

## **DERBY DIOCESAN ADVISORY COMMITTEE**

### **GUIDANCE NOTES FOR HEATING SYSTEMS IN CHURCH AND PARISH BUILDINGS**

#### **INTRODUCTION**

This brief note is intended as guidance for Parochial Church Councils (PCC) who are considering new, replacement, amended or improved heating systems in their church or parish buildings.

It is hoped that the following information will help to ensure that PCC's:

- Give appropriate consideration to the type of system best suited to their requirements.
- Obtain adequate advice from suitably qualified and/or experienced engineers and architects.
- Are satisfied with the completed project which needs to meet their expectations and requirements whilst conforming to good practice, all appropriate statutory regulations and the specific needs of the building.

#### **TYPE OF SYSTEM (Initial considerations)**

A wide range of heating systems is available, including conventional low temperature hot water (LTHW) radiator or fan convactor systems, underfloor heating, warm air and radiant heating.

These systems are all available for use with gas, oil, "Calor" gas or electricity.

The type of system chosen will depend upon several factors:

- The type of building to be heated (eg "listed" or modern church or parish hall).
- The regular use and needs of the church.
- The funds available for the installation.
- The funds available for operating and maintaining the installation.

Where advice is sought from designers or installers they are usually willing to provide initial budgetary information relating to installation and running costs.

Consideration must also be given to the possible disruption and structural alteration of the building and to the final appearance of the system. In any event the final installation should be as discreet as possible with radiators and the like selected and positioned to suit the existing building structure.

### TYPE OF FUEL

Prior to details of the scheme being developed it is necessary to decide on the fuel.

In the case of new systems using gas or electricity, is a supply available? For systems being replaced or improved is the existing supply adequate, and if it is not, is the supply company able to make a larger capacity supply available at a reasonable cost?

If oil or "Calor" gas are considered, a location must be found for the storage tank and this location must be acceptable for delivery vehicles whilst suitably located for the fuel line to the appliance. Equally, the location of tank should be secure and discreet.

In addition, whichever fuel is used, the trenching for the service or bases for tanks may have archaeological implications in church yards etc.

Finally, do not overlook the need for bunds in the case of oil tanks.

It would normally be the responsibility of the PCC to organise and pay direct for any incoming gas, water and electricity supplies.

### CONSULTING ENGINEER OR CONTRACTOR

The design of a heating system could be carried out either by a consulting engineer (or suitably qualified/experienced designer) or by the installation contractor.

The principal difference between these two being that if a consultant is used then the scheme will be fully designed prior to competitive tenders being obtained, thus allowing the PCC to consider in advance the detailed proposals of the scheme before tenders are invited. However, a professional fee will have to be paid for this service.

If the design is to be carried out by the installation contractor then it is unreasonable to expect to see a detailed design until an order has been placed for the work to be carried out. However, it would be usual for a competent person (architect, surveyor etc) to prepare a "performance document" to ensure quotations received from installers suit the needs of the PCC.

In a church which is a Listed Building, where a new heating system is being considered or where it is proposed to alter an existing heating system, it is almost always essential for the PCC to be advised by their church architect.

In any event it is strongly recommended that a detailed drawing of the system is produced in advance of any work being carried out on site (see "THE INSTALLATION").

## DESIGN OF SYSTEMS

Whichever type of system is selected and procurement route agreed, the design of the system (heat loss calculations, pipe sizing, appliance selection etc) should be carried out in accordance with the information set out in the "Guide to Current Practice" published by the Chartered Institution of Building Services Engineers (CIBSE), as well as equipment manufacturers recommendations and Statutory Regulations.

The layout of the system should meet the requirements of the building and its use and should take account of whatever builders/structural work will be required to install the system. The layout of pipework and radiators/heaters should be agreed with the Church Architect to minimise visual and physical intrusion.

When selecting radiators, those to be installed in crèche or children's areas and those in disabled persons facilities should either be of the low surface temperature type or should be fitted with guards to prevent burning. In these areas pipework should also be protected.

If fan convectors are to be used, attention should be given to the noise levels at the various operating speeds.

Location of boiler plant is also important and where no established boiler or plantroom exists then advice of the Church Architect should be sought in selecting a suitable location.

Control systems should be designed to suit the circumstances. These may be fully automatic, designed to provide adequate temperatures in advance of occupation, or manual systems. Alternatively, (particularly in old buildings) it may be desirable to maintain a permanent low level of heat which is boosted in advance of occupation. In any event, do not overlook the need for frost protection in the building.

## FACULTY APPLICATION

The following information is required by the DAC in support of faculty application:-

1. Completed advice application form.
2. Ground plan showing location of all equipment including boiler, flues, radiators, electric heaters, pipe runs and oil tanks.
3. Photographs showing the location of all new radiators/heaters and boiler if in main part of church and external location of oil tank if appropriate.
4. Details of the size, location and appearance of flues with photographs showing external location.
5. Catalogue details of boiler, radiators, electric heaters etc.
6. If electrical work is involved please refer to the DAC Guidance Notes for Electrical Work in Churches available from DAC office.

## THE INSTALLATION

Prior to accepting a tender or quotation, and assuming it is not intended to use a standard formal contract (eg JCT), ensure that terms of payment have been agreed. Be wary of paying "up front" for work not completed or materials not on site and avoid final payments until the installation has been demonstrated and final documentation provided.

Ensure the cost agreed includes all the associated costs for builders work, electrical work, making good and redecoration. Also included in the cost should be a twelve month warranty and service visit.

Ensure, prior to work starting, that the drawing has been agreed by all interested parties. The drawing (and if appropriate the specification) should indicate the detailed layout of the installation with heater locations/sizes/outputs, pipework routes and sizes, plant arrangement (boilers, pumps, expansion etc) and control details. This is of particular importance where there is hidden pipework (such as underfloor heating systems) since the drawing will indicate pipework routes for future reference and maintenance.

Pipework which is visible and accessible should be installed using steel pipework and screwed fittings. (Copper pipework will easily fracture if stood on by children). Pipework which is out of sight and/or boxed in could be installed using copper pipe and end feed or "Yorkshire" fittings.

The pipework should be installed in a neat, tidy and workman-like manner, suitably bracketed and supported with allowance made for expansion. Sleeves must be used where pipework passes through walls.

Gas appliances, including flues must be installed and serviced by CORGI approved installers.

Electrical work should be carried out by an NICEIC or ECA approved installer in accordance with the DAC Guidance Notes for Electrical Work in Churches (available from the DAC Office).

Ensure that the contractor is familiar with, and works within modern safety standards. Even if the installation does not fall within the terms of the Health and Safety Executive, CDM regulations (the PCC) still have a responsibility for safety in their buildings.

Prior to completion, ensure that the system is adequately pressure tested (this would normally be a water test to twice the working pressure of the system for not less than two hours). The test should be witnessed by a responsible person (architect, project manager etc) and the test certificate signed by the witness and the contractors at the time of the test. Where underfloor heating systems are installed, these should be tested before they are covered over and test certificates provided as already described.

Ensure that the contractor demonstrates the effectiveness of the system at completion and demonstrates its operation. During this demonstration he should have available the Operating and Maintenance Instructions and as fixed drawings.

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