Building Services
Consulting Engineers

Derbyshire Fire & Rescue Service

Proposed Temporary Fire Station

Unit 3C, Boardman Industrial Estate, Swadlincote

Employer's Requirements for Electrical Services

Tender Issue

Ref: 17.043/e

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-	Tender Issue	R J Cadge	03.10.17

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Employer's Requirements for Electrical Services

Part 1

Employer's Requirements Preamble

1.1 Definitions

The following terms appear within this Employer's Requirements document:

The Employer – Derbyshire Fire & Rescue Service

The Employer's Representative – Nigel Tate Associates

The Principal Contractor - Will be the Principal Contractor with whom the employer has contracted to complete the works. The Contractor shall be a Sub-Contractor appointed by the Principal Contractor.

Electrical Contractor - The Contractor appointed by the Principal Contractor to design, supply and install the Works. All references to the "Contractor" will mean the Electrical Contractor.

The Works - Shall encompass all works associated with the Principal Contractor's Contract at the site. Unit 3C, Boardman Industrial Estate, Boardman Road, Swadlincote, Derbyshire, DE11 0BB, as defined by the Principal Contractor's Contract for the works.

1.2 Scope of this Contract

This contract covers the entire design, based on information and requirements given, the detailed design, manufacture, works testing, supply and delivery to site, erection, connecting up, site testing, adjusting and setting to work of the electrical installation.

1.3 Contractor's Responsibilities

a) Contractor Design

The Contractor shall be responsible for the following:

i) Accepting copies of the scheme drawings, standards specification, performance data sheets and specific technical schedules where offered and applying himself to the resolution of the design intent in a competent, informed and diligent manner.

ii) The development and provision of design drawings, installation drawings, together with all fabrication details, manufacturers' drawings, panel layout drawings, wiring diagrams, control diagrams and schedules shall be the Contractor's responsibility.

iii) A comprehensive drawing register is to be drawn up to establish a common form of identifying areas and drawings.

iv) Symbols shown on drawings shall comply with CIBSE standards where applicable.

v) All design and installation drawings shall be developed on Auto CAD.

b) Schedules & Calculations

The Contractor shall undertake and provide the following design information not less than 4 weeks following tender acceptance to allow full assessment, checking and approval.

- All circuit design
- All voltage drops
- All cable sizing
- All fault levels
- All protection grading
- All lighting
- All earthing and bonding
- All tray and trunking sizes
- All technical schedules of all equipment (Manufacturer, type, size, construction, finish, performance data)

1.4 Interpretation of Documents and Drawings

a) The Specification and Tender Drawings shall be read together and the Tenderer shall, before submitting his Tender, draw attention to any discrepancies which may appear between the Document and/or Drawings and to anything which, in his opinion, may be unsuitable, undesirable or inconsistent with his guarantees and responsibilities.

b) The Tender Drawings are prepared essentially so that, in conjunction with the Specification, a correct engineering interpretation may be put on the scheme for the Works and full tender prepared.

c) The Specification shall be interpreted in accordance with good installation practice relevant to the circumstances.

1.5 Design Requirements

The design criteria for the electrical installations are to be as detailed in the scope of works and schedules.

The Contractors detailed design shall take full account of the Energy Conservation Act 1981, the CIBSE Energy Codes and the Building Regulations and shall include for the provision and installation of all equipment necessary to comply with their requirements and recommendations.

The Contractors detailed design shall take full account of the design, selection and detailed installation recommendations of the Manufacturers of all equipment selected, CIBSE Design Guides, British Standards and Codes of Practice, IEE Wiring Regulations. Refer to Clause '1.7 Approvals and Compliance'.

The Contractor shall be responsible for determining and making due allowance for the final selection of all electrical installation, materials, plant and equipment to meet the listed design criteria.

The capacities of plant and equipment, where shown on the Employer's Requirement Drawings have been determined by the Employer. The Contractor shall not be expected to make allowance for additional output capacity in respect of these plants but shall advise with his Tender if additional capacity is considered necessary.

The power distribution shall have 25% spare capacity provided as in inaugural part of the Contractor's Design, for future expansion. Where specific electrical loads have not been identified by the employer for specific plant, the Contractor shall also allow a spare capacity of 25%.

1.6 Alternative Suppliers

The Contractor's attention is drawn to the named supplier's equipment detailed in the schedules.

It is necessary that the Tender Offer is based upon the supply of this equipment.

Alternatives may be offered for consideration provided the quality, design service and/or material of the substituted supplier is at least equal to that specified and/or complies with the design criteria and the supplier is approved. The Contractor is required to supply at his own cost all information including any necessary testing to enable the Client's Team to decide upon acceptability of alternative products and no allowance of extension time will be made attended upon such consideration.

The Contractor shall clearly state the cost reduction that will be offered to the Client for the alternative proposal. The Client shall not be under any obligation to accept any of the alternatives offered.

1.7 Approvals and Compliance

The Contractor shall obtain and ensure approvals and compliance with the following:-

- Building Regulations
- Insurance Company - Test Certificates
- Electrical Supplier
- Building Inspector
- Environmental Health Officer
- Fire Officer
- Local Byelaws/Acts
- British Standards and Codes of Practice
- CIBSE Guide
- IEE Wiring regulations, 17th Edition

The provision of working, fabrication co-ordination and workshop drawings having co-operated fully with all trades to ensure that co-ordination of all services and the building has been fully executed. These drawings shall have fully dimensioned positions and specific details where interface with other trades, or where exposed in critical areas to the general public's view.

Submit copies of each of the drawings, diagrams and schedules detailed in Section above in good time, to comment during the development of same.

Subject to final comments and revisions made to these drawings the Contractor shall provide copies of the said drawings, diagrams and schedules, for distribution.

The same shall apply to the working, fabrication co-ordination and workshop drawings and copies of the said drawings shall be provided after final comments have been made.

The Contractor shall appraise the duties of all plant and equipment relating to the Contract works whether specified or developed during the design (taking into account the technical and performance data sheets issued by The Employers Advisor and shall inform The Employer's Advisor in good time of any matter with which he disagrees.

The Contractor shall draw The Employer's Advisor's attention to any discrepancy in the documents, drawings or instruction issued during or after the time of tender immediately upon receipt of same and prior to the commencement of any part of the design or works affected thereby.

1.8 Contractor's Drawings

The Contractor is required to produce design and co-ordination drawings, installation drawings, builders work drawings, shop/fabrication drawings and furnish manufacturers drawings. In addition Record Drawings and Documentation as Clause 1.9 are required.

a) Drawing Production

Prepare and submit a master plan for drawing production covering the following:

i) List of drawings to be produced.
ii) Drawing/Schedule titles and numbers.
iii) Symbols/notation/scales to be used.
iv) Cross-references to other drawings.
v) Identification of drawings required for record purposes.

Prepare in conjunction with the Principal Contractor a programme for the preparation and presentation of the Contractor's drawings, samples, materials data and other information. The submission and examination dates should be programmed to meet the required dates for the placing of orders or commencements of work.
Such programme shall also include as appropriate the dates for the issue of any Design Team or Principal Contractor's drawings or information required by the Employer's Requirements.

All drawings, Schedules and other information provided by manufacturers, suppliers, or approved sub-Contractors shall be reviewed by the Contractor to ensure that all requirements of the Employers Requirements have been incorporated prior to submission. All drawings will be submitted by the Contractor to the Principal Contractor and the Design Team for review.

All submissions required by the Employer's Requirements shall be received by the Principal Contractor in sufficient time so that no delay is caused to the placing of orders or to the commencement of any part of the works.

The Contractor shall allow for the issue of 3 copies of each drawing for approval. All drawings shall be prepared on a CAD system, compatible with AutoCAD software. Upon approval of drawings "for construction" the Contractor shall allow for and forward to the Principal Contractor (for D&d Building Services Consulting Engineers) a CAD disc of the relevant drawings.

Drawings may also be issued via email. The Contractor is responsible for checking that any drawings issued by email have been received by the recipients.

The issue of drawings shall include an "overall" floor plan drawing as well as larger scale portions of the building each time drawings are issued.

b) Co-ordination Drawings

Shall mean the drawings showing the co-ordination and inter-relationship of all engineering services and the integration into the structural, shop fitting, architectural, and specialist elements in detail. Such drawings should be provided to a scale of not less than 1:50 unless otherwise agreed and be prepared in detail, including low and high level plans and elevations of walls, etc, as to demonstrate that the engineering services will be properly separated from one another and can be installed and maintained in a proper workmanlike manner in the locations and spaces provided.

The Contractor shall be responsible to the Principal Contractor for the co-ordination of services in both the preparation of Shop/Working drawings and the execution of the site works.

The Contractor shall accept responsibility for co-ordination of his works with the work of all the specialist Contractors to ensure that the installation as detailed does not conflict with other services or the building fabric, either during construction or within the finished building.

The Contractor shall liaise with the Principal Contractor and other Contractors to determine restrictions imposed by others.

c) Installation Drawings

Shall mean the drawings based on the Contract Drawings and/or Co-ordination Drawings showing details of the Contractor's proposals for the execution of the Contract Works. The drawings shall be to such scales, in such detail and shall indicate all services and components for the installation and also particular installation methods to be applied in certain instances, eg where connecting to existing services. These drawings shall also relate to builder's work drawings.

In respect of electrical installations shall include but not necessarily be limited to:

i) Site distribution and cable routes;

ii) General layout drawings of all plant and equipment included in the Contract;

iii) Schematics for main and sub-main distribution;

iv) Cabling and wiring connections, showing cable types, sizes and loads;

v) Trunking and cable tray routes with details of sizes; fixings, cables carried and terminations, including references.

vi) Conduit routes with conduit sizes, and all junctions and pull-in boxes;

vii) Power distribution for lifts;

viii) Lighting layouts for normal and emergency purposes, detailing positions and types of luminaires, switch positions and wiring connections to any lighting control system;

ix) Fire detector and alarm positions and wiring routes with type details and functions;

x) Earthing system with precise details of routing, conductor sizes, capacity and connection;

d) Builder's Work Information Drawings

Shall mean the drawings and Schedules prepared to show requirements for architectural, shop fitting, or structural provisions necessary to facilitate the execution of the Contract Works and allow their integration into the project.

Such drawings should include requirements for foundations, bases, lifting and supporting structure for plant or equipment, all holes in walls, floors and ceiling elements, provision of services requirements within void above false ceilings or below false floors, the integration of the services installations into the false ceiling system, and trenches depressions, ducts, etc, in or through building and site elements.

General arrangement and floor plan drawings giving builder's work requirements shall be to a scale of 1:50.

Builder's work drawings for plant rooms shall be to a scale of 1:20.

In cases where preliminary builder's work and structural information has already been given by the Design Team, such information shall be confirmed and amplified as required above by the Contractor (including confirmation of weights of items of equipment, size of access ways, etc) and incorporated on their drawings.

The builder's work drawings shall include access details into voids, risers, shafts and other enclosures for the subsequent 'operation and maintenance of the Building Services Installations covered by this Contract Package. The drawings of access points shall highlight those which are only likely to be used in an emergency or infrequently and those which are required regularly.

e) Shop/Fabrication Drawings

Shall mean the drawings produced for the purpose of explaining how the components of the designed works are to be fabricated and assembled.

In respect of ductwork, shall be to a scale of not less than 1:50 and shall indicate the length of each duct section, the internal dimensions of the bare sheet steel, dimensions of bends and fittings, location of stiffeners and supports, and shall dimensionally locate the ducts in relation to the supporting or any adjacent structure. In addition, the location and size of all equipment, grilles, diffusers, access panels, dampers, fire dampers, test points, penetrations and associated fittings for automatic controls and instrumentation, etc, shall be shown.

f) Manufacturers' and Equipment Drawings

Shall mean the drawings of any item of plant or equipment produced by a manufacturer or equipment supplier indicating principle dimensions, fixings, connections and all other relevant details.

Where manufacturers' original drawings are used they shall be specific to the relevant Contract Works and all references to optional features, other machines of a range, etc, shall be deleted or the original drawings redrawn to comply with this clause.

Each drawing shall be stamped CERTIFIED by the Manufacturer which shall mean that:

i) The drawing represents accurately the item concerned with correct dimensions and all connections precisely located;

ii) The item conforms to the specific description given in the Employers Requirements, quoting the reference numbers from the Employers Requirements;

iii) The item is shown complete and entire as it will be supplied for the Contract Works and no extraneous or alternative parts are indicated.

Individual and layout drawings from electrical component manufacturers shall include wiring both internal and external to panels and controls.

All wiring diagrams shall indicate clearly that wiring which forms part of or is connected to the equipment as delivered and shall conclude the following minimum information to enable the site connections and wiring to be completed:

i) Maximum electrical loading for each power cable.

ii) Cable termination facilities.

iii) Cable identification and all terminal numbers.

iv) Inter-connections between different items.

All manufacturers' drawings shall be prepared on a CAD system as detailed previously for trade contract drawings.

g) Switchgear, Starter and Control Instruments Panel Drawings

Shall mean the drawings showing the general arrangement of the construction, the external and internal layout of panels, and wiring diagrams comprising internal wiring, wiring types and termination references, schematics of interlocking and external wiring diagrams, internal circuitry arrangements, for the complete systems in the panels. The drawings shall also indicate all conduit connections from the panels to external equipment.

h) Progress Drawings

Shall be a full set of white prints of the Installation Drawings kept on the Site showing the progress of all work in connection with this Trade Contract. Such prints shall be kept up-to-date and all conduit, cable, pipe, trunking and duct runs, positions of equipment and apparatus shall be recorded by the Contractor on the drawings as they are installed.

1.9 Record Drawings

Shall mean the drawings, diagrams and Schedules produced two sets of prints and one set of computer discs, in AutoCAD format to provide an accurate record of the whole of the services as installed which shall:

a) Fully indicate diagrammatically each individual electrical, air, gas and fluid system, showing all plant and equipment and identifying same with type number and reference to the specified item, and showing size, flow rate, pressure drop, and velocity in each section of the pipe or duct.

b) Show major items of plant and system controls.

c) Indicate plant room layouts, with sections, to a scale of not less than 1:20.

d) Indicate on individual floor plans and sections to a scale of not less than 1:20 in difficult or congested areas, all building engineering services provided under the terms of the Trade Contract, fully identifying each service and fully indicating with accurate dimensions, the sizes and positions of all plant, equipment, pipes, ductwork, conduits, trunking, underfloor ducting, cable tray and cables, together with all inspection, test and maintenance points and cable joints.

e) Provide general arrangement drawings and wiring diagrams of switchgear, starter and controls panels, including, starter motor switching and interlocks.

f) Indicate the number, size, type and services supplied by every cable (circuit lists and fuses/mcb sizes for each distribution board shall be entered into relevant drawings and shall agree with lists fixed within distribution boards. Show the positions and nature of all earth electrodes installed and the route of the connecting copper tapes.

g) Show the position and reference of all luminaires, fire alarm points, speakers etc.

h) The preparation of Record Drawings shall be a rolling programme of work as the installation proceeds, it must not be left to the last moment. The Principal Contractor and D&d Building Services Consulting Engineers Ltd will regularly inspect and monitor progress on the preparation of the Record Drawings.

Four weeks before the Contract completion date, the Contractor. shall provide draft copies of every Record Drawing to the Principal Contractor and D&d Building Services Consulting Engineers Ltd for comment.

The drawings will be returned with comments and prior to Practical Completion full, final and approved sets will be issued by the Contractor together with CAD discs. Practical Completion will not be awarded without the receipt of final and approved Record Drawings.

1.10 Operation and Maintenance Manuals

Provide two bound copies and one electronic copy of Operating and Maintenance Manuals which shall incorporate Instruction Manuals on detail requirements covering and including the information detailed below. The manuals shall include comprehensive information on the Health and Safety and CDM regulations specific to the works.

Scope of Systems

a) A full technical description of each of the systems installed, written to ensure that the Client's staff fully understand the scope and facilities provided.

b) A technical description of the mode of operation of all systems.

Preparation of Manuals

The manuals shall be contained in A4 size, plastic covered, loose leaf, four ring binders with stiff covers, each indexed, divided and appropriately cover-titled. Drawings larger than A4 shall be folded and accommodated in the binder so that they may be unfolded without being in any way detached from the rings.

Prepare the Operating and Maintenance Manuals in draft as soon as the Installations Drawings are in hand.

Obligations of Manufacturers to Provide Literature

The requirements and obligations of manufacturers to provide literature as part of the installation record shall form part of the plant and equipment orders and such orders shall be considered unfulfilled until literature requirements have been met.

Information for Manuals

Where the Contractor sublets for the preparation of the Operating and Maintenance Manual to a specialist firm, he shall provide or obtain all necessary information in respect thereof.

Manufacturers' Technical Literature

Manufacturers' technical literature submitted for examination or for inclusion in the Operating and Maintenance Manual shall be prepared and assembled specifically for the Record Drawings and cross referenced to the Employers Requirements.

Manufacturers' Guarantee and Warranties

All manufacturers' guarantee and warranties on plant, equipment etc, shall be valid up to the end of the Defects Liability Period, or for at least twelve months after Practical Completion of the total project whichever is the longer period.

All equipment normally guaranteed by the manufacturers for a period of time which goes beyond the period defined above shall be held to remain under guarantee for the maximum period.

Provide two copies of all such guarantees, one of which shall be included in the Operating and Maintenance Manual.

Installation Record

a) A photo reduction of all record Drawings to A3 size together with an index.

b) Diagrammatic drawings of each system indicating principal items of plant, equipment, valves, etc.

c) Legend for all colour coded services.

d) Schedules of plant, equipment, valves etc, by system, stating their locations within the building, duties and performance figures, together with anticipated life expectancies.

e) A unique code number for each item of plant, equipment, valves etc installed cross-referenced to the record and diagrammatic drawings and Schedules. The name, address and telephone number of the manufacturer of every item of equipment and plant shall be listed together with catalogue list numbers.

f) Manufacturer's literature including detailed drawings, electrical circuit details, and printed operating and maintenance instructions for all items of plant and equipment supplied under this Trade Contract.

g) A copy of all test certificates including those for all plant, equipment, valves, etc used in the installations, including (but not limited to) electrical circuit tests, corrosion tests, type tests, works tests, start-up and commissioning tests, including those for air and water balancing.

h) A copy of all commissioning records including control calibration.

i) A copy of all manufacturers' guarantees.

Submission of Operating and Maintenance Manual

Two complete drafts of the Operating and Maintenance Manuals shall be submitted not less than 6 weeks prior to Practical Completion.

The Operating and Maintenance Manual is an essential part of the Contract Works. The Contract Works will not be accepted as complete, and payment will be withheld, until the required number of copies of the complete final document have been received by the Principal Contractor. Four copies of the final Operating and Maintenance Manual shall be provided by the Contractor, together with two sets of discs containing the complete information held in the Manual, including all manufacturers' literature. These are required to be issued 2 weeks prior to Practical Completion.

Systems Operation

a) Starting up, operating and shutting down instructions for all equipment and systems installed.

b) Control sequences for all systems installed.

c) Scheduled details of all equipment settings, and actual values maintained in controlled variables during commissioning.

d) Procedures for seasonal changeovers.

Maintenance

a) Detailed recommendations as to the preventive maintenance frequency and procedures, including related health and safety procedures, which should be adopted by the Client to ensure the most efficient operation of the systems.

b) Lubrication Schedules for all lubricated items of plant and equipment.

c) A list of normal consumable items.

d) A list of recommended ‘running spares’ required, being those items subject to wear or deterioration and which may involve the Client in extended deliveries when replacements are required at some future date.

e) Procedures for fault diagnosis.

f) Emergency procedures.

1.11 Co-ordination

The Contractor is responsible for the co-ordination and integration of the Contract Works with other works of the Project, including the production of co-ordination drawings, where necessary showing the works of other Contractors.

The Principal Contractor will require the attendance of’ all relevant Contractors and, where necessary their Sub-Contractors and suppliers, at weekly meetings to report progress with co-ordination and to resolve conflicts. Where necessary the Principal Contractor will identify “1 ad co-ordinator” Contractor for different areas of the installation to ensure co-ordination between Contractors progresses satisfactorily.

The means of achieving co-ordination will be as follows:

- Identify objectives.
- Agree priorities.
- Agree common parameters and datums.
- Identify interface details.
- Identify problem zones.
- Share responsibility between Contractors.
- Ensure available information of manufacturer’s equipment details is distributed.
- Seek clarification of obscure details and design problems.
- Select most appropriate service zones.
- Identify clashes with structure/other services.
- Discuss options.
- Agree most appropriate solution.
- Review proposed solution.
- Sign off drawings.
- Submit to Design Team for comment.

The methods and process for co-ordination will include:

- Attendance at co-ordination meetings.
- The production and distribution of detail sketches.
- Queries, via RFIs, to Design Team.

- The development of proposed solutions for Design Team endorsement.
- The overlay of drawings, by exchange of CAD discs where possible.
- The adoption of clearly understood, easily verified dimensions of datums for installation staff.
- The careful programming of installation and inspection sequences.

Co-ordination drawings are to be agreed and signed by all other directly affected Contractors prior to being submitted to the Principal Contractor for Design Team Review.

1.12 Materials and Protection

a) Specified Materials, Equipment and Workmanship

Unless otherwise specified all materials, plant and equipment, and the use and installation thereof, shall comply with the material, test and other requirements of the relevant British Standard Specifications and Codes of Practice, all relevant Institutional regulations statutory requirements and By-laws where applicable.

The Tender return must be based upon the named manufacturers listed in the specification. After appointment the Contractor may offer alternative manufacturers of equal specification but the acceptance of these will be solely at the discretion of the Design team.

b) Source of Specified Materials and Equipment

All materials shall be of British manufacture wherever possible or from other member countries of the European Community.

Should the Contractor propose using any materials which are manufactured outside the European Community, they shall submit details of each alternative of non-EC origin with their tender.

c) Materials and Samples

Prior to any Contract being finalised the Contractor is to submit a comprehensive list of proposed manufacturers and suppliers of materials and equipment. This list is to be based on specified manufacturers where identified. All materials proposed are to be to the satisfaction of the Design Team and subject to submittal of details for review before placement of order.

Each manufacturer must be willing to admit the Principal Contractor to his premises during normal working hours for the purpose of examining and witnessing the testing of materials and equipment proposed for the Contract Works.

All materials and equipment shall be new. Obtain and implement manufacturers' instructions on the assembly and installation of materials and equipment.

Submit all samples required by the Employers Requirements.

The procedure for submission of samples shall be agreed prior to commencement of the Contract Works.

d) Samples and Materials

Samples of materials, workmanship, components and equipment accepted as complying with the Employers Requirements will be retained by the Principal Contractor, and all related items included in the Contract Works shall be at least equal in all respects to these samples.

Provide or arrange to be provided by the Principal Contractor safe storage of accepted samples on site including racks for display, reference and inspection.

Materials or substances which are generally known at the time of use to be deleterious shall not be used other than as allowed by British Standards or Statutory regulations current at the time of use.

Workmanship shall be of the best quality, and shall be produced by skilled and responsible craftsman fully experienced in their respective trades.

Allow for proper packaging and safe delivery of all equipment and materials and for returning re-usable packaging to the suppliers as appropriate.

Include for obtaining materials from any source whatsoever to complete the Works within the Contract Period.

Identical parts of similar equipment shall be interchangeable and any items, fittings or accessories which are used in quantity shall in each case be the produce of one manufacturer.

e) Guarantee Availability of Spares

Guarantee or provide manufacturer's written guarantees that spares will be available for a minimum period often years from the date of Practical Completion both to the Employer and to any other future building owner, occupier or Contractor having responsibility for the maintenance of the Contract Works.

f) Rejection of Materials or Works not to Standard of Samples

Any material or work which is inferior to an accepted sample or is different from parts of the Contract Works already constructed or which is stained or damaged after installation will be treated as defective work.

g) Protection of Materials and Equipment Prior to Fixing

All installation materials, component parts or complete items of equipment shall be delivered and stored on site in properly labelled boxes, crates or containers, suitably designed and constructed to give protection against transportation and handling damage and deterioration during storage. The packing shall be weather-proof.

Store all materials on raised boarded platforms under weather-proof cover and store pipes, conduits, trunking and the like on racking.

Equipment or component parts of equipment specifically designed to operate in normal room conditions, shall be delivered to and stored on site with suitable waterproof protection.

Equipment incorporating components (particularly electrical) susceptible to moisture damage shall be stored in an environment free from condensation.

Take particular care to protect component parts specifically designed to act as heat transfer surfaces. These surfaces shall have purpose-designed packing to protect them whilst in transit and storage on site.

Completely cover valve ports and ends of pipes or plug to prevent the ingress of foreign matter, and additionally protect flanges against damage to the flange surface.

Examine all materials and equipment supplied under this Contract on delivery to site and immediately prior to installation. Any materials or equipment which is damaged or faulty shall be replaced.

h) Defective Work

Replace defective work with materials, goods or work in accordance with the Employers Requirements. Alternatively submit proposals for any treatment or making good that is considered will bring the defective work to the standard required by the Employers Requirements. Such proposals shall not relieve the Contractor of his responsibility to execute the Contract Works to the full intent of the Employer's Requirements.

1.13 Inspection and Testing

a) General

Agree procedures for notices, witnessing, reporting and recording tests with all parties involved including Local Authorities and Statutory Undertakings, prior to the commencement of the Contract Works.

Submit copies of the formal test certificates signed by the Contractor's representative not later than seven days after completion of successful tests.

b) Additional Tests

Re-test or carry out at no extra cost any additional tests required to establish acceptability of the Contract Works following failure of any part thereof or any item therein to meet the required standard or functional performance.

c) Instruments and Equipment for Testing

Supply, check, recalibrate whenever necessary and maintain in good working order all instruments and equipment for setting out, measurements, gauging inspection, commissioning and performance testing whether they are specifically called for or implied by the Employers Requirements.

All such instruments and equipment shall be adequate for the purpose and shall satisfy the purposes and accuracies required by the Employers Requirements. The type of instruments proposed must be agreed with the Consulting Engineer.

d) Provision of Resources

Provide all necessary staff with the relevant skills and competence for all inspection testing, commissioning and performance testing.

e) Inspection and testing Certificates

Schedule and submit method statements and an integrated programme in respect of these elements of the Contract Works for which inspections and tests shall be carried out and for which inspection and test records shall be maintained for agreement by the Principal Contractor.

f) Certificate for Materials and Equipment

All materials shall be manufactured and tested in accordance with the appropriate British Standard or as described in this specification. Should the Contractor propose an alternative item without the appropriate certification, independent testing shall be carried out at the Contractor's expense to determine compliance with the Employer's Requirements.

Where appropriate all materials delivered to the site shall bear the manufacturer's name, brand name and any other data that may be required to verify their exact nature and relate it to the requirements of the Employers Requirements.

Materials and components shall bear the British Standards certification Trade (Kite) Mark, British Board of Agreement Certificate mark as applicable.

g) Works Tests Certificate

Works test certificates shall include, whenever applicable, full information to enable the item tested to be identified, such as project title, Contractor's name, manufacturer's nameplate or serial numbers, the location in the Works and the delivery or batch which the sample represents.

h) Inspection and Testing Records

Maintain records of all inspections, and testing performed to substantiate conformity with the Employers Requirements including those carried out by the Contractor and/or third party testing agencies, together with manufacturer's or suppliers certificates of test.

All records shall be retained on site and made available to the Principal Contractor on request. On completion of the Contract Works all records shall be handed over to the Principal Contractor unless otherwise directed.

These records shall include, as appropriate, but not be limited to, project title, Contractor's name, the identification of the element, item, batch or lot, the nature and number of the observations and tests, the dates of testing, the name and signature of the person responsible for the testing, the number and type of deficiencies found, and details of any corrective action taken.

Any record which indicates that any part of the Contract Works inspected or tested does not comply with the Employers Requirements shall be submitted without delay in order that the Contractor's proposals for rectification may be assessed.

The content and format of the inspection and the test records is to be approved by the Principal Contractor.

i) Works Visits

Works visits are required to inspect final witness testing and for validation purposes. The Contractor shall allow in the Tender for all costs incurred by 3No. Professional Team members, in visiting works tests, inspections and valuations including all travel, subsistence and hotel accommodation as necessary in both the UK and overseas.

1.14 Commissioning

Commissioning of the Contract Works is to be included as detailed in this Specification. The Design Team will witness and sign off every section of the testing and commissioning required. The Contractor, and their commissioning specialist, shall liaise fully with the Design Team.

a) Attendance and Co-operation

Give at least seven days' notice to the Principal Contractor of requirements for the attendance and co-operation of other Contractors.

b) Notice to Principal Contractor

Give at least two days' notice of any commissioning or testing to be carried out to enable the Principal Contractor and the Design Team to organise the necessary witnessing.

c) Checking and Commissioning

Commissioning includes the setting to work and regulation of the installation.

Check all installations and commission in accordance with the Employers Requirements including but not limited to the following:

i) Co-operation with the Principal Contractor and Design Team to produce method statements and a coordinated programme for the testing and commissioning of the complete Contract Works.

ii) Provision of all consumable materials. Check the availability of electrical power, fuel, water etc, costs for which will be met by the Employer.

iii) Provision of such temporary communication apparatus as is necessary to enable members of the commissioning team who are unable to be in visual or oral contact with each other to carry out their tasks safely and effectively. Such apparatus shall not cause interference with equipment owned or operated by other parties.

iv) Provision of proper and permanent records of relevant readings of all quantities taken during the checking, pre-commissioning, and commissioning procedures. The form of the records shall be agreed with the Principal Contractor in advance of the commissioning and the record for each complete commissioning procedure shall be dated and signed by the person whom the Contractor has appointed to be formally in charge of commissioning.

1.15 Performance Tests

When the Contractor has completed the commissioning of the whole of the Contract Works he shall give to the Principal Contractor written certification of this fact. The certificate shall be signed by the Director or Manager responsible for the Trade Contract.

Only when this written certification has been received by the Principal Contractor will performance tests be allowed to commence. These tests shall be carried out during a one week period. All systems shall be operated to ensure performance matches the design criteria scheduled in this specification. Unless otherwise agreed by the Principal Contractor in writing, where engineering systems involve the works of more than one Contractor, performance tests will only be allowed to commence when written certification from all the relevant Contractors has been received.

Carry out during this period full tests on the compete Contract Works to demonstrate that the works meet the requirements of the Employers Requirements.

The Principal Contractor may at his discretion waive any part of the full test procedure if he considers it has been satisfactorily demonstrated, recorded and properly certified at any earlier time but the Contractor shall however allow in his costs for carrying out all of the provisions in this clause.

1.16 Employer Instruction and Training

Prior to Practical Completion of the whole of the project, the Employer may appoint maintenance staff or a Maintenance Contractor and the Contractor shall include for providing any necessary assistance to the Employer's staff during the course of the installation and prior to Practical Completion to explain the purpose and function of the Works.

Include for a minimum period of three plant operating days prior to Practical Completion, to instruct the Employer's maintenance staff or Maintenance Contractor in the day to day running of the plant and systems. The location and function of all systems together with their control functions shall be explained and the procedures given in the Operating and Maintenance Manuals for starting up, shutting down, isolating sections, emergency procedures etc, shall be comprehensively explained and demonstrated to the Employer's satisfaction.

1.17 Spares, Tools and Charts

a) Spares

Provide at Practical Completion as part of the Contract package the following spares:-

Mechanical Services

- Sets of belts for each fan motor set.
- Set of filters for all air handling units, fan coil units and close control air conditioning units.
- 12 months' supply of water treatment, dosing chemicals.
- 4 spare fuses of each rating to be provided in each control panel.
- 4 spare air vent keys.

Electrical Services

- 10 Spare lamps of each type used.
- 2 Spare smoke detectors, 2 spare heat detectors
- 5 Fire alarm call point glasses
- 2no MCB's & MCB/RCD's of each type and rating installed

Spares shall be handed over to an appointed representative of the Employer and a signed receipt obtained by the Contractor.

b) Tools

At Practical Completion, provide one complete set of tools and portable indicating instruments for the operation and maintenance of all plant and equipment together with suitable means of identifying, sorting and securing same. These shall include all necessary specialist tools and instruments related to plant items.

c) Plant room Schedules and Schematics

In addition to the provision of Record Drawings, provide the following at a size to be easily readable arid frame under glass and hang in each plant room and all other appropriate locations as directed by the Principal Contractor.

i) Circuit diagrams consisting of schematic drawings of circuit layouts showing identification and duties of equipment, numbers and locations, control and circuits.

ii) Valve Schedules in the form of printed sheets showing the number, type, location, application, service and symbol, and normal operating positions of each valve installed.

iii) Control schematics and settings.

iv) Mechanical and electrical plant items.

v) First aid instructions for treatment of persons after electric shock.

vi) All other items required under Statutory or other regulations.

vii) Location of main incoming gas valve serving gas meter and any safety shut off devices.

viii) Emergency operating procedures and telephone numbers for emergency call-out service applicable to any system or item of plant.

ix) Electrical distribution diagrams.

1.18 Construction Design and Management Regulations 2015

The tendering Electrical Services Sub Contractors are noted to the following statements relating to the above regulations for construction and maintenance of building once built:

a) Design/Pre-Construction Stage

For design elements by the Electrical Services Contractor, the Electrical Services Contractor will be the appointed 'Designer' and will be required to develop the design proposals ensuring and identifying that risks are eliminated or foreseeable risks controlled through the design work.

The Electrical Services Contractor shall liaise with and issue associated information to the appointed Principal Designer.

b) Construction Stage

The Electrical Services Contractor shall be required to present risk assessments and method statements of the works; initially on overall general method statement followed by fully detailed job specific method statements for connections to live services, works within occupied public areas, large items of plant/ equipment and such like.

It shall be necessary for the Contractor to attend meetings with the Principal Designer, Principal Contractor, design team and clients representatives to determine the required method statements and a programme for the necessary shutdowns.

Method statements will be particularly important due to the nature of the works within a sensitive environment and should be presented to the Principal Contractor via the Principal Designer at least 7 days prior to each element of the works. Method statements will be assessed by the Principal Designer, design Team and the Client's representatives, amended if deemed necessary and a written statement of approval issued to the Principal Contractor when fully agreed.

The Contractor must note that requested method statements must be presented, assessed, amended if necessary and approved before each identified element of the works commences.

1.19 Schedule of Rates

The Contractor is to provide a fully quantified, prices and detailed schedule of rates showing how the tender price has been built up with a period of 7 days of being asked to do so by the Contract Administrator.

The Contract Administrators request for such information is not to be interpreted by the tenderer as an indication that his offer has been accepted or is about to be accepted.

The schedule of rates submitted is to be fully priced and moneyed out to make up the tender sum. Each item is to be priced to include the cost of the item, fixings, installation, overheads and profit.

The Contractor is responsible for the accuracy of all quantities and extensions contained in the schedule of rates.

The Contract works will be carried out in accordance with the lump sum price included on the form of tender and in the analysis of tender. The schedule of rates submitted by the successful Contractor will be used solely to establish the sums to be added to or subtracted from the contract sum should any variations be instructed to the works.

1.20 Servicing

The Contractor shall include to service and maintain the electrical installation throughout the 12 months' defect period. All plant and equipment shall be maintained in accordance with the manufacturer's requirements to maintain the warranty. The Contractor shall include for all parts and labour as required.

The Contractor shall provide confirmation of the maintenance undertaken during this period by issuing manufacturers reports/schedules to the Consulting Engineer and Client following works being undertaken.

Derbyshire Fire & Rescue Service

Proposed Temporary Fire Station

Unit 3C, Boardman Industrial Estate, Swadlincote

Employer's Requirements for Electrical Services

Section 2

Scope of Works

Derbyshire Fire & Rescue Service

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Unit 3C, Boardman Industrial Estate, Swadlincote

Employer's Requirements for Electrical Services

Section 2

Scope of Works

2.0 Introduction

This Employer's Requirements Performance Specification relates to the electrical services works which are required at the proposed temporary fire station at Unit 3C, Boardman Industrial Estate, Swadlincote, Derbyshire.

The proposed building will comprise of accommodation as shown on the architectural drawings which includes:

- Ground floor office accommodation, appliance bay and fire service specific spaces
- First floor staff areas

The tenderers are advised to make themselves fully aware of the site conditions and existing services. No claims will be considered due to lack of knowledge regarding the site conditions or existing services.

The Contractor is to include for all work shown, described or apparent as being necessary for the complete and proper execution of the works.

The Contractor will be deemed to have examined the site during the tender period and fully acquaint themselves as to the local conditions, accessibility of the site, the conditions affecting Labour and materials and the execution of the contract works generally.

This specification shall be read in conjunction with all other tender information, including but not limited to Architectural drawings and specifications, structural engineering drawings and specifications, Mechanical and Electrical services Employer's Requirements.

2.0.1 Fire Station Brief

It is essential that the Contractor incorporates the requirements details within the Fire Station Brief document, room data sheets, and DFRS Technical Appendices contained within the tender documents. Should any conflict arise between the Employers Requirement and the Fire Station Brief, this shall be brought to the attention of the Contract Administrator during the tender period.

2.0.2 Provision of Builders' Work

The Contractor shall include for providing all necessary Builders' Work information for the proposed Contractor Design to the Principal Contractor.

The Contractor shall provide necessary Builders' Work Schedules, drawings, attendances and details to the Principal Contractor in order for them to undertake necessary works.

2.1 Summary of Systems:

The Contractor shall be responsible for the procurement, design, installation, commissioning and setting to work of the complete Electrical Services Installation.

The scope and provision of the Electrical Services is set out below:

a) Incoming Electricity Service
b) Main Switchgear and Distribution
c) Lighting and Emergency Lighting Installation
d) Small Power Installation
e) Power Supplies to Fire Service Equipment
f) Power Supplies to Roller Shutter Doors
g) Power Supplies to Mechanical Plant
h) Telephone and Data Containment
i) Access Control System
j) Television Distribution System
k) Lightning Protection Systems
l) Provision of Earthing and Bonding
m) Testing and Commissioning

2.2 Existing Services

The Contractor shall disconnect, strip out and remove from site all existing electrical services which become redundant as a result of this project being undertaken. Existing electrical services shall not be reused unless specifically stated in this document.

2.3 Electricity Service

The new electricity service to the temporary fire station is to be provided by the Landlord.

The Contractor is to include for undertaking negotiations with the Industrial Units Landlord for the supply and installation of 3 phase and neutral, 415 volt electricity service.

The Contractor is to provide all information required by the Landlord including the breakdown of the final projected maximum demand to the site.

The Contractor shall allow for a 20% increase in electrical load for future use or further expansion.

It is anticipated that the capacity of the new electricity service will be 140kVa. The Contractor is responsible for determining the exact supply capacity required.

2.4 Main Switchgear and Distribution

The Contractor will provide a complete electrical distribution system throughout the building.

A main moulded case circuit breaker panel board shall be provided adjacent to the incoming electricity service metering equipment. The panel board shall be connected to the Electricity Board meters using suitably sized cables enclosed in galvanised steel trunking.

The main panel and electricity board meters and cut out will be located in gym as shown on the drawings.

The main panel board shall be sized to have a spare load capacity of at least 20% for future expansion together with a minimum of 1 No. 3-phase spare ways.

The panel board shall be complete with suitably sized moulded case circuit breakers to serve the final circuit distribution boards, plant control panels and equipment etc. The main panel board shall be fitted with overall hinged doors.

The panel board shall be fitted with multi-function meters to each outgoing way, where required for Building Regulation compliance.

The final circuit distribution boards shall be of the same manufacturer as the main panel board and located at strategic positions throughout the building to provide local protection of final circuits. Distribution boards shall be complete with integral main isolator. The distribution boards shall be fitted with miniature circuit breakers of suitable rating and type for the circuits served.

Distribution boards shall be designed to a minimum 20% spare load capacity and 20% spare ways for future use. Distribution boards shall be complete with blanks to un-used outgoing ways, shrouded main terminals, earth bar overall hinged cover etc.

Main panel board and all distribution boards shall be labelled to indicate their function with the area and equipment served. Main panel board and each distribution board shall be fitted with a laminated typed circuit chart fixed inside the hinged cover. Information required on the circuit chart is as detailed in the schedules of this document.

The Contractor shall provide the multifunction meter to the main incomer of the panel board together with multi-function meters to each outgoing way where required for building regulation compliance.

2.5 Sub-Mains Cables

The Contractor shall design, supply and install all necessary sub-mains cables from the main panel board to the final circuit distribution boards, plant control panels etc. All sub-main cables shall be concealed from view within the staff areas of the building. Surface fixed sub-mains cables shall only be permitted within the appliance bay.

Sub-mains cables shall comprise XLPE/SWA/LSF.ZH cables. All sub-mains cables shall be installed on new heavy duty return flange galvanised steel cable tray within the building.

2.6 Final Circuit Wiring

2.6.1 Appliance Bay

All final circuits in the appliance bay are to be wired using LSF single core copper cables installed in new galvanised steel trunking and rigid PVCu high impact heavy gauge conduits. Trunkings and conduits shall be surface fixed within the appliance bay.

2.6.2 All Other Areas

In all other areas final circuits are to be wired using LSF twin and earth cables installed to form a flush installation. Where cables are concealed within the building structure, they should be drawn into conduits installed flush.

All flush conduits shall be rigid PVCu high impact heavy gauge. The use of flexible conduit shall not be permitted except for final connections (maximum length 300mm to equipment) where it is impractical to use rigid conduit. All surface mounted conduits shall be galvanised steel.

Where cables need to drop to switches/sockets etc mounted on fair faced block work walls they shall be installed in PVC-u high impact conduit which shall be painted to the same colour as the wall finishes and installed surface.

Where final circuit cables are run above the suspended ceilings or in the roof space, they should be neatly clipped to the building structure. Where a multiplicity of twin and earth cables are run together they should be installed on new galvanised steel return flange tray above the suspended ceiling or in the roof space.

Where cable trays are suspended from the structure, e.g. above suspended ceilings they shall be suspended using threaded rod and Unistrut or cantilever brackets. Mounting cable tray horizontally on walls shall not be permitted.

2.7 Internal Lighting

The Contractor is to design, supply and install a complete lighting installation to the Fire Station building in accordance with the information provided on the drawings and in this document.

The Contractor shall design the lighting installation in the areas in accordance with the CIBSE Lighting Guides and BS EN 12464-1: 2002.

The type and approximate location of luminaires is shown on the drawings. The Contractor is responsible for determining the exact quantity of luminaires required.

Final connection of the recessed luminaires shall be via plug in ceiling rose and heat resistant flex. Final connections to surface mounted luminaires shall be via the final circuit wiring. Where the final circuit wiring is installed within the luminaire it shall be fitted with heat resistant sleeving.

The maximum length of flex from plug in ceiling rose to luminaire shall be 2 metres. All flexes above suspended ceilings shall be supported so that they do not rest on the ceiling grid.

Where luminaires are recessed into or fixed directly to the suspended ceilings the Contractor shall ensure that the ceiling is suitably fixed to support the luminaires. The Contractor shall include for any supplementary supports that may be required in the event that the suspended ceiling alone cannot support the luminaires.

The Contractor is to ensure that lighting in the office areas is fully LG7 compliant.

Internal lighting shall be controlled either by manual switches or by automatic occupancy/daylight sensors as shown on the drawings.

A turnout lighting system is to be provided in several areas of the building as shown on the drawings denoted 'TO'. The turnout lighting shall illuminate dedicated luminaires automatically by remote control. The Contractor shall note that the turnout lighting controller shall be provided by a specialist employed direct by the Client. The Contractor shall include for full liaison with the specialist. The Contractor shall provide the necessary relays/contactors to operate the turnout lighting luminaires.

The Contractor shall provide DIN rail mounted relays in a separate enclosure adjacent to distribution boards to operate the turn out lighting circuits.

A separate relay shall be provided for each group of switched luminaires connected to the turn out system. The contractor shall provide all wiring associated with the tur out lighting system back to the turn out lighting controller. Turn out lighting wiring shall be installed in accordance with Clause 2.6.

2.8 Emergency Lighting

The Contractor is to provide a complete emergency lighting installation in full compliance with the requirements of BS 5266, BS EN 1838 and Building Control Officer requirements.

The Emergency lighting is to consist of 3-hour duration self-contained luminaires and general lighting luminaires fitted with emergency conversion packs.

The supplies to the emergency lighting luminaires shall be from the same local circuit as the general lighting so that the emergency lighting will operate in the event of local circuit failure.

Each emergency lighting luminaire and general lighting luminaire fitted with an emergency lighting conversion battery pack shall be complete with self-test module.

The Contractor is responsible for determining the exact quantity and setting out of emergency luminaires required and obtaining the agreement of the Building Control Officer.

2.9 Small Power Installation

The Contractor is to provide a complete small power installation to the building comprising socket outlets, fuse connection units etc. The quantity and approximate location of socket outlets and fuse connection units is indicated on the drawings. The contractor shall include for any additional socket outlets, fuse connection units etc. as required by the Contractors design development.

The small power installation shall be wired in accordance with clause 2.6 of this document. Small power accessories shall be installed surface mounted in the appliance bay, plant areas and fair face block work only. In all other areas, small power accessories shall be mounted flush or installed in dado trunking, where applicable.

2.9.1 Appliance Bay

Heavy duty galvanised steel trunking shall be provided around the walls of the workshop area at high level. Manufacturer's bends and supports must be used.

All socket outlets and isolators in the appliance bay shall be surface mounted and connected to the perimeter trunking using surface fixed rigid PVCu high impact heavy duty conduits.

Sockets outlets shall be wired on ring main circuits with no T's or Spurs installed and each circuit shall incorporate a separate CPC protected in a ring.

The contractor should also provide 2No charging cable reels outlets, together with the associated appliance inlets for connection to fire appliance. The charging reels shall be retractable type with BS 4343 appliance inlets.

2.10 Roller Shutter Door Supplies

The Contractor is to design, supply and install the power supply to the existing roller shutter door terminating in a suitably rated isolator.

2.11 Compressor

The Contractor is to design, supply and install the power supplies as necessary to the compressor system terminating in a suitably rated isolator. Final connection and commissioning of the compressor system shall be by the system installer.

2.12 Power Supplies to Mechanical Plant

The Contractor is to provide all necessary power supplies to the new Mechanical Services heating ventilation and air conditioning installation.

The Contractor is to provide a means of local isolation adjacent to each item of Mechanical plant.

The contractor shall note that the power requirements for mechanical plant are not shown on the drawing and must be obtained from the mechanical services contractor during the tender period.

The Contractor shall note that no variation will be accepted due to lack of information being obtained for the power supplies required for mechanical services plant and equipment during the tender period or for any variance in the power supplies required as the Contractor develops the design.

All power supplies to mechanical services plant and equipment shall be wired in accordance with Clause 2.6 of this document.

2.13 Dado Trunking

The Contractor is to provide 3-compartment dado trunking complete with socket outlets and back boxes for IT and telephone outlets as shown on the drawings. All dado trunking shall be suitable for cat6 data cabling.

2.14 Television Distribution System

The Contractor is to design, supply, install and commission the television distribution system complete with television aerial, amplifiers, splitters and flush isolated television outlets.

The Contractor is to engage a television system specialist to undertake an onsite survey to determine the optimum position to locate the television aerial.

Final position of the television aerial is to be agreed with the contract administrator.

Television system cabling is to be installed flush concealed above the ceilings and protected down walls using conduit.

The television outlets that are are shown on the drawings.

2.15 Telephone and Data Cabling Containment

The Contractor is to engage a approved specialist to design, supply, install and commission the telephone and data cabling installation. The Contractor is to include for full liaison and full co-ordination with the specialist. The Contractor is to provide all necessary containment and power supplies for the systems.

The Specialist shall provide twin outlet RJ45 voice and data points as detailed on the room data sheets.

The Specialist shall cable each outlet back to the comms cabinet in the station office using category 6 cabling. The Specialist shall provide a data cabinet with patch panels into which the category 6 cabling shall be terminated.

Where telephone and data outlets are wall mounted, the Contractor shall provide a single gang accessory box surface mounted in areas where sockets etc are surface mounted and installed flush in all other areas.

The Containment network shall be designed such that each single gang accessory box can be fitted with a twin telephone or twin data outlet. Single gang accessory boxes shall be linked to the telephone and data trunking network using conduits. All conduits shall be complete with draw wires.

The Contractor shall install and network of cable basket above the suspended ceilings for telephone and data cabling.

Where suspended ceilings are not installed the Contractor shall provide a network of PVCu trunking and conduit for the telephone and data cabling.

The telephone and data outlets that are required as detailed in the room data sheets.

2.16 Intruder Alarm System

The Contractor is to employ the specialist scheduled to design, supply, install and commission an intruder alarm system throughout the building. All intruder alarm system cabling shall be run in a dedicated containment system. This shall comprise cable baskets above the suspended ceilings, surface conduits/trunking in the appliance bay and plant room areas.

The Contractor shall provide all necessary containment comprising conduits and cable baskets as required by the alarm specialist. The Contractor shall provide the power supply from the local distribution board to the intruder alarm system control panel.

Final connection shall be via a 13-amp un-switched fused connection unit and flush conduit.

2.17 Fire Alarm Installation

The Contractor is to provide a fully addressable fire alarm system throughout the building. The system is to fully comply with BS5839 Part 1 and the local building control officer requirements.

The minimum level of protection is to be L1. Automatic detection shall also be provided to any additional areas are requested by the local building control officer.

The fire alarm system shall be wired using firetuff cabling with red LSF Sheath. Surface fixed fire alarm cabling shall only be permitted in the appliance bay and plant room areas and on fair faxed block work.

Fire alarm cabling in all other areas shall be installed to form a flush installation. Where fire alarm cabling is installed flush within the building structure ie within plastered walls etc the cabling shall be drawn into flush conduit. Where single fire alarm cables are installed in the roof void or above suspended ceilings they should be clipped neatly to the building structure. Where multiplicity of fire alarm cables are run together in the ceiling void or roof space they should be installed on dedicated new galvanised steel cable tray.

The Fire alarm main control panel shall be installed flush in the ground floor entrance lobby.

The Contractor shall engage the fire alarm specialist scheduled to carry out the commissioning of the system.

2.18 Access Control System

The Contractor is to engage the specialist scheduled to design, supply, install and commission the access control system. The Contractor is to include for full liaison and full co-ordination with the specialist. The Contractor is to provide all necessary containment and power supplies for the systems as required by the Specialist.

A high quality door access control system is to be provided to control the access to the building.

The system is to comprise:

Key pad and high quality maglock to the external entrance door. The door shall be released by push buttons from inside the building. The access control door shall automatically release upon activation of the fire alarm.

2.19 Turn Out System

The Contractor is to supply, install and commission the turn out system sounders and beacons as detailed on the room data sheets. The contractor shall include for all wiring back to the turn out system controller. All wiring shall be installed in accordance with Clause 2.6. The Contractor shall include for full liaison with the turn out lighting controls supplier to ensure compatibility with the turn out sounders and Turn Out beacons, which shall be supplied and installed by the Electrical Contractor.

The Contractor shall also provide an audible door bell tone over the turnout system speakers operated from a push button adjacent to the main entrance door.

2.20 Connection to Kitchen Equipment

The Contractor shall provide power supplies for all kitchen and canteen equipment which shall include but not be limited to fridges, dish washers etc.

Where white goods are located below the worktop the Contractor shall provide a single gang socket immediately behind the fridge, dish washer etc. Each single gang socket shall be controlled via a double pole switch mounted above the worktop. The double pole switch shall be engraved to detail the item controlled.

The Contractor shall refer to all architectural drawings to determine the exact location and setting out of kitchen and canteen equipment etc.

2.21 Earthing and Bonding

The Contractor is responsible for undertaking all necessary earthing and bonding as required to comply with the current edition of the IEE wiring regulations.

2.22 Testing and Commissioning

The Contractor is responsible for testing and commissioning the installation in accordance with regulations.

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Employer's Requirements for Electrical Services

Section 3

Employer's Requirements Standard Electrical Services

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Employer's Requirements Standard Electrical Services

3.1 General

This section details the general requirements for the Electrical Services Installation and shall be read in conjunction with all other sections of the Specification and contract documents.

The complete Electrical Services Installation shall be to the highest standards and in accordance with, but not limited to the current editions of the following.

a) The 17th Edition of the IEE Wiring Regulations.
b) Electricity Supply Regulations.
c) Health and Safety at Work Act.
d) Chartered Institution of Building Services Codes.
e) The Electricity at Work Regulations.
f) COSHH.
g) Requirements of the Local Authorities including Building Control Officers, Environmental Health Department and local Fire Officers.
h) British Standards

No materials shall be installed which may pose a hazard to health of the construction, maintenance or eventual occupants of the building.

No materials shall be installed which are potentially damaging to the Environment.

All electrical equipment shall be designed and fitted with interference suppression devices to comply with BS 800 and components and filter units shall comply to BS 613.

3.2 Miniature Circuit Breakers

Miniature circuit breakers shall be manufactured to comply with BS 3871 Part 1. Circuit breakers shall be type A, B, C or D as specified.

Short circuit breaking capacity shall be to type M9.

All miniature circuit breakers shall comply with the test requirements of 20°C and 40°C.

All miniature circuit breakers shall be rated to withstand the maximum fault current attainable in the circuit they control.

The operation of the tripping mechanism shall be instantaneous under short circuit conditions. The fitted magnetic thermal or magnetic hydraulic time delay shall be designed to give a delay on tripping inversely proportional to the magnitude of the circuit current.

3.3 Cables

All cables and flexible cords shall be manufactured by an approved manufacturer.

Only one manufacturer of each type of cable or flexible cord shall be used throughout the installation.

For any final sub-circuit no cable shall be installed with a cross sectional area of less than 2.5mm^2.

Flexible cords shall be installed to a minimum size of 0.75mm^2.

XLPE/SWA/LSF Cables

XLPE/SWA/LSF Cables shall be manufactured in accordance with BS 6724 with XLPE insulation to BS 5467.

The cable shall meet the minimum reduced flame propagation requirements of BS 4066 Part 1 for single cables and category C of BS 4066 Part 3 for bunched cables.

The cable shall be made up of XLPE insulated LSF sheathed copper conductors and steel wire armouring with high conductivity wires to BS 1442 inserted to make the conductivity the same as a separate conductor.

Bending radii of XLPE/SWA/LSF cables shall be as large as possible to the constraints of the building but shall be kept to a minimum of:

a) 6 x diameter of the cable for insulated control and instrument cable.

b) 12 x diameter of the cable for power applications.

Glands shall be of the compression type to BS 6121 constructed to grip both inner and outer sheath so that any strain on the cable is taken by the steel wire armouring. This shall effectively be bonded to the gland.

The gland shall incorporate an efficient seal between the gland itself and the outer cable sheath and shall be covered in an LSF black coloured shroud.

Earth rings shall be installed at each gland position. Stripping of the cable and installation of the gland shall be in accordance with the manufacturer's recommendations.

LSF or LSOH Insulated Wiring Cables

LSF or LSOH wiring cables shall be manufactured to comply with BS 6360 and gas emission shall be less than 0.5% HCI in accordance with BS 6245 Part 1 reduced flame propagation shall comply with the requirements of BS 4066 Part 1.

Final sub-circuit cables shall be run in separate conduits from sub mains and lighting and power circuits shall be kept separate from each other as far as practically possible except where conduits cross.

No cables shall be drawn into conduits until all such conduits bends, boxes or other fittings have been permanently fixed in position and all associated plastering works etc are completed.

This shall also apply to any cables to be run in any trunking installation. All cable pins, racks or supports must be fitted before cables are drawn.

The consulting engineer reserves the right to inspect all conduits prior to any cable being installed.

The separate conductors of the same circuit shall in all cases be drawn into one conduit.

Cables sheaths shall be coloured with the European harmonised colours as detailed in Amendment 2 to BS 7671: 2001 published in March 2004.

All flexible cables and cords shall be rated in accordance with the current IEE Regulations and shall be scheduled to suit the ambient temperature conditions.

Flexible cables and cords shall be of circular waterproof LSF sheathed.

Minimum size cross sectional area of flexible cords shall be 0.75mm^2.

Cable conductor sleeve colouring shall be as follows:

Earthing	-	Green/Yellow
Live	-	Brown
Neutral	-	Blue

Apparatus with flexible cable entries shall be fitted with strain relief grips to prevent unnecessary mechanical strain on the conductors.

Where single core cables are used, the plate through which the cable enters the apparatus together with couplings and locknuts when required, shall be nonferrous.

All cable ends shall be protected and sealed with glands and seals utilising cold plastic compound of a grade recommended by the manufacturer of the cable.

Where multicore cables terminate at a switch or distribution board of any metal clad accessory other than at a specially manufactured control panel, or a spout entry BS conduit box, the cable gland shall terminate in a screwed conduit socket so arranged as to be in good mechanical and electrical contact with the metal case.

An internal brass bush screwed into the socket shall be fitted from inside the case and the two locked together.

The cable sheath shall be clamped to the gland with the locking device recommended by the cable manufacturer.

Cable conductors up to 4mm^2 to be connected to plant and accessories shall be connected to stud type terminals.

The cable shall have a crimped type lug fitted for good contact. This shall be fitted to the stud between two brass or plated washers by a nut and lock nut.

If a solid conductor is to be connected to a stud terminal a lug may not be fitted if the hole is over 90% of the conductor area.

Conductor sizes of cross sectional area over 4mm^2 connecting to plant shall have the appropriate size lug crimped to the cable.

Where the cable is to be used for power applications an approved pneumatic or hydraulic crimping tool shall be used.

3.4 Cable Cleats and Supports

All cleats or supports for single core cables shall be manufactured from non-magnetic material.

Cable cleats and ties shall be used to secure cables and shall be spaced at intervals not exceeding those in the IEE Regulations or less if recommended by the cable manufacturer.

Cables shall also be fixed on all vertical runs passing through floors both above and below the floor level.

Cleats shall be provided in all vertical runs of cable at intervals of not more than 600mm.

To minimise underside sheath currents in single core cables carrying three phase systems, cables and cleats shall be trefoil arranged with the cables touching.

Where the trefoil formation has to be separated unavoidably, approved arrangements shall be made to minimise the sheath currents.

Single core cable cleats shall be of sufficient strength to withstand short circuit conditions.

Cables run horizontally on walls or vertical surfaces shall be cleated to channel or similar. Multicore control or power cables with an overall diameter of less than 30mm may be run securely fixed by cable ties or straps to cable tray.

No cables shall be ‘stacked’ on the containment system except for cables run in trefoil formation or with prior approval from the consulting engineer.

Cleats shall be fixed at centres not exceeding 1000mm or less if recommended by the cable manufacturer.

Cable ties or straps shall be fixed at spacings not exceeding 600mm or less if recommended by the manufacturer.

Cable ties shall be manufactured from serrated nylon and shall be low smoke emitting.

3.5 Conduits

Steel conduits shall be Class ‘B’ heavy gauge seam welded type and shall be manufactured to comply with BS 31, BS 6053, BS 4568 and BS 6099.

Conduit finish shall either be galvanised (Class 4) or black enamel Class 2.

No conduit smaller than 20mm diameter shall be used.

Separate conduit systems shall be run for individual service requirements.

Conduit ends shall have all sharp edges removed and be cleaned before installation.

Conduits to be connected to unspouted accessories such as fuse boards, light switches, socket outlets etc shall be by means of flanged couplers and brass male bushes etc.

Prior to installation the Contractor shall ensure every length of conduit is inspected and if it is not perfectly smooth inside and outside and free from flaws it shall be rejected.

Conduit boxes shall be manufactured to the above British Standards and shall be circular of the malleable iron type.

All boxes shall have long bush spouts with the exception of ’loop’ in boxes. These shall be of the back outlet type.

All box covers shall be of the heavy steel type and where a flush conduit installation is used, the covers shall be flush with the plaster finish.

Where necessary off sets are likely to occur, adaptable boxes of a sufficient size shall be installed. Circuit separation shall be maintained at all times.

Bends and sets in runs of conduit between boxes shall be limited to the recommendations of the current edition of the IEE Electrical Regulations to ensure ease of installation for cables.

Bends and sets shall be made cold and the conduits shall not sustain any reductions in cross sectional area or deformation. The radius of any bend must not be less than the minimum requirements of BS 31.

All joints shall be painted in accordance with the manufacturers recommendations immediately after the installation to ensure corrosion of any part of the conduit does not occur.

In plant and external areas galvanised conduit and accessories shall be used. On external installations all fittings shall be sealed with neoprene gaskets and conduit threads shall have a mastic sealant to prevent the ingress of water and corrosion.

All conduits shall be tightened properly between the lengths and into fittings or boxes so that the wiring is continuously and effectively protected throughout its length.

Conduits shall not be under mechanical stress and shall be electrically continuous including where special arrangements are made using expansion type couplers for traversing expansion joints.

Conduits shall be laid so as to drain off any condense moisture without damage to any connections. The conduit length between draw in points shall not exceed 9000mm for straight or near straight lengths or 7500mm for runs including two right angle bends without prior consent of the consulting engineer.

Conduits run on the surface shall be fixed with distance/spacer saddles or suspension clips which allow the conduit to be run into all accessories without forming special bends or sets for the purpose.

Pipe hooks shall not be used for surface conduit installations.

Conduit run on the surface of walls and/or ceilings shall be securely fixed at the maximum intervals in accordance with the following schedule:

Size	**Interval**
20mm	1500mm
25mm	2000mm
32-50mm	2500mm

All surface conduits shall have saddles at a distance of not more than 300mm from their point of emergence from floors, walls or ceilings and the remaining saddles shall be consistent with the fixing requirements and appearance.

Saddles shall also be fixed on each side of every bend or junction at a distance of not more than 300mm from the point of intersection of the centre line of the conduits.

Conduits shall be installed with minimum clearance of 75mm between themselves and any other service.

Conduits to be concealed in ceilings, floor voids or chased into walls and buried with a plaster finish, or laid direct on structural floors and concealed by the floor finish shall be sufficiently chased into the material to provide at least 12mm cover over the conduits.

The Contractor shall provide sufficient supervision to ensure co-ordination of the chases and depths are correct prior to the conduit installation.

Draw wires shall be provided in all conduit runs to facilitate the cable installation.

Conduits shall be cleaned and inspected before any cables are drawn into them.

Conduit boxes for all lighting points shall be positioned so that future wiring can be easily carried out with removal of any inaccessible ceiling etc.

Flexible steel conduits shall be manufactured to comply with BS 731 Part 1 and where specified shall be LSF sheathed overall.

Flexible conduits shall be installed where a rigid conduit entry is not possible or desirable in final connections to plant or motors. The fixed conduit shall terminate in a conduit box or adaptable box with earth terminal fitted at a position adjacent to the equipment.

The wiring from this box to the equipment shall be continued in flexible conduit.

A separate earth conductor not less than 2.5mm^2 shall be run in the flexible conduit and connected to earth terminals on the connection box on the equipment, and in the conduit box terminating the fixed conduit run where appropriate.

The earth conductor shall be brought out through suitable size holes drilled in the units and connected to the earth terminals outside the units.

3.5 Cable Trays and Trunking

All cable trays shall be manufactured from sheet steel to BS 1449 and to a galvanised finish to BS 5729.

Cable trays shall be manufactured to the following minimum thicknesses:

Cable trays up to 225mm - 1.2mm metric gauge
Cable trays from 225mm to 450mm - 1.6mm metric gauge

Conduits shall enter the trunking by means of smooth bore male brass bushes, locknuts etc.

Where trunking sizes are not shown on the layout drawings or in the detailed specification they shall be sized to achieve 50% spare capacity of the average size cable to be contained within the particular trunking. They shall be sized in accordance with the space factors given in the current edition of the LEE Regulations and supplements.

Trunking shall be supported by means of purpose made mild steel brackets or hangers, or where multiple service runs are to be co-ordinated, trunkings may be securely fixed to a channel section and steel supports fixed to structure.

Channel sections shall not be less than 40mm x 40mm and steel supports not less than 6mm diameter.

Fixings shall be to a maximum distance of 1200mm centres and attention must be given to provide sufficient fixings to limit lateral movement.

PVC trunking shall be manufactured to comply with BS 4678 Part 4 and characteristic ‘P’ of BS 476 Part 5 and shall be of rigid construction.

The requirements appertaining to steel trunking shall generally apply to PVC trunking.

All dado trunking shall be with end caps, cover seals, cable retainers, couplers and all necessary accessories to provide a complete system.

3.6 Earthing

Earthing systems shall fully comply with the current edition of the Electrical Regulations and British Standard BS 7430.

Protection against indirect contact shall be by utilising the overcurrent protective devices for earthed equipotential bonding and automatic disconnection of supply.

All metalwork which may provide a path to earth such as all plumbing hot and cold water pipework, waste pipes, stainless steel sinks etc within 2000mm of any electrical outlet shall be bonded to the earthing system.

All incoming service ducts and pipes shall be bonded to the electrical earthing system direct from the main earth bar.

The resistance between any points on the bonded system and main earth shall not exceed 0.5ohms.

Low voltage switchboards shall be provided with a 25 x 3mm copper tape to which all electrical apparatus shall be connected to form a continuous bonded earth system directly connected to the earth point.

Tapes 25 x 3mm shall be fixed at intervals not exceeding 600mm intervals.

All extraneous conductive parts and metalwork shall be solidly bonded by supplementary bonding conductors of minimum size 4mm^2.

Cables shall be LSF sheathed and coloured Green/Yellow.

All bonding conductors shall be concealed by a surface or flush conduit system as appropriate.

Extraneous parts shall include Building Cladding, Raised Floors and Supports, Handrails, Ceiling Supports and Structural Steel Work etc.

Whilst sizes of earthing bonding and protective conductors will have, in most cases, been stated within the specification, it is the Electrical Contractors responsibility to check the actual resistances in accordance with the examination and test procedures outlined therein and in the current edition of the IEE Electrical Regulations.

The contractor shall confirm the tabulated requirements have been met or calculations based on the regulation formulae.

All protective conductor cables shall be connected by properly sized lugs crimped to the cable.

Earth Electrode systems shall be installed as necessary to comply with BS 7430.

A single multi jointed earth electrode rod should initially be driven in the ground to obtain the earth resistance specified.

If the resistance cannot be achieved a series of electrode rods shall be driven and connected in parallel until the required resistance is gained.

Earth rods shall be of high conductivity copper 1200mm x 15mm diameter and shall be capable of being extended where necessary.

Earth Electrode rods shall be spaced not less than 1.25 times the depth of the adjacent rods.

The earth rods shall be connected by 25mm x 3mm copper earth tape buried to a minimum of 500mm below ground level.

Suitable clamps shall be securely fixed when connecting the earth tape and rods together.

Inspection pits shall be installed where rods are to be driven and set flush with the ground level.

Inspection pit lids shall have a sufficient seal to prevent the ingress of water into the pit and shall be adequately identified.

3.7 Circuit Identification Labelling

All switch fuse gear shall be clearly identified with an engraved three part laminate ‘traffolyte’ label with a minimum of 6mm high black lettering on a white background to show their functions.

Standard colour phase buttons shall be fixed on the outside of all switch and fuse gear to indicate to which phases of the supply the various circuits are connected.

All labels and phase buttons shall be secured by brass 4BA instrument headed bolts and nuts and each label shall be fixed with at least two bolts.

All switchgear shall be labelled with the number detailed on the Electrical drawings together with a description of its function.

Each distribution board shall be fitted with a clear plastic wallet on the inside of the enclosure door and be fitted with all relevant distribution board charts for individual circuits showing circuit reference, description and number of points fed, location, cable size etc.

The Electrical Contractor shall supply and install in a suitable location within all main switch rooms the following safety wall charts:

a) The Electricity at Work Act 1989.

b) Emergency Resuscitation Treatment for Electric shock.

In addition to this the Contractor shall supply and install an as fitted non-fading drawing, black on white print of the single line diagram mounted in a glazed wooden frame next to each main switchgear.
The drawing shall be to the size of the original schematic working drawing.

All danger and warning labels shall have black lettering on a yellow background.

All proposed label inscriptions shall be submitted to the consulting engineer for approval prior to installation.

All external lights, switches and other remote circuits shall be labelled with the circuit reference to which they are served from.

Identification markers for cables etc shall clearly identify the circuit reference or cable number.

3.8 Testing and Commissioning

Upon completion of the works the whole installation shall be tested by the Contractor in accordance with Part 7 of the IEE Regulations and shall submit the completion and test certificate forms for approval by the consulting engineer.

The Contractor shall give due notification of the date when various tests are to be conducted so the consulting engineer can arrange to be present to witness them.

Failure to notify the consulting engineer may necessitate the tests to be carried out again at the Contractors own cost.

The Contractor shall arrange for off-site testing for equipment as required in the particular section.

The Contractor shall ascertain from the Local Electricity Authority if they require a certificate of test as a condition of accepting the installation for final connection to meters etc and if such certificates are required the Contractor shall obtain sufficient copies of the type of certificate required.

They shall then be submitted to the Local Electricity Authority directly.

Full test certification for all off site testing shall be issued by the appropriate manufacturer for approval for the consulting engineer.

The consulting engineer may require additional function tests when equipment has been offloaded, positioned and installed on site.

Control panels shall have an insulation test of 2kv to earth for a period of one minute in addition to normal manufacturers testing.

415 volt switchgear installations shall be tested in accordance with BS 5486.

Complete mechanical tests shall demonstrate the satisfactory operation of the equipment. All relays shall be set and all overload and tripping devices demonstrated.

Phase rotation of all 3 phase distribution systems shall be demonstrated to the consulting engineer.

Site testing shall include conduit and steel trunking continuity tests.
Testing procedures shall include the following tests:

a) Test for ring continuity.
b) Test of circuit protective conductors including main and supplementary equipotential bonding.
c) Test of Earth Electrode resistance (where fitted).
d) Tests of insulation resistance.
e) Tests of polarity and connections.
f) Measurement of earth loop impedance.
g) Functional tests, including operation of residual current devices and fault-voltage operative protective devices.

The 600/1000 volt LSF insulated mains cable installation shall be tested in accordance with BS6346.

Insulation tests on MICC cables shall be taken 24 hours after the seals have been completed and one month later.

Characteristic curves of fuses and miniature circuit breakers shall be issued by the Contractor.

Whilst certificates may show a given prospective fault current at the origin of the supply, the Contractor shall measure the external fault loop impedance and add this to the test sheets.

This test shall be carried out with the main equipotential bonding conductors temporarily disconnected.

Having determined Ze in this manner, it may be found useful where residual current devices are fitted, to calculate the total earth loop impedance on protected circuits by the calculation method based on direct resistance measurements, rather than to attempt to bridge the 'RCD'.

Residual current devices, where fitted, shall be tested to ensure correct operation and the Contractor shall verify the disconnection times are within the values given with the current IEE Regulations.

Functional tests shall also include checking the operation of all luminaires, lamps and lighting points.

Any energy saving systems shall also be fully tested and commissioned to prove the entire system to the consulting engineer.

Records shall be made of all tests carried out and issued with all maintenance documents and a copy shall also be attached in the previously described manner to all equipment.

3.9 IEE Regulations and British Standards

Full compliance is required with the current edition of the IEE Regulations for the Electrical Equipment of Buildings and all relevant British Standards Codes of Practice including all amendments thereto current at the date of tender.

Full compliance will be required with the latest appropriate British Standards Specifications issued in respect of all materials used on the project.

Derbyshire Fire & Rescue Service

Proposed Temporary Fire Station

Unit 3C, Boardman Industrial Estate, Swadlincote

Employer's Requirements for Electrical Services

Section 4

Specific Schedules for the Electrical Services

Derbyshire Fire & Rescue Service

Proposed Temporary Fire Station

Unit 3C, Boardman Industrial Estate, Swadlincote

Employer's Requirements for Electrical Services

Section 4

Specific Schedules for the Electrical Services

Contents

Appendix

Schedule No 1

Tender Drawings

The Contractor is to also refer to all other tender drawings included but not limited to Architectural, Structural and Mechanical Services drawings produced for this project.

17.043/E/01 Rev T0	Proposed Lighting Layout. Ground Floor Level
17.043/E/02 Rev T0	Proposed Small Power, Data & Fire Alarm Layout. Ground Floor Level
17.043/E/03 Rev T0	Proposed Lighting Layout. First Floor Level
17.043/E/04 Rev T0	Proposed Small Power, Data & Fire Alarm Layout. First Floor Level

Schedule No 2

Manufacturers/Suppliers

The manufacturers and suppliers that are named in this specification reflect the level of quality that is to be achieved within the installation.

Where names are given the tendering Contractor must base their tender on one of the names indicated in order to ensure fair trading.

Alternatives may be considered separately and any alternatives, which the tendering Contractor's wish to put forward for consideration, shall be indicated in the returning summary of tender.

Cost differences, any technical variation from the specification must be reported in detail by the tenderer.

Schedule No 3

Switchgear

Main LV MCCB Panel

Manufacturer:	MEM Square D
Type:	Floor Standing, Front Access
Incoming Device:	Switchfuse/MCCB
Cover:	Overall hinged metal cover
Metering:	To main incomer and outgoing ways as required by Building Regulations – meters to record Volts, Amps, kWh, kW and kVA
Changeover:	Automatic changeover contactor to generator

Distribution Boards

Manufacturer:	Square D MEM
Type:	Surface Mounted Metal Clad

Complete with integral main isolator and overall hinged metal cover
Each distribution board to be fitted with a laminated typed circuit chart inside the hinged cover to show the following:-

Prospective fault level at incoming terminals

Prospective device type and rating

Type, size and number of cables

Circuit Type (ring, radial etc)

Description and location of equipment supplied.

Maximum values of earth loop impedance recorded during test

Tripping time and rating of residual current device

Schedule No 4

Light Switches and Small Power Accessories

Manufacturer:	MK Electric Limited

Light Switches

Range:	Grid Switch

Cover Plates

Appliance Bay, Plant Room:	Metalclad Plus
All Other Areas:	Logic Plus

Switches Socket Outlets

Range:	
Appliance Bay, Plant Room:	Metalclad Plus
All Other Areas:	Logic Plus

Socket Outlets over 13A rated

Range:	
All Areas:	Commando

Schedule No 5

Dado Trunking

Manufacturer:

Marshall - Tufflex Limited
Churchfields Industrial Estate
Hastings
East Sussex
TN38 9PU

Tel: 0870 240 3200
Fax: 0870 240 3201

Contact: Tim Jones
Mobile: 07713 877244

Dado Trunking:

Range:	Sterling Profile 1 Dado
Colour:	White – Grey contrasting inserts for DDA compliance.

All trunking and accessories to be compliant for cat 6 data cabling.

Schedule No 6

Lighting

Manufactured by:

Whitecroft Lighting Limited
Head Office
Burlington Street
Ashton-under-Lyne
Lancashire OL7 OAX

Contact: Mark Streeter
Mobile: 07584 518062
Email: mark.streeter@whitecroftlight.com

Stand-alone Lighting Control Sensors shall be as manufactured by:

BEG (UK) Ltd
Qwest (International House)
1100 Great West Road
Brentford
TW8 0GP

Tel: 0870 850 5412
Fax: 0870 850 5413

Contact: Ian McNeill, Specification Sales Manager
Mob: 07584 068640
Email: ian@beguk.co.uk

Schedule No 7

Fire Alarm System

Supplier:

Clymac Ltd
Cloudway Court
Belton Road
Loughborough
LE11 1LW

Tel: 01509 232651
Contact: Andy Walker
Mobile: 07702 809288

Protec Fire Detection plc
5 Moreston Court
Blakeney Way
Cannock
Staffs
WS11 8JB

Tel: 01543 468646
Contact: Ian Jones
Mobile: 07973 217769

WRS Electronic Security Solutions
Cliff House
Cliff Street
Mexborough
South Yorkshire
S64 9HU

Tel: 01709 588773

Contact: Martyn Armstrong
Mobile: 07909 254162

The Contractor shall engage one of the above specialists to supply the fire alarm equipment and commission the system.

Control Panel:	Multiple loop analogue addressable open protocol
Sounders:	Electronic loop powered – red finish, lighting beams where required for BS and DDA Compliance
Other Equipment:	Interface units, line isolators

Schedule No 8

Trunking, Cable Tray, Cable Basket

Manufacturer:	Legrand Electric Ltd
Trunking:	Salamandre Cable Trunking Single or multi-compartment
Finish:	Standard – Pre-galvanised steel to BS EN 10142 & 3
Cable Tray:	Swifts SRF cable tray
Type:	Heavy Duty return flange
Finish:	Standard – Pre-galvanised steel too BS EN 10142 & 3
Cable Basket:	Swifts wire mesh tray
Range:	60mm flange height
Finish:	Bichromate Zinc Plated

Schedule No 9

Access Control System

Specialist:

WRS Electronic Security Solutions
Cliff House
Cliff Street
Mexborough
South Yorkshire
S64 9HU

Tel: 01709 588773

Contact: Martyn Armstrong
Mobile: 07909 254162

The above specialist shall be engaged by the contractor to design, supply, install and commission the access control system.

Derbyshire Fire & Rescue Service

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Employer's Requirements for Electrical Services

Appendices

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Employer's Requirements for Electrical Services

Analysis of Tender

Element		
1.0	Preliminaries	£
2.0	Preambles	£
3.0	Stripping out of redundant electrical services	£
4.0	Switchgear and Distribution	£
5.0	Lighting and Emergency Lighting	£
6.0	Small Power Installation	£
7.0	Fire Alarm Installation	£
8.0	Power Supplies to Mechanical Plant	£
9.0	Supply and Installation of Hand Dryers	£
10.0	Television Distribution System	£
11.0	Turnout System including Doorbell System	£
12.0	Access Control System	£
13.0	Telephone and Data Containment and Cabling	£
14.0	Earthing and Bonding	£
15.0	Testing and Commissioning	£
16.0	Operations and Maintenance Manuals & As Installed Drawings	£
17.0	12 Month Maintenance of Electrical Installation	£
29.0	**Total**	**£**

Signed ……..……Dated……

For and on behalf of……..…….

Address……..……..

…….....

End of document