Federation of Piling Specialists

Reference Material

Temporary Works

Table of Contents

FEDERATION OF PILING SPECIALISTS

Summary
The aim of this document is to provide a simple summary of temporary works items that are commonly associated with the various forms of ground engineering that FPS members may undertake. This is designed as an aide memoir for FPS members, main contractors, engineers and their clients and does not constitute a definitive list of temporary works that could be encountered on site. In particular this does not remove the need for individual organisations to undertake site specific assessments of temporary works requirements. Statutory legislation and the Contract will define the respective responsibilities of the parties involved to manage the design and checking of temporary works.

Definition
Temporary works can be defined as an 'engineered solution' used to:

- Support or protect an existing structure or the permanent works during construction
- Support an item of plant or equipment
- Support an excavation
- Provide access to and egress from the place of execution of the ground engineering works

Classification
All items of temporary works should be classified for the purposes of checking as Class 0, 1, 2 or 3 as that outlined in BS5975:2008. Typical checking requirements are as follows, however it may at times be necessary to increase the class due to specific site conditions:

Class 0 - This applies to the use of standard solutions and not the original design, which will require both structural calculation and checking to category 1, 2 or 3, as appropriate. Temporary works may be checked by another member of the site or design team. Standard solutions may be checked for compliance with the design criteria.

Class 1 - Such designs would be undertaken using simple methods of analysis and be in accordance with the relevant standards, supplier's technical literature or other reference publications. Temporary works can be design checked by another member of the design team.

Class 2 - This include designs where a considerable degree of interpretation of loading or soils information is required before the design of the foundation or excavation, support or slope. Temporary works must be design checked by someone independent from the design team (not involved in or consulted by the original design team).

FEDERATION OF PILING SPECIALISTS

Class 3 - These designs include unusual designs or where significant departures from standards, novel methods of analysis or considerable exercise of engineering judgement are involved. Temporary works must be checked by a third party organisation independent from the design team organisation.

Table 1 – Large Diameter Bored Piling

Management Class 0: Basic construction methods	**Management Class 1: Routine construction methods**	**Management Class 2: Specialist construction methods requiring exact control**	**Management Class 3: Unusual and bespoke construction methods**
Guidewall excavation, not exceeding 1.0m depth with no significant overburden and separated from 3rd party boundaries and equipment Formwork for guidewalls below ground level Equipment to facilitate pile trimming such as debonding foam and lifting eyes Covers to open or recently concreted pile bores	Pits and trenches to CIRIA 97 Trenching Practice Temporary casing Mobile crane outrigger foundations in good ground, crane to 50T and collapse radius is clear of 3rd party infrastructure or public areas Guidewall construction Lifting bands and lifting points for reinforcement cages Slope / excavation edge protection Test and reaction piles	Guidewall excavation, exceeding 1.0m depth or with significant overburden or close to 3rd party boundaries and equipment Propping to an embedded wall Piling platforms, access roads & batters, ramps not exceeding 1m height Tower crane bases Plunge or kingpost column installation and support Mobile crane outrigger foundations in poor / unknown ground or crane in excess of 50T or collapse radius is not clear of 3rd party infrastructure or public areas Large excavations and slopes Lifting beams, bands and points for tandem/cage lifts Load test and lifting beams	Temporary works combining inter-acting multiple designs Unusual concepts (methods, sequence, design) Novel highly complex designs Excavations and cofferdams in tidal conditions Deep excavations in poor soils outside the range of previous experience Assessment of structures likely to be affected by settlement or vibration caused by the method of work Any works outside the normal operations of the organisation

		Base slab and bund walls for support fluid tanks Simple dewatering and ground water pumping	Access ramps exceeding 1m height

Table 2 – Continuous Flight Auger Piling

Management Class 0: Basic construction methods	**Management Class 1: Routine construction methods**	**Management Class 2: Specialist construction methods requiring exact control**	**Management Class 3: Unusual and bespoke construction methods**
Guidewall excavation, not exceeding 1.0m depth with no significant overburden and separated from 3rd party boundaries and equipment Formwork for guidewalls below ground level Equipment to facilitate pile trimming such as debonding foam and lifting eyes Covers to recently concreted piles	Pits and trenches to CIRIA 97 Trenching Practice Mobile crane outrigger foundations in good ground, crane to 50T and collapse radius is clear of 3rd party infrastructure or public areas Guidewall construction Lifting bands and lifting points for reinforcement cages Slope / excavation edge protection Test and reaction piles	Guidewall excavation, exceeding 1.0m depth or with significant overburden or close to 3rd party boundaries and equipment Propping to an embedded wall Piling platforms, access roads & batters, ramps not exceeding 1m height Tower crane bases Kingpost column installation and support Mobile crane outrigger foundations in poor / unknown ground or crane in excess of 50T or collapse radius is not clear of 3rd party infrastructure or public areas Large excavations and slopes Load test and lifting beams Simple dewatering and ground water pumping	Temporary works combining inter-acting multiple designs Unusual concepts (methods, sequence, design) Novel highly complex designs Excavations and cofferdams in tidal conditions Deep excavations in poor soils outside the range of previous experience Assessment of structures likely to be affected by settlement or vibration caused by the method of work Any works outside the normal operations of the organisation

			Access ramps exceeding 1m height

Table 3 – Vibratory and Dynamic Ground Improvement

Management Class 0: Basic construction methods	**Management Class 1: Routine construction methods**	**Management Class 2: Specialist construction methods requiring exact control**	**Management Class 3: Unusual and bespoke construction methods**
Excavation, not exceeding 1.0m depth or with significant overburden or close to 3rd party boundaries and equipment Formwork to flared head construction below ground level	Pits and trenches to CIRIA 97 Trenching Practice Mobile crane outrigger foundations in good ground, crane to 50T and collapse radius is clear of 3rd party infrastructure or public areas Plate loading tests Slope / excavation edge protection	Excavation, exceeding 1.0m depth or with significant overburden or close to 3rd party boundaries and equipment Piling platforms, access roads & batters, ramps not exceeding 1m height Zone loading tests Lifting and dropping of dynamic compaction weights Mobile crane outrigger foundations in poor / unknown ground or crane in excess of 50T or collapse radius is not clear of 3rd party infrastructure or public areas	Temporary works combining inter-acting multiple designs Unusual concepts (methods, sequence, design) Novel highly complex designs Assessment of structures likely to be affected by settlement or vibration caused by the method of work Any works outside the normal operations of the organisation Access ramps exceeding 1m height

FEDERATION OF PILING SPECIALISTS

Table 4 – Mini Piling and Ground Anchors

Management Class 0: Basic construction methods	**Management Class 1: Routine construction methods**	**Management Class 2: Specialist construction methods requiring exact control**	**Management Class 3: Unusual and bespoke construction methods**
Excavation, not exceeding 1.0m depth or with significant overburden or close to 3rd party boundaries and equipment Equipment to facilitate pile trimming such as debonding foam and lifting eyes Covers to open or freshly concreted pile bores	Pits and trenches to CIRIA 97 Trenching Practice Temporary casing Mobile crane outrigger foundations in good ground, crane to 50T and collapse radius is clear of 3rd party infrastructure or public areas Designed scaffolds and loading platforms TG20:08 Lifting bands and lifting points for reinforcement cages Slope / excavation edge	Excavation, exceeding 1.0m depth or with significant overburden or close to 3rd party boundaries and equipment Propping to an embedded wall Piling platforms, access roads & batters, ramps not exceeding 1m height Tower crane bases Connecting bars or steel tubes together Lift off test equipment, test piles and beams Kingpost column installation and support Mobile crane outrigger foundations in poor / unknown ground or crane in excess of 50T or collapse radius is	Temporary works combining inter-acting multiple designs Unusual concepts (methods, sequence, design) Novel highly complex designs Rig mast restraint system working adjacent railway lines Assessment of structures likely to be affected by settlement or vibration caused by the method of work Any works outside the normal operations of the organisation

	protection Test and reaction piles	not clear of 3rd party infrastructure or public areas Anchor or soil nail head details Large excavations and slopes Load test and lifting beams Simple dewatering and ground water pumping	Access ramps exceeding 1m height

FEDERATION OF PILING SPECIALISTS

Table 5 - Precast Driven Piling

Management Class 0: Basic construction methods	**Management Class 1: Routine construction methods**	**Management Class 2: Specialist construction methods requiring exact control**	**Management Class 3: Unusual and bespoke construction methods**
Excavation, not exceeding 1.0m depth or with significant overburden or close to 3rd party boundaries and equipment Formwork to flared head construction below ground level Equipment to facilitate pile trimming such as construction of static test pile head	Pits and trenches to CIRIA 97 Trenching Practice Mobile crane outrigger foundations in good ground, crane to 50T and collapse radius is clear of 3rd party infrastructure or public areas Slope / excavation edge protection	Excavation, exceeding 1.0m depth or with significant overburden or close to 3rd party boundaries and equipment Piling platforms, access roads & batters, ramps not exceeding 1m height Mobile crane outrigger foundations in poor / unknown ground or crane in excess of 50T or collapse radius is not clear of 3rd party infrastructure or public areas Tower crane bases Large excavations and slopes Load test and lifting beams Simple dewatering and ground water pumping	Temporary works combining inter-acting multiple designs Unusual concepts (methods, sequence, design) Novel highly complex designs Excavations and cofferdams in tidal conditions Assessment of structures likely to be affected by settlement or vibration caused by the method of work Any works outside the normal operations of the organisation Access ramps exceeding 1m height

FEDERATION OF PILING SPECIALISTS

Table 6 – Driven Cast In Situ

Management Class 0: Basic construction methods	**Management Class 1: Routine construction methods**	**Management Class 2: Specialist construction methods requiring exact control**	**Management Class 3: Unusual and bespoke construction methods**
Excavation, not exceeding 1.0m depth or with significant overburden or close to 3rd party boundaries and equipment Formwork to flared head construction below ground level Equipment to facilitate pile trimming such as construction of static test pile head	Pits and trenches to CIRIA 97 Trenching Practice Mobile crane outrigger foundations in good ground, crane to 50T and collapse radius is clear of 3rd party infrastructure or public areas Slope / excavation edge protection Lifting bands and lifting points for reinforcement cages Test and reaction piles	Excavation, exceeding 1.0m depth or with significant overburden or close to 3rd party boundaries and equipment Piling platforms, access roads & batters, ramps not exceeding 1m height Mobile crane outrigger foundations in poor / unknown ground or crane in excess of 50T or collapse radius is not clear of 3rd party infrastructure or public areas Tower crane bases Large excavations and slopes Load test and lifting beams Simple dewatering and ground water pumping	Temporary works combining inter-acting multiple designs Unusual concepts (methods, sequence, design) Novel highly complex designs Excavations and cofferdams in tidal conditions Assessment of structures likely to be affected by settlement or vibration caused by the method of work Any works outside the normal operations of the organisation Access ramps exceeding 1m height

FEDERATION OF PILING SPECIALISTS

Table 7 – Sheet piling

Management Class 0: Basic construction methods	Management Class 1: Routine construction methods	Management Class 2: Specialist construction methods requiring exact control	Management Class 3: Unusual and bespoke construction methods
Excavation, not exceeding 1.0m depth or with no significant overburden or close to 3rd party boundaries and equipment	Pits and trenches to CIRIA 97 Trenching Practice Mobile crane outrigger foundations in good ground, crane to 50T and collapse radius is clear of 3rd party infrastructure or public areas Slope / excavation edge protection	Excavation, exceeding 1.0m depth or with significant overburden or close to 3rd party boundaries and equipment Working platforms for handling cranes and reaction stand/temporary gates erection Piling platforms, access roads & batters, ramps not exceeding 1m height Mobile crane outrigger foundations in poor / unknown ground or crane in excess of 50T or collapse radius is not clear of 3rd party infrastructure or public areas Large excavations and slopes Simple dewatering and ground water pumping. Working at height, and/or suitable access to specific guarded platforms on standard equipment Control of long thin materials during lifting operations in variable weather conditions	Temporary works combining inter-acting multiple designs Unusual concepts (methods, sequence, design) Novel highly complex designs Assessment of structures likely to be affected by settlement or vibration caused by the method of work Deep excavations in poor soils outside the range of previous experience Any works outside the normal operations of the organisation Access ramps exceeding 1m height

FEDERATION OF PILING SPECIALISTS

Table 8 - Soil Mixing

Management Class 0: Basic construction methods	**Management Class 1: Routine construction methods**	**Management Class 2: Specialist construction methods requiring exact control**	**Management Class 3: Unusual and bespoke construction methods**
Excavation, not exceeding 1.0m depth or with no significant overburden or close to 3rd party boundaries and equipment	Pits and trenches to CIRIA 97 Trenching Practice Slope / excavation edge protection	Piling platforms, access roads & batters, ramps not exceeding 1m height Mobile crane outrigger foundations in poor / unknown ground or crane in excess of 50T or collapse radius is not clear of 3rd party infrastructure or public areas Large excavations and slopes Simple dewatering and ground water pumping. Base slab and bund walls for mixing plant	Temporary works combining inter-acting multiple designs Unusual concepts (methods, sequence, design) Novel highly complex designs Any works outside the normal operations of the organisation Access ramps exceeding 1m height

FEDERATION OF PILING SPECIALISTS

Table 9 – Grouting

Management Class 0: Basic construction methods	Management Class 1: Routine construction methods	Management Class 2: Specialist construction methods requiring exact control	Management Class 3: Unusual and bespoke construction methods
Equipment to facilitate pile trimming such as debonding foam and lifting eyes Covers to open or freshly concreted pile bores	Pits and trenches to CIRIA 97 Trenching Practice Temporary casing Mobile crane outrigger foundations in good ground, crane to 50T and collapse radius is clear of 3rd party infrastructure or public areas Designed scaffolds and loading platforms TG20:08 Lifting bands and lifting points for reinforcement Slope / excavation edge protection	Propping to an embedded wall Piling platforms, access roads & batters, ramps not exceeding 1m height Connecting bars or steel tubes together Mobile crane outrigger foundations in poor / unknown ground or crane in excess of 50T or collapse radius is not clear of 3rd party infrastructure or public areas Large excavations and slopes Lifting beams Simple dewatering and ground water pumping Base slab and bund walls for mixing plant	Temporary works combining inter-acting multiple designs Unusual concepts (methods, sequence, design) Novel highly complex designs Rig mast restraint system working adjacent railway lines Assessment of structures likely to be affected by settlement or vibration caused by the method of work Any works outside the normal operations of the organisation Access ramps exceeding 1m height

FEDERATION OF PILING SPECIALISTS

Table 10 – Diaphragm Walls

Management Class 0: Basic construction methods	Management Class 1: Routine construction methods	Management Class 2: Specialist construction methods requiring exact control	Management Class 3: Unusual and bespoke construction methods
Guidewall excavation, not exceeding 1.0m depth with no significant overburden and separated from 3rd party boundaries and equipment Formwork for guide walls below ground level Equipment to facilitate pile trimming such as debonding foam and lifting eyes Covers to open or recently concreted panels	Pits and trenches to CIRIA 97 Trenching Practice Mobile crane outrigger foundations in good ground, crane to 50T and collapse radius is clear of 3rd party infrastructure or public areas Guidewall construction Slope / excavation edge protection Trapping beams for standard rectangular cages	Guidewall excavation, exceeding 1.0m depth or with significant overburden or close to 3rd party boundaries and equipment Propping to an embedded wall Piling platforms, access roads & batters, ramps not exceeding 1m height Mobile crane outrigger foundations in poor / unknown ground or crane in excess of 50T or collapse radius is not clear of 3rd party infrastructure or public areas Large excavations and slopes Lifting bands, points and lowering heads for cage installation & tandem cage lifts Trapping beams for non-standard or non-rectangular cages Temporary works for cages including but not limited to raker bars, cathedral bars, lifting bands, trap off bands and fish plates Base slab and bund walls for support fluid tanks Simple dewatering and ground water pumping	Temporary works combining inter-acting multiple designs Unusual concepts (methods, sequence, design) Novel highly complex designs Excavations and cofferdams in tidal conditions Deep excavations in poor soils outside the range of previous experience Assessment of structures likely to be affected by settlement or vibration caused by the method of work Any works outside the normal operations of the organisation Access ramps exceeding 1m height Cage lifting points when lifting over critical assets or people

		Trench stability in difficult ground conditions or with tidal water levels	

Table 11 – Marine Work

Management Class 0: Basic construction methods	**Management Class 1: Routine construction methods**	**Management Class 2: Specialist construction methods requiring exact control**	**Management Class 3: Unusual and bespoke construction methods**
Covers to open or recently concreted pile bores Basic scaffolds to TG20:08	Mobile crane outrigger foundations in good ground, crane to 50T and collapse radius is clear of 3rd party infrastructure or public areas Designed scaffolds and loading platforms TG20:08 Lifting bands and lifting points for reinforcement cages Temporary casing Slope / excavation edge protection	Piling platforms, access roads & batters, ramps not exceeding 1m height Working at height, and/or suitable access to specific guarded platforms on standard equipment Mobile crane outrigger foundations in poor / unknown ground or crane in excess of 50T or collapse radius is not clear of 3rd party infrastructure or public areas Lowering heads used for cage installation Lifting beams Simple dewatering and ground water pumping Trench stability in difficult ground conditions or with tidal water levels	Temporary works combining inter-acting multiple designs Unusual concepts (methods, sequence, design) Novel highly complex designs Jack up platforms Any works outside the normal operations of the organisation Excavations and cofferdams in tidal conditions Access ramps exceeding 1m height