21482

# Test Report

## Testing of tower in accordance with BS EN 1004-1:2020

| | |
|---|---|
| **Client:** | Ferral, Ruas dos Sobrais, 655 - Zona Industrial sul, Apartado 70, 3885-307, Cortegaca, Ovar, Portugal. |
| **Product:** | Prestige |
| **Date(s) of testing:** | 08/01/2026 to 18/02/2026 |
| **Scope of testing:** | BS EN 1004-1:2020<br>Mobile access and working towers made of prefabricated elements<br>Part 1: Materials, dimensions, design loads, safety and performance requirements. |
| **Test result:** | Sample assessed met requirements |

**Authorised by:**

John Darby
General Manager

T&R reference: S1187 Test report No: T1384-01

# Summary of findings

## BS EN 1004-1:2020

*Within UKAS Accreditation*

| Clause No | Clause | Pass/Fail |
|---|---|---|
| 1 | Scope | Pass |
| 4 | Classification | Pass |
| 5 | Designation | Pass |
| 6 | Materials | Pass |
| 7 | General requirements | Pass* |
| 8 | Requirements for structural design | Pass* |
| 9 | Structural design | Pass |
| 10 | Tests | Pass |
| 11 | Instruction manual | Pass |
| 12 | Marking | Pass |
| Annex A | Stiffness test | Pass |

## BS EN 1004-2:2021

*Outside UKAS Accreditation*

| Clause No | Clause | Pass/Fail |
|---|---|---|
| 1 | Scope | Pass |
| 3 | Instruction manual | Pass |
| 4 | General | Pass |
| 5 | Identification of the components in the structure | Pass |
| 6 | Assembly, alteration and dismantling | Pass |
| 7 | Stability | Pass |
| 8 | Application and moving | Pass |
| 9 | Inspection, care and maintenance | Pass |
| 10 | Designation | Pass |

* Evidence of conformity for some sub-clauses provided by client.

This laboratory is accredited in accordance with the recognised International Standard ISO/IEC 17025. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF communiqué dated April 2017).

# Test Report - Section 1

| | | | |
|---|---|---|---|
| Test Report ID: | T1384-01 | Service Order: | S1187 |

## Client Details

| | |
|---|---|
| Client: | Ferral, Ruas dos Sobrais, 655 - Zona Industrial sul, Apartado 70, 3885-307, Cortegaca, Ovar, Portugal. |
| Client Reference: | C1055 |

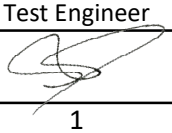
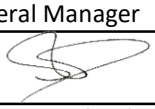
## Test specification

| | | |
|---|---|---|
| Test specification: | BS EN 1004-1:2020 | Mobile access and working towers made of prefabricated elements<br>Part 1: Materials, dimensions, design loads, safety and performance requirements. |
| Test method: | Work Instruction: TRC-W03 | |
| Test laboratory: | The Test & Research Centre, 34 Regal Drive, Soham, Cambridgeshire, CB7 5BE. | |
| Comments: | | |

## Product Details

| | | | |
|---|---|---|---|
| Product Name: | Prestige | | |
| Product Description: | Mobile access and working tower | | |
| Product condition: | New | | |
| Component codes: | Various - see manual | | |
| Date of receipt: | 19/12/2025 | Sample no: | 1 |

## Test Details

| | | | |
|---|---|---|---|
| Start: | 08/01/2026 | Finish: | 18/02/2026 |
| | **Evaluation by** | | **Authorised by** |
| Date: | 18/02/2026 | | 18/02/2026 |
| Name: | J. Darby | | J. Darby |
| Position: | Test Engineer | | General Manager |
| Signature: |  | |  |
| Report revision: | 1 | Date of issue: | 18/02/2026 |

## Comments

Sample assessed met requirements

## Legend

| | | |
|---|---|---|
| P(ass) = passed test specification | N/A = not applicable | # = Opinion or interpretation made based on competence of T&R staff (Not within UKAS accreditation) |
| F(ail) = failed test specification | N/T = not tested | |
| All dimensions in mm unless stated otherwise | | * = Information provided by the client |

## Decision Rule

Decision rule (based on ILAC G8-09/2019) - Binary statement for simple acceptance:
Pass – the measured value is below the acceptance limit, AL = TL
Fail – the measured value is above the acceptance limit, AL=TL

## DISCLAIMER

# Test Report - Section 1

| Test Report No: | T1384-01 |
|---|---|

## List of equipment used

| Equipment Name | Equipment Number | Used (Y/N) |
|---|---|---|
| 150mm steel rule | TE180067 | Y |
| 300mm steel rule | TE180068 | Y |
| 3m steel tape | TE180046 | |
| 8m steel tape | TE180047 | Y |
| 150mm digital vernier calliper | TE180071 | Y |
| 1000mm digital vernier calliper | TE180072 | Y |
| Digital Protractor | TE180066 | |
| Digital Laser Measure | TE190015 | Y |
| Stopwatch | TE180070 | |
| 25mm Digital plunger indicator | TE200009 | |
| 1000mm steel rule | TE200015 | Y |
| 50mm Digital plunger indicator | TE200016 | |
| 100mm Digital plunger indicator | TE240001 | Y |
| 600mm digital vernier calliper | TE220001 | |

## Information supplied by the client

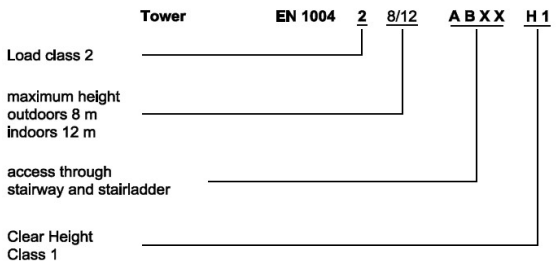
| Item | Description | Document ID | Date/Rev |
|---|---|---|---|
| 1 | Instruction Manual - Prestige | - | - |
| 2 | PRESTIGE - Structural Integrity Report | - | 26/02/2025 |
| 3 | Castor test report - TUV No. | AK 50332834 0001 | 23/02/2016 |
| 4 | Risk assessment - Mobile towers (Prestige / Apex) | - | 17/12/2026 |
| 5 | File of material certificates | - | - |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |

## Components evaluated

| Item | Code | Description |
|---|---|---|
| 1 | - | Platform unit |
| 2 | - | Brace |
| 3 | - | Guardrail frame |
| 4 | - | Folding base frame |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |

# Test Report - Section 2

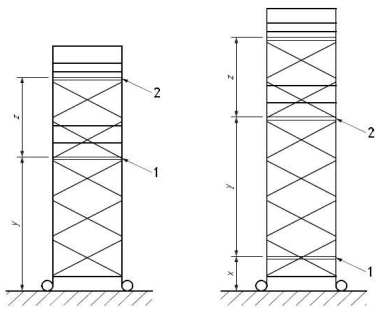
| Test Report No: | T1384-01 | Test Specification | BS EN 1004-1:2020 |
|---|---|---|---|

| Clause | Requirement | Remark | Result |
|---|---|---|---|
| **1** | **Scope** | | |
| | This document applies to the design of mobile access and working towers made of prefabricated elements with dimensions which are fixed by the design and with a height up to 12 m (indoors) and up to 8 m (outdoors).<br>This document applies to mobile access and working towers used as temporary work equipment.<br>This document:<br>— gives guidelines for the choice of the main dimensions and stabilizing methods,<br>— gives safety and performance requirements, and<br>— gives information on complete towers.<br>This product standard does not apply to scaffolds according to EN 12810-1 and EN 12811-1. | Product is within scope. | P |
| **2** | **Normative references** | See standard | |
| **3** | **Terms and definitions** | See standard | |
| **4** | **Classification** | | |
| **4.1** | **Load Classes** | | |
| | **Table 1 — Classes of uniformly distributed load**<br>Load class \| Uniformly distributed load q kN/m²<br>2 \| 1,50<br>3 \| 2,00 | Load class 3<br>Ref doc. No. 1 - Instruction manual | |
| **4.2** | **Access Classes** | See 7.6 | |
| **4.3** | **Height Classes** | See 7.2 | |
| **5** | **Designation** | | |
| | The following data are required for the designation of all prefabricated mobile access and working towers:<br>a) class of uniformly distributed load (see 4.1);<br>b) maximum height outdoors/indoors;<br>c) access classes (see 4.2);<br>d) clear height classes (see 4.3).<br>  | | |
| **6** | **Materials** | | |
| | Materials shall fulfil the requirements given in European standards, where design data are provided. If European standards do not exist, ISO standards can be applied.<br><br>Materials shall be sufficiently robust and durable to withstand normal working conditions. | Ref doc. No. 5 - Material certificates<br>Materials are 6060 or 6063 grade.<br><br>Materials and connections considered to be robust and durable. | P |

# Test Report - Section 2

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-1:2020 |
|---|---|---|---|

| Clause | Requirement | Remark | Result |
|---|---|---|---|
| | Additional requirements for some materials are given in EN 12811-2.<br>When materials are used, whose properties in relation to the intended application (e.g. temperature, ageing, UV-degradation) are not given in any available standard an adequate assessment is required.<br><br>Steel shall be protected by one of the methods given in EN 12811-2, or zinc plated to the level required for the design service environment stated in EN ISO 2081. | | |
| **7** | **General Requirements** | | |
| **7.1** | **General** | | |
| | A mobile access and working tower shall only consist of a single-bay structure. | Tower is a single bay structure.<br>**PASS** | **P** |
| | The mobile access and working tower shall be designed such that it can be assembled, altered and dismantled without the need for personal fall protection equipment. | Tower can be built without personal fall protection equipment.<br>**PASS** | |
| | Only one platform shall be a working platform at one time. | Uppermost platform is working platform.<br>**PASS** | |
| | The mobile access and working tower shall be designed in such a way that the uppermost platform is a working platform and lower platforms are intermediate platforms. | Uppermost platform is working platform.<br>**PASS** | |
| | The vertical distance between platforms shall be no greater than 2,25 m. | N/A - Only one platform level in product. | |
| | The vertical distance between the ground and the first platform shall be no greater than 3,40 m.<br><br>However, if a platform is placed ≤ 0,6 m from the ground, it is allowed to have a vertical distance no greater than 3,40 m between that platform and the next platform. See Figure 2. | Clear height 1893.00 **PASS**<br>Measurement uncertainty (± mm) 1.28<br>*Note: Pack B*<br>N/A | |
| | If the mobile access and working tower cannot be entered from the inside of the structure, the requirements of 7.11 shall apply. | N/A | |



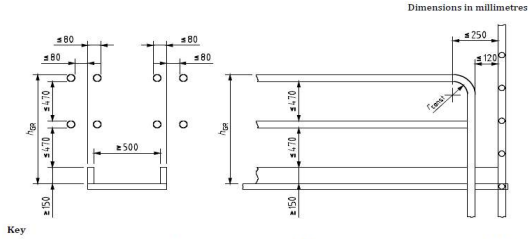

Key
$x$ ≤ 0,6 m
$y$ ≤ 3,40 m
$z$ ≤ 2,25 m
1 first platform
2 second platform

NOTE Stabilizers are omitted from this figure for clarity.

**Figure 2 — Maximum distance between platforms**

# Test Report - Section 2

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-1:2020 |
|---|---|---|---|

| Clause | Requirement | Remark | Result |
|---|---|---|---|
| **7.2** | **Dimensions** | | |
| | The minimum width, *w* , of the platform shall be 0.60 m and the minimum length, *l* , shall be 1.00 m. See Figure 1. | Width 635.22 **PASS**<br>Measurement uncertainty (± mm) 0.21<br>Length 1572.61 **PASS**<br>Measurement uncertainty (± mm) 1.51 | **P** |
| | The minimum clear width between the toe boards shall be 0.5 m. | Width 611.25 **PASS**<br>Measurement uncertainty (± mm) 0.27 | |
| | The minimum clear height between platforms H shall be in accordance with Table 2.<br>Table 2 — Clear height classes<br>Clear height class: H1 — Minimum clear height H in m: 1,85<br>Clear height class: H2 — Minimum clear height H in m: 1,90 | N/A - Only one platform level in product. | |
| **7.3** | **Openings within platforms** | | |
| **7.3.1** | **Access openings** | | |
| | Access openings in platforms through which the user will climb shall have a minimum clear opening of 0.40 m wide × 0.60 m long. | Gauge fit? **PASS**<br>If measured:<br>Width 532.54 **PASS**<br>Measurement uncertainty (± mm) 0.25<br>Length 609.51 **PASS**<br>Measurement uncertainty (± mm) 0.27 | **P** |
| | Access openings in platforms shall be provided with a means to prevent falling through. The trapdoor shall be fastenable in the closed position. | Access opening has trap door with lock in the closed position **PASS** | |
| **7.3.2** | **Apertures** | | |
| | Apertures in platforms or between platform units shall not exceed 25 mm in width. This does not apply to apertures like hand holes in hatches. | Not present | **N/A** |
| **7.4** | **Side Protection** | | |
| **7.4.1** | **General**<br>Dimensions for side protection shall be in accordance with Figure 3.<br>Dimensions in millimetres<br>  <br>Key<br>$h_{GR}$ distance between uppermost surface of the platform and uppermost surface of the principal guardrail<br>$r_{const}$ corner radius of side protection consisting of a frame to be constant (see 7.4.3)<br>Figure 3 — Dimensions for side protection | Outside toe-board to outside guardrail: **N/A**<br>Outside toe-board to inside guardrail: 62.00<br>Measurement uncertainty (± mm) 0.56 **PASS** | **P** |
| | Side protection is composed of a principal guardrail, intermediate side protection and a toe board. The principal guardrail, intermediate side protection, and toe-board may be combined. | | |
| | Side protection components shall be incapable of removal except by direct intentional action. | Side protection can only be removed by direct intentional action. **PASS** | |

# Test Report - Section 2

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-1:2020 |
|---|---|---|---|

| Clause | Requirement | Remark | Result |
|---|---|---|---|
| | It shall be possible to erect protection at platform edges comprising:<br>a) both a principal guardrail and intermediate side protection;<br>b) toe-board.<br>Toe boards may be omitted on intermediate platforms. | It is possible to place side protection at platform edges.<br>PASS | |
| **7.4.2** | **Principle guardrail** | | |
| | The principal guardrail shall be fixed so that its uppermost surface is a minimum of 1000 mm above the uppermost surface of the platform it is protecting, measured vertically (dimension $h_{GR}$ in Figure 3). A minus tolerance of 50 mm is acceptable. | Pack A - brace tubes<br>Principle guardrail height: 956.00<br>Measurement uncertainty (± mm) 0.75<br>PASS<br>Pack A - end frames<br>Principle guardrail height: 1123.00<br>Measurement uncertainty (± mm) 1.98<br>PASS<br>Pack A - folding frame<br>Principle guardrail height: 950.97<br>Measurement uncertainty (± mm) 0.58<br>PASS<br>Pack B - side frame<br>Principle guardrail height: 1033.00<br>Measurement uncertainty (± mm) 1.97<br>PASS<br>Pack B - end frame<br>Principle guardrail height: 995.71<br>Measurement uncertainty (± mm) 0.24<br>PASS | P |
| **7.4.3** | **Intermediate Side Protection** | | |
| | Intermediate side protection shall be fixed between the principal guardrail and the toe-board.<br><br>Intermediate side protection may consist of:<br>— one or more intermediate guardrails, or<br>— a frame, or<br>— a frame of which the principal guardrail forms the top edge, or a fencing structure.<br><br>Openings in the side protection shall be so dimensioned so that a sphere with a diameter of more than 470 mm will not pass through them. | Intermediate side protection formed by side frame, end frame and/or horizontal braces.<br>PASS<br><br>Gauge check (TE180014) PASS<br>If measured:<br>Pack A - braces<br>Intermediate to toe board gap: 422.19<br>Measurement uncertainty (± mm) 0.13<br>PASS<br>*Note: largest opening recorded* | P |

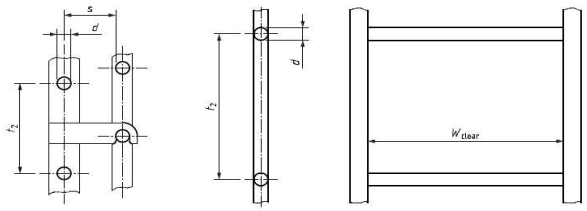
# Test Report - Section 2

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-1:2020 |
|---|---|---|---|

| Clause | Requirement | Remark | Result |
|---|---|---|---|
| | | Pack B - End frame<br>Principle to intermediate gap: 460.01<br>Measurement uncertainty (± mm) 0.14<br>**PASS**<br>*Note: largest opening recorded* | |
| **7.4.4** | **Toe-Board** | | |
| | It shall be possible to fix a solid toe-board such that its top edge is at least 150 mm above the adjacent platform level. Apertures in toe boards shall not exceed 25 mm in width. This does not apply to apertures like hand holes. | Toe-board height (ends): 153.00<br>Measurement uncertainty (± mm) 0.56<br>**PASS**<br>Toe-board apertures: **N/A** | **P** |
| **7.5** | **Castor Wheels** | * Ref doc. No. 3 - Castor TUV certificate | **P** |
| **7.6** | **Access to Platforms** | | |
| **7.6.1** | **General** | | |
| **7.6.2** | **General requirements** | | |
| | Access to the platforms ≥ 2 m height in an assembled tower shall be within the main structural supports using one of the access methods specified in 7.6.1 and shall:<br>— be secured against unintentional loosening;<br>— not rest on the ground;<br>— have a distance from the ground to the first step or rung of 400 mm maximum taking into account adjustable legs. If the first step is a platform, 600 mm is allowable;<br>— have steps/rungs with constant spacing and a slip resistant surface. | Access type: Type A<br>Type B<br>Type C<br>Type D ✓<br>Access is integral to end frame.<br>Access does not rest on ground.<br>First step height:<br>369.79 **PASS**<br>Measurement uncertainty (± mm) 0.13<br>Slip resistant surface:<br>Tubes have extruded ribs.<br>**PASS**<br>Spacing:<br>Rung spacing consistent within +/- 2mm.<br>**PASS** | **P** |
| **7.6.3** | **Additional requirements** | | |
| **7.6.3.1** | **Stairway and stairladder** | | **N/A** |
| **7.6.3.2** | **Access type A - stairway (see Figure 4)** | | **N/A** |
| **7.6.3.3** | **Access type B - stairladder (see Figure 5)** | | **N/A** |
| **7.6.3.4** | **Access type C - inclined ladder (see Figure 6)** | | **N/A** |
| **7.6.3.5** | **Access type D -vertical ladder (see Figure 7)** | | |
| | Vertical ladders shall conform with the following geometric requirements:<br>From the front edge of the step or from the centre of the rung to any obstacle behind the stairway/ladder there shall be a horizontal distance of s = 150 mm minimum (see Figure 7).<br>Rung spacing $t_2$ $230 \le t_2 \le 300$ | **N/A**<br>299.90<br>Measurement uncertainty (± mm) 0.12<br>**PASS** | |

# Test Report - Section 2

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-1:2020 |
|---|---|---|---|

| Clause | Requirement | Remark | Result |
|---|---|---|---|
| | Rung depth or diameter $d$ $20 \le d \le 51$ | 39.52<br>Measurement uncertainty (± mm) 0.10<br>**PASS** | P |
| | Minimum clear width $W_{clear}$ $W_{clear} = 280$ | 683.49<br>Measurement uncertainty (± mm) 0.30<br>**PASS** | |
| | Vertical ladders shall be designed in accordance with 8.3.5.<br>  <br>a) Separate ladder b) Integral ladder c) $W_{clear}$<br>**Figure 7 — Dimensions of vertical ladder** | *See 8.3.5* | |
| **7.7** | **Means for stabilizing** | | |
| **7.7.1** | **Stabilizers and outriggers** | | |
| | The stabilizers and outriggers of a tower shall be designed as components of the main structure and shall provide means of adjustment to ensure contact with the ground. | Stabilisers are a designed component of the tower system.<br>**PASS** | P |
| | The method of fixing the stabilizer or outrigger to the tower shall have adequate strength and shall be such that the reaction loads in the stabilizer or outrigger are transferred to the tower without slip, rotation, or other movement of the stabilizer or outrigger. | Stabilisers are part of the structural analysis.<br>**PASS** | |
| **7.7.2** | **Ballast** | | N/A |
| **7.8** | **Connections** | | |
| **7.8.1** | **General** | | |
| | Each connection device shall be effective, easy to monitor and the components shall be easy to assemble. | # All connections are easy to monitor and assemble.<br>**PASS** | P |
| | The securing of components forming part of the structure of the mobile access and working tower and side protection components shall make them incapable of removal except by direct intentional action. | All components cannot be removed unless by direct intentional action.<br>**PASS** | |
| **7.8.2** | **Vertical spigot and socket connection** | | |
| | When assembled, the horizontal movement (slack or play) between upper and lower components shall not exceed 4 mm or a movement away from the centre line of 2 mm. | Spigot 35.46<br>Measurement uncertainty (± mm) 0.10<br>Socket 36.70<br>Measurement uncertainty (± mm) 0.10<br>Slack 1.24 **PASS**<br>Measurement uncertainty (± mm) 0.20 | |

# Test Report - Section 2

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-1:2020 |
|---|---|---|---|

| Clause | Requirement | Remark | Result |
|---|---|---|---|
| | In all cases it shall not be possible to disconnect an upper component laterally until the upper component has been lifted more than 80 mm.<br>When the spigot and socket connection acts over a distance less than 150 mm, the connection shall be provided with a positive locking device, such as a cross pin, to prevent the upper component from being lifted unintentionally and provide additional structural stiffness.<br>The positive locking device shall be designed in such a way that its positive action can be monitored visually. | 102.37 **PASS**<br>Measurement uncertainty (± mm) 0.31<br>Spigot has a steel cross locking pin. **PASS**<br>Locking pins can be visually monitored. **PASS** | **P** |
| **7.8.3** | **Other vertical connections** | | **N/A** |
| **7.9** | **Working and access platform units** | | |
| | Components of platforms shall be durable and shall have a slip-resistant surface.<br>Platform units shall be secured at both ends so that turning or removal by wind is not possible. | Platforms have timber with imprinted mesh surface. **PASS**<br>Platforms have locks to secure hooks at both ends. **PASS** | **P** |
| **7.10** | **Erection and dismantling** | | |
| | The tower shall remain stable and resist all loads imposed on the components during erection and dismantling. | # Stabilisers are fitted to base frame at all times. | **P** |
| **7.11** | **Requirements for mobile access towers less than 2 m working platform height** | | |
| **7.11.1** | **Requirements for access** | | |
| | Access to the platform in an assembled tower shall:<br>— be an integral component or components of the tower;<br>— be secured against unintentional loosening;<br>— have a distance from the ground to the first step or rung of 400 mm maximum taking into account adjustable legs;<br>— have steps/rungs with constant spacing and a slip resistant surface;<br>— shall comply with the requirements of 7.6.<br>There is no requirement for access if the working platform height is ≤ 600 mm.<br>Access to working platforms in an assembled tower may be from the outside of the structure. | Access is part of the end frames. **PASS**<br>Access is part of the end frames. **PASS**<br>Measured: 369.79<br>Measurement uncertainty (± mm) 0.13 **PASS**<br>Slip resistant surface:<br>Tubes have extruded ribs. **PASS**<br>Spacing:<br>Rung spacing consistent within +/- 2mm. **PASS**<br>*See 7.6* **PASS**<br>N/A | **P** |

# Test Report - Section 2

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-1:2020 |
|---|---|---|---|

| Clause | Requirement | Remark | Result |
|---|---|---|---|
| | The structure may be provided with access openings in the side protection provided that:<br>— it shall be possible to close access openings in the side protection after access or egress;<br>— access openings in the side protection shall be provided with a means to prevent unintentional opening;<br>— access openings in the side protection shall have a minimum clear width ≥ 400 mm:<br>— the access to the platform shall be aligned with access openings in the side protection;<br>— access openings in the side protection shall be designed in such a way that only one hand is required to opening. | N/A | |
| **7.11.2** | **Requirements for positional stability when accessing from outside** | | **N/A** |
| **8.0** | **Requirements for structural design** | | |
| **8.1** | **General** | * Ref Doc No. 2 - Structural report | **P** |
| **8.2** | **Characteristic actions on the complete structure including its parts** | * Ref Doc No. 2 - Structural report | **P** |
| **8.3** | **Characteristic actions on parts of the structure** | | |
| **8.3.1** | **Loads on platform units** | | |
| | Platforms and supporting structure shall be designed for concentrated loads in the most unfavourable position on a platform area of:<br>— 0,50m x 0,50m 1,5 kN;<br>— 0,20m x 0,20m 1,0 kN.<br>In addition uniformly distributed load shall also be considered (see 8.2.1.2).<br>The above requirements may be fulfilled separately. | *Information to the designer - tested at 8.4.1* | |
| **8.3.2** | **Load on side protection** | | |
| **8.3.2.1** | **Downward load** | | |
| | Any principal guardrail or intermediate guardrail, regardless of its method of support, shall be able to resist a point load of 1.25 kN. This also applies to any other side protection component, such as a fencing structure, which has a potential foothold of 50 mm wide or greater.<br>This load shall be considered as an accidental load and applied in the most unfavourable position in a downward direction within a sector of ± 10° from the vertical. | **Guardrail brace**<br>Withstand load: **PASS**<br>*Deflection limit from 9.3.3.4:*<br>Max deflection (mm) 300.00<br>Deflection under load 37.82<br>Measurement uncertainty (± mm) 0.25<br>**PASS**<br>**Guardrail frame**<br>Withstand load: **PASS**<br>*Deflection limit from 9.3.3.4:*<br>Max deflection (mm) 300.00<br>Deflection under load 14.44<br>Measurement uncertainty (± mm) 0.31<br>**PASS** | **P** |

# Test Report - Section 2

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-1:2020 |
|---|---|---|---|

| Clause | Requirement | Remark | Result |
|---|---|---|---|
| | | **Folding frame**<br>Withstand load: **PASS**<br>*Deflection limit from 9.3.3.4:*<br>Max deflection (mm) 300.00<br>Deflection under load 7.11<br>Measurement uncertainty (± mm) 0.29<br>**PASS** | |
| **8.3.2.2** | **Horizontal load** | | |
| | All components of the side protection, except toe-boards, shall be able to of resist a horizontal load of 0.3 kN in each case in the most unfavourable position. This load may be distributed over an area of 300 mm x 300 mm, for example when applied to the grid of a fencing structure. For toe-boards, the horizontal load is 0.15 kN. | Withstand load: **PASS**<br>*See 8.4.2 for deflection limits* | **P** |
| **8.3.3** | **Load on stairways and stairladders** | | **N/A** |
| **8.3.4** | **Load on inclined ladders** | | **N/A** |
| **8.3.5** | **Load on Vertical ladder** | | |
| | Vertical ladder shall be verified either by:<br>- structural analysis for the following characteristic vertical load, always acting in the most adverse position of $F_{1,k}$ = 1.5kN action on 200mm, or<br>- in accordance with the test for torsion and vertical load on rungs in EN 131-2 | * Ref doc. No. 2 - Structural assessment report | **P** |
| **8.4** | **Deflections** | | |
| **8.4.1** | **Elastic deflection of platform components** | | |
| | When subjected to the concentrated loads specified in Table 4, line 1.2, the elastic deflection of any platform component shall not exceed 0.01 of the span of that platform component.<br>In addition, in the case of platform components with spans of 2.5 m or greater, when the appropriate concentrated load is applied, the maximum difference in levels between adjacent loaded and unloaded platform components shall not exceed 25 mm. | Platform span (mm) 1572.61<br>Measurement uncertainty (± mm) 1.51<br>Max deflection (mm) 15.73<br>Deflection under load 4.24<br>Measurement uncertainty (± mm) 0.12<br>**PASS** | **P** |
| **8.4.2** | **Elastic deflection of side protection** | | |
| | When subjected to the load specified in Table 4, line 2.2, the maximum deflection of any principle or intermediate guardrail, regardless of its span, shall not exceed 35 mm. | **Side protection**<br>Component: Guardrail frame<br>Deflection under load 12.04<br>Measurement uncertainty (± mm) 0.13<br>**PASS**<br>Component: Brace<br>Deflection under load 14.40<br>Measurement uncertainty (± mm) 0.50<br>**PASS**<br>Component: Folding frame<br>Deflection under load 14.31 | **P** |

# Test Report - Section 2

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-1:2020 |
|---|---|---|---|

| Clause | Requirement | Remark | Result |
|---|---|---|---|
| | When subjected to the load specified in Table 4; line 3, the maximum deflection of any toe-board, regardless of its span shall not exceed 35 mm. These are measured with reference to the supports at the points where they are connected. | Measurement uncertainty (± mm) 0.30<br>PASS<br>**Toe board**<br>Component: Side<br>Deflection under load 34.92<br>Measurement uncertainty (± mm) 0.27<br>PASS<br>Component: End<br>Deflection under load 12.50<br>Measurement uncertainty (± mm) 0.41<br>PASS | P |
| **9** | **Structural Design** | * Ref doc. No. 2 - Structural assessment report | **P** |
| **10** | **Tests** | | |
| | Being part of the structural design additional stiffness tests of a complete tower shall be made. These tests shall be carried out in accordance with Annex A. | *See Annex A below* | **P** |
| **11** | **Instruction manual** | | |
| | For each type of prefabricated equipment the manufacturer shall produce an instruction manual for use on site. The instruction manual shall include at least the data according to EN 1298. | *See Section 3 - EN1004-2* | **P** |
| **12** | **Marking** | | |
| **12.1** | **Components** | | |
| | Each component shall be marked with:<br>a) a symbol or letters to identify the mobile access and working tower and its manufacturer;<br>b) the year of manufacture, using the last two digits. Alternatively, a code for tracing the year of manufacturer may be used.<br>Marking shall be so arranged that it will remain legible for the life of the component. The size of the lettering may take account of the size of the component. | Examples of component labels provided.<br>Found PASS<br>Found PASS | **P** |
| **12.2** | **Manufacturers label** | | |
| | A manufacturer's label showing the information below shall be displayed and visible from the ground level on all mobile access and working towers:<br>a) manufacturer's name;<br>b) designation;<br>c) “Read the instruction manual”, which can be shown as a symbol in accordance with EN ISO 7010, or text written in the official languages of the country where the product is placed on the market. | Found PASS<br>Found PASS<br>Found PASS | **P** |

# Test Report - Section 2

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-1:2020 |
|---|---|---|---|

| Clause | Requirement | Remark | Result |
|---|---|---|---|
| **Annex A** | **Stiffness test on complete tower structure** | | |
| **A.1** | **General requirements** | *See standard* | |
| **A.2** | **Test structure** | | |
| | The tests shall be carried out on complete tower structures with a minimum height of 6,0 m. The tower shall be built in accordance with the manufacturers manual instructions. When the self weight of the structure is insufficient to prevent overturning during the test, sufficient ballast may be added to the base to prevent this | Based on the user instructions, the tower has a maximum platform height of 1.7m. It was supplied with additional components and description, so that the tower could be built to 6.0m minimum platform height. | |
| | If the maximum platform height, in accordance with the manufacturer's instructions, is less than 6.0 m the test structure shall be erected to at least 6.0 m height with additional components as prescribed by the manufacturer. This extra height will enable $d_1$ to be measured. The stiffness may not be adversely affected by doing this. Tests shall be carried out in the arrangement envisaged by the manufacturer, which is:<br>- either: with or without stabilizers;<br>- or: with or without outriggers. | | |
| | As the stiffness of the tower is not affected by ballast only one test is necessary, where ballast is the only means of stability. | Additional ballast was added to the base to prevent overturning during testing. | |
| | Adjustable legs, if fitted, shall be extended to 50 % of their maximum extension. Castor wheels shall be turned in their most unfavourable orientation and shall be locked. | | |
| | As adjustable legs are normally fitted to level the tower, this represents a working condition. | | |
| **A.3** | **Test method** | | |
| | The horizontal test load shall be 500 N. | | |
| | It shall be applied at the first convenient node point above 6.0 m level. It may be adjusted to give equivalent moment above the base level of the tower because of this. | Load application height (mm) 6188.80<br>**Test Load**<br>Target moment (Nm) 3000<br>**Test Load (N) = 485** | |
| | The load shall be applied perpendicular to one face of the tower and acting through the centroid. The load shall be applied in one direction and then the opposite direction, and the total displacement $d_1$ (in mm) shall be measured at the exact height of 6.0 m (see Figure A.1). | | |
| | This test shall be repeated at 90° to the first face (see Figure A.1). | | |

# Test Report - Section 2

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-1:2020 |
|---|---|---|---|

| Clause | Requirement | Remark | Result |
|---|---|---|---|
| A.4 | **Result of test** | | |

The total displacement measured as described in the above test shall be correlated by linear calculation to give a value of displacement $d_2$ for the maximum permitted platform height of the tower, with or without stabilizers, outriggers or ballast. This total displacement $d_2$ shall not exceed 200 mm and may limit the maximum platform height.

The maximum height of platform, limited by stiffness, is given in Equation (A.1):

$$h_1 = \frac{6 \times D_2}{D_1} = \frac{6 \times 200}{D_1} m$$

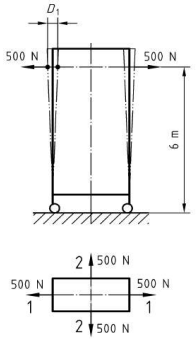
a) if the measured value $d_1$ is 100 mm, then Equation (A.2) applies:

$$h_1 = \frac{6m \times 200}{100}$$

the maximum permitted platform height $h_1$ = 12 m.

b) if the measured value D1 is 300 mm, then the maximum permitted platform height $h_1$ = 4 m.

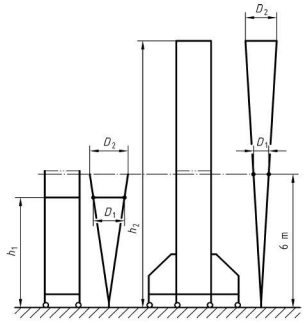
The linear formula is not precisely correct but over the range of towers that this document covers, calculations and practical tests have shown that a linear relationship is acceptable.




Key

1 first test in two opposite directions
2 second test in two opposite directions

**Figure A.1 — Horizontal loads for stiffness tests on a complete tower structure**




Key

$h_1$ maximum permitted height without stabilizers or outriggers
$h_2$ maximum permitted height with stabilizers or outriggers
$D_1$ measured total displacement on the test height of 6,0 m
$D_2$ maximum permitted total displacement on the maximum permitted platform height

**Figure A.2 — Measured and permitted displacements of towers**

**Measurements**

| | Left (mm) | Right (mm) |
|---|---|---|
| Side 1 | 172 | 161 |
| End 1 | 119 | 114 |
| Side 2 | 165 | 172 |
| End 2 | 119 | 115 |

| | | $D_1$ |
|---|---|---|
| Averages: | Side (mm) | End (mm) |
| 1 | 166.3 | 116.8 |
| 2 | 168.5 | 117.0 |
| $h_1$ (m) = | (6*200) / $D_1$ | (6*200) / $D_1$ |
| $h_1$ (m)= | 3.6 | 5.1 |

Maximum height limited by deflection (m)= **3.6**

Maximum height in manual = 1.9

**PASS**

**P**

# Test Report - Section 3

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-2:2021 |
|---|---|---|---|

| Clause | Requirement | Remark | Result |
|---|---|---|---|
| **1** | **Scope** | | |
| | This document gives rules and guidelines for the preparation of instruction manuals for mobile access and working towers in accordance with EN 1004-1, Mobile access and working towers made of prefabricated elements — Part 1: Materials, dimensions, design loads, safety and performance requirements.<br>This document is intended for all parties involved in the preparation of instructions for use, for example: suppliers, technical writers, technical illustrators, translators or other people engaged in the work of conceiving and drafting such instructions for use. | Product is within scope. | P |
| **2** | **Normative references** | See standard | |
| **3** | **Terms and definitions** | See standard | |
| **4** | **General** | | |
| **4.1** | **Basic requirements** | | |
| | The instruction manual shall be written in the official language of the country where the product is placed on the market. | Written in several languages - Portuguese, English, French Spanish. Only English reviewed. **PASS** | P |
| | The instruction manual shall give information about the use of the mobile access and working tower. | Found **PASS** | |
| | The supplier of the mobile access and working towers is responsible for the contents as well as for the supply of an instruction manual. The instruction manual is a part of the product. | | |
| | The instruction manual shall give full information about the identity of the supplier. | Found **PASS** | |
| | The instruction manual shall make reference to relevant assessment documentation according to EN 1004-1:2020, Clause 13 held by the supplier. | Found **PASS** | |
| | The instructions for use shall state the intended use and contain all information that a user needs to know when using the product.<br>Extensive information on instruction manual content may also be found in IEC/IEEE 82079 (all parts). | Found **PASS** | |
| | The instruction manual shall state the following sentences in a prominent position. | | |
| | a) This instruction manual shall be available on the location of use of the mobile access and working tower. | Found **PASS** | |
| | b) This mobile access and working tower shall only be used according to this manual without any modification. | Found **PASS** | |
| | c) Mobile access and working towers must only be used in accordance with national regulations. | Found **PASS** | |

# Test Report - Section 3

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-2:2021 |
|---|---|---|---|

| Clause | Requirement | Remark | | Result |
|---|---|---|---|---|
| | The level of description and details of information should be adapted to the knowledge of users. | | | |
| | Instructions for use should ensure the completeness of relevant information at a sufficient level of detail based on the ascertained needs of the users. | | | |
| | The instructions shall be separated into sections for use that are clearly and appropriately marked and defined at the beginning of the content. | Found | PASS | |
| | Pictograms of safety information shall be used to supplement text in instruction manuals. Examples are contained in Annex A. | Found | PASS | |
| **4.2** | **Risk assessment** | | | |
| | Instructions for use shall, when followed by the user contribute to reducing the risk of injury to people and risks of any damage. | Found | PASS | |
| | Instructions for use are an integral part of the safe operation and maintenance of a mobile access and working tower. | | | |
| | They shall provide information to avoid any unacceptable risk for the user or other parties, damage to the mobile access and working tower itself or other products or materials. | Found | PASS | |
| | Instructions for use shall provide users with the necessary information to allow them to identify and avoid reasonably foreseeable misuse. | Found | PASS | |
| | This requires that the mobile access and working tower supplier ensures that the following are taken into account: | Ref doc. No. 4 - Risk assessment | PASS | P |
| | a) the process of risk analysis for the product as sold; | | | |
| | b) the result of the risk analysis shall be taken into account in the instructions for use as safety-related information; and | | | |
| | c) reasonably foreseeable misuse and risks arising from the use of the mobile access and working tower shall be covered. | | | |
| | The instruction manual shall give information about hazards to be considered during the use of mobile access and working towers. | Found | PASS | |
| **4.3** | **Principal guidelines** | | | |
| | The description of the application of the mobile access and working tower shall give guidelines with respect to: | | | |
| | a) the intended means of access to the working platform; | Found | PASS | |
| | b) the load class in accordance with EN 1004-1; | Found | PASS | |
| | c) the permitted uniformly distributed load in kilograms on the working platform; | Found | PASS | |
| | d) a warning that only one platform shall be a working platform at one time; | Found | PASS | |

# Test Report - Section 3

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-2:2021 |
|---|---|---|---|

| Clause | Requirement | Remark | | Result |
|---|---|---|---|---|
| | e) the maximum number of people permitted on the working platform at one time; | Found | PASS | P |
| | f) the permitted horizontal force at the working platform; | Found | PASS | |
| | g) the permissible configurations of the mobile access and working tower with respect to the permitted heights; | Found | PASS | |
| | h) the importance of selecting the correct platform height in relation to the required working height; | Found | PASS | |
| | i) the specification of the maximum wind limits: | | | |
| | 1) when working on the mobile access and working tower is permissible; | Found | PASS | |
| | 2) when the freestanding mobile access and working tower shall be dismantled or made secure. | Found | PASS | |
| **5** | **Identification of components in the structure** | | | |
| | The instruction manual shall give information about the total structure of the mobile access and working tower and the individual components needed.<br>It is recommended that this information is given with clear references to the position of individual components in the total structure, such as exploded drawings. | Found<br>Diagrams of tower and components on page 1 and 2 for pack A and B. | PASS | P |
| **6** | **Assembly, alteration and dismantling** | | | |
| | The instruction manual shall include the following information: | | | |
| **6.1** | The instruction manual shall specify that before assembling the mobile access and working tower the location should be checked to identify and prevent hazards during assembly, alteration and dismantling including but not limited to: | | | |
| | a) ground conditions; | Found | PASS | |
| | b) level and slope; | Found | PASS | |
| | c) obstructions; | Found | PASS | |
| | d) weather conditions; | Found | PASS | |
| | e) electrical hazards. | Found | PASS | |
| **6.2** | The instruction manual shall specify that all the components, tools and other necessary equipment for assembling the mobile access and working tower shall be available on site. | Found | PASS | |
| **6.3** | The assembly and dismantling methods shall ensure that a person is not required to stand on a platform without principal and intermediate guardrails. | Found | PASS | |
| **6.4** | The instruction manual shall specify at least the following information for assembling, altering and dismantling the mobile access and working tower: | | | |
| | a) the number of people required for assembly, alteration and dismantling; | Found | PASS | |
| | b) the listing of components, their weights and the quantities of these components needed for assembly and dismantling the mobile access and working tower to a specified configuration; | Found | PASS | |

# Test Report - Section 3

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-2:2021 |
|---|---|---|---|

| Clause | Requirement | Remark | | Result |
|---|---|---|---|---|
| | c) the listing of specific tools or other equipment, if required; | Found | PASS | P |
| | d) if specific training is required; | Found | PASS | |
| | e) the procedure for assembling the mobile access and working tower, describing the correct sequence of actions. This description shall include illustrations and, if necessary, add text to the illustrations; | Found | PASS | |
| | f) the method for vertical alignment of the mobile access and working tower within an inclination of 1%; | Found<br>Note: adjustable legs are available from the manufacturer. | PASS | |
| | g) detailed information about the way connections shall be attached and disconnected; | Found | PASS | |
| | h) a description of the use and fixing of stabilizers, outriggers and/or ballast; | Found | PASS | |
| | i) a description of the recommended method of lifting the components for assembling the upper sections; | Found | PASS | |
| | j) the correct location of connections for braces, outriggers or stabilizers and ballast shall be clearly shown; | Found | PASS | |
| | k) a description of the use and fixing of stair or ladder access; | N/A | | |
| | l) a description of the use and fixing of guardrails and toe boards; | Found | PASS | |
| | m) the procedure for dismantling the mobile access and working tower (if applicable with reference to the assembly procedure). | Found | PASS | |
| **6.4.1** | The instruction manual shall state the following text; | | | |
| | a) User training courses cannot be a substitute for instruction manuals but only complement them; | Found | PASS | |
| | b) Only the original [manufacturers name] components specified in this manual shall be used; | Found | PASS | |
| | c) Damaged or incorrect components shall not be used; | Found | PASS | |
| | d) This product shall only be used according to the instruction manual; | Found | PASS | |
| | e) Mobile access and working towers designed in accordance with EN 1004-1 are not anchor points for personal fall arrest equipment; | Found | PASS | |
| | f) Working is only permitted on a platform with a complete side protection including guardrails and | Found | PASS | |
| **6.4.2** | After assembly or alteration the following minimum information shall be displayed on the mobile access and working tower and be clearly visible from the ground (e.g. on a tag): | | | |
| | a) the name and contact details of the responsible person; | Found | PASS | |
| | b) if the tower is ready for application or not; | Found | PASS | |
| | c) the load class and the uniformly distributed load; | Found | PASS | |

# Test Report - Section 3

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-2:2021 |
|---|---|---|---|

| Clause | Requirement | Remark | | Result |
|---|---|---|---|---|
| | d) if the mobile access and working tower is intended for indoors use only; and | Found | PASS | |
| | e) the date of assembly. | Found | PASS | |
| **7** | **Stability** | | | |
| | The instruction manual shall include: | | | P |
| | a) instructions for the use of stabilizers, outriggers and/or ballast for all configuration and conditions that the mobile access and working tower is intended to be used in; | Found | PASS | |
| | b) a warning about horizontal and vertical loads which contribute to overturning of the mobile access and working tower, such as: | Found | PASS | |
| | 1) horizontal loads caused by use, for example as a result of work on an adjacent structure; | | | |
| | 2) additional wind loads (tunnelling effect of open-ended buildings, un-clad buildings and at the corners of buildings); | | | |
| | c) measures to be taken for securing the mobile access and working tower when left unattended; and | Found | PASS | |
| | d) the wind speed at which the tower must be dismantled or made secure which shall be expressed in commonly used units such as; metres per second, miles per hour, kilometres per hour or Beaufort scale grade. | Found | PASS | |
| | Mobile towers are designed to be stable in a free-standing condition at a maximum wind pressure of 0.1 kN per square metre. The manufacturer should propose a maximum wind speed depending on local and national conditions. | | | |
| **8** | **Application and moving** | | | |
| **8.1** | The instruction manual shall give at least the following information regarding what should be checked before each application of the mobile access and working tower as an addition to the checks made during the assembly procedure: | | | |
| | a) that the mobile access and working tower is vertical or needs readjustment; | Found | PASS | |
| | b) that the castors are locked by the brakes; | Found | PASS | |
| | c) whether the mobile access and working tower is still correct and complete; | Found | PASS | |
| | d) that no environmental changes influence safe use of the mobile access tower; and | Found | PASS | |
| | e) the stabilizers, outriggers and/or ballast are in accordance with the instruction manual. | | | |
| **8.2** | The instruction manual shall give guidelines for the safe application of the mobile access and working tower. It must also take national or local regulations into account. | Found | PASS | |

# Test Report - Section 3

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-2:2021 |
|---|---|---|---|

| Clause | Requirement | Remark | | Result |
|---|---|---|---|---|
| 8.3 | The instruction manual shall give information regarding the means of access to the mobile access and working tower. | Found | PASS | P |
| 8.4 | The instruction manual shall give guidelines for the lifting of tools and materials to the working platform of the mobile access and working tower within the limits of the permitted load and stability. | Found | PASS | |
| 8.5 | The instruction manual shall detail the procedure for moving the mobile access and working tower, including: | | | |
| | a) the maximum wind condition for moving the mobile access and working tower; | Found | PASS | |
| | b) the way to release and lock the castor brakes; | Found | PASS | |
| | c) the way to move the mobile access and working tower; | | | |
| | d) the way to use the leg adjustment to level the mobile access and working tower within the inclination of 1 % after movement; | Found | PASS | |
| | e) instructions to check the effective support of the stabilizers and outriggers; | Found | PASS | |
| | f) the maximum height and inclination of the tower when it is being moved; and | Found | PASS | |
| | g) a warning to be careful of overhead obstacles including power lines when moving a mobile access and working tower. | Found | PASS | |
| 8.6 | The instruction manual shall state at least the following safety information; | | | |
| | a) It is not allowed to extend the height of the platform by the use of ladders, boxes or other devices; | Found | PASS | |
| | b) Do not climb the outside of the mobile access and working tower (except where this is permitted in accordance with EN 1004-1); | Found | PASS | |
| | c) Mobile access and working towers in accordance with EN 1004-1 are not designed to be lifted or suspended; | Found | PASS | |
| | d) Mobile access and working towers shall never be moved with loose materials or persons on it; | Found | PASS | |
| | e) Mobile access and working towers shall only be moved using manual effort not exceeding normal walking speed; | Found | PASS | |
| | f) Mobile access and working towers shall only be moved on flat and solid ground without obstacles and stating the maximum permitted slope; | Found | PASS | |
| | g) Mobile access and working towers are not designed to be sheeted; | Found | PASS | |
| | h) Mobile access and working towers in accordance with EN 1004-1 are not designed to be used as a means to enter or exit other structures, e.g. as a stair tower; | Found | PASS | |

# Test Report - Section 3

| Test Report No: | T1384-01 | Test Specification | BS EN 1004-2:2021 |
|---|---|---|---|

| Clause | Requirement | Remark | | Result |
|---|---|---|---|---|
| | i) Mobile access and working towers in accordance with EN 1004-1 are not designed to be used as a means of edge protection | Found | PASS | |
| | j) Distance between platforms shall not exceed 2,25m. Except the distance to the first platform: max. 3,40m. | Found | PASS | |
| | It is recommended that safety information is marked on or attached to the product. Example of pictograms of safety information are contained in Annex A. | | | |
| **9** | **Inspection, care and maintenance** | | | |
| | The instruction manual shall include information regarding the inspection, care, maintenance and repair of the components of the mobile access and working tower, taking into account: | | | P |
| | a) the specific features of the components with respect to their safe and correct functioning; | Found | PASS | |
| | b) guidelines for handling, transport and storage. | Found | PASS | |
| | It must also take national regulations into account. Additionally, the instruction manual shall specify; | | | |
| | c) maintenance that can be performed; | Found | PASS | |
| | d) the procedure for dealing with damaged parts (replacement, repair or destruction). | Found | PASS | |
| **10** | **Designation** | | | |
| | The designation of an instruction manual which fulfils the requirements of this document shall be:<br>Instruction Manual EN 1004-2 - en x de x fr x it. | | | P |
| | The designation shall be stated in the instruction manual. | Found | PASS | |
| | Language versions with code for name of language in accordance with ISO 639-1. Symbols shall be separated by an “x” if there is more than one language, e.g. in English, German, French and Italian. | | | |

| Test Report - Section 4 | | |
|---|---|---|
| **Test Report No:** | T1384-01 | |

**Photographs**

Product sample

Brace


Folding frame

Guardrail frame

EN 1004-1 - 8.3.2.1. Downwards load

| Test Report - Section 4 | | |
|---|---|---|
| **Test Report No:** | T1384-01 | |

**Photographs**


EN 1004-1 - 8.4.1. Elastic deflection of platform components

Brace

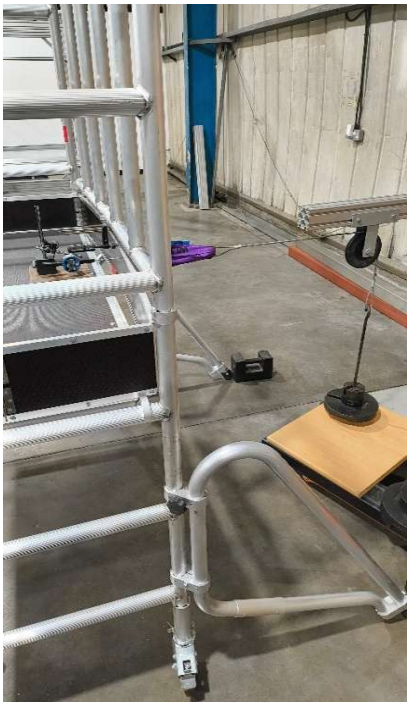
Folding frame

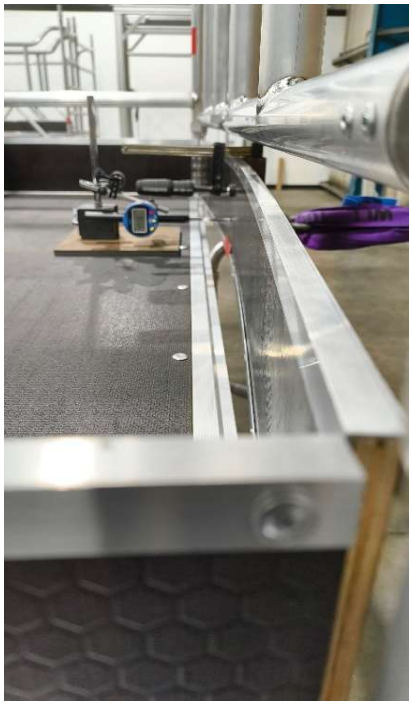
Guardrail frame

EN 1004-1 - 8.4.2. Elastic deflection of side protection

| Test Report - Section 4 | | |
|---|---|---|
| **Test Report No:** | T1384-01 | |

**Photographs**





EN 1004-1 - 8.4.2. Elastic deflection of side protection (toeboard)

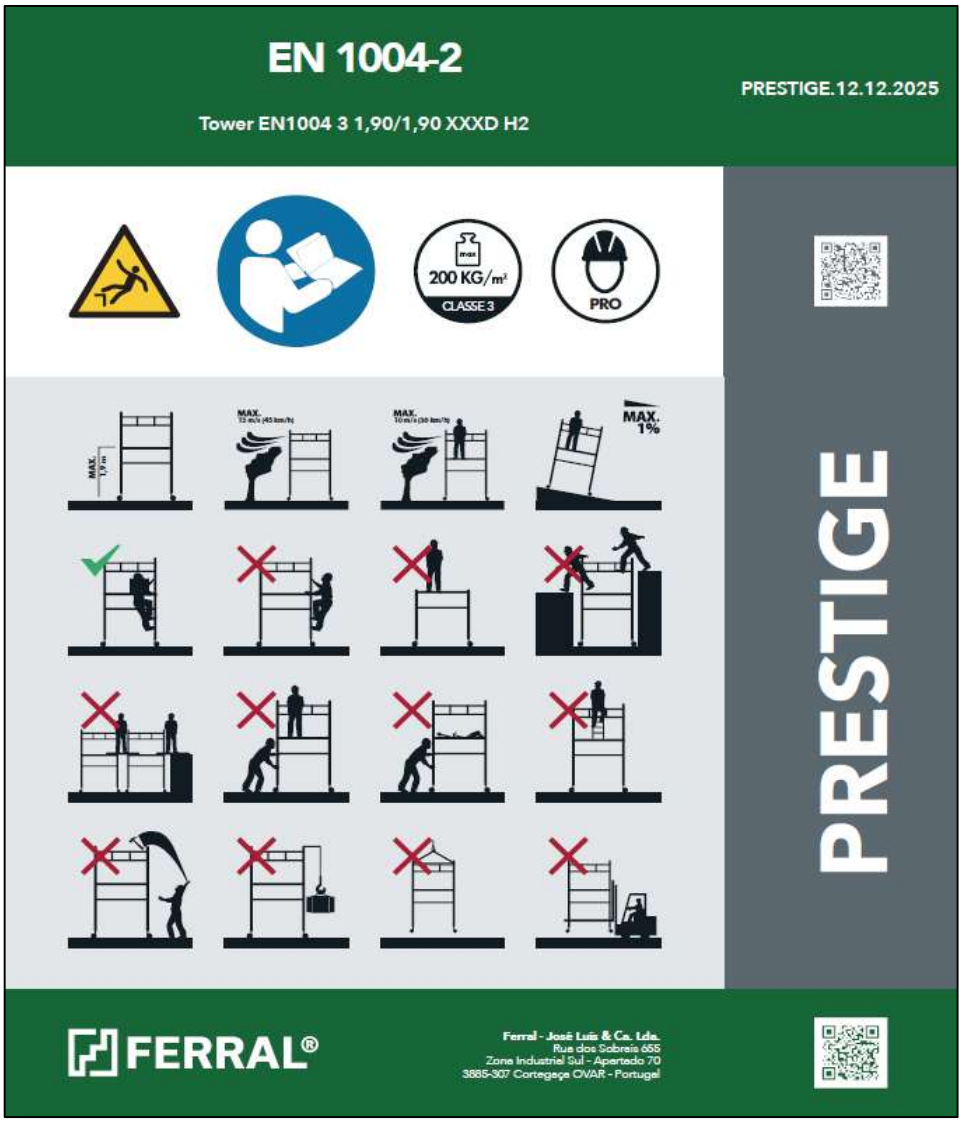
End

Side

Annex A Stiffness test

| Test Report - Section 4 | | |
|---|---|---|
| **Test Report No:** | T1384-01 | |

**Photographs**





EN 1004-1 -12 Markings

**END OF TEST REPORT**