Mobile access and working towers made of prefabricated elements.

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1 Executive Overview

The popularity of Premanufactured Aluminium Towers is currently growing exponentially in South Africa due to its fast construction times, reduced costs of ownership and reduced logistical complexity.

With this growth comes a certain level of uncertainty regarding Safety Regulations and subsequent complexity when distinguishing between compliant and non-compliant systems.

Safety, Safety Organisation and safe working practices are defined in the **OCCUPATIONAL HEALTH & SAFETY ACT (85 OF 1993)** - *To provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith.*

Regulations are incorporated in Section 43; and Standards in Section 44 of this Act.

The **CONSTRUCTION REGULATIONS, 2014** was published under Section 43 and the two applicable standards as per Section 44 referring to Scaffolding are:

1. **SANS 10085-1:** The design, erection, use and inspection of access scaffolding Part 1: Steel Scaffolding; and
2. **SANS 51004:2009:** Mobile access and working towers made of prefabricated elements — Materials, dimensions, design loads, safety and performance requirements.

In terms of SANS 10085-1, Section 7.1.2, second paragraph, aluminium and systems scaffolding shall be accepted as “special scaffolding” when the system is approved by a Professional Engineer. In SANS 51004:2009, the “professional engineer” is defined as an independent third party, whom issues a certificate to confirm compliance, normally in the form of a comprehensive Strength and Stability Certificate.

Meeting the Compliance is thus not as complex as perceived. A Special Scaffold System is one that conforms to SANS 51004:2009 as certified in a Strength & Stability Certificate. In absence of such

proof, the system can still be used but must conform to SANS 10085-1 in terms of team competencies, inspections and general conditions defined.

It is also critical to note that special scaffolds form an integral part of the overall standard and cannot be operated outside of the ambit of SANS 10085-1, the Construction Regulations or the OCCUPATIONAL HEALTH & SAFETY ACT 1993.

2 Discussion

In the definitions, the CONSTRUCTION REGULATIONS, 2014 defines scaffold as follows: ***"scaffold"*** *means a temporary elevated platform and supporting structure used for providing access to and supporting workmen or materials or both*; and continues is Section (16) as follows:

> *Scaffolding*
>
> *16. (1) A contractor must appoint a competent person in writing who must ensure that all scaffolding work operations are carried out under his or her supervision and that all scaffold erectors, team leaders and inspectors are competent to carry out their work.*
>
> *(2) A contractor using access scaffolding must ensure that such scaffolding, when in use, complies with the safety standards incorporated for this purpose into these Regulations under section 44 of the Act.*

2.1 SANS 10085-1

The most familiar standard for scaffolding is SANS 10085-1 which defines the normative standards and procedures governing the supply and use of scaffolding.

SANS 10085-1 predominantly deals with Steel Scaffolding and the requirements pertaining to providing this type of access.

Section 7.1.2 of this standard refers “Special Scaffolding” where it states the following:

> 7.1.2 Special scaffolding
>
> There are no restrictions on specially designed scaffolding except that the scaffold **design** shall be approved by a person competent in scaffolding design or by a professional engineer.
>
> [This paragraph refers to Steel Scaffolds and requires that the specific design is approved by a competent person or professional engineer.]
>
> Aluminium and system scaffolding (other than those covered in this part of SANS 10085) are also considered to be special scaffolding and the **system** shall have been approved by a professional engineer.

[The focus here is on a “system” and the approval of such system by a professional engineer.]

2.2 SANS 51004 (2019)

SANS 51004 (2019) specifies the norms & standards applicable to Mobile access and working towers made of prefabricated elements — Materials, dimensions, design loads, safety and performance requirements i.e. Premanufactured Towers, or **a System** as in SANS 10085-1.

The standard defines 3 basic conditions:

1. Normative standards pertaining to material, design and manufacturing, as well as forces impacting on the system;
2. Independent assessment, testing and certification requirements; and
3. Transfer of basic competence through training manuals.

In terms of Inspection/Assessment/Approval, it states in Section 13:

> 13 Assessment
>
> An assessment shall be carried out by a person or an organization different from the designing person and organization. On completion of a successful assessment a statement to that effect shall be given by the assessor. This statement shall identify the reference number of all examinations and the tests report shall include:
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> - identification of the particular set of components examined;
> - identification of the evaluated configuration;
> - structural data for components and connections as resistances and stiffnesses evaluated by tests.

In lieu of this requirement, Altrex as manufacturer, subjects every system manufactured to a third party (TUV) for testing. When satisfied, TUV then issues a Strength & Stability & Quality Certificate for such system in which it certifies that the system conforms to the standard when built and used as designed by the manufacturer.

A system will only be certified if it meets all the normative standards & requirements. Certificates are issues for a series of systems, not individual towers, and the range is continuously tested and certified to ensure continuous conformance.

Valid copies of these documents are issued with every tower rented or sold and should be available for inspection on the site where the tower is used.

A further condition to these Certificates is that the System is built and used as per Factory issued Training Material.

In order to ensure safe construction, use and storage procedure, SANS 51004 requires an Instruction Manual (Method Statement and Risk Assessment based) according to which the Premanufactured System must be constructed and used.

In respect of SANS 10085-1, a premanufactured aluminium system can only be deemed a “Special Scaffold” if all of the above conditions are met.

3 Competence & Organisation

According to the OCCUPATIONAL HEALTH AND SAFETY ACT, 1993, CONSTRUCTION REGULATIONS, 2014, a:

> "**competent person**" means a person who-
>
> (a) has in respect of the work or task to be performed the required knowledge, training and experience and, where applicable, qualifications, specific to that work or task: Provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualification Framework Act, 2000 (Act No.67 of 2000), those qualifications and that training must be regarded as the required qualifications and training; and
> (b) is familiar with the Act and with the applicable regulations made under the Act;

In terms of premanufactured aluminium systems, the level of competence required is very different from that specified in SANS 10085-1 for non-special scaffolds.

In terms of SANS 51004, basic competence is acquired by getting trained on the instructions provided by the factory (Altrex) as minimum requirement. This is a per-system methodology and a person need to be certified on each type of system as per the specific instruction manual.

A Global Standard we subscribe to at AltScaf is PASMA (Premanufactured Systems Manufacturers Association). PASMA developed global standards pertaining to all types of such systems and entitles the holder to perform various specialised tasks pertaining to premanufactured towers in general. We prefer this standard as it avoids training in individual systems and enable the holders to follow the manufacturers’ instructions and integrate that into safe working at height practices and site-specific hazards and risks.

4 Interpretation

SANS 10085-1, together with the Construction Regulations, 2014 sets a framework for the overall requirements pertaining to the construction and use of scaffold-based access systems.

Premanufactured aluminium systems may qualify as “Special Scaffolds” if the requirements of SANS 51004 (2019) are fully met, and systems are certified by a qualified independent body as per this standard. Certification is an output of scientific test results and prescribed by the standard.

Where the requirements of SANS 51004 cannot be certified, SANS 10085-1 stands with all the specifications and requirements as detailed.

Where Premanufactured Systems are used on a site, it is allowed under the applicable Section discussed earlier if, and only if, it is operated within the framework and intent of the higher order standards, regulations and Acts.

5 Conclusion

The South African Market is flooded with various aluminium systems claiming to be compliant to South Africa National Standards. In order to claim compliance to SANS 51004:2009 a supplier must provide the following:

- A Valid Strength & Stability Certificate issued by an Independent and registered test facility such as TUV, SABS or similar. These certificates should be verifiable at the institution where it was tested.
- A training manual including step-by-step construction methods, user - and maintenance guides and general risk assessments.
- As a rule, all manufacturers of compliant systems are registered with PASMA and can as such be validated by this body.

Regardless of this compliance, mobile access and working towers made of prefabricated elements falls within the ambit of SANS 10085-1 and should be managed, inspected and recorded as required by this standard.

In order to realise the full benefits of Mobile Towers it is critical to ensure compliance to SANS 51004:2009. In all other cases costs may be increased as all the requirements of SANS 10085-1 would need to be met in full.

When built as designed, by persons trained to build according to instructions, Mobile Tower will save any business a substantial amount of time and costs at the highest possible level of safety and quality.

As with all good things, the market is currently flooded with cheap imports and non-compliant locally produced systems.

As our Altrex range of systems meet all the requirements, we are confident that our systems fit 100% with your safety requirements.

AltScaf and its distributors partners offers a range of services to assist with your choices and decisions. Please feel contact any of our staff to arrange a free, no obligations call to discuss your options.