



Haverhill Relief Road Toucan crossing, (East of Roundabout), Suffolk

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Document History

Haverhill Relief Road Toucan crossing, (East of Roundabout), Suffolk

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1. Introduction

- 1.1. This specification details the work required to install the traffic signal ducts, which form part of the Haverhill Relief Road Toucan crossing (East of roundabout) scheme.
- 1.2. This document is to be read by all key parties who are involved with the installation of the traffic signal ducts and chambers.

2. Service Duct Requirements

General

- 2.1. The position of ducts, traffic signal controller root, termination cabinet roots, feeder pillars, pole retention sockets, chambers and detector joint boxes are to be installed as shown on the signal design drawing listed in Appendix 12/5.
- 2.2. The Principal Contractor shall liaise directly with the Traffic Signal Contractor throughout the duration of the associated traffic signals works.
- 2.3. The Principal Contractor shall be responsible for providing all the necessary traffic management in accordance with the requirements of Chapter 8 of “The Traffic Signs Manual – Road Works and Temporary Situations” (2009) Parts 1 & 2, to carry out all necessary works under this contract.
- 2.4. The Principal Contractor shall be responsible for the installation of the following:
 - Traffic Signal Controller Root
 - Feeder Pillar(s)
 - Pole Retention Socket(s)
 - Ducting
 - Chambers and Detector Joint boxes
 - Underkerbs/ Carriageway Loop boxes
- 2.5. The Principal Contractor shall liaise with the Traffic Signal Contractor regarding installation specification and timescales.

Installation

- 2.6. Duct and bedding combinations shall be selected from the following drawings which form part of the Highway Construction Details:
- Drawing MCX 0814 Sheet 1 – Longitudinal and Local Ducts
 - Drawing MCX 0814 Sheet 2 – Local Ducts
 - Drawing MCX 0814 Sheet 3 – Transverse Ducts
 - Drawing MCX 0814 Sheet 4 – Spacer and Strapping
 - Drawing MCX 0814 Sheet 5 – Mechanical Duct Plug
- 2.7. The minimum cover below finished level shall be as follows:
- 100mm diameter ducts across carriageway 750 mm
 - 100mm diameter ducts within footway/verges 450 mm
 - 50mm diameter ducts between chambers and underkerbs
- 2.8. Ducts shall conform to BS EN 50086-2-4 and be 100 mm diameter, orange coloured and have 'Traffic Signals' embossed along its length. All ducts are to have smooth internal bore. Ducts from underkerbs to nearest chamber shall be 50mm diameter and orange in colour.
- 2.9. The numbers and sizes of ducts are specified in the schedule Table 1- Schedule of Proposed Ducts.
- 2.10. Where joints are required between duct sections the edges shall be chamfered and any burrs removed.
- 2.11. In instances where multiple ducts are installed in a single trench, they are to be strapped together at 1m intervals please refer to Drawing MCX0814 Sheet 4.
- 2.12. Chambers and detector joint boxes are to conform to Highway Construction Details Drawing MCX 0815 Sheet 1-4 and should be capable of supporting a vertical load of 12.5 to 40 tons. Refer to Table 2 – Schedule of Proposed Chamber Requirements for chamber cover requirements.
- 2.13. Chambers are to be 600 x 450 mm and 450 x 450mm as per the traffic signal design drawing and are to be installed as per the manufacturer's instructions. All chambers are to have a smooth and level concrete base and a concrete surround.
- 2.14. Pole retention sockets, Chambers, Detector joint boxes shall be of the following types, or equivalent with the agreement of the Overseeing Organisation's Traffic Signal Engineer.
- Pole Retention Socket: NAL RS115 Pole Retention Socket
 - Chamber NAL STAKKAbOX 600x450mm, 450 x 450mm

- 2.15. Before the installation of any signal cable or other equipment, all duct chambers are to be cleared of all debris and ducts shall be sealed by means of pre-formed plastic end caps.
- 2.16. The Principal Contractor shall liaise with the Overseeing Organisation's Traffic Signal Engineer to determine if expanding foam sealant is to be used to seal every duct, to prevent vermin or flooding of the duct network.
- 2.17. Chambers and Detector Joint boxes located behind safety fencing are to be installed at the current minimum safety working width.
- 2.18. Dimensions and sizes of chambers are referenced on the Signal Design Drawing and specified in the schedule Table 1- Schedule of Proposed Ducts.
- 2.19. Chamber and Detector Joint boxes covers and frames should be Class B125 minimum or as defined in schedule (Table 2). The chamber covers are to be fitted with 8mm coach screws to enable the cover to be fastened to the chamber. The legend 'Traffic Signals' is to be applied to each chamber cover.
- 2.20. For all chambers and detector joint boxes, resin composite non-slip lids are to be fitted. A concrete surround of not less than 150mm deep shall be provided, and where installed in verges a surround of 150mm on all four sides at ground level is also to be provided.
- 2.21. Ducts are to extend into access chambers, joint boxes, and pole retention sockets to a distance of 25mm +/- 2mm.
- 2.22. Refer to manufacturers' installation requirements with required to foundation depths and method of installation for pole retentions sockets. Refer to Traffic Signal Design drawing and Appendix 12/5 for site specific requirements.
- 2.23. The Principal Contractor shall ensure that all duct runs are clear of obstructions and contain draw cord before cable installation work begins. If found to be missing at the time of cable installation the Principal Contractor shall install the draw cords.
- 2.24. The Traffic Signal Contractor shall ensure that all draw cords are to remain within the duct network during the course of traffic signal installation and once works are complete. All cables are to be pulled into the duct by the use of draw cord already in the duct network and new draw cord shall be pulled in at the same time.
- 2.25. The maximum number of armoured and non-armoured cables to be installed in any 100mm duct shall be 5 and 10 respectively. If combined an armoured cable is deemed to be equivalent to two non-armoured cables.

- 2.26. The Principal Contractor shall install underkerbs at the point of where the detector loops connect to the duct network system. They are to be used for the entry of inductive detector loops under the kerb into the duct system. Refer to Traffic Signal Drawing and Table 2 for details of where underkerbs are to be installed.
- 2.27. The Principal Contractor shall install 1 No 50mm black duct between the electrical feeder pillar and the traffic signal controller.

Reinstatement

- 2.28. Trench and carriageway reinstatements are to be in accordance with 'HAUC Specification for the reinstatement of Opening in Highways'.
- 2.29. Coloured marker tape in accordance with SHW Clause 1421 and bearing the legend 'CAUTION TRAFFIC SIGNALS CABLE BELOW' shall be installed as defined in sheets 1 and 2 of MCX 0814.
- 2.30. The Principal Contractor shall carry out the Final (considered permanent) reinstatement of disturbed footway and carriageway surfaces in materials similar to those removed.
- 2.31. The Overseeing Organisation (Highway Authority) will inspect all reinstatement works. Final approval of all reinstatement works shall be given in writing.
- 2.32. All reinstatement works are to be guaranteed for a period of 12 months from system handover. Any failure in the reinstatement works during the warranty period shall be corrected/replaced at the cost of the Contractor.
- 2.33. Any failure in the 12 months warranty period must be fixed within 30 days of a formal notice being served to the Principal Contractor by the Overseeing Organisation.

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Table 1: Schedule of Proposed Ducts Requirements

Start	End	Ducts		Duct Diameter (mm)	Depth of Cover (mm)	Total Length (m)	Length Under Verge (m)	Length Under Footway (m)	Length Under Carriageway (m)	Trench Depth (mm)	Notes Drawing No: 18007-101
		Row No	Ducts in a Row								
Cont	Feeder pillar	1	1	50	450	1	0	1	0	600	ELECTRICITY DUCT/ HARDSTANDING
Cont	N1.0	2	2	100	450	1	0	1	0	750	HARDSTANDING/ VERGE
N1.0	Pole 1	1	1	100	450	1	1	0	0	650	FOOTWAY/ VERGE
N1.0	Pole 4	1	1	100	450	6	1	5	0	650	FOOTWAY/ VERGE
N1.0	N1.1	1	1	100	450	8	2.5	5.5	0	650	FOOTWAY/ VERGE
N1.1	N1.2	1	1	100	450	38	38	0	0	650	VERGE
N1.2	AX2	1	1	50	450	1	1	0	0	600	VERGE
N1.2	N1.3	1	1	100	450	32	32	0	0	650	VERGE
N1.3	N1.4	1	1	100	450	31	31	0	0	650	VERGE
N1.4	AIN1	1	1	50	450	1	1	0	0	600	VERGE
N1.0	N2.0	1	2	100	750	13.5	2	0	11.5	950	CARRIAGEWAY/ VERGE
N2.0	Pole 2	1	1	100	450	1	0.5	0.5	0	650	FOOTWAY/ VERGE
N2.0	Pole 3	1	1	100	450	5.5	0.5	5	0	650	FOOTWAY/ VERGE
N2.0	N2.1	1	1	100	450	22	22	0	0	650	VERGE
N2.1	BX3	1	1	50	450	1	1	0	0	600	VERGE

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Table 2: Schedule of Proposed Chamber Requirements

Duct Access Chamber Number	Re-instatement Type	Chamber Type	Chamber Cover	Trench Depth (mm)	Notes Drawing No: 18007-101
N1.0	VERGE	600 x 450	B125	950	
N1.1	VERGE	450 x 450	B125	650	
N1.2	VERGE	450 x 450	B125	650	FOR AX2
N1.3	VERGE	450 x 450	B125	650	
N1.4	VERGE	450 x 450	B125	650	FOR AIN1
N2.0	VERGE	600 x 450	B125	950	
N2.1	VERGE	450 x 450	B125	650	FOR BX3