SML Services Management Limited

PERFORMANCE SPECIFICATION FOR

MECHANICAL SERVICES

FOR

LONDON BOROUGH OF CAMDEN

OLD TOWN HALL GROUND FLOOR LADIES

TOILET REFURBISHMENT PROJECT

August 2007

PREPARED FOR:

Watts & Partners
1 Great Tower Street
London
EC3R 5AA

PREPARED BY:

Services Management Ltd
Seymour House
51 Praed Street
London
W2 1NR

2007/4581/L R1

PERFORMANCE SPECIFICATION FOR MECHANICAL SERVICES FOR LONDON BOROUGH OF CAMDEN, OLD TOWN HALL GROUND FLOOR LADIES TOILET REFURBISHMENT PROJECT

DOCUMENT ISSUE RECORD

Issue	Status	Date	Director Sign-off
1st	Final	28th August 2007	G. Howard
Rev01	Final	30th August 2007	G. Howard

CONTENTS

1.0 EXISTING SERVICES

- **Electrical Services**

The existing small power installation to the ladies WC originates from an existing Crabtree distribution board. This is located within the existing electrical riser duct cupboard within the WC. There are circuits serving an existing Sadia wall mounted electric storage heater and various other circuits serving hand dryers and ancillary electrical equipment.

Lighting within the WC area is currently carried out by suspended fluorescent fittings with prismatic diffusers.

Apart from the foregoing, there is a relatively new non-maintained bulkhead type emergency light fitting. This is located on the inside of the room on the party wall to the corridor area.

Wiring circuits for the existing lighting installation originate from an existing Crabtree distribution board located within the electrical riser duct cupboard within the space.

Apart from the foregoing there is an existing distribution board located at high level on the party wall to the corridor. This serves various electrical outlets outside the WC and other areas e.g. DX cooling units etc.

- **Mechanical Services**

LTHW

LTHW is provided to the space via steel distribution pipework which enters the room at low level in the corner of the existing disabled WC from the corridor. The LTHW pipework serves an existing steel panel radiator.

Domestic water Services

- Mains Water Service

There is an existing MWS within the existing disabled WC. This serves a Heatrae Sadia storage type electric water heater which is located on the wall of the disabled WC.

Distribution to the unit is from a valved supply within a wall duct in the disabled WC.

Cold Water Down Service

There is an existing CWDS within the disabled WC. This serves existing sanitary ware and wash hand basins, together with a cleaner's sink.

1.0 Cont'd...

Domestic Hot Water Service

HWS is currently provided to sanitary ware within the space from a large wall mounted Heatrae Sadia, storage type electric water heater.

S12 HOT AND COLD WATER (SELF CONTAINED SPECIFICATION)

100.000 SYSTEM DETAILS & SCOPE OF WORKS:

100.010:

The ground floor female toilets located within Camden Old Town Hall are to be refurbished. New services are to be installed including a new disabled WC. The existing Domestic Hot Water will be disconnected from the existing Sadia electric water heater and be provided locally via underbench domestic water heaters.

Within the Old Town Hall ventilation will be provided via new local supply and extract fan units located above the suspended ceiling in each toilet.

The supply fan shall be complete with a new electric heater battery.

Where the extent of materials, products and workmanship are not fully specified, they shall be carried out by the Contractor as follows:

- In accordance with manufacturer's instructions and good building practice (including the relevant provisions of current BS documents, BRE digests and BBA Certificates).
- Suitable for the purpose of the works stated in or to be reasonably inferred from the contract documents.
- The level of workmanship shall be of the highest standard; therefore when the site foreman/charge-hand has satisfied himself that a completed operation is of the required standard (as described elsewhere and previously agreed with the CA) he should notify the CA so that an inspection can be made of the work and approval given before the next operation is commenced.
- The Contractor shall ensure that all site operatives under his direct or indirect employment working on this project are aware of the standard of workmanship he is expected to attain.
- The Contractor shall not leave it to the CA to detect faults or provide snagging lists, but plan his own inspection arrangements in order to reduce the risk of costly remedial works which he would have had to carry out to comply with his obligations.
- On completion, the Contractor shall remove all material, debris and waste from site and shall thoroughly clean down all areas leaving them neat and tidy.
- The Contractor shall hand over all requisite documentation comprising all manufacturer's information relating to operation maintenance, and cleaning etc.

100.010 Cont'd.....

The Contractor shall allow for providing all builders work details in connection with new mechanical, electrical and plumbing services and alterations to existing services throughout. This is to include, but not limited to the following:

- All holes, chases and related making good of surfaces for new installation. Note that services are to be contained within the existing structure and not surface mounted unless instructed by CA. The Contractor shall examine all the services drawings and establish at tender stage all builders' work requirements.
- Fire stopping around services and within ceiling where they penetrate cavity barriers and compartment walls and partitions. To include all necessary sleeving etc.
- Fix all equipment in accordance with manufacturer's recommendations and include for all making good after all surfaces distributed throughout the works area in connection with new or altered services trades to match existing finishes. This is to include temporary removal and reconnection of radiators in order to carry out decorations.
- Provision for boxing in areas of exposed pipework as directed by the CA.

The Contractor is to be aware that the property is fully occupied and certain areas are also open to the public. The Contractor is to ensure that the occupants and visitors enjoyment of the property is maintained throughout the Construction Phase.

The works described herein are to be completed by the Contractor whilst the property is in occupation. The Contractor should allow for all necessary liaison with the Client contacts including access through the property and into occupied areas.

The Contractor shall be Lead Co-ordinator for the services.

The Contractor is to allow for all necessary protection of his works throughout the contract period and remain responsible for making good any damage caused during the works at no additional cost to the Employer.

The Contractor shall ensure that the following is carried out:

- Access and egress routes via reception and front stairs/lifts etc. will need to be maintained throughout the works, free from trip hazards and risk of contact with wet paint etc.
- All fire escapes routes are to be maintained throughout the works and must not become blocked at any time. All fire escape signage must be maintained throughout the works at all times.
- Notify the Client contact in writing at least 24 hours prior to carrying out noisy work.
- Regarding pipes through walls and floors etc; fix in a manner that permits free movement (e.g. through sleeves). Ensure no cable or other pipe shares a sleeve with a water pipe.
- Existing cold water service pipework shall be extended to serve new sanitary ware in positions as shown on the drawings, complete with Ball-O-Fix isolation valves on the supplies to each basin and WC cistern.

100.010 Cont'd.....

- New hot water service pipework shall be installed from a new underbench point of use instantaneous electric water heater.
- The layout of distribution pipework shall be designed in such a manner as to be self draining, where this objective cannot be achieved, drain off cocks shall be provided at all the lowest points of the system. All draw-off taps shall comply with the requirements of by-law 86 and all WC cisterns shall be supplied with Type B air gap and valveless siphonic flushing apparatus.
- Test and commission on completion.
- Provide copies of any drawings for inclusion in O&M Manuals to the Contract Administrator.
- Supply, install, set to work, test and commission extract ductwork systems serving the toilet areas and shower rooms.
- Maintain areas at a negative pressure, to ensure that odours do not spread to other parts of the building.
- All pipe runs are to be concealed where possible/or as agreed with CA.

Install 1 No. radiator to each of the following: Disabled WC male and main female toilet in position shown on drawings or as specified by CA.

100.20 DESIGN PARAMETERS

This is a performance specification only; any sizes, ratings or capacities given are approximate only and must be verified by the contractor prior to installation.

100.40 SYSTEM DRAWINGS

The contractor shall provide a complete set of 'Working Drawings' for approval prior to commencing installation on site. Design calculations shall be supplied to support design layouts should the Client's representative consider such information necessary.

200.000 PLANT AND EQUIPMENT:

200.030 INSTANTANEOUS WATER HEATER(S):

- Type Under bench point of use
- Application for handwashing
- Manufacturer and reference Redring MW15 undersink, code 47782101, 15 litre, 3kW
- Or Client approved equivalent

Supply and install

- Electric instantaneous water heater to BS EN 60335-2-35.
- Location
- Refer to drawings
- Service

Installation
1 unit located under the WHB to serve WHB range, 1 unit to serve the disabled WC sink.

Comply with manufacturer's instructions and recommendations for the installation of heater.

200.135 APPROVALS:

Ensure all water fittings and materials are listed in the Water Fittings and Materials Directory published by WRAS.

200.150 VENTILATION:

Old Town Hall

- Manufacturer and reference Nuaire Quietscroll twin fan, Est 3 Extract Fan & Nuaire Ecosmart Squrbo ESS 3-E Supply Fan
- Or Client approved equivalent from the Helios TFDA range
- Report to indicative layout drawings
- Install ventilation units in accordance with manufacturer's instructions and recommendations.
- Grilles/diffusers
- As installed in the ground floor old block gents WC or Client approved equivalent

200.150 VENTILATION Cont'd.....

- Install ventilation unit in accordance with manufacturer's instruction and recommendation.
- Grilles and diffusers to be as currently installed in ground floor old block gents WC or Client approval equivalent.

600.000 PIPELINES AND ANCILLARIES - MATERIALS:

600.015 PIPES - COPPER TO BS EN 1057:

- Kitemark certified
- Material - Copper to BS EN 1057.
- All pipe runs to be concealed where possible
- Ensure adequate clearance for insulation, painting and maintenance.
- Jointing
    - Capillary fittings as clause 600.040.
        - Compression fittings for connections to equipment - as clause 600.050.

600.025 PIPES AND FITTINGS - PLASTICS TO BS 7291:

- Kitemark certified.
- UKWFBS.
- Jointing
    - Plastics fittings to BS 7291.
        - Method of jointing to BS 5955-8
    - Compression fittings - refer to clause 600.055.
    - All pipe runs to be concealed where possible
    - Ensure adequate clearance for insulation, painting and maintenance.

600.040 COPPER FITTINGS - CAPILLARY, FOR COPPER TUBING:

- Kitemark certified.
- Standard
    - BS EN 1254-1.
    - BS 864-2
- Jointing materials - capillary joints.
  Solder - BS EN 29453 alloy nos. 28 or 29 or 23.

600.050 COPPER FITTINGS - COMPRESSION, FOR COPPER TUBING:

- Kitemark certified.
- Standard
    - BS EN 1254-2.

600.070 STOP VALVES TO BS 1010-2:

- Kitemark certified.
  Material -Bronze or DZR copper alloy body.
- Ends
  - Threaded to BS 21and BS EN 10226-1.
  - With connections for capillary fittings to BS EN 1254-1, or BS 864-2.

600.082 STOP VALVES - GATE TYPE TO BS 5154:

- Kitemark certified.
- Series - B.
- Gate valve type - Solid or split wedge.
- Ends
  - Threaded to BS 21 and BS EN 10226-1.
  - Compression to BS EN 1254-2, or BS 864-2.
  - Capillary to BS EN 1254-1, or BS 864-2.
- Trim material - Manufacturer's standard.
  - Suitable for potable water supply.
- Operation
  - Handwheel.
  - Lockshield.

600.084 ANTI BACK SYPHONAGE VALVES - COMBINED CHECK AND ANTI-VACUUM TYPE:

- Kitemark certified.
- Bronze or DZR copper alloy body assembly.
- Water Research Centre approval.
- Ends - Compression connections to BS EN 1254-2, or BS 864-2.
- Pattern - In-line pattern.
- Components
  Stainless steel domed air inlet. Non-return valve with plastic body, rubber actuator and stainless steel to plastic seal.

600.085 STOP VALVES - BALL TYPE:

- Ends
  - Threaded to BS 21 and BS EN 10226-1.
  - Capillary to BS EN 1254-1, or BS 864-2.
- Operation
  - Screwdriver operated.
  - Key operated.
  - Lever operated.

600.086 FLOAT OPERATED VALVES - BALANCED EQUILIBRIUM TYPE:

- Kitemark certified.
- WRc approved.
- Bronze or DZR copper alloy body.
- Inlet
  - Threaded to BS 21 and BS EN 10226-1.

  Spindle and head effectively guided and arranged with stops to engage with valve body and prevent over-travel. Linkage fulcrum adjustable relative to vertical plane, and securely locked to body tapping when set. Screwed plug from access cover. Spun copper float, halves brazed or welded together, with centre sleeve connecting to lever arm. For feed and expansion application use long arm type arranged to close when tank contains 150mm depth.

600.100 DRAIN COCKS - SCREWDOWN COCK TYPE TO BS 2879, TYPE 1:

- Bronze body threaded male to BS 21 and BS EN 10226-1.
- Screw down plug with square shank for loose lever.
- Serrated outlet to accept hose pipe, fixed or union pattern.

600.120 WALL, FLOOR AND CEILING MASKING PLATES:

- Material
  - Copper alloy, chromium plated.
- Style
  - Heavy, split on the diameter.
- Fixing
  - Chrome raised head fixing screws.

700.000 PIPELINE WORKMANSHIP:

700.010 INSTALLATION GENERALLY:

Install, test and commission systems to comply with BS 6700, Water Supply (Water fittings) Regulations 1999 and Water Supply (Water Fittings) (Amendment) Regulations 1999, and equipment manufacturers' recommendations.

- Install thermoplastics pipework in accordance with BS 5955-8.

700.020 APPEARANCE:

Arrange all exposed pipe runs to present neat appearance, parallel with other pipe or service runs and building structure, subject to gradients for draining or venting.
Ensure all vertical pipes are plumb or follow building line.

700.030 SPACING:

Space pipe runs in relation to one another, other services runs and building structure, allow for thermal insulation and ensure adequate space for access to pipe joints, etc.

700.040 GRADIENTS:

Install pipework with gradients to allow drainage and air release.

700.050 EXPANSION AND CONTRACTION:

Arrange supports and fixings to accommodate pipe movement caused by the thermal changes. Isolate pipes from structure to prevent noise or abrasion due to thermal movement /changes in direction.

700.060 BENDS, SPRINGS AND OFFSETS:

Machine bend and ensure that machine guides and formers are smooth and clean, free from any scores, or other damage. Deformed bends will not be accepted.

700.070 PIPES THROUGH WALLS AND FLOORS:

Enclose pipes passing through building elements, (walls, floors, partitions, etc.) concentrically within purpose made sleeves.

700.080 PIPE SLEEVES:

Cut sleeves from material same as pipe one or two sizes larger than pipe. Do not use sleeves as pipe supports. Install sleeves flush with building finish.

700.090 TEMPORARY PLUGS AND CAPS:

Seal all open ends as installation proceeds by metal, plastic or wooden plugs or caps, to prevent ingress of foreign matter.

700.100 CAPILLARY JOINTS, COPPER/STAINLESS STEEL PIPES:

Preparation

Ensure that plain ends are cut square. Reamer out bore at plain ends to full bore size. Clean plain ends with fine steel wool.

Making and sealing

Use specified flux ensuring no excess material used. Make joint in accordance with manufacturer's instructions. Clean off traces of flux when joint is completed. Protect building fabric from heat when forming joints.

- Polyethylene sheathed pipe
  - Follow manufacturer's recommendations to avoid damage to plastic coating. Make good with PVC tape of matching colour.

700.110 COMPRESSION JOINTS, COPPER/STAINLESS STEEL/POLYETHYLENE PIPES:

Preparation

Ensure that plain ends are cut square. Reamer out bore at plain ends to full bore size. Clean plain ends with fine steel wool or fine sandpaper. Then if using:

Type 'A' fitting - no further preparation.

Type 'B' fitting - in accordance with fitting manufacturer's instructions.

Making and Sealing

In accordance with fitting manufacturer's instructions.

700.120 SCREWED JOINTS TO BS 21:

Preparation

Ensure that plain ends are cut square. Reamer out bore at plain ends. Screw plain ends, taper thread.

Making and Sealing

Coat male pipe threads with PTFE tape, connect with female end of socket or fitting, and tighten ensuring that coating does not intrude into pipe. Leave joint clean.

700.130 PIPE RINGS AND CLIPS:

Select type according to the application and material compatibility.

700.140 PIPE SUPPORTS:

Arrange supports and accessories for equipment, appliances or ancillary fitments in pipe runs, so that no undue strain is imposed upon pipes.
Ensure that materials used for supports are compatible with pipeline materials.

700.150 PIPE SUPPORT SPACING COPPER/STAINLESS STEEL PIPE:

PIPE BORE (mm)	MAXIMUM SUPPORT SPACING (mm)	
nominal	horizontal	vertical
Up to 15	1200	1800
22	1400	2100
28	1800	2400
35	2400	3000
42	2400	3000
54	2700	3000

700.160 PIPE SUPPORT SPACING CARBON STEEL PIPE:

PIPE BORE (mm)	MAXIMUM SUPPORT SPACING(mm)	
nominal	horizontal	vertical
Up to 15	1800	2400
20	2400	3000
25	2400	3000
32	2700	3000
40	3000	3600
50	3000	3600

700.165 PIPE SUPPORT SPACING PLASTICS PIPE:

PB & PE-X PIPE (mm)	MAXIMUM SUPPORT SPACING PLASTICS PIPE (mm)	
nominal size	horizontal runs	vertical runs
Less than 16	300	500
18-25	500	800
28	800	1000
32 & 35	900	1200

PVC-C PIPE (mm)	MAXIMUM SUPPORT SPACING (mm)	
nominal size	horizontal runs	vertical runs
12-25	500	1000
32 &6 3	800	2200

700.165 PIPE SUPPORT SPACING PLASTICS PIPE:

PB & PE-X PIPE (mm)	MAXIMUM SUPPORT SPACING (mm)	
nominal size	horizontal runs	vertical runs
Less than 16	300	500
18-25	500	800
28	800	1000
32 & 35	900	1200

PVC-C PIPE (mm)	MAXIMUM SUPPORT SPACING (mm)	
nominal size	horizontal runs	vertical runs
12-25	500	1000
32 & 63	800	2200

700.170 MAINTENANCE AND RENEWAL:

Arrange pipework, valves, drains, air vents etc., for convenient routine maintenance and renewals.

700.180 PROTECTION OF PIPES IN SCREEDS:

- Wrap pipework with two protective tapes prior to laying.
- Sheath pipework with PVC.

700.190 CLEANING:

Remove cement and clean off all pipework and brackets.

700.200 FIXING TO BUILDING FABRIC:

- Structural fixing detail drawings
  - Anchor fixing to concrete, standard detail M9994SFS007.
  - Clamped fixing to 1 section, standard detail M9994SFS002.
  - Clamped fixing to angle and channel, standard detail M9994SFS001.
  - Expansion bolt fixing to 1 beam and hollow section, standard detail M9994SFS004.
  - Expansion bolt fixing to angle and channel, standard detail M9994SFS003.
  - Fixing to purlins 01, standard detail M9994SFS011.
  - Fixing to purlins 02, standard detail M9994SFS010.
  - Fixings to composite deck, standard detail M9994SFS009.
  - Shot-fired fixings to 1 beam and hollow section, standard detail M9994SFS006.
  - Shot-fired fixings to angle and channel, standard detail M9994SFS005.
  - Shot-fired fixings to concrete, standard detail M9994SFS008.

800.000 THERMAL INSULATION:

800.010 THERMAL INSULATION TO PIPELINES:

- Use closed cell nitrile rubber elastomeric preformed flexible sections.
- Protection
  Ensure that where protection is applied to insulation, the joints fall blind side and that all joints are made to shed water and sealed with waterproof tape, adhesive or joint sealant where appropriate.

800.030 THERMAL INSULATION WORKMANSHIP:

Do not apply thermal insulation until installation has been fully tested and all joints proved sound.

Ensure that all materials are kept dry.

Ensure clearance between insulated pipes.

Apply insulants, facings, coatings and protection strictly in accordance with manufacturer's instructions.

800.000 Cont'd...

Neatly finish joints and corners, and ensure continuity over fittings and supports, with longitudinal split concealed.

Arrange insulation of feed and expansion cistern to allow removal of access covers.

900.000 COMMISSIONING AND TESTING:

900.010 PRESSURE TESTING:

Test concealed or buried pipework before any permanent covering is applied.
Complete pressure testing before applying thermal insulation.

- Pressure test the system for a period of one hour, and check for and repair any leaks. Repeat pressure test if leaks have been found.

BS APPENDIX

BS 21:1985
Specification for pipe threads for tubes and fittings where pressure-tight joints are made on the threads (metric dimensions)

BS 5955-8:2001
Plastics pipework (thermoplastics materials). Part 8 Specification for the installation of thermoplastic pipes and associated fittings for use in domestic hot and cold services and heating systems in buildings

BS 6700:1997
Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages

BS 7291-1:2001
Thermoplastics pipes and associated fittings for hot and cold water for domestic purposes and heating installations in buildings. Part 1 General requirements

BS 7291-2:2001
Thermoplastics pipes and associated fittings for hot and cold water for domestic purposes and heating installations in buildings. Part 2 Specification for polybutylene (PB) pipes and associated fittings

BS 7291-4:1990
Thermoplastics pipes and associated fittings for hot and cold water for domestic purposes and heating installations in buildings. Part 4 Specification for chlorinated polyvinyl chloride (PVC-C) pipes and associated fittings and solvent cement
Current, Obsolescent

BS 864-2:1983
Capillary and compression tube fittings of copper and copper alloy. Part 2 Specification for capillary and compression fittings for copper tubes.
Replaced by BS EN 1254-1:1998 and BS EN 1254-2:1998 but remains current.

BS EN 10226-1:2004
Pipe threads where pressure tight joins are made on the threads. Part 1 Taper external threads and parallel internal threads. Dimensions, tolerances and designation.
Partially replaces BS 21:1985

BS EN 1057:1996
Copper and copper alloys. Seamless, round copper tubes for water and gas in sanitary and heating applications

BS EN 1254-1:1998
Copper and copper alloys. Plumbing fittings. Part 1 Fittings with ends for capillary soldering or capillary brazing to copper tubes.
Replaces BS 864-2:1983 which remains current.

BS EN 1254-2:1998
Copper and copper alloys. Plumbing fittings. Part 2 Fittings with compression ends for use with copper tubes.

Replaces BS 864-2:1983 which remains current.

BS EN 29453:1994
Soft solder alloys. Chemical compositions and forms

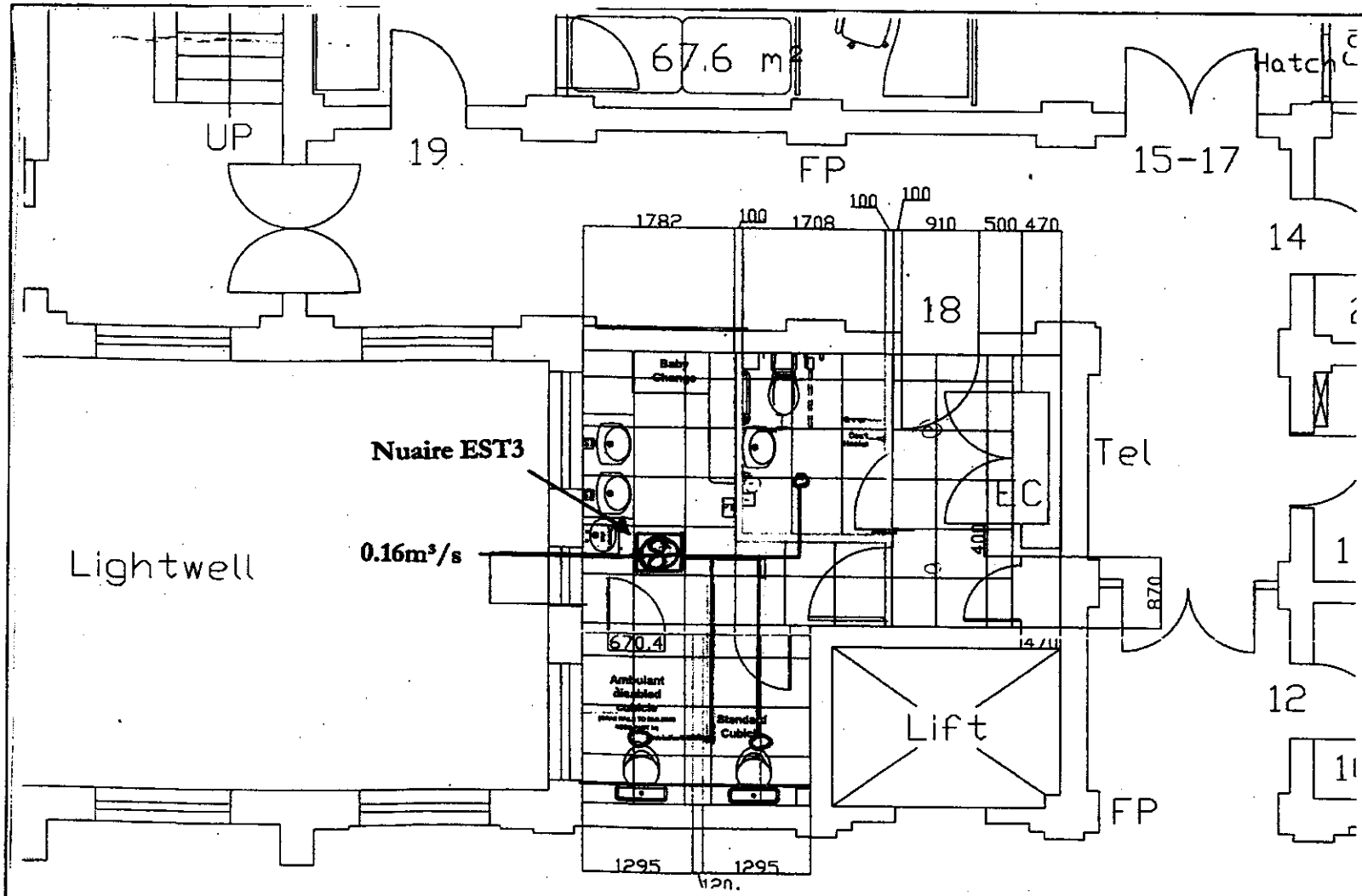
SCHEDULE OF MATERIALS:

Ladies WC

1 Nuaire EST 3 Quietscroll twin fan or Client approved equivalent
5 Extract ventilation grilles with integral volume control dampers as supplied by Nuaire Ltd or Client approved equivalent
- Ductwork, Accessories, fixtures & fittings as supplied by Nuaire Ltd or Client approved equivalent
2 Supply ventilation grilles with integral volume control dampers as supplied by Nuaire Ltd or Client approved equivalent

APPENDIX 1

INDICATIVE LAYOUT DRAWINGS



0.037m³/s per extract grille
All new extract ventilation system
Exhaust through wall to be ≥ 500x 300mm to minimise the noise

revision	dcc	description	drwn by	checked	date

SML Services Management Limited
Seymour House
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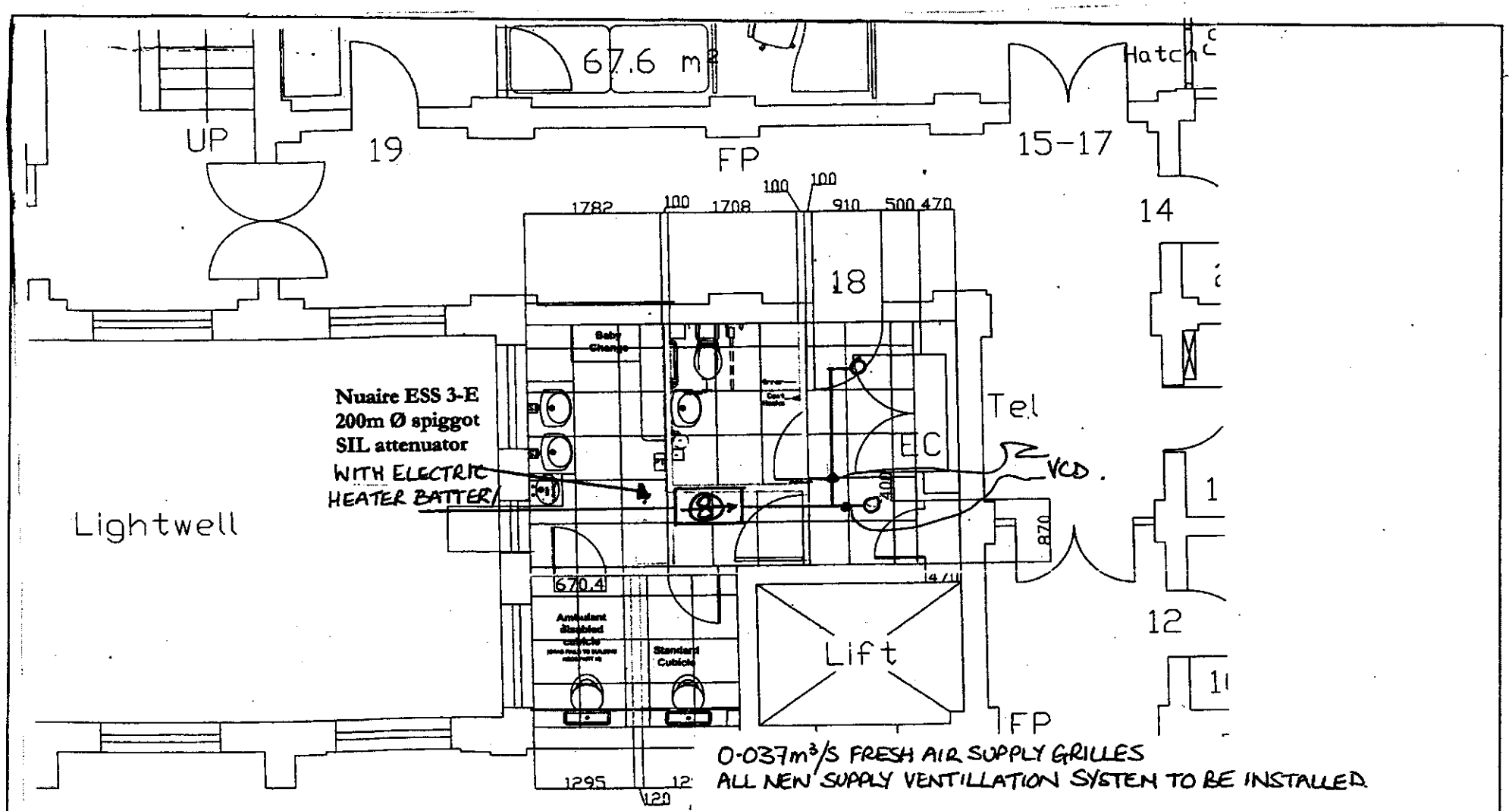
Project CAMDEN TOWN HALL
GROUND FLOOR LADIES WC
Title
PROPOSED EXTRACT VENTILLATION SYSTEM

drawn by	date	checked	scale
A-T	22/08/07	CJS	NTS
file name	drawing no.		
N/A	10570/M001.		



revision	dcc	description	drwn by	checked	date

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Seymour House
51 Praed Street
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Project CAMDEN TOWN HALL
Title GROUND FLOOR LADIES WC.
PROPOSED FRESH AIR VENTILLATION SYSTEM

drawn by	date	checked	scale
A·T.	22/08/07	CJS	NTS
file name	drawing no.		
N/A	10570/M002.		

SML Services Management Limited

PERFORMANCE SPECIFICATION

FOR ELECTRICAL INSTALLATIONS

FOR

LONDON BOROUGH OF CAMDEN

OLD TOWN HALL GROUND FLOOR LADIES

TOILET REFURBISHMENT PROJECT

August 2007

PREPARED FOR:

Watts & Partners
1 Great Tower Street
London
EC3R 5AA

PREPARED BY:

Services Management Ltd
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2007/4581/L R1

PERFORMANCE SPECIFICATION FOR ELECTRICAL INSTALLATIONS FOR LONDON BOROUGH OF CAMDEN OLD TOWN HALL GROUND FLOOR LADIES TOILET REFURBISHMENT PROJECT

DOCUMENT ISSUE RECORD

Issue	Status	Date	Director Sign-off
1st	Final	28th August 2007	G. Howard
Rev01	Final	30th August 2007	G. Howard

PERFORMANCE SPECIFICATION FOR ELECTRICAL INSTALLATIONS FOR LONDON BOROUGH OF CAMDEN OLD TOWN HALL GROUND FLOOR LADIES TOILET REFURBISHMENT PROJECT

CONTENTS

1.0 EXISTING SERVICES

- Electrical Services

The existing small power installation to the ladies WC originates from an existing Crabtree distribution board. This is located within the existing electrical riser duct cupboard within the WC. There are circuits serving an existing Sadia wall mounted electric storage heater and various other circuits serving hand dryers and ancillary electrical equipment.

Lighting within the WC area is currently carried out by suspended fluorescent fittings with prismatic diffusers.

Apart from the foregoing, there is a relatively new non-maintained bulkhead type emergency light fitting. This is located on the inside of the room on the party wall to the corridor area.

Wiring circuits for the existing lighting installation originate from an existing Crabtree distribution board located within the electrical riser duct cupboard within the space.

Apart from the foregoing there is an existing distribution board located at high level on the party wall to the corridor. This serves various electrical outlets outside the WC and other areas e.g. DX cooling units etc.

- **Mechanical Services**

LTHW

LTHW is provided to the space via steel distribution pipework which enters the room at low level in the corner of the existing disabled WC from the corridor. The LTHW pipework serves an existing steel panel radiator.

Domestic water Services

- Mains Water Service

There is an existing MWS within the existing disabled WC. This serves a Heatrae Sadia storage type electric water heater which is located on the wall of the disabled WC.

Distribution to the unit is from a valved supply within a wall duct in the disabled WC.

1.0 Cont'd...

Cold Water Down Service

There is an existing CWDS within the disabled WC. This serves existing sanitary ware and wash hand basins, together with a cleaner's sink.

Domestic Hot Water Service

HWS is currently provided to sanitary ware within the space from a large wall mounted Heatrae Sadia, storage type electric water heater.

100.000 SYSTEM DETAILS AND SCOPE OF WORKS

100.010 SYSTEM DESCRIPTION

The contractor shall undertake to provide the following electrical services:-

Alteration to existing mains distribution board which is to be retained

Alterations are required to the existing distribution board located at high level within the ladies WC, on the party wall to the corridor.

The Contractor shall allow for repositioning the existing distribution board within the proposed disabled toilet area above the false ceiling. This will entail re-connecting a new mains supply cable from an existing isolator within the existing riser cupboard.

The sub-circuit cabling from the distribution board will also need to be re-located within the proposed disabled toilet area.

Mains Distribution

The Contractor shall supply and install an additional new distribution board to serve all new lighting and small power services within the toilet areas. The incoming supply to the new board should be fed from the main electrical riser.

General Small Power

General small power services as indicated on the drawing 10570/E001 shall be installed in locations shown from the new installed distribution board.

Separate circuits shall be installed as necessary to serve:-

- Cleaner socket
- Electric water heaters (allowance for local 7 day programmable time switches shall be made)
- Extract ventilation fan
- Supply ventilation fan and electric heater battery
- Water controlled modules

All small power cabling shall comprise LSF insulated singles to be installed within a concealed trunking/conduit system throughout. The contractor shall ensure that all aspects of the installation are fully re-wireable as defined in BS 7671.

Lighting

The contractor shall supply and install new light fittings selected by the Client and as currently installed within the ground floor gents WC.

Lighting circuits shall be installed as necessary to serve all areas within the new ladies and disabled toilet.

All lighting cabling shall comprise LSF insulated singles to be installed within a concealed trunking/conduit system throughout. The contractor shall ensure that all aspects of the installation are fully re-wirable as defined in BS 7671.

A PIR light sensor shall be installed to control all new lighting installations.

Lighting locations to be installed in positions shown on drawing 10570/E002.

Emergency Lighting

Emergency lighting shall be installed to satisfy the requirements of BS5266 and shall comprise self-contained non-maintained, luminaire with integral battery packs.

The contractor shall supply and install new emergency light fittings selected by the Client and as currently installed within the ground floor gents WC.

Key test facilities for emergency lighting shall be provided in the electrical riser.

Earthing and Bonding

The Contractor shall include for all bonding of incoming services and ancillary services as defined in BS 7671.

All modified and re-arranged mechanical services and plumbing installations shall be fully checked and the Contractor shall include for all supplementary bonding required by relocation and modifications to the existing building layout.

Fire Alarm Services

Smoke detectors are to be installed or repositioned as shown on drawing 10570/E002.

A specialist contractor will be required to install and program wireless detectors as shown.

Buildings Works

Where the extent of materials, products and workmanship are not fully specified, they shall be carried out by the Contractor as follows:

- In accordance with manufacturer's instructions and good building practice (including the relevant provisions of current BS documents, BRE digests and BBA Certificates).
- Suitable for the purpose of the works stated in or to be reasonably inferred from the

100.000 Cont'd...

contract documents.

- The level of workmanship shall be of the highest standard; therefore when the site foreman/charge-hand has satisfied himself that a completed operation is of the required standard (as described elsewhere and previously agreed with the CA) he should notify the CA so that an inspection can be made of the work and approval given before the next operation is commenced.
- The Contract shall ensure that all site operative under his (direct or indirect) employment working on this project aware of the standard of workmanship he is expected to attain.
- The Contractor shall not leave it to the CA to detect faults or provide snagging lists, but plan his own inspection arrangements in order to reduce the risk of costly remedial works which he would have had to carry out to comply with his obligations.
- On completion, the Contractor shall remove all material, debris and waste from site and shall thoroughly clean don all areas leaving them neat and tidy.
- The Contractor shall hand over all requisite documentation comprising all manufacturer's information relating to maintenance and cleaning etc.

The Contractor shall allow for providing all builders work details in connection with the new electrical services and alterations to existing services throughout. This is to include, but not limited to the following:

- All holes, chases and related making good of surfaces for new installation. Note that services are to be contained within the existing structure and not surface mounted unless instructed by CA. The Contractor shall examine all the services drawings and establish at tender stage all builders' work requirements.
- Fire stopping around services and within ceiling where they penetrate cavity barriers and compartment walls and partitions. To include all necessary sleeving etc.
- Fix all equipment in accordance with manufacturer's recommendations and include for all making good after all surfaces distributed throughout the works area in connection with new or altered services trades to match existing finishes.
- Provision for boxing in areas of exposed electrical services as directed by the CA.
- Identification and relocation of the existing distribution board. All current subcircuits are to be identified and reported to provide details and any impact on business critical supplies before the relocation of the distribution board.

The Contractor is to be aware that the property is fully occupied and certain areas are also open to the public. The Contractor is to ensure that the occupants and visitors enjoyment of the property is maintained throughout the Construction Phase.

The works described herein are to be completed by the Contractor whilst the property is in occupation. The Contractor should allow for all necessary liaisons with the Client contacts including access through the property and into occupied areas.

The Contractor shall be Lead Co-ordinator for the services.

100.000 Cont'd...

The Contractor is to allow for all necessary protection of his works throughout the contract period and remain responsible for making good any damage caused during the works at no additional cost to the Employer.

The Contractor shall ensure that the following is carried out:

- Access and egress routes via reception and front stairs/lifts etc., will need to be maintained throughout the works, free from trip hazards and risk of contact with wet paint etc.
- All fire escapes routes are to be maintained throughout the works and must not become blocked at any time. All fire escape signage must be maintained throughout the works at all times.
- Notify the Client contact in writing at least 24 hours prior to carrying out noisy work.
- Full testing and will be compulsory along with identification and labelling of circuits to satisfy BS7671 regulations.
- Provide copies of any drawings and test certificates for inclusion in O&M Manuals to the Contract Administrator.

100.20 DESIGN PARAMETERS

This is a performance specification only; any sizes, ratings or capacities given are approximate only and must be verified by the contractor prior to installation.

100.40 SYSTEM DRAWINGS

The contractor shall provide a complete set of 'Working Drawings' for approval prior to commencing installation on site. Design calculations shall be supplied to support design layouts should the Client's representative consider such information necessary.

200.000 GENERAL LIGHTING AND POWER

200.010 REGULATIONS:

Comply with:

- Requirements for electrical installations (the IEE Wiring Regulations) BS 7671
  - Including Amendment 2.

200.020 ELECTRICITY SUPPLY:

- Liaise with the electricity distribution company, as necessary, to confirm or determine
  - the maximum demand of the installation.
  - the nature of the supply, its suitability for the installation and the type of earthing arrangement.
  - the location of the incoming supply.

200.030 ARRANGEMENTS OF CIRCUITS:

Divide the installation into separately controlled circuits as described below, further subdividing where necessary to ensure compliance with BS 7671 (the IEE Regulations). Separate circuits will be provided for the following services:-

- 16A SPN Radials for 3kW water heaters
- 16A radial circuits serving cleaners power outlets (RCD Controlled, 1no to be installed)
- 6A Circuits for lighting
- 32A ring circuit for flushing/tap sensors and disabled toilet alarms
- 16A SPN Radial circuits serving ventilation equipment (2 no. supplies including heater battery)

200.040 INSPECTION AND TEST PROCEDURE:

Comply with BS 7671 (IEE Regulations). Provide completion certificates in accordance with BS 7671 (IEE Regulations). Provide information to fulfil BS 7671 (IEE Regulation) 711-01-02.

- Carry out site testing and inspection and provide test certificates for specialist installations. Record all results and readings. Provide copies of any test and inspection result.

Check correct operation of devices. Confirm interlocks and sequences operate correctly. Provide test equipment and consumables to complete tests and retest any failed installations following corrective measures. Check and confirm correct sequence in multiphase circuits.

200.060 IDENTIFICATION - GENERAL:

Apply identification notices in accordance with the BS 7671 (IEE Wiring Regulations) Clause 514 to all electrical cables plant and equipment.

- Phase colour
  - Brown, Black, Grey.

Fix using materials compatible with the notices and fixing surface.

200.000 Cont'd...

Apply identification markers in accordance with the BS 7671 (IEE Wiring Regulations), Clause 514 to all conductor termination points.

- Phase marking
  - L1, L2, L3.

200.070 LABELS

Label all electrical plant and equipment using safety sign 8.A.0044 of BS 5499-5, where voltages above ELV exist.

- Materials
  - Engraved thermosetting plastic laminate.
- Colour
  - Background white
  - Lettering black
- Fixing
  - Screwed into tapped hole size to suit equipment.

200.090 SCHEMATIC DIAGRAMS:

Provide a purpose made schematic diagram permanently fixed showing the connections of the equipment and plant.

200.100 DISTRIBUTION BOARDS IDENTIFICATION:

Identify every outgoing way with a renewable circuit chart in a transparent plastic envelope permanently fitted inside distribution board cover. Clearly indicate in typed script, circuit identification number, cable size, fuse or circuit breaker rating and a description of item supplied and area supplied by circuit.

200.110 CABLE IDENTIFICATION:

Provide all cables, other than final sub-circuit wiring with labels fixed at each end of cable, either side of wall and floor penetrations and at approximately 10m intervals. Ensure labels show reference number of cable.

200.130 CABLE SHEATH IDENTIFICATION - EXTERNAL:

Identify cable sheaths for various services in accordance with NJUG 7.

200.140 FIXING TO BUILDING FABRIC - PREPARATION:

Mark-out using manufacturer's drawings and templates and fix all items.
Ensure structure and fixings are suitable for items to be fixed. Use largest size of fixing permitted by diameter of hole in item to be fixed. Comply with BS 3974 for fixings.
Provide all assistance to enable any item to be built in by others.

200.150 PLUGS AND SCREWS:

Use plugs of material, size and length, in accordance with the manufacturer's instructions. Use screws to BS 1210. Generally use sherardized steel screws. In damp or exposed situations use brass screws.

200.160 FIXING - WORKMANSHIP:

Drill holes squarely. Use drills of correct size and type. Do not flame-cut holes in metalwork. Comply with manufacturer's instructions for all fixings. Avoid fixing through reinforcement. Do not fix to unsound material.

200.170 FIXING TO THE STRUCTURE:

- Obtain approval to:-
  - Cut holes in the structure.
  - Weld to structural steelwork.

200.180 OFF-SITE PAINTING AND ANTI-CORROSION TREATMENTS - GENERAL REQUIREMENTS:

Protect all equipment and ancillaries against corrosion. Protect ferrous metals with coatings at works. Provide all items for decorative finishing primed to suit base material and finish.

300.000 CONDUIT AND TRUNKING, LV CABLES AND WIRING - MATERIALS

300.010 STEEL CONDUIT AND FITTINGS:

- Type A
- Application distribution of final circuit cables.
- Standard
  - BS EN 50086-2-1.
- Ends
  - Threaded.
- Size in accordance with BS 7671 (IEE regulations).
- Fittings
  - Use adaptable boxes of 100mm x 100mm x 50mm minimum size.
  - Use couplers and externally screwed brass bushes to connect conduit to loop-in circular conduit boxes.
- Protection class/finish
  - Class 4 hot dipped galvanized.
  - Installation

    Use maximum practical lengths to minimise number of joints. Form bends by machine and remove burrs from cut ends.

    Use bends and/or junction boxes at changes of direction. Do not use elbows or tees of any sort without approval.

    Fix securely with boxes fixed independently of conduit.

    Tightly screw all joints to ensure electrical continuity, with no thread showing.

    Use expansion couplings where conduit crosses movement joints in structure.

300.030 STEEL SURFACE TRUNKING:

- Type A
- Application Distribution of main/sub main/final circuit cables as required.
- Type
  - Standard cable trunking.
- Standard
  - BS 4678-1.
- Size in accordance with BS 7671 (IEE regulations).
- Fittings
  - Hanger brackets.
  - Fire barriers.
- Protection class
  - Class 2.
- Finish
  - Zinc coated to BS EN 10142 or BS EN 10143 and BS EN 10147.
- Installation

  Use proprietary units to form junctions and changes of direction wherever possible.

  Use mechanical fastenings/fixings; do not weld.

300.000 Cont'd...

Fit a copper link at each joint to ensure electrical continuity.
Fit grommets, bushes or liners to holes through which cables pass.

300.090 FIRE STOPPING OF TRUNKING/DUCTING:

Where trunking or ducting pass through fire resisting floors, ceilings, cavity barriers, etc., seal internally with

- proprietary intumescent material.

300.100 FLEXIBLE CORDS:

- Type A
- Application Connection of equipment/lighting from connection units
- BASEC certified.
- Standard
  - PVC insulated cord 450/750V to BS 7919

300.110 INSULATED CABLES:

- Type A
- Application Installation of sub main wiring to new consumer units and distribution boards
- BASEC certified.
- Type
  - Copper conductors.
  - Multi-core As required
  - Armoured.
  - Sheathed.
    - LSF.
- Standard
  - 600/1000V to BS 6346.
- Cable glands
  - BS EN 50262.
- Fire performance to BS 5839-1
  - Standard.

300.110B INSULATED CABLES:

- Type B
- Application final circuit wiring
- BASEC certified.
- Type
  - Copper conductors.
  - Multi-core as required
  - Unarmoured.
- Standard
  - General purpose 450/750V to BS 6004.
  - Internal wiring 300/500V to BS 6004.

300.000 Cont'd...

- Cable glands
  - BS EN 50262.
- Fire performance to BS 5839-1
  - Standard.

300.120 MINERAL INSULATED LV CABLES:

- Type A
- Application as required for modification/relocation of existing fire alarm devices.
- BASEC certified.
- Type
  - Sheathed to match existing if appropriate
- Standard
  - 500V light duty to BS EN 60702-1 Section 14.
- Fire performance to BS 5839-1.
  - Standard.
- Cable glands
  Use seals and glands to BS EN 60702-2.

300.150 CABLE JOINTING SUNDRIES:

Use terminations conforming to the BS EN 61238-1. Use tapes to BS 3924 or BS EN 60454.

300.180 PERFORATED CABLE TRAY:

Support all cables throughout their length using cable tray, firmly fixed to building fabric. Ensure cable tray allows for spacing in accordance with BS 7671 for the design current of the cable.

- Standard BS EN 61537

Type

- Return flanged.

Perforations and thickness

- Manufacturer's standard pattern and thickness.

Fittings

Use factory made fittings throughout of same material, type, pattern, finish and thickness as cable tray.

300.190 CABLE CLIPS AND CLEATS:

- Standard BS EN 50368

400.000 CONDUIT AND TRUNKING, LV CABLES AND WIRING - WORKMANSHIP

400.010 INSTALLING CONDUIT IN CONCRETE:
Fix securely to reinforcement and fix boxes to formwork to prevent displacement. Depth of concrete cover not less than indicated for reinforcement.

400.020 INSTALLING TRUNKING:
Remove burrs from cut trunking ends.

400.030 DRAINAGE OF CONDUIT:
Provide drainage outlets at lowest points in conduit installed externally and in locations where condensation may occur.

400.040 APPEARANCE:
Arrange conduit and trunking, plumb where vertical, neatly parallel with other service runs and the structure.

400.050 EXPANSION AND SETTLEMENT JOINTS:
Make provision at expansion and settlement joints for movement. Use manufactured expansion couplings.

400.060 SPACING:
Install conduit, trunking and equipment clear of other services with minimum spacings:-

- To steam - 300mm, other services - 150mm and above radiators - 1000mm.

Ensure trunking and conduit is independently supported from building fabric. Obtain approval for supports.

400.070 ACCESS:
Locate covers on top or sides of trunking to allow access to wiring.

400.080 CABLE ROUTES:

- Ensure cable routes are
  - Straight, vertical or horizontal and parallel to walls.
  - In approved locations where exposed to view. Conceal cables wherever possible.
  - Positioned at least 150 mm clear of other services. Locate cables running parallel and adjacent to heating pipes below pipes.
- Install
  - Concealed horizontal runs in walls within 150 mm of ceiling or between 150 and 300 mm of floor.
  - Concealed vertical cable runs to wall switches and outlets in line with accessory.

400.090 CABLE INSTALLATION - GENERAL:

- Install cables neatly and securely, adequately protected against accidental damage, adverse environmental conditions, mechanical stress and deleterious substances.
- Install cables without joints other than at equipment and terminal fittings. Do not use junction boxes without approval.

400.000 Cont'd...

- Sleeve cables passing through masonry walls with conduit bushed at both ends.
- Do not run cables in spaces where they will be surrounded or covered by insulation.

400.100 PROTECTIVE CONDUCTORS:
Use cable conductors throughout; do not use conduit or trunking as protective conductors.

400.110 CABLE INSTALLATION - ARMOURED CABLE:
Handle and install carefully to prevent damage to sheath and armouring.
Do not install if cable and ambient temperature are, or have been for the last 24 hours, below 0°C.
Fit galvanized steel guards where cables are liable to mechanical damage.
Bond armour to equipment and main earthing system.
Make moisture proof connections to apparatus using sealed glands and PVC shrouds.

400.120 CABLE INSTALLATION - PVC SHEATHED CABLES:
Do not install cables when temperature is near or below freezing.
Do not install in cavities of external walls.
Fit insulating cable glands at entries to equipment.
Terminate cable sheaths within boxes.

400.130 CABLE INSTALLATION - MICC CABLE:
Neatly and carefully dress cable into position using tools recommended by cable manufacturer. Avoid corrugating sheath when bending.
Connect to equipment and boxes with shrouded glands.
Fix cables with clips recommended by manufacturer ensuring that cable is fixed within 150 mm of bends and connections.
As soon as a length of cable has been installed, fit permanent seals and immediately carry out an insulation test between conductors or between any conductor and cable sheath. Repeat test between 24 and 48 hours later. Only infinity readings will be accepted. Replace any cable which fails and repeat tests.

400.160 CABLES IN PLASTER:
Cover with galvanized steel channel nailed to background.

400.170 CABLES IN VERTICAL TRUNKING/DUCTS:
Support with pin racks or cleats at each floor level or at 5m vertical centres, whichever is less.
Provide and fix heat barriers at not more than 5m centres where fire resisting barriers are not indicated.

400.180 CABLES IN ACCESSIBLE ROOF SPACES:
Cables running across ceiling joists to be fixed to timber battens nailed to joists.

500.000 LIGHTING AND POWER - PRODUCTS/MATERIALS

500.030 DISTRIBUTION BOARDS:

- Type A
- Application new single phase riser distribution boards within ceiling void of disabled WC serving toilet areas.
- Manufacturer and reference Merlin Gerin Iso range
  - Or approved equivalent.
- Standard - BS 5486-13 and BS EN 60439-3.
- Main control
  - MCB.
- Number of ways.
  - One per circuit plus 2 spares.
- Circuit protection
  - Miniature circuit breakers to BS EN 60898-1.
    - Type B
    - Rating (A) As described elsewhere
- Enclosure
  - Manufacturer's standard.

500.040 FUSES:

Supply fuses including fuse carrier, bases and associated components to BS EN 60269-1 and BS 88.

500.140 ENCLOSURES FOR ELECTRICAL ACCESSORIES:

- Type A
- Application as required
- Standard, BS 4662 or BS 5733
- Pattern
  - Flush.
- Mounting
  - Direct to enclosure.
- Material and finish
  - Pressed steel.
- Coverplate finish
  - Moulded plastic colour white
- Coverplate pattern
  - Overlapping.

500.150 LIGHTING SWITCHES:

- Type A
- Application Automatic switching of lighting will be achieved via PIR detection within all areas, key test facilities for emergency lighting will be provided in the riser.
- Standard - BS EN 60669-1, with earth terminal in enclosure.
- Rating

500.000 Cont'd...

  - 5A.
- Ancillaries
  - Operating keys.
- Switch mechanism
  - Two position.
- Pole configurations
  - Single pole.

500.160 SWITCHED FUSE CONNECTION UNITS:

- Type A
- Application Local isolation to water heaters, sensors, etc.
- Manufacturer and reference MK Logic Plus
  - Or approved equivalent.
- Standard
  - BS 1363-4.
  - Double pole switching.
- Ancillaries
  - Red indicator lamp.
  - Fuses to BS 1362, sized to suit load
  - Cord outlet and cord grip.

500.170 SOCKET OUTLETS:

- Type A
- Application Cleaners sockets
- Manufacturer and reference MK Logic Plus
  - Or approved equivalent.
- Standard
  - BS 1363-2.
  - BS EN 60669.
- Type
  - Socket outlet.
  - Switched.
  - 2 gang.
- Ancillaries
  - RCD.

500.235 TOILET ALARM INDICATOR:

- Standard - Building Regulations Approved Document M Section 4.
- Ceiling pull unit with 2 bangles in each disabled toilet
- Overdoor light with sounder to each disabled toilet

500.250 ACCESSORIES MOUNTING HEIGHTS:

Provide switches and socket outlets for lighting and other equipment in habitable rooms at appropriate heights between 450mm and 1200mm from finished floor level, in accordance with Building Regulations Approved Document M and BS 8300.

600.000 LIGHTING AND POWER - WORKMANSHIP

600.010 LAMPS AND LUMINAIRES INSTALLATION:

Install luminaires in horizontal plane unless otherwise shown.

Ensure luminaires are clean.

Ensure classification of luminaires is appropriate.

- Install recessed and semi-recessed luminaires as manufacturer's details.

Do not support luminaires directly from any flammable non-metal or heat sensitive materials.

Ensure suspensions are vertical unless otherwise shown.

Provide ultra violet tubes to fitting shown on drawings.

600.030 ELECTRICAL ACCESSORY INSTALLATION:

Provide CPC between earth lug on metal box and accessory except for plastic accessories.

Ensure there is no damage to accessories during installation.

Protect surface mounted accessories from painting. Install front plates of flush mounted accessories after painting.

Align accessories to building finishes. Mount grouped accessories in line, parallel and equidistant.

700.000 MISCELLANEOUS ELECTRICAL EQUIPMENT

700.011 INSTANTANEOUS WATER HEATER(S):

- Type A
- Application installation to main wash hand basins and disabled WC.
- Manufacturer and reference Heatrae Sadia Multipoint 15
  - Or approved equivalent

Supply and install

- Electric instantaneous water heater.
- Duty - Rated output (kW) 3
- Service
  - Multipoint.
- Water supply
  - Mains.
- Casing finish
  - Manufacturers Standard
- Heating element
  - 3kW element.
- Incorporating
  - Controls timeclock controls to each unit (allow 7 day programmer)

800.000 SPECIALIST SYSTEMS

800.010 EMERGENCY LIGHTING SYSTEM:

- Application A
- Standards
  - BS 5266.
  - BS EN 50171.
  - BS EN 60598-2-22.
  - ICEL 1006.
  - CIBSE TM 12.
  - the requirements of the Local Authority.
  - manufacturer's instructions.
- Mode of operation
  - Maintained.
- Type
  - Luminaire.
  - Conversion unit.
- Illumination of signs

  Illuminate exit, emergency exit and escape route signs so that they are legible at all times, with:-
  - Luminaires external to sign.

800.240 EXISTING INSTALLATIONS EARTHING AND BONDING:

Check earth continuity conductors and loop impedance values of existing installation. Report defects and elements not in accordance with BS 7671 (IEE Regulations 16th Edition) before connecting new or modified installations to existing supply.

800.250 ELECTRICAL INSTALLATION METALWORK:

Bond together all exposed conducting parts with joints of negligible impedance. Carry out work in accordance with BS 7671 (IEE Regulations), BS 7430, Electricity Safety Quality and Continuity Supply Regulations, and Local Electricity Supply Authority Requirements.

- Comply with the requirements of BS EN 50310.

800.270 PROTECTIVE CONDUCTORS:

- Application A

Provide protective and equipotential bonding conductors. Size in accordance with the BS 7671 (IEE Wiring Regulations).

- Material
  - Copper LSF to BS 7211.
  - Protective conductor of multi-core cable.

800.320 BUILDING SERVICES:

Bond to protective conductor system, all metallic building services in:-

- The Ladies WC complex

800.330 EQUIPOTENTIAL BONDING:

Provide main and supplementary equipotential bonding conductors in accordance with BS 7671 (the IEE Wiring Regulations).

BS APPENDIX

BS 1210:1963	Specification for wood screws
BS 1363-2:1995	13 A plugs, sockets-outlets and adaptors. Part 2 Specification for 13 A switched and unswitched socket-outlets
BS 1363-4:1995	13 A plugs, socket-outlets and adaptors. Part 4 Specification for 13A fused connection units switched and unswitched
BS 2950:1958	Specification. Cartridge fuse-links for telecommunication and light electrical apparatus
BS 3924:1978	Specification for pressure-sensitive adhesive tapes for electrical insulating purposes. Current but partially replaced by Parts of BS EN 60454-3
BS 4533-102.1:1990	Luminaires. Particular requirements. Part 102.1 Specification for fixed general purpose luminaires
BS 4662:1970	Specification for boxes for the enclosure of electrical accessories
BS 5225-1:1975	Photometric data for luminaires. Part 1 Photometric measurements
BS 5225-3:1982	Photometric data for luminaires. Part 3 Method of photometric measurement of battery-operated emergency lighting luminaires
BS 5266-1:1999	Emergency lighting. Part 1 Code of practice for the emergency lighting of premises other than cinemas and certain other specified premises used for entertainment
BS 5467:1997	Electric cables. Thermosetting insulated, armoured cables for voltages of 600/1000 V and 1900/3300 V
BS 5486-11:1989	Low-voltage switchgear and controlgear assemblies. Part 11 Specification for particular requirements of fuseboards
BS 5486-12:1989	Low-voltage switchgear and controlgear assemblies. Part 12 Specification for particular requirements of type-tested miniature circuit-breaker boards
BS 5733:1995	Specification for general requirements for electrical accessories
BS 5839-1:2002	Fire detection and alarm systems for buildings. Part 1 Code of practice for system design, installation, commissioning and maintenance

BS 6004:2000	Electric cables. PVC insulated, non-armoured cables for voltages up to and including 450/750 V, for electric power, lighting and internal wiring
BS 6121-2:1989	Mechanical cable glands. Part 2 Specification for polymeric glands
BS 6346:1997	Electric cables. PVC insulated, armoured cables for voltages of 600/1000 V and 1900/3300 V
BS 6500:2000	Electric cables. Flexible cords rated up to 300/500 V, for use with appliances and equipment intended for domestic, office and similar environments
BS 6724:1997	Electric cables. Thermosetting insulated, armoured cables for voltages of 600/1000 V and 1900/3300 V, having low emission of smoke and corrosive gases when affected by fire
BS 67:1987	Specification for ceiling roses
BS 7211:1998	Electric cables. Thermosetting insulated, non-armoured cables for voltages up to and including 450/750 V, for electric power, lighting and internal wiring, and having low emission of smoke and corrosive gases when affected by fire
BS 7430:1998	Code of practice for earthing
BS 7629-1:1997	Specification for 300/500 V fire resistant electric cables having low emission of smoke and corrosive gases when affected by fire. Part 1 Multicore cables
BS 7671:2001	Requirements for electrical installations. IEE Wiring Regulations. Sixteenth edition
BS 7846:2000	Electric cables. 600/1000 V armoured fire-resistant cables having thermosetting insulation and low emission of smoke and corrosive gases when affected by fire
BS 7919:2001	Electric cables. Flexible cables rated up to 450/750V, for use with appliances and equipment intended for industrial and similar environments
BS 8300:2001	Design of buildings and their approaches to meet the needs of disabled people. Code of practice
BS EN 50085-1:1999	Cable trunking and cable ducting systems for electrical installations. Part 1 General requirements

BS EN 50085-2-3:2001
Cable trunking and cable ducting systems for electrical installations. Part 2-3 Particular requirements for slotted cable trunking systems intended for installation in cabinets

BS EN 50086-2-1:1996
Specification for conduit systems for cable management. Part 2-1 Particular requirements. Rigid conduit systems

BS EN 50368:2003 Cable cleats for electrical installations

BS EN 60081:1998 Double-capped fluorescent lamps. Performance specifications

BS EN 60269-1:1999 Low-voltage fuses. Part 1 General requirements

BS EN 60335-1:2002 Specification for safety of household and similar electrical appliances. Part 1 General requirements

BS EN 60335-2-35:2002
Specification for safety of household and similar electrical appliances. Part 2-35 Particular requirements for instantaneous water heaters

BS EN 60400:2000 Lampholders for tubular fluorescent lamps and starterholders

BS EN 60529:1992 Specification for degrees of protection provided by enclosures (IP code)

BS EN 60598-1:2000 Luminaires. Part 1 General requirements and tests

BS EN 60598-2-22:1999
Luminaires. Part 2-22. Particular requirements. Luminaires for emergency lighting

BS EN 60598-2-2:1997
Luminaires. Part 2-2. Particular requirements. Recessed luminaires

BS EN 60702-1:2002 Mineral insulated cables and their terminations with a rated voltage not exceeding 750 V. Part 1 Cables

BS EN 60702-2:2002 Mineral insulated cables and their terminations with a rated voltage not exceeding 750 V. Part 2 Terminations

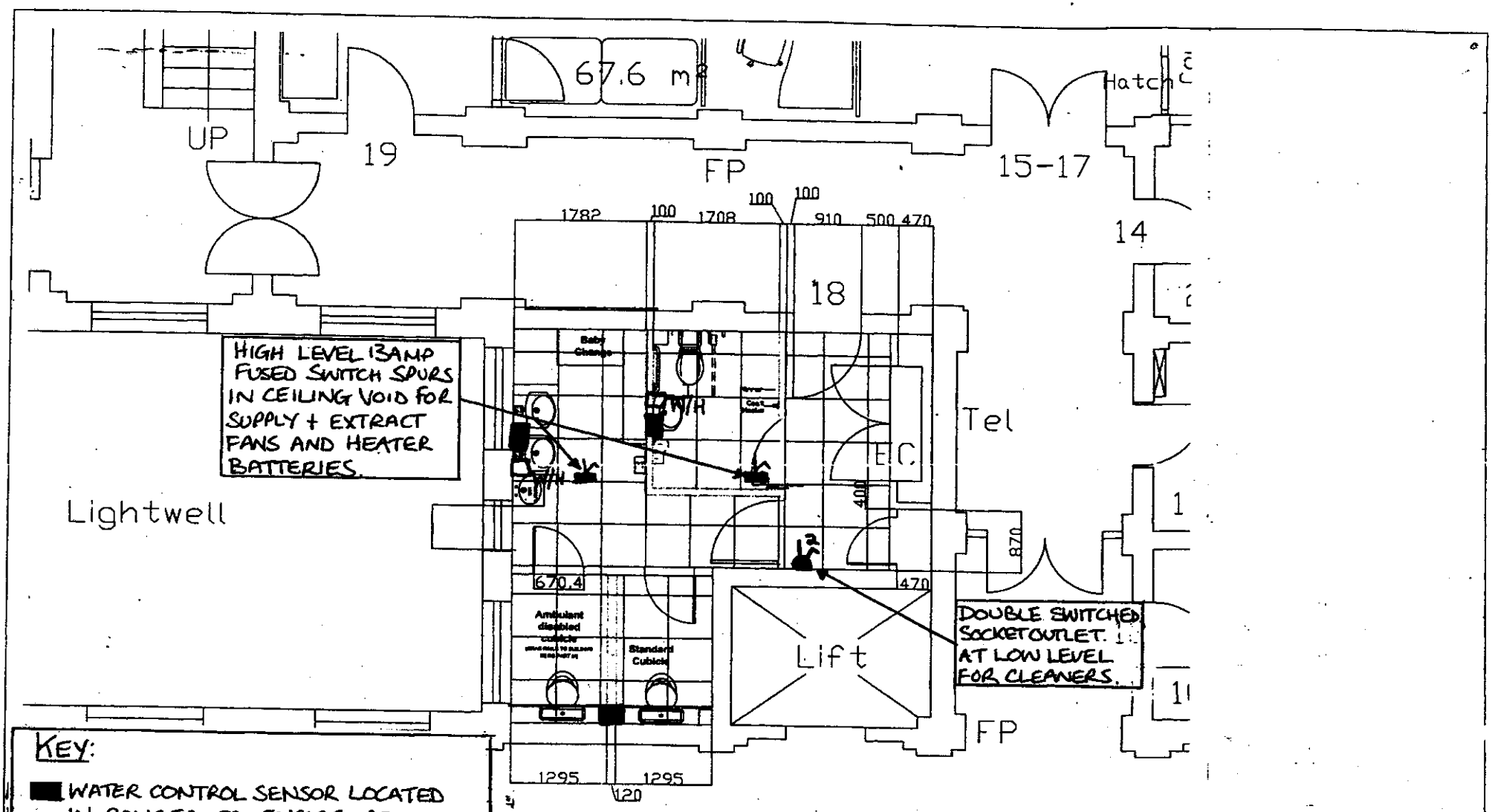
BS EN 60898-1:2003 Circuit-breakers for overcurrent protection for household and similar installations. Part 1 Circuit-breakers for a.c. operation

BS EN 60947-2:2003 Specification for low-voltage switchgear and controlgear. Part 2 Circuit-breakers

BS EN 60947-3:1999	Specification for low-voltage switchgear and controlgear. Part 3 Switches, disconnectors, switch-disconnectors and fuse-combination units
BS EN 61008-1:1995	Specification for residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs). Part 1 General rules
BS EN 61558-1:1998	Safety of power transformers, power supply units and similar devices. Part 1 General requirements and tests

APPENDIX 1

ELECTRICAL INDICATIVE LAYOUT DRAWINGS



KEY:

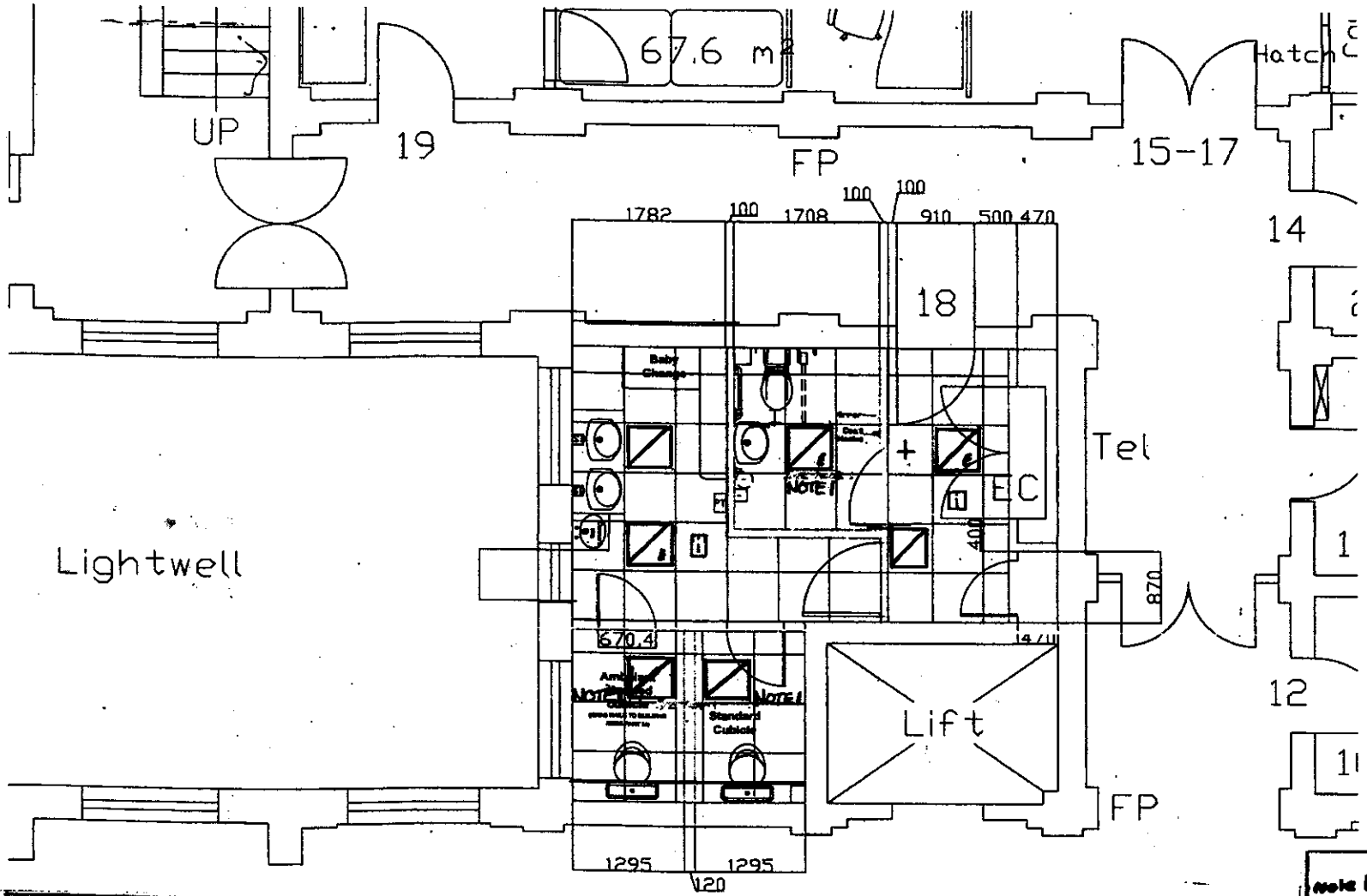
- ■ WATER CONTROL SENSOR LOCATED IN CONCEALED ENCLOSURE 1 No. 13AMP FUSED SPUR CONNECTION REQUIRED FOR EACH SENSOR SHOWN
- □ W/H. ELECTRIC WATER HEATER. SIZED AS PER SPECIFICATION. 1 No. 13AMA FUSED SPUR CONNECTION REQUIRED FOR EACH HEATER SHOWN.

revision	dcc	description	drwn by	checked	date

SML Services Management Limited
Seymour House
51 Praed Street
London W2 1NR

Project CAMDEN TOWN HALL GROUND FLOOR LAVIES WC.
Title PROPOSED SMALL POWER SERVICES, WATER HEATING + CONTROLS.

drawn by	date	checked	scale
A.T.	22/08/07	C.J.S	NTS
file name	drawing no.		
	10570/E001		



KEY:

- RECESSED 600x600 MODULAR FLUORESCENT FITTING AS PER SPECIFICATION.
- E AS ABOVE, WITH INTEGRAL BATTERY PACK FOR EMERGENCY LIGHTING.
- \+ = PIR SENSOR (360°)
- SD SMOKE DETECTOR LOCATION.

note 1. Requires U.V. lamp

revision	dcc	description	drwn by	checked	date

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Project CAMDEN TOWN HALL GROUND FLOOR LADIES W.C.
Title PROPOSED LIGHTING LAYOUT.

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A.T.	22/08/07	CJS	NTS
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