

SOUTH DUBLIN COUNTY COUNCIL
Traffic Management Centre
Roads (Traffic and Transportation) Department



TECHNICAL SPECIFICATION 4
SDCC-TS-04
SIGNAL INSTALLATION REQUIREMENTS

**REQUIREMENTS FOR THE DESIGN AND INSTALLATION OF
TRAFFIC CONTROL EQUIPMENT
FOR SOUTH DUBLIN COUNTY COUNCIL**

Issue 5.0
May 2014

TRAFFIC MANAGEMENT CENTRE
ROADS (TRAFFIC AND TRANSPORTATION) DEPARTMENT
SOUTH DUBLIN COUNTY COUNCIL
COUNTY HALL
TALLAGHT
DUBLIN 24

1. GENERAL REQUIREMENTS

- 1.1** The works shall be carried out and all materials and equipment shall comply with current relevant Irish or British Standard specifications.
- 1.2** Installation shall comply with the requirements of the DETR Local Transport Note (LTN) 1/98, The Installation of Traffic Signals and Associated Equipment and any contract documents prepared by South Dublin County Council for the Scheme. Where the requirements of this document exceed the requirements of LTN 1/98 and the contract documents, this document shall take precedence.
- 1.3** Traffic signal pole positions shall be marked out on site and agreed with SDCC Traffic Management Centre and the Resident Engineer prior to installation commencing.
- 1.4** Equipment provided shall meet the requirements of TRG 1068 (Electro Magnetic Compatibility Tests).

2. CONTROLLER, POWER SUPPLY AND TELEPHONE CIRCUITS

- 2.1** Controllers shall be installed in accordance with the Standard Detail SDCC/SD/01 and shall contain an UTC interface.
- 2.2** Dimming shall be operated by a photoelectric cell and normally operate at 160 volts. The solar cell shall be carefully sited to avoid street lighting or overshadowing that would be detrimental to normal operation. If ELV heads are to be used dimming shall be pro-rata. It should be noted that ELV heads may only be used in the context of a full ELV installation.
- 2.3** Power, the supply of which shall be arranged by the Engineer, shall be un-metered, single phase with protection against overcurrent and short circuit terminated in a Haldo pillar (or agreed equivalent) located in the proximity of the controller in an agreed position, and ducting shall be installed between the pillar and the controller. The supply shall be 230 volts (+/- 6 percent), 50Hz (+/- 1 percent), 30amp minimum. Actual power supply requirements shall be confirmed by the Contractor taking into account the number of heads, length of cable runs etc.

- 2.4 It is not acceptable to source ‘Mains Supply’ from Public Lighting (PL) poles, but on occasion with the prior agreement from the council, for the purpose of a ‘**temporary supply**’, it may be acceptable on a short term bases to do so and under such circumstances the following should be observed:

Temporary supplies taken from PL poles should have adequate fusing and isolation at both ends of the circuit path. On the PL poles side, a HRC fuse carrier unit (or equivalent) should be installed to protect the circuit and to act as a form of isolation. Cable and fuse sizing should be chosen to reflect the existing wiring of the PL pole. Supply cables leaving the PL pole to temporarily service other applications should have the same conductor diameter as the PL supply conductor. In circumstances where it is required to reduce the diameter of the temporary supply cable leaving the PL pole the use of an appropriate fused unit should be employed to correctly step down the cable conductor diameter and associated current rating.

On the user end of the circuit path (traffic controller cabinet/CCTV cabinet/mini pillar), properly rated fused protection should be employed to protect against over current and act as a form of isolation (Lucy Triton or equivalent). All 13Amp sockets installed in the unit should be protected with the use of a Residual Circuit Device (RCD).

- 2.5 When connecting to ‘Mini Pillars’ there should be two separate and distinct sections, the ESB supply side and the consumer side. The ESB supply side should incorporate a suitably rated main fuse unit along with an isolator unit (supplied and fitted by the ESB). The consumer side should incorporate a fused unit isolator (Lucy Triton or equivalent), the proper fusing convention and cable sizing should be adhered to. Glands, grommets and shrouds should always be used to maintain the IP rating of the electrical equipment.
- 2.6 In situations where the source of the incoming ESB supply is taken off an overhead power line it is acceptable to have the **ESB side** of the power circuit located on the ESB pole itself provided that suitable IP exterior rated equipment is used and it is placed at an adequate distance up the pole (5-7 metres). The correct SWA glands and PVC sleeves/shrouds should be used. The Consumer side of the power circuit should be located in the mini pillar as normal.
- 2.7 Low Voltage and Extra Low Voltage cabling should be kept separate and segregated and not run in the same circuit path or overlap within controllers and cabinets.
- 2.8 The permanent power connection point shall be connected to a permanent ESB supply with corresponding ESB MPRN (Metre Point Registration Number). Permanent power supplies from public lighting columns will not be acceptable under any circumstances.
- 2.9 A consumer earth terminal shall be supplied. This terminal shall be located adjacent to the mains “cut out”.
- 2.10 A minimum of one twin 13 amp electricity socket, RCD or equivalent shall be provided within the controller case.

- 2.11 The following should be noted:

- a) An agreed communications circuit shall be terminated in the controller case; and
- b) ducting from the controller case to the nearest communications chamber shall be provided. The location of the communications chamber shall be agreed on site with the Engineer.

3. STREET FURNITURE

3.1 Traffic signal heads shall be LED based and fitted with backing boards and appropriate hoods. Any heads mounted at a height greater than 2.1m above ground level (measured to the underside of the head) shall utilise LED technology traffic signal heads (with approved lamp monitoring facilities) and all related electrical equipment shall be housed within an appropriate sized midi pillar at the base of the pole. Within the midi pillar all electrical connections shall be made off within an appropriately IP rated PVC enclosure. Correct glands and shrouds should be employed to maintain the integrity of the IP rating of the enclosure.

3.2 Poles:

- a) shall be galvanised with a grey plastic coated sleeve;
- b) shall be installed so that the pole is not less than 800 mm from the nearest kerb face and no part of any head fixed to the pole shall be within 500mm of the nearest kerb face; and
- c) cranked poles may only be used by agreement.

3.3 PRISMA DAPS push button units shall be used unless advised otherwise by the Council. Audible devices shall be used when appropriate but tactile devices shall always be utilised.

3.4 Poles carrying push buttons shall be installed 0.5m from the white lines of the crossing to allow pedestrians and cyclists to easily reach the push buttons.

3.5 Pole caps shall be grey coloured and securely fixed to the pole using a bolt or other mechanism. Pole caps shall not protrude above the top of correctly installed pedestrian or traffic signals heads.

4. CABLING

4.1 LV (low voltage) and ELV (extra low voltage) cabling shall be steel wire armoured colour coded except for detector feeder cables that shall be unarmoured single pair. The armouring shall be utilised as the Earth Continuity Conductor and shall have adequate conductivity.

4.2 At least 4 spare cores at the pole cap shall be provided for each LV cable run and each ELV cable run to push buttons .

4.3 Joints shall not be permitted for LV cabling or ELV cable runs to push buttons.

4.4 All cables shall be laid in ducts and LV and ELV shall be segregated into different cables.

4.5 All cables (LV and ELV) shall be clearly labelled at the controller and in chambers using indelible ink on plastic labels securely fixed to the cable to indicate their function in sufficient detail to allow future maintenance and modification.

4.6 Separate neutrals shall be utilised for signalling, regulatory signs and push buttons.

- 4.7 Unused cable cores at the controller shall be connected to earth at the controller end only.
- 4.8 Unused cable cores between poles shall be connected to earth at one pole only.
- 4.9 Earthing shall be in accordance with British Standard Code of Practice CP1013 or equivalent.
- 4.10 Traffic signal cables shall not pass through ducts or chambers used by any other service and other services shall not utilise traffic signal ducts.
- 4.11 The nearside primary on each approach shall be cabled back to the controller separately from any other signal head. The traffic signal heads showing to any one stop line shall not be fed by the same cable.

5. APPROVAL

- 5.1 Equipment shall be type approved to appropriate UK DETR/HA Specifications unless otherwise stated by the Council.
- 5.2 All controllers shall be type approved to the latest edition of TR 2210 (formerly TR0141C).

6. TESTING

- 6.1 The following tests shall be undertaken and copies of appropriate test certificates supplied to the Engineer on completion of the relevant tests:
 - a) factory acceptance tests of the controller;
 - b) on site electrical tests, in accordance with the current edition of British standard BS7671 (Requirements for Electrical Installations) and TR0102A, including earth continuity, insulation resistance test, polarity check, earth loop impedance test and (if fitted) ELCB test;
 - c) loop and loop feeder cable tests; and
 - d) site acceptance test of the complete installation.
- 6.2 An 'Earth Fault Loop Impedance Test' should be carried out to establish whether the 'Neutralising Link' has been placed in the circuit path prior to the consumer supply point. If resistance readings indicate that the neutralising link has been omitted then the neutralising link should be put in place to ensure that electrical circuit equipment (MCB/RCD trip times) response characteristics are maintained.
- 6.3 The Engineer, and others as the Engineer may consider necessary, shall witness all tests. In the event of the failure of tests necessitating re-testing, the Contractor shall meet all reasonable time and travel and subsistence costs incurred by the Engineer or others attending the retest.
- 6.4 Commissioning and switch on will not take place until:
 - a) all tests are completed to the satisfaction of the Engineer and a Completion Certificate as prescribed in the contract documents is issued;
 - b) all works are completed; and
 - c) the final safety audit (if required) is satisfactorily completed
- 6.5 The Engineer may allow minor works that do not affect safety to be completed after switch on.

7. MAINTENANCE

- 7.1** The traffic signal equipment will be maintained by the installation Contractor after switch on until a fault free period of 30 days is achieved. The maintenance shall be undertaken in accordance with relevant South Dublin County Council maintenance performance requirements.
- 7.2** After the Council's maintenance Contractor takes over maintenance the installation Contractor shall provide a one-year return to base warranty service.

8. TUNING

- 8.1** The Engineer shall, within three months of switch on, tune the operation of the timings and timing plans.
- 8.2** The Contractor shall allow for incorporating any adjustments in an updated controller EPROM and installation in the controller within 2 weeks of receiving the necessary information. Revised controller specification forms and if necessary updated drawings shall also be reissued prior to installation of the new EPROM.

9. DUCTING AND CHAMBERS

- 9.1** All installations shall be fully ducted using a spinal ducting system connecting between chambers located in verges/footpath (but not located in tactile paving). Poles, other equipment and loops shall be connected to the spinal chambers in an agreed manner. Where there are two or more signal installations on the same scheme they shall be linked by 2 no ducts.
- 9.2** All legs of traffic signal installations shall have duct crossings, ie so that a duct 'ring' is achieved.
- 9.3** The number of ducts between chambers in the spinal system shall not be less than three in carriageway and two elsewhere. The actual number shall be shown on the appropriate drawings. In any case sufficient ducts shall be provided to allow complete re-cabling of the junction while the signals remain fully operational.
- 9.4** Ducts in carriageway shall be installed at 750mm deep and 450mm deep elsewhere.
- 9.5** A 50mm red 'hockey stick' duct shall be installed from the ESB mini pillar to the traffic/CCTV mini pillar. An additional 50mm red 'hockey stick' duct shall be installed from the nearest public lighting column to the traffic/CCTV mini pillar.

- 9.6** Ducts shall be:

- a) 100mm diameter medium/high density smooth internal bore polyethylene, minimum wall thickness 5mm (+/- 0.1mm) coloured orange with the words "Traffic Signals" printed in 9mm high white lettering along the outside at intervals not exceeding 1 metre;
- b) impact resistant, impervious to water and sufficiently flexible to accommodate undulations in the trench; and
- c) when installed shall be properly jointed or sleeved to provide a continuous smooth internal bore with the printed words "Traffic Signals" uppermost.

9.7 A single, securely fixed, polypropylene draw wire, shall be left in every duct after installation of the cabling.

9.8 Duct chambers shall be Cooper Clarke or agreed equivalent:

- a) spinal chambers shall not be less than 600 by 600mm (nominal);
- b) chambers with integral pole foundations shall be 300 by 300mm or 450 by 450mm (nominal); and
- c) chambers for loop tails shall be not less than 300 by 300mm (nominal) but loop tails may be run into spinal chambers and chambers with integral pole foundations when appropriate.

9.9 Chamber lids shall be occasional run over unless otherwise required by the County Council.

10. MISCELLANEOUS

10.1 All heads shall be bagged until switch-on and appropriate temporary signing shall be installed and maintained until three months after switch on when they shall be removed.

10.2 Two copies of the as-built drawings (including layout, heads, cabling (including core allocations and spare cores) and staging) at 1:200 scale shall be handed over prior to take-over. Drawings shall also be provided electronically in an agreed format and/or on paper.

10.3 One controller User Manual suitable for installation, operation and maintenance shall be provided and two sets of controller keys shall be provided, per site.

10.4 A site logbook of a type agreed with the Engineer shall be provided and this shall be stored together with one of the supplied controller specifications and one set of drawings in a waterproof wallet fixed inside.

11 ADDITIONAL INFORMATION

11.1 Additional information or clarification may be obtained from:

Traffic Management Centre

Land Use, Planning and Transportation Department
South Dublin County Council
County Hall,
Town Centre,
Tallaght,
Dublin 24

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