Taylor Wimpey

Taylor Wimpey Uk
Site HSE Manual

Section 5
Scaffolding

Document Owner

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Working on scaffolding presents several health risks that can affect workers both immediately and over time. Constant climbing and balancing can strain muscles, joints, and the lower back, while awkward postures increase the likelihood of repetitive-strain injuries. Dust, debris, and chemical exposure at height can irritate the lungs and skin, and prolonged work in harsh weather such as cold, heat, or wind can lead to dehydration, fatigue, or hypothermia. Without proper rest, training, and protective equipment, these health pressures accumulate and undermine long-term wellbeing.

Safety risks on scaffolds are often more acute and can be life-threatening if not properly managed. Falls from height remain the most significant danger, especially when guardrails, toe boards, or harnesses are missing or improperly used. Poorly assembled or overloaded scaffolds can collapse, while loose tools and materials create hazards for both workers on the platform and those below. Electrical lines, unstable ground, and inadequate inspections further increase the likelihood of accidents that could otherwise be prevented through strict safety protocols.

Environmental risks also play a major role in scaffold work, influencing both safety and productivity. High winds can destabilize platforms and make balance difficult, while rain, ice, or snow creates slippery surfaces that heighten the chance of falls. Extreme temperatures affect material integrity and metal components can expand, contract, or become brittle; compromising structural stability. Noise, dust, and vibration from surrounding construction activities can also reduce visibility and concentration, making the working environment more hazardous overall.

5.1 Introduction

Scaffolding on new build housing sites is typically used to provide a temporary, safe working platform at height which supports both materials & operatives & enables the permanent structure to be built.

Scaffolding, whether constructed from traditional tube & fitting components or proprietary system components is an item of temporary works.

This section of the HSE manual details the standards and control measures to be implemented for the use of scaffold structures on Taylor Wimpey sites.

This has been developed to ensure that all work from scaffold structures including design, erecting, use, alteration, inspecting and dismantling is correctly planned with suitable control measures in place to prevent:

- An operative falling from scaffold structures
- Objects falling from scaffold structures
- Instability or collapse of scaffold structures

5.2.1 Planning for Scaffolding

Thorough planning prior to commencing on site is essential to ensure that scaffolding is designed and provided to meet all intended uses. All scaffolding requirements must be accurately identified so that appropriate, compliant, and safe solutions can be incorporated within the project's programme and site constraints.
Before scaffold operations begin on site, the following considerations must be reviewed and addressed:

- Determine whether a bespoke scaffold design is required.
- Identify any scaffolding or temporary edge protection requirements not directly associated with a specific plot (e.g., retaining or garden walls).

- Identify and assess any unusual external works that may affect scaffold stability (e.g., scaffolding positioned at the top of an embankment or adjacent to a non–load bearing retaining structure).
- Site constraints (such as OHPL) & the effect they may have on scaffold structures.
- Approval requirements from third parties (e.g. Network Rail).

5.2.2 What Scaffolding Requires a Bespoke Design

Strength and stability calculations for all scaffolding shall be carried out unless it is assembled in conformity with a generally recognised standard configuration.

For tube & fitting scaffolds, the NASC has developed TG20 to provide standard configurations.

TG20 compliant scaffolds are standard configurations of tube & fitting scaffolding that have been designed by structural calculations. A TG20 compliance sheet can be used to demonstrate that a scaffold is TG20 compliant and therefore does not require a bespoke design.

Where a TG20 compliance sheet cannot be produced or where all aspects of the compliance sheet cannot be implemented on site, a bespoke design will be required.

For system scaffolding, this has historically been achieved by working in accordance with manufacturer guidance. However, in addition to assembly instructions, strength & stability calculations must also be provided to support these standard arrangements of scaffolding. This is normally provided in the form of tables of safe working heights & configurations within the manufacturer's literature. Not all system scaffold manufacturers provide all of the information required (such as maximum leg loads & tie duty).

NASC has developed TG30 to provide a practical solution to these issues.

TG30 compliant scaffolds are standard configurations of tube & fitting scaffolding that have been designed by structural calculations. A TG30 compliance sheet can be used to demonstrate that a scaffold is TG30 compliant and therefore does not require a bespoke design.

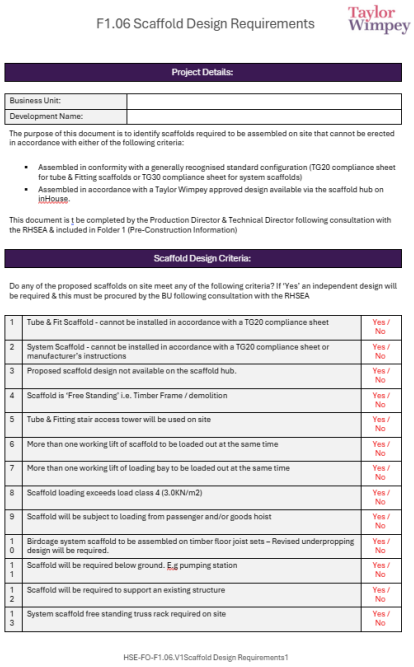
Where a TG30 compliance sheet cannot be produced and manufacturer guidance does not provide a standard solution, a bespoke design will be required.

5.2.3 Identification of Plots Requiring a Scaffold design

Plots/buildings that require a bespoke independent scaffold design must be identified and noted (at pre-tender stage) in the **Folder 1 (F1.6 Scaffold Selection Checklist)**. This form prompts the BU or Scaffold Contractor to provide suitable design documents, including:

- Detailed design drawings to include tie requirements and a list of critical inspection points.
- Calculations supporting the design
- Designers Risk Assessment – this may be a separate document or included on the design drawings.
- Design check certificate (where design requires a class 2 or class 3 design check)

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



F1.06 Scaffold Design Requirements

Taylor Wimpey

Project Details:

Business Unit:	
Development Name:	

The purpose of this document is to identify scaffolds required to be assembled on site that cannot be erected in accordance with either of the following criteria:

- Assembled in conformity with a generally recognised standard configuration (TG20 compliance sheet for tube & Fitting scaffolds or TG30 compliance sheet for system scaffolds)
- Assembled in accordance with a Taylor Wimpey approved design available via the scaffold hub on inHouse.

This document is t be completed by the Production Director & Technical Director following consultation with the RHSEA & included in Folder 1 (Pre-Construction Information)

Scaffold Design Criteria:

Do any of the proposed scaffolds on site meet any of the following criteria? If 'Yes' an independent design will be required & this must be procured by the BU following consultation with the RHSEA

1	Tube & Fit Scaffold - cannot be installed in accordance with a TG20 compliance sheet	Yes / No
2	System Scaffold - cannot be installed in accordance with a TG20 compliance sheet or manufacturer's instructions	Yes / No
3	Proposed scaffold design not available on the scaffold hub.	Yes / No
4	Scaffold is 'Free Standing' i.e. Timber Frame / demolition	Yes / No
5	Tube & Fitting stair access tower will be used on site	Yes / No
6	More than one working lift of scaffold to be loaded out at the same time	Yes / No
7	More than one working lift of loading bay to be loaded out at the same time	Yes / No
8	Scaffold loading exceeds load class 4 (3.0KN/m2)	Yes / No
9	Scaffold will be subject to loading from passenger and/or goods hoist	Yes / No
10	Birdcage system scaffold to be assembled on timber floor joist sets – Revised underpropping design will be required.	Yes / No
11	Scaffold will be required below ground. E.g pumping station	Yes / No
12	Scaffold will be required to support an existing structure	Yes / No
13	System scaffold free standing truss rack required on site	Yes / No

HSE-FO-F1.06.V1Scaffold Design Requirements1

5.2.4 Scaffold Foundation/Margin

Scaffolding must be erected on foundations that are firm, level, clear of debris and adequate to support the structure throughout its lifespan on site. Once the scaffold has been erected, the foundations must be suitably maintained and not undermined.

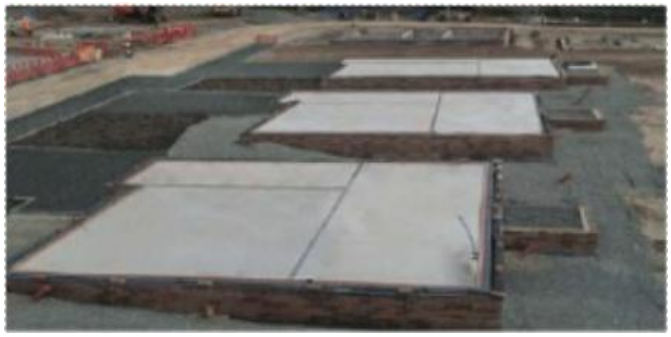
Scaffold foundations are typically installed on the surface of the ground and should be comprised of an existing hardstanding or compacted aggregate. These foundations are unprotected and vulnerable to disturbance and/or displacement by both environmental factors and site construction activities. For these reasons, it is important that the scaffold foundations are regularly inspected and form part of the wider scaffold inspection regime.

Where it is necessary for a scaffold to be founded on an existing structure (such as roofs, retaining walls etc) a structural engineer should be consulted to ascertain weather the existing structure is capable of supporting the loads imposed by the scaffold or if additional re-enforcement/temporary works are required.

The Technical Director as Principal designer is responsible for ensuring the foundation on which the scaffold is to be erected can support the imposed loads.

Where a scaffold needs to be erected adjacent to an existing excavation, slope/batter or embankment, the sole boards must be set back a minimum of either 300mm or 2 x the slope height.

No excavation works are to take place within 1.0m of the standards of an existing scaffold structure.



5.3.1 Scaffold Designs

Under the Work at Height Regulations, Strength and stability calculations for all scaffolding shall be carried out unless it is assembled in conformity with a generally recognised standard configuration.

Where a generally recognised standard configuration (e.g. TG20/TG30 Compliance Sheet) is not available for a specific scaffold configuration or where all elements of the standard configuration cannot be implemented then an independent design must be provided.

Scaffold design is not simply the final drawing provided by the design engineer. It is the holistic approach to providing a compliant solution to an engineering problem & includes the following aspects:

- Identification of scaffold structures which require a bespoke design.
- Selecting a competent design engineer for the project.
- Providing a design brief document to the designer, which includes client specific requirements and site constraints (essentially this document forms part of pre-construction information)
- Obtaining calculations from the design engineer to confirm the proposed scaffold structure will be strong enough for the task & will be stable under different weather conditions.
- Designing out risk where possible to operatives involved in its assembly, alteration & dismantle.

- Provision of assembly, alteration & dismantle instructions. This is typically in the form of a design drawing.
- Reviewing the proposed design to ensure it can be implemented on site.

The NASC classifies the various types of scaffolds as either 'Standard' or 'Complex' structures & examples of each classification is shown below (please note this is not an exhaustive list):

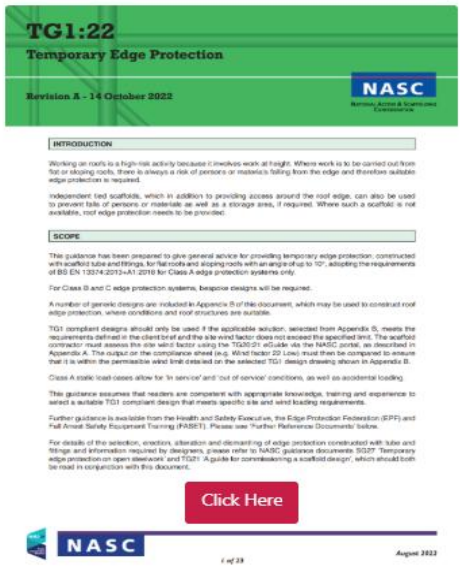
Standard Structures	Complex Structures
Independent scaffolds	Cantilever drop
Birdcage scaffolds	Ramped scaffolds (for plant/machinery)
Loading Bays up to 20KN	Tubular drop scaffolds from steelwork
Underpropping for TW timber mid-floors	Façade retention (Raking Shore, Flying Shore)
Tower scaffolds	Dead shore scaffolds
Timber frame structures	Temporary roof scaffold
Chimney stack	Loading gantry
Bridging with pre-fabricated beams	Pedestrian bridges & walkways
Protection fans	
Pavement gantry	
Radial scaffolds	
Edge protection	
Truss-out scaffold	

5.3.2 Taylor Wimpey Standard Scaffold Designs

Taylor Wimpey have provided a suite of 'Standard' scaffold designs which can be found within the Scaffold Hub 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)
- Free Standing Truss Rack
- Storage Racking
- 1.50KN Birdcage Scaffold
- Underpropping scaffold for supporting timber mid-floors which are either unloaded or loaded with aircrete blocks only.
- Temporary Edge Protection for Concrete Stairs (Provided via the NASC TG1:22-14 Design)
- Temporary Edge Protection for Retaining Walls & Slopes up to 10 degrees (Provided via the NASC TG1:22 suite of designs).

Where an existing Taylor Wimpey design is not available for a specific scaffold configuration or where all elements of the design cannot be implemented then an bespoke independent design must be provided. Please contact your Regional HSE Advisor for further information.

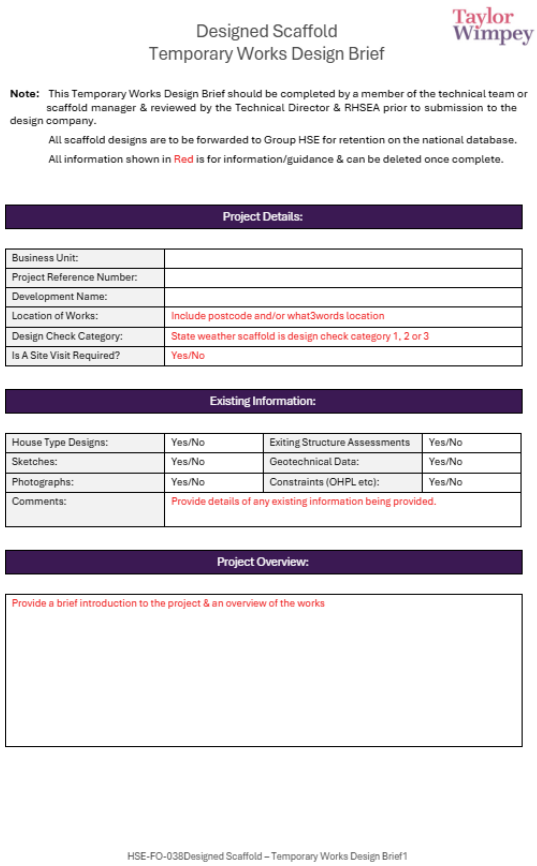


5.3.3 Bespoke Independent Scaffold Designs

The requirement for a bespoke independent scaffold design may have been identified either during the pre-planning phase of the development or as the site evolves. In either case, the design must be provided by a competent scaffold design engineer.

Taylor Wimpey preference is for the Business Unit to procure the design to ensure it meets our requirements.

The Taylor Wimpey Designed Scaffold – Temporary Works Design Brief document must be completed and sent to the design engineer for all scaffolds where a bespoke design is required. This document can be completed by either the Scaffold Manager or member of the technical department & must be reviewed & approved by the Technical Director.



Designed Scaffold
Temporary Works Design Brief

Taylor Wimpey

Note: This Temporary Works Design Brief should be completed by a member of the technical team or scaffold manager & reviewed by the Technical Director & RHSEA prior to submission to the design company.

All scaffold designs are to be forwarded to Group HSE for retention on the national database.

All information shown in Red is for information/guidance & can be deleted once complete.

Project Details:

Business Unit:	
Project Reference Number:	
Development Name:	
Location of Works:	Include postcode and/or what3words location
Design Check Category:	State weather scaffold is design check category 1, 2 or 3
Is A Site Visit Required?	Yes/No

Existing Information:

House Type Designs:	Yes/No	Exiting Structure Assessments	Yes/No
Sketches:	Yes/No	Geotechnical Data:	Yes/No
Photographs:	Yes/No	Constraints (OHPL etc):	Yes/No
Comments:	Provide details of any existing information being provided.		

Project Overview:

Provide a brief introduction to the project & an overview of the works

HSE-FO-038Designed Scaffold – Temporary Works Design Brief1

The design engineer must provide the following supporting documentation:

- Detailed design drawings to include tie requirements and a list of critical inspection points.
- Calculations supporting the design
- Designers Risk Assessment – this may be a separate document or included on the design drawings.
- Design check certificate (where design requires a class 2 or class 3 design check)

The final design must be approved by the Production Director following consultation with the RHSEA prior to use on site.

All approved bespoke scaffold designs and supporting documentation must be provided to Group HSE to enable these to be collated centrally & shared between BU's.

Where a bespoke independent scaffold design is required, there are some additional considerations that must be addressed/identified before the design can be implemented on site:

- Additional competencies/training may be required for the scaffold operatives undertaking the works (such as for complex scaffolds)
- Inspection of the structure may be beyond the competencies of the site management team and therefore additional support may be required for handover & ongoing statutory inspections.
- A bespoke design may be required for the foundation.
- A separate rescue plan may be required for the operatives undertaking the works.
- If the scaffold structure is classified as 'Complex' it will need to be managed through the F2.32 - ATP- Erect A Complex Scaffold.

5.3.4 Complex Scaffolds

Where a bespoke independent design has been provided for a 'Complex' scaffold structure, it will need to be managed through the F2.32 - ATP- Erect A Complex Scaffold.

The ATP contains the following sections:

Design documentation:
Ensures that all the design information detailed & requested in the Designed Scaffold – Temporary Works Design Brief document has been provided to the site management team and scaffold contractor & that a suitable risk assessment & safety method statement has been provided by the contractor.

Pre-Erection Declaration:
Completed by the scaffold supervisor. Confirms they hold the correct CISRS card, they understand the erection sequence, have communicated this to the other members of the gang & all scaffold operatives have read, understood and signed up to the risk assessment.

Authority To Proceed:
Signed by a member of the Site Management Team to permit the scaffold to be assembled.

Completion Declaration:
Completed by scaffold supervisor & a member of the Taylor Wimpey Site Management Team. Confirms a handover certificate has been provided & where mechanical ties are installed a calibration certificate for the pull test machine has been provided together with the pull test results.

Dismantle Declaration
Completed by the scaffold supervisor Confirms they hold the correct CISRS card, they understand the dismantle sequence, have communicated this to the other members of the gang & all scaffold operatives have read, understood and signed up to the risk assessment.

Site Management Team countersigns to confirm the dismantle process can commence.

5.4.1 Scaffolder Competence

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

The scaffolding operative training provided through by CISRS is the nationally recognised scheme for scaffolding in the UK & the operatives CISRS Record Cards are endorsed with the training courses and S/NVQ qualifications achieved. This card must be presented to the site management team before any work is carried out.

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

Within any team of scaffolders, the correct ratio of 'trained' to 'trainee' scaffolders must be maintained. A scaffolder is considered a 'trainee' until they have passed their 'part-2' training & assessment and until this point may only work under the direct supervision of a 'part-2' or 'advanced' scaffolder.

The CISRS 'Base Access Systems Erector (BASE)' card is not acceptable on a Taylor Wimpey site unless the operative is under training & constant supervision of a fully trained scaffolder. BASE card holders are only permitted to construct simple system scaffold structures with the product they have been trained on up to a maximum of 6m in height & in an environment with no general public interface.

Each site must have an appointed chargehand or lead scaffolder & this individual must hold a CISRS Basic Scaffolder (Part-2) card a minimum.

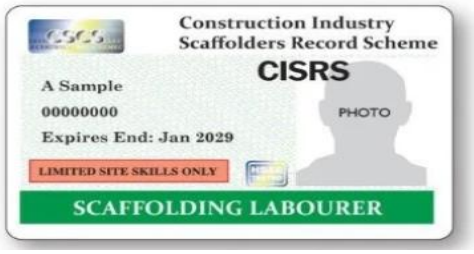
The activities which can be undertaken on site by scaffold operatives will be dependant on the type of CISRS card they hold. The most common types of CISRS Card's are summarised below & further information can be found in the CISRS – Training Handbook

5.4.2 Scaffolding Labourer Card

In order to apply for the Scaffold Labourer card, the operative must have attended the 1-Day CISRS COTS Course & have passed a CITB HS&E Test within 2 years (or hold an accepted exemption).

Scaffolding Labourers are only permitted to work from a safe and secure location, i.e. the ground, building floor/fully protected roof or a fully completed section of a scaffold platform.

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



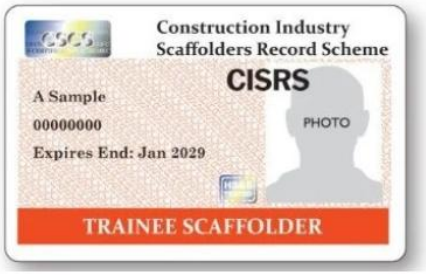
The CSCS Green Labourer card is not acceptable for use in scaffold operations. Any scaffold operatives presenting this card must not be allowed to work on a Taylor Wimpey site.

5.4.3 Trainee Scaffolder

In order to apply for the Trainee Scaffolder card, the operative must have completed the CISRS Part-1 Course & have passed a CITB HS&E Test within 2 years (or hold an accepted exemption).

CISRS Trainee Scaffolder card holders will be considered a trainee scaffolder regardless of the experience they have within the scaffolding industry.

CISRS Trainee Scaffold card holders are entitled to work as part of a scaffold gang, but only under the direct supervision of a qualified scaffolder.

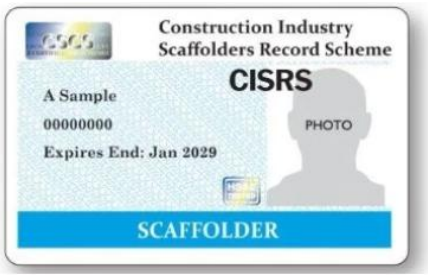


5.4.4 Tube & Fitting Scaffolder

In order to apply for the Scaffolder card, the operative must have completed the CISRS Part-1 & Part-2 Course's, CISRS 1-Day Skills Test, hold a VQ2/SCQF5 & have passed a CITB HS&E Test within 2 years (or hold an accepted exemption).

CISRS Scaffolder (Tube & Fitting) card holders are deemed as a qualified scaffolder and can lead a scaffold gang in basic scaffold operations as defined in TG20 and CISRS course content.

CISRS Scaffolder (Tube & Fitting) card holders are also entitled to work on complex scaffold operations but only under the direct supervision of an Advanced Scaffolder.

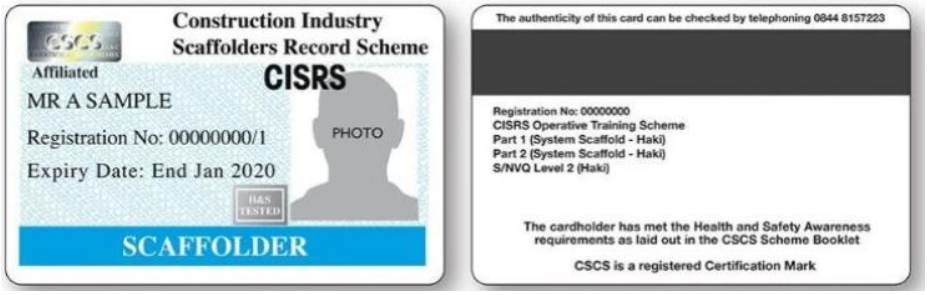


5.4.5 System Scaffold

In order to apply for the Scaffolder card, the operative must have completed the CISRS Part-1 & Part-2 Course's, CISRS 1-Day Skills Test, hold a VQ2/SCQF5 & have passed a CITB HS&E Test within 2 years (or hold an accepted exemption).

CISRS Scaffolder (System) card holders are deemed as a qualified scaffolder and can lead a scaffold gang in basic scaffold operations as defined by the CISRS course content, using the system scaffold endorsed on the rear of the card, e.g. Haki.

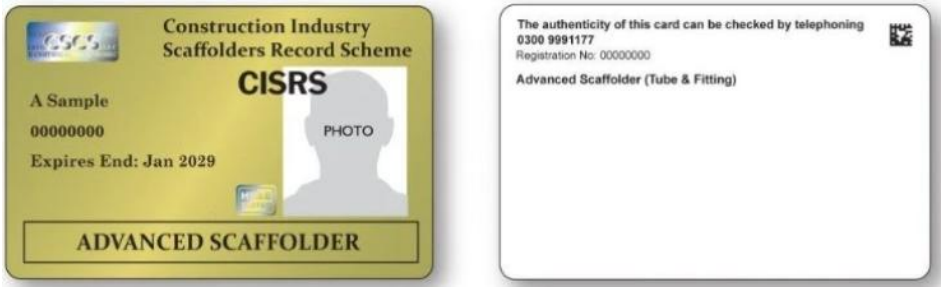
CISRS Scaffolder (System) card holders have received no training in Tube & Fitting and are not deemed competent to erect, alter or dismantle any Tube & Fitting structures.



5.4.6 Advanced Scaffolder

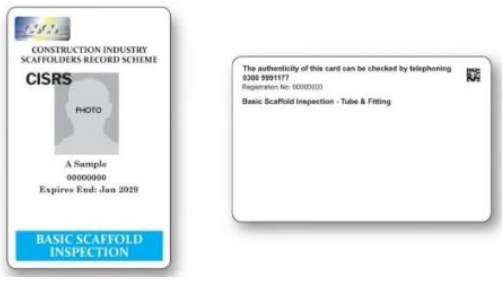
In order to apply for the Advanced Scaffolder card, the operative must have completed the CISRS Advanced Course, CISRS 2-Day Skills Test, hold an NVQ level 3 or SCQF Level 6 & have passed a CITB HS&E Test within 2 years (or hold an accepted exemption).

CISRS Advanced Scaffolder Card Holder are deemed competent to lead a scaffold gang in all scaffold operations, including complex design structures.



5.4.7 Basic Scaffold Inspection

In order to apply for the Basic Scaffold Inspection card, the operative must have completed the CISRS Basic Scaffold Inspection Course & have passed a CITB HS&E Test within 2 years (or hold an accepted exemption).

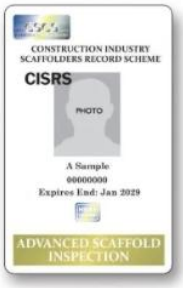


CISRS Basi Scaffold Inspection card holders are deemed competent to carrying out statutory scaffold inspections on basic scaffold structures only in accordance with Working At Height Regulation 2005.

CISRS Basic Scaffold Inspection card holders are not deemed competent to erect, alter or dismantle any scaffold structure.

5.4.8 Advanced Scaffold Inspection

In order to apply for the Basic Scaffold Inspection card, the operative must have completed the CISRS Advanced Scaffold Inspection Course & have passed a CITB HS&E Test within 2 years (or hold an accepted exemption).



CISRS Basi Scaffold Inspection card holders are deemed competent to carrying out statutory scaffold inspections on both basic and more complex scaffolding structures in accordance with Working At Height Regulation 2005.

CISRS Advanced Scaffold Inspection card holders are not deemed competent to erect, alter or dismantle any scaffold structure.

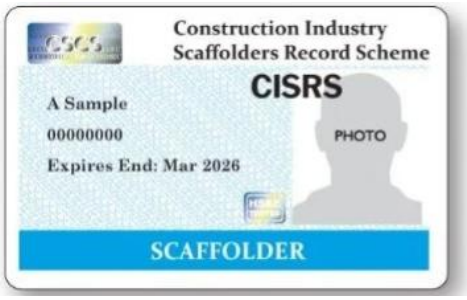
5.4.9 System Scaffold Training

The 2 Day System Scaffolding Product Training Scheme (SSPTS) provides structured training in system scaffold products for operatives who had previously only received training in tube and fitting. The scheme provides scaffolders with the skills and knowledge for the safe use of the system scaffold product, in accordance with the manufacturer's instructions.

CISRS system scaffold products are placed into categories of similar type. If an operative wishes to use a 2nd system scaffold product within the same category (e.g Layher and Plettac Metrix) their employer will be required to ensure that all relevant product information is passed onto the operative and that the operative is made aware of any differences.

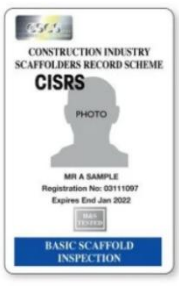
If an operative is required to use a system product in a different category, they will need to attend a CISRS SSPTS course in that particular product before commencing works.

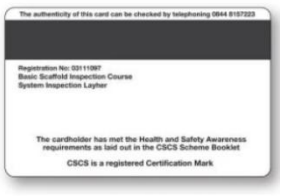
CISRS cards will be endorsed with the relevant system product upon successful completion of the CISRS training.



5.4.10 System Inspection Training

In response to the growing use of system scaffolding, CISRS now provide 1-Day system scaffold inspection courses for Haki, Layher, Kwikstage, Peri Up and Plettac Metrix systems.





Where system scaffolds are being inspected by a holder of the CISRS Basic or Advanced Inspection cards then the rear of the card will need to be endorsed with the relevant inspection training as shown in the example below.

Where an inspection is required for a system scaffold product not currently covered with a specific course, the operative must attend a 1-Day System Inspection course in a product within the same category and to use the product manual to note any differences in product capability.

The updated CISRS list showing the different brands within each product category are shown below:

CUP	Rosette / Ring	Wedge
Cuplok Genlok K-lok Tradlok	Layher Plettac (Altrad) Contur Plettac (Altrad) Futuro Scafom Rux Peri Up Rossett Flex AT-PAC Ringlok Plettac Metrix Wenma Finelock48	Kwikstage DSL Climastage
Turner	**Combiface**	**HAKI**
Turner OCTO	Oktolok	Haki

5.5.1 Scaffold Handover

Whilst there is no statutory requirement for a scaffold handover certificate to be provided, it is Taylor Wimpey policy that handover certificates are provided for all scaffolds on our developments. A handover certificate is required at both initial installation stage & for any subsequent lifts and/or adaptations carried out.

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

The Site manager or Assistant Site Manager must inspect the scaffold at handover & must counter sign the handover certificate before the scaffold is brought into use.

By countersigning the handover certificate, this demonstrates that the site management team have fulfilled the 'First Use Inspection' requirements under the Work at Height Regulations.

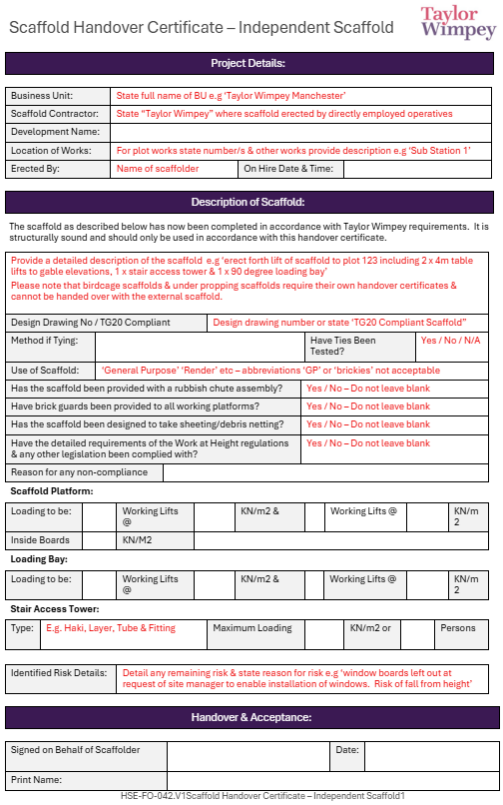
Where designed scaffolds are being handed over, the design drawing must be used by the person carrying out the First Use Inspection to ensure critical elements within the design have been correctly installed.

Where complex scaffolds are being handed over, the BU must make arrangements for a competent person to carry out the First Use Inspection & to counter sign the handover certificate on behalf of the site management team.

The external working platform & associated loading bay & stair tower can be handed over on 1 certificate but the loading criteria for each element must be clearly stated on the handover certificate.

Birdcage scaffolds & underpropping scaffolds cannot be handed over on the same certificate as the external working platform and separate handover certificates must be provided. This is due to the specific parameters for birdcage & underpropping agreed with both METSA & Staircraft.

Taylor Wimpey directly employed scaffolders must complete the following handover certificates:



Scaffold Handover Certificate – Independent Scaffold

Project Details:

Business Unit:	State full name of BU e.g 'Taylor Wimpey Manchester'		
Scaffold Contractor:	State "Taylor Wimpey" where scaffold erected by directly employed operatives		
Development Name:			
Location of Works:	For plot works state number/s & other works provide description e.g 'Sub Station 1'		
Erected By:	Name of scaffolder	On Hire Date & Time:	

Description of Scaffold:

The scaffold as described below has now been completed in accordance with Taylor Wimpey requirements. It is structurally sound and should only be used in accordance with this handover certificate.

Provide a detailed description of the scaffold e.g 'erect forth lift of scaffold to plot 123 including 2 x 4m table lifts to gable elevations, 1 x stair access tower & 1 x 90 degree loading bay' Please note that birdcage scaffolds & under propping scaffolds require their own handover certificates & cannot be handed over with the external scaffold.			
Design Drawing No / TG20 Compliant	Design drawing number or state 'TG20 Compliant Scaffold"		
Method if Tying:		Have Ties Been Tested?	Yes / No / N/A
Use of Scaffold:	'General Purpose' 'Render' etc – abbreviations 'GP' or 'brickies' not acceptable		
Has the scaffold been provided with a rubbish chute assembly?	Yes / No – Do not leave blank		
Have brick guards been provided to all working platforms?	Yes / No – Do not leave blank		
Has the scaffold been designed to take sheeting/debris netting?	Yes / No – Do not leave blank		
Have the detailed requirements of the Work at Height regulations & any other legislation been complied with?	Yes / No – Do not leave blank		
Reason for any non-compliance			

Scaffold Platform:

Loading to be:		Working Lifts @		KN/m2 &		Working Lifts @	KN/m 2
Inside Boards		KN/M2					

Loading Bay:

Loading to be:		Working Lifts @		KN/m2 &		Working Lifts @	KN/m 2

Stair Access Tower:

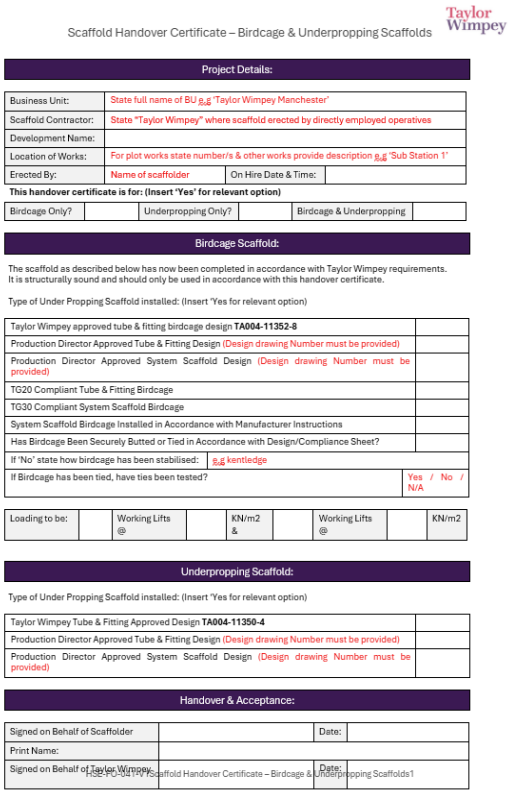
Type:	E.g. Haki, Layer, Tube & Fitting	Maximum Loading		KN/m2 or		Persons

Identified Risk Details:	Detail any remaining risk & state reason for risk e.g 'window boards left out at request of site manager to enable installation of windows. Risk of fall from height'

Handover & Acceptance:

Signed on Behalf of Scaffolder		Date:	
Print Name:			

HSE-FO-042.V1Scaffold Handover Certificate – Independent Scaffold1



Scaffold Handover Certificate – Birdcage & Underpropping Scaffolds

Project Details:

Business Unit:	State full name of BU e.g 'Taylor Wimpey Manchester'		
Scaffold Contractor:	State "Taylor Wimpey" where scaffold erected by directly employed operatives		
Development Name:			
Location of Works:	For plot works state number/s & other works provide description e.g 'Sub Station 1'		
Erected By:	Name of scaffolder	On Hire Date & Time:	

This handover certificate is for: (Insert 'Yes' for relevant option)

Birdcage Only?		Underpropping Only?		Birdcage & Underpropping	

Birdcage Scaffold:

The scaffold as described below has now been completed in accordance with Taylor Wimpey requirements. It is structurally sound and should only be used in accordance with this handover certificate.

Type of Under Propping Scaffold installed: (Insert 'Yes for relevant option)

Taylor Wimpey approved tube & fitting birdcage design **TA004-11352-8**	
Production Director Approved Tube & Fitting Design (Design drawing Number must be provided)	
Production Director Approved System Scaffold Design (Design drawing Number must be provided)	
TG20 Compliant Tube & Fitting Birdcage	
TG30 Compliant System Scaffold Birdcage	
System Scaffold Birdcage Installed in Accordance with Manufacturer Instructions	
Has Birdcage Been Securely Butted or Tied in Accordance with Design/Compliance Sheet?	
If 'No' state how birdcage has been stabilised: e.g kentledge	
If Birdcage has been tied, have ties been tested?	Yes / No / N/A

Loading to be:		Working Lifts @		KN/m2 &		Working Lifts @	KN/m2

Underpropping Scaffold:

Type of Under Propping Scaffold installed: (Insert 'Yes for relevant option)

Taylor Wimpey Tube & Fitting Approved Design **TA004-11350-4**	
Production Director Approved Tube & Fitting Design (Design drawing Number must be provided)	
Production Director Approved System Scaffold Design (Design drawing Number must be provided)	

Handover & Acceptance:

Signed on Behalf of Scaffolder		Date:	
Print Name:			
Signed on Behalf of Taylor Wimpey		Date:	

HSE-FO-041.V1Scaffold Handover Certificate – Birdcage & Underpropping Scaffolds1

Scaffold contractors can provide their own handover certificates to the site management teams provided they meet the requirements detailed above.
Due to the advancements in technology, several scaffold contractors are now providing digital handover certificates. This practice is acceptable as long as the site team are able to digitally countersign the handover certificate.

Where the ability for the site team to countersign digital handover certificates is not provided by the scaffold contractor then the contractor must complete the relevant Taylor Wimpey scaffold handover certificate.

5.5.2 Scaffold Inspection Requirements

Once the scaffold has been handed over to the site management team, it must be inspected regularly (at least every 7 days) to ensure it remains safe.
A record of inspection must be recorded on the Working Platform/Scaffold Inspection Record Sheet (Construction HSE Plan – Folder 2, F2.6).

All scaffolding, working platforms, internal fall protection & temporary edge protection must be inspected:

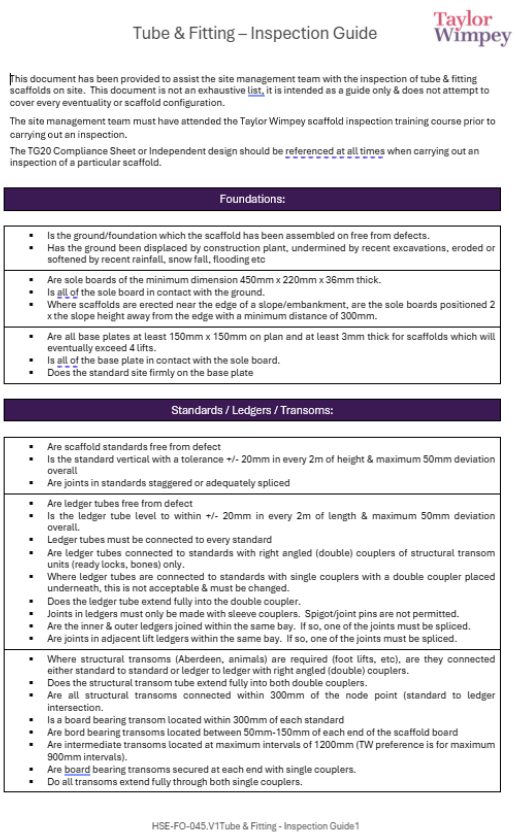
- Before first use
- After significant alteration
- Within seven days of the previous inspection
- Following adverse weather
- After an event likely to have affected its strength and stability (e.g overloading, being struck by an item of plant/machinery)

Where TG20 compliant tube & fit scaffolds, basic designed scaffolds &

system scaffolds require inspecting, this can be carried out by a member of the site management team who has undergone the appropriate training (see HSE Training Matrix)

Where complex scaffolds require inspecting, the BU must make arrangements for a competent person to carry out these inspections on behalf of the site management team.

The following inspection guides can be used when carrying out scaffold inspections:



Tube & Fitting – Inspection Guide

This document has been provided to assist the site management team with the inspection of tube & fitting scaffolds on site. This document is not an exhaustive list, it is intended as a guide only & does not attempt to cover every eventuality or scaffold configuration.

The site management team must have attended the Taylor Wimpey scaffold inspection training course prior to carrying out an inspection.

The TG20 Compliance Sheet or Independent design should be referenced at all times when carrying out an inspection of a particular scaffold.

Foundations:

- Is the ground/foundation which the scaffold has been assembled on free from defects.
- Has the ground been displaced by construction plant, undermined by recent excavations, eroded or softened by recent rainfall, snow fall, flooding etc

- Are sole boards of the minimum dimension 450mm x 220mm x 36mm thick.
- Is all of the sole board in contact with the ground.
- Where scaffolds are erected near the edge of a slope/embankment, are the sole boards positioned 2 x the slope height away from the edge with a minimum distance of 300mm.

- Are all base plates at least 150mm x 150mm on plan and at least 3mm thick for scaffolds which will eventually exceed 4 lifts.
- Is all of the base plate in contact with the sole board.
- Does the standard site firmly on the base plate

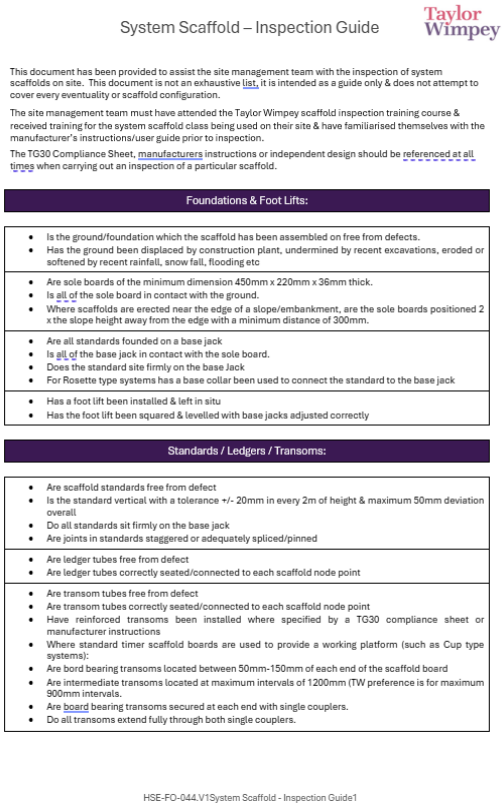
Standards / Ledgers / Transoms:

- Are scaffold standards free from defect
- Is the standard vertical with a tolerance +/- 20mm in every 2m of height & maximum 50mm deviation overall
- Are joints in standards staggered or adequately spliced

- Are ledger tubes free from defect
- Is the ledger tube level to within +/- 20mm in every 2m of length & maximum 50mm deviation overall.
- Ledger tubes must be connected to every standard
- Are ledger tubes connected to standards with right angled (double) couplers of structural transom units (ready locks, bones) only.
- Where ledger tubes are connected to standards with single couplers with a double coupler placed underneath, this is not acceptable & must be changed.
- Does the ledger tube extend fully into the double coupler.
- Joints in ledgers must only be made with sleeve couplers. Spigot/joint pins are not permitted.
- Are the inner & outer ledgers joined within the same bay. If so, one of the joints must be spliced.
- Are joints in adjacent lift ledgers within the same bay. If so, one of the joints must be spliced.

- Where structural transoms (Aberdeen, animals) are required (foot lifts, etc), are they connected either standard to standard or ledger to ledger with right angled (double) couplers.
- Does the structural transom tube extend fully into both double couplers.
- Are all structural transoms connected within 300mm of the node point (standard to ledger intersection.
- Is a board bearing transom located within 300mm of each standard
- Are bord bearing transoms located between 50mm-150mm of each end of the scaffold board
- Are intermediate transoms located at maximum intervals of 1200mm (TW preference is for maximum 900mm intervals).
- Are board bearing transoms secured at each end with single couplers.
- Do all transoms extend fully through both single couplers.

HSE-FO-045.V1Tube & Fitting - Inspection Guide1



System Scaffold – Inspection Guide

This document has been provided to assist the site management team with the inspection of system scaffolds on site. This document is not an exhaustive list, it is intended as a guide only & does not attempt to cover every eventuality or scaffold configuration.

The site management team must have attended the Taylor Wimpey scaffold inspection training course & received training for the system scaffold class being used on their site & have familiarised themselves with the manufacturer's instructions/user guide prior to inspection.

The TG30 Compliance Sheet, manufacturers instructions or independent design should be referenced at all times when carrying out an inspection of a particular scaffold.

Foundations & Foot Lifts:

- Is the ground/foundation which the scaffold has been assembled on free from defects.
- Has the ground been displaced by construction plant, undermined by recent excavations, eroded or softened by recent rainfall, snow fall, flooding etc

- Are sole boards of the minimum dimension 450mm x 220mm x 36mm thick.
- Is all of the sole board in contact with the ground.
- Where scaffolds are erected near the edge of a slope/embankment, are the sole boards positioned 2 x the slope height away from the edge with a minimum distance of 300mm.

- Are all standards founded on a base jack
- Is all of the base jack in contact with the sole board.
- Does the standard site firmly on the base Jack
- For Rosette type systems has a base collar been used to connect the standard to the base jack

- Has a foot lift been installed & left in situ
- Has the foot lift been squared & levelled with base jacks adjusted correctly

Standards / Ledgers / Transoms:

- Are scaffold standards free from defect
- Is the standard vertical with a tolerance +/- 20mm in every 2m of height & maximum 50mm deviation overall
- Do all standards sit firmly on the base jack
- Are joints in standards staggered or adequately spliced/pinned

- Are ledger tubes free from defect
- Are ledger tubes correctly seated/connected to each scaffold node point

- Are transom tubes free from defect
- Are transom tubes correctly seated/connected to each scaffold node point
- Have reinforced transoms been installed where specified by a TG30 compliance sheet or manufacturer instructions
- Where standard timer scaffold boards are used to provide a working platform (such as Cup type systems):
- Are bord bearing transoms located between 50mm-150mm of each end of the scaffold board
- Are intermediate transoms located at maximum intervals of 1200mm (TW preference is for maximum 900mm intervals.
- Are board bearing transoms secured at each end with single couplers.
- Do all transoms extend fully through both single couplers.

HSE-FO-044.V1System Scaffold - Inspection Guide1

5.5.3 Monitoring Requirements

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.

Where a Taylor Wimpey Site Manager oversees a site using System Scaffold, they must be provided with the System Specific Awareness Training in relation to the inspection of the system scaffold. This System 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

Where a Taylor Wimpey Site Manager oversees a site using System Scaffold Stair Access Towers only, full system scaffold awareness training is not required. The site management team must, however be provided with awareness training for the system staircase in use on site. This training must highlight the key inspection points including how the stair access tower is to be connected to the main scaffold working platform. This training can be provided via the manufacturer/supplier, Fulcrum Scaffold Safety Training Ltd or your RHSEA.

The Scaffold Supervisor/Charge Hand

The level and nature of supervision provided for each site will need to be determined by the production team following consultation with the scaffold manager and/or scaffold contractor. However, each site must have a minimum of 1 x designated scaffold supervisor/charge hand.

Scaffold Supervisors/Charge Hand's are responsible for:

- The supervision of scaffold operations on site
- Liaising with the site management team and attending co-ordination meetings where required.
- Communicating scaffold design drawing information to the scaffold team.
- Carrying out & recording the statutory inspections (this maybe delegated to other members of their team, e.g. trained Scaffold Operative)

- Under PUWER (Provision & Use of Work Equipment Regulations) for example any power tools.
- LOLER (Lifting Operations & Lifting Equipment Regulations) for example any 'gin wheels'

- Preparation of Scaffold Handover Certificates
- Completing Taylor Wimpey ATP's where required.

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 identify:

- Any concerns / shortfalls with immediate actions taken and details of any further action required.
- Include forthcoming / planned works and note controls agreed.
- Review of the Scaffold Designs or compliance Sheets
- Review of Risk Assessments & Safety Method Statements
- Review of internal fall protection systems

5.6 Occupational Health

This chapter details the occupational health risks that must be considered when carrying out scaffold operations on site.

The information contained within this chapter must be read in conjunction with the wider occupational health considerations & controls detailed in section 3.8

5.6.1 Hand Arm Vibration (HAV)

The vast majority of scaffold operatives who assemble, alter & dismantle scaffold structures use a hand held battery operated impact wrench, which exposes them to hand arm vibration.

Hazardous exposure to hand arm vibration can lead to hand arm vibration syndrome (HAVS) which is the all encompassing term describing the signs and symptoms affecting vascular health, neurological health & Musculoskeletal health caused by vibration exposure.

Impact wrenches are not the only source of HAV exposure to scaffold operatives. The use of battery operated ripsaws & circular saws used for cutting boards and tube also contribute to HAV exposure.

Under the Control of Vibration at Work Regulations Employers must assess vibration levels and compare them against legal Exposure Action Values (EAVs) and Exposure Limit Values (ELVs). These values are averaged over an 8-hour working period.
Even where the vibration exposure has been assessed as under the Exposure Action Values (EAVs), employers are still required to:

- Assess vibration risks to operatives health and safety
- Eliminate vibration risk at source wherever possible
- Provide information and training for operatives on vibration risks and control measures

The Exposure Action Value:

The Exposure action value is the value in which an employer must start to implement a programme of organisational and technical measures to reduce exposure to vibration to the lowest level reasonably practicable. This can be implemented by providing employees with tools that produce les vibration emissions or by rotating tasks between employees.
The vibration exposure limit value is expressed as 2.5m/s2 A(8) – This means that the employee can't exceed a vibration magnitude of 2.5 metres per second squared, averaged over an 8-hour working period. This is also expressed as 100 HSE points.

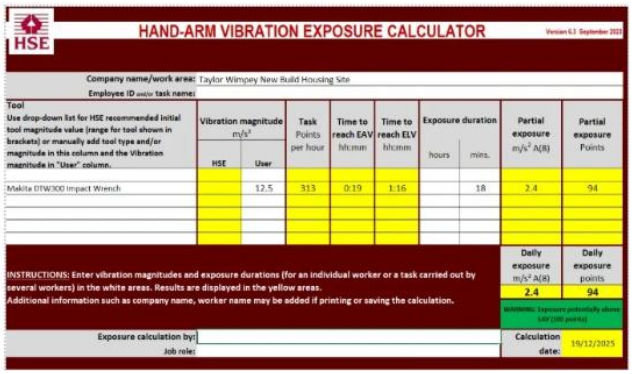
The Exposure Limit Value:

The Exposure Limit Value is the value which an employer must ensure an employee doesn't exceed within an 8-hour working period. If an employee comes close to exceeding this value, then immediate action must be taken to prevent further exposure. This would typically involve job rotation to a task where the employee is no longer exposed to vibration.

The vibration exposure limit value is expressed as 5m/s2 A(8) – This means that the employee can't exceed a vibration magnitude of 5 metres per second squared, averaged over an 8-hour working period. This is also expressed as 400 HSE points.

Prior to using any tool which exposes the operative to HAV, an assessment must be carried out to estimate the vibration that an operative may be exposed to. This is typically calculated using the HSE vibration exposure calculator as follows:

- Insert the tools that area being used for the task.
- Insert the vibration magnitude m/s2 provided by the manufacturer.
- Insert the estimated exposure time for each individual tool used.
- Exposure values are then calculated over an 8-hour period.



HAND-ARM VIBRATION EXPOSURE CALCULATOR

Company name/work area: Taylor Wimpey New Build Housing Site

Employee ID and/or task name:

Tool (Use drop-down list for HSE recommended initial tool magnitude value (range for tool shown in brackets) or manually add tool type and/or magnitude in this column and the Vibration magnitude in "User" column.)	Vibration magnitude m/s² HSE	Vibration magnitude m/s² User	Task Points per hour	Time to reach EAV hh:mm	Time to reach ELV hh:mm	Exposure duration hours	Exposure duration mins.	Partial exposure m/s² A(8)	Partial exposure Points
Makita DTW300 Impact Wrench		12.5	313	0:19	1:16		18	2.4	94
								Daily exposure m/s² A(8)	Daily exposure points
								2.4	94

INSTRUCTIONS: Enter vibration magnitudes and exposure durations (for an individual worker or a task carried out by several workers) in the white areas. Results are displayed in the yellow areas.
Additional information such as company name, worker name may be added if printing or saving the calculation.

WARNING: Exposure potentially above EAV (100 points)

Exposure calculation by:

Job role:

Calculation date: 19/12/2025

The results of the calculation & subsequent control measures must be provided & explained to the operatives. The scaffold contractors risk assessment should also detail how the operatives exposure to vibration will be monitored by the contractor.

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.

Impact wrenches are not to be used with 'pressed' type scaffold fittings.

5.6.2 Noise

One of the biggest risks faced by operatives within the scaffold industry is exposure to noise. This exposure results

Under the Control of Noise at Work Regulations, employers must assess noise levels and compare them against legal Lower Action Values (LAVS), Upper Action Values (UAVs) and Exposure Limit Values (ELVs). Employers are required to eliminate or control noise exposure, provide health surveillance where necessary & ensure proper information, instruction and training is provided for operatives.

Lower Action Value – 80dB(A):
Where the noise exposure has been assessed as exceeding the lower action value employers are required to:

- Assess noise risks to operatives health and safety
- Eliminate noise risk at source
- Provide information and training for employees on vibration risks and control measures
- Hearing protection to be provided to employees if they request it.

Upper Action Value – 85dB(a) A(8):

The Exposure action value is the value in which an employer must start to implement a programme of organisational and technical measures to reduce exposure to Noise to the lowest level reasonably practicable.

- A health surveillance programme should also be implemented when employees are frequently exposed at or above the Upper Action Value.
- Hearing protection must be provided
- Further controls must be considered to reduce exposure further.
- Hearing protection zones should also be implemented where applicable, where other controls can't further reduce the noise exposure for employees.
- The Upper Action Value is 85 dB(A) averaged over an 8-hour period.

Exposure Limit Value – 87dB(A) A(8):

The Exposure Limit Value is the value which an employer must ensure an employee doesn't exceed within an 8-hour working period.

If an employee comes close to exceeding this value, then work must stop and immediate action must be

taken to prevent further exposure.
This would typically involve job rotation to a task where the employee is no longer exposed to vibration.
The noise exposure limit value is 87 dB(A) – This means that the employee can't exceed this value over an 8-hour working period.

Prior to carrying out any task which exposes the operative to noise, an assessment must be carried out to estimate the noise level that an operative may be exposed to. This assessment may need to be calculated for various different activities.

The results of the calculation & subsequent control measures must be provided & explained to the operatives. The scaffold contractors risk assessment should also detail how the operatives exposure to vibration will be monitored by the contractor.

5.6.3 Manual Handling

In the average working day, a scaffolding gang can typically handle over 15 tonnes of materials. The average scaffolder, in their working life, could handle more than 150,000 tonnes of scaffolding materials, the equivalent of Cunard's cruise ship the Queen Mary II

Several factors in scaffolding can make manual handling tasks difficult. Scaffolders are often required to:

- support loads, often in awkward positions.
- move heavy and unwieldy materials.
- carry loads over rough, uneven ground or within buildings.
- carry out highly repetitive tasks.

Some items of scaffolding material are of such a weight that they require special handling techniques to prevent injury e.g. 6.4m (21ft) scaffold tube, 3.9m (13ft) scaffold board, a bag of loose fittings, long ladders or beams. Although scaffolders do require certain physical capabilities most of the more strenuous, awkward or unwieldy tasks rely more upon special techniques than pure strength.

Under the Manual Handling Operations Regulations employers have a legal duty to:

- Avoid the need to carry out manual handling operations wherever possible.
- If manual handling cannot be avoided the task should be automated or mechanised in some way, in order to reduce the amount of manual handling required.
- If manual handling cannot be avoided, an employer must assess the risks involved with the operations and take steps to avoid them

Where it has been assessed that there is a risk of injury from manual handling, the first consideration should be whether the load needs to be handled at all, or whether the requirement for handling can be minimised.

The scope for eliminating the handling of loads in most scaffolding operations is very limited.

Carrying out a manual handling assessment:

When assessing the manual handling risk assessment the scaffold contractor must consider the different characteristics that make up the activity. This is often referred to by the acronym 'TILE'

Task:

- The nature of the task – find out how much reaching, bending, stooping, stretching and twisting is involved.
- The position of the load relative to the handler is important in determining the degree of control and effort required to do the task. If a load has to be lifted above head height, then the degree of control and effort needed will be greater than if the activity were carried out at waist height e.g. when topping out a standard on a tall hemp compared to a short one.
- The frequency and duration of the handling are important in determining the degree of risk. Where there are repetitive lifting operations combined with repeated bending, twisting and reaching over a period of time, the effect of all these tasks added together significantly increases the likelihood of injury, e.g. chaining materials in a restricted space or working on a short lift.

Individual Capability:

- Does the job require someone of unusual height or strength?
- Does the individual have an existing health problem which increases the risk?
- An individual's age, strength, level of skill and experience will affect how much a person can safely handle.
- It is recognised that scaffolding requires certain physical capabilities, but it is more important to utilise the specialist techniques of the trade developed over decades, known as kinetic handling techniques.

Load:

- The nature of the load: is it heavy, bulky, hard to grasp?
- The weight, size, shape and stability of the load all contribute to the degree of control and effort needed for the activity.
- The unwieldy nature in which the load needs to be handled e.g. long components held vertically such as a hoisted tube, or away from the centre of gravity when passing out scaffold boards in advance to form a working platform.

Environment:

- The nature of the working environment: is it hot, cold, windy or poorly lit?
- Working at height adds another dimension to manual handling tasks and scaffolders must ensure that they create a safe working platform so that manual handling at height does not increase the risk of a fall or even the risk of manual handing injury (All work at height must be carried out in accordance with the latest edition of NASC Safety Guidance SG4). The risk of falling objects from poor manual handling techniques also needs to be considered when working at height.
- Are there slopes, uneven ground or poor access arrangements? Poor ground conditions make slips and trips more likely.
- Constraints on posture (such as confined or restricted spaces) increase the degree of control and effort needed for the task, increasing the risk of injury.
- Carrying items on slopes requires greater effort than carrying on the level.
- Adverse weather conditions need to be considered, as carrying sheet materials in windy conditions could make the manual handling task more difficult.

If manual handling cannot be avoided then the scaffold contractor should reduce the possible harmful effects of manual handling to as low a level as is reasonably practicable.

As manual handling is an inherent part of scaffolding, the manual handling risk assessment does not necessarily need to be recorded as a separate assessment and can be considered as part of the overall risk assessment & method statement.

Kinetic Lifting Techniques:

This technique lets scaffold operatives use their body weight and momentum to start a lift. It keeps the spines natural shape even when the body is bent forward. Kinetic lifting techniques relies on strong leg & thigh muscles however, this method uses less muscle effort which lowers stress & fatigue.

Kinetic lifting techniques require the use of 6 key factors to become one co-ordinated action:

- Feet
- Legs
- Back
- Head
- Grip
- Arms

Further information on carrying out a manual handling risk assessment & applying suitable control measures can be found online in the NASC Safety Guidance Document SG6:22 – Management of Manual handling in the Scaffolding Industry

5.6.4 COSHH & Dust

COSHH & Dust:

Scaffold operatives can potentially be exposed to varies substances which are hazardous to health such as.

- Silica dust – when installing mechanical ties into brickwork, blockwork & when raising or lowering boards on the working platform.
- Wood dust – when cutting timber scaffold boards
- Lubricants – used to remove rust, corrosion, grease etc from scaffold fittings

The scaffold contractor will need to clearly identify the substances their operatives will be exposed to during scaffold activities & ensure suitable COSHH Assessments are carried out & documented.

5.6.5 Adverse & Inclement Weather

Weather conditions must be considered as part of the risk assessment and planning for work at height. Adverse weather conditions can significantly increase the risk of a fall when carrying out scaffold activities. High winds and icy or wet surfaces can be especially hazardous. The employer's risk assessment should consider all aspects of working in adverse weather conditions, and not just simply specify protective clothing, footwear or sun cream.

Wind:

High winds can significantly affect the safety of scaffold operatives working at height.

- High winds can affect the stability of scaffold operatives increasing the risk of a fall occurring.
- Materials can be harder to control & move around resulting in an increased risk of musculoskeletal injuries.
- High winds can reduce visibility & make communication difficult, resulting in an increased risk of an accident occurring.

The Beaufort scale of wind force depicts the force of wind by a series of numbers from 0 to 12. HSE guidance states that wind speeds in excess of 23mph or Force 5 will affect the balance of a roof worker. Exposure to wind speeds & gusts of wind id dependent on several factors & therefore strict guidance on the maximum wind speed limit for scaffold operations cannot be provided. However, the

NASC recommend that subject to a risk assessment, the following guidance is considered:

- Beaufort Force 5-6 – No work at height should be carried out on external scaffolds.
- Beaufort Force 7-8 – All external work at ground level should be suspended.

Force	Description	Specification on land	MPH
0	Calm	Smoke rises vertically	<1
1	Very light	Direction of wind shown by smoke drift but not by wind vanes.	1-3
2	Light breeze	Wind felt on face, leaves rustle, ordinary wind vane moved by wind.	4-7
3	Gentle breeze	Leaves and small twigs in constant motion, wind extends light flag.	8-12
4	Moderate breeze	Wind raises dust and loose paper, small branches move.	13-18
5	Fresh breeze	Small trees in leaf start to sway crested wavelets form on inland waters.	19-24
6	Strong breeze	Large branches in motion, whistling in telegraph wires, umbrellas used with difficulty.	25-31
7	Near gale	Whole trees in motion, inconvenience felt when walking against wind.	32-38
8	Gale	Twigs break from trees, difficult to walk.	39-46
9	Strong gale	Slight structural damage occurs, chimney pots and slates removed.	47-54
10	Storm	Trees uprooted; considerable structural damage occurs.	55-63
11	Violent storm	Widespread damage	64-73
12	Hurricane	Widespread damage	>74

Sun / Warm Weather Working:

Scaffold operatives can spend a considerable time exposed to the effects of sunlight & heat during a typical working day. The scaffold contractors risk assessment must therefore detail suitable control measures to be adopted.

Damage from sunlight is caused by ultraviolet rays in the sunlight. In the short term, excess exposure of unprotected skin causes sunburn. In the long term, too much exposure to sunlight will speed up the aging of skin & can cause skin cancer. Even a sun tan that has been built up gradually can be harmful as a tan is a sign that the skin has potentially been damaged.

Heat exhaustion is the body's response to loss of water and body salts through excessive sweating. The most common cause of this condition is working or exercising in hot conditions.
Heat exhaustion occurs when the core body temperature rises above 38 C.

Heat stroke is a very serious condition. It results from the failure of the hypothalamus in the brain. The sweating mechanism fails, the body is unable to cool down and the core temperature can reach dangerously high levels within 10 – 15 minutes.

Cold & Wet Conditions:

Working in wet conditions & heavy rain can significantly increase the risks associated with scaffold activities:

Heavy rainfall can make scaffold boards slippery to walk on increasing the risk of a slip, trip or fall.
Heavy rainfall can reduce visibility, making it hard to see hazards or judge distances.
Wet gloves can loose grip on tools and materials which can cause them to fall.

Working in cold conditions can expose operatives to the risk of cold stress, this is when the body struggles to maintain tis core temperature due to prolonged exposure to cold. This can lead to conditions like hypothermia.

5.7 Safe System of Work

Falling from height is a significant risk faced by scaffold operatives when assembling, altering & dismantling scaffold structures on construction sites.
Prior to any scaffold operations commencing on site a Risk Assessment of the tasks being undertaken must have been carried out by a competent person. The Risk Assessment must detail the preventative & protective control measures required to eliminate or reduce the risk of injury.

5.7.1 - General Controls

- Prior to undertaking 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.
- A process must be agreed between the scaffold operatives & site management teams whereby access to a scaffold by other trades is prevented until a member of the SMT has inspected the scaffold & countersigned the handover certificate.
- During work, scaffolders must ensure steps are taken to secure scaffolding material (tubes and boards) whilst dismantling or erecting scaffold.

- Ensure all scaffold tubes and boards temporarily rested against the scaffold structure are positioned securely to prevent them from falling over & do not stack too much material against the scaffold at any one time

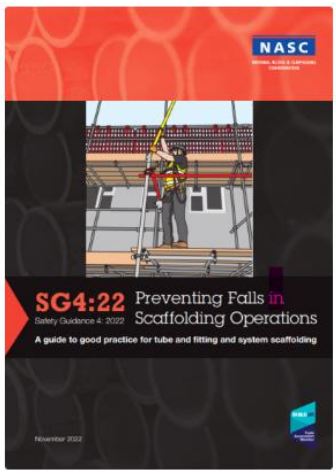
5.7.2 Fall Protection Measures

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

Scaffolders must always be prevented from falling or have mechanisms in place to minimise the consequences of a fall.

The adoption of **NASC Guidance Document SG4:22 – Preventing Falls In Scaffolding Operations** is

mandatory on all Taylor Wimpey Sites. Examples of SG4 compliant systems are as follows:



Scaffolders Safe Zones:
A scaffolders 'safe zone' is a form of collective fall protection system which utilises guardrails & platform decking comprising a minimum of:

A correctly supported & boarded platform without gaps through which an operative could fall and:
A single guardrail where there is a risk of a fall set a minimum of 950mm above the platform.

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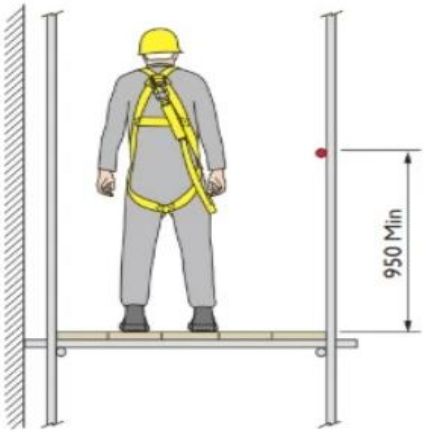
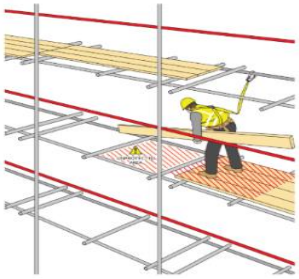
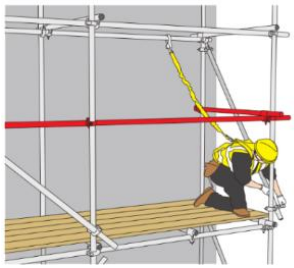


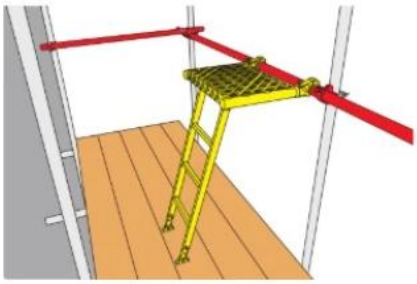
Scaffolders safe zones do not completely eliminate the risk of a fall from height for all scaffold operations, for example when raising or lowering working platform boards or when installing ledger bracing below the single guardrail. In these scenarios Personal Fall Protection Equipment (PFPE) must be used.

ample of PFPE being used when lowering working platform boards	Example of PFPE being used when installing ledger bracing below the single guardrail
	

When raising or lowering materials scaffold operatives should be clipped on when working within a scaffolders 'safe zone'. Alternatively, they can create a safe handling platform with double guardrails including stop end guardrails so there is no gap greater than 470mm through which an operative could fall.

Scaffolders Step:

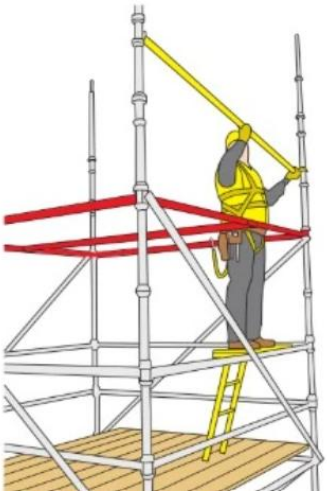
This system utilises a proprietary step which is fixed to the main guardrail approximately 1m above the working platform & enables the scaffold operatives to assemble the guardrail on the lift above in advance or remove them from below during dismantle.



Scaffolder operative must be clipped on to a suitable anchor point due to the risk of falling from the scaffold when using a scaffolders' step system.

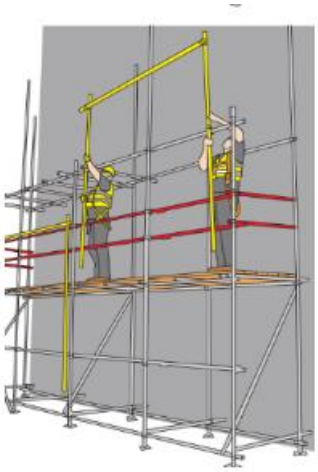
Scaffold operatives must also be clipped on as a secondary means of protection before climbing onto the step platform and must not jump down onto the boarded platform due to the risk of board failure from impact loads.

The scaffold step can also be utilised on proprietary system scaffolds to assemble the guardrail on the lift above in advance or remove them from below during dismantle.
Where a scaffolders step is being used to install advance guardrails on the first lift, a guardrail will need to be fixed to the base lift to accommodate the step.

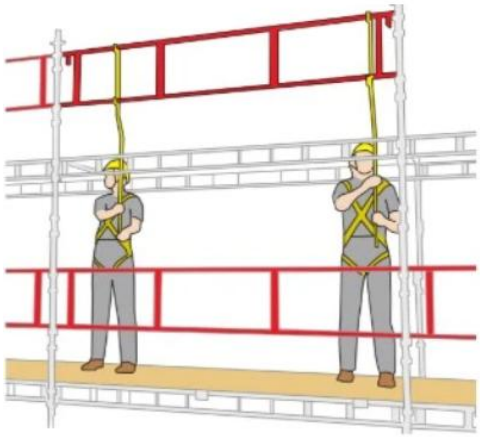


Advanced Guardrail systems (AGS)

For tube & fit scaffolding, advanced guardrail systems provide collective fall prevention for scaffolders traversing along a boarded lift and when erecting, altering or dismantling scaffold structures. These temporary guardrails remain in place whilst the platform guardrails are installed or removed, allowing scaffolders to maintain guardrail edge protection on working platforms at all times.

ary advanced guardrail system for tube & fitting scaffold	Example of a tube & fitting advanced guardrail system.
	

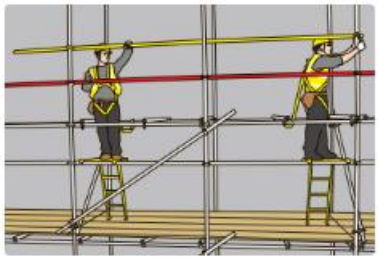
Several manufacturers of proprietary system scaffolding have developed integrated advanced guardrail systems that form the permanent guardrails for the completed scaffold structure. These AGS are typically installed using proprietary tools which are bespoke to the system scaffold manufacturer.



Shorter Lift Heights:

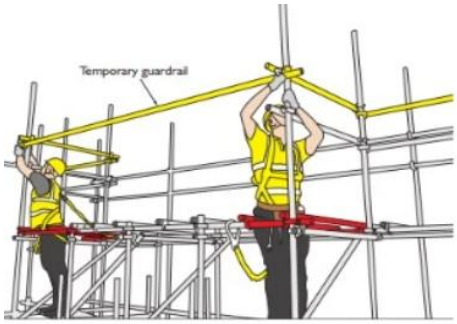
During the construction of a traditional brick/block structures progressive lifts for brickwork & floor installation are typically erected with lift heights between 1.0m – 1.50m. Proprietary collective fall protection systems to not easily accommodate these smaller lift heights. In some instances the guardrails for the next lift can be installed from the existing working platform. Where this is not possible, scaffolders steps or small proprietary 'hop-up' platforms can be used to enable the scaffold operatives to install the guardrails for the next lift or remove them during the dismantling process.

When utilising scaffold steps or hop-up platforms on shorter lift heights, care must be taken to ensure that scaffold operatives continue to work behind a single guardrail. This may require the installation of the intermediate guardrail from the lift below before utilising the scaffold step or hop-up platform to install the principal guardrail.

lift below	
Scaffold step then used to install the principal guardrail	
Proprietary hop-up platform being used as an alternative to the scaffold step.	

Loading Bays:

Before installing & removing loading bay gates, the scaffold operatives must fix a temporary guardrail to the front & sides of the loading bay to maintain the scaffolders safe zone.



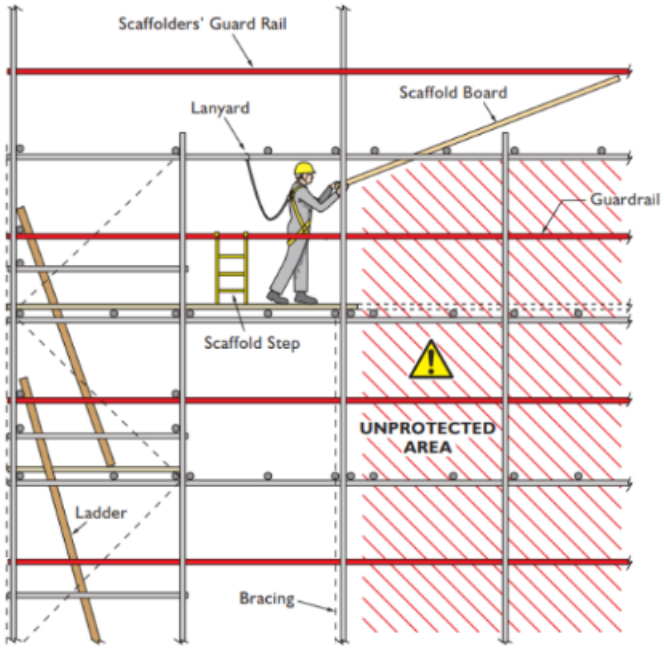
Methods of Access & Agress:
Scaffold operatives should introduce a method of safe access as early as possible during the assembly process & should remove the method of safe access as late as possible during the dismantling process to remove the need for operatives to climb the scaffold structure.

Temporary ladder access can be provided for use by scaffold operatives until the permanent access/egress arrangement has been installed.

A system of working should be adopted that enables the scaffold operatives to work progressively away

from & back towards their access/egress location during the assembly, alteration & dismantling process.

example of a scaffold operative raising boards to the next lift above whilst working progressively back towards the ladder access point.



5.7.3 Personal Fall Protection Equipment

When working on Taylor Wimpey sites, operatives involved in scaffold operations must wear & use Personal Fall Protection Equipment (PFPE) at all times when working at height.

Scaffold Labourers are not permitted to wear any form of PFPE

The use of PFPE that is designed to arrest a fall does not prevent a fall from occurring & therefore does not eliminate the risk of injury. PFPE is used to arrest a fall should it occur, to prevent the scaffold operative from hitting the ground or structure. The PFPE and anchorage points must be capable of withstanding the forces involved and minimising those forces to an acceptable level.

The following minimum personal fall protection equipment should be issued to all scaffold operatives permitted to work ate height:

- Industrial helmet designed for work at height conforming to BS EN 397
- Fall arrest harness complete with rear dorsal ring conforming to BS EN 361
- Fall arrest lanyard conforming to BS EN 354 incorporating an energy absorber conforming to BS EN 355
- A 55mm opening scaffold connector for one handed operation conforming to BS EN 362

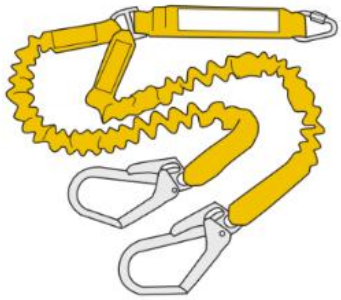
Single Fall Arrest Lanyards

Personal fall arrest systems that utilise a single fall arrest lanyard are only effective if continually attached whilst exposed to a risk of a fall. If the scaffold operative has to change anchor positions to overcome an obstruction, they would be without fall protection, and exposed to an unacceptable risk	

Double Fall Arrest Lanyards:

Double lanyards, commonly referred to as Twin-tailed lanyards, are typically used when scaffold operatives have to access structures without a boarded platform or guardrail protection (installing a bridging section using beams).

The main benefit of using a double lanyard system of work is that it allows the scaffold operative to remain clipped on continuously when exposed to the risk of a fall e.g. when crabbing along a beam



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:

- Taylor Wimpey directly employed Scaffold Operatives must use F2.07 – Work Equipment and Lifting Equipment Inspection Record Sheet to record their weekly checks
- Scaffold Contractor operatives to record their weekly inspection on a suitable PUWER form

Anchor Points:

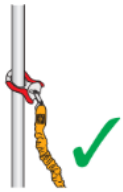
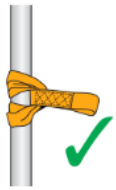
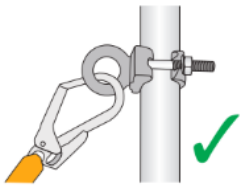
Personal Fall Protection Equipment relies on being attached to a suitable anchor point in order to perform correctly should a fall occur. Anchor points must be suitable for the potential loads imposed in an arrested fall.

Anchoring to tube & fitting scaffolds.

It has been established by the NASC, through independent testing, that steel tube and fitting TG20 compliant scaffolding can provide a safe anchor point for a scaffolder wearing a full body harness and attached by a lanyard with an energy absorber.

Suitable anchor points for tube & fitting scaffolds are as follows:

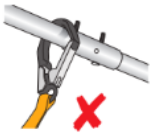
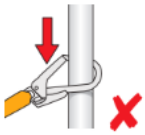
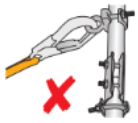
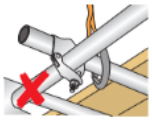
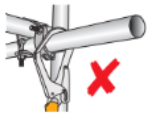
- Ledgers and transoms supported with load bearing couplers.
- Standards, but only when using a suitable anchor device and no joints between the lift and the attachment point.
- Guardrails supported with load-bearing couplers
- Plan braces (horizontal) supported on right-angle couplers

Ledgers secured with right angled couplers	Guardrail secured with right angled couplers	
		
Karabiners that are designed especially for attaching to scaffold standards	**Webbing slings specifically designed to wrap around standards to create an effective anchor device.**	**special couplers that can be pre-assembled on standards**
		

Unsuitable anchor points:

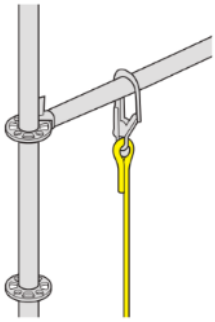
Unsuitable anchor points for tube & fitting scaffolds are as follows:

- Ledgers or guardrails supported with single couplers
- Ledgers or guardrails within a bay where it has a joint
- Standards unless a suitable anchor device is used
- Standards with a joint between the lift and the attachment point
- Puncheons
- Transoms at foot level or below
- Putlog transoms or bridle tubes
- Underslung tubes below ledgers on non load-bearing couplers
- Reveal or prop tie assemblies
- Vertical braces (e.g. façade or ledger braces) or other diagonal tubes (e.g. spurs or rakers)
- Open ended tube
- Standalone edge protection, unless designed to be used as a suitable anchor point

Ledger or guardrail on single couplers	No joints in ledger or guardrails	Standards without suitable anchor device
		
Standards with a joint above the platform	**Transoms below foot level**	**Putlog transom or bridle tube**
		
Reveal ties	**Verticle bracing**	**Open ended tube**
		

Anchoring to proprietary system scaffolds:

The system scaffold manufacturers instructions must always be followed when attaching personal fall protection equipment.

int for a proprietary scaffolding system as per the manufacturers' instructions	

5.7.4 Setting up an Exclusion Zone

It is impractical to completely enclose a plot during the erection, alteration or dismantling of scaffold structures as scaffold operatives 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:

- Scaffold operations are underway and
- To keep a safe distance away from the scaffold working area.

A group of men working on a building
Description automatically generatedThe 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.

Note: any 'riot' type barriers are suitable

All scaffold operatives 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:

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

5.7.5 Birdcage Installation & Dismantling

Where birdcage scaffolds are used on site to provide internal fall protection a safe system of work must be provided by the scaffold contractor which details the installation & dismantling process. The safe system of work must include the following points as a minimum:

- How materials used to frame out the birdcage will be delivered to & removed from the working area. This must include both the ground floor & birdcages installed on timber and pre-cast concrete mid-floors.
- How will the birdcage working platform be boarded/decked out during the erection phase & how will the platform boards/decks be removed during the dismantling phase. This must include both the ground floor & birdcages installed on timber and pre-cast concrete mid-floors.
- It is not acceptable for birdcages to be boarded/decked out from the perimeter working platform without suitable control measures in place to prevent operatives from falling into the plot/structure.
- How will scaffold operatives access the working area for birdcages installed on timber and pre-

cast concrete mid-floors.

5.7.6 Temporary Edge Protection Installation

Where temporary edge protection is installed on site a safe system of work must be provided by the scaffold contractor which details the installation & dismantling process for each type of edge protection system.

For gable end/verge guardrails, the safe system of work must clearly identify how the guardrails will be installed and dismantled. It is not acceptable for scaffold operatives to climb up the roof structure to facilitate the installation or dismantling of gable end/verge guardrails.

Where temporary guardrails are provided to internal pre-cast concrete staircases the safe system of work must clearly identify how scaffold operatives carrying out the installation & dismantling of the guardrails will be prevented from falling through the stairwell void.

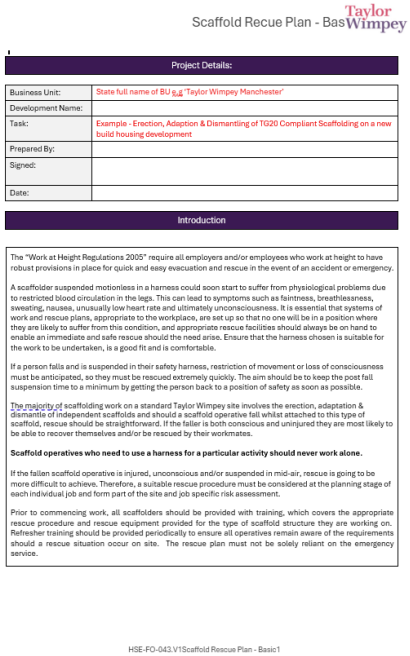
5.8.1 Emergency & Rescue

Scaffolders safe systems of work will need to include emergency rescue arrangements that are suitable for the scaffolds being worked on. This requirement applies to both contract scaffolders & those employed by Taylor Wimpey Directly.

Prior to commencing work, all scaffolders should be provided with training, which covers the appropriate rescue procedure and rescue equipment provided for the type of scaffold structure they are working on. Refresher training should be provided periodically to ensure all operatives remain aware of the requirements should a rescue situation occur on site. The rescue plan must not be solely reliant on the emergency service.
A rescue plan must be suitable and sufficient for both the site conditions and the tasks being carried out. It must be noted that a rescue plan that is suitable for basic housing sites/activities will not be appropriate for more complex structures such as truss out or suspended scaffolds. Consult with your RHSEA if you are unsure.

All scaffold operatives & members of the site management team on site shall be briefed on the method of rescue before any scaffold activities commence.

As soon as a fall takes place the scaffold team must put the rescue plan into effect and inform the site management and the emergency services in case specialist attention is required.


Scaffold Recue Plan - Bas

Project Details:

Business Unit:	State full name of BU e.g 'Taylor Wimpey Manchester'
Development Name:	
Task:	Example - Erection, Adaption & Dismantling of TG20 Compliant Scaffolding on a new build housing development
Prepared By:	
Signed:	
Date:	

Introduction

The "Work at Height Regulations 2005" require all employers and/or employees who work at height to have robust provisions in place for quick and easy evacuation and rescue in the event of an accident or emergency.

A scaffolder suspended motionless in a harness could soon start to suffer from physiological problems due to restricted blood circulation in the legs. This can lead to symptoms such as faintness, breathlessness, sweating, nausea, unusually low heart rate and ultimately unconsciousness. It is essential that systems of work and rescue plans, appropriate to the workplace, are set up so that no one will be in a position where they are likely to suffer from this condition, and appropriate rescue facilities should always be on hand to enable an immediate and safe rescue should the need arise. Ensure that the harness chosen is suitable for the work to be undertaken, is a good fit and is comfortable.

If a person falls and is suspended in their safety harness, restriction of movement or loss of consciousness must be anticipated, so they must be rescued extremely quickly. The aim should be to keep the post fall suspension time to a minimum by getting the person back to a position of safety as soon as possible.

The majority of scaffolding work on a standard Taylor Wimpey site involves the erection, adaptation & dismantle of independent scaffolds and should a scaffold operative fall whilst attached to this type of scaffold, rescue should be straightforward. If the faller is both conscious and uninjured they are most likely to be able to recover themselves and/or be rescued by their workmates.

Scaffold operatives who need to use a harness for a particular activity should never work alone.

If the fallen scaffold operative is injured, unconscious and/or suspended in mid-air, rescue is going to be more difficult to achieve. Therefore, a suitable rescue procedure must be considered at the planning stage of each individual job and form part of the site and job specific risk assessment.

Prior to commencing work, all scaffolders should be provided with training, which covers the appropriate rescue procedure and rescue equipment provided for the type of scaffold structure they are working on. Refresher training should be provided periodically to ensure all operatives remain aware of the requirements should a rescue situation occur on site. The rescue plan must not be solely reliant on the emergency service.

HSE-FO-043.V1Scaffold Rescue Plan - Basic1

Where scaffold operatives are directly employed by Taylor Wimpey, the TW Rescue Plan Template document must be used to form the site & task specific rescue plan. This document must be completed by for each site & all scaffold operatives working on the site must be briefed on its contents. This document is only suitable for basic housing sites/activities. Where more complex activities (such as beam work) are being carried out, a separate rescue plan will be required.

Where contract scaffold operatives are working on site, the requirement for formulating and communicating a recue plan will be the responsibility of the scaffold contractor.

In the event of an operative falling from an independent, tower, birdcage scaffold, or any other structure where there is access adjacent to the suspended person then the guidance below is to be followed:

5.8.2 Rescue Procedure

- The first priority must be to recover the scaffold operative from suspension as quickly as possible, without endangering, unnecessarily, the safety of the rescue team or fallen operative. When an operative has suffered a fall and is suspended in their harness, the suspension time should be kept to a minimum by getting the operative back to a position of safety as soon as possible.

- Inform the site management team & emergency services as soon as practicable to make them aware that there is an emergency situation and to request assistance.

If the suspended scaffold operative is conscious & can recover themselves or assist in their own rescue, the options detailed below can be followed:

- Climb back onto an adjacent working platform. The fallen operative may need assistance from other members of the scaffold gang to achieve this.

- Climb back onto an adjacent un-boarded platform. The fallen operative must not release or cut their lanyard whilst on an un-boarded platform & should wait for further assistance from other members of the scaffold gang.

- Support themselves on part of the scaffold structure so they are not solely supported by the harness & wait for further assistance from other members of the scaffold gang.

- Take steps to reduce the risk of further injury until rescued. E.g keep all four limbs moving to aid blood circulation by flexing the leg muscles. Transferring body weight from one side to the other. Make use of foot support straps, if available.

- Remaining members of the scaffold gang can create a working platform a minimum 4 boards wide at a position adjacent to the casualty, clip-on to the guardrail, ledger or other suitable anchorage point, and assist them to get onto the working platform.

- The fallen operatives lanyard must not be released or cut until they are in a place of safety.

If the suspended scaffold operative is unconscious or cannot assist in their own rescue, the options detailed below should be followed:

- Remaining member of the scaffold gang to manually manoeuvre the fallen operative onto an adjacent existing working platform.

- Remaining members of the scaffold gang can create a working platform a minimum 4 boards wide at a position adjacent to the casualty, clip-on to the guardrail, ledger or other suitable anchorage point, and manually manoeuvre the fallen operative onto the working platform.

- The fallen operatives lanyard must not be released or cut until they are in a place of safety.

- Where possible, the remaining scaffold gang members should assist the emergency services by providing safe access to the scaffold operative. E.g installing temporary guardrails, securing platform boards, positioning ladders etc.

The Emergency Services should then make their way to the fallen operative to administer treatment and make an assessment as to their condition before deciding on the next steps to be taken to get the operative to ground level.

5.8.3 Post Rescue

Where a scaffold operative has been suspended in their harness & has been rescued & is fully conscious and mobile, if the operative has been rescued promptly by his colleagues, or has self-rescued and no injuries were sustained before, during or after the fall and provided there was no medical reason for the fall i.e. a seizure or other sudden loss of consciousness, the operative should be monitored by a first aider until satisfied no trauma has occurred, up to a maximum of 30 minutes.

Where a scaffold operative has been suspended in their harness & has been rescued, but is unconscious or semi-conscious, they must be seen and observed by a competent first aider who should ensure that the emergency services are called immediately. The first aider should then ensure the airway is open, the operative is breathing and only then place the operative in the traditional recovery position until the emergency services are in attendance.

Advise the ambulance service that the patient needs to be treated for orthostatic shock (suspension trauma) or intolerance, which should be treated similarly to crush injuries.

Following a fall, any fall protection equipment should be quarantined for inspection as part of the accident investigation process.

5.8.4 Work on Complex Structures

The rescue of scaffold operatives who have fallen and are hanging in free air with no access adjacent to the suspended person are far more complex and will require specific plans to be developed, which will include specialist equipment and/or machinery & will require additional training for the scaffold operatives & site management teams. Your scaffolding contractor and RHSEA will be able to assist with developing these plans.

Examples include

- Rescue by a MEWP
- Gotcha rescue kits

5.9.1 Scaffold Lift Heights (Traditional Build)

Lift heights are the vertical distances between the horizontal levels of scaffolding, typically referred to as ‘lifts’.

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

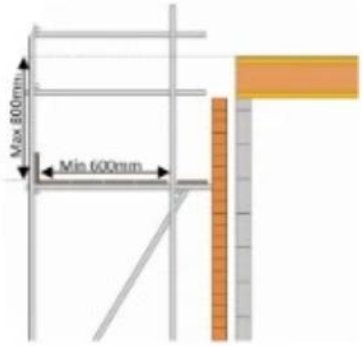
To manage the risk of falls from the mid-floor(s) and roof surface on to the external scaffold working platforms, there are a few critical height dimensions/measures that must be applied to all our scaffolds.

Mid-Floors:

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. Where the main working platform is outside this tolerance, the entire lift of scaffold will need to be raised. Inside board or console brackets cannot be used to reduce the distance.

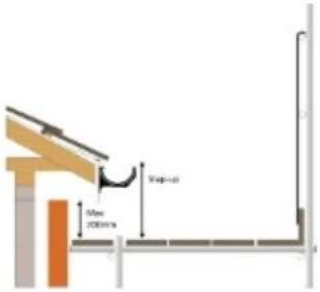
To ensure the risk of falls off the scaffold (onto floor slab/ midfloor) are minimised, no scaffold lift may be set more than 600mm above the floor slab/ midfloor unless internal fall protection (decking system, birdcage) is in place, or internal handrails provided.

Internal fall protection (birdcage, decking system) must be provided to enable the safe construction of all timber mid-floors. Where the distance from the top of the ground floor slab/Timber mid-floor to the underside of the joist beam on the floor above exceeds 2.40m, the height of the internal fall protection system will need to be adjusted accordingly to ensure adequate protection is maintained.



Roof Structure:

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. Where the main working platform is outside this tolerance, the entire lift of scaffold will need to be raised. Inside board or console brackets cannot be used to reduce the distance.



5.10 Tube and Fit Scaffolding

Science
Kilonewtons - It is common to see forces and loads expressed in kilonewtons (KN), where 1 KN = 1000 Newtons.

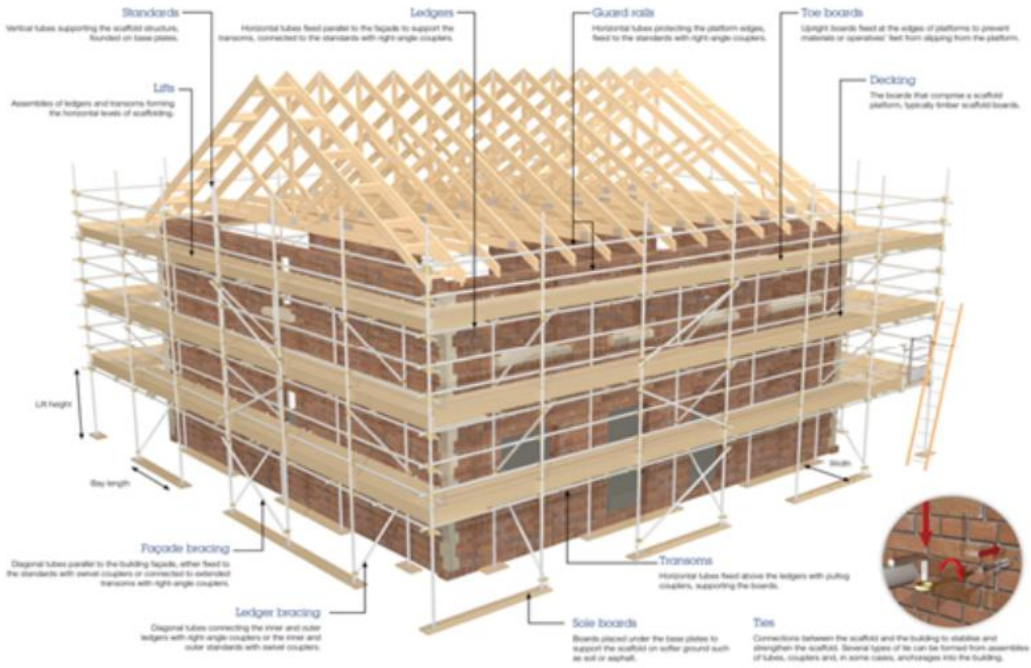
Specifications in kilonewtons are common in safety specifications for the holding values of fasteners, and other items used in the building industry.

One newton is the force needed to accelerate one kilogram of mass at the rate of one metre per second squared in the direction of the applied force.

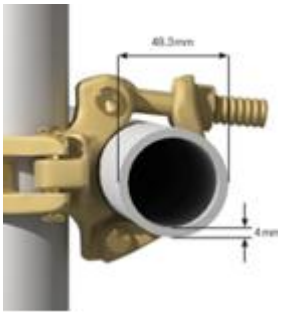
5.10.2 Parts of a Scaffold

Parts	Description
Sole Boards	Boards placed under the base plates to support the scaffold.
Standards	Vertical tubes supporting the scaffold structure, founded on base plates.
Ledgers	Horizontal tubes fixed parallel to the façade to support the transoms, connected to the standards with right angled couplers.
Transoms	Horizontal tubes fixed above the ledgers with single couplers to support the boards.
Ledger Bracing	Diagonal tubes connecting the inner and outer ledgers with right angled couplers or inner and outer standards with swivel couplers.
Facade Bracing	Diagonal tubes parallel to the building façade, either fixed to the standards with swivel couplers or connected to extended transoms with right angle couplers.

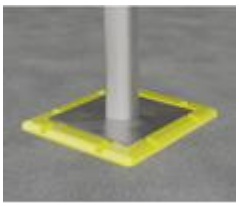
Parts	Description
Decking	The boards that comprise a scaffold working platform, typically timber scaffold boards.
Toe Boards	Upright boards fixed at the edges of a platform to prevent materials or operatives feet from slipping through the platform.
Guard Rails	Horizontal tubes protecting the platform edges, fixed to the standards with right angle couplers.
Lifts	Assemblies of ledgers and transoms forming the horizontal levels of scaffolding.
Ties	Connections between the scaffold and the building to stabilise and strengthen the scaffold. Several types of tie can be formed from assemblies of tubes, couplers and in some cases, anchorage to the building.



5.10.3 Scaffold Components

Component	Details
	Type 4 Galvanised Steel Tubes The most common type of tube used in scaffolding is type 4 steel tube manufactured to BSEN 39. These tubes have an outside diameter of 48.3mm and a wall thickness of 4mm.
	Double Coupler (Right Angle) Double couplers are load bearing fittings manufactured to BSEN74 and can be identified by the markings impressed into the fitting. These fittings are available in Class A & Class B load classes. Class A fittings have a safe working load of 6.1KN & Class B fittings have a safe working load of 9.1KN.
	Swivel Coupler Swivel couplers are load bearing fittings manufactured to BSEN74 and can be identified by the markings impressed into the fitting. These fittings are available in Class A & Class B load classes. Class A fittings have a safe working load of 6.1KN & Class B fittings have a safe working load of 9.1KN.
	Band & Plate Coupler Band & plate couplers are load bearing fittings manufactured to BSEN74. They are a Class A load bearing fitting and have a safe working load of 6.1KN. They are a versatile fitting and can be used in a variety of applications where a flush finish is required.
	Putlog / Single Coupler Putlog / Single couplers are manufactured to BSEN74 but they are not load bearing fittings and only have a safe working load of 0.63KN. They must not be used for load bearing applications and are suitable for securing transoms to ledgers & for securing toe boards.

Component	Details
	Sleeve / Joint Coupler Sleeve / joint couplers are manufactured to BSEN74 and can be identified by the markings impressed into the fitting. These fittings are available in Class A & Class B load classes. Class A Fittings have a safe working load of 3.6KN & Class B fittings have a safe working load of 5.5KN Sleeve / joint couplers can be used to connect 2 tubes together either horizontally or vertically.
	Spigot / Pin Spigot / pin's are manufactured to BSEN74 but they are not load bearing fittings. They have no safe working load in tension so should not be used to connect tubes horizontally or vertically. Spigot / Pin's should only be used to connect 2 tubes together vertically.
	Base Plates BSEN74-3 details the structural requirements for baseplates and base plates with a minimum thickness of 5.0mm are deemed to satisfy these requirements. There has been a significant increase in the use of 2mm & 3mm thick base plates over the years. These reduced thickness base plates can be used but the maximum lift heights are greatly reduced, typically to 10 lifts where 3mm thick base plates are used and 4 lifts where 2mm thick base plates are used.
	Sole Board / Sole Pad Sole boards / sole pads are timber boards which spread the loads from the scaffold and help protect the bearing surface. Sole boards / sole pads should be at least 0.1m2 with no dimension less than 220mm and a thickness of at least 36mm. This is typically achieved by cutting a 225mm x 38mm timber scaffold board to a length of 450mm.
	Board Retaining Clamp Board retaining clamps are manufactured to BSEN74 but they are not load bearing fittings. They are typically used for securing scaffold boards & are fixed to the transom tubes. Where board retaining clamps need to be used, it is recommended that 2 per board are used.

Component	Details
	Treader Plates In locations where public access is needed, it may be possible to use 'treader plates' to reduce the risk of trips. Treader plates can only support a maximum leg load of 12KN & can only be used where permitted by the TG20 compliance sheet. Treader Plates are not to be used for site work & can only be used for remedial works within the public area where the ground conditions are suitable

5.10.4 Introduction to TG20

TG20 is a comprehensive guide to good practice for tube & fitting scaffolding in the UK. The guidance is produced by the NASC which is the recognised UK trade body.

TG20 provides guidance for all those who specify, procure, supply, install, use & manage tube & fitting scaffolding.

The original British Standard for scaffolding in the UK (BS 5973) was withdrawn in 2003 and replaced by BS EN 12811.

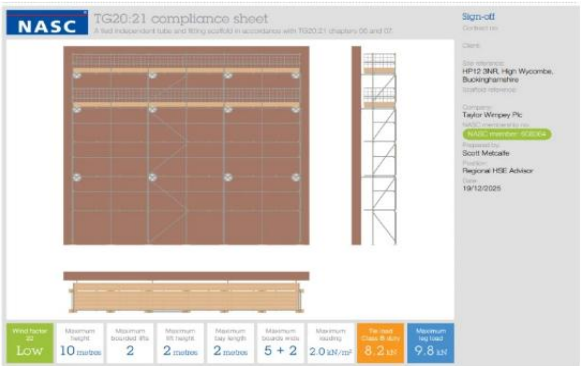
Why is TG20 required?

Work at Height Regulations 2005 Schedule 3 Part 2 Paragraph 7 states that:

Strength and stability calculations for scaffolding shall be carried out unless:

- (a)a note of the calculations, covering the structural arrangements contemplated, is available; or
- (b)it is assembled in conformity with a generally recognised standard configuration.

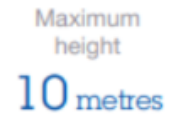
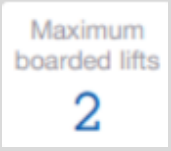
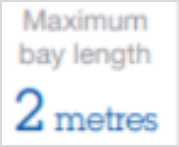
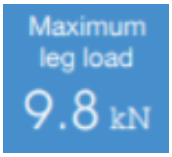
The European Standard for scaffolding performance and design BS EN 12811 does not contain such standard configurations. It is a performance document for the design of scaffolding by calculation, it is not a practical guide.



It is not practical for every scaffold to be designed individually by calculation so NASC have provided definitions for TG20 compliant scaffolding of common scaffolding structures that have been designed by structural calculation to BSEN12811.

The back page of the compliance sheet provides details of the compliance criteria for the scaffold. If the scaffold permits additional TG20 compliance features such as bridge sections, protection fans, pavement lifts etc they are stated here. The compliance badges are also repeated on the back page so that the back page contains the complete set of scaffolding compliance criteria.

Understanding the Criteria
This section provides guidance on interpreting the information contained within the TG20 compliance sheet.

	The maximum permitted site wind exposure as determined by the TG20 e-guide.
	The maximum permitted scaffold height measured to the top platform. If the scaffold has several elevations of different heights, a single compliance sheet may be used for the maximum height required.
	The maximum number of boarded lifts per elevation of scaffold. Fewer boarded lifts are permitted.
	The maximum permitted lift height, excluding any pavement lift if present.
	The maximum permitted distance between adjacent pairs of standards.
	The maximum permitted platform width (distance between inner & outer standard) shown in boards. The number after the '+' denotes the maximum number of inside boards.
	The maximum uniform loading on one lift per scaffold elevation. An additional 1 x lift 50% loaded is permitted per elevation.
	The maximum working leg load transmitted through the standards to the ground. TG20 compliance sheets include both vertical & horizontal loads within the stated leg load. This differs from TG30 compliance sheets which include vertical leg loads only.

5.10.5 Load Classes for Independent Scaffolding

TG20 caters for Four load classes of Independent Scaffolding from 0.75KN/m2 up to 3.0KN/m2. The load class will be stated on the TG20 compliance sheet.

Load Class 1 (0.75KN/m2) – Very Light Duty Scaffold

Typically used for inspection, access & light cleaning activities. Load class 1 scaffolds have a maximum uniform load of 0.75Kn/m2 (approximately 75kg per m2). Storage of materials is not permitted on load class 1 scaffolds.

Scaffolds of this class are typically 3-5 boards wide plus up to 1 inside board, with maximum 2.4m bays.

Load Class 2 (1.5KN/m2) – Light Duty Scaffold

Typically used for plastering, painting, glazing etc. Load class 2 scaffolds have a maximum uniformly-distributed load of 1.5KN/m2 (approximately 150kg per m2)

Scaffolds of this class are typically 4-5 boards wide plus up to 1 inside board, with maximum 2.4m bays.

Load Class 3 (2.0KN/m2) – General Purpose Scaffold

Typically used for general building work including brickwork, plastering, rendering etc. Load class 3 scaffolds have a maximum uniformly-distributed load of 2.0KN/m2 (approximately 200kg per m2)

Scaffolds of this class are typically 4-5 boards wide plus up to 3 inside boards, with maximum 2.0m bays.

Load Class 4 (3.0KN/m2) – Heavy Duty Scaffold

Typically used for heavy masonry work, concrete block work, heavy cladding etc. Load class 4 scaffolds have a maximum uniformly-distributed load of 3.0KN/m2 (approximately 300kg per m2)

Scaffolds of this class are typically 4-5 boards wide plus up to 3 inside boards, with maximum 1.80m bays. Board bearing transoms spaced at maximum 0.9m.

5.10.6 Independent Scaffolding

Standards & ledgers

All independent scaffolds are formed from pairs of vertical tubes (standards) connected with horizontal tubes (ledgers). All connections between the two must be made with load bearing fittings.

Standards must be plumb vertical, with a maximum deviation of 20mm in any 2.0m lift, and 50mm overall deviation.

Ledgers must be level with a maximum deviation of 20mm in any 2.0m bay, and 50mm overall deviation.

Joints in Scaffolds

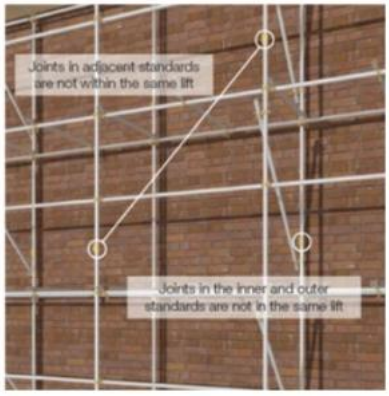
A joint is required wherever a standard, ledger or guardrail is too long to be formed from a single tube.

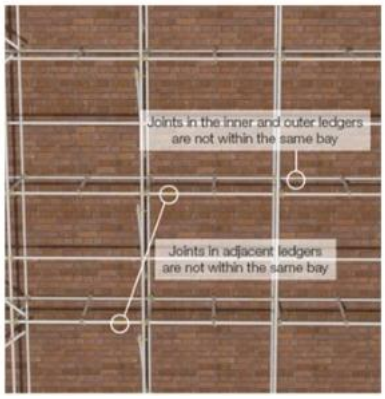
Joints in standards should be staggered so that adjacent standards are not joined within the same lift. An alternative pattern of joints is typically used to achieve this. Any pair of inner and outer standards should also not be joined within the same lift. If it is necessary to join all for standards comprising a bay within the same lift one of the joints must be 'spliced'.

Joints in Ledgers & Guardrails

Joints in ledgers at the same lift and in adjacent lifts should not occur within the same bay. The absence of a joint in the guardrail of any bay may be accepted as providing sufficient continuity to permit joints in ledgers above and below in the same bay

Joints in ledgers within the main working platform of TG20 compliant scaffolds may be made anywhere within the bay. Joints in guardrails are permitted in any bay and may be placed anywhere within the bay.





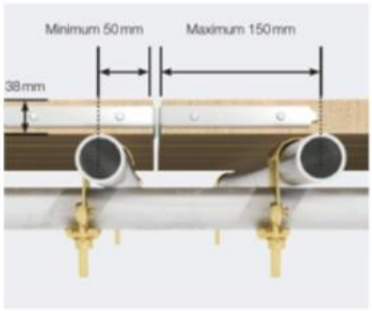
Standard Splicing Detail

Where joints in standards and ledgers of TG20 compliant scaffolds are required to be 'spliced', the TG20 standard splicing detail must be used. A small length of tube is placed parallel with the joint and connected to the standard/ledger with 2 x swivel couplers (1 either side of the joint).

Transoms

Transoms serve 2 purposes, to connect the inner & outer ledgers & to support the scaffold boards that form the working platform. The spacing of transoms is determined by a variety of factors but subject to a maximum spacing of 1200mm.

Transoms must be placed within 300mm of every pair of standards, at maximum intervals along the length of the board as standard on the TG20 compliance sheet and within 50mm-150mm of the end of every board.



Structural Transoms (Aberdeen's)

TG20 compliance sheets may specify structural transoms to add additional strength in the design to reduce lateral movement to the scaffold. On certain scaffolds they may be required due to a combination of wind loading and scaffold height.

Structural transoms must be fixed with load bearing couplers to the standards or ledgers within 300 mm of the node point.

Structural transoms are required for independent scaffolding clad with sheeting and may be required for debris netting scaffolds.

Structural transoms are a requirement on Taylor Wimpey scaffolds designed to support roof truss during installation.

Pre-Fabricated Transoms (Bones, Ready Lock)

Pre-fabricated transom units are manufactured with integrated connections that are directly fixed to both standards and ledgers to form a structural connection. These types of transom units are typically stronger and stiffer than traditional transoms connected with putlog/single couplers. It is possible to omit ledger bracing when pre-fabricated transom units are installed but only if the TG20 compliance sheet states this is permitted.

Pre-fabricated structural transom units must be certified as TG20 compliant by the supplier or manufacturer in order to be used within TG20 compliant scaffolding.

Foot Lifts / Foot Ties

A foot lift is a structural lift at the foot of the scaffold, typically around 300mm above the base plates. It is generally not necessary to provide a foot lift for TG20 compliant independent scaffolding. However, some of the compliance sheets for taller scaffolds require a foot lift to provide extra strength and stability.

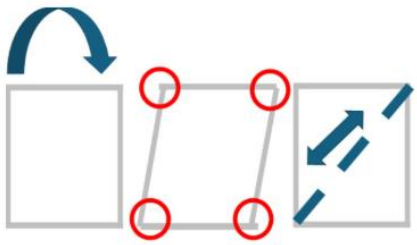
A foot lift is recommended to provide extra stability if the ground is sloping with a gradient in excess of 1:10.

A foot lift is assembled by fixing horizontal ledgers to standards with right angle (double) couplers. If the foot lift is to be boarded out then board bearing transoms should be fixed to the ledgers with putlog (single) couplers. If the foot lift is required to be structural then structural transoms are required at each pair of standards & must be connected to the standards or ledgers with right angle (double) couplers.

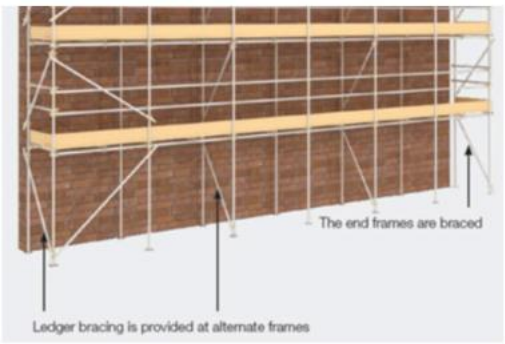
Example of a typical foot lift with structural transoms connected to the standards with right angled couplers.

5.10.7 Ledger Bracing

Ledger bracing is a series of tubes and fittings that connect the inner and outer ledgers or the inner and outer standards, performing an important role in stiffening and stabilising the scaffold. Ledger bracing connections must always be made with load bearing couplers & should be installed within 300mm of the intersection between the standard and ledger (node point).



Ledger bracing is required to every end frame of scaffold and in every alternate bay of scaffold thereafter.



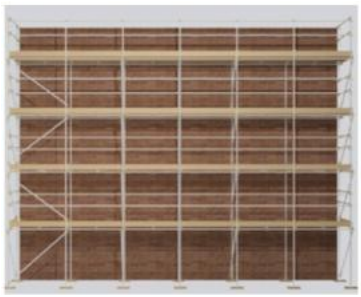
Where scaffold is erected round a corner to form a return, the ledger bracing starts at the first pair of standards at each elevation.

5.10.8 Facade (Sway) Bracing

Facade (sway) bracing is used to stabilise scaffolds along their outer face. Single bay façade bracing is the preferred method for use on Taylor Wimpey sites, with individual bracing tubes being installed in progression with each lift.

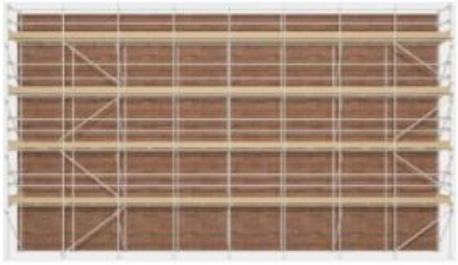
Facade bracing is typically formed by connecting diagonal tubes to the standards with swivel couplers. Facade bracing should be connected within 300mm of the standard to ledger intersection or within 300mm of the ground.

Facade bracing should be set within an angle range of 35-55 degrees with an optimum angle of 45 degrees. The direction of façade bracing does not affect the structural stability of a scaffold.



Alternatively, façade bracing can be connected to extended structural transoms with right angled (double) couplers providing the transoms are connected to the standards or ledgers with right angled couplers.

Facade bracing is required for every elevation of scaffold with one set of bracing required within every six horizontal bays. An elevation of scaffolding up to 6 bays long requires one set of bracing. An elevation that is 7-12 bays long requires two sets of bracing and so on.



5.10.9 Plan Bracing

Plan bracing is the term used to describe bracing fitted horizontally under a lift.

Plan bracing is not normally required for TG20 compliant independent scaffolding except in two cases:

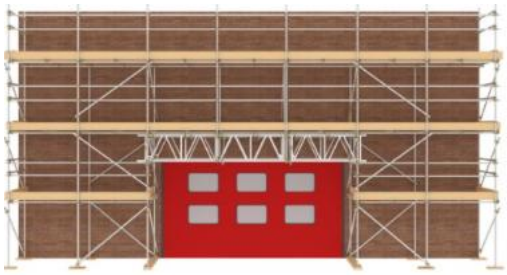
Bridges over openings supported with beams.
Pavement lifts which provide clear access for pedestrians by omitting the ledger bracing below the first lift.

Plan bracing is preferably provided by fixing tubes between the inner and outer standards with right angled couplers. Alternatively, plan bracing may be fixed to the ledgers with swivel couplers. Plan bracing may be fixed to the rungs of beams with right angled couplers or the chords of the beam with swivel couplers. The direction of the plan bracing does not affect the stability of a TG20 compliant scaffold.

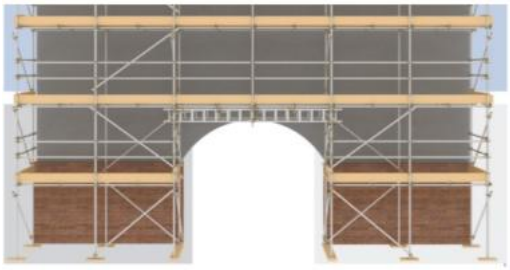
Plan bracing may be required for scaffolds which have been designed by an engineer. The design will specify where the plan bracing should be fixed & its direction.

5.10.10 Bridges and Openings

A bridge is a structure that supports the scaffolding above an opening. There are several ways to form a bridge but the most common is to fix a pair of prefabricated steel or aluminum beams beneath the ledgers.



TG20 compliant bridges are installed in accordance with a recognised standard configuration and therefore do not require a bespoke design. Two types of bridges are TG20 compliant



- Two bay bridge supported by 305mm deep steel ladder beams or equivalent aluminium lattice beams.
- Three bay bridge supported by 610mm deep steel unit beams or equivalent aluminium lattice beams.

The bridge must be supported at both sides by at least 1 x bay of scaffolding & the additional ledger and façade bracing requirements around the opening will be detailed on the TG20 compliance sheet.

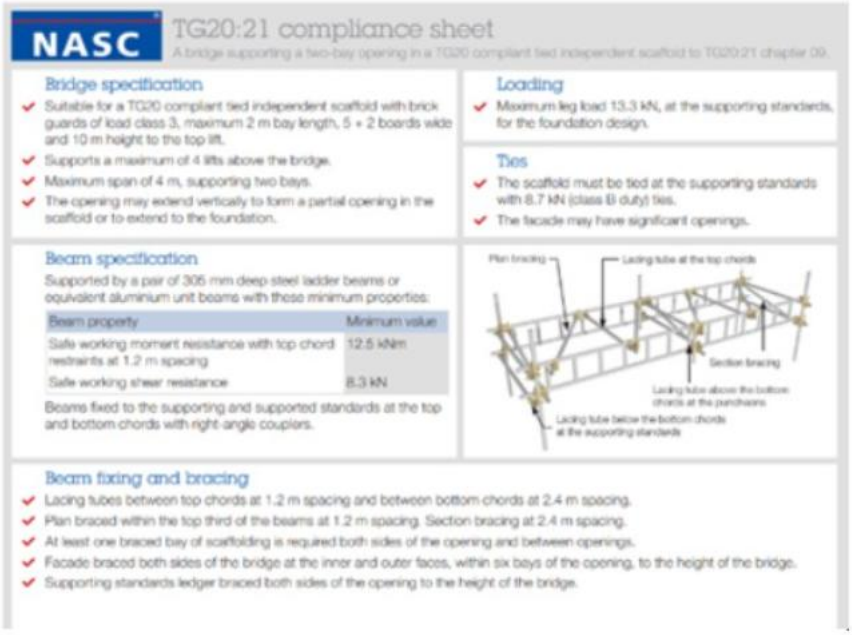
Bridges that fall outside the scope of TG20 will require a bespoke independent design. Examples of bridge requiring a bespoke design are:

- Bridges that span more than 3 bays
- Bridges that cannot be supported by beams
- Bridges with beams that do not meet the minimum TG20 specification
- Cantilevered bridges
- Bridges within a birdcage

5.10.11 Beam Specification

A variety of proprietary beams are available from several manufactures, so its important to use beams that have sufficient load bearing capacity to support the scaffold above the opening.

The TG20 Compliance sheet will minimum beam properties for a specific opening.



NASC TG20:21 compliance sheet

A bridge supporting a two-bay opening in a TG20 compliant tied independent scaffold to TG20:21 chapter 09.

Bridge specification

- Suitable for a TG20 compliant tied independent scaffold with brick guards of load class 3, maximum 2 m bay length, 5 + 2 boards wide and 10 m height to the top lift.
- Supports a maximum of 4 lifts above the bridge.
- Maximum span of 4 m, supporting two bays.
- The opening may extend vertically to form a partial opening in the scaffold or to extend to the foundation.

Loading

- Maximum leg load 13.3 kN, at the supporting standards, for the foundation design.

Ties

- The scaffold must be tied at the supporting standards with 8.7 kN (class B duty) ties.
- The facade may have significant openings.

Beam specification

Supported by a pair of 305 mm deep steel ladder beams or equivalent aluminium unit beams with these minimum properties:

Beam property	Minimum value
Safe working moment resistance with top chord restraints at 1.2 m spacing	12.5 kNm
Safe working shear resistance	8.3 kN

Beams fixed to the supporting and supported standards at the top and bottom chords with right-angle couplers.

Beam fixing and bracing

- Lacing tubes between top chords at 1.2 m spacing and between bottom chords at 2.4 m spacing.
- Plan braced within the top third of the beams at 1.2 m spacing. Section bracing at 2.4 m spacing.
- At least one braced bay of scaffolding is required both sides of the opening and between openings.
- Facade braced both sides of the bridge at the inner and outer faces, within six bays of the opening, to the height of the bridge.
- Supporting standards ledger braced both sides of the opening to the height of the bridge.

Beams should be connected to each standard at the top and bottom chords with right angled couplers. A pair of connections is required at the supporting standards at each side of the opening. The beams should not be connected at the 'horn ends'.

Beams can be installed below the lift height ledgers or alternatively, beams can be incorporated into the lift height ledgers above the opening. In either arrangement, beams must be connected to the standards with right angled (double) couplers at both the top and bottom chord. Where the beams form part of the lift height ledger they must be connected to the adjacent ledgers with Class B Sleeves.

5.10.12 Lacing and Bracing the Beams

The pairs of beams which bridge an opening must be braced to prevent lateral buckling & twisting and to sustain their load bearing capacity. For TG20 compliant bridges this is achieved by:

- Connecting the inner & outer beams with lacing tubes at both the top and bottom chords.
- Providing plan bracing within the top third of the beams
- Providing section bracing – connecting the top chord of one beam to the bottom chord of the other beam.

Lacing Tubes

The inner & outer beams must be connected together at both the top and bottom chords with horizontal lacing tubes fixed with right angle (double) couplers. For TG20 compliant bridge sections the lacing chords must be installed as follows:

- The top chords of the beams connected with lacing tubes at a maximum spacing of 1.20m (or as specified by the beam manufacturer)
- The bottom chords of the beams connected with lacing tubes at a maximum spacing of 2.40m

(or as specified by the beam manufacturer)

- Lacing tubes at 'puncheon' standards within the opening should be fixed immediately above the beam to puncheon connection to enable them to act as supplementary couplers.
- Lacing tubes to ground bearing standards should be made immediately below the beam to standard connection.

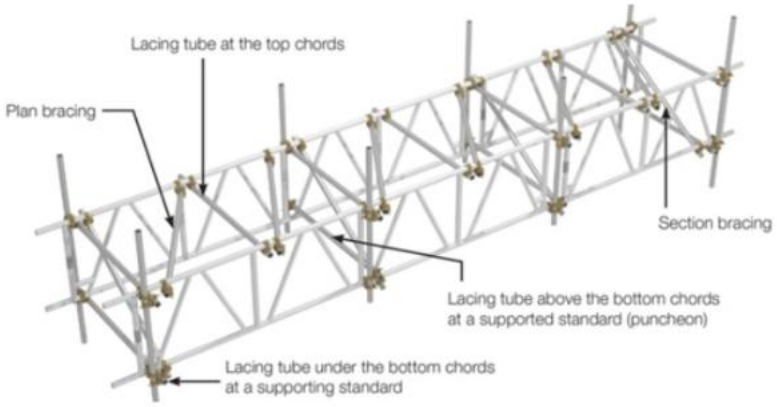
Plan bracing

Plan bracing should be fixed between the inner and outer beams within the top third of the beam depth. Connections can be made with either right angle (double) or swivel couplers. Plan bracing should be provided at maximum spacing of 1.20m.

If plan bracing is omitted or fixed incorrectly, the load bearing capacity of the beams can be reduced by up to 50%.

Section Bracing

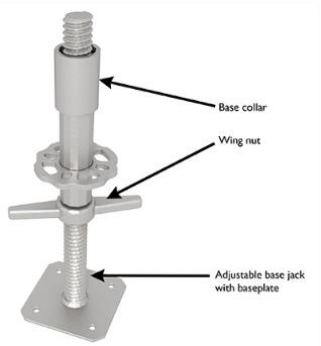
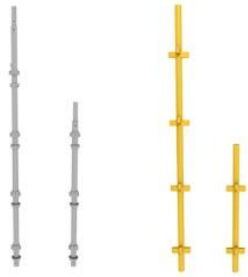
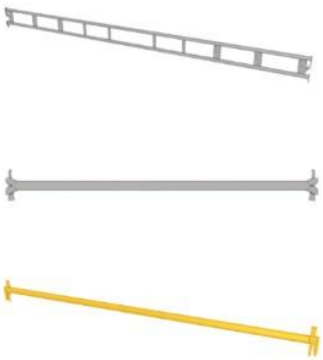
Section bracing should be provided at a maximum spacing of 2.40m (or as specified by the beam manufacturer) but should be provided at each standard and puncheon location. Section bracing can be connected with either right angled (double) or swivel couplers. Bracing can be fixed from the top chord of the inner beam to the bottom chord of the outer beam or vice versa



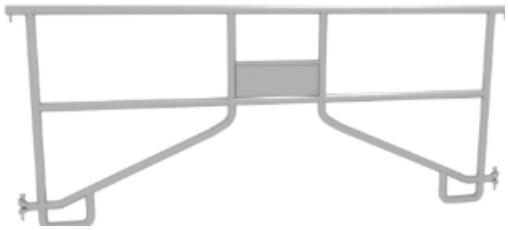
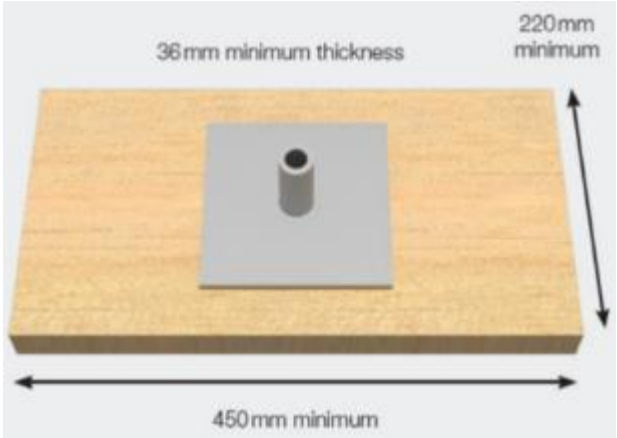
5.11.1 System Scaffold Equipment

Due to the various classes of system scaffolding & the number of individual systems within each class, it is not possible to list every type of component. The following information relates to the practical identification & use of common system scaffolding components.

The full component list and practical applications for each system scaffold type will be detailed within the manufacturers instructions/guidance documentation.

Component	Description
	Adjustable Base Jack An adjustable base jack incorporates a 150mm x 150mm steel base plate & threaded rod with an adjustable nut, manufactured in accordance with BS EN 12811. The base plate is founded on a sole board. They are designed to handle uneven ground by allowing for vertical adjustments. Base jacks are available with various lengths of threaded rod & the extension should never exceed the length stated by the manufacturer for the applied loading.
	Standards Standards are the principal vertical components supporting the scaffold structure. They bear the loads from the scaffolding, transferring weight to the ground. Standards for TG30 compliant systems are fabricated from 48.3mm diameter tubes with a wall thickness between 3.2mm & 4mm, hot rolled to BSEN 10210-1 or cold rolled to BSEN 10219-1 Standards typically incorporate a spigot to allow vertical connection of additional standards.
	Ledgers The ledgers are the longitudinal horizontal components used to form the bay lengths of scaffold lifts & foot lifts. Ledger components can also be used to form the guard rails. Ledger components are supplied in modular lengths that match the bay lengths required. The method of connecting ledger components to the standards is dependant on the individual system scaffolding type being used.

Component	Description
	Transoms The transoms are the horizontal components used to form the bay widths of scaffold lifts & foot lifts. A transom is required between each pair of standards to form the lifts & provide support for the decking units. Depending on the platform load class & bay dimensions, it may be necessary to use reinforced transoms. Manufacturer guidance or a TG30 compliance sheet will state when reinforced transoms are required.
	Console Brackets Console brackets are commonly refereed to as 'hop-up' brackets. They are designed to increase the width of a scaffold platform by supporting additional decks to form a cantilevered platform, typically at the inner face of the scaffold. Intermediate brackets may also be required, located at positions between the standards. These brackets are supported by a pair of ledgers, one at the platform level and one 500mm below, subject to manufacturers guidance.
	Bracing Bracing components form the vertical bracing (façade & ledger bracing where required) and the horizontal bracing (plan or wing) required in a system scaffold structure. Bracing components are supplied in modular lengths to suit the available system bay lengths and lift heights. A swivelling connection head is provided at each end of a bracing component. Not all system types incorporate components for all types of bracing & in some cases bracing may have to be fitted using traditional tube & fitting components, subject to manufacturer guidance.

Component	Description
	Guard Rails Frames Guard rail frames may be supplied by some system scaffold manufacturers as an alternative to ledger components. These frames are typically used as advanced guard rails and let in place during the service life of the scaffold. Some guard rail frames are designed to reduce or remove the need for façade bracing, subject to manufacturer instructions.
	Toe Boards Proprietary toe board components are normally manufactured from steel or timber & are typically 150mm in height & available in modular lengths to match the bay lengths. The method of attachment to the scaffold varies between manufacturers. Toe boards may be fitted using traditional scaffold boards secured with fittings or proprietary components, subject to manufacturer instructions.
	Sole Board / Sole Pad Sole boards / sole pads are timber boards which spread the loads from the scaffold and help protect the bearing surface. Sole boards / sole pads should be at least 0.1m2 with no dimension less than 220mm and a thickness of at least 36mm. This is typically achieved by cutting a 225mm x 38mm timber scaffold board to a length of 450mm.

Component	Description
	Treader Plates In locations where public access is needed, it may be possible to use 'treader plates' to reduce the risk of trips. Treader plates can only support a maximum leg load of 12KN & can only be used where permitted by the TG30 compliance sheet.

5.11.2 System Scaffold Types and Classifications

System scaffolds are placed into categories of a similar type & each of the TG30 compliant categories are detailed below:

Rosette/Ring Types:

A rosette/ring type system utilises perforated connections welded to the standards at 500mm intervals. The ledgers, transoms, guardrails & bracing components are secured to the rosette connections with wedge head connections welded to the ends of each component. Some rosette type systems also utilise proprietary guard rail frames to provide stability to the scaffold structure, removing or reducing the need/frequency of façade bracing.

Cup Types

A cup type system utilises a locking device formed by fixed lower cups welded to the standards at 500mm intervals and sliding upper cups that lock the blade ends of the horizontal components and bracing components into place, forming a rigid connection.

Cup type systems typically offer 2 x options for the working platform, either traditional transoms with scaffold boards or Omega type transoms supporting steel or timber battens. Omega type transoms provide a flush working platform without the need for intermediate transoms.

Wedge Types

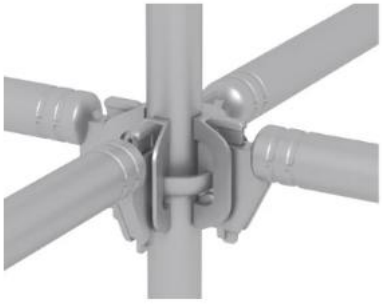
A wedge type system utilises a pivoting wedge at each end of the ledgers, transoms & bracing connected to 'V' pressings welded to the standards at 500mm intervals.

Pocket Type

A pocket type system utilises single or double pocket connections welded onto the standards at 500mm intervals. The horizontal and bracing components are connected to the pocket connections with spring catches.

Octo Type

An Octo type system utilises octagonal node points within cups welded to the standards at 500mm intervals. An Octo system provided up to 8 connections for the horizontal, bracing and guard rail components. These components connect to the standards with wedge & saddle connections containing a quick locking mechanism. Octo type systems also utilise a truss guard rail frame to provide stability to the scaffold structure, removing or reducing the need/frequency of facade bracing.



5.11.3 Introduction to TG30

TG30 is a comprehensive guide to good practice for system scaffolding in the UK. The guidance is produced by the NASC which is the recognised UK trade body. TG30 has been developed in collaboration with a range of manufacturers & suppliers to provide the industry with practical guidance on a wide range of scaffold systems.

TG30 provided guidance for all those who specify, procure, supply, install, use & manage various types of system scaffolding.

Why Do We Need TG30?

Work at Height Regulations 2005 Schedule 3 Part 2 Paragraph 7 states that:

Strength and stability calculations for scaffolding shall be carried out unless:

- (a)a note of the calculations, covering the structural arrangements contemplated, is available; or
- (b)it is assembled in conformity with a generally recognised standard configuration.

In the case of system scaffolding, “assembled in conformity with a generally recognised standard configuration” it is typically considered to be achieved by working in accordance with manufacturers guidance. However, it is not sufficient to simply work to the manufacturer’s assembly instructions, as in addition to assembly instructions, strength & stability calculations must also be provided to support these standard arrangements of scaffolding. This is normally provided in the form of tables of safe working heights & configurations within the manufacturer’s literature. Not all system scaffold manufacturers provide all of the information required (such as maximum leg loads & tie duty).

NASC has developed TG30 to provide a practical solution to these issues.

TG30 is being developed incrementally & will be increasing in scope over time to incorporate additional scaffold systems & configurations. Where a TG30 compliance sheet is not yet available for a specific

scaffold system or configuration then manufacturers guidance must be sought.

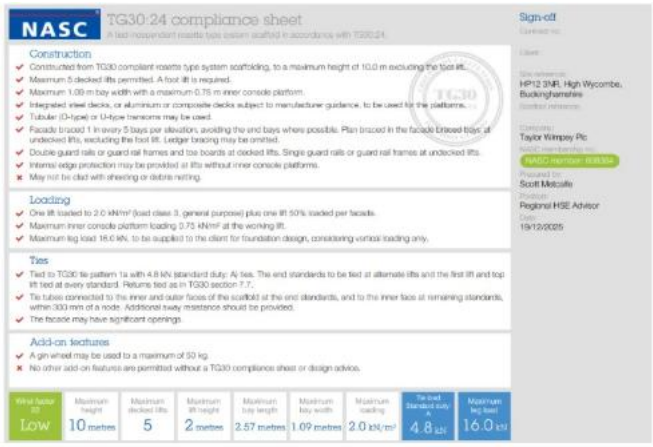
A scaffold system is TG30 compliant if its manufacturer or supplier has verified that it conforms to the minimum structural performance specification defined in the TG30 design Guide & has certified that their system is compliant.

TG30 Compliance Sheets:

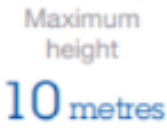
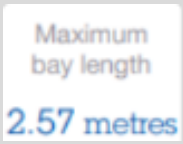
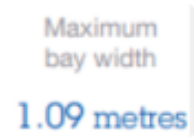
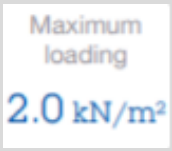
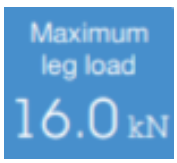
TG30 compliance sheets demonstrate that scaffolding assembled in accordance with a compliance sheet is a standard configuration that has been checked by strength & stability calculations to BS EN 12811 and related codes of practice, thereby meeting the regulatory requirements in Schedule 3, Part 2 of the Work at Height Regulations 2005 & does not require a bespoke design.

The front page of the compliance sheet provides a visual representation of the scaffold & illustrates the principal compliance criteria. This includes the number of lifts, maximum bay length & width, cladding requirements, tie duty and pattern and maximum dimensions. The information is summarised by the compliance badges below the illustration.

The back page of the compliance sheet provides details of the compliance criteria for the scaffold. If the scaffold permits additional TG20 compliance features such as bridge sections, protection fans, pavement lifts etc they are stated here. The compliance badges are also repeated on the back page so that the back page contains the complete set of scaffolding compliance criteria.



5.11.4 Understanding the Criteria

	The maximum permitted site wind exposure as determined by the TG30 e-guide.
	The maximum permitted scaffold height measured to the top platform. The stated height refers to the principal lifts only & excludes the foot lift height up to a maximum of 500mm.
	The maximum number of decked or boarded lifts per elevation of scaffold.
	The maximum permitted lift height, excluding any pavement lift if present.
	The maximum permitted distance between adjacent pairs of standards.
	The maximum permitted main platform width (distance between inner & outer standard).
	The maximum uniform loading on one lift per scaffold elevation. An additional 1 x lift 50% loaded is permitted per elevation.
	The maximum working leg load transmitted through the standards to the ground. TG30 compliance sheets include vertical loads only & do not include any allowance for horizontal loads. This differs from TG20 where horizontal loads are included.

5.11.5 Load Classes for Independent Scaffolding

TG30 caters for Four load classes of Independent Scaffolding from 0.75KN/m2 up to 3.0KN/m2. These load classes should be used in conjunction with the TG30 compliance sheet for each system type to determine the scaffolding dimensions appropriate for its required use.

Depending on the platform load class & bay dimensions, it may be necessary to use reinforced transoms. Manufacturer guidance or a TG30 compliance sheet will state when reinforced transoms are

required.

Load Class 1 (0.75KN/m2) – Very Light Duty Scaffold

Typically used for inspection, access & light cleaning activities. Load class 1 scaffolds have a maximum uniform load of 0.75Kn/m2 (approximately 75kg per m2). Storage of materials is not permitted on load class 1 scaffolds.

Scaffolds of this class are of a minimum 600mm width between the inner & outer standards. If console (inside board) brackets are required, they are typically 1 deck in width.

Load Class 2 (1.5KN/m2) – Light Duty Scaffold

Typically used for plastering, painting, glazing etc. Load class 2 scaffolds have a maximum uniformly-distributed load of 1.5KN/m2 (approximately 150kg per m2)

Scaffolds of this class are of a minimum 800mm width between the inner & outer standards. If console (inside board) brackets are required, they are typically 1 deck in width.

Load Class 3 (2.0KN/m2) – General Purpose Scaffold

Typically used for general building work including brickwork, plastering, rendering etc. Load class 3 scaffolds have a maximum uniformly-distributed load of 2.0KN/m2 (approximately 200kg per m2)

Scaffolds of this class are of a minimum 800mm width between the inner & outer standards. If console (inside board) brackets are required, they are typically up to 3 decks in width (depending on the scaffolding system).

Load Class 4 (3.0KN/m2) – Heavy Duty Scaffold

Typically used for heavy masonry work, concrete block work, heavy cladding etc. Load class 4 scaffolds have a maximum uniformly-distributed load of 3.0KN/m2 (approximately 300kg per m2)

Scaffolds of this class are of a minimum 800mm width between the inner & outer standards. If console (inside board) brackets are required, they are typically up to 3 decks in width (depending on the scaffolding system).

5.11.6 Independent Scaffolding

Standards

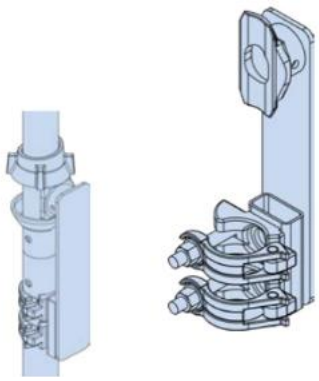
Independent system scaffolds contain 2 rows of standards arranged parallel to the building façade. System scaffold standards are typically founded on an adjustable base jack. A foot lift should be provided which allows the base of the scaffold to be squared & levelled. The foot lift should remain for the life of the scaffold to provide stability & rigidity.

Standards must be plumb vertical, with a maximum deviation of 20mm in each 2.0m of height, and 50mm overall deviation.

Joints in Standards

It is good practice to alternate the standard lengths used within a run of scaffolding so that the joints fall within different lifts. This may be achieved by using different standard lengths at the inner & outer faces. Guidance on this varies between manufacturers but is typically recommended for scaffolds greater than 6-8m in height.

Joints in system scaffold standards are typically only maintained by the effects of gravity. Where uplift may occur or where a joint is required above the top tie position then manufacturer guidance on securing the joint should be followed. This typically involves the use of spigot pins or splicing tubes (either proprietary or tube & fitting components.

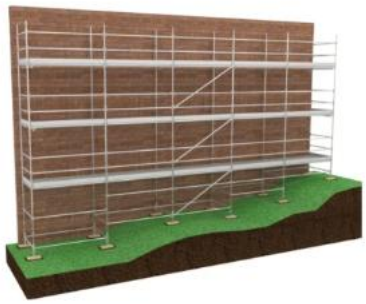
Example of a proprietary splicing component.	Typical tube & fitting splice detail.
	

Foot Lifts

A foot lift is required for all TG30 compliant system scaffolds. The foot lift comprises ledgers & transoms connected to the standards or base jack collars & is levelled using the adjustable base jacks & a spirit level.

For TG30 compliant scaffolds, the foot lift is typically 300mm from the ground with a maximum of 500mm. However, manufacturer guidance should be followed.

Foot lifts can be decked to provide a working platform for scaffold operatives to assemble the first lift above. A single guard rail must be provided at 1.0m above the foot lift to create a protected working area. Where the foot lift is not required to enable installation of the first lift, a guard rail is still required at 1.0m above the foot lift where scaffold steps are being used to install the advanced guardrail system.
Where the ground is uneven or gently sloped, the scaffold can generally be levelled in one continuous run by adjusting the base jack extensions. Where the slope is to steep to permit this, a stepped foot lift should be provided. Intermediate structural lifts may be required to maintain the maximum permitted lift height.



Ledgers

The ledgers are the longitudinal horizontal components used to form the bay lengths of scaffold lifts & foot lifts. Ledger components can also be used to form the guard rails.
Ledger components are supplied in modular lengths that match the bay lengths required.
The method of connecting ledger components to the standards is dependant on the individual system scaffolding type being used.

Transoms

The transoms are the horizontal components used to form the bay widths of scaffold lifts & foot lifts. A transom is required between each pair of standards to form the lifts & provide support for the decking units.
The transoms bear the loads from the decking, which can vary depending on the bay dimensions & scaffold load class. Transoms are therefore supplied in several configurations with different load bearing capacities. Manufacturer guidance or a TG30 compliance sheet will state when reinforced transoms are required.

For system scaffolds that permit the use of traditional timber scaffold boards (such as Cup type systems), intermediate transoms will be required in order to support the board ends & at intermediate bearing points.

Façade Bracing:

Façade (sway) bracing is used to stabilise scaffolds along their outer face. The preferred method of providing façade bracing to system scaffolds is to fix between the node point connections in a single bay from the base of the scaffold to its topmost lift.

Bracing components are fitted between the diagonally opposing node points at the outer face of a bay of scaffold. Façade bracing of system scaffolds is typically in the same direction at every lift within a bay

Façade bracing is required for every elevation of scaffold. The maximum horizontal spacing between sets of façade bracing varies between system type & manufacturer but is typically between 4 & 6 horizontal

bays. The TG30 compliance sheet will confirm the façade bracing frequency.

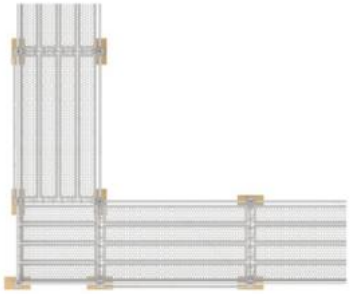
Some manufacturers provide guard rail frames which are designed to reduce or remove the requirement for façade bracing. Manufacturer guidance must be followed where guard rail frames are being used.

Corner Returns

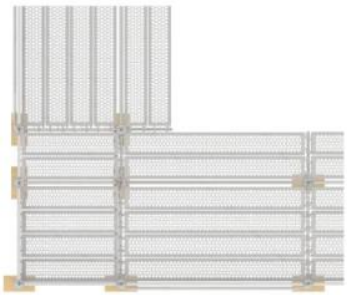
Corner returns can be constructed in a number of ways depending on the type of system scaffold being used. Manufacturers guidance should always be followed. Information on the most common types or corner returns are shown below.

Corner returns with standard bay dimensions

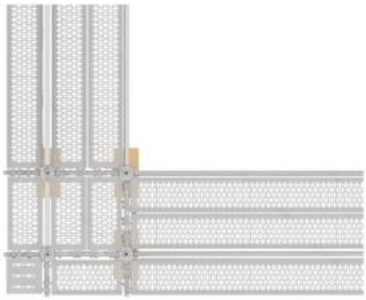
The simplest method of constructing a corner return is to utilise modular ledger frames to provide a square bay at the corner supported by 4 standards. This method can be used for both internal & external corner returns. The image below shows square corner return without console (inside board) brackets.



Where console brackets (inside board) are required, a square bay at the corner return can still be constructed. When constructing an external corner, an additional pair of standards is typically required to achieve this.



When constructing an internal corner, it is possible to achieve this without the requirement for additional standards, dependent on the type of system scaffold being used.

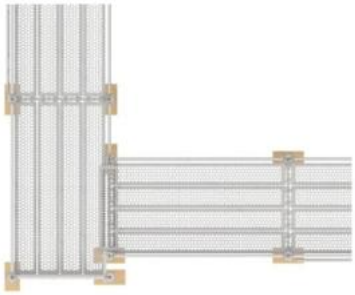


'Flypast' Corner Returns

Where the dimensions of a building or ground obstacles (such has manhole covers) prevent the use of a square bay at a corner, a flypast return can be constructed.

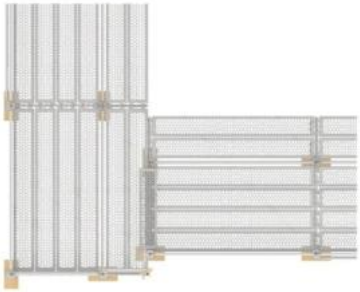
Flypast returns require each elevation to be supported by standards at each corner. The elevations are then connected together with the use of either proprietary components or short tube & load bearing fittings.

An example of a flypast return connection utilising proprietary components is shown below.



Any gaps created within the working platform as a result of the flypast return should be covered to reduce the risk of falling objects & reduce the likelihood of trips to operatives using the platform. This is typically achieved by using steel plates secured to the platform.

Additional tube & fitting components may also be required to cover any gaps within the guardrail & toe board arrangements created by the flypast return.
Where console brackets (inside board) are required, a flypast at the corner return can still be constructed. Each elevation will still need to be supported by standards at each corner. The elevations are then connected together with the use of either proprietary components or short tube & load bearing fittings. Any gaps within the working platform or guardrail & toe board arrangement will still need to be covered as detailed above.



5.11.7 Plan Bracing

Plan bracing is the term used to describe bracing fitted horizontally under a lift.

Plan bracing is required for TG30 compliant independent scaffolding, unless otherwise stated by manufacturer guidance.

The requirement for plan bracing differs between the different classes of system scaffolding, but where plan bracing is required, it should be provided within the same bays as the façade bracing. The plan bracing requirement is detailed within the TG30 compliance sheet.

Below is an example of a Rosette system where plan bracing is required at each undecked lift.

5.11.8 Console (Inside Board) Brackets

Console (inside board) Brackets

The provision of inside boards within system scaffolding is typically achieved by the use of console brackets. These brackets are fixed to the standards at the working platform level.

Console brackets are typically available for 1, 2 & 3 board options & the design of these brackets varies between each manufacturer.

An example of a 2 board Rosette console bracket is shown below:

For some system scaffold classes (such as Cup & Wedge types) it may also be necessary to provide additional components to prevent the console brackets from rotating at their end frames. This is typically achieved with the use of additional brackets or tie bars.

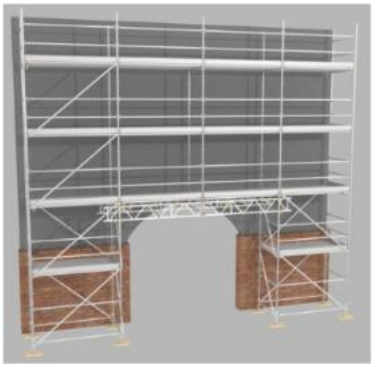
Example of additional supporting components used in a Cup type system to prevent rotation:

Where the system scaffold permits the use of traditional timber scaffold board to form the working platform (such as Cup type systems), additional intermediate & end bearing inside board transoms will also be required.

An example of a Cup system inside board platform supported by intermediate transoms is shown below:

5.11.9 Bridges and Openings

A bridge is a structure that supports the scaffolding above an opening. There are several ways to form a bridge but the most common is to fix a pair of prefabricated steel or aluminium beams beneath the ledgers & connect them with traditional tubes & couplers.



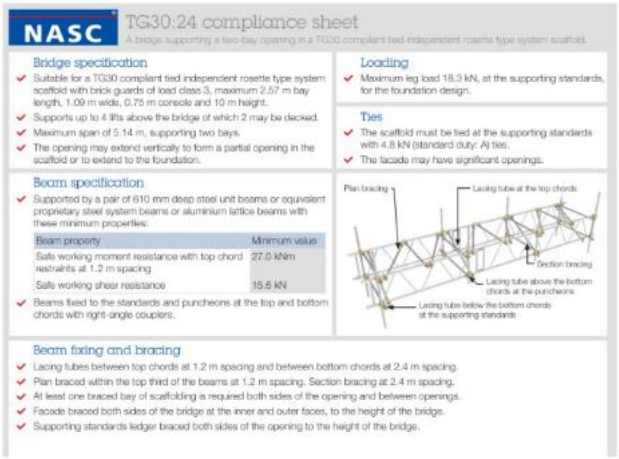
TG30 compliant bridges are installed in accordance with a recognised standard configuration and therefore do not require a bespoke design. Two types of bridges are TG30 compliant

- Two bay bridge supported by 305mm deep steel ladder beams or equivalent proprietary steel system scaffolding beams or equivalent aluminium lattice beams.
- Three bay bridge supported by 610mm deep steel unit beams or equivalent proprietary steel system scaffolding beams or equivalent aluminium lattice beams

The bridge must be supported at both sides by at least 1 x bay of scaffolding & the additional ledger and façade bracing requirements around the opening will be detailed on the TG30 compliance sheet.

Bridges that fall outside the scope of TG30 will require a bespoke independent design. Examples of bridge requiring a bespoke design are:

- Bridges that span more than 3 bays or where the bay length exceeds the maximum permitted.
- Bridges that cannot be supported by beams.
- Bridges with beams that do not meet the minimum TG30 specification
- Cantilevered bridges
- Bridges within a birdcage


NASC TG30:24 compliance sheet

A bridge supporting a two-bay opening in a TG30 compliant tied independent rosette type system scaffold.

Bridge specification
- Suitable for a TG30 compliant tied independent rosette type system scaffold with brick guards of load class 3, maximum 2.57 m bay length, 1.09 m wide, 0.75 m console and 10 m height.
- Supports up to 4 lifts above the bridge of which 2 may be decked.
- Maximum span of 5.14 m, supporting two bays.
- The opening may extend vertically to form a partial opening in the scaffold or to extend to the foundation.

Loading
- Maximum leg load 18.3 kN, at the supporting standards, for the foundation design.

Ties
- The scaffold must be tied at the supporting standards with 4.8 kN (standard duty: A) ties.
- The façade may have significant openings.

Beam specification
- Supported by a pair of 610 mm deep steel unit beams or equivalent proprietary steel system beams or aluminium lattice beams with these minimum properties:

Beam property	Minimum value
Safe working moment resistance with top chord restraints at 1.2 m spacing	27.0 kNm
Safe working shear resistance	15.6 kN

- Beams fixed to the standards and puncheons at the top and bottom chords with right-angle couplers.

Beam fixing and bracing
- Lacing tubes between top chords at 1.2 m spacing and between bottom chords at 2.4 m spacing.
- Plan braced within the top third of the beams at 1.2 m spacing. Section bracing at 2.4 m spacing.
- At least one braced bay of scaffolding is required both sides of the opening and between openings.
- Façade braced both sides of the bridge at the inner and outer faces, to the height of the bridge.
- Supporting standards ledger braced both sides of the opening to the height of the bridge.

Beam Specification

A variety of proprietary beams are available from several manufactures, so its important to use beams that have sufficient load bearing capacity to support the scaffold above the opening.

The TG30 Compliance sheet will minimum beam properties for a specific opening.

An opening in an independent scaffold should be supported by pairs of beams, one fixed to the inner & one fixed to the outer standards. Care must be taken to ensure the beams are set out correctly to enable correct connection of the puncheon standards and subsequent ledgers & transoms of the lifts above.

Fixing Traditional Beams

Beams should be connected to the inner faces of each standard directly below the ledgers. The beams should be connected to each standard at the top and bottom chords with right angled couplers. A pair of connections is required at the supporting standards at each side of the opening & at each puncheon. The beams should not be connected at the ‘horn ends’.

A bearer transom is required under both the top & bottom chords of the beams at each pair of supporting standards, connected with right angle (double) couplers.

Fixing Proprietary System Scaffold Beams

Proprietary beams are fixed directly to the connection points at each pair of supporting standards. There are 2 methods of connecting proprietary beams:

- Beam top chords connected to the standards at lift level in place of the scaffold ledgers with bottom chords connected 500mm below.
- Beam top chords connected to the standards connected to the standards 500mm below the lift level with bottom chords connected a further 500mm below.

The method of beam connection used will be dependent on the requirements set out within the TG30 compliance sheet & manufacturer guidance.

The puncheon standards are then connected to the beams following the manufacturers guidance.

Lacing & Bracing The Beams

Lacing & Bracing Traditional Scaffold Beams:

The pairs of beams which bridge an opening must be braced to prevent lateral buckling & twisting and to sustain their load bearing capacity. For TG30 compliant bridges this is achieved by:

- Connecting the inner & outer beams with lacing tubes at both the top and bottom chords.
- Providing plan bracing within the top third of the beams
- Providing section bracing – connecting the top chord of one beam to the bottom chord of the other beam

Lacing Tubes

The inner & outer beams must be connected together at both the top and bottom chords with horizontal lacing tubes fixed with right angle (double) couplers. For TG30 compliant bridge sections the lacing chords must be installed as follows:

- The top chords of the beams connected with lacing tubes at a maximum spacing of 1.20m (or as specified by the beam manufacturer)
- The bottom chords of the beams connected with lacing tubes at a maximum spacing of 2.40m (or as specified by the beam manufacturer)
- Lacing tubes at 'puncheon' standards within the opening should be fixed immediately above the beam to puncheon connection to enable them to act as supplementary couplers.
- Lacing tubes to ground bearing standards should be made immediately below the beam to standard connection.

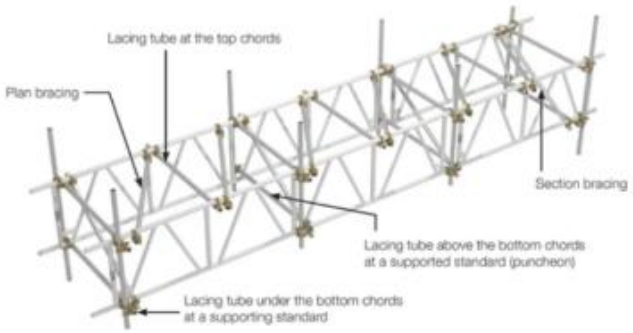
Plan bracing

Plan bracing should be fixed between the inner and outer beams within the top third of the beam depth. Connections can be made with either right angle (double) or swivel couplers. Plan bracing should be provided at maximum spacing of 1.20m.

If plan bracing is omitted or fixed incorrectly, the load bearing capacity of the beams can be reduced by up to 50%.

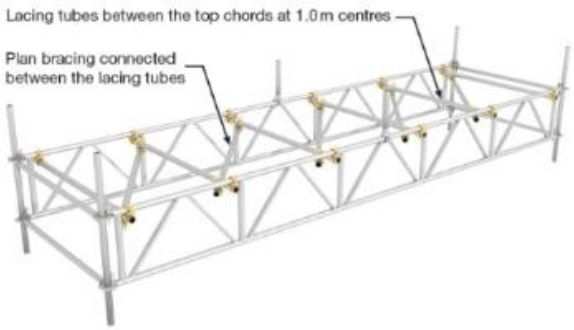
Section Bracing

Section bracing should be provided at a maximum spacing of 2.40m (or as specified by the beam manufacturer) but should be provided at each standard and puncheon location. Section bracing can be connected with either right angled (double) or swivel couplers. Bracing can be fixed from the top chord of the inner beam to the bottom chord of the outer beam or vice versa



Lacing & Bracing Proprietary System Scaffold Beams

The lacing & bracing requirements for proprietary system scaffold beams varies between the different manufacturers & manufacturer guidance should therefore be followed. Where a TG30 compliance sheet is available for a specific manufacturer then the compliance sheet will detail the lacing and bracing requirements.



The below example shows a proprietary system scaffold beam laced & braced at 1.0m intervals:

5.12.1 Birdcages

A birdcage scaffold consists of multiple rows of standards at regular intervals arranged in parallel lines. The standards are connected with ledgers and transoms to form a grid structure. A birdcage can consist of single or multiple lifts with the top lift fully boarded/decked out for form a continuous working platform.

5.12.2 TG20 & TG30 Compliant Birdcage Scaffolds

TG20 & TG30 Compliant Birdcage Scaffolds

TG20 (Tube & Fitting) & TG30 (System Scaffold) cater for three load classes of birdcage scaffold from 0.75KN/m2 up to 3.0KN/m2. The load class is stated on the TG20 or TG 30 compliance sheet.

Load Class 1 (0.75KN/m2) – Very Light Duty Birdcage

Typically used for inspection, access & very light duty work activities. Load class 1 birdcage scaffolds have a maximum uniform load of 0.75Kn/m2 (approximately 75kg per m2). Storage of materials is not permitted on load class 1 birdcage scaffolds.

Tube & fitting birdcage scaffolds of this class permit a maximum bay length of 2.1m & a maximum bay width of 2.10m.

For system birdcage scaffolds of this class, the maximum bay dimensions are dependent on the system type and individual manufacturer. The maximum bay dimensions are detailed on the TG30 compliance sheet.

Load Class 2 (1.5KN/m2) – Light Duty Birdcage

Typically used for plastering, painting, glazing etc. Load class 2 birdcage scaffolds have a maximum uniformly-distributed load of 1.5KN/m2 (approximately 150kg per m2).

Tube & fitting birdcage scaffolds of this class permit a maximum bay length of 1.9m & a maximum bay width of 1.9m.

For system birdcage scaffolds of this class, the maximum bay dimensions are dependent on the system type and individual manufacturer. The maximum bay dimensions are detailed on the TG30 compliance sheet.
Load Class 3 (2.0KN/m2) – General Purpose Birdcage

Typically used for general building work including brickwork, plastering, rendering etc. Load class 3 birdcage scaffolds have a maximum uniformly-distributed load of 2.0KN/m2 (approximately 200kg per m2)

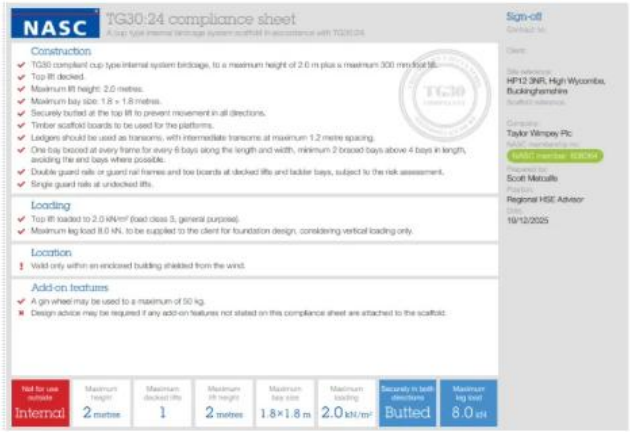
Tube & fitting birdcage scaffolds of this class permit a maximum bay length of 1.7m & a maximum bay width of 1.7m.

For system birdcage scaffolds of this class, the maximum bay dimensions are dependent on the system type and individual manufacturer. The maximum bay dimensions are detailed on the TG30 compliance sheet.

TG20 & TG30 compliance sheets provide a summary of the features and requirements of a compliant birdcage scaffold. The aim of a compliance sheet is to clearly demonstrate that a birdcage scaffold is in accordance with a standard configuration of scaffolding and therefore does not require a bespoke design.

The front page of the compliance sheet provides a visual representation of the principal compliance criteria. This includes the maximum height, number of lifts, maximum bay sizes, tie requirements and maximum loading. The information is summarised by the compliance badges below the illustration

The back page of the compliance sheet provides details of the compliance criteria for the birdcage scaffold. The compliance badges are also repeated on the back page so that the back page contains the complete set of scaffolding compliance criteria.



5.12.3 Birdcage Construction - Tube & Fitting

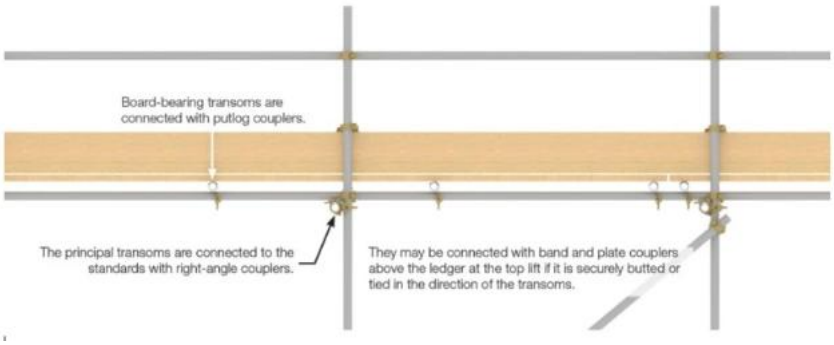
Tube & Fitting

Birdcage scaffolds are formed by connecting ledgers and principal transoms to the standards with load bearing right angled (double couplers). Principal transoms are typically fixed directly below the ledgers

to enable the board bearing transoms to be fixed above the ledgers with single couplers.

The maximum transom spacing for board bearing transoms of a Class 1 (0.75KN/m2) birdcage scaffold is 1.20m.

The maximum transom spacing for board bearing transoms of Class 2 (1.50KN/m2) & Class 3 (2.0KN/m2) birdcage scaffolds is 0.90m.



Bracing

The bracing pattern required to stabilise a birdcage scaffold is dependent on whether the birdcage is free standing, tied to or butted against a permanent structure. The bracing requirements will be detailed on the TG20 compliance sheet.

Single bay bracing can be utilised for a birdcage scaffold which is either tied to or securely butted against a permanent structure. At least one bay should be braced in each direction at every frame for every 6 bays of scaffold up to the full height of the scaffold. A plan view example is shown below.
Bracing tubes can either be fixed to the standards at both ends with swivel couplers, fixed ledger to ledger with right angle (double) couplers or fixed to the principal transoms with right angled (double) couplers. All bracing should be connected within 300mm of the node point (standard to ledger intersection).

Foot Lifts

Foot lifts are required for single lift birdcage scaffolds. The foot lift should comprise of ledgers & principal transoms fixed to the standards with right angled (double) couplers. A foot lift is required at alternate bays in both directions as a minimum. However, it is typical for scaffold operatives to provide a continuous foot lift arrangement. For multiple lift birdcage scaffolds, the foot lift requirement will be detailed on the TG20 compliance sheet.

5.12.4 Birdcage Construction - System Scaffolding

Birdcage scaffolds are formed by connecting ledgers and transoms to the standards to form a grid arrangement.

Transoms

The transoms bear the loads from the decking, which can vary depending on the bay dimensions & birdcage load class. Transoms are therefore supplied in several configurations with different load bearing capacities. Manufacturer guidance or a TG30 compliance sheet will state when reinforced transoms are required.
Board bearing transoms are not usually required for proprietary system scaffold decking components. For system scaffolds that permit the use of traditional timber scaffold boards (such as Cup type systems), board bearing transoms will be required in order to support the board ends & at

intermediate bearing points.

The maximum transom spacing for board bearing transoms of a Class 1 (0.75KN/m2) birdcage scaffold is 1.20m.

The maximum transom spacing for board bearing transoms of Class 2 (1.50KN/m2) & Class 3 (2.0KN/m2) birdcage scaffolds is 0.90m.

Bracing

The bracing pattern required to stabilise a birdcage scaffold is dependent on whether the birdcage is free standing, tied to or butted against a permanent structure. The bracing requirements will be detailed on the TG30 compliance sheet.

If a system scaffold with only 4 connection points per standard node is being used (such as Cup or Wedge type systems), the connection points will be used for the ledger and transom connections meaning that no connection points will be available for proprietary bracing components. In this case, traditional tube and fitting components can be used with all bracing tubes connected within 300mm of the node point (standard to ledger intersection).

If a system scaffold with 8 connection points per standard node is being used (such as Rosette or Octo type systems), then sufficient connection points will be available to connect proprietary bracing components. However, where it is not practical to use proprietary bracing components (such as multiple decked lifts) then traditional tube and fitting components can be used with all bracing tubes connected within 300mm of the node point (standard to ledger intersection)

Foot Lifts

Foot lifts are required for TG30 compliant birdcage scaffolds. The foot lift should comprise ledgers and transoms connected no more than 300mm above the ground/foundation.

5.12.5 TW Birdcage Requirements

Block & Beam / Pre-Cast Concrete Floors:
Where a birdcage scaffold is being installed onto a block & beam floor or a pre-cast concrete floor then the following options are permitted:

Where the birdcage is only utilised for internal fall protection only or where the birdcage is loaded out with lightweight Aircrete blocks only:

- Taylor Wimpey approved tube & fitting birdcage design TA004-11352-8 (available on the scaffold hub on inHouse)
- Tube & fitting load class 2 (1.50KN/m2) or load class 3 (2.0KN/m2) birdcage installed in accordance with a TG20 compliance sheet.
- System scaffold load class 2 (1.50KN/m2) or load class 3 (2.0KN/m2) birdcage installed in accordance with either a TG30 compliance sheet or manufacturers instruction.
- Independent tube & fitting or system scaffold design provided by the BU or scaffold contractor with a minimum loading of 1.50KN/m2.

Where the birdcage is to be loaded out with concrete blocks:

- Tube & fitting load class 3 (2.0KN/m2) birdcage installed in accordance with a TG20 compliance sheet.
- System scaffold load class 3 (2.0KN/m2) birdcage installed in accordance with either a TG30 compliance sheet or manufacturers instruction.
- Independent tube & fitting or system scaffold design provided by the scaffold contractor with a minimum loading of 1.50KN/m2.

Timber Mid-floors

Tube & fitting:

Where the birdcage is only utilised for internal fall protection only or where the birdcage is loaded out with lightweight Aircrete blocks only, the preferred option is for the Taylor Wimpey approved tube & fitting birdcage design TA004-11352-8 (available on the scaffold hub on inHouse) to be used as the under propping requirements for both Metsa & Staircraft floors are based on this design.

Where a scaffold contractor wishes to install their own independent tube & fitting birdcage design onto a timber mid-floor then this design must be approved by the Production Director following consultation with the RHSEA & joist manufacturer prior to use on site.

Where the birdcage is to be loaded out with concrete blocks, the RHSEA must be contacted to ensure a suitable birdcage & underpropping design has been provided. These designs must be approved by the Production Director following consultation with the RHSEA & joist manufacturer prior to use on site

System Scaffold:

The current under propping requirements for both Metsa & Staircraft floors do not incorporate the use of system scaffold birdcages.

Where a system scaffold birdcage is to be installed onto a timber mid-floor then the RHSEA must be contacted to ensure a suitable birdcage & underpropping design has been provided. These designs must be approved by the Production Director following consultation with the RHSEA & joist manufacturer prior to use on site

5.13.1 Working Platforms

Scaffold working platforms are typically formed with either timber scaffold boards or proprietary decking panels, toe boards & a minimum of a double guardrail at the outer face.

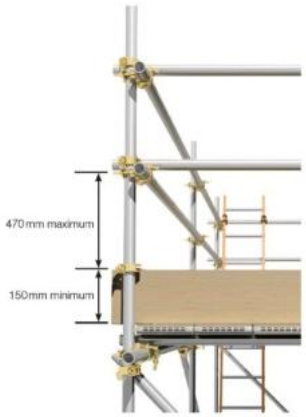
Timber Scaffold Boards:

Timber scaffold boards are manufactured in accordance with BS2482. These boards have a nominal thickness of 38mm, are 225mm wide and are available in various sizes in both imperial & metric measurements up to a maximum length of 3.96m or 13 feet.

The ends of timber boards should be protected with either end hoops or nail plates & must be marked as BS2482.

Toe Boards

Toe boards are either upright timber scaffolds boards or proprietary system scaffold components. Toe boards are intended to prevent materials & operatives feet from slipping off the working platform. Toe boards should be fixed to all working platforms.



Toe boards must be placed lengthways along the outer face of the working platform & stop end toe boards are also required at all end frames (i.e table lifts).

Toe boards should have a minimum height of 150mm. The gap between the top of the toe board and the underside of the intermediate/lower guard rail should not exceed 470mm.

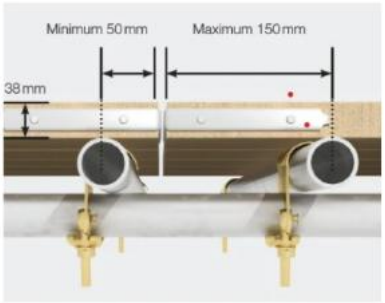
Timber toe boards are fixed inside the standards and are typically secured with single couplers.

Proprietary toe boards are typically manufactured from steel or timber & are available in modular lengths to match the ledger lengths of system scaffolds. The method of attachment varies between manufacturers & therefore manufacturers instructions should be followed.

Example of a proprietary rosette type steel toe board:

5.13.2 Tube & Fitting Scaffolds

Working platforms for tube & fitting scaffold structures are typically formed by placing sets of timber scaffold boards onto board bearing transoms. All boards comprising the working platform should be of the same nominal thickness and each 'set' of boards should be the same length.



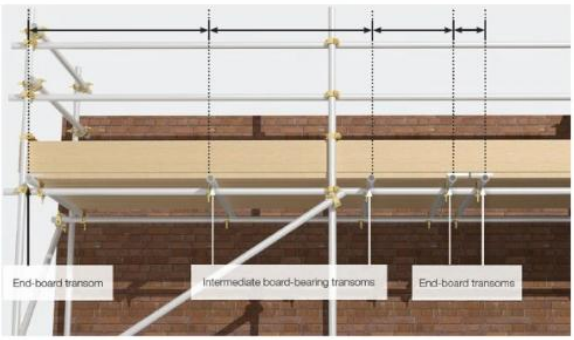
Overlapping boards should be avoided on the working platform except at corner returns. To reduce the risk of tripping, the lapped boards at corner returns should all be the same length & should either terminate at the inside line of standards or extend all the way to the outer face of the scaffold.

A transom is required at each end of the board with intermediate transoms along the length.

For 38mm thick scaffold boards, the board end transoms should be placed so that the board overhang is a minimum of 50mm & a maximum of 150mm when measured from the centre of the transom tube.

Transom Spacing

Intermediate transoms are also required along the length of the scaffold board. The maximum spacing between transoms depends on the load class of the scaffold structure. For Load Class 3 (2.0KN/m2) General Purpose scaffolds structures the maximum transom spacing is 1200mm & for Load Class 4 (3.0KN/m2) Heavy duty scaffold structures the maximum transom spacing is 900mm.



For Load Class 3 (2.0KN/m2) General Purpose scaffolds structures the minimum number of transoms required to support different lengths of 38mm thick timber scaffold boards is as follows:

Scaffold Board Length	Minimum Transoms Per Board
Up to 1.50m (5 Feet) Long	2
Between 1.60m & 2.70m (9 Feet) Long	3
Between 2.80m & 3.90m (13 Feet) Long	4

For Load Class 4 (3.0KN/m2) Heavy duty scaffold structures the minimum number of transoms required to support different lengths of 38mm thick timber scaffold boards is as follows:

Scaffold Board Length	Minimum Transoms Per Board
Up to 1.20m (4 Feet) Long	2
Between 1.30m & 2.10m (7 Feet) Long	3
Between 2.20m & 3.0m (10 Feet) Long	4
Between 3.10m & 3.90m (13 Feet) Long	5

Notches in scaffold boards are not permitted within the working platform except where boards need to fit around an obstacle. Where notches need to be cut they should not exceed 150mm in length & should not extend more than a third of the width of the scaffold board. Additional transoms should be provided within 150mm of each side of the notch.

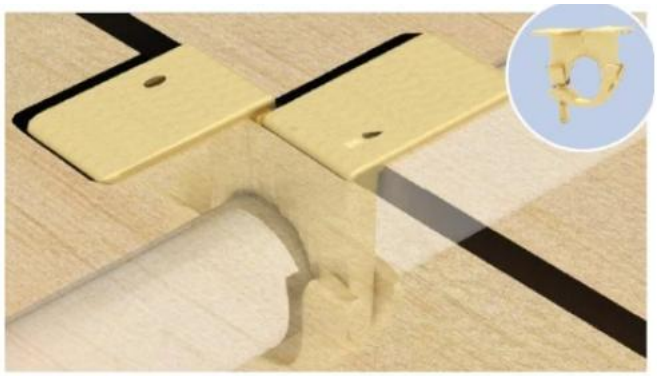
Tying Down Timber Scaffold Boards

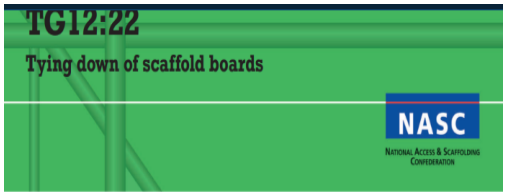
Any timber scaffold board that is less than 2.13m (7 feet) long should be fixed down to prevent movement. Scaffold boards which are only supported by 2 x transoms should be fixed down at both ends to prevent the boards from tipping when walked on or loaded onto.

Single couplers should not be used to secure working platform boards as they can create gaps within the working platform and act as a trip hazard due to their raised profile. Where boards need to be fixed down a proprietary fixing clamp should be used.

Further information can be found in NASC Technical Guidance Document TG12:22 – Tying Down of Scaffold Boards

Example of a proprietary board retaining clamp is shown below:





Gaps In the Working Platform

There may be no gap in any working platform except the 50mm gap along the inside line of standards between the main working platform and the inside boards. The inside board closest to the permanent structure should be secured at each end to prevent this gap from increasing during use.

Inside Board Brackets

Inside boards are typically supported by fixed length transoms where the number of inside boards will not change during construction works & where inside boards are only required at the same level as the main working platform.

Where the number of inside boards needs to change in order to allow works to progress, such as timber frame construction or during render/cladding works, the use of telescopic transoms units should be considered.

Where the inside boards needs to be raised above or lowered below the main working platform then prefabricated inside board brackets should be used. A maximum of 1 x inner platform can be raised or lowered per elevation of scaffold to a maximum offset of 500mm.

The inside platform should be level & not contain any 'lapped' boards except at corner returns. Inside boards must be supported in the same way as the main working platform boards with transoms provide at each board end and intermediately on its length.

Inside board brackets are typically connected to the inside ledger with an additional restraining ledger required to prevent rotation.

Edge Protection For Inside Board Platforms

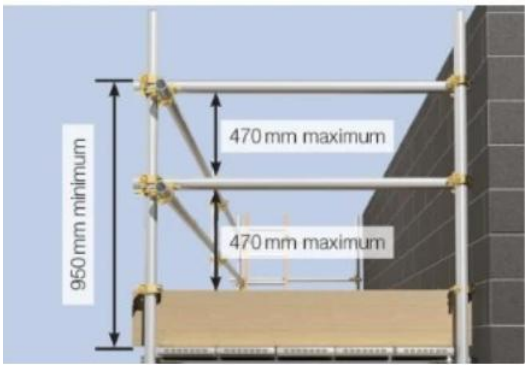
Inside board platforms must be protected with guard rails. Toe boards will also be required where there is a risk of materials falling through the gap.

Where inside board platforms are raised above or lowered below the main working platform then additional guard rails will need to be provided. A principal guardrail will be required a minimum of 950mm above the inside board platform with intermediate guardrails provided to ensure no gap greater than 470mm exists.

Guardrails

All boarded working platforms must be protected with a minimum of a double guard rail at their outer face. A principal guardrail is required at a minimum height of 950mm when measured from the top of the working platform decking to the top of the guardrail tube. An intermediate guardrail is required below the principal guardrail & positioned so that no gap between the top of the toe board & the intermediate guard & the intermediate guard & the principal guardrail exceeds 470mm. Are all guardrail tubes should be secured to the standards with right angled (double) couplers & extend fully through each coupler. Stop end guardrails are also required at exposed edges of all end frames (i.e table lifts).

There may be no lateral opening in any guardrail except where a ladder or stair access joins.



All un-boarded lifts must be protected with single guardrails during assembly, adaption & dismantling works as this forms part of the scaffold operatives safe system of work as detailed in NASC Safety Guidance document SG4.

Where the pitch of the roof is at 40 degrees or above, an additional (third) guardrail will be required at the outer face of the main working platform. This additional guardrail is provided above the principal guardrail to provide additional fall protection for operatives installing the roof covering. The gap between the principal guardrail & this additional guardrail must not exceed 470mm.

An additional (third) guardrail is also required to the outer face of the main working platform where inside board brackets are used to raise the inner platform.

The installation of 'up & over' temporary edge protection is also required for all plot gable roof's under construction to ensure suitable fall protection is provided to the roofing operatives. See Section 5.21 for further information.

Internal Edge Protection

The gap between the inside boards of the scaffold structure & the permanent works must be kept to the

smallest reasonable distance to allow works to progress. For plots of traditional construction this must not be more than 100mm. Where additional working room is needed, such as for render or cladding, an additional gap up to a maximum of 225mm may be introduced just in advance of the build stage requiring the gap. Where the gap exceeds 225mm, internal guardrails must be installed.

Service gap up to 225mm	Service gap greater than 225mm
	

Table Lifts

Access to table lifts should be via a ladder and self-closing gate to afford protection whilst maintaining access for loading materials.

Table lifts not to exceed 2m in height so that materials can be easily loaded up by hand.

The ladder should be installed at the correct angle 75% - 1 in 4 rule, which is 1 unit out for every 4 units up & should extend a minimum of 1m above the working platform. The ladder should also be secured with proprietary ladder fixings and a 'halo' tube provided around the ladder access opening.

Ladders are positioned adjacent to the table lift so the step off point is to the side.

Tools and materials must not be carried up the ladder as three points of contact cannot be maintained.

Internal handrails must be installed and remain in place to any table lift wherever there is a risk of falls.

Where a structural table lift is required for roof truss installation the following must be provided:

- Ledgaer bracing required to all pairs of standards.
- structural transoms required to all pairs of standards connected with load bearing right angled (double couplers) either to the inside & outside ledger or inside & outside standards
- All joints in standards above the roof lift platform to be 'spliced' with a short scaffold tube connected immediately above & below the sleeve joint with swivel couplers. Splicing is required for all joints regardless of whether they have been staggered or not.
- An additional third guardrail tube is required to the inside face of the table lift below the intermediate guardrail.
- A suitable length of structural grade timber is to be secured to the inside standards with single couplers.

Loading Out

Standard tube and fitted scaffolds constructed on Taylor Wimpey sites are assembled to Load Class 3 (2.0KN/m2) General Purpose. This allows a maximum load of 200kgs per bay.

Materials (brick/block) should be loaded adjacent to external standards, where the structure is designed to carry the load.

The gaps between material stacks can be used for spot boards & storage of bricklayers tools.

Window/Door Infills

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

A maximum of 3 inside boards can be provided to tube & fitting scaffold structures in accordance with the TG20 compliance sheet. Where additional inside boards which exceed those permitted by the TG20 compliance sheet are required at structural openings, additional supporting standards should be provided to the inner most board.

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)

5.13.3 System Scaffold

Working platforms for system scaffold structures are typically formed with sets of proprietary steel or aluminium deck panels. Some system scaffold classes (such as cup & wedge systems) permit the use of timber scaffold boards placed onto board bearing transoms.

Steel / Aluminium Deck Platforms:

Internal Edge Protection:
The gap between the inside boards of the scaffold structure & the permanent works must be kept to the smallest reasonable distance to allow works to progress. For plots of traditional construction this must not be more than 100mm. Where additional working room is needed, such as for render or cladding, an additional gap up to a maximum of 225mm may be introduced just in advance of the build stage requiring

the gap. Where the gap exceeds 225mm, internal guardrails must be installed.

Gaps In the Working Platform:

Console (inside board) Brackets:

Transom Spacing:

Platforms Constructed From Timber Scaffold Boards:

Working platforms comprised of proprietary deck panels are typically connected to the support transoms at each end of a bay and secured with a locking device. The type of locking device used varies between manufacturers & therefore the manufacturers user guide should be consulted to ensure deck panels are correctly secured.

Decking units are available in modular lengths to match the bay sizes in use. The width of these decking units varies between manufacturers but are typically available in sizes between 190 & 320mm.

Gaps in Decking:

Significant gaps in decking (such as those created by corner returns) will need to be covered & manufacturers typically provide proprietary components for this purpose which can be secured to the primary deck panels.

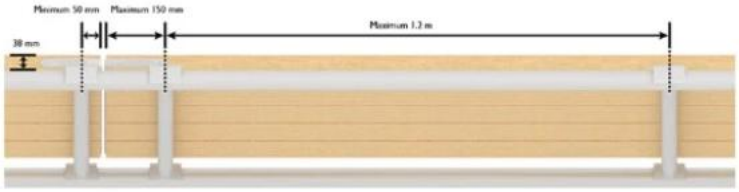
Platforms Constructed From Timber Scaffold Boards:

All boards comprising the working platform should be of the same nominal thickness and each 'set' of boards should be the same length.

Overlapping boards should be avoided on the working platform except at corner returns. To reduce the risk of tripping, the lapped boards at corner returns should all be the same length & should either terminate at the inside line of standards or extend all the way to the outer face of the scaffold.

A transom is required at each end of the board with intermediate transoms along the length.

For 38mm thick scaffold boards, the board end transoms should be placed so that the board overhang is a minimum of 50mm & a maximum of 150mm when measured from the centre of the transom tube.



Transom Spacing

Intermediate transoms are also required along the length of the scaffold board. The maximum spacing between transoms depends on the load class of the scaffold structure. For Load Class 3 (2.0KN/m2) General Purpose scaffolds structures the maximum transom spacing is 1200mm & for Load Class 4 (3.0KN/m2) Heavy duty scaffold structures the maximum transom spacing is 900mm.

For Load Class 3 (2.0KN/m2) General Purpose scaffolds structures the minimum number of transoms required to support different lengths of 38mm thick timber scaffold boards is as follows:

Scaffold Board Length	Minimum Transoms Per Board
Up to 1.50m (5 Feet) Long	2
Between 1.60m & 2.70m (9 Feet) Long	3
Between 2.80m & 3.90m (13 Feet) Long	4

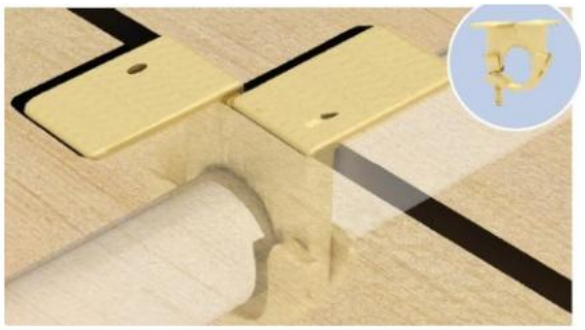
For Load Class 4 (3.0KN/m2) Heavy duty scaffold structures the minimum number of transoms required to support different lengths of 38mm thick timber scaffold boards is as follows:

Scaffold Board Length	Minimum Transoms Per Board
Up to 1.20m (4 Feet) Long	2
Between 1.30m & 2.10m (7 Feet) Long	3
Between 2.20m & 3.0m (10 Feet) Long	4
Between 3.10m & 3.90m (13 Feet) Long	5

Notches in scaffold boards are not permitted within the working platform except where boards need to fit around an obstacle. Where notches need to be cut they should not exceed 150mm in length & should not extend more than a third of the width of the scaffold board. Additional transoms should be provided within 150mm of each side of the notch.

Typing Down Timber Scaffold Boards:

Any timber scaffold board that is less than 2.13m (7 feet) long should be fixed down to prevent movement. Scaffold boards which are only supported by 2 x transoms should be fixed down at both ends to prevent the boards from tipping when walked on or loaded onto.



Single couplers should not be used to secure working platform boards as they can create gaps within the working platform and act as a trip hazard due to their raised profile. Where boards need to be fixed down a proprietary fixing clamp should be used.

Further information can be found in NASC Technical Guidance Document TG12:22 – Typing Down of Scaffold Boards

Gaps In the Working Platform:

There may be no gap in any working platform except the 50mm gap along the inside line of standards between the main working platform and the inside boards. The inside board closest to the permanent structure should be secured at each end to prevent this gap from increasing during use.

Console (inside board) Brackets:

The provision of inside boards within system scaffolding is typically achieved by the use of console brackets. These brackets are fixed to the standards at the working platform level.

Console brackets are typically available for 1, 2 & 3 board options & the design of these brackets varies between each manufacturer.

An example of a 2 board Rosette console bracket is shown below:

For some system scaffold classes (such as Cup & Wedge types) it may also be necessary to provide additional components to prevent the console brackets from rotating at their end frames. This is typically achieved with the use of additional brackets or tie bars.

Example of additional supporting components used in a Cup type system to prevent rotation:

Where the system scaffold permits the use of traditional timber scaffold board to form the working platform (such as Cup type systems), additional intermediate & end bearing inside board transoms will also be required.

An example of a Cup system inside board platform supported by intermediate transoms is shown below:

Where the inside console platform needs to be raised above or lowered below the main working platform then A maximum of 1 x inner platform can be raised or lowered per elevation of scaffold to a maximum offset of 500mm in accordance with either a TG30 compliance sheet or manufacturers instruction.

Example of a console platform in the step up position.	Example of a console platform in the step down position.
	

Where inside console platforms are decked with traditional timber scaffold boards the following applies:

- The inside platform should be level & not contain any ‘lapped’ boards except at corner returns. Inside boards must be supported in the same way as the main working platform boards with transoms provide at each board end and intermediately on its length.
- Additional ledger tubes will need to be provided at the inner face of the main scaffold & at the inner face of the console bracket.
- Intermediate & board end transoms will need to be provided to support the timber boards.

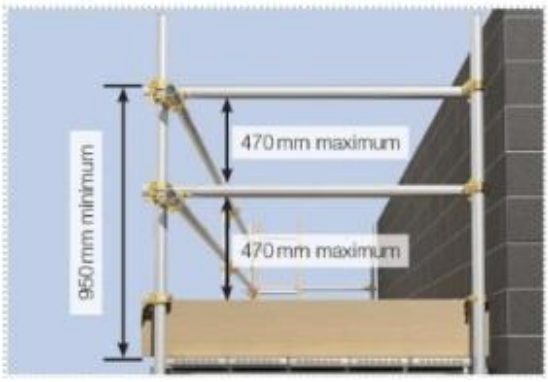
Edge Protection For Console Brackets:
Inside board platforms must be protected with guard rails. Toe boards will also be required where there is a risk of materials falling through the gap.

How edge protection is provided is dependent on the individual system manufacturers. For example, with Rosette type systems, guard rail posts are connected to the console brackets & proprietary components are used to provide guardrail protection as shown in the example below:

For wedge type systems, single board console brackets do not incorporate an inner guard rail post connection. To overcome this issue, a single board support bracket is typically connected to the inner standard of the main working platform for provide edge protection to the console platform as shown in the example below:

Guardrails:

All boarded working platforms must be protected with a minimum of a double guard rail at their outer face. A principal guardrail is required at the 1.0m node connection above the working platform & an intermediate guardrail is required at the 0.5m node connection above the working platform. This arrangement ensures that no gap between the top of the toe board & the intermediate guardrail & the intermediate guardrail & the principal guardrail exceeds 470mm. Stop end guardrails are also required at exposed edges of all end frames (i.e table lifts).



There may be no lateral opening in any guardrail except where a ladder or stair access joins.

All un-boarded lifts must be protected with single guardrails during assembly, adaption & dismantling works as this forms part of the scaffold operatives safe system of work as detailed in NASC Safety Guidance document SG4.

Where the pitch of the roof is at 40 degrees or above, an additional (third) guardrail will be required at the outer face of the main working platform. This additional guardrail is provided at the 1.50m node connection point above the working platform to provide additional fall protection for operatives installing the roof covering. The gap between the principal guardrail & this additional guardrail must not exceed 470mm.

An additional (third) guardrail is also required to the outer face of the main working platform where inside board brackets are used to raise the inner platform.

The installation of 'up & over' temporary edge protection is also required for all plot gable roof's under construction to ensure suitable fall protection is provided to the roofing operatives. See Section 5.21 for further information.

Guard Rail Frames:

Some system scaffold manufacturers provide proprietary guard rail frame components as an alternative to guardrails constructed from ledger/transom components. These guard rail frames are typically used as advanced guardrails during the assembly, alteration & dismantle of the scaffold structure.

Some guard rail frames can be used as a substitute for façade (sway) bracing when installed in accordance with manufacturers instructions. In these arrangements, façade bracing is typically only required below first lift as shown in the example below:

Internal Edge Protection:

The gap between the inside boards of the scaffold structure & the permanent works must be kept to the smallest reasonable distance to allow works to progress. For plots of traditional construction this must not be more than 100mm. Where additional working room is needed, such as for render or cladding, an additional gap up to a maximum of 225mm may be introduced just in advance of the build stage requiring the gap. Where the gap exceeds 225mm, internal guardrails must be installed.

Service gap up to 225mm	Service gap greater than 225mm
	

Table Lifts:

Access to table lifts should be via a ladder and self-closing gate to afford protection whilst maintaining access for loading materials.

Table lifts not to exceed 2m in height so that materials can be easily loaded up by hand.

The ladder should be installed at the correct angle 75% - 1 in 4 rule, which is 1 unit out for every 4 units up & should extend a minimum of 1m above the working platform. The ladder should also be secured with proprietary ladder fixings and a 'halo' tube provided around the ladder access opening.

Ladders are positioned adjacent to the table lift so the step off point is to the side.

Tools and materials must not be carried up the ladder as three points of contact cannot be maintained.

Internal handrails must be installed and remain in place to any table lift wherever there is a risk of falls.

Some system scaffold manufacturers provide proprietary deck units with integrated ladder access. This units are permitted for use on Taylor Wimpey sites provided they are installed in accordance with the manufacturers instructions & a suitable access hatch is provided.

Where a structural table lift is required for roof truss installation, a suitable configuration must be obtained from the manufacturer. Where the system scaffold manufacturer cannot provide a suitable configuration, an independent design should be obtained & approved by the PD prior to use on site.

Loading Out:

Standard tube and fitted scaffolds constructed on Taylor Wimpey sites are assembled to Load Class 3 (2.0KN/m2) General Purpose. This allows a maximum load of **200kgs** per bay.

Materials (brick/block) should be loaded adjacent to external standards, where the structure is designed to carry the load.

The gaps between material stacks can be used for spot boards & storage of bricklayers tools.

Window/Door Infills

Fall protection must be in place at structural openings where a gap exists between the working platform and proprietary decking system or birdcage scaffold. This should be achieved by extending the inside boards of the scaffold platform or decking system into the opening in accordance with the user guide, compliance sheet or scaffold design. A maximum of 3 inside boards can be provided to system scaffold structures in accordance with the TG30 compliance sheet and/or manufacturer's instructions.

Where system scaffold bay lengths exceed window/door openings, the infills will ned to be provided by the internal fall protection system.

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)

5.13.4 Access Scaffolds For External Render / Cladding

For the application of external render or cladding 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 or cladding.
- Bricklayers hop-ups or similar may not be used to gain additional height on the working platform.
- When adapting for render or cladding, 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

5.13.5 Concrete Structures - Fall Protection

On 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

5.14.1 Ties & Stability

Scaffold structures must be tied/stabilised to prevent them from buckling, sliding & collapsing. The purpose of stabilising scaffold structures is to restrain the standards in a vertical position so they can effectively carry the weight of the structure (components, boards, personnel & materials) without bucking.

During a scaffold structures use on site it is exposed to the elements. The effects of high winds are a common cause of scaffold failures. Depending on the direction the wind is blowing, it will attempt to push a scaffold towards the permanent structure, pull it away from the permanent structure or cause the scaffold to move parallel to the permanent structure.

Any cladding provided to the scaffold (brick guards, debris netting, sheeting etc) will influence the effect wind loading has on the scaffold structure.

The overall height of the scaffold is another important factor. Taller scaffolds structures will attract greater wind forces than those of a lower height.

Where scaffolds are assembled against an existing building this provides an element of shielding from wind exposure. However, where scaffolds are assembled against a building under construction, such as new build housing sites, the scaffold is much more exposed to the wind. It is therefore important that compliance sheets or independent designs correctly account for the permeable or impermeable nature

of the building to which the scaffold will be assembled.

The local site wind conditions & overall height will determine the stability requirements.

Several methods of providing the required stability to a scaffold structure are available. The most common methods are Raking Assemblies & physical connection (anchorage) to the permanent structure.

Tie Duty & Capacity:

The tie duty is the tension or 'pull' force that the ties resist to prevent a scaffold structure moving away from the permanent structure. The tie duty is determined by a number of different factors.

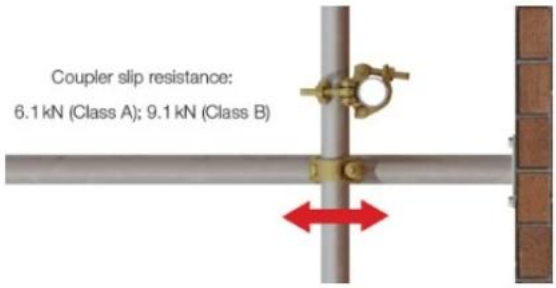
The tie capacity is determined by the lowest value of the following:

- The board bearing capacity of the permanent structure
- The capacity of the connection between the tie tube & the permanent structure
- The capacity of the connection between the tie tube & the scaffold structure. This is determined by the slip resistance of the couplers used to connect the tie tube to the scaffold structure.

Both the tie duty & tie capacity must be taken into account when selecting the tie method.

The following table provides guidance only & the actual typing method used should be determined by a competent person.

Tie Duty	Tie Duty Class	Suitable Tying Method
2.7 KN or less	Very Light Duty	Rakes may be used at tie positions to stabilise a scaffold up to 6m in height or the first 6m for higher scaffolds
3.5 KN or less	Light Duty	Reveal ties may be used for no more than 50% of the ties
6.1 KN or less	Standard Duty (Class A)	Through ties, box ties & lip ties may be used. Mechanical ties rated & tested to 6.1 KN may be used & connected to the scaffold with right angled couplers
9.1 KN or less	Standard Duty (Class B)	Through, box or lip ties may be used if connected to the scaffold with 2 x right angled couplers of at least 1 Class B coupler. Mechanical ties rated & tested to 9.1 KN may be used if connected to the scaffold with 2 x right angled couplers of at least 1 Class B coupler.
12.2 KN or less	Heavy Duty	Heavy duty box ties may be used. Mechanical ties into concrete or structural steelwork, rated & tested to 12.2KN may be used if connected to the scaffold with 2 x right angled couplers.



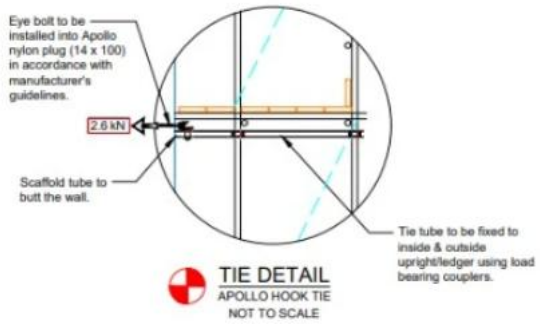
Tie/Stability Requirements:

Where a scaffold structure has been installed in accordance with either a TG20 or TG30 compliance sheet, the tie requirements will be detailed on the second page of the compliance sheet. The compliance badge will also detail the tie load & duty.

Where a scaffold structure has been installed in accordance with an independent design, the tie requirements including the tie load & connection requirements will be detailed on the design drawings.

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 the stability of the scaffold is not compromised. This may require the temporary removal & re-instatement of the tie or an alternative method may need to be introduced.



5.14.2 Raker Assemblies

At present, TG30 does not provide guidance on the use of raker assemblies to provide stability to proprietary system scaffolds. Guidance is intended to be included as part of a future release but in the meantime manufacturer guidance or advice from a design engineer must be followed where raker assemblies are proposed to stabilise system scaffold structures.

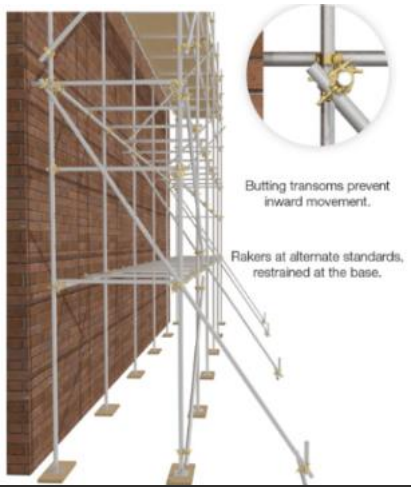
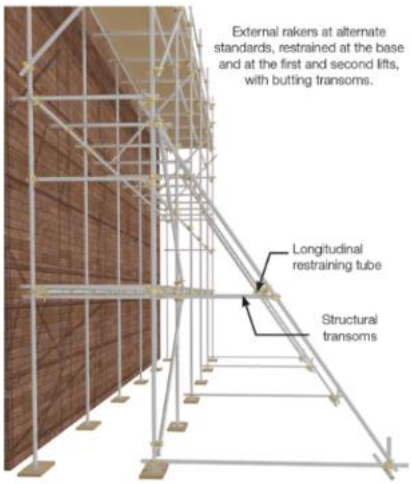
For TG20 compliant tube & fitting scaffolds, raker assemblies can be used to provide stability for unclad independent scaffolding up to 6.0m in height. For scaffolds over 6.0m in height, raker assemblies may be used in place of ties at the first or second lift provided the tie duty requirement does not exceed 2.7 KN.

TG20 compliant raker assemblies need to be butted to an existing structure & cannot be used for free standing structures (such as timber frame) without a bespoke design.

Raking tubes should be positioned at ledger braced standards and attached within 300mm of the node point. Raking tubes should be set at an angle of no more than 2 vertical to 1 horizontal.

Raking tubes can be fixed to either the inner or outer face of the scaffold & should be fixed to wither the ledger with right angled (double) couplers or to the standards with swivel couplers. A structural butting transom is required within 300mm of each raking tube secured with right angled (double) couplers or alternatively, all board bearing transoms at the supported lift can butt the permanent structure. Where raking tubes are connected at the inner face of the scaffold, they should be connected at the second lift & connected at the outer face at the first lift.

Where raking tubes are connected at the outer face only they should be restrained at their base & at the first lift with tubes connected back to the scaffold structure with right angled couplers. A longitudinal (ledger) tube should also be provided, connected with right angled couplers to restrain the rakers.

Example of a raker assembly connected to the inner & outer face of the scaffold.	Example of a raker assembly connected to the outer face only of the scaffold
	

Raker assemblies must also be suitable restrained at their base. Where is not practical to anchor the raking tubes, they may be supported by sole boards. In this instance, an additional longitudinal (ledger) tube will be required at the base level connected back to each standard with a structural transom as shown below:

5.14.3 Ties/Anchorage to the Permanent Structure

The following information is suitable for scaffold structures assembled form both tube & fitting & proprietary system scaffolds

This section does not detail all possible tying methods & is designed to provide an overview of the two common methods used on site. Further information can be found in the NASC Technical Guidance Document TG4:25

Ties are assemblies of tie tubes, couplers and anchorages (depending on the tie type) that connect the scaffold to the permanent structure.

Through Ties:

Through ties are suitable for scaffold structures that require a standard duty tie & are installed through window or other openings & rely on the tube inside the opening to prevent outward movement & 'butting' tube outside to prevent inward movement.

The inside tube can be placed horizontally although it is preferable for this tube to be placed vertically & rest of the floor so it cannot slip downwards. The tie tube connected to the scaffold structure should ideally rest on the cill for the same reason. Tie tubes should be placed as close to the edges of the opening as possible.

An outside tube should be placed horizontally spanning the opening and 'butted' up against the permanent structure. Timber packing is typically used to prevent damage to brick/blockwork. Where it is not possible to install a horizontal outside tube, a structural transom will need to be provided & 'butt' the outside face.

5.14.4 Mechanical Ties (Drilled or Cast-in Anchorages)

Mechanical ties are used to attach a scaffold structure directly into the fabric of the permanent structure. Before mechanical ties can be used, an assessment of the permanent structure must be made by a competent person to ensure it can support the proposed tie loads.

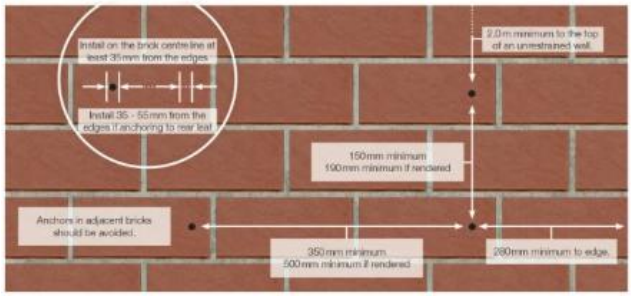
Achieving a suitable mechanical tie fixing into 'green' brickwork can be difficult as the mortar joints will need time to cure. Additionally, the permanent structure under construction may not be sufficiently stable until floor joists, roof trusses etc have been incorporated. For these reasons, mechanical ties should only be considered where all other options have been exhausted.

Several types of anchor are available & manufacturer guidance for the specific type of anchor being used should always be followed. A summary of the anchor types & suitable base material is shown below:

Anchor Type	Suitable Base Material
Drop-in expansion anchors	Structural concrete, hard natural stone,
Self-tapping screws	Structural concrete, concrete blockwork, brickwork & stonework, steelwork.
Nylon anchors with screw-in eyes	Structural concrete, concrete blockwork, brickwork & stonework
Resin anchors	Structural concrete, concrete blockwork, brickwork & stonework

When drilling into brickwork the anchor should be within the solid part of the brick rather than in the

mortar joint.



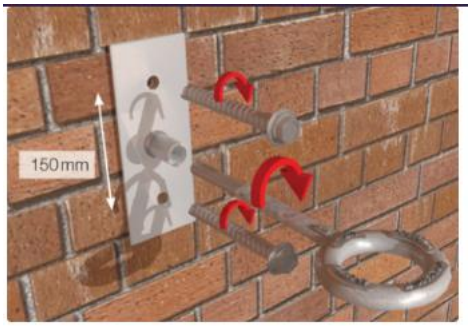
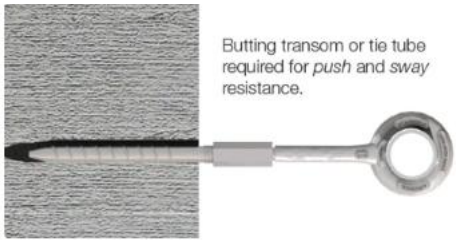
If anchors cannot be fixed into the bricks then guidance must be sought from the manufacturer or structural engineer.

Self-Tapping Screws:

Self-tapping screws are often referred to as 'concrete screws' but they are suitable for use in brickwork & stonework as well as concrete blockwork. They are not suitable for use in lightweight aircrete blockwork. Some manufacturers also permit their use in timber.

Self-tapping screws cut their own thread into pre-drilled holes & can be used with a variety of components such as band & plate, welded plates & threaded rod. Self-tapping screws should not normally be re-used.

Example of a self-tapping screw being used with a band and plate coupler.

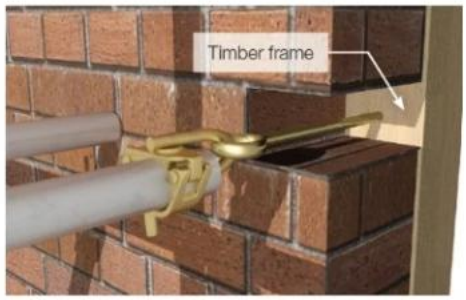
Example of a self-tapping screw being used with a welded plate.	Example of a self-tapping screw being used with threaded rod.
	

Nylon Plugs With Screw-In Eyes:

Plastic plug anchors with screw in eye bolts are suitable for use in concrete, brickwork and stone work and are also permitted for use in timber by some manufacturers.

Nylon plug anchors are available in both light duty (3.5KN) versions & standard duty (6.1KN) versions so care must be taken to ensure the correct option is selected.

Care must be taken not to overtighten the eye into the anchor plug as this may strip the thread.



5.14.5 Proof Testing of Mechanical Ties

Proof testing is required to confirm that mechanical ties have been installed correctly.

Proof testing must be carried out for all Taylor Wimpey projects where mechanical ties have been installed, including those where previously installed anchors have been used.

Scaffold contractors must provide a copy of the calibration certificate for the machine/s used to carry out the proof testing together with a report of the test results.

A sample must be tested for each individual project with at least 5% of the ties (1 in 20) tested with a minimum of 3 ties tested. The ties to be tested must be chosen at random.

Additional testing may be required where:

- Different types of ties have been used
- The base material is different
- The condition of the base material has been affected on separate elevations by expose to the elements.
- Separate tie installers have worked on the project.

Mechanical ties must be tested to a load 25% greater than the specified tie duty:

Tie Duty	Working Load	Test Load
Light Duty	3.5 KN	4.4 KN
Standard Duty (Class A)	6.1 KN	7.6 KN
Standard Duty (Class B)	9.1 KN	11.4 KN
Heavy Duty	12.2 KN	15.3 KN

Where a mechanical tie has failed a proof test, the cause of the failure will need to be identified. The rate of proof testing will also need to be increased as follows:

- If one failure occurs, the test rate should be doubled to 1 in 10 with a minimum of 6 tests carried out.
- If two failures occur, the test rate should be doubled again to 1 in 5 with a minimum of 12 tests carried out.
- If more than two failures occur, every anchor should be tested & the fixing specification & installation method will need to be reviewed.

All proof testing on site must be carried out by a competent person. The test meter being used must have been calibrated within the last 12 months to an accuracy of 5%.

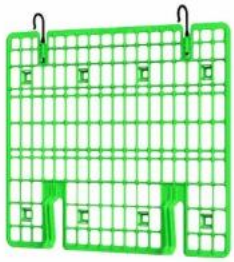
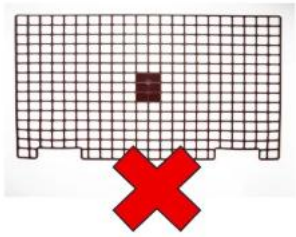
5.15.1 Brick Guards

The purpose of a brick guard is to prevent materials from falling from the scaffold working platforms where toe-boards do not provide sufficient protection. Brick guards can be used in conjunction with either a TG20 or TG30 compliance sheet or system scaffold manufacturers user/installation guide.

Brick guards are mesh screens and in order to be effective, the horizontal length of each hole in the mesh should not exceed 50mm & the total area of each hole should not exceed 100cm2. Holes

Brick guards are hung from the inside of the principal guardrail and must be secured to the toe board to prevent outward movement.

It may be necessary to lap adjacent brick guards & manufacturers advice should be followed.

Brick guards can be secured to guardrail & toe board.	Brick guards cannot be secured to the toe board & are not suitable for use on site.
	

5.15.2 Debris Netting

As most plots under construction on site are classed as 'Permeable Facades' Your RHSEA must be contacted before debris netting is used on site as it is likely an independent scaffold design will be required. It is unlikely that a TG20 or TG30 compliance sheet can be produced for the use of debris netting with permeable facades.

Impermeable Façade:

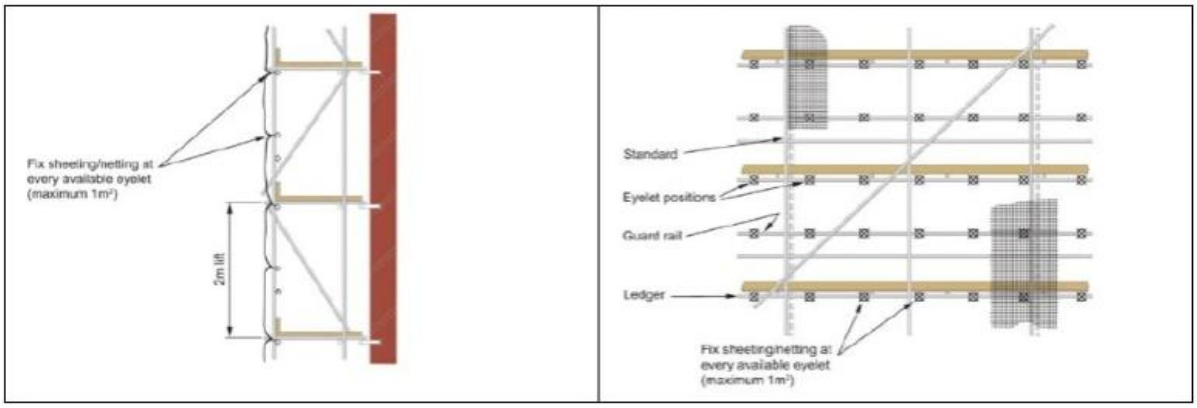
A solid building without significant openings that shields the scaffold from the wind.

Permeable Façade:

An open structure or a façade with significant openings that does not shield the scaffold from the wind.

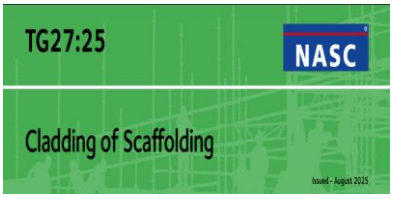
Debris netting is designed to protect the surrounding area from light debris & particles generated during construction works. Debris netting can be used in conjunction with either a TG20 or TG30 compliance sheet or system scaffold manufacturers user/installation guide. Both TG20 & TG30 compliance sheets assume the use of common high-permeability netting. Low permeability netting is sometimes required to provide increased environmental protection. Taylor Wimpey preference in these circumstances is that plastic sheeting be used instead.

Debris netting is fixed to the scaffold using cable ties, which should be spaced at a maximum of 1.0m2 to ensure the netting remains securely attached. Netting should be secured wherever the run of eyelet holes or tie point cross the ledgers and guardrails as shown below:



Where scaffolds are subjected to high or extreme wind factors then the frequency of fixings should be increased as indicated on the TG20 or TG30 compliance sheet.

In accordance with NASC Guidance Document TG27:25, the following specification is recommended:



- Minimum width – 4.8mm

- Minimum breaking strain – 22kg
- Cable ties to be UV & heat stabilised.

The netting manufacture may provide an alternative specification for the cable ties.

Reinforced Plastic Sheeting

As most plots under construction on site are classed as 'Permeable Facades' Your RHSEA must be contacted before reinforced plastic sheeting is used on site as it is likely an independent scaffold design will be required. It is unlikely that a TG20 or TG30 compliance sheet can be produced for the use of sheeting with permeable facades.

Impermeable Façade:

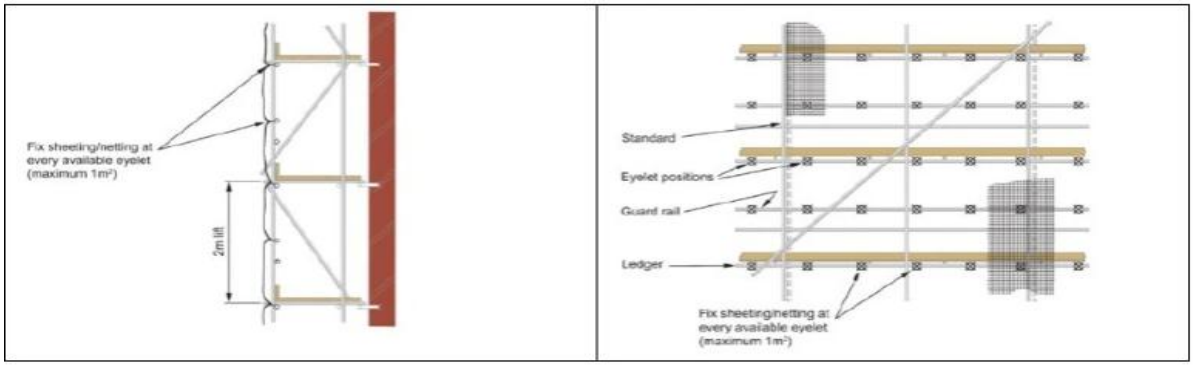
A solid building without significant openings that shields the scaffold from the wind.

Permeable Façade:

An open structure or a façade with significant openings that does not shield the scaffold from the wind.

Reinforced plastic sheeting is normally used when debris netting does not provide sufficient environmental protection. Various grades of sheeting are available which enables a wide range of weather conditions, working environments & project durations to be catered for.

Sheeting is normally secured to the scaffold façade with elasticated ties (often referred to as bungee, toggle, anchor or strap ties) designed to hold the sheeting in place whilst providing a degree of flexibility. Sheeting should be secured wherever the run of eyelet holes or tie point cross the ledgers and guardrails as shown below:



Sheeting is usually installed in horizontal bands from the base of the scaffold upwards to match the scaffold lift heights and is fixed to the ledgers & principal guardrail as a minimum. The sheeting should be overlapped by 120-200mm with end laps near structural components & node points.

Sheeting is generally fixed to the outside face of the scaffold however, it is possible to fix sheeting inside the outer standards of a scaffold. When sheeting is attached internally, the wind will act on both the sheeting & the scaffold members, potentially imposing additional loading on the structure and its ties. A bespoke independent design must be provided for all scaffold with internal sheeting.

5.16.1 Rubbish Chutes

A rubbish chute is a temporary structure typically suspended from the outside of the scaffold structure to enable waste construction materials to be safely transferred from the working platform into the tip below.

where rubbish chutes are to be used on site, they must be provided to all plot scaffolds where the working platform is 2m or above from ground level (typically this will be at joist lift & above).

In accordance with NASC Guidance, rubbish chutes in excess of 10m are not permitted for use on Taylor Wimpey sites. A more controlled method of removing waste materials from the scaffold working platform must be provided.

TG20 & TG30 compliant scaffold may be fitted with a rubbish chute under the advice of a competent scaffold designer. It is the responsibility of the scaffold contractor to consult a design engineer prior to the installation of any rubbish chutes.

Rubbish chute assemblies typically consist of the following components:

- **Fixing frame** – A metal component which connects to the scaffold & supports the rubbish chute assembly & also the hopper section. Fixing frames are available in a variety of designs.
- **Hopper** – A funnel shaped section of the chute intended to restrict overspill and to direct material into the chute. Hopper sections are available in both 'top entry & 'side entry' variations with the top entry section being placed at the uppermost working platform & the side entry section being placed at each lower working platform where required.
- **Chute Section** – Interchangeable sections capable of joining with other sections of the same design. Chute sections are typically joined together with a metal chain arrangement.

Examples of rubbish chute components shown below:

Hopper	Chute Section	Fixing Frame
		

The following control measures must be followed where rubbish chutes are installed on site:

- All rubbish chutes must be installed by the scaffold contractor in accordance with the manufacturers installation instructions with a copy held on site.
- All rubbish chute assemblies must be installed as such that a clear space of approximately 1m provided between the bottom of the lowest chute section & the top of the skip.
- For stability, chutes must be fixed either near a loading bay or tie position.
- The skip at the bottom of the rubbish chute assembly must be enclosed with Heras type fencing on 3 sides.

- Rubbish chute assemblies must be inspected at handover stage & included within the main scaffold inspection regime.

- Chutes should not be used with damaged or excessively worn components.

Further information & guidance on the safe use of rubbish chutes on site can be found in NASC Guidance Document TG3:25.

5.17.1 Tube & Fitting Loading Bay Structures

At present, there are no Taylor Wimpey approved system scaffold loading bay designs available on the scaffold hub.
Where a BU is utilising system scaffold loading bays on site, it must be installed in accordance with one of the following options:

- Manufacturers guidance/instructions.
- Independent design provided by the BU following consultation with the RHSEA.

Where the manufactures guidance states that stability in the form of tie's are required but the tie duty is not provided, the BU must seek guidance from an independent design engineer.

Where the loading bay cannot be installed fully in accordance with the system scaffold manufactures guidance/instructions, an independent design must be provided & approved by the PD following consultation with the RHSEA prior to use on site.

5.17.3 Loading Bay Gates

All loading bays must be provided with an access gate where they are loaded/unloaded on site by a telehandler. The gate provides fall protection for both materials and operatives & therefore provides a safe working area whilst the loading bay is in use.

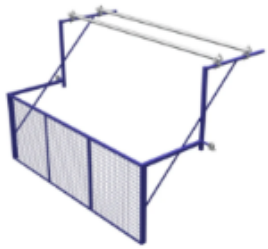
All loading bay gates used on Taylor Wimpey sites must meet the following criteria:

- 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.
- Gates must be able to be operated without undue force.
- Gates must sit flush when in the closed position.
- The sides of the loading bay adequately secure (e.g., mesh) to prevent the fall of materials from the sides.
- Loading bay gate arm connecting tubes must be secured to the scaffold standards with load bearing couplers (Tube & Fitting Scaffolds).
- Proprietary system scaffold loading bay gate arms to be secured in accordance with manufacturer's instructions.
- Single arm loading bay gates whether joined together with a single tube or not, do not comply with the Work at Height Regulations and must not be used on Taylor Wimpey sites.
- Extendable gates with the mesh infill are prohibited for use on all Taylor Wimpey sites

Loading Bays Gate Fronts:

All loading bay gate fronts used on site must provide protection for both materials and operatives. This can be achieved in one of the following ways:

- Constructed using traditional scaffold tube & provided with a suitable toe board.
- Constructed from a proprietary mesh infill panel.
- Constructed from a proprietary system scaffold loading bay gate.

Example of a proprietary mesh infill panel front with a double guardrail	

Loading Bay Side/Ranch Panels

The sides of all loading bays used on site must provide protection for both materials and operatives. This can be achieved in one of the following ways:

- Double guardrail constructed with traditional scaffold tube & provided with a suitable toe board & brick guards.
- Single guardrail provided at a minimum height of 950mm constructed with traditional scaffold tube & provided with multiple toe boards stacked on top of each other, known as 'Ranch' style boarding.
- In accordance with system scaffold manufacturers guidance/instructions.
- Constructed from a proprietary mesh infill panel.

All guardrail tubes are to be secured to the standards at each end with load bearing couplers.
All toe board & ranch boards to be secured to the standards at each end with suitable fittings to prevent movement.
Where mesh infill panels are used, they mut have a minimum of 2 'horns' at each end to enable them to be secured to the standards at each end with 2 x load bearing couplers.

Example of a proprietary mesh side infill panel with 2 x 'horns' at each end:	

5.18.1 Access Arrangements

This chapter describes the requirements for providing safe access and egress from both scaffold structures & plots under construction.

The site management team & other trade operatives will require access into the plot whilst the external scaffold structure is still in place. Therefore, access to plots must be provided once the external scaffold is above the height of the plot access doorways (typically once the joist lift has been installed)

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)

The following table should be used to determine the appropriate method of access & egress from scaffold structure on Taylor Wimpey developments.

Authorised means of accessing the scaffold:	To be used for scaffolds at:
Tube & fitting stair towers incorporating proprietary stair units Or Proprietary System Scaffold stair towers 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

5.18.2 Tube & Fitting Stair Towers

All tube & fitting stair towers in use on Taylor Wimpey developments will require a bespoke design which must be approved by the PD following consultation with the RHSEA before being used on site.

Toe boards must be provided to all landing platforms of tube & fitting stair towers.

The site management team must be briefed on the bespoke stair tower design including details of critical inspection points.

The bespoke design should consider the following:

- Connection detail showing how the stair access tower will be connected to the main scaffold structure.
- Mechanical ties should not be used to stabilise the stair access tower wherever possible.
- Lift heights shown on the stair tower design should match the lift heights of the main scaffold structure as closely as possible. It is not acceptable for the design to simply show multiple 2m lift heights.

- The maximum difference in height between the stair access tower & main scaffold structure should not exceed 225mm.
- Design should detail the use of proprietary stair units only. Individual stair treads that rely on a scaffolding fitting for stability are not permitted on Taylor Wimpey Sites.
- Requirement for toe boards & guardrails to be installed on all landing platforms.

Individual stair treads that rely on a scaffolding fitting for stability are not permitted on Taylor Wimpey Sites

Where BU's currently use the Appollo Public Access single stair treads with double 'horn' ends, a proposal must be agreed with the scaffold contractors to remove them from use on site during 2026 as these types of stair tread will not be permitted for use on Taylor Wimpey sites from 2027.

5.18.3 System Scaffold Stair Towers:

Proprietary system scaffold stair towers can be used with both tube & fitting & system scaffold structures.

Stair access towers should be set out to ensure they are as close to the main scaffold structure as possible. Any gap between the stair tower & main scaffold structure should be suitably closed.

Care must be taken when using system scaffold stair towers to access tube & fitting scaffold structures to ensure the platform height of the stair tower aligns as closely as possible to the main scaffold structure. The maximum height difference should not exceed 225mm.

When using system scaffold stair towers to access system scaffold structures the landing platform should be flush with the main scaffold structure platform.
Toe boards must be provided to all landing platforms of system scaffold stair towers.

A TG30 compliance sheet or the manufacturers instructions can be used to demonstrate the stair tower has been assembled in conformity with a generally recognised standard configuration.

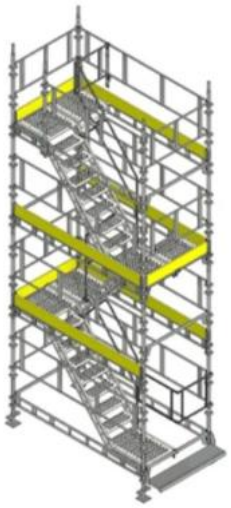
Where a stair tower cannot be assembled fully in accordance with either manufacturers instruction or a TG30 compliance sheet then a bespoke design must be provided.

Where a bespoke design is provided, it should consider the following:

- Connection detail showing how the stair access tower will be connected to the main scaffold

structure.

- Mechanical ties should not be used to stabilise the stair access tower wherever possible.
- Requirement for toe boards & guardrails to be installed on all landing platforms.



Where a system scaffold stair access tower is being used on site, the following additional requirements apply:

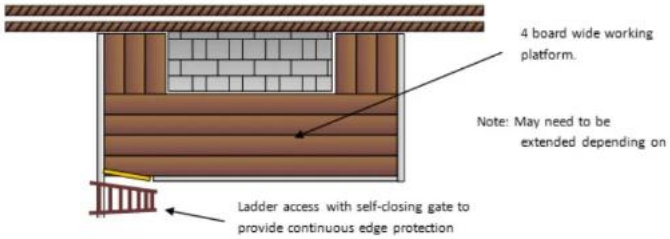
- Scaffold operatives assembling, altering & dismantling the stair tower must be trained in the system being used.
- The site management team must have received familiarisation training for the system stair tower being used including details of how to correctly inspect the tower.
- SHSEA have received familiarisation training for the system stair tower being used including details of how to correctly inspect the tower.

5.18.4 Low Level Scaffold Access

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.



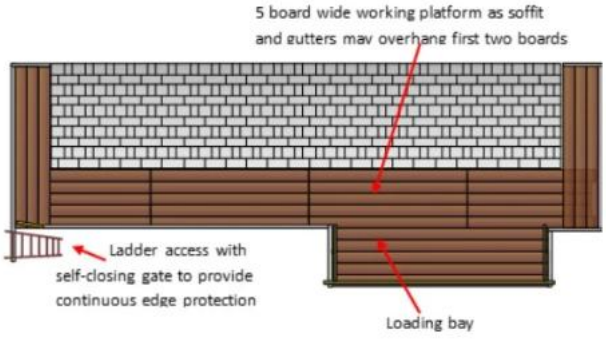
This scaffold is of a wrap-around type, giving sufficient access to the front and sides of the roof. Access is via a ladder and self-closing gate directly on to the working platform.

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.



5.18.5 Ladder Access

Ladders may be used to access table lifts, single garages, garden or retaining walls, substations, or similar small structures only.

Where ladders are used to access working platforms on site the following control measures should be followed:

- All ladders must conform to EN131 Professional Standard
- Timber ladders are not permitted for use on Taylor Wimpey developments.
- All ladders should extend a minimum of 1.0m above the working platform but should present a cantilever effect.
- Ladders should be fixed at an angle of 75% - 1 in 4 rule, which is 1 unit out for every 4 units up.
- Where internal ladder access is provided, the opening should be protected using a ladder trap.
- Where external ladder access is provided, the opening should be protected using a self-closing ladder gate.
- Where external ladder access is provided, a 'halo' tube should be provided.
- Ladders should be prevented from slipping & twisting by securing both stiles at the top of the ladder.
- Ladders should be secured with proprietary ladder fixings wherever possible. The use of scaffold clips is not recommended as the can damage the ladder stiles when tightened.

External ladder access with a safety gate (halo tube omitted for clarity)	**Internal ladder access with a ladder trap.**
	

Ladder secured with proprietary ladder fixing	Example of proprietary ladder fixing
	

Inspecting Ladders:
Where the ladder is used to access a scaffold structure, the inspection of the ladder should be included as part of the scaffold inspection. During inspection, the following points should be reviewed:

- The ladder is installed the correct way up and correct way round.
- The ladder shows no signs of mechanical damage, corrosion or chemical attack.
- There are no splits, cracks or permanent twist, buckling or excessive bowing.
- Plastic inserts (such as feet) are in place and not missing.
- The rungs & stiles show no significant signs of excessive wear, movement corrosion or metal fatigue.
- All rungs are in place

Superficial markings are acceptable but a dent in the stile or small buckle can considerably reduce the capacity of the ladder.

5.19.1 Scaffold Security

All scaffolding on site must be secured to prevent unauthorised access. This includes periods when the site is closed and when scaffolds have not yet been formally handed over and accepted as safe for use by the site management team.

Stair access towers:

All scaffold stair access towers must be secured on all four sides to prevent unauthorised access.

- Closed-off with a proprietary enclosure incorporating a lockable access gate provided by the scaffold supplier.
- Closed-off using heras or other type of fencing panel incorporating a lockable access gate.
- Closed off using scaffold boards (ranch boarding) incorporating a lockable access gate.

Tube & fit stair access towers - Where scaffold boards (ranch boarding) are utilised, this detail must be included on the bespoke stair tower design.

System stair access towers - Where scaffold boards (ranch boarding) are utilised, confirmation must be obtained from the manufacturer/supplier that the use of such boarding is permitted due to the potential for additional wind loading as this falls outside the scope of TG30. Where manufacturer/supplier confirmation cannot be obtained, a bespoke design must be obtained.

Timber Frame – stair access towers should not be enclosed with scaffold boards (ranch boarding) due to the increased fire risk associated with timber frame construction.

Example of a proprietary system supplied by Trad	Example of Heras type enclosure
	

5.19.2 Ladders

The following options can be used to prevent unauthorised access to scaffolds where the primary means of access is via a scaffold ladder:

- Remove base/first lift ladders and store securely, either in the site compound or padlocked horizontally to the scaffold.
- A proprietary 'ladder guard' can be fitted which is locked/padlocked into the ladder to make the rungs unusable.

Where a proprietary ladder guard is provided, it must be of sufficient width to prevent the guard from being pushed over to one side & the rungs being used to climb the ladder.

The use of a scaffold board clipped or fixed with rope to the ladder is not a suitable means of preventing unauthorised access & must not be used on site.

Example of a proprietary ladder guard.	Example of a proprietary ladder guard of suitable width secured to the ladder rungs.
	

5.19.3 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 their work activates. 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.

To avoid confusion, where a loading bay gate has been fitted to a scaffold that incorporates maximum loading information, it must match the Taylor Wimpey maximum loading of 2000KG otherwise it cannot be used. The Taylor Wimpey loading bay safe working load signage is still required.

Below is an example of a loading bay gate containing the incorrect maximum loading.

5.20 Timber Frame:

This section of the Site HSE manual details the specific requirements for timber frame scaffolds used on Taylor Wimpey sites. To avoid duplication, the control measures detailed elsewhere within section 5 of the manual are not repeated here but must also be complied with.

When scaffold structures for timber frame buildings are initially constructed, there is no building in situ to which the scaffold can be tied. Therefore, timber frame buildings are not currently covered by either NASC TG20:21 for tube & fit scaffolds nor NASC TG30 for system scaffolds.

It is Taylor Wimpey's policy that an independent design must be produced by a competent person for all scaffolds constructed for use with timber frame buildings.

5.20.1 Design Requirements for Timber Frame Scaffolds:

Taylor Wimpey preference is for the Business Unit to procure any timber frame scaffold designs to ensure it meets our requirements.

As detailed in section 5.3.3 of the site HSE manual, The Taylor Wimpey Designed Scaffold – Temporary Works Design Brief document must be completed and sent to the scaffold design engineer. The timber frame engineer & timber frame installation contractor will need to be consulted & should contribute to the design brief to ensure that the scaffold design engineer is provided with all relevant information.

Examples of the timber frame specific information which needs to be provided to the scaffold design engineer is as follows (this is not an exhaustive list):

- Type of scaffold structure e.g tube & fitting or system scaffold.
- Lift heights
- Number of boarded lifts – including main working platform size & number of inside boards.
- Load class of scaffold
- Details of structural elements available for mechanical tying-in of the scaffold.
- Site constraints which may prevent the use of raking assemblies or buttress towers.
- Requirement for additional stair access towers to aid emergency escape.
- Loading Bay requirements
- Roof truss construction method
- Modifications required to support follow on trades
- Verge edge protection & internal guardrail requirements.
- Sheeting/cladding requirements.

The Technical Director will need to discuss the proposed build route with the Production Director to ensure that the correct number of designs are procured.

The documentation provided by the scaffold design engineer must meet the requirements stated in section 5.3.3 of the site HSE manual. The documentation must clearly identify:

- Buttress/raker assembly detail (where used for stability)
- Kentledge requirements including type & weights (where used for stability)
- Leg loadings & sole board arrangements
- Ledger & transom type for system scaffolds.
- Allowable loads
- Phasing details for both timber frame installation & follow on trade adaptions (required even if telescopic transoms or board brackets/hop ups are being used).
- Loading bay design including connection detail to the main scaffold.
- Stair access tower design including connection detail to the main scaffold.
- How the stability of the scaffold will be maintained throughout all phases of work.

The final design must be approved by the Production Director following consultation with the RHSEA prior to use on site.

All approved bespoke scaffold designs and supporting documentation must be provided to Group HSE to enable these to be collated centrally & shared between BU's.

Design Change:

If the scaffold structure needs to be modified in a way that is not detailed within the existing design documentation (such as stripping an elevation to allow installation of underground services) the scaffold design engineer must be consulted before hand to ensure the structural stability of the scaffold can be maintained. An updated design drawing may not be required, but as a minimum, confirmation must be obtained from the scaffold design engineer that works can proceed.

Generic Designs:

The use of generic designs are permitted, but they must be reviewed against the specific conditions for each individual development to ensure the design can be fully implemented & the site falls within the design parameters. Wind loadings can vary significantly between each site based on factors such as altitude, distance from the sea, topography etc

Confirmation must be obtained from a competent scaffold design engineer that the generic designs are suitable for use on each individual site.

5.20.2 Lift Heights:

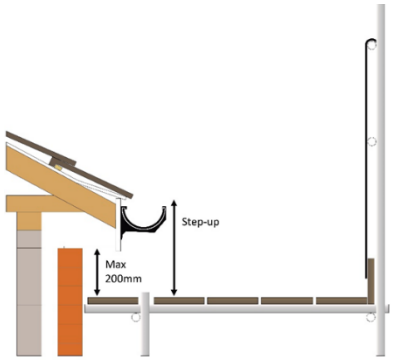
The lift heights of timber frame scaffolds need to be carefully planned to take into account the different methods of timber frame build & the adaptations required by follow on trades. This will help reduce both the number and costs associated with follow up adaptations by the scaffold contractor.

Where the timber frame installation contractor is proposing to build the roof structure off the floor level & lift out, the lift height of the scaffold working platform below must be set no more than 450mm below the top of the mid-floor.

For tube & fit scaffolds, the maximum height of any one lift should not exceed 2.20m. this allows for plan bracing and/or structural transoms to be installed below the ledger whilst maintaining sufficient headroom. Where lift heights in excess of 2.20m are required, this must be approved by the Production Director following consultation with the RHSEA

For system scaffolds, lift heights can be adjusted in 500mm increments and should not exceed 2.0m. Where lift heights in excess of 2.0m are required, this must be approved by the Production Director following consultation with the RHSEA

Prior to the roofing contractor commencing works, safe access onto the roof structure must be provided. The 'top lift' of scaffold working platform should be set a maximum of 200mm from the underside of eaves. Where the main working platform is outside this tolerance, the entire lift of scaffold will need to be raised. Inside board or console brackets cannot be used to reduce the distance.



5.20.3 Working Platforms:

All timber frame scaffolds installed on Taylor Wimpey sites must contain a fully boarded/decked out kicker lift.

Timber frame working platforms for both traditional tube & fitting & proprietary system must be in accordance with section 5.13 of the site HSE manual.

To enable operatives to work safely behind an internal double guardrail when installing the timber frame kit, it is recommended that two inside boards are provided wherever possible (instead of three). This will enable the installers to safely reach the face of the timber frame panels. Where individual site or plot constraints require more than two inside boards to be provided for timber frame installation then the installation contractor must produce a site/plot specific safe system of work for this scenario.

The width of the main working platform & number of inside boards for each phase of works must be agreed with both the scaffold contractor & scaffold design engineer. Where inside boards need to be loaded with materials then this must be detailed within the design documentation.

Only two lifts of scaffold should be in use per elevation at anyone time. 1 x lift loaded to 100% of the load class & 1 x lift loaded to 50%. If the scaffold needs to be utilised outside of these parameters then this

must be detailed within the design documentation.

Timber frame scaffolds typically require multiple adaptions to the inside board arrangements to support follow on trades. The method of inside board support is determined by the required use of the platform. Bricklaying often requires the inner platform initially be placed in the step down position, then raised to the same level as the main working platform & then raised to the step up position.

Tube & fitting and proprietary system scaffolds can provide step up & step-down platforms.

The inner platform may only be raised or lowered by a maximum of 500mm.

When setting out the external scaffold structure, access into the plot at ground floor level by follow on trades needs to be considered. The scaffold should be set out so that standards are placed either side of the doorway. The ledgers, transoms, guardrails boards/decks should be installed so they can easily be removed and reinstated to allow safe access into the plot.

5.20.4 Edge Protection For Roof's under Construction:

The installation of 'up & over' temporary edge protection is mandatory for all timber frame plot gable roof's under construction to ensure suitable fall protection is provided to the roofing operatives.
The Taylor Wimpey design drawing TA004-11352-2-REV B **is not** suitable for use with timber frame scaffolds. The 'up & over' temporary edge protection must be incorporated into the timber frame design provided by a competent engineer.

5.20.5 Service Gaps & Internal Guardrails:

Service Gaps:
To enable the timber frame system to be installed, a gap between the inside scaffold boards & external face of the timber will be required to enable the installation of pinch battens, cavity barriers etc.
Due to both the individual requirements of timber frame installation contractors & potential fire risk mitigation measures, this service gap will not be the same for all developments. However, the maximum service gap permitted is 150mm from the external face of the timber frame panel to the edge of the inner most scaffold inside board.

To enable the bricklaying contractor to construct the external façade, the scaffold will need to be adapted. The amount & type of adaptions required will depend on the build sequence agreed but this typically involves the removal of one or more inside scaffold boards and/or the introduction of 'hop-up/console' brackets. These alterations will introduce a service gap between the inside scaffold boards & the external face of the brick/blockwork.
Due to both the differences in scaffold systems & the gap required for the timber frame installation, the bricklaying service gap will not be the same for all developments. However, the maximum service gap permitted is 150mm from the external face of the brick/blockwork to the edge of the inner most scaffold inside board
Ideally, the scaffold adaptions should be carried out on a lift-by-lift basis once the brick/blockwork has been built up to the underside of the above lift. If the inside boards are removed at an earlier stage, then measures must be in place to prevent operatives from working near the inside edge. This is typically achieved by the installation of double internal guardrails of by preventing access to the lift from the stair access tower.

Internal Guardrails:
Edge protection must be provided to the internal face of all timber frame scaffolds above the kicker lift where there is no structure in place to prevent a fall from height. This must be provided in the form of double guardrails. Internal edge protection will only be required on kicker lifts where the height difference between the top of the scaffold board & the floor slab below exceeds 600mm.
As the installation of the timber frame kit progresses through the lifts of scaffold, the double guardrails can then be removed to allow for follow on works (pinch battens, cavity barriers etc). Alternatively, access gates through internal guardrails can be provided. Where access gates are utilised, they must be chained & padlocked shut until the timber frame structure provides suitable fall protection.
Where the height difference between any timber frame mid-floor & the external scaffold below exceeds 800mm then suitable edge protection around the mid-floor is to be provided by either the installation of edge protection around the perimeter of the mid-floor or the installation of internal handrails on the inner side of the scaffold.

5.20.6 Loading Bay's:

A suitable scaffold design must be provided for all loading bays proposed for use with timber frame scaffolds.

Consideration must be given to the weights of the proposed martials being placed onto the loading bay & to the number of lifts to be loaded at any one time to ensure a suitable & adequate design is produced.

For tube & fit scaffolds, loading bays are typically installed in one of the following sequences:

- Installed for the roofing contractor initially then struck & re-assembled progressively as the

brickwork progresses. This process may need to b repeated for follow on trades (such as drylining).
- Installed & decked out progressively at each lift utilising steel or aluminium beams. Double guardrails are installed to prevent access to non-working lifts, removing the need for structural adaptions.

For system scaffolds, the loading bays are typically installed & decked out progressively utilising reinforced ledgers and transoms. Double guardrails are installed to prevent access to non-working lifts, removing the need for structural adaptions.

5.20.7 Access & Egress:

Primary access to the working platforms of all timber frame scaffolds must be in accordance with section 5.18 of the site HSE manual.
A site fire risk assessment must be carried out to determine if additional means of escape from the scaffold platform needs to be provided. Where additional means of escape is required, it must be in the form of stair access towers. Ladder towers are not permitted on Taylor Wimpey developments for use as secondary means of escape.
Access/egress between the scaffold structure & timber frame floors for the timber frame installers is provided via knock out panels. The location of these knock out panels must be considered when accessing the need for additional means of escape from the scaffold structure.
The scaffold stair access tower will typically have a boarded platform at the same height as the kicker lift of the main structure. Where the difference in height between this boarded platform & the ground level below exceeds 450mm then additional measures must be introduced to accommodate the height difference. This is typically provided via either a proprietary step or ramped access.

5.20.8 Dismantling Procedure:

The scaffold contractors risk assessment & safety method statement documentation must include a procedure for dismantling the scaffold structure.
Timber frame scaffolds should be dismantled progressively lift by lift including the removal of any stability measures.
If the scaffold is dismantled by elevation, then the design engineer must be consulted to ensure measures are put in place to prevent collapse or overturning of the remaining elevations.

5.21.1 Temporary Edge Protection

Temporary edge protection is used in construction activities, primarily to prevent persons and objects from falling to a lower level from both sloped & flat working surfaces.

The performance requirements for Temporary Edge Protection Systems are defined within BS EN 13374:2025 & are split into 3 performance classes dependant on the slope angle and fall distance.

- Class A – Provides protection to flat surfaces and slopes generally up to 10 degrees.
- Class B – Provides protection to flat surfaces and slopes generally up to 30 degrees.
- Class C – Provides protection to steeply sloping surfaces generally up to 45 degrees.

Temporary Edge Protection For Roof's Under Construction:

The installation of 'up & over' temporary edge protection is mandatory for all plot gable roof's under construction to ensure suitable fall protection is provided to the roofing operatives.

For apartment block roofs, the requirement for temporary edge protection will depend on the roof design. Further advice can be obtained from your RHSEA.

For single and double garages, suitable edge protection can be provided in the form of a table lift or 'up & over' guardrails.

Gable edge protection must be in accordance with either:

- Taylor Wimpey design drawing TA004-11352-2-REV B
- Bespoke design provided by the Scaffold Contractor.

Where the scaffold contractor is proposing to use their own design, this must be agreed by the PD prior to use on site.

5.21.2 Temporary Guardrails on Concrete Staircases

A common challenge facing scaffold contractors is the safe installation of temporary guardrails on permanent concrete stairways present in apartment blocks & RC Frame buildings.

Wherever possible, work at height should be avoided to reduce the reliance on personal fall protection equipment by scaffold operatives. Where there is no existing guardrail on the concrete staircase then the scaffold contractor must provide a safe system of work for the installation of temporary guardrails.

Where temporary guardrails are required to provide edge protection on concrete staircase's then this must be installed in accordance with a design. Where on site conditions are suitable, the use of NASC Generic Design TG1:22-14 can be used.

Where on site conditions do not meet the criteria of NASC Generic Design TG1:22-14 then an independent design will be required.

Temporary Guardrails For Retaining Walls & Slopes Up To 10 Degrees (Class A):
Where temporary guardrails are required to provide edge protection for retaining walls and surfaces with a slope up to 10 degrees (Class A) then installation & use must be in accordance with a design. NASC Guidance Document TG1:22 provides several generic designs which may be used, subject to on site conditions.

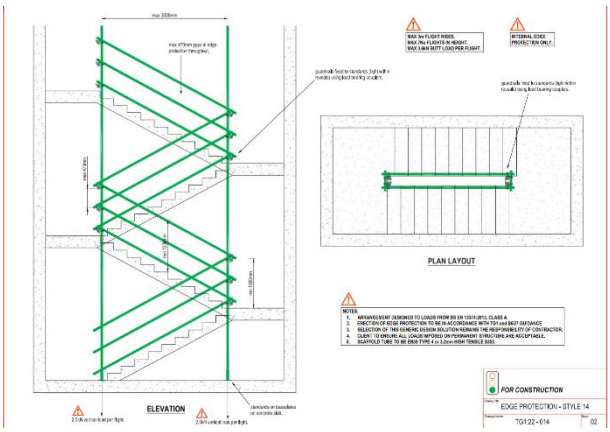
TG1compliant designs should only be used if all aspects of the design can be implemented and complied with on site & where the site wind factor does not exceed the specified limit. The scaffold contractor must assess the site wind factor using the TG20:21 e-Guide via the NASC Portal. The output on the compliance sheet must be compared against the proposed TG1 design drawing. A copy of the compliance sheet must be retained on site.

The procedure for checking the wind factor is shown in Appendix A of NASC Guidance Document TG1:22.

Where the generic designs detailed in TG1 are not suitable for use on site then a bespoke design will be required.

The designs detailed within TG1 are only suitable for use on Class A surfaces. Where temporary edge protection is required for Class B & Class C surfaces then a bespoke design will be required.

The designs detailed within TG1 are not suitable for use as temporary edge protection for operatives constructing retaining walls.



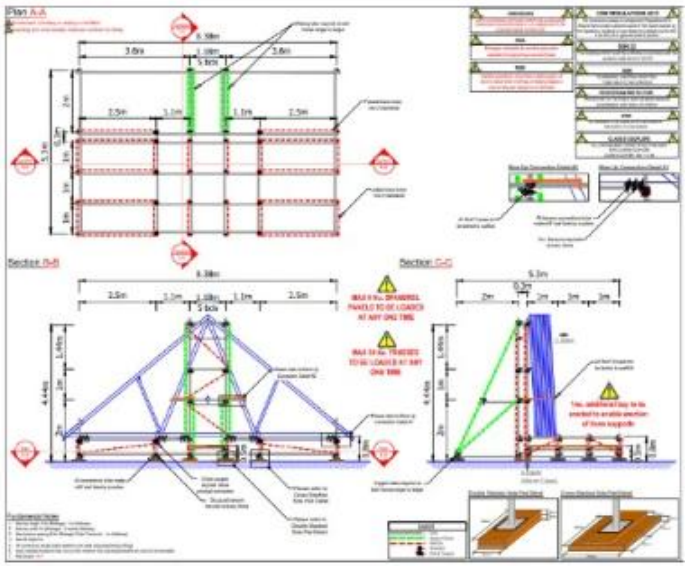
5.22.1 Tube & fitting Roof Truss / Spandrel Panel Racks

A Taylor Wimpey standard design is available for a **Free-Standing Truss Rack** constructed from traditional tube & fittings. This design is located within the scaffold hub on InHouse.

This design includes a 5-board wide platform at mid-point running the length of the truss rack. This platform provides safe access for operatives to hook/un-hook trusses and spandrel panels from their lifting straps.

The following key points must be followed when using this truss rack:

- Maximum of 30 roof trusses to the loaded at any one time.
- Maximum of 9 spandrel panels to be loaded at any one time.
- All load bearing connections to be made with Class B Couplers only.
- Design requirement for both double stacked sole board & cross stacked sole board detail must be followed.
- All roof trusses are too be secured to the truss rack.
- A handover certificate must be provided by the scaffold contractor for each truss rack on site.
- All truss racks on site must be included on the F2.6 Working Platform/Scaffold Inspection Record Sheet.



Where a truss rack is required to be provided against the scaffold working platform or loading bay then the BU must obtain an independent design & this design must be approved by the PD following consultation with the RHSEA prior to use on site.

5.22.2 System Scaffold Roof Truss / Spandrel Panel Racks

Where a system scaffold truss rack is required on site, either free-standing or provided against the scaffold working platform or loading bay then the BU must obtain an independent design & this design must be approved by the PD following consultation with the RHSEA prior to use on site.

A free standing system scaffold truss rack must include a decked/boarded platform at mid-point running the length of the truss rack. This platform provides safe access for operatives to hook/un-hook trusses and spandrel panels from their lifting straps.

5.23.1 Supporting Mid-floors

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.).

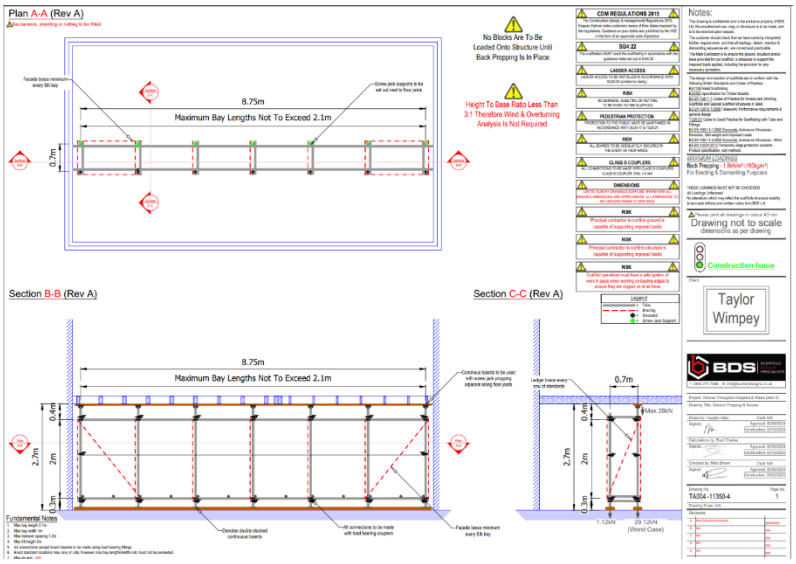
Where it is intended to have a mid-floor loaded without under propping an assessment must be carried out by a Structural Engineer and Floor Manufacturer to confirm that the mid-floor can carry the weight of the load without the need for under propping.

Where a timber mid-floor requires supporting (under propping) the preference is for the Taylor Wimpey approved design **TA004-11350-4** to be utilised.

This design is suitable for use where lightweight aircrete blocks are loaded either directly onto a timber mid-floor or onto an internal fall protection system (e.g. Birdcage, Trad deck, G&M safety deck, Rhino deck) as long as the Taylor Wimpey loading out arrangements are adhered too.

Where the BU wishes to procure their own underpropping design or utilise a design provided by a scaffold contractor, this must be approved by the PD following consultation with the RHSEA prior to use on site.

Example below of the Taylor Wimpey approved design **TA004-11350-4**



Taylor Wimpey approved design TA004-11350-4 is not suitable for use where concrete blocks are loaded either directly onto a timber mid-floor or onto an internal fall protection system. Where mid-floor support is required for concrete blocks, the RHSEA must be contacted.

Upon installation of the underpropping scaffold the following procedures must be followed:

- Scaffold operatives must provide the site management team with a completed handover certificate. Directly employed operatives must complete the **Taylor Wimpey Scaffold Handover Certificate – Birdcage & Underpropping**. Scaffold contractors can provide their own handover certificate provided it meets the requirements detailed in Section 5.5.1.
- A member of the site management team to inspect the underpropping scaffold for compliance with the design & counter sign the handover certificate.
- Subsequent weekly checks of the underpropping scaffold are to be undertaken and recorded on the F2.06 Working Platform/Scaffold Inspection Record Sheet

5.24.1 Lightweight Scaffold Access Towers

Lightweight Scaffold Access Towers come in a variety of sizes & configurations to suit site specific requirements. The most common towers used on Taylor Wimpey sites are:

- Mobile Access Towers
- George Robers Aluminium Cantilever Stairwell Tower
- Stepped Towers

The Taylor Wimpey requirements for each type of tower are detailed below.

Where Lightweight Scaffold Access Towers are required on site which fall outside of the above criteria then prior written approval must be provided by the PD following consultation with the RHSEA.

5.24.2 Mobile Access Towers

Mobile Access Towers are straight up and down, single bay structures with four legs with wheels that can reach heights of 8m outdoors and 12m indoors. These lightweight structures can be assembled and dismantled quickly and easily, with collective fall prevention in place throughout. These structures must conform to BSEN 1004-1:2020.

Only a 'Nominated Person' is permitted to erect, inspect, use, move, alter and/or dismantle a lightweight mobile access tower & this person must be certified. The manufacturers instruction manual will also be required together with a risk assessment & method statement.

PASMA 'Towers For Users' training is required to erect, inspect, use, move, alter & dismantle a lightweight mobile access tower.

Scaffold operatives whose CISRS Card has been endorsed with the CISRS Alloy Tower Module are also deemed competent to erect, inspect, use, move, alter & dismantle a lightweight mobile access tower.

The manufacturers instruction manuals for the most popular towers can be found on the PASMA website.

If you do not have a copy of the manufacturer's instructions, you cannot assemble the tower.

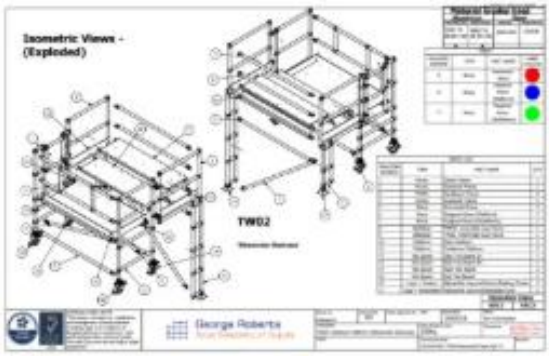
Safe assembly methods must be employed to ensure that collective fall protection is provided during the erection, modification & dismantle of the Mobile Access Tower. This is achieved by either the 3T (Through The Trap) or AGR (Advance Guardrail) methods. The manufacturer instruction manual will detail the process to be followed for each option.

5.24.3 George Roberts Aluminium Stairwell Tower

The Alloy Stairwell Tower is made from pre-fabricated aluminium and steel and manufactured in accordance with BS EN-1004.

The Tower is a lightweight access platform designed specifically for use internally on stairwells. It is supported from the staircase below, within Taylor Wimpey properties, to carry out multi-discipline activities.

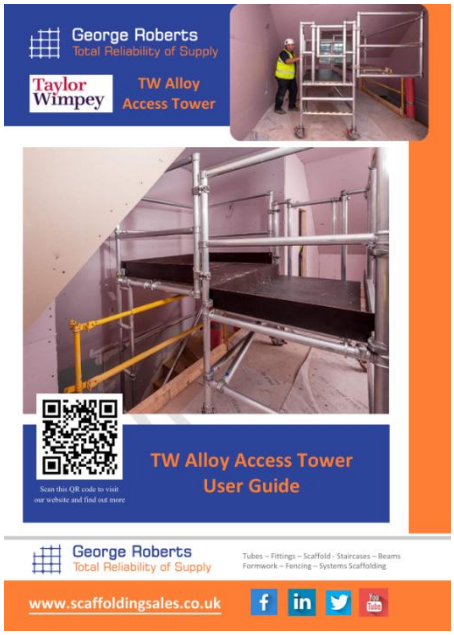
The tower can be supplied in 2 different types for either straight stair or kite winding stair configurations.



The user guide for the George Roberts Aluminium Stairwell Tower containing the installation sequence can be obtained by clicking the following link

PASMA 'Towers For Users' training is required to erect, inspect, use, move, alter & dismantle a lightweight mobile access tower.

Scaffold operatives whose CISRS Card has been endorsed with the CISRS Alloy Tower Module are also deemed competent to erect, inspect, use, move, alter & dismantle a lightweight mobile access tower.



5.24.4 Stepped Towers

Stepped Towers are generally used on a stairway where access is often difficult, but they can also be used in other places where the ends of the tower will be at different heights. Stepped Towers can reach a freestanding working height of 12m indoors and 8m outdoors & can be assembled and dismantled with collective fall prevention in place throughout.

These structures fall outside the scope of BSEN 1004-1:2020 due to their added complexity & must therefore conform to BS 1139-6.

Only a 'Nominated Person' is permitted to erect, inspect, use, move, alter and/or dismantle a stepped access tower & this person must be PASMA Certified. The manufacturers instruction manual will also be required together with a risk assessment & method statement.

PASMA 'Towers on Stairways For Users' training is required to erect, inspect, use, move, alter & dismantle a stepped access tower.

Scaffold operatives whose CISRS Card has been endorsed with the CISRS Alloy Tower Module **Are Not** deemed competent to erect, inspect, use, move, alter & dismantle a lightweight mobile access tower.

manufacturers instruction manuals for the most popular towers can be found on the PASMA website by clicking on the following link - PASMA - Scaffold Tower Instruction Manuals

If you do not have a copy of the manufacturer's instructions, you cannot assemble the tower.

Safe assembly methods must be employed to ensure that collective fall protection is provided during the erection, modification & dismantle of the Stepped Access Tower. This is achieved by either the 3T (Through The Trap) or AGR (Advance Guardrail) methods. The manufacturer instruction manual will detail the process to be followed for each option.

Examples of both methods are shown in the video below

5.24.4 Inspection Requirements

To comply with the Work at Height Regulations, lightweight scaffold access towers must be inspected after assembly or significant alteration and before use. Thereafter, towers will need to be inspected regularly but at least every 7 days or following any event likely to have affected the towers stability or structural integrity.

The tower does not need to be re-inspected after it has been moved unless it was necessary to significantly alter the tower to enable movement or it was subjected to an event during its movement that may have affected its stability.

All lightweight scaffold access towers used on Taylor Wimpey sites must be provided with a Tower Inspection Record Tag. The completed tags must be retained in the site office for a minimum of 3 months.

Tower Inspection Record Tags enables the site management team to monitor the movement, build and inspection of a Tower at the point of use whilst also serving as a visual aid when a tower is ready for use.

Examples of Taylor Wimpey approved Tower Inspection Record Tags from PASMA & ScaffTag are shown below:

ScaffTag TowerTag Inspection Record holders & tags can be purchased on line.

PASMA Tower Inspection Record tags can be purchased online

5.24.5 Outdoor Working

Where Mobile Access Towers are to be used externally, they may be constructed up to a maximum platform height of 8m.

Sites wishing to use a Mobile Access Tower outside will need an anemometer to enable them to measure the wind speed to ensure works can proceed.

The risk assessments for the installation, inspection, use, move, alteration and dismantle will need to make reference to checking the weather forecast & wind speed.

Netting, boards or sheeting should never be attached to Mobile Access towers being used outdoors. These items act like sails and can easily cause the tower to overturn, even in light winds.

If the average wind speed reaches 17mph or 7.6m/s (wind force 4 on the Beaufort Scale) then all works must stop immediately & the tower dismantled.

5.25 Leaning Ladders

Only the following ladders may be used on Taylor Wimpey sites:
Ladders to EN131 Professional

BS EN131 Professional

Note:
a) damaged ladders must be put out of use immediately.
b) metal ladder rungs must have a profiled (anti-slip) surface.

5.25.1 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

Maintaining 3 Points 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.

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