

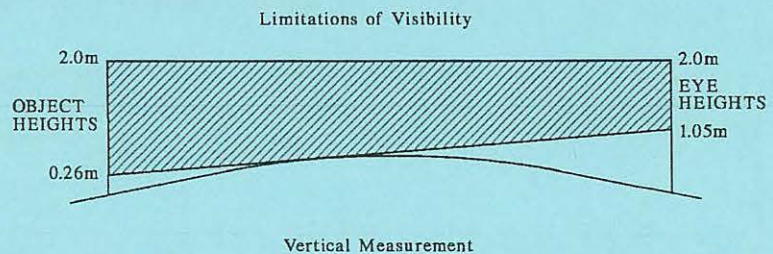
B7***Carriageway Widening at Bends***

- 7.1 The swept path of vehicles on bends is greater than the width of the vehicle itself. To enable vehicles to pass, curve-widening corresponding with the values set out in Table 5 should be used.
- 7.2 The carriageway should be widened over the full length of the horizontal curve and the widening proportioned to a third on the inside and the remainder on the outside of the bend. The kerblines are to be tapered into the standard carriageway width at a minimum of 1:25 from the tangent points.
- 7.3 The provision of carriageway widening can in some instances encourage increased vehicle speeds. Therefore, carriageway widening on residential developments will be left to the discretion of the Highway Authority.

TABLE 5 Carriageway Curve Widening Widths For 4.8m and 5.5m Wide Residential Roads

Radius at centre-line	20m	30m	40m	50m	60m-90m
4.8m road	5.65	5.45	5.25	5.05	4.95
5.5m road	6.75	6.45	6.20	5.90	5.75

- 8.1 The vertical alignment of a road must provide the minimum stopping sight distances in accordance with TD 9/93.
- 8.2 For local distributor roads forward visibility in accordance with TD 9/93 must be applied. A visibility envelope shall be measured from a minimum drivers eye height of between 1.05m and 2.0m to an object height of between 0.26m and 2.0m all above the road surface as shown in Figure 7. It shall be checked in both the vertical and horizontal planes between any two points as shown.
- 8.3 For all other residential roads a minimum object height of 600mm above carriageway will suffice.

FIGURE 7. Forward Visibility Envelope

- 8.4 Vertical curves should be provided at all changes in gradient. To ensure reasonable standards of comfort at sag curves and to provide the appropriate visibility at crests, vertical curves should be the greater of either:
- indicated by the formula $L = KA$, where L is the curve length in metres, A is the Algebraic difference in gradients (expressed as a percentage) and K has a value selected from Table 6 or
 - shown in the fifth column of Table 6.

TABLE 6. Forward Visibility Requirements

Design Speed (kph)	Desirable min. crest K value	Absolute min. Crest K value	Absolute min. sag value	Min. vertical curve length (m)
50	10	6.5	9	30
32	6.5	6.5	9	30
24	6.5	6.5	9	30

8.6 Maximum longitudinal gradients are specified for each road type in this Design Guide. In addition to these limits, the maximum longitudinal gradient on a minor road approach to a junction should not exceed 5% for the distance specified in Table 7, measured from the nearside edge of the major carriageway. It will be noted that when the minor road approach to the junction is downhill rather than uphill a longer distance with a gradient not exceeding 4% is required. This is intended to reduce the risk of vehicles sliding onto the major road in icy conditions.

TABLE 7 Maximum Distance for Longitudinal Gradients

Minor Road	Major Road	Distance along minor road measured from nearside edge of major road carriageway (metres)	
		Downhill Approach max 4%	Uphill Approach max 5%
Residential Road	Residential Road	15m	10m
Residential Road	Local Distributor	20m	15m
Local Distributor	District Distributor	30m	15m

8.7 The normal minimum acceptable longitudinal gradient on any residential road is 0.833% (1 in 120)

NB. District and Local distributor roads do not appear in the hierarchy of residential roads and are to be taken as roads at a higher category than residential (Group A) roads road.

6.1. The recommendations made in the South Wales Parking Guidelines (revised edition 1993) will generally be acceptable until the emerging addendum is adopted by this Council. The addendum provides guidance on maximum parking requirements in line with the Government's policies. However, in certain circumstances parking requirements will be adjusted by the Highway Authority to suit particular developments.

6.2. **Residential Areas**

Encouragement will be given to developments, which are designed to reduce the impact of the car. For example, providing a maximum of two parking spaces per dwelling excluding the regardless to the number of bedrooms it has and locating visitor parking in conveniently positioned roadside bays.

This together with suitably designed carriageway widths will allow the maintenance of quality vehicular access whilst calming traffic and retaining speeds.

6.2.1. It is particularly important that residential dwellings situated adjacent to turning heads are provided with ample, easily accessed off-street parking to prevent the turning head from being used as an on-street parking area.

6.2.2. When a garage is provided it shall be located 10 metres from the back of the footway or service margin to allow for two vehicles to be parked lengthways. In exceptional cases, consideration will be given to the garage being set back a minimum of 6m from the footway/service margin, where parking spaces are provided adjacent to one another. However, to avoid the impact of cars on the streetscene, it is recommended that parking and garages be provided to the rear or side of dwellings. (Refer also to 6.3)

6.2.3. In certain cases additional parking, provided solely for visitors may be required.

An alternative to the above is a communal parking court. This type of facility will not be adopted, but must have a suitable layout agreed by the Highway Authority. Communal parking courts should only be used in exceptional circumstances, but never in secluded courts, as they are considered insecure places to park and residents will be reluctant to use them.

6.2.4. Group parking bays may be provided in roads serving less than 100 properties in which vehicles can park at right angles to the carriageway. No more than four 6m x 2.4m bays should be provided in a group, and individual groups must be separated by at least 5 metres. The gradient of each bay must not exceed 1 in 20 (5%). The front of each group must be set back at least 1.8m from the edge of carriageway and be accessed over a standard vehicle crossover. Group parking bays will not be adopted.

6.2.5. Parallel parking bays, 2.4m wide, in which vehicles can park parallel to and adjacent to the carriageway may also be provided on all road types, provided forward visibility is not impaired. This type of facility is preferred and will be adoptable.

6.2.6. People with disabilities must be catered for, therefore, when considering parking provision for new or redeveloped sites, the advice contained in the Institution of Highways and Transportation Guidelines should be followed wherever possible.

6.3. **Control of on-street parking**

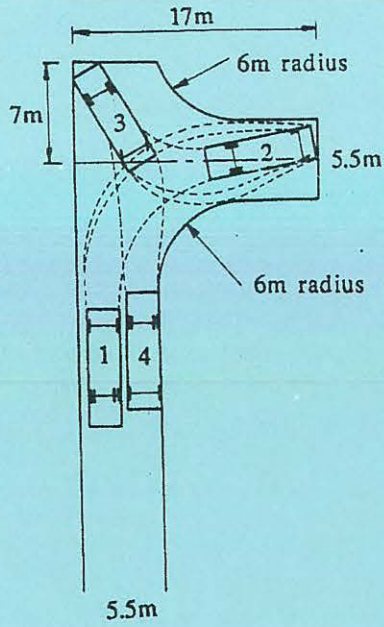
The provision of a minimum of 2 off-street parking spaces, excluding the garage, has been shown to substantially reduce on-street parking. (Refer to 6.2.2). On-street parking can be prevented with careful design, for example, by constructing a shared drive at such a width that any on-street parking would obstruct the highway

6.4. **Industrial Areas**

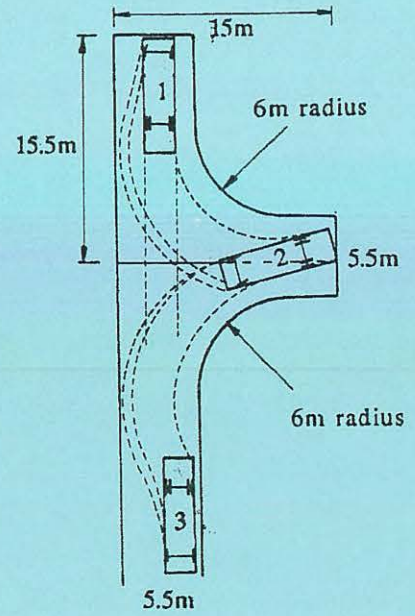
6.4.1. Due allowance must be made for both operational and non-operational parking requirements off the highway. Particular emphasis must be placed on the provision of suitable parking and turning areas for service and delivery vehicles and also on adequate staff parking facilities.

6.4.2. Minimum carriageway widths for industrial roads make no allowance for any on-street parking which may arise. Where frontage servicing occurs greater carriageway widths may be required to accommodate on-street parking.

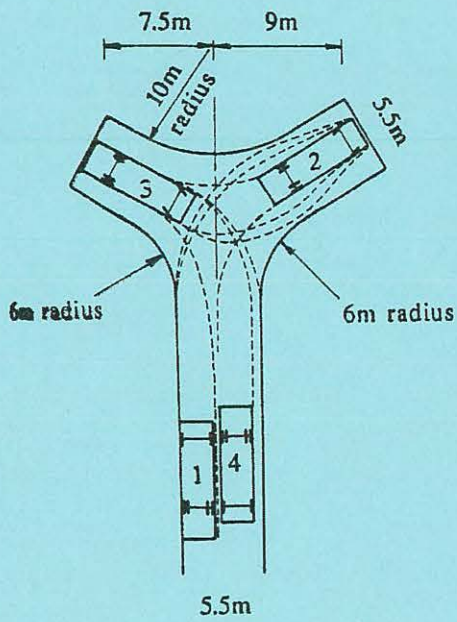
FORWARD SIDE TURN



REVERSE SIDE TURN



HAMMERHEAD Y FORM



HAMMERHEAD T FORM

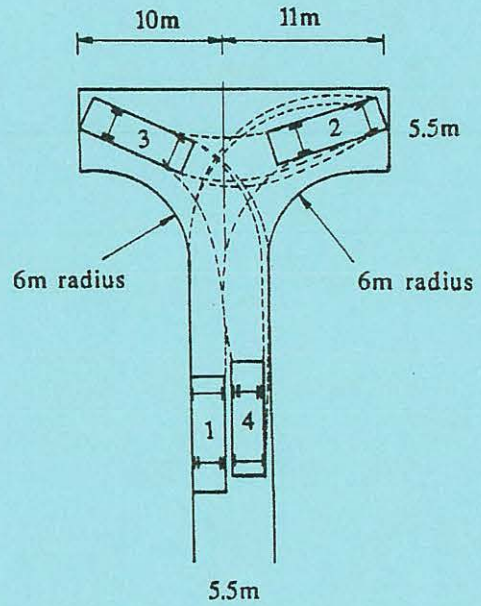


FIGURE 8 Minimum Dimensions For Turning Areas

- 10.1 In order to make a positive contribution to road safety, the design of residential roads should maintain low speeds throughout the development. Preferably this should be achieved by good design practice, however, where necessary physical traffic calming features such as chicanes, road narrowings (ramped or otherwise) or junction plateaus will be considered.

Good Design Practice

- a) The inclusion of a roundabout in an otherwise straight section of road in place of a junction.
 - b) Offset junctions
 - c) Changes in horizontal alignment with short lengths of straight.
- 10.2 The design of traffic calming features will require close liaison between the developer and the Highway Authority to comply with legislative requirements.
- 10.3 The following measures for traffic speed restraint can be considered to achieve a solution.

Traffic Calming Features

- (i) Road humps (to be considered when other features are impractical)
- (ii) Junction Plateaus
- (iii) Chicanes
- (iv) Road narrowings
- (v) Pedestrian Refuges
- (vi) Awareness strips
- (vii) Gateway features
- (viii) Speed cushions

20mph zones

- 11.0 Detailed advice upon the introduction of 20 mph speed limit zones and upon the processes for their implementation is given in Design Bulletin 32, Welsh Office Circular 2/91 and Traffic Advisory leaflet 7/91
- 11.1 In broad terms the following criteria must be satisfied:
- (i) vehicle speeds must already comply with the guidelines (i.e. zone entry points must be within existing 30 mph speed limit areas).
 - (ii) the zone only covers residential roads.
 - (iii) no part of the zone is to be more than 1 km by road from the zone boundary.
 - (iv) the zone does not include the approach to a fire station or hospital.
 - (v) alternative routes are available for through traffic.

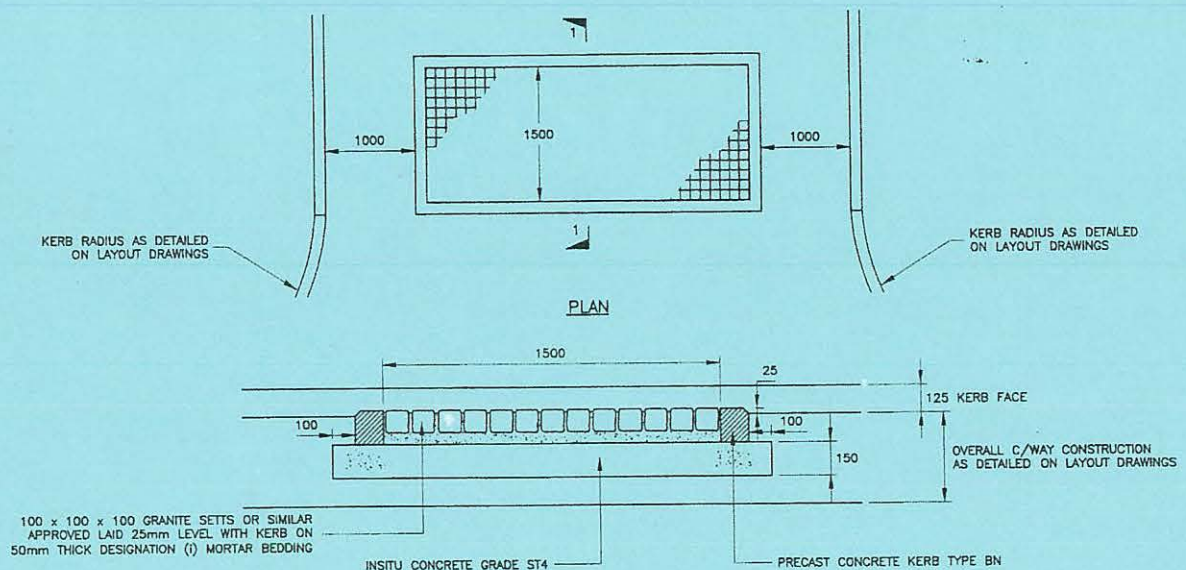
Home Zones

- 11.2 Home zones are a new concept in Britain although they are widely used on the continent.
- The Home zones concept takes the implementation of a 20mph limit a stage further. This is an area where a core network of residential streets are identified where the road-space has been redesigned to give priority to pedestrians and cyclists within a wider 20 mph speed restriction. The aim of this approach is to change the way in which the street is used in order to achieve a range of benefits to the local community. The main features of a home zone are:
- Priority changes, with little or no vehicle/pedestrian segregation
 - Low traffic speeds, around 10mph
 - Change in status
 - Residents ownership and involvement in the zone

The changes are achieved by changing the characteristics of the street scene using street furniture, planting, signing, surface textures, etc.

- 12.1 On roads where pedestrians will be required to share the same area as vehicles, it is essential to make drivers fully aware of the changed circumstances prevailing on the shared road as opposed to the circumstances on a normal road where vehicles and pedestrians use separate surfaces. The provision of an awareness strip at the entrance to the shared area is recommended and typical construction details of an awareness strip are shown in Figure 9.
- 12.2 Any shared surface roads must be subject to a maximum gradient of 1 in 12 (8.3%).
- 12.3 Driveways on the side of a shared surface road without a footway on that side shall enter the road via a bellmouth with 1.8m radii. The bellmouth will be located within the area to be adopted and made up to the same specification as the carriageway of the road.

FIGURE 9 Awareness Strip Detail



13.1 (a) General

- 13.1.1 Private drives, although being of an approved width and construction, shall not be maintainable by the Highway Authority.
- 13.1.2 In adoptable areas shared multiple use private drives may be permitted subject to a maximum number of two dwellings sharing the drive. This limitation avoids the confusion that would arise over the responsibility to maintain drives in multiple ownership. Additionally the incidence of two vehicles entering and exiting a narrow drive simultaneously is reduced. Consequently stopping in the highway and reversing manoeuvres which would be an inconvenience to drivers and a potential hazard to pedestrians and vehicles is avoided. A private drive in multiple use shall be provided with a turning facility to enable vehicles to enter and leave the highway in forward gear. Additional dwellings together with alternative arrangements will be considered, if it can be proven that the layout will enhance and/or improve the overall layout of the development. Where additional dwellings are proposed, the overall length of the private drive should be reduced. This will reduce the area over which vehicular conflict may occur.
- 13.1.3 A single private drive will normally be at least 2.7m wide and a shared private drive will normally be at least 3.65m wide.
- 13.1.4 It is a normal requirement that concrete, bitumen macadam, asphalt or blockwork shall be used to surface private drives.
- 13.1.5 Visibility splays should be provided in accordance with Figures 4 and 5 in Part B4.
- 13.1.6 The gradient of vehicular access drives should ideally be no steeper than 1 in 10 but a maximum gradient of 1 in 8.
- 13.1.7 Gates, where provided must open inwards only over the applicant's property and will normally be set back 5m from the highway boundary. This distance may be less in urban situations but any relaxation must be agreed with the Highway Authority.
- 13.1.8 No surface water from the site shall drain onto the highway or into the highway drainage.
- 13.1.9 Developers should also take positive measures to prevent surface water from the adjacent highway ingressing into the site.
- 13.1.10 Where driveways cross a public footway or highway verge, a crossing must be provided to the highway authority's specification.

- 14.1 The informal atmosphere intended in Mews Court and Access Ways is to be achieved by introducing appropriate finishes. A 1.8 metre wide footway should be provided along one side of the road and extended around the turning head. A rumble strip should be constructed at the inside tangent point of the junction radii. The non-continuing footway shall be terminated 1.8 metres beyond the rumble strip into the shared surface.
- 14.2 Statutory Undertakers' apparatus should be located within the limits of the footway. The carriageway must be a minimum width of 4.8 metres. When the road serves as an access to 6 properties or less and is a maximum of 40 metres in length no footways are required 1.8 metres beyond the rumble strip on the inside of the shared surface. However, service strips 1.8m wide should be provided each side of the shared surface. Adoption will normally be up to a line 1.8m outside the edge of carriageway or to the boundary of adoptable visibility zones. This 1.8m boundary is to be marked on the paved surface to drives by means of a stringer course of bricks or precast concrete edging.
- 14.3 Where streetlighting is provided the service strip shall be of permanent material.
- 14.4 Adequate space must be provided at the head of the cul-de-sac to allow for turning vehicles. This space must be able to enclose the outline of one of the turning heads illustrated in the standard details. The limits of the highway adopted by the local authority must be readily identifiable to the public. To avoid disputes in future all conveyances by the developer should include a clear indication of the respective limits of responsibilities at each relevant property. A sample copy of this conveyance should be provided to the county borough.
- 14.5 See para. 12.1 entrance awareness strip.

- 15.1 Every care must be taken to design new developments so as to meet as far as possible the needs of elderly and disabled people. Footways and footpaths should have acceptable gradients for wheelchair users and should be located such that those with limited walking ability can reach all bus stops without difficulty.
- 15.2 Within Sections 2 and 3 of Design Bulletin 32 positive practical advice is given. Further advice is given in the following publications.
- (a) Designing for the disabled (S.Goldsmith) - Royal Institute of British Architects.
 - (b) Providing for people with a mobility handicap - The Institution of Highways and Transportation.
 - (c) Reducing mobility handicaps - The Institution of Highways and Transportation.
- 15.3 The use of tactile paving at pedestrian crossing points is increasing. This authority now requires that wherever dropped kerbs are introduced to assist pedestrian and disabled persons in crossing the carriageway, tactile paving should be introduced.

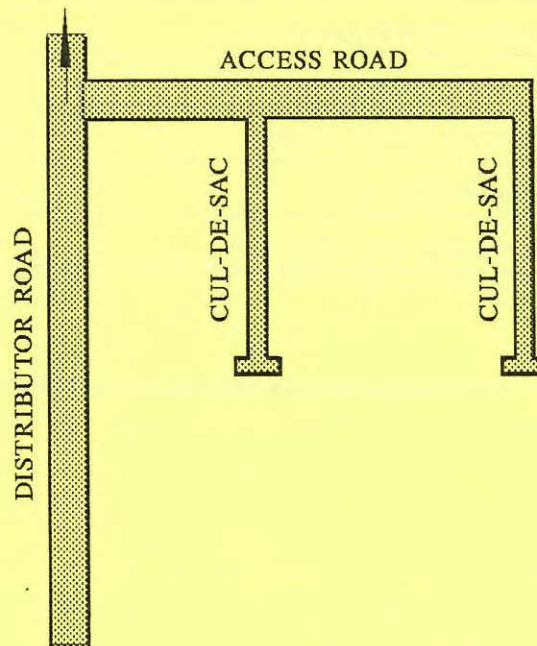
Section C

Industrial Estate Roads

- C1. Design Philosophy
- C2. Road Hierarchy and Standards
- C3. Turning Areas
- C4. Carriageway Widths on Bends
- C5. Visibility Requirements
- C6. Nursery Units

- 1.1 Industrial estate roads must be designed specifically to cater for use by large commercial vehicles. Highway Authorities will have regard to the manoeuvring characteristics of heavy commercial vehicles in assessing industrial development proposals.
- 1.2 Industrial estate roads must also be designed with peak hour vehicle flows and pedestrians in mind.
- 1.3 Vehicle speeds must also be minimised whenever possible to produce safe roads and cul-de-sacs within an industrial estate.
- 1.4. Operational requirements with specific reference to the provision of parking, turning, loading and storage facilities within the site curtilage shall be identified at the planning application stage.

- 2.1 The three industrial estate road types shown in Figure 10 are described as Distributor Road, Access Road and Cul-de-Sac. The design standards for each category are shown in Table 8.
- 2.2 Industrial Estate roads should include the provision of footways on both sides of the carriageway.
- 2.3 Carriageways should have a minimum width of 7.3m and footways 2.0m width



Note: This layout does not provide good links for pedestrians or public transport and is for illustrative purposes only

FIGURE 10. Industrial Road Hierarchy

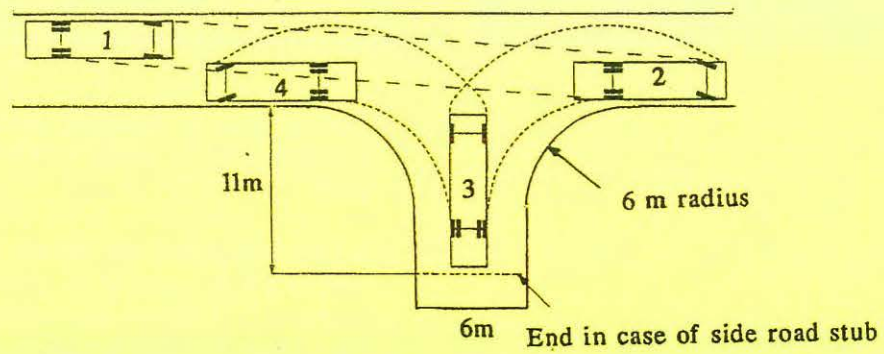
TABLE 8 Standards for industrial estate roads

Industrial Estate Roads	Distributor Road	Access Road	Cul-de-Sac
Design Speed (km/hr)	50	50	40
Minimum carriageway width (m)	7.3	7.3	7.3
Minimum centre line radius (m)	90	75	30
Maximum Gradient (%)	10	10	12
Minimum adjacent junction spacing (m)	90	60	30
Minimum opposite junction spacing (m)	50	50	25
Minimum kerb radius at junction (m)	15	15	10
Minimum Kerb Radius at Unit Access (m)	15	9	**
Minimum 'X' distance at junction	9	4.5 - 9	**
Minimum forward stopping sight distance (m)	70	70	50

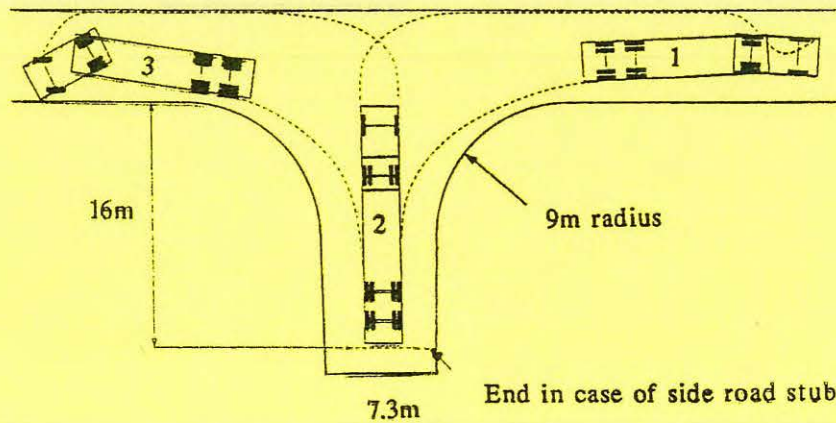
** refers to private access and will be determined dependent on the scale of the proposed development

- 3.1 Turning areas in industrial estates should be capable of accommodating the 'design vehicles' shown in Figure 11 of this guide.
- 3.2 A 1.8m wide (minimum) footway or 1.0m wide margin strip must be provided around all turning areas depending on the requirements of services installations. Refer to Part A9 for the requirements for marginal strips.
- 3.3 The use of circular turning heads are not preferred due to the ease with which they become blocked, but may be appropriate in certain circumstances.

SIDE ROAD STUB FOR TURNING RIGID VEHICLES ONLY



T-TURNING AREA FOR RIGID AND ARTICULATED VEHICLES



SIDE ROAD STUB FOR TURNING ARTICULATED VEHICLES

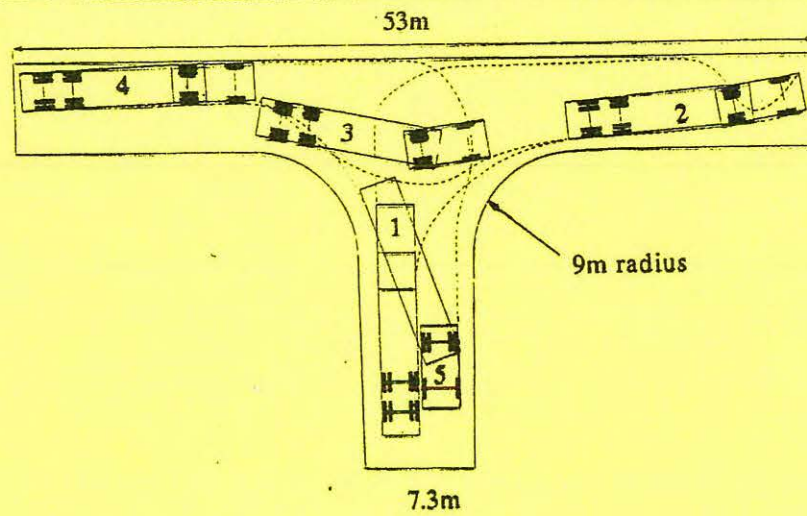


Figure 11 - Industrial Turning Areas

- 4.1 Allowance must be made on tight bends for increases in the width of the paths described by vehicles when turning. The width of the road will therefore depend on the radius of the bend and the length of the vehicle. The width of the road is shown in Table 9 and illustrated in Figure 12.

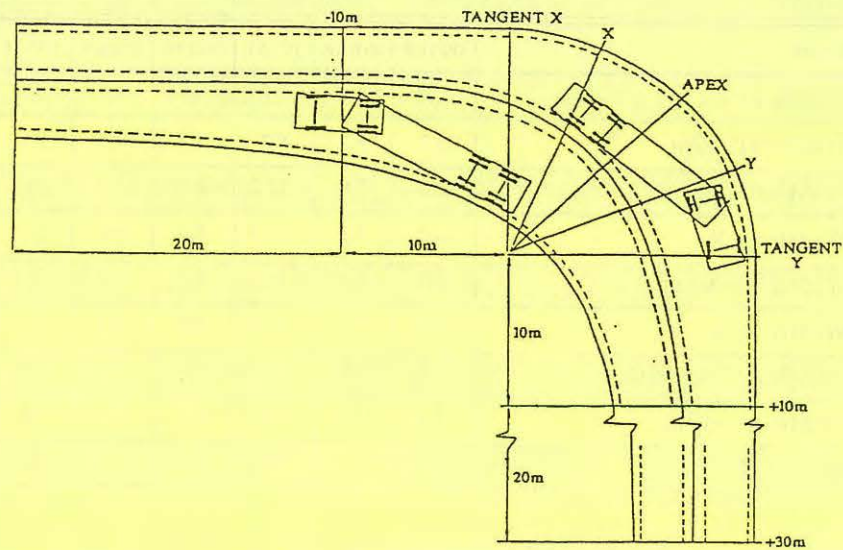


Figure 12 Carriageway Widening on Tight Bends

TABLE 9. Carriageway Widening

Source Freight Transport Association "Designing for Deliveries".

WIDTH IN METRES ACROSS LINES SHOWN IN FIGURE 12									
Radius of Outside Curve	ARTICULATED AND OTHER VEHICLES								
	15m			23m			50m		
Lane	OUTER	INNER	TOTAL	OUTER	INNER	TOTAL	OUTER	INNER	TOTAL
Width at -30m	3.7	3.9	7.6	3.7	3.8	7.5	3.7	3.7	7.4
Width at -10m	3.7	5.4	9.1	3.7	4.5	8.2	3.7	4.0	7.7
Width at Tangent X	5.0	7.8	12.2	4.4	5.7	10.1	4.0	4.5	8.5
Width at X	6.2	7.1	13.3	5.4	6.0	11.4	4.7	1.8	9.5
Width of Apex	6.9	6.5	13.4	5.7	5.9	11.6	4.8	4.8	9.6
Width at Y	7.0	6.2	13.2	5.9	5.3	11.2	4.9	4.6	9.5
Width at Tangent Y	6.4	6.3	12.7	5.3	4.6	9.9	4.6	3.9	8.5
Width at +10m	4.6	4.2	8.8	4.2	4.2	8.4	4.0	3.8	7.8
Width at +30m	3.8	3.7	7.5	3.8	3.7	7.5	3.8	3.7	7.5

- NOTES
1. The road width is assumed to be 7.3m
 2. The safety margin between vehicles and the carriageway edge is 0.5m
 3. The safety margin between opposing vehicles is 1.3m

- 5.1 Full details of requirements can be found in Parts:
- B4 Visibility at Junctions
 - B6 Forward Visibility at Bends
 - B8 Vertical Alignment and Forward Visibility of this document.

- 6.1 Land in central urban areas is at a premium and consequently there is a tendency to over-develop to the detriment of servicing and parking and this frequently results in the use of the highway as an overflow for these functions.
- 6.2 It is often comparatively easy to establish the type and size of vehicles to be used by a first generation tenant but thought must be given to second and subsequent generation tenants, with perhaps their increased vehicle size and usage, if serious problems in the future are to be avoided. However, modifications of the layouts previously described in this document are permissible where development is comprised of nursery units, which are defined as units normally having a floor area not greater than 300 sq.m (3,200 sq.ft.). In certain cases some units of up to 500 sq.m. (5,400 sq.ft) may be included in a design provided an average size of 300sq.m. is not exceeded.

REFERENCES

- Design Manual For Roads and Bridges : HMSO
- Planning Policy Guidelines (Wales)
- All Wales Estate Development Highway Design Guide
- Transport In the Urban Environment : Institute of Highways & Transportation
- Highways Act 1980
- Town & Country Planning Act 1991
- Water Industries Act 1991
- Land Drainage Act 1991
- New Roads & Streetworks Act 1991
- Health & Safety At Work Act, etc.
- Design Bulletin 32 : Department of the Environment and Transport Regions
- Places Street and Movements : Department of the Environment and Transport Regions
- The Traffic Signs Manual : Chapters 3,4,5,7 & 8
- The Traffic Signs Regulations and General Directions 1994 : HMSO
- South Wales Parking Guidelines 1993
- Designing For Deliveries : Freight Transport Association
- Disabled Persons Act 1981
- Disability Discrimination Act 1995
- Traffic Advisory Leaflet 7/73
- Welsh Office Note 2/1987 & 2/1986 : Local Transport
- Welsh Office Departmental Standards HD 23/94 & 26/94
- Welsh Office Circular 2/91
- Guidelines for Planning For Public Transport In Developments : Institute of Highways & Transportation
- Secured By Design : Chief Police Officers Project & Design Group
- Highway Design Providing For The Older Driver : April 1998 Institute
- Providing For People with a Mobility Handicap - Institute of Highways & Transportation
- Reducing Mobility Handicaps - Institute of Highways & Transportation
- Designing For The Disabled : Royal Institute of British Architects

- Building Research Establishment Digest 365
- National Joint Utilities Group (NJU2 & NJU5)
- BS 5837 : 1991 Guide For Trees In Relation to construction
- BS 3998 : 1989 Recommendations For Tree Work

APPENDICES

CONTENTS

Appendix A	-	Guidance Notes for Prospective Developers
Appendix B	-	Section 38 Information Sheet
Appendix C	-	Section 228 Information Sheet
Appendix D	-	Works in Existing Highway
Appendix E	-	Inspection Procedures
Appendix F	-	Streetlighting

GUIDANCE NOTES FOR PROSPECTIVE DEVELOPERS**1. Highways for Adoption**

1.1 The Council will consider for adoption carriageways and associated parking bays, footways, footpaths or combined footpath/cycleways, cycleways linking to adopted roads, road margins/verges, visibility splays and zones provided that such works are of sufficient public utility to justify future maintenance at public expense. Usually all adjoining building operations on properties must be completed before adoption can take place. Construction must have been completed in accordance with all relevant standards and specifications.

1.2 Adoption Procedure

1.2.1 Developers are encouraged to enter into a formal road agreement with the Council under Section 38, Highways Act 1980. Such an agreement will allow the local highway authority (the Council) to adopt a road, which is to be constructed subject to acceptance of detail and satisfactory construction.

1.2.2 The agreement must be made between the authority and a person having the necessary capacity to dedicate the land as a highway. Only the owner of the land in perpetuity has the power. Lessees and other limited owners are not capable dedicating the way without the agreement of the freehold owner. Certain tripartite Section 38 agreements are made between the authority, the freehold owner, and the developer (where he/she is not the freehold owner of the land).

1.2.3 It is normal practice for the agreement to be supported by a bond to ensure the completion of the highways by the Council in the event that the developer or landowner defaults. The bond value is 100% of the Council's estimated cost of building the roads and providing the associated services. The developer on signing the agreement also has to pay the authority 6% of the aforementioned estimated cost to cover the authority's administration and inspection charges.

1.2.4 The Council will alternatively consider applications for adoption under the Section 228, Highways Act, 1980, procedure if require by the developer.

1.3 Advance Payments Code

1.3.1 Under Section 204, Highways Act 1980 the provision of the advance payments codes is in operation in the County Borough of Torfaen. Immediately, a developer receives building regulation consent by the Council, or the Council receives notification of the issue of an NHBC Certificate of Approval, for a building which will have a frontage onto an existing or proposed private street in which the Council as the street works authority has the power under the private street works code to require works to be executed or to execute works, a Notice, served in accordance with the provisions of Section 220, Highways Act 1980, will be issued to the developer.

1.3.2 The Section 220 Notice requires payment to the Council of the sum specified in the Notice. The sum is the Council's estimate of the full construction cost of the works and is issued prior to the commencement of any work for the purpose of erecting any building on the site.

1.3.3 Cancellation of a Section 220 Notice will be achieved by a developer entering into an agreement under Section 38, Highways Act with the Council.

2. Highways Drains

- 2.1 Surface water from new streets shall not be connected to the Council's highway drainage system or to a watercourse without the explicit consent of the Council. Drains collecting highway water only, will be acceptable for inclusion in a Section 38 Road Agreement or adoption under Section 228, provided they discharge into a public watercourse, or to a drain to be maintained or being maintained by the Council.
- 2.2 Those drains collecting yard/roof water, as well as highway water, will be subject to separate Agreement under Section 104 of the Water Industries Act 1991 with the Council.

3. Land Drainage

- 3.1 Existing land drainage facilities, which include both streams and culverted streams shall not be diverted or stopped up or otherwise altered without the explicit consent of the Council.
- 3.2 New land drainage facilities or any nature shall not be provided without the explicit consent of the Council, and no drainage or sewerage connection shall be made to any existing or new land drainage facility without the explicit consent of the Council.
- 3.3 Any new land drainage structures to be provided by the developer shall be constructed in accordance with the current Council specification.
- 3.4 The Council has general drainage powers conferred upon it by the Land Drainage Act 1991, but so also does the Environment Agency. Developers must therefore check with the Environment Agency to ascertain whether separate Environment Agency approvals for land drainage matters are required in addition to the approvals to be sought from the Council.
- 3.5 The Council has no authority in respect of main rivers, which fall under the exclusive control of the Environment Agency. Developers should therefore seek land drainage consents and discharge consents for the Environment Agency only for any proposals, which will effect a main river.

4. Public Sewers

- 4.1 These Guide Notes do not contain any advice in respect of alterations to existing or provision of new public sewers, which works should form the subject of a separate Agreement under Section 104 of the Water Industries Act 1991 with the Council. Separate guidance on these matters will be available to developers from the Council's Welsh Water Manager.

5. Public Rights of Way

- 5.1 Under the National Parks and Access to the Countryside Act 1974 the status of a particular route could be shown as either:-
1. Footpath or
 2. Bridleway or
 3. Cart Road Footpath or
 4. Cart Road Bridleway
- 5.2 The Rights of Way network for the former County of Glamorgan has been the subject of a reclassification exercise whereby those paths under categories 3 a and 4 indicated above have been reclassified to either: -
5. Footpath or
 6. Bridleway or
 7. Byway Open to All Traffic (B.O.A.T.)

- 5.4 Public paths (footpaths and bridleways) which have been registered in the Definitive Survey of Rights of Way and which are affected by a proposed development shall be dealt with under statutory planning application procedures by application to the Local Planning Authority under Section 257 of the Town and Country Planning Act 1990. Routes indicated as byways, cart road footpaths, or cart road bridleways, shall be the subject of statutory procedures contained in Section 247 of the Town and Country Planning Act 1990. Orders under Section 247 can only be processed by the Secretary of State for Wales. At no time shall a public right of way be affected by the development until all necessary statutory processes have been carried out.
- 5.5 When considering the diversion of a public right of way, developers are requested to consider the suggestions contained in the Welsh Office Circular 1/83 which suggest that the use of estate roads for the purpose of diversion should be as far as possible avoided.
- 5.6 A footpath diverted around the development, where its width is not to be restricted by fences and hedges etc. shall be constructed with a cambered surface to a minimum width of 1.4 metres with hard-core (or similar approved material) to a depth of 150mm of which 75mm shall be excavation. Where the footpath is to be enclosed on both sides, the width should be a minimum of 1.8 metres and of similar construction.
- 5.7 A bridleway diverted around a development shall be constructed of sand hogging, or similarly approved material to a width of 1.8 metres if unfenced or 2.4 metres if bounded on both sides.
- 5.8 Where a path enters or leaves an estate it may be necessary for a stile or kissing gate to be provided to prevent ingress or egress of livestock. If a structure is to be provided it shall be constructed in accordance with the current Council specification.
- 5.9 Bridleways or byways incorporated or diverted in association with a development shall be referred to the Council for guidance before an application is made for its realignment.
- 5.10 In all cases it will be necessary to signpost and waymark new paths provided by diversion or stopping up orders.
- 5.11 No barbed wire is to be erected upon any fences adjacent to any public path.

6. Highway Extinguishment Procedures

- 6.1 Any proposal involving the extinguishment or stopping up of an existing section of highway (either a road or a public right of way) will need to be the subject of an appropriate order. If the proposals are as a direct consequence of a planning application, the order will be required to be made under the provisions contained in Section 247 of the Town and Country Planning Act 1990. It will be incumbent on the developer to ensure compliance with all statutory procedure prior to any site works commencing which might affect the existing highway network.
- 6.2 In certain instances, the Council will be prepared to consider highway extinguishment procedures subject to Committee approval under Section 116 and 117 of the highways Act 1980 with all costs being borne by the developer. The average fees involved are in the region of £1,000 at January 1993, however, this will be the subject to an annual review.

7. **New Street Orders** - Section 30 Public Health Act 1925
Section 188 Highways Act 1980

7.1 To safeguard the widths of narrow rural highways likely to be the subject of development, it is the Council's custom to make New Street Orders, but such 'added widths' will not become maintainable at public expense until made up by the developer and formally adopted by the Council.

8. **Statutory Undertakers' Services**

8.1 The National Joint Utilities Group (c/o The Electricity Council, London) - covering the gas, water, electricity and telecommunication industry - has produced two documents (NJUG2 and NJUG5) giving comprehensive guidelines on procedures and technical requirements for the installation and location of buried services on residential and new building developments. The standards set out in those documents are acceptable to the Council and consequently no detailed information on this subject is given in this design guide. However, it should be noted that public utility mains other than sewers must generally be located beneath the highway but not in the carriageway except when crossing from side to side.

9. **Retaining Walls**

9.1 Any retaining wall, whether it supports the highway or is constructed alongside* the highway shall not be erected without the design, plan, section and specification, having first been approved by the Council. Only a retaining wall, which directly supports the highway, will be considered for adoption. However, wherever possible, the support for the highway should be by means of embankments. The Council shall approve the structural stability of all boundary walls higher than 1.5 metres above lower ground level, alongside the highway.

* alongside means within a distance of 3.6 metres, or the height of the wall plus 50% whichever is the greater.

10. **Existing Highways**

Alterations to existing highways, necessary to provide new road junctions, can be undertaken by Developers if an Agreement under Section 278 of the Highways Act 1980 is entered into with the Council. Dependent upon the classification of the existing highway and the extent of the alterations, the Developer may be required to prepare and let a separate contract for such works, with the Council named as Employer. Minor alterations may be covered within a Section 38 Agreement of the Highways Act 1980, or where there is no such Agreement by use of Section 50 of the New Roads and Streetworks Act 1991.

TORFAEN COUNTY BOROUGH COUNCIL

ENVIRONMENTAL MANGEMENT DEPARTMENT (ENGINEERING DIVISION)
TRAFFIC AND DEVELOPMENT

SECTION 38 INFORMATION SHEET

SCHEDULE OF REQUIREMENTS

Torfaen County Borough Council acting as the highway authority under the provisions of the Highways Act 1980, requires that new highways to be adopted by agreement under Section 38 of the act shall be designed and constructed in accordance with its current publication: -

“Estate Development Highway Design Guide”

This document is available from Torfaen County Borough Council, County Hall; Cwmbran, at a cost of £15 inclusive of postage and V.A.T.

Planning Application Stage

Whilst formal adoption procedures will only be entered into subsequent to the granting of detailed planning permission, the technical design can broadly be agreed with the Council and included in the planning application submission. This shall be, as a minimum, a clear indication of the extent of the proposed public highway.

No construction works on the adoptable highways should be commenced on site until you have: -

- (a) received formal technical approval to your road designs;
- (b) entered into a Section 38 Agreement, provided an acceptable Surety and paid the Council’s administration and inspection fees being 6% of the estimated total cost of the work;
- (c) or paid to the Council the deposit in accordance with Section 219 of the Act (the advance payment code).

Entering into a Section 38 Agreement secures exemption from the need to make a cash deposit in advance in accordance with Section 219 of the Highways Act 1980 (The advance payments code) and guarantees the adoption of the new highways, subject to satisfactory construction and following a twelve month period of maintenance.

Technical Approval

Initially a preliminary highway layout can be agreed by submitting two 1/200 scale plans for comments. Once approved the formal application package should be forwarded to the Council. This will indicate: -

- (a) setting out details, radii, channels and centreline levels on plan and longitudinal vertical profile, visibility splays and zones.
- (b) drainage line and levels plus calculation where any drainage run carries solely highway surface water.
- (c) street lighting details.
- (d) traffic management items.
- (e) road markings and signs.
- (f) land drainage details.
- (g) locations and result of necessary C.B.R. soil tests together with proposed road make up specification.
- (h) a 1/200 scale plan showing the extent of the proposed roadwork’s to be offered for adoption edged in red.
- (i) confirmation of ownership of the land edged in red.
- (j) a typical cross section.

- (k) a clear indication in separate colours of all areas of carriageway, footway, footpath, cycleway and verge.
- (l) structures overhanging adoptable areas must be clearly shown and identified by a note on the road layout plan stating that height directly above ground level. No door or window on the ground floor of a property will be allowed to open over the highway.

All drawings should have printed thereon a unique number for reference purposes, together with any amendment sub reference, and be dated.

The Council will contact you to arrange for any necessary amendments to be made, or to have additional information provided.

Once proposals have been agreed and approved you will receive a letter stating the relevant reference numbers of the drawings approved.

Design Services

Torfaen County Borough Council offers a full design service for all Section 228 works, or alternatively for the street lighting installation only.

The Council can undertake to provide the design within an agreed timescale showing all relevant details to an agreed brief. A charge is made for these services and further information can be provided on request.

SECTION 38 ROAD AGREEMENT

In order to process the Section 38 Agreement 7 No. copies of the approved plan which show the road layout together with street lighting and road drainage details and 4 No. copies of any other approved drawings.

Upon receiving these details, Council's Chief Executives' Department will prepare the Section 38 Agreement.

Payment of administration and inspection fees will be required when the Section 38 road Agreement is signed. Such Agreements are supported by a Bond to the value of 100% of my estimate of the cost of the works.

A pre-requisite to the completion of the road agreement will be for the Council to also enter into a Section 104 Agreement under the Water Industries Act 1991, where the surface water drainage system is taking yard and roof water in addition to highway drainage and in respect of the fall sewers. Until the Section 38 Agreement is completed, however, you will not be permitted to undertake works connected with the development in, on, over or under any existing public highway.

Completion of the Agreement also releases you from your obligation under the Highways Act 1980 in respect of the advance payment code.

Inspection and Certification of Works

The cost of any initial proving by laboratory testing or inspection of new constructed drains by CCTV on a site, as necessary, is deemed to be included in the administration and inspection fee. In the event of the workmanship or materials being proven unsatisfactory by that testing the developer shall bear all subsequent re-testing costs for those elements of the works.

Certificate of satisfactory completion will be issued in three stages: -

1. Part 1 Certificate within the terms of the road agreement, comprising the following works.
 - (i) All highway drainage.
 - (ii) All other drainage contained within the highway.
 - (iii) All kerb foundations and appropriate kerbing.
 - (iv) Carriageway sub-base, road base, supporting structures thereto.
 - (v) Carriageway base course surfacing.
 - (vi) Demarcation of sight lines and clearance of vision splays.
 - (vii) Street lighting (in part).

2. Part 2 Certificate within the terms of the road agreement, comprising of the following works.
 - (i) Kerbing.
 - (ii) Pedestrian ways and cycleways.
 - (iii) Carriageway wearing course.
 - (iv) Vision splays and verges.
 - (v) Road markings.
 - (vi) Completion of street lighting.
 - (vii) All other works described in the specification and shown in the drawings.

3. Final Certificate of satisfactory completion at the end of the twelve months maintenance period, which commenced upon the issuing of the Part 2 Certificate.

4. Inspection and Certification of Road Lighting Installations

The Council will only issue certificates showing acceptance of lighting installations for complete phases of the development. This will be done at two stages.

 - (i) Certificate that lighting installations are ready for the commencement of the twelve months maintenance period. (Part 2 certificate stage).

 - (ii) Certificate that lighting installations are ready for adoption (Final Certificate of satisfactory completion stage).

5. Entry into Maintenance and Adoption

The Council will not enter any phase of development into the adoption maintenance period without the road works and street lighting having been previously certified as described in clause 4 above.

TORFAEN COUNTY BOROUGH COUNCIL
ENVIRONMENTAL MANAGEMENT DEPARTMENT- ENGINEERING DIVISION
TRAFFIC AND DEVELOPMENT
SECTION 228 INFORMATION SHEET
SCHEDULE OF REQUIREMENTS

Torfaen County Borough Council acting as the highway authority under the provision of the Highways Act 1980, requires that new highways to be adopted under Section 228 of the Act shall be designed and constructed in accordance with its current publication: -

“Estate Development Highway Design Guide”.

This document is available from Torfaen County Borough Council, County Hall, Cwmbran, at a cost of £15 inclusive of postage and V.A.T.

Planning Application Stage

Whilst formal adoption procedures will only be entered into subsequent to the granting of detailed planning permission, the technical design can broadly be agreed with the Council and included in the planning application submission

No construction works on the adoptable highway should be commenced on site until: -

- (a) formal technical approval to your road designs;
- (b) paid to the Council the deposit in accordance with Section 219 of the Act (the advance payment code);

Technical Approval

Initially a preliminary highway layout can be agreed by submitting two 1/200 scale plans for comments. Once approved the formal application package should be forwarded. This will indicate: -

- (a) setting out details, radii, channels and centreline levels on plan and longitudinal vertical profile, visibility splays and zones.
- (b) drainage line and levels plus calculation where any drainage run carries solely highway surface water.
- (c) street lighting details.
- (d) traffic management items.
- (e) road markings and signs.
- (f) land drainage details.
- (g) locations and result of necessary C.B.R. soil tests together with proposed road make up specification.
- (h) a 1/200 scale plan showing the extent of the proposed roadwork's to be offered for adoption edged in red.
- (i) confirmation that you own or control all the land edged in red.
- (j) a typical cross section.
- (k) a clear indication in separate colours of all areas of carriageway, footway, footpath, cycleway and verge.
- (l) structures overhanging adoptable areas must be clearly shown and identified by a note on the road layout plan stating that height directly above ground level. No door or window on the ground floor of a property will be allowed to open over the highway.

All drawings should have printed thereon a unique number for reference purposes, together with any amendment sub reference, and be dated.

Contact will be made should any amendments or additional information be required.

Once the final details have been agreed and approved you will receive a letter stating the relevant reference numbers of the drawings approved.

Design Services

Torfaen County Borough Council offers a full design service for all Section 228 works, or alternatively for the street lighting installation only.

The Council can undertake to provide the design within an agreed timescale showing all relevant details to an agreed brief. A charge will be made for these services and further information can be provided on request.

Adoption

A pre-requisite to the adoption of the new highways will be for the Council to also enter into a Section 104 Agreement under the Water Industries Act 1991, where the surface water drainage system is taking yard and roof water in addition to highway drainage and in respect of the foul sewers. You will not be permitted to undertake Section 104 Agreement drainage works connected with the development in, on, over or under any existing public highway, unless you also obtain appropriate Street Works Licenses from the Council under Section 50 of the New Roads and Streetworks Act 1991.

The cost of any proving by laboratory testing or inspection of newly constructed drains by CCTV together with associated reports, and inspection of the works by or on behalf of the Council will all be at the expense of the Developer. No Certification will be issued to the Developer as a result of this work. Following satisfactory completion of the works, and then after a satisfactory maintenance period of twelve months following the completion of the work, during which time the Developer remains the Street Manager for the purpose of Section 49(4) of the New Roads and Streetworks Act 1991, adoption procedures will be instigated using Section 228 of the Highways Act 1980.

Provided that no valid objection is forwarded to the Council during the period that the Section 228 Notice is displayed on site, the new highways will thereby become adopted as maintainable at public expense

Fees

The Developer will be required to pay a standard administration fee of £500, plus £100 for each site inspection, as well as the inspection costs referred to above. If requested, the Council will provide the Developer with an estimate of the likely total costs of these items, but for guidance it can be assumed that the costs are unlikely to be less than the fee charged for an Agreement under Section 38 of the Highways Act 1980.

WORKS IN EXISTING HIGHWAY - NEW ROADS & STREETWORKS ACT - 1991

Where a private development scheme is proposed that involves works within the existing highway and is not subject to a Highways Agreement, it will be necessary for the Authority to issue a formal Streetworks Licence to the developer.

Approval must be sought from Highways Maintenance section prior to works commencing. Failure to comply with this requirement will constitute illegal works within the highway and will be dealt with appropriately under the Highways Act 1980.

TORFAEN COUNTY BOROUGH COUNCIL

SECTION 38 AGREEMENT (HIGHWAYS ACT 1980)

DEVELOPMENT AT :

BY:

HIGHWAYS INSPECTION PROCEDURE

Prior to the commencement of the highway works the developer or his representative must submit a programme of the works giving the anticipated commencement and completion date of each operation and must give at least three days notice in writing before commencing the following operations:

- i) Excavation to formation
- ii) Laying of surface water drains or construction of any catch pits, gullies or inspection chambers
- iii) Backfilling any engineering operation
- iv) Laying of carriageway capping layer/sub base
- v) Kerbing works
- vi) Laying of carriageway roadbase
- vii) Laying of carriageway basecourse
- (viii) Laying of wearing course
- ix) Any other prospective work to be considered for adoption

Failure to comply with this requirement **will** jeopardise the adoption of the highway works.

Failure of the Council to disapprove any work or materials shall not prejudice the power of the Council subsequently to disapprove such work or materials.

CONTACT NUMBERS – TRAFFIC AND DEVELOPMENT

Christina Harry (Team Leader)

Office: 01633 648437

Paul Wheeldon (Senior Engineer)

Office: 01633 648430

Sue Davies (Technician)

Office 01633 648395

Steve Poole (Inspector)

Office 01633 648433 Mobile 0780 1222161

Highways Maintenance 01633 648429

Streetlighting 01633 648413

On completion of each site visit, the Council and the Developers Site Agent will sign a register of inspection.

Part 1 and Part 2 Certificates will only be issued if the above procedure is followed.

Please note that a Part 2 Certificate (and the subsequent commencement of the maintenance period) can only be issued upon safe return of this document to Torfaen County Borough Council, with all the relevant sections of the inspection register completed by the Engineer and Developers representative.

The Developer shall during the construction of the works: -

- a) comply at all times with Chapter 8 of the Traffic Signs Manual published by HMSO and any amendments thereof and such directions as the Engineer shall think fit for the purpose of ensuring road safety and traffic control.
- b) make provision in accordance with the Engineer's requirements to prevent mud and other materials from being carried by vehicles and plant onto adjacent highways.
- c) keep any partially constructed works in a good state of repair and condition to the satisfaction of the Engineer and suitable for use by the public.
- d) ensure that the works (so far as is reasonably practicable) do not interfere unnecessarily or improperly with the convenience of the public or the access to or use or occupation of adjacent public or private roads and footpaths.
- e) ensure that any works to be carried out in existing public highway is undertaken under a Section 50 Road Opening Licence of the New Roads and Street Works Act 1991. Contact must be made to Highway Maintenance for further information and the appropriate application forms. Failure to comply with this requirement will constitute illegal works within the highway and will be dealt with appropriately under the Highways Act 1980.
- f) comply at all times with the Torfaen County Borough Council Design Guide for Developers and its specifications. Copies of the guide are available from Traffic and Development, Department of Environmental Management, Torfaen County Borough Council, County Hall, Cwmbran.

INSPECTION CHAMBERS AND CATCHPITS

TESTING AND CLEANING OF MANHOLES, CATCHPITS ETC.

Inspection Chamber/catchpit no.			Date of inspection		
Location			Drawing ref		
Actual chainage			Level of cover		
	Pipe run	Invert to Soffit	Soffit to Cover	Pipe Inverts	Comment

<u>Item</u>	Satisfactory	Unsatisfactory	Remarks	Work Complete	Approved
Step irons					
Rings					
Cover slab					
Cover					
Pipes					
Benching					
Brickwork					
Cleanliness					
Ring seals					

SECTION 38 AGREEMENT - INSPECTION REGISTER

DESCRIPTION OF WORK	CHAINAGE M	REMARKS	CERTIFIED

NOTE: Failure of Torfaen County Borough to disapprove any work or materials shall not prejudice the power of the Council subsequently to disapprove such work or materials.

STREET LIGHTING WORKS**Additional Information for S38 Road Lighting Works**

1. The developer as part of the S38 Agreement must install an approved street lighting scheme.
2. As a condition of approval the developer must indicate on his plans the following information:
 - a) Position of the feeder pillar (if being used) as agreed between the developer and SWALEC.
 - b) Position of lighting columns and illuminated signs/bollards
 - c) Type and mounting height of column
 - d) Type and wattage of luminaires.
 - e) Underground cable route, cable size and position of underground ducts and cable pull chambers.
 - f) Internal wiring details of columns and feeder pillar.
 - g) Define which part and category of BS 5489 has been used in the road lighting calculation/design.
3. Torfaen County Borough Council offers a design service. If the developer wishes to utilise this service he must submit approved blank site plans indicating the position of the feeder pillar (the developer must obtain this position from SWALEC). "Approved" in this instance means a highway layout approved as suitable for adoption by the Highway Authority. The adopted areas must be clearly indicated by colouring.

Upon receipt of the plans the Council will provide a suitable lighting scheme indicating the details listed items b), c), d), e), f) and g) in 2 above. A charge will be made to cover design costs. This charge will be based on a sliding scale. For details contact Torfaen's Street Lighting.

4. The developer must not deviate from the lighting layouts indicated in 1, 2 or 3 above without the permission of the Street Lighting section. On completion of the scheme, the developer must provide two "as installed" drawings for Torfaen County Borough Council records and also return the inventory forms for road lighting and traffic signs.
5. Lighting columns must be erected as far as possible at the rear of footpaths, and on the party lines of individual properties. Care must be taken to avoid other underground services.
6. On satisfactory completion of the lighting installation, Torfaen County Borough Council will pay all energy and maintenance charges during the maintenance period. During this period the developer at his own cost will repair any outages.
7. Feeder pillars shall be constructed in hot dipped galvanised sheet steel of a minimum thickness of 3mm. They shall include a full size backboard of marine plywood at least 12 mm thick or other approved non – hygroscopic material. (similar to Charles Endirect type EP350). The entry for cables shall be via the root (see drawing SL2). The feeder pillar will be fitted with an integral Isolator and Fuse unit (similar to Charles Endirect type PQ361A)

8. Columns to be of galvanised tubular steel construction and must comply with the latest British Standard Specifications, and be of a design approved by the Department of Transport and the Regions (DETR). Galvanised T6 B8 with a minimum column height of 6m being installed. If installed on footpaths they must be of a raise and lower type. Columns shall be identified by a number (black on white) in accordance with the column numbers indicated on the approved drawings. The numbers shall, at the discretion of the Street Lighting Engineer be in paint or plastic tiles not less than 50mm in height and located 2 metres above ground level. They shall face in the direction approved by the Street Lighting section. Columns doors shall be flush fitting and fitted with anti vandal type bolts (as Phosco Forest range or similar approved). The columns are to be fitted with an integral Isolator and Fuse.
9. Luminaires and lamps to be either High Pressure Sodium or Compact Fluorescent types, the luminaires to be fitted with a vandal resistant bowl and fitted with NEMA sockets and Photo Electric cells. High Pressure Sodium luminaires shall contain optics with a one-piece reflector system sealed to IP65 (minimum). The luminaires and control gear must be purchased as a package and have the same manufacturer. If a special lantern is requested by the developer and permission for its use granted by the County Borough Council, the developer must provide the County Borough Council with replacement lanterns, the quantity to be 10% of the number used on each respective site.
10. The type of control will be as specified on each individual scheme, and will be Photocell or Digital Time Clock and will be generally group switching.

Photo Electric Cell : Two-piece type or as specified on individual scheme.
11. Fuses to be to BS 88, BS 646 or BS 1361.
12. All column wiring shall be PVC insulated and sheathed single or multi-core cable to BS 6004 of 300/500 volt grade. Phase and neutral conductors shall not be less than 2.5mm², and be colour coded. (Also applies to control wiring in feeder pillar). The circuit protective conductor shall be of equal cross-sectional area to the associated circuit conductor unless otherwise shown on the drawings.
13. Earthing and bonding to be as shown on Drawing No. SD1400-03, included in this appendix.
14. Underground cables shall be 3 core PVC insulated and sheathed 600/1000 volt grade with steel wire or aluminium strip armouring to BS 6346 and all conductors shall be of copper with equal cross section area. The size of the cable shall be such that the voltage drop at any point in the system does not exceed 4% of the voltage at the supply point. Cables shall have a minimum size of 16mm² for road lighting and 10mm² for supply to signs.
15. Cables laid under verges, footways or drives to have a minimum cover of 500mm. Cables laid under carriageway to have a minimum cover of 750mm. Cables to be installed in a non-rigid orange 100mm diameter UPVC duct. A yellow PVC or polythene plastic type for cable marking not less than 0.1mm thick and 150mm wide with the wording "STREET LIGHTING CABLE" along the full length and

occurring at least at 1 metre intervals shall be laid approximately 250mm above any individual or groups of lighting cable.

16. No cable joints will be allowed except by permission of the Street Lighting section.
17. The developer must carry out tests as prescribed in the IEE Regulations and a copy of the tests sent to the Torfaen County Borough council Street Lighting section.
18. The developer is to apply to SWALEC for a 240 volt 50Hz supply to the feeder pillar using the standard form ref. 722-0 entitled "Supply Enquiry Form" (Unmetered)(Including Public Lighting Supplies).
19. On commencement of works the developer must notify Torfaen County Borough Council's Street Lighting section who will arrange for an inspector to visit the site and confirm cable runs, feeder pillar and lighting column positions, and numbering sequence.
20. Torfaen County Borough Council Street Lighting section who will arrange for the Inspector to visit the site and inspect the installation.
21. On receiving a satisfactory report from Torfaen County Borough Council Street Lighting Inspector, the developer is to submit an application to SWALEC using the standard form Ref. 236/6 entitled "Application for Test Correction"
22. If the Street Lighting installation has been in lighting for 3 years then a Bulk Lamp Change must be completed on the Street Lighting installation prior to the Highway and ancillary features being adopted.
23. If the Developer has any queries relating to the above information or the following drawings clarification should be sought via the County Borough Councils Street Lighting section. (tel. 01633 648413).

TORFAEN COUNTY BOROUGH
COUNCIL

ESTATE DEVELOPMENT
SPECIFICATION

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Table 2 Residential roads (including distributor roads)

Table 3 Footway vehicular crossings

Table 4 Sub base layer thickness for CBR values

Table 5 Major Industrial Access Roads

Table 6 Minor Industrial Estate Roads

APPENDIX 0/4: LIST OF DRAWINGS INCLUDED IN THE CONTRACT

1. Contract – Specific Drawings Supplied to Each Tenderer

Drawing No.	Title	Volume No.
	NONE	

2. Standard Drawings

2(i) Specified Drawings Supplied

Drawing No.	Title	Volume No.
SD500-01	Filter/Surface Water Drains Trench and Bedding Detail	
SD500-02	Gulley Detail	
SD500-03	Soakaway Detail	
SD500-04	Details of Duct Design Groups SD5, SD6 and SD7	
SD700-01	Rumble Strip Layout	
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SD700-07	General Laybys – Concrete Construction	
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SD700-11	New and Existing Pavements Where No Overlay is Required	
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SD800-01	Cross Section Through a Raised Bus Boarder or Promontory	
SD800-02	Kerbside Bus Stop – Unobstructed	
SD800-03	Kerbside Bus Stop With Parking on Approach and Exit	
SD800-04	Kerbside Bus Stop on Exit Side of Pedestrian Crossing	
SD800-05	Full Width Bus Boarder (Shelter Located on Build Out)	
SD800-06	Full Width Bus Boarder (Shelter on Existing Footway)	
SD800-07	Half Width Bus Boarder	
SD800-08	Trapezoidal Bus Promontory	
SD800-09	Half Width Bus Bay	
SD800-10	Full Width Bus Bay	
SD800-11	Detail of Area of Footway to be Built Up	
SD800-12	Section Through Proposed New Bus Boarder	
SD1100-01	Details of Kerb Types BN and BN1	
SD1100-02	Details of Kerb Types SP and HB2/1	
SD1100-03	Details of Kerb Types HB2 and HB3	
SD1100-04	Details of Kerb Types HB 1F and HB 2F	

2. Standard Drawings (Continued)

2(I) Specified Drawings Supplied

Drawing No.	Title	Volume No.
SD1100-05	Details of Kerb Type HB/BD1	
SD1100-06	Details of Kerb Sett Types KS1 and KS2 and Bollard Type	
SD1100-07	CB	
SD1100-08	Details of Edging Types EF, EBN, ET and ER	
SD1100-09	Details of Channel Types CS1 and CD	
SD1100-10	Details of Channel Type CD/1	
SD1100-11	Details of Channel Type CF and Kerb Type TS	
SD1100-12	Kerb Detail at Footway Crossing	
SD1100-13	Paved Footway Type P1	
SD1100-14	Footway Construction Details	
SD1100-15	Recommended Arrangement of Statutory Undertakers Plant in the footway	
SD1200-01	Detail of Tactile Paving Slab – Profile and Plan Blister	
SD1200-02	Surface	
SD1200-03	Details of Traffic Sign Foundations	
SD1400-01	Typical Erection Details For Baselight Bollard and Shell	
SD1400-02	Road Marking for Estate Road Junctions Typical Column Connection When Connected to Swalec Supply	
SD1400-03	Details of Earthing and Bonding Connections in Lighting Columns on Local Network	
SD1400-04	Details of Earthing and Bonding Connections in Lighting Columns on Local Network	
SD1400-05	Details of Earthing and Bonding Connections in Lighting	
F3	Typical Details of Earthing and Bonding Connections in Feeder	
F5	Pillar	
F6	Distribution Units For Feeder Pillars	
F11	Type 1 Chamber (Brick or Insitu Concrete Manhole) Type 3 Chamber (Precast Concrete Manhole) Type 4 Chamber (Precast Concrete Manhole) Type 7 Chamber (1050 Catchpit)	

TABLE 1 - PAVEMENT OPTIONS FOR LOCAL DISTRIBUTORS

CONSTRUCTION	CLAUSE	MATERIAL	GRADE OF BINDER	THICKNESS (mm)	SPECIAL REQUIREMENTS
WEARING COURSE	912	CLOSE GRADED BITUMEN MACADAM	100 PEN	40	BS 4987 Part 1 Clause 7.3 Aggregate type: Crushed rock or blast furnace slag. Nominal size : 14mm Minimum PSV: 55 Maximum AAV: 12 Maximum Flakiness Index: 35 (overall) Binder content (see note 7): 5.6 +/- 0.5
BASE COURSE	905	ROLLED ASPHALT	50 PEN	60	BS 594 Part 1, Table 2, Column 4.
	906	DENSE BITUMEN MACADAM	100 PEN	60	BS 4987 Part 1 Clause 6.5 Aggregate Type: Crushed rock or blastfurnace slag. Nominal size : 20mm; Maximum flakiness index: 35(overall) Binder content (see note 7):5.2 +/- 0.6
ROAD BASE	808	WET MIX MACADAM		210	
	903	DENSE BITUMEN MACADAM	100 PEN	140	BS 4987 Part 1. Clause 5.1 Nominal size: 40mm; Maximum flakiness index: 35 (overall) Binder content (see note 7): 3.8 +/- 0.6
	904	ROLLED ASPHALT	50 PEN	140	BS 594 Part 1, Table 2, Column 6.
SUB BASE	803	GRANULAR SUB-BASE TYPE 1		225	Minimum 10% fines value (saturated) 50Kn.

1. Location: Local Distributor Roads.
2. Grid for checking surface levels of pavement course (Clause 702.4).
Longitudinal Dimension: 10m generally: 5m at stated locations.
Transverse Dimension: 2m generally.
3. Surface regularity (Clause 702.7): Table 7/2 Category of road: A.
4. Percentage Refusal Density required (Clause 901.15): 93%.
5. The use of limestone group aggregates in accordance with BS 812 will not be permitted in wearing courses.
6. BS 4987 Traffic Category (Clause 908, 909, 912, 914, 916 and 917): A
7. Where gritstone aggregate of PSV in excess of 65 is used, the binder content as stated in BS4987 shall be amended as described in the Table 2.
8. The minimum total pavement thickness must be 450mm to provide sub-grade frost resistance. Pavement construction is based on a minimum CBR for the sub-grade of 5%. For sub-grades with CBR's below 5% additional sub-base to be provided in accordance with Chapter 3, Chart 1 Department of Transport Standard HD14/93 "Structural Design of New Road Pavements", and as shown in Table 4 of this guide.

CONSTRUCTION DETAILS

All materials to be used in carriageway and footway construction shall comply with the relevant British Standard, where applicable and with the requirements of the Specification for Highway Works 1998.

Torfaen County Borough Council reserves the right to limit the choice of materials to suit local or individual circumstances.

Carriageway Construction

Permitted pavement options for local distributor roads are given in Table 1, and for other residential roads in Table 2.

Regulating Courses: shall be in accordance with sub-clauses 2, 3 and 4 of Clause 907.

Bituminous Tack Coat: If coated macadam or cement bounded material Class 3, is laid as roadbase and is not covered immediately with the basecourse, then the roadbase should be sprayed with a sealing coat of bituminous spray to Clause 920.

Upper roadbase material, in pavements without basecourse, and basecourse material shall not remain uncovered by either the wearing course or surface treatment, for more than 3 days.

Apart from those lengths requiring superelevation by design need, the cross section of a new carriageway should be crowned to provide a balanced camber. This will ensure that surface water from higher ground will not drain across the carriageway to the lower side. (1 in 32 (3%)).

All carriageway material is to be machine laid.

NOTE: Where the provision of a new development requires the widening of a portion or single side of the existing carriageway the Highway Authority may request the developer to overlay the whole of the carriageway with appropriate base and/or wearing course material. This is both to ensure that adequate falls for drainage are maintained and for the sake of providing a uniform appearance to the carriageway.

Footway Construction

Footway construction details are given in Table 3.

Cross-fall of 1 in 30.

Cycle Route Construction

Cycle route construction to be in accordance with Sustrans guidelines

Laybys and Hardstandings

To resist oil and diesel spillage, laybys and hardstandings shall be surfaced with either:

- Close graded macadam wearing course
- Concrete: See Specification (MCHW 1), Series 1000;
- Block paving; Series 1100;
- Dense tar surfacing wearing course with 50% coarse aggregate content with 50% coarse aggregate content without coated chippings, Series 900; or
- With proprietary surfacing with an equivalent resistance to oil spillage and deformation.

TABLE 2 - PAVEMENT OPTIONS FOR RESIDENTIAL ROADS (excluding Local Distributors).

CONSTRUCTION	CLAUSE	MATERIAL	GRADE OF BINDER	THICKNESS (mm)	SPECIAL REQUIREMENTS
WEARING COURSE	912	CLOSE GRADED BITUMEN MACADAM	100 PEN	40	BS 4987 Part 1 Clause 7.3. Aggregate type: Crushed rock or blast furnace slag. Nominal size : 14mm Minimum PSV: 55 Maximum AAV: 12 Maximum Flakiness Index: 35 (overall) Binder content (see note 7): 5.6 +/- 0.5
BASE COURSE	905	ROLLED ASPHALT	50 PEN	60	BS 594 Part 1, Table 2, Column 4.
	906	DENSE BITUMEN MACADAM	100 PEN	60	BS 4987 Part 1 Clause 6.5 Aggregate Type: Crushed rock or blastfurnace slag. Nominal size : 20mm Maximum flakiness index: 35(overall) Binder content (see note 7):5.2 +/- 0.6
ROAD BASE	S1	DRY BOUND MACADAM		210	(See special clause S1) BS4987
	808	WET MIX MACADAM		210	
	903	DENSE BITUMEN MACADAM	100 PEN	140	BS 4987 Part 1. Clause 5.1 Nominal size: 40mm Maximum flakiness index: 35 (overall) Binder content (see note 7): 3.8 +/- 0.6
	904	ROLLED ASPHALT	50 PEN	140	BS 594 Part 1, Table 2, Column 6.
SUB BASE	803	GRANULAR SUB-BASE TYPE 1		225	Minimum 10% fines value (saturated) 50Kn.

1. Location: Other Residential Roads.
2. Grid for checking surface levels of pavement course (Clause 702.4).
Longitudinal Dimension: 10m generally: 5m at stated locations.
Transverse Dimension: 2m generally.
3. Surface regularity (Clause 702.7): Table 7/2 Category of road: B.
4. Percentage Refusal Density required (Clause 901.15): 93%.
5. The use of limestone group aggregates in accordance with BS 812 will not be permitted in wearing courses.
6. BS 4987 Traffic Category (Clause 908, 909, 912, 914, 916 and 917): B
7. Where gritstone aggregate of PSV in excess of 65 is used, the binder content as stated in BS 4987 shall be amended as described in the Table below.
8. The minimum total pavement thickness must be 450mm to provide sub-grade frost resistance. Pavement construction is based on a minimum CBR for the sub-grade of 5%. For sub-grades with CBR's below 5% additional sub-base to be provided in accordance with Chapter 3, Chart 1 Department of Transport Standard HD14/93 "Structural Design of New Road Pavements", and as shown in Table 4 of this guide.

TABLE 3 – FOOTWAY MINIMUM CONSTRUCTION REQUIREMENTS.

<u>CONSTRUCTION</u>	<u>STANDARD FOOTWAY</u>	<u>LIGHT VEHICULAR CROSSING</u>	<u>HEAVY VEHICULAR CROSSING</u>
<u>WEARING COURSE</u>	DBM Wearing Course Clause 912 Nominal Size agg: 6mm Thickness: 20mm	As Standard Footway	As Standard Footway But Nominal Size Agg: 10mm Thickness: 25mm
<u>BASE COURSE</u>	DBM Base Course Clause 906 Nominal Size agg: 20mm Thickness: 50mm	As Standard Footway	As Standard Footway But Nominal Size agg: 40mm Thickness: 75mm
<u>SUB BASE</u>	Granular Sub-Base Type 1 Clause 803 Thickness: 100mm	Granular Sub-Base Type 1 Clause 803 Thickness: 225mm	Granular Sub-Base Type1 Clause 803 Thickness: 350mm

TABLE 4 – SUB-BASE LAYER THICKNESS FOR CBR < 5%

<u>CBR %</u>	<u><2%</u>	<u>2 – 5 %</u>	<u>>5%</u>
	<u>Minimum Sub-Base Thickness (mm)</u>		
<u>GRANULAR SUB-BASE TYPE 1</u>	150	150	225
<u>CAPPING LAYER</u> <u>* CLASS 6F1 OR</u> <u>6F2</u>	450	200	-

* Capping Layer Material shall be at a minimum Class 6F1 or 6F2 Material as specified in Table 6/1 of the Specification for Highway Works.

TABLE 5 - PAVEMENT OPTIONS FOR MAJOR INDUSTRIAL ACCESS ROADS.

CONSTRUCTION	CLAUSE	MATERIAL	GRADE OF BINDER	THICKNESS (mm)	SPECIAL REQUIREMENTS
WEARING COURSE	911	ROLLED ASPHALT DESIGN MIX	50 PEN	40	BS 594 Part 1, Table 3, Column 9. Marshall stability target: 6KN (+/- 2KN) Marshall flow (Clause 911):5mm max. Aggregate type: Crushed rock or blastfurnace slag (The use of limestone aggregate in accordance with BS 812 will not be permitted). Maximum air temperature in the shade for laying wearing course material (Clause 703.4): 8 degrees Celsius.
BASE COURSE	905	ROLLED ASPHALT	50 PEN	60	BS 594 Part 1, Table 2, Column 4.
	906	DENSE BITUMEN MACADAM	100 PEN	60	BS 4987 Part 1 Clause 6.5 Aggregate Type: Crushed rock or blastfurnace slag. Nominal size : 20mm Maximum flakiness index: 35(overall) Binder content (see note 8):5.2 +/- 0.6
ROADBASE	903	DENSE BITUMEN MACADAM	100 PEN	150	BS 4987 Part 1. Clause 5.1 Nominal size: 40mm Maximum flakiness index: 35 (overall) Binder content (see note 8): 3.8 +/- 0.6
	904	ROLLED ASPHALT	50 PEN	150	BS 594 Part 1, Table 2, Column 6.
SUB BASE	803	GRANULAR SUB-BASE TYPE 1		240	Minimum 10% fines value (saturated) 50Kn.

1. Location: Major Industrial Access Roads.
2. Grid for checking surface levels of pavement course (Clause 702.4).
Longitudinal dimension: 10m generally: 5m at stated locations.
Transverse dimension: 2m generally.
3. Surface regularity (Clause 702.7): Table 7/2, Category of road: A.
4. Percentage refusal density required (Clause 901.15): 93%
5. Coated chippings (Clause 915) – Nominal size – 20mm; Minimum PSV – 60; Maximum AAV – 10.
6. Surface texture required – 1.03mm; Measured by the Mini Texture Metre (Clause 922) method.
7. BS 4987 Traffic Category (Clause 908, 909, 912, 914, 916 and 917): A.
8. Where gritstone aggregate of PSV in excess of 65 is used, the binder content as stated in BS 4987 shall be amended as described in the Table below.
9. The minimum total pavement thickness must be 450mm to provide sub-grade frost resistance. Pavement construction is based on a minimum CBR for the sub-grade of 5%. For sub-grades with CBR's below 5% additional sub-base to be provided in accordance with Chapter 3, Chart 1 Department of Transport Standard HD14/93 "Structural Design of New Road Pavements", and as shown in Table 4 of this guide.

TABLE 6 - PAVEMENT OPTIONS FOR MINOR INDUSTRIAL ESTATE ROADS.

CONSTRUCTION	CLAUSE	MATERIAL	GRADE OF BINDER	THICKNESS (mm)	SPECIAL REQUIREMENTS
WEARING COURSE	911	ROLLED ASPHALT DESIGN MIX	50 PEN	40	BS 594 Part 1, Table 3, Column 9. Marshall stability target: 6KN (+/- 2KN) Marshall flow (Clause 911): 5mm max. Aggregate type: Crushed rock or blastfurnace slag (The use of limestone aggregate in accordance with BS 812 will not be permitted). Minimum air temperature in the shade for laying wearing course material (Clause 703.4): 8 degrees Celsius.
BASE COURSE	905	ROLLED ASPHALT	50 PEN	60	BS 594 Part 1, Table 2, Column 4.
	906	DENSE BITUMEN MACADAM	100 PEN	60	BS 4987 Part 1 Clause 6.5 Aggregate Type: Crushed rock or blastfurnace slag. Nominal size : 20mm Maximum flakiness index: 35(overall) Binder content (see note 8): 5.2 +/- 0.6
ROADBASE	805	WET MIX MACADAM		210	
	903	DENSE BITUMEN MACADAM	100 PEN	150	BS 4987 Part 1. Clause 5.1 Nominal size: 40mm Maximum flakiness index: 35 (overall) Binder content (see note 8): 3.8 +/- 0.6
	904	ROLLED ASPHALT	50 PEN	150	BS 594 Part 1, Table 2, Column 6.
SUB BASE	803	GRANULAR SUB-BASE TYPE 1		240	Minimum 10% fines value (saturated) 50Kn.

1. Location: Minor Industrial Estate Roads.
2. Grid for checking surface levels of pavement course (Clause 702.4).
Longitudinal dimension: 10m generally: 5m at stated locations.
Transverse dimension: 2m generally.
3. Surface regularity (Clause 702.7): Table 7/2, Category of road: B.
4. Percentage refusal density required (Clause 901.15): 93%
5. Coated chippings (Clause 915) – Nominal size – 20mm; Minimum PSV – 60; Maximum AAV – 10.
6. Surface texture required – 1.03mm; Measured by the Mini Texture Metre (Clause 922) method.
7. BS 4987 Traffic Category (Clause 908, 909, 912, 914, 916 and 917): B.
8. Where gritstone aggregate of PSV in excess of 65 is used, the binder content as stated in BS 4987 shall be amended as described in the Table below.
9. The minimum total pavement thickness must be 450mm to provide sub-grade frost resistance. Pavement construction is based on a minimum CBR for the sub-grade of 5%. For sub-grades with CBR's below 5% additional sub-base to be provided in accordance with Chapter 3, Chart 1 Department of Transport Standard HD14/93 "Structural Design of New Road Pavements", and as shown in Table 4 of this guide.