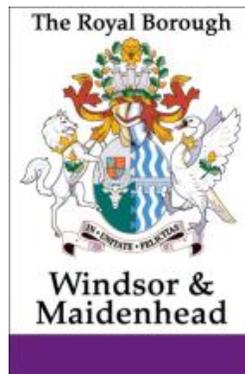


HIGHWAY DESIGN GUIDE
Royal Borough of
Windsor and Maidenhead

HIGHWAY DESIGN GUIDE
&
PARKING STRATEGY (2004)



AUGUST 2010

HIGHWAY DESIGN GUIDE

1

PRINCIPLES AND RESPONSIBILITIES

CONTENT

- 1.1 Purpose and Format
- 1.2 Role of the Highway Authority
- 1.3 Road Hierarchy
- 1.4 Fitting Developments into the existing highway network
- 1.5 Highway Agreements
- 1.6 Adoption of Highways
- 1.7 Provision for Public Transport
- 1.8 Provision for Cyclists
- 1.9 Provision for Pedestrians
- 1.10 Provision for mobility impaired people
- 1.11 Conservation Areas
- 1.12 Highway Structures
- 1.13 Statutory Undertakers' Mains and Plant
- 1.14 References

HIGHWAY DESIGN GUIDE

1.1

PURPOSE AND FORMAT

This Guide is intended for developers, their advisors and the members of the Royal Borough of Windsor and Maidenhead.

Its principle aims are to achieve high standards of highway design whilst making a clear statement of requirements for the layout of the highway elements of development. By this means it is hoped that the planning process will be streamlined.

The Guide is in six parts:

Part 1

Explains the process of Development Control as it relates to highway matters and gives details of whom to contact. It also sets out the essential requirements of the Highway Authority and in each case explains which other part of the Design Guide should be referred to for more information.

Parts 2, 3 and 4

Covers primarily layout and design standards.

Part 5

Covers vehicle parking requirements

Part 6

Appendices

HIGHWAY DESIGN GUIDE

1.2

ROLE OF THE HIGHWAY AUTHORITY

The Royal Borough of Windsor and Maidenhead is the Highway Authority for all highways within the borough other than the trunk roads and motorways, which are of national significance and are the responsibility of the Department of Transport.

The Department of Transport is consulted on those planning applications which have a direct effect (or indirect but material effect) on trunk roads and / or motorways, it has the statutory power to give directions to local planning authorities to restrict the grant of permission for development of land requiring a new or altered access to trunk roads with a speed limit above 40mph in force, and to motorways.

The Royal Borough of Windsor and Maidenhead carries out, within the Council, its responsibilities as the Highway Authority. In relation to control of development these responsibilities are: -

- Setting standards for the layout of development regarding parking and movement of motor vehicles, provision for pedestrians and cyclists.
- Giving advice to the local planning authorities on Highway aspects of planning applications.
- Administering the process of adopting new estate roads and footpaths.
- Maintenance of existing and provision of new highways.

The Highway Assets Group and Streetcare Services provide highway maintenance within the Borough.

It should be noted that the maintenance authority ensures that the existing highways are maintained in a state of good repair during the course of the development.

HIGHWAY DESIGN GUIDE

1.2

ROLE OF THE HIGHWAY AUTHORITY

Where development abuts the existing highway the Developer will be expected to contact the maintenance authority before construction commences. Reinstatement of any damage to kerbs, footways or verges is the responsibility of the Developer. Licences for work carried out within the highway limits will normally be obtained from Street Care Services.

HIGHWAY DESIGN GUIDE

1.3	ROAD HIERARCHY
------------	-----------------------

The Highway Authority attaches great importance to making sure that new roads are built to suit their primary purpose. It is useful, therefore, to define a road hierarchy, together with a set of design principles for each type of road.

The road system falls broadly into five main categories:-

Regional Primary Network	Consisting of roads whose function is to accommodate both long distance and through traffic
Primary distributor roads	Consisting of roads onto which major traffic movements, essentially local to Berkshire are directed
District distributor roads	Distribute traffic between the residential, industrial and business districts of built-up areas and link them to roads in higher categories
Local Distributor Roads	Linking the smaller centres of population and employment to roads in higher categories and distributing traffic within those areas.
Access Roads	Serving groups of properties (roads within housing estates) or individual properties (factories or office buildings).

The design and construction of Regional Primary, Primary distributor, District distributor and Local distributor roads are discussed in Part 2 under the general description of distributor roads.

HIGHWAY DESIGN GUIDE

1.3

ROAD HIERARCHY

Part 3 and 4 deal with **access** roads within residential, industrial and commercial areas respectively and with the layout standards for simple T-junctions off distributor roads.

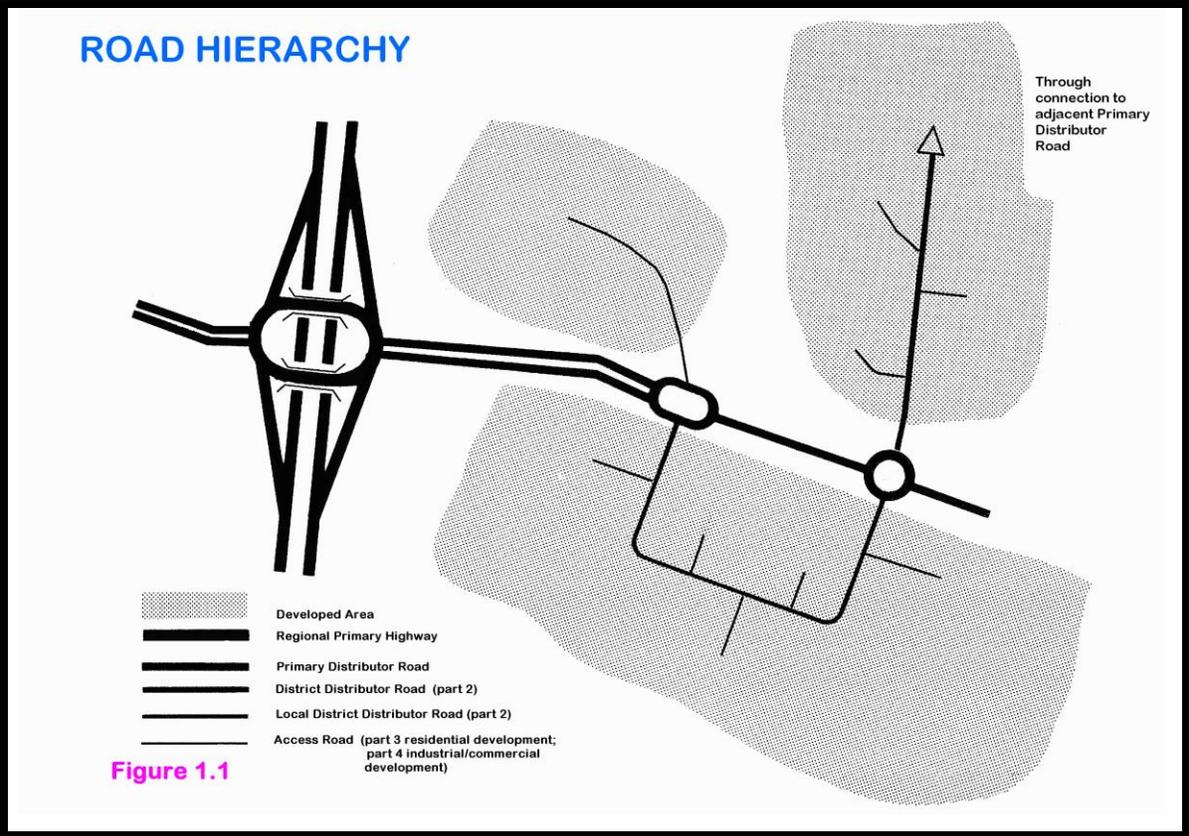


Figure 1.1 Illustrates the types of road encountered at various levels in the hierarchy

HIGHWAY DESIGN GUIDE

1.4

FITTING DEVELOPMENT INTO THE EXISTING HIGHWAY NETWORK

Connection to the Highway

Where a junction is to be formed off an existing access road this will normally be a simple T-junction. Part 3 (residential roads) and Part 4 (roads serving industrial and commercial development) set out the Highway Authority's standards for spacing and layout of T-junctions in these circumstances. In cases of doubt, the Highway Authority should be consulted.

The number, positioning and types of junction on road which come under the general heading of distributor roads affect, to a great extent, the efficiency and safety of those roads. Thus a road given a width which has many, closely spaced, side road junctions and accesses to individual properties will have less capacity and, usually, a worse safety record than a road of similar width with no frontage access and widely spaced junctions of appropriate design. The more important the distributor road, the more essential it is that a restrictive policy of the number and type of new junctions is applied.

Therefore, where a junction is proposed off a local distributor or higher category road the views of the Highway Authority should be sought at the earliest possible stage. In such cases it is essential that the Developer is advised by qualified Traffic and Highway Engineers. Reference should be made to Part 2 of the Guide (Distributor Roads).

The first stage of consultation with the Highway Authority should be to establish whether, in principle, a suitable means of connection to the existing highway can be agreed. At this stage it may also be necessary to consider the wider effects of the development on the surrounding highway network and whether, in fact, the development would be acceptable taking all traffic-related matters into account.

If agreement can be reached in principle then the next stage is for the Developer or his advisors to draw up layout plans of the junction. The work of approving these preliminary plans will be carried out by reference to the latest Department of Transport technical memoranda and advice notes, and to the standards set out in Part 2 of the Guide.

HIGHWAY DESIGN GUIDE

1.4

FITTING DEVELOPMENT INTO THE EXISTING HIGHWAY NETWORK

The layout should be supported by calculations demonstrating that the junction will perform satisfactorily; taking into account expected traffic from the development and growth in **local** traffic generally. Nationally agreed methods of simulating junction performance should be used.

If approved, these plans and calculations will form the basis of a legal agreement with the Highway Authority whereby the junction works will be constructed at the Developer's expense and, in due course, adopted and maintained by the Authority.

No planning permission will be granted until the agreement has been signed and, if necessary, sealed.

HIGHWAY DESIGN GUIDE

1.5

HIGHWAY AGREEMENTS

Where the layout of on-site roads has been designed to adoption standards the **Developer** would normally be expected to enter into agreement with the appropriate agent and the Highway Authority under Section 38 of the Highways Act 1980 to secure their adoption. More details are given in the next section and in Parts 2, 3 and 4.

Where off-site highway works are to be carried out it is the Highway Authority's practice to ensure that an agreement is entered into before the granting of planning permission. The agreement would cover design, supervision and adoption of the works, and also the timing of the works in relation to development and / or occupation of the application site.

In most cases these agreements are straightforward but in cases where major works are involved it is essential that the **Developer** is advised by professionally qualified **Traffic and Highway Engineers**.

HIGHWAY DESIGN GUIDE

1.6

ADOPTION OF HIGHWAYS

Areas which the Highway Authority will normally adopt include carriageways, footways, main footpaths, cycle ways, verge and highway structures which are constructed in accordance with the appropriate standards and are for the use of the general public. The process of adoption is regulated by an agreement under Section 38 of the Highways Act 1980.

All land required for sight lines will be adopted as part of the highway where the road is of distributor class. Sight line areas along access roads will not normally be adopted but it will be a condition of planning consent that sight lines are not obstructed.

It is essential that Developers make contact with the Highway Authority to agree layout standards for the areas which will be adopted. This may involve prior discussions with the Statutory Undertakers and other services to ensure that their requirements can be accommodated within the adopted highway.

Verges which abut private gardens

Verges which abut 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 are fully understood by the purchaser of adjacent property. The limits of this verge must be indicated by markers such as sets or bricks in private drives and at boundaries between individual dwellings. The Developer must ensure that purchasers are made aware of any trees, shrubs, walls and boundaries between individual dwellings. Also, the Developer must ensure that purchasers are made aware that trees, shrubs, walls and fences must not be placed on the verge.

HIGHWAY DESIGN GUIDE

1.7

PROVISION FOR PUBLIC TRANSPORT

Public transport plays an important part in the movement of people, the siting and layout of new development should ensure good access to bus services.

Pedestrian routes should provide direct links between dwellings and bus stops.

The siting of a new bus stops and lay-bys should be considered at an early stage so that they can be located in positions which are convenient for the maximum number of potential bus passengers. Housing for elderly / disabled people should be as close as possible to bus routes and bus stop positions to minimise walking distances. Ideally walking distances to bus stops should not exceed 400m.

Roads which, it is envisaged, will be used as bus routes should be designed to distributor road standards so that they are constructed to a suitable alignment, width and strength for the purpose.

Where a development is in close proximity to a railway station clear and defined pedestrian / disabled routes should be provided to aid pedestrian / disabled access.

HIGHWAY DESIGN GUIDE

1.8

PROVISION FOR CYCLISTS

The Royal Borough of Windsor and Maidenhead is keen to promote cycling as a mode of transport and as a recreational pursuit. The Highway Authority will require Developers to provide cycling facilities as part of new development, where appropriate. As well as providing for people living or working in the newly developed area, this may bring opportunities for improving the safety and convenience of those already making regular cycle journeys by extending an existing cycle path network. The particular needs of cyclists should be considered early in the design stage so that suitable provision can be made.

When large scale development is being planned the local Planning and Highway Authority may well wish to consider the provision of a system of trunk footpaths and parallel cycle ways segregated from the distributor road system for the area.

Cycle ways should be designed and constructed to permit their adoption by the Highway Authority. They should have a smooth, non-skid riding surface whose profile, as far as possible, continues without interruption across intersecting roads. The layout will need to allow for ease of entry by maintenance vehicles.

HIGHWAY DESIGN GUIDE

1.9

PROVISION FOR PEDESTRIANS

Pedestrian routes are provided in the form of footways, footpaths or, in very lightly trafficked areas, ways shared by vehicles and pedestrians. Footways are areas reserved for pedestrian movement running parallel and adjacent to the carriageway. Footpaths are generally divorced from the carriageway, with a separate alignment.

All footways and footpaths must be safe, convenient and secure and their use cause as little nuisance to residents as possible. In achieving these basic objectives footways and footpaths should be designed to:

- Allow pedestrians, prams, and wheelchairs to pass each other freely and without hindrance.
- Allow for ramped crossings into garage drives and parking areas.
- Allows, in suitable circumstances, for occasional use by emergency vehicles.
- Accommodates statutory underground services.
- Is well lit and viewed from dwellings or highways over their entire length.

Design details are set out in Parts 2, 3 and 4 of the Design Guide.

HIGHWAY DESIGN GUIDE

1.10

PROVISION FOR MOBILITY IMPAIRED PEOPLE

In considering the needs of pedestrians, the Royal Borough of Windsor and Maidenhead is anxious to ensure that, by careful design the needs of all pedestrians, including those with mobility handicap, are well catered for. The design details in other parts of The Guide have been compiled with this in mind. Detailed advice on the planning and design of facilities for pedestrians with impaired mobility is contained in “*Berkshire Accessibility by design 2007*” and the “*Equality Act 2010*”.

HIGHWAY DESIGN GUIDE

1.11

WINTER MAINTENANCE

All new highways should be designed to take into consideration winter maintenance issues. Where a new junction [bellmouth] is formed to serve two or more residential properties or a commercial development then developers will be required to include a salt bin within the design. Where developers seek to retain new access roads under their, or a management company's ownership, then a winter maintenance plan for the removal of snow and ice will be required as part of any design submission.

HIGHWAY DESIGN GUIDE

1.12

CONSERVATION AREAS

Within conservation areas, areas containing listed buildings and other areas of “special townscape character”, particular care needs to be taken. Many such areas were built prior to the age of mass car ownership and often modern highway requirements are incompatible with their character. To retain these areas' integrity and character, it may be necessary to compromise normal highway standards for new developments.

Principles

Within such areas the retention of architectural character should take precedence where highway requirements can be reduced in a manner which is compatible with safety.

The general objective in conservation areas should be to reduce the volume, weight and speed of vehicles to a level which will minimise damage and reduce conflict between pedestrians and vehicles and, in this respect, is similar to the general objective in housing areas.

Code of Practice

Provision for servicing and parking should allow the possibilities of traffic management measures to be fully explored. Opportunities for unobtrusive off-street parking should be considered whenever possible, where this is compatible with the aims of conservation.

New development should make a positive contribution to enhancing the visual character of the area.

The Highway Authority will take steps to ensure that the minimum and number and size of signs are used in conservation areas. Lighting schemes and street furniture should be designed to be sympathetic with, and enhance the character of the area.

HIGHWAY DESIGN GUIDE

1.13

HIGHWAY STRUCTURES

The Royal Borough of Windsor and Maidenhead, as Highway Authority is responsible for the approval of all structures which are constructed on, over, under or adjacent to all public highways, with the exception of motorways and trunk roads. In these cases approval is given by the Department of Transport.

Approval is required for all types of structure including bridges, culverts, retaining walls, gantries, support structures for pipes and conveyors, scaffolding, buildings which overhang the highway and temporary structures.

Approval extends to all highway structures whether they remain in private ownership or are adopted and subsequently maintained by The Royal Borough of Windsor and Maidenhead.

The main purpose of the technical approval system is to maintain public safety. At the same time The Royal Borough of Windsor and Maidenhead also requires to approve the form of construction and suitability of materials used on structures which are to be adopted and maintained by it. The Highway Authority normally adopts all structures which are a necessary feature of the public highway such as bridges supporting the road, retaining walls supporting the road, sign gantries and drainage culverts. Structures which would not be adopted (but would still be subject to Technical Approval) include private overbridges and retaining walls supporting adjacent development.

Those structures which will not be adopted may need a licence from the Highway Authority in addition to technical approval.

All highway structures should be designed and detailed in accordance with the current Department of Transport standards.

HIGHWAY DESIGN GUIDE

1.14

STATUTORY UNDERTAKERS' MAINS AND PLANT

The provision of undertakers' mains and plant is an essential part of any development and should be considered at the preliminary design stage. It is of vital importance that Developers have early discussion with the Undertakers to establish their requirements. Detailed advice on providing for utilities in new development can be found in the current NJUG Guidance.

The Statutory Undertakers prefer to lay their mains in land adopted by the Highway Authority, where they have statutory rights, or land in public ownership. Where streets are to be adopted, it will be necessary to ensure that all legal documents required by the utility companies are completed as soon as possible.

It is normally preferable to lay mains outside carriageways to minimise costs of installations and repairs. In mews courts and housing squares where there is no separate verge or footpath provided it will be necessary to lay them within the carriageway. In this situation a 2.0m strip must be allocated at one side of the carriageway for use by undertakers. Alternatively, and subject to the Undertaker's requirements regarding the layout of their mains, two 1m strips at either side may be acceptable. This is particularly important at the entrance to the court or square in order that a clear entrance can always be maintained for emergency services during repairs. The layout of mews courts and housing squares is covered in Part 3 of The Guide.

Where mains are laid in a highway verge which is contiguous with open gardens the verge will form part of the adopted highway, although owners and residents may carry out maintenance of this verge.

If the adopted highway or public open space is insufficient for the Undertaker's apparatus the **Developer** must provide mains routes with satisfactory easements.

Banks and mounds in landscaped areas can cause special problems since the undertakers prefer mains to be at a constant depth. Therefore verges should ideally be level with the adjacent kerb in such cases.

HIGHWAY DESIGN GUIDE

1.14

STATUTORY UNDERTAKERS' MAINS AND PLANT

It is essential that only grass or ground cover plants with limited root systems are planted on top of mains routes and that trees are located so that their roots will not damage mains, nor be damaged themselves during the maintenance of such mains.

The layout of mains should be co-ordinated and the common trench principle adopted wherever possible, as illustrated in Figure 1.3

Particular attention must be paid to the location of inspection covers, boxes, gullies etc., so that they accord with the overall design. Each Statutory Undertaker has special requirements which should be considered in the initial design.

HIGHWAY DESIGN GUIDE

NJUG Guidelines on the Positioning and Colour Coding of Underground Utility Apparatus

FIGURE 1 - Recommended Positioning of Utility Apparatus in a 2 metre Footway

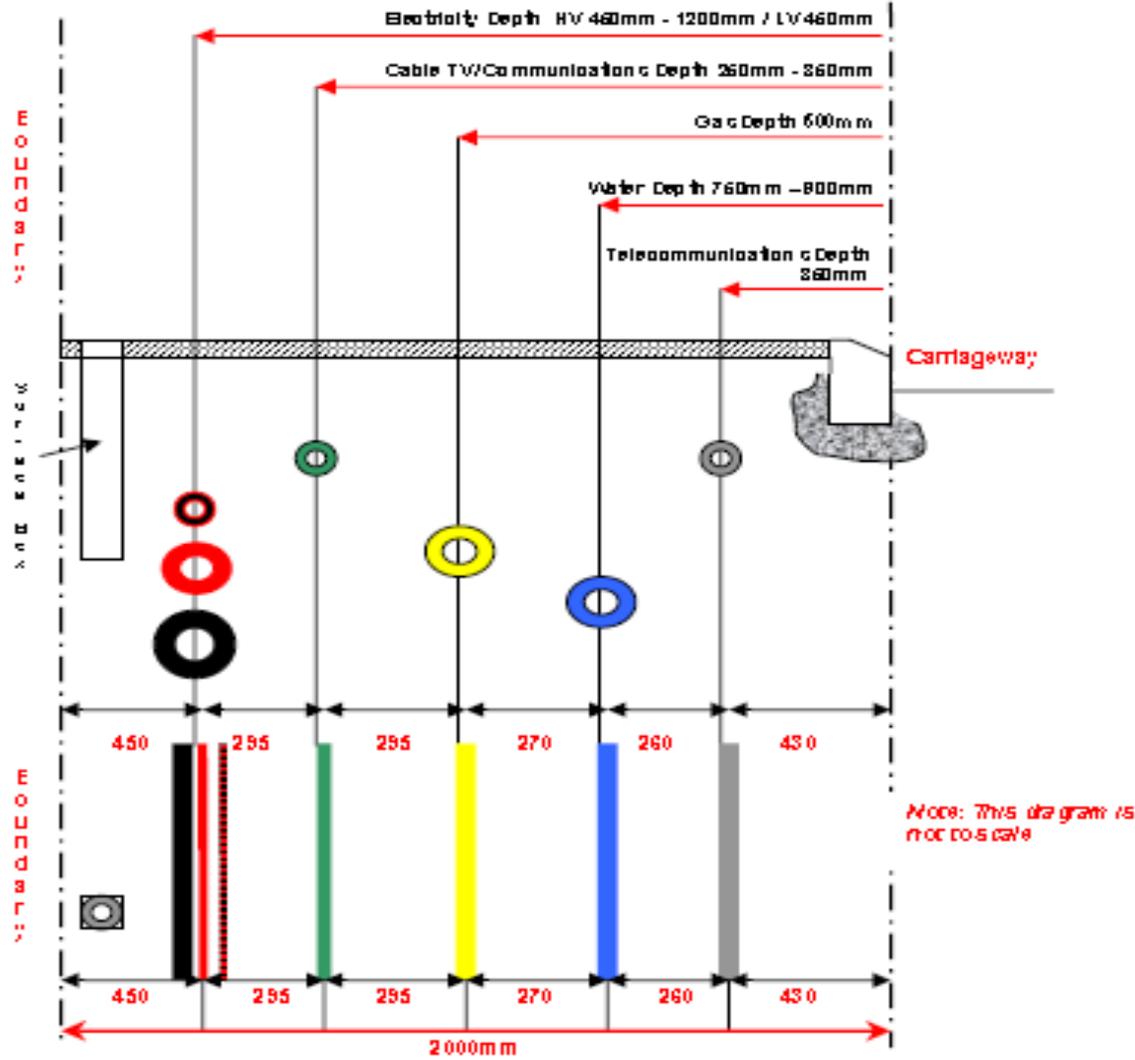


Figure 1.3

HIGHWAY DESIGN GUIDE

1.16	REFERENCES
------	------------

- National Joint Utilities Group ~ NJUG GUIDELINES ON THE POSITIONING AND COLOUR CODING OF UNDERGROUND UTILITIES' APPARATUS - Issue 5: 8th December 2009
- National Joint Utilities Group ~ Guidelines on the positioning of underground utility Apparatus for new developments site (issue 2)
<http://www.njug.org.uk/publication/63>
- Traffic Signs Manual
- New Roads and Street Works Act 1991
Department of Transport Road Circulars
- Circular 2/92 ~ Road Humps and Variable Speed Limits
- Circular 2/93 ~ The Highways (Traffic Calming) Regulations 1993
- Circular 3/93 ~ Road Traffic Regulations Act 1984:Sections 81-85 Local Speed Limits
Traffic Advisory Leaflets (TAL)
- TAL 1/94 ~ Traffic Management in Historic Areas

1/96 Traffic Management in Historic Areas.

HIGHWAY DESIGN GUIDE

2

DISTRIBUTOR ROADS

CONTENT

- 2.1 Introduction**
- 2.2 Road Hierarchy**
- 2.3 Junction Design – General Considerations**
- 2.4 Junction Design Standards**
- 2.5 Design of new Distributor Roads**
- 2.6 Provision for Public Transport**
- 2.7 Provision for Cyclists**
- 2.8 Surface Water Drainage**
- 2.9 References**

HIGHWAY DESIGN GUIDE

2.1	INTRODUCTION
-----	--------------

This section deals mainly with the design and construction of all-purpose, single carriageway roads in the Local and Distributor categories. Roads in higher categories are normally only associated with one-off, large-scale developments and will be dealt with as such by the Highway Authority.

HIGHWAY DESIGN GUIDE

2.2	ROAD HIERARCHY
------------	-----------------------

The relationship between these types of distributor road and the classification of roads in Berkshire is set out in Table 2.1

	Design Guide Hierarchy	Road Classification
	Regional Primary Highway Network	Motorway and Primary route network (comprises A404, A404(M), A308(M), A329(T), A329(M), A332(T))
	Primary distributor roads	Other important roads (all other 'A' roads most B roads, Bracknell – Windsor routes)
	District distributor roads	Other important 'B' routes
	Local distributor roads	Classified unnumbered roads ('C'- roads)



Relative Level in Hierarchy

Table 2.1 Relationship between road hierarchy and road classification

HIGHWAY DESIGN GUIDE

2.3

JUNCTION DESIGN – GENERAL CONSIDERATIONS

The Highway Authority attaches great importance to ensuring that the safety and efficiency of the distributor road network is maintained or enhanced by insisting on good junction design for access to new development. The need for good design is exemplified by the fact that about 2/3rd s of fatal and serious accidents in urban areas occur at junctions. Particular care is needed at junctions to ensure that pedestrians the disabled and cyclists are well catered for.

On primary and district distributors the maintenance of free flowing traffic conditions and reasonable average speeds take precedence over the need for access. The Highway Authority will seek to ensure that, as far as possible, junctions with these categories of highway will only be with roads of equal importance or roads in the next category down in the hierarchy. Where direct access is unavoidable the proposed junction will be assessed with particular care to ensure that good design standards are achieved, especially with respect to: layout and visibility, adequacy of junction spacing, and effect on the freedom of movement of the main traffic flows. If any of these factors is in doubt it is likely that the Highway Authority will object to the proposed access.

Where proposals for development give rise to opportunities to reduce the number of direct accesses to primary and district distributors, the Highway Authority will expect those opportunities to be taken and will advise the Local Planning Authority accordingly.

Local Distributor roads generally serve as a link from smaller areas of population and employment to the higher categories of distributor road. They also serve to distribute traffic within those areas. As such their role as traffic movement corridors is subsidiary, and access road connections will be more frequent. Even so access road junctions should be regularly spaced, such that the distance between them is at least equal to the appropriate stopping sight distance on the major road in accordance with the advice given below.

HIGHWAY DESIGN GUIDE

2.3

JUNCTION DESIGN – GENERAL CONSIDERATIONS

Choice of Junction Type

The general procedure for discussion and agreement with the Highway Authority on the type and layout design of junctions is given in section of 1.5 of the Guide. It is emphasised that Developers should be professionally advised and submit schemes to the Highway Authority for appraisal at the earliest possible stage.

The choice of junction type will frequently be obvious from a preliminary discussion of the proposal and inspection of the site plans. In less straightforward cases it will be necessary to agree the amount of traffic that will enter and leave the site, particularly during peak traffic periods, together with average traffic volumes on the distributor road and estimates of traffic growth up to a suitable forecast year. This information can then be used to test alternative junction, designs, and comparisons can be made of the level of service and safety offered by each one.

HIGHWAY DESIGN GUIDE

2.4

JUNCTION DESIGN STANDARDS

The layout design must be carried out by reference to the latest Department of Transport memoranda and advice notes appropriate to the junction type. Forecasts of turning traffic volumes will be used as input to the relevant DfT computer simulation program to demonstrate that the junction has sufficient reserve capacity to operate with a reasonable level of service at the forecast year.

The **Developer** must be able to demonstrate that **they** can obtain control of, or has control of, sufficient land to accommodate the full standards of design, and that the legitimate concerns of landowners and occupiers affected by the works have been fully taken care of.

Particular care must be taken in providing for the needs of pedestrians and the disabled at junctions. Routes should be provided which cause the minimum possible deviation from the straight – ahead path. Kerbs must always be set flush at points where pedestrians have to cross the carriageway to include disabled facilities. Traffic islands should be provided wherever possible to assist crossing pedestrians and the disabled.

In cases where the side road traffic is light and pedestrian flow along the main road is heavy (urban central areas), the use of a “footway crossover” at the junction may be acceptable to the Highway Authority.

Where there exists, or is likely to be, significant cyclist traffic, it may be necessary to separate this from the vehicular flow.

Right Turning Lanes

The design of a right turning lane shall accord with *TD 42/95 ~ Geometric Design of Major /Minor Junctions set out in the Design Manual for Roads and Bridges (DMRB) ~ Volume 6.*

HIGHWAY DESIGN GUIDE

2.4

JUNCTION DESIGN STANDARDS

A right turning lane will often be required where the priority road is a Primary, District or Local Distributor (C- road) or a main traffic sensitive route. The factors to consider when determining whether a right turn lane is necessary are listed below:-

- Volume of two-way annual average daily traffic (AADT) exceeds 500 vehicles.
- The right turns are the dominate movements compared to the surrounding areas or other major traffic attractors.
- The speed and volume of the traffic on the priority road.
- The forward visibility splays
- Junction spacing
- Accident records or the potential for accidents
- Advice given in DMRB (TD 42/95 ~ Volume 6)
- Relevant traffic model output

HIGHWAY DESIGN GUIDE

2.5	DESIGN OF NEW DISTRIBUTOR ROADS ASSOCIATED WITH DEVELOPEMNT
------------	--

Distributor roads shall be designed in accordance with the Department of Transport's standard: (TD9/93 (Rev. 19)).

The following table summarises the Highway Authority's requirements.

Road Type	Design Speed (Tables 2 & 3 of TD9/93) kph	Width (all purpose single carriageway) m	Width of margins (min) m
Local distributor (residential area)	50	6.00	3.0
Local distributor (elsewhere)	50	7.30	3.0
District distributor	70A	7.30	3.0

Table 2.2 Highway link design requirements

Local distributor roads in residential areas shall have speed controls incorporated with the aim of producing an 85th percentile vehicle speed of 50kph (30mph). On this class of road the controls should be roundabouts spaced approximately 200m apart.

Footways must be provided within the 3.0metre margin wherever there is likely to be pedestrian traffic, and careful account must be taken of the need for safe crossing places. If pedal cyclists are likely to be present the Highway Authority may be require provision of a cycle track or shared path (for pedestrians and pedal cyclists) alongside the carriageway. Section 2.9 below gives further details.

HIGHWAY DESIGN GUIDE

2.5	DESIGN OF NEW DISTRIBUTOR ROADS ASSOCIATED WITH DEVELOPEMNT
------------	--

The minimum horizontal clearance from the edge of the carriageway to the face of any structure, or to any other obstruction, shall be 600m. The minimum headroom clearance above the carriageway shall be 5.3m. This is increased to 5.7m under footbridges and gantries.

The minimum headroom clearance over footways shall be as follows:-

Solid Structures	2.7m
Canopies	2.4m
Signs (as per traffic Signs)	
Regulations & General Directions	2.1m

The minimum headroom clearance over combined cycle / footways shall be as follows:-

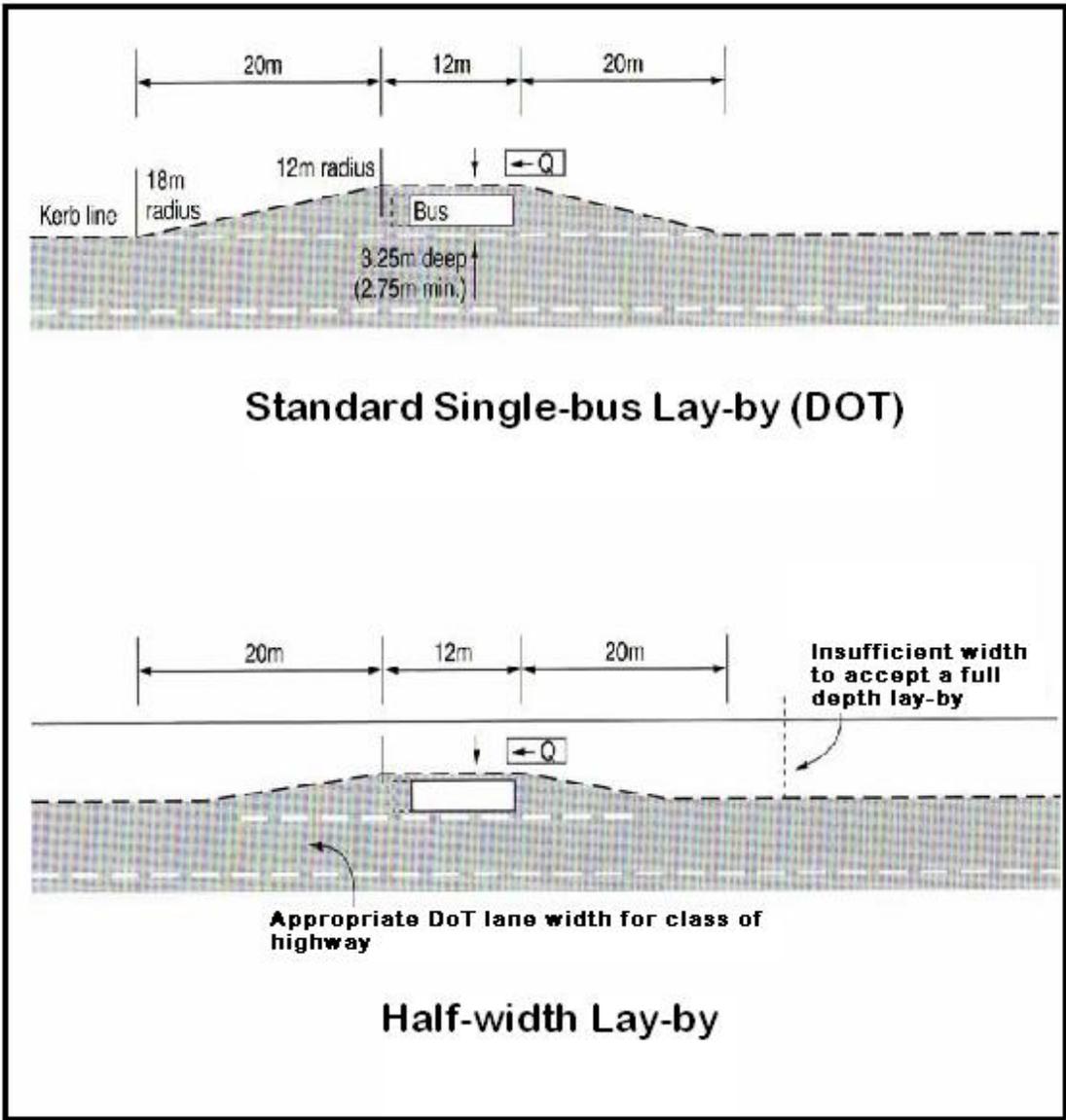
All Structures	2.7m
----------------	------

HIGHWAY DESIGN GUIDE

2.6	PROVISION FOR PUBLIC TRANSPORT
-----	--------------------------------

The minimum carriageway width for new road links which will serve as bus routes shall be 6.00m

Lay-bys will not normally be required at bus stop positions, but may be required at lay-over points in the bus route network. Figure 2.1 the setting out details for a standard single bus lay-by. Detailed advice design of measure to assist buses is given in *“Keeping Buses Moving”*(Local Note 1/97)



HIGHWAY DESIGN GUIDE

Figure 2.1

2.7	PROVISION FOR CYCLIST
-----	-----------------------

Reference should be made to the Department of Transport Local Transport Note 2/08 (Cycle Infrastructure Design) and the London Cycle Network Design Guide.

Cycle lanes segregated from the road network

This type of facility will be provided, in conjunction with main footpaths, to form a direct route between residential areas and centres of employment, shopping or education. A cycleway width of 1.75 metres will be required, separated from the parallel footpath by kerbs, setts or brick pavements to allow the cycleway to be at a lower level and clearly distinguishable.

Where only very light traffic is expected a reduced standard may be appropriate and the Highway Authority will consider accepting a 3.0 metre wide shared path.

The cycle lanes should be adequately lit and situated in open areas. They should not be laid out so that boundary walls or fences closely abut the cycle way on both sides.

Details of junctions with roads, and regulatory and direction signing should be discussed with and approved by the Highway Authority.

Cycle lane alongside the carriageway

Cycle lanes should be 2 metres wide on busy roads, or where traffic is travelling in excess of 40 mph. A minimum width of 1.5 metres may be generally acceptable on roads with a 30 mph limit. For cycle feeder lanes to advanced stop line arrangements, a minimum width of 1.2m may be acceptable. Cycle lanes less than 1.2 metres wide cannot easily accommodate tricycles or child-carrying cycle trailers wholly within the lane.

HIGHWAY DESIGN GUIDE

2.8

SURFACE WATER DRAINAGE

An adequate system of drains must be provided for the collection and disposal of surface water from the roads, footpaths and cycle lanes in the development area. It is absolutely essential that the means of disposal of surface water be investigated with the Highway Authority's consultants at the preliminary stage of any development scheme. The management of surface water runoff is set out in *Making Space for Water* and designers and developers need to take account of the guidance given in Planning Policy Statement 25 in evaluating flood risk and developing an integrated drainage strategy.

A Flood Risk Assessment (FRA) demonstrates how flood risk from all sources of flooding to the development will be managed and the Developer is responsible to undertake the FRA.

It is also the responsibility of the Developer to make adequate and satisfactory outfall arrangements for their project, and it must not be assumed that permission will automatically be granted by the Highway Authority to make connections to the existing highway drainage system in adjacent maintained roads.

The road will not be considered for adoption if an adequate highway drainage system to a suitable piped outfall or watercourse cannot be provided. Soak-ways will NOT normally be accepted as a suitable outfall for highway drainage.

Gully Spacing

This is governed by the nature and gradients of the area to be drained but as a general guide only one gully per 200m of drainage area may be sufficient. Gullies must be provided at all low points and at tangent points on junctions.

Kerb Channels

Kerb channels are recommended when the longitudinal fall on the carriageway is less than 0.67% where the longitudinal fall along the kerb channel is less than

HIGHWAY DESIGN GUIDE

2.8

SURFACE WATER DRAINAGE

0.5% the Developer shall provide “false” falls to facilitate the passage of water to the gullies.

Where false falls are to be provided the kerb face shall not exceed 125+/-25mm.

Inspection Covers Spacing

Spacing for inspection covers shall not exceed 90.0m for pipe diameters up to 300mm or 110.0m for pipes larger than this. They shall be provided at all changes in direction, gradient or diameter and at all connection to other pipes, existing or new.

Pipe size shall accord with design calculators but not in no case shall they be less than 150mm in diameter, and gradients shall be such as to obtain full-bore velocities not greater than 4.50m/sec and not less than 0.75m/sec.

When the roads in a development are adopted the Highway Authority will be responsible only for those drains carrying surface water from these roads. If roof water or water from any source is introduced, the drain will become a sewer by legal definition and as such will come under the jurisdiction of the Water Authority or its agent as appropriate to secure the adoption of the sewer in order that it may become a public sewer. Adoption of the roads will not take place until this procedure has been completed.

Where other than surface water from the roads, discharges into the drainage system, thus creating sewers in lieu of highway drains, only the gullies and connections will be taken over by the Highway Authority.

Sustainable Drainage Systems

The term Sustainable Drainage Systems (SUDS) covers a whole range of techniques, including green roofs, permeable **carriageway** / paving, and rainwater harvesting which mimic the natural drainage process. These techniques used in combination greatly improve water quality and should be applied wherever practical and technically feasible.

SUDS are more sustainable than conventional drainage methods because they:-

- **Protect and enhance the water quality**
- **Sympathetic to the environment**
- **Provides a habitat for wildlife**
- **Deals with the runoff close to the rain falls**
- **Encourage natural groundwater recharge**

HIGHWAY DESIGN GUIDE

2.9	REFERENCES
-----	------------

- Water UK (2006) Sewers for Adoption, 6th Edition
- The Building Regulations (2000) ~ [Part H \(Drainage and Waste disposal\)](#)
- Planning Policy Statement 25 (PPS25) ~ 'Development and Flood Risk' in [December 2006 \[Flood Risk Standing Advice for England - PPS25 National Version 2.0 \]](#)
- Making Space for Water ~ [Making space for water - LGA response \(PDF, 7 pages, 192KB\)](#)
- Environment Agency ~ [Sustainable Drainage Systems \(SUDS\)](#)
- Keeping Buses Moving ~ [A GUIDE TO TRAFFIC MANAGEMENT TO ASSIST BUSES IN URBAN AREAS \(Local Note 1/97\)](#)
- Design Manual for Roads and Bridges (DMRB), Volume 6. *TD 42/95* ~ [Geometric Design of Major /Minor Junctions](#)
- Department of Transport Local Transport Note 2/08 ~ [\(Cycle Infrastructure Design\)](#)
- London Cycle Network Design Guide
Traffic Advisory Leaflets (TAL)
TAL 11/99 ~ [Improved Cycle Parking at South West Trains' Stations in Hampshire](#)
TAL 6/99 ~ [Cycle Parking Examples of Good Practice](#)
- TAL 3/90 ~ [Urban Safety Management Guidelines from IHT](#)
- TAL 3/93 ~ [Traffic Calming Special Authorisations](#)
- TAL 3/94 ~ [Fire and Ambulance Services – Traffic Calming: A Code of Practice](#)

HIGHWAY DESIGN GUIDE

3

RESIDENTIAL ROADS

CONTENT

- 3.1 Introduction
- 3.2 Road Hierarchy
- 3.3 Visibility Splays
- 3.4 Turning Heads
- 3.5 Speed Controls Measures
- 3.6 Surface Water Drainage
- 3.7 Street Lighting
- 3.8 References

HIGHWAY DESIGN GUIDE

3.1

INTRODUCTION

The guidance in this section is based in the advice given in the Design Manual for Roads and Bridges (DMRB) and Manual for Streets (M f S).

Residential access roads and footpaths should form an integral part of the overall housing layout, unlike distributor roads where the passage of vehicles is normally the dominant factor. Accordingly, the aim should be to provide a system of roads and paths which:

As far as possible provide for safe and convenient access for all forms of movement, especially on foot and by bicycle, whilst avoiding non-access motorised traffic;

Are designed to provide natural surveillance in the interests of security and crime prevention;

Respect existing landscape and townscape features and complement rather than dictate the overall design of the development, the surrounding urban form and road layouts.

Emphasis of design looks towards providing a range of roads, whilst allowing the designer maximum freedom of flexibility in their designs.

This section of the Guide sets out detailed guidance, which seeks to achieve the above aims whilst ensuring that new residential access roads are suitable for adoption by the highway authority.

HIGHWAY DESIGN GUIDE

3.2

ROAD HIERARCHY

TYPES OF RESIDENTIAL ACCESS ROAD

In accordance with advice in DB32 three types of access road are described below: access roads serving up to around 300 dwellings; shared surface roads serving up to 50 dwellings; and private courts and drives serving up to 15 dwellings and 5 dwelling respectively. Against that background, the precise manner in which the roads on the development are laid out, are left to the discretion of the designer. The Highway Authority will consider access roads and shared surface roads for adoption.

Formal access roads

These are formal roads with one or two footways, which normally link the residential development to the distributor roads whilst providing direct access to dwellings. For the purpose of this Guide, they are divided into two types:

Major access roads which may serve from around 100 to 300 dwellings

Minor access roads which may serve up to 100 dwellings

They should be designed to restrict vehicular speeds to 30 mph or less and about 20 mph respectively. Some suggested ways to achieve this are set out in Section 3.4

HIGHWAY DESIGN GUIDE

3.2	ROAD HIERARCHY
-----	----------------

PRIVATE DRIVES	
Drive width	Preferably 4.80m with a 2.00m footpath Minimum 4.80m
Longitudinal gradient	Maximum of 1:12

Private drives serving a maximum of five dwellings are not suitable for and should not be accessed direct from classified district distributor roads other than local distributor (residential) roads.

Water from the drive or any party of the premises shall not discharge onto the public highway [*Section 163 of the Highways Act 1980*].

Driveways/parking areas over five square metres must be surfaced with a permeable bonded material [Refer to the Environment Agency’s current publication]

The access to the public highway shall be via a vehicular crossing and positioned 90° to the road.

Adequate turning facilities for cars and service vehicles must be provided where more than one dwelling is served and where the road length exceeds 20m.

HIGHWAY DESIGN GUIDE

3.2	ROAD HIERARCHY
-----	----------------

SHARED PRIVATE DRIVES		
Carriageway width	Preferably 4.80m with a 2.00m footpath	Minimum 4.80m shared surface
Longitudinal gradient	Maximum of 1:12	
Maximum number of units served	5	

- Will not be adopted as a public highway and should not be accessed off a distributor road.
- The carry distance from each dwelling to the nearest waiting point for service vehicles should not exceed 25 metres.
- A turning area is required for refuse and service vehicles if the length of the shared drive exceeds 20 metres.
- Minimum pedestrian visibility splays of 2m x 2m measured from the back of the footway.
- A minimum junction spacing of 30 metres to an adjacent access is required. A minimum junction spacing of 15 metres is required if the drive is opposite an existing access.
- Additional parking spaces for visitors **should be considered** where the private drive serves more than 25 dwellings.

HIGHWAY DESIGN GUIDE

3.2	ROAD HIERARCHY
-----	----------------

SHARED SURFACE ROADS	
Carriageway width	4.8 (closed) to 5.5m (open) with a 2m verge (service strip)
Maximum number of units served	25 for a cul-de-sac, 50 for a through road (open at both ends)
Entry Radii	Minor access road 4.0m
	Major access road 6.0 to 10.0m
Design Speed	20mph

A single hard surface is shared by pedestrian and vehicles without segregation. Shared surface roads should be differentiated from formal access roads by the use of rumble strips at the entry points to emphasise its shared use by vehicles and pedestrians.

The road surface is normally blocked paved, again emphasising its difference from conventional roads / streets.

Public utility apparatus should be contained within the soft landscaped margins.

Because of the lower standard of junction design and lack of footways, they should not have direct access off a distributor road.

A turning facility for cars and service vehicles is required if the length of the road exceeds 20m.

HIGHWAY DESIGN GUIDE

3.2	ROAD HIERARCHY
------------	-----------------------

PRIVATE COURTYARDS

PRIVATE COURTYARDS	
Carriageway width	4.8m with a 2m service strip
Maximum number of units served	15
Entry Radii	Minor access road 4.0m
	Major access road 6.0 to 10.0m
Design Speed	20mph

They should not have direct access to a distributor road

Private courtyards should be differentiated from formal access roads by the use of rumble strips at the entry points to emphasise its shared use by vehicles and pedestrians.

The carry distance from each dwelling to the nearest waiting point for service vehicles should not exceed 25 metres.

A turning facility for cars and service vehicles is required if the length of the road exceeds 20m.

Private courtyards are not normally considered suitable for adoption.

HIGHWAY DESIGN GUIDE

3.2	ROAD HIERARCHY
------------	-----------------------

MINOR ACCESS ROADS	
Carriageway width	5.5m with a 2m footpath 6.00m if the road is used as a bus route
Maximum number of units served	100
Entry Radii	Minor access road 6.0m Major access road 10.0m
Design Speed	20mph to 30mph
Minimum centre line radius	20m
Minimum forward visibility splays along centre line radius	33m to 43m

HIGHWAY DESIGN GUIDE

3.2	ROAD HIERARCHY
------------	-----------------------

MAJOR ACCESS ROADS	
Carriageway width	6.0m with a 2m footpath (7.0m if the road is used as a bus route)
Maximum number of units served	300
Entry Radii	10m (Each case to be assessed)
Design Speed	30mph
Minimum centre line radius	40m
Minimum forward visibility splays along centre line radius	50m
Junction spacing	Adjacent 30m
	Opposite 15m

HIGHWAY DESIGN GUIDE

3.2

ROAD HIERARCHY

SINGLE TRACK ROADS

Carriageway can be narrowed to a minimum of 3m where there is no parking or frontage access providing the two ends of the narrowing are intervisible and two-way width is resumed on the approach to a junction. Where the narrowing covers a length greater than about 40m passing places will be necessary. If more than 50 dwellings are served, then an alternative access or loop road system will need to be provided. On formal access roads, footways or footpaths will be needed where pedestrians would otherwise walk along the carriageway.

Footways, footpaths and verges

A footway is generally adjacent to the carriageway whereas a footpath is generally remote from the carriageway. In both instances the public have a right of way on foot only.

Footways and verges may be varied in width, although the normal minimum verge width is 2m to allow for services to be laid in the verge and the normal minimum footway width is 2 metres in any event.

Crossfalls and Gradients

The maximum longitudinal gradient of footways and footpaths should be 1 in 20 (5%). To ensure adequate surface water drainage across the footway a crossfall between of 1 in 40 to 1 to 25 (2.5% to 4.0%) should be provided.

Crossfalls		
	Min	Maximum
Carriageway	2.5%	3.3%
Footway	2.5%	4%
Verges	2.5%	4%

HIGHWAY DESIGN GUIDE

3.2	ROAD HIERARCHY
-----	----------------

Vertical Alignment

The maximum and minimum gradients allowable on new developments are shown in the table below:

Road Type	Maximum Gradient	Minimum Gradient	Minimum "K" value
Major Access Road	1: 20 (5%)	1:150 (0.67%)	6
Minor Access Road and below (shared surface road , private drives, etc)	1: 20 (5%)	1:150 (0.67%)	2

Tactile paving

Tactile paving shall be provided at all pedestrian crossing points to Major and Minor access roads and on other roads considered appropriate by the Highway Engineer. The installation of tactile paving surfaces should be considered as part of a wider package of measures to assist visually impaired people.

The tactile paving should be buff in colour if used at an uncontrolled crossing point and red at a controlled crossing point. In no circumstances should the red tactile surface be used at uncontrolled crossings. Red is strictly for controlled crossings only. To avoid confusion it is also advisable not to use any other red footway material in the vicinity of an uncontrolled crossing.

The use of tactile paving shall be in accordance with the recommendations given in "*Guidance on the use of Tactile Paving Surfaces*" published by Department for Transport.

HIGHWAY DESIGN GUIDE

3.2	ROAD HIERARCHY
-----	----------------

CLEARANCE FROM THE CARRIAGEWAY

Horizontal Clearance

The clearance between the edge of the carriageway and any structure should be 600mm.

Vertical Clearance

Type	Clearance
Carriageway	5.3m minimum headroom below bridges and buildings. A 5.7m clearance is required under footbridges and gantries
Footway	2.4m
Cycle track	2.7m

HIGHWAY DESIGN GUIDE

3.2

ROAD HIERARCHY

Summary of the layout standard for residential access roads

Road Type	Maximum number of units	Target Speed mph	Carriageway width m	Minimum centre line radius R m	Minimum sight distance A-B m	Junction Spacing (minimum)		Kerb Radii Minimum r m
						Adjacent m	Opposite m	
Major access Road	300	20 to 30	6.0m* 2 x 2m footway	40	60	30	15	7.5
Minor access Road	100	20	5.5m* 2 x 2m footway	20	33	20	10	
Shared surface road (open)	50	12	5.5m 2 x 2m verge	10	20	20	10	
Shared surface road (closed)	25	12	4.8m 2 x 2m verge	10	20	20	10	4 to 6
Private courtyard	15	12	4.8m	-	-	20	10	4 to 6
Shared private drive	5	-	4.8m	-	-			
Single private drive	1	-	3.0m	-	-			

Notes:

* 7.0m required where the road is likely to be used as a bus route
An emergency access should be provided for cul-de-sac in excess of 50 dwellings

HIGHWAY DESIGN GUIDE

3.3 VISIBILITY SPLAY REQUIREMENTS

These are required to enable drivers to see a potential hazard in time to slow down or stop comfortably before reaching it. It is necessary to consider the driver's line of vision, in both vertical and horizontal planes, and the stopping distance of the vehicle.

The design of sightlines is discussed in detail in both Manual for Streets and Design Manual for Roads and Bridges.

This section draws together the advice given in those two documents. The guidance given here needs to be assessed in the circumstances of each case. Sightlines should never be reduced to a dangerous level.

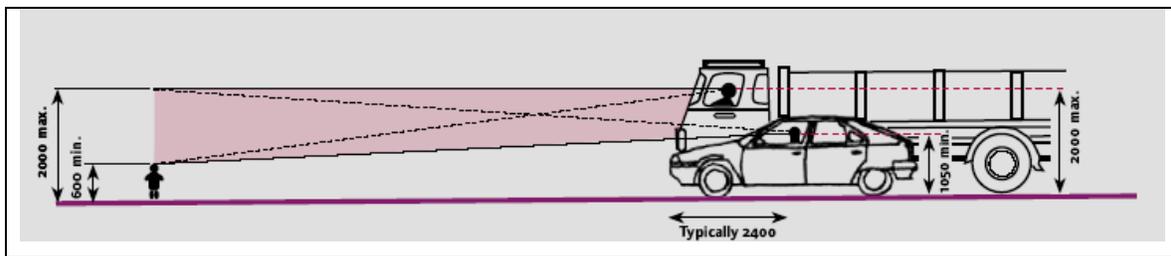


Figure 3.1 Vertical visibility splays requirements

As general guidance, it is suggested that a height of 600mm above the carriageway be taken as the point above which unobstructed visibility should be provided wherever the potential exists for conflicts between motorists and young children. This will apply along all sections of residential roads and is especially important where shared surface roads are used.

The visibility splays should be measured horizontally and vertically.

HIGHWAY DESIGN GUIDE

3.3

VISIBILITY SPLAY REQUIREMENTS

SIGHT LINES AT ROAD JUNCTIONS

Visibility splays at a junction enables a driver to see and be seen by drivers proceeding along the highway. Visibilities vary greatly dependant on the classification / speed and number of vehicle movements along a road.

Details of these requirements are illustrated below.

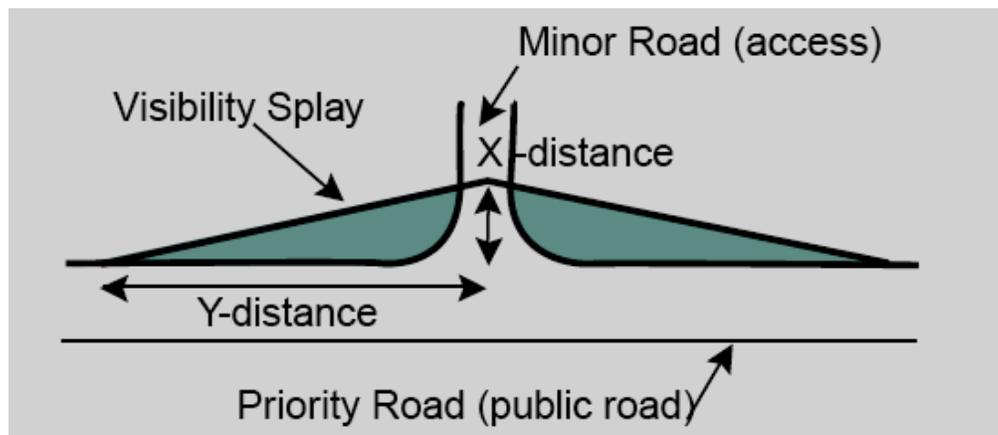


Figure 3.2 Visibility splays

Visibility is required over the shaded area shown in Figure 1. The X- distance is measured along the centre-line of the minor road from the edge of the running carriageway (the give way line) of the priority road.

An X-distance of 2.4m should normally be used in the majority of built-up situations, as this represents a reasonable maximum distance between the front of the car and the driver's eyeline.

The Y-distance represents the distance that a driver emerging from the minor access can see and is generally measured along the near edge of the running carriageway of the priority road from the centre-line of the minor road.

HIGHWAY DESIGN GUIDE

3.3

VISIBILITY SPLAY REQUIREMENTS

Where the access is on the outside of a bend, an additional area will be necessary to provide splays which are tangential to the road edge as shown.

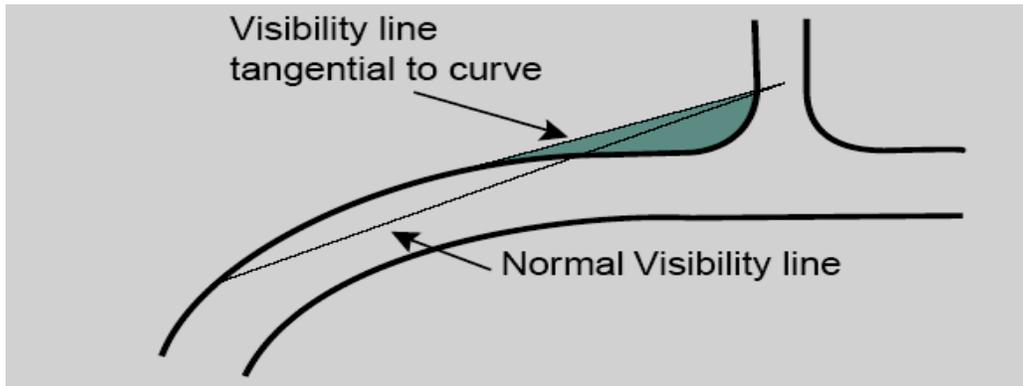


Figure 3.3 Visibility splays on the outside of a bend

FORWARD VISIBILITY SPLAYS

This is the distance a driver must be able to see whilst waiting to turn right from a priority road. There must be clear intervisibility between the vehicles using the minor road and those proceeding along the priority road.

HIGHWAY DESIGN GUIDE

3.3

VISIBILITY SPLAY REQUIREMENTS

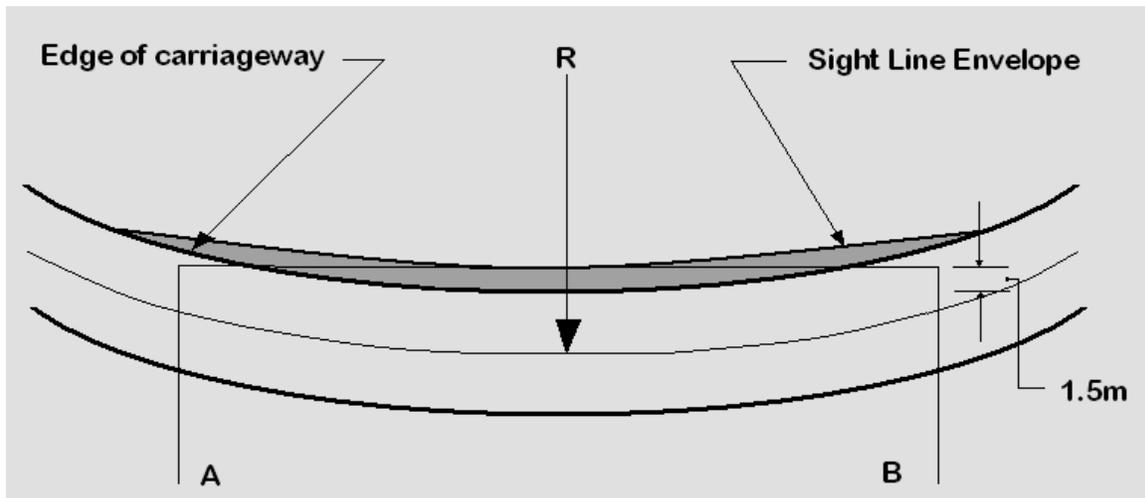


Figure 3.4 Forward visibility splays

The forward visibility curves on bends should be constructed in accordance with the procedure set out below and as indicated in Figure:

A line should be drawn parallel to the inside kerb, 1.5m into the carriageway to represent the path of the vehicle;

The required stopping distance commensurate with the expected speed of the vehicle should be ascertained from Figure and measured back along the vehicle path from tangent point A;

The stopping distance should then be divided into equal increments of approximately 3m, and the increment points numbered in sequence;

1. The same stopping distance with the same number of increments should then be repeated around the curve, finishing at a full stopping distance beyond the tangent point B;

HIGHWAY DESIGN GUIDE

3.3	VISIBILITY SPLAY REQUIREMENTS
------------	--------------------------------------

2. The area, which has to be kept clear of obstruction, should then be constructed by joining increments of the same number together, i.e. 1 to 1, 2 to 2 etc.

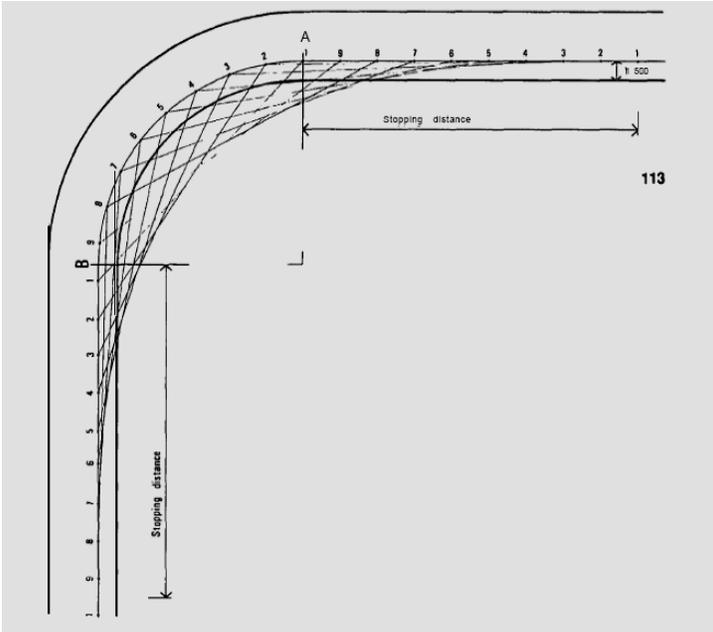


Figure 3.5

A summary of the visibility splays requirements are given in the tables below: -

X – DISTANCES (minimum dimensions)

Table A

9m	For major junctions
4.5m	For major and minor access roads serving more than 50 units
2.4m	Minor access serving up to 50 units
2.4m	For a single dwelling

HIGHWAY DESIGN GUIDE

3.3	VISIBILITY SPLAY REQUIREMENTS
------------	--------------------------------------

Y- DISTANCES (minimum dimensions) ~ For Residential and Minor access roads

Table B

Speed	Mph	10	12	15	16	19	20	25	28	30	31	37
	Kph	16	20	24	25	30	32	40	45	48	50	60
SSD		11	14	17	18	23	25	33	39	43	45	59

Y- DISTANCES (minimum dimensions) ~ For Classified and most classified un-numbered distributor roads

For higher speed roads, i.e. with an 85th percentile speed over 60 km/h, it is considered appropriate to use longer SSDs, as set out in the *Design Manual for Roads and Bridges* (see Table 7.1) below: -

Table C

Speed limit (mph)	20	30	40	50	60	70
SSDs	45	90	120	160	215	295

Sightlines at Access ways

Where the outside edge of the driveway meets the back edge of a footway, pedestrian visibility splays of 2.0m x 2.0m are required and should be free off all obstructions to visibility above a sightline height of 0.6m from the surface of the carriageway.

An X distance of 2.4m should be provided where the road is readily used as a school / heavily pedestrianised route.

HIGHWAY DESIGN GUIDE

3.3	VISIBILITY SPLAY REQUIREMENTS
------------	--------------------------------------

CARRIAGEWAY WIDENING ON BENDS

Carriageway widening is normally needed as indicated in table 3.2 below on bends curving through more than 10 degrees along roads serving 25 or more dwellings. Widening should be on both sides of the curve, or on the inside.

Table 3.2 Carriageway widening on bends

Centre line radius (m)	20	30	40	50	60	80
Minimum Widening	0.60	0.40	0.35	0.25	0.20	0.15

HIGHWAY DESIGN GUIDE

3.4

TURNING HEADS

TURNING SPACES IN CUL-DE-SACS

Turning spaces will be required at the end of all cul-de-sacs and access roads and must be one of the following forms:

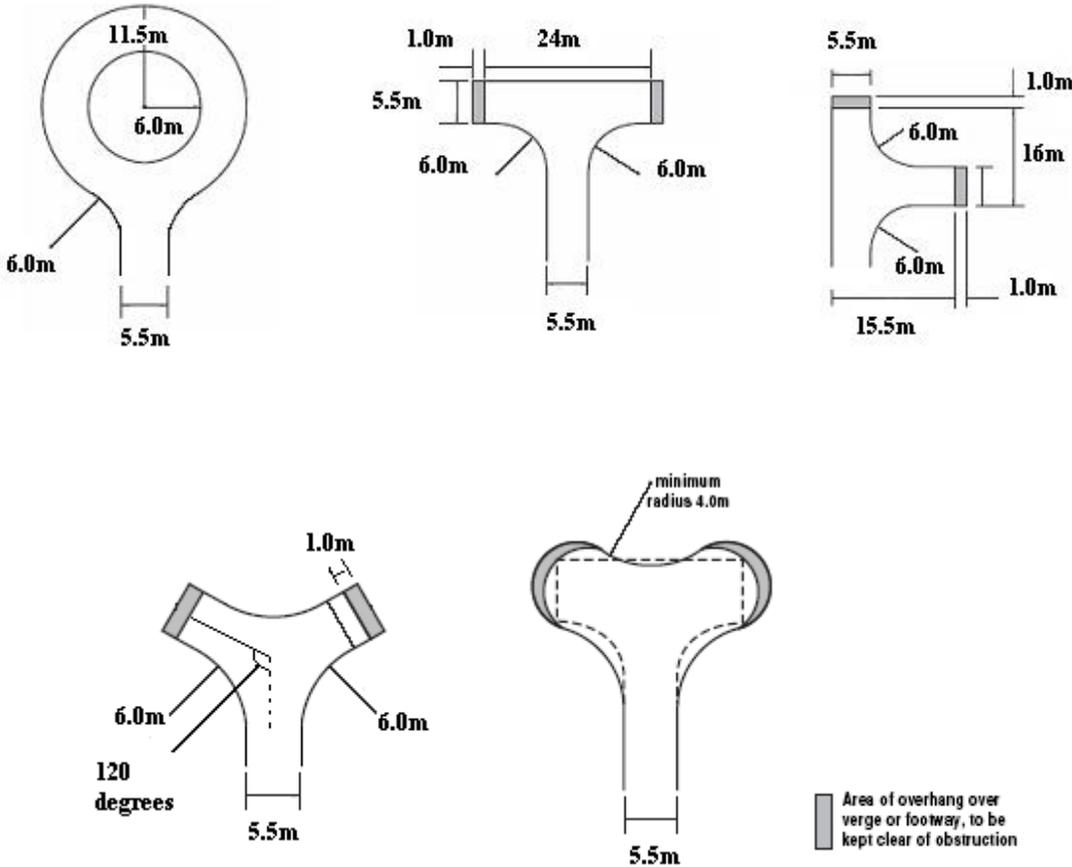


Figure 3.6 Turning spaces in cul-de-sacs

HIGHWAY DESIGN GUIDE

3.5	SPEED CONTROL MEASURES
-----	------------------------

Layouts must be designed so as to control the volume of traffic, speed of vehicles and behaviour of drivers to that appropriate for mixed use residential access roads.

Vehicle speeds lower than 30mph generally result in less severe accidents, and the chance of pedestrians sustaining serious injuries following a collision is significantly reduced when vehicle speeds are below 20mph. The immediate environment should convey to the driver the impression that it would be wholly inappropriate and anti-social to drive at anything other than a low speed.

SPACING OF SPEED CONTROLS

The spacing of speed restraints are highlighted in the table below and indicated in Figure ()

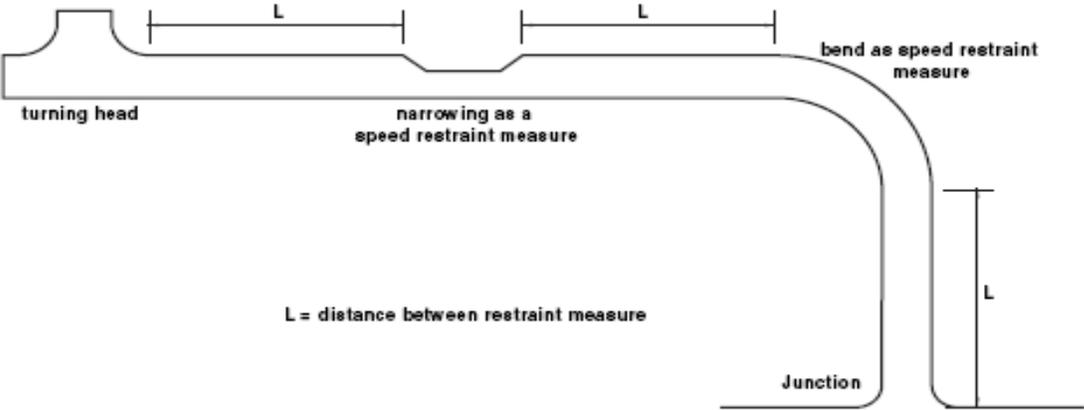


Figure 3.7 Speed Control restraints

HIGHWAY DESIGN GUIDE

3.5	SPEED CONTROL MEASURES
------------	-------------------------------

Road Type	Target Speed mph	Spacing of speed restraint (L)
Major Access Road (Up to 300 dwellings)	20	No greater than 60m to 80m
Minor Access road (Up to 100 dwellings)	20	40m apart No restraint for a 60m cul-de-sac. A mid point restraint is required if the cul-de-sac is 60m-100m in length
Shared surface drive (Up to 50 dwellings)	15	40m apart No restraint for a 60m cul-de-sac. A mid point restraint is required if the cul-de-sac is 60m-100m in length
Shared access (Up to 5 dwellings)	15	40m apart No restraint for a 60m cul-de-sac. A mid point restraint is required if the cul-de-sac is 60m-100m in length

Traffic calming features slow traffic down by a combination of some of the following methods: -

- Introduction of a gateway
- Speed zone sign
- Speed control bend
- A lateral shift in the carriageway
- Roundabouts and central islands
- Narrowing the carriageway width
- Change in surface texture
- Vertical change in level of the carriageway

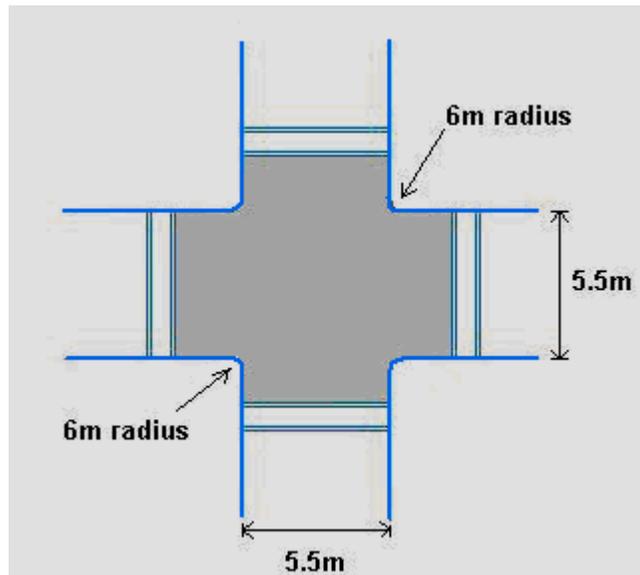
HIGHWAY DESIGN GUIDE

3.5	SPEED CONTROL MEASURES
------------	-------------------------------

The following figures are some of the speed control measures that can be incorporated into the road layout to ensure that vehicle speeds are kept to the target speeds given in the table above.

FLAT TOP HUMPS ~ At junctions

- Provides a facility for pedestrians to cross
- The provision of road humps must comply with the Highways (Road Humps) Regulations 1996.



FLAT TOP HUMPS ~ Between junctions

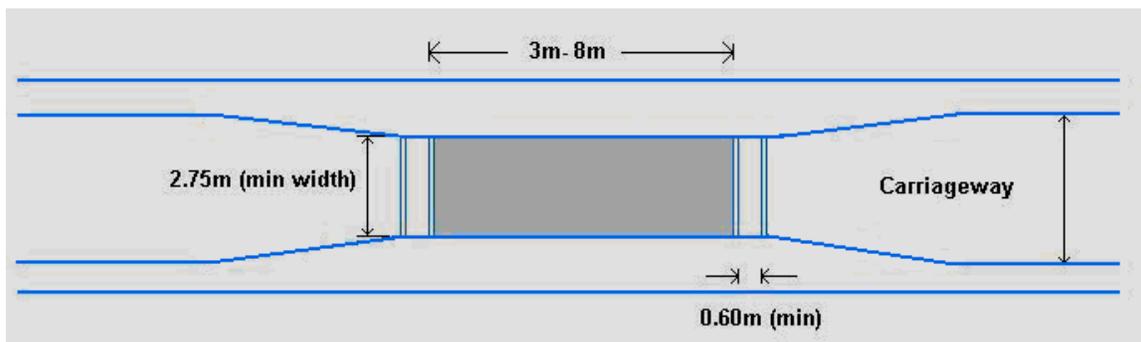


Figure 3.8 Flat Top Humps

HIGHWAY DESIGN GUIDE

3.5	SPEED CONTROL MEASURES
------------	-------------------------------

SPEED CONTROL BENDS

- Not suitable for roads serving more than 100 dwellings
- There should be no pedestrian access on the bend
- The over-run area should be in a contrasting colour and ridged to deter drivers
- Forward visibility splays should be restricted to 14 metres across the bend

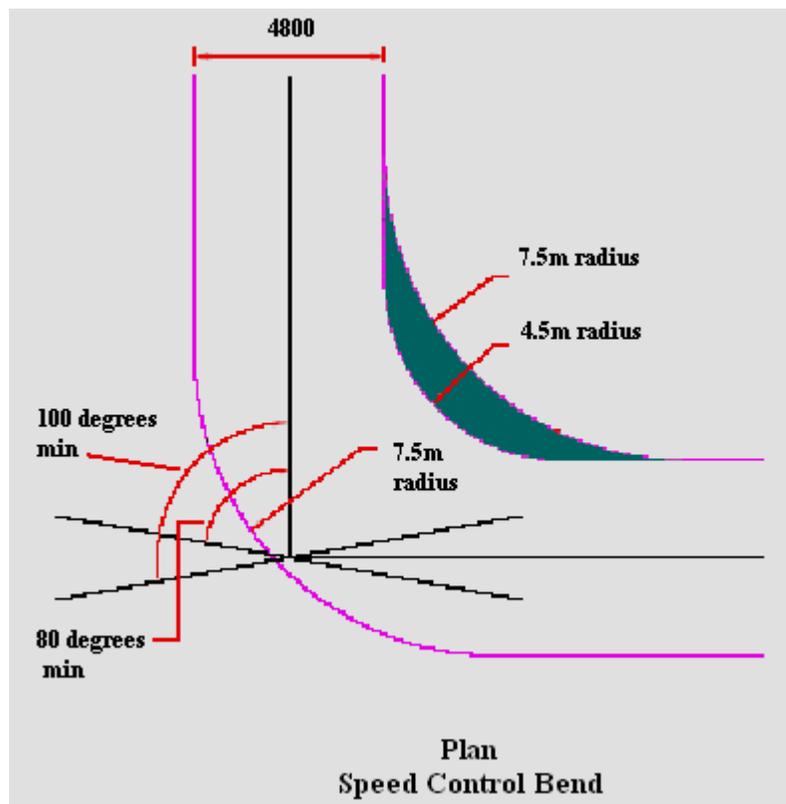


Figure 3.9 Speed Control at a bend

HIGHWAY DESIGN GUIDE

3.5	SPEED CONTROL MEASURES
-----	------------------------

SPEED CONTROL ISLAND

- Not suitable for roads serving more than 100 dwellings
- There should not be an access within 12 metres of the centre of the island.
- The over-run area should be in a contrasting colour and ridged to deter drivers

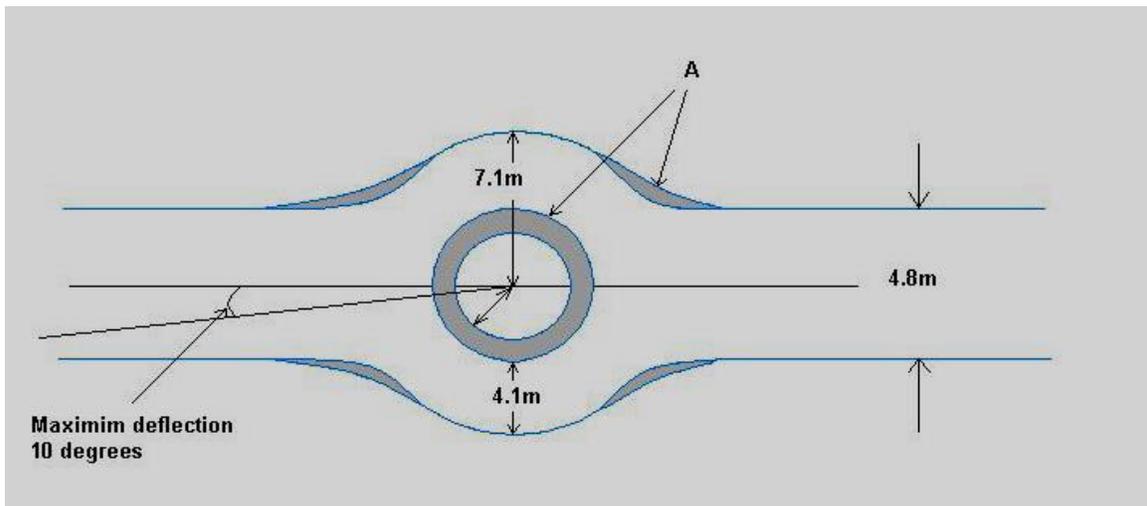


Figure 3.10 Speed Control Island

HIGHWAY DESIGN GUIDE

3.5	SPEED CONTROL MEASURES
-----	------------------------

SPEED CONTROL ROUNDABOUT

- The design can be adapted for crossroads and Y junctions.
- The over-run area should be in a contrasting colour and ridged to deter drivers

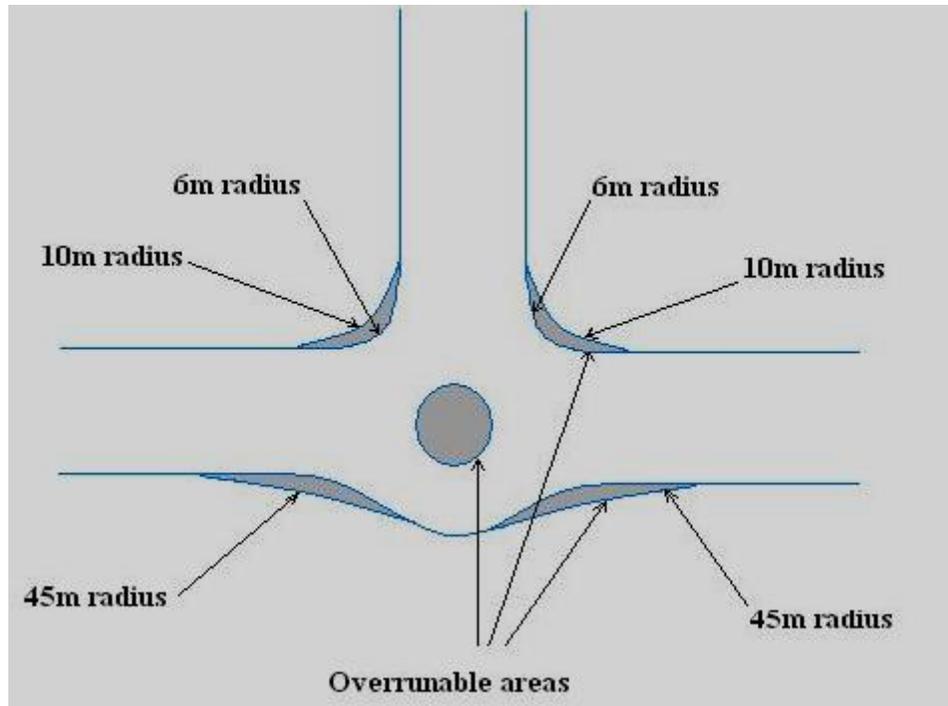


Figure 3.11 Speed Control at a Roundabout

HIGHWAY DESIGN GUIDE

3.6

SURFACE WATER DRAINAGE

An adequate system of drainage must be provided for the collection and disposal of surface water from the roads, footpaths and cycle ways in the development area. It is absolutely essential that the means of disposal of surface water is investigated and agreed with the Highway Authority at the preliminary stage of any development scheme.

It is the responsibility of the Developer to make adequate and satisfactory outfall arrangements for his project, including any necessary consent. It must not be assumed that permission will automatically be granted by the Highway Authority to make connections to the existing highway drainage system in adjacent maintained roads.

The Highway Authority will not consider the road for adoption if an adequate highway drainage system to a suitable piped outfall or watercourse cannot be provided. Soakaways will **not** normally be accepted as a suitable outfall for highway drainage.

When the roads in a development are adopted, the Highway Authority will be responsible only for those drains carrying surface water from these roads. If roof water or water from any other source is introduced, the drain will become a sewer by legal definition and as such, will come under the jurisdiction of the Thames Water Utilities plc who will decide whether to adopt it or not. In such circumstances, the Developer must enter into a separate agreement with the Thames Water Utilities plc or its agent to secure the adoption of the sewer in order that it may become a public sewer. Adoption of the roads will not take place until this procedure has been completed.

Where other than surface water from the highway discharges into the drainage system (e.g. from roofs and hard standings), thus creating sewers in lieu of highway drains, only the gullies and connections will be taken over by the Highway Authority, the Developer must provide calculations in relation to gully spacing, manhole spacing, pipe sizes and velocity/capacity of pipes to demonstrate the adequacy of the drainage system.

HIGHWAY DESIGN GUIDE

3.7

STREET LIGHTING

Street lighting will normally be required on all estate roads, footpaths and cycle ways that are to be within the control of the Highway Authority. The Highway Authority should be approached at an early stage to determine the need, or otherwise for street lighting on each development. The standard of lighting will be determined after approval of the layout and construction details. For electricity supply to the streetlights, the Developer will need to consult the local electricity authority (subject to checking).

HIGHWAY DESIGN GUIDE

3.7

LANDSCAPING

Before applying for planning permission, the wishes of the Local Planning Authority (LPA) with regard to landscape design and retention of existing landscape features should be ascertained. It is essential that an accurate tree and hedgerow survey be carried out in order to plot the position and condition of these features. The survey should include details of species, heights, condition spread of the canopy and girth of all trees (girth to be measured at a height of 1.0m above ground level).

The design of residential access roads to serve the development should, as far as possible, be sympathetic with the LPA's wishes.

In residential areas the Highway Authority will normally only adopt the carriageway and margins, up to 2m, either side (which will normally be either grassed or, if a footway is to be provided, paved), together with any embankments or structures supporting the highway and any visibility splays. Planting outside these areas but within visibility splays should be of a low growing type or should receive sufficient maintenance to ensure that the splays are not obstructed. The landscape scheme will also need to be suitable for submission as part of the planning application for approval by the LPA.

It is most important to design landscaped areas in such a way as to reduce to a minimum further maintenance costs. Designs should be simple and should avoid the use of small and isolated shrub beds and grass areas.

The Highway Authority only has limited funds to maintain landscaped areas within the highway. Therefore, where a higher standard of landscape design and maintenance is desirable, the Developer will need to reach agreement with the LPA for the area to make provision for maintenance to such higher standards.

HIGHWAY DESIGN GUIDE

3.8

REFERENCES

- Environment Agency's publication - '[Guidance on the permeable surfacing of front gardens](#)' for details].
- Department for Transport ~ [Guidance on the use of Tactile Paving Surfaces](#)
- Department for Transport 's Manual For Streets 1 & 2
- Department for Transport's Inclusive Mobility ~ [A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure](#)
- Highway Agency's Design Manual For Roads and Bridges, Volume 6 ~ [Geometric Design of Major/Manual Priority Junctions Table 7/1](#).
- Department of Transport Road Circulars
- Circular 05/99 ~ [20 mph Speed limit Zones](#) –
- Circular 4/96 ~ [Road Humps](#)
Traffic Advisory Leaflets (TAL)

HIGHWAY DESIGN GUIDE

4

INDUSTRIAL/COMMERCIAL ACCESS ROADS

CONTENT

- 4.1 Introduction
- 4.2 Road Hierarchy
- 4.3 Junction Layouts
- 4.4 Turning heads
- 4.5 Surface Water Drainage
- 4.6 Street Lighting

HIGHWAY DESIGN GUIDE

4.1

INTRODUCTION

The types of development served by these roads include the following: -

- Industrial trading estates
- Science parks
- 'Out of Town' shopping centres
- Exhibition centres / theme parks, sports centres and stadia
- Lorry parks / transhipment depots

It is essential that early discussions take place between representatives of the Developer and the Local Highway and Planning Authorities at the planning stage of such development.

HIGHWAY DESIGN GUIDE

4.2	ROAD HIERARCHY
------------	-----------------------

The industrial road classification used in the Design Guide is as follows: -

- **INDUSTRIAL ACCESS ROADS**
- **SERVICE ROADS**

The road hierarchy and alternative layouts for industrial trading estate roads are shown in Figures 4.1 and 4.2.

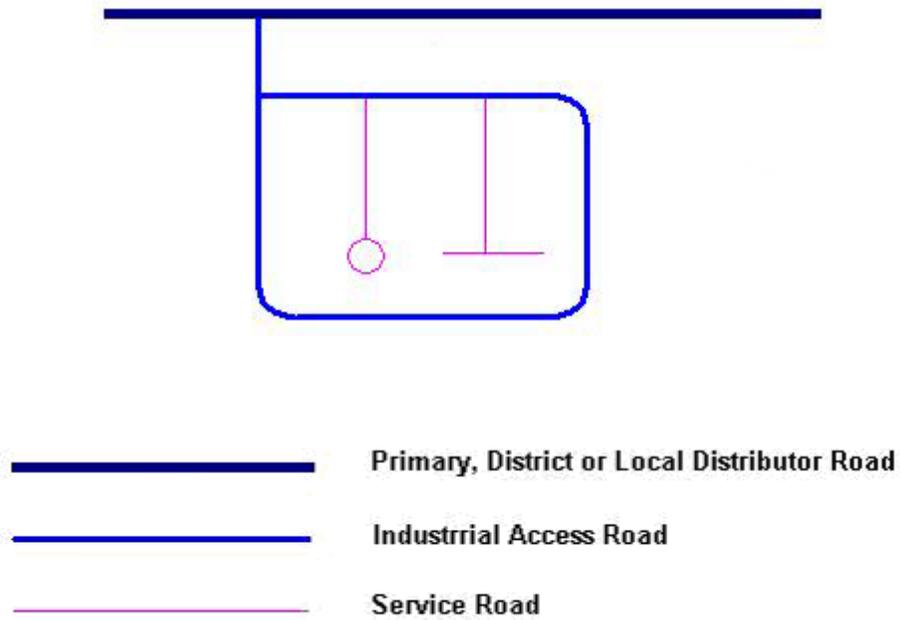


Figure 4.1 Diagrammatic layouts for industrial trading estate roads

HIGHWAY DESIGN GUIDE

4.2	ROAD HIERARCHY
-----	----------------

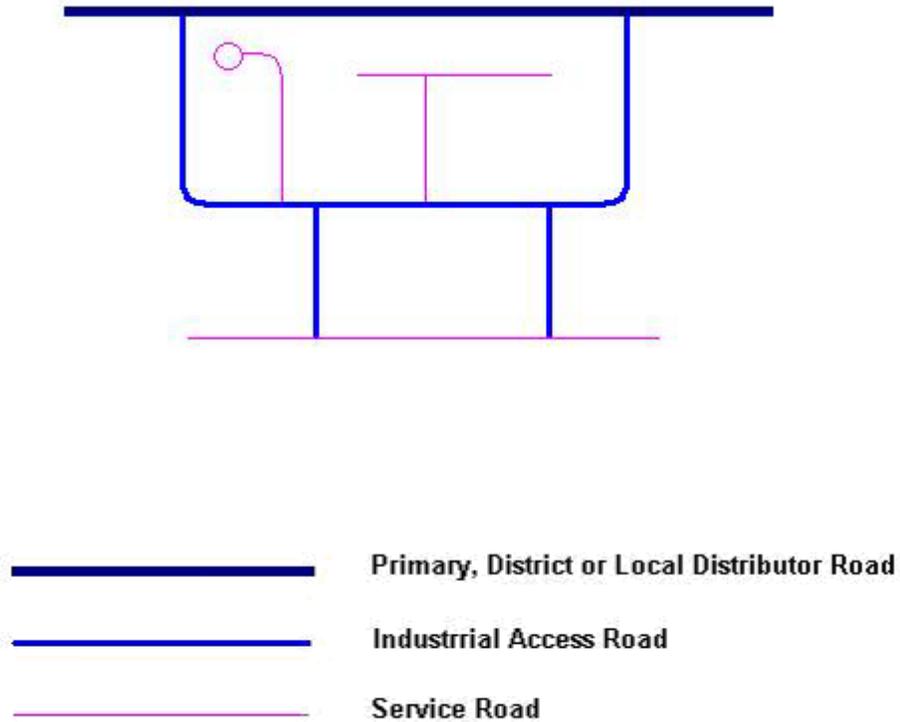


Figure 4.2 Diagrammatic layouts for industrial trading estate roads

ROAD TYPES –

Industrial Access Road

These roads are designed to accommodate traffic flows containing less than 250 commercial vehicle trips per day and provide direct access to industrial units of development.

A road loop or a turning head shall provide for turning movements. See [Section 4.4](#) of the Design Guide.

HIGHWAY DESIGN GUIDE

4.2

ROAD HIERARCHY

Industrial roads carrying traffic flows in excess of 250 commercial vehicle trips per day (i.e. possibly equivalent to about 125,000m² gross floor area) are classed as distributor roads and dealt with in Part 2.

Service Road

This class of road is designed to accommodate traffic flows containing less than 50 commercial vehicle trips per day (i.e. possibly equivalent to about 15,000m² gross floor area). Turning movement shall be provided for by a road loop, or turning head as illustrated in Figures 4.8 and 4.9.

Service roads are not normally considered for adoption.

HIGHWAY DESIGN GUIDE

4.3	JUNCTION LAYOUTS
-----	------------------

LAYOUT STANDARDS FOR INDUSTRIAL ACCESS AND SERVICE ROADS

Road width, alignment, junction spacing and junction layout for industrial access and service roads must comply with the standards set out in Tables 4.2 and Figures 4.4, 4.5 and 4.7 below. Where junctions are to be formed off existing or new distributor roads, reference should be made to Part 2 of the Guide.

Unobstructed forward visibility must be provided across bends in accordance with the detail shown on Figure 4.3 in conjunction with the minimum sight distances given in Table 4.2

If the carriageway centre line radius is less than 150m carriageway widening is required in accordance with Table 4.3

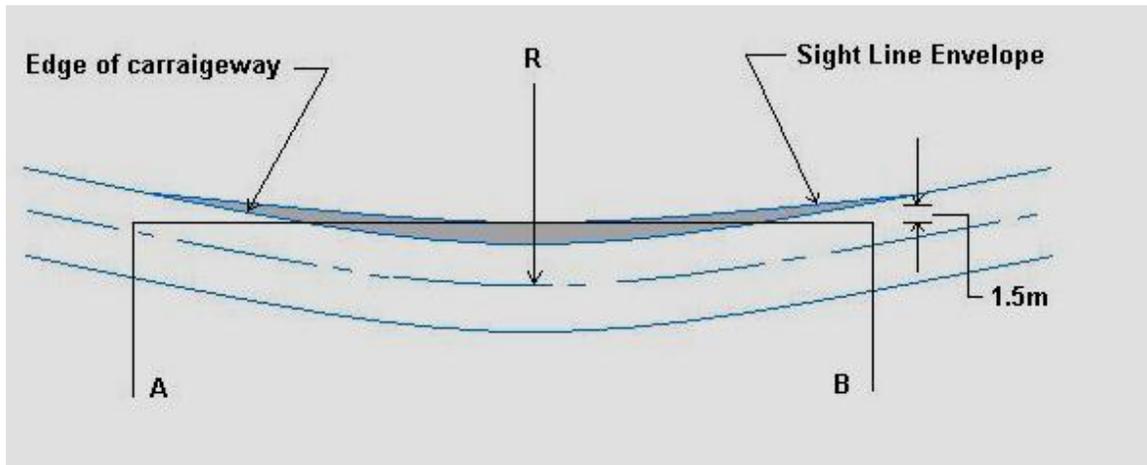


Figure 4.3 Forward visibility curves on bends

HIGHWAY DESIGN GUIDE

4.3 JUNCTION LAYOUTS

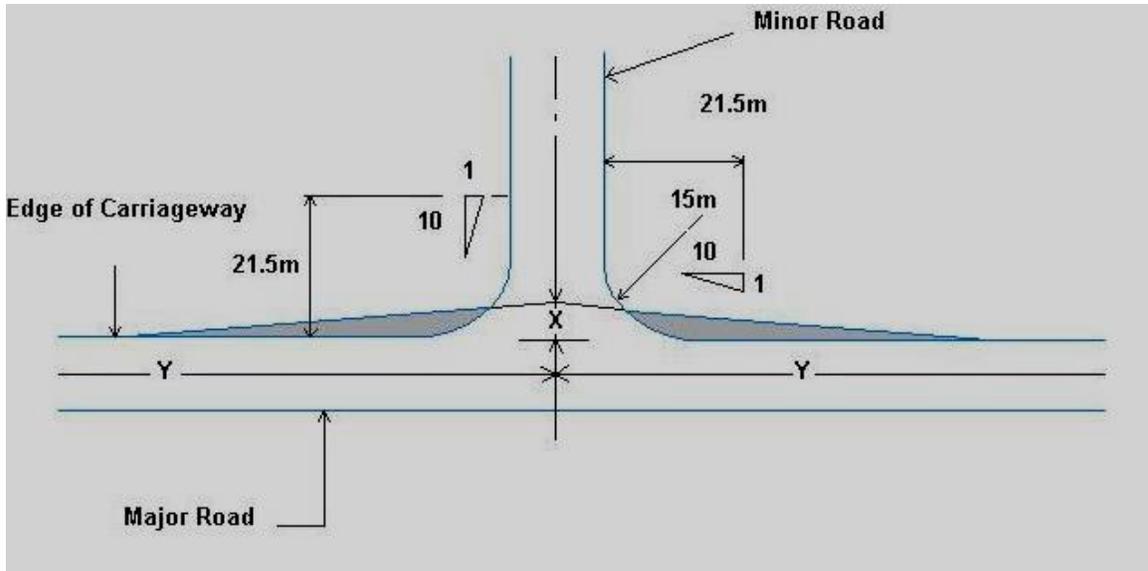


Figure 4.4 Junction layout standards (junction off industrial access road)

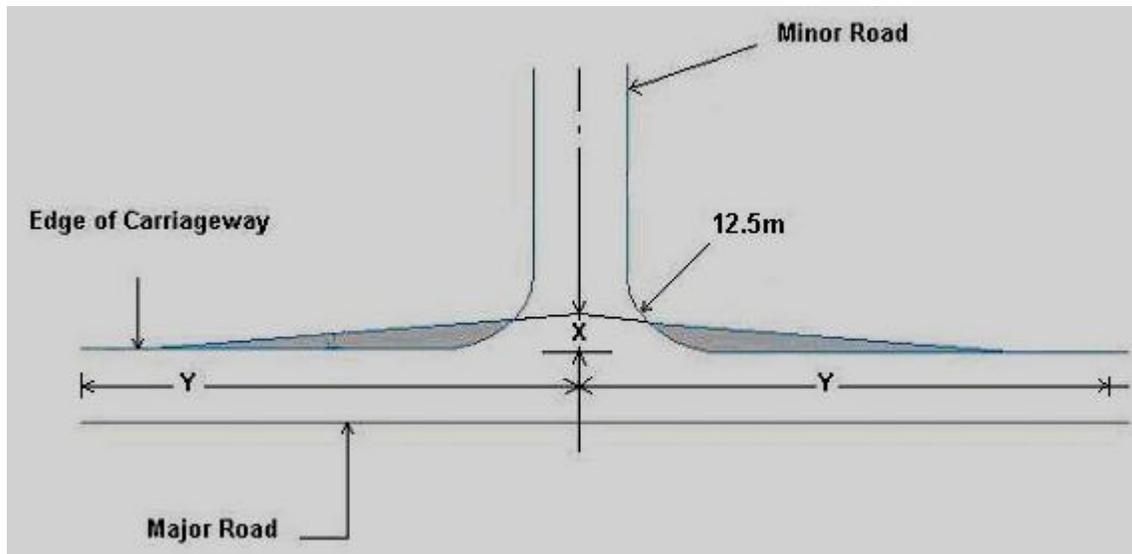


Figure 4.5 Junction layout standards (junction off service road)

Notes:

- All land within sight lines is to be included in the public highway.
- The visibility must be available on a line between two points 1.05m above the carriageway level.

HIGHWAY DESIGN GUIDE

4.3	JUNCTION LAYOUTS
-----	------------------

- Care must be taken in placing signs and street furniture within the visibility splays to ensure that their obstructive effect is minimal.
- Trees and plants will only be permitted with the specific approval of the Highway Authority.

ACCESSES TO INDUSTRIAL PREMISES

Accesses should be designed together with on site vehicle parking and manoeuvring areas to ensure that vehicles can be driven into and out of the premises in forward gear without interference to the flow of traffic.

Figure 4.5 illustrates an acceptable form of two-way access.

Single way accesses may be preferred to facilitate manoeuvring of commercial vehicles within the site. In this situation a modified design as shown by Figures 4.6 and 4.7 can be used.

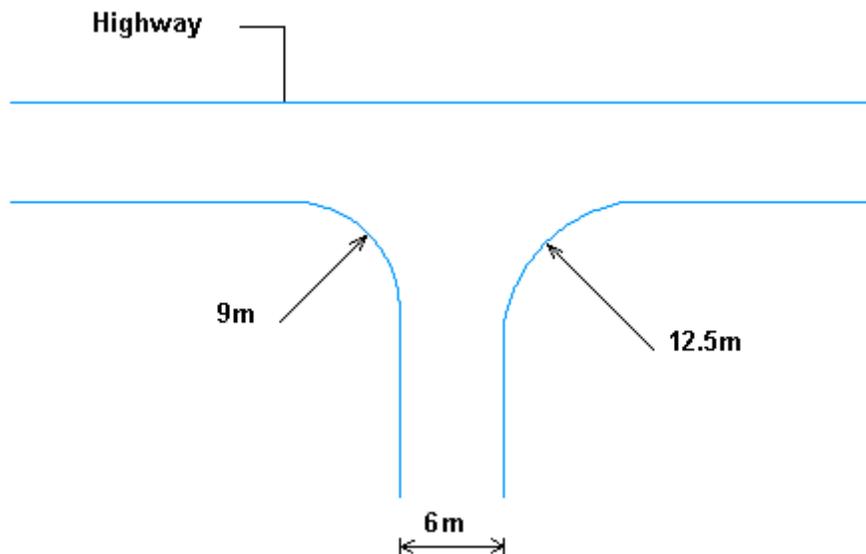


Figure 4.6 Single way industrial access ~ Individual Ingress

HIGHWAY DESIGN GUIDE

4.3 JUNCTION LAYOUTS

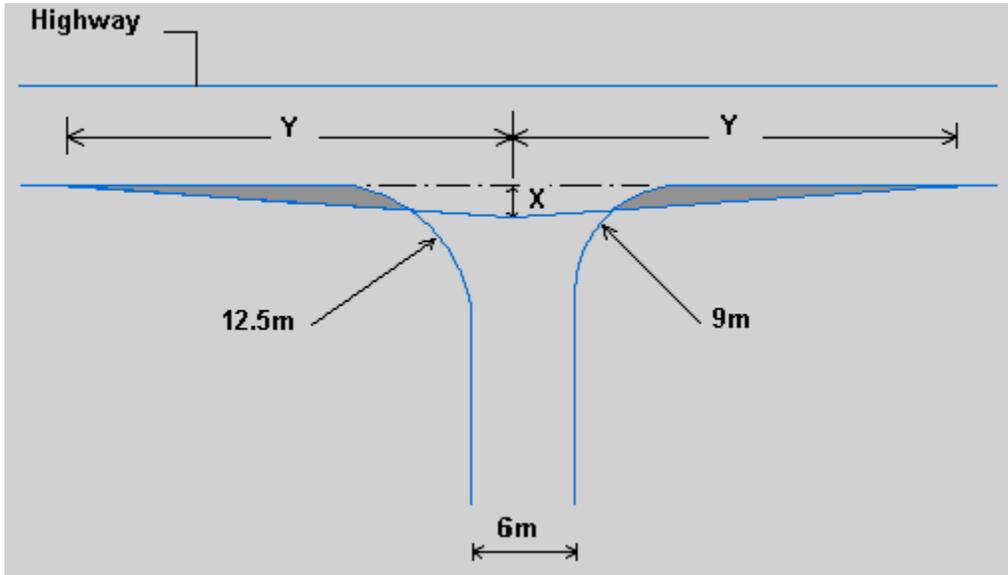


Figure 4.7 Single way industrial access ~ Individual Ingress

A minimum X ~ distance of 4.5m is required on all Industrial Access Roads and Service Road. The Y ~ distance must comply with the standards set out in the following table.

Table 4.1

Speed limit (mph)	20	30	40	50	60	70
SSDs	45	90	120	160	215	295

HIGHWAY DESIGN GUIDE

4.3

JUNCTION LAYOUTS

In all cases visibility must be available on a line between two points 1.05m above the road levels and care must be taken in placing of signs and street furniture within the visibility splays to ensure that their obstructive effect is minimal.

Where there is a gated access there must be a sufficient draw-in space of at least 18m depth to permit the vehicle to clear the highway before having to stop.

HIGHWAY DESIGN GUIDE

4.3

JUNCTION LAYOUTS

Table 4.2 Summary of the layout standard for Industrial Access and Service Roads

Road Type	Maximum number of commercial vehicle trips/day	Target Speed mph	Carriageway width m	Minimum centre line radius R m	Minimum sight distance A-B m	Junction Spacing		Kerb Radii Minimum r m
						Adjacent m	Opposite m	
Industrial Access Road	250	30	7.3m 2 x 2m footway	90	70	90	40	15
Service Road	50	25	6.0m 2 x 2m footway	60	70	50	30	12.5

Notes: Horizontal alignment ~ sight distance is measured from a point 1.5m into the carriageway from the inner channel.

HIGHWAY DESIGN GUIDE

4.3 JUNCTION LAYOUTS

Centre Line Radius (metres)	Carriageway Width on Curve (m)	
	Normal Width Industrial	Access Road
60	7.3	8.5
70	7.3	8.3
80	7.3	8.1
90-150	7.3	7.9

Table 4.3 Carriageway widening on curves

Notes: For curves of intermediate radii widths are to be interpolated.
The extra width shall be applied uniformly along transition curves

HIGHWAY DESIGN GUIDE

4.3

JUNCTION LAYOUTS

CROSSFALLS

Carriageways - Except on curves where super elevation may be required the cross fall shall be 2.5% from the crown.

Footways - Footways shall have a minimum cross fall of 4%

Verges - The maximum cross fall of verges shall be 4%, Cutting slopes shall be a maximum of 33% and embankment slopes a maximum of 50%.

Super elevation

On industrial access roads where the centre line radius is less than 500m, adverse cross fall shall be eliminated and full width cross fall applied in accordance with the formula: -

$$\frac{\text{Cross fall}}{R} = 900\%$$

Where R is the radius in metres: - The minimum cross fall is 2.5%

The maximum cross fall is 5%

The difference in grade between the inner channel and outer channel should not exceed 1%. The application or removal of the super elevation shall be by means of transitional curves of the appropriate length.

HIGHWAY DESIGN GUIDE

4.3	JUNCTION LAYOUTS
------------	-------------------------

CLEARANCE FROM THE CARRIAGEWAY

Horizontal - The minimum clearance between the edge of the carriageway and any structure shall be 600mm

Vertical - The minimum headroom, below bridges and buildings on all-purpose roads is 5.3m. The minimum headroom under footbridges and gantries is 5.7m

Vertical Alignment

The maximum and minimum gradients allowable on new developments are shown in the table below:

Road Type	Maximum Gradient	Minimum Gradient	Minimum curve length
Industrial Access Road	6%	0.67%	10k 30
Service Road	7%	0.67%	6k 10

Notes:	Vertical alignment ~ 'K' is the algebraic difference between gradients expressed as a percentage.
---------------	---

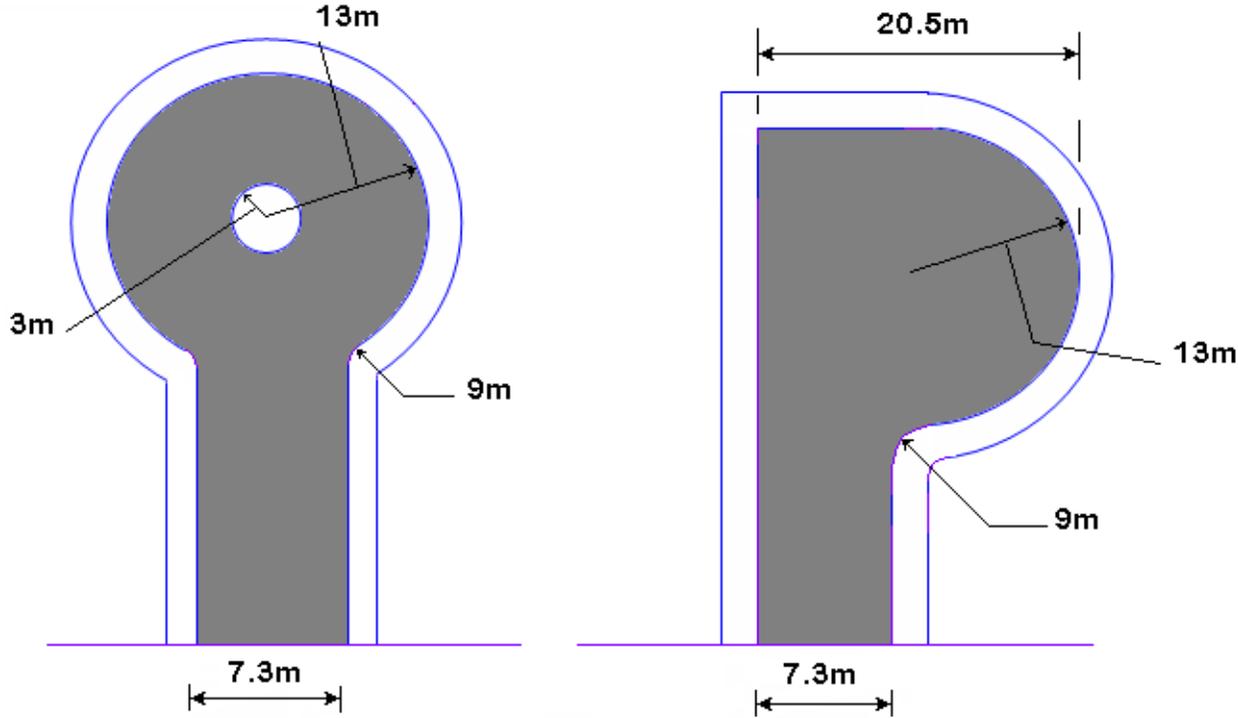
HIGHWAY DESIGN GUIDE

4.4

TURNING HEADS

TURNING HEADS

Whenever possible cul-de-sac access should be avoided but where this cannot be done, turning heads must be provided at the end of each cul-de-sac. The size of turning head will depend on the type of vehicle likely to be using the turning provision on a regular basis. The minimum dimensions for turning heads are given in Figures 4.5



Figures 4.8 Turning spaces in cul-de-sac based on a carriageway width of 7.3m

HIGHWAY DESIGN GUIDE

4.4 TURNING HEADS

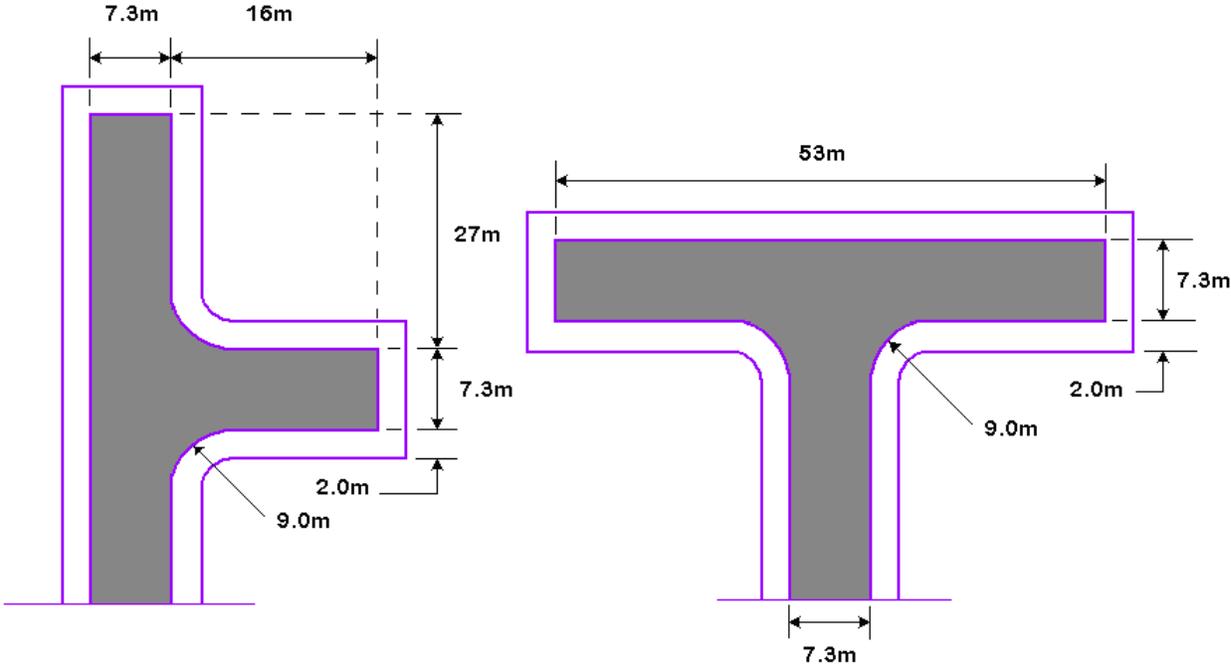


Figure 4.9 Turning spaces in cul-de-sac based on a carriageway width of 7.3m

HIGHWAY DESIGN GUIDE

4.5

SURFACE WATER DRAINAGE

An adequate system of drains must be provided for the collection and disposal of surface water from the roads, footpaths and cycle ways in the development area. It is absolutely essential that the means of disposal of surface water be investigated with the Highway Authority at the preliminary stage of any development scheme.

It is the responsibility of the Developer to make adequate and satisfactory outfall arrangements for his project, it must not be assumed that permission will automatically be granted by the Highway Authority to make connections to the existing highway drainage system in adjacent maintained roads.

The Highway Authority will not consider any road for adoption in any adequate highway drainage system to a suitable piped outlet or watercourse cannot be provided. Soakaways will not normally be accepted as a suitable outfall for highway drainage.

Gully Spacing

This is governed by the nature and gradients of the area to be drained but as a general guideline one gully per 200m² of drainage area may be sufficient. Gullies must be provided at all low points and at tangent points or junctions.

Inspection Covers Spacing

Spacing for inspection covers shall not exceed 90.0m for pipe diameters up to 300mm or 100.0m for pipes larger than this. They shall be provided at all changes in direction, gradient or diameter and at all connection to other pipes, existing or new.

Pipe sizes shall accord with design calculations but in no case shall they be less than 150mm in diameter, and gradients shall be such as to obtain velocities not greater than 4.50m/sec and not less than 0.75m/sec.

HIGHWAY DESIGN GUIDE

4.5

SURFACE WATER DRAINAGE

When roads in a development are adopted the Highway Authority will be responsible only for those drains carrying surface water from these roads. If roof water or water from any other source is introduced, the drain will become a sewer by legal definition and as such will come under the jurisdiction of the Thames Water Authority. In such circumstances the Developer must enter into a separate agreement with the appropriate district council as agent for the Water Authority to secure the adoption of the sewer in order that it may become a public sewer. Adoption of the roads will not take place until this procedure has been completed.

Where other than surface water from the roads discharges into the drainage system, creating sewers in lieu of highway drains, only the gullies and connections will be taken over by the Highway Authority.

HIGHWAY DESIGN GUIDE

4.6

STREET LIGHTING

Street lighting will be required on all roads and footpaths, which are to be taken over by the Highway Authority. **The Head of Highways and Engineering** will determine the standard of lighting after approval of the layout and construction details. For electricity supply to the streetlights the Developer will need to consult the local electricity authority. On certain roads and roundabouts a private cable system of supply may be specified by the Highway Authority.

HIGHWAY DESIGN GUIDE

5

PARKING

CONTENT

- 5.1 Introduction**
- 5.2 Parking Standards**
- 5.3 Parking Design Layouts**
- 5.4 Surface Water Drainage**
- 5.5 Street Lighting**
- 5.6 References**

HIGHWAY DESIGN GUIDE

5.1

INTRODUCTION

The objective of the Borough's parking standard is to reduce the amount of land dedicated to parking, but set at a level to reflect the location of the development to local facilities, car ownership, public transport and accessibility and encourage the use of sustainable travel where suitable.

Accessibility criteria for parking in town centres or areas where there are good public transport services will be applied to reduce the amount of land used for car parking and so reduce the number of vehicles travelling to the area.

The criteria are consistent with the proposed Local Plan housing density accessibility zones. Where locations for new or expanded residential and non-residential developments cannot be easily accessed without a car, a Developer will be expected to provide appropriate measures or contributions to ensure adequate accessibility.

With certain forms of residential development, cycle parking provision will be required; secure cycle parking should be allocated for all new dwellings or within the overall development site. Purpose-made cycle cages should normally be provided, rather than freestanding sheds or lean-tos, which tend to become the focus for the theft of bicycles and parts. In blocks of flats, a proportion of secure cycle parking will be required and will be calculated on a case specific basis.

A proportion of secure motorcycle parking may also be required in the case of larger residential developments.

HIGHWAY DESIGN GUIDE

5.2	PARKING STANDARDS
------------	--------------------------

RESIDENTIAL PARKING			
Classification	Use	Maximum Parking Standard (Areas of Poor Accessibility)	Maximum Parking Standard (Areas of Good Accessibility)
C3 General Residential	1 bedroom units	1 space per unit	0.5 space per unit
	2-3 bedroom units	2 spaces per unit	1 space per unit
	4 or more bedroom units	3 spaces per unit	2 spaces per unit
	Flats with communal spaces	1 space per bedroom	0.5 spaces per unit bedroom
C2	Hostels	1 space per 3 residents	1 space per 6 residents
C1	Hotels / boarding and guest houses	1 space per bedroom	1 space per 2 bedrooms
C3	Active elderly with warden control (sheltered housing)	1 space per unit	0.5 spaces per unit
C2	Nursing and rest homes	1 space per 4 residents and 1 space per full-time staff	1 space per 8 residents and 0.5 space per full-time staff

A Travel Plan may be required to cover staff and visitors for some of the above categories

HIGHWAY DESIGN GUIDE

5.2	PARKING STANDARDS
------------	--------------------------

COMMERCIAL			
Classification	Use	Maximum Parking Standard (Areas of Poor Accessibility)	Maximum Parking Standard (Areas of Good Accessibility)
B1	Business	1 space per 35m ²	1 space per 100m ²
B2	Industrial	1 space per 35m ²	1 space per 100m ²
B8	Warehouse	1 space plus 1 lorry space per 90m ² , plus 1 space plus 1 lorry space per every 200m ²	1 space per 303m ² , plus 1 lorry space per 200m ²
A Travel Plan is required to cover staff and visitors for all categories			

HIGHWAY DESIGN GUIDE

5.2

PARKING STANDARDS

RETAIL			
Classification	Use	Maximum Parking Standard (Areas of Poor Accessibility)	Maximum Parking Standard (Areas of Good Accessibility)
A1- A2	Individual shop units, financial and professional services up to 550m ²	1 space per 30m ² (4 spaces per 120m ²)	1.5 spaces per 60m ² (3 spaces per 120m ²)
	Individual shop units, financial and professional services between 550m ² and 2500m ²	1 space per 30m ² , plus 1 lorry space per unit	1.5 spaces per 60m ²
A3	Food and drink (restaurant, public houses, cafés, wine bars licensed clubs)	1 space per 6m ² dining / bar / dance area	1.5 spaces per 12m ²
A1	Non-food general retail with floor area less than 2,500m ²	1 space per 30m ² , plus 1 lorry space per 1,000m ²	1.5 spaces per 60m ²
	Food retail	1 space per 14m ² covered area, plus 1 lorry space per 500m ²	1.5 spaces per 28m ²
	DIY stores, garden centres	1 space per 25m ² open and covered display area, plus 1 lorry space per 500m ²	1.5 spaces per 50m ²

HIGHWAY DESIGN GUIDE

5.2	PARKING STANDARDS
------------	--------------------------

EDUCATIONAL ESTABLISHMENTS

Classification	Use	Maximum Parking Standard (Areas of Poor Accessibility)	Maximum Parking Standard (Areas of Good Accessibility)
	Day nurseries, playgroups, crèches	1 space per 1 full-time equivalent staff	1.5 spaces per 4 full-time equivalent staff
D1	Schools	1 space per 1 full-time equivalent staff	1.5 spaces per 4 full-time equivalent staff
	Higher and further education	1 space per 2 full-time equivalent staff, plus 1 space per 15 students	1 space per 4 full-time equivalent staff, plus 1 space per 30 students
C2	Halls of residence, residential schools and children's homes	1 space per 1 full-time equivalent staff	1 space per 4 full-time equivalent staff
A Travel Plan is required to cover staff, pupils/students and visitors for all categories			

HIGHWAY DESIGN GUIDE

5.2	PARKING STANDARDS
------------	--------------------------

HEALTH AND MEDICAL ESTABLISHMENTS
--

Classification	Use	Maximum Parking Standard (Areas of Poor Accessibility)	Maximum Parking Standard (Areas of Good Accessibility)
C2	Hospitals	1 space per 4 full-time staff plus 1 space per 3 daily visitors	1.5 spaces per 6 full-time staff, plus 1 space per 6 daily visitors
D1	Doctors, dentists, veterinary surgeries, health centres	3 spaces per consulting room (incl. staff)	1.5 spaces per consulting room

A Travel Plan is required to cover staff and visitors for all categories

HIGHWAY DESIGN GUIDE

5.2	PARKING STANDARDS
------------	--------------------------

LEISURE AND CONFERENCE CENTRES

Classification	Use	Maximum Parking Standard (Areas of Poor Accessibility)	Maximum Parking Standard (Areas of Good Accessibility)
D1	Libraries, museums, art galleries	1 space per 30m ²	Nil space
	Places of workshop/churches	1 space per 5 fixed seats and 1 space per 10m ² open hall	1 space per 10 fixed seats and 0.5 space per 10m ² open hall
D2	Halls, sports halls and community centres	1 space per 30m ²	1 space per 60m ²
	Cinemas, theatres and conferences centres	1 space per 5 fixed seats	1 space per 10 fixed seats
	Bowling alleys	4 spaces per lane	Nil space
	Sports fields	12 spaces per hectare of pitch	6 spaces per hectare of pitch
	Tennis courts, squash courts, swimming pools, golf courses, marinas, health clubs, equestrian uses or other undefined uses	Individual assessment	Individual assessment

Travel Plan required to cover staff and visitors for all categories of developments of 500m² or above

HIGHWAY DESIGN GUIDE

5.3

PARKING DESIGN

The Borough recommends a minimum car-parking bay of **2.5m x 5.0m** with a minimum garage dimension of **3.0m x 6.0m**. The parking requirements for individual dwellings and communal parking areas are detailed below:

PRIVATE DRIVEWAYS

Driveways serving garages in dwellings to be: -

Long enough to accommodate a car parked in front of the garage, which would enable the garage door to be opened without the car having to project beyond the site curtilage onto public highway. This length should be a minimum of 6m.

Parking spaces on an open driveway should conform to the following requirements: -

Be wide enough to allow access to both sides of the parked car and also, on one side, allow for a pathway to the house. This width should be no less than 3.2m. If one side of the car is adjacent to a wall or a boundary fence the minimum width of the bay should be 2.7m. This distance should be increased to 3.0m if both sides of the parking bay are bounded by a solid surface or boundary. Special considerations should be given to widths and lengths of driveways designed for occupation by wheel chair users.

Be at least 5m between the back of the pavement or property boundary (the face of the wall, fence or hedge, for example) and the front of a building. A minimum distance of 6.0m is required if the car is parked in front of the entrance to the house or garage.

Have a gradient no greater than 1 in 12 along the length of the driveway.

As mentioned above no part of the car parked within the property should project onto or over the public highway. The crossing should not be used as a parking area.

HIGHWAY DESIGN GUIDE

Two crossings serving a single property (entrance and exit)

The general rule is that the more points on the highway where vehicles turn, the more potential for traffic conflict there is. Therefore, applications for two crossovers or access points to a single property, or a second crossover or access point where one already exists will not normally be approved for domestic dwellings unless there is strong evidence that it will add significantly to highway safety.

For such applications to be considered, the applicant will need to show:

- How a second crossover or access point will add to the safety of the access arrangement.
- Why such added safety cannot be achieved from a single crossover or access point, or by improving or repositioning an existing one.

Parallel parking is not actively promoted but may be considered in exceptional circumstances. A minimum frontage depth of 3m with a minimum width of 6m will be required

HIGHWAY DESIGN GUIDE

5.3	PARKING DESIGN
------------	-----------------------

Where a private drive is accessed off an A, B, C or other traffic sensitive road the parking and turning layout should comply with the design criteria as set out in Figure 5.1

Tandem parking

Cars parked in a tandem format should comply with the following the design criteria set out in Figure 5.2

PRIVATE DRIVEWAYS

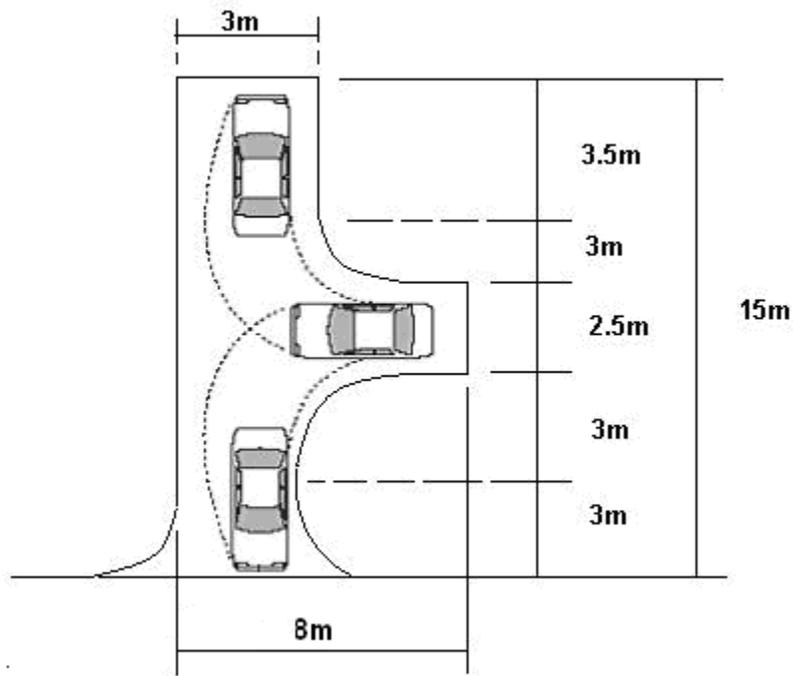


Figure 5.1 Parking and turning provision for a single dwelling

HIGHWAY DESIGN GUIDE

5.3 PARKING DESIGN

PRIVATE DRIVEWAYS

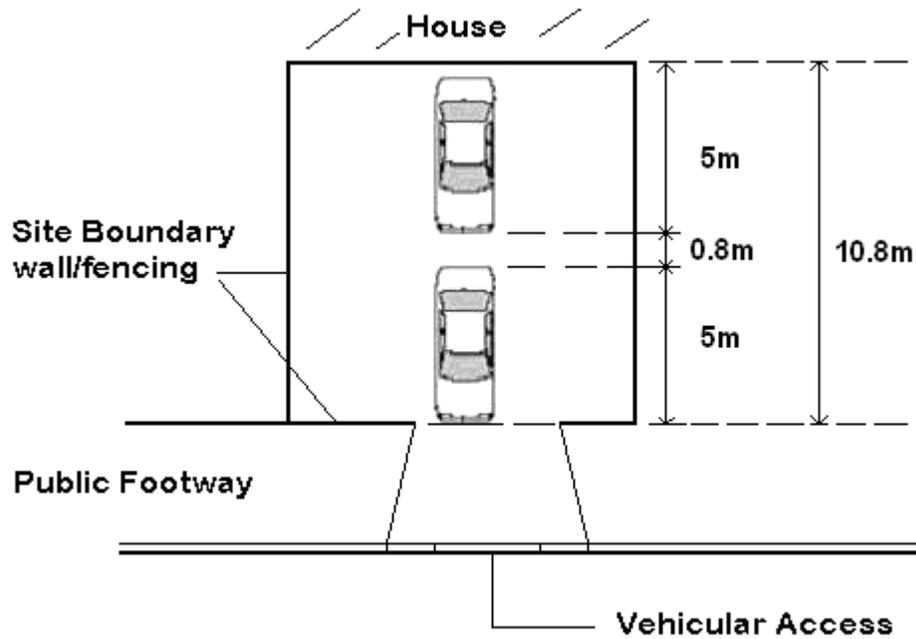


Figure 5.2 Cars parked in tandem

COMMUNAL PARKING BAY LAYOUTS

Below is a series of accepted parking formats: -

90 Degree Parking

Where parking at right angles, a forecourt depth of 6m is required for manoeuvrability purposes. An additional 800mm strip at the back of the bays is also required to allow for vehicle overhang.

HIGHWAY DESIGN GUIDE

5.3	PARKING DESIGN
-----	----------------

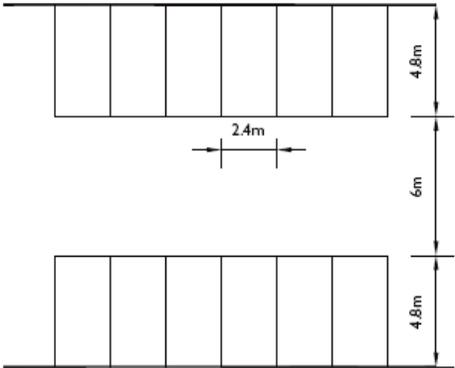


Figure 5.3

60 Degree Parking

A forecourt depth of 4.2m is required to allow for two way. An additional 800mm strip at the back of the bays is also required to allow for vehicle overhang.

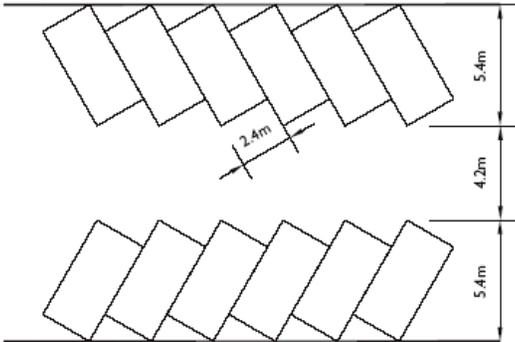


Figure 5.4

HIGHWAY DESIGN GUIDE

5.3	PARKING DESIGN
-----	----------------

COMMUNAL PARKING BAY LAYOUT

45 Degree Parking

This format requires a minimum forecourt depth of 3.6m. However, this layout restricts traffic to one-way flow. An additional 800mm strip at the back of the bays is also required to allow for vehicle overhang.

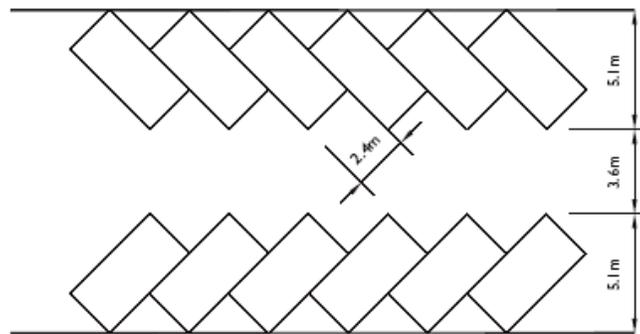


Figure 5.5

Parallel Parking

For parallel parking the dimension of the parking bays should be 2m x 6m or 2.4m wide if there is no footway or a paved area alongside the bay.

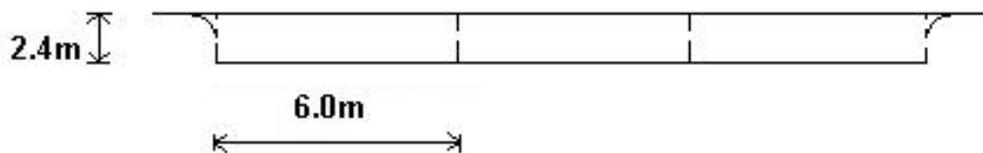


Figure 5.6

HIGHWAY DESIGN GUIDE

5.3 PARKING DESIGN

GARAGE COURTS Single sided access

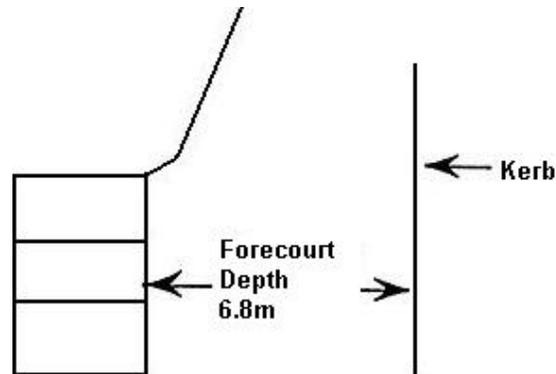


Figure 5.7

Where a low kerb forms one side of the forecourt, which allows cars to overhang the kerb, the forecourt depth may be reduced by 0.5m.

Double sided access

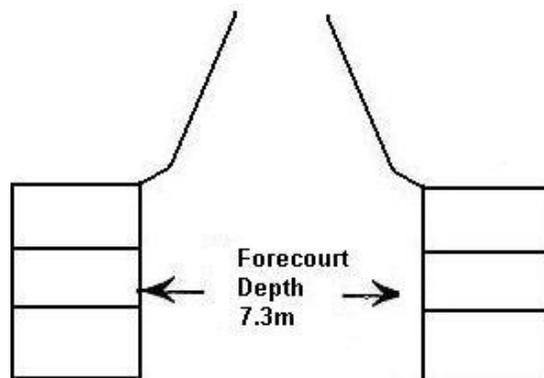


Figure 5.8

Where space for the forecourt is critical, the depth may be reduced to 6.0m.

HIGHWAY DESIGN GUIDE

5.3 PARKING DESIGN

DISABLED PARKING SPACES

Detailed design specifications for disabled parking spaces are set out in Traffic Advisory Leaflet 05/95. Traffic signs and road markings for on street bays reserved for disabled badge holders should comply with The Traffic Signs Regulations and General Directions (TSRGD) and further guidance is provided in Traffic Signs Manual Chapter 3 and Traffic Signs Manual Chapter 5.

Car parking spaces for the mobility handicapped drivers must be marked as shown in the Figure 5.9 below and in the case of a public car park should also be sign posted at the entrance. The dimension of the bays should be 3.6m or at least 3m wide where two adjacent bays share an unloading area. It should be designed to allow wheelchair users to gain access from the side and the rear and protect the user from moving traffic if it is not possible to exit the car on the footway side.

DISABLED PARKING SPACES

Inclusive Mobility recommends that dropped kerbs with tactile paving are provided adjacent to car parking spaces.

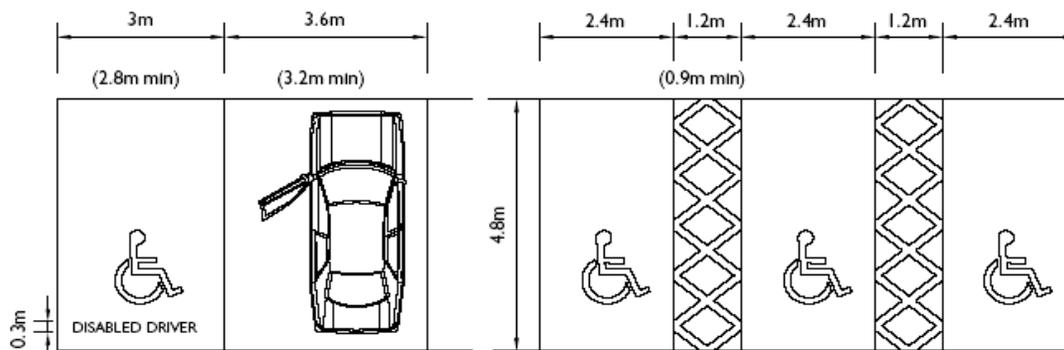


Figure 5.9

HIGHWAY DESIGN GUIDE

5.3

PARKING DESIGN

CYCLE PARKING

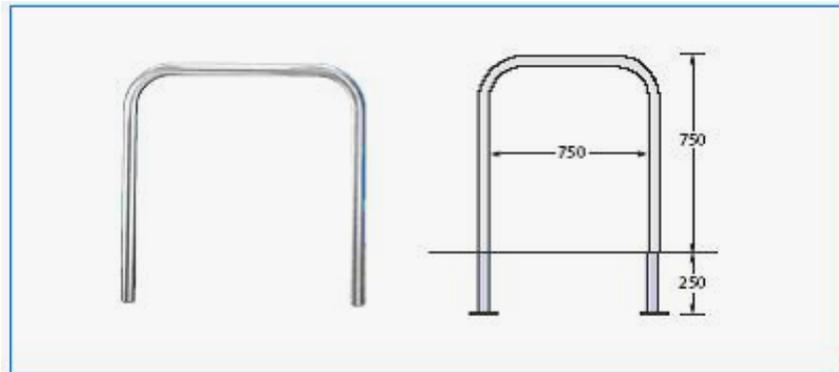


Figure 5.10 Cycle Stands

The Sheffield type stand consist of a horizontal two vertical tubes 750mm high joined at the top by a horizontal tube. The tubing is normally 48mm in diameter.

CYCLE PARKING

When erecting stands, the following requirements should be met:

- Stands should not be positioned in line of any pedestrian movement
- Stands should be located where frequent surveillance is possible. Stands otherwise located will encourage vandals and thieves.
- Stands should be protected from the weather in locations where bicycles will be parked for long periods (e.g. more than two hours).
- Where stands may be used after dark they should be positioned close to a light source.
- The location of bicycle stands should be clearly signposted.
- Allow a 1m between each stand

HIGHWAY DESIGN GUIDE

5.3

PARKING DESIGN

Further information on cycle design guidance can be obtained from the following web sites: -

The Department for Transport's Cycle Parking, *Key Principle Design Guidance*

[www.cyclingengland.co.uk]

London Cycle Network – Design Manual

An example of expected cycle parking provision is detailed in the table below.

Location Category	Land Use Category	Location	Cycle Parking Standard
Places of Work	B1/A2	Business Offices, Services	1/125m ² with minimum of 2 spaces
	B1	Light Industrial	1/250m ² with minimum of 2 spaces
	B2-B7	General Industrial	1/500m ² with minimum of 2 spaces
	B8	Warehouses	1/500m ² with minimum of 2 spaces
Shopping	A1	Food Retail	Out of town 1/350m ² Town centre/local shopping centre 1/125m ²
	A1	Non-Food Retail	Out of town 1/1500m ² with minimum of 4 spaces Town centre/local shopping centre 1/300m ²
	A1	Garden Centre	1/300m ² with minimum of 2 spaces
Educational	D1	Primary Schools	1 space per 10 staff
	D1	Secondary Schools	1 space per 10 staff/students
	D1	Universities, Colleges	1 space per 8 staff/students
Entertainment	A3	Pubs, Wine Bars	1/100m ² with minimum of 2 spaces
	A3	Fast Food Takeaway	1/50m ² with minimum of 2 spaces
	A3	Restaurants, Cafes	1 space per 20 seats with minimum of 2 spaces
	D2	Theatres, Cinemas	1 space per 50 seats with minimum of 2 spaces
	D2	Leisure, Sports Centres, Swimming Pools	1 space per 10 staff plus 1 space per 20 peak period visitors
Housing	C2	Student accommodation	1 space per 2 students
	C3	Flats	1 space per unit
Community	D1	Doctor and Dentist Surgeries, Health Centres and Clinics	1 space per 5 staff plus 1 space per 5 staff for visitors
	D1	Libraries	1 space per 10 staff plus 1 space per 10 staff for visitors
	C2	Hospitals	1 space per 5 staff plus 1 space per 10 staff for visitors
Transport		Rail Stations	See text
		Bus Stations	Meet local demand

HIGHWAY DESIGN GUIDE

5.4

SURFACE WATER DRAINAGE

An adequate system of drainage must be provided for the collection and disposal of surface water from the roads, footpaths and cycle ways in the development area. It is absolutely essential that the means of disposal of surface water is investigated and agreed with the Highway Authority at the preliminary stage of any development scheme.

It is the responsibility of the Developer to make adequate and satisfactory outfall arrangements for his project, including any necessary consent. It must not be assumed that permission will automatically be granted by the Highway Authority to make connections to the existing highway drainage system in adjacent maintained roads.

The Highway Authority will not consider the road for adoption if an adequate highway drainage system to a suitable piped outfall or watercourse cannot be provided. Soakaways will **not** normally be accepted as a suitable outfall for highway drainage.

When the roads in a development are adopted, the Highway Authority will be responsible only for those drains carrying surface water from these roads. If roof water or water from any other source is introduced, the drain will become a sewer by legal definition and as such, will come under the jurisdiction of the Thames Water Utilities plc who will decide whether to adopt it or not. In such circumstances, the Developer must enter into a separate agreement with the Thames Water Utilities plc or its agent to secure the adoption of the sewer in order that it may become a public sewer. Adoption of the roads will not take place until this procedure has been completed.

The Developer must provide calculations in relation to gully spacing, inspection cover spacing, pipe sizes and velocity/capacity of pipes to demonstrate the adequacy of the drainage system.

HIGHWAY DESIGN GUIDE

5.5	STREET LIGHTING
-----	-----------------

Street lighting will normally be required on all estate roads, footpaths and cycle ways that are to be taken over by the Highway Authority. The Highway Authority should be approached at an early stage to determine the need, or otherwise for street lighting on each development. The standard of lighting will be determined after approval of the layout and construction details. For electricity supply to the streetlights, the Developer will need to consult the local electricity authority (subject to checking).

HIGHWAY DESIGN GUIDE

5.6	REFERENCES
-----	------------

- Department for Transport's Traffic Signs Manual Chapter 3 ~ [Regulatory Signs](#)
- Department for Transport's Traffic Signs Manual Chapter 5 ~ [Road Markings](#)
Traffic Advisory Leaflets (TAL)
- TAL 05/05 ~ [Parking for Disabled People](#)
- Transport for London ~ [Workplace Cycle parking Guide](#)
- Bike Parking and Security Association ~ [Quality Cycle Parking Standard Issue 1](#)
- Sustrans information sheet 2004 ~ [Cycle Parking](#)

HIGHWAY DESIGN GUIDE

6

APPENDICES

CONTENT

- 6.1 Section 278 Agreements
- 6.2 Section 38 Agreements
- 6.3 Advance Payment Code (APC)
- 6.4 Road Safety Audits
- 6.5 Traffic Regulation Orders

HIGHWAY DESIGN GUIDE

6.1

SECTION 278 AGREEMENTS

The Developer or his appointed Agent is advised to contact the Council at the earliest opportunity to ensure that the requirement to obtain technical approvals and agreements does not cause any unnecessary delays.

The Council uses a standard model Agreement and a draft can be issued upon request. Please note that it may be necessary to make amendments to the wording of the Agreement in some instances for example to allow for specific highway structures and commuted sums to be included.

It is a requirement of the Council that the safety audit process is carried out for all highway works covered by Section 278 Agreements. These are to be undertaken by an accredited safety auditor independent from the design consultant.

The Developer is responsible for complying with all aspects of the Construction Design and Management Regulations 2007 and indemnifying the Council against all claims, liabilities and actions if they fail to do so. With regard to The Land Compensation Act 1973 and the Noise Insulation Regulations 1975 (Updated 1988) the Developer is also required to indemnify the Council against all claims and liabilities.

The Developer must comply with all aspects of the Health and Safety at Work Act 1974.

Please note that if the proposed highway works only involve constructing a new vehicular crossing over a footway a Developer may be able to carry out this work pursuant to Section 184 of The Highways Act 1980 by license.

Legislation

Any works required on the highway as a result of a planning permission being granted are carried out in most instances under Section 278 of The Highways Act 1980 (as amended by Section 23 New Roads and Street Works Act 1991).

HIGHWAY DESIGN GUIDE

6.1

SECTION 278 AGREEMENTS

The entering into of a legal agreement will allow the Developer to carry out and / or fund the highway works and any accommodation works.

Completing a Section 278 Legal Agreement

The Council's Legal Department will prepare the agreement on behalf of the Council's Head of Planning and Development who is responsible for overall project management of the scheme.

Before the legal agreement can be entered into, a full planning permission must be obtained from the planning authority including approval of any reserved matters relating to the highway works.

The following information will be required to enable the Agreement to be entered into:

- The Developer's name and registered office address.
- Names and registered office addresses of any other parties to the Agreement.
- The Bondsman's name and registered office address.
- Details of the solicitor to be used by the Developer.
- A copy of the planning permission.
- 6 copies of a location plan.
- 6 copies of the layout plan indicating the limits of the work outlined in red, and coloured as follows:-

Section 278 Works (within the highways)	
Carriageway	Yellow Ochre
Footway	Pale Brown
Surface Water Sewers	Broken Blue Line
Surface Water Drains	Solid Blue Line
Hard Landscaping	Windsor Violet
Verges	Sap (Light) Green

HIGHWAY DESIGN GUIDE

6.1

SECTION 278 AGREEMENTS

- A detailed description of the proposed highway works.
- An estimated cost of the highway works including any Statutory Undertakers costs.

Before commencing work on the highway an appropriate surety equivalent to the Council's estimated cost of the works must be obtained. The surety can be either a bond, obtained from a recognised financial institution, or equivalent money lodged with the Council. A percentage of the bond or cash deposit will be released when the Provisional Certificate has been issued.

Fees Payable

This Council charge for the work involved in:

- Preparing and managing the Section 278 Agreement.
- Legal Fees
- Checking the design of the highway works.
- Checking of safety audits.
- Inspecting the works during the course of construction.
- Conducting surveys for inventory information.

Technical Approval

Before any consideration of the submitted drawings takes place an initial minimum fee which will be required for checking the plans and supervising the works.

A stage 1 / 2 or stage 2 safety audit in accordance with the criteria laid down in HD19-03 must be submitted with the detailed design package.

Please note that the Council will only issue technical approval after:

- A satisfactory design package has been submitted.
- Stage 1 / 2 or Stage 2 safety audits have been satisfactorily completed.
- Any additional or amended details have been submitted and approved.

HIGHWAY DESIGN GUIDE

6.1

SECTION 278 AGREEMENTS

The issue of technical approval is not approval for works to commence on the public highway.

Feasibility Stage

Initially the Developer will need to discuss the need for any off-site highway works so that details can be included when submitting a planning application. At this stage we must be satisfied that any proposed highway works:

- Will off-set the highways and transportation impacts of the development.
- Are possible within the land constraints of the developments.

Preliminary Design Stage

Once planning permission for the development has been obtained it may be necessary to submit a preliminary design where major works on the highway are taking place. This will avoid any major design changes having to be requested at the detailed design stage.

Where a preliminary design is submitted, a Stage I Safety Audit in accordance with HD19-03 will also be required to be carried out. This will enable potential road safety problems to be identified at an early stage that may affect users of the highway. At this stage the Developer should also contact other interested parties who may have an influence on the scheme design such as Statutory Undertakers, Access Groups or the Environment Agency etc

Highway Structures

Where a highway structure is included or affected by the proposed Section 278 works the design of it must comply with agreed Approval in Principle (AIP).

All design / check certificates in accordance with BD2/02 (**superseded by BD2/05**) shall be supplied and endorsed by the Council as the Technical Approval Authority.

HIGHWAY DESIGN GUIDE

6.1

SECTION 278 AGREEMENTS

Traffic Regulation Orders

Where Section 278 works involve modifications to an existing Traffic Regulation Order (TRO) or a new order is required the Developer will be required to pay all costs associated with this including legal fees.

Traffic Signal Equipment

Where traffic signal equipment is proposed for the scheme there will be a requirement for the Developer to submit detailed design information to enable the Council to assess compatibility with existing equipment.

Developers should note that they will be required to pay a commuted sum towards the future maintenance of all traffic signal equipment.

CCTV Drain Survey

A CCTV survey of the existing highway drainage will be required prior to, and after completion of the highway works.

Within 28 days of issue of the Provisional Certificate the Developer or his appointed contractor must supply 2 sets of the surveys, on DVD and on paper format.

Commuted Sums

The Council charge commuted sums to cover maintenance in certain circumstances. Details of commuted sum payments will be discussed and agreed once the detailed design drawings have been considered.

Commuted sums allow greater flexibility to adopt non-standard materials and other items without placing undue burdens on the Council's maintenance budgets or the Council Tax Payers. These charges are reviewed annually as part of the Council's budget process.

HIGHWAY DESIGN GUIDE

6.1

SECTION 278 AGREEMENTS

Contractor Approval

A contractor that has relevant experience and competency must do all road works carried out on the existing highway. The contractor must be registered with the Considerate Contractors Scheme. The Council, prior to the commencement of highway works, must approve all contractors.

Public Liability Insurance

The Council must be indemnified against any claims by third parties arising from any work included in the Section 278 Agreement. A minimum of £10m cover is required.

Health and Safety

The Developer must comply with all aspects of the Health and Safety at Work Act 1974 and the Construction Design and Management Regulations 2007 and must indemnify the Council against all claims, liabilities and actions from third parties arising from any of these matters.

Commence of Works

Work on the public highway will not be permitted to commence before the Section 278 Agreement is in place. Developers are reminded that they need to pre-book their road space to comply with the requirements of The Traffic Management Act 2004 and The New Roads and Street Works Act 1991. Please refer to the separate guidance note for developers on “Programming Works on the Highway”.

HIGHWAY DESIGN GUIDE

6.1

SECTION 278 AGREEMENTS

The Developer is responsible for arranging a pre-start co-ordination meeting (see Standard Agenda for Pre-Commencement Meeting) to ensure that all interested parties understand the following:

- The approved drawings have been issued.
- All traffic control measures have been put in place.
- Emergency telephone numbers have been provided.
- The start date has been agreed.
- The programme of works has been agreed.

The Developer's representative should also arrange to meet with the Council's site supervising engineer to take photographs of the site and its immediate surroundings prior to commencement so that **any** damage to the existing highway can be assessed and recorded for future reference.

Site Inspections

The Developer is responsible for the day-to-day supervision of the road works. The Council's site supervising engineer will only inspect the works to check that they are constructed in accordance with approved drawings.

Issue of Certificates

Under the terms of the Section 278 Agreement two certificates will be issued.

The Provisional Certificate will be issued after the highway works have been substantially completed.

- Any new street lighting has been installed and is operational.
- Any landscaping has been fully established.
- The works have been jointly inspected and no significant defects have been identified.
- The Stage 3 Safety Audit has been completed and all changes required have been attended to.

HIGHWAY DESIGN GUIDE

6.1

SECTION 278 AGREEMENTS

Once the Provisional Certificate has been issued the Bond supporting the Section 278 Agreement will be reduced or released in accordance with the Agreement. The Developer remains responsible for maintaining the highway works for 12 months after the Provisional Certificate has been issued.

The Final Certificate will be issued after:

- A joint inspection of the highway works and any outstanding remedial works been completed to the Council's satisfaction.
- All the highway works have been maintained to the Council's satisfaction during the duration of the maintenance period.
- The Developer has paid any commuted sums owed to the Council.
- The Developer has furnished the Council with as- built drawings and a copy of the Health and Safety file.
- The Stage 4 Safety Audit has been completed and any changes recommended have been attended to.

Release of Bond

Once all the Section 278 works have been completed to the Council's satisfaction the outstanding Bond will be cancelled or released.

HIGHWAY DESIGN GUIDE

6.2	SECTION 38 AGREEMENTS
------------	------------------------------

The Developer or his appointed Agent is advised to contact the Council at the earliest opportunity to ensure that the requirement to obtain technical approvals and agreements does not cause any unnecessary delays.

The Council uses a standard model Agreement and a draft can be issued upon request. Please note that it may be necessary to make amendments to the wording of the Agreement in some instances for example to allow for specific highway structures and commuted sums to be included.

Before the legal agreement can be entered into, a full planning permission must be obtained from the planning authority including approval of any reserved matters relating to the highway works.

The following information will be required to enable the Agreement to be entered into:

- The Developer’s name and registered office address.
- Names and registered office addresses of any other parties to the Agreement.
- The Bondsman’s name and registered office address.
- Details of the solicitor to be used by the Developer.
- A copy of the planning permission.
- 6 copies of a location plan.
- 6 copies of the layout plan indicating the limits of the work outlined in red, and coloured as follows:-

Section 38 Works (within the developers land)	
Carriageway	Coloured brown
Footway	Coloured grey
Transfer of land	Coloured purple
Highway drains	Coloured orange
Street Lighting	Coloured yellow
Verges	Coloured green

HIGHWAY DESIGN GUIDE

6.2

SECTION 38 AGREEMENTS

- A detailed description of the proposed highway works.
- An estimated cost of the highway works including any Statutory Undertakers costs.
- Full details of any proposed structures (Approval In Principles).

Before commencing work on the highway an appropriate surety equivalent to the Council's estimated cost of the works must be obtained. The surety can be either a bond, obtained from a recognised financial institution, or equivalent money lodged with the Council. A percentage of the bond or cash deposit will be released when the Provisional Certificate has been issued.

Fees Payable

The Council will charge for the work involved in:

- Preparing and managing the Section 38 Agreement.
- Legal Fees
- Checking the design of the highway works.
- Checking of safety audits.
- Inspecting the works during the course of construction.
- Conducting surveys for inventory information.

The Developer will have to contact the appropriate Water Company for the adoption of new storm and foul sewers within the adoptable highway.

Private sewers within the adoptable highway will not be considered for adoption

The Developer should also contact other interested parties who may have an influence on the scheme design such as Statutory Undertakers, Access Groups or the Environment Agency etc.

HIGHWAY DESIGN GUIDE

6.3

ADVANCE PAYMENT CODE (APC)

An Advance Payment Code is required if a Developer proposes to erect a building served by a private street. This is achieved by following the procedure as defined in Section 219 of the Highways Act 1980. The APC procedure is a statutory tool that provides for the future making up of private streets and relieves house buyers of road charge liabilities if the Developer defaults.

The APC applies to all developments that have more than five dwellings. The Highway Authority will serve the Notice under Section 219 / 220 of the Highways Act 1980 within six weeks of Building Regulations Approval being granted.

It is an offence to start constructing the building before depositing the funds. If building works commence before the advance payment funds are secured, this will result in enforcement by way of a prosecution. Works carried out on different buildings will constitute a separate offence.

If works are to start before the agreement is signed, the Developer must either make a deposit or provide the necessary security in accordance with Section 220 notice.

The amount specified in the Section 220 notice may be broken down to cover individual dwellings or reflect part of the development. The deposit paid will be refunded along with any interest it may have accrued. All notices, payments or security received are registered as a local land charge with the Authority.

HIGHWAY DESIGN GUIDE

6.4

ROAD SAFETY AUDITS

A Road Safety Audit (RSA) is a formal safety assessment of an existing or future road proposal and can be used in any phase of a development from planning and preliminary engineering to design and construction.

Safety audits are required in respect of new works constructed on the existing highway (under Section 278 of the Highways Act or, in some cases, works under Section 38 of the Highways Act).

General

1.2 The [Design Manual for Roads and Bridges, Volume 5, Section 2, Part 2, HD19/03](#) is the national standard for safety audits. Paragraph 1.5 says: “Road safety audits are intended to ensure that operational experience is applied during the design and construction process in order that the number and severity of accidents is kept to a minimum. Auditors identify and address problem areas using experienced gained from accident reduction schemes, accident investigation and research work.”

1.3 Paragraph 1.21 of HD19/03 says: “[An] Audit Team works together on all aspects of the audit, independent of the Design Team [designing the works]...”

1.4 So, safety audits are checks to ensure that a road is designed and operates as safely as is possible in order to keep accident numbers to a minimum. They must be carried out by people who are not involved with the design of the proposed works.

1.5 They should only consider road safety matters – they are not a technical check that the design conforms to standards and they do not consider structural safety.

1.6 Paragraph 2.8 of HD19/03 says: “Although the Audit Team’s contribution to design [of the proposed works] is limited, in making recommendations they may be considered to have undertaken design work under health and safety legislation. It is therefore recommended that audit teams make themselves aware of current health and safety

HIGHWAY DESIGN GUIDE

legislation and consider the implications of their recommendations for the health and safety of others.”

Pre-works construction (Stage 1 and 2 audits)

1.7 Stage 1 audits: These should be carried out at the preliminary design stage. This is the last occasion that the basic design of the works can be significantly changed and any land requirements finalised.

1.8 Stage 2 audits: These should be carried out when you have completed the design works’ detailed design. This audit is concerned with the more detailed aspects, for example the provision of signs, road markings and street lighting.

1.9 Where we require Stage 1 and Stage 2 safety audits of your proposed works (see [Section SA3](#)), we will not issue [technical approval](#) for your works until the audits have been completed to our satisfaction and we are satisfied with any changes we have asked you to make.

Post-works construction (Stage 3 and 4 audits)

1.10 Stage 3 audits: These should be carried out only when the works have been substantially completed and preferably before the works are open to road users. This audit should look at the works from all road users’ viewpoints and be carried out both in daylight and during the hours of darkness.

1.11 Where we require a Stage 3 safety audit of your works (see [Section SA3](#)), we will not issue you with a [provisional certificate](#) for your works until the audit has been completed to our satisfaction and we are satisfied with any changes that we have asked you to make.

1.12 Stage 4 audits: These should look at how the works are operating and examine the accident record. They should normally be carried out at 12 months and 36 months after the works opened. Based on the accident record and observations made during any site visits, these audits should identify any road safety problems and recommend remedial measures.

HIGHWAY DESIGN GUIDE

1.13 Where we require a Stage 4 safety audit of your works (see [Section SA3](#)), we will decide whether we can issue the final certificate once the 12-month report has been completed.

Note: We are able to provide you with [personal injury accident details](#) (for a fee).

When will we require safety audits?

1.14 Works under [Section 38 agreements](#): We will not normally require safety audits unless:

Your development layout contains features which are not explicitly covered by this design guidance or your layout is not covered in any other way by this document; or the proposal is for, or contains, a Home Zone.

1.15 Works under [Section 278 agreements](#): We will require Stage 1, 2, 3 and 4 audits for all works.

What you are responsible for?

1.16 When you enter into either a Section 278 agreement or Section 38 agreement, you, the developer, will be required to indemnify (protect us from legal responsibility) against any claims arising from your works.

1.17 You are also responsible for:

commissioning and paying for all safety audits;

ensuring that the audits are carried out by an accredited safety audit team that is independent from the works' designers;

submitting the audits to us, along with the designers' response (we will not consider the audit report until we have received the designers' response); and

ensuring any audit recommendations we require to be implemented are completed to our satisfaction.

1.18 You must also comply with all aspects of the [Construction \(Design and Management\) Regulations 1994](#) and indemnify us (protect us from legal responsibility) against all claims, liabilities and actions if you fail to do so.

HIGHWAY DESIGN GUIDE

6.5

TRAFFIC REGULATION ORDERS

The management of traffic can be achieved through a variety of measures. Some of these will require the making of a Traffic Regulation Order (TRO) under the appropriate legislation (typically the Road Traffic Regulations Act 1984 and Highways Act 1980).

What is a Traffic Regulation Order?

Examples of TROs are:

- waiting restrictions
- speed limits
- one-way streets
- prohibitions of vehicles
- weight limits
- residents preference parking schemes
- traffic calming

These forms of traffic management require a legal process of consultation, both formal and informal, together with advertisement so that the views of all interested parties and the needs of different users can be taken into consideration.

Costs

Presently , the typical costs (2010) involved in a TRO are:

- £2,500- £5,000 Traffic Management staffing or consultancy costs
- £500 legal staffing costs
- £300 for each public notice in a local newspaper (minimum of 2 notices)
- Cost of works on site: each scheme is unique and therefore there is no "typical" figure.

Where a TRO is required to support a development scheme, then the Council would expect the developer to fund the full costs of developing, processing and implementing a TRO.

HIGHWAY DESIGN GUIDE

It should be noted that these figures are a guide only. In all instances, rechargeable costs will be the actual costs incurred.

How long does the TRO process take?

TROs are very time-consuming & labour-intensive. The way that Local Authorities must process TROs is laid down in law. There are no short cuts.

- Simple and non-controversial proposals which receive no objections can take about 6 - 12 months to process.
- Controversial schemes have been known to take longer, especially when challenged or objections are raised.
- Any designs, approvals and agreements should take into account that, even once the procedures have begun, there is no guarantee that a TRO will be implemented.
- All schemes, including minor ones, are still subject to the same lengthy legal procedures.

The requirement for and planning of a TRO therefore needs to be considered at an early stage of any development scheme. It should not be left until construction has started on site.

TRO Priorities

Only a limited number of TROs can be processed each year. Those schemes which are likely to give the most benefit will be prioritised. Some of the factors considered in the priority system are:

- Potential for accident reduction
- Likely effect on traffic speeds
- Potential benefits to vulnerable road users, the environment, public transport, emergency vehicles, and schools.

HIGHWAY DESIGN GUIDE