
Section 5 Equipment Schedules

5.1 Pipework Schedule

Internal Tube and Fittings

Service

Mains Cold Water (MWS)	Supply and install PEX cross-linked polyethylene pipework for internal potable water services, including fittings and accessories, complete with all supports and jointing systems, manufactured and tested in accordance with EN ISO 15875 and installed in accordance with the manufacturer's recommendations.
Cold Water (CWS)	As mains cold water pipework.
Hot Water (HWS)	As mains cold water pipework.
CWS/HWS Where Copper is used:	Copper tube to BS 2871 Part 2, Table X, Kitemark Certified. Jointing generally: integral lead free solder ring capillary fittings to BS864, Part 2, Kitemark Certified. Connections to equipment and fittings: compression fittings to BS 864, Part 2, Kitemark Certified.
Heating Cold Feed	As mains cold water pipework.
LPHW Heating	Mild steel tube to BS EN 10255:2004 (EN 10255) medium quality with screwed or welded joints. Fittings to be screwed, other than sockets, to be cast malleable iron or purpose made welded. Screwed fittings shall be used up to and including 50mm with welding fittings on 65mm and above.
LPG gas	External pipework shall be high density polyethylene HDPE yellow to IS266. Internal pipework shall either be medium grade black steel to EN 10255 suitable for welded connections or; CSST , a flexible gas piping system made from corrugated stainless steel tubing with mechanical fittings, used for distributing natural gas or LPG/propane within buildings. Tubing shall comply with EN 15266:2024 and be suitable for the operating pressure and gas type specified.

5.2 Pipeline Ancillaries Schedule

The valves and gauges noted below are deemed to meet the standard required for the project, any other valves and gauges of a similar standard and specification will also be deemed to be acceptable.

LPHW Heating – Valves

- From 15 mm up to and including 32 mm bore. Crane Fig. D.151 bronze fullway valves with internally screwed ends. Crane Fig. D.237 ditto for lockshield valves.
- Above 32 mm up to and including 65 mm bore. Crane Fig. DM.160 bronze flanged fullway valve with mating flanges. Crane Fig. DM.258 ditto for lockshield valves.
- Above 65 mm bore. Crane Fig. FM.82 cast iron flanged fullway valve with bronze trim and mating flanges.
- Non-return valves 65 mm and above. Crane Fig. FM.450 wafer check valve complete with mating flanges and centralising sleeves.
- Below 65 mm bore. Crane Fig. D.136 bronze swing type non-return valve with featherweight disc and with internally screwed ends.

Double Regulating Valves

DRV's up to 50mm dia. to be type as manufactured by Hattersley with screwed ends. DRV's 65mm dia. and over to be type as manufactured by Hattersley flanged to PN16

Note: DRV's to be installed to manufacturers recommendations for effecting precise flow control

Orifice Plates

Orifice plates up to 50mm dia. to be type as manufactured by Hattersley with screwed ends. Orifice plates 65mm and above to be type as manufactured by Hattersley flanged to PN16.

Note: Orifice plates to be installed to manufacturers recommendations for effecting precise flow controls.

Radiator Valves

Closed lockshield radiator valves shall be in bronze to BS 2767 with C.P. finish as manufactured by Crane Ltd., Fig D 881CP or D 891CP or equal to approval. Wheel-head valves shall be in bronze to BS 2767 with a C.P. finish as Crane Fig D 880 CP or D 890 CP or equal and approved.

Automatic Air Valves

Automatic air vents shall be provided on all high points in the system whether indicated or not and they shall be as Spirax Sarco Fig. No. AE 31 CV or equal and approved.

Note: Automatic Air Valves to be fitted at all high points.

Non-Return Valves

Non-return valves shall have screwed ends and be of the swing check featherweight type as manufactured by Hattersley Fig. No. 47 or equal and approved, or of the Senflux type as manufactured by Holden Brooke Limited, or equal and approved.

Draincocks

15mm gunmetal, lever operated, gland type drain cock, with a hose union outlet as B.S.S. Ltd Fig 81HU.

Note: Draincocks to be fitted at all low points

Hot Water Service

Isolating Valves:

Valves used on 28 mm bore pipework and below shall be Ballofix Fig 23381/23481/C1 valves with a non-dezincifiable body and ball, a chromium plated finish and with ends prepared for use with light gauge copper tubing and shall be arranged for operation with an Allen Key. Valves above 28 mm bore shall be Yorkshire YP514 DZR with union ends.

Non-Return Valves:

Non-return valves shall have screwed ends and be of the swing check featherweight disc screwed-in cap type as manufactured by Hattersley Fig. No. 47 or equal and approved.

Double Regulating Valves:

DRV's to be as manufactured by Hattersley variable orifice Y pattern globe valves.

Note: DRV's to be installed on HWS returns with ball isolating valves upstream taken within the billed rate for the regulating valve.

Draincocks:

Draincocks shall be as B.S.S. Ltd Fig 81HU.

Note: Fitted at all low points

Pressure Reducing Valve:

PRV to be IMI Bailey Birkett Ltd "Class T" regulator with spring for range 1.4 - 2.8 Bar (colour coded orange)

Cold Water Service

Isolating Valves:

As for hot water service.

Draincocks:

As for hot water service.

Mains Cold Water Service

As for cold water service.

Safety Valves:

Safety valves fitted to LPHW heating or HWS to be NABIC relief valves springs to be set for 20% greater than the maximum system working pressure.
All safety valves to be tested on completion of the system to release at set pressures.

System Venting:

Air vents to be provided at all high points of system. Air bottles for heating and HWS systems to be 50mm tube approx 250mm long fitted to equal tees or a 50mm conn where main is 50mm and above.

Automatic air vents to be as manufactured by Brownall Ltd and have integral isolating valve. AAV to have gunmetal bodies Non-Ferrous or stainless steel floats and guides, and non-corrodible valves and seats. Drip pipes to be piped to low level.

Float Operated Valves:

Float operated valves for water tanks to be as per Kerraflo Aylesbury "K" float valve. Valve bodies manufactured from DZR brass.

Gauges

Temperature Gauges

Gauges to be Mercury type with graduated range in degrees Celsius (with normal system operating point indicating at or about mid-scale), as manufactured by BSS Ltd or Stuart Buchanan gauges.

Pressure and Altitude Gauges

Gauges to be Bourdon Tube type with 100mm dia. The Bourdon type to activate a black pointer in the gauge. There is to be a second red pointer, which can be adjusted to suit. Gauges to be as manufactured by Stuart Buchanan or equal and approved.

Insulation

Insulation for all services to be CFC Phenolic foam for pre-formed sections and slabs.

- | | | | |
|----|-----------------|---|---|
| 1) | Pipework | - | 25mm thick up to 40mm
30mm thick over 40mm on all services
High density insulation to be fitted at all brackets
All insulation to be finished with class 'O' faced bright aluminium foil.
All CWS, MCWS pipework to be vapour sealed. |
| 2) | Plant and Tanks | - | 50mm thick on all surfaces.
All insulation to be finished with class 'O' faced bright aluminium sheet.
Cold surfaces to be vapour sealed. |

Aluminium Pipe Cladding (N/A)

5.3 Gas Proving Schedule

- For use in classrooms, laboratories, kitchen and teaching/training areas where gas is used – the system is designed to provide a failsafe start control for the gas supply to the room by proving there are no leaks in the pipework or appliances open etc.
- System in to be in accordance with IS820:2000 (Annex J) and consist of the following items:
 - Gas proving System
 - Carbon Monoxide Detector
 - Emergency Stop
 - Gas Solenoid Valve
- The Merlin 1000V system to comprise a key operated control panel, an electronic pressure sender unit which measures the gas pressure differentially across the solenoid valve and a 230v gas slam shut solenoid valve (size to be specified),
- Panel to be wall mounted with integral emergency knock-off button, on/off key switch and LED indication for power, testing, gas-on, test fail, supply low and EM-stop.
- Panel to have potential free relay outputs for a controls system and terminals to allow the connection of additional emergency stops.
- Panel to have terminals for the acceptance of a fire panel alarm signal in order to close the gas valve served by that panel during a fire alarm.
- The control panel housing is an ABS enclosure, rated IP65, measuring 180mm high, 255mm wide & 77mm deep.
- The pressure sender unit and the gas solenoid valve are supplied with a fixing kit for connection on site.
- The pressure sender unit is wired to the control panel using a two-wire signal cable (twisted pair).
- The connection terminals are marked “A + B” on both the sender unit and control panel connections
- The 230volt mains supply to the panel should be from a 3amp fused switch.
- The solenoid valve is connected to the terminals marked “Valve” on the panel connections.
- System to be supplied by S&S Northern model 1000V or equivalent.

5.4 Radiator Schedule

The following radiator schedule has been produced using the output, type, physical size and connection details of radiators as manufactured by Zehnder Runtal Radiators.

The radiators noted below are deemed to meet the standard required for the project, any other radiator of a similar standard and specification will also be deemed to be acceptable.

Ref.	Location	Type	Model	Req'd Output (W)	Height (mm)	Length (mm)	Depth (mm)	Selected/ Corrected Output (W) @ dt 50°C	Qty
R01-R04	Science Room 1	Runtall	RRHLLH	2,358	499	1500	100	2,348	x 4No.
R05	Prep Room	Runtall	RRHLLH	1,886	499	1200	100	1,886	x 1No.
R06	Science Room 2	Runtall	RRHLLH	2,358	499	1500	100	2,348	x 1No.
R07-R08	Science Room 2	Runtall	RRHLLH	4,402	499	2800	100	4,402	x 2No.

Additional Notes:

- LST - indicates low surface temp radiator
- BOE - indicates bottom opposite end connections
- TOE - indicates top opposite end connections
- RF - indicates reduced fin radiators
- FF - indicates full fin radiators
- Radiator selection must be approved by this office prior to order.

5.5 Schedule of Domestic Water heaters

The following units are deemed to meet the standard required, any other units of a similar standard and specification will also be deemed to be acceptable.

Ref.	Model	Capacity	Manufacturer	Length (mm)	Height (mm)	Depth (mm)	Electrical Supply
WH-01	3100306 (10U)	10 Litre	Ariston – Andris LUX	360	360	298	2.0kW @230

5.6 Extract fans Schedule

The following fans are deemed to meet the standard required, any other units of a similar standard and specification will also be deemed to be acceptable.

Schedule of Fans				
Ref.	Model / Type	Duty (m ³ /se c.)	Electrical	Comments
EF1	Anti-Corrosive, single inlet, Direct drive Centrifugal Fan	0.250 @ 250Pa	240/1/50Hz Watts – xx Max Op. – 2.5A	Frequency Inverter. Via the fume cupboard.
EF2	Inline Extract Fan	0.035 @ 100Pa	240/1/50Hz Watts – 30 RC – 0.24A FLC – xxA	Science Prep Chemical store – Control via timeclock to run 30Minutes every 8hours.
SF1	Inline Extract Fan	0.030 @ 100Pa	240/1/50Hz Watts – 30 RC – 0.24A FLC – xxA	Science Prep Chemical store – Control via timeclock to run 30Minutes every 8hours.

Additional Notes:

- All External louvres/roof cowls colour to be approved by Architect.
- Mechanical contractor responsible for making ceiling and wall penetrations for ducting and correct fitting of fan. The mechanical contractor shall fix and seal external louvre outlets.
- The supplier of the extract fan equipment shall verify all selections, dimensions, capacities and acoustic properties of the specific equipment being proposed.
- The units must comply with the new EcoDesign Directive and the Energy-Related Products Directive (ErP).
- All extract fans to be supplied complete with backdraught shutters, flush mounted speed controller or inverter as scheduled and anti-vibration mountings.
- All extract fans shall have limiting specific fan powers (SFP) as required by the current Building Regulations and as detailed within the current Non-Domestic Building Services Compliance Guide.

5.7 Schedule Of Tenderer's Selected Manufacturers

Tenderers are required to detail in the undernoted Schedule the manufacturers/suppliers' names, etc. of equipment on which their tender offer is based.

Item	Manufacturer/Supplier	Catalogue Reference	Delivery

Signed by: _____

For: _____

Date: _____

5.8 Schedule of Mechanical Tender Drawings

Drawing No.	Drawing Title
PL-M52-001	Above ground soils and wastes layout
PL-M53-001	Domestic water services layout
PL-M54-001	Gas services layout
PL-M56-001	Space heating services layout
PL-M57-001	Ventilation services layout