

TEMPORARY WORKS AND DESIGN PROCEDURE.

Legislation

The Working at Height Regulations 2005, require “Strength and Stability calculations” for any arrangement of scaffolding that is not covered by a recognised “standard” configuration. The strength and Stability calculations must conform to BS EN 132811.

The Construction (Design and Management) Regulations 2015 sets out the duties of Designers and Contractors.

BS 5975:2008: Code of Practice for temporary works procedures and the permissible stress design of falsework. Not law but can be used in court as evidence of good practice so therefore has quasi-legal status.

Temporary works must be installed to the same safety standards as the permanent works.

Scaffolding Design.

Design Brief.

The purpose and use of all scaffolding must be carefully considered by the Principal Contractor and be conveyed to the scaffold contractor pre-contract. Any changes or amendments during the contract must be conveyed to the scaffolding contractor. This information is called the “The design brief”.

The following information, as a minimum, must be established and provided to the Scaffolder in the format of a “design brief”, for all scaffolding works: -

Location

Duty and use.

Height and Length.

Hire Period.

The presence of any hidden hazards.

Details of the integrity of foundations and any supporting structures.

Special loading requirements, size and magnitude of load, confirm the method of handling and loading.

Cladding requirement.

The proposed method of access required for users.

The tying of scaffolding is an important element of the design and should be considered at an early stage.

The customer must carry out Preliminary Testing to check that the substrate is suitable to support proposed tie loads.

Refer to TG20:21 Operational Guide for full guidance in relation to ties.

Design Information.

The level of design response provided will depend on the complexity of the scaffolding structure and in part on the requirements of the procedures and policies of the customer, usually identified within their “Temporary Works Policy” (TWP) or Standards Operating Procedures (SOP).

The level of design information produced and provided to the customer for each individual item of scaffolding will conform to one of the following levels.

1. TG20:21 Compliance Certification
2. Engineering Certification.

The Certificate is to Include the following details: -

Engineering Job Number, Date, Customer, Site and Location / Description.

The confirmation content must specifically refer to the design brief details provided to the Engineer.

The certificate is to be signed by the designer, and counter signed by an Engineer who has checked the design.

3. Engineering Certificate, as above, but to also include “strength and stability calculations”.
4. Design Drawing.
5. Design Drawing and Design Risk Assessment.

TG20:21 Compliance Certification.

From the users design brief, TG20:21 compliance certification is created from the TG20:21 eguide. If the design features of the scaffolding comply with the compliance certification, this is classified as standard scaffolding.

Non-Standard / non TG20 compliant scaffolding.

Any non-standard scaffold, for which compliance certification cannot be created within the eguide, is subject to bespoke design from first principles.

A design brief, including the details provided within the user’s design brief, must be provided to the Engineer. The competence records of the Engineer are to be established and the Engineer will hold suitable and sufficient Professional Indemnity insurance cover.

On completion of Engineering Design, the design details will be submitted to the Principal Contractors Temporary Works Department for approval.

The Principal contractor should ensure that the permanent building can support the proposed loads imposed by ties and standards identified within the design and that the arrangement of the scaffolding is suitable for their purpose.

A responsible person or regulatory authority may ask for “strength and stability calculations” for any non-standard scaffold to be provided to the user, during an audit of their records. This information must be provided to the customer if requested.

Tender Stage Design.

Where practically possible design reference details are included within the scaffolding specification for each item of scaffolding. Any non-standard scaffolding that does not conform to any recognised design or compliance certification will be identified at Tender Stage, the Quotation specifications will be annotated accordingly.

Contract Stage Design.

Communication of scaffolding specifications.

During the production of the contract Method Statement, all scaffold types on site will be carefully considered to check compliance to TG20:21 and to identify if there are any additional design issues to be resolved.

Design information is to be submitted with the Method Statement to the Principal Contractor as follows: -

- Standard / Compliant scaffolding. TG20:21 compliance sheets.
- Magnum Scaffolding generic designs, where appropriate.
- Item specific Designs. Where the design is incomplete, or needed, this will be noted along with a design issue date.

The Scaffolding Supervisor will be fully briefed with design details and information during the site induction process or if possible at an earlier opportunity.

Management of Temporary works.

All scaffolding is classified as Temporary Works, the planning, design, construction and compliance to the design must be suitably managed by the Principal Contractor. "BS 5975:2008 Code of Practice for temporary works procedures and the permissible stress design of falsework", whilst not a legal document sets out an industry recognised process for the management of Temporary Works, the process within is recognised by industry as in compliance to current regulations.

The code defines levels of risk related to temporary works into four classes and identifies control measures as follows.

Class 0 - temporary works may be checked by another member of the site or design team. Standard solutions often come with manufacturer calculated working or ultimate capacities but still need to be checked for compliance with the design criteria to ensure they will be fit for purpose.

Class 1 - temporary works can be design checked by another member of the design team.

Class 2 - temporary works must be design checked by someone independent from the design team (not involved in or consulted by the original design team).

Class 3 - temporary works must be design checked by a third-party organisation independent from the design team organisation.

The code identifies roles and responsibilities of duty holders and titles for the duty holders as follows.

TEMPORARY WORKS DESIGNATED INDIVIDUAL

The overall responsibility for the control of Temporary Works within any contracting organisation will lie with the 'Designated Individual (DI)'. This is set out in Clause 6.3.1.1 of BS 5975:2008.

The Designated Individual has, unless formally passed on, overall accountability. The DI is a role defined in BS5975:2008 as the individual within the contracting organisation who is responsible for establishing and implementing a procedure for controlling temporary works.

The procedure should cover the management of the design process and include measures for ensuring the design function and the roles of the Temporary Works Co-ordinator and Temporary Works Supervisor are carried out by competent individuals.

TEMPORARY WORKS COORDINATOR

The TWC should be appointed by and is responsible to the DI as appointed in writing. The TWC should

have the authority to stop works at any time if it is not being carried out satisfactorily.

The TWC is responsible for ensuring the temporary works design is implemented in accordance with the drawings and specification. It is preferable that the TWC is not responsible for the day to day progress of the temporary works under consideration.

It is the Temporary Works Coordinator's responsibility to ensure that:

- He/she is point of contact between the designer and the site team.
- The organisation's procedure is being adhered to on site.
- Temporary work activities are co-ordinated.
- Responsibilities are allocated and accepted.
- The design brief has been prepared in accordance with and is adequate for the actual site situation.
- Any residual risks are included in the design brief.
- That a satisfactory temporary works design is carried out.
- That a design check is carried out which should include: concept, structural adequacy and compliance with the brief.
- Make the design available to other interested parties such as the CDM Co-ordinator or designer of permanent works.
- Record all drawings, calculations and other relevant documentation.
- Give full details to those carrying out on-site supervision - including full details of the design and limitations plus sequence and timing aspects, and information about the influence of other work taking place nearby.
- All checks are made at appropriate stages and maintained.
- In consultation with the TWD, assess the implications of design changes and accept or reject these.
- Issue formal permission to load/bring in to use.
- Issue formal permission to unload/dismantle.

TEMPORARY WORKS SUPERVISOR

On larger contracts the TWC may need assistance or may not be based on site full time. In these cases

one or more Temporary Works Supervisors (TWS) may be appointed to oversee the temporary works on site. The TWS are responsible to the TWC. The TWS will assist the TWC in the supervision and checking of the temporary works.

This should include the supervision of erection, use, maintenance and dismantling of the temporary works as applicable. This may also include carrying out checks of the scheme during construction on site recording and reporting to the TWC to ensure any modifications to the scheme or differences from the envisaged conditions (use or environmental) are drawn to the attention of the TWD designer. It is imperative that when there is more than one TWS that the processes of communication are established, and areas of responsibility defined.

TEMPORARY WORKS DESIGNER

The Temporary Works Designer will as a minimum:

- Provide advice to sites on all aspects of Temporary Works and construction methods/sequence
- Assist sites in developing safe and economical systems of temporary support and access
- Assist sites in developing safe and economical methods of construction
- Liaise with the Permanent Works Designer to ensure both that the temporary works do not overload the permanent works; and that where needed the permanent works can provide sufficient support for the temporary works
- Provide background information on materials and construction methods
- Carry out their design work in accordance with the “Designers Duties” as set out in the Construction

(Design and Management) Regulations. Design risk must be considered and mitigated as far as possible during design. For all significant residual risks involving the temporary works designs this should be a formal Design Risk Assessment with residual risks being communicated to site.

This is particularly important where unusual arrangements or sequences of work are involved

- Carry out the design works in accordance with the programme of the works

The Principal Contactor should have developed and implemented a temporary works policy that conforms to the code. The Principal Contractors TWP should be issued to the scaffolding sub contractor.

Code of Practice	Suggested MSCL design response level
0	1 or MSCL generic design solution.
1	2 or 4
2	2 or 4
3. Scaffolding (User to obtain independent design check by competent engineer)	4 and 5

NB: With the exception of Class 3, Strength and stability calculations are not issued to the user unless requested.

Magnum Scaffolding take design responsibility for scaffolding, on behalf of the Principal Contractor, to fulfil that responsibility they appoint a competent and Qualified Scaffolding Engineer.

On some large projects the scaffolding Sub Contractor may be asked to provide a Temporary Works Supervisor. In such circumstances MSCL will provide a Temporary Works Coordinator qualified person.

Standard Scaffolding

Standard configurations of scaffolding are identified within NASC TG20:21, through creation of compliance certification. Strength and Stability calculations conforming to BS EN 132811 have been carried out on TG20:21 compliant scaffolds configurations.

The TG20:21 eguide enables different arrangements and features of scaffolding to be considered, producing a compliance sheet pertinent to the site, arrangements and features.

Any scaffolding structure that is needed beyond “Standard Scaffolding” is subject to further design.

Edge Protection

The arrangement of edge protection is not covered by TG20:21. However, Edge protection is also subject to design and the production of strength and stability calculations.

The design and construction of Edge protection must comply with the requirements of EN 13374, Design of Temporary Edge Protection.

Classes of Edge Protection

EN 13374 divides edge protection into three classes A, B and C. Class A is for protection of a roof, floor or surface of less than 10 degree slope. All classes are designed to manage static loads, Class C and D are also designed to manage Dynamic Loads.

Where the slope of the roof exceeds 10 degrees, class B and C edge protection, it is unlikely that traditional scaffolding materials are suitable for construction in such situations. Strength and stability calculations alone are insufficient to prove the suitability of class B and C edge protection, the performance must also be tested and proven in laboratory conditions. Therefore, Class B and C edge protection, are likely to be constructed with proprietary systems.

Supervisors Design Manual.

Magnum Scaffolding retain numerous standard design solutions for resolving common non-standard scaffolding including, Edge protection, Beam work, Birdcages and Free-standing scaffold.

Supervisors have access to specific contract and the generic MSCL design suite from any remote device. This enables Supervisors and management to assess if the scaffolds they are asked to erect on site are compliant or if generic design solutions can be implemented. This process has the advantage of the scaffolding Supervisor being able to assist in the progress of the project programme by implementing known scaffolding solutions.

The TG20:21 user guide is issued to all production staff.

Does the scaffolding need additional design?

The scaffolding complies with a TG20:21 Compliance sheets. No further action is necessary.

The scaffolding complies with a MSCL standard generic design:

- "Working drawing", no further action is necessary.
- "Approval Drawing" to be updated to site specific details.

If the scaffolding or any features, do not conform to the above further Engineering Design input and documentation is required.

Design brief to be issued by the Principal Contractor as outlined above.