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|  | SECTION 2 |  |
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|  | SPECIFICATION |  |
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|  | MATERIALS AND |  |
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|  | WORKMANSHIP CLAUSES |  |
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All works shall comply with Milton Keynes University Hospital Standard Material and Workmanship Clauses

 Unless otherwise stated in this document.

**PROPERTY – MILTON KEYNES UNIVERSITY HOSPITAL**

**WORKS – FIRE DETECTION REPLACEMENT PROJECT**

**DESCRIPTION**

The installation, described in more detail below, comprises:-

* Install new wiring to adapt several loops to accommodate the new devices throughout.

 Install new Gent

* Stripping out the existing bells throughout once the area is covered by sounders.
* Install new detection in all wards to have dual sensing, voice and flashing beacon.
* Investigate the existing site circuits to plan the best place to carry out the alterations.
* Allow for a full down load before carry out the alterations and forward all information.
* The installation of wiring containment comprising galvanised steel conduits, galvanised steel cable basket, galvanised steel cable trunking and galvanised perforated steel cable tray to accommodate the new loops wiring.
* Small Power Installation to supply any equipment relating to these works.
* Installation of the new s-quad dual optical-heat devices and include all bases.
* Installation of all wiring shall be rated as the “standard” fire resistance as described in BS 5839-1, FP200.
* Modifications to the existing network and all associated connections, devices and nodes needed. O&M manuals and Log Book.
* Install all new devices on the WIN MAG system and control panel equipment and programme accordingly to allow remote AP software.
* Record drawings, commissioning certification.

**2.1. GENERAL REQUIREMENTS**

**2.1.1 Scope**

This Specification covers the fire detection alterations, supply, installation, connection, commissioning, testing and setting out; the system must be modified to allow for additional fire detection throughout the main buildings.

The Tender will be computed in strict accordance with the Specification, however, where the Contractor wishes to put forward alternative equipment or method to that specified, notice in writing must be given at the time the Tender is submitted stating

The alternative equipment or method proposed, and the cost implications of the alternative submitted

Should the alternatives although agreed by the Engineers prove of lower quality when installed than that specified, the Contractor shall revert to the original material or intent at their own cost.

**2.1.2 Related Documents**

This Specification shall be read in conjunction with the Conditions of Contract, the “Particular Clauses” and any supplementary Specification(s), schedule(s) and Contractors

Safe Working and Conduct Policy issued with it and enumerated in the invitation to tender or in the Appendix to the “Particular Clauses”. In the event of a discrepancy between this Specification and any drawing(s) or particular specification, the drawing(s) or specific Specification shall be followed.

**2.1.3 Regulations and Codes of Practice**

The installation(s) shall comply with all relevant statutory instruments and regulations current at the date of Tender (unless otherwise indicated) and in particular with the following:

• The IEE Regulations for Electrical Installations, BS7671 17th Edition, including all current amendments and guidance notes.

• Any special regulations issued by the Electricity Supply Regulations 1937.

• Electricity at Work Regulations 1989.

• Fire Detection For Buildings BS5839

• The British Gas Safety Regulations.

• The latest relevant BSI, BSIEN and Codes of Practice.

• Health and Safety at Work Act.

• Gas Safe Regulations.

• CIBSE Guides and Codes of Practice.

• HVAC Duct Work Specifications (latest edition), and SMACNA where stated.

• Any regulation issued by the local Gas, Water or Electricity undertakings.

• Factories Act.

• Building Regulations.

• Offices, Shops and Railway Premises Act.

• The Electromagnetic Compatibility Regulations 2005.

• National Inspection Council for Electrical Installation Contracting (NICEIC) Technical Manual.

• Waste Electrical and Electronic Equipment Directive.

• H & S Approved Code of Practice “Work with Asbestos Insulation and Asbestos Coating”.

• Asbestos Regulations.

• Construction Design Management Regulations.

• Control of Substances Hazardous to Health (COSHH Regulations).

• Noise at Work Regulations.

• Health Building Notes.

• BSRIA Technical Memoranda and Manuals.

The specification and service sheets should be read in conjunction with Milton Keynes University Hospital specification for electrical services standard materials and workmanship clauses which is available from the Hospitals Estates Division.

**2.2. Drawings**

These drawings are intended to show approximate positions and routes only. Dimensions should not be measured from these drawings. Final arrangements are to be agreed on site.

The contract shall be appointed on a Design & Build basis. The contractor shall provide full design calculations, installation layouts, schedules of equipment and installation.

Details including technical submittals, all ground and builders works required for the entire fire detection system to be operational as described in this specification

The electrical/fire contractor will be required to provide a full set of working drawings. To be fully coordinated to avoid clashes with other services and detail all containment systems, cable routes etc.

**2.3. Fire Alarm Installation**

Except as otherwise indicated, fire alarm systems shall be wired with LSOH cables drawn in steel conduits or installed on cable tray.

Except as otherwise indicated, fire alarm systems shall be wired in LSOH cables drawn in steel conduits or on cable tray. All wiring shall be rated as the “standard” fire resistance as described in BS 5839-1, Section 2 and shall be in 2 core LSOH Firetuff, FP200 or equal and approved.

All fire alarm cables shall be fixed to cable tray using fire rated metallic clips.

Circuits shall be of the self-monitoring closed or open circuit type using equipment specified. Systems shall be 24V DC and cables shall be sized to obviate voltage drop on the system.

The mains supply (240V) shall be taken from a separate switch fuse or circuit breaker and this unit shall be coloured “RED” and marked “FIRE ALARMS - DO NOT SWITCH OFF”.

Final positions of all bells and pushes will be decided on site by the Engineer.

Fire alarm systems shall be installed and wired in accordance with BS 5839:2013.

**2.4. Electrical Installation**

All electrical works shall be carried out by a company which is a NICEIC approved contractor, or the contractor must be accredited by an electrical association or they will not be accepted.

All equipment, locations and design elements shall be submitted in a timely manner, for review, comment and approval by the contract administrator, prior to commencing on site. The contractor is deemed to have visited site before submitting their tender and shall be satisfied as to the full extent and nature of the works. Claims for lack of knowledge will not be considered.

No claim for additional works shall be considered due to failure to visit the site or interpret the requirements correctly. Any questions relating to the site or the works must be raised before the return of tenders.

Milton Keynes Hospital is a live working hospital which shall remain in operation during the project.

**2.5. Contacts**

Queries Relating to The Tender

• The Trust will endeavour to answer all questions as quickly as possible, but cannot guarantee a minimum response time.

• Clarification requests can ONLY be submitted via the Procurement Portal (Precontract).

• No requests for clarifications will be accepted after specify time, specify date to fit with EU requirements to allow Potential Providers their right to 30 days before closing date to respond to questions.

• In order to ensure equality of treatment of Potential Providers, The Trust intends to publish the questions and clarifications raised by Potential Providers together with The Trust’s’ responses (but not the source of the questions) to all participants on a regular basis.

• Clarification messages sent by The Trust will be sent via the Discussions functionality on the Procurement Portal (Precontract)

**2.6. Scope of building works**

The scope of the building works are mainly hole penetrations and fire stopping which must be carried out by the awarded contractor

**2.7. Redundant Equipment**

The electrical contractor shall strip out and remove all redundant electrical services.

**2.8. System of wiring**

Unless otherwise detailed new wiring shall be installed and comprise lsoh (6242b) sheathed cables run in surface dual compartment trunking or Conduit specified by the electrical contractor once confirmed with the engineer.

Where dado trunking is shown on the indicative drawing, dual compartment dado trunking specified by the electrical contractor once confirmed with the engineer. Basket Tray 200mm with divider and Lid must be used on the main corridor or high level runs.

All cables to be Basec (British approval service for cables) approved.

The contractor will carefully remove all redundant distribution boards, luminaires, and hand to the Trust/engineers for spares or dispose of accordingly.

All rooms detailed on the drawings to be re-wired and fittings to be installed including re-connection of circuits outside the works.

**2.9. Small power**

All 13a socket outlets to be twin switched type wired as new ring circuits derived from new and replacement distribution boards.

All final circuits shall be protected by separate 30ma RCBO's in each distribution board and socket outlets.

Un-switched single gang socket outlet mounted below worktop controlled by engraved switched fused connection unit above worktop for future fridge/washing machine/dishwasher. (See drawing).

In all WC/DDA toilets an engraved switched fused connection unit to be located at high level (1800mm). A 20mm conduit surface run down the buildings wall should be run vertically below to a blanking plate at 1200mm for a future hand dryer connection.

All fused connection units without flex connection shall be engraved as to their use. Emergency lighting key switches shall be engraved.

Lighting switches greater than four gang shall be engraved indicating switching arrangements of luminaires.

All accessories and luminaires shall have labels fitted indicating circuit number. These can be the printed type.

All SWA cables shall be marked up at each end with suitable identification markers.

All details of all engraving shall be agreed with the engineer.

**2.10. Fire alarm system**

The contractor shall include in their tender for any power supplies that may be required.

Fire Alarm Installation

Except as otherwise indicated, fire alarm systems shall be wired with LSOH cables drawn in steel conduits or installed on cable tray.

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Final positions of all bells and pushes will be decided on site by the Engineer.

Fire alarm systems shall be installed and wired in accordance with BS 5839:2013

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**2.11. Protection of Cables**

All cable drops to switches, socket outlets etc, shall, unless otherwise specified, be protected for their entire length by means of heavy gauge, welded/screw jointed conduit in flush or surface conditions.

Cables shall also be so protected where liable to mechanical damage and in any event up to 1800mm above the finished door level, and where directed by the Engineer.

Where overhead cable runs are encountered a cable change box shall be fitted on the inside of the exterior walls and the outside run made by using weather resisting cable unless otherwise specified.

The overhead cables shall be carried and secured in an approved manner.

Cables buried in wall finishes shall be protected throughout their entire length by one of the following means, as indicated or as directed by the Engineer:

• Close joining light gauge steel oval conduit having protection against corrosion in accordance with Class 2.

• Steel conduit complying with BS.4568 having protection against corrosion in accordance with Class 2.

• Rigid PVC conduit complying with BS.4607 Part 1.

• Pliable conduit of self-extinguishing plastics material complying with clause 2.5.12 of this Specification.

• Non-circular conduit or channelling manufactured from rigid PVC.

Ends of conduit shall be so finished or bushed as to prevent abrasion of the cable insulation when cables are being drawn into or out of conduits or connected to apparatus.

Cables buried in concrete floors shall be protected throughout their entire buried length by means of heavy gauge welded conduit complying with BS.4568. Alternatively, rigid PVC conduit complying with BS.4607 Part 1 shall be used.

Conduit buried in concrete shall have at least 35mm depth of cover over its entire length. Conduit buried in plaster shall have at least 5mm depth of cover over its entire length.

**2.11. Handover**

Prior to handover the electrical contractor will test the new installation in accordance with BS7671 and provide NIC EIC test certificates.

Handover will not be accepted until appropriate test certificates have been received.

The electrical contractor shall produce as installed drawings and operation & manuals as appropriate. Electronic versions in the form of AutoCAD drawings and word documents on a CD-ROM shall be required.

Allow for adequate training for all operatives.

Spare keys shall provide for test switches, fire panels and call points.

**2.12 TESTING & COMMISSIONING**

The Contractor shall arrange for a full series of tests to be carried out. The complete installation shall be tested in accordance with BS7671:2008 + A3:2015.

The Contractor shall submit a full testing programme including blank test sheets for approval 14 days before testing commences.

Tests shall also include but not be limited to the following:-

• Full electrical installation tests to BS 7671:2008 + A3:2015

• Full testing Design, Installation, Commissioning and any Variations Certification for the fire alarm system

The above tests shall be carried out under normal working conditions.

Tests carried out on site shall be witnessed at the CA’s discretion and all Test Certificates shall be completed and signed. Test Certifications shall record results of all tests carried out in addition to the General Completion Certificate and Inspection Certificate.

The Contractor shall give 14 days' notice in writing to the CA of when circuits will be available for witnessing of tests. These tests are not exclusive of any other test required in the specification for the proof of the integrity of the system to the satisfaction of the CA.

A suitably calibrated test instrument rated at not less than 500V shall be used for insulation resistance testing.