



**Management System Document - Procedure**

**Design for Standalone Crossings**

**Document reference: SQA-0644 - issue: 4**

### 1 Purpose

1.1 To set out the design requirements for standalone crossings in London.

### 2 Scope

2.1 This process applies to all standalone crossings in London.

### 3 General

#### 3.1 Overview



- 3.1.1 The preferred layout and method of operation for standalone crossings in Greater London is the Ped-X crossing.
- 3.1.2 This type of crossing can also be fitted with pedestrian countdown units.
- 3.1.3 Other types of crossing are acceptable if requested by the client, and if site conditions warrant their use.
- 3.1.4 At standalone crossings, multi-lane approaches are not recommended and where possible should be designed out, if necessary by provision of a central refuge.
- 3.1.5 Preferred crossing layouts are shown in Appendix A.

- 3.1.6 All crossings shall be designed according to LTN2/95. The particular requirements for a crossing installation in London are given below.
- 3.2 Push Buttons, Tactiles and Audibles
- 3.2.1 Where signalised pedestrian facilities are being provided, tactile and/or audible devices must be provided for the visually impaired in addition to the visual pedestrian signal, as per LTN2/95. Tactile devices should be provided as a minimum where it is not possible to provide both, for example at dual crossing sites.
- 3.2.2 To minimise noise pollution, audible signals should be timetabled to operate to switch off during the night. Typically this will be 22:00 to 07:00, but can be changed to suit site conditions.
- 3.2.3 Tactile and audible devices should always operate at the same time as and be interlocked with the green man indication. Red lamp monitoring must be provided to monitor any vehicle phase that conflicts with a pedestrian phase.
- 3.2.4 With far sided signals, pedestrian push buttons should normally be mounted at an angle of 45° to the kerb line.
- 3.2.5 Where near side signals are used the Pedestrian Display Unit (PDU) should generally be mounted at an angle of 25-30° to the kerb line. High level repeaters should be provided where, in the designer's judgement, the volume of waiting pedestrians may obstruct visibility of the PDU.



- 3.2.6 Where PDUs are fitted on central refuge islands, the controller must be configured so that the units on the central island display a Black Out sequence during the extension periods. A dual crossing controller will be required for this purpose.
- 3.2.7 Tactile devices should normally only be installed in the right hand push button when facing the crossing. Where central refuges are provided, a push button (without tactile unit) should be provided on the most appropriate side. Where the crossing width is in excess of 3.2m, push buttons (without tactile units) should be provided on both sides.
- 3.2.8 To ensure consistency for visually impaired people the tactile unit should be installed on the right hand side of the bottom of the push button unit in the pre-drilled holes (Inclusive Mobility, Paragraph 3.12).
- 3.3 Signal Aspects And Hoods
- 3.3.1 Primary hoods should be used on all vehicle signal heads at crossings as it improves the visibility both on the approach and from the stop line.

- 3.3.2 The dimming facility shall be used on all installations unless specifically requested by the Highway Authority.
- 3.4 Box Signs
- 3.4.1 For stand alone signal-controlled pedestrian facilities the following signs are allowed as box signs:
- a) 606 White arrow on blue background (AO, TL, TR)
  - b) 612 NRT
  - c) 613 NLT
  - d) 614 NUT
  - e) 616 No entry
- 3.4.2 The following “exemption” plates may be added:
- a) 954.5 Except buses (may be varied to Except cycles)
  - b) 954.6 Except buses & cycles (may be varied to local buses, buses & taxis, local buses & cycles or local buses & taxis)
  - c) 954.7 Except buses, taxis & cycles
- 3.5 High Friction Road Surfacing
- 3.5.1 For all new installations on the TLRN, the installed road surface shall meet a minimum Polished Stone Value (PSV) of 68 (HD36/06 Table 3.1) for a minimum of 50m ahead of the stopline on all approaches. The PSV is a measure of the resistance of an aggregate to the polishing action of a pneumatic tyre under conditions similar to those occurring on the surface of a road.
- 3.5.2 High friction road surfacing may need to be considered where the minimum PSV cannot be met. Where high friction surfacing is required on an approach, the minimum treatment length must be 50m.
- 3.5.3 On a gradient, or on roads with a speed limit greater than 30 mph, it may be necessary to increase the length of the skid resistant / high friction surface beyond the 50m length.
- 3.5.4 For information regarding the requirements of high friction surfacing that is appropriate to be installed, see HD36/06 ([DMRB 7.5.1](#)).
- 3.6 Road Markings
- 3.6.1 These shall be in accordance with TSRGD 2016 and Chapter 5 of the Traffic Signs Manual.
- 3.6.2 All forms of standalone crossings, including Ped-X must have zig-zag road markings to TSRGD 2016 Schedule 15 Part 2 Item 51 (Diagram 1001.3).



- 3.6.3 Generally, no other road markings are permissible within zig-zag markings, this includes bus and cycle lanes, which must stop before and start after, however zig-zag lines may be placed up to 2 metres from the edge of the carriageway to allow cyclists space to ride on the nearside of the lines. Right turn pockets and cycle markings to TSRGD diagram 1057 are also permissible.
- 3.6.4 Advance cycle stoplines (without gates) may now be used at standalone crossings in conjunction with zig-zag road markings, where it is deemed this will provide a benefit for cyclists.
- 3.6.5 The recommended distance between the stop line and studs is 3.0m and between the stop line and the primary signal post is 2.5m. The distance between the stop line and studs may be reduced to 1.7m if requested by the client where whole route cycling facilities are proposed.
- 3.7 Detection



- 3.7.1 Where vehicle detection is required and speed assessment equipment is not to be provided, above ground detectors are preferred. The performance of above ground detectors shall comply with TOPAS 2505A specifications. The siting of loop detectors, when used, shall comply with DfT Specification MCE 0108.

- 3.7.2 Kerbside call/cancel detectors can be utilised on Puffin installations that do not have pre-timed max activated. The effectiveness of kerbside detection should be assessed on a site by site basis.
- 3.7.3 Consideration should be given to the envelope of detection at wide crossings. This applies to both on and off crossing detection. It may be necessary to add more detectors, or to use a different type of facility. As part of the design, the engineer must establish the limitations of the detection to be used.
- 3.8 Linking
- 3.8.1 Linking is to be provided to crossings within 50m of a signalled junction. This can either be as an internal part of the junction or a form of controlled linking to that facility (TD50/04).
- 3.8.2 Linking may be provided to nearby crossings as site conditions dictate, which have a benefit for pedestrian safety or journey time reliability. Any design decisions must be recorded in the project file. This link may be in the form of:
- a) A line share for UTC control;
  - b) A leaving/starting amber link; or
  - c) Cableless linking (also used to link junctions when the UTC system is not operating).
- 3.8.3 Local links and delay timers may be overridden by UTC.  
Note: All link cables should be ducted.
- 3.8.4 Cross Inhibit Linking must be provided at staggered stand alone crossings except when they are controlled by another controller or stream, as this facility is likely to interfere with the operation of the local linking. Pedestrian progression achieved by a call-ahead facility may be implemented if requested by the client but shall be assessed on an individual site basis. On UTC sites Cross Inhibit Linking will be overridden when under computer control where applicable.
- 3.9 Timings
- 3.9.1 Dual Vehicle Precedence Periods (VPP) shall be provided on all installations under UTC control. The higher period to be used when the crossing is working isolated, the lower period when under UTC so that the crossing can be double cycled where possible. The default settings for the times are 7 seconds and 20 seconds. The higher value can be increased with agreement from a Team Leader or Chief Engineer.
- 3.9.2 Engineers are to consider pedestrian wait times when operating in UTC mode. An option such as double cycling of pedestrians is encouraged where appropriate.

3.9.3 Pre-timed max is included as standard on TfL pedestrian controllers, but it should not be used on roads with a speed limit greater than 30mph.

3.9.4 The 2 second overlap period should be provided at all existing Pelican crossings.

### 3.10 Vehicle Detection and Speed Assessment (SA)

These shall be provided as follows:

#### 3.10.1 30 mph roads - New installations

- a) 85 percentile speed less than 35 mph

No detection. These sites shall operate fixed time. However if, using engineering judgement, some form of vehicle actuation is required or would be beneficial, then Above Ground Detection Units should be used.

No SA required.

- b) 85 percentile speed between 35 mph and 45 mph

VA detection (c) or (d) in Table 2 of LTN2/95 and Speed Assessment (SA) are a requirement in this speed range.

If the installation is under UTC control, detection is not provided.

The 'Red Man / Red to Traffic' (period 3) should be set at its maximum value of 3 seconds.

- c) 85 percentile speed greater than 45 mph

If the installation is under UTC control, no detection shall be provided but the 'Red Man / Red to Traffic' (period 3) should be set at its maximum value of 3 seconds, providing a traffic to pedestrian intergreen of 6 seconds.

For vehicle actuation SA should be provided as well as simple system D detection. MVDs should not be used.

Ducts should be provided for all feeder cables at the client or highway authority's expense.

#### 3.10.2 Over 30 mph roads - irrespective of 85<sup>th</sup> percentile speed - New installations

As 3.10.1 c).

#### 3.10.3 Modernisation / Modification of existing installations

It may be necessary to obtain speed readings to confirm the precise requirements. Although it is not envisaged that additional detection facilities, i.e. SA, will be required at many sites, a fully ducted system should be provided when required as above.



### 3.11 Pedestrian Islands and Refuges



- 3.11.1 Where pedestrian refuges are provided at standalone crossings, they are to be a minimum of 1.5m in width (TD 50/04) but it is recommended that they are 2.0m in width.
- 3.11.2 Where central refuges are provided, a push button (without tactile unit) should be provided on the most appropriate side. Where the crossing width is in excess of 3.2m, push buttons (without tactile units) should be provided on both sides.
- 3.11.3 Consideration based on engineering judgement and on site observation should be given to the volume of pedestrians when accepting island sizes, to ensure overcrowding on the central island does not become an issue.
- 3.11.4 Where the crossings are signalised, no tactile paving will be provided on the pedestrian refuge.
- 3.11.5 Street furniture, such as Lamp Columns should not be placed on the refuge in the area bounded by the stud markings.

### 3.12 Staggered Facilities



- 3.12.1 An internal stud to stud distance of 4.0m is recommended at staggered crossings to reduce see-through problems and provide an adequate waiting area for pedestrians.
- 3.12.2 At staggered crossings there should be a minimum of 1.5m of clear unobstructed width whilst moving through the crossing i.e. between signal poles.
- 3.12.3 This will result in a minimum island width of 2.5m if no guard railing is fitted.
- 3.12.4 For shared use crossings a wide stagger will be required to allow space for cycles to pass each other. This will be dependent on the volume of cycles and pedestrians at the crossing, but it should be greater than the width required for a pedestrian only stagger.
- 3.12.5 At staggered Toucan facilities, care must be given to achieving a comfortable distance between street furniture for users. Toucan crossings should be a minimum of 4.0m wide.



### 3.13 Straight Across Staggered Facilities



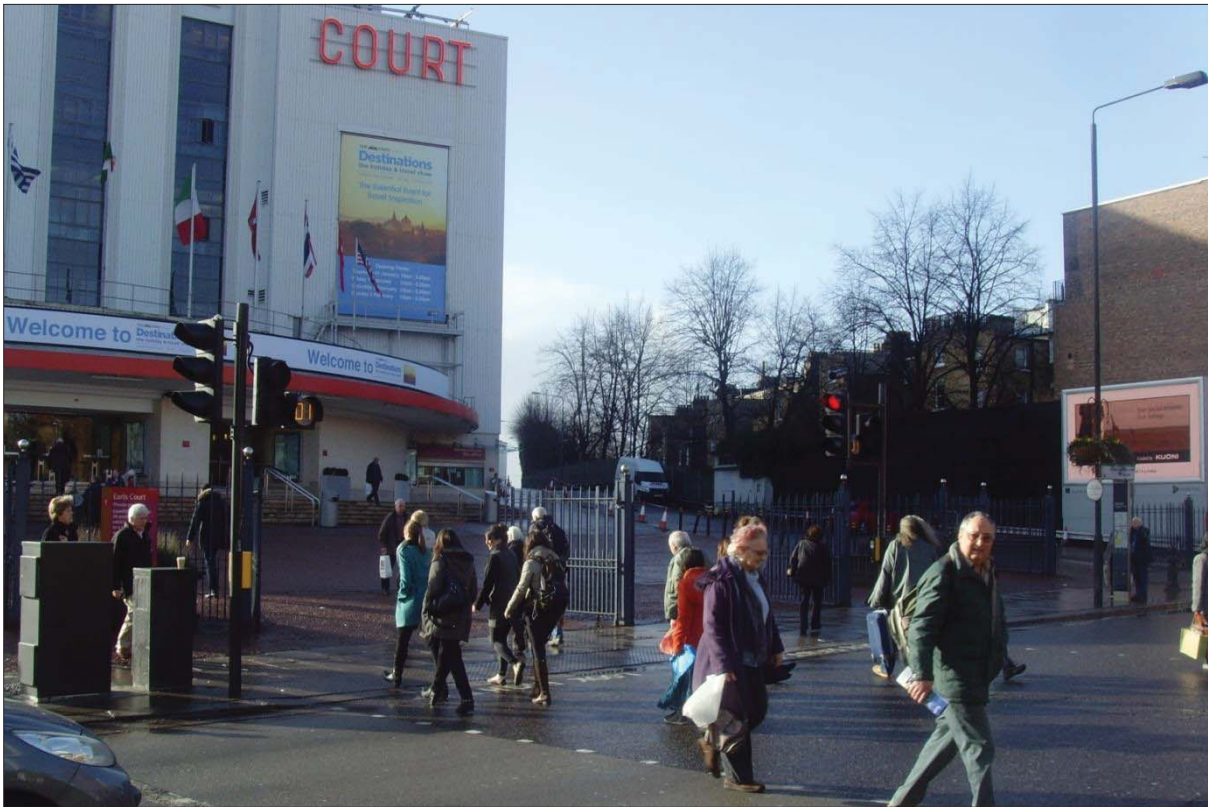
- 3.13.1 In some locations the layout of the road enables the designer to install a staggered crossing with a very large central island.
- 3.13.2 This arrangement will then permit the distance between the studs to be reduced from the recommended distance of 4.0m to none.
- 3.13.3 This layout is not recommended to be used with a central island less than 7.0m wide.
- 3.13.4 The Green Figure will still need to be louvred to prevent any see-through between the two crossings.

## 4 Pedestrian Crossings (Ped-X)



- 4.1 This is the preferred crossing type for all new, modified and modernised signal layouts.
- 4.2 This layout lends itself well to larger straight across designs.
- 4.3 The layout is as a Pelican, but the traffic light sequence is as a signalised junction.
- 4.4 Far sided signals shall be used.
- 4.5 Timings are set out in SQA-0645 Traffic Timings.
- 4.6 Countdown is approved for use at Ped-X crossings.





- 4.7 Standard full-size two-figure or small push button units may be used at Ped-X crossings. For consistency, and to ensure satisfactory operation of lamp monitoring, push button types should not be mixed across the same site.



## 5 Pelicans



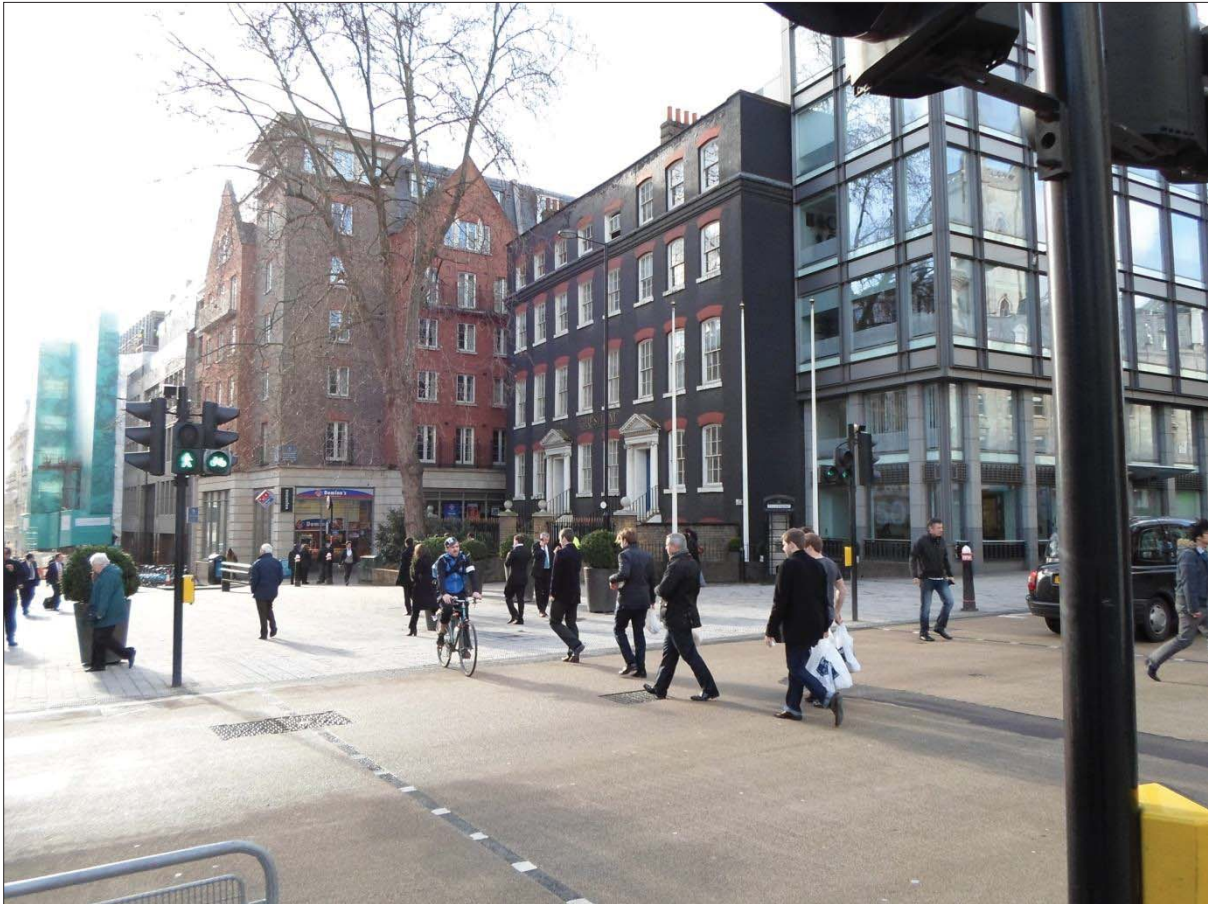
- 5.1 Following the release of the TSRGD 2016, Pelican crossings are deprecated and can no longer be implemented on street. Existing Pelicans may remain in operation until life-expired, at which point they must be replaced with an alternative type of crossing.
- 5.1 Design standards for Pelican crossings are given in LTN 2/95.
- 5.2 The Vehicle Precedence time is currently either fixed at 20 seconds or given an extension. When VA extensions are applied the minimum period shall be 7 seconds up to a maximum of 20 seconds. There must be good traffic engineering reasons for a longer period, e.g. where there is a very heavy vehicle movement and a continuous light pedestrian demand.
- 5.3 All timings are set out in SQA-0645 Traffic Signal Timings.
- 5.4 A 2 second 'overlap' period (Flashing Green Man / Red to Traffic) must be provided. This time should be taken from the Flashing Green Man / Flashing Amber stage.
- 5.5 The minimum recommended crossing width is 3.0m.
- 5.6 Pelican crossings are not compatible with pedestrian countdown.



5.7 Pelican Crossings will be provided with three-figure Push Button Units.



## 6 Toucans



- 6.1 Design standards for Toucan crossings are given in LTN2/95; advice is given in TAL10/93 and 4/98.
- 6.2 Zig-Zags at Toucans are a requirement as set out in TSRGD 2016. Some existing Toucans were installed without zig-zags and Highway Authorities had until 1st January 2007 to install them at these sites.
- 6.3 Far sided Toucan crossings may have on-crossing detection, however this cannot be used in conjunction with pedestrian countdown.
- 6.4 Timings are set out in SQA-0645 Traffic Signal Timings.
- 6.5 High Level repeater signals shall be used at near sided Toucans. The minimum recommended crossing width is 4.0m.
- 6.6 Countdown may be used in conjunction with far-sided Toucan facilities. To prevent overloading of the mounting brackets, the combined Toucan / countdown signal head should be front-mounted, either with the signal pole set back from the kerb edge, or using a formed pole to maintain clearances.
- 6.7 Where PCaTS are installed at a Toucan crossing it is recommended that the PCaTS unit is installed on the inside of the crossing.



- 6.8 Toucan crossings require corduroy tactile paving as set out in the London Cycling Design Standards.
- 6.9 A push button to the right hand side of the crossing should be provided; push buttons on both sides may be provided if deemed beneficial due to crossing width or volume of pedestrians/cycles. Push buttons should be located so that the front wheel of cyclists does not protrude into the carriageway.
- 6.10 Far sided Toucan crossings may be provided with either a full-size “blank” push button panel, or with small push buttons. Push button types should not be mixed at the same site.





- 6.11 Near sided Toucan push button unit, with a high level repeater.
- 6.12 The repeater unit does not have a push button.
- 6.13 Small push buttons may be used as additional pedestrian demand units.



## 7 Puffins



- 7.1 Installation of a Puffin crossing should be considered in the wider context of crossings nearby on the network and the mixing of different types of signal control.
- 7.2 Where pedestrian crossings are being replaced by Puffin crossings, the designers should make allowances for the Puffin requirements for:
- Tactile paving
  - The position of the nearside signal poles to accommodate the nearside pedestrian display unit.
  - The position of detection equipment
- 7.3 Design standards for Puffin crossings are given in LTN 2/95. Further information is given in TAL 1/01 “Puffin Pedestrian Crossings” and TAL1/02 “The Installation of Puffin Pedestrian Crossings” and in the TI Puffin Design Guide Document No: U/S000/TS/603 and in the Puffin Good Practice Guide

- 7.4 Near sided signals shall be used together with on-crossing detection and kerb side detection.
- 7.5 The minimum recommended crossing width is 3.0m
- 7.6 High Level Repeaters should be used at crossings with high volumes of pedestrians.
- 7.7 Timings are set out in SQA-0645: Traffic Timings.
- 7.8 Countdown is not approved for use at Puffin crossings
- 7.9 Additional Push Buttons on Left Hand Side of crossing are without the Red/Green Figure.





## 8 Relevant Documentation

[The Traffic Signs Regulations and General Directions 2016](#)  
[Construction \(Design and Management\) Regulations 2015 \(CDM 2015\)](#)  
[Croydon Tramlink Act 1994](#)  
[Design Manual for Roads and Bridges \(DMRB\)](#)  
[Disabled Persons Act 1981](#)  
[Greater London Authority Act 1999](#)  
[Guidance on the use of tactile paving surfaces \(DfT 2007\)](#)  
[Guidance on Tramways \(ORR\)](#)  
[HD 28/15 Skidding Resistance](#)  
[Inclusive Mobility: A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure \(DfT 2002\)](#)  
[London Accident Analysis Unit Report ATWP25 and ATWP37](#)  
[London Cycling Design Standards](#)  
[LTN1/09 Signal Controlled Roundabouts](#)  
[LTN1/86 Cyclists at Road Crossings and Junctions](#)  
[LTN1/97 Keeping Buses Moving](#)  
[LTN1/98 The Installation of Traffic Signals and Associated Equipment](#)  
[LTN2/95 The Design of Pedestrian Crossings](#)  
[LTN2/08 Cycle Infrastructure Design](#)  
[MCE0181 Issue A Siting of Inductive Loops for Vehicle Detecting Equipments at Permanent Road Traffic Signal Installations](#)  
[MCE0360 Issue C: Urban Traffic Control Functional Specification](#)  
[MCE0361 Issue A: High Capacity Data Transmission System for use In Urban Traffic Control Systems](#)  
[Signing the Way \(DfT Traffic Signs Policy Paper October 2011\)](#)  
[TA 57/87 Roadside Features](#)  
[TA68/96 The Assessment and Design of Pedestrian Crossings](#)  
[TA90/05 The Geometric Design of Pedestrian, Cycle and Equestrian Routes](#)  
[TA91/05 Provision for Non-Motorised Users](#)  
[TA12/07 Traffic Signals on High Speed Roads](#)  
[TAL1/06 General Principles of Traffic Control by Light Signals](#)  
[TAL1/08 Wig-wag Signals](#)  
[TAL2/03 Signal-control at Junctions on High-speed Roads](#)  
[TAL3/03 Equestrian Crossings](#)  
[TAL16/99 The Use of Above Ground Vehicle Detectors](#)  
[TD9/93 Highway Link Design](#)  
[TD42/95 Geometric Design of Major/Minor Priority Junctions](#)  
[TD50/04 The Geometric Layout of Signal-Controlled Junctions and Signalised Roundabouts](#)  
[TD 35/06 All Purpose Trunk Roads MOVA System of Traffic Control at Signals](#)  
[TfL Traffic Modelling Guidelines](#)  
[TfL Signal Design Memorandum – No.002 ASL to Stud Distances on Cycle Routes](#)  
[TfL Signal Design Memorandum – No.003 Monitoring of Box Signs](#)  
[TfL Streetscape Guidance 2016: A Guide to Better London Streets](#)

8 Relevant Documentation (continued)

[TR2206A: Specification for Road Traffic Signals](#)

[TOPAS 2500A: Specification for Traffic Signal Controller](#)

[TOPAS 2505A: Performance Specification for Above Ground Vehicle  
Detector Systems for use at Permanent Traffic Signal Installations](#)

[TOPAS 2508A: Performance Specification for Tactile Equipment for use at  
Pedestrian Crossings](#)

[TOPAS 2509A: Performance Specification for Audible Equipment for use at  
Pedestrian Crossings](#)

[TOPAS 2513A Performance Specification for Wig Wag Signal Control  
Equipment](#)

[TOPAS 2523A: Traffic Control Equipment Interfacing Specification](#)

[Traffic Signs Manual Chapter 3, Regulatory Signs](#)

[Traffic Signs Manual Chapter 5, Road Markings](#)

## 9 Structure

The documents listed below form a set of guidance and procedures for the design of traffic signals and signal junctions in London:

<a href="#">SQA-0640</a>	Policy, Standards and Guidance to Procedures for the Design of Traffic Signals
<a href="#">SQA-0641</a>	High Level Process for the Design of Traffic Signals
<a href="#">SQA-0642</a>	Client Requirements
<a href="#">SQA-0643</a>	Design for Signalised Junctions
<a href="#">SQA-0644</a>	Design for Stand Alone Crossings
<a href="#">SQA-0645</a>	Traffic Signal Timings
<a href="#">SQA-0646</a>	Safety Auditing of Signal Schemes
<a href="#">SQA-0647</a>	Justification for Traffic Signals
<a href="#">SQA-0648</a>	Documentation for the Design File
<a href="#">SQA-0651</a>	Design of Traffic Signal Control for Pedal Cycles

## 10 Document Control

Issue	Date	Change Summary	Author	Checker	Approver
1	June 2013	Previously incorporated in SQA-0064. Issued for use.	K Van Tuyl	S Poole	A Scriven
2	Aug 13	Revised following consultation	K Van Tuyl	S Poole	A Scriven
3	Dec 13	Reference to TD amended to RSM, TI (Signals) to AMD	R Pierson	J Fraser	
4	Nov 16	Updated for incorporation into new QMS.	R Booth (Principal Traffic Control Engineer (acting) - TI P&M)	N Pompilis (Principal Traffic Control Engineer - TI Signals)	B Sleight (Chief Engineer (acting) - TI Signals)



APPENDIX A

Drawings

Diagram A1: 2 lanes, 1 controller, 1 signal head. Markings: 1, 2.

Diagram A2: 2 lanes, 1 controller, 1 signal head. Markings: 1, 2, 3, 4.

Diagram A3: 2 lanes, 1 controller, 1 signal head. Markings: 1, 2.

Diagram A4: 2 lanes, 1 controller, 1 signal head. Markings: 1, 2, 3.

Diagram B1: 2 lanes, 1 controller, 1 signal head. Markings: 1, 2, 3.

Diagram B2: 2 lanes, 1 controller, 1 signal head. Markings: 1, 2, 3, 4.

Diagram C1: 2 lanes, 1 controller, 1 signal head. Markings: 1, 2, 3, 4.

Diagram C2: 2 lanes, 1 controller, 1 signal head. Markings: 1, 2, 3, 4, 5.

Diagram D1: 2 lanes, 1 controller, 1 signal head. Markings: 1, 2, 3, 4.

Diagram D2: 2 lanes, 1 controller, 1 signal head. Markings: 1, 2, 3, 4, 5, 6.

D NOV 16	ZIGZAG ROAD MARKINGS ADDED	RPB	NAP
C AUG 11	MINOR AMENDMENTS	TMP	KVT
B MAR 04	MINOR AMENDMENTS	IAH	IAH
A FEB 02	NOTES, LAYOUTS & TITLE BLOCKS AMENDED	IAH	IAH
- OCT 95	REDRAWN; SUPERSEDES DRAWING SIG/GEN/S/88-1A	IAH	KSS

scale	A3	date	OCT 95	GB	IAH	???
NTS				dirn	eng	chk

Transport for London  
**Surface Transport**

STREETS

Traffic Directorate  
Windsor House  
42-50 Victoria Street  
LONDON SW1H 0TL  
Telephone 020 7222 5600

NO GEN/SIG/PEL1 D

1150 14/11/16 RBooth //SIG/GEN/SIGPEL1D

SINGLE FAR SIDED SITES

scheme

NOTES  
1 THESE LAYOUTS ARE REPRESENTATIVE ONLY  
2 THE ACTUAL LAYOUT OF EACH INSTALLATION SHALL BE IN ACCORDANCE WITH THE APPROPRIATE SIGNAL SECTION SITE REQUIREMENTS

D NOV 16	ZIGZAG ROAD MARKINGS & PCATS ADDED	RFB	NAP
C MAR 04	UPDATED TITLE BLOCK	TMP	KVT
B MAR 04	MINOR AMENDMENTS	IAH	IAH
A FEB 02	NOTES, LAYOUTS & TITLE BLOCKS AMENDED	IAH	IAH
- OCT 95	REDRAWN; SUPERSEDES DRAWING SIG/GEN/S/88-1A	IAH	KSS

Transport for London <b>Surface Transport</b>	scale	A3	date	OCT 95	GB	IAH	???
	NTS				drn	eng	chk

scheme  
**DUAL FAR SIDED SITES**

**Traffic Directorate**  
Windsor House  
42-50 Verochs Street  
LONDON SW1H 0TL  
Telephone 020 7222 5600

**NO GEN/SIG/PEL2 D**

1558 14/11/16 RBooth //SIG/GEN/SIG/PEL2D

**NOTES**

- 1 THESE LAYOUTS ARE REPRESENTATIVE ONLY
- 2 THE ACTUAL LAYOUT OF EACH INSTALLATION SHALL BE IN ACCORDANCE WITH THE APPROPRIATE SIGNAL SECTION SITE REQUIREMENTS

**NOTES**

- 1 THESE LAYOUTS ARE REPRESENTATIVE ONLY
- 2 THE ACTUAL LAYOUT OF EACH INSTALLATION SHALL BE IN ACCORDANCE WITH THE APPROPRIATE SIGNAL SECTION SITE REQUIREMENTS

**CONTROLLER** ■

H1

**CONTROLLER** ■

H2

**CONTROLLER** ■

J1

**CONTROLLER** ■

J2

**CONTROLLER** ■

I1

**CONTROLLER** ■

I2

C APR 09	POU'S ON LAYOUTS I1 AND I2 AMENDED	TMP	TMP
B MAR 07	PRIMARY BRACKETS AMENDED ON LAYOUT I1 AND J1	IAH	TMP
A NOV 05	POLE NUMBERS AMENDED ON LAYOUTS H2, J1 & J1	IAH	TMP

scale	A3	date	WT
NTS		MAR 04	drn
eng			chk

scheme

PUFFIN SITES  
VARIOUS LANES

**Street Management**  
Transport for London  
42-50, Penton Street  
LONDON SW1H 0TL  
Telephone 020 7343 5000

**Traffic Technology Services**  
1141 01/11/05 TazzarW //SIG/GEN/SIGPUFIC

This map is reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. (62X/10002/279) (2002).