

DS.307

Warning line markings

Rev.	Status	Created by	Date	Approved by	Date
A	Final	D.Farnham/C.Agyei-Frempong	19.01.12	D.Waters	08.02.12
B	Final	D.Farnham	15.03.14	D.Waters	10.04.12
C	Final	G Lake	31.05.19	D Foden	24.06.19



1 Introduction

1.1 Notes

- a. This standard explains requirements about the use of warning line road markings to TSRGD diagram 1004.
- b. See standard DS.300 for general requirements about the use of traffic signs and road markings, including sign sizes and lighting.

1.2 Discussion

- a. Warning line markings to TSRGD diagram 1004 have no statutory meaning. However, the description provided for them in the TSRGD is 'line over which traffic should not pass unless it is safe to do so'. It is likely that this would be taken into legal account in the event of an incident.

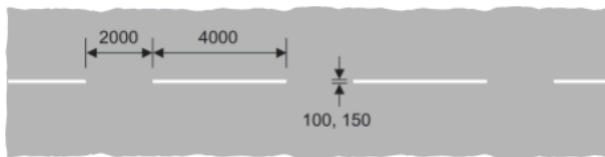


Diagram 1004: Vehicular traffic should not cross or straddle the line unless it is safe to do so and when the line is used to indicate a cycle lane, motor vehicles should not enter that lane (longitudinal marking).

- b. Warning lines are often used to the centre of roads in situations where it would not be advisable for drivers to cross into opposing lanes and on the approaches to potential hazards such as physical refuges in the carriageway. However, designers also regularly confuse these markings with diagram 1008 'centre line' markings, using these mistakenly in their place where there is no good reason to do so. Both the mistaken use of these markings and general overuse in other circumstances diminishes their impact and the important message they are intended to convey to road users.

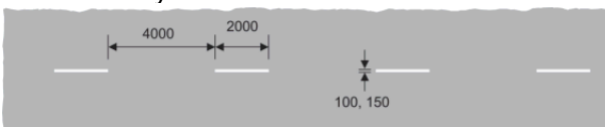


Diagram 1008: Division between opposing flows of traffic on a carriageway (longitudinal marking).

- c. Similar to most traffic signs in the TSRGD, in the majority of instances no statutory requirement whatsoever exists to provide warning lines. Designers will usually choose to introduce them to support some statutory duty (such as the promotion of road safety or the expeditious movement of traffic).

2 Requirements

2.1 General

- a. Where considered necessary by designers, road studs may be located in the gaps between warning-line dashes in any of the configurations discussed in the sub-sections below in order to provide additional emphasis during hours of darkness. Arrangements will be agreed on a case specific basis with approving officers.

2.2 Priority junctions

2.2.1 Use requirements

Minor road

- a. Where the minor road is a 20mph street then designers *may* use diagram 1004 'warning line' markings on the immediate approach to the junction. However, there is no requirement to do. This is left to designer's discretion.

Note: Where it is felt that there is a need for some delineation of lanes at the junction mouth, designers should consider whether diagram 1008 'centre line' markings might not suffice instead. These have a reduced visual impact and can often be arrangement more neatly with side road raised tables so that the gap between dashes coincides with the pedestrian plateau.

- b. Where the minor road is a 30mph street diagram 1004 'warning line' markings should be introduced on the immediate approach to the junction.

Major Road

- c. Where the major road is a 20mph street then, except where introduced to create a turning pocket, to delineate a traffic island,

else in association with a vertical traffic calming feature (see sections 2.5, 2.77 and 2.8 respectively) no diagram 1004 'warning line' markings should be provided through the junction. Use will require agreement of a level 1 departure.

- d. Where the major road is a 30mph street then diagram 1004 'warning line' markings *may* be provided through the junction. However, there is no requirement to do so. This is left to the designer's discretion.

Note: In general this should only be considered where visibility is restricted or the turning flow out of side roads is greater than 100 vehicles an hour. However, where raised tables are provided at the junction to slow vehicles this may yet be unnecessary.

2.2.2 Design requirements

Minor Road

- a. Where the minor road is a 20mph street then the maximum number of dashes used on the approach to junctions should be 2. Use of a greater number of dashes will need agreement of a level 1 departure. It will need to be demonstrated that visibility is somehow compromised.
- b. Where the minor road is a 30mph street then the maximum number of dashes used on the approach to the junction should be 4. However, a minimum of 2 may be used at the designer's discretion.

Note: Designers should consider the extent to which other features help make the approaching junction conspicuous, such as buildings, raised table crossovers or general junction geometry.

Major Road

- c. Where their use is necessary, the length of diagram 1004 'warning line' markings will be agreed with approving officers on a case specific basis.

Note: In general, whether the street is 20mph or 30mph, the length of any warning lines

provided should be kept to a strict minimum for the purposes proposed whilst – for the sake of emphasis – clear separation should be kept from any preceding road markings (e.g. centre line or zig-zag markings).

2.3 Signal controlled junctions

Use requirements

- a. Diagram 1004 'warning line' markings should be provided at signal controlled junctions. Where only a single lane exists on the approach then they should be used to delineate the centre line of the carriageway. Where multiple lanes exist then they should also be used to delineate between individual lanes.

Design requirements

- b. The length of each line of diagram 1004 'warning line' markings will be agreed on a case specific basis with approving officers.

Note: It may not always be necessary for these to be as long as the predicted peak queue lengths. Subject to general consideration of road safety issues and other measures to encourage road user discipline where multiple approach lanes exist (e.g. directional arrow lane markings) then relatively short lengths or replacement with diagram 1005 'lane' markings may often be acceptable.

2.4 Footway build outs

Design Requirements

- a. Where use of warning lines is permitted then the following requirements should be met.
 - i. On 20mph streets the line should be developed from the edge of the carriageway on 1:5-8 taper (appropriate to context).
 - ii. On 30mph streets the line should be developed from the edge of the carriageway on a 1:12-1:15 taper (appropriate to context).
 - iii. In both 'i' and 'ii':
 - The origin of the line prior to the build out should be close to the edge of carriageway but need not necessarily spring directly from the

kerb line. Contingent on the circumstances, locating this as much as 700mm from the edge of carriageway may be appropriate. Arrangements will therefore be agreed on a case specific basis with approving officers.

- The end of the line should be drawn to a point 150mm from the near-side edge of the build out where it reaches its typical width.
- The number of dashes in the line shall be dictated by the required taper and the origin and end points.

2.5 Vertical traffic calming features

Use requirements

- a. Where diagram 1062 'ascent arrow' markings are used to a vertical traffic calming feature, statutes require that a diagram 1004 'warning line' marking must also be provided in association with these -unless the ramp is of a width of 5m or less. This requirement must be met. However, where the width of the vertical traffic calming feature is 5m or less or where no diagram 1062 'ascent arrow' markings are used (see note) then warning line markings should not be used.

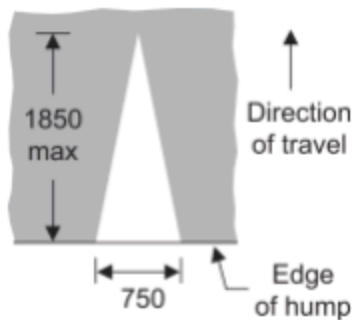


Diagram 1062. Road hump.

Note: No statutory requirement exists to provide diagram 1062 'ascent arrow' markings to ramp faces, including those used to road humps or other vertical traffic calming features. Omission of these may be appropriate in some circumstances. See standards DS.111 for further information.

Design requirements

- b. Where 'a' applies the diagram 1004 'warning line' marking should consist of

two dashes. The location of this will be agreed on a case specific basis with approving officers (see note).

Note: This line is not considered to be critical to road safety and is only to be provided to meet the statutory requirement. Placement should therefore seek to minimise visual impact. Statutes include no express requirements about its location in relation to the diagram 1062 'ascent arrow' markings. As such, it need not necessarily be located alongside these on the ramp face and may be located elsewhere nearby in a less conspicuous location (providing this does not serve to confuse road users).

2.6 Approaches to stand alone controlled crossings

Use requirements

- a. Diagram 1004 'warning lines' should not be used within the controlled area of stand alone crossings except for as explained in 'b'.

2.7 Approaches to traffic islands

2.7.1 Islands separating opposing flows of traffic

Use requirements

- a. On the approach side to a traffic island:
 - i. On 20mph streets, a single line of diagram 1004 'warning line' markings may be used. However, there is no requirement to do so and this is left to the designer's discretion.
 - ii. On 30mph streets then a single line of diagram 1004 'warning line' markings should be used.
- b. On the exit side to a traffic island diagram 1004 'warning lines' should not be used. This will require agreement to a level 1 departure. It will need to be demonstrated that evidenced safety concerns exist and these could not be otherwise addressed.

Design requirements

- c. The number of dashes to be provided in the line should be based upon achieving the following minimum taper gradients from the notional off-side edge of the

traffic-lane to a point 150mm from the off-side edge of the island. These gradients may be increased by agreement to a level 1 departure.

- i. On 20mph streets, 1:5-1:8 (appropriate to context).
 - ii. On 30mph streets, 1:12-1:15 (appropriate to context).
- d. See standard DS.309 about the potential use of hatched or chevron in-fill markings to build ups on the approaches to traffic islands.

2.7.2 Islands separating flows of traffic moving in the same direction

- a. All requirements are as per section 2.7.1 except for that warning lines may be inclined to both sides of the island on the approach.

2.8 Turning pockets at junctions

Note: Turning pockets are spaces that allow for informal sheltered waiting in the major road for vehicles wishing to turn onto minor roads at junctions. These may not necessarily provide shelter for the entire width of the vehicle.

Use requirements

- a. On 20mph streets, turning pockets for vehicles at priority junctions (whether protected by physical refuges or defined purely by road markings) should not be used. This will require agreement to a level 1 departure.

Note: Incidental creation because of the introduction of a traffic island close to the junction is acceptable (see standard DS.113). However, where created no other warning lines beside those on the approach to such island may be used.

- b. On 30mph streets, diagram 1004 'warning line' markings may be used to define turning pockets, including both the taper build ups to these and the informal waiting area itself.

Design requirements

- c. Where the approach to a turning pocket is protected by a traffic island then see section 2.7.

- d. Where the approach to a pocket is to be defined by road markings only (a ghost pocket) then this should be formed by inclining diagram 1004 'warning line' markings to either side of the pocket to create the taper build up to it. Where used on 30mph streets then the number of dashes used to the build up should be based on a 1:12-1:15 gradient (appropriate to context). Where used on 20mph streets then it should be based on a 1:5-1:8 gradient (appropriate to context). Following completion of the build up to the necessary width, the waiting area itself should be defined by parallel lines of warning lines.

2.9 Cycle lanes

- a. See standard DS.304 about use to contra-flow lanes and facilities on one way streets.

2.10 Use elsewhere on links

- a. Use of diagram 1004 'warning line' markings elsewhere on links will require agreement to a level 1 departure. An evidenced safety justification will need to be demonstrated. Sparing use is likely to be approved in circumstances where forward visibility is restricted at one of the following:
 - i. Bus-stops.
 - ii. Bends in the road.
 - iii. Hill crests.