# UKCS Offshore Specific Scaffolding Guidance

## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 Introduction</td>
<td>2</td>
</tr>
<tr>
<td>2.0 References</td>
<td>2</td>
</tr>
<tr>
<td>3.0 Section – Offshore Additions to TG20:13</td>
<td></td>
</tr>
<tr>
<td>3.1 Offshore Guardrail Requirements</td>
<td>3</td>
</tr>
<tr>
<td>3.2 Aberdeen Transoms (supplementary Tubes)</td>
<td>4</td>
</tr>
<tr>
<td>3.3 Suspended Scaffolds</td>
<td>5</td>
</tr>
<tr>
<td>3.4 Typical Gravlock/Girder Coupler &amp; Steelwork Dropper Tube Connection</td>
<td>6</td>
</tr>
<tr>
<td>3.5 Scaffold Ties</td>
<td>7</td>
</tr>
<tr>
<td>3.6 Scaffold Fitting Class</td>
<td>8</td>
</tr>
<tr>
<td>3.7 Scaffold Boards - Fire Retardant</td>
<td>9</td>
</tr>
<tr>
<td>3.8 Aluminium Beams</td>
<td>10</td>
</tr>
<tr>
<td>3.9 Aluminium Tube</td>
<td>11</td>
</tr>
<tr>
<td>3.10 Scaffold Inspection</td>
<td>12</td>
</tr>
<tr>
<td>3.11 Erected Scaffold Life Expectancy</td>
<td>13</td>
</tr>
<tr>
<td>3.12 Wind Loadings</td>
<td>14</td>
</tr>
<tr>
<td>3.13 Friction Clamps</td>
<td>15</td>
</tr>
<tr>
<td>4.0 Revision History</td>
<td>16</td>
</tr>
</tbody>
</table>
Recognising there are specific requirements relating to (UKCS) offshore scaffolding, e.g. 3 x guardrails, scaffold life expectancy, weather exposure & methods of working.

This document has been compiled with the aim of providing further guidance not covered within NASC TG20:13 for offshore operations.

1.1 Contributing Companies

2.0 Reference

TG20:13 - Technical Guidance on the Use of BS12811-1 & associated reference documents within
3.1 Offshore Guardrail requirements

Definition – Normally fixed to the outside standards on each scaffold platform working level where there is the potential for person to fall from height.

The example below shows the maximum allowable gap (400mm) between guardrails.

Example below:
3.2 “Aberdeen Transoms” (Structural Transom Tubes)

Where load bearing couplers have not been used to connect transoms to ledgers at node points, an additional structural transom tube should be installed on load bearing right angle couplers. (Where required) E.g. weather exposed sheeted scaffolds.

The use of double couplers to connect structural transoms at boarded levels can result in uneven decking. To overcome this, structural transoms (where required) are to be installed below the boarded level to retain structural integrity.

Example:-

![Diagram of "Aberdeen" transom tube connected with double couplers to standards, Ledger tube, Board bearing transom fitted with single couplers]
3.3 Slung Scaffolds

Common to the offshore industry, slung scaffolds (Hangers) are frequently required for access. This type of scaffold arrangement is often under-deck and in many cases requires beams incorporated and/or multiple lifts. Design input is required - Refer to specific company scaffold procedure for guidance.

Hanger (Dropper) tubes require to be connected by means of load bearing 90 Degree couplers. Addressing safety; check fittings require to be installed at top of hanger tubes & the bottom of standing “T-Pieces” or “trapeze tubes”.

Gravlock scaffold couplers are designed to be used in opposing pairs, either from the underside of steelwork (as per illustration below) or from the upper steelwork location.

Example below:-
3.4 Typical Gravlock/Girder Coupler & Dropper Tube Arrangement

The illustrations below provide examples of a typical Gravlock/Girder Coupler arrangements attached to a horizontal “I beam” Steelwork lower position. This arrangement can also be an upper position.

- Gravlock/Girder couplers must be used in opposing pairs.

**Note:** Loadings are determined by specific fitting manufacturer’s specification.

Upright hanger tubes must be located “directly against” Gravlock/Girder couplers.

When not achievable/practicable, Contact Company scaffold design department for guidance.
3.5 Scaffold Ties

The stability of a scaffold offshore is governed by the physical attachment (Ties) to adjacent steelwork. The scaffold structure will require to be physically tied to primary and/or secondary structure, using Push / Pull or Box Ties attached to the scaffold structure using 90 degree couplers with a loading capacity of Min. 6.1kN.

Where possible, ties should be evenly distributed over the scaffold horizontally and vertically.

In the event that tying requirements specified in TG 20:13 are NOT achievable, contact should be made with the scaffold contractors’ design engineering department/company scaffold procedures.

Tie example below using Gravlock/Girder couplers attached to vertical steelwork face in opposing pairs connected with 90 degree load bearing coupler

Tie example below using box method around vertical member connected with 90 degree load bearing couplers
3.6 Scaffold Fittings (Load Bearing)

All NEW purchased fittings to comply with TG20:13

Example:
- Double/Swivel Coupler – Class A: SWL 6.1 kN
- Double/Swivel Coupler – Class B: SWL 9.1 kN
- Sleeve Coupler – Class A: SWL 3.6 kN
- Sleeve Coupler - Class B: SWL 5.5 kN

Note: Double couplers are also known as “Right Angle” or “90 degree couplers”

Double couplers are marked in one or two lines with the following information, in the sequence shown:
- Reference to EN74-1
- Registered trademark or the manufacturer (xx)
- Year of manufacture (last two digits only)
- Coupler class (B)
- Type of ongoing production inspection if provided (L or M) – See definition below
  (L: The production quality control is carried out only by a manufacturer approved to either EN ISO 9001 or another appropriate document)
  (M: The production quality control is carried out by the manufacturer itself and is supervised by an independent certification system)

Photo of typical class B pressed steel Presco fitting identifications

Note: As the above is applicable to new purchased class B load bearing fittings, existing class A load bearing fittings in operation can be used / phased-out in accordance with service / inspection results.

NB: Class A double couplers are still suitable as calculations are based on the lowest factor.
3.7 Scaffold Boards

All NEW scaffold boards provided for offshore use are to be fire retardant treated compliant with:

- BS EN 13501-1:2007 - Fire classification of construction products and building elements.
- Firestop flame retardant to Euro class C.
- F/R Specification
- Year of Manufacture (Optional)

The above can be "branded" onto the scaffold board at regular intervals

Certification example photo below
3.8 Aluminium Alloy Beams

1. When the above type beams are required to be used in lifting operations refer to the respective company scaffold procedure for guidance.

2. Sample couplers are to be removed for visual inspection of the aluminium alloy beam surface at periods indicated by supplier / manufacture / company TA to ensure corrosion is not a concern.

3. Joining of aluminium alloy beams to be as per manufacture instructions – see example below.
   Note: Conventional tube & fitting connections are NOT to be used.

4. Beams joints can also be subject to internal corrosion which cannot be seen, this requires to be assessed during scaffold inspection of long term scaffolds.

5. When incorporating pre-fabricated beams within scaffolds a specific design is required.

Example illustration below: - Note 450mm aluminium beam

Note: Due to galvanic corrosion issues, consideration should be given regarding the use of steel galvanised pre-fabricated beams for long term projects.
3.9 Aluminium Tube for Scaffolds

Due to the high salt content of the offshore environment aluminium can, in certain circumstances, corrode much faster than steel, especially when it is in contact with dissimilar metals as will be the case when connected with steel scaffold couplers. This phenomenon is known as ‘galvanic corrosion’ and is brought about by the electrochemical reaction of steel on aluminium in the presence of an electrolyte (i.e. in this instance seawater).

Whilst in dry conditions such corrosion is rare, the process will be greatly accelerated if the structure is subjected to seawater or rainwater with environmental contaminants.

It should be noted that in severe cases such corrosion could seriously affect the integrity of the scaffold structure.

In most instances corrosion will occur on surfaces hidden from view i.e. on the portion of tube in contact with the couplers or the internal spigots used to connect prefabricated beams, so it is normally difficult to detect prior to the scaffold being dismantled.

In the absence of specialist guidance the following precautions should be taken:-

No scaffold containing aluminium tubes or beams, which is erected in a ‘marine’, ‘acidic’ or ‘frequently wet’ environment, shall be allowed to stand for a period of more than 6 months.

Clients should be advised of this requirement at the outset and if for unforeseen circumstances the scaffold is required beyond this period, it will need to be dismantled and re-erected with fully serviceable equipment following a risk assessment.

Where it is known that scaffold structures erected in such environments are required to remain in situ for periods exceeding 6 months, galvanised steel beams and tube should always be selected in preference to aluminium.

The Design Engineer must always be made aware of this requirement with the submission of the design requisition.

It is only permitted to mix aluminium and steel within the same structure provided that it complies with the requirements of TG 20:13 or that it has been specifically designed.
3.10 Scaffold Inspection

Following a pre-use scaffold inspection by a competent person, a scaffold is deemed to be “handed over” to the user/client when the scaffold tag is inserted. Note: The scaffold USER then becomes responsible for ensuring that the scaffold is not overloaded, is used only for its intended purpose, is not modified in any way (except my a competent Scaffolder) and must report any damage or defects immediately.

Mandatory / further inspections and auditable record keeping is reverted back to the scaffold contractor.

Scaffold inspection is to be carried out by a suitably qualified, competent & experienced person who is familiar with the arrangement type of scaffold being inspected. (See table below)

Competency guidance below taken from CISRS CAP 609 General information booklet

<table>
<thead>
<tr>
<th>Scaffold Type</th>
<th>Part 2 Basic</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independent</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Birdcage</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Tower</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Cantilever</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Scaffold Inc.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Prefab Beams</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Protective Fans</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Barriers / Rails</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Edge Protection</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Minor Alterations</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Complex Alterations</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Suspended Scaffolds</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Design Scaffolds</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

For further clarification purposes please refer to company scaffold procedure
3.11 Erected Scaffold Life Expectancy (Age)

Due to the high salt laden atmosphere offshore, the presence of corrosion is greatly accelerated, in particular at the scaffold fittings.

To retain structural integrity & reduce the potential high safety risk when dismantling, the following guidelines based on fitting manufacturers test results apply to scaffold structures:-

Note: The above is for general guidance purposes only & scaffolds would be subject to specific risk assessment dependant on exposure of its location. (E.g. Topside location at platform edge exposed to sea spray etc.)

When the scaffold reaches its initial period as indicated above, if still required, a comprehensive risk assessment / inspection is to be carried out to establish the material condition & determine/confirm how long the scaffold can remain in a safe condition. If an extended period is required, any necessary remedial work is to be implemented accordingly.

After the extended period has lapsed, the scaffold is expected to be dismantled, dependant on the above criteria.

All the above to be recorded for audit purposes.
3.12 Wind Loads

To facilitate wind loading calculations for the Western, Northern & Southern North sea sectors, values of 31, 28 & 25 m/s to be used respectively as indicated below. Note: For design purposes an initial height from sea level to pipe deck @ 30m or adjusted to reflect addition information provided by specific location.

Refer to the respective Company Scaffold Procedure/Design Department for guidance.
3.13 Friction Clamps (Typical)

**Universal Friction Clamp User Instructions**

The Universal Friction Clamp provides a safe and easy fixing method to secure scaffolding to any part of tubular steel jacket. It can be used for catwalks, platforms and access ladders for repair cleaning and painting. It is also safe to be constructed on offshore jackets. Speedy removal is achieved through the rapid release clamp. The Universal Friction clamp is also popular for use in platform fabrication yards where it is provides safe and secure access to all parts of the construction work.

**Introduction**

- The clamp can be fitted horizontal, inclined or vertical tubular members of any diameter from 500mm upwards.
- Although it will have some resistance to loading applied parallel to the axis of the tubular member, it is intended to support loading applied at right angles to the axis.
- The maximum permissible applied load and out of balance moment when applied as illustrated below are 30KN and 4.5KN m respectively.

6. Ensure the chain is not excessively twisted, snagged or misplaced (i.e. it takes the shortest path) in its 2 turns around the tube, then engage a convenient link in the chain clutch.

**Fixing procedure**

1. Ensure the clamp is fitted with the correct length of chain for the tube to which it is to be fixed. (see table).
2. The load capacity of the clamp could be adversely affected if the tube is excessively oily or wet so it is advisable to ensure that the tube is as clean as reasonably possible.
3. Loosen the nuts on the tensioning devices each side of the clamp to approx. 15mm from the end.
4. Place the clamp in the approx. required position on the member which it is to be fixed and pass the free end of the chain completely round the member.
5. Lift the clamp sufficiently to enable the chain to be located in the two slots in its underside and take a second turn round the tube with the chain.
6. Tighten each of the tensioning nuts sufficiently to hold the clamp in position.
7. Check the position of the clamp for the position and orientation. If it needs re-positioning, slacken off the tensioning nuts sufficiently to allow the clamp to be repositioned, then re-tighten.
8. Once the clamp is positioned correctly, tighten up the nuts to a torque of 40lb ft (54 Nm) approx.
9. The clamp is then ready for use.

**Dismantling Procedure**

1. If the scaffold structure attached to the clamp has been dismantled, the tensioning nuts can be loosened, the chain disengaged from the clutch hook, and the clamp removed from the pipe.
2. If it is required to detach the clamp with the scaffolding equipment still attached to it, provision must be made to support the load from such equipment before the tensioning nuts are loosened.

**Note:** Loadings are determined by specific fitting manufacturer’s specification.
# Revision History

<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Status Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>31.03.2015</td>
<td>First issue</td>
</tr>
<tr>
<td>0.3</td>
<td>23.02.2015</td>
<td>Issued for comment (Final draft)</td>
</tr>
<tr>
<td>0.2</td>
<td>09.02.2015</td>
<td>Issued for review</td>
</tr>
<tr>
<td>0.1</td>
<td>04.08.2014</td>
<td>Draft for comment</td>
</tr>
</tbody>
</table>