

York Teaching Hospital NHS Foundation Trust  
Bridlington and District Hospital



**Alterations to AMD Clinic**

Electrical Services Specification

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## Preamble

Warning:

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## Document History

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# 1 PARTICULAR ELECTRICAL TECHNICAL SPECIFICATION

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## 1.1 Related Documents

Each of the following documents must be read in conjunction with Section D. Documents under Section B and C are the Current NHS Model Engineering Specifications.

<b>Section B</b>	B01 General Clauses Common to Building Services Plant and Equipment
<b>Section C</b>	Technical Clauses
C41	Common Services Electrical Low and Extra Low Voltage
C46	Fire Detection and Alarm System
C51	Electrical Requirement for Specified equipment
C54	Building Management Systems
C82	Colour Coding for Identification of Building Services

## Definitions

Throughout Sections B, C & D the following shall apply:-

"The Building Services Sub Contract" and "The Building Services Contractor" shall mean the "Contract" and the "Contractor" respectively.

The "Main Contract" and the "Main Contractor" shall mean the "Contract" and "The Contractor" respectively.

"Specialist manufacturer/installer" shall mean the named specialist manufacturer/installer, employed by the Contractor to execute certain sections of the work as part of The Contract, such as data installations, fire alarm installations etc.

**NB** Refer to Contract Preliminaries for Contract Programme.

## 1.2 General Description of the Works

The works included under this Contract includes the provision of the following services as shown on the drawings in the existing AMD Clinic at Bridlington & District Hospital.

1. Stripping out of the existing redundant installations.
2. Modifications to existing and provision of new general power installations
3. Modifications to existing and provision of new general lighting installations.
4. Modifications to existing and provision of new containment systems.
5. Modifications to existing, provision and Installation of new Luminaires
6. Modification/extensions to existing Fire Alarm installations.
7. Modifications to existing and provision of new Data outlets and wiring etc.
8. Modifications to existing and provision of new Nurse Call/Staff Attack installations
9. Provision of wiring and connections associated with the mechanical services installations
10. The provision of all plant, materials and labour for testing and commissioning of the complete installation.
11. Testing and commissioning of all new and retained electrical services
12. Provision of record drawings, operation and maintenance manuals

The works and installations shall be as detailed in the complete specification and on the drawings enclosed, neither of which shall be read in isolation.

All equipment, plant, materials and labour shall be provided to meet the true intent of the specification and drawings to render the completed installation safe and efficient in all respects.

Any assumptions made by the Contractor shall be at the Contractor's own risk. The Contractor shall have no claims because of want of knowledge.

### **1.3 Tender Drawings**

The following drawings indicate the works to be provided and shall be read in conjunction with this specification: -

0872-(69)-E001	Electrical Services Existing and Proposed Fire Alarm and Lighting Layout
0872-(69)-E002	Electrical Services Existing and Proposed Small Power, Data and Containment Layout

### **1.4 Contract Period**

The Contractor shall obtain details of the programme from the Main Contractor. The Contractor shall allow within the Tender for all necessary overtime working to suit the proposed Contract Programme. Where access to other occupied areas of the building are necessary, then the Contractor must assume that these works will have to be carried out at nights or weekends and shall allow within the Tender for all necessary premium time working required.

The Contractor shall check the delivery of all materials, commissioning services etc and shall ensure that orders are placed in sufficient time to suit the programme of works.

### **1.5 Other Services**

The Contractor's attention is drawn to the existence of other services such as hot and cold water, heating, ventilation, medical gas pipework etc, in floor and ceiling spaces etc, which occur in this installation and is hereby charged with the responsibility of working in such a manner so as to make all due allowances for these services.

Any additional costs involved in re-routing or re-designing services due to lack of such allowances on the Contractor's behalf will be chargeable to the Contractor. Pleas of ignorance of other services in such instances shall not be entertained.

The drawings of other disciplines, including the Building Contractor's drawings must be consulted before any conduits; cables or equipment are positioned.

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### **1.6 Testing**

The sections of the new and retained installations shall be tested by the Contractor, in accordance with the testing procedures set out in the current IEE Regulations (17<sup>th</sup> Edition) and Sections B and C

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## **1.7 Siting of Equipment**

The Contractor shall note that the specification and drawings are for Tender purposes only. Should the Contractor use the Tender Drawings for installation purposes, then this shall be entirely at the Contractor's own risk. Any room elevation drawings shall also be consulted before any equipment outlets or positions are set out.

If the Contractor deems necessary he should provide full working drawings based on these, together with further information in connection with room layouts, ceiling tile layouts and all other services, which the Contractor shall obtain after the Contract is placed

## **1.8 Sequence of Operations**

The Contractor shall note that due to the complexity of the services in certain areas, it may be necessary to install various services out of normal sequence at specific times to ensure that all services etc can be installed within the designated spaces etc.

## **1.9 Equipment Deliveries**

All equipment deliveries shall be checked by the Contractor and equipment on extended delivery shall be placed on order as soon as the Contract is officially let. Any equipment delivery dates which may cause a problem with the proposed programme of works shall be brought to the attention of the Engineer at commencement of the Contract.

## **1.10 Works within Existing Building**

The Contractor shall note that the works included with this Contract are to be carried out within existing areas and that other areas adjacent will be occupied and must be kept operational throughout the Contract period. In particular, the existing fire alarm system which serves the whole building is to be modified and kept fully operational throughout the Contract.

The Contractor shall not enter any other areas of the building without prior permission and shall carry out all of the work without causing undue disturbance to the occupied areas.

Any shut down of localised services which may affect other areas of the building shall be arranged with the Hospital Engineer and 14 days notice shall be given.

All shut-downs which affect occupied areas of the building shall be carried out at nights or weekends and the Contractor shall allow for premium-time working within the Tender for these operations.

## **1.11 Investigation of Existing Retained Electrical Installations**

Before commencing any wiring modifications or stripping out, the Contractor shall investigate and confirm the existing distribution and circuit arrangements. Any circuits which feed equipment in adjacent areas where the existing services are to be retained shall then be modified or re-wired as necessary.

Any defects found in the existing installation to be retained shall be reported to the Engineer for instruction to be given on any remedial works to be carried out.

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## 1.12 Stripping Out

The Contractor shall strip out all of the existing redundant electrical services installation within the areas of the works where these are being replaced with new as indicated on the drawings and in accordance with the following.

All stripped out equipment and fittings shall be offered to the Client for spares or re-use. All stripped out materials not required by the Client shall become the Contractor's responsibility and shall be removed from the site by the Contractor. The Contractor shall visit the site and ascertain the work involved.

Where stripped out materials are scheduled for re-use in the new scheme, the Contractor shall carefully remove and store these. Until they are re-fixed they shall be the responsibility of the Contractor.

Where stripping out of existing circuits or equipment effects the retained installations in adjacent areas, then the Contractor shall include for partially re-wiring these installations in the affected areas to enable the existing wiring to be integrated into the new circuit arrangements

The Contractor shall liaise with the Hospital Engineer regarding stripping out of all computers, telephones and intercoms etc before any stripping out work is undertaken.

The Contractor shall note in particular this requirement with regards to maintaining fire alarm coverage during the Contract works.

**Note** The following services are to be retained with extensions/modifications: -

- Existing Lighting Installations
- Existing Power Installations
- Existing Fire Alarm System
- Existing Data and Telephone installations
- Existing Nurse Call/Staff Attack System

## 1.13 Electricity Supplies

All new and modified electrical services shall be wired from the existing lighting and power distribution boards.

Any shut down of services to allow working on the existing distribution board shall be arranged at a time to suit the Hospital and at least 14 days notice shall be given.

## 1.14 Earthing and Bonding

All switchgear, cables, DBs, branch switches, fitting and socket outlets shall be bonded continuous throughout and shall be efficiently earthed to the earth point at the DB positions.

Earthing cables shall be concealed throughout.

Supplementary bonding shall also be carried out to all steel sink units, ventilation ductwork, metal ceiling grids and all other exposed or extraneous conductive parts etc., using 4mm<sup>2</sup> green/yellow PVC sheathed copper earth cable run from the local power sub-circuit earthing network.

This section shall deal only with the main earthing details and general earthing of switches, sockets etc shall be allowed for within the sections dealing with these items and shall be deemed to be included within the rates concerned.

All earthing measures shall comply with BS 7671 (IEE Wiring Regulations) 17<sup>th</sup> Edition.

### **1.15 Existing Distribution Board**

The existing lighting and power distribution board shall be retained to accommodate the modified and extended lighting and power sub circuits as shown on the drawings.

The modified and extended lighting and power shall be fed from the existing distribution board.

The Contractor shall include for the following works associated with the existing distribution boards:-

1. Supply and install new MCB's as required for new circuits
2. Connect new circuits to new MCB's
3. Supply and fit new circuit charts.

### **1.16 Type of Installation**

All new sub-circuit wiring shall be single core 600/1000v XLPE insulated copper cored cables to CMA Ref. 6491B which shall be laid in existing systems and drawn through existing and new conduits.

All new conduits shall be HGSW galvanised. All conduits, cables etc. shall be concealed throughout in ceiling spaces and walls. No conduits shall be run in the floor screed, unless shown specifically otherwise.

All conduits and cables shall be installed in accordance with the Standard Technical Clauses of the Specification.

Lighting circuits shall be wired using 1.5mm<sup>2</sup> cables, unless otherwise shown, ring main circuits shall be wired using 2.5mm<sup>2</sup> and 4.0mm<sup>2</sup> cables unless otherwise shown.

No sub-circuit wiring of less than 1.5mm<sup>2</sup> shall be used. The loop-in system of wiring shall be used throughout with joints only occurring at control or equipment positions.

All circuits shall include separate PVC insulated single core protective conductors drawn through the conduit and trunking runs.

To maintain earth continuity of the conduits connections to trunking system and accessory boxes shall be made using earth couplings with serrated compression washers.

Wiring for the modifications to the Fire Alarm System shall be carried out using red LSF sheathed mineral insulated cable.

### **1.17 Existing Containment Systems**

The existing containment systems shall be utilised wherever possible and modified/extended as necessary using matching containment.

Cables installed within existing containment systems shall be segregated into groups relating the category of wiring.

## **1.18 New Wall Mounted Dado Trunking**

Provide, install and connect new dado trunking as shown on the drawings.

The trunking shall be installed for the complete wall length to the layouts shown and shall be mounted at approximately 1050mm AFL (to the bottom) (to be confirmed prior to installation) The trunking shall be complete with all matching lids, fixings etc. to form the complete installation as shown.

All new accessories fitted into the trunking shall be fixed with purpose made insertion boxes.

The trunking shall be split into 3 No. separate compartments for the following services: -

### **Top and Bottom Compartments**

Telephone and data cables

### **Middle Compartment**

Mains voltage cables

Connections from this trunking to the main trunking in the ceiling spaces shall be as detailed on the drawings.

All wiring shall be installed within the particular compartment dealing with that category of service. All containment for data and telephone wiring shall be installed by the Contractor.

## **1.19 Accessory Boxes**

All wall mounted accessories shall be complete with accessory boxes incorporating earth terminals.

The method of attaching a conduit shall be by means of an earth coupling, a serrated compression washer and male brass bush.

The earth connection from the earth coupling shall enter the box via a hole drilled in the top and shall connect to the earth terminal in the box.

The separate earth conductors shall be connected to the accessory and to the box earth terminal.

Surface units shall have surface boxes.

The Contractor shall ensure that all boxes are fitted level and securely fixed

## **1.20 General Power Electrical Accessories**

Provide, install and connect all new general power electrical accessories as shown on the drawings and as follows.

All accessories shall be flush mounted and shall be of MK manufacture 'Logic Plus' range, as follows:-

### **1) 13A Socket Outlets**

(a) Flush mounting (complete with flush box)

(i) Single gang switched

Ref: K1257 WHI

(ii) Single gang switched

Ref: K1257D1 WHI – Essential Services



- |       |                    |                                       |
|-------|--------------------|---------------------------------------|
| (iii) | Twin gang switched | Ref: K1246 WHI                        |
| (iv)  | Twin gang switched | Ref: K1246D1 WHI – Essential Services |

Socket outlets (except for trunking mounted units) shall be mounted at the following heights: -

- |    |                                    |                            |
|----|------------------------------------|----------------------------|
| 1. | In Office areas, etc               | Mounted onto dado trunking |
| 2. | In Communal Areas , Corridors, etc | 450mm AFL                  |

The heights of sockets shall be assumed to be correct for Tender purposes, however all heights must be checked against room layouts prior to chasing of any walls etc.

Socket outlets shall be wired on ring main circuits using 2.5mm<sup>2</sup> and 4.0mm<sup>2</sup> cables as shown.

## 2) 13A Fused Connection Units (spurs)

### (a) Flush mounting (complete with flush box)

- |       |                                       |                  |
|-------|---------------------------------------|------------------|
| (i)   | Switched indicating                   | Ref: K1060 WHI   |
| (ii)  | Switched Indicating                   | Ref: K1060D1 WHI |
| (iii) | Switched indicating with cable outlet | Ref: K1070 WHI   |
| (iv)  | Switched Indicating with cable outlet | Ref: K1070D1 WHI |

The types of spur units required and the mounting height shall be specified under the Clause dealing with the equipment to be connected. Spur units shall be wired into local ring main circuits or shall be wired on separate radial circuits using 2.5mm<sup>2</sup> and 4.0mm<sup>2</sup> cables, as shown. The front plates of all spurs shall be engraved to denote duty.

## 1.21 Light Points

Provide, install and wire the new light points as shown on the drawings.

Generally light points shall be as follows: -

### a) Surface fixed light points on suspended tile ceilings

Light points for surface luminaires on suspended tile ceilings shall terminate at a conduit box within 300mm of the fittings, which shall be fitted with an Ashley plug-in ceiling rose, Ref. PCR2000.

Final connections from the ceiling rose plug to the light fittings shall be via a short length of 0.75mm<sup>2</sup> 3 core heat resisting flexible cable.

Light fittings with auxiliary circuits, i.e. split switching etc shall be wired via 4 core cable and 4 pole plug-in ceiling roses, Ashley Ref. PCR200/4.

### (b) Surface fixed light points on solid ceilings

Light points for surface fixed lights on boarded ceilings and on walls shall comprise of a flush mounted besa box containing porcelain connectors fitted flush with the walls situated directly behind the fittings.

Final connections between the connectors and the fittings to be made using heat resisting cables.

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## **1.22 Light Fittings**

Light fittings shall be provided and installed as shown on the drawings.

On the drawings the letter or symbol within or adjacent to a light point indicates the type of fittings required for that point, as detailed on the drawings. Light fittings shall be complete with a first fixing of all lamps, as indicated on the drawings. Light fittings fitted onto or into suspended tile ceilings shall be supported from the structure on 2 no. drop rod or conduit supports. No light fittings shall rely solely on the suspended ceilings for support.

## **1.23 Lighting Electrical Accessories**

Provide, install and wire all new lighting electrical accessories as shown on the drawings, and as follows: -

All accessories shall be flush mounting.

### **1. Lighting Switches**

Non Essential Services shall be MK flush mounting 'Logic Grid Plus' switch range with white plates and white 20A rated interiors, one way, two way or intermediate as required.

Essential Services shall be MK flush mounting 'Grid Plus' switch range with white plates and red 20A rated interiors, one way, two way or intermediate as required.

At multiple switch positions switch units shall be mounted onto a common plate. Switches shall be mounted at 1050mm AFL.

## **1.24 Data/Telephone Outlets and Wiring**

The existing data installation shall be modified and extended as indicated on the drawings.

The Contractor shall employ the services of York Teaching Hospitals NHS Foundation Trust to design, provide, install, connect and commission the modified and extended data installation as detailed on the drawings.

Contact: Adrian Shakeshaft (Network Manager), Tel. 01904 631313 extn 5010

## **1.25 Fire Alarm System**

The existing fire alarm system shall be modified and extended as indicated on the drawings.

The Contractor shall employ the services of Yorkshire Fire Protection to design, provide, install, connect and commission the modified and extended fire alarm system as detailed on the drawings.

Contact: Stewart Watson Tel. 01904 631313 Mobile. 07875 226672

## 1.26 Nurse Call/Staff Attack System

The existing nurse call/staff attack system shall be modified and extended as indicated on the drawings.

The Contractor shall employ the services of Static Systems Group to design, provide, install, connect and commission the modified and extended nurse call/staff attack system as detailed on the drawings.

Contact: Tel. 01902 895551

## 1.27 Wiring for Mechanical Control Panels and Equipment

The Contractor shall provide if necessary all control circuit wiring, containment, accessories and final connections to all sensor elements, thermostats, miscellaneous interconnections and links.

For tender purposes the Contractor shall refer to the mechanical service layout drawings.

In general, power wiring shall be LSF insulated single core copper cables installed within steel trunking and conduit. Specific essential interconnection sub circuit wiring shall be Firetec enhanced multi core cable with white LSF sheath.

Screened cables shall be installed as detailed and rated at the maximum voltage to allow them to be installed with the general power trunking. The Contractor shall include for all attendance on the mechanical services contractor as necessary to ensure the satisfactory completion of the works including obtaining and checking all wiring diagrams prior to installing wiring. **If there are any differences between the proposed wiring arrangements and those shown on the tender drawings the Contractor shall report these to the engineer prior to ordering materials or starting any related works on site.**

The Contractor shall provide and install all circuit wiring, containment, and connection units etc. to form the complete installation. The Contractor shall allow for installing local connection units, isolators etc as detailed on the drawings.

The Contractor shall ensure means of local isolation, by providing local suitably rated switch disconnectors or commando socket outlets to all 230volt and 400volt equipment to include: ventilation and extract fans, pumps, boilers, pressurisation units, etc where served from a control panel. The final connection from the switch disconnector to the equipment shall be via LSF single core cables enclosed within metallic flexible conduit (kopex), where the length shall not exceed 1500mm, or multicore EPR insulated and sheathed flexible cables.

Final connections to all pumps shall utilise a IEC 60309-2 socket outlet as manufactured by MK, type commando angled surface socket outlets 16amp 400V 3P +E or 230volt 2P+E, or equal and approved to serve Low voltage control field wiring shall be as directed/approved by the relevant Specialist controls Engineer or the relevant Control Panel manufacturer.

The Contractor shall make due allowance for earthing arrangements of all field devices, where all back boxes and field equipment shall be suitably earthed.

The Contractor shall obtain 'CONSTRUCTION ISSUE' wiring diagrams and manufacturer's drawings.

## **1.28    Queries**

Any technical queries in respect of this specification or drawings shall be addressed to Steve Bradley at:

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DH3 4AN

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Mob: 07841 338 894

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