Suffolk County Council

SUFFOLK DESIGN GUIDE FOR RESIDENTIAL AREAS

Adopted 1993
Revised 2000

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1 Introduction

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1 Introduction

1.0.1 East Anglia has the fastest growing population of any region in the UK. The Suffolk Structure Plan envisages some 54,000 new dwellings will be built in Suffolk between 1988 and 2006. Most of these new houses will be built as estates on the edge of towns and larger villages.

1.0.2 This design guide aims to set out the principles, or guidelines which should be adopted by all those involved in the development of housing areas whether it be developers, housebuilders, local planning authorities or the utilities. The Guide advocates the adoption of an integrated design process where all of the elements of layout and design, the roads, the planting, the siting and external appearance of the houses are considered as part of a single comprehensive process rather than in isolation.

1.0.3 The Design Guide is intended to make a positive contribution to improving the quality of housing development in Suffolk. The Local Authorities trust that all concerned in housing development will seek to achieve the very highest standards of layout and design.

1.0.4 The aims of the Design Guide are to:

- Reflect the essential character of Suffolk in new housing estate development within the County;
- improve the visual appearance of housing estates;
- reduce the impact of new housing on the landscape and to ensure that new development relates to its surroundings;
- improve the quality of life for residents;
- ensure the provision of a road, cycle and footway network which is safe and convenient to use and which does not detract from the attractiveness of the estate.

1.0.5 The most successful layouts are those which, from the outset, embody a co-ordinated approach with attention being given to all aspects of design and which respect the context of the site. Mediocre layouts often arise when undue emphasis is placed upon one aspect of the design at the expense of other equally important factors, such as varied street-scene and landscaping. In recent years, this failure to take a co-ordinated approach has given rise to many road-dominated estates which, whilst often functionally acceptable, lack interest and variety.

1.0.6 Listed below are the main elements of successful layouts, which should form part of the designer's considerations at the very beginning.

Planning Background

1.1.1 The Structure Plan identifies the scale and location of major new development in the County. The Local Plan will allocate specific sites for new housing and provide more detailed policies on matters such as housing density, conservation, design and landscape.

1.1.2 The developer should ensure that he is aware of the planning background to the site, for example, local plan policies, development briefs, statutory designations such as Conservation areas, Sites of Special Scientific Interest, Tree Preservation Orders and Listed Buildings. When allocating land for housing local planning authorities will, whenever possible, produce site-specific development briefs which will set out the framework for development, having regard to the planning policies and advice contained in this guide. Where a development brief does not exist, the developer is advised to liaise with the Local Planning Authority and the Highway Authority at the earliest possible stage in order to determine the main principles which should be adopted for the satisfactory development of the site.

1.1.3 Housing designs should be based upon an understanding of the site and its surroundings, resulting from a detailed site survey and analysis (see Appendix A). The details required to support a planning application for housing development are set out in Appendix B.

Safety

1.2.1 Safety should be a primary concern, with the following groups of users being considered:

Pedestrians

Pedestrians, especially the most vulnerable groups such as children, the elderly and people with disabilities, should feel secure in their immediate residential environment. Safe pedestrian routes, whether footways or separate footpaths, need careful design, appropriate lighting, and attention to crime prevention. Design should facilitate movement, and where shared surface roads are provided, the safety of pedestrians should be paramount.

Cyclists

Cycling represents an environmentally desirable alternative to motor vehicles. The needs of the cyclist should be addressed in the design of housing estate layouts. Children are one of the main users of bicycles and are most vulnerable. Particular care will be needed in the design of cycling facilities where schools are to be provided.

Motorists

Residents rightly expect to be able to drive their cars in safety from their homes to work and for leisure. Roads should be designed to cater for the passage of vehicles in a safe manner at an appropriate speed, in order to minimise conflict with other road users. The aim should be to provide a safe residential environment. This will usually entail a road hierarchy, with the motorists having priority on local distributor roads and the pedestrian having priority on residential roads.

Variety

1.3.1 Many recently-built housing estates have rightly been criticised for their lack of variety and visual interest. A limited number of house types, poor quality building materials and fixed block spacings and building lines, have given designers of housing layouts few options. The pursuit of variety for its own sake, however, can be inappropriate and may deny the designer the option of pursuing a common theme. Nevertheless, diverse house styles and building lines, careful detailing, good workmanship and materials all add to the richness of the overall street scene. House designs and materials should reflect the variations in local character which arise throughout the County.

Amenity

1.4.1 Privacy, light and space for private leisure pursuits are essential for the occupants' enjoyment of their property and contribute to the overall amenity of the area.

Access to Facilities

1.5.1 Residents have a reasonable expectation that large estates will have facilities such as schools, community centres/village halls, and public open space provided at an early stage. Access to these should be convenient and safe as well as attractive. Early consideration should be given to the location of the facilities and their transport links. Smaller estates should be integrated into existing communities, with thought being given to appropriate links to existing facilities nearby.

Planting and Landscaping

1.6.1 Trees, shrubs, paving and walls are essential assets to the appearance of housing estates. The landscape design for the whole estate, including retention of existing features and provision of appropriate public and private open spaces must be incorporated as part of the initial layout. Landscaping applied as an afterthought is seldom as successful as that integral to the original design concept.

Maintenance

1.7.1 The best housing estates are those that 'mature' without recourse to expensive maintenance and where adequate provision is made for the upkeep of landscaping, surfaces (roads and footpaths), common areas (shared car parks) and community facilities.

Servicing

1.8.1 Utility services should never dictate the form and content of estate layout or landscape design. Routes for services should avoid any area identified for planting in the landscape design.

Security

1.9.1 The safety of people and the security of property need to be taken into account in the design of housing estates. Regard should be paid to the advice of the Suffolk Police, as embodied in the 'Secured by Design' award initiative.

Providing for People with disabilities

1.10.1 One of the aims of the Design Guide is to improve the quality of life for residents. In this respect, considerations of safety for pedestrians and access to facilities will be of particular benefit to people with a mobility handicap. However, such provisions are of limited value if applied to estate layout considerations only. Developers are therefore advised to consider internal house design to make homes more accessible.

2 Perceptions

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2 Perceptions

"First comes the shape of the development"

"Second comes the choice of materials and details...."

What Others have Said

2.0.1 In February 1990 a Royal Institute of British Architects/House Builders Federation seminar took place in London. The following are extracts from the subsequent Discussion Paper entitled 'Good Design in Housing'.

'There is a hierarchy of design importance, three key factors which, when combined, create good design:

a) Shape of Development

First, comes the shape of the development and the spaces within it, the scheme as it is seen in the landscape. This shape is created by solids and voids, buildings and planting, hard and soft surfaces. The layout should come from the nature of the site, its natural features and context. The detailed form is determined by the height and massing of the buildings, by roof pitches, storey heights and the profiles of the housing elements. This is where we can demonstrate our response to the setting for the new development.

b) Materials & Details

Second, comes the choice of materials and details that shape our response to the character and quality of the local built environment. There is opportunity for well considered contrast and variety but larger developments should normally work within an overall theme which harmonises with the landscape or townscape context. Generally, dominant colours and textures that complement traditional development and local materials will be acceptable to most people.

"Not so much the house itself..."

... but it's setting

c) **The Individual Dwelling:-**

The last factor is the house itself. Planners, architects and developers spend too much time and thought on this, at the expense of the first two priorities. There is no point in having a beautifully designed house which uses the wrong materials and is laid out in an inappropriate form'.

'We need to reproduce the charm of existing settlements in a new way. We must create a variety of spaces and not allow the car and road to dominate'.

'We want new designs with vigour, clarity and authenticity, twentieth century designs which also respect local building tradition, materials and details.'

"Unique character of Suffolk ..."

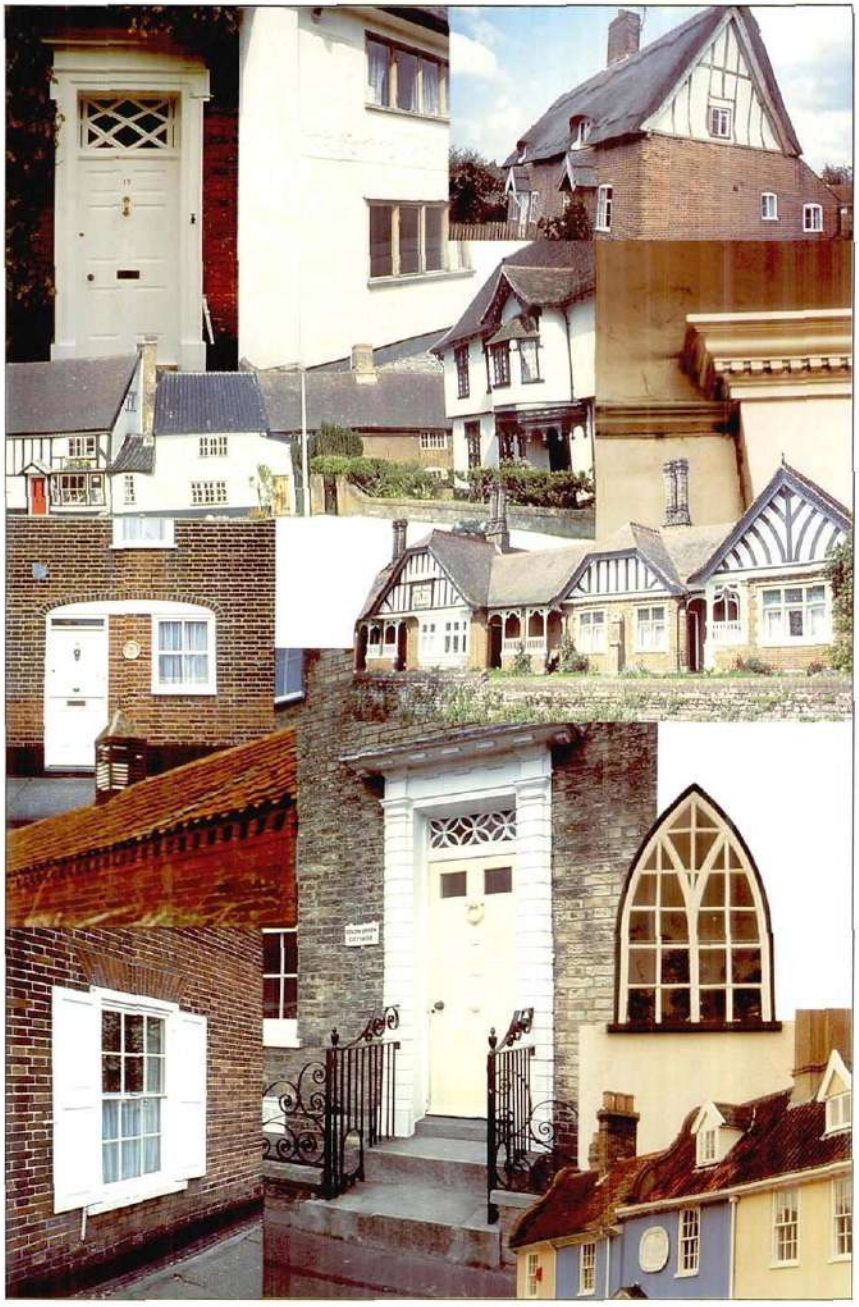
"... totally nondescript..."

Suffolk Vernacular

2.1.1 Vernacular means 'The language of a particular people or place'. When applied to buildings, the term 'vernacular architecture' refers to the type of buildings which are unique to a particular area - those buildings which so clearly help to distinguish one county from another.

2.1.2 The traditional buildings of any region spring from the available local building materials, from the terrain, the climate, and the social and industrial structure. The inaccessibility of Suffolk meant that it was less affected than most by the upheaval of the Industrial Revolution of the 18th Century, although development was more rapid in the larger towns in the 19th Century. Many of Suffolk's towns and villages have a uniqueness stemming from this slow rate of change and clearly illustrate a gradual evolution of styles building upon the skills of previous generations and adopting the ideas of immigrants.

2.1.3 To some, Suffolk will evoke a mental image of picturesque churches and thatched cottages nestling into a rural landscape. To others it may be an image of the rich variety and bustle of a mediaeval market town, or indeed the remote and exposed beaches of the Suffolk coast. Few, if any, would instinctively conjure up an image of a modern housing estate as being characteristic of the County. Far too much modern housing estate development is totally nondescript and some developers seem only too willing to build exactly the same style of house on sites from Lands End to John O'Groats. Unless we are prepared to see the character of Suffolk continue to be eroded, new development must compliment traditional Suffolk building styles.



"...Buildings of Suffolk display a wealth of detail and a love of quality."

2.1.4 This guide does not advocate the re-creation of settlements from the past, indeed 'pastiche', if badly done, devalues the original. The buildings of Suffolk are of many styles but they display a wealth of detail and a love of quality. Frequently the better quality materials and more ornate detailing are confined to the 'public' side of the building, and, as a general 'rule of thumb', the larger, grander buildings would have been the more ornate whilst the artisan's cottages would have had a simpler, uncluttered elevational treatment.

2.1.5 Traditionally they would have been arranged in one of two ways - the low density rural approach where the buildings were secondary to the landscape, or the higher density urban approach where the building frontages gave shape to the streets, squares, alleyways and courtyards. Too much modern development fails to differentiate between these basic principles and the result is mediocrity. What is required now is twentieth century development which builds upon the lessons of the past; development of quality which respects its surroundings and which is as characteristic of the County as that which has evolved over many generations.

Suffolk Present

2.2.1 Modern materials and techniques have been embraced by every generation through the ages, and it would be foolhardy to try to turn back the clock. Twentieth Century man has access to a range of building materials and techniques undreamed of by our forebears, but the unthinking application of modern mass produced materials, used on stereo-typed house designs and unimaginative layouts has done much to detract from the character of Suffolk's towns and villages. Mass production, standardisation, Planning and Building Regulation controls all impose their own constraints. Economic reality is as relevant now as it has ever been, and, in addition to these, the motor vehicle is an ever-present fact of life.

Shape...

Materials...

The Individual dwelling...

The Way Forward

2.3.1 Many of the people who live and work in Suffolk value it for the sense of being unspoilt and retaining a character which by contrast has been made less recognisable elsewhere by ubiquitous developments. Lifestyle plays an important part in attracting economic development to the area but the changes this brings must not be allowed to destroy Suffolk's pleasant character which is the very key to its success. It is therefore ultimately in the interests of landowners and developers to retain an environment which is valued by people who live in it.

2.3.2 Outline planning permission for a particular site cannot carry a presumption in favour of just any form of development. The presumption must be that when part of a Suffolk landscape is to be laid under bricks and concrete, the transformations will positively contribute to its present surroundings. Housing should look good in the landscape with a design philosophy directed to enhancement and not just concealment.

2.3.3 The key to achieving this is to foster the right design approach which must start with an overall perspective of what needs to be achieved. The question should not be, 'What can the site do for the development?' but, 'What can the development do for the settlement?' Raising the quality of the built environment has to be a team effort, including - architect, builder, highway engineer, landscape architect, and local planning authority.

2.3.4 The eventual 'bricks and mortar' must spring from a logical, step-by-step appraisal of many factors, which may be grouped under three main headings:

a) SHAPE OF DEVELOPMENT

b) MATERIALS

c) THE INDIVIDUAL DWELLING

3 Shape of Development

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3 Shape of Development - Highways

3.0.1. In Suffolk the integrated design approach will mean that the Highway and Planning Authorities will work closely together with other agencies to ensure that their standards for building density, layout, highway design, landscaping and parking provision are compatible. Those involved in designing roads on new estates must refer closely to the advice given later in this chapter as the layout has a fundamental effect on the shape and appearance of the development.

3.0.2. Early joint consultation with the respective officers of the District Planning Authority and the County Surveyor is strongly recommended. That consultation should include amongst other things the estate layout and the areas of roads, footpaths and verges which may be offered for eventual adoption by the County Council. Early consultations with developers are likely to result in time savings and avoid abortive work. In addition, an economical and well thought out layout could allow land which might otherwise have been wasted to be used for development purposes.

3.0.3. The capital cost of providing a new housing estate rests with the developer and all future maintenance costs are largely divided between highway authorities and service providers. At the design stage a balance has to be struck between these matters. Special care needs to be taken to keep maintenance to a minimum whilst still using materials which are visually acceptable. For example, layouts should be designed to eliminate the possible damage and recurring maintenance charges caused by vehicles overrunning footways and verges.

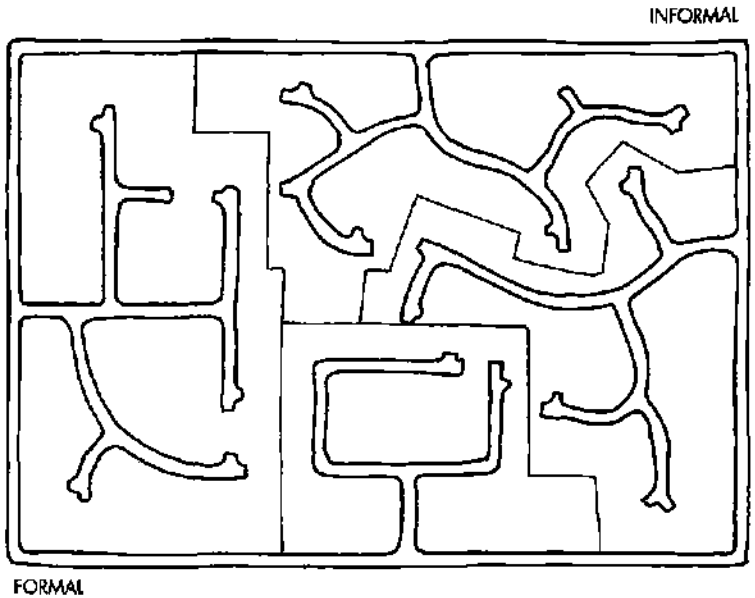

Fig 3 1 Disconnected Network

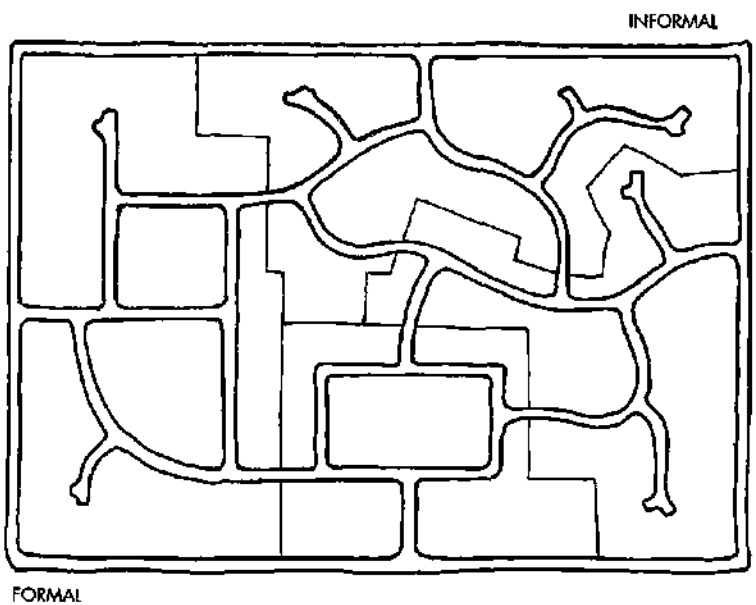

Fig 3 2 Interconnected Network

Design Options

3 1 1 Two types of hierarchical road layout arrangements are available. disconnected (tree like) arrangements of culs-de-sac shown in Figure 3 1 and the interconnected network arrangement of roads shown in Figure 3.2. Large developments often contain a mixture of each type. Both concepts will be subject to the same overall standards with regard to the description of the road, its function, width and restrictions

3 1 2 The design of the residential road layouts should indicate to drivers, in a progressive manner, that they need to reduce speed and be considerate to the needs of pedestrians On the lower categories of residential roads such as shared surface roads, the maximum vehicle speeds should be well below 20mph.

3.1.3. The hierarchical road layouts recommended in this guide will help to ensure the progressive reduction in vehicle speeds In large development areas these layouts will also help strangers to find their way around.

Design Bulletin 32 (DB32)

3.2.1. DB32 is published jointly by the Departments of Environment and Transport and offers guidance for local authorities and designers on the layout of roads and footpaths within new residential development The aim of DB32 is to create surroundings which are visually attractive, safe, convenient, nuisance free, secure and economical to construct and maintain.

3.2.2. The following guidance draws very largely upon the revised DB32 particularly from the point of view of road safety Therefore any applicant wishing to depart from the guidelines in this document will have to demonstrate that the proposals satisfy the same safety criteria

3 Shape of Development - Highways

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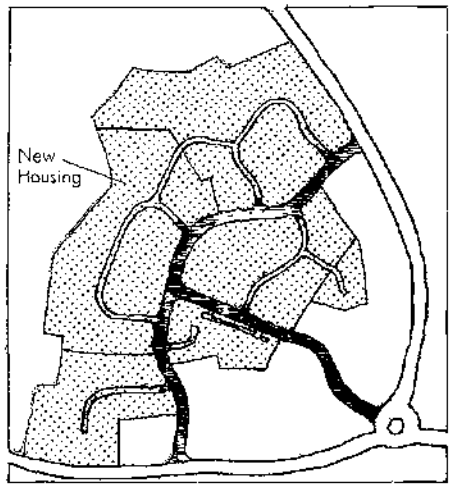


Fig. 3.3 Local Distributors

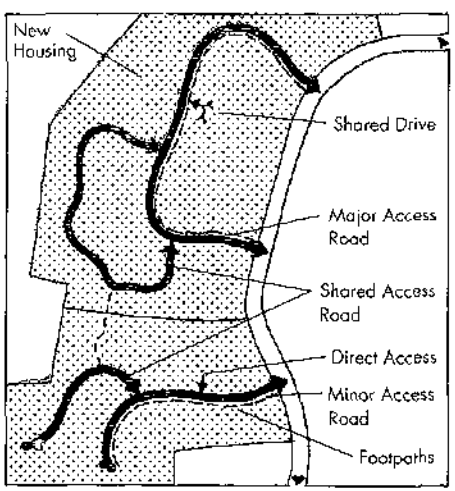


Fig. 3.4 Residential Roads

3.2.3. No attempt is made within DB32 to prescribe standards for adoption of highways. Such standards can only sensibly be set locally and the Suffolk Design Guide seeks to achieve this.

Types of Road and Access Requirements

3.3.1. Within this document two main categories of roads will be described :-

Local Distributor Roads - Fig. 3.3

3.3.2. Local Distributor Roads distribute traffic within districts of a town. In residential areas they form the link between District Distributors and residential roads and should not normally give direct access to dwellings.

3.3.3. Whenever practicable, points of access to the site together with the layout should ensure that all roads in the development serve fewer than 300 dwellings in order to avoid the over-provision of Local Distributor Roads.

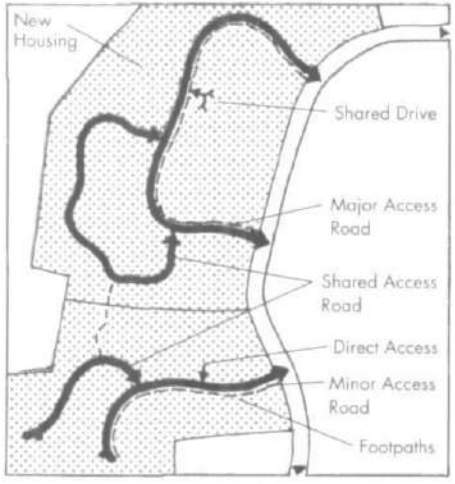
Residential Roads - Fig. 3.4 & 3.5.

These will be:

Major Access Roads
Minor Access Roads
Shared Surface Roads

3.3.4. Major Access Roads are residential roads with footways that would not normally serve more than 300 dwellings and may give shared direct access to dwellings.

Fig. 3.3 Local Distributors



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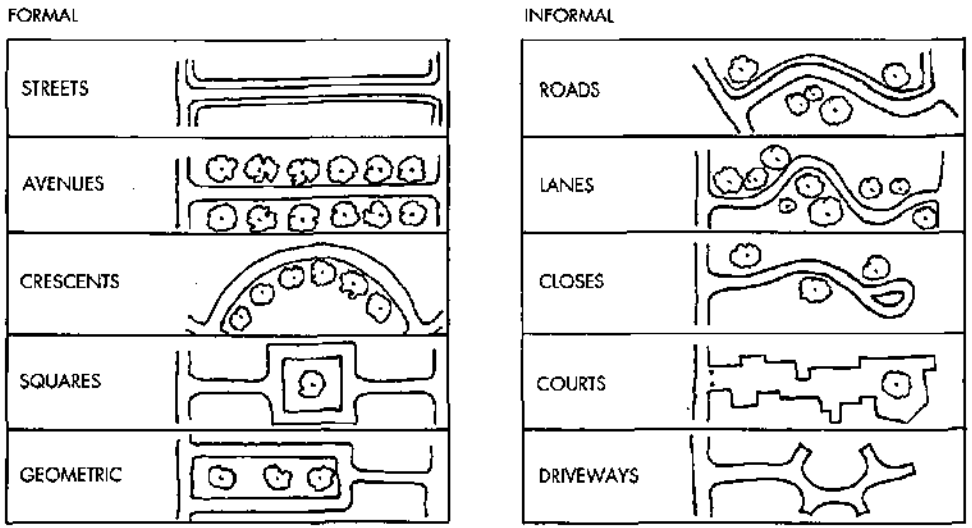


Fig. 3.5 Residential Roads (concepts from DB32)

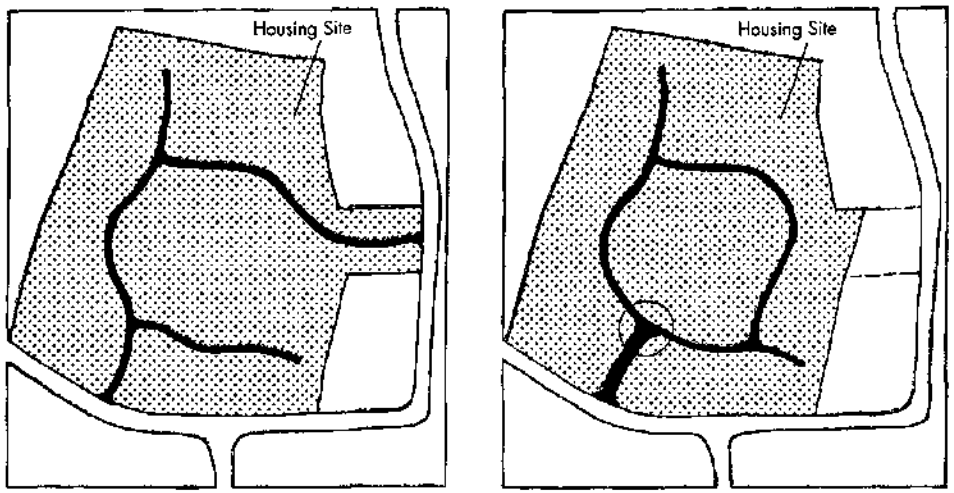


Fig. 3.6 Access Requirements }150 (300 dwellings

3.3.5. Minor Access Roads are residential roads with footways that provide direct access to dwellings and parking spaces but would not normally serve more than 100 dwellings.

3.3.6 Shared Surface Roads are residential roads without footways that would not normally serve more than 50 dwellings if looped or 25 in the form of a cul-de-sac.

3.3.7. Shared Driveways are unadopted paved areas that may serve the driveways of up to five dwellings.

Access Requirements

3.3.8. For Major Access roads serving more than 150 and up to 300 dwellings :

(a) two points of access should be provided to the part of the site being served and the road layout should conveniently connect those points of access (Figure 3.6a).

(b) where only one point of access is available the road layout should form a circuit and there should be the shortest practicable connection between this circuit and the point of access. This should always form the stem of a T-junction - usually with a Local Distributor Road. (Figure 3.6b)

3.3.9. From the point of view of safety and the need to consider access in emergencies, not more than 150 dwellings will normally be served by a single means of access.

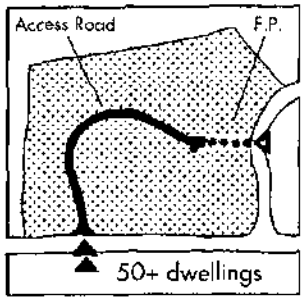


Fig. 3.7

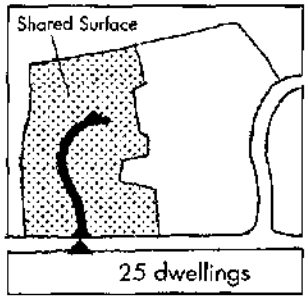


Fig. 3.8

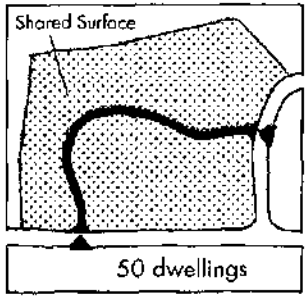


Fig. 3.9

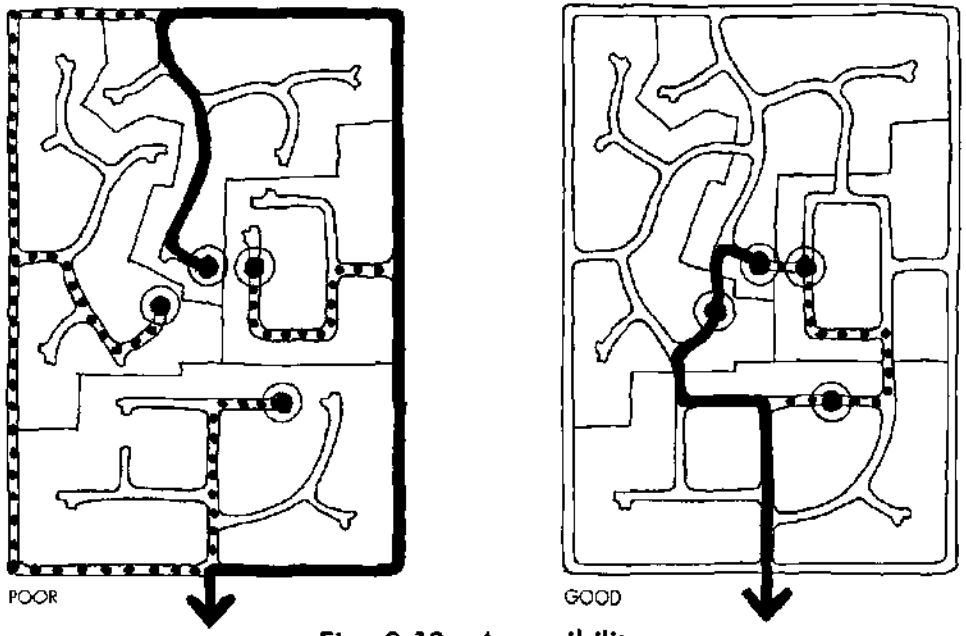


Fig. 3.10 Accessibility

3.3.10. Minor access roads serving more than 50 dwellings should normally be through-roads or looped. Culs-de-sac serving such numbers must have a footpath link with other roads that could be used by vehicles in an emergency (Figure 3.7).

3.3.11. Shared surface roads may serve up to 25 dwellings in a cul-de-sac (Figure 3.8) and up to 50 if looped (Figure 3.9).

3.3.12. The road layout should be compatible with the road hierarchy for the local area. Access points to the site and the road layout should provide the shortest practicable routes between the homes and off-site destinations and direct routes for service vehicles between different parts of the site. (Figure 3.10).

3.3.13. The range of road types described above will provide the developer with solutions for the great majority of applications, although situations will arise where more than the minimum values shown will be required.

Traffic Flows, Target Maximum Speeds and Speed Restraints.

Local Distributor Roads

3.4.1. Local Distributor Roads are provided to ease traffic flow and drivers would normally expect to be able to proceed at speeds of up to 30mph.

3.4.2. Vehicle speeds will normally be restrained to 30mph on Local Distributor Roads by their alignment. Where other measures are proposed these will need to be discussed with the Highway Authority.

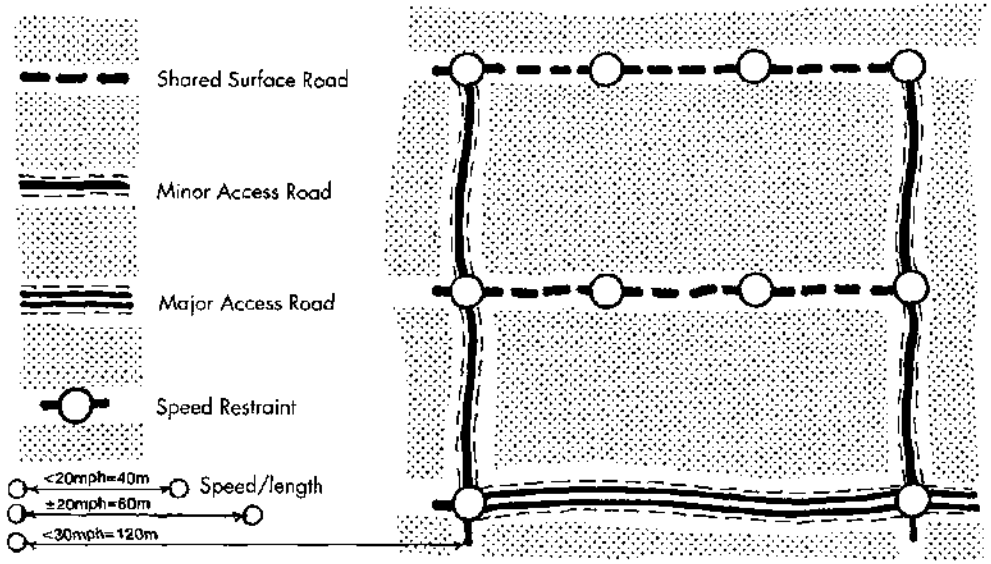


Fig. 3.11 Speed Restraints

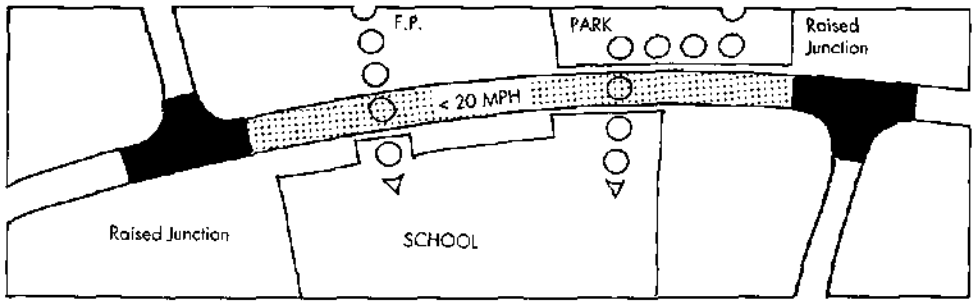


Fig 3.12

Residential Roads

3.4.3. Residential roads will give direct access to dwellings but drivers will be aware from the layout that their progress is controlled by speed restraints. Through traffic will be discouraged from entering residential roads.

3.4.4. Residential roads not only give access to dwellings, they also form an integral part of the living environment within housing estates. It is essential that design measures be used to prevent drivers from exceeding the target maximum speed recommended below.

3.4.5. The target maximum speeds and the spacing of speed restraints will be as follows:-

(a) Under 30mph along major access roads - by keeping unrestrained road lengths to no more than around 80m - 120m.

(b) About 20mph along minor access roads - by keeping unrestrained road lengths to no more than around 60m;

(c) Well below 20mph along shared surface roads - by keeping unrestrained road lengths to no more than around 40m (Figure 3.11).

3.4.6. Vehicle speeds should be restrained to well below 20mph outside schools and elsewhere where children may be especially at risk (Figure 3.12).

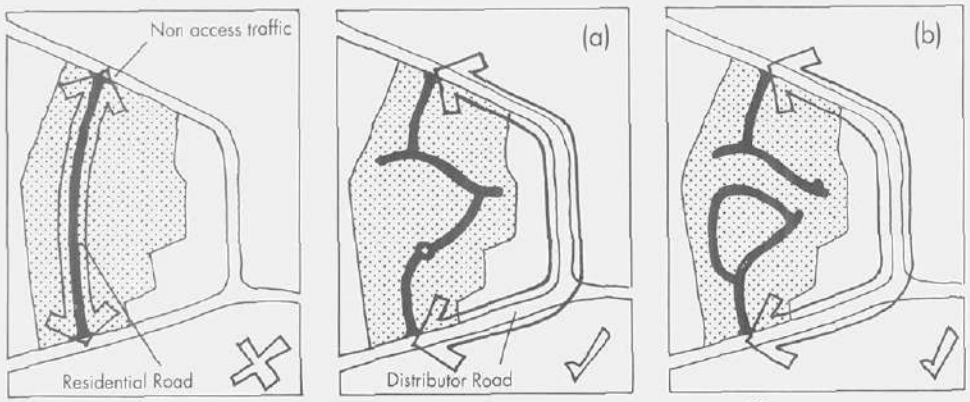


Fig. 3.13 Discouraging non-access traffic

Layout Considerations

3.5.1. The layout of carriageways, bends, junctions and turning spaces should minimise vehicle flows and reduce vehicle speeds. When making decisions about these matters the following considerations should be taken into account :-

(a) The expected volumes and speeds of vehicular traffic.

(b) The frequency with which various types of vehicles need to pass each other.

(c) The provision made for off-street and on-street parking.

(d) The availability of alternative means of access to dwellings to help ensure that carriageways are not blocked by incidents such as vehicle breakdowns and carriageway repairs.

3.5.2. Normally changes in horizontal alignment will be the only means necessary to control vehicle speeds. Speed tables and raised junctions (extended flat top road humps) may also be considered.

3.5.3. When speed restraints alone would not be sufficient to discourage through traffic from using residential roads:

(a) the routes provided should be made significantly longer than those provided by Local Distributor Roads (Figure 3.13a) or

(b) loops or culs-de-sac should be created to make it impossible for short cuts to be taken along residential roads by through traffic (Figure 3.13b).

Fig. 3.14 Dwellings Along Distributor Roads

3.5.4. Dwellings designed to provide natural surveillance could be located along stretches of road serving more than 300 dwellings (Local Distributor Roads), with vehicular access being located between the dwellings and the distributor road. Figure 3.14 illustrates access being taken from a road that is connected to a Local Distributor Road carrying low volumes of traffic and where :

(a) the spacing of connections along the Local Distributor Road is not less than the minima required for junctions;

(b) most drivers do not normally have to park on the Local Distributor Road (i.e. assigned and unassigned parking provision for both residents and visitors is adequate);

(c) drivers of cars and small service vehicles would not have to reverse out onto the Local Distributor Road (i.e. the design of the parallel road or shared driveway and individual driveways together allow such vehicles to turn).

3.5.5. Roads should be carefully planned to relate directly to open spaces and other community facilities.

3.5.6. The road layout should be designed to avoid breaking up areas of public open space such as playingfields or other features which need to be preserved intact.

3.5.7. Separate access from a Local Distributor Road should be provided where large service vehicles will frequently visit community facilities such as shops.

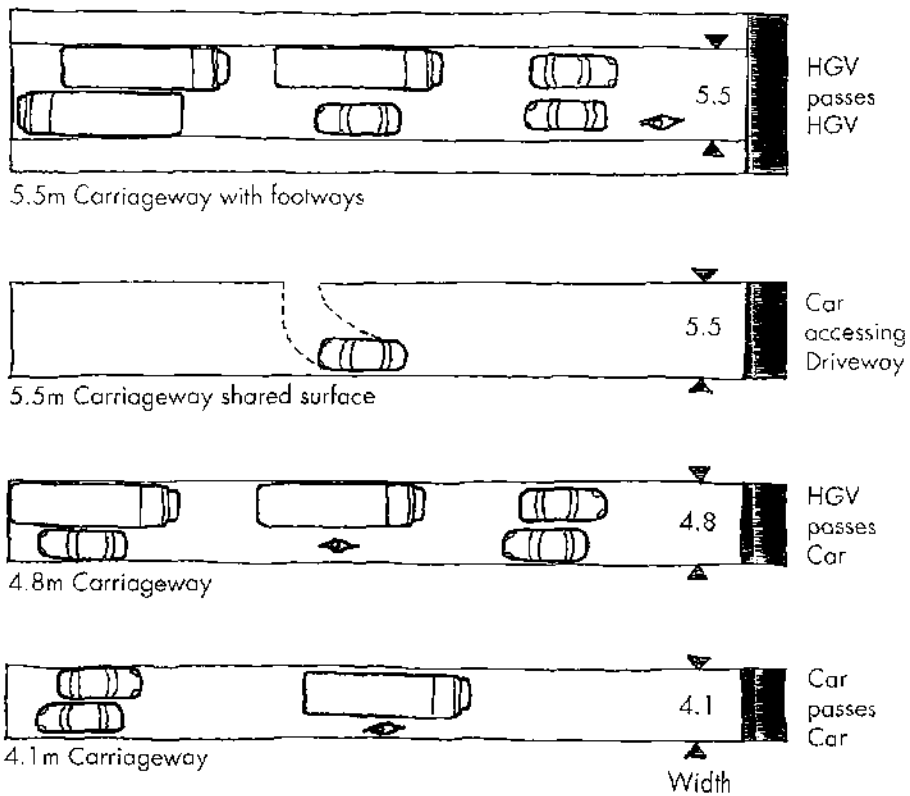


Fig. 3.15 Road Width Passing Diagram

Road Widths for Residential Roads

3.6.1. A crucial factor in determining the width of any carriageway is the provision for off- street and on-street parking. Experience suggests that, wherever roads give direct access to dwellings, the carriageways are invariably used for parking by casual callers and service vehicles. Thus, in those locations and in any other places where parking by service vehicles will normally occur on the carriageway, a minimum carriageway width of 5.5 metres should be provided to allow one service vehicle to pass another which is parked.

3.6.2. Where no direct access is given to dwellings, the following widths could apply.

Between 50 and 300 dwellings - 5.5 metres
Between 25 and 50 dwellings - 4.8 metres
Up to 25 dwellings - 4.1 metres

The diagram (Figure 3.15) opposite shows vehicles that can pass one another within those width bounds.

Buses

3.7.1. In the planning of new residential areas, early consideration should be given to road layouts which will permit adequate penetration by bus services to meet the needs of potential users whilst satisfying environmental considerations. The recent move towards more frequent services using smaller buses means it should be possible for such services to go further into developments. Local planning authorities should consult public transport organisations when considering the layouts of residential developments of more than 50 dwellings.

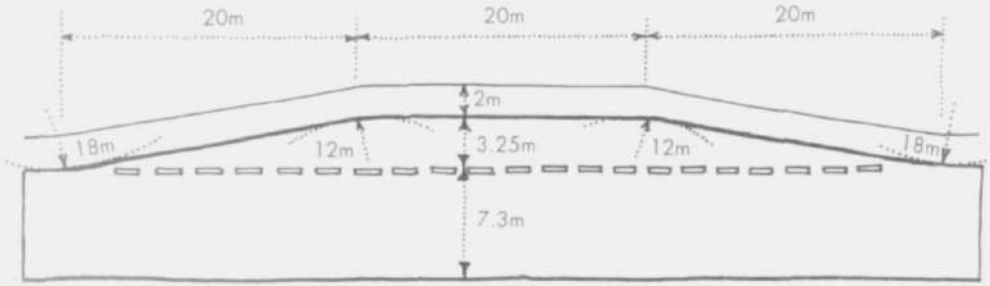


Fig. 3.16 Bus Layby

3.7.2. Roads likely to be used by buses should be identified at the outset in consultation with the highway authority and public transport operators. Special consideration should be given to the location of bus stops and any provision that may be required for buses to turn or wait.

3.7.3. Only very large developments are likely to lead to the viable operation of a 'specific service'. Most new bus services are developments of an existing one. The majority of bus services are commercial operations and the decision on routing them lies with their operator.

3.7.4. Where new estates are reasonably close to a main bus route, the estate road design should permit a circulatory route with a safe entry and exit.

3.7.5. Where this layout is possible, unsatisfactory manoeuvres are avoided and the siting of adequate bus stops becomes the only consideration. The aim should be to site these along both Major Access and Local Distributor Roads so that, taking advantage of planned pedestrian routes, a stop becomes available within 400 metres of all houses. Where a circulatory route cannot be provided, bus turning facilities are essential.

3.7.6. Where laybys are required, hardstandings for pedestrians must be provided (Fig.3.16) and footpaths must link to housing areas. It is appropriate to site shelters, telephone call boxes, post boxes and information boards at these locations but hardstandings must be well lit and provided in the immediate vicinity to prevent those areas becoming muddy and wet in winter.

3.7.7. The provision of road links which can only be used by buses may need to be considered when the road layout has been designed to make it impossible for vehicles to take short cuts across a large development area.

3.7.8. The incorporation of selective traffic management measures to facilitate the provision of through bus services whilst discouraging such movements by private cars (where this is considered inappropriate) should be given careful consideration in planning road layouts.

3.7.9. In large developments the road should be made available to bus services at an early stage for the benefit of residents.

Cycleways and Pedestrian Routes

3.8.1. Design measures to restrain vehicle speeds and minimise vehicle flows will normally create sufficiently safe conditions for the movement of pedestrians and cyclists along residential roads. Footpath links for pedestrians and cyclists will only be required to create significantly shorter routes than those provided by the roads or to complement segregated provision in the area.

3.8.2. In larger schemes, however, joint pedestrian and cycle routes should link housing areas with community facilities, schools, shopping and places of employment. The footpath layout must meet the needs of elderly people.

3.8.3. The routes need to be carefully positioned and well designed in order that their use be maximised. It is particularly important that footpaths should follow the most direct route from point to point and have practical gradients; they should not be so segregated from passing traffic or dwellings as to encourage crime.

3.8.4. Footpaths should normally be provided as short links overlooked from dwellings. Whenever practicable, this should be achieved by designing the road layout so that turning spaces at the ends of culs-de-sac abut either each other or adjacent roads in order to provide continuous routes for pedestrians and cyclists and to serve dwelling entrances.

3.8.5. When the provision of a footpath or footway is required it will be necessary to ensure that it is sufficiently wide and well aligned to :-

(a) avoid the need for pedestrians when passing each other to step out into busy carriageways or to cause damage to planted areas;

(b) allow for ramped crossings to garage drives or parking spaces;

(c) allow, when necessary, for occasional access along footpaths by emergency vehicles;

(d) provide for statutory and other services underground.

3.8.6. Major routes will link housing areas with schools, shopping centres and employment areas. The minimum width shall be :-

(a) cycleway - 2 metres;

(b) footway - 1.8 metres.

A greater width may be required where the facility abuts walls or visibility is below the required standard.

3.8.7. Minor routes will provide access from groups of dwellings to the major routes or to link adjoining culs- de-sac and give access to bus laybys. In these cases a minimum width of 3.0 metres will be required for a combined cycleway and footpath, providing the facility abuts a level open area and visibility is to the required standard.

Fig. 3.17.

Visibility Splay Requirements

	Pedestrian Route	Cycleway
Pedestrian Route	NIL	2.0 x 2.0
Cycleway	2.0 x 2.0	2.0 x 15.0 (min)
Vehicular Carriageway	2.0 x 2.0*	2.0 x 30.0 (min)**

* Barriers may be required. The need for disabled persons to negotiate the barriers shall be taken into account in the design.

** If the road is a Local Distributor or a Major Access Road and the traffic flows are high, the provision of a subway, bridge or signed or signalled crossing will be required.

3.8.8. In cases where the cycleway and footpath adjoin, the uses should be segregated by a difference in level or by a difference in surface colour. Segregation of use by a difference in level is not recommended when the width of the combined facilities is less than 3 metres.

3.8.9. The forward visibility distance for both routes is 15 metres, measured along the centre line. This distance should be increased by 2 metres for each 1% of down gradient. If it is not possible to provide the recommended visibility distances physical constraints and markings should be used to avoid possible conflicts.

3.8.10. At all junctions of Pedestrian Routes and cycleways, visibility splays (as shown on the Figure 3.17) and dropped kerbs will be required. It should be noted that the maximum gradient of footpath is 1 in 8. For gradients in excess of 1:12 a handrail may be required. The maximum gradient is generally 1 in 20.

Providing for people with disabilities

3.9.1. Access to any development should be available to all sections of the community. Provision for motor vehicles should not, therefore, be to the detriment of the access requirements of pedestrians, including those with other disabilities.

3.9.2. It is a statutory requirement to have regard to the needs of people with disabilities in designing any building to which the public have access. This will include the provision of suitable access routes for wheelchairs and the marking out of parking spaces close to pedestrian entrances.

3.9.3. Provision should be made at all road junctions for pedestrians to cross the minor road with a minimum of inconvenience. Kerbs should, therefore, be dropped flush with the carriageway and tactile paving provided at all junctions. This does not apply where pedestrians are directed to a footbridge or underpass provided that it is suitable for persons with disabilities.

3.9.4. Suitable routes should be provided for pedestrians with prams or wheelchairs, from residential areas to shops, schools, clinics and community services. These routes should have a firm, non-slip surface and avoid steps even if this means slightly longer ramped routes. Steep crossfalls, gratings likely to trap wheels and obstructions such as lighting columns and sign posts should also be avoided. Long ramps should include rest platforms and there should also be level areas at the top, bottom and at every turn.

3.9.5. Particular attention should be paid to the locations at which pedestrian routes cross the carriageway (e.g. at road junctions) so that footway and footpath users are not exposed to unexpected dangers. Judicious use of hard and soft landscaping can guide pedestrians to suitable crossing points and help prevent children running directly out onto the road. Special consideration should be given to the need for crossing facilities adjacent to shops, clinics, community facilities, old people's homes and other generators of pedestrian traffic.

3.9.6. Steps pose particular problems for prams and wheelchairs, and also for mechanised maintenance. However, since some people find walking on steeply sloping surfaces difficult or impossible, steps should be provided where appropriate in addition to ramps. Flights should comprise between three and twelve steps and longer flights should be split into sections by landings. Steps should be provided with handrails, have permanently non- slip treads, and have a minimum width of 1200mm clear between handrails.

3.9.7. Handrails should be easily gripped, and must be securely fixed. They should be provided at both sides of the steps (or centrally on steps a minimum of 3m wide) so they can be used by either hand, and should extend well beyond the top and bottom nosings.

3.9.8. Stepped ramps are unmanageable for wheelchair users and can cause acute difficulties for people with disabilities. They should never provide the sole means of pedestrian access unless no alternative exists, and hence will not normally be eligible for adoption.

3.9.9. Shared Surface Roads will not be permissible for access to sheltered accommodation where the elderly, blind or infirm would be regular users. Provision should continue to be made for prams and wheelchairs.

3.9.10 The location of car parking areas in a development should be considered at an early stage in the design process to achieve a balanced distribution of spaces throughout the site, conveniently related to user destinations. Pedestrian access to premises should be so arranged that it is easier and more convenient to use the designated parking areas than to park casually on the road.

3.9.11 The minimum size for car parking bays for people with disabilities shall be 4800 x 3300mm. Longer bays may be required in certain situations.

3 Shape of Development - Design Principles

Landscape or Building dominated

INFORMAL

FORMAL

LINEAR

ENCLOSED

Fig. 3.10.2 Patterns of Settlement.

Appearance and Relationship to Surroundings

3.10.1 The importance of Development Briefs has been stressed in Chapter 1. Local Planning Authorities will normally produce site specific development briefs for major housing allocations in Local Plans which will set out a framework for the development.

Character

3.10.2 Most new development will be an extension of an existing settlement and it is the character of existing buildings, roads, open spaces and landscaping which should provide the starting point for the design of a new development. A number of questions dealing with shape need to be addressed, for example -

- Is the existing settlement landscape or building dominated?
- What is the scale of the existing settlement?
- Is the settlement pattern formal or informal, linear or enclosed?
- Is the topography of the site a significant influence?
- Are there important views or features which can benefit the new development or its surroundings?

3.10.3 Answers to such questions will often establish a set of principles from which sympathetic new design can spring. The aim is to add to, rather than detract from, the total character of a place. Whether such development is to blend with the existing or contrast with it, neither will be successful unless they are based upon an appreciation of what already exists.

3.11.1 Large scale emphasises differences between old and new

3.11.2 Low density, but over developed by large dwellings.

3.11.2 Too many small dwellings can lead to parking dominance

Scale & Density

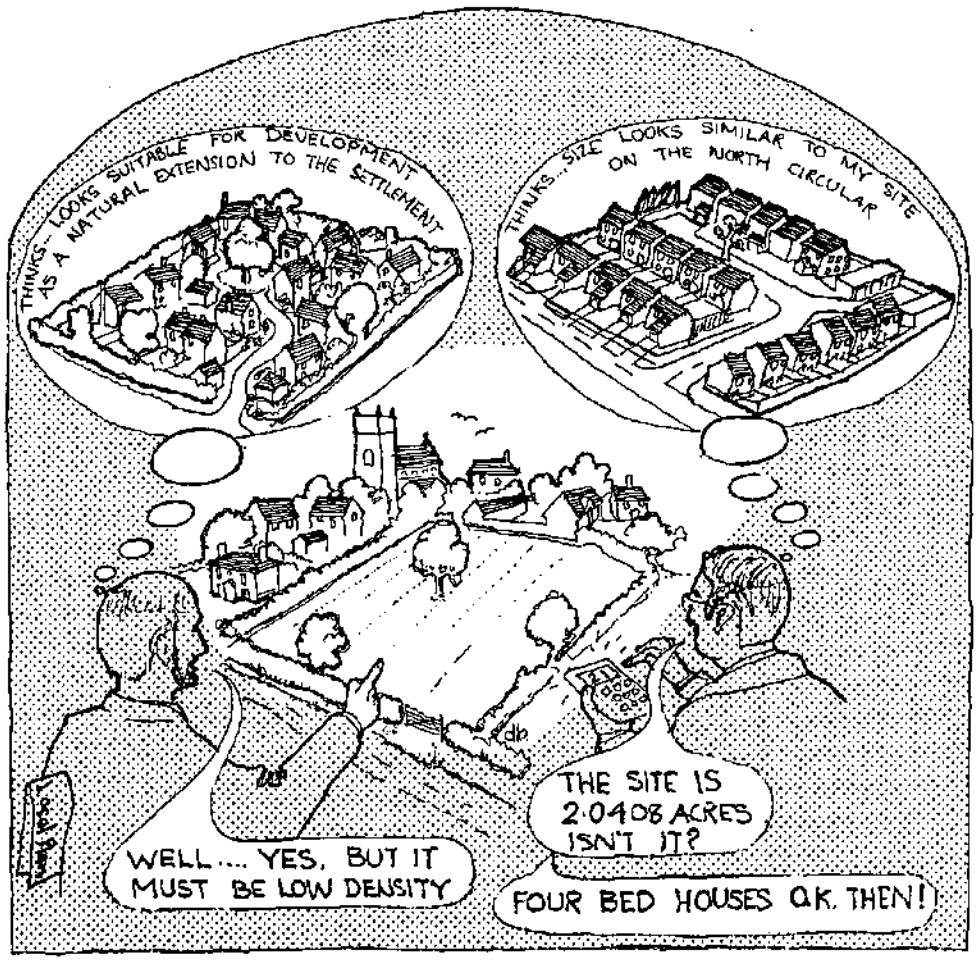
3.11.1 All too often new development does not relate well to its landscape setting. Most problems occur where large estates are placed on green-field sites next to existing small scale settlements. Examples maintaining good relationships can be found in urban locations and small infill sites where the scale and design of development is more readily influenced by immediate surroundings. It is the failure to respect an existing scale within new large estates which emphasises the differences between old and new.

3.11.2 The size of building, the extent of car parking and highways, and the quality of space between buildings all interact to affect the appearance of development. A simple calculation of so many dwellings per hectare is inadequate to guide this design process. For example:

> Low density development can become over-developed and dominated by buildings due to the excessive use of large scale dwellings.

> Conversely, where higher density developments are appropriate, too many small dwellings can lead to an environment dominated by car parking.

In both cases the space about buildings is reduced in importance and unable to contribute to a distinctive and pleasing townscape or landscape character.



3.12.1 Interpretations

3.11.3 To determine the numbers of dwellings for a site the following main principles must be considered together:

ENVIRONMENT:
Dwellings should be comfortably accommodated to create good townscape and significant landscape appropriate to their scale and setting.

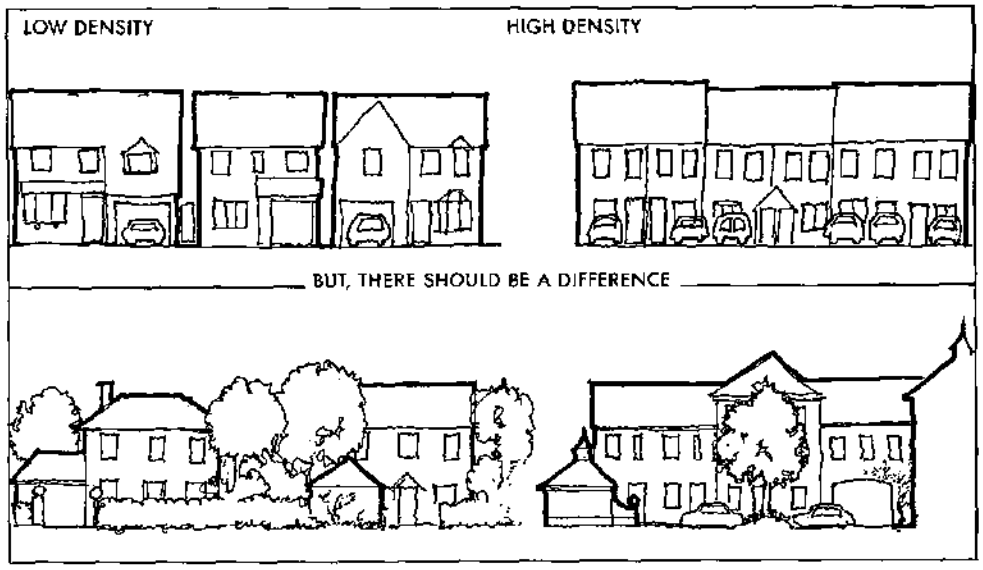
HIGHWAYS AND PARKING:
Car parking and highway requirements are directly governed by the extent of development being served. This must no longer be of incidental consideration as it has fundamental effects upon the quality of places.

SPACE ABOUT BUILDINGS:
This must not be treated as a residual element after other requirements have been apportioned to buildings and cars. Space gives a positive and unique dimension to what may otherwise be little more than a collection of buildings and roads.

These three main principles will now be amplified.

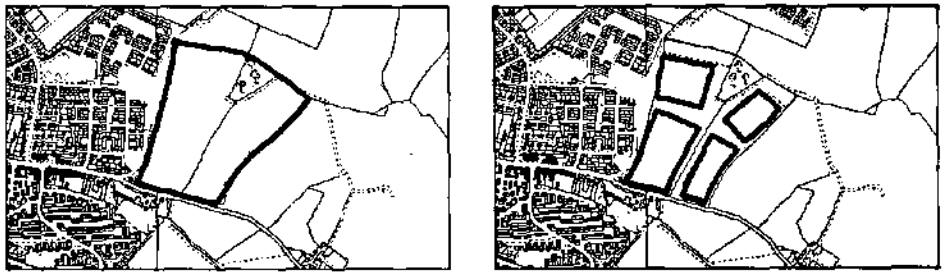
Environment

3.12.1 Sites are often considered favourable for development because they offer a close relationship with an adjacent settlement and have been allocated on the basis of a pre-determined density. It is important therefore, that development should have regard to the setting, its relative scale and how density should be interpreted.



3.12.2 Building Volume

3.12.3 Relative Scale -impact of development of a given size



3.12.3 Large development benefiting by breaking down scale.

Building Volume

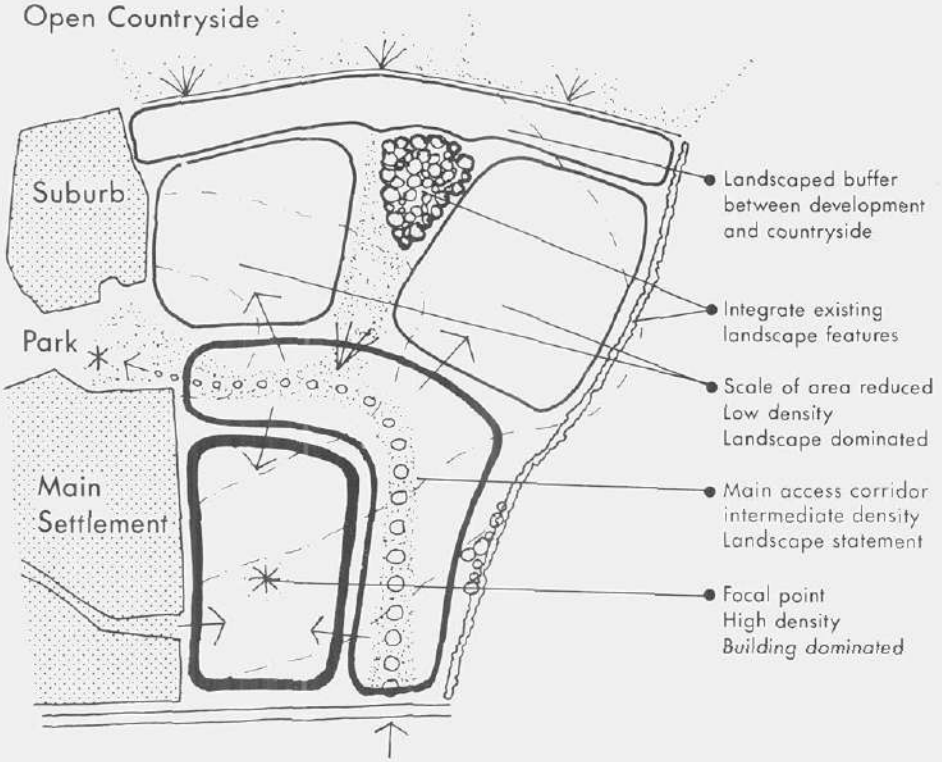
3.12.2 Density is as much to do with the scale and volume of the building as it is with the numbers of dwellings. Higher density does not mean more of the same nor does it presume an increase in the building content of a site, but possibly a diverse range of smaller accommodation which remains at the right scale for the area. Conversely, where low density is appropriate, this does not imply a dominance of large scale houses. Building volume is an important factor in determining whether a development is to become building or landscape dominated.

Relative Scale

3.12.3 It is important to consider the scale of the site relative to its surroundings. For example, a development of a given size will have a greater impact on a small village than on a large town. In a small scale development a single identity may be appropriate, whereas a large development may benefit from being broken down into smaller areas each with its own identity.

Shape

3.12.4 It is often appropriate for a development to adopt distinctive characteristics of an existing settlement pattern. This is especially true for small sites closely associated with existing town or village centres.



3.12.5 Shape

3.12.6 Positive elements of buildings and space

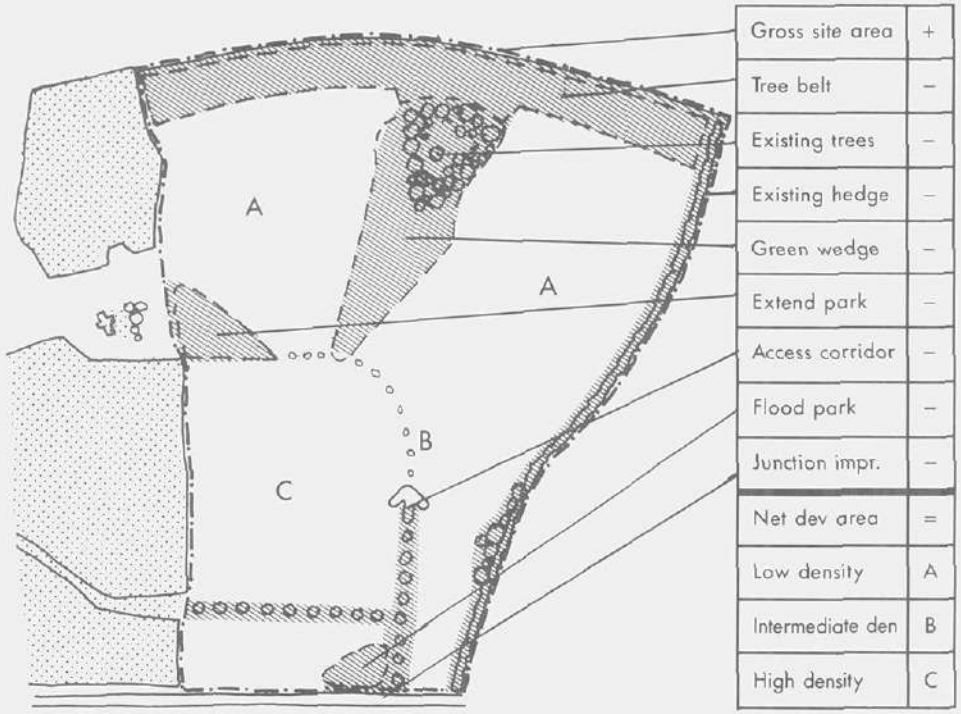
3.12.5 Larger scale developments should not be universally low density or high density but should be broken down in scale and given 'shape'. This could be achieved by balancing distinctively low density areas, perhaps on landscape dominated outskirts, with a high density centre giving focus to the development. High density estate development is rarely applicable in Suffolk.

Site Elements

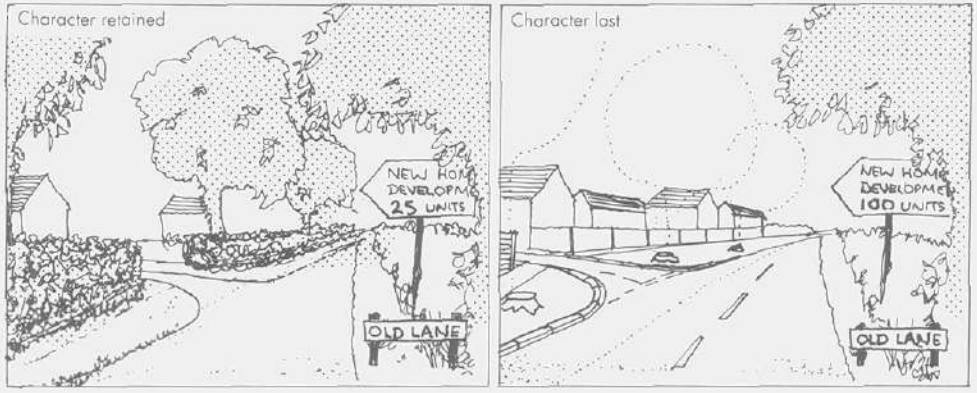
3.12.6 It is a misguided assumption that every square foot of a proposed site area is capable of supporting development at a given density. What is needed is a positive approach, where the various elements for a site development are identified at the outset. For example:

Where a large site needs to be serviced by a Local Distributor Road or other works, it should be recognised that the land taken up for these purposes cannot physically support housing nor contribute directly to a good residential environment. The space under existing tree canopies and boundary hedges cannot support development.

It may be necessary to break the mass and scale of development by incorporating spaces between areas or groups of houses with parks or green wedges. There may be specific requirements to screen the edge of a development by planting a tree belt or to soften a skyline or emphasise footpath routes. Unless space is allocated for these purposes before the number of dwellings is determined, such provisions can only be achieved at the expense of compressing numbers of dwellings into ever smaller remaining areas of site.



3.12.7 Site Elements



3.13.2 Problem of too much development, rather than road design.

3.12.7 Before the development potential of any site can be considered it will be necessary to identify the major parameters affecting that site both in support of development itself and its relationship with its surroundings. Residential densities must apply only to areas suited for actual housing development and not to gross site area.

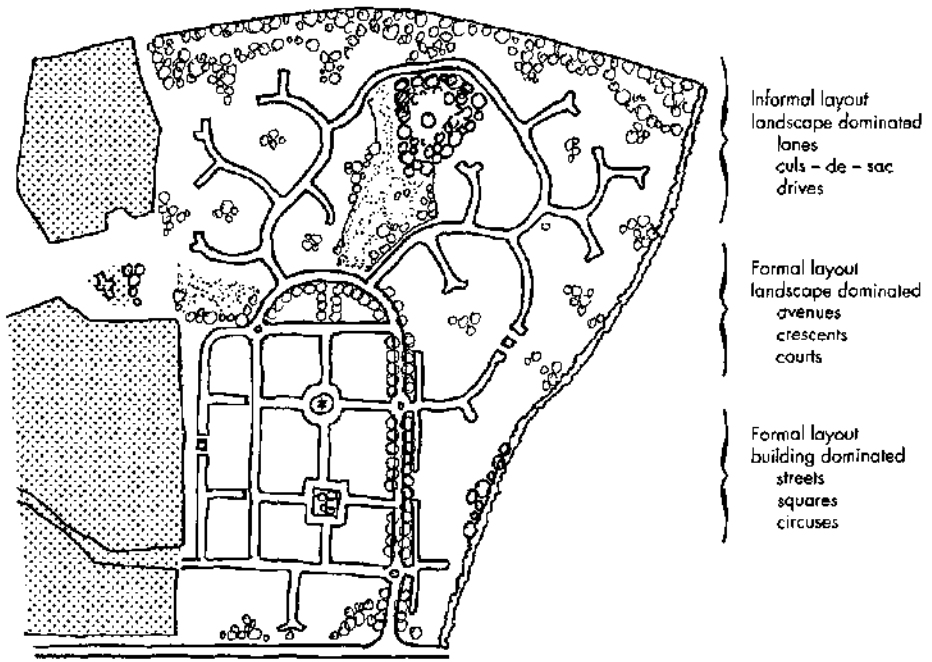
Highways and Parking

3.13.1 Scale and density of development is greatly influenced by highway and parking considerations. Roads are visually prominent because they form the pathways from where we approach and view development. Roads do not merely carry traffic; their design dictates townscape and forms places. Equally, the space required to accommodate roads and parking makes them a significant component in the density of development a site can support. DB32 offers opportunities to reduce the scale and impact of roads by applying standards which are both responsive and appropriate to different types and levels of development.

Development loading

3.13.2 To achieve the benefits afforded by this approach the number of houses within any development may be restricted to encourage the use of roads of a lower order more appropriate to its setting. For example:

> If a site is approached from a small lane or street then the scale of any new road, and hence scale of development should reflect this. At a much larger scale, sites for development should be broken down into smaller residential neighbourhoods to minimise the use of Local Distributor Roads.



3.13.4 Patterns and themes

Pattern

3.13.3 Road layout is an intrinsic part of any settlement pattern and often it is the way in which roads inter-relate or shape space that reinforces a townscape identity. Consideration should be given therefore to creating road patterns more in keeping with traditional forms of settlement found in Suffolk.

3.13.4 Recently, highway design has been based upon a hierarchical approach which encouraged a 'tree-like' structure for road layouts with development patterns fanning out in loose and random ways ending in culs-de-sac. This form of development can be appropriate on a small scale but becomes amorphous when used en- masse. Introducing road patterns which are joined in a network helps to give shape and variety to large developments. For example:

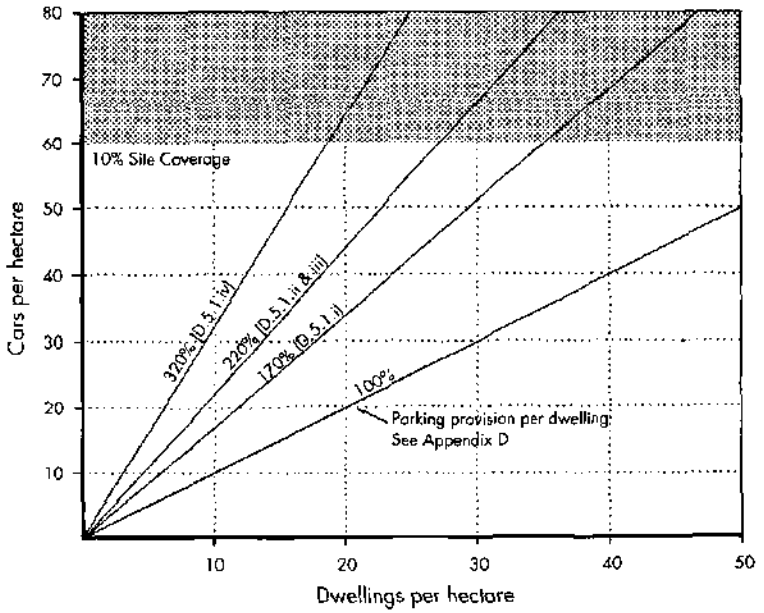
The edges of a large development could be made softer and more secluded using a cul-de-sac approach whereas more central areas could focus on traditional, formal and permeable patterns of layout which provide a stronger and more embracing identity.

Spatial hierarchy

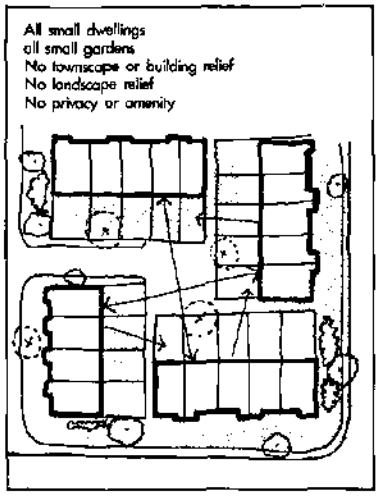
3.13.5 The scale and density of each part of a new development should reflect the type of road to which it relates. For example:

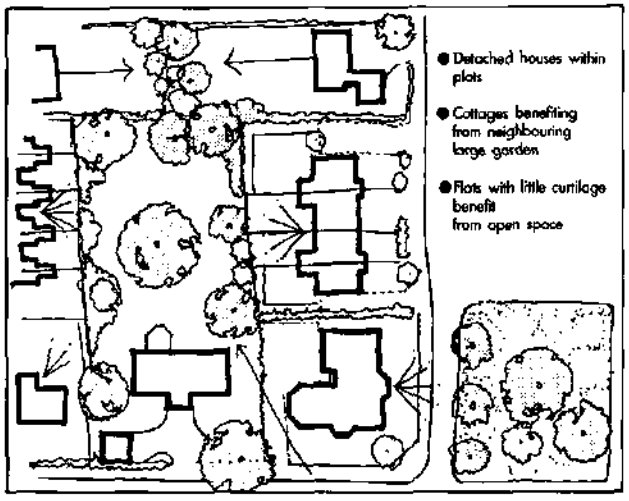
Higher order residential roads should have dwellings set well back from the carriageway, and possibly at a lower density. Greater spaciousness would relate the size of road to a more impressive scale of surroundings and provide more space for landscaping. Lower order roads will provide the opportunity to create a more closely integrated arrangement of buildings and spaces.

3.13.5 Spatial Hierarchy



3.13.6 Car Parking Density





3.14.2 Plot size

Parking

3.13.6 The intensity of car parking is a significant factor contributing to the over-development of sites. The space required to manoeuvre and park a car cannot be physically reduced and as car ownership per household rises, any increase in housing density will have a disproportionate effect on the space required for parking. A balanced mix of house types should normally result in car parking densities of between 60-70 spaces per hectare. Exceptions to this might include urban style developments where more dominant architecture and high quality streetscape and surface treatments can offset the impact of parked cars.

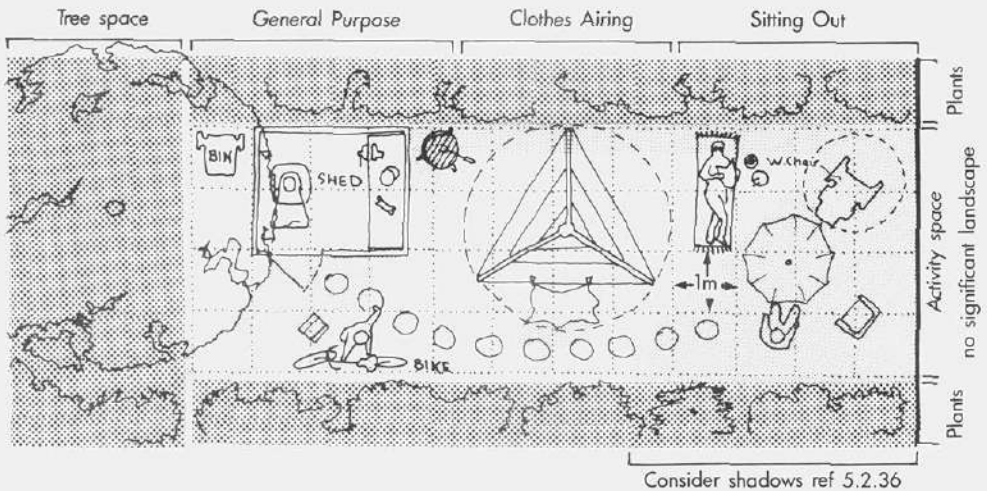
Space about Buildings

3.14.1 The desire to maximise the level of saleable building accommodation has frequently led to minimal space between buildings - even for conventional family housing at lower densities. The welcome move towards a greater housing mix has tended to raise densities rather than to show any improvements in space standards. These were frequently set for privacy distances or garden size but when applied rigidly tended to reinforce uniformity.

3.14.2 Developing accommodation for smaller households results in smaller gardens but the space needed for a tree, for privacy or for daylight remains constant. A layout consisting entirely of small gardens reduces space about buildings which still retain conventional height and massing. A more diverse range of garden size is required, where larger gardens can accommodate screen and relief planting.

3.14.3 In traditional patterns of development, cottages with little or no gardens were frequently able to benefit from more spacious neighbouring properties or an open space. This emphasises the need to provide an appropriate mix of large and small dwellings on a site to achieve a balance of building scale and plot sizes.

3.14.6 Small Gardens - no room for landscape



3.14.8 Useful Garden Space

3.14.4 In the absence of a balanced approach, those developers wishing to provide for large houses must accept much lower densities to achieve a sense of spaciousness. Equally, proposals for predominantly small dwellings will need to incorporate an element of compensatory open space, such as a square, green or park.

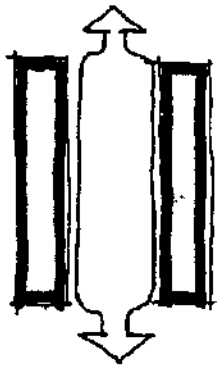
3.14.5 Unlike highways and car parks which form a continuous and significant spatial element, open space within housing areas is fragmented by numerous plot divisions. Areas of land forming private gardens are normally dispersed throughout a layout and do not appear as a visually significant space.

3.14.6 Substantial planting has only occurred on conventional developments where density is below 25 dwellings per hectare and where the proportion of open ground exceeds 50%. Often gardens will represent the only space available for storage and to accommodate wheeled bins. Other requirements will include working space for hobbies or clothes drying and for sitting out.

3.14.7 With such limited garden provision it is most unlikely that any significant planting could be accommodated or allowed to reach maturity. Even moderately larger gardens tend to be used for play or cultivation to the exclusion of significant planting

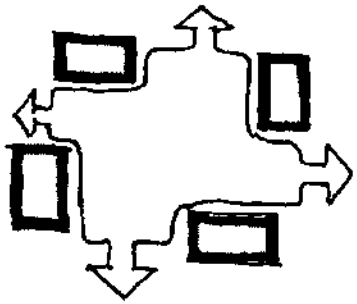
3.14.8 It is inappropriate, in this document, to prescribe rigid formulae for private space but gardens should be of a size which is practical, useful and not uniformly small to the exclusion of planting.

3.14.9 Designs that show only tree planting in garden areas will be considered unacceptable unless sufficient space is allocated for the planting without causing obvious conflict with other garden usage. Most modern housing should rely heavily upon planting to enhance its appearance. Therefore landscaped space must provide an essential element in housing layouts and density of development must be set at levels that can accommodate these needs.

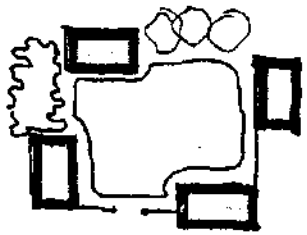


Linear Space

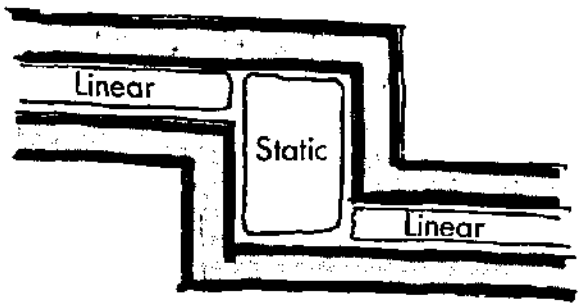
Static Space



Too loose to create an identifiable enclosure



Some space modified by use of planting and linking walls to create satisfactory enclosure



Combining linear and static spaces

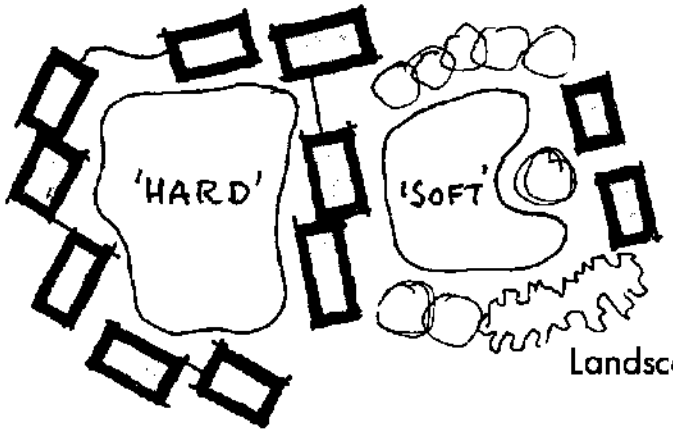
Spatial Organisation

3.15.1 The way in which buildings are grouped, and the way in which they relate one to another, is one of the most powerful influences on how we react to the built environment. Imagine walking through a house where room after room was of the same size, decorated in the same colour, and furnished in the same way; reaction to such monotony would quickly become boredom. An estate of standard houses, set to a rigid building line and having the same materials would trigger the same response.

Enclosure

3.15.2 Buildings can be arranged to create identifiable space each with its own unique character to which an observer will react in different ways. Spaces can be linear or static and can be likened to the corridors and rooms of a dwelling. They can be formal or informal in shape, building dominated or landscape dominated, large or small, and their precise character will be determined by the size and spacing of the enclosing buildings, the colours and textures of materials, the extent of planting, and the way in which the static 'rooms' are linked together by the linear 'corridors'. It is this constantly changing pattern of small and large spaces, enclosure and openness, surprise and uncertainty which makes a walk around an historic town such an exhilarating experience.

3.15.3 There are no hard and fast rules governing the proportion of width of space to height of enclosing structures, but, as a general principle, satisfactory enclosure will be achieved where the width/height ratio of linear spaces does not exceed 2.5 to 1 and for static spaces does not exceed 4 to 1.



Landscape dominated

Building dominated

3.15.5

3.15.4 Applying these basic principles is the beginning of an appreciation of urban design and, with little additional effort, can be combined with other factors to create spaces of true quality. For example:

- a particularly fine tree could become the centrepiece of a static space

- a well designed property or a particularly striking feature can become the focal point at the end of a linear space

- an archway at the entrance to a linear space can create immediate interest as it poses the question, 'I wonder what is beyond the arch'?

3.15.5 Homes can be modified and personalised by their owners, but an unimaginative and boring layout cannot be so easily altered. Developers will therefore be required to produce layouts which clearly employ either the principles of buildings set within a dominant landscape indigenous to Suffolk or buildings arranged to satisfactorily enclose spaces of individual and distinctive identity.

3.15.7 "... good design will relate to local historic character...

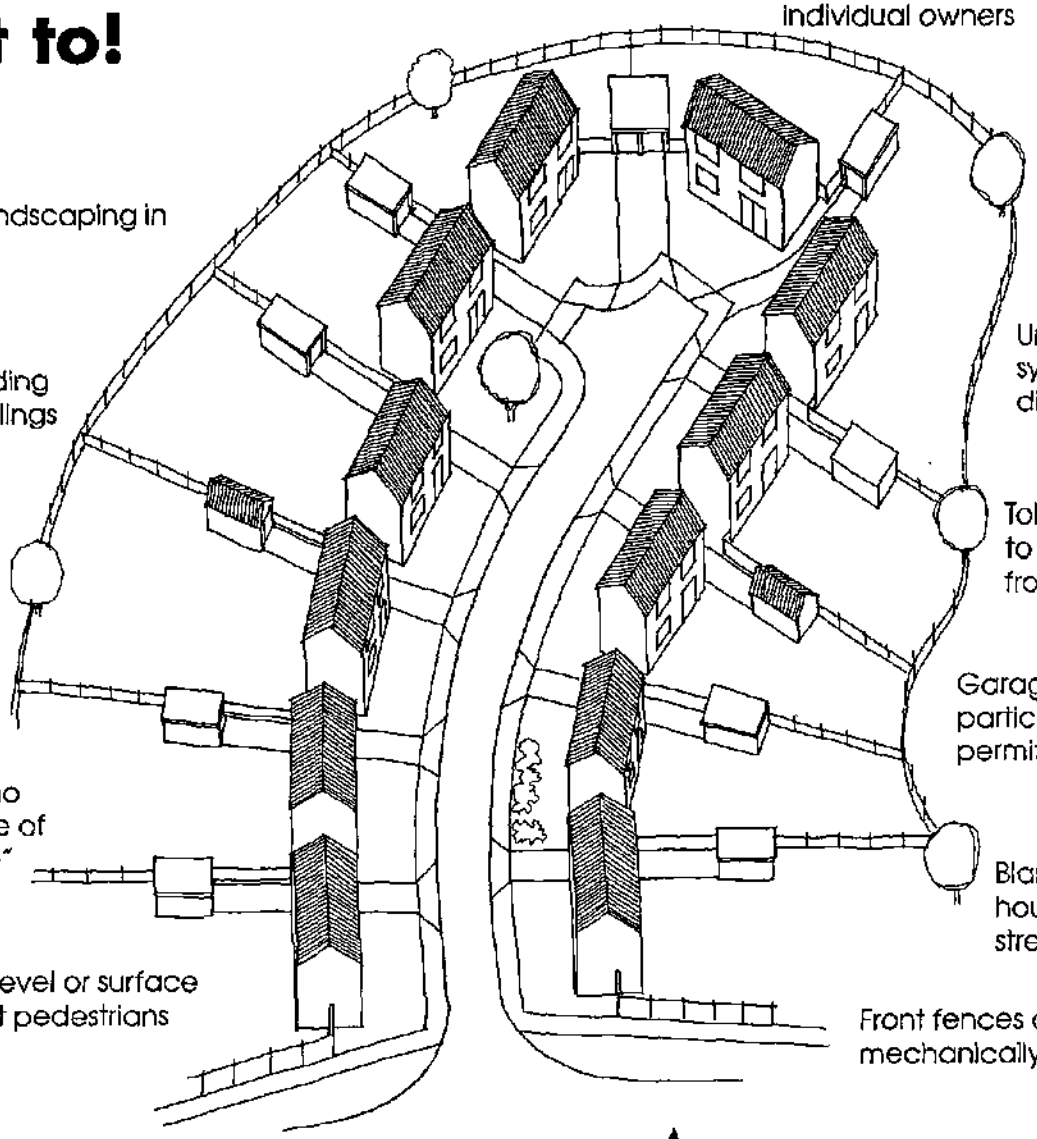
Scale

3.15.6 The character of individual spaces will be largely determined by the scale and style of enclosing buildings, by the surface treatments and landscaping, and by the way in which the spaces connect one to another. The scale of individual buildings may be dictated by the need to relate to adjacent existing buildings but in any event, the overall scale should be appropriate to the part of Suffolk which the development occupies. It would not, for example, be appropriate to tack onto a village of small cottages or terraces a new estate of large detached dwellings. In a well landscaped and spacious 'parkland' setting however, such properties could be wholly appropriate.

Sense of Place

3.15.7 Good design in Suffolk will relate to local and historic character. The people of a place will have to live with any new development there and it is right that they should have a role in decisions about its appearance. All too often new roads are simply lined with standard detached or semi-detached units, a few trees planted, and future occupants are left with the awesome, if not impossible, task of trying to transform another chunk of anywhere into somewhere.

SPATIAL ORGANISATION – how not to!



Open plan front gardens frequently result in the unco-ordinated provision of sundry walls & fences by individual owners

No thought given to visual linkage of dwellings or enclosure of space

Little space for landscaping in front gardens

Unnecessarily dominant road/footpath system which allows the vehicle to dictate the layout

Buildings set to a rigid building line. Space between dwellings dictated by driveways

Token landscaping – no thought given to appearance of the development from the 'outside'

Standard "go anywhere" house types regardless of location

Garages frequently of poor design, particularly if erected by owners as permitted development

'Tunnel' effect layout – no variety of width, no sense of place – "it's all the same"

Blank gable ends to suit standard house types – no regard to effect on streetscene

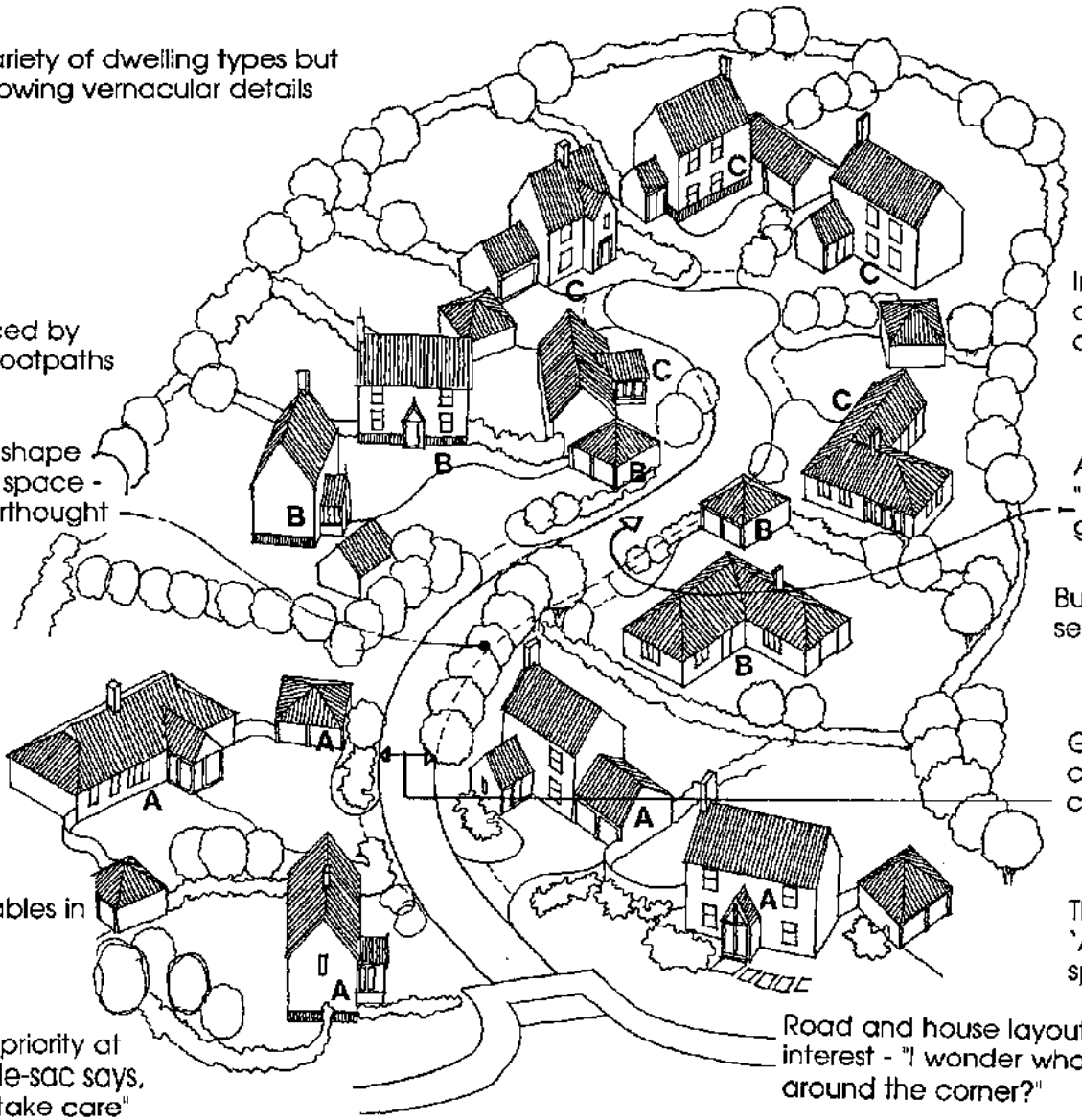
No change of level or surface to indicate that pedestrians have priority

Front fences and paths set mechanically to visibly splay

No interest – one glance reveals all

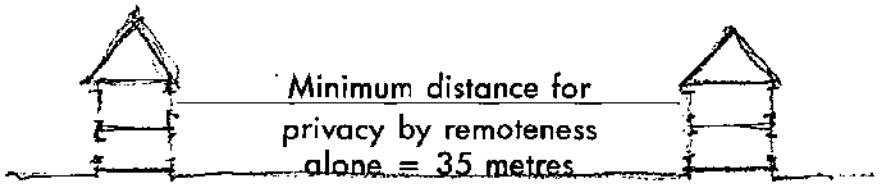
Why design a road like this .....?

SUFFOLK DESIGN GUIDE



.....when it could be like this?

SPATIAL ORGANISATION



3.15.8 Privacy.

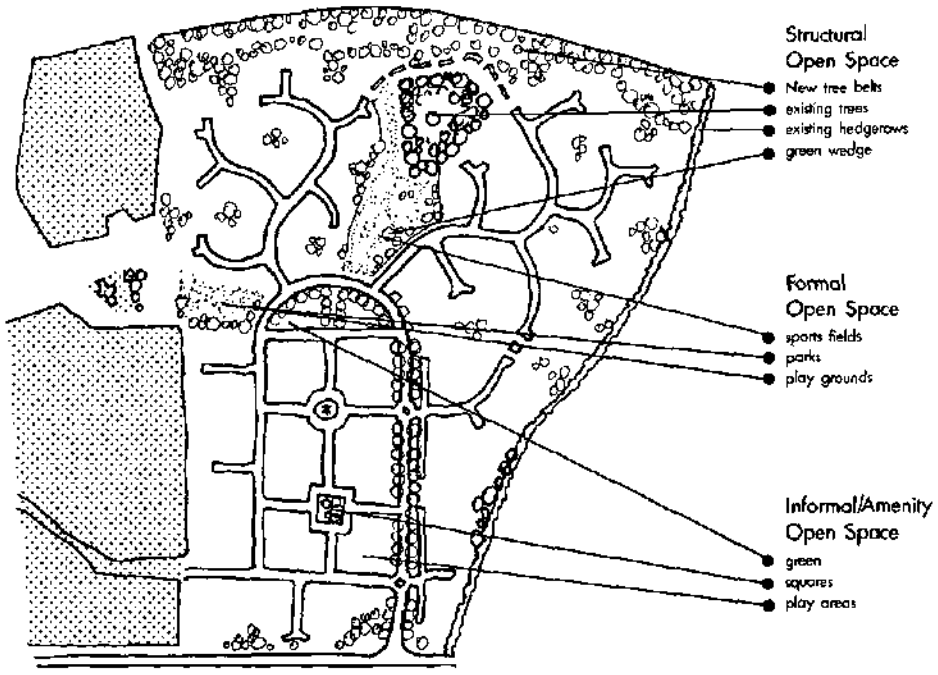
Privacy and Overshadowing

3.15.8 Care will be needed to secure a good degree of personal privacy in residential housing layout. It is essential to prevent the overlooking of areas of private garden, which is often at the rear of a property. Occupants of dwellings will suffer progressive loss of privacy where first floor windows overlook them at distances of less than 36 metres. It would be impractical to apply universal standards but this optimum distance for unobstructed views will be used as a benchmark for layout design.

3.15.9 Alternatively, upper floor windows of conventional cill height should be carefully located to avoid direct views into neighbouring private gardens unless the view from them is very oblique, or well screened by trees or buildings.

3.15.10 The views into living rooms from the public side of buildings also require protection. Reasonable internal privacy for living rooms can be achieved by screening large front facing windows, restricting unscreened windows to a narrow width, and avoiding unscreened front facing windows to through living rooms.

3.15.11 A reasonable size of private garden space should always be provided, and a major part of that space should be arranged to receive sunlight, particularly during the months of British Summer Time.



3.16.2 Public Open Space

Public Open Space

3.16.1 Government advice stresses the role of Local Plans in identifying suitable sites for open space and ensuring that such provision is properly co-ordinated with other land use policies.

3.16.2 In the context of housing estate design and layout it is possible to identify three different but equally important categories of open space:

a) Structural Open Space
b) Formal Open Space
c) Informal/Amenity Open Space

Structural Open Space

3.16.3 This will not normally form part of the open space allocated to a specific housing site, since it is intended to provide a framework for the development. Such spaces often consist of retained landscape features such as copses on the skyline, ancient woodland/hedgerows and water features, or may be formed by new planting, providing a buffer to existing development or proposed major roads. These open spaces will normally be identified when land is allocated for housing in local plans.

Formal Open Space

3.16.4 Development Briefs will normally identify requirements for formal public open space which may involve considerable areas of land, enabling residents to enjoy walking and sporting activities.

3.16.5 The National Playing Fields Association advocates a provision of six acres of open space per thousand population. The Local Planning Authority requirements for the provision of open space will vary from area to area, depending upon identified deficiencies.

3.16.6 A proportion of the open space provision may be required for children to be furnished with approved play equipment. Where such play areas are required they shall:

- comply with any minimum space and safety standards of the relevant Local Planning Authority;
- have good footpath links with the rest of the development;
- be within easy walking distance for small children;
- not be secluded but be in well overlooked positions;
- be located away from elderly persons' dwellings;
- have easy access for maintenance purposes.

Informal/Amenity Open Space

3.16.7 Apart from its recreational value open space is an essential element of townscape. As part of an integrated design it can greatly enhance the character of any housing development by the use of features such as 'village greens' formal squares, sculpture, varied hard surfaces and water. Amenity planting and opportunities for play by young children also help to enhance the character and enjoyment of a very localised housing environment.

3.16.8 Whilst it is not appropriate to set a prescriptive standard it is suggested that for housing estates with smaller than average garden sizes, 10% of the net developable area should comprise informal open space over and above space allocated for formal open space.

3.16.9 Developers are therefore advised to liaise with the local planning authority at an early stage to ascertain the requirements for the provision of open space, play space and all associated issues.

Maintenance

3.16.10 The majority of structural and formal open spaces, because of their future use by the community will be adopted as public open space by local planning authorities along with childrens' play equipment. Under these circumstances it is important to establish who will be responsible for maintenance of such areas and play equipment.

Security

3.17.1 The Town and Country Planning (Development Plans) Regulations require local planning authorities to have regard to social considerations in preparing structure plans and unitary development plans. Crime prevention must be regarded as one of these social considerations.

3.17.2 Landscaping will play an ever increasing role in making the built environment a better place in which to live. Planted areas have in the past been created with little thought to how they affect opportunities for crime. Whilst creating no particular problem in the short term, certain types and species of shrubs when mature have formed barriers where natural surveillance is compromised. This not only creates areas where intruders or assailants can lurk, but also allows attacks on vehicles to take place with little or no chance of being seen. Overgrown planting heightens the fear of crime, which often exceeds the actual risk. Planting next to footpaths should be kept low with taller varieties next to walls.

3.17.3 Where footpaths are separate from the highway they should be kept short, direct and well lit. Long dark alleyways should not be created, particularly to the rear of terraced properties. Where such footpaths are unavoidable they should not provide a through route. Changes in the use of materials can also have an influence in deterring the opportunist thief by indicating a semi- public area where residents can exercise some form of control.

3.17.5 Natural surveillance.

3.17.6 Real or symbolic barriers

3.17.4 The principal objective should be to design an area which creates a community allowing people to recognise where they live as being collectively their own neighbourhood. They should be able to readily identify those who belong to their community and have little difficulty in recognising the presence of strangers. This will enable residents to challenge criminal or anti-social behaviour.

3.17.5 Natural surveillance can be improved where some properties are occupied throughout the day. This is best achieved by using a mixture of house types which will cater for a variety of households.

3.17.6 Real or symbolic barriers such as changes of surface, or texture help to provide a sense of semi-privacy. This is particularly important at entrances to grouped parking areas to encourage self-policing.

Secured by Design

3.17.7 Careful design and layout of new development can help to make crime more difficult to commit and increases the risk of detection for potential offenders, but any such security measures must form part of a balanced design approach which addresses the visual quality of the estate as well as its security. Local Planning Authorities may therefore wish to consult their local Police Architectural Liaison Officer on new estate proposals. Developers should be aware of the benefits obtained from the 'Secured by Design' initiative, details of which can be obtained from the Police Architectural Liaison Officer.

3 Shape of Development - Landscaping

Vegetation can only thrive with adequate space

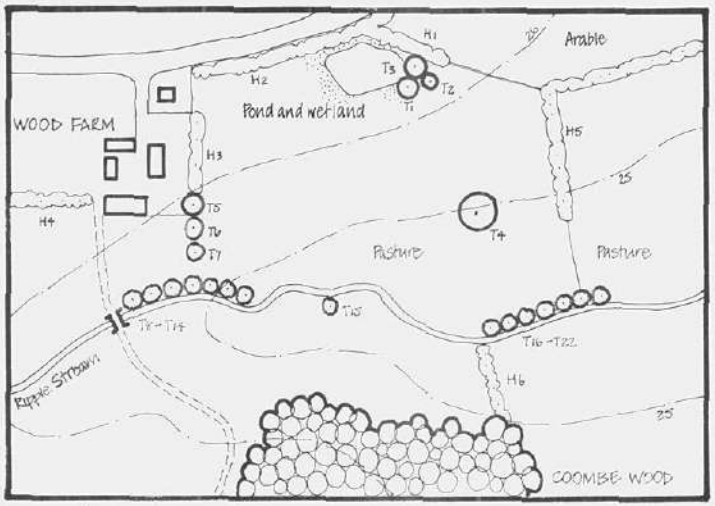
3.18.1 Landscaping is a key factor in the success of an attractive housing environment. Too often it is an element left out of the design process until other constraints make implementation of a worthwhile scheme impossible. The use of plants is only one element - albeit a vital one - of landscape design and should never be considered in isolation. A good quality landscape scheme can 'lift' designs by creating a varied, stimulating and satisfying living environment.

3.18.2 It is one of the aims of the Suffolk Design Guide to ensure that landscape considerations are discussed and agreed at the earliest possible moment in the development process. The guiding principles may then be established at the outset; adequate provision for its implementation and maintenance can be allocated; and constraints such as service routes organised to allow the landscape scheme the fullest possible scope.

3.18.3 Developers are reminded that the responsibility for creating an acceptable scheme lies with them and not the local authority. An attitude of 'you tell us what to do and we will do it' is unacceptable, as time and resources cannot be made available. The employment of professional expertise is likely to pay for itself not least in the saving of much valuable time. Where a professional landscape designer is not used attention is drawn to Appendix C.

The Design Stage

3.19.1 Mistakes made at the design stage frequently create long-term problems and have both environmental and financial implications. The effects are likely to increase as time passes, becoming more costly and difficult to rectify.



The initial survey will detail all the existing features on site

3.19.2 Landscape schemes must include details of, or changes to, site topography, existing features with details of how these are to be used or reasons for removal, and a comprehensive soil survey. These details are essential to any landscape scheme, dictating both the form of the design and the choice of plants.

3.19.3 The landscape design should include a brief, setting down the principles and aims of the scheme. This should encompass the entire site rather than attempt a piecemeal approach and will involve an assessment of adjacent development and landform. Where the estate boundary adjoins older development or open countryside, landscaping should seek to integrate the new works within the locale by the choice of appropriate plant material and by the creation of new landscape features, taking advantage of existing contours or features.

3.19.4 Where proposed development will dominate a landscape by virtue of its visual prominence, provision for minimising any negative effects will be required. This may involve:

- Pre-development planting. The species chosen must reflect the vegetation of the surrounding environment and the aim should be to help link the new development with its surroundings rather than to create a screen or barrier between them.

- Alterations in topography. This may be a useful means of increasing the effectiveness of planting or in producing variety of landform.

Angles formed by walls and hard surfacing can be planted.

3.19.5 Within the estate adequate space for planting must be allocated at the earliest stages in the design process. All plants require room to develop and sufficient soil to thrive, but it is clear that the importance of this has not been fully appreciated in the past. A shrub with a mature spread of 2 metres must have that space allocated at the design stage even though when planted it is only 50cms in spread and will not physically occupy the room for a number of years. Similarly, hedges need space on both sides of the main stem to develop and a forest tree will require 75 square metres or more at the time of planting, even if the new plant is scarcely larger than a pencil.

3.19.6 The result of failing to achieve this includes:

- Increased maintenance costs as inappropriate plants in restrictive sites require constant pruning.
- Damage to dwellings, services and other structures.
- Premature removal of landscape features, particularly trees before they reach maturity.

3.19.7 Soil type, aspect, prevailing wind and available space all play their parts in determining the choice of species. Planting schemes submitted without reference to this additional information will not be acceptable.

3.19.8 Angles formed by walls and hard surfacing, extended sections of fencing or wall, and areas of grass surrounded by hard surfacing can look unappealing and can create maintenance problems. However where planting is used effectively these 'dead' areas can be transformed into positive assets.

3.19.9 Formal landscape features, such as arches, seats, fences, fountains and ornamental structures can improve the appearance of an estate by creating contrasts of form and colour.

Small shrub beds tend to be visually ineffective

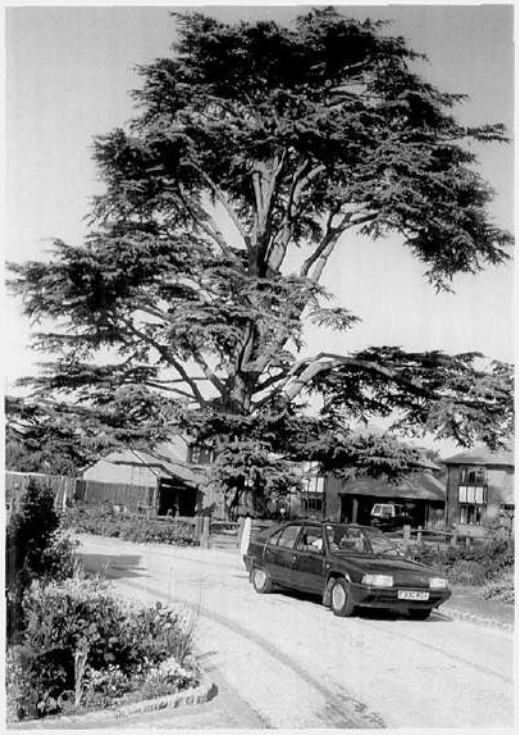
3.19.10 Block plantings containing single species tend to be more visually effective than a haphazard mixture, however planting need not always be confined to strictly defined 'beds'. Single plants or small groups may be used to clothe or soften the appearance of walls, road and path edges and street furniture, particularly where space for more extensive planting is limited. Generally, however small shrub beds tend to be visually ineffective and difficult to establish and maintain. It is preferable that such areas should contain at least 10 plants. See Appendix C for plant spacing details.

3.19.11 Ornamental planting containers, if used, must be of a substantial size to allow adequate stocking and maintenance. Containers themselves form ornamental feature and should therefore be well designed. Small tubs or boxes are often found in a deplorable state and their use will be discouraged.

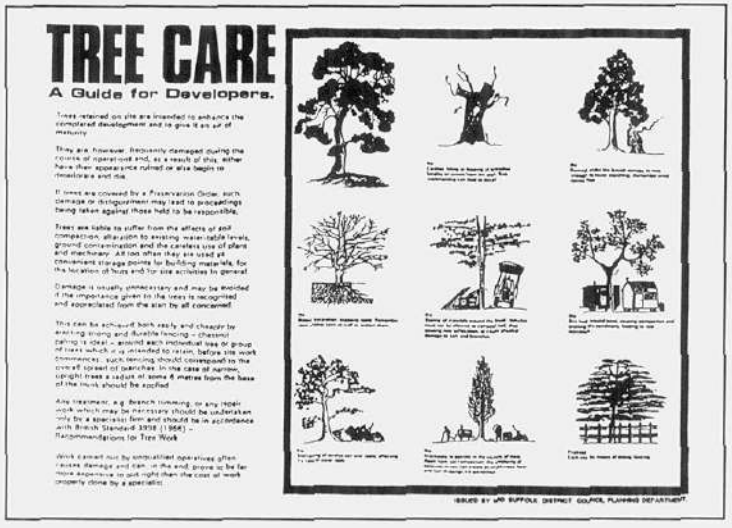
3.19.12 Breaking the tyranny of grass within the urban environment is a vital factor in its improvement. Its substitution with ground cover shrubs, trees, woods, or 'hard' landscape features will be encouraged.

3.19.13 Service routes must pay respect to the landscape scheme and the presence of existing features, otherwise the landscaping of the new estate will be compromised.

3.19.14 Security is of great concern to residents and local authorities alike. Landscape schemes should avoid creating high-risk areas of shade or screening. A sense of security may be achieved by appropriate co-ordination between the landscape design and street lighting layout, car parking zones and footpath/cycleway alignment.



Existing trees give
a new site a sense
of maturity
but require careful attention
if they are to survive



Professional advice is available from the Local Authority

Existing Features

3.20.1 Important existing features on a new development site should be retained, to give a site maturity and help link it with the past. Such features may either be organic such as trees, hedges, ponds and meadows; or they may be inorganic such as walls and buildings. In either case their effect or existence can be lost through neglect or improper management. Attention is drawn to B.S.5837;1991. 'Trees in relation to construction', which will form the basis for discussions regarding tree retention and protection on site.

3.20.2 A number of points should be borne in mind in relation to the retention of mature trees.

- Tree roots should be permitted to remain intact across service trenches. This may involve an element of more costly hand digging. Provision must be made for this at an early stage. Thrust boring may be a more satisfactory alternative.

- No activity should be permitted beneath the crown of any mature tree. This includes storage of materials, site-huts and vehicle parking as well as soil disturbance or alterations in level. The advice of the local authority Arboricultural Officer should be sought.

- Any existing feature will either become the property of one party or, where this is impractical, the planning authority may seek to retain it as adoptable open space.

3.20.3 Retained features will require attention if they are to survive development, continue to thrive and satisfy the reasons for their retention. The following information must form part of any design seeking to retain existing site features:

Development provides space for existing mature trees

- ACCURATE DIMENSIONAL IDENTIFICATION ON PLAN. All features must be accurately identified on the site plan and those to be removed must be clearly indicated. The proposed development, including dwellings, services and highways, should be shown in relation to them.
- SURVEY OF GENERAL CONDITION. As with all old and neglected structures, repair and maintenance may be necessary and provision in the form of a commuted sum may be required. The need for this should be highlighted in a comprehensive survey prepared by the developer. Where the feature is retained in public ownership (often desirable where trees and woodlands are concerned) this sum will also cater for their future maintenance. The survey should indicate age, health (if a tree), life expectancy and any necessary repair or remedial work. It should also include a full appraisal of the importance of the feature and the part it will play in the future development.
- PROVISION FOR PROTECTION DURING DEVELOPMENT. Most mature trees which fail to survive development do so because inadequate protective measures were taken during the course of building works. Fencing, at least out to the crown-edge, will be required prior to the commencement of works. Where buildings and structural items are retained, a full structural survey should be obtained with recommendations for protection. Ref BS5837:1991.
- SUFFICIENT SPACE FOR DEVELOPMENT, SAFETY AND MAINTENANCE. The layout must show that sufficient space has been provided for the growth and safety of the retained feature. In the case of a mature tree, this may involve keeping new structures outside the falling distance and orientating buildings and gardens to avoid excessive shading.

3.20.4 Existing features may also be subject to statutory protection. Developers must obtain any necessary consent before work is begun. Statutory protection may involve:

- Tree Preservation Orders: Local Authority
- Felling Licences: Forestry Commission
- Conservation Area Protection: Local Authority
- Listed Buildings: Local Authority
- Sites of Special Scientific Interest: English Nature.

3.20.5 In any event, professional assistance should be sought in retaining or removing existing features. Even where a consent has been obtained, prosecution could result or irreversible damage be caused from working without the necessary understanding and experience.

Use of planting

3.21.1 Form, colour, rate of growth, autumn and winter colouring, may all play a part in the overall design and will be assessed in considering any proposed scheme. A random selection of plant species is unlikely to produce an effective scheme.

3.21.2 Good quality plant material is vital to the establishment of any landscape scheme. Plants should be vigorous, healthy, free from defects and of good form. Ornamental shrubs should be container grown.

3.21.3 The density of planting (distance from plant to plant) will dictate the speed at which the design begins to have an impact. A well-stocked area can tolerate the loss of an occasional individual without loss of effect or possibly the need to replace. Plants spaced too far apart take considerable time to develop into a pleasing state and will require higher maintenance for a longer period than those beds which are well stocked.

...guiding pedestrians

...improving car parking areas

3.21.4 Plants may be used to perform a number of 'tasks' in design, besides creating an harmonious and pleasing environment. These include:

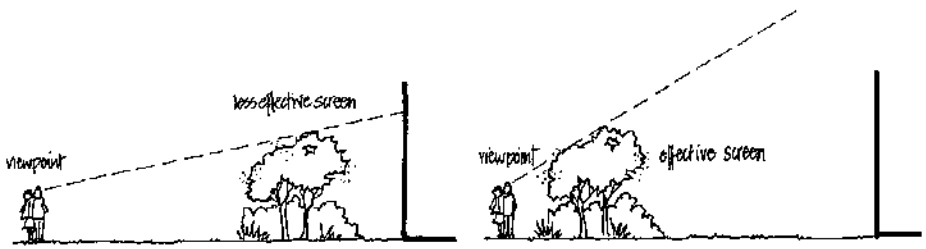
- providing privacy;
- shielding the unsightly;
- softening the visual harshness of new development;
- guiding pedestrians in desirable directions;
- preventing access;
- improving the visual appearance of car parking areas;
- keeping pedestrians away from moving vehicles.

3.21.5 A wide range of plant families within the whole scheme should be used to create a varied environment, thus minimising the risks associated with monoculture. However, plants known to cause structural damage, or which have health implications, should be avoided.

3.21.6 A variety of plant forms and species may also satisfy a number of aims. These may include:

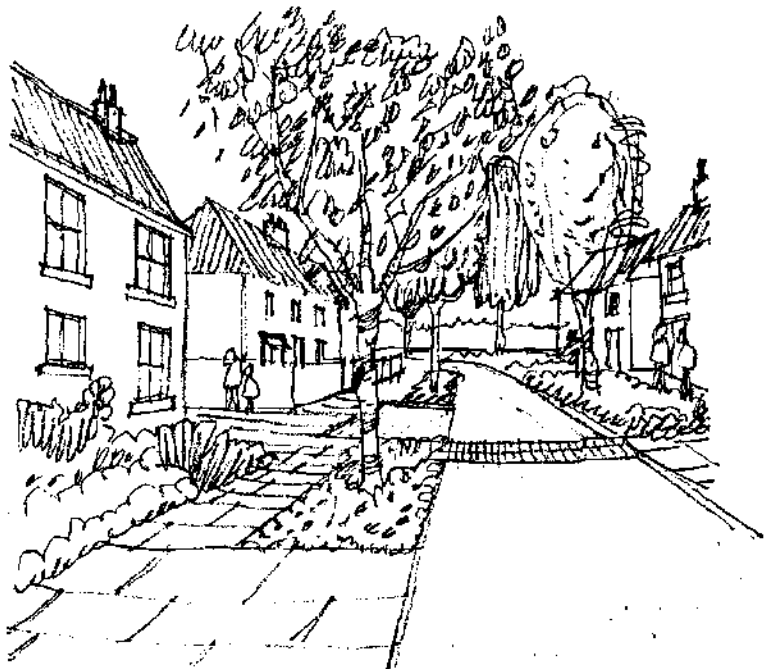
- shade for parking;
- colour, particularly in autumn and spring;
- height;
- wildlife encouragement;
- creating vistas;
- providing focal points.

3.21.7 Large trees give a sense of height and grandeur to a development as they mature and sufficient space must be provided for them to develop and thrive. It is not acceptable to populate new estates exclusively with small ornamental trees.



3.21.8 Trees planted within hard paved or impervious surfaces must be allowed adequate access to water. Herbaceous weed and grass competition for water and nutrients makes the establishment of all new planting difficult. Close mown grassland is particularly damaging where it encroaches up to the stems of trees; this combination of factors should be avoided. See Appendix C.

3.21.9 The use of bare-rooted, heavy standard trees is to be avoided unless there is a substantial maintenance commitment.



Maintenance

3.22.1 Securing and maintaining adequate management of planting is often disregarded during the planning process. This leads to confusion over responsibility, scope of work, timing and access. It is probably the single most common cause of the failure of otherwise admirable designs. The maintenance of retained features and landscaping should be itemised and its responsibility clearly identified and agreed prior to implementation. An agreed commuted sum for maintenance will be required on all adopted open space. Attention is drawn to the items listed in the Appendix C.

4 Materials

Contents Page

4 Materials - Dwellings

Typical timber-framed farmhouse

Suffolk Traditions

4.0.1 The underlying geology of Suffolk is chalk, exposed to the surface at the north western extremity of the county, but covered with sand and crags to the east and by London clay to the south. Most of central and western Suffolk is overlaid with boulder clay and the visible landscape is the product of these different soil regions. The chalk was too soft to be of value as a building material but the clays not only provided a source of clay lump, render, bricks, and tiles but also supported the forests which covered much of Suffolk. These too, provided a ready source of building material.

4.0.2 To these were added flints and reed and straw thatching, and it is from this basic 'palette' of building material that the traditional 'Suffolk character' stems, as each material imposed its own limitations upon the builders of the time.

4.0.3 Thatch needed a roof pitch of between 45° and 55° and, because of the large eaves overhang, was an ideal covering for any clay lump building, a material which did not take kindly to constant drenching.

4.0.4 Timber framed buildings were governed to some extent by the length of readily available timber and the front to back depth of a timber framed house rarely exceeded 20 feet. By the late 17th Century, timber was becoming less readily available and brickwork was fast replacing it as a walling material.

4.0.5 Most brickyards produced red bricks but, toward the end of the 18th Century, changing fashions and the availability of clays to produce 'Gault' facings led to the many fine buildings boldly detailed in red and white contrasting brickwork.

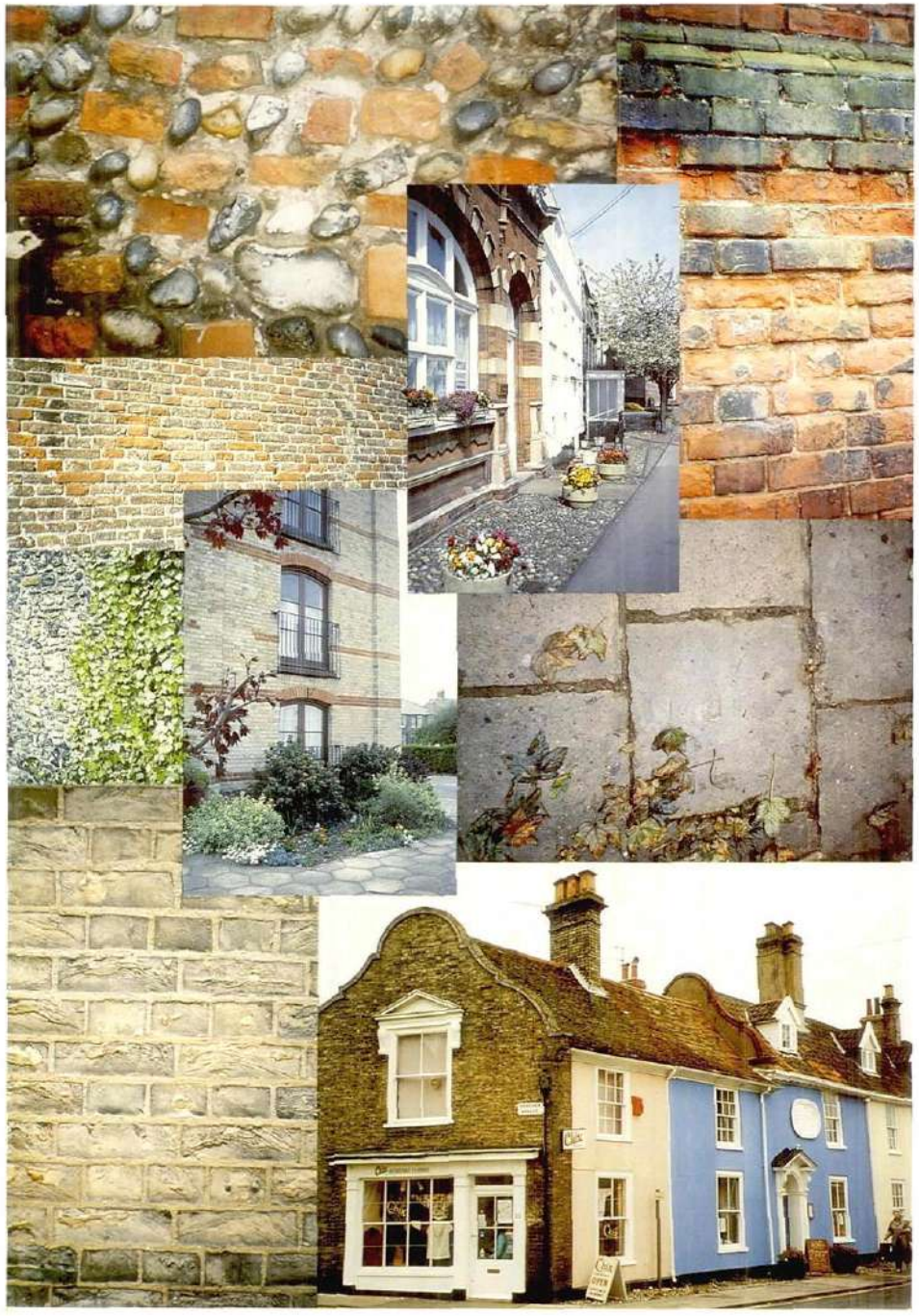
4.0.6 Slate was not indigenous to Suffolk but the construction of turnpikes and railways in the 18th and 19th Centuries allowed the import of what was to become a most popular roofing material. So widespread was its use that it may now be considered a typical Suffolk building material.

4.0.7 In order to perpetuate the unique character of the county and with a view to re-establishing local identity, developers will be encouraged to use external materials which are sympathetic in colour and texture to the Suffolk vernacular.

4.0.8 Avoid using materials which are uncharacteristic to the area, such as artificial stone, tilehanging and white lapped boarding. The following guidelines should generally be observed in selecting external materials for new housing designs based on traditional forms.

Colour

4.1.1 Colour is most important, and materials should generally conform to the traditional orange/red, cream/white and grey/black ranges. Generally the material on the roof appears darker than the walls and this is accentuated by weathering. This relationship also has the satisfactory visual effect of tying the building into the landscape rather than associating with the skyline. For these reasons, it is strongly recommended that the traditional arrangement of roofs darker than walls should continue. A red brick house, for instance, with red roof tiles will, from the middle distance, simply lose its form and will appear a shapeless mass in the landscape.



Walling

4.2.1 Use good quality facing bricks without coloured mortars. Avoid yellow/brown bricks and those with pronounced textured faces. Very accurate square cut bricks without imperfections, although easy to lay, produce an uncharacteristic mechanical finish lacking all charm.

4.2.2 Smooth faced rendering can be a good representation of traditional Suffolk plaster finished houses. Avoid rough- cast or pebble-dash. Aim generally for a neutral colour finish (white, ivory, cream or buff) to contrast with the orange/red or dark grey pantiles. Reserve strong colours, as highlights, for woodwork where they will give an attractive emphasis to the pattern of openings. A dark plinth, either in black brick or painted, will give a plastered house a firm looking base.

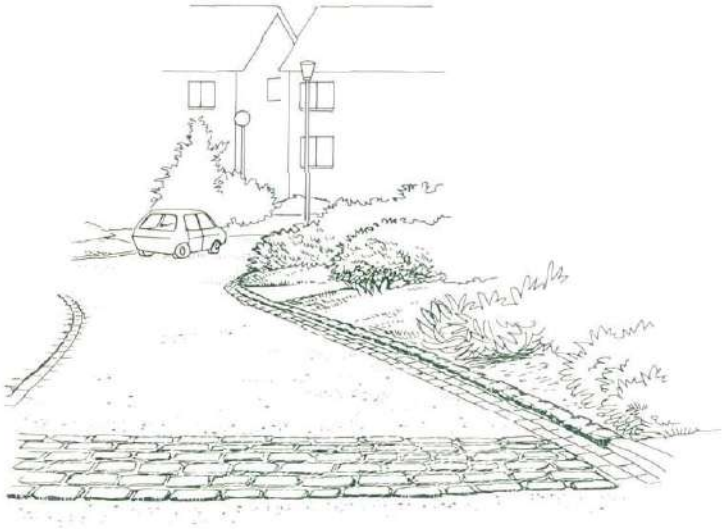
4.2.3 Tarred or black stained weather-boarding is a common Suffolk tradition for farm buildings. It can be used today in a variety of acceptable ways such as for the upper storey over a brick ground floor, or to clad a single storey lean-to addition. In particular, a separate garage in black boarded walls can reflect the tradition of timber framed out-buildings.

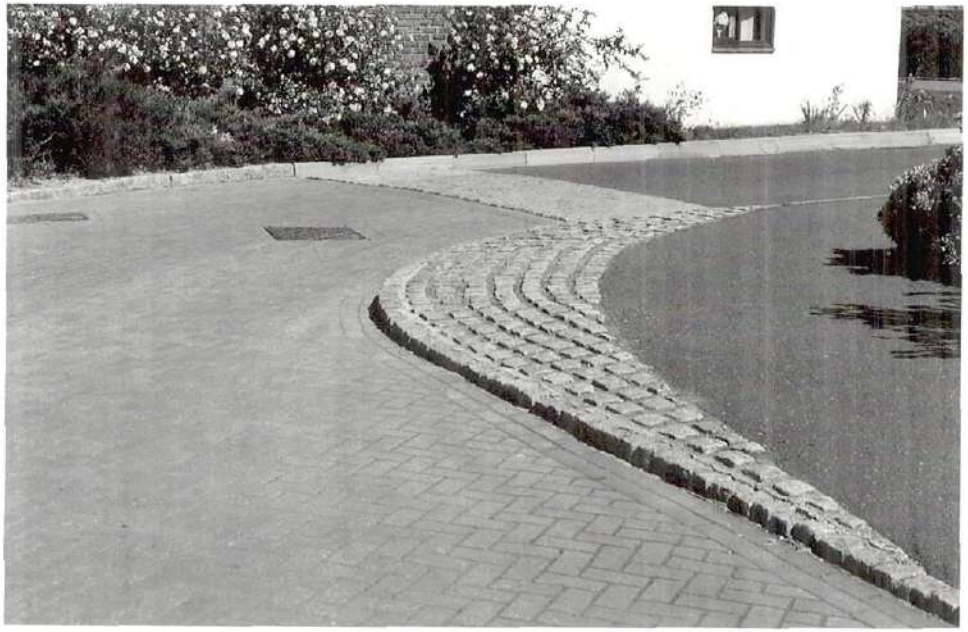
Roofing

4.3.1 Black or orange clay pantiles and grey slates are predominant traditional Suffolk roofing materials and should be used wherever appropriate. Some inexpensive mass-produced substitutes may be acceptable depending on the context. Avoid using light coloured or brown tiles.

4.3.2 Black plastic gutters and rain water pipes are a perfectly acceptable substitute for the traditional metalware goods. Avoid light grey or brown colours, and shapes other than round, half round and ogee.

4 Materials - Roads





Surface Materials

4.4.1 One of the most important features of any housing estate is the quality, scale and durability of the surface materials used. For instance, Standard (127x254mm) highway kerbs with 125mm upstand may be considered appropriate for Distributor Roads but they are quite out of place when used for Shared Surface roads, for example, where Granite Setts are more effective and pleasing in appearance. In addition, surface dressing of Shared Surface roads will express the traditional 'Suffolk' country lane.

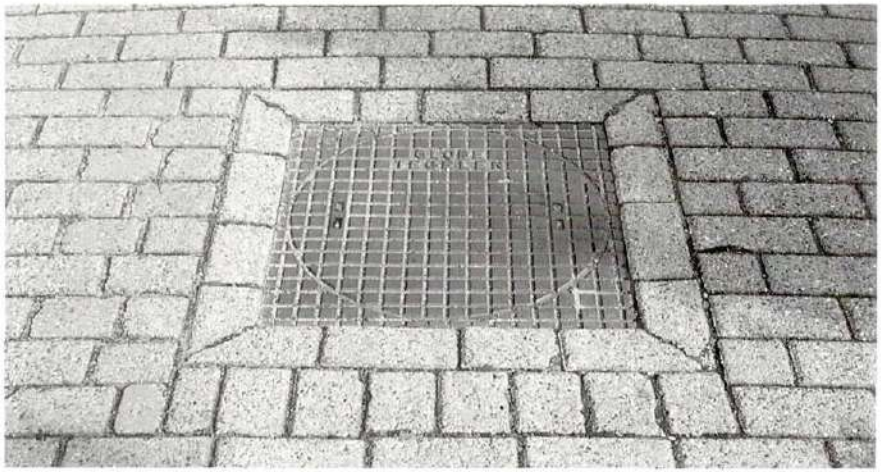
4.4.2 Hot Rolled Asphalt (HRA) will not be acceptable on Shared Surface roads from a road safety point of view because it is of the utmost importance that drivers of motor vehicles are aware that they are on a road which is shared by pedestrians and vehicles alike and HRA will not convey this message.

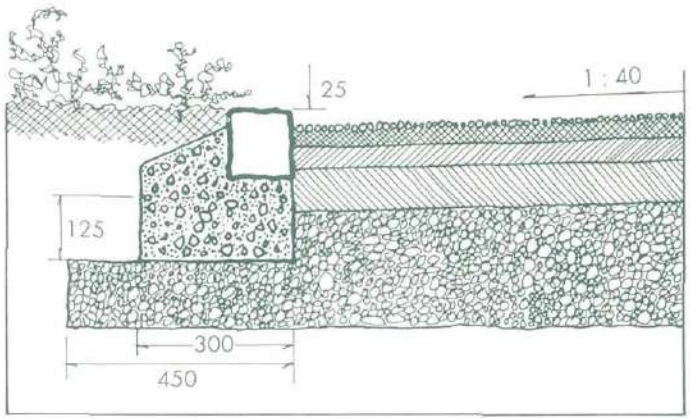
Concrete Block Paving

4.4.3. The use of concrete blocks for the surface of carriageways and footways will be acceptable within residential areas provided that :-

- The use is restricted to rectangular block measuring 200 x 100 x 80mm on carriageways and 65mm on footways.
- There may be instances where the use of 400 x 400 x 65mm module blocks will be accepted.
- The choice of colours will be restricted to red, charcoal, buff, brindle-type and natural.

  Blocks to be laid in accordance with BS 6717 Part 3.





Binder – an approved hot applied emulsion based polymer modified binder to give independently certified Shell M.ix Fretting test parameters of:

Chipping loss at 10°C	8% max
" " 0°C	8% max
" " 40°C	15% max

Chippings – BS63 – As RN39 and additionally:

(a) Size 10mm nominal precoated with an approved "class" binder
(b) PSV 52 min.
(c) AAV 15 max.
(d) Colour – chippings to be "red" or "grey" and sourced from a quarry listed as such as in the Colour Listing of the "Spons Quarry Guide"
(e) The finished surface shall be "racked in" with "3mm down" chippings from the same source as the 10mm precoated chippings. They need not be precoated.

REFER TO SPECIFICATION FOR FULL DETAILS

Cross Section through surface dressed road

- Pavement construction to comprise a sub-base and road base designed in accordance with Table 5 of the Highway Authority's specification for Housing Estate Roads, a laying course of sharp sand 50mm thick when compacted and a surface course of closely fitting paving blocks laid in an interlocking pattern.

4.4.4. The use of block paving as an edge restraint for traditional hot rolled asphalt surfaced carriageways will be permitted on access roads providing the blocks comply with the colour and size restrictions.

4.4.5. The use of blocks as a surface material for carriageways and footways will be restricted to Minor Access Roads and Shared Surface Roads. An important feature of the Shared Surface Road will be an access ramp to inform the driver that he is entering a residential road and will need to be considerate to pedestrians.

4.4.6. Where block paving is used in footway and/or carriageway it is essential that they are laid before the occupation of any dwelling. This will inevitably mean that they will be laid early on in the course of construction; particular care should be taken to protect the finished surface.

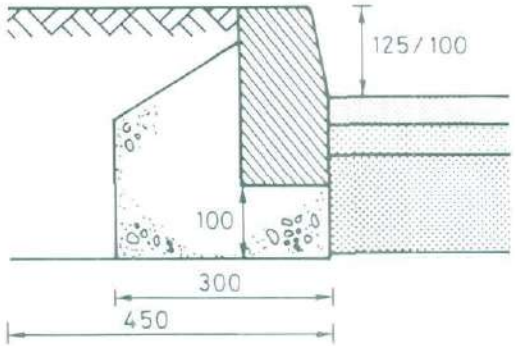
Surface Dressing

4.4.7. When the use of surface dressing is approved it shall be laid on the normal hot rolled asphalt construction wearing course as follows and as shown on the cross section opposite,

The wearing course asphalt shall be laid without precoated chippings and shall be swept and mechanically washed.

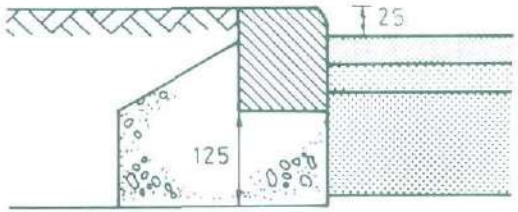
The surface dressing shall be carried out by an approved specialist contractor in accordance with TRL Road Note 39.

Kerb Details



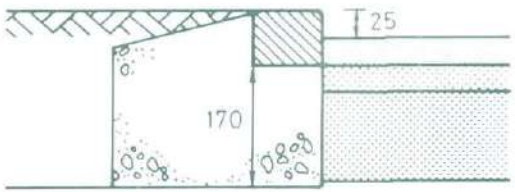
127 x 254 Kerb (half battered)

used for Distributor Roads
Major Access Roads
Minor Access Roads (100 mm)

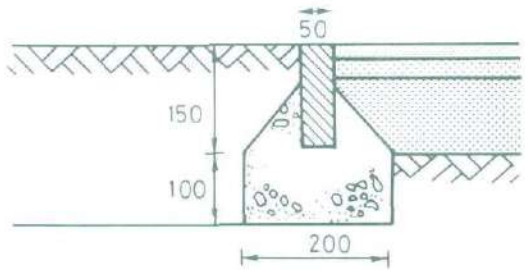


127 x 150 Kerb

used for Mews Court and
alternative for Shared Surface Roads



Granite Sett
for Shared Surface Roads



Footway/Footpath edge

All dimensions in mm

4 Materials - Hard Landscaping

...paved street

... acres of tarmac

What is 'Hard' Landscaping?

4.5.1 The space surrounding buildings can be shaped by, or clothed in, living materials such as trees, shrubs or grass or inert materials such as concrete, brickwork or cobbles. The living materials are referred to as 'soft' landscaping; the inert materials are called 'hard' landscaping.

4.5.2 The importance of soft landscaping is well recognised but hard landscaping frequently appears to be left to chance, yet it can be the 'hard' landscaping, the walls, fences and surfaces, which dictates the character of the spaces we visit. Who has failed to be depressed by the acres of tarmac which dominate so many modern estates or be charmed by the paved streets of an historic town?

The Function of Hard Landscapes

4.5.3 Hard landscaping may be used for many reasons, such as to:

- create links between buildings
- enclose space
- create a 'theme' within a development
- define private areas
- give security to private areas
- cater for pedestrian or vehicular movement
- deter pedestrian or vehicular movement
- assist people with disabilities
- visually link a development with its surrounding

Choosing materials

4.5.4 Hard landscaping materials should be selected not only for their appearance but also for their ability to withstand the use to which they are being put.

Above: Good use of hard and soft landscaping to create a "country park" approach to a new housing scheme.

Right: Traditional boundary treatment in an urban location.

The use of appropriate, good quality and durable materials will frequently reduce long-term maintenance costs whereas the use of an inappropriate material, purely because it has low initial cost, is often a false economy.

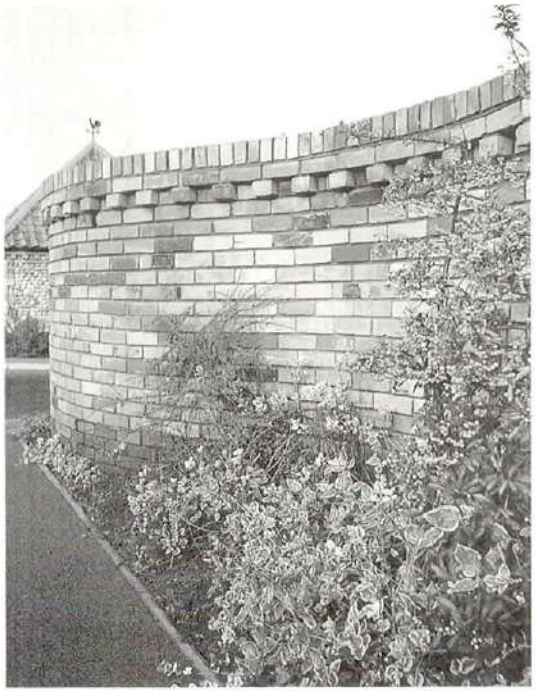
4.5.5 When selecting materials developers should ask themselves:

- Does the material enhance the surrounding buildings?
- Is the material appropriate for the character of the development?; this may be formal or informal, rural or urban, modern or traditional.
- Is the material suitable for its proposed use?
- How does the material weather? - i.e. Does it improve with age? if not, is there a better choice of material available?

Urban or Rural

4.5.6 Urban areas tend to be tight knit with buildings in close proximity to one another. In these locations boundary walls, railings and gates, together with the traditional surface treatments of roads and footpaths, all combine to make an important contribution to the character of the area. Soft landscaping is generally subordinate to the buildings, although individual mature trees can have a particular significance in such areas.

4.5.7 Rural areas tend to be characterised by a feeling of spaciousness with the soft landscaping dominating rather than the buildings. There may be a compact group of buildings around a village green or flanking the street but other buildings will be set in spacious plots and, generally, the hedges, trees and gardens are visually as important as the buildings themselves.



Left: Good modern example of a serpentine or "crinkle-crankle" wall.

Simple timber palisade fence used to good effect.

4.5.8 These basic differences should be recognised when deciding between hard or soft landscaping for any new development; for example, a brick wall may be an appropriate enclosure for a garden in an urban development but a hedge could be more appropriate in a rural area.

Walls

4.6.1 Appropriately designed walls can greatly enhance the appearance of new developments by physically and visually linking them to the established street scene. If old brick walls exist on or around a potential development site every effort should be made to retain them.

4.6.2 'Crinkle-crankle' or 'serpentine' walls, which comprise a series of curves on plan, can provide visual interest as well as structural stability.

4.6.3 Traditionally, walls would be capped with a brick-on-edge detail or with semi-circular or ridged clay bricks. Plinths, piers, corbelling and buttresses would frequently form part of the design.

4.6.4 Concrete copings, concrete blocks and perforated, patterned concrete screen blocks are not traditional to Suffolk and should, in the main, be avoided.

Fences

4.7.1 Simple timber palisade fences were frequently used around gardens in rural areas and, although they do not provide a complete visual or security barrier, they do mark boundaries and deter encroachment in a very pleasing manner.

4.7.2 Close boarded fences provide more effective screening and security but can become visually obtrusive unless combined with substantial soft landscaping.

Inappropriate use of a brick wall in a rural setting... a hedge would have been better

Traditional use of steps or railings to create an imposing entrance.

4.7.3 In rural developments woven wattle fencing, cleft chestnut or split logs supported on wooden rails, used in conjunction with hedge planting, can be appropriate.

4.7.4 Woven and lapped slatted timber fence panels are frequently used in both urban and rural situations purely because of the low installation cost. They are however easily damaged and difficult to repair and are rarely suitable in any prominent location.

4.7.5 Timber post and rail or post and wire fences come in many forms and are satisfactorily used for field and roadside boundaries in the countryside. However, the use of concrete posts and chainlink fencing looks out of place in the countryside and can mar an otherwise attractive street scene in both town and village.

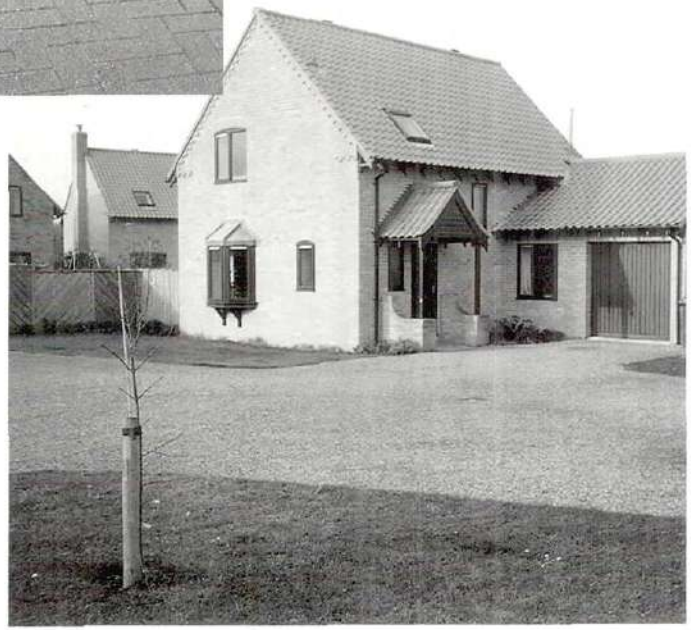
Metal Railings

4.8.1 Metal railings were frequently used in conjunction with a flight of steps to create an imposing entrance to a property. Similarly, before the war, many houses, churchyards, formal parks and gardens in both towns and villages, were enclosed with metal railings, often set on low brick walls.

4.8.2 Traditional designs of railings are readily available and their use in carefully selected locations can help to give an established feel to a new development. Railings can also be used to advantage in providing security against intruders without creating a total visual barrier.

4.8.3 Many large country properties or areas of parkland were enclosed with fences consisting of cast metal posts and horizontal metal rails and, again, these can be used to create a theme to a new development.

"... paviors can be combined with 'traditional materials'..."



.. in rural areas a simple sealed gravel surfacing may be appropriate...

4.8.4 Timber posts and tubular rail, or timber post and chain fences, may be appropriate in a small number of locations but their use and design may cause a hazard to young children or to the partially sighted.

Hard Surfaces

4.9.1 Hard surfaces in new developments have as much effect on the appearance as the materials chosen for the buildings themselves and should therefore be given the same careful consideration.

4.9.2 In the past, in the more important and heavily used areas, stone flags and kerbs would have been used to provide a smooth, hard-wearing surface for pedestrians; granite setts, cobbles or paviors were laid to accommodate vehicular traffic; softer bricks were used for informal paved areas in gardens and gravel was laid in areas with limited pedestrian or vehicular traffic.

4.9.3 The advent of bitumen macadam led to the decline in use of many of these traditional materials and many modern estates have suffered from a surfeit of 'black top'.

4.9.4 Recent mass production of clay and concrete block paviors has provided the designer with cost-effective small scale blocks, available in a wide range of colours and suitable for both pedestrian and vehicular use. Such paviors can be combined with the traditional materials such as stone slabs, granite setts or cobbles to create hard surfacing which will complement traditional or modern styles of new development.

4.9.5 In rural areas a simple sealed gravel surfacing to roads and footpaths will often be appropriate.

Examples of bold use of texture and colour.

Textures and Colours

4.10.1 The texture and colour of materials should be carefully selected to create a desired effect rather than being used at random; for example, garden walls built in the same colour brick as the dwellings can give consistency to an area.

4.10.2 Particular care needs to be taken where new materials are being placed in close proximity to old materials; a 'red' concrete pavior often appears pink or purple when placed against a traditional Suffolk red brick wall.

4.10.3 Changes of texture and colour can be used to good effect to denote changes of function; for example changing from a smooth surfaced footpath to a rough surface such as cobbles for areas of pedestrian deterrent paving.

Examples of well considered use of Hard Landscaping

A cobbled margin which is more concrete than cobble!

Lack of attention to detail

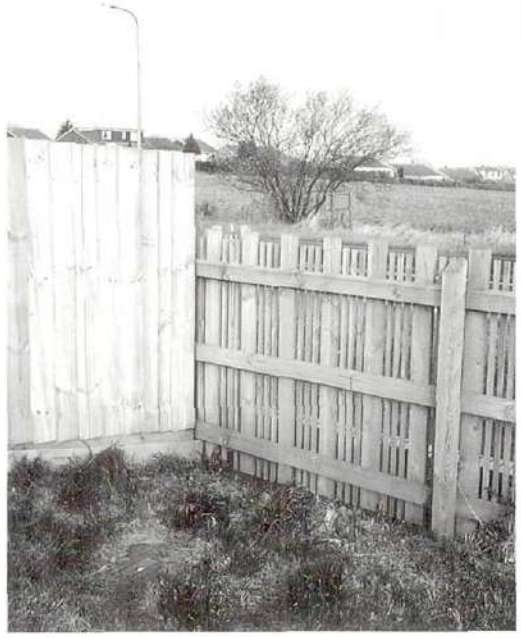
A small development dominated by blacktop!

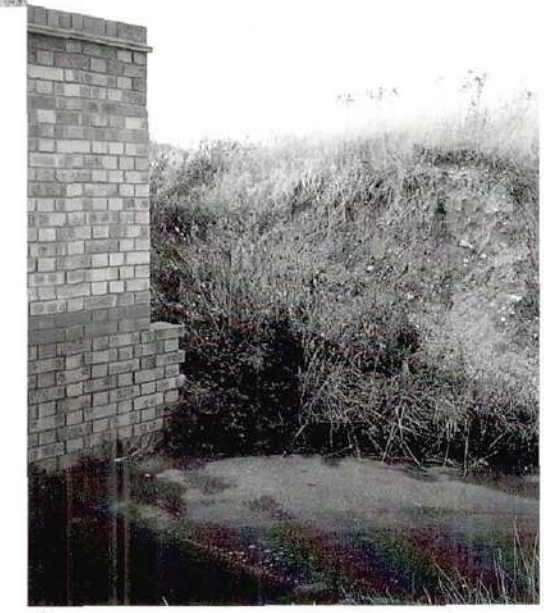
Fencing which detracts from the appearance of property.

Poorly detailed angles . . .

Unscreened rear gardens.

. . . and junctions.





What happened here?

5 Individual Dwellings

Contents

5 Individual Dwellings - Design Principles

Traditional design well done

Or good modern. . .

Aims

5.0.1 One of the aims of this guide is to ensure that new housing development in the county reflects the essential character of Suffolk. This does not mean that all 20th Century development should copy the designs of the past but, rather, that an appreciation of traditional Suffolk architecture combined with the thoughtful application of modern building techniques and suitable materials should provide the basic inspiration for new developments.

5.0.2 The internal layout of the individual dwelling is largely the domain of the owner or developer but, for the general observer, the most important aspect will be the external appearance. Does the property look attractive and does it blend well into its surroundings?

5.0.3 The best way of achieving this will be to employ the services of a skilled professional with a good knowledge of, and sympathy towards, the County.

"Some will build modern ..."

"...others will build reproductions."

Styles

5.1.1 There will be occasions where the designer wishes to build unashamedly modern dwellings employing new materials, new technology and new forms and, at the other end of the spectrum, there will be those who prefer to build historically accurate reproductions. This guide does not preclude either of these approaches although where proposed development would have a significant impact upon a small settlement it may be more appropriate to follow a traditional design approach, carried out with care and with sympathy to its surroundings.

5.1.2 The vast majority of new estates, however, will fall between these two extremes and may be described as 'mainstream traditional' - e.g. dwellings of brick and tile, using mass-produced materials and providing comfortable and affordable homes.

5.1.3 The following pages show how the incorporation of traditional Suffolk features, together with the application of a few simple but well established architectural principles will help towards the creation of a more varied and interesting environment - the kind of surroundings people enjoy living in because they have a distinctiveness and character with which they can readily identify.

"... many such properties were re-fronted"

"...rapid growth in the late 19th Century..."

Learning from the past

5.2.1 A close look at traditional Suffolk settlements, particularly the ways in which their buildings are grouped together, reveals a remarkable series of shapes and roof formations from which to evolve new, traditionally-based shapes for today. The characteristics of what is 'Suffolk', as distinct from 'English' architecture, are seen in pre-18th Century Suffolk house design which evolved not only from the desired plan form but also from the limitations of locally available materials.

5.2.2 The width of a timber framed house was governed by the length of a spar so dwellings tended to be narrow and long rather than square. Steeply pitched roofs were necessary for thatch and stacks were raised high to lessen fire risks. Roofs projected well beyond rendered walls to protect them from rain and, for the same reason, a broad tarred or brick plinth raised the structure away from the ground.

5.2.3 In the 18th Century many such properties were refronted with beautifully proportioned Georgian facades, behind which the distinctive house form remained. The 19th Century saw rapid growth of the urban centres of the County and produced substantial areas of terraced Victorian properties. These later areas are just as much a part of our inheritance as the more picturesque Suffolk vernacular housing. With their good quality, locally produced facing brickwork, slate roofs and period detailing such areas are often under-valued and deserve respect. With investment many such areas have been turned into attractive, convenient and low cost housing areas which can still act as an inspiration for meeting today's needs.

5.2.4 Although modern construction is far removed from such an historical context, new development should reflect the best qualities of its surrounding architecture.

"Each individual dwelling plays a part ..."

A large house set in spacious grounds can look very attractive, but the same house set on a small plot and repreated over and over will look progressively less attractive.

Context

5.3.1 Each individual dwelling of an estate plays an important part in achieving a satisfactory whole. If the estate is to be sympathetic to its surroundings and to have an environment in which it is a pleasure to live, then the design of each dwelling, and its relationship to its neighbouring dwellings, will need careful attention.

5.3.2 Whether the style of the development is to be modern or traditional, the designer must address the question: -

'How can each dwelling best contribute to a development which respects and enhances the unique qualities of the area and which is truly 'of Suffolk''? For example:

- What role will the building play visually within the general scene?
- Will it be seen in isolation or will it form part of a wider composition with other buildings? - Should the architecture be passive to merge into the street scene or assertive to form a focal point?
- Are the materials and details of the dwelling in keeping with the area and with its immediate neighbours?
- Is the size of the dwelling really suitable for the size of plot or are you trying to 'get a quart into a pint pot'?
- How can the design best deal with the challenges such as overlooking, a sloping site, a corner plot, or a difficult orientation?

This list is not intended to be exhaustive but it is only by answering such questions that the problem of context can be resolved.

"...people react comfortably to the scale of a cottage..."

"...Scale of the individual dwelling should respect the scale of its neighbour..." Not like the example above!

Scale

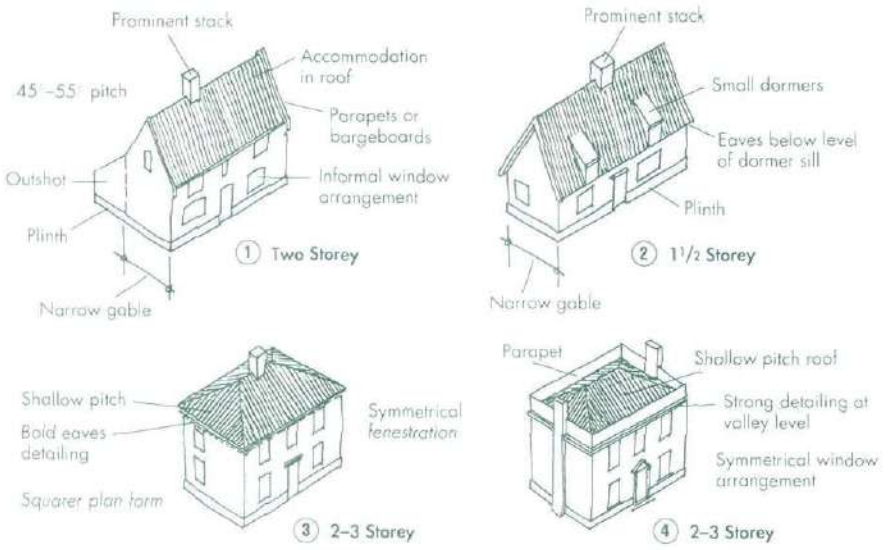
5.4.1 Scale should not be confused with size. It is a relative measure, and in architectural terms, the scale of a building is normally judged against other buildings, space around them or against man himself. Dwellings that relate well to the human scale will create a familiar living environment. For example, most people react comfortably to the scale of a cottage, but they will be overawed by the scale of a cathedral.

5.4.2 Many of our historic towns and villages consist of small scale properties nestling closely together along narrow streets or around small greens and thus possess a character which is familiar and comfortable. On a grander scale, many urban areas comprise three or four storeyed properties and the streets, footpaths, public parks, and formal squares are all correspondingly increased in scale. So the scale of the buildings frequently goes hand in hand with the scale of the space around, and enclosed by, the buildings.

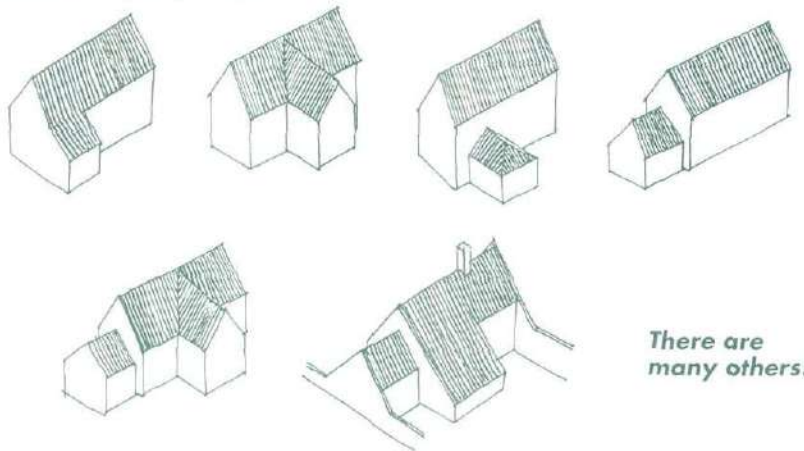
5.4.3. A starting point for new development is that the scale of the individual dwelling should respect the scale of any neighbouring development. For example, a development of small traditional Suffolk cottages may look completely out of scale where dwarfed by an urban setting. Enlarging the cottages could bring them into scale physically with the neighbouring buildings, but they would still not "ring true" as they would no longer possess the traditional scale of a Suffolk cottage.

5.4.4. Equally, any attempt to mask an inappropriately large scale house, by applying a cottage style is likely to fail, being both out of scale physically and out of character. Where a large scale building is appropriate, for example in an urban setting, or where it is spatially well detached from its neighbours, then the detailing of the building, for example the style of doors and windows, should reflect the grander nature of the dwelling.

Typical Traditional Suffolk House Forms:-



Remember these typical Suffolk house forms when considering new designs. Numerous variations can be developed from them – for example those below are *developed from* (1) *above:-*



There are many others!

Urban areas may require different forms based upon traditional Suffolk terrace forms.

A skilled designer will not be constrained by developing new designs based upon traditional Suffolk forms – they can be developed into exciting new forms to satisfy the most demanding site.

Form

5.5.1 There is little point in producing a well thought out layout if each neighbourhood created consists of nothing more than characterless little boxes.

5.5.2 Traditional Suffolk House forms evolved from the available local building materials and the limitations which these placed upon the builders - see Chapter 4 on materials. Houses were frequently only a single room in depth, or a single room in width. Often this simple narrow rectangular form was extended by lean-to additions, or by single or double storey wings to the side or rear of the main house. This resulted in a large house, of irregular plan form, but appearing as a series of linked small scale elements.

5.5.3 In the larger towns, where space at ground level was at a premium, terraces of 3 or 4 storey height, frequently with accommodation within the roof space, were common.

5.5.4 Many new buildings are of a very different form. Near square plans, frequently with integral garages, are covered with a single shallow pitched roof. The resulting shape is inevitably alien to Suffolk traditional building, even where the property is 'dressed-up' in vernacular materials and details.

"Carefully selected mass produced products, coupled to traditional detailing..."

"...a cast drip mould..."

Detailed Design

5.6.1 Designers are no longer constrained to a limited range of traditional Suffolk building materials and techniques and this freedom of choice has resulted in many new developments which are unsympathetic to their surroundings. However, carefully selected mass produced products, coupled to traditional detailing can help to overcome this problem.

Windows and Doors

5.6.2 Good quality detailing around door and window openings will enhance the appearance of a building. A segmental arch can introduce a traditional feature at little extra cost. Brick soldier arches, brick or tiled cills, the use of contrasting materials, a cast drip mould above an opening in a rendered wall, are all devices which can given an opening a well finished appearance. There are many others.

5.6.3 Remember too that shadowing and three dimensional relief to an elevation can be achieved by setting window and door frames well back from the external face of the wall.

5.6.4 A strong looking facade will be achieved by keeping the area of opening considerably less than the remaining area of brickwork. A general rule is that the total area of windows and doors in each facade should not exceed one third of the total wall area. Gable end walls require particular care, and may benefit from having an even lower ratio of opening to wall.

"...Neo-Georgian..."
"Windows too close to corner..."
Crude detailing -
Integral garages -
Houses jammed together

Traditional detailing - simple grid of windows over windows

5.6.5 Keep it simple when selecting windows and doors! Traditional windows were usually subdivided so that each pane of glass was the same size, and this resulted in windows which were pleasing to the eye. There are many 'off the peg' modern windows which still achieve this, but avoid the so called 'neo-georgian' windows which are a poor substitute for their finely detailed and proportioned originals.

5.6.6 Simple vertical boarded doors, or those with recessed moulded panels are preferable to the more fussily detailed types.

5.6.7 Try to keep a sturdy slab of walling between each opening, as windows which are placed very close together, or very close to the corner of a wall, will make a building look structurally unsound. Avoid the temptation to link windows together with panels of different material.

5.6.8 The position of windows and doors, particularly to the street elevation, needs care and a balance must always be struck between the need to achieve a satisfactory floor plan and a visually pleasing elevation. Many traditional buildings are based upon a simple grid of 'window over window' and this may still be the easiest way of achieving a well balanced elevation. A skilled designer, with an appreciation of the problem of visual balance will be able to achieve equally satisfying results with less regular patterns of openings.

Modern design based upon traditional features

"... the jumble of roofs ... forming a tapestry of colour and visual interest."

Dormer Windows

5.6.9 Keep dormer windows small. Traditional dormers would rarely exceed 4 feet in width, with near square windows and 'wedge' or gabled roofs.

5.6.10 It is better to have two small dormers rather than one large one. Avoid painted or stained boarding to the side cheeks and apex of dormers - traditionally these would have been rendered or covered in sheet lead.

Eaves & Verges

5.6.11 The generously overhanging eaves and verges of traditional Suffolk houses owe their existence to the time when most buildings were thatch roofed and there was a real need to protect a vulnerable walling material beneath from the weather.

5.6.12 As fashions and materials changed, so too did roofing details. Dutch gables, crow stepped gables, simple parapets following the slope of the roof and highly decorative mouldings to the bottom edge of barge-boards all added to the richness of Suffolk's architectural heritage. All of these can still have a place in modern developments.

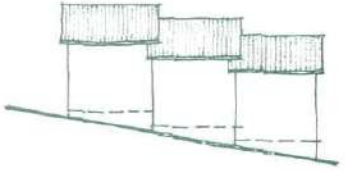
5.6.13 The practical and visual effect of pronounced overhangs with deep shadow lines continues up to the present day and the 'meanness' of dwellings with clipped eaves and minimum verge detail should be avoided.

Roofscape

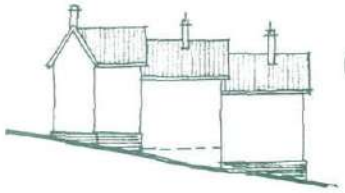
5.6.14 One of the joys of many older villages is the jumble of roofs, dormers and chimneys, appearing to have been thrown together with different materials, pitches and details but collectively forming a tapestry of colour and visual interest. By comparison many modern estates appear bland with their regimented houses and uniform roofs.

"Designers will be encouraged to introduce variety". ..."pronounced overhangs with deep shadow lines...".

(1) A wasted opportunity.



(2) Better.



(3) Better still when combined with changes of profile and material.

"Sloping sites provide unique opportunities....."

5.6.15 Designers will therefore be encouraged to introduce variety into the roofscape of developments by careful attention to the way dwellings are grouped, by the choice of roofing materials, by the use of different roof pitches, by varying eaves and verge details and by the provision of chimney stacks or other features to stand above the ridge line.

5.6.16 Sloping sites provide unique opportunities to achieve an interesting roofscape and these opportunities should always be exploited.

Plinths

5.6.17 Many Suffolk buildings have a brick or tarred plinth at the base of the walls. Frequently these project from the face of the wall and are capped with a splayed brick course. Whilst plinths were primarily intended to prevent vulnerable materials such as timber framing coming into contact with the damp earth, they are still an attractive feature which gives a well finished appearance to the base of the wall. They are particularly effective on sloping sites, where the plinth provides a level 'platform' from which the building rises.

Porches

5.6.18 The appearance of a dwelling can be enhanced or ruined by the addition of a porch. A simple gabled or lean-to roof supported on shaped brackets can look very satisfactory, particularly where the materials and detailing match that of the main dwelling.

5.6.19 Fully enclosed porches need particular care so that they do not become over obtrusive and out of scale with other elements of the facade.

5 Individual Dwellings - Parking and Garaging

... unsatisfactory both visually and in road safety terms.

25% of all crimes involve motor vehicles.

5.7.1 An essential element of successful highway design is the elimination of unauthorised parking on the highway. It is not sufficient merely to meet the minimum necessary number of parking spaces by allocating small 'left over' areas of land for this use. Unless parking is carefully considered as an essential element of a co-ordinated design the result will be unsatisfactory both visually and in road safety terms.

Provision

5.7.2 The required minimum number and size of parking spaces, standards for parking layouts and turning areas, together with general examples of good practice are shown in Appendix D.

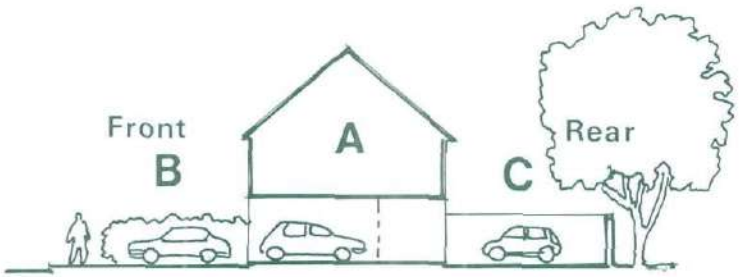
Location

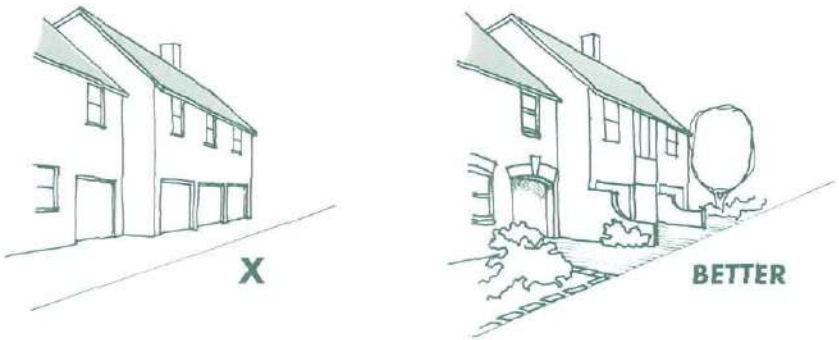
5.7.3 Experience shows that drivers tend to park as close as possible to the entrances of the houses to which they are going. If parking provision is not conveniently located this can lead to parking on verges or footways. Allocated parking spaces should therefore be located within the private curtilage wherever possible.

5.7.4 Where this is not possible, for example terraced houses or flats, parking spaces should be sited clear of the carriageway within about 20m of an entrance to the property and linked to the dwelling by a convenient and attractive footpath. Avoid creating large concentrations of parking.

Security

5.7.5 Cars which are left unsupervised are a prime target for vandals and thieves. 25% of all crimes involve motor vehicles. Any parking space outside the private curtilage should therefore be visible from some of the adjacent dwellings. This does not mean that car parking should be allowed to visually dominate the environment of the estate but implies a need to strike a balance between convenience, security and appearance.





Developers will be required to minimise the impact of integral garages.....

Garaging in the Streetscene

Garaging frequently appears to be treated as a "necessary evil", or simply as an afterthought.

However, where it is well used, as in the example above, it provides the opportunity to vary the scale and alignment of the street frontage and to visually link properties of different scale and character.

The detailed design of garages, driveways, walls and fences must be treated as a vital part of the design process.

Types of parking

Parking within the curtilage

5.8.1 Parking or garaging within the private curtilage of the dwelling has the advantage of being accessible, secure and easy to supervise. One disadvantage is that the car can become visually very dominant. Examples of parking within the curtilage are as follows.

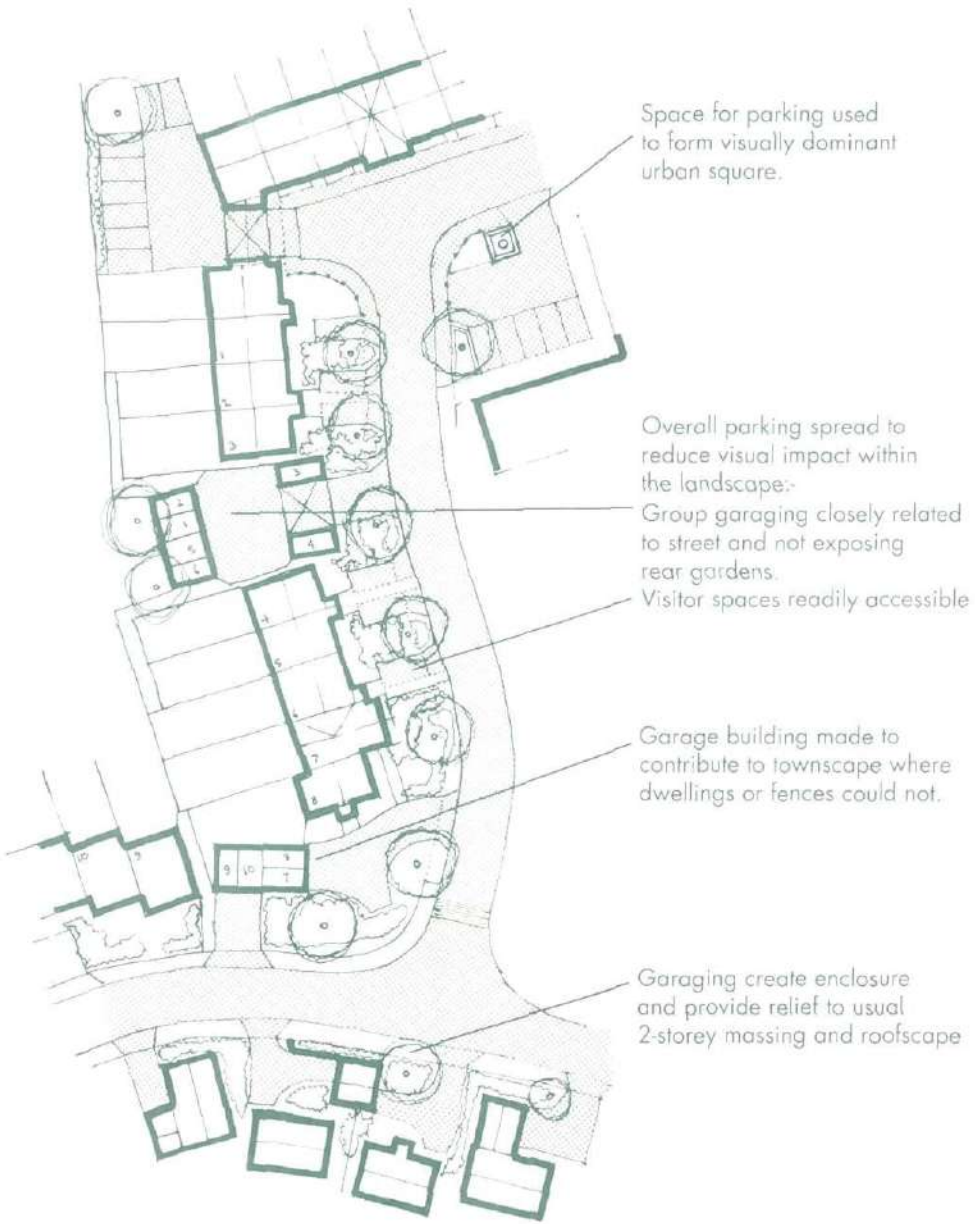
Integral garages

5.8.2 These often result in unacceptably stereotyped layouts due to the buildings being set to a rigid 6m building line purely to allow space for a car to park in front of the garage door.

5.8.3 Integral garages also tend to dominate the elevation of the dwelling because the garage door is so much larger than any other element of the facade. Furthermore, the added volume exacerbates the overall scale and bulk of dwellings. Such garage space is frequently used as an extension of the living accommodation rather than for housing a vehicle, thereby displacing the car into prominent and unplanned areas. These problems can be lessened where garages are detached or built at the side of a dwelling.

5.8.4 Where integral garages are unavoidable, for example in a tight-knit urban situation, they should, wherever possible, be served from the rear of the property.

5.8.5 Developers will be required to minimise the visual impact of integral garages by careful attention to the style and colour of doors, the architectural detailing of the opening, and the way in which they are assimilated into the overall design.



PARKING USED AS POSITIVE DESIGN ELEMENT

Parking in front gardens

5.8.6 Parking in front gardens, particularly where directly in front of houses, often causes the most serious visual intrusion into the street scene. To overcome this problem such provision must be limited in scale where the architecture, soft and hard landscaping can remain visually dominant.

5.8.7 If well designed, garages can be used to good effect in such locations. Not only can they provide a small scale building set hard against the back edge of the footpath, but they can also create a well screened private courtyard in front of the dwelling. In such locations garage doors must not give direct access onto the public highway. Combinations of walls, railings, hedges, or changes of level can be used to reduce the impact of parked vehicles.

Parking in rear gardens

5.8.8 This can result in a large proportion of the private curtilage being given over to the garage driveway and creates exposed and fragmented patterns of development reminiscent of 60's semi-detached estates.

5.8.9 Parking in rear gardens is more appropriate where access is to the rear, serving properties facing onto open spaces or narrow passages.

5.8.10 Developers will be required to demonstrate that parking or garaging which is to be provided within the curtilage of dwellings, not only meets the minimum numbers required, but is designed to assist in the creation of an attractive and safe environment.

Grouped Parking

5.8.11 This can provide an economical use of space and means that the private gardens of dwellings are free for uses other than accommodating cars.

REQUIREMENTS FOR GROUPED PARKING AREAS

Well landscaped parking bays at approach to dwellings

5.8.12 The disadvantages of grouped parking are that surveillance by the residents can be difficult to achieve; the parking is further from individual dwellings, frequently being relegated to a backland site and the appearance of such areas is often poor.

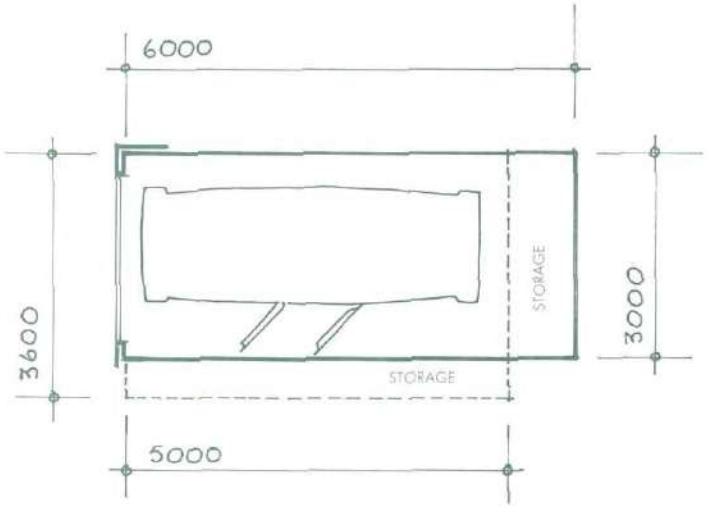
5.8.13 In future therefore where developers wish to provide all or part of the parking requirement in grouped parking areas they will be required to demonstrate that such areas are:-

- sited within about 20m of the dwellings which they serve and linked to them by a safe and attractive path;
- overlooked by some of the surrounding properties to provide a degree of surveillance and lessen the risk of vandalism or theft;
- surfaced and landscaped to a high standard. The individual parking bays shall be delineated in a permanent manner, e.g. by the use of granite setts and the detailed design shall protect surrounding walls, fences and planting from vehicle damage.

5.8.14 Where grouped parking is to be provided in front of dwellings or adjacent to a main approach to dwellings, special attention will need to be given to the choice of materials and to the provision of substantial planting to visually break up the mass of cars. In such locations the use of 'smaller element' paviors will be required.

5.8.15 Parking spaces should be assigned to particular dwellings and these, together with visitors' parking bays, should be clearly but discretely signed. Grouped parking may be particularly appropriate when used with features such as town squares or courtyards. Private parking areas will not be adopted by the Highway Authority.

Unacceptable - unscreened and poorly detailed parking areas creating a very poor environment



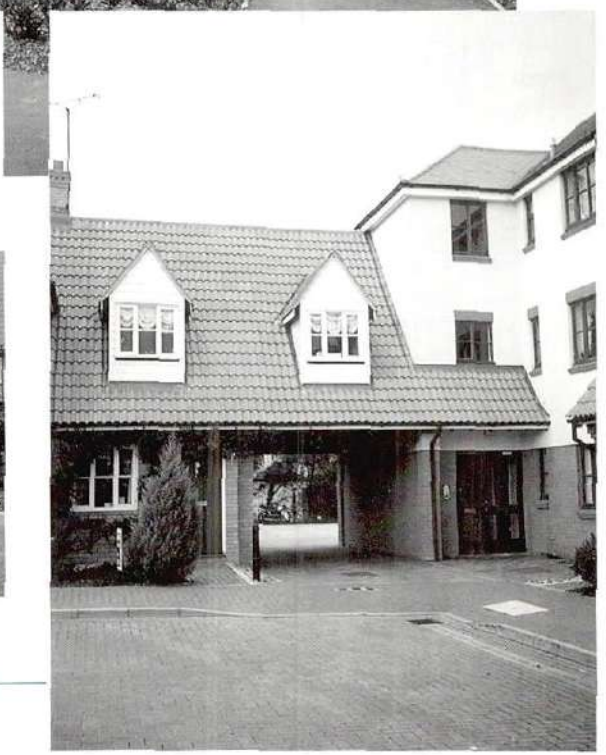
Dotted line indicates minimum internal dimensions where storage space is alongside vehicle.

5.8.16 Visitor parking space will be required in accordance with the parking standards set out in Appendix D. Where such spaces are adjacent to the highway they shall be:

- sited clear of any highway visibility splay;
- situated within 20m of the dwellings they are intended to serve;
- constructed to the satisfaction of the Highway Authority.

Size of Garages

5.9.1 Garages, particularly those which are attached to and have direct access from the dwelling, will frequently be used as 'overspill' storage space for items such as deep freezers and work benches. They should therefore be of a size which allows a degree of storage space and of sufficient width to permit easy access to and from the vehicle. Unless provision is made for this, the car will be displaced into prominent and unplanned locations. Recommended minimum internal dimensions are shown.



1. Dwellings grouped around a central parking quadrangle.
2. Quadrangle is well screened from the road..
3. ...and fits well into the street scene.
4. off one corner of quadrangle is a discreet covered way to further parking.

A Parking Quadrangle
(one successful solution to a large number of cars).

1. Garage set gable end on to road and using complementary materials. Good 'soft' landscaping.

2. Block of 4 garages, two accessed from side, two accessed from rear. Hipped roof to reduce bulk.

3. Well designed garage block set close to road & providing privacy to properties behind.

Good Examples of Garages in Prominent Positions.

1. Individually the garage blocks are reasonable, but repeated time and time again, and coupled to very poor hard and soft landscaping, the overall result is mediocrity.

2. These parking bays have been 'claimed' by individual owners. Crude detailing & lack of maintenance is self evident.

3. An environment dominated by vehicles, concrete, and 'blacktop'!

Avoid these Mistakes

2

1

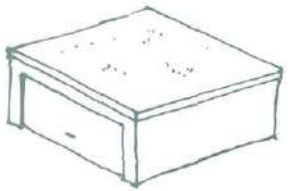
3

Domestic Garaging – Examples of good practice

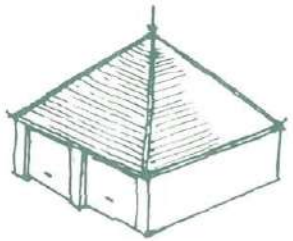
Avoid garage within main body of dwelling.

Express garages as subordinate element in the dwelling composition. Use complimentary materials.

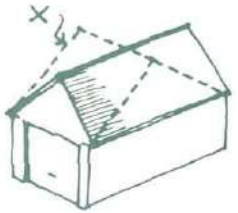
Changes in levels can be used to advantage to minimise the visual impact of parked cars.



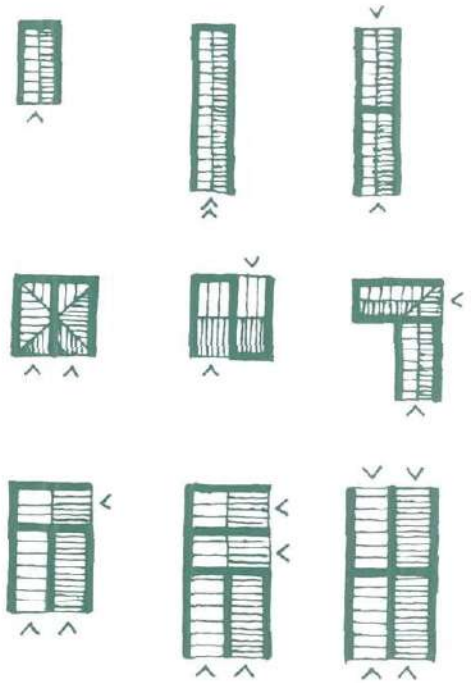
Avoid flat roof and double width doors.



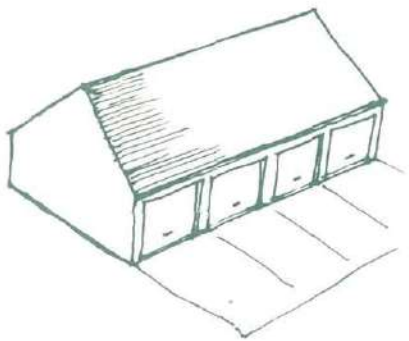
Use pyramid or pitched roof with two single doors.



Avoid pitching roof wrong way when freestanding.



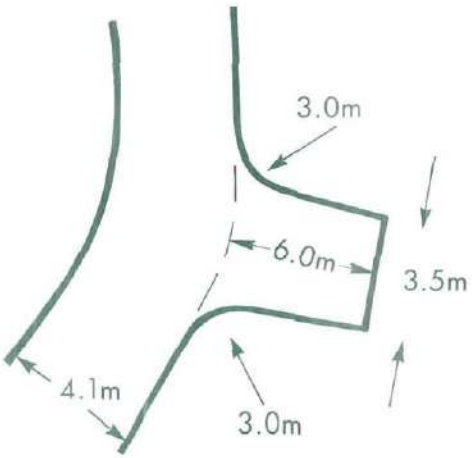
Consider different garage compositions



Avoid rows of doors or open forecourts which can dominate the scene.

Keep to numbers and designs that remain in scale.

5 Individual Dwellings - Driveways



Turning head Type G

Shared Driveways

5.10.1. Unadopted paved areas may serve the driveways of up to five dwellings. They will normally have a minimum width of 4.1m for the first 10m from the edge of the highway.

Junction visibility. (see 6.4.1).

Access can be taken from Major Access Road, Minor Access Road and Shared Surface Road.

Shared Driveways shall be surfaced with a bound material for a minimum distance of 4.5m from the edge of the highway.

A Type G turning area will be required.

No road lighting required.

If lighting is proposed, it must be agreed with the County Lighting Engineer - to ensure no conflict with adopted road lighting.

Private Driveways

5.10.2. These are unadopted paved areas that provide access to garages and other parking spaces within the curtilage of an individual dwelling. They should normally:-

have a minimun width of 3m;

have a minimum length of 6m;

be surfaced with a bound material for a minimum distance of 3m from the edge of the highway;

have, if required, a turning space Type G.

6 Road Types in Detail: Structures; Adoption Procedures

Contents

6 Road Types in Detail : Structures; Adoption Procedures

Local Distributor Road

6.0.1. A through-road which is required when 300 or more dwellings are being served. Likely to be a bus route and will require bus laybys 3.25 metres wide. Limited access to shared driveways may be allowed under certain circumstances.

Target Maximum Speed (TMS) - 30mph

Width - 6.7 - 7.3 metres. If 6.7 is considered satisfactory, widening on bends will be required where the centre line radius is less than 100 metres.

Minimum centreline radius - 60m.

Maximum length of straight between bends - 30m

Maximum gradient - 1 in 15 but 1 in 40 for the first 15m.

Minimum gradient - 1 in 125

Minimum forward visibility - 70m

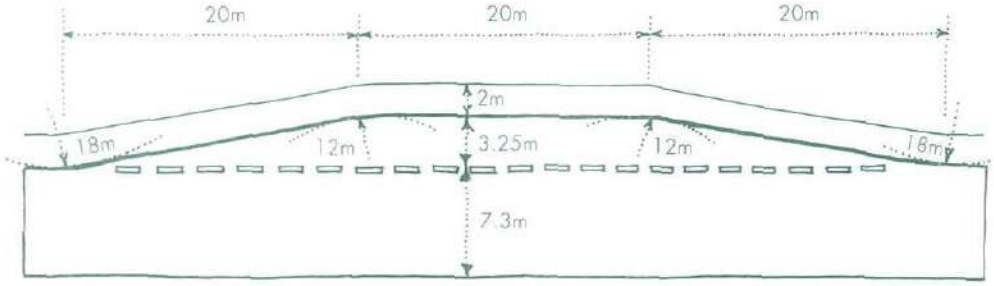
Minimum spacing between junctions - 100m

Minimum junction stagger - 40m

Junction visibility - See 6.4.1.

Footway Width - 2m.

Verge width - min 2m - ground cover and suitable tree planting should be used.



Bus layby

Footways and verges will normally be required on both sides of the carriageway.

Kerb Radius (junction of major road and Local Distributor Road) - 10.67m

Kerb Upstand - 125mm or for vehicular accesses 12mm, flush for pedestrian/cycle crossings in conjunction with tactile paving.

Access taken from Classified County Road.

Gives access to Major Access Road and Minor Access Road.

Vertical curves - At changes of gradient vertical curves will be required and the length of the curve shall be 10 x the algebraic difference in the gradients (minimum length of 40m).

Gully spacings - To be designed.

Road Lighting - in accordance with BS 5489 (formerly CP1004). Part 3 or on large estates, Part 2. Columns to be mounted at the rear of the verge.

Lighting level will be:-

No of Houses	BS5489
Up to 450	Part 3 CAT 3/1
450+	Part 2 CAT 2/3

Note: With a minimum carriageway width of 6.7m it may be possible to use 6m mounting height columns, especially if the development is on the outskirts of villages and small towns. Developments on the outskirts of large towns will require 8m mounting height columns.

Major Access Road

6.1.1. Residential Road with footways that would not normally serve more than 300 dwellings and may give shared direct access to dwellings.

TMS - Less than 30mph. Minimum Width - 5.5 metres. (Widening will be required on bends of 5.5m roads which have a centre line radius less than 100m).

Minimum centreline radius - 30m.

Distance between speed restraints - 80 to 120m.

Maximum gradient - 1 in 15 but 1 in 25 for the first 20m.

Minimum gradient - 1 in 125

Minimum forward visibility - 50m

Minimum spacing between junctions - 50m

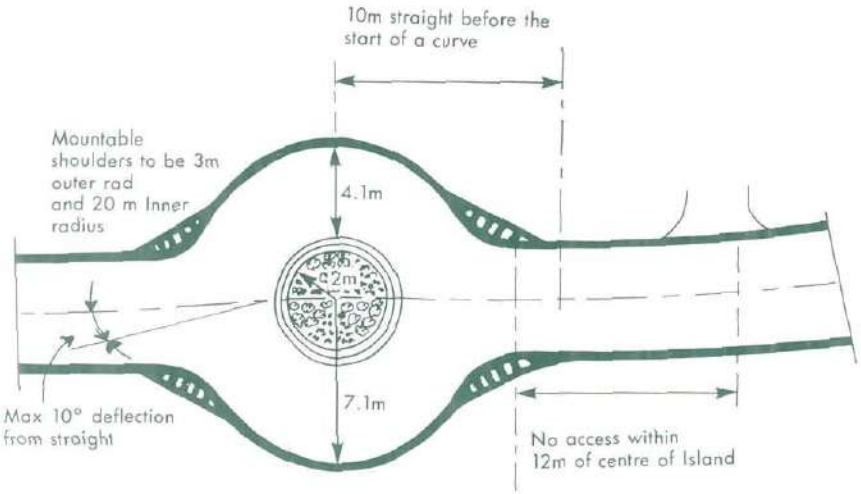
Minimum junction stagger - 25m

Junction visibility - See 6.4.1.

Footway Width - 1.8m normally required on both sides of carriageway.

Kerb Radius (junction of Local Distributor Road and Major Access Road) - 10.67m

Kerb Upstand - 100mm or for vehicular crossings 12mm, flush for pedestrian/cycle crossings in conjunction with tactile paving.



Speed Control Island

Turning Head - Type A if required.

Access taken from Classified County Road or Local Distributor Road. Where direct access to dwellings is allowed it should be noted that vehicles must be able to enter and leave the curtilage in forward gear.

Gives access to Minor Access Roads, Shared Surface Roads and Shared Driveways.

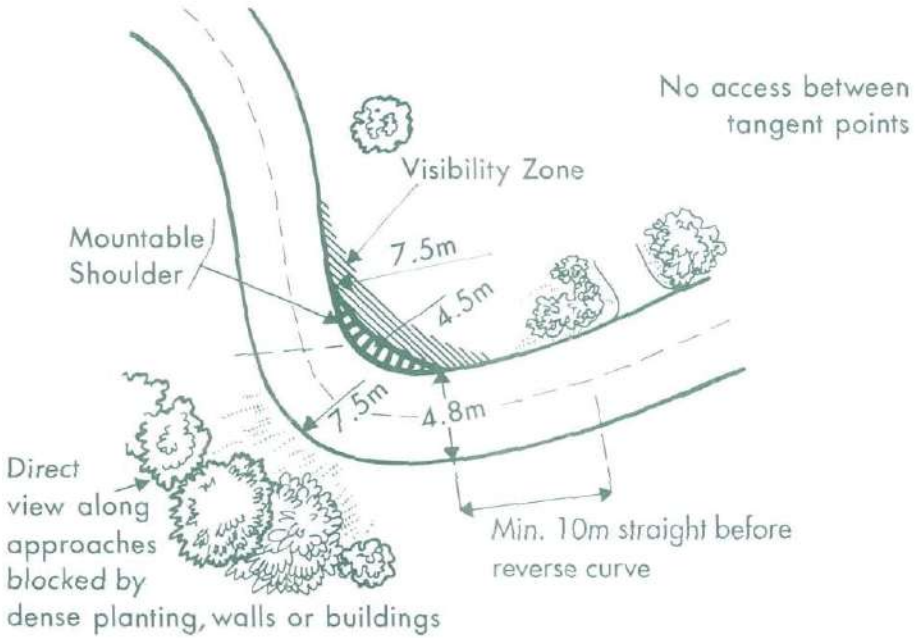
Vertical curves - At changes of gradient vertical curves will be required and the length of the curve shall be 10 x the algebraic difference in the gradients (minimum length 25m).

Gully spacings - To be designed.

Road Lighting to be to BS 5489, Part 3 CAT 3/1 or CAT 3/2.	
No. of houses	BS 5489
250+ (with or without shops or amenity areas)	CAT 3/1
Less than 250 (shopping area only, and/or amenity areas)	CAT 3/1
Less than 250 (areas outside the above)	CAT 3/2

Columns to be mounted at the rear of the footway.

Height of the columns to be agreed but expected to be 6m mounting height.



Minor Access Road

6.2.1. *Residential road with footways that provide direct access* to dwellings and parking spaces but would not normally serve more than 100 dwellings. Traffic speeds will be controlled by the use of speed restraints. All vertical speed restraints must comply with the Road Hump Regulations 1990, the Traffic Calming Act 1992 and the Traffic Calming Regulations (when published).

Traffic speeds should be about 20mph (TMS).

Width - 5.5m where dwellings front the road but can be reduced to 4.8m if no frontage development is present. Widening on bends of centreline radius of less than 30m should be *considered.*

Minimum centre line radius - 15m

Maximum distance between speed restraints 60m.

Maximum gradient - 1 in 15 but 1 in 25 for first 12m.

Minimum gradient - 1 in 125

Minimum forward visibility - 30m

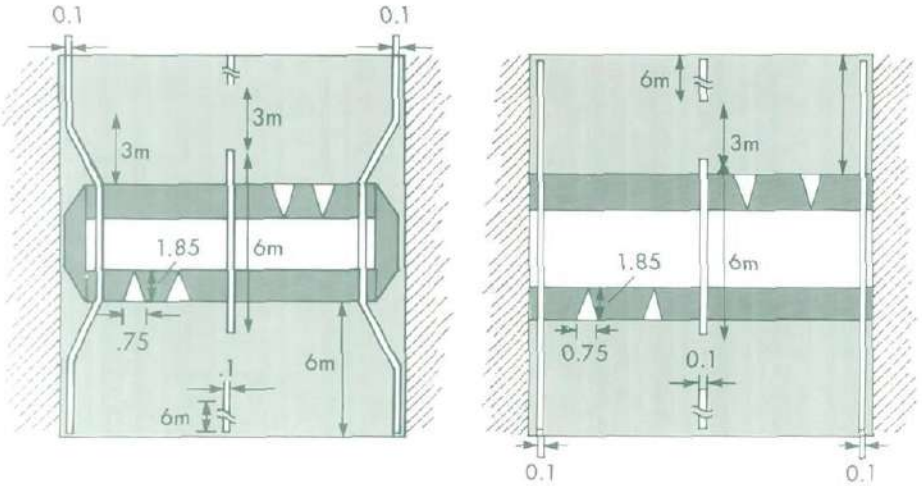
Minimum spacing between junctions - 40m

Minimum junction stagger - 20m

Junction visibility - See 6.4.1.

Footway width - 1.8m, generally required on both sides.

Kerb Radius - 6.1m to Major Access Road and 10.67 to County Road.



Dimensions of flat topped humps

Examples of the use of speed restraints

Road narrowed flat topped table

Full width flat topped table

Raised Junction

Kerb Upstand - 100mm or for vehicular accesses 12mm and flush for pedestrian crossing in conjunction with tactile paving.

Turning Head - Type 'B', 'C', 'D', 'E' or 'F'.

Access taken from County Road, Local Distributor Road or Major Access Road

Gives Access to Shared Surface Roads, Shared Driveways and Driveways.

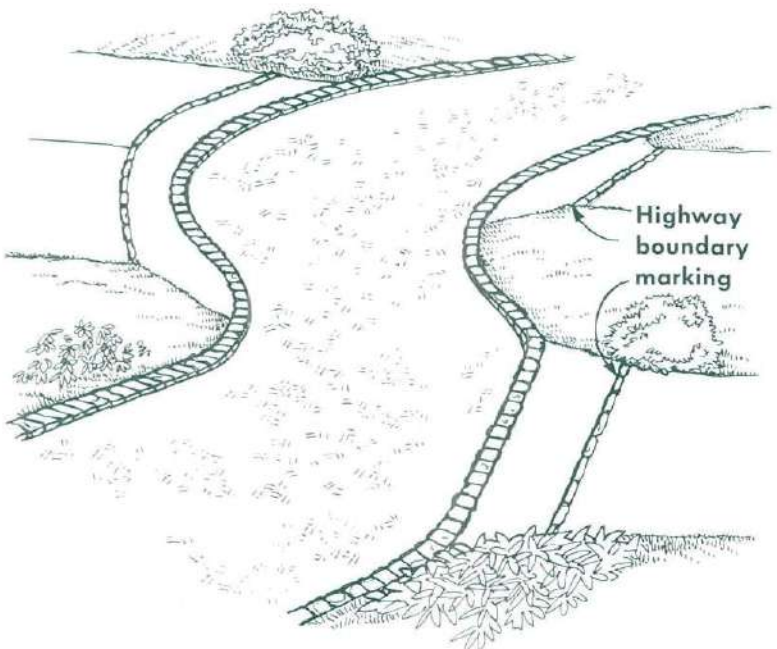
Vertical curves - At changes of gradient vertical curves will be required and the length shall be 5 x the algebraic difference in gradient.

Gully spacings - 30m max. to be designed.

Road Lighting to BS 5489, CAT 3/3

Columns generally will be 5m mounting height.

Columns to be mounted at the rear of the footway.



Shared Surface Road

6.3.1. Residential Road without footways that would not normally serve more than 50 dwellings if looped or 25 in the form of a cul-de-sac.

TMS well below 20mph.

Width - road width may be variable with a nominal width of 5.5m, which may be reduced to 4.1m where no frontage development is present (Overrun widening on bends required for centre line radii less than 30m)

Surface Treatment : Block paving or surface dressing finishes only, will be permitted.

Minimum centre line radius - 12m. Maximum distance between speed restraints not more than 40m.

Maximum gradient - 1 in 15 but 1 in 25 for the first 12m.

Minimum gradient - 1 in 80 for block paving, 1 in 125 for surface dressing.

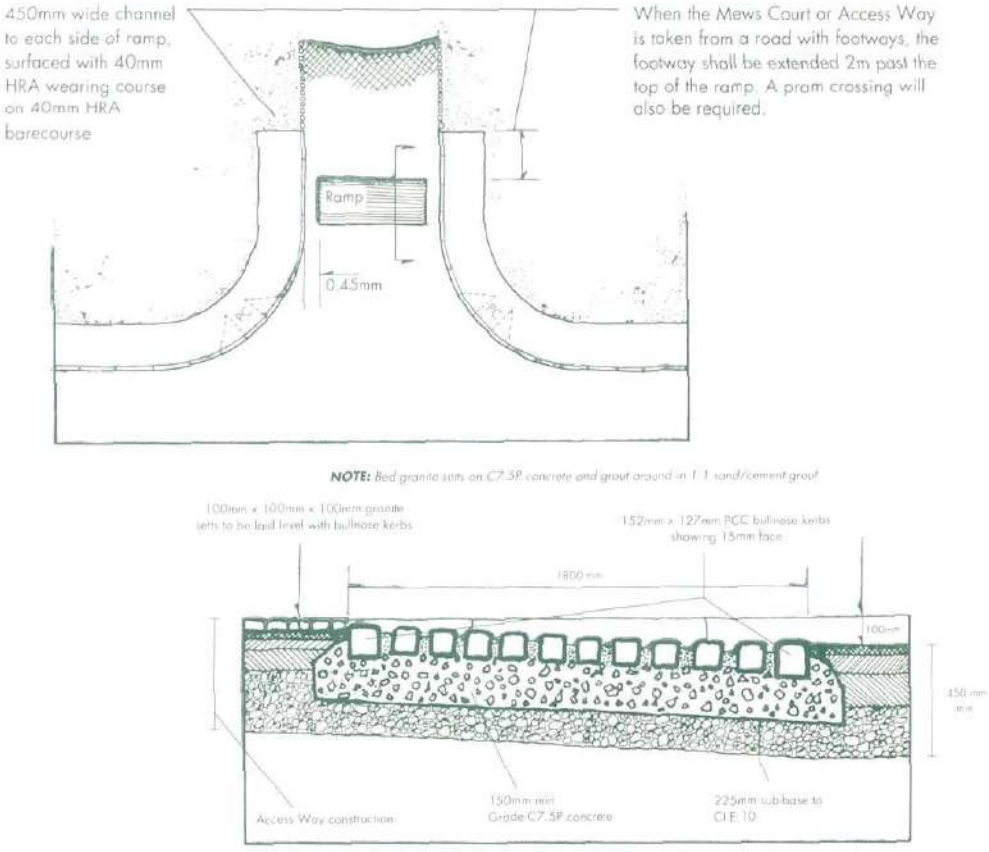
Minimum forward visibility - 20m.

Junction visibility - See 6.4.1.

Verge Widths - minimum 0.5m, maximum 2.0m. Planting will be required. The boundary should be defined on site as shown opposite.

Kerb Radius (junction) - 6.1m or 4.1 with mountable shoulders.

Kerb Upstand - 25mm throughout (including all vehicular crossings), use of granite setts will be encouraged or small element concrete block kerbing.



Section through ramp

Turning Head - Types 'E' or 'F'.

Access taken from Major Access Road or Minor Access Road.

Gives access to Driveways, shared and individual.

An access ramp will be required at the road junction, see detail opposite.

Vertical curves - At changes of gradient vertical curves will be required and the length of the curve shall be 5 x the algebraic difference in the gradients.

Gully spacings - To be designed.

Road lighting to BS 5489, CAT 3/3

5m mounting height columns preferred.

Where columns are to be mounted in the verge or service strip they are to be at the rear.

Speed restraints should be sited at a distance away from a road lighting column no greater than one third of the average spacing of columns in the road.

6.4.1 Junction Visibility Standards

Minor or Non-Priority (Road B) / Major or Priority (Road A)	County Roads				Residential Housing Estate Roads (1)			
	Classified 'A' Roads	Classified 'B' & 'C' Roads	'Rural' Unclassified Road > 40 mph	'Urban' Unclassified Road < 40 mph	Local Distributor Road	Major Access Road	Minor Access Road	Shared Surface Road
Local Distributor Road	★	★			9x90			
Major Access Road	★	★			9x70 (2)	9x70 (2)		
Minor Access Road	★	★	★	★	4.5x70	4.5x60	4.5x45	
Shared Surface Road				★		2.4x60	2.4x45	2.4x30
Shared Driveways Drive (3)	★	★	★	★		2.4x60	2.4x45	2.4x20

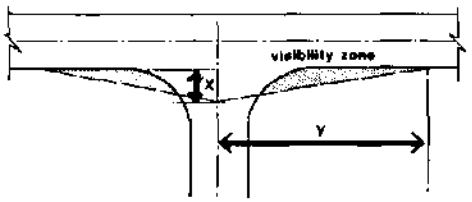
(1) In cases where the major or non-priority residential road does not meet the TMS requirements of this guide treat as an 'urban' unclassified road.

(2) 'X' distance may be reduced to 4.5m when minor road serving less than 100 dwellings.

(3) For shared drives serving up to 5 dwellings the 'X' distance may be reduced to 2.4m. For single private drives the 'X' distance may be reduced to 2.0m.

★ See table a. below

TABLE A



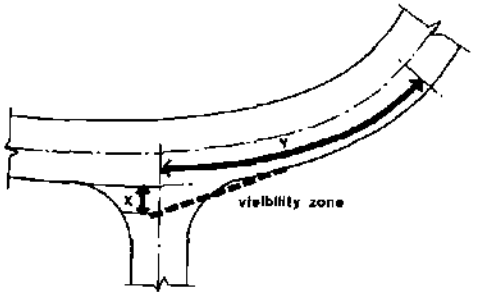
Visibility zones for traffic turning out of non-priority roads are defined by "X" distance and visibility distance ("Y" distance) as shown

Y Distance

SPEED Kph	SPEED Mph	ROAD CLASSIFICATION	Y
50	30	All types, except class 1 roads	70m
50	30	Class 1 roads- 'A' signed	90m
60	37	All classified roads	90m
70	43	"	120m
85	53	"	160m
100	62	"	215m
120	74	"	295m

X Distance

The "X" distance will vary according to the proposed use of the junction.
Normally a "X" distance of 9.0m will be required however this may be reduced to 4.5m where the minor road serves less than 100 dwellings.

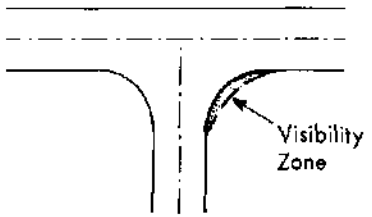


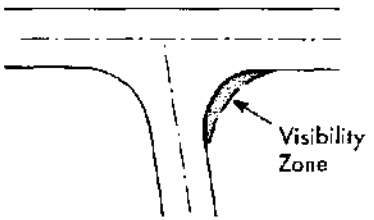
Where road curvature would cause the sight line to exclude part of the carriageway from the visibility zone, the sight line should be drawn tangentially to the edge as shown.

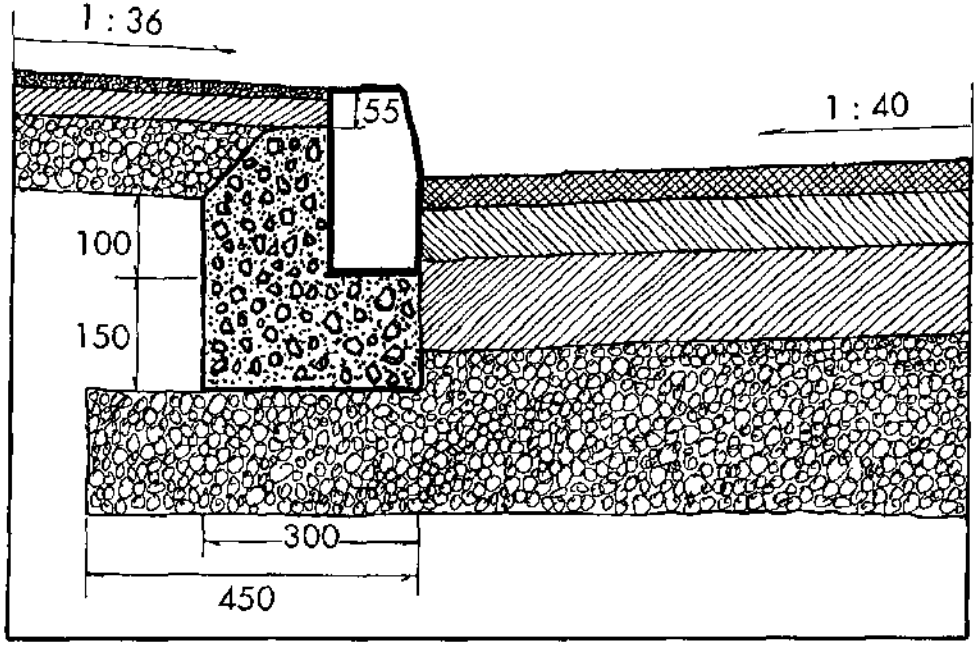
Left Turn Junction Visibility Zones

As general guidance, it is suggested that visibility should be ensured for vehicles turning left into a non-priority road by providing a visibility radius tangential to the kerb (i.e. inside the kerb radius). Suggested normal visibility radii for different junction angles and kerb radii are as shown below.

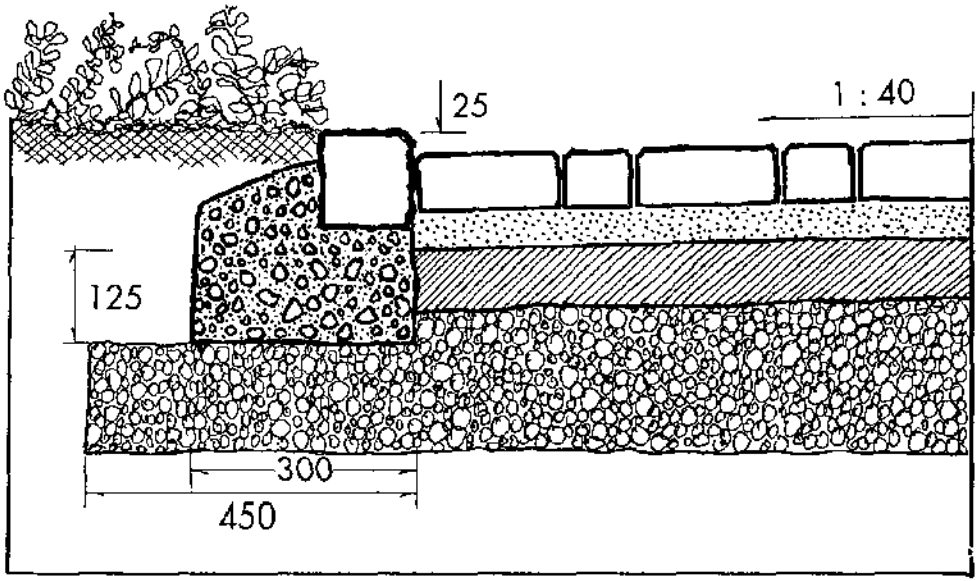
Junction deflection (degrees)	**Kerb radius 4m**	**6m**	**10m**
80	10m	11m	19m
90	9m	10m	19m
100	8m	9m	19m







Cross-section through Major Access Road



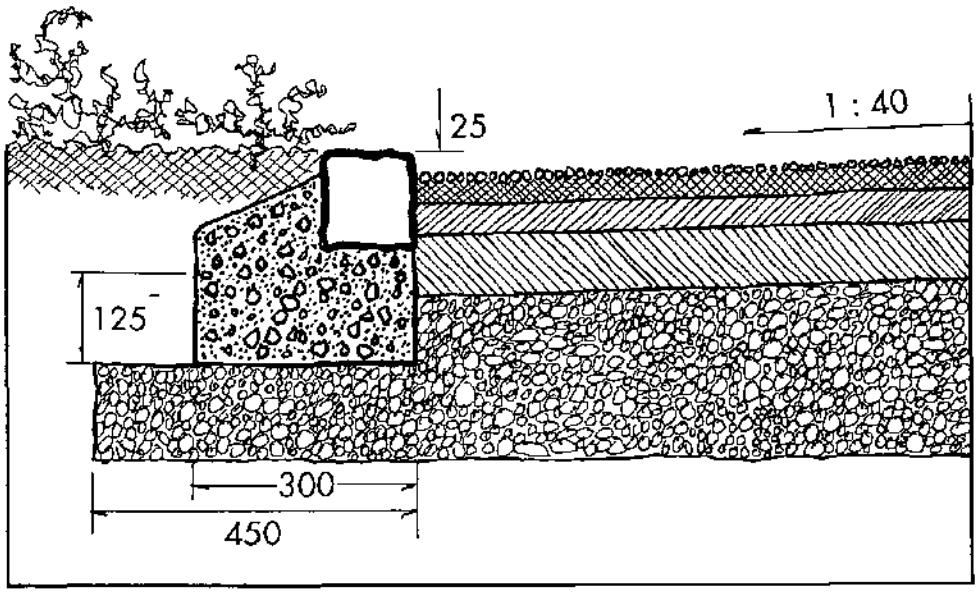
Cross-section through Block Paved Road

Road Adoption Advance Payment Code (APC) Highways Act 1980 Section 219

6.5.1. The Advance Payments Code applies throughout Suffolk.

6.5.2. Within six weeks of Building Regulations approval you will receive an Advance Payments Code Notice telling you how much money is to be deposited with the Highway Authority or what security must be given before building work (even the foundations) can start. The sum of money will be the amount which the County Surveyor, or his agent, where appropriate, calculates it would cost to do the street works. To start work on houses without a deposit being made is an offence and the Highway Authority will be quite prepared to prosecute.

6.5.3. One point to note is that the Advance Payments Code requires the County Surveyor or his agent to serve a Notice specifying the sum to be deposited or secured by the Developer in respect of the same unit of land for which Buildings Regulations approval has been given. Accordingly, if a Developer submits for Building Regulations approval plans of a very large number of houses, he must expect to be served with an Advance Payments Code Notice requiring the deposit or the securing of a very large sum of money. The estate cannot be subsequently divided for the purposes of the deposit and Developers are therefore asked to consider the advantages of sub-dividing their estates into manageable phases before seeking approval of plans in accordance with Building Regulations.



Cross-Section through Shared Surface Road

Section 38 Agreements and Procedures

6.5.4. Provided developers have entered into an Agreement under Section 38 of the Highways Act 1980, no deposit need be made under the APC Notice. The Agreement will provide that if a road is constructed to the satisfaction of the Highway Authority, in accordance with the plans attached, the Highway Authority will, on expiry of a maintenance period (normally 12 months), thereafter maintain that road. The Developer will be absolved from any further liability for maintenance.

6.5.5. Prospective purchasers and Building Societies are also likely to favour the existence of a Section 38 Agreement since this should (provided both Developer and Surety do not go bankrupt at the same time) guarantee there will be no future road charges to be paid.

6.5.6. The Highway Authority will require the Section 38 Agreement to be supported by either a cash deposit from the Developer or a Bond given by an approved Surety. Inspection and legal fees are payable by the Developer.

6.5.7. Where an Estate Developer wishes to complete a Section 38 Agreement he should apply to the County Surveyor, or his agent as appropriate, as soon as practicable. At the Developer's request and where it is considered reasonable to do so, the site may be divided into a number of stages and an Agreement completed for each stage of the site before building work commences on the dwellings in that stage.

6.5.8. Initially, the Developer should forward, for each Agreement, two copies of each relevant drawing for approval, together with drainage calculations and a soil survey where this has been requested. One copy of the layout will be returned to the Developer showing the area that the Council is prepared to accept as forming part of the Agreement. Eight coloured layouts and three copies of the road and surface water sections will be required. All of the land owned by the Developer should be indicated by a red outline.

6.5.9. The County Solicitor (or the legal advisor in the case of an Agent Authority) will prepare a draft Agreement which will be sent to the Developer or his Solicitors for approval. Once the draft has been approved the engrossment will be prepared and despatched for sealing by the Developer and the Surety Company.

6.5.10. Written evidence of approval of surface water drainage from the water authority or their agents will be required where appropriate before the Section 38 can be signed. Written evidence of adoption of the surface water drainage by the Water Authority will be required before the highway can be adopted.

6.5.11. Only when the Developer and his Surety have sealed the engrossment may house building work commence, unless deposits have been made or a temporary Bond provided, but the Agreement will not show on Local Searches until it has been sealed by all parties.

6.5.12. Whilst it is not an offence to commence roadworks before the Agreement is completed or a deposit paid, the Developer is advised :-

- to ensure that any work carried out complies with the plan approved by the County Surveyor, and

- that the County Council's inspection fees have been paid, so that it is inspected by the County Council's Area Surveyor, or by the appropriate officer of the District Council in the areas where the District Councils act as the County Surveyor's agent.

All drawings must be to scale and properly presented

6.5.13. Free hand sketches and 'not to scale' drawings will not be accepted. Adequate details of existing topography shall be shown both on and adjoining the site to enable setting out to be accurately located. THE ROAD PROPOSALS SHALL BE SHOWN IN THE FOLLOWING DETAIL :-

- 1/2500 scale site location plan with north point (this can be included with the 1/500 scale layout plan).

- A 1/500 scale plan (or larger) showing the road together with full details of curves, footpaths, cycleways, vehicular access, surface water sewers and manholes, and all services within the proposed highway. With some developments a 1/200 scale plan will be required for the Agreement.

- Longitudinal section of proposed road and sewers together with existing ground levels. The levels must be related to Ordnance Datum. The horizontal scale should be the same as the layout plan, the vertical scale 1/100 or larger. The long section should be sufficient to enable the works to be properly set out.

- A typical cross section of the road, footpaths, cycleways and shared cycleways, showing the construction proposed to a scale of 1/50 or larger.

- Cross sections will be required where differences in ground level between the road and the adjoining existing ground level exceeds 0.5 metres.

  Any departure from the agreed plans will require the prior approval of the Highway Authority. Revised 1/500 layout plans (as constructed) will be required.

Adoption of Roads

6.5.14. The Highway Authority can be recommended to adopt estate roads, footways, together with cycleways and linking footpaths and visibility splays, provided that :-

- the Developer (not the Contractor) completes a Section 38 Agreement.

- all work is completed in accordance with the approved details and in compliance with the specification of works and materials;

- advance notice is given at designated stages in the works to allow for proper inspection and the checking of materials by the County Surveyor's representative.

Stage	Percentage reduction of Original Bond Sum
Completion of Part One Works	maximum 50%
Completion of Part Two Works	maximum 40%
Completion of Maintenance Period	10%

Bond Reduction Table

6.5.15. The Agreement will require the Developer to carry out the work expeditiously and in phase with the building works. Completed sections of road of reasonable length may be adopted in advance of the completion of the whole estate.

6.5.16. Completion certificates are issued in two stages, Part One and Part Two.

6.5.17. A set of prepaid cards will be sent to the developer at the time of agreeing Section 38 details to be returned to the Area Surveyor or Agent Authority at the relevant stages of construction. Return of cards will be a pre-requisite of bond release. Bond reductions may be appropriate at the following stages of construction (see table opposite).

6.5.18. The Agreement will only be prepared after submission to, and the agreement of plans by, the County Surveyor or his agent authority.

6.5.19. The areas that may be offered for adoption are : carriageways, bus laybys, cycleways, footways and footpaths, verges (where appropriate) and visibility splays.

6.5.20. Amenity areas, private car parking spaces, play areas and other open spaces not necessary for highways purposes must be excluded from the Section 38 plans. The maintenance of these areas should be discussed with the District Council.

6.5.21. It is the County Council's policy that roads within housing estates serving six or more houses should be constructed to adoption standards. A shared driveway will normally serve a maximum of five residential properties.

6.5.22. Street lighting will be adopted by the relevant authority when the installation is required by the County Council having regard to its policy. Street lighting will normally be required on all estate developments.

6.5.23. Further advice on street lighting is given in Section 6.3 of this guide.

Structures to be adopted

6.6.1. Developers seeking the adoption, by the Highway Authority, of bridges, culverts or retaining walls supporting the highway should satisfy the following five-stage procedural requirements :-

- APPROVAL IN PRINCIPLE to outline structural proposals . . . . . Form TA1(SCC)1993
- APPROVAL OF DETAILED DRAWINGS
- DESIGN AND CHECK CERTIFICATE for detailed calculation and drawings . . . . . Form TA2(SCC)1993
- NOTIFICATION OF PROGRESS OF WORKS
- COMPLETION INFORMATION . . . . . Form 277(SCC)

Approval in Principle (Form TA1(SCC)1993)

6.6.2. The purpose is to ensure that adequate regard is paid to appropriate Codes of Practice, Bridge Design Standards and soils information. The form should be completed by the developer or his agent at the earliest time to ensure that the type of structure proposed will be acceptable for adoption. Where possible a preliminary General Arrangement Drawing should be included in the documents for approval.

6.6.3. Proper consideration of soils information in interpretive reports, structural form, geometry and finishes are essential at this stage.

6.6.4. It is inadvisable to commence detailed structural designs prior to agreement of the 'approval in principle'.

Approval of Detailed Drawings

6.6.5. The purpose is to ensure that working drawings include adequate details for the satisfactory performance and maintenance of the structure. The Developer should submit working drawings as soon as they are available. It is intended that this should be a process of liaison leading to submission, for formal approval, of FORM TA2(SCC)1993 and the design and check certificates which must be completed by suitably qualified persons.

Design and Check Certificate (Form TA2(SCC)1993)

6.6.6. The purpose is to ensure that detailed design calculations and drawings comply with the agreed 'approval in principle'. The developer or his agents should submit calculations, approved drawings, design and check certificates for acceptance by the County Council prior to commencement of any works.

Notification of Progress

6.6.7. On acceptance of the design and check certificate the developer will be advised of the stages at which inspection of the works, by the County Council, will be required. Notification cards may be used for this purpose or where progress of works necessitate, telephone the County Bridge Engineer, Ipswich 230000, ext. 5486. The above forms TA1(SCC)1993 and TA2(SCC)1993, and a Schedule of Design Documents (T.A.S.) relating to Highway Bridges and Structures can be obtained in writing from the County Surveyor.

Completion of Works (Form 277(SCC)).

6.6.8. On completion of the work the developer must submit Form 277(SCC) for record purposes. This form acts as an as-built record of the structure, including photographs, details of services, clearances and proprietary products used. Adoption may not proceed without the completion of Form 277(SCC).

Other Retaining Walls

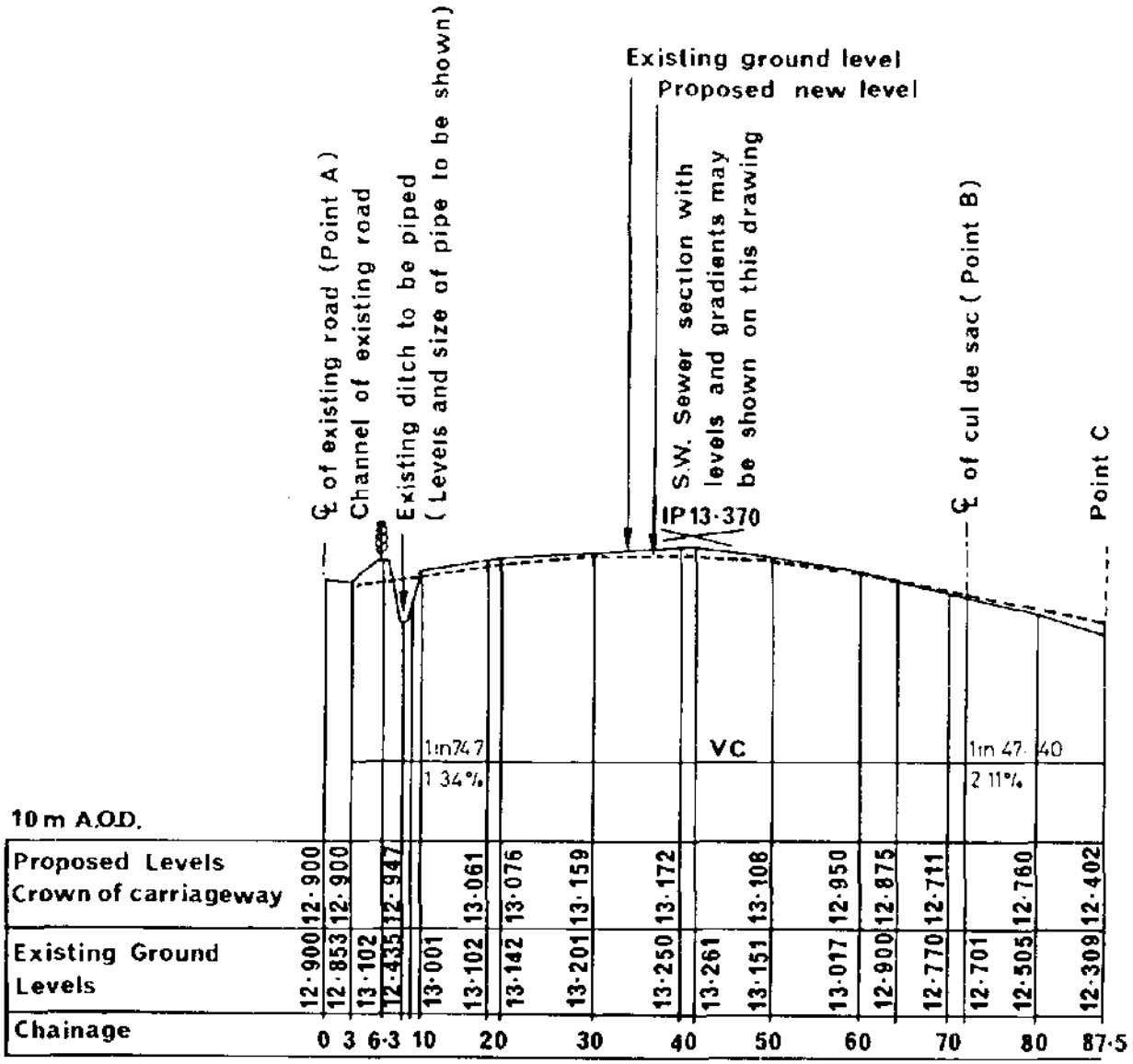
6.6.9. Any length of retaining wall within 4 metres of the edge of the metalled carriageway or footway (if in existence) and which at any point is 1.3m above ground level, shall be erected in accordance with plans, sections and specifications approved by the Highway Authority.

Road Construction

6.7.1. The Developer must obtain the prior approval of the County Surveyor in writing to the form of construction proposed. The 'Specification for Housing Estate Roads', which is published by the County Surveyor, allows a choice of materials.

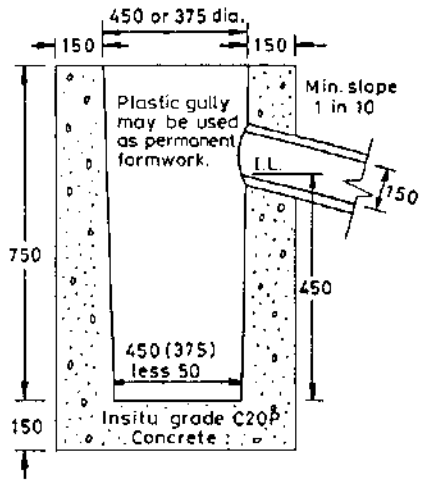
6.7.2. The depths of construction can only be determined after investigations and tests on site and are particularly related to the California Bearing Ratio (CBR) value and frost susceptibility of the sub- grade (refer to the specification). The Developer should make the necessary arrangements with an approved Laboratory holding NAMAS accreditation for the necessary testing and for on- site investigation and reports. The County Council are able to carry out the investigations on a rechargeable basis.

Typical Longitudinal Section



The proposed road shall have a maximum gradient of 1 in 40 for a distance of 10 m from the channel of the existing road

Identification of road to be given. Name if known.



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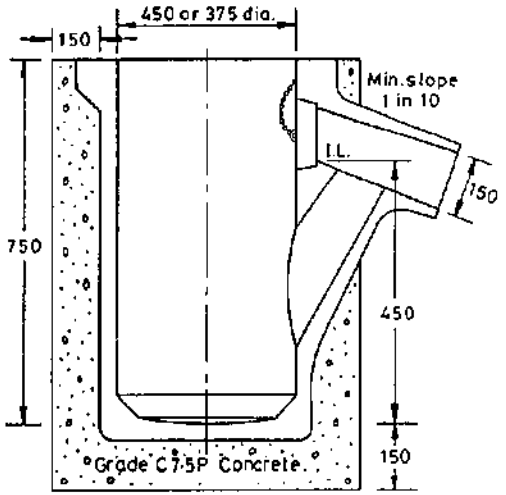

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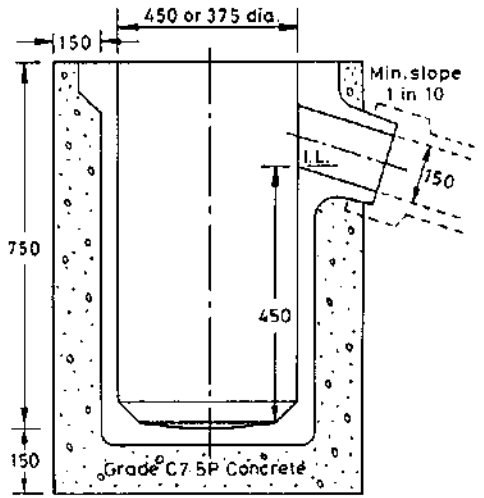
Highway (Surface Water) Drainage

6.8.1. Only surface water pipelines that take water from highway areas will be adopted by the County Council or its agent authorities as highway drains and should be designed in accordance with the following paragraphs.

6.8.2. Where pipelines take water from adoptable areas and roof water from dwellings they may be eligible for adoption by Anglian Water Services Limited as public surface water sewers. Adoption of these sewers will, typically, be the subject of agreements under Section 104 of the Water Industry Act 1991, between the developer and Anglian Water Services Limited provided they are designed and constructed to the requirements of Anglian Water.

6.8.3. When a developer wishes to use an existing highway surface water drain he will be expected to carry out the necessary on-site investigations and to prove its adequacy.

6.8.4. Surface water shall be collected by means of trapped gullies and discharged wherever possible through a pipe system to an adequate surface water drain, ditch or watercourse. Consent to discharge will be required from the National Rivers Authority.



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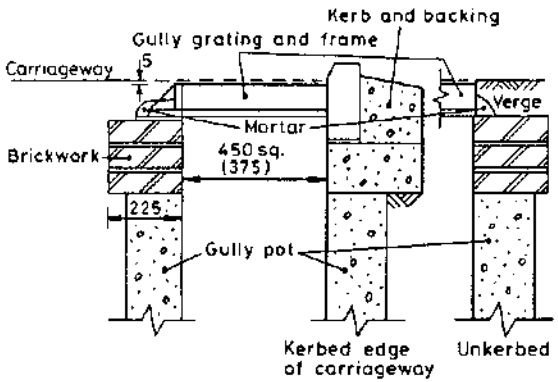


GULLY GRATING DETAIL

6.8.5. The design of the surface water drainage system must receive the approval of the County Surveyor or his agent authority. The 'Rational (Lloyd- Davies) method' shall be used as the basis for the design of surface water sewer systems as set out in Road Note 35 'A guide for engineers in the design of storm water systems' used in conjunction with the 'Tables for Hydraulic Design of Pipes Metric Edition' published by HMSO. Soakaway drainage will not normally be accepted.

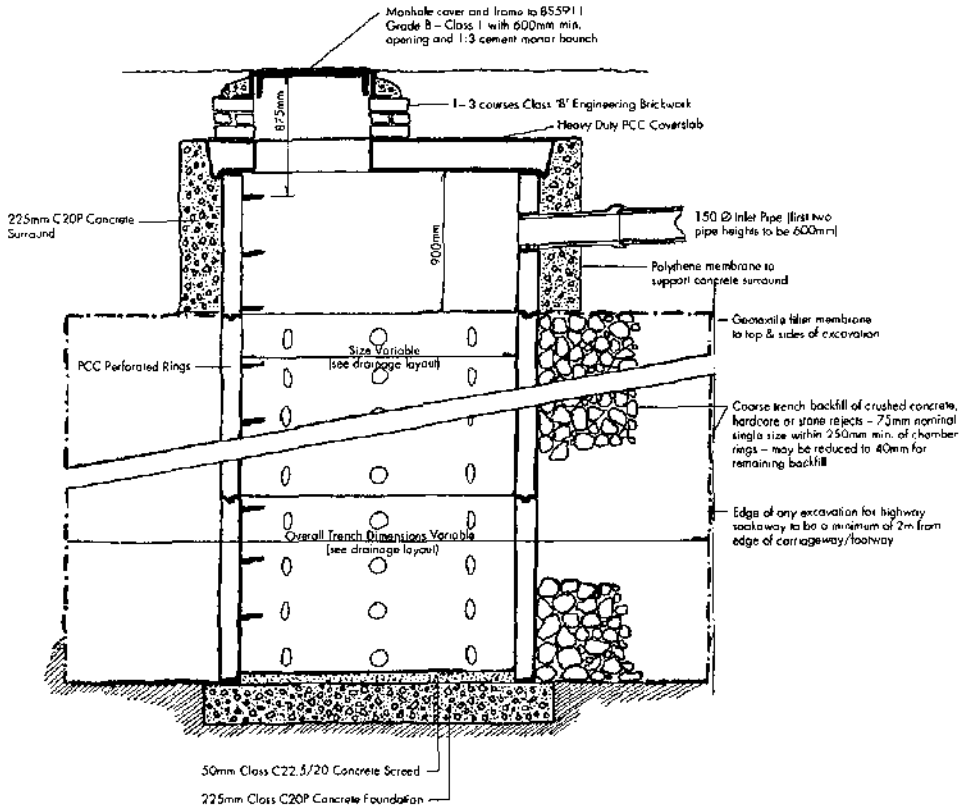
The following design parameters shall be used:

- Storm frequency - once per annum (in some cases a longer return frequency period may be required)
- Time of entry - 3 minutes.
- Minimum full bore velocity - 0.76m/sec.
- Maximum full bore velocity - 3.1m/sec.
- Impermeability factor - 1.0 over whole width of highway (including footpaths and verges).
- Coefficient of friction 0.6mm
- The following formula should be used in calculating the rate of flow :-

$$Q \text{ (litres/sec)} = 2.778 \times R \times Ap$$

where R is the rainfall in mm/hour
and Ap is the cumulative
impermeable area in hectares.

HIGHWAY SOAKAWAY



For developments consisting of a short cul-de-sac only it will be sufficient to use the formula Q / 0.0003 ApR where Ap = impermeable area in sq. metres and R = 50 mm/hr. Q is in litres/sec.

- The minimum size of a carrier drain is 225mm diameter (gully connections generally 150mm diameter).

6.8.6. Where no positive drainage is proven to exist the use of soakaways may be considered if the applicant obtains :-

- N.R.A. approval for the use of soakaways;
- The soakaways are designed in accordance with BRE Digest 365

Any approved soakaway must be located in open areas at least 2m away from any road/footway construction. The area of the soakaway must be adopted by the Highway Authority.

6.8.7. To assist in the checking of drainage calculations the format shown on Drawing No. DC113 should be used.

Gullies : Spacing to be designed.

Manholes : Maximum spacing 75 metres (but required at all changes of direction and gradient).

Gully connections max. length 10m.

Highway (Surface Water) Drainage Design Sheet

Surface Water Drainage - Rational Formula Design Sheet

Scheme; _____

Storm Frequency 1 in 1 years
Roughness Coefficient 0.6 mm

Time of Entry 3 mins

Date: _____

Initials: _____

Length No	Difference in level (m)	Length (m)	Gradient (1 in)	Velocity (m/sec)	Time of flow (min)	Time of Conc. min	Rate of Rainfall mm/h	Impermeable Area				Rate of flow l/sec		Pipe Diameter mm	Remarks
								Roads	Buildings	Total	Cumulative	Actual	Possible		

Foul Drainage - Prospective public foul sewers must be designed to the satisfaction of AWSL and will normally be the subject of greement under Section 104 of the Water Industry Act 1991.

Road Lighting

6.9.1. Road Lighting Systems in accordance with the current version of BS 5489 will be required on all roads and footpaths which are to be adopted, and on any existing roads and footpaths which are to be modified and adopted, or where the increased use of the road justifies it.

6.9.2. Lighting systems designed to 'footway standard' will not be allowed except by prior agreement with the Lighting Engineer and in any case will be confined to short extensions to existing estates which have 'footway standard 'lighting systems.

Conservation Areas

6.9.3. The style of lighting equipment will be specified by the Highway Authority. This is likely to include decorative lanterns. Early consultations with the lighting engineer is recommended.

Equipment

6.9.4. In all areas, except Conservation Areas, conventional Road Lighting equipment will be used. A list of approved equipment will be issued, and the developer will be free to choose from this list. The developer must still obtain the Lighting Engineer's approval to the equipment offered prior to installation.

6.9.5. The lighting points will be controlled by electronic photo-electric cells set with a 70 LUX switch-on setting, a negative switching ratio, and a 6 year guarantee.

Mains Supplies

6.9.6. All road lights and signs should be fed directly from Eastern Electricity's low voltage distribution mains. Only in exceptional circumstances will a private cable network feeding the lighting columns be allowed and then only by prior arrangement with the Lighting Engineer.

6.9.7. Roundabouts at the entrance and within the development will be lit in accordance with BS 5489, Part 4 and Part 2. The minimum value of the lighting level on the roundabout will be equal to the average value on the approach road with the highest defined lighting category.

6.9.8. In small developments in small villages the lighting level may be varied by prior agreement of the Lighting Engineer.

Design Approval

6.9.9. The developer will submit two copies of plans showing his proposed road lighting layout for approval. Calculations of lighting levels will be presented for each road in accordance with BS 5489, Part 2, Appendix B or BS 5489, Part 3, Appendix A.

6.9.10. The drawing shall be a minimum scale of 1:500 and show houses, private drives and drop kerbs. The drawing will also show existing lighting within 100m of any new road.

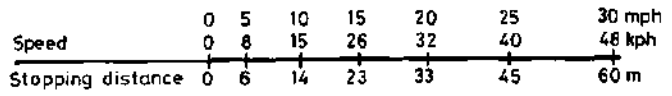


Figure A

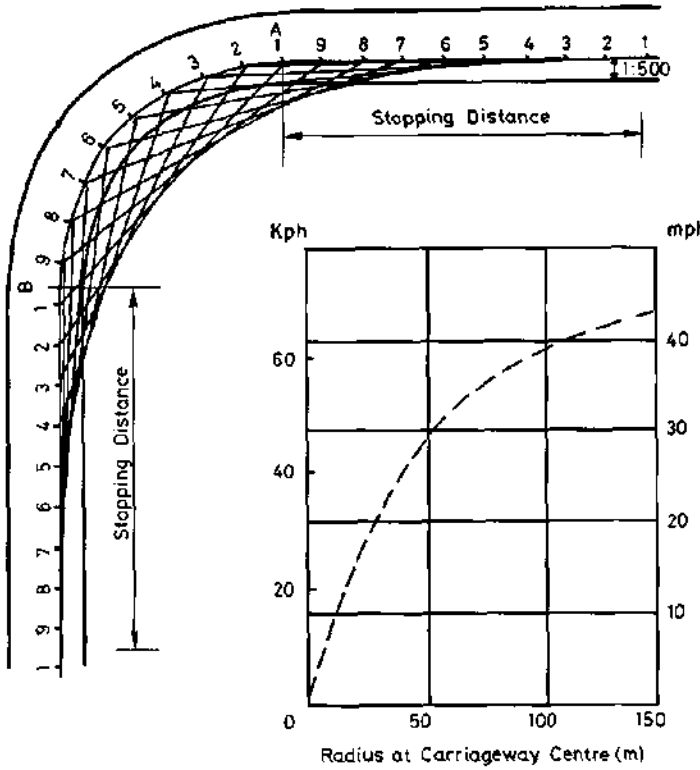


Figure B

Figure C

Design Aids for Visibility on Bends

6.10.1. To construct a forward visibility curve around a bend as shown in Figure B.

a line should be drawn parallel to the inside kerb, 1.5m into the carriageway;

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

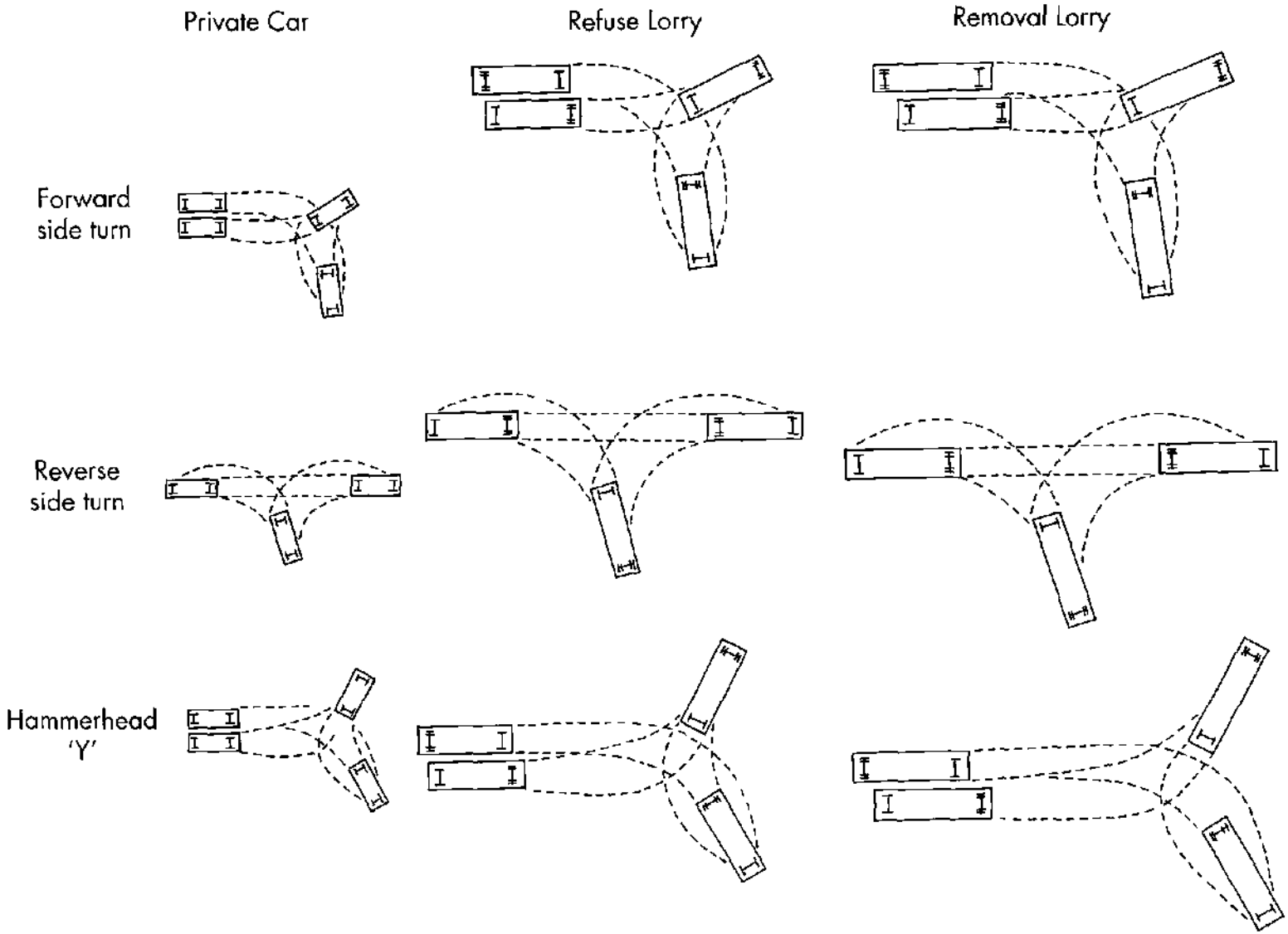
the stopping distance should then be divided into equal increments of approximately 3m, and the increment points numbered in sequence;

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

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

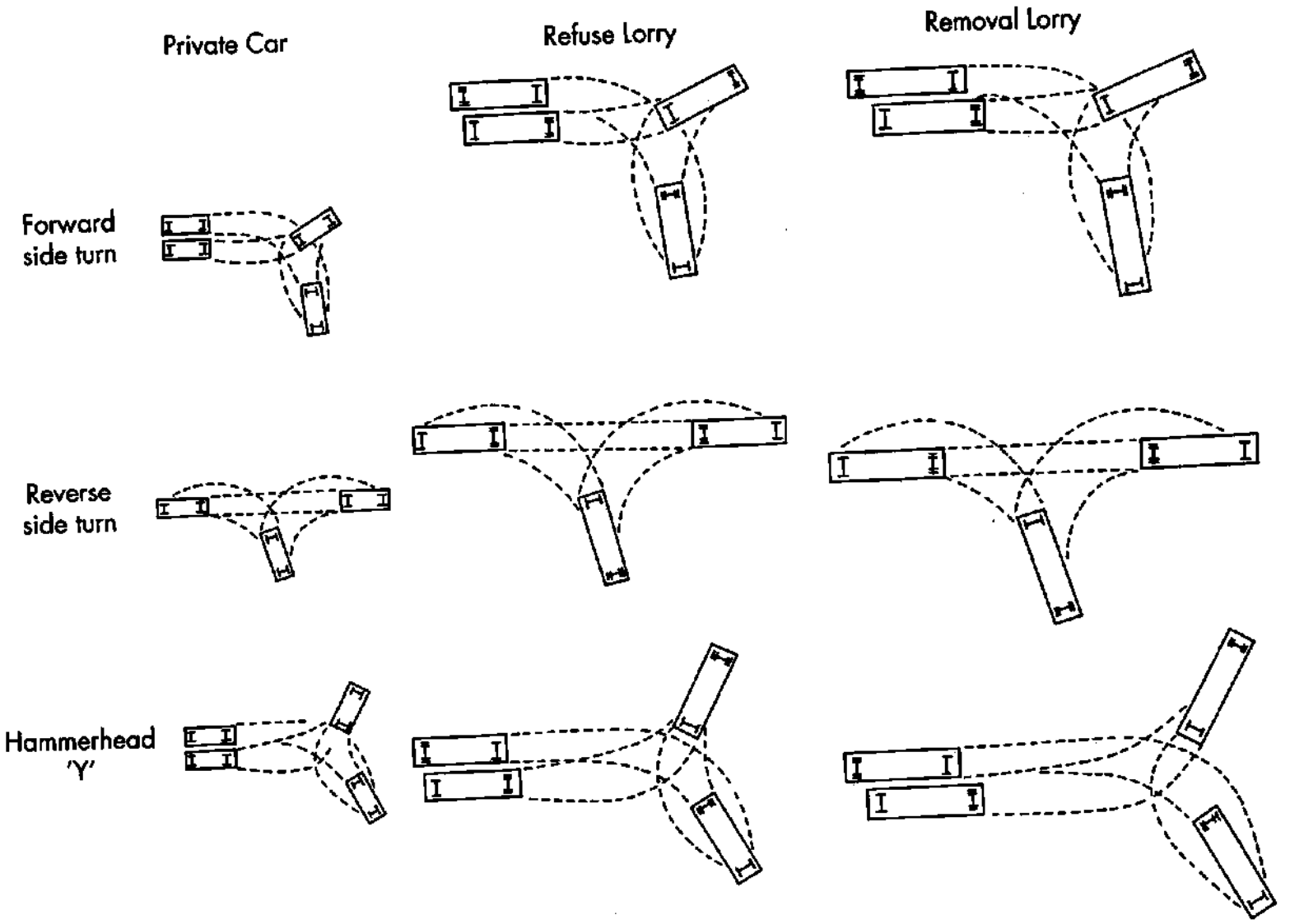
Figure C indicates that very substantial reductions in mean vehicle speeds occur with successive reductions in curve radii below 100m. It is suggested, however, that this data be used only as guidance to the likely speeds on bends of 90° or tighter. It should also be noted that Figure C represents mean vehicle speeds only and a safety factor of 20% should be added to these speeds when considering the stopping distances and the forward visibility which should be provided.

6.11 Swept Path Diagrams



Scale 1 : 500

6.11 Swept Path Diagrams



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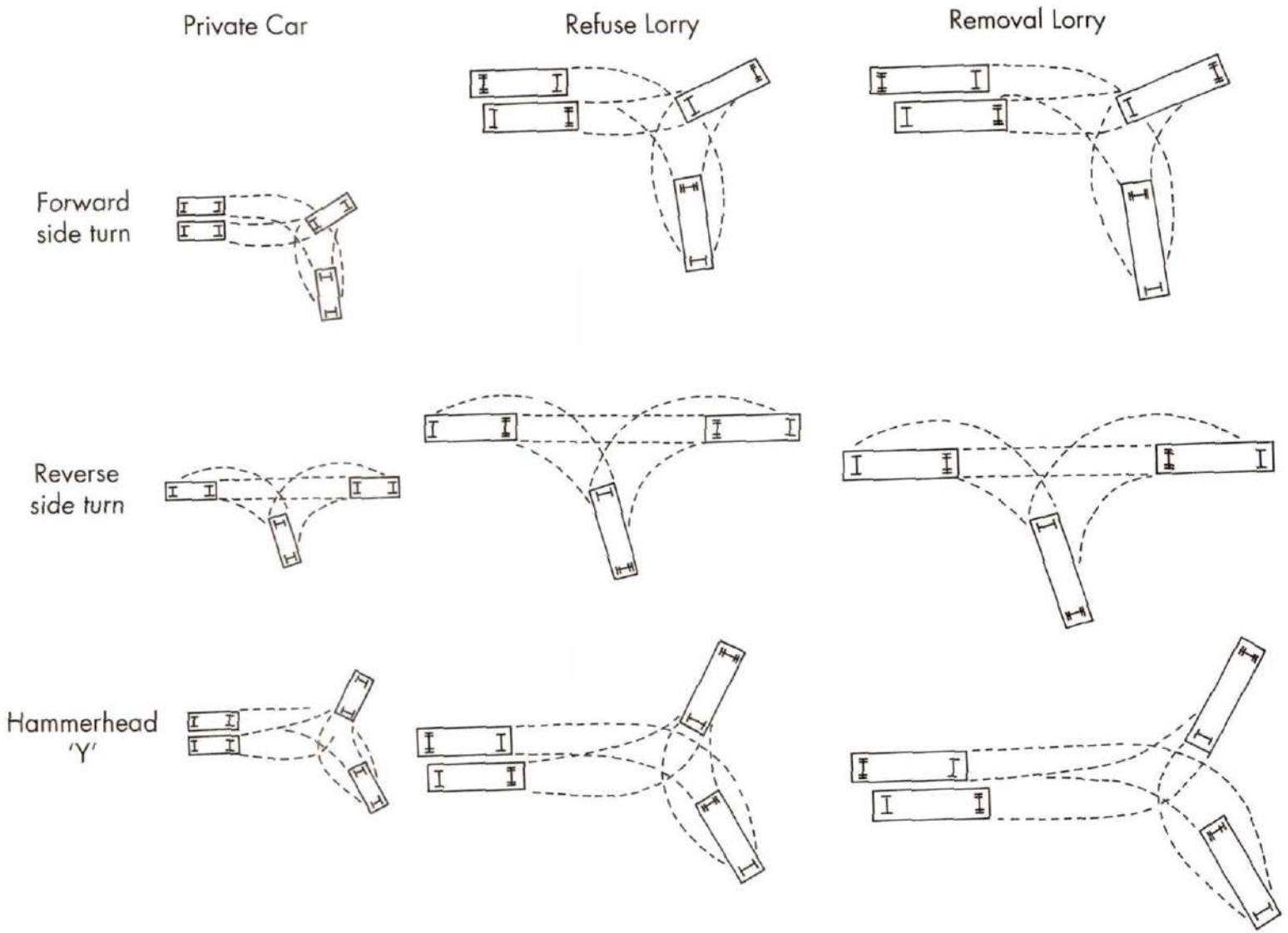
6.11 Swept Path Diagrams



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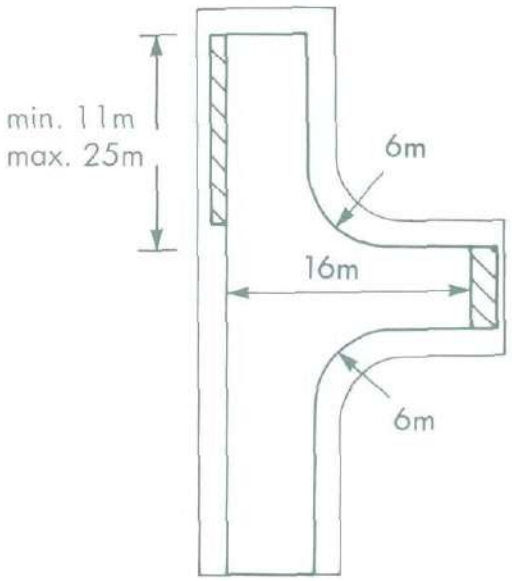
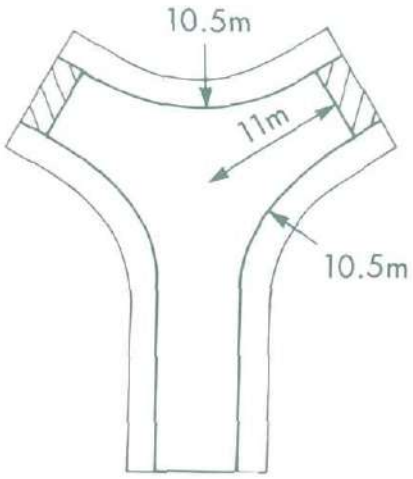
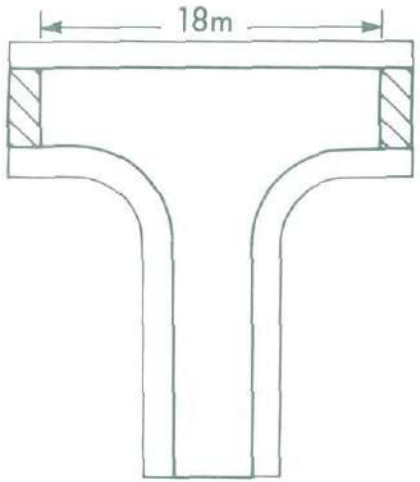
6.12 Typical Turning Heads



Type A



Type B



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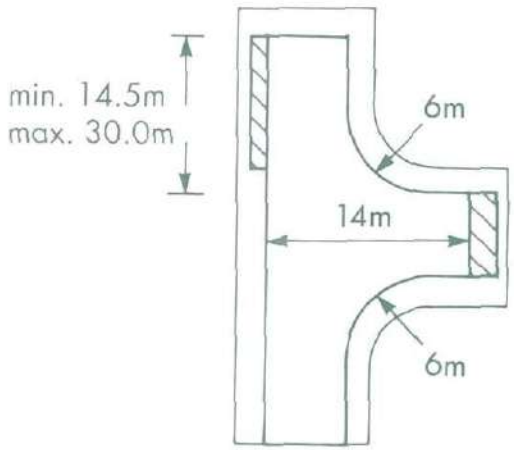

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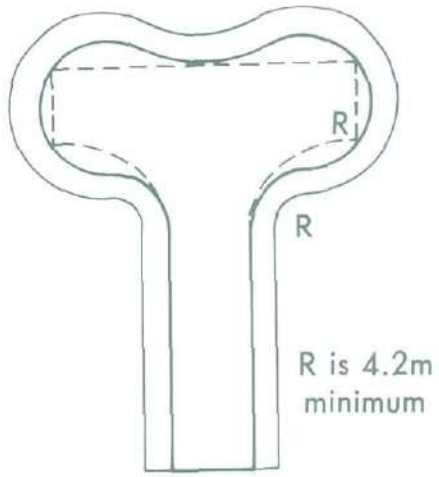
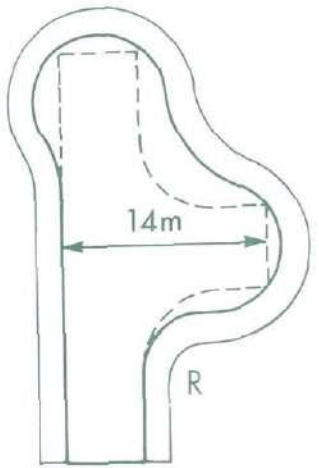


Type E



Type F

Indicates vehicle overhang

7 Utilities Services and Street Furniture

Contents

7 Utilities' Services & Street Furniture

Introduction

7.0.1 This Guide embodies the joint views of the Suffolk Statutory Undertakers and augments:

- DoE and DTp Design Bulletin 32 'residential roads and footpaths' and
- The National Joint Utilities Group (N.J.U.G.) Publication No.2 'Provision of Mains and Services by Public Utilities on Residential Estates
- NJUG No.7

The NJUG documents are the main source of guidance on service requirements and copies should be available from any of the service authorities, or direct from The NJUG telephone 071 344 5720.

7.0.2 Services are an integral part of housing estate design and fundamental to the well being of future residents. It is important that all concerned are familiar with the views of the Statutory Undertakers in order to minimise difficulty or conflict at a later stage in the design of layouts, although Statutory Undertakers will always be prepared to discuss, preferably jointly, all proposals.

7.0.3 Where housing layouts are approved by local planning authorities without details of the service routes, the subsequent provision of these services can have a significant adverse effect upon the appearance of the estate. It will not be acceptable to delete landscaping in order to accommodate services such as electricity sub-stations and gas governors which the developers should have planned for at the outset. Applicants will therefore be required to show service corridors at the planning application stage.

Principles

7.1.1 The principles set out below should be followed when considering service provision for housing estates.

- A balance should be struck between housing, planning, highway and utility interests.
- All parties involved should work closely together to ensure services become an integral part of the initial design process
- Resident's requirements for statutory services should be met efficiently and economically.
- Innovative solutions to design problems should be encouraged while having regard to future maintenance implications.
- The risk of damage to utility plant, apparatus and underground services particularly from vehicles should be minimised. Mains and services adjacent to carriageways and parking areas should normally be located under paved footways or be otherwise protected when there would be a risk of damage from vehicle parking on soft ground.

Powers of Statutory Undertakers

7.2.1 Statutory Undertakers have powers to break open streets and lay and maintain apparatus in public highways and other public land. The New Roads and Street Works Act 1991 and other specific enactments give powers to ensure that the Undertakers have adequate facilities for immediate repair and maintenance. Statutory Undertakers prefer to maintain these rights by laying their mains within the public highway other than in the carriageway.

Design Considerations

7.3.1 Layouts for developments may well create special problems for plant installation, for example, the location of electricity sub-stations at the correct load centre and gas regulator locations. Planners and developers must establish early liaison with individual Statutory Undertakers to ensure that their requirements can adequately be catered for.

7.3.2 Developers must clearly indicate on plans the footpaths, service strips and carriageways which will be adopted by the highway authority before plant is installed.

7.3.3 Ducts for cable TV will be required on all new estates; the position of ducts will need to be agreed between local N.J.U.G. representatives and the highway authority.

Routes for Main Services

7.4.1 Utilities prefer to route their services and locate plant within land forming part of the adopted public highway. There are three main categories of road which can be used for this purpose, namely:

- Local Distributor Roads
- Access Roads
- Shared Surface Roads

Distributor Roads

7.4.2 These roads will normally consist of a carriageway, verges and footways. To prevent the visual sterility associated with such large vehicular corridors it will in future be a requirement that the verges are primarily used for planting, particularly trees. The future growth of planting and trees need to be carefully considered. Services will therefore need to be located either within carriageways (only foul and surface water sewers) or under footways (all other services). If at a later stage services are required and it is impracticable to include them in the footway due to congestion it may be necessary to place them in the verge.

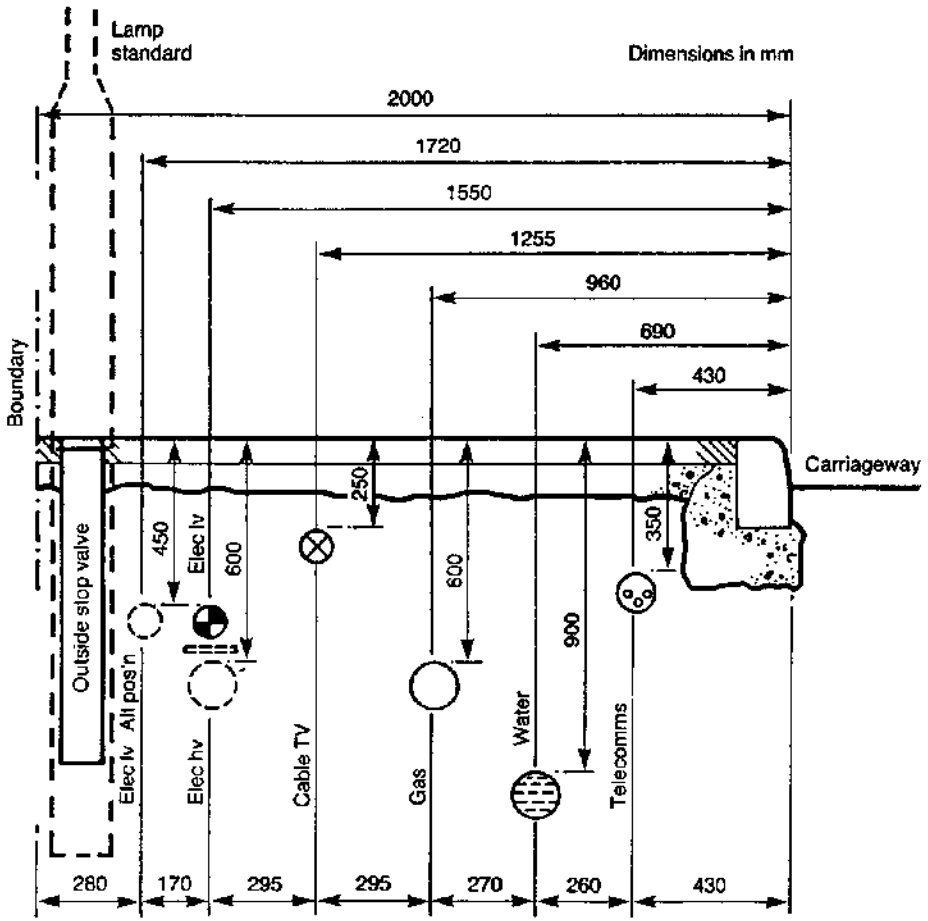


Figure 7.1

7.4.3 Provision of plant in the carriageway is costly to install and to maintain. It can cause access and road safety problems and result in high reinstatement costs, considerable excavations often being necessary. Therefore, it is undesirable from the viewpoints of residents, street authorities/managers and statutory undertakers for mains and services to be located in the carriageway.

7.4.4 The preferred location for all services on distributor roads is within the footways. Where this is not possible verges should be widened from the usual width of 2 metres to allow for adequate planting to co-exist with services.

7.4.5. Footways normally require a clear minimum width of 1.8 metres. This assumes no excessive overspill of concrete for the edging or kerb haunch and that satisfactory arrangements can be made for the provision of lighting columns and road signs where appropriate without obstructions to the services.

7.4.6 Where services are laid at an early stage care needs to be taken with the setting out in order to avoid service area encroachment on private properties.

7.4.7 The layout and depth of main services as shown in Figure 7.1 (NJUG Publication 7) shows the recommended arrangement. It is advisory and should not be relied upon as an accurate indication of either existing or future dispositions. Excavations in the vicinity of underground services should be carried out in accordance with HSE Guidance Booklet HS(g)47 "Avoiding Danger for Underground Services".

Access Roads

7.4.8 These consist of a carriageway plus footways and the general principles outlined in Paragraphs 7.4.3 - 7.4.7 above also apply to such roads.

Shared Surface Roads

7.4.9 These roads consist of a carriageway shared by vehicles and pedestrians plus appropriate verges/service strips. The services will usually be accommodated within the service strips which should have a minimum width of 2 metres. It should not normally be necessary to provide a 2 metre service strip on both sides of the road and a reduced width will be acceptable in some circumstances subject to discussion and agreement.

7.4.10 It is essential that only plants with shallow root systems should be planted within service strips on top of service runs. Where service strips accommodate existing vegetation they should be widened to avoid damage to the retained landscaping. Banks or mounds in adjoining landscape areas should not encroach on service strips. Levels should not be altered over Undertaker's equipment without prior consultation with the Undertakers concerned.

7.4.11 Service strips must be defined by the developer in agreement with the highway authority. Developers are required to make it clear to purchasers that service strips are not conveyed to the property. As a further safety precaution Statutory Undertakers may wish to attach a note to each meter board warning against digging or plating in the margin and indicating the position of services.

7.4.12 Where a shared surface road consists only of the carriageway, it will be essential to provide mains and services in a manner whereby repair and maintenance can be carried out without excavating or blocking the carriageway. This situation can be met by consultation between all concerned at the outset.

Routes other than Highways

7.4.13 It should be very rare for services to be located other than in the public highway. Where this is unavoidable developers should seek early liaison with the Statutory Undertakers and the local planning authority. Services located under footpaths or public open space should conform to the general design principle applicable to footways and service strips. Where services are laid in land which will not ultimately form part of the adopted highway the utilities are likely to require permanent easements and access rights.

Street Furniture

7.5.1 A great deal of time, consideration and effort which goes into the layout of a housing estate can be ruined because of lack of thought with regard to the location of street name plates, telephone kiosks, Utility Service cabinets, litter bins, etc. The position of lamp columns is covered under the section on street lighting. Likewise, bus shelters are covered under the section on public transport.

7.5.2 On large estates the location of an information board close to, but not immediately within, the entrance to the estate is a useful feature and should be combined with the provision of a layby.

7.5.3 Suggested combinations of street furniture for successful layouts include the provision of telephone kiosks and post boxes adjacent to bus shelters that are on main footway/footpath links and, in addition, street name plates affixed to property are likely to suffer less from vandalism and generally makes for much less clutter on the highway.

Appendices

Contents

Appendix A

Site Survey and Analysis

1. Designers need to be familiar with, and aware of, the specific physical characteristics of the site being developed. The design concept for each site will vary depending upon these characteristics.

2. The Site Survey. This should be map based to a scale of 1:500 or, in the case of very large sites, 1:1250. Each plan should contain a north point, scale, title and reference number.

   The following list contains some of the key elements of a comprehensive site survey:-

   * Precise boundaries of site
   * soil characteristics
   * topography/landform
   * drainage and water features, including ditches and ponds
   * existing roads and footpaths both on site and adjoining, including drainage
   * vegetation (all trees and hedges should have the full extent of canopies/widths shown)
   * archaeological sites
   * services crossing and adjoining site
   * buildings and structures on site and those immediately adjacent.

3. **Site Analysis**

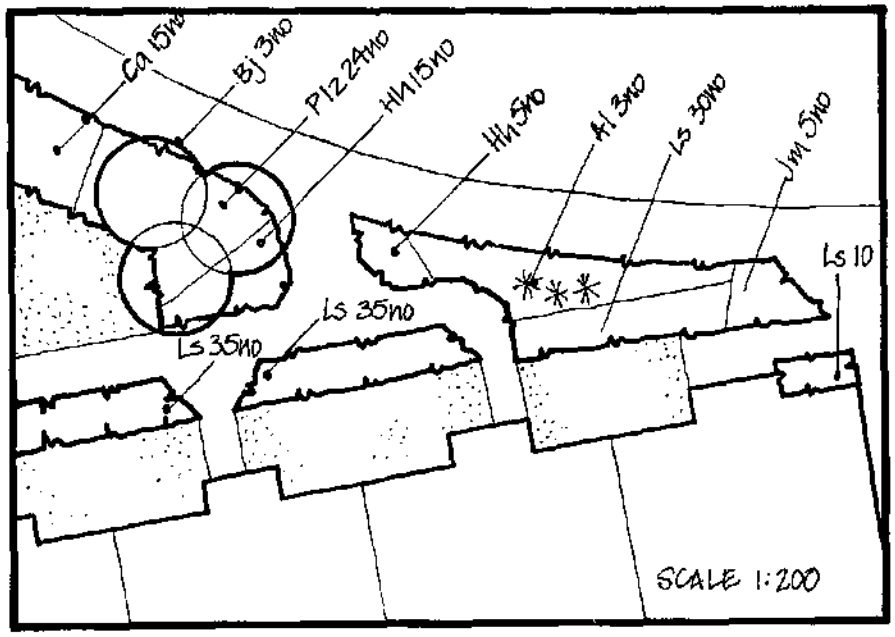
   This should relate the site survey to any development brief in terms of specified features to be retained. Such analysis should identify any constraints on development, for example, areas likely to flood, contaminated land, the presence of ecologically sensitive areas including wildlife or preserved trees. It is expected that a landscape and/or townscape appraisal will be undertaken in respect of the site and its surroundings, along with an assessment of the capacity of the existing road and footpath network.

Appendix B

Details to be submitted with a planning application

1. OUTLINE PLANNING APPLICATIONS. Apart from the usual forms, certificates and appropriate fee, Outline planning applications should be accompanied by the following information:
   - Site Survey and Analysis on a map base to a scale of 1:500 or, on very large sites, 1:1250. Smaller urban sites may justify site survey and analysis on a 1:200 scale map base, given the likely proximity of surrounding development;
   - a Master Plan for large estates to a scale of 1:1250, accompanied by a brief written statement outlining the developer's design philosophy. Whilst not definitive, the following list indicates the general content of a Master Plan:
   - retained site features
   - infrastructure, especially road network as it relates to current road pattern
   - phasing and density of areas to be developed for housing
   - landscaping (predominantly structural and formal open space provision)
   - community facilities
   - any associated non-housing provision such as local shops/employment sites.
2. RESERVED MATTER APPLICATIONS. Reserved Matter applications which are submitted in pursuance of an Outline planning permission will be expected to contain all the details required by the local planning authority to determine the merits of the total housing environment proposed. Normally such details should be shown at a minimum of 1:500 scale for layout plans, 1:200 scale for landscape details and 1:100 scale for building elevations and floorplans. Details to be submitted would include:
   - the position of all buildings, their design and method of construction/materials;
   - details of road and footpath/cycleway layout, materials, construction if the road is not to be adopted; when road to be adopted see section 6.5.
   - hard surfaces, walls, fences, gates and play equipment;
   - landscape details eg, location, species, size, density, site preparation;
   - services eg, routeing, substations, bus stops, lighting, telephone boxes, pumping stations;
   - provision for car parking and assignment of spaces, if not within domestic curtilages;
   - amenity and informal landscaped areas;
   - details of maintenance proposals for all communal areas, roads, footpaths and open spaces, with a clear indication of who will maintain them. In the case of roads and footways/footpaths, this is likely to be covered by the subsequent adoption procedures under the Highways Act.
3. FULL PLANNING APPLICATIONS.
   Applications seeking a full planning permission from the outset should contain all the detail required in Sections 1 and 2 above.

Appendix C



SPECIES		SIZE	NO	PLANTING DENSITY
Bj	Betula jaquemontii	1·8m cg	3	3 metre spacing
Al	Amelanchier lamarki	60-90 cg	3	1 metre spacing
Ca	Cornus alba "Sibirica"	60-90 cg	15	1 metre spacing
Hh	Hedera helix Hibernica	90-120 cg	15	2 per m^2
Jm	Juniperus x media "Pfitzerana"	45-60 cg	5	1 per m^2
Ls	Lavandula spica	30-45 cg	110	3 per m^2
P12	Prunus laurocerasus "Zabeliana"	45-60 cg	24	1 per m^2

NOTE
Trees are to be protected in shrub areas with spiral guards and stake supports
All shrub areas will be mulched following planting to a depth of 50mm with ornamental grade Bark mulch

Landscape Technical Specifications

1. Landscape Schemes

A full schedule of works should be appended to the scheme demonstrating the pre and post planting works that will be carried out.

All plants being used on the scheme should be named, using botanical (Latin) names, showing both the species and the genera, e.g. Cotoneaster (dammeri) 'Skogholm' not 'Cotoneaster ground cover' or 'Skogs'.

Plans should always contain the following information:

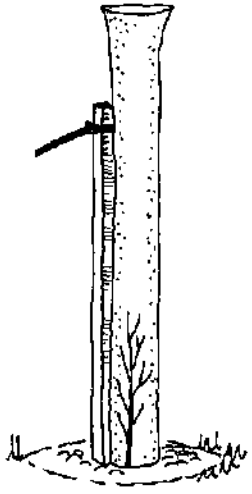
- Planting density (plants per square metre)
- Size of plants.
- Planting materials such as mulching, stakes, canes, shelters and other materials intended to aid establishment.

Where standard trees are being planted these should be container grown. They should be secured to a low wooden stake not more than 30cms tall above ground level, using one tree tie. All broken and damaged branches should be pruned back to a living bud. Larger trees will require more robust securing systems, involving taller stakes, more stakes or underground anchorage. Stakes must be removed during the third season after planting or ties loosened after that time to accommodate stem growth.

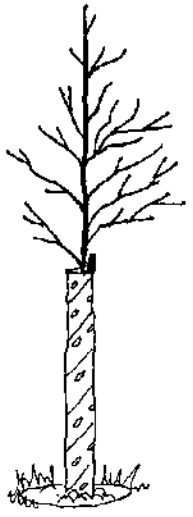
A landscape design should contain measures to ensure that soil conditions will allow successful establishment of the planting, where this is necessary. For example, soil contaminated with fuel or chemical spillage (including road salts) must be replaced with fresh top soil before planting.

All landscape plans should be clear, concise and normally to a scale of 1:200.

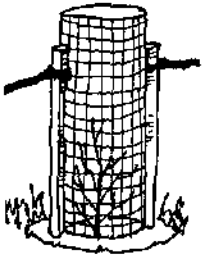
Appendix C (continued)



1·2metre high tree shelter



60cm high Spiral guard



60cm high Gro cone

2. Soil compaction

Soil compaction caused through mechanical activity is very common on development sites. This destroys the soil structure and makes the proper movement of air and moisture through the soil impossible. Plants will fail to establish and grow in these conditions, so measures to alleviate compaction should form part of any landscape scheme.

These could include:

- Protection of planting areas to prevent mechanical activity or storage of materials.
- Subsoiling to relieve compaction.
- Excavation and replacement of compacted soil.

3.Topsoil

Where topsoil is to be imported/replaced on a site which has been stripped of its topsoil during the course of development, it is expected that replacement soil will be graded and freed from rubbish such as stones and building materials. Topsoil should be inspected and its quality agreed before it is installed on site. - See B.S.3882 for guidance.

4. Aids to Establishment

These should be used on all low maintenance schemes

- rabbit guards: where damage is likely;
- tree shelters: to help some slower growing trees establish quickly if planted as whips or transplants;
- mulch: to reduce weed competition and evaporation from the soil. Can be bark or woodchips, bitumen or polythene mats; polythene sheeting;
- the use of rainwater butts in association with stormwater runoff systems to provide a watering facility for garden planting is recommended in the interests of water conservation.

Appendix C (continued)

5. **Weed Control**
It is especially important with hedges and shrub beds to ensure that weeds are adequately controlled. In addition, the bases of trees and shrubs which are grown in grass areas should always be kept clear for a distance of at least half a metre from the trunk of the tree. The use of mulching material cuts down the cost of weed control after planting. Mechanical weeding should be undertaken at least twice yearly.

6. **Grass Seeding**
Grass areas will only be regarded as acceptable where the soil level has been cultivated to a minimum depth of 15cms, left even, well compressed and free from stones and other materials and raked to a fine tilth. The seed itself should have successfully germinated evenly over the entire soil surface. A minimum of 30gms per metre square sowing rate will have been undertaken (dependent on the seed mixture) which should be indicated on the scheme. The soil surface must be left slightly proud of edging stones and other hard surfacing, to ensure that acceptable grass cutting can be undertaken. Narrow corners should not be laid to grass and service access points such as manholes should not be left proud of the final soil level.

7. **Tree Works**
The standard work to trees must conform to the B.S.3998; 1989. The terminology and types of work described therein should be used in all tree work proposals.

8. **Choice of Plant Species**
The lists of plant species given below are for guidance in specific circumstances, where the choice of species may be particularly important. The lists are in no way intended to be a substitute for professional expertise, nor are they exhaustive in scope.

Where a new estate abuts open countryside, or where the rural nature of a site requires emphasis, the use of native plants within a landscape scheme is desirable. A list of appropriate species is given below, however these plants may not be suitable for all sites in the county. Professional assistance is strongly recommended before making any final selection of species.

Appendix C (continued)

Native Trees and Shrubs Suitable for Planting in Suffolk

BROAD LEAVED TREES

Common Name	Latin Name	Comments
Alder-Common	Alnus glutinosa	Wet, heavy soils
Ash	Fraxinus excelsior	All soils
Beech*	Fagus sylvatica	Open lighter soils
Aspen	Populus tremula	Moist soils
Birch - Downy	Betula pubescens	Heavy loam
Birch - Silver	Betula pendula	Light sandy loam
Bird Cherry	Prunus padus	All
Crab Apple	Malus sylvestris	All
Gean	Prunus avium	All
Holly*	Ilex aquifolium	All - shade tolerant
Hornbeam*	Carpinus betulus	Moist except very moist
Lime - small leaved	Tilia cordata	Deep, moist soils
Maple - field *	Acer campestre	All
Oak - English	Quercus robur	Moist, heavy clay
Oak - Sessile	Quercus petraea	Dry soils and flood tolerant
Pear*	Pyrus pyraster	All soils
Poplar - Black	Populus nigra	Moist
Rowan	Sorbus aucuparia	Well drained light soil
Service*	Sorbus torminalis	Chalk
Whitebeam	Sorbus aria	Moist soils - limestone
Willow - White*	Salix alba	Wet, flooding or new sites
Willow - Crack	Salix fragilis	Wet, flooding or new sites
Willow - Purple *	Salix purpurea	Moist

* = Trees that are also suitable for inclusion within hedges

CONIFERS

Common Name	Latin Name	Comments
Scots Pine	Pinus sylvestris	Well drained acid soils
Yew	Taxus baccata	All soils except very acid

PLANTS SUITABLE FOR HEDGING

Beech*	Fagus sylvatica	Deep moist soils
Blackthorn*	Prunus spinosa	All soils
Bramble	Rubus fruticosus	All soils
Broom - Common	Cytisus scoparius	All soils
Buckthorn - Alder	Frangula alnus	Moist and acid
Buckthorn - Purging	Rhamnus catharticus	Alkaline
Dogwood	Cornus sanguinea	Moist
Guelder Rose	Viburnum opulus	Moist
Field Maple*	Acer campestre	All soils
Hawthorn *	Crataegus monogyna	All
Hazel *	Corylus avellana	All
Holly*	Ilex aquifolium	All
Hornbeam*	Carpinus betulus	Deep moist soils
Osier	Salix viminalis	Deep moist soils
Privet - Common	Ligustrum vulgare	Dry, alkaline chalk
Rose - Dog	Rosa canina	All soils
Rose - Field	Rosa arvensis	Deep clay
Wayfaring tree*	Viburnum lantana	Alkaline soil
Willow - Goat	Salix caprea	Moist
Willow - Grey *	Salix cinerea	Moist

* = Hedge species which may grow on to become trees

Appendix C (continued)

Low Ground Cover Plants.

adjacent to highways and within visibility splays
(These may still require routine pruning)

Name	High Salt Tolerance
Berberis wilsonae*	Yes
Bergenia cordifolia	Yes
Buxus microphylla	
Ceanothus thyrisflorus repens	
Cornus canadensis	
Cotoneaster dammeri 'Skogholm'*	Yes
Cytissus scoparius prostratus	Yes
Erica carnea*	Yes
Euonymus fortunei 'Coloratus'*	Yes
Hebe albicans*	Yes
Hedera helix*	
Hypericum calycinum♦	Yes
Jasminum nudiflorum	
Juniperus horizontalis 'Glauca'	Yes
Lamium galeobdolon	
Lavendula spica 'Hidcote'	
Lonicera japonica 'Halliana'	Yes
Lonicera pileata	Yes
Mahonia x repens	
Pernettya prostrata	
Picea abies 'Repens'	
Prunus laurocerasus 'Otto Luyken'*	
Pryacantha 'Soleil d'Or'	
Rubus tricolor	
Sarcococca humils	
Vinca minor 'Variegata'	

Those marked * contain other varieties within the same family, which are also suitable.

Small Trees or Large Shrubs for Planting in Sites with Restricted Space

English Name	Botanical Name	Ht.m	Suitable where rootspace is restricted	Suitable where crownspace is restricted
Silver Birch	Betula pendula*	15	+	+
Hepeh Crab	Malus hupehensis*	7	+	+
Hornbeam	Carpinus betulus 'fastigiata'	16		+
Rowan	Sorbus aucuparia*	7	+	+
Fastigiate Oak	Quercus robur 'fastigiata'	15		+
Medlar Tree	Mespilus germanica	7	+	+
Irish Yew	Taxus baccata 'fastigiata'	10		+
Snowy Mespilus	Amelanchier lamarckii	10	+	+
Moosewood	Acer pensylvancium	10	+	+
Spindle	Euonymus europaeus	5	+	+
Fastigiate Beech	Fagus sylvatica 'Dawyck'	20		+
Kilmarnock Willow	Salix caprea 'Pendula'	4	+	+
Pea-tree	Caragana arborescens	5	+	+
Wayfaring Tree	Viburnum lantana*	4	+	+
Juniper	Juniperus communis	7	+	+
Weeping Box	Buxus semperirens 'Pendula'*	8	+	+
Pyramid Alder	Alnus glutinosa 'Pyramidalis'	20		+
Almond	Prunus dulcis*	10	+	+
Alder Buckthorn	Frangula alnus	5	+	+
Cornelian Cherry	Cornus mas*	10	+	+
Filbert	Corylus maxima*	6	+	+
Tulip Tree	Liriodendron tulipifera Fastigiata	20		+

* = other entirely acceptable species, hybrids or cultivars within the genus
+ = suitable
♦ = prone to rust disease

Appendix D

Parking Standards
Introduction

1.1 The purpose of the parking standards contained in this document is to ensure, in normal circumstances most commonly encountered, that parking and manoeuvring space is provided within the curtilage of development sites to cope with the traffic likely to be generated by that particular land use. It is expected that these standards will be met thus preventing a rise in on-street parking, interference with free flow of traffic and congestion.

1.2 The standards have been prepared taking into consideration the number and type of vehicles likely to be generated by the particular land use and reflect the normal minimum requirements for parking spaces. Where a proposed development is not specifically included in these standards the parking requirement will be assessed by taking into account experience of similar developments and the particulars of the specific application including the numbers of vehicles likely to be generated by the use and whether vehicles belong to the occupants or visitors.

1.3 Where a development will include two or more uses each use will be assessed separately for its parking requirement. If it can be demonstrated that such uses will not be carried out concurrently, shared use of parking areas may be considered.

2. Service Vehicles

2.1 Service vehicles will be required to enter and leave the highway in forward gear and have sufficient space on site for manoeuvring. An indication of the minimum number of service vehicle bays and their size will be given within the standards.

3. Dimensions

3.1 Each car parking space shall be 4.8m x 2.4m unless otherwise agreed and spaces for the physically handicapped should represent approximately 5% of the total number. Those spaces should have a minimum width of 3.3 metres.

4. Calculations

4.1 When calculating the number of spaces for the development proposed the result shall be 'rounded up' to the next highest whole number if the original calculation produces a decimal number.

Appendix D (continued)

5. Residential Development

5.1 Houses and Flats

In addition to the standards quoted below for each 5 dwellings proposed 1 unassigned space shall be provided for visitor and service parking. These spaces, if located and constructed in accordance with Highway Authority guidance are likely to be adopted by the Highway Authority.

- Dwellings of 2 or fewer bedrooms with private grouped unassigned parking courts	Three spaces per two dwellings
- Dwellings of 3 or more bedrooms with private grouped unassigned parking courts	Two spaces per dwelling
- Dwellings of 3 or fewer bedrooms (parking within the curtilage of the dwelling)	Two spaces per dwelling which may include garage provision
- Dwellings of 4 or more bedrooms (parking within the curtilage of the dwelling)	Three spaces per dwelling which may include garage provision

Appendix D (continued)

5.2 **Retirement Homes**

The schemes are, in the main, provided by the private sector and are Leasehold Schemes for the elderly (L.S.E.). The District Council will normally require developers to enter legal agreements restricting occupation to elderly persons.

The normal standards for houses/flats will apply if no lower age is to be agreed. The rate of parking provision applicable is dependent upon the age of the occupants and the location of the scheme. The Suffolk Structure Plan Policy CS5 sets out a list of towns in Suffolk and, for the purpose of car parking, these can be taken as 'urban' - all other villages will be termed 'rural' - the list is shown in 9 below.

5.3 **Retirement Homes - Parking Spaces per Residential Unit**

MINIMUM AGE	'RURAL'	'URBAN'
55	one and a half	one
60	one	two-thirds
65	three-quarters	half
70	half	one-third

5.4 ***Warden Serviced Housing for the frail elderly***

- Two spaces per warden and one space per 4 dwellings

The District Council will normally require developers to enter legal agreements restricting occupation to persons over 60. The normal standard for house/flats will apply if no or a lower age limit is to be agreed. This includes Local Authority Category 2 Sheltered Accommodation.

5.5 **Community Homes (Homes for children, physically and mentally handicapped adults and children).**

- 1 space for each member of residential staff and one space per 2 members of day staff and 1 space per 3 beds

Appendix D (continued)

5.6 Homes in Multiple Occupation

Where housing needs are paramount (not holiday bedsits) 2 spaces per 3 rooms

6 Shopping

Shops	Up to 499 sq.m GFA	Room for one 16.5m lorry	One car space per 25sq.m
	500-2000 sq.m GFA	Room for one 16.5m lorry per 1000sq. m	20 car spaces plus one car space per 15sq.m above 500sq.m.
	Above 2000 sq.m	Room for one 16.5m lorry per 1000 sq.m	120 spaces plus one space per 10sq.m above 2000sq.m
Food supermarkets and super-stores		Room for one 16.5m lorry per 1000sq.m	One car space per 10sq.m

7. Hotels, Conference Centres, Restaurants, Public Houses

Hotels	1 coach space /16.5m lorry space per 100 bedrooms	1 car space for each bedroom
Restaurant & bars		1 space per 4sq.m of public area
Conference Centres		1 space per 3 seats
Exhibition Halls		1 space per 6sq.m

Note: Where conference centres and/or exhibition halls are to be developed in conjunction with an hotel the standards should be additive but with a reduction on conference centre space equivalent to one seat per bedroom.

Appendix D (continued

Restaurants, Cafes Public House and Wine Bars	One 16.5 lorry space	1 car space per 4sq.m of public area
8. **Education**		
Operational Requirements	One lorry/coach parking space with adequate and safe facilities for turning the vehicle	1 space per teaching staff member
		1 space per 2 ancillary/administrative staff
		Visitor spaces, a minimum of 6 or 1 space per 25 pupils whichever is the greater subject to a maximum of 20 spaces. Where parents parking has been provided at the site the visitors spaces standard may be reduced or dispensed with.
Parents Parking at Primary Schools		1 space per 10 pupils on roll. Given the wide variation in the type, size and location of primary schools and of the means of access to such schools the Local Planning & Highway Authorities will undertake a detailed assessment of each application in order to determine, in each case, the way in which this standard is applied.

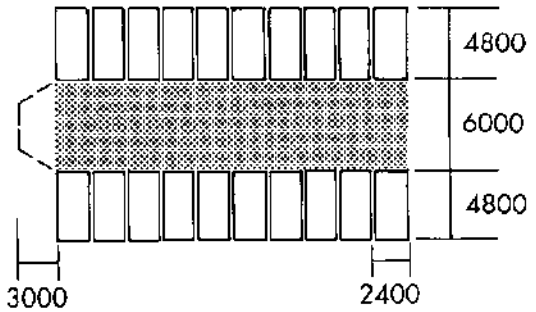
Appendix D (continued)

Urban Towns

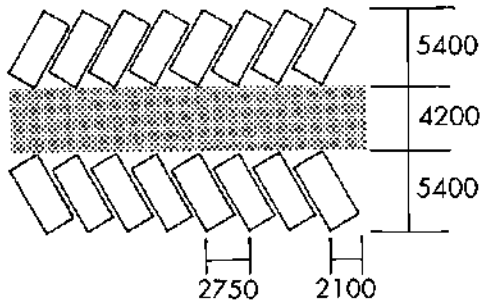
The following towns taken from Structure Plan Policy CS5 will be considered 'urban' for the purposes of car parking standards.

Aldeburgh
Beccles with parts of Worlingham
Brandon
Bury St Edmunds with parts of Fornham All Saints, Fornham St Martin and Horringer
Bungay
Debenham
Eye
Felixstowe with parts of Trimley St Martin and Trimley St Mary
Framlingham
Hadleigh
Halesworth with parts of Holton
Haverhill
Ipswich with parts of Belstead, Kesgrave, Martlesham, Purdis Farm, Rushmere St Andrew, Sproughton and Washbrook
Leiston
Lowestoft with parts of Oulton and Carlton Colville
Mildenhall
Needham Market
Newmarket
Saxmundham
Southwold with parts of Reydon
Stowmarket with parts of Stowupland
Sudbury with parts of Chilton and Great Cornard
Woodbridge with parts of Melton

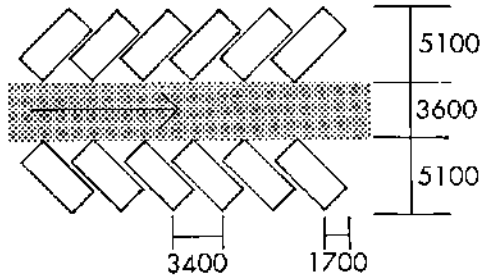
90° Parking



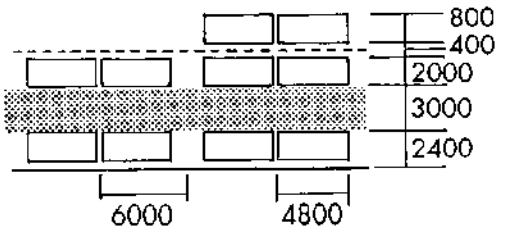
60° Parking



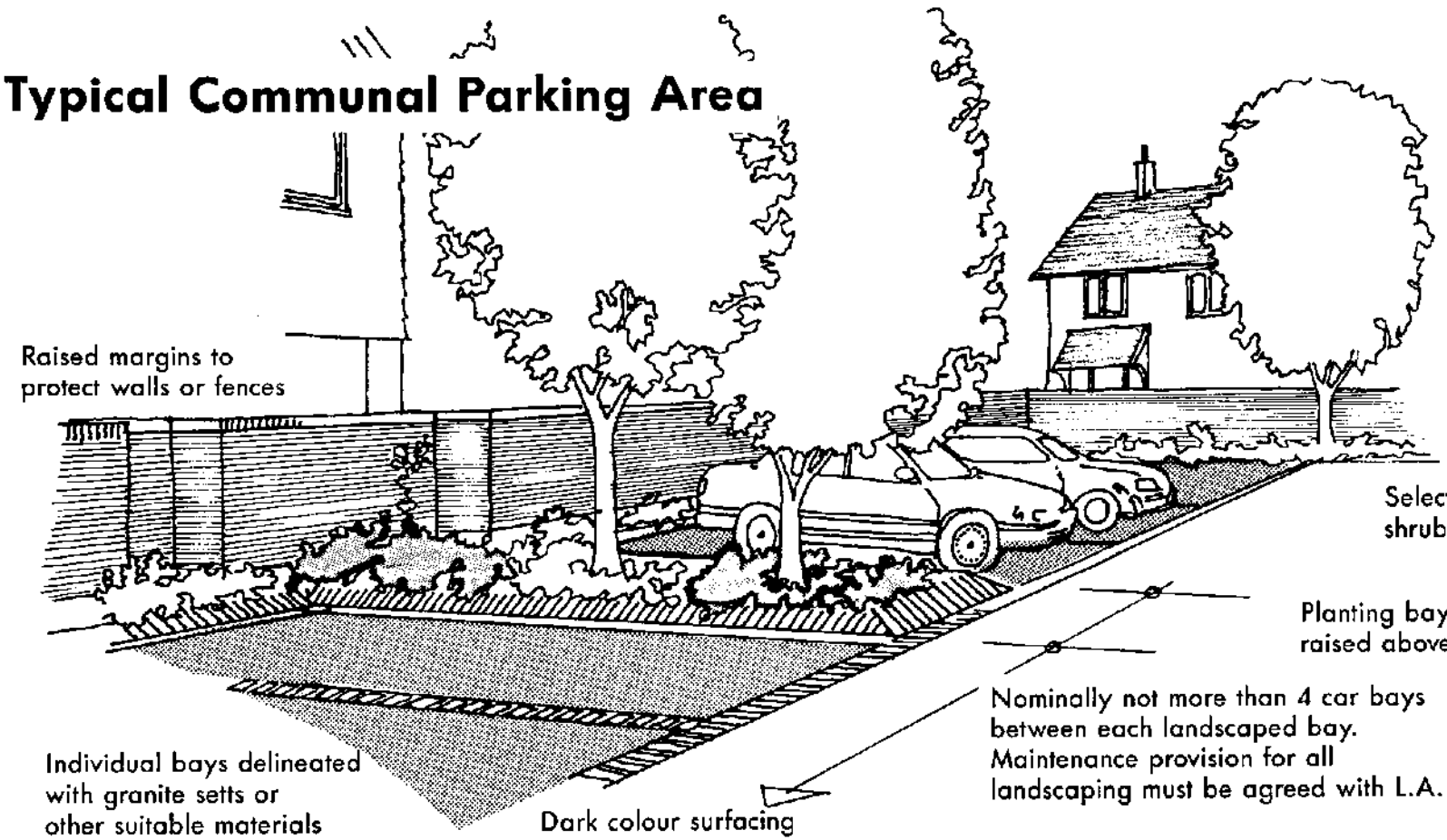
45° Parking

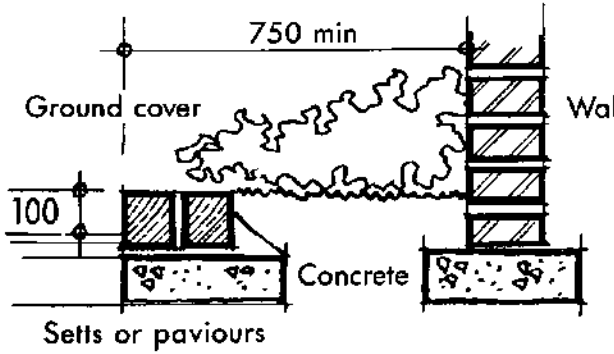


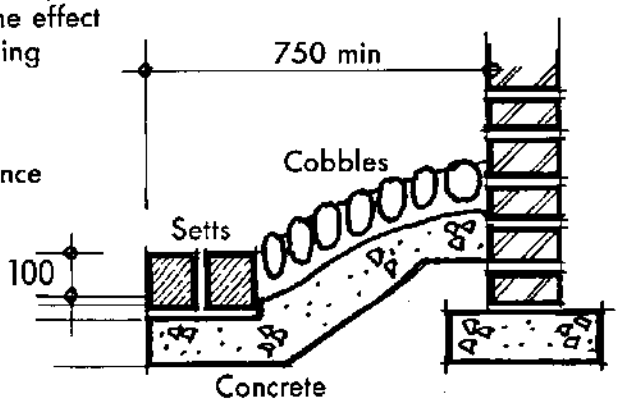
0° Parking

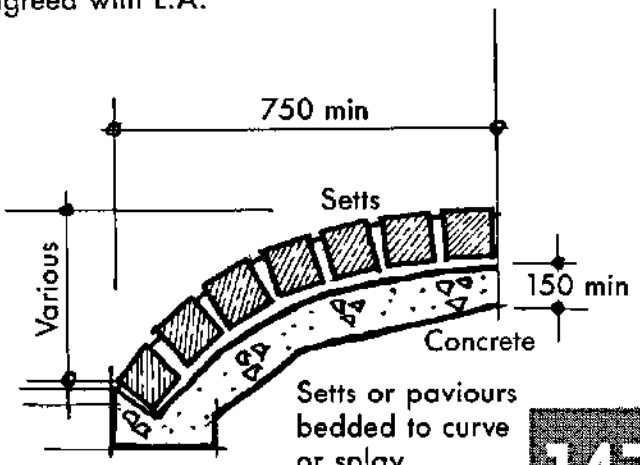


Typical Communal Parking Area









Examples of Suitable Treatment of Raised Margins

Appendix E

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