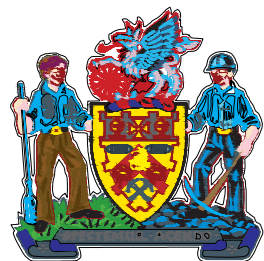


Standard Detail Pack

for

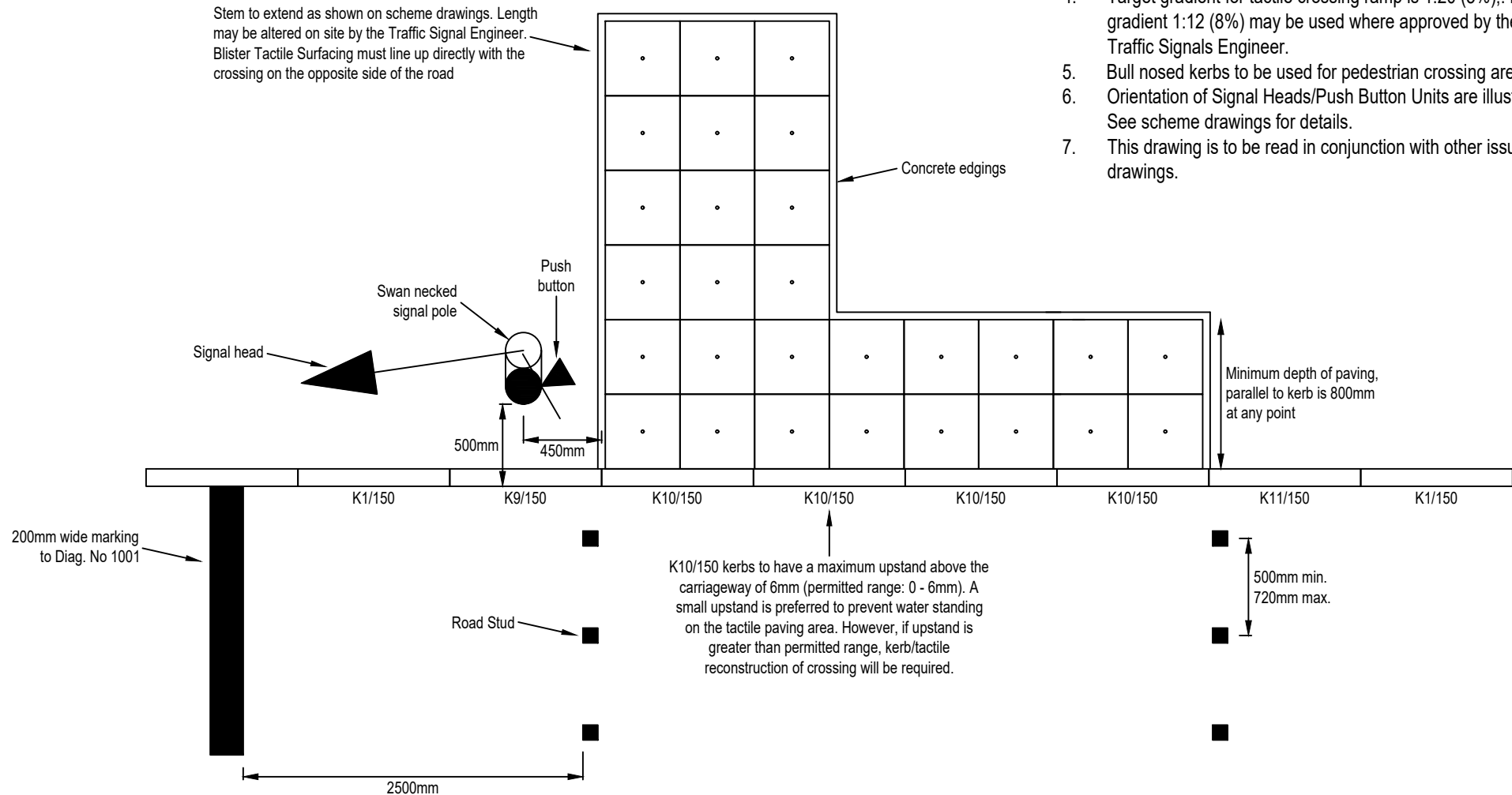
Traffic Signal Schemes

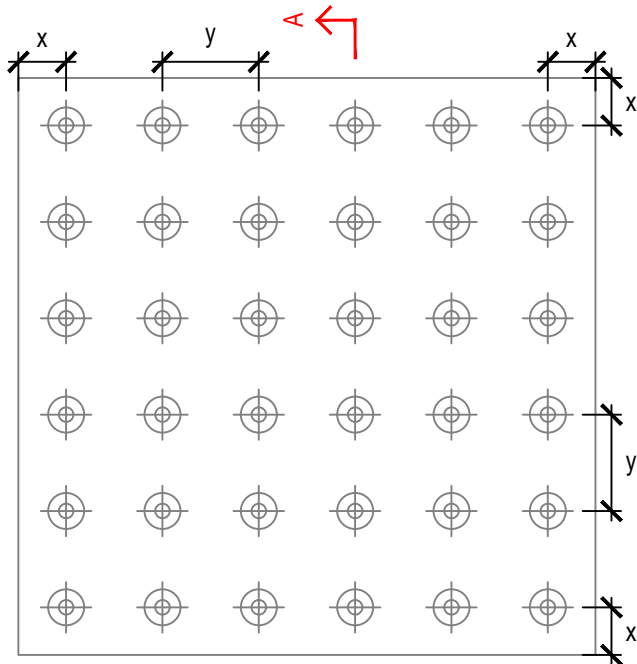


BARNLSLEY
Metropolitan Borough Council

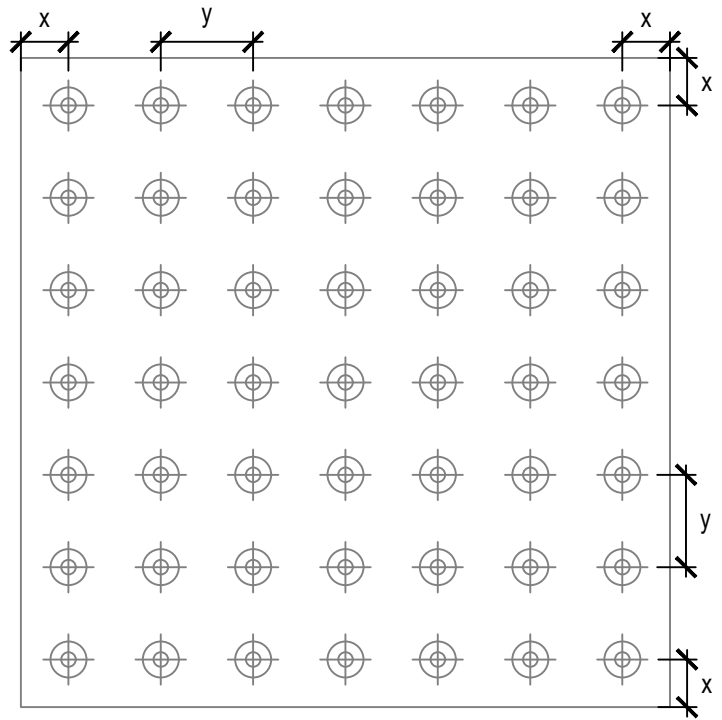
Notes

1. Poles to be positioned half way down kerb taper (approx 450mm).
2. Kerb face to outside diameter of pole to be 500mm on cranked poles and 700mm on straight poles.
3. Paving to be in accordance with latest DfT guidance documents.
4. Target gradient for tactile crossing ramp is 1:20 (5%),. Maximum gradient 1:12 (8%) may be used where approved by the BMBC Traffic Signals Engineer.
5. Bull nosed kerbs to be used for pedestrian crossing areas.
6. Orientation of Signal Heads/Push Button Units are illustrative only. See scheme drawings for details.
7. This drawing is to be read in conjunction with other issued contract drawings.



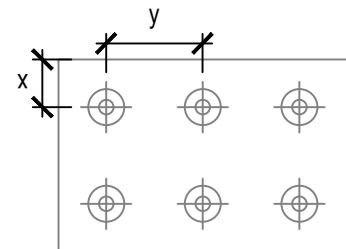


Module Type 'A'

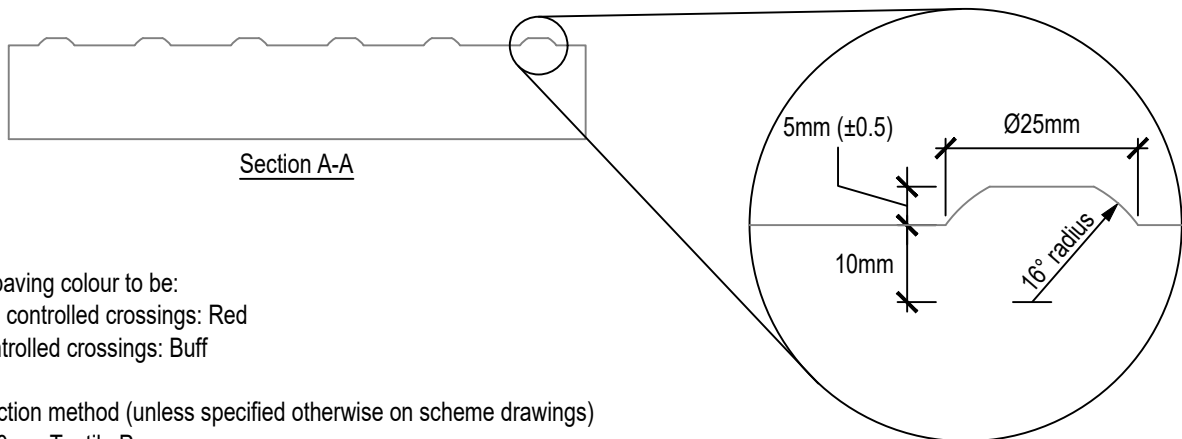


Module Type 'B'

Module type	Size	No. of domes	Dimensions	
			x	y
A	400mm x 400mm	6 x 6 = 36	33mm	66.8mm
B	450mm x 450mm	7 x 7 = 49	33mm	64mm
C	200mm x 133mm	2 x 3 = 6	33mm	67mm



Module Type 'C'



Section A-A

Notes

1. Tactile paving colour to be:
 - 1.1. Signal controlled crossings: Red
 - 1.2. Uncontrolled crossings: Buff
2. Construction method (unless specified otherwise on scheme drawings)
 - 65/70mm Tactile Paver; on
 - 70mm Lean mix concrete to CBM1 (Grade C7) or greater; on
 - 150mm of compacted Type 2 Granular Sub-Base.
3. This drawing is to be read in conjunction with other issued contract drawings.



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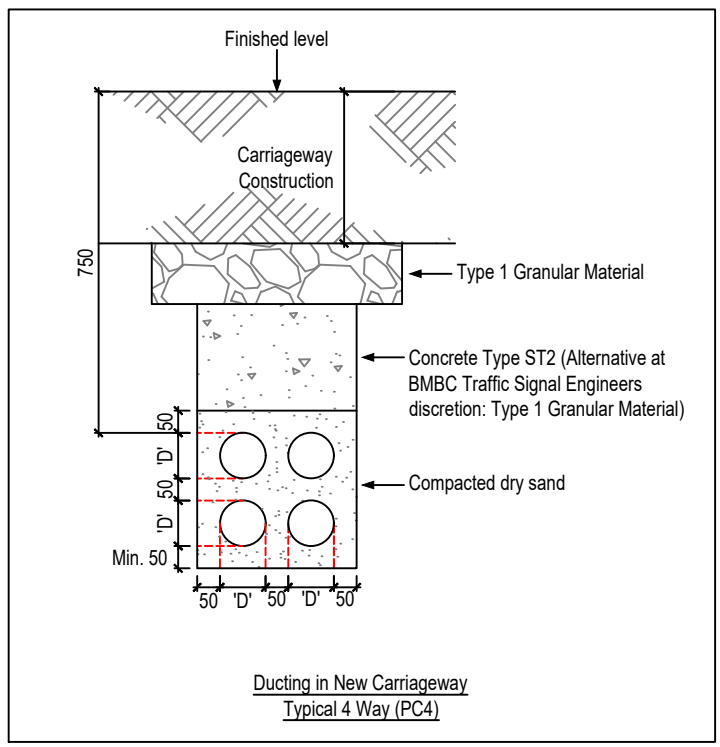
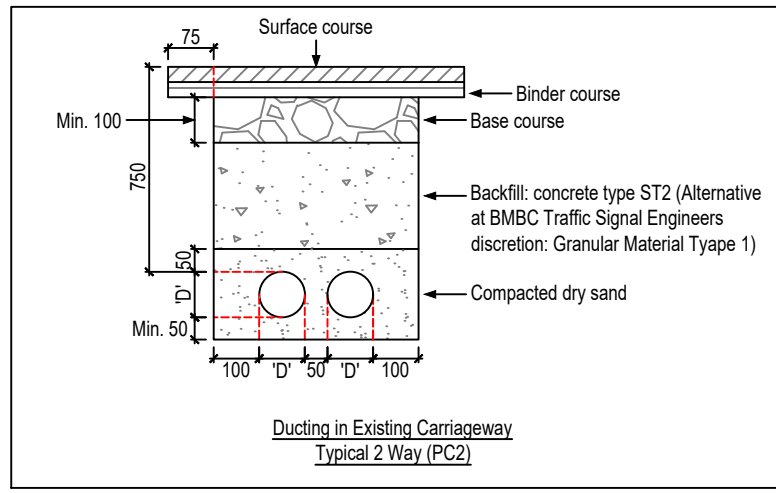
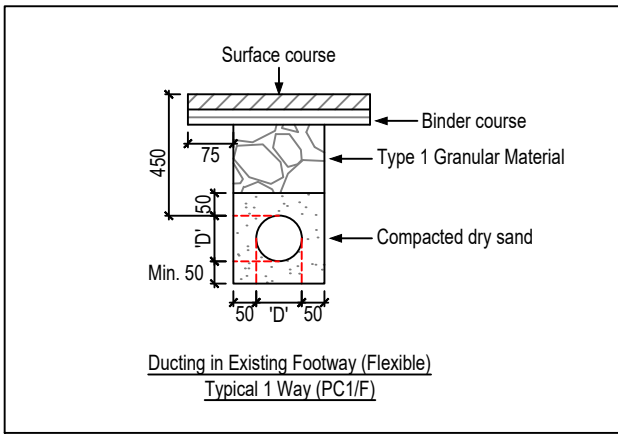
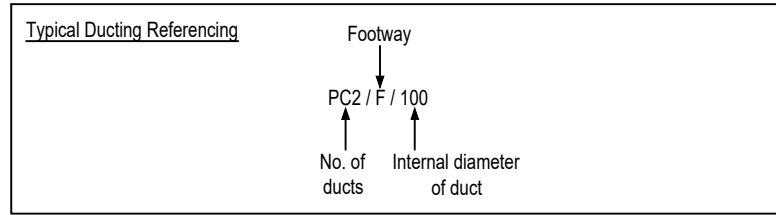
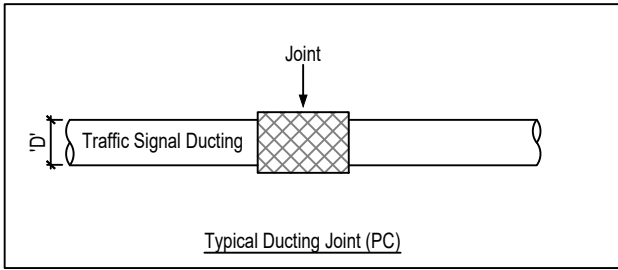
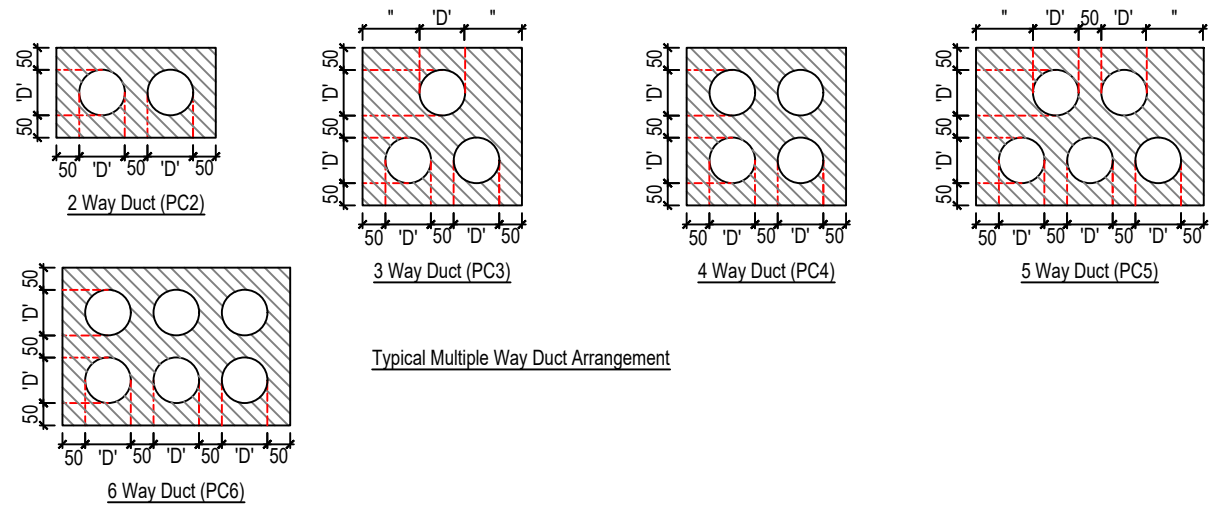
Scale N.T.S	
Drawn D. Ellis	Date Feb. 2013
Checked	File TM/SD

David Finnegan, Interim Assistant Director Environmental Services, Westgate Plaza One, Westgate, Barnsley, S70 2DR Tel. (01226) 773555 Fax. (01226) 772110	
Drawing No.	TM/SD/05 Rev. D

Drawing Barnsley Metropolitan Borough Council
Standard Details - Traffic Signals
Blister Tactile Paving - Module Details

Notes

1. The duct shall be H.D.P.E, orange in colour, and marked along its length with the legend 'Traffic Signals'.
2. Ducting shall be in accordance with BS EN 61386-24:2010. Refer to Appendix 5/2 (Service Ducts and Chambers) for full specification. Only approved manufacturers can be used for ducting.
3. Compaction of backfill to be 4 passes of 50kg vibrotamped in layers not exceeding 100mm.
4. Minimum depth of cover (unless otherwise specified on scheme drawings) to be:
 - 4.1. 450mm under verges and footways;
 - 4.2. 750mm under carriageways.
5. All ducting which does not meet the required depths must be inspected and approved by the BMBC Traffic Signals Engineer.
6. Ducting shall be compatible with access chambers. Ducts to protrude into chambers by 30mm.
7. Vertical and horizontal separation of conduits to be 50mm minimum. (Spacers to be used).
8. Ducts to be laid straight to ensure easy cable installation and pulling. No sudden changes in direction allowed without the use of a chamber.
9. Draw cords (polypropylene, 5kN break) shall be provided in each duct with no knots or joints and will extend into each access chamber by 1.0m.
10. All dimensions on this drawing in millimeters.
11. This drawing is to be read in conjunction with other issued contract drawings.

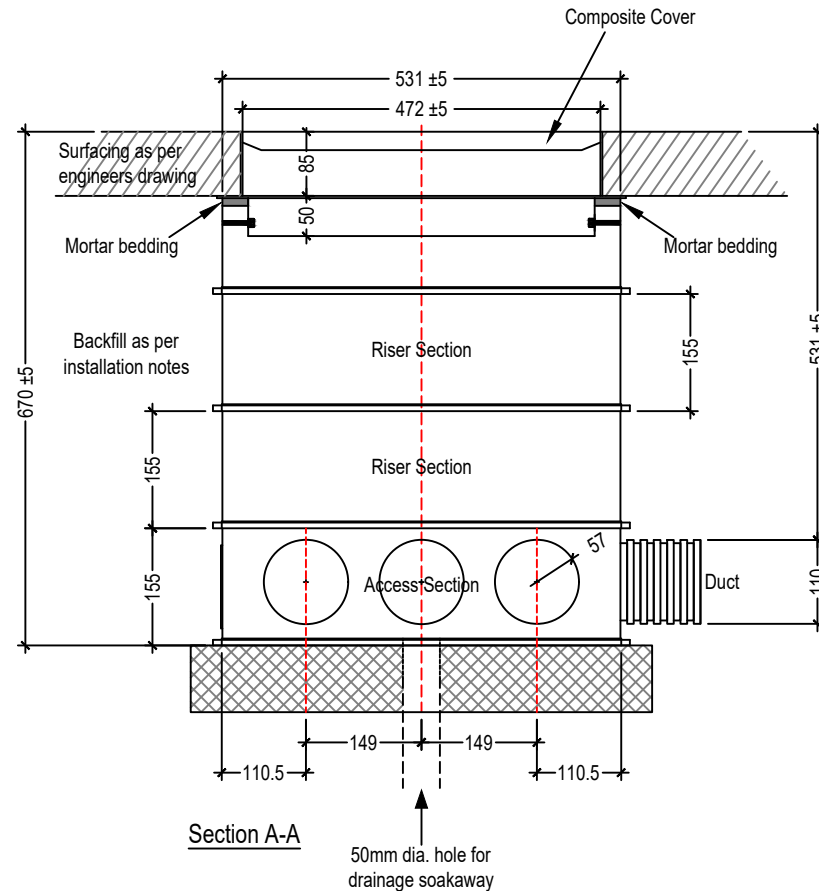
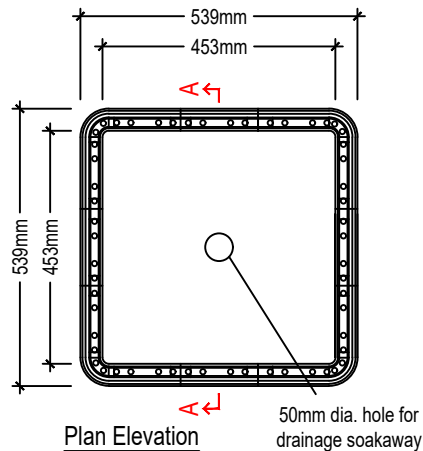


Notes

1. Chambers, covers and frames must be of the same approved manufacturer, and must be installed in accordance with the manufacturers instructions.
2. The chamber will meet the Highway Regulation of minimum duct cover in both carriageway and footways as shown on TM/DS/06 Rev. C.
3. Refer to Appendix 5/2 (Service Ducts and Chambers) for full specification.
4. Chambers and covers shall not be installed within tactile paved areas (unless approved by the Traffic Signals Engineer).
5. Chambers, when completed, must be internally free from any debris and have a smooth floated base with clear drain hole.
6. Do not make duct entries or cut top chamber section in footway (top 2 sections in carriageway), with the exception of levelling the cover and frame.
7. Chambers will be specified as 'AC/1/Length'. E.g.:

300 x 300mm - AC/1/300
 450 x 450mm - AC/1/450
 600 x 600mm - AC/1/600
 450 x 900mm - AC/1/900

8. This drawing is to be read in conjunction with all other issued contract drawings.



Installation of Frame and Cover

Grass/verge/loose surfaces: Minimum 20mm of high performance two part mortar bedding between underside of frame and top of chamber, with 100mm fillet around the frame to secure.

Footway areas: Minimum 20mm of high performance two part mortar bedding between underside of frame and top of chamber.

Vehicular areas: Minimum 25mm of high performance two part mortar mortar between underside of frame and top of chamber.

Chamber frame to be coach screwed into chamber twin walls in all installations.

Installation of Base

Footway areas: 100mm lean mix concrete.

Vehicular areas: 150mm lean mix concrete reinforced with A393 steel mesh of 150mm (to BS 4483:2005).

Surround

Footway areas: minimum 50mm lean mix concrete, or compacted Type 2 material, or self compacting pea-gravel, or suitable as dug material.

Vehicular areas: 150mm lean mix concrete.

Duct Entry

Use a hole saw of the appropriate size to suit the outside diameter of the duct, ideally 2-6mm larger than the outside diameter. Run the duct directly into the hole and use mortar to point up any gap between the duct and the chamber. Ducting, when fitted, is to extend 30mm inside the chamber.



Drawing

Barnsley Metropolitan Borough Council
 Standard Detail - Traffic Signals
 Traffic Signal Chamber

Scale N.T.S	
Drawn D. Ellis	Date Feb. 2013
Checked	File TM/SD

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 Environmental Services,
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 Tel. (01226) 773555 Fax. (01226) 772110

Drawing No. TM/SD/07 Rev. E

Product Specification

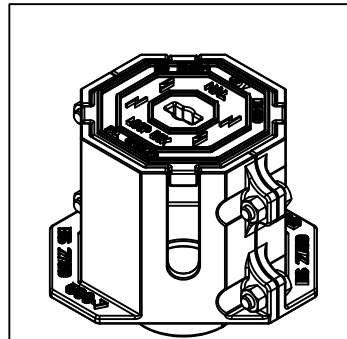
1. Carriageway loop box to be octagonal in shape with a minimum of 4no. cable entry slots.
2. All cable entry slots must be sealed by blanking plates when not in use.
3. Loop box must be supplied with a ductile iron base and base entry spigot, to accept both 50mm and 100mm twin wall ducts.
4. Base entry spigot must be sealed with plastic plug or similar at all times to prevent detritus ingress into ducting.
5. Loop cables must pass through base entry spigot seal to avoid debris entering the connecting duct.

Technical Specification

1. Base and Body: Ductile iron to BS EN 1563:2011 (GGG50 - Din 1693).
2. Cover: One piece ductile iron to BS EN 1563:2011 (GGG50 - Din 1693), BS EN 124, Class D400.
3. Slot cover plate: 0.8mm steel.
4. Assembly Screws: M12, A2, stainless steel. Setscrew: DIN 933.
5. Protective coating to be a smooth finish, in black. The coating shall not flow when exposed to high temperatures and not be so brittle as to chip off at low temperatures.
6. Units to be manufactured to the above specification by NAL Ltd (Worcestershire) (or similar approved by BMBC Traffic Signals Engineer).

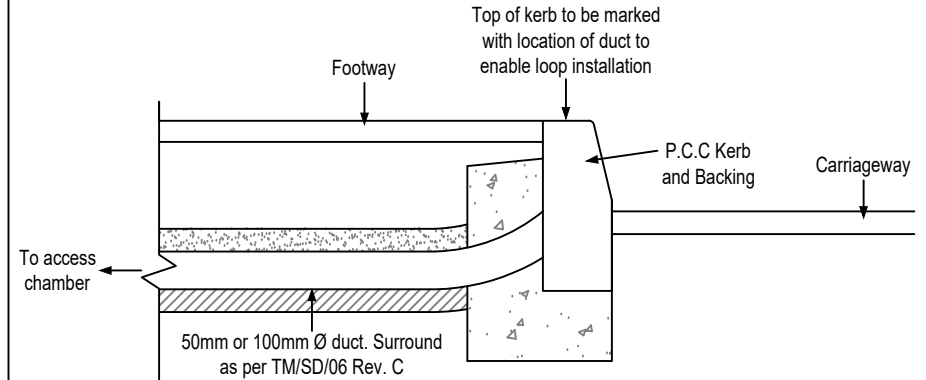
General Notes

1. All measurements in millimetres.
2. Concrete surround to Loop Feeder Box to be a minimum of 150mm.
3. Carriageway Loop Box should be installed as per manufacturers instructions.
4. This drawing is to be read in conjunction with other issued contract drawings.

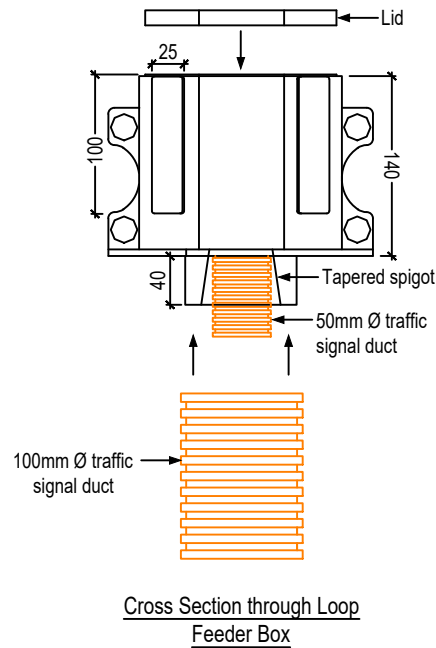
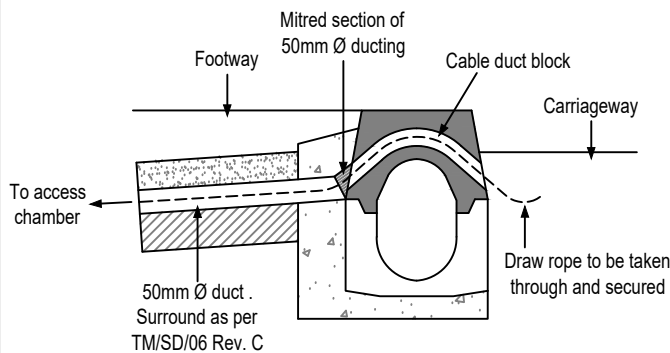


Isometric View

Carriageway Loop Feeder (Back of Kerb)

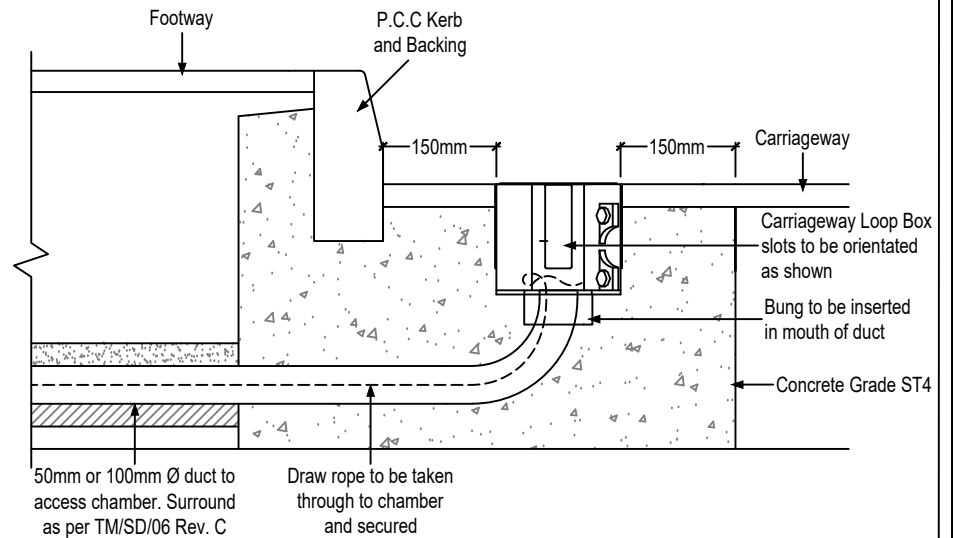


Combined Drainage and Kerb Block



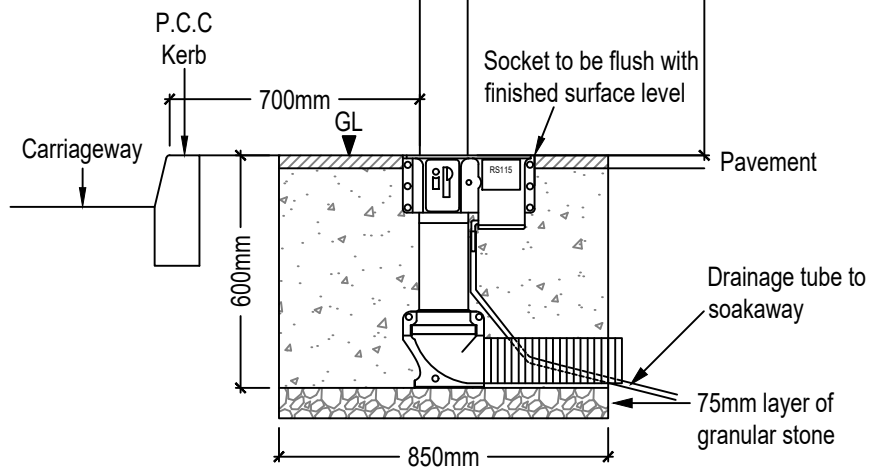
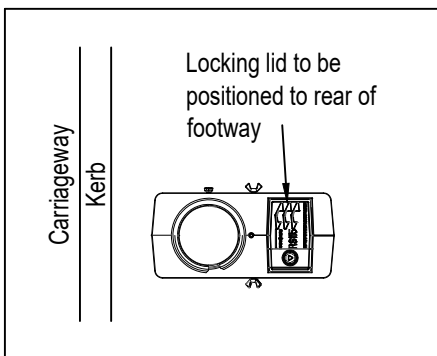
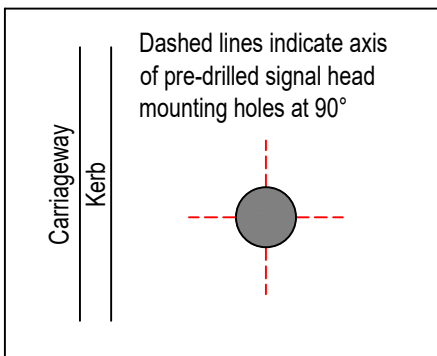
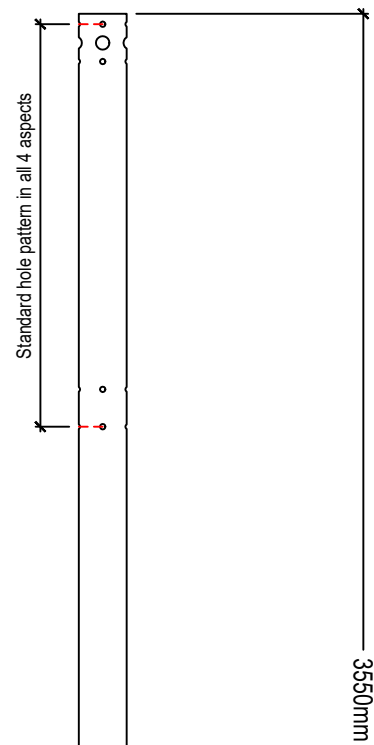
Cross Section through Loop Feeder Box

Carriageway Loop Feeder Installation



Notes

1. Installation should be carried out in accordance with manufacturers instructions. Detail shown is illustrative only. See scheme drawings for details.
2. Signal pole to be hot dip galvanised to BS EN ISO 1461:2009, with a fusion bonded coating of DuPont Abcite thermoplastic powder coating in standard black (care must be taken not to damage this coating during transit and installation).
3. The signal pole is to be constructed from a single section of tubular steel with no cuts or welds.
4. The pole is to be free from sharp edges, burrs or damage.
5. The signal pole size must be in accordance with the manufacturers recommendation for the retention socket.
6. Duct access is to be gained to the base of the signal pole by the use of a NAL Pole Retention Socket (or similar approved by BMBC Traffic Signals Engineer).
7. Ensure the signal pole is straight and true once installed in the socket. If not, then the socket must be recast until correct.
8. When installed adjacent to the carriageway, the offset from the kerb face to the outside of the pole is 700mm (unless specified otherwise by the BMBC Traffic Signals Engineer).
9. Any minor damage to signal poles may be repaired in accordance with the manufacturers instructions, where approved by the BMBC Traffic Signals Engineer. If damage is significant the entire pole should be replaced.
10. Ensure equipment mounting holes are orientated in the correct position when installing pole. Unused equipment mounting holes to be capped over.
11. Ensure the blanking cap from the top of the pole retention socket is stored in the side compartment of the socket for future use.
12. Push button holes to be drilled in site.
13. Signal poles are not to be cut down without prior approval from BMBC Traffic Signals Engineer.
14. This drawing is to be read in conjunction with other issued contract drawings.



Section through Signal Pole and Foundation

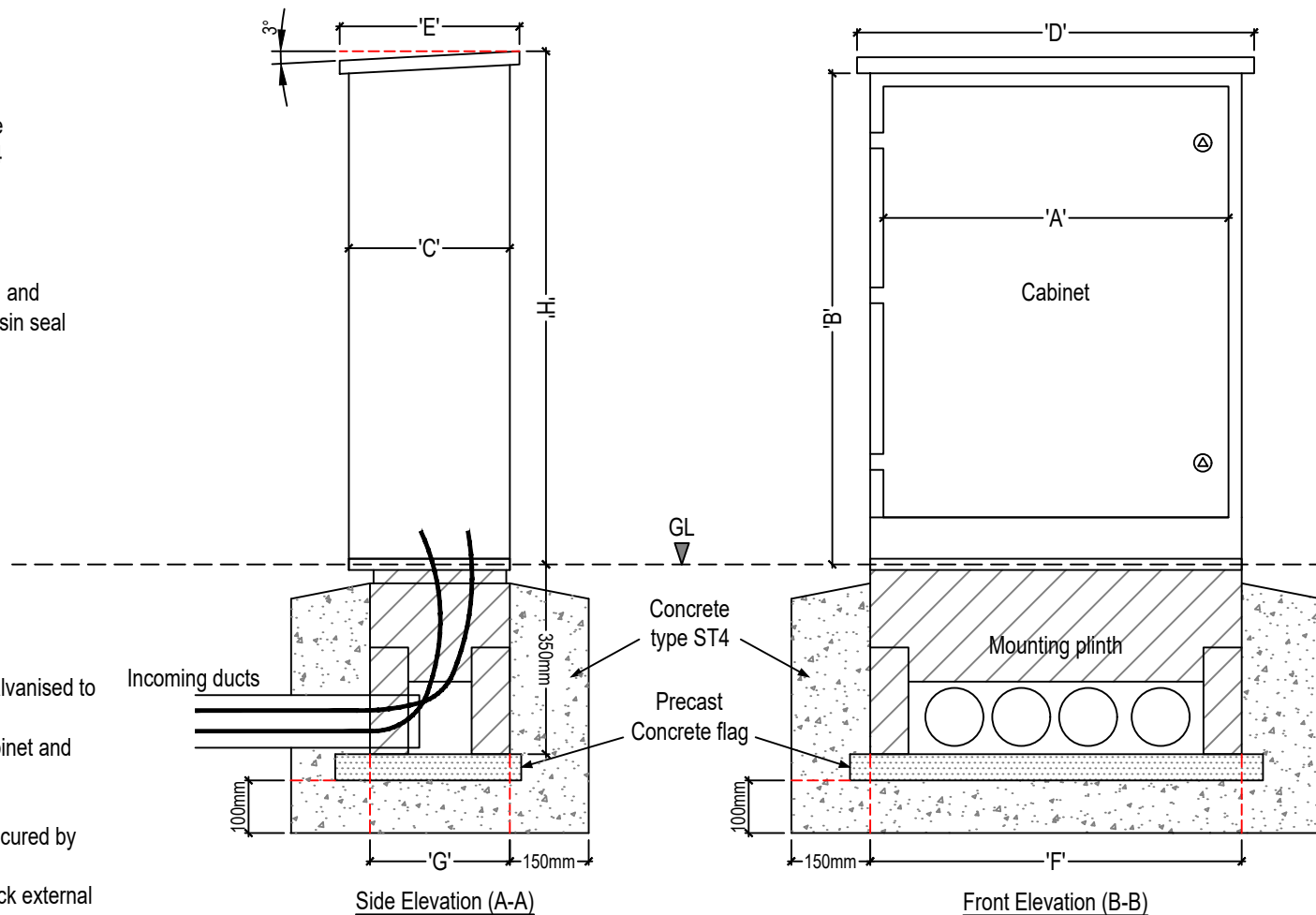
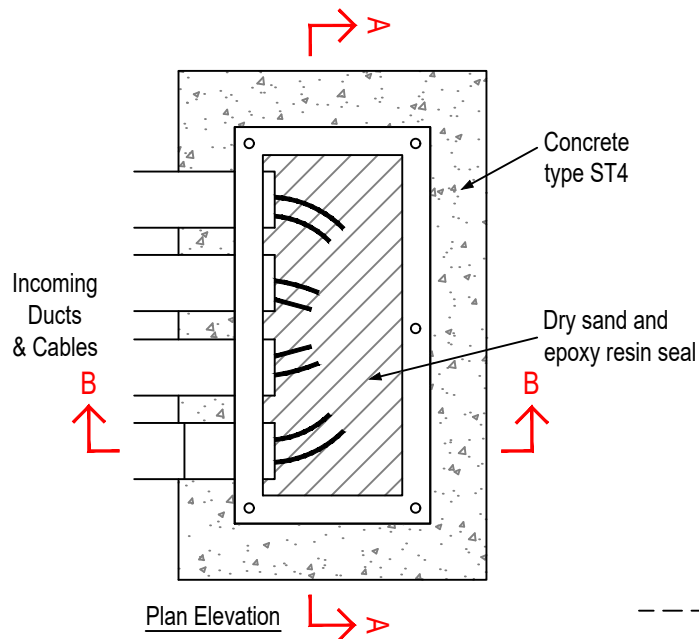


BARNLSLEY
Metropolitan Borough Council

Scale		N.T.S
Drawn	Date	
D. Ellis	Feb. 2013	
Checked	File	
	TM/SD	

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Drawing No.	TM/SD/11 Rev. E

Drawing Barnsley Metropolitan Borough Council
Standard Details - Traffic Signals
Straight Signal Pole



Notes

1. See table for dimensions of cabinets.
2. Cabinets to be manufactured from 3mm mild steel sheet, hot dip galvanised to BS EN ISO 1461:2009 throughout.
3. Stainless steel earth terminal and strap provided between main cabinet and door.
4. Flush fitting door hinges with stainless steel pins and nylon bushes.
5. EDPM door seal 20mm wide x 10mm thick. Door to be positively secured by two tri-locks.
6. Cabinet to have a fuseboard fitted in the back made from 12mm thick external grade plywood.
7. Mounting plinth to be levelled on a precast concrete flag before adding concrete surround.
8. Ducts to be installed into base of cabinet/mounting plinth. After cable installation the base should be sealed with dry sand and topped off with an epoxy resin.
9. Silicone sealant to be applied to joint between cabinet and mounting plinth.
10. Electrical service cabinet to be supplied to the above specification by Haldo Developments Limited (or similar approved by BMBC Traffic Signals Engineer).
11. This drawing is to be read in conjunction with other issued contract drawings

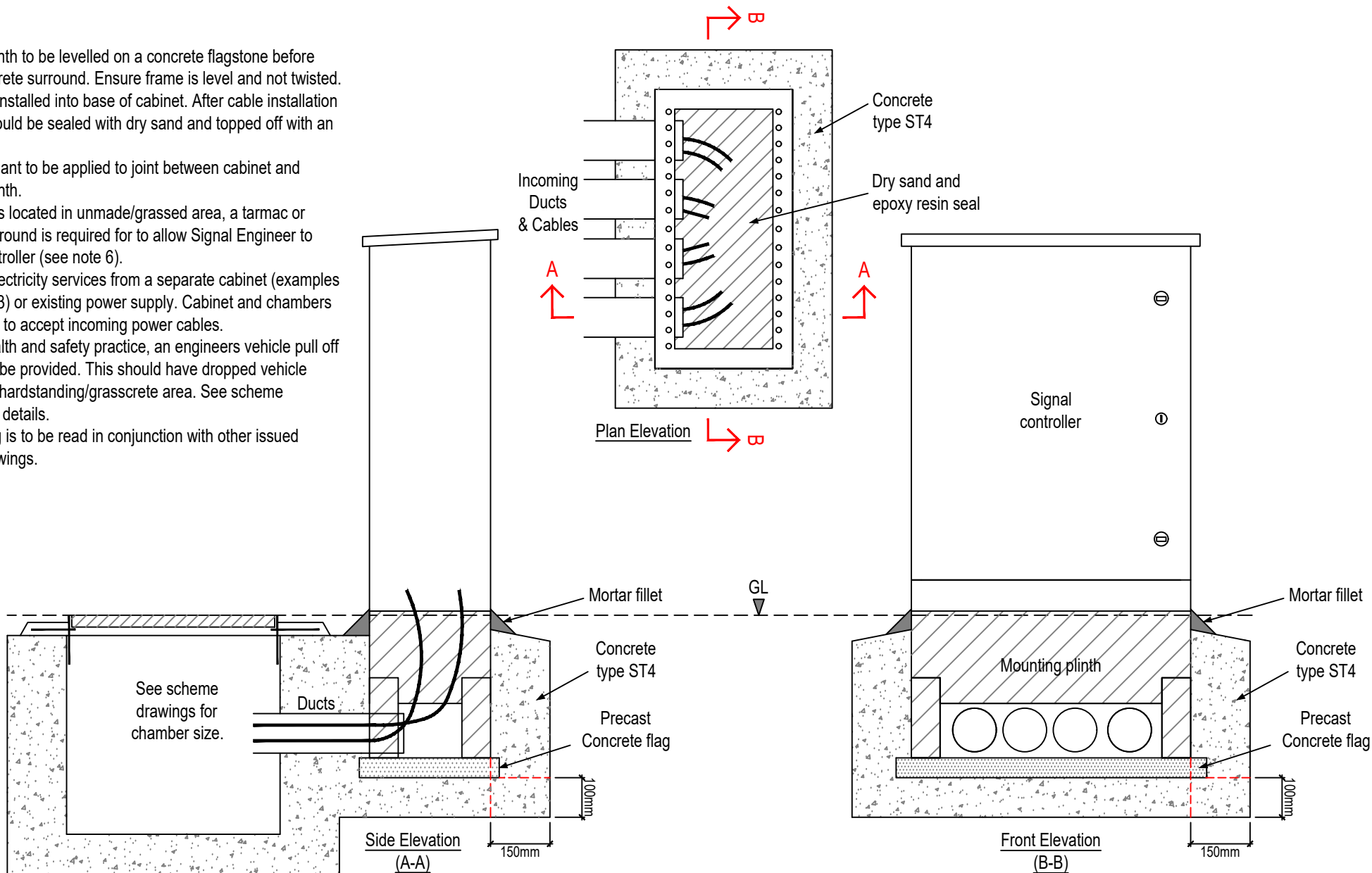
Cabinet Ref.	Dimension ref.								
	A	B	C	D	E	F	G	H	
210	210	694	206	312	227	306	170	770	
410	410	694	206	512	227	506	170	770	
610	610	944	306	712	327	706	270	1020	

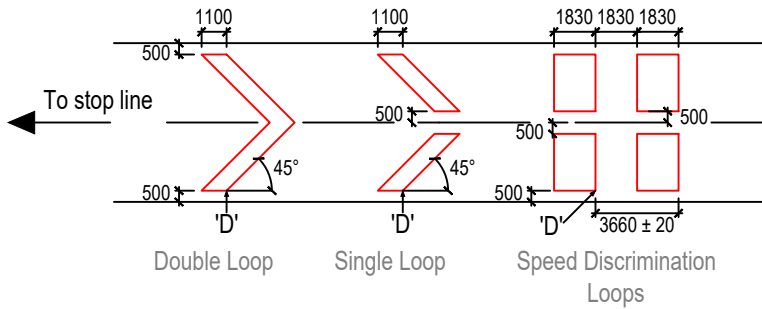
All dimensions in millimetres

Backboard		Internal dims.		
H	W	H	W	D
640	240	700	300	170
640	470	700	500	170
870	660	950	700	270

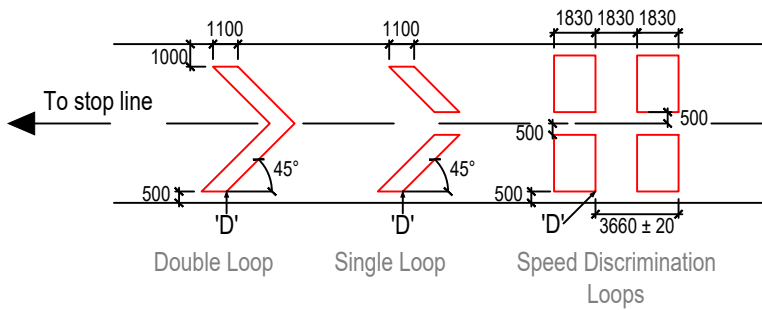
Notes

1. Mounting plinth to be levelled on a concrete flagstone before adding concrete surround. Ensure frame is level and not twisted.
2. Ducts to be installed into base of cabinet. After cable installation the base should be sealed with dry sand and topped off with an epoxy resin.
3. Silicone sealant to be applied to joint between cabinet and mounting plinth.
4. If controller is located in unmade/grassed area, a tarmac or concrete surround is required for to allow Signal Engineer to work on controller (see note 6).
5. Controller electricity services from a separate cabinet (examples on TM/SD/13) or existing power supply. Cabinet and chambers to be ducted to accept incoming power cables.
6. As good health and safety practice, an engineers vehicle pull off area should be provided. This should have dropped vehicle kerbs and a hardstanding/grasscrete area. See scheme drawings for details.
7. This drawing is to be read in conjunction with other issued contract drawings.

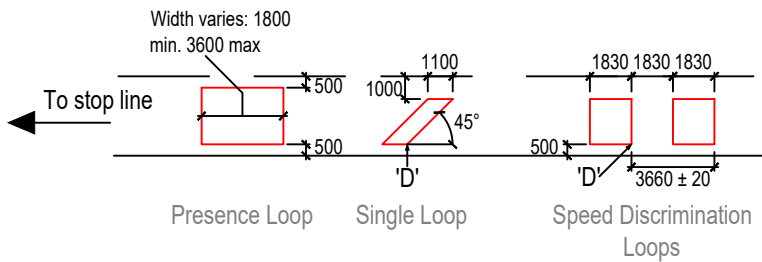




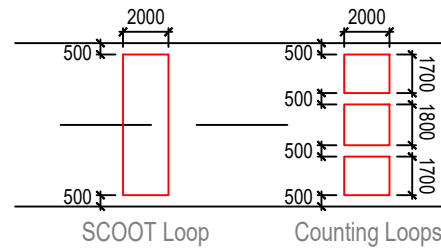
1. Loop configuration - 2 lane dual carriageway



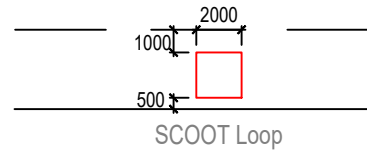
2. Loop configuration - 2 lane single carriageway



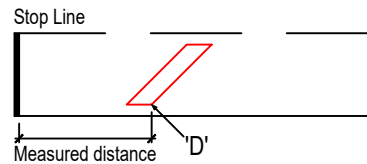
3. Loop configuration - single lane approach, single carriageway



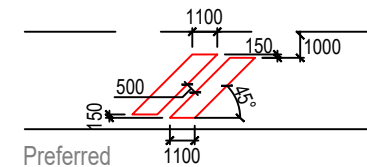
4. SCOOT and Counting Loops - 2 lane dual carriageway



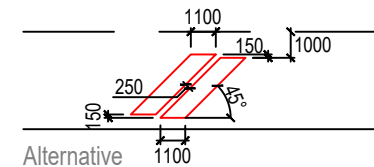
5. SCOOT Loop for 2 way carriageway (approach may be marked as two lanes)



6. Measured distance to Point 'D'



7. Uni-directional Loops



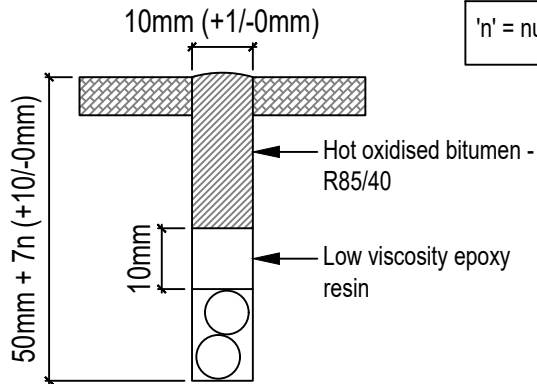
Notes

1. Standard configuration for new installations unless specified otherwise on scheme drawings.
2. No loop to be installed within 1.0m of any ironwork. No loop shall be moved more than 1.0m from the position specified on the scheme drawings without approval from the BMBC Traffic Signals Engineer.
3. Loop tails/feeder to be kept to a minimum length where possible. Connection chambers should be installed adjacent to the loop in the footway area.
4. Waterproof, reusable bottle style connectors should be used to connect loops to feeder cables.
5. All dimensions on this drawing are in millimeters unless stated otherwise.
6. All dimensions are ± 20 mm.
7. This drawing is to be read in conjunction with other issued contract drawings.

Distance from Stop Line to Loop (Point 'D')			
Z	Y	X	Speed Discrimination
12m	25m	39m	79m
7m	18m	30m	-
6m	-	18m	-

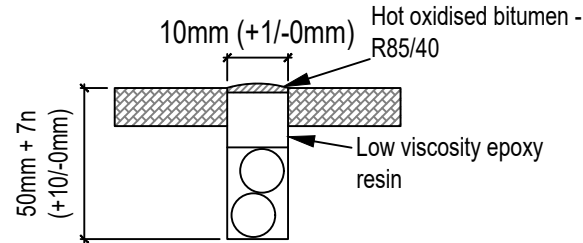
Standard Config.		Speed Discrimination		Presence Loop	
Loop perimeter	No. of turns	Loop perimeter	No. of turns	Loop perimeter	No. of turns
< 8m	3	all	3	< 8m	3
> 8m	2	-	-	> 8m	2

Detail of Loop Cable Slot

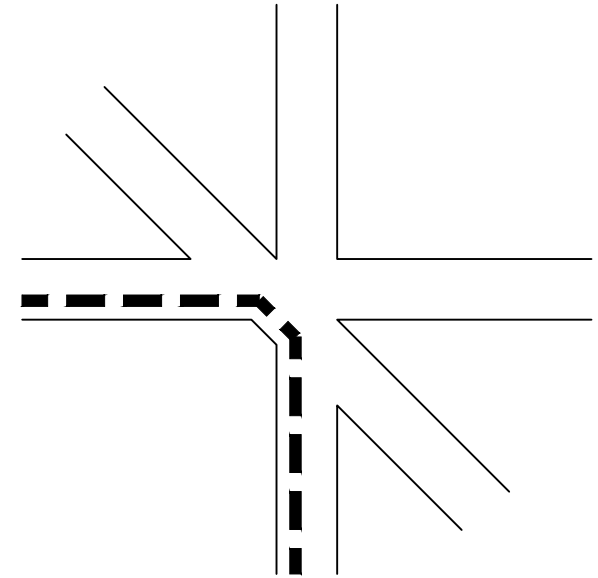


Loop Slot in Bituminous Road Surface

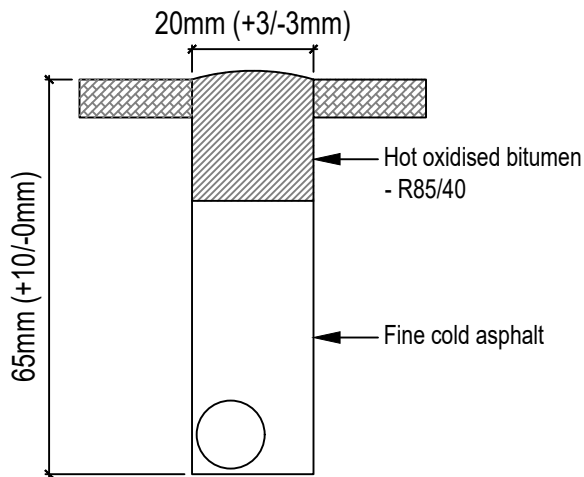
'n' = number of loop turns



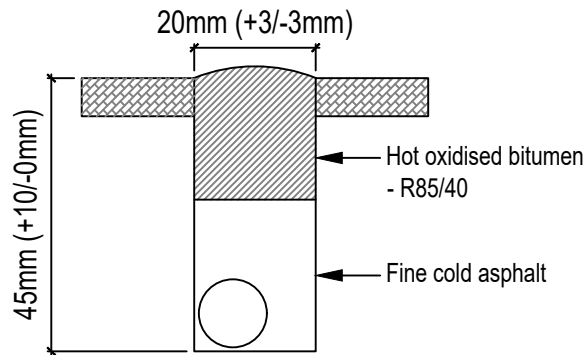
Loop Slot in Concrete Road Surface



Modification of Slot Corners showing Cable Route

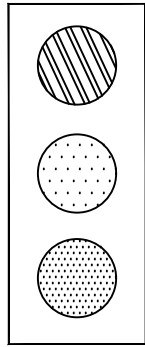


Detail of Feeder Cable Slot

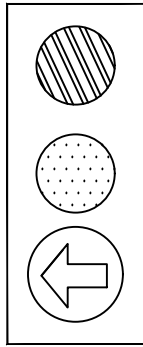


Notes

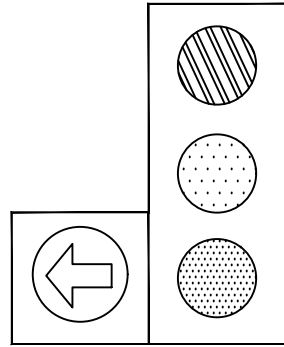
1. Standard configuration for new installations (unless otherwise specified on scheme drawings).
2. One part backfill may be used with approval from BMBC Traffic Signals Engineer.
3. Waterproof, reusable connectors should be used to connect loops to feeder cables.
4. All dimensions on this drawing are in millimetres.
5. This drawing is to be read in conjunction with other issued contract drawings.



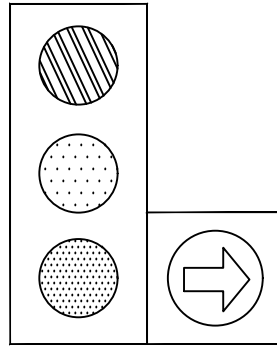
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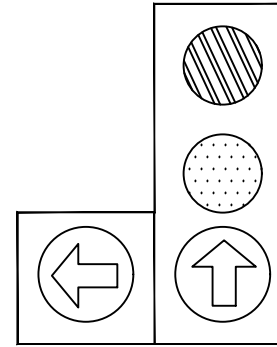
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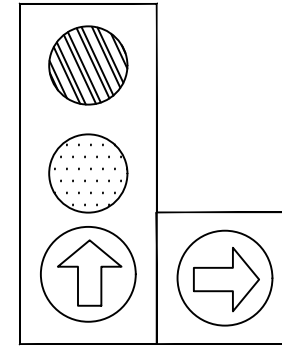
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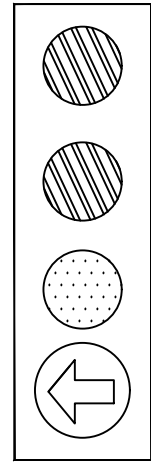
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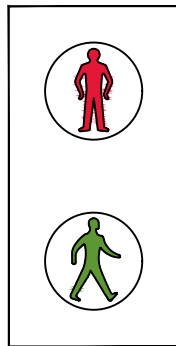
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6/**



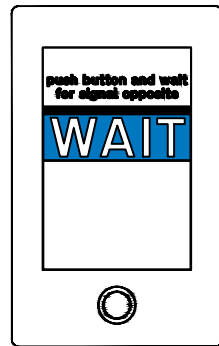
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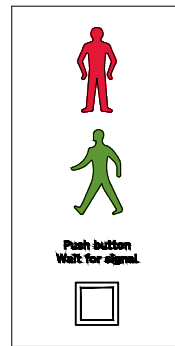
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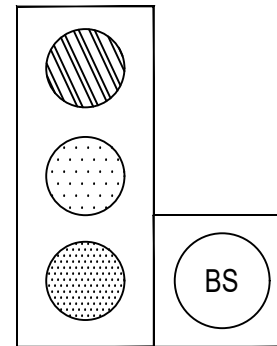
9



9/C



10



E.g. 1/BS

Key

* - denotes direction of arrow:

A - Ahead

R - Right turn

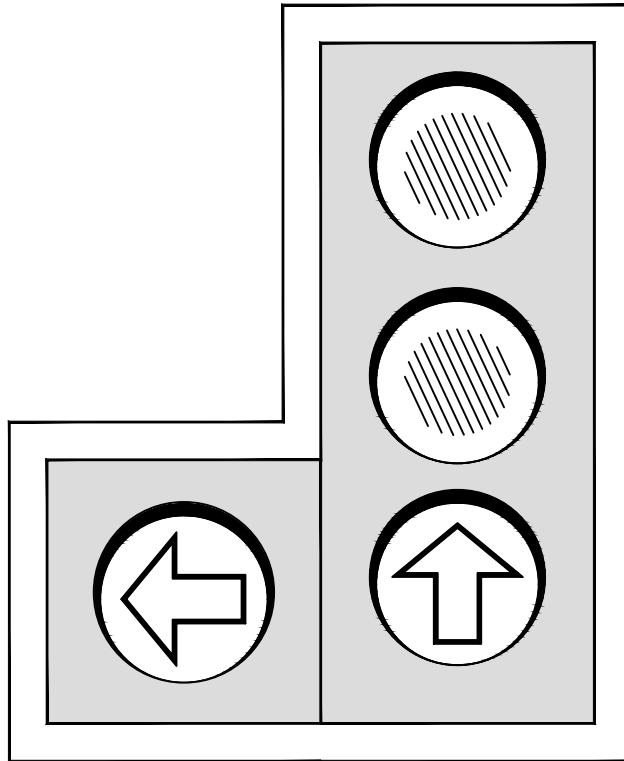
L - Left turn

'BS' - denotes Box Sign within signal head;

'C' - denotes addition of cycle facilities (see scheme drawings for details).

Notes

1. Traffic signal configurations shown are not to scale and indicative only.
2. Any other traffic signal head configuration can be used and should be referenced as Type 11 (or greater).
3. Refer to scheme drawings for exact configuration.
4. Signal heads to be in accordance with the Traffic Signs Regulations and General Directions 2002 (or amendments).
5. This drawing is to be read in conjunction with other issued contract drawings.



Notes

1. All signal poles to be vertically level once installed.
2. Poles to be black in colour (unless specified otherwise on scheme drawings).
3. All poles to include pole cap assembly.
4. Pedestrian push button units to be extra low voltage and include extra low voltage tactile units.
5. Push button units to be mounted between 1m and 1.1m from footway level to the centre of the push button.
6. All signal heads to be compliant with EN 12368:2006.
7. Primary and secondary traffic hoods shall be moulded and include an indexing system to ensure that they can be accurately located.
8. The signal head shall have a secure locking mechanism to allow accurate positioning of the head with respect to the signal pole. This should break under minor impact to avoid damage to the signal head.
9. Backing boards for all 3 or 4 aspect in-line signal heads shall be of two piece construction, with no added strips or items which may become detached over time.
10. All backing boards are to be white in colour, composed of fully prismatic retroreflecting material.
11. Where arrow aspects are used they must be achieved by the use of a physical mask which enables the accurate location, in increments not exceeding 12.5°.
12. All optics shall be based on the SIRA lens technology patented by the Highways Agency. Any supplier company shall demonstrate that the appropriate licence fee has been paid for the last 12 months.
13. All signal heads, head arrangements, light aspects, push button units are to be in accordance with The Traffic Signs Regulations & General Directions 2002 (or amendments).
14. All extra low voltage light emitting diode aspects are to be of central light source (CLS) type and allow full lamp monitoring, without the presence of an artificially loaded resistance which simulates lamp loading and wastes energy.
15. This drawing is to be read in conjunction with other issued contract drawings.

Pedestrian Crossing Road Stud Specification

1. Each stud is to be made from austenitic stainless steel, heat treated to ensure maximum toughness, strength and rust resistance.
2. Must be installed with a shank design which prevents twisting after installation. To assist skid resistance the stud must have a serrated face.

Pedestrian Crossing Road Stud Installation

1. Drill a hole to the correct diameter and depth (to manufacturers guidelines).
2. Clear away dust from interior of hole and surface of the road to be covered by the head of the marker (Note: for concrete surfaces it is necessary to prime the hole and surrounding road surface with bitumen emulsion primer prior to grouting).
3. Fill the hole fully with hot bituminous grout (to specification below) and immediately insert the marker shank.
4. Press the head firmly to the road surface taking care that the marker is properly aligned. If necessary, pressing may be supplemented by light tamping with a wood or rubber head mallet. On no account should the stud be hammered into position.
5. The surplus of bitumen will be forced out of the hole by the ingoing shank to form a bed for the head.
6. Any surplus bitumen beyond the area of the marker should be trimmed off.

Bituminous Grout Specification

Filled bitumen comprising:

- a. 25 - 30% - Bitumen 60/80 penetration;
- b. 70 - 75% - Limestone filler (80 - 90% passing 75 micron sieve).

The resultant mixture should have the following properties:-

- a. Penetration at 25°C 23 ± 5°;
- b. Softening point (R & B) 85°C ± 5°C.

The filled bitumen shall be heated in a bitumen heater capable of holding the charge at a constant temperature of 200°C and fitted with a mechanical aggregator to ensure the solids are properly dispersed through pouring material at all times.

Material to be applied to stud cavity at pouring temperature of 190 - 200°C.

Under no circumstances should the grout be heated over 230°C as this will result in hardening and loss of elasticity.



BARNSLEY
Metropolitan Borough Council

Scale

N.T.S

Drawn

D. Ellis

Date

Feb. 2013

Checked

File

TM/SD

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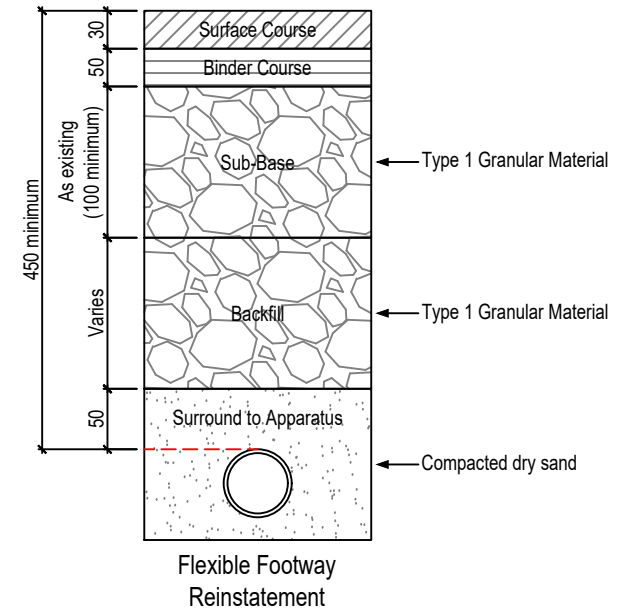
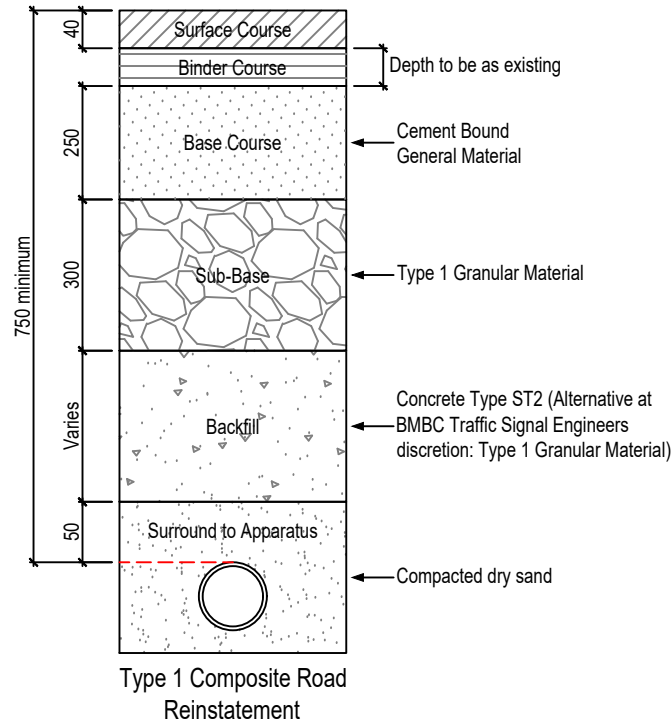
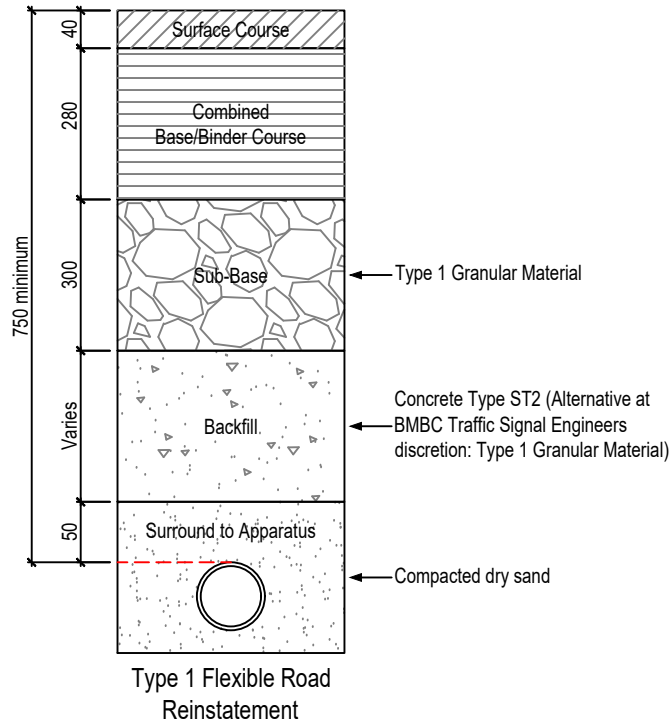
Drawing No.

TM/SD/25 Rev. C

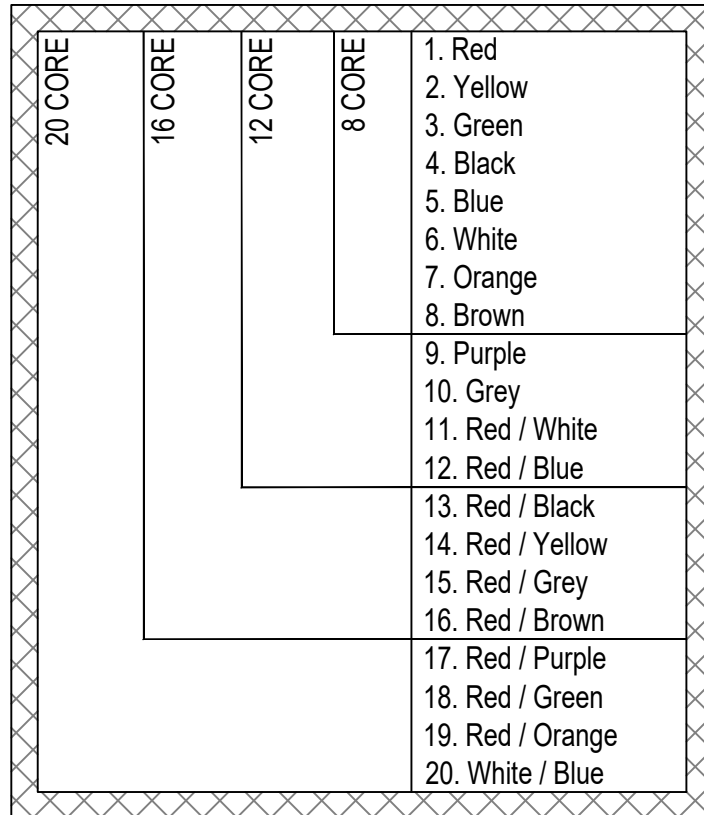
Drawing Barnsley Metropolitan Borough Council
Standard Details - Traffic Signals
Pedestrian Crossing Road Studs

Notes

- All excess water and loose material should be removed from the cut faces of the reinstatement.
- All bound vertical edges must be clean and free from slurry and dust etc. with the stone in the existing layers clearly visible.
- Base preparation: tack coating materials are generally based on rapid curing anionic or cationic bitumen emulsions to BS 434-1:2011, with approximately 40% bitumen content.
- Edge preparation: materials are generally based on rapid curing bitumen emulsions to BS EN 13808:2005, typically in the range of 40 to 100 pen and approximately 70% bitumen content. Alternatively, hot bitumen's to BS EN 12591:2009 typically 50 or 70 pen.
- Base/edge preparation materials to be applied prior to reinstatement of base, binder and surface course. Materials are to be installed as per manufacturers instructions.
- Grassed areas shall be reinstated using the original turf, replacement turf or an equivalent seed, depending on weather and growing season. In all cases, a reasonable growth shall be established within the following 12 months.
- Any shrubs, trees or planted areas shall be reinstated with the same species (unless otherwise agreed with BMBC Traffic Signals Engineer) and shall be established within the following 12 months.
- All works and materials must be in accordance with Department for Transport document 'Specification for the Reinstatement of Openings in Highways'.
- Details shown below are for illustrative purpose only. Exact dimensions, material and overall construction to be determined by BMBC Traffic Signals Engineer. See scheme drawings for details.
- This drawing is to be read in conjunction with other issued contract drawings.



Multi-core Cable



Notes

1. All connections in pole caps must be wired neatly and allow cores to be easily identifiable.
2. All spare cores to be neatly stored and tied back, but must have sufficient length for future connections.
3. Spare cores must not have the insulation stripped back within the pole cap, but should be connected back to an earth point within the controller.
4. To avoid the risk of electrical shock or short circuiting, insulation around the copper cores should be stripped back to a minimum.
5. No exposed copper core should be evident after wiring to the terminal connector.
6. All cables, at each end, must have identification attached as to it's origin, i.e. pole numbers, phases, controllers etc.

Black in low voltage cables is always neutral. All other colour's may be live.

When using Extra Low Voltage (ELV) equipment for installations, all cable thickness' and lengths must be calculated in accordance with the manufactures handbooks.

Loop Feeder Cable

1No. Pair Feeder	Red Black	Loop Tails
2No. Pair Feeder	Red Blue	X Loop Tails
	Yellow Black	YZ Loop Tails

Recommended Installation for NAL RS115DFx600 Retention Socket (or similar approved by BMBC Traffic Signals Engineer). For other pole retention sockets, the depths/foundation size may vary. In all cases, always follow manufacturers installation guidelines

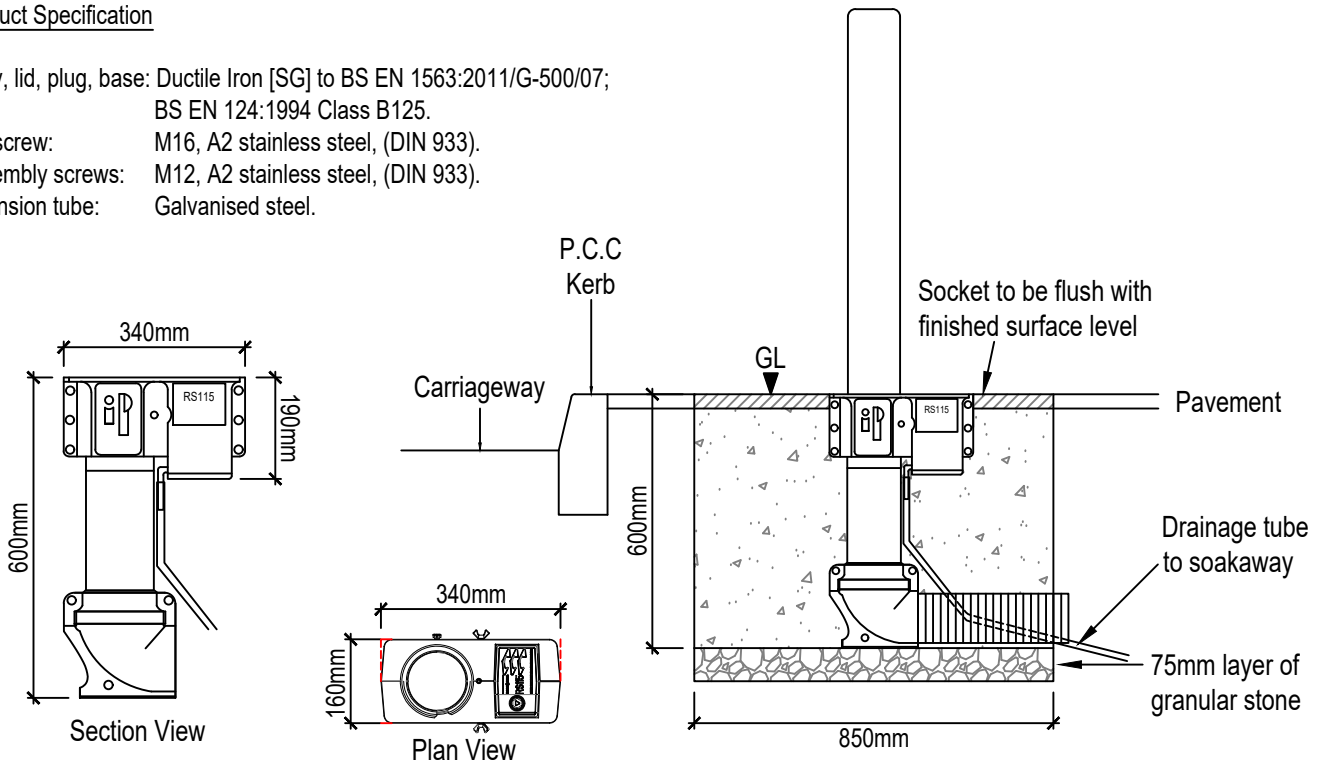
1. Excavate hole as shown below, 75mm deeper than the overall height of the retention socket.
2. Compact a 75mm layer of granular stone in the base of the excavation.
3. Place the retention socket in the required location, ensuring that there is at least 200mm clearance to the surround. Insert drainage tube to soak away ensuring it is not pinched or obstructed.
4. Connect the traffic signal ducting from chamber to swivel bend on retention socket.
5. Leave draw cord in base of socket bend.
6. Ensure the two stainless steel bolts do not obstruct the traffic signal pole from entering the socket.
7. Lubricate the Stainless Steel Sleeve prior to placing the levelling pole into the socket and tighten the two stainless steel bolts against the pole. Ensure the pole is vertical in both planes, using a post style spirit level.
8. Cast concrete with the lid locked in position and compact using a vibrating poker. Fill the concrete to a level to allow for the surrounding surfacing to be completed in the appropriate material (paving should be bedded on mortar). The concrete should be at least ST4/C25 mix or stronger. Re-check post is vertical and finish.
9. Once the concrete has begun to cure, carefully remove the levelling pole and replace the pedestrian plug.
10. The socket should be left for the Electrical contractors with the stainless steel sleeve in position.


Notes

1. Where the required depth for the retention socket cannot be achieved, units can be shortened on site by removing the bottom bend only and cutting the connecting shaft. Approval must be obtained from BMBC Traffic Signals Engineer prior to making any changes on site.
2. This drawing is to be read in conjunction with other issued contract drawings.

Product Specification

Body, lid, plug, base: Ductile Iron [SG] to BS EN 1563:2011/G-500/07;
 BS EN 124:1994 Class B125.
 Set screw: M16, A2 stainless steel, (DIN 933).
 Assembly screws: M12, A2 stainless steel, (DIN 933).
 Extension tube: Galvanised steel.



 **BARNLSLEY**
 Metropolitan Borough Council

Drawing Barnsley Metropolitan Borough Council
 Standard Detail - Traffic Signals
 Installation of Pole Retention Socket

Scale N.T.S	
Drawn D. Ellis	Date Feb. 2013
Checked	File TM/SD

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Drawing No. **TM/SD/32 Rev. B**