



Support where it's needed

It is tempting for designers to ignore temporary works on their projects – they are, after all, the responsibility of the contractor. But why not help minimise the hazards associated with them?

Temporary works are provided during a project either for the purpose of access, or as support until design strengths have been achieved. Designers sometimes ignore temporary works, thinking that they are the responsibility of contractors.

While this is true legally, that does not mean designers play no role in helping to safeguard against the dangers associated with temporary works. By integrating features into your design that make temporary works safer, you can help minimise their hazards.

More importantly, by staying mindful of the needs of contractors when it comes to constructing temporary works, you can be sure to specify a design that is practicable to build. Without such care, you could design a project that is impossible to build without subjecting the workforce to unnecessary danger.

Life outside the tick box.



Scaffolds

The design of scaffolds is covered by British Standard 5973. Some of its requirements are detailed below.

Frequent tying

Designers should provide tying points for scaffold on the permanent structure. These should be capable of supporting 10kN applied horizontally.

For tube and fitting scaffolds, such points should be specified every 40m². If the scaffold is less than eight metres high, you should ensure there is sufficient clear space around the edge to install rakers inclined at one in four.

For prefabricated scaffold systems, tying points should be provided on every standard, approximately every four metres.

Scaffolds can cantilever a maximum of two metres above a tied lift. If the scaffold is being used in this way – when building masonry walls, for instance – you should specify masonry that can be constructed in two-metre lifts.

Stability

If it is not possible to provide tying points on the permanent works, you should allow sufficient room in your design for buttresses or outriggers to be used to secure the scaffold.

Control of loading

When loading is in the designer's control – in the case of glazing units and lintels, for example – you should try to keep weight to a minimum. In any case, you should provide information about the weight of components you specify. This will make it easier for the contractor to control the loading on a scaffold system.

Edge-protection

You can help contractors provide edge-protection for the workforce, by making provision for it in the design of the permanent works.

For example:

- **Consider specifying that 50mm ID x 100mm long tubes be welded to steel, or cast into reinforced concrete, on edges like building perimeters and stair wells. This provides a suitable mounting point for most types of edge-protection**
- **Make provision for a small bracket to be welded to columns, enabling edge-protection to be attached to them**
- **Consider incorporating parapets into your design. These can serve as permanent edge-protection for construction and maintenance workers. Note that parapets are required to be at least 950mm high if they are to function as edge-protection**
- **You should also consult suppliers of prefabricated edge-protection to see how their solutions can be integrated into your design**

British Standard 1139: Part 3 specifies the legal requirements for edge-protection.



Where edge-protection is unsuitable

In some circumstances, it is not practical to provide edge-protection. When roofs feature a slope of more than 30 degrees, for example, edge-protection should not be used. This is because it can injure any person who slides into it.

If your specification makes edge-protection unsuitable, you should specify anchorage points for personal protection equipment (PPE), such as fall-arrest systems.

Falsework

What to avoid

If falsework is under a heavy load, it has to be closely spaced. This makes it difficult for workers to move around it, and should therefore be avoided wherever possible.

You should also try to avoid regular movement of plant close to, or in between, falsework. Generally speaking, plant should be given a clearance of its slewing radius, plus 600mm, from any falsework.

Avoid designs that require falsework solutions to be located close to excavations (see **GND201 Excavations**). And try not to position other structures near to falsework.

What to do

Designers should try to incorporate as much falsework as possible into the permanent works. For example, you could incorporate sheet-piles into subterranean walls, or specify permanent shuttering.

You should also make information about site conditions available to the contractor. This might include details concerning the wind and tide, and geotechnical information.

Make sure the permanent structure can carry the falsework loads that will be applied to it in the construction phase. If you are designing a two-storey structure, for example, you should make sure the floor at ground level is capable of withstanding the loads associated with construction of the floor above.

In the case of temporary propping, you should make sure the floor can bear the concentrated prop loads.

British Standard 5975 covers the design of falsework.

Mobile Access Towers (MATs)

MATs are prone to toppling over. To help reduce the risk of this happening, you should:

- **Inform the contractor if workers will need to carry out operations involving significant physical effort (e.g. pulling cable through ducts) while using MATs**
- **Allow clear space around areas where MATs will be used, and make room for outrigger extensions where necessary**
- **Avoid locating obstacles, like steps or holes, where MATs are likely to be used**
- **Avoid specifying components that require the use of MATs for their installation when the ground is uneven or soft**
- **Avoid designs that require the use of free-standing MATs on exposed sites**

British Standard 1139: Part 3 provides information about the requirements governing use of MATs.

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The hazards

The main hazards associated with temporary works are:

- **Instability, which can lead to collapse**
- **Difficulties with manual handling, especially in relation to heavy loads and awkward shapes used to construct falsework**
- **Workers and objects falling from height**

Designer checklist

Play your part in helping contractors meet their legal responsibility to control the hazards of temporary works:

- **Read the British and European standards governing temporary works, so that you are familiar with what contractors are required to provide**
- **Incorporate lateral stability points for temporary works equipment and fall protection attachments into your design**
- **Provide information on the capacities of structural components that could be used to support temporary works. Such components could include suspended floors that might be used under props, and the ground on which temporary works equipment might be used**
- **Detail the lateral thrusts exerted by permanent works, which temporary works will be used to support until the structure is complete**
- **If permanent works are to be used to support temporary works for the installation of follow-on components, provide information about any restrictions that would limit their suitability. For example, if masonry walls take time to gain full strength, you should make this clear to the contractor**
- **Make sure there is adequate space around the permanent works for temporary works to be used. Remember that scaffolding can be up to 1,200mm wide, and MATs can be 1.2 x 2.4m, excluding outriggers**

Temporary works designers

You should consult specialist temporary works designers to ensure that their systems can be integrated into your project. This Guide does not provide specific information for specialist designers – but it does provide useful background information for them.

When it comes to specifying your design, make sure you draw on appropriate expertise in the industry. That way, you will ensure that temporary works equipment can be used during the build phase.

Useful resources

BS 1139 Parts 1-6 Metal Scaffolding

See elsewhere on SID:

GND201 Excavations
CON301 Manual handling and vibration
CON307 Fall prevention by design

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