

LEV SYSTEMS UPGRADE PROJECT, GRETb **TRAINING CENTRES, MERVUE BUSINESS** **PARK, MERVUE, GALWAY.**



An tSeirbhís Oideachais Leanúnaigh agus Scileanna
Further Education and Training Authority

VOLUME A.2.3.2.2 - ELECTRICAL SERVICES **SPECIFICATION**

Document Control Sheet

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INDEX

VOLUME A.2.3.2.2. - ELECTRICAL SERVICES SPECIFICATION

- | | | |
|----|--------------|--|
| 1. | ELEMENT (61) | ELECTRICITY CENTRE AND MAIN DISTRIBUTION |
| 2. | ELEMENT (62) | POWER DISTRIBUTION SERVICES |
| 3. | ELEMENT (68) | EARTHING |

SYSTEMS OF WIRING, MATERIALS AND WORKMANSHIP APPLYING TO SEVERAL SECTIONS

1. METALLIC CABLE TRUNKING

Metallic cable trunking shall be a hot dip zinc coated low carbon sheet steel cable trunking supplied in 3.0-metre-long sections and shall conform to the following standards:

- IS EN 50085-1: 2005
- I.S. EN 50085-2-1:2006
- BS EN IEC 61084-2-1: 2024 + A11:2024
- EN 10346:2015, Grade DX5 1D Z275

The trunking sections shall be jointed with cup-sq. bolts and serrated flange nuts (LSN) to ensure earth continuity to EN 50085 without copper earth links.

Trunking shall be erected complete before the insertion of any cables and all entries to trunking shall be placed or so protected as to eliminate the possibility of water entering the trunking. All joints between trunking sections, between trunking and conduit, or trunking and switchgear shall be mechanically sound, and shall be such as to ensure that cables being drawn in shall not suffer any damage or abrasion. Trunking shall generally be fixed by screwing the back of the trunking to Unistrut sections fixed to the walls or underside of floor slabs or ceilings whichever is appropriate. Cable retainer clips shall be used as required.

All trunking going through fire walls and ceilings shall be fire stopped using Intumescent fire blocks in and around the trunking in the approved manner. (The Contractor shall determine on site where these fire walls are actually located and provide for all fire stopping of the new LV and ELV trunking system where they pass through the fire walls and ceilings as necessary).

The number of cables to be installed in trunking shall be such as will permit easy drawing in without damage to the cables and shall in no circumstances be such that a space factor of 45% is exceeded.

Cabling within any trunking shall not be grouped together with cable ties, insulation tape or any other similar product.

2. METALLIC CABLE TRAY

Metallic cable tray shall be a hot dip zinc coated low carbon sheet steel medium duty cable tray supplied in 3.0-metre-long sections and shall confirm to the following standards:

- IS EN 61537: 2007
- EN 10346:2015, Grade DX5 1D Z275

The Cable Tray sections shall be Medium Duty Cable Tray, jointed with cup-sq. bolts and serrated flange nuts (LSN) to ensure earth continuity to EN 50085 without copper earth links, which shall be provided with return flanges not less than 25 mm high with the following minimum gauges:

- Minimum gauge of 0.7 mm for sizes up to 225 mm wide
- Minimum gauge of 1.0 mm for sizes greater than 300 mm wide

All cable trays shall be complete with integral couplers, tray dividers, bends, tees, reducers, conduit take-off plates, and fish plates, etc., with a min of 2 number fastenings per section.

Where changes in level or direction or tray occurs, the manufacturers preformed bends, tees, etc., shall be used as far as possible. The Employers Representative approval shall be obtained to the use of site made bends etc.

The manufacturer's support systems shall be used as far as practicable. Jointing details and fixing details shall be in accordance with the manufacturer's recommendations. Cable tray shall be supported at not greater than 1.5 metre centres, but in no case shall the deflection at mid span exceed 10 mm.

3. METALLIC CONDUITS

Metallic conduits shall consist of Class 4 heavy gauge hot dipped galvanised welded steel conduit manufactured from Grade Q195 steel and shall confirm to the following standards:

- BS EN IEC 61386-1: 2008 +A1: 2019
- BS EN IEC 61386-21:2021 +A11: 2021
- BS EN IEC 61386-25:2011
- No conduit system shall be smaller than 20 mm diameter

The capacity of the conduits shall be in accordance with Annex 52A, National Rules for Electrical Installations, as issued by the Electro-Technical Council of Ireland.

All joints in the conduit shall be made by screwed couplings, the insides of all ends of tubes to be rounded and free from irregularities of bore.

CI oblong draw-in, intersection, T joint and other necessary boxes shall be hot dipped galvanised to BS EN 61386 Class 4 and shall be screwed full thread into which the conduit must fit tightly. The tubes are to be properly screwed, and the threads fully worked, so that when finished no rings shall be noticeable on the outside of the tube.

All bends shall as far as possible be made from the conduit and no bends shall have a radius smaller than $2\frac{1}{2}$ times the outside diameter of the conduit. When complete the conduit must be mechanically and electrically continuous throughout and earthed in accordance with Clause 12 of this section and Element (68).

Ventilating outlets shall be provided for the conduits containing every circuit, preferably at their highest and lowest points, so as to allow free circulation of air.

Junction or draw in boxes may only be inserted to facilitate wiring on the expressed approval of the Engineer and on plastered walls; the lids of these are to be flush with the finished plaster.

No cables, etc., shall be inserted until all the conduits and boxes are fixed. All cables shall be drawn in by means of draw-in wires inserted in the conduit at the time of erection and no pull greater than 15 kg is to be exerted. Talc powder shall be plentifully used.

Socketed and screwed brass mouthed bushes shall be used on all ends through which cables or wires are moved in either direction.

Switch boxes shall likewise be of heavy quality galvanised malleable iron or steel, for flush or surface mounting as specified.

Conduits shall be firmly fixed with approved type saddle or crampets to suit the location. The Employers Representative approval to the type of fixing in each location shall be secured when laying out the work.

An approved lubricant shall be used when screw cutting, which must afterwards be carefully removed. All joints in tubing shall be made with galvanised paint.

The conduit shall be run in straight lines as far as possible; no single length to exceed 10 metres without an oblong draw-in box of ample size, readily accessible.

Where connections are to be made to items of equipment these shall preferably be made in electrically continuous galvanised watertight flexible conduit with suitable adaptors.

4. CONDUCTORS IN TRUNKING OR CONDUIT

Conductors shall be plain annealed copper single-strand up to and including 2.5 sq. mm and multi-strand over 2.5 sq. mm complying with the following standards where appropriate:

➤ EN 50525: Part 1	➤ EN 50525: Part 2 -11
➤ EN 50525: Part 2 -21	➤ EN 50525: Part 2 -22
➤ EN 50525: Part 2 -31	➤ EN 50525: Part 2 -41
➤ EN 50525: Part 2 -42	➤ EN 50525: Part 2 -51
➤ EN 50525: Part 2 -71	➤ EN 50525: Part 2 -72
➤ EN 50525: Part 2 -81	➤ EN 50525: Part 2 -83
➤ EN 50525: Part 3-11	➤ EN 50525: Part 3-21
➤ EN 50525: Part 3-31	➤ EN 50525: Part 3-41

No joints shall be permitted except at fittings, all wiring being on the loop-in principle. No cables shall be drawn into conduit or trunking until all conduits, boxes and trunking are erected. The maximum pull to be exerted on any cable shall be 15 kg. and talc powder shall be liberally used to ease drawing-in to conduits.

5. XLPE (LSZH) INSULATED ARMOURED CABLE

Cross linked polyethylene (XLPE) **Low Smoke Zero Halogen** thermosetting insulated armoured cables for LV distribution system of rated voltages of 600/1000V and 1900/3300 V for fixed installations shall comply with BS 6724: 2016, and IEC 60502-1: 2021, and which shall be suitable for direct installation on cable tray or cable ladder and direct burial installations, and shall also be subject to compliance with the Construction Products Regulation (CPR), to the following construction:

	BS 6724 1kV (600/1000V)	BS 6724 3.3kV (1900/3300V)
Conductors		
Single core	Stranded copper (Class 2) or solid aluminium (Class1)	
Two- core	Stranded copper (Class 2) or solid aluminium (Class1)	N/A
Three- core	Stranded copper (Class 2) or solid aluminium (Class1)	
Four- core	Stranded copper (Class 2) or solid aluminium (Class1)	N/A
Five-core	Stranded copper (Class 2)	N/A
Multicore auxiliary - core	Stranded copper (Class 2)	N/A
Insulation	GP8, GP6 or EIS	
Bedding	Extruded layer of polymeric material compatible with the operating temperature of the cable. HCI levels are not to exceed 0.5%	
Armour		
Single core	Plain aluminium wire	
Two-core and above	Galvanised steel wire	
Outer sheath	Extruded layers of compatible polymeric material conforming to the requirements of LTS 1 specified in BS7655. HCI levels are not to exceed 0.5%	

6. PVC INSULATED PVC SHEATHED, (PVC, PVC) UNARMoured CABLES

PVC insulated PVC sheathed cables shall be the 600/1000-volt grade and shall comply with BS 6004:2012 + A1: 2020 standards. The conductor shall be plain annealed copper with PVC insulation and PVC sheath coloured grey. The cables shall generally be single core but twin, three and four core cables may also be used.

7. MINERAL INSULATED COPPER COVERED CABLE

Mineral Insulated copper or copper alloy sheath and copper conductors and their terminations with a rated voltage not exceeding 750V shall comply with the following standards:

- IEC 60702-1: 2002 + A1: 2015. (Part 1- Cables)
- IEC 60702-2: 2002 + A1: 2015. (Part 2- Terminations)
- IEC 60702-3: 2016. (Part 3- Guide for Use)

The whole of the wiring shall be carried out in strict accordance with the maker's instructions and to the approval of the Employers Representative. The maker's cold sealing technique is to be used throughout, special care being taken to ensure that the mineral insulation has been fully removed from the conductors and the copper surface left clean before applying the sealing compound.

At all fittings, switches, plugs or similar positions associated with a concealed installation standard BESA galvanised boxes shall be used, to which shall be fitted the makers standard sealing glands.

All cables shall be securely fitted at sufficient intervals with brass saddles and dome headed screws. In no case shall the saddles be placed at intervals greater than 60 cm, and after erection cable shall be 'dressed' to obtain a neat appearance.

All wiring shall be carried out in two, three or four core cable not less than 1.00 mm² sectional area of conductor. Sizes of cables are given in the appropriate Schedules attached to the end of this specification.

The whole of the wiring shall be arranged on the multiple distribution system, conductors to radiate from the sub-distribution centres. The cable may not be buried direct without protection by conduit tube.

The whole of the sheathing of the cable system shall be electrically continuous across all joints and earthed in accordance with Clause 11, 'Earthing', of this section.

8. WIRING FOR LOW VOLTAGE SYSTEMS

The wiring for systems operating at voltages lower than 50 volts shall, unless otherwise stated be carried out in standard bell or telephone cables. Cables shall be twin or multicore 1.0 mm² copper PVC insulated and sheathed, enclosed in steel conduit run in accordance with Clause 3, of this section.

Where low voltage wiring is permitted to be run on the surface such wiring shall be twin or multicore insulated with PVC and PVC sheathed overall. Where access cannot be had to the cables, such as in ducts between buildings, PVC sheathed cables shall be run in galvanised steel conduit bushed at both ends and arranged so that the cables can readily be drawn out if required.

9. MAIN SWITCHES

Switches shall be superior quality heavy duty metal clad three pole and neutral units, suitable for a supply of 400 volts between phases, 50 cycles AC complying with BS EN IEC 60947-3:2021 +A1: 2025. The switch mechanism shall be such that it shall not be possible to open the casing when the switch is in the "on" position or to close the switch when the casing is open.

All units shall be of the damp proof metal clad type, mounted on insulating material, with protecting fillet between the poles. Contacts shall be preferably laminated and arranged for rapid spring break and terminals shall be of the grip socket pattern. Switches shall be suitable for bolting to busbar chambers and other pieces, to give a single built-up unit.

10. MAIN ELECTRICAL DISTRIBUTION CENTRE

The Main LV Electrical distribution centres shall be a free-standing factory built metal clad cubicle type (fixed to the wall) meeting as a minimum the requirements of **Form 3 of BS EN 61439-2:2021** with front access achieving as a minimum a short time withstand symmetrical fault current of 50 kA RMS for 1 second and 25 kA for 3 seconds, which shall be provided with lockable doors.

The electrical distribution centre shall be capable of accepting incoming cables from the bottom and outgoing cables from the top.

The Main LV electrical distribution centre live busbars, including the neutral bar, shall be fully rated throughout. A removable neutral earth link shall be included and be so arranged that it can be readily accessible via removal of a cover.

All outgoing devices shall have a minimum short circuit capacity of 35 kA, be sized as indicated on the drawings and shall be arranged so as to accept the cabling as indicated.

11. ELECTRICAL SUB-DISTRIBUTION CENTRE

The Electrical sub-distribution centres shall be factory-built wall mounted metal clad assemblies in accordance with **Form 2, Type 2 of BS EN IEC 61439-1:2021 and BS EN IEC 61439-2:2021**, which shall be provided with lockable doors.

The electrical sub-distribution centre shall be capable of accepting incoming cables from the bottom and outgoing cables from the top.

Each electrical sub-distribution centre shall be fitted with a switching device on the incoming supply and outgoing ways shall be protected by miniature circuit breakers. The miniature circuit breakers on the socket outlet circuits shall be of the residual current device type with on/off switch and test button and having a 30 m amp tripping current.

Central Test Units (CPU) shall be provided within the Lighting distribution boards for all self-contained emergency lighting systems and have the following features:

- “On/Off” Control Switch
- “½ Hour /3 Hour” selector switch
- “Emergency Lighting on Test” Indicator
- “Test Complete” indicator
- Interposing relays

When the system is in test mode a 220 Volt signal shall energize one or more interposing relays to break the feeds to emergency points and shall automatically reset after the selected test period.

The interposing relays shall be multipole normally closed relays or contactors rated at 10 amps minimum.

12. EARTHING

All switches, sub-distribution centres, earthing pins of sockets, transformers and all electrical machinery or any metalwork whatsoever adjacent to any of the electrical equipment shall be connected to the conduit and/or the metallic cable sheath which itself is fully earthed. The Contractor shall include for earthing the main electrical distribution centre to the Supply Authority's earth lead at the supply point generally in accordance with the National Rules for Electrical Installations I.S. 10101: 2020 +AC2: 2025), including the IET Wiring Regulations, 18th Edition, and BS 7671:2018 +A4: 2026.

The earthing of machinery shall be by means of a copper conductor of high conductivity copper and its sectional area shall not be less than 2.5 mm² or less than half the size of the largest conductor feeding the circuit to which the earthing pertains, whichever is the greater. At the main electrical distribution centre, the earth lead shall be of copper strip of not less than half the size of the incoming ESB phase cables. At all joints in the conduit such as boxes, couplings, etc., approved bonding connections shall be provided.

The earthing of the system shall comply fully with National Rules for Electrical Installations I.S. 10101: 2020 +AC2: 2025), including the IET Wiring Regulations, 18th Edition, and BS 7671:2018 +A4: 2026.

The connections to all conduit and metalwork, earthing lead and earthing connection, measured from any position in the installation shall not exceed one ohm resistance.

13. LABELLING

All fuse boards, switch fuses, fused connection units, isolators, controllers, time switches, contactors and the like shall have plainly and clearly indicated on them the services they control by suitable attached labels of bevelled trifoliate or other approved material engraved with 10 mm high letters. In addition, the various fuses shall be labelled or other approved arrangement to indicate the circuit protected.

The Employers Representative' approval for the type of labelling proposed is to be obtained before this work is set in hands. The size of the replacement fuse for each circuit should be indicated in each board. Engraved discs should be fastened to the dividing fillet immediately opposite the respective fuses, so as to enable fuses listed on the fuse board circuit labels to be readily identified.

14. LABELLING OF FIRE ALARM SYSTEM

The Contractor shall provide for the labelling of all the fire alarm equipment throughout the building. The Contractor shall use a system of labelling the system by loops i.e. L1/001, therefore Loop 1 / device 1. This then shall correspond with the address on the main central control unit which shall read the device address and location.

A draft copy of all the devices shall be issued to the Employers Representative before commissioning, and this shall be checked to ensure that all room names have the correct device reference.

The labelling of each fire alarm device shall be indicated on the “As Installed” drawings also.

15. LABELLING OF EMERGENCY LIGHTING INSTALLATION

The Contractor shall provide for the labelling of all the Emergency lighting equipment throughout the building. The Contractor shall use a 20mm high lettering system, and each fitting shall be given a unique number in a format which shall be agreed with the Employers Representative, with the numbering system indicated on the “As Installed” drawings also.

ELEMENT (61): ELECTRICITY CENTRE AND MAIN DISTRIBUTION

61.1 EXTENT OF WORKS IN THIS SECTION

This section covers the provision of additional C-Type motor rated MCB's, including the provision of new Contactors and overloads for the new fume extraction fans in the various electrical sub-distribution centres serving the Metal Fabrication Workshop and Welding Workshop in Building No 1, including the Garage in Building No 2, as indicated on the drawings and as specified below.

61.2 EXISTING ELECTRICAL SUB-DISTRIBUTION CENTRES

The existing factory-built metal clad electrical distribution centres in the various electrical sub-distribution centres serving the Metal Fabrication Workshop and Welding Workshop in Building No 1, including the Garage in Building No 2, which are of "Parkmore" manufacture shall be retained, and shall be modified as necessary to cater for the power and control wiring serving the new Fume Extraction fans as detailed on the drawings.

The Contractor shall include in their tender for the following remedial works to the existing electrical sub-distribution centres being retained, serving the Metal Fabrication Workshop and Welding Workshop in Building No 1, including the Garage in Building No 2:

Drawing No	SDB Location	Remedial works required
6917-3/E/01	Metal Fabrication Workshop	Disconnection and removal of the redundant MCB's and Contactors/overloads serving the redundant fume extraction fans
		Supply and installation of 6 number new 20-amp TP&N C-type motor rated MCB's.
		Supply and installation of 6 number new 20-amp TP&N overloads
		Provision of the re-labelling of the existing electrical sub-distribution centre
		Provision of a new run and trip indicator light for Extract Fan No 15
6917-3/E/02	Welding Workshop	Disconnection and removal of the redundant MCB's and Contactors/overloads serving the redundant fume extraction fans
		Supply and installation of 6 number new 20-amp TP&N C-type motor rated MCB's.
		Supply and installation of 6 number new 20-amp TP&N overloads
		Provision of the re-labelling of the existing electrical sub-distribution centre

Drawing No	SDB Location	Remedial works required
6917-3/E/03	Garage	Disconnection and removal of the redundant MCB's and Contactors/overloads serving the redundant fume extraction fans
		Supply and installation of 3 number new 20-amp TP&N C-type motor rated MCB's.
		Supply and installation of 3 number new 20-amp TP&N overloads
		Provision of the re-labelling of the existing electrical sub-distribution centre

The Contractor shall include a copy of the up-dated labelling of the existing electrical sub-distribution centres in the electrical operation and maintenance manual for future reference as necessary.

ELEMENT (62): POWER DISTRIBUTION SERVICES

62.1 EXTENT OF WORKS IN THIS SECTION

This section includes the provision of new power and control wiring to the new fume extraction fans, serving the Metal Fabrication Workshop and Welding Workshop in Building No 1, including the Garage in Building No 2, as indicated on the drawings and as specified below.

62.2 SYSTEM OF WIRING

The new power and control wiring to the new fume extraction fans shall generally be carried out in **PVC 6491 B Zero Halogen Low Smoke (OHLS) cable** in a new steel conduit and the existing LV trunking system, which shall be run at high level in the various workshops, to the cable sizes as specified in Clause 62.3 below.

62.3 FUME EXTRACTION FANS

The Contractor shall provide for the provision of all power and control wiring for the New Fume Extraction fans serving the Metal Fabrication Workshop and Welding Workshop in Building No 1, including the Garage in Building No 2, in the locations as indicated on the drawings, which shall be supplied under the mechanical contract.

The Contractor shall take over the fume extract fans Invertor Drives supplied as a “Free Issue” under the mechanical contract and provide for their erection and connection, including all power and control wiring as follows:

- ✓ Provide for taking over the invertor drive for each of the Fume Extraction Fans supplied as a free issue item under the Mechanical Contract and provide for their erection and connection adjacent to the fume extraction fans at high level within the workshop.
- ✓ Provide for wiring to the invertor drives from the local sub-distribution centres in 5 x 2.5mm² **PVC 6491 B Zero Halogen Low Smoke (OHLS) cable** in a steel conduit and the existing trunking system, complete with a local isolator.

- ✓ Provide for wiring from the inverter drive to the Fume Extraction fan, generally mounted at high level within the workshop (with some fans mounted externally on the building) in 5 x 2.5mm² **PVC 6491 B Zero Halogen Low Smoke (OHLS)** cable in a steel conduit system, complete with local IP65 isolator, including making the final connection to the fan in a 5-core x 2.5mm² flexible cable.
- ✓ Provide for wiring from the existing On/off buttons and control switches on the existing local sub-distribution centres in 3x 1.5mm² **PVC 6491 B Zero Halogen Low Smoke (OHLS)** cable in a steel conduit /trunking system and connect into the control circuit on the new inverter drive.

The new external IP65 TP&N local isolators shall be of “MK Commando Safety switch” range, Ref **M4413/AC 22/AC23** or equivalent manufacture, mounted on a matching surface mounted box.

The Contractor shall co-ordinate the wiring above with the specialist fume extraction fan suppliers on site and include for attendances on the Specialist Suppliers during installation and commissioning of the fume extract fans and the associated inverter drive installations as necessary.

ELEMENT (68): EARTHING

68.1 EXTENT OF WORKS IN THIS SECTION

This section shall cover the provision of the earth electrode for any new installation, the connection between the electrode and the main earthing terminal for Building No 1 and Building No 2 and the connection of the following to the main earthing terminal: -

- Neutralizing conductor from the ESB Neutral.
- Protective earth conductors for the installation.
- Main equipotential bonding conductor.

The earthing system generally shall comply with the following sections of the National Rules for Electrical Installations I.S. 10101: 2020 +AC2: 2025), including the IET Wiring Regulations, 18th Edition, and BS 7671:2018 +A4: 2026.

Chapter 4- Part 41: Protection for Safety, Protection against electric shock.

Chapter 5- Part 54: Earthing arrangements and protective conductors.

68.2 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 the ETCI Regulations.

68.3 MAIN EARTHING TERMINAL

The main earthing terminal shall consist of a bare copper bar of a minimum cross-sectional area equal to the largest protective earth conductor. The bar shall be incorporated in the new Main LV switchboard and shall be fitted with adequate terminals which shall ensure that no more than two conductors shall be under the one terminal.

68.4 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	Half conductor size

68.5 NEUTRALIZING CONDUCTOR

The neutralizing 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.

68.6 PROTECTIVE CONDUCTORS

Protective conductors shall be provided between the main earthing terminal and each 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.

68.7 EQUIPOTENTIAL BONDING

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

Incoming metallic services (**including Gas pipework**) 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 16 mm² minimum cross-sectional area.

Metallic services and equipment in the toilet areas and kitchen shall all be bonded together by means of insulated standard copper conductor of 4 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.

68.8 BONDING OF KITCHEN EQUIPMENT

The Contractor shall allow for the earth bonding of each item of static kitchen furniture and equipment in accordance with the ETCI Wiring Rules.

The Electrical Contractor shall ascertain the exact method of making each earth connection.

Where earth clamps are used these shall be suitable for damp environmental conditions, identified by a blue dye mark. Earth clamps exhibiting red dye marks will be rejected.

68.9 TESTING

The whole of the earthing systems and arrangements shall be tested using the appropriate earth testing instruments and the results, shall be logged and a copy forwarded to the Employers Representative for their records.

The Employers Representative shall be advised in advance of the testing being carried out so as to give them an opportunity to witness the said tests.