

GOSHA Scaffolding Presentation

Dennis Braithwaite – NASC Technical Advisor

INTRODUCING THE NASC

- **NASC is the national trade body for access and scaffolding in the UK.**
- **Established 1945 and now serving a family of 300+ leading contracting firms, scaffolding suppliers and manufacturers, designers and more.**
- **Nearly 80 years later, raising and maintaining safety standards remains at the heart of the NASC's objectives – driving every activity it undertakes.**

INTRODUCING THE NASC

The NASC sets the standards for scaffolding. It does this in a variety of ways:

- **NASC Standing Committees**
- **Production of NASC guidance – 100+ titles**
- **Minimum criteria for Contractor, Supplier and Designer members**
- **Annual audits**
- **Production of annual NASC Safety Report**
- **Focus on innovation**
- **Engagement with construction industry – Build UK, HSE, CEN, UEG, IOSH etc etc**
- **NASC Information membership**

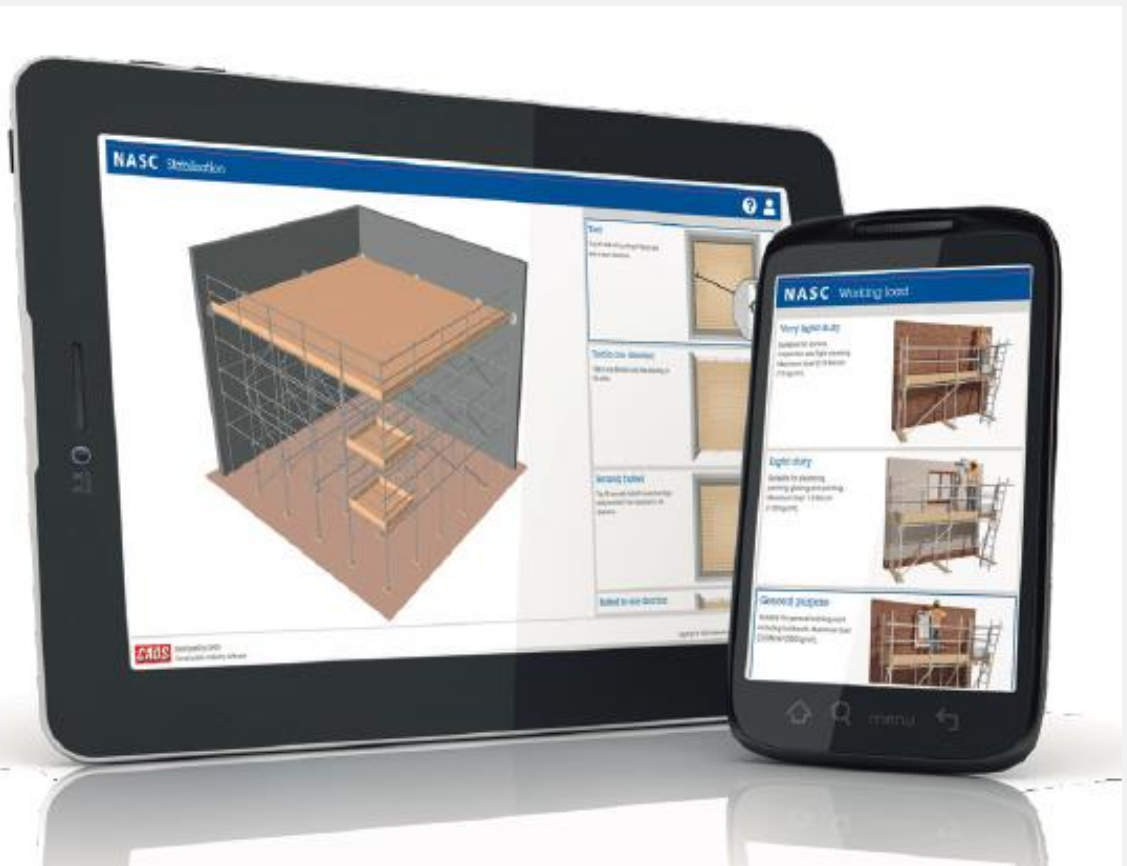
How do we ensure that scaffolds are built correctly?

WORK AT HEIGHT REGULATIONS 2005

Schedule 3 – part 2, additional requirements for scaffolding

- 7) Strength & stability calculations for scaffolding shall be carried out unless...**
 - a) A note of calculations, covering the structural arrangements contemplated is available; or,**
 - b) It is assembled in conformity with **a generally recognised standard configuration.****

TG20:21



TG20:21

The TG20 suite of documents has become the recognised ‘**Code of Practice**’ for tube and fitting scaffolding.

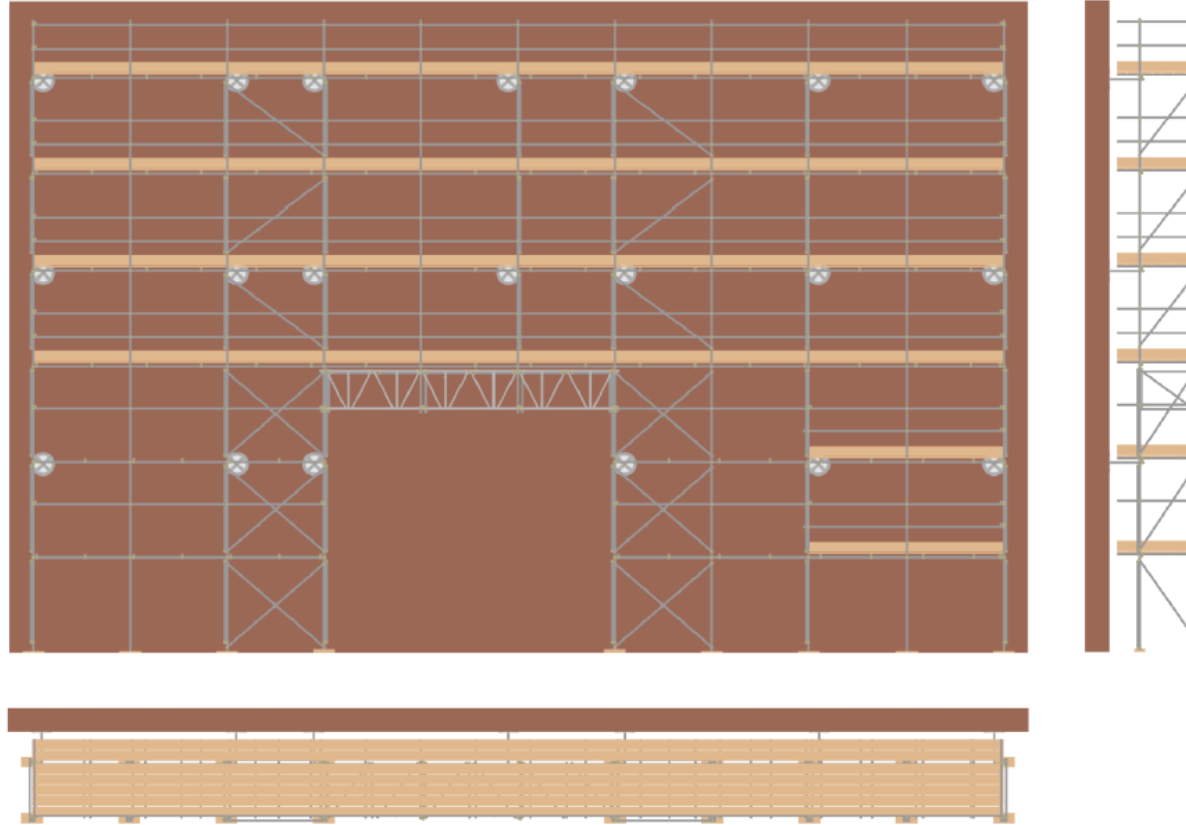
The suite of documents provides a series of ‘standard designs’ for **commonly used scaffolds** which form ‘**generally recognised standard configurations**’ as required by WAHR and therefore do not need further design.

Scaffold details are specified on ‘**TG20 Compliance Sheets**’ which specify all information to allow the specified structure to be suitably constructed.


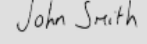
COMPLIANCE SHEETS

TG20:21 compliance sheet

A tied independent tube and fitting scaffold in accordance with TG20:21 chapters 06 and 07.



Sign-off

Contract no:
ABC-1234
Client:
ABC Construction Ltd.
Site reference:
NASC, 12 Bridewell Place,
London, EC4V 6AP
Scaffold reference:
0001
Company:
Scaffolding Services Ltd.
NASC membership no:
Not an NASC member
Prepared by:
Fred Jones
Position:
Site Manager
Signature:

Date:
01/01/2021
Checked by:
John Smith
Position:
Contracts Manager
Signature:

Date:
01/01/2021
Notes:
Some notes may be provided here.

Your Logo Here

Wind factor 20 LOW	Maximum height 12 metres	Maximum boarded lifts 4	Maximum lift height 2 metres	Maximum bay length 2 metres	Maximum boards wide 5 + 2	Maximum loading 2.0 kN/m ²	Tie load Very light duty 1.6 kN	Maximum leg load 11.4 kN
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TG20:21 compliance sheet

A tied independent tube and fitting scaffold in accordance with TG20:21 chapters 06 and 07.

Construction

- ✓ Constructed from type 4 galvanised steel tubes.
- ✓ Maximum 4 boarded lifts and 2 unboarded lifts permitted with ladder landings.
- ✓ Maximum transom spacing: 1.2 metres.
- ✓ Facade braced every 6 bays per elevation.
- ✓ Ledger braced at alternate standards and end frames.
- ✓ Double guard rails and toe boards at boarded lifts. Single guard rails at unboarded lifts.
- ✓ Internal edge protection may be provided where required.
- ✗ May not be clad with sheeting or debris netting.



Loading

- ✓ One lift loaded to 2.0 kN/m² (load class 3, general purpose) plus one lift 50% loaded per facade.
- ✓ Maximum inside board loading 0.75 kN/m² at the working lift.
- ✓ Maximum leg load 11.4 kN, to be supplied to the client for foundation design.
- ! This scaffold includes add-ons with additional leg loads stated on their TG20 compliance sheets.

Ties

- ✓ Tied at alternate lifts to TG20 tie pattern A with 1.6 kN (very light duty) ties.
- ✓ Tie tubes may be connected to the inner face of the scaffold.
- ✗ The facade must not have significant openings.

Add-on features

- ✓ A gin wheel may be used to a maximum of 50 kg. The following add-ons are permitted with a TG20 compliance sheet:

<input type="checkbox"/> Pavement lift	<input type="checkbox"/> Two bay bridge	<input type="checkbox"/> Cantilever platform	<input type="checkbox"/> Loading bay
<input type="checkbox"/> Cantilever fan	<input checked="" type="checkbox"/> Three bay bridge	<input type="checkbox"/> Hop-up brackets	<input type="checkbox"/> Ladder-access tower

Wind factor 20	Maximum height	Maximum boarded lifts	Maximum lift height	Maximum bay length	Maximum boards wide	Maximum loading	Tie load Very light duty	Maximum leg load
LOW	12 metres	4	2 metres	2 metres	5 + 2	2.0 kN/m ²	1.6 kN	11.4 kN

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Site reference:

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Company:

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NASC membership no:

Not an NASC member

Prepared by:

Fred Jones

Position:

Site Manager

Signature:



Date:

01/01/2021

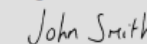
Checked by:

John Smith

Position:

Contracts Manager

Signature:



Date:

01/01/2021

Notes:

Some notes may be provided here.

YOUR LOGO HERE

COMPLIANCE SHEETS

TG20:21 compliance sheet

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

Bridge specification

- ✓ Suitable for an unclad TG20 compliant tied independent scaffold of load class 3, maximum 2 m bay length, 5 + 2 boards wide and 12 m height to the top lift.
- ✓ Supports a maximum of 4 lifts above the bridge.
- ✓ Maximum span of 6 m, supporting three bays.
- ✓ The opening may extend vertically to form a partial opening in the scaffold or to extend to the foundation.

Loading

- ✓ Maximum leg load 19.7 kN, at the supporting standards, for the foundation design.

Ties

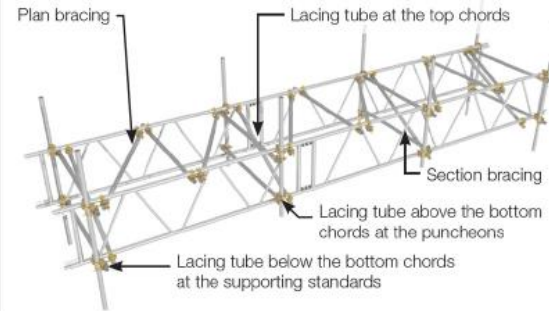
- ✓ The scaffold must be tied at the supporting standards with 1.6 kN (very light duty) ties.
- ✗ The facade must not have significant openings.

Beam specification

Supported by a pair of 610 mm deep steel unit beams or equivalent aluminium 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


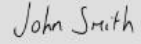
Beams fixed to the supporting and supported standards at the top and bottom chords with right-angle couplers.



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.

Sign-off

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 Notes: Some notes may be provided here.

Wind factor 20 LOW	Lifts above the bridge 4	Maximum lift height 2 metres	Maximum bay length 2 metres	Maximum boards wide 5 + 2	Maximum loading 2.0 kN/m²	Tie load Very light duty 1.6 kN	Maximum leg load 19.7 kN
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A 'TG20 compliance sheet', contains all information necessary to construct the specified scaffold.

- Construction requirements
- Key Dimensions
- Bay sizes
- Lift heights

- No. of boarded lifts
- Allowable imposed loadings
- If cladding is permitted
- Tie details
- Add-on features
- Max leg loadings

Wind factor 20 LOW	Lifts above the bridge 4	Maximum lift height 2 metres	Maximum bay length 2 metres	Maximum boards wide 5 + 2	Maximum loading 2.0 kN/m²	Tie load Very light duty 1.6 kN	Maximum leg load 19.7 kN
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The range of **commonly used scaffolds** for which compliance sheets can be produced includes:-

- Independent tied scaffolds with up to 3 inside boards
- Part boarded Independents
- Bridging in independents
- Putlog scaffolds
- Internal and external birdcages
- Static and mobile towers
- Tied towers
- Lift shaft towers
- Loading bays (with and without prefabricated beams)
- Chimney stack scaffolds



Please note that either an applicable TG20 compliance sheet or a bespoke design drawing should be available for every scaffold.

Which types of scaffolds need a bespoke design?

So

Any scaffold structure that falls outside the 'compliant scaffold' criteria in TG20 or similar guidance from manufacturers of system scaffolds.

That is:-

Independent tied scaffolds

Birdcage scaffolds

Tower scaffolds

Loading bays

Chimney stacks

Protection fans

Public protection



**Not covered by
TG20**

Or system scaffolds outside of manufacturers' guidance

Types of Scaffolds which need bespoke design:-

Temporary buildings and temporary roofs

Load bearing platforms

Shoring

Storage racking

Radial scaffolds i.e. Spheres and Tanks (both internal and external)

Temporary ramps and roadways

Pedestrian bridges and walkways

Scaffolds for the attachment of lifting tackle

Suspended scaffolds

Slung scaffolds

Truss-out scaffolds

Cantilever scaffolds

Types of Scaffolds which need bespoke design:-

Load bearing platforms

Free-standing or buttressed scaffolds

Staircases and fire escapes

Edge protection

Temporary roofs or temporary buildings

Spectator terraces and seating stands

Temporary storage on site

Masts, lighting towers and transmission towers

Advertising hoardings/fences/sign boards

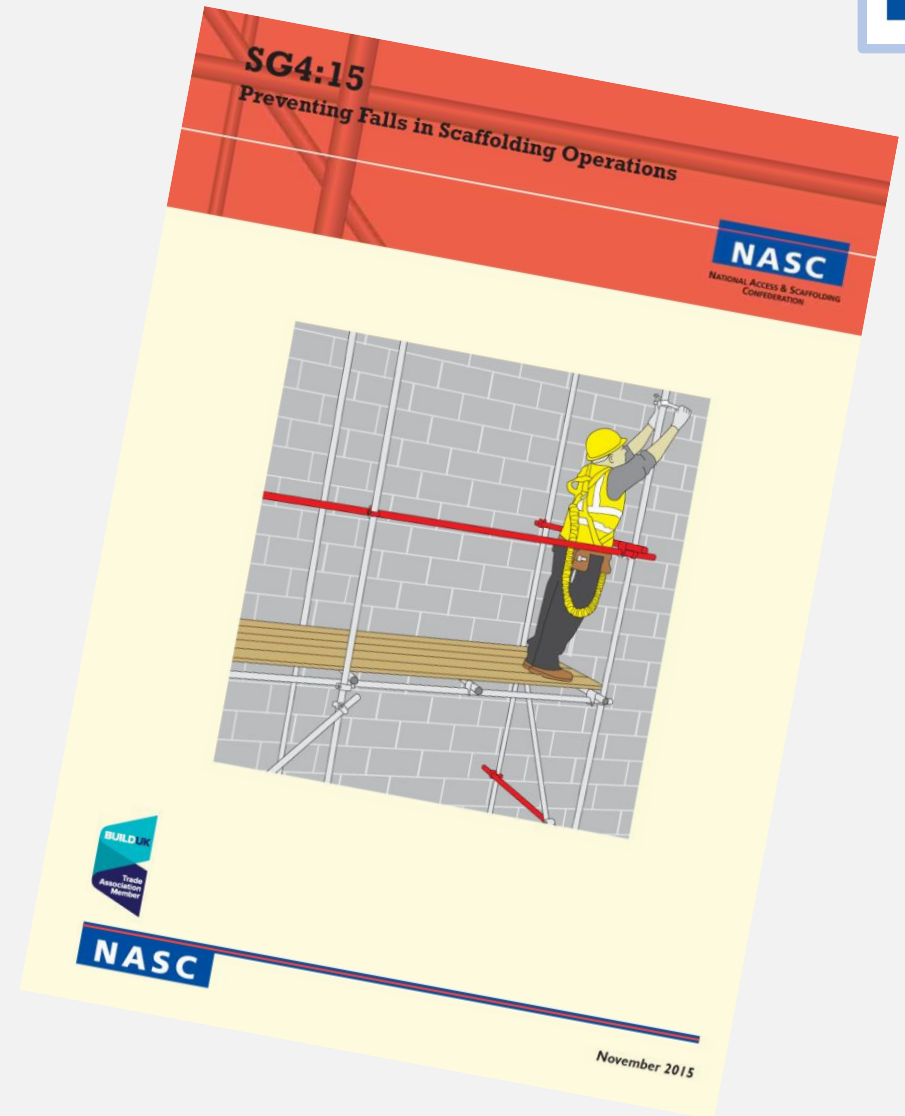
Offshore or marine scaffolds

Scaffolds with guys, ground anchors or ballast.

How do we ensure that scaffolds are erected/dismantled safely?

SG4:15 – Preventing falls in scaffolding operations

This document provides the minimum requirements for a safe system of work for scaffolders working at height.



The Work at Height Regulations 2005

Reg 6 Follow the Safe Work at Height Hierarchy of Risk

AVOID – Working at height if reasonably practicable.

PREVENT – Objects or people falling (so far as is reasonably practicable).

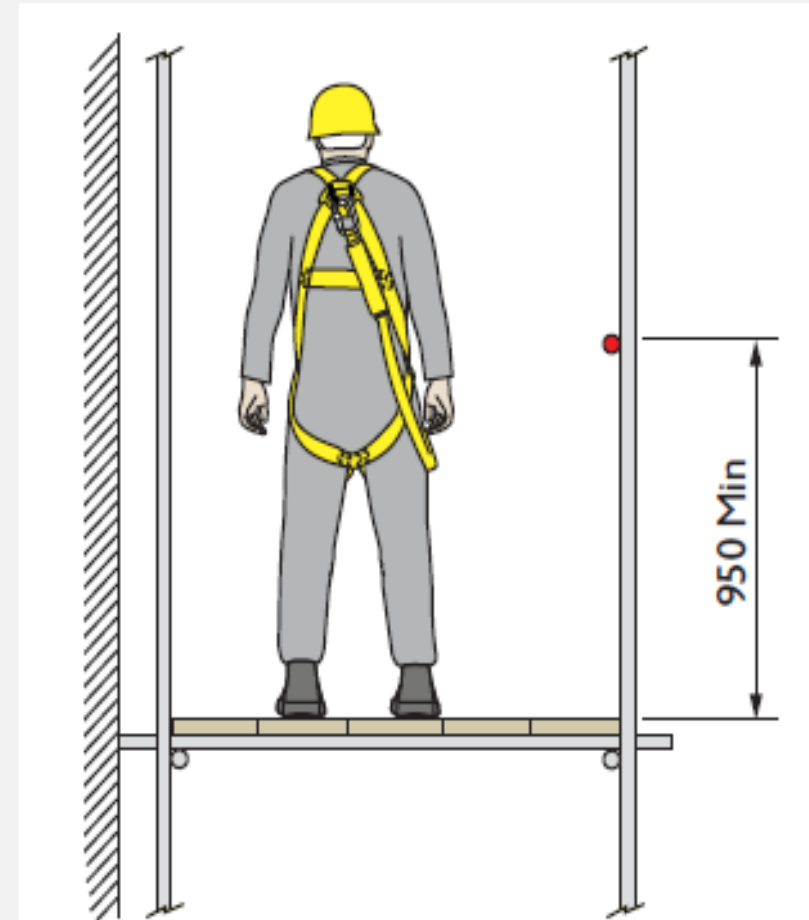
MITIGATE – Where the risk of falls remains, minimise the distance and consequences of a fall. (Fall arrest).

NOTE – Safety harnesses provide the lowest level of protection. At all times, collective measures must have priority over personal protection.

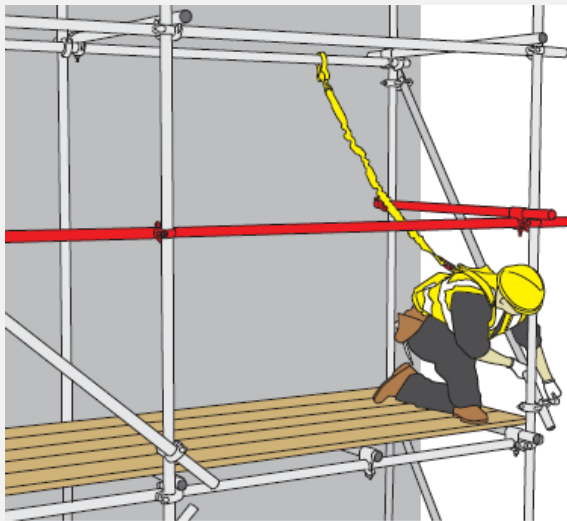
Principles of SG4

Scaffolders must establish a 'safe zone' as a priority when working at height.

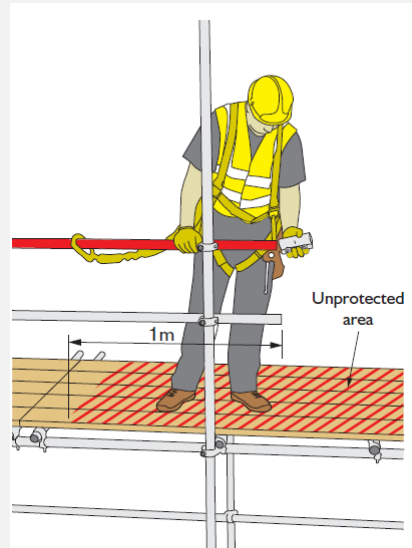
- A safe zone consists of a fully boarded platform with a single guardrail fitted on all sides where there is a risk of a fall.
- Single guardrails should be erected and left in place, for the life of the scaffold.



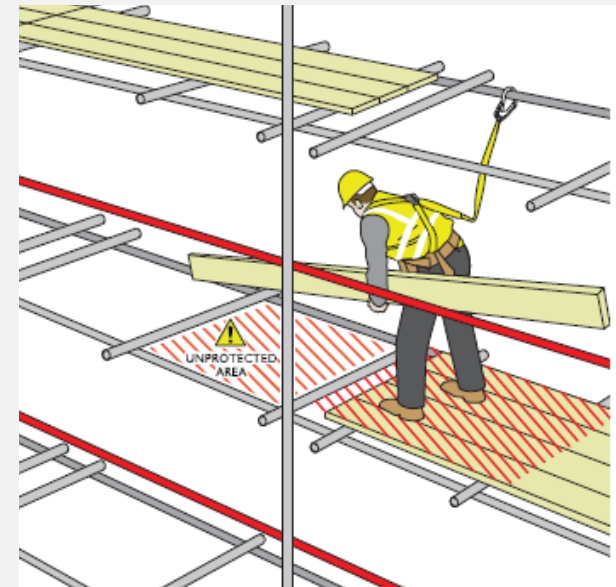
Scaffolders may generally work ‘unclipped’ when working within the **Safe Zone**. However, it must be recognised that achieving a safe zone does not completely eliminate the risk of a fall. In such cases fall arrest equipment will still be required.



When working below the guardrail



When fixing advanced guardrails



When transferring boards to the next level

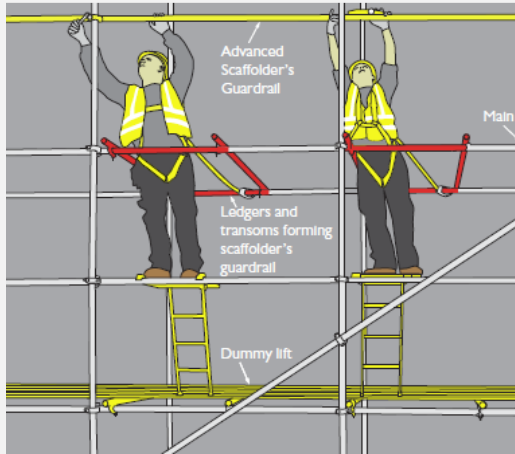
It is not permitted to climb the scaffold via braces or tubes. Ladders must be used at all times

It is not permitted to stand on scaffold tubes or beams at any time

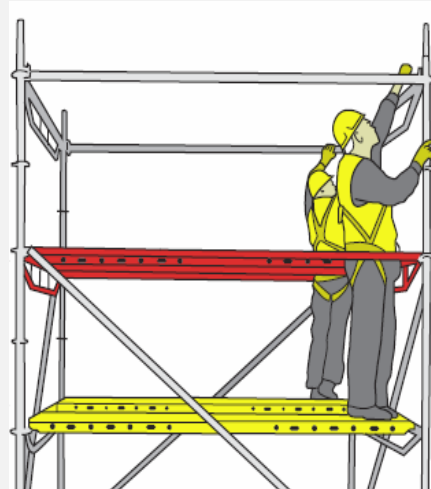
(Except when constructing slung scaffolds or prefabricated beams – Fall arrest equipment must be used)

- All lifts should be boarded out from below.
- All boards must be correctly supported with no 'trap ends'.
- The working platform should be fully boarded, (except where a gap is required to fit a lanyard hook when one board may be omitted).
- A single guardrail should also be fitted to provide edge protection.
- In most cases guardrails can be fitted before access is gained to the platform.

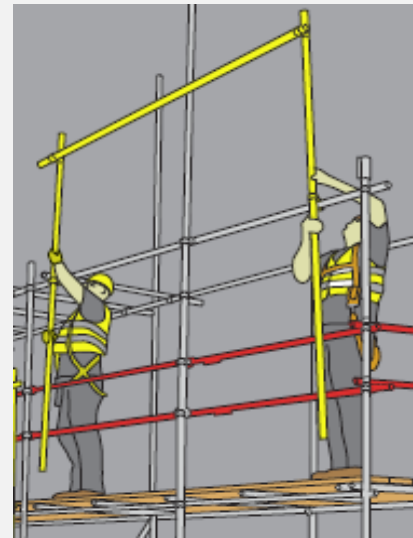
All levels of the scaffolding must be fitted with single guardrails before accessing that section of the scaffolding.
 Examples of methods for fixing single guardrails:



Scaffolders Steps



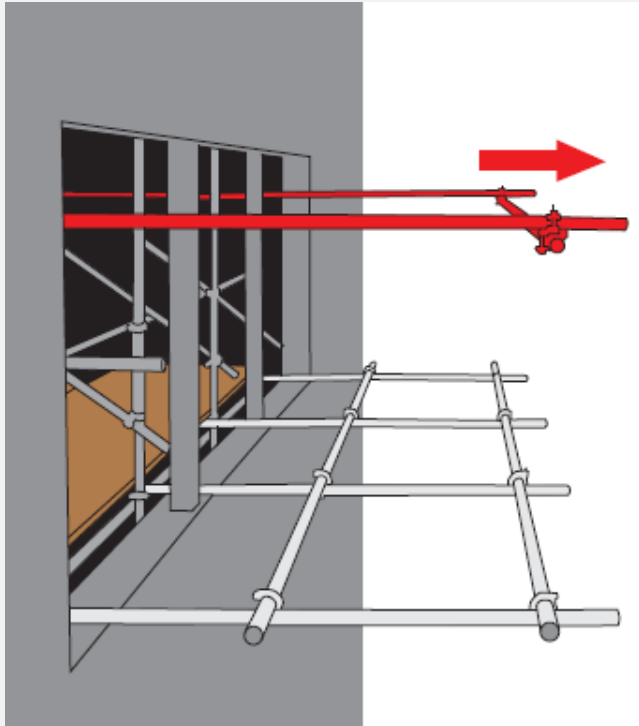
Short lift system



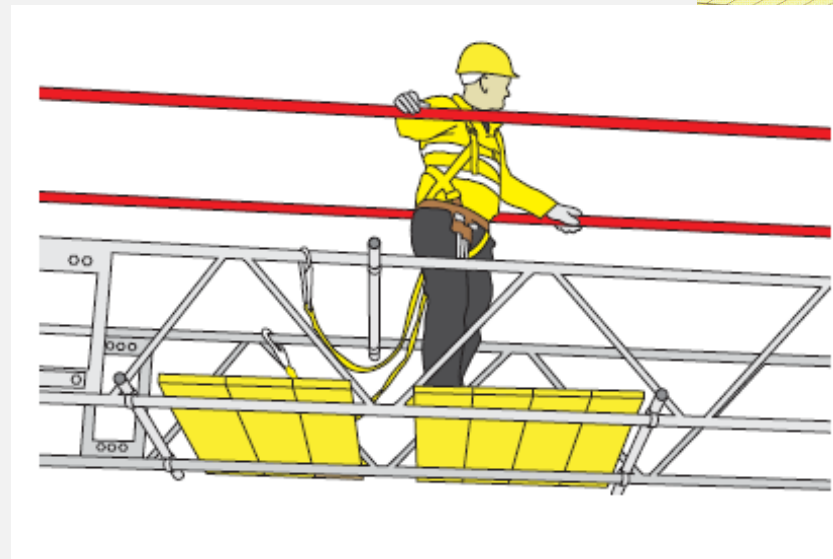
Advanced Guardrails



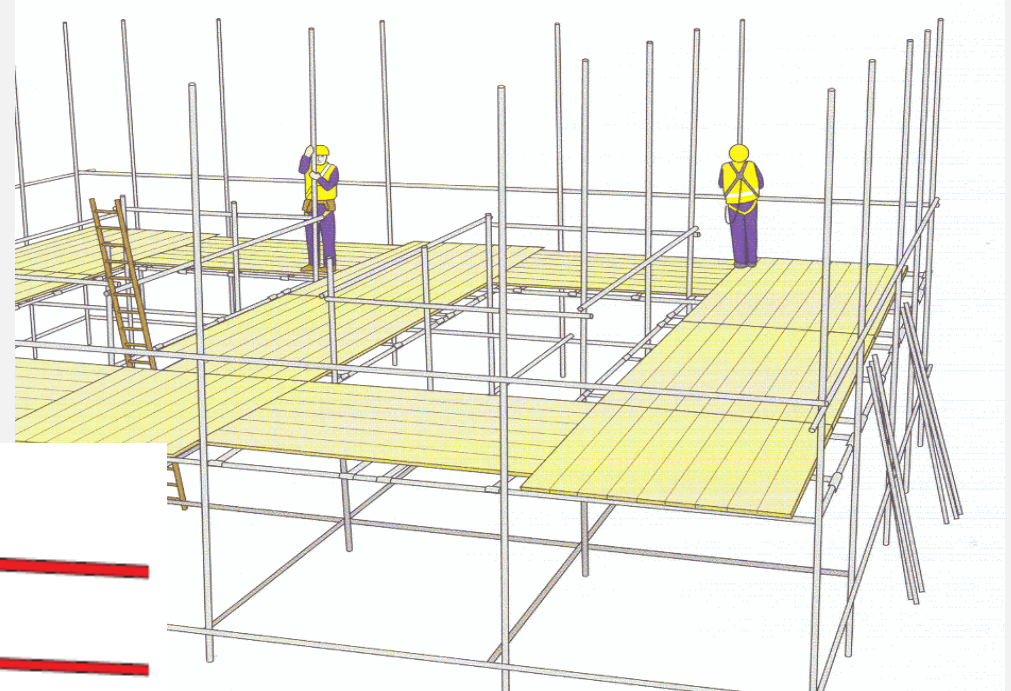
Here are some examples where additional measures are required to erect a safe zone.



Truss-outs & Cantilevers



Prefabricated Beams



Birdcages

Dismantling

- All dismantling activities should be carried out progressively, reversing the erection process.
- Scaffolders should work along the elevation removing the single guardrail and then lowering the boards from that section of guardrail to the lift below.
- Scaffolders **MUST NOT** remove the single guardrail from the whole elevation before lowering the boards.
- Work should progress back towards the ladder bay to eliminate the need to climb down the structure itself.

Rescue

- The law requires that a rescue plan must be in place before any scaffolding work takes place.
- There are health risks associated with any person suspended in a fall arrest harness for any length of time, therefore an adequate rescue plan must be in place for every scaffolding operation where fall arrest equipment is used.
- The rescue plan must be detailed on the risk assessment **BEFORE** any work commences.
- This should consider the method of rescue, which may vary dependent on the type and configuration of the scaffold and should consider the action to be taken once the individual has been rescued.

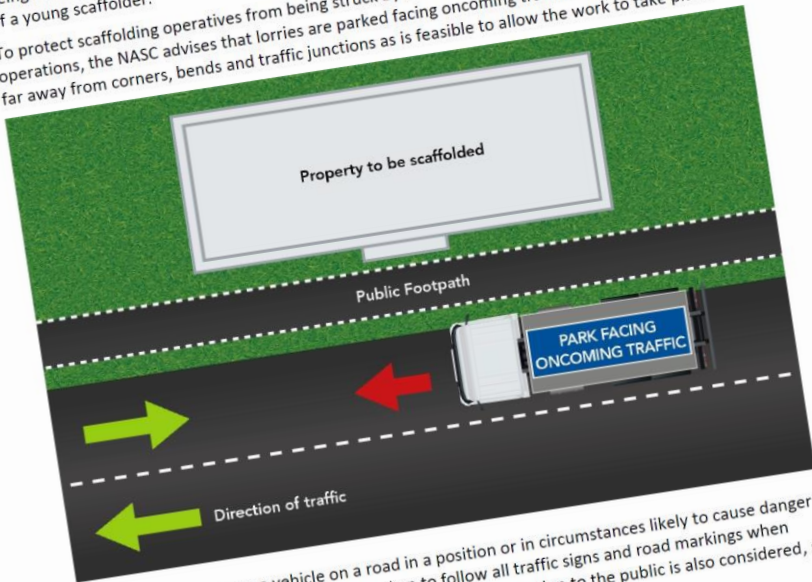
Rescue Equipment



SAFE PARKING OF SCAFFOLDING VEHICLES ON A PUBLIC ROAD

Unfortunately, there have been a number of incidents in the past year of third-party vehicles running into the back of stationary/parked scaffolding vehicles on main roads, whilst they are being loaded/unloaded. The most recent incident in Northamptonshire sadly resulted in the death of a young scaffolder.

To protect scaffolding operatives from being struck by a vehicle during loading or unloading operations, the NASC advises that lorries are parked facing oncoming traffic where possible and as far away from corners, bends and traffic junctions as is feasible to allow the work to take place.



It is an offence to leave a vehicle on a road in a position or in circumstances likely to cause danger to other persons, so care must also be taken to follow all traffic signs and road markings when choosing a safe place to park as well as ensuring that protection to the public is also considered, so as not to impede their progress or put them in harm's way.

A vehicle stationary whilst goods are being loaded or unloaded is not normally deemed to be causing an unnecessary obstruction, provided that it is parked in a reasonable and proper manner. Therefore, if there are no specific bans/restrictions regarding loading and unloading at the location, drivers can assume they are free to do so, provided they do not stop in a dangerous position, or cause unnecessary obstruction.

Loading or unloading over a pavement should be avoided where possible. It is an offence to park a goods vehicle exceeding 7.5 tonnes gross vehicle weight on a pavement or verge for loading or unloading unless the loading or unloading could not have been satisfactorily performed if the vehicle had not been parked on the footway or verge and the vehicle was not left unattended at any time whilst parked.

INTRODUCTION

This guidance has been produced to assist scaffolding contractors and others who are involved with the delivery and management of temporary works as set out in 'BS 5975:2019, 'Code of practice for temporary works procedures and permissible stress design of falsework'.

Temporary works is defined in BS 5975 as 'providing an "engineered solution" that is used to support or protect either an existing structure or the permanent works during construction' and also includes 'providing a safe platform for work activity on land or water (e.g., jetty, scaffolding, edge protection or towers)'. Temporary works therefore incorporates all types of scaffolding.

Following a number of significant falsework collapses in the 1970s and an apparent lack of authoritative guidance, BS 5975 was first published in 1982 as the Code of practice for falsework. It was revised in 2008 to include recommendations and guidance on the procedural controls which should be applied to both falsework and general scaffolding.

The guidance contained within BS 5975 is not a legal requirement and its recommendations for suitably managing scaffolding operations do not have to be followed. However, scaffolding contractors may need to justify that their processes and systems are at least as good as the recommendations laid out in BS 5975. The Health and Safety Executive (HSE) can visit any project at any time and will expect to see evidence that adequate and appropriate controls are in place for the management of temporary works. They have powers to impose enforcement action, which could hold up the work if they have any major concerns.

There are of course a number of statutory requirements which apply to temporary works, some aspects of which are referred to throughout this document. These include, but are not limited to:

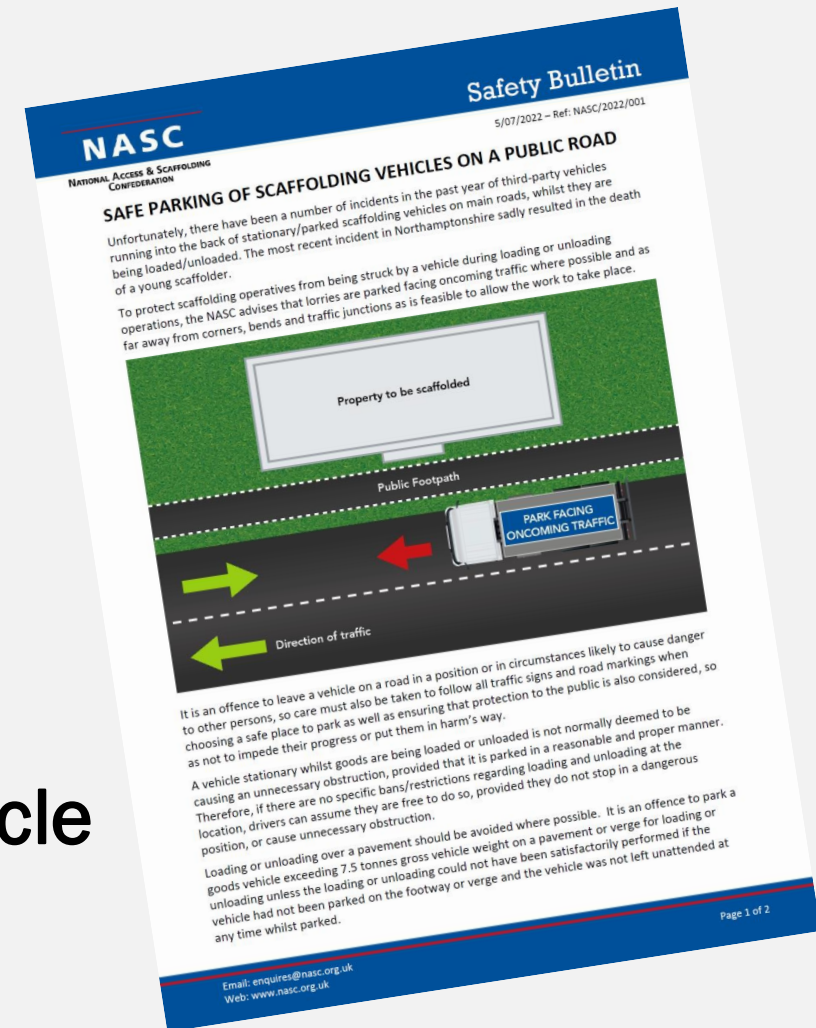
- Health and Safety at Work Act etc. 1974
- Construction (Design and Management) Regulations 2015 (CDM2015)
- Management of Health and Safety at Work Regulations 1999
- Work at Height Regulations 2005
- Provision and Use of Work Equipment Regulations 1998
- Lifting Operations and Lifting Equipment Regulations 1998

Further and more detailed guidance regarding the management of temporary works can be found in the guidance document recently produced by the Temporary Works Forum – 'Effective management of scaffolding to BS 5975:2019' (the TWf Guide) which should be read in conjunction with this guidance. A copy of the TWf Guide can be downloaded, free of charge from the TWf website.

Link – (https://higherlogicdownload.s3-external-1.amazonaws.com/TWFORUM/ebab7dc9-485f-9187-31fe-8a9a591c5f69_file.pdf?AWSAccessKeyId=AKIAVRD07IEREB57R7MT&Expires=1641315122&Signature=GSHDWIQVmpq0hnCWlphXr7DIXF8%3D)

Background

- Park facing traffic to protect operatives unloading
- Park as far away from corners, bends and junctions as is feasible
- Follow traffic signs and road markings
- Segregate 7-8m at rear of vehicle to form a no-go one during operations





Public Footpath

PARK FACING
ONCOMING TRAFFIC



Direction of traffic

- **Stationary vehicle being loaded/unloaded is not normally deemed to be causing an unnecessary obstruction, provided that it is not parked in a dangerous position or where there are specific bans or restrictions**
- **Loading/unloading over a pavement should be avoided if possible unless the work could not be satisfactorily performed in any other way.**
- **If so, the vehicle must never be left unattended**

- **Specific risk assessment to be undertaken**
- **Prime objective to segregate members of the public and other workers from the work area**
- **Signage and cones should be set out in compliance with Chapter 8 of the Traffic Signs Manual**
- **Amber warning beacons may be required**

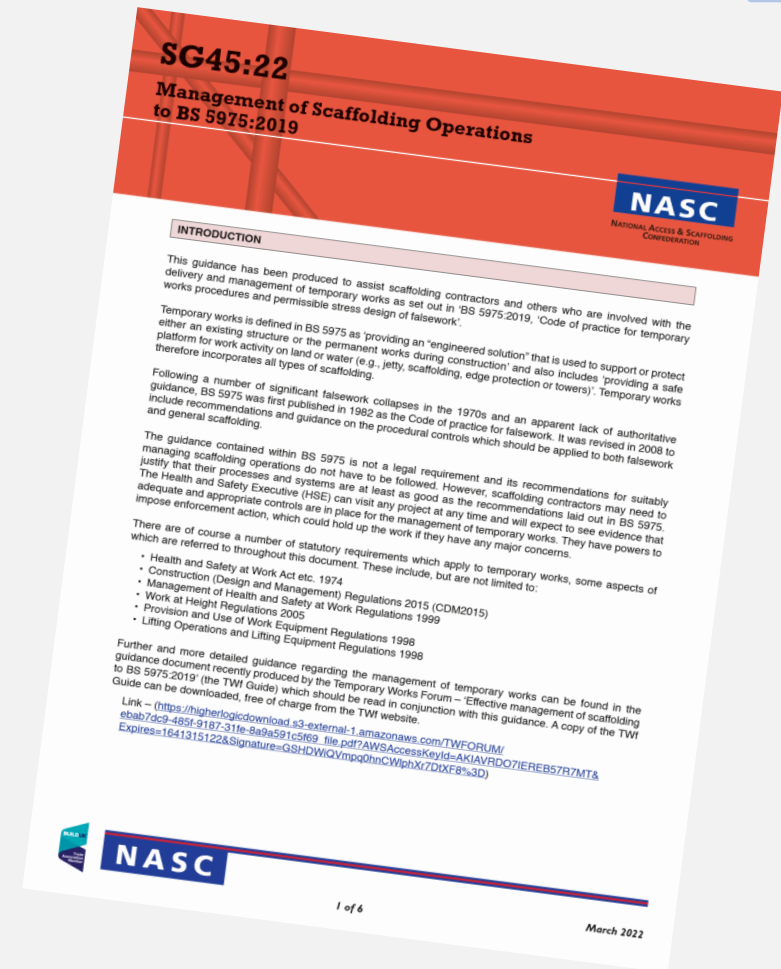
- **Other safety measures:-**
 - **Scheduling work for a quiet time**
 - **Using rear or side access roads**
- **If vehicle is moved ensure load is secured**
- **Consult with local authority to ensure that there are no special requirements**

BS 5975

- Published 1982
- Code of practice for falsework
- 2008 version included a section on procedural controls for temporary works

Temporary Works – Definition Providing an engineered solution

- Includes all types of scaffolding



Not a legal requirement but scaffolding contractors will need to justify that their processes are at least as good

Lots of guidance available but this SG has been produced as a concise guide specifically for scaffolding contractors

- **Communication**
- **Requirements for scaffolding contractors**
- **Planning and pre contract**
- **Scaffold design**
- **Scaffolding Construction, modification and dismantling**
- **Inspection**

Communication

- **Effective communication is absolutely essential**
- **Project specific temporary works procedures must be established and agreed.**
- **Procedures should show how interfaces between all parties are managed**

Requirements for scaffolding contractors

- Capable of showing they are competent to safely carry out the work
- Competent workforce
- Materials compliant with appropriate specs and in good order.
- Appointment of competent subcontractors (e.g Scaffold Designers)

Planning and pre-contract

- Essential to understand how various roles interact
- Temporary works coordinator
- Temporary works supervisors

Scaffold Design

- Design process
- Design brief
- Design check

Scaffolding Construction, modification and dismantling

Risk assessment and method statement

Permits may be required

All work should be:-

- **Erected/dismantled safely**
- **Adequately supervised**
- **Good standard of housekeeping maintained**
- **Scaffold used and maintained safely**

Scaffold Inspection

- Scaffold completed and 'handed over'
- Responsibilities for inspection?
- On-going statutory inspections

QUESTIONS PLEASE