

**Climate Action Summer Works Scheme. Woodwork
Room Refurbishment at Deansrath Community
College, Clondalkin, Dublin 22, Co. Dublin**

**Works Requirement document – Volume A.2.4
Specification of Performance, Standards and
Materials**

For

Electrical Services Installation

Project Ref: 0839

Date: June 2026

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PRELIMINARIES AND GENERAL CLAUSES:

01. Description Of Site:

The site is the existing Deansrath Community College, Clondalkin, Dublin 22, Co. Dublin which is easily accessible from the road. The site boundaries are defined on the architects drawings, and this Contractor shall confine his operations to the area indicated.

This Contractor shall be deemed to have made a thorough examination of the site and all features thereof, the existing premises, together with all internal and external services, adjoining premises and property or other things affecting the proposed works, to ascertain precisely the nature and extent of same and the condition under which the works will have to be executed, as no claim will be allowed on the grounds of want of knowledge in this respect.

02. Description Of Works:

The works covered by this specification comprises of the Electrical Services Installation works complete, within the proposed Woodwork Room Refurbishment areas, as shown and as detailed on the accompanying drawings. These works are to be carried out by a suitably qualified and registered Electrical Contractor as a domestic contractor to the Main Contractor.

The contractor shall include all labour, materials, import charges and transport which may be required for and in the construction of works detailed in the Specification and as shown on drawings, and shall provide at this own expense for all necessary power, plant, tackle, machinery, tools, apparatus, instruments, scaffolding, ladders, hoists, fencing and other equipment for the workmen and for the erection, testing, demonstration and commissioning of the complete plant in the manner described, together with the carriage thereof to the spot where they are required to be used and their subsequent removal.

03. Site Conditions:

This Contractor is strongly advised to visit the site and ascertain the facilities of access thereto, the supply of labour and materials the district will afford and general convenience of working. He shall be taken to have made himself acquainted with the nature of the works; the site and all existing buildings and all other things insofar as they may have any connection with or effect the works.

Contractors must refer to the Construction Industry Federation standardised approach to commencing construction projects in Ireland which incorporates the COVID-19 public health requirements, and ENSURE that all measures required in order to comply with these guidelines are included for. This document is available at www.cif.ie and a copy of same is included with the tender documentation issued for the works.

All the above matters must be taken into account when tendering and no charge for any extra labour or materials will be allowed in consequence of this Contractors failure to do this. The Contractor must notify the project Architect/Engineer immediately should site conditions alter significantly from those as stated in the tender documents.

04. Covid 19

The contractor shall allow in his tender for working on site in line with the CIFs Standard Operating Procedure (SOP) and, for any additional time and cost incurred to accommodate the implications of C19 restrictions. Please refer to CIF Construction Sector C-19 Pandemic SOP – V.9 October 2021, and/or all subsequent editions.

Ensure all directly and indirectly employed staff have undergone the CIF's COVID-19 safety induction programme and have a digital card and follow the instructions of the main contractors C-19 compliance officer.

05. Tender Drawings

The design drawings issued within the tender package must be read in conjunction with all relevant project specifications. If the contractor has any queries regarding design drawings issued prior to tendering they shall notify this office immediately. It shall be otherwise deemed that the contractor has understood and priced for all works as designed.

06. Tender Returns:

The Electrical Contractor shall be deemed, before tendering, to have made a thorough examination of the Drawings, Specifications, Conditions of Contract, the Site and other things affecting the proposed works to ascertain precisely the nature and extent of same and the conditions under which the proposed works will have to be executed.

The Tenderer must complete the tender return / pricing pages accompanying this specification document, in full, where each elemental item is to be priced for separately.

07. Payment:

The Contractor must submit Progress Statements for each Claim and Interim Certificate Amounts may be at the Engineer's Discretion.

08. Ascertainment of Prices for Variations:

Variations to the contract shall be dealt with in accordance with Clause "Price Variation" as set out in the "Short Public Works Contract, Doc PW-CF6 V1.15.

09. Works Programme:

The Electrical Contractor shall include within his Programme, details of his intended timing and order for the construction of the Electrical Services Works and the dates by which any significant items of information will be required from the Main Contractor.

10. Guarantees and Warranties

All manufacturers guarantees and warranties on plant, equipment, etc., shall be valid up to the end of the Defects Liability Period.

11. Defects Liability Period:

All manufacturers guarantees and warranties on plant, equipment, etc., shall be valid up to the end of the Defects Liability Period. Refer to the Conditions of Tendering in the Main Contract Document.

12. Samples / Materials And Products:

The Electrical Contractor shall issue details of all specified equipment and plant for approval prior to placing order. All equipment and plant shall be approved on site by the engineer prior to installation. Such approval shall not relieve the Contractor from responsibility for making good any defects which may arise as a consequence of failure or otherwise of any materials during the contract period. The entire installation shall be constructed from new materials and equipment and all materials and workmanship shall be the best of their respective kinds in accordance with the specification. All materials and equipment selected or proposed by the Contractor shall be provided by manufacturers who have local maintenance and servicing capacity available within the Republic of Ireland as necessary.

13. CE Marking

All electrical equipment, systems supplied and installed shall conform to the appropriate EU Directives and shall carry the applicable CE Marking.

14. Builders Work:

The Electrical Contractor shall be responsible for the correct marking out and providing all builder's works information/drawings to enable the Main Contractor to fulfil his obligations with regard to Builder's Attendances. Where services pass through partitions (floors, walls, ceilings) the Electrical Contractor shall maintain the fire rating if applicable within the services e.g. Fire dampers in ductwork etc. The Electrical Contractor shall refer to the Architect to identify all Fire Walls within the building. The Main Contractor shall be responsible for making good of all builder's work open around services and ensuring that the making good does not damage the services installed.

15. Supervision:

The Contractor shall make available throughout the duration of the works a Project Supervisor or Site Foreman with appropriate qualifications and or experience to attend site meetings and receive instructions as are necessary for the execution of the contract, and to carry out superintendence of the works on site. The Project Supervisor /Site Foreman shall keep accurate records and details of all aspects of the works as necessary.

16. Labour:

The Electrical Contractor shall ensure that all employees are registered for PAYE / PRSI and that all employees have successfully completed a SafePass course. Only fully qualified and competent tradesmen, together with their necessary labourers, or helpers, shall be employed by the Contractor on the works, which shall be carried out and completed in the best substantial manner.

17. Site Establishment:

It is the responsibility of the Main Contractor to provide adequate temporary water, power and lighting supply for the duration of the Construction period.

18. Protection of Existing Services:

When stripping out the redundant services the Contractor shall ensure that no unnecessary damage is caused to either the equipment and/or the building fabric which is to be retained. The Electrical Contractor shall make good, at his own expense any damage caused whatsoever to existing services to the complete satisfaction of and in accordance with the instructions of the Engineer/Statutory Authority concerned, and shall keep the Client indemnified at all times from claims in connection with the damage.

19. Electricity Supply:

The electricity supply to this project will be 380/220 Volts, 50 cycles, and all electrical plant and equipment must be suitable for this supply.

20. Wiring Details:

The General rules for wiring of supplies of Electrical Energy, as laid down by the Electro Technical Council of Ireland, National Rules for Electrical Installations, 5th Edition IS 10101:2020, together with the regulation laid down by the E.S.B., shall be strictly adhered to, as shall the requirements of the 18th Edition of the I.E.E. Rules and Regulations.

21. Trade Names

Any reference to Trade names shall be for the purpose of describing the Specification standard of the article or material to be used and it does not imply that the specified trade name solely must be used.

22. Inspection Prior to Concealment

Where work requiring inspection or testing is subsequently to be concealed, due notice shall be given to the Main Contractor/Engineer to accommodate necessary inspection and witnessing of testing where required before concealment. Failure to give due notice, of at least 48 hours, shall necessitate the Contractor uncovering the work and reinstating at their own expense.

The Engineer reserves the right to forego its inspection; however this will in no way relieve the Contractor's responsibility to comply with the specification and drawings. All work that is not installed to the required standard or does not demonstrate adequate co-ordination with the building and other services must be removed and re-installed in full compliance with the tender documentation and relevant standards at the Contractor's cost and without any associated increase in the project programme.

23. Tests/Commissioning On Completion:

The contractor shall test all installations on completion in accordance with standard test procedures, that is, relevant I.S. / B.S. / E.S. and Codes of Practice.

The Contractor shall notify the Main Contractor in writing when the electrical services installation or parts thereof are ready for testing and commissioning, allowing sufficient time period for programming the testing, commissioning and handover of the systems. The contractor shall issue a seven day notice period to the Engineer prior to tests being carried out to allow for the Project Engineer to witness, if he so wishes.

The Contractor shall prove that all test results are in accordance with the performance based specification issued, and furnish the project Engineer with the report / certificate issued by the specialist commissioning company. All test / commissioning certificates are to be included in the project O&M manual.

24. Making Good Damage:

The Contractor shall inspect all equipment and materials on arrival on site for defects or any failure to meet the specification and shall replace any defective equipment or materials as necessary. The Contractor shall take all necessary precautions to ensure that there is no damage or defacements caused by their employees or representatives to the furniture, fittings or other equipment within the buildings or to the premises themselves or to adjoining premises, and shall make good at their own expense any damage caused to the premises or its contents during the works, to the entire satisfaction of the Employer's Representative.

25. Instruction:

This Contractor shall liaise with the Main Contractor in providing for instructing the Employer in the operation of the electrical services installations on completion of the installation works. He shall provide two sets of record drawings, for the installed systems and full operating and maintenance manuals.

26. Drawings:

Copies of drawings of the building are issued with each Specification. Dimensions and other information shown on the drawings forming part of the Contract are believed to be correct, but no responsibility for same is accepted. This Contractor should note that, prior to finally positioning and outlets or fittings, these must be agreed with the Engineer. The Contractor shall be responsible for the setting out of the work and he shall rectify any errors he may make, either in setting out the work or during its progress.

The Sub Contractor shall not deviate in the execution of the work from the Specification or Drawings herein referred to, except upon written order signed by the Employers Representative authorising such deviation.

The Electrical Contractor shall keep on site a full set of the Construction Drawings, on which he shall record and note the actual layout of all the Electrical services installations as installed, including routes.

The Electrical Contractor shall include for the preparation of final marked-up drawings, at practical completion stage.

27. Maintenance:

The works shall be maintained by the Contractor in perfect condition for 12 months after the issue of the Engineers certificate of practical completion and any work or material exhibiting defects during that period shall be made good by the Contractor at his own expense.

28. Tax Clearance Certificate & C.I.F. Pension/Sick Pay Scheme:

It will be a condition for the award of the Contract that the firm being considered must be able to produce, within seven days of being requested to do so, a Tax Clearance Certificate from the Collector General of Taxes, Sarsfield House, Limerick and provide evidence of Membership of the Construction Industry Federation (C.I.F.) Pension/Sick Pay Scheme.

29. Insurances:

The Contractor shall comply with the requirements of Clause 10 of the “Short Public Works Contract” relating to Insurance and Compensation. He shall effect adequate insurance in his own name and also in the name of the Employer to cover all the risks or claims specified in the aforesaid “Short Public Works Contract” and shall hold the Employer indemnified against all such claims and risk in anyway arising out of the works included in the Contract.

The minimum sum for public liability insurance shall be €6,500,000.00 (six million, five hundred thousand euro) for any single claim, including employer’s liability of €13,000,000.00 (thirteen million euro) and including all risks as stated in the attached “Tender and Schedule”.

CONTRACT SAFETY AND HEALTH PROCEDURES:

B1. BASIC LEGAL REQUIREMENTS:

Contractors must comply with the Safety, Health and Welfare at Work (Construction) Regulations 2013 to 2021 and any other statutory provisions and common law duties. Steps must be taken to ensure the provision of adequate and suitable plant and equipment.

Only those Contractors and Employees having appropriate training and experience should be allowed work, on the premises. The Contractor shall appoint a Project Supervisor as required by the Site Health and Safety Regulations.

B2. SAFETY COMMUNICATION:

The Contractor is required to ensure that all the Employees, Sub-Contractors and all their Employees, whilst on the Company premises are informed of the Health and Safety Rules and Procedures.

B3. PERIOD OF WORK:

The Contractor must notify the Project Co-ordinator in an appropriate way before commencing and on completion of their task. Prior application must be made for any work to be undertaken outside of normal office hours.

If work is to be phased, the method of phasing the work is to be prepared, agreed and distributed to all parties.

B4. VEHICLES:

Vehicles used by Contractors or their Employees are allowed on the Companies premises for delivery, parking or collection subject to local instructions. All drivers are requested to exercise maximum care when on Company premises and particularly when Employees or Members of the Public are entering or leaving.

Drivers of large vehicles operating in confined circumstances must ensure there is a person in attendance to assist with reversing etc.

B5. DELIVERY AND DEPOSIT OF MATERIALS AND GOODS:

No materials, goods or equipment shall be stored in Plant Rooms or placed so as to obstruct general work areas, gangways or fire exit routes.

All rubbish especially dangerous or flammable materials must be removed from the premises daily.

B6. CONTRACTORS WORK AREA:

The Contractor must keep locked, the doors to flat roofs with unprotected edges, plant rooms and electrical apparatus, unless in attendance. Where possible, the Contractor's work should be clearly defined and physically separated from all parts of the premises. The area may be marked by a temporary partition or tape backed up with warning signs.

The segregated area will become the responsibility of the Contractor. Visitors to Contractor's work must be accompanied by Contractors representative. Under no circumstances should portable or temporary methods of heating be introduced to the Contractors Area, without prior written authorisation.

B7. RAISED SURFACES, HOLES AND PROJECTIONS:

Raised surfaces, holes, trailing leads or surface and projecting equipment must not be left at any time without taking the necessary safety precautions. All opening must be securely fenced or covered over and marked with warning notices. Loose materials of whatever kind must not be left about or allowed to obstruct the roadway, gangways or working area.

B8. FIRE EQUIPMENT:

The removal or obstruction of Fire Extinguishing Equipment from its original location is prohibited. A Contractor is responsible for providing and maintaining any specialised fire extinguishers and equipment for the work in progress.

B9. EVACUATION OF BUILDING:

The contractor must read Fire Instructions displayed on the premises and comply in the event of an emergency evacuation. He/she is not to eliminate or diminish exists during alterations.

B10. EXISTING SERVICES:

It is the Contractors responsibility to ascertain the existence and whereabouts of electrical cables, drains, air, gas, and water mains. The Contractor must familiarise himself/herself and how to operate the main and/or local isolation points for services before starting work and in anticipation of an emergency.

B11. PLANT, TOOLS, AND EQUIPMENT:

All plant, tools and equipment brought onto the Company's premises should be of safe design and in a safe condition. Particular attention must be given to checking the electrical and mechanical integrity of any hired equipment. Earth leakage circuit breakers should be fitted on all 220 volt cables. Equipment operating at 110 volts is preferable.

B12. SAFEGUARDING OF MACHINERY:

All machines such as circular saw tables and pipe threaders must be guarded in accordance with statutory requirements.

B13. SAFETY STATEMENT:

Contractors are required to have safety statements available for inspection by the Clients H.S. and W. offices. They are also required to prepare method statements when undertaking tasks requiring special skills or technology.

B14. PORTABLE ACCESS EQUIPMENT:

Where ladders, step-ladders and trestles are necessary, they must be used in a safe manner for work to be done. Ladders should be securely tied at the top or held by a person at the bottom unless they incorporate suitable safety devices. The equipment should be of suitable construction and free from defect. Equipment and materials must be carefully moved and not thrown or dropped from a height.

B15. WARNING OF DANGER:

Care must be taken, at all times to protect the Client's employees and members of the public from danger and to protect property and work in progress from damage.

Any circumstances which give rise to such danger or damage must be reported immediately.

B16. PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING:

All Contractors employees must be issued with, and make full use of, all such protective equipment or clothing, as required by statute or any regulations made thereunder. They must also meet any locally agreed requirements for protecting the employee, e.g., for the use of safety helmets and protective footwear.

B17. ACCIDENTS:

In addition to the statutory obligations for Contractors to report dangerous occurrences and accidents to the appropriate authority, all accidents must be reported to the safety co-ordinator of the Clients.

B18. HOT WORK:

In the event of the Contractor carrying out any of the following works he must carry the appropriate insurance and also comply with all the procedures and safety precautions set out in this insurances:

- ☐ All activities involving flame.
- ☐ Hot air or arch welding and cutting equipment.
- ☐ Braising and soldering equipment and blow lamps.
- ☐ Bitumen boilers and other equipment producing heat or having naked flame.

B19. SAFETY, HEALTH, WELFARE & ENVIRONMENTAL ISSUES

This Contractor shall comply fully with all statutory safety, health and welfare regulations regarding work people, including those employed by Sub-Contractors employed on the site and particularly the Safety, Health and Welfare at Work (Construction) Regulations 2013 to 2021 and provide all relevant details to the Main Contractor to carry out the function of Safety Planning Supervisor for the construction phase of the works.

This Contractor shall comply in all respects with the Factories and Safety in Industry Acts and any other Acts and with any Statutory Instruments or Regulations issued thereunder.

This Contractor is required to provide a safety method statement clearly indicating the proposed sequence of his works and the precautions he will be taking at each stage in the works to protect his employees, and those of the main contractor, other sub-contractors, visitors and the Employers personnel and any plant and equipment, etc. Full details of any chemicals or substances proposed to be used in the project construction process should also be detailed fully and the Employer's prior written approval received for its use.

This Contractor shall include for complying with the Safety, Health and Welfare at Work Acts and Regulations current at the date of tender.

The Main Contractor shall be appointed by the Client under a collateral agreement to the main contract as Project Supervisor for the Construction Stage in respect of the project pursuant to the Safety, Health and Welfare at Work (Construction) Regulations 2013 to 2021. This Contractor shall include all costs for the provision of the necessary services and details to the Main Contractor to perform his duties as Project Supervisor for the Construction Stage pursuant to Regulations 6 and 7 of the Regulations.

This Contractor shall include for providing all necessary information as requested by the Project Supervisor for the Construction Stage to enable the preparation and completion of the Safety File including record drawings, specifications, maintenance and operating manuals and commissioning certificates.

The record drawings and Maintenance Manuals shall be as required under previous clauses of this document.

PARTICULAR SPECIFICATION

ELEMENT (61) : ELECTRICITY CENTRE MAIN AND SUB- DISTRIBUTION SYSTEM

61.1 Extent Of Work In This Section

This section covers works to the existing sub electrical switchgear, as shown and as detailed on the accompanying drawings. The existing switchgear is to be modified to accept the proposals, as per the accompanying drawings.

Contractor to verify sub main cable size to this switchgear and advise engineer, in advance of works commencing.

61.2 Distribution Trunking

The Contractor shall include the low and extra low voltage trunking for the distribution cables and control cables to sizes and runs as indicated on the drawings. The steel cable trunking shall be fixed to walls, ceiling or structural steelworks as indicated on the drawings. It shall be provided complete with all bends, tees, crossovers, couplers, offsets and earth links and shall be as manufactured by Uni-Trunk or equal and approved.

Where cable trunking passes through floors and where it enters separate fire compartments it shall be provided with approved fire barriers.

Vertical mounted cable trunking shall be provided with cable pin racks to support cables at 2000 mm centres. All fixing holes and holes for conduit entry shall be drilled prior to commencement of wiring so as to avoid damage to cables.

The Contractor shall note the requirements for works to the existing containment, as shown and as detailed.

Works to existing sub-mains cabled in disconnecting and re-connecting to new switchgear, as shown and as detailed on the accompanying drawings, shall be allowed for and priced in the Tender Summary.

61.3 Cable Tray

The Contractor shall supply and install cable tray as required and as shown on the drawing for the distribution cables. Cable trays shall be W.I.B.E., or equal and sizes shall be as shown on the drawings.

61.4 Disconnection and Removal of Obsolete Systems

The contractor is strongly advised to visit the site to familiarise himself with the full extent of the works to be de-commissioned, disconnected and removed. The contractor's attention is drawn to the fact that no allowance will be made due to lack of knowledge of the existing on site conditions and the extent of the works to be disconnected and removed as part of this element of the works.

ELEMENT (62) : POWER DISTRIBUTION SERVICES

62.1 Extent of Works in This Section

This section shall include for the complete sockets, power and general services installation within the areas of works as shown on the drawings, and as specified below. The de-commission, disconnection and removal off site of existing obsolete services shall be allowed for.

62.2 System of Wiring

Sockets shall be wired on the ring main system using 4 mm² PVC/LSF/CU cable, protected by 20A RCD units, with a maximum of 6 outlets per circuit. The wiring shall generally be carried out in PVC/LSF/CU singles cable in galvanised steel trunking and conduit run at high level and on the surface.

62.3 Socket Outlets and Plugs

Socket outlets shall be the surface type (Part M Compliant) in metal boxes, with surface type being used. They shall be 13 Amp flat pin type and shall comply with BS 3676.1989 and BS EN 60669-1.2000 or BS 3676. Part 1 of 1989, and amendments up to May 1978, shall be the switched type, single or twin, as shown on the drawings, and shall have a matt chrome finish. The contractor shall note the requirement for unswitched socket outlets to the computer stations.

SURFACE BOXES SHALL BE WITHOUT MANUFACTURERS KNOCK-OUTS

Sockets generally shall be mounted about 0.45 metres above floor and in the case of worktops placed against walls, the sockets shall be located about 200 mm above the worktop. A small number of outlets shall be at 1.5 metres above floor in the locations as indicated on the drawings. The Contractor is to ensure that Socket/Switches are Part M Compliant, and ensure the following;

- The switch / socket cover itself needs to contrast visually with the wall background and switches.
- There is a colour contrast to be implemented for the on circuit switch to the wall socket and light switches.
- On a double socket the circuit switches cannot be adjacent.

62.4 Connection Units

The Contractor shall include for the supply and installation of fused connection units for the following equipment located as indicated on the drawing.

- (a) Extract fan
- (b) Water Heaters
- (c) Dust Collection units
- (d) Wood Work Machine
- (e) Specialist Equipment as shown

Connections to the equipment shall be in accordance with the accompanying detailed drawings, final connection shall be in PVC flexible cable clipped.

62.5 Wiring to Extract Fans:

Extract fans shall be provided in certain locations as shown on the drawings. Fans shall be provided by the mechanical contractor complete with speed regulators. The regulators shall however be handed over to the Electrical Contractor for erection and connection.

Wiring to fans shall be carried out in 2.5 mm sq., PVC cable in galvanised steel conduit with the final connection in three or four core white flexible cable. Control switches shall be provided by the Contractor. Three phase starters shall be provided, where required, with single phase protection magnetically operated (thermal operation is not acceptable).

62.6 Disconnection and Removal of Obsolete Services/Materials

The contractor is strongly advised to visit the site to familiarise himself with the full extent of the works to be disconnected and removed. The contractor's attention is drawn to the fact that no allowance will be made due to lack of knowledge of the existing on site conditions and the extent of the works to be disconnected and removed as part of this element of the works.

ELEMENT (63): LIGHTING SERVICES

63.1 Extent Of Works In This Section

This section shall include for the general lighting and emergency lighting within the areas of works as indicated on the drawings and as specified below.

The decommission, disconnection and removal off site of existing general and emergency lighting system, as shown and as detailed, shall be allowed for and deemed to be priced for in the tender summary.

63.2 System Of Wiring

Wiring to the circuits shall be carried out using 2.5 mm² singles P.V.C/L.S.F/Cu insulated cable in surface galvanised steel conduit and or trunking where convenient. Circuitry shall be as shown on the accompanying drawings.

Generally, the conduit/wiring shall be run on the surface at high level and shall terminate at each lighting point in a C.I. multiple loop-in box. All bushes connecting conduit to trunking shall be securely tightened prior to the commencement of wiring. Within the SNU all conduits/cabling systems are to be recessed.

Flanged couplings shall be used for connecting conduit to trunking.

The wiring to recessed lighting fittings shall terminate in a local 6 amp outlet, with final connection in heat resistant flexible cable (maximum length 1500 mm). The 6 amp outlet shall be of M.K. manufacture and shall be surface mounted in cast iron Besa boxes. Wiring to surface mounted fittings shall be directly into the terminal blocks provided in the fittings. Heat resistant glass fibre sleeves shall be fitted to all wiring inside fittings.

Note: PVC/PVC, flexible cable shall not be used for final connections to recessed fittings. The contractor shall note that the lighting control strategy within classrooms / teaching areas as shown and as detailed on the accompanying drawings.

63.3 Lighting Switching

Lighting switches shall be provided and ganged as indicated on the drawings. They shall be 20 amp inductive rating grid switch type, either 1 way, 2 way, key operated, intermediate for internal use, on push type with auto-time release and shall be mounted on surface conduit boxes. They shall have porcelain bases with plastic rockers and flush mounted matt chrome cover plates.

Where wiring of more than one phase enters a switch box, vertical barriers shall be provided between phases and 'red' warning plates engraved "Danger 380 Volts" shall be provided below the cover plate and fixed to the switch.

The Engineers approval shall be obtained to all ganging arrangements before ordering and fixing to ensure that these are in accordance with the Clients and Architects requirements.

Switchgrids shall be fitted with earth terminals and bonded to the switch boxes by suitable earth conductors. Switches shall be mounted at 1100 mm above finished floor level unless otherwise indicated.

Lighting switches for toilets used for the control of extract fans shall be the double pole type as detailed. Switches in small window less stores which are located outside the door shall have an 'on' indicator light.

63.4 Lighting Fittings

Lighting fittings shall be supplied and erected in the positions shown on the drawing and shall be in accordance with the materials specification, the applicable standards and the performance required as scheduled which is bound-in at the end of this specification.

The Contractor shall include for taking delivery, handling, storing, erecting and connecting all lighting fittings, and shall also include for profit and overheads.

The Contractor shall provide in his tender for the erection and trial of a reasonable number of fittings specified, not exceeding 5% of the total, for inspection by the Employer and the Architect, and no claim shall afterwards be entertained for the labour involved in the erection of such fittings for trial before selections have been made.

Fixing of light fittings shall be adequately supported in accordance with the manufacturer's instructions/guidelines, all by this contractor.

63.5 Lamps

The contractor shall include for the installation of all LED fittings, the cost of supply and delivery being included in the sum for the fittings.

63.6 Emergency Lighting

The Contractor shall provide for the complete emergency lighting installation as indicated on the drawings.

Wiring shall be carried out using 2.5 mm² singles P.V.C./LSF/cu insulated cables in galvanised steel conduit or trunking to each self contained emergency light or exit sign.

Exit lights of the self contained sustained type shall be complete with LED filaments and a capacity of 3 hours duration and shall have a mains monitoring light.

Some emergency lights shall be of the integrated emergency type with the emergency lighting built into the standard fluorescent fitting. The emergency gear shall include change-over arrangement, battery and charger with inverter for conversion from DC to AC. Twin tube fittings shall have only one emergency lamp. The battery shall have adequate capacity for three hour duration for the particular fitting and shall have a built-in LED monitor to indicate correct charging.

Final connection to the fittings shall be as described for the general lighting installation. Where exit signs are suspended, the Contractor shall allow for providing the necessary conduit suspensions. The Contractor shall include for supply and delivery of the emergency light fittings including any profit and for handling, storage, erecting and connecting.

63.7 Testing and Commissioning of Emergency Lighting

Wiring to emergency lighting units, shall be taken separately from the sub-distribution board. At the board, as required, an interface unit shall be inserted into the wiring to the emergency lights. The contractor shall include for the testing and commissioning of the entire system by the system suppliers and for attendance on the suppliers during commissioning. On the satisfactory completion of the testing and commissioning the contractor shall submit the inspection and test certificate in accordance with IS 3217: 2023.

A completed 4-Part Commissioning Certificate of the Emergency Lighting Installation as required under IS 3217: 2023 for Emergency Lighting Installations shall be provided by the Contractor and handed over to the Employers Representative on substantial completion of the project as follows:

Part 1 (Design)

Geaney Engineering Consultants will prepare, complete and sign Part 1 of the Commissioning Certificate (on the company's headed paper) as the Designers on the project, and will issue the certificate for inclusion in the Safety File.

Part 2 (Installation).

The Contractor is required to prepare, complete and sign Part 2 of the Commissioning Certificate (on the company's headed paper) as the Installers on the project, and issue the certificate for inclusion in the Safety File.

Part 3 (Commissioning).

The Contractor shall arrange to have the Emergency Lighting Installation commissioned by a suitable qualified person in accordance with the ETCI Building Emergency Safety System (BESS) requirements, or approved alternative scheme, who is required to prepare, complete and sign Part 3 of the Commissioning Certificate (on the company's headed paper) as the Commissioning Engineers on the project, and issue the certificate for inclusion in the Safety File.

Part 4 (Handover).

The Contractor are also required to prepare, complete and arrange for the Clients Signature of Part 4 of the Handover Certificate (on the company's headed paper) as the Contractor on the project confirming that the Client has been fully instructed on their responsibility regarding the ongoing maintenance of the system, and have issued a service contract agreement to the Client.

63.8 Servicing of Emergency Lighting

The contractor **must** allow for the **first year** of servicing of the Emergency Lighting System, the following must be included for;

- Quarterly tests in accordance with a systematic schedule.
- All Lamps checked and verified to ascertain any blown lamps.
- All LEDs in charging circuit will be checked and verified for illumination.
- During the tests, each emergency light is illuminated from it's battery source for 30 minutes for the quarterly test
- Each emergency light is illuminated from it's battery source for 3 hours on the annual test to be carried out at prior to the yearly service agreement ending.
- Check that all defects recorded in the log book have been rectified.
- The log book is checked and filled out as appropriate and a certificate of testing is issued on completion.

63.8 Disconnection and Removal of Obsolete Services/Materials

The contractor is strongly advised to visit the site to familiarise himself with the full extent of the works to be disconnected and removed. The contractor's attention is drawn to the fact that no allowance will be made due to lack of knowledge of the existing on site conditions and the extent of the works to be disconnected and removed as part of this element of the works.

ELEMENT (64) : COMMUNICATIONS SERVICES

64.1 Extent Of Works In This Section

This section covers the supply and installation of the infrastructure for the information and communication technology system installations within the areas of works, as detailed.

The commission, disconnection and removal off site of existing obsolete services shall be as detailed and deemed to be priced in the tender summary.

The Contractor shall note the requirement for the link back to the main frame in the school, as detailed.

64.2 Systems Of Wiring (I.T.)

Wiring generally shall be carried out in Cat 6a cable on cable tray and the cable shall terminate in standard R.J 45 outlet sockets, mounted 450 mm above floor for a desk mounted instrument and 1200 mm above floor for a wall mounted instrument.

Caballing to outlets off the cable tray containment shall be in galvanised steel conduit and metal outlet boxes throughout.

64.3 Class Call /P.A. System

There is currently an existing PA speaker (wall mounted within the existing space). The contractor shall include for the removal of this speaker and dispose off site.

The contractor shall supply and install a new public address speaker and fully integrate to the existing school PA system. The new speaker shall be wall mounted and positioned adjacent to the vertical trunking in the room as detailed on the drawings.

The existing cabling feeding the old PA speaker shall be jointed and extended to the new speaker location. The contractor shall fully integrate the new PA speaker into the existing school PA system and fully commission it to operate as per the school PA system.

64.4 Disconnection and Removal of Obsolete Services

The contractor is strongly advised to visit the site to familiarise himself with the full extent of the works to be disconnected and removed. The contractor's attention is drawn to the fact that no allowance will be made due to lack of knowledge of the existing on site conditions and the extent of the works to be disconnected and removed as part of this element of the works.

ELEMENT (65): PROTECTIVE SERVICES

65.1 Extent Of Works In This Section

This section includes for the works to the existing fire detection and alarm system, as shown and as detailed and the gas detection installation, as shown on the drawings and as specified.

Re-commissioning of the system shall be allowed for on completion of the works. The contractor shall note that the building **MUST** be protected at all times during the course of the works, and at no stage is the building to be unprotected.

65.2 Fire Alarm Installation:

The fire alarm systems (L3/L2 coverage) shall be carried out as indicated on the drawings and as specified hereafter. The works to the fire alarm system shall be carried out in full accordance with IS.3218.2013 + A1:2019.

All equipment central to the operation of the analogue addressable Fire Alarm system shall be designed and manufactured by the company installing and commissioning the system.

SINGLE KNOCK OPERATION

The System shall be programmed with 'single knock' operation whereby actuation of an automatic/manual point within the building shall automatic activate the Fire Alarm panel.

The controls panels shall incorporate a facility for separate (Phased) alarms, whereby the sounders shall operate an evacuation signal in the actuated zone and warning signal only in other zones.

The system shall continuously scan all loops and report a fault or fire condition in two seconds maximum.

The system shall be cabled, connected and commissioned with interconnections to the following, as required:

Gas Detection System:

The Fire Alarm shall be inter-linked to the Gas Detection System. Upon receipt of an alarm signal all gas slam shut valves shall fail safe into the closed position. A Fire Alarm interface unit shall be sited at each gas detection panel power supply unit.

65.3 Supervision and Fault Reporting:

The control and indicating equipment shall have the following Supervision and Fault Monitoring Function

- Monitor all critical system components and interconnections (internal and external). In the event of a failure occurring which prevents correct operation of the alarm
- alarm functions, a fault indicator will light and a message shall be given on the alphanumeric display within 100 seconds of occurrence.
- Provide text messages to indicate the precise location of where a fault has occurred in the system.
- The extract shall remain operational during a fire event.

65.4 Automatic Fire Detectors:

All detectors shall be approved and listed by the Loss Prevention Council Board (LPCB).

The automatic fire detectors shall be fixed to the installation by means of plug-in addressable detector bases. The base shall incorporate the optional feature of being able to lock the detectors in place once plugged in. The addressable base must incorporate all the circuitry required for communicating detector status to the Control and Indicating Equipment, including the address setting switch.

The contractor shall produce standard accessories for installing smoke detectors in air ducts. This equipment shall be designed to accommodate the manufacturer's standard smoke detectors and bases, both conventional and addressable.

OPTICAL SMOKE DETECTORS

The Optical Smoke Detectors shall meet the requirements of BS5445: Pt.7: 1984

The optical smoke detectors shall have a sensitivity sufficient to be classified as 'A' in BS5445: Pt.9: 1984 test fires TF2 and TF3.

ADDRESSABLE MANUAL CALL POINTS / BREAK GLASS UNITS

The Addressable Manual Call Points / Break Glass Units shall meet the requirements of BS5839: Pt.2.

The Addressable Manual Call Points / Break Glass Units shall provide an integral red led to indicate activation.

Break-glass Call points shall be individually addressed.

FIRE ALARM SOUNDERS/STROBE UNITS

Fire Alarm Sounders shall be of the detector integrated or surface mounting type, with solid state, two-tone 24V DC c/w integral 75cd strobe light unit.

65.5 Fire Alarm Cabling:

Fire alarm cabling shall be carried out in 1.5sq.mm. PH120 **enhanced** Cable with red LSF oversheath. As per Irish Standard – I.S. 3218 : 2013

Check to ensure that all ancillary warning devices operate as specified.

Check interconnection with Fire Alarm Control Panel to ensure correct operation.

65.6 Commissioning & Testing of fire alarm:

Introduce Smoke into the Detector Assembly to provide a basic functional test.

Introduce smoke to the furthest Sampling Point in each Sampling Pipe. Transport time is not to exceed the local regulations Activate the appropriate Fire Alarm zones and advise all concerned that the system is fully operational. Fill out the log book and commissioning report accordingly.

A completed 6-Part Commissioning Certificate of the Fire Detection and Alarm Installation as required under IS 3218: 2013+ A1: 2019 shall be provided by the Contractor and handed over to the Employers Representative on substantial completion of the project as follows:

Part 1 (Design)

Geaney Engineering Consultants will prepare, complete and sign Part 1 of the Commissioning Certificate (on the company's headed paper) as the Designers on the project, and will issue the certificate for inclusion in the Safety File.

Part 2 (Installation).

The Contractor is required to prepare, complete and sign Part 2 of the Commissioning Certificate (on the company's headed paper) as the Installers on the project, and issue the certificate for inclusion in the Safety File.

Part 3 (Commissioning).

The Contractor shall arrange to have the Installation commissioned by a suitable qualified person in accordance with the ETCI Building Emergency Safety System (BESS) requirements, or approved alternative scheme, who is required to prepare, complete and sign Part 3 of the Commissioning Certificate (on the company's headed paper) as the Commissioning Engineers on the project, and issue the certificate for inclusion in the Safety File.

Part 4 (Handover).

The Contractor are also required to prepare, complete and arrange for the Clients Signature of Part 4 of the Handover Certificate (on the company's headed paper) as the Contractor on the project confirming that the Client has been fully instructed on their responsibility regarding the ongoing maintenance of the system, and have issued a service contract agreement to the Client.

Part 5 (Verification).

Geaney Engineering Consultants will prepare, complete and sign Part 5 of the Certificate of Verification (on the company's headed paper) as the Designers on the project, and will issue the certificate for inclusion in the Safety File on receipt of the remaining completed certificates.

Part 6 (Certificate of Servicing /Testing)

The Specialist Fire Alarm Suppliers are required to prepare, complete and sign Part 6 of the Certificate of Servicing /Testing (on the company's headed paper) as the Commissioning Engineers after they carry out their 3 month and 6 month inspection and testing of the fire alarm system, and issue the certificates for inclusion in the Safety File.

65.11 Servicing Of Fire Detection and Alarm System

The contractor **must** allow for the **first year** of servicing of Fire Detection and Alarm System, the following must be included for;

Quarterly Checks:

- Review of Log Book
- Test stand-by power supply units
- Battery Tests
- Test and inspect Panel
- Test and clean % of smoke detectors, heat detectors and BGU's in each zone to ensure 100% completed annually.
- Test Sounders
- Test alarm receiving centre Link
- Test all ancillary functions / equipment, ie Fire rays / beams.
- Inspect structure for changes
- Inspect % of Manual Call Points in each zone (to ensure 100% completed annually) and ensure they are unobstructed.

Annual Checks:

- Primarily Test and Report
- Log Book Inspection
- Panel, Batteries + Every Device (A proportion of devices will have been tested on each quarterly visit such that in any one year 100% of devices are checked)
- Visual Inspection of system, building and wiring.
- On Takeover of any system / panel not installed by Hall Alarms Ltd, we will also carry out location, spacing and height visual inspections on equipment to ensure system meets the regulation to be certified as the system stated. Sounder levels will also be tested to ensure they meet regulations.

65.7 CO² Monitoring

Provide CO² monitoring system in each teaching space. Each science room and prep room shall be fitted with its own standalone wall mounted Carbon Dioxide/Sensor alarm. The units shall be maintenance free, have internal automatic self-diagnostics and incorporate a high quality, gold plated, non-dispersive infrared (NDIR) waveguide sensor for measuring the ambient carbon dioxide concentration. Each unit shall have an LED display which displays the actual concentration of carbon dioxide in ppm and shall have an operating range of 0 to 3,000 ppm CO².

In addition, each unit shall have a visual LED 3 colour backlit "traffic light" alarm together with an audible alarm. The general aim is to maintain the CO² concentration at or below 1,000 ppm and the traffic light LED's shall read as follows:

Green: 0-800ppm – Healthy

Yellow: 800-1400ppm – Warning

Red: > 1400 ppm – Alarm

The audible alarm shall also activate at 1400 ppm with the red traffic light to warn the teacher to open windows. The audio alarm shall automatically turn off when the reading reduced to 1000ppm and shall also be provided with a mute button which will operate for 30minutes.

The units shall be 24V AC/DC $\pm 20\%$, 50Hz and be provided with 1 no. 0-10V DC analogue output. The self-diagnostics shall indicate an error message on the LED screen should any error be present and also activate a yellow LED in flashing mode.

The units shall have a measurement accuracy of $\pm 2\%$ of the reading, have a response time of less than 10 seconds and a warm up time of less than a minute and be suitable for an operating temperature of 0-50°C.

The complete installation shall be in accordance with EMC 2004/108/EC, 92/31/EEG including amendments, EN 61000-4-2, EN 61000-4-3 level 2, EN 61000-4-4 level 4, EN 61000-4-6, EN 61000-4-8 level 4, EN 55022 class B.

65.8 Disconnection and Removal of Obsolete Services/Materials

The contractor is strongly advised to visit the site to familiarise himself with the full extent of the works to be disconnected and removed. The contractor's attention is drawn to the fact that no allowance will be made due to lack of knowledge of the existing on site conditions and the extent of the works to be disconnected and removed as part of this element of the works.

ELEMENT (69): EARTHING

69.1 Extent Of Works In This Section

This section shall cover the provision of the earth electrode for the installation, the connection between the electrode and the main earthing terminal in the building and the connection of the following to the main earthing terminal:

- (a) Neutralising conductor from the E.S.B. Neutral.
- (b) Protective earth conductors for the installation.
- (c) Main equipotential bonding conductor.

The earthing system generally shall comply with the following sections of the 'National Rules for Electrical Installations' as issued by ETCI:

Section 413: Protection against electrical shock in case of a fault
(Protection against indirect contact)

Chapter 54: Earth arrangements and protection conductors.

69.2 Earth Electrode

The earth electrode shall consist of an earth rod of copper clad steel or galvanised iron of minimum dimensions 16 mm dia. by 1.2 m long driven vertically into the ground or of bare copper conductor or galvanised iron rod of minimum 16 mm dia. and 4.5 m long buried 500 mm in the ground, complying with ETCI Regulation 542.2.

The point of connection to the earth electrode shall be marked with a 50 mm thick concrete cover stamped 'Earth Electrode' as detailed in Clause 79 of Document 'BE'.

69.3 Main Earthing Terminal

The main earthing terminal shall consist of a bare copper bar of a minimum cross sections area equal to the largest protective earth conductor. The bar shall be incorporated in the main Distribution Board and shall be fitted with adequate terminals which shall ensure that not more than two conductors shall be under the one terminal.

69.4 Earthing Conductor

The earthing conductor shall connect the earth electrode to the main earthing terminal for the installation. The earthing conductor shall be an insulated copper conductor having a cross sectional area in accordance with the following table:

Cross Section Area of phase conductors	Cross Sectional Area of earthing conductor
Smaller or equal to 16 mm ²	10 mm ²
16 mm ² to 35 mm ²	16 mm ²
Larger than 35 mm ²	25 mm ²

69.5 Neutralising Conductor

The neutralising conductor between the main earthing terminal and the E.S.B. neutral shall be an insulated copper conductor. The conductor shall have the same cross-sectional area as that of the earthing conductor between the main earthing terminal and the earth electrode and may be a conductor of a multicore cable or a separate earth conductor insulated for system voltage.

69.6 Protective Conductors

Protective conductors shall be provided between the main earthing terminal and each sub-distribution board. This shall have a minimum cross sectional area as set out in Table 54F of the ETCI Rules as follows:

Cross Section Area of conductor mm²	Cross Sectional Area of corresponding protection conductors mm²
Smaller or equal to 16 mm ²	Same area as conductor
16 mm ² to 35 mm ²	16 mm ²
Larger than 35 mm ²	Half conductor size

Protective conductors shall be insulated in green-yellow coloured PVC as specified.

It may form one core of a multi-core cable or else be a separate cable run alongside the supply cable.

69.7 Equipotential Bonding

Equipotential bonding shall be carried out in accordance with Clause 547 of the ETCI National Rules for Electrical Installations.

Incoming metallic services and the extension of these services in metal pipes within the building shall be connected to the main earthing terminal at the main switchboard by means of an insulated stranded copper conductor of 10 mm² minimum cross sectional area.

Metallic services and equipment in the toilet areas shall all be bonded together by means of insulated standard copper conductor of 2.5 mm² minimum cross sectional area and such local bonding conductor shall be connected to a protective conductor which in turn shall be connected to the main earthing terminal at the main switchboard.

69.8 Testing

The earthing system shall be tested using an appropriate earth testing kit and the results shall be logged and a copy forwarded to the Engineers for their records.

The engineers shall be advised in advance of the test being carried out so as to give them an opportunity to witness the test.