4.5.9 Network cabling and electrical components inc. feeder pillars

ELECTRICAL TESTING

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|  | The cyclic maintenance of road lighting units shall be carried out in accordance with TD 23/99 of the DMRB, and to the testing frequency stated in GM701-ADAMR.  The *Contractor* shall carry out the inspection and testing of electrical installations in accordance with BS 7671. The *Contractor* shall provide inspection and completion certificates to the Overseeing Organisation in accordance with BS 7671 and to notice periods determined in contract Maintenance Requirements Plan. |

# maintenance requirements

* Electrical testing to be carried out every 6 years (GM 701 – PG 86)
* Every Lighting Unit and network, on completion and before being energised, shall be inspected and tested to verify that the requirements of BS 7671 have been met (MCHW Vol 1-1424)
* The following tests shall be carried out in the sequence indicated below and recorded on a Schedule, in an appropriate format, which shall be submitted to the Overseeing Organisation immediately after completion of all the tests, including those on Lighting Units, within each network:

(i) For Lighting Units (b), (d), (f), (g) apply.

(ii) For networks (a), (b), (c), (e), (f), (g), (h), (j) apply.

Standard methods of testing are given in BS 7671.

(a) Cable sheath insulation test.

(b) Continuity of protective conductors including main and supplementary equipotential bonding.

(c) Earth electrode resistance.

(d) Insulation resistance at a test voltage of 500 V to be not less than 1.0 M ohm. (e) Insulation resistance at a test voltage of 500 V to be not less than 6 M ohm. (f) Insulation of the site-built assemblies.

(g) Polarity, including the continuity of circuit conductors.

(h) Earth fault loop impedance at every cut-out.

(j) Operation of residual current devices

* The cable sheath insulation test shall be carried out using an insulation tester. The insulation resistance test of 1000 V, direct current, shall be applied and maintained for not less than one minute between the continuous cable armouring or earth conductor and the general mass of earth. The measured insulation resistance shall not fall below 1.0 M ohm for the full duration of the test. The cable sheath insulation test shall be carried out after the cable has been laid and the trench backfilled, but before jointing has taken place. (MCHW Vol 1-1424)
* Voltage readings shall be taken at each feeder pillar and at the terminals of the last current-using equipment on each circuit, with all equipment energised. (MCHW Vol 1-1424)
* The Contractor shall give not less than 7 days’ notice to the Overseeing Organisation of his intention to carry out any of the tests specified and the Overseeing Organisation shall be given the opportunity to witness such tests. (MCHW Vol 1-1424)
* The Contractor shall furnish the Overseeing Organisation with two copies of a certificate verifying compliance with BS 7671 upon satisfactory completion of the inspection and tests. (MCHW Vol 1-1424)
* The Contractor shall ensure that all test instruments have been calibrated and adjusted in accordance with BS EN ISO 9001 and come complete with calibration certificates to verify that BS EN ISO 9001 has been complied with. (MCHW Vol 1-1424)
* Input into the energy consumption inventory in accordance with BSCP520 [Ref 46.N]. (GM 701 – PG 86)
* During electrical testing check and clean identification markers on lighting equipment (GM 701 – PG 86)
* Feeder pillars shall be structurally and electrically maintained to ensure operational integrity according to manufacturer's instructions. (TM501 – RLM – PG9)
* Feeder pillar thermostats and heaters, where installed, shall be checked for adjustment to 5oC and that the heater is operational. (TM501 – RLM – PG9)
* Within the feeder pillar, an up to date as-built electrical wiring schematic and layout drawing shall be available. (TM501 – RLM – PG9)
* The external and internal surfaces of the feeder pillar shall be cleaned in accordance with manufacturer's recommendations and specifications. (TM501 – RLM – PG9)
* All locks, catches and hinges associated with the feeder pillar shall be lubricated in accordance with manufacturer's recommendations and specifications.

(TM501 – RLM – PG9)

* All electrical terminations associated with the feeder pillar shall be cleaned, tightened and renewed as necessary in accordance with manufacturer's specifications. (TM501 – RLM – PG9)

* All electrical switchgear associated with the feeder pillar shall be maintained for safe electrical and mechanical operation in accordance with the manufacturer's instructions.

(TM501 – RLM – PG9)

# UNIT / MEASUREMENT / ITEMISATION

* Electrical testing of network cabling and electrical components inc. Feeder pillars 386 Number (MOM Schd. B Issue 7 PG19)
* The measurement of electrical testing of network cabling and electrical components inc. Feeder, shall be the number of columns within which the item is carried out (MOM Schd. B Issue 7 PG19)
* Separate items shall be provided for cleaning and changing of lighting lamps, electrical testing of network cabling and electrical components including feeder pillars and structural testing of lighting columns (<20m in height) in accordance with Chapter II paragraphs 3 and 4 and the following:

Group Feature

I 1 Sub-Asset Type.

II 1 Item.

(MOM Schd. B Issue 7 PG20)

# additional information

* The term ‘network’ is defined to ensure that testing to Clause 1424 is not applied to Lighting Units and feeder pillars where it could cause damage to equipment.

(MCHW Vol 2-NG1401)

* New Lighting Units should not normally be switched on and left in operation, apart from testing, before the road is opened to traffic. They are liable to mislead and confuse drivers particularly where temporary diversion routes have been introduced or a newly completed road has not been opened to traffic. Existing Lighting Units should not be switched off until the new permanent, or appropriate temporary, Lighting Units are available. (MCHW Vol 2-NG1404)
* The use of methods of testing other than those given in BS 7671 is not precluded provided they give no less effective results (MCHW Vol 2-NG1424)
* An acceptable test of cable sheath insulation is provided by the application of 1000 V from an insulation tester (MCHW Vol 2-NG1424)
* The Overseeing Organisation requires a certificate from the Contractor verifying compliance with BS 7671 in order that the Overseeing Organisation can fulfil its duties under the Electricity at Work Regulations 1989. The certificates should be forwarded to the Overseeing Organisation along with other site records (MCHW Vol 2-NG1424)
* Distribution Network Operator (DNO) supply is subject to Electricity Supply Regulations and faults shall be reported to the DNO SI 2001/3263 [Ref 6.N].
* Private network cabling shall be maintained in accordance with BS 7671 [Ref 5.N].
* Circuit protective devices shall be checked for correct rating and replaced where defective.