SECTION - A RESIDENTIAL ROAD AND FOOTPATH STANDARDS

1.1 Introduction

1.1.1 This design guide shall be used in association with the standard specification for private residential, industrial and commercial development document. The standard specification is derived from the Highways Agency Specification for Highway Works.

1.1.2 Design, Setting-out, Construction, Completion and Maintenance of the Works.

The Developer shall be responsible for the true and proper design, setting-out, construction and completion of the works. If at any time during the progress of the works any error or omission shall appear or arise in the design, position, levels, dimensions, or alignment of any part of the works, the Developer on being required so to do by the Engineer shall at his own cost rectify such error or omission to the satisfaction of the Engineer, unless such error or omission is based on incorrect data supplied in writing by the Engineer, in which case the cost of the same shall be borne by the Engineer. The checking of any design, setting-out or any line or level by the Engineer shall not in any way relieve the Developer of his responsibility to design, construct, complete and maintain the works until the Final Certificate of Completion has been issued and the roadworks adopted accordingly.

1.2 Philosophy and Objectives

1.2.1 This revision of the design guide has been introduced to reflect the County Borough Council's commitment to reducing accident casualties by requiring developers to incorporate traffic calming principles into their design layouts. There is also a requirement to provide facilities for disabled persons and cyclists and to make provision for buses to penetrate residential areas.

1.2.2 It is also a response to the new version of "Design Bulletin No. 32" (DB32), issued by the Department of the Environment, Department of Transport and the Welsh Office and "Places Streets & Movement" A companion guide to DB32 Residential roads and footpaths issued by the Department of the Environment, Transport and the Regions.

1.2.3 The principles and objectives of the design guide are aimed at allowing developers to create layouts which have a distinctive character in their built environment and landscaping, whilst at the same time applying design standards which will achieve a safe provision for pedestrians, cyclists and motor vehicles. These guidelines will permit a more flexible approach by the developer who nevertheless must have regard to the function and role of the various categories of road involved.

1.2.4 The principles of traffic calming are being introduced in acknowledgement of research which has shown that at 40 m.p.h. most children struck by cars are killed, at 30 m.p.h. half are killed, but at 20 m.p.h. only 1 child in 20 is killed. It is desirable that road layouts are now produced which will keep traffic to the recommended speeds for the appropriate classification of the road, and indicated later in this guide. There would
appear to be advantages to developers if 20 m.p.h. speed limit zones were introduced within an area, in terms of the ability to successfully market the new housing.

The factors which generally influence any decision on the need for traffic calming can be summarised as follows:-

(a) Volume of traffic using the road.
(b) Number of pedestrians crossing the road.
(c) Number of relevant accidents along the road.
(d) Speed at which vehicles travel.
(e) Use of the road by extraneous traffic e.g traffic using a particular road because of congestion on an adjacent road.
1.3 Design Factors and Principles

1.3.1 There are a number of factors to be taken into account: the needs of pedestrians and vehicles have already been mentioned, but in specific terms these comprise several elements - the carriageway, the footway - the cycleway, as part of the highway, other footpaths separate from the carriageway, car parking and garaging.

1.3.2 These elements inter-relate in many ways and a dominant consideration in that relationship is the potential conflict of pedestrians and vehicles. The design of residential layouts must seek to take account of this relationship and according to circumstances there may be scope for varying degrees of separation of pedestrians and vehicles. The pedestrian network should facilitate journeys from the home to shops, schools, playgrounds, bus stops or railway stations and to other local facilities. The location of uses within the development should also be related to the configuration of the network as for example, in the siting of facilities for the old, the handicapped or the very young.

1.3.3 The design of the carriageway itself must meet operational and safety requirements. The adoption of physical design constraints will ensure more effective speed control than the use of legislative measures.

1.3.4 Guidance on vehicle parking and garaging is that it shall be off the highway, either inside the curtilage of dwelling or in parking squares and garage compounds or courts. The location should be such that there can be natural surveillance of vehicles from the owners' properties.

1.3.5 Cyclists are one of the most vulnerable groups of road users. It would be unreasonable to expect a developer to provide for cyclists on a small development. However on the larger developments, consideration should be given to the provision of facilities so as to encourage such users. Cases may arise where shared pedestrian and cycle facilities will be appropriate.

1.3.6 These guidelines have been prepared so as to permit a flexible approach by the developer whilst ensuring that the designs create safe, convenient, nuisance free and secure surroundings that are visually attractive and economical to construct and maintain. Whilst the standards contained within the guide give details of design arrangements which will be acceptable to Rhondda Cynon Taff County Borough Council, alternative arrangements which conform to the principles outlined in the guide can also be put forward for consideration.

1.3.7 Providing the standards set out in this guide are adhered to, the following areas will normally be recommended for adoption.

- Carriageways and associated general purpose parking bays which lie between carriageway and footway.
- Footways.
- Footpaths or combined footpath/cycleways linking to adopted roads.
- Road margins/verges.
- Visibility splays and zones.
- Roundabouts
- Embankments and cuttings
- Highway drainage, culverts and the inlet and outlet structures
- Highway structures such as road and foot bridges

1.3.8 Developers should note that the geometrical requirements of the guide should be met even when adoption is not intended.

1.3.9 When considering into which category a road should be placed for design standards due account needs to be taken not only of the number of properties being served off that road but also the added number of properties served by road/s with direct access onto the road being considered e.g. if an approach road served 140 dwellings but an access road serving 80 dwellings had a junction with it the relevant classification would be A or B and not C or D (see para.6.4).

1.3.10 The likelihood of future development on land adjoining any site should be taken into account in assessing road categories

1.3.11 At priority junctions the roads should preferably be at an angle of 90°. At all other junctions the angle can deviate to a maximum of 80°.

1.3.12 Accesses to properties should be positioned away from the junction radius to discourage parking in the bell mouth area. Where the non priority road joins a local housing estate distributor road there should be no private access off the non priority road within 20 metres of the junction channel line or roundabout give way line.

1.3.13 When a new junction is being constructed onto an existing road a gulley should be provided at the highest tangent point of the junction radius on the existing road to collect surface water before it crosses the mouth of the junction. The surface water from the gulley should normally discharge into the new drainage system being provided by the developer.

1.3.14 Every property on a new development (not being a shared surface type) should have a direct access to an adopted highway by means of a drive, or 2.0m. wide footpath even if that footpath is not to be adopted. i.e. layouts with properties having pedestrian access to the adopted highway via the surfaced area of a private parking court or turning area will not be approved for adoption.

1.3.15 When a new junction is established off an existing highway, then all improvements required to the existing road shall be carried out by the developer to the satisfaction of this Authority.
2. **Hierarchy of Residential Estate Roads**

The standards for the hierarchy of estate roads will reflect the character of the traffic to be carried thereon and their respective functions are described briefly below:

2.1 **Local Housing Estate Distributor Roads** (see also para. 3.1)

2.1.1 As the name implies, such roads will link the housing estate development to the general highway network and connect with it at more than one junction. They will usually form the bus routes but must be designed to discourage short cutting by extraneous traffic. "Bus Only" links may be necessary to provide a comprehensive network of routes between distributor and approach roads, whilst discouraging through movement. Direct access to local housing estate distributor roads will be limited to parking and delivery areas associated with shops, schools and similar community facilities located within the estate.

2.2 **Approach Roads** (see also para. 3.2)

2.2.1 These roads will act as feeders to the local housing estate distributors. They may form the bus routes but must be designed to discourage short cutting by extraneous traffic. "Bus Only" links may be necessary to provide a comprehensive network of routes between approach roads, whilst discouraging through movement. Direct access from certain types of development within the estate (such as schools, recreation grounds and other places of public interest) may be permitted.

2.3 **Access Roads** (see also para. 3.3)

2.3.1 These roads link dwellings and their associated parking areas to approach and local housing estate distributor roads.

2.4 **Footways and Footpaths**

2.4.1 Footways and footpaths fulfil an important role by ensuring the safe movement of pedestrians and, if properly designed, should facilitate and encourage pedestrian activity. Further reference is made to the design standards and objectives in section 3.2.3 and 6.2.5.

2.5 **Cycleways**

Cycleways are routes which are intended for use by pedal cyclists with or without rights of way for pedestrians.
3. Design Standards for Road Categories

3.1 Local Housing Estate Distributor Roads (see also paras 2.1 and 6.3)

Whilst the legal speed limit on such roads will normally be 30 m.p.h., the design standards are intended to ensure speeds of less than 30 m.p.h. The road should normally be designed to cater solely for the traffic generated by the estate approach roads but it is likely that such roads may also form part of a through route or a route for a scheduled bus service. The carriageway width shall be 7.3 metres.

3.1.1 Continuous 2.0m wide footways on both sides of the carriageway may not be required but at least one footway is to be provided. A 2.5 metre verge shall be provided to accommodate the usual underground services alongside the carriageway, where a second footway is not provided. Where footways are provided, they shall measure at least 2.0 metres in width and at least 3 metres in width outside schools, shops, or other community facilities, in the area the public may congregate.

3.1.2 In order to discourage motorists from parking on the highway whilst visiting shops or other community facilities, no direct pedestrian access will be permitted from the highway frontage with the building. In addition, such buildings must be served by off-street parking areas, with all vehicular access being via this parking area. Wherever possible the parking area should be located between the shop and the highway. A segregated pedestrian facility of at least 3 metres width shall be provided along the frontage between the parking area and the building.

3.1.3 In all cases the road alignment shall be designed to restrict vehicle speeds to less than 30 m.p.h. Speed control may be achieved by a variety of measures including:-

(i) The use of short lengths of road which are either straight or gently curved, interspersed with frequent bends of a severity commensurate with the maintenance of speeds of less than 30 m.p.h. Definitions of the lengths of straights and the severity of bends required are given in sections 6.2 of this document;
(ii) Roundabout junctions;
(iii) Central islands (see DB32 para. 2.40); and
(iv) Raised traffic calming features such as junction plateaux and exceptionally, road humps. Where such features are used they must conform to the relevant standards contained in current legislation.

3.1.4 There will generally be a presumption against designs, which include a predominance of raised traffic calming features. Designs should usually include a combination of the above measures and should, wherever possible consist of a combination of the measures listed in 3.1 3 (i) and (ii) above. The use of other features e.g. carriageway narrowing or additional methods of reducing speed may also be agreed in consultation with the County Borough Council and incorporated in the design.
3.2 **Approach Roads** (see also paras. 2.2 and 6.4)

3.2.1 Whilst the legal speed limit on such roads will normally be 30 m.p.h., the design standards are intended to ensure speeds of 20 m.p.h. or less. It is possible that such roads may form part of a through route for a scheduled bus service. If it is anticipated that such use may occur, the carriageway width shall be 7.3 metres. Where use as a bus route is not anticipated, a width of either 6.75 or 6.00 metres may be approved, subject to capacity requirements.

3.2.2 Speed control will be achieved by physical layout as indicated in paras. 3.1.3 and 3.1.4, though the lengths of straights or gently curved sections will be less than those for housing estate distributor roads and the severity of the bends will increase.

3.2.3 Generally, 2.0m wide footways, on each side of the carriageway, will be required. In exceptional cases, if only one footway is required, a 2.5m. wide verge should be provided on the other side of the carriageway. If the footway is located outside schools or similar community facilities, it should measure at least 3 metres in width in the area the public may congregate.

3.2.4 In order to discourage motorists from parking on the highway whilst visiting shops or community facilities, no direct pedestrian access will be permitted from the highway frontage with the building. In addition, such buildings must be served by off-street parking areas, with all vehicular access being via this parking area. Wherever possible the parking area should be located between the shop and the highway. A segregated pedestrian facility of at least 3 metres width shall be provided along the frontage between the parking area and the building.

3.2.5 Terminal standing areas, including turning facilities for buses and other vehicles serving schools and recreational areas etc., shall be provided clear of carriageways and the layout of such turning facilities will be the subject of individual consultation and consideration.

3.2.6 In areas subject to invasion by straying animals, property/highway definition shall be such as to prevent nuisance and danger from such trespass. All boundary walls, fences to be maintainable by the property owner. Where the incidence of animal trespass is prevalent, approved cattle grids and bypass facilities shall be provided as necessary, at the nearest junction to the approach road.

3.3 **Access Roads** (See also paras. 2.3 and 6.5)

3.3.1 Whilst the legal speed limit on such roads will normally be 30 m.p.h., the design standards are intended to ensure speeds of 15 m.p.h. or less. As the name suggests, such roads will provide direct access for residential development, where the interests of the pedestrian should be dominant to the needs of motor vehicles.

3.3.2 Speed control will be achieved by physical layout as indicated in paras. 3.1.3 and 3.1.4, though the lengths of straights will be less than those for local approach roads.

3.3.3 Access roads will nearly always take the form of culs-de-sac with turning areas at their extremities though consideration may also be given to the use of loop roads. The type
of turning facility will have regard to topographical difficulties encountered and typical layouts are shown in the standard details. Carriageway width will be a minimum of 5.5 metres. Footways of at least 2.0 metres shall be provided along each side of the carriageway. Where there is single sided development throughout the length of the road, a verge or surfaced margin between 1.0 and 1.8 metres in width may be substituted for one of the footways, subject to the approval of the County Borough Council.

3.3.4 The standards applied to this category will be related to:-
(a) The length of the street (cul-de-sac type in the main) measured from the junction with the approach road or housing estate distributor road and
(b) The number of dwellings served at any point along the road, or combination of roads, leading to that point.

3.4 Private Access Roads, Private Accesses, Shared Private Drives

3.4.1 The vehicular access to communal garages is to be a minimum of 2.75m. in width with a possible passing bay requirement depending on the overall length of the access and the extent of the parking. These private roads and the aprons of communal garage areas (which shall be of an approved construction) will not be maintainable by the County Borough Council.

3.4.2 Shared private drives off approach roads or access roads serving not more than three dwellings should be a minimum of 3.65 metres in width to allow for adequate vehicular, pedestrian, and emergency vehicle, access criteria. Consideration will be given to the possibility of up to 5 dwellings being served by a shared private drive subject to the developer being able to satisfy the parameters in the illustrations on the standard drawings which include, inter alia, a widened driveway of 4.5m. for the first 10m. from the junction to allow the passage of two vehicles.

3.4.3 Where any private access is located on a bend the forward vision requirements appropriate to the speed of the road will need to be provided. Such provision may require the footway to be widened to incorporate the vision zone. This is particularly relevant where the access is on the inside of the bend.

3.5 Shared Surface Roads, Mews Courts or Access Ways less than 50 metres long

3.5.1 Any shared surface roads must be subject to a maximum gradient of 1 in 12 (8.3%).

3.5.2 The informal atmosphere intended in Mews Court is to be achieved by introducing appropriate finishes. A 2.0 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 2.0 metres beyond the rumble strip into the shared surface.

3.5.3 Statutory Undertakers apparatus should be located within the limits of the footway. The carriageway must be a minimum width of 5.5 metres. When the road serves as an access to 5 properties or less and is a maximum of 40 metres in length no footways are required.
3.5.4 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.

3.6 **Visibility Standards**

3.6.1 A new road junction should wherever possible be on level grounds or in hollows where there is good visibility. They should not be near the crest of a hill, near a sharp bend or where there are double white lines (indicating restricted forward visibility). At a height of 600 mm. above the adjacent road levels there shall be a clear view over the whole area cross-hatched (see standard details).

3.6.2 A minor road "x" distance* of up to 9 metres is normal requirement for new junctions and for the improvement of existing junctions between access roads and district or local distributor roads. The provision will be required where the "minor road" is busy (e.g. Where it serves as a main connection between the public road system and a housing estate development or an industrial estate) but would not apply at junctions or accesses within estates. For less busy, simple and very minor junctions and busy private accesses (e.g. those serving a factory, a free standing shop, or a petrol filling station) a minor road distance of 4.5m. will normally be the acceptable minimum. For other types of access serving single dwellings or a small cul-de-sac of less than 6 dwellings, the minimum acceptable minor road distance is 2.4m.

* The minor road "x" distance is measured along the centre line of the minor road from the nearside channel line of the major road.

3.6.3 As a general rule the following vision splay criteria will normally be applied to development proposals:-

(i) Private drive or access road serving up to and including 5 dwellings will require a vision splay minor road "x" distance of 2.4 metres.
(ii) An access road serving, between 6 and 15 dwellings will require a vision splay minor road "x" distance of 3.5 metres.
(iii) An access road serving between 16 and 50 dwellings will require a vision splay minor road "x" distance of 4.5 metres.
(iv) An access road/approach road serving between 51 and 150 dwellings will require a vision splay minor road "x" distance of 6.0 metres.
(v) An approach road serving between 151 and 300 dwellings will require a vision splay minor road "x" distance of 9.0 metres.

300 dwellings will normally be the maximum allowed off one access point.

3.6.4 The major road "y" distance measured along the channel of the major road from the centre line of the minor road will depend on the speed of traffic on the major road. The appropriate distance can be read off Table 1 or 2. If the highest traffic speed on the road in wet weather (excluding the fastest 15% of vehicles) is known* then this speed - or the next highest speed which appears on the table, - should be used as the major road speed in Table 1 to arrive at the appropriate "major road distance". Where there is a
speed limit and the actual speed of traffic on the major road is not known it will normally be necessary to provide for "major road distances" as shown in Table 2.

* Advice on measurements for this purpose is given in DTp Advice Note TA 22/81 or the latest revision of this document.

3.6.5 Where an emerging vehicle crosses a footway at a lightly used access, for example from the driveway of a dwelling, pedestrians will not have sufficient warning of its approach. It should be noted that in such cases a sight splay of 2m. X 2m. will be required to be maintained by the owner of the land such that there is no obstruction to vision above a height of 0.6 metres above the adjoining road level.

<table>
<thead>
<tr>
<th>Major road speed (m.p.h.)</th>
<th>75</th>
<th>62</th>
<th>53</th>
<th>44</th>
<th>38</th>
<th>30*</th>
<th>30**</th>
<th>25</th>
<th>20</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major road distance (metres)</td>
<td>295</td>
<td>215</td>
<td>160</td>
<td>120</td>
<td>90</td>
<td>70</td>
<td>60</td>
<td>45</td>
<td>33</td>
<td>23</td>
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</tbody>
</table>

TABLE 1

<table>
<thead>
<tr>
<th>Speed Limit (m.p.h.)</th>
<th>70</th>
<th>60</th>
<th>50</th>
<th>40</th>
<th>30*</th>
<th>30**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major road distance (metres)</td>
<td>295</td>
<td>215</td>
<td>160</td>
<td>120</td>
<td>90</td>
<td>60</td>
</tr>
</tbody>
</table>

TABLE 2

* Where the major road is not an access road but a higher category road.
** Where the major road is an access road with speeds universally below the speed limit.

3.6.6 Visibility splays for junctions and forward vision zones on bends are part of the highway and must be included in the adoptable area. Therefore it is not permissible for such areas to lie within private gardens or grounds.

3.6.7 The location of grouped parking in the visibility zones of bends, or junctions will not be permitted.

3.6.8 When different gradients meet in the longitudinal plane it will be necessary to provide a smooth transition between them. The minimum length of summit transition curve should be calculated to provide clear visibility over the length of the stopping distance for the speed of the road, at a height of 600 mm. above the adjacent road levels.

3.6.9 Where road curvature would cause the sight line to exclude part of the carriageway from the visibility zone, the sight line should be moved back to meet the edge of the carriageway.
3.7 Cycleways

3.7.1 The Authority has a policy of encouraging the provision of appropriate cycle facilities within new developments in accordance with the Sustrans National Cycle Network – Guidelines and Practical Details.

3.7.2 Where a cycleway is provided it should be 2.5 metres wide, have street lighting, and be overlooked by dwellings wherever possible. Sudden changes in direction should be avoided and there should be a minimum radius of 5 metres. Site lines should be such that cyclists have a clear view with a minimum visibility of 20 metres. Signing of cycleways should be made in consultation with the County Borough Council and by reference to Welsh Office Transport note 2/1987 or the latest revision of this document.

3.7.3 Foot/cycle paths (cycleways) - to encourage cycling and provide a safe environment for this vulnerable group of road users shared facilities for pedestrians and cyclists will be acceptable.

3.7.4 Shared facilities should be 3 metres wide (1.5m. footway/footpath, 1.5m. cycle track) with clear diversion markings to separate each user. Lighting should be provided and the facility should be overlooked by dwellings wherever possible. Physically segregated facilities may be required where flows of cyclists or pedestrians are likely to be high and the needs of the visually impaired should be taken into account by suitable tactile paving in order to make them aware of the various areas. The Authority should be consulted at an early stage as to the specific requirements of cycling facilities for a development.

3.7.5 Sudden changes in direction or features that would reduce public confidence in using the shared path should be avoided. Sight lines should be such that cyclists and pedestrians have a clear view of each other. The minimum visibility should be 20 metres on bends and at junctions. Where sight lines may be unavoidably obstructed some warning feature may be necessary such as the inclusion of barriers.

3.7.6 At all locations where cycle routes emerge onto street, then safety barriers will be required to ensure that cyclists stop at the end of cycle track. The minimum spacing between segregated barriers should be 1.2m to allow for electric wheelchairs.

3.7.7 Signing of paths should be in accordance with Welsh Office Local Transport note 2/1987 or the latest revision of this document. The design of shared facilities should be in accordance with Welsh Office Local Transport note 2/1986 or the latest revision of this document.
4. **County Borough Policies**

4.1 **Highways in Conservation Areas**

New development in conservation areas would normally be expected to comply to the standards and requirements set out in this design guide. However, it is recognised that in certain cases consultations with the Planning Officer of the County Borough Council will be necessary.

4.2 **Tree and Shrub Planting within Highway Limits**

4.2.1 The following information is the County Borough Council's policy statement regarding the conditions for planting trees and shrubs within highway limits by organisation other than the Highway Authority.

4.2.2 The types and siting of all trees and shrubs must be approved by the County Borough Council Highway Engineer responsible for the development.

4.2.3 Trees and shrubs must be situated at least 3.5 metres (11.5 ft.) from the edge of the carriageway, at locations where a footway exists, or 2.5 metres (8.0ft.) from the edge of the carriageway, at locations where no footway exists, or such other distance as may be specified by the highway engineer.

4.2.4 Trees and shrubs must in no way impair visibility or overhang the carriageway or obstruct the footway. In this respect, where the proposed planting is in close proximity to the highway, upright growing species are preferred.

4.2.5 Any shrubs to be planted at or near a road junction, shall be restricted to types which do not exceed 600 mm. in height, on reaching maturity.

4.2.6 Any persons or organisation who wish to carry out planting in highway land, must contact the local offices of all the Statutory Undertakers, to ensure that the landscaping proposals in no way interfere with the Statutory Undertaker's apparatus.

4.2.7 The County Borough Council does not confer any rights whatsoever in the highway, on individuals or organisations by granting permission to carry out landscaping within highway limits.

4.2.8 The County Borough Council will accept responsibility for future maintenance of trees or shrubs so planted, but any maintenance will be at the discretion of the Highway Engineer.

4.2.9 The County Borough Council will not accept responsibility for the replacement of trees or shrubs that fail to become established for any reason whatsoever, including vandalism.

4.2.10 The County Borough Council will not accept responsibility for the replacement of trees or shrubs whose removal becomes necessary for any roadworks undertaken by the County Borough Council.
4.2.11 The County Borough Council will not accept responsibility for the replacement of any trees or shrubs, which have to be removed by reason of their becoming a hazard to highway users, or through disease or death of the trees or shrubs.

4.3 **Maintenance of Amenity and Open Landscape Areas Adjoining Highways**

4.3.1 It is a requirement that these areas are designed for minimum maintenance once handed over to the local authority. Special care in design is needed to minimise risks of damage to planted areas and paving from pedestrians and vehicles. Furthermore visibility should not be obscured by trees or vegetation. Normally, adequate maintenance in the long-term has to be assured by designing the layout so that areas provided for the benefit of the general public can be adopted by the local authority - with the developer making provision for the continuing maintenance of areas provided for the benefit of the development itself.

4.3.2 The Highway Authority is mindful of the need for amenity areas and their maintenance to enhance the appearance of estates. For all such areas apart from highway verges, visibility splays, and zones, the developer would need to liaise with the appropriate Section of the County Borough Council to agree the continuing future maintenance. It is suggested that a suitable arrangement would entail the developer maintaining for a period of 3 years after adoption of the highway, with the developer then paying a previously agreed commuted sum to the County Borough Council to continue that maintenance.

4.4 **Catering for the Disabled**

4.4.1 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 all bus stops can be reached without difficulty by those with limited walking ability.

4.4.2 Within Section 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.
(d) Guidance on the use of Tactile Paving Surfaces – The Department of the Environment, Transport and the Regions

4.4.3 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. Further advice on the use of tactile paving slabs can be obtained by referring to the publication listed in (d) above and contacting the Estate Development Control Section of this department.
4.5  **Street Names and Dwelling Numbering**

4.5.1 Visitors commonly have difficulty in finding addresses when layout configurations are complex and maze-like. The requirements for street names and dwelling numbering should be taken into account when planning the configuration of the layout as a whole.

4.5.2 The street names must be approved by County Borough Council. The developer may therefore submit to the council a list of street names in a priority order for the development for consideration. Upon approval, the developer will be notified of the name chosen.

4.5.3 The Developer is responsible for the manufacture, supply and erection of the required number of street name signs in accordance with this Authority's Specification. The Developer is also responsible for providing and erecting other signs as may be necessary at other locations as a result of the new development.

5.0 **Provisions for Servicing of New Developments by Bus**

5.1 **Need for a Bus Service**

5.1.1 Most households need a bus service, and certain groups of people - the elderly, disabled and mothers with young children - may not be able to walk very far to reach one. Moreover the nearer people live to the bus stop the more likely they are to find it attractive to travel by bus. Government guidelines indicate that the walking distance to a bus stop should not exceed 400 metres, equivalent to a five minute walk (where there are steep gradients a reduction of 10 metres in the horizontal distance should be made for every 1 metres difference in level). However it is desirable that bus stops should be located only 250 metres apart. There is a need for developer to consult with the local bus operators and the County Borough Council at an early stage in the planning process to establish the opportunities for providing a bus service for the development and the location of stops.

5.2 **Designing for the Bus**

5.2.1 The design of the estate road and footpath system should therefore allow buses to pass as close to the residents as possible. Smaller units of housing e.g. flats, should generally be sited closer to the bus stops, and larger units furthest away. Housing for the elderly should be as near to a bus stop as possible. Bus stops should also be located adjacent to schools, shops, and other community facilities. The footpath system within the housing estate should link to the proposed bus stops.

5.2.2 Bus laybys may be appropriate at bus stops to prevent buses from obstructing other traffic and terminal and turning facilities will need to be provided as appropriate. This may also include the possibility of catering for the phased introduction of a bus service to a staged development. A turning circle of a minimum 30 metres diameter (or 24 metres for a midibus) will be required, which may need to be provided on a temporary basis.

5.2.3 Bus services will normally be routed via local housing distributor roads but approach and occasionally access roads (for midibus operation only) may be appropriate in
certain circumstances to achieve acceptable walking distances. The potential for extending bus services to feed the possible future development of adjacent land should also be a consideration in determining bus routes and facilities. It should be mentioned that any bus provision should be such as to achieve a viable service.

5.2.4 The Bus and Coach Council publication "Design for Urban Bus Operation" and Guidance for Planning for Public Transport in Developments by the Institute of Highways & Transportation covers the above aspects in more detail. Further advice on any particular case can be obtained from the County Borough Council.

6.1 **General**

6.1.1 For general guidance and to assist prospective developers in submitting plans for housing estate lay-outs, the following brief specification on the design and construction of estate roads, road drainage and road lighting has been prepared.

6.1.2 It is emphasised that this brief specification is intended for initial guidance only and fuller details are contained in the County Borough Council's Standard Specification for Residential Industrial and Commercial Development. Copies of this publication can be obtained from the Estate Development Section of this Department.

6.2 **Road Gradients and Vertical Alignment**

6.2.1 Road gradients normally to be between limits of 1 in 125 (0.8%) and 1 in 12 (8.3%). In exceptional cases, this can be increased to 1 in 8 (12.5%). Care must be taken to ensure that at steep junctions, at no point is the back of the footway steeper than 1 in 8 (12.5%).

6.2.2 At junctions the gradient of the non-priority road should not exceed 1 in 20 (5%) when rising towards the priority road or 1 in 25 (4%) when falling to the priority road. The distances over which these gradients should not exceed are shown in Table 3. The reason for this requirement is to reduce the risk of vehicles sliding onto the major road in icy condition.

<table>
<thead>
<tr>
<th>Minor Road</th>
<th>Major Road</th>
<th>Distance along Minor Road measured from Near side edge of Major Road Carriageway</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Downhill Approach (m)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4% (1 in 25)</td>
</tr>
<tr>
<td>Residential Road</td>
<td>Residential Road</td>
<td>10</td>
</tr>
<tr>
<td>Residential Road</td>
<td>Local Distributor Road</td>
<td>15</td>
</tr>
<tr>
<td>Local Distributor Road</td>
<td>Higher Category than Local Distributor Road</td>
<td>15</td>
</tr>
</tbody>
</table>

**TABLE 3**

6.2.3 Vertical curves should be provided at all changes in gradient. For Local Housing Distributor Roads Forward Visibility in accordance with the Department of Transport Directive TD9/93 or the latest revision of this document must apply.

6.2.4 For Distributor Roads, a visibility envelope shall be measured from a minimum drivers eye height of between 1.05 metres and 2.0m to an object height of between 0.26m and
2.0m all above the road surface as shown in figure 1. For all other residential roads a minimum object height of 0.6 metres above carriageway will suffice.

<table>
<thead>
<tr>
<th>OBJECT HEIGHTS</th>
<th>EYE HEIGHTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.26m</td>
<td>1.05m</td>
</tr>
</tbody>
</table>

FIGURE 1 - Forward Visibility Envelope

6.2.5 To ensure reasonable standard of comfort at sag curves and to provide appropriate visibility at crests, vertical curves should be the greater of:-

(a) \( L = K A \)

where \( L \) - is the curve length in metres.

\( A \) - is the algebraic difference in gradients (expressed as a percentage).

\( K \) - has a value selected from Table 4.

(b) Vertical curve length shown in the sixth column of Table 4

<table>
<thead>
<tr>
<th>Design Speed (kph)</th>
<th>Overtaking Crest K Value</th>
<th>Desirable Min. Crest K Value</th>
<th>Absolute Min. Crest K Value</th>
<th>Absolute Min. Sag K Value</th>
<th>Min. Vertical Curve Length(m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>142</td>
<td>19</td>
<td>11</td>
<td>20</td>
<td>36</td>
</tr>
<tr>
<td>50</td>
<td>100</td>
<td>11</td>
<td>6.5</td>
<td>13.5</td>
<td>30</td>
</tr>
<tr>
<td>40</td>
<td>n/a</td>
<td>7</td>
<td>4</td>
<td>10</td>
<td>24</td>
</tr>
<tr>
<td>30</td>
<td>n/a</td>
<td>5</td>
<td>3</td>
<td>n/a</td>
<td>18</td>
</tr>
<tr>
<td>20</td>
<td>n/a</td>
<td>4</td>
<td>2.5</td>
<td>n/a</td>
<td>12</td>
</tr>
</tbody>
</table>

TABLE 4
6.3 Local Housing Estate Distributor Roads

6.3.1 Road Widths and Alignment

Road widths are shown in Table 5.

<table>
<thead>
<tr>
<th>Description</th>
<th>Overall Width</th>
<th>Carriageway Width</th>
<th>Footway Widths</th>
<th>Verge/Margin Widths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linking roads which in total give access to more than 300 dwellings</td>
<td>11.80m</td>
<td>7.3m.</td>
<td>1 x 2.0m.</td>
<td>1 x 2.5m.</td>
</tr>
<tr>
<td></td>
<td>11.30m</td>
<td>7.3m</td>
<td>2 x 2.0m.)</td>
<td>Nil</td>
</tr>
</tbody>
</table>

**TABLE 5**

6.3.2 Footways of at least 3.0m wide should normally be provided outside the entrance/frontage to schools and similar community facilities.

6.3.3 Direct access to these roads will be limited to parking and delivery areas associated with shops, schools and similar community facilities located within the estate.

6.3.4 Minimum centre line radius of 60 metres, with appropriate superelevation.

6.3.5 In order to keep traffic speeds of 30 m.p.h. generally and 20 m.p.h. outside schools or at other locations where children or other vulnerable road users may be at risk a variety of traffic calming measures shall be used. Straight or gently curved sections of carriageway shall be no longer than 120 metres between bends. The definition of a bend in this context shall be where a vehicle changes direction by not less than 70 degrees within a distance of 73 metres (i.e. a bend with a radius of 60 metres – see Fig. 2). Further guidance is given in DB32, paragraphs 2.29 to 2.63 inc. and specific advice on appropriate measures is available from the County Borough Council.
6.3.6 Junction Design

6.3.7 Where practical, junctions between a distributor road and
(a) main roads or
(b) other distributor roads or
(c) approach roads
shall be roundabout controlled. In exceptional circumstances associated with junctions with existing roads a junction layout may be provided in accordance with Welsh Office circular TD 42/95 or the latest revision of this document. In such a case an additional speed-reducing feature will need to be provided on the side road.

6.3.8 Junctions between distributor roads and access roads shall be 7.5 metre radii. In such circumstances the limit of adoption, demarcated by kerb edging or the adjacent property boundary wall shall follow a radius of 10.2 metres or the vision splays as approved by the highway engineer.

FIGURE 2

Horizontal bend (centre line) to achieve speeds of less than 30 m.p.h.
6.3.9 Forward Visibility on Bends:

Restricted forward visibility must not be used as a means of reducing vehicle approach speed. It is essential that the minimum safe stopping sight distances shown in Table 6 below are maintained to accord with the design speed of the road.

As for junctions, the visibility required on bends should be related to the expected speed of vehicles and their stopping distances. To construct a forward visibility envelope curve around a bend refer to figure 3.

<table>
<thead>
<tr>
<th>Speed Limit (km/h)</th>
<th>8</th>
<th>16</th>
<th>24</th>
<th>32</th>
<th>40</th>
<th>48</th>
<th>80</th>
<th>90</th>
<th>110</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed (miles/h)</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
<td>50</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td>Safe stopping distance (metres)</td>
<td>6</td>
<td>14</td>
<td>23</td>
<td>33</td>
<td>45</td>
<td>60</td>
<td>160</td>
<td>215</td>
<td>295</td>
</tr>
</tbody>
</table>

**TABLE 6**

(a) A line should be drawn to represent the path of the driver's eye, 1.5 metres into the carriageway measured from where the inner kerb would be if there were no carriageway widening, or on the centreline of the traffic lane if the carriageway is greater than 6.0 metres wide.

(b) The required stopping distance with the centreline radius of the carriageway should be ascertained from the above table and measured back along the vehicle path from tangent point A.

(c) The stopping distance shall then be divided into equal increments of approximately 3 metres, and the increment points numbered in sequence.

(d) The same stopping distance with the same number of increments shall then be repeated around the curve, finishing at a full stopping distance beyond the tangent point B.

(e) The area which has been kept clear of obstruction to visibility shall then be constructed by joining points of the same number together, ie, 1 to 1, 2 to 2, 3 to 3, etc.
FIGURE 3
Forward Visibility on Bends
6.4 **Approach Roads**

6.4.1 Road widths and Alignment
Road widths are shown in Table 7 and 8.

<table>
<thead>
<tr>
<th>Description</th>
<th>Overall Width</th>
<th>Carriageway Width</th>
<th>Footway Widths</th>
<th>Verge/Margin Widths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linking roads which in total give access to more than 200 dwellings (up to a maximum of 300)</td>
<td>A. 11.25m.</td>
<td>6.75m.</td>
<td>1 x 2.0m.</td>
<td>1 x 2.5m.</td>
</tr>
<tr>
<td>B. 10.75m.</td>
<td>6.75m</td>
<td>2 x 2.0m</td>
<td>Nil</td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 7**

Note:- Maximum number of dwellings to be served off a single approach road, at any point along it, is to be no more than 300.

<table>
<thead>
<tr>
<th>Description</th>
<th>Overall Width</th>
<th>Carriageway Width</th>
<th>Footway Widths</th>
<th>Verge/Margin Widths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linking roads which in total give access to less than 200 dwellings</td>
<td>C. 10.5m.</td>
<td>6.00m.</td>
<td>1 x 2.0m.</td>
<td>1 x 2.5m.</td>
</tr>
<tr>
<td>D. 10.0m.</td>
<td>6.00m</td>
<td>2 x 2.0m)</td>
<td>Nil</td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 8**

6.4.2 Overall width and carriageway width shall be increased by a total of 0.55 metres if, in the opinion of the Highway Authority, the road is likely to form part of a bus route. Footways of at least 3.0m wide should normally be provided outside the entrance/frontage to schools and similar community facilities.

6.4.3 Direct access to these roads will be limited to parking and delivery areas associated with shops, schools and similar community facilities located within the estate.

6.4.4 Minimum centre line radius of 26 metres.
6.4.5 In order to keep traffic speeds to 20 mph. or less a variety of traffic calming measures shall be used. Straight or gently curved sections of carriageway shall be no longer than 60 metres between bends. The definition of a bend in this context shall be where a vehicle changes direction by not less than 70 degrees within a distance of 32 metres (i.e. a bend with a radius of 26 metres – see Figure 4. Further guidance is given in DB32, paragraphs 2.29 to 2.63 inc. and specific advice on appropriate measures is available from the County Borough Council.

FIGURE 4

Horizontal bend (centre line) to achieve speeds of 20 m.p.h. or less.

6.4.6 Junction Design

Junctions of approach roads with distributor roads is covered in para. 6.3.6.

Junction of approach roads with other approach roads shall wherever practicable be roundabout controlled. In exceptional circumstances a junction with a 10m. width may need to be provided. In such circumstances an additional speed reducing feature will need to be provided on the new approach road.

All junctions between an approach road and an access road shall be in accordance with standard drawing number 1 of this design guide. In such circumstances, the limit of adoption, demarcated by a kerb edging or the adjacent property boundary wall shall follow a radius of 10.2m. or 8.7m. or the vision splays as approved by the highway engineer.

Restricted forward visibility must not be used as a means of reducing vehicle approach speed. It is essential that the minimum safe stopping sight distances shown in Table 9, are maintained to accord with the design speed of the road.
### TABLE 9

**Access Roads**

6.5.1 Road Widths and Alignment

In the light of problems experienced with 4.5 metre wide access roads, particularly with regard to gaining access to drives and the inability to pass parked vehicles, all access roads must be a minimum of 5.5 metres wide, in accordance with the recommendation contained in paragraph 3.15 and 3.16 Design Bulletin 32. The road widths are shown in Table 10.

<table>
<thead>
<tr>
<th>Description</th>
<th>Overall Width</th>
<th>Carriageway Width</th>
<th>Footway Widths</th>
<th>Verge/Margin Widths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cul de sac (or loop road), a maximum of 200 metres long, giving access to up to 150 dwellings from any point along its length.</td>
<td>E. 9.5m. (See para. 6.5.2)</td>
<td>5.5m. (See para. 6.5.2)</td>
<td>2 x 2.0m.</td>
<td>Nil.</td>
</tr>
</tbody>
</table>

### TABLE 10

6.5.2 Overall width and carriageway width shall be increased by a total of 0.55 metres if, in the opinion of the highway authority, the road is likely to form part of a bus route.

6.5.3 Minimum centre line radius of 20 metres.

6.5.4 In order to keep traffic speeds to 15 mph or less a variety of measures shall be used, as indicated in paras. 3.1.5 and 3.1.6. Straight or gently curved sections of carriageway shall be no longer than 40 metres between bends. The definition of a bend in this context shall be where a vehicle changes direction by not less than 70 degrees within a distance of 32 metres (i.e. a bend with a radius of 26 metres - see Fig 4. Further guidance is given in DB32, paragraphs 2.29 to 2.63 inc. and specific advice on appropriate measures is available from the County Borough Council.
6.5.5 Junction Design

Junctions of new access roads with the existing local housing estate distributor road and approach roads shall be 7.5m. radii. In such circumstances an additional speed-reducing feature will need to be provided on the new access road.

All junctions between new access roads, where either road serves more than 50 houses shall be 7.5m. radii. Where either road serves less than 50 houses, the junction radii shall be 6.0m. radii. In the latter case the road serving the fewest number of houses shall form the minor leg of the junction. In both cases the limit of adoption, demarcated by kerb edging or boundary walls shall follow a radius of 5.5 metres or vision splays as approved by the highway engineer.

Restricted forward visibility must not be used as a means of reducing vehicle approach speed. It is essential that the minimum safe stopping sight distances shown in Table 11 are maintained to accord with the design speed of the road.

<table>
<thead>
<tr>
<th>Speed Limit (km/h)</th>
<th>8</th>
<th>16</th>
<th>24</th>
<th>32</th>
<th>40</th>
<th>48</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed (miles/h)</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>Safe stopping distance (metres)</td>
<td>6</td>
<td>14</td>
<td>23</td>
<td>33</td>
<td>45</td>
<td>60</td>
</tr>
</tbody>
</table>

**TABLE 11**

6.5.6 Shared Surface Roads and Mews Courts

Shared surfaces and mews courts should, at the point where they join onto other roads which have footways, incorporate 'rumble strips' (See Standard Details). This strip of rough textured paving is intended to warn a driver, who is entering or leaving a 'special' area. It will also encourage pedestrians to move onto the adjoining footways. Footway and carriageway widths are shown in Table 12.

<table>
<thead>
<tr>
<th>Description</th>
<th>Overall Width</th>
<th>Carriageway Width</th>
<th>Footway Widths</th>
<th>Verge/Margin Widths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared Surface Roads and Mews Courts a maximum of 40 metres long, giving access to up to 50 dwellings from any point along its length.</td>
<td><strong>F.</strong> 7.5m.</td>
<td>5.5m.</td>
<td>1 x 2.0m.</td>
<td>Nil.</td>
</tr>
</tbody>
</table>

**TABLE 12**
6.5.7 Carriageway Widening on Bends.

The swept path of vehicles on bends is greater than the width of the vehicle itself. In order to enable vehicles to pass, curve widening corresponding with values set out in Table 13 is necessary. The widening may be split equally each side of the road or totally on the inside over the full length of the horizontal curve. The kerb lines are to be tapered into the standard carriageway width at a minimum of 1:25 from the tangent points.

<table>
<thead>
<tr>
<th>Centre line radius (m)</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>80-400</th>
<th>400 +</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum widening (m)</td>
<td>0.60</td>
<td>0.40</td>
<td>0.35</td>
<td>0.25</td>
<td>0.20</td>
<td>0.15</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**TABLE 13**

6.5.7 Summary of Minimum Centre Line Radii.

The centre line radii are summarised in Table 14.

<table>
<thead>
<tr>
<th>Road Type</th>
<th>Carriageway Width (m)</th>
<th>Minimum Centre Line Radius (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Housing Estate Distributor Roads</td>
<td>7.3</td>
<td>60</td>
</tr>
<tr>
<td>Approach Roads</td>
<td>6 to 6.75</td>
<td>26</td>
</tr>
<tr>
<td>Access Roads</td>
<td>5.5</td>
<td>20</td>
</tr>
<tr>
<td>Industrial/Commercial Estate Road</td>
<td>7.3 minimum</td>
<td>70 and over</td>
</tr>
<tr>
<td>Bus Route</td>
<td>6.75 minimum</td>
<td>30</td>
</tr>
</tbody>
</table>

**TABLE 14**
6.6  **Road Construction**


6.6.1  Carriageway
See Standard Details.

6.6.2  Construction of General Purpose Laybys and Bus Bays
See Standard Details

6.6.3  Footways
See Standard Details

6.6.4  Vision Areas, Margins and Road Islands
As for footways - See Standard Details

6.6.5  Vehicular crossings to footways, verges and margins
See Standard Details

6.6.6  Highway Drainage
(Also See Standard Details)

A combined road/roof surface water drain system can be permitted subject to the agreement of the Welsh Water or it's successor/Agent to adopt the drains.

Road gullies must be sited at all valley points. Where a length of road is longer than 200 metres away from a valley point, two gullies should be provided at the valley point with independent drainage pipes to the main drain. Unless required for a valley point position, gullies should not be sited against the radius kerbs at junctions. The spacing of gullies should be such that each drains no greater an area than 160 sq. metre of highway (carriageways and footways).

Manholes to be built at changes or horizontal and vertical alignment, and spaced not more than 100 metre intervals.

Drain pipe sizes to be not less than 225 mm. diameter, except for gully connections, which shall be not less than 150 mm.

No drain shall be laid at a lesser gradient than 1 in 120 unless a self-cleansing velocity of 0.75m/s can be achieved.

The manholes should not be positioned under the wheel tracks.

The sewers laid under carriageway, footway or highway verge should have a minimum cover of 1.2m measured from the top of the pipe barrel to the finished ground level. Where this is not achievable, the sewers shall incorporate 150mm thick ST4 concrete bed and surround, with flexible joints at every 6.0m.
Where highway drainage only is discharging into a watercourse, the developer must submit a written confirmation of discharge consent prior to the completion of a Section 38 Agreement or adoption of the streetworks.

Soakaways will not be acceptable where alternative outfall can be arranged from the highway system to an adopted sewer or watercourse, and will be acceptable only where the developer can prove to the satisfaction of the highway engineer that, the ground conditions and location are suitable.

6.7 Footpaths

6.7.1 Footpath links with roads are to be strategically sited to serve bus stops, schools, shopping areas and other community and social centres and developers must ensure that walking distances between such facilities and residential properties are minimised. It is also important to design footpaths to ensure that passive surveillance from nearby properties is optimised. This will encourage use of footpaths by minimising the risk of attacks on pedestrians and vandalism.

6.7.2 Where footpaths emerge onto local housing distributor roads or onto the general road network, facilities to ensure safe crossing movements (such as pedestrian refuges, footbridges, carriageway narrowing and pedestrian crossings) shall be considered and provided at the discretion of the County Borough Council. Subways may also be considered in exceptional areas, where other measures are impractical. In such circumstances, the footpath will, where ever possible, continue at the same grade whilst the carriageway is elevated above.

6.7.3 Where footpaths join a footway at the side of a road and children could run from the footpath onto the carriageway, a suitable length of safety barrier should be erected on the edge of the footway across the line of the footpath. Due regard shall also be taken of the need to provide staggered guardrail within footpaths, to prevent or discourage their misuse by pedal cyclists, motor cyclists and skateboarders etc.

6.7.4 Where a footpath is flanked on both sides by walls or fences more than 900 mm. In height the width should be increased to 2.5m. (where no cycleway is to be provided alongside) unless the path is only 10 metres long and open to view from end to end.

6.7.5 Steps are permitted on footpaths (not footways) where there is an alternative route for prams and wheelchairs. Flights of 6 risers are preferred with a maximum of 10 risers allowed. Landings between flights should be at least 1.5 metres long. A galvanised steel handrail should be provided on one side of the steps. The base of the vertical lowest support to the handrail should be located on the ground level before the first riser. The base of the vertical highest support should be located at the same level and 0.75 metres away from the edge of the top tread. Dwarf walls along each side of the steps may be required to prevent the adjoining ground from falling onto the steps.
6.8 Parking

6.8.1 Parking requirements are assessed according to the traffic generated by the type of development. The Standing Conference of South Wales Counties in consultation with District Councils produced a parking guideline publication (revised edition 1993) which sets out the required standards. A copy may be obtained from the County Borough Council. The advice given in the publication will assist developers, consultants and builders in the preparation and submission of planning applications. It will also achieve a common approach to the provision of vehicle parking facilities associated with new development and change of use.

There are proposals to amend this guideline, but at present the 1993 revised edition should be used.

6.8.2 Should a domestic garage be converted at a later date such that the parking space has been lost, then an additional car parking space should be provided within the curtilage of the property. A proper means of access to that new space, from the highway should be provided.

6.8.3 Group car parking bays alongside highways - No more than 4 bays should be provided together. Each group should be separated by a distance of 5 metres. Each bay within the group should measure 6m. X 2.4m. A standard vehicle crossover should be constructed in front of each group including the area between each group. The front of each group must be set back at least 2.0m. from the carriageway edge - See Figure 5.

6.8.4 Off-street parking areas should always be sited so that they can be overlooked by residents for security reasons and therefore should not be in secluded locations.

6.8.5 There shall be an adequate space between the edge of the drive and a car parked on it to allow pedestrian access to be gained to the front door of the property.

6.8.6 On roads serving more than 100 properties, when parking bays are provided they must be parallel to the carriageway.

6.8.7 Group car parking areas should provide for off street turning so that the vehicles can leave in a forward gear.

6.8.8 The gradient of parking bays at right angles to the carriageway must not exceed 1 in 20 (5%).

6.8.9 When footways or footpaths pass the inner ends of parking bays, vehicles should be prevented from overhanging the pedestrian route by means of rubbing strips, dwarf walls, or cast iron bollards.

6.8.10 All gates leading into the drive shall only open away from the back of the adjoining highway.

6.8.11 Parking Bay Construction and Marking. The bay area shall be constructed in a different material and colour to the adjoining footway. Individual bays shall be delineated by means of permanent materials and not be painted lines.
6.9 Traffic Signs and Road Markings

The developer will be required to submit details of traffic signs and carriageway markings for approval. These details must comply with the current Traffic Regulations and General Directions and the bilingual requirements.

The developer shall provide all regulatory and warning signs including street name plates and meet all costs associate with the making of any necessary Traffic Orders.