

Working Platform Certificate

Guidance on working platforms for tracked plant

General Introduction

This document is intended for the use by designers and engineers considering the piling platform requirements for a project utilising Sheet Piling (UK) Ltd equipment and it only applies to ground supported working platforms for tracked plant construction on granular material.

The information is based upon details supplied by the plant manufacturers and Sheet Piling (UK) Ltd own experiences of the plant performance.

To produce the bearing pressures an analysis has been conducted in accordance with the agreed procedures of the FPS and cover the typical working envelope within which piling plant is operated. Further analysis should be undertaken when operating equipment outside of this envelope and when the situation requires different loads or constraints from those noted within this document.

A piling platform designer should take into account any imposed loading by other plant, the ground conditions, the effects of weather, platform deterioration with time, soft spots and the platform maintenance regime.

In accordance with the BRE guidance document (published June 2004) on Design, Installation and Maintenance of Working Platforms the loads for each rig have been analysed and are presented for the two load cases of Case 1 and Case 2.

Case 1 loading applies to the situation when the rig or crane operator is unlikely to be able to aid recovery from an imminent platform failure.

Operations in which this type of loading condition applied could include standing, travelling and handling.

Case 2 loading applies to the situation when the rig or crane operator can control the load safely, for example by releasing the line load, or by reducing power, to aid recovery from an imminent platform failure.

Operations in which this type of loading condition applies could include installing/extracting a sheet pile, and/or drilling/extracting an auger. Consequently, a lower factor of safety can be adopted for this loading case.

These operations include sheet pile installation, extraction and preaugering (where applicable).

1. Design

- 1.1. The HSWA 1974 and CDM Regulations 2015 require the Principal Contractor to appoint competent Designers in respect of Working Platform design. This legislation explains how competence can be assessed by reference to professional qualifications or professional memberships and by reference to practical experience of the design of working platforms. Principal Contractors must be satisfied that a competent Designer has been appointed by them in accordance with the relevant legislation before they complete and sign the WPC.
- 1.2. The stability of tracked plant is fundamentally dependent upon the provision of a suitable and sufficient working platform. It must be properly designed and installed to a recognised standard. Whilst the same type of rig may be operated by different companies, the design bearing pressures may differ due to the specific operating configuration of the rig and/or any modifications. Details of the plant to be used and bearing pressures will be provided by the specialist contractor in advance of work commencing.
- 1.3. Working platform design is extremely sensitive to the bearing pressure and type of fill used in the platform. (For example, changing the angle of friction of the fill from 35 degrees to 45 degrees can halve the platform thickness.) It is therefore advised that the Designer may have to adopt conservative/cautious estimates of platform shear strength unless higher values can be demonstrated by testing or with reference to appropriate published data.
- 1.4. The working platform must be *safe for pedestrian access and* free draining to prevent the build-up of water and slurry. It must be free from harmful materials and contaminants. In the case of fine-grained sub-grades, a separation/filter membrane should be installed beneath the platform material to inhibit 'pumping' and infiltration of the fine-grained soils up into the platform material during wet weather (which can impair platform performance and increase maintenance costs).
- 1.5. Proof testing of the platform can be carried out with a suitably sized circular plate subjected to the maximum design loading. Such testing, as part of an appropriately designed testing regime, should highlight any gross inconsistencies in platform performance. Potentially, significant savings in platform thickness and cost may be realised by adopting a more detailed testing strategy.
- 1.6. The working platform must have a design life which starts before delivery of the piling equipment and ends on completion of all piling works. This includes load testing, integrity testing, investigation of non-conformances and any remedial works.
- 1.7. The specialist contractor is to advise the Principal Contractor at the earliest practicable opportunity should the specialist contractor become aware of any circumstances relating to the working platform that renders it unsafe.

2. Installation

- 2.1. The FPS Working Platform Certificate is mandatory for all sites where a rig or attendant plant operates. It must be signed by an authorised representative of the Principal Contractor. This signature confirms that the legal duties required under CDM have been carried
- 2.2. If the working platform is to be constructed or removed in phases while piling works are ongoing, then the extent of the platform must be clearly defined on the certificate and, in accordance with good practice, physically on site. This is particularly important where the platform material is removed from an area previously made available to the specialist contractor.

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- 2.3. The working platform *must* provide *safe* access for all plant deliveries, sub-contractors and personnel associated with the specialist operations. Properly designed and installed, the working platform could also provide suitable and safe access for following trades for the whole project.
- 2.4. Poor definition of the edge of the working platform is a major cause of tracked plant instability. It is good practice that the working platform should extend at least 2m beyond the pile position/edge of the building to ensure sufficient safe working area for the specialists personnel and attendant plant. Where having to work within this 2m zone is unavoidable the Designer is to be informed of the requirement to design the platform for working up to its edge.
- 2.5. Where access ramps are used to move between working levels these must be of sufficient gradient and width to allow the plant to move safely with the stability constraints of the machine. Ramps must be in a straight line between working areas. Rigs and cranes cannot change direction on ramps. Where a change in direction is required, this must be on a flat level platform.

3. Maintenance, modification, repair and reinstatement

- 3.1. The working platform must be kept free draining. Water and slurry which is allowed to build up on the working platform can hide such hazards as recently constructed piles, trip hazards, uneven or unstable ground, services and excavations. Slurry can be transferred to work equipment which increases the risk of slips on steps as well as difficult handling of work tools.
- 3.2. Obstructions encountered during installation of the piling works will generally require excavation to remove them. This can create a 'soft spot' which can result in the rig overturning. It is essential, therefore, that any excavations made in the working platform are reinstated to the designed standard, including any reinforcement and separation filter/membrane.
- 3.3. The working platform shall be subject to regular inspection by a competent individual appointed by the Principal Contractor (e.g. the Temporary Works Co-ordinator) throughout its design life and after any reinstatement or any works which might have modified it. Any damaged or inadequate areas identified must be reinstated to the designed standard. Following the regular inspection, the Working Platform Regular Inspection Log shall be signed by an authorised representative of the Principal Contractor and issued to the specialist contractor with a layout drawing of the working platform amended as appropriate.

4. Working Platform Layout

- 4.1 Items that must be included and properly located on the working platform layout drawing and be notified by the Principal Contractor to the specialist contractor would include: detail of platform edges and 2m delineation, trial pits, services or voids, areas of backfilling, known underground basements; areas that are covered by the certificate or permit, test locations (if specified by the Designer of the platform) and any other feature that may affect the safety of operations.

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Project Name	C1642 - NEWPORT TRANSPORTER BRIDGE
Work area covered by this certificate	PILING PLATFORM

(A sketch or marked up pile layout drawing may be attached to this certificate. Include haul roads and gridlines.)

Part 1 – WORKING PLATFORM DESIGN (INCLUDING RAMPS AND ACCESS ROUTES)

Equipment to be used on site.	CAT 328D LCR EXCAVATOR
Maximum plant loading	219KN/m2

(Note: BR470 'Working Platforms for Tracked Plant: Good practice guide to the design, installation, maintenance and repair of ground-supported platforms' is available from IHS BRE Press – Tel 01344 328 038)

Designer Name		Tel No.
Designer Organisation		
Specification of testing required to verify the design		

Part 2 – VERIFICATION BY PRINCIPAL CONTRACTOR

The working platform detailed above has been designed, installed to the design and, if specified, tested to safely support the equipment detailed in Part 1 above. The limits of the platform have been clearly identified on site as necessary.

The working platform will be REGULARLY INSPECTED, MAINTAINED, MODIFIED, REPAIRED, and REINSTATED to the as-designed condition after any excavation or damage, throughout the period when the equipment is on the site. A completed copy of this certificate signed by an authorised person from the Principal Contractor shall be given to each user of the working platform prior to commencement of any works on site.

Name & Position		Date
Organisation		Signature

Sheet Piling UK Ltd are committed to develop this initiative and supports the principle of reducing accidents by the certification of properly designed, prepared and maintained working platforms

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PLANT LOADINGS

PILING RIG & CRAWLER CRANE BEARING PRESSURES

Plant Manufacturer & Model	Track Pad Width (m)	Track Bearing length (m)	Working Weight (Te)	Max Crowd Force (kN)	Max Extraction Force (kN)	Case 1 Loading Standing or Travelling		Case 1 Loading Handling		Case 2 Loading Installation		Case 2 Loading Extraction [1]		Notes
						Max Rectangular Bearing Pressure (kN/m²)	Equivalent Track Bearing Length (m)	Max Rectangular Bearing Pressure (kN/m²)	Equivalent Track Bearing Length (m)	Max Rectangular Bearing Pressure (kN/m²)	Equivalent Track Bearing Length (m)	Max Rectangular Bearing Pressure (kN/m²)	Equivalent Track Bearing Length (m)	PLEASE NOTE: Track Loadings and Track Lengths quoted are based strictly on the following operational limitations noted below for each item of plant.
Sheet Piling Rigs														
ABI TM 13/16 SL	0.60	3.85	50	90	175	200	3.08	N/A	N/A	204	2.32	291	2.30	Maximum Working Radius = 5.79m Maximum Crowd Force = 58kN Maximum Extraction Force = 109kN
ABI TM 14/17 SL	0.60	3.85	52	90	175	200	3.10	N/A	N/A	204	2.32	291	2.30	Maximum Working Radius = 5.79m Maximum Crowd Force = 58kN Maximum Extraction Force = 109kN
Bauer RTG 16	0.70	4.15	52	140	200	231	2.15	N/A	N/A	124	3.11	355	1.39	Maximum Working Radius = 5.29m Maximum Crowd Force = 60kN Maximum Extraction Force = 50kN
Bauer RTG 19	0.70	4.15	60	140	200	243	2.38	N/A	N/A	147	3.19	335	1.68	Maximum Working Radius = 5.29m Maximium Crowd Force = 60kN Maximum Extraction Force = 50kN
Bauer RTG 21	0.70	4.42	78	140	260	343	2.23	N/A	N/A	222	2.91	372	1.85	Maximum Working Radius = 5.91m Maximium Crowd Force = 60kN Maximum Extraction Force = 20kN
ABI TM 18/22 HD	0.70	4.80	82	120	200	203	3.49	N/A	N/A	215	2.52	313	2.64	Maximum Working Radius = 5.70m Maximum Crowd Force = 120kN Maximum Extraction Force = 200kN
ABI TM 20 LR • Tracks out. • Maximum reach.	0.90	4.40	84	180	180	260	2.38	N/A	N/A	199	2.36	315	1.87	Maximum Working Radius = 8.04m Maximum Crowd Force = 120kN Maximum Extraction Force = 120kN
ABI TM 20 LR • Tracks in. • Maximum reach.	0.90	4.40	84	120	120	267	2.38	N/A	N/A	205	2.36	324	2.08	Maximum Working Radius = 8.04m Maximum Crowd Force = 120kN Maximum Extraction Force = 120kN
ABI TM 12/15 H Long Reach	0.70	4.51	62	90	100	194	2.77	N/A	N/A	121	3.56	320	1.70	Maximum Working Radius = 8.08m Maximum Crowd Force = 72kN Maximum Extraction Force = 80kN Handling of Sheet Pile is NOT Permitted
CAT 328D LCR Excavator Piling Rig	0.85	4.05	34	80	80	114	2.89	N/A	N/A	219	1.01	191	1.81	
DOOSAN DX255 Excavator Piling Rig	0.80	3.85	28	60	60	113	2.38	N/A	N/A	185	1.05	152	1.96	
Crawler Cranes														
Sennebogen 643E	0.70	4.40	42	N/A	N/A	121	2.94	237	3.28	-	-	-	-	Maximum Radius / Maximum Load Minimum Radius / Maximum Load
Sennebogen 653E	0.70	4.40	50	N/A	N/A	94	3.82	241	1.92	-	-	-	-	Maximum Radius / Maximum Load Minimum Radius / Maximum Load
Sennebogen 673E	0.70	5.10	70	N/A	N/A	184	2.66	291	2.46	-	-	-	-	Maximum Radius / Maximum Load Minimum Radius / Maximum Load
NCK Nova 50	0.85	4.50	54	N/A	N/A	124	4.50	235	2.10	-	-	-	-	Maximum Radius / Maximum Load Minimum Radius / Maximum Load

1. Extraction load case applicable to both pile extraction and pre-augering activities.

2. Maximum crowd and extraction force only possible with reduced reach.

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Working Platform Regular Inspection Log (To be completed by an authorised representative of the Principal Contractor)

The working platform has been inspected *prior to handover and provides safe access for people and plant*. All necessary maintenance, modification, repair or re-instatement of the working platform is to the as-designed installed condition. If necessary, a revised Working Platform Layout Drawing has been issued to the specialist contractor.

Date	Organisation	Name & Position	Signature	Comments (include key details of alteration, modification, maintenance, repair, date of next inspection, and whether or not revised drawing issued etc. as appropriate)