



**Street Lighting and Electrical  
Term Maintenance Contract  
2013 - 2018**

**ITT**

**APPENDIX 2**

**Specification & Appendices**

**Name of Tenderer .....**

**Address .....**

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.....

**December 2012**

Reading Borough Council  
Civic Centre  
Reading  
RG1 7AE

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## INTRODUCTION

This document comprises the numbered appendices to the Specification for the Street Lighting and Electrical Maintenance 2013 - 2018 within the Borough of Reading. These works cover the following:

- Preparation and cyclic maintenance of public lighting installations and illuminated road signs (within highway, parks and public open space) including bulk lamp change, cleaning, inspection, electrical testing and fault repair
- Provision of emergency facilities and repairs
- Lighting infrastructure replacement and ad hoc new installation
- Maintenance and repairs of miscellaneous electrical equipment eg. highway drainage pumps

The Specification for the works is the Highways Agency Specification for Highway Works (SHW) published in March 1998 including all amendments up to and including amendments published in November 2008. The Specification also comprises the numbered appendices in this document and is to be read in conjunction with Contract Drawings listed in Appendix 0/4 and the Conditions of Contract. The Specification and this document form part of the Contract Documents.

## PREAMBLE TO THE SPECIFICATION

1. The Specification referred to in the Tender shall be the 'Specification for Highway Works', published by the Stationery Office (formerly HMSO) as Volume 1 of the Manual of Contract Documents for Highway Works, as modified and extended by the following:
  - i) Appendix 0/1: Contract - specific Additional, Substitute and Cancelled Clauses, Tables and Figures;
  - ii) Appendix 0/2: Contract - specific minor alterations to existing Clauses, Tables and Figures;
  - iii) The Numbered Appendices listed in Appendix 0/3;
  - iv) Appendix 0/4 contains a list of the Drawings.
2. The relevant publication date of each page of the Specification for Highway Works is given in the Schedule of Pages and Relevant Publication Dates.
3. An Additional Clause as indicated by a suffix 'A' in Appendix 0/5 is an alteration originating from the Overseeing Department of Scotland, Wales or Northern Ireland. An Additional Clause as indicated by a suffix 'AR' in Appendix 0/1 is a Contract-specific alteration.

4. A Substitute Clause as indicated by the suffix 'S' in Appendix 0/5 is an alteration originating from the Overseeing Department of Scotland, Wales or Northern Ireland. A Substitute Clause as indicated by a suffix 'SR' in Appendix 0/1 is a Contract-specific alteration.
5. A Cancelled Clause as indicated by a suffix 'C' Appendix 0/5 is an alteration originating from the Overseeing Department of Scotland, Wales or Northern Ireland. A Cancelled Clause indicated by a suffix 'CR' in Appendix 0/1 is a Contract-specific alteration.
6. Insofar as any of the Numbered Appendices may conflict or be inconsistent with any provision of the Specification for Highway Works the Numbered Appendices shall always prevail. Additionally, Numbered Appendices 0/1 and 0/2 shall take precedence over Numbered Appendix 0/5.
7. Any reference in the Contract to a Clause number or Appendix shall be deemed to refer to the corresponding Substitute Clause number or Appendix listed in Appendix 0/1, 0/2 or 0/5.
8. Where a Clause is altered any original Table / Figure referred to in the Clause shall apply unless the Table is also altered. Where a Table is altered any reference in a Clause to the original Table / Figure shall apply to the altered Table / Figure.
9. Where a Clause in the Specification relates to work goods or materials which are not required for the Works it shall be deemed not to apply.
10. Any Appendix referred to in the Specification which is not used shall be deemed not to apply.
11. Where a Clause in the Specification is prefixed by an # this indicates that this particular Clause has a substitute National Alteration for one or more of the Overseeing Organisations of Scotland, Wales or Northern Ireland. Substitute or additional National Clauses shall be used within countries to which they specifically apply and they are deemed to replace corresponding Clauses in the main text of the Specification as appropriate. The substitute National Clauses are located at the end of the relevant Series together with the additional National Clauses of the Overseeing Organisations.
12. Other than where references to the Overseeing Organisation are made in the context of the Overseeing Organisation granting statutory or type approvals, the roles and functions of the Overseeing Organisation shall be undertaken by the Engineer.

13. Where the Specification requires the provision of documentation to the Overseeing Organisation for statutory or type approval such documentation shall be provided to the Engineer.
14. If the Specification is used in conjunction with a Contract under which the Contractor is responsible for the design of any part of the Permanent Works, the delegation of the roles and functions of the Overseeing Organisation as stated in paragraph 12 above shall be amended as follows:
  - i) If any agreement, consent or approval required to be obtained from the Overseeing Organisation impacts on the health and safety of the general public, the environment or any property or equipment not owned or operated by the Contractor or the Design Build Finance and Operate concessionaire, such agreement, consent, approval shall be obtained from the Employers Representative.
  - ii) Where the Specification provides for the Overseeing Organisation to require a test, waive the requirement for a test or alter testing frequency, the party to whom the Overseeing Organisation's roles and functions have been ascribed by paragraph 12 above shall exercise such decisions in accordance with the Secretary of State's requirements stated in the Contract.

**APPENDIX 0/1 - LIST OF REGIONAL AND SCHEME SPECIFIC SUBSTITUTE,  
ADDITIONAL AND CANCELLED CLAUSES INCLUDED IN THE CONTRACT  
SERIES 100 PRELIMINARIES**

**170AR Maintenance Compounds**

**1. General**

- (i) The management of the Network shall be carried out from Maintenance Compounds provided by the Contractor for the duration of the Contract. The maintenance compounds shall be located and be of sufficient size to ensure the contractor can comply with the contract requirements, most notably the emergency service.
- (ii) The contractor shall ensure that appropriate security measures are provided at the maintenance compound as recommended by his insurance company. This may include high security locks on gates, secure perimeter fencing and intruder alarms.

**171AR The Network**

- 1. The Network is as defined in Appendix 1/71.

**172AR Handling of Materials**

- 1. The Contractor shall ensure that all materials delivered to the Network and all materials recovered from the Network are handled and dealt with in a manner which will ensure the safety of the users of the Network and of the occupiers of land adjacent to the Network.

**173AR Site Safety**

- 1. The Contractor shall comply with the requirements described in Appendix 1/74 in connection with the Engineers Policy with respect to Health and Safety at all sites under his jurisdiction.

**174AR Qualifications of Supervisors and Operatives**

- 1. The Contractor will be required to ensure (NRSWA 1991: Section 67) and demonstrate on request that all Supervisors employed on the Contract are qualified in accordance with the requirements of the Street Works (Qualifications of Supervisors and Operatives) Regulations 1992 ("the Regulations") and that all Operatives employed on non-cyclic operations were qualified in accordance with these Regulations.

2. Supervisors and Operatives carrying out work outside the scope of the mandatory units of the Regulations shall also be qualified in the appropriate units covering the work that they are undertaking.
3. All Operatives working within the highway shall be qualified in 'Unit 2' (Signing, Lighting and Guarding) of the Regulations described in Paragraph 1 of this Clause.
4. All operatives working on the highway shall be qualified in accordance with Appendix 14/71.
5. Proof of these qualifications must be submitted to the Engineer before the Supervisors or Operatives are employed on the Contract.
6. For any Site where traffic control is effected using traffic signals there must be at least one person on Site competent in the operation and adjustment of such apparatus. The name of the person identified as being the competent person shall be submitted to the Engineer prior to commencement of the Works Order.
7. The Contractor shall procure that all sub-contractors or self-employed sub-contractors shall comply with this clause in respect of their own employees.
8. The Contractor shall be required to ensure and demonstrate on request that all operatives are appropriately trained for the equipment and apparatus they are using, including but not limited to, mechanical plant, vibrating equipment, lifting apparatus, hoists, lifts, cranes etc.
9. The Contractor shall be required to ensure and demonstrate on request that all operatives involved in installing or maintaining electrical apparatus such as lanterns, lamps, cables and feeder pillars are appropriately trained and certified in accordance with the 17<sup>th</sup> Edition of the IEE wiring regulations and Health and Safety at Work Act.
10. Any Contractor / sub-contractor involved in electrical works shall be NICEIC and or ECA registered.
11. When undertaking any electrical works the contractor / sub contractor shall maintain on site a JIB Technician or Approved Grade Electrician to supervise the work. No more than 25% of the electrical workforce shall be apprentices.



#### **175AR Pedestrian Safety**

1. The Contractor shall ensure that all work sites which are accessible to pedestrians are effectively fenced off in accordance with his general obligations under the Contract and to the satisfaction of the Engineer.
2. Excavations which have to be left open overnight shall be surrounded by a solid barrier and be lit during the hours of darkness.
3. If a Site reduces the width of pedestrian access or passage to less than one metre, then the Contractor shall divert pedestrians onto a temporary footway to be approved by the Engineer.
4. All works are to be carried out so as to comply with Chapter 8 of the Traffic Signs and General Regulations and the guidance in Safety at Street Works and Road Works A Code of Practice published by the DfT in 2001.

#### **176AR Disposal of Material**

1. When the Works give rise to the need to dispose of material in tips off the Network, the tips shall in all cases be appropriately licensed for the material to be disposed.

#### **177AR Working in Confined Spaces**

1. The Contractor is required to provide and maintain a minimum level of suitably trained and certified staff plus equipment for working in confined spaces, as set out in Appendix 1/73.
2. The Contractor shall implement, maintain and operate a work/enter system. A permit to enter shall be required for each confined spaces entry.
3. The Contractor shall ensure that his permit to enter includes all personnel who are entering that confined space. This includes sub-contractors, Engineer's Representatives and others notified to the Contractor by the Engineer in addition to Engineer's Representatives who may from time to time require access to the confined space during the currency of the works for the purpose of overseeing the Works.

#### **178AR Cleanliness of Site and Use of Land**

1. The Contractor shall take all necessary steps to avoid creating a dust nuisance; in particular when cutting paving, concrete etc., with power saws. If, in the opinion of the Engineer, the Contractor is not dealing adequately with the control of dust the Engineer may instruct the

Contractor to carry out such additional measures as the Engineer considers are necessary, at the Contractor's expense.

2. The Contractor shall keep all roads, private entrances, verges, paths, footways, drains and ditches that are affected by the Works or by vehicles of the Contractor or by any of his sub-contractors or by suppliers of materials or by plant free from mud, slurry or other hazardous substance that is deposited through his operations and in a safe, clean and passable state. All waste or superfluous material or any substance deposited by the Contractor or his Sub-Contractor shall be promptly removed by the Contractor at his expense.
3. The Engineer shall have the authority to close any crossings and exits if any substance deposited is not promptly removed by the Contractor and any losses or expenses incurred as a result shall be borne by the Contractor.
4. The Contractor shall obtain the approval of the Engineer as to siting of all huts, equipment, stacks or heaps within the highway. Such approval will only be given when the Engineer has satisfied himself that no danger or limitation to sight lines will be caused. On completion of the Works, the huts, equipment, etc. shall be removed and the site made good to the satisfaction of the Engineer.
5. The Contractor shall take all necessary precautions to prevent danger, nuisance or inconvenience to the owners, tenants or occupiers of adjacent properties and to the public generally. The Contractor shall make his own arrangements including applying for planning permission, with the owners, tenants and occupiers concerned for the use of any private land for plant, stores, working space, borrow pits or spoil dumps he requires.
6. Upon completion of any works on the Network the Contractor shall leave the site free from any debris, including signs, cones, barriers etc. and shall leave the site in a clear and tidy condition.

#### **179AR Other Works on the Network**

1. The Contractor shall take into account the presence from time to time of other authorised contractors and bodies executing works which shall have an impact on his works and on the accessibility on and to parts of the Network. Such works shall include major maintenance and improvement contracts, works by public utility companies and other specialist activities as defined in Appendix 1/72.

## **SERIES 200 SITE CLEARANCE**

### **204SR Hazardous Materials**

1. The treatment of hazardous materials encountered in Site clearance or during an emergency situation shall comply with Appendix 2/5 or as agreed by the Engineer.
2. Compliance with sub-clause 1 of this Clause does not confer immunity from relevant legal requirements.

### **270AR Sign Posts**

1. Existing sign posts that are to be removed may by agreement with the Engineer be cut off level with the top surface of the concrete foundation and the surface reinstated. Subject to a minimum of 100mm thick bituminous material being used.
2. If there is no foundation, the post must be completely removed.
3. All surplus material shall be disposed of at a licensed tip provided by the Contractor off the Network.
4. Prior to the removal of sign posts carrying illuminated signs, the Contractor shall arrange to de-energise the electricity supply to the electrical equipment.

## **SERIES 600 EARTHWORKS**

### **670AR Disposal of Material off the Network**

The Contractor shall comply with the requirements of Appendix 6/7 when disposing of any material arising from the Works carried out under any Specification or Method of Measurement Series contained in this Contract.

## **SERIES 1100 KERBS, FOOTWAYS AND PAVED AREAS**

### **1101.1SR Precast Concrete Kerbs, Channels, Edgings and Quadrants**

1. Except where otherwise specified in this Clause, precast concrete kerbs, channels, edgings and quadrants shall conform to BS EN 1340 and their dimensions, type designations and performance and classes shall be as described in this Clause and Appendix 11/1. They shall be laid and bedded in accordance with BS 7533-6 on a mortar bed on a concrete pavement slab, a base or a C16/20 or ST4 in accordance with BS 8500-2 concrete foundation. The mortar bed may be omitted if units are bedded onto a concrete slab or foundation that is still plastic. All precast units laid on a mortar bed or bedded onto plastic concrete shall be backed with a strength class C16/20 or ST4 concrete in accordance with BS 8500-2.

### **1170AR Footways and Paved Areas - Construction Details**

1. Footway construction details shall be in accordance with Drawing No. SD/1103.

### **1171AR Precast Concrete Flags Artificial Stone Paving or York Stone Paving**

1. Before work in any individual existing precast concrete flags, artificial stone paving or York stone paved footway commences the Engineer and the Contractor shall agree the number of broken or damaged flags in the area of footway.
2. The Contractor shall replace any flags or paving broken or damaged in lifting or relaying. The Contractor shall carefully lift the flags or paving and set aside. If the flags or paving are not permanently relaid on the same day as they are lifted, the Contractor shall secure and stack them on site.

### **1172AR Laying or Relaying of Artificial Stone Paving**

1. After any existing flags have been lifted, the Contractor shall compact the whole of the exposed formation with a vibrating roller of a minimum of 400kg dead-weight or where the area is restricted, with a plate compactor of a design approved by the Engineer.
2. The footway base, when required, shall consist of Type 1 sub base as specified in Clause 803. When compacted the finished level shall not be less than 90mm ( $\pm 5$ mm) below the new surface level.
3. When the footway base has been approved by the Engineer, the Contractor shall provide and lay a 25mm thick bed of sand as specified

over the whole area of the base and then relay the undamaged flags previously set aside or lay new flags as specified. Every flag shall be bedded for its full area on the sand, shall be made solid and firm with paviors maul and shall be flush with adjoining paving. Flags shall be carefully cut where necessary to allow for surface boxes, lamp columns, telegraph poles, trees, carriage crossings irregular boundary walls, laying to radius, closers, etc., and the Contractor shall allow for this labour and material wastage in his tender prices. No closers of less than 450mm in width shall be used. Generally, paving flags shall break bond by 150mm and there shall be a gap of 10mm left between each slab as laid.

4. After not more than 50m<sup>2</sup> of flags have been laid, their joints shall be raked out and carefully filled with sand cement mortar grout and their surfaces then thoroughly cleaned off. Any mortar which gets on the kerb face, kerb top or boundary walls and fences shall be carefully removed. Finally, the joint between the back line of kerb and front line of paving shall be pointed with cement mortar.

#### **1173AR Concrete Block Paving - Flexible Pavements**

1. Concrete Block Paving shall be manufactured to BS EN 1338 : 2003 and laid complying with BS 7533-3 : 2005 Pavements constructed with clay, natural stone or concrete pavers - Part 3 : Code of Practice for laying precast concrete paving blocks and clay pavers for flexible pavements.
2. Nominal thickness of Concrete Block paving shall be 65mm (typically in footways) or 80mm (typically in carriageways) or to match existing as instructed by the Engineer and shall be bedded in accordance with BS 7533-3 : 2005.
3. The cutting of blocks shall be done by either a bench mounted stone-concrete saw or a disc-cutter. If a disc-cutter is used it must have a wet-cutting attachment (eg. A Stihl TS 360 AV/TS 510 AV or equivalent). The water spraying attachment is to be functioning at all times during cutting. Cutting sites shall be agreed prior to commencement of work and shall be fixed in one position and suitably enclosed to limit dust emissions.
4. All newly formed joints shall be treated with a water miscible, biodegradable, non-toxic material capable of stabilising the joint filling sand.
5. All covers within areas to be blockpaved shall have the pattern continued up to the cover and a header course laid around the perimeter of the frame where appropriate. Wherever practical the surrounding laying pattern should be continued through the cover area.

6. Dished channel blocks shall have a 10mm dish and shall be bedded on ST4 concrete 100mm thick. Class (i) or (ii) mortar to Table 24/1 shall be used in vertical joints between dished channel blocks and joints shall be tooled smooth and flush.
7. The colour and pattern of the blocks shall match those of the existing surface where appropriate.
8. Where the paving is new, the blocks shall be rectangular in plan 200mm long and 100mm wide BS type R.

#### **1174AR Laying Clay Block Paving**

1. After any existing paving has been lifted, the Contractor shall compact the whole of the exposed formation with a vibrating roller of a minimum of 400kg dead-weight or where the area is restricted, with a plate compactor of a design approved by the Engineer.
2. The footway base, when required, shall consist of Type 1 sub base as specified in Clause 803. When compacted the finished level shall not be less than 90mm ( $\pm 5$ mm) below the new surface level.
3. Blocks specified for laying as clay block paving shall be laid on a bed of sand 25mm thick. Joints in the work may be flushed up as the work proceeds or pointed subsequently with a cement/lime mortar. In both cases the joint shall be finished flush with the work and care shall be taken to ensure that all facework is kept clean. Mortar stains shall be carefully removed. Block paving shall be laid true to line and level. The maximum deformation measured under a 3m straight edge laid in any plane on the finished work shall be 5mm.

#### **1176AR Granite Sett Kerbing**

1. Granite setts shall comply with the requirements of BS435. The exposed face shall be treated to Standard Dressing B, designated "fair picked".
2. Setts shall be bedded and backed with concrete Grade ST2. All joints shall be filled and neatly pointed with cement mortar.
3. Expansion joints shall be provided at 9m intervals for granite sett kerbing and shall consist of pre-formed joint filler to Clause 1174.

#### **1177AR Cement Mortar for Kerbing**

1. Refer clause 1101.1SR.

2. Except as stated in Clause 1101.1SR, bedding mortar for kerbing shall be in accordance with BS7533-6 : 1999.

**1178AR Pre-formed Joint Filler**

1. Pre-formed joint filler shall be 20mm thick.
2. The material comprising joint filler shall be approved quality such that it can be satisfactorily installed in position at the joint.

**1179AR Timber Edging to Footways.**

1. Timber shall be as described in Clause 304.1.
2. Timber shall be pressure impregnated with preservative in accordance with Clause 311.
3. Fixing shall be to pointed pegs impregnated as in paragraph 2 of this Clause and shall be trimmed off and weathered.



## **SERIES 1200 TRAFFIC SIGNS AND ROAD MARKINGS**

### **1212SR Road Markings**

1. Damaged or disturbed road markings and studs shall be reinstated in accordance with the HAUC Specification for the Reinstatement of Openings in Highways. Second Edition 2002 (or later if issued during the currency of the term contract). Published by TSO on behalf of Department of Transport / HAUC.

## **SERIES 1300 ROAD LIGHTING COLUMNS AND BRACKETS**

### **1370AR Removal of Existing Equipment**

1. The Contractor shall carefully excavate around and dismantle any existing equipment to be removed. Immediately following removal, the Contractor shall temporarily reinstate the excavation using bituminous material.
2. The Contractor shall then either re-erect the equipment as instructed by the Engineer or indicated on the drawings or if not to be used, transported to a location agreed with the Engineer. The excavation shall then be permanently reinstated in compliance with the appropriate Clauses in the 600, 700, 800, 900, 1000 and 1100 Series.
3. The Contractor shall not switch off, dismantle or remove from Site any existing lighting without prior approval of the Engineer.
4. Prior to the removal of any electrical equipment, the Contractor shall arrange to de-energise or remove the electricity supply.
5. Any equipment removed following emergency attendance shall be left in a safe state. Columns or signposts shall either be cut to a height of not less than 1m or to ground level as appropriate. Sharp edges shall be removed or protected and warning tape indicating the danger of electric shock shall be clearly displayed. The electricity supply shall be isolated if possible and in any case left in a safe condition. Items cut to ground level shall be temporarily reinstated to a level surface using bituminous material.

## **SERIES 1400 ELECTRICAL WORK FOR ROAD LIGHTING AND TRAFFIC SIGNS**

### **1470AR Materials**

1. The Contractor will be required to provide all materials for the Contract.
2. Sufficient materials must always be held in stock to carry out the requirements of the Contract.
3. All materials and components shall be supplied in a new and unused condition, except insofar as they have been tested in the course of manufacture, and of a type approved by the Engineer.
4. An inspection of equipment shall be made as soon as it is delivered to Site and the Engineer shall be informed immediately of any damage or non-compliance with the Specification, which the Contractor shall remedy to the Engineer's satisfaction without charge to the Employer.
5. The Contractor shall be responsible for accepting on the Site all materials and components for the carrying out of the Works. He shall provide and maintain at his own expense such storage facilities as may be necessary to ensure the safe keeping of all materials and components and shall be responsible for any damage to or loss of materials and components occurring during the Contract period.
6. The Contractor shall ensure that any equipment and materials supplied under the Contract shall be compatible with any equipment that it is proposed to be used with. In the case of new installations the Contractor shall prepare test certificates and submit one copy to the Engineer, and one copy to Scottish & Southern Energy PLC when equipment is to be connected to their system.
7. Lamps shall be manufactured to the standards and performance specification detailed in the table in Clause 1478AR.

### **1471AR Routine Maintenance of Road and Sign Lighting Units (Including Internally Illuminated, Solar and Reflective Bollards), Subway Lighting, Belisha Beacons and Pumping Stations**

#### **1. Minimum Operational Performance**

The Contractor shall perform routine maintenance of road and sign lighting units (including subway lighting) and ensure a minimum operational performance of 98%. Details of defects constituting non-operational performance are listed below:-

- (i) Road and sign lighting units unlit, dim, red burning or flashing during normal hours of operation;
- (ii) Road and sign lighting units lit during the hours of daylight (day burning), if fitted with an automatic switching control;
- (iii) Lit sign face and bollard misaligned with respect to the carriageway;
- (iv) Any other fault caused by the failure to perform any item of routine maintenance.

The operational performance will be monitored by the Engineer, as defined in Clause 1477AR. Failure to perform minimum operational performance will result in the imposition of **default points** and application of liquidated damages.

Performance	%age decrease
98% and above	0
96.1 - 97.0%	-5
95.1 - 96.0%	-15
94.1 - 95.0%	-30
93.1 - 94.0%	-50
92.1 - 93.0%	-75
91.1 - 92.0%	-100
<91.1	-100

2. The routine maintenance of road, subway, sign lighting installations (columns, lanterns, electrical), dummy lighting columns (including electrical connections) which contain mobile phone equipment, belisha beacons and post mounted lighting installations in 'parks & leisure' land which shall include:-
  - (i) Replacement of road, parks and sign lighting unit lamps in quantity at the end of their guarantee period (bulk lamp change). Lamp guarantee periods are given in Clause 1478AR;
  - (ii) Repair of any faults in road, parks and sign lighting units reported by Reading Borough Council scouts, the Engineer or members of the public;
  - (iii) Securing doors on road, parks and sign lighting units including installing, removing and replacing banding where required.
  - (iv) Carrying out insulation resistance and earth loop impedance tests, at six yearly intervals as instructed by the Engineer, and recording results on forms approved by the Engineer;
  - (v) Carrying out the cleaning and inspecting of road, parks, subway and sign lighting units, sign plate faces, internally illuminated signs & bollards, solar and reflective bollards, feeder pillars and school flashing units, on a three year cycle (except where noted) including:-
    - (a) a thorough cleaning of all photo-electric control units, lantern external surfaces, internal surfaces and any other components affecting the optical performance of the lantern to be carried out on a three year cycle. The cleaning methods and materials shall be in accordance with Clause 1472AR.

- The Contractor shall note that the internal surfaces and any other components affecting the optical performance of lanterns with an ingress protection rating of IP65 or greater shall not be cleaned unless directed otherwise by the Engineer;
- (b) a thorough cleaning of all electrical compartments in columns, sign posts and feeder pillars;
  - (c) the degreasing, lubrication and operation of all toggles, wing nuts, hinges, door locks and any raising and lowering gear;
  - (d) the removal of the lamp(s) during the cleaning process;
  - (e) all new lamps to be indelibly marked with date of installation;
  - (f) spraying of all electrical components with a de-moisturising spray
  - (g) checking of all electrical connections;
  - (h) checking of all earthing connections;
  - (i) removal of all debris and undergrowth from 300mm radius of column, sign or feeder pillar base or foundation;
  - (j) cleaning of column flange;
  - (k) repair of grouting;
  - (l) raising and lowering of columns, ensuring correct operation. The Contractor shall provide any specialist equipment to perform this operation;
  - (m) cleaning of all numbering and warning labels and replacement of illegible numbering and upgrading any numbering not in compliance with Appendix 13/1 1(b);
  - (n) disposal of any sign or road lighting lamp after bulk lamp change or repair in accordance with Clause 1473AR;
  - (o) visual checking and repair of all sign face fixings and re-setting misaligned sign faces on an annual basis
  - (p) checking of all conduits for any corrosion and other defects, and reporting to the Engineer;
  - (q) checking, and repair if necessary, of photocell or time switch for correct operation;
  - (r) cleaning of internal surfaces of internally illuminated signs to be carried out on an annual basis;
  - (s) cleaning of external faces of externally illuminated signs of all types (mandatory, directional & information) to be carried out on an annual basis
  - (t) pruning or trimming any branches or foliage up to a maximum cross sectional diameter of 25mm, located within the highway boundary, which impair the optical performance of the lantern onto the road surface, or obscure an illuminated sign to the road user (Plants and Trees located on private land, or are greater than 25mm in cross sectional diameter which impair performance of lanterns or obscure illuminated signs shall be identified by the Contractor to the Engineer)
  - (u) LED lanterns. a thorough cleaning of all photo-electric control units, CMS external nodes and submasters, lantern external

surfaces, internal surfaces and any other components affecting the optical performance of the lantern to be carried out on a three year cycle.

- (v) St. Marys Churchyard spotlights, Broad Street Uplighters and Broad Street Fibre Optic Generators - a thorough cleaning of all photo- electric control units, lantern external surfaces, internal surfaces and any other components affecting the optical performance of the lantern to be carried out annually. The cleaning methods and materials shall be in accordance with Clause 1472AR.
- (vi) The following shall be carried out on a three year cycle on each visit to the road, subway or sign lighting unit;
  - (a) ensuring the bracket, lantern housing and lantern optical equipment is correctly aligned with respect to the carriageway/signface and realign as necessary;
  - (b) all grub screws, locking devices etc. shall be properly tightened in accordance with the manufacturer's instructions;
  - (c) a report to the Engineer of any damage, corrosion or misalignment of columns/posts/brackets;
  - (d) a report to the Engineer of any electrical component showing signs of overheating, fracture, condensation or tracking.
  - (e) A report to the Engineer of any incorrect information stored on the Engineers inventory system.
- (vii) Carrying out the cleaning of external surfaces of internally illuminated bollards in accordance with the following requirements, twice annually:

The cleaning methods and materials shall be in accordance with Clause 1472AR.

- (a) Summer period : 1 April - 30 September  
Clean once
- (b) Winter period : 1 October - 31 March  
Clean once

One clean in accordance with this clause shall be deemed to be the annual external clean in paragraph 2(v).

- (viii) Replacement of damaged, broken, burnt-out or missing items including lamps, lamp holders, lantern bowls, hinges, clips, toggles, nuts, doors, locks, cut-outs, isolators and the like (not including columns, lanterns, feeder pillars and illuminated signs).
  - (ix) TMP Heritage solar bollards battery pack to be replaced on a 4 year cycle.
- 3. The electricity supply shall be isolated at the cut-out/isolator before lamp removal and fitting and all maintenance operations.
- 4. At least one qualified Electrician shall be required in order to carry out all routine maintenance.
- 5. All plant and vehicles used shall comply with Appendix 14/70 and the contractor shall allow for the use of up to two platforms when instructed by the Engineer at any one time.
- 6. All types of labour employed on electrical or associated works shall comply with the requirements of Appendix 14/71.
- 7. The Contractor shall supply for inspection by the Engineer a tool kit for each vehicle to be used. The tool kit shall include the following:-
  - (i) An earth fault loop impedance tester;
  - (ii) An insulation resistance/continuity tester;
  - (iii) A voltmeter (range 0-500v);
  - (iv) All necessary hand tools to carry out inspection, fault finding and repair;
  - (v) A driver socket set to include a torque ratchet and a complete range of metric and imperial hexagonal shank bits to ensure all different lantern and bracket fixings can be correctly tightened to the manufacturer's instructions;
  - (vi) All necessary tools for tightening lighting column fixings to the manufacturer's instructions.
- 8. The Contractor shall maintain a supply of sundry materials for routine maintenance as detailed in Appendix 14/72.
- 9. The Contractor shall provide daily, by 09.30am, a whereabouts report that details works progress, labour employed and plant used for that day. The reports format shall be as agreed with the Engineer.



10. The inventory for each area, in Appendix 14/75 will be subject to change at any time by the Engineer. Increases/decreases in inventory shall incur no increase or decrease in the rate given in the Priced Schedule of rates except at the following intervals. The Contractor will be expected to maintain the inventory as part of his general conditions of contract and will produce updated inventory information for contract price amendment at twelve monthly intervals beginning 12 months after the contract start date. Amendment to the rate at which the Contractor is paid for routine maintenance will be made at that time pro rata in accordance with the Priced Schedule of Rates, for increases/decreases in items of equipment subject to routine maintenance.

**Bulk Lamp Change Frequency - Refer to Clause 1471AR**

Equipment Type	Lantern Type	Frequency of Change
Column Lights	SOX	36 Months
	SON	36 Months
	COSMOPOLIS	72 Months
	LED	144 Months
External Sign Lights	LED	72Months
	Fluorescent	12 Months
Internally Illuminated Signs	LED	72 Months
Refuge Beacons	Fluorescent	12 Months
Belisha Beacons	LED	144 Months
	Fluorescent	12 Months
Subway Fittings		12 Months

**Cleaning and Inspection Frequency - Refer to Clause 1471AR.**

Equipment Type	Lantern Type	Frequency
Column Lights	LED	36 Months
	SOX	36 Months
	SON	36 Months

	<b>COSMOPOLIS</b>	<b>36 Months</b>
<b>External Sign Lights</b>	<b>LED</b>	<b>12 Months</b>
	<b>Fluorescent</b>	<b>12 Months</b>
<b>Externally Illuminated</b>	<b>LED</b>	<b>12 Months</b>
<b>Signs</b>	<b>Fluorescent</b>	<b>12 Months</b>
<b>Internally Illuminated</b>	<b>LED</b>	<b>12 Months</b>
<b>Signs</b>	<b>Fluorescent</b>	<b>12 Months</b>
<b>Refuge Beacons</b>	<b>Flourescent</b>	<b>12 Months</b>
<b>Belisha Beacons</b>	<b>LED</b>	<b>12 Months</b>
	<b>Fluorescent</b>	<b>12 Months</b>
<b>Subway Fittings</b>		<b>12 Months</b>
<b>Internally illuminated</b>		
<b>And Reflective Bollards</b>		<b>6 Months ( Twice per Year)</b>
<b>St Marys Churchyard Spotlights</b>		<b>12 Months</b>
<b>Broad Street Uplighters ( Seating area)</b>		<b>12 Months</b>
<b>Fibre Optic generators Broad Street</b>	<b>Halide</b>	<b>12 Months</b>

**TMP Heritage Solar Bollard Battery Pack change**

<b>TMP Heritage Solar Bollards</b>	<b>Battery Pack</b>	<b>48 months</b>
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## **1472AR Cleaning Method and Materials**

1. The cleaning of all lighting equipment shall be carried out using an anti-static water based alkaline cleaner/degreaser and cloths complying with the following requirements:-
  - (i) The cleaning solution shall be non-toxic and cause no handling dangers to personnel. The proposed detergent shall be approved by the Engineer;
  - (ii) The cleaning solution shall cause no harmful effects to the range of materials and surfaces to be cleaned;
  - (iii) The cleaning solution shall be highly effective against greasy surface deposits, fast acting and suitable for use in cold water, in hard or soft water areas;
  - (iv) The cleaning solution shall not give rise to smearing and it shall not be necessary to carry out rinsing with clean cold water after cleaning;
  - (v) The cleaning solution shall not cause persistent foaming in use and shall not promote the formation of static charges on the equipment surfaces;
  - (vi) The cleaner/degreaser solution shall be diluted with clean uncontaminated water in accordance with the manufacturer's instructions and shall be applied by means of soft muslin cloths.
2. The cleaning cloths shall be continually cleaned or changed to ensure that no scouring or abrasive action damages the surfaces of the optical components. The cloths shall not be 'wrung out' or cleaned on the working platform of the lift vehicle and quantities of the cleaning solution in open containers shall not be carried in the working platform of the lift vehicle.
3. The attention of the Contractor is drawn to the dangers which may arise from the dropping of quantities of water or solution onto vehicles or other highway users passing below or adjacent to the cleaning vehicle. All cleaning cloths to be used shall be dipped in the cleaning solution and wrung out from containers on the vehicle chassis before cleaning commences.
4. After the use of the cleaning solution, all surfaces treated shall be wiped with a clean dry cloth and left reasonably dry.

### **1473AR Lamp Disposal**

1. All lamps for disposal shall be passed through an approved lamp disposal machine to be located in the Contractor's Compound and positioned in a well ventilated area.
2. The Contractor shall note that mercury and cadmium are 'red listed' substances thereby prohibiting discharge of contaminated water into the sewers and/or waterways. The lamp disposal machine used shall incorporate a recirculation facility.
3. The Contractor shall provide a skip for the neutralised lamp debris and a separate skip for the lamp containers, the skips to be located as near as possible to the lamp disposal machine.
4. The Contractor shall, when necessary, arrange for the skips to be taken to an appropriately licensed tip.
5. The Contractor shall comply with the following legislation during the lamp disposal process:-
  - (i) The provisions of the Environmental Protection Act 1990, Section 34, Duty of Care Regulations;
  - (ii) Directive 76/464/EEC and statutory instruments issued under the Water Act 1989 provisions relating to the discharge of substances to waterways
  - (iii) COSHH Regulations 1991;
  - (iv) Health and Safety at Work Act 1974.
  - (V) Directive on Waste Electrical and Electronic Equipment (WEEE)
6. The Contractor shall carry a valid waste carriers certificate of registration under the Control of Pollution (Amendment) Act 1989.
7. The Contractor shall supply, for approval by the Engineer, completed transfer notes detailing the movement of waste material, as detailed in the Environmental Protection Act 1990.

### **1474AR Non-Routine Maintenance**

1. Non-routine maintenance operations shall be any operation instructed by the Engineer which does not constitute part of routine maintenance, described in Clause 1471AR, and shall be carried out on:-
  - (i) Lighting units;

- (ii) Underpass and subway lighting;
  - (iii) Lighting columns and brackets;
  - (iv) Underground cable systems;
  - (v) Feeder pillars and associated switchgear;
  - (vi) Control systems;
  - (vii) Pumping systems;
  - (viii) Any other related electrical and lighting equipment.
2. The Contractor shall respond to emergency call outs in accordance with Appendix 36/70 and provide reports in a format approved by the Engineer.
  3. The Contractor shall on receipt of the Engineer's instruction, carry out Non-Routine Maintenance, repair or make safe emergency faults.
  4. The Contractor shall include for the provision of sundry items of equipment for non-routine maintenance operation as detailed in Appendix 14/72.
  5. The Contractor shall provide daily, by 0930am, a whereabouts report that details works progress, labour employed and plant used for that day. The reports format shall be as agreed with the Engineer.
  6. All types of labour employed on electrical or associated works shall comply with the requirements of Appendix 14/71.
  7. All plant and vehicles used shall comply with the requirements of Appendix 14/70.

**1475AR Procedures for Isolation, Energising and Making Safe of Existing Power Supplies and Cables**

1. All isolation, energising and making safe works shall be carried out in accordance with the Energy Networks Association ER G39/1;
2. Any person working directly on the isolation, energising and/or making safe of existing power supplies shall be "competent" in accordance with the Energy Networks Association ER G39/1;
3. The Contractor shall inform the Engineer prior to isolating or energising power supplies.

4. For isolation, energising and making safe of 'private' power supplies and cables the following shall apply:-
- (i) In the event of an emergency, no authorisation shall be required for isolation or making safe of any cable, however, the Contractor shall notify the Engineer as soon as practical.
  - (ii) The following notice shall be given for isolation, energising and/or making safe power supplies:-
    - (a) 1 hour for urgent maintenance works;
    - (b) 8 hours for other non-routine maintenance;
    - (c) 24 hours for detailed inspections and testing;
    - (d) 24 hours for planned non-routine maintenance operations;
    - (e) 24 hours for routine maintenance operations;
  - (iii) The isolation, energising and/or making safe of power cables shall be recorded by the Contractor at the Engineer's principal office to ensure, wherever possible, only one operation is being carried out on any cable;
  - (iv) Suitable weatherproof notices with the name of the operative responsible for isolation shall be displayed on the switchgear in the feeder pillar/supply position. Where more than one operative requires a cable isolated or energised, each operative shall display a separate notice. On completion of testing or works the notice(s) shall be removed;
  - (v) When routine maintenance operations are undertaken, the number of feeder pillars energised at any time shall be kept to a minimum;
  - (vi) Isolation shall include for disconnection from the incoming electricity supply of all live conductors (including the neutral conductors);
  - (vii) The isolation of individual circuits may be carried out using the associated MCB(s) or fuse(s) within a distribution board. The fuse carrier **MUST NOT** be removed whilst circuits are energised;
5. For isolation, energising and making safe of 'Electricity Authority' power supplies the following shall apply:-
- (i) Where Electricity Authority supplies are to be isolated above the cut-out, only competent persons approved by the Regional Electricity Company in accordance with G39 and qualified to "Electrician" status (see Appendix 14/71) may remove the fuse;

- (ii) Where Electricity Authority supplies are to be isolated below the cut-out, the Contractor shall liaise with the Electricity Authority before work commences (see Appendix 14/73).

- 6. The Contractor shall ensure all Sites are left in a safe condition and all exposed cables, cut-outs, equipment and the like are suitably protected.
- 7. The Contractor shall protect the site of emergency works as detailed in Appendix 36/70.

#### **1476AR Reports**

- 1. All reports and test certificates shall be typed and signed by the Contractor's Supervisor and the electrician carrying out the test unless otherwise agreed with the Engineer.

#### **1477AR Scouting**

- 1. Scouting of all lamps and electrical units & equipment shall be carried out by Reading Borough Council during the hours of darkness to identify those electrical units which are damaged, not working at all, or not working correctly. Reading Borough Council shall undertake to provide the frequency of the scouting and provide details of the faults to the Contractor, however, the Contractor shall assess the details provided and provide additional resources where necessary to comply with the performance target given in Clause 1471AR.
- 2. The operative shall inspect each lighting unit at a location from which it would be reasonable to expect the identification of major damage or doors missing.
- 3. The operational performance shall be calculated by the following formula:  
$$\frac{\text{(Number of lighting units without defect from check sample)}}{\text{(Total Sample No.)}} \times 100 = \text{operational performance}$$

(greater than 1000) (to be expressed to the nearest 1 decimal place)
- 4. Faults identified by the scouting or check scouting shall be rectified in accordance with Clause 1480AR.
- 5. No check scouts will be enforced within the first 3 months from the commencement of the contract. During this time the operational performance shall be 98%.

#### **1478AR Lamp Performance**

1. The Contractor shall be fully responsible for all lamps fitted by him under this Contract and shall guarantee the said lamps for the full period until their next bulk lamp change cycle is due. The bulk change cycles shall be based on the lamp burning hours detailed in the following lamp performance schedule.

LAMP	Standard(s)	Minimum Initial Luminous Flux (1m)	Minimum Flux Output at end of guarantee period	Guaranteed Lamp burning hours (h)	Nominal Months Bulk Change Frequency
SOX + 18w		-	88%	12600	36
35w	BS 3737 AND	4550	88%	12600	36
55w	IEC 192	7800	88%	12600	36
90w		13000	88%	12600	36
135w		20800	88%	12600	36
180w		32500	88%	12600	36

SON + 100w		10000	82%	12600	36
150w	IEC 662	16000	82%	12600	36
250w		30500	82%	12600	36
310w		-	82%	12600	36
400w		54000	82%	12600	36
SON/t+ 50w		4400	85%	12600	36
70w	IEC 662	6600	85%	12600	36
100w		10500	85%	12600	36
150w		16500	85%	12600	36
250w		32000	85%	12600	36
400w		55000	85%	12600	36
600w		90000	85%	12600	36
1000w		130000	85%	12600	36
COSMOPOLIS					
140w	IEC662			25200	72
LAMP					
LED 10				50,000	144
12				50,000	144
14				50,000	144
18				50,000	144
24				50,000	144
26				50,000	144
28				50,000	144
30				50,000	144



LAMP	Standard(s)	Minimum Initial Luminous Flux (1m)	Minimum Flux Output at end of guarantee period	Guaranteed Lamp burning hours (h)	Nominal Months Bulk Change Frequency
60				50,000	144
80				50,000	144
100				50,000	144
120				50,000	144
140				50,000	144
160				50,000	144
180				50,000	144
200				50,000	144

2. LED Lanterns. The performance of LED lanterns varies depending on the number of LED's in the lantern and the colour of light that is produced. The LED lamp burning hours and Bulk Change Frequency are shown in the table above, but the measurement of wattage and flux varies between different lanterns and manufacturers.

LAMP	Standard(s)	Minimum Initial Luminous Flux (1m)	Minimum Flux Output at end of guarantee period	Guaranteed Lamp burning hours (h)	Nominal Months Bulk Change Frequency
MCF 6w	-	260	77%	8400	24(switched) 12(unswitched)
8w	-	370	77%	8400	24(switched) 12(unswitched)
13w	-	930	77%	8400	24(switched) 12(unswitched)
15w	-	960	77%	8400	24(switched) 12(unswitched)
18w	-	1150	77%	8400	24(switched) 12(unswitched)
30w	-	2300	77%	8400	24(switched) 12(unswitched)

	38w		3200	77%	8400	24(switched) 12(unswitched)
	40w	-	3000	77%	8400	24(switched) 12(unswitched)
	80w	-	4850	77%	8400	24(switched) 12(unswitched)
	100w	-	8500	77%	8400	24(switched) 12(unswitched)
	PL 7w	-	400	-	12600	36(switched) 18(unswitched)
	9w	-	600	-	12600	36(switched) 18(unswitched)
	11w	-	900	-	12600	36(switched) 18(unswitched)
	18w	-	1200	-	12600	36(switched) 18(unswitched)
	24w	-	1800	-	12600	36(switched) 18(unswitched)
	36w	-	2900	-	12600	36(switched) 18(unswitched)
	40w	-	3500	-	12600	36(switched) 18(unswitched)
	55w	-	4700	-	12600	36(switched) 18(unswitched)
	MBF/U 50w	BS 3677 and	1770	-	8400	24(switched) 12(unswitched)
	80w	IEC 188	3600	-	8400	24(switched) 12(unswitched)
	125w		6200	-	8400	24(switched) 12(unswitched)

	250w		12700	-	8400	24(switched) 12(unswitched)
	400w		22000	-	8400	24(switched) 12(unswitched)
HPI-t	250w	2	17000	75%	8400	24
	400w	-	30500	75%	8400	24
CDM-t	70w	-	6600	-	8400	24
	150w	-	14000	-	8400	24
Tungsten		-	-	-	2100	6

### **1479AR Temporary Retention of Faulty Equipment**

1. The Contractor shall retain at his Depot for a period of 28 days or as otherwise agreed with the Engineer, all faulty components removed from the installation other than those subject to the Contractor's own guarantee. The components shall be clearly marked with the previously installed location and may be removed for examination by the Engineer without notice.

### **1480AR Time to Repair Defects**

1. Defects identified either by contractor scouting, engineer check scouting, the engineer, the public or other sources shall be repaired within the timescale identified on the following schedule.
2. Defects not repaired within the prescribed timescale shall be subject to default points and liquidated damages. Commencement of time to repair shall be immediately after notification to, or the detection by the contractor. The Time for repair identified in the following table shall not be deemed to be emergency call outs.

<b>Defective Equipment</b>	<b>Time for Repair</b>
Street Light	5 Days
Illuminated Sign	5 Days
Traffic Bollard	5 Days
Flashing Beacon*	1 Day
Spotlight on Flashing Beacon	5 Days
School Crossing	1 Hour
Subway Lighting	5 Days
Mayflower equipment	5 Days
Identification of no supply on private cable network	5 Days

\* Excluding spotlight attached to Flashing Beacon.

### **1481AR IT Specification of Requirements**

1. General:

The Contractor shall provide a fully managed IT service for street lighting covering the provision, hosting, supporting and maintaining of all hardware, operating and database software and Internet connectivity, firewalls etc required to run the system. The system should be capable of operating as:

Electronic Works Ordering System

Fault Management System  
Inventory Management System  
Energy Reporting System

It is envisaged that one system will be able to provide all these requirements. However, if multiple systems are to be provided data sharing is essential. In addition it may be required to provide data to the Highways other main works ordering system in a compatible format. The system id WDM. Details of compatibility can be provided by WDM ([www.wdm.co.uk](http://www.wdm.co.uk)).

The system should be compatible with the Mayflower CMS system, which Reading Borough Council uses as its Central Management System for streetlight fault monitoring and management. It should be able to receive fault reporting information from the Mayflower system and to automatically include this information in its asset management system.

It should be remembered that any inventory data which is supplied to the contractor remains the property of Reading Borough Council, and any changes to the inventory must have the prior agreement of The Engineer.

The system is to be delivered securely in a manner that allows an authorised user to access the system from an office or any other location.

A contract period of 5 years commencing on 1 July 2013.

The application software supplier is to directly provide technical support for the application software and system and to contract directly with the hosting supplier to deliver this support service.

The hosting supplier must develop and be able to demonstrate an appropriate commercial and close working arrangement with the software supplier to enable seamless delivery of the total service and support of the system.

The software supplier must be aware of the legislation regulating street lighting and related equipment and be able, in conjunction with the hosting supplier, to ensure that the system is capable of managing changes to legislation, withdrawal of EU exemptions and so on, through system upgrade and enhancements with minimum impact on the user.

## 2. Hosting Environment:

The Council requires that the supplier:

- a. presents and provides, in conjunction and with the full support of the software supplier, a hardware configuration which is sufficient to

meet the Council's needs based upon current volumes and estimated growth during the contract term.

- b. provides a diagrammatic representation of how the service is to be delivered.
- c. demonstrates backup and security arrangements. (Note - the Council reserves the right to review and revise these should needs change).
- d. demonstrates plans to deliver Business Continuity for the Council's street lighting service. (Note - the Council reserves the right for the Council staff or for external audit staff to visit the supplier's site for audit or other reasonable purposes to monitor the supply of services to the Council. Any such visits will normally (but not necessarily) be by prior arrangement with the supplier).
- e. provides and manages the transfer of data from the current hosting service in the event that the contract is awarded to an alternative supplier.
- f. provides technical options and the basis for any charges to interlink the street lighting system with other systems
- g. drafts and agrees a Service Level Agreement with the Council. Such agreement to include arrangements for regular monitoring, reporting and review of the hosting service against specific performance targets.

3. The Council expects the supplier to be responsible for:

3.1 Installation and Implementation including:

- a. installation of server hardware and other machines in appropriate rack or other space,
- b. configure all hardware and firewall software,
- c. configure the network and configure accounts,
- d. set up and configure system, data security and back up,
- e. configure DNS registrations,
- f. test telecommunications links and verify IP connectivity,
- g. installation and configuration of the street lighting system, duly loaded with the Council's data.

### 3.2 Operations:

- h. maintenance of all server and other hardware,
- i. server fault monitoring to resolution and all liaison with suppliers and the Council's nominated officer,
- j. network fault monitoring to resolution and all liaison with suppliers and the Council's nominated officer,
- k. provision of an uninterrupted power supply,
- l. monitoring for security threats and regular reporting thereof,
- m. monitoring for security breaches and regular reporting thereof,
- n. creation and storing of system and data backups (both locally and at a secure off-site location),
- o. validation process to verify successful execution of system and data backups
- p. database administration and liaison with the software supplier.
- q. working in close co-operation with the software supplier and users to install and test all software upgrades, both for correction of errors and for provision of additional functionality, and then to make the appropriate arrangements, in conjunction with the Council's nominated representative, to migrate the software to live usage
- r. regular liaison with the Council's nominated officer as may be required to deliver an effective and efficient operational hosting service to the Council. Such liaison is to include attendance at regular progress service meetings to monitor progress against the agreed Service Level Agreement.
- s. ensuring that fault reporting information from the Mayflower CMS system, owned by Reading Borough Council is automatically incorporated into the asset management system.

### 3.3 Hosting:

- s. the supplier's service should be hosted at a suitable location (data centre) where the environment fully complies with best practice IT

standards (including back up power supply, cooling systems, building and equipment security etc).

#### 4. Support & Monitoring

The Council will expect the software supplier to deliver the first line of support but the supplier is to retain overall responsibility for the system operations and to continually monitor and liaise with the software supplier, using clearly defined escalation paths for all application and other issues.

The hosting supplier is to monitor the response times and support levels delivered by the software supplier to ensure that a first class service is delivered to the users of the system in accordance with the agreed service levels.

The Council expects the supplier to monitor and manage all 3<sup>rd</sup> party components including liaising on hardware and telecommunications faults.

The Council will request regular service review meetings at a frequency to be agreed.

The Council requires the following service levels:

- a. published support number,
- b. 8am - 6pm Monday to Friday service level as standard supported hours,
- c. extension of support hours available if required (provided a reasonable notice period is given),
- d. a Web-based support system to track and report on incident resolution.
- e. a guaranteed start-of-fix times based on agreed severity levels
- f. monitoring of all third party components,
- g. management of third parties against the agreed Service Level Agreement,
- h. a Service Level Agreement for the duration of the contract,
- i. a schedule for Liquidated damages in respect of failure to achieve service availability targets,



## 5. Costs

The Council expects a costing based on a 5 year contract ( and for any contract extension) and for costs to include:

- a. An inclusive price for the supply, installation, commissioning and implementation of all hardware, application and system software and operating licences and any other services or skills required to deliver the hosting service
- b. The basis of cost escalation due to inflation or any other criteria is to be shown clearly and the various components subject to cost escalation during the period of the contract are to be shown separately, together with confirmation on whether or not they are beyond the control of the supplier
- c. Transfer of data (data migration from existing supplier and loading to the supplier's hosting service) costs are to be clearly identified
- d. All one-off costs are to be identified separately from annual recurring costs
- e. Any one-off costs for the design of the infrastructure are to be identified separately

## **SERIES 3200 DRAIN CLEANING**

### **3270AR Drainage Pumps**

1. The Council owns and maintains 3 no. surface water drainage pumps which are situated at the following locations.
  - (i) Vastern Road, junction with Forbury Road Roundabout.
  - (ii) Inner Distribution Road, junction with Chatham Street Roundabout
  - (iii) A33 under Berkeley Avenue Bridge

Detail site location maps are available from the Council when required.
2. All drainage pumps including those located within sub-ways shall be serviced at 12 monthly intervals as directed by the Engineer.
3. The services shall be either “General” or “Major” and these shall be carried out alternatively.
4. The requirement of each type of service is described in Appendix 32/70.
5. The Contractor shall inform the Engineer of all faults with the operation of drainage pumps identified whilst carrying out either “General” or “Major” services.
6. The Engineer shall instruct all repairs to drainage pumps to be carried out and reimbursed in accordance with the Dayworks Schedule.

## **SERIES 3600 EMERGENCY SERVICE**

### **3670AR Emergency Service**

1. The Contractor shall provide emergency facilities as described in Appendix 36/70.
2. Following incidents on the highway, it will be necessary to clear the highway and/or make it safe. These incidents will normally be of a size that a one or two man team with a suitably equipped hydraulic platform vehicle can be expected to resolve within a two hour work period.
3. The Contractor will be required to provide a 24 hour emergency service every day of the year with a one-man team and suitably equipped vehicle available to deal with such incidents.
4. During the normal working day of 0800 to 1730 hours the instruction to attend an incident will normally be from the Engineer. At all other times outside of these hours including weekends and Bank Holidays, the instruction will normally be given to the Contractor by the Engineers appointed representative (TBA).
5. The Engineer shall confirm all telephone instructions in writing not later than the end of the following working day.
6. During normal working hours it is likely that many of the incidents will be dealt with by operatives engaged on routine or cyclic maintenance, but the Contractor must be prepared to provide the service from other resources if so instructed.
7. In the case of more serious incidents, or simultaneously more than one incident in an area, the emergency resource team will be supplemented by such additional resources as may be necessary. The Contractor shall be reimbursed for these additional resources in accordance with the appropriate Schedule of Rates items.
8. The Contractor shall provide one telephone number and one facsimile machine number to which emergency instructions can be transmitted by the Engineer. The telephone and facsimile machine shall be continuously manned during the periods 0800 to 1730 hours Monday to Friday (excluding Bank Holidays) by a person able to receive and communicate instructions to the Contractor's workforce.
9. The Contractor shall provide a roster of duty staff including one telephone number to which emergency instructions can be transmitted by the Engineer outside the hours described in paragraph 8. This telephone number shall not change more frequently than once per week

unless otherwise agreed with the Engineer and shall be continuously manned outside the hours described in paragraph 8, by a person both able to receive and communicate instructions to the Contractor's workforce and feedback information on progress to the Engineer.

10. At all hours of every day there shall be available competent and trained operatives on call able to obtain a suitably equipped vehicle and to be available on site within the time period stated in Appendix 36/70. Failure to respond within this time will result in the imposition of default points.
11. The Contractor's arrangements for training and supervision shall ensure that all operatives are familiar with the types of incident that the team can be expected to resolve including the special procedures necessary during the hours of darkness and a knowledge of basic first aid.
12. Each team shall have available suitable vehicles so that they can deal effectively with any incident that they will be expected to resolve. The vehicles shall be painted a conspicuous safety colour and be equipped with hazard beacons and floodlights capable of being directed to assist operations during the hours of darkness. The vehicles shall carry a full range of small tools; shovels, brushes, drain rods, manhole keys, crowbars, chain saw, wooden extension ladder etc. and sufficient traffic signs and cones so that the team can deal effectively with the incident. The vehicles shall be capable of carrying, in addition to the above, a reasonable quantity of debris away from an incident.

**APPENDIX 0/2 - CONTRACT SPECIFIC MINOR ALTERATIONS TO EXISTING CLAUSES  
AND TABLES INCLUDED IN THE CONTRACT**

CLAUSE NUMBER	ALTERATIONS TO BE MADE
	NONE

## **APPENDIX 0/3 - LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION AND INCLUDED IN THE CONTRACT**

This Appendix 0/3 is comprised of two lists, A and B, of numbered Appendices as follows:

List “A” Is a complete list of the Numbered Appendices referred to in the Specification for Highway Works with those not adopted marked “Not Used”.

List “B” Gives the list of Contract-specific Numbered Appendices devised for the Contract.

List “A”: List of Numbered Appendices referred to in the Specification for Highway Works

<b><u>Appendix. No.</u></b>	<b><u>Title</u></b>	<b><u>Page No.</u></b>
<b>Introduction</b>		
0/1	Contract-specific Additional, Substitute and Cancelled Clauses and Tables included in the Contract.	tbc
0/2	Contract-specific Minor alterations to Existing Clauses and Tables included in the Contract.	
0/3	List of Numbered Appendices referred to in the Specification and included in the Contract.	
0/4	List of Drawings included in the Contract.	
0/5	Not used.	
<b>Preliminaries</b>		
1/1	Equipment to be provided by the Contractor for the Engineer	
1/2	Not Used.	
1/3	Not Used.	
1/4	Not Used.	
1/5	Not Used.	
1/6	Not Used.	
1/7	Site Extent and Limitations on Use.	
1/8	Not Used.	
1/9	Noise Control.	
1/10	Not Used.	
1/11	Not Used.	
1/12	Not Used.	
1/13	Programme Requirements.	
1/14	Payment Applications.	
1/15	Not Used.	
1/16	Private and Publically Owned Services.	
1/17	Traffic Safety and Management.	

<b><u>Appendix. No.</u></b>	<b><u>Title</u></b>	<b><u>Page No.</u></b>
1/18	Not Used.	
1/19	Not Used.	
1/20	Not Used.	
1/21	Information Boards.	
1/22	Not Used.	

**Note:** From this point forward, appendix numbers not listed are *not used*

#### **Site Clearance**

2/5 Hazardous Materials.

#### **Earthworks**

6/7 Weedkillers

6/8 Topsoiling, Grass Seeding and Turfing

#### **Road Pavements - General**

7/2 Reinstatement of Road Pavement

7/4 Bituminous Spray.

#### **Traffic Signs**

12/1 Traffic Signs: General.

#### **Road Lighting Columns and Brackets**

13/1 Lighting Columns and Brackets

13/2 Typical Column and Bracket data sheet

13/3 Instructions for Completion of Column and Bracket data sheet.

#### **Electrical Work for Road Lighting and Traffic Signs**

14/1 Site Records

14/3 Not Used.

14/4 Electrical Equipment for Road Lighting

14/5 Electrical Equipment for Traffic Signs

#### **Protection of Steelwork Against Corrosion**

<u><b>Appendix. No.</b></u>	<u><b>Title</b></u>	<u><b>Page No.</b></u>
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19/3	Requirements for lighting columns and bracket arms
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**List “B” Gives the list of Contract-specific Numbered Appendices devised for the Contract**

**Preliminaries**

1/70	Not Used
1/71	The Network.
1/72	Other Works on the Network.
1/73	Working in Confined Spaces.
1/74	Site Safety.

**Electrical Work for Road Lighting and Traffic Signs**

14/70	Plant requirements.
14/71	Labour requirements.
14/72	Purchase, delivery, handling and storage of materials.
14/73	Liaison with Statutory Undertakers.
14/74	Testing and Inspection of lighting column and illuminated sign internal wiring.
14/75	Inventory of road and sign lighting units.

**Drain Cleaning**

32/70	Drainage Pumps.
32/73	Contamination of Watercourses.

**Emergency Facilities**

36/70	Emergency facilities.
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## APPENDIX 0/4 - LIST OF STANDARD DRAWINGS INCLUDED IN THE CONTRACT

### 1. RBC Standard Drawings

Drg. No.	Title
SD101	Network Plan
SD102	Information Sign
SD103	Labels
SD401	Pedestrian Restraint System
SD402	Typical Pedestrian Area Bollards
SD501	Pipes under paved areas
SD502	Pipes and filter drains under verges
SD503	Service ducts
SD504	Road and footpath gully details
SD505	Catchpit Type 1
SD506	Catchpit Type 3
SD9xx	Minor access road construction
SD9xx	Major access road construction
SD1101	Kerbs and Channels - 1
SD1102	Kerbs and Channels - 2
SD1103	Footways, cycleways, verges and vehicular crossovers
SD1104	Cycleways and Shared Facilities
SD1105	Concrete Paving and Flags and Signal Controlled Crossing Points
SD1106	Traffic Islands
SD1107	Road Hump
SD1108	Layby
SD1201	Traffic signs
SD1202	Traffic signals - jointing chambers and ducts
SD1301	Column and feeder foundation details
SD1302	Illuminated bollard foundation details
SD1303	Typical column/sign wiring details
SD1304	Termination types - Type A, B, C and D
SD1305	Termination types - Type E, F, G and H

During the tender period, the above referenced drawings will be available for inspection by tenderers. To arrange a viewing, an appointment should be made with the Asset Manager, Reading Borough Council, Darwin Close, Reading, RG2 0RB.

At the start of the contract, a set of the standard drawings will be issued to the Contractor to assist in carrying out the work. The drawings may be revised and reissued by the Engineer under the provisions of Clause 7(1) of the Conditions of Contract from time to time during the contract. The Contractor will be expected to maintain and work to the up to date set of drawings.

2. Drawings brought into contract by reference

Those traffic management layout drawings contained in Chapter 8 of the Traffic Signs Manual which are applicable to the type of Works to be carried out under the Contract.

## **APPENDIX 1/1 - EQUIPMENT TO BE PROVIDED BY THE CONTRACTOR FOR THE ENGINEER**

The contractor should supply the Engineer with the following equipment:

1. One Minolta T10 illuminance meter and calibration certificate. To be retained by the Client
2. One hand held device of the type used by the contractor for mobile working, including all relevant licenses, communication equipment ( including all data transfer costs). To be returned to the Contractor at the end of the contract.
3. 2 smartphones, BlackBerry 9900 or similar approved suitable to provide mobile internet, e mail, text and telephone. To include costs of all calls, texts and data transfers, upgrades and life time costs. To be retained by the client.

1. All land within the public highway network and within the Borough's boundary as shown.
2. Public open space, parkland within the Borough Council's boundary.
3. Refer also to Appendix 1/16 with respect to Network Rail.



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## **APPENDIX 1/9 - NOISE CONTROL**

1. The Contractor shall employ the best practical means to minimise noise and vibration produced by his operations and shall have regard to the recommendations in BS 5228: Part 1: 1984 (Noise Control on Construction and Open Sites) and any similar British Standard or Code of Practice which may be considered relevant.
2. Without prejudice to the Contractor's obligations under the preceding paragraph the Contractor shall comply in particular with the following requirements:-
  - (a) All vehicles and mechanical plant used for the purpose of the Works shall be maintained in good and efficient working order and shall be fitted with effective exhaust silencers.
  - (b) All compressors shall be "sound reduced" models fitted with properly lined and sealed acoustic covers which shall be kept closed whenever the machines are in use and all ancillary pneumatic percussive tools shall be fitted with mufflers or silencers of the type recommended by the manufacturers.
  - (c) Machines in intermittent use shall be shut down in the intervening periods between work or throttled down to a minimum.
  - (d) Where practicable plant with directional noise characteristics shall be positioned to minimise noise at adjacent properties.
  - (e) Static machines shall be sited as far away as practicable from inhabited buildings.
  - (f) Where it is necessary to provide power for the running of traffic signals, pumps etc., at any time during the period 1900 to 0700 hours Monday to Saturday inclusive and all day on Sunday, then the sources of such power shall be from mains electricity except if the Engineer agrees in writing that alternative plant may be used, after consultation with the Local Authorities.
  - (g) All piling throughout the Works shall be carried out by a method which includes positive and effective measures, such as vibration, jacking, blanketing, screening or the like. The method employed shall be subject to the prior approval of the Engineer, after consultation with the Local Authorities.
3. The Contractor's normal working hours on the Site shall be 0800 to 1730 hours Monday to Friday inclusive, excluding Public Holidays.

During this period the equivalent continuous sound level (Leq) shall not exceed the following, measured 1 metre outside the facades of any adjacent occupied buildings:-

- (i) 70 dB(A) twelve hour value of Leq.
- (ii) 73 dB(A) six hour value of Leq (provided the six hours fall within the period 0800 to 1600 hours)
- (iii) 76 dB(A) three hour value of Leq (provided the three hours fall within the period 0900 to 1300 hours)
- (iv) 85 dB(A) at any instant. (slow response).

The limit of twelve hour value of Leq shall always be met so that when the higher levels occur, the levels permitted throughout the remainder of the normal working hours will become progressively lower than the overall limit imposed.

With the exception of winter maintenance and emergency works no work shall be done outside the normal working hours or on Sundays without the written permission of the Engineer. Such permission will normally only be granted for work producing low noise levels, or where work is to be carried out in an area of the site remote from any residentially occupied premises. The noise levels produced by such work shall not exceed those directed by the Engineer.

- 4. The Contractor shall provide the Engineer with as much advance warning as possible of any emergency work that it is necessary to conduct outside of the above permitted working hours.
- 5. The Contractor shall furnish such information as may be required by the Local Environmental Health Officers in relation to noise levels emitted by plant or equipment used or installed on the Site or which the Contractor intends to use or install on the Site and also afford all reasonable facilities to enable such officers to carry out such site noise-monitoring as may be necessary.
- 6. The Engineer shall have the right to order the Contractor to cease using any item of plant insufficiently silenced or generating noise levels in excess of those specified.
- 7. Compliance with these conditions and the other requirements of the Contract will not of itself constitute any ground of defence against any proceedings instituted under Section 59 of the Control of Pollution Act

1974 (whereby any occupier of premises may complain to a Magistrate's Court of a noise nuisance).



## **APPENDIX 1/13 - PROGRAMME REQUIREMENTS**

### **1. Programme of Works**

Under the provisions of Clause 14(1) of the Conditions of Contract, the Contractor shall prepare and submit 'working' programmes for both routine and ordered work, including capital work projects at 3 monthly intervals to coincide with every 3<sup>rd</sup> monthly progress meeting as noted in paragraph 2.3 below. The 3 monthly programme should be timed to commence on the Monday following the week of the progress meeting and shall cover the full period until the succeeding programme is issued. The programme may be in the form of a bar chart, activity schedule or in the form of a detailed statement showing the planned locations, scope, sequencing, dates and durations for routine maintenance, renewal and other works orders issued by the Engineer under Clause 2(2) of the Conditions of Contract.

### **2. Progress Meetings and Reporting**

- 2.1 At 3 monthly intervals to coincide with every 3<sup>rd</sup> monthly progress meeting as noted in paragraph 2.3 below, the Contractor shall prepare, submit and present a detailed progress report on the works carried out in the preceding 3 months.
- 2.2 The Contractor shall attend monthly contract management meetings, the dates, venues and format of which shall be decided by the Engineer in consultation with the Contractor. The monthly meeting shall include the monitoring and accounting of individual works orders and review of a rolling monthly programme.
- 2.3 Every 3<sup>rd</sup> monthly meeting shall be regarded as a strategic quarterly contract management meeting which shall include the formal reporting on progress and the presentation of the programme for the next 3 monthly period.
- 2.4. End of Contract Works in Progress Statement
- 2.5. Payment for Attendance at General Progress Meetings and Written Reports
  - 2.5.1 Should the Engineer so require the Contractor shall attend additional ad hoc progress meetings and/or prepare written reports, where the meeting/report is not of a direct result arising from the Contractors failure to perform, on any aspect of the Works. The Contractor shall be reimbursed for the time taken.

- 2.5.2 The costs associated with attendance by the Contractor at strategic quarterly contract management meetings. The Contractor should include these costs in his tendered rates.
- 2.6. Budget Allocations, Capital Expenditure Targets and Budgetary Control for Works
- 2.6.1 Budget allocations shall be set by the Employer for all Works before the start of each of the Employer's financial years and these will be issued for guidance purposes only to the Contractor. These budget allocations shall be revised by the Employer, as necessary, during each financial year.
- 2.6.2 All capital expenditure targets issued by the Employer to the Contractor will reflect policy or proposed policy and present a breakdown of the Works by location, purpose of scheme and cost.
- 2.7. Closure of the Employer's Accounts
- 2.7.1 At the end of each of the Employer's financial years, or at other times when reasonably required by the Employer, the Contractor shall provide promptly and to a timetable supplied by the Engineer sufficient information, so that the Employer may close its accounts in accordance with its normal accounting practices.
- 2.8. Best Value
- 2.8.1 The Employer, in its commitment to delivering best value, considers that the way the Works are carried out on site makes a significant impact on both convenience to the public and the perception of a quality service
- 2.8.2 The Contractor shall fully co-operate with initiatives to promote Best Value whether proposed by the Employer in anticipation of new legislation, or to meet the requirements of such legislation.
- 2.8.3 Initiatives in this area are likely to include:
- Consultation with service users and community groups
  - Service reviewers
  - Publication of performance indicators
  - Commitment to continuous improvement
- 2.8.4 Should the Engineer so require the Contractor shall attend ad hoc meetings with the Employer and/or the Engineer to review the options for change to improve the overall service, adopting the basic principles that services levels will be sustained or improved through new methods of working and/or the introduction of technical innovation. The Contractor shall be reimbursed for time taken.

3. The Contractor shall prepare a programme of works for routine maintenance as required by Clause 14 of the Conditions of Contract. The Engineer shall approve or require modifications to the programme before issuing Works Orders.

4. Non-Cyclic Operations

- i) The Engineer in issuing Works Orders shall ensure that timing requirements for the work are not unduly restrictive. Should the Contractor find that Works Order timing requirements issued by the Engineer lead to significant fluctuations in his workload, he may compile an alternative programme and request that the Engineer reviews his requirements. The Engineer shall give due consideration to such requests and respond to the Contractor within seven days.
- ii) When a section of carriageway is closed, every opportunity should be taken to carry out other maintenance on that Section. Work shall be so programmed to ensure that working is continuous and efficient within lane closures.
- iii) The requirements of Appendix 1/17 shall be observed.
- iv) The Contractor should note that other Authorities, utility companies and contractors will also be using the Network to fulfil their obligations subject to the approval of the Engineer.
- v) Work undertaken by the Contractor within the highway on behalf of the Engineer will be deemed to be 'Works for Road Purposes' as defined by the New Roads and Street Works Act 1991 (NRSWA).

The Contractor shall be responsible for providing all information to the Engineer's Representative to enable him to fulfil his duties as representative of the Street Authority under the Act. (see Clause 5.8.2 of the 'Code of Practice for the Co-ordination of Street Works and Works for Roads Purposes and Related Matters').

The information required shall be supplied in the form and at the times required by NRSWA

5. Performance Monitoring

A performance monitoring system will operate for the duration of the Contract whereby default points will accrue where the Contractor fails to meet agreed programme dates or other specified performance related areas of work and will apply as follows:-

- i) The Engineer shall inform the Contractor if the system applies to any particular Works Order in respect of works programmes. This may be after the Works Order has been issued or even during the period of the work. In the latter case, the completion date may be reviewed in agreement with the Contractor.
- ii) For each working day that the Contractor fails to complete work within any Works Order subject to the system, points will accrue as detailed in Clause 82 of the Conditions of Contract.
- iii) If there are any circumstances which have given cause for the Contractor to be delayed in completing any Works Order they shall be presented to the Engineer who will determine if any extension of time is due.

## **APPENDIX 1/14 - PAYMENT APPLICATIONS**

1. Monthly payment applications shall be made in accordance with Clause 60(1) of the Conditions of Contract.
2. The estimated contract value carried out to the end of that month shall be itemised and shall include the following:
  - (i) Works Order Number
  - (ii) Item Numbers
  - (iii) Item Descriptions
  - (iv) Quantities
  - (v) Rates in accordance with the Schedule of Rates
  - (vi) Price Fluctuation (Clause 77)
  - (vii) Sub Total Value of Invoice (less any previous payment)
  - (viii) Value Added Tax
  - (ix) Grand Total

The Contractor may submit interim applications for Works Orders whose duration, in the opinion of the Contractor and with the agreement of the Engineer, is in excess of 28 days. Interim applications and invoices are however required for all work in progress at 31<sup>st</sup> March each year.

## **APPENDIX 1/16 - PRIVATE & PUBLICLY OWNED SERVICES & SUPPLIES**

1. The following statutory companies and organisations are registered with the Highway Authority as having plant and apparatus within the Borough network.

### **CABLE & WIRELESS**

Cable and Wireless worldwide  
Streetworks  
Pavilion 1  
1-2 Berkeley Square  
99 Berkeley Street  
Glasgow  
G3 7HR

### **SCOTIA GAS NETWORKS**

NRSA central Team  
St Lawrence House  
Station Approach, Horley  
Surrey  
RH6 9HJ

### **INSTALCOM**

Plant Enquiries  
Instalcom House  
Manor Way  
Borehamwood  
Hertfordshire WD6 1QH  
Instalcom alternative -  
[plantenquiries@instalcom.co.uk](mailto:plantenquiries@instalcom.co.uk) (Tel: 0208 731 4613 / Fax: 0208 731 4601)

### **LEVEL 3 COMMUNICATIONS LTD**

Plant Enquiries Section  
Room C501, The Crescent  
Taunton  
Somerset TA1 4XE

### **RACAL TELECOMMUNICATIONS LTD**

Solihull Parkway  
Birmingham Business Park  
Birmingham B37 7YU

### **FIBERNET GROUP PLC**

### **THAMES WATER UTILITIES**

Streetworks Bureau  
Thames Water Utilities LTD  
Clearwater Court  
Vastern Road  
Reading Borough Council RG1 8DB  
Thames Water alternative - email  
[searches@thameswater.co.uk](mailto:searches@thameswater.co.uk) stating  
that you wish them to be returned via  
email.

### **GC PAN EUROPEAN CROSSING UK LTD**

Lismirrane Industrial Estate  
Elstree Road  
Elstree  
WD6 3EA

### **SCOTTISH & SOUTHERN ENERGY**

Operations Manager Reading Depot  
SSE Power Distribution  
Arrowhead Road  
Theale  
Nr Reading Borough Council RG7 4AH

Scottish & Southern Energy alternative  
- [mapping.services@scottish-southern.co.uk](mailto:mapping.services@scottish-southern.co.uk)

### **WORLDCOM INTERNATIONAL LTD**

MK International Ltd  
1 West Smithfields  
1 East Poultry Avenue  
London EC1A 9PT

### **EASTERN GROUP TELECOMS LTD**

Constantine House  
PO Box 37, Constantine Road  
Ipswich IP1 2DH

### **NATIONAL GRID COMPANY PLC**

Roslyn House  
Jays Close  
Viabes  
Basingstoke RG22 4BF

**NTL**  
Network Services, National Network  
Crawley Court  
Winchester  
Hampshire SO21 2QA

**VODAFONE LIMITED**  
The Courtyard  
2 - 4 London Road  
Newbury  
Berks RG14 1JX  
**ENERGIS COMMUNICATIONS LTD**  
Street Works Office  
Littlebrook Business Centre  
Littlebrook Manor Way  
Dartford DA1 5PS

**THUS TELECOM**  
Dalmore House  
310 St Vincent Street  
Glasgow G2 5BB

**360 NETWORKS**  
Europe Ltd  
Vanwall House  
Vanwall Business Park  
Maidenhead  
Berks  
SL6 4UB

**CONNECT**  
Ocean Park House  
East Tyndall Street  
Cardiff  
CF24 5GT

**VIRGIN MEDIA**  
Network Operations Support Centre  
Unit 1A  
Scimitar Park  
Courtauld Road  
Basildon

NRSA Enquiries  
P O Box 7324  
Coleshill  
Birmingham B46 1AR

**NTL SOUTH CENTRAL**  
Wharfedale Road  
Winnersh  
Wokingham  
Berkshire RG41 5TZ

**ENVIRONMENT AGENCY**  
Thames Region West Area  
Isis House, Howbery Park  
Wallingford  
Oxon OX10 8BD  
**ORANGES PCS**  
Fujitsu Telecommunications  
Solihull Parkway  
Birmingham Park  
Birmingham B37 7YU

**COLT TELECOM**  
Unit F  
20/22 Wharf Road  
London N1 7SW

**METRO CABLE TV**  
Unit 1  
40 Commercial Square  
Freemans Common  
Leicester  
LE2 7SR

**NETWORK RAIL**  
Network Rail Outside Party Engineer  
125 House, Gloucester Street  
Swindon  
SN1 1GW Tel: 01793 515904

**BRITISH TELECOM (BT)**  
Room 101, Cheltenham Telephone  
Exchange,  
Oriel Road, Cheltenham,  
GLOS, GL50 1BA  
Enquiries to: [www.dialbeforeyoudig.com](http://www.dialbeforeyoudig.com)

SS13 1ND  
Register at [www.digdat.co.uk](http://www.digdat.co.uk)

or call 0800 917 3993 or to BT's "Maps by Email" system by requesting an application by email to:  
[stoke.incoming.notices@openreach.co.uk](mailto:stoke.incoming.notices@openreach.co.uk)

2. The Contractor shall make arrangements with the Statutory Undertakers and others concerned, for the co-ordination of his work with all work which needs to be done by them or their Contractors concurrently with the works. Compliance with the periods of notice given in this appendix does not relieve the contractor of his obligations.
3. There are a number of private services laid within the public highway under a 'Section 50 licence' and those issued since 1999 are loaded onto the NRSWA EXOR database system. The licence holders are 'flagged up' when electronic road opening notices are issued.
4. Private Services to individual properties have not generally been listed or shown on the drawings. The Contractor shall make arrangements with the Statutory Undertakers and others concerned for the phasing of all necessary disconnections and diversions of private services affected by the works.
5. Disconnected apparatus can be removed by the Contractor only with the prior approval of the authority concerned.
6. Work under, over or alongside the railway infrastructure is subject to advance notification and liaison with Network Rail. Except for minor maintenance items it should be noted that on contact with Network Rail, the Contractor will be required to submit details of the works planned, the locations and the programming and enter into a period of consultation (supported by the Engineer / Employer as necessary) and obtain Network Rail's agreement before proceeding.



## **APPENDIX 1/17 - TRAFFIC SAFETY AND MANAGEMENT**

### **1. General**

#### **(a) Publications**

It is essential that all traffic safety measures accord where applicable with the requirements and advice given in the following:

- (i) New Roads and Street Works Act 1991
- (ii) The Street Works (Qualifications of Supervisors and Operatives) Regulations 1992
- (iii) Chapter 8 Traffic Signs Manual - Traffic Safety Measures and Signs for Road Works and Temporary Situations (2006)
- (iv) Safety at Streetworks and Roadworks (2001) (A Code of Practice) published by TSO under the New Roads and Street Works Act 1991 (NRSWA)
- (v) Notes for Guidance - Safety at Roadworks (A County Surveyors Society publication)

#### **(b) Definition of Terms**

- (i) "Working Area" shall mean the area occupied by the Contractor at any time for the purpose of carrying out the Works.
- (ii) "Works Traffic" shall mean vehicles and plant that are required within the Working Area for the purpose of carrying out the Works.
- (iii) "Traffic Safety and Management System" shall be defined as any system comprising the use of signs, lamps, cones and other aids to traffic movement placed on or adjacent to the Public Highway or Private Accesses in order to delineate any Working Area within the Site.
- (iv) "Lateral Safety Zone" shall be defined as the area adjacent to the Works between the Working Area and the lane of the carriageway in use by public traffic. "Longitudinal Safety Zones" shall be defined as the area in advance of and at the end of the Works.

- (c) NRSWA: A list of Protected Streets, Streets with special engineering difficulties and traffic sensitive streets is available from: the Highway Works Coordinator by contacting: [streetworks@reading.gov.uk](mailto:streetworks@reading.gov.uk)
- (d) Traffic Sensitive Streets in the Network are listed in the following table:-

Road Name	Localit y	Ward	Criteria									Proposed Timings
			A	B	C	D	E	F	G	H	I	
A327 Christchurch Road ^	Reading	Church, Redlands, Katesgrove	x				x	x	x		x	0730-0930, 1200-1400 and 1600-1900 Mon-Fri. All day Saturday, Sunday 1000-1600.
A327 London Street ^	Reading	Abbey, Katesgrove	x				x	x	x		x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
A327 Shinfield Road ^	Reading	Church, Redlands	x	x			x	x	x		x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
A327 Silver Street	Reading	Katesgrove	x				x	x	x			0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
A327 Southampton Street	Reading	Katesgrove	x			x	x	x	x			0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
A329 Caversham Road ^	Reading	Abbey, Caversham	x	x		x	x	x	x			0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
A329 Chatham Street	Reading	Abbey	x	x		x		x	x			0730-0930, 1200-1400 and 1600-1800 Mon-Fri. All day Saturday, Sunday 1000-1600. 24 <sup>th</sup> and 26 <sup>th</sup> December all day
A329 IDR Inner Relief Road	Reading	Abbey, Katesgrove, Minster	x	x		x	x	x	x		x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
A329 Kings Road ^	Reading	Abbey, Park, Redlands	x			x	x	x	x		x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
A329 Oxford Road ^	Tilehurs t	Abbey, Battle, Norcot, Kentwood	x				x		x		x	0630 - 0930 and 1530 - 1900 Mon-Fri. 0830 - 1130 Sat. All day on 24th December annually
A329 Queens Road	Reading	Abbey, Katesgrove	x	x		x		x	x			0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-

Road Name	Localit y	Ward	Criteria									Proposed Timings
			A	B	C	D	E	F	G	H	I	
												1600
A329 Wokingham Road	Reading	Park, Redlands	x	x				x	x	x		0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
A33 * ^	Reading	Abbey, Mister, Whitley	x				x	x	x	x		0730-0930 and 1600-2000 Mon-Fri. All day Saturday. All day 24 <sup>th</sup> and 26 <sup>th</sup> December
A33 Rose Kiln Lane ^	Reading	Katesgrove, Minster, Whitley	x	x			x		x	x		0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
A4 Berkeley Avenue ^	Reading	Katesgrove, Minster	x	x					x	x		0730-0930 and 1600-2000 Mon-Fri. All day Saturday
A4 London Road ^	Reading	Abbey, Park, Katesgrove, Redlands	x				x	x	x	x		0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
A4 Pell Street	Reading	Katesgrove							x	x		0730-0930 and 1500-1900 Mon-Fri, Sat & Sun 0900-1700.
A4/A4155 Bath Road ^	Reading	Minster, Southcote	x				x	x	x			0730-0930 and 1600-1900 Mon-Fri.
A4074 Church Road	Caversham	Caversham	x				x		x	x		0730-0930, 1200-1400 and 1600-1800 Mon-Fri. All day Saturday, Sunday 1000-1600. 24 <sup>th</sup> and 26 <sup>th</sup> December all day
A4074 St Peters Hill	Caversham	Caversham, Thames	x						x	x		0730-0930 and 1500-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
A4074 Upper Woodcote Road	Caversham	Mapledurham	x	x					x			0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
A4074 Woodcote Road	Caversham	Mapledurham, Thames	x	x					x	x		0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
A4155 Castle Hill *	Reading	Abbey, Minster	x	x			x	x	x	x		0730-0930 and 1600-2000 Mon-Fri. All day Saturday. All day 24 <sup>th</sup> and 26 <sup>th</sup>

Road Name	Localit y	Ward	Criteria										Proposed Timings
			A	B	C	D	E	F	G	H	I		
												December	
A4155 Castle Street *	Reading	Abbey, Minster	x	x		x	x	x	x			0730-0930 and 1600-2000 Mon-Fri. All day Saturday. All day 24 <sup>th</sup> and 26 <sup>th</sup> December	
A4155 Bridge Street	Caversham	Caversham		x			x					0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700	
A4155 Church Street	Caversham	Caversham		x			x					0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700	
A4155 Henley Road	Caversham	Caversham, Peppard, Thames	x					x	x			0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700	
Abbey Street ^	Abbey	Abbey									x	See ^	
Addington Road	Reading	Redlands	x	x			x	x			x	0730-0930 and 1600-1930 Mon-Fri. Saturday 0800-1200	
Albert Road	Caversham	Thames		x				x				0730-0930 and 1600-1900 Mon-Fri.	
Armour Hill	Tilehurst	Kentwood		x		x		x				0730-0930 and 1600-1830 Mon-Fri.	
Armour Road	Tilehurst	Kentwood, Tilehurst		x		x		x				0730-0930 and 1600-1830 Mon-Fri.	
B3031 Basingstoke Road * ^	Reading	Katesgrove, Whitley	x	x			x	x	x		x	0730-0930 and 1600-2000 Mon-Fri. All day Saturday. All day 24 <sup>th</sup> and 26 <sup>th</sup> December	
B3270 Whitley Wood Lane *	Reading	Whitley	x	x		x	x	x	x		x	0730-0930 and 1600-2000 Mon-Fri. All day Saturday. All day 24 <sup>th</sup> and 26 <sup>th</sup> December	
B3345 George Street	Caversham	Caversham	x	x				x	x		x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-2000	
B3345 Gosbrook Road	Caversham	Caversham	x			x	x	x				0730-0930 and 1600-1800 Mon-Fri	
B3345 Lower Henley Road	Caversham	Caversham, Peppard	x					x	x			0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600	

Road Name	Localit y	Ward	Criteria									Proposed Timings
			A	B	C	D	E	F	G	H	I	
B481 Buckingham Drive	Reading	Emmer Green	x						x			0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700.
B481 Peppard Road	Reading	Caversham, Emmer Green	x						x			0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700.
Bennet Road * ^	Reading	Whitley		x		x		x	x		x	0730-0930 and 1600-2000 Mon-Fri. All day Saturday
Beresford Road	Reading	Battle		x				x				0730-0930 and 1600-1900 Mon-Fri.
Blagrove Street ^	Reading	Abbey				x	x	x			x	0730-0930 and 1600-2000 Mon-Fri. Saturday 0900-1700
Briants Avenue	Caversham	Caversham		x				x				0730-0930 and 1600-1900 Mon-Fri.
Bridge Street	Reading	Abbey	x	x		x	x	x	x		x	0730-0930 and 1600-2000 Mon-Fri. All day Saturday, Sunday 1000-1600
Broad Street	Reading	Abbey				x		x			x	0730-0930, 1200-1400 and 1600-1800 Mon-Fri. All day Saturday, Sunday 1000-1600
Buckland Road	Reading	Whitley						x			x	0730-0930 and 1600-2000 Mon-Fri. Saturday 0900-1700
Bulmershe Road	Reading	Park		x							x	0730-0930 and 1600-1900 Mon-Fri Term time
Burghfield Road	Reading	Southcote	x	x				x	x			0730-0930 and 1600-2000 Mon-Fri. Saturday 0900-1700
Butter Market	Reading	Abbey				x		x	x		x	0730-0930 and 1600-2000 Mon-Fri. Saturday 0900-1700
Caversham Park Road	Caversham	Peppard	x	x				x			x	0730-0930 and 1600-1900 Mon-Fri
Chain Street	Reading	Abbey						x				0730-0930, 1200-1400 and 1600-1800 Mon-Fri. All day Saturday, Sunday 1000-1600. 24 <sup>th</sup> and 26 <sup>th</sup> December all day
Christchurch Gardens			x					x	x	x		0730-0930, 1200-1400 and 1600-1800 Mon-Fri. All day Saturday, Sunday 1000-1600. 24 <sup>th</sup> and 26 <sup>th</sup> December all day
Church End	Tilehurst	Kentwood,	x					x			x	0730-0930 and 1500-1800

Road Name	Localit y	Ward	Criteria									Proposed Timings
			A	B	C	D	E	F	G	H	I	
Lane	t	Tilehurst										Mon-Fri Term time
Cintra Avenue	Reading	Redlands	x									0730-0930 and 1500-1800 Mon-Fri Term time
Clonmel Walk	Reading	Abbey						x			x	0730-0930 and 1600-1900 Mon-Fri
Cockney Hill	Tilehurst	Norcot, Southcote	x			x		x			x	0730-0930 and 1600-1900 Mon-Fri, Sat 0900-1700 and Sunday 1000-1600
Coley Avenue	Reading	Minster						x	x		x	0730-0930 and 1600-1900 Mon-Fri, Sat 0900-1700
Conisboro Avenue	Caversham	Caversham, Thames						x				0730-0930 and 1600-1900 Mon-Fri
Connaught Road	Reading	Battle, Minster						x				0730-0930 and 1600-1900 Mon-Fri
Corbridge Road	Reading	Redlands					x	x				0730-0930 and 1600-1900 Mon-Fri
Corwen Road	Tilehurst	Tilehurst						x				0730-0930 and 1600-1900 Mon-Fri
Cow Lane	Reading	Abbey, Battle	x			x						0730-0930 and 1600-1900 Mon-Fri
Craven Road	Reading	Redlands	x				x	x			x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-2000
Crescent Road	Reading	Park, Redlands	x					x				0730-0930 and 1500-1800 Mon-Fri Term time
Cross Street	Reading	Abbey						x				0730-0930, 1200-1400 and 1600-1800 Mon-Fri. All day Saturday, Sunday 1000-1600. 24 <sup>th</sup> and 26 <sup>th</sup> December all day
Crown Street	Reading	Katesgrove	x					x	x			0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-2000
Dee Road	Tilehurst	Tilehurst, Norcot					x	x				0730-0930 and 1600-1900 Mon-Fri
Duke Street	Reading	Abbey					x	x	x			0730-0930 and 1600-1900 Mon-Fri
Dwyer Road	Reading	Southcote					x	x				0730-0930 and 1600-1900 Mon-Fri
Eldon Road	Reading	Abbey, Redlands	x				x	x				0730-0930 and 1600-1900 Mon-Fri
Elm Road	Reading	Church		x				x				0730-0930 and 1600-1900 Mon-Fri
Elmhurst	Reading	Church,	x					x			x	0730-0930 and 1500-1800

Road Name	Localit y	Ward	Criteria									Proposed Timings
			A	B	C	D	E	F	G	H	I	
Road		Redlands										Mon-Fri Term time
Forbury Road	Reading	Abbey	x			x	x	x				0730-0930 and 1600-1800 Mon-Fri
Friar Street ^	Reading	Abbey				x	x	x	x		x	0730-0930 and 1600-1900 Mon-Fri, All day Sat, 0830- 1200 Sun
Great Knollys Street	Reading	Abbey					x	x	x			0630-0930 and 1600-2000 Mon-Sat
Greyfriars Road	Reading	Abbey					x	x				0730-0930 and 1600-1900 Mon-Fri, All day Sat, 0830- 1200 Sun
Grovelands Road	Reading	Norcot						x	x			0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900- 2000
Gun Street	Reading	Abbey					x	x				0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900- 2000
Hartland Road ^	Reading	Church, Whitley	x					x			x	0730-0930 and 1600-1800 Mon-Fri
Hemdean Road	Caversh am	Caversham, Thames	x				x	x	x			0730-0930 and 1600-1900 Mon-Fri, Sat 0900-1700
High Street	Reading	Abbey					x	x			x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900- 1700. 24 <sup>th</sup> and 26 <sup>th</sup> December 1000-1600
Hogarth Avenue	Reading	Southcote	x					x	x			0730-0930 and 1600-1800 Mon-Fri
Honey End Lane	Reading	Norcot, Southcote		x				x	x			0730-0930 and 1600-1900 Mon-Fri
Kendrick Road ^	Reading	Katesgrove, Redlands	x				x	x			x	0730-0930 and 1500-1900 Mon-Fri
Kentwood Hill	Tilehurs t	Kentwood, Tilehurst	x					x	x			0730-0930 and 1600-1900 Mon-Fri
Kidmore End Road	Emmer Green	Peppard						x	x			0730-0930 and 1600-1900 Mon-Fri
Kidmore Road	Caversh am	Mapledurham, Thames	x					x	x			0730-0930 and 1600-1900 Mon-Fri
Kiln Road	Emmer Green	Peppard						x				0730-0930 and 1600-1900 Mon-Fri
King Street ^	Reading	Abbey				x	x	x	x		x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900- 1700. Bank holidays 1000- 1600
Kings	Reading	Abbey	x			x		x			x	0730-0930 and 1600-1900



Road Name	Localit y	Ward	Criteria										Proposed Timings
			A	B	C	D	E	F	G	H	I		
Meadow Road												Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600	
Leibenrood Road ^	Tilehurs t	Tilehurst									x	See ^	
Lowfield Road	Caversh am	Peppard	x					x	x			0730-0930 and 1600-1900 Mon-Fri	
M4 J11 *	Reading	Whitley	x	x		x		x	x			0730-0930 and 1600-2000 Mon-Fri. All day Saturday. All day 24 <sup>th</sup> and 26 <sup>th</sup> December	
Market Place	Reading	Abbey				x	x	x			x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600	
Mayfair	Tilehurs t	Tilehurst	x						x			0730-0930 and 1600-1900 Mon-Fri	
Mill Lane	Reading	Abbey	x	x		x		x	x			0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600	
Minster Street	Reading	Abbey				x	x	x				0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600	
Mount Pleasant	Reading	Katesgrove	x				x	x				0730-0930 and 1600-1900 Mon-Fri	
Napier Road	Reading	Abbey	x	x		x		x				0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600	
New Lane Hill	Tilehurs t	Norcot, Southcote, Tilehurst	x					x				0730-0930 and 1600-1900 Mon-Fri	
Newcastle Road	Reading	Church, Katesgrove, Redlands					x	x				0730-0930 and 1600-1900 Mon-Fri	
Norcot Road	Tilehurs t	Norcot, Tilehurst	x				x	x				0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600	
Northumberland Avenue ^	Reading	Church, Katesgrove, Redlands, Whitley	x	x			x	x			x	0730-0930 and 1500-1900 Mon-Fri, Sat & Sun 0900-1700.	

Road Name	Localit y	Ward	Criteria									Proposed Timings
			A	B	C	D	E	F	G	H	I	
Park Lane	Tilehurs t	Tilehurst	x				x		x			0730-0930 and 1500-1900 Mon-Fri, Sat & Sun 0900- 1700.
Pepper Lane ^	Reading	Church	x					x			x	0730-0930 and 1600-1900 Mon-Fri
Portman Road	Reading	Battle, Kentwood	x					x	x			0730-0930 and 1600-1900 Mon-Fri
Priest Hill	Caversh am	Caversham, Thames	x					x				0730-0930 and 1600-1900 Mon-Fri
Prospect Street	Caversh am	Caversham, Thames	x	x				x	x			0730-0930 and 1500-1900 Mon-Fri, Sat & Sun 0900- 1700.
Prospect Street	Reading	Battle		x				x				0730-0930 and 1600-1900 Mon-Fri
Queen Victoria Street	Reading	Abbey						x				0730-0930 and 1500-1900 Mon-Fri, Sat & Sun 0900- 1700.
Redlands Road	Reading	Redlands	x				x	x			x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900- 1700. Bank holidays 1000- 1600
Richfield Avenue ^	Reading	Abbey, Battle	x	x				x			x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900- 1700. Bank holidays 1000- 1600
Richmond Road	Caversh am	Mapledurham, Thames		x								0730-0930 and 1600-1800 Mon-Fri
Russell Street ^	Reading	Abbey, Minster	x				x	x	x		x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900- 1700. Bank holidays 1000- 1600
School Road	Tilehurs t	Tilehurst	x				x	x	x			0730-0930 and 1500-1900 Mon-Fri, Sat & Sun 0900- 1700.
Silchester Road	Reading	Southcote	x					x				0730-0930 and 1500-1800 Mon-Fri Term time
Southcote Lane	Reading	Southcote	x	x			x	x	x			0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900- 1700. Bank holidays 1000- 1600
St Marys Butts	Reading	Abbey					x	x	x		x	0730-0930 and 1500-1900 Mon-Fri, Sat & Sun 0900- 1700. Bank holidays 1000- 1600

Road Name	Localit y	Ward	Criteria									Proposed Timings
			A	B	C	D	E	F	G	H	I	
Stanshawe Road	Reading	Abbey					x		x			0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
Station Approach	Reading	Abbey					x	x	x		x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
Station Hill	Reading	Abbey					x	x	x		x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
Station Road	Reading	Abbey					x	x	x		x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
The Forbury ^	Reading	Abbey					x				x	0730-0930 and 1500-1800 Mon-Fri. 0900-1700 Sat
The Meadway	Tilehurst	Norcot, Tilehurst	x	x			x	x	x			0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
The Triangle	Tilehurst	Tilehurst	x					x	x			0730-0930 and 1500-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
Tilehurst Road ^	Reading	Abbey, Battle, Minster, Norcot, Southcote	x	x			x	x	x		x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
Tudor Road	Reading	Abbey					x					0730-0930 and 1500-1800 Mon-Fri. 0900-1700 Sat
Union Street	Reading	Abbey						x				0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
Upper Redlands Road	Reading	Church, Park, Redlands	x					x			x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
Valpy Street ^	Reading	Abbey					x	x	x		x	0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600

Road Name	Localit y	Ward	Criteria									Proposed Timings
			A	B	C	D	E	F	G	H	I	
Vastern Road	Reading	Abbey	x	x				x	x			0730-0930 and 1600-1900 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
Water Road	Reading	Norcot, Southcote		x								0730-0930 and 1600-1800 Mon-Fri
West Street ^	Reading	Abbey				x	x	x	x		x	0730-0930 and 1600-2100 Mon-Fri, Sat & Sun 0900-1700. Bank holidays 1000-1600
Western Elms Avenue	Reading	Battle	x					x				0730-0930 and 1500-1800 Mon-Fri. 0900-1700 Sat
Whiteknights Road	Reading	Park		x								0730-0930 and 1600-1800 Mon-Fri
Whitley Street	Reading	Katesgrove	x	x		x	x	x				0730-0930 and 1500-1800 Mon-Fri. 0900-1700 Sat
Whitley Wood Lane	Reading	Whitley	x	x			x	x				0730-0930 and 1500-1800 Mon-Fri. 0900-1700 Sat
Whitley Wood Road ^	Reading	Church, Whitley	x	x				x			x	0730-0930 and 1500-1800 Mon-Fri. 0900-1700 Sat

Criteria	
<b>A</b>	The street is one on which, at any time, the street authority estimates traffic flow to be greater than 500 vehicles per hour, per lane of carriageway, excluding bus or cycle lanes.
<b>B</b>	The street is a single carriageway two-way road, the carriageway of which, is less than 6.5 metres wide, having a total traffic flow in both directions of not less than 600 vehicles per hour.
<b>C</b>	The street falls within a congestion charges area.
<b>D</b>	Traffic flow contains more than 25% heavy commercial vehicles.
<b>E</b>	The street carries more than eight buses an hour.
<b>F</b>	The street is designated for pre-salting, by the street authority as part of its programme of winter maintenance.
<b>G</b>	The street is within 100 metres of a critical signalised junction, gyratory or roundabout system.
<b>H</b>	The street, or that part of a street that, has a pedestrian flow rate in both directions at any time, of at least 1,300 persons per hour, per metre width of footway.
<b>I</b>	The street is on a tourist route or within an area where international, national, or significant major local events take place.

*Source: NRSWA (1991) Code of Practice for the Co-ordination of Street Works and Works for Road Purposes and Related Matters*

Road Name	Localit y	Ward	Criteria									Proposed Timings
			A	B	C	D	E	F	G	H	I	

Symbol	
*	This street is affected by events at the Majeski Stadium. These streets will be traffic sensitive for the 2 hours leading up to the start of an event, and for the 2 hours following completion of the event.
^	This street is severely affected by annual events such as the Reading Festival, Reading Half Marathon and Heavenly Planet Festival. Special conditions will be applied to these street's for the period leading up to, during, and after the event, as designated by Reading Borough Council's Network Management Team.

## 2. Traffic Safety and Management

### (a) Responsibility for Traffic Safety and Management

- (i) the Contractor shall be responsible for the Traffic Safety and Management Systems and associated work as described in Clause 117 and this Appendix.
- (ii) the Contractor shall take particular care with the siting of all huts, plant, equipment, materials, stacks or heaps within the Public Highway, in order that no danger or limitation of sight lines is caused.

### (b) Phasing of the Works

- (i) specific traffic management requirements and standards for each Works Order will be provided by the Engineer on the order.
- (ii) the maximum length of any lane closure shall be 200m excluding tapers.

### (c) Works Traffic

Only vehicles essential for carrying out the Works shall be allowed to enter any Working Area. Any vehicle deemed by the Engineer to be non-essential (especially private cars), and any vehicle not complying with Clause 117 shall not be permitted to remain within the Working Area. If necessary the Contractor shall provide and maintain an area separate from the Site for the long term parking of his employees' private vehicles. The location of such a parking area shall be subject to the Engineer's prior approval. The Contractor shall arrange, if necessary, for the transport of personnel between the parking area and the Site.

### (d) Emergency Officers

The Contractor shall appoint an Emergency Officer and Deputy who shall be direct Employees (and not a sub-contractor) and who shall be entirely responsible for all liaison with the Engineer and where specified, with the Police, in connection with any traffic management system as follows:

- (i) arranging and agreeing systems;
- (ii) setting out of the system;

- (iii) controlling traffic during periods when traffic systems are necessary;
- (iv) ensuring all traffic systems requirements are met;
- (v) inspection and maintenance of all equipment described;
- (vi) arranging duties for watchmen and for patrolling and inspection of the Site at all times;
- (vii) arranging and ensuring that at all times whilst Traffic Safety and Management Systems are in place the Contractor's communication base (radio and telephone) is manned by a competent person;
- (viii) dealing with traffic in emergencies, including notifying the Police immediately of any accidents, emergencies and the like;
- (ix) reinstatement or temporary alterations to traffic management systems as requested by the Police in the event of an emergency;
- (x) The Contractor shall supply to the Engineer and the Police, the name and telephone number of the Emergency Officer and his Deputy, one of whom is to be available at all times in case of an emergency.

(e) Safety Zone

Safety Zones shall comply with the requirements of the "Traffic Signs Manual - Chapter 8; Traffic Safety Measures and Signs for Road Works and Temporary Situations (2006)."

(f) Traffic Safety and Management Patrols

- (i) During the period when any Traffic Safety and Management Systems are in operation on dual carriageways the Contractor shall be responsible for patrolling in accordance with the requirements set out below.
- (ii) Where Traffic Safety and Management Systems are in place on dual carriageways the following requirements shall apply in addition to the requirements set out in the following sub-clauses;
  - (a) the personnel required for patrolling shall be available on site at all times.

- (b) the vehicle provided shall be fitted with a communication system (radio and/or telephone) enabling two way communication with the Contractor's communication base.
- (iii) The Site shall be patrolled at hourly intervals whilst lane restrictions are in operation. Any Traffic Safety and Management Systems that have become displaced from their correct alignment and/or damaged in any way shall be repositioned and/or replaced to their correct positions immediately. In addition to patrolling, any defect in the Traffic Safety and Management System reported to the Contractor by either the Police or the Engineer shall also be rectified immediately.
- (iv) The Contractor shall provide two able and competent watchmen for the purpose of patrolling the Site and attending to signs, lamps, cones and any other aids to traffic movement. To enable patrolling of the Site to be carried out the Contractor shall provide a vehicle suitable for the Site conditions. In the event of an Emergency then the procedure as described in the Contract shall be followed. During periods of bad weather conditions additional personnel and transport may be required.

The Contractor shall ensure that a sufficient stock of spare signs, lamps, cones and other aids to traffic movement are available to immediately make good all reasonably foreseeable damage to the Traffic Safety and Management Systems.



(g) Restrictions on the Implementation of Traffic Safety Measures

- (i) Traffic safety measures involving the use of two way manual or two/three way traffic signal control shall not be permitted on any traffic sensitive street during the days and/or hours specified in the list of Traffic Sensitive Streets without the permission of the Engineer.
- (ii) All roads are to be left in a safe and fully operational condition after each day's operation.
- (iii) On roads where restricted working hours apply, no disruptions to traffic flows shall be permitted during the peak hours defined in g(i) above, except in the case of emergencies as instructed by the Engineer.
- (iv) Any traffic safety measures likely to affect access to or from any event likely to generate significant volumes of traffic will not be permitted without the permission of the Engineer. The Contractor will be provided with a list of known special events which may be subject to amendment at any time.
- (v) Where restricted working hours are stipulated on the Works Order the Contractor shall not be entitled to adjustment to the schedule of rates. The Contractor shall take account of these restricted hours when pricing his tender. Should the Contractor continue working within the defined restricted hours, default Points will be applied in accordance with Clause 82 of the Conditions of Contract.

(h) Traffic Management for use by Others:

Provision of traffic management schemes for use by others may be required from time to time.

(i) Removal of Lane Restrictions:

Except as otherwise authorised the Contractor shall so arrange his working as to ensure that, as far as possible, all obstructions can be removed from a carriageway and that traffic lanes can be operated within 30 minutes of an instruction being issued by the Engineer or Police Authority.

3. Traffic Orders

Notice required by the Engineer for him to arrange for:-

- (a) Amending or making temporary traffic orders - 6 weeks
- (b) Authorising of non prescribed signs - 6 weeks
- (c) Authorising of three way signal control - 2 weeks
- (d) Authorising of four way signal control - 2 weeks

#### 4. Temporary Traffic Signals

- (a) When the control of traffic is by temporary traffic signals, the Contractor shall monitor traffic queue lengths at hourly intervals. The person selected to carry out the task, whose name shall be communicated to the Engineer, shall be competent in the operation of temporary traffic signals and be capable of controlling traffic safely and effectively.
- (b) If the queue lengths of traffic, either side of the temporary lights, are of unequal lengths such that at least three green phases in the direction of the longer queue would not eliminate the inequality, then the Contractor shall:-
  - (i) Undertake manual traffic signals control and adjust timings to reduce the length of the longer queue; and.
  - (ii) Reset the automatic operations of the lights to equalise the queue lengths as far as possible.

Should actions in (i) and (ii) create a hazard or if the traffic hold up within the longer queue is transitory and it is anticipated that it will clear within 10 minutes of the monitoring exercise, the traffic signal settings shall remain unchanged.

- (c) Should the Contractor elect to use temporary traffic signals with a device for self traffic monitoring and automatic re-adjustment, the monitoring procedure need only be carried out once during the morning, mid-day and evening peaks.

#### 5. Maintenance of Temporary Signing and Guarding

- (a) The Contractor shall maintain all temporary signing and guarding of works to the standards detailed in paragraph 1(a) of this appendix.
- (b) Maintenance of temporary signing and guarding shall consist of a maximum period between visits to site of 12 hours to adjust, replace or take down signing and guarding as appropriate until the works are complete. The frequency of visits shall be increased as appropriate for areas, deemed by the Contractor or Engineer, to be high risk or prone to vandalism.

- (c) All maintenance of temporary signing and guarding shall be included within the Contractor's Tendered Schedule of rates including replacement of items damaged or stolen by third parties.

#### 6. Guarding of Defective or Damaged Illuminated Bollards

- (a) In the event that the Contractor attends a defective or damaged illuminated bollard, either during an emergency call out or routine maintenance, and the bollard cannot be brought into light or replacement items are required, the bollard shall be left in a safe state by covering with a Glasdon Jumbo Hazard Cone and properly illuminated. Stick on arrows shall be affixed as necessary. This temporary bollard shall be maintained as paragraph 5 of this Appendix until such times as the bollard is fully repaired.
- (b) Provision and maintenance of this temporary bollard shall be included within the contractors tendered schedule of rates including replacement if necessary.

#### 6. M4 Junction 11 Traffic Management

- (a) The contractors attention is brought to the traffic management requirements for M4 Junction 11. The junction includes single ( both one way and two way), dual and multiple lane sections as shown in the plan below. Detailed PDF's of the layout drawings are available on request from the Engineer who will then send a Zip File to the tenderer and the maintenance plan for Junction 11.

## APPENDIX 1/21 - INFORMATION BOARDS

1. For works likely to cause inconvenience to the public the Contractor shall provide, erect, maintain and remove information boards as directed by and in the format specified by the Engineer. These shall include advance notification of works for appropriate schemes.
2. At all sites where the highway is left obstructed whilst the site is left unattended the Contractor, at his own expense shall provide and erect an information sign giving the telephone number of a person competent to deal with an emergency arising at that site and shall ensure that the telephone is manned during the period that the sign is displayed.
3. When instructed by the Engineer, the Contractor shall prepare and distribute informatory letters to appropriate frontages and occupiers providing information as to the proposals for carrying out the works. Payment for such notification shall be in accordance with the Dayworks Schedule.
4. A typical sign is shown on drawing no. SD101.

<p>STREETLIGHTING IMPROVEMENT WORKS HERE FROM &lt;&lt;<i>Insert Programmed Date</i>&gt;&gt; FOR &lt;&lt;<i>Insert Duration</i>&gt;&gt; DAYS DELAYS POSSIBLE PLEASE PREVENT ON-STREET PARKING CONTRACTORS NAME CONTRACTORS TEL. NO.</p>
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## **APPENDIX 1/24 - QUALITY MANAGEMENT SYSTEM**

1. The Contractor shall institute and operate a quality management system complying with BS EN ISO 9002. The quality management system shall be described in a Quality Plan of which shall be submitted to the Engineer for his acceptance.

The Quality Plan shall cover the following items:

- (i) Contractor's organisation and management
  - (ii) Contractor's method statements and construction procedures
  - (iii) Contractor's construction quality control
  - (iv) Suppliers Quality Plans
2. Quality Plans shall conform with the requirements tabulated in this Appendix, as follows:
3. Items (i) and (iii) of the Quality Plan shall be submitted to the Engineer for his acceptance not later than 21 days after award of the Contract.  
  
The Contractor shall submit other parts of the Quality Plan prior to commencement of any related work or activity and to a timetable included in item (i).
4. Method statements are required for the works which are not included or form part of the contractors generic health and safety plan.

### **Contractor's Organisation and Management**

This section of the Quality Plan shall include:

1. Definition of the Contract and its documentation
2. The organisation of the contract, including the line of command and communication links between parties involved in the Contract.
3. Names, roles, responsibilities and authority of principals and key personnel.
4. Control of liaison and meetings with third parties.
5. Identification of the contractor's own staff responsible for overseeing each major activity.
6. The main Contractor's control of sub-contracts
7. Document control

8. Programme for submission of method statements and Suppliers Quality Plans.

The Quality Plan shall identify procedures (which may be a part of the Contractor's general procedure) which cover the topics listed below. Copies of these procedures shall be made available to the Engineer on request.

9. The quality plans for sub-contractors and suppliers of work, goods and materials which are the subject of quality management schemes.
10. Procedure for the preparation, review and adjustment of programmes for the effective progression of the Works and the recording of this.
11. Control and approval of purchases of materials.
12. Control of off-site activities (where appropriate).
13. Procedures for the regular review and recording by the contractor of the quality of the Works.
14. Control of personnel selection, based on their care, skill and experience.
15. Management review/audits to monitor and exercise adequate control over the implementation of the quality plan.
16. Any other relevant item.

Contractor's Method Statements and Construction Procedures

This Section of the Quality Plan shall include:

1. Detailed method statements for each major activity whether directly controlled or subcontracted.

The method statements shall identify hold points and invoke:

- work instructions
- quality control procedure
- compliance testing/inspection arrangement
- and work acceptance procedures

for all activities that might affect the quality of the permanent and temporary works.

2. Identify the relevant construction procedures in the Contractor's own Quality Management System (and provide copies on request).

### Contractor's Construction Quality Control

This Section of the Quality Plan shall include:

1. Statement of the Contractor's organisation for quality control.

The quality plan shall identify procedures (which may be a part of the Contractor's general procedure) that cover the topics listed below. Copies of these procedures shall be made available to the Engineer on request.

2. Arrangements for 'receiving' and 'in-process' testing.
3. Control of test laboratories.
4. Control of test, measuring and inspection equipment.
5. Document control.
6. Procedure for monitoring and recording the inspection, test and approval status of the constructed/installed work.
7. Procedures for tests and inspections for the purpose of the contractor certifying that prior to covering up, each part of the Works is complete and conforms to the Contract.
8. Procedure for the review of work submitted for review but not accepted as conforming to the Contract.
9. Procedure for the collation of quality records as identified in BS EN ISO 9002, and provision of copies when requested by the Engineer.

### Suppliers Quality Plans

The Quality Plan shall include:

1. Definition of the product or service to be provided.
2. The organisation of the Supplier describing the line of command and stating the name of the senior manager responsible for the contracted Work and the name of the Suppliers on-site management representative. Contact addresses, telephone numbers etc shall be provided.

- 3.\* Identification of the relevant parts of the Suppliers quality system relevant to the product or service being provided. (Copies to be provided to the Engineer on request).
4. The control of personnel selection (at works and on site), including special requirements for skilled personnel e.g. certification of welders, training of operatives, experience requirements etc.

Specific procedures for the following:

- 5.\* Receipt and examination of certificates of conformity and tests results for purchased products.
- 6.\* Product identification and traceability.
- 7.\* Handling, storage, packaging and delivery to Site and storage and handling on Site.
8. Quality records.

Items marked \* Where available and appropriate, copies of the Supplier's quality system/general procedures may be acceptable.



## **APPENDIX 1/71 - THE NETWORK**

1. The network is defined as all Highway Authority Maintained roads in the Borough of Reading including private streets and Housing estate roads.
2. The total lengths of carriageway in the Borough of Reading are as follows:-

A Roads (Principal)	35.6 km
B Roads	10.3 km
C roads	59.1 km
Unclassified Roads	290.3 km
Back lanes	1.4 km
Total Highway Network	<b>396.7 km</b>

## **APPENDIX 1/72 - OTHER WORKS ON THE NETWORK**

1. A schedule of the main types of work which may be undertaken from time to time by other authorised Contractors and bodies is given below:-
  - (a) Major maintenance  
Discreet contracts for major resurfacing, reconstruction and bridge works on any part of the Network;
  - (b) Improvement Contracts  
Discreet contracts for small and major improvement works on any part of the Network;
  - (c) Technical Surveys and Minor Specialist Activities
    - (i) small discreet contracts for such work as closed circuit television surveys, drainage inspections, surveying, specialist surface dressing and other high skid-resistant surface treatments;
    - (ii) regular surveys undertaken by other Contractors using their own deflectograph machine, high speed road monitor and SCRIM machine.
  - (d) Statutory Undertakers  
Installation and maintenance of Statutory Undertakers equipment and apparatus (this may include work by Street Works Licensees by virtue of Section 50 of the New Roads and Street Works Act 1991);
  - (e) Traffic Control Systems  
Installation and maintenance of traffic signals and associated equipment and apparatus.
2. The Engineer shall keep the Contractor informed as far as possible where other works as itemised in Clause 1 of this Appendix are planned and undertaken on the Network.
3. The Contractor may be required to carry out works in preparation for, or to assist in the carrying out of any of the above works. The Engineer shall issue a Works Order when this is required.

## APPENDIX 1/73 - WORKING IN CONFINED SPACES

1. All works that involve entering and working in confined spaces must comply with the Confined Spaces Regulations 1997.
2. The level of trained and certified staff and specialist equipment provided by the contractor shall be as described in the Tables following for each category of confined space.
3. The Contractor shall provide and maintain for the duration of the Contract, sufficient trained and certified staff and specialist equipment to be able to conduct up to two confined entries simultaneously at different locations, not including those required for other specialist sub-contractors and other third parties.

Category	Description	Essential Equipment	Minimum Manning *	Additional equipment where required
A	Locations with good access, poor ventilation and low risk of hazardous atmosphere. Access to single cell only from point of access, and max. distance within cell from point of access <15m.	Atmosphere monitor. Communications. Personnel protective equipment. Safety lamp.	2	Portable ventilation equipment. Pump for de-watering (Intrinsically safe).
B	Locations with poor/restricted access and/or vertical ladder, and poor ventilation with a low risk of hazardous atmosphere - depth at point of access <3m. Access to single cell only from point of access, and max. distance within cell from point of access <15m.	Atmosphere monitor. Communications. Lifeline. Personnel protective equipment. Safety lamp. Safety harness.	2	
C	Locations with poor/restricted access and/or vertical ladder, and poor ventilation with a risk of hazardous	Atmosphere monitor. Communications. Escape breathing apparatus.	2	

	atmosphere - depth at point of access <3m.	Lifeline. Personnel protective equipment. Safety lamp (Intrinsically safe). Safety harness.		
D	Locations with poor access, greater than 3m deep at point of access, with either restricted access and/or a vertical ladder, poor ventilation and a high risk of a hazardous atmosphere.	Atmosphere monitor. Communications. Escape breathing apparatus. Lifeline. Man riding winch. Personnel protective equipment. Safety lamp (Intrinsically safe). Safety harness.	3	

\* Intermediate man may be required to maintain audible/visible communication between Top-man and persons in confined space.

## **APPENDIX 1/74 - SITE SAFETY**

### **General**

1. The Contractor shall at all times comply with the requirements of the Health and Safety at Work Act 1974 and any other Acts, Regulations or Orders pertaining to the health and safety of employees.
2. Notwithstanding compliance with any legislation in connection with Site Safety, including The Construction (Design and Management) Regulations 2007 and also the requirements of this Contract, the Contractor shall comply fully with his own published Safety Policy current at the time the work is carried out.
3. The Contractor shall have regard to the Employer's Safety Policy when preparing his/her own statement, a copy of which shall be supplied to the Council prior to the date of Access to the Network. The Contractor shall nominate a person to be responsible for the health and safety matters as required by the said Act. Whilst on premises owned by the Employer, the Contractor shall ensure that his/her employees comply with the Employer's Health and Safety Policy Statements and any other requirements drawn up by the Engineer.
4. The Contractor shall while carrying out Works on the Network comply with traffic management requirements as set down in the Contract.
5. The Contractor shall while carrying out the Works comply specifically with the requirements of:-
  - a) Control of Substances Hazardous to Health Regulations 1988
  - b) Electricity at Work Regulations 1989
  - c) BS7671: 1992 - Requirements for Electrical Installations (The IEE Wiring Regulations).
6. The Contractor shall prior to complying with paragraphs 1 to 5 carry out a formal risk assessment as required by Management of Health and Safety at Work Statutory Instrument No. 2051, conforming to the Approved Code of Practice.
7. The Engineer may suspend the Works or part thereof in the event of non-compliance by the Contractor with health and safety matters as described in the Contract. The Contractor shall not resume the Works until the Engineer is satisfied that non-compliance has been rectified. In respect of any such period of suspension, the Contractor shall not add any cost to the Works price and no extra time shall be allowed for completion.

8. All sites under the jurisdiction of the Engineer must be managed in strict accordance with the Construction (Head Protection) Regulations 1989 and supporting Health and Safety Executive guidance.
9. When entering into any sub-contract for the execution of part of the works, the Contractor shall bring this requirement to the attention of the sub-Contractor.
10. The Contractor shall display at appropriate locations signs as described in the HSE Guidance on Regulations (Regulation 5).
11. The Contractor's attention is drawn to Clause 16 of the Conditions of Contract with respect to the removal from the site of any person who fails to conform with particular provision set out in the specification with regard to safety.
12. The Contractor's attention is specifically drawn to paragraph 17 of Clause 117 of the Specification regarding the wearing of high visibility clothing.
13. The Contractor shall ensure that the clothing required to be worn is maintained to a standard that accords with its intended use.
14. Where, in the Engineers opinion, there is a breach of any part of this Appendix, Penalty Points will be applied in accordance with Clause 82 of the Conditions of Contract.

## **APPENDIX 2/5 - HAZARDOUS MATERIALS**

### **1. Site Clearance**

The treatment of hazardous materials encountered in site clearance during the normal working day shall be as follows:-

- (i) The Engineer shall be informed immediately who in turn will consult with the Environment Agency and/or the Emergency Services;
- (ii) Upon receipt of expert advice the Engineer shall inform the Contractor of the appropriate course of action.

### **2. Emergencies**

The treatment of hazardous materials encountered during an Emergency situation shall be as follows:-

- (i) During normal working hours the procedure shall be as described in paragraph 1(i) and (ii) of this Appendix;
- (ii) Outside normal working hours, it is possible that the Engineer or his representative may not be available and so direct instruction may be provided on site by the Emergency Services.

### **3. Polychlorinated Biphenyls (PCBs)**

PCBs may be present, within capacitors used for discharge and fluorescent lighting, on the network. The Contractor must take all appropriate precautions and be responsible for their safe removal and disposal.

## **DUTY OF CARE: DISPOSAL OF WASTE MATERIALS**

- 1. All waste and surplus materials regarded as “controlled wastes” collected during the course of the works shall be taken direct to a licensed tip and disposed of in accordance with the requirements of The Control of pollution (Special Waste) Regulations 1980. The Contractor shall be responsible for making his own arrangements as to the tipping sites to be used, any charges to be paid and for ensuring that each site has the necessary licences or permissions that may be required for the purpose by any statutory body. Where required by the Engineer, the Contractor shall provide all information to show that all such waste materials are being disposed of in accordance with the Contract. A list of all tips licensed by this Authority is available from the Environment Agency.

2. The Contractor shall ensure that he is registered in accordance with the requirements of The Control of Pollution (Amendments) Act 1989 as a carrier of waste and that such registration was made with the Waste Disposal Authority for the area in which his Principal Office is located.
3. The Contractor is reminded that certain items, for example re-usable lanterns, bollards and columns etc., remain the property of the Employer and where directed by the Engineer, shall be returned to the Employer.

## **APPENDIX 6/7 - SUB-FORMATION AND CAPPING AND PREPARATION AND SURFACE TREATMENT OF FORMATION**

### **Weedkillers**

1. Weedkillers shall be applied to the formations of footway and vehicular accesses.
2. The weedkiller must be approved by the Engineer and applied according to the manufacturer's instruction.
3. Where a contact weedkiller is appropriate and where there is direct access to water courses a glyphosate chemical must be used.
4. Residual weedkillers must be approved by the Environment Agency and must not contain Atrazine or Simazine.



## **APPENDIX 6/8 - TOPSOILING, GRASS SEEDING AND TURFING**

### **Topsoiling, Grass Seeding and Turfing**

1. Topsoiling, grass seeding and turfing shall be as per British Standard BS4428.

## **APPENDIX 7/2 - REINSTATEMENT OF ROAD PAVEMENT**

### **General**

1. Reinstatement of excavation in existing road pavement shall be as per standard drawings or HAUC reinstatement specification as applicable, see paragraph 2 below.
2. Reference Document

Specification for the Reinstatement of Openings in Highways. Second Edition 2002 (or later if issued during the currency of the term contract). Published by TSO on behalf of Department of Transport / HAUC.

### **REINSTATEMENT OF FOOTWAYS**

1. Reinstatement of excavation in existing footway shall be as per standard drawings or HAUC reinstatement specification as applicable.

## **APPENDIX 7/4 - BOND COATS, TACK COATS AND OTHER BITUMINOUS SPRAYS**

1. Where there is a delay of three days or more between the laying of bituminous materials a tack coat BH 594987 (Section 5.5) and conforming to BSEN 13808 Classes C69B2, 3 or 4 or C69F2, 3 or 4 and shall be applied at a uniform rate of spread of 0.4 - 0.45 litres/m<sup>2</sup>.

## APPENDIX 12/1 - TRAFFIC SIGNS

### Traffic Signs: General

*All signs shall comply with this specification, BS 873 and technical advice note TA/19/81.*

#### 1. Permanent Traffic Signs

- (i) Diagram numbers referred to are those in the Traffic Signs Regulations and General Directions, 2002
- (ii) Requirements for Sign Plates, Posts, etc.

##### Sign Plates

All sign plates shall be manufactured in accordance with Chapter 13 of the Traffic Signs Manual. They shall be of the permanent type and manufactured from either sheet aluminium or extruded aluminium sections (planks) conforming with BS873: Part 6: 1983 Section 4:2:1 (b) and (c) or of a composite material formed from sheet aluminium bonded to a UV-resistant polyethylene core, such as Dibond, or similar approved.

Preparation of the aluminium base material prior to application of sheeting and film shall be in accordance with the instructions of the sheeting and film manufacturer.

##### Stiffening and Framing

On all sizes of sign plate, the stiffening and framing shall be constructed of aluminium section of equivalent strength (section modulus) to that of the mild steel tabulated in Chapter 13 of the Traffic Signs Manual.

Fixing devices such as rivets, bolts etc. shall be non-corrosive, free of oil and shall not bring about any reaction with the sign plates or the sign surface material. Fixing shall be effected taking account of any specialist instructions given by the manufacturer of the sign surface material used.

##### Posts

Steel posts shall be galvanised in accordance with BS 729.

##### Protection against damage

If signs are to be stored prior to erection, the following recommendations must be followed:-

- (a) If stored indoors, the packaging (provided it is dry) need not be removed unless storage is to be for an extended period of time (more than 4 weeks). If packaging is removed, the SCW82 slip sheeting should remain in situ to protect the sign face. In either case, the signs must be supported on wooden battens in the upright position so that they do not touch.
- (b) If it is necessary to store signs outdoors, all packaging must be removed and the signs placed on wooden battens in the upright position with a minimum space of 50mm for free air circulation.
- (c) Signs must not come into contact with treated wooden posts and must not be allowed to stand in water at any time. Sharp and heavy objects must not be placed on or against signs during storage.
- (d) During sign erection, measures must be taken to ensure that signs are not abraded, impacted or otherwise marked.
- (iii) Traffic signs schedules and standard detail drawings give details of foundations as well as the number, type and size of posts.
- (iv) Base or Flange plates for posts may be required.
- (v) Housing or Electrical Equipment.

All illuminated sign assemblies shall be provided with one large base post integral with the sign post to the house the requisite electrical equipment. The base housing may be circular or rectangular in section. If circular it shall have an internal diameter of not less than 165mm and if rectangular its sides shall be not less than 130mm apart. The depth, measured from the face of the baseboard to the front, shall be not less than 100mm. The housing shall have an aperture of not less than 300mm x 130mm and be fitted with a weatherproof metal door having a vandal resistant lock with key. A panel of hardwood not less than 16mm thick at centre, 5mm thick at edges, 100mm wide and 400mm long, shall be securely fixed to the back of the compartment on which the electrical equipment shall be mounted.

- (vi) Type and Class of Sign Face Material

#### Permanent Traffic Sign

- (a) All permanent road traffic signs shall be faced with 3M Diamond Grade Prismatic (DG<sup>3</sup>) reflective material to BS4808, and Technical Advice Note TA/19/81.

Signs shall provide satisfactory performance night and day for drivers of motor vehicles under normal driving conditions, for a minimum period of 10 years and the average coefficient of retroreflection of the sign face material at the end of that period shall not fall below the following values:-

At an entrance angle of -5°:-

Observation Angle	White	Red	Yellow	Blue	Warboys Green
12'	200	36	136	16	16
20'	144	28	96	11	11

Note: The average coefficient of retroreflection for white Class 1 sheeting, where silk screen printed with transparent colours red and blue shall not be less than 60% of the above values, for red and blue sheeting.

- (b) Retroreflection sheeting and non-reflective film

All retroreflective sheeting and non-reflective film shall be of the same manufacture and compatible one with the other. They shall be processed and applied in strict accordance with the manufacturer's instructions using heat activated adhesive and a heat lamp vacuum applicator with a temperature controller.

Wherever practicable, sign faces shall be formed from a single piece of sheeting; all joints in the sheeting should be kept to a minimum and be either horizontal or vertical. Butt joints shall not be used and all overlaps shall not be less than 6mm and not more than 100mm and in the case of horizontal joints, the uppermost sheet shall overlap the one below. The backgrounds, symbols, borders and cut out letters and numerals, adjacent or otherwise, adjoining sections of panels, borders, symbols and backgrounds of both retroreflective sheeting and non-reflective film must be carefully matched for colour at the time of fabrication to provide a uniform appearance by day and, in the case of reflective signs, by night.

The sheeting manufacturer's recommendations on colour matching must be observed.

(c) Clear coating and edge sealing

Clear coating and edge sealing of signs shall be in accordance with the sheeting and film manufacturer's recommendations.

(d) Silk Screen printing

Signs made by silk screen printing colours, legends, symbols, etc onto retroreflective sheeting or non-reflective film, shall be processed in accordance with the instructions of the manufacturer. Only the silk screen printing pastes and inks supplied by the sheeting and film manufacturer compatible with the specific grade of material may be used.

(e) Sign Marking

Finished signs shall be marked on the reverse with the sign number, and permanently marked with the name or code of the manufacturer and the month and year of manufacture.

(f) Sign Performance Warranty

(i) All signs supplied against this Appendix to the specification shall be warranted in accordance with this Appendix to the specification.

(ii) Upon receipt of this specification and prior to supplying signs against it, the sign manufacturer shall forward a confirmation to the Employer offered jointly by the sign manufacturer and the supply of the retroreflective sheeting and non-reflective film, in which the terms, conditions and benefits of the warranty are detailed.

(g) Repair and Replacement

The sign manufacturer and the sign face material supplier jointly shall repair or replace and when necessary dismantle and re-erect any sign which fails to provide the performance set out in this specification. Such repair or replacement shall be completed within a reasonable period as agreed with the Employer.

## Temporary Traffic Signs

Temporary traffic signs shall be faced with Scotchlite or equivalent retroreflective sheeting, meeting Class 2 of BS873: Part 6: 1983. The minimum coefficient of retroreflection of the material shall be the following values expressed in  $\text{cd}/(\text{lx}/\text{m}^2)$ :

Entrance Angle	Observation Angle	White	Yellow
-5°	12'	70	50
	20'	50	35
	1.0°	5	3
15°	12'	55	35
	20'	45	20
	1.0°	3	2
40°	12'	15	8
	20'	10	5
	1.0°	1.5	0.5



(vii) Details for illumination

All lit plate signs shall have external overhead mounted luminaries as detailed in Appendix 14/5 and on the works order or instruction.

(viii) Switching Control

All illuminated signs shall have the light source controlled by means of a photo-electric cell device located at each sign position. Details of the photo electric control are given in Appendix 14/4. Illuminated signs mounted on columns shall be controlled from the same photo-electric cell as the street lighting lantern.

- (ix) Central Management System. Each sign lantern shall include a Mayflower CMS mini node and control gear integral to the lantern. Any lantern should be equipped with a 6 pin NEMA socket.

(x) Details of Bollards

Bollards are to be retroreflective, self righting, internally illuminated, by LED's powered by solar panels and include a flexible integral knuckle type hinge. Bollard mounting bases shall be steel and set in the surface and attached to the bollard using suitable fixing bolts. The shell shall be fitted with 3M Diamond Grade Prismatic (DG<sup>3</sup>) reflective material and the sign face shall be colour UV stabilised with a guarantee delamination period of 12 years. Shells shall be coated with an antigrime treatment. Solar powered LED illuminated bollards should include replacable batteries with a guaranteed life of 4 years.

2. Additional Information

(i) The covering of any sign

For covering period of up to one year, an adhesive graphic overlay plastic film shall be used to support the temporary sign face sheeting.

“Scotchlite” Graphic Overlay Film, or similar equivalent, durable removable transparent polyester film, shall be used. It shall be coated with pressure sensitive transparent adhesive with a protective removable liner. The film is designed for the production of attractive multi-coloured overlays, which can be applied to a variety of reflective and non-reflective surfaces. When properly applied to smooth surfaced highly retroreflective materials, the application of Graphic Overlay Film results in signs which have a similar day-time and night-time appearance. The “Scotchlite” Brand Graphic Overlay Film contains a pressure-sensitive adhesive which is water activated

and is designed to allow for the overlay to be removable. This allows for repeated use of the surface to which the film is applied.

Temporary sign coverings are to be adhesive waterproof materials compatible with and removable from the permanent retroreflective sign face; applied and removed in accordance with the manufacturer's instructions, and not affective the Manufacturers Warranty for the permanent sign face.

(ii) Traffic Sign Housing Keys

Keys shall be supplied to the Engineer for locks to traffic sign housings when requested.

(iii) Location of Identifying Marks

Not required.

### 3. Traffic Sign Foundations

For tubular steel posts, the foundations shall be a cube of concrete class ST5 to the dimensions shown in the following table: (in cubic metres).

Height to Centre of Sign (m)

		1.5	2.0	2.5	3.0	3.5	4.0	4.5
		0.6	0.6	0.6	0.6	0.6	0.6	0.6
Area of Sign (sq.m)	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	1.0	0.6	0.6	0.6	0.6	0.6	0.75	0.75
	1.5	0.6	0.6	0.75	0.75	0.75	0.75	0.75
	2.0	0.6	0.75	0.75	0.75	0.75	0.75	1.0
	2.5	0.75	0.75	0.75	0.75	1.0	1.0	1.0
	3.0	0.75	0.75	1.0	1.0	1.0	1.0	1.0
	3.5	0.75	1.0	1.0	1.0	1.0	1.0	1.0
	4.0	0.75	1.0	1.0	1.0	1.0	1.0	1.0
	5.0	0.75	1.0	1.0	1.0	1.25	1.25	1.25
	6.0	1.0	1.0	1.0	1.25	1.25	1.25	1.25
	7.0	1.0	1.0	1.25	1.25	1.25	1.25	1.25
	8.0	1.0	1.25	1.25	1.25	1.25	1.25	1.25
	9.0	1.25	1.25	1.25	1.25	1.25	1.5	1.5
	10.0	1.25	1.25	1.25	1.25	1.5	1.5	1.5
	12.0	1.25	1.25	1.5	1.5	1.5	1.5	1.5
	14.0	1.25	1.5	1.5	1.5	1.5	1.5	1.75
	16.0	1.5	1.5	1.5	1.5	1.75	1.75	1.75
	18.0	1.5	1.5	1.5	1.75	1.75	1.75	1.75
	20.0	1.5	1.5	1.75	1.75	1.75	1.75	1.75

The base plate shall be founded on 75mm thick concrete class ST5 and the holes shall then be back-filled with concrete, well consolidated, to within 150mm of the adjoining finished level and the remaining portion carefully reinstated to suit existing conditions or to the requirements of the Engineer. 50mm diameter orange or black (as stated on the works order) UPVC service duct to be provided to all illuminated signs.

Any additional excavation carried out beyond that specified shall be filled with concrete, and the Contractor shall ensure that posts and foundations do not cause any interference with existing drains or services.

The mounting height is 2.1m to base of lowest sign on footways or 2.3m to base of lowest sign on cycleways.

All signs shall be Class 1 reflective and have one or two posts as detailed on the works order.

#### 4. Bollards

New and replacement bollards will be required from time to time and their location and details including traffic sign diagram references which will be given on the works order.

In accordance with the works order, bollards shall be from the following or equivalent:

##### Reflective Bollards

- (i) TMP Heritage c/w base fittings
- (ii) TMP Heritage Solalite range c/w base fitting and 2 batteries

Available from

Traffic Management Products  
Unit 7  
Church Park  
Church Road  
Lowfield Heath  
Crawley  
West Sussex  
RH11 0PJ  
Tel: 08456 808066

#### 5. School Flashing Units

New and replacement School Flashing Units will be required from time to time and their location and details including any traffic sign diagram references will be included on the works order.

In accordance with the works order, school flashing units shall be from the following:

##### 1. Simmonsigns PULSA 4004 school flashing unit (LED)

Available from:  
Simmonsigns  
Stafford Park 5  
Telford  
Shropshire  
TF3 3AS  
Tel: 01952 293 333

## **APPENDIX 13/1 - LIGHTING COLUMNS AND BRACKETS**

1. All lighting columns and brackets shall be of the type listed on the works order or equivalent approved by the Engineer. Equipment shall satisfy the requirements detailed in paragraphs 1 and 2 of this Appendix unless otherwise stated on the works order.
  - (i) the location exposure is  $K=1.8$ ;
  - (ii) Ground level shall be taken as 600mm below the door opening unless otherwise directed by the Engineer;
  - (iii) the columns to be planted without a base plate. Flange based columns may be used as agreed with the Engineer;
  - (iv) the soil type varies;
  - (v) backfilling shall not be used;
  - (vi) where multiple lanterns with remote gear are mounted on a column, 2 door openings shall be provided. Door openings are to be greater than 495mm x 95mm. The door shall be sited to increase the safety of the person working on the equipment. The door shall normally face away from on-coming traffic. The direction of the door shall be identified by the Engineer upon request;
  - (vii) base compartments shall be greater than 160mm outside diameter;
  - (viii) columns shall be of tubular steel unless otherwise instructed by the Engineer or stated on the works order;
  - (ix) corrosion protection treatments shall be as laid out in Appendix 19/3;
  - (x)
    - (a) no painting shall be carried out during extremes of temperature, ie. below 5°C or above 30°C or in wet or foggy conditions;
    - (b) identification numbering:-

columns and signs shall be identified by a number in accordance with a schedule which will be provided by the Engineer upon request. The numbers will be to the design shown on Drawing No. SD1306 and will be not less than 75mm in height for category 1 roads and 50mm for Category 2 and 3.

On lighting columns the numbers shall be located 1.8m above ground level. The numbers shall face in a direction agreed by the Engineer. This will normally be at 90 degrees to the on-coming traffic for category 3 roads and at 45° to oncoming traffic in both directions for Category 1 and 2 roads. The number shall be installed at 45° to oncoming traffic on both sides of a double arm column.

- (xi) wall mountings shall be used when directed by the Engineer;
- (xii) a 6mm/8mm diameter brass or stainless steel earthing terminal complete with two brass washers and a brass nut and locknut shall be provided in the base compartment. The terminal shall be positioned so as to be readily accessible through the door opening. Metal doors shall incorporate a 6mm diameter non-ferrous or stainless steel earthing terminal complete with two brass washers and brass nut and locknut. A baseboard of non-hygroscopic material, minimum thickness 15mm, shall be securely fixed in each compartment and shall be of sufficient size to accommodate cable termination, fuse and control gear where required.
- (xiii) hinged column doors shall be used when directed by the Engineer;
- (xiv) columns to be designed to BS5649 and BD26/99. All door locks shall be greased. Columns to be erected as per 1300 series standard drawings.
- (xv) overhead line warning notices shall be attached to all columns within 25m horizontal distance from an overhead electricity line.
- (xvi) the securing arrangement of the bracket arm to the column shall be positive to ensure that the arm does not rotate and shall be such that the bracket can be fixed on any one of 4 x 90° positions in relation to the column door opening. Bracket fixing screws shall be of stainless steel.
- (xvii) each column shaft shall be suitable for use with any bracket outreach specified for a given mounting height. Each column shaft shall have a base compartment large enough to offer easy access to the equipment therein. A weatherproof door shall be provided for each opening and shall be interchangeable between columns of the same mounting height and type. The doors shall be complete with a locking device and keys shall be provided when requested by the engineer. The locking device shall be of stainless steel and of the anti vandal screw type as directed by the Engineer.
- (xviii) columns to be mounted on bridge parapets shall be fitted with a door retaining device to ensure that the door cannot be dropped over the

parapet. Any steel wire or chain used to achieve captivity shall be galvanised.

- (xix) column offset to be 1.5m to rear of carriageway when columns are sited on verge or at rear of footway when a footway is situated adjacent to the carriageway or as otherwise directed by the Engineer or works order. Columns in the central reserve shall be central.
  - (xx) each column and bracket shall carry a unique identification label to indicate the column manufacturer , date of manufacture and the column and bracket data sheet reference number. The label shall be manufactured from non-corrosive material and securely fixed to the column. The label shall conform with the requirements of standard drawing SD-1300-006.
2. Data sheets, as shown in Appendix 13/2, shall be completed and submitted to the Engineer for approval, for any column that is proposed to be used in the Contract. Data sheets shall be submitted to the engineer for approval prior to installation.

## APPENDIX 13/2 - TYPICAL COLUMN AND BRACKET DATA - SHEET 1

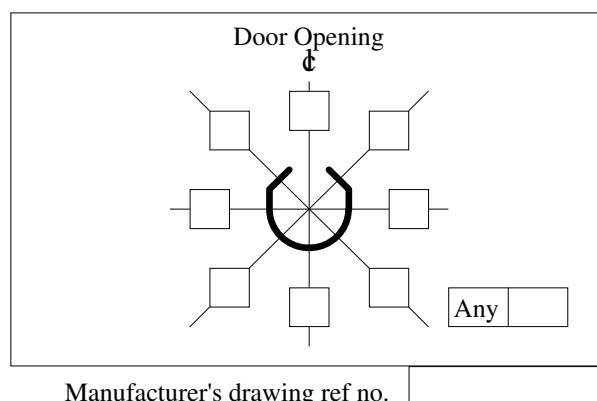
Name of Manufacturer:

Column Reference No

Revision No

Date

NAME OF CONTRACT:



Manufacturer's drawing ref no.

### PART A General

Column nominal height	<input type="text"/> (m)		
Column Material	<input type="text"/>		
Material design strength	<input type="text"/> (N/mm <sup>2</sup> )		
No. of door openings	<input type="text"/>		
Door opening size - Height	<input type="text"/> (mm)		
- Width	<input type="text"/> (mm)		
Cross-section of base compartment	height (mm)	width (mm)	depth (mm)
	<input type="text"/>	<input type="text"/>	<input type="text"/>

Acceptable positions of bracket arms relative to door positions

Corrosion protection (steel columns only) -basic system type (NG1901)

- additional sacrificial steel thickness, above that needed in the design, from the bottom of the column to at least 250mm above the anticipated ground level

 (mm)



**PART B Foundation Data**

Planted Base	Planting Depth	(m)
--------------	----------------	-----

Diameter of concrete surround (if any)

Standard Soil Type Factor G		
630	390	230

Flange base

Bolt hole centres	Hole diameter	Design load/bolt
(mm)	(mm)	(N)

Relevant forces and moments at ground level

Line of action of max. moment relating to door opening


NOTE: For flange plates with slotted holes a diagram shall be included with this Data Sheet

## TYPICAL COLUMN AND BRACKET DATA - SHEET 2

### Part C Acceptable Lanterns

Lantern: Maximum Characteristics

Post Top Column

		Standard k Factors (see BS 5649)				
		1.50	1.80	2.20	2.50	3.00
Lantern connection	Lantern Max Wt	Maximum Windage Area (m <sup>2</sup> ) for standard k factors				
Dia.	Length					

Single Arm Bracket Column:

Lantern Lever Arm (mm)	
Due to wt. of lantern	Due to windage on lantern

Bracket Projection (m)	Ref No.	Drawing No.	Material		Lantern Fixing Angle	Lantern Connection		Lantern Maximum Wt (kg)	Maximum Windage Area (m <sup>2</sup> ) for standard k factors				
			Grade	Design Strength (N/mm <sup>2</sup> )		Diameter (mm)	Length (mm)						

Double Arm Bracket Column:

Lantern Lever Arm (mm)	
Due to wt. of lantern	Due to windage on lantern

Bracket Projection (m)	Ref No.	Drawing No.	Material		Lantern Fixing Angle	Lantern Connection		Lantern Maximum Wt (kg)	Maximum Windage Area (m <sup>2</sup> ) for standard k factors				
			Grade	Design Strength (N/mm <sup>2</sup> )		Diameter (mm)	Length (mm)						

### Part D Certification (08/93)

It is certified that the information given in this Data Sheet has been obtained in accordance with the requirements of BS 5649 as implemented by Departmental Standard BD 26 and the Specification.  
 Signed on behalf of the Contractor

.....Date.....

## **APPENDIX 13/3 - INSTRUCTIONS FOR COMPLETION OF COLUMN AND BRACKET DATA SHEETS**

### **General**

1. When information is not required a dash shall be inserted in the appropriate boxes.
2. Where a Data Sheet is amended it shall be given a new revision number with a date.
3. The revision numbers shall be consecutive letters of the alphabet, commencing with "A".
4. The date of the revision shall agree with the date of the Contractor's signature.
5. The column, or bracket material shall be steel, aluminium, reinforced or prestressed concrete, glass fibre reinforced plastic or any other approved material.
6. The material design strength shall be the minimum specified in the design. Where more than one material is used values for all materials shall be given.
7. All relevant entries shall be made on the Data Sheet before the document is certified by the Contractor.

### **Column Data**

8. The column nominal height shall be selected from clause 2 or 3 of BS 5649: Part 2: 1978 as appropriate.
9. The number of door openings shall agree with the manufacturer's drawing.
10. The cross-section of the base compartment shall be indicated by a dimensioned diagram/sketch.
11. The acceptable positions of bracket arms relative to the door position shall be indicated on the diagram. Where all positions are acceptable the box noted "ANY" shall be ticked.
12. Where concrete is necessary around the planted base in accordance with sub-Clauses 1305.3 and 1305.4 the minimum diameter shall be entered.
13. For flange bases all forces and moments used in the design of the foundations, anchorages and attachment systems shall be given.

14. The corrosion protection system used on the column when new shall be recorded. Where additional steel is provided for sacrificial purposes the amount shall be recorded.

#### Bracket Data

15. The lantern lever arms, weight and maximum windage area quoted shall be based on the most adverse loading on the bracket when it is attached to any of the columns quoted in the compatible column sections.

(Note: The lantern lever arms are the horizontal distances from the centre of gravity of the lantern and, if applicable, the centroid of the windage surface area to the end of the bracket joint.)

## **APPENDIX 14/1 - SITE RECORDS**

As-built drawings shall be produced by the Contractor, and shall be in accordance with the requirements of Clause 1402.

Where necessary large scale inserts shall be produced by the Contractor where layouts are complex.

Actual column numbers, shall be shown on the 'as constructed' drawings and not the contract column numbers.

Three paper copies of the 'as constructed' drawings shall also be provided by the Contractor upon completion. One copy shall be placed in a clear plastic holder which shall be attached to the inside of the door of each feeder pillar; one copy shall be forwarded to the electrical maintenance agent; and the third copy shall be forwarded to the Engineer within one month of completion.

## **APPENDIX 14/3 - TEMPORARY LIGHTING**

No existing lighting shall be removed without the prior approval of the Engineer, but alternative lighting must maintain at least the same lighting levels as were in existence prior to the commencement of the Works Order. The type of temporary lighting to be used shall be agreed with the Engineer prior to the installation and shall comply with the provisions of BS 5489.

Temporary overhead feeds to lighting units shall not be permitted unless approved by the Engineer.

The lighting of any temporary traffic signs and temporary lighting of the works must conform to chapter 8 of the Traffic Signs Manual.

The Contractor shall ensure that any temporary lighting does not cause glare to traffic using the highway or annoyance to occupants of surrounding property.

Temporary lighting shall only be provided for non-routine operations unless otherwise directed by the Engineer.

## **APPENDIX 14/4 - ELECTRICAL EQUIPMENT FOR ROAD LIGHTING**

All equipment shall be of the type listed on the works order or equivalent approved by the Engineer. The Contractor shall, if requested, supply samples of the equipment he proposes to use in the Works prior to installation. Equipment shall satisfy the requirements detailed in paragraphs (i) to (v) of this Appendix unless otherwise stated on the works order.

### **(i) Lanterns and Lamps**

- (a) The lanterns shall be compatible with the columns and brackets offered in Appendix 13/2 and comply with the lighting levels in BS 5489.
- (b) The lanterns are to comply with BS4533.
- (c) The lanterns shall be of totally enclosed design, shall be of sound construction and be capable of being easily dismantled for maintenance. Lanterns incorporating LED light sources should be of a design which efficiently dissipates heat in such a way as to ensure the longevity of the lantern. The method of fixing the lantern to the bracket shall incorporate an adequate locking device.
- (d) The bowl or other part of the lantern providing access to the interior of the lantern shall, when in the closed position, be firmly attached to the fixed part of the lantern. In the open position it shall be attached so that it may not become accidentally detached or blow against the fixed part of the lantern, the bracket or the column.
- (e) The canopy, hinges, toggle catches, captive screws and nuts shall be of cast aluminium or similar non corroding material as approved.
- (f) If the optical system incorporates prismatic refractors, these shall have smooth exterior surfaces to prevent the accumulation of dirt. Refractors wholly within a totally enclosed lantern need not be sealed.
- (g) New lanterns shall be sealed and protected to a minimum ingress protection rating of IP65, BS5490, and so designed that moisture collecting in the bracket cannot enter the lantern. It shall be fitted with a suitable lampholder ready wired to a terminal block of adequate size. Wiring shall be tinned copper conductor suitably insulated with non-hydroscopic heat-resisting material, and the lantern design shall be such as to facilitate wiring on site. Lamp supports shall be arranged to ensure constant register of the lamp in relation to the optical control system under all conditions. Lanterns shall be fitted with a 6 pin NEMA sockets to accept one part photo-electric cells or to allow fitting of Mayflower CMS nodes.

- (h) Replacement lanterns on a one for one basis may have a lower IP rating at the discretion of the Engineer.

(ii) Ancillary Equipment

1. Equipment shall be positioned in the base compartment in accordance with Standard Drawing no. SD-1300-004/005/007/008.
2. Electronic photoelectric control units shall be one part inverse ratio 1:0.5 switching differential and 50 LUX (or 70 LUX as directed by the Engineer) setting with a 6 pin NEMA plug with a manufacturer guarantee of 6 years.
3. Cutouts and isolation units shall be of the combined double pole, single phase and neutral type incorporating an earth terminal and shall be suitable for cables up to 25 mm<sup>2</sup> with capacity for looping in and out.
4. The cutouts and isolation units shall be manufactured from a material which is non-hydroscopic and non-tracking with all metal parts tinned.
5. The terminals and contacts shall be fully shrouded, only accessible by use of a tool, and shall have a rating not less than 25 amps and be suitable for HRC fuses complying with BS88 Part 1.
6. Illuminated traffic signs and bollards shall be fused at 4 amps. Low pressure sodium lanterns, shall be fused at 6 amps. High pressure sodium columns shall be fused at 6 amps for 50w to 125w lamps, 10 amps for 150w to 310w lamps and 16 amps for 360w to 400w lamps.
7. In columns where an outgoing spur cable is to feed illuminated traffic signs, bollards, or other columns a double pole fused isolator shall be installed, one fuse to protect the light unit in the column, the other fuse to protect the outgoing spur cables.
8. On double bracket columns each lantern shall be separately controlled by its own PECU with a separate circuit and subfuse to each lantern.
9. There shall be no group switching.
10. All illuminated traffic signs, (excluding bollards) shall have the photocell eye fitted in the top of the lantern, where possible. Photocells in bollards shall be factory fitted. All illuminated sign photocell shall not be affected by streetlighting.
11. Where a private cable system is used the cable armour or earth shall be terminated using a Central Earthing Terminal to which all other earthing shall be bonded.



12. All column and sign doors shall be Earthed using a 4 sq mm copper 56/0.30 flexible cords PVC insulated colour code Green/Yellow.
13. All sub-fuses, switch fuses and switches shall be labelled with permanent plastic labels to identify the equipment that they feed and the fuse rating, and shall be phase identified with a colour coded plastic label.
14. Chambers for earth electrodes shall be used in accordance with standard Drawing No. SD-1300-010.
15. A label shall be fitted in all column base compartments detailing feed points in accordance with standard drawing SD-1300-006.
16. Lantern manufacturers recommended gear shall be mounted in the lantern.
17. Fuse links shall be HBC to BS88.
18. The electrical installation shall be in accordance with BS7671.

Clause	Item	Manufacturer	Catalogue or Type No.	Requirements
1409	Photo-electric control units	Signs  Columns  Bollards		Contractors Choice - 50/70 Lux one part electric negative switching diff. With low profile eye. Contractors Choice - 50/70 Lux one part electronic negative switching diff 50/70 Lux factory fitted. All lanterns to incorporate 6 pin NEMA socket to allow addition of Mayflower CMS node at a later date

1410	Shorting Plug	Not used		6 pin NEMA
1411	Time switches	Not used		
1412	Ballasts	)Philips Extreme DV Dali ballast Or similar approved.		
1414	Starters	)		Specified on works order.
1415	Capacitors	)		
1416	Cut-outs	Bill Lucy Tofco		
	Fuse Holders	Not used		
	Fuse Links	To BS88 HBC		
	MCB's	Not used		
	Double Pole Isolator			
1418	Switchgear			Specified on works order.

(iii) Feeder Pillars

1. The feeder pillars should be of cast iron or galvanised sheet steel construction with a hinged front door secured by tamper proof lock.
2. All switches and switch fuses shall be labelled with engraved plastic labels to identify which columns, signs, etc. they feed and the fuse rating.
3. Sufficient space shall be allowed in the pillar for the installation of the Regional electricity company supply equipment.
4. A circuit schematic diagram label showing the outgoing circuits shall be mounted on the inside of the pillar door. The label to be manufactured from rigid plastic, pre-printed and adhesive mounted. Lettering to be 3.5mm high in black on a white backboard.
5. Earth electrodes shall be provided at each Feeder Pillar and at the last item of highway electrical equipment on each circuit. The maximum acceptable value of earth electrode resistance shall be 60 Ohms.
6. One feeder pillar key per feeder pillar is to be provided by the contractor for the Engineer.
7. Feeder pillars shall be identified by a white plastic plaque with 40mm high black letters. The plaque must be fixed to the top half of the pillar door with adhesive. Feeder Pillars shall be identified in accordance with the schedule provided by the Engineer upon request.
8. Galvanised feeder pillars shall be painted to the same specification as columns detailed in Appendix 19/3.
9. A clear plastic holder shall be fitted onto the inside of the door of each feeder pillar. An 'as constructed' drawing identifying all the equipment that the feeder pillar supplies shall be placed in this holder.
10. Door locks shall be of the standard triangular type or the standard 'Lucy' type.
11. The manufacturer and the catalogue number shall be specified for each feeder pillar.

(iv) Cables and Cable Joints

1. Network cables shall be XLPE/SWA/PVC with copper conductors in accordance with BS5467 and BASEC approved.

2. Not used (Cable Covers).
3. Cable lines and cable joints are to be shown schematically on the works order. Cable joint marker blocks shall not be used.
4. Cables shall be laid in 100mm diameter orange coloured duct with a minimum wall thickness of 2.0mm in accordance with SD/500/3. No additional protection or support shall be used.
5. Cables following the same route shall be as specified in sub-Clause 1421.7.
6. Installation of power supply cables adjacent to communication cables shall be as sub-Clause 1421.9.
7. Identifying marks to be indented in permanent marker blocks shall not be used.
8. Armoured cables shall be terminated using Charles Manufacturing CET or equivalent approved by the Engineer.

(v) Earthing

1. Equipment shall be earthed in accordance with BS7671 and BS7430.

## **APPENDIX 14/5 - ELECTRICAL EQUIPMENT FOR TRAFFIC SIGNS**

All equipment shall be of the type listed on the works order or equivalent approved by the Engineer. Equipment shall satisfy the requirements detailed in paragraphs 1 to 14 of this Appendix unless otherwise stated on the works order.

1. Equipment described in Clauses 1411 to 1416 shall be positioned in the base compartment of posts.
2. Wiring and installation of components within posts and lit sign units shall be as per Appendix 14/4.
3. Control gear including ballasts, ignitors, starters, Mayflower (CMS) and capacitors shall be integral to the lanterns.
4. Method of switching as detailed in Appendix 14/4 except miniature one part PEC types or Mayflower (CMS) nodes, secured in the luminaire housing by a mechanical screw fixing.
5. Cut outs, isolators and fuse ratings as described in Appendix 14/4.
6. Illumination and electrical work on or to gantries shall be as specified on the works order.
7. Galvanised conduit shall be used between the stub post and the main post where fitted.
8. Flexible conduit shall be used between the bracket mount and the lantern body where necessary.
9. Lanterns shall be of a type designed for sign lighting, shall be constructed of cast aluminium to BSEN 1706:2010 with anti-rotational fixing bracketry and tamper proof access. They should incorporate LED gear trays which can be easily replaced.
10. The lantern shall be suitable for mounting on the brackets offered in Appendix 12/1.
11. Lanterns shall have a minimum ingress protection rating of IP54.
12. Lamps shall be LED's to provide a light output to BSEN 12899 Part 1, (Mean Illuminance E3 Uniformity UE2).
13. Signs shall be externally lit in accordance with the requirements of BS873 where so required by the Traffic Signs, Regulations and General Directions 1994.

14. The electrical installation shall be in accordance with BS7671.

## APPENDIX 14/70 - PLANT REQUIREMENTS

### 1. General

- (i) The Contractor shall ensure that all vehicles are maintained in good working order and serviced in accordance with the manufacturer's recommendations.
- (ii) The Contractor shall when requested by the Engineer produce all relevant certificates for any vehicle within 24 hours.
- (iii) All vehicles used shall have twin flashing lights and a sign prominently displayed with Highway Maintenance in 150mm high black letters on yellow background.

### 2. Type A Vehicles

- (i) A Type A vehicle shall:-
  - (a) have a minimum 1.75 tonne load carrying capacity;
  - (b) carry sufficient traffic signs and cones for short duration closures;
  - (c) carry a comprehensive tool kit;
  - (d) carry a saw and spare blades, brickwork/masonry type;
  - (e) carry crimping tools suitable for up to 25mm copper cables;
  - (f) have a roof rack;
  - (g) carry a wooden extension ladder;
  - (h) have two externally fitted adjustable spot lamps;
  - (i) carry a hand lamp;
  - (j) be fitted with flashing lights at front and rear;
  - (k) carry 2 No. reflective jackets;
  - (l) carry 110V transformer and 12.5mm chuck 110V drill;
  - (m) carry voltage test lamp;
  - (n) carry 500V insulation tester;
  - (o) carry loop impedance tester;
  - (p) carry clip on digital ammeter;
  - (q) carry plastic dust bin liners for waste materials;
  - (r) have adequate racking and storage bins for carrying electrical cables and components;
  - (s) have adequate space for carrying lamps, lanterns etc.;
  - (t) be fitted with mobile radio/telephone;
  - (u) carry cable location equipment;
  - (v) carry a camera with facility to record date/time on photograph or Polaroid as agreed with Engineer;
  - (w) carry isolation warning notices;
  - (x) carry banding tool and accessories;
  - (y) carry hazard warning bollards.

### 3. Platform Vehicle

- (i) The Platform Vehicle to be used shall have a mechanically, electrical or hydraulically operated hoist arm;
- (ii) The working platform shall be of sufficient size and capacity to accommodate two operatives with working equipment;
- (iii) The vehicle shall have operating controls duplicated on the vehicle chassis; the vehicle chassis controls shall have priority control;
- (iv) The vehicle chassis shall be fitted with stabilising jacks;
- (v) The hoist arm or boom shall have interlocks to prevent the hoist arm boom interfering with traffic in adjacent lanes;
- (vi) The hoist's raising and lowering cycle to vehicle chassis to operational height shall not exceed 2.5mins;
- (vii) These facilities shall enable the vehicle to service 15m mounting height columns with 2.5m double arm bracket projection;
- (viii) The interlock system shall ensure that:-
  - (a) the stabilising jacks do not operate until the hand brake is applied;
  - (b) the working platform cannot be moved until the stabilising jacks are lowered;
  - (c) the stabilising jacks cannot be retracted until the working platform is parked;
  - (d) the vehicle cannot be driven with the stabilising jacks down.
- (ix) The hoist system, including jacks, shall lock in the event of any component or combination of components in the system failing;
- (x) The vehicle shall be in all ways suitable for the purposes intended and shall comply with all relevant Regulations, Specifications and Codes of Practice;
- (xi) The working platform shall be fitted with two anchor points for safety harnesses;
- (xii) A warning notice shall be prominently displayed in the cab of the vehicle drawing the attention of the Operators to the dangers which may arise from operating the lift platform in the vicinity of an overhead power line. Instructions for resuscitation from electric shock shall also be displayed in the cab of the vehicle;



- (xiii) A dry powder fire extinguisher shall be mounted in the cab;
- (xiv) The working platform shall have a simple system of communication with the cab of the vehicle;
- (xv) The Contractor shall stipulate in his Tender the type of platform vehicle(s) he proposes to use in the Contract;
- (xvi) A bucket of sand shall be carried on every vehicle for covering of any spillage of hydraulic oils;
- (xvii) The vehicle shall be fitted with flashing beacons at the front and rear;
- (xviii) The working platform and rear working area of the vehicle shall be covered in a non slip finish to prevent accidents should the floor become covered with cleaning solution and/or water;
- (xix) When required the vehicle shall be fitted with adequate lighting for carrying out maintenance functions during darkness;
- (xx) A basic first aid kit shall be mounted in the cab;
- (xxi) The platform shall be capable of being loaded to 210kg minimum without loss of stability;
- (xxii) The platform shall be automatically stabilised for the floor to remain horizontal at all times;
- (xxiii) The platform shall be enclosed to a height of 980mm;
- (xxiv) The platform shall be extended by netting to form a symmetrically disposed catchment area from the centre of the platform, having sufficient strength to retain a whole lantern and mesh size to retain small screws: It shall not be possible for an operative to reach beyond the catchment area;
- (xxv) The platform shall provide clips and trays for all items of working equipment required to carry out the operation;
- (xxvi) The platform shall have four drainage holes in the bottom of a diameter not exceeding 5mm;
- (xxvii) The platform shall be without sharp edges or projections which could be dangerous to operatives;

- (xxviii) Hydraulic lines and other components of the hoist system shall be adequately protected against impact by another vehicle;
- (xxix) No items shall extend beyond the vehicle base plan;
- (xxx) The walkway at the rear of the vehicle shall be fitted with a guard rail if applicable;
- (xxxi) Provide apparatus for manually operating the hoist and jacks under fault conditions.

#### 4. Lorry With Lifting Facility

- (i) The vehicle shall:-
  - (a) have a capacity of lifting a 4.5 tonne cable drum from at least 1m away;
  - (b) have facilities for carrying 15 metre columns.

#### 5. Jointing Tent

- (i) The Contractor shall have available at all times, a specialist tent for cable jointing operations.

## **APPENDIX 14/71 - LABOUR REQUIREMENT**

### **1. Labour requirements shall generally include for:-**

- (i) (a) A Supervisor appointed by the Contractor specifically for electrical works. The Engineer shall be provided with the name of the Supervisor and his nominated deputies and with telephone numbers or details of other means by which they or one of them can be contacted at any time;
  - (b) the Supervisor or his nominated deputy shall be on the Network at all times when electrical work is proceeding and shall be readily available to deal with all related matters;
- (ii) The Supervisor shall report to the Engineer daily by 09.30am with respect to works progress, detailing labour and plant employed on all on-going works and complete reports as required by the Engineer;
- (iii) The Supervisor shall have suitable transportation, and a mobile telephone;
- (iv) Labourers shall not make electrical connections into cut-outs, switchgear or underground cable joints;
- (v) All rates of pay shall as a minimum be in accordance with the Joint Industry Board for the Electrical Contracting Industry for the category of staff of approved electrician and electrician;
- (vi) All electrical personnel including labourers employed on standby duties and non-routine maintenance operations shall hold a current full driving licence;
- (vii) The Contractor shall ensure that all personnel employed are fully equipped with protective clothing for working in all weathers and Site conditions;
- (viii) (a) The Contractor shall provide evidence of competency of all employees engaged on the Contract. The criteria for competent persons is given in the Electricity Council Engineering Recommendation G39 and shall be for the Supervisor, approved electricians, and electricians. In addition it shall apply to any labourers engaged on column erection, routine and non-routine maintenance operations;
- (b) It shall not be sufficient for a person to be classified as an Electrician without meeting the full criteria given in paragraphs 3 or 4.

2. The Supervisor shall:-

- (i) Have a minimum 3 years supervisory experience in public lighting or motorway and trunk road lighting maintenance and installation work;
- (ii) Have the ability to organise all types of Electrical Maintenance functions efficiently;
- (iii) Have the ability to organise and programme the installation of electrical and lighting equipment;
- (v) Have a thorough working knowledge of the:-
  - (a) National Working Rules of the Electrical Contracting Industry;
  - (b) BS 7671;
  - (c) Electricity Supply Regulations;
  - (d) Health and Safety at Work Act;
  - (e) Electricity Council Engineering Recommendations (G39 and notes);
  - (f) Relevant British Standard and ILE Codes of Practice;
  - (g) Working practices of local Electricity Authorities;
  - (h) Electricity at Work Regulations 1989.
- (vi) Have a suitable electrical qualification, which shall be City and Guilds A, B and C (C & G Parts 1-3) certificate or similar as approved by the Engineer.

3. The Electricians/Approved Electricians shall:-

- (i) Have served an approved electrical apprenticeship;
- (ii) Have at least one year's public lighting or motorway lighting maintenance experience;
- (iii) Have the ability to work in an emergency situation without direct supervision on all types of lighting equipment and underground cabling systems;
- (iv) Have an ability to carry out underground jointing of cables up to 120 sq mm 4-core with a voltage rating of up to 1000 volts;
- (v) Have a working knowledge of the:-
  - (a) National Working Rules of the Electrical Contracting Industry;
  - (b) BS 7671;
  - (c) Electricity Supply Regulations;

- (d) Health and Safety at Work Act;
  - (e) Electricity Council Engineering Recommendations (G39 and notes);
  - (f) Relevant British Standard and ILE Codes of Practice;
  - (g) Working practices of local Electricity Authorities;
  - (h) Electricity at Work Regulations 1989.
- (vi) Have a thorough knowledge of maintenance and installation procedures of Highway Electrical Systems including fault finding;
- (vii) Be able to set out jobs from drawings and specifications and requisition the necessary materials;
- (vii) Have suitable electrical qualifications which shall be City and Guilds A and B (C & G 1 & 2)) certificate or similar as approved by the Engineer.

4. Labourers shall:-

- (i) Assist electricians in the installation and maintenance of lighting equipment;
- (ii) Be required to do other work of an unskilled nature under supervision;
- (iii) When used on column and sign erection and installation of other equipment shall be adequately trained and fully conversant with all relevant working methods and procedures;
- (iv) Be trained in basic electrical safety.

## **APPENDIX 14/72 - PURCHASE, DELIVERY, HANDLING AND STORAGE OF MATERIALS**

### **1. General**

The Contractor shall be required to supply all materials and maintain adequate stocks to comply with all routine and non-routine maintenance works, isolation, energising and making safe existing power supplies and cables.

### **2. Sundry Materials**

The Contractor shall include in the routine and non-routine maintenance operations for the supply of sundry materials as follows:-

- (i) All types of fixings screws, nuts and bolts up to 16mm diameter;
- (ii) Lubricants and degreasing agents;
- (iii) Insulation tape;
- (iv) Drills and taps for fixings up to 15mm diameter;
- (v) Connectors for general wiring up to 25sq mm;
- (vi) Cleaning materials;
- (vii) Cables ties;
- (viii) Demoisturising spray;
- (ix) Cable sheathing for general wiring up to 10sq mm;
- (x) Cable fixings for general wiring cables up to 25sq mm;
- (xi) General wiring up to 25sq mm in lengths of up to 1 metre;
- (xii) Fuses up to 32A rating;
- (xiii) Banding, Banding tools and equipment for fault repairs;
- (xiv) Grommets;

The Contractor shall ensure that all teams have supplies of the above materials at all times.

### **3. Compatibility of Electrical Equipment**

All materials and equipment used are to be compatible with existing equipment.

## **APPENDIX 14/73 - LIAISON WITH STATUTORY UNDERTAKERS**

### **1. Emergency Call-out**

- (i) The Contractor shall immediately inform the Statutory Undertaker if assistance is required for making safe his plant;
- (ii) The Contractor shall liaise with the Electricity Authority regarding the making safe, disconnection and reconnection of power supplies.

### **2. Services**

- (i) The Contractor shall liaise with the Electricity Authority in programming of works for disconnection and reconnection of new and existing power supplies;
- (ii) The Contractor shall be responsible for completing all relevant documentation for the provision and disconnection of supplies;
- (iii) The Contractor shall be responsible for obtaining quotations when necessary.
- (iii) When instructed by the Engineer the Contractor shall issue at his own expense a C2 - Preliminary Enquiry under New Roads and Street Works Act 1991, and collate returned statutory undertakers plant details. The Contractor shall operate a system of monitoring the date of issue and return of information which may be audited by the Engineer.
- (v) Where works so described under Appendix 1/13 Clause 3(v) requiring neither notice nor registration, the Contractor shall be responsible for complying with Section 83 Clause (2) of NRSWA 1991.

### **3. Payment for Electricity Authority Services**

- (i) The Contractor shall pay for the provision of Electrical Authority Services as directed on a Works Order. The payment shall often be required before the works are programmed and therefore the payment shall be made to the Electricity Authority within 24 Hours of receipt of a Works Order or receipt of Electricity Authority quotation as directed by the Engineer.

### **4. The Contractor shall comply with the requirements of the Energy Networks Association ER G39/1.**



## **APPENDIX 14/74 - TESTING AND INSPECTION OF LIGHTING COLUMN AND ILLUMINATED SIGN INTERNAL WIRING**

### **1. General**

- (i) The testing and inspection of lighting column and illuminated sign internal wiring shall generally be carried out during daylight hours;
- (ii) The testing and inspection of lighting column and illuminated sign internal wiring shall be carried out as described in Clause 1424;
- (iii) The Contractor shall follow the procedures for isolation, energising and making safe of existing power supplies and cables as described in Clause 1475AR;
- (iv) In addition to the tests outlined in Clause 1424 the Contractor shall note all visual defects on an inspection sheet and submit a hand written copy to the Engineer immediately after test. The Contractor shall retain a copy of the sheet and have it typed before formal submission to the Engineer.

### **2. Methods of Working**

- (i) The Contractor shall:-
  - (a) determine where each individual lighting column or illuminated sign is supplied/controlled from;
  - (b) advise all necessary personnel of the area(s) in which this work is being carried out, and display the location(s) at the depot/office;
  - (c) provide a method statement for approval of Engineer;
  - (d) provide a programme of works. The programme shall include the number of vehicles and operatives to be used;
  - (a) ensure all necessary equipment and plant required to carry out the inspection and testing is available on Site;
  - (b) provide reference numbers and copies of calibration certificates for all test instruments to the Engineer.

### **3. Labour and Plant**

- (i) The testing and inspection of lighting column and illuminated sign internal wiring shall be carried out by an electrician in accordance with Appendix 14/71.

## APPENDIX 14/75 - INVENTORY OF ROAD AND SIGN LIGHTING UNITS

### 1. Street Lighting

Column Height	No. of Units	No. of LED Lanterns*
3m	7	
4m	5	
5m	8393	
6m	1522	
8m	950	
10m	1997	
12m	378	
30m	37	
Wall Bracket	72	
10-12m Phone Mast	12	
Subway Lights	60	
<b>GRAND TOTAL</b>	<b>13433</b>	<b>164</b>

\* No of LED lanterns is included in the 13433.

### 2. Parks & Leisure Lighting

Column Height	No. of Units	No. of LED Lanterns*
6m	244	
<b>GRAND TOTAL</b>	<b>244</b>	<b>0</b>

### 3. Signs and Bollards

Sign Type	No. of Units	No. of LED	No. Reflective/Solar bollards*
Bollards	1111	0	144
Beacons	135	0	
Belisha Beacons	70	70	
Illuminated signs	2698	30	30
School Flashing Units	20	0	
<b>GRAND TOTAL</b>	<b>4034</b>	<b>100</b>	<b>174</b>

\* No of reflective bollards is included in the 1111

### 4. Decorative Lighting

Lighting Type	No. of Units
St. Marys Churchyard Spotlights	10

Broad Street Uplighters	2
Broad Street Fibre Optic Generators	5
<b>GRAND TOTAL</b>	<b>17</b>

4. A complete inventory register will be issued to the Contractor at the commencement of the term in the form of an excel spreadsheet. The register at issue will contain the following basic information of the lighting units within the Borough:-

- Road Name
- Electoral Ward
- Unit location in road
- Unit reference number
- Equipment type (street light, sign or bollard)
- Column height and type
- Lamp type
- Sign face type
- Easting and Northing

The Contractor shall use the basic data provided in the excel spreadsheet to populate the database which is to be provided under the provisions of Appendix 0/1 clause 1481AR - IT Specification of Requirements.

## **APPENDIX 19/3 - REQUIREMENTS FOR LIGHTING COLUMNS AND BRACKET ARMS**

Finish requirements for lighting columns and bracket arms  
Section 1 New columns.

1. Environment: Inland 'A'.
2. Accessibility: Good
3. Durability:  
No maintenance up to 8 years;  
Minor maintenance from 8 years;  
Major maintenance after 15 years.
4. 'Ground level' shall be taken as being 600mm below the door opening.
5. Type of columns shall be taken as planted unless otherwise directed by the Engineer.
6. All columns and bracket arms shall be of steel galvanised to BS EN ISO 1461: Hot Dip galvanised coatings on iron and steel.

### System 1.

6. Surface Preparation and Protective Systems
  - (i) External and internal surfaces, overall treatment;  
Galvanise.
  - (ii) External Surfaces
    - (a) additional overall coats  
1<sup>st</sup> coat: Item 155, 'T' wash;
    - (b) upper section only, additional coats  
1<sup>st</sup> coat: Item 130, Vinyl/vinyl Copolymer Primer, AS mdft 60 microns  
  
2<sup>nd</sup> coat: Item 131, Vinyl/vinyl Copolymer Finish, AS mdft 60 microns  
Colour of finish: as below.  
Minimum total dry film thickness 130 microns
    - (c) ground section, additional coats  
1<sup>st</sup> coat: Item 110, Zinc Phosphate epoxy Primer (2 pack), AS mdft 30 microns.

2<sup>nd</sup> coat: Item 150, Pitch Epoxy (2 pack),  
AS mdft 100 microns.  
Minimum total dft 150 microns.

(iii) Application instructions

- (a) the requirements of sub-clause 1914.21 need not apply for lighting columns which remain in a shop environment after galvanizing;
- (b) 'T' Wash, all shop paint coats on external surfaces and site paint coats where access permits shall be returned on to edges and 25mm inside at ends, at door openings and under base flange;
- (c) all paint coats except Item 131 shall be applied in the shops. Item 131 may be applied in the shops or on site, to overlap Item 150 by 25mm and shall be the last applied coat;
- (d) Item 110 shall be overcoated within 96 hours;
- (e) Item 150 shall be applied over Item 110 from the bottom to 150 mm above plinth level;
- (f) Brushing grade paints may be used at the option of the Contractor.

7. Paint Suppliers

Paint for any one system shall be obtained from the same Manufacturer.

System 2

6. Surface Preparation and Protective Systems

(i) External Surfaces

- (a) overall treatment.

Method: Blast clean with chilled cast iron grit;  
Standard: clean steel, 1<sup>st</sup> Quality, medium profile;  
Aluminium metal spray;  
Item 159, Aluminium Epoxy Sealer, (2 pack) B. Application rate:  
0.05 - 0.07 L/m<sup>2</sup>.

- (b) upper section, additional coats.

1<sup>st</sup> coat: Item 15, Zinc Phosphate Epoxy Ester;  
undercoat, AS mdft 40 microns;

2<sup>nd</sup> coat: Item 15, Zinc Phosphate Epoxy Ester;  
undercoat: AS mdft 40 microns;

3<sup>rd</sup> coat: Item 74, Silicone Alkyd;  
undercoat, AS mdft 50 microns;

4<sup>th</sup> coat: Item 73, Silicone Alkyd finish;  
AS mdft 50 microns;

Colour of Finish; as below;  
Minimum total dft 200 microns.

(c) ground section, additional coats;

1<sup>st</sup> coat: Item 110, Zinc phosphate Epoxy Primer;  
(2 pack), AS mdft 30 microns;

2<sup>nd</sup> coat: Item 150, Pitch Epoxy;  
(2 pack) AS mdft 100 microns;

Minimum total dft 150 microns.

(ii) Internal surface;

Ground section to door area;  
Method: Blast clean;  
Standard: Clean steel, 2<sup>nd</sup> Quality, Medium profile;  
1<sup>st</sup> coat: Item 110, Zinc phosphate Epoxy Primer;  
(2 pack), AS mdft 30 microns;

2<sup>nd</sup> coat: Item 150, Pitch Epoxy;  
(2 pack) AS mdft 100 microns;  
Minimum total dft 150 microns.

(iii) Application instructions;

(a) blast cleaning, aluminium metal spray and all shop paint coats  
on external surfaces and site paint coats where access permits,  
shall be returned on to edges and 25mm inside at ends and at  
door and other openings;

(b) not used;

- (c) Item 159 shall be overcoated within 96 hours;
- (d) on external surfaces, Item 110 shall be applied over item 159 from the bottom to 250mm above ground level. Item 110 shall be overcoated within 96 hours;
- (e) on external surfaces, Items 150 shall be applied from the bottom to 250 mm above ground level;
- (f) Item 74 and 73 shall be applied on Site unless otherwise agreed by the Engineer and shall be taken down to ground level;
- (g) Item 15, and also Items 74 and 73 as shop coats, shall be applied down to 100mm below ground level, overlapping Item 150;
- (h) on internal surfaces, Item 110 and 150 shall be applied from the bottom to 300mm above the door opening;
- (j) brushing grade paints may be used at the option of the Contractor;
- (k) the undercoat shall be of a different shade from the finishing coat.

## 7. Paint Suppliers

Paint for any one system shall be obtained from the same Manufacturer.

Standard Paint Colours Used Include:-

BS4800:00E53: Black  
18B25: Darker Light Grey  
18B21: Light Grey  
12B21: Light Green  
12B25: Dark Green  
Crown Reading Silver



## Section 2 Existing Columns

### 1. General

- (a) All existing surfaces shall be degreased, abraded and cleaned down to a sound finish. Areas found to be damaged, after cleaning down and the prior removal of all traces of rust, shall be examined for structural correctness. If found to be satisfactory, they shall be spot primed to an equal standard using material compatible with the protective finish and with the new paint manufacturer's recommendations. Inspection, surface preparation and painting shall extend to 50mm below ground level. Two finish coats shall be applied to the entire column and bracket in accordance with manufacturer's recommendations. The ground section shall be painted with item 150, pitch epoxy (2 pack). As mdft 100 microns, applied to 250mm above ground level. Verge shall be hand dug and reinstated as existing. Hard surface shall be cold chiselled to 50mm away from base and reinstated to surface level with ST4 concrete, trowelled finish with a gradient to ensure liquid runs away from column base;
- (b) Structurally suspect equipment shall not be overpainted but details referred to the Engineer in writing;
- (c) No painting shall be carried out during extremes of temperature or in wet or foggy conditions;
- (d) Colour will be as directed by the Engineer.

## APPENDIX 32/70 - DRAINAGE PUMPS

### 1. Annual General Service

The following service items shall be included:-

- (1) Isolate supply;
- (2) Lift, examine and clean pumps
- (3) Examine motor stator housings for water ingress
- (4) If wet mounted, examine oil housing for level and water ingress, conditions of seals
- (5) If dry mounted, check for excessive seal or packing leakage, condition of bearings (regrease if required), condition of glands (pack as required), operation of air release pipework
- (6) Check pump impellers for excessive water
- (7) Check strainers and clean or replace as necessary
- (8) Check pump vibrations to assess bearing condition
- (9) Check lifting strain and cables and chains
- (10) Check operation of reflux valves
- (11) Check condition of pipework and supports
- (12) Test insulation resistance of electricity supplies
- (13) Check motor overload settings
- (14) Test earth loop impedances
- (15) Check system operation in both hand and automatic
- (16) Check control panels
- (17) Check fuses for security and correct size
- (18) Check operation of heaters and thermostats
- (19) Check operation of control panel lamps and replace as necessary
- (20) Check alarm operation
- (21) Check floats and clean or replace as necessary
- (22) Check installation for damage
- (23) Check installation security locks
- (24) Check sump condition
- (25) Check lifting equipment (chains / shackles test numbers . dates)
- (26) Read and record hours run meters
- (27) Read and record electricity meters
- (28) Open all enclosures, check for water penetration and condition of seals
- (29) Check and secure electrical connections, clean if necessary
- (30) Check if circuits are labelled correctly, label if necessary
- (31) Check if schematic diagram is intact
- (32) Oil door hinges and locks
- (33) Check all cables and joints for deterioration
- (34) Clear silt and debris from pump inlet filters
- (35) Check pit for build-up of silt and debris. Clear out silt and debris and dispose;

- (36) Check lighting at control position or sumps (where fitted). Replace lamp if required
  - (37) Measure insulation resistance of cables and motor windings
  - (38) Measure earth loop impedance
  - (39) Check correct operation of non-return and isolating valves
  - (40) Check heater operation
  - (41) Secure all covers and doors upon completion of service
  - (42) Produce and submit report of service to include all check and test results.
3. In the event that the Contractor attends a flooded subway and cannot return the pumping system to working order the Contractor shall tape off and sign closed the subway and notify the engineer that the subway is out of use within a reasonable time.

## **APPENDIX 32/73 - CONTAMINATION OF WATERCOURSES**

### **1. Introduction**

- i) This appendix gives guidance on procedures to be followed when clearing blocked drains so that the risk of any contamination of adjacent watercourses is minimised.
- ii) The Environment Agency have been consulted on the preparation of these procedures and it is important that they are further consulted in any specific circumstances where it is perceived that a problem may occur, this being through the Engineer.

### **2. General**

- i) The Engineer shall assess if there is any risk of watercourse contamination. In any circumstances where such a risk exists, the procedures outlined in this appendix must be followed.
- ii) Contamination includes mud/soil being washed/jetted into streams as well as other more obvious contaminants such as diesel fuel/oil/other chemicals.
- iii) It may not be possible to follow these procedures when dealing with emergency flooding situations although every effort should be made to comply with them whenever possible. Where it is not possible to comply with these procedures and where there is a foreseeable risk of watercourse contamination occurring then the Contractor shall advise the Engineer.

### **3. Drain Clearance Operations**

- i) Initial attempts to clear blocked drains should be undertaken by hand rodding and any debris and silt removed by the operation shall be taken to a licensed tip off the Network. In cases of localised blockages, that cannot be cleared by rodding, the contractor shall inform the Engineer immediately.
- ii) Where jetting is requested by the Engineer, the following procedures should be followed:-
  - a) A Vacuum Jetter must be used.
  - b) Jetting should ideally take place from downstream of the blockage in an upstream direction. The pipe should be plugged below the jetting point to prevent contaminants flowing to the watercourse. This jetting could take place from a manhole,

although it may be necessary to make a temporary excavation into the pipeline in some circumstances, where this is instructed by the Engineer.

- c) Where it is not possible to jet in an upstream direction the pipe should be plugged below the blockage and the vacuum jetter then used to “back jet” to the suction pipe.
- d) If it is not possible to operate the vacuum jetter as in either (b) or (c) above, then the Engineer shall determine the appropriate course of action.

## **APPENDIX 36/70 - EMERGENCY FACILITIES**

1. Emergency facilities shall be provided by the Contractor to make safe lighting units after road traffic accidents including the removal of debris, as required to return the highway to a safe condition. Approximate quantities for this operation are given in Appendix 1/13.
2. All debris shall be removed to a licenced tip off the Network.
3. The Contractor will mobilise during normal working hours following a call out by the Engineer or out of normal working hours following a call out either by the Engineer or an appointed member of Reading Borough Council's Out-of-Hours emergency team.

Following Reading Borough Council's scouting, Reading Borough Council would like the Contractor to attend the following faults on an emergency call out basis, for the following faults only (without an instruction from RBC):-

Bollard Shell Knocked off (Baselight)

Knocked down (Springback)

Any other faults where the bollard is in any way not visible

4. The Contractor shall attend to any emergency repairs, such as any missing bollard or bollard knocked out of place, detected by the Contractor immediately and the Engineer shall be informed at the earliest convenience.
5. The Contractor shall organise emergency facilities to comply with a response time of 1 hour at any time of night or day, 7 days a week including Bank holidays.
6. The response time is defined as the time between the Contractor receiving the initial call out and his emergency personnel arriving at the site of the emergency. During this time, the Contractor will have contacted his staff, given them detailed instructions and ensured that all necessary facilities are mobilised.
7. After making safe the electrical installation, the Contractor shall ensure that the Site is left in a safe condition and that warning signs, cones and lamps are positioned as appropriate to the situation. See also Clause 1370AR and Appendices 1/17 and 32/70.
8. The following plant and equipment, with drivers/operators as applicable, shall be provided by the Contractor to ensure emergency services within the stipulated response time;

- (a) 1 No. lorry with lifting facility

- (b) 1 No. platform vehicle
  - (c) 1 No. suitably equipped electricians van (Type A vehicle)
  - (d) 1 No. 1.5 tonne Pick-up
  - (e) 6 No. portable Roadworks Ahead signs (diag. 564) 750 mm
  - (f) 6 No. portable Road Narrows Left/Right (diag. 571) 750 mm
  - (g) 6 No. portable Keep Left/Right signs (diag. 610) 750 mm
  - (h) 50 No. Traffic Cones size 750 mm
  - (i) 50 No. Road Danger lamps
  - (j) Pedestrian/Traffic barriers (quantity as appropriate)
  - (k) 20 No. Traffic Signals `Out of Order' signs
  - (l) 20 No. "Road Closed" signs
  - (m) 20 No. "Diversion" without arrows signs
  - (n) 20 No. each "Diverted Traffic" signs left/right/straight
  - (o) 2 No. floodlight sets
  - (p) 2 No. disc cutters/masonry saws
9. A minimum of 4 operatives trained in the use of the plant, equipment and materials listed above shall be available for emergency call out during the summer and winter period.
10. Details of the enquiries and call-outs shall be recorded on forms approved by the Engineer and details passed to the Engineer before 0930 on the next working day.
11. It is anticipated that most emergencies will be dealt with satisfactorily within 2 hours by 1 or 2 operatives with equipment and transport. However if an incident requires a greater site presence than this, then the Engineer should be advised immediately so that further instructions can be given. Contact names and telephone numbers will be supplied for this purpose by the Engineer.