Proposed M & E Requirements

for

New Islamic Seminary

Darul Uloom Dawatul Imaan

Harry St, Dudley Hill, Bradford, BD4 9PH

Spring 2010 (Rev 1)

Amãnah Studio

Planning, Architectural Design & Project Management

Contents

Prepared by

M. Aslam Patel, BA (Hons) Arch Studies, Dip. Arch

Project Co-ordinator

Amãnah Studio

178 Headfield Rd, Savile Town, Dewsbury, West Yorkshire, WF12 9JH

Tel: Mobile (Preferred) 07971521211 - Studio (am only) 01924 488929

Email: info@amanahstudio.org

Background

Introduction

The now almost complete 5002sqm shell of the four-storey New Islamic Seminary in Dudley Hill, Bradford consist of a steel-frame structure supporting metal-deck/in –situ composite concrete floors arranged in a L -Shape configuration with artificial stone cavity walls and a pitch concrete tile and support system on steel purlins and rafters.

All internal walls are of blockwork construction.

There are three main dedicated entrances and stairwells, one of the latter surrounding a lift shaft.

Plant rooms are stacked upon each other in a central location throughout the building and are adjacent to corridors which are viewed as horizontal service spines running throughout the development.

Function of an Islamic Seminary (Darul Uloom)

An Islamic Seminary may be described as a boarding institution where both religious, temporal and spiritual education and character development to a higher standard are imparted in an academic setting with the aim of producing graduates who go on to become Ministers of Religions (Imams), guides and responsible leaders of the Muslim and wider Community.

The post of Imam is viewed as important, influential and prestigious. He would be the person whom the Community look towards for jurisprudence, spiritual and moral guidance from leading the five daily prayers, officiating weddings, burials, to imparting education to people of all age and gender.

The course of study is fairly long, intensive and demanding, up to 10 or 11 years.

The academic year of approximately 42 weeks starts straight after Ramadhan (mid September) and lasts until end of July.

Demands Upon Building Environment

This intensive course of study places an unique demand on the building structure.

Students arrive at the tender age of 11 years of age and stay until their early twenties.

All boys live in boarding accommodation with food provided (to a high standard of cuisine, hygiene and in-house preparation).

A relatively disciplined yet affable regime of prayer, learning, education, contemplation, self-reformation, character development and recreation means the building needs to cater for the demands imposed from 300 to 400 students attending classes and welfare facilities on many occasions all at similar times, beginning from 7.30am and lasting until 10.00pm

ELECTRICAL SERVICES

The electrical services installation shall comprise of the following:-

1. Design
2. Mains Distribution
3. Earthing and Bonding.
4. Lighting
5. Emergency Lighting
6. External Lighting
7. Small Power
8. Fire Alarm
9. Disabled W.C. Alarm
10. Hand Driers
11. Disabled Refuge.
12. Electrical Supplies to Mechanical Equipment
13. Lightning Protection
14. Intruder Alarm
15. PA System & Intercom
16. Induction Loop (for hard of hearing)
17. Network Cabling & VGA Cabling for IT Equipment & Projectors/Teaching Aids
18. Internal & External CCTV System
19. Last Man Switches per Floor
20. Testing and commissioning

1. Design Standards

The installation shall be designed and installed in accordance with good current practice and shall comply specifically with the following:-

Current Building Regulations.& Building Bulletins for Schools

CIBSE Codes

BS 7671: 2008, Requirements for Electrical Installations (including all amendments to date)

Health and Safety at Work Act 1974 and all current amendments.

Electrical Supply Regulations 1988 and all current amendments.

CDM Regulations 2007.

BS 5266 - 1: 2005 Emergency Lighting

BS 5839 - 1: 2002 Fire Detection & Fire Alarm Systems for Buildings

PD 6662:2004 which is the UK implementation ofEN50131

2. Mains Distribution

A 250A three phase electricity supply shall be installed into the building by the supply authority (YEDL) and terminate at a meter and cut out arrangement in a suitable location (Plant Room facing Dudley St).

Suggested to be located in the Plant Room:

Distribution equipment shall be selected and installed fully in accordance with BS 7671:2008.

The short circuit rating of switchgear shall be at least 25% greater than the calculated short circuit current at the respective location.

At the incoming supply position, a suitably sized and rated panel board shall be provided and installed to serve the building. Distribution boards shall be fed via this panel board to ground, first, second and third floor levels.

Submain cables to feed these distribution boards shall be PVC/SWAlLSF cables.

Dedicated supplies to mechanical control panel, lift isolator and fire alarm panel shall also emanate from the panel board.

The distribution boards shall be of metal construction, with a suitable quantity of outgoing ways to serve the lighting, power, and mechanical services supplies etc, including 20% spare ways.

An isolator shall be provided to each of the distribution boards.

Spare load capacity of25% shall be provided at the distribution boards.

Wiring for final circuits from the distribution boards shall be generally multi core copper cables with LSF insulation and over sheath installed on basket containment to main runs and within cable loops off of the main runs. PVC conduit will be installed where cablesdrop to accessories.

Distribution boards shall be complete with all labels, identification and typed circuit schedules.

Spare ways shall be fitted with blank plates.

3. Earthing & Bonding

A complete earthing system comprising main earthing conductors, earth bars, main and supplementary bonding shall be installed in full compliance with BS 7671: The IEE Wiring Regulations, and BS 7430: Code of Practice for Earthing.

4. Lighting

The Lighting scheme and illumination levels shall be designed in accordance with CIBSE Code for Interior Lighting and the recommendations of Building Bulletins. Lighting levels but must take into account the practice of Islamic Seminaries of teaching sitting at floor level.

Luminaires shall be as follows;

• Circulation Areas

• Recreation Rooms.

• Ablutions.

• Shower Areas

• Teaching Rooms/Library.

• Boarding Rooms.

• Student Lounge.

• Plant Areas.

Recessed 600x600 modular fittings.

Wall mounted circular decorative 2D fittings.

Recessed 600x600 modular fittings

Recessed IP65 PL Downlighters.

Recessed IP65 LV Spotlights.

Recessed 600x600 modular fittings

Energy Efficient Pendant Light c/w decorative bowl shade.

Surface suspended batten fitting.

IP65 Non Corrosive Batten Fittings.

Lighting shall generally be manually switched from suitable locations, complying with the requirements of Building Regulations, Part L and building Bulletins.

Within rooms, manual switches shall be provided adjacent the main entrance doors to each room, with two way switching provided where two or more doors will be used during normal circumstances.

Switches shall be Grid switch type with 10 amp rated (white rockers). White moulded flush mounted switch plates shall be utilised in all areas.

Wiring for the general lighting installation is generally multi core copper cables with LSF insulation and over sheath installed in proprietary clips above suspended ceilings and PVC conduit where they drop to switches etc

The lighting layouts shall be coordinated with the building structure and ceiling layout.

5. Emergency Lighting

The emergency lighting scheme and illumination levels shall be designed in accordance with BS 5266.

Self-contained bulkhead and exit signs which shall be provided and installed to highlight the escape routes. These shall operate in non-maintained mode throughout the building, operating for a period of not less than three hours after mains interruption.

Circuits containing emergency luminaires shall be provided with test facilities via key switches located within the general lighting switch plate, these shall be wired such that all luminaires are disconnected on that circuit, simulating a mains failure situation. These shall be engraved ""EMG LTG TEST".

Wiring for the emergency lighting installation shall be generally multi core copper cables with LSF insulation and over sheath installed in proprietary clips above suspended ceilings and PVC conduit where they drop to switches etc

Prior to handover full certification shall be provided to confirm satisfactory installation and commissioning in accordance with BS 5266.

6. External Lighting (Subject to Planning Conditions)

External lighting shall be designed in accordance with CIBSE Lighting Guide and the conditions agreed with Planning Authority.

External lighting shall be provided to car parking and circulation areas. These shall take the form of building mounted luminaires, supplemented by column-mounted luminaires.

All mounting heights, luminaires, columns, etc shall be selected to provide the most appropriate distribution of light to provide the uniformity levels required to meet the

British Standards. External lighting shall be controlled by a photocell and time switch, to ensure that lights are automatically switched 'on' only when the daylight levels are below 70 lux at the point of measurement. External lighting shall be automatically switched 'off' when daylight levels exceed 250 lux. A Seven day 24 hour time switch shall be installed at the point of control, to allow the building users to switch the external lighting 'off' when not required. Over-ride switches shall be provided at positions to be agreed for the canopy/terrace lighting.

7. Small Power

All containment, socket outlets, fused connection units, isolators, isolation devices, miscellaneous power outlets and associated wiring shall be provided to complete a working installation.

Socket outlets throughout the building shall be protected by RCBO's at the distribution boards. Socket outlets shall be flush mounted to all areas apart from Plant Rooms.

Fused connection units and switch-disconnectors shall be labelled to identify the equipment served.

Dado trunking needs to be allowed to Reception (G/F), Staff Administration Office (F/F), Staff Library (F/F), Teaching rooms 8,10 and 11 (F/F) and Libraries on Second & Third Floor to cater for possible IT equipment.

All accessories shall be minimum white plastic finish (manufacturer: **MK or Crabtree** Commercial Range Only), with those in Communal Areas (Kitchen, Staff, Student Common Rooms, Dinning, Prayer, Office, Library, ITC suite, etc) to a Stainless Steel finish

Wiring for the small power installation shall be generally multi core copper cables with LSF insulation and over sheath installed in proprietary clips above suspended ceilings and PVC conduit where they drop to accessories etc

8. Fire Alarm

A conventional Fire Detection and Alarm System shall be designed to meet the requirements of BS 5839-1:2002. The Fire alarm system shall be a category Ll.

The fire alarm system shall include all detection devices, sounders, control and indicating equipment, cabling, interfaces, power supplies, containment, etc as required forming an operational system.

The control and indicating equipment shall be mounted at the main visitors entrance in a suitable location for the fire officer

Power supplies provided for the charger, or for any maintained equipment forming part of the Fire Detection and Alarm system shall be dedicated, segregated and fireproof supplies terminating in a key switched fused connection units clearly labelled "FIRE ALARM DO NOT SWITCH OFF".

Detection devices shall generally be ceiling mounted optical or heat sensors. Devices shall be installed a minimum of 500mrn from partition walls where possible.

Manual call points shall be provided and installed at the exit point to each zone and the entrance/exit to the building

Sounders shall have a minimum output of 98dB (A) at 1m, either white coloured wall mounted types, or sounder base type, with a minimum output of90dB (A) at 1m.

Wiring shall be carried out using multi-core soft-skinned fire resistant cable, with a red LSF over sheath-approved cable. Cables shall generally be installed on cable basket to main runs and within the building fabric, ceiling voids etc. Single run cables shall be clipped using proprietary cable loops.

The Contractor shall employ the manufacturer or their agent, to program, test, commission and certify the systems on completion of the works. This shall include a marked up drawing to indicate recorded audibility levels in each room, which shall be carried out when all doors, windows and partitions are installed/constructed. There are no requirements for the fire alarm to signal to remote off site locations i.e. Redcare has not been included for.

9. Disabled Persons W.C. Distress Alarm

A disabled person's W.C. distress alarm system shall be provided, installed, tested and commissioned to the wheelchair accessible WC.

A pull cord shall be located at the WC, complete with two red triangular bangles or similar to aid use by the mobility impaired. Heights of these shall be in accordance with the recommendations of BS 8300. A local reset and re-assurance lights visible from the WC shall be installed. Above to door to the wheelchair accessible WC an over-door indicator and sounders shall be located at a suitable location to allow rapid identification of an alarm situation..

The Disabled Person's Distress Alarm system shall comply fully with the recommendations of BS 8300. The entire system shall be installed and commissioned by a contractor approved by the manufacturer.

10. Hand Driers

Hand driers shall be installed in all toilets, ablution areas, medical room and shall be automatic operation.

A switched fused connection unit shall be installed at high level, with a single outlet box at hand drier level connected to the switched fused connection unit by a 25mm PVC conduit.

11. Disabled Refuge

The Disabled Refuges will meet the requirements of BS5588

12. Electrical Supplies to Mechanical Services Equipment

Provide and install power supplies associated with the proposed mechanical services installations.

All cabling shall be designed fully in accordance with BS 7671 :2008. Locations of equipment shall be provided on the Mechanical Services Drawings with any additional details confirmed by the Mechanical Services Contractor.

Provide power supplies and controls wiring to the following:-

- Boilers.
- Single & Twin Heating Pumps.
- Single DHWS Pump.
- Immersion Sensors.
- H&V Panel.
- VT Mixing Valve.
- Heating Pressurisation Unit.
- External Temperature Sensor.
- Internal Temperature Sensor.
- Extract Fans.
- Extract Fans linked to Light Switches.
- Lossnay Heat Recovery Units linked to Control Panel.
- Approximately 60 no Velux Roof Windows

13. Lightning Protection

A Lightning protection system shall be designed and installed to provide physical and electronic protection to the building in the event of direct or indirect lightning strike, as well as to minimise damage to electrical electronic equipment. The system shall comply with the relevant sections of BS 6651, BS 7671 and BS EN 62305.

Physical protection to the building shall be provided in accordance with the recommendations made in BS 6651 and BS EN 62305. Suitable air termination networks, down conductors, earth electrodes and test joints shall be provided as necessary. Elements of the structure of the building may be utilised for down conductors, with the express permission of the structural engineer. Care shall be taken to ensure that as many components of the physical lightning protection installation are concealed from view, as possible. Earth electrodes shall be provided with access panels, generally located in the footpaths or soft landscaping around the perimeter of the building.

14. Intruder Alarm

The intruder alarm installation shall be installed by a NACOSS (or equivalent) installer and in any case to the NACOSS codes of practice. There are no requirements for transmissions (signalling) equipment. The intruder alarm shall not conform to the current Police security systems policy as Police response is not required.

15. PA System & Intercom (Subject to Client Specification & Approval)

16. Induction Loop (Subject to Client Specification & Approval)

17. Network Cabling & VGA Cabling for IT Equipment & Projectors/Teaching Aids

18. Internal & External CCTV System (Subject to Client Specification & Approval)

19. Last Man Switches per Floor (Subject to Client Specification & Approval)

20. Testing and Commissioning

On completion, the whole electrical installation shall be tested as set out in BS 7671 :2008. Prior to energising any part of the installation the Contractor shall fully inspect and test the new or modified works to prove that the requirements of BS 7671 :2008 and this specification are fully met.

The Contractor shall provide all the necessary calibrated instruments for testing the installation, in accordance with the Regulations, and any extra tests called for in this Specification. The Contractor for all test instruments shall provide evidence of accuracy. Failure to provide such evidence will invalidate the test. Final testing shall be carried out in the presence of the client's representative and the Contractor shall supply results, the completion certificate and the inspection certificate, as described in the Regulations.. The installation should not be accepted until such certificates have been approved.

Mechanical

1. LTHW Heating

As per Client Request the design and installation is to include for separate gas fired, wall mounted condensing boilers to each floor. Each condensing boiler serves an independent LTHW Heating system installation comprising the following:

- Ground Floor
- First Floor
- Second Floor
- Third Floor

Under Floor Heating - Under floor Heating (UFH) installation throughout Ground Floor (140mm space allowed with 75mm insulation and 65mm screed envisaged).

Underfloor Heating to WC, Shower Areas and Ablutions on upper floors, with LTHW Heating to all remaining areas, via a series of steel panel radiators.

Each individual boiler will be controlled via the dictates of a single HVCA control panel, located within the ground floor plantroom.

Each radiator will be fitted with thermostatic radiator valves and matching lockshield valves for individual control.

Each plant room will consist of its own boiler plant, pumps, expansion vessel and pressurisation unit, to suit and cater for the proposed design loads.

Design and installation to include for a new incoming gas supply and/or meter installation in Ground Floor Plant Room along Dudley Street Elevation.

2. Domestic Hot & Cold Water Services

Design to include for the installation of l no. Hot Water storage calorifier, which is to be located within the ground floor plant room only and cater for the domestic hot water demand for the whole building.

The Design must include for the incoming mains cold water service installation. A mains cold water supply will rise to serve each plant room.

Domestic Hot & Cold water services will run to serve each wash hand basin, sink unit and shower valve. Blended hot water supply serving individual wall mounted bib taps, situated at low level within each respective WC area. Blended hot water is also supplied to low level spray nozzle outlets to each point within the ablution areas.

All pipe work will be run in copper table 'x' complete with solder ring and capillary fittings and fully insulated. The Hot water system shall be fully automatic in operation and work under the dictates of the aforementioned HVCA control panel.

3. Sanitaryware & Above Ground Drainage

Sanitaryware is either a selection from the Armitage Shanks or Twyford 'commercial' range or units supplied by Client which shall consist of 'exposed' type fittings i.e. close coupled toilets, wall mounted wash basins etc.

The Installation costs are to include for all shower installations including exposed shower valves, shower trays and glass/chrome shower enclosures.

Soil and waste shall be taken from each item of sanitaryware and terminate into a designated builders drain, via a mixture of white PVC waste pipe and grey soil pipe.

4. Mechanical Ventilation

Mechanical ventilation needs to be included, to serve the following areas:

GROUND FLOOR

- Prayer Area

Include for the installation of a heat recovery unit to be installed to supply fresh air and extract stale air to the area. Ceiling mounted grilles shall be ducted to the unit and then discharge/intake air through the adjacent wall.

- Dining & Recreation Area

Include for the installation of a heat recovery unit to be installed to supply fresh air and extract stale air to the area. Ceiling mounted grilles shall be ducted to the unit and then discharge/intake air through the adjacent wall.

- Kitchen & Store Areas

Include for the installation of a heat recovery unit to be installed to supply fresh air and extract stale air to the area. Ceiling mounted grilles shall be ducted to the unit and then discharge/intake air through the adjacent wall.

- Meeting , Hospitality, Laundry & Medical Rooms

Include for the installation of a heat recovery unit to be installed to supply fresh air and extract stale air to the area. Ceiling mounted grilles shall be ducted to the unit and then discharge/intake air through the adjacent wall. The fresh air ductwork will be insulated to suit. The system shall be operated via the dictates of the HVCA panel and be time controlled.

- Ablution, Shower & WC Area (inclusive of Disabled WC

Include for the installation of a ceiling void, duct mounted extract fan, linked to a series of ceiling mounted extract grilles and louvre, discharging to atmosphere via the external wall. The extract fan will be controlled by a PIR sensor and be time controlled.

FIRST, SECOND and THIRD FLOORS

To each floor include the following ventilation systems:

- Administration Office (Second Floor Only)

Include for the installation of a ceiling void, duct mounted extract fan, linked to a series of ceiling mounted grilles and louvre, discharging to atmosphere through the external wall. The fan will be controlled by a PIR sensor and be time controlled.

- Larger Teaching & Boarding Areas

Include for the installation of a heat recovery unit to be installed to supply fresh air and extract stale air to the area. Ceiling mounted grilles shall be ducted to the unit and then discharge/intake air through the adjacent wall.

- Library/ITC Suite

Include for the installation of a ceiling void, duct mounted extract fan, linked to a series of ceiling mounted grilles and louvre, discharging to atmosphere through the external wall. The fan will be controlled by a PIR sensor and be time controlled.

- Ablution Area (First & Second Floors only)

Include for the installation of a ceiling void, duct mounted extract fan, linked to a series of ceiling mounted grilles and louvre, discharging to atmosphere through the external wall. The fan will be controlled by a PIR sensor and be time controlled.

- WC & Shower Areas (inc Disabled -All Floors)

Include for the installation of a ceiling void, duct mounted extract fan, linked to a series of ceiling mounted extract grilles and louvre, discharging to atmosphere through the external wall. The fan will be controlled by a PIR sensor and be time controlled.

Generally, where mechanical extract ventilation is indicated, assume 'make up' air can be achieved, in each case, by the undercutting of doors.

5. Automatic Controls

Include for the installation of a wall mounted HVCA control panel, to be located within the ground floor plantroom. Operation is linked to an outside sensor and a range of individual, internal room thermostats, also complete with integrated controls in order to dictate operation of each aforementioned service installation.