



**Temporary Works  
forum**

Promoting best practice in  
the construction industry.

TW18.073 – 26 October 2018

## **TWf INFORMATION SHEET No. 4**

### **Scaffolding FAQs**

Queries received from members (in advance of the open meeting on 26.9.18) with responses provided by representatives of the NASC and HSE (subsequent to the meeting).

In no particular order:

- 1. What types of fittings are in use? How do you know if fittings are suitable on thin wall tube? How do you know if you have rogue product?**

Double couplers, swivels and sleeve couplers should comply with the requirements of EN74. However, EN74 does not cover all types of fitting, e.g. Gravlock couplers ('beam clamps'). These are generally compliant to an Australian standard. If in doubt, ask for the manufacturer's data sheet.

NASC TG20 (Design Guide) provides design data for several types of compliant tube. Note, however, that the eGuide - and compliant designs in the Operational Guide - only deal with type 4 tube (EN39) and 3.2mm S355 (BS EN 10219-1). Aluminium tube requires a bespoke design due to its lower stiffness.

System scaffolds are often copied. Some copies are more reputable than others. Sourcing from a known manufacturer is usually the best approach. The original manufacturer will usually state that their user instructions and standard solution design arrangements are only provided for use with their own equipment. Copy manufacturers of the same system often claim it is interchangeable with the original. This is not usually the case.

The NASC is introducing a mandatory set of purchasing guidelines for its members relating to the minimum performance specification expected of scaffold materials, which should help get rid of the 'cheap and nasty' end of the supply chain.

## 2. TG20 Compliance Sheets

Shouldn't they say where the scaffolding is located (and not just give a wind speed). The former is easier to understand.

The 'Site reference' (in the 'Sign-off') gives the post code used in the design.

An update to the eGuide is moving toward the input parameters automatically populating the compliance sheet. This will aid auditing of the design and help end incorrect use of a compliance sheet.

## 3. What does the CISRS course teach a scaffolder that means they might be able to alter designs without reference to a designer?

This question is best dealt with in two parts:

1. Can a TG20-compliant structure be altered to a slightly different structure, which is still compliant?

**Answer:** Yes.

However, this should only be done on site to ensure the scaffold is safe, easy to access and suitable for the intended use. A decision to change to a different compliant design, e.g. to allow additional features (such as sheeting) should be made by all parties in consultation as this will have both safety and cost implications.

Examples of changes that a scaffold gang may introduce include:

- minor adjustment to the base lift height in order to cater for variation in ground level;
- additional ties to meet pattern requirement and match scaffold to available structure;
- changes to dimensions that are not limited by the complaint design (such as increasing or decreasing the number of bays, whilst maintaining bay dimensions).

TG20-compliant scaffolds are height limited. A scaffold that is at or close to the height limit will be more sensitive to change.

TG20-compliant scaffold designs allow a degree of tolerance to aid the situation on site. For example, bay length can be reduced to suit the existing structure, e.g. at returns. Additional bracing and edge protection can be added as needed without significant effect on dead load. There is also a tolerance given for the key dimensions of lift height (+100mm) and bay length (+10%) on independent scaffolds and deviation from vertical/horizontal (See TG20

Operational Guide, Section 6.6, Page 68). Note, however, that these tolerances are intended as one-offs and should not be cumulative. Note also that BS2482 scaffold boards are graded to a target span that allows +100mm, however limiting span to the graded dimension should be encouraged.

The need for any change beyond this must still be referred to the scaffolder's management for discussion with the Principal Contractor's TWC.

All compliant scaffolds can be built by a trained scaffolder (i.e. an advanced CISRS Part 3 is not required)

2. Can a scaffolder (any level) alter a bespoke design without reference to the designer/Engineer?

**Answer:** No.

Bespoke designs are likely to be more sensitive than compliant designs and their design rationale may not be obvious to a scaffolder. The need for alteration must be referred to the designer, via the TWC.

#### 4. Is a 'scaffolding supervisor' competent to be a TWS?

In general, the answer will be 'yes'. A proviso, however, is that the individual is trained and experienced in the type and layout of scaffold involved.

The TWS role is more about the accuracy and integrity of a completed scaffold and less about the management of personnel. The individual must have the ability – and, indeed, authority – to avoid peer pressure (which can lead them to accept second-best when there are time and material constraints). So it very much depends on the individual and the environment in which they are being asked to work.

In addition:

- Ideally, they will benefit from having completed the scaffolding supervisor's course and the CITB TWS Course.
- The considered opinion of the TWC (and the DI) will also be relevant.



**5. A TG20 compliance sheet gives a pictorial representation of a scaffold. Are drawings required in addition, for site coordination purposes?**

This depends on the environment in which they are being asked to work and the scale of the job. A congested industrial site may require more coordination than, say, a typical housing development. A larger job may benefit from drawings being produced to aid logistics, even if the erection gang don't need them (and if drawings have been produced, they should be given to the site gang as an aid).

The Work at Height Regulations 2005 (Schedule 3, Part 2, Clause 8) require an “assembly, use and dismantling plan” (i.e. drawings and method statement) dependent on the complexity of the scaffolding selected. Therefore, for simple, repeat work the TG20 compliance sheet (or, for system scaffold, the manufacturer's instructions and standard arrangements) will often suffice.

If the principal contractor requires layout drawings, etc. beyond what is required by legislation then it should be stated as a requirement in the tender documentation.

**6. Should TG20 compliance sheets be signed by the designer (and who is the designer)?**

The designer of an individual TG20-compliant scaffold is whoever inputs the data and produces the compliance sheet. Their name should appear on the sheet.

If an ink signature is required it should be stated in the tender documentation. In this case, the designer is signing to say they have followed the TG20 procedure for selecting a suitable design to match the client's specification and/or needs. They are not signing to verify the underlying accuracy of the technical detail.

The TG20-compliant scaffold suite of designs was prepared by a design team who followed a quality assured protocol. Only in extreme cases where, for example, a major legal action was involved would a representative of the original design team be called upon to justify the development process. The same applies to standard arrangement designs prepared and supplied by a system scaffold manufacturer.

In all cases there is a separate need for the Client (and Principal Designer and/or Principal Contractor) to verify that the ground conditions and the permanent works are suitable to carry the scaffold and provide tie capacity.



**7. Who should check that the conditions stated agree with the site conditions and design brief?**

Both bespoke and compliant designs will set out the leg loads and the required tie capacities and tie spacing/pattern. This information needs to be passed to the TWC (and Principal Designer and/or Principal Contractor) so that they can ensure the necessary capacity is present and confirm that it is already available or that ground etc improvement is underway.

The erection gang attending site should liaise with site management, confirm that the required conditions are met, and carry out a visual inspection prior to starting work.

**8. Is a design check certificate required (If so, who should sign it)?**

This depends on the client's arrangements. The intent of a TG20-compliant scaffold is that it really only applies to class 0 and class 1 works as defined in BS5975.

**9. Who is responsible for the foundations under a scaffold (and for the capacity of any supporting structure or building to carry tie loads)?**

**Foundations**

Ground and/or foundations (structures) rest with the principal contractor (PC) - and the principal designer (PD) - as this involves 'engineering judgement' beyond most contractors' technical capability.

Of course, the scaffold contractor - at time of tender - has no idea generally where service trenches, etc. are to be positioned (and, in reality and in many cases, neither does the PC or PD). The TWC plays a crucial role in ensuring there is no competing clash between groundworks contractors and standing scaffolds.

**Ties**

The effect of tie loads ('global loads') on the permanent structure is the responsibility of the PC and PD. This is particularly relevant in the refurbishment and demolition of structures, where the structure supporting the scaffold is being altered and/or demolished.

Where the intent is to provide an access scaffold, if the existing structure is found to be inadequate in any way - and the scaffold may need to provide structural support - this will require a bespoke design.

The scaffold contractor is responsible for testing any fixings (whether drilled or screw-in) used as scaffold ties after installation and before the

scaffold is taken higher. The number tested and the method should follow the guidance given in NASC's TG4.

**10. Should a permanent works designer review and approve the scaffold drawings? (What happens if they won't?).**

There are a number of scenarios, most of which are not technical but contractual. The proposed scaffold arrangements should always be reviewed by someone competent to do so. This will depend on the class of works - the more complex the proposal, the more in-depth the check should be. If the permanent works designer won't (or can't) then the PC should seek the guidance of an organisation that can.

Most disputes about access scaffolds and the permanent works fall into one or more main groups:

- drilled ties - damage to façade;
- through ties - interference with interior trades, disruption to occupiers in an occupied building;
- security issues - keeping trespassers out of the empty or occupied building;
- landscaping and planting - which may be led by the Client.

As with all coordination issues regarding structural capacity and sequencing of work, these issues should all be agreed at tender stage by discussion between the parties. As such, the PD should be involved automatically and aware of (and in agreement with) the temporary works involved.

**11. Who is responsible for designing any ties and fixings to permanent works?**

See Question 7.

Design of ties includes consideration of the function, type and layout. When selecting the type of tie to be used it is important to cater for all loads that could be experienced, i.e. not just tension and compression, but also bending and shear. This subject needs to be discussed at tender stage as the Client - and PD and/or PC - needs to be clear about the options proposed (e.g. type of tie and frequency/pattern, etc.) as this has implications for the permanent look of the façade; the completion of cladding or curtain walling; internal fit out trades; and internal access for installing, inspecting and striking the scaffold.

In all cases the Client (and PD and/or PC) is responsible for ensuring that the building has the structural capacity to carry the ties involved. Once all this has been clarified and agreed the scaffold designer (or, for small





compliant scaffolds, the lead installer) can derive the pattern and capacity and method of installation of each type of tie involved.

It is particularly important that the scaffold contractor and scaffold designer understand any limitations on the use of particular ties. For example, concrete structures in corrosive atmospheres (not just chemical works but including swimming pools) may not permit drilled fixings. Further, high security establishments may not permit through-ties. In some cases buttressing and kentledge becomes the main option.

**12. Many proprietary systems look the same but have different loading data. How can you tell the difference?**

BS EN 12810 specifies the requirements for the marking of components by manufacturers. This includes the manufacturer, date of manufacture, etc.

Original manufacturers' data sheets will all tell you not to mix their product with another manufacturer's product. Copy manufacturer's use interchangeability as a selling point. Note also that most system scaffold manufacturers accept tube and fitting components being used at interfaces, e.g. to link scaffolds, and for ties.

Mixing systems: See also answer to Q1.

**13. Is supplier information sometimes unreliable, e.g. tube wall thickness, grade of steel, etc.?**

See Question 1.

**Specification issues**

In some cases a product may have been superseded or the product you require may not be available in the quantity you need. You should be informed of this, rather than the supplier simply supplying an alternative product.

This applies equally to the situation where a scaffold contractor intended to provide a particular type of scaffold but installs a totally different system. This may be acceptable, if it meets the specification and design criteria, but delay may occur trying to confirm this.

Early communication is key to keeping everyone on board and happy.

**Quality issues**

If you buy from a reputable manufacturer, via a reputable supplier, you should get a quality product that meets the specification set for it.



However, problems do occasionally occur. Supply chains are now stretched and very little product is manufactured in the UK. Some of the major systems are made in Germany or Eastern Europe, but many copy systems originate in China.

Reputable former UK manufacturers and suppliers turn increasingly overseas to source manufacturing capacity which can strain agreed quality assurance standards. Vigilance is necessary, including on the part of the scaffold contractor and scaffold user (and, in particular, the scaffold inspector).

Any concern should be taken up immediately with the supplier. In some cases this may also need to be reported to the relevant enforcing authority (usually HSE) where potential product safety issues are involved.

- 14. Do others have the same issues as us with TG20 compliance sheets<sup>1</sup>? They are handed over by scaffolders who have no engineering knowledge and have no idea how the sheet relates to the scaffold under construction.**

The enquirer's concerns are noted. It is not clear whether the question concerns the TG20 eGuide compliance sheets or with the photocopying of compliance sheets in the TG20 Operational Guide.

A TG20 eGuide compliance sheet needs to relate to the site in question and be based on the correct location. This includes height, topography, distance from the sea, distance from open country, wind speed data for the area, etc. The sooner all input parameters are automatically included within a compliance sheet the better. A TG20 eGuide compliance sheet that bears no relation to the location or the building in question should be rejected.

The TG20 Operational Guide contains a set of standard arrangements (albeit, a simpler set with fewer 'add-ons' than the eGuide). The relevant compliance sheet can be photocopied and sent to site. This will set out limiting factors for the type of scaffold involved (these being much more limited than the eGuide, so as to simplify the effect of wind). So long as

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<sup>1</sup> For example: (i) a scaffold design for another building with no reference to the structure involved; (ii) designs using a low wind speed not appropriate for the location; (iii) un-netted scaffolds being netted; (iv) building heights and scaffold design heights that do not match; (iv) a chimney scaffold for a 2-storey house when the scaffolder was building it for a 4-storey house.



the limiting factors are met then the scaffold will be compliant and the compliance sheet in question can be used as evidence of the design.

**15. The text on the compliance sheet is largely ignored by the scaffolders. Is literacy an issue?**

This may be the case, but it is more likely that the gang, and especially the lead scaffolder, is over-confident and can't be bothered to follow the design. Based on their experience, they may believe that their own arrangements are better, simpler and good enough.

For CISRS-trained scaffolders who wish to renew their 5-year card, the 2-day mandatory CPD course (in place since July 2017) is intended to help drive up standards across the industry and especially with scaffolders who originally trained many years ago.

If there are such problems getting a scaffold contractor to follow a TG20 compliance sheet, the question must be asked: why are you still using this contractor? Find a better one. Or would they cost more?

**16. Method statements sometimes state simply that a scaffold should be dismantled in the reverse of the sequence in which it was erected. Is this always the case, e.g. kentledge structures?**

In general, a TG20-compliant scaffold will be struck in the reverse order to how it was erected. Bear in mind, however, that TG20 is only part of the picture. NASC's SG4:15 gives guidance on the HSE-endorsed safe systems of work for scaffolding operations (including both 'tube and fitting' and system scaffolds). The procedures in SG4 are intended to prevent falls during scaffolding work by ensuring that the scaffolder is always in a safe zone and, where working at the edge of a safe zone, is 'clipped on' using a fall arrest system. SG4 safe systems of work include the implicit need to ensure that the scaffold remains stable at all times throughout its erection, alteration and dismantling.

Complex access scaffolds and those that provide structural support to permanent or other works need a method statement covering their erection, including the sequence. This should also cover dismantling – and may need a dedicated dismantling method statement to be drawn up where this does not involve reversal of the erection sequence. This is a requirement under CDM2015 (designer duties) and WAHR2005.

## 17. How should the requirement for scaffold inspection (in the Work at Height Regulations) integrate with temporary works permits?

The weekly inspections should be linked to the temporary works register, and be overseen by the TWC (or their appointed TWS).

Statutory scaffold inspection (i.e. after erection, following any significant alteration, after heavy weather and at intervals not exceeding 7 days) overlays any other permit system.

The only time that statutory inspection may not remain a requirement in excess of the quoted intervals or events is where a scaffold is not able to be accessed and is not being used as a 'work platform', e.g. where it is effectively abandoned in-situ and out-of-use. This situation arises from time to time where client or contractor disappear, or where a structural support scaffold is installed as emergency works following a fire or partial collapse and then insurance and planning wrangles take over. The record for such situations is well over 20 years.

Occasionally, a scaffold may become a dangerous structure and need to be dealt with by the local authority under their powers within the relevant Building Act. Of course, any sensible client or contractor would continue to monitor such a scaffold to ensure that it did not deteriorate significantly. (A scaffold that cannot be accessed, and does not require '7 day' inspections under the WAH Regulations, would still need to be inspected and maintained at suitable intervals as an item of work equipment (PUWER 1998).

## References

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