



## Economy, Transport and Environment Department

# Technical Guidance Note TG3 - Stopping Sight Distances and Visibility Splays

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## **1. Policy / Approach**

- 1.1. An important contribution to road safety is the provision of adequate visibility thereby enabling road users to see a potential hazard in time to slow down or stop comfortably before reaching it. For links, this will be provision of appropriate Stopping Sight Distances (SSDs) and, for junctions, provision of appropriate visibility splays.
- 1.2. Design Manual for Roads and Bridges (DMRB) standards shall apply to all new and existing approaches to traffic signal controlled junctions and controlled pedestrian crossings.
- 1.3. DMRB visibility standards apply where the Design Speed is above 60kph and for all traffic signals regardless of Design Speed. MfS criteria shall apply where the Design Speed is up to and including 60kph. Refer to Section 3.1 for Design Speed.

## 2. Definitions and Abbreviations

<b>DMRB</b>	Design Manual for Roads and Bridges - The Stationery Office publication containing current standards, advice notes and other guidance documents relating to the design, maintenance, operation and improvement of motorways and trunk roads but also adopted by local Highway Authorities for use on the local Highway Network
<b>Departure from Standard (Departure or DfS)</b>	A non-compliance with a Mandatory Requirement of a Standard, as set out in HCC's Technical Guidance Notes or other policy/standard document cross-referred to from the Technical Guidance Notes.
<b>HCC</b>	Hampshire County Council
<b>Immediate approaches to junctions</b>	The area within 1.5 x SSD
<b>Links</b>	Carriageway between immediate approaches to junctions
<b>Measured speed</b>	In accordance with TA 22/81 (DMRB 5.1.4)
<b>MfS</b>	Manual for Streets – published 2007 by Thomas Telford Publishing
<b>MfS2</b>	Manual for Streets 2 – Wider Application of the Principles Published September 2010 by CIHT
<b>SSD</b>	Stopping Sight Distance (Refer to 3.2)

### 3. Technical Requirements

#### 3.1 Design Speed

- 3.1.1. The Design Speed for new roads (excluding new residential estates and new roads with a proposed Speed Limit of 30mph or less) shall be selected using the procedure in TD 9/93 (DMRB 6.1.1).
- 3.1.2. The Design Speed for new residential estates and new roads with a proposed Speed Limit of 30mph or less shall be determined based on the proposed Speed Limit for the new road in accordance with MfS2 Section 8. Refer also to TG1–Alignment Design and TG2–Highway Cross Sections.
- 3.1.3. For improvements to existing roads, the Design Speed shall be derived from the measured speeds (regardless of the posted speed limit) as detailed in TA 22/81 (DMRB 5.1.4).
- 3.1.4. Measurement locations and prevailing weather and roads conditions must be fully considered in line with TA 22/81 when undertaking speed measurements on existing roads. Initial assessment of observed speeds should be used to ensure that speed measurement equipment is located in the appropriate location (ie near the expected “Y” distance). See Figure 3.1
- 3.1.5. In order to convert the **dry weather spot speeds** into **wet weather journey speeds** in TA 22/81, evidence of the weather over the survey period is required. Where evidence is not supplied or shows varying weather conditions, the dry weather spot speed shall be used for the Design Speed. Evidence may be regular recorded observations, daily met office data or rain gauge data at the site for the period of the speed survey.
- 3.1.6. Where there is a difference in speed depending on the direction of travel, different Y distances may be used (rather than a single Y distance based on the highest speed).

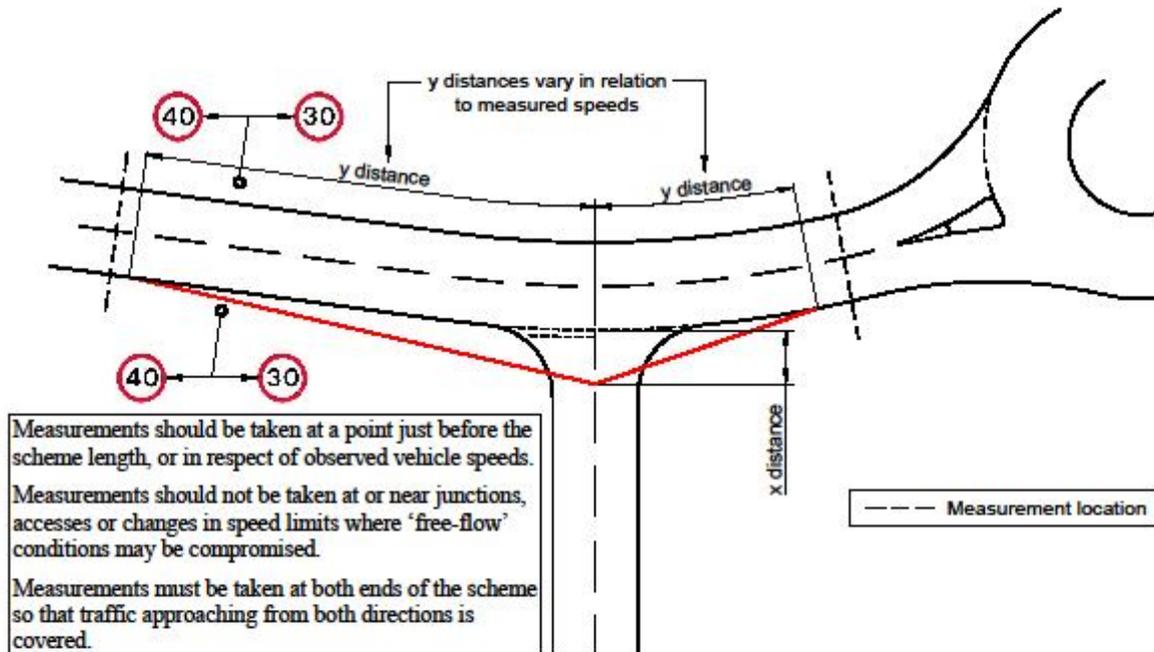


Figure 3.1 – Indicative Measurement Locations

### 3.2 Stopping Sight Distance

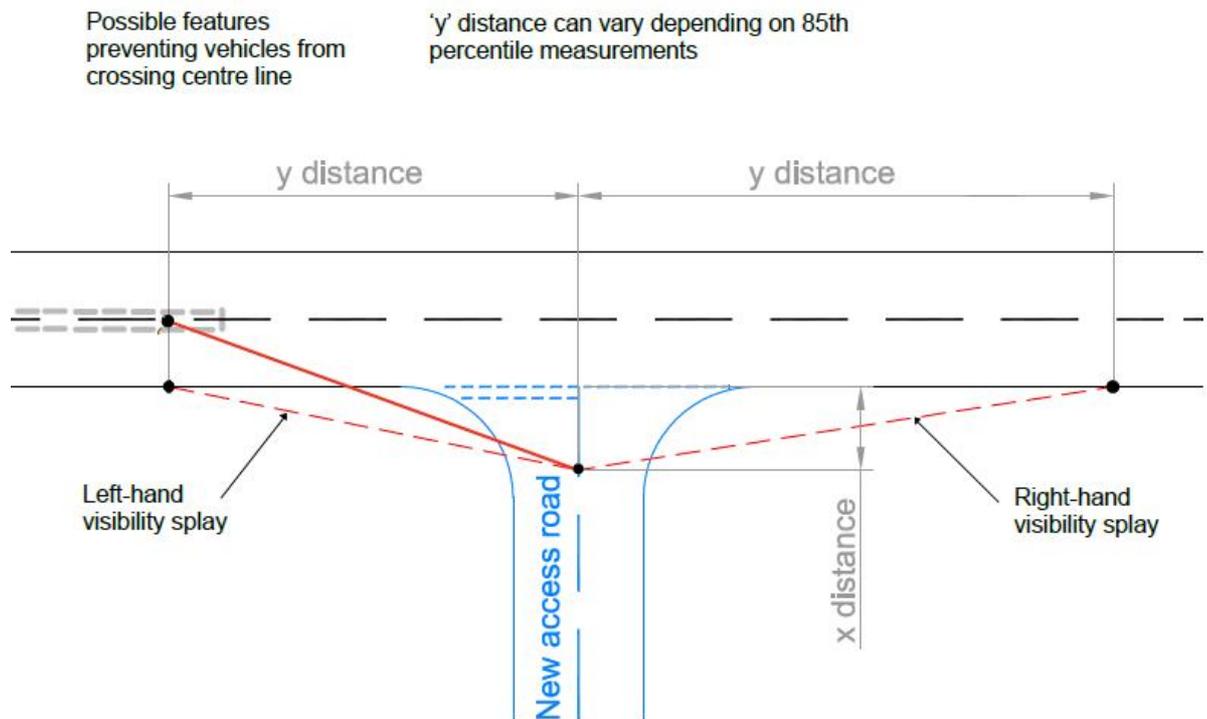
- 3.2.1 SSD's shall be based on the Design Speed in accordance with Table 3 in TD 9/93 or Table 7.1 in MfS as appropriate. On existing roads where the Design Speed falls between the tabulated values in TD 9/93 or MfS, the higher value shall be used. Alternatively, the SSD may be calculated from first principles. HCC has developed a SSD calculator which is available at <https://www.hants.gov.uk/transport/developers/technical-guidance> DMRB allows relaxations in certain circumstances; however the SSD may not be relaxed on the junction approach. Within links the SSD can be relaxed based on the Design Speed, and in accordance with TD 9/93. For S278 and S38 Design Audit Submissions, any relaxations included within the design must be detailed and the mitigating circumstances explained. This should also be provided to the Road Safety Auditor within the Safety Audit Brief (Refer to TG17 – Departures from Standard and TG18 – Road Safety Audits)
- 3.2.4 When assessing **forward visibility**, the vertical visibility envelope shall be as stated in TD9/93 with an object height of **between 0.26m and 2.00m**. Where the forward visibility line passes over any soft landscaping areas (eg where the alignment is on a horizontal curve), 600mm vertical clearance must be achieved above the soft landscaping/grass to allow for vegetation growth. Where 600mm clearance is not achievable, hard landscaping should be considered. Horizontally, visibility splays shall not be obstructed by vegetation and where possible existing planting cut back behind the splay to allow room for growth, preferably a minimum of 1m. Proposed planting or trees should be set back sufficiently so as not to impede the visibility splay once fully mature. Refer also to TG 15 – Landscaping.

### 3.3 Y distances for vehicles

3.3.1 The point to which the Y distance to the left is measured may be relaxed by measuring to the major road centreline, where there is:

- A refuge island with high level keep left signs within the Y distance or
- Double white line road markings exist for the length of the Y distance

Refer to Figure 3.2.



**Figure 3.2 – Measurement of Y Distances**

3.3.2 The point to which the Y distance to the right is measured shall not be reduced.

3.3.3 Where there is a difference in speed depending on the direction of travel, different Y distances may be used (rather than a single Y distance based on the highest speed).

3.3.4 The vertical visibility envelope when assessing visibility along the Y distance shall have an object height of between **0.6m and 2.0m**. Horizontally, visibility splays shall not be obstructed by vegetation and where possible existing planting cut back behind the splay to allow room for growth, preferably a minimum of 1m. Proposed planting or trees should be set back sufficiently so as not to impede the visibility splay once fully mature. Refer also to TG 15 – Landscaping.

### 3.4 X distances for vehicles

- 3.4.1 An X distance of 2.4m is required on the minor arm approach to roads subject to a 40mph speed limit or less. On roads with speed limits above 40mph an X distance of 4.5m will normally be required unless there are circumstances which allow a reduction.

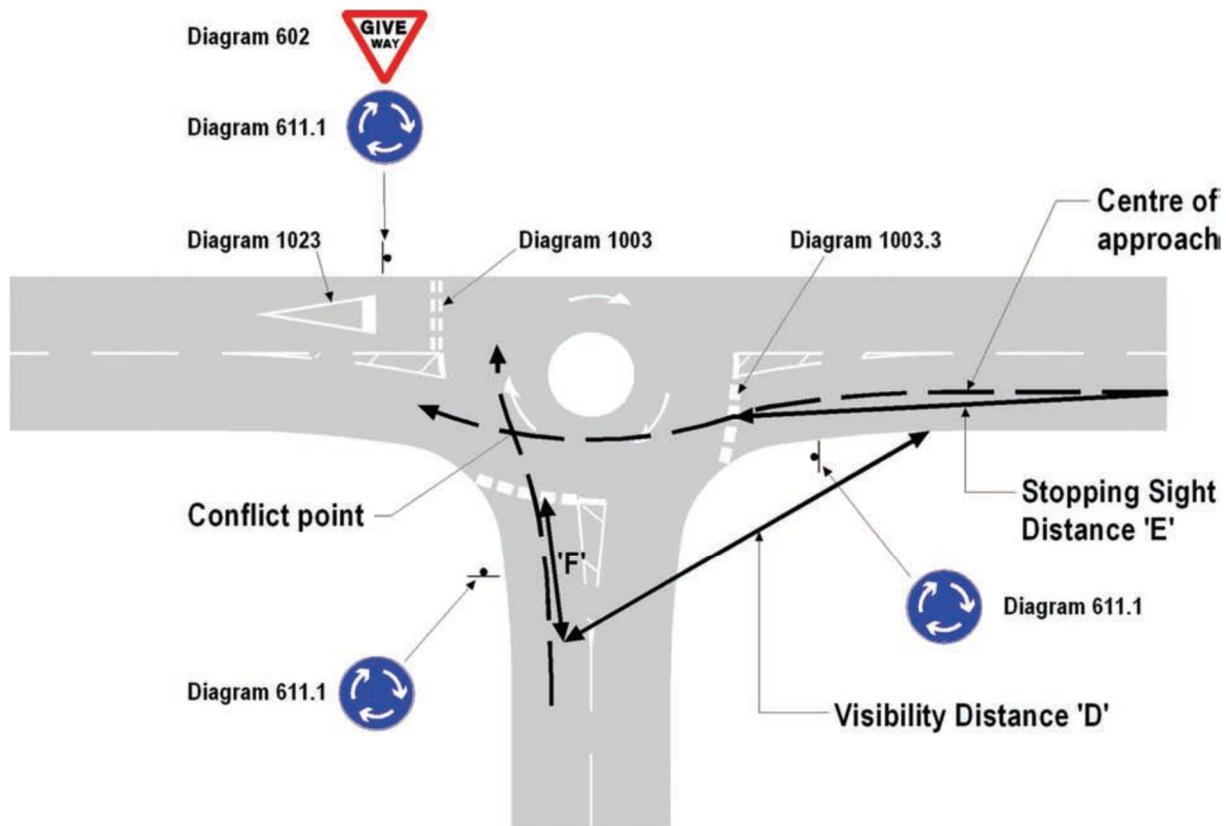
### 3.5 Mini-Roundabouts

- 3.5.1 Mini-roundabouts shall only be located on existing streets where MfS criteria apply and shall be designed in accordance with TD 54/07 (DMRB 6.2.2). Mini-roundabouts must only be used on roads with a **speed limit** of 30mph or less and where the 85th percentile **dry weather** speed of traffic is less than 35mph within a distance of 70 metres from the proposed give way line **on all approaches** (see 2.1 TD 54/07).

- 3.5.2 The following table replaces Table 6/2 in TD 54/07.

- “D” is the Visibility Distance from one arm to the approach of the adjacent arm.
- “E” is the Stopping Sight Distance to the give-way line on the approach to the junction.
- “F” is the set-back position from which “D” is measured.

85 <sup>th</sup> percentile speed of arm to the right (mph) (Dry weather speed)	SSD (MfS) “E” (m)
35	50
30	40
25	30



**Figure 3.3 – Mini-Roundabout Visibility** (as Figure 6/5 TD54/07 Figure 6/5)

### 3.6 Walking, Cycling and Horse Riding

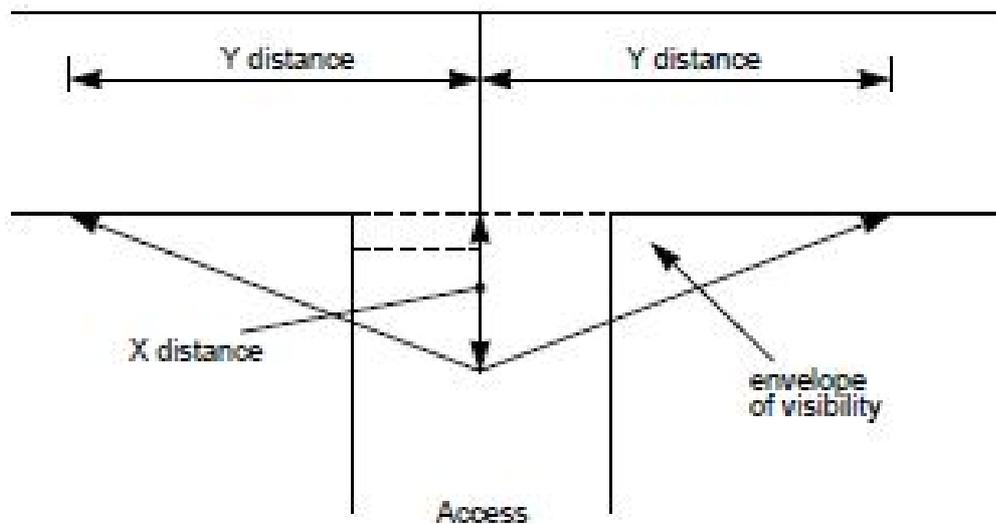
- 3.6.1 Requirements for Walking, Cycling and Horse Riding shall be considered as appropriate, in accordance with the relevant national design standards including DMRB, MfS, [Local Transport Notes 1/95, 2/95, 1/12, 2/08](#) and [Traffic Advisory Leaflets such as 03/05, 04/05, 05/05, 03/03](#) etc (published by the Department for Transport).
- 3.6.2 Each crossing location shall be assessed in terms of visibility splay and stopping sight distance in accordance with TA 90/05 (DMRB 6.3.5) and utilising MfS SSD's only where MfS applies (see 3.1.5).
- 3.6.3 Set-back distances shall be 1.5, 2.5 & 3m respectively for pedestrians / cyclists / equestrians.

### 3.7 Visibility Requirements at Vehicle Crossovers

- 3.7.1 For vehicle crossovers (ie dropped kerb accesses rather than full bellmouth construction), the y-distance(s) can either be based on the measured speeds, as detailed in 3.2 and 3.3 or the y-distances detailed in the table below may be used.

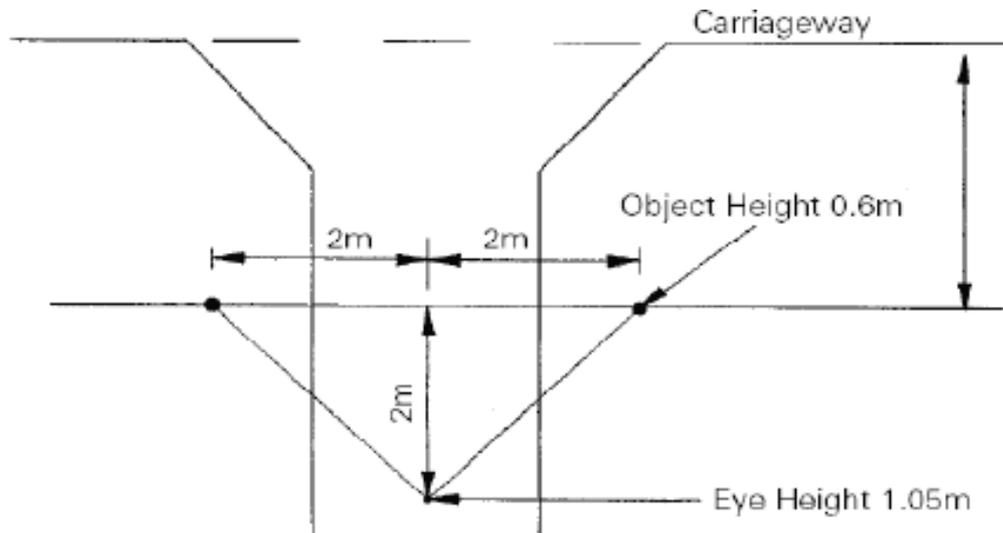
Speed Limit (mph)	20	30	40	50	60
X Distance	2.4m	2.4m	2.4m	2.4m	2.4m
Y Distance	25m	43m	120m	160m	215m

3.7.2 In urban residential streets where a footway is present it is acceptable to reduce the x distance to 2m in order to achieve the y distance visibility unless cycling on the footway is permitted through the provision of a shared use path or segregated cycle path.



**Figure 3.4 – Vehicle Crossover Visibility**

- 3.7.3 Where the proposed access crosses an existing footway/cycleway then inter-visibility from between the driver and any footway users should be provided. This should be measured as 2m x 2m from the back of the footway/verge and be kept clear of any obstruction greater than 600mm in height.



**Figure 3.5 – Pedestrian/Vehicle Inter-visibility at Vehicle Crossovers.**

## 4 Further Support

- 4.1 Should you have a specific query or feedback about any of the content of this Technical Guidance Note, please send an email to [Technical.Guidance@hants.gov.uk](mailto:Technical.Guidance@hants.gov.uk) with the start of the email title as “TG3 – “.
- 4.2 Should you have a query about applying this to your particular project, please contact:
- the Design Check Engineer dealing with your S278 or S38 application (if you are a Developer or Developer’s Consultant)
  - the Technical Guidance Note Specialist(s) (if you are a working within Hampshire County Council)
- 4.3 Associated Technical Guidance Notes:
- TG1 – Alignment Design
- TG2 – Highway Cross-Sections
- TG4 – Intelligent Transport Systems
- TG17 – Departures from Standard
- TG18 – Road Safety Audit