DESIGN STANDARDS FOR
INDUSTRIAL ROADS
Introduction

Although the general principles and advice given elsewhere in National Guidance apply equally to Industrial Roads the layout of these roads has a different emphasis from that of Residential Roads. In order to cater for the larger and heavier vehicles the roads need to be of greater width and strength. The Design Standards to cater for this traffic are set out in this Section.
1.1 Design Standards

1.1.0 Industrial Estate Roads have been categorised as follows:

i. Major Industrial Roads (Major IR)
ii. Minor Industrial Roads (Minor IR)

In general only culs-de-sac of less than 200m in length should be considered as Minor Industrial Roads with all others being Major Industrial Roads. It is not essential to use both Categories in any one development.

1.1.1 Details of design are summarised in Table 1. These should be read in conjunction with the following notes:-

i. Forward Visibility is measured on the centre line of the carriageway (see also Clause 1.1.2)

ii. On Major Industrial Roads where the gradient is greater than 6% (1 in 16.7) an increased carriageway width may be required. (See also Clause 1.1.4)

iii. Footways must be provided on both sides of the carriageway; the width of 2m may need to be increased to 3m in certain cases to cater for heavier pedestrian flows and shared cycle use.

iv. Increased carriageway width may also be required on sharp bends to enable larger vehicles to pass each other.

1.1.2 Visibility splays within Industrial Estates are to be provided at all junctions as shown in Table 3. Where a new estate road joins the existing wider highway network visibility will be required to be in accordance with National Guidance.
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Visibility on curves, at summits and at junctions shall be provided between points 1.05m above the carriageway. (See also clause 1.1.1 (i).)

1.1.3 A Turning space shall be provided at the end of each cul-de-sac. This turning space must be in accordance with one of the diagrams shown in Figure 1.

The positioning of accesses to individual premises with turning spaces is recommended as this discourages casual parking which obstructs turning movements.

1.1.4 The gradients of carriageways shall normally not exceed the following limits:

<table>
<thead>
<tr>
<th>Maximum gradient</th>
<th>8.33%</th>
<th>(1 in 12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum gradient</td>
<td>0.83%</td>
<td>(1 in 120)</td>
</tr>
</tbody>
</table>

In exceptional cases steeper gradients may be approved by the Engineer. Where the channel is formed of pre-cast concrete or other suitable channel blocks, the gradient shall not be less than 0.66% (1 in 150). (See also Clause 1.1.1)

1.1.5 Culs-de-sac over 200m in length are undesirable but will be considered in certain circumstances (eg, to avoid sterilisation of land) up to a maximum of 400m in length beyond which a second access to the existing highway network should be provided. Where the 200m maximum length is exceeded intermediate turning facilities must be provided in accordance with clause 1.1.3 at a maximum spacing of 200m.

1.1.6 Where an Industrial Estate Road joins an existing Distributor Road, offside diverging (right turn) lanes may be required to be provided by the Developer, together with associated traffic signs, central refuges and road markings. Under normal circumstances offside diverging lanes will be required at all junctions between Distributor Roads and Major Industrial Roads. Details of Pedestrian facilities may also be required to be agreed with the Engineer, based on the
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latest Department of Transport advice.

1.1.7 The use of roundabout/mini-roundabout junctions will be considered where appropriate.

1.1.8 Carriageway construction thickness shall be in accordance with Table 2. (See also Figure 3).

1.1.9 On Industrial Estates footway construction shall be in accordance with Table 2. (See also Figure 3).

1.1.10 The layout of these premises shall be such that all vehicles can leave and regain the public highway in a forward direction.

1.1.11 For access to premises radius kerbs (normally 6.0 metres) should be provided. The width of accesses to premises will depend on the size and nature of the premises but should not be less than 6.0m. In addition an area of footway of 2m long on each side of the access shall be constructed to carriageway standards to reduce the effects of vehicles mounting the kerb (see Figure 2).

1.1.12 All necessary provision for vehicular parking, including deliveries, should be clear of the public highway. In general parking to serve premises is not acceptable on the highway and the Developer will be expected to meet the full costs of Traffic Regulation Orders, signs and road markings required to enable waiting restrictions to be implemented, where appropriate. General off-street parking provision shall be in accordance with the standards set out in the current edition of “Standards for Parking and Servicing for Developments” produced by East Sussex County Council.
<table>
<thead>
<tr>
<th>Category</th>
<th>Design Speed</th>
<th>Minimum Widths</th>
<th>Bend centre line radius</th>
<th>Minimum Forward Visibility</th>
<th>Minimum distance between centre lines of junctions</th>
<th>Minimum distance between centre line of first junction and commencement of road</th>
<th>Normal Maximum Gradient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>C/way</td>
<td>Footway</td>
<td>Normal</td>
<td>Minimum</td>
<td>Same side</td>
<td>Opposite Side</td>
</tr>
<tr>
<td>Major Industrial Roads</td>
<td>50kph (30mph)</td>
<td>7.3m</td>
<td>Two x 2m</td>
<td>200m</td>
<td>90m</td>
<td>70m</td>
<td>80m</td>
</tr>
<tr>
<td>Minor Industrial Roads</td>
<td>25kph (15mph)</td>
<td>7.3m or 6.75m</td>
<td>Two x 2m</td>
<td>45m</td>
<td>20m</td>
<td>25m</td>
<td>24m</td>
</tr>
</tbody>
</table>

Details of visibility requirements and junction radii are included in Table 10
## Construction Details
(Carriageways and Footways)
Industrial Roads

### Carriageway Construction

<table>
<thead>
<tr>
<th>Layer</th>
<th>Material</th>
<th>Road Category: All Industrial Estate Roads Thickness of Layer (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Surface Course</strong></td>
<td>30% (6-14mm) hot rolled asphalt 50 PEN to BS 5974 Table 3, column 3/2, with (14-20mm) pre-cracked chippings</td>
<td>45 mm</td>
</tr>
<tr>
<td><strong>Binder Course</strong></td>
<td>0-20mm nominal size dense bitumen macadam 125 PEN or 60% (0-20mm) hot rolled asphalt Binder Course 50 PEN to BS 5974 Table 3 column 2/4</td>
<td>60 mm</td>
</tr>
<tr>
<td><strong>Base</strong></td>
<td>(0-32mm) nominal size dense bitumen macadam 125 PEN</td>
<td>160 mm</td>
</tr>
<tr>
<td><strong>Sub-base</strong></td>
<td>Gravel or sub-base material Type 1 Recycled Pavement as approved by the Engineer</td>
<td>From Figure 15 but not less than 150mm</td>
</tr>
</tbody>
</table>

### Footway Construction

<table>
<thead>
<tr>
<th>Layer</th>
<th>Material</th>
<th>Footways Thickness of layer (mm)</th>
<th>Footway Crossings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Surface Course</strong></td>
<td>(0-6mm) nominal size dense bitumen macadam 125 PEN or (0-6mm) size gravel hot rolled asphalt to a proprietary mix or design approved by the Engineer</td>
<td>20 mm</td>
<td>Construction to be as for adjoining carriageway</td>
</tr>
<tr>
<td><strong>Binder Course</strong></td>
<td>(0-20mm) nominal size dense bitumen macadam 125 PEN</td>
<td>60 mm</td>
<td></td>
</tr>
<tr>
<td><strong>Sub-base</strong></td>
<td>Granular sub-base material Type 1 Recycled Pavement as approved by the Engineer</td>
<td>150 mm</td>
<td></td>
</tr>
</tbody>
</table>
Table 3
Visibility Splays Within Industrial Estates

'X' Measured along the centre line of the side road from the near channel of the through road

'y' Measured along the near channel of the through road

<table>
<thead>
<tr>
<th>Main Road Type</th>
<th>Distributor Road</th>
<th>Major IR</th>
<th>Minor IR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$x$</td>
<td>$y$</td>
<td>$r$</td>
</tr>
<tr>
<td>Side Road Type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major IR</td>
<td>4.5</td>
<td>70</td>
<td>15.0</td>
</tr>
<tr>
<td>Minor IR</td>
<td>4.5</td>
<td>70</td>
<td>15.0</td>
</tr>
</tbody>
</table>

See also clause 5.2.3

Note:

* These splay also to be used at the point of access of larger industrial premises onto Industrial Estate Roads.
Turning Spaces
Industrial Roads
Access to Premises
Industrial Roads

For visibility splays see note on Table 10
Footway

- 20mm thick (0-6mm nominal size) dense bitumen macadam Surface Course 125 Pen
- 60mm thick (20mm nominal size) dense bitumen macadam Binder Course 125 Pen
- 150mm thick Type 1 granular sub-base

Recycled Permeable as Approved by the Engineer

Carriageway

- 45mm thick 30% (0-14mm size) hot rolled asphalt to BS594 Table 3, columns 3/2 with 14-20mm pre-coated chippings, Surface course 50 Pen
- 60mm thick (c-32mm nominal size) dense bitumen macadam Binder course 125 Pen
- 60mm thick 60% (0-20mm nominal size) hot rolled asphalt Binder course 50 Pen
- to BS 594 Table 2 with 1/2
- 160mm thick dense bitumen macadam (0-32mm) Base 125 Pen

Type 1 granular sub-base (Figure 15)
Recycled Permeable as Approved by the Engineer

Footway crossing

Construction as for adjoining carriageway

Vehicle crossing gradients should generally remain comparable with a 2.0m width. In some circumstances, where widths of less than 2.0m are involved, the back line may need lowering.

(see also clause 4.3.4.9)