# Assembly Guide



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#### 1.1 INTRODUCTION

This Assembly Guide contains the necessary information required to correctly assemble Turner OCTO® System Scaffolds in accordance with appropriate methods of safe assembly.

The provision and utilisation of collective protection equipment and methodology is recommended where practicable for installers of Turner OCTO® System Scaffolding.

Installers / Dismantlers of Turner OCTO<sup>®</sup> System Scaffolding must also be competent, relative to the type of scaffold to be erected, dismantled or altered.

This Assembly Guide provides instruction for foot tied, non-foot tied, and pedestrian categories (as listed within the Assembly Guide) built from the ground or other suitable foundation.

Types of Turner OCTO<sup>®</sup> System standard configuration included within this Assembly Guide are detailed on the Contents Page and limited to the maximum heights as indicated in Section *1.7 Maximum Heights* (page 57).

This Assembly Guide should be used in conjunction with a suitable Risk Assessment and Method Statement (by user) relative to the project to be undertaken. It must be noted that all employers have a responsibility to ensure that work methods (practices) and adequate facilities / resources (including work equipment) are provided to eliminate or minimise risks, in accordance with current legislation.

A complete separate safe system of work (Method Statement) is required for all other types of scaffold.

Sufficient training, combined with necessary experience, must also be considered and be appropriate to achieve competency to build or dismantle a particular scaffold type in question.

Please ensure you read and fully understand the manual, and follow the content during scaffold erection and ensure that the scaffold is complete prior to use and / or handover.

This Manual must be made available to the user / installer of the Turner OCTO<sup>®</sup> Scaffold System at all times.

Only competent and qualified personnel should undertake assembly, dismantling and alteration (and organisation, planning and supervision) of basic Turner OCTO<sup>®</sup> standard configurations, and consideration should be given to providing additional (minimum) training beforehand, if required.

SECTION 1.2 Pre-use Inspection & Selection

#### 1.2 PRE-USE INSPECTION & SELECTION

To ensure that a scaffold is assembled in a manner that prevents its component parts from being accidentally displaced at any time, it is important that the following checks are carried out:

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- Ensure that all necessary components and safety equipment are available and operational.
- Each component should be visually inspected prior to use and should be free from defects.
- Steel components should be straight with no sign of corrosion, cracks or splits that would impair strength or safety.
- Deck locks should be in good working order; hooks should be free of cracks and corrosion, and bolts should be tight and locking nuts fitted.
- Stiles or Ply inserts should not be punctured or worn to a degree that would impair strength or safety.

Damaged or incorrect components must not be used.

Pre-use inspection should ONLY be carried out by a competent person.

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SECTION 1.3 Components

#### 1.3 COMPONENTS

Turner OCTO<sup>®</sup> System components for basic use are described in this section for assembly, dismantling and alteration of Turner OCTO<sup>®</sup> System standard configurations. For detailed component information, refer to the Turner OCTO<sup>®</sup> Component Identification Guide.

#### 1.3.1 Basic Components



No.	Component	Details
1.	Adjustable Base Jack	Enables adjustment up to 500mm
2.	Standard	Sizes: 4m; 3m; 2m; 1m; 0.5m
3.	Bracing Guardrail	Sizes: 3.5m; 2.5m; 1.75m; 1.25m; 1m; 0.7m
4.	Horizontal	Sizes: 3.5m; 2.5m; 1.75m; 1.25m; 1m; 0.7m
5.	Deck	Sizes: 3.5m; 2.5m; 1.75m; 1.25m; 1m; 0.7m
6.	Ladder Access Deck	Sizes: 3.5m; 2.5m
7.	Alloy Stair	Stair access between working platform levels
8.	Cantilever Bracket	Sizes :1.25m; 1m; 0.7m; 0.45m; 0.30m; 0.1m

#### Note The sizes shown are basic sizes, other sizes available. Please ask for details.

#### Turner OCTO® Assembly Guide

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#### 1.3.2 Component Fixing Hints

#### Horizontals



1. Turn the Horizontal upside down at an angle of approx. 45° and shake.



4. Slide the Saddle over to the Standard.



....until the top of the Wedge is level with the top of the Horizontal.

**Note** If the Horizontal and Standard are not level and plumb, the Wedge may be difficult to drive.



2. The Wedge and Saddle will then automatically fall back into the preset position.



5. Lift Wedge and point bottom of Wedge towards the Standard.



7. To de-mount Horizontal, drive Wedge vertically upwards to loosen.



 Position the Locking Head by turning the Horizontal approx.
 and rotate into the cup.



6. Drive Wedge down at an angle of 45° initially towards the Standard....



8. Lift the Wedge clear, slide Saddle backwards and lift Horizontal from cup.

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#### Guardrails



1. Preset Guardrail by lifting Wedge and resting it on ledge within the Guardrail. Note Saddle will hang loosely leaving space to fit hook into cup.



2. Locate top and bottom hooks of Guardrail in cups (0.5m apart). Hint Tap lower hook with hammer to ensure that it is properly located in cup.



3. Lift Wedge clear of ledge within the Guardrail to the Vertical position and allow to drop and loosely engage.



4. Drive vertically until level with the top of the Guardrail.



5. To de-mount Guardrail, drive Wedge vertically upwards to loosen.



6. Lift the Wedge clear, rest on ledge and lift Guardrail from cup.

#### Decks



1. Push Deck from below and through bay, then slide back along bay until the hooks are in line with the Horizontal. Place Deck onto Horizontal



2. Ensuring that Deck fits correctly in bay to be decked out and there is no movement in the Deck. lock in position.



3. The OCTO® Deck has the added benefit of being locked permanently by fully engaging the OCTO® Lock using the appropriate OCTO® tool.



SECTION 1.3 Components

#### 1.3.3 Access Methods

#### Stairway Access

Prior to the commencement of any scaffolding operations, please refer to Sections *1.4.1 General Safety Notes* and *1.5 Assembly Procedures*.

• 0.7m External Stairway Access (2.5m bay)



 Assemble 0.7m wide bay to external face of facade scaffold. Fit Guardrail Post and 1.75m Bracing Guardrail to allow walk off from Stair unit when fitted.



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2. Continue to assemble next lift and fit Stair unit to 2nd lift.



3. Fit Guardrail Post and 1.75m Bracing Guardrail to allow next lift Stair unit to be placed.



4. Complete.



• 0.7m External Stairway Access (3.5m bay)



• 1.25m External Stairway Access (2.5m bay)



#### Ladder Access

Internal Ladder Access with Hatches



• External Ladder Access with Hatches



SECTION 1.4 Safety Information

#### 1.4 SAFETY INFORMATION

1.4.1 General Safety Notes

Only competent and qualified personnel should undertake assembly, dismantling and alteration (and organisation, planning and supervision) of basic Turner OCTO<sup>®</sup> standard configurations, and consideration should be given to providing additional (minimum) training beforehand, if required.

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Ensure that all necessary components and safety equipment are available and operational.

Inspect components for signs of damage or incorrect functioning prior to use. Damaged or incorrect components should not be used.

Erect Exclusion Zone and fit Warning Signs to comply with current legislation.

Before assembling the scaffold structure, check that the location for the structure does not present any hazards during assembly, dismantling, moving and safe working with respect to ground conditions, level and slope and obstructions.

Ensure the scaffolding is to be assembled on suitable foundations capable of withstanding the loads imposed by the scaffolding and, where appropriate, adequate base boards to be provided.

Fit toeboards on all working platforms.

DO NOT affix sheeting of any type to the scaffold structure without a proper Design.

Turner OCTO<sup>®</sup> System Scaffolding is compatible and can be used with another similar type of system scaffold; however, both types have different load bearing capacities. When the components of both types are mixed, then the load bearing capacities of the compatible product should be used instead of the data for Turner OCTO<sup>®</sup> System.

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SECTION 1.4 Safety Information

#### 1.4.2 GuardAid®

#### (i) User Instructions

The GuardAid<sup>®</sup> Positional Tool (Figure 1) provides the scaffolder with integrated safety and safe systems of work throughout scaffold assembly, dismantle and alteration; therefore, eliminating the risk of fall from height and enabling compliance with current legislation.

GuardAid<sup>®</sup> is a scaffold tool used to position, while holding secure, a scaffolding guardrail, before it is fixed and locked into place.

GuardAid<sup>®</sup> enables existing components to be utilised as integral advance guardrails. This is achieved by combining a sequence of steps; holding, securing, guiding and then enabling automatic positioning, fixing and locking the existing scaffold component.



To use the GuardAid<sup>®</sup> Positional Tool safely, each guardrail component can be lifted into position by two operatives (one at each end of the guardrail - as illustrated opposite).

The GuardAid<sup>®</sup> Positional Tool consists of various component parts within the Tool Head (Detail 'A') that have different functions for the scaffolder using the tool.



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#### Upper and Lower Chord Locators



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Figure 2 - Using GuardAid® Positional Tool

The operatives should then simultaneously raise the guardrail and fit the quardrail into the cups of the standard.

#### Standard Cup Hook

Should the scaffold standards be slightly off the plumb then one operative should locate one end of the guardrail into position and locate in cups allowing wedge to drop and become loosely engaged. This operative can then assist in locating the opposite end of guardrail by using the Standard cup hook (of the GuardAid® Tool) pulling the standard to the vertical (Figure 3); therefore, allowing the guardrail to be fitted correctly.



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#### Locking Pin for Guardrail Wedge

Using the Guardrail Wedge Locking Pin, push the wedge from its preset condition (Figure 4) to the vertical position and allow to drop and loosely engage (Figure 5).

When all guardrails (including end guardrails) are located in position on the lift and platforms are placed and locked then the scaffold operatives should safely access the platform and drive wedges home on all guardrails.

Locking Pin for Guardrail Wedge





Figure 4 -Guardrail Preset Condition

Guardrail loosely engaged

Guardrail Wedge Release

To de-mount the scaffold guardrails each operative must ensure that the GuardAid® Positional Tool is located correctly in the guardrail prior to it being removed.



Figure 6 - De-Mounting Guardrail using GuardAid® Positional Tool

It is then necessary for each operative to drive the wedges on each end of the guardrail vertically upwards to loosen (Figure 6).

> This should be done usina the Guardrail Wedge Release component part of the GuardAid® tool (Detail 'C')

Lift the wedge clear and rest the wedge on inner ledge within the guardrail and then both operatives should simultaneously lift the Guardrail clear of cups.



Detail 'C' - De-Mounting Guardrail using GuardAid® Positional Tool

Detail 'C'

SECTION 1.4 Safety Information

(ii) Wall Scaffold Assembly Procedure using GuardAid®

This section shows the assembly procedure for a fully boarded tied wall scaffold using the GuardAid<sup>®</sup> Positioning Tool; Turner's recommended system of work for safe scaffold assembly, dismantle and alteration.

Prior to the commencement of any scaffolding operations appropriate training is recommended. Forward planning and organisation to ensure the amount and best utilisation of the correct materials, before assembly procedures commence, will be rewarded throughout assembly and in the final scaffold constructed. Please refer to Section *1.5 Assembly Procedures* for further details.



 Position two Jacks to approximate starting position of first bay (on base boards if required) and place first pair of appropriate Standards on Jacks then connect transom (Horizontal) in lowest cups.

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 On outer Standard fix Bracing Guardrail (to suit required bay length) in direction of the length of the scaffold.



- 3. Position next pair of Jacks and place Standard on outer Jack. Connect Bracing Guardrail and fix transom to bottom cup.
- 4. Place appropriate inner Standard and connect transom between Standards.

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- 5. Fit Horizontal (ledger) between the inner Standards (along length of bay) in bottom cups.
- 6. Check levels along 1st transom, ledger and finally 2nd transom and check that bay is square.



*Note* It may be advantageous to place a Deck in the bay to assist in "squaring" the bay. Place an appropriate-sized Deck in the bay against the inside Horizontal (it should be parallel).

If required, make any adjustments and repeat as necessary.



- 7. Fix required Bracing Guardrail to outer Standard and leave to "hang" in direction of length of scaffold.
- 8. Place next Standard on Jack (set to minimum height), lift into position and connect Guardrail. Adjust Jack to sit under Standard.



*Note* On sloping ground, steps should be cut to ensure the base boards lie flat and level.



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# 9. Fix transom to outer Standard then place inner Standard on Jack, lift into position and connect transom.

10. Fix ledger to inner Standards (bottom cup) and level. Level along transom.

Repeat steps 7 to 10 until the desired base length is complete.

**Note** Ensure that the entire base is level and square. This will assist greatly throughout the assembly of the remainder of the structure.











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12. Place next lift Guardrails temporarily in cups immediately above existing base Guardrails.



13. Using GuardAid<sup>®</sup> Positional Tool, raise temporary Guardrails (placed at step 12) into position to suit next lift platform and fix in position.



14. Continue to raise Guardrails from temporary location into appropriate position to suit first lift platform using GuardAid<sup>®</sup> until entire next lift Guardrails are affixed.

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15. Fix transoms at first lift level (normally 4th cup).



16. Select appropriate Decks and deck out transoms (from below) until the lift is complete (ensuring that locks on each end of each Deck are in the locked position).

**Note** Place ladder access unit in one of the bays to allow access to next lift.



17. Utilising ladder access unit, access can be gained to Deck level and fix Toeboards in place.

*Note* Ensure that trapdoor is closed when working on Deck.

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 Place next lift Guardrails temporarily in cups immediately above existing Deck Guardrails and engage Wedge.



19. Using GuardAid<sup>®</sup> Positional Tool, raise temporary Guardrails (step 18) into position to suit next deck lift and fix in position.



- 20. Continue to raise Guardrails into appropriate position using GuardAid<sup>®</sup> until entire next lift Guardrails are affixed.
- 21. Fix transoms at first lift level (normally 4th cup from lower deck).

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22. Select appropriate Decks and deck out transoms (from below) until the lift is complete (ensuring that locks on each end of each Deck are in the locked position).

*Note* Place ladder access unit in one of the bays to allow access to next lift.

23. Utilising ladder access unit, access can be gained to Deck level and fix Toeboards in place.

*Note* Ensure that trapdoor is closed when working on platform.

- 24. Add additional and appropriate Standards on top of inner and outer Standards (if required).
- 25. Place next lift Guardrails temporarily in cups immediately above existing deck Guardrails and engage Wedge.



 Using GuardAid<sup>®</sup> Positional Tool, raise temporary Guardrails (step 24) into position to suit next lift platform and fix in position and engage Wedge.

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- 27. Continue to raise Guardrails into appropriate position using GuardAid<sup>®</sup> until entire next lift Guardrails are affixed.
- 28. Fix transoms at first lift level (normally 4th cup from lower platform).



29. Select appropriate Decks and deck out transoms (from below) until the lift is complete (ensuring that locks on each end of each Deck are in the locked position).

**Note** Place ladder access unit in one of the bays to allow access to next lift.



30. Utilising ladder access unit, access can be gained to deck level and fix Toeboards in place.

*Note* Ensure that trapdoor is closed when working on Deck.

Repeat steps 24 to 30 until desired platform height is reached.

SECTION 1.4 Safety Information

#### 1.4.3 Fall Arrest

If lanyards are to be used in the installation of Turner OCTO<sup>®</sup> System Scaffolds, rather than Turner best and recommended practice using GuardAid<sup>®</sup>, then double lanyards must be used.

The attachment points shown below must be used. Only use the specified attachment points.

At no point in the installation should you attach the lanyard to Guardrails or Horizontals. The positions indicated below are shown and numbered for maximum resistance against fall.



#### 1.5 ASSEMBLY PROCEDURES FOR TURNER OCTO® SYSTEM SCAFFOLDS

Read this section in conjunction with Section 1.4.1 General Safety Notes on Page 11.

Prior to the commencement of any scaffolding operations appropriate training is recommended. Forward planning and organisation to ensure the amount and best utilisation of the correct materials, before assembly procedures commence, will be rewarded throughout assembly and in the final scaffold constructed. Careful consideration of the scaffold to be assembled is required to ensure that it will meet working requirements and is designed to carry the necessary loads.

The scaffold and the system of work chosen to assemble, dismantle and alter it, must also comply with the requirements of current legislation, and further ensure that members of the public are not put at risk.

It is necessary to erect Exclusion Zones and fit Warning Signs prior to scaffold assembly.

Ensure the scaffolding is to be assembled on suitable foundations capable of withstanding the loads imposed by the scaffolding and, where appropriate, adequate base boards to be provided.

Where the foundation is a soft ground, the soil should be excavated to a firm base or, alternatively, a larger base board used.

On sloping ground, steps should be cut to ensure the base boards lie flat and level.

All components, including GuardAid<sup>®</sup> components (if used), should be available and operational.

All components should be closely inspected before use (see Section 1.2 Pre-Use Inspection & Selection page 5).

Ties should be fixed as the scaffold rises (see Tie Pattern on Page 55).

Suitable access should also be used to achieve safe assembly and dismantling at all times.

This Assembly Guide should be issued to all operatives that will assemble, dismantle or alter Turner OCTO<sup>®</sup> scaffolds and referred to if required.



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Where this symbol appears, a risk of fall is present. However, this is only applicable if using fall arrest equipment (does not apply when using GuardAid<sup>®</sup> methodology to provide collective protection measures).

SECTION 1.5 Assembly Procedures

#### 1.5.1 Tied Wall Scaffold

Prior to the commencement of any scaffolding operations, please refer to Sections *1.4.1 General Safety Notes* and *1.5 Assembly Procedures*.

(i) Fully Boarded



 Position two Jacks to approximate starting position of first bay (on base boards if required) and place 1st pair of appropriate Standards on Jacks. Connect transom (Horizontal) in lowest cups.



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2. On outer Standard fix Bracing Guardrail (to suit required bay length) in direction of the length of the scaffold.



- Position next pair of Jacks and place Standard on outerJack, connect Bracing Guardrail and fix transom to bottom cup.
- 4. Place appropriate inner Standard and connect transom between Standards.



- Fit Horizontal (ledger) between the inner Standards (along length of bay) in bottom cups.
- 6. Check levels along 1st transom, ledger and finally 2nd transom and check that bay is square.

SECTION 1.5 Assembly Procedures



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**Note** It may be advantageous to place a Deck in the bay to assist in "squaring" the bay. Place an appropriate sized Deck in the bay against the inside Horizontal (it should be parallel).

If required, make any adjustments and repeat as necessary.



- Fix transom to outer Standard then place inner Standard on Jack, lift into position and connect transom.
- 10. Fix ledger to inner Standards (bottom cup) and level. Level along transom.

Repeat steps 7 to 10 until the desired base length is complete.



- Fix required Guardrail to outer Standard and leave to "hang" in direction of length of scaffold.
- 8. Place next Standard on Jack (set to minimum height), lift into position and connect Guardrail. Adjust Jack to seat under Standard.



**Note** Ensure that the entire base is level and square. This will assist greatly throughout the assembly of the remainder of the structure.

11. Add additional and appropriate Standards on top of outer Standards.

#### Turner OCTO® Assembly Guide

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*Note* Ensure that the entire base is level and square before proceeding with first lift height.



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12. Place appropriate-sized Decks, Bracing Guardrails and all Horizontals to complete first lift safely. Ensure that ladder access unit is situated in one of the bays to allow access to next lift.



13. Add additional and appropriate-sized Standards on top of the existing outer Standards (as necessary) to allow placing of the next lift of scaffolding.



 Repeat placement of appropriatesized Decks, Bracing Guardrails, Horizontals and ladder access unit to complete the second lift.

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15. Position inner Standards as necessary and continue to next lift.



16. Repeat sequence until desired height is reached.



17. Fit Toeboards to each working lift.



18. Completed scaffold.

SECTION 1.5 Assembly Procedures

#### (ii) Top Lift

Prior to the commencement of any scaffolding operations, please refer to Sections *1.4.1 General Safety Notes* and *1.5 Assembly Procedures*.

To assemble top lift only scaffolds, simply remove Decks from the bays that do not require to have a working platform below the top lift (leaving ladder access bay in place).



 Add Bracing Guardrails between outer and inner Standards to provide protection to the ladder access bay prior to removing Decks.



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2. Remove Decks from the remaining bays (from below).



3. Fit Toeboards.



4. Completed scaffold.

(iii) Corner Returns

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External / Internal

Construction of the scaffold structure with corner returns should begin at a corner of the building allowing for either corner return options 1 to 3 to be built correctly. Option 4 return may be required in a corner to complete the scaffold run.

Option 1: 3 Legged Return



External

Constructed using 3 legs built from base level.



Internal



Option 2: 4 Legged (core) Return



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External

Built from a complete bay of scaffold where inside Standard is placed at corner and a run of scaffold is constructed in both direction away from the corner along the building façade.





Option 3: Corner Return with inside boards



External

Two runs of scaffolding linked by a bay at the corner identical in size to the inside boards allowing for Decks to be placed from the bay in one direction and placed on inside Cantilever Brackets in the other direction. This allows for movement of the inside boards without interfering with the scaffold construction.



Internal

#### Option 4: Fly By Return

Two runs of scaffolding that meet at a corner but cannot form one of the returns as shown previously. Therefore, it is necessary to let one scaffold "fly by" the other to maintain scaffold run platform width. It will be necessary to close the gap with handrailing and Toeboards to protect users.

In all cases, ensure that Bracing Guardrails are fitted on inside faces of the scaffold structure if the gap between the building and the scaffold structure exceeds 225mm (or local regulations, if different).



#### 1.5.2 Independent Towers

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Prior to the commencement of any scaffolding operations, please refer to Sections *1.4.1 General Safety Notes* and *1.5 Assembly Procedures*.

(i) Fully Boarded

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 Base out structure according to base out procedure in Section 1.5.1 *Tied Wall Scaffold Fully Boarded* steps 1 to 11.
 Note Ensure that the entire base is level and square before proceeding with first lift height.



2. Place appropriate-sized Decks (incl. ladder unit to one side of tower), Bracing Guardrails and all Horizontals to complete first lift safely.



3. Add additional and appropriate-sized Standards on top of existing Standards to allow placing of the next lift of scaffolding.





 Repeat placement of appropriate-sized Decks, ladder access, Bracing Guardrails & Horizontals to complete subsequent lifts.



5. Fit Toeboards.



 Completed Scaffold.

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#### (ii) Top Lift

Prior to the commencement of any scaffolding operations, please refer to Sections 1.4.1 *General Safety Notes* and 1.5 *Assembly Procedures*.



 Add Bracing Guardrails between outer and inner Standards to provide protection to the ladder access bay prior to removing decks.



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2. Using Bracing Guardrail to Bracing Guardrail Connector component, close off ladder access units leaving them safe to use.



3. Fit toeboards.

#### (iii) Mobile

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Prior to the commencement of any scaffolding operations, please refer to Sections 1.4.1 *General Safety Notes* and 1.5 *Assembly Procedures*.

The following drawings show the base out procedure for a mobile tower. On completion of the base out, proceed using steps 2 - 6 on Page 34.



 Position four Castor Wheel Jacks and four Horizontals to approximate starting position of first bay.



2. Ensure wheels are locked, then place first Standard on Jack and connect Horizontal in lowest cup.



 Place second Standard on Jack and connect second Horizontal in lowest cup.



 Place third Standard on Jack and connect third Horizontal in lowest cup.



5. Continue until all Horizontals are connected. Check levels along Horizontals and check that bay is square.

**Note** Please refer to the *Inspection & Maintenance Guidance Notes for Mobile Structures* on Page 37 when moving Turner OCTO<sup>®</sup> scaffold structures.

(iv) Inspection & Maintenance Guidance Notes for Mobile Structures

All mobile structures should be inspected prior to any moves to determine the integrity of the structures has not been compromised. All components should be securely fastened.

Upon completion of your operations, all tools, materials, debris, etc. should be removed and all platforms left in this condition. Before usage of structure and prior to structure being moved, all platforms should be checked to ensure that they are free of any loose items.

All personnel should be clear of structure prior to movement of that structure. However, if it has been determined by the person in charge that it will be necessary to have personnel on board the structure to assist in the safe passage of the structure then the following is necessary:-

i. Check with Turner OCTO<sup>®</sup> Design Dept. to ensure that personnel can be positioned on board the structure.

If Item (i) has been affirmed then temporary guardrails have to be placed in position to protect those on board when the structure is moved.

It is absolutely necessary to ensure that brake locks are in the off position during all movements of the structure to avoid unnecessary damage occurring to the Castor wheel and Jack arrangements or "flat spots" appearing on the wheel.

When the structure has been successfully moved to its required location, and is stationary, all brake locks must be on.

Protruding items are potentially hazardous and may cause injury to personnel or damage to surrounding areas. To prevent such incidents occurring all protrusions should be removed, if possible, or protective measures deployed before movement of structure.

If structure is to be stored outside, said structure should be adjoined to other such structures in storage area to add stability and suitable anchorage / ties utilised to prevent overturn or movement due to prevailing weather conditions. Deck locks should be on and further supplemented by other means such as cable ties especially if exposed conditions are expected.

When structure is stored and not in use, access to the structure should be restricted by any means necessary at all access points on all structure.

The following checks and procedures must be followed prior to and during all moves (refer to Guidance notes):

#### TICK

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() All structures and components are securely in place.

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- () All platforms have been checked and are clear of any debris and / or all loose items.
- () All personnel are cleared from structure to be moved.

If it has been deemed necessary by the Client that personnel are required to be stationed on board the structure to provide guidance whilst it is being moved then the following checks are to be included.

- () Design check has been requested.
- () Temporary guardrails are in position.
- () All brake locks are off prior to and during all movements of structure.
- () All brake locks are on when structure is stationary and in required position (location).
- () All protruding items are removed or protective measures deployed.
- () Is structure to be stored outside?

If yes;

- () All necessary measures have been taken to prevent movement when stored.
- () All access to structure has been restricted when stored.

Signed.....

Date.....

SECTION 1.5 Assembly Procedures

#### 1.5.3 Birdcages

A Turner OCTO<sup>®</sup> system birdcage scaffold creates a large flat platform that can cover a great expanse of work area overhead.

The procedure for assembling the birdcage is similar to building a series of towers. Each tower is constructed from the tower next to it.

Prior to the commencement of any scaffolding operations, please refer to Sections *1.4.1 General Safety Notes* and *1.5 Assembly Procedures*.



 Base out structure according to base out procedure in Section 1.5.1 Tied Wall Scaffold Fully Boarded steps 1 to 11.

**Note** Ensure that the entire base is level and square before proceeding with first lift height. It may be advantageous to fit temporary bracing guardrails to determine the positioning of second structure and to assist in levelling overall structure.



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- 2. Place appropriate-sized Decks, Bracing Guardrails, Horizontals and Standards to complete each lift.
- 3. Repeat sequence until desired height is reached.
- 4. Fit Toeboards to working lift. Completed Scaffold.

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To assemble top lift only birdcage scaffolds, remove Decks from the bays that do not require to have a working platform below the top lift (leaving ladder access bay in place).

Add Bracing Guardrails between outer and inner Standards to provide protection to the ladder access bay prior to removing Decks.

Remove Decks from the remaining bays (from below).

Fit Toeboards.

#### (i) Linked Birdcage

Birdcage scaffolds can also be constructed by linking 2 runs of scaffolding using Bracing Guardrails as the assembly procedure progresses until final lift height is achieved and the full platform is completed.



SECTION 1.5 Assembly Procedures

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3. Place appropriate-sized Decks, Bracing Guardrails, and Horizontals to complete first (ladder access unit) lift safely.

1. Base out structure according to base out procedure in Section *1.5.1 Tied Wall Scaffold Fully Boarded* steps 1 to 11.

2. Fit temporary Bracing Guardrails to protect the scaffold run platforms when working from them. Bracing Guardrails should be used to create the link between the scaffold runs.

**Note** Ensure that the entire base is level and square before proceeding with first lift height. It may be advantageous to fit temporary Bracing Guardrails to determine the positioning of second structure and to assist in levelling overall structure.



4. Fit Toeboards to each working lift.

To assemble top lift only birdcage scaffolds, remove Decks from the bays that do not require a working platform below the top lift (leaving ladder access bay in place).

Add Bracing Guardrails between outer and inner Standards to provide protection to the ladder access bay prior to removing Decks. Remove Decks from the remaining bays (from below). Fit Toeboards.





1.5.4 Freestanding Structures

The stability of freestanding structures is created using buttressing.

The example below is formed using full box type buttressing extended to the lift below the full height of the structure (platform level) and tied back to the wall scaffold using plan braces enabling each leg of the wall scaffold to be connected to the buttress.

This type of buttress provides the greatest stability to the wall scaffold structure.

Prior to the commencement of any scaffolding operations, please refer to Sections *1.4.1 General Safety Notes* and *1.5 Assembly Procedures*.

For freestanding structures ensure all standards are pinned (using Standard Pins).



- 1. Base out wall scaffold to 1st lift height according to base out procedure in Section 1.5.1 Tied Wall Scaffold Fully Boarded steps 1 to 11.
- 2. Determine correct positioning for buttress and fix bracing guardrails (to suit correct size of buttress) from outer Standards and leave to "hang" in the direction of buttress.



- 3. Position Jacks to approximate starting position of first bay (on base boards if required) and place first pair of appropriate standards on Jacks then connect transom (horizontal) in lowest cups.
- 4. Fit plan bracing from buttress Standard to tie back to wall scaffold and affix to wall scaffold (in cup).

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5. Place appropriate-sized Decks (incl. ladder unit to one side of tower), Bracing Guardrails and all Horizontals to complete first lift safely.



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- Add additional and appropriatesized Standards on top of existing Standards to allow placing of next lift of scaffolding.
- Fix bracing guardrails and plan bracing from buttress standard to tie back to wall scaffold and affix to wall scaffold (in cup).



8. Repeat placement of appropriate-sized Decks, ladder access, Bracing Guardrails and Horizontals to complete subsequent lifts of the buttress.



9. Completed scaffold.

#### Buttress Examples

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Due to the complexity of any freestanding structure i.e. whether a structure is to be sheeted or netted; if there is enough space to provide a full buttress, will the structure be exposed to wind or other such important factors, then the structure may require additional stability measures (ballast) to be employed and should therefore be designed prior to any works commencing.

The following examples are illustrative only and may be subject to specific design criteria.

**Tower Buttress Examples** 





Wall Scaffold Buttress Examples



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SECTION 1.5 Assembly Procedures

#### 1.5.5 Cantilever Brackets

Prior to the commencement of any scaffolding operations, please refer to Sections 1.4.1 *General Safety Notes* and 1.5 *Assembly Procedures*.

#### (i) Inside Boards



1. Base out structure according to base out procedure in Section *1.5.1 Tied Wall Scaffold Fully Boarded* steps 1 to 11.

*Note* Ensure that the entire base is level and square before proceeding with first lift height.



 Add additional and appropriate-sized Standards on top of the existing outer Standards (as necessary) to allow placing of the next lift of scaffolding.



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2. Place appropriate-sized Decks, Bracing Guardrails, Horizontals and Cantilever Brackets to complete first lift safely. Ensure that ladder access unit is situated in one of the bays to allow access to next lift.



 Repeat placement of appropriatesized Decks, Bracing Guardrails, Horizontals and ladder access unit to complete the second lift.

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5. Position inner Standards as necessary and continue to next lift.



 Fit Toeboards to each working lift (ends at additional inside cantilver brackets).



6. Repeat sequence until desired height is reached.



8. Completed scaffold.



Tied Wall Scaffold with Bridge - Example of Cantilever Brackets in use.

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(ii) Cantilever Brackets with End Plate





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Cantilever brackets with end plate (0.10m to 1.20m) are used as inside cantilever brackets to minimise the gap between the scaffold structure and the building.

They may also be used (in some instances) as hop up brackets and moved as works progress.

(iii) Cantilever Brackets with Cup





Cantilever brackets with cup (0.50m to 1.25m) can be used to the inside, outside or end faces of the scaffold structure.

Additional scaffold materials can be built from this cantilever bracket (in accordance with design) useful in bridging over lower level projections (for example) or increasing platform width if necessary in certain applications.





To provide additional loading capacity to the cantilever bracket with cup then the bracket should be located 0.5m (1 cup in normal circumstances) below the platform level to allow diagonal face braces to be fitted as a raker.

Additional Horizontals (transoms) must be fitted below the existing platform adjacent to the cantilever bracket and also at the lift below where the diagonal face brace fits in the cup.

*Note* When using this arrangement, refer to design.

#### 1.5.6 Circular Structures

Prior to the commencement of any scaffolding operations, please refer to Sections *1.4.1 General Safety Notes* and *1.5 Assembly Procedures*.

The circular scaffold structure is a series of towers that are linked together.



 Base out structure according to base out procedure in Section 1.5.1 Tied Wall Scaffold Fully Boarded steps 1 to 11.

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2. Ensure that the inside Horizontals (ledgers) have free passage and do not foul the structure.



3. Place appropriate sized Decks, Bracing Guardrails and Horizontals in the towers (including a ladder access unit in at least one tower) and link between the towers (in accordance with the design) ensuring Bracing Guardrails are fitted too.

Should the minimum handrail height fall below regulated heights then an additional ledger should be added above the Bracing Guardrail (handrail).

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SECTION 1.5 Assembly Procedures



4. Repeat placement of appropriate-sized Decks, ladder access units, Bracing Guardrails and Horizontals to complete subsequent lifts.



- 5. Fit Toeboards.
- 6. Completed Scaffold.

#### 1.5.7 Suspended Scaffolds (Hanging Scaffolds)

Prior to the commencement of any scaffolding operations, please refer to Sections *1.4.1 General Safety Notes* and *1.5 Assembly Procedures*.

There are many variations in the design and construction of hanging scaffolds. The following instructions are intended as an example only of one type based on the final design of the hanging structure.

All hanging scaffolds are subject to design and verification of that design prior to scaffolding works commencing.

*Note* When constructing a hanging scaffold structure you MUST pin the standards using high tensile M16 Nuts and Bolts.



 Assemble the tower structure using additional Base Jacks upturned in the Standards that can then be adjusted to fit tight against the underside of the floor above. This provides structural stability.

This should be carried out in strict accordance with design drawings and appropriate plan bracing fitted.



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- 2. Fit connecting Horizontals (transoms) from tower structure to allow connection of hanging Standards.
- Fit Guardrails and Horizontals (ledgers) and tie Standards back to the tower structure using diagonal face braces ensuring all components are securely locked.
- 4. Fit Decks.

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- Create hanging bay using Standards, Bracing Guardrails, Horizontals, Cantilever Brackets and Decks.
- 6. Tie outside Standards back to tower structure using diagonal face braces.



- Fit hanging Standards to complete the bay and pin using high tensile M16 Nuts and Bolts.
- Fit appropriate Bracing Guardrails, Horizontals and Decks to complete bay.

Ensure that a ladder access unit is fitted to gain access to lower level.



9. Fit Toeboards.



10. Complete Scaffold.

SECTION 1.5 Assembly Procedures

#### 1.5.8 Pre Scaffold Handover Inspection

The scaffold should be visually inspected to make certain that all components used have been installed correctly and secured to prevent accidental displacement.

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Check that all necessary scaffold ties (if required) have been installed in accordance with the tie pattern on page 55 and that all Guardrails and Toeboards have been fitted to the working platforms.

#### 1.5.9 Maintenance

All Turner OCTO<sup>®</sup> Scaffolds, in common with all types of scaffolding, should be regularly inspected (at least once per week) and recorded, in accordance with current legislation.

The statutory regulations of each state or country should be observed and/ or the type of work to be carried out on the scaffolding or the environment in which the scaffolding is to be used, or the position (if moved) may also determine the frequency of inspections required.

However, it is good safety practice to inspect the structure before every working shift and any defects or misuse reported and corrected, as soon as possible, by a competent person.

Examples of misuse are as follows (but not limited to):

- · Overloading of platforms
- Removal of Components; in particular, decking, guardrails, toeboards and ties
- Undermining of foundations
- · Sheeting fixed to structure without approval
- Electrical Hazards



#### 1.5.10 Dismantling Procedure

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The dismantling procedure should simply be a reversal of the steps explained for the assembly of the various types of standard configurations.

However, several safety procedural steps should be considered before dismantling operations begin.

- 1. Refer to your Risk Assessment a separate Risk Assessment should be carried out prior to any dismantling operations.
- 2. Visually check the scaffold from ground level for any obvious hazards that may have developed or been created (by the user) that may not be listed on the Risk Assessment.

Such hazards may include:

- Debris left on the scaffold
- Overhead wires on or touching the scaffold
- Obvious removal of scaffold ties (check number of ties fitted on Hand Over Certificate to assist in determining whether ties may have been removed).
- · Removal of structurally important components, e.g. Decks and Bracing Guardrails.

This list is not exhaustive and other hazards may exist. If in any doubt and you can see hazards that have not been notified on the Risk Assessment, seek consultation before proceeding to the next step.

- 3. Erect an exclusion zone and fit Warning signs in accordance with current legislation prior to scaffold dismantle taking place.
- 4. Commence dismantling operations and continue to visually inspect scaffold at close proximity throughout the dismantling procedure for any unforeseen hazards.

#### Turner OCTO® Assembly Guide

SECTION 1.6 Anchoring

#### 1.6 ANCHORING

Denotes Tie Location

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1.6.1 Tie Patterns for unclad scaffolds



Every standard to be tied at top lift except where platform is greater than 1500mm from eaves.

- · End ties to be tied at maximum 4000mm crs
- All ties to be within 300mm of standard transom joint
- Good practice is to fix all ties to inner and outer standards. A minimum requirement is for all end ties to be fixed to
  inner and outer standards and other ties fixed to inner standard only.

SECTION 1.6 Anchoring

#### 1.6.2 Tie Loads

Unclad Scaffold 24m x	CONFIGU	JRATIONS		
WIND LOAD CRITERIA	MAXIMUM TIE LOADS	DESCRIPTION	C1 & C2 (kN)	C3 & C4 (kN)
BS EN 12810 - 1	EDGE	End standards > 2.0m from edge of building	3.1	2.9
South East England	EDGE(II)	End standards ≤ 2.0m from edge of building	6.2	5.8
Distance <100m from sea	INTERIOR	Any Internal standards	5.7	5.6
300m land altitude	TOP	Top platform level > 2.0m from eaves of building	3.0	3.0
Open Country	TOP(II)	Top platform level ≤ 2.0m from eaves of building	5.6	5.5
BS 6999 - 2	EDGE	End standards > 2.0m from edge of building	4.3	3.9
West of Scotland	EDGE(II)	End standards ≤ 2.0m from edge of building	8.4	7.7
Distance <100m from sea	INTERIOR	Any Internal standards	7.6	7.5
300m land altitude	ТОР	Top platform level > 2.0m from eaves of building	4.0	3.8
Open Country	TOP(II)	Top platform level ≤ 2.0m from eaves of building	7.3	7.2
Bracing guardraits & Transoms @ 2.0m c/c Max. 4.27m to first Tie Location				CB060

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SECTION 1.7 Maximum Heights

#### 1.7 MAXIMUM HEIGHTS

#### 1.7.1 Assembly Criteria - Unclad Tied Wall Scaffold Examples

		FOOT TIED	FOOT TIED	NON FOOT TIED	
COMPONENTS		(Horizontal as Base Transom Member)	(Guardrail as Base Transom Member)		
	Max Bay Length	3500mm	3500mm	3500mm	
TRANSOMS	Max. Height to first transom	800mm	800mm	2700mm	
TRANSOMS	Max. Subsequent vertical spacing	2000mm	2000mm	2000mm	
	Horizontal Spacing	In End Bays + minimum every 2nd Bay			
LEDGERS	Max. Height to first ledger	800mm	800mm	800mm	
(Inside Face)	Max. Subsequent	2000mm	2000mm	2000mm	
	vert. spacing	Ledgers not required where locked Turner System decks are in place			
	Horizontal Spacing	In End Bays + minimum every 2nd Bay			
GUARDRAILS (Outside Face)	Max. Height to bottom chord of 1st guardrail	800mm	800mm	800mm	
	Max. Subsequent vert. Spacing c/c	2000mm	2000mm	2000mm	

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SECTION 1.7 Maximum Heights

The following examples of Unclad Tied Wall Scaffolds are SYSTEM CONFIGURATIONS in accordance with BS EN 12810-1:2003 (7.2 The standard set of system configurations).

They note the maximum computed leg load for the configurations built to their maximum height to top platform level. Where this computed height is higher than 24m it is noted that the Max. Height to Platform is 24.0m.

#### LIVE LOAD

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The loading configurations are in accordance with BS EN 12811-1:2003(6.1.3 Load Classes).

See Turner Fabrication interpretation of Load Class Table below.

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LOAD CLASS	DUTY	UDL ON PLATFORM kN/m <sup>2</sup>	MAX. NUMBER OF PLATFORMS IN USE (UDL KN/M²)
1	Inspection & Very Light Duty	0.75	1 @ 100% (0.75) & 1 @ 50% (0.375)
2	Light Duty	1.50	1 @ 100% (1.50) & 1 @ 50% (0.75)
3	General Purpose	2.00	1 @ 100% (2.00) & 1 @ 50% (1.00)
4	Heavy Duty	3.00	1 @ 100% (3.00) & 1 @ 50% (1.50)

The cantilevers are rated at the same capacity as the main platforms in all cases. Scaffolds other than those noted in the SYSTEM CONFIGURATION <u>must</u> be designed

#### Turner OCTO® Assembly Guide

SECTION 1.7 Maximum Heights



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\*Height restricted to 24m. Leg Loads given for maximum height achieved in this configuration.

- · Based on 3.5m bay lengths.
- · Tie pattern arrangement shown separately
- Scaffolds other than those noted in System Configurations (BS EN 12810-1:2003 7.2) require design.

SECTION 1.7 Maximum Heights



\*Height restricted to 24m. Leg Loads given for maximum height achieved in this configuration.

- · Based on 3.5m bay lengths.
- Tie pattern arrangement shown separately
- Scaffolds other than those noted in System Configurations (BS EN 12810-1:2003 7.2) require design.

#### Turner OCTO® Assembly Guide

SECTION 1.7 Maximum Heights

#### 1.7.4 Maximum Heights Of Unclad Tied Scaffolds (Non Foot Tied)



Drawing 1				
LEG LO	OADS	Max Height		
Outer (kN)	Inner (kN)	to Platform (m)		
8.21	20.73	20		

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Drawing 2					
LEG LO	OADS	Max Height			
Outer (kN)	Inner (kN)	to Platform (m)			
8.35	18.41	14			

Drawing 3				
LEG LO	OADS	Max Height		
Outer (kN)	Inner (kN)	to Platform (m)		
20.7	19.91	24*		



First lift restricted to 1kN per m<sup>2</sup>

#### \* Height restricted to 24m. Leg Loads given for maximum height achieved in this configuration.

- · Based on 3.5m bay lengths.
- Tie pattern arrangement shown separately
- Scaffolds other than those noted in System Configurations (BS EN 12810-1:2003 7.2) require design.

SECTION 1.8 Transport and Storage

#### 1.8 TRANSPORT AND STORAGE

The Transportation Rack is fully galvanised and used for the safe transportation to/ from site and storage in Yard (Compound) areas.

Racks can be stacked either empty or full to minimise the area required for storage.

Sample loads for the Transportation Rack:

ltem	Approx. No. per Rack	
S400 to S125	Standards 4,00 m to 1,25 m	75
S100 + S100FT	Standards 1,00 m + Standards 1,00 m with flush top	150
S050	Standards 0,50 m	225
BG350 to BG125	Bracing Guardrails 3,50 m to 1,25 m	25
BG100 to BG070	Bracing Guardrails 1,00 m to 0,70 m	50
BG050	Bracing Guardrails 0,50 m	75
H350 to H125	Horizontals 3,50 m to 1,25 m	100
H100 to H070	Horizontals 1,00 m to 0,70 m	200
HB125 to HB100	Horizontal Beam 1,25 m to 1,00 m	90
HB350 to HB150	Horizontal Beam 3,50 m to 1,50 m	64



SECTION 1.9 References



#### 1.9 REFERENCES

- BRITISH STANDARD BS EN 12811 (2003): Parts 1 & 2 Temporary Works Equipment
- BRITISH STANDARD BS EN 12810 (2003): Parts 1, 2 and 3 Façade Scaffolds made of Prefabricated Components
- Assessment of the OCTO<sup>®</sup> System for Access Scaffold Applications by A.W. Irwin, B.Sc.(Eng.), PhD., C. Eng., M.I.C.E., M.I. E. MASA.
- Work at Height Regulations (2005)
- Construction (Lifting Operations and Lifting Equipment) Regulations (LOLER), 1998: Provision and Use of Work Equipment Regulations 1998
- Personal Protective Equipment at Work Regulations 1992
- Management of Health & Safety at Work Regulations 1999
- Construction (Design & Management) Regulations 1994
- Construction (Health, Safety & Welfare) Regulations 1996
- Manual Handling Operations Regulations 1992
- BRITISH STANDARD BS 1139 Pt.5 1990
- (HD 1000:1988) Metal Scaffolding Part 5: Specification for Materials: Dimensions, design loads and safety requirements for service and working scaffolds made of prefabricated elements.



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