

Volume A Documents

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1. A2.3 Builder's Work Specification

Schedule of approximate* Builder's Work
for
Electrical Services Installation
at

**St John of God GNS, Kilmore Road, Artane, Dublin 5 [RN:19920A]
[Eircode: D05 E265]**



**Electrical contractor is wholly responsible to ensure all elements of builder's works are included and adequately priced for in the contract*

'By others' or 'Not included' will deem your tender non-qualifying as these works are ALL required as part of the project

'Maintenance' as noted for additional 12 months IS required

'Css certificates' in accordance with BCaR 2014 IS required for all hanging systems i.e. new containment runs throughout the school

Note: This schedule is to be read in conjunction with all the drawings that comprise the works requirements which indicate all the Mechanical Services, Electrical Services & Builders Works

1.0 Isolation & Disconnection of existing services:

Note: The contractor is required to visit site prior to submitting their tender.

The contractor, therefore, shall be deemed to have allowed for the most onerous requirement in terms of cost and programme for the disconnection and removal of all existing services being removed under the proposed emergency works contract.

Contractor to complete full survey of existing mechanical & electrical services installed prior to any demolition works commencing.

Contractor to isolate and make safe all existing mechanical & electrical services prior to any demolition works commencing.

2.0 External / Site:

- **Removal and disposal of all redundant electrical equipment**
- Removal of redundant material from site
- Provide contractor's compound, incl. Harris Fencing
- Provide for final cleaning & DEEP CLEAN of the entire school
- Clearing away & Disposal of rubbish/debris
- Portaloo's as per drawings
- Skips as per drawings
- Canteen as per drawings
- Container as per drawings

3.0 Building Internally:

3.0 Openings in Conc. Slabs, Downstand Beams & Conc. Slabs penetrations

For any forming of new opes, the electrical contractor is required to provide Certificate of opinion on completion of these opes by their own Chartered Civil & Structural Engineer (As registered with Engineers Ireland)

3.1 Openings in Internal Walls:

Provide for cores and opes in solid internal and external walls for electrical services as required.

Provide for making good and sealing up all said opes in internal block walls.

Paint, patch, fill and touch up as required to match existing.

3.2 Openings in Solid Floors:

Provide for cores and opes in solid floors for electrical services as required.

Provide for making good and sealing up all said opes in internal block walls.

Paint, patch, fill and touch up as required to match existing.

3.3 Existing Ceilings:

Refer to Builder's Works drawings for specific areas & details

Type 1: Plasterboard Ceilings in **BLUE**

Allow for the dismantling & removal of the existing plasterboard ceilings in corridors & classrooms, where new containment runs are to be installed and / or other necessary electrical works – **INSTALL NEW Plasterboard ceilings & paint with 2 coats of white paint**

Type 2: 600x600mm Lay-In T-Bar suspended Ceilings in **GREEN**

Allow for the dismantling & removal of the existing 600x600mm suspended ceilings in corridors & classrooms, where new containment runs are to be installed and / or other necessary electrical works – **INSTALL NEW 600x600mm suspended ceiling**

Contractor to fully survey all these areas prior to works commencing

ALL Floors to be protected during these ceiling works

3.4 Plywood flooring to Attic Space:

Refer to ATTIC section

3.5 Openings through roof:

Not applicable

3.6 Support Brackets

Cut and drill into solid walls all necessary support brackets and where walls are not solid provide necessary grounds for misc. mechanical services as required for the completed installation.

3.7 Floors

Provide protections for all areas where works is being carried out with Correx Twinwall Polypropylene sheet

3.8 Concrete Plinths

Not applicable

3.9 Internal Partition

Not Applicable

4.0 Cranage – Positioning of Equipment:

Provide for off-loading and positioning:

- **1Nr.** New electrical sub-distribution boards, SUB DIST. BOARD/FUSE BOARD
1,200mm long x 1,500mm high (Approx. weight 400kg)

5.0 Firestopping:

The contractor shall provide for all fire stopping works where services penetrate fire rated wall or partitions. The contractor shall employ a specialist sub-contractor to carry out the required fire stopping who shall be responsible for certification upon completion.

For multi-service penetrations the contractor shall provide fire rated batts, Nullfire System 747, comprising mineral fire batts, faced both sides with a fire resistant water based acrylic mastic, fire rated to BS746: Part 20/22. This fire batt shall prevent the passage of toxic gases, smoke and fire, between compartments for up to 4 hours and also provide thermal and acoustic insulation.

For single services penetrate through a fire wall the contractor shall provide suitable intumescent pipe collars, wraps and/or sleeves to maintain the integrity of the fire wall. Collars, wraps and sleeves shall be manufactured by Envirograf and shall comply with BS746: Part 20/22



6.0 Co-ordination of Mechanical and Electrical Services

Contractor to include for and ensure that they will have responsibility for and supervise the co-ordination, quality assurance and commissioning and testing of the mechanical and electrical installations.

7.0 Photographic Records of Mechanical and Electrical Services

Contractor to include for taking photographic records of installed Mechanical and Electrical Services on a regular basis. Photographs to be labelled under by date and installed area.

The Photographic Records in digital format will form part of the hand-over documentation.

8.0 Support systems for works at high level

In accordance with current Health and Safety guidelines, Contractor to ensure that safe support systems are provided for domestic mechanical and electrical sub-contractors to work at heights.

9.0 Lightning Protection System

N/A for this project

10.0 Protective Steel Cages

Are required for ALL new electrical equipment in the GP Hall & Ground Floor exits



11.0 Painting/Decoration

The contractor will be responsible for ALL elements of:

- Painting of walls, floors and ceilings with 2 coats of paint to match existing
- Painting of electrical elements where required
- Filling/making good opes in walls/floors
- Making good ceilings
- Decoration & touch-up
- Final clean

12.0 Programme

ALL works to be completed by 26th February 2027

ALL works to take place during OUT OF SCHOOL HOURS i.e. 3pm to 11pm on daily shifts with cleaning on a daily basis so that the school is clean for re-opening each morning

Tenderers need to submit with their Tender their proposed Programme.

13.0 ATTIC

N/A

14.0 Asbestos Survey

The contractor will be responsible for an Asbestos Survey of the whole school and issuing of report BEFORE any works commence

15.0 Main Riser

IF detailed on the BW series drawings, the contractor will be responsible for creation of main electrical riser c/w fire rated cupboard, smoke detector within same and fire stopping

16.0 Fire Rated Cupboard

IF detailed on the drawings, the contractor will be responsible for creation of fire rated cupboards, smoke detector within same and fire stopping

2. A2.4 Electrical Specification

T5 PARTNERSHIP LTD.

Electrical Specification

Document 1 of 1

FOR

Electrical Services:

**St John of God GNS,
Kilmore Road,
Artane,
Dublin 5
[RN:19920A]**

[Eircode: D05 E265]

On behalf of

Client:

St John of God GNS, Kilmore Road, Artane, Dublin 5 [RN:19920A]

TENDER ISSUE

Oct 2026

Electrical Services Installation - Contents

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1.0 Schedule of Tender Drawings for Electrical & B/W Services *

Drg. No.	Description:	Scale:
62 (00 to 01)	Proposed Containment - Ground / First	1:100/A1
63 (00 to 01)	Proposed Emergency & General Lighting - Ground / First	1:100/A1
63 (02 to 03)	Proposed Emergency & General Lighting systems to be removed - Ground / First	1:100/A1
68 (00 to 01)	Proposed Fire Detection & Alarm System (FDAS) - Ground / First	1:100/A1
68 (02 to 03)	Proposed Fire Detection & Alarm Systems (FDAS) to be removed - Ground / First	1:100/A1
BW (00 to 01)	Proposed Builder works Ceilings, Painting & Furniture - Ground / First	1:100/A1
BW (02 to 03)	Proposed Builder works Opes, Fire stopping & Site compound - Ground / First	1:100/A1
BW (04 to 05)	Proposed Builder works Protection of floors - Ground / First	1:100/A1
CL (00 to 01)	Post Construction Cleaning Protocol - Ground / First	1:100/A1

** Refer to A4 drawing issue list for most up to date drawings*

2.0 Introduction:

2.1 Project Location and Description:

This project is in St John of God GNS, Artane, Dublin 5. This project comprises of major Electrical works for Fire Detection & Alarm Systems, Emergency Lighting Systems and LV Distribution services to an existing live School.

This contract shall fall under the new government contracts as follows:

PUBLIC WORKS CONTRACT FOR BUILDING WORKS

2.2 Scope of Contract:

This specification details the requirements for the supply, installation testing and commissioning of the electrical services associated with the proposed development.

This specification shall be read in conjunction with all of the Services Engineers, Architects &, Structural Engineers drawings, schedules and specifications and any other supplementary information which comprise the client's requirements.

The contractor shall be responsible for ensuring that the electrical engineering services are co-ordinated, installed, tested and commissioned in accordance with the employers requirements, and to the satisfaction of the Services Engineer.

Where materials and equipment are specified, these must be strictly adhered to unless alternative proposals have been submitted to and accepted by the Services Engineer prior to placement of contract.

The contractor in preparing his tender shall familiarise himself with and make due allowance for the structural restrictions of the building, particularly in respect of plantrooms, ceiling voids and service risers. A full set of structural engineering and architectural drawings are available for inspection at the offices of the Main Contractor for this purpose.

The Tender Drawings represent design layouts only. It shall be the responsibility of the contractor to ensure that the installation as represented on the design drawings are fully co-ordinated with other services and structure.

The contractor shall be responsible for integration, co-ordination and the preparation of full installation/working drawings and during the construction phase, of all aspects of the services installation as detailed herein, including Builders work in Connection with these Services.

The contractor's attention is specifically drawn to the materials and suppliers schedules which form part of this specification, and which shall form the basis of any tender submitted.

2.3 Description of Works:

The Electrical Contractor shall supply all labour, materials, equipment and engineering services, and perform all works necessary to install the complete, tested, commissioned and operational electrical systems as specified hereinafter and shown on the accompanying drawings. The works included in this specification generally comprise of but are not be restricted to the following:

- Installation of new emergency lighting system to comply with **I.S 3217:2023**
- Installation of new fire detection and alarm system to comply with **I.S. 3218:2024**
- Installation of new general electrical services to comply with **I.S. 10101:2020+AC1:2020**
- New Addressable fire alarm panel to be installed with a New fire detection and alarm system.
- All new power distribution to fire detection and alarm system to be enhanced complying with I.S 3218: 2024, BS5839-1 & BS7629-1, LPCB 172C/01, BASIC 803198.
- All new power Distribution to Emergency Lighting
- Installation of new containment throughout, cable trays steel conduit etc.
- Contractor to include for testing and commissioning of fire detection & alarm system and emergency lighting system after works are completion of works and providing maintenance on same for 24 months in total (12 months for DLP and 12 months after DLP)
- Complete general service socket installation
- Complete power wiring installation
- Complete Lighting reconfiguration & new installation
- Commissioning, Earthing, testing and commissioning
- CCTV system installation

2.4 Programme of Works:

The contractor should note that the works must be carried out strictly in accordance with the main contractors program and the program as detailed in the preliminary documentation prepared by the Quantity Surveyor if issued

The contractor shall also note the phasing details prepared by the Architects if issued

2.5 Standards, rules and regulations:

The contractor shall ensure that the engineering, fabrication, construction, installation, inspection, testing and commissioning of the electrical installation, shall be executed in accordance with but not limited to the latest edition of the following standards and codes of practice in effect at time of tendering. Where requirements overlap or conflict the most onerous conditions shall be met.

- ☐ British Standards or European Equivalents
- ☐ CIBSE Codes and Technical Memoranda
- ☐ The Building Regulations
- ☐ Local Authority Regulations and By-Laws – Kildare County Council.
- ☐ The specific requirements of service providers – ESB, Eircom. Etc..
- ☐ Factories Act – Republic of Ireland Regulations
- ☐ Loss Prevention Council Rules.
- ☐ BS:7671:1992, Requirements for Electrical Installations, including amendments No.2 1997.
- ☐ British Standard Codes of Practice for Building Services Systems
- ☐ Institute of Plumbing, Plumbing Services Design Guide
- ☐ The Environmental Protection Act
- ☐ National rules for Electrical Installations as issued by the Electro Technical Council of Ireland.
- ☐ The EMC Directive 89/336/EEC

2.6 Quality:

All materials used in this contract shall be new, of finest quality, purchased from approved manufacturers. All works carried out under this contract shall be in accordance with good practice and finest quality workmanship.

All items of equipment and components installed under this contract shall be installed in strict accordance with the manufacturers recommendations, which shall form part of this specification. For items of equipment supplied under this contract by others, you the contractor shall pass on the manufacturers installation instructions and recommendations to the installer and also ensure that these are understood and complied with.

Any item of equipment or component supplied or installed under this contract, which is not of a standard or quality consistent with good practice shall, at the request of the owner, be replaced at no additional cost to the owner.

2.7 Reference Documentation:

The contractor shall note that the following documents shall form part of this specification:

1. Mechanical and Electrical Drawings & Specifications.
2. Equipment Schedules.
3. The Quantity Surveyors Preliminaries, Schedules etc.
4. The Architects phasing information

2.8 Basis of Contract:

The works shall be carried out in accordance with the directions and to the satisfaction of the Engineers in accordance with the signed drawings and specification and in accordance with such further drawings, details, instructions, directions and explanations as may be given from time to time by the Engineers.

This contract shall fall under the new government contracts - PUBLIC WORKS CONTRACT FOR BUILDING WORKS

2.9 Tenders:

The contractor shall submit his tender for a gross amount which shall include for all materials, workmanship, plant, equipment for the complete operation of the electrical systems as detailed on the design drawings and within this specification.

The contractor shall pay particular attention to the proper completion of the summary of prices included in the form of tender and must complete the summary of prices strictly under the item numbers listed. The contractor shall include in his tender under additional headings if necessary and irrespective of the items indicated for all work specified or implied by the drawings and specifications.

The Clients do not bind themselves to accept the lowest or any tender and the contractors tendering for the works will **not** be in any way remunerated for any trouble or expense they may sustain in the preparation of their tenders.

3.0 Standard Conditions

NOTE:

This contract shall fall under the new government contracts – PUBLIC WORKS CONTRACT FOR BUILDING WORKS

3.1 Currency:

All tenders shall be quoted in Euro.

3.2 Inspection of Premises:

The contractor shall have visited and checked the site relative to all aspects of the work and included for same in his Tender. No claims shall be entertained by the Engineers due to lack of knowledge of site conditions/ existing services prior to you submitting this tender.

3.3 Provision of Everything Necessary:

This specification and the design drawings are to be used jointly and anything not specifically mentioned in either but necessary for the fulfilment of the guarantee and requirements called for in the contract, or necessary for the proper working of the systems to the satisfaction of the Engineers, is to be provided under the contract without additional costs.

Any discrepancies or conflicts of information between the contract documents, specification and drawings shall be brought to the Engineer's attention at the time of tender. The sub-contractor shall be deemed to have allowed for the most onerous requirement in terms of cost and/or programme unless instructed otherwise in writing prior to appointment.

The design drawings are primarily intended to enable the sub-contractor to prepare his estimate. Where runs of piping, ducts, cables, conduits etc., are shown to small scale (e.g. 1:50, 1:100 etc.) these do not necessarily indicate exact positions and the contractor shall include for developing these drawings to suit his installation within the parameters set and is deemed to have included for all materials and associated costs.

This specification and any drawings forming a part of the tender or contract documents indicate the Client's requirements and are in no way deemed to be complete working instructions or drawings.

Large scale arrangement details are based on agreement with the Architect and no alteration in principle will be allowed without the approval of the Engineers.

3.4 Responsibility:

The contractor shall be responsible for the correct installation of the works as specified and/or shown on the design drawings, and for the proper working of the installations to the complete satisfaction of the Engineers, and shall be responsible for compliance with all tests called herein or required by the Engineers. In the event of anything described or shown on the drawings being in the sub-contractors opinion unsuitable or inconsistent with his guarantee and responsibilities, the sub-contractor shall draw attention to these matters at the time of tendering.

3.5 Materials and Workmanship:

All materials supplied and work carried out shall be the best of their respective kinds and to the approval of the Engineers. All such materials and work shall comply with British and European Standards where applicable.

All materials used in the installation shall be marked as appropriate with the CE mark to show compliance with European Directives, certificates of conformity shall be obtained from the suppliers and these shall be incorporated in the O&M Manuals.

Where Irish Standards/British Standards are referred herein these shall be deemed to refer to the current edition of such standards and to include as far as practicable any amended standard requirements which may become current before the date at which the work is carried out.

No substitution for specified or approved materials will be permitted except by permission of the Engineers in writing.

3.6 Manufacturers/Suppliers:

This specification and the contract drawings have been prepared on the basis of the first named manufacturers and suppliers only. Where more than one manufacturer or supplier is indicated as acceptable alternatives, the first named has been used in the preparation of the contract documents.

The contractor shall include in his tender for the specified manufacturers and suppliers within his tender only. He may indicate alternatives with cost differences where applicable on the form provided within the appropriate section of the contract. The form shall be submitted with the tender for consideration by the Engineers.

The contractor shall be responsible for ensuring that any alternative equipment, plant etc. proposed meets the design duty, quality standards, etc. and fits within the space available. The sub-contractor shall be deemed to have allowed for all associated costs to meet the specified criteria and equipment specification.

Where more than one manufacturer's name is included under a particular item, all such items/ e.g. valves, pumps, fans, switchgear, accessories etc. shall be of the same manufacturer and not a combination of various makes.

The contractor shall ensure that manufacturers, suppliers, domestic sub-contractors, etc., are informed of all the relevant information to ensure that all the materials, services, installations, etc. are properly co-ordinated and interconnected.

Copies of all relevant sections of the specifications shall be forwarded to manufacturers, suppliers and sub-contractors.

3.7 Ordering:

Following his appointment the contractor shall obtain confirmation of all particulars and details necessary for the placing of orders and thereafter shall as soon as possible place orders for all plant, equipment and materials. In placing such orders it shall be the contractor's responsibility to ensure that his suppliers are cognisant of, and work to, the requirements of the contract.

The contractor shall complete within two weeks of receipt of a letter of acceptance/intent or formal order, a schedule of procurement to align with the contract programme. The schedule shall include all relevant details of the equipment, order date, technical submission approval period, delivery date, dates of works inspections and tests and any other relevant information.

3.8 Selection of Plant and Equipment:

The duties and ratings of Electrical Items or units described in the specification and on the design drawings are the minimum necessary for the operation of the complete system. The contractor shall be responsible for checking the duties against the working drawings and for making all necessary adjustments to achieve the design performance.

The contractor shall be responsible for obtaining plant and equipment selections from the selected manufacturers, which fall within the middle of the range of the plants performance and not at the maximum or minimum capabilities.

All plant and equipment shall be all selected to achieve the specified duties at the relevant performance criteria.

Where particular model numbers of equipment have been specified these are for guidance only. The sub-contractor shall be responsible for selecting the appropriate size of unit to meet the design criteria. The sub-contractor shall advise at the time of tender any discrepancies between specified model numbers and those selected.

The contractor shall submit details of the plant selections to the Engineers for approval prior to manufacture or delivery.

This shall be in the form of a bound Technical Submission document for each item of plant. The document shall include:

- Title page
- The specified design duties/criteria
- Manufacturers technical data sheets
- Manufacturers Literature
- Plant selection calculations (where requested)
- Performance curves
- Latest order date
- Procurement Period

3.9 Guarantee:

The contractor, shall for a specific piece of equipment or apparatus, whether specified herein by name or whether of a make selected by the sub-contractor be deemed to guarantee its satisfactory performance under all working conditions defined in the specification.

The contractor shall be responsible for maintaining equipment guarantees and for the rectification of any defects, which may arise during the Defects Liability Period in accordance with the contract.

Where plant equipment or complete systems are guaranteed by the supplier, these guarantees shall be arranged to commence from the date of Practical completion and any extended warranties necessary shall be deemed to be included in the tender sum.

3.10 Rejection of Unsuitable Materials:

The Engineers shall be at liberty to reject any plant, materials, etc., and workmanship, not complying with the requirements of this specification or which are in any way unsuitable; and to order the removal and replacement without extra cost to the contract, of any faulty materials or inferior work. The above shall apply notwithstanding that the Engineers may have previously named a particular make or type of plant or materials.

3.11 Plant Inspections:

The contractor shall be responsible for inspecting all plant, equipment and materials at the manufacturer's works and for satisfying himself as to its suitability for the use to which it will be put. He shall if so requested, makes the necessary arrangements for joint works inspections and/or tests of such plant, with the Engineers. Any such inspections shall not relieve the sub-contractor of his responsibilities under his contract.

The contractor shall furnish to the Engineers copies in triplicate of works test certificates in respect of all plant, equipment and material, showings compliance with tests to British Standards and with additional tests specifically called for herein.

3.12 Packing Storage and Protection:

All plant, equipment, apparatus, materials and parts shall be delivered to site in factory perfect condition and properly packed and protected against damage due to handling, or due to adverse weather or other circumstances and so far as practicable shall be kept in packing cases or under protective covering until required for use.

Any items suffering damage in transit or on the site shall be rejected and replaced without extra cost to the employer. The sub-contractor shall suitably protect, encase, cover over, etc., as may be appropriate, all plant and equipment, instruments, pipework, insulation etc., installed by him, against damage due to building operations or adverse weather or other causes up to the date of practical completion and shall make good any damage and handover the entire installation in a new and undamaged condition.

During the progress of the works all open ends of plant, pipes, conduits, etc., shall be suitably capped to prevent the ingress of foreign matter.

Any open end of plant, pipe, duct, conduit etc., which is not being worked on immediately, shall be protected from the entry of foreign matter, tools, etc., by fixing an approved type of seal. The sub-contractor shall take every precaution to prevent dirt or rubbish entering the open ends of pipework etc. during erection, and inspect each length after jointing to ensure it is clean inside. Should any stoppage occur after the system is commissioned, the sub-contractor will be responsible for removing at his own expense.

The ventilation ductwork shall not be set to work unless clean and free from debris/dust. Any resultant replacement of air filters or specialist cleaning of ductwork due to the failure of the sub-contractor to meet this requirement shall be at his own expense.

3.13 Regulations & Signage:

The contractor shall obtain all approvals from the relevant authorities and allow for any statutory signage where applicable.

It is the contractors responsibility to check that the working drawings show all necessary details and installation instructions, and to ensure that the operating and maintenance instructions and record drawings comply with the requirements of the Health & Safety at work Act, and any other applicable legislation.

The contractor shall allow within his tender for his own safety officer to visit site on a regular basis to undertake routine health and safety inspections.

The contractor shall be responsible for ensuring that all items of plant, machinery and systems comply and that all necessary manufacturers instructions are included in the operating and maintenance instructions and, where necessary, fixed to items of plant as well.

The contractor shall be responsible for ensuring that all plant rooms and plant within have the necessary statutory notices, warnings and instructions. These shall cover maintenance, working, operating and access or egress thereto and there from. For example, all plantrooms shall have a notice permanently secured to all doors stating '**No admittance to Unauthorised Personnel**'.

All plantrooms where the noise level is in excess of 85dbA shall have a warning notice on all doors in accordance with the code of practice for reducing the exposure of employed persons to noise and ear protectors shall be provided.

All British Standards and British Standards Codes of Practice shall for the purposes of this specification be deemed as minimum legal requirements.

3.14 Permit to Work (Occupied Buildings):

No services in the building are to be turned off unless a permit to work has been obtained and method statement submitted to the contractor or his representative on site and approval given. Such permits shall be submitted and issued in respect of all services to be turned off and shall cover specific services over specific periods only.

A minimum 24-hour is required before a service can be turned off.

The contractor will remain responsible for checking that any service turned off is no longer live and no assumption is to be made by the sub-contractor that a service having been turned off is safe to work on. The sub-contractor will remain responsible for ensuring the safety of all operatives on the site and normal safety checks must still be carried out.

The contractor is responsible for ensuring that the isolation of any service has no detrimental effect upon the performance of any service that remains in use within the building. The contractor must advise the Engineers of any effect on remaining services before the service is isolated.

The contractor will remain responsible for ensuring that all areas are safe for the services to be livened up and that all pipework and the like has been adequately and thoroughly tested before being made live. Any damage

resulting from the failure to ensure systems are intact and safe before being made live will remain the responsibility of the contractor.

The employer will retain the right to enter into any of the sub-contractors working areas in order to carry out maintenance on any items of plant or other equipment within that area and not forming part of the works by the contractor.

Where the contractor is due to undertake work on an item of equipment which has been temporarily closed down or shut off, the contractor shall carry out such sufficient 'caretaker' maintenance so as to ensure that when work on the equipment has been finally completed, it is brought back into use without damage as a result of lying idle for any period of time.

3.15 Hot Working Permit (Occupied Buildings):

All welding, soldering, brazing or other hot working methods used must be notified to the Engineers or his representative and a hot working permit obtained. Such a permit will be issued in respect of all hot working to cover specific aspects of work over specific periods only.

Any hot working carried out without such a permit will be subject to immediate suspension and any lost time shall be made up by the sub-contractor so that there is no effect to the programme.

The contractor shall provide adequate fire protection equipment, as detailed on the hot works permit, including flash screens alongside every area of hot working and shall ensure that operatives are aware of the requirements of the permit and that they are adhering to the same.

The Engineers reserves the right to remove from site any persons working without due care or without necessary permits to work.

3.16 Photographs etc.:

The contractor and his suppliers of plant and equipment shall not, without the prior written approval of the Employer/Architect or Engineers take or authorize the taking of any photographs of the project for use in any publicity or advertising, or publish any articles, relating to the project.

3.17 Sub-Letting:

The contractor shall not without the prior approval in writing of the Engineers, sub-let the supply or installation of any portion of the works and such approval when granted shall not relieve the sub-contractor of any of his obligations under the contract.

The contractor shall be entirely responsible for all aspects of the work of his suppliers and sub-contractors as though he were carrying out such work himself and he shall duly progress such work and off-site manufacture and preparation in every way, and shall make such sub-contracts and shall secure all rights of the employer under the contractor. The contractor shall at the time of tendering state in the appropriate section of the contract details of all sub-contracts that he proposes to place.

3.18 Control of Noise:

The systems as installed shall achieve the noise levels defined in operation under the conditions under which they will be called to operate, and in any case shall be such that no noise or vibration is discernible outside plantrooms or similar spaces in which the equipment is housed.

The contractor shall take all necessary steps to ensure that the equipment supplied by him is silent as described above and shall include in his tender for such sound absorbing or anti-vibration material or devices, as are necessary to ensure the design noise levels are achieved.

The Engineers decision as to what constitutes satisfaction in this respect shall be final.

If on completion, the system does not satisfy the required noise levels, the sub-contractor shall without charge, carry out such modifications or additions as may be required, to the Engineers satisfaction.

3.19 Sub-Contractor's Office:

The contractor shall provide experienced and competent staff to comply fully with the requirements of this documentation.

The contractor shall, throughout the duration of the contract, maintain an adequate drawing office with staff, for the timely preparation of all drawings required for the contract.

The contractor shall keep constantly upon the site of works an experienced supervisor and shall provide him with reasonable office accommodation and facilities.

The contractor shall also provide and keep on the site a staff of experienced foreman and charge-hands adequate for carrying out the works in relation to the magnitude thereof.

Any directions or instructions given to the contractor's representative or to the supervisor, shall be deemed to have been given to the sub-contractor and shall be confirmed in writing.

None of the above staff shall be removed from their respective duties without prior approval of the Engineers.

In the event of any of them being in the opinion of the Engineers unsatisfactory or misconducting themselves they shall be forthwith be removed and replaced by suitable substitutes to the Engineers satisfaction.

The contractor shall arrange that a full set of prints are kept on site showing the progress of work in connection with this contract. Such prints must be kept up to date weekly and all conduit, cable, pipe and duct runs, positions of equipment and apparatus etc., shall be recorded on the drawings as they are installed. The contractor shall be aware that non-production of these drawings for inspection may cause delay or deductions from his monthly valuation payments.

3.20 Site Clerk of Works:

The Purchasers may appoint a Clerk of Work who will be paid by them but neither his appointment nor any of his actions shall in any way invalidate the responsibility of the Contractor. The Clerk of Works will have no power to authorize deviations of any kind.

3.21 Time for Completion:

The contractor is to state in his tender the number of weeks in which he will commence and finish the installation complete and ready for regular work from the date of the acceptance of his tender. It is to be understood that the Contract work must proceed with the progress of the Building Works and the Contractor must arrange to have his work carried out in a manner to conform thereto. The accepted Contractor will be required to agree a programme of work with the Main Building Contractor.

3.22 Damages for Delay in Completion

If the contractor fails in the due performance of his contract or any extension thereof by not completing the work in the time set out in his tender and if the Purchaser has suffered any loss from the delay occasioned by such failure, the Contractor shall agree to accept a reduction of the contract price (refer to Preliminaries by Quantity Surveyor) or part thereof between the appointed or extended time as the case may be and the actual time of taking over, and such reduction shall be in full satisfaction of the Contractor's liability for delay.

3.23 Insurance:

The Contractor shall make full provision in his tender for insuring with an approved Insurance Company the whole of the plant and works relative to Fire Insurance, Compensation, etc. He shall provide all other necessary insurance's in connection with Employers Liability, National Health and Unemployment Acts, Third Party Risks and for complying with the Conditions of Employment and all statutes or statutory orders in force affecting employers or employed. See Appendix for level of public liability insurance.

3.24 Bill of Quantities:

Contractors tendering for the project should submit their priced tenders in the normal way, without priced Bills of Quantities. Within five working days of the Contractor receiving notification in writing from the Engineers, the two lowest Contractors shall submit sealed Bills of Quantities to the Engineers. The lowest Bill shall be opened and examined by the Engineers and if found to be satisfactory shall be used to measure variations on the contract. The second Bill shall only be opened when the lowest tenderer has been eliminated. Unopened Bills of Quantities shall be returned to the Contractor who submitted the Bill. No Bill shall be opened without the consent of the Contractor.

3.25 Pricing, Payments, Alterations, Additions and Extras:

The Contractor shall pay particular attention to the proper completion of the summary of tender, included in the form of tender. You shall ensure that each section is completed in full, the term 'included above' is not allowed as each item must contain a priced value. This contract is in Euros.

As the project progresses you shall make claims in relation to the dates furnished by the Quantity Surveyor. We shall require your claim five working days in advance of this date, together with a break down of materials, labour, plant installed, etc.

- up to 80% of the value of the materials delivered on site but not fixed and up to 90% of the value of the work executed to the satisfaction of the Engineers.
- An additional 7% shall be paid upon the plant passing satisfactory tests as a whole.

- The balance of 3% shall be paid at the expiration of the guarantee period of 12 months subject to the satisfactory performance of the installation.

No departure from the specification or approved plans or any alterations or additions shall be permitted or paid for until the written instructions of the Engineers have been obtained. Any alterations, additions, or omissions shall be priced in accordance with the Contractors priced Bill of Quantities.

Where it is impossible to apply the Bill of Quantity rates to any variations from the contract such variations shall be charged at the day work rates appended to the Summary of Tender.

In all cases where extra work is found to be necessary the Contractor must notify the Engineers giving them a detailed estimate as to the amount of extra required and he must obtain their approval in writing before carrying out such work.

During the execution of any such extra work the Contractor shall furnish weekly to the Engineers time sheets giving separate details of the items executed. Such time sheets when checked and found to be in order will be signed by the Engineers and a copy returned to the Contractor.

All variations and omissions shall be costed at prices ruling at the date of original tender and shall be adjusted for increased costs and prices in the same manner as the Tender Price.

3.26 Claims for Increased Costs:

Where the Contractor intends to make a claim for increases in the cost of labour, he will be required to provide the Engineers on a weekly basis, time sheets for all his employees at the site. These time sheets should be counter signed by the Clerk of Works. Time sheets which have not been received within two weeks will not be considered.

Claims for increased cost of materials must show the quantity and rates included in his tender and the invoice showing rates charged. The Consulting Engineers may require additional supporting evidence in specific cases.

Note: In the case of a Fixed Price Contract, this Clause does not apply.

3.27 Guarantee Bond:

The Contractor will be required to obtain a Guarantee Bond to cover 25% of the value of the Contract work. The Contractor shall enter into a Bond with an approved Insurance Company. The Contractor shall include in the summary of tender the cost of obtaining such Bond.

3.28 Collateral Warranty:

The Contractor shall be requested to enter into a Collateral Warranty Agreement with the client in the Form approved by the Construction Industry Federation. The Contractor shall include in his tender the cost of providing the Collateral Warranty.

3.29 Prime Costs Sums: (not applicable for this contract)

The words "Prime Cost" or the abbreviations "P.C." shall be understood to mean the Nett cost of the equipment or the works to which they refer, including delivery to site after deducting any trade or other discount except a cash discount of not exceeding 5 per cent. In every case where an addition is made to a Prime Cost sum to cover the cost of the installation and for profit, a separate entry for these items must be shown in the Summary of Tender.

The Contractor shall not place orders or expend money in respect of P.C., items without first obtaining the Engineers approval in writing of the equipment, the Supplier, drawings, specification (if any) and the amount to be paid. The Contractor shall when required produce all correspondence quotations, invoices and receipts in connection with such expenditure.

In the final account, Nett P.C. Sums together with any addition thereto which the Contractor may have made in his summary of tender shall be deducted from the contract sum and both the P.C. Sum and the addition shall be adjusted in accordance with the expenditure authorised by the Engineers in respect of the P.C. items before being added back into the final account.

All provisional sums required in the specification shall be included by the Contractor in his Summary of Tender. Such provisional sums shall be at the entire disposal of the Architect/Engineers and no part of it shall be payable to the Contractor except upon certificate of the Engineers.

3.30 On Appointment:

Before the Contractor is appointed he must produce evidence that all personnel working on the project are members of the C.I.F. Pension/Sick Pay scheme.

Before the Contractor is appointed he must produce his current Tax Clearance Certificate. No payments can be issued until the Client is satisfied that all tax clearance procedures have been fulfilled. Insurance Details shall like wise be furnished.

3.31 Co-ordination:

The contractor is responsible for coordinating the works specified and shown on the drawings and is to provide all necessary coordinated installation, manufacturing and builder's work drawings required for the works and as may be requested by the Engineers.

The tenderer for the mechanical services shall be deemed to have included for the co-ordination of all services and shall include within his tender for any costs incurred to chair and attend contractors co-ordination meetings and should subsequent clashes occur during the installation of the works the mechanical contractor shall be responsible for any remedial costs should it be shown that he has not provided the necessary co-ordinated working drawings.

The tenderer for the electrical services shall include for providing all information required by the mechanical services contractor and attend any necessary co-ordination meetings called by the mechanical contractor to perform their co-ordination function.

Should clashes occur during the installation because the electrical sub-contractor has failed to provide the necessary information to allow production of co-ordinated drawings he shall be responsible for any necessary remedial costs.

The contractor shall be responsible for the detailed co-ordination and positioning of services to ensure that clashes are avoided. He shall allow in his tender for coordinating all the building services including mechanical, electrical, lift services, with the architectural and structural elements of the construction.

The mechanical and electrical sub-contractors shall allow in the tender for any costs associated with the requirement for the services to be fully co-ordinated.

Where, for clarification, it is necessary to provide detailed co-ordination installation drawings the mechanical contractor shall provide the same.

The above description shall not absolve the responsibilities of any sub-contractor to provide adequate and timely information for the production of such drawings etc.

In the event of any dispute the Project Manager/Engineers shall be the sole arbiter as to the needs and responsibilities.

The contractor's installation drawings are to be prepared in accordance with the installation drawings specified below and shall be to an approved CAD standard.

3.32 Installation Drawings:

The design drawings are primarily intended to enable the sub-contractor to prepare his estimate and submit a tender. Where runs of piping, ducts, cables, conduits, etc. are shown to small scale these do not necessarily indicate exact positions. Large-scale arrangement details are based on agreement with the architect taking into account other services and no alteration in principle will be allowed without the approval of the Engineers.

Prior to the preparation of installation drawings the sub-contractor shall produce a schedule of drawings indicating dates by which information will be issued for comment and dates by which drawings are required to be finalized in accordance with the agreed construction programme.

The sub-contractor shall, before the relevant work proceeds, prepare and submit for comment by the Engineers fully detailed and dimensioned installation drawings based on the design drawings and taking into account any modifications either to the building, structure, or to the equipment to be installed. The sub-contractor shall, similarly prepare all necessary schedules of equipment, etc. and also all necessary wiring diagrams, both internal diagrams for items of electrical equipment and diagrams showing the inter-connections between different items.

Any comments made by the Engineers do not relieve the sub-contractor of his responsibility to co-ordinate the installation of services within the space allocated in a safe and workman like manner and to ensure adequate provision is made for future maintenance.

Should the sub-contractor consider there to be a problem, which cannot be resolved, he shall refer it to the Engineers.

The sub-contractor shall produce installation drawings in CAD format, installation drawings are to be prepared in accordance with the installation drawing scale schedule below.

Installation Drawing Scale Schedule:

Mechanical Drawings:

Provide as a minimum co-ordinated fully dimensioned installation and builderswork drawings all to scale.

□ General layout drawings and associated sections	1:50/1:20/ as appropriate
□ Manufacturers general arrangement for each type and size of unit	Scale as appropriate
□ Shop manufacturer's drawings for all ductwork	1:50/1:20/ as appropriate
□ Manufacturers wiring drawings	NTS
□ Control Panel wiring diagrams including field controls wiring diagrams	NTS
□ All plant room setting out plans and sections	1:20
□ Setting out plans and sections on each riser shaft and duct	1:10
□ Fixing details	1:10
□ Reflected ceiling plans for all areas with false ceilings indicating all mechanical and electrical services mounted within the ceiling, co-ordinated with the ceiling tile layout where appropriate.	

Electrical Drawings

Produce as a minimum fully dimensioned installation drawings all to scale detailing the following:

□ Site distribution and cable routes	scale as appropriate
□ General layout drawings of all plant and equipment	1:10/1:20
□ Schematics distribution for main and final sub-circuits	NTS
□ Cabling and wiring connections, showing cable type, sizes, loads	NTS
□ Trunking and cable tray routes with details of sizes / cables carried	1:50
□ Conduit routes with conduit size and details of cables carried	1:50
□ Power and control distribution for lift & mechanical plant	NTS
□ Lighting layouts for normal and emergency purposes	

detailing positions and types of luminaire, switch positions and wiring connections	1:50
□ Fire detector and alarm positions and wiring routes with type details and functions.	1:50
□ Earthing system with precise details of as appropriate routing, conductor sizes, capacity and connection.	NTS
□ Lightning protection system with precise details of position, routing, conductor sizes and terminations.	1:50
□ Communication systems wiring routes and details	NTS
□ Schedule of symbols	NTS

3.33 Builders Work Drawings:

The contractor shall prepare fully dimensioned, drawings and schedules showing details of builders work required in connection with the services installations of the contract, which shall be submitted to the Engineers for comment.

In cases where preliminary builders work and structural information has been issued by the Engineers such information shall be confirmed by the sub contractor (including confirmation of weight of items of equipment, sizes of access ways, etc.) and incorporated on his own drawings.

3.34 Setting out the works:

The contractor shall set out the works and shall be responsible for the accuracy of same, including the positioning of all services in voids, risers, plant, and plant bases. The sub-contractor shall at high own cost rectify any errors arising from inaccurate setting-out.

All ceiling void services shall be set out from floor datums, not from slab soffits. Installation drawing dimensions shall relate to these datums.

3.35 Protection:

From the time when the first material is delivered to site until practical completion, the sub-contractor will be held responsible for the proper protection of all stored, unfixed and fixed materials, plant and equipment, from all damage, by weather, construction debris, paint or other foreign bodies.

The sub-contractor shall be responsible for cleaning down all parts of the installation prior to commissioning the plant, particular care being taken to ensure that all spots of concrete and decorating material are removed. All surfaces shall be properly prepared and primed and painted where specified.

The sub-contractor shall take every precaution that electric motors, controls panels, electrical equipment etc., is additionally protected to prevent the ingress of moisture.

Any materials not properly protected in the opinion of the Engineers, shall be removed from site or replaced at no additional cost to the contract.

3.36 Ease of Maintenance:

The contractor shall at all times give proper consideration to the future maintenance of all plant as required and shall include for all such component parts as are provided by the manufacturer of equipment and plant for this purpose.

In particular all items of plant and control devices shall be installed to permit easy removal, (i.e. shall be incorporated into the pipework system with either unions or flanges).

The contractor shall allow in his cost for any modifications necessary for ease of maintenance as dictated by the Engineer.

3.37 Approvals:

Approval shall be sought from the following parties if appropriate, should no approvals be obtained the sub-contractor shall provide written confirmation in the O&M Manuals that his services installation complies with the requirements of the various parties listed:

- ☐ Environmental Health Authority
- ☐ Water Authority
- ☐ Local Authority
- ☐ Bord Gais
- ☐ Electricity Supply Board
- ☐ Fire Officer
- ☐ Telecom Provider

The contractor shall obtain final approval of his installation from the appropriate Authority and submit these approvals prior to the issue of a completion Certificate. Copies of the respective approvals shall be incorporated in the O&M Manuals by the sub-contractor.

3.38 Operation and Maintenance Documentation:

Introduction:

Under the requirements of the Provisions of the Health and Safety at Work Act, the employer shall not accept handover of the installation until full documentation concerning the installation is in the possession of his operational and maintenance staff and therefore the certificate of completion cannot be issued until the record drawings and instruction manuals are received.

Three complete sets of Operating and Maintenance Manuals shall be supplied to enable the building owner to operate and maintain the systems correctly. The manuals must therefore contain:

- ☐ All necessary technical information on each item of equipment and the associated components, which have been used to construct the system.

- Commissioning and testing results and reports of how the components were adjusted to achieve the design intent.
- Line diagrams to show how the system is arranged in the building giving the location of all equipment and components.
- Details of the control system and how the system must be operated normally and in an emergency.
- Routine maintenance checks that must be made.
- A list of spare parts that should be kept.
- A list of any spare tools that may be required.
- Details of routine testing of fire alarms, emergency lighting etc.

Manuals:

The manuals shall be prepared in such a way that an Engineer who has no previous knowledge of the building, may use them to operate and maintain systems.

Manuals shall be prepared and presented as detailed in BSRIA application guide 1187.1. The front covers of the manuals shall have lettering to indicate the title i.e. Operating and Maintenance instructions, the name of the project and volume number. A label shall be fitted in the window on the spine of the file listing its volume number and contents.

An index shall be included in each volume identifying and contents of all volumes. Approved Operating and Maintenance instructions must be handed to the Engineer prior to handover. Operating and Maintenance instructions are required by the building operator to comply with Health & Safety at work Act 1974.

The manual shall include the following sections:

- Master Index
- Volume Index
- Section 1 - Construction Team
- Section 2 - Emergency Procedures
- Section 3 - Description of Services
- Section 4 - Plant Schedules and Asset Register
- Section 5 - Operating Procedures
- Section 6 - Preventative Maintenance Procedures
- Section 7 - Health and Safety Information
- Section 8 - Risk Assessments (For Operating & Maintenance)
- Section 9 - Fault Finding
- Section 10 - Statutory Certificates
- Section 11 - Test Certificates and Commissioning Report
- Section 12 - Controls (descriptions, test certificates and commissioning report)
- Section 13 - Manufacturers literature
- Section 14 - Record Drawings

Commissioning and Testing Report

The commissioning and testing report shall be incorporated in the 'Operating and Maintenance manuals'.

The report for each system shall contain a record of all the parameters, which affect the performance of the system at the time of commissioning. The report shall be comprehensive and shall contain a record of the settings of all controls and any other adjustable equipment together with the environmental test report.

As Built Record Drawings:

Immediately on completion of the installation the sub-contractor shall submit to the Engineers two sets of prints marked up as 'as built' drawings of the installation. Practical completion for the entire project shall not be deemed to have been achieved unless these conditions are complied with.

Within one month of receipt of acceptance of the 'as built' drawings the sub-contractor shall supply to the employer for his permanent retention:

- Three sets of folded prints housed in A4 size binders to match the O&M manual binders, each drawing housed in a plastic wallet.
- One set of A3 reduced size drawings in covered booklet.
- One set of drawings in CAD format on CD ROM.

In general, the scope and number of these drawings shall not be less than the number presented and accepted as installation drawings and shall include:

- Schematic diagrams of all systems and circuits.
- Plans to 1:50 minimum scale indicating the location of all services within the building
- Plans to 1:20 scale showing the location and identify of all items of plant and equipment
- Schedules suitably numbered and related to plans shall be included.
- Plans to 1:100 scale indicating the location of all buried and concealed services on the site and within the building.

Commissioning flow rates and pressures for air and water systems shall be recorded on the schematic record drawings. As a minimum this shall be at all commissioning valves and volume control dampers.

Copies of the approved system diagrams shall be permanently displayed in the appropriate switchrooms and plantrooms. The drawings shall be copied onto permanent surface which shall not fade with time and shall be framed and hung in approved positions.

Attention is drawn to the fact the provision of the above drawings instructions and manuals detailed below, forms part of the contract works, which shall not be deemed complete until they are received.

3.39 Practical Completion:

Practical completion of the works shall be the date when the works are complete, satisfactorily commissioned and witnessed and the operating and maintenance instructions and as-fitted drawings are issued.

All commissioning, including environmental tests, specified elsewhere in this specification shall be completed prior to practical completion.

3.40 Defects and Snagging:

The contractor shall ensure all defects and snags are completed prior to practical completion.

To comply with this requirement the sub-contractor shall appoint a dedicated Defects Engineer at an appropriate time prior to the anticipated Practical Completion date whose sole responsibility will be to clear the Engineer's defects and snagging lists, the contractor shall leave this Engineer on site until such time as all defects have been cleared to the satisfaction of the Engineers.

The contractor shall be aware that defects/snags will only be re-inspected by the Engineers once the sub-contractor has signed off each defect/snag on the defects sheet and formally written confirming that the noted defects have been cleared.

Should the subsequent inspections shown that the works have not been correctly completed to the Engineers satisfaction then the Engineers reserve the right to counter charge the contractor for abortive time.

Any minor defects that have not been cleared by the date of practical completion shall be completed within 30 days. The client reserves the right after this time to employ others to complete the works with any associated costs being deducted from the sub-contractors account.

3.41 Instructing Employer's Staff:

The contractor shall allow in his tender for the services of at least one skilled man, during ordinary working hours, for the purpose of instructing and supervising the employers staff in the operation of plant for a period of five days after practical completion.

In addition the sub-contractor shall allow for the attendance of the control specialist for five days for instruction of the control system.

The allowance made by the contractor shall include for non-sequential plant demonstration/training.

All Health and Safety matters, Risk Assessment, etc. shall be brought specifically to the attention of the employers staff.

3.42 Operation of the Installation:

Up to the date of Practical Completion the contractor shall, if called upon to do so, operate the installations or any portion thereof for the benefit of the employer for marketing or demonstration purposes provided that such operation does not prejudice the sub-contractor's responsibilities and obligations under the contract, and does not unreasonably interrupt or interfere with the progress of the work or commissioning and testing.

Should the contractor consider that the plant is unsafe to operate or liable to fail he shall notify the Engineers accordingly.

3.43 Fire Hazard:

The contractor shall take all necessary fire precautions in respect of his stores, workshops, etc. and shall comply with the requirements of his specialist Health & Safety Officer, the planning supervisor and the main contractor.

Where it is necessary for the sub-contractor to use any naked flame or welding equipment in the carrying out of his work, adequate protection shall be given to all other materials and personnel. Suitable fire extinguishers shall be readily available at the position where such work is proceeding.

3.44 Handover of Spares:

In cases where the contract includes the provision of spares for the use of the employer, the contractor shall hand over all such spares to the employer properly packed and labeled and accompanied by a detailed schedule thereof.

The employer shall sign a copy of such schedule which shall constitute a receipt for the spares and which shall be issued to the Engineers.

3.45 Maintenance Contracts:

If there is no requirement for the contractor to be responsible for the maintenance of the services installation within the 12 months defects liability period as identified elsewhere in this specification the sub-contractor shall before practical completion assist the employer in the making of Maintenance Contracts with the manufacturers of specialized items of plant and equipment as may be requested.

3.46 Programme:

The contractor shall supply a master programme for the works for which he is appointed. The master programme must be supplied within 2 weeks of appointment.

The programme shall cover all elements of work in detail and shall incorporate the work content anticipated for provisional and prime cost sums.

The programme shall include production time for working drawings, Builders Work drawings, As-Fitted Drawings and O&M Manuals.

The programme shall indicate procurement times for major items of plant and equipment.

The programme shall be distributed fortnightly throughout the contract marked up to show progress against each item.

The contractor shall prepare 6 weeks after appointment, a detailed commissioning programme.

The programme shall be issued for comment and discussion, to the Engineers. Any modifications agreed shall be incorporated and the programme issued to all relevant parties.

The commissioning programme shall be monitored against actual progress on a weekly basis and any necessary modifications shall be incorporated.

3.47 Working Restrictions:

The sub-contractor shall carry out all installation works, where possible during normal working hours. All deliveries of major plant and equipment shall be during out of hour's periods unless approved by the Engineers. All out of hours working and deliveries are to be agreed with the Engineers. The Engineers reserve the right to stop works at any time without penalty if noise is excessive.

3.48 Appendix to General Conditions:

For the Appendix to General Conditions and the cost summary for this project see the Quantity Surveyors Contract Preliminaries contained within the Appendix at the back of this document.

4.0 Mains Distribution:

4.1 Incoming Electricity Supply:

Existing

4.2 Main Switchboard:

Alterations to Main Dist. Board and New Sub Dist. Boards incl new sub mains & distribution

4.2.1 Standards

All items of switchgear shall be designed, manufactured and tested in accordance with the current editions of the following National and International Standards

- ETCI National Rules for Electrical Installations (Latest edition).
- ETCI code of Practice for the design, selection and erection of low voltage switchgear assemblies.
- Regulations for Electrical Installations as published by the I.E.E. (Latest edition).
- All requirements of the Industrial Inspectorate of the Department of Labour of the Irish Government, the 'Safety in Industry Act' 1980 and the Factories (Electricity) Regulations (S.I. No. 3 1972).
- BS 5486 Part I - Form 4.
- IEC 439.
- Latest additions to and amendments of all relevant standards published by the British Standards Institute, the Institution of Electrical Engineers and I.E.C.

It is at all times the responsibility of the vendor to ensure that any equipment he supplies is suitable for the application for which it is intended.

4.2.2 Rating and service conditions

The switchgear shall be designed for continuous operation on a 415 volt, 50 Hz, 3 phase, 4 wire, solidly earthed (TN-S) system, with a maximum fault level of 50 KA.

All switchgear shall be designed to operate under the following environmental conditions: -

Ambient temperature:	40°C (Max) 35°C over 24 hours
Relative Humidity:	50% @ 40°C (Max) 90% @ 20°C (Max)
Altitude:	Below 1000 meters
Location:	Indoors - Dedicated Electrical Switchroom

4.2.3 Enclosures and general arrangements

The main distribution board shall be floor standing and sub distribution boards shall be wall or floor mounted. All shall be fixed, flush-fronted, sheet metal, industrial cubicle type, welded and bolted to form a rigid structure, totally enclosed, dust-tight and damp-proof, to IP 54, BS 5420/IEC 144. All shall be designed for top or bottom entry as site conditions require. All units shall be designed for front only access. Completed floor standing assemblies shall be mounted on 150mm high rigid steel channel plinths which shall be pre-drilled to receive 12mm floor fixing anchor bolts.

Sections shall be arranged in columns, no section shall be less than 190mm high. All sections shall be adequately sized to house their intended equipment, allowing sufficient access for inspection, maintenance of components and the connection of outgoing cables.

The overall height of the main distribution board shall not exceed 2100mm. The overall height of the sub distribution boards shall not exceed 1600mm.

All field wiring cables for connection to feeder sections shall enter the switchgear via site-drilled, removable gland plates and shall be routed via adequately sized vertical cable chambers to their respective sections. All gland plates shall have a 10mm² flexible cable connecting them to the earth bus-bar.

Light gauge galvanized steel cable trays shall be provided in these cable chambers. Each section shall be fitted with a removable cable entry plate.

Busbars and all other parts that are normally live when the switchgear is energized shall be adequately enclosed to prevent access while cables are being installed, such that outgoing circuits may be safely installed, glanded and connected while the switchgear is energized and such that maintenance may be carried out within sections without danger. All the above generally in accordance with BS 5486 (Revision) Form 4.

All sections shall be fully door-interlocked to prevent access to live equipment. All connections which must remain live when section doors are opened shall be shrouded and fitted with suitable warning labels.

Spare supply sections shall be provided as shown on appropriate drawings. The switchgear shall be so constructed to facilitate the fitting of additional columns at a later date. Wires passing through openings or over edges likely to cause chafing, shall be properly protected from damage by insulating grommets or grommet strip securely fixed. Suitably sized lifting eyes or angles shall be supplied, fitted to each shipping section. The enclosure shall conform to IS/EN 60 439.

4.2.4 Busbars

Busbars shall conform to BS 5486/IEC 439-1 (TTA). Busbars shall be rectangular section, hard drawn solid copper. Copper-clad aluminium busbars will not be accepted. The vendor is required to submit details of busbars with his proposal, including dimensions, spacing, fixings, short circuit rating and certification.

Busbars shall be fully rated in relation to the incoming main switch and shall be adequately braced to withstand the maximum fault current. Busbars shall be enclosed in separated air insulated compartments which cannot be opened without the use of tools.

An earth busbar of adequate rating; but not less than 50% of the cross-section of the main phase busbars shall run the entire length of the switchgear and the entire height of each cable chamber. This busbar need not follow the same route as the current carrying busbars, but should be securely bolted to the structure of the switchgear and adequately braced to withstand fault currents.

Busbar joints shall be made with over-lapping sections of the same size and material as the busbars and securely fixed with high-tensile, electro-plated steel bolts, nuts and washers, correctly torqued. The busbar system shall be manufactured/ supplied by or approved by the system metalwork manufacturer.

4.2.5 Incoming Supply Section

The incoming supply section of the main distribution board shall be fitted with a Moulded Cased Circuit Breaker rated as required for the total load of the building.

The MCCB shall be Schneider or ABB, fixed pattern, complete with fully adjustable short-circuit and over-current protection release devices and shall be in accordance with IEC 947-2. Adequate space and terminating facilities shall be provided for glanding and connecting cables.

The incoming supply section shall be fitted with CT's, ammeter, ammeter selector switch, voltmeter fuses and neutral link, voltmeter and voltmeter selector switch. Fuse bases and neutral link shall be to BS 88, rated 20A and shall be GEC Redspot RS20H, black for fuses, white for neutral link.

CT secondary shorting/disconnect terminals shall be of the sliding link type, specifically Klippon SAKT range and shall be so arranged to facilitate the positive shorting of CT secondary windings.

CT's and voltage circuit fuses shall be in accordance with relevant Clauses within. The switchboard shall have adequate provision for the installation of ESB account metering CTS and ESB service cutout unit.

4.2.6 Outgoing Feeder Sections

Outgoing feeder sections shall contain door interlocked fuse-switch and neutral link. Fuse-switches shall be ABB, OESA range c/w BS 88 fuse links. It is the responsibility of the vendor to ensure that the characteristics of all outgoing protective devices is such that they will successfully discriminate with the incoming protective device in the event of over-current, short-circuit or earth fault. The vendor's proposal shall include full details and calculations of how this is to be achieved.

4.2.7 Distribution Sections

Distribution sections shall contain an incoming door on interlocked fuse switch and neutral link in accordance with relevant clause herein and rated as shown on the drawings.

Final circuit distribution MCB's and combined RCD/MCB's shall be rated as shown on the drawings and shall be capable of withstanding fault currents of 10 KA. RCB/MCB's shall have a rated earth leakage trip sensitivity of 30mA and shall be capable of responding a DC component in the earth leakage current.

They shall be in accordance with V.D.E. 0641/6.78 and shall be manufactured by Merlin Gerin. Distribution sections shall contain all ancillary devices as shown on the relevant drawings. Distribution sections shall contain a neutral and an earth terminal for every outgoing circuit originating within that section.

Adequate cable routing facilities shall be provided within the switchboard to readily facilitate the routing of all field wiring to the distribution sections without them passing through other live sections of the switchboard.

Distribution sections shall be designed to facilitate the connection of field wiring cables directly to the MCB's without the use of intermediate terminals. Every MCB, neutral and earth terminal shall be clearly numbered and adequate circuit reference charts shall be provided in transparent packets in the section doors.

The outer doors of distribution sections shall be arranged to allow operational access to MCB's without switching off the section main circuit breaker.

4.2.8 Power Factor Correction

Allowance shall be made in the new main switchboard for future installation of suitable power factor correction equipment for the development.

The PFC equipment shall be arranged to achieve the desired power factor through an adjustable range of 0.8 to 0.99 lagging.

The PFC shall comprise of capacitor bank stages, which shall be automatically controlled to achieve the desired power factor.

The PFC equipment and controller along with all necessary linkages, cabling, fusing etc. shall be factory fitted integral to the main switchboard to give the appearance of a single switchboard of consistent width, depth and height as that of the main switchboard.

Each 50 kVAr stage of the PFC equipment shall be connected to factory fitted panel mounted neon indicator lamps to identify which stages of the PFC are in operation.

The PFC equipment shall be interfaced with the generator control panel so as to be disabled during the operation of the generator and to remain disabled during operation of the generators and to remain disabled until the mains supply has been restored and the generator disconnected from the busbars

4.2.9 Generator Connection

There is no requirement for a generator connection in this development.

4.2.10 Wiring

All internal wiring shall be PVC insulated 600/1000 volt grade, stranded flexible conductors, tri-rated, to BS 6231. Current carrying connections from MCCB's and fuse-switches to bus-bars shall be with rectangular section copper bars with close-fitting PVC sleeves.

The phase sequence and colouring shall be L1, L2, L3, brown, red, yellow. All power conductors and connections shall be arranged to follow this sequence, reading from left to right or from top to bottom, when observed from the front of the Switchboard. Neutral conductors shall be coloured blue and earth conductors shall be green/yellow.

Wiring shall be neatly arranged so as to prevent damage. Wiring to door-mounted equipment shall be so arranged to prevent damage by door opening or closing and shall be enclosed in spiral-wrap or all-insulated flexible conduit, securely fixed at each end.

All cables shall be terminated using seamless copper compression lugs with "Hellernan" sleeves for stud or bolt terminals and bootlace ferules with insulating skirt for tunnel or clamp terminals.

Every cable end shall be identified with colour coded PVC number ferules passed over the cable end before termination. Snap-on an open sided markers will not be accepted. Markers shall be Critchley Z type or equal and approved and shall in all cases be correctly sized for the diameter of cable to which they are applied.

4.2.11 Ammeters, Voltmeters and Current Transformers

Ammeters and voltmeters shall be flush mounting and shall comply with BS89/IEC 51.

Ammeters and voltmeters shall be provided with external zero adjustment. They shall be GEC Measurements or equal and approved.

Current transformers for instrument circuits shall have 5A secondary windings and shall comply with BS 3938/IEC 185. Current transformers shall be Class 1 with suitable current and burden ratings, and shall be capable of withstanding fault currents in the circuit which they monitor.

All current transformers shall be securely fixed to the base-plate or chassis of the section. One side of the secondary circuit shall be securely earthed in all cases. Ammeter and voltmeter switches shall have an OFF position. Voltmeters switches shall have positions for all phase to phase and phase to neutral measurements.

4.2.12 Labels

The switchboard shall have a main designation label to BS 5486/IEC 439 bearing the following minimum information:-

- a) Manufacturers name or trademark.
- b) Country of origin.
- c) Type, designation number or code.
- d) Rated voltage and frequency.
- e) Rated current of Incoming Main Switch.
- f) Short circuit withstand level.

The vendor shall submit name-plate designations for approval before engraving. All bus-bar chambers shall be fitted with warning labels, red script on white background, reading "DANGER LIVE BUSBARS".

All switches and circuit breakers shall have ON and OFF positions clearly labelled. All push-buttons, selector switches and indicator lamps shall have their functions clearly labelled. All labels shall be securely fixed using non-ferrous rivets or screws. Adhesive alone shall not suffice.

4.2.13 Treatment and Finish

All steelwork shall be subjected to degreasing, rust removal, rust inhibiting and passivating prior to painting. The switchgear shall be finished with an approved paint system, inside and outside, to the vendors standard colour or if required to a specified BS shade.

During the construction of the switchgear, the vendor shall allow access at reasonable notice and frequency, to the Purchases or the Purchasers Engineer to inspect work in progress.

The switchgear shall be completely assembled, wired and tested at the vendors workshops. Type test certificate shall be presented for verification of short-circuit withstand, to BS 5486/IEC 439.

The following routine tests shall be witnessed by the Purchaser or the Purchasers Engineer:-

- a) Inspection of the switchgear including inspection of wiring and components.
- b) Electrical operation tests and the proving of all safety circuits and inter-locks.
- c) Dielectric tests - 2.5 KV for one minute.
- d) Checking of protective measures and of the electrical continuity of the protective conductors.

Routine tests shall be as described in BS 5486/IEC 439 and all test results shall be furnished upon completion of the Switchgear.

4.2.14 Delivery, Erection and Connection on Site

The vendor should allow for delivery of all items to site. While assistance on site for off-loading and positioning will be available, the vendor should include for supervision of these operations and any on-site assembly/internal wiring/testing as may be required.

The Contractor shall assume that each of the boards shall be delivered in three separate sections and he shall include for assembly as necessary on site. The Contractor shall include for all labour, transport and craneage necessary to take delivery of the units, to put them in position and site them as per final approved design layout drawings.

The contractor shall include for the supply and installation of the main distribution board MDB1.

To this figure he shall add for:

- (a) Profit
- (b) Transport, craneage, and siting
- (c) Assembly
- (d) Supply & installation of mains cabling

4.2.15 Switch Gear Certificate

All distribution panels and main boards having a rated voltage not exceeding 1000V A.C. or 1200V D.C. shall be built in accordance with the "Code of Practice for the Design, Selection and Erection of Low Voltage Switchgear Assemblies", as published by the E.T.C.I. Current Edition. Before a board is delivered to site the Contractor shall present to the Engineer a completed Standard Form of Declaration by the manufacturer.

4.2.16 Miniature Circuit Breaker Boards

MCB. boards shall be used for final sub-circuit protection for lighting, sockets, cooking , power, etc. MCB. boards shall be of approved pattern, case to be of sheet steel complete with a hinged door. The boards shall be of the three phase and neutral type designed to accept single, double or three pole circuit breakers in a vertical configuration. Doors shall be complete with locks.

The case shall have such dimensions as to allow ample room for connecting up incoming and outgoing cables. All terminals and connections shall be capable of carrying continuously without sign of heating the total load connected to the board.

MCB's shall be single or three pole as required and they shall conform to the requirements of BS EN 60898 1991 - M3 Category. They shall be of the thermal/magnetic type. The name of the service shall be neatly fixed on the front of each MCB. board by means of rigid plastic labels engraved with 12 mm. capital letters and fixed with rivets or screws.

All MCB boards shall be complete with suitably rated TP&N isolation switch as indicated on the associated drawings. The Contractor shall include for all necessary miniature circuit breakers to form a complete and safe installation. MCB's for lighting circuits shall be rated at 10 amps and 25 amps for sockets, MCB/RCD tripping sensitivity of 30 mA. All MCB/RCD/RCBO shall be as manufactured by Schneider Ltd.

4.2.17 Earth Leakage Circuit Breakers (ELCB)

Current earth leakage circuit breakers shall be of the residual operated type. Each breaker shall comprise a circuit breaker unit and a trip coil unit mounted on a common back plate and enclosed in a sheet steel or all insulated enclosure.

The breaker shall have a solenoid operated tripping mechanism and where specified shall be provided with suitable over current and short circuit tripping facilities. The complete unit shall comply with BS 4293 or CEE19.

Earth leakage circuit breakers shall be either of the TP & N or SP type as specified. Tripping currents shall be as specified. Where voltage operated earth leakage circuit breakers are called for they shall comply with BS 842. Earth leakage circuit breakers shall be as manufactured by Schneider Ltd.

4.2.18 Moulded Case Circuit Breakers (MCCB)

Moulded case circuit breakers shall be of the quick make quick break type with trip free mechanism all contained within an all insulated moulded case, all to BS EN 60898, 1991. All multi pole breakers shall be provided with thermal overload and adjustable magnetic short circuit tripping facilities and shall be capable of taking a shunt trip and up to two auxiliary contacts, either normally open or normally closed. Fault rating of MCB's shall be taken to be 25mVA unless other specified. The complete breaker shall be mounted in sheet steel or all insulated enclosure.

4.2.19 Fuses

Fuses shall be in accordance with VDE 0660 for NH type CEE 16 for DZ type and BS 88 for bridge type. Fuses shall be of Klockner Moeller manufacture.

4.2.20 Contactors

Contactors shall be of the quick make and break 500 volt type with removable copper contact shoes in a substantial sheet steel enclosure and complying with BS 775. The operating coil shall not overheat and shall be free from chatter or hum during operation. The operating coil of contactors shall be single phase. Contactors shall be of Schneider Ltd. Manufacture.

4.3 Sub Distribution Boards:

The contractor shall include for the supply of new sub-distribution boards in the locations indicated on the layout drawings.

The contractor shall include for the following:

- (e) Profit
- (f) Transport, cramage, and siting
- (g) Assembly
- (h) Supply & installation of mains cabling

The contractor shall include for the supply, installation, testing and commissioning of the general services sub-distribution boards. The Boards shall comply with relevant clauses above.

The distribution boards shall comply with all British Standards, I.E.E. Regulations, the E.T.C.I. Regulations. The distribution boards shall be metalclad units fabricated using 2mm minimum thickness sheet metal and shall be of Form 3 construction. Boards shall be fitted with solid drawn rectangular section solid copper fully rated busbars. The busbars shall be centre fed, the rating shall be reduced to 75% of the rated service capacity. Where indicated, all fuses shall be of HRC bridge type, DZ fuses will not be accepted.

All of the distribution boards shall fully wired to outgoing terminal racks.

4.4 Surge Protection Devices (SPDs)

All incoming and outgoing cables (of all types) shall be provided with Lighting/Surge Protection devices to IS EN 62305. The electrical contractor shall ensure allowance for surge protection at all panels within his scope and those provided by others.

Lightning Protection Zone 1 Main Incoming Switchboards

- SPD's for power supplies must be capable of diverting both Direct Lightning impulses 25kA 10/350µs per pole and Surge currents 40kA 8/20µs per pole eg. Combined arrester type 1/2/3.
- The arrester must be a 3 stage combined arrester eg Type 1, 2 and 3 to protection level 1 100kA 10/350µs per device or 25kA 10/350µs per pole. The arrester must be fully coordinated between Lightning and Surge currents.
- The let through voltage should not exceed 1kV even in the event of 100kA10/350µs Lightning impulse. The arrester will also limit follow currents.
- Only hermetically sealed gas filled spark gap arresters should be used. The arrester must comply with BSEN62305-4 and EN61643-11.
- Arresters to be equipped with a fault alarm contact to remotely signal if the device fails

Lightning Protection Zone 2 Sub Distribution Boards

- SPD's to have a maximum discharge current 40kA 8/20 μ s waveform per pole 160kA 8/20 μ s TP+N systems type 2.
- The arresters must have visual indication of status LED's.
- The arrester must be constructed so as to have no earth leakage currents.
- The arrester must comply to BSEN62305-4 and EN61643-11
- Arresters to be equipped with a built-in thermal fault alarm contact to remotely signal if the device fails.

Lightning Protection Zone 3 Final Sub Circuits

All fire / burglar alarm panels and any sensitive electronic equipment installed shall be protected as follows...

- Maximum discharge current of SPD's 5kA 8/20 μ s type 3.
- Protection devices must have indication of status.
- The arresters must comply to BSEN62305-4 and EN61643-11.

Lightning/Surge Protection for Data/Signal and Telecommunication Cables

Incoming data links and telecoms lines and lines between buildings must be protected against Direct Lightning and Surge impulses on each core and at both ends.

- Arresters used for protection of data signal lines must be capable of handling Lightning impulse currents and Surges of at least 20kA 8/20 μ s
- The protection circuit for signal transmission <600kHz must have an EMI filter function (resonance circuit by inductance and capacitance) to protect also against harmonics caused by high frequency influences
- Arresters must comply to IEC61643-21
- Screens of cables to be earthed directly or indirectly via shield earthing

5.0 System of Wiring:

5.1 PVC/LSF Cable in conduit:

All cable drops down walls for light switches, sockets, data cabling etc within refurbished building to be carried out in steel conduit tracked into walls.

Conduit shall be Class B. to B.S. 4568-1970 BS6053, and no tubing shall be smaller than 20 mm. dia. or have metal less than 1.8 mm. The thickness of metal shall increase in proportion to the increase in diameter. The capacity of the conduits shall be in accordance with E.T.C.I. Regulation AX52A and I.E.E. Table 12 (16th Edition).

Where cables in conduit are specified, they shall be protected throughout their length by screwed welded galvanised steel conduit, terminating in cast iron or pressed steel boxes at the fittings, switches, etc.

C.I. oblong intersection joint 'T' and other necessary boxes shall be screwed full thread into which the conduit shall fit tightly. Screw cutting oil shall be used as a lubricant when screw cutting, which must be afterwards carefully removed.

Tubes are to be properly screwed, the thread fully worked and when screwed up no rings shall be noticeable on the outside of the tubes. Conduits are to be mechanically and electrically continuous across all joints and earthed in accordance with the Clause marked "Earthing".

At junctions and ceiling roses, galvanised steel junction boxes shall be used. At ganged switch positions special multiple switch boxes shall be used.

Surface conduit shall be run either vertically or horizontally so as to avoid unsightliness and to conform with the Architectural features of the building. The conduit shall be to the Engineers approval and fixings to walls and steelwork shall be adequate in number and in mechanical strength to support the conduit rigidly. All fixings shall be by means of spacer bar saddles using either slotted or keyhole pattern to permit the assembly and removal of the saddle tops, without the removal of the retaining screws. The conduit shall be laid out for the loop in system of wiring and no joints shall be permitted in the wiring, except at outlet boxes.

Where conduit is to be concealed it shall be fixed in chases by means of suitable crampets. The conduit where sunk in the walls shall have at least 15mm cover of plaster from the external surface. Chases for conduits shall be filled with sand and cement to 7mm from the finished surface.

All bends shall be made as far as possible from conduit and no bends shall have a radius smaller than 2.5 times the outside diameter of the conduit. Elbows and tees shall not be used except in positions approved by the Engineers. When complete the conduit must be watertight and electricity continuous throughout. The conduits shall be as manufactured by Messrs. Tube Rollers Ltd. or similar.

No cables are to be inserted until the conduit and boxes are fixed and the plastering complete and no pull greater than 15 kg shall be exerted. Talc powder shall be plentifully used.

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

Conductors shall be high conductivity copper P.V.C. insulated, 600 volt grade made to comply with B.S. No. 6004, 1975 for 600/1000 volt grade. Colours of insulation on cables shall comply with the current E.T.C.I.

Regulations (latest Edition). Cables shall be as manufactured by Messrs. Cable & Wire Ltd. / Driver Harris Ltd., or similar to written approval.

All conductors shall be stranded and shall not be smaller than 1.5 sq. mm for lighting and 2.5 sq. mm for services sockets. Connections between cables shall be made by means of mechanical connections of approved type. Conductor sizes for services other than lighting and sockets shall be as outlined hereafter or as indicated on drawing or schedule. A separate 2.5 sq.mm. earth wire shall be run in all conduits and trunkings for lighting, sockets and other general services circuits.

Every connection shall be easily accessible and shall have resistance not greater than that of the equivalent length of the largest conductor to which the connector is fixed. The maximum voltage drop between any point where the circuit leaves a fuse board and any outlet point shall not exceed five volts.

Conduits shall be concealed throughout the building and Contractor shall mark the routes of all conduit to be chased by the Builder.

5.2 PVC/ Insulated Armoured LSF Cables:

The cables shall comply with B.S. 6346:1989. In general, main cables shall be run in external trenches or in ceiling space inside the building. Where cables are run underground other than in heating ducts, excavation of trenches and reinstatement will be carried out by the Building Contractor on site. The Electrical Contractor shall include for all labour necessary to lay the cables in position at a minimum depth of 750 mm below ground level. Fine sand as approved by the Engineers shall be spread in the excavations to form an underlay for the cables. The sand shall not be less than 50 mm depth both over and under the cables. A 150mm wide plastic marker tape with a repetitive inscription "Danger - Buried Electric Cables Below", shall be installed 200 mm below ground level, along the route of the cables.

The Contractor shall provide cable trays for all cables inside the building and cable runs to mechanical plant. The Contractor shall size the cable trays for a single layer of cable with at least 30% free expansion space.

Where indicated PVC/PVC/SWA/LSF and PVC/XLPE/SWA/LSF cables shall be installed as outlined below. The cables shall comprise copper stranded conductors insulated with P.V.C. enclosed in P.V.C. sheath and covered with steel wire armour which shall be covered with a L.S.F. sheath. Cables shall be of 600/1000 volt grade. The cables shall be installed in strict compliance with the manufacturer's requirements and bends in the cables shall be of the minimum radius of 10 times the overall diameter of the cable.

All runs of cables inside the building shall be securely fixed to the cable trays in floor voids, ceiling voids and in rising shafts with approved cable ties, and in all instances and spacing of supports shall comply with the cable manufacturer's recommendations.

All cables shall be terminated in the manufacturer's glands. Termination of the cable core shall be by means of manufacturer's compression termination lugs in accordance with the manufacturer's instructions. The cable armouring shall be carefully made off in the manufacturer's gland at each entry to switch fuses etc. Bonding to the metal work for the earthing shall be in accordance with the Clause marked "Earthing".

Where necessary, separate earth wire shall be installed alongside the PVC/SWA/LSF and XLPE/SWA/LSF cable to comply with E.T.C.I. Regulations.

5.3 XLPE /Insulated Armoured LSF Cables:

Where indicated XLPE insulated cables shall be installed as outlined below. The cables shall comprise copper stranded conductors insulated with XLPE enclosed in P.V.C. sheath and covered with steel wire armour which shall be covered with steel wire armour which shall be covered with an L.S.F. sheath. The cables shall comply with B.S. 8724: 1990. Cables shall be of 600/1000 volt grade. The cables shall be installed in strict compliance with the manufacturers requirements and bends in the cable shall be of the minimum radius of 8 times the overall diameter of the cable.

In general, main cables shall be run in Wavin ducts or on cable tray inside the building. Where cables are run underground externally excavation of trenches and reinstatement will be carried out by the Building Contractor on site. The Electrical contractor shall include for all labour necessary to lay the cables in position at a minimum depth of 750 mm below ground level. Fine sand as approved by the Engineers shall be spread in the excavations to form an underlay for the cables. The sand shall not be less than 50mm depth both over and under the cables. A 150 mm. wide plastic marker tape with a repetitive inscription "Danger - Buried Electric Cables Below" shall be installed 200 mm below ground level, along the route of the cable.

The Contractor shall provide cable trays for all cables inside the building and cable runs to mechanical plant. The Contractor shall size the cable trays for a single layer of cable with at least 30% free expansion space.

All runs of cables inside the building shall be securely fixed throughout their length with approved cable clamps and in all instances the spacing of supports shall comply with the cable manufacturer's recommendations.

All cables shall be terminated in the manufacturers glands. Termination of the cable core shall be by means of the manufacturer's compression termination lugs in accordance with the manufacturer's instructions. The cable armouring shall be carefully made off in the manufacturer's gland at each entry to switch fuses, etc. Bonding to the metalwork for the earthing shall be in accordance with the Clause marked "Earthing".

5.4 Butyl Rubber in Conduit:

Where indicated, Butyl rubber cable shall be manufactured from high conductivity copper with rubber insulation to B.S. 6360: 1991. Wiring shall be installed as detailed in Clause marked "PVC Cable in Conduit"

5.5 M.I.C.C./L.S.F. Over Sheath Cable:

Where specified, M.I.C.C./L.S.F. cable shall be installed as outlined below. The cable shall be 660-volt grade with seamless copper sheath with outer LSF covering and powdered mineral insulated high conductivity copper conductors.

All M.I.C.C. wiring shall be carried out in strict accordance with the manufacturer's instructions and to the approval of the Engineers. All sealing glands shall be made with the manufacturers cold type seal. Where cables are fixed to brick or concrete suitably sized rawl plugs shall be used.

All cables shall terminate using only screw-on pot type seals incorporated in the universal ring type glands and shall be adapted to suit the various boxes, switches, etc. All cables shall be effectively sealed using only the manufacturers sealing compounds.

All sheathing shall be electrically continuous across all joints and earthed in accordance with the Clause marked "Earthing".

All cables shall be securely fixed at sufficient intervals with brass saddles and screws. In no case shall saddles be placed at intervals greater than 300 mm. Where cables pass through floors, walls or ceilings, they shall be protected by a short length of galvanised steel conduit of suitable size correctly bushed.

Connections between cables shall be by means of mechanical connectors of approved type. Every connector shall be easily accessible and shall not have a resistance greater than that of the equivalent length of the largest conductor to which the connector is fixed.

All wiring where M.I.C.C./L.S.F. cable is specified shall be carried out in two or four core, not less than 1.5 sq. mm cross sectional area.

5.6 Telephone Cables:

To be carried out in Cat6a type UTP Data cabling. See data section within this specification for manufacturer's details.

5.7 Intruder Alarm Cables:

Where intruder cable is specified hereafter the system of wiring shall comprise 6 core alarm cable to BS4737 Section 3.3.

The exact run of intruder cables shall be to the approval of the Engineers on site and is to be only run INTERNALLY within the building and not externally on the roof

5.8 CCTV System Cabling:

Where CCTV cable is specified hereafter the system of wiring shall comprise of CAT 6 UTP cable to each of the camera positions as indicated on the layout drawings back to the security room in the first floor. At least 5m of slack cable shall be provided at each camera location. The contractor shall also supply and install a separate 2x2.5 sq. mm PVC circuit in conduit to each PTZ camera position. A separate 2.5mm earth wire shall also be run to each PTZ camera position. A 20Amp switched spur outlet shall be provided in the ceiling space adjacent to each PTZ camera. No power supplies are required to each of new static cameras as these are PoE.

Where fully functional CCTV cameras are specified CAT6 UTP cabling shall be installed looped from each PTZ camera and wired back to the comms room /principal's office.

6.0 System of Installation:

6.1 Cable trunking:

Trunking and associated fittings mounted inside the building shall be of galvanised sheet steel complying with B.S. 4678 Part 1. Where trunking and fittings are mounted outside the building or run in floor trenches it shall be of the continuously hot dip galvanised plain sheet steel complying with B.S. 4678 Part 2.

Trunking and fittings shall have a removable lid extending over their entire length. The lids shall be of the same material, thickness of sheet and finished as that of the trunking. The number of cables to be installed in trunking shall be such that a space factor of 45% is not exceeded and shall be in accordance with the manufacturers recommendations.

The fixings and spacings of fixing shall conform with the manufacturer's instructions and all trunking shall be adequately supported, so as to prevent sagging. Trunking shall only be installed in locations where it is completely accessible for re-wiring.

Where more than one circuit is run in the same trunking or more than one service, the cables, for each circuit or service shall be bound together at 1.2 m intervals with P.V.C. tape suitably coloured, so as to segregate and identify the various services.

Each length of trunking shall be adequately bonded to the adjacent section of trunking and the installation as a whole shall satisfy the requirements of Clause marked "earthing". All bends, tees, off-sets, etc. required shall be supplied by the trunking manufacturers.

A separate P.V.C earth cable shall be taken from the main earth terminal to each item of equipment when run through the trunking. The size of this earth cable shall be at least one half the area of the phase conductor.

Where trunking passes through walls, floors and ceilings, etc. the Contractor shall provide a silicone base sealed around the points of penetration.

6.2 Lighting trunking:

Where specified, lighting trunking shall be manufactured from 1.2 mm galvanised sheet steel in nominal lengths of 3.5m. Lighting trunking shall be 50mm x 50mm in size or 3 compartment, 200 x 50mm and shall be complete with all necessary couplings, blank ends, attachment assemblies, suspension brackets, etc. The trunking and suspension brackets shall be of a design to allow the trunking lid to be removed without disturbing the suspension brackets. When lighting fittings are mounted directly on the trunking, the lid shall extend behind the fitting to prevent the circuit wiring lying directly on the lighting fittings. Cable retainers shall be installed at 600 mm intervals.

A separate PVC earth cable shall be taken from the main earth terminal to each item of equipment when run through the trunking. The size of this cable shall be at least one half the area of the conduits.

Connections from the trunking to the light fittings shall be made using a pre-wired multi-gang Klik socket outlets rated at 6 amps each and unfused plug top fitted to the side of the trunking. A 3core P.V.C. covered flex shall be taken on to the light fitting and 4 core to fittings which have emergency inverter packs.

The Contractor shall provide multi gang pre-wired Klik outlet boxes on the trunkings. Each socket outlet on the multi gang boxes shall be rated at 6 amps. All Klik boxes shall be labelled.

6.3 Flexible Metallic Trunking:

Where indicated, flexible metallic conduit shall be of double leaded steel construction with black P.V.C. outer covering and bitumen paper lining and shall be of "Sealite" manufacture. The manufacturers of cadmium plated mild steel glands shall be used to terminate the conduit to switches, conduit, boxes, etc. The flexible metal conduit shall be depended upon for earth continuity and where used, and insulated earth continuity conductor of 2.5 sq.mm. minimum size shall be installed in the conduit and effectively connected to earthing terminals which the contractor shall provide at each of the flexible conduit.

6.4 Cable Ladder:

Cable ladder shall be manufactured in accordance with EN 61537.

The appropriate corrosion protection will be determined by reference to EN ISO 12944.

In general, cable ladder installed internally shall be galvanised to EN 10346. Cable ladders installed externally and in internal areas of high humidity and corrosion shall be galvanised to EN ISO 1461. In highly corrosive and clean room environments stainless steel cable ladder shall be installed.

Cable ladders shall be heavy duty with a sidewall of 45mm

Cable ladders will be 3000 or 6000mm in length.

Cable ladders installed externally shall be fitted with covers.

All accessories (bends, tees, intersections, internal and external risers, offsets, and reducers etc.) shall be supplied by the manufacturer.

Cable ladders shall be supported at span distances not greater than 1.5m or as specified by the manufacturer.

The deflection conditions of EN 61537 must be met at all times. Additional supports will be positioned no further than 300mm from accessories. Only support brackets with load capacities tested in accordance with EN 61537 will be used.

Cable ladders will have adequate space to allow for the correct installation and fixing of all cables plus 30% spare capacity for future use.

Vertical cable ladder systems will be used in risers. Cables will be secured with U clamps supplied by the manufacturer.

Any cuts will be treated to return the cable ladder to the condition of manufacture.

Cable ladders will meet the following requirements:

- Electrical continuity without additional earth bonding.
- Magnetic shield insulation without cover 10dB, with cover 15dB, G mesh cable basket 15dB.
- Electromagnetic compatibility to VDE 0870-1.
- Supplied folded up for ease of transport and storage (45, 60 and 110mm sidewall only).
- Continuous side perforation slots.
- The facility to fit snap-in segregation strips into the base of the cable ladder (45, 60 and 110mm sidewall only).
- Covers will be supplied with pre-installed turnbuckles.
- Sprung steel clips will be manufactured from stainless steel.

Cable ladders for life safety and fire-fighting applications and those that run along and across escape routes shall be tested in accordance with DIN 4102 Pt12 and approved for function maintenance classes E30 to E90. As OBO Bettermann or equal approved.

Fire-resistant cables shall be segregated from non-fire-resistant cables. Fire resistant cables shall be supported on a system that has an approval of equal duration to that of the cables it is supporting.

Cables that run along and across escape routes shall be supported on a system that has a stability approval equal to the duration specified for the safe evacuation of the building.

6.5 Cable Trays:

The Contractor shall include in his tender for the installation of cable trays to support the main PVC/PVC/SWA/LSF and PVC/XLPE/SWA/LSF cables.

The Contractor shall provide cable trays in all electrical rising shafts, roof areas, ceiling voids, etc. for the carrying of PVC/XLPE/SWA/LSF cables, control cables on roof and PVC/PVC/SWA/LSF cables.

Cable tray shall be manufactured in accordance with EN 61537.

The appropriate corrosion protection will be determined by reference to EN ISO 12944.

In general, cable tray installed internally shall be galvanised to EN 10346. Cable trays installed externally and in internal areas of high humidity and corrosion shall be galvanised to EN ISO 1461. In highly corrosive and clean room environments stainless steel cable tray shall be installed.

Cable trays shall be heavy duty with a sidewall of 60mm

Cable trays will be 3050mm in length (3000mm usable length).

Cable trays installed externally shall be fitted with covers.

All accessories (bends, tees, intersections, internal and external risers, offsets, and reducers etc.) shall be supplied by the manufacturer.

Cable trays shall be supported at span distances not greater than 1.5m or as specified by the manufacturer.

The deflection conditions of EN 61537 must be met at all times. Additional supports will be positioned no further than 150mm from accessories. Only support brackets with load capacities tested in accordance with EN 61537 will be used.

Cable trays will have adequate space to allow for the correct installation and fixing of all cables plus 30% spare capacity for future use.

Any cuts will be treated to return the cable tray to the condition of manufacture.

Cable trays will meet the following requirements:

- Interlocking ends with self-locking couplers that do not require additional bolting. As OBO Bettermann or equal approved.
- Electrical continuity without additional earth bonding.
- Magnetic shield insulation without cover 20dB, with cover 50dB.
- Electromagnetic compatibility to VDE 0870-1.
- Transfer impedance without cover 1.14mΩ/m, with cover 0.71mΩ/m.
- Embedded perforations in the base of the cable tray for increased ventilation and simplified connection to the support system.
- Both lengthways and crossways perforation slots in the base of the cable tray.
- Continuous side perforation slots 7 x 20mm.
- The facility to fit snap-in segregation strips into the base of the cable tray.
- Covers will be supplied with pre-installed turnbuckles.
- Sprung steel clips will be manufactured from stainless steel.

Cable trays for life safety and fire-fighting applications and those that run along and across escape routes shall be tested in accordance with DIN 4102 Pt12 and approved for function maintenance classes E30 to E90. As OBO Bettermann or equal approved.

Fire-resistant cables shall be segregated from non-fire-resistant cables. Fire resistant cables shall be supported on a system that has an approval of equal duration to that of the cables it is supporting.

Cables that run along and across escape routes shall be supported on a system that has a stability approval equal to the duration specified for the safe evacuation of the building.

Cable Basket

Cable basket shall be manufactured in accordance with EN 61537.

The appropriate corrosion protection will be determined by reference to EN ISO 12944.

In general, cable basket installed internally shall be galvanised to EN 12329. Cable baskets installed externally and in internal areas of high humidity and corrosion shall be galvanised to EN ISO 1461. In highly corrosive and clean room environments stainless steel cable basket shall be installed.

Cable baskets shall be heavy duty with a sidewall of 55mm.

Cable baskets will be 3000mm in length.

Cable baskets installed externally shall be fitted with covers.

Bends shall be supplied by the manufacturer. Other accessories (tees, intersections, internal and external risers, offsets, and reducers etc.) shall be manufactured according to the manufacturer's instructions.

Cable baskets shall be supported at span distances not greater than 1.2m or as specified by the manufacturer.

The deflection conditions of EN 61537 must be met at all times. Additional supports will be positioned no further than 150mm from accessories. Only support brackets with load capacities tested in accordance with EN 61537 will be used.

Cable baskets will have adequate space to allow for the correct installation and fixing of all cables plus 30% spare capacity for future use.

Any cuts will be treated to return the cable basket to the condition of manufacture.

Cable baskets will meet the following requirements:

- Interlocking ends that do not require additional bolting. As OBO Bettermann or equal approved.
- Electrical continuity without additional earth bonding.
- Magnetic shield insulation without cover 15dB, with cover 25dB.
- Electromagnetic compatibility to VDE 0870-1.
- Transfer impedance without cover 6.17mΩ/m, with cover 5.5mΩ/m.
- Mesh grid of 50 x 100mm
- The facility to fit snap-in segregation strips into the base of the cable basket.
- Covers will be supplied with sprung steel clamps.
- Sprung steel clips will be manufactured from stainless steel.

Cable baskets for life safety and fire-fighting applications and those that run along and across escape routes shall be tested in accordance with DIN 4102 Pt12 and approved for function maintenance classes E30 to E90. As OBO Bettermann or equal approved.

Fire-resistant cables shall be segregated from non-fire-resistant cables. Fire resistant cables shall be supported on a system that has an approval of equal duration to that of the cables it is supporting.

Cables that run along and across escape routes shall be supported on a system that has a stability approval equal to the duration specified for the safe evacuation of the building.

6.6 Suspending Services:

The Contractor shall include for a complete suspension system for suspending trunking, cable trays, cable ladder, conduit and other services where required.

Services shall be suspended with standard suspension clips, galvanised mild steel rod suspensions and clamp type fixing to the building steel and fixed direct to concrete slabs. Where building steel is not conveniently located the Contractor shall provide galvanised mild steel channel trimmers, "Uni-strut" or similar to approval, run between the steel trusses. No fixing to metal is permitted, and all fixing shall be with approved type clamp fittings. Threaded rod suspensions shall be minimum 6 mm diameter.

All suspension material used shall be hot dip galvanised where possible but where mild steel channel or angle is used the Contractor shall be responsible for painting with rust inhibiting primer prior to installation. Final painting on site will be carried out by others.

6.7 3 Compartment Dado Trunking



The contractor shall supply and install a complete 3 compartment dado trunking system in the locations indicated on the drawings. The completed trunking system and associated fittings where mounted inside the building shall MK Prestige 3D dado OEA. The dado trunking shall be mounted at heights as per TGDs. The exact location as per TGDs. The dado trunking shall comprise the following features:

- CAT6a compliant flexible internal and external corners, moulded flat angles and tees.
- Pre-punched base
- Part M Compliant using a charcoal straight covers where applicable
- To be complete with screening divider VP30 for data signal protection.
- Colour: White PVC
- Dimensions: 170x57mm 3 compartment

6.8 Angular Bench Sockets

Not applicable

6.9 Power pole drops

Not applicable.

6.10 PVC Cable in Three compartment flush floor trunking:

Not applicable.

7.0 Earthing:

7.1 General:

The contractor shall undertake to effectively earth the whole of the electrical installation in accordance I.S. 10101 and all statutory requirements.

All bonding conductors shall connect to appropriate services / metalwork in accessible positions and in the case of incoming gas, water and sprinkler pipework at the nearest possible point to their entry. At these points of connection a label should be provided, securely fixed and be clearly visible stating "SAFETY ELECTRICAL EARTH – DO NOT REMOVE"

7.2 Earth Bars:

Earth bars shall be of sufficient length to allow termination of all protective bonding conductors, each bar shall incorporate a bolted link formed of the same material to allow disconnection of the main incoming earth conductor.

Terminations shall comprise of hole drilled through the centre of the bar. Conductors shall be connected at the termination's using suitable brass bolts, nuts and washers. Crimped, tinned copper lugs shall be provided on all stranded copper conductors. PVC tape shall extend from just below the lugs over the first 25mm of cable insulation.

All connected bonding conductors shall be clearly and permanently labelled at their point of connection to identify their destination.

7.3 Switchboard Earthing:

The main switch board shall be provided with a full size continuous strip copper earth bar along the full size continuous strip copper earth bar along the full length of the switchboard. At all main switchgear positions an earth conductor consisting of copper strip shall effectively earth all equipment including the metal cases of switchboard, fuse switches etc.

LSF insulated single core stranded copper cable shall be supplied and installed between the earth bar and the incoming cable gland earth rings. All incoming cable gland earth rings shall be cross bonded.

All bolts, washers, nuts etc used for fixing copper tape shall be brass of high tensile strength.

7.4 Main Equipotential Bonding:

The Contractor shall install main and local equipotential bonding systems to comply with the requirements of I.S. 10101

Bonding cables shall be run in conduit throughout, terminating at the bonding point in a flush or surface conduit box as required. Final connection shall be from a bushed outlet or outlet plate to the bonding point. Only proprietary bonding clamps with cable terminals shall be used. The use of perforated strip is prohibited. Main bonding clamps shall be fitted with approved labels.

Where an equipotential bonding conductor interconnects several extraneous conductive parts, the bonding conductors shall remain unbroken throughout their entire lengths.

8.0 UPS System:

N/A

9.0 Standby Generator:

There is no requirement for a Standby Generator for this project.

10.0 Power Distribution:

10.1 Overview:

This section shall cover the requirements for all wiring and support systems:

- (a) Complete installation for trunking and conduit systems, for wiring, low voltage wiring, etc.
- (B) Wiring for, lighting, ventilation unit, hand dryers Em lighting under sink water heater etc.
- (C) Power wiring for Fire Alarm Panels, intruder alarm and pir sensors.

10.2 Standards:

Subject to the provisions of this specification the general rules for wiring for the supply of electric energy recommended by the Electro Technical Council of Ireland (E.T.C.I.) latest edition together with the regulations laid down by the Electricity Supply Board shall be strictly adhered to by the Contractor.

Segregation of essential and non-essential services wiring shall be in accordance with the E.T.C.I. Regulations Part 3.7 Section 6, Clause 7 Part 2 and shall be segregated as detailed below:

"Where a consumer wishes to supply part of the installation from a generator while at the same time retaining connection of the remainder of the installation to the E.S.B. network, the circuits of that part of the installation which is supplied by the generator shall be completely separated from all other circuits on the premises by physical segregation, for example, by trunking conduit or multi-core cable systems which are constructed in a manner so as to prevent modification by an unauthorized person."

You shall supply and install to site new and unused plant, wiring, fittings, controls etc. which is required under a contract of this type. You shall supply all labour and expertise in doing so. You shall price for cramage of plant, equipment, etc. to final locations. You will provide in sufficient time all builders work requirements to the Main contractor in good time.

10.3 General Service Sockets:

10.3.1 Description

Service sockets shall be switched 13A 3 pin with shuttered receivers suitable for installation in surface/flush mounted galvanized sheet steel or cast-iron conduit boxes. Sockets shall be manufactured to B.S. 1363-1984 and shall have ivory inserts with satin chrome over plates. Socket outlets shall be mounted generally at 450 mm AFFL and above below desk level within dado trunking where indicated. Socket outlets shall be M.K. Logic Plus Range OEA - K780 WHI and K781 WHI. Flush mounting boxes to be MK 861/862 ZIC with surface mounting boxes to be K2140/K2142 WHI.

Each socket outlet shall be fitted with a plastic engraved label indicating circuit ref. and distribution board.

10.3.2 Wiring

Unless otherwise specified, service sockets shall be wired on the ring main system in a completely separate conduit system in accordance with the circuit diagrams using 2.5 sq. mm. P.V.C. insulated cable with no more than five sockets per ring. All socket circuits shall be wired from the R.C.B. section of the distribution boards. A separate 2.5 sq.mm earth wire shall be run with all socket circuits and shall be bonded to each outlet.

The earth terminal of all sockets shall be connected to the integral earth terminal in the outlet box by means of a copper 2.5 sq. mm square earth conductor at least 150 mm long, with green/yellow strip P.V.C. insulation, in accordance with E.T.C.I. Current Regulations.

10.3.3 380V Sockets

Power sockets shall be mounted as required and shall have ratings as indicated. Sockets shall be switched with safety interlock, inbuilt fuse ways and 4 pin plug-tops shall be provided. Integral current sensitive earth leakage protection shall be provided on all outlets. Wiring to sockets shall be PVC cables in conduit or SWA whichever is most appropriate. Plug tops shall be provided with all units. All 220 volt sockets shall have ELCB protection. Standard circuit arrangements shall comply with the regulations as set out in Appendix 5 of IEE Regulations.

10.3.4 110V Sockets

110 volt sockets shall be provided where shown on the drawings. Each socket shall be connected to a single phase 220/110 volt transformer which shall be contained in a suitable metal box with external fixing lugs. The centre of the output winding of the transformer shall be earthed and plug tops shall be provided with all units.

10.3.5 Local Isolators

Local isolators shall be used on all large power equipment and electric motors. The isolators shall be adequately rated for the duty and shall have facilities for locking in the "off" position in the case of large power requirements. Water heaters and hand dryers shall be connected by means of an adequately rated double pole switch unit with outlet for flexible cord and pilot lamp. Connections to water heaters and hand dryers shall comply with Regulation 544-30 of the IEE Regulations.

10.4 Wiring for UPS System

The contractor shall be responsible for the supply, installation of the wiring of all electrical power supplies to and from the rack mounted UPS in the comms cabinet in the comms room

10.5 Wiring for Mechanical Plant & BMS system:

10.5.1 General:

The contractor shall be responsible for the supply, installation of the wiring of all electrical power supplies to items of Mechanical plant and equipment.

All control wiring of mechanical plant and equipment, including containment and supports, shall be carried out under the direction of the controls specialist, who shall be employed by the Mechanical contractor.

The contractor shall supply, install and co-ordinate the control wiring containment system supports.

The contractor shall liaise and co-operate with the Mechanical Contractor forming the sub-contractors own design team throughout the duration of the contract with regard to plant sizes, orientation, etc and make all necessary allowances for the liaison included within the tender return.

The contractor shall supply and install all cabling along with all necessary cable trays, trunkings, conduits, supports etc. to provide a complete electrical power installation and control wiring installation for the mechanical services.

The contractor shall undertake to size and install all isolators, containment systems and provide circuit wiring to all items of plant.

The contractor shall liaise with the Mechanical Engineer forming the sub-contractors own design team with regard to power cable sizing and control cabling specifications to ensure that all necessary cable sizes can be accommodated within all panels, plant and equipment

All Mechanical plant and equipment shall be installed by the Mechanical sub-contractor.

Screened cable may be installed within the same compartment as mechanical services wiring providing the screened cable outer installation is rated at 600V, 50Hz.

10.5.2 Isolators:

The sub-contractor shall include for the supply and installation of isolators and/or socket outlets and fused connection units at all mechanical locations, sizes and types as indicated on the drawings, except where there are integral isolating switches on plant and equipment provided by the sub-contractor, in which case cabling shall terminate in the relevant switch. The sub-contractor shall ensure that isolators/socket outlets/fused connection units are not more than 800mm away from the equipment they are serving. The sub-contractor shall include for all necessary containment and supports in order to comply with this clause.

10.5.3 Wiring to fixed equipment:

The contractor having installed circuit wiring to all items of plant shall undertake final connection between the isolator and equipment using Kopex brand flexible conduit. All Kopex brand flexible conduit shall be provided with a separate CPC (minimum size to comply with the 16th Edition of IEE wiring regulations).

10.6 Power Wiring for Fire Alarm, AOV Panels, Access Control Units,

The contractor shall provide for fused spur power supplies for the above equipment panel in the locations as indicated in the drawings.

The panels shall each be wired from the relevant distribution board as indicated on the layout drawings. A separate 2 x 2.5 sq. mm, with a 2.5mm sq. earth shall be taken to each flush mounted switched fused connection outlet. This shall have a polished stainless-steel accessory cover plate with black internals. Final connection to the panels shall be via concealed conduit terminating within a conduit end box to the rear of the panel.

10.7 Power Wiring for Handryers

The Contractor shall include for the supply and installation of Hand Dryers, in the locations indicated on the drawings. A separate 2 x 2.5 sq.mm circuit, with 2.5 mm earth, shall be taken to each of the hand dryer locations from the relevant distribution boards. The supply shall terminate in a switched fused spur outlet, with neon indicator, to be installed adjacent to each hand dryer location. The final connection from the spur unit shall be taken in flush conduit, to a rear entry to each hand dryer.

The hand dryers shall be low energy commercial grade handryers, ATC Panther High Speed White

10.8 Wiring for Lift Installation

The contractor shall, supply, install and commission a dedicated 32 Amp TP&N power supply to feed the lift, which shall terminate within a 32 Amp TP&N lockable isolator located within the lift shaft adjacent to the lift control panel in the location as indicated on the drawings.

The sub-contractor shall supply and install and commission the following equipment/accessories within the lift shaft in accordance with the lift supplier's requirements:

One switched fused connection unit (engraved "lift car lighting") located adjacent to the TP&N isolator as indicated on the design drawings. The lift specialist shall undertake outgoing cabling from the connection unit to the lift car.

One 2-way switch (engraved "lift shaft lighting") complete with neon indicator lamp located in lift shaft pit as indicated on the design drawings. The electrical contractor shall provide full height shaft lighting to include conduit & wiring by way of one twin 1200mm emergency fluorescent light fitting per floor and one in the lift pit. The switches for lift shaft lighting shall be located in the lift shaft (accessible from the landing doors) 300mm from the top of the shaft and 300mm from the pit.

One 13 Amp fused socket shall be provided by the contractor located in the lift pit adjacent to the shaft light switch.

Telephone outlet point for connection by lift specialist for emergency communication shall be provided adjacent to lift control panel as indicated on the design drawings.

The contractor shall undertake all cabling associated with the above. The sub-contractor shall liaise with and obtain the approval of the lift specialist for the above equipment/accessories prior to installation.

10.9 Wiring for Roller Shutter

The contractor shall be responsible for the supply, installation of the wiring of all electrical power supplies to the Roller Shutters throughout the school

10.10 Provision of Standby Cover after practical completion:

The contractor shall allow for leaving the foreman electrician on site for a period of two weeks after the completion. The purpose of this exercise is to remedy minor faults and train the management in the operation of the system. During this period the contractor can use this designated time to clear Snag Lists and attend to Commissioning problems. He shall also carry out minor additional works required by the engineer for which he shall charge for materials only.

10.11 Dado Trunking Installation

The contractor shall supply and install a complete 3-compartment dado trunking system as indicated on the tender drawings. Dado trunking to be 3-compartment MK Prestige and be CAT6A compliant.

11.0 Lighting Installation:

11.1 General:

This section shall cover the requirements for all wiring and support systems for the lighting services within and around this building:

Item:	Description:
1	Surface mounted Emergency Bulkhead IP 65
2	Emergency Exit sign
3	Surface mounted till lights TS120/BASIC
4	Led Light Fittings
5	Spotlights
6	PL downlighters
7	Wall uplighters
8	Twin LEDs
9	External light fittings
10	Classrooms

The sub-contractor shall supply, install and commission all luminaries throughout. The lighting installation and levels shall meet those detailed within CIBSE code for interior lighting and respective lighting guides.

All luminaries shall be supplied with appropriate lamp(s).

The method of fixing all luminaries shall be electrically and mechanically sound and to the entire satisfaction of the Engineers.

All luminaires shall be in a clean and undamaged condition when the installation is handed over.

The sub-contractor shall ensure the back boxes of all the recessed luminaries in voids are not covered by any insulation or acoustic materials.

The sub-contractor shall supply and install all necessary supports for the recessed luminaires.

All luminaires supplied under this contract shall be specially modified at the manufacturers works to incorporate final terminal block capable of accepting looping in and out of final circuit cables of the cross-sectional area required.

11.1.2 Lighting installation to all areas:

The Contractor shall include for the supply of all light fittings to the development as per the schedule that forms part of this specification. To this figure he shall add for:

- (a) Profit:
- (b) Installation:

Luminaires within these areas shall except where detailed elsewhere be surface mounted/suspended from the ceiling system or recessed into the ceiling system where indicated. The sub-contractor shall make sure all necessary information and details of the ceiling system are obtained from the Architect such that suitable luminaire types can be determined before placing order.

The sub-contractor shall be responsible for ensuring that all luminaires are located correctly in accordance with the Architects reflected ceiling layout.

Final connection to all recessed luminaires shall be via plug in ceiling roses fixed to the ceiling void trunking system within 500mm of the connected luminaire in a readily accessible location. Final connection to each recessed luminaire shall be via heat resistant flexible cord.

Where luminaires are fitted with self contained emergency lighting units a purpose made four pin plug in ceiling rose and 4 core flexible cord shall be utilized.

Each luminaire supplied by a flexible cord shall be fitted with a suitably sized nylon compression gland fitted at the flexible cord entry point.

Flexible cords shall not exceed 1.5m in length.

11.1.3 Lighting installation in suspended ceilings:

Suspended ceilings may be provided by others. The lighting in these areas may consist of recessed modular fittings, decorative downlighters, strip lighting, PL lighting, recessed metal halide downlighters suspended off the ceiling grid. The wiring for the lighting in each area shall be taken from a designated local distribution centre which shall incorporate a lighting MCB board.

Wiring shall be PVC in 50 x 50 mm trunking suspended above the ceiling. Wiring for lighting in these areas shall not be less than 2.5 sq. mm. Fixed connections to fittings shall be through a 6A Klik unfused plug and socket as already detailed.

Final wiring to the fitting in 1.5 sq. mm heat resistant flexible cord from a 5 amp unfused plug top. Flexible cords shall be as short as is practical but not greater than 1.5 m. Flexible cords shall be arranged so that they do not lie on the body of fitting. The Contractor shall ensure that all fittings fixed to suspended ceiling tiles are adequately supported by timber battens or metal angle strips. 2 no; battens shall be provided for each fitting suitably notched to support the fitting from the teebar.

11.1.4 Lighting installation in plant room, service area and ceiling voids

Lighting in the plant rooms and service areas shall consist of surface fittings mounted on lighting trunking suspended under the concrete slab.

The cables shall be PVC/LSF and shall not be less than 2.5 sq. mm in section. Final connection to the fittings shall be as already detailed in Clause headed "Lighting Installation in Suspended Ceilings".

11.1.5 Wiring for lighting

The wiring for the various lighting installations shall be taken from the various distribution boards. Each of the distribution boards shall incorporate separate lighting MCB panels.

The wiring for the lighting system shall be segregated throughout the entire installation, to include trunking, conduits, switchboxes, etc. Throughout the major areas, the lighting wiring shall be carried in trunking. Each of the lighting circuits shall consist of a 2 x 2.5 sq.mm PVC/LSF circuit, with a separate 2.5 mm earth wire carried with each and every circuit. Each light fitting, light switch, etc. shall be separately bonded.

Wiring for all dimmable lighting within the development shall consist of a 4 x 2.5 sq.mm PVC/LSF circuit with a separate earth wire carried with each and every circuit. The contractor shall also supply and install a 2 x 0.75mm sq. control cable with each and every circuit. From each dimmer switch location to the relevant dimmer panel the contractor shall supply and install a 2 twisted-pair belden 9729 control cable.

The Contractor shall be responsible for sizing the trunking installations throughout, to comply with the requirements of the I.E.E. Current Edition.

Contactors shall be provided in the Distribution Boards for the group switching of the lights.

11.1.6 Light Switches

Lighting switches throughout the installation shall be 20 amp adjustable grid type in galvanised steel or flush boxes. Switches shall be rocker operated to B.S. 3676 1989. The Contractor shall wire a neutral to all indicator lamp switches throughout the installation.

Unless otherwise indicated, switches shall be mounted at 1200 mm. above F.F.L. Multiple switch boxes and switch plates shall be provided at all points where a number of switches are grouped. Multiple switch boxes where there are two or more phases in the same box shall be fitted with metal dividing fillets, which shall not be removable. Inner cover plates shall be fitted over each phase section of such boxes, which shall then be covered by a single switch plate. The inner plates shall be engraved "Danger 415 VOLTS".

Waterproof lighting switches, where required, shall be suitable for surface mounting to B.S. 3676: 1963 and shall be complete with entries for 20 mm. threaded conduit.

Dimmer switches forming part of the lighting control system shall be supplied by others, installed by the electrical contractor.

11.1.7 Flexible Cords:

Flexible cords for lighting shall be 0.75 sq. mm. H.C. copper stranded and insulated with P.V.C. (H.R.) for 300V with white circular P.V.C. (H.R.) outer sheath of B.I.C.C. manufacture or similar to approval. Flexible cords shall comply in all respects with the E.T.C.I Rules. Where rating of the lamps exceed 200 watts heat resisting braided flexible cords shall be used.

11.1.8 Ceiling Roses and Plates:

Ceiling roses shall be of the approved high voltage type with cord grip holder or the equivalent. They shall be securely fitted to the conduit boxes and must be designed and so arranged that no strain shall come upon any of the conductors or pendant wiring terminals.

11.1.9 Lighting Control System:

A lighting control system is proposed for areas within the development as indicated on the tender drawings. Controls generally comprised automatic motion sensors with lux hold off facility.

The electrical contractor shall include for all the equipment associated with the lighting control system to be (i.e. Dimmer Panels, Dimmer switches, control devices, daylight sensors, motion sensors etc.) The electrical contractor shall include for installation of all lighting control equipment. This shall include termination of all lighting circuits and control circuits in the field and at the dimmer panels.

11.2 Emergency Lighting Installation:

11.2.1 General:

The sub-contractor shall be responsible for the, supply, installation and commissioning of a complete emergency lighting system in accordance with **I.S. 3217 2023**

The emergency lighting system shall generally consist of standard fluorescent luminaires converted to dual-purpose luminaires through self-contained maintained inverter/battery units being built into the designated luminaires.

Exit signs shall be self-contained maintained units complete with appropriate running man legends, sizes of blades to be in accordance with I.S 3217:2023 for maximum allowable viewing distances. These luminaires shall be mounted centrally above escape doors and throughout building in accordance with I.S I.S 3217:2023.

External over door emergency luminaires shall be 1x8w self-contained non-maintained IP65 bulkhead luminaires. These luminaires shall be provided mounted centrally above escape doors.

All emergency luminaires shall provide 3-hour emergency lighting duration.

The sub-contractor shall be responsible for ensuring that the emergency inverter, battery and interface units mounted within luminaires are located to ensure that they are not subject to damage or premature failure due to the heat emission from the luminaire control gear. Where the above guarantee cannot be provided the sub-contractor shall include to mount the inverter, battery and interface units piggyback to the general luminaire within a suitable enclosure.

11.2.2 Wiring for Emergency Lighting:

The Contractor shall include in his tender for wiring to the emergency lighting fittings. Wiring shall be carried out in 2 x 2.5 sq. mm. P.V.C. cables with 2.5 mm earth in recessed conduit to a recessed outlet box over which the fittings shall be mounted. Supply shall generally be taken from the interface unit on the lighting MCB board fed from the MCB controlling the adjacent lighting circuit.

11.2.3 Central Test Units:

The Contractor shall include for the supply and installation of emergency lighting central test units as required. The units shall be supplied and installed adjacent to sub-distribution boards. A separate 2 x 1.5 sq.mm PVC circuit in steel conduit, with earth wire, shall be run to each of the test units from the adjacent distribution board.

A separate 2 x 1.5 sq.mm PVC circuit with earth wire in conduit shall be taken from each central test unit and shall be looped to the emergency lighting interface units on all of the distribution boards on the level concerned.

Emergency lighting systems shall be installed, tested and commissioned in accordance with I.S 3217:2023 The central test system shall be commissioned by the supplier and a Commissioning Certificate shall be issued.

11.2.4 Supervisory Service for emergency lighting installation:

The contractor shall employ Independent emergency lighting specialists to act as supervisors for the installation of all elements of the emergency lighting installation. To this end they shall:

Ensure that I.S 3217:2023 is complied with and issue a certificate of compliance to state this.

Ensure all light fittings being used or adapted shall conform to heat tests and other time delay tests.

11.3 External Lighting

11.3.1 General:

The sub-contractor shall include for the supply, installation and commissioning of all external luminaires, lamps, columns and associated control required to provide for the complete installation in accordance with ETCI Code of practice for exterior lighting and the design drawings.

11.3.2 External Lighting Control:

The lighting control circuits shall emanate from the new distribution boards at ground floor level. The control of the external lighting shall be primarily provided via an automatic time clocks and photocell arrangements. The time clocks shall be a 24 hour, 7 day, day omit time clock located within the distribution board. The photoelectric cell shall be mounted 3000mm AFFL in a suitable location.

HOA Manual / Override external lighting switchbanks shall be provided. The switchbanks shall incorporate a master override "lights on" switch to override the automatic control. In addition, switches to control each and every lighting circuit.

Prior to multi-core control circuit cabling entering the associated distribution board to supply the contactor coil it shall pass through a suitably rated multi-pole isolator located above the associated distribution boards. These isolators shall provide the facility to isolate the external lighting control circuit. The isolators shall be suitably labeled.

11.4 Labelling:

All equipment provided under this contract shall be provided with labels clearly indicating their function. Warning labels shall be manufactured from rigid plastic to be secured by screws or rivets to the items of plant or chamber.

Lettering shall be block capitals standing 9 mm. high. Warning labels shall be coloured white background and red lettering with descriptive labels white background with black lettering.

The type and layout of all labels shall be approved by the Engineers before the Contractor sets the work in hand. All sockets circuits, lighting circuits, general services circuits, power supplies, socket outlets, telephone outlets, spur outlets etc., shall be labelled indicating board reference and circuit number.

11.5 Classrooms:

Light switching in the classroom shall be arranged so that individual banks from the windows or that in front of the white boards can be separately switched. The switch for the row of luminaires in front of the projector shall be coloured RED or GRAY and the classroom lights switch shall be WHITE. An engraved label shall be provided at each switch (see below for text). Light switches shall be non-polished surface mounted metal clad finished. The light switches to windowless spaces shall be located outside the space and fitted with neon indicator.

Average working plane illumination levels shall generally be as follows:

Classroom	300lux
Corridor	120lux
GP Hall	300lux
Library	300lux
Set Room	300lux
Principal's office	300lux
Staff Room	300lux
Multipurpose room	300lux
Disabled Shower / WCs	200lux
Toilets	120lux

Luminaires shall generally be surface mounted linear LED fittings with dimmable electronic control gear and high efficiency LED lamps, Prismatic or opal diffusers shall generally be provided, with glare control louvers in the library/resource area for VDU use. A number of decorative PL luminaires shall be provided in the entrance area. Surface mounted linear LED fittings shall be used.

An automatic lighting control system shall be provided in all areas, including toilets. The lighting system shall comprise of Dimmable Control Daylight/movement Sensors, Auto/Off switches and Momentary switches.

The switching and wiring arrangements shall be as follows:

Classroom

A three channel 10 way Lighting Control Module (LCM) marshalling box offering extra-low-voltage (ELV) switching, corridor hold and emergency light test facility shall be installed in each classroom. The connections to the luminaire fittings shall be via a 6 pin Wieland plug and socket arrangement. These plugs shall be supplied complete with a 'side latching' mechanism to prevent accidental removal, conforming to current regulations regarding "latching electrical connectors".

Presence detectors, microwave detectors and photocells shall connect to the marshalling box with RJ45 patch leads at extra-low-voltage.

The manual switches shall connect at extra-low-voltage via a 3 switch input connection on the front of the box, to provide auto/on/off control only override with the dimming LCM. It is recommended that 2-way centre biased retractive switches are used.

The one, two or three channel switching options on the LCM shall be selectable via simple internal 'DIL Switch' settings. All LCM's shall come programmed from the factory with the classroom requirements built in with further provision for additional control and energy saving features. For example enabling the window row of luminaires in a room to be controlled separately via a photocell. Alternatively, the "holding off" of a window row of luminaires whilst switching the rest of the lighting on in a room could be done from one detector such as a microwave sensor covering the whole room, which covers the requirements of the revised Part L Building Regulations. The contractor shall consult with the Engineer on this once the Structure is in place to confirm all switching arrangements.

The LCM emergency light test facility shall allow a number of boxes to be interlinked (if required) via an extra-low-voltage connection and the test can be carried out with the lights on or off. This option is also selectable via the internal DIL Switch settings. A min of 1mm² 2-core cable is to be used for the interlinking cabling.

Dimming shall be DSI dimming control with the dimming signal provided directly via two of the terminals on the 6 pin Wieland outlet plug connection. Providing an automated "maintained illuminance" level when used in conjunction with a dimming sensor or photocell.

Control Philosophy:-

Lighting shall be switched on using the LCM in conjunction with one ceiling mounted combined microwave and photocell sensor at rear of classroom, absence detection (i.e. manual switch on, auto switch off) with:

- On entering the room there shall be two switches adjacent to the door. These shall be centre biased retractive (as for example MK K4900), one controls the luminaires to the classroom and the second controls the luminaires in front of the whiteboard. Switching shall be at extra-low voltage (SELV).
- The room shall work in 'Absence' mode in that to activate the lighting the switches must be pressed on.
- All Luminaires shall be dimming type using DSI dimming ballasts and shall be "daylight linked". The overall working plane illumination levels detailed above shall be maintained.
- The row of Luminaires alongside the window shall dim to maintain a set Illuminance level, dependant on the ambient light level measured by the integral photocell at the sensor position (i.e. reducing luminaire output automatically, dependant on ambient light level).
- The row of Luminaires furthest from the window shall also dim at a different % rate to that of the Luminaires alongside the window (based on the light layout & room size) to maintain a set illuminance level, dependant on the ambient light level measured by the integral photocell at the sensor position (i.e. reducing luminaire output automatically, dependant on ambient light level).
- The microwave / photocell sensor will provide the automated detection so that when the sensor has been activated and the room later vacated and if the user has left lighting on, all the lights will be automatically switched off after movement detection has ceased and the set time period has elapsed (min of 10 minutes).
- There shall be the facility to set the detectors using an infra-red programming handset. One user handset shall be supplied with the system for user maintenance.
- On the teacher's wall by the whiteboards there shall be one two way centre biase retractive switch to control all the Luminaires infront of the whiteboards allowing the teacher to switch on & off the Luminaires as required.
- The detectors in the toilet area shall be linked to the classroom LCM. Switching shall be similar to that of the classroom with the switch located outside of the toilets and operate with a five minute off delay, i.e. No movement in the room for five minutes will result in the lighting being switched off.

The light level sensors shall be programmed as follows:

- The Average working plane illumination levels as stated above shall be constantly maintained.
- Each sensor shall adjust the illumination levels of the lights / row of lights connected as required.
- Lights shall not dim below 10%.
- Where day light levels are above the required illumination levels lights shall be switched off.

The light level hysteresis should be set to five minutes to prevent short cycling.

At each light switch a laminated label shall be installed that contains the following wording.

“Light switch to be switched off (switch up) when leaving the room (even if the lights are already off)”.

Corridor & Stairways

All circulation lighting shall be controlled automatically by daylight/absence sensors. Manual switches shall generally not be provided. Lighting shall be controlled via H/O/A keys switches located by the main entrance and combined microwave and photocell sensors, presence detection (i.e. auto switch on, auto switch off) with:

- The default setting shall be 'Auto' leaving the sensors control the lighting. 'Off' allows for maintenance and 'On' shall allow for leaving the lights on during open days etc.
- The corridor & stairways shall work in 'Presence' mode in that the lights are activated on the detection of movement.
- The Average working plane illumination levels as stated above shall be constantly maintained.
- Dimming of these areas is not required but where the day light levels are above the required illumination levels the lights shall be switched off.
- All the lights will be automatically switched off after movement detection has ceased and the set time period has elapsed (min of 5 minutes).

Entrances

- The Entrance lighting shall operate similar to that of the Corridor lights but shall be dimmable controlled and the H/O/A key switch shall be located in the main entrance lobby.
- The Average working plane illumination levels as stated above shall be constantly maintained.

The Lighting system shall be commissioned, tested, and demonstrated to the Design team and the employer. Test and Commissioning sheets for all rooms shall be issued to the employer's representative detailing that each and every area has been commissioned to the above parameters and the settings installed prior to handing over.

The Contractor shall allow and provide two seasonal commissioning visits for the lighting controls set a min of 3 months apart after PC. Test and Commissioning sheets shall also be issued to the employer's representative on completion of each visit.

Street/Area Lighting

The objective of the system is to provide sufficient lighting for safe movement of people outdoors.

The design parameters are outlined in CIBSE Lighting Guide: The Outdoor Environment and guidelines set out by the Department of Education and Skills.

The system shall be as outlined in the system drawings, and shall consist of wall mounted fittings around the building perimeter. All the external lighting shall be fed from the main switchboard with Hand/Off/Auto control switching located in the Admin office.

External building perimeter lighting shall consist of wall mounted bulkhead fittings. Luminaires outside exit doors shall be complete with 3-hour emergency pack. Separate 24 hour 7day timers shall be provided for the building perimeter and the car park lighting, with separate 'Hand-Off-Auto' switches in the administration office.

The perimeter light outside the main entrance shall have a separate Auto/On key switch located in the entrance lobby. This shall allow the options of (i) leaving the light controlled via the perimeter circuit settings or (ii) bypass the perimeter circuit leaving the light on for security or access purpose. The bypass circuit shall be supplied from the same breaker in the main switchboard.

The building perimeter wall mounted fittings including those with 3-hour emergency packs shall not under any circumstance be connected to the internal building lighting circuit or internal building emergency lighting circuit. In the case of an emergency activation of the Fire alarm and / or the Intruder alarm system (as the two systems shall be linked) will activate the external building perimeter lights. Under power failure all emergency lights shall activate. The tripping of a local MCB does not constitute an emergency.

All perimeter wall mounted fittings shall come on during security alarm activation.

12.0 Protective Services Installation:

12.1 Fire Alarm:

The contractor shall include a for the supply of all fire alarm equipment to include addressable control panels, smoke detectors, heat detector, sounders and commissioning as detailed on the tender drawings

12.1.1 General

The fire alarm systems shall fully comply with the recommendations **I.S 3218:2024** and also with the local fire officer requirement.

The fire alarms shall be an **L2/L3** type system.

A complete, fully functional system is required for the school.

The contractor shall supply, install and commission an analogue addressable fire alarm system to cover the entire development.

The system shall consist of automatic detector/sounders, manual call points, interface units, sounders and flashing beacons to ensure compliance with I.S 3218: 2024 and the fire officer requirements.

The contractor shall include for any additional power supplies, equipment and accessories that is required by the chosen system manufacturer to form a complete fully functional fire alarm system. This shall include any necessary new circuits, including switches, MCB's fused connection units etc. as appropriate.

The contractor shall receive written confirmation from the selected equipment manufacturer that the proposed scheme is in full compliance with I.S 3218: 2024, the manufacturer's recommendations and this specification.

Particular reference shall be made to the following:

- The proposed detection loop cable runs, fall well within maximum permitted lengths.
- A minimum of 25% spare address capacity shall be provided on each detection loop.
- Fire alarm sounder activation following activation of any detector or manual call point will be within maximum permitted time interval.
- Short circuit loop isolators shall be provided in strict compliance with I.S. 3218: 2024 and the manufacturer's recommendations.

12.1.2 Supplies to Fire Alarm Panels

The contractor shall supply, install and commission a suitably rated fused switch within the building switchgear. The fuse switch shall be painted red and labelled "FIRE ALARM SUPPLY – DO NOT SWITCH OFF".

The fuse switch shall be connected on the downstream side of the main incoming switch/metering equipment and shall be connected using MICC cable. The outgoing cable to the fire alarm panel shall be 3c MICC with orange oversheath and shall be contained within a PVC trunking system. The cable shall terminate in an un-switched fuse connection unit adjacent to the main fire alarm panel.

12.1.3 System Supply Source

The fire alarm system shall operate from a 24 volt DC power source provided as part of the system either incorporated within the control panel as an integral part, or in a separate enclosure generally matching the appearance of the control panel, and suitable for mounting adjacent.

The 24 volt DC supply shall incorporate an automatic full wave rectified charging system and nickel cadmium sealed cells of sufficient capacity to maintain the system in full operational condition for a minimum period of 48 hours with additional capacity to sound all alarms at the end of this period for a further 30 minutes minimum.

The power source for the system shall be taken from the battery power unit so that interruptions or transient voltages occurring on the mains supply do not affect the operation of the fire alarm system.

12.1.4 Fire Alarm Control Panel

The fire alarm control panel along with the associated batteries/charger unit shall be flush mounted located on the ground floor as indicated on the design drawings.

The fire alarm control panels shall be housed in a sheet metal enclosure with lockable, transparent front door.

The cabinet enclosure shall be suitable for the termination of all outgoing cables generally comprising MICC cables. The panel shall have adequate spaces in the upper section to enable glanding off these cables and routing the cable conductors to the appropriate terminal boards within. Preferably the panel construction should allow, this work to be carried out prior to installing interior control components, indicator sections etc.

The fire alarm control panels shall be based on microprocessor technology to provide a fully addressable detection, control and monitoring system by means of "intelligent" interrogation of the remote sensors and devices.

The system shall operate on analogue data transmission principles in order to meet the precise requirements for servicing monitoring and fire sensing described later. Data received from remote sensors shall be constantly analyzed and updated by the processor to ensure close surveillance of the system for the primary aim to reducing possible false alarm occurrences to an absolute minimum whilst maintaining full reliability to detect a genuine fire.

The control panels shall be capable of the following functions:

- Contain individual addresses for each sensor, alarm device, etc. forming part of the fire alarm system.
- Monitor all cabling to sensors, devices and alarm sounders for open circuit and short circuit faults.
- Interrogate all alarm devices systematically. Where manual call points are included in the alarm device circuit, interrogation and panel response shall take no longer than 2 seconds.
- Process return response signals to determine the presence, correct operation, and sensitivity and output signal generated by each alarm device.
- Determine a fire condition by analyzing the output signals for slow smoldering fires through to rapid combustion fires. Respond to subsequent alarms in sequence of activation of sensors, and display "queuing" indication where possible.
- Differentiate between fire conditions and ambient pollution caused by smoking cigarettes, cigars and pipes, or local variations in temperature, humidity, pressure etc.

- Programme the sensitivity band for each device to compensate for pollution occurring between the clean state periods of maintenance.
- Determine and indicate a fault or maintenance requirement for sensors that are approaching or have reached the limit of sensitivity regulation.
- Display fire or fault and device address in illuminated digital or LCD format. Indicators shall be LED type. Indicators for "Fire" and "Fault" for each zone are to be provided in addition to the main display.
- Protection against spurious alarms and faults caused by outside electrical influences, i.e. starting spikes on mains supplies or induced transients.
- Provide alarm sounder outputs for hard wiring in at least 2 circuits to meet the current requirements of I.S 3218: 2024
- Provide electronic memory store for event logging and built in printer.
- Provide programming capability and accept authorization code inputs.
- Provide test facilities (dial out and plant shutdowns inhibited by means of a key switch)
- Contain all equipment and circuitry necessary for the complete operation of the fire alarm system (including the provision of future automatic detection devices – 25% minimum expansion capability)
- Provide outputs for the remote signaling and plant shutdowns.
- Integral dot matrix printer and paper to printout events when required and the printer controls shall only be accessible by authorized persons.
- The panel shall be capable of identifying individual trigger device, interface unit or manual call point.
- The master fire alarm panel shall be provided with a user-friendly means of overriding the operating of auxiliary contact whilst undertaking routine testing. This facility shall be provided by the operation of a single key switch.
- Each and every detector, interface unit and call point shall have its own unique address.

12.1.5 Fire Alarm Cabling:

The fire alarm cabling shall be wired exclusively in PRYSMIAN FP PLUS approved in accordance with the requirements of BS5839-1:2017 clause 26.2e for enhanced fire resisting cabling having an overall red LSF sheathing. (PH 120 = 120 min survival time)

All cabling to detection devices, call points, sounders etc shall be undertaken in FP Plus cable with red oversheath. The FP Plus cable shall be further enclosed in a PVC mini trunking or run in a dedicated compartment of the galvanized steel trunking system.

The sub-contractor shall ensure that the 2 supplying legs of each loop take alternative routes around the building. The 2 supplying legs shall not (except for where they enter the fire alarm panel) be run together.

Except where detailed otherwise all detectors and call point shall be wired in ring formation in accordance with the manufacturer's recommendations.

Sounders and beacons supplied from at least 5 separately fused sounder circuits within the panel and shall be wired in a radial manner in accordance with the manufacturer's recommendations.

All fire alarm cable terminations shall incorporate earth tail seals.

The sub-contractor shall terminate all cabling using earth tail seals with earth tails connected to the box earth terminal.

All FP Plus cables shall be 2-core light duty.

12.1.6 Circuits

Sounders shall be wired on totally separate circuits (both electrically and mechanically separate) to the detector loops

Detectors, call points etc shall be configured on 4-wire loops as per the schematic drawing. The number of loops and the number of devices per loop shall be confirmed with the contractor/specialist with due recognition of the requirements for 25% spare capacity for additional devices per loop.

12.1.7 Sequence of Operation

Upon activation of any manual call point or automatic sensor in the development the system shall automatically switch all sounders to give a continuous (evacuate) audible alarm only, and (where applicable) mechanical plant shut down shall be activated and plant shut off or door unlock signals generated if required.

It shall not be possible to silence the audible alarm or reset the system in any location other than at the main fire alarm panel. Access to control functions on the main panel shall only be possible by the use of 2 (different) keys. Key 1 shall be required to open the main panel door (giving access to control switches). Key 2 shall be required to enable the functionality of control switches, push buttons etc. The contractor shall supply four sets of Key 1 and Key 2 in his tender price.

It shall not be possible to 'reset' the main panel until the original initiating device(s) has been reset.

12.1.8 Device Configuration

Manual Call points -

- Manual call points shall contain the electronic circuitry necessary for interrogation by the central processor.
- Manual "break glass units" call point shall comply with BS 5839 part 2 and be of the non-fragmentable type not requiring a hammer for operation. They shall be red in colour and have operating instructions clearly visible on the front of the unit.
- Call points shall be suitable for surface mounting using red conversion box. Wiring facility shall be suitable for the termination of MICC cables.
- Call points shall have a test and re-set facility operated by a common test key or probe, with this facility being clearly accessible.
- External call points shall be weatherproof.

- The contractor shall allow in his tender a pack of 20 glasses spare and handover to employers at the completion of the project.

Automatic detectors –

- All detectors shall be installed in locations to give coverage to comply with I.S 3218: 2024 and the fire officer requirements.
- The sub-contractor shall ensure that where heat detectors are proposed that the type of detector used in relation to its mounting height fully conforms with BS 5839 Part 1:1989.

12.1.9 Fire Alarm System Interfaces

The fire alarm system shall incorporate suitable interfaces for connection to the following systems. The sub-contractor shall include within his tender for all works associated with the connection to the following:

- Alarm Communicator
- Door access system

12.1.10 Alarm Communicator

The sub-contractor shall within his tender allow for the supply and installation of a digital alarm communicator which shall be connected to the public switched telephone network upstream of the private telephone system. The system shall be such that outgoing calls cannot be interfered with by incoming calls. The communicator shall have a sequence where by 5 attempts are made to an initial central station receiver number and should no connection be made a further 5 attempts shall be made to a second central station receiver number.

The central station shall be fully manned 24-hour loss prevention council (LPC) listed station.

The telephone line shall be constantly monitored for fault conditions by the LPC station.

12.1.11 Central Station Monitoring

All fire alarm activations are to be signaled to the specialist manufacturer's central monitoring station via and Eircom telephone-monitoring Network.

A total of one signal is required which is sent to a central monitoring station.

The necessary logic to obtain the above signals shall be achieved within the main fire alarm panel, which shall then be coupled to the appropriate signaling requirements is to be supplied, installed and commissioned by the contractor in liaison with the specialist manufacturer.

The contractor shall be responsible for liaison with Eircom to ensure that all facilities that Eircom require are provided. They shall also include for all necessary attendance to Eircom for showing their engineers all conduits, cable, trunking and tray routes on site.

When the fire alarm panel is switched to Test mode then the automatic signaling facility for that panel shall be disabled for as long as the panel is in test mode.

All charges associated with the rental and maintenance of signaling facilities, line, Telecom line, and with central station operations for the first year of operation shall be included within the tender sum.

12.1.12 Zonal Diagram

In addition to the requirement to produce "record drawings" which is stated elsewhere in this specification, the contractor shall provide a colour "zonal diagram" and install it next to the main fire alarm panel.

The zonal diagram shall clearly show the layout of the site and the zones division on each floor.

The zonal diagram shall be not less that A3 size and mounted in a glazed frame with permanent fixings.

12.1.13 Automatic Smoke Vents

The contractor will be responsible for ensuring that the control of the automatic smoke vent is from a local dedicated smoke detector only. It is imperative that the automatic smoke vent does NOT nuisance trip open due to some or any of the following:

- a. Voltage Drop
- b. Signal Interference
- c. General Fire Alarm

Should the automatic smoke vent nuisance trip open due to any of the above, it will be the contractor's responsibility for payment of damages due to rain ingress.

The automatic smoke vent is to operate ONLY upon local smoke detector activation.

12.2 Induction Loop System:

n/a

12.3 CCTV System:

n/a

12.4 Door Entry System:

n/a

12.5 Public Address System:

N/A

12.6 Disabled toilet alarm systems:

N/A

12.7 Intruder alarm systems:

n/a

Electronic Oil Fuel Theft Detection System

n/a

12.8 Emergency Voice Communication Systems (EVC)

n/a

12.9 Lightning Protection System (LPS)

GENERAL

The contractor shall include for the complete, supply installation and testing of the complete lightning protection installation as indicated on the drawings and as specified herein. The lightning protection system shall be in accordance with the main conductor routes indicated on the drawings and as set out and described hereinafter.

Standards & regulations

BS 6651 The Protection of Structures Against Lightning.
IS EN 62305 - Protection Against Lightning

EQUIPMENT, WIRING AND INSTALLATION

Air Terminals shall be copper taper-pointed Air Rods of 500mm length and 15mm diameter, complete with flat saddle for support on flat surfaces, or ridge saddle for support on ridges. The flat and ridge saddle to be complete with a four-way pass through tape joint and Four No. Fixing Points, 100mm separate and 90° displaced from each other. Conductive Tape on roof shall be of high-conductivity PVC coated, annealed copper, measuring 25mm wide x 3mm thick. PVC cover shall be provided to all horizontal conductors on Main Roof. Conductive Tapes shall be fixed to the roof structure and wall structures with non-metallic clips, suitable for copper tape and complete with screw fixing. Square Tape Clamps for forming straight-through, cross or tee joints shall be provided where required. Test Connectors shall be provided, as indicated on the Drawings. Equipment Earthing Points shall be as indicated on the Drawings and shall be manufactured from copper and cast into the concrete structure. They shall be bonded to the Structural Steel Members which shall be used as the down conductor, by means of 70sq.mm. bare copper cable, clamped to the steel and 'Cad-Welded' to the earthing point. Earth Rods shall be molecular bonded 99.99% pure electrolytic copper, with a minimum thickness of 25mm onto a carbon steel core. Rod couplings shall be counter-bored and made from silicone aluminium bronze. All metal protrusions from the Building and their associated services shall be bonded to the Lightning Protection System. PVC Wrapping Tape of similar colour as the PVC covered tape shall be wrapped around all joints.

Denso Tape shall be wrapped around all underground tape and joints. All windows between building corners and down conductors shall be bonded to the down conductors.

TESTING AND COMMISSIONING

Upon completion of the installation, the whole of each system shall be tested and all results duly recorded.

The installation shall not be deemed to be complete until a satisfactory Test Certificate is issued.

13.0 Data & Voice Installation:

13.1 Data & Voice Installation

13.1.1 General:

Under this Section the Specialist Contractor shall include for all the supply and installation of a structured cabling system as shown on the design drawings.

Important Note: Cat 6a UTP

- The contractor is required to submit a cost for a **CAT 6a UTP Solution**.
- No other product will be acceptable other than that specified within this section.
- All products including patch panel, UTP cable, outlets, patch cords and device cables shall be Category 6a compliant.
- All components shall be of one manufacturer.
- Class E channel performance of 200 MHz (and specified out to 250 MHz) shall comply with TIA/EIA 568, IS 11801 and EN 50173
- The specified product in this tender shall be installed by an authorised installer.
- The authorised installer shall be approved by the product manufacturer and the consulting engineer
- The solution required shall be 'end to end'
- The attached schematic has been carefully considered and designed. The tenderer is not at liberty to re-design it or to change any of the products specified.
- No sub-let labour shall be allowed and all staff shall be permanent employees of the tenderer.

All products shall comply with the Category 6a standard, EIA/TIA 568-B, 568-B, IS 11801 and EN 50173. All products shall be of one manufacturer, as specified. (Alternative or ADHOC systems will invalidate tender). Class 6a channel performance of min 500MHz (and specified to 100MHz) is required.

The solution required shall be one of the following only:

Systimax CAT6a solution.

Brandrex CAT6a solution.

Belden CAT6a solution.

The structured cabling system shall be designed and installed to provide a system, which shall provide the end user with a high-speed infrastructure for the future.

The Voice and Data installation shall be used on a fully integrated structured cabling system to IT industry standards and shall consist of the following: -

- a) Work location subsystem.
- b) Horizontal subsystem.
- c) Administration subsystem.
- d) Backbone subsystem.
- e) Equipment room subsystem.

The system shall support analogue and digital applications, voice, data, local area networks (LAN) and video on a common cabling platform.

The Specialist Contractor shall allow for supply, installation, termination and testing of the entire installation.

They shall give due care to manufacturers recommendations on bend radius, pulling tension, compression and pair untwisting.

Open System Interconnection

Plan, provide and install data communication system complying with the ISO Open System Interconnection 7 layer model, set out in BS ISO/IEC 10731.

The Specialist Contractor shall supply a statement of compliance that the system meets the requirements of the EU Directive on EMC. This statement should be backed by test documentation showing compliance of the cabling system under stated test conditions. The test networks shall be 100Mbps TPPMD, 16 Mbps Token Ring, Ethernet, 10 Mbps 10 base T and 100 Mbps, 100 Base TX, 100 VG Anylan, Gigabit Ethernet (IEEE 802.3Z), 155, 622 Mbps ATM and 1000 Base T.

The contractor is not at liberty to change the specified category of cable as indicated above.
The specialist contractor shall include for fishing cables through conduits.

The specialist contractor shall pay due care and attention while installing all cables and he should comply to manufacturer specification in this respect, specific care should be taken in respect of bend radii, pulling tension and pairs on twisting.

13.1.2 Specialist Contractor:

The specialist shall comply with the following minimum requirements, in order to demonstrate that he is a legitimate voice and data specialist contractor with the necessary properly trained in-house permanent staff required to build a proper high speed standards compliant network.

1. The contractor shall be in the Structured Cabling business for a period of **5 years** and have experience with Category 6a products.
2. The contractor shall have the proper Employers Liability of **€10m** and Public Liability of **€10m**.
3. The contractor shall have a minimum of **20** field staff and **5** office staff for back up.
4. The field staff should be part of the TEEU.
5. The product must be as specified and well represented in Ireland.
6. The product must be independently tested by UL.
7. The warranty must be complete, unambiguous and give the client the appropriate assurances.
8. The contractor shall be able to demonstrate that they have carried out five similar size installations with the specified product in the last **2 years**.
9. The contractor shall offer **5** references, from work carried with the specified product in the last **2 years**.
10. The contractor shall be required to produce evidence from the manufacturer, that he is certified to install the specified product.
11. The contractor shall have a current **C2** tax certificate.
12. The contractor shall demonstrate that he will not sublet the labour and that he carries sufficient **permanent staff** to complete this installation.

13.1.3 Horizontal UTB Sub-System:

Both Voice and Data horizontal cabling shall consist of Category 6a compliant, 4 pair unshielded twisted pair cable complying with EIA-TIA. All cables will run in a system of cable trays within the ceiling void and to all point locations as indicated on the drawings.

Both Voice and Data dropper cabling shall consist of Category 6a compliant, 4 pair unshielded twisted pair cable complying with EIA-TIA. All cables will run in a system of flexible conduits to all desk user locations as indicated on the drawings.

Both Voice and Data Wifi (Wireless) cabling shall consist of Category 6a compliant, 4 pair unshielded twisted pair cable complying with EIA-TIA. All cables will run in a system of trays/conduits to all locations as indicated on the drawings.

The cables at the consolidation, Wifi and desk locations shall terminate in RJ45 Category 6a compliant outlets.

Each voice and data outlet shall be connected to the RJ45 Category 6a patch panels via the above cable in a star topology format. The length of each run shall not exceed 90 metres. If necessary, additional comm's locations must be provided, complete with backbone cabling as necessary.

UTP cable shall comply with EIA-TIA 568A (SP28740A) ISO IS 11801 and EN50173 standards. UTP cables from each user locations shall be terminated at the Communications Room as indicated.

13.1.4 Work Location System:

Both Voice and Data device equipment shall be connected to RJ45 socket outlets via Category 6a compliant device cables to EIA/TIA 568A (SP2840A), ISO IS 11801 and EN 501173 standards. Cables shall be terminated on RJ45 plugs and shall be 3 metres long.

Voice and Data outlets shall be supplied and fitted under this contract and shall be modular universal applications RJ45 type to EIA/TIA 568A, ISO IS 11801 and EN 50173 Category 6a compliant.

13.1.5 System Cabinets:

The specialist contractors shall include for K-Cab System Cabinets at the Communication Rooms in the quantities indicated on the schematic drawing – 1No. cabinet is required.

The cabinets shall be of modular design cabinet construction, free-standing and manufactured to comply with BS 5954, IEC 297, ISO/IEC IS 11801, ENN 50173 and EIA/TIA 568A. It shall fully comply to the EMC directive EN 55022/Class B. It shall be suitable for assembly on site and shall be extendible.

Cabinets shall be suitable for top cable entry and doors shall have a common locking system throughout. The cabinets shall be Cannon 39U minimum height (U=50 mm APPROX) 800 mm x 800 mm (19") with lockable glass fronted cabinet complete with metal sides, heavy duty casters, vertical and horizontal cable management and the following:

- ETSI Mounting Protocols
- Space for SNMP Management Module
- 1 No. Portable 9 – Gang Socket Power Supply
- As required-horizontal Cable Management Units per cabinet
- As required 48 way CAT 6E Compliant RJ45 patch panel for link cables
- 2mm high quality steel manufacture, rigid robust framework
- Capable of loads of up to 500kg
- Side panels in 1.2mm steel with 2 beaded ribs for rigidity
- Side panels must have locks
- Mounting posts in 1.5mm high quality steel
- Slots for ventilation
- Doors shall open through 180° when bayed or 270° when stand alone to comply with EU standards for fire evacuation

Power supply to each cabinet shall be via a separate MCB to an industrial type 'Commando' plug and socket to IS/EN 60309, so as to eliminate the risk of nuisance tripping. A trailing lead from the plug shall be terminated in a switched spur in the cabinet which in turn connects to socket outlets. The number of socket outlets within the cabinets can be calculated by dividing the number of network points by twenty four with a min of an 8 way outlet installed. At least two additional socket outlets shall be provided for expansion.

Separate telephone lines from the service provider's main incoming termination frame to the DCC frame shall be provided for internet (WAN) & phone connection. All data cabling shall be installed in a separate ELV mesh cable tray of the main containment distribution system and classroom points shall be installed in the dado trunking in the computer section. Active computer network equipment (hubs, routers, switches, servers, UPS's) is outside the scope of the building contract.

13.1.6 Cable Identification and Labeling:

All labelling shall conform to good labelling and identification standards. The specialist contractor shall be responsible for labelling at both the user and communications cabinets locations to an agreed labelling system in all UTP / Multicore / Fibre installations. Hand written labels will not be acceptable.

13.1.7 Backbone Sub-System: (Not Required)

The contractor shall supply 24 AWG (0.51 mm) multi-pair Category 3 cables for voice and low speed data applications in the backbone sub-system. These cables shall meet or exceed the attenuation and PowerSum NEXT requirements of ANSI/EIA/TIA 568-B, ISO IS 11801 and EN 50173 standards.

The Fibre optic multimode cables shall meet and exceed the proposed M/M OM3 10G SC fiber optic specifications in the ISO standards.

The fibre patch panels shall be wall or 19" rack mounted. The preferred method including the connector type should be detailed in the tender response. This will depend on the space requirements of the building

13.1.8 Port Plans:

The specialist contractor shall include for maintaining an accurate detailed record of the works as they progress. He shall include for supplying copies of 'As-Installed' Port Plans upon completion of each area. Drawings shall be in A1 CAD Form and shall be submitted to the Engineer as directed.

13.1.9 Testing & Commissioning:

The installation shall be fully tested (i.e. 100% of all cables) to comply with ISO/IEC 11801, TIA/EIA 568A to Category 6a limits, full TDR tests required.

Fibre Optic cables shall be 100% tested @850nm and 1300nm

Level III test instruments shall be used and all test results recorded on disc and included in the hand-over documents.

Cables that fail the test must be replaced. The engineer reserves the right to witness some or all of the testing.

13.1.10 Handover Documentation:

The specialist contractor shall include for detailed hand-over documentation to include:

- Product Warranty
- Test results on CD x 2 copies
- Test results on hard-copy x 2 copies
- Labelling drawings and details
- As-installed drawings on CD x 2 copies
- As-installed drawings on hard copy x 2 copies
- Contact telephone numbers for emergency situations, complete with product manual and company information

13.1.11 Commissioning:

The specialist contractor shall be responsible for punchdown at each end of each Voice / Data Cable, together with testing and commissioning to current requirements and for warranty purposes. All cables shall be 100% continuity tested and 100% TDR tested with results recorded on disc in Excel format.

13.1.12 Go Live Attendances:

In addition to the standard commissioning detailed above the specialist contractor shall allow for two engineers to attend site for the weekend of the client move / changeover. The hours to be worked shall be Friday, Saturday and Sunday from 9am to 5pm each day.

13.1.13 Patch Cords:

The system shall be complete with high grade Systimax Patch Cords to draft Category 6a standards. The specialist contractor shall supply the following leads: -The number of patch leads and device leads shall be 100% of the number of wired points. Patch cords shall support FDDI/TPDDI and Data Speeds of 500Mbps
The Services Specialist shall include for Patch Cords and device cables as follows:-

(100% of installed points)No. 1 metre RJ45-RJ45 Category 6a 4-Pair Patch Cords
(100% of installed points)No. 3 metre RJ45-RJ45 Category 6a 4-Pair Device Leads
(100% of installed points)No. 1 metre RJ45-RJ45 Category 6a 4-Pair Patch Cords

- All patching will be completed by the specialist contractor

13.1.14 Warranty:

The entire voice and data networks shall be fully guaranteed for a minimum period of twenty years. The Specialist Contractor shall be required to produce Warranties and Guarantees in this regard.

Warranties shall include for the following:

1. Compliance with TIA/EIA 568, IS 11801 and EN 50173 standards (with no get out clauses)
2. Independent UL tested system, no other lab is acceptable.
3. Products and labour for replacement of products (in the event of a problem)
4. The products must be manufactured by a single manufacturer. No mix/match shall be allowed.
5. The warranty must cover the full 'channel' and not just the 'permanent link'
6. The warranty must be issued by a manufacturer and not a contractor or a distributor
7. The warranty must provide full application assurance

13.1.15 Tender Response:

The tenderer shall not deviate from the specification. Any deviation shall make the tender null and void.

The tenderer shall confirm with his tender submission:

1. All components comply with Category specification.
2. All components are as specified.
3. All labour is in-house staff and not sub-let.
4. All items in the specification and on the drawings are included in the tender submission.

Telephony

The ICT wiring system outlined above shall be utilised for the telephone system signalling. Separate telephone wiring will not be accepted in place of the Cat 6 cabling indicated above.

14.0 Health & Safety:

14.1 General:

This section shall cover the following:

- (a) Health, Safety & Welfare At Work (Constructions) Regulations
- (b) Cost Summary
- (c) Appendix to General Conditions

14.2 Health and Safety:

The client has appointed **T5 Partnership Ltd** as Project Supervisor for the design Stage of the project to carry out on the duties set out in Article 4 of the Regulations.

The successful contractor will be appointed by the Client as Project Supervisor for the Construction Stage of the Project to carry out the duties set out in Article 6 of the Regulations. The Contractor shall include in his tender for complying fully with the Safety Health & Welfare at Work Act 1989 and The European Council Directive 92/57/EEC.

14.3 Co-ordination of persons engaged in the design of the project:

In accordance with Article 4(1) (a) of the Regulations, it is the duty of the Project Supervisor for Design Stage to co-ordinate the activities of persons engaged in the design of the Project.

14.4 Duties of sub-contractors as designers:

Preliminary Health & Safety Plan:

To enable the Project Supervisor for Construction Stage to develop the Health & Safety Plan for the project it is necessary for the nominated Sub Contractor to give the information which is relevant to the requirements of the Regulations in relation to that part of the works for which they are tendering:

- A general description of the works.
- The time in which it is intended that the works will be completed.
- Work which will enable Particular Risks as defined in Schedule 2 of the Regulations.

14.5 General Duties as Designers:

Where a nominated sub-contractor designs any element of the works as part of his contract, the nominated sub-contractor has a statutory obligation to perform the duties set out in Article 5 of the Regulations in relation to those parts of the works. These are:

- (a) Take account of the general principles of prevention as specified in First Schedule of the Principle Regulations (S.I. 44 of 1993) and any relevant Safety & Health Plan or Safety File prepared in accordance with the Health Safety and Welfare at Work (Construction) regulations 1995.

- (b) Co-operate with the project supervisor appointed for the design stage or the project supervisor appointed for the Construction Stage, as appropriate, to enable that project supervisor to comply with these regulations.
- (c) Promptly provide the project supervisor appointed for the design stage or the project supervisor appointed for the construction stage as appropriate, with such information as is known to that person regarding particular risks to the safety and health of persons at work as referred to in the second schedule which may be associated with the project, and also with such information regarding the nature and scope of the project to the extent necessary to enable the project supervisor to comply with these regulations.
- (d) Take into account any directions from the project supervisor appointed for the construction stage, as appropriate.

It should be noted that under (c) above, the nominated sub-contractor is required to provide copies of the following documents to the project supervisor for construction stage for the purpose of preparing the Safety File:

Drawings showing the installation as constructed.

Details of the construction or installation including manufacturers instructions for the installation of proprietary elements, pipe layouts, wiring routes and diagrams.

Full instructions for the safe maintenance of the construction or installation.

14.6 Sub-contractor to check all matters:

The sub-contractor is to examine the site and the information supplied regarding the nature and extent of the proposed works, so as to be satisfied as to what is required to be done to fulfil the duties in relation to the design and preparation for the works and also what measures are required to be taken to meet the requirements of the Regulations in the execution of the works. All costs arising in respect of these obligations are to be included in the tender figure and the Client will not be liable for any such costs which are reasonable foreseeable and which are not so included.

15.0 SCHEDULE OF RATES *(to be completed by the tenderer)*

CABLING				
Nr. of Cores & Size (mm²)	Type	Supply/m	Install/m	Terminations (Each)
2 x 1.5	XLPE/SWA/LSF			
3 x 1.5	XLPE/SWA/LSF			
4 x 1.5	XLPE/SWA/LSF			
4 x 1.5	XLPE/SWA/LSF			
12 x 1.5	XLPE/SWA/LSF			
19 x 1.5	XLPE/SWA/LSF			
27 x 1.5	XLPE/SWA/LSF			
3 x 2.5	XLPE/SWA/LSF			
4 x 2.5	XLPE/SWA/LSF			
4 x 4	XLPE/SWA/LSF			
4 x 6	XLPE/SWA/LSF			
4 x 10	XLPE/SWA/LSF			
4 x 16	XLPE/SWA/LSF			
4 x 25	XLPE/SWA/LSF			
4 x 35	XLPE/SWA/LSF			
4 x 50	XLPE/SWA/LSF			
4 x 70	XLPE/SWA/LSF			
4 x 95	XLPE/SWA/LSF			
4 x 120	XLPE/SWA/LSF			
4 x 150	XLPE/SWA/LSF			
4 x 185	XLPE/SWA/LSF			
4 x 240	XLPE/SWA/LSF			
2 x 0.75	1 PR/SCR/SCR			
4 x 0.75	2 PR/SCR/SCR			
10 x 0.75	5 PR/SCR/SCR			
20 x 0.75	10 PR/SCR/SCR			
40 x 0.75	20 PR/SCR/SCR			
1 x 16	LSF Earth			
1 x 70	LSF Earth			
2 x 1.5	Fire resistant pliable			
4 x 1.5	Fire resistant pliable			
2 x 1.5 Enhanced	Fire resistant pliable			
4 x 1.5 Enhanced	Fire resistant pliable			
3 x 4	Braided flex			
CAT 6A F/FTP 10G	8 x 0.5			
16 core Single Mode	Optic Fibre Cable			
32 core Single Mode	Optic Fibre Cable			
100 x 0.5	50 pair telephone cable			
200 x 0.5	100 pair telephone cable			
CABLE TRAY (Galvanised Steel)				

Size	Tray	Supply/m	Install/m
75	Tray		
150	Tray		
225	Tray		
300	Tray		
450	Tray		
600	Tray		

CABLE BASKET (Galvanised Steel)			
Size	Basket	Supply/m	Install/m
75	Basket		
150	Basket		
225	Basket		
300	Basket		
450	Basket		
600	Basket		

Conduit/Trunking (Galvanised Steel)			
Size	Type	Supply/m	Install/m
20mm	Steel Conduit		
25mm	Steel Conduit		
50x50mm	Steel Trunking		
100x100mm	Steel Trunking		
150x150mm	Steel Trunking		

Dado Type Cable Trunking (uPVC) (for CAT6a F/FTP Cable)			
Size	Type	Supply/m	Install/m

2 compartment	White uPVC		
3 compartment	White uPVC		

POWER AND GENERAL SERVICES EQUIPMENT		
Type	Supply (Ea)	Install (Ea)
13A 2 gang flush mounted socket white		
13A 2 gang surface mounted socket metalclad		
13A 2 gang IP 66 rated polycarbonate type white		
10A 1 gang 2 way flush mounted switch white		
10A 2 gang 2 way flush mounted switch white		
10A 4 gang 2 way flush mounted switch white		
10A 1 gang 2 way surface mounted switch metalclad		
10A 2 gang 2 way surface mounted switch metalclad		
10A 4 gang 2 way surface mounted switch metalclad		
Lighting PIR (Internal - Ceiling Mounted)		
Lighting PIR (Internal, Long Range – Wall Mounted)		
Lighting PIR (Externally Mounted)		
1 gang 1 module co-axial cable outlet white		
1 gang 2 module Cat 6A RJ 45 outlet white		
1 gang 2 module Cat 6A RJ 45 outlet metalclad		
1 gang 2 module Cat 6A RJ 45 IP 66 rated polycarbonate type white		
13A switched fused spur outlet with indicator and flex outlet flush mounted white		
13A switched fused spur outlet with indicator and flex outlet surface mounted metalclad		
13A switched fused spur outlet with indicator and flex outlet IP 66 rated polycarbonate type white		
20A D.P. switched spur outlet with indicator and flex outlet flush mounted white		
20A D.P. switched spur outlet with indicator and flex outlet surface mounted metalclad.		

20A D.P. switched spur outlet with indicator and flex outlet IP 66 rated polycarbonate type white		
25A T.P. padlockable isolator wall mounted IP65		
63A T.P. padlockable isolator wall mounted IP65		
Emergency stop push button with mushroom head twist to release IP 65		
Automatic hand dryer with proximity detection		
Under-sink water heater		
Disabled Toilet Alarm System (Complete)		
Disabled Refuge Intercom (Stairwell mounted)		
Insectocuter ceiling mtd. splash proof type		

FIRE ALARM EQUIPMENT		
Type	Supply (Ea)	Install (Ea)
Smoke Detector		
Heat Detector		
Manual Call Point		
Control Interface Unit		
Fire Alarm Sounder/Strobe		
Fire Alarm Repeater Panel		
Automatic Opening Smoke Vent and controls		
Fire Alarm Voice Evacuation Speaker		

ACCESS CONTROL EQUIPMENT		
Type	Supply (Ea)	Install (Ea)
Magnetic Door Lock		
Door Release Pushbutton		
Door Release Breakglass Unit (Green)		
Feedback Door Contact		
Swipe Card Reader (Internal)		

Swipe Card Reader (External)		
Proximity type Fob Reader (Internal)		
Proximity type Fob Reader (External)		
Keypad (Internal)		
Keypad (External)		
Door Intercom (External - Voice only)		
Door Intercom (Internal – Voice Only)		
Door Intercom (External – Video type)		
Door Intercom (Internal – Video type)		

INTRUDER ALARM EQUIPMENT		
Type	Supply (Ea)	Install (Ea)
Dual Microwave/PIR detector		
Feedback Door Contact		
Feedback Window Contact		
Keypad (Internal)		
Keypad (External)		
Panic Alarm pushbutton		
Self activating bell box (external)		

EARTHING & LIGHTNING PROTECTION EQUIPMENT		
Type	Supply (Ea)	Install (Ea)
Earth Pit		
Earth Rod/Clamp		
Earth Bar (Switchroom)		
70 sq.mm bare earth cable (per metre)		
Connections to Steelwork		
Connections to Mechanical services		

25mm x 3mm bare aluminium tape		
Termination of 25mm x 3mm tape to equipment		
Self Adhesive roof pad for 25mm x 3mm tape		

WIRELESS CLOCK		
Type	Supply (Ea)	Install (Ea)
Primex Wireless Clock as specified		

GENERAL LUMINAIRES		
Type	Supply (Ea)	Install (Ea)
Type A		
Type A – Emergency		
Type B		
Type B – Emergency		
Type C		
Type C – Emergency		
Type D		
Type D – Emergency		
Vapour Proof		
Vapour Proof – Emergency		
Twin emergency spot		
Exit Sign		
Exit sign with wire guard		

EQUIPMENT/CONTROLS		
Type	Supply (Ea)	Install (Ea)
Lighting Control Module		

Presence Detector		
Microwave Presence Detector		

EXTERNAL LUMINAIRES		
Type	Supply (Ea)	Install (Ea)
IP65 Emergency external bulkhead		
Single 5m Column, brackets, spill shield & 100w Metal Halide lamp		
Single 5m Column, brackets & 100w Metal Halide lamp		
Back to Back 5m Column, brackets & 100w Metal Halide lamp		
Single IP65 Wall mounted 42w PL lamp		

3. A2.5 Electrical Schedule of Equipment

Register of Electrical Equipment Schedules

<u>Ref No.</u>	<u>Description</u>
201	Emergency Light Fittings
202	Fire detection and Alarm Devices
203	General lighting
204	Containment - Galv. Steel Earth link
205	General Electrical Items

Builders works

<u>Ref No.</u>	<u>Description</u>
301	Fire Stopping Compounds
302	Floor Protection

Electrical Equipment Schedules

201 Emergency Light Fittings *(ALSO SHOWN ON DRAWINGS)*

Emergency light Fitting- EX1- EXB/Basic 1W IP20 Surface mounted

EXB/Basic 1W IP20 Surface mounted ExB2/SelfTest Product Features: Viewing distance - 31 metres (as per I.S.3217:2013+A1:2017) Fully compliant to I.S./E.N. 60598-1, I.S./E.N. 60598-2-22, the LVD, the EMC, the ErP, the RoHS, the WEEE and the Battery European Directives.	Mode of operation: Maintained Supply Voltage: 230V AC 50/60Hz Light Source: TRIDONIC 1W high output 6500K LED Strip. Battery: RIDONIC 3.6V 2Ah 3-Cell NiMH Emergency Inverter: TRIDONIC EMpowerLED 1W Selftest Re charge period: 24 hours from full discharge Emergency Duration: 3 hours Status indicator: Bi-colour green/red LED Test Facility: Automatic testing, results documented manually. Viewing Distance: 31 metres Ingress protection: IP20 Finish: White	
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Emergency light Fitting- EX2 - 1Watt LED Basic IP20 Self-Contained Maintained Emergency Picture Exit Sign

- 1Watt LED Basic IP20 Luminaire -Extruded Aluminum Construction -8mm Acrylic Panel - 4000mm Adjustable Suspension Length -Ral 9016-Colour - Surface Or Ceiling Mounted - Viewing Distance 26 Meters (AsPerI.S.3217:2013+A1:2017) -Must Be Fully Compliant To I.S./E.N 605981,I.S./E.N60598-2-22, The Lvd, The Emc, The Erp, The Rohs The Wee And The Battery European Directives.	Mode of operation: Maintained Supply Voltage: 230V AC 50/60Hz Light Source: 2no. TRIDONIC 1W High Output 6500K LED Strip Battery: TRIDONIC 6V 2Ah 5-Cell NiMh Emergency Inverter: TRIDONIC EMpowerLED 2W SELFTEST Re charge period: 24 hours from full Discharge Emergency Duration: 3 hours Status indicator: Bi-colour green/red LED Test Facility: Automatic testing, results documented manually Viewing Distance: 31 metres Ingress protection: IP20 Finish: White	
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Emergency light Fitting- EX3- EXB65/Basic 1W IP65 Surface mounted

EXB/Basic 1W IP65 Surface mounted	Mode of operation: Maintained Supply Voltage: 230V AC 50/60Hz Light Source: TRIDONIC 1W High Output 6500K LED Strip Battery: TRIDONIC 6V 2Ah 3-Cell NiMH Emergency Inverter: TRIDONIC EMpowerLED 1W SELFTEST Re charge period: 24 hours from full Discharge Emergency Duration: 3 hours Status indicator: Bi-colour green/red LED Test Facility: Automatic testing, results documented manually Viewing Distance: 34 metres Ingress protection: IP65 Finish: Grey	
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Emergency light Fitting- E3 – BH265/Basic 2 Watt IP65 Surface mounted

BH265/Basic 2Watt IP65 Surface mounted •IP65 Sealed. •Full DALI / Self-Test / Non-DALI options available. •Fully compliant to I.S./E.N. 60598-1, I.S./E.N. 60598-2-22, the LVD, the EMC, the ErP, the RoHS, the WEEE and the Battery European Directives.	Mode of operation: Non- Maintained Supply Voltage: 230V AC 50/60Hz Light Source: 2no. TRIDONIC 1W High Output 6500K LED Battery: TRIDONIC 6V 2Ah 5-Cell NiMh Emergency Inverter: TRIDONIC EMpowerLED 2W SELFTEST Re charge period: 24 hours from full Discharge Emergency Duration: 3 hours Status indicator: Bi-colour green/red LED Test Facility: Automatic testing, results documented manually Typical Luminous Flux: 260 lm Ingress protection: IP65 Finish: White Polycarbonate	
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Emergency light Fitting- E1 – DL2/Basic 2 Watt Recessed downlight

DL2/Basic 2 Watt Recessed downlight	Mode of operation: Non- Maintained Supply Voltage: 230V AC 50/60Hz Light Source: 2W High Output 6500K LED CRI >80 Battery: 3.2V 3Ah 2-Cell Lithium Iron Phosphate Emergency Inverter: TRIDONIC EMpowerLED 2W SELFTEST Re charge period: 12 hours from full Discharge Emergency Duration: 3 hours Status indicator: Bi-colour green/red LED Test Facility: Automatic testing, results documented manually Typical Luminous Flux: 200 lm Ingress protection: IP20 Impact protection: IK 03 Finish: RAL 9016	
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Emergency light Fitting- E5 – TS265/ LED Basic High Output 2x8 Watt IP65 Twin Spot

TS265/Basic 2x8 Watt IP65 Twin Spot	Mode of operation: Non- Maintained Supply Voltage: 230V AC 50/60Hz Light Source: 2no. 2W High Output 4000K LED Battery: 2no. TRIDONIC 6V 2Ah 5-Cell NiMh Emergency Inverter: TRIDONIC EMpowerLED 4W SELFTEST Re charge period: 24 hours from full Discharge Emergency Duration: 3 hours Status indicator: Bi-colour green/red LED Test Facility: Automatic testing, results documented manually Typical Luminous Flux: 2 x 120 lm Ingress protection: IP65 Finish: Grey Adjustment: 270° vertical, 360° horizontal	
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- 2Watt LED Basic IP20 Self-Contained Non-Maintained Emergency Surface Mounted Downlighter

LUMINAIRE ·Robust Die-Cast Aluminium Base - Ik10 Rated. ·Black Base As Standard ·Available With Opal (As Standard) Or Clear Diffuser. ·Ip65 Sealed. ·Easy Installation - 2 X 20mm Conduit Entry Points. · High Output 22w Tridonic Led Module. ·Full Dali / Self-Test / Non-Dali Options Available. ·Maintained (As Standard) / Non-Maintained Options Available. Fully Compliant To I.S./E.N. 60598-1, I.S./E.N. 60598-2- 22, The Lvd, The Emc, The Erp, The Rohs, The Weee And The Battery European Directives.	Specifications <table><tr><td>Mode of operation:</td><td>non-maintained</td></tr><tr><td>Supply voltage:</td><td>230v ac 50/60hz</td></tr><tr><td>Light source:</td><td>2w high output 6500k led cri>80</td></tr><tr><td>Battery:</td><td>3.2v 3ah 2-cell lithium iron phosphate</td></tr><tr><td>Re-charge period:</td><td>12 hour from full discharge</td></tr><tr><td>Emergency duration:</td><td>3 hours</td></tr><tr><td>Status indicator:</td><td>green led</td></tr><tr><td>Test facility:</td><td>manual testing via central test unit, results doc</td></tr><tr><td>manually</td><td></td></tr><tr><td>Typical luminous flux:</td><td>200 lm</td></tr><tr><td>Ingress protection:</td><td>Ip20</td></tr><tr><td>Impact protection</td><td>Ik07</td></tr><tr><td>Finish:</td><td>Ral 9016</td></tr></table>	Mode of operation:	non-maintained	Supply voltage:	230v ac 50/60hz	Light source:	2w high output 6500k led cri>80	Battery:	3.2v 3ah 2-cell lithium iron phosphate	Re-charge period:	12 hour from full discharge	Emergency duration:	3 hours	Status indicator:	green led	Test facility:	manual testing via central test unit, results doc	manually		Typical luminous flux:	200 lm	Ingress protection:	Ip20	Impact protection	Ik07	Finish:	Ral 9016	
Mode of operation:	non-maintained																											
Supply voltage:	230v ac 50/60hz																											
Light source:	2w high output 6500k led cri>80																											
Battery:	3.2v 3ah 2-cell lithium iron phosphate																											
Re-charge period:	12 hour from full discharge																											
Emergency duration:	3 hours																											
Status indicator:	green led																											
Test facility:	manual testing via central test unit, results doc																											
manually																												
Typical luminous flux:	200 lm																											
Ingress protection:	Ip20																											
Impact protection	Ik07																											
Finish:	Ral 9016																											

- 15Watt LED Basic IP65 Self-Contained Switch-Maintained Emergency Surface Mounted Die-Cast Anti-Vandal Circular Bulkhead c/w Eyelid

LUMINAIRE -Robust Die-Cast Aluminium Base Ik10 Rated. -Black Base As Standard -Available With Opal (As Standard) Or clear Diffuser. - Ip65 Sealed. - Easy Installation - 2 X 20mm Conduit Entry Points. - High Output 22w Tridonic Led Module. - Full Dali / Self-Test / Non-Dali Options Available. ·Maintained (As Standard) / Non-Maintained Options Available ·Fully Compliant To I.S./E.N. 60598-1, I.S./E.N. 60598-2- 22, The Lvd, The Emc, The Erp, The Rohs, The Weee And The Battery European Directive	SPECIFICATIONS <table><tr><td>Mode Of Operation:</td><td>Non-Maintained</td></tr><tr><td>Supply Voltage:</td><td>230v Ac 50/60hz</td></tr><tr><td>Light Source:</td><td>2w High Output 6500k Led Cri>80</td></tr><tr><td>Battery:</td><td>3.2v 3ah 2-Cell Lithium Iron Phosphate</td></tr><tr><td>Re-Charge Period:</td><td>12 Hour From Full Discharge</td></tr><tr><td>Emergency Duration:</td><td>3 Hours</td></tr><tr><td>Status Indicator:</td><td>Green Led</td></tr><tr><td>Test Facility:</td><td>Manual Testing Via Central Test Unit, Results Doc Manually</td></tr><tr><td>Typical Luminous Flux:</td><td>200 Lm</td></tr><tr><td>Ingress Protection:</td><td>Ip65</td></tr><tr><td>Impact Protection</td><td>Ik07</td></tr><tr><td>Finish:</td><td>Ral 9016</td></tr></table>	Mode Of Operation:	Non-Maintained	Supply Voltage:	230v Ac 50/60hz	Light Source:	2w High Output 6500k Led Cri>80	Battery:	3.2v 3ah 2-Cell Lithium Iron Phosphate	Re-Charge Period:	12 Hour From Full Discharge	Emergency Duration:	3 Hours	Status Indicator:	Green Led	Test Facility:	Manual Testing Via Central Test Unit, Results Doc Manually	Typical Luminous Flux:	200 Lm	Ingress Protection:	Ip65	Impact Protection	Ik07	Finish:	Ral 9016	
Mode Of Operation:	Non-Maintained																									
Supply Voltage:	230v Ac 50/60hz																									
Light Source:	2w High Output 6500k Led Cri>80																									
Battery:	3.2v 3ah 2-Cell Lithium Iron Phosphate																									
Re-Charge Period:	12 Hour From Full Discharge																									
Emergency Duration:	3 Hours																									
Status Indicator:	Green Led																									
Test Facility:	Manual Testing Via Central Test Unit, Results Doc Manually																									
Typical Luminous Flux:	200 Lm																									
Ingress Protection:	Ip65																									
Impact Protection	Ik07																									
Finish:	Ral 9016																									

202 Fire detection and Alarm Devices

Fire alarm panel

Addressable fap Advance mxpro 5 (4 loop) Apollo xp95 protocol -20 programmable zonal LEDs with slide-in labels, and 25 system LEDs for information purposes. -Advanced graphical LCD user interface and support for up to 200 fire zones by default allowing full EN54 compliance without additional hardware. - Dual flash-based microprocessor technology with real-time clock on-board. - Integral 'P-Bus' for system expansion via available option cards Ad-NeT peer-to-peer network with up to 2000 zones Approved to BS EN54 part 2, 4 and 13 -3 Year Warranty	Base Technology: Dual flash-based processors with real-time clock Display: White backlit 240 x 64 graphical LCD LED Indicators: 22 red (1 x Fire, 1 x More Alarms, 20 x Zonal Programmable), 1 green (Power), 13 amber and 12 bi-colour (Fault & System) Controls Protocols: Alpha numeric keypad permitting Navigation, Reset, Mute, Silence, Resound, Evacuate, and 4 x programmable push buttons Protocols: Apollo (Xp95 / Discovery), Argus Vega, Hochiki ESP Number of Fire Zones: 2000 (200 per individual panel) Number of Loops: Dedicated 1-2 loop control panel Devices per loop: Protocol dependent Loop Current: 500mA per loop On-Board Sounder Circuits: 2 x 1 Amp Programmable. On-Board Relays: 2 x 1 Amp 30v AC/DC programmable (10mA, 5v min) - expandable to 4 using Mxp-507 Auxiliary Supply: 1 x 24v 500mA Programmable Input: 1 x monitored programmable input on-board. Programmable Key Switch Inputs: 8 volt free inputs Total Available Output Current: 5A maximum available for loop current + sounder outputs + auxiliary supply Mains Supply: 200 - 240v 47-63 Hz AC (+10%, -15% tolerance) 1.4A max.	
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Addressable fap (continued)	Battery Capacity: 24V 4Ah internal (min), 24V, 12Ah internal (max), large enc. (L) - 24v, 18Ah internal (max), deep enc. (D) - 24v, 45Ah internal (max) Charger Current: 2A temperature Compensated. Serial ports: 1 x On-board RS232 connection for PC, modem, IP, or portable printer. USB Interface: 1 x USB B type connection for PC communication Programming: On-board keypad or PC running Windows tools. Event Log: 5000 event & diagnostic + 500 fire. Networking: Optional plug in Network Card (Mxp-503 - Standard, or Mxp-509 - Fault-Tolerant). Printer (Optional): On-board (M, L, D enc. Only) Enclosure / Colour: Steel IP30 / RAL7035 Cable Entry (20mm knockouts): 17 x top, 11 x rear & 2 x bottom, large enc. (L) - 19 x top, 11 x rear, 2 x bottom, deep enc. (D) - 30 x top, 11 x rear, 3 x bottom Size H x W x D mm: .340 x 430 x 115, large enc. (L) - 470 x 450 x 115, deep enc. (D) - 470 x 450 x 190 Metalwork Options: Flushing bezel, battery box, utility enclosure, termination enclosure and rack mount Approvals: EN 54-2:1998, EN 54-4:1998 & EN 54-13:2005	
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AlarmSense Optical Smoke Detector and Sounder Base

AlarmSense Optical Smoke Detector and Sounder Base (Product code: 55000-392APO)	Open protocall	
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AlarmSense A1R Heat Detector with Sounder Base

AlarmSense A1R Heat Detector with Sounder Base (Product code: 55000-196APO)	Open protocall	
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Break Glass unit

KAC Red Break Glass Call Point, Break Glass Operated, Resettable

External Call Point
Sealed to IP67
Unique 'Plug & Play' installation concept
Choice of operating element
Anti-tamper facility

Standards
EN54-11

Attribute	Value
Call Point Type	Fire Alarm Call Point
Operation Type	Break Glass
Indoor/Outdoor	Outdoor
Resettable	Yes
Colour	Red
Element Material	Glass
Tamper Resistant	Yes
Box Material	PC/ABS
Depth	71 mm
Height	93 mm
Width	97.5mm

Input output device

**3-Channel
input/output device
for addressable fire
systems**

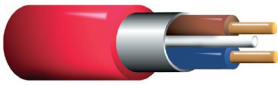
The 3 channel I/O unit enables simple interfacing between the fire system and other equipment, such as nurse call systems or access control systems. The inputs are fully monitored for open and short circuits.

Three models of the 3 channel I/O unit are available: resets on reset, resets on silent alarms and resets on reset and is recognised as 3 addresses.

Standards:	EN54 P117 & 18 2005
Operating Voltage:	18Vdc to 30Vdc
Quiescent Current:	310µA
Maximum Switching Voltage:	50Vac or 30Vdc
Output Relay Contact Rating:	1A at 30V resistive, 0.5A inductive
Operating Temperature:	-10°C to +60°C
Humidity (Non-condensing):	0 to 95% RH
Construction:	PC / ABS
Dimensions (HxWxD):	129mm x 180mm x 60mm
Weight:	0.23kg
Ingress Protection:	IP40
Suitable for use with:	Eaton addressable fire systems



Fire Alarm Cable

Prysmian FP Plus 'ENHANCED' FIRE RESISTANT CABLE 300/500 V	Conductor: Plain annealed copper. Solid (1.5 & 2.5 mm²) or stranded circular conductors (4.0 mm²) to meet the requirements of BS EN 60228 class 1 or class 2. Insulation: High performance, damage resistant enhanced Insudite™ to meet BS EN 50363-5, Type EI5. Including mica tape for 2c4mm² and all 3 & 4 core. Overall metallic screen and CPC: Polyester backed laminated aluminium or copper tape bonded to outer sheath to provide overall screen. In contact with full sized, tinned annealed copper circuit protective conductor and laid-up with the cores to provide automatic screen earthing. Sheath: Robust thermoplastic low smoke, zero halogen and reduced flame propagation outer sheath. colour red Suitable for outdoor installation with exposure to normal daylight UV. British Standards, Tests & Approvals: • BS 7629-1 Enhanced 120* • BS EN 50200 PH30, PH60, PH120* • BS 8434-2 Flame, impact & water test for 'enhanced' cable* • BS 5839-1, 6, 8 & 9 'enhanced' fire resisting cable* • BS 5266-1 'enhanced' fire resisting cable • BS 8519 category 2 control cable • BASEC approved • LPCB approved* • BS 6387 CWZ*	 PRYSMIAN FP PLUS ENHANCED FIRE RESISTANT CABLE 300/500V  
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203 General Light Fittings *(ALSO SHOWN ON DRAWINGS)*

ACADEMY Opal Prism

Linear LED luminaire typically used in education applications

White painted steel body with polycarbonate opal diffuser and secured endcaps

1200, 1500 & 1800mm luminaire 2000 to 8000 Lumens, efficacy up to 116 Llm/cW

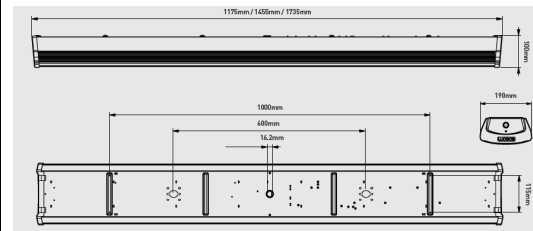
Surface or suspension mounted

LAC12P22S40

LUMINAIRE PERFORMANCE

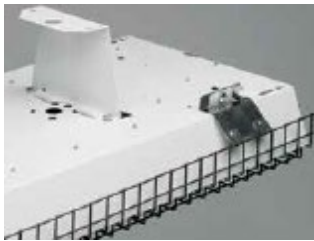
Light Output Ratio: 100%
Luminaire Efficacy: 115.18 lm/W
Light Distribution: A31 ↓91.3% ↑8.7%
CIE Flux Codes: 42 73 91 91 100
UGR 4H 8H: 18.9 / 17.9
50%, 70%)C0 / C90
Power: 19.1W
Luminous flux: 2200 lm

Must have a 5 year Warranty minimum



STANDARDS

EN 60598-1	Luminaires - General requirements
EN 60598-2-1	Luminaires - Fixed
EN 60598-2-22	Luminaires - Emergency
EN 61347-1	Lamp controlgear - Part 1: General and safety requirements
EN 61347-2-13	Lamp controlgear - Part 2-13: Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules
EN 55015	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
EN 61547	Equipment for general lighting purposes - EMC immunity requirements
EN 61000-3-2	Electromagnetic compatibility (EMC) - Part 3-2: Limits - for harmonic current emissions
EN 62471	Photobiological safety of lamps and lamp systems
2002/96/EC	Waste Electrical & Electronic Equipment (WEEE)
2011/65/EU	Restriction of the use of certain Hazardous Substances in EEE (RoHS)
(EC) No 1907/2006	The Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Linery LED TYPE D Wire guard option for increased security in environments where impact resistance is needed LED and Control Gear Options High efficacy linear LED light engines >80 CRI 4000K Energy efficient control gear as standard Materials Body – full box steel construction powder coated in RAL 9016 white finish Reflectors – faceted finish (wide area) iridescence anodised aluminium Wire guard – heavy duty zinc plated steel, 25mm grid size Installation Notes Suitable for ceiling, conduit, chain, rod and trunking mounting Supplied with diffuser and light engines pre-fitted, no need to remove during installation Access flap on the rear of housing to aid wiring during installation Fused as standard Wire guard is a retrofit accessory secured by screws, hangs for ease of maintenance. Please note, this is not suitable for the Linergy High Rack	Surface mounted, LED high/low bay luminaire, of full box welded construction with post coat powder paint finish, high performance faceted/satin reflectors for Wide Area/Narrow/Rack with high output light engines and integrated emergency sensor/wire guard options, as Eaton's Linergy LED range, Wide Area LNLA1504KZ Wattage (W) 112.4 Efficacy (Llm/cW) 145.	          
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**AMETYST NEW LED 3000 PC
E IP65 840**

**Type B1 19w
&
Type B1 28w**

**Product: AMETYST NEW LED
3000 PC E IP65 840**

**Surface mounted or wall luminary
equipped in highly efficient LED panels.
Luminary body and screen made from
IK10 impact resistant material. Luminary
recommended for: bathrooms, wards,
medical staff room and also in outdoor
areas.**

Product information

Category	Surface mounted luminaires
Family	AMETYST NEW LED
Name	AMETYST NEW LED 3000 PC E IP65 840
Index	0F1ADN30PCA
Pictograms	



Light and electrical data

Light source	LED
Luminous flux LED [lm]	2970
LED power [W]	17
Luminaire luminous flux [lm]	2138
Power of luminaire [W]	18
Luminaire's light efficiency [lm/W]	119
Color of the light [K]	4000
CRI	>80
SDCM (LED sources)	3
Photobiological risk class (IEC/EN 62471)	RG0
Protection against electric shock	I
Protection degree	IP65
Voltage	220..240 V, 50..60 Hz
Lifetime of LED sources [h]	68000
Lx/By	L80/B10
Operating temperature range [°C]	-20 + 30
Driver	standard (E)

Mechanical data

Assembly	surface mounted on ceiling or on wall
Material	polycarbonate
Color	white
Diffuser	PC (opallescent polycarbonate)
Impact resistant	IK10
Weight [kg]	1.16
Dimensions [mm]	Ø356 x 76



204 Containment - Galv. Steel Earth link

Galv. Steel Earth link

Ref.EBS100 (M6 Braid)

-Earth linking to be installed across entire
Containment systems.



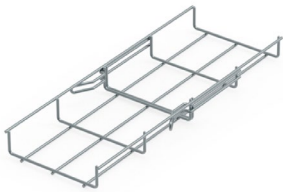
Containment - Galv. Trunking Uni-trunk

Cable Trunking -Uni-trunk	Type = Hot Dip Galvanised to BS EN 10346:2009. BS EN 50085-1:2005 compliant. To have End caps supplied with each end. Screw fixing system Coupler, Bridge, Nuts, Bolts	
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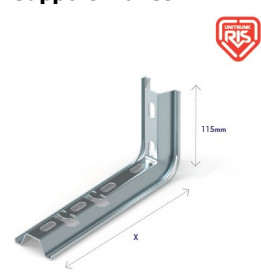
Containment - Flex Kopex Conductor

Kopex KSU 316 Stainless Steel Flexible Conduit 16mm 5m Inherent Low Fire Hazard Resistance to Flame Propagation (no test) Stainless Steel AISI 316L	Conforms to: BSI Kitemark KM-90009 Low voltage directive Approvals & Standards :  Protection: IP40 - As standard with GFMS Fittings. UV protection: Very High Finish: Self Coloured Normal operating Temperature Static range : (- 65°C) to (+350°C) Dynamic range: (- 45°C) to (+250°C) Chemical Resistant	
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Containment - Galv. Basket tray

Wire mesh tray -Uni-trunk 100mm - 225mm	Type = Hot Dip Galvanised after manufacture to EN ISO 1461 standard. EN 61537 clause 6.3 compliant. Yellow end	
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Containment - Galv. Brackets

Suspension Brackets: 100mm - 200mm, Uni- trunking-ceiling support braket	Type: Cable basket support Material & finish: zinc - Hot Dip Galvanised after manufacture to EN ISO 1461 standard	Ceiling Support Braket  Wall Support Braket 
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Containment - Galv. Brackets Suspension

Trapiese suspension braket,	Type = Hot Dip Galvanised after manufacture to EN ISO 1461 standard. EN 61537 clause 6.3 compliant. Yellow end	
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205 General

ITEM	MANUFACTURER	ALTERNATIVES	NOTES
Metering & Distribution containment			
External ESB enclosure	Renley	Or equal approved	Unit Specifications and Dimensions: - 1760mm H: 1100mm W: 320mm D. - Manufactured from 3mm Galvanised Steel. - Doors may be held open at 90° and 180°. - Includes ESB access via ESB Keysafe. - Chubb lock security on Meter Door. - Independent Customer Compartments. - Integrated sectioned trunking for ease of wiring - CT chamber installed Dimensions 600 x 500 x 230 Slide rails fitted ESB sealable lock - Detachable base plate for ease of access. - Meets IP44 rating standard. - Modern connectability. - Doors fitted with triangular locks and brass security bungs. - Weight 150kg. - 18mm thick backboards for mounting electrical equipment. - Removable bottom plates for ease of installation of incoming & t i b l - Back mounting board made of flameretardant Class 0 material with lacquered waterproof surface. outgoing cables.
Distribution Boards	Davenham Engineering	M&L or equal approved	As specified
024 Cable Containment			
Cable Containment			
Cable Tray	Uni-trunk	Cablofil, electrix or equal approved	Medium Duty Cable tray to BS 61537:2007. Type = Post Galvanised to BS EN ISO 1461:1999.
Cable Trunking	Uni-trunk	Cablofil, electrix or equal approved	Type = Hot Dip Galvanised to BS EN 10346:2009. BS EN 50085-1:2005 compliant. To have End caps supplied with each end. Screw fixing system
Wire mesh tray	Uni-trunk	Cablofil, electrix or equal approved	Type = Hot Dip Galvanised after manufacture to EN ISO 1461 standard. EN 61537 clause 6.3 compliant. Yellow end caps supplied with each support end.
Standard galvanized 20mm steel conduit	Uni-trunk	Cablofil, electrix or equal approved	
Stainless steel 20mm steel conduit	Uni-trunk	Cablofil, electrix or equal approved	
Dado trunking	MK	Legrand, Wandsworth or equal approved	3 Compartment Contour Trunking. Material : high impact self-extinguishing PVC-U. Colour : white RAL 9003 Trunking assembly: 195 x 50 mm Body, lids and dividers included in 3m lengths Lid width : 2 x 42 curved + 1 x 85 mm Fitting allowances: End caps; Internal angles; External angle; Flat angle; Flat tee;
General Electrical Accessories			

Surface mounted spur outlet Switched Unswitched	MetalClad Plus - MK	Legrand, Wandsworth or equal approved	
Surface mounted switches	MetalClad Plus - MK	Legrand, Wandsworth or equal approved	
Surface mounted data outlets	MetalClad Plus - MK	Legrand, Wandsworth or equal approved	
Surface mounted un-switched 13A single socket outlet	Logic-plus MK	Legrand, Wandsworth or equal approved	
Surface mounted Un-Switched 13A Twin Socket Outlet	Logic-plus MK	Legrand, Wandsworth or equal approved	
H/O/A Switch	MK	Legrand Wandsworth or equal approved	Metal Clad - Aluminium Finish Surface mounted Curved design Double Pole Key Operated 20A Switch Flush: 51mm 1 GANG: 86 x 86 x 51mm FIXING CENTRES: 1 TERMINAL CAPACITY: 2 x 6mm² stranded (max) Fits flush with the backbox giving chamfered edges BS EN 60669-1: 2000 
IT Cabling Installation			
LSOH 4-Pair UTP	Avaya "Gigaspeed"	BICC, Alcatel or	

horizontal distribution cabling to category 6a Standard	4070	equal and approved	
LSOH Cat 6a. Patch Cords	Avaya Gigaspeed Modular Patch Cords – Visipatch		
IT Patch Panels	Avaya 110 Cross Connect to Category 6 Standard	BICC, Alcatel or equal and approved	
Communications Cabinets	Rittal DK Network Racks including 8-way power strips and all accessories.	BICC, Alcatel or equal and approved	
Cat 6a. Outlets	Avaya Gigaspeed MGS400 series	BICC, Alcatel or equal and approved	
Multicore Telephone Cable	Class 1 solid annealed plain copper PETP (Polyethylene Terephthalate LSF (Low Smoke and Fume) PETP (Polyethylene Terephthalate	BrandRex or equal and approved	
General services switch socket 13 amp MK switch socket with outboard rockers flush A urea moulded anti-bacterial outlet, with a soft curved edge and a chamfered top edge that prevents dust collection, whilst offering a slim unobtrusive appearance. Cable connections must be upward facing, with easy to identify white markings on a dark background and grouped in a straight line with captive terminals screws for ease of installation. All sockets to have a 3 pin operated shutter safety mechanism and double pole switching, with the contacts arranged such that the neutral pole makes before and breaks after the live pole to improve safety. All sockets to have a 20 year guarantee minimum			

Builders works

301 Fire Stopping Compounds

PROMASAL fire stopping compound	Suitable for walls or floors up to a maximum aperture of 1200mm with services < 60mm dia Providing up 240 minutes of fire protection	
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302 Floor Protection

Correx Twinwall Polypropylene sheet

Details below

Technical Datasheet

Correx Product Specifications

Correx twinwall polypropylene sheet is produced to your specification in 2 basic forms which cover a wide variety of possible configurations.

The table below shows some standard production specifications together with typical applications.

Weight per square metre	Die '3' (fine flute) Flute spacing 3.2mm	Die '4' (wide flute) Flute spacing 5.0mm	Die '8' Flute spacing 9.0mm	Typical applications
<i>gms</i>	<i>mm thickness</i>	<i>mm thickness</i>		
300	2.1	-		Lightweight, disposable, waterproof trays and layer pads.
350	2.1	-		
400	2.6	-		Small signs and displays, cartons.
450	2.8	-		
500	3	3.5		Portfolios, cases, presentation packs.
550	3	3.5		
600	3	3.5		Outdoor signs, large trays and transit cases.
650	4	4.0		
700	4	4.0		Heavy duty layer pads, containers and signs.
1050	5	5.0		
1250	5	6.0		
1500	5	6.0		
1250			7	Construction - concrete
1500			7.5	formings. Visual display
1650			7.8	boards.
1800			8	
2000			9.5	
Maximum width (S or Z Grade)	2500*	1270*		
			Thickness	Spacing
Maximum width (T Grade)	2460	1230		
Minimum width	160	160		
Minimum length	500	500		
Maximum length	3500**	3500**		

**This dimension is variable according to quality requirements.*

***Longer lengths may be made, subject to minimum quantities.*

Dimensional tolerances are width across flutes $\pm 2\text{mm}$, length along flutes $-0/+20\text{mm}$. Sheets can be squared up to $\pm 2\text{mm}$ by a separate operation.

COLOURS:

Translucent, White, Black, Blue, Silver, Dark Blue, Yellow, Green, Red

Special colours are available for a minimum order of 1000Kgs.

GRADE ABBREVIATIONS USED (Please specify requirements):

T	=	Screenprinting quality (suitable for signs)
S	=	Packaging quality not guaranteed for screen printing
Z	=	100% reprocessed polypropylene used
FR	=	Flame retardant
UV	=	Ultra Violet stabilised to give outdoor life in UK of 3 - 5 years
AS	=	Static reducing additive used

CONVERSION:

Correx may be converted on conventional machinery by diecutting, creasing, slitting, stitching etc. Correx Plastics also have purpose designed welding equipment.

PRINTING:

A corona discharge treatment to the surface of the material renders it suitable for screen and flexographic printing. This treatment (designated 'T') must be specified when an order is placed.

AVAILABILITY:

For further information, e.g. minimum order quantity, or to determine the location of your nearest specialist stockist of Correx sheet, contact the sales office who will advise you on your specific requirements.

CORREX TECHNICAL INFORMATION

INTRODUCTION

The name 'Correx' applies to a range of extruded corrugated plastic sheet based on a propylene ethylene copolymer. The natural polymer is chemically inert and is generally recognised by legislative authorities as being non-toxic and safe to use in contact with foodstuffs. The polymer has been safely used in large quantities for over 25 years in all the normal thermoplastic conversion processes. The Correx sheet itself is more recent; it has been marketed since 1972. This note has been prepared to give information on the potential hazards in handling and processing Correx sheets in all their forms, including sheets containing pigments and UV stabilising additives.

EFFECT OF HEAT/BURNING

Propylene ethylene copolymer is sensitive to oxidation in the presence of heat and/or UV light, and thus all Correx sheets contain anti-oxidants and other stabilisers to improve their heat and light stability. These additives are melt blended with the polymer during granule manufacture and so do not constitute any extra health hazard under normal handling conditions.

(a) Effect of heat

Correx can be handled at normal processing temperatures. Small quantities of fumes are evolved at about 220°C due to a partial volatilisation of some stabilisers and/or of lower molecular weight hydrocarbons. These gradually increase until at about 300°C decomposition and oxidative pyrolysis proceeds at an appreciable rate. The softening temperature for Correx sheet is approximately 144°C and its crystalline melting point is approximately 160 - 175°C. If for any reason Correx sheet should become molten, and any of the molten polymer comes into contact with the skin, medical attention must be sought immediately.

(b) Burning behaviour

Typical thermal properties for propylene ethylene copolymer are as follows:

Softening temperature (BS 2782: 102D, ISO R306)	144°C
Crystalline melting point	160 - 175°C
Flash ignition temperature	ca 350°C
Self-ignition temperature	ca 380°C
Calorific value	11000 cal. kg
Specific heat	0.46 cal gm °C
Limiting oxygen index (ASTM D2863)	0.174 - 0.180
Burn rate - Correx sheet (FMVSS 302)	5.3 - 8.2 cm/min

When Correx is heated in air above 300°C, decomposition and oxidative pyrolysis takes place. The heat of oxidation may produce a rapid rise in temperature which accelerates the pyrolysis. Under these conditions carbon monoxide, formaldehyde and acrolein are evolved. These evolved gases may ignite. Once ignition occurs sufficient heat will be generated to accelerate further the pyrolysis, thereby releasing further quantities of low molecular weight fractions. Burning is accompanied by the release of flaming molten droplets of polymer which could ignite other flammable materials which are nearby.

Carbonisation also occurs and some of the carbon is released as soot. The main combustion product in flaming conditions is generally carbon dioxide. However, in confined spaces rapid deoxygenation of the air can occur, resulting in increased amounts of carbon monoxide.

Appreciable quantities of acrolein and other toxic aldehydes can also evolve over a limited range of temperatures. This pyrolysis is very similar to that of wood and other cellulosic materials though there are differences in detail.

The comments made on the burning behaviour of Correx can only be of a general nature, since the conditions in a fire situation will depend upon many factors, such as location, the presence of other flammable materials and the availability of air, and can never be fully predicted. Should a fire involving Correx occur, however, any commonly available fire extinguisher may be used. It has been found that powder extinguishants are very effective in quenching flames although they do not have the cooling ability needed for a deep seated fire. Water sprays are especially effective in rapidly cooling and damping down a fire, but the use of jets of water in the early stages of a fire is not recommended since they could help to spread the flames.

TOXICITY

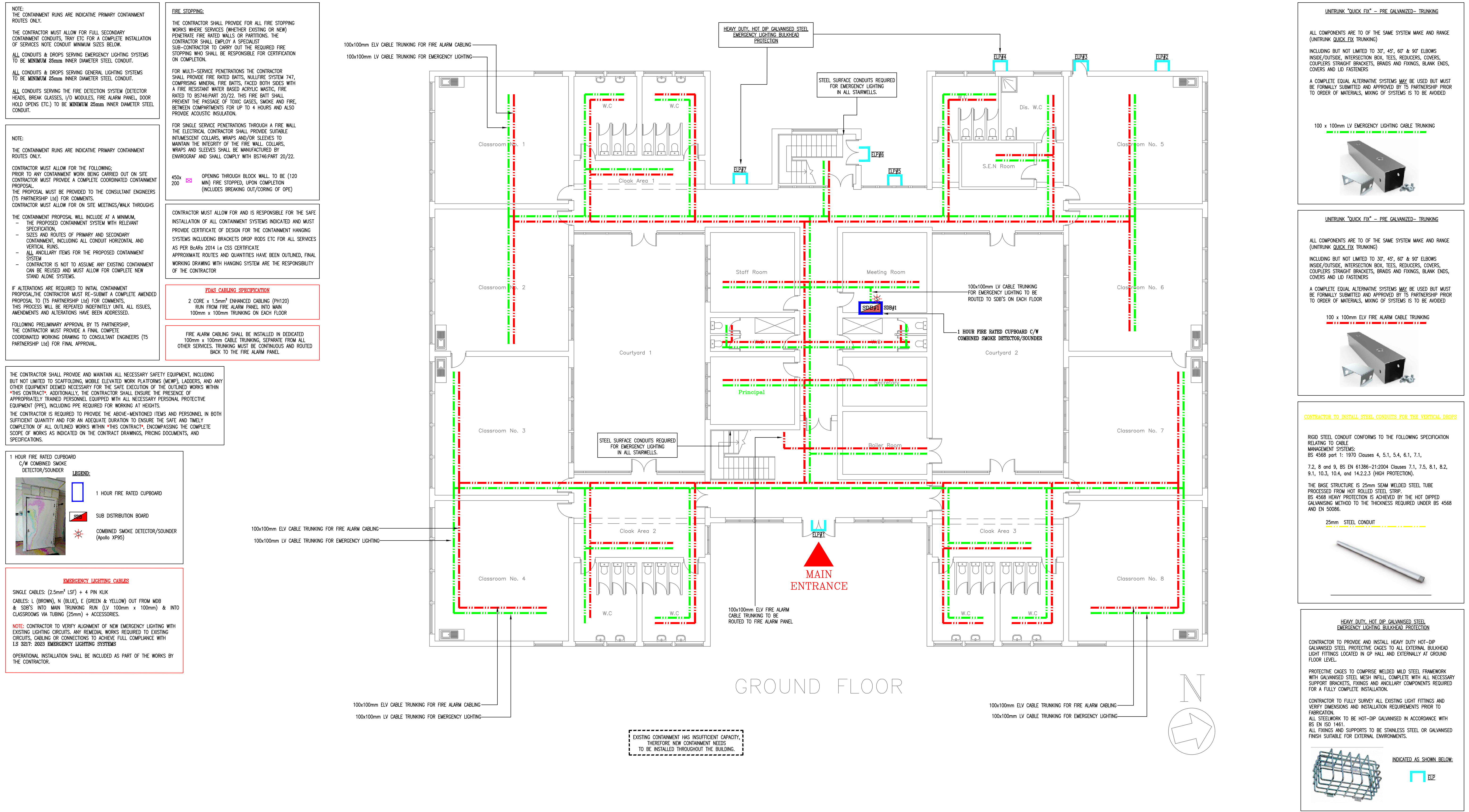
Translucent Correx is chemically inert and is generally recognised as being non-toxic.

UV stabilised Correx can also be handled under normal circumstances without any extra health hazard. However, the UV stabilised polymer does not possess food contact approval.

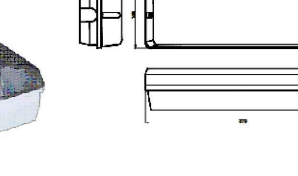
Pigmented (coloured) Correx contains pigments which are fully compounded into the polymer and encapsulated by it, hence they do not constitute any extra health hazard under normal handling conditions. The pigmented polymer is considered suitable for most food contact usage situations. The exceptions to this are recycled Correx, flame retardant grades of Correx and conductive grades of Correx which contain polymer formulations that do not possess food contact approval.

Information in this technical service note and otherwise supplied to users is based on our general experience and is given in good faith, but because of the many particular factors which are outside our knowledge and control, no warranty is given or is to be implied with respect to such information. Freedom under patents, copyright and registered designs cannot be assumed.

4. Electrical Drawings



CONTRACTOR TO ISSUE BCAR CERTIFICATES UPON COMPLETION OF THEIR WORKS AS NOTED BELOW				Client:  An Roinn Oideachais Department of Education		Drawing Status FOR TENDER		 Unit G1, Centrepont Business Park, Oak Road, Dublin 12. web : www.t5.ie ph : 00353 1 4604968 fax : 00353 1 4097957	
ANCILLARY CERTIFICATE OF COMPLIANCE ON COMPLETION CERTIFICATE SIGNED BY SUB-CONTRACTOR / SPECIALIST CONTRACTOR ASSIGNED BY THE BUILDER / MAIN CONTRACTOR ON COMPLETION				Architect: N/A		Project: ST. JOHN OF GOD NATIONAL SCHOOL, KILMORE ROAD, ARTANE, D05E265 [RN: 19920A]		T5 Partnership Ltd Consulting Engineers	
ANCILLARY CERTIFICATE OF COMPLIANCE ON COMPLETION CERTIFICATE FOR SUB-SUB CONTRACTOR TO SUB-CONTRACTOR / SPECIALIST SUB-CONTRACTOR c/ BUILDER / MAIN CONTRACTOR						Drawing Title: PROPOSED CONTAINMENT LAYOUT [GROUND FLOOR]		Drawn By: BL Checked By: SK Project Ref: 2345 Drawing Scale: 1:100 @ A1	
								Drawn Date: 24-JUL-26 Checked Date: 24-JUL-26 Drawing Ref: 62(00) Drawing Rev: -	
								This is a performance drawing and issued for pricing guidance. The Contractor shall produce all working drawings, including coordination drawings with other trades and the Builder. This drawing shall be read in conjunction with the specification, schedules that are associated with this project. This drawing and/or contents, information and principles of design is confidential and the sole and exclusive property of T5 Partnership Ltd. Neither the drawing nor, its contents, information or principles of design are to be disclosed, reproduced, copied or relied, in whole or part to any other person or firm except with written consent of T5 Partnership Ltd.	
Rev		Date		Description		By		Chk	

	EnCen BH265-- 2x1Watt LED Basic IP65 Self-Contained
	Non-Maintained Emergency Surface Mounted Bulkhead
	
LUMINAIRE	
• DURABLE WHITE POLYCARBONATE HOUSING. • SURFACE MOUNTED. • HIGH OUTPUT LED MODULE. • IP65 SEALED. • FULL DALI / SELF-TEST / NON-DALI OPTIONS AVAILABLE. • FULLY COMPLIANT TO I.S./EN. 60598-1, I.S./EN. 60598-2-22, THE LVD, THE EMC, THE EIP, THE ROHS, THE WEEE AND THE BATTERY EUROPEAN DIRECTIVES.	
SPECIFICATIONS	
MODE OF OPERATION:	NON-MAINTAINED (ADD/MT FOR MAINTAINED)
SUPPLY VOLTAGE:	230V AC 50/60Hz
LIGHT SOURCE:	TRIDONIC 2W HIGH OUTPUT
6500K LED	
BATTERY:	TRIDONIC 9.6Wh 4.5Ah LiFePO4
EMERGENCY INVERTER:	TRIDONIC ePowerLED 2W BASIC
RE-CHARGE PERIOD:	24 HOUR FROM FULL DISCHARGE
EMERGENCY DURATION:	3 HOURS
STATUS INDICATOR:	GREEN LED
TEST FACILITY:	MANUAL TESTING VIA CENTRAL TEST UNIT, RESULTS DOCUMENTED MANUALLY
TYPICAL LUMINOUS FLUX:	260 lm
INGRESS PROTECTION:	IP65
FINISH:	WHITE POLYCARBONATE

● **EmCon DL2SUR – ZWatt LED Basic IP20 Self-Contained Non-Maintained Emergency Surface Mounted Downlighter**



LUMINAIRE ● **●**

- SUPER COMPACT DESIGN.
- RAL 9001 (WHITE) OR 9005 (BLACK) AS STANDARD
- CAN BE POWDER COATED ANY COLOUR IN THE RAL SPECTRUM.
- BECA COMPATIBLE SURFACE MOUNTING WITH OPTIONAL HIGH BACKBOX FOR SIDE CABLE ENTRY AND THROUGH WIRING.
- ANTI-PANIC (AP), ESCAPE ROUTE (ER) AND SPOT (SP) VARIANTS.
- EASY INSTALLATION.
- HIGH OUTPUT LED MODULE.
- FULL DALI / SELF-TEST / NON-DALI OPTIONS AVAILABLE.
- FULLY COMPLIANT TO I.S./EN. 60598-1, I.S./EN. 60598-2-22, THE LVD, THE EMC, THE ENEC, THE ROHS, THE WEEE AND THE BATTERY EUROPEAN DIRECTIVES.

SPECIFICATIONS

MODE OF OPERATION:	Non-Maintained
SUPPLY VOLTAGE:	230V AC 50/60Hz
LIGHT SOURCE:	ZW High Output 6500K LED CRI>80
BATTERY:	TRIDRONC 8.4V 3Ah LiFePO4
RE-CHARGE PERIOD:	12 HOUR FROM FULL DISCHARGE
EMERGENCY DURATION:	3 HOURS
STATUS INDICATOR:	GREEN LED
TEST FACILITY:	MANUAL TESTING VIA CENTRAL TEST UNIT, RESULTS DOCUMENTED MANUALLY
TYPICAL LUMINOUS FLUX:	200 lm
INGRESS PROTECTION:	IP20
Impact Protection	IK07
FINISH:	RAL 9016 or RAL 9005(as standard)

EmCon BHD1865S – 18W LED, IP65 Self-Contained, Switch-Maintained, Emergency Circular/Ceiling Mounted Bulhead

• E8



LUMINAIRE • E8

- POLYCARBONATE OPAL DIFFUSER
- SURFACE MOUNTED INSTALLATION.
- LIFEPO4 TECHNOLOGY
- IP65 SEALED.
- K10 DIE-CAST ALUMINIUM HOUSING.
- FULLY COMPLIANT TO I.S./EN: 60598-1, I.S./EN: 60598-2-22, THE LVD, THE EMC, THE ENEC, THE RoHS, THE WEEE AND THE BATTERY EUROPEAN DIRECTIVES.

SPECIFICATIONS

MODE OF OPERATION:	SWITCH-MAINTAINED
SUPPLY VOLTAGE:	230V AC 50/60Hz
LIGHT SOURCE:	TRIDRONIC 18W HIGH OUTPUT 4000K LED
BATTERY:	TRIDRONIC 3.2V 4.5Ah LiFePO4
TRIDRONIC EMPOWERED	32W 50V
RE-CHARGE PERIOD:	24 HOUR FROM FULL DISCHARGE
EMERGENCY DURATION:	3 HOURS
TEST FACILITY:	MANUAL TESTING VIA CENTRAL TEST UNIT, (SELF-TEST & DALI ALSO AVAILABLE)
TYPICAL LUMINOUS FLUX:	260 lm
INGRESS PROTECTION:	IP65
FINISH:	9005 AS STANDARD (OTHER COLOURS AVAILABLE ON REQUEST)

EMERGENCY LIGHTING CABLES

SINGLE CABLES: (2.5mm² LSF) + 4 PIN KLIK

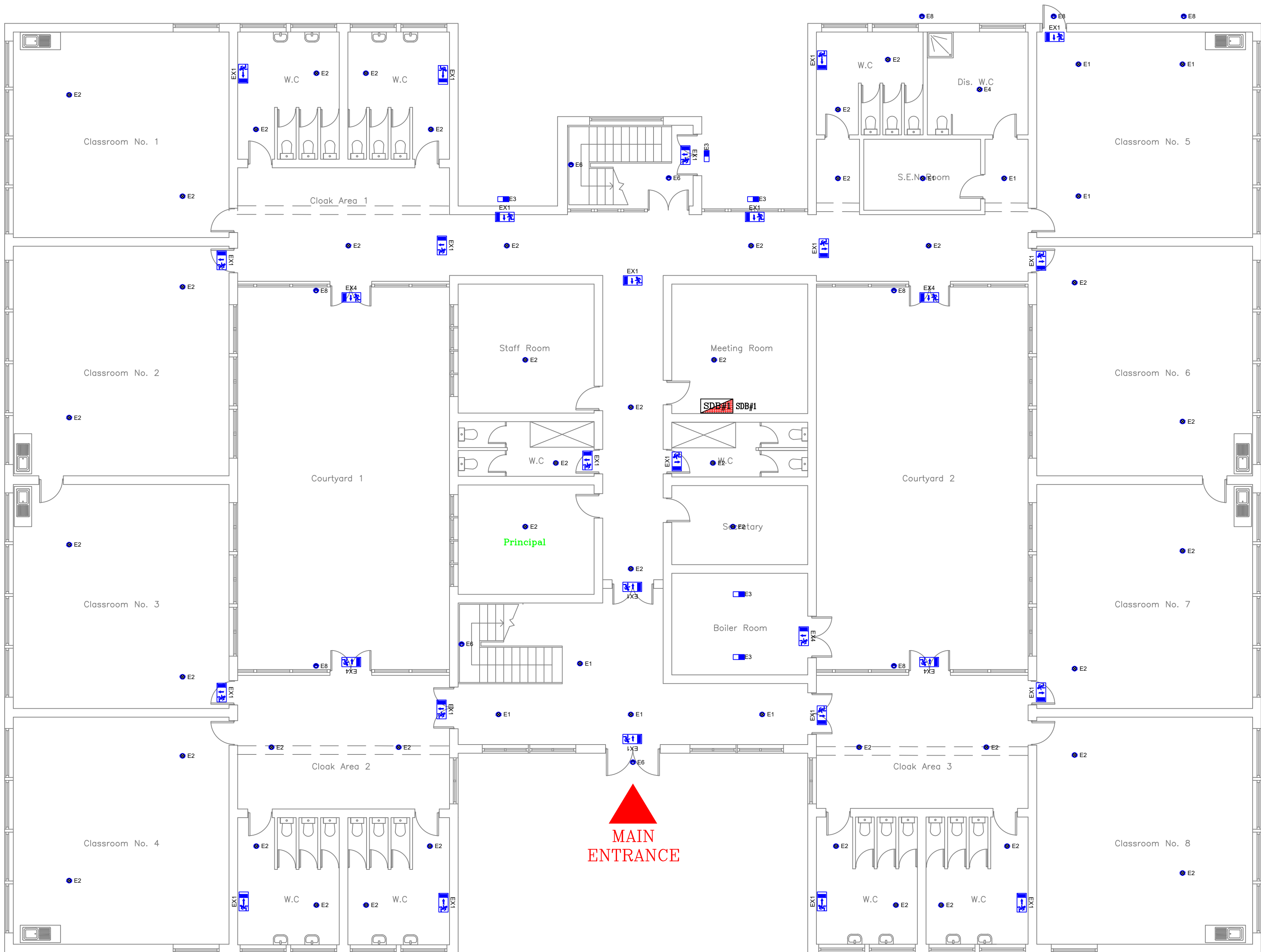
CABLES: L (BROWN), N (BLUE), E (GREEN & YELLOW) OUT FROM MDB & SOB'S INTO MAIN TRUNKING RUN (LV 100mm x 100mm) & INTO CLASSROOMS VIA TUBING (25mm) + ACCESSORIES.

NOTE: CONTRACTOR TO VERIFY ALIGNMENT OF NEW EMERGENCY LIGHTING WITH EXISTING LIGHTING CIRCUITS. ANY REMEDIAL WORKS REQUIRED TO EXISTING CIRCUITS, CABLEING OR CONNECTIONS TO ACHIEVE FULL COMPLIANCE WITH I.S 3217: 2023 EMERGENCY LIGHTING SYSTEMS

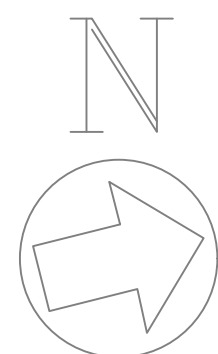
OPERATIONAL INSTALLATION SHALL BE INCLUDED AS PART OF THE WORKS BY THE CONTRACTOR.

THIS IS NOT A WORKING DRAWING.
CONTRACTORS MUST PRODUCE
CO-ORDINATED WORKING DRAWINGS
PRIOR TO ANY WORKS PROCEEDING

ALL WORKS TO COMPLY WITH-
LS 3217 : 2023
EMERGENCY LIGHTING SYSTEMS



GROUND FLOOR



						Client:  An Roinn Oideachais Department of Education Architect: N/A	Drawing Status FOR TENDER Project. ST. JOHN OF GOD NATIONAL SCHOOL, KILMORE ROAD, ARTANE, D05E265 [RN: 19920A] Drawing Title. PROPOSED NEW EMERGENCY LIGHTING LAYOUT [GROUND FLOOR]	 Unit G1, Centrepont Business Park, Oak Road, Dublin 12. web : www.t5.ie ph : 00353 1 4604968 fax : 00353 1 4097957 T5 Partnership Ltd Consulting Engineers Drawn By. BL Drawn Date. 24-JUL-26 Checked By. SK Checked Date. 24-JUL-26 Project Ref. 2345 Drawing Ref. 63(00) Drawing Scale 1:100 @ A1 Drawing Rev. —	Rev Date Description By Chk
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LUMINAIRE

- VIEWING DISTANCE – 31 METERS
(AS PER I.S.1327:2013+A1:2017)
- WHITE POWDER COATED STEEL HOUSING.
- HOUSING AVAILABLE IN A WIDE VARIETY OF FINISHES
INCLUDING CUSTOM RAL POWDER COATING.
- SUITABLE FOR WALL OR CEILING MOUNTING.
- EASY INSTALLATION.
- HIGH OUTPUT LED MODULE.
- FULL DALI / SELF-TEST / NON-DALI OPTIONS
AVAILABLE.
- FULLY COMPLIANT TO I.S./E.N. 60598-1, I.S./E.N.
60598-2-22, THE LVD, THE EMC, THE ErP, THE
RoHS, THE WEEE AND THE BATTERY EUROPEAN
DIRECTIVES.

SPECIFICATIONS

MODE OF OPERATION:	MAINTAINED
SUPPLY VOLTAGE:	230V AC 50/60Hz
LIGHT SOURCE:	TRIDONIC 1W High Output 6500K LED Strip 6500K LED
BATTERY:	TRIDONIC 6.4V 3Ah LifePo4
EMERGENCY INVERTER:	TRIDONIC EPowerLED 1W BASIC
RE-CHARGE PERIOD:	24 HOUR FROM FULL DISCHARGE
EMERGENCY DURATION:	3 HOURS
STATUS INDICATOR:	GREEN LED
TEST FACILITY:	Manual testing via central test unit, results documented manually
VIEWING DISTANCE:	31 meters
INGRESS PROTECTION:	IP20
FINISH:	WHITE

PRODUCT WARRANTY CLARIFICATION FOR EMERGENCY LIGHT FITTINGS

1. WARRANTY TO INCLUDE THE CONSUMABLE COMPONENTS OF THE EMERGENCY LIGHT SYSTEM, EQUIPMENT AND DEVICES (WITHIN LIMITS) WHICH ARE INTEGRAL TO THE SELF-CONTAINED EMERGENCY LIGHTING LUMINAIRES, SUCH AS THEIR INTERNAL RECHARGEABLE, SECONDARY CELL TYPE EMERGENCY POWER SOURCE BATTERIES AND THEIR INTERNAL LED LIGHT SOURCES.
2. WARRANTY IS FROM THE DATE OF FINAL COMMISSION, CERTIFICATION AND PRACTICAL COMPLETION OF THE EMERGENCY LIGHTING INSTALLATION PROJECT TO I.E. 3217/2023 OR 6 MONTHS FROM DATE OF PURCHASE, WHICHEVER IS THE SOONEST.
- NOT FROM THE DATE OF PURCHASE
3. EXTENDED WARRANTY IS TO COVER A PERIOD OF **6 YEARS** MINIMUM INCLUDING CONSUMABLES (WITHIN LIMITS)
4. MINIMUM SPECIFICATION:
 - TRIDONIC LED LIGHT SOURCE
 - LITHIUM IRON PHOSPHATE (LiFePO4) BATTERY CHEMISTRY

NOTE 1: ADDITIONAL EMERGENCY LUMINAIRES WILL BE REQUIRED IF DISABLED ASSISTANCE EQUIPMENT IS FITTED TO ANY TOILET FACILITIES.

NOTE 2: ALL EXISTING EM FITTINGS
TO BE REMOVED AND REPLACED
WITH NEW

ELECTRICAL CONTRACTOR TO PROVIDE CERTIFICATE OF PHASE FAILURE (SUB-CIRCUIT) MONITORING IS PRESENT ON ALL LIGHTING CIRCUITS ON ESCAPE ROUTES SO THAT IN THE EVENT OF FAILURE OF SUPPLY TO THE NORMAL LIGHTING, OR PART THEREOF, THE EMERGENCY LIGHTING ASSOCIATED WITH THAT AREA SHALL OPERATE

EMERGENCY LIGHTING CABLES

SINGLE CABLES: (2.5mm² LSF) + 4 PIN KLIK
CABLES: L (BROWN), N (BLUE), E (GREEN & YELLOW) OUT FROM MDB
& SDB'S INTO MAIN TRUNKING RUN (LV 100mm x 100mm) & INTO
CLASSROOMS VIA TUBING (25mm) + ACCESSORIES.

NOTE: CONTRACTOR TO VERIFY ALIGNMENT OF NEW EMERGENCY LIGHTING WITH EXISTING LIGHTING CIRCUITS. ANY REMEDIAL WORKS REQUIRED TO EXISTING CIRCUITS, CABLING OR CONNECTIONS TO ACHIEVE FULL COMPLIANCE WITH LS 3217: 2023 EMERGENCY LIGHTING SYSTEMS

OPERATIONAL INSTALLATION SHALL BE INCLUDED AS PART OF THE WORKS BY THE CONTRACTOR.

THIS IS NOT A WORKING DRAWING.

CONTRACTORS MUST PRODUCE
CO-ORDINATED WORKING DRAWINGS
PRIOR TO ANY WORKS PROCEEDING

ALL WORKS TO COMPLY WITH—
I.S 3217 : 2023
EMERGENCY LIGHTING SYSTEM

E2 EmCon DL2SUR- 2Watt LED Basic IP20 Self-Contained Non-Maintained Emergency Surface Mounted Downlighter



LUMINAIRE ● E2

- SUPER COMPACT DESIGN.
- RAL 9016 (WHITE) OR 9005 (BLACK) AS STANDARD
- CAN BE POWDER COATED ANY COLOUR IN THE RAL SPECTRUM.
- BESSA COMPATIBLE SURFACE MOUNTING WITH OPTIONAL "HIGH BACKBOX FOR SIDE CABLE ENTRY AND THROUGH WIRING.
- ANTI-PANIC (AP), ESCAPE ROUTE (ER) AND SPOT (SP) VARIANTS.
- EASY INSTALLATION.
- HIGH OUTPUT LED MODULE.
- FULL DALI / SELF-TEST / NON-DALI OPTIONS AVAILABLE.
- FULLY COMPLIANT TO I.S./E.N. 60598-1, I.S./E.N. 60598-2-22, THE LVD, THE EMC, THE ErP, THE RoHS, THE WEEE AND THE BATTERY EUROPEAN DIRECTIVES.

SPECIFICATION

MODE OF OPERATION:	Non-Maintained
SUPPLY VOLTAGE:	230V AC 50/60Hz
LIGHT SOURCE:	2W High Output 6500K LED CRI>80
BATTERY:	TRIDONIC 6.4V 3Ah LiFePO4
RE-CHARGE PERIOD:	12 HOUR FROM FULL DISCHARGE
EMERGENCY DURATION:	3 HOURS
STATUS INDICATOR:	GREEN LED
TEST FACILITY:	MANUAL TESTING VIA CENTRAL TEST UNIT, RESULTS DOCUMENTED MANUALLY
TYPICAL LUMINOUS FLUX:	200 lm
INGRESS PROTECTION:	IP20
Impact Protection	IK07
FINISH:	RAL 9016 or RAL 9005(as standard)

• E6 EmCon BH1865S - 18W LED, IP65 Self-Contained, Switch-Maintained, Emergency Circular Surface Mounted Bulkhead

LUMINAIRE E

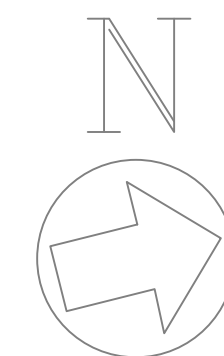
- DURABLE WHITE POLYCARBONATE HOUSING.
- SURFACE MOUNTED.
- HIGH OUTPUT LED MODULE.
- IP65 SEALED.
- SWITCH MAINTAINED
- FULLY COMPLIANT TO I.S./E.N. 60598-1, I.S./E.N. 60598-2-22, THE LVD, THE EMC, THE ErP, THE ROHS, THE WEEE AND THE BATTERY EUROPEAN DIRECTIVES.

SPECIFICATIONS

MODE OF OPERATION:	SWITCH-MAINTAINED
SUPPLY VOLTAGE:	220V AC 50/60Hz
LIGHT SOURCE:	TRIDONC 18W HIGH OUTPUT 4000K LED
BATTERY:	TRIDONC 3.2V 4.5Ah LifePO4
EMERGENCY INVERTER:	TRIDONC DmPowerLED 32W 50V
RE-CHARGE PERIOD:	24 HOUR FROM FULL DISCHARGE
EMERGENCY DURATION:	3 HOURS
TEST FACILITY:	MANUAL TESTING VIA CENTRAL TES UNIT, (SELF-TEST & DALI ALSO AVAILABLE)
TYPICAL LUMINOUS FLUX:	260 lm
INGRESS PROTECTION:	IP65
FINISH:	WHITE POLYCARBONATE



FIRST FLOOR



					Client: _____  An Roinn Oideachais Department of Education	Unit G1, Centrepont Business Park, Oak Road, Dublin 12. web : www.t5.ie ph : 00353 1 4604968 fax : 00353 1 4087957 T5 Partnership Ltd <i>Consulting Engineers</i>
					Project: ST. JOHN OF GOD NATIONAL SCHOOL, KILMORE ROAD, ARTANE, D05E265 [RN: 19920A]	Unit G1, Centrepont Business Park, Oak Road, Dublin 12. web : www.t5.ie ph : 00353 1 4604968 fax : 00353 1 4087957 T5 Partnership Ltd <i>Consulting Engineers</i>
					Architect: N/A	Drawing Title: PROPOSED NEW EMERGENCY LIGHTING LAYOUT [FIRST FLOOR]
					Rev Date Description By Chk	Drawing By: BL Checked By: SK Project Ref: 2345 Drawing Scale: 1:100 @ A1 Drawing Date: 24-JUL-26 Checked Date: 24-JUL-26 Drawing Ref: 63(01) Drawing Rev: —
This is a performance drawing and issued for pricing, guidance. You the Contractor shall produce all working drawings, including coordination drawings with other Trades and the Builder. This drawing shall be read in conjunction with the specification, schedule list and associated with this project. This drawing and/or contents, information and principles of design is confidential and the sole and exclusive property of T5 Partnership Ltd. Neither the drawing nor its contents, information or principles of design are to be discussed, reproduced, copied or relayed, in whole or part to any other person or firm except with written consent of T5 Partnership Ltd.						

LEGEND



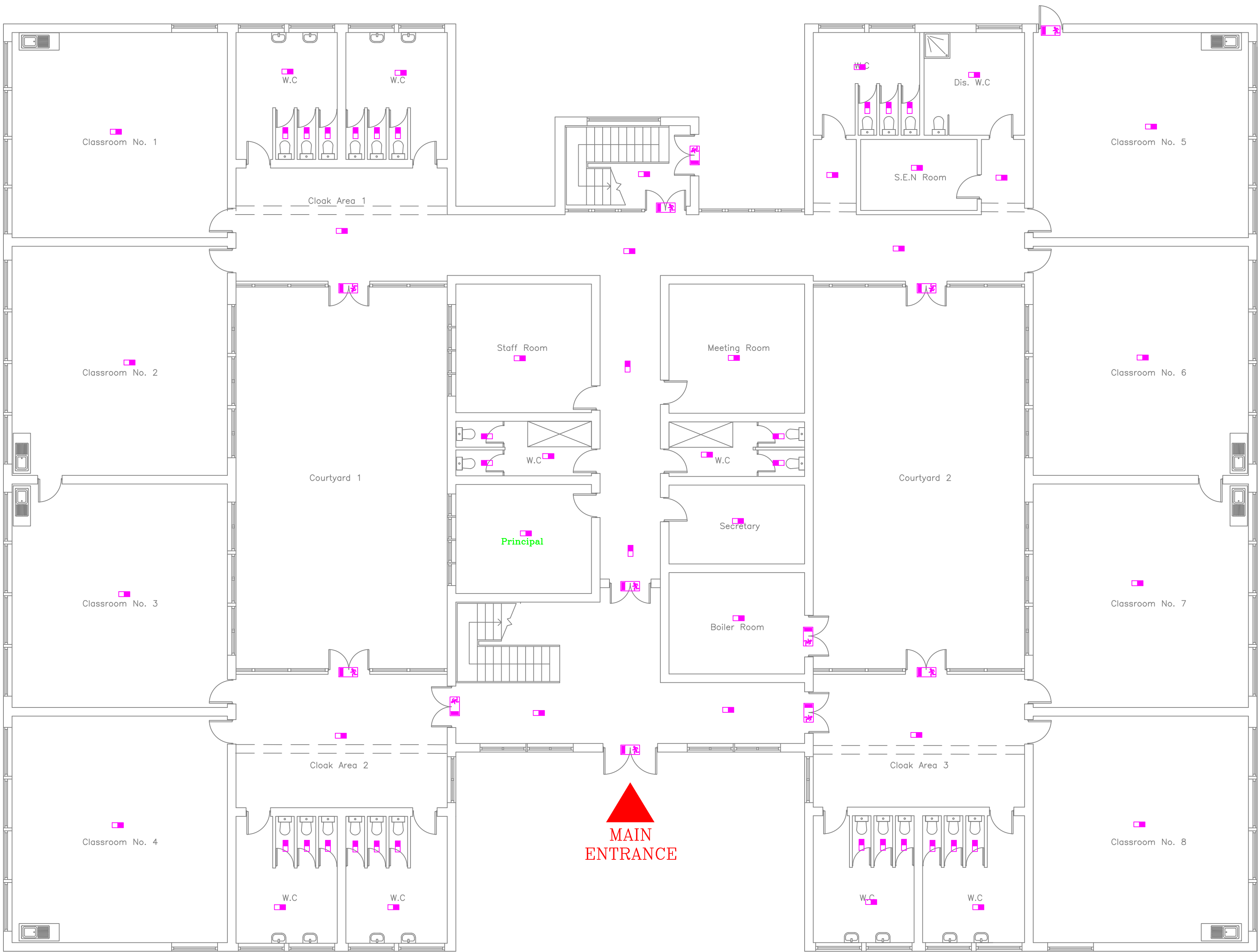
EXISTING EXIT SIGN TO BE REMOVED



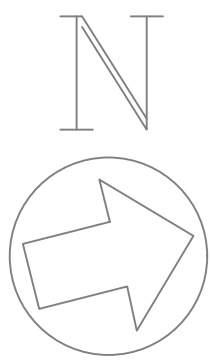


EXISTING BULKHEAD TO BE REMOVED





GROUND FLOOR



			Client: An Roinn Oideachais Department of Education		Drawing Status FOR TENDER	 Unit G1, Centrepoint Business Park, Oak Road, Dublin 12. web : www.t5.ie ph : 00353 1 4604968 fax : 00353 1 4097957 T5 Partnership Ltd Consulting Engineers
			Architect: N/A		Project. ST. JOHN OF GOD NATIONAL SCHOOL, KILMORE ROAD, ARTANE, D05E265 [RN: 19920A]	
					Drawing Title. EXISTING EMERGENCY LIGHTING – TO BE REMOVED [GROUND FLOOR]	
					Drawn By. BL Checked By. SK Project Ref. 2345 Drawing Scale 1:100 @ A1	Drawn Date. 24-JUL-26 Checked Date. 24-JUL-26 Drawing Ref. 63(02) Drawing Rev. –
					This is a performance drawing and issued for pricing guidance. You the Contractor shall produce all working drawings, including coordination drawings with other trades and the Builder. This drawing shall be read in conjunction with the specification, schedules that are associated with this project. This drawing and/or contents, information and principles of design is confidential and the sole and exclusive property of T5 Partnership Ltd. Neither the drawing nor, its contents, information or principles of design are to be disclosed, reproduced, copied or relayed, in whole or part to any other person or firm except with written consent of T5 Partnership Ltd.	
Rev	Date	Description	By	Chk		

LEGEND



EXISTING EXIT SIGN TO BE REMOVED



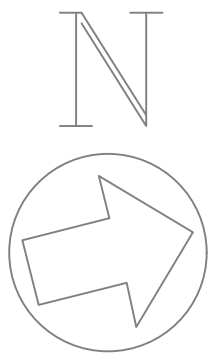


EXISTING BULKHEAD TO BE REMOVED





FIRST FLOOR



			Client: _____  An Roinn Oideachais Department of Education		Drawing Status FOR TENDER	 Unit G1, Centrepoint Business Park, Oak Road, Dublin 12. web : www.t5.ie ph : 00353 1 4604968 fax : 00353 1 4097957 T5 Partnership Ltd Consulting Engineers															
			Architect: N/A		Project. ST. JOHN OF GOD NATIONAL SCHOOL, KILMORE ROAD, ARTANE, D05E265 [RN: 19920A]																
					Drawing Title. EXISTING EMERGENCY LIGHTING – TO BE REMOVED [FIRST FLOOR]																
					<table><tr><td>Drawn By.</td><td>BL</td><td>Drawn Date.</td><td>24-JUL-26</td></tr><tr><td>Checked By.</td><td>SK</td><td>Checked Date.</td><td>24-JUL-26</td></tr><tr><td>Project Ref.</td><td>2345</td><td>Drawing Ref.</td><td>63(03)</td></tr><tr><td>Drawing Scale</td><td>1:100 @ A1</td><td>Drawing Rev.</td><td>---</td></tr></table>		Drawn By.	BL	Drawn Date.	24-JUL-26	Checked By.	SK	Checked Date.	24-JUL-26	Project Ref.	2345	Drawing Ref.	63(03)	Drawing Scale	1:100 @ A1	Drawing Rev.
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Drawing Scale	1:100 @ A1	Drawing Rev.	---																		
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Rev	Date	Description	By	Chk																	

SOUNDER/STROBE (RED) IN PUBLIC AREAS ADDRESSABLE TYPE TO BE USED. (Apollo 55000-005AP0)

CONVENTIONAL TYPE TO BE USED EXTERNALLY & IN SWITCH ROOM.

PROPOSED MANUAL CALL POINT (BREAK GLASS UNIT) TO BE INSTALLED - WITH REMOVABLE PLASTIC COVER TO PREVENT ACCIDENTAL ACTIVATION (Apollo XP95)

FIRE ALARM PANEL 4-LOOP ADDRESSABLE OPEN PROTOCOL (Advanced MxPro 5)

ADDRESSABLE TYPE COMBINED SMOKE DETECTOR & SOUNDER

SMOKE DETECTOR MOUNTED ROOM (Apollo XP95)

ADDRESSABLE TYPE COMBINED HEAT DETECTOR & SOUNDER

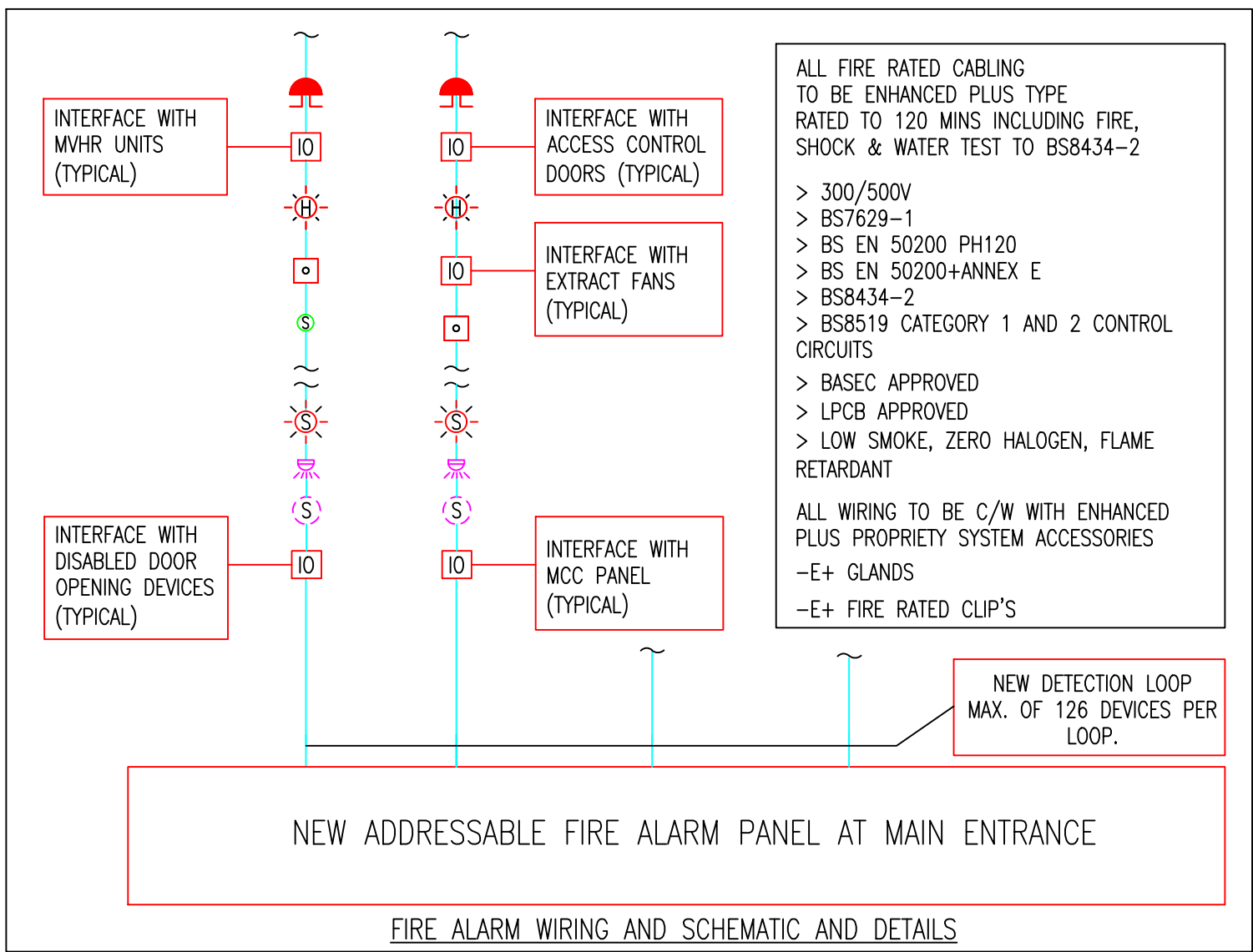
HEAT DETECTOR MOUNTED ROOM (Apollo XP95)

INTELLIGENT FIRE ALARM INPUT/OUTPUT MODULE (Apollo SA4700-102AP0)

REMOTE DETECTOR LED INDICATOR (C-Tec BF318)

DOOR HOLD OPEN DEVICE - MUST BE MIN IP50 RATED (Cranford Controls - DRW-L-302-019)

DETECTOR IN CEILING VOID C/W LED INDICATOR IN CEILING BELOW (Apollo XP95/BF318)



FIRE ALARM CABLE SPECIFICATION

'PRYSMIAN FP PLUS CABLE' (120MINS)

Enhanced Fire Resistant Wiring Cable

> 300/500V

> BS7629-1

> BS EN 50200 PH120

> BS EN 50200+Annex E

> BS8434-2

> BS8519 category 1 and 2 control circuits

> BASEC Approved

> LPCB Approved

> Low smoke, zero halogen, flame retardant

COMPLETE WITH FP PROPRIETY SYSTEM ACCESSORIES

-FP GLANDS

-FP FIREFIX SINGLE CLIP

-FP FIREFIX DOUBLE CLIP

EXISTING FIRE ALARM SYSTEM

EXISTING FIRE ALARM SYSTEM TO BE UTILISED AS A TEMPORARY COVERAGE DURING THE NEW INSTALL WORKS.

AFTER NEW INSTALL WORKS ARE COMPLETE EXISTING FIRE ALARM SYSTEM EQUIPMENT AND WIRING TO BE REMOVED AND DISPOSED OF.

THIS IS NOT A WORKING DRAWING.
CONTRACTORS MUST PRODUCE CO-ORDINATED WORKING DRAWINGS PRIOR TO ANY WORKS PROCEEDING

- NOTE:
- ALL CONDUITS & DROPS SERVING EMERGENCY LIGHTING SYSTEMS TO BE MINIMUM 25mm INNER DIAMETER STEEL CONDUIT.
 - ALL CONDUITS & DROPS SERVING GENERAL LIGHTING SYSTEMS TO BE MINIMUM 25mm INNER DIAMETER STEEL CONDUIT.
 - ALL CONDUITS SERVING THE FIRE DETECTION SYSTEM (DETECTOR HEADS, BREAK GLASSES, I/O MODULES, FIRE ALARM PANEL, DOOR HOLD OPENS ETC.) TO BE MINIMUM 25mm INNER DIAMETER STEEL CONDUIT.

- GENERAL NOTES:
- THIS IS NOT A WORKING DRAWING - CONTRACTORS ARE REQUIRED TO PRODUCE COORDINATED DRAWINGS
 - ALL SERVICES TO BE COORDINATED WITH ALL OTHER SERVICES AND OBSTACLES ON SITE
 - WHERE DEVICES ARE LOCATED EXTERNALLY THEY ARE TO BE IP65 RATED AND VANDAL RESISTANT TO IK10
 - ALL ITEMS LOCATED EXTERNALLY ARE TO BE IP65 RATED AND VANDAL RESISTANT
 - DISABLED REFUGES ARE TO COMPLY WITH THE REQUIREMENTS OF BS9999 ANNEX G
- FIRE ALARM NOTES:
- 1 I/O DEVICES ARE TO BE SUPPLIED AS NEEDED TO CONTROL DEVICES, AOVs AND SHUT DOWN PLANT.

LEGEND:

FAP

FIRE ALARM PANEL 4-LOOP ADDRESSABLE OPEN PROTOCOL (Advanced MxPro 5)

OPTICAL SMOKE SENSOR/SOUNDER (Apollo XP95)

DETECTOR IN CEILING VOID C/W LED INDICATOR IN CEILING BELOW (Apollo XP95/BF318)

DUAL OPTICAL HEAT SENSOR/SOUNDER (Apollo XP95)

SOUNDER/BEACON (Apollo 55000-005AP0)

MANUAL CALL POINT (BREAK GLASS UNIT) (Apollo XP95)

FIRE ALARM INPUT/OUTPUT UNIT (Apollo SA4700-102AP0)

OPTICAL SMOKE SENSOR (Apollo XP95)

REMOTE DETECTOR LED INDICATOR (C-Tec BF318)

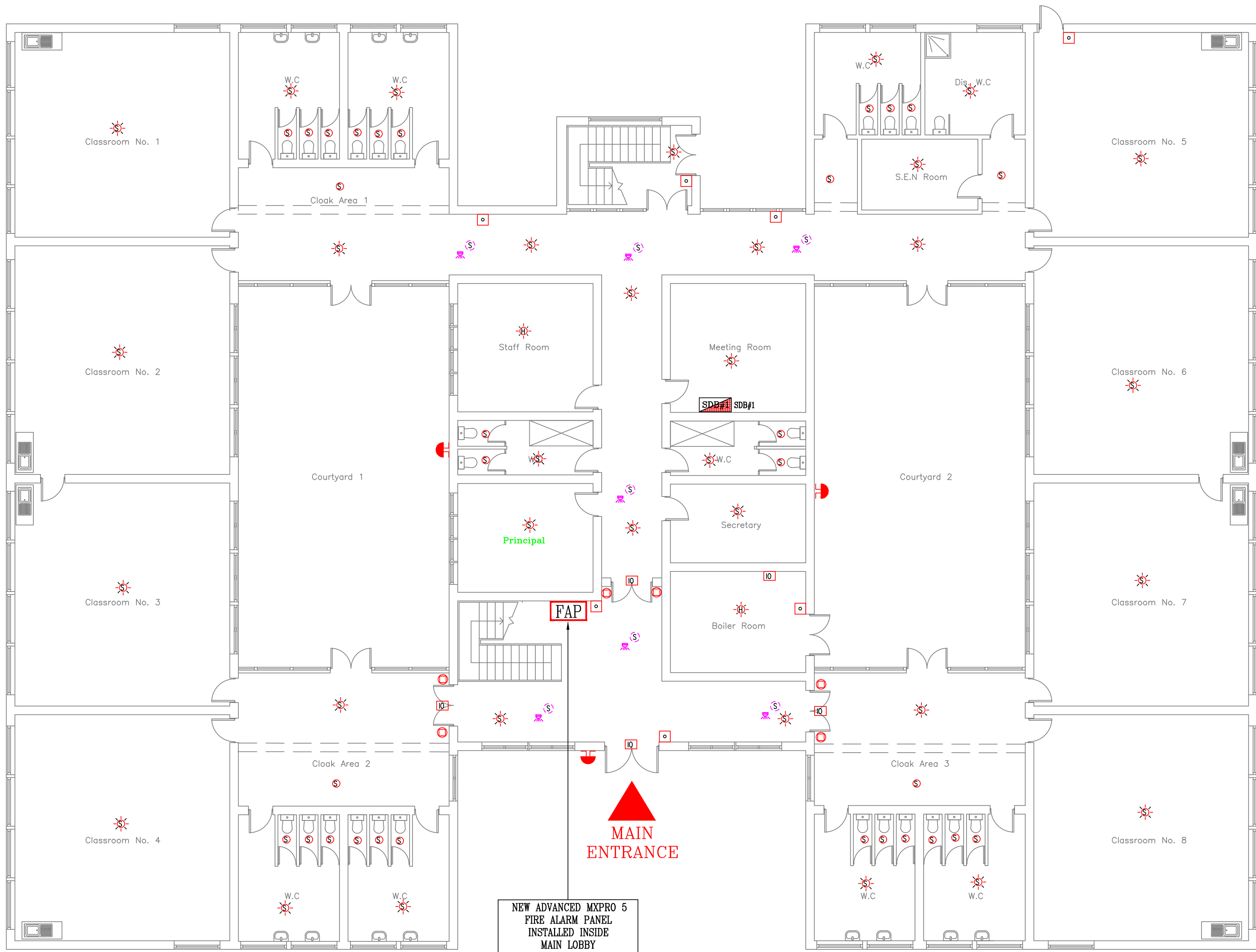
DOOR HOLD OPEN DEVICE (Cranford Controls - DRW-L-302-019)

ANALOGUE FULLY ADDRESSABLE FIRE ALARM SYSTEM-OPEN PROTOCOL

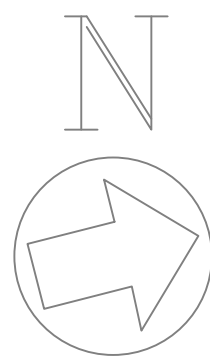
CATEGORY 12/13 SYSTEM

FIRE DETECTION & ALARM SYSTEM

REMOTE INDICATORS REQUIRED FOR ALL CEILING VOID SPACE DETECTORS



GROUND FLOOR



Rev

Date

Description

By

Chk

Client:

Architect:

N/A

Drawing Status

FOR TENDER

Project.

ST. JOHN OF GOD NATIONAL SCHOOL, KILMORE ROAD, ARTANE, D05E265 [RN: 19920A]

Drawing Title.

PROPOSED NEW FIRE DETECTION SYSTEM LAYOUT [GROUND FLOOR]

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Unit G1, Centrepont Business Park, Oak Road, Dublin 12.
web : www.t5.ie
ph : 00353 1 4604968
fax : 00353 1 4097957

T5 Partnership Ltd
Consulting Engineers

Drawn By: BL

Drawn Date: 24-JUL-26

Checked By: SK

Checked Date: 24-JUL-26

Project Ref: 2345

Drawing Ref: 68(00)

Drawing Scale: 1:100 @ A1

Drawing Rev: -

PROPOSED MANUAL CALL POINT (BREAK GLASS UNIT) TO BE INSTALLED – WITH REMOVABLE PLASTIC COVER TO PREVENT ACCIDENTAL ACTIVATION (Apollo XP95)

ADDRESSABLE TYPE COMBINED SMOKE DETECTOR & SOUNDER
 SMOKE DETECTOR MOUNTED ROOM (Apollo XP95)

ADDRESSABLE TYPE COMBINED HEAT DETECTOR & SOUNDER
 HEAT DETECTOR MOUNTED ROOM (Apollo XP95)

INTELLIGENT FIRE ALARM INPUT/OUTPUT MODULE
 (Apollo SA4700–102AP0)

REMOTE DETECTOR LED INDICATOR
 (C-Tec BF318)

DOOR HOLD OPEN DEVICE – MUST BE MIN IP50 RATED
 (Cranford Controls – DRW–L–302–019)

CO DETECTOR/SOUNDER IN ATTIC SPACE
 (AICO 3000 Series)

FIRE ALARM CABLE SPECIFICATION

‘PRYSMIAN FP PLUS CABLE’ (120MINS)

Enhanced Fire Resistant Wiring Cable
> 300/500V
> BS7629–1
> BS EN 50200 PH120
> BS EN 50200+Annex E
> BS8434–2
> BS8519 category 1 and 2 control circuits
> BASEC Approved
> LPCB Approved
> Low smoke, zero halogen, flame retardant
COMPLETE WITH FP PROPRIETY SYSTEM ACCESSORIES
–FP GLANDS
–FP FIREFIX SINGLE CLIP
–FP FIREFIX DOUBLE CLIP

ANALOGUE FULLY ADDRESSABLE FIRE ALARM SYSTEM–OPEN PROTOCOL

CATEGORY L2/L3 SYSTEM

FIRE DETECTION & ALARM SYSTEM
REMOTE INDICATORS REQUIRED FOR ALL CEILING VOID SPACE DETECTORS

EXISTING FIRE ALARM SYSTEM

EXISTING FIRE ALARM SYSTEM TO BE UTILISED AS A TEMPORARY COVERAGE DURING THE NEW INSTALL WORKS.

AFTER NEW INSTALL WORKS ARE COMPLETE EXISTING FIRE ALARM SYSTEM EQUIPMENT AND WIRING TO BE REMOVED AND DISPOSED OF.

GENERAL NOTES:

1. THIS IS NOT A WORKING DRAWING – CONTRACTORS ARE REQUIRED TO PRODUCE COORDINATED DRAWINGS

2. ALL SERVICES TO BE COORDINATED WITH ALL OTHER SERVICES AND OBSTACLES ON SITE

3. WHERE DEVICES ARE LOCATED EXTERNALLY THEY ARE TO BE IP65 RATED AND VANDAL RESISTANT TO IK10

4. ALL ITEMS LOCATED EXTERNALLY ARE TO BE IP65 RATED AND VANDAL RESISTANT

5. DISABLED REFUGES ARE TO COMPLY WITH THE REQUIREMENTS OF BS9999 ANNEX G

FIRE ALARM NOTES:

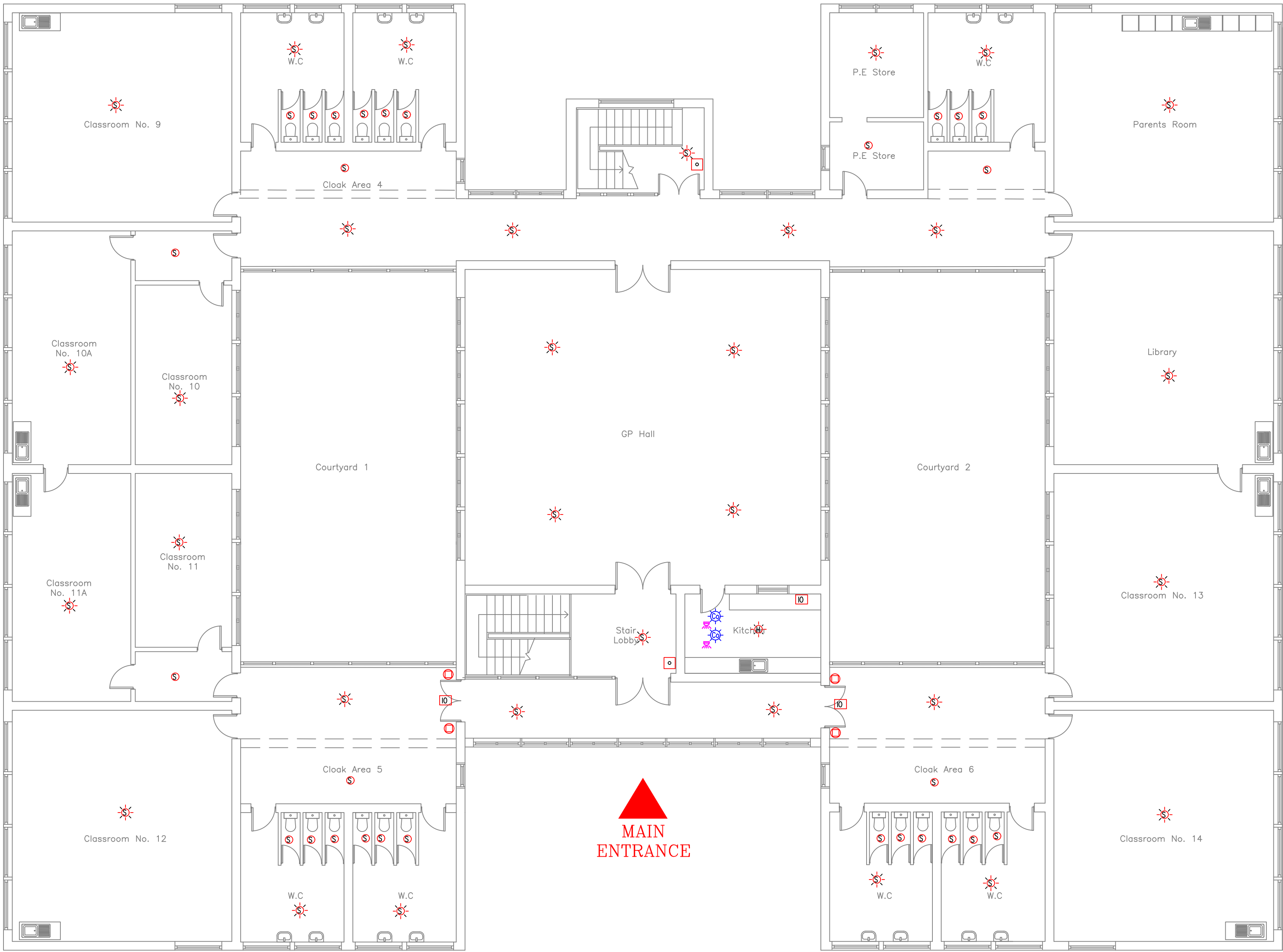
1 I/O DEVICES ARE TO BE SUPPLIED AS NEEDED TO CONTROL DEVICES, AOVs AND SHUT DOWN PLANT.

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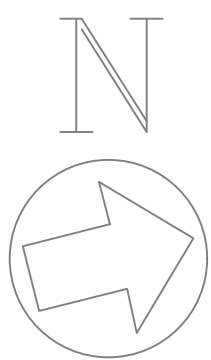
NOTE:

- ALL CONDUITS & DROPS SERVING EMERGENCY LIGHTING SYSTEMS TO BE **MINIMUM 20mm** INNER DIAMETER STEEL CONDUIT.
- ALL CONDUITS & DROPS SERVING GENERAL LIGHTING SYSTEMS TO BE **MINIMUM 25mm** INNER DIAMETER STEEL CONDUIT.
- ALL CONDUITS SERVING THE FIRE DETECTION SYSTEM (DETECTOR HEADS, BREAK GLASSES, I/O MODULES, FIRE ALARM PANEL, DOOR HOLD OPENS ETC.) TO BE **MINIMUM 25mm** INNER DIAMETER STEEL CONDUIT.

LEGEND:
 OPTICAL SMOKE SENSOR/SOUNDER (Apollo XP95)
 DUAL OPTICAL HEAT SENSOR/SOUNDER (Apollo XP95)
 MANUAL CALL POINT (BREAK GLASS UNIT) (Apollo XP95)
 FIRE ALARM INPUT/OUTPUT UNIT (Apollo SA4700–102AP0)
 OPTICAL SMOKE SENSOR (Apollo XP95)
 REMOTE DETECTOR LED INDICATOR (C-Tec BF318)
 DOOR HOLD OPEN DEVICE (Cranford Controls – DRW–L–302–019)
 CO DETECTOR/SOUNDER IN ATTIC SPACE (AICO 3000 Series)



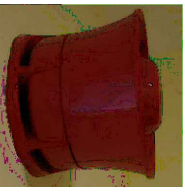
FIRST FLOOR



Rev	Date	Description	By	Chk

 Client: N/A Architect: | FOR TENDER Drawing Status ST. JOHN OF GOD NATIONAL SCHOOL, KILMORE ROAD, ARTANE, D05E265 [RN: 19920A] Project. PROPOSED NEW FIRE DETECTION SYSTEM LAYOUT [FIRST FLOOR] Drawing Title. This is a performance drawing and issued for pricing guidance. You the Contractor shall produce working drawings, including coordination drawings with other trades and the Builder. This drawing shall be read in conjunction with the specification, schedules that are associated with this project. This drawing and/or contents, information and principles of design is confidential and the sole and exclusive property of T5 Partnership Ltd. Neither the drawing nor, its contents, information or principles of design are to be disclosed, reproduced, copied or relied, in whole or part to any other person or firm except with written consent of T5 Partnership Ltd. | Unit G1, Centrepont Business Park, Oak Road, Dublin 12. web : www.t5.ie ph : 00353 1 4604968 fax : 00353 1 4097957 T5 Partnership Ltd Consulting Engineers Drawn By: BL Drawn Date: 24-JUL-26 Checked By: SK Checked Date: 24-JUL-26 Project Ref: 2345 Drawing Ref: 68(01) Drawing Scale: 1:100 @ A1 Drawing Rev: — |

LEGEND



EXISTING FIRE ALARM BELL
TO BE REMOVED



EXISTING MANUAL CALL POINT
(BREAK GLASS UNIT)
TO BE REMOVED



EXISTING FIRE ALARM PANEL
TO BE REMOVED AND RELOCATED
TO THE MAIN ENTRANCE RECEPTION

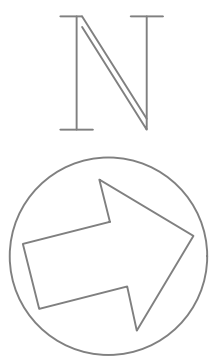
FAP



EXISTING SMOKE OR HEAT
DETECTOR
TO BE REMOVED



GROUND FLOOR



					Client: An Roinn Oideachais Department of Education	Drawing Status FOR TENDER	 Unit G1, Centrapoint Business Park, Oak Road, Dublin 12. web : www.t5.ie ph : 00353 1 4604968 fax : 00353 1 4097957 T5 Partnership Ltd Consulting Engineers
					Architect: N/A	Project. ST. JOHN OF GOD NATIONAL SCHOOL, KILMORE ROAD, ARTANE, D05E265 [RN: 19920A]	
						Drawing Title. EXISTING FIIRE DETECTION SYSTEM TO BE REMOVED [GROUND FLOOR]	
						Drawn By. BL Checked By. SK Project Ref. 2345 Drawing Scale 1:100 @ A1	Drawn Date. 24-JUL-26 Checked Date. 24-JUL-26 Drawing Ref. 68(02) Drawing Rev. —
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LEGEND



EXISTING FIRE ALARM BELL
TO BE REMOVED



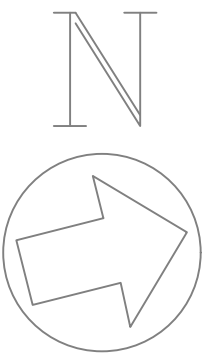
EXISTING MANUAL CALL POINT
(BREAK GLASS UNIT)
TO BE REMOVED



EXISTING SMOKE OR HEAT
DETECTOR
TO BE REMOVED



FIRST FLOOR



			Client:  An Roinn Oideachais Department of Education		Drawing Status FOR TENDER		 Unit G1, Centropoint Business Park, Oak Road, Dublin 12. web : www.t5.ie ph : 00353 1 4604968 fax : 00353 1 4097957 T5 Partnership Ltd Consulting Engineers	
			Architect: N/A		Project. ST. JOHN OF GOD NATIONAL SCHOOL, KILMORE ROAD, ARTANE, D05E265 [RN: 19920A]			
			Drawing Title. EXISTING FIRE DETECTION SYSTEM TO BE REMOVED [FIRST FLOOR]		Drawn By. BL		Drawn Date. 24-JUL-26	
					Checked By. SK		Checked Date. 24-JUL-26	
					Project Ref. 2345		Drawing Ref. 68(03)	
					Drawing Scale 1:100 @ A1		Drawing Rev. —	
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Rev	Date	Description	By	Chk				

OVERVIEW: NEW INTERNAL (2) & EXTERNAL DOORS (1)

- 3 SETS OF DOUBLE DOORS, INCL. THE SCREEN ABOVE EACH SET OF DOORS
- ALL EXIT DOORS TO BE DOUBLE ACTION RELEASE / FULL WIDTH
- ALL EXIT DOORS C/W PUSH-BARS
- MAKE GOOD EXTERNALLY
- MAKE GOOD INTERNALLY
- NEW ACCESS CONTROL TO ALL DOORS
- NEW I/O TO ALL DOORS
- ALL ASSOCIATED ANCILLARY ELECTRICAL WORKS

SPECIFICATION NEW INTERNAL & EXTERNAL DOORS

EXTERNAL DOORS (U-Value 1.2 W/m²K)

- Proposed External Doors shall be provided in accordance with "Specification of Windows & Doors
- Specification for new windows / doors in Educational facilities" in conjunction with additional guidance below.
- To be read in conjunction with Door schedules, Floor plans and Elevation drawings.
- Style and break-ups to be signed off prior to order.
- Proposed doors shall consist of Double glazed polyester powder coated, commercial grade, thermally broken aluminium windows and doors specified exceeding D.O.E TGD 021-1. U-value to exceed the performance of 1.2 W/m²K
- Contractor shall include for the supply and fitting of all units and is responsible for accurately measuring structural openings prior to ordering.
- All doors to be foam filled to perimeter with vertical DPC joint and mastic sealed externally upon completion of external reveals.
- Internal reveals to be flexible caulk filled upon completion of internal plaster reveal.
- Doors to have a maximum threshold strip of 15mm for wheelchair access.
- Doors must have a design life span of 40 years.
- All doors to be polyester powder-coated aluminium systems. Extruded aluminium profiles shall be fabricated from designated treated alloy 6060 or 6063 in tempers T4, T5 or T6 conforming to bs EN 755-9:2001. The aluminium profiles used in the construction of the frames excluding glazing beads, mbs, interlocks and similar features shall be, at minimum tolerance, not less than 1.2 mm thick.
- All windows are to be double glazed and thermally broken. Doors shall be glazed in accordance with the recommendations given in BS 6262.
- Colour of Door system to be confirmed.
- External windows to be thermally broken polyester powder-coated aluminium window system with a thermal performance to comply with building regulations.
- Glazing type and thickness shall be Selected, using the recommendations given in BS 6262-4:2018, to withstand the design wind pressure calculated in accordance with BS 6375-1:2015 or BS EN 1991-1-4:2005 (+A1:2010). The type and quality of glass shall conform to bs 952-1: 1995.
- All safety glazing to be toughened and laminated glass.
- Powder coating to conform to BS EN 12066-1:2021: 'paints and varnishes - coating of aluminium and aluminium alloys for architectural purposes'
- Weather tightness to BS 6375:2015 part 1. Weather strips and gaskets to bs 4255 part 1.
- Ironmongery to all doors to be agreed with architect prior to Manufacture.
- All proposed External doors shall include a Hold open device / latch.
- All proposed External doors shall include a heavy duty soft door closer on each leaf.
- Fire escape doors to have panic ironmongery where necessary.
- Threshold piece to all external doors to be supplied and fitted by window contractor with 15mm max height.
- Master key to be provided for all internal and external doors
- All external doors to be submitted as shop drawings with sample provided for written approval of architect prior to manufacture.
- The completed doors shall conform to the performance requirements for operation and strength specified in BS 6375-2.
- No doors should be manufactured without written approval of window samples as set out in the works requirement.
- All of the above to be carried out by door sub-contractor.
- ACO or equivalent drainage channels fitted to front of doors and sidelights and to connect to surface water drainage as indicated on drawings.
- Contractor to include for manifestation and door clear opening widths in compliance with TGD Part M 2010 Section 1.2.4 Accessible entrance doors
- Refer to TGD part M 2010 for minimum door opening clear widths and directions

DOOR SEALANTS

- Door sealants shall be provided to all new and altered Doors consisting of moisture curing neutral low modulus silicone or similar In accordance
- with BS 6213:2000+A1:2010. Classification and requirements: To BS EN ISO 11600.
- Reaction to contact products and finishes: Stable and compatible
- Colour: To be chosen by Architect from full available colour range
- Finish triangular fillets with a flat or slightly convex profile.

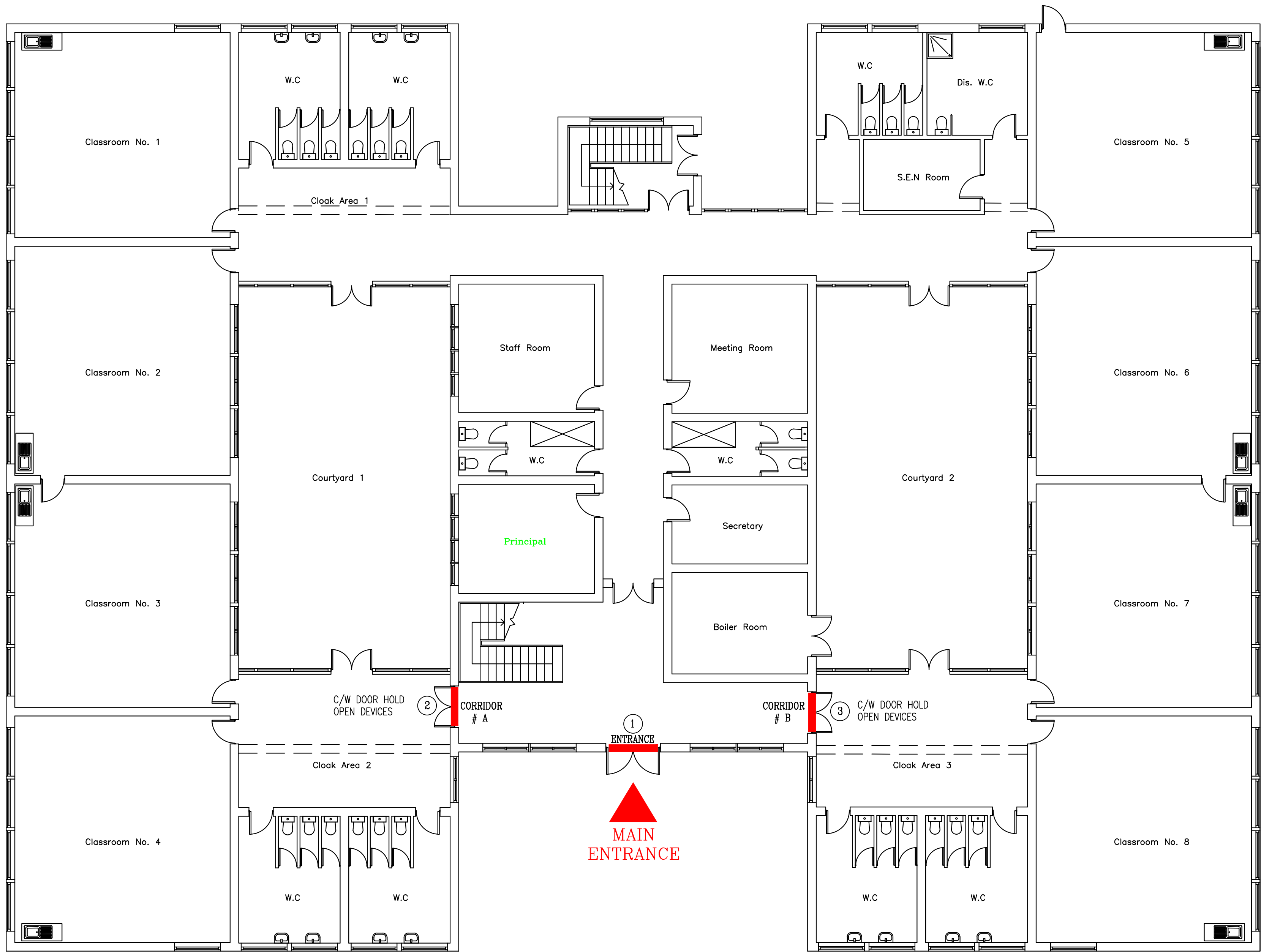
- Pre-sealing checks:
- Joint dimensions: Within limits specified for the sealant.
- Substrate quality: Surfaces regular, undamaged and stable.
- Joints not fit to receive sealant: report to architect
- Preparation of Joints
- Surfaces to which sealant must adhere:
- Remove temporary coatings, tapes, loosely adhering material, dust, oil, grease, surface water and contaminants that may affect bond.
- Clean using materials and methods recommended by sealant manufacturer.
- Vulnerable surfaces adjacent to joints: Mask to prevent staining or smearing with primer or sealant.
- Backing strip and/ or bond breaker installation: Insert into joint to correct depth, without stretching or twisting, leaving no gaps.
- Protection: Keep joints clean and protect from damage until sealant is applied.

- Applying Sealants
- Substrate: Dry (unless recommended otherwise) and unaffected by frost, ice or snow.
- Environmental conditions: Do not dry or raise temperature of joints by heating.
- Sealant application: Fill joints completely and neatly, ensuring firm adhesion to substrates.
- Sealant profiles:
- Butt and lap joints: Slightly concave.
- Fillet joints: Flat or slightly convex.
- Protection: Protect finished joints from contamination or damage until sealant has cured.

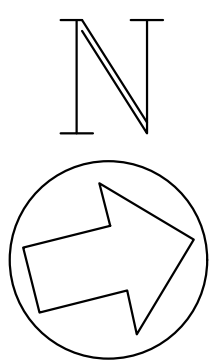
EXTERNAL DOOR ACCESS CONTROL

- Contractor shall provide and install all access control systems in compliance with PSA 67- 2022
- Allow for new electrical connections - 13A fused spur supplies
- The Contractor shall allow for the supply and installation of door access system for the doors as indicated to restrict access.
- The door access system shall be supplied with electromagnetic door lock and these door locks shall release the door once the reader has been successfully activated.
- To be read in conjunction with FSC report for required electromagnetic door locks and hold open device to fail upon activation of the alarm system.
- The Contractor shall liaise with the supplier to ensure all wiring requirements are included for. The door release facility for the system shall also be linked to the fire alarm system so that in the event of fire activation
- the respective door shall open. The Contractor shall check suitability of the door structure before placing order.
- All Access control door system to have a high-level switch control where the system can be deactivated.
- Details and specification of all ironmongery / Hardware to be approved by architect prior to manufacturing process.
- Full range of hardware, ironmongery, fittings, locking devices, handles, budget locks, restrictors, stays proposed for use on the operable windows and doors on the work.
- All ironmongery to comply with the requirements of standard BS EN 1670: 2007 Building Hardware Corrosion Resistance.
- Requirement and test method. Multipoint single lever locking system is to be incorporated in all opening sashes.

- D01 - Stairway Entrance / Exit Door
- Ablay or equivalent Package 3MP
- Narrow stile door Multipoint - Read in, free egress - complies with EN1125
- D02 - Corridor Entrance / Exit Door
- Ablay or equivalent Package 3ME
- Narrow stile door Multipoint - Read in, free egress - complies with EN179



GROUND FLOOR

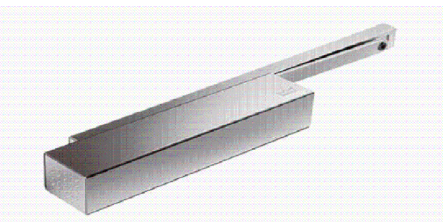


EQUIPMENT

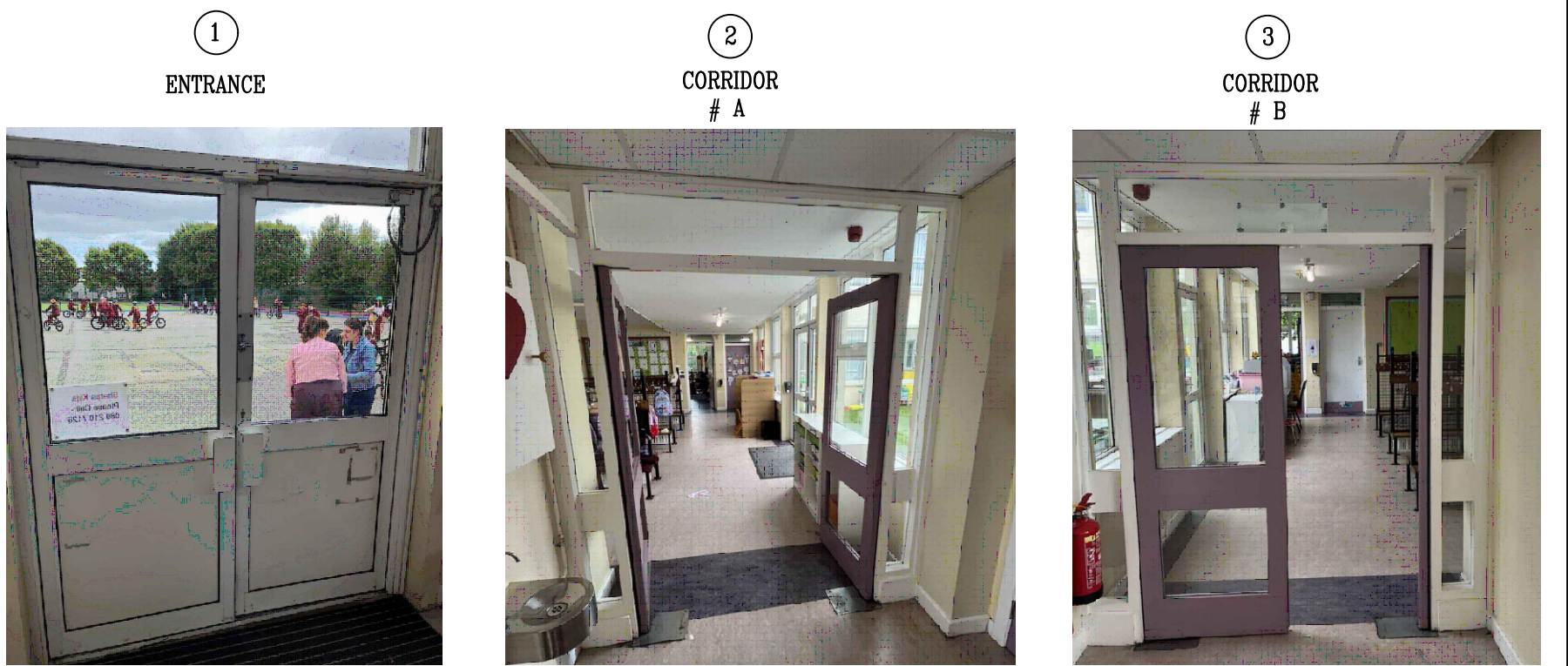
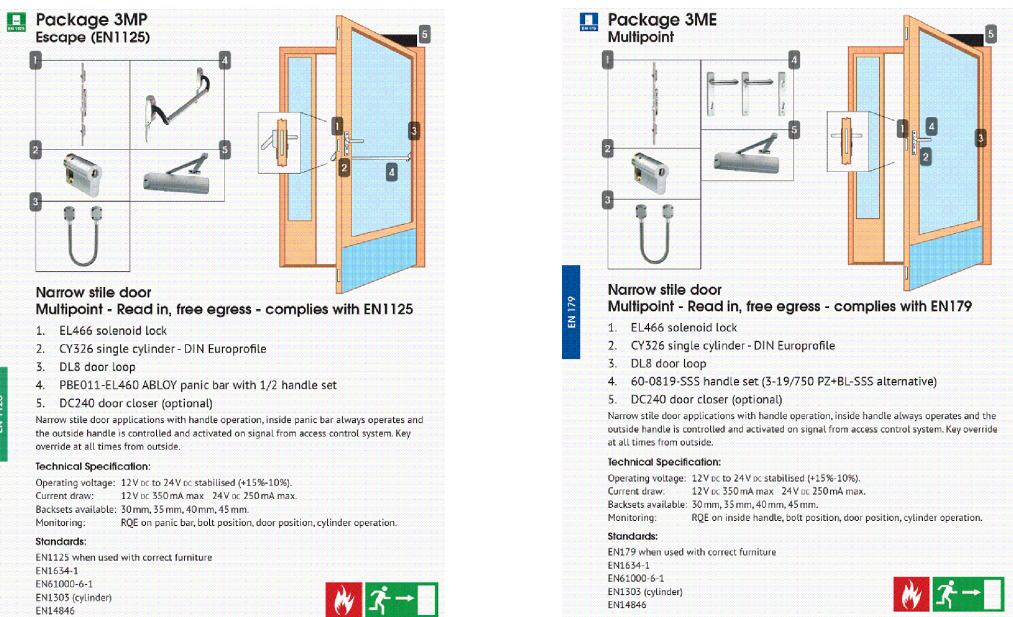
Heavy Duty Door Stop With Shock Absorber & Retainer - Proline Hardware or Equivalent



Dorma TS93 Cam Action Door Closer or equivalent



Refer below for details of proposed Ablay or equivalent Access Control Package hardware in compliance with EN1125 & EN179.



Client:	An Roinn Oideachais Department of Education	Drawing Status:	FOR TENDER	 Unit G1, Centrepont Business Park, Oak Road, Dublin 12. web : www.t5.ie ph : 00353 1 4604968 fax : 00353 1 4097957 T5 Partnership Ltd Consulting Engineers	
Architect:	N/A	Project:	ST. JOHN OF GOD NATIONAL SCHOOL, KILMORE ROAD, ARTANE, D05E265 [RN: 19920A]		
		Drawing Title:	PROPOSED NEW FIRE DOORS [GROUND FLOOR]		
Rev	Date	Description	By	Chk	

Drawn By:	SK	Drawn Date:	26-JUNE-26
Checked By:	SK	Checked Date:	26-JUNE-26
Project Ref:	2345	Drawing Ref:	68(04)
Drawing Scale:	1:100 @ A1	Drawing Rev:	-

This is a performance drawing and is not for pricing guidance. The Contractor shall produce working drawings, including coordination drawings with other Trades and the Builder. This drawing shall be read in conjunction with the specification, schedules that are associated with this project. This drawing and/or contents, information and principles of design is confidential and the sole and exclusive property of T5 Partnership Ltd. Neither the drawing nor, its contents, information or principles of design are to be disclosed, reproduced, copied or relied, in whole or part to any other person or firm except with written consent of T5 Partnership Ltd.

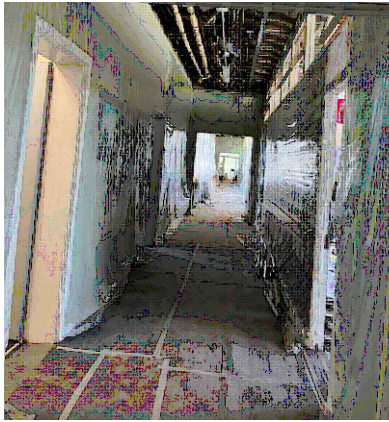
5. Builder's Works Drawings

DETAIL # 1

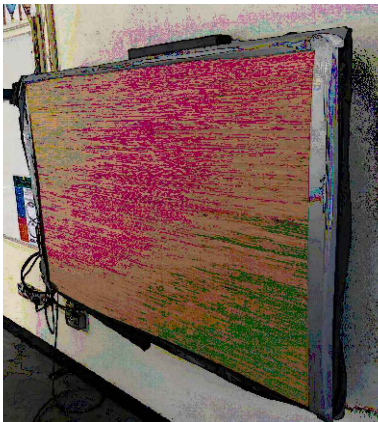
ENSURE PROTECTION BOARD (24m x 12m x 21mm) 'CORRIDORBOARD' IS USED TO PROTECT FLOORS AND PROTECTIVE SHEETS ARE USED TO PROTECT FURNITURE, BOOKS, SHELVES & ICT EQUIPMENT FROM PAINT & DUST FROM CONSTRUCTION WORKS.

CLASSROOM WHITE BOARDS AND 1/4 SCREENS REQUIRE 12mm PLYWOOD SHEETS AND PLASTIC SHEETS

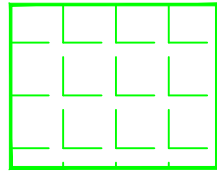
PROTECTION BOARD TO PROTECT FLOORS



12mm PLYWOOD SHEETS (ON WHITE BOARDS)



CEILING



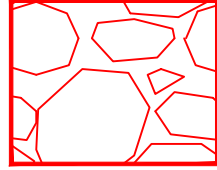
CEILING

600x600mm CEILING TILE AREAS INDICATED IN GREEN REQUIRE DISMANTLING, TAKE DOWN AND SAFE REMOVAL FOR ACCESS FOR NEW EQUIPMENT OR REMOVAL OF REDUNDANT EQUIPMENT.

NEW 600x600mm CEILING TILES ARE TO BE INSTALLED.

CONTRACTOR IS FULLY RESPONSIBLE FOR THE SAFE REMOVAL & REINSTALLATION OF ALL EXISTING SERVICES IN THE CEILING VOID PRIOR TO AND FOLLOWING BUILDERS WORKS.

CEILING



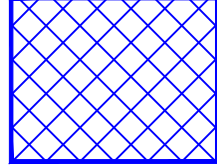
CEILING

CONCRETE CEILING AREAS INDICATED IN RED REQUIRE REPAIR ON COMPLETION OF THE ASSOCIATED WORKS. ANY DAMAGE TO THESE CEILING SECTIONS INCURRED DURING CONSTRUCTION MUST BE REPAIRED & REPAINTED TO MATCH THE EXISTING COLOUR AND FINISH, ENSURING A UNIFORM APPEARANCE BEFORE FINAL HANDOVER.

CONTRACTOR RESPONSIBLE TO FULLY SURVEY SAME BEFORE WORKS COMMENCE ON SITE.

NEW PAINTING REQUIRED TO SAME-2 COATS WHITE PAINT

CEILING



CEILING

PLASTERBOARD CEILING AREAS INDICATED IN BLUE REQUIRE DISMANTLING, TAKE DOWN AND SAFE REMOVAL. NEW PLASTERBOARD IS TO BE INSTALLED.

CONTRACTOR RESPONSIBLE TO FULLY SURVEY SAME BEFORE WORKS COMMENCE ON SITE.

NEW PAINTING REQUIRED TO SAME-2 COATS WHITE PAINT

CONTRACTOR IS FULLY RESPONSIBLE FOR THE SAFE REMOVAL & REINSTALLATION OF ALL EXISTING SERVICES IN THE CEILING VOID PRIOR TO AND FOLLOWING BUILDERS WORKS.

1. ALL REQUIRED ELECTRICAL DISCONNECTIONS AND SAFETY MEASURES WITHIN THE BUILDING MUST BE CARRIED OUT IN A SAFE MANNER AND IN ACCORDANCE WITH THE DRAWINGS, SPECIFICATIONS AND DOCUMENTS.
2. WHERE THE CUTTING OR BURNING OF METAL IS LIKELY TO GENERATE SMOKE, THE CONTRACTOR WILL BE REQUIRED TO ISOLATE THE RELEVANT AREA FIRE DETECTION SYSTEMS TO AVOID FALSE FIRE ALARM ACTIVATIONS.
3. THE CONTRACTOR WILL BE REQUIRED TO PROVIDE A METHOD STATEMENT SHOWING HOW THEY INTEND TO ISOLATE AND PROTECT THE FIRE DETECTION EQUIPMENT SERVING THE VARIOUS AREAS BEING WORKED ON AND CHECKING TO ENSURE THAT THE SYSTEM WILL BE FULLY OPERATIONAL AT THE END OF EACH WORKING DAY.
4. ALL PLANT, EQUIPMENT, FITTINGS, BATTERIES, CONDUITS ETC WITHIN THE BUILDING THAT ARE TO BE REMOVED MUST BE DISPOSED OF IN A SAFE AND PROPER MANNER.
5. THE SCHOOL BUILDING SHALL BE THOROUGHLY CLEANED AND SANITISED PRIOR TO SCHOOL BEING HANDED BACK OVER UPON COMPLETION OF WORKS. CONTRACTOR MUST INSIST ON A CLEAN AS YOU GO POLICY ON SITE WITH NO EXCESS BUILD UP OF MATERIALS OR DEBRIS CAN ACCUMULATING ON SITE DURING THE WORKS.

TYPICAL PAINTING PER CLASSROOM

CONTRACTOR TO INCLUDE FOR PAINTING, MAKING GOOD, SEALING WALLS & CEILINGS WHERE EMERGENCY LIGHTING AND FIRE ALARM ARE REMOVED AND REPLACED WITH NEW, ALL EXPOSED SURFACES TO MATCH EXISTING.

ENSURE PROTECTIVE SHEETS ARE USED TO PROTECT ALL FLOORS & FURNITURE/EQUIPMENT FROM PAINT

TYPICAL SURVEY TO EXISTING SURFACES

CONTRACTOR TO CARRY OUT A FLOOR SURVEY PRIOR TO WORKS COMMENCING BEFORE IT IS COVERED UP TO IDENTIFY ANY EXISTING DEFECTS.

CONTRACTOR IS RESPONSIBLE TO ISSUE A FULL DETAILED REPORT OF ANY SURFACES INDICATING EXISTING DAMAGE WITH PHOTOGRAPHIC EVIDENCE AND A DRAWING INDICATING AREAS WITH DEFECTS PRIOR TO WORKS COMMENCING OR SURFACES BEING COVERED OVER.

TYPICAL PROTECTION PER CLASSROOM

CONTRACTOR TO PROTECT FURNITURE, BOOKS, SHELVING ETC. WITH PLASTIC SHEETING

CONTRACTOR TO PHYSICALLY PROTECT WHITE BOARDS WITH POLYSTYRENE SHEETS & PLASTIC.

CONTRACTOR TO SEAL UP PC'S AND PROJECTORS + ANY OTHER ELECTRICAL EQUIPMENT WITH PLASTIC FILM TO AVOID ANY DUST INGRESS TO EQUIPMENT

CONTRACTOR IS RESPONSIBLE FOR CORRECT OPERATION OF EQUIPMENT AFTER

TYPICAL PROCESS PER CLASSROOM

CONTRACTOR TO INCLUDE FOR MOVING ALL FURNITURE, DESKS, CHAIRS, SHELVES, BOOKS ETC. OUT OF THEIR WAY PRIOR TO WORKS COMMENCING AND REINSTATE IN EXISTING POSITIONS AFTER WORKS COMPLETED

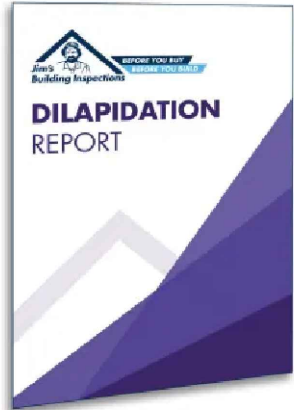
DETAIL # 2

ENSURE FULL SURVEY OF WALLS, FLOORS & CEILINGS TO IDENTIFY ANY EXISTING DEFECTS. ISSUE A FULLY DETAILED REPORT OF WALLS, FLOORS & CEILINGS INDICATING EXISTING DAMAGE WITH PHOTOS AND A DRAWING INDICATING AREAS.

-SCHEDULE OF DIAPADATIONS-

-SCHEDULE OF DIAPADATIONS-

DESCRIPTION	CONSTRUCTION	ATTENTION REQUIRED
Walls	Repair	Repair and patch
Floors	Repair	Repair and patch
Ceilings	Repair	Repair and patch
Doors	Repair	Repair and patch
Windows	Repair	Repair and patch
Stairs	Repair	Repair and patch
Other	Repair	Repair and patch



DETAIL # 3

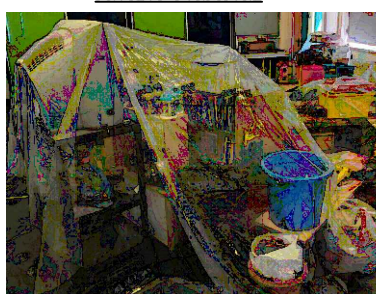
ENSURE FULL SURVEY OF ALL I.C.T. EQUIPMENT PC'S, PROJECTORS, 1/4 WHITE BOARDS THAT THEY WORK PRIOR TO WORKS COMMENCING. ISSUE A FULLY DETAILED REPORT/LIST OF ALL I.C.T. EQUIPMENT. CONTRACTOR IS WHOLLY RESPONSIBLE TO ENSURE CORRECT OPERATION OF SAME AFTER WORKS

CONTRACTOR TO SEAL UP PC'S AND PROJECTORS + ANY OTHER ELECTRICAL EQUIPMENT WITH PLASTIC FILM TO AVOID ANY DUST INGRESS TO EQUIPMENT

SURVEY OF ALL I.C.T. EQUIPMENT



PROTECTIVE SHEETS TO PROTECT FURNITURE



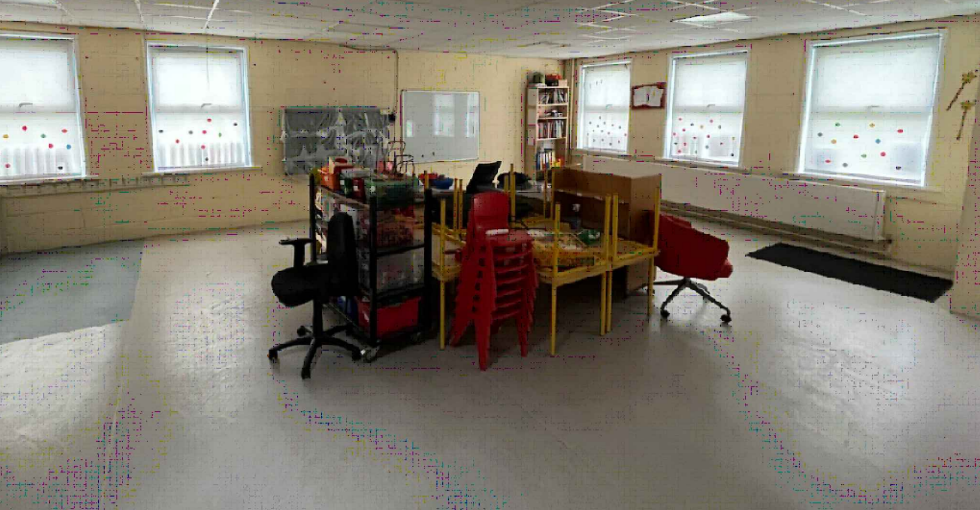
PROTECTIVE SHEETS TO PROTECT BOOKS & SHELVES



DETAIL # 4

CONTRACTOR TO INCLUDE FOR MOVING ALL FURNITURE, DESKS, CHAIRS, SHELVES, BOOKS ETC. OUT OF THEIR WAY PRIOR TO WORKS COMMENCING AND REINSTATE IN EXISTING POSITIONS AFTER WORKS COMPLETED. I.E. TYPICALLY INTO MIDDLE OF ROOM

MOVE ALL FURNITURE, DESKS, CHAIRS, SHELVES INTO MIDDLE OF ROOM



PAINTING AND DECORATION FOR ALL AREAS:

CONTRACTOR TO ALLOW FOR THE REMOVAL OF ALL EXISTING REDUNDANT EQUIPMENT: LIGHTING, EMERGENCY LIGHTING

WHERE THE ABOVE MENTIONED ITEMS ARE REMOVED, THE CONTRACTOR MUST ALLOW THE PATCHING, FILLING AND CLOSURE OF ANY AND ALL OPES REMAINING. THIS INCLUDES HOLES CAUSED BY SCREWS UP TO AND INCLUDING OPES MADE FOR MOUNTING EXISTING OR NEW FITTINGS.

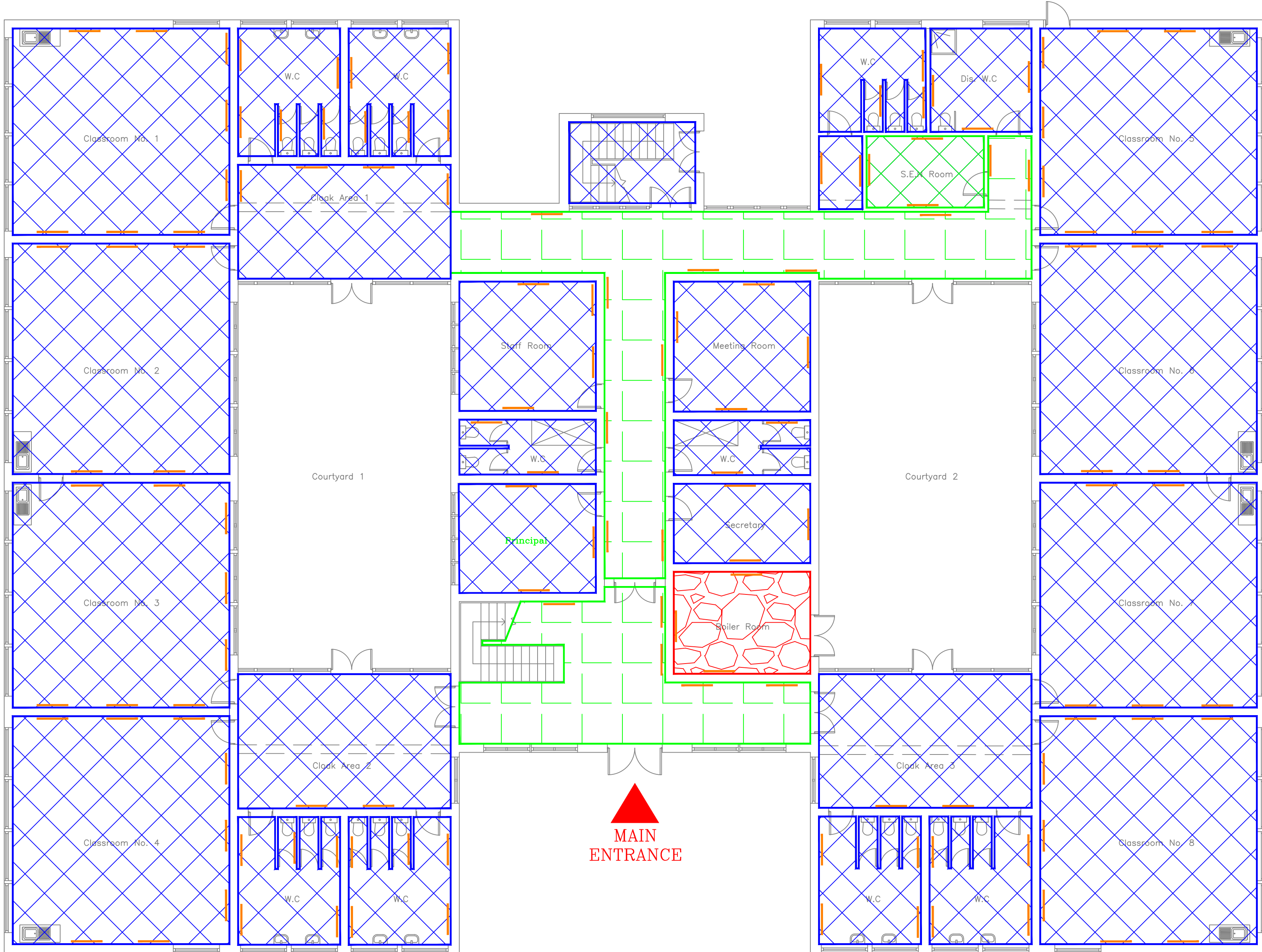
3 COATS OF PAINT ARE TO BE APPLIED FOR THE AREA WHERE ITEMS HAVE BEEN REMOVED, THE COLOUR MUST MATCH THE SURROUNDING PAINT FINISH.

REMOVES LENGTH OF WALL TO BE PAINTED FROM FLOOR TO CEILING HEIGHT FOLLOWING WORKS FOR INSTALL OF NEW EMERGENCY LIGHTING & FIRE ALARM C/W ASSOCIATED CONTAINMENT, FIXTURES & FITTINGS ETC (1.5m WIDE x 3m HIGH MIN.)

CONTRACTOR TO ALLOW FOR APPROPRIATE PROTECTION OF EXISTING FLOOR. YOU MUST NOTE ANY AND ALL EXISTING DAMAGE TO THE FLOOR FINISH PRIOR TO COMMENCEMENT OF ANY WORK, AS UPON COMPLETION OF WORKS THE CONTRACTOR WILL BE LIABLE FOR THE REPAIR OF ANY & ALL DAMAGE CAUSED DURING WORKS.

THIS IS NOT A WORKING DRAWING. -

CONTRACTORS MUST PRODUCE CO-ORDINATED WORKING DRAWINGS PRIOR TO ANY WORKS PROCEEDING



MAIN
ENTRANCE

GROUND FLOOR



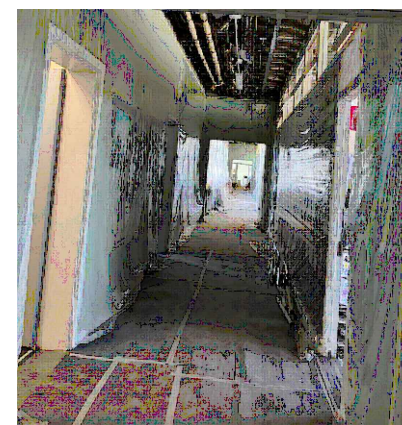
						Client:  An Roinn Oideachais Department of Education	Drawing Status FOR TENDER	 Unit G1, Centrepark Business Park, Oak Road, Dublin 12. web : www.t5.ie ph : 00353 1 4604968 fax : 00353 1 4097957 T5 Partnership Ltd Consulting Engineers	
					Architect: N/A	Project: ST. JOHN OF GOD NATIONAL SCHOOL, KILMORE ROAD, ARTANE, D05E265 [RN: 19920A]	Drawn By. BL		Drawn Date. 24-JUL-26
						Drawing Title. PROPOSED BUILDERS WORKS, CEILINGS, PAINTING & FURNITURE [GROUND FLOOR]	Checked By. SK		Checked Date. 24-JUL-26
							Project Ref. 2345		Drawing Ref. BW(00)
							Drawing Scale 1:100 @ A1		Drawing Rev. —
Rev	Date	Description	By	Chk	This is a performance drawing and issued for pricing guidance. You the Contractor shall produce all working drawings, including coordination drawings with other trades and the Builder. This drawing shall be used in conjunction with the specification, schedules that are associated with this project. This drawing and/or contents, information and principles of design is confidential and the sole and exclusive property of T5 Partnership Ltd. Neither the drawing nor, its contents, information or principles of design are to be disclosed, reproduced, copied or relayed, in whole or part to any other person or firm except with written consent of T5 Partnership Ltd.				

DETAIL # 1

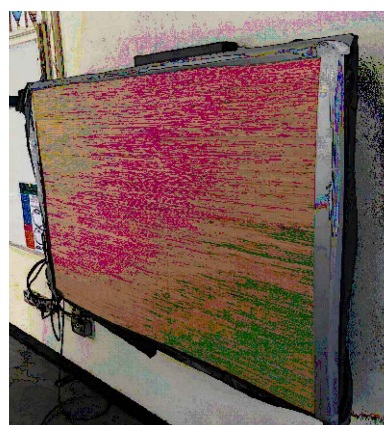
ENSURE PROTECTION BOARD (2.4m x 1.2m x 21mm) 'CORRIDOR' IS USED TO PROTECT FLOORS AND PROTECTIVE SHEETS ARE USED TO PROTECT FURNITURE, BOOKS, SHELVES & ICT EQUIPMENT FROM PAINT & DUST FROM CONSTRUCTION WORKS.

CLASSROOM WHITE BOARDS AND 1/4 SCREENS REQUIRE 12mm PLYWOOD SHEETS AND PLASTIC SHEETS

PROTECTION BOARD TO PROTECT FLOORS



12mm PLYWOOD SHEETS (ON WHITE BOARDS)

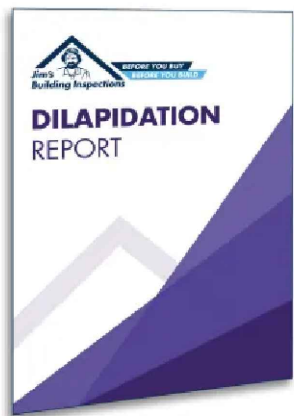


DETAIL # 2

ENSURE FULL SURVEY OF WALLS, FLOORS & CEILINGS TO IDENTIFY ANY EXISTING DEFECTS. ISSUE A FULLY DETAILED REPORT OF WALLS, FLOORS & CEILINGS INDICATING EXISTING DAMAGE WITH PHOTOS AND A DRAWING INDICATING AREAS. -SCHEDULE OF DIAPADATIONS-

-SCHEDULE OF DIAPADATIONS-

DESCRIPTION	CONSTRUCTION	ATTENTION REQUIRED
Walls	Interior	Repair, patch and seal
Floors	Interior	Repair, patch and seal
Ceilings	Interior	Repair, patch and seal
Doors	Interior	Repair, patch and seal
Windows	Interior	Repair, patch and seal
Stairs	Interior	Repair, patch and seal
Corridors	Interior	Repair, patch and seal
Classrooms	Interior	Repair, patch and seal
Library	Interior	Repair, patch and seal
Parents Room	Interior	Repair, patch and seal
Kitchen	Interior	Repair, patch and seal
Stair Lobby	Interior	Repair, patch and seal
W.C.	Interior	Repair, patch and seal
P.E. Store	Interior	Repair, patch and seal
Cloak Area	Interior	Repair, patch and seal
DB Hall	Interior	Repair, patch and seal
Courtyard	Exterior	Repair, patch and seal



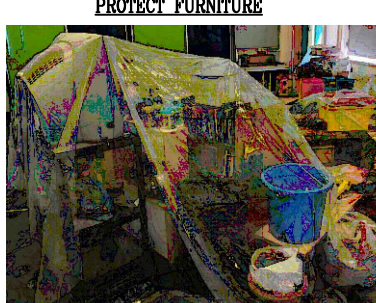
DETAIL # 3

ENSURE FULL SURVEY OF ALL I.C.T. EQUIPMENT P.C.'s, PROJECTORS, 1/4 WHITE BOARDS THAT THEY WORK PRIOR TO WORKS COMMENCING. ISSUE A FULLY DETAILED REPORT/LIST OF ALL I.C.T. EQUIPMENT. CONTRACTOR IS WHOLLY RESPONSIBLE TO ENSURE CORRECT OPERATION OF SAME AFTER WORKS. CONTRACTOR TO SEAL UP P.C.'S AND PROJECTORS + ANY OTHER ELECTRICAL EQUIPMENT WITH PLASTIC FILM TO AVOID ANY DUST INGRESS TO EQUIPMENT

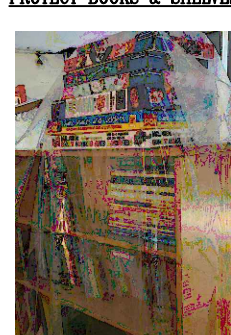
SURVEY OF ALL I.C.T. EQUIPMENT



PROTECTIVE SHEETS TO PROTECT FURNITURE



PROTECTIVE SHEETS TO PROTECT BOOKS & SHELVES



DETAIL # 4

CONTRACTOR TO INCLUDE FOR MOVING ALL FURNITURE, DESKS, CHAIRS, SHELVES, BOOKS ETC. OUT OF THEIR WAY PRIOR TO WORKS COMMENCING AND REINSTATE IN EXISTING POSITIONS AFTER WORKS COMPLETED. I.E. TYPICALLY INTO MIDDLE OF ROOM

MOVE ALL FURNITURE, DESKS, CHAIRS, SHELVES INTO MIDDLE OF ROOM



PAINTING AND DECORATION FOR ALL AREAS:

CONTRACTOR TO ALLOW FOR THE REMOVAL OF ALL EXISTING REDUNDANT EQUIPMENT: LIGHTING, EMERGENCY LIGHTING

WHERE THE ABOVE MENTIONED ITEMS ARE REMOVED, THE CONTRACTOR MUST ALLOW THE PATCHING, FILLING AND CLOSURE OF ANY AND ALL OPES REMAINING. THIS INCLUDES HOLES CAUSED BY SCREWS UP TO AND INCLUDING OPES MADE FOR MOUNTING EXISTING OR NEW FITTINGS.

3 COATS OF PAINT ARE TO BE APPLIED FOR THE AREA WHERE ITEMS HAVE BEEN REMOVED, THE COLOUR MUST MATCH THE SURROUNDING PAINT FINISH.

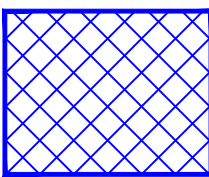
REMOVES LENGTH OF WALL TO BE PAINTED FROM FLOOR TO CEILING HEIGHT FOLLOWING WORKS FOR INSTALL OF NEW EMERGENCY LIGHTING & FIRE ALARM C/W ASSOCIATED CONTAINMENT, FIXTURES & FITTINGS ETC (1.5m WIDE x 3m HIGH MIN.)

CONTRACTOR TO ALLOW FOR APPROPRIATE PROTECTION OF EXISTING FLOOR, YOU MUST NOTE ANY AND ALL EXISTING DAMAGE TO THE FLOOR FINISH PRIOR TO COMMENCEMENT OF ANY WORK, AS UPON COMPLETION OF WORKS THE CONTRACTOR WILL BE LIABLE FOR THE REPAIR OF ANY & ALL DAMAGE CAUSED DURING WORKS.

THIS IS NOT A WORKING DRAWING. -

CONTRACTORS MUST PRODUCE CO-ORDINATED WORKING DRAWINGS PRIOR TO ANY WORKS PROCEEDING

CEILINGS



CEILINGS

PLASTERBOARD CEILING AREAS INDICATED IN BLUE. REQUIRE DISMANTLING, TAKE DOWN AND SAFE REMOVAL. NEW PLASTERBOARD IS TO BE INSTALLED. FOR ACCESS FOR NEW EQUIPMENT OR REMOVAL OF REDUNDANT EQUIPMENT. CONTRACTOR RESPONSIBLE TO FULLY SURVEY SAME BEFORE WORKS COMMENCE ON SITE. NEW PAINTING REQUIRED TO SAME-2 COATS WHITE PAINT

CONTRACTOR IS FULLY RESPONSIBLE FOR THE SAFE REMOVAL & REINSTALLATION OF ALL EXISTING SERVICES IN THE CEILING VOID PRIOR TO AND FOLLOWING BUILDERS WORKS.

1. ALL REQUIRED ELECTRICAL DISCONNECTIONS AND SAFETY MEASURES WITHIN THE BUILDING MUST BE CARRIED OUT IN A SAFE MANOR AND IN ACCORDANCE WITH THE DRAWINGS, SPECIFICATIONS AND DOCUMENTS.
2. WHERE THE CUTTING OR BURNING OF METAL IS LIKELY TO GENERATE SMOKE, THE CONTRACTOR WILL BE REQUIRED TO ISOLATE THE RELEVANT AREA FIRE DETECTION SYSTEMS TO AVOID FALSE FIRE ALARM ACTIVATIONS.
3. THE CONTRACTOR WILL BE REQUIRED TO PROVIDE A METHOD STATEMENT SHOWING HOW THEY INTEND TO ISOLATE AND PROTECT THE FIRE DETECTION EQUIPMENT SERVING THE VARIOUS AREAS BEING WORKED ON AND CHECKING TO ENSURE THAT THE SYSTEM WILL BE FULLY OPERATIONAL AT THE END OF EACH WORKING DAY.
4. ALL PLANT, EQUIPMENT, FITTINGS, BATTERIES, CONDUITS ETC WITHIN THE BUILDING THAT ARE TO BE REMOVED MUST BE DISPOSED OF IN A SAFE AND PROPER MANOR.
5. THE SCHOOL BUILDING SHALL BE THOROUGHLY CLEANED AND SANITISED PRIOR SCHOOL BEING HANDED BACK OVER UPON COMPLETION OF WORKS. CONTRACTOR MUST INSIST ON A CLEAN AS YOU GO POLICY ON SITE WITH NO EXCESS BUILD UP OF MATERIALS OR DEBRIS CAN ACCUMULATING ON SITE DURING THE WORKS.

TYPICAL PAINTING PER CLASSROOM

CONTRACTOR TO INCLUDE FOR PAINTING, MAKING GOOD, SEALING WALLS & CEILINGS WHERE EMERGENCY LIGHTING AND FIRE ALARM ARE REMOVED AND REPLACED WITH NEW, ALL EXPOSED SURFACES TO MATCH EXISTING.

ENSURE PROTECTIVE SHEETS ARE USED TO PROTECT ALL FLOORS & FURNITURE/EQUIPMENT FROM PAINT

TYPICAL SURVEY TO EXISTING SURFACES:

CONTRACTOR TO CARRY OUT A FLOOR SURVEY PRIOR TO WORKS COMMENCING BEFORE IT IS COVERED UP TO IDENTIFY ANY EXISTING DEFECTS.

CONTRACTOR IS RESPONSIBLE TO ISSUE A FULL DETAILED REPORT OF ANY SURFACES INDICATING EXISTING DAMAGE WITH PHOTOGRAPHIC EVIDENCE AND A DRAWING INDICATING AREAS WITH DEFECTS PRIOR TO WORKS COMMENCING OR SURFACES BEING COVERED OVER.

TYPICAL PROTECTION PER CLASSROOM

CONTRACTOR TO PROTECT FURNITURE, BOOKS, SHELVING ETC. WITH PLASTIC SHEETING

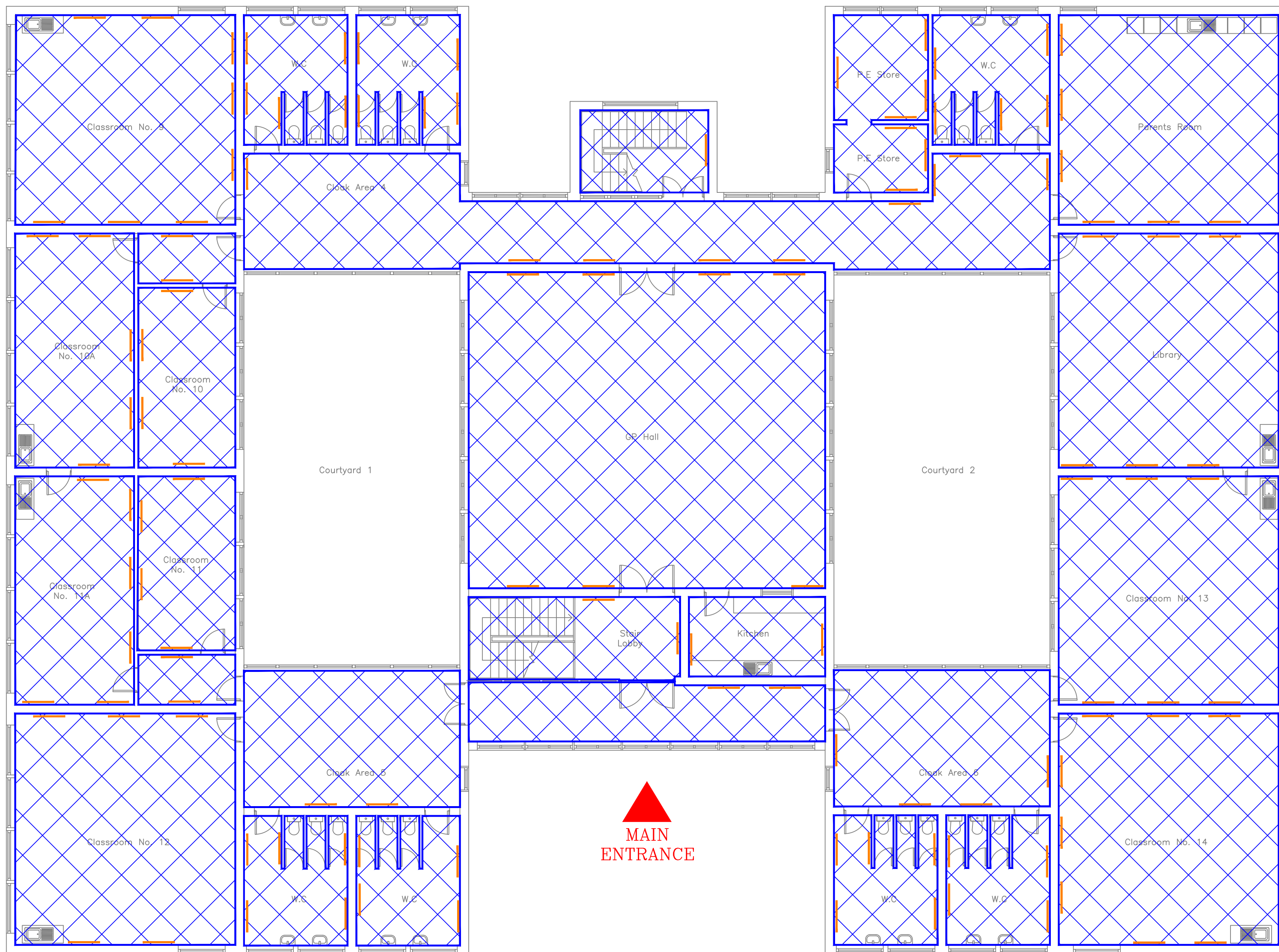
CONTRACTOR TO PHYSICALLY PROTECT WHITE BOARDS WITH POLYSTYRENE SHEETS & PLASTIC.

CONTRACTOR TO SEAL UP P.C.'S AND PROJECTORS + ANY OTHER ELECTRICAL EQUIPMENT WITH PLASTIC FILM TO AVOID ANY DUST INGRESS TO EQUIPMENT

CONTRACTOR IS RESPONSIBLE FOR CORRECT OPERATION OF EQUIPMENT AFTER

TYPICAL PROCESS PER CLASSROOM

CONTRACTOR TO INCLUDE FOR MOVING ALL FURNITURE, DESKS, CHAIRS, SHELVES, BOOKS ETC. OUT OF THEIR WAY PRIOR TO WORKS COMMENCING AND REINSTATE IN EXISTING POSITIONS AFTER WORKS COMPLETED.



FIRST FLOOR



Client:



An Roinn Oideachais
Department of Education

Architect:

N/A

Drawing Status

FOR TENDER

Project:

ST. JOHN OF GOD NATIONAL SCHOOL,
KILMORE ROAD, ARTANE,
D05E265 [RN: 19920A]

Drawing Title:

PROPOSED BUILDERS WORKS, CEILINGS,
PAINTING & FURNITURE [FIRST FLOOR]

This is a performance drawing and is not for pricing guidance. The Contractor shall produce all working drawings, including coordination drawings with other trades and the Builder. This drawing shall be read in conjunction with the specification, schedules that are associated with this project. This drawing and/or contents, information and principles of design is confidential and the sole and exclusive property of T5 Partnership Ltd. Neither the drawing nor, its contents, information or principles of design are to be disclosed, reproduced, copied or relied, in whole or part to any other person or firm except with written consent of T5 Partnership Ltd.



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fax : 00353 1 4697957

T5 Partnership Ltd
Consulting Engineers

Drawn By: BL Drawn Date: 24-JUL-26

Checked By: SK Checked Date: 24-JUL-26

Project Ref: 2345 Drawing Ref: BW(01)

Drawing Scale: 1:100 @ A1 Drawing Rev: -

Rev Date Description By Chk

THIS IS NOT A WORKING DRAWING. —

CONTRACTORS MUST PRODUCE CO-ORDINATED WORKING
DRAWINGS PRIOR TO ANY WORKS PROCEEDING

FIRE STOPPING:

THE CONTRACTOR SHALL PROVIDE FOR ALL FIRE STOPPING WORKS WHERE SERVICES (WHETHER EXISTING OR NEW) PENETRATE FIRE RATED WALLS OR PARTITIONS. THE CONTRACTOR SHALL EMPLOY A SPECIALIST SUB-CONTRACTOR TO CARRY OUT THE REQUIRED FIRE STOPPING WORK WHICH SHALL BE RESPONSIBLE FOR CERTIFICATION ON COMPLETION.

FOR MULTI-SERVICE PENETRATIONS THE CONTRACTOR SHALL PROVIDE FIRE RATED BATTS, NULLFIRE SYSTEM 747, COMPRISING MINERAL FIRE BATTS, FACED BOTH SIDES WITH A FIRE RESISTANT WATER BASED ACRYLIC MASTIC, FIRE RATED TO BS7476:PART 20/22. THIS FIRE BATT SHALL PREVENT THE PASSAGE OF TOXIC GASES, SMOKE AND FIRE, BETWEEN COMPARTMENTS FOR UP TO 4 HOURS AND ALSO PROVIDE ACoustic INSULATION.

FOR SINGLE SERVICE PENETRATIONS THROUGH A FIRE WALL THE ELECTRICAL CONTRACTOR SHALL PROVIDE SUITABLE INTUMESCENT COLLARS, WRAPS AND/OR SLEEVES TO MAINTAIN THE INTEGRITY OF THE FIRE WALL. COLLARS, WRAPS AND SLEEVES SHALL BE MANUFACTURED BY ENVIROGRAF AND SHALL COMPLY WITH BS7476:PART 20/22.

THE CONTRACTOR SHALL PROVIDE FOR ALL FIRE STOPPING WORKS WHERE SERVICES (WHETHER EXISTING OR NEW) PENETRATE FIRE RATED WALLS OR PARTITIONS. THE CONTRACTOR SHALL EMPLOY A SPECIALIST SUB-CONTRACTOR TO CARRY OUT THE REQUIRED FIRE STOPPING WHICH SHALL BE RESPONSIBLE FOR CERTIFICATION ON COMPLETION.

FOR MULTI-SERVICE PENETRATIONS THE CONTRACTOR SHALL PROVIDE FIRE RATED BATTS, NULLIFIRE SYSTEM 747, COMPOSING MINERAL FIRE BATTS, FACED BOTH SIDES WITH A FIRE RESISTANT WATER BASED ACRYLIC MASTIC, FIRE RATED TO BS476:PART 20/22. THIS FIRE BATT SHALL PREVENT THE PASSAGE OF TOXIC GASES, SMOKE AND FIRE, BETWEEN COMPARTMENTS FOR UP TO 4 HOURS AND ALSO PROVIDE ACQUISITIVE INSULATION.

FOR SINGLE SERVICE PENETRATIONS THROUGH A FIRE WALL THE ELECTRICAL CONTRACTOR SHALL PROVIDE SUITABLE SLEEVED/STITCHED COLLARS, WRAPS AND/OR SLEEVES TO MAINTAIN THE INTEGRITY OF THE FIRE WALL. COLLARS, WRAPS AND SLEEVES SHALL BE MANUFACTURED BY ENVIROGARD AND SHALL COMPLY WITH BS746:PART 20/22.

*** 

FOR MULTI-SERVICE PENETRATIONS THE CONTRACTOR SHALL PROVIDE FIRE RATED BATT, NULFIRE SYSTEM 747, COMPOSING MINERAL FIBRE BATT, FACED BOTH SIDES WITH A FIRE RESISTANT WATER BASED ACRYLIC MASTIC, FIRE RATED TO ~~BS7474~~ PART 20/22. THIS FIRE BATT SHALL PREVENT THE PASSAGE OF TOXIC GASES, SMOKE AND FIRE, BETWEEN COMPARTMENTS FOR UP TO 4 HOURS AND ALSO PROVIDE ACOUSTIC INSULATION.

FOR SINGLE SERVICE PENETRATIONS THROUGH A FIRE WALL THE ELECTRICAL CONTRACTOR SHALL PROVIDE SUITABLE INTUMESCENT COLLARS, WRAPS AND/OR SLEEVES TO MAINTAIN THE INTEGRITY OF THE FIRE WALL. COLLARS, WRAPS AND SLEEVES SHALL BE MANUFACTURED BY ENVIROGRAF AND SHALL COMPLY WITH BS7476 PART 20/22.

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NOTES :

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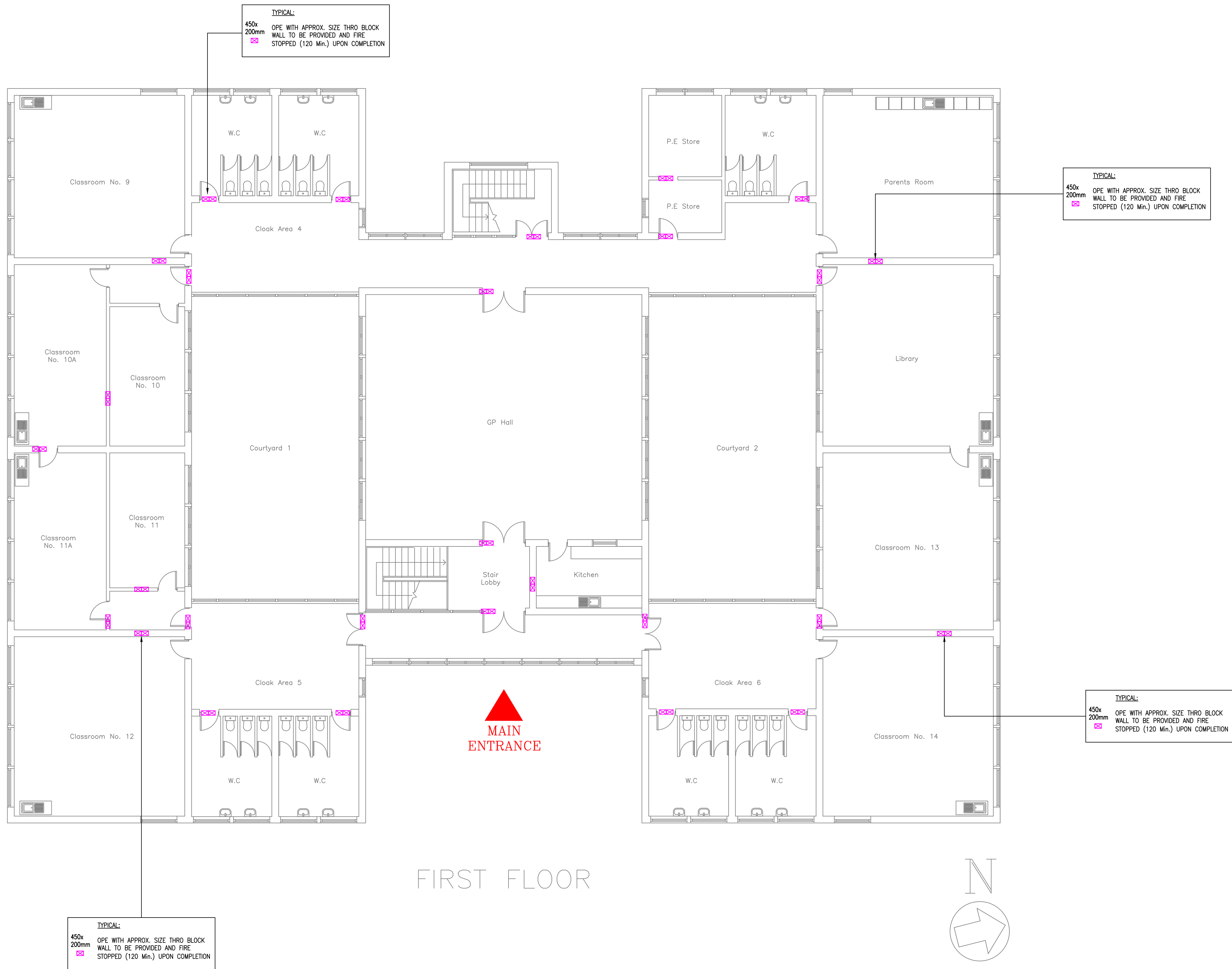
- NOTES :**
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TYPICAL:

450x
200mm
☒ OPE WITH APPROX. SIZE THRO BLOCK
WALL TO BE PROVIDED AND FIRE
STOPPED (120 Min.) UPON COMPLETION

TYPICAL:

450x
200mm
☒ OPE WITH APPROX. SIZE THRO BLOCK
WALL TO BE PROVIDED AND FIRE
STOPPED (120 Min.) UPON COMPLETION



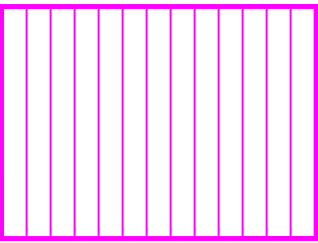
FIRST FLOOR

					Client:  An Roinn Oideachais Department of Education Architect: N/A	Drawing Status FOR TENDER Project. ST. JOHN OF GOD NATIONAL SCHOOL, KILMORE ROAD, ARTANE, D05E265 [RN: 19920A] Drawing Title. PROPOSED BUILDERS WORKS, OPES & FIRE STOPPING [FIRST FLOOR] This is a performance drawing and issued for pricing, guidance. The Contractor shall produce all working drawings, including coordination drawings with other Trades and the Builder. This drawing shall be used in conjunction with the specification, schedule that are associated with this project. This drawing and/or contents, information and principles of design is confidential and the sole and exclusive property of T5 Partnership Ltd. Neither the drawing nor, its contents, information or principles of design are to be disclosed, reproduced, copied or relayed, in whole or part to any other person or firm except with written consent of T5 Partnership Ltd.  Unit G1, Centrepoint Business Park, Oak Road, Dublin 12. web : www.t5.ie ph : 00353 1 4604968 fax : 00353 1 4097957 T5 Partnership Ltd <i>Consulting Engineers</i> Drawn By. BL Checked By. SK Project Ref. 2345 Drawing Scale 1:100 @ A1 Drawn Date. 24-JUL-26 Checked Date. 24-JUL-26 Drawing Ref. BW(03) Drawing Rev. —	<table><tr><th>Rev</th><th>Date</th><th>Description</th><th>By</th><th>Chk</th></tr><tr><td></td><td></td><td></td><td></td><td></td></tr></table>	Rev	Date	Description	By	Chk					
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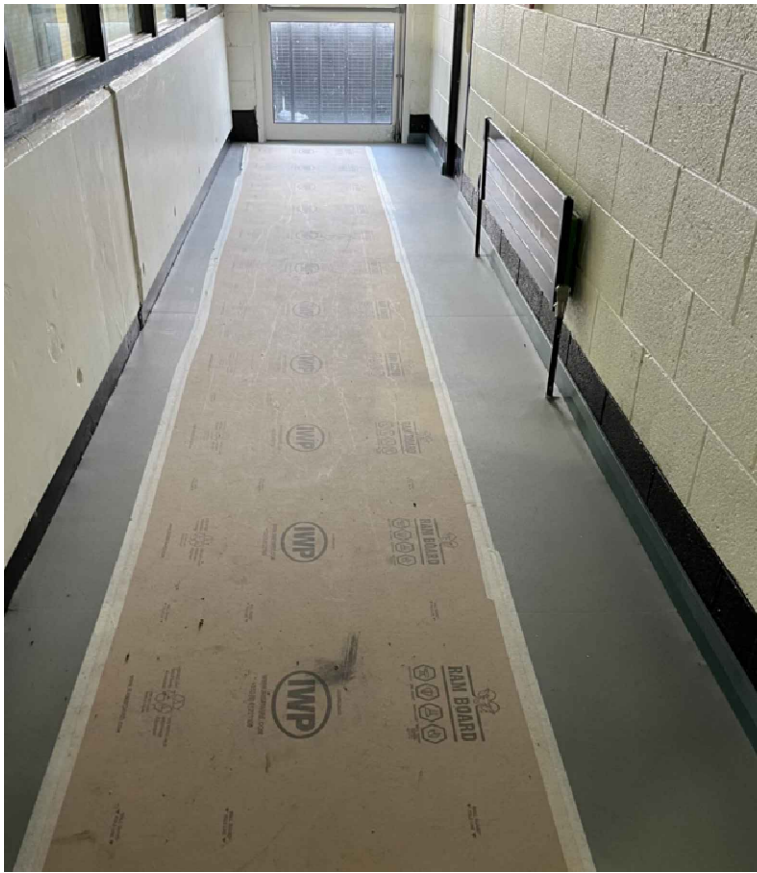
DETAIL

ENSURE PROTECTION BOARD (2.4m x 1.2m x 2.1mm) 'CORRIDOR' IS USED TO PROTECT FLOORS FROM PAINT & DUST FROM CONSTRUCTION WORKS.

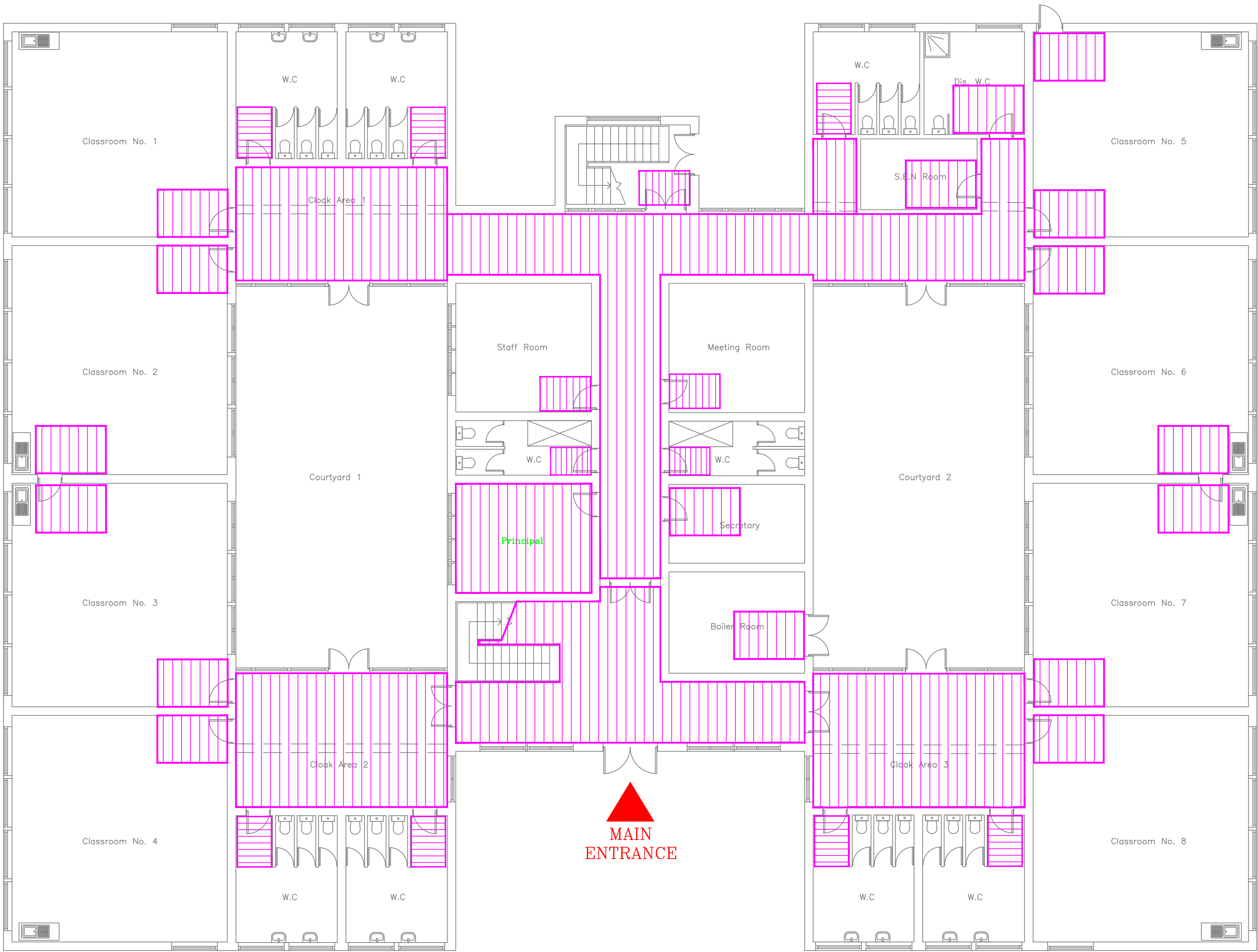
CLASSROOM WHITE BOARDS AND 1/A SCREENS REQUIRE 12mm PLYWOOD SHEETS AND PLASTIC SHEETS



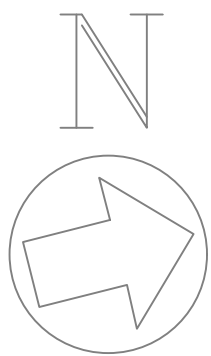
PROTECTION BOARD TO PROTECT FLOORS



CONTRACTOR TO ALLOW FOR APPROPRIATE PROTECTION OF EXISTING FLOOR, YOU MUST NOTE ANY AND ALL EXISTING DAMAGE TO THE FLOOR FINISH PRIOR TO COMMENCEMENT OF ANY WORK, AS UPON COMPLETION OF WORKS THE CONTRACTOR WILL BE LIABLE FOR THE REPAIR OF ANY & ALL DAMAGE CAUSED DURING WORKS.



GROUND FLOOR

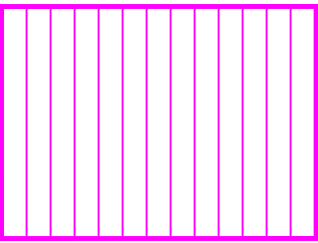


						Client: _____		Drawing Status FOR TENDER		5 Unit G1, Centrepoint Business Park, Oak Road, Dublin 12. web : www.t5.ie ph : 00353 1 4604968 fax : 00353 1 4097957 <i>T5 Partnership Ltd</i> <i>Consulting Engineers</i>			
						An Roinn Oideachais Department of Education		Project. ST. JOHN OF GOD NATIONAL SCHOOL, KILMORE ROAD, ARTANE, D05E265 [RN: 19920A]		Drawn By. BL Drawn Date. 24-JUL-26		Checked By. SK Checked Date. 24-JUL-26	
						Architect: N/A		Drawing Title. PROPOSED BUILDERS WORKS, PROTECTION OF FLOORS [GROUND FLOOR]		Project Ref. 2345 Drawing Rev. BW(04)		Project Ref. 2345 Drawing Rev. —	
Rev	Date	Description				By	Chk	This is a performance drawing and issued for pricing guidance. You the Contractor shall produce all working drawings, including coordination drawings with other Trades and the Builder. This drawing shall be read in conjunction with the specification, schedules that are associated with this project. This drawing and/or contents, information and principles of design is confidential and the sole and exclusive property of T5 Partnership Ltd. Neither the drawing nor, its contents, information or principles of design are to be disclosed, reproduced, copied or relayed, in whole or part to any other person or firm except with written consent of T5 Partnership Ltd.					

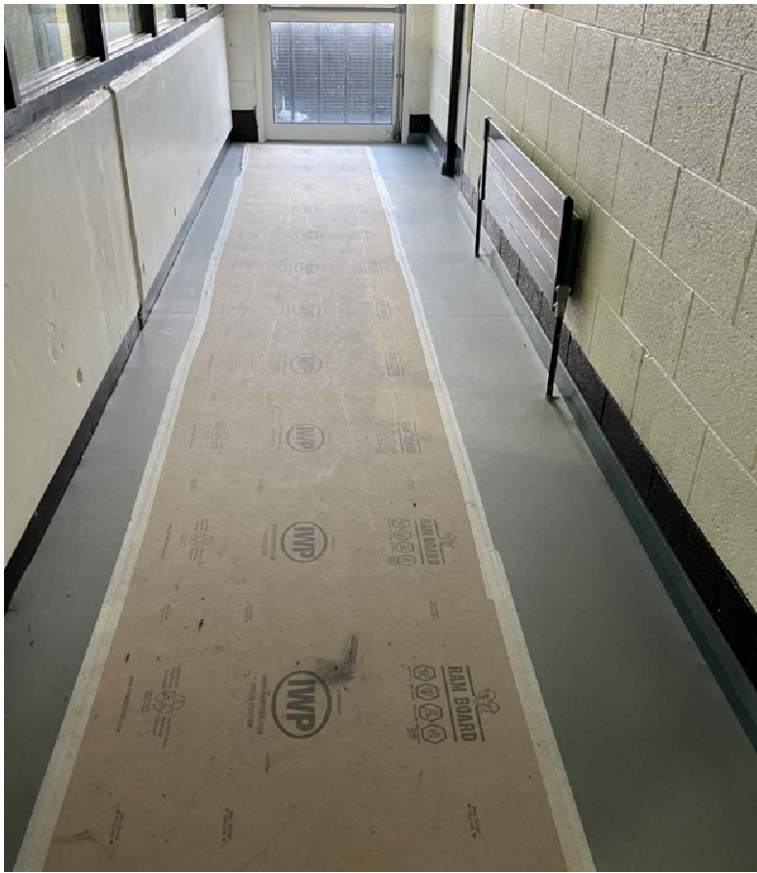
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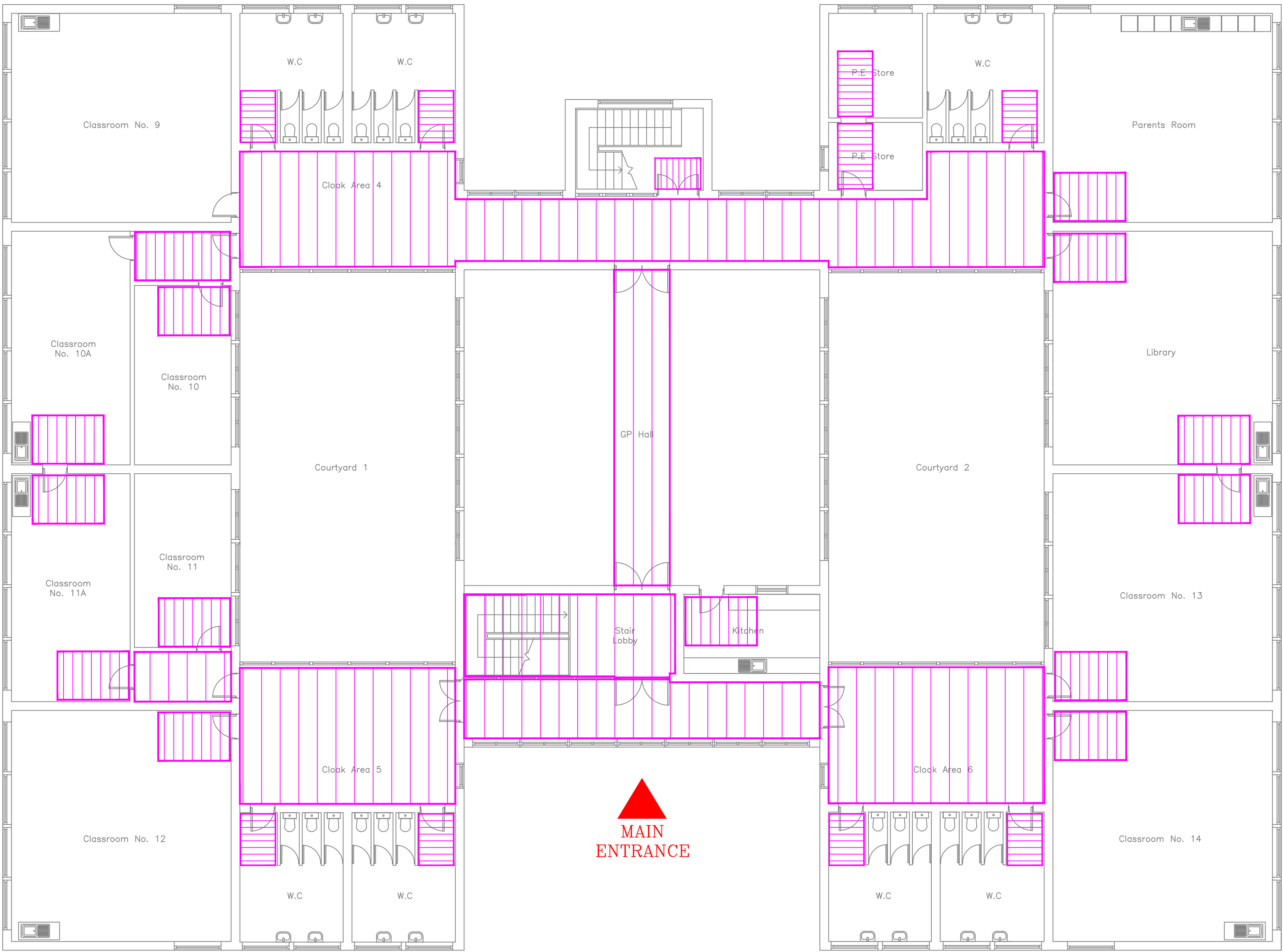
CLASSROOM WHITE BOARDS AND 1/A SCREENS REQUIRE 12mm PLYWOOD SHEETS AND PLASTIC SHEETS



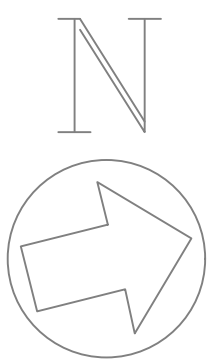
PROTECTION BOARD TO PROTECT FLOORS



CONTRACTOR TO ALLOW FOR APPROPRIATE PROTECTION OF EXISTING FLOOR, YOU MUST NOTE ANY AND ALL EXISTING DAMAGE TO THE FLOOR FINISH PRIOR TO COMMENCEMENT OF ANY WORK, AS **UPON COMPLETION OF WORKS THE CONTRACTOR WILL BE LIABLE FOR THE REPAIR OF ANY & ALL DAMAGE CAUSED DURING WORKS.**



FIRST FLOOR



						Client: An Roinn Oideachais Department of Education	Drawing Status FOR TENDER	 Unit G1, Centrapoint Business Park, Oak Road, Dublin 12. web : www.t5.ie ph : 00353 1 4604968 fax : 00353 1 4097957 T5 Partnership Ltd Consulting Engineers
					Architect: N/A	Project: ST. JOHN OF GOD NATIONAL SCHOOL, KILMORE ROAD, ARTANE, D05E265 [RN: 19920A]	Drawn By: BL Drawn Date: 24-JUL-26	Checked By: SK Checked Date: 24-JUL-26
						Drawing Title: PROPOSED BUILDERS WORKS, PROTECTION OF FLOORS [FIRST FLOOR]	Project Ref: 2345 Drawing Scale: 1:100 @ A1	Drawing Ref: BW(05) Drawing Rev: -
Rev	Date	Description	By	Chk	This is a performance drawing and issued for pricing guidance. You the Contractor shall produce all working drawings, including coordination drawings with other Trades and the Builder. This drawing shall be read in conjunction with the specification, schedules that are associated with this project. This drawing and/or contents, information and principles of design is confidential and the sole and exclusive property of T5 Partnership Ltd. Neither the drawing nor, its contents, information or principles of design are to be disclosed, reproduced, copied or relied, in whole or part to any other person or firm except with written consent of T5 Partnership Ltd.			

ZONE 1: STAFF ROOM/CANTYEN

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ORGANISING AND COORDINATING A PROFESSIONAL CLEANING COMPANY TO CARRY OUT A FULL POST-CONSTRUCTION CLEAN OF THE STAFF ROOM/CANTYEN AND ALL FOOD SERVICE AREAS. THIS SHALL INCLUDE THE SWEEPING, VACUUMING, AND MOPPING OF FLOORS; THE CLEANING AND SANITISING OF WALLS, WINDOWS, DOORS, HANDLES, AND GLAZING; AND THE DEEP CLEANING OF ALL FIXED FURNITURE INCLUDING TABLES, CHAIRS, COUNTERTOPS, SERVING AREAS, AND STORAGE UNITS. ALL FOOD PREPARATION AND SERVICE SURFACES MUST BE THOROUGHLY SANITISED TO MEET HYGIENE STANDARDS, AND SPECIAL ATTENTION MUST BE GIVEN TO REMOVING ALL CONSTRUCTION DUST, RESIDUE, AND DEBRIS. THE CONTRACTOR SHALL ENSURE THAT THE CANTYEN IS HANDLED OVER IN A CLEAN, SAFE, AND HYGIENIC CONDITION, READY FOR IMMEDIATE USE BY STUDENTS AND STAFF.

ZONE 2: TOILETS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ORGANISING AND COORDINATING A PROFESSIONAL CLEANING COMPANY TO CARRY OUT A FULL POST-CONSTRUCTION CLEAN OF ALL TOILET AND WASHROOM FACILITIES. THIS SHALL INCLUDE THE CLEANING, SANITISING, AND DISINFECTING OF FLOORS, WALLS, PARTITIONS, DOORS, HANDLES, AND GLAZING; THE DEEP CLEANING OF ALL SANITARY FIXTURES INCLUDING TOILETS, URINALS, BASINS, MIRRORS, AND ACCESSORIES; AND THE REMOVAL OF ALL CONSTRUCTION DUST, DEBRIS, AND RESIDUE. ALL SURFACES MUST BE LEFT HYGIENIC AND FREE FROM STAINS OR MARKS. THE CONTRACTOR SHALL ALSO ENSURE THAT ALL TOILETS AND WASHROOMS ARE FULLY STOCKED WITH SOAP, HAND TOWELS, AND TOILET PAPER. ALL AREAS SHALL BE HANDLED OVER IN A CLEAN, SAFE, AND SANITISED CONDITION, READY FOR IMMEDIATE USE BY STUDENTS AND STAFF.

ZONE 3: CLASSROOMS/OFFICES/UTILITY ROOMS

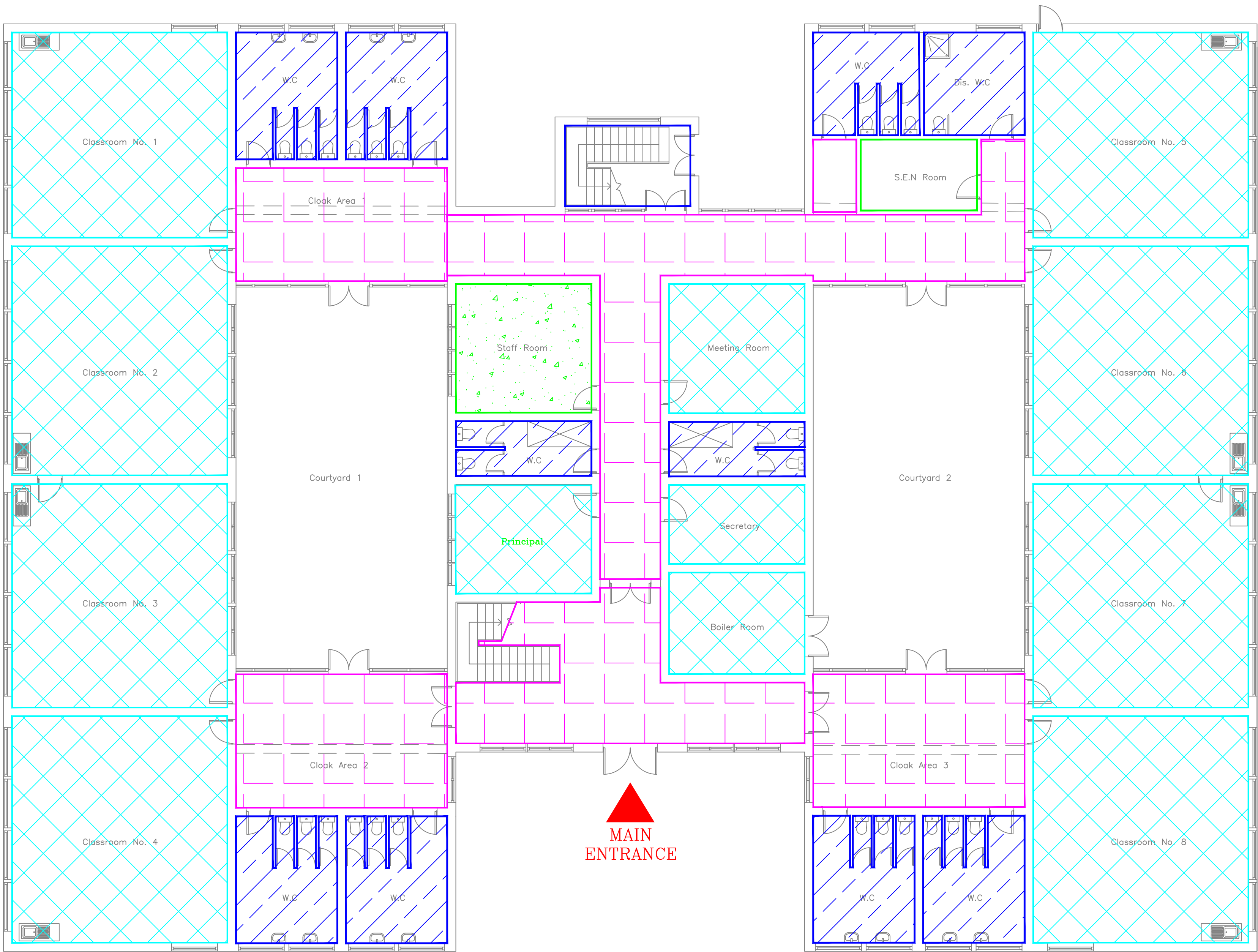
THE CONTRACTOR SHALL BE RESPONSIBLE FOR ORGANISING AND COORDINATING A PROFESSIONAL CLEANING COMPANY TO CARRY OUT A FULL POST-CONSTRUCTION CLEAN OF ALL CLASSROOMS, OFFICES AND UTILITY ROOMS. THIS SHALL INCLUDE THE THOROUGH SWEEPING, VACUUMING, AND MOPPING OF FLOORS; THE CLEANING AND WIPING DOWN OF WALLS, WINDOWS, DOORS, FRAMES, HANDLES, AND GLAZING; AND THE DUSTING AND CLEANING OF ALL FIXED FURNITURE INCLUDING DESKS, SHELVES, CUPBOARDS, AND STORAGE UNITS. SPECIAL CARE MUST BE TAKEN TO REMOVE ALL CONSTRUCTION DUST AND DEBRIS FROM SURFACES, CORNERS, AND HIGH-LEVEL AREAS. THE CONTRACTOR SHALL ENSURE THAT ALL CLASSROOMS ARE HANDLED OVER IN A CLEAN, HYGIENIC, AND PRESENTABLE CONDITION, READY FOR IMMEDIATE OCCUPATION BY STUDENTS AND TEACHING STAFF.

ZONE 4: HALLWAYS AND GP HALL

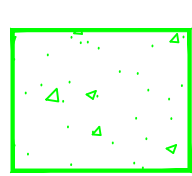
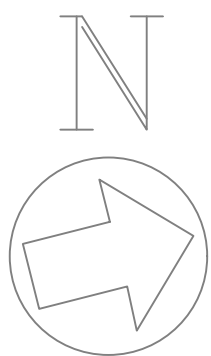
THE CONTRACTOR SHALL ENSURE THAT ALL HALLWAYS AND GP HALLS ARE THOROUGHLY CLEANED AS PART OF THE POST-CONSTRUCTION WORKS. THIS SHALL INCLUDE THE SWEEPING, VACUUMING, AND MOPPING OF FLOORS TO REMOVE ALL DUST, DEBRIS, AND MARKS; THE CLEANING AND WIPING DOWN OF ALL WALLS AND SKirting TO REMOVE CONSTRUCTION RESIDUE; AND THE CLEANING OF ALL DOORS, FRAMES, HANDLES, AND GLAZING TO ENSURE A PRESENTABLE AND HYGIENIC FINISH. HALLWAYS MUST BE LEFT FREE OF OBSTRUCTIONS AND IN A SAFE, CLEAN CONDITION SUITABLE FOR IMMEDIATE USE BY STUDENTS AND STAFF.

REFER TO THE SUMMARY OF TENDER DOCUMENT FOR MORE INFORMATION ON PRICING THE CLEANING WORKS (MUST BE PRICED).

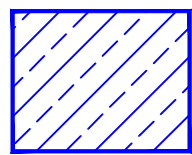
MINIMUM SCHEDULE FOR WORKS REQUIRED FOR THE DEEP CLEAN INVOLVES:
DEDICATED CLEANING COMPANY (NOT GO'S FROM CONTRACTOR) AND NOT THE INCUMBENT SCHOOL CLEANING COMPANY
1) BRUSH AND PANS
2) INDUSTRIAL HOOVER
3) MOPS & BUCKETS
4) WET VACS
5) FOR A MINIMUM PERIOD OF 4 WEEKS 5 DAYS A WEEK, 8 HOURS A DAY
TOTAL: 160 HOURS



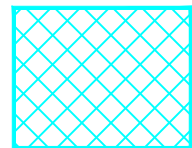
GROUND FLOOR



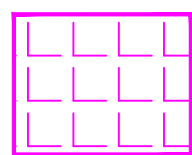
STAFFROOM/CANTEEN CLEANING
STAFFROOM/CANTEEN AREAS INDICATED **IN GREEN** ON DRAWING REQUIRE FULL POST-CONSTRUCTION CLEANING. THE CONTRACTOR SHALL ARRANGE AND COORDINATE A PROFESSIONAL CLEANING COMPANY TO CARRY OUT THESE WORKS. CLEANING SHALL INCLUDE FLOORS, WALLS, CEILINGS, WINDOWS, DOORS, AND FIXED FURNITURE.



TOILET CLEANING
TOILETS AREAS INDICATED **IN BLUE** ON DRAWING REQUIRE FULL POST-CONSTRUCTION CLEANING. THE CONTRACTOR SHALL ARRANGE AND COORDINATE A PROFESSIONAL CLEANING COMPANY TO CARRY OUT THESE WORKS. CLEANING SHALL INCLUDE FLOORS, WALLS, CEILINGS, WINDOWS, DOORS, AND FIXED FURNITURE.



CLASSROOMS/OFFICES/UTILITY ROOMS CLEANING
CLASSROOM/OFFICE/UTILITY ROOM AREAS INDICATED **IN CYAN** ON DRAWING REQUIRE FULL POST-CONSTRUCTION CLEANING. THE CONTRACTOR SHALL ARRANGE AND COORDINATE A PROFESSIONAL CLEANING COMPANY TO CARRY OUT THESE WORKS. CLEANING SHALL INCLUDE FLOORS, WALLS, CEILINGS, WINDOWS, DOORS, AND FIXED FURNITURE.



HALLWAY & GP HALL CLEANING
HALLWAY AND GP HALL AREAS INDICATED **IN MAGENTA** ON DRAWING REQUIRE FULL POST-CONSTRUCTION CLEANING. THE CONTRACTOR SHALL ARRANGE AND COORDINATE A PROFESSIONAL CLEANING COMPANY TO CARRY OUT THESE WORKS. CLEANING SHALL INCLUDE FLOORS, WALLS, CEILINGS, WINDOWS, DOORS, AND FIXED FURNITURE.

					Client:  An Roinn Oideachais Department of Education	Drawing Status FOR TENDER	 Unit G1, Centrepont Business Park, Oak Road, Dublin 12. web : www.t5.ie ph : 00353 1 4604968 fax : 00353 1 4097957 T5 Partnership Ltd Consulting Engineers
						Project. ST. JOHN OF GOD NATIONAL SCHOOL, KILMORE ROAD, ARTANE, D05E265 [RN: 19920A]	Drawn By. BL Drawn Date. 24-JUN-26
					Architect: N/A	Drawing Title. POST CONSTRUCTION CLEANING PROTOCOL [GROUND FLOOR]	Checked By. SK Checked Date. 24-JUN-26
						Project Ref. 2345 Drawing Scale 1:100 @ A1	Drawing Ref. CL(00) Drawing Rev. —
Rev	Date	Description	By	Chk	This is a performance drawing and issued for pricing guidance. You the Contractor shall produce all working drawings, including coordination drawings with other Trades and the Builder. This drawing shall be used in conjunction with the specification, schedules that are associated with this project. This drawing and/or contents, information and principles of design is confidential and the sole and exclusive property of T5 Partnership Ltd. Neither the drawing nor, its contents, information or principles of design are to be disclosed, reproduced, copied or relied, in whole or part to any other person or firm except with written consent of T5 Partnership Ltd.		

ZONE 1: STAFF ROOM/CANTEN

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ORGANISING AND COORDINATING A PROFESSIONAL CLEANING COMPANY TO CARRY OUT A FULL POST-CONSTRUCTION CLEAN OF THE STAFF ROOM/CANTEN AND ALL FOOD SERVICE AREAS. THIS SHALL INCLUDE THE SWEEPING, VACUUMING, AND MOPPING OF FLOORS; THE CLEANING AND SANITISING OF WALLS, WINDOWS, DOORS, HANDLES, AND GLAZING; AND THE DEEP CLEANING OF ALL FIXED FURNITURE INCLUDING TABLES, CHAIRS, COUNTERTOPS, SERVING AREAS, AND STORAGE UNITS. ALL FOOD PREPARATION AND SERVICE SURFACES MUST BE THOROUGHLY SANITISED TO MEET HYGIENE STANDARDS, AND SPECIAL ATTENTION MUST BE GIVEN TO REMOVING ALL CONSTRUCTION DUST, RESIDUE, AND DEBRIS. THE CONTRACTOR SHALL ENSURE THAT THE CANTEN IS HANDLED OVER IN A CLEAN, SAFE, AND HYGIENIC CONDITION, READY FOR IMMEDIATE USE BY STUDENTS AND STAFF.

ZONE 2: TOILETS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ORGANISING AND COORDINATING A PROFESSIONAL CLEANING COMPANY TO CARRY OUT A FULL POST-CONSTRUCTION CLEAN OF ALL TOILET AND WASHROOM FACILITIES. THIS SHALL INCLUDE THE CLEANING, SANITISING, AND DISINFECTING OF FLOORS, WALLS, PARTITIONS, DOORS, HANDLES, AND GLAZING; THE DEEP CLEANING OF ALL SANITARY FIXTURES INCLUDING TOILETS, URINALS, BASINS, MIRRORS, AND ACCESSORIES; AND THE REMOVAL OF ALL CONSTRUCTION DUST, DEBRIS, AND RESIDUE. ALL SURFACES MUST BE LEFT HYGIENIC AND FREE FROM STAINS OR MARKS. THE CONTRACTOR SHALL ALSO ENSURE THAT ALL TOILETS AND WASHROOMS ARE FULLY RESTOCKED WITH SOAP, HAND TOWELS, AND TOILET PAPER. ALL AREAS SHALL BE HANDLED OVER IN A CLEAN, SAFE, AND SANITISED CONDITION, READY FOR IMMEDIATE USE BY STUDENTS AND STAFF.

ZONE 3: CLASSROOMS/OFFICES/UTILITY ROOMS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ORGANISING AND COORDINATING A PROFESSIONAL CLEANING COMPANY TO CARRY OUT A FULL POST-CONSTRUCTION CLEAN OF ALL CLASSROOMS, OFFICES AND UTILITY ROOMS. THIS SHALL INCLUDE THE THOROUGH SWEEPING, VACUUMING, AND MOPPING OF FLOORS; THE CLEANING AND WIPING DOWN OF WALLS, WINDOWS, DOORS, FRAMES, HANDLES, AND GLAZING; AND THE DUSTING AND CLEANING OF ALL FIXED FURNITURE INCLUDING DESKS, SHELVES, CUPBOARDS, AND STORAGE UNITS. SPECIAL CARE MUST BE TAKEN TO REMOVE ALL CONSTRUCTION DUST AND DEBRIS FROM SURFACES, CORNERS, AND HIGH-LEVEL AREAS. THE CONTRACTOR SHALL ENSURE THAT ALL CLASSROOMS ARE HANDLED OVER IN A CLEAN, HYGIENIC, AND PRESENTABLE CONDITION, READY FOR IMMEDIATE OCCUPATION BY STUDENTS AND TEACHING STAFF.

ZONE 4: HALLWAYS AND GP HALL

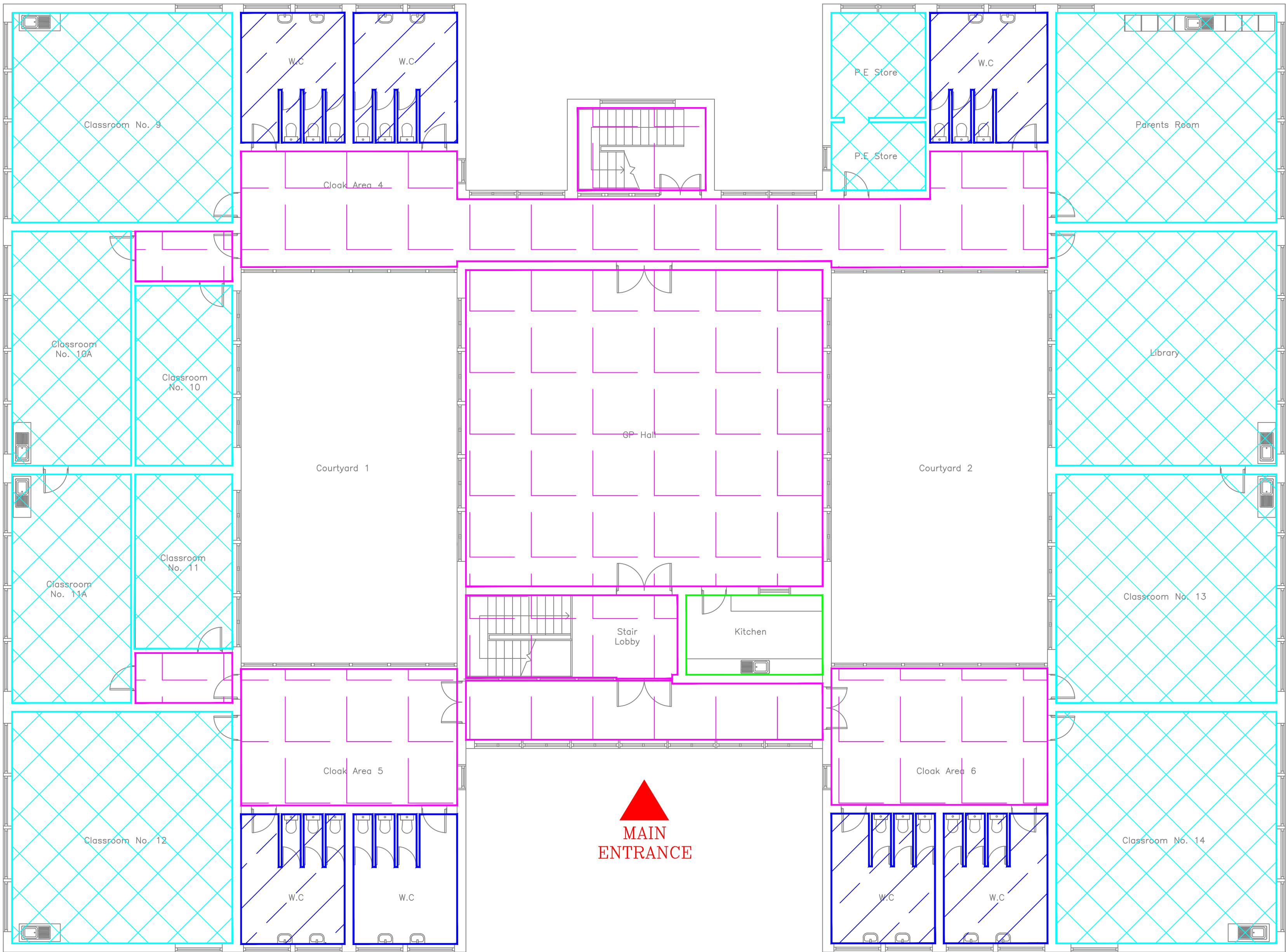
THE CONTRACTOR SHALL ENSURE THAT ALL HALLWAYS AND GP HALLS ARE THOROUGHLY CLEANED AS PART OF THE POST-CONSTRUCTION WORKS. THIS SHALL INCLUDE THE SWEEPING, VACUUMING, AND MOPPING OF FLOORS TO REMOVE ALL DUST, DEBRIS, AND MARKS; THE CLEANING AND WIPING DOWN OF ALL WALLS AND SKIRTING TO REMOVE CONSTRUCTION RESIDUE; AND THE CLEANING OF ALL DOORS, FRAMES, HANDLES, AND GLAZING TO ENSURE A PRESENTABLE AND HYGIENIC FINISH. HALLWAYS MUST BE LEFT FREE OF OBSTRUCTIONS AND IN A SAFE, CLEAN CONDITION SUITABLE FOR IMMEDIATE USE BY STUDENTS AND STAFF.

REFER TO THE SUMMARY OF TENDER DOCUMENT FOR MORE INFORMATION ON PRICING THE CLEANING WORKS (MUST BE PRICED).

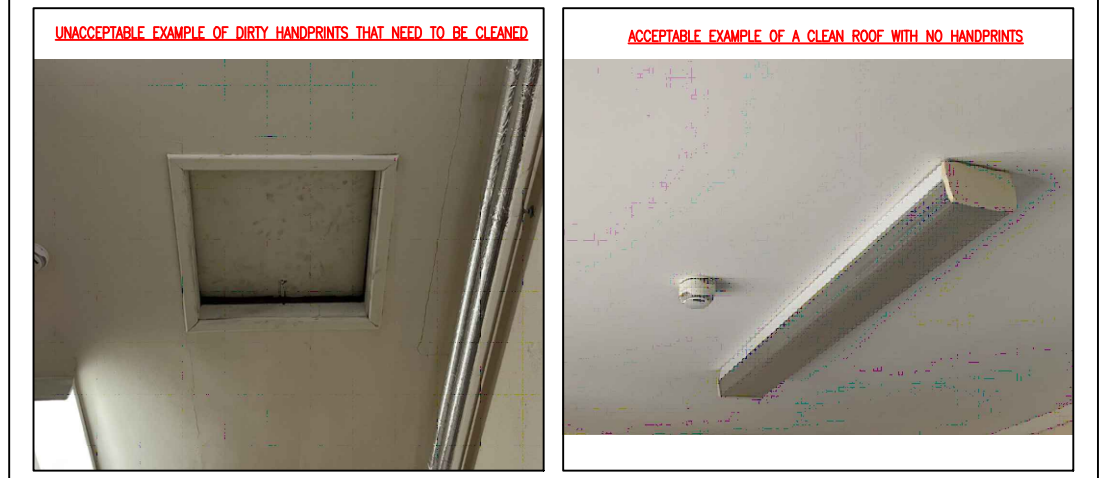
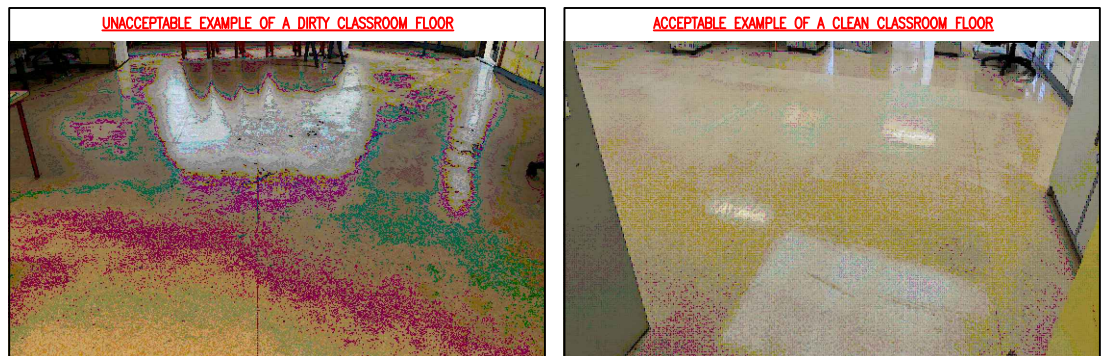
MINIMUM SCHEDULE FOR WORKS REQUIRED FOR THE DEEP CLEAN INVOLVES:

DEDICATED CLEANING COMPANY (NOT GO'S FROM CONTRACTOR) AND NOT THE INCUMBENT SCHOOL CLEANING COMPANY

1) BRUSH AND PINE
2) INDUSTRIAL HOVER
3) MOPS & BUCKETS
4) WET VACS
5) FOR A MINIMUM PERIOD OF 4 WEEKS 5 DAYS A WEEK, 8 HOURS A DAY
TOTAL: 160 HOURS



FIRST FLOOR



STAFFROOM/CANTEN CLEANING

STAFFROOM/CANTEN AREAS INDICATED **IN GREEN** ON DRAWING REQUIRE FULL POST-CONSTRUCTION CLEANING. THE CONTRACTOR SHALL ARRANGE AND COORDINATE A PROFESSIONAL CLEANING COMPANY TO CARRY OUT THESE WORKS. CLEANING SHALL INCLUDE FLOORS, WALLS, CEILINGS, WINDOWS, DOORS, AND FIXED FURNITURE.

TOILET CLEANING

TOILETS AREAS INDICATED **IN BLUE** ON DRAWING REQUIRE FULL POST-CONSTRUCTION CLEANING. THE CONTRACTOR SHALL ARRANGE AND COORDINATE A PROFESSIONAL CLEANING COMPANY TO CARRY OUT THESE WORKS. CLEANING SHALL INCLUDE FLOORS, WALLS, CEILINGS, WINDOWS, DOORS, AND FIXED FURNITURE.

CLASSROOMS/OFFICES/UTILITY ROOMS CLEANING

CLASSROOM/OFFICE/UTILITY ROOM AREAS INDICATED **IN CYAN** ON DRAWING REQUIRE FULL POST-CONSTRUCTION CLEANING. THE CONTRACTOR SHALL ARRANGE AND COORDINATE A PROFESSIONAL CLEANING COMPANY TO CARRY OUT THESE WORKS. CLEANING SHALL INCLUDE FLOORS, WALLS, CEILINGS, WINDOWS, DOORS, AND FIXED FURNITURE.

HALLWAY & GP HALL CLEANING

HALLWAY AND GP HALL AREAS INDICATED **IN MAGENTA** ON DRAWING REQUIRE FULL POST-CONSTRUCTION CLEANING. THE CONTRACTOR SHALL ARRANGE AND COORDINATE A PROFESSIONAL CLEANING COMPANY TO CARRY OUT THESE WORKS. CLEANING SHALL INCLUDE FLOORS, WALLS, CEILINGS, WINDOWS, DOORS, AND FIXED FURNITURE.

Rev	Date	Description	By	Chk	Client:  An Roinn Oideachais Department of Education	Drawing Status FOR TENDER	 Unit G1, Centrepont Business Park, Oak Road, Dublin 12. web : www.t5.ie ph : 00353 1 4604968 fax : 00353 1 4097957 T5 Partnership Ltd Consulting Engineers	
						Project. ST. JOHN OF GOD NATIONAL SCHOOL, KILMORE ROAD, ARTANE, D05E265 [RN: 19920A]	Drawn By. BL Checked By. SK Project Ref. 2345 Drawing Scale 1:100 @ A1	Drawn Date. 24-JUL-26 Checked Date. 24-JUL-26 Drawing Ref. CL(01) Drawing Rev. —
						Drawing Title. POST CONSTRUCTION CLEANING PROTOCOL [FIRST FLOOR]	This is a performance drawing and issued for pricing guidance. You the Contractor shall produce all working drawings, including coordination drawings with other Trades and the Builder. This drawing shall be read in conjunction with the specification, schedules that are associated with this project. This drawing and/or contents, information and principles of design is confidential and the sole and exclusive property of T5 Partnership Ltd. Neither the drawing nor, its contents, information or principles of design are to be disclosed, reproduced, copied or relied, in whole or part to any other person or firm except with written consent of T5 Partnership Ltd.	

6. Drg Issue Sheet

DRAWING/DOCUMENT ISSUE SHEET



Unit G1
Centre Point Business Park,
Oak Road,
Dublin 12 [D12 RD98]
www.t5.ie

[P] 353 1 460 4968

[E] info@t5.ie

Project:

St. John of God National School
Kilmore Road, Artane
D05E265 [RN: 19920A]

Project. No.
2345

Issued By.
BL

Page
1 of 1

PURPOSE OF ISSUE

P = PRELIMINARY FC = FOR COMMENTS
A = FOR APPROVAL C = FOR CONSTRUCTION
T = TENDER I = FOR INFORMATION

DATE OF ISSUE :

T
22-OCT-26

SERVICE: Emergency Upgrade Works

DRAWING CIRCULATION: STAGE T: TENDER

Client: DEPARTMENT OF EDUCATION

Architect: N/A

QSurv: N/A

Structural Eng: N/A

Main Contractor: N/A

Electrical Contractor: N/A

Mechanical Contractor: N/A

Sprinkler Contractor: N/A

Specialist Contractors: N/A

Drg. Ref.	Drg. Title:	Drawings/Documents Issued and Revisions:					
2345_62(00)	PROPOSED CONTAINMENT LAYOUT – GROUND FLOOR (GF)	●					
2345_62(01)	PROPOSED CONTAINMENT LAYOUT – FIRST FLOOR (FF)	●					
2345_63(00)	PROPOSED NEW EMERGENCY LIGHTING LAYOUT – GROUND FLOOR	●					
2345_63(01)	PROPOSED NEW EMERGENCY LIGHTING LAYOUT – FIRST FLOOR	●					
2345_63(02)	EXISTING EMERGENCY LIGHTING TO BE REMOVED – GROUND FLOOR	●					
2345_63(03)	EXISTING EMERGENCY LIGHTING TO BE REMOVED – FIRST FLOOR	●					
2345_68(00)	PROPOSED NEW FIRE DETECTION SYSTEM LAYOUT – GROUND FLOOR	●					
2345_68(01)	PROPOSED NEW FIRE DETECTION SYSTEM LAYOUT – FIRST FLOOR	●					
2345_68(02)	EXISTING FIRE DETECTION SYSTEM TO BE REMOVED – GROUND FLOOR	●					
2345_68(03)	EXISTING FIRE DETECTION SYSTEM TO BE REMOVED – FIRST FLOOR	●					
2345_68(04)	PROPOSED NEW INTERNAL & EXTERNAL FIRE DOORS – GROUND FLOOR	●					
2345_BW(00)	PROPOSED BUILDERS WORKS, CEILINGS, PAINTING & FURNITURE – GF	●					
2345_BW(01)	PROPOSED BUILDERS WORKS, CEILINGS, PAINTING & FURNITURE – FF	●					
2345_BW(02)	PROPOSED BUILDERS WORKS, OPES, FIRE STOPPING & SITE COMPOUND –GF	●					
2345_BW(03)	PROPOSED BUILDERS WORKS, OPES & FIRE STOPPING – FIRST FLOOR	●					
2345_BW(04)	PROPOSED BUILDERS WORKS, PROTECTION OF FLOORS – GROUND FLOOR	●					
2345_BW(05)	PROPOSED BUILDERS WORKS, PROTECTION OF FLOORS – FIRST FLOOR	●					
2345_CL(00)	POST CONSTRUCTION CLEANING PROTOCOL – GROUND FLOOR	●					
2345_CL(01)	POST CONSTRUCTION CLEANING PROTOCOL – FIRST FLOOR	●					