SECTION 5: SCAFFOLDING, STAIRWAYS AND LEANING LADDERS

SECTION 5: INDEX
SCAFFOLDING, STAIRWAYS AND LEANING LADDERS

5.1 SCAFFOLDING

This section of the site HSE manual identifies the standards and controls to be implemented for the use of scaffolding on TW sites.

This has been developed to ensure that all work from scaffolding including planning, erecting, use, altering, inspecting and subsequently dismantling is correctly planned with suitable measures in place to prevent:

- A fall from scaffolding.
- The risk of falling objects; and/or
- Instability or collapse of scaffold.

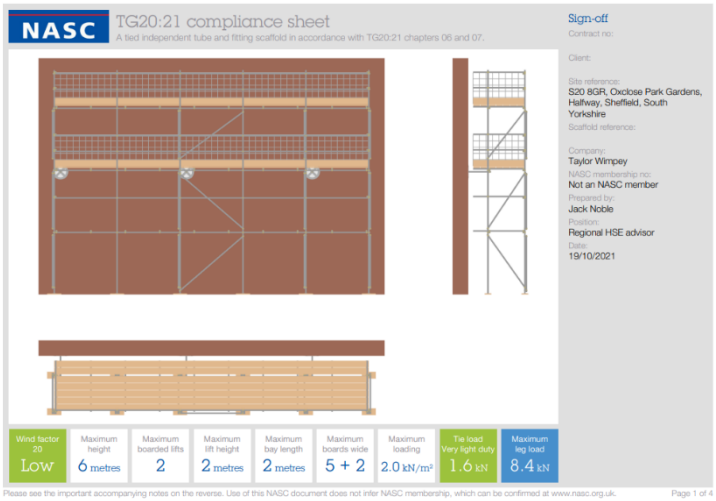
5.1.1 TUBE AND FITTING SCAFFOLDING

This applies to traditional steel tube and fitting scaffolds and includes the use of "system type" components such as extending transoms, steel, aluminium ladder beams and unit beams.

All components must be used in strict accordance with the manufacturer's instructions/design guidance, and the information supplied to site

Throughout this section, three types of scaffolds are discussed.

- Basic scaffold: these are defined as those which are specified and constructed in full accordance with NASC (National access scaffolding confederation) guidance TG20:21, supported by the presence of a TG20:21 compliance sheet on site.

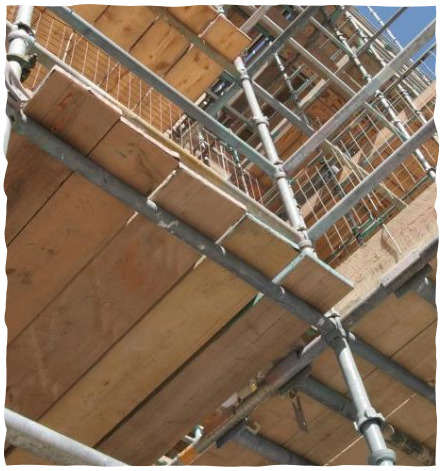


- Standard designed scaffold: a few our house types and standard build methods require a designed scaffold; however, these are in routine use and do not normally require a bespoke site-specific design. The designs are available on *in house.* The designs have been produced considering a 'normal' site and may not always be appropriate if you are building on a particularly exposed site (i.e., on a hill, by the coast). Through the pre-development scaffold requirements checklist, it is identified if these standard designs are appropriate for your site.

- Bespoke designed scaffold: Some unique house types/ apartment blocks, build methodologies or very exposed sites may require bespoke designs on some or all the plots. Through the pre-development scaffold requirements checklist, it is identified if bespoke designs are required for your site.

If at any point during your build, you need to erect a scaffold that was not identified in pre-development but cannot be erected as a 'basic scaffold' please contact your RHSEA for advice.

5.1.2 SYSTEM SCAFFOLDING

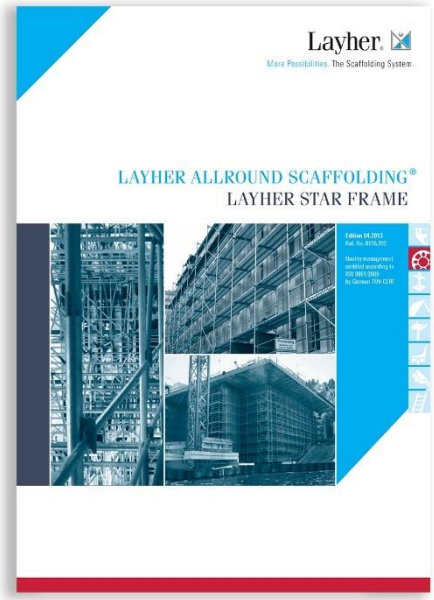


All system scaffold types, such as Kwikstage, Haki, Layher, etc., must conform to the relevant British and European Standards BS EN 12810/12811.

All Scaffold Operatives erecting, or dismantling systems scaffolding must have successfully completed the relevant Systems Product Training.

Where System Scaffolding is used on a site the relevant members of the Site Management Team responsible for carryout the weekly scaffold inspections must have attended the System Specific Awareness Training in relation to specific system scaffold used.

The System Scaffold Specific Awareness Training must highlight the key aspects of the scaffold to be inspected.



System Specific Awareness Training on System Scaffolding for TW is provided via Fulcrum Scaffold Safety & Training Ltd.

5.1.3 PLANNING FOR SCAFFOLDING

Good planning before commencing on site is essential to ensure that scaffolding can be provided for all intended uses. Ensuring all scaffold needs are correctly identified to ensure an appropriate and compliant solution can be factored into the program constraints of the site. Prior to commencing on site, the following areas must have been considered and addressed.

- Consideration if scaffolding requires a bespoke design
- Consideration given to scaffolding or handrails not directly connected to a plot that will be required (retaining or garden walls etc)
- Consideration of any unusual external works that may compromise scaffold stability (e.g., scaffold at the top of an embankment or non-load bearing retaining feature)

Identification of Plots requiring a Scaffold Design

Buildings that require a scaffold design must be identified and noted (at pre-tender stage) in the Folder 1 (F1.6 Scaffold Selection Checklist). This form prompts the Scaffold contractor to provide suitable design documents where required, including:

- For tube and fitting: design calculations in accordance with scaffolding standards.
- For system scaffolds: confirmation of compliance with the Manufacturer's User Guides.
- Design drawings: including the type, number, and location of any required ties, etc.; and
- A list of the critical inspection points, e.g., ties, rakers, etc.

Where a design has been identified as necessary and no designs have been provided by the scaffolding contractor - scaffold erection cannot proceed (until the design has been provided and checked).

5.1.4 Scaffold Designs (Category 1: Standard Temporary Works)

TW Standard scaffold designs can be found on inHouse

These designs are standard configurations for:

- Tube & Fit Loading Bay (Face on)
- Tube & Fit Loading Bay (90 degree)
- Skip Loading Bays (Face on)
- Skip Loading Bays (90 degree)
- Gable End Guard Rails (Up & Overs)
- Truss Racks
- Tube & Fit Staircases
- Storage Racking

Any non-standard house types must have the following available prior to erection:

- A plot-specific scaffold design or a TG20 compliance sheet provided, and
- The necessary Authority to Proceed completed (F2.32 - ATP - Erect a Designed Scaffold)

Completion of the APT demonstrates that the Site Team have reviewed scaffold design/compliance sheet with the Scaffold Contractor or Scaffold manager and confirmed that the necessary arrangements are in place for its safe erection and use.

For further information and advice, please contact your Regional HSE Advisor.

5.1.5 BESPOKE DESIGNED SCAFFOLDS (Category 2: Non-Standard Temporary Works)

During pre-development or as the site evolves, it may be necessary to erect a scaffold not in accordance with one of the standard configurations outlined above. In this case, a design must be sought from a competent scaffold designer (via the appointed Scaffold Contractor, Scaffold Manager or Technical Team).

When procuring a designed scaffold, there are some additional considerations that must be addressed/identified, including.

- The process of erection is managed via the use of F2.32 - ATP- Erect a Designed Scaffold.
- Additional competencies may be required for the scaffolders working on the structure
- Additional support may be needed with the statutory inspections
- Additional nonstandard components may be needed
- Additional design work may be needed for the foundation.
- Additional rescue plans may need to be developed.

Speak with your contractor or RHSEA if you are unsure about any of these.

COMPANY NAME:

AUTHORITY TO PROCEED – ERECT DESIGNED SCAFFOLD

SITE NAME:

This authority to Proceed is to be completed for each set of plot(s)/blocks(s) of scaffolds with design requirements listed in Folder 1: F1.6 'Scaffold Design Requirements'.

Design Documents Required	Yes/No/NA
For tube and fitting: Design Calculations in accordance with scaffolding standards.	
For system scaffolds: Confirmation of compliance with the Manufacturer's User Guides.	
Design drawings, including the type, number and location of any required ties.	
A list of the critical scaffold inspection points.	

Pre-erection Declaration by Scaffold Supervisor		Yes/No
The scaffold will be erected to the Scaffold Design prepared or provided and in compliance with the Manufacturer's User Guides.		
Scaffold Contractor:		
Scaffold Supervisor:	**Date:**	
Name:	**Signature:**	

Authorisation To Proceed	
Site Manager:	**Date:**
Name:	**Signature;**

Completion Declaration by Scaffold Supervisor		Yes/No
The scaffold has been erected to the Scaffold Design prepared or provided and in compliance with the Manufacturer's User Guides.		
Scaffold Contractor:		
Scaffold Supervisor:	**Date:**	
Name:	**Signature:**	

Authority to Proceed - Erect Designed Scaffold

Prior to erecting a 'designed scaffold', the Scaffold Supervisor must complete form Folder 2 F2.32 ATP – Erect Designed Scaffold (supplied by the Site Manager) with a copy of the relevant Folder 1 F1.6 Scaffold Design Requirements attached. The Site Manager must have confirmation that the scaffold is erected to the design.

5.1.6 TW SCAFFOLDING SPECIFICATION / REFERENCES

A.General	• All scaffolding must be constructed in accordance with the requirements outlined on its TG20:21 compliance sheet, system scaffold user manual or an independent design completed by a competent scaffold designer. • Compliance sheets can be provided by your scaffolding contractor, scaffold manager (TW in house scaffolders) or your RHSEA. • In the table below, some areas are identified where Taylor Wimpey expectations exceed or vary from those expressed within TG20:21. • If a point is not referenced below, refer to the TG20:21 compliance sheet or design drawing.
B. Loading Out	• Standard tube and fitted scaffolding are constructed to allow a maximum load of 200kgs per bay. • Materials (brick/block) are loaded adjacent to external standards, where the structure is designed to carry the load. 
C.Access to plots	• Access to plots must be provided with adequate unobstructed head height access where internal access is required. • Where works will be taking place from the scaffold above the entrance, suitable protective measures must be in place to protect those below from falling materials (e.g., double boarding with polythene sheet, ply boarding)
D. Proprietary Stairways/ ladder access	• The preferred access to main working platforms is via a proprietary stairway. This is a mandatory requirement on any multiple lift scaffold. • Ladders may be used on scaffold for single garages, garden or retaining walls, substations, or similar small structures only. • All ladders must conform to EN131 Professional standard (or preceding equivalent standard) and free from defects. • Ladder to extend at least 5 rungs above the working platform but does not present a cantilever effect. • Ladder to be secured by both stiles (so cannot twist) with proprietary ladder fixings or suitable secure fittings. • For metal access ladders, rungs to be profiled. (See section 5.2.2)
E. Birdcage scaffold	• All birdcage scaffolds to be back propped to the ground floor unless the flooring manufacturer (PCC or timber joists) confirms that the flooring can support the imposed load of the scaffold and any loading (consult the compliance sheet).

F. Engineering components	• All engineered components to be supplied with data sheets / loading calculations, e.g., ladder beams. • Gallows brackets to be tested and of known capacity.
G. Foundations	• All scaffolds will require a suitable foundation to be prepared in advance of construction. This will either be an existing hard standing (tarmac/ concrete) or a foundation constructed with compacted aggregate. The foundation must be firm, level and sufficiently robust to withstand the expected weather conditions.
H. Guardrails & toe boards	• Verge guardrails to be installed where table lifts do not offer suitable protection whilst working on roofs. • A single guardrail must be left in place on each un-boarded lift for the duration of the lift to ensure safe dismantling as per SG4: Latest Edition. • Brick guards must be attached to the toe boards – either by hooks incorporated within the brick guard or by staples, ties or similar. • On roofs with a pitch 40 degrees or more additional (triple) guardrails to be installed on the external edge of the working platform with no gaps in excess of 470mm between any guardrails. • Suitable edge protection must be provided to all sides of table lifts.
I. Loading bays and gates	TW standard tube and fitting loading bays: • Standard designs are available on in-house for a progressively constructed loading bay and for a side-on loading bay. • Additional spur bracing will be required for loading on the loading bay's handrails. Perpendicular (Side-On) Loading Bay: • On occasion site design and layout make installation and use of a traditional loading bay problematic. On these occasions, the loading bay can be rotated by 90 degrees to ease access and use. • Side-on loading bays fall outside of the scope of TG20 and therefore require a design. TW design is available and must be used on all occasions. • Loading bay gates, signage etc, must follow the TW specification below. Loading bay gates: • Gates to prevent the fall of persons and materials must be flush when closed and of an 'up-and over' design. Self-closing gates with an integral barrier must be used and provide full opening for loading. • Gates with a suitable counterbalance must be provided to ensure the gate can remain in the open position of its own accord, without the need for Operatives to hold the gate open. • A double guardrail must be provided to protect Operatives when the gate is in the open position. • Mesh infill section adequately secured to the gate frame. • Gate closed securely at the bottom to prevent the fall of materials. • The sides of the loading bay adequately secure (e.g., mesh) to prevent the fall of materials from the sides. • Gates operated without undue force. • Extendable gates with the mesh infill are prohibited for use on all TW sites.

J3. Scaffold Components: Internal Standards	• The top of internal standards should be flush with any working platform, where this is not possible, they must protrude a minimum of 1m and be capped.
J8. Sole board/ base plates	• Whole scaffold boards are to be used as sole plates where required by the design or compliance sheet. These must be painted red so that they are not used as part of a working platform again. • Base Plates - Must always be used for tube and fitting. • On block and beam, sole boards to be doubled up and span at least 3 beams.
K. Sheeting / netting Scaffolding	• Scaffold must not be sheeted or netted unless this has been included in the design calculations or compliance sheet.
L. Signage	• Signs to be displayed by the scaffolders. • Check your working platform. • 3 points of contact (where ladders are being used) • Scaffolding incomplete "Do not use"- where any scaffold is being adapted or left in an incomplete state. • Weight signage to be displayed on loading bays
M. System Scaffold	• There must be a copy of manufacturer's user instructions available on site • Any member of the site management team inspecting the scaffold must have received training in the inspection of the system (including cover managers) • The site HSE advisor must have received training in the inspection of the system. • Scaffolders erecting, altering or dismantling the scaffold must be able to demonstrate competence in the system being used.
N. Table lifts	• Access to table lifts should be via a ladder and self-closing half gate to afford protection whilst maintaining access for loading materials. • Internal handrails must be installed and remain in place to any table lift wherever there is a risk of falls.
O. Tying in, Bracing and Buttressing	• Ties must be installed in accordance with the compliance sheet or design as the structure is progressed. • Works that will require tie removal (i.e., window fitting) must be planned to ensure that additional ties can be provided in alternative locations.
R. Waste Chutes and mini skip loading bays.	• All scaffolding must have either a waste chute or a mini skip loading bay to reduce the risk of materials being 'bombed' from the working platforms. • Where a skip loading bay is preferred, this must be erected in accordance with the TW design, which can be found on In-House. • Where proprietary Waste Chutes are used, they must be installed by the Scaffolding Contractor to the Waste Chute manufacturers installation guidance, with a copy held on Site • The Scaffolding Contractor must consider the attachment of the Chute to the Scaffold and whether it affects the Scaffold design (consult compliance sheet)

	• The Chute assembly is installed such that a clear space of approx. 1m is provided between the bottom of the lowest chute and the top of the skip • Chutes fixed either near a loading bay or a tie position for stability
R. Underpropping	• Where materials (blocks) are to be loaded on the mid-floor, the floor must be propped using the TW propping design which can be found on In- House. • Materials must not be loaded out onto unsupported floors unless written confirmation is obtained from the floor and joist designers.

Scaffold References:

- **BS EN 12811** is the recognised standard for scaffolding in the UK, replacing BS 5973. It sets out the performance requirements, methods of structure and general design of access and working scaffolds.
- **TG20: Latest edition** - 'A Guide to Good Practice for Scaffolding with Tubes and Fittings' provides technical guidance on the use of **BS EN 12811-1** and is the recognised good practice guide for scaffolding with tubes and fittings.
- **SG4: Latest edition** – Preventing Falls in Scaffolding provides guidance for reducing the risk of falls when erecting.
- **TG3**: Erection, Use and Dismantling of Temporary Rubbish Chutes on Scaffolding (latest edition)

5.1.7 MONITORING AND INSPECTION

TW Site Management

The Site Management Team must carry out regular monitoring of work underway on their site, particularly medium to high-risk activities such as scaffold erection, adaption and dismantling. Paying particular attention to checking that the Scaffold Team are following their Safe System of Work.

The Scaffold Supervisor/Charge Hand

Is responsible for:

- The supervision of scaffold operations on site; and
- Carrying out and recording the statutory inspections (this may be delegated to other members of their team, e.g., a trained Scaffold Operative):
  - Under PUWER (Provision and Use of Work Equipment) for example any power tools, and.
  - LOLER (Lifting Operations and Lifting Equipment Regulations) for example any 'gin wheels', and
  - Preparing Scaffold Handover Certificates

The Scaffold Contractors HSE Advisor

The Scaffold Contractor, including Taylor Wimpey where Directly Employed Scaffolders are used, must:

- Complete a Monthly Site HSE Inspection / Audit (as a minimum)
- Provide the TW Site Manager and Scaffold Supervisor/Charge Hand with a copy of their report
- The report must clearly identity:
  - Any concerns / shortfalls with immediate actions taken and required
  - Include forthcoming / planned works and note controls agreed
  - Review of the Scaffold Designs or Compliance Sheets

Scaffold Contractor inspections undertaken by:	Directly employed scaffolder inspections undertaken by:
 Inspections Undertaken by their H&S Advisor	Taylor Wimpey — Scaffold Manager
 Scaffold Manager – Holding CISRS Basic Scaffold Inspection (BSI)	DM Safety & Health Services — DM Safety & Health Services – SHSEA as part of Site Inspection
	RG Wilbrey Consultants — RG Wilbrey – SHSEA as part of Site Inspection
	Fulcrum Scaffold Safety & Training Ltd — Fulcrum Scaffolding

5.1.8 SCAFFOLD ACCESS ARRANGEMENTS

Authorised means of accessing the scaffold:	To be used for scaffolds at:
Proprietary/ TW Standard designed Stairways Category 1: Standard Temporary Works	Mandatory on: • All houses and bungalows, both traditional and timber frame • All apartment buildings • All garage 'terraces' of 3 or more and barn style garages • All render and cladding Scaffolds • Note: a suitable proprietary stair must be provided for access into RC basements, on concrete podium slabs, RC frame buildings, and slip-forms over 1st lift where space permits.
Ladders – with self-closing gates Category 1: Standard Temporary Works	Only on small single storey structures, including: • Single and double garages • Bin stores • Bike stores • Pumping and electrical sub stations • Garden/screen/retaining walls • Table lift scaffolds • Porches

System scaffolds: e.g., Kwikstage, Haki, Layher etc. will have their own stair access tower that must be used (do not mix systems in one scaffold without design advice from a competent scaffold designer).

Tube and Fitting scaffolds: System staircases may be used to access tube and fitting scaffolds, provided a detail for fixing the two systems together is provided and implemented.

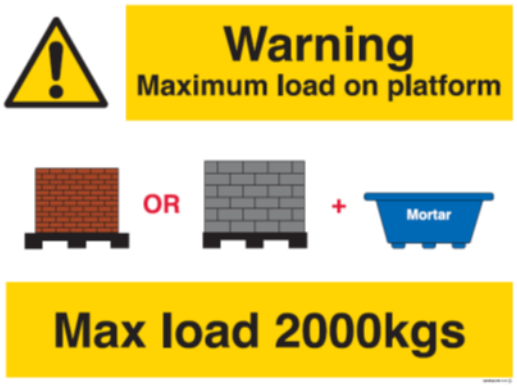
Where a tube and fitting tower is used to support the staircase, the TW Standard Design can be used or the Scaffold Contractor can provide a design, however, this must be agreed by the Production Director with the assistance of the RHSEA prior to use on site.

5.1.9 SCAFFOLD SIGNAGE

During inductions, Site Managers must remind all operatives to inform them immediately if they believe the scaffold is unsafe or if they identify any remedial or adaption work is necessary for them to carry out work. They must also be advised that works must stop on the scaffold until the remedial work is carried out.

- At all ladder / stair accesses a 'Check Your Working Platform' sign is placed to advise all operatives to carry out a visual user-check before use and a Ladder Safety Sign to encourage safe use of the ladder as illustrated.
- Scaffolding signs can be attached in a group, such as on a portable brick guard.

- Loading bays must be signed with the safe working load (check your design, compliance sheet or system user guide)
- Loading bays must display the 'keep gate closed' sign.



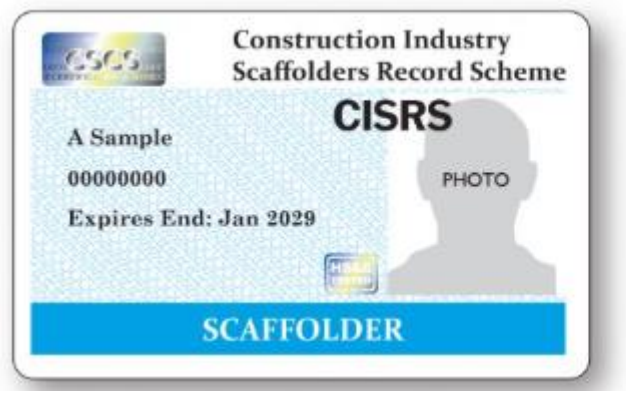
5.1.10 SCAFFOLDER COMPETENCE

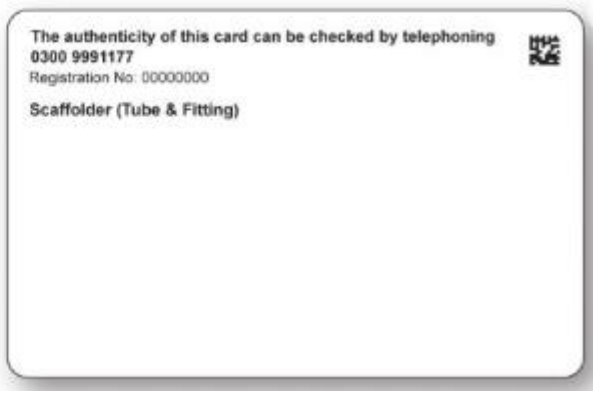
Scaffolders and Scaffold Supervisors working on Taylor Wimpey sites must hold a scaffold qualification /card relevant to their work through the CISRS scheme.

See overleaf for details of the various CISRS Cards

The back of the CISRS Card identifies which system the holder has been trained in and this card must be presented to the site management team before any work is carried out.

Scaffolders may only work on types of system that they have been trained on.





Within any team of scaffolders, it must be ensuring that there is the correct ratio of 'trained' to 'trainee' scaffolders. A scaffolder is considered a 'trainee' until they have passed their 'part 2' training and until this point may only work under the close supervision of a 'part 2' or 'advanced' scaffolder.

Note: The CISRS 'Basic Access Systems Erector' Card is not acceptable on a TW site unless the operative is under training and constant supervision of the fully trained scaffolder.

Each site must have a appointed chargehand or lead scaffolder, with this individual holding a CISRS Basic Scaffolder (Part 2) as a minimum.

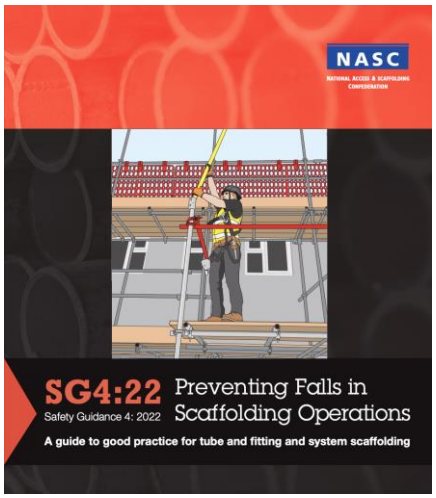
Note: Scaffold Labourers are not permitted to carry tools wear harnesses and lanyards or any other fall arrest/restraint system and must be always supervised.

5.1.11 SAFE SYSTEM OF WORK

Prior to making any alteration to a scaffold, access must be closed and locked off, with a scaffold incomplete sign placed clearly at each entry point.

Where any scaffolds are interlinked, the linked plots must be securely separated from the plot to be worked on by stop ending.

During work, scaffolders must ensure steps are taken to secure scaffolding material (tubes and boards) whilst dismantling or erecting scaffold.



- Scaffolders must work safely when working at height
- They must always be prevented from falling or have mechanisms in place to minimise the consequences of a fall.
- This is defined in an industry standard guidance document from NASC, SG4.
- Adoption of this is mandatory on Taylor Wimpey sites.
- Ensure all tubes and boards temporarily rested against the scaffold structure are positioned securely
- Do not stack too much material against the scaffold at any one time
- Move or use tubes / boards in a stillage as soon as possible

Setting up an Exclusion Zone

It is impractical to completely enclose a plot during the erection or dismantling of scaffold as scaffolders need unobstructed working areas, However, we do need to have a means of alerting others to the foreseeable risk i.e., advising them to keep clear of the plot/area to avoid the potential hazard of falling or dropped scaffolding materials.

Shown below is a means of establishing a suitable 'Scaffold Exclusion Zone' thereby alerting persons on site that:

a) Scaffolding work is underway; and
b) To keep a safe distance away from the scaffolding area.

The approach to setting up a 'Scaffold Exclusion Zone' may differ depending on the plot e.g., route of traffic management, telehandler off-loading area, etc. However, a simple assessment during 'pre-call-off' or 'pre-work' checks by the Site Management Team and Scaffold Supervisor can identify the most prominent location for the warning signs, to achieve maximum exposure.

All sites must have a minimum of eight Barriers, and four Warning Signs allocated for this use *(sites with a greater build rate may require more)*.

The barriers and signs can be stored locally near the plots in readiness for any scaffolding erection or dismantling operation.

Note: any 'riot' type barriers are suitable.

All scaffolders on site must be briefed and the use of the Exclusion Zone discussed with other site operatives during site inductions.

Areas of your site where the simple measures outlined above are not sufficient to protect others from the risk of falling scaffolding components will require further consideration. These circumstances might include

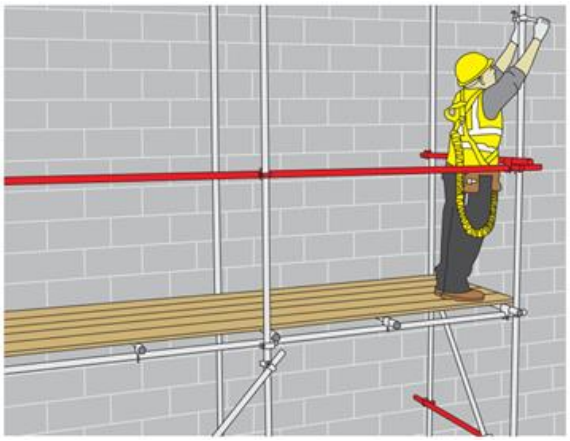
- Striking or erecting scaffold over or adjacent to an area alongside a public area
- Striking or erecting scaffold near to an area open to the public
- Striking or erecting scaffold in an area where a fallen component could reach a public road, or a railway.

Fall Protection

To ensure that scaffolds are erected, altered, and dismantled safely, scaffolders must operate a safe system of fall protection, i.e., enable handrails to be fitted to the next lift before accessing the platform.

Systems must comply with Industry Guidance (SG4:22 Latest Edition), such as:

Scaffolder's "step"



This step allows the scaffolder to erect the guardrail protection on the lift above in advance of them accessing the lift

For some modular system scaffolding, standard side brackets (hop-ups) can be used to create an internal temporary platform to install guardrails in the lift above, in a similar fashion to the proprietary scaffolders step system.

Note that a guardrail will need to be fixed to the base lift to accommodate the step for the first lift.
A foot tie may also be required to secure the base lift with certain step designs that are supported by a scaffold standard – see manufacturers' instructions.

Scaffolders must be clipped on to a suitable anchor point (ideally to the back ledger) due to the remaining risk of falling from the scaffold when using a scaffolder's step system.

Scaffolders must be clipped on before climbing on the temporary platform and must not jump down onto the boarded platform due to the risk of board failure from spot impact loads

Checking and Inspection of Safety Harnesses and Lanyards

All harness and lanyards used for fall arrest must be:

- Visually checked daily before use
- Weekly recorded interim inspection carried out
- Detailed inspection every 6 months.

Weekly interim inspections must be recorded:

- for TW directly employed Scaffold Operatives must use F2.07 – Work Equipment and Lifting Equipment Inspection Record Sheet to record their weekly checks
- Contractors to record on a suitable PUWER form

Advanced Guardrail (for example 'bSafe' Fast Guard)

These push-ups type advanced guardrail tools (AGT) utilise special couplers that allows scaffold tube guardrails to be erected from below and pushed up into position with a locating tool.

The guardrail is automatically locked and remains in place to provide fall protection when scaffolders access the next lift. The sequence of work is critical as the advance guardrails need to be raised before the next lift is formed. The temporary guardrail remains in place whilst the permanent guardrails are fitted. Alternatively, the AGT couplers can be replaced with normal right-angle scaffold couplers to form the scaffold guardrails. This system can be used on all faces of the scaffold including inside fall risks and stop-ends.

The positioning tool can also be used to unlock the guardrail from below during dismantling.

All scaffold operatives must have access to and be briefed on their Safe System of Work, which must include the following:

- Always wearing a harness and lanyard e.g.:
    - Fall arrest harness with rear dorsal ring to BS EN 361.
    - Fall arrest lanyard incorporating an energy absorber to BS EN 355
    - (max Length 1.75m) with 55mm opening scaffold hook for one handed operation to BS EN 362; and
- Displaying a "scaffold not in use" sign where necessary

Impact Wrenches

- Scaffolding Contractors whose Operatives use impact wrenches on site must establish that the impact wrenches being used can apply the correct torque (50 N/Mtr) to scaffold fittings on a consistent and recurring basis.
- Prior to using an impact wrench on site all Operatives must first undergo training, instruction and familiarisation. Monitoring should be carried out to ensure that the impact wrench is always being used in the correct manner.
- An Assessment is carried out to identify the risks from noise and hand/arm vibration
- Impact wrenches are normally supplied with rechargeable lithium batteries that provide a more stable power pack. It is recommended that all users must follow manufacturer's instructions, and that battery life should be regularly monitored.
- Impact wrenches are not to be used with 'pressed' type scaffold fittings.

5.1.12 EMERGENCY AND RESCUE

All scaffolders safe systems of work will need to include emergency rescue arrangements that are suitable for the scaffolds being worked on. It must be noted that a rescue plan that is suitable for basic housing will not be appropriate for more complex structures such as truss out or suspended scaffolds. Consult with your RHSEA if you are unsure.

An outline of a typical rescue system for a scaffolder who has fallen within the scaffold structure or is suspended next to the scaffold is detailed below:

- All operatives to receive instruction in their rescue plan and rescue procedures
- Inform site management immediately of emergency situations and ensure emergency services are called with instructions on the nature of the incident; and
- First priority is to recover suspended scaffolder and release the pressure of the harness as soon as possible.

Self-Rescue – If possible, a fallen scaffolder should attempt self-rescue by supporting self on adjacent scaffold or structure to reduce suspension trauma and then climbing back on to structure / platform.

Assisted rescue- A fallen scaffolder may be incapable of self-rescue, in these scenarios, colleagues will need to

- Move to or create a working platform adjacent to casualty; ensure this is boarded out with min 3 boards; use own harness and lanyard if no guard rail
- Encourage casualty to keep all limbs moving to aid blood circulation, flex muscles, transfer weight from side to side, make use of foot straps if available or adjacent scaffold / structures
- Draw the fallen or injured scaffold onto the platform, once the casualty is on safe platform, the fall arrest equipment can be released; and
- Casualty to be seated in upright position and not allowed to lie horizontally or in traditional recovery position if conscious.
- Once the fallen scaffolder is recovered, steps will need to be taken to safeguard first responders, by for instance, boarding adjacent bays, provision of double handrails and means of safe access.

Scaffolder Unconscious - Create a platform as above and manually manoeuvre casualty onto platform. Leave casualty in the inclined position, with the head at the highest point and body at about 20 degrees, NEVER LAY FLAT if unconscious

Emergency Services – Any scaffolders on site may assist emergency services by constructing safe access to the casualty where required and assisting the emergency services if practicable in getting the casualty to ground level.

Any scaffolder who has been suspended in a harness must be treated as a medical emergency and should be given immediate medical attention.

Other scenarios

Rescues of scaffolders who have fallen and are hanging in free air are far more complex and will require specific plans to be developed, along with training and equipment. Your scaffolding contractor and RHSEA will be able to assist with developing these.

Examples include

- Rescue by a MEWP
- Gotcha rescue kits

5.1.13 SCAFFOLD HANDOVER AND INSPECTION ARRANGEMENTS

A handover certificate must be provided for each scaffold and all subsequent adaptions.

Directly employed scaffolders must also provide a handover certificate on completion of work.

The Site Manager must inspect the scaffold at handover before the scaffold is brought into use and regularly thereafter (

At least every seven days – see section 1.4.3). The Working Platform/Scaffold Inspection Record Sheet (Construction HSE Plan – Folder 2, F2.6).

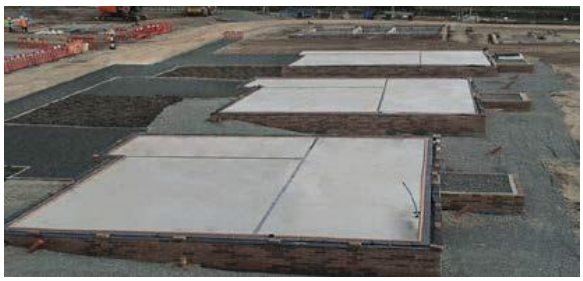
On complex or designed scaffolds, guidance on the additional critical elements to check should have been provided by the scaffold designer (see Section 5.1.5 - 6).

5.1.14 KEY INSPECTION POINTS

The following section is designed to assist any member of the site team who is required to inspect any scaffold used on site. The points below refer to the expected standard of a TG20:21 compliant or basic system scaffold. More complex or designed scaffolds may have additional key points to inspect; the design or compliance sheet also describes these.

Many of the principles are similar when inspecting a system scaffold. Where there is a possibility of significant differences between the requirement for tube and fitting and system, this must be highlighted and discussed in your system scaffold inspection training.

Scaffold margin/ foundation

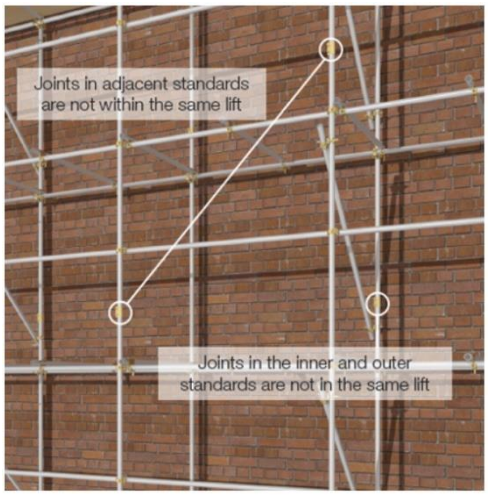


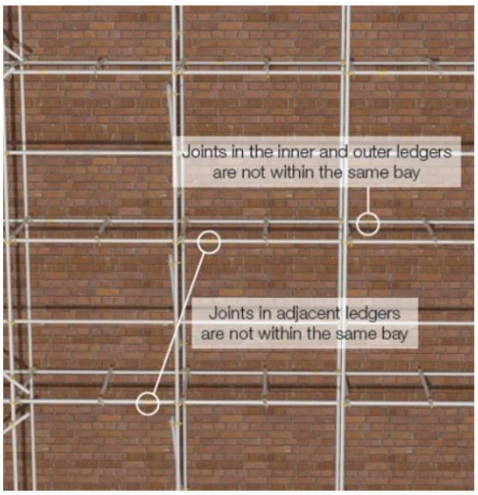
- The foundation for the scaffold must be firm and level, either an existing hardstanding or compacted aggregate.
- During inspections, check if the condition is deteriorating due to weather
- No excavation within 1.0m of the scaffold standards.
- No slope or excavation batter within 300mm of the scaffold standard
- All standards terminate at a base plate

All standards on a sole pad (38x225x450mm) or if founded on a hardstanding, a treader plate (up to three lifts).

Scaffold structure and bracing

- Standards spaced as per the indicated standard spacing on the compliance sheet, design or system user guide.
- Lift heights not greater than the maximum lift height on the compliance sheet, design or system user guide.
- Standards and ledgers plumb vertical/ horizontal (maximum deviation of 50mm across full length/ height)
- Ledger bracing to be in accordance with the design or if a compliance sheet is being followed then ledger bracing is required to every end frame per elevation and every second bay, to every lift. Bracing to be secured to the scaffold within 300mm of a node point (tube and fitting only)
- Façade bracing to be in accordance with the design or if a compliance sheet is being followed then facade bracing is required every six bays, to every lift and every elevation (tube and fitting only)
- System scaffold braced as per the user guide
- Transoms spaced at a maximum of 1200mm, with an additional transom within 300mm of every standard.
- Board ends bearing on the transom with an overhang of at least 50mm and not more than 150mm. (tube and fitting).
- Where tubes are jointed, this must be with the use of load bearing ‘sleeve couplers’ or ‘tubelock’. Care must be taken to ensure that where sleeve couplers are used, joints in both the standards and ledgers are staggered between different lifts and different bays.





Ties

Ties play an extremely important role in providing stability to scaffolding structures, with several techniques available, including using structural features of the building or by anchors installed into the fabric of the building.

Tube and Fitting scaffolds must be tied in accordance with the tie frequency indicated on the TG20:21 compliance sheet as soon as the scaffold reaches a height of 4.0m from its base plates, or in accordance with any design in place.

System scaffolds must be tied in accordance with the user guide for that system or any design in place.

When considering how to tie a particular scaffold, the following points lead to a determination of the most effective and simplest means.

1) Any elevation with windows can be tied with through ties as shown below
2) For any elevation with a compliant loading bay or stair tower, the bays directly behind the add on structure and one bay either side can be said to be 'buttressed' by this tower
3) Any elevation with sufficient space around its base may be secured with the provision of a raker in accordance with the detail below.
4) If none of these above options are available, then mechanical ties into the building fabric are needed.

Through ties

- Tie tube connected to the inside and outside ledger with a right-angle coupler, within 300mm of a standard
- Secured with a tube on the inside and outside of the opening to prevent movement in both directions.
- Openings for through ties may be created by omitting or removing a brick/ block

Rakers

- Several configurations of rakers can be found in TG20:21, some requiring a secure stake into the ground. For simplicity, the non-staked version is pictured and described here.
- Rakers can secure a scaffold up to a maximum height of 6.0m and can only be used in situations where the tie duty indicated on the compliance sheet does not exceed 2.7kn/m2
- The main raking tube must sit at an angle of not more than 60deg and be fixed to the ledger braced standard within 300mm of a node point.
- The raking tube can be fixed to the inner face (as shown) or the outer face. Where fixed to the outer face, the raker requires additionally fixing to the 2.0m lift with a structural transom.
- The base of the raker must sit on a sole board and be secured both to the scaffold at its foot and to at least one other raker. (if only a single raker is used, it must be securely staked into the ground).

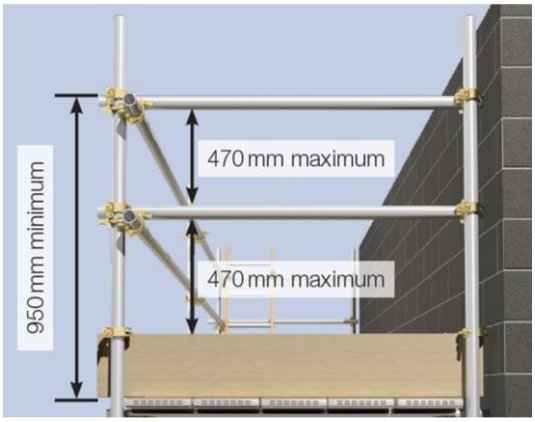
Mechanical ties

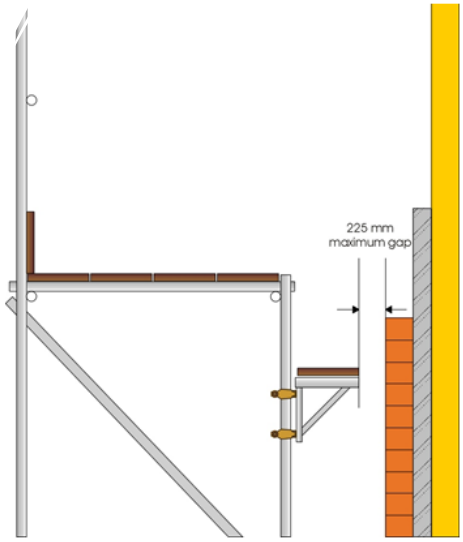
- Achieving a satisfactory mechanical tie into 'green' brickwork can be difficult, and as such, this tie methodology must only be considered where other options have been exhausted.
- Brickwork requires sufficient time to fully cure before a tie can be installed.
- Ties must be installed in accordance with the fixing supplier's guidance.
- Once installed, ties will need to be tested by a competent person (usually the scaffolder or supervisor) using a calibrated pull tester.
- On each plot, a minimum of 5% of the ties (with a minimum of three) must be tested.
- If any test fails, the testing frequency is to be doubled to 10% (minimum of 6)
- If two tests fail, the testing frequency is to double again to 20% (minimum of 12)
- If more than two tests fail, the fixing methodology needs to be reviewed, and all ties tested.
- When testing a tie into brickwork, the test apparatus must be set up, so the feet of the testing rig do not rest on the brick into which the tie is made; this means that the integrity of the mortar joints is also being tested.

Putting this into practice

- Within one scaffold, it would not be unusual to encounter multiple types of ties
- The entire scaffolding, considering its returns, buttresses and ties must be considered as a whole to ensure that each elevation is tied as a minimum at the frequency as indicated on the compliance sheet or system scaffold user guide.

Working platform

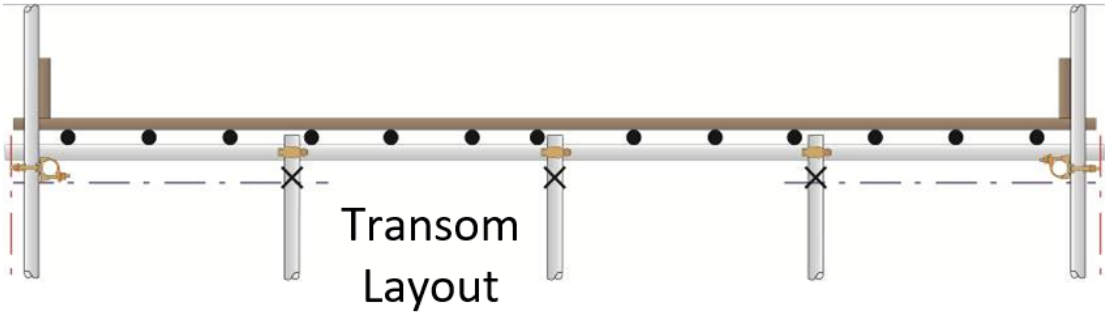




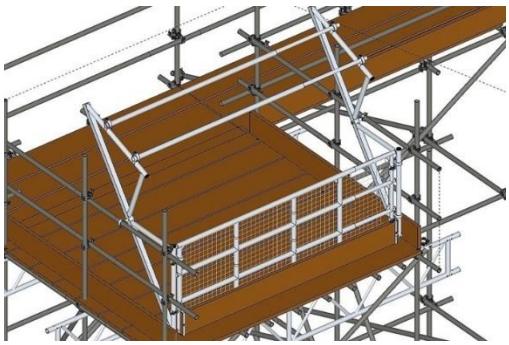
- Every working platform must have a minimum of two guardrail, one positioned at a minimum height of 950mm, and others positioned in such a way that means no gaps greater than 470mm are present.
- There may be no lateral opening in any guardrail except where a ladder or stair access joins.
- Every working platform must be equipped with a toe board of a minimum height of 150mm, and, where tools or materials are going to be carried on the platform, brick guards must be in place, that are secured at the top and bottom.
- On any plot with a roof pitch of more than 40 degrees, a third guard rail must be provided.
- There may be no gap in any working platform except that created where the standards protrude between the working platform and inside boards. The inside boards must be clipped to prevent this gap opening during use.
- The gap between the building and inside boards must be kept to the smallest reasonable distance to allow works to progress. Thus, in traditional build methodologies, this must not be more than 100mm. Where additional working room is needed, i.e., for render, cladding or in timber frame build, an additional gap up to a maximum of 225mm may be introduced just in advance of this build stage that requires the gap.
- Where the gap exceeds 225mm, internal handrails must be installed.
- All boards must be checked to see if they are in good order and replaced if defective.
    - No scores across the face of the timber (check the underside from below)
    - No notches in boards
    - No splits in the timber longer than the board are wide
    - No warping or twisting of timbers

Loading bay

- Standard designs for a loading bay and a side-on loading bay are available on inhouse, these, or a TG20:21 compliant loading bay is to be provided where materials are required to be loaded out onto a scaffold.
- The key inspection principles are identified on the design.
    - Board bearing transoms spaced at 300mm
    - Structural transoms to be fixed using load bearing (double) couplers.
    - Standards spaced at a maximum of 950mm
    - Sufficiently braced (façade, ledger and plan bracing needed)
    - All puncheons fitted with supplementary couplers.
- Where long loads are to be loaded over the handrails of the loading bay, spur bracing must be in place.
- Counterbalanced self-closing up and over gate in place.



Loading bay gates:

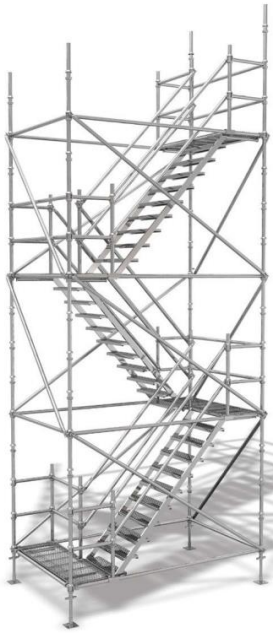


- Gates with a suitable counterbalance must be provided to ensure the gate can remain in the open position of its own accord, without the need for operatives to hold the gate open.
- A double guardrail must be provided to protect operatives when the gate is in the open position

Stair tower

Stair towers may be proprietary systems or constructed in tube and fitting.

- Where constructed from tube and fitting, the following requirements apply.
    - Stair treads that rely on a scaffolding clip for stability (see right) are not permitted, instead, a tube and fitting tower may support a proprietary stair unit.
    - Stair towers over 1.5m tall, must be designed by a competent scaffold designer.
- Where the scaffold contractor Is proposing to use their own design, this must be agreed by the PD prior to use on site.



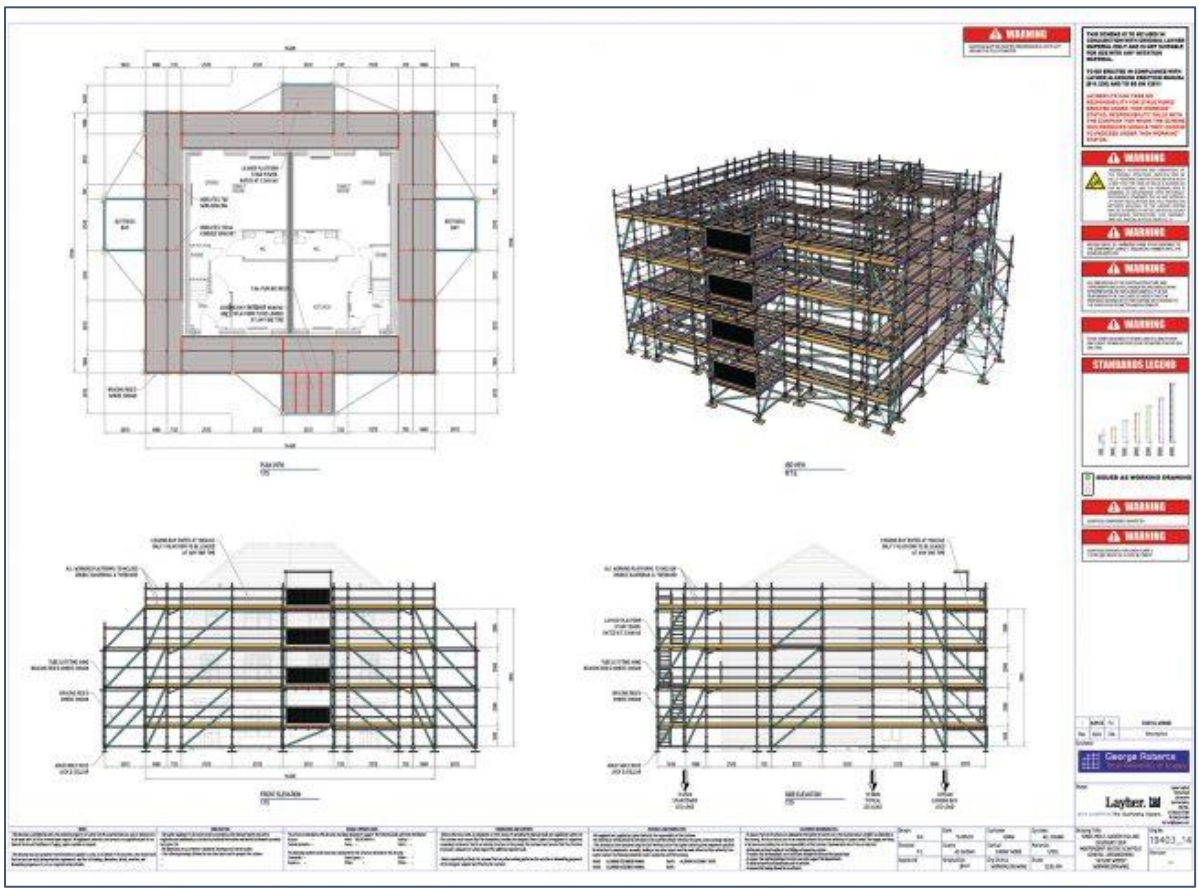
Where proprietary stair towers are used to access a scaffold, the following requirements apply

- The manufacturer's instructions for erection, dismantling and use must be followed and available on site
- Scaffolders must have been trained in the use of the system
- Site management teams must have been trained in its inspection.
- The system must be physically secured to a structure or scaffolding in accordance with the manufacturers guidance.

Scaffolding for timber frame (Category 1: Non-Standard Temporary Works)

- All methods of timber frame construction require that scaffolding is erected free standing in advance of construction. All timber frame scaffolds require a design.
- These scaffolds must be constructed and inspected in accordance with the design drawings.
- Where any kentledge is indicated, this must be positioned onto the scaffold in the indicated location in advance of construction.
- Where any buttress is indicated, this must be constructed progressively with each lift/ elevation.
- Any buttress and/ or kentledge weight must remain in place until has been tied to the structure in a manner indicated by the timber frame manufacturer. This usually requires tying into the floor cassettes.
- As bricklaying commences, the scaffold may require numerous alterations. It must be ensured that each alteration does not affect the stability of the overall structure or create falls from height. I.e., where inside boards are removed, additional internal handrails must be provided.

Example of a scaffold Design for timber frame below

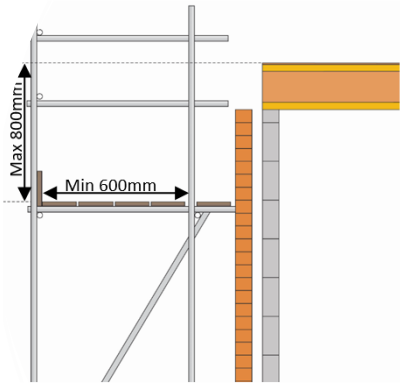


5.1.15 SCAFFOLD LIFT HEIGHTS

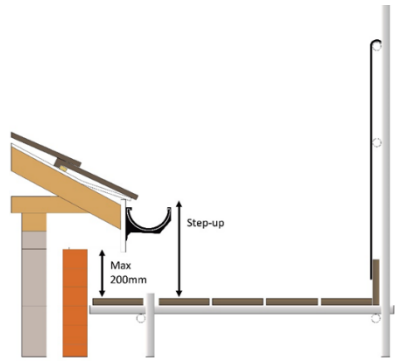
The type of construction work being carried out from the scaffold determines the height and number of lifts required on each scaffold.

To manage the risk of falls from the mid-floor(s) and roof surface on to the external scaffold working platforms, there are a few critical height dimensions/measures that must be applied to all our scaffolds.

Critical Scaffold Lift Heights



- To ensure the risk of falls from any midfloor are minimised, the scaffold working platform must be set a maximum of 800mm below the finished height of that mid floor.
- To ensure the risk of falls off the scaffold (onto floor slab/ midfloor) are minimised, no scaffold lift may be set more than 600mm above the floor slab/ midfloor unless internal fall protection (decking system, birdcage) is in place, or internal handrails provided.



- To allow safe access onto the roof, the 'top lift' of scaffold working platform is set a maximum of 200mm from the underside of eaves.

Window Infills (Category 1: Standard Temporary Works)

Fall protection must be in place at structural openings where a gap exists between the working platform and proprietary decking system. This should be achieved by extending the scaffold or decking system into the opening in accordance with the user guide, compliance sheet or scaffold design.

Note: All scaffolds must be erected to minimise the internal fall distance, including the installation of proprietary decking systems (i.e., TRAD, RHINO or M&G decking systems)

Table Lifts (Category 1: Standard Temporary Works)

- Table lifts not to exceed 2m in height so that materials can be easily loaded up by hand.
- Ladders are positioned adjacent to the table lift so the step off point is to the side.
- When fitting a gate to a putlog scaffold to ensure that the support tubes are stable and cannot move.
- Ladders are secured, with a halo around access point to provide additional handhold
- Tools and materials must not be carried up the ladder as three points of contact cannot be maintained.

Access Scaffolds for External Rendering (Category 1: Standard Temporary Works)

For the application of external render finishes safe access must be provided via a suitable scaffold working platform.

- The existing scaffolding may need to be fully or partially adapted to achieve a suitable working height for rendering
- Bricklayers hop-ups or similar may not be used to gain additional height on the working platform
- When adapting for render, Scaffold Operatives must remove the inside board and secure a scaffold tube, closing the inside gap to a maximum 225mm, whilst allowing space for equipment
- Brick guards required only if material is stored on the working platform
- Access is via a stair tower

5.1.16 TIMBER /CONCRETE STRUCTURES – FALL PROTECTION (Category 0: Standard Temporary Works)

On timber frame or concrete structures where the height between the mid-floor and scaffold platform below exceeds 800mm, then suitable edge protection is to be provided e.g.:

- Internal handrail on inner side of scaffold; or
- Edge protection to the perimeter of the floor/slab edge

5.1.17 SCAFFOLD SECURITY

Securing Stairs/ladders to prevent unauthorised access

All stairs/ladders when the site is closed must be secured to prevent unauthorised access. Means of securing stairs/ladders include:

Stairs:

- Closed-off using a proprietary gate provided by the scaffold supplier, or
- Closed-off using a heras or other type of fence panel
- The sides and rear closed off with heras fence panels, boards or panels, and

  The gate/fence must be secured with a suitable lock to stop access on to the stairs

Ladders:

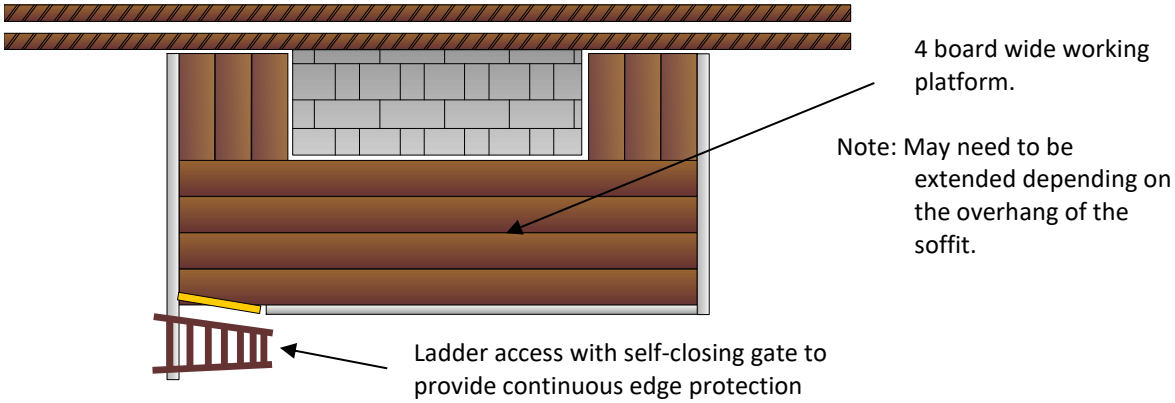
- A 'ladder guard' fitted that is locked/padlocked into ladder to make the rungs unusable
- Remove ladders and store securely, either in the compound or padlocked horizontally to the scaffold

5.1.18 LOW LEVEL SCAFFOLD ACCESS (Category 1: Standard Temporary Works)

Access to small low roof: e.g., bolt on, retrofit or small tiled porch roofs.

Wherever possible the main existing scaffold is utilised as it is progressively stripped to provide the necessary wrap-round platforms with suitable provision for ladder access and loading.

However, if the scaffold is provided independently the detail illustrated below is used.



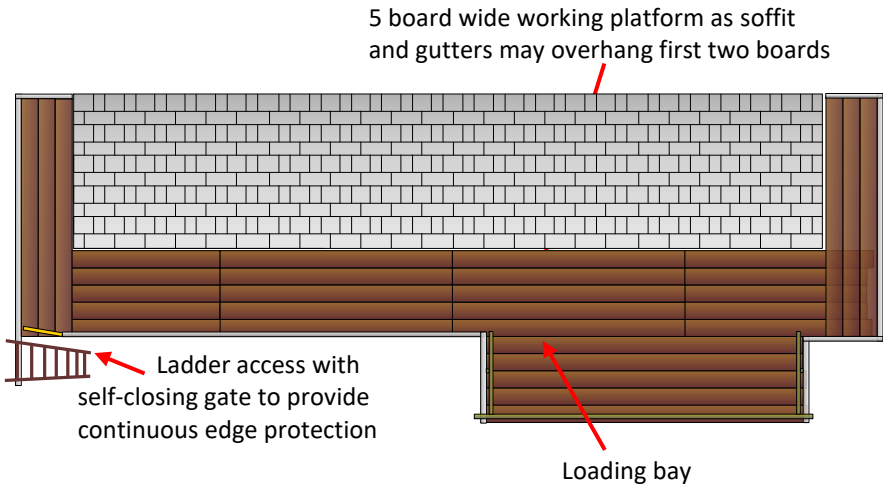
This scaffold is of a wrap-around type, giving sufficient access to the front and sides of the roof. Access is via a ladder and self-closing gate directly on to the working platform.

Access to Large low roofs e.g., those over integral garages and porches.

Wherever possible the main existing scaffold is utilised as it is progressively stripped to provide the necessary wrap-round platforms with suitable provision for ladder access and loading bay. However, if the scaffold has to be provided independently the following detail is used:

Access is via a ladder and self-closing gate directly on to the working platform.

A loading bay is to be included for the loading of materials.



Example of low-level scaffold

5.1.19 TRUSS / SPANDREL PANEL RACKS (Category 1: Standard Temporary Works)

Tube and Fitting Roof Truss/Spandrel Panel Racks

Details are available for:

- Independent (freestanding) truss/spandrel rack, available on inHouse –; and
- Truss rack against a scaffold, available on inHouse
- Both can store trusses up to 10m span with total stored weight of 4.5 tonnes.
- Key inspection points
  - The truss rack is at high risk of being knocked during use and can be subject to high wind loads- ensure it is included in your statutory inspections.
  - Ensure the raking tubes and correct weight of kentledge is in place as indicated on the design if free standing.
  - Ensure the maximum bay lengths and sizes are adhered to.
  - Ensure supplementary couplers are in place as indicated on the design (marked with a black cross)
  - Trusses must be supported on the truss rack at the indicated node points (see design)

System Scaffold Independent (Free Standing) Truss / Spandrel Panel Racks

There are also System Scaffold drawings available on Inhouse for both Freestanding CupLock Truss Rack Scaffold and Freestanding KwikStage Truss Rack Scaffold.

Truss /Spandrel Panel Racks in Use

The truss racks are designed to:

- Carry a number of truss packs as well as floor joists or spandrel panels and so service a number of plots.
- Varying sizes can be accommodated with extra transoms in the rack; and
- Meets NHBC's and manufacturer's truss storage requirements.

5.1.20 SUPPORTING MID-FLOORS (Category 2: Standard Temporary Works)

Timber mid-floors being loaded during the build normally require the mid-floor to be supported from below, e.g. under propping (see Section 6.4.3).

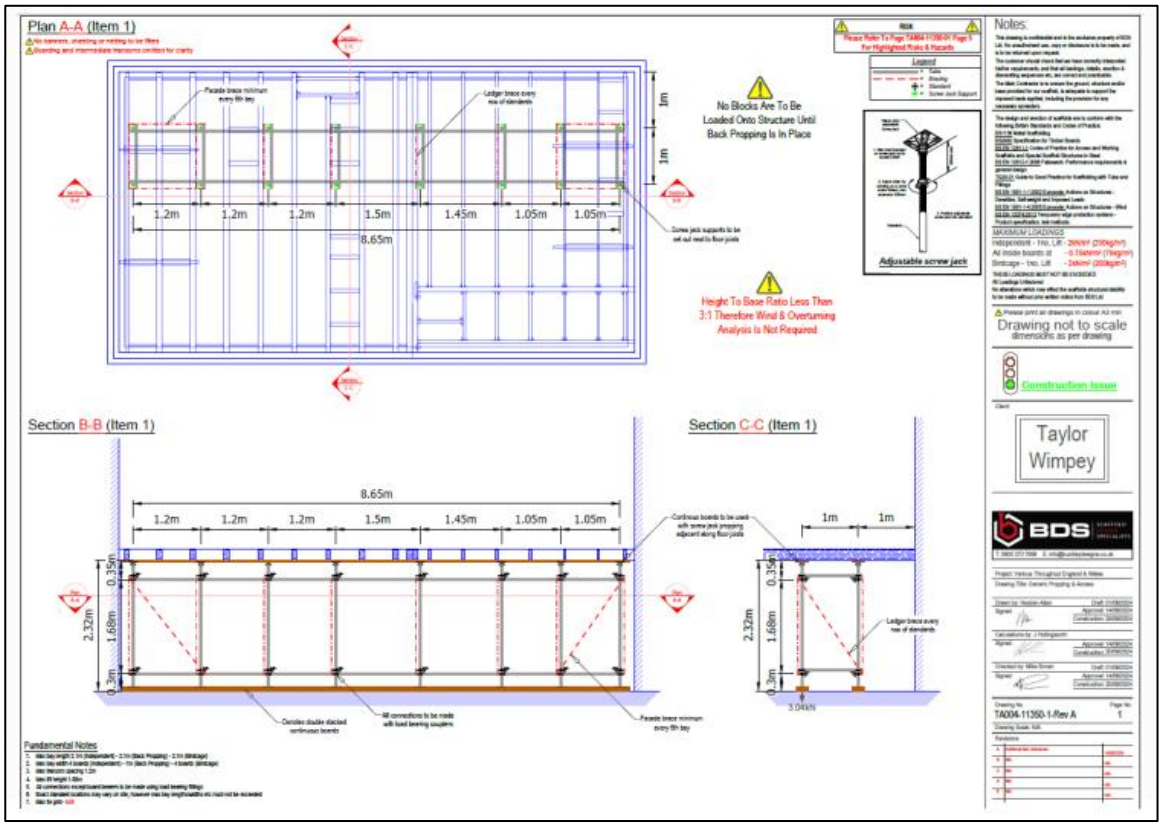
Where it is intended to have a mid-floor loaded without under propping an assessment must be carried out by a Structural Engineer and Floor Manufacturer to confirm that the mid-floor can carry the weight of the load without the need for under propping.

Mid-floors where support (under propping) is required must use either:

- The TW standard designs (see inHouse), or
- Bespoke designs via the Scaffold Contractor

Note: sole boards under the propping must be sprayed red to avoid reuse on working platforms due to the loadings applied to them in this configuration

Example below of a TW Propping Design for supporting a timber mid-floor



5.2 LIGHTWEIGHT MOBILE SCAFFOLD PLATFORMS (Category 1: Standard Temporary Works)

- Only a 'Nominated Person' is permitted to erect, inspect, use, move, alter and/or dismantle a Lightweight Mobile Scaffold Platforms and this person must be PASMA certificated.
- Lightweight Mobile Scaffold Platforms are inspected, and a report made by the nominated person after assembly, or significant alteration, and before use.
- Thereafter, they are inspected regularly but at least every 7 days, or after any event likely to have affected stability or structural integrity, e.g., adverse weather conditions.

5.3 LEANING LADDERS

5.3.1 WORKING WITH LADDERS

All work at height must be planned and where possible eliminated, following this hierarchy of control:

- Activity carried out from ground level, i.e., telescopic window cleaning equipment.
- Use of a drone, i.e., survey
- Working from the perimeter external scaffold (progressive scaffold strip)
- Local scaffold or aluminum scaffold towers
- MEWPS
- Leaning ladders

The use of a leaning ladder is only permitted where the other arrangements are not practical, and the task is:

- Low risk, and
- Short duration

Typical works considered suitable to be carried out from a ladder include:

- Fitting/adjusting downpipes
- Mastic pointing
- Cleaning, painting (touching up only).
- Installing aerials, alarm boxes, etc.; and
- Pointing putlog holes.

In any case, working from a ladder may only be carried out:

- For short duration work (30 minutes maximum).
- For light work (materials or tools up to 10 kg and of manageable size / length).
- To a maximum vertical height of 5m. For heights above this, alternative means of access must be found; and
- Where three points of contact can always be maintained.

5.3.2 TYPES OF LADDERS

BS EN131 Professional

Only the following ladders may be used on TW sites:

Ladders to EN131 professional

Note:

a) damaged ladders must be put out of use immediately.

b) metal ladder rungs must have a profiled (anti-slip) surface.

C) Telescopic ladders are not permitted

5.3.3 STABILITY OF LEANING LADDERS

Prior to using a 'Leaning' ladder suitable arrangements must be in place to ensure the ladders stability, by either:

- Secure the ladder using a suitable ladder stability device
- Tying the ladder to a suitable point

Note: Footing of ladders by another person is not permitted

Ladder Stability Devices

There are two types of ladder stability devices

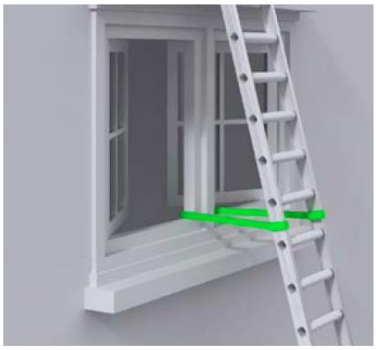
- An integrated stability device permanently fitted to the ladder
- A ladder stability device that can be fitted to the base of the ladder

Note: all new ladders (BS/EN 131 Professional) over 3m must come with an integrated stability device.

If you have an older ladder that is still in usable condition, then a suitable ladder stability device must be fitted prior to use (unless you are securing the ladder by a mean of tying)

A stand-off 'V' bracket facilitates safer ladder use, e.g., around corners or where there is not a strong upper resting point (e.g., against plastic guttering / fascia).

Tying Ladders



This method requires the ladder to be tied to a suitable physical feature such as a window mullion

To maintain stability and prevent rotation, both stiles must be tied

5.3.4 THREE POINTS OF CONTACT

Three points of contact must always be maintained on a ladder . This can be provided via feet and hands (e.g., two feet and one hand when carrying out tasks such as wiping windows/frames, plastic guttering, or fascia, etc.). However, where three points of contact cannot be maintained (e.g., fitting a swan neck to a downspout, mastic work, pointing putlog holes, etc.), the operative must wear a safety harness with D-ring, secured to the ladder by lanyard restraint (provides the third point of contact).

Item	Order Reference
Ladder Stability Device	TW01
Ladder Stand-off Bracket	TW02
Safety Harness with D-ring	TW03
Restraint Lanyard	TW04
Full set (TW01, TW02, TW03 and TW04)	TW05

Ladder Safety Equipment is available from Safety Gear Store (Tel 0800 678 5708). Email: customerservice@safetygearstore.co.uk

This use of the ladder safety equipment is for all freestanding ladders on TW sites, whether supplied by TW or a contractor. Site Managers must stock at least one set of the equipment for use by general operatives on site for tasks such as minor repairs, cleaning, etc.

5.3.5 GENERAL POINTS FOR SAFE USE OF LEANING LADDERS

- only carry light materials and tools up to a maximum of 10kg – read the manufacturer's labels on the ladder and assess the risks
- don't overreach – make sure your belt buckle (or navel) stays within the stiles
- make sure the ladder is long enough or high enough for the task (ladders on TW sites must not exceed 5m in vertical length)
- don't overload the ladder – consider your weight and the equipment or materials you are carrying (10kg)
- check the pictogram or label on the ladder for any advisory information
- make sure the ladder angle is at 75° – use the 1-in-4 rule (one unit out for every four units up – see opposite).
- always grip the ladder and face the ladder rungs while climbing or descending – don't slide down the stiles
- don't try to move or extend the ladder while standing on the rungs
- don't work off the top three rungs, and try to make sure that the ladder extends at least 1 m (three rungs) above where you are working
- don't stand ladders on movable objects, such as pallets, bricks, lift trucks, tower scaffolds, excavator buckets, vans, or mobile elevating work platforms
- avoid holding items when climbing – use a tool belt
- don't work within 6m horizontally of any overhead power line unless it has been made dead or it is protected with insulation. Use a non-conductive ladder (e.g., fibreglass or timber) for any electrical work
- maintain three points of contact when climbing and ascending the ladder