Road Type	Description	Max. No. of Dwellings served	Design Speed	C'way and footway details	Description and Comments
1	Local Distributor	-	50 kph (30 mph)	7.3m 2 x 2m footways	Multi-purpose local road, generally forming part of local County network. Collected frontage access in forward gear only. Min 3m verges required.
2	Link Road	-	50 kph (30 mph)	6.75m 2 x 2m footways	Links residential elements and accommodates regular non-residential uses. Frontage access in forward gear only. Min 3m verges required
3	Major Access Road	700 400 link or loop 200 cul-de-sac	30 kph (20 mph)	6.0m 5.5m 2 x 1.8m footways	Direct access in or out of a residential area may serve non residential uses regularly accessed by vehicles <7.5T (a plated HGV). If a bus route 6m carriageway required
4	Minor Access Road	200 link or loop 100 cul-de-sac	30 kph (20 mph)	4.8m 2 x 1.5m	No access restrictions Special surfacefinish
5	Home Zone	As defined by maximum 100vph traffic flow	10 mph	Minimum carriageway width of 3m for service/emergency vehicle access	A street that is designed to prioritise its social and environmental functions (i.e. a space for people living on the street) over its highway function (i.e. a space for people moving along it). - See Road Type Description for details
6	Access Way	50 link or loop 25 cul-de-sac	30 kph (20 mph)	4.1 m 2 x 1.5m	No access restrictions Special surface finish
7	Access Lane	50 link or loop 25 cul-de-sac	30 kph (20 mph)	4.8m overall 3m vehicle way + 1.8m pedestrian margin	Specifically designed for rural access. Pedestrian margin over-runnable. Special surface finish
8	Mews	50 link or loop 25 cul-de-sac	30 kph (20 mph)	5.8m overall with 1m pedestrian margin	Urban form. Special Surface finish. Special junction criterion
9	Residential Square	As defined by space enclosed	As host road	4.8m vehicle way	Urban form. Ramped approaches to tabled area. Special surface finish. Central feature for driver orientation

Road Types

Road Type Descriptions

Type 1 - Local Distributor

5.1 These will generally form part of the local County Road network and serve as multi-purpose roads giving access to most land uses. Houses should front onto these roads, but access to frontage dwellings should be either by parallel access roads or collected private drives (up to 5 dwellings each) served from the rear or by junctions onto the local distributor at 120 m (min) spacing.

5.2 Quality provision must be made at pedestrian and cycle route crossings to ensure that the road does not become a barrier to local cross movement.

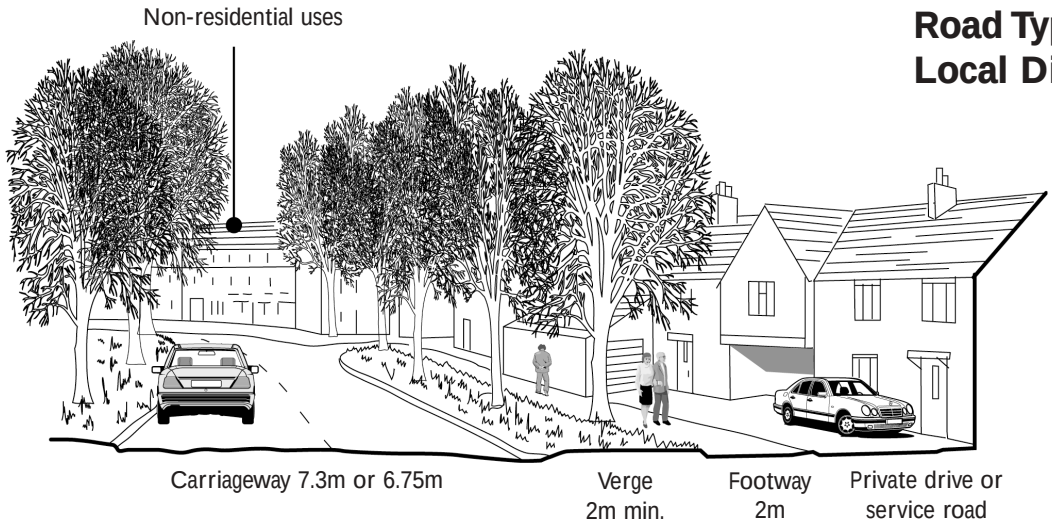
5.3 A carriageway width of 7.3m is required. 2m wide footways, separated from the carriageway by minimum 3m wide verges, are required on both sides. Tree planting in the verges will be encouraged.

5.4 The design speed of 50 kph (30 mph) must be ensured in the vicinity of residential areas by bends of a maximum centreline radius of 90 metres and maximum straight lengths of 36 metres.

5.5 This road type may only take access from an existing County Road or another type 1 road. The design of a junction with an existing County Road shall be determined in discussion with the Highway Authority, which should be done as early as possible in the development process. Other junctions should have a 10m minimum kerb radius (or 6m radii with overruns for long vehicles if not a bus route). The minor road should be straight for the first 30m from the main road channel.

5.6 Sight lines of 9m (X distance) by 90m (Y distance) are required though consideration may be given to reduction in both figures if, traffic volumes on the side road are light and actual speeds on the main road are restrained. If the main road joined has a higher speed limit than 30mph then the 'Y' distance should be established from the tables at para 5.130.

5.7 The maximum carriageway gradient should be in the order of 5%.



Type 2 - Link Road

5.8 These are roads which link neighbourhoods within a large residential area.

5.9 A built frontage is required to these roads and direct access to/from dwellings is allowed but in forward gear only and with 2m x 2m pedestrian/vehicle sight splays.

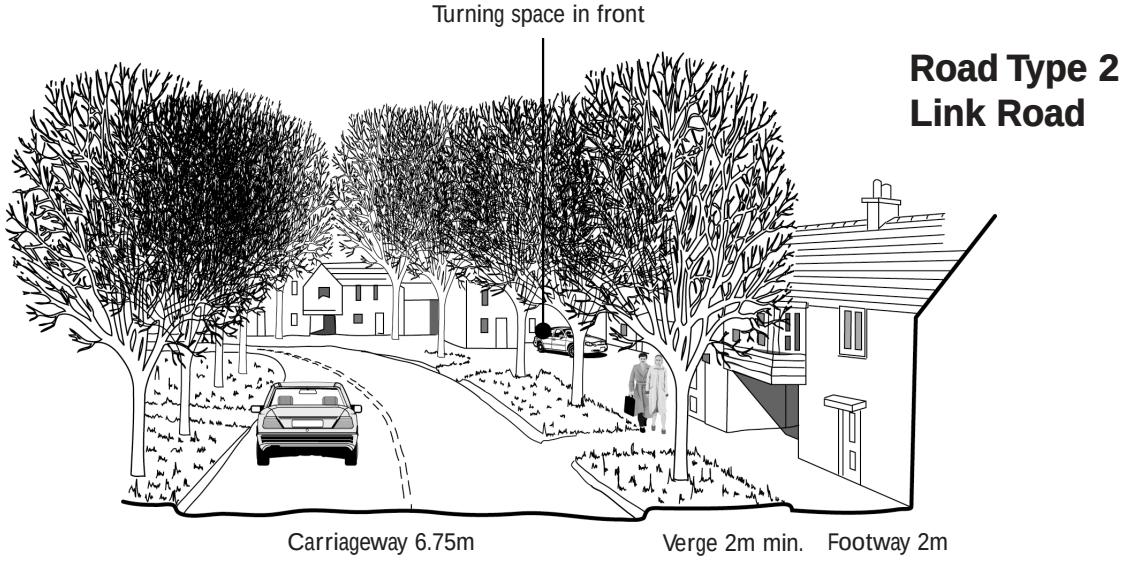
5.10 A carriageway width of 6.75m is required, with 2m wide footways on each side, separated from it by minimum 3m wide verges containing tree planting.

5.11 The design speed is 50 kph (30 mph) and this must be ensured by bends of a maximum centre line radius of 30m separated by 18m (min) to 80m (max) straights.

5.12 This road type may take access from an existing County Road, a type 1 road or type 2 road. The design of a junction onto an existing County Road will be to the Highway Authority's requirements, other junctions should have a 10m minimum kerb radius (or 6m radii with overruns for long vehicles if not a bus route). The minor road should be straight for a 22m minimum distance from the junction.

5.13 Sight lines of 9m (X distance) by 90m (Y distance) are required though consideration will be given to reduction in both figures subject to traffic volume and restrained speed. A greater Y distance may be required where the main road is an existing road (see para 5.130)

5.14 The maximum carriageway gradient should be in the order of 6%.



Type 3 - Major Access Road

5.15 These are the principal access roads serving a maximum of 700 dwelling within the 20 mph (30 kph) network. They should penetrate the neighbourhood sufficiently to ensure that no part of the residential area is more than 400m from this road or a higher category road. They offer a direct route out of a 20 mph (30 kph) network.

5.16 Direct frontage access to dwellings is allowed, but within 30m of a junction egress to the road must be in forward gear only, and have 2m x 2m pedestrian/vehicle sight splays.

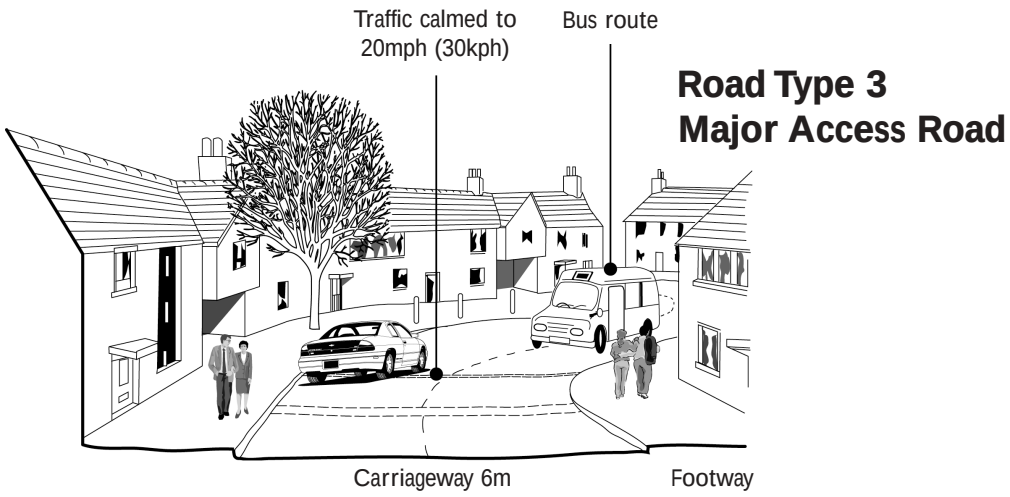
5.17 A carriageway width of 6m is required - but where this type of road serves fewer than 400 dwellings (link or loop) or 200 dwellings (cul-de-sac) and it does not have the potential to become a future 'bus route then the carriageway width may be reduced to 5.5m.

5.18 A minimum 1.8m footway is required each side of the carriageway, and if a verge for tree planting is required then this should be at least 3m wide and separate the carriageway and footways.

5.19 The design speed is 30kph (20mph) and this is to be ensured by speed restraint measures. The minimum centreline radii is 20m unless a tighter speed restraint bend is being used, and the maximum centreline radius is 70m.

5.20 This road type may take access from an existing County Road or types 1-3. Any junction with an existing County Road shall be to the Highway Authority's requirements otherwise 6m min kerb radii are required. The side road should be straight for 22m minimum from the junction. Sight lines of 4.5m x 90m are required where the major road at the junction is a type 1 or 2 road though consideration will be given to reduction in both figures where traffic volume and speed are restrained. Greater Y distances may be required where the main road is a County Road - see para 5.130.

5.21 The maximum carriageway gradient should be in the order of 5%, higher gradients if unavoidable may require special measures to be agreed with the Highway Authority, such as special surfacing, salt/grit boxes and hand rails for footways.



Type 4 Minor Access Road

5.22 These are minor roads within a 20mph (30kph) network giving direct access to dwellings. The preferred format of a link or loop may serve up to 200 dwellings (subject to equal traffic distribution) or a cul-de-sac up to 100 dwellings.

5.23 A minimum carriageway width of 4.8m is required, flanked by 1.5m wide footways - if a verge for tree planting is required it should separate the carriageway and footways and be 3m (min) wide; 2m x 2m vehicle/pedestrian sight splays are required at egresses with 2m x 33m splays at the carriageway edge.

5.24 The design speed is 30kph (20mph) and this should be ensured by speed restraint measures. The minimum centre line radius is 13.6m unless a tighter restraint bend is being used, and the maximum centre line radius is 30m.

5.25 This road type may take access from an existing County Road and road types 1-4.

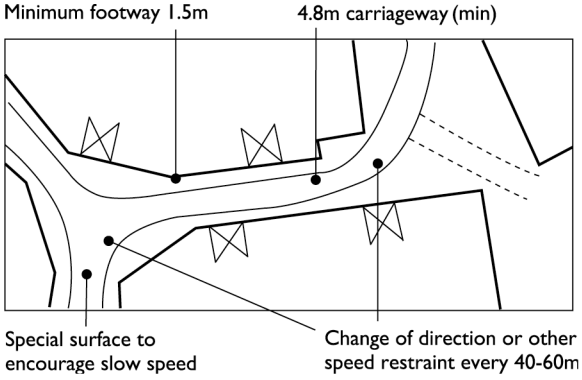
5.26 The design of a junction with an existing County Road shall be to the Highway Authority's requirements, otherwise 6m (min) kerb radii are required. The main road should be straight for a minimum distance of 15 metres from the junction.

5.27 Sight lines should be based on an X distance of 4.5m, Y distances will be related to traffic speed on the main road and established from the criteria specified in the technical support data.

5.28 The maximum carriageway gradient should normally be in the order of 8%, higher gradients, if unavoidable, may require special measures to be agreed with the Highway Authority (e.g salt bins, special surfacing).

5.29 The provision of an entry feature, eg, ramp or rumble strip, etc, may be required, and a special surface to encourage slow traffic speeds will be required for the whole length of the road.

5.30 It is important that care be taken with regard to the relationship between off street car parking spaces and pedestrian access to properties, to minimise the possibility of on street parking during the daytime in particular.



Road Type 4
Minor Access Road

Type 5 - Home Zones

5.31 The County Council endorses the principles of Home Zones, which can be defined as "residential streets that have been designed to create a sense that motor vehicles using the street **must drive** with respect for all other non-motorised users of the street."

5.32 Whilst Home Zones can be secured by redesigning existing residential streets, they can also be created in new developments.

5.33 The County Council has produced draft guidelines for Home Zones to secure *"residential areas which are designed primarily for the residents, so that the streets become spaces for pedestrians, cyclists, and community activity such as children's play areas. Cars are not normally banned but there may be physical and/or aesthetic design features which encourage people to drive at a gentle, neighbourhood-friendly speed."*

5.34 The above principles are seen as an expansion of those expressed throughout the remainder of this Design Guide, and that proposals for home zones will therefore be welcome and considered on their merits.

5.35 Bearing in mind that the detailed design of home zones is still in its relative infancy in this Country, developers proposing such schemes should contact both the Local Planning Authority and Highway Authority at the earliest opportunity to secure the most up to date guidelines available.

5.36 Further guidance on design of Home Zones can be found in Appendix 6, the County Council's most up to date guidance document (February 2002) - 'Home Zone Characteristics for New Housing Developments'.

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Type 6 - Access Way

5.37 These are minor roads within a 20mph (30kph) network, and are particularly for access in urban situations. They can serve a maximum of 50 dwellings in link or loop form but no more than 2 5 dwellings as a cul-de-sac, and direct access to dwellings is given, at which 2m x 2m pedestrian/vehicle sight splays are required.

5.38 The carriageway width required is 4.1m, flanked by footways on each side of minimum width 1.35m and capable of carrying over-running vehicles. The whole road width is available for pedestrians and vehicles, although the demarcation of footways widths is intended to constrain vehicles generally to use the 4.1 m track.

5.39 A clear distance of 6m is required between a parking space abutting the highway and the opposite edge of the carriageway.

5.40 The design speed is 30kph (20mph) which is to be ensured by speed restraint measures, though because of the narrow carriageway and over-runnable footways, humps, tables or chicanes will not be practicable for this road. A centreline radius of 13.6m will be the normal minimum (unless a tighter speed restraint bend is being used). The maximum centreline radius is 30m. Speed restraint measures should be spaced at around 40m to secure speeds well within the design speed criterion.

5.41 This road type may take access from an existing County Road or road types 1-4 and 6.

5.42 The design of a junction with an existing County Road shall be to the requirements of the Highway Authority, other junctions require a minimum kerb radius of 4m.

5.43 The minor road should be straight for the first 15m from the junction with the first 12m being 4.8m wide, narrowing to 4.1m over the next 5 metres.

5.44 Sight lines should be based on an X distance of 2.4m and Y distances related to the traffic speed on the road being joined and established from the criteria specified in the technical support data. The X distance may be reduced to 2m where no more than six dwellings are served.

5.45 No windows or doors should open outwards or overflow pipes, single-storey eaves, etc, project over the net adoptable area of the road, and where buildings abut the highway, street lighting lanterns should be fixed to the buildings instead of on columns.

5.46 The maximum carriageway gradient should normally be 8%, higher gradients, if unavoidable, may require special measures to be agreed with the Highway Authority e.g. Salt Bins.

5.47 A ramp, or rumble strip, must be provided at the junction and a special surface to encourage low speeds will be required for the whole length of the road.

5.48 It is important that care be taken with regard to the relationship between off street car parking spaces and pedestrian access to properties, to minimise the possibility of on street parking during the daytime in particular.

Road Type 6
Access Way

4.1m carriageway - special surface to encourage low speeds

1.35m overrunnable footway

Type 7 - Access Lane

5.49 These are minor shared surface roads within a 20mph (30kph) network, and are particularly for rural and Arcadian areas (ie, densities in the order of 8 dwellings per acre/20 dwellings per hectare).

5.50 They may serve up to 50 dwellings in a link or loop format, but no more than 25 dwellings from a cul-de-sac.

5.51 An overall carriageway width of 4.8m is required which will contain a vehicle way of 3m with a service margin (in which services will be provided) of 1.8m delineated by a row of setts or other agreed demarcation. The service margin will, of course, be used for vehicle passing. A 0.75 m wide maintenance strip will be adopted around the 4.8 m paved surface.

5.52 Vehicle/pedestrian sight splays of 2m x 2m are required at accesses to the road and splays of 2m x 33m are required where the egress meets the carriageway edge.

5.53 If houses are to be located at the edge of the carriageway they must be set back 500mm and protected by bollards. (Bollards will be of high quality and will only be used where protection is required).

5.54 A clear distance of 6m is required between a parking space abutting the highway and the opposite edge of the carriageway.

5.55 The design speed is 30kph (20mph) and is to be ensured by speed restraint measures spaced at around 40m to secure speeds well within the design speed criterion.

5.56 The minimum centreline radius will be 13.6m unless a tighter speed restraint bend is being used, and the maximum radius is 30m.

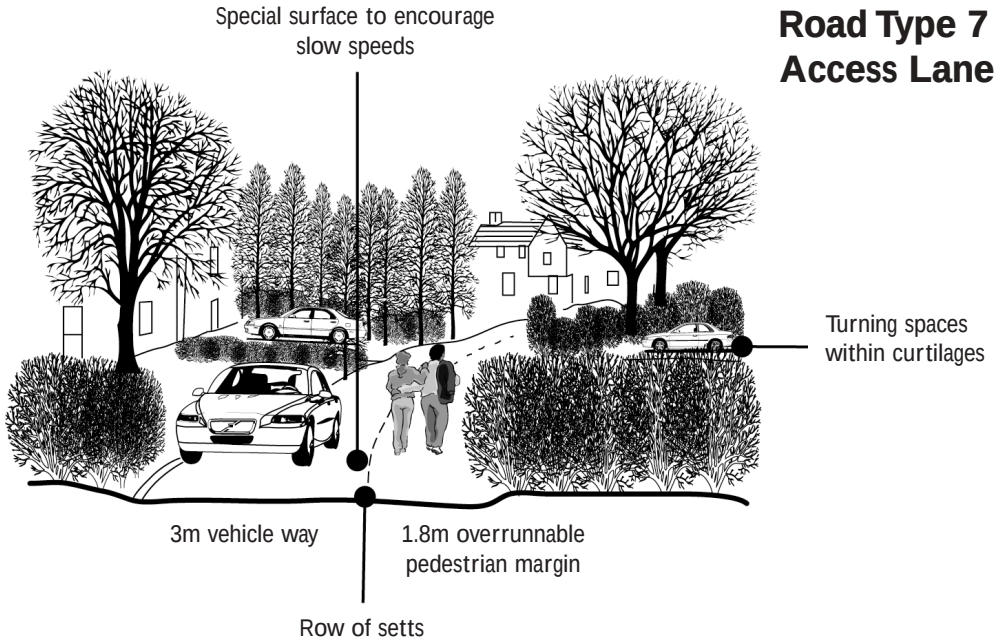
5.57 This road type may take access from an existing County Road or road types 1-4 and 7. Junction design onto an existing County Road shall be to the Highway Authority requirements, other junctions will have a minimum 4m kerb radius.

5.58 The minor road should be straight for the first 15m from the major road. The carriageway should be 4.8m wide for the first 12m and should be provided with a separate footway of 1.8 width on one side over this initial length.

5.59 Sight lines based on an X distance of 2.4m are required, and Y distances will be related to the traffic speed on the road being joined and established from the criteria specified in the technical support data. The X distance may be reduced to 2m where no more than six dwellings are served.

5.60 A ramp or rumble strip must be provided and a special surface to encourage slow speed must be provided over the whole length of the road.

5.61 The maximum carriageway gradient should be in the order of 8%, higher gradients, if unavoidable, may require special measures to be agreed with the Highway Authority.



Type 8 - Mews

5.62 These are minor pedestrian/vehicle shared surfaces within a 20mph (30kph) network giving access to up to 50 dwellings on a link or loop and not more than 25 units from a cul-de-sac. Consideration will be given to increasing numbers of dwellings accessed if the garaging/parking spaces from dwellings are accessed from elsewhere - however, any secure garaging/parking must be very accessible and secure to the properties served.

5.63 The link/loop format will only be acceptable where the risk of 'rat-running' is negligible, having regard to the overall development layout.

5.64 The need for pedestrian/vehicle sight splays will be considered on an individual basis, depending upon the characteristics/geometry of the design submitted - if needed they will be 2m x 2m.

5.65 The minimum width should 5.8m of which 1m would form a pedestrian margin delineated by a row of setts (or other agreed demarcation). Underground services should be sited within the pedestrian margin.

5.66 A clear distance of 6m is required between every parking space abutting the mews and the opposite side of the mews.

5.67 The design speed is 30kph (20mph) and is to be secured by speed restraint measures. The minimum centre line bend radius is 13.6m unless a tighter restraint bend is being used. Maximum centre line bend radius is 30m.

5.68 It may take access from an existing County Road or road types 1-4.

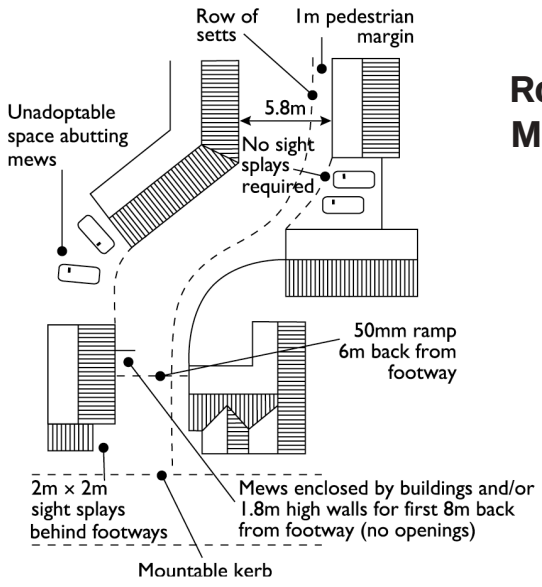
5.69 The design of a junction with an existing County Road needs to be to the Highway Authority's requirements. Other junctions require a constricted entrance enclosed by buildings or walls of minimum height 1.8m for the first 8m back from the footway of the major road (at which point 2m x 2m pedestrian/vehicle sight splays are required). This initial 8m length shall have no form of access to it. The entrance shall be designed to high quality visual/material standards.

5.70 A mountable kerb and a further ramp of 50mm upstand 6m back from the footway of the major road are required.

5.71 The mews should be straight for 11m from the junction. Sight lines will be based on an X distance of 2.4m, Y distances will be related to the traffic speed on the road being joined and established from the criteria specified in the technical support data. The X distance may be reduced to 2m where no more than 6 dwellings are served.

5.72 No windows or doors should open outwards or overflow pipes, single-storey eaves, etc, project over the net adoptable area of the mews. Where buildings abut the mews, street lighting lanterns should be fixed to the buildings rather than column-mounted.

5.73 The maximum carriageway gradient should be in the order of 8%, higher gradients if unavoidable may require special measures to be agreed with the Highway Authority.



Road Type 8 Mews

Type 9 - Residential Square

5.74 These are pedestrian/vehicular shared surface spaces occurring at intervals within a 20mph (30kph) network. The number of dwellings served by a residential square will be a function of the size of the space which should normally not exceed 50m in any dimension. No vehicle/pedestrian sight splays are normally required at egresses onto the residential square.

5.75 A minimum 4.8m wide vehicle route is to traverse the space. If the residential square is being used as a speed restraint measure, the vehicle route must change direction in the square, eg, entry and exit in diagonally opposite corners - it may not simply cross the square in a straight line. A central feature should be located in the middle of the vehicle route to aid driver orientation. The vehicle way will need to be widened to accommodate the feature, and road markings or arrows/chevrons on the feature should indicate that traffic is to pass on the left.

5.76 A junction of routes may occur within the square in which case the junction should have 4m radii and 2.4m X distance from the minor road. The Y distance need not extend beyond the square. A central feature should be placed roughly at the centre of the square - designed to aid driver orientation.

5.77 The central feature which shall be a quality built structure will attract a contribution from the developer to cover the cost of its future maintenance. A large tree could be considered as an option, to be agreed on an individual basis, with the Landscape and Environment Officer. See appendix 7 for contact details.

5.78 If the residential square is not to be used as a speed restraint measure, speed restraints should be used on the approach roads as required for the host road type.

5.79 Buildings should directly front the square, and a 1.5m wide pedestrian margin should be marked out in front of the facades by different coloured paving and a 50mm upstand or a channel. Differentiation by surface texture block will be considered as an alternative to colour differentiation. The differentiation in colour should extend beyond the square by some 5m on to footways of the approach roads to identify pedestrian space continuity.

5.80 Car parking may be accommodated in those parts of the square not occupied by the vehicle route and the pedestrian margin, which should be protected, where appropriate, by bollards - a proliferation of bollards must be avoided, and a high quality design will be required where protection of buildings and pedestrians is essential.

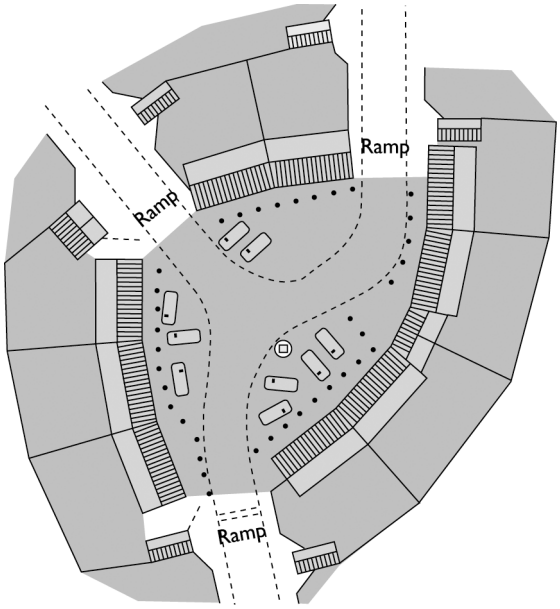
5.81 No windows or doors should open outwards or overflow pipes, single-storey eaves, etc, project over the net adoptable area.

5.82 Street lighting lanterns may be fixed to the buildings or mounted on columns, which will be carefully located clear of manoeuvring areas and protected by bollards, if necessary.

5.83 A special surface is required in order to encourage slow speeds, and the vehicle route should be demarcated by channels or rows of setts. Allowance should be made for over-running by larger vehicles where bends in the vehicle way are tighter than 13.6m centreline radius.

5.84 Where the residential square is being used as a speed restraint measure, the vehicular approach from entering roads shall be tabled, ie, ramped up to 100mm.

5.85 A residential square may be located on road types 4, 7 and 8.



Road Type 9
Residential Square

Private Drives

5.86 These are private vehicular and pedestrian access ways which may give access to a maximum of five dwellings - they are by definition not adoptable.

5.87 They may take access from all road types, but in the case of an existing County Road the junction shall be to the requirements of the Highway Authority. Turning facilities must be provided in accesses to types 1 and 2 roads to enable egress in forward gear - this too is a requirement if the access is within 30m of a junction on a type 3 road. On type 8 roads accesses must be further than 8m from the junction.

5.88 A drive serving a single dwelling shall be at least 3.0m wide, and this width may also be used for shared private drives off road types 4 and 6-9. Drives on to existing County Roads or road types 1-3 must be 4.1m wide for the first 6m from the highway edge, tapering to 3.0m over the next 6m.

5.89 The drive in front of a double garage should be the width of the garage or 4.8m (min) for a length of at least 9m in front of the garage doors to allow door opening and manoeuvrability into the garages - for the avoidance of doubt the 9m length does not apply where the driveway is the width of the garages.

The District Planning Authority may have specific requirements for the set back of garages in relation to adjacent buildings for visual reasons.

5.90 Where space on the public highway is at a premium, providing difficulty for pedestrians where bins/recycling boxes are deposited for collection, space must be made available adjacent to the highway boundary and directly accessible from the public highway - this issue is particularly important at the entrance to private drives to several dwellings. A "haul distance" of 5m maximum for refuse collection staff (to the highway boundary) must be respected.

5.91 Where drives join road types 1-9, sight lines based upon an X distance of 2m shall be provided with Y distances related to the speed of the traffic on the road joined, determined from the criteria specified in the technical support data.

5.92 Vehicle/pedestrian sight splays of 2m x 2m should be provided at the back of footways on road types 1-6, also on road type 8 (if required) - they are not required for road type 9.

5.93 All drives longer than 18m should contain a turning head at least to size 5 (see technical support data), and it is recommended that private drives should not exceed a length of 45m to the furthest dwelling (from the public highway) as special conditions apply in respect of access requirements for fire tenders, ie, minimum 3.7m width, minimum centreline radius 7.75m and pavement carrying capacity of 12.5 tonnes (e.g normal carriageway construction).

5.94 Passing places will be required on shared drives longer than 18m, or on any drive in which the ends are not intervisible.

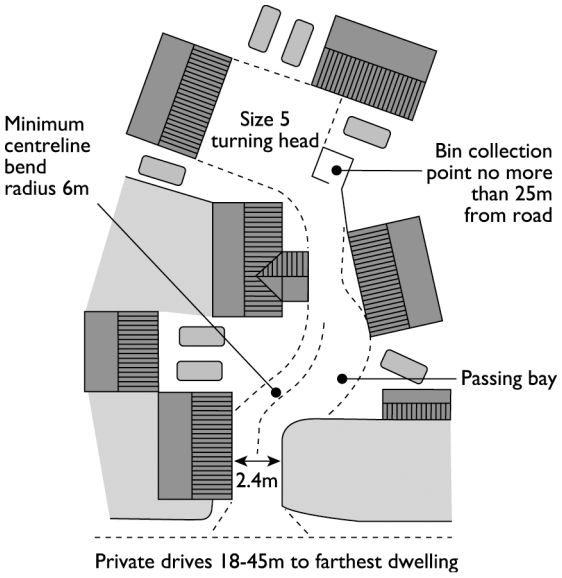
5.95 Drives should meet the highway at an angle which permits a car to turn in either direction in one movement (normally within 10^{o} of a right angle). If the drive is to be used by a fire tender, that vehicle must be able to turn in either direction in one movement. Minimum centre line radius is 6m, unless to be used by a fire tender (see above).

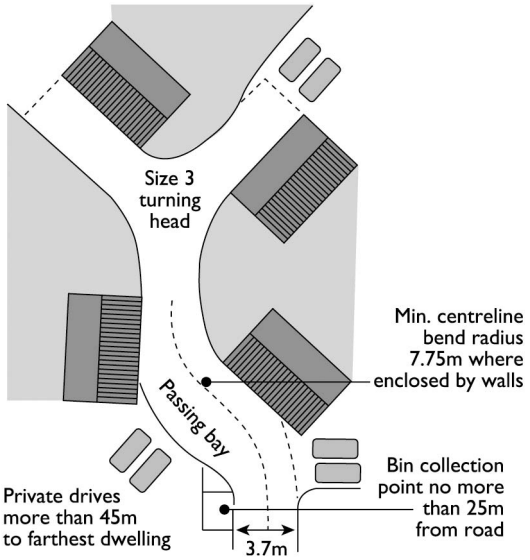
5.96 The maximum carriageway gradient should be around 8%, higher gradients, if unavoidable, are likely to attract special requirements from the Highway Authority.

5.97 Minimum headroom is to be 2.5m normally, though use by a fire tender will require 3.7m minimum.

5.98 The surface finish of driveways should encourage low vehicle speeds and be of pleasant appearance - if loose materials are used (eg, gravel etc) they must be sealed within 6m of the public highway.

Note: The relationship of driveway entrances on opposite sides of access roads and shared surfaces needs to be carefully considered. Research has shown that if they are staggered then parking on the carriageway can seriously inhibit manoeuvring into and out of the driveways - this risk must be considered and addressed in the design. It should be borne in mind that refuse collection will not be made over private drives/roads, therefore a refuse collection point must be provided within 5m of the public highway edge, which is both convenient and contained. A maximum haul distance of 25m for residents to access the collection point should be secured for the resident's convenience as a matter of preference.





Car-Free Developments

5.99 The principles of car-free developments are an extension of the philosophy expressed in this document of reducing car usage and supporting more use of sustainable transport modes.

5.100 Any such proposals would inevitably only be practical in or near the centres of the city or towns where access to a wide range of social, commercial and employment facilities, and access to public transport is available within walking distance of the development.

5.101 The County Council as Highway Authority has no objection in principle to such proposals, but inevitably would require a series of criteria to be met to ensure that the objectives are secured without detriment to the surrounding highway network - these may include:

- Residents covenanting not to drive a vehicle within (say one mile) from the centre of the development (to prevent parking in adjacent areas).
- The securing of contributions from the development to add to/amend existing parking restrictions and controls in the site area and adjacent areas to protect them from off-site parking.
- Specific on-site road layouts which identify the area as car-free, and provide a high quality pedestrian/cycle environment, but do not prevent satisfactory access for delivery vehicles and emergency service vehicles.
- Criteria for adoption of the site routes (which may only be those which serve a "through function" for pedestrians and cyclists).

In summary, therefore, developers and their agents who have such proposals in mind should make very early contact with both the Local Planning Authority and Local Highway Authority officers to establish whether or not the site is considered suitable for this type of development - and if so, the "ground rules" can be identified at the earliest stage in the development process.

Speed Restraint - Principles

5.102 All new residential developments containing an adoptable road network will be expected to form part of a 20mph (30kph) zone. Residential developments which have road networks not offered for adoption will not be excepted from the imposition of the principles outlined in this document.

5.103 Speed restraint measures should be used throughout the 20mph zone and no warning signs are required within the zone. Signs (in accordance with Traffic Advisory Leaflet 2/93) and an entrance gateway are, however, required to indicate to drivers that they are entering a zone.

5.104 It is essential that the designer appreciates that speed restraint is not just a matter of using the engineering features described in this section - a driver's perception of a safe speed is also materially affected by the spacing, form and proximity of the buildings served by the road, in addition to the surface materials used and the effective use of hard and soft landscaping. A composite design will be called for which must be agreed at an early stage by both Planning and Highway Authorities, and will include:-

- a gateway feature
- road engineering speed restraints
- complementary measures

Gateways

5.105 A gateway feature is required at each entrance to a 20mph zone - its main purpose is to provide a visual indication to drivers that they are entering a special area where they must act to control their speed and give greater priority to more vulnerable road users.

5.106 The gateway feature may consist of a 'pinch point' of buildings or walls at the entrance or of a physical gateway structure either arching across the road or a pair of substantial piers close to the carriageway.

5.107 The footway may pass through the gateway, though preferably it should go round it, so as not to dilute the 'narrowing effect' being sought.

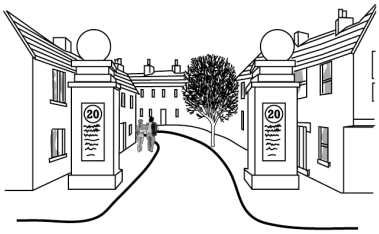
5.108 Physical gateway structures should be designed to withstand vehicular impact and should provide a headroom to be agreed with the Highway Authority/Planning Authority representatives (a headroom of 4.2m is the minimum likely to be required). The developer will be required to accompany his design submission for the gateway with an independent "road" safety audit.

5.109 Structures over the highway need to be licensed, and this issue should be discussed with the Highway Authority representatives at an early stage in the gateway design.

5.110 Formal arrangements will need to be made for the future maintenance of the gateway structure. In the event that the developer/purchaser wishes to pass that liability to a public authority, then, dependent upon the form of the gateway, it may be that District, Town or Parish Council or the Highway Authority could adopt - but in each of the above options a commuted maintenance sum will be required.

Gateway consisting of 'pinch point' of buildings

Physical gateway



Speed Restraints within a 20mph (30kph) Zone

5.111 To secure a composite influence on driver behaviour to keep within the design speed, a combination of an engineering measure under (a) or (b) following and a complementary measure under (c) will normally be required in each location.

5.112 Measures to reduce visibility for the driver are not acceptable by themselves. Rumble strips are not an adequate speed restraint measure.

5.113 Speed restraint measures are to be located no more than 60m apart and must be in a different surface material from the rest of the carriageway. They must be well lit.

5.114 In effect they may be classified as:-

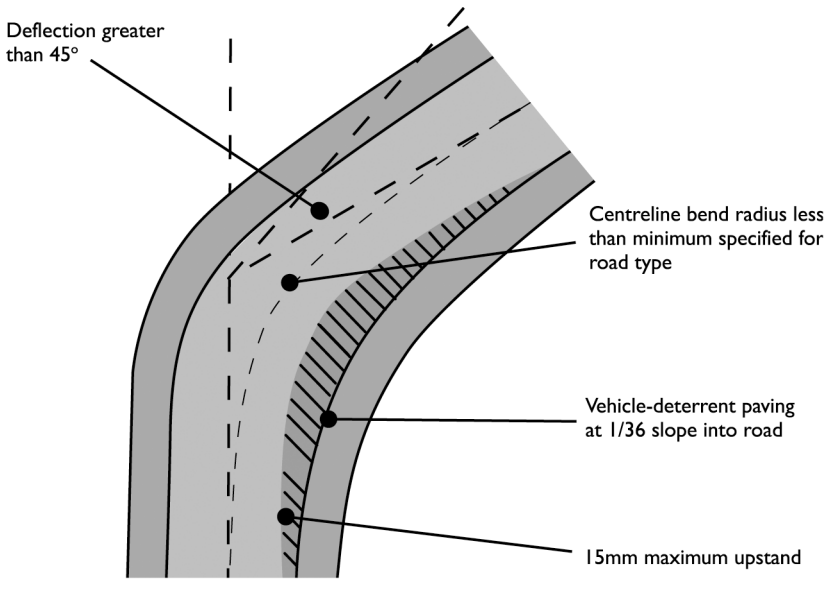
- Changes in horizontal alignment.
- Changes in vertical alignment.
- Complementary measures.

Changes in Horizontal Alignment

Changes in Horizontal Alignment - Bends

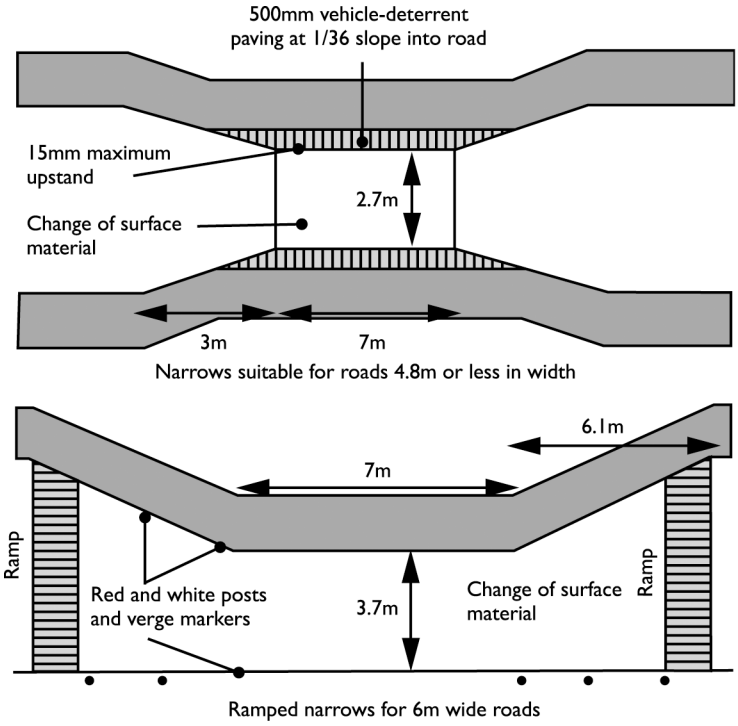
Note: See para 4.66 for use of these measures

5.115 These should be tighter than the minimum centre line radius specified for each road type down to a minimum centre line bend radius of 7.5m. The deflection angle should be greater than 45° and a mountable shoulder will be required to enable larger vehicles to overrun.



Changes in Horizontal Alignment - Narrowings

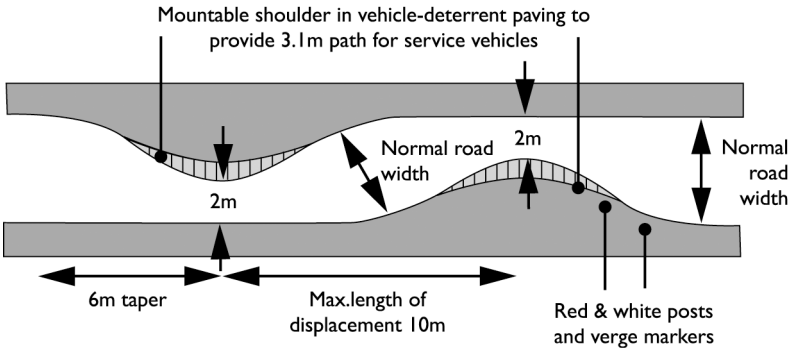
5.116 Drivers will wait for oncoming traffic to pass at narrowing of the carriageway to 2.7m over a length not exceeding 7 metres. A 500mm wide mountable shoulder either side will enable service vehicles to negotiate this layout. This type of measure is not appropriate for shared surfaces.



Mountable shoulders should always be designed with slope and surface finish to discourage parking on them. This form of speed constraint is also suitable as an element of the measures, with a raised table at footway/cycleway crossings of a carriageway.

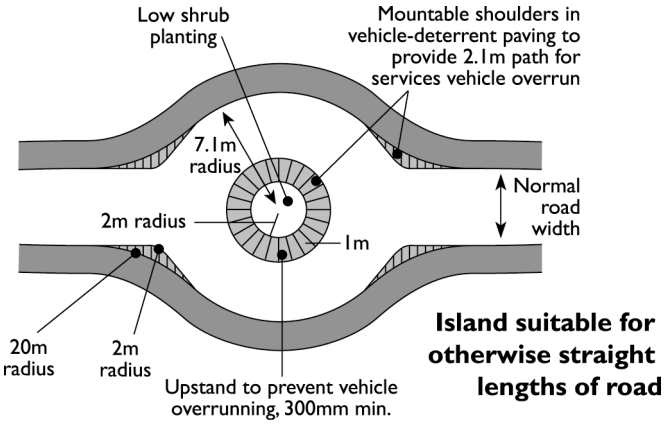
Changes in Horizontal Alignment - Chicanes

5.117 To achieve effective restraint the lateral displacement of the running lane must be at least 2m over a length no greater than 10m. The carriageway width at entrance and exit of the chicane may be reduced to 2m, but a mountable shoulder may be necessary to provide a 3.1m wide path for service vehicles. This measure is not suitable for shared surfaces.

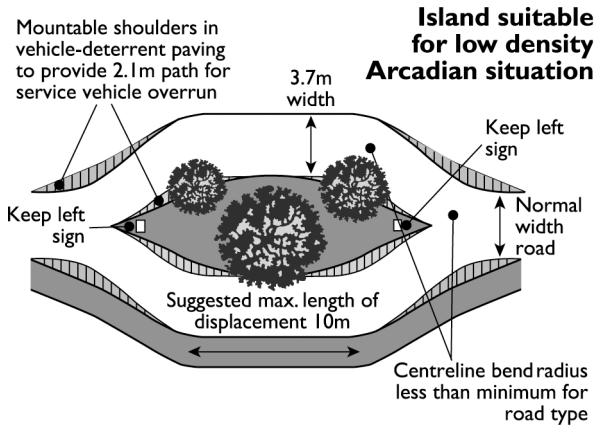


Changes in Horizontal Alignment - Islands

5.118 Whilst the island may be any shape subject to the minimum dimensions given in the diagrams below, a lateral displacement of the running lane by at least 2m must be achieved. Mountable shoulders may be used to enable the passage of service vehicles, but the centre of the island should not be over-runable by any type of vehicle. This layout type is not suitable for shared surfaces.



N.B For islands to accommodate tree planting a minimum width of 3m will be required.

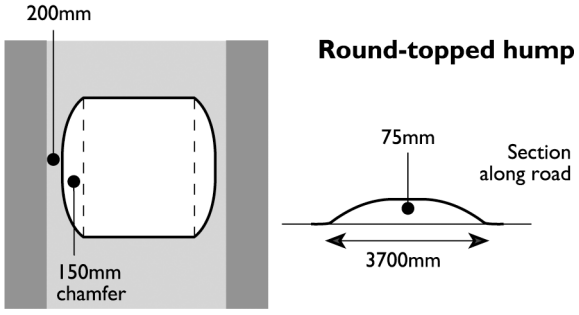


Changes in Vertical Alignment

Note: See para 4.66 for use of these measures

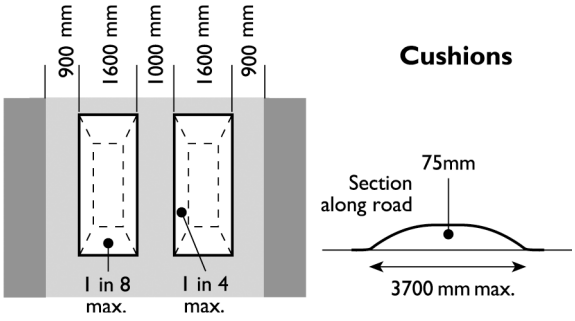
Changes in Vertical Alignment - Humps

5.119 Round topped humps should be 75mm high and no longer than 3.7m. They are not appropriate for shared surfaces, nor road types 1 & 3.



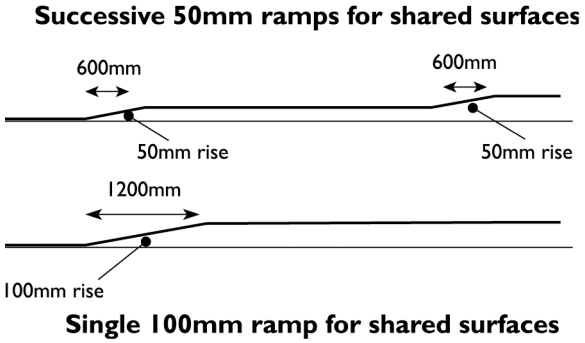
Changes in Vertical Alignment - Cushions

5.120 Road type 3 is likely to be used as a 'bus route', and will also carry emergency services, speed cushions should therefore be used rather than humps. They are specially designed to allow the wheels of buses and wide wheelbase vehicles to pass either side of the raised area - but cars have to negotiate the humps. They should be constructed in pairs to the dimensions given in the diagram below.



Changes in Vertical Alignment - Ramps

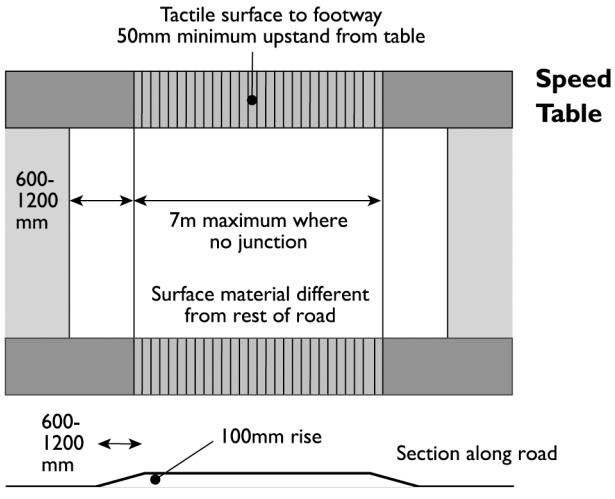
5.121 Single ramps with a rise of 100mm over 1200mm or successive ramps of 50mm rise over 600mm are particularly appropriate at the entrance to shared surfaces or within them.



Changes in Vertical Alignment - Speed Tables

5.122 Whilst this particular layout is seen as a 'last resort' for solely speed restraint purposes, it is however particularly appropriate to serve as a means of highlighting a crossing of the carriageway by a cycle and/or pedestrian route.

5.123 They will need to be 'reinforced' with other hard and/or soft landscaping features and with appropriate signing where the pedestrians/cyclists have 'right of way' (the preferred solution).



5.124 A raised table of maximum length 7m (when not at a junction) may be formed by approach ramps rising over a minimum length of 1500mm. If provided on a 'bus route' the rise should not exceed 75mm provided on a gradient of 1 in 15, and the raised platform should be no shorter than 6m - generally a sequence of speed tables on a bus route will not be acceptable. Tactile surfaces should demarcate carriageway and footway for the benefit of the visually impaired.

Changes in Vertical Alignment - Table Junction

5.125 A road junction may be treated as a raised table approached by ramps as described in 'Speed Tables' above - tactile surfaces should demarcate carriageway and footway too.

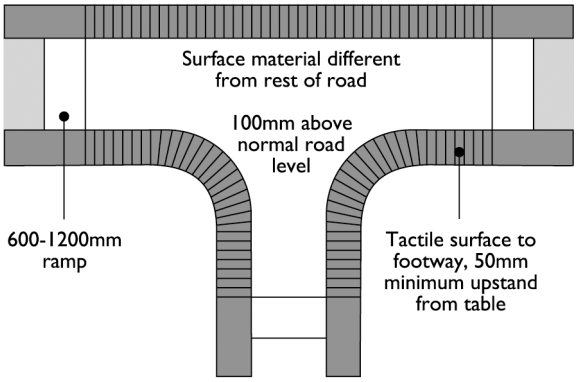
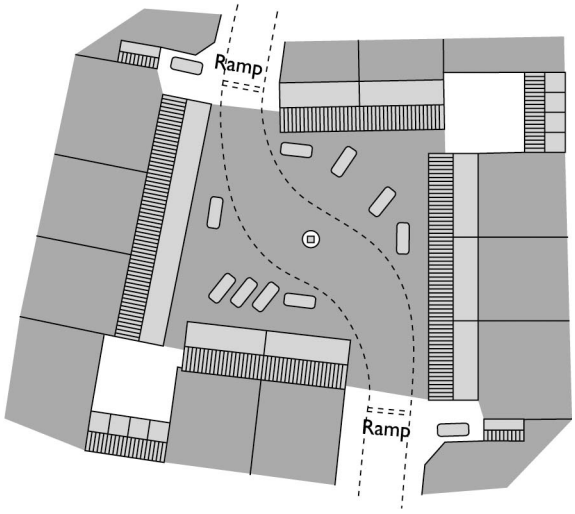


Table Junction

Changes in Vertical Alignment - Shared Surfaces

5.126 Where a residential square forms a feature along a conventional road, its approaches should be ramped as described under 'Speed Tables' so that the whole shared surface becomes a raised plateau. The vehicle way should be demarcated by channels, rows of setts and the different paving colour of the perimeter footway will be sufficient for the visually impaired.



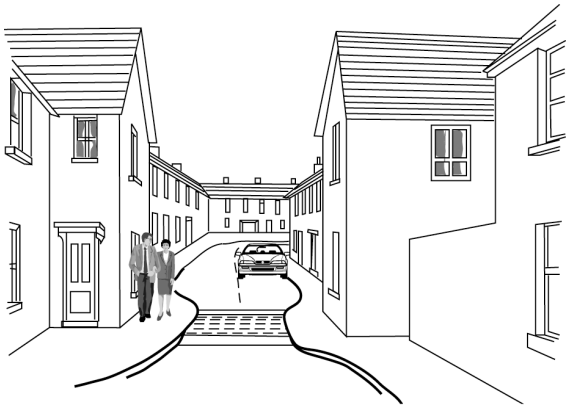
Complementary Measures

5.127 The use of these measures should be discussed at an early stage with the Planning and Highway Authorities as they will have an impact on the design layout, character and visual appearance of a scheme. In some instances they may not be deemed appropriate for more aesthetic design reasons.

Complementary Measures - Buildings

5.128 Buildings may be used to form an end-stop to a straight stretch of road, or be angled indicating a change of direction.

5.129 They may form a 'gateway' or 'necking', through which the road passes - used in conjunction with other speed restraints, they can induce drivers to slow up and take extra care.



Gateway consisiting of
'pinch point' of buildings

Complementary Measures - Width and Alignment

5.130 In addition to the measures described under changes in Horizontal Alignment above, general variation in the width and alignment of the carriageway can make the driver feel less secure and less able to increase speed. The intention should be to make the driver feel that he is in 'a place' rather than 'on a road'.