SG25:20

Access and Egress from Scaffolding, via Ladders and Stair Towers etc.

NASC
National Access & Scaffolding Confederation

1. INTRODUCTION

This document gives scaffolding companies and clients guidance on The Work at Height Regulations 2005 (WAHR 2005) relating to safe means of access to and from scaffolding working platforms.

The Construction (Design and Management) Regulations (CDM) outline that clients, principal designers, principal contractors, designers and contractors should consider what form of access may be needed at the planning stage. This should include any emergency escape routes that have been identified by the risk assessment, the preferred option for access / egress and the required number of access points

On larger projects powered passenger / goods hoists may be a safer option if available. Where passenger hoists are used, an additional means of access will be required for emergency purposes (e.g. in the event of a fire or mechanical failure).

On existing buildings, it may be possible to use permanent staircases to gain access to the scaffolding; however, for many applications the starting point for consideration by the client should be an access staircase that can be adapted to suit all scaffolding types, followed by ladder access towers or bays (see **Figure 1** and **2**).

Figure 1
Proprietary system scaffold stair tower

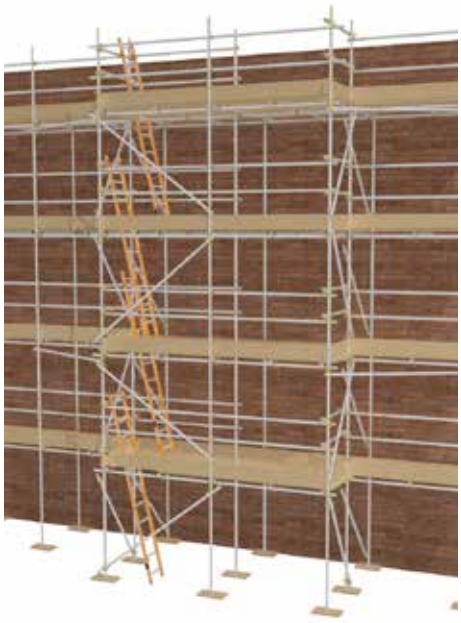

Figure 2
Ladder access bay with single lift ladders

The WAHR 2005 state that ladders should only be used for work at height if a risk assessment under Regulation 3 of The Management of Health and Safety at Work Regulations 1999 has demonstrated that the use of more suitable work equipment (e.g. a staircase) is not justified because of the low risk and short duration of use, or there are existing features on site which cannot be altered.

All equipment, including staircase components and ladders, must be inspected and maintained in compliance with the Provision and Use of Work Equipment Regulations 1998 (PUWER 1998) and all relevant British and European Standards, as well as any manufacturer's inspection recommendations.

Where such access solutions are not reasonably practicable, internal or external ladder access may have to be considered.

HSE inspectors will expect all parties, including clients, principal designers, principal contractors, designers and contractors to give careful consideration to the various ways of achieving safe access and egress and all may be asked to explain the reasoning behind any of their decisions. Principal contractors are now becoming more aware of the need to consider safer means of access to scaffolds and will increasingly be specifying stair towers and ladder access towers at various points on the scaffolding.

The NASC advises that access points should be no more than 30.0m apart, subject to a suitable risk assessment.

Factors which need to be considered by clients, principal designers, principal contractors, designers and contractors regarding the assessment of suitable access and egress from scaffolds will include:

- Length, width and height of scaffolding;
- Number of people using the scaffolding at any one time; duration of scaffolding hire;
- Type of work to be undertaken on scaffolding (e.g. access to confined space entry work and asbestos removal enclosures whilst using full face respirators etc. requires a higher degree of assessment for access and egress);
- Emergency and evacuation requirements (Fire, Toxic Gas alarms etc.) may, for instance, require additional access points (and those that are easiest to use under pressure);
- Security issues to ensure access by authorised persons only;
- Access hazards to and from the scaffolding and also the access arrangements on scaffolding e.g. assess the risk of trip hazards where the standards protrude up past the boards on the top lift and, where required by the assessment, fix caps on tops of tubes or hemp up short tubes so that the standards are waist high.

1.1 Hierarchy of Safe Access in Order of Preference:

1	Staircases and Lifts in permanent structures
2	Mechanical hoists for larger projects and where available (with additional emergency access), including hoists under the control of the scaffold contractor used for erection of scaffolding, then kept for other trades if required
3	Temporary Staircase Towers
4	Ladder Access Bays with Single Lift Ladders
5	Ladder Access Bays with Multiple Lift Ladders
6	Internal Ladder Accesses with Protection (i.e. ladder trap hatch / handrails etc)
7	External Ladder Accesses Using a Safety Gate / Swing Arm System
8	Other

2. STAIRCASE TOWERS

There are various Proprietary Staircases on the market to choose from. Scaffolding companies should ensure that the equipment that they plan to purchase or hire meets the requirements of the planned application and is compatible as necessary. There are alternative versions of 'original' systems, which are visually similar. These systems can be constructed in unison providing the product attains the standard outlined in the NASC 'Code of Practice for Scaffolding Products'. When mixing original systems with alternative versions, design input will be required and the scaffold should be erected to the lower capacity specification.

Note: The NASC strongly recommend the use of staircases over ladders as they are a safer method of access, enable some material to be safely manual handled, and allow easier evacuation and emergency service access.

Some specifiers call for staircase towers to be fully sheeted in order to increase security and reduce discomfort on windy days. However, please note that current guidance (HSG168) recommends that any staircase tower that ALSO functions as a fire escape should not be sheeted. Where clients and / or principal contractors include the staircase tower(s) as part of their fire emergency route, they should inform the scaffolding contractor at design / pre-tender stage and arrange, if required by the client / principal contractor's risk assessment, for the scaffold contractor to fix additional measures if needed (e.g. additional guardrails and toe boards).

Where the client, principal contractor, designer and / or contractor requires toeboards on the landings of system staircases this should be stipulated at design / pre tender stage, as retrospectively fitting toeboards after the staircase has been erected is very expensive in terms of man hours and cost. Similarly, where the client, principal contractor, designer and / or contractor requires additional guardrails at chest height on the outside standards – to make staircase users feel more comfortable and "caged in" as they walk up and down, this again should be stipulated at design / pre tender stage, to reduce costs.

Where practical, staircase flights and landings should align where the tower connects with scaffold lifts to reduce as much as possible the need to step up or down onto the staircase.

When proprietary staircase equipment is hired or purchased, manufacturer's instructions, user guide and specifications must be provided to the hirer or purchaser.

Competence

Scaffolders should have received appropriate training in accordance with the manufacturer's standards for the proprietary stair system which, as a minimum, should cover the erection, altering or dismantling of the equipment. Note that tube and fitting stairways are covered on the CISRS Advanced Scaffolder and NVQ level 3 training courses.

Preparation of the Foundation

As with the construction of a scaffold, it is the client's responsibility to prepare a suitable foundation that is firm and level to ensure that the load bearing capacity of the ground can support the load imposed by the stair tower.

Setting Out

The staircase tower should be set out to ensure that it is set as close to the main access scaffold as is practically possible, where applicable. Any gap between the staircase tower landing platform and the working platform of the scaffolding or permanent floor should be suitably closed.

Care should be taken when planning platform heights of proprietary stair towers, when they are used to access scaffold constructed from tubular material and fittings. This will ensure that the platform heights of the tower align as closely as is practically possible with the working platforms of the scaffold.

Ties

Proprietary stair towers should be physically tied or suitably stabilised to the permanent or scaffold structure as specified by the manufacturer or competent scaffold designer (please see the latest versions of TG20 or TG4 for suitable applications, including example below).

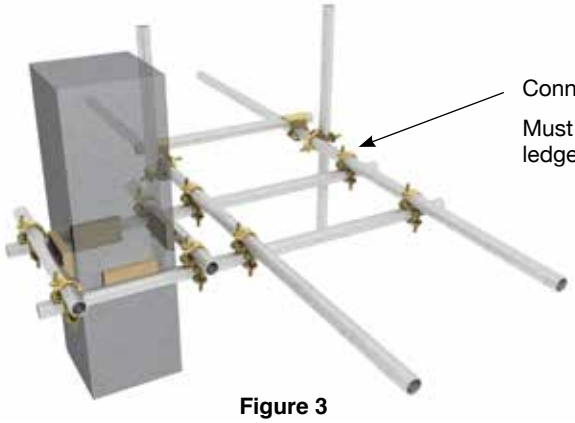

Figure 3

Design

Proprietary staircases are generally designed by the manufacturer for most site and work applications; however, manufacturers do produce standard configurations for proprietary stairways in system scaffolding that may require further consideration in mating to the scaffold. In such cases consult the manufacturer's instructions for use. System scaffold stairways should be designed in accordance with BS EN 12810. A stair tower constructed from tube and fitting components or a mixture of tube, fittings and prefabricated treads or flights of stairs or system staircases not covered by the manufacturer's instructions, shall be subject to engineering design and should be designed in accordance with the relevant standards (e.g. BS EN 12810, BS EN 12811 and TG20 Design Guide).

Note: The latest version of TG20 includes guidance on how to erect a low-rise tube and fitting staircase up to a height of 1.5m. If this guidance is followed no further design is required.

When a staircase tower is attached to any scaffold structure, there are additional forces created on the scaffold and / or ties by the wind on the staircase tower. If the staircase tower is attached to a scaffold structure constructed from system scaffolding, then it will be necessary to refer to the system scaffold manufacturer's guidance, or consult a competent scaffold design engineer. If the staircase tower is attached to a scaffold constructed using a TG20 compliance sheet, then it will be necessary to refer to the staircase tower manufacturer's guidance or advice should be sought from a competent scaffold design engineer.

System staircase towers are provided with manufacturer's instructions in the form of a user guide. This will set out limitations on installation and use, including maximum height and the load that can be carried on landings and stair sections. This means that there is a limitation on the weight of materials that can be carried up the stairs, and a limit on how many persons can be on the stairs at any one time.

Please note that 1.0kN/M^2 is typically the weight of one person.

Client, principal contractor, designer and user should decide on the appropriate Staircase Tower for their project, based on the key factors of the number of operatives (site traffic / footfall), frequency of use and length of service and the likelihood of the staircase remaining in use for long periods of time. They should specify larger capacity staircases for heavy site traffic / footfall to reduce risks of overloading.

Note: Materials must not be stored on staircase towers at any time and the client, principal contractor and user should monitor and control its use to ensure that the risk of continually exceeding design capacity, which can eventually lead to material fatigue, can be controlled. Issues with unauthorised modifications etc are detailed in NASC Safety Guidance SG36 as well as the requirement to report overloading to the site management team.

Loading limitations on staircase towers should be issued as a handbook or similar (or detailed on the handover paperwork) to ensure that the client / principal contractor or hirer user is given full information. The client / principal contractor should include relevant information to the users during their site induction. The client / principal contractor may in some cases mark these limits on the staircase tower as a reminder and where necessary communicate application considerations and controls (e.g. at inductions).

An inspection regime must be in place to inspect staircases prior to use (and during use via scaffolding inspection requirements). In scaffolding yards, the competent operative must have appropriate training on the inspection and maintenance of staircases. If a staircase or component cannot be properly repaired or serviced then it must be scrapped and disposed of in an appropriate manner.

3. TEMPORARY STAIRCASES FOR THE PUBLIC

The erection of Temporary Staircases for the Public can be a complex issue and will be subject to engineering design in all cases, which will require the designer to consult the relevant Building Regulations, Fire Prevention Regulations (some of which are cited in References), together with the Principal Client and all relevant interested parties (e.g. Network Rail, National Grid etc, who may have specialist requirements on their projects), prior to the issue of the design.

The following gives the scaffold designer guidance on relevant sources of information.

If it is necessary to provide a stair tower for public access or escape, the stair tower may also need to comply with the requirements of HSG168 Fire safety in construction, as well as the relevant Regulations – please see References for lists of some of the relevant regulations for England and Wales, Scotland, and Northern Ireland.

Note: HSE Publication: HSG168 Fire safety in construction gives applicable fire safety guidance (including information about staircase towers as fire escapes, provided in Part 2, Sections Sheeted scaffolds and External escape stairs and ladders).

Figure 4

There are specialist proprietary stair towers available which are suitable for public access and escape. Fire escape stair towers for the public must be fit for purpose (i.e. capable of withstanding live loads of large number of people running down stairs). For instance, the Approved Documents: B, K and M of the Building Regulations set the minimum standards for fire safety, the safety of stairways etc in England and Wales (similar Fire Safety Regulations etc cover Scotland and Northern Ireland – please see References) and access to buildings, and must be complied with. If it is not practicable to conform to the requirements of Approved Document, K, for instance, it is advisable that the client seeks the agreement of the relevant regulatory authority

Some proprietary staircases designed and supplied as public access and escape stairs may be constructed with drainage holes in the platform deck units. The user should be advised to cover the holes to ensure that footwear such as stiletto heels cannot become trapped.

Non slip surfaces to treads and platform decks should be considered in accordance with the client's requirements. This may also extend to panels fitted to the risers of stairs for vanity or anti-litter purposes.

4. LADDER ACCESS BAYS

Ladder bays can be separate structures fixed to the external face of the scaffolding or built independently, and are used solely for access and egress. Where more than one ladder is being used they should be installed in a parallel rather than a zigzag pattern. In general, separately constructed ladder bays should not require any further additional protection to the ladder opening.

The use of single lift ladders is preferred, but multiple lift ladders can be acceptable (see Figure 2).

It is recommended that access to each lift on a ladder access bay contains a guardrail to remind users that ladder openings are present. Alternatively, the ladder access openings can be suitably protected by ladder trap hatches, which are designed to minimise the risk of users inadvertently stepping into the opening and falling.

4.1. Boarded Lifts

Boards less than 2.1m in length must be individually physically tied to the scaffold with suitable fixings, supported at the correct centres, and overhang the end transoms at a minimum of 50mm and a maximum of 150mm to prevent tipping / creating a "trap end".

The access opening in the platform for the ladder should be as small as practically possible but be no less than 450mm x 600m.

4.2. Design

When a ladder access tower is attached to a scaffold, that scaffold may be subject to engineering design. Particular attention should be paid to the external ledger and standards of the scaffolding, as this will often be shared with the ladder tower. Refer to the latest version of TG20 for further guidance.

5. TYPES OF LADDER ACCESS

Where it is not reasonably practical to provide a staircase or ladder tower, ladders can be positioned internally on the main scaffolding.

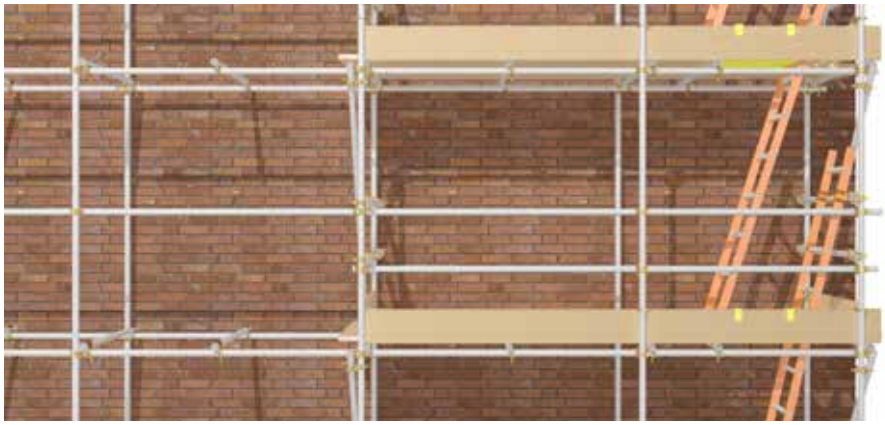

Figure 5

Ladder access openings should be protected to prevent a fall. This can be achieved by locating the ladder access away from the immediate working platform, preferably in a protected area whenever practical (see **Figure 8**), by providing a proprietary self-closing gate (see **Figure 6**), by installing a pivoting guardrail (see **Figure 9**) and / or by installing a ladder trap hatch (see **Figure 7**).

On low rise scaffolds, external ladder access through the perimeter guardrail may be acceptable, subject to a suitable risk assessment. In all designs involving external ladders, the arrangements for climbing on and off the ladder must minimise the opportunity for a fall to occur. External ladder access should not lead directly into a vehicle traffic route. If the ladder meets ground level close to a traffic route, additional fencing or barriers may be needed to ensure pedestrian / vehicle segregation.

Note: Scaffold users must ensure that ladder trap hatches are in the closed position when not in use. The NASC recommends that external ladder access is restricted to the first and second lift only (with maximum height of 4.7m, which would be a 2.7m base lift with an additional 2m lift).

When fixing a single lift ladder at the first lift, consideration should be given to supporting the ladder at a higher level to prevent the ladder from tipping. This support could be achieved by supporting the ladder at guardrail height (please see **Figure 6** for an example).

Figure 6
External ladder using a safety gate

Figure 7
Internal ladder access using a protected ladder trap

Where a scaffold is being raised in stages, shorter ladders may be preferable to longer ladders. The use of an over-long ladder on a low scaffold must be avoided, there have been incidents where the projecting weight of a ladder has been sufficient for it to tip up and rotate.

Where the client specification does not clearly specify the type of ladder access required, the scaffolding contractor should always consider providing the safest means of access possible.

Should the client request a means of access that is not considered good practice for the scale and location of work to be undertaken, this must be clearly stated on the handover certificate issued to the client / hirer.

Although the HSE expects the client to be responsible for this issue, they would also look to the scaffolding contractor to provide guidance to the client on options and how they can meet their statutory duties relating to safe access. It is no longer acceptable for the scaffolding contractor to say that they gave the client what they wanted or could afford. Whatever the scaffold contractor provides it should, as a minimum, meet the legal requirements.

Figure 8
Extended platform and staggered guardrail

This type of ladder access provides a safe means of access and egress. A staggered system of guardrails has been fitted to prevent accidental approach to the ladder opening/trap.

This type of ladder access point should also be positioned as far away as is practicable from the main area of work (for example, at the end of the access scaffold).

Note: Where it is not practical to extend the platform beyond the working face, and subject to a suitable risk assessment, ladders in sequence (each one directly above the other inside the scaffold) can also provide a degree of fall protection, especially if operatives are working in a different area, away from the ladders.

Figure 9
Pivoting Guardrail or self-closing gate

This type of access can be used near to the work place because the guardrails have been placed around the access point, complete with a pivoting guardrail or self-closing gate, to prevent accidental approach by users.

Care must be taken when positioning the access ladder to ensure the working lift is not unduly restricted.

If the pivoting guardrail lands between two puncheons 60mm apart it is less likely to work loose and hang vertically out of use.

6. LADDER SAFETY

6.1 Ladder Classification

If you have responsibilities for ladders used in scaffolding activities then you must ensure that the ladders that you specify, purchase and use, are safe and fit for purpose. Ladders should:

- Be manufactured and tested to EN131 or to the new standard BS EN131 in accordance with that relevant standard;
- Ideally, be tested / certificated by an accredited test authority (such as BS);
- Conform to the relevant standards or meet the strength and dimensional requirements of those standards where the material is outside the scope of the standard;
- Be produced by a manufacturer with an accredited ISO quality management system and supplied with labelling which enables you to identify the manufacturer (e.g. includes the license number).

6.1.1 Standards for Ladders Suitable for Use in Scaffold Work

Standard	Material	Max Safe Working Load	Application
BS EN131 Professional Ladders (New standard)	All	150kg	High frequency use in onerous conditions
EN131 (Will not be available to purchase after a transition period – please see below)	All	110kg	Frequent use in reasonable conditions
BS2037 Class 1 Industrial (Will not be available to purchase after a transition period – please see below)	Aluminum only	130kg	High frequency use in onerous conditions (such as power stations)
BS1129 Class 1 Industrial (Will not be available to purchase after a transition period – please see below)	Timber only	130kg	

Notes:

1. The figures for safe working load only apply where the ladder is correctly founded and installed at an acceptable angle as use of ladders at shallower angles can overload the ladder and lead to failure.
2. The revised ladder standards for EN131 – which are now BS EN131 – are designed and tested to take 150kg load including the user, their tools, their equipment and any materials. Although ladders approved to the revised EN131 standard carry the same load rating, professional ladders are subject to tougher durability requirements, because they are expected to be subjected to more onerous use.
3. Well-maintained ladders which are still in good condition ***can continue to be used***, but it is of course good practice to plan ahead and update them at the earliest opportunity. When ladders need replacing, then purchase the BS EN131 ladder for future conformity.
4. During the transition period, ladders which don't meet the new standards will still be available to purchase as shops and stockists clear their existing stock. To make sure you are buying ladders which meet the new standards then check with the supplier before making a purchase.
5. Earlier BS2037 ladders are being superseded by new standards. Ladders previously made from other materials, such as steel, could only be tested to the strength requirements of BS2037 but cannot be licenced to BS2037 and to EN131.

6. BS2037 and BS1129 Class 3 ladders are for domestic use only and are not suitable for scaffolding work.
7. Please see section **6.4** for confirmation that ladders within scaffolding do not require new stability aids.

The NASC does not recommend the use of extension ladders for standard scaffolding operations; however, clients may wish to use extension ladders to gain access / egress to the 1st or 2nd lift of scaffolds where it is not practicable to leave a ladder in situ, or to safely store a rigid ladder due to security concerns. In this event, the client is responsible for assessing the risk and for arranging suitable and sufficient training for operatives in erecting / dismantling ladders.

Fibre glass type ladders may be requested for use by clients in special situations, where timber and metal ladders cannot be used. Such ladders are to be used in accordance with manufacturer's instructions.

6.2 Timber Ladders

Timber ladders conforming to BS1129 / EN131 / BS EN131 are suitable for most scaffolding applications but such ladders must be closely inspected as damage to timber ladders may not be obvious.

Care should be taken in handling to ensure that ladders are not overloaded or dropped from a height.

Correct storage is necessary so that the styles do not warp or the rungs become loose, and scaffolding contractors should refer to the manufacturer's instructions for advice on storage.

Ladders should be used with the wire tie rods beneath the rungs and the wire stile reinforcement (if fitted) on the underside of the stile.

Note: Timber ladders must NOT be secured with metal scaffolding clips (e.g. putlog clips / single wraps), as they damage the timber ladder. Lashing or proprietary ladder clips are preferred, but please see section **6.6** for full details on suitable methods to secure ladders.

Timber pole ladders that are damaged should be taken out of service and returned to the yard (for servicing or scrapping). Repairing a wooden ladder is not a simple task (and may remove the manufacturer's rating for this product). Additionally, altering the ladder – e.g. by cutting the ladder down when the ends are damaged – may increase the risk of stiles separating or rungs becoming loose. Repairs should only be undertaken by a competent and authorised person.

6.3 Metal Ladders

Metal ladders manufactured and tested to EN131 (or BS EN131) or in accordance with that relevant standard are suitable for most scaffolding operations.

While ideally metal ladders should be manufactured and tested to EN131 / BS EN131, many of the metal ladders in use today predate EN131 / BS EN131, having been manufactured before the standard was introduced However, the NASC considered them fit for purpose in scaffold applications and they do not have to be replaced unless unserviceable. These galvanised steel pole ladders were originally introduced as a heavy-duty robust alternative to the timber pole ladders that were used predominantly by the scaffolding industry. At that time (approximately 20 years ago or more) there were no European Standards for steel ladders and the only materials covered in British Standards were timber (BS1129) and aluminium (BS2037).

When these ladders become unserviceable, they should be replaced by BS EN131 ladders.

A safety alert on pole ladders was erroneously published following a HSE prohibition notice served on a non-NASC scaffolding contractor which was later withdrawn. The retraction was published on the NASC website, drafted in consultation and co-operation with the Health & Safety Executive (HSE) and the Ladder Association:

Please see: http://www.nasc.org.uk/wp-content/uploads/2018/07/Steel-ladders-docs.pdf

Note: In areas where there is the potential for contact with an electrical hazard or chemical corrosion, consideration should be given to whether or not the use of a metal ladder would be appropriate.

6.4 Access To and From Ladders Within a Scaffold Structure

All ladders used for access shall be long enough to extend sufficiently above the working platform, unless other measures have been taken to ensure an adequate handhold. (The NASC would recommend a minimum of 1.0 metre.) Ladders should be fixed at an angle of 65% to 75% (to judge the angle use the angle indicator marked on the stiles of some ladders or use the 1 in 4 rule, which is 1 unit out for every 4 units up).

Please note: The HSE states that there is nothing in the EN131's that require leaning ladders to have a base bar within scaffolding structures. Therefore, base bar ladders, flared or tapering ladders – which are ladder stability aids – should NOT be used within scaffolding structures due to trip hazards and reduction in safe access space.

Builders and Other Trades' Considerations

The new ladder standard only affects non-scaffolding trades.

You are likely to see builders and other trades, such as window cleaners, using new ladders with stability aids, such as base bars or flared and tapered ladders.

Note: These stability-aided ladders are NOT required within scaffolding structures.

Figure 10

In the event that there is a potential risk of a fall over the guardrail while climbing a ladder between landing platforms, the introduction of additional guardrails to the external face of the scaffold will need to be assessed, and provided if required by the risk assessment.

Suitable access to the working platform must be provided at the stepping off point. Persons should not be required to climb over or under guardrails or over toe boards to gain access to the working platform. Any gaps in the guardrails or toe boards at the access point should be kept as small as reasonably practicable. NASC recommends a maximum of three lifts (6.0m) for an internal ladder – although more regular rest platforms are recommended – and two lifts (4.7m) maximum for an external ladder, with the ladder extending past the lift level by at least 1.0m to provide sufficient handhold and be fixed to the principal guard rail.

The NASC recommends that self-closing safety gates or pivoting guardrails are used. Where self-closing gates are selected, they must be installed so that they are easy to use and cannot open outwards. They must have sufficient overlap with the fixed structure to prevent this occurring over time and to prevent it happening if a person stumbles and falls with impact against the gate.

The competent person must inspect all ladders as per the statutory requirements of The Working at Height Regulations 2005 (please see section 6.5), but the user also has a duty to inspect a ladder before accessing it for the first time at the beginning of the shift.

It is recommended that the user should remove any contamination from the ladder, such as wet paint, mud, oil or snow before use and wear suitable strong soled, flat footwear with a good grip and laces tied properly when climbing ladders. Failure to follow this advice presents dangers and a risk of a fall.

More specific details for ladder requirements can be found in The Work at Height Regulations 2005 (WAHR) Schedule 6.

6.5 Inspection of Ladders

In order to comply with Regulation 12 of the WAHR, all work equipment, including ladders, should be inspected at suitable intervals to ensure it is fit for purpose. All ladders must be inspected for worthiness before leaving the scaffolding yard and also before use by the lead scaffolder on site prior to installation (scaffolders are trained to inspect ladders on their CISRS courses).

Where the ladder is part of the scaffolding structure, the inspection of the ladder is included in the inspection report and there will be no requirement for a separate ladder inspection.

Note: Some clients may require a more detailed inspection report, which would involve a contract specification.

These statutory inspections must be carried out at least once every 7 days; following inclement weather; following authorised alterations; and following any event likely to compromise the structural integrity of the scaffold.

Where ladders do not form part of the scaffolding structure, the inspection of the ladder must be included in a separate ladder inspection report.

NASC recommends that clients carry out regular monitoring of the scaffolding structure, including ladders, to ensure that no unauthorised modifications are carried out by others, and that users are instructed to inspect a ladder before accessing it for the first time at the beginning of the shift.

During the inspection the competent person will check for faults, including the following:

Timber ladders:

- The ladder is installed the correct way up and the correct way around;
- The ladder is not painted (although security painting can be used in moderation and clear varnish);
- There are no splits, cracks, splintering, warping or bruising;
- The rungs show no significant signs of undue wear or movement;
- All rungs are in place;
- Wedges and tie rods are tight;
- Metal reinforcements are correctly positioned;
- The feet are not split or fraying.

Metal ladders:

- The ladder is installed the correct way up and the correct way around;
- The ladder shows no signs of mechanical damage, corrosion or chemical attack;
- There are no splits, cracks or permanent twist, buckling or beyond tolerance bowing;
- Timber or plastic inserts to metal ladders are in place and not missing;

- The rungs and stiles show no significant signs of undue wear, movement or corrosion thinning / metal fatigue;
- All rungs are in place.

General:

- Hired or loaned ladders must have a certificate / label showing conformity.

Note: Superficial markings may be acceptable, but a dent in the stile of a metal ladder (or a small buckle) can seriously reduce the capacity of the ladder, which could fail suddenly and without warning.

In scaffolding yards, the competent yard operative must have appropriate training on the inspection and maintenance of ladders. If a ladder cannot be properly repaired or serviced then it must be scrapped and disposed of in an appropriate manner.

Further guidance can be obtained from the ladder manufacturer or supplier.

6.6 Securing Ladders

The Work at Height Regulations 2005 sets out the requirements for ladders.

Ladders should only be used on level ground or scaffolding platforms, they should be positioned to ensure their stability during use and secured immediately. It is critical that ladders are properly secured by a competent person to prevent accidental movement. The NASC recommends that ladders are secured by square lashings, using suitable rope or wire, proprietary ladder couplers, cable ties of sufficient strength and use, or scaffolding fittings (where the use of such fittings cannot damage metal ladders). The selected method should ensure that the ladder is safely and securely fixed to the scaffolding structure and there is no lateral movement of the ladder.

Note: Timber ladders must NOT be secured with metal scaffold couplers (e.g. putlog clips), as this damages the ladder and the couplers.

Where the ladder cannot be tied off by a competent person standing on the platform, the ladder should be temporarily restrained at the base before being secured at the top of the ladder (i.e. another operative footing the ladder to allow their team mate to safely climb up the ladder and secure it at the top; and with the reverse operation used to remove the ladder during the dismantle operation). Footing will only be used in the installation and subsequent removal of a ladder for platforms in excess of 2.0m.

Ladders should be prevented from slipping during use by securing both stiles at the top of the ladder, some clients may require additional ties on the middle of the ladder and at the base. Where this is not practicable, the stability of the ladder should be supplemented by an effective ladder stability device.

Note: Where ladders are tied off, care must be taken to ensure that the support tube is either directly behind or immediately below the rung; this will prevent the user from hitting the support with their toe / foot when ascending / descending the ladder as this can create a significant hazard (see **Figure 11** for examples of good practice).

Ladders should not be used if there is any possibility of the ladder being struck by passing vehicles unless they have been protected with suitable barriers.

When the correct device has been selected it is also important to ensure that it is applied and fixed correctly. The method of tying should ensure that both stiles are adequately fixed to the ladder support. The ladder must be tied to a suitable anchor point, making sure that both stiles are tied, see **Figure 11**.

Figure 11
Typical methods of securing a Ladder

Note: Timber ladders must NOT be secured with metal scaffold couplers, as it damages the ladder and the couplers.

Ladders need a stable base to use at ground level. Some types of ladder fixings used to restrain the top of a ladder do not clamp the ladder to the scaffolding and other types can fail when stressed incidents have occurred where the ladder has settled into weak ground, and either slid out of the securing clips or overloaded the lashing, causing the ladder to disengage from its support and fall away causing the worker to be thrown to the ground. The NASC recommend clients and principal contractors etc ensure the ground is compacted and where required the ladder is placed on suitable boards to spread the load.

Care should be taken to ensure that there are no protruding tubes that could cause a trip or other obstruction for the full height of the ladder (i.e. ensure there are no protruding tube that "pokes" into the space where someone walks up or down a ladder). Additionally, the rung at the landing should be level (see **Figure 11** above) because a support tube that is erected much lower than the rung can create a "false step" which is likely to cause an accident.

Remember to also consider whether a person could fall and become impaled on a scaffolding tube or similar. Where there is a risk of impalement, vertical projecting tube can be extended so that a person slipping would fall along it rather than strike the end. Alternatively, it may be possible for the vertical end to be protected by a horizontal rail to increase contact area should an incident occur.

6.7 The Use of Ladders within Scaffolding Structures

Once the ladder is secured, users should have both their hands free for climbing up or down the ladder and should maintain three points of contact with the ladder at all times. Tools or other small items should be carried in a belt or backpack or similar, or hauled up by rope.

It is recommended that ladders should not be used when carrying materials. If this cannot be avoided and you must carry something up or down a ladder, as a minimum, you must have one hand free to grip the ladder.

Note: If the client's subcontractors are likely to carry up material up or down a ladder then the client, main contractor and scaffold users should consider the provision of a staircase at design stage (see section **1.1 Hierarchy of Safe Access in Order of Preference**).

It is important that the use of ladders on site is properly controlled by the scaffolding contractor during erection, alteration and dismantling of the scaffold and by the client and principal contractor during use.

6.8 The Use of Ladders as Places of Work

The NASC does not recommend the use of ladders as a place of work, especially when used to erect or dismantle scaffolding (and there are other suitable access platforms such as podiums, examples of which can be seen in the latest version of SG4).

7. SECURITY

It is the responsibility of the principal contractor / main contractor / client to ensure that any unauthorised access onto the scaffold is denied by following the HSE and NASC recommendations. The principal contractor / main contractor / client should provide clear instruction to the scaffolding contractor at tender stage of any measures that are to be supplied by the scaffolding contractor in this respect (and please note that these proactive measures may fall under the scaffold contractor's responsibility if they are the main contractor or only contractor on site).

Unauthorised access to the Scaffold should be prevented at all times. This can be achieved by various methods including a ladder guard, when the scaffold is not in use (see below).

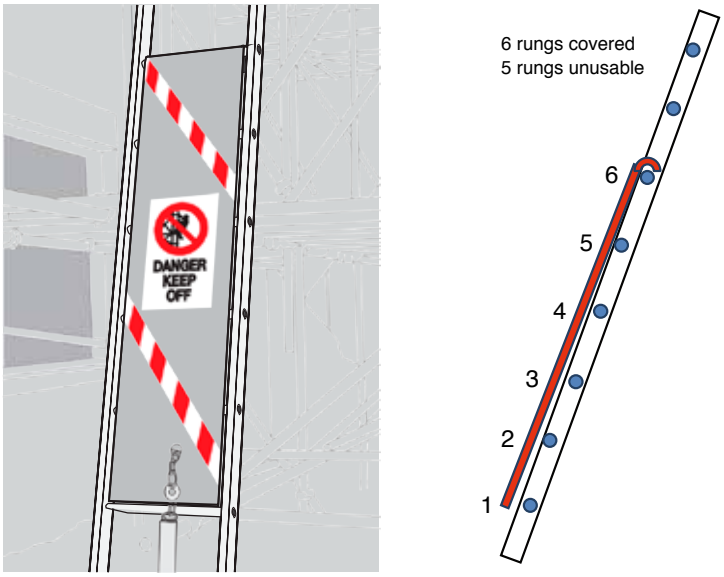

Figure 12

The NASC recommends that ladders to the first lift are removed when not in use and kept in a secure storage area where possible, and that stair towers should be fenced off and secured.

Where ladders at ground level need to remain in place, these should be made un-useable by for instance installing ladder guards, an example of which is shown above. Please note where these are used, ensure that they fit the full width of the ladder and cover at least six rungs (making five rungs unusable); please see the sketch above which shows how a suitable ladder guard prevents the foot being placed on at least five rungs. When fitted they must be secured in place (e.g. by using a robust padlock).

The ladder guard must also be matched to the ladder – a minimal rung width should be exposed when the locked guard is pushed hard to one side. Remember that trespassers are frequently very young and may have small feet.

8. AUTHORISED REMOVAL AND REPLACEMENT OF LADDERS AT GROUND LEVEL

The NASC accepts that there may be a need for clients, principal contractors, hirers or users to remove and replace first lift ladders for security reasons during the life time of the project, where it may not be suitable or cost efficient to be done by scaffolders.

This must be managed by the client and principal contractor to ensure that only authorised and trained operatives remove and replace ground level ladders subject to a suitable risk assessment.

Note: No other scaffolding works must be carried out by the hirer / user and this requirement must be specified at tender stage.

The HSE may not require written records of first level ladders being replaced, but there may be a risk of ladders not being suitably secured, and someone falling from an unsecured ladder. The NASC recommend that clients, principal contractors and hirer / users consider this risk and put in appropriate control measures where it is deemed necessary (including ensuring suitable training and retaining written records of each removal and replacing operation).

9. REFERENCES AND FURTHER GUIDANCE

Health and Safety at Work Etc Act 1974;
Construction (Design & Management) Regulations 2015;
Provision and Use of Work Equipment Regulations 1998;
The Management of Health and Safety at Work Regulations 1999;
The Workplace (Health, Safety and Welfare) Regulations 1992;
The Work at Height Regulations 2005;
BS EN 12810 and BS EN 12811;
BS 5395 – 1:2010 Stairs, Code of practice for the design of stairs with straight flights and winders;
HSE Website: www.hse.gov.uk
NASC Website: www.nasc.org.uk/
NASC – Code of Practice for the Hire, Sale and Use of System Scaffolds;
NASC Guidance including:
- SG36 Unauthorised Modifications to Scaffolds;
- TG20 Latest Revision;
- TG12 Tying down of Scaffold Boards.

Note: there are different regulations etc covering England and Wales, Scotland, and Northern Ireland:

England and Wales:
The Regulatory Reform (Fire Safety) Order 2005;
Building Regulations [latest revision], including Approved Documents: B, K and M.

Scotland:
Fire (Scotland) Act 2005;
Building Regulations (Scotland) 2004;
Technical Handbooks 2013 (Domestic and Non-domestic) Sections 2.9, 4.1 and 4.3.

Northern Ireland:
Fire Safety Regulations (Northern Ireland) 2010;
Building Regulations (Northern Ireland) 2012;
Technical Booklets E, H and R.

NASC, 4th Floor, 12 Bridewell Place, London EC4V 6AP
Tel: 020 7822 7400 Fax: 020 7822 7401
enquiries@nasc.org.uk www.nasc.org.uk