Design and construction of Bus Pole Foundations and Ancillary works, for the National Bus Pole Project

Certification Procedure

1.1 Introduction

1.1.1 This document is to be used where a local authority, developer or contractor working outside of the NTA national bus pole frame work contract, are to undertake bus stop works on National Transport Authority bus stop.

1.1.2 The local authority, developer or Contractor, shall be responsible for the design, execution and completion of the Works in order to render them fit for purpose.

2 CERTIFICATION PROCEDURE

2.1 Introduction

2.1.1 The local authority, developer or Contractor, shall provide to the NTA certification to cover the Design, execution and completion of the Works.

2.2 Design and Construction Certificate

2.2.1 In respect of each Bus Stop retention socket installation, Real Time Passenger Information (RTPI) retention socket installation and Bus Stop hard standing, the Contractor shall provide a completed Design and Construction Certificate in the form, as found in section 3 of this document, in respect of such installation. Each Design and Construction Certificate shall be signed by a qualified civil or structural engineer holding the designation of Chartered Engineer with the Institute of Engineers of Ireland or an equivalent chartered status.

2.2.2 The Chartered Engineer shall provide such supervision or inspection of the construction of the Works as they consider necessary to ensure that the construction complies with the Design.

2.2.3 No modifications may be made, or qualifications added, to the form of the Design and Construction Certificates.

Design Requirements

2.2.4 The Retention Sockets shall be installed such that the installed Bus Stop Pole or RTPI Pole is no more than one half of one degree off true vertical when measured on any part of the Bus Stop Pole or RTPI Pole

2.2.5 The retention socket types are the RS60 x 450 Retention Socket for the Bus Stop Poles manufactured by IPL Group Limited, www.iplgroup.com, or such other retention sockets as may be specified by the NTA from time to time. The Contractor shall obtain any additional information required for the Design or the installation of the Retention Sockets from the manufacturer of the Retention Sockets. Refer Attachment 1 for details.

2.2.6 The retention socket system for the RTPI Poles shall be the RS115df x900 or similar approved, and shall be supplied by the Contractor. Refer Attachment 2 for details.

2.2.7 Dimensions for the RTPI display are provided in attachment 3 (NTA-0000-SCD_ZZ-00_XX-0000-DR-KK-0005). Details of the various bus stop flag dimensions are available from the NTA on request.

2.2.8 A standard foundation design for a Bus Stop Pole is included in attachment 4 (drawing N169-09 E) and attachment 5 (NTA-0000-SCD_ZZ-00_XX-0000-DR-KK-0003). The retention socket shall be encased in concrete (mix type ST4 or higher grade) in accordance with the foundation details developed as part of the Design and to BS EN 206-1, BS 8500-1, and BS 8500-2. In the event this design is not installed, a drawing of the installed design is to be submitted with the design and construction certificate.

3 Form - Design and Construction Certificate

Certificate Ref: -

This Certificate refers to bus stop reference number _____.

To be completed by a Chartered Engineer:

I am a qualified civil / structural *(strikeout whichever is not applicable)* engineer who is a registered Chartered Engineer and, having exercised reasonable professional skill and care, I hereby certify to the NTA that the installation of this:

- Retention Socket
- RTPI Pole
- Hard Standing

(tick as appropriate for each stop)

has been undertaken in accordance with the Design and the other relevant provisions of this document.

Signed: _____ Date: _____

Print Name: _____ Firm Name *(if applicable)*: _____

Address: _____

Attachment 1 – RS60 x 450

Intelligent Foundation Solutions

RETENTION SYSTEM™ sockets are intelligent foundation solutions for the installation and maintenance of posts.
Essential to sustainable infrastructure design, they add value through improved asset management and performance, reduced operational costs and deliver environmental, health and safety benefits.

world leading design...

- Patented design tested to international standards
- Approved and used throughout the world
- High-strength, reusable design survives vehicle impact
- Solution for knock-down and access-control locations
- Eliminates repeat excavation, disruption and expense
- Shallow foundation options for congested sites
- Easy to handle, adjust and install on site
- Facilitates electrical cabling at ground level
- Simplifies project, contractor & site management
- Assists maintenance and seasonal schedules
- Supports health and safety work practices
- Promotes environmental policies and targets

Sustainable Infrastructure Design

RS60

RS60 socket for the installation of Ø60mm (2.3in) posts including signs, bollards, barriers, benches, bins...

RETENTION SYSTEM™
sockets for post installation

RS sockets *are available in common industry sizes and post installation depths.*
Base options include: standard [flat] / duck-foot & tee bends for cable access / shallow foundation.
RS engineered sockets *are made to size, specification and installation requirements.*

www.retention-system.com

- **Facilitates Passive Safety design to EN12767**
- **Foundation size and specification to EN40 & BD94/07**
- **Product tested and load rated to EN124 B125**

RETENTION SYSTEM™ is a trademark and patented product of IPL group | Innovative Products Ltd:
ISO 9001 / ISO 14001 / OHSAS 18001

IPL group | +353 (0) 41 983 2591

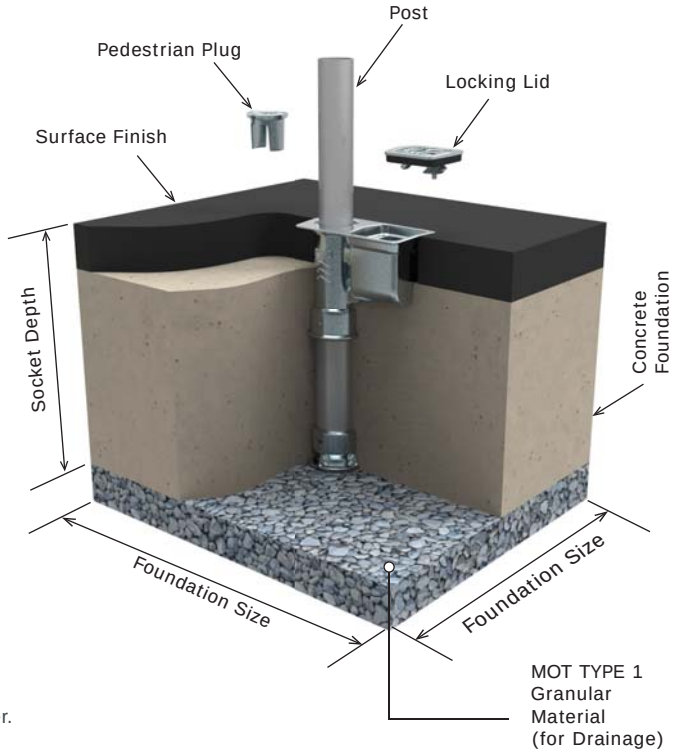
nqa. ISO 9001 Registered · nqa. ISO 14001 Registered · nqa. OHSAS 18001 Registered

ipl group

RS socket
installation & specification...

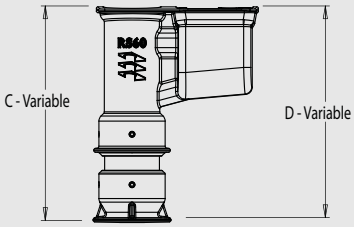
The **RS socket** should be set into concrete generally in accordance with International Standards or good Codes of Practice for the installation of posts.

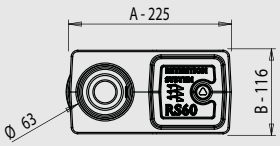
1. Prepare hole at least 75mm deeper than the overall height of the **RS socket**. If depth for **RS socket** cannot be achieved, unit can be shortened on site. Please contact your supplier for technical support.
2. Compact at least 75mm of MOT type 1 granular material in base of hole.
3. Position **RS socket** in centre of hole. For cabled installations connect ducting from remote chamber to swivel bend on socket. Leave draw cord in base of **RS socket** bend.
4. Rotate the **RS socket** head into the required orientation.
5. Remove locking lid, loosen the two M16 locking set-screws and remove the pedestrian plug.
6. Install a levelling post (stump pole) in the **RS socket**, fasten the locking set-screws and replace the locking chamber lid.
7. Surround with the required amount of concrete (ST4 mix or stronger). Use stump pole to achieve a vertical level.
8. Once vertical level is achieved, compact concrete.
9. Once concrete has been compacted and has begun to cure, carefully remove stump pole and lock the pedestrian plug in place.
10. Replace the locking chamber lid and secure in position. Finish footway with required surface when concrete has cured.



See **RS socket** installation guide for EN40-3-1:2000 foundation guidelines

For detailed foundation sizing on specific site conditions contact your supplier.





RS60

C* RS socket foundation depth
D** post insertion depth

Technical drawings for all **RS sockets** available from **IPL group**.

Drawings not to scale, illustrations, technical data, dimensions and weights are subject to alteration without notice.

RS60 socket for the installation of Ø60mm (2.3in) posts

Ref No:	Base Type	A (mm)	B (mm)	C* (mm)	D** (mm)	Weight (kg)
RS60x300	standard [flat]	225	116	300	290	9
RS60x450	standard [flat]	225	116	450	440	9.8
RS60x450df	duck foot bend	225	116	450	310	10
RS60x600	standard [flat]	225	116	600	590	10.7
RS60x600df	duck foot bend	225	116	600	460	10.8

Options: **RS stump pole**

Material Specification:

Head, Plug, Locking Lid:	Cast Steel (EN10340 GS240 Grade)
Body:	Galvanised Steel Pipe
Flat Base:	Cast Steel (EN10340 GS240 Grade)
Duck Foot Bend:	Cast Steel (EN10340 GS240 Grade)
Setscrews:	M16 A2 Stainless Steel
Assembly Screws:	M12 A2 Stainless Steel
Finish:	Galvanised

Further information on the RETENTION SYSTEM sockets for post installation is available at **www.retention-system.com**

IPL group, Slane Road, Drogheda, Co. Louth, Ireland. Tel: +353 41 9832591 | Fax: +353 41 9832599 | Email: info@ipl.ie | Website: www.iplgroup.com

Attachment 2 – RS115df x900

Intelligent Foundation Solutions

RETENTION SYSTEM™ sockets are intelligent foundation solutions for the installation and maintenance of posts.
Essential to sustainable infrastructure design, they add value through improved asset management and performance, reduced operational costs and deliver environmental, health and safety benefits.

world leading design...

- Patented design tested to international standards
- Approved and used throughout the world
- High-strength, reusable design survives vehicle impact
- Solution for knock-down and access-control locations
- Eliminates repeat excavation, disruption and expense
- Shallow foundation options for congested sites
- Easy to handle, adjust and install on site
- Facilitates electrical cabling at ground level
- Simplifies project, contractor & site management
- Assists maintenance and seasonal schedules
- Supports health and safety work practices
- Promotes environmental policies and targets

Sustainable Infrastructure Design

RS115

RS115 socket for the installation of Ø114mm (4.5in) posts including traffic signals, bollards, signs, lighting columns...

RETENTION SYSTEM™
sockets for post installation

RS sockets *are available in common industry sizes and post installation depths.*
Base options include: standard [flat] / duck-foot & tee bends for cable access / shallow foundation.
RS engineered sockets *are made to size, specification and installation requirements.*

www.retention-system.com

» **Facilitates Passive Safety design to EN12767**
» **Foundation size and specification to EN40 & BD94/07**
» **Product tested and load rated to EN124 B125**

RETENTION SYSTEM™ is a trademark and patented product of IPL group | Innovative Products Ltd:
ISO 9001 / ISO 14001 / OHSAS 18001

IPL group | +353 (0) 41 983 2591

nqa ISO 9001 Registered · nqa ISO 14001 Registered · nqa OHSAS 18001 Registered

ipl group

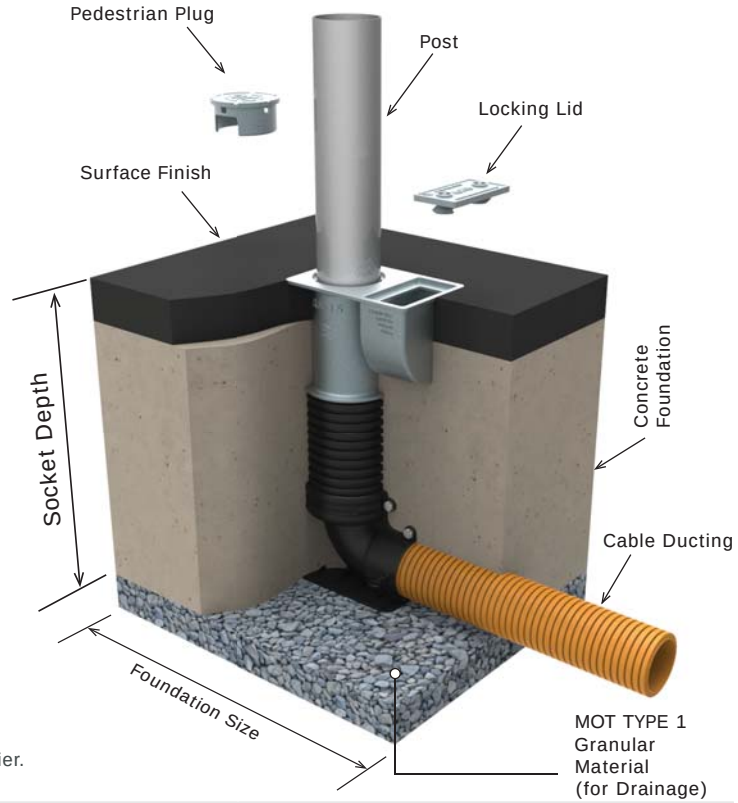
RS socket
installation & specification...

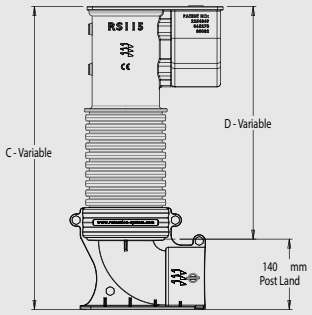
The **RS socket** should be set into concrete generally in accordance with International Standards or good Codes of Practice for the installation of posts.

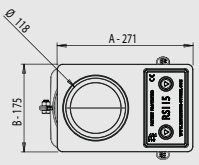
1. Prepare hole at least 75mm deeper than the overall height of the **RS socket**. If depth for **RS socket** cannot be achieved, unit can be shortened on site. Please contact your supplier for technical support.
2. Compact at least 75mm of MOT type 1 granular material in base of hole.
3. Position **RS socket** in centre of hole. For cabled installations connect ducting from remote chamber to swivel bend on socket. Leave draw cord in base of **RS socket** bend.
4. Rotate the **RS socket** head into the required orientation.
5. Remove locking lid, loosen the two M16 locking set-screws and remove the pedestrian plug.
6. Install a levelling post (stump pole) in the **RS socket**, fasten the locking set-screws and replace the locking chamber lid.
7. Surround with the required amount of concrete (ST4 mix or stronger). Use stump pole to achieve a vertical level.
8. Once vertical level is achieved, compact concrete.
9. Once concrete has been compacted and has begun to cure, carefully remove stump pole and lock the pedestrian plug in place.
10. Replace the locking chamber lid and secure in position. Finish footway with required surface when concrete has cured.

See **RS socket** installation guide for EN40-3-1:2000 foundation guidelines

For detailed foundation sizing on specific site conditions contact your supplier.







RS115

C* **RS socket foundation depth**
D** **post insertion depth**

Technical drawings for all **RS sockets** available from **IPL group**.

Drawings not to scale, illustrations, technical data, dimensions and weights are subject to alteration without notice.

RS115 socket for the installation of Ø114mm (4.5in) posts

Ref No:	Base Type	A (mm)	B (mm)	C* (mm)	D** (mm)	Weight (kg)
RS115x300sf	shallow foundation	271	175	300	210	22.5
RS115x300	standard [flat]	271	175	300	300	16
RS115x450	standard [flat]	271	175	450	450	16.25
RS115x450df	duck foot bend	271	175	450	310	15.6
RS115x450t	tee bend	271	175	450	310	27.3
RS115x600	standard [flat]	271	175	600	600	16.5
RS115x600df	duck foot bend	271	175	600	460	15.8
RS115x600t	tee bend	271	175	600	460	27.5
RS115x750	standard [flat]	271	175	750	750	17
RS115x750df	duck foot bend	271	175	750	610	16
RS115x750t	tee bend	271	175	750	610	27.7
RS115x900	standard [flat]	271	175	900	900	17.5
RS115x900df	duck foot bend	271	175	900	760	16.3
RS115x900t	tee bend	271	175	900	760	28

Options:

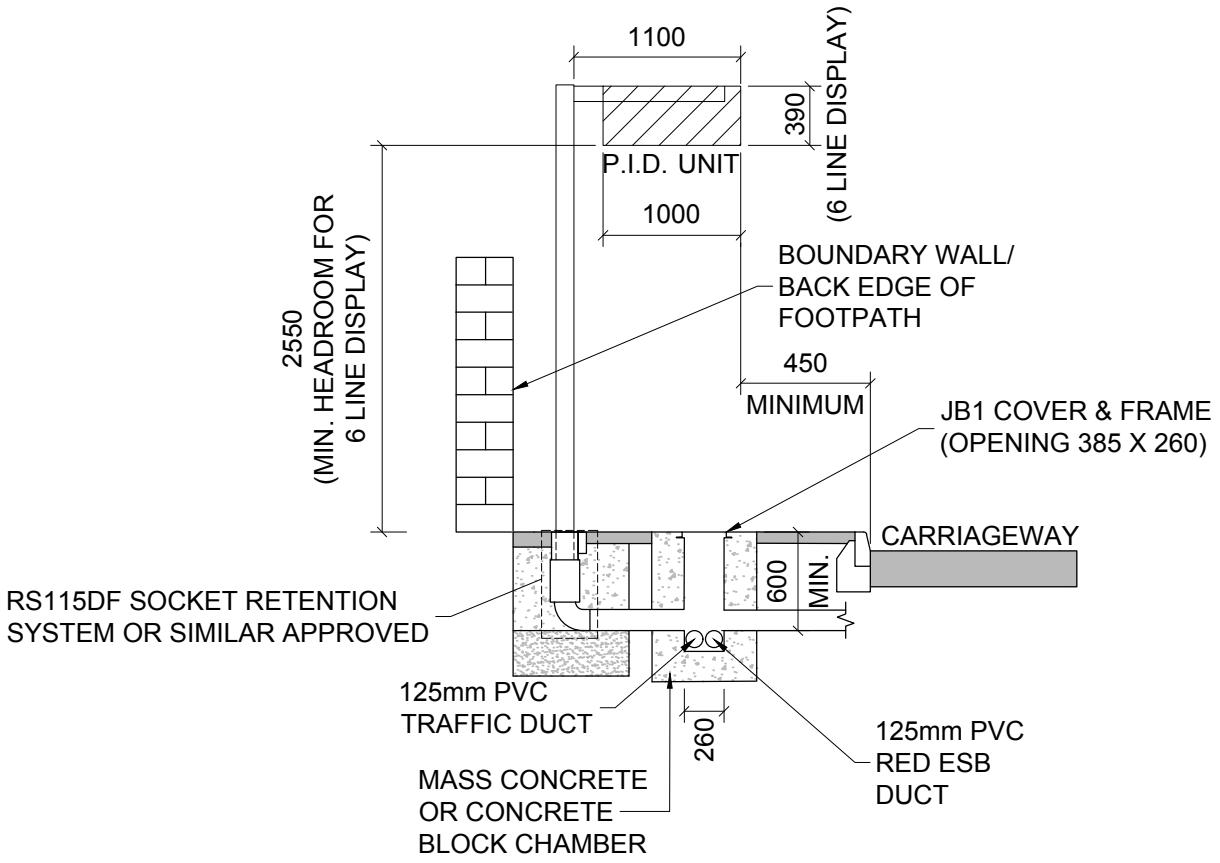
RS stump pole | RS drop kerb wedge | RS post installer
RS adapters for post sizes: Ø101.6mm / Ø88.9mm
(non-standard foundation depths & base types per specification)

Material Specification:

Head, Plug, Locking Lid:	Cast Steel (EN10340 GS240 Grade)
Body:	PP - Polypropylene Twin Wall
Flat Base:	Mild Steel
Duck Foot Bend:	PC/ABS - Polycarbonate
Tee Bend:	Ductile Iron (BS2789 500-7)
Setscrews:	M16 A2 Stainless Steel
Assembly Screws:	M12 A2 Stainless Steel
Finish:	Galvanised

IPL group, Slane Road, Drogheda, Co. Louth, Ireland. Tel: +353 41 9832591 | Fax: +353 41 9832599 | Email: info@ipl.ie | Website: www.iplgroup.com

Attachment 3 - NTA-0000-SCD_ZZ-00_XX-0000-DR-KK-0005



TYPICAL RTPI POLE & BOX CROSS SECTION

NOTES:
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE WORKS REQUIREMENTS & SPECIFICATION.

NTA
Údarás Náisiúnta Iompair
National Transport Authority

National Transport Authority
Design Section
Dún Scéine
Harcourt Lane
Dublin 2

T. +353 1 881 8300 (Main switch)

Údarás Náisiúnta Iompair
An Rannóg Deartha
Dún Scéine
Lána Fhearchair
Baile Átha Cliath 2

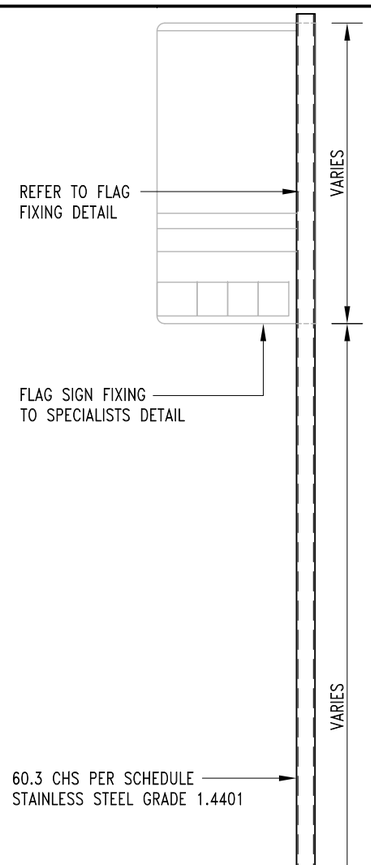
PUBLICATION TITLE

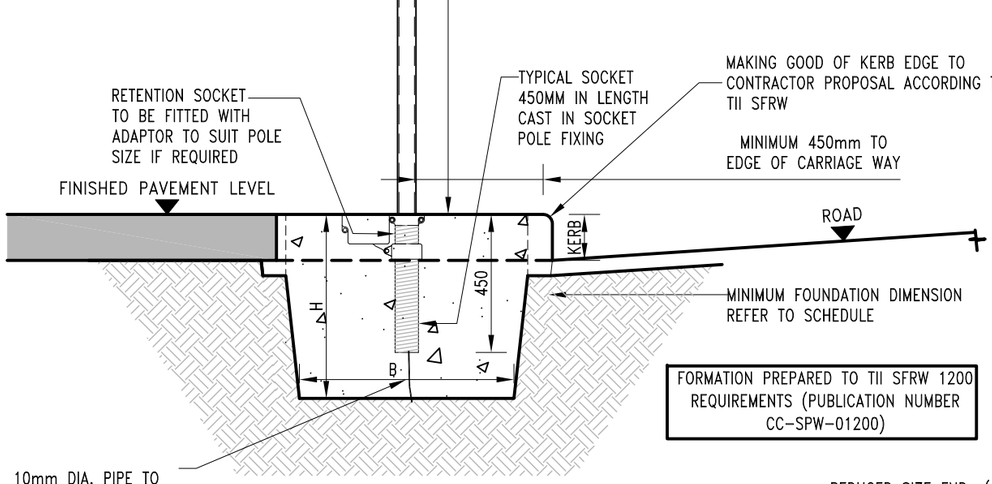
RTPI POLE & DISPLAY UNIT
CABLE ACCESS CHAMBER WITH JB1 COVER & FRAME

DOCUMENTATION SET	PUBLICATION DATE	PUBLICATION NUMBER
STANDARDS	JULY 2018	NTA-0000-SCD_ZZ-00_XX-0000-DR-KK-0005

Filename: K:\NTA\XXX\01_WIP\DR\ NTA-0000-SCD_ZZ-00_XX-0000-DR-KK-0005.dwg

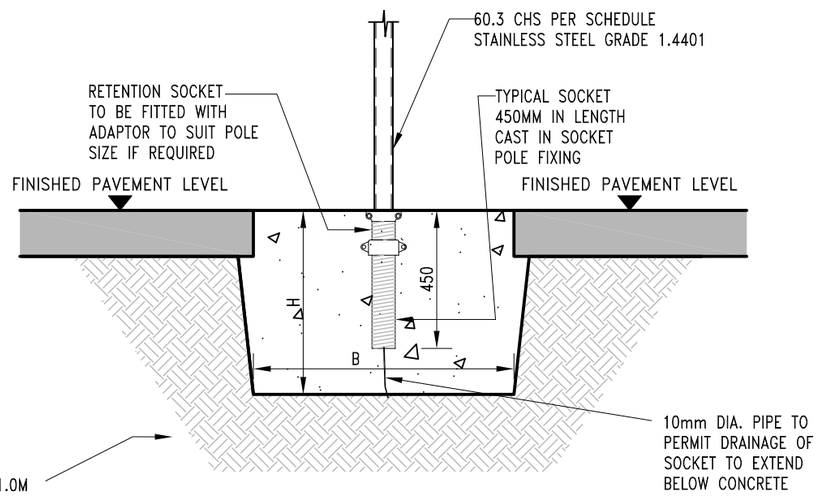
Attachment 4 - N169-09 E





FORMATION PREPARED TO TII SFRW 1200 REQUIREMENTS (PUBLICATION NUMBER CC-SPW-01200)

SIDE ELEV OF SIGN POLE FOUNDATIONS



REDUCED SIZE FNDs (0.4X0.4X1.0M AND Dia. 0.4X1.0m dp.) TO BE CAST IN A WELL COMPACTED SOIL/SUBASE/FILL MATERIAL AS PER TII SFRW 1200 REQUIRMENTS

FRONT ELEV OF SIGN POLE FOUNDATIONS

Foundation Sizes (BxBxH)									
	0.7x0.7x0.6m dp.			0.4x0.4x1.0m dp.*			Dia. 0.4x1.0m dp.*		
Sign Type	Urban	Urban or Rural	Urban or Rural or Costal	Urban	Urban or Rural	Urban or Rural or Costal	Urban	Urban or Rural	Urban or Rural or Costal
C			✓			✓			✓
E			✓			✓			✓
F			✓			✓			✓

FOUNDATION SIZES AND POSSIBLE INSTALLATION LOCATIONS

Concrete Grade

XC4/XD3/XS1
XF4 to EN 206.1
Min. Cement = 400kg/m³
Min. Strength = C40/50
Max. W/C = 0.45

NOTE:

- WHERE FOOTPATH CONSISTS OF PAVING OR COBBLE SETS POST FOUNDATION TO BE RECESSED TO ALLOW FOR REINSTATEMENT OF FINISH (MAX. 100mm)
- FOR THE REDUCED FOUNDATIONS SIZES (0.4x0.4x1.0m dp. AND Dia. 0.4x1.0m dp.) A SITE SPECIFIC GROUND INVESTIGATION MAY BE REQUIRED WHERE THE FOUNDATION IS NOT COMPLETELY SURROUNDED BY A WELL COMPACTED FILL MATERIAL IN ACCORDANCE WITH TII SFRW 1200 REQUIREMENTS .

FOR CONSTRUCTION

NOTES

1. For setting out refer to Architect's drawings.
2. This drawing to be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications.
3. DO NOT SCALE THIS DRAWING. Use figured dimensions only.
4. No part of this document may be reproduced or transmitted in any form or stored in any retrieval system of any nature without the written permission of O'Connor Sutton Cronin as copyright holder except as agreed for use on the project for which the document was originally issued.
5. Flag pole and securing plate to be grade 316 stainless steel as per specification.

Rev. No.	Date	REVISION NOTE	Drn. By	Chkd. By
A	27-08-14	UPDATED TO NTA COMMENTS	BP	MH
B	02-09-14	UPDATED TO NTA COMMENTS	PJD	MH
C	11-07-18	UPDATED TO NTA COMMENTS	SMG	KA
D	21-10-19	UP DATES TO NTA COMMENTS	EB	KA
E	25-11-19	UPDATED TO FND DRAINAGE	EB	KA

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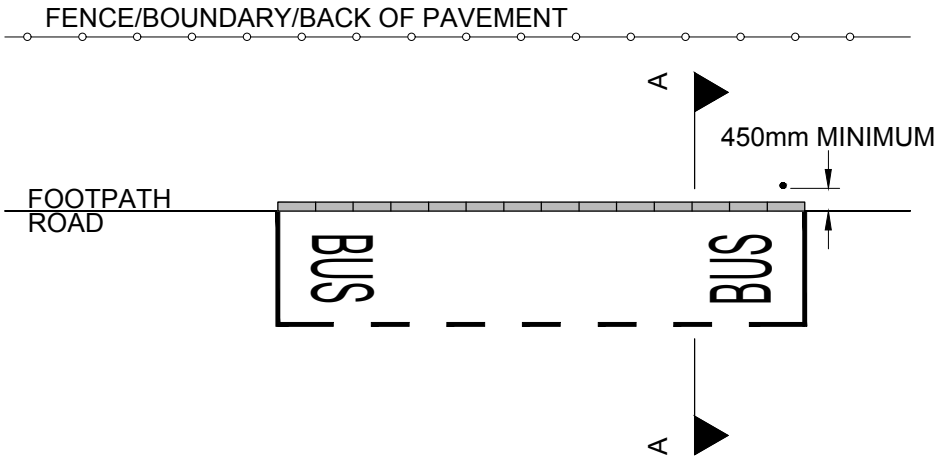
ISO 9001:2008 QUALITY | OHSAS 18001:2007 HEALTH & SAFETY | ISO 14001:2004 ENVIRONMENTAL

Client	NATIONAL TRANSPORT AUTHORITY
Project	BUS STOPS POLE & BASE DETAILS REPORT NO. 3
Title	GENERAL ARRANGEMENT OF BUS STOP POLE & FOUNDATION TYPES C, E & F

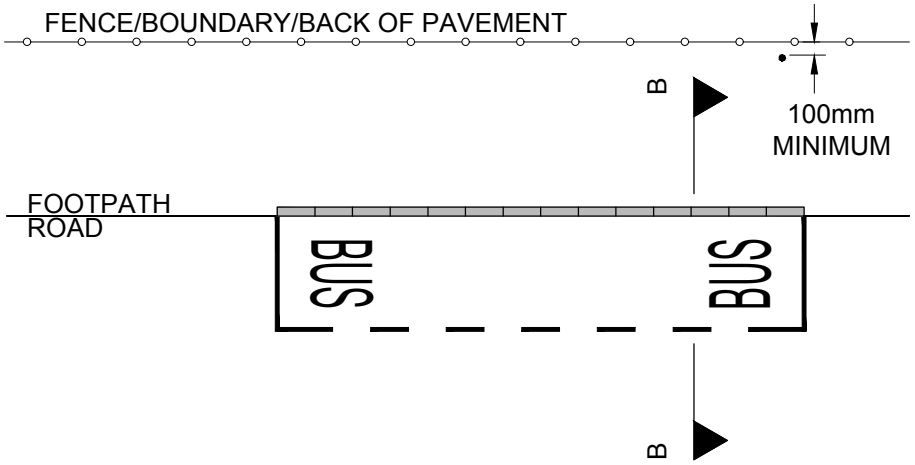
Drn by	Chkd by	Aprvd by	Dwg. No.	Revision
BP	MH	MOR	N169 -009	E

Date 25/08/14 | Scale AS SHOWN @ A3

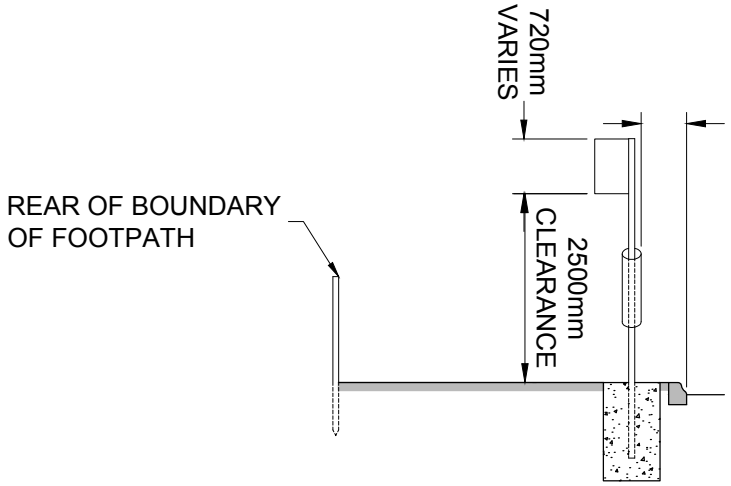
Attachment 5 - NTA-0000-SCD_ZZ-00_XX-0000-DR-KK-0003



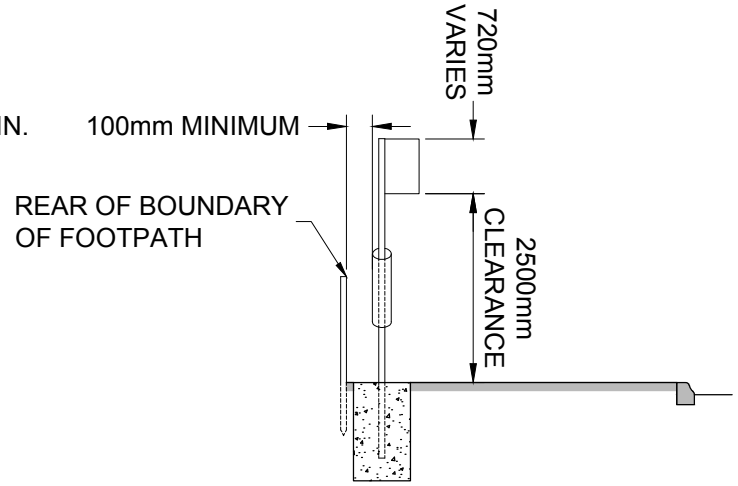
LAYOUT 1: BUS STOP POLE AT BACK OF KERB



LAYOUT 2: BUS STOP POLE AT BACK OF FOOTPATH



SECTION A-A



SECTION B-B

GENERAL NOTES:

1. LAYOUT 1 TO BE USED WHERE POSSIBLE, ALTERNATIVE LAYOUT 2 TO BE USED WHERE LAYOUT 1 IS NOT ACHIEVABLE.
2. NO PART OF THE BUS STOP POLE INCLUDING HEADPLATE & CAROUSEL SHALL BE CLOSER THAN 450mm FROM THE FRONT FACE OF THE KERB.
3. THE UNDERSIDE OF THE POLE HEADPLATE SHALL NOT BE WITHIN 2500mm OF THE FOOTPATH LEVEL.
4. WHERE LAYOUT 2 IS USED, THE POLE SHALL BE POSITIONED SO THAT THE COROUSEL IS FREE TO ROTATE 360° ON THE POLE & A MINIMUM CLEARANCE OF 100mm IS PROVIDED BETWEEN THE CAROUSEL & ANY FIXED FEATURE OR BOUNDARY WALL
5. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE WORKS REQUIREMENTS & SPECIFICATION.

NTA
Údarás Náisiúnta Iompair
National Transport Authority

National Transport Authority
Design Section
Dún Scéine
Harcourt Lane
Dublin 2

T. +353 1 881 8300 (Main switch)

Údarás Náisiúnta Iompair
An Rannóg Deartha
Dún Scéine
Lána Fhearchair
Baile Átha Cliath 2

PUBLICATION TITLE

BUS STOP - NEW POLE LOCATION
TYPICAL DETAIL

DOCUMENTATION SET	PUBLICATION DATE	PUBLICATION NUMBER
STANDARDS	JULY 2018	NTA-0000-SCD_ZZ-00_XX-0000-DR-KK-0003

Filename: K:\NTA\XXX\01_WIP\DR\ NTA-0000-SCD_ZZ-00_XX-0000-DR-KK-0003.dwg