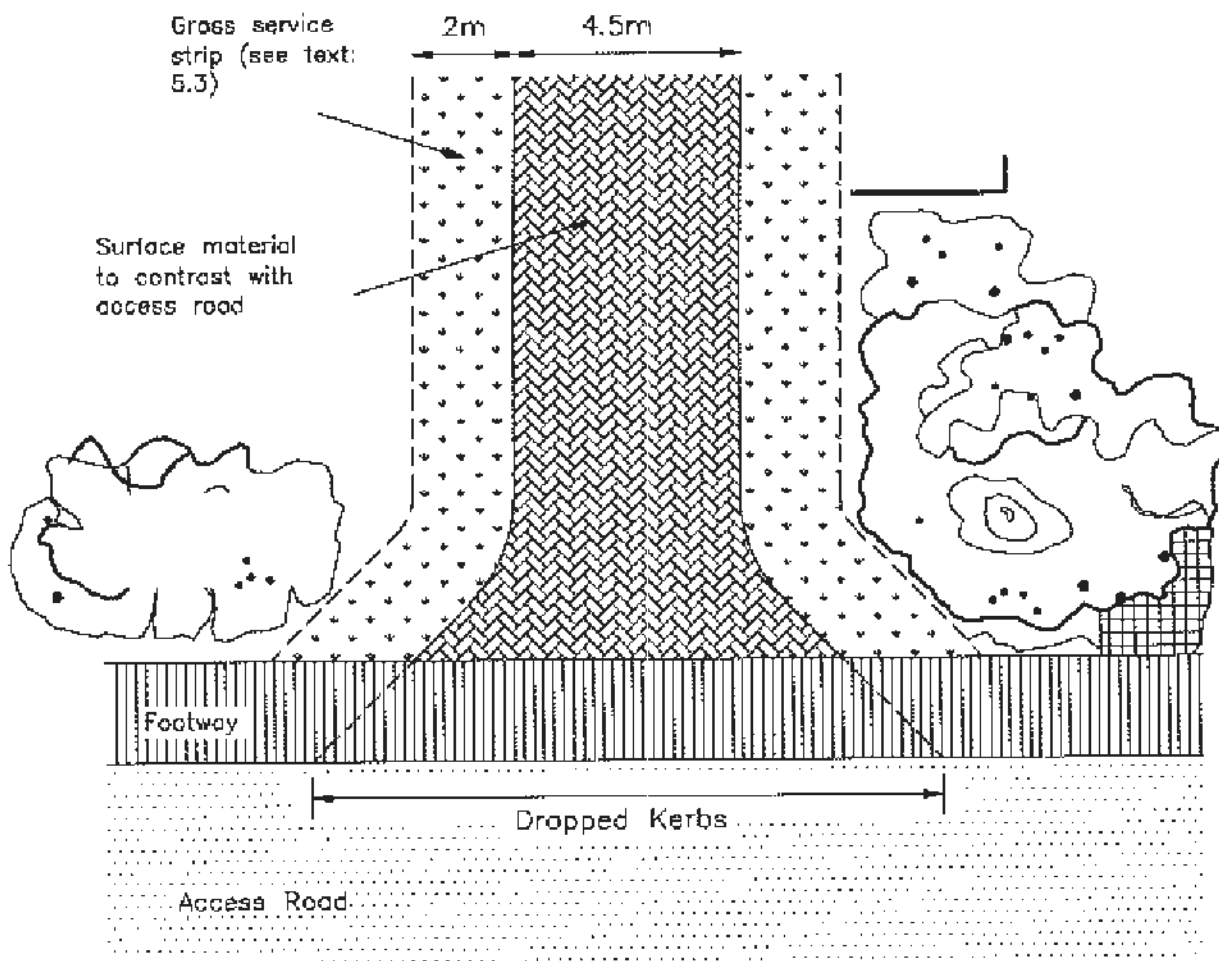


FIGURE 3.12



MINOR ACCESS WAYS

Although not intended for widespread use, minor access ways can be used where, in their absence, because of the shape of a site parts of the site could not be developed or could only be developed with shared private drives.

Access is formed with a dropped kerb rather than the usual kerbline formed in a radius. The length of dropped kerb shall provide an access width relating to that formed with 4m (min.) kerb radii.

Visibility onto the access road shall conform with Appendix A.

FIGURE 3.13

3.8 PRIVATE DRIVES

- 01 **Shared Private Drives** are unadopted and may serve as primary access to a maximum of 3 dwellings.
- 02 Surveys have highlighted residents' dissatisfaction with the width of drives, particularly where the drive also provided for pedestrian access. A minimum width of 3.2 metres is therefore required which may be reduced to 2.0 metres where a separate pedestrian path is provided. Where there is a possibility of two cars passing the drive width should be a minimum of 4.1 metres. The width should also be sufficient for vehicles to manoeuvre satisfactorily into and out of parking spaces/garages. The length of drive shall be limited by the carrying distance for refuse collection given in Section 8.8. The minimum length of drive shall be 6.0 metres.
- 03 Where private drives are shared the communal area should be easily distinguished from areas associated with individual plots. Areas for individual plots should be of sufficient size to accommodate the required parking standards and prevent blocking of communal areas. Responsibility for the future maintenance of communal areas should be established.
- 04 The entrance to a Private Drive should be in the form of a dropped kerb crossing and any part of the drive which is within the limits of the street to be adopted shall be constructed to a standard acceptable to the Highway Authority.
- 05 Whilst Private Drives may serve a maximum of three dwellings, it is the intention of the Councils that where there is no other way of accessing a plot of land, Minor Access Ways should be used rather than Private Shared Drives.

Road type	Minimum	Minimum	Minimum	Minimum	Design speeds	Max.	Junction	Minimum junction	
	carriageway	centreline	footway	verge	for visibility	Gradient	Alignment	spacing (m)	
	width * (m)	radius (m)	width (m)	width (m)	etc. (mph)	(%)		Same Side	Opp. Side
Local Distributor	6.5 ¹	60	2 x 2.0	2 x 1.5 ²	30	6	90°	60	35
Transition Road	6.0	60	2 x 2.0	2 x 1.5 ²	30	6	90°	60	35
Access road:									
major	5.5	20 ³	2 x 2.0	NA	20/30	7	90°	30	15
minor	5.5	20	2 x 2.0	NA	20	7	90° ± 10°	NA	NA
Shared Surface:									
Court	6.5 ⁴	10	NA		<20	10	90° ± 10°	NA	NA
Informal	4.5 ⁵	10	NA	2 x 2.0	<20	10	90° ± 10°	NA	NA

* Widening on bends required in accordance with Appendix E

1. Greater widths up to 7.3m may be required in particular circumstances e.g. where traffic flows will be high (large developments or where through traffic is likely) or where a higher proportion of heavy vehicles is expected (mixed developments).
2. A variable width is recommended for visual interest and to provide opportunities for landscaping. Verges shall be at least 3.0m wide where no footway is provided.
3. Other than at speed control bends.
4. Included in this width is a 2.0m service strip.
5. Variable width required with wider sections to incorporate casual parking - 5.5m at entrance.
6. Junction alignment is the angle the minor road joins the major road.

4.0 Further Road Design Considerations

4.1 DESIGNING TO RESTRAIN VEHICLE SPEEDS

- 01 It is anticipated that the principal means of restraining speeds on residential roads will be short loops and culs-de-sac and the careful location of junctions. In some circumstances other traffic calming measures will need to be designed into longer lengths of roads. This may occur where physical circumstances or the overall design concept for a site override the emphasis on short roads. The spacing of speed control features should be related to the unrestrained lengths and target speeds given in 03 below.
- 02 The following guidelines should be used in assessing the appropriate speed for various types of roads:-

LOCAL DISTRIBUTOR ROADS

30 mph except where circumstances (eg adjacent to schools) require the design to restrict speed to 20 mph

RESIDENTIAL ACCESS ROADS

20 mph generally, although 30 mph may be appropriate for some major access roads;

SHARED SURFACE ACCESS ROADS and MINOR ACCESS WAYS

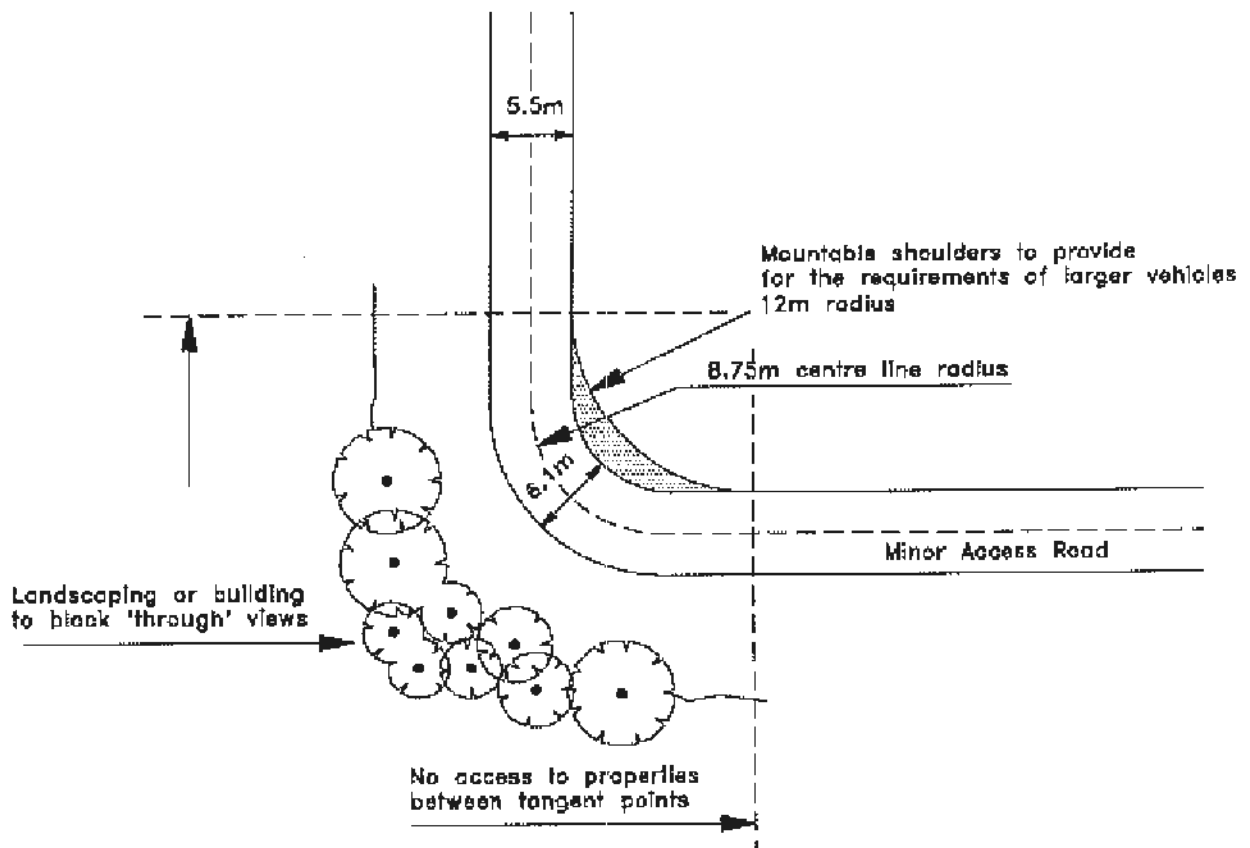
Less than 20 mph but assessed on individual circumstances .

- 03 Target speeds will be achieved by keeping lengths of road with unrestrained speed below the following maximum lengths:-

TARGET SPEED	UNRESTRAINED ROAD LENGTH
Up to 30 mph	80 m - 120 m
20 mph	60 m
less than 20 mph	40 m

- 04 Unrestrained road length is measured between speed restraints which include junctions at which traffic on the road concerned has to give way. Whilst the full range of speed restraint measures are generally available for access roads, speed restraint bends should not be used on major access roads. Urban design considerations will, however, be important in determining the appropriate measures for specific locations.
- 05 A wide range of speed restraint measures are now available, although practical experience in their implementation and effects, particularly in the context of new developments, is still limited. Measures may be categorised according to whether they involve vertical shifts in the road (eg road humps, speed tables, speed cushions) or horizontal shifts (pinch points, chicanes, speed control bands, speed control islands). Figure 4.1 illustrates the use of speed control bends and islands.

Speed Control Bend



Speed Control Island

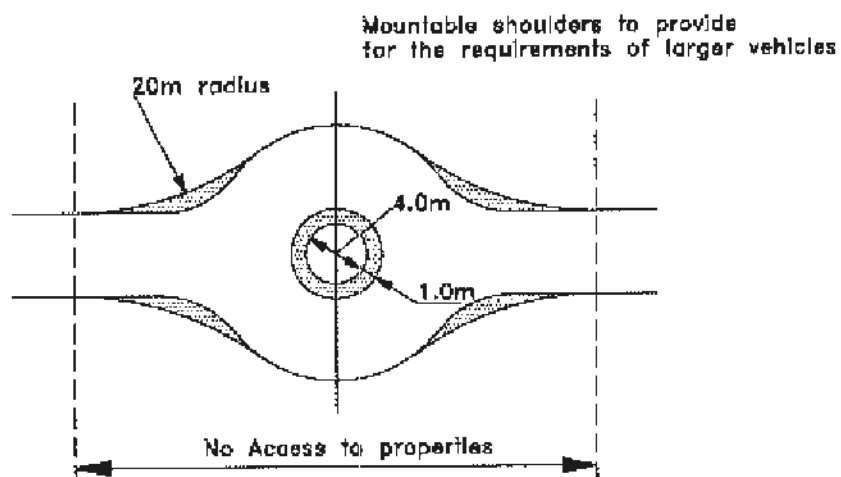


FIGURE 4.1

- 06 To date the most commonly used speed restraint measure has been the round top road hump. However, recent legislation and changes to regulations have enhanced the scope for the use of a wider range of measures making the widespread use of road humps unnecessary. In most cases it is expected that changes in horizontal alignment (including junctions) will be sufficient to achieve the desired vehicle speeds. However, circumstances will arise where 'vertical shift' measures are either more feasible or desirable, for example at pedestrian crossings or where the use of horizontal alignment changes could create a confusing maze-like layout. Any potential difficulties for buses, emergency vehicles and the disabled must be fully taken into account in the design of schemes involving vertical shifts.
- 07 The use of speed control measures can give the designer an added degree of flexibility, promoting greater variety in layouts and encouraging innovation. In the design of appropriate measures the following guidelines need to be borne in mind:-
- * Measures must be an integral part of layout design and not appear as an after-thought or as a means of making the unacceptable acceptable;
 - * Rumble strips/areas can cause noise nuisance and are therefore not suitable close to housing;
 - * Landscaping can often be used to complement and emphasise physical speed restraint measures in the road layout;
 - * speed humps are the least desirable option. Speed cushions are more acceptable than humps;
 - * The selection of speed restraint measures for different roads in the road hierarchy on larger developments can, with landscaping, be employed to emphasise the different functions of roads and appropriate, safe speeds for each.
 - * Possible use by buses and the needs of emergency service and delivery vehicles must be given full consideration in the design of any speed restraint measures.
 - * Speed restraint bands are only appropriate for minor access roads within developments.
 - * Carefully planned layouts which "naturally" indicate appropriate driver behaviour are the best measures of all.
- 08 Further discussion of speed restraints is found in Design Bulletin 32 (Second Edition) which also provides comprehensive references on the subject. Detailed design information may also be obtained from the Highway Authority.
- 09 All speed restraint features should be constructed in accordance with the current Department of Transport Regulations.

4.2 DESIGNING FOR PEDESTRIANS AND CYCLISTS

01 If a residential layout follows the principles of keeping vehicle speeds and flows low by design, then pedestrian and cycle movements are best provided for by the estate roads and footways alongside them. Though it may be technically impossible to design new developments to meet all the needs of the elderly and disabled a variety of practical arrangements can be of positive benefit.

02 In certain circumstances it may be appropriate to provide footpaths or cyclepaths separate from the highway network.

to provide a more direct route to facilities or amenities where that available via the road system is circuitous and inconvenient

or

in large developments, to segregate pedestrian or cycle movements from busy distributor roads

or

where they will form part of a wider network of pedestrian or cycle routes.

This may require the creation of Public Footpaths or Bridleways to link to the existing network as shown on the Definitive Map. Well used routes near urban areas usually require a stone surface to keep them in a condition suitable for general use. The minimum width for a dedicated public footpath is 1.5 metres. Such paths should be dedicated under Section 25 of the Highways Act 1980.:-

03 Assistance will be given to identify the main pedestrian and cycle routes relevant to the site and the provisions to be made for them.

04 The design of segregated footpath or cyclepath links requires great care to ensure their security and safety. In particular:-

- * They should be short, with each end intervisible;
- * They should be overlooked by development;
- * Landscaping and layout should not create blind spots or hiding places;
- * They should have easy gradients and shelter from wind and rain where this does not compromise security.

05 The use of footpaths by mopeds and motorcycles is a recurrent problem on some existing residential estates. Access to and the layout of footpath and cyclepath links should prevent such use where it is likely to be a problem, generally by the use of bollards and planting.

- 06 The need to make special provision for cyclists should always be considered. Where peak vehicle flows are expected to exceed 200 vehicles/hour these facilities should be separate from the carriageway.
- 07 The shared use of footpaths by pedestrians and cyclist is feasible up to combined pedestrian/cycle flows of around 200 persons per hour. Above this figure or where the path will form part of a wider network of cycle routes a separate cyclepath or cycleway will be required. The provision of short lengths of separate cycleways or cyclepaths may also be considered in the vicinity of schools, shops and neighbourhood centres. The District and County Council should be consulted on the provision of all separate cycleways or cyclepaths.
- 08 The geometric standards for the layout for pedestrian and cycle routes are as follows:

4.3 FOOTWAY AND FOOTPATH WIDTHS

- 01 Normal minimum width: 2.0 metres, with a reduction to 1.35 metres (1.2 metres absolute minimum) permitted over short sections where this will achieve another objective (eg to retain a tree) and pedestrian and adjacent vehicle flows are low.
- 02 3.0 metres at points where pedestrians congregate (eg outside schools, shops and community buildings).
- 03 2.0 metres in a 3.7 metre width where footpaths are to be used for emergency access, 3.0 metre in 3.7 metres where a joint footpath/ cyclepath is required. For emergency accesses all 3.7 metres width will require strengthened construction.

4.4 CYCLEWAY AND CYCLEPATH WIDTHS

- 01 2.0 metres for unsegregated shared use with pedestrians.
- 02 3.0 metres for segregated shared use with pedestrians.(Segregation by a white line or other similar.)

4.5 GRADIENTS FOR PEDESTRIANS AND CYCLISTS

- 01 For footpaths the desirable maximum gradient is 5% with a maximum of 8%.
- 02 For cyclepaths or shared cyclepaths/ footpaths the desirable maximum gradient is 3%, with gradients up to 5% permitted over 100 metres and 7% for up to 30 metres.

4.6 VERTICAL CLEARANCES

- 01 Subways used by pedestrians only should have the following clearances:-
 Upto 23m length 2.3m high
 Over 23m length 2.6m high
- 02 Subways for use by pedestrians and cyclists should have the following clearances:-
 Upto 23m length 2.4m high
 Over 23m length 2.7m high
- 03 Restricted headways may be provided up to a line 0.5 metres from the edge of a carriageway.
- 04 In most circumstances design for joint use by pedestrians and cyclists is likely to be appropriate.

4.7 PEDESTRIAN CROSSING POINTS

- 01 Provision should be made at all road junctions for pedestrians to continue along the major road with a minimum of inconvenience. Flush dropped kerbs should therefore be provided at all junctions and desire lines across verges. Where the junction layout provides a pedestrian refuge, dropped kerbs should align with the refuge, at all other junctions the crossing point should normally be located on the tangent to the radius.
- 02 A tactile warning should be installed at dropped kerbs for the safety of the visually impaired.
- 03 More detailed guidance on the design of those with Mobility Handicaps can be found in 'Revised Guidelines for Reducing Mobility Handicaps, Towards a barrier free Environment published by The Institution of Highways and Transportation' and Department of Transport Disability Unit Circular 1/91 'The Use of Dropped Kerbs and Tactile Surfaces at Pedestrian Crossing Points'

4.8 ADDITIONAL FOOTPATH CONSIDERATIONS

- 01 Where footpaths are the only or main means of access to property they will need to meet the requirements of the fire service.
- 02 In appropriate locations footpaths can be separated from the road carriageway.
- 03 At junctions the back line of the footway should follow the back line of the visibility splay.
- 04 Staggered pedestrian safety barriers, in accordance with Appendix N, may be required where there is a danger of pedestrians stepping out from footpaths onto busily trafficked areas.

05 More detailed guidance on the design of pedestrian and cycle routes is given in:-

- * Roads and Traffic in Urban Areas, Institution of Highways and transportation with the Department of Transport 1987
- * TD36/93 Pedestrian and Cycle Subways, Department of Transport.
- * Traffic Advisory Leaflet 1/90, A cycling bibliography, Department of Transport.

4.9 DESIGNING FOR EMERGENCY SERVICES' ACCESS

01 The emergency services must be able to gain rapid access to any incident occurring within a housing development.

02 At least two points of access are required to residential roads serving more than 100 houses. This is best provided by the use of loop roads.

03 Where culs-de-sac serve between 50 and 100 dwellings a separate access for emergency use should be provided.

04 All routes used for emergency accesses must be a minimum of 3.7 metres wide and any bends should have a minimum radius of 9.0 metres. They may include a footpath in the 3.7 metres width. Minimum headroom should be 4.5 metres. The construction of an emergency link should be sufficient to carry a fully laden fire tender, this may be achieved by providing an adequate foundation below a grass surface.

05 Some of the fundamental requirements to ensure rapid unobstructed access to all locations are as follows:-

- * Street names and numbering must be uncomplicated and clearly marked so that properties can be identified quickly. (see 8.4).
- * The layout should be designed so that properties are easily located.
- * The layout should be designed to enable emergency vehicles to get reasonably close to all properties. The route provided for emergency vehicles should be adequate in every way to ensure that satisfactory access is possible. Fire service pumping appliances should be able to get within 45m of the entrance to all one and two storey premises and to within 35m of the entrance of three and four storey flats and maisonettes. any building in excess of these heights should be the subject of specific discussions with the County Fire Officer.

06 Fire Prevention Note 1/70, CP3 Chapter 4 Part 1 and 'Traffic Management Policy' and 'RESPARK Formula' published by North Yorkshire Fire and Rescue Service should be referred to for fuller description of fire access requirements. The Developer should ensure that the proposals are in accordance with the County Fire Officer's requirements.

4.10 DESIGNING FOR PARKING

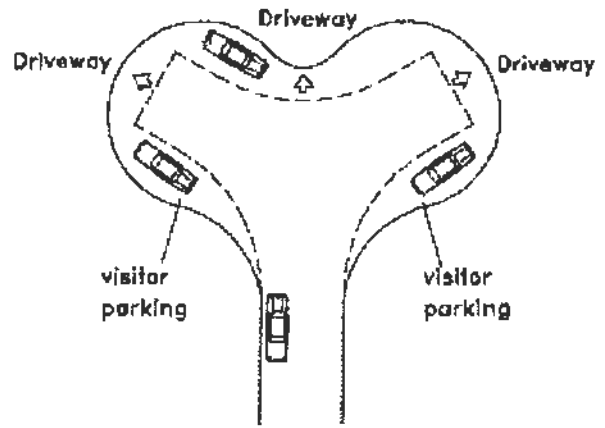
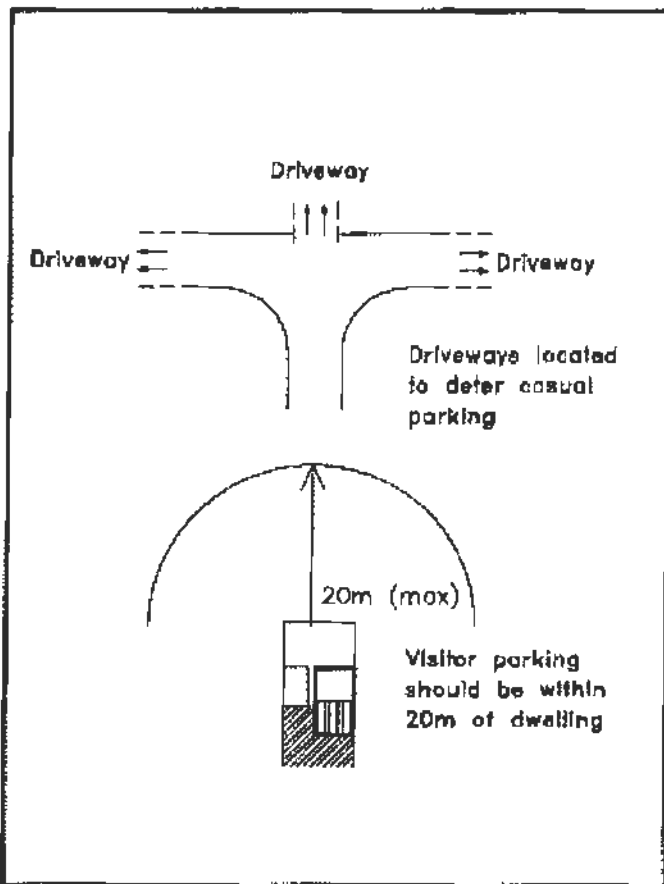
- 01 Surveys of existing housing developments indicated a high level of concern among residents about the detrimental impact of on-street parking on the environment of their estates. Whereas the actual levels of on-street parking occurring on these estates were not high, a substantial proportion of the parking that was observed was on footways, verges and within turning heads, causing inconvenience and safety hazards.
- 02 An estate layout must therefore provide sufficient parking to meet demand from:-
- * Residents and regular visitors;
 - * Casual callers;
 - * Deliveries/service vehicles.
- 03 Consideration of parking requirements, both in terms of quantity and location of spaces, must be an integral part of the design process to ensure that it is provided in a way compatible with a safe and pleasant environment.
- 04 Parking may be provided as:-
- * Garages or hardstanding within the curtilages of individual properties;
 - * Grouped garages or hardstanding adjacent to blocks of flats or houses and separate from the highway;
 - * An integral part of the highway (for casual parking). Where a road serves more than 300 dwellings visitor parking should be provided clear of the carriageway.

4.11 OFF STREET PARKING

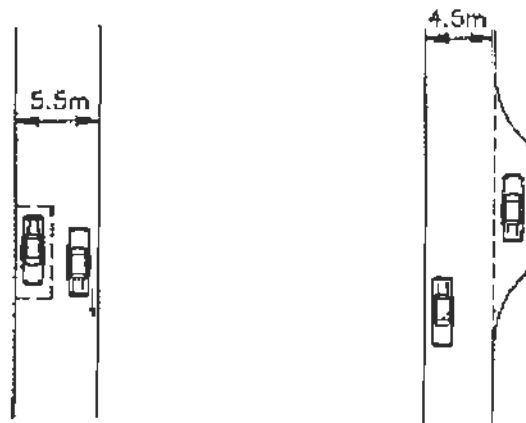
- 01 Standards for the provision of off-highway parking (either within curtilages or in grouped areas) are detailed in the North Yorkshire Parking Design Guide and summarised in Appendix J. Details of parking layouts are given in Appendix J.
- 02 The layout of grouped parking areas must ensure that parking spaces are more convenient for the properties they are intended to serve than the adjacent public highway and are secure and attractive. Hence the design of parking areas should:-
- * Provide spaces immediately outside and overlooked by the dwellings they are intended to serve;
 - * Provide for landscaping to reduce the visual impact of large parking areas;
 - * Use surfacing materials that add variety and interest.
- 03 Where practicable off street parking should be assigned to individual dwellings.

4.12 ON STREET PARKING

- 01 The off street parking standards are intended to ensure that sufficient spaces are provided to accommodate residents' parking and longer-stay visitor parking. In most circumstances, however, casual callers, service and delivery vehicles will park on-street along with short-duration parking by residents and visitors.
- 02 The requirement for a minimum carriageway width of 5.5 metres on access roads is intended to ensure that casual and short-stay parking can take place outside properties. Locations where further consideration will need to be given to the effect of parking on-street are:-
- * At turning areas at the ends of cul-de-sacs;
 - * On shared-surface roads.
- 03 Parking within turning areas is often observed in existing developments, preventing the area being fully used for turning. Where a turning head is likely to be used for parking or where more convenient casual parking for properties accessed from a turning head is not provided, then space for parking clear of the basic turning area should be provided. This parking space should be delineated from the turning area by distinctive surfacing. The location of accesses to drives can be used to control where parking takes place.
- 04 Where a shared vehicle/pedestrian surface is provided it is vital to design to minimise indiscriminate parking, because such parking can seriously hinder or inconvenience pedestrian movement. Parking areas for casual parking must therefore be provided clear, but contiguous with, the highway and be clearly delineated from it.
- 05 One space per five properties should be provided for casual parking. On 5.5 metre wide access roads this may be provided within the minimum width. On shared surfaces and access roads with less than 5.5 metres minimum width, casual parking spaces may be contiguous with or away from the highway. However:
- * A space should be available within 20 metres of all properties;
- and
- * Where casual parking is provided away from the highway, casual parking must be more convenient for the properties served than parking on the highway.
- 06 Figure 4.2 illustrates some of the means available to provide for casual parking.
- 07 Parking spaces located contiguous with the highway and constructed in accordance with the Highway Authority's requirements will be adopted by the Highway Authority.
- 08 Dimensions for parking spaces and circulation areas are given in Appendix J.

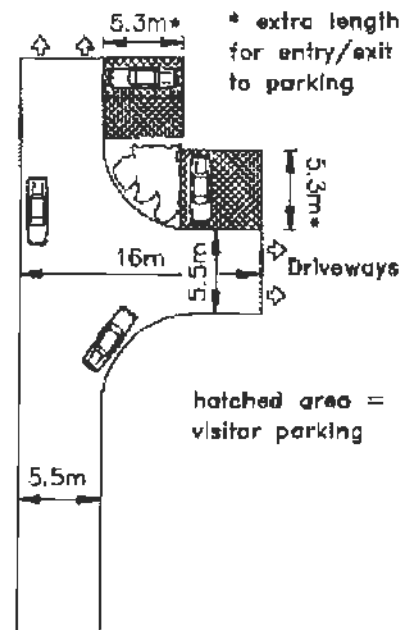


(i) Visitor parking provided at head of informal cul-de-sac



(ii) Road width = 5.5m or greater: On-street visitor parking acceptable

(iii) Shared surface road: casual parking in lay-by



(iv) Visitor parking provided at turning head without blocking driveways

FIGURE 4.2

4.13 DESIGNING FOR PUBLIC TRANSPORT ACCESS

- 01 When planning new development, requirements for bus services must form an essential part of the initial design considerations. Consultation with local operators and the Public Transport Officer of the County Council will help to identify what provision needs to be made within a residential area for bus services. New developments should have easy access to a bus network and the service should, ideally, be operational when the first residents move in. Early establishment of bus routes is often difficult due to the time scales of final road construction. Where potential bus routes are identified the road layout should:-
- * Provide adequate road width and (where appropriate) turning space for buses;
 - * Identify suitable locations for bus stops and shelters.
- 02 A minimum carriageway width of 6.0 metres is required where a road is likely to be used by a bus service. The turning space requirement can only be determined through consultation with potential operators.
- 03 Bus stops should be located where:-
- * It is safe for buses to stop with minimum disruption to traffic flow and where movement of buses to and from the stop is not likely to be hindered by parking;
 - * Passenger access is convenient and safe;
 - * They are overlooked by residential property but not over intrusive.
- 04 Bus stops should be located so that all parts of the development lie within 400 metres walking distance of a stop to ensure adequate accessibility to bus services. Bus laybys may be required on distributor roads but will not generally be required on access roads unless to overcome potential problems of safety or hindrance to traffic flows at particular locations.
- 05 The spacing of bus stops must be balanced to take into account maximum walking distances on the one hand and the need to avoid unnecessary delays to busses on the other. On average bus stops should be sited at between 0.3km and 0.5km spacing. Where footpaths are located away from carriageways they should be focused towards bus stops. Bus stops on opposite sides of a two lane carriageway should be located so that buses stop tail to tail and move away from each other. Staggered bus stops should be 45m apart. Care must be taken in siting bus stops so as to avoid nuisance and loss of privacy to residents. Further guidance on accommodating busses is given in Roads and Traffic in Urban Areas.
- 06 Bus facilities should contribute to the overall attractiveness of any residential environment by the selection of good quality street furniture and appropriate landscaping.

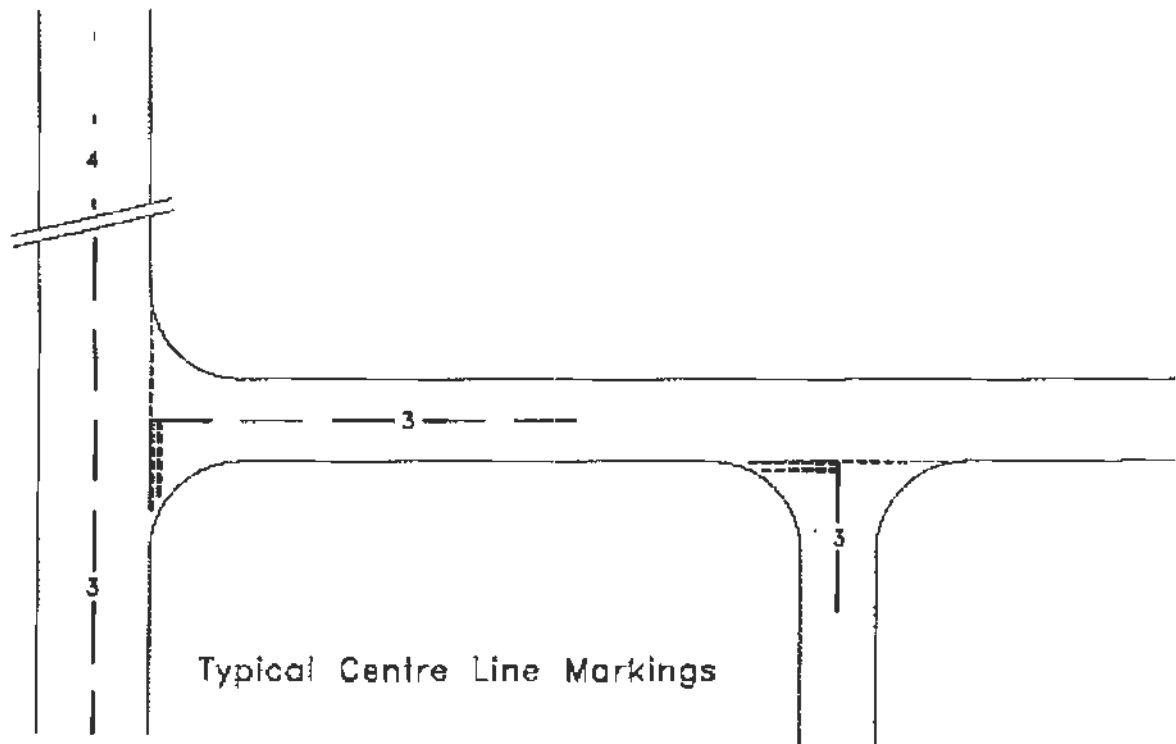
- 07 the developer should consult the local Planning Authority the Highway Authority and bus operators on the design and siting of any bus shelters. The local District Council and Parish Council should be consulted regarding the future maintenance of these facilities. A paved area is required for boarding and alighting and there should be street lighting close by.
- 08 In many cases, particularly in smaller developments, bus routes WITHIN the development are unlikely to be required. In such circumstances account should be taken of the location of existing routes and bus stops and the pedestrian routes within the development should provide for direct access to these stops.
- 09 More detailed guidance on designing for buses is described in 'Keep buses moving, Local Transport Note 1/91, Department of Transport 1991'.

4.14 ARCHWAYS

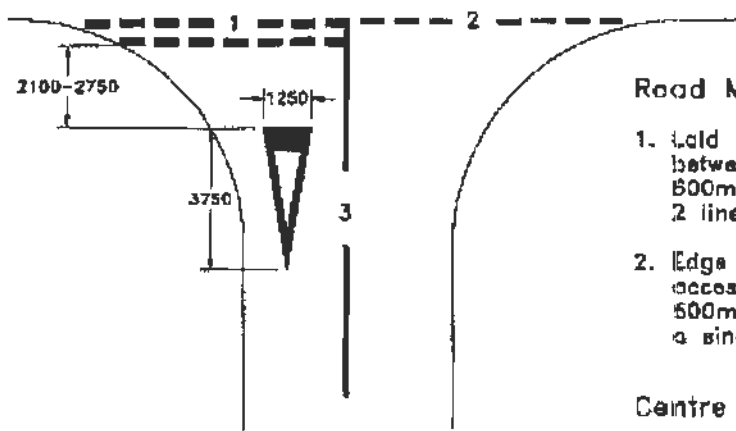
- 01 Archways may sometimes be necessary to create or maintain an unbroken frontage of buildings yet allow development at the rear.
- 02 An archway of sufficient height for all vehicles will normally be out of scale with its surroundings, and visually unacceptable. Low archways with 2.4 metres minimum clear headroom will be acceptable as the principal car access to a housing development serving no more than 10 dwellings, provided that access is available for emergency services and maintenance, and acceptable refuse carrying distances can be achieved (see Section 8.8). A carriageway width of 2.7 metres is required with 0.5 metres hardened verges either side.
- 03 Archways of these dimensions will be acceptable as the sole access to a parking or garage court but not over adoptable public highways.

4.15 LINING AND SIGNING

- 01 The developer will be expected to provide all traffic signs and road markings that are consequent upon the development. It should be noted that this may involve signs and marking on the existing highway and occasionally with signing at some distance from the development.
- 02 Road markings and traffic signs will need to be in accordance with the Traffic Signs Regulations and General Directions 1994 and the current edition of the 'Traffic Signs Manual' issued by the Department of Transport. The design, location and mounting of traffic signs should be in accordance with Circular 7/75.



Typical Centre Line Markings



Typical Junction Markings

Road Markings at Junctions

1. Laid across the mouths of access roads at junctions between nearside tangent and centre of access road. 500mm marks and 300mm gaps, 200mm wide, in 2 lines 300mm apart.
2. Edge of carriageway lines extend give ways across access roads to offside tangent. 500mm marks and 300mm gaps, 100mm wide in a single line.

Centre Line Markings

3. Warning Lines Fig 4.3a. Placed along centre line of access roads at immediate approach to junction :-

Over 5.5m wide	Minimum of 5 marks
5.5m or less	Up to 5 marks
Minor access roads	Minimum of 2 marks

Placed along centre line of roads over 5.5m wide at junctions with access roads (min. 6 marks either side of centre line of access road) and in certain locations i.e. bends where forward visibility is less than that recommended.
4000mm mark, 2000mm gap, 100mm wide.

4. Lane Markings Fig 4.3b. Placed along centre of carriageway to divide into traffic lanes
1000mm mark, 5000mm gap, 100mm wide.

All markings to be white, reflective thermoplastic to BS 3262.

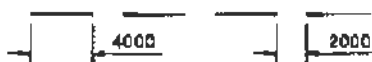


Fig 4.3a.

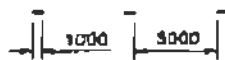


Fig 4.3b.

FIGURE 4.3

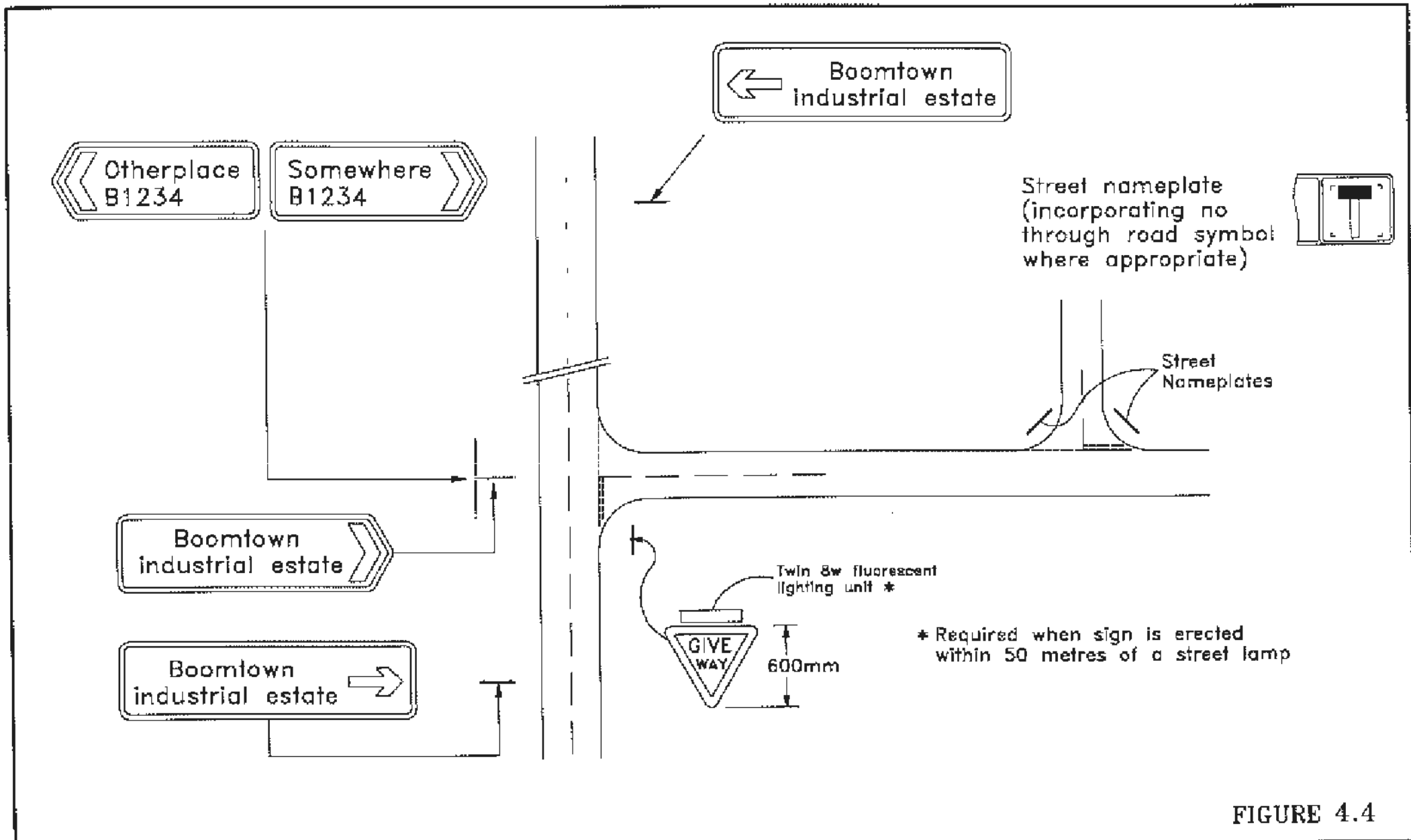


FIGURE 4.4

4.16 ROAD MARKINGS AT JUNCTIONS

01 All junctions will require to be marked as follows:-

LOCAL DISTRIBUTORS MAJOR ACCESS ROADS MINOR ACCESS ROADS	'Priority marked' with formal give way lines as Figure 4.3
INFORMAL ACCESS ROADS ACCESS COURTS MINOR ACCESS WAYS	Edge of carriageway markings to bellmouth

02 The give way triangle should be used on all junctions with kerb radii of 10 metres or more.

4.17 CENTRE LINE MARKINGS

01 Centre line markings should be provided as follows:-

Roads over 5.5m wide	Standard centre line markings as Figure 4.3
Major Access Roads 5.5m wide or less	Upto 5 marks at junctions
Minor Access Roads	Minimum of 2 marks at junctions
Informal Access Ways Access Courts Minor Access Ways	No markings required

4.18 ROAD SIGNS

01 Typical signing for junctions is shown in Figure 4.4. This is not exhaustive as circumstances could require other warning or regulatory signs such as speed limit terminal signs.

02 Certain signs will, when within 50 metres of a street lamp require illumination. Reference should be made to the current edition of the Traffic Signs Regulations and general directions.

5.0 Landscape Design

LANDSCAPING

5.1 A fundamental component of the design of the residential environment is the provision of plants, ranging from simple grass planting to retaining fine trees. For the most part, the landscaping of a development will lie outside the highway and general landscape guidance is outside the scope of this guide. However there are a wide range of landscaping opportunities within the highway which may be exploited both to enhance the highway and to complement the overall design of the development.

5.2 GENERAL PRINCIPLES

01 It is not necessary to design fussy and expensive details in order to produce an attractive scheme. A simple design often creates the most pleasing impression. The careful use of planting can be especially helpful in defining and giving character to the space where the highway will be the central feature. At the same time attention to planting and the use of interesting surface materials can make the highway itself pleasant to look at and use.

02 The particular functions of highway planting are:

- * emphasise the character of the chosen highway layout;
- * provide contrast to hard surfaces;
- * reinforce enclosure and narrowing;
- * direct pedestrian flow;
- * complement wider landscape design; and
- * preserve existing site features.

03 In addition to providing visual enhancement, planting can provide a good practical solution to maintenance problems, but should avoid creating potential future problems.

5.3 DESIGN OPPORTUNITIES

01 Service Verges

These should be grassed or planted with approved shrubs. Appendix H contains a list of approved species which are low growing with shallow roots.

Shrubs are particularly suitable where grass cannot readily be looked after by residents, for example where a verge joins a screen wall. Adopted service verges must be clearly defined on the ground. Where there is no identifiable boundary between the service verge and a private curtilage (for example, in an "open plan" layout) markers of a design acceptable to the Highway Authority should be used. Measures should be taken to ensure that service boxes can be easily identified in planted verges.

02 Visibility Splays

These should be grassed or planted with approved shrubs to Appendix H and form part of the adoptable highway. Where footways are provided these should follow the back of the visibility splay. Grass verges of less than 900mm will not normally be acceptable for maintenance reasons. The planting of trees within a 2.4 metres setback visibility splay will not be permitted. At greater setbacks trees will generally not be permitted but exceptions may be considered, for example to retain a mature tree or to continue avenue style planting. In these instances the visibility setback should be extended to compensate for the visibility obscured by the tree.

03 Other Areas

Areas of amenity landscape planting, play areas etc, will not be adopted by the Highway Authority.

However, where planting can be shown to relate to a particular highway feature or function (eg traffic calming) it may rank for adoption by the Highway Authority. Landscape planting specifically for highway purposes may be justified on Local Distributor roads where the public pass and re-pass frequently. On these, road verges may be 3 metres wide (excluding footway if provided) in order to accommodate planting. Nevertheless, the general principle of keeping verge widths to a minimum is emphasised.

5.4 TREES

- 01 Trees should be planted at least 2 metres back from the carriageway or footway edges within a minimum 3 metres verge to afford clear passage to all highway users without the need for extensive future lopping.
- 02 Trees planted within the highway verge will generally be single specimens planted as standard or extra heavy standard stock.
- 03 A list of trees that are generally suitable for roadside planting is set out as Appendix H. The trees are categorised by suitability for narrow verges (over 3.0 metres) and wider verges (over 6.0 metres). The list is not exclusive. Other deciduous trees may be considered favourably depending on such factors as bulk in maturity, longevity, period in leaf, and root behaviour.

- 04 Some species of tree have many varieties and cultivates, including those having particular characteristics required for trees in confined spaces. These varieties sometimes have the additional advantages of being less vigorous than the original species.
- 05 The selection of trees should relate to the wider style of the overall landscaping scheme. While there may be scope for ornamental stock in urban or suburban settings (eg *Prunus Serrulata* - Japanese Cherry), more use of native or well established forest and hedgerow trees would usually be sought in villages (eg *Prunus Padus* - Gean/Wild Cherry).

5.5 SHRUBS

- 01 Appendix H contains a list of shrubs which are suitable for planting in highway verges. Whilst these are low growing there may be opportunity to plant larger shrubs outside visibility splays and service verges where it is desirable to create a sense of enclosure. However, species that will grow above 1.0 metres will not be favoured.
- 02 Shrubs should be massed in beds as large as possible: complex designs create maintenance problems.

5.6 GRASS

- 01 The correct selection of seed is important to ensure that the grass species will suite the type of soil, function and maintenance requirements of the area.
- 02 'Flat' areas must not be flat or dished, unless the design incorporates land drains, but should be domed slightly. For maintenance reasons the maximum gradients of slopes should be 1 in 3 with a 500mm minimum width transition gradient adjacent to level areas and hard surfaces. Grass should not be laid hard up against vertical structures as mowing against them is impracticable. A mowing strip (minimum width 225mm) should be provided to obviate the need for an additional expensive edging operation. In addition potential obstructions such as fence posts, sign posts and lamp posts should be sited in areas of paving or be surrounded by mowing strips.
- 03 The general level of grass areas should always be 25mm higher, (after settlement) than surrounding hard areas, including kerbs to facilitate mowing.
- 04 Adequate access for mowing machines must be allowed. Where an area is large enough to justify using gang mowers, access of at least 3.0 metres width must be available and curves of not less than 5.0 metres radius provided.
- 05 Grass should not be used where heavy wear from pedestrians is likely. In these areas hard surfacing should be provided.

5.7 PRESERVATION

- 01 The Highway Authority recognises the desirability of retaining existing trees and hedgerows.
- 02 At the initial design stage of a scheme an accurate tree and hedgerow survey should be made. The survey should include details of species, position, height, condition, canopy spread and girth of all trees. Trees and hedges in good condition should be considered for retention with new landscape proposals.
- 03 To ensure the survival of existing trees the following conditions should be observed:-
 - a. wherever possible, services should be arranged to avoid trees and their root systems, and new roads should be designed with care where they have to be in close proximity to existing trees. Particular care should be taken to ensure that the ground level adjacent to trees is maintained as existing;
 - b. trees should not be subject to alterations in existing ground levels over the area of their root systems or adjoining the base of their trunks;
 - c. all excavations under canopies should be carried out by hand and no roots over 25mm in diameter should be severed;
 - d. where buildings are to be placed close to large trees considerations should be given to the construction of a ground wall. The ground wall should be at an adequate depth in the ground and of sufficient length to safeguard the protected structure. The top of the wall need not be visible above ground level;
 - e. it may be desirable to prune or thin the crown of a tree;
 - f. the protection of trees and hedges during site construction is essential. Specific advice on measures to protect them will be given by the Local Planning Authority; and
 - g. well qualified arboricultural advice is particularly valuable in dealing with established trees.

5.8 FUTURE MAINTENANCE

The Highway Authority has strictly limited facilities for the maintenance of soft landscape and will not accept within the highway adoption boundaries planting which requires complex or specialised treatment.

6.0 Design in Conservation Areas

6.1 DESIGN IN CONSERVATION AREAS

- 01 This section sets out the principles which will be adopted when considering proposals in Conservation Areas, and the guidance should be taken as applying equally to the setting of any Listed Building of architectural or historic interest, whether in a Conservation Area, or not.
- 02 A Conservation Area is an area designed by the Local Planning Authority under Section 69 of the Planning (Listed Buildings and Conservation Areas) Act 1990. It is an "area of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance". It is the duty of the Local Planning Authority to formulate and publish proposals for the preservation and enhancement of any parts of their area which are Conservation Areas.
- 03 One of the recurring problems in Conservation Areas is the accommodation of traffic without adversely affecting buildings and their setting. As Highway Authority, North Yorkshire County Council will seek to exercise a major influence in ensuring the success of local conservation policies, and will apply the following principles when considering new highway proposals in Conservation Areas or when carrying out maintenance works to existing highways.
- * New development should preserve or enhance the architectural or historic character or appearance of Conservation Areas and should respect the character and setting of Listed Buildings and of adjacent Conservation Areas.
 - * The Highway Authority will permit the reduction of normal highway standards in Conservation Areas where this is compatible with safety, provided that there is a genuine environmental benefit to be gained from reducing the standards.

6.2 URBAN CONSERVATION AREAS

- 01 Many Conservation Areas in North Yorkshire have an 'urban' character and particular features of these areas are:-
- * A sense of street enclosure as a result of the proportions of road and pavement width to building heights.
 - * The absence of large gaps in the street frontage.
- 02 New development should repeat these features and the layout and highway should be carefully designed so that large open spaces between buildings are avoided and areas accessible or visible to the public are not dominated by parked vehicles. The design guide provides sufficient flexibility to allow the width and alignment of carriageways to be varied to properly reflect the character of the area.

- 03 It is also important to consider the details of street furniture, materials, signs, etc. as an integral part of the proposal. In particular, posts, lamp columns, bollards, signs, bins, seating etc, should be positioned and designed so as to reduce potential visual clutter. Details of carriageway and footway design should reflect the character of the Conservation Area and take into account the surrounding buildings and their functions and features.
- 04 Natural materials traditional to the area should be used, where possible, and the colour and texture of new materials should reflect those of the rest of the Conservation Area. Both design and materials should assist those with disabilities. Provision should also be made by developers for likely future replacement of small sections of these materials, following repairs undertaken by utilities. This might take the form of additional ancillary hard landscaping, the materials from which could be relocated to the carriageway and footway as and when needed. The Highway Authority will be willing to consider alternative solutions.

6.3 VILLAGE CONSERVATION AREAS

- 01 New development in village Conservation Areas should generally respect the predominant form of the particular village and a standardised approach to highway design and detailing is unlikely to be appropriate. As in 6.2 the carriageway can be designed to reflect the character of the area.
- 02 A characteristic of many villages is the informal appearance of highway edges : grass verges or village green without kerbs. In these areas standard pre-cast concrete to kerbs may not be appropriate and new roads may be edged with informal stone kerbs where a vehicle deterrent is necessary.
- 03 For maintenance reasons the Highway Authority will not normally accept a grass verge between the highway and front boundary walls of new properties. However, it will be accepted for new development in village Conservation Areas where it is the normal pattern and where other arrangements would appear incongruous.

6.4 SIGNS

- 01 Careful attention should be given to the siting of signs as an integral part of the design of any development in conservation areas. Developers should ensure that they consult the Highway Authority at an early stage in the design process to establish requirements, and should take account of the following guide lines and those contained in the Department of the Transport's Traffic Signs Manual.
- * In Conservation Areas, the minimum number and size of signs should be used consistent with road safety and traffic management needs.
 - * Support poles should be avoided wherever wall mounting can be achieved.
 - * Signs should be illuminated only where absolutely necessary.

- 02 The Civic Trust/English Heritage Towns Forum booklet "Traffic measures in Historic Towns - an introduction to good practice" contains useful information and suggestions in this respect.

6.5 **ROAD LIGHTING**

The Highway Authority will relax normal standards applicable to road lighting where this will avoid a multiplicity of columns or where a high level of illumination would be detrimental to the character of the conservation area. Well designed columns or wall mounted lanterns should be used, appropriate to the particular character of the area, and cables, fuse and switch cabinets should be hidden or incorporated into the walls of buildings where possible. See Section 8.3 for further details on road lighting.

7.0 Design in Urban Areas

APPLICATION OF GUIDE TO URBAN DEVELOPMENTS

7.1 GENERAL

Development in urban areas, either new build or redevelopment of the existing built environment, requires recognition of the particular difficulties created by urban living. It requires an acknowledgement of the impact that the private car has upon the quality of both the local residential environment and the environment of the whole area. It necessitates a recognition of the need for development to conform closely to the achievement of policies which are strategic in content. The policies contained in PPG 13 'Transport' will be particularly relevant to design in urban areas.

7.2 SPECIFIC REQUIREMENTS

In particular development will need to :-

- * contribute towards the goal of restraining future traffic growth
- * prevent vehicle speed from adversely affecting the local environment
- * recognise the importance of walking and cycling as means of individual personal transport
- * allow for easy Access to existing public transport
- * enable new public transport opportunities to develop in the future

7.3 REDUCING TRAFFIC

In some areas where the effects of existing traffic movement has produced unacceptable levels of congestion and pollution the development may be required to contribute directly to the achievement of policies which are designed to contain or reduce the use of the car. This may typically reduce the level of car parking provision below that applicable elsewhere and may in some cases introduce standards for cycle parking. Prior to commencing detailed design work in any urban area and particularly within The City of York developers should contact the Director of Development in order to determine what individual strategic policies may be applicable.

7.4 RESTRAINING SPEED

Design of the highway infrastructure should follow the principles laid out in Chapter 5 of Design Bulletin 32 (pages 69 to 77 inclusive). Particular note should be taken of the need to "design in" speed reducing measures and not to provide these as an afterthought. In general the extensive use of road humps should be avoided. On roads expected to be used regularly by public transport or as means of access for the Fire and

Rescue Service road humps are unlikely to be acceptable. Further information upon the design of Traffic Calming elements will be found in Department of Transport leaflets and from the local authorities themselves.

7.5 PEDESTRIAN FACILITIES

Pedestrian facilities will need to be carefully thought out and appropriately included in any design having regard to the need to provide safe, well lit and direct routes to and from main points of demand. Routes which are not overlooked by frontage development should be avoided and any associated landscaping designed so as to ensure that no part of the route is obscured from external or internal view by vegetation. These requirements will also be applicable to the provision of cycleways. In all cases the principle adopted should be one of ensuring that pedestrians and cyclists travel on the shortest most direct route whilst the vehicles follow an indirect path.

7.6 PARKING AREAS

Care in the location of parking areas will be needed to avoid placing these in the direct line of any pedestrian route and to avoid vehicles overhanging footways. Where this is unavoidable, measures must be incorporated which positively guide the blind or partially sighted around the obstruction. Tactile paving must be included at all crossing points. Care should be exercised in the selection of paving materials for footways and paths to take into account the needs of wheelchair users.

7.7 CONSULTATION

Developers intending to undertake projects in urban areas are urged to make early contact with the Local Planning Authority and Highway Authority so that advice can be given concerning standards that would be applicable for the particular site. Early contact should also be made with the Fire and Rescue Service whose documents 'Traffic Management Policy' and 'RESPARK Formula' are particularly relevant.

8.0 Public Services and Utilities

8.1 HIGHWAY DRAINAGE

- 01 In all cases where estate roads are to be offered for adoption as highways maintainable at the public expense, developers will be required to provide adequate highway drainage facilities, including the provision of satisfactory outfall drains. Due to ongoing maintenance problems soakaway drainage is not acceptable.
- 02 Design should be in accordance with the latest relevant technical publications.

8.2 LAND DRAINAGE

Where substantial run-off from landscaped areas is anticipated appropriate arrangements for land drainage with satisfactory outfalls should be made.

8.3 ROAD LIGHTING

- 01 The level and type of road lighting required is based on the following factors:-
 - * the volume of traffic using a road
 - * the level of pedestrian use
 - * the need for security
 - * aesthetics
 - * the properties of the road surface
 - * the roads alignment
 - * economic operation and maintenance costs
 - * adjacent footways and cycleways
 - * the layout of other services

Consequently road lighting must be carefully planned as an integral part of the layout of roads, footpaths and underground services.

- 02 The Highway Authority's Road Lighting Engineer will advise the developer on a suitable lighting layout and interpretation of the Specification. Standardisation of apparatus is desired by the Highway Authority to assist future maintenance but in special circumstances consideration will be given to departures from the Standard apparatus. These variations must be agreed with the Highway Authority at the planning stage. Whilst every effort will be made to produce aesthetically pleasing layouts it should be noted that there will sometimes be a conflict of interests between

safety and aesthetics and in these instances matters of safety will normally take precedence. There may also be a conflict between aesthetics and the Highway Authorities future maintenance costs as the County Council's Energy Conservation policy requires efficient light sources with low wattage and high output to be used on all new roads. In these circumstances it may be possible for a commuted sum to be provided to cover the Highway Authority's additional maintenance costs.

- 03 Lighting in accordance with British Standard Code of Practice, BS 5489, 1989 must be provided on streets which are adopted as highways maintainable at the public expense. Generally lighting will be in accordance with Part 3 of BS 5489 although in certain circumstances Local Distributor roads and Transition Roads may require to be in accordance with Part 2 of BS 5489.
- 04 The lighting classifications in BS 5489 Part 3 will be applied as follows to roads, as classified in Section 3 of this document:-

CATEGORY 3/1

Major Access Roads
or
Areas where pedestrian flows are high
or
High crime risk areas

CATEGORY 3/2

Minor Access Roads
or
Areas where pedestrian flows are low
or
Low crime risk areas

CATEGORY 3/3

Informal Access Roads
or
Access Courts
or
Minor Access Ways
or
Areas where pedestrian flows are very low
or
Very low crime risk areas

The advice of the local Crime Prevention officer should be sought in determining the crime risks for a site.

05 When designing lighting layouts columns shall be located so that they do not:-

- * obstruct accesses or footpaths
- * obstruct the vision of drivers
- * create undue glare for adjacent properties
- * interfere with new or existing trees

06 The lighting of Public Open Space or footpath links not offered for adoption by the Highway Authority should be referred to the District or Parish Council.

8.4 STREET NAMING

01 The Authority for street naming and numbering is the appropriate City, Borough or District Council. Developers may offer suggestions for street names. The reasons for the choice would be helpful to the Authority in reaching a decision.

02 Whether or not the developer wishes to suggest names for new roads he should, as soon as possible after receiving Building Regulations Approval, submit to the naming Authority the following duplicate plans to enable postal numbers to be allocated:-

1. All roads and walks that require naming
2. The location of all new and existing properties
3. The front and rear access to all properties
4. The plot/unit numbers
5. The postal numbers or names of any existing properties incorporated within the development and served by new roads.

03 Developers should provide new street name plates to the specification of the Local Authority in the positions notified to them when the street is named and before any properties are occupied.

04 Where the street is a cul-de-sac this should be indicated appropriately in the name plate.

05 It is essential that all statutory authorities and undertakers are informed of postal numbers as soon as house construction starts for each phase of development, so that official records of new addresses do not need to refer to Plot/unit numbers with the subsequent confusion when the change to postal numbers takes place.

- 06 Developers will be expected to inform each purchaser/occupier of their postal address and to ensure that legible number are fixed in conspicuous positions at the entrance to each dwelling.
- 07 Developers and naming Authorities should have regard for the contents of The Department of Transport's Circular Roads 3/93 'Street Name Plates and the Numbering of Premise'.

8.5 PUBLIC UTILITIES

- 01 Public utility apparatus on residential estates should be provided in the most economic manner consistent with consumer convenience, ease of maintenance and good appearance. The developer must consult with the statutory undertakers and co-ordinate the location of mains and services during the initial design process. The developers should obtain copies of the National Joint Utilities Group publications:-

- * NJUG Publication No 7(Dec. 1986)
Recommended Positioning of Utilities' Mains and Plant for New Works

8.6 ROUTING OF STATUTORY UNDERTAKERS' SERVICES

- 01 The statutory undertakers prefer to establish routes for their apparatus within areas adoptable as public highway or in land to be maintained by local authorities. To minimise installation and maintenance costs and to avoid future disruption, apparatus will normally be laid in footways and verges adjacent to carriageways. The standard positions for services are shown in Appendix K. It is expected that electricity and telephone cables will be laid underground for aesthetic reasons.
- 02 In the event of the routes available in the adoptable highway being unsuitable, the developer must provide other land as necessary and arrange for satisfactory easements. Neither the Highway Authority nor the Local Authorities have the resources to maintain land that is required solely, for public utilities.
- 03 Developers should take account that services are usually laid on the side of the road fronting the most properties, and that it will be their responsibility to provide cross-carriageway ducts at agreed locations and to establish means of readily locating the duct ends.
- 04 Where services are to be laid in highway service verges which are contiguous with open plan gardens, the Statutory Undertakers may wish to draw specific attention to the status of the verge as highway and to take additional measures to protect their apparatus. They may request a covenant in the conveyance to each purchaser drawing attention to the presence of their services. A recommended form of covenant is given in section 9.7.03. Any proposed changes to the form of covenant should be agreed with the Highway Authority. As a further safety precaution, Statutory Undertakers may wish to attach a notice to each meter board warning against digging or planting in the verge and indicating the position of services.

- 05 Where services are laid in land outside the control of the Highway Authority or Local Authority, any covenant required should be negotiated between the developer and the undertaker.
- 06 Some utility apparatus functions more efficiently if looped circuits can be installed, and the linking of cul-de-sac heads may provide suitable routing opportunities.
- 07 Trunk mains laid to large radius bends or requiring special protection should be accommodated within the local/distributor network, and should only be located within the residential areas if alternative routes are unavailable. Installations such as substations and gas governor houses requiring heavy vehicle access should be located on local distributor or major access roads outside the limits of the public highway. They should be provided with sufficient parking to accommodate service vehicles clear of the highway.
- 08 The siting of water valve boxes, hydrants, post office mail boxes and telephone boxes requires special attention and must be co-ordinated with the Statutory Undertakers and the emergency services.
- 09 The location of Public sewers and drains must be agreed with the appropriate Water Authority or its agent District Council who will normally require adoptable sewers to be laid within highway limits. In the case of drains catering solely for the discharge of surface water from prospectively adoptable highways, the highway authority should be consulted.

8.7 CABLE TELEVISION APPARATUS

The developer should ascertain if a Cable Television Franchise has been entered into for the area. Should a franchise exist then the developer should ensure that all necessary ducts are accommodated.

8.8 CO-ORDINATION

- 01 The estate layout design must reconcile the sometimes conflicting requirements of highway authority, public utilities and local authority, always bearing in mind that the main objective of these standards is to create a better housing environment.
- 02 Certain species of trees and shrubs in close proximity to public utilities should be avoided since their roots will cause damage, and the plants themselves will be damaged by excess excavation.
- 03 In addition, the layouts of the several services must be co-ordinated, although the joint trench principle is an ideal which is not often practicable. However, care must be taken to ensure the services do not conflict.

- 04 Developers must provide the public utilities with their proposals at the earliest possible stage, and the designers must consider services as a basic design element
- 05 Each Statutory Undertaker will need copies of plans, sections, drainage and sewerage details including particulars of any underground structures or apparatus. These plans should show "start" and "finish" dates of construction phases. Street names and house numbers are needed as soon as possible.
- 06 Other matters on which agreement between the developer and the undertakers should be reached are:
- a. programming cut-offs from any existing premises to be demolished;
 - b. protection and diversion of existing services;
 - c. providing services when routes from supply points cross undeveloped land;
 - d. termination points in dwellings, entry details and meter reading facilities.

8.9 REFUSE COLLECTION

- 01 Standards are laid down in connection with refuse collection from residential buildings, these criteria are also appropriate for all similar servicing.
- 02 The desirable maximum carry distance for 0.93cu.m. (3.25 cu.ft.) dustbins is 23m with an absolute maximum of 36.5m; these distances should be from where the collection vehicle can reasonable be expected to stand on the public highway to a point not more than 3m from the rear of the dwelling. Unless other arrangements have been agreed with the refuse collection authority these minimum carrying distances should not be exceeded.

9.0 Adoption and Implementation

9.1 COUNTY COUNCIL POLICY

It is the policy of the County Council that 'Any street which is being developed to serve four or more properties shall be capable of being laid out to a minimum standard, so that a street can be constructed which can be adopted as a highway maintainable at public expense'.

9.2 AREAS FOR ADOPTION

It is essential that land, structures and apparatus to be adopted are identified during the design stage in order to avoid misunderstandings and consequent delay. All land must be conveyed to individual occupiers, local authorities, statutory bodies or some other responsible authority. The future maintenance responsibility relating to trees, shrubs and other planted areas should be established prior to a detailed planning submission.

9.3 HIGHWAYS

- 01 The highway authority will adopt as highways maintainable at the public expense those roads and footpaths which are necessary for public access or passage subject to their being constructed entirely in accordance with the County Council's 'Specification for Housing and Industrial Estate Roads and Private Street Works' to the satisfaction of the County Surveyor. Such highways include carriageways, footways, verges and footpaths which are constructed in accordance with these standards and which are of real use to the general public. The highway authority may also adopt areas of land which are necessary to ensure the stability of the highway.
- 02 Highway service verges, whether between the footway and the carriageway or adjacent to private gardens, will be adopted as part of the highway, although this does not mean that every highway needs a verge. Generally, highway verges should not be more extensive than indicated in Section 3, although adoptable verges on local distributor roads will be considered sympathetically.
- 03 Planting of trees, shrubs and ground cover within adoptable highway areas must be agreed with the highway authority in respect of type and location prior to the approval of a detailed planning submission.
- 04 Where road humps are to be provided as part of a traffic calming scheme these must be in place before dwellings are occupied. In some instances this may involve the provision of temporary humps at base course level.

9.4 PUBLIC OPEN SPACE

- 01 Proposals for the long term maintenance of amenity areas, play space and landscaped areas should be agreed with the appropriate Authority before approval of the site layout.

- 02 Areas of soft landscaping other than highway verges and other areas relating to the Highway are not acceptable for adoption by the Highway Authority and should be in private ownership unless some other responsible authority agrees to adopt and maintain them.

9.5 PARKING PLACES

- 01 Private parking provision must be located off the public highway. Parking spaces provided in lieu of garages or private drives for the regular parking of residents' cars will not be adopted by the highway authority. Such parking spaces must be either in private ownership, or in the case of group parking of garage courts, adopted by a responsible Authority as amenity space or controlled by a residents' association.
- 02 In Access Areas, those communal short term visitors' parking spaces which are contiguous with the highway, and which are clearly not for the regular short term use of any specific dwelling will be adopted by the highway authority by agreement.
- 03 Short term waiting bays in Access Areas which are merely widened sections of the carriageway will be acceptable for adoption if they are not too extensive. Laybys adjacent to shops or community buildings will be accepted for adoption providing proper provision is made for traffic flow and safety. Bus laybys will be encouraged if agreement on their location can be reached at design stage.

9.6 ADOPTION PROCEDURES

- 01 It is hoped that developers will make an agreement with the Council under Section 38 of the Highways Act 1980. With this agreement, roads and footpaths are, on satisfactory completion following a formal maintenance period, automatically adopted as highway maintainable at the public expense.
- 02 Immediately a development receives Building Regulation approval, the Highway Authority (either the County Council or the District Council as agent) requires a statutory guarantee that funds are available to complete the roads and footpaths to the satisfaction of that Authority. Therefore a Notice of assessment in accordance with the Advance Payments Code, Section 219 of the Highways Act 1980, will be served in this respect.
- 03 Before construction begins the developer must either:-
- complete payment of the estimated cost of highway works in accordance with the Notice served under the Advance Payments Code
- or
- enter into a Section 38 Agreement which provides a bond for due completion of the roads.
- 04 If a developer wishes to construct an estate in distinct phases, the phasing should be clearly shown on his submission for approval.

- 05 If an early start to building is essential, developers must make an Advance Payment prior to commencing building work and replace this as soon as possible with a Section 38 Agreement. In this case, the Advance Payment is refunded with interest once the Section 38 Agreement is in place.
- 06 Developers are required to notify the highway authority of the commencement of any work on prospectively adoptable highways so that inspection and approval can be arranged. This applies to work under both Advanced Payment Code and Section 38 Agreements. Works not so inspected will not be adopted until proven satisfactory at the developer's expense. A composite plan indicating public utility apparatus to be laid or erected within the adoptable highway will be required. A supervision fee, to cover the Highway Authority's inspection of works on site is charged and must be paid prior to adoption.
- 07 North Yorkshire has a standard form of Section 38 Agreement. The Plan accompanying the agreement shows the road and footpaths to be adopted as public highway. The plan may be modified by mutual consent during construction but it will be necessary to substitute the revised plan into the Agreement prior to the adoption of the roads.
- 08 Public rights of way crossing land are protected by statute. They may not be obstructed by development until a formal diversion has been obtained. Development affecting such rights may be prejudiced if formal procedures under the provision of Section 257 of the Town and Country Planning Act 1990 are not instigated at an early state where diversions are required.

9.7 VERGES ON THE EDGE OF HIGHWAYS

- 01 A verge which is contiguous with private gardens and which the highway authority agrees to adopt will require special attention to ensure that the rights of the highway authority and statutory undertakers and the public at large are fully understood by the purchaser of the adjacent property. Much can be done including careful landscaping to indicate that such a verge is part of the highway. Sett or cobble patches should be provided to contain stop cocks, hydrants etc.
- 02 One objective of open plan estates where service verges may occur is that householders will be encouraged to maintain the service verge. Therefore, whatever measures are taken to define the verges must not hinder maintenance by householders. However, purchasers must be made aware of the prohibition of building walls or fences and planting of any hedges trees or shrubs other than those included in the approved planting scheme, on the verge, and that the statutory undertakers may excavate their services within the service verge at any time.
- 03 While it is recognised that it is a matter for agreement between the developer and the purchaser it is strongly recommended that a suitable covenant is inserted in the conveyance to each purchaser. The following wording is recommended:-

"The Purchaser hereby covenants with the Vendor that he the Purchaser and his successors in title will not at any time hereafter erect or construct any building wall or

fence or plant any tree or shrub on the strip of land shown cross hatched on the plan annexed hereto nor do or suffer to be done therein or thereon any act, matter or thing whereby the cover or soil over or the support of the pipes, wires and/or cables laid or to be laid in the said strip of land shall be altered or which may render access therefore more difficult or expensive and shall understand that the highway authority, the statutory undertakers and the public at large have unencumbered right or access to the said strip of land."

SERVICE VERGES MUST BE SHOWN ON LAYOUT PLANS SUBMITTED FOR PLANNING PERMISSION AND ANY APPROVED PLANTING MUST BE FULLY ESTABLISHED BEFORE ADOPTION.

9.8 SEWERS AND DRAINS

- 01 The highway authority will adopt and maintain as highway drains those pipelines provided solely for the disposal of surface water from prospectively maintainable highways, provided that:
 - (a) where such drains are laid outside the limits of the maintainable highway suitable easements shall be negotiated by the developer, with such rights of easement being transferred to the Highway Authority on adoption of the roads.
 - (b) the outfall at the point of discharge of a drain is of sufficient capacity and free of any legal encumbrances.
- 02 The status of all other drains and sewers must be the subject of negotiation with District Councils or Regional Water Authorities.
- 03 The Highway Authority will not normally accept the laying of private drains and private sewers within the limits of either the existing highway or prospectively maintainable highway. Connections from individual properties to the existing Highway drains will not be permitted. Connections from individual properties to the public sewers are a matter for the Water Authority's Agents.

9.9 STRUCTURES SUPPORTING THE HIGHWAY

- 01 Structures to which the public have access or which support the Highway, whether to be adopted by the Highway Authority or maintained by another body, shall be designed and constructed in accordance with the procedures laid down in the County Council's Technical Approval Procedure for Developers Structures.
- 02 Structures supporting the highway but integral with properties will not normally be acceptable.
- 03 The Highway Authority will adopt and maintain structures which solely support the highway. Suitable access shall be provided for inspection and maintenance and where easements are required for this purpose these shall be negotiated by the developer and transferred to the Highway Authority on adoption of the structure.

Appendices

1. Paragraph 6.7 of PPG13 states 'Whatever the type of access, good visibility is essential.' The requirements for safe visibility splays at all junctions and accesses are fully detailed in Annex D of PPG13, however the following extracts will be of use in the design of estate roads.
 - * At eye level (defined as 1.05m above road level) there should be a clear view over the whole area shaded in Figure 1 below. At Informal Access Roads, Access Courts and Minor Access Ways visibility should be at 0.6m above road level.
 - * To determine the required visibility splay the appropriate 'Major Road Distance' and 'Minor Road Distance' should be established.
 - * All visibility splays should form part of the adoptable highway.

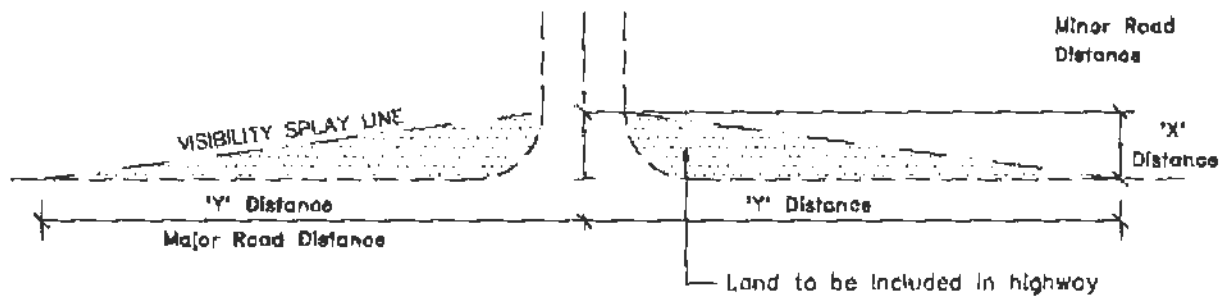


FIGURE 1

2. MINOR ROAD DISTANCE (X DISTANCE)

This is as follows:-

- 9.0m at junctions of ACCESS ROADS onto DISTRIBUTOR ROADS and at other heavily trafficked junctions.
- 4.5m at simple junctions within estates and at petrol stations and other busy private accesses.
- 2.4m desirable at minor accesses serving less than 6 dwellings
- 2.0m minimum at minor accesses serving less than 6 dwellings.

3. MAJOR ROAD DISTANCE (Y DISTANCE)

This depends on the speed of traffic on the major road, the appropriate distance being obtained from Tables A and B below.

TABLE A

Where the actual speed of traffic has been measured, the 85 percentile wet weather speed of traffic on the road should be used. To be measured in accordance with Department of Transport Advice Note TA 22/81. The actual speed or the next highest speed shown on the table is taken.

MAJOR ROAD SPEED (kph)	120	100	85	70	60	50	40	30
(mph)	75	62	53	44	37	31	25	19
MAJOR ROAD DISTANCE (metres)	295	215	160	120	90	70	45	33

TABLE B

Where the road is subject to a speed limit and no speed measurements have been taken.

SPEED LIMIT (mph)	70	60	50	40	30	20
MAJOR ROAD SPEED (metres)	295	215	160	120	90*	45*

* Includes an allowance for motorists travelling at 10kph above the speed limit

NOTE: The back line of the footway should follow the back line of the visibility splay where the splay is outside the standard footway.

- If the visibility splay lies partially within the major road carriageway it should be made tangential to the nearer edge of the major road running carriageway as shown in Figure 2 below.

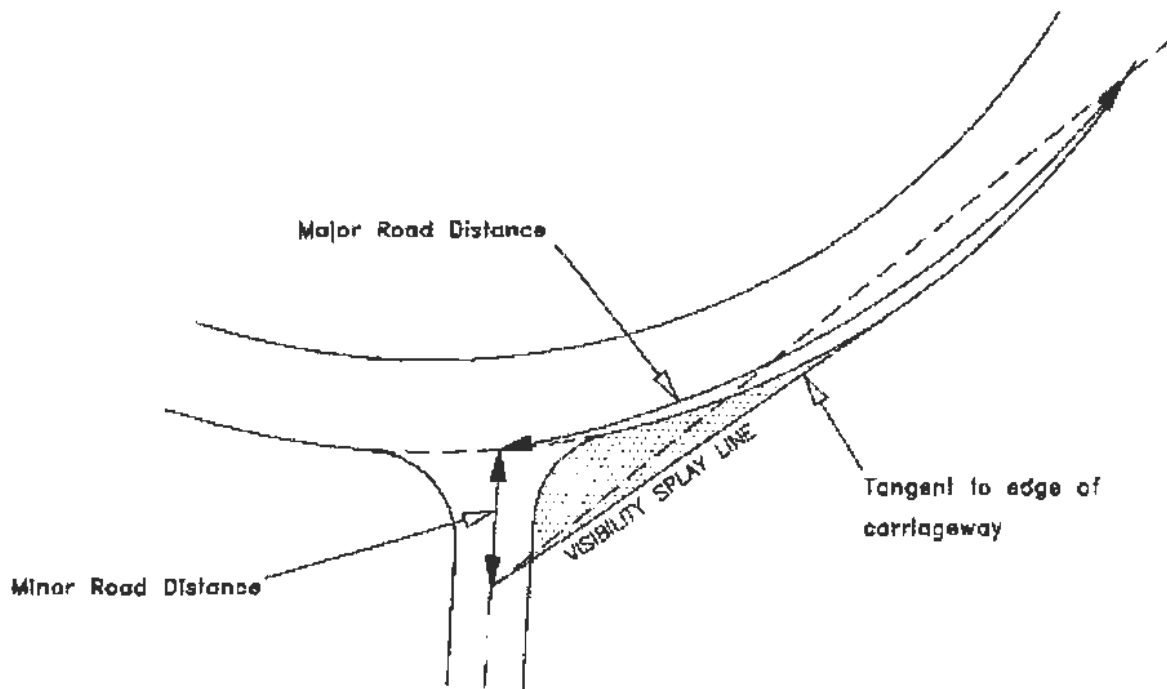
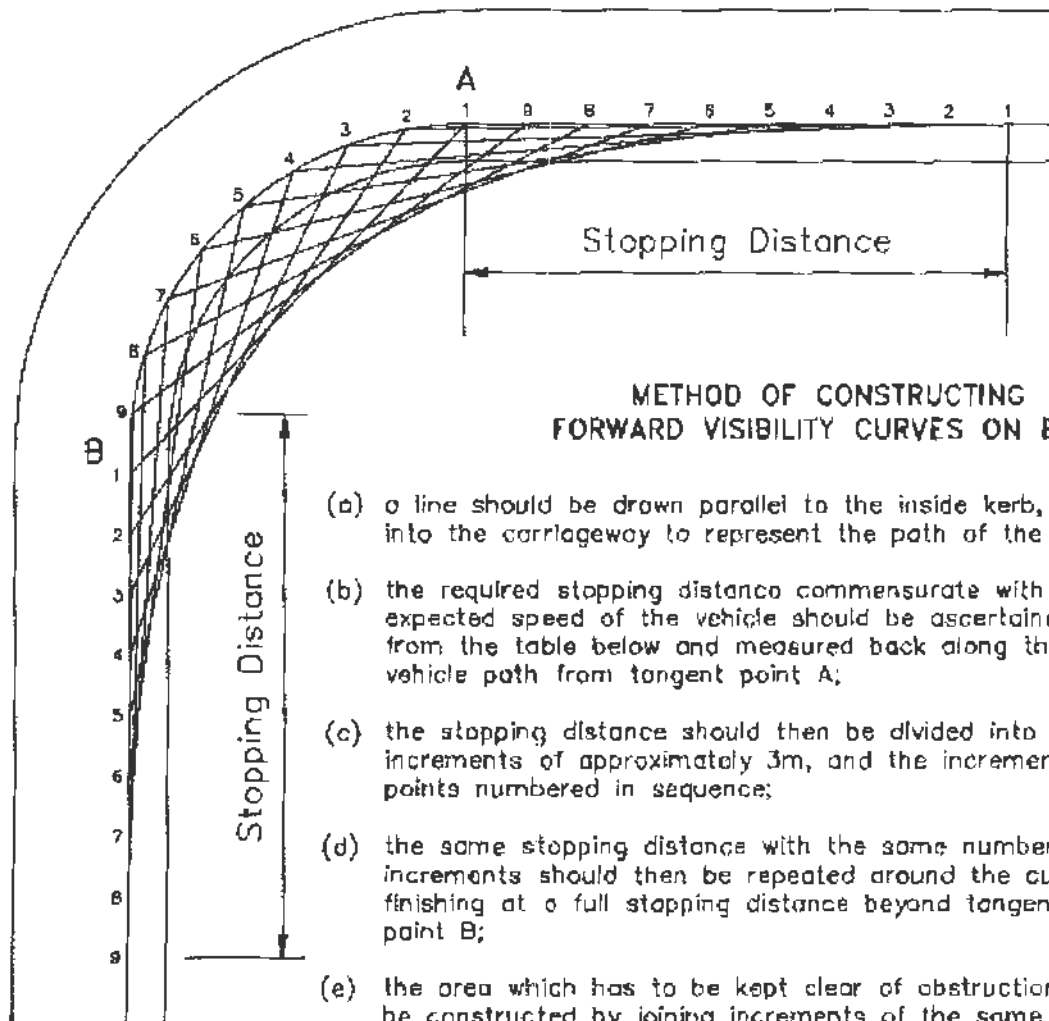
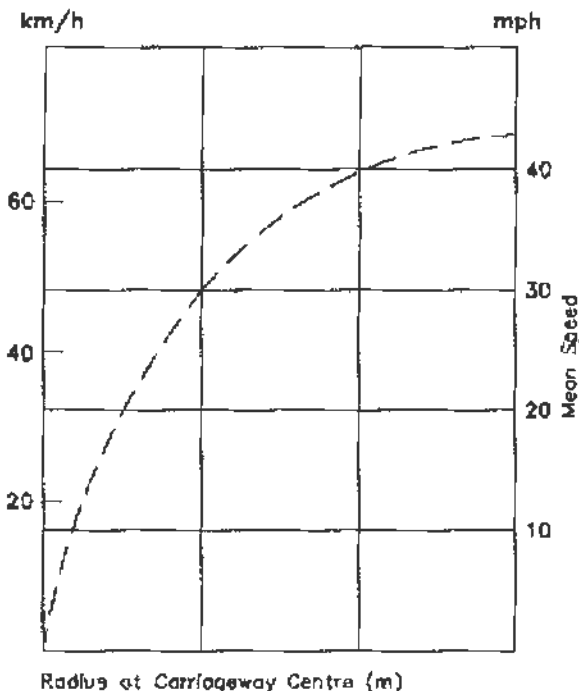


FIGURE 2



METHOD OF CONSTRUCTING FORWARD VISIBILITY CURVES ON BENDS

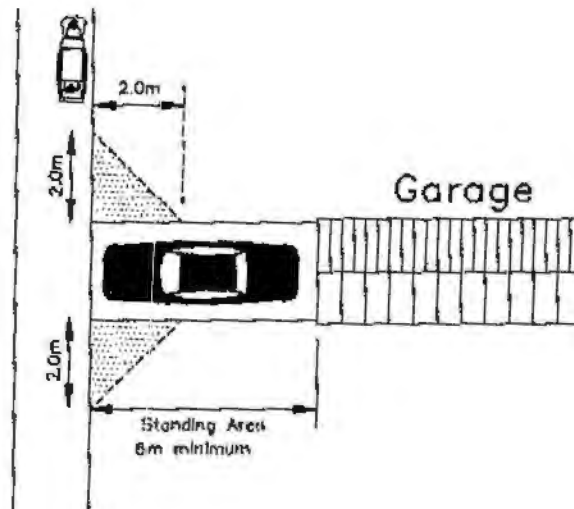
- (a) a line should be drawn parallel to the inside kerb, 1.5m into the carriageway to represent the path of the vehicle;
- (b) the required stopping distance commensurate with the expected speed of the vehicle should be ascertained from the table below and measured back along the vehicle path from tangent point A;
- (c) the stopping distance should then be divided into equal increments of approximately 3m, and the increment points numbered in sequence;
- (d) the same stopping distance with the same number of increments should then be repeated around the curve, finishing at a full stopping distance beyond tangent point B;
- (e) the area which has to be kept clear of obstruction should be constructed by joining increments of the same number together, i.e. 1 to 1, 2 to 2 etc.



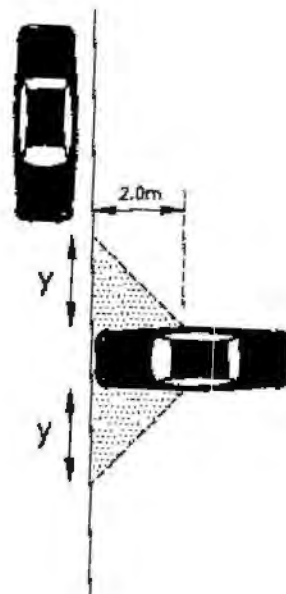
Speed						
0	5	10	15	20	25	30 mph
0	8	16	24	32	40	48 km/h
Stopping Distance (metres)						
0	6	14	23	33	45	60

It should be noted that this graph represents mean vehicle speeds only and as an additional safety factor it is recommended that 20% be added to these speeds when considering the stopping distances and the forward visibility which should be provided.

(i) Vehicle v. pedestrian - splays measuring 2.0m x 2.0m will be required.



(ii) Vehicle v. vehicle - The 'y' dimension will relate to the minimum stopping distance for the anticipated speed of oncoming vehicles in accordance with tables A & B Annex D of PPG13 dated March 1994



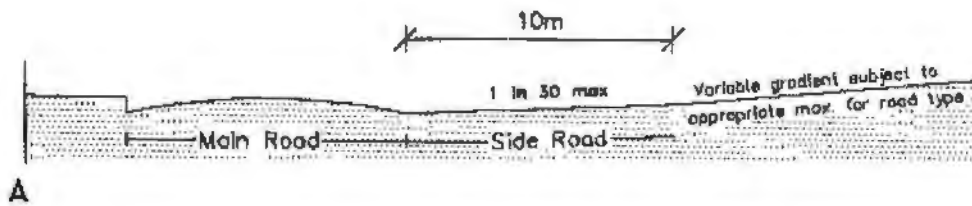
The shaded triangular areas must be kept clear of all obstructions exceeding 0.6m in height

<p>North Yorkshire County Council Highways & Transportation Department</p>	<p>Residential Highway Design Guide</p>	<p>VISIBILITY AT INDIVIDUAL ACCESSES</p>
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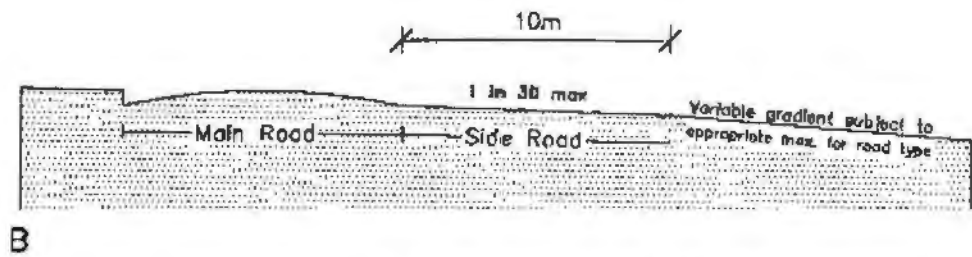
SIDE ROAD TYPE	MAIN ROAD TYPE						
	LOCAL DISTRIBUTOR	TRANSITION ROAD	MAJOR ACCESS ROAD	MINOR ACCESS ROAD	INFORMAL ACCESS ROAD	ACCESS COURT	MINOR ACCESSWAY
LOCAL DISTRIBUTOR	10.0	—	—	—	—	—	—
TRANSITION ROAD	10.0	—	—	—	—	—	—
MAJOR ACCESS ROAD	10.0	10.0	10.0	—	—	—	—
MINOR ACCESS ROAD	10.0	—	6.0	6.0	—	—	—
INFORMAL ACCESS ROAD	10.0	—	6.0	6.0	4.0	4.0	—
ACCESS COURT	10.0	—	6.0	6.0	4.0	4.0	—
MINOR ACCESSWAY	—	—	—	4.0	4.0	4.0	—

(Radii given in metres)

(Centre Line Radius)	MINIMUM WIDENING OF CARRIAGEWAY ON BEND
UP TO 20m	0.60m
21 – 30m	0.40m
31 – 40m	0.35m
41 – 50m	0.25m
50 – 60m	0.20m
61 – 80m	0.15m

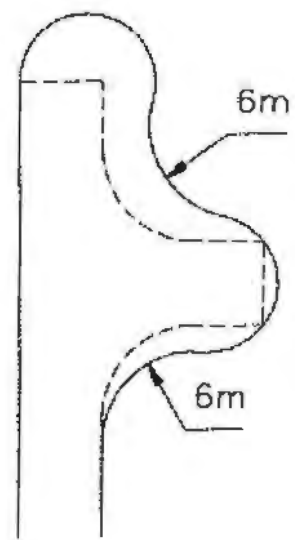
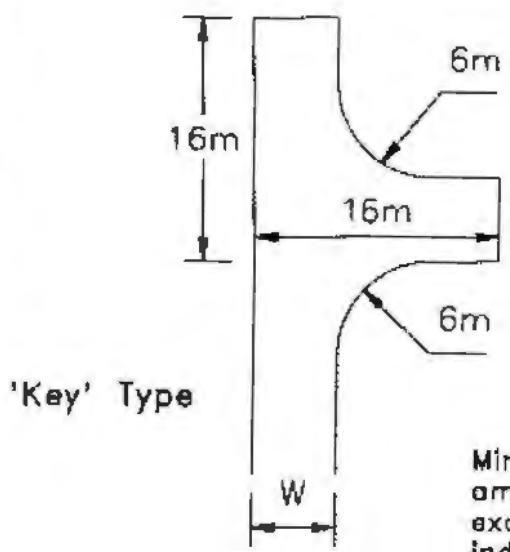
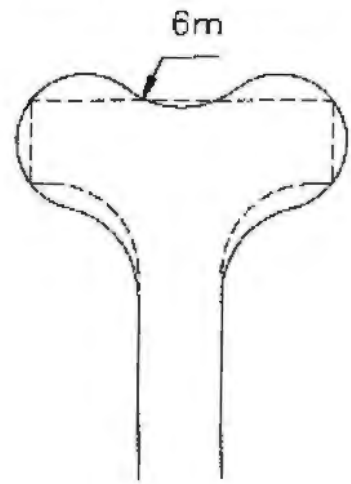
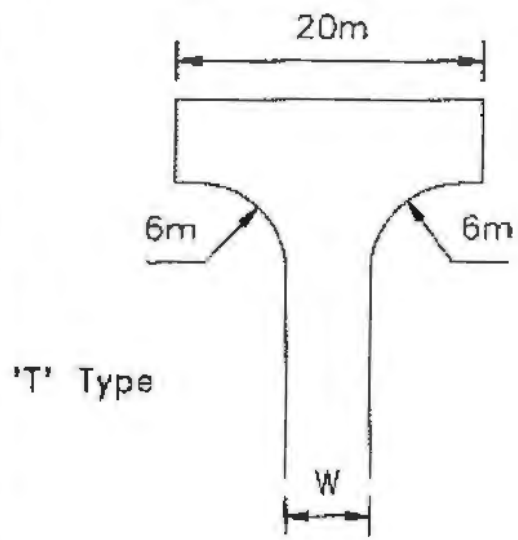


Side road on rising ground

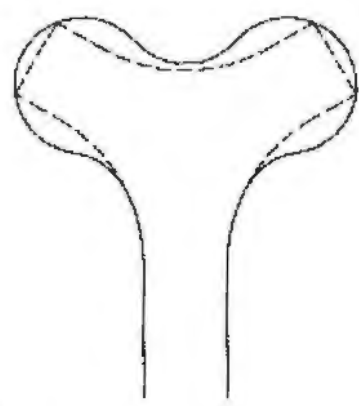
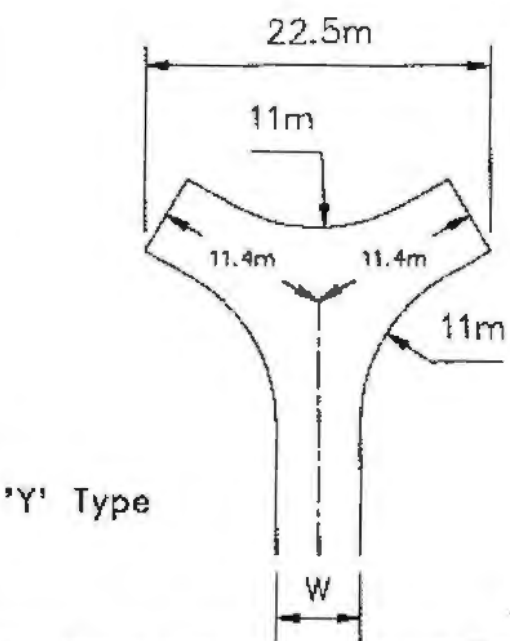


Side road on falling ground

(i) Basic Dimensions and Layouts (ii) Acceptable Variations

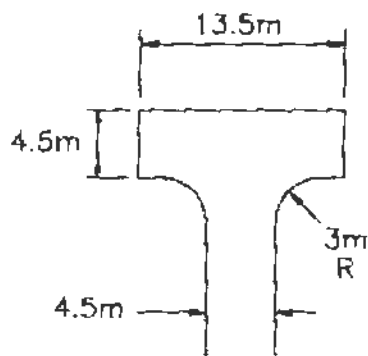


Minimum kerb radius to amorphous shapes 4.5m except where otherwise indicated.

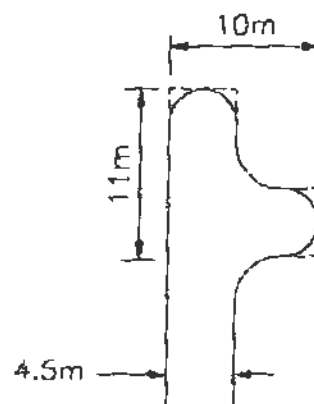
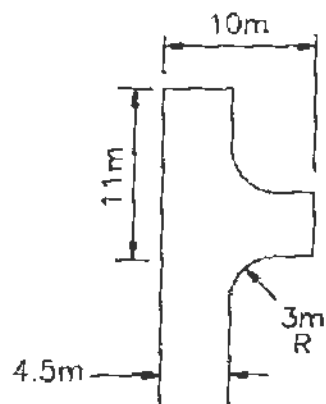
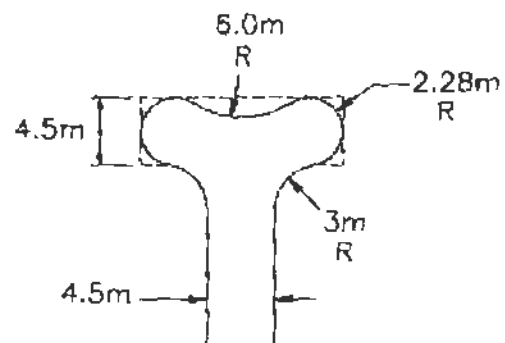


Scale 1/500

(i) Basic Dimensions and Layouts



(ii) Acceptable Variations



Scale 1/500

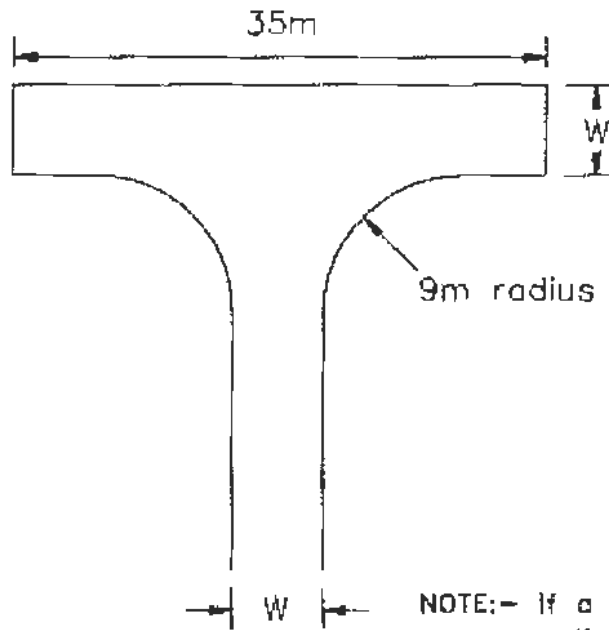
MINOR ACCESS WAYS

These examples of car ways show the minimum dimensions to allow the turning of a car as shown in Design Bulletin 32. Extra space or widening should be incorporated to provide at least one casual parking space.

Because of the small radii employed in the layout of car ways, statutory undertakers cannot generally lay their services round them as is usual. Approval of the statutory undertakers must be sought and/or acceptable routes agreed for services.

<p>North Yorkshire County Council Highways & Transportation Department</p>	<p>Residential Highway Design Guide</p>	<p>TURNING SPACE REQUIREMENTS RESIDENTIAL ESTATES</p>
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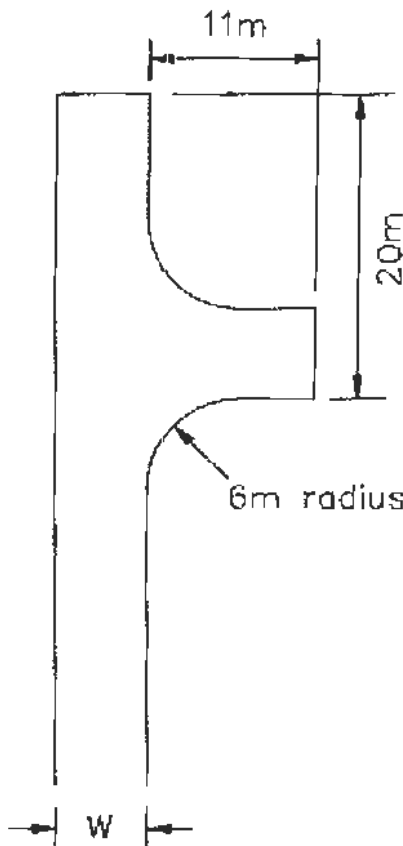
'T' Type



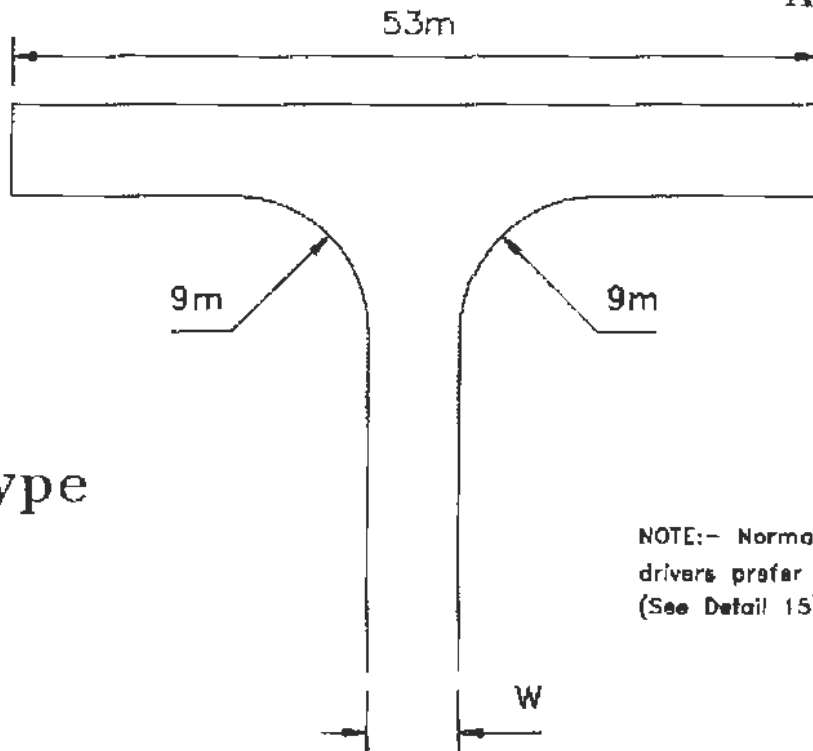
NOTE:- If a 35m hammerhead is used, articulated vehicles will not be able to use it.

MINIMUM REQUIREMENTS FOR RIGID VEHICLES

'Key' Type



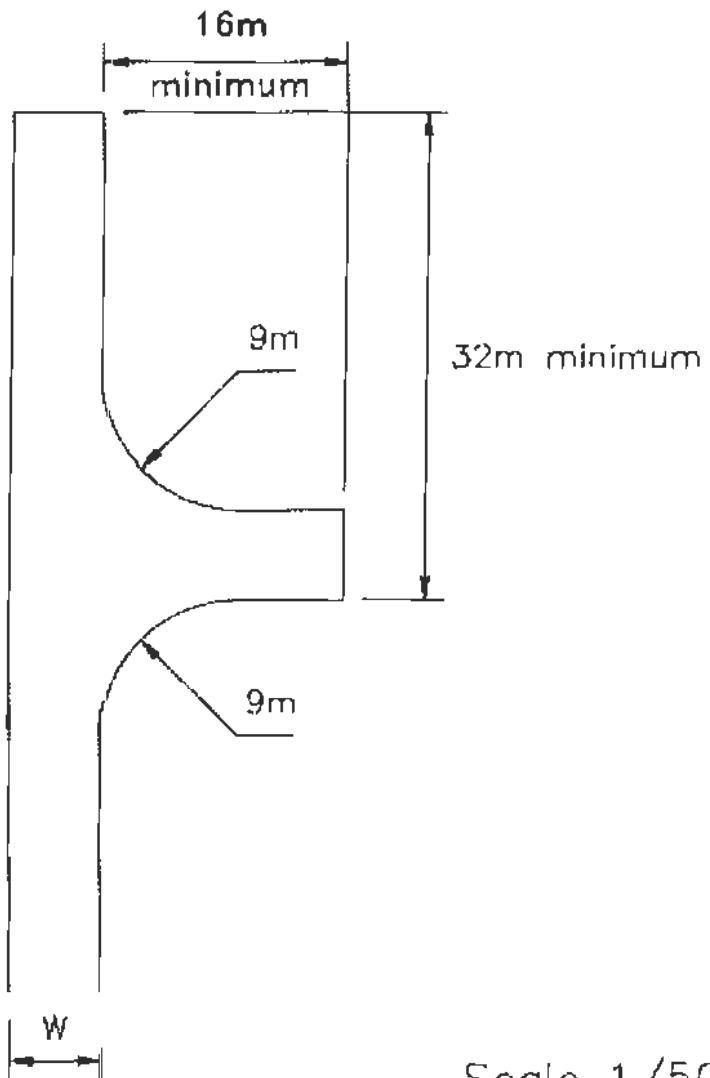
Scale 1/500



'T' Type

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

MINIMUM REQUIREMENTS FOR ARTICULATED VEHICLES



'Key' Type

Scale 1/500

APPENDIX H

APPROVED PLANTING

SCHEDULE OF SHRUBS

Botanical Name	Common Name	Height(m)
Berberis candidula	Barberry Family	0.5
Berberis thunbergii "Atropurpurea 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 procumbens	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
Juniperus horizontalis		0.5
Lavandula spica "Hidcote"	Lavender	0.5
Pachysandra terminalis		0.5
Rosa "Max Graf"		0.5
Vinca major (in variety)	Greater Periwinkle	0.3
Vinca minor (in variety)	Lesser Periwinkle	0.3

APPENDIX H continued

SUGGESTED TREES FOR PLANTING IN RESIDENTIAL HIGHWAY VERGES

NARROW VERGES upto 3m wide

Betula pendula	(Silver Birch)
Crataegus laevigata	(Hawthorn)
Prunus padus	(Wild Cherry/Gean)
Sorbus intermedia	(Swedish Whitebeam)
Sorbus aucuparia	(Rowan)

WIDE VERGES upto 6m wide

Acer lobelii	(Lobel's Maple)
Alnus cordata	(Alder)
Tilia euchlora	(Lime)

APPENDIX J1

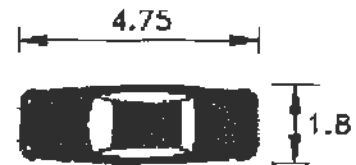
ON SITE PARKING STANDARDS

DWELLING TYPE	PARKING REQUIREMENT	
5 or more bedrooms	Residents visitors	2 garage spaces on plot 2 parking spaces on plot
4 bedrooms	Residents visitors	1 garage spaces on plot 2 parking space on plot
2 or 3 bedrooms	Residents visitors	1 garage spaces on plot 1 parking space on plot
1 bedroom space/2 flats on/near plot	Residents	1 garage space on/near plot visitors 1
Flat conversions/ Bedsitters Houses in multiple occupation	Residents and Visitors	1 parking space/bedroom
Frail Elderly/ nursing homes (restricted to age 60/65+)	Staff	1 space/resident member of staff 1 space/2 non resident staff
	Visitors	1 space/5 resident old people
Sheltered accommodation (restricted to age 60/65+ & 1 bedroom units)	Staff	1 space/resident member of staff 1 space/2 non resident staff
	Residents/ visitors	1 space/2 units
Semi-retirement (self contained units)	Staff Residents/ visitors	1 space/resident member of staff 1 space/ unit

APPENDIX J2

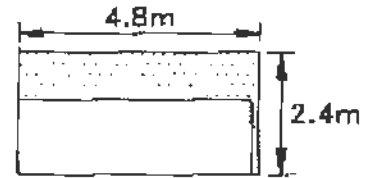
'Standard' Car Size

99% of all new cars will fit within the dimensions of a rectangle 4.75m x 1.8m



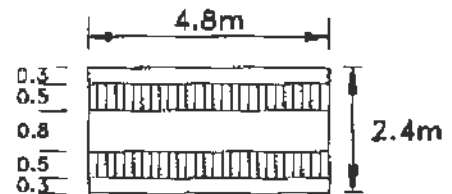
'Standard' Car Parking Space

A minimum space of 4.8m x 2.4m is required for hardstandings, car ports and the internal dimension of garages. The standard dimension of 4.8m x 2.4m must only be used as a general minimum (16ft. x 8ft.)



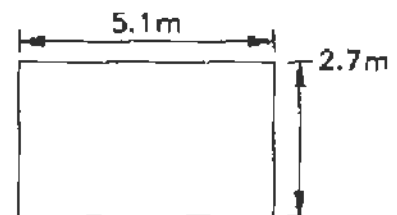
Basic Hardstanding

for a "standard car" excluding working space for individual plots



Basic

- Convertible hardstanding
- Convertible car port
- Attached garage
- Detached garage
- Group hardstandings (convertible to garages later)

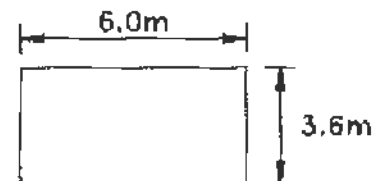


NOTES

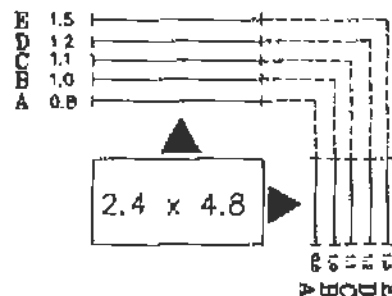
- a. Dimensions of convertible hardstandings include allowance for wall thickness
- b. Slab dimensions are the absolute minimum for garages and larger sizes will be to provide working space
- c. Add from 0.6m in length x 1.0m in width to 1.5m in length and 1.5m in width for working space
- d. In special case of garages or car ports for the semi-ambulant, see "Designing for the Disabled" by Selwyn Goldsmith RIBA

Car Working Space

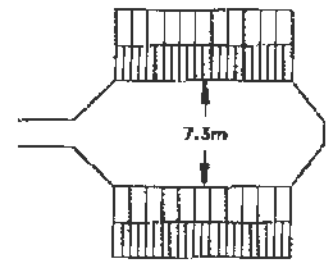
For practical purposes "standard car" parking spaces need to be increased to accommodate working areas - e.g. for washing and storage space



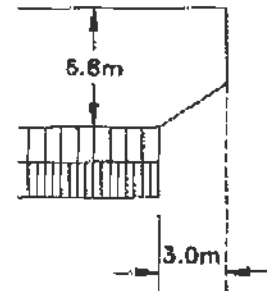
- A - Working surface and minimum clearance
- B - Door opening from dwelling
- C - Washing and cleaning
- D - Washing and storage space
- E - As D, with space for kneeling



Manoeuvring space between walls or garages
 min. 7.3m – up to 9.0m desirable
 To allow for opening lock up doors and
 cars parked outside

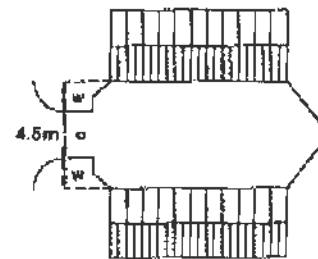


Manoeuvring space between garage and opposite
 kerb



Manoeuvring space at end of forecourt aisles 3.0m

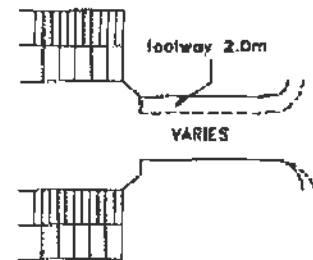
Garage forecourts need to be kept as visually
 unobtrusive as possible
 The provision of screening by layout or by
 screen wings (w) may be required.



Accessway Widths To Garage Courts

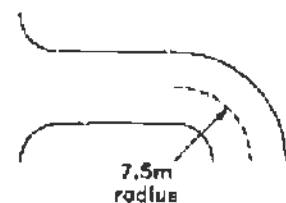
Total spaces*	Widths
(a) Up to 6	2.5m
(b) 7-16	4.5m
(c) Over 16	5.0m

*Garages and hardstandings
 For service vehicles to mews area 4.5m



RADIUS

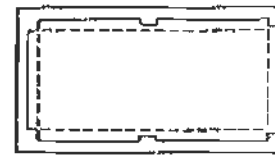
For access ways up to 16 spaces a minimum
 centre line radius of 7.5m
 For access ways over 16 spaces radius to be
 designed for 10mph and forward visibility
 provided accordingly
 Washing areas should be sited clear of the
 vehicular access and parking area



Individual Garage

The MINIMUM internal size is
4.8m x 2.4m

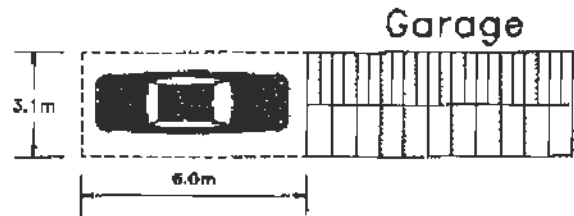
THROUGH garages—with doors back and front
are strongly recommended when this can give
access for additional rear cutilage parking



Parking Space In Front Of A Garage

Allow a minimum of 6m space for minimum
working at rear, up and over door clearance
at front

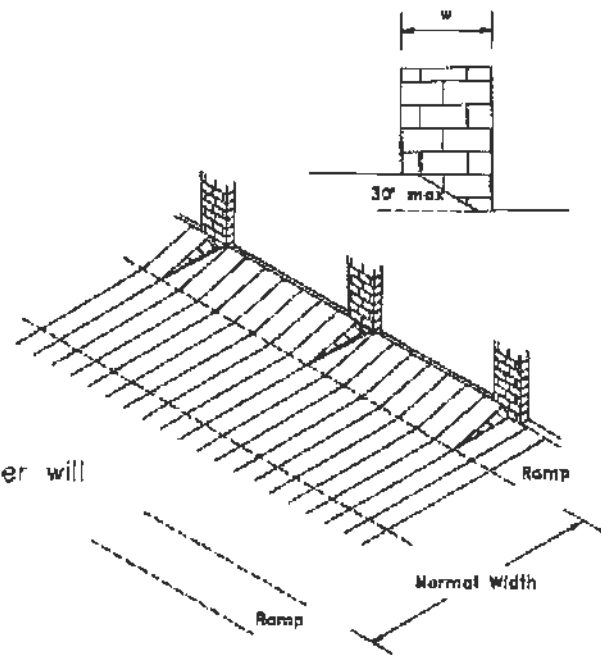
This space MUST NOT lie within
future highway limits



Grouped Garages On Sloping Sites

Where garages are sited across contours
they may need to be wider than normal
to accommodate wider piers

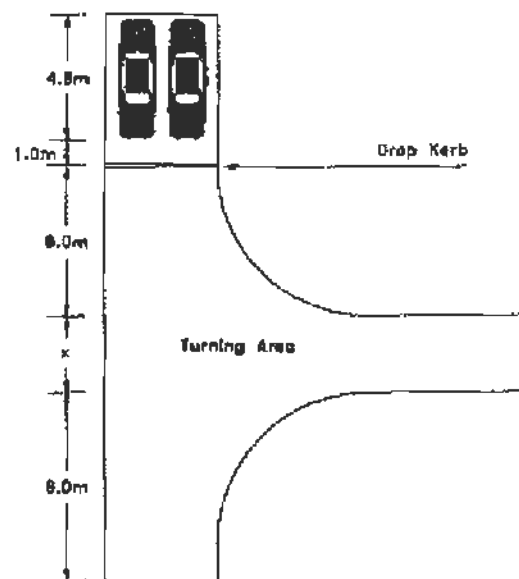
The manoeuvring space in a garage forecourt
will need to be wider than the minimum to
accommodate a short ramp

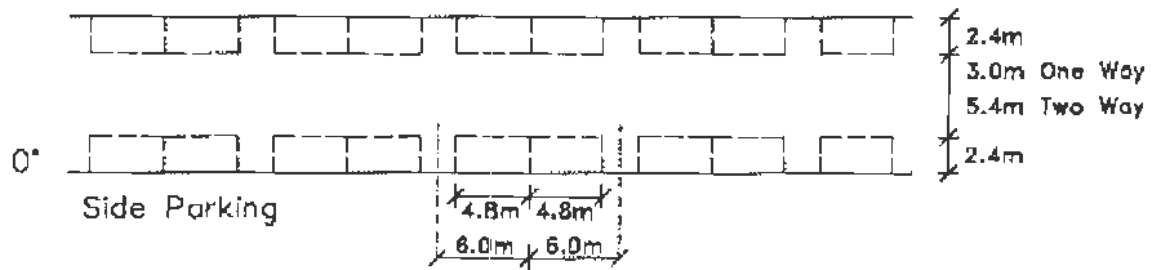


The length of a ramp and width of pier will
depend on the slope of the forecourt

**Parking Space Abutting
Turning Areas**

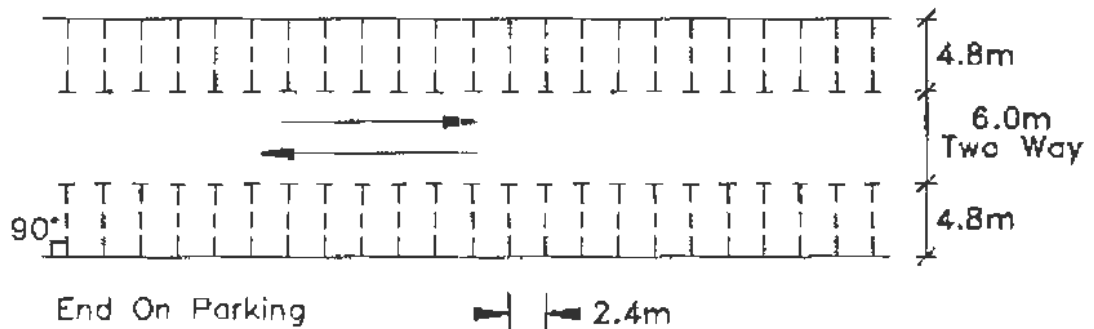
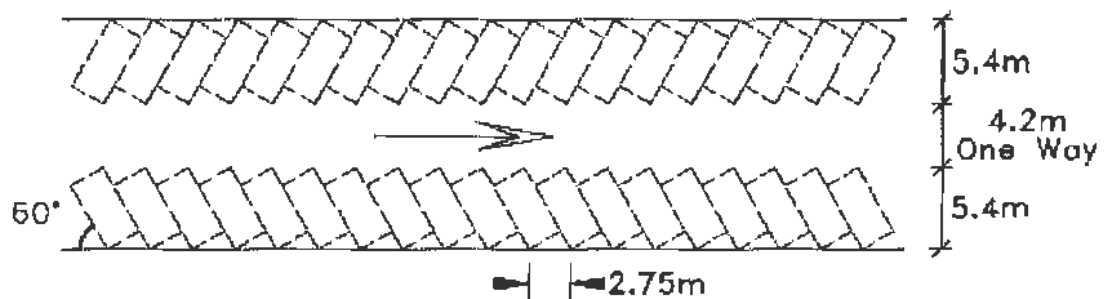
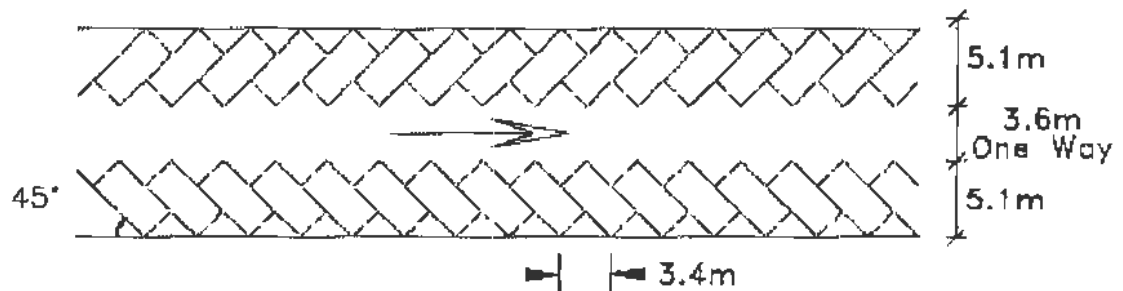
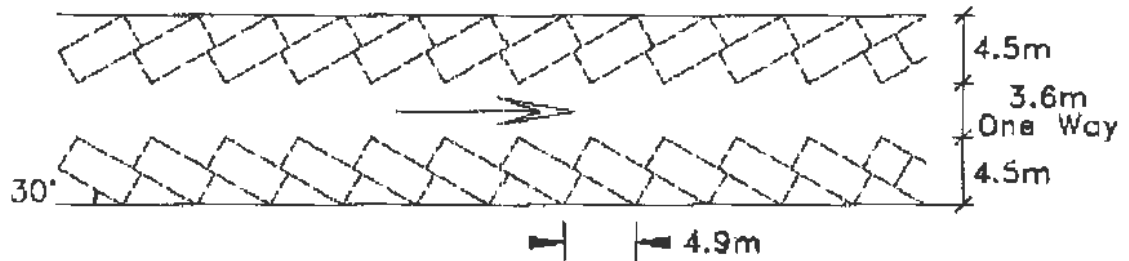
Parking bays will need to be lengthened where
they abut turning areas and provide with a
drop kerb to act as a distance stop
This will enable large vehicles to turn properly



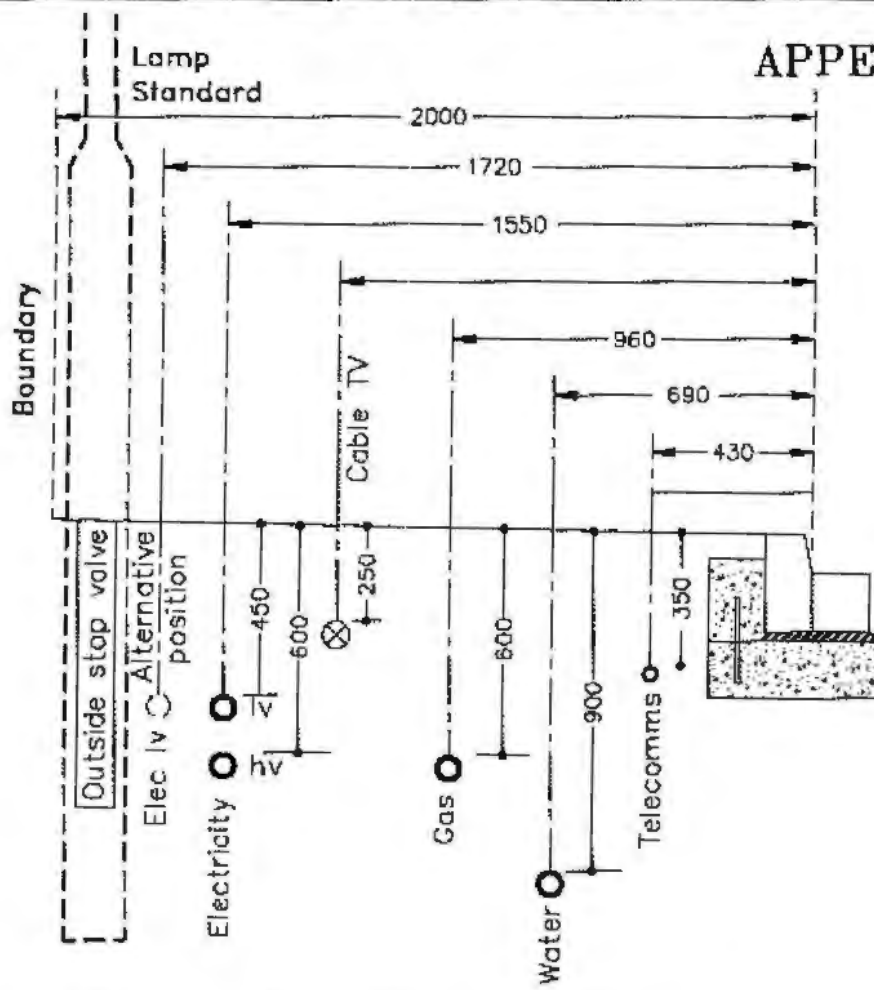


Alternative Parking Layouts

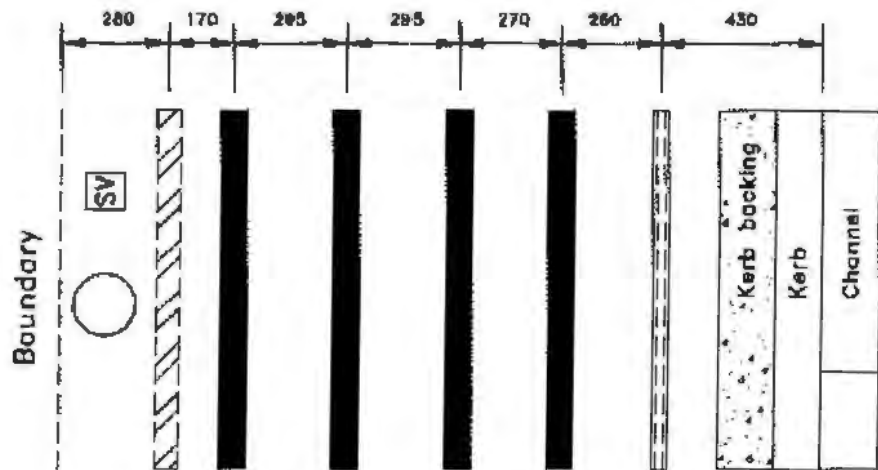
N.B. These arrangements are not normally acceptable adjacent to highways



SECTION



PLAN

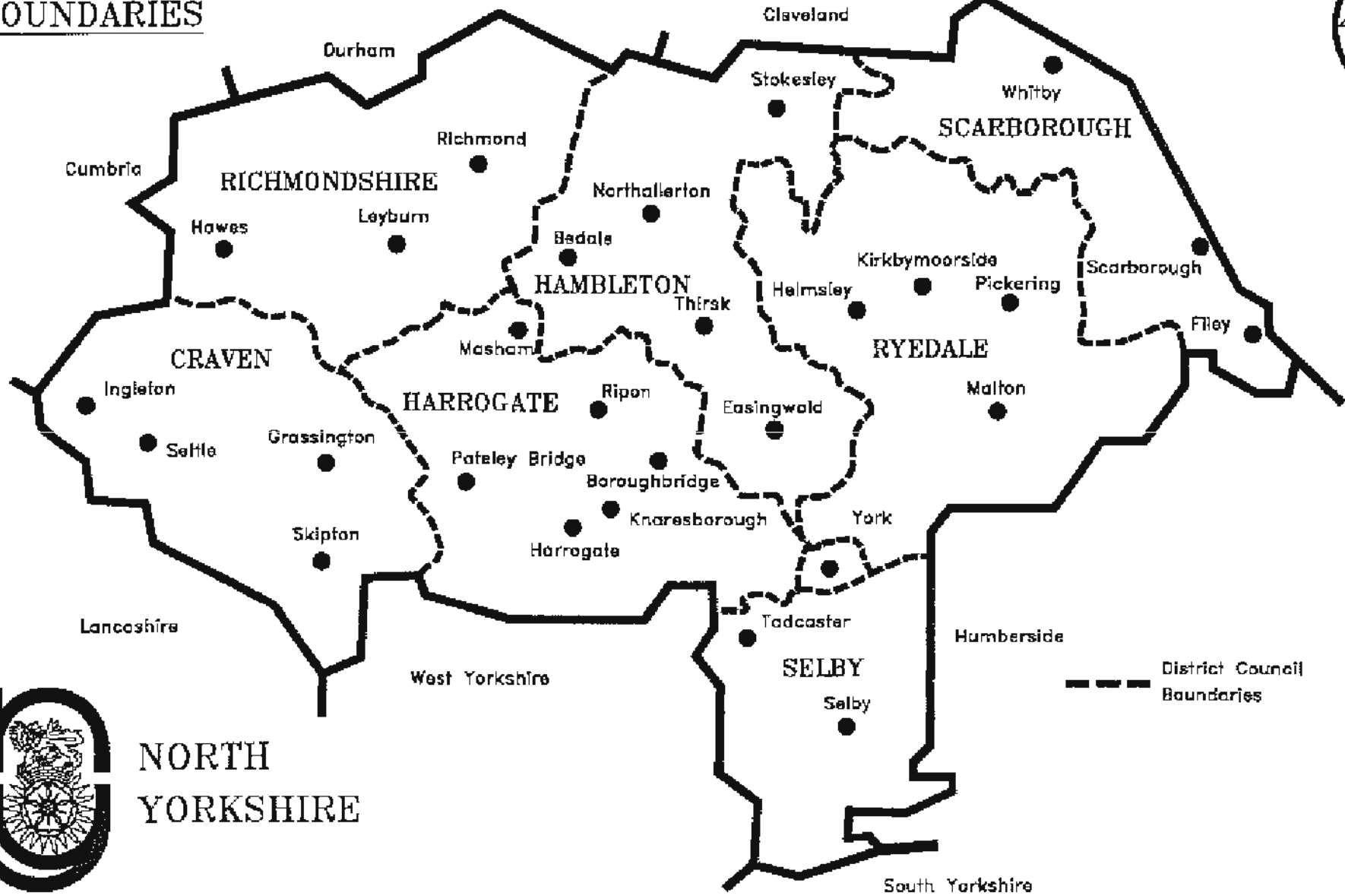


DIMENSIONS IN MILLIMETRES

NOTES

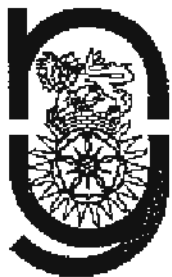
1. The layout of Mains is generally in accordance with the "Report of Joint Committee on Location of Underground Services" published by the Institution of Civil Engineers.
2. The dimensions shown represent the preferred arrangement in straight routes on residential estates. Variations may be necessary 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.

COUNTY AND DISTRICT
BOUNDARIES



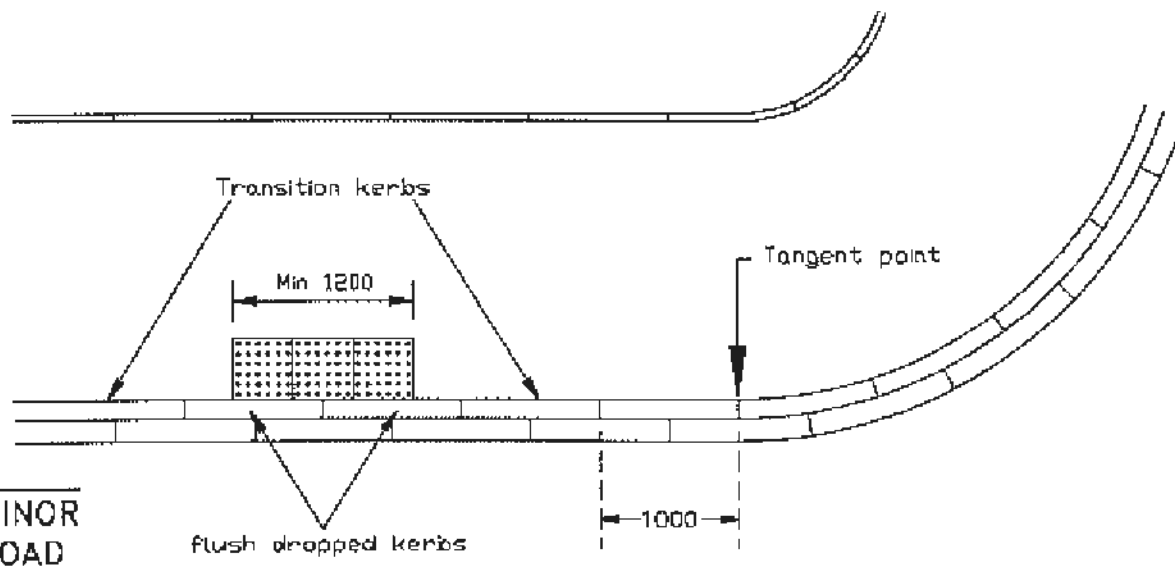
10-20

10/8/94



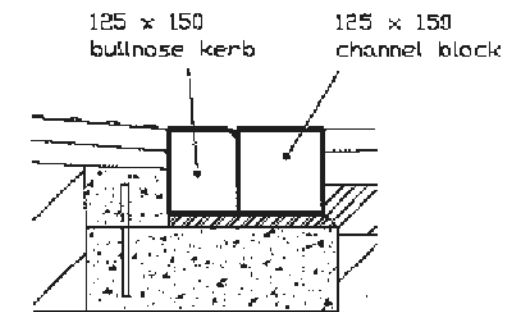
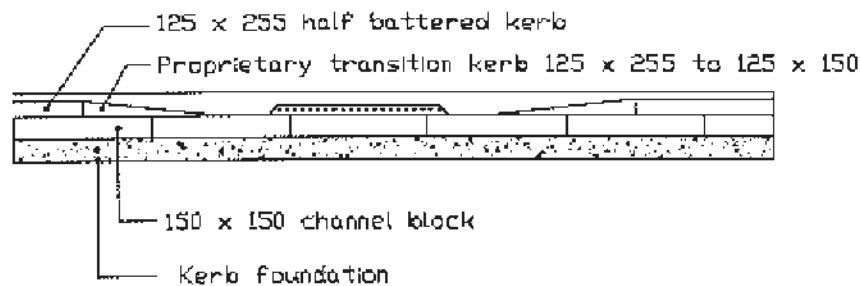
NORTH
YORKSHIRE

APPENDIX I



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 accordance with Clause 4.7 and the recommendations given in Disability Unit Circular 1/91 published by the Department of Transport.
3. Tactile paving slabs shall be aligned to indicate the direction of travel to the opposite crossing point.

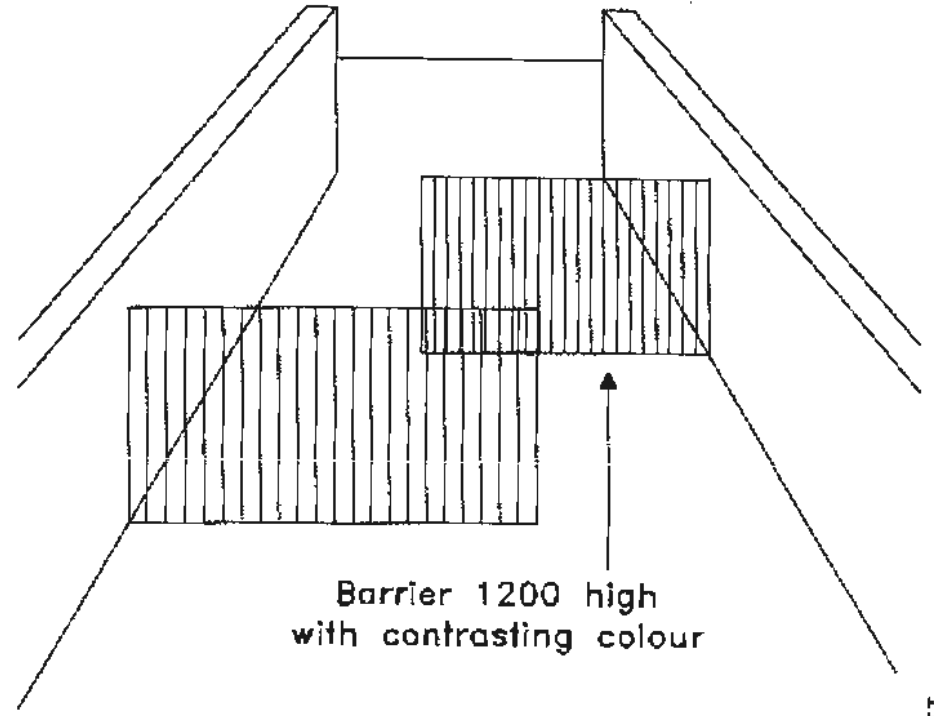
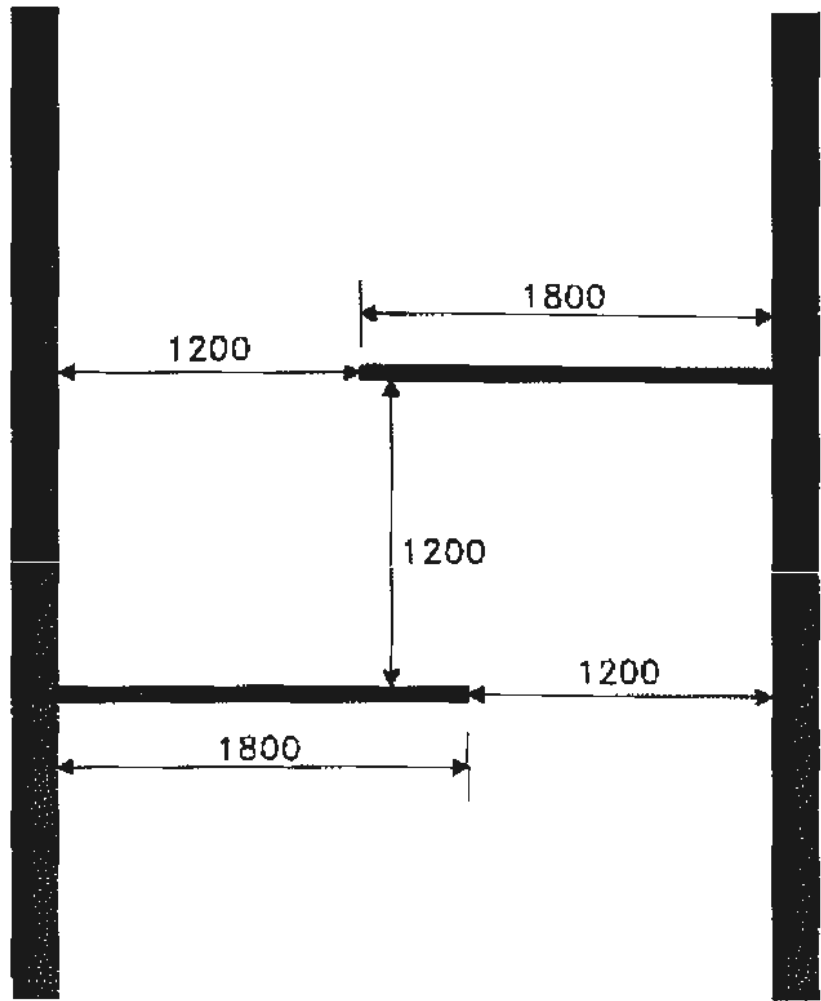


Dropped kerb & channel

(All dimensions in millimetres)

Do Not Scale

APPENDIX M



10-22

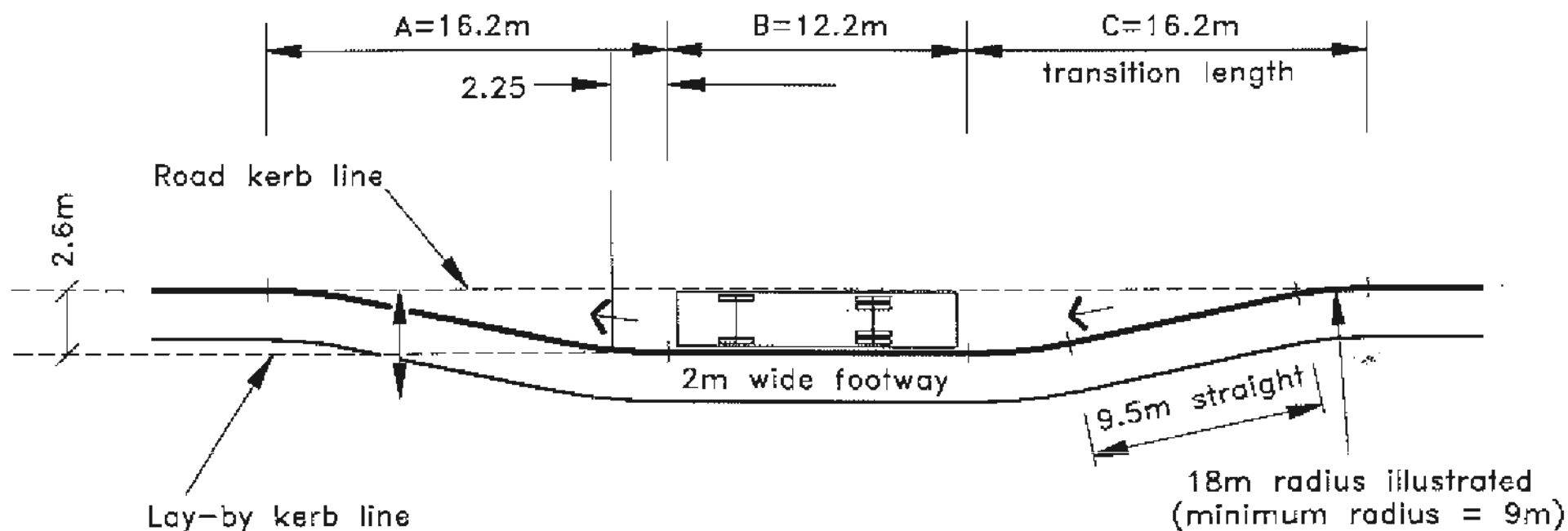
10/8/94

North Yorkshire County Council
Highways & Transportation
Department

Residential Highway
Design Guide

Staggered barrier layout for
footpaths and footways

APPENDIX N



Design criteria for a lay-by with one bus stop, assuming normal urban speeds of 16.2m is considered the minimum requirement for a 12m rigid vehicle.

A three bus stop is considered the desirable maximum in a lay-by (i.e. maximum comfortable boarding distances for passengers to walk).

When setting out alternative layouts for lay-bys, overall length should be calculated as $A + (x)B + C$, where x is the number of buses to be accommodated.

LIST OF CONSULTEES

NORTH YORKSHIRE COUNTY COUNCIL:-
COUNTY PLANNING OFFICER
COUNTY FIRE OFFICER
DIRECTOR OF PROPERTY SERVICES
CRAVEN DISTRICT COUNCIL
HAMBLETON DISTRICT COUNCIL
HARROGATE BOROUGH COUNCIL
RICHMONDSHIRE DISTRICT COUNCIL
RYEDALE DISTRICT COUNCIL
SCARBOUOUGH DISTRICT COUNCIL
SELBY DISTRICT COUNCIL
YORK CITY COUNCIL
NORTH YORKSHIRE MOORS NATIONAL PARK
YORKSHIRE DALES NATIONAL PARK
DEPARTMENT OF THE ENVIRONMENT
DEPARTMENT OF TRANSPORT
NORTH YORKSHIRE POLICE
NORTH YORKSHIRE AMBULANCE SERVICE
ASSOCIATION OF MUNICIPAL ENGINEERS
INSTITUTION OF CIVIL ENGINEERS
INSTITUTION OF HIGHWAYS AND TRANSPORTATION
NATIONAL HOUSE-BUILDING COUNCIL
HOUSE BUILDERS FEDERATION
ROYAL INSTITUTE OF BRITISH ARCHITECTS
ROYAL INSTITUTION OF CHARTERED SURVEYORS
ROYAL TOWN PLANNING INSTITUTE
BRITISH GAS
BRITISH TELECOM
MERCURY COMMUNICATIONS
NORTHUMBRIAN WATER
NORTHERN ELECTRIC
YORK WATERWORKS plc
YORKSHIRE ELECTRICITY
YORKSHIRE WATER
ENGLISH HERITAGE
THE CIVIC TRUST

DRAINAGE DESIGN

The following standards should be applied when designing highway drainage. However, where a sewer is to be adopted by the Water Authority their advice should be sought on the appropriate design criteria.

FREQUENCY OF STORM:-	ONCE A YEAR
MINIMUM DURATION OF STORM:-	8 MINUTES
MAXIMUM INTENSITY:-	40,5 mm/hr
TIME OF ENTRY:-	3 MINUTES
DESIRABLE MINIMUM VELOCITY:-	1,0 m/s
ABSOLUTE MINIMUM VELOCITY:-	0,6 m/s
MINIMUM GRADIENT:-	1/200
ROUGHNESS COEFFICIENTS (K):-	
for carrier drains	0,15
for french drains	0,3
MINIMUM PIPE DIAMETER:-	150 mm
RUN-OFF:-	
FOR PAVED AREAS	100%
FOR VERGES AND PLANTED AREAS	50%
MAXIMUM DRAINED AREA FOR GULLIES:-	150m ²
MINIMUM CHANNEL GRADIENT	
Generally	1 in 100
With tilted channels	1 in 200
MINIMUM GRADIENT FOR BLOCK PAVING	1 in 100

VERTICAL CURVES

To ensure reasonable standards of comfort and to provide appropriate visibility at summits vertical curve should be of adequate length. The minimum length of curve provided should be derived from TABLE 1 using the formula:-

$$L = KA$$

where L is the curve length in metres
 A is the algebraic difference in gradients expressed as a percentage)
 K is selected from TABLE 1

TABLE 1

Design Speed mph	Minimum K Value	Minimum Curve Length (m)
30	6.5	30
20	1	20

REFERENCES

- 1 RESIDENTIAL ROADS AND FOOTPATHS - LAYOUT CONSIDERATIONS,
DESIGN BULLETIN 32 (SECOND EDITION)
Departments of Transport and Environment, April 1992
- 2 PLANNING POLICY GUIDANCE: TRANSPORT, PPG 13
Departments of Environment and Transport, March 1994
- 3 ROADS AND TRAFFIC IN URBAN AREAS
Institution of Highways and Transportation with the Department of Transport, 1987
- 4 RYEDALE HOUSING DESIGN GUIDE
Colin Buchanan and Partners, 1994
- 5 SPECIFICATION FOR HOUSING AND INDUSTRIAL ESTATE ROADS AND
PRIVATE STREET WORKS
North Yorkshire County Council
- 6 PARKING DESIGN GUIDE
North Yorkshire County Council
- 7 THE HIGHWAYS (ROAD HUMPS) REGULATIONS 1990
Department of Transport
- 8 CIRCULAR ROADS No 3/90 ROAD HUMPS.
Department of Transport
- 9 TRAFFIC ADVISORY LEAFLET 2/90 ROAD HUMPS.
Department of Transport
- 10 TD36/93 PEDESTRIAN AND CYCLE SUBWAYS
Department of Transport
- 11 TA 22/81. VEHICLE SPEED MEASUREMENT ON ALL PURPOSE ROADS
Department of Transport
- 12 DISABILITY UNIT CIRCULAR 1/91, THE USE OF DROPPED KERBS AND
TACTILE SURFACES AT PEDESTRIAN CROSSING POINTS
Department of Transport
- 13 TRAFFIC ADVISORY LEAFLET 1/90, A CYCLING BIBLIOGRAPHY
Department of Transport
- 14 LOCAL TRANSPORT NOTE 1/91, KEEP BUSES MOVING
Department of Transport

- 15 CIRCULAR ROADS 3/93, STREET NAME PLATES AND THE NUMBERING OF PREMISES
Department of Transport
- 16 CIRCULAR ROADS 7/75, SIZE DESIGN AND MOUNTING OF TRAFFIC SIGNS
Department of Transport
- 17 TRAFFIC SIGNS REGULATIONS AND GENERAL DIRECTIONS 1994
Department of Transport
- 18 TRAFFIC SIGNS MANUAL
Department of Transport
- 19 REVISED GUIDELINES FOR REDUCING MOBILITY HANDICAPS: TOWARDS A BARRIER FREE ENVIRONMENT
The Institution of Highways and Transportation
- 20 TRAFFIC MANAGEMENT POLICY
Fire and Rescue Service, North Yorkshire County Council
- 21 RESPARK
Fire and Rescue Service, North Yorkshire County Council
- 22 RECOMMENDED POSITIONING OF UTILITIES' MAINS AND PLANT FOR NEW WORKS
NJUG Publication No 7 December 1986
- 23 TRAFFIC MEASURES IN HISTORIC TOWNS A GUIDE TO GOOD PRACTICE
The Civic Trust/ English Heritage Towns Forum