

# Designing your WORKSHOP

MICHAEL BIRD concludes his report on the ideal golf course workshop, with practical tips on what to build and how to build it

A well-designed, properly equipped and efficiently managed workshop will enable the majority of machinery service, repair and maintenance tasks to be carried out without the need to call in the supplier or repair specialist. This requirement is equally as important on a golf course as it is in any industry where work must be completed outside normal hours. Punctures may need to be repaired, frames welded and cutting cylinders re-ground at a time of the day when the dealer's front door is firmly locked and its service engineers are literally still only dreaming about their breakfast.

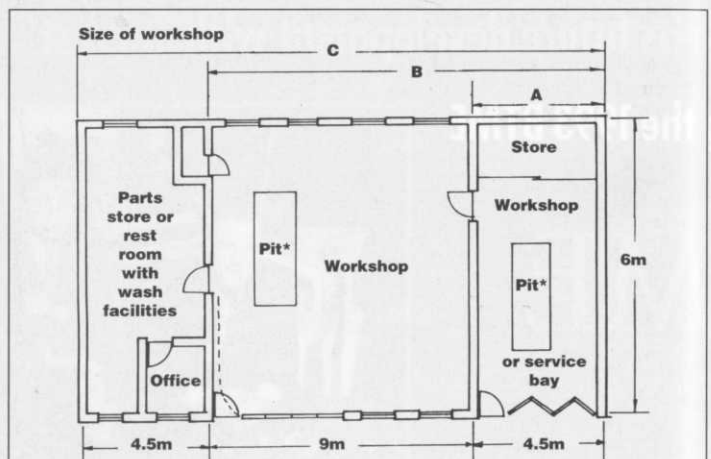
As the demand for golf grows, with more and more players prepared to start their round the moment the sun clears the horizon, the pressure on those responsible for machinery maintenance is going to increase at both ends of the day. For that reason, the workshop building needs to be carefully planned and managed. The first step in designing any new building is to establish the required finished size. In the case of a workshop, this can only be determined by sitting down and deciding on the number and the type of machines which will require access and what may need to be done to them when inside.

For example, it would be illogical to make an entrance sufficiently high to allow access by a tractor and back-acter if the boom cannot be extended fully when the equipment is within the building. ADAS mechanisation consultant, Warner Hall, recommends that golf clubs think in terms of 15ft (4.5m) bays when planning a new workshop. "A single bay building measuring 15ft wide by

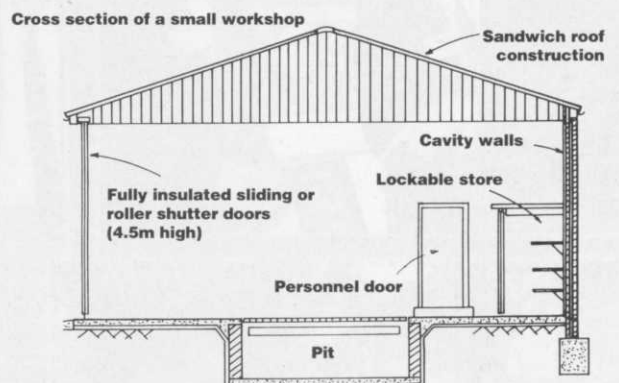
30ft deep is just about the simplest design available and this will be suitable for storing and servicing equipment used for, say, a golf driving range," he comments. "For an 18 hole golf course, a building measuring 45ft wide by 30ft deep by 15ft to eaves will fulfil virtually all requirements".

Hall advocates a minimum height to eaves of 15ft in all workshop buildings and sufficient floor space to allow at least 1m clear around any machine being serviced or repaired. The site selected for the workshop should be level with sufficient space for an external concrete apron running the full length of the building. Avoid areas with overhanging cables, although it is advisable to be within easy reach of mains water and power. For maximum security, the workshop should be situated as close as possible to occupied buildings.

To make full use of the outside walls, an open or lockable lean-to can be built at the side or rear for storage of machines, fertilisers or top dressings. If an office or rest room are required, Hall recommends adding a further 15ft by 30ft bay which can be divided into suitable rooms along its length. "This part of the building should be kept completely separate from the workshop area," he stresses. "There are good reasons for not having a personnel door in the wall dividing the workshop from any office or restroom. Easy access will encourage food being carried into the workshop and tools, overalls and dirty boots being taken into the rest area." To allow the free movement of machinery in and out of the building, every 15ft bay should have a separate entrance with its own



Three basic sizes of workshop are recommended for golf courses. (A) is the minimum advised, measuring 15ft (4.5m) wide by 6m (20ft) deep, and suitable for servicing small numbers of machines, for example on a golf driving range. Covering three 15ft bays, (B) will meet virtually all the requirements of an 18 hole course. For larger courses or where office, restroom or parts store facilities are needed, add a further 15ft bay (C). \*Pit not essential



New workshops should be built around a timber, steel or concrete portal frame complying with BS5502. A fully insulated roof and double skinned roof lights will help reduce heating costs and condensation. All doors should be lockable with the minimum number of key holders.

lockable door. For maximum security, safety and convenience, a steel roller shutter is the ideal answer. The doors should have steel frames and can include a personnel entrance to minimise heat loss when moving in and out

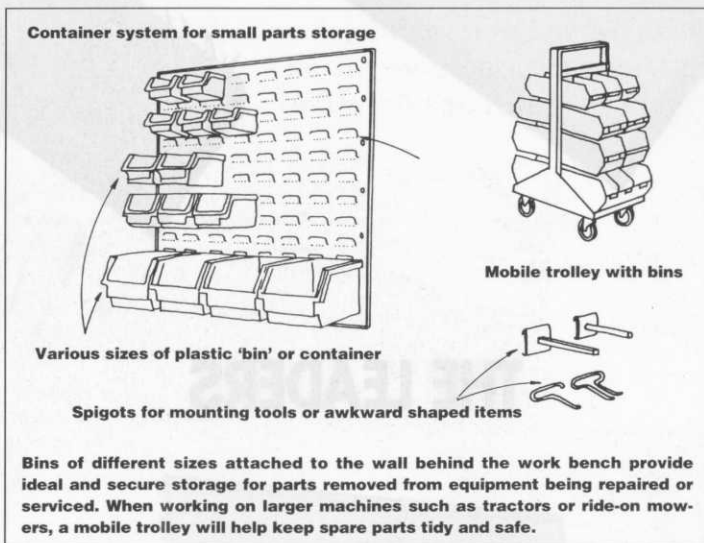
of the building during winter. "It is important to liaise with the local fire officer when planning staff entries and exits from buildings," comments Hall. "It is quite common for personnel doors to be positioned at the side or

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12 → rear of the building, but the final design must satisfy both the planners and the building regulations.”

For reasons of security, it is advisable not to have any windows in the building, apart from translucent corrugated or flat sheets in the roof over each bay. All calculations on lighting should therefore ignore the presence of any natural light. The recommended level of artificial light for building such as a workshop is 100 lux, and this can be achieved by allowing 10 watts for every square metre of floor. However, experience has shown that one can never have too much light, especially when working on small, detailed and complex equipment.

So Hall advises having six 5ft fluorescent tubes in every 30ft deep by 15ft wide bay, giving a total output of 1.5kW – three times the recommended level. Even then, ‘wander’ lights will still be necessary for certain tasks. If windows have to be fitted, they should be positioned at least 5ft (1.5m) above ground level and have either wire-reinforced glass or protection by steel bars on the outside. Because lighting is so important, provision should be made to connect a stand-by generator into the electrical circuitry to maintain illumination, and to power small tools, in the event of a mains failure. For maximum working efficiency, the building should be warm but not hot. A temperature close to 60degF (16degC) will prove comfortable, and this should be supported by draught-free doors and well-insulated walls and roof, helping also to prevent condensation. The greatest heat loss from any building is normally through its ventilating air, so it is important to ensure that any extraction fans are not positioned adjacent to the heat source. Instead, they need to be on the opposite side of the building to encourage the movement of warm air across the work place. Heating is best provided by a gas or oil-fired boiler heating water which is carried to air radiators, with the warmed air entering the workshop at high level. The same boiler, carefully sized, can be used also to heat radiators



in adjacent offices and restroom, as well as hot water for washing. For obvious reasons, Hall does not recommend the use of portable oil-burning heaters in enclosed buildings due to the danger and unpleasant atmosphere created by the products of combustion within the building. Having planned the building and its illumination, ventilation and heating, one will need to consider other services.

In common with lighting, one can never have too many electrical sockets. These need to be positioned around the walls and on any building stanchions to keep lead lengths to a minimum. Meters and fuse boxes should be housed in lockable cabinets and the circuit should include an earth leakage trip to enable regular testing. Most sockets will be of 240 volts, 13 amp capacity – although at least one 30 amp outlet will be needed for welding equipment, with three phase supply recommended for both welders and compressors. A compressor has become an essential item of workshop equipment, used to power air jetting lines, tyre gauges and a host of hand tools. Ideally, the compressor should be housed outside the workshop in a weather-proof, yet well-ventilated area and linked to the various service points by a pipeline fixed to the wall within the building. It is vital that any fixed compressor unit is properly designed, installed and commissioned to ensure the supply of clean, moist-free air of suffi-

cient volume and pressure to the delivery points.

Useful advice for anyone considering the installation of fixed equipment in a workshop is to look at how other professional organisations go about the job. Tyre specialists or a service centre run by one of the major car accessory companies all have well-equipped, sensibly laid-out buildings able to provide good ideas. The workshop bench is a key area. The more benches there are, the more clutter there is likely to be. Hall recommends that each person in the building should have just one 6ft long by 30in wide bench which is their sole responsibility. Only where there is a high proportion of bench work should additional space be provided. Ideally, benches should be attached to the rear wall of the building opposite the main doors, and also screwed securely to the floor. A vice is the only item of fixed equipment which should be fitted to the bench. To avoid trailing leads, position power sockets and air line outlets beneath the front face of the bench. A further useful addition is an adjustable spotlight mounted at the rear of the bench. The back wall can be used also to support slotted racking to carry hand and power tools as well as labelled bins. These will prove invaluable for the storage of small components when stripping down a machine. Larger items can be placed on a shelf beneath the

bench. Building and store security is very important and the number of key holders should be kept to a minimum. A good maxim is to lock the building when empty of people. Apart from the safety aspects, it is all too easy for someone to wander in and ‘borrow’ a spanner, linch pin or grease gun, forgetting to return it until weeks later – and sometimes never.

All well-run workshops will need an outside wash-down area where machines can be cleaned of grass and dirt. Any water contaminated with oil, fuel or grease will need a separate oil trap, as required by the National Rivers Authority. Servicing of machines must be carried out in accordance with the manufacturers’ schedules. It is vital, therefore, that the person responsible for maintaining the machines is kept informed by operators of impending service requirements and any problems which may need attending to. If the operator also looks after his or her ‘own’ machine, then its service needs are usually dealt with promptly. Problems can arise, however, with equipment which has no specific operator or user. Not only can service intervals become greatly extended, but, in the case of hand tools, parts can go missing or become worn or broken without any remedial action being taken. The answer, says Warner Hall, is to allocate every new item of course machinery or equipment to a member of the maintenance staff. “That way, nothing should get put away if it needs attention or servicing,” he points out. “Most people react well to responsibility. Even if they do not use the item of equipment themselves, they will make sure that it is clean, in good condition and returned to where it is stored at the end of each day.” Although each club will wish to develop its own system, Hall suggests that every person is given their own ‘log book’ which lists the machines they are responsible for, their daily maintenance requirements and a record of servicing, repairs and spare parts used. The end result will be better maintained equipment leading to reduced servicing costs, downtime and aggravation.