SMART ESTIMATOR

SMART SCAFFOLDER

CHECK IT TG20:13 AND CHECK IT TG20:13 PLUS USER GUIDE

Version: 2024.0

CADS GLOBAL CONSTRUCTION SOFTWARE AND SERVICES

AUTODESK Authorized Developer

Microsoft Partner

Contents

Introduction

Please read the **Getting Started Guide**, which will help you customise SMART Estimator before continuing to read this guide.

Note on TG20:21

On 12th April 2021, the National Access and Scaffolding Confederation (NASC) launched the new TG20:21 guidance. https://eportal.nasc.org.uk/tg20

In due course, SMART Estimator will be updated to support the new guidance with a **Check IT TG20:21** module. This guide only relates to the TG20:13 check.

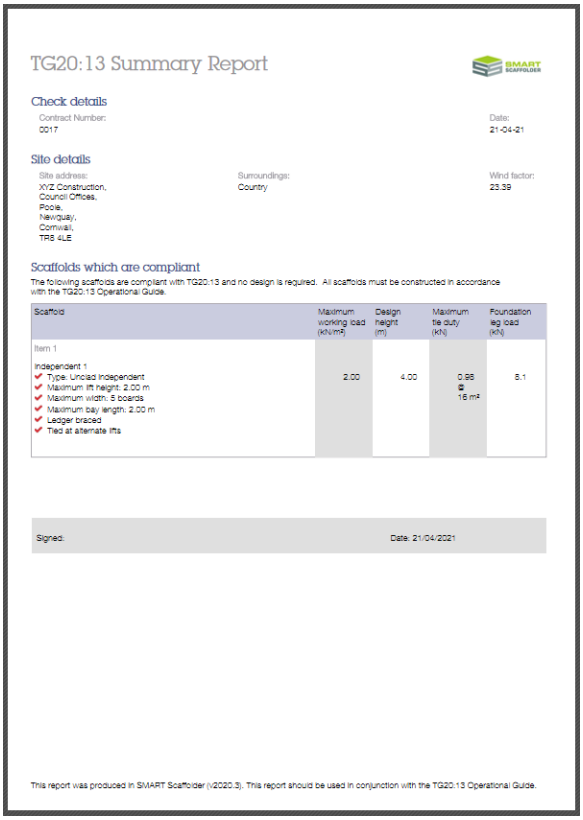
Thank you for choosing SMART Estimator.

- This user guide explains how to use the **Check IT TG20:13** and **Check IT TG20:13 Plus** features of SMART Estimator. SMART Estimator **Check IT TG20:13** supports your work within TG20:13, published by the National Access and Scaffolding Confederation (NASC). TG20:13 is a guide to good practice for tube-and-fitting and system scaffolding.
- SMART Estimator **Check IT TG20:13** simplifies the design process by automatically checking your scaffold against TG20 criteria while you work. SMART Estimator conforms to TG20:13 by creating drawings and load lists that comply with the TG20:13 bracing patterns, and by using the TG20:13 tie rules to estimate the number of ties required for a scaffold.
- SMART Estimator **Check IT TG20:13 Plus** provides TG20:13 certificates for scaffolds that pass the check. Certificates can be used as proof that your scaffolding is exempt from design, as it will be erected in accordance with TG20:13.

"Any proposed modification or alteration that takes a scaffold outside the scope of a generally recognised standard configuration should be designed by a competent person and proven by calculation."

http://www.hse.gov.uk/construction/scaffoldinginfo.htm

"Our mission is to prevent death, injury, and ill-health in Great Britain's working places."



TG20:13 Summary Report

Check details

Contract Number: 0017

Date: 21-04-21

Site details

Site address: XYZ Construction, Council Offices, Poole, Newquay, Cornwall, TR8 4LE

Surroundings: Country

Wind factor: 23.39

Scaffolds which are compliant

The following scaffolds are compliant with TG20:13 and no design is required. All scaffolds must be constructed in accordance with the TG20:13 Operational Guide.

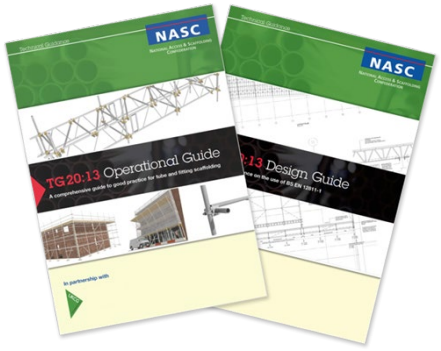
Scaffold	Maximum working load (kN/m²)	Design height (m)	Maximum tie duty (kN)	Foundation leg load (kN)
Item 1 Independent 1 ✔ Type: Unclad independent ✔ Maximum lift height: 2.00 m ✔ Maximum width: 5 boards ✔ Maximum bay length: 2.00 m ✔ Ledger braced ✔ Tied at alternate lifts	2.00	4.00	0.95 @ 16 m²	5.1

Signed: Date: 21/04/2021

This report was produced in SMART Scaffolder (v2020.3). This report should be used in conjunction with the TG20:13 Operational Guide.

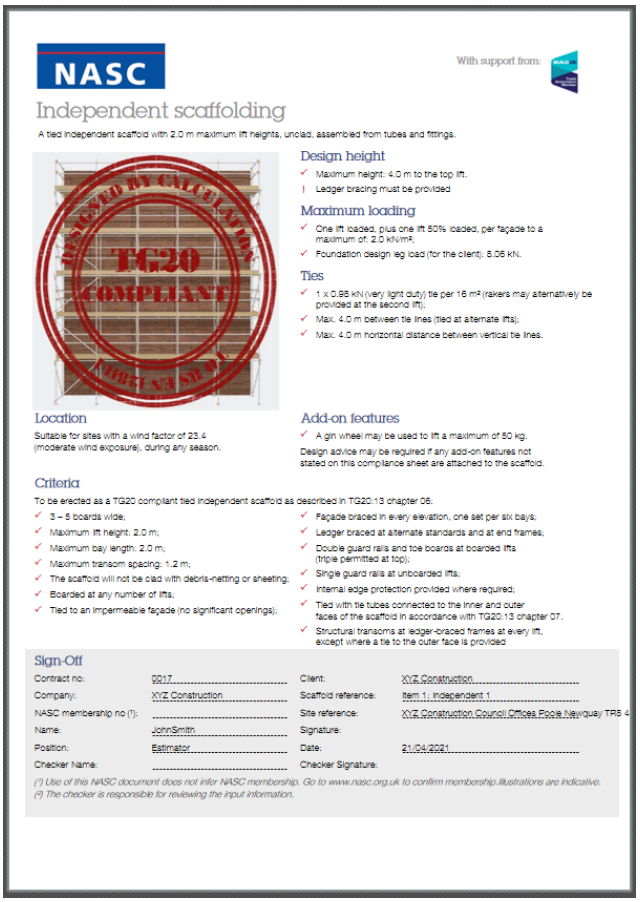
Check IT TG20:13

Check IT TG20:13 summarises, in a printable and exportable format, which of your project scaffolds are compliant scaffolds, which are not and thus may require design, and it offers suggestions and guidance on how to make your project compliant.



Check IT TG20:13 Plus

Check IT TG20:13 Plus provides printable, exportable compliance certificates. These certifcates act as proof that your scaffolds are TG20:13 *compliant* and are therefore exempt from structural design.



NASC

With support from:

Independent scaffolding

A tied independent scaffold with 2.0 m maximum lift heights, unclad, assembled from tubes and fittings.

Design height
- Maximum height: 4.0 m to the top lift.
- Ledger bracing must be provided

Maximum loading
- One lift loaded, plus one lift 50% loaded, per façade to a maximum of: 2.0 kN/m².
- Foundation design leg load (for the client): 5.05 kN.

Ties
- 1 x 0.95 kN (very light duty) tie per 16 m² (rakers may alternatively be provided at the second lift);
- Max. 4.0 m between tie lines (tied at alternate lifts);
- Max. 4.0 m horizontal distance between vertical tie lines.

Location

Suitable for sites with a wind factor of 23.4 (moderate wind exposure), during any season.

Add-on features
- A gin wheel may be used to lift a maximum of 50 kg.

Design advice may be required if any add-on features not stated on this compliance sheet are attached to the scaffold.

Criteria

To be erected as a TG20 compliant tied independent scaffold as described in TG20:13 chapter 06:
- 3 – 5 boards wide;
- Maximum lift height: 2.0 m;
- Maximum bay length: 2.0 m;
- Maximum transom spacing: 1.2 m;
- The scaffold will not be clad with debris-netting or sheeting;
- Boarded at any number of lifts;
- Tied to an impermeable façade (no significant openings);
- Façade braced in every elevation, one set per six bays;
- Ledger braced at alternate standards and at end frames;
- Double guard rails and toe boards at boarded lifts (triple permitted at top);
- Single guard rails at unboarded lifts;
- Internal edge protection provided where required;
- Tied with tie tubes connected to the inner and outer faces of the scaffold in accordance with TG20:13 chapter 07.
- Structural transoms at ledger-braced frames at every lift, except where a tie to the outer face is provided

Sign-Off

Contract no:	0017	Client:	XYZ Construction
Company:	XYZ Construction	Scaffold reference:	Item 1: Independent 1
NASC membership no (*):		Site reference:	XYZ Construction Council Offices Poole Newquay TR8 4
Name:	JohnSmith	Signature:	
Position:	Estimator	Date:	21/04/2021
Checker Name:		Checker Signature:	

(*) Use of this NASC document does not infer NASC membership. Go to www.nasc.org.uk to confirm membership.Illustrations are indicative.
(*) The checker is responsible for reviewing the input information.

SMART Estimator Check IT TG20:13 benefits

SMART Estimator **Check IT TG20:13** has been designed to help your business adopt TG20:13 and cost-effectively meet the requirements of the HSE.

✓	SMART Estimator **Check IT TG20:13** will summarise whether your scaffolds are TG20:13 *compliant* and are therefore exempt from a structural design
✓	Quickly generates a printable and exportable TG20:13 summary report that can be used to confirm that you will be able to obtain a NASC TG20:13 compliance sheet (available from the NASC TG20:13 eGuide or Operational Guide)
✓	Helps you to learn TG20:13 as you work, bringing the text of TG20:13 to life with graphics and easy-to-understand compliance summaries and guidance
✓	SMART Estimator **Check IT TG20:13** helps you to adopt TG20:13 as easily as possible, get the most value from it, and save you time and money by avoiding the need for an engineering design for everyday scaffolding
✓	SMART Estimator keeps up with the latest changes to TG20, helping you to understand the impact of the changes and to ensure that you continue to conform to the requirements of the HSE
✓	SMART Estimator offers easy to follow suggestions and guidance for non-compliant scaffolds avoiding accidental non-compliance

Introducing TG20:13

TG20:13 is a Technical Guidance document published by the NASC – the National Access and Scaffolding Confederation – who are the UK national trade body for access scaffolding.

It was developed by the NASC in response to changing European legislation, which requires every scaffold to be designed by calculation. It would not be practical for every scaffold to be individually designed by an engineer, so TG20:13 aims to solve this problem with its *standard scaffold* system.

TG20:13 contains a set of definitions for *standard scaffolds* that have been designed by the NASC: if a scaffold matches one of the standard scaffold definitions then the design from TG20:13 can be reused; if the scaffold does not match any of the standard scaffold definitions then it may require design advice from a structural engineer.

TG20:13 is supplied in four volumes:

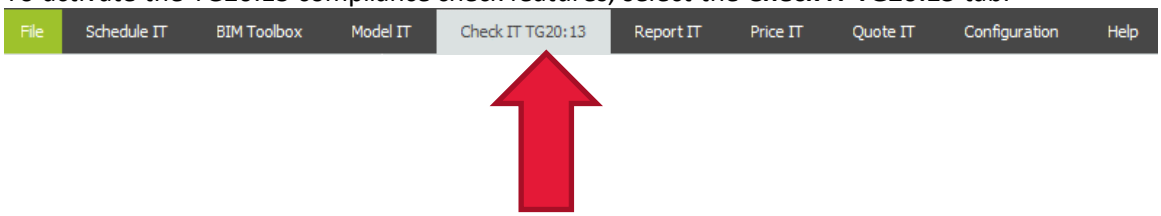
- *Operational Guide:* gives guidance on TG20:13 to scaffolding operatives;
- *User Guide*: a quick pocket size reference guide to TG20:13 for a scaffolding operative;
- *Design Guide:* gives guidance on TG20:13 for scaffold designers, with greater detail on compliance;
- *E-Guide:* a digital version of the guide which can check individual scaffolds for compliance.

SMART Estimator **Check IT TG20:13** helps you to get the most from TG20:

- ✓ It will summarise TG20:13 compliance for multiple scaffold models simultaneously, showing whether your scaffolds are compliant;
- ✓ It produces a printable report summarising which of your scaffolds need a design;
- ✓ It will help you to learn how TG20:13 works;
- ✓ It will help you identify and resolve non-compliant scaffolds, by offering guidance and suggestions.

Checking TG20:13 compliance

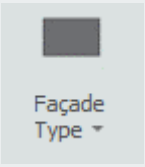
To activate the TG20:13 compliance check features, select the **Check IT TG20:13** tab.



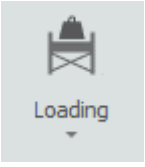
This module helps you to summarise TG20:13 compliance in four simple steps:

Set the **Wind Factor**;
This tool determines the effect of the wind on your scaffold.

If you already chose a site address with a UK postcode when you first created the project, this will already be set for you.



Set the **Façade Type**;
Specify whether your scaffold is Permeable or Impermeable (tied to a façade with openings or not).



Set the **Loading**;
Specify how much load your scaffold needs to support.

Run the final summary report to review your scaffolds TG20:13 compliance.

Wind factor

The site **Wind Factor** is essential to determine the maximum safe height of the scaffold, particularly where sheeting or debris netting are used.

There are four methods for setting the Wind Factor, dependent on your internet connection availability. Choose **one** of the below:

A. You can enter the site address including a UK postcode;

B. You can enter the UK postcode of the site where the scaffold will be erected;

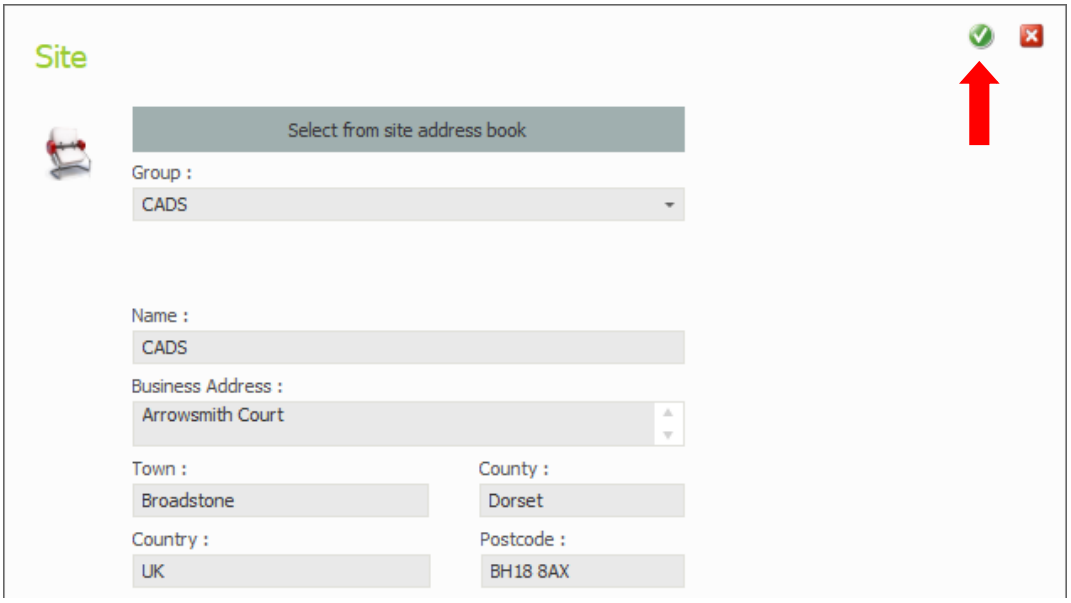
If you already chose a site address with a UK postcode when you first created the project, this will already be set for you. You can move to the next step.

C. You can select a map location and manually enter the Topography and Seasonal Factors.

Choose **ONE** of the following to set the Wind Factor:

A: Using a UK site address with a UK postcode

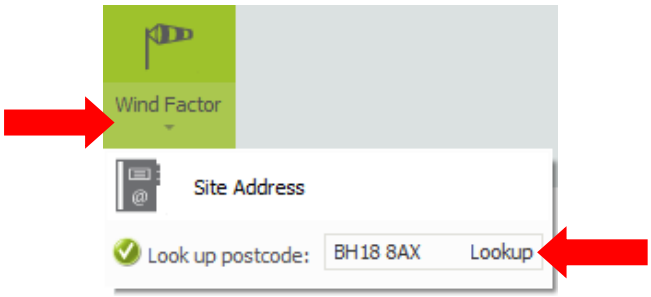
- Click the arrow located beneath the Wind Factor image, avoiding selecting the top half (which has an image, but no text);
- Select the **Set the Site Address** button;



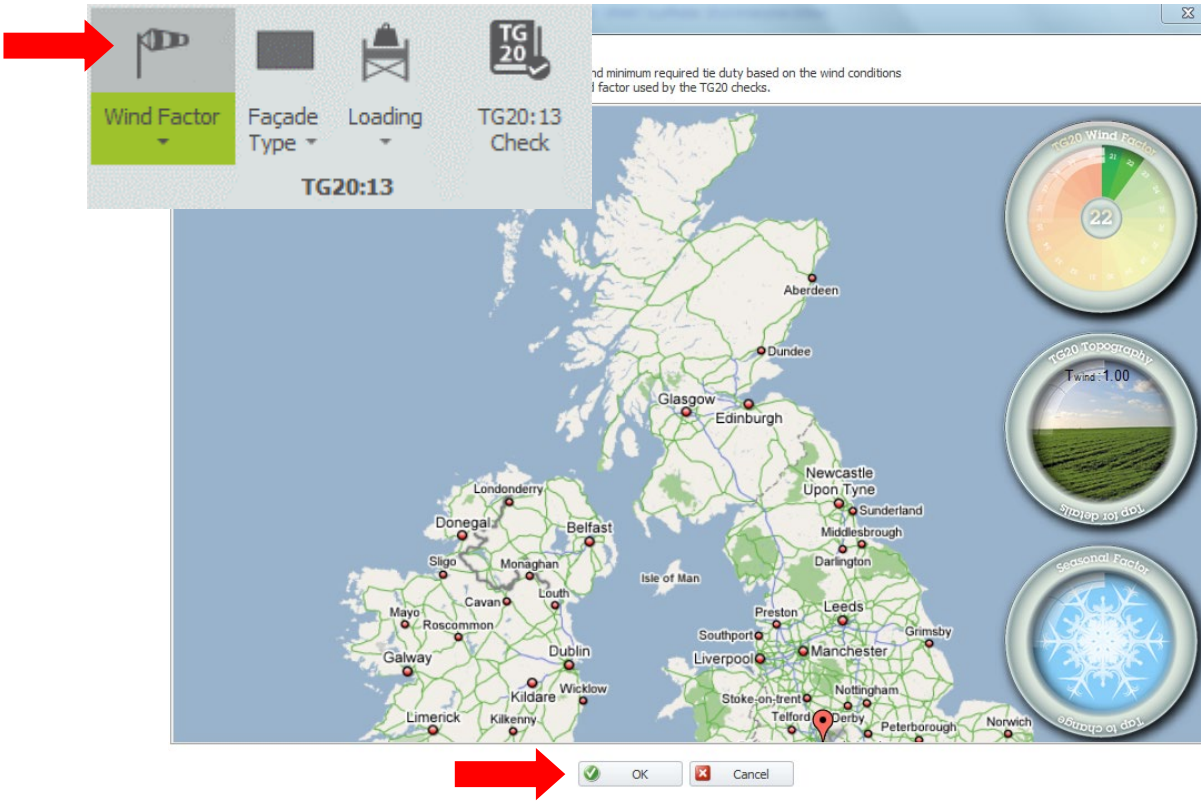
- Enter the site address and click the green **Apply** tick button;

B: Using a UK postcode

- Click the arrow located beneath the Wind Factor image, avoiding selecting the top half (which has an image, but no text);
- Type the postcode into the text box which appears;
- Click the **Lookup** button or press **Enter**;
- If the postcode is successfully recognised a *tick* will be displayed and the Wind Factor will be set.



C: Using a map

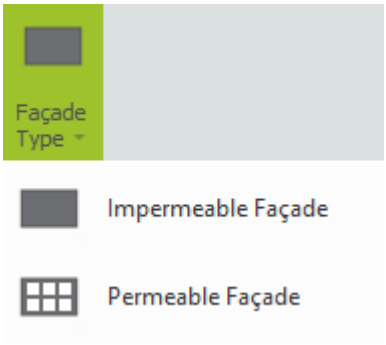


- Click the Wind Factor image;
- Using the mouse, left click the red marker and hold down the mouse button whilst you drag the marker to your location;
- Click on the image in the centre dial, 'TG20 Topography' to change your landscape (for details, see the NASC TG20:13 Operational Guide);
- For non-flat topography, move the small marker to your site location on the topography feature;

- Update the Seasonal Factor by left clicking the mouse in the centre of the Seasonal Factor dial (for details, see the NASC TG20:13 Operational Guide);
- Click the green OK button when finished.

Choosing the façade type

You can specify whether your scaffold is tied to a *permeable façade* (an open structure or a façade with a high percentage of openings) or an *impermeable façade* (a solid building with few openings).



- Click on the **Façade Type** button;
- Choose the façade type that you require by clicking on your choice from the drop-down list;
- If you choose the **permeable** type (with openings) the façade will be drawn transparently to remind you that this option has been selected;
- Select each scaffold by hovering the burgundy square over the scaffold and then pressing the left mouse button to apply the façade to all your structures.

It is essential to use this option if your scaffold is tied to a building with a high percentage of openings, to ensure that your scaffold is built with sufficient ties.

Note that sheeted and debris-netted scaffolds must be designed if tied to a permeable façade.

Specifying the scaffold loading

The TG20:13 check is greatly affected by the *loading* that your scaffold is required to support.

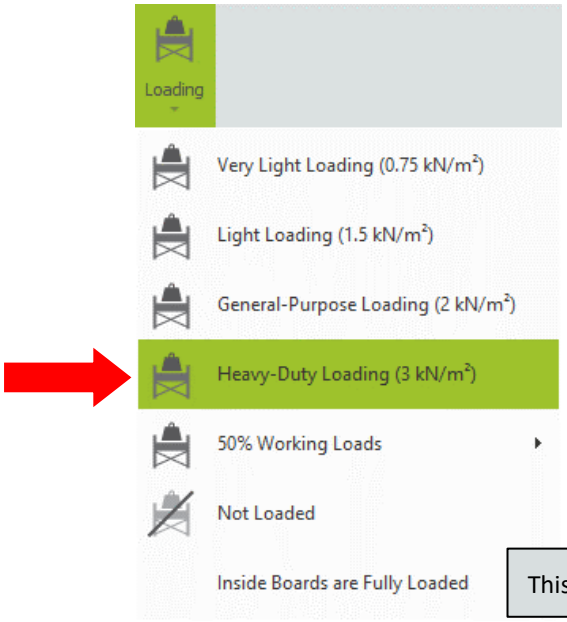
By default, **Check IT TG20:13** assumes that your scaffold will be a *General Purpose* scaffold used for most types of building work. This is represented in **Check IT TG20:13** by scaffolders on the loaded lifts.

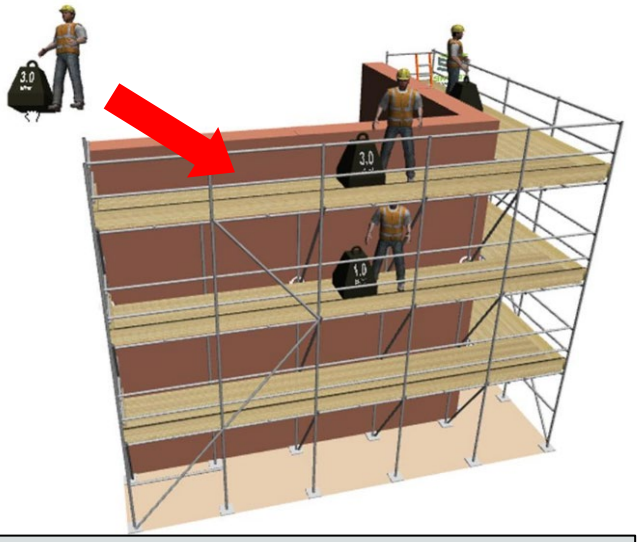
A General Purpose TG20:13 scaffold is loaded with 2.0 kN/m2 on one lift.

You can change the working loads, to do this:

- Click the **Loading** button;
- Click on the load class that you require;
- Move and drop the scaffolder and weight icon that appears, using the mouse left hand button, onto a lift. In most cases you will drop the load onto the top lift of each elevation.

If you change the loading on the top lift, the 50% loaded lift is updated automatically.





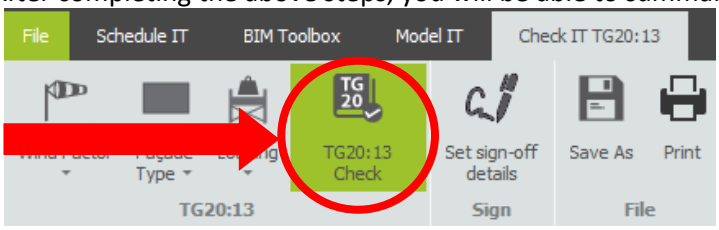
This is now a *Heavy Duty* TG20 scaffold, loaded with 3.0 kN/m^2.

The scaffold load class has a great effect on the TG20:13 check, so **be careful** to select the correct one, especially if you need heavy-duty loading. In particular the load class can determine the maximum safe height of the scaffold, its maximum width, and the maximum distance between the standards.

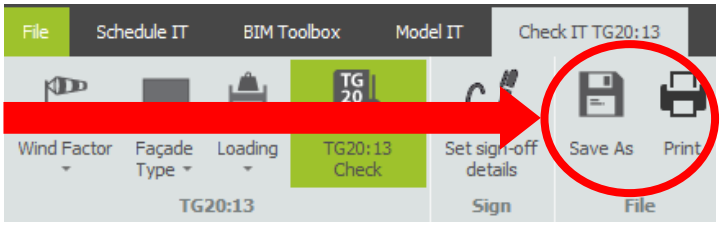
Note that, regardless of the load class, TG20:13 requires that inside boards are only very lightly loaded with a maximum load of 0.75 kN/m2.

Checking for TG20:13 Compliance

After completing the above steps, you will be able to summarise your project for compliance.

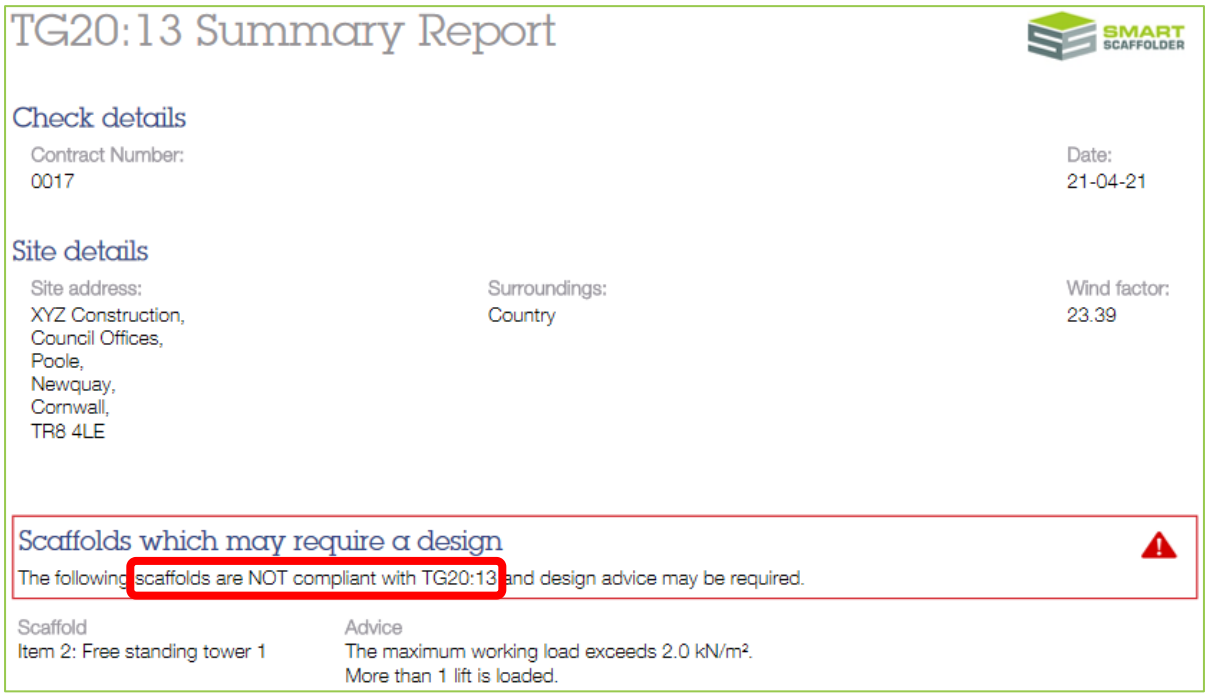


- Click on the **TG20:13 Check** button;
- The TG20:13 summary report is displayed;
- To return to your model, press the **TG20:13 Check** button again;



- To print the report, click on the **Print** button.
- To save the report as a PDF, select the **Save As** button.

An example of a TG20:13 **non-compliant** summary report will look like this:



TG20:13 Summary Report

SMART SCAFFOLDER

Check details

Contract Number: 0017

Date: 21-04-21

Site details

Site address: XYZ Construction, Council Offices, Poole, Newquay, Cornwall, TR8 4LE

Surroundings: Country

Wind factor: 23.39

Scaffolds which may require a design

The following scaffolds are NOT compliant with TG20:13 and design advice may be required.

Scaffold	Advice
Item 2: Free standing tower 1	The maximum working load exceeds 2.0 kN/m². More than 1 lift is loaded.

No compliance certificates will be created for this scaffold.

TG20:13 certificates require a **Check IT TG20:13 Plus** licence.

An example of a TG20:13 compliant summary report will look like this:

TG20:13 Summary Report

SMART SCAFFOLDER

Check details

Contract Number:
0017

Date:
21-04-21

Site details

Site address:
XYZ Construction,
Council Offices,
Poole,
Newquay,
Cornwall,
TR8 4LE

Surroundings:
Country

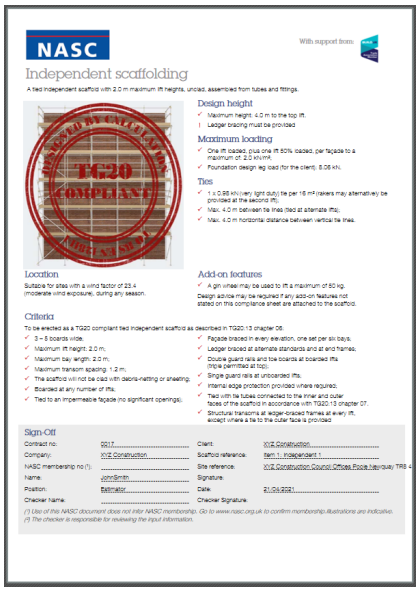
Wind factor:
23.39

Scaffolds which are compliant

The following scaffolds are compliant with TG20:13 and no design is required. All scaffolds must be constructed in accordance with the TG20:13 Operational Guide.

Scaffold	Maximum working load (kN/m²)	Design height (m)	Maximum tie duty (kN)	Foundation leg load (kN)
Item 1 Independent 1 ✔ Type: Unclad independent ✔ Maximum lift height: 2.00 m ✔ Maximum width: 5 boards ✔ Maximum bay length: 2.00 m ✔ Ledger braced ✔ Tied at alternate lifts	2.00	4.00	0.98 @ 16 m²	8.1

The later pages will include one or more compliance certificates for this scaffold.


NASC

Independent scaffolding

Design height

Maximum loading

Ties

Location

Add-on features

Criteria

Sign-Off

TG20:13 certificates require a **Check IT TG20:13 Plus** licence.

Correcting non-compliance

If your scaffold is not compliant with TG20:13, you will (if possible) be given advice about what you could change to make your scaffold compliant.

Scaffold	Advice
Item 3: Independent 1	The maximum TG20:13 safe height has been exceeded. You could consider the following options: Add double standards to height 22m. Change to tie pattern D or E and reduce the maximum bay spacing to 1.5m.

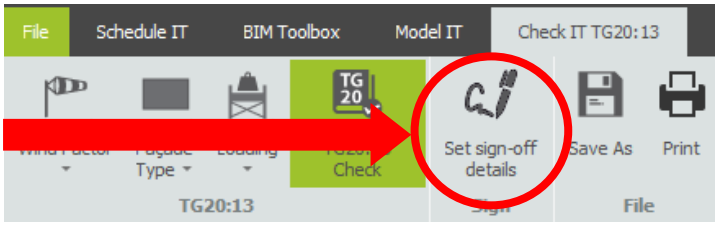
Here, I can see that I have three choices. I can add double standards up to 22 m, or I can switch to tie pattern D (or E) and reduce the maximum bay spacing to 1.5 m.

See the **Model IT User Guide** available from the **Help** tab, for details of how to make either of these changes.

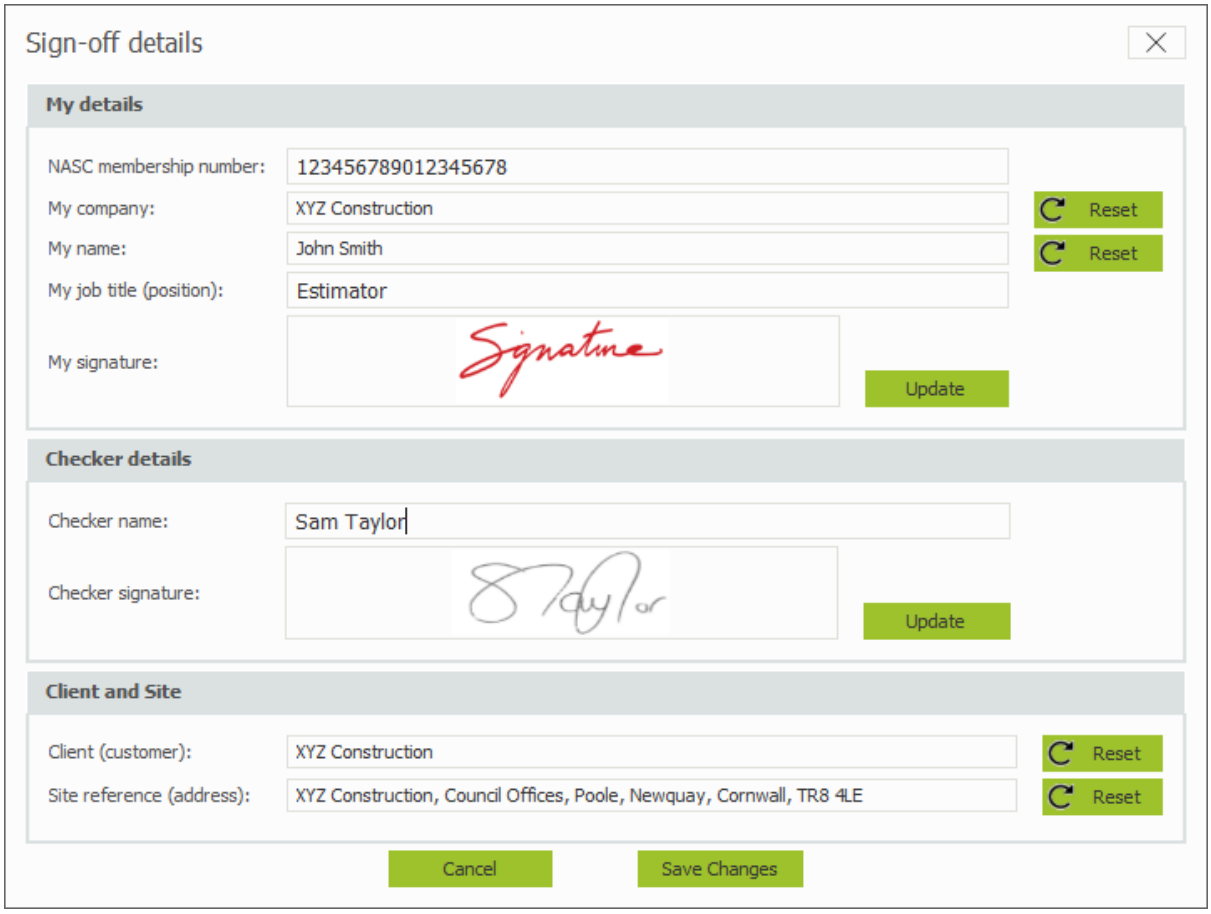
Setting the signature details

You could print out the compliance summary report and certificates, and then sign them with a pen. It may be easier to upload a picture of your signature and let SMART Estimator attach it automatically.

To do this, click the **Set sign-off details** button.



A form is displayed:



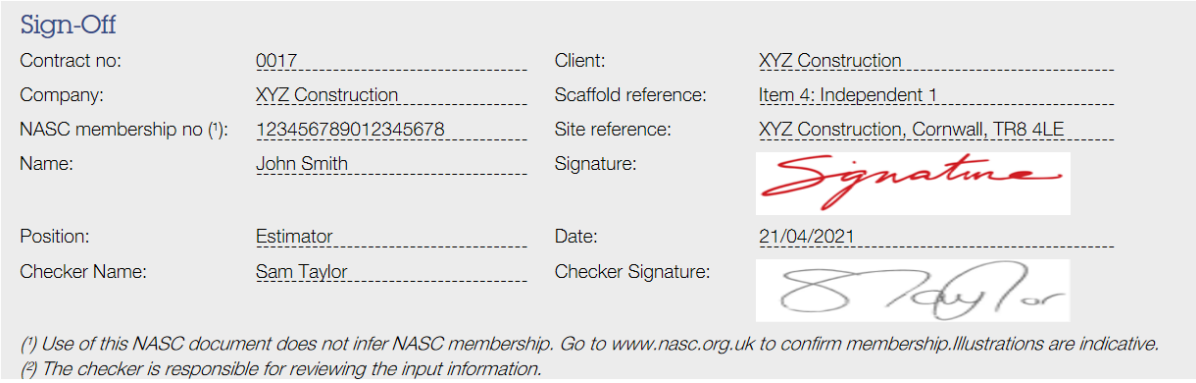
- To add your signature graphic, choose **Update** (in the **My Signature**) section, and select the image you want to use.

My Signature is the only field used on the Summary Report.

All of the others are only used on the compliance certificates.

Details to be used on the compliance certificates

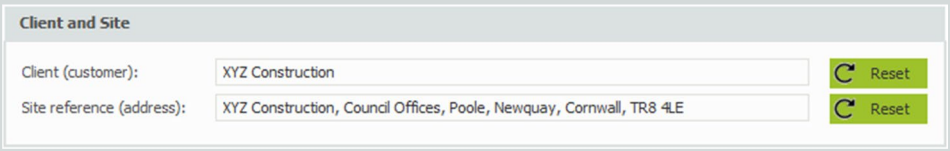
The remaining details on this form, plus **My Signature**, are used in the sign-off section of the compliance certificates:



Fill out these details and choose **Save Changes** to update the compliance certificate.

These sign-off details are saved and used automatically for future projects.

The **Reset** buttons can be used to refresh the values from your **My Address** setting and the projects **Site Address**.



FAQ

Why is the *Foundation leg load* the same with double standards?

The *Foundation leg load* is the combined load for scaffolds with double standards.

Why does the TG20:13 summary report suggest reducing the maximum bay spacing for my non-compliant scaffold when I already have double standards?

SMART Estimator assumes that a lower bay spacing is preferred to double standards, because this usually requires fewer total standards.

- If you reduce the bay spacing as suggested, you can also remove the double standards. Your scaffold will usually remain TG20:13 compliant.
- If you choose not to remove the double standards, following the remaining advice is usually sufficient to achieve TG20:13 compliance.

Now TG20:21 is released, can we still work to TG20:13?

Yes. TG20:13 compliant scaffolds are exempt from design. However, TG20:21 is the latest guidance for best practice. CADS recommend switching to Check IT TG20:21 if and when it is released. In the meantime, we recommend using the NASC ePortal to access the latest guidance.

Using the other SMART Estimator products

The best way to use the SMART Estimator products is to use them together. Every product is designed to enhance the rest of the suite.

SMART Estimator **Check IT TG20:13** can be used with the rest of the SMART Estimator products:

Model IT

SMART Estimator **Model IT** is a powerful 3D modelling tool. Use it to create scaffolds to exactly meet your project-specific needs. It is recommended that **Model IT** is used alongside **Check IT TG20:13** and **Check IT TG20:13 Plus**, since you can use it to adjust the scaffold design so it passes TG20.

Schedule IT

As a rapid way of creating large, multi-scaffold projects, **Schedule IT** can be used to rapidly create scaffolding projects, which can then be checked for TG20:13 compliance.

Report IT

Produce material lists and technical drawings alongside the TG20:13 compliance reports.

Price IT

Produce a fast and highly customisable pricing report for your scaffolding project.

Quoting

Generate quotations for the project, to send to the customer.

BIM Toolbox

Create scaffolds more quickly, using information from an existing model, or export data from SMART Estimator to be used in other design software.

For more information about the other SMART Estimator products, please refer to their user guides, which are available from the Help tab.

Feedback

Thank you for choosing SMART Estimator.

We are always striving to improve the product so please contact us with your feedback. We are always keen to hear new ideas and if you experience any problems with the software we want to hear about them so that they can be resolved.

You can contact us via:

- Our website support centre at www.smartscaffolder.com/support.html;
- Email on support@smartscaffolder.com;
- Telephone on +44 (0)1202 603733 from Monday to Friday between 09:30 and 17:00.