**Preambles & Design Brief**

**For the provision of retrofitting New Sprinkler System to Project Admiral blocks**

**Contents**

1. Introduction to project
2. Standard Preambles, Design Brief
3. Materials
4. Access and tenant liaison
5. Pipework
6. Fire compartmentation
7. Frost protection
8. Sprinkler flow rates
9. Fire Brigade inlet
10. Sprinkler positioning
11. Temperature rating
12. Testing and commissioning
13. Documentation
14. Additional considerations

**Introduction**

Poole Housing Partnership Ltd (PHP) is an Arms-Length Management Organisation (ALMO) formed in 2004. Its remit is to deliver the effective housing management and maintenance of the council’s retained housing stock on behalf of the Borough of Poole and this includes the management of the Housing Revenue Account (HRA) for the Borough of Poole.

This management responsibility therefore covers all day to day responsive and planned repairs that are delivered from within the ALMO management fee as well as all major capital works associated with the upkeep of the councils housing stock and funded from the Major Repairs Reserve held within the capital element of the HRA.

**Background to Project**

Situated within Poole town centre are four, eleven storey tower blocks of Nelson court, Grenville Court, Rodney court and Drake court. These blocks are originally a concrete frame construction with external walls of wimpy no-fines and traditional brickwork and have been refurbished recently to bring them to meet the current housing needs and standards. There is now a requirement to retro-fit a new fire suppression sprinkler system to all flats as part of fire precaution upgrade works.

The project task is to carry out a fitting of a new fire suppression sprinkler system to these blocks and to provide a safe and secure housing in the borough and for those who live in the buildings. This will also ensure that these blocks remain safe and fit for purpose for the future years.

**Objective**

The works would require a sprinkler system to be fitted to all blocks, a fully occupied block of flats The works entail the complete retrofit sprinkler system to be fitted and concealed including, but not limited to, removal, cutting, provision, making good, builders work, decorations and full reinstatement to match existing for all ceilings / walls including the new total length central ceiling access panel in each flat corridor. These works shall also include for any necessary new electrical and alarm works to the sprinkler system including the provision of new lighting to the sprinkler plant

**Introduction**

The following preambles clauses are for building services installations generally therefore this section shall be deemed to be subordinate to all other sections of this document, other sections being specific to this particular scheme. However, any items contained within this section which are not superseded or contradicted by other parts of this document shall be deemed to apply and must be adhered to.

**Generally**

The contractor shall install a fully functional tested and commissioned system of any type mentioned within this document as instructed by the Contract Administrator.

The contractor shall allow in his tender figure for all necessary attendants, builders, electrical, mechanical, removal of redundant systems and general making good works.

The contractor shall be deemed to have made a thorough inspection of the site prior to the submission of his tender, and no claim for a want of knowledge with regards to any additional works, which the contractor could have reasonably been expected to foresee as being necessary for the successful completion of the works, will be accepted by the contract Administrator, regardless of whether such works are, or are not, referred to within this document.

It shall be the contractors responsibility to bring to the Contract Administrator’s attention any matters which he feels may influence his ability to, price competitively for the work, or, in the event of his tender being accepted, successfully complete the works. As an example, adverse on-site conditions, discrepancies within the contract documentation etc.

**Materials**

All materials to be used on site must conform fully to the specification or if not covered therein must be of the makes, models, types, standards etc. set out in these preambles.

Any materials which are necessary for the completion of the works, but which are not mentioned within this document, must be approved by the Contract Administrator before being used.

Any materials used on site which do not conform to either of the previous two clauses shall

be replaced, to the satisfaction of the Contract Administrator, at the contractor’s expense.

**Access/tenant liaison**

Work shall only be carried out between the hours of 8.00 a.m. and 5.00 p.m., Monday to Friday.

It shall be the principal contractor’s responsibility to arrange access by liaison with each tenant, and they shall give a minimum five days’ notice of commencement of work.

Access to void (empty) properties shall normally be by arrangement with the Principal Contractor

It shall be the contractors responsibility to ascertain the availability of on-site services, and no claims for extensions of time or additional costs will be accepted by the Contract Administrator if such losses are caused by a lack of electrical power, water etc.

The contractor shall be responsible for moving any fixed or loose furniture as necessary to enable him to carry out the work, and he will be expected to replace same on completion.

The site shall be kept, as far as can be reasonably expected, safe at all times for reasonable access and movement of the tenants.

The contractor shall take adequate measures to at all times protect the tenants property, fixtures, and fittings. Failure to do so may result in claims for compensation from the tenant, which the contractor shall be expected to settle at his own expense.

Before leaving site at the end of each working day the contractor must ensure that all previously connected services are still connected and useable (gas, mains water etc.). If any problems are encountered with connected services, e.g. burst pipework, the contractor must ensure that he does everything within his power to restore the service. For example,

1. Affect a permanent, or (safe) temporary repair himself.
2. Arrange for the relevant statutory authority to reinstate the service.
3. Contact the Contract Administrator for the scheme.
4. Contact the local Housing Management Office.
5. Arrange a temporary service.

The contractor should have provided a programme of work as part of the tender submission. The contractor shall provide a weekly update, in writing, to the Contract Administrator and client in respect of this programme updating and reissuing as necessary.

**The works: generally**

All work shall be carried out fully in accordance with all relevant legislation and codes of practice, paying particular attention to the following:

1. The Building Regulations, including all relevant amendments.
2. The Health and Safety at Work etc Act 1974.
3. Electricity at Work Regulations 1989
4. The Construction (Design and Management) Regulations 2015.
5. I.E.E. Wiring Regulations (17th Edition).
6. Control of Asbestos Regulations 2012
7. The Water Supply (Water Fittings) Regulations 1999.
8. The Regulatory Reform Fire Safety Order 2005
9. BAFSA Technical Note 1 Design and Installation of Residential. Sprinkler Systems Revision 1: June 2008
10. Legionnaires' disease - the control of legionella bacteria in water systems Approved Code of Practice and guidance (L8)

Sprinkler systems are to be designed and installed fully in accordance with BS 9251:2014 by a UKAS accredited 3rd party approved designer / installer. All works undertaken as part of this package are to be signed off by a UKAS accredited 3rd party (i.e. FIRAS etc.).

Bending of any copper piping should only be carried out by an approved method in accordance with BS 6700.

All installation work shall be carried out by fully qualified plumbers, fitters/electricians as appropriate. Any work on gas appliances, pipework or equipment shall only be carried out by operatives who have undertaken and passed a course administered by the C.I.T.B. to the H.S.E.’s Approved Code of Practice for Standards of Training in Safe Gas, and who shall carry a card that proves the attainment of said qualifications for the correct discipline of work.

**Pipework generally**

The Contractor shall install internal runs of all non-gas pipework according to the following order of priority.

1. Main runs to be within existing boxing (where possible) in communal areas
2. Main runs and other runs in tenant flats to be surface mounted in the corners of the rooms/corridors where possible and covered (following all testing and on completion of installation) in Talon pipe concealment

The contractor shall only be allowed to install pipework in the manner described.

Where pipes and cables for pipework and/or fire alarm works pass through floors and compartment walls they must be fire stopped by a UKAS third party accredited installer, a completion certificate will be required.

The pipework shall be so designed and installed as to render the installation:

1. Self-purging of air.
2. Free draining.
3. Free of water hammer and other forms of avoidable noise.
4. Free from the problems of “pumping over” and “pulling down”.
5. Free of leaks.

The contractor shall obtain approval of routes for pipework from the Contract Administrator following appointment but before *any* installation; this is to be issued as marked on the existing floor plans provided with the tender documentation. Any pipework runs with which the Contract Administrator is not entirely satisfied shall be removed and replaced, inclusive of making good to the structure, by the contractor at no extra cost.

All pipes and fittings should be supplied and installed in accordance with the relevant British Standards.

“Blazemaster” CPVC Pipe and Fittings are to be installed in accordance with the manufacturer’s instructions and handbook.

Copper tube conforming to BS EN 1057 used in underground locations [if applicable] should be R220'(annealed), thick walled, factory plastic coated tube. In this case, fittings should be manipulative Type B. Brass fittings in underground locations should be immune to de-zincification.

Plastics and other pipes and fittings should be in accordance with a standard as recognized by the authority having jurisdiction and suitable for residential and domestic sprinkler systems and should be installed in accordance with the supplier's instructions.

Pipe runs are to be straight, and parallel to the structure/perpendicular, as appropriate. Pipe runs to be located so as to facilitate installation, removal, maintenance etc. of all attendant fittings, equipment, insulation and accessories.

Do not run pipework through electrical enclosures or above switch gear, distribution boards or the like.

**Pipe fixings and joints**

Pipes are to be fixed securely and neatly with the minimum number of joints, bends, and offsets to the levels in the table below

|  |  |  |
| --- | --- | --- |
| Nominal Diameter  Of pipe (mm) | Horizontal run in metres | Vertical run in metres |
| 22 | 1.7 | Max 3.0 |
| 28 | 1.8 | Max 3.0 |
| 32 | 2.0 | Max 3.0 |
| 40 | 2.1 | Max 3.0 |
| 50 | 2.4 | Max 3.0 |
| 65 | 2.7 | Max 3.0 |
| 80 | 3.0 | Max 3.0 |

Allow for thermal movement of pipelines and isolate from the structure to prevent noise or abrasion of the pipework caused by movement.

Only metallic pipe fixings should be used. Batons and lock type clips should be fitted in close proximity to the sprinkler heads to ensure no movement occurs which would recoil heads into the ceiling or loft voids.

Structural timbers should not be notched or bored in such a way that the integrity of the structure is compromised (Building Regulations Part A).

**Pipe Joints**

Pipes shall be cut square, burrs removed, and neat, fully sealed joints made with the pipe entering the fitting to its full depth.

Contact between dissimilar metals shall be avoided wherever possible, and connection between dissimilar materials shall be by purpose designed fittings or adapters only.

Do not use formed bends on exposed pipework except for small offsets

**NOTE** Attention is drawn to the Water Regulations for requirements for pipes and fittings. Capillary fittings should be joined by soldering or brazing with alloys with a melting point of not less than 230 °C as specified in BS EN 29453.

**Finished Pipework**

Completed pipelines shall be of smooth consistent bore, clean and free from tool marks, wrinkling etc.

Open pipe ends shall be temporarily sealed during the work to prevent the ingress of dirt during installation, and pipework fully flushed on completion.

**Pipe Ducts**: Size to be the minimum for the pipework that is to be encapsulated.

**Fire Compartmentation**

Where any breaches in compartmentation are made the contractor shall make good with materials offering minimum of 60 minutes fire separation in walls and 120 minutes through floors. The standards shall be using materials compliant with BS476 Parts 17, 22.

Such compartment works are to be carried out by third party accredited installer working to LPC or FIRAS standards using materials compliant with BS476 Parts 17, 22 who will issue certificate of compliance following works.

Where existing boxing are to be utilized as requested within the communal areas, the contractor is to reinstate all boxing so these are left in a condition where they are no worse than existing. Where such boxing requires compartment / fire proofing works, this is to be carried out by third party accredited installer working to LPC or FIRAS standards using materials compliant with BS476 Parts 17, 22 who will issue certificate of compliance following works.

**Frost protection**

It is essential that any water filled pipework which may be subjected to low temperatures should be protected against freezing at all times. The type and need must be agreed and cleared with contracts administrator before proceeding.

**Option 1** Electrical trace heating and/or lagging or antifreeze solutions may be used.

**Note 1** Water Regulations forbid the employment of anti-freeze solutions where the system is directly connected to a mains water supply.

**Note 2** Plastics pipe and fittings may be protected using glycerine based anti-freeze solutions. Glycol based anti-freeze solutions should not be used in plastic systems.

**No insulation work is to commence until the pipework has been fully tested.**

**Feasibility**

Before installation begins, the service pipe water supply should be tested to ensure that, when at its lowest hydraulic characteristic, the recommended flow rate and pressure can be achieved. If the recommended pressure and flow rate is not achieved the installation should not proceed and the contract administrator should be consulted.

**Sprinkler flow rates**

The sprinkler system should be capable of providing flow rates at the sprinklers of not less than:

1) 60 l/min through any single sprinkler; or

2) 42 l/min through each of two sprinklers operating simultaneously in a single room

**Flow rate requirements for mains water supply connections**

Where the mains water supply connection serves both the sprinkler system and the domestic or residential occupancy supply, the sprinkler system should be capable of providing flow rates at the sprinkler heads as above by:

a) The operation of an automatic priority demand valve; or

b) For domestic occupancies, the sprinkler flow rate plus at least 25 l/min;

When relying only on a direct mains water supply only 85 % of the water pressure and flow rates at the lowest flow/pressure characteristics anticipated should be allowed in the calculations.

Where the connection to the mains water supply serves more than one dwelling, the system should be capable of providing the flow rates at the sprinkler heads in accordance with the recommendations above at times of simultaneous peak demand from all of the dwellings concerned.

**Fire Brigade Inlet**

The riser main will have a two way breaching inlet installed by the contractor to allow the fire service to supplement the town main if required. Include pricing for a cabinet housing for the breaching, the building works which will be required to install the cabinet in the wall and a sign (red background white lettering) to indicate to fire fighters the maximum pressure that should not be exceeded.

**General**

Sprinklers should be installed in accordance with the supplier's instructions but not contravene the recommendations of BS 9251 Sprinklers should be of sidewall or ceiling (not recessed), suitable for service in domestic application. Sprinklers should have a quick response thermal sensitivity rating and be in accordance with DD 252. Only new equipment should be used. Any sprinkler head removed from a system should be discarded.

Sprinklers should be threaded suitable for use with fittings threaded in accordance with ISO 7·1 and ISO 65, and BS 21.

**Sprinkler positioning**

Sprinklers should be positioned in accordance with the British Standard unless specifically specified by the contract administrator.

The works are contractor design and the contractor will be resonsibel for all design works and compliance with BS 9251.

**Temperature rating**

Fusible link sprinklers should be colour coded on the frame or sprinkler body; glass bulb sprinklers should be colour coded by the bulb liquid in accordance with BS EN 12259-l. The temperature rating of the sprinklers should be:

a) the closest to but at least 20 °C greater than the highest anticipated ambient temperature of the location;

b) Within the range of 79 °C to 100°C when installed under glazed roofs.

**NOTE** as we are in the UK and classed as normal conditions, the sprinkler temperature ratings will be 57°C or 68 °C

**Alarm devices**

Valves and alarm devices suitable for residential and domestic systems should be installed in accordance the manufacturer’s instructions

The system should notify the following alarm devices which should be triggered by the flow of water to at least one sprinkler:

An electrically operated flow switch connected to an audible alarm/fire alarm;

The fire alarm is linked to a remote alarm monitoring station, and any work carried out on the alarm will be subject to and require a completion certificate

**Valves**

The system will have the following

a) an appropriate back-flow prevention device to prevent mains water contamination;

b) a stop valve, of the **full** bore lever type to isolate sprinkler pipework from mains water supply, to be located to suite the design requirements.

c) An isolation valve to each flat

**NOTE 1** The valve should be locked in the open position to prevent accidental interruption of the water supply to the sprinkler system.

d) where appropriate, a priority demand valve;

e) an alarm test valve;

**NOTE 2** A test facility should be provided at the end of the hydraulically most remote range pipe on the system consisting of not less than a 22 mm nominal diameter pipe and quick acting test valve with an outlet nozzle equivalent in size to the smallest sprinkler in the system.

f) a quick-acting drain and test valve facility fitted at the lowest point of the sprinkler pipework to allow functional testing and the complete draining of the sprinkler system, suitably sized to check the appropriate maximum flow rate specified for domestic sprinklers but not less than a 22 mm nominal diameter pipe size

g) Installation of individual drain line linked into the valve set installed at each floor level for testing and emergency requirements if required.

**Testing and commissioning:**

All fitting, testing, and commissioning of the systems shall be carried out by the contractor, under the supervision of the Contract Administrator or his representative if so requested.

All pressure testing of the pipework shall be carried out before the fixing of any insulation. The sprinkler system should be tested for leakage by filling with water at the normal working pressure and checking visually for leaks at each joint. Any leaks found should be repaired.

The water supply to the system should be isolated and the system should be tested to a minimum of 1.5 times working pressure or 12 bar, whichever is the lesser, for 1 hour. If the system fails to maintain pressure the leak should be found and corrected and this test repeated.

**Hydraulic test**

The sprinkler system should be tested to ensure that at least the flow rate for domestic dwellings can be met at the required pressure at the alarm test valve.

If this flow rate at the required pressure cannot be achieved, the system will not be approved for use until the system has been corrected and the retested and passed.

**Alarm test**

The alarm (and/or repeaters) should be heard in all habitable rooms (within the communal areas) in the premises protected by sprinklers coupled to the alarm device being tested. The stated audibility should be achieved when there is a water flow of not more than 60 l/min through the alarm device under test.

**Signage**

Each door to area where shut off valves are contained on floors and the main valve should be signed with “Sprinkler Control Valve” sign 200mm x 200mm sign.

**Compliance**

On satisfactory completion of the commissioning tests by the experienced sprinkler contractor a certificate will be issued and include a general description of the system and a statement of compliance with this British Standard in the form of a signed Compliance Certificate, together with any deviations agreed with the authority having jurisdiction and the justification for the deviation.

A certificate will also be provide by a UKAS Accredited 3rd party regulatory body (FIRAS or other) following their own independent system sign-off.

**Sprinkler Box Provision**

The bidder should include for the provision and installation of a lockable sprinkler box to be sited adjacent the fire alarm panel. The box to have six spare heads and one valve handle and a spanner for changing heads kept in the box.

**Documentation:**

The contractor shall produce for each completed installation a hard backed A4 ring binder with front display pocket within this folder there must be :-

1. For new and extended systems all drawings (both electronic and hard copy) and documents should bear as a minimum details of the system which will include:
2. the address and location of the premises
3. the name and address of the approved contractor;
4. the name of the designer;
5. The date of installation.
6. The following information should be provided by the approved contractor to the client;
7. Details of the authorities consulted and any response to consultation;
8. A general description of the system and a statement of compliance with this British Standard in the form of a signed Compliance Certificate, together with any deviations agreed with the authority having jurisdiction and justification for the deviation;
9. A layout drawing of the premises, which includes as-fitted details, showing the extent of the installation together with a set of the hydraulic calculations;
10. Details of the water supplies which, if a town main, should include pressure and flow rate data at a specified location for the commissioned installation, with the time and date of the test;
11. An inspection and routine checking programme for the system;

**NOTE** The programme should include instructions on the actions to be taken in respect of operation of the system, faults, etc.

1. In addition to full set of as built drawings supply two CAD drawings, Minimum A3 (for use by emergency services) size showing typical floor layouts with floor shut off valve and main shut off valve indicated, all areas not covered by sprinklers should be clearly marked. The heading should be “Name of Premises – Sprinkler Zones” and be in an aluminium frame with safety glass, the electronic version should be provided as well for future use.
2. A list of components used, identifying supplier's name and parts reference number;
3. A 24 h emergency telephone number which can be used to obtain assistance;
4. A Log Book containing inspection, checking and maintenance documents, detailing a regular programme to be undertaken by an approved contractor;
5. Essential information for the user e.g. "do not paint, cover or in any way impede the operation of a sprinkler head", "no modification should be made to any sprinkler equipment except in accordance with this British Standard".
6. A A4 laminated Information leaflet to all residents regarding the sprinkler installation, the do’s and the don’ts, in simple plain language. A further 20 laminated Information leaflets shall be supplied to the Scheme/Housing Manager, electronic copies shall be sent to contract administrator.

**NOTE** All text to be agreed with client before printing / lamination.

Spare pockets within the folder specifically for future addition of further test report & test sheets.

A List of defects identified (if any) within the contract period and the final date the defects were cleared.

**Additional considerations**

The following points shall be included in any bids provided if required and if necessary:

* Core drilling through the central core into each of the flats (Dry Core only due to décor)
* Trace Heating and Lagging in areas that are deemed to be exposed to freezing including plant room’s, bin stores etc.
* Wiring of fire pump from local isolators.
* The pressure and flow test on the incoming block main and advise if the system can achieve the design density and requirements from the blocks main pump room / potable water supply. Successful bidder shall carry and arrange all checks / task