Bridges -

The new Ballington Bridge at Sudbury

Above: The new Gedham Bridge has a relief frieze celebrating the design of the old bridge.

Replacement bridge parapet in the Nayland Conservation Area.

For safety reasons a crash barrier was erected in order to retain the existing parapet at Mighb's Bridge, Southwold.
Bridges -

Construction

Building a new bridge is a complex procedure particularly when the road must remain open during the construction period. If this is the case, temporary bridges or decking and site compounds can cause excessive disturbance. The location of these should be carefully considered at the design stage to ensure that sufficient land is acquired, thereby minimising disruption or disturbance to wildlife and vegetation. At the end of the work the site must be restored and any compaction of the soil must be remedied. If vegetation is removed then replacement planting should be carried out and maintained until established, using species which are appropriate to the character of the surrounding countryside.

3.2.6 Traffic Management and Safety Measures on Bridges

A well designed modern bridge or an attractive historic structure can be marred by visually inappropriate measures for traffic management and highway safety:

- In rural areas footways or refuges on bridges should be kept to a safe practical minimum width, especially where there is no footway on the approach roads. Where appropriate, they could be demarcated with granite sets and be surfaced in sympathetic material such as crushed gravel.
- Carriageway narrowing should be carefully designed. Demarcation using materials such as granite, or concrete sets is preferable to large areas of hatching.
- Traffic lights or priority systems with their necessary signs and lines should be avoided and only be used in circumstances where highway safety would otherwise be jeopardised.

Oak posts and granite sets help to protect these bridges as well as providing room for pedestrians and creating priority systems.
3.3. Highway Drainage

The Highway Authority has a duty under highways legislation to maintain a safe road network and this duty includes the need to drain the highway to avoid flooding.

The Land Drainage Act 1991 requires any landowner to maintain the natural flow of surface water over their land.

If water from the highway drains onto private land, there is traditionally a shared burden of maintenance of systems to prevent siting or blocking water flow.

Drainage of the highway may be by:

- grips in the verge, either soaking away or discharging water into ditches or ponds, or
- positive drainage systems; gullies, kerb offsets, channels and pipes
- lagoons or ponds
- soakaways or french drain systems
- pumped drains

3.3.1. Improvements to Drainage Systems

Where a new system is installed or an existing system improved it may have an impact by altering the drainage and hydroecology of the surrounding area. This can have an effect on fauna and flora and ameliorative measures may be needed to ensure minimum ecological damage.

Improvements to drainage systems may comprise:

- New water features, such as ponds, ditches and lagoons. These should be designed not only to fulfill their required function but also to be sensitive to the local landscape and have ecological benefits. New water features should be designed in conjunction with a landscape designer or ecologist. Details such as form, profiles, new planting, and fencing will all need to be specified carefully. Reed beds can be used to filter pollutants.

- New structures such as bridges, culverts, outfalls and headwalls. These should also be carefully located in the landscape, be well designed and built out of appropriate materials. The impact on vegetation and needs of local wildlife should be considered and accommodated. Features such as otter ledges and bat bricks could be provided (see Section 2.2.).
3.3.2. Maintenance of Drainage Systems

This is an ongoing duty of the Highway Authority and the maintenance programme must balance different needs:

- In areas where there are local drainage problems, work may need to be carried out in drier conditions when access is easier.
- Maintenance of a system must not cause pollution elsewhere. Waste from drains, gullies and kerb offset cleaning must be disposed of in an appropriate manner.
- Maintenance must be carried out when it causes least impact on local wildlife, avoiding annual breeding and plant growing seasons.

- Vegetation which obstructs a watercourse may require specialised pruning or removal. Coppicing, for example of willows, may be more effective than total removal as the root growth can help bind river banks together.
- If erosion is occurring to the watercourse then bioengineering solutions should be investigated such as the use of willow faggots or spiles, biodegradable matting and planting tree cuttings or marginal species, e.g. flag iris.
- There will often be ecological benefits to retaining open ditches which could otherwise be culverted. Their value should be properly assessed prior to any blocking off or culverting.
- The Land Drainage Act 1991 requires a licence to be obtained prior to filling in or culverting a watercourse.

Steep sides, fencing and unnatural shape can make the balancing ponds alien features in the landscape.

Top right and above: This pond replaced one lost at Wortham for the bypass and has matured well in 12 years.
3.4. Fences and Other Means of Enclosure

3.4.1. Fences

Traditionally, in the more built up locations, walls were constructed to provide privacy and to divide one property from another. In more rural areas, hedges were the norm. Timber fences tended to be restricted to the use of simple palisade structures around front gardens and post and rails in rural areas where they defined boundaries and restricted the movement of animals.

Unpainted timber posts and rails are widely used for highway boundary fencing and are usually appropriate to their context. The use of round, un-sawn and cleft timber is usually acceptable. Stock proof and wire fencing should be considered as an alternative when a less intrusive solution is required.

Chainlink fencing should normally be avoided but, if necessary, it should be mounted on metal or timber posts rather than concrete. Galvanised or black coating is preferable to any other colour.

Fencing, together with hedges and shrubs, can be effective where the fence is designed to allow planting to grow sufficiently to screen the fence. Woven willow, hazel hurdles, palisade, hit and miss fences (perhaps with split half round verticals), and different types of trellis will all allow planting to grow up and through and eventually completely hide the fence.

Panelled and close-boarded fences are usually unsuitable for use in villages and the Suffolk countryside.

Timber should be from a sustainable source (see 4.4.5. Environmental Management Systems).

3.4.2. New Walls

Choice of materials, together with detailing, colour and texture, are all important considerations when designing new freestanding and retaining walls:

- In certain locations new walls will need to match existing ones in the vicinity
- Walls constructed of a suitable type of brick or traditional flintwork are usually the best solution
- With the exception of foundations, the use of hard engineering bricks or concrete (including in situ and precast) will not be appropriate
- Generally, new brick walls should be kept simple, finished with a brick on edge coping, (exposed bedding holes and metal angles should be avoided)
- In some locations, specially formed semi-circular or ridged clay brick copings may need to be used (concrete copings can be inappropriate due to colour, texture and weathering)
- The creepings are not traditional and can appear fussy
- The use of plinths, corbelling and buttresses may also be appropriate and can add interest
- Piers in walls should be constructed as buttresses and not project above the top unless they form a focal point, mark an entrance or the end of the wall
- On sloping sites, stepping the top of the wall at closely spaced intervals invariably appears jagged and incomplete
- Because of its colour and weathering properties, the use of lime-based mortar is preferred
- Mortar joints should, in most cases, be finished flush
- Flemish or an alternative traditional bond may need to be used in important locations where stretcher bond is inappropriate

3.4.3. New Railings

In villages or the countryside care should be taken to ensure that the right sort of railings are used:

- In all cases they should be aesthetically appropriate as well as safe and practical
- In most cases the use of galvanised tubular rails and post systems will not be acceptable
- Galvanised tube can be used in conjunction with timber posts. When used with concrete posts both should be painted white.
- Continuous bar (or parkland) railings are appropriate in many rural locations. They should usually be painted black, although in some locations dark green or white has proved successful.

- Where decorative railings are to be used, consideration should be given to using local craftsmen. They can often be cheaper and will add originality and reinforce local character.

**Means of enclosure -**

*Timber post and rail fencing*

*A new wall of reclaimed bricks*

*Post and wire fence*

*Concrete post and metal rails – a central rail was added for safety purposes*

*New parkland railing painted dark green*
3.5. New Planting Schemes

3.5.1. The Design of New Planting Schemes

The County Council as Highway Authority adopts additional areas of land as highway either as a result of improvements to the existing highway network or as a result of new developments being completed. These may end up being simple grassed areas (for example, visibility splays), or may be planted with new shrubs, hedges or trees.

Planting any new vegetation on highway land must be approved by the Highway Authority.

Proper consideration needs to be given to whether or not any form of planting is necessary or appropriate. Where the opportunity does exist, tree, hedge and shrub planting can often be used to improve the character and appearance of the street scene in various ways including:

- In an architectural way, for example, framing views, screening, or to provide a focal point in a space
- To change the character by softening the overall impact of hard surfaces, to provide a more natural contrast, or to visually "break up" the straight lines and hard edges of the highway
- To recreate or reinforce traditional landscape features and habitats

Where new planting takes place it should be designed to respect both the local landscape character and be practical to maintain. Design and specification should be carried out by landscape professionals. The source of the specialist advice will depend on the nature of the scheme. Budgets for this work must be allocated at the same time as other scheme costs.

3.5.2. Technical Aspects of Planting Schemes

New planting associated with rural highway schemes should usually comprise native plant species. Typical hedgerow species include oak, ash, hawthorn, field maple, blackthorn, hazel, spindle, dogwood and wild rose. In more built up areas there may be other options such as perennial planting and annuals.

The type, species and eventual size of trees and shrubs need to be carefully considered. A balance should be struck between the desire to create an immediate impact and what the scheme will look like in the longer term. The effect of seasonal changes should also be considered. Plants should, wherever possible, be from a local source.

Certain other important criteria should be given adequate consideration. These include:

- Highway visibility and safety
- Overhead cables and underground services
- Maintenance implications (including costs and responsibility), in both the short and the long term
- Soil types
- Ground levels
- Drainage (too much or too little water)
- Providing temporary protection and the need for watering in order to allow the planting to become established
- The implications of autumn leaf fall
- Individual trees or groups can provide shade. On hot days this can be beneficial but take care that they do not cause problems by overshadowing adjacent buildings and spaces.
- Plants should be appropriate to the environment. Some trees will not survive if surrounded by hard surfaces; with others their growth may be too vigorous. The effects of spreading salt during winter months should be taken into account.
- Some species can create a nuisance by, for example, dropping sticky substances or fruits onto paving, cars and seats. Sometimes bird droppings can also be a problem.
- Certain plants can sometimes be used to help prevent vandalism, for example species with thorns.
- Tree roots can cause damage to hard surfaces, services and adjacent building foundations. Care should be taken to choose appropriate species and they may also need containing in pits with special liners.

- Trees can have an adverse effect on clay soils due to water extraction.

- Peat based products should not be used in any planting schemes.

**Planting -**