TOPCON

3D-MC v13.1

New Sitelink3D Features

Quick Reference Guide

3D-MC v13.1
New Sitelink3D Features
Quick Reference Guide

Part Number 1051913-01
Revision B

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May 2022

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Manual Conventions

This manual uses the following conventions:

Convention	Description	Example
Bold	Menu, or drop-down menu selection	**File > Exit** (Click the **File** menu and click **Exit**)
	Name of a dialog box or screen	From the **Connection** screen...
	Button or key commands	Click **Finish**.
Mono	User supplied text or variable	Type guest, and click **Enter**.
Italic	Reference to another manual or help document	Refer to the *Topcon Reference Manual.*

NOTE	Further information to note about system configuration, maintenance, or setup.
NOTICE	Supplementary information that can have an adverse affect on system operation, system performance, data integrity, or measurements.
CAUTION	Notification that an action has the potential to result in minor personal injury, system damage, loss of data, or loss of warranty.
WARNING	Notification that an action has the potential to result in personal injury or property damage.
DANGER	Notification that an action has the potential to result in severe personal injury or death.

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About this Guide 1

What's New in 3D-MC v13.1? 2

As-Built Live and Reporting Services 3

Terminology 3

Sitelink3D Web Portal – Preparing the Site for As-Built 5

3D-MC – Creating and Selecting a Sequence 9

3D-MC – Enabling and Displaying As-Built 10

3D-MC – Controlling As-Built 12

Sitelink3D Web Portal – Viewing As-Built Live 14

3D-MC – Finalizing a Sequence 15

Sitelink3D Web Portal – Height Map 16

ICMV Calibration Tool 17

ICMV Calibration Tool 17

3D-MC – ICMV Calibration Process 18

Sitelink ID 19

Device Data 20

3D-MC – Device Data Creation and Synchronization 21

Sitelink3D Web Portal – Accessing Device Data 22

Safety Warnings. 23

About this Guide

Sitelink3D Compatibility

Sitelink3D – **Sitelink3D v2** https://sitelink.topcon.com

3D-MC v13.1 supports **Sitelink3D v2** enabled sites and **Local** sites (.tp3 files), therefore all mentions of **Sites** and **Sitelink3D** contained in this guide are referring to the **Sitelink3D v2** service and web portal.

sitelink3D – **Sitelink3D v1** https://www.sitelink3d.net

Clients requiring **Sitelink3D v1** connectivity will need to use **3D-MC v12.2** or **v12.3**.

What’s New in 3D-MC v13.1?

3D-MC v13.1 delivers additional Sitelink3D functionality and improved workflows to increase jobsite productivity and efficiency.

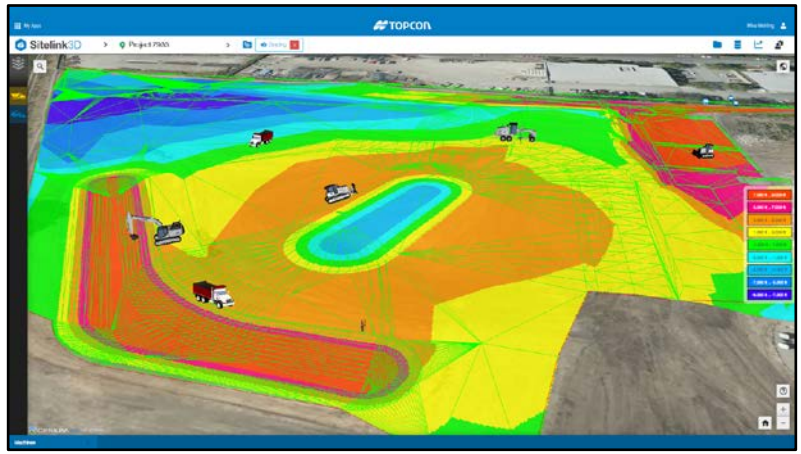
Key new features:

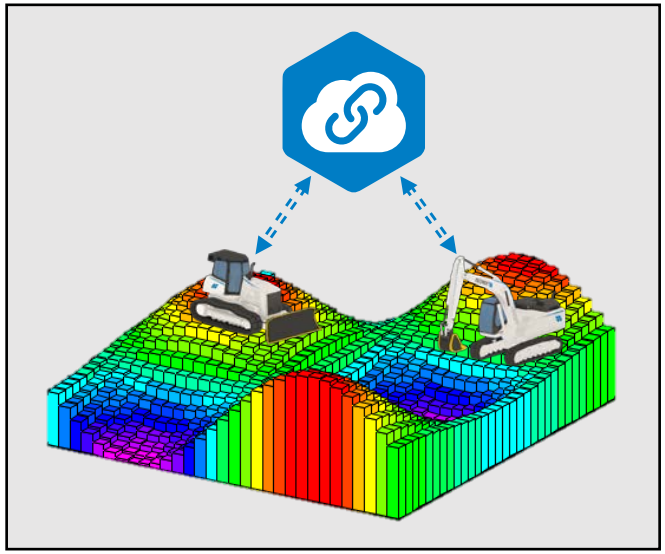
- Support for **Compacting Roller**
- Sitelink3D **As-Built** functionality
- ICMV calibration tool
- **Device Data** backup to Sitelink3D

As-Built Live and Reporting Services

A solid understanding of how As-Built works is essential to achieving the best results!

Terminology





As-Built data – As-built data is a record of grid cell activity, collected by as-built enabled 3D-MC systems.

As-Built Live – As-Built Live is a cloud-based micro-service that continuously monitors and updates the as-built data record and renders the **Color Maps** that can be displayed in real-time in both 3D-MC and the Sitelink web portal.

Grid cells – Grid cells are 2D squares. Like a chessboard or floor tiles, grid cells form a dynamic network covering the entire Site.

Cell Size – Cell size specifies dimensions of the individual grid cells (10cm; 20cm; 40cm), which in-turn equates to the density of the stored datapoints. Grid cell size is specified in the **Sequence Type** and can significantly affect the performance of both Color Map rendering and as-built reporting, particularly for large areas.

Sequence Type – Sequence Types define the rules for the recording and display of the as-built data collected for a **Sequence** and are managed in the Metadata Manager.

Two **Sequence Types**:

- **Level** – A Level Sequence Type is **height-based** (*elevation*) and commonly used for earthworks and compaction Tasks. Multiple Level Sequences can be active simultaneously.
- **Shift** – A Shift Sequence Type is **time-based** and commonly used for Tasks such as snow grooming. Only one Shift Sequence can be active at a time.

Terminology continued…

Sequence – A Sequence is a reference ID that is attached to all as-built data and used for filtering purposes. Sequences are linked to a Sequence Type and delineate repetitive segments of Task-based work that are typically performed in a sequential order (i.e., Lift 1, Lift 2, etc.). Sequences are managed (*created and finalized*) in 3D-MC. A Sequence must be selected in 3D-MC in order collect as-built data.

Color Maps – Color Maps are a network of colored grid cells, correlating to a predefined color palette, describing the relationship between the current as-built data and its reference target. Each Site is preconfigured with a set of "Default" Color Maps; however, these maps can be modified, and additional Color Maps can be created to suit any as-built situation.

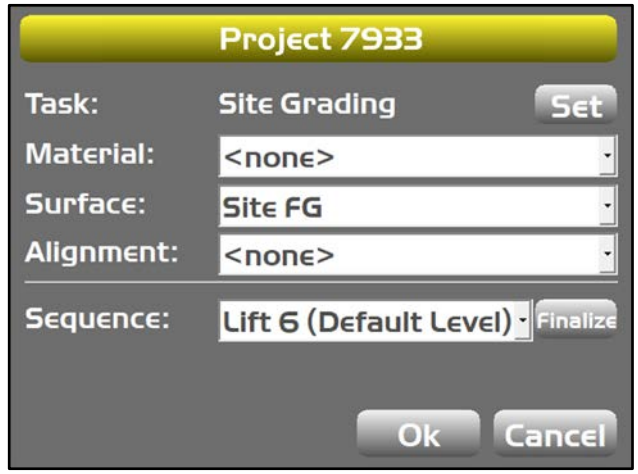
Reference Surface – Cut/Fill Color Map rendering requires the selection of a Reference Surface, which must be contained one of the Task's Design Sets.

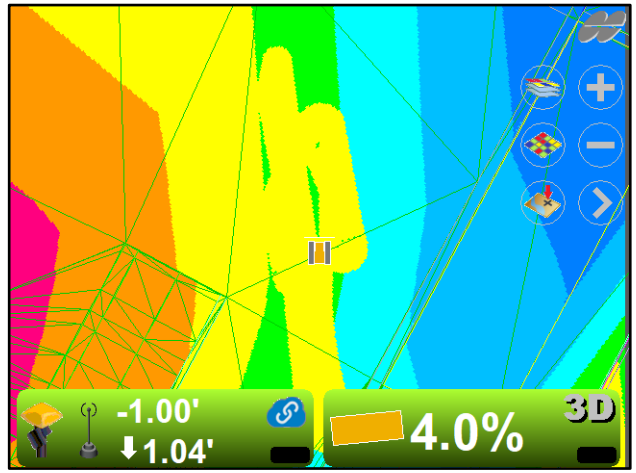
Masking Region – A Masking Region is simply a Region (*geo-fence*) used for the purpose of filtering as-built data, by trimming the data to the limits of the Region.

Height Map Report – A Height Map Report is a downloadable file, containing as-built surface data for a specified date and time. Height Map Reports can be generated in either .XYZ (*text*) or .PLY (*point cloud*) formats.

TDS Report – A TDS Report is an Intelligent Compaction report formatted for import into VETA software for further analysis.

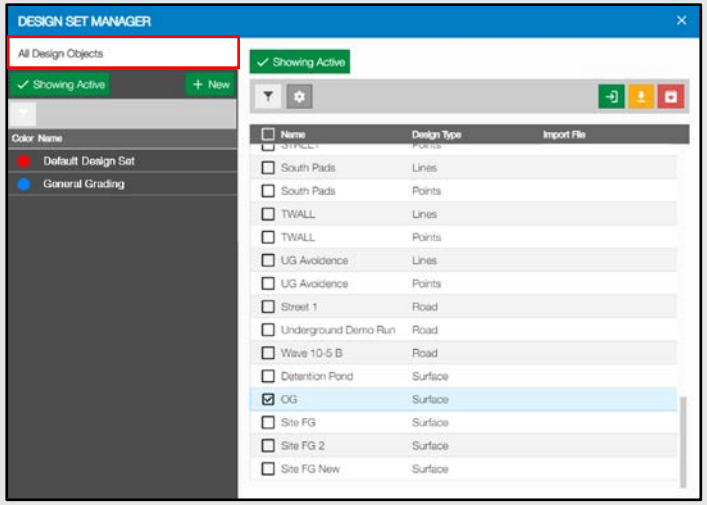
Visit https://www.intelligentconstruction.com to learn more about VETA software.





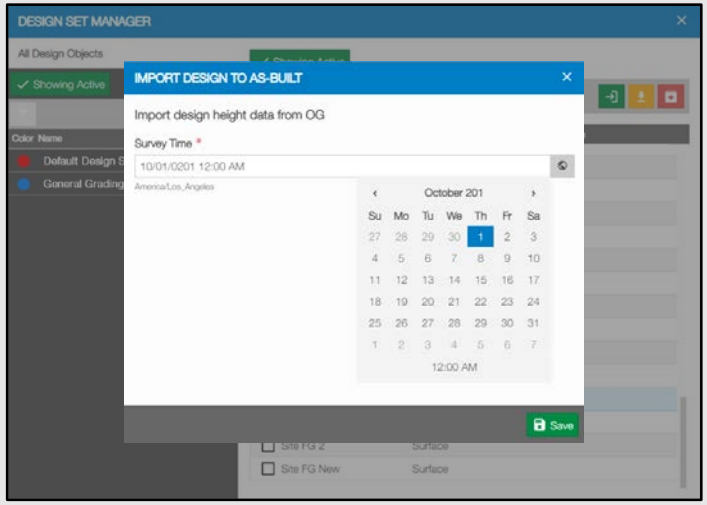
Sitelink3D Web Portal – Preparing the Site for As-Built

Insert a surface into the as-built record *(optional)*



Step 1. **Design Set Manager** dialog

- click **All Design Objects**
- select the surface to be inserted from the list
- click (*Import Design to As-Built*)



Step 2. **Import Design to As-Built** dialog

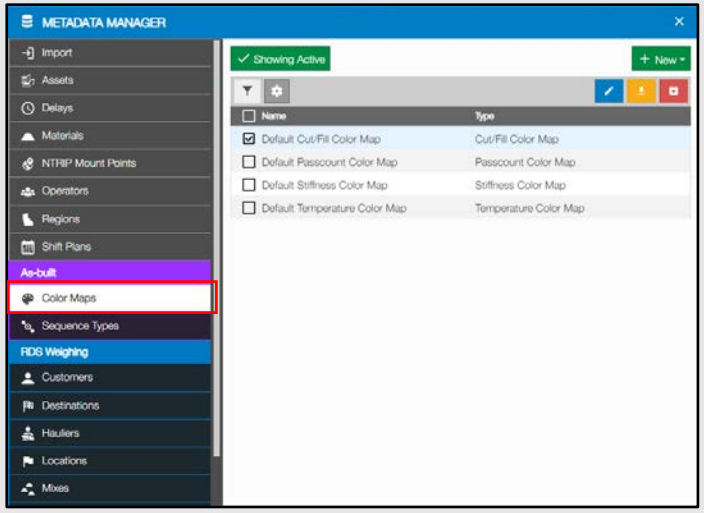
- adjust the **Date and Time** that the survey was completed
- click Save

For original ground surfaces, the date should precede all other as-built data.

NOTICE Inserting an original ground surface is recommended for all Sites that will utilize cut-fill color mapping.

Sitelink3D Web Portal – Preparing the Site for As-Built

Configure Color Maps *(optional)*



Step 1. **Metadata Manager** dialog

- select **Color Maps**
- click + New

or

- select the **Color Map** from the list
- click (*edit*)

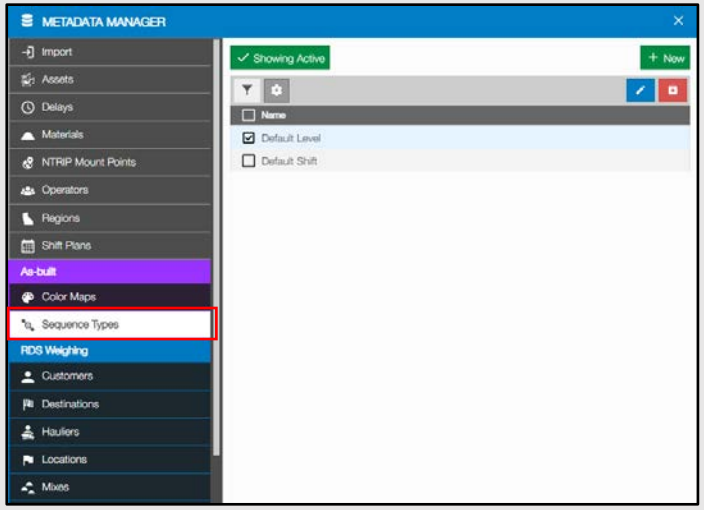
Step 2. **Edit Color Map** dialog

- enter or modify the **Name**
- adjust the settings as desired
- click Save

NOTE To simplify the setup process, each Site is preconfigured with a set of **Default Color Maps**.

Sitelink3D Web Portal – Preparing the Site for As-Built

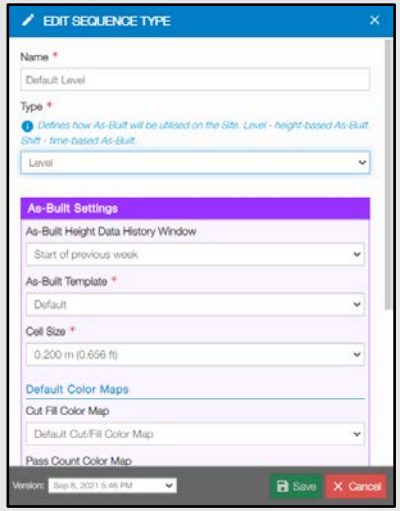
Configure Sequence Types *(optional)*



Step 1. **Metadata Manager** dialog

- select **Sequence Types**
- click + New

  or
- select the **Sequence Type** from the list
- click (*edit*)



Step 2. **Edit Sequence Type** dialog

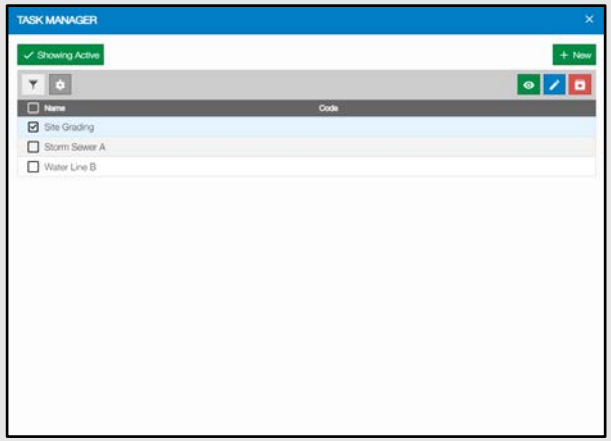
- enter or modify the **Name**
- adjust the settings as desired
- click Save

NOTE To simplify the setup process, each Site is preconfigured with **Default Sequence Types**.

Sitelink3D Web Portal – Preparing the Site for As-Built

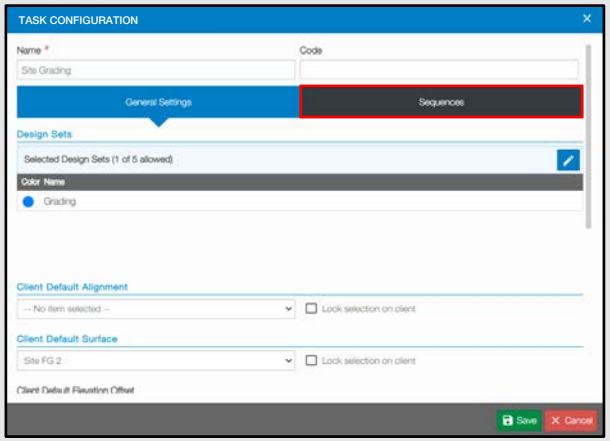
Enable As-Built in the Task *(required)*

Enabling a **Sequence Type** in a Task allows 3D-MC clients to create, select and finalize **Sequences** when the Task is selected.



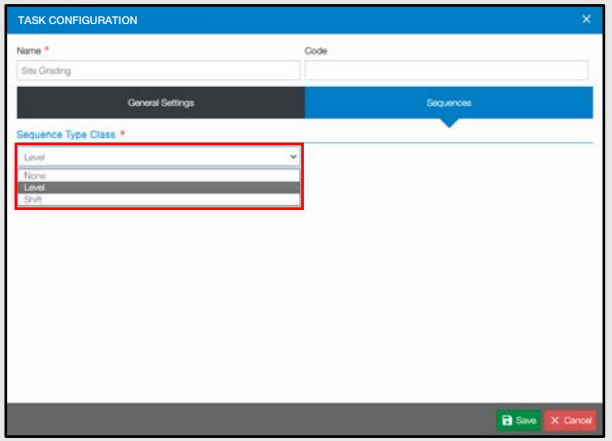
Step 1. **Task Manager** dialog

- Select the **Task**
- Click (*edit*)



Step 2. **Task Configuration** dialog

- Click on the **Sequences** tab



Step 3. **Task Configuration** dialog

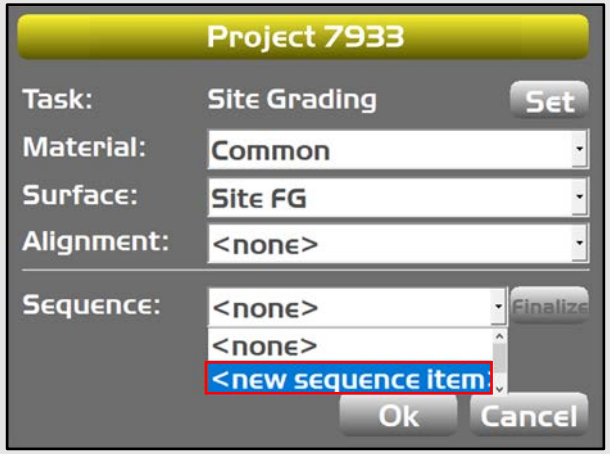
- Select a **Sequence Type**
- Click Save

NOTE

As-Built Live is a **Premium Service**, therefore additional usage fees will apply when a **Sequence** is selected in 3D-MC. Usage fee schedules are available in the **About Sitelink3D** section in the Sitelink3D web portal.

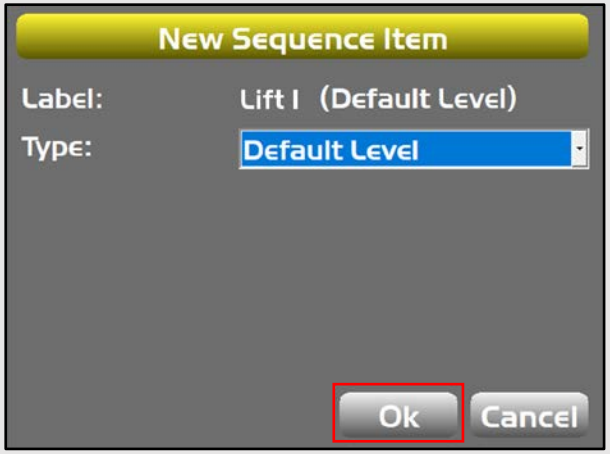
3D-MC – Creating and Selecting a Sequence

Data → Task…



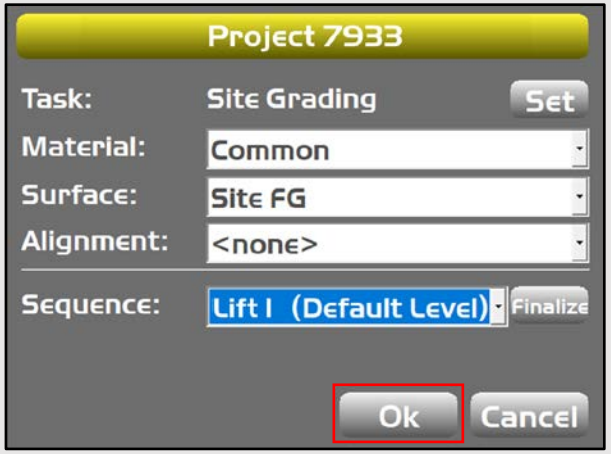
Step 1. **Task** dialog

- Select **<new sequence item>** from the Sequence dropdown



Step 2. **New Sequence Item** dialog

- Verify the **Label** name
- Click **Ok**



Step 3. **Task** dialog

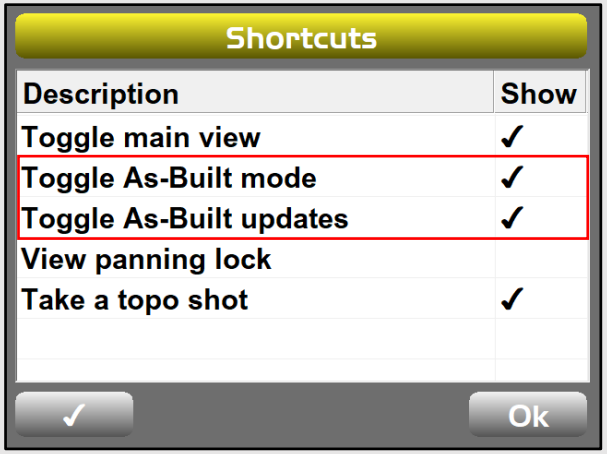
- select the desired **Sequence**
- click **Ok**

NOTE

The **Sequence** section of the Task dialog is hidden if a **Sequence Type** has not been enabled in the Task Configuration.

3D-MC – Enabling and Displaying As-Built

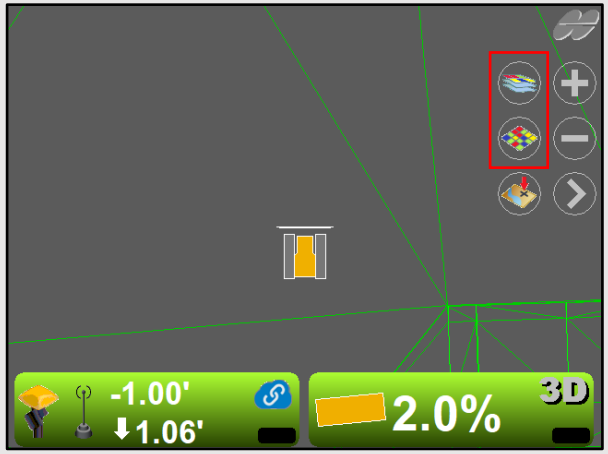
As-Built Shortcuts



Shortcuts dialog

View → Display Options → Shortcuts…

- Ensure that both **As-Built Shortcuts** are enabled



When enabled, both **As-Built shortcuts** will remain hidden until a **Sequence** has been selected in the **Task**.

Toggle As-Built mode

- Each click toggles to the next available **Color Map** *(see note below)*

Toggle As-Built updates

Enabled Disabled

NOTE

Only **Color Maps** defined in the **Sequence Type** AND available for the machine type can be displayed. Please refer to page 11 for the list of the available Color Maps for each machine type.

3D-MC – Enabling and Displaying As-Built

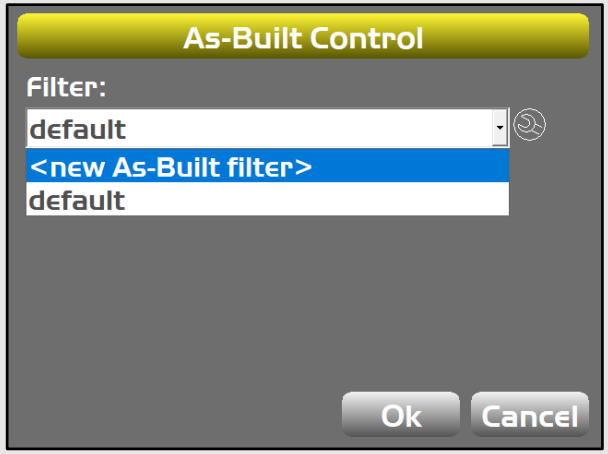
Available Color Maps by Machine Type

	Excavator	Mastless Dozer	Masted Dozer	Masted Motor Grader	Compacting Roller
Height	✔	✔	✔	✔	✔
Pass count	×	×	×	✔	✔
Temperature	×	×	×	×	✔ *
Stiffness	×	×	×	×	✔ *

✔ **Available** × **Not available** * **Optional sensor required**

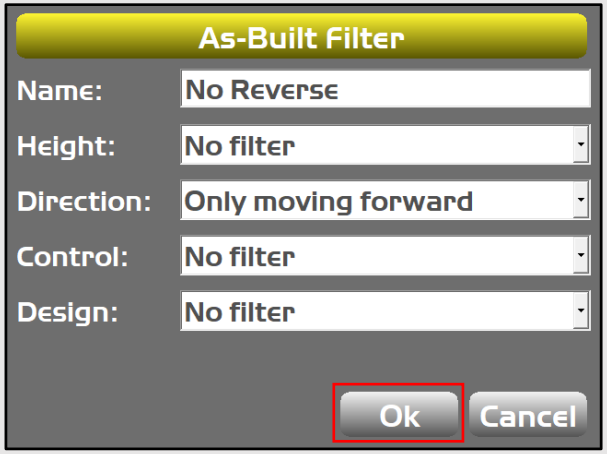
3D-MC – Controlling As-Built

Configuring As-Built Filters – Control → As-Built Control



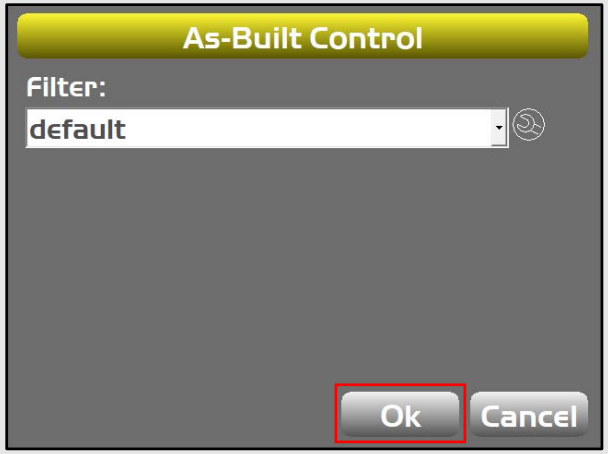
Step 1. **As-Built Control** dialog

- Select **<new As-Built filter>**
  or
- Select an existing an As from the list and click to edit.



Step 2. **As-Built Filter** dialog

- Adjust the filters as desired
- Click **Ok**



Step 3. **As-Built Control** dialog

- Click **Ok**

NOTE

Some As-Built Filters are not available for every machine type. Please refer to page 13 for further details.

3D-MC – Controlling As-Built

As-Built Filters by Machine Type

	Excavator	Mastless Dozer	Masted Dozer	Masted Motor Grader	Compacting Roller
Height					
No Filter	×	×	✔	✔	×
Lower than previous (cut)	×	×	✔	✔	×
Higher than previous (fill)	×	×	✔	✔	×
Direction					
No Filter	×	✔	✔	✔	×
Only moving forward	×	✔	✔	✔	×
Only in reverse	×	✔	✔	×	×
Control					
No Filter	×	✔	✔	✔	×
Only in automatic	×	✔	✔	✔	×
Design					
No Filter	✔	✔	✔	✔	✔
Within the design boundary	✔	✔	✔	✔	✔
Within the vertical proximity	✔	✔	✔	✔	×

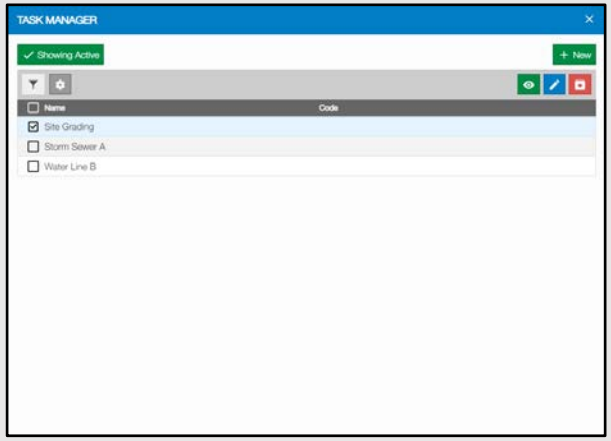
✔ **Available** × **Not available**

NOTICE

To help prevent the introduction of bad As-Built data, the Height filter for Excavator is permanently fixed to Lower than previous (cut).

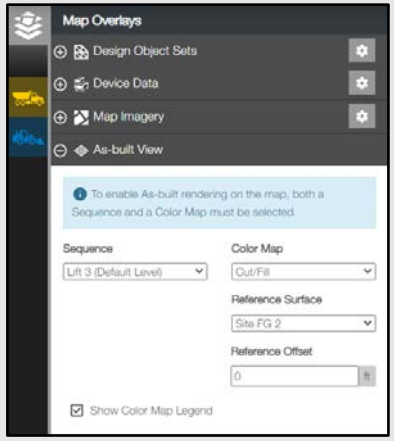
Sitelink3D Web Portal – Viewing As-Built Live

Display Color Maps



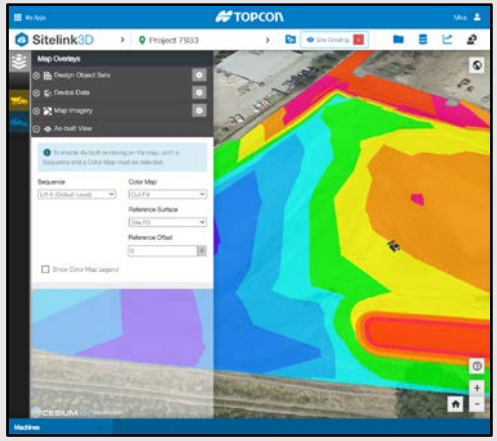
Step 1. **Task Manager** dialog

- Select the **Task**
- Click (*view*)



Step 2. **Map Overlays Panel**

- Expand the **As-Built View** section
- Select
  - **Sequence**
  - **Color Map**
  - **Reference Surface**



NOTE

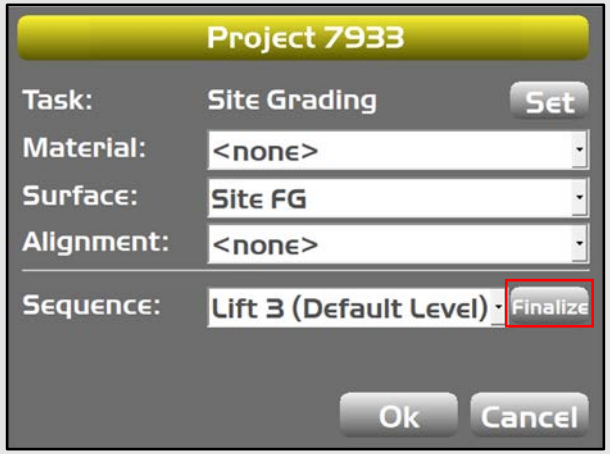
Sequences that have been **Finalized** in 3D-MC will no longer be available for display in the web portal. Please refer to page 15 for further details.

3D-MC – Finalizing a Sequence

Data → Task…

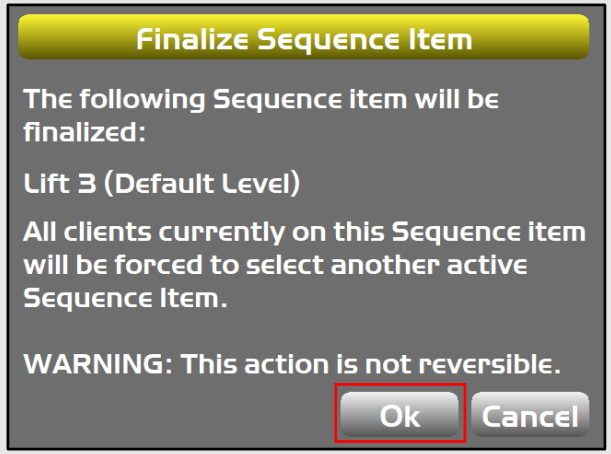
Finalizing a **Sequence**, marks it as complete and removes it from the **As-Built Live** service.

Multiple **Level Sequences** may be Live concurrently, so it is not necessary to **Finalize** a **Sequence** before creating a new one.



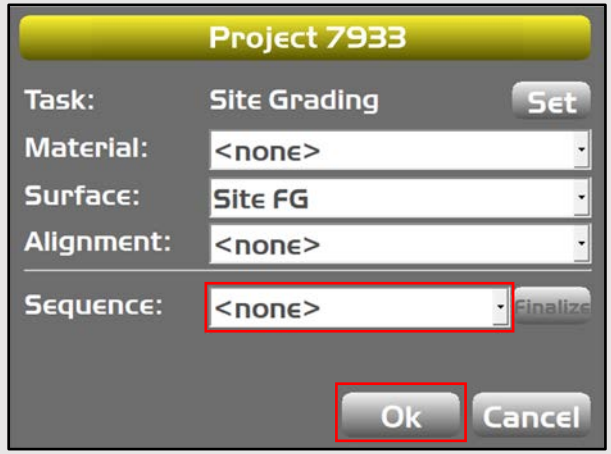
Step 1. **Task** dialog

- Click **Finalize**



Step 2. **Finalize Sequence Item** dialog

- Click **Ok** to acknowledge the warning



Step 3. **Task** dialog

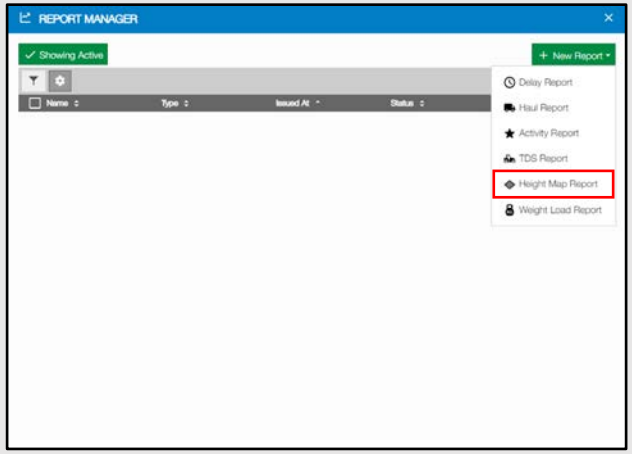
- Create or select another Sequence (*optional*)
- Click **Ok**

CAUTION

Once a **Sequence** has been **Finalized** it will no longer be “Live”, therefore its related **Color Maps** can no longer be displayed in either 3D-MC or the Sitelink3D web portal.

Sitelink3D Web Portal – Height Map Report

Display Color Maps

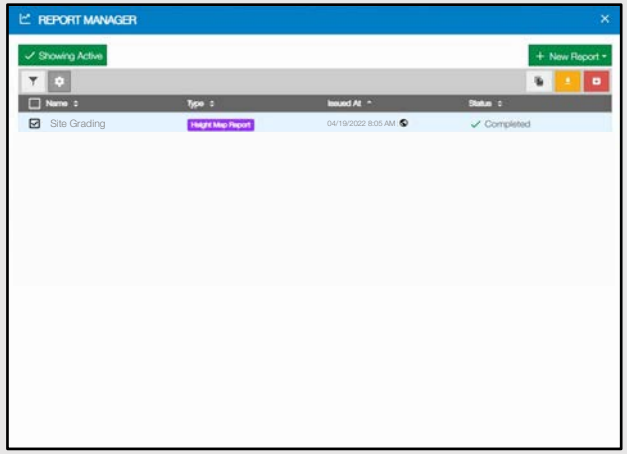


Step 1. **Report Manager** dialog

- Click **New Report**
- Select **Height Map Report**

Step 2. **New Height Map Report**

- Enter Name
- Select **Date** and Time
- Select **Output File Format**
- Select **Cell Size**
- Adjust additional settings (*optional)*
- Click Save

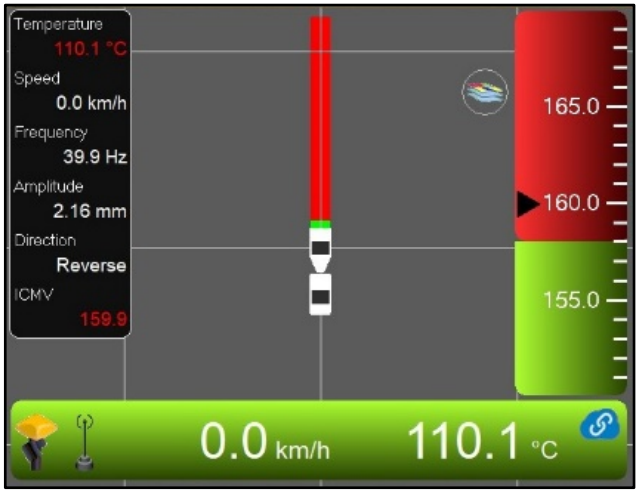


Step 3. **Report Manager** dialog

- Select the report
- Click (*download*)

NOTE Height Map Reports can be generated in either **.XYZ** (*text E,N,Z*) or **.PLY** (*point cloud*) formats.

ICMV Calibration Tool



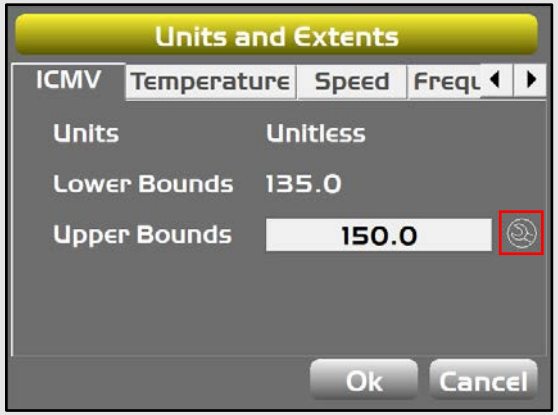
3D-MC v13.1 provides a simple ICMV stiffness calibration routine for use on generic roller systems.

This feature enables operators to calibrate the upper ICMV bound stiffness value during the final pass of a test strip area. This value represents the optimum stiffness for a specified material and lift thickness.

NOTICE Recalibration is recommended if either the material or the lift thickness is changed.

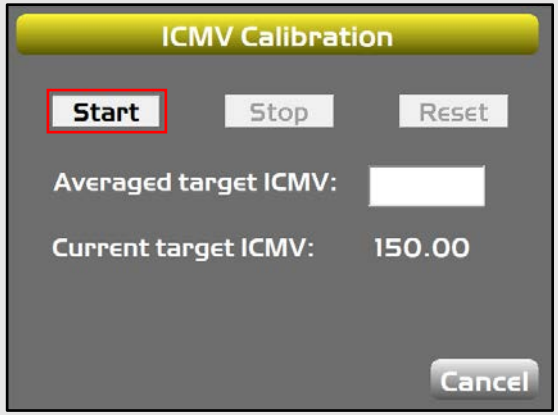
3D-MC – ICMV Calibration Process

Control → Units and Extents…



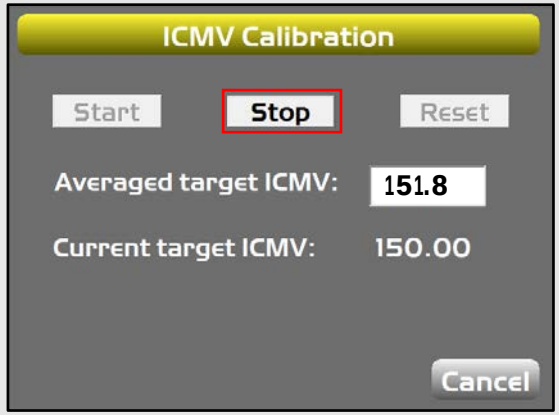
Step 1. **Units and Extents** dialog

- Click



Step 2. **ICMV Calibration** dialog

- Click **Start**

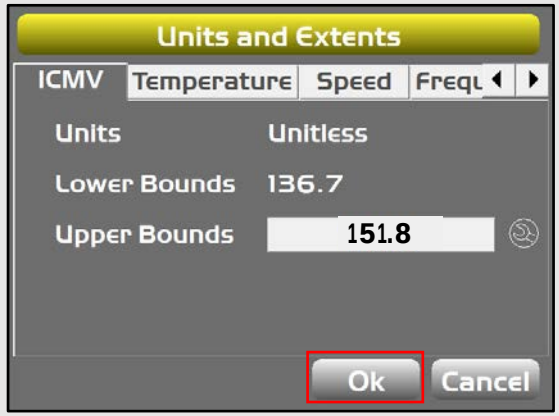


Step 3. **ICMV Calibration** dialog

- Click **Stop**

Step 4. **ICMV Calibration** dialog

- Click **Set**



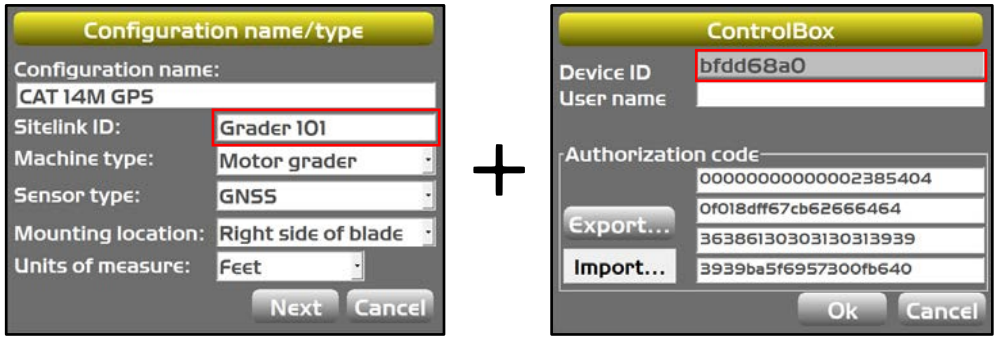
Step 5. **Units and Extents** dialog

- Click **Ok**

Sitelink ID

3D-MC v13.1 includes a new **Sitelink ID** field in the machine configuration (*.mx3*) file that enables a single machine to switch between multiple configuration files, without incurring additional Sitelink3D usage fees.

The **Sitelink ID** together with the **Device ID** uniquely identifies each machine.



When the **Sitelink ID** field is blank, the **Configuration Name** will serve as the default **Sitelink ID**.

NOTICE

If either the **Sitelink ID** or the **Device ID** vary, Sitelink3D will treat them as different machines and additional usage fees will apply.

Device Data

3D-MC v13.1 provides cloud backup storage for devices connected to Sitelink3D sites.

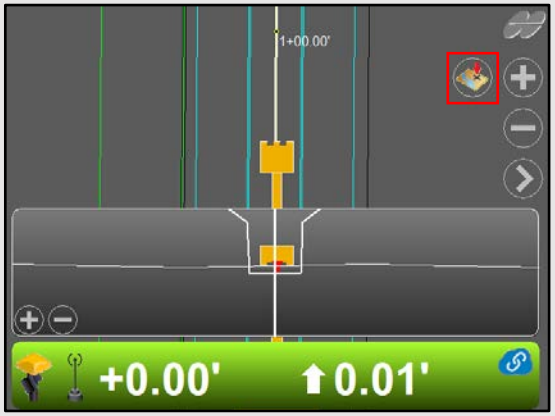
Data stored in the **Device Data** tab of the **Surfaces** and **Layers** dialogs is now automatically backed up to the Sitelink3D cloud, enabling Site Managers to visualize and download the data via the Sitelink3D web portal.

Benefits of Device Data backup

- **Simple** – data automatically synced to the cloud hourly and can be synced more frequently on-demand
- **Portable** – data is available on any machine the device is connected to
- **Accessible** – Site Managers can view and/or download all synced device data in the Sitelink3D web portal

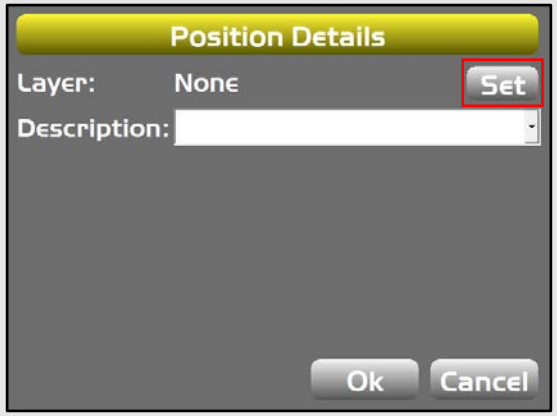
NOTE **Device Data** is linked to the system **Device ID**.

3D-MC – Device Data Creation and Synchronization



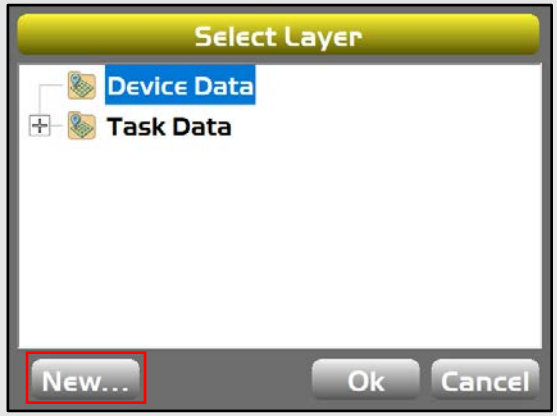
Step 1. **Main screen**

- Click **Topo Point** shortcut



Step 2. **Position Details** dialog

- Click **Set**



Step 3. **Select Layer** dialog

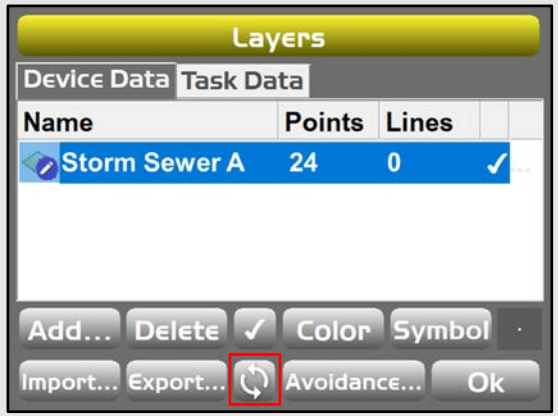
- Click **New** and enter name

Step 4. **Select Layer** dialog

- Click **Ok**

Step 5. **Position Details** dialog

- Click **Ok**

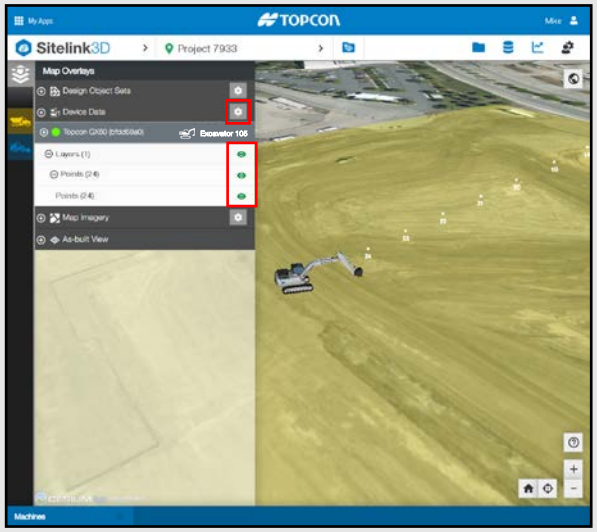


Step 6. **Data → Layers** dialog

- Click (*sync*)

Sitelink3D Web Portal – Accessing Device Data

Display and Download

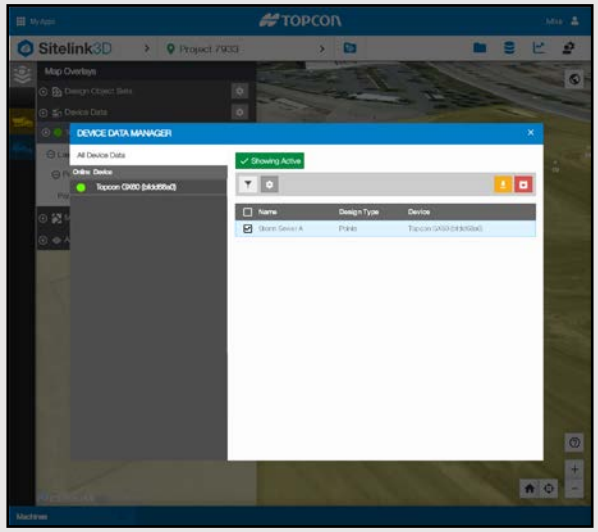


Step 1. **Map Overlays** Panel

- Expand **Device Data**
- Click (*view*)

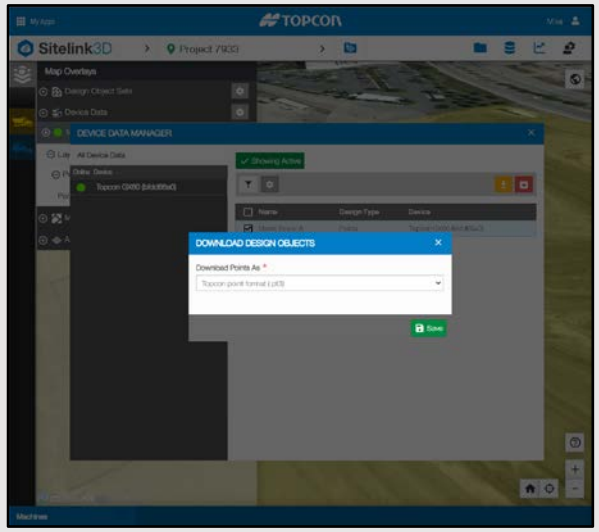
To download

- Click to open the **Device Data Manager**



Step 2. **Device Data Manager** dialog

- Select the object
- Click (*download*)



Step 3. **Download Design Objects**

- Select the desired format
- Click Save

NOTE

The current **Sitelink ID** is displayed to the right of the **Device ID** in the Map Overlays panel.

Safety Warnings

General warnings

CAUTION

Topcon products are designed for survey and survey related uses (that is, surveying coordinates, distances, times, events, angles and depths, and recording such measurements). This product should never be used:

- Without the user thoroughly understanding this manual.
- Without proper safeguards at the survey site.
- Contrary to applicable laws, rules, and regulations.

Usage warnings

CAUTION Inform Topcon Positioning Systems immediately if this product does not function properly.

www.topconpositioning.com

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