

# *MAINTENANCE MATTERS*



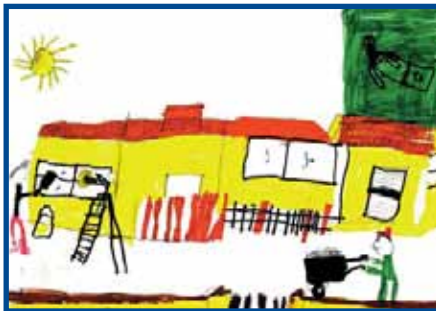
**Maintenance and Minor Works in Primary Schools**  
A Manual for Boards of Management

# Credits

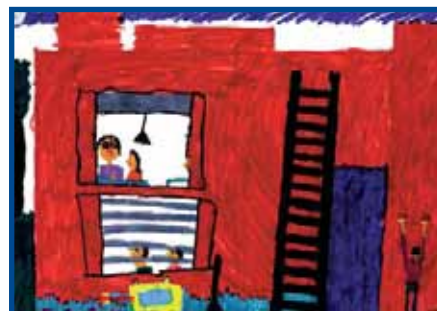
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The artwork used on the cover, inside cover and section dividers of this manual was chosen from an art project carried out by the pupils at St. Colman's N.S., Mucklagh, Co. Offaly.

# *F o r e w o r d*



I warmly welcome this publication which covers the important work of caring for school buildings and facilities. I have no doubt that it will become an invaluable reference manual for schools throughout the country.

The publication of the manual is timely. We live in a era when property-owners everywhere have become increasingly conscious of the importance of routine maintenance, and of the fact that deferred maintenance is a false economy. Those messages are reinforced throughout the manual. Furthermore, the publication comes at a time when finance, authority and responsibility for minor improvement works at national schools have been devolved to the schools under the Devolved Minor Grants Scheme which came into operation in 1997.

I know that a lot of work has gone into the preparation of the manual and I commend those responsible. Considerable attention was paid to "user friendly" language and descriptions and I welcome that approach. I know also that a number of schools assisted in the drafting work and I thank them sincerely for their invaluable input. A special word of thanks is due to the pupils of St. Colman's National School in Mucklagh, Co. Offaly who provided us with some of the artwork.

In visiting schools around the country, I am enormously impressed by the work carried out by school management in maintaining school buildings. I know that a lot of work is done on a voluntary basis and I want to acknowledge that effort which, I think, contributes so much to the sense of community involvement. Such community interest in schools is to be encouraged and is unquestionably beneficial for the children we are here to serve.

*Micheál Martin*

Micheál Martin, T.D.,  
Minister for Education and Science.  
June 1998

# *C o n t e n t s*

		<i>Page No.</i>
	Foreword	
<i>Chapter 1</i>	Introduction	1-01
<i>Chapter 2</i>	A Roof over our Heads	2-01
<i>Chapter 3</i>	Floors and Walls	3-01
<i>Chapter 4</i>	Doors and Windows	4-01
<i>Chapter 5</i>	External and Internal Finishes	5-01
<i>Chapter 6</i>	Heating, Plumbing and Drainage	6-01
<i>Chapter 7</i>	Electrical Installations	7-01
<i>Chapter 8</i>	External Works (Paved and Grassed Surfaces)	8-01
<i>Chapter 9</i>	Getting Work Done	9-01
<i>Chapter 10</i>	Furniture and Loose Equipment	10-01
	Appendix	App-01
	Glossary	Gl-01
	Index	Index-01
	Checklists	CHK-01

# *C h a***I***p t e r*

## *Introduction*

### **Grants Scheme for Minor Works to National Schools**

A grant scheme for minor works to national schools has been introduced. In addition to its long-established responsibility for the maintenance of its school and grounds, a Board of Management now has the responsibility for the proper execution of minor works. The school must organise the execution of the works and pay the bills. Failure by a school to discharge this responsibility properly may jeopardise further funding. This manual gives clear, concise guidance on the range of typical maintenance matters that arise in national school buildings, and is designed to assist Boards of Management in the execution of their role in relation to the maintenance, upkeep and improvement of school premises.

Full details of the grants scheme for minor works to National School properties are set out in Department of Education Circular 3/96, dated May 1996, which is reproduced as an Appendix of this document.

# *Nature and Importance of Maintenance*

## Introduction

Building maintenance can be defined as a combination of technical and associated administrative actions to retain a building in, or restore a building to, a state where it can fulfil its required function satisfactorily.

Maintenance of school buildings is sometimes regarded as unproductive and is consequently neglected. Maintenance expenditure is sometimes kept to a minimum, and the long-term effects of this approach are ignored or misunderstood. Neglect of maintenance results in rapidly increasing deterioration of materials which can adversely affect the occupants and the contents of school buildings. All elements of a building deteriorate at different stages, depending on the material, construction method and environmental conditions.

Boards of Management are accordingly exhorted to adopt a “proactive” rather than a “reactive” approach to maintenance. The adoption of a “maintenance mentality” and a common-sense approach to maintenance and minor works should help ensure that the life expectancy of the school property is optimised.



**Think maintenance!**

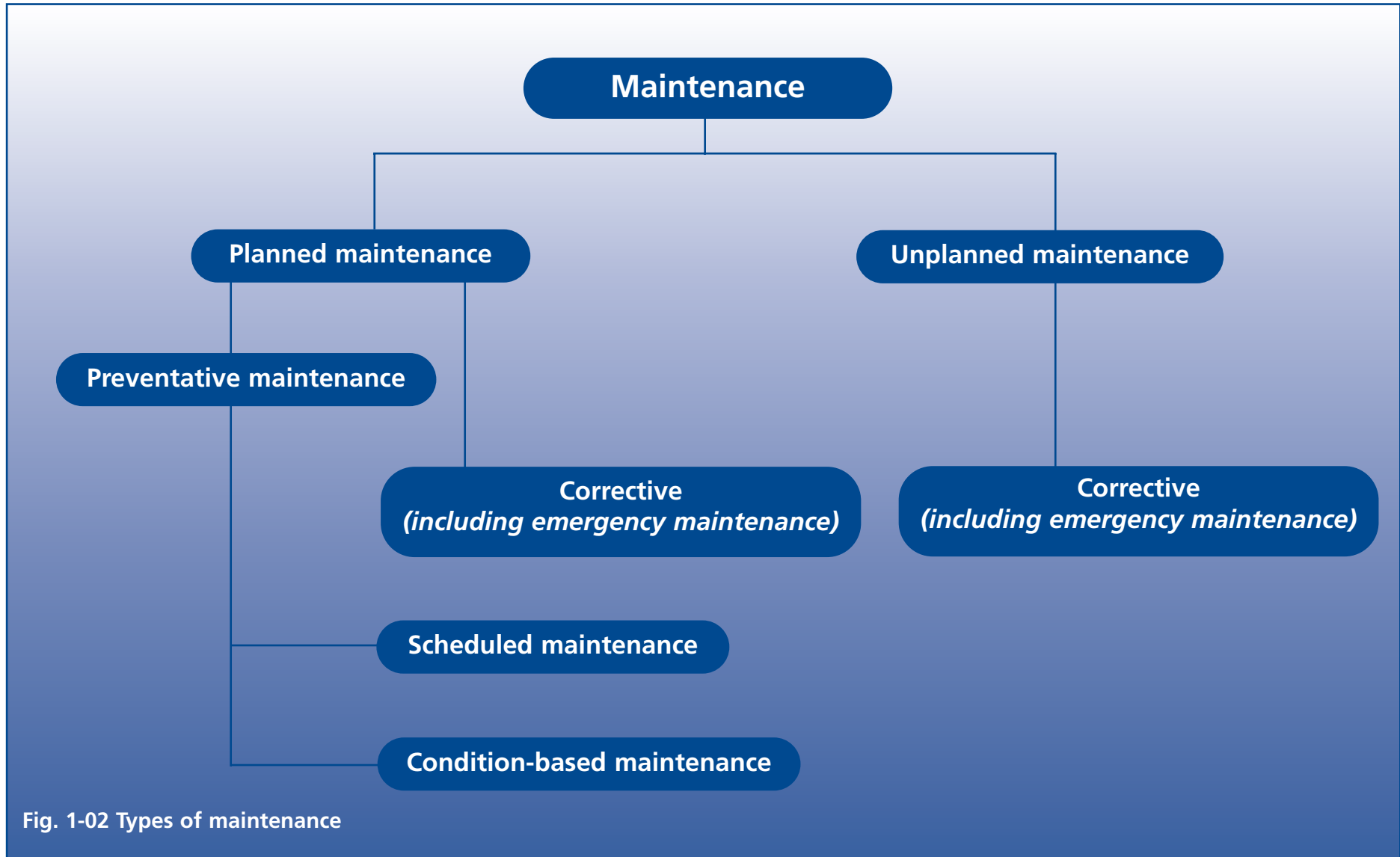


Figure 1-02 outlines in chart form various forms of maintenance. The commentary on the following pages expands on the content of the chart.

As highlighted in Figure 1-02, maintenance falls into two broad categories, 'planned' and 'unplanned'.

## Planned Maintenance

Planned maintenance, as the phrase suggests, comprises maintenance which is organised and carried out with forethought, control and in accordance with a plan. Boards of Management are exhorted to adopt such a strategy in relation to the maintenance of the property for which they are responsible. The checklists appended to this manual should be adopted as a model and modified, as appropriate, for individual schools.

Planned maintenance will be based primarily on a preventative approach, i.e. maintenance will be planned and carried out so as to avoid damage or deterioration of the structure and fabric of the building. For example, in a system of planned maintenance, decoration of external woodwork will be carried out at sufficiently frequent intervals to ensure that damage to the timber arising from rot or decay is, at best, prevented and, at worst, delayed for as long as possible. A well-managed system of preventative maintenance will also incorporate provisions for systematic inspections to allow for identification of items requiring attention or for planning of appropriate maintenance action in the future. A planned maintenance system, involving inspections at regular intervals, demands significant input and commitment by Boards of Management, but ultimately leads to lower maintenance costs, compared to an inspection system that is not planned.

Planned maintenance can be further classified into three sub-categories as follows:

- ▼ **Major repair or restoration**, such as reroofing or refurbishment works.
- ▼ **Periodic maintenance**, such as annual shampooing of carpets, regular decoration or servicing of heating and electrical systems.
- ▼ **Routine or day-to-day maintenance**, such as the cleaning of floors and windows.

## Unplanned Maintenance

The alternative to planned maintenance is unplanned maintenance, which is primarily corrective in nature, i.e. maintenance work is carried out when defects become apparent. Such an approach is less satisfactory, and maintenance becomes primarily a "fire-fighting" activity, i.e. maintenance is only carried out when a major defect arises. Even in the best planned systems of preventative maintenance, the need for unscheduled emergency maintenance can arise, as for example when a drain blocks or when storm damage causes a roof to leak.



## Maintenance Aims and Priorities

The main aim of maintenance is the preservation of a properly working building. The main priorities for maintaining school buildings are:

- ▼ **To protect the health and safety** of occupants of and visitors to the building.
- ▼ **To prevent or reduce deterioration** of the fabric of the building.
- ▼ **To maintain services** such as heating and lighting installations.
- ▼ **To maintain decorative** surfaces/finishes, and carry out adequate cleaning.

Deferred maintenance is a false economy. Remedial works will cost more in the long run.

## Implications of Design and Construction for Maintenance

High maintenance costs can result from inadequacies at the design or construction stage, such as lack of or incorrectly placed damp proof courses, substandard materials or poor access and facilities for repairs. Often such shortcomings cannot be repaired satisfactorily within the scope of maintenance works.

**Deferred maintenance is a false economy.**

**Prevention is better than cure.**

## Maintenance and Improvement Works - Some Examples:

Maintenance Items (to be funded from Capitation Grant)	Improvement works (to be funded from Minor Works Grant)
<ul style="list-style-type: none"> <li>▼ Repair of storm damage to roof- replacement of dislodged tiles or slates.</li> <li>▼ Re-glazing of broken window panes.</li> <li>▼ Repair of wet rot damage to individual window frames.</li> <li>▼ Painting of school building.</li> <li>▼ Routine servicing or repair of central heating boiler.</li> <li>▼ Periodic inspection/testing of fire detection and alarm system.</li> <li>▼ Cleaning of carpets.</li> <li>▼ Cleaning/repair of window blinds.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Installation of new windows to replace old decayed windows.</li> <li>▼ Installation of fire detection and alarm system.</li> <li>▼ Installation of new central heating boiler to replace obsolete unit.</li> <li>▼ Provision of new items of furniture.</li> <li>▼ Provision of physical education equipment.</li> <li>▼ Provision of new floor covering.</li> <li>▼ Provision of new window blinds.</li> </ul>

Remember: Costs of maintenance (e.g. repair and upkeep) are to be funded from the school's Capitation Grant and improvement works (e.g. renewals and additions) are to be funded from Minor Works Grant. Note the distinction. Costs of some of the maintenance items listed above may be recoverable under a school's building insurance cover.

**Deferred maintenance is a false economy.**

**Prevention is better than cure.**

# Chapter

## *A Roof over our Heads*

The maintenance and repair of roofs is one of the most common and costly items associated with school buildings. This chapter summarises the most common problems which arise and highlights what Boards of Management can do to get the most out of the roofs of their buildings and, in the process, reduce maintenance costs.

### The Basics

There are essentially two forms of roof: pitched roofs (usually covered with concrete tiles or slates) and flat roofs (usually covered with felt or a similar sheet material, or with asphalt).

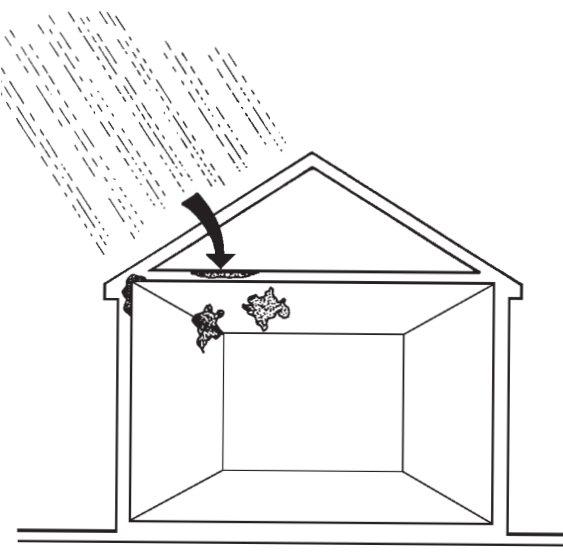


Flat roofs, of their nature, are almost inevitably a more troublesome form of roof. They generally require more maintenance than pitched roofs and have a shorter life. Felt roofs typically require replacement after about 15 years, whereas a tiled or slated roof should have a "design life" of around 60 years. Defects in flat roofs require careful analysis to ensure that appropriate repairs or renewals are undertaken.




Figure 2-01 . Pitched and flat roofs.

June 1998


## *Pitched and Flat Roofs - The most common problems*

What goes wrong?	Why?	Matters for maintenance
<p><b>Leaks</b>, often first indicated by damp patches on ceiling or top of wall or by water dripping into the building.</p>  <p>Figure 2-02. Where dampness occurs.</p>	<p>Leaks are caused by:</p> <ul style="list-style-type: none"> <li>▼ Slipped, broken or missing slates or tiles.</li> </ul>  <p>Figure 2-03. Slate roof in poor condition.</p> <ul style="list-style-type: none"> <li>▼ Defective metal “flashings” which are provided to form a waterproof seal at junctions such as chimney stacks and upstands on flat roofs. Typical defects:               <ul style="list-style-type: none"> <li>- not fixed correctly</li> <li>- cracked or corroded because of age</li> <li>- missing flashings arising from theft (lead flashings are a frequent target for thieves).</li> </ul> </li> </ul>  <p>Figure 2-04. Defective flashing.</p>	<p><b>Matters for maintenance</b></p> <ul style="list-style-type: none"> <li>▼ Check roof annually and after storms for slipped, broken or missing slates and tiles. Repair/replace promptly. Consider acquiring a small stock of slates or tiles to facilitate such work.</li> <li>▼ Check condition of flashings as part of annual roof inspection. Seek advice about whether or not old flashings need to be repaired or replaced. Where theft of lead flashings is a problem, replace with low scrap value material such as zinc.</li> </ul>
<b>Checks roofs regularly for damage</b>		<b>When in doubt, seek expert advice</b>

## *Pitched and Flat Roofs - The most common problems (continued)*

What goes wrong ?	Why ?	Matters for maintenance
<p><b>Leaks</b>, <i>continued</i></p>  <p>Figure 2-05. Blocked rainwater outlet.</p>	<ul style="list-style-type: none"> <li>▼ Concrete (sand/cement) fillets (at junctions such as chimney stacks) which have shrunk or broken away.</li>   <li>▼ Defective or blocked gutters and rainwater outlets on flat roofs.</li>   <li>▼ Excessive foot traffic on roofs (for example by maintenance operatives or unauthorised access). Inappropriate maintenance or work practices.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Defective fillets should be replaced with metal flashings.</li>   <li>▼ Gutters need regular cleaning and checking. Gutters should be cleaned twice annually and checked regularly for blockages such as leaves, balls and other debris which may cause blockages.</li>   <li>▼ Where possible, restrict foot traffic on roofs to a minimum. Readily climbed elements may allow access by vandals. Care should be taken by operatives on pitched roofs to avoid cracking slates or tiles. Use a roof ladder to minimise damage. Use of shovels to clear snow off flat roofs can lead to roof surface being punctured; the use of brushes is preferable.</li> </ul>
<b>Check and clean gutters frequently</b>		<b>Minimise foot traffic on roofs</b>



## *Pitched and Flat Roofs - The most common problems (continued)*

What goes wrong?	Why?	Matters for maintenance
<p><b>Leaks</b>, <i>continued</i></p>  <p>Figure 2-06. Cracking of flat roof surface.</p>	<ul style="list-style-type: none"> <li>▼ Premature breakdown of roof covering, particularly on flat roofs. The most common causes are excessive solar heat gain in hot weather and chemical breakdown by the rays of the sun ("ultra-violet degradation").</li>   <li>▼ Breakdown of roof coverings, particularly on flat roofs, at the end of their "design life".</li> </ul>	<ul style="list-style-type: none"> <li>▼ Flat roof coverings should have an appropriate form of solar protection, such as stone chippings ("spar" chippings) or reflective paint. Ensure that chippings are smooth/rounded and evenly spread over the entire roof surface sufficiently to obscure the roof covering. Excessive depths of chippings on a roof surface can cause damage by overloading the roof structure which can cause the roof to deflect excessively and compromise effective drainage. Purpose-made reflective coatings should be provided (where absent), checked annually and repaired or renewed as necessary. Use of inappropriate coatings can cause damage. If in doubt seek, expert advice.</li>   <li>▼ Repair or maintenance of roof coverings beyond their realistic life expectancy is likely to be of limited use and excessively costly. Substantial replacement may be a more cost effective option.</li> </ul>
<b>When in doubt, seek expert advice</b>		<b>Always adopt safe working procedures</b>

## *Pitched and Flat Roofs - The most common problems (continued)*


What goes wrong?	Why?	Matters for maintenance
<p><b>Leaks, continued</b></p>	<ul style="list-style-type: none"> <li>▼ Plumbing leaks within attic space of pitched roofs arising from                             <ul style="list-style-type: none"> <li>- tanks overflowing</li> <li>- pipe bursts because of freezing or other causes</li> <li>- failure of joints in pipes within the roof space</li> </ul> </li>   <li>▼ Condensation within the roof space.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Ensure that tanks in roof spaces are fitted with an overflow pipe which discharges outside the building in a location where an overflow of water will be noticed. Check operation of ball-valves in water tanks annually. Replace defective valves. Check that tanks and pipes are "lagged" (insulated) and that insulation is securely fixed/located. In older school buildings pipes/tanks might not be insulated. Insulate such pipes/tanks. Where possible, arrange for regular checks of school, when unoccupied during "cold snaps", such as during Christmas holidays.</li>   <li>▼ See page 2-10.</li> </ul>
<b>Check plumbing in roof spaces regularly</b>	<b>Insulate water tanks and pipes in roof spaces</b>	

## *Pitched and Flat Roofs - The most common problems (continued)*


What goes wrong?	Why?	Matters for maintenance
<p><b>“Blistering”</b> of flat roof coverings, where the material rises in “bubbles” on the surface of the roof.</p>  <p>Figure 2-07. Blistering on flat roof.</p>	<ul style="list-style-type: none"> <li>▼ Blistering is caused by overheating of the roof surface in hot weather, combined with poor bonding of roof covering to material below.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Minimise risk by ensuring roof covering is protected against excessive solar heat gain by chippings or reflective paint, as appropriate. Note that it is not necessary to repair “blisters” unless they are damaged or the roof covering is also cracked. In such cases, local repairs should be carried out to avoid subsequent leaks.</li> </ul>
<p><b>“Ponding”</b> of water on flat roofs i.e. pools of water which do not drain off roof surface.</p>  <p>Figure 2-08. “Ponding” on flat roof.</p>	<ul style="list-style-type: none"> <li>▼ Ponding can be caused by                             <ul style="list-style-type: none"> <li>- inadequate drainage falls on roof, i.e. roof laid too flat</li> <li>- rainwater outlets wrongly located</li> <li>- rainwater outlets blocked.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▼ Clear any blocked rainwater outlets. Inadequate drainage falls or incorrectly located outlets are design/construction defects which cannot be remedied solely by maintenance works. Seek appropriate advice.</li> </ul>
<b>Protect flat roofs against the sun</b>		<b>Clear blocked drainage outlets</b>



## *Pitched and Flat Roofs - The most common problems (continued)*

What goes wrong?	Why?	Matters for maintenance
<p><b>Dry Rot</b> - this is a very serious form of timber decay caused by fungal attack. If left unchecked, it can spread widely throughout a building and give rise to costly remedial work. When attacked by dry rot, timber becomes dry, brittle and cracked. In some cases fungal (mushroom-like) growths called "fruiting bodies" occur on the timbers. Another feature of dry rot is a strong musty smell in the vicinity of the outbreaks.</p>	<p>▼ Dry rot will be "triggered" by a combination of damp timber, humid conditions and heat. Once established, however, it has the capacity to spread to dry timber; hence the term "dry" rot.</p> <div style="text-align: center;">  </div> <p style="text-align: center;">Figure 2-09. Dry rot outbreak.</p>	<p>▼ Rigorously check all accessible timbers annually for signs of dampness, mould or fungus. Especially vulnerable are roof and floor timbers which have been exposed to dampness (for example because of a leak).</p> <p>In older buildings, preventative measures involving the treatment of timbers with appropriate fungicide chemicals may be worth considering. Such treatment should be carried out only by competent personnel in strict accordance with the product manufacturers' instructions. Where an outbreak of dry rot is suspected or detected, seek expert advice. It is essential that treatment is effective and comprehensive, so as to avoid recurrent outbreaks and duplication of work and costs.</p>
<b>Check timber annually for rot/decay</b>		<b>When in doubt, seek expert advice</b>

## *Pitched and Flat Roofs - The most common problems (continued)*

What goes wrong?	Why?	Matters for maintenance
<p><b>Wet Rot</b> - like dry rot (see above), wet rot is a form of timber decay. It occurs in timber which has been exposed to dampness over a period of time and typically occurs in:</p> <ul style="list-style-type: none"> <li>- Window and door frames</li> <li>- Timbers built into damp walls</li> <li>- Parts of roofs where leaks have occurred</li> <li>- Fascia and soffit boards, especially at corners.</li> </ul>	<p>▼ Prolonged exposure to moisture will cause wet rot in timber. Unlike dry rot, it will not spread to relatively dry timber, but can nonetheless give rise to quite expensive repairs, replacement and maintenance work.</p> <div style="text-align: center;">  </div> <p>Figure 2-10. Wet rot decay in window frame.</p>	<p>▼ Check all external timbers annually for signs of decay. Deal with any outbreaks promptly. Regular painting (see chapter 5) of external timber is a significant preventative measure.</p> <p>Small areas of wet rot can in many cases be repaired without the need to replace the entire element (door, window). Timber used in such repairs should be treated with preservative prior to painting.</p>
<p><b>Woodworm</b></p>	<p>▼ Insect attack on timber, characterised by small "pinholes" on surface of timber. More common in older buildings. Can also occur in furniture.</p>	<p>▼ Check all accessible timber annually. Treat small outbreaks. In the case of extensive outbreaks, specialist treatment may be required. In extreme cases, it may be necessary to replace infected timbers.</p>
<b>Check timber annually for rot/decay</b>		<b>When in doubt, seek expert advice</b>

## *Pitched and Flat Roofs - The most common problems (continued)*

What goes wrong?	Why?	Matters for maintenance
<p><b>Birds, vermin and wasps nesting in roof space.</b> In addition to the health hazard posed by vermin and the hazard of insect stings, water supplies in roof spaces can become contaminated.</p>	<ul style="list-style-type: none"> <li>▼ Access to roof available through gaps in construction.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Cover water tanks within roof space. Check roof space and water tanks annually for any evidence of nesting. Close all obvious means of access but do not block off ventilation of roof space. If nesting occurs, it may be necessary to engage pest control specialists. Note that bats and some breeds of bird are protected species. Advice and assistance on dealing with protected species is available from the National Parks and Wildlife Service.</li> </ul>
<p><b>Sagging Roofs</b></p>	<ul style="list-style-type: none"> <li>▼ Sagging roofs can be caused by:                             <ul style="list-style-type: none"> <li>- Overloading of the roof, for example, by additional water tanks or re-roofing a slated roof with concrete tiles.</li> <li>- Inadequate design of the roof structure.</li> <li>- Weakening of roof timbers owing to rot or decay.</li> <li>- Subsidence of the building structure as a whole.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▼ Remedies for structural settlement are beyond the scope of maintenance works. Substantial reconstruction may be necessary. Expert advice should be sought.</li> </ul>
<b>Check roof spaces regularly for nesting birds, vermin, wasps</b>		<b>When in doubt, seek expert advice</b>

## *Pitched and Flat Roofs - The most common problems (continued)*

What goes wrong?	Why?	Matters for maintenance
<p><b>Condensation</b> in roof spaces (see also chapter 3 for treatment of condensation within the building proper).</p>	<p>▼ Vapour passing from warm, relatively humid rooms into the colder conditions in the roof space causes water to condense out of the vapour on to cold surfaces such as water pipes and roofing materials. In extreme cases, the water leaks back into the space below and may be misinterpreted as being caused by leaks in the roof covering.</p> <p>Condensation can also occur on the underside of poorly insulated roofs or the surfaces of "cold bridges" (i.e. the parts of a roof less well insulated than the surrounding area; for example the glass in rooflights).</p> <p>Condensation will occur during the winter months, particularly in cold, damp weather.</p>	<p>▼ Key points are:</p> <ul style="list-style-type: none"> <li>- Roof space ventilation. Ensure adequate ventilation of pitched and flat roofs. Do not allow eaves in pitched roofs to become blocked by insulation or other material.</li> <li>- Restrict vapour entering roof.</li> <li>- Encourage ventilation of classrooms during, between and after use.</li> <li>- Surfaces affected by mould growth and discoloration should be treated with appropriate fungicide wash at regular intervals, ideally annually, and before redecoration.</li> </ul> <p>See further guidance in chapter 3 in relation to condensation control. Note that, even with the best design and construction, some condensation is almost inevitable. The steps outlined above however, should, go a long way to reducing its extent and intensity.</p>
<p><b>To control condensation - ventilate roof spaces, ventilate rooms, minimise water vapour sources</b></p>		

## *Pitched and Flat Roofs - The most common problems (continued)*

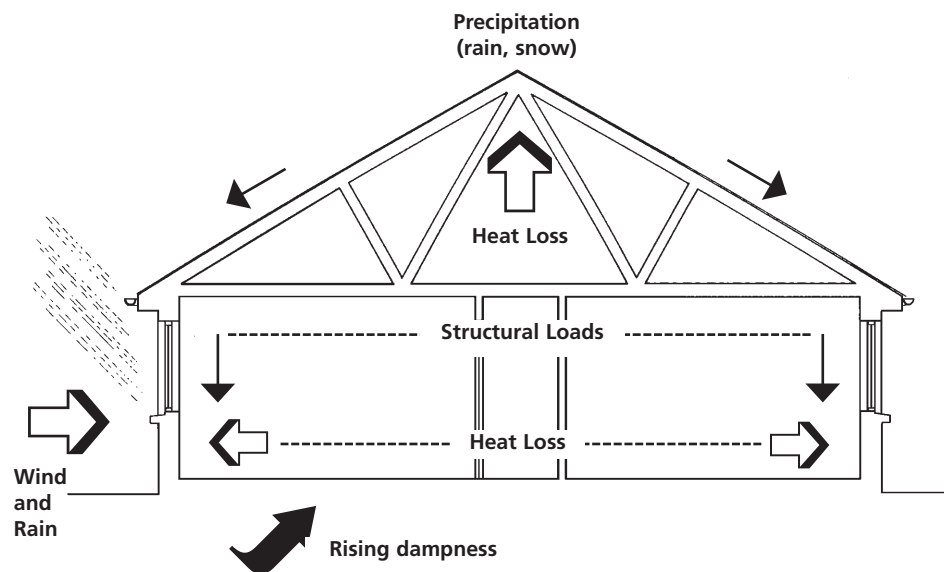
What goes wrong?	Why?	Matters for maintenance
<p>▼ Asbestos products used in roof coverings</p> <p>Problems with roofs of prefabricated accommodation.</p> <p>▼ All the problems listed in the preceding pages for conventionally constructed roof can similarly arise in the roofs of prefabricated units.</p>	<p>▼ In some older buildings, roof coverings incorporating asbestos fibre can be present. In some cases the nature and age of the material can pose a health hazard warranting its removal.</p> <p>▼ The range of problems that arise in the roofs of prefabricated accommodation are the same as those in conventional roofs-the causes of the problems are inevitably the same. See commentary on preceding pages.</p>	<p>▼ Seek specialist advice from the Health and Safety Authority or Forbairt.</p> <p>▼ See advice on preceding pages in respect of:</p> <ul style="list-style-type: none"> <li>- Leaks</li> <li>- Blistering</li> <li>- Ponding</li> <li>- Dry rot</li> <li>- Wet rot</li> <li>- Woodworm</li> <li>- Birds, vermins, wasps nesting</li> <li>- Sagging roofs</li> <li>- Condensation</li> </ul>
<b>Pre-fabs are buildings too; look after them accordingly</b>		

# Chapter

## Floors and Walls

The ground floor and external walls of school buildings, in conjunction with the roof, form the envelope which separates the accommodation from the external environment. Key functions of the ground floor and walls are the exclusion of dampness and moisture, and provision of reasonable levels of thermal comfort. This chapter deals with the most common maintenance issues which arise in relation to ground floors and external walls.

### The Basics





#### Functions of Ground Floors

- ▼ Structural - carry loads.
- ▼ Damp proofing - resist rising dampness.
- ▼ Thermal - reduce heat loss.
- ▼ Durability - resist decay, wear and tear.

#### Functions of External Walls

- ▼ Structural - carry loads.
- ▼ Weatherproofing - resist weather penetration.
- ▼ Thermal - reduce heat loss, heat gain, avoid condensation.
- ▼ Durability - retain appearance, resist wear and tear.

Figure 3-01. Cross-section through typical school building, highlighting key functions of external walls and ground floors.

What goes wrong?	Why?	Matters for maintenance
<p>Penetrating dampness through walls, most commonly through walls exposed to the prevailing wind (“driving rain”) or where evaporation is poor.</p>  <p>Figure 3-02. Cracking.</p>	<p>Damp penetration arises from:</p> <ul style="list-style-type: none"> <li>▼ Solid wall construction, e.g. solid brick, stone.</li> </ul>  <p>Figure 3-03. Penetrating (and rising) dampness.</p> <ul style="list-style-type: none"> <li>▼ Cracks, which can be caused by: <ul style="list-style-type: none"> <li>- Settlement</li> <li>- Weak mortar or plaster mixes</li> <li>- Inadequate design, construction or materials</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▼ Solid wall construction is common in older school buildings. Isolated patches of dampness or leaking will usually be due to a specific cause and can be dealt with by appropriate treatment; see below for advice on treatment. More widespread dampness is likely to be beyond the scope of routine maintenance. In such cases, seek expert advice on ways to deal with dampness.</li> <li>▼ Cracks should be repaired/sealed to prevent dampness penetrating. Cracks may be caused by structural defects. If such a cause is suspected, expert advice is required to assess the extent of the problem and determine an appropriate remedy.</li> </ul>
<b>When in doubt, seek expert advice</b>		

## *Walls and Floors - The most common problems*

What goes wrong?	Why?	Matters for maintenance
<p><b>Penetrating dampness, continued.</b></p>	<ul style="list-style-type: none"> <li>▼ Dirty cavities. Mortar “droppings” which lodge in the wall cavity act as a “bridge” for moisture to pass through the wall from outside to inside.</li>   <li>▼ Absence of DPCs (damp proof courses) around openings such as doors and windows. Generally in buildings with solid wall construction, or those built prior to the 1920s DPCs would not have been inserted. In newer school buildings DPCs might be omitted in error or incorrectly installed at the construction stage.</li>   <li>▼ Leaks in gutters, downpipes.</li> </ul>	<ul style="list-style-type: none"> <li>▼ The ingress of moisture across a cavity bridged by mortar droppings requires to be remedied by the opening of the wall and removal of the mortar. This is a specialist item requiring appropriate expertise; if in doubt, seek expert advice.</li>   <li>▼ Seek expert advice on the best way to overcome dampness penetration arising from the absence of DPCs.</li>   <li>▼ Inspect gutters and downpipes regularly. Make sure all fixings are securely in place. Remove/replace any cracked gutters or downpipes where the cracks cannot be repaired.</li> </ul>

<b>Check regularly for obvious sources of dampness</b>	<b>When in doubt, seek expert advice</b>
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## *Walls and Floors - The most common problems (continued)*

What goes wrong?	Why?	Matters for maintenance
<p><b>Rising dampness, continued.</b></p>	<ul style="list-style-type: none"> <li>▼ Absence of DPM (damp proof membrane) in solid ground floors. In older school buildings, DPMs would not have been standard practice. In newer school buildings DPMs might be omitted in error or incorrectly installed.</li>   <li>▼ Defective DPMs arising from:               <ul style="list-style-type: none"> <li>- Punctures due to poor workmanship</li> <li>- Junction where DPC and DPM meet incorrectly lapped</li> <li>- Failure of material</li> </ul> </li>   <li>▼ Rising dampness that bypasses the DPC can be caused by:               <ul style="list-style-type: none"> <li>- Mortar droppings within the cavity</li> <li>- External render bridging DPC</li> <li>- Erection of extensions or porches without proper cavity trays</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▼ Seek expert advice on the best way to overcome dampness penetration arising from the absence of DPMs.</li>   <li>▼ Check timber/concrete floors for signs of dampness, and staining on walls where dampness may have risen. Seek advice on whether or not the DPM can be readily fixed at junctions or whether or not the whole DPM needs to be replaced.</li>   <li>▼ Check external and internal wall faces for signs of dampness, particularly at junctions around extensions.</li> </ul>

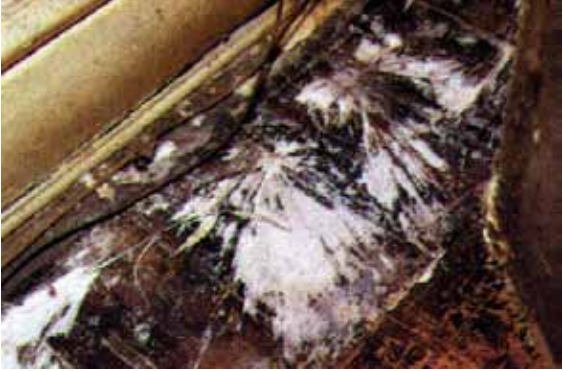
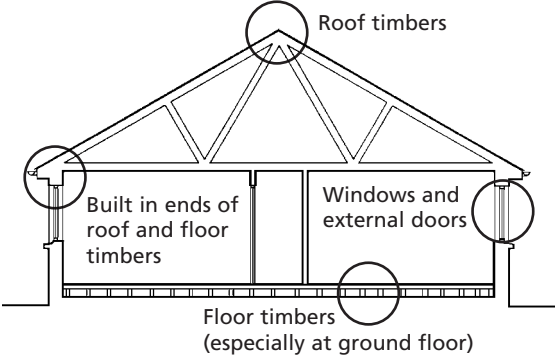
**Check regularly for obvious sources of dampness**

**When in doubt, seek expert advice**

## Walls and Floors - The most common problems (continued)

What goes wrong?	Why?	Matters for maintenance
<p><b>Rising dampness</b>, <i>continued</i>.</p> <p><b>Efflorescence in brickwork.</b> Staining caused by soluble salts which appear as loose white powder on the brick face. Can occur internally as well as externally. It is usually harmless and is generally washed away by rain externally.</p> <p><b>Staining</b> of brickwork.</p>	<ul style="list-style-type: none"> <li>▼ Moisture that bypasses the DPC in wall at ground level: <ul style="list-style-type: none"> <li>- DPC and DPM junction is faulty</li> <li>- DPC incorrectly installed</li> <li>- Ground level externally higher than level of DPC</li> </ul> </li>   <li>▼ The salts usually come from the brickwork or soil in contact with the brickwork.</li> </ul>  <p style="text-align: center;">Figure. 3-04. Efflorescence in brickwork.</p> <ul style="list-style-type: none"> <li>▼ Staining usually occurs when rainwater runs freely down a wall face, with no projection to prevent this happening. Green stains are caused by the corrosion of copper or bronze.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Check for discolouration and dampness at wall and floor junctions. Excavate soil that is higher than DPC level; reduce to at least 150 mm below DPC. Seek advice concerning detail or construction faults.</li>   <li>▼ The staining (white powder) is usually washed away by rain. Brickwork can be brushed to remove the powder. In sheltered situations, it may be necessary to hose down the brickwork to remove the staining.</li>   <li>▼ Check external face for staining. Wash the affected area with clean water. Green stains may be harder to remove. Many stone-and brick-cleaning solutions are strongly acidic and may permanently damage the materials. Follow instructions for use rigorously.</li> </ul>
<b>Check brickwork for efflorescence and staining</b>		<b>When in doubt, seek expert advice</b>

## Walls and Floors - The most common problems (continued)

What goes wrong?	Why?	Matters for maintenance
<p><b>Dry Rot and Wet Rot</b> in floors are forms of timber decay due to dampness. Dry rot is very serious, and can spread rapidly throughout the floor. Wet rot will occur when timber is exposed to dampness over a period of time, but will not spread. Refer to chapter 2.</p>  <p>Figure 3-05. Rot in floor.</p>	<p>▼ Dry rot will be 'triggered' by a combination of damp timber, humid conditions and heat. Once established, however, it has the capacity to spread to dry timber - hence the term "dry" rot. Prolonged exposure to moisture will cause wet rot in timber. Unlike dry rot, it will not spread to relatively dry timber, but can nonetheless give rise to quite expensive repairs, replacement and maintenance work.</p>  <p>Figure 3-06. Typical locations for timber decay.</p>	<p>▼ Rigorously check all accessible timbers annually for signs of dampness, mould or fungus. Especially vulnerable are roof and floor timbers which have been exposed to dampness (for example because of a leak). In older buildings preventative measures involving the treatment of timbers with appropriate fungicide chemical may be worth considering; such treatment should be carried out only by competent personnel in strict accordance with product manufacturers' instructions. Where an outbreak of dry rot is suspected or detected, seek expert advice. It is essential that treatment is effective and comprehensive, so as to avoid recurrent outbreaks and duplication of work and costs. Small areas of wet rot can in many cases be repaired without the need to replace the entire element (e.g. floor joist, timber flooring). Timber used in such repairs should be treated with preservative.</p>

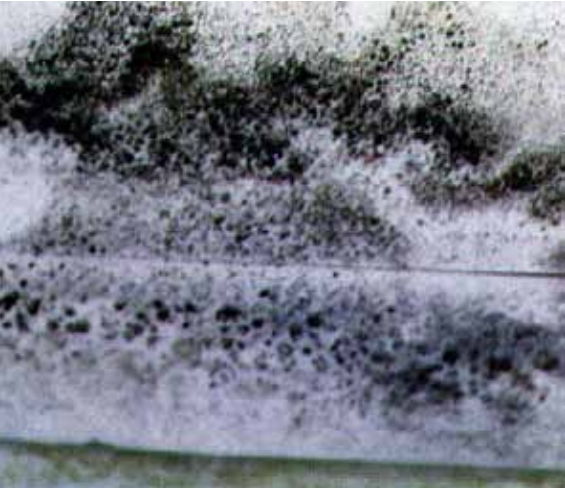
**Check timber annually for rot/decay**

**When in doubt, seek expert advice**

## *Walls and Floors - The most common problems (continued)*

What goes wrong?	Why?	Matters for maintenance
<p><b>Frost action</b>, which can cause “spalling” (crumbling of the surface) of brickwork and disintegration of mortar. Cracks in external render (plaster) are vulnerable to water penetration, which can lead to “spalling” of the render as a result of frost action.</p> <p><b>Cracks</b></p> <p><b>Lichens, Moulds and Other Growths</b> - rarely destructive but climbing or other plants can cause damage to walls. Ivy with its aerial roots can penetrate cracks or soft mortar and cause damage.</p>	<ul style="list-style-type: none"> <li>▼ Stronger mortars are more prone to frost attack, are vulnerable to shrinkage and cracking, which allows water to penetrate into the cracks. Water can penetrate cracks in plaster work, freeze, expand and break off a portion of the brick/mortar/external plasterwork.</li> <li>▼ Cracks can be caused by: <ul style="list-style-type: none"> <li>- Settlement of structural elements</li> <li>- Shrinkage due to moisture</li> <li>- Evaporation</li> <li>- Expansion because of water penetration</li> <li>- Breakdown of concrete elements</li> </ul> </li> <li>▼ Lichen growth can cause staining to wall surfaces.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Check mortar and plasterwork for any cracks. Fill them. If the wall face has already been attacked by frost, it may be necessary to seek advice for the repair of the damaged area.</li> <li>▼ Check walls and floors internally and externally for cracks. Seek advice about cracking.</li> <li>▼ Remove growths and treat with a recommended toxic wash during a dry spell. This will prevent or destroy growths. Control climbing plants; keep away from window and door frames, and below the eaves level.</li> </ul>
<b>Check annually for cracks</b>		<b>Treat lichen and mould growth</b>

## *Walls and Floors - The most common problems (continued)*

What goes wrong?	Why?	Matters for maintenance
<p data-bbox="219 304 680 368"><b>Condensation on wall and ceiling surfaces</b></p>  <p data-bbox="219 1166 651 1230">Figure 3-07. Mould growth due to condensation.</p>	<ul style="list-style-type: none"> <li data-bbox="846 308 1417 711">▼ Warm vapour in relatively humid rooms causes water to condense out of the vapour on to cold wall surfaces. This can be misinterpreted as being caused by leaks. Condensation can also occur on the underside of poorly insulated roofs or the surfaces of “cold bridges” (i.e. the parts of a roof less well insulated than the surrounding area; for example the glass in rooflights).</li> <li data-bbox="846 794 1368 898">▼ Condensation will occur during the winter months particularly, in cold, damp weather.</li> </ul>	<ul style="list-style-type: none"> <li data-bbox="1473 308 2045 711">▼ Key points for condensation control are: <ul style="list-style-type: none"> <li data-bbox="1518 379 2033 483">- encourage ventilation of classrooms during, between and after periods of use</li> <li data-bbox="1518 491 2045 711">- surfaces affected by mould growth and discolouration caused by condensation should be treated with appropriate fungicide wash at regular intervals, ideally annually, and prior to redecoration.</li> </ul> </li> <li data-bbox="1473 794 2022 1121">▼ See further guidance in chapter 2 in relation to condensation control in roof spaces. It should be noted that, even with the best design and construction, some condensation is almost inevitable. The steps outlined above, however should go a long way towards reducing its extent and intensity.</li> </ul>

**Ventilate rooms thoroughly and often**

**Treat mould growth promptly**


## *Walls and Floors - The most common problems (continued)*

What goes wrong?	Why?	Matters for maintenance
<p><b>Leaking heating pipes in floors.</b></p>	<ul style="list-style-type: none"> <li>▼ Leaks in heating pipes caused by:                             <ul style="list-style-type: none"> <li>- old age and corrosion</li> <li>- bursts due to freezing</li> <li>- poor pipe connections</li> <li>- punctures due to poor workmanship.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▼ Seek expert advice. See also guidance in chapter 6 in relation to maintenance of heating systems and pipework.</li> </ul>
<p><b>Condensation on floor surface</b></p>	<ul style="list-style-type: none"> <li>▼ High humidity levels, combined with cold, usually uninsulated, floor surfaces.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Ventilate the space as much as possible. Improve levels of heating if possible. Consider change of floor surface. In extreme cases seek expert advice.</li> </ul>
<p><b>Lifting of floor finishes,</b> such as PVC sheeting and tiles.</p>	<ul style="list-style-type: none"> <li>▼ Lifting of floor finishes is mainly caused by the “drying-out” of moisture in floor slabs in new buildings.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Seek expert advice.</li> </ul>

**Check regularly for leaks**

**Repair leaks promptly**

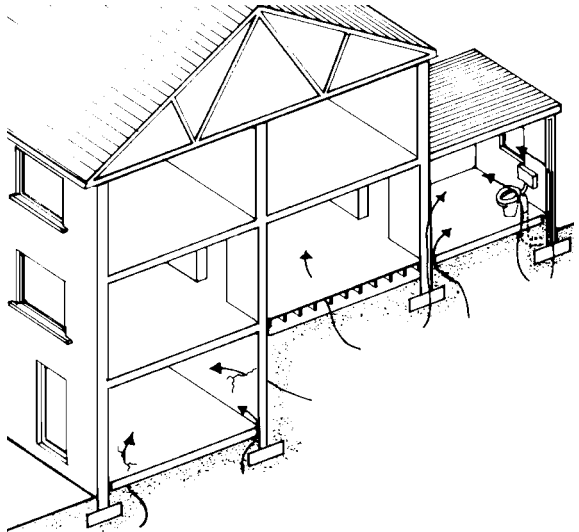
## *Walls and Floors - The most common problems (continued)*

What goes wrong?	Why?	Matters for maintenance
<p>Problems with floors and walls of pre-fabricated accommodation.</p> <ul style="list-style-type: none"> <li>▼ All the problems listed in the preceding pages for conventionally constructed floors and walls can similarly arise in the floors and walls of prefabricated units.</li> </ul>  <p>Figure 3-08. Poorly maintained prefabricated accommodation.</p>	<ul style="list-style-type: none"> <li>▼ The range of problems that arise in the floors and walls of prefabricated accommodation are the same as those in conventional floors and walls. The causes of the problems are inevitably the same. See commentary on preceding pages.</li> </ul>	<ul style="list-style-type: none"> <li>▼ See advice on preceding pages in respect of: <ul style="list-style-type: none"> <li>- Penetrating dampness</li> <li>- Rising dampness</li> <li>- Dry rot and wet rot in floors</li> <li>- Cracks</li> <li>- Lichens, moulds and other growths</li> <li>- Condensation on wall and ceiling surfaces</li> <li>- Leaking heating pipes</li> <li>- Condensation of floor surfaces</li> <li>- Lifting of floor finishes</li> </ul> </li> </ul>

**Pre-fabs are buildings too; look after them accordingly**



## Walls and Floors - The most common problems (continued)

What goes wrong?	Why?	Matters for maintenance
<p>▼ <b>Excessive accumulations of radon gas within buildings.</b> Radon is an odourless, colourless, radioactive gas which occurs naturally in the subsoil. In certain circumstances it can accumulate in what are considered to be hazardous concentrations inside buildings.</p>  <p>Figure 3-09. Major radon entry routes.</p>	<p>▼ Radon gas infiltrates buildings from the underlying ground through cracks in floors, penetrations for building services and cavities and voids within the construction.</p> <p>▼ Modern buildings tend to be more "gas-tight" than older buildings. Since they are better sealed against the weather and draughts, high concentrations of radon tend to be associated with such buildings.</p> <div style="background-color: #e0f2f1; padding: 10px; margin-top: 10px;"> <p>For general information on radon or to obtain a measurement contact <i>The Radiological Protection Institute of Ireland (RPII)</i> 3 Clonskeagh square, Clonskeagh Road, Dublin 14 (Tel:01 269 7766)</p> <p>For information on radon reduction techniques contact <i>The Planning and Building Unit, department of education and Science, Tullamore, Co. Offaly.</i></p> </div>	<p>▼ Boards of Management have their buildings monitored to establish radon levels. Ideally, this should be done on a regular basis; for example, once during the three-year term of any Board of Management.</p> <p>▼ Where remedial works arise, the solution will depend on the building construction and configuration. The principal options are:</p> <ul style="list-style-type: none"> <li>- Sealing of potential radon gas routes (usually not readily achieved in an existing structure).</li> <li>- Provision of sub-floor ventilation.</li> <li>- 'Pressurisation' using supply air fans.</li> <li>- 'De-pressurisation' (extract fans).</li> <li>- Filtration of air, to remove radon.</li> </ul> <p>Where radon remediation work has been carried out to reduce indoor radon levels it is important to service and maintain the mitigation equipment every 12 months. In order to ensure the continued effectiveness of the system, the school should be remeasured every five years.</p>
<b>When in doubt, seek expert advice</b>		

# Chapter

## *Doors and Windows*

Doors and windows are elements subjected to substantial wear and tear in school buildings. Constant opening and closing, together with exposure to the elements, inevitably take their toll and can give rise to leaks, draughts and associated damage to the building fabric, as well as unnecessary heat loss and additional energy costs. This chapter gives key guidelines to Boards of Management for the maintenance of doors and windows.

### The Basics

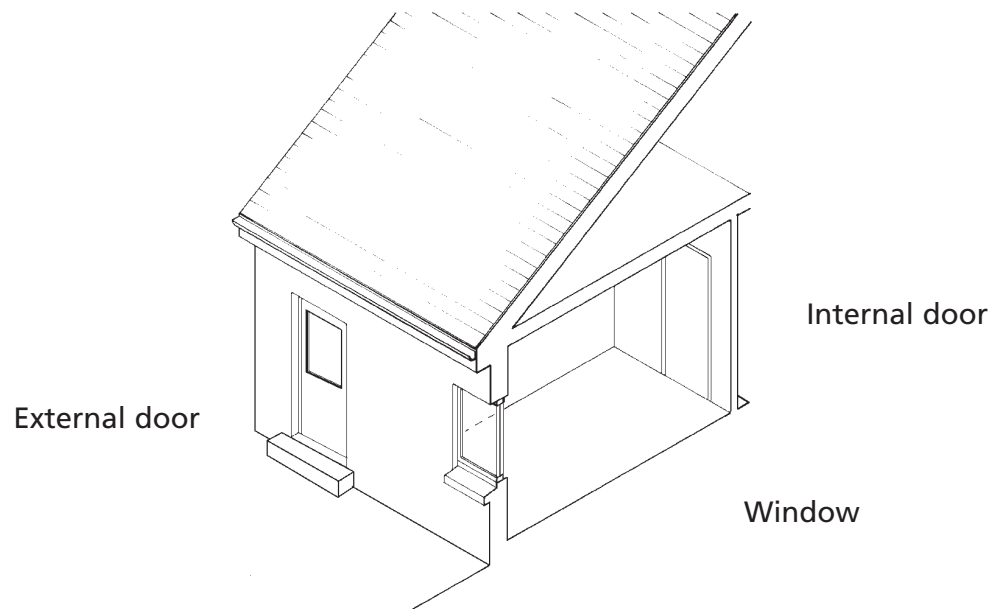



Figure 4-01. Section through typical school building, highlighting doors and windows (including internal doors).

June 1998

## *Doors and Windows - The most common problems*

What goes wrong?	Why?	Matters for maintenance
<p><b>Leaks at and around doors and windows</b></p> <p><b>Fungal decay</b>, most typically wet rot. Dry rot can also attack timber doors and windows.</p>  <p>Figure 4-02. Wet rot in window frame.</p>	<ul style="list-style-type: none"> <li>▼ <b>Damp penetration arises from:</b> <ul style="list-style-type: none"> <li>- Gaps in and around doors/windows</li> <li>- Poorly fitting doors/windows.</li> <li>- Inadequate damp proof courses</li> <li>- Failure of mastic sealants</li> <li>- Damaged or missing weather boards at door thresholds</li> <li>- Broken glass</li> </ul> </li>   <li>▼ See commentary in chapters 2 and 3 on wet and dry rot.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Replace or repair as appropriate. Some causes of leaks, such as the absence of damp proof courses, may be beyond the scope of routine maintenance.</li>   <li>▼ See commentary in chapters 2 and 3 on wet and dry rot.</li>   <p><b>Note the importance of regular decoration in protecting timber elements against decay.</b></p> </ul>
<b>Check regularly for rot/decay</b>		<b>Decorate timber at frequent intervals</b>







## *Doors and Windows - The most common problems*

What goes wrong?	Why?	Matters for maintenance
<p><b>Ironmongery defects:</b></p> <ul style="list-style-type: none"> <li>- Handles, hinges, closers</li> <li>- On doors and windows</li> <li>- Restrictors on high level windows</li> </ul> <p><b>Condensation weepholes become blocked</b></p>	<ul style="list-style-type: none"> <li>▼ Wear and tear, physical damage, vandalism.</li>   <li>▼ Accumulation of dirt/debris, over-painting.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Replace with commercial quality heavy duty components. The use of cheap material is a false economy. In fire doors, replace defective ironmongery with identical components. Check ironmongery regularly. Watch solidity of fixings (e.g. handles to frames). Watch safety considerations (e.g. ironmongery on escape routes). Defective restrictor on high-level window may allow window to open excessively and pose a risk of failing.</li>   <li>▼ Weepholes should be provided in all single-glazed and timber windows and should be kept clear at all times. Failure to do so can lead to accumulation of water run-off from condensation on the surface of the glazing. This in turn can lead to rot and decay of timber components and unsightly mould growth on affected surfaces.</li> </ul>
<p>All comments in this chapter are as applicable to doors and windows in prefabricated accommodation as to conventional buildings.</p>		
<p><b>Pre-fabs are buildings too look after them accordingly.</b></p>		

# Chapter

## *External and Internal Finishes*

Apart from providing acceptable appearances to walls, floors, ceilings and joinery, appropriate finishes contribute significantly to the durability of the school fabric. Proper choice and care of finishes can contribute not only to the appearance of a school and its environment but also to limiting the extent of wear and tear, prolonging its useful life and reducing running costs. The commentary in this chapter examines the principal maintenance issues which arise for Boards of Management in relation to finishes.

### The Basics

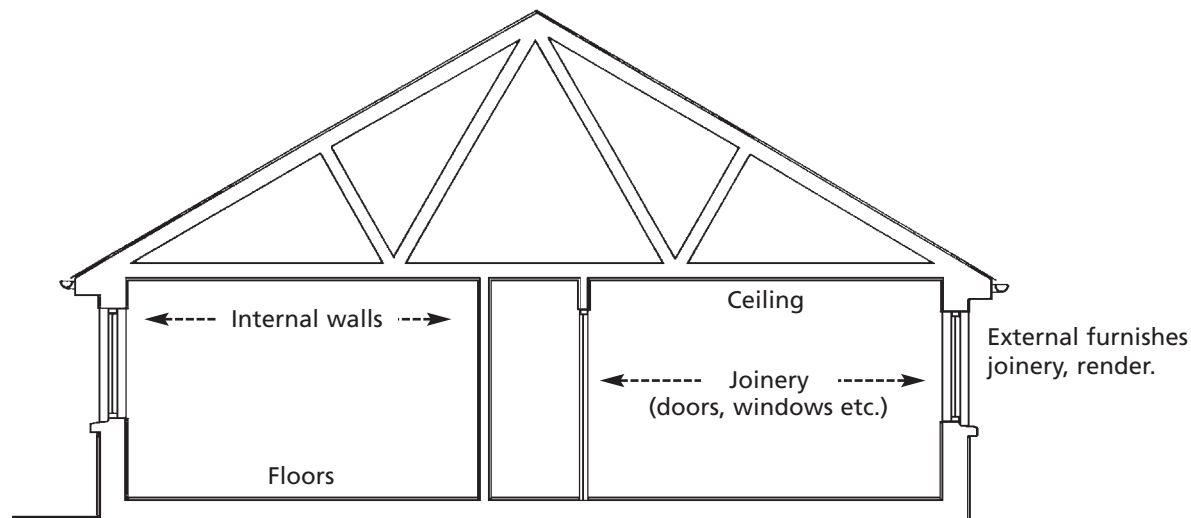



Figure 5-01. Section through typical school building, highlighting typical elements whose finishes require maintenance.



## *External and Internal Finishes*

What goes wrong?	Why?	Matters for maintenance
<p><b>Paintwork/decorative finishes</b></p> <ul style="list-style-type: none"> <li>▼ Cracking/blistering/peeling.</li> </ul>  <p>Figure 5-02. Paint flaking, damp penetration.</p>	<ul style="list-style-type: none"> <li>▼ Poor preparation of surface, poor application of paint, dampness.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Make good at time of scheduled repainting. See chapter 3 for advice relating to penetrating and rising dampness. Use appropriate paint specification for external surfaces, such as masonry paint on rendered surfaces.</li> <li>▼ Ensure that paints/varnishes are applied to a compatible surface: surface should be thoroughly prepared (cleaned, filled and sanded as necessary). In the case of a change of decorative material (e.g. from gloss to emulsion paint) a suitable primer might be necessary to ensure satisfactory bonding of this new coat. Where possible, avoid overpainting on varnished surfaces. If painting is necessary, the varnish should be stripped and the base timber primed prior to painting.</li> </ul>
<b>Prepare surfaces correctly before decorating</b>		<b>Read what's written on the tin</b>

## *External and Internal Finishes*

<b>What goes wrong?</b>	<b>Why?</b>	<b>Matters for maintenance</b>
<p><b>Paintwork/decorative finishes, continued</b></p> <ul style="list-style-type: none"> <li>▼ Ageing, wear and tear, rusting of metal elements, such as steel windows and gates.</li>   <li>▼ Pattern staining on painted surfaces.</li>   <li>▼ Putty to glazing cracking, falling out.</li>   <li>▼ Fading, blistering of decorative stains, and varnishes on timber.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Normal use, abuse, wear and tear.</li>   <li>▼ Variations in construction behind surface.</li>   <li>▼ Natural ageing, inadequate painting, birds eating putty (see chapter 4).</li>   <li>▼ Natural ageing, exposure to sunlight.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Make provision for regular redecoration of all painted surfaces, inside and out. It is recommended that repainting should generally be carried out at five-year intervals. In some circumstances, the interval might be lengthened to seven years.</li>   <li>▼ Clean surfaces thoroughly as part of preparation for regular re-painting. Pattern staining arises from the nature of inherent construction and its elimination is usually beyond the scope of routine maintenance.</li>   <li>▼ Renew defective putty as part of regular, planned redecoration.</li>   <li>▼ Renew finish in accordance with manufacturer's recommendations.</li> </ul>
<b>Redecorate at frequent intervals</b>		<b>Read what's written on the tin</b>

## *Linoleum and Vinyl. Important do's and don'ts*

Do's	Don'ts
<p>Use dust control mopping frequently. A dust control mop is a mop with a specialised cloth (slightly damp). Use the mop frequently in heavy duty areas.</p> <p>Use minimum moisture on the floors.</p> <p>Keep all cleaning machinery and equipment in good working order.</p> <p>Mop up spillages as soon as possible; prevent spots becoming stains.</p> <p>Purchase good quality products, this will help provide cost effectiveness.</p> <p>Erect caution signs every time you carry out cleaning tasks.</p> <p>Remember to rinse and neutralise floors prior to any application of polish.</p> <p>Use a colour-coded mopping system.</p>	<p>Don't mix cleaning chemicals unless specified by the manufacturer. This can be harmful to the floor coverings, animals and humans.</p> <p>Don't change chemical manufacturer's dilution rates. More is not necessarily better, but can be expensive and even harmful.</p> <p>Don't use excess moisture this merely creates more work clearing up.</p> <p>Don't apply polishes to wet or dirty floors.</p> <p>Don't use polishes on static-dissipative or 'safety' floors without consulting manufacturer.</p> <p>Don't allow wax polish to be mixed with other polishes.</p> <p>Don't use no-rinse strippers on linoleum.</p> <p>Don't wet, clean or polish the floor for at least 48 hours after installation, to allow adhesive to cure. Ideally the floor should be left for at least 5 days. If this is impossible, minimum moisture techniques are essential.</p>
<b>Follow correct cleaning procedures</b>	<b>Follow correct safety procedures</b>

## *Finishes - The most common problems (continued)*

What goes wrong?	Why?	Matters for maintenance
<p><b>Linoleum and Vinyl Flooring</b></p> <ul style="list-style-type: none"> <li>▼ Excessive scratching of floor surface.</li> <li>▼ After application of polish floor, finish begins to whiten up or powder.</li> <li>▼ Colour change.</li> <li>▼ Colour fade.</li> <li>▼ Tiles or sheets lifting at edges.</li> <li>▼ Polish is not drying between coats.</li> <li>▼ Polish wearing off quickly.</li> <li>▼ Floor shiny on non-traffic areas but dull or whitish bloom in traffic lane.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Ineffective barrier mat or none at all.</li> <li>▼ Excessive alkalinity used in cleaning or stripping process. No rinse stripper used or used incorrectly.</li> <li>▼ Excessive alkalinity used in cleaning or stripping process.</li> <li>▼ Mopping system contaminated with bleach or similar volatile cleaning solution.</li> <li>▼ Excessive moisture used (probably combined with excessive alkalinity), seeping into joints. Wet floor cleaned before adhesive has fully dried.</li> <li>▼ Location of flooring too cold or poor ventilation.</li> <li>▼ Excessive grit on the flooring.</li> <li>▼ Floors maintained with highly alkaline chemicals.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Arrange for installation of barrier mat.</li> <li>▼ Reclean floor ensuring that floor rinse is neutralised.</li> <li>▼ Clean immediately to remove alkalinity; colour may be restored.</li> <li>▼ Rinse thoroughly with clean water. Only use recommended cleaning solutions by manufacturers.</li> <li>▼ Consult flooring contractor for repair.</li> <li>▼ Introduce a heat source such as turbo blower.</li> <li>▼ Use a barrier mat at the entrance.</li> <li>▼ Remove coating on floor covering and reapply a neutral coating.</li> </ul>
<b>Always follow recommended maintenance procedures</b>		<b>Read what's written on the tin</b>



## *Finishes - The most common problems (continued)*

What goes wrong?	Why?	Matters for maintenance
<p><b>Linoleum and Vinyl Flooring</b> <i>continued.</i></p> <ul style="list-style-type: none"> <li>▼ Linoleum and vinyl floor coverings not properly maintained.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Absence of proper maintenance planning. Lack of knowledge of good floor maintenance practice.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Daily to weekly.                             <ul style="list-style-type: none"> <li>- Clean floor with a dust control mop.</li> <li>- Remove spots by damp mopping or by hand scrubbing with water and neutral maintainer (only if required).</li> </ul> </li>   <li>▼ Weekly to monthly.                             <ul style="list-style-type: none"> <li>- Light scrubbing with neutral maintainer and edging tool. Use a sponge mop to pick up residue.</li> <li>- Damp mop with clean water.</li> </ul> </li>   <li>▼ Periodically, at least once a year.                             <ul style="list-style-type: none"> <li>- Scrub the floor with edging tool or deck scrubber. Use a sponge mop to pick up residue. Dampen mop with clean water.</li> <li>- When floor is dry, apply recommended protection covering to floor.</li> </ul> </li> </ul>
<b>Always follow recommended maintenance procedures</b>		<b>Read what's written on the tin</b>




## *Finishes - The most common problems (continued)*

What goes wrong?	Why?	Matters for maintenance
<ul style="list-style-type: none"> <li>▼ <b>Carpets</b> <i>continued</i></li>   <li>▼ Neglect of fibre-bonded carpets.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Inadequate maintenance. Lack of knowledge of correct maintenance procedures.</li> </ul>	<p>Scrape up the excess with a blunt-edged knife. Apply freezer spray and scrape or brush out.</p> <ul style="list-style-type: none"> <li>▼ Daily vacuuming with a rotary brush vacuum cleaner is preferable. It is essential to remove loose soil daily because, if left to build up, it is much harder to remove the dirt and can damage the fibres.</li> </ul> <p>Depending on the level of foot traffic, the carpets should be periodically deep-cleaned. The carpets should be cleaned at least every year, using high performance hot water extraction equipment. Cleaning frequency may need to be increased for carpets in areas of heavy foot traffic, such as corridors.</p>
<b>Always follow recommended maintenance procedures</b>		<b>Read what's written on the tin</b>



## *Finishes - The most common problems (continued)*

What goes wrong?	Why?	Matters for maintenance
<p><b>Graffiti</b></p>  <p>Figure 5-03. Graffiti</p> <ul style="list-style-type: none"> <li>▼ Asbestos products used as wall and ceiling linings</li> </ul>	<ul style="list-style-type: none"> <li>▼ All readily accessible surfaces are likely targets for the "graffiti artist".</li> </ul> <ul style="list-style-type: none"> <li>▼ See page 2-11</li> </ul>	<ul style="list-style-type: none"> <li>▼ Appropriate treatment will vary with the material used and the surface affected: <ul style="list-style-type: none"> <li>- Options include chemical removal and mild abrasive.</li> <li>- Treatment of the cleaned surface with an anti-graffiti surface coating will allow subsequent graffiti attacks to be removed with hot water pressure jets.</li> <li>- In the case of persistent graffiti problems, Boards of Management might consider placing graffiti maintenance contracts with a firm specialising in such works. See classified telephone directories for listings of such contractors.</li> </ul> </li> </ul> <ul style="list-style-type: none"> <li>▼ See page 2-11</li> </ul>
<p>All comments in this chapter are as applicable to prefabricated accommodation as to conventional buildings.</p>		
<p><b>Pre-fabs are buildings too; look after them accordingly</b></p>		

# Chapter

## Heating, Plumbing and Drainage

The heating and plumbing system within primary schools typically comprises water storage tanks and cisterns, supply and distribution pipes for hot and cold water, fittings, such as sanitary fittings and sinks, heating boilers, heating pipework and radiators. Drainage systems are usually made up of above and below ground pipework which connects to local authority sewers or, in some cases, to on-site septic tanks or sewage treatment plants. This chapter deals with maintenance items and minor works which commonly arise in relation to heating, plumbing and drainage systems in schools.

- A Water supply pipe (rising main) from mains or well supply.
- B Cold water storage cistern.
- C Overflow pipe.
- D Central heating feed and expansion ("header") tank.
- E Cold water distribution pipework.
- F Heating system pipework.
- G Sanitary appliances.
- H Sinks (e.g. in classrooms or staff rooms).
- I Central heating boilers.
- J Radiators.

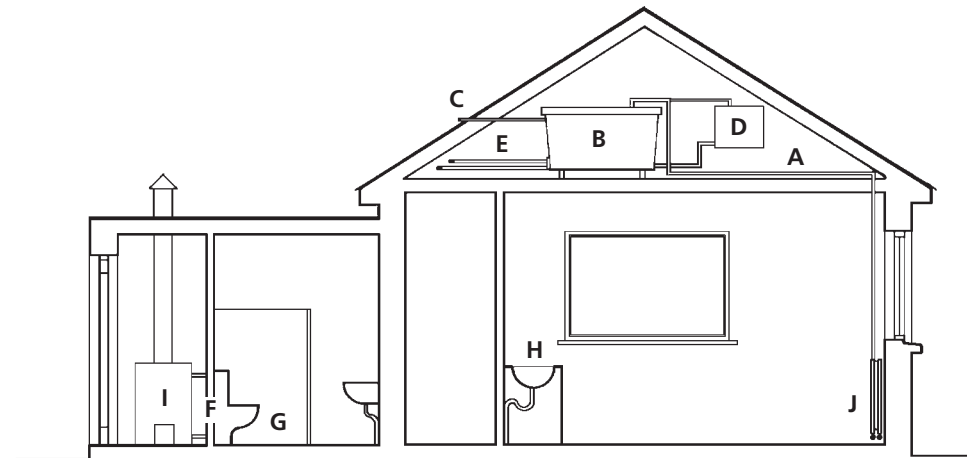


Figure 6-01. Typical elements of heating, plumbing and drainage systems.

## *Central Heating Systems - Common Problems*

What goes wrong?	Why?	Matters for maintenance
<p><b>Boiler breaks down or fails to deliver adequate heat</b></p>	<p>▼ Usually due to inadequate maintenance or servicing. Boiler might be undersized for heating load. Leaks on system at pipes and valves (sometimes in buried pipework) can also cause breakdown or unsatisfactory performance.</p>	<p>▼ Have boiler serviced at least twice annually - at start of "heating season" (usually October) and halfway through the heating season (January). A maintenance contract should be placed with a competent heating / plumbing contractor and suppliers of any 'compensator' controls. If a boiler has been frequently and well serviced, it should have a design life of 15 - 20 years before full or partial replacement. If the boiler is undersized consider:</p> <ul style="list-style-type: none"> <li>- Replacement or supplementing</li> <li>- Improving insulation of building fabric and heating pipework.</li> <li>- Reducing heat loss due to draughts.</li> </ul> <p>If boiler replacement is required, review other elements of the system, especially time clocks and thermostats.</p> <p>▼ Check the heating installation regularly for leaks, especially at radiator valves.</p>
<b>Service boilers regularly</b>		<b>Check regularly for leaks</b>

## *Central Heating Systems - Common Problems (continued)*

What goes wrong?	Why?	Matters for maintenance
<p><b>Flooding in basement and below-ground boiler rooms</b></p> <p><b>Oil leaks</b></p> <p><b>Gas leaks</b></p>	<ul style="list-style-type: none"> <li>▼ Defective sump pump</li>   <li>▼ Corrosion, damage, wear and tear in oil feed pipes and tanks.</li>   <li>▼ Corrosion, damage, wear and tear in pipe lines and at appliances.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Have pump repaired and serviced as part of regular servicing of heating system.</li>   <li>▼ Have leaks repaired. Renew feed pipes or tank as necessary.</li>   <li>▼ No smoking, naked flames or operation of electrical switches, appliances, or mobile phones.</li>   <li>▼ Open doors, windows and contact gas supply company.</li>   <li>▼ Check that appliances are turned off.</li>   <li>▼ If source of leak is not an unlit appliance, turn off gas at meter, evacuate building and contact gas supply company. If the gas supply company cannot be contacted, dial 999 and ask for Fire Brigade. Do not use a phone in the immediate vicinity of the leak. The Bord Gais emergency service number is 1850 20 50 50.</li> </ul>

<b>Check regularly for gas/oil leaks</b>	<b>Always adopt safe working procedures</b>
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## *Central Heating Systems - Common Problems (continued)*

What goes wrong?	Why?	Matters for maintenance
<b>Fire hazard in boiler rooms</b>	<ul style="list-style-type: none"> <li>▼ Inappropriate use of boiler room as store for hazardous materials, e.g. paint, petrol.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Ensure good housekeeping and safety practice in the management of the heating system and boiler room. Do not store materials in boiler rooms.</li> </ul>

**Do not use the boiler room for storage**

## *Water supply and distribution - Problems*

What goes wrong?	Why?	Matters for maintenance
<b>Inadequate water supply</b>	<ul style="list-style-type: none"> <li>▼ Blocked nozzles in spray taps.</li> <li>▼ Poor mains pressure.</li>   <li>▼ Inadequate groundwater in systems supplied from wells; this can be intermittent, occurring in long dry spells.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Clean spray tap nozzles annually.</li> <li>▼ Mains pressure problems are usually beyond the control of a Board of Management and require rectification by the local authority or group scheme. In older schools, the renewal of the rising main might improve pressure. In any event of poor mains pressure, seek expert advice.</li> <li>▼ Where groundwater supply is inadequate, seek expert advice.</li> </ul>

**When in doubt seek expert advice**









## *Below ground drainage*

What goes wrong?	Why?	Matters for maintenance
<p><b>Blocked drains</b></p>	<ul style="list-style-type: none"> <li>▼ Back-up of material in drain.</li>   <li>▼ Subsidence or fracture of drain.</li>   <li>▼ Drain laid to inadequate fall (slope).</li> </ul>	<ul style="list-style-type: none"> <li>▼ Occasional blockages can usually be cleared by conventional "rodding". Difficult-to-clear blockages may require power-assisted rodding or jetting; see your local classified directory for listings.</li>   <li>▼ Persistent recurrence of blockages usually arises from habitual abuse of system, vandalism or an inherent defect in the below ground pipework. In the latter case, seek appropriate expert advice.</li>   <li>▼ Seek expert advice.</li> </ul>
<p><b>Clear blockages promptly</b></p>		<p><b>When in doubt, seek expert advice</b></p>



# Chapter

## *Electrical Installations*

This chapter outlines recommended procedures for Boards of Management in relation to the maintenance and the improvement of the electrical installations within their schools.

### The Basics

The typical electrical installations in a school will comprise the following components:

- ▼ Incoming ESB supply - rising main.
- ▼ ESB main switch and meter(s).
- ▼ Distribution board ("fuseboard" or "circuit board").
- ▼ Individual wiring circuits, typically divided into lighting, power (sockets) and, where applicable, storage heating. Some installations will include circuits for fire safety services, i.e. fire detection and alarm systems and escape lighting. Each circuit will be limited as to capacity by appropriately sized circuit breakers or (in older installations) fuses.

**Defective or incorrectly used electrical installations are a safety and fire hazard!  
MAINTAIN THEM ACCORDINGLY.**







# Chapter

## *External Works (Paved and Grassed Surfaces)*

External paving and grassed areas are subject to significant wear and tear, not just from the occupants of the school but from weathering. It is essential for paved and grassed areas to be in good condition. If paved areas are cracked or not level; they can constitute a trip hazard and a possible cause of injury. This is the most common source of accidents, injury and consequent litigation. It may lead to the increase of insurance costs. This chapter deals with the most common maintenance issues which arise in relation to external works.

### The Basics



Figure 8-01. Typical external paving finishes.

## *External Works (continued)*

<b>What goes wrong?</b>	<b>Why?</b>	<b>Matters for maintenance</b>
<p><b>Tarmacadam</b></p> <ul style="list-style-type: none"> <li>▼ Potholes within vested area.</li>   <li>▼ Cracking.</li>   <li>▼ Edge failure.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Potholes are caused by settlement of soil underneath the tarmacadam.</li>   <li>▼ Cracking can be caused by settlement of soil underneath the tarmacadam, and also because of poor quality materials or workmanship.</li>   <li>▼ Tree roots can cause cracking because of movement underneath the surface.</li>   <li>▼ Inadequate support for edges of tarmacadam areas, for example, at a junction with a grassed area.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Fill in potholes with tarmacadam and level the top surface. If excessive failure reoccurs, it may be necessary to seek advice.</li>   <li>▼ Fill in cracks and level the top surface. If failure reoccurs, it may be necessary to seek advice.</li>   <li>▼ Seek expert advice.</li>   <li>▼ Provide properly bedded edging in the form of kerbs or similar. Local repairs to the areas of tarmacadam affected by the edge failure may also be necessary. Work should be carried out by personnel of appropriate expertise and competence.</li> </ul>
<b>Repair defects promptly</b>	<b>When in doubt, seek expert advice</b>	





## *External Works (continued)*

What goes wrong?	Why?	Matters for maintenance
<ul style="list-style-type: none"> <li>▼ Misalignment of slabs.</li>   <li><b>Other pavings such as cobbles, setts and bricks</b></li> <li>▼ Cracking.</li>   <li>▼ Misalignment of paving.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Misalignment can be caused by:               <ul style="list-style-type: none"> <li>- Settlement of bedding material underneath</li> <li>- Poor workmanship in laying of slabs</li> </ul> </li>   <li>▼ Cracking can be caused by:               <ul style="list-style-type: none"> <li>- Settlement of bedding material underneath</li> <li>- Joint between slabs too strong; no room for movement</li> <li>- Poor materials used</li> </ul> </li>   <li>▼ Misalignment can be caused by:               <ul style="list-style-type: none"> <li>- Settlement of bedding material underneath</li> <li>- Poor workmanship when laying the paving</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▼ Remove the misaligned slabs, level bedding material underneath. Replace slabs and fill in joints between slabs. Uneven slabs are a very common cause of accidents. Watch very carefully. When fault occurs, deal with promptly.</li>   <li>▼ Remove cracked paving. Replace with new ones. Ensure that paving is laid on a firm level and a continuous bed of appropriate material (usually sand or a weak mix of sand and cement). If fault reoccurs a seek advice.</li>   <li>▼ Remove the misaligned paving, level out bedding material underneath. Replace paving and fill in joints between paving.</li> </ul>
<b>Repair defects promptly</b>	<b>When in doubt, seek expert advice</b>	

## *External Works (continued)*

What goes wrong?	Why?	Matters for maintenance
<p><b>Grassed Areas</b></p> <ul style="list-style-type: none"> <li>▼ Mud strips adjacent to the building.</li>   <li>▼ Flooding/ponding.</li> </ul> <p><b>Chain link fencing</b></p> <ul style="list-style-type: none"> <li>▼ Rusting.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Inadequate drainage, rainwater running down the face of the building and collecting in the grass below.</li>   <li>▼ Flooding or ponding can be caused by drains or gullies or other forms of drainage, such as septic tanks, becoming blocked.</li>   <li>▼ Metal fencing exposed to the weather will rust if it is not properly protected.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Clean face of building, removing any mud splashes. Remove a strip of grass around the perimeter of the building. Place a concrete apron or a paved area around.</li>   <li>▼ Check all drainage (drains and gullies) regularly. Ensure they do not become blocked. If they are blocked, clear them by rodding.</li>   <li>▼ Remove badly rusted chainlink fencing. Replace with plastic-coated fencing.</li> </ul>
<b>Repair defects promptly</b>		<b>Check drains for blockages</b>

## *External Works (continued)*

What goes wrong?	Why?	Matters for maintenance
<ul style="list-style-type: none"> <li>▼ Concrete posts spalling.</li>   <li>▼ <b>Boundary wall</b>, the copings on top of the walls become loose.</li> </ul>	<ul style="list-style-type: none"> <li>▼ Spalling occurs because of reinforcement being too close to the surface or physical damage to posts.</li>   <li>▼ Copings can come loose because of:               <ul style="list-style-type: none"> <li>- Poor mortar joint between the wall and coping</li> <li>- Wear and tear</li> <li>- Pupils climbing on top of the coping and dislodging it</li> <li>- Vandalism</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▼ Repair or remove damaged posts. Where repair is not possible, posts should be replaced.</li>   <li>▼ Rebed loose sections of coping on bed of mortar. Replace broken or missing sections of coping stone. In the case of constant damage to copings (for example, as a result of vandalism), an alternative coping design and fixing detail may have to be considered.</li> </ul>
<b>Repair defects promptly</b>	<b>When in doubt, seek expert advice</b>	

# Chapter

## *Getting Work Done*

### **Statutory Approvals, Tenders, Contracts, Tax Clearance**

In undertaking any works to its school, the Board of Management should consider carefully the scale and complexity of the task. Works to the structure of the school, or to the mechanical and electrical systems should not be undertaken without engaging a properly-qualified professional adviser. If there is any doubt about the work being planned, professional advice should be sought.

The professional adviser can be engaged to plan the project, check on planning authority and fire officer requirements, health and safety issues and, where necessary, prepare tender documentation, invite tenders (quotations), and oversee the contract on behalf of the Board.

### **Planning Permission**

Examples of works which might attract the requirement for an application for Planning Permission are:

- ▼ The placing of a prefabricated accommodation on a school site. Note that, in many cases, planning authorities limit planning permission for such accommodation to a specified time period (typically five years). Accordingly, Boards of Management may, on occasion, be required to renew or extend such planning permissions.
- ▼ Any extension of a school building.
- ▼ Any alteration which renders the external appearance of the school building inconsistent with the character of the building or of neighbouring structures. Clearly the status of this category of work is, to some degree, a matter of interpretation. Some alterations might, however, fall within its scope; for example, the external painting of a school building in a vivid colour, or the installation of replacement windows might be deemed to require planning permission. Where any doubt exists, the Board of Management should consult the local planning authority or take expert advice.

## Fire Safety Certificates and Commencement Notices.

Building Control Regulations made under the Building Control Act state that the following works to school buildings are subject to the requirement for a Fire Safety Certificate:

- ▼ Extensions exceeding 25 square metres (269 square feet) in floor area.
- ▼ Material alterations to an existing school building.

A '*material alteration*' is an alteration which has implications for the structure or fire safety of the building.

Where any significant building work is proposed to a school building, it would be prudent for the Board of Management, if in doubt, to check with the local authority if the need for a Fire Safety Certificate arises. The making of a Fire Safety Certificate application requires the lodging of plans and other documents.

Where the need for a Fire Safety Certificate arises, a consequential obligation is that a Commencement Notice be served on the local authority by or on behalf of the Board of Management.

## Appointing Consultants

In the case of some categories of maintenance and minor works, it may be necessary for the Board of Management to engage professional consultants such as an architect or a consulting engineer. It is not possible in a document such as this to clearly define the circumstances in which such engagement might be required. However, in any circumstances where the matters in question are clearly beyond the competence of the membership of the Board of Management or where any significant doubt exists as to an appropriate course of action, advice from a competent, suitably experienced and suitably qualified person should be sought.

Listings of members of the relevant professional bodies are available from:

The Royal Institute of the Architects  
of Ireland,  
8 Merrion Square,  
Dublin 2

*Telephone:* 01-6761703  
*Fax:* 01-661 0948

The Institution of Engineers of Ireland,  
22 Clyde Road,  
Dublin 4

*Telephone:* 01-6684341  
*Fax:* 01-668 5508

The Society of Chartered Surveyors,  
5 Wilton Place,  
Dublin 2

*Telephone:* 01-6765500  
*Fax:* 01-676 1412

### **Listing of consultants are also included in local classified telephone directories**

Consultants' fees are based on a percentage of the value of the works in question or on the time input involved. Professional scales of fees and rates of time charges are determined by the appropriate professional bodies, which may be consulted where any query arises. Professional consultants in private practice will normally be registered for VAT and have professional indemnity (P.I.) insurance cover.

### **Appointing Contractors.**

In most cases the carrying out of maintenance or improvement works in and around school buildings will involve Boards of Management in engaging individuals or firms to carry out the works. In this commentary, such individuals or firms are referred to as "contractors", although they might not always be such in the precise sense of the word.

Some categories of works require greater levels of expertise and competence than others. For example, cleaning windows at ground floor level is a relatively simple and unskilled task, whereas servicing a central heating boiler requires a relatively high level of skill and experience. The level of expertise appropriate to the task should be borne in mind by Boards of Management when appointing contractors. See checklist below for more detailed commentary on the appointment of contractors.

## Health and Safety

The Safety Health and Welfare at Work (Construction) Regulations of 1995 made under the Safety Health and Welfare and Work Act of 1989 impose obligations on promoters of building works. These obligations extend to a Board of Management undertaking maintenance or minor works on a school building.

The key points for Boards of Management to note regarding the Regulations are:

- ▼ Open and keep a Safety File for maintenance and minor works.
- ▼ Appoint competent person(s) as Project Supervisor (Design Stage) and Project Supervisor (Construction Stage). A single party, including a Board of Management, can act in both capacities if competent to do so.
- ▼ In the case of large-scale works or works involving particular risk (e.g. work with electrical installations, roof repairs) or where any doubt exists, Boards of Management are advised to appoint competent Project Supervisors. Advice on the assessment of the competence of Project Supervisors is available in guidelines from the Health and Safety Authority (HSA). The guidelines are available from the HSA and Government Publications.
- ▼ Competent contractors should have a written Safety Statement. Boards of Management should ask for a copy of contractors' Safety Statements before finalising tender lists or appointing of contractors.
- ▼ **If in doubt, seek expert advice.**
- ▼ **Always adopt safe working procedures.**



## Appointing Contractors - Checklist

The following checklist summarises for Boards of Management the key points to be considered in getting work done.

- ▼ Assess the scope of the work and consider the need for professional advice. If in doubt, get such advice.
- ▼ Prepare appropriate documents for the works. This may vary from a simple, clearly stated written list to drawings and specification prepared by a professional adviser. At this stage, the Board should ensure that it is satisfied with the scope of the works proposed. Remember that changes during a contract can prove very expensive.
- ▼ Local authority, fire officer and health and safety requirements should be checked. Applications for planning permission and Fire Safety Certificate may be necessary.
- ▼ Seek at least three (more if possible) tenders (quotations) from competent contractors. Set a deadline for submission of tenders. If any contractor seeks and is given additional information about the contract, provide the same information to the other tendering contractors. If one contractor seeks additional time to quote, and the Board agrees, notify other contractors of the extension of time. Contractors should visit the school to assess the project themselves before submitting a tender; indicate suitable times for such visits in the tender documents, to avoid disruption of school activities.
- ▼ The Board may not use brand names in tender documents. Open all tenders on the date/time specified in the invitation to tender. Do not open tenders received after the specified deadline.
- ▼ Make sure that the contractor submitting the lowest tender has priced all the work. If he has not, adjustment of the tender price should not be allowed. If the price seems too low otherwise (compared with the other tenders), ask the contractor to justify the price. Ask the contractor to name other projects undertaken and check with the promoters of those projects on their outcome. If the answers are unsatisfactory, the contractor should be advised accordingly, and the next lowest quotation examined.
- ▼ If the nature and scale of the work involves the charging of VAT, check that the contractor is registered for VAT.
- ▼ Check that the contractor to be awarded the contract has a valid Tax Clearance Certificate. A letter from the tax office will not suffice. Do not engage any contractor without such a Certificate. Insist that the Certificate be kept in force for the duration of the contract.

- ▼ Check that the contractor's insurances are in order. If necessary, have them checked by the Board of Management insurance advisers.
- ▼ A valid contract requires an offer (from the contractor), an acceptance (from the school), a consideration (price), and consensus between the parties on all matters relating to the contract. Make sure there is no ambiguity.
- ▼ Treat all contractors fairly and impartially.
- ▼ The letter of acceptance to the contractor should set out clearly what is expected in terms of start date, completion date, and the timing of payments for the work.
- ▼ Notify unsuccessful contractors promptly.
- ▼ Monitor progress of the contract and notify the contractor, in writing, of any difficulties.
- ▼ Insist that the contractor corrects any problems that arise within a contract guarantee period.
- ▼ Keep a record of details of the tenders, and the awarded contract, for five years.

### Special Note on Window Replacement Contracts

Products of window manufacturers can vary significantly in terms of materials, gauge, security arrangements etc. Consequently, it is difficult to compare like with like in a tender situation. Where a Board of Management is replacing windows, it should first ask prospective contractors to provide a sample of the window, supporting technical details, and also supply information on other locations where the window has been installed. The Board should satisfy itself in relation to the information supplied and then invite tenders, but only from contractors capable of supplying and installing windows considered suitable for the school.

# Chapter

## *Furniture and Loose Equipment*

In addition to expenditure on the structure and fabric of their schools, the Minor Works Grant Scheme empowers Boards of Management to purchase items of furniture and P.E. equipment. This chapter deals with the key issues arising in respect of the purchase of such items, as well as their maintenance and repair.



## *Furniture and loose equipment*

### **Acquiring furniture and equipment**

#### **Points to note**

Standard specifications for Primary School Furniture are available from the Building Unit of the Department of Education and Science. Any furniture or equipment (including fixtures such as chalkboards and noticeboards) should conform with those specifications. Items covered by the specifications include:

- ▼ pupils' tables and chairs
- ▼ cupboards, including cupboards with display and cupboards with shelving
- ▼ bookcases
- ▼ book trolleys
- ▼ paper cabinets
- ▼ storage bins
- ▼ chalkboards and display boards
- ▼ pedestals
- ▼ bookshelves

The Department also publishes detailed information on the approved range of furniture and equipment. All furniture purchased should conform with that information.

## *Furniture and loose equipment*

When inviting tenders for furniture and/or equipment, note the following:

- The general advice given at chapter 9 - **Getting Work Done**.
- Insist on itemised prices.
- Tenders should include for delivery and, where appropriate, assembly and/or fixing/erection.
- A standard certificate and undertaking by the supplier/contractor is required prior to payment. See standard specifications referred to above for full details.

Any repairs to damaged furniture should be carried out by a competent party. This is particularly so in the case of P.E. equipment. If in doubt, consult the original supplier/contractor.

# Appendix

## *Department of Education Circular 3/96*

### **New Grants Scheme for Minor Works to National Schools**

#### **1. The New Scheme**

The Minister for Education is pleased to announce the introduction of a new grant scheme for minor works to national school properties. This initiative is in keeping with the **White Paper** statement that **"implementation of smaller projects and building maintenance...will be devolved to the relevant education board or school as appropriate"**.

The new scheme will begin in January 1997 with the transfer of funds to all primary schools on the following basis:

- ▼ **£2,000 basic grant plus £9 per pupil** (on rolls on 30 September 1996)
- ▼ The grant will be paid on an annual basis thereafter.

In future, schools should not apply to the Department for grant-aid for works costing less than £5,000, or twice the annual allocation, whichever figure is higher.

## 2. Works covered under the scheme

The funds being transferred to the schools are designated as capital and *must be spent on new facilities, or improvements to existing facilities*. The facilities in question are:

- ▼ school buildings and grounds
- ▼ mechanical and electrical services
- ▼ furniture and physical education equipment
- ▼ floor coverings and window blinds

Schools need not apply to the Department for approval to carry out works covered by the scheme.

## 3. Works not covered under the scheme

### 3.1 School Maintenance and Repair

The funds must not be used for any maintenance works to the school facilities. Items such as repairs, painting and decorating should continue to be funded from the capitation grant.

### 3.2 Additional Classrooms

All proposals relating to the provision of additional classroom accommodation should continue to be referred to the Department for approval.

#### **4. Capital Account**

The funds transferred by the Department under this scheme must be held by each school in a separate, clearly identifiable capital account controlled by the Board of Management.

In December 1998, and every three years thereafter, each school must provide the Department with a written statement of the sum held in the account.

In the event that a school ceases operation, any balance held in the account must be surrendered to the Department.

#### **5. Local Contribution**

Schools are not required to make a local contribution towards the cost of works covered by the scheme. However, schools must continue to provide a local contribution for other projects being grant-aided by the Department. Such local contribution cannot be taken from the new capital account.

#### **6. Vested Area**

The funds should be expended only on works to facilities which are within the vested school area.

#### **7. Authority/Responsibility**

The new scheme devolves authority to Boards of Management for the execution of minor works. Responsibility for the proper execution of works will also rest with the Boards of Management.

#### **8. Execution of Works**

Schools must organise the execution of the works covered under the scheme, and pay the bills themselves.

The Department will prepare and issue a booklet to assist schools in relation to the procedures for the execution of works.



## 9. Schools housed in rented accommodation

Where works are required to schools housed in rented accommodation, Boards of Management should ensure that they adhere to the terms of the lease in undertaking such works.

## 10. Administrative Issues

### ▼ Records/Auditing

The capital account may be audited by the Department, so full records, including invoices and receipts, must be kept by the school for a period of five years.

### ▼ Withdrawal of Circular 18/91

This Circular supersedes Circular 18/91, which is hereby withdrawn.

### ▼ Withdrawal of existing grant sanctions

Grant sanctions for works covered by this scheme, and which pre-date 31 December 1994, are hereby withdrawn. The withdrawal does not apply to cases where works are already in progress.

## 11. Review

The operation of the new scheme will be reviewed after two years.

Seán Ó Briain  
Assistant Secretary

May 1996.

# Glossary

**Alkalinity:** A measure of the chemical nature of a material. The opposite to acidity.

**Cavity:** In a cavity wall, the space between the inner and the outer leaves of masonry.

**Concrete fillets:** A sloped wedge of concrete sometimes used instead of metal flashings, especially at chimney-to-roof junctions.

**Copings:** A brick, stone or concrete capping for weathering the top of a wall, chimney or similar element.

**Door closers:** A device attached to a door so that when the door is left in the open position, it will automatically close.

**Door thresholds:** A horizontal element at the foot of an outside door, provided to prevent draughts and blown rain passing under the door.

**Downpipes:** Rainwater pipes.

**DPC (*Damp proof course*):** A horizontal layer of impervious material built into walls and chimneys to exclude moisture and dampness.

**DPM (*Damp proof membrane*):** A layer of impervious material laid under a floor to prevent rising dampness.

**Eaves:** The lowest, overhanging part of a sloping roof.

**Fascia board:** A wide board set vertically on edge, fixed to the horizontal edges of a roof. It carries the gutter around the eaves.

**Flashings:** Strips of impervious material, usually flexible metal (such as lead), which exclude water from the junction between a roof covering and another surface (usually vertical). Flashings, at their upper end, are usually wedged tightly into mortar joints which have been raked out to receive them.

**Glazing beads:** A small hardwood strip, used instead of putty to retain glass in a window frame.

**Glazing compound:** A bedding material into which the glazing bead is set.

**Gutter:** A channel along the edge of an eaves to remove rainwater. Usually connects to downpipe.

**Intumescent strip:** Narrow strip of material bedded into the top and sides of a fire door. In fire conditions, the material swells to hold the door in the frame and restrict fire and smoke spreading through the door opening.

**Linoleum (lino):** A floor covering built up from linseed oil and hessian canvas.

**Mastic:** A permanently plastic waterproof material, which hardens on the surface so that it can be painted. It is used for bedding roof lights, window frames, sealing joints in gutters, flashings etc. Gun mastics are applied to window glazing with a pressure gun, which lays it on very quickly and cleanly.

**Mortar droppings:** Splashes of mortar arising from the process of building brick or block walls.

**PVC sheeting and tiles:** A rubbery almost non-combustible material.

**Radon:** A natural radioactive gas that has no taste, smell or colour. It is found to some degree in all soils and rocks. It is formed in the ground by the radioactive decay of small amounts of radium. See chapter 3.

**Reflective coating:** A paint, usually white or silver, which reflects the ultra violet rays of the sun, and reduces heating of roof surfaces. Common on flat roofs.

**Sealants:** Materials used to fill and seal surface of a joint to prevent water and grit entering. It is usually applied, like mastic, with a pressure gun.

**Soffit board:** A horizontal board nailed to the underside of rafters, forming a soffit under an overhanging eaves.

**Spalling:** If reinforcement within a concrete element is too close to the surface, the effects of frost and moisture can cause the layer of concrete covering the steel to “blow” off, exposing the steel. This process is called spalling.

**Structural elements:** The parts of a building which carry load in addition to their own weight, as opposed to elements which only carry their own weight. Structural elements include walls, floors and roofs.

**Vinyl:** Flexible plastic used, in tile and sheet form, as a floor covering.

**Weatherboarding:** Timber boards nailed (usually horizontally) on the outside of buildings.

**Weephole:** (a) A small hole in a timber sill which allows condensation water to escape outwards. (b) a small gap in a cavity wall to allow water to drain out of the cavity.

# Index

## A

Alarm systems	7-03
Appointing consultants	9-02
Appointing contractors	9-03
Asbestos	2-11, 5-10, 6-09

## B

Birds nesting	2-09
Boiler rooms	6-03
Boiler rooms	
<i>fire hazard</i>	6-04
Boundary wall	8-06

## C

Carpets	5-08
Carpets	
<i>care</i>	5-09
<i>stains</i>	5-08
Chain link fencing	8-05
Circuit board	7-01
Cobbles	8-04
Commencement notices	9-02
Condensation	3-10, 4-06

## D

Doors	4-01
Doors	
<i>broken glass</i>	4-03
<i>damp penetration</i>	4-02
<i>draughts</i>	4-04
<i>fungal decay</i>	4-02
<i>jamming</i>	4-03
<i>leaks</i>	4-02
<i>replacement</i>	4-05
DPC	3-03
DPM	
Drainage	6-01
Drainage	
<i>blockages</i>	6-07
<i>smells</i>	6-07
Draughts	4-04
Dry Rot	2-07, 3-07, 4-02
Dust control mopping	5-04

## E

ESB	7-01
ESB	
<i>main switch</i>	7-01
<i>supply</i>	7-01
Electrical installation	7-01
Electrical installation	
<i>breakdowns</i>	7-02
Escape lighting	7-04
External finishes	5-01
External finishes	
<i>blistering</i>	5-02
<i>cracking</i>	5-02
<i>fading</i>	5-03
<i>pattern staining</i>	5-03
<i>peeling</i>	5-02
<i>rusting</i>	5-03
External works	8-01
External works	
<i>edge failure</i>	8-02
<i>misalignment</i>	8-04
<i>potholes</i>	8-02
<i>surface breakdown</i>	8-03

**F**

Fire alarm	7-03
Fire detection	7-03
Fire doors	4-05
Fire doors	
<i>closers</i>	4-05
<i>intumescent strips</i>	4-05
<i>smoke seals</i>	4-05
Fire Safety Certificates	9-02
Flashings	
Flat	2-01
Flat roof	2-02
Floor finishes	3-10
Floors	3-01
Floors	
<i>cracking</i>	3-02
<i>DPC</i>	3-03
<i>DPM</i>	3-05
<i>dry rot</i>	3-07
<i>frost action</i>	3-08
<i>leaks</i>	3-03
<i>mastic seals</i>	3-04
<i>penetrating dampness</i>	3-02
<i>spalling</i>	3-08
<i>wet rot</i>	3-07
Fungicide	3-09, 4-02
Fuseboard	7-01

**G**

Gas leaks	6-03
Graffiti	5-09
Grants Scheme	1-01, App-01
Grassed areas	8-05
Grassed areas	
<i>ponding</i>	8-05
Grassed surfaces	8-01

**H**

Health and safety	9-03
Heating	6-01
Heating	
<i>boiler breakdown</i>	6-02

**I**

Improvement works	1-06
Internal finishes	5-01
Internal finishes	
<i>blistering</i>	5-02
<i>cracking</i>	5-02
<i>fading</i>	5-03
<i>patterning staining</i>	5-03
<i>peeling</i>	5-02
<i>rusting</i>	5-03
Ironmongery	4-06
Ivy growth	3-08

**L**

Leaks	2-03, 3-03, 3-10, 4-02, 6-06
Lichen growth	3-08
Linoleum	5-04

**M**

Maintenance	1-02
Maintenance	
<i>aims</i>	1-05
<i>definition</i>	1-02
<i>planned</i>	1-04
<i>priorities</i>	1-05
<i>unplanned</i>	1-04
Mould growth	3-08

**O**

Oil leaks	6-03
-----------	------

**P**

Paintwork	5-02
Paved surfaces	8-01
Paving slabs	8-03
Pitched roof	2-02
Planning permission	9-01
Plumbing	6-01
Prefabricated accommodation	2-11,
	3-11, 4-06, 5-10



# *Maintenance Checklists*

**The following is a series of checklists of items for periodic inspection as part of a systematic planned maintenance regime for primary schools. Boards of Management are urged to adopt these checklists as a model, modifying them appropriately to their individual school.**

The master checklists are divided into five categories (daily, weekly, six-monthly, annual and 5-to-7 yearly.) Boards of Management are exhorted to copy these lists and use them as a basis for maintenance inspections and activities, modifying them as necessary to suit their individual school premises. Use of these forms will assist in the development of a positive 'maintenance mentality' and allow for systematic management of the maintenance function.

Also included in this section is a master maintenance "To Do" list, which should be copied and used to record items requiring action noted during routine inspection.

Boards of Management should open and maintain a separate Maintenance File in which should be retained copies of all completed checklists, the master maintenance "To Do" list, and copies of documents relating to the school and its equipment ( e.g. "as built" drawings, equipment manuals and documents relating to any works carried on). It should be available for periodic inspection by staff of the Department of Education and Science.



## *Maintenance Checklists*

<b>Daily Maintenance Checklist</b>	<b>Date:</b>	<b>Done</b>		<b>Comments</b>
		<b>Initials</b>	<b>Date</b>	
<ul style="list-style-type: none"> <li>▼ Vacuum carpets in heavily trafficked areas, such as lobbies and corridors, with a rotary brush vacuum cleaner.</li>   <li>▼ Clean linoleum and vinyl flooring with a dust control mop.</li>   <li>▼ Check toilets, urinals, handbasins for blockages and leaks.</li>   <li>▼ Check heating system systems during heating seasons. Adjust, as necessary, to suit prevailing weather conditions.</li>   <li>▼ Check pipes in roof void during cold spells.</li>   <li>▼ Update Master maintenance "To Do" sheet as necessary. Add new items requiring action. "Sign Off" any actions completed today.</li> </ul>				

## *Maintenance Checklists*

<b>Weekly Maintenance Checklist</b>	<b>Week Ending Friday:</b>	<b>Done</b>		<b>Comments</b>
		<b>Initials</b>	<b>Date</b>	
<ul style="list-style-type: none"> <li>▼ Vacuum carpets not vacuumed daily (i.e. in less heavily trafficked areas, such as classrooms and staffrooms) using a rotary brush vacuum cleaner.</li>   <li>▼ Wash handbasins and sinks.</li>   <li>▼ Clean toilets and urinals.</li>   <li>▼ Check heating oil levels during the heating season.</li>   <li>▼ Cut grass during the growing season.</li>   <li>▼ Maintain shrubs and flowerbeds during the growing season.</li>   <li>▼ Carry out general "walk around" inspection of school and grounds. Note any items requiring action.</li>   <li>▼ Update Master maintenance "To Do" sheet as necessary. Add new items requiring action. "Sign Off" any actions completed today.</li> </ul>				

## *Maintenance Checklists*

<b>Six-Monthly Maintenance Checklist</b> <b>Date:</b>	<b>Done</b>		<b>Comments</b>
	<b>Initials</b>	<b>Date</b>	
<ul style="list-style-type: none"> <li>▼ Clean gutters.</li> <li>▼ Check rainwater outlets on flat roofs.</li> <li>▼ Clean rainwater downpipes.</li> <li>▼ Check ironmongery.</li> <li>▼ Clean windows.</li> <li>▼ Clean blinds.</li> <li>▼ Check all tables and chairs for damage to legs or tops, and repair, if necessary.</li> <li>▼ Check all school furniture for damage to castors, shelves, tops.</li> <li>▼ Scrub linoleum or vinyl flooring and reapply recommended protected covering.</li> <li>▼ Check external paving surfaces; replace or repair any damage immediately.</li> <li>▼ Check all gullies, access junctions and manholes for blockages.</li> <li>▼ Check septic tank, where present. If necessary, have tank desludged, preferably not during school hours. Desludging should be carried out by a competent contractor and rigorous safety procedures followed.</li> <li>▼ Cut hedges at start and end of growing season.</li> <li>▼ Check all toilet roll holders, towel rails, soap dispensers.</li> <li>▼ Check for vermin and deal with appropriately.</li> <li>▼ Update Master maintenance "To Do" sheet as necessary. Add new items requiring actions. "Sign Off" any actions completed today.</li> </ul>			

## *Maintenance Checklists*

Annual Maintenance Checklist (Page 1 of 2) Date:	Done		Comments
	Initials	Date	
<ul style="list-style-type: none"> <li>▼ Check roof for slipped or broken or missing slates or tiles.</li> <li>▼ Check the roof for defective flashing.</li> <li>▼ Check the operation of ball valves in water tanks in the roof void.</li> <li>▼ Check all accessible timbers for signs of dry rot - dampness, mould or fungus growth.</li> <li>▼ Check all external timbers for signs of decay - wet rot.</li> <li>▼ Check all accessible timbers for signs of woodworm.</li> <li>▼ Areas affected with condensation should be treated with a fungicidal wash.</li> <li>▼ Check surrounds to window and door frames for signs of dampness.</li> <li>▼ Check timber/concrete floors for signs of dampness and staining on walls.</li> <li>▼ Control climbing plants; keep away from window and door frames and down from eaves level.</li> <li>▼ Check the putty in doors and windows.</li> <li>▼ Clean carpets with high performance hot water extraction equipment.</li> <li>▼ Have septic tank desludged.</li> </ul>			

## *Maintenance Checklists*

<b>Annual Maintenance Checklist (Page 2 of 2) Date:</b>	<b>Done</b>		<b>Comments</b>
	<b>Initials</b>	<b>Date</b>	
<ul style="list-style-type: none"> <li>▼ Check all electrical appliances, e.g. radios, overhead projectors, photocopiers, hand-driers. If in doubt, have inspected by suitably qualified person.</li>   <li>▼ Check cloakroom fixtures: rails, benches, hanging fixtures. Repair/renew damage or defects as appropriate.</li>   <li>▼ Check any trees on school grounds for problems with overhanging branches or threat to power lines.</li>   <li>▼ Repair/replace as appropriate damaged or lifting tiles or floor coverings.</li>   <li>▼ Check goalposts, crossbars, basketball nets, backboards and roofs. and all other major items of P.E. and sports equipment.</li>   <li>▼ Check door closers and adjust if necessary.</li>   <li>▼ Renew chalkboard surfaces.</li>   <li>▼ Check all boundary walls, hedges, fences for damage or breaks and repair as necessary.</li>   <li>▼ Update Master maintenance "To Do" sheet as necessary. Add new items requiring action. "Sign Off" any actions completed.</li> </ul>			

## *Maintenance Checklists*

<b>Every 5 - 7 Years Maintenance Checklist Date:</b>	<b>Done</b>		<b>Comments</b>
	<b>Initials</b>	<b>Date</b>	
<ul style="list-style-type: none"> <li>▼ Painting Internally and externally</li>   <li>▼ Update Master maintenance "To Do" sheet as necessary. Add new items requiring actions. "Sign Off" any actions completed.</li> </ul>			