Practical Restoration Handbook

Demolition and Scaffolding

by

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CONTENTS

1. INTRODUCTION

1.1 This chapter of the Practical Restoration Handbook deals with two subjects often associated together – demolition (especially using powered breakers) and scaffolding.

1.2 Health and Safety matters directly appropriate to the subject are dealt with here but the overall subject of Health and Safety is considered in depth in the PRH Chapter "Health and Safety (Sections 1–4)". It is strongly recommended that this is read before any demolition or scaffolding is undertaken.

1.3 A comprehensive text on demolition and scaffolding would be very large indeed. Demolition techniques and skills take many years to learn. In addition the wide range of jobs and conditions that are encountered on restoration sites across the country mean that the planning and carrying out of demolition is very specific. For this reason only golden rules and generalisations are given here, together with tips that have been found applicable on many sites.

1.4 Please note that throughout this chapter the term **breaker** is used, although it is accepted that there are many variations (Kango, Pacebreaker, jack hammer, etc.) from site to site.

1.5 Similarly scaffolding is not only site specific but has considerable legislation and rules associated with it. The design of complex scaffolding is best left to appropriately trained individuals and so this chapter again seeks to give only the rules for regular scaffolding. It is hoped that this will enable the reader to:

- design and erect simple scaffolding,
- erect more complex scaffolding to an already prepared design and,
- identify defects within scaffolds even if professionally erected.

1.6 It should also give the visiting volunteer an ability to assess existing scaffolding he encounters and ensure he does not overload it's capacity. Note that only "access" scaffolding is discussed here, the subject of "support" scaffolding is not included as this is a separate subject best left to the design engineers. Similarly only conventional "tube and clamp" scaffolding is discussed, where "quick fit" towers are used then the reader is strongly advised to take the time to read the manufacturers "recommendations for use" and adhere to them. The supplier has a "duty of care" to provide these recommendations. (HSE guidance is available on Tower Scaffolds, see Section 4 Recommended reading).

2. DEMOLITION

2.1 Health & Safety

2.1.1 There are Health and Safety considerations that must be in place before and whilst the work is being carried out, be it demolition by hand or breaker. These should be an integral part of the planning process not just standard clauses tacked on the end. Two elements should be considered: firstly the job itself should be designed to minimise the risks to the breaker operator and also to everyone else on the site, secondly the operator should be given adequate protection to ensure he can carry out the job safely.

2.1.2 Demolition should be a controlled process. This means generating the rubble at a speed that it can be dealt with.

2.1.3 The rules covering eye protection are quite simple – if an eye injury can occur then adequate eye protection must be worn.

2.1.4 Gloves should be worn on any demolition site, as protection against grazes and dirt and to ease fatigue.

2.1.5 Where the job may be expected to generate significant levels of dust then respiratory protection must be provided. Normally this just takes the form of dust masks, however, in extreme situations breathing apparatus may be necessary. When providing dust masks check that it is adequate for the dust you expect – there are many different grades for different types and sizes of particulates. Wetting the material down may help keep dust under control but ensure that it does not make the site slippery or pose a risk with any electricity.

2.1.6 Other items of Personal Protective Equipment (PPE) would include safety boots and a hard hat (both essential on any demolition job).

2.1.7 As a breaker cuts into a hard material, such as concrete, bits of the material can be thrown up over quite a wide area – you may therefore need to consider PPE for those working nearby to the job, and possibly take steps to protect the public as well.

2.1.8 One point that must be clearly stressed to all about to partake demolition on waterway sites – generally there are only two types of demolition that are undertaken: demolishing very old brickwork from a time when quality control was unheard of and demolishing concrete blocks etc. that were put in a few decades ago where a cheap fix was required. This means that the waterway structures are very variable to say the least. Sections of wall that look very solid may well not be tied in the overall structure and collapse with a single blow. Retaining walls may well have only been supported by the water in the channel and so when you de-water to re-patch the wall. . .

2.1.9 The message therefore is that it is essential to have someone competent to inspect the job before demolition starts and to instruct all those involved in the demolition on what to look out for. Cracks, etc. should be marked with chalk, or spray paint where chalk will wash off, and inspected regularly.

2.1.10 A further complication is that often it is only the area around the waterline that has deteriorated and so partial demolition will be required. An example of this is a lock chamber wall that requires demolition of the section around the low-level waterline. It is obviously dangerous to demolish a section of wall with the rest of the wall still on top of it. Where there is any risk of collapse the job should be assessed by a competent person and advice on propping and supporting the structure given.

2.2 Planning a Demolition Project

2.2.1 Firstly the question needs to be asked – "Does it need to come down?" Can the work be achieved by underpinning, anchoring, etc? This is probably the realm of qualified Engineers, however, some

guidance is given in PRH "Bricklaying". Once it has been established that demolition is necessary then it is important to think the whole job through. Consideration needs to be given to:

- Timing to minimise interference from other jobs on site and the public
- Technique to be used
- Equipment to be used
- Any special training required
- PPE
- Additional props or support during the demolition
- Safety fencing
- Is the structure reinforced in any way? (If steel reinforced then boltcroppers or a cutting saw will be required)
- Access
- Pollution (especially noise and dust)
- Fuel for equipment
- Recruiting extra volunteers (such as visiting groups) to reduce project duration
- Time of year
- Removal of rubble from the immediate area during demolition
- Storage of rubble
- Removal of rubble off site (possible reuse of rubble for building up towpaths, etc.)

2.2.2 Any boundaries or limits to the demolition should be clearly marked.

2.3 Demolition by Hand

2.3.1 This doesn't actually mean "by hand" but refers to demolition using hand tools.

2.3.2 Demolition using hand tools can be very efficient as it requires far less set-up time and so for small "easy" sections, or sections where the utmost care must be taken (e.g. if it is hoped to reclaim the bricks) it may well be the sensible option.

2.3.3 Always use chisels with hand guards and ensure that any mushroomed heads are ground down. The use of hammers and wrecking bars is also discussed in PRH "Hand Tools". Don't extend wrecking bars by sliding scaffold tubes over them. Pick the hammer you feel comfortable with, they come in lots of sizes; you may well be more effective with a 7lb sledgehammer than a 14lb one or a 2lb club hammer rather than a 4lb one.

2.3.4 The usual technique is the same as with a powered breaker – work along the weaknesses of the section to be demolished. This usually means for brickwork that it is best to cut along the mortar joints rather than attempt to cut through the brick itself. Always cut away easily handleable sections – while it may look impressive to lever a half tonne lump of masonry out of a wall what are you going to do with it then?

2.3.5 Even the most skilled demolition using breakers will require some element of cleaning up using hand tools before construction can begin.

2.4 Why Use Breakers?

2.4.1 Breakers cost money, they require maintenance and training, they are easy to break (especially if misused) and are often easy targets for thieves. Given this it seems easiest to stick to hand-tools. Demolition, for example, can be done quite successfully with the use of hammers and chisels. Brickwork can be cut out and foundations excavated through hard clay all with the use of hand tools. However, the time spent by your volunteers should be used to the best advantage and it is often the case that powered tools speed up the job.

2.4.2 There are also Health and Safety considerations; the use of a sledge hammer and wrecking bar may lead to a less controlled demolition and a tired, less careful navvy (outbreaks of excessively dangerous testosterone may also result). To complete the demolition in one day means that you don't have to spend the weekends erecting safety fences and spend the midweek worrying about whether these precautions have been breached.

2.4.3 Finally there is nothing quite so demoralising for volunteers as a long tedious demolition that runs on for seemingly endless weekends.

2.4.4 Given this it can be seen that it may well make sense to use breakers. Before we can continue with a discussion on types of breakers and techniques it is necessary to consider additional Health and Safety points.

2.4.5 One mistake often made is to say that these considerations only really apply to people using breakers day after day. Whilst "duration of exposure" is a valid consideration it does not mean that because you are an office worker who only uses the breaker for a Saturday morning you do not need to consider all aspects of safe use. It should be noted that there is a risk and it is everyone's responsibility to reduce the risk.

2.4.6 Certainly on longer projects (such as a week long Canal Camp) a careful check should be kept on the individuals hours of use. It may be necessary to limit the time people actually use breakers.

2.4.7 The most obvious risk is that of excessive noise levels, from the breaker, the power source and the job itself. When a breaker is being operated then noise levels will almost certainly rise above the level that can cause damage to hearing. This is discussed in PRH "Health and Safety – Section 1", however, as a rule of thumb, if a person needs to raise their voice above a normal talking level to make himself heard then the background noise level is too high and hearing protection should be worn. The person using the breaker is most at risk, but also at risk are those people on the site within the area. It is a good idea to have ear defenders available for those carrying out the work and ear plugs for those on nearby parts of the site as these are more comfortable and less restricting than ear defenders.

2.4.8 Additionally you also need to consider your neighbours – will they appreciate being woken up at 9am on a Sunday morning by the sound of a demolition gang?

2.4.9 With breakers there is an additional risk as prolonged use of breakers can cause white finger syndrome. Gloves have been specifically designed to help reduce the risk of white finger and these are heavily padded in the palm and across the base of the fingers. It is unlikely that a volunteer will develop the syndrome as it is most commonly associated with miners and people involved with the use of breakers on a daily basis over a period of time. However, the risk of sprains and aches must be emphasised to anyone using breakers and if aches occur then a rest should be compulsory. This rest may well be of the order of days, indeed some people may find that they cannot operate breakers without problems developing and these people should obviously be given other jobs.

2.4.10 One less obvious risk to Health and Safety is the consideration of the actual weight of the breaker and the manual handling of the breaker. There is no point in using a high powered breaker if you do not have volunteers who can lift it or control it. A volunteer must be able to control the breaker. This leads to a consideration of which breaker to use.

2.5 Types of Breaker

2.5.1 Breakers have evolved over many years resulting in a vast selection of breakers, each designed for specific tasks. Power to the breaker needs to be the first consideration. Breakers can be electric (110 or 240 volts), hydraulic and pneumatic and specific site conditions and the task to be completed will determine the choice. Obviously, if possible, it makes sense to use whatever power source you use on the rest of the site but do not fall for the "well we already have a generator so we'll use an electric one" argument. If the job deserves a hydraulic breaker then you should hire one in. The relative merits of the various power sources are discussed in detail in PRH "Plant" but the main advantages and disadvantages are given here.

2.5.2 One point that must be made is that whatever the choice of power source everyone on site should be aware of the procedure to switch off (or make safe) the power source. It is too late to try and instruct them when a problem has occurred.

2.5.3 **Electric breakers** are available throughout the power range from small hand-held breakers often doubling up as hammer drills through medium breakers, e.g. a Kango 950, through to road breakers. These are the most common breaker used in canal restoration as the small and medium breakers are lightweight and easy to use particularly when cutting out using the tool horizontally. They are readily available to hire from small hire shops. Owing to the extreme conditions encountered on most restoration sites the author strongly recommends that 240v breakers are not used by volunteers on restoration sites.

2.5.4 The electric cable is much easier to handle than a heavy air or oil hose. One important point is to always ensure that the cable supplying the breaker is sufficient to cope. Too lightweight a cable will create a voltage drop which means the breaker will be running on lower volts than it is meant to. This actually causes the breaker to overrun and it will overheat. A 110 volt Kango running on 100 volts will burn out within an hour!

2.5.5 The most common accident does not actually involve the breaker but the electric cables. Don't let the cables dangle unsupported, always ensure any junction boxes are secured out of harms way and keep the connectors clean and dry. Don't let rubble build up on top of the cable. If you suspect a cable is damaged then switch off the power, swap it and mark it up as faulty.

2.5.6 **Hydraulic breakers** tend to be classed as heavy breakers. This particular class of breaker is often referred to as a "Pacebreaker" (named after the leading manufacturer) and consists of a small power pack, usually on wheels, with two hydraulic hoses given flow and return hydraulic oil to the breaker. Because it is relatively small and self-contained it can be used on remote parts of the site although it is at least a two-man job to manoeuvre it. The hoses are often only approx. 4m long and are usually connected by quick release fittings and it is important to keep these clean.

2.5.7 **Air breakers** are the most powerful of the hand held variety and are usually powered by a large trailer mounted compressor. These are heavy usually requiring a dumper to move it around a site. They also require considerable discipline in their operation to ensure that the quick release couplings (usually known as "claw" or "bayonet") are not uncoupled while there is residual pressure in the hoses. The air is at a very high pressure and can easily blow contaminants such as oil and water under the skin where there is a serious risk to health. Ensuring that there is agreed procedure to release pressure before moving the equipment or rearranging the hoses (and that everyone involved knows this procedure) is the key to safe operation of air breakers.

2.5.8 **Other Breakers**. All the breakers considered so far have been hand-held. Also available are breakers that fit to an excavator. Most commonly known as "peckers" these peckers are heavy duty and take away the strain of using the breaker. Powered by either the machines hydraulic system or by a remote source these breakers can become a viable proposition if heavy demolition work is to be undertaken. Fitting these breakers is generally specialist and obviously you need to be competent with the excavator as well as the breaker.

2.6 Types of Tool

2.6.1 The tool referred to is the working end of the breaker. Over the years many different configurations have been developed. Each of these is for specific jobs:

- Chisel – cutting out of brickwork
- Spike – cutting into and breaking up concrete
- Bolster – cutting up brickwork and dressing edges
- Tarmac cutter – cutting straight cuts into tarmac before excavating
- Clay spade – cutting of clay when hand digging

2.6.2 The tool should be sharp, a blunt chisel or spike will make the job harder. If you are hiring the breaker then always check the tools and ask for at least one sharp one before you leave the shop. When hiring a breaker for the weekend, where the shop will be closed, the author suggests three tools is the minimum required.

2.7 Working Methods and Tips

2.7.1 The first consideration when working with breakers has to be Health & Safety. From this will come the correct working method. The two most common mistakes with regard to demolition are volunteers interfering with the access arrangements (i.e. removing scaffolding braces to get at a section of wall) and failing to keep the demolition area clear and "losing" their power cables, hoses, etc under rubble. The most common accident when working with breakers particularly on

scaffolding is tripping on rubble. A stiff broom and a shovel should be considered essential equipment when using a breaker. It is important to keep both the work and the area clear.

2.7.2 You do not have to be a gorilla to be successful at demolition. Skill, intelligence and the right choice of equipment can mean that even the most lightweight of volunteers can make good progress.

2.7.3 It is usual to work from the top of a structure down. Everyone should be clearly briefed as to the technique and in addition told what to look out for such as shifts or cracks appearing etc.

2.7.4 Especially be aware about working in or near water. Dropping a breaker into water whether air or electrically powered is not good. If it is an electrical one then switch off the power source and return the breaker for repair.

2.7.5 The usual technique for demolishing brickwork is the same as for demolition by hand: work along the mortar joints easing the bricks apart cleanly. This will be easier going and may allow some bricks to be reused. For concrete it is best to create a weakness by cutting along a line to split the slab into small handleable sections, rather than just demolishing the block haphazardly. For concrete a spike will tend to slip off less than a chisel-ended tool would.

2.7.6 Breakers are designed to break up the material, but if used incorrectly they can drill holes in it. When cutting up a slab or similar care should be taken to ensure that the tool does not become embedded in. This can be achieved by allowing the tool to cut in a short way then lift it clear and start at another point adjacent.

2.7.7 Do not be afraid to put down the breaker and pick up a hammer and chisel if it is more appropriate.

2.7.8 Generally speaking for every person operating a breaker you will need someone operating a shovel to clear the rubble generated. It is best to schedule the "clearers" and the "demolishers" so they work in "antiphase" i.e. the demolishers work for 10 minutes and then the clearers shovel up for 10 mins. This gives everyone regular breaks and is especially important where the clearers are working below the demolishers (for example when a chamber wall is demolished from a scaffolding).

2.7.9 With breakers the golden rule is to let the breaker do the work. The breaker is designed to do the task with the minimum of effort on the part of the operator. It is good practice to hold the breaker firmly without exerting undue pressure on the tool. Leaning on the breaker does not improve the performance to any great extent and simply tires the user out more readily.

2.7.10 Never use the breaker as a lever, it will drastically increase the chance of the tool breaking (which usually results in the breaker landing on your foot).

2.7.11 The handles on a breaker are often adjustable, set them so they are comfortable and you can manoeuvre the breaker easily.

2.7.12 Keep the area clear!

2.7.13 If you get the tool stuck then switch off the power, disconnect the tool and fit another one so that you can dig out the stuck one. This is one reason for always hiring a breaker with at least two tools.

2.7.14 When using breakers the operator can become tired very quickly it is therefore very important that breaks from the work are frequent. During breaks the breaker should be stored temporarily in a safe position where it is unlikely to fall over or become excessively dirty. The break from the noise is just as important as any other break so turn the power source off during the break if possible.

2.7.15 When working with pneumatic breakers extra care should be taken as ice can build up on the air exhaust from the tool. This ice should be removed periodically as required. It is also important to ensure that air hoses do not run through or droop into water.

3. SCAFFOLDING

3.0.1 It takes years to learn the skill of scaffolding. This chapter should hopefully enable those reading to have a clearer view of what elements go to make up a scaffold that is safe to use.

3.0.2 All scaffolds and working platforms should be properly constructed to provide adequate working space.

3.0.3 No scaffold may be erected, modified or dismantled, except under the supervision of an experienced and competent person, and the competent person before use should inspect all materials. The recognised indication of training in a scaffolder is the scaffolders record card. This is a scheme run by the CITB where scaffolders are grouped into three categories – trainee, basic and advanced. Those who work on access scaffolding less than 5m high are at present exempt from the scheme.

3.0.4 Care should be taken when handling scaffolding. Boards and tubes can be heavy and awkward to carry. No volunteer should lift a weight that is beyond their capabilities or above 25Kg, whichever is the lower. Fittings and clips should be passed and never thrown. Volunteers should check there are no power cables close to where they intend to erect or handle scaffolding. Volunteers involved with the construction, alteration or dismantling of scaffolds should be made aware of the dangers involved with these activities.

3.1 Planning a Scaffolding Project

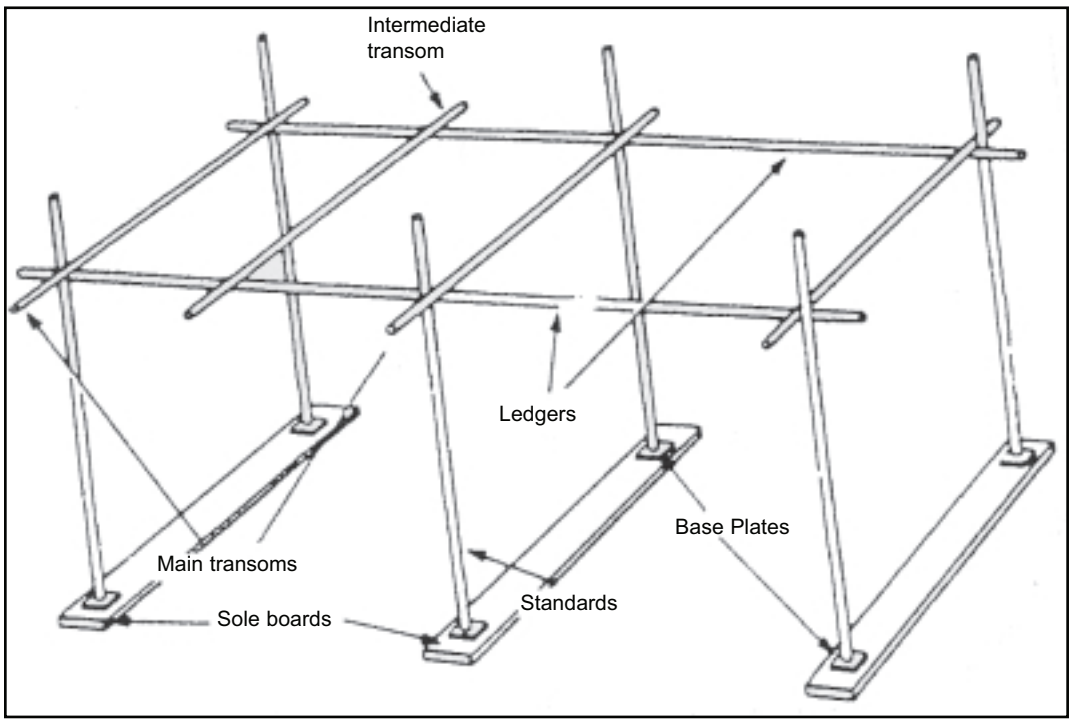
3.1.1 Before any scaffold can be built questions need to be asked.

- What is the scaffold for?
- What type of scaffolding is to be used?
- Where will the access to the scaffold be?
- What will the scaffold stand on?
- What materials, if any, are to be stored on the scaffold?
- How will the scaffold be secured in position?

3.1.2 Scaffolding should be properly planned to ensure that:

- It meets the working requirements and is designed to carry necessary loadings
- Sufficient materials are available
- It complies with the requirements of the Construction (Working Places) regulations 1996
- Members of the public are not put at risk

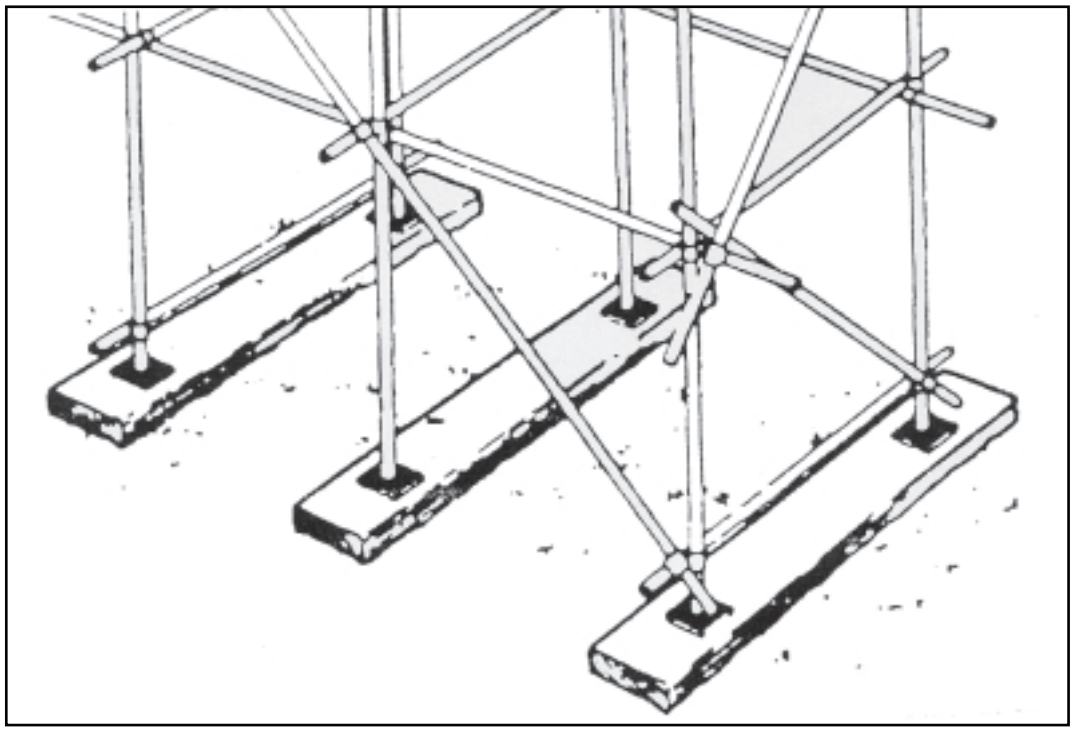
3.2 Basic Scaffolding Components



3.2.1 Tubes and fittings must comply with B.S.1139 part 1. The tube ends must be cut square. The tubes must be free from bends, corrosion, de-lamination or splits. The threads on fittings should not be worn. The bolt heads should not be damaged and fittings should be free from excessive oil or grease, which might reduce the friction grip.

3.2.2 Scaffold boards should comply to B.S.2482 and should not be split, warped, badly worn or treated in such a way as to conceal defects, i.e. by painting.

3.2.3 Scaffolding needs to be sited on a good foundation which will be strong enough to disperse the load of the scaffold as well as people working and any materials. Standards may be placed directly on a suitably strong foundation, however it is advisable to use 75mm x 75mm steel base plates (3' x 3'). On surfaces less suitable sole plates should be used. If the sole plate is made from timber it must not be less than 35mm thick (1.5'). The area of the sole plate under the standard is dependant on the ground. For hard ground the sole plate area should not be less than 1000cm^2 with a minimum dimension of 225mm.



3.3 Standards

Standards should be:

- Fitted vertically or inclined slightly towards the structure
- Spaced in such a way as to give adequate support
- Be on a base plate, or on a base plate and sole board, to prevent displacement
- Near to ledgers
- Fitted to have any joints staggered between bays

3.4 Ledgers

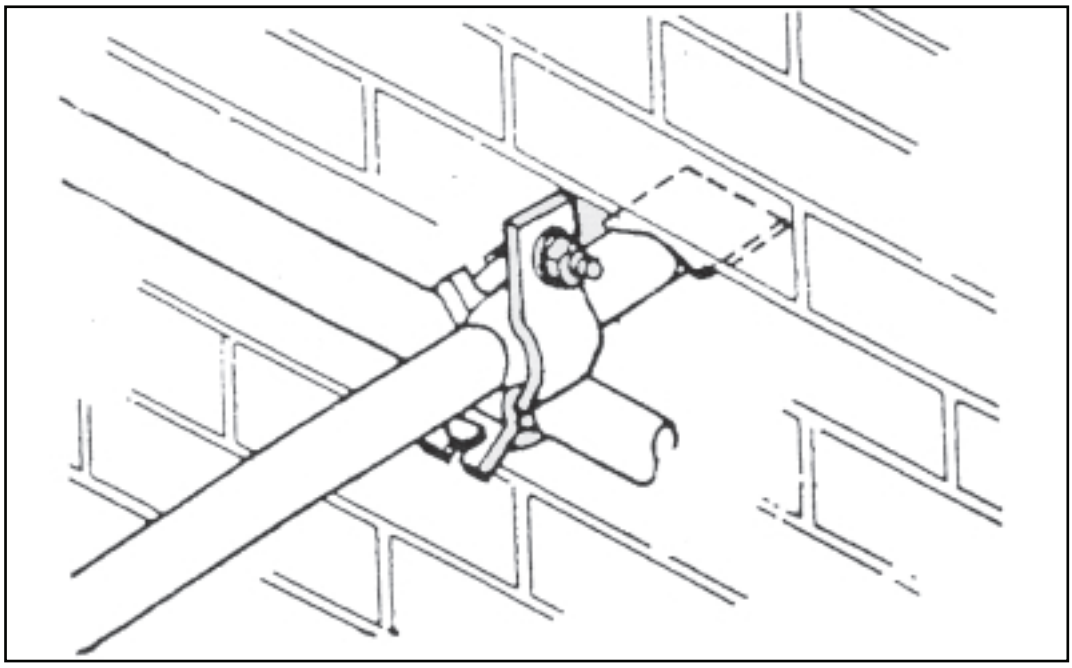
Ledgers should be

- Horizontal
- Securely fixed to inside of standards with right-angled load bearing couplers
- Fitted in such a way that joints are staggered between bays

3.5 Putlogs and Transoms

3.5.1 **Putlogs and Transoms should be**

- Horizontal
- Securely fixed to ledgers or standards with right-angled or putlog couplers
- Supported with flattened end placed right into the mortar bed joint of brickwork
- Putlogs should be approximately 75mm long.



3.5.2 The spacing for putlogs and transoms is determined by the thickness of the boards used. For boards 38mm thick the maximum spacing is 1.5m, for 50mm the spacing is 2.6m and for 63mm 3.5m is the maximum. Consideration must be given to the overall bay length. The maximum bay length is dependent on the width of the scaffold, this in turn is dependent on the type of use. B.S.5973 covers this in detail but basically:

Very light duty	2.7m Max
Light duty	2.4m Max
General purpose	2.1m Max
Heavy duty	2.0m Max
Special duty	1.8m Max

3.5.3 Putlogs and transoms used for non-boarded lifts should be fixed to either the standards with right-angled couplers or to the ledgers with putlog couplers and must be within 300mm of the ledger and standard connection.

3.5.4 The length of the putlog or transom will depend upon the scaffold use. In any eventuality the ends of the putlogs or transoms should not project an unnecessary distance outwards. The width of a scaffold deck is often referred to by the number of boards. For example:

For access and gangway runs	2 boards
Working platforms for men without materials or for passage of materials	3 boards
For men and materials	4 boards
For carrying trestles or other similar higher platforms	5 boards

Scaffolds wider than 5 boards should be specially designed

3.6 Ledger Bracing

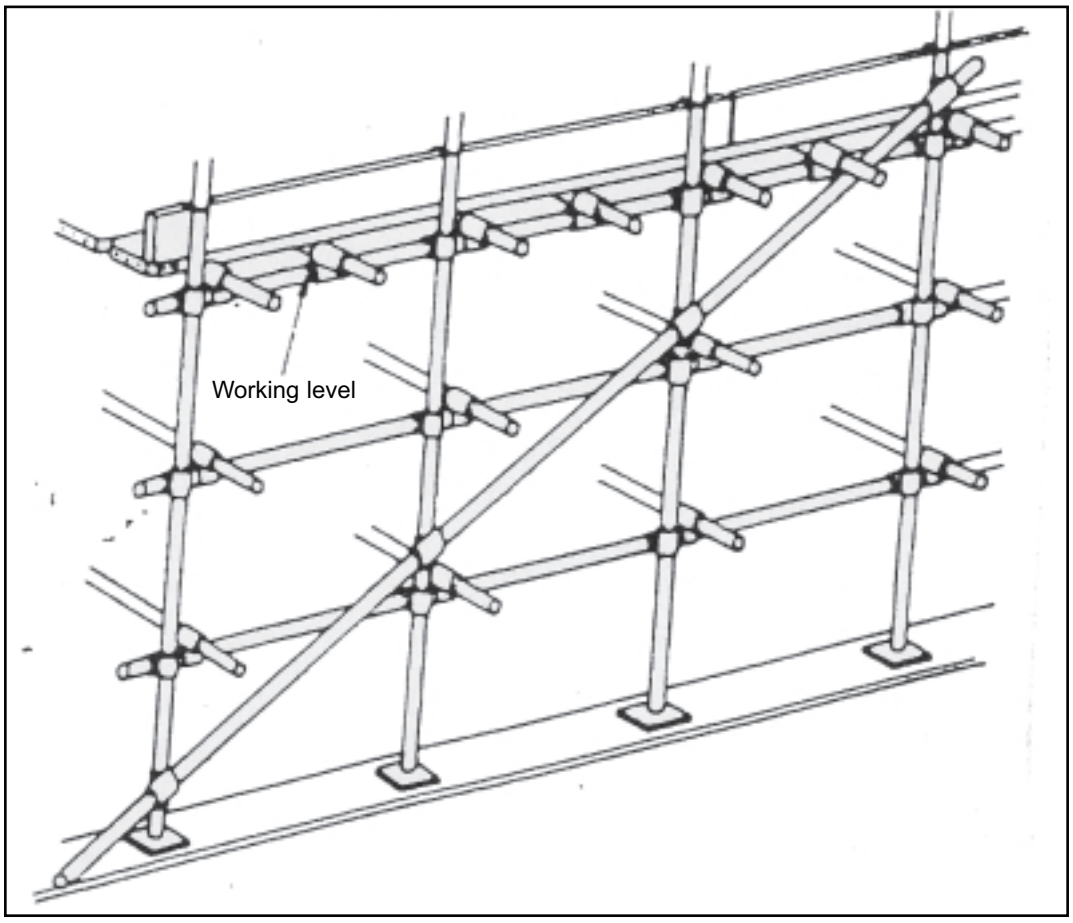
3.6.1 **Ledger bracing** should be fitted on alternative pairs of standards except where the width of the bays are 1.5m or less in which case they should be fitted on every third pair.

3.6.2 Ledger bracing should be fitted:

- To ledgers or standards using load bearing fittings
- To the full height of the scaffold
- To start at the base level

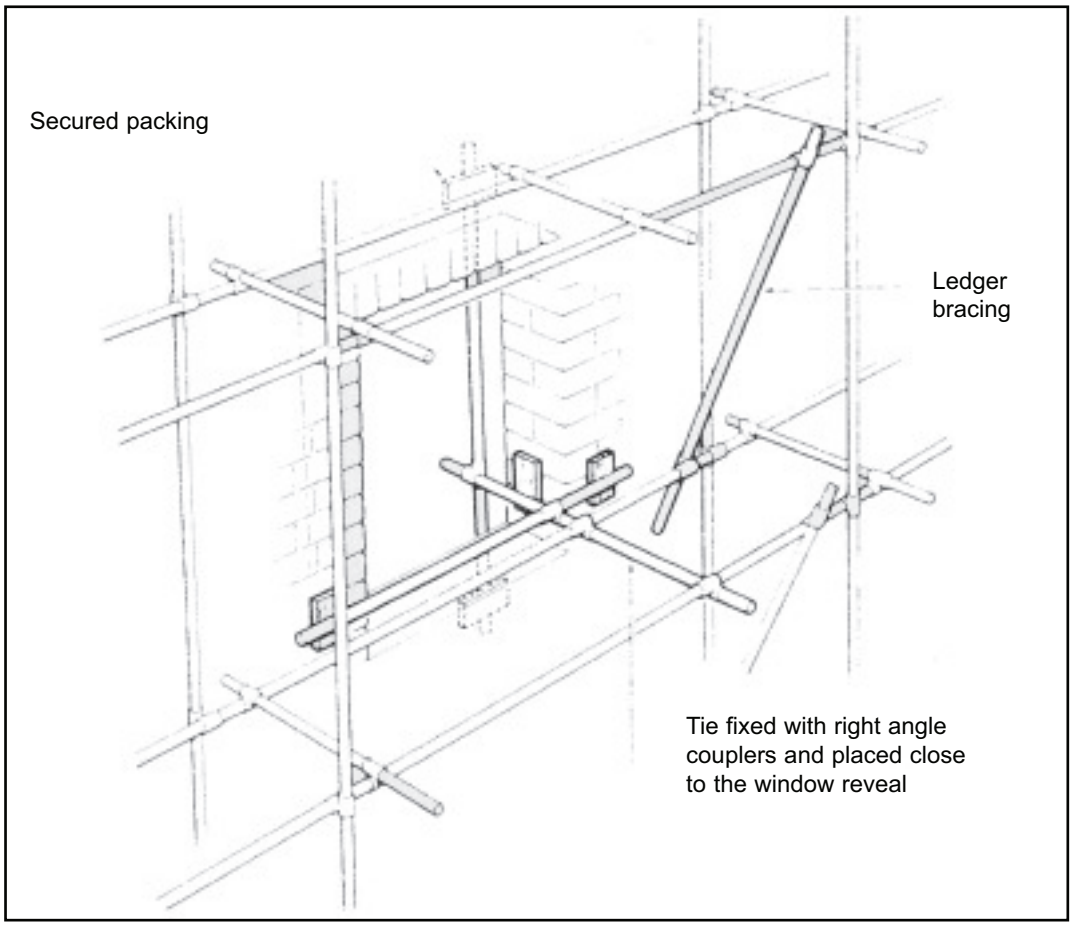
3.7 Longitudinal or Facade Bracing

Longitudinal or Facade Bracing should be fitted to all scaffolds that do not get the longitudinal stability by other means. The bracing must be connected to every lift of extended transoms with right-angled couplers or to every standard with swivel couplers. All joints should be made with sleeve couplers.



3.8 Ties

Ties link the scaffold to the structure and help resist inward and outward movement as well as going some way in giving additional longitudinal stability. Below are some examples of scaffold ties.



3.9 Scaffold Boards

3.9.1 The minimum any scaffold board may overhang a putlog or transom is 50mm. The maximum overhang is dependent upon the thickness of the board. This is outlined as follows:

Board thickness	Span between transoms	Max overhang
38mm	1.5m	150mm
50mm	2.6m	200mm
63mm	3.25m	250mm

3.9.2 Scaffold boards should:

- Be free from splits, shakes, excess knots, paint or concrete
- Be 225mm wide and not less than 220mm wide
- Not be treated in a way that would conceal defects
- Be banded or nail plated at ends
- Be supported by putlogs or transoms at the appropriate spacings
- Overhang at least 50mm but not more than four times the thickness of the board unless secured from tipping
- Be guarded against the wind causing the boards to lift

3.10 Decking

All decking or working platforms should be closely boarded to the full width where there is a danger of persons falling more than 2m or more. Where boards overlap each other bevelled pieces should be fitted to prevent tripped hazards. The decking should be of adequate width for the work to be carried out on it.

3.11 Guardrails

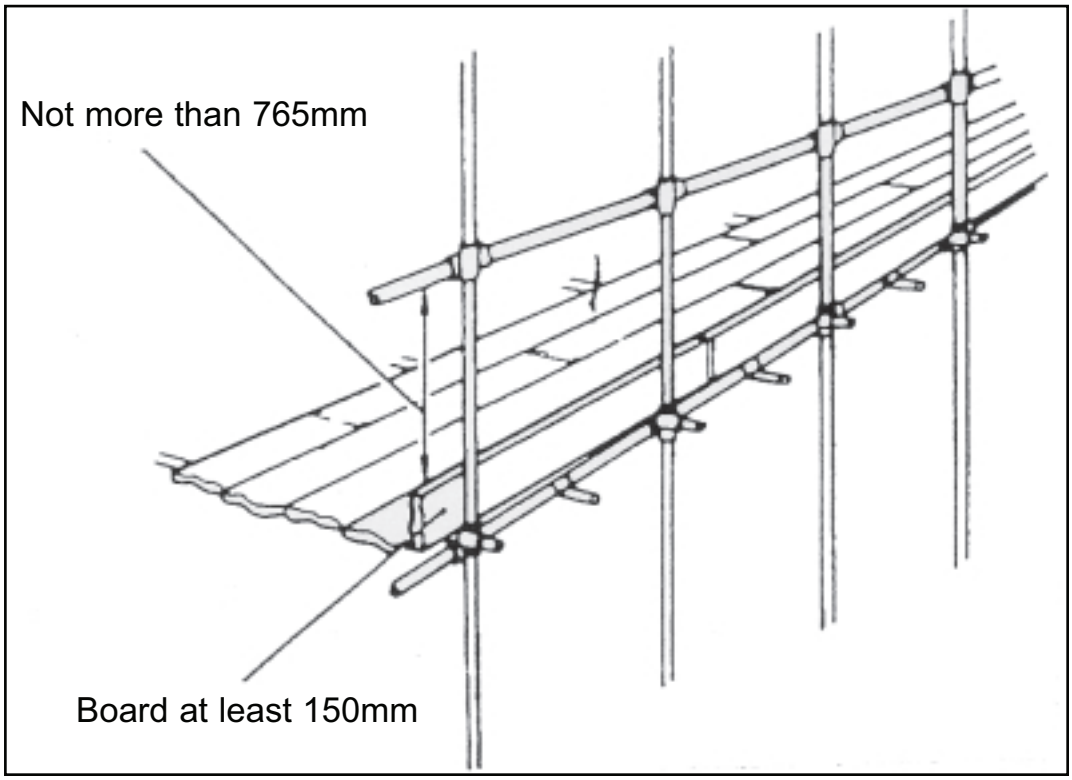
Guardrails must be provided:

- Where persons are liable to fall 2m or more
- At a level between 910mm but not more than 1150mm above the working platform
- If the guardrail is above 915mm, with a second guardrail or higher toeboard, so the gap between the guardrail and toeboard does not exceed 765mm
- Fixed inside the standards
- If the guardrail is removed for access of materials, it must be replaced as soon as practicable

3.12 Toeboards

Toeboards must be provided:

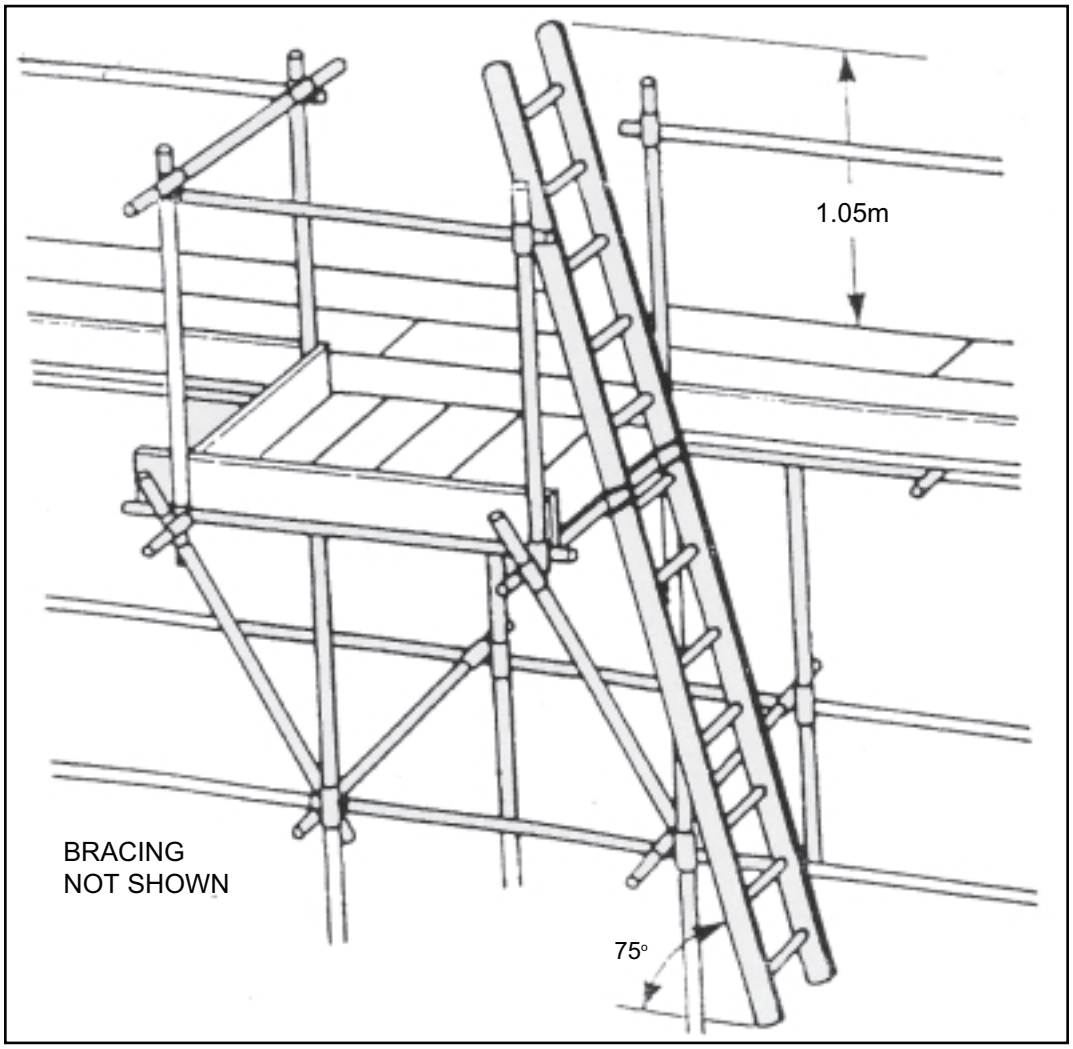
- To accompany guardrails
- At least 150mm high above the platform
- Fixed inside the standards, preferably with the use of proper clips



3.13 Ladder Access

Ladders used to the workplace should be:

- Not defective
- Not painted
- Placed on a firm footing
- So positioned as to give an adequate footing on each rung
- Be at approximately 750 (1 horizontal to 4 vertical)
- Extended 1.05m or 5 rungs above the working platform
- So that the vertical height does not exceed 9m
- Access holes for ladders must be no wider than 500mm and as small as practicable in other directions. Further guidance on access ladders is given in HSE Sheet SS2 (rev).



3.14 General Provisions

- Scaffolds must not be overloaded
- Beware the effects of wind on any sheeting you have on the scaffolding

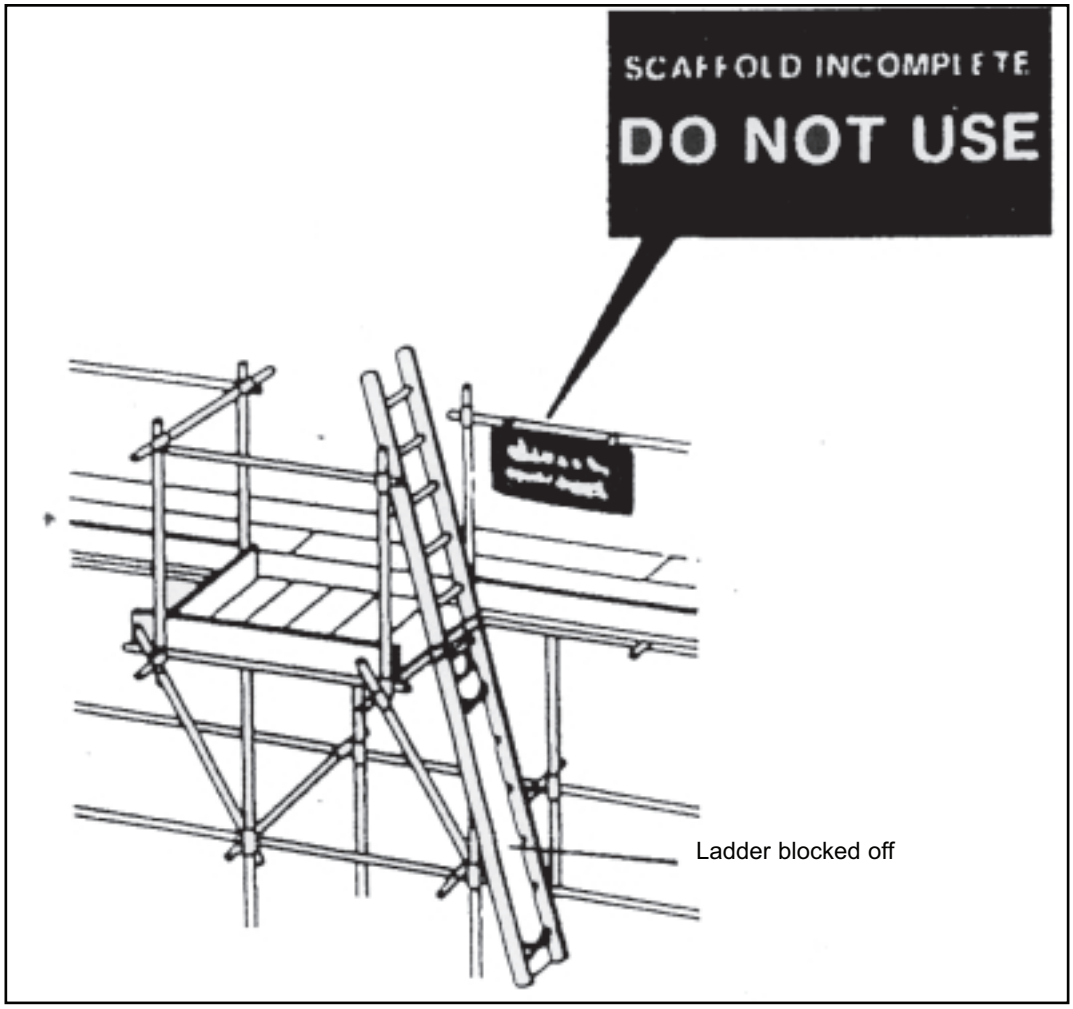
• Materials should not be stored on scaffolds unless they are intended to be used in a reasonable time

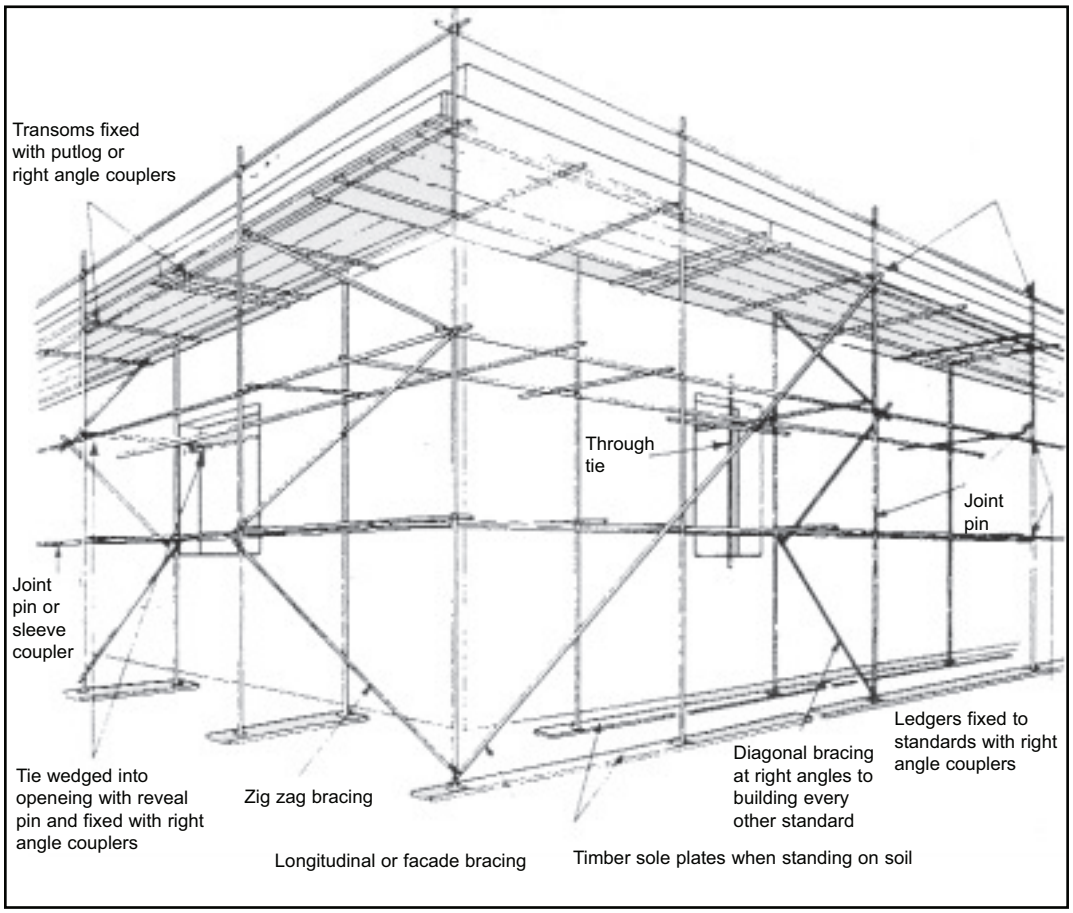
• Brick guards should be provided where stored materials can fall from a scaffold

• Warning notices must be displayed on scaffolds that are incomplete and access routes blocked

• Scaffolds should be inspected every seven days or after adverse weather conditions

• These inspections should be kept in a record (HSE F91A)





Final Tip

When scaffolding out a lock chamber or along a wall the standards should be set about 325mm from the wall to allow the use of a 225mm board and give working clearance near the wall.

4. RECOMMENDED READING

"Safe Use of Ladders" HSE Construction Summary Sheets SS2 (rev)
"Your Body at Risk" HSE Construction Summary Sheets SS28-35
HSE Books
PO Box 1999
Sudbury
Suffolk
C010 6FS

"Access Scaffolding" by C J Wilshere
Thomas Telford Ltd
ISBN 0 7277 0090 1

"General Access Scaffolds" HSE Construction Summary Sheet SS3 (rev)
"Tower Scaffolds" HSE Construction Summary Sheet SS10
HSE Books
PO Box 1999
Sudbury
Suffolk
C010 6FS

Scaffolding Record F91(A)
HMSO
Any Local HMSO Bookshop