



**INLAND  
WATERWAYS**  
ASSOCIATION

# GUIDANCE NOTE

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*Temporary Works  
& Excavations*



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First published as v.1 in 2022. This is a web-friendly document and will be reviewed and updated when the source legislation changes. Any printed version may not be the latest version and a check should be made on IWA website. IWA has interpreted the current legislation, as dated in the document, in good faith but the reader should check for themselves that it is the latest version and that they are acting within the legal framework.

## INTRODUCTION: TEMPORARY WORKS

The requirement to manage temporary works is not just restricted to large, complex, multi-million pound projects. Across all canal restoration projects we undertake temporary works of varying scales and they must be managed appropriately. Poorly managed temporary works lead to risks, such as injuries or fatalities, failure of temporary or permanent works, damage to adjacent premises with consequent delays and extra cost.

Temporary works are the parts of a construction project that are needed to enable the permanent works to be built and which are usually removed after use.

***British Standard 5975 describes temporary works as an engineering solution used to:***

- ① Support or protect an existing structure or the permanent works during construction.
- ② Support an item of plant or equipment (e.g. craning platform for installing lock gates).
- ③ Support an excavation.
- ④ Provide access.

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**Excavation supports, edge protection, scaffolding and propping systems are also classed as temporary works. Even setting up your site compound and fencing is classed as temporary works.**

There is a wide variety of temporary works on a canal restoration project such as installing a steel former, the temporary form, for a new brick arch accommodation bridge, or using a wooden falsework, the temporary support for a culvert arch, to using a scaffolding tower for access or erecting shuttering for a concrete pour.

On some projects the permanent works may be used in a temporary works situation, such as a path alongside a building where scaffold needs to be erected. The permanent works will need to be designed to accommodate the loads from the temporary works.



## LEGAL REQUIREMENTS

The law requires all temporary works to be well designed, planned activities from installation through to dismantling. You should be able to demonstrate that you have effective arrangements in place for controlling risks arising from the use of temporary works.

There is no difference between temporary or permanent works under the law; any hazards must be managed safely, with the main requirements of coordination, cooperation, communication, competency, timing, planning and inspections set out under Construction (Design & Management) Regulations 2015.

British Standard 5975 sets out one way of managing temporary works that has been found to work well on medium and large projects and is recognised as good practice. If this is not followed you could be in breach of other health and safety legislation.

Good planning and coordination of temporary works will ensure safety on site, reduce costs and improve the quality of the construction.

### MAIN ITEMS OF BS 5975

<b>Designated individual</b>	One person in an organisation who establishes and implements temporary works design and construction, including the appointment of a TWC.
<b>Temporary works coordinator (TWC)</b>	The restoration group should appoint a person to act as TWC, although this is not a legal requirement. The appointment should be in writing and the duties made known. The responsibilities of the TWC include ensuring that procedures relating to the management and coordination of temporary works are implemented on site. The TWC does not necessarily have to be the person responsible for the day-to-day progress of the temporary works on site.
<b>Temporary works supervisor (TWS)</b>	One or more TWSs may be required on large or complex projects to assist the TWC. The appointment should be in writing and the duties made known.
<b>Temporary works register</b>	All sites should have a temporary works register including all the temporary works identified for the project giving: <ul style="list-style-type: none"> <li>• A brief description.</li> <li>• Which parties are designing and executing the work.</li> <li>• Significant dates.</li> </ul>
<b>Permits to load / unload</b>	The TWC should issue a permit to load or unload the temporary works.
<b>Information flow</b>	BS 5975 stresses the importance of good information flow and coordination. Designers should have a written brief.



# TEMPORARY WORKS CONSIDERATION

It is very important that the same degree of care and attention is given to the design and construction of temporary works as to the design and construction of the permanent works. As temporary works may be in place for only a short while there is a tendency to assume they are less important. This is incorrect. Lack of care with design, selection and assembly, leaves temporary works liable to fail or collapse. This places people at risk of injury, damage to permanent structures and can cause the project to be delayed.



**Larger forces are often involved with temporary works, for example when concrete is wet it is more fluid and heavy than when it is set and self-supporting.**

- 1 **Reuse:** Temporary works components can often be reused (like props and scaffolding) which can lead to risk of damage, cracking or distortion.
- 2 **Overloading:** Temporary works can be overloaded if not adequately managed causing collapses or failures.
- 3 **Poor design:** A poorly designed temporary works can cause structural failures when in use – for example not calculating strength requirements or robustness for a concrete pour or taking short cuts due to costs and using the wrong materials.
- 4 **Last minute changes:** Unplanned changes or removal of key components can compromise the safety and structural integrity of a temporary works.
- 5 **Duration:** due to the speed of canal restoration, many of our temporary works end up in place longer than on a normal construction project and have to cope with seasonal factors instead.



## RECOMMENDATIONS FOR RESTORATION GROUPS

### *Pre-planning & Design:*

- ① Appoint a competent person to plan, coordinate and supervise the installation of the temporary works. On more complex projects appoint a Temporary Works Coordinator and prepare a Temporary Works register.
- ② Before starting work consider how long the temporary works are going to be in place. What is their purpose? This will help formulate a clear design brief so that calculations and drawings can be prepared.
- ③ For temporary works that will need to be in place for a defined length of time, such as formwork for a concrete pour or scaffold tower, make sure that they do not obstruct an access or public Right of Way.
- ④ Even simple temporary works may require careful consideration so take time to make sure temporary works are well designed, hazards have been identified and method statements are in place.
- ⑤ Set aside adequate budgets and don't take short cuts. Make sure you have the materials to do the job properly. Don't just make do with materials from around the site.
- ⑥ Check that the equipment provided is in a good condition.

### *Communication is key to safe working on site:*

- ① Communicate the plan – there is no point having a plan if volunteers/people on site don't follow them or make modifications along the way.
- ② Work to create a culture where temporary works are given the same considerations as permanent works.

- ③ Make sure people understand the risks associated with temporary works.
- ④ Before making any changes – ASK – there might be a good reason (load calculation for example) that the temporary works has been constructed in that way.
- ⑤ Make sure volunteers/staff involved in the activity have the appropriate level of supervision and/or training to be involved.

### *Check and Check Again:*

- ① Before using the temporary works check and double check everything is secure before commencing work.
- ② Check the temporary works throughout its use for signs of stresses, overloading and unplanned modifications. If the temporary works becomes unsafe stop work immediately.
- ③ Some forms of temporary works require formal inspections, such as scaffold, temporary dams, excavations. Ensure these inspections are carried out and are recorded.

### *Don't forget to plan the dismantling stage:*

- ① The dismantling stage can often be a neglected phase of the project – before starting work consider how you are going to safely dismantle it at the end of the project.
- ② Inspect temporary works before dismantling and make sure everyone is clear on steps to be taken. You don't want someone removing an essential piece of the temporary works before it is safe to do so.

# INTRODUCTION: EXCAVATIONS

Most construction work will involve some form of excavation, which will always be considered a high risk activity. Local conditions need to be considered for any method of excavation and volunteers should be trained and competent to ensure excavation is carried out in a safe way.

Good planning and preparation for excavation is essential because the shallowness of an excavation or ground appearance are not indicators of safety. Many accidents arise from the collapse of the side of an excavation or materials dropping on a person working in an excavation. A cubic metre of soil can weigh over a tonne.

*Hazards associated with excavation include:*

- ① Collapse of the sides, thorough lack of support, surcharge to the sides (overloading the ground next to the excavation by plant or materials), a change in ground conditions due to weather or ground vibrations from plant or equipment.
- ② Falls of materials, plant, equipment or persons into the excavation.
- ③ Underground/overhead services.
- ④ Contaminated ground.
- ⑤ Confined spaces, lack of oxygen, toxic or explosive atmospheres, and flooding.
- ⑥ Undermining adjacent structures or services.



## EXCAVATION SUPPORT

Do not assume that the sides of an excavation can support its own weight. There will always be water present, which is an additional hazard. Loose sands are likely to flow, whereas clays stick together more easily. Use relevant information on ground conditions, the presence of services, underground structures or underground watercourses to plan the excavation.

Battering back or stepping the sides of an excavation to a safe angle is an acceptable means of providing stability. The angle that is safe will depend on the soil conditions and will require sufficient space. Plant, materials and people should be kept at a safe distance to prevent surcharge by erecting suitable barriers and fencing.

### SOME TYPICAL SAFE SLOPE ANGLES (ANGLES ARE FROM THE HORIZONTAL)

Wet clay	16°
Wet sand	22°
Gravel with sand	25°
Dry earth	28°
Dry sand	38°
Shingle	39°
Gravel	40°
Drained clay or rubble	45°
Moist earth	50°

*Where space does not allow for battering back, trench supports can be used. The type of support will depend on:*

- ① The type of excavation.
- ② The nature of the ground and underground structures and services.
- ③ Groundwater conditions.
- ④ Surcharge of the sides of the excavation.
- ⑤ The length of time the excavation will be open.

Trench supports should be designed and the installation supervised by a competent person. Materials for trench supports should be available before the excavation starts. They should be of good quality and well maintained. There are different types of trench supports available and guidance from a competent person should be used to decide on the most suitable type.



**Bear in mind the length of time that the excavation will be open and the possibility that the soil conditions will change over time.**



## EXCAVATION SAFETY

**Access;** there must be a suitable and sufficient access into and out of the excavation. This is usually achieved using ladders, properly located and fixed. Under no circumstances should the side supports or any services crossing the excavation be used. The risk assessment should consider first aid needs and the means of recovering a casualty from the excavation.

**Edge protection;** physical barriers are required to prevent any person, vehicle, plant, equipment or materials from falling into the excavation. The arisings from the excavation should be placed far enough away that they do not surcharge the excavation and allow space for access at the top of the excavation. When barriers are removed, they should be replaced as soon as possible. The edges of excavations should be lit during darkness.

**Plant use;** traffic routes should be designed so that vehicles and plant cannot go near excavations. Use stop blocks where plant is filling an excavation. Do not allow plant to idle close to an excavation, the vibration may be transferred to the ground causing loosening of the soil and failure of the side.

**Confined spaces;** the excavation should be kept ventilated to prevent a build-up of suffocating, toxic or explosive atmospheres. Gases may seep through the soil into the excavation. Gases heavier than air could accumulate in the excavation, displacing the air and lead to asphyxiation. Propane or butane will sink to the lowest point to form an explosive concentration.

Some excavations could be classified as confined spaces and will require added precautions. Specialist advice needs to be sought and entry into the excavation will be controlled by a permit to work system.



**CAT scanning;** on the power frequency setting a CAT will find most electricity cables whilst power is flowing through them unless the current is small beyond the detection capacity. The radio frequency setting can detect electricity cables not picked up on the power frequency setting, but can have geographical limitations and will detect other metal objects. It can be used to pick up telecommunications cables of certain frequencies, but may not work on fibre optic cables.

Use the transmitter and receiver method to locate services when there is no current in the services. The signal generator (genny) has to be attached to the pipe or cable and will provide a signal for the CAT to track.

**Excavating around services;** once the service routes have been identified, mark them with paint, tape or markers. Do not use metal spikes as they could penetrate a cable or pipe. Don't forget that the exact position will not be known until the underground service has been exposed.

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Where services are known to be on a site from utilities plans, but have not been detected by CAT and signal generator, a hand dug trial trench can be used to accurately locate the services. Any services encountered must be identified and the utilities should be contacted to identify their apparatus. Never assume that a service is dead, always treat it as live until it has been confirmed otherwise. The location of any services encountered must be provided to the client for inclusion in the health and safety file. Utility providers provide a 'Dial before you dig' service. You can call them before you carry out excavation to see if they are aware of any services. You should contact your local utility companies to find out the details.

When excavating near any service do not use power tools or excavators within 500mm of a service. Hand digging should be undertaken using insulated tools. Sharp tools, such as picks or forks should not be used. Power tools can be used to break paved surfaces, but be careful not to over-penetrate because the service may be located immediately below the paving.

**Permit to dig;** in some circumstances excavation will be controlled by a permit to dig system, for instance where there are underground services shown in the service search. The permit needs to be cancelled once the excavation has been completed.



**For any excavation the side supports must be sufficient to support the sides of the excavation and allow any services to be supported across the excavation. Small deflections in some services can result in cable or pipe damage.**



## INSPECTIONS & REPORTS

*A competent person must carry out an inspection of an excavation at the following intervals:*

- ① At the start of each shift during which work is to be carried out.
- ② After an event that is likely to have affected the stability of the structure.
- ③ After an accidental fall or dislodgement of any material.

The competent person must be satisfied that the work can be carried out safely and produce a report of the inspection. If the competent person is not satisfied that the work can be carried out safely, they should inform the person they were instructed by. The report should be completed and provided within 24 hours of the inspection. The report must be kept on site and for a period of three months from the date of completion.

*The report should contain the following information:*

- ① Name and address of the person on whose behalf the inspection was carried out.
- ② Location of the work being inspected.
- ③ Description of the place of work, or part of that place of work inspection, including plant, equipment or materials.
- ④ Date and time of inspection.
- ⑤ Details of any matter identified that could give rise to the health and safety of any person.
- ⑥ Details of any action taken as a result of any matter identified.
- ⑦ Details of any further actions considered necessary.
- ⑧ Name and position of person making the report.

There are some useful forms produced by the Construction Industry Training Board (CITB), see useful resources for links to these forms.



## GUIDANCE NOTE

### USEFUL RESOURCES:

[HSE Structural stability during excavations](#)

[CITB Checklists and forms](#)

[Temporary Works FAQs](#)

[The management of temporary works in the construction industry](#)

[Navvies article on Formwork for Concrete \(page 32-35\)](#)

Sign up to read the full Practical Restoration Handbook and supporting resources here:  
[waterways.org.uk/practicalrestorationhandbook](http://waterways.org.uk/practicalrestorationhandbook)





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