



# Release Notes

CIVIL DESIGN AND ENGINEERING

January 2023

## Quantm 2023.1

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## New and improved features

Carbon emission from construction embedded into the optimization

Quantm is now able to not only calculate the CO2 from construction, but also optimize alignment taking the CO2 into account during the submission.

### Add CO2 for construction items

Possible to add a CO2 cost/tonne for carbon emissions coming from construction under “Cost Parameters” and the tab “global”

Global	Material	Geology	Fill	Template Materials	Bridge	Tunnel	Wall	Culvert	Area	Linear	Fixed
Earth movement cost											
Haul	8,00	\$/m³/km	2,00	CO2/m³/km							
Dump	8,50	\$/m³	3,00	CO2/m³							
Borrow	10,00	\$/m³	4,00	CO2/m³							
CO2	1,00	\$/tonne									

The results will be shown in the alignment summary



Excel Worksheet



Item	Quantity		\$ %		CO2 %
<u>Source</u>					
Cut (m <sup>3</sup> )	1 080 000	6 610 000	1	3 130 000	2
Tunnel Debris (m <sup>3</sup> )	122 000		0 0		0 0
Import (m <sup>3</sup> )	0		0 0		0 0
Borrow (m <sup>3</sup> )	0		0 0		0 0
<u>Destination</u>					
Fill (m <sup>3</sup> )	775 000	1 940 000	0	1 550 000	1
Export (m <sup>3</sup> )	0		0 0		0 0
Dump (m <sup>3</sup> )	387 000	3 290 000	0	1 160 000	1
<u>Template Materials</u>		82 600 000	7	47 300 000	29
Mass Haul (m <sup>3</sup> km)	865 000	6 920 000	1	1 730 000	1
<u>Ret. Wall (m<sup>2</sup>)</u>	101 158	809 000 000	67	62 700 000	38
<u>Culvert (m)</u>	0		0 0		0 0
<u>Bridge (m)</u>	248	11 600 000	1	2 580 000	2
<u>Tunnel (m)</u>	2 440	56 100 000	5	10 700 000	6
<u>Footprint Area (m<sup>2</sup>)</u>	1 430 000	70 100 000	6	34 100 000	21
<u>Linear (m)</u>	47 110		0 0		0 0
<u>Cadastral</u>	0		0 0		0 0
<u>Fixed Cost</u>			0 0		0 0
<b>CO2 (Construction)</b>		165 000 000	14	165 000 000	
Traffic Cost		1 280 0		1 280	
<b>Total cost</b>		<b>1 210 000 000</b>		<b>165 000 000</b>	

Item
<u>Geometric</u>
<u>Warnings</u> HR, HT, HX, VX

## Turn on/off CO2 traffic and noise in the alignment summary

Under preference settings and alignment users can turn on/off the possibility to display CO2 from traffic and noise

The image shows a 'Preference Settings' dialog box with the 'Alignment' tab selected. The 'Display CO2' checkbox is highlighted with a green box. Other settings include 'Display width factor' (10), 'V:H Ratio' (10:1), 'Cross Section Interval Setting' (20.0 m), 'Volume Report section interval' (200 m), and 'Accuracy for duplication' (1.0 %). The 'Alignment Cost Settings' section includes checkboxes for 'Alignment cost', 'Alignment %', 'Fixed cost', 'Cost as % savings only', 'Automatically re-cost on edit', 'Display CO2', 'Display Noise', 'Cost CO2 Traffic', and 'Cadastral Clip Footprint'. The 'Height Defined Structures' section includes checkboxes for 'No Height Defined Bridges', 'No Height Defined Tunnels', and 'No Height Defined Walls'. The 'Rounding of Radii' section includes radio buttons for 'Radius H (m)' (10, 100, 1000) and 'Radius V (m)' (10, 100, 1000).

Preference Settings

General Alignment Zone Feature Warnings CSV Export

Display width factor: 10

V:H Ratio: 10:1

Cross Section Interval Setting: 20.0 (m)

Volume Report section interval: 200 (m)

Accuracy for duplication: 1.0 %

Alignment Cost Settings

- Alignment cost
- Alignment %
- Fixed cost
- Cost as % savings only
- Automatically re-cost on edit
- Display CO2
- Display Noise
- Cost CO2 Traffic
- Cadastral Clip Footprint

Height Defined Structures

- No Height Defined Bridges
- No Height Defined Tunnels
- No Height Defined Walls

Rounding of Radii

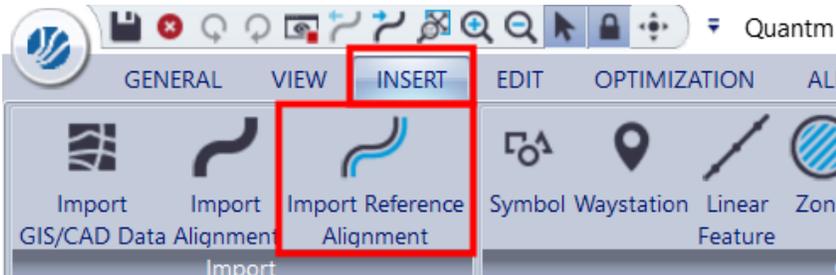
Radius H (m):  10  100  1000

Radius V (m):  10  100  1000

OK Cancel

## Import reference alignment with cross section and structures

You can now import LandXML reference alignments with cross sections and structures. This allows you to compare alignments in other software with alignments in Quantm.



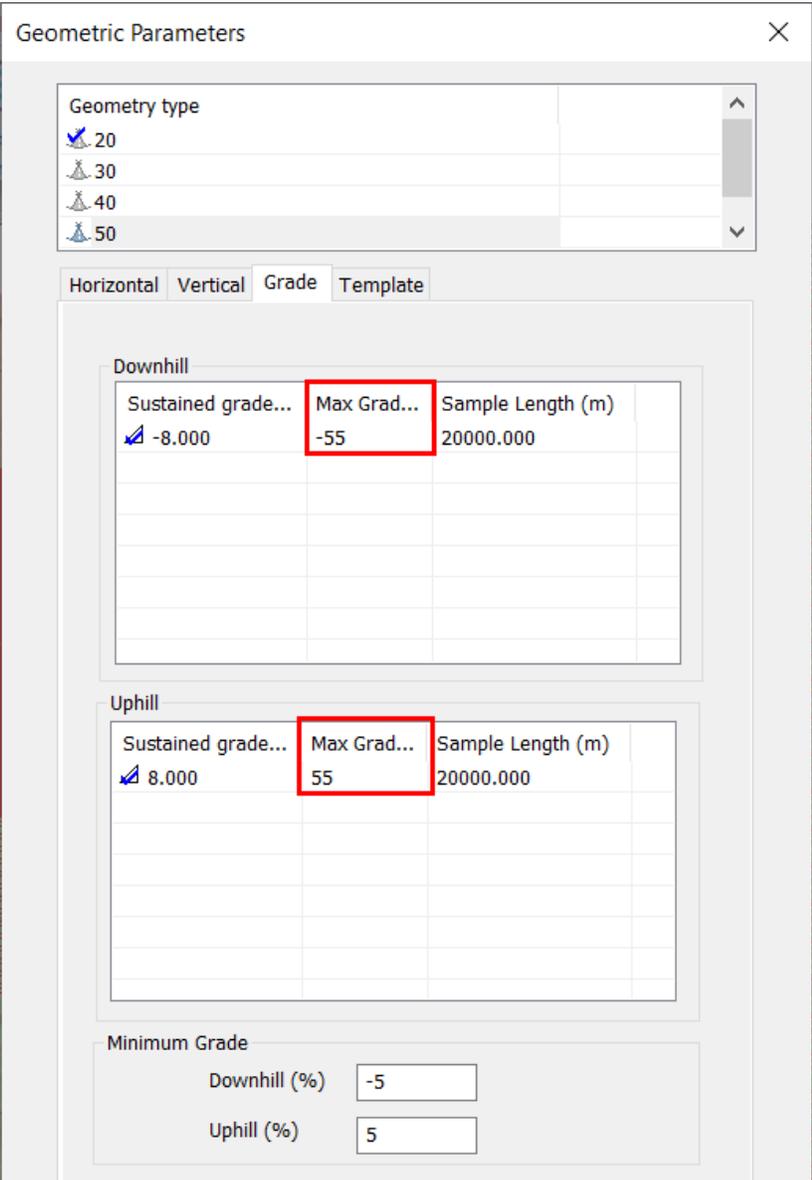
## Add fixed section for road and rail

You can now create a fixed station for both road and rail. This function is typically used for railways where a fixed station is required and for road/windmill projects where a typical platform is needed.



# Max grade increased to +/-55 %

It is now possible to have +/-55% in max grade (before was +/-35%)



## Orthophoto attached to the project's mdb file

If the Orthophoto is stored in the Quantm project folder, it will automatically be included in the project if it's sent and opened by another user.

## Crossing rule for culvert

It is now possible to set a crossing clearance (m) for culverts when it crosses features or areas.

**River Feature**

Name: New river    Width (m): 10    Layer: River

Earth moving: No effect    Usable (m3): 0    Unusable (m3): 0

Reference altitude: Natural surface

Crossing type: Culvert    No. of cells: 1

Clearance (m): > 5.00

Culvert type
Default Culvert
New...

OK    Cancel

# Quantm Corridor able to display construction CO2

You can now review CO2 from construction with the Quantm Corridor version.

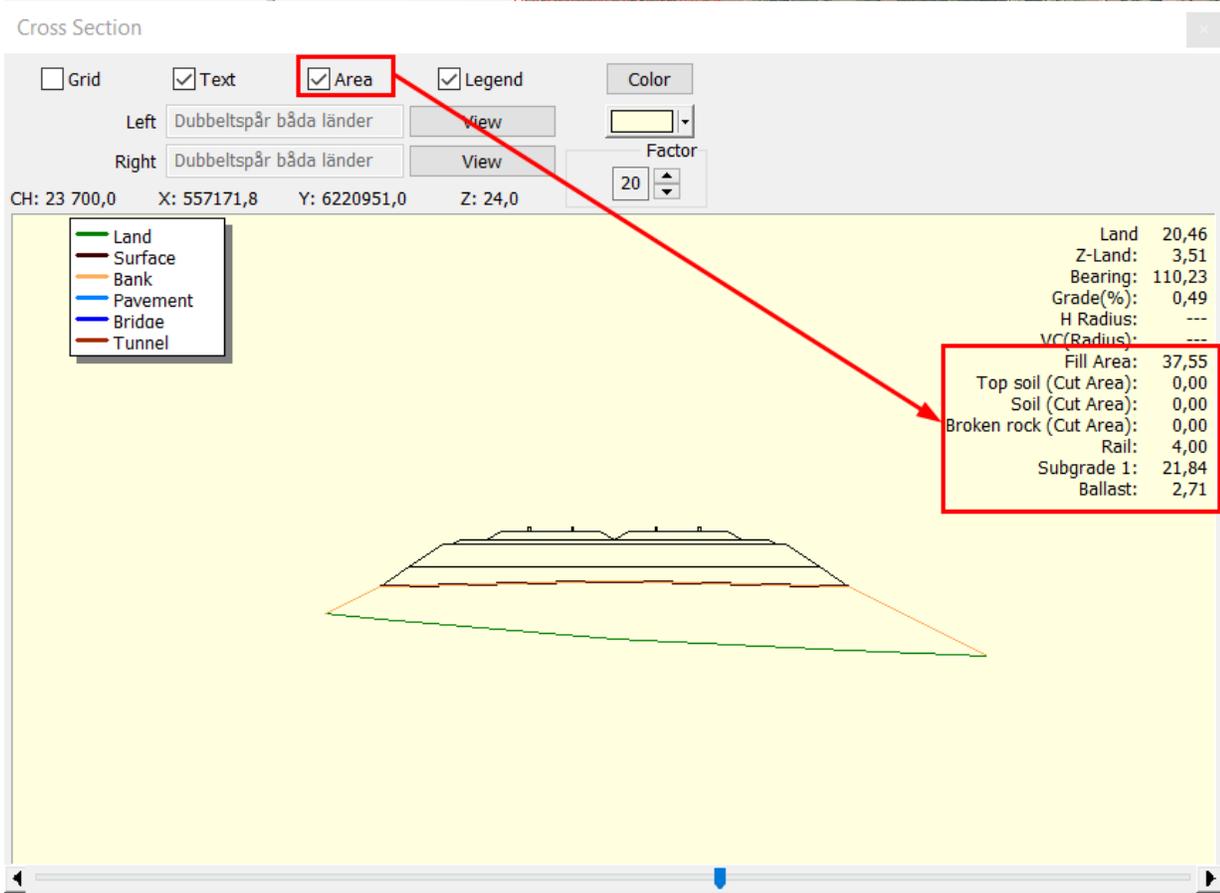
Alignment Summary

Excel Worksheet

Item	Quantity	kr %	CO2 %
<u>Source</u>			
Cut (m³)	0	0 0	913 000 1
Tunnel Debris (m³)	0	0 0	0 0
Import (m³)	0	0 0	0 0
Borrow (m³)	0	0 0	3 920 000 2
<u>Destination</u>			
Fill (m³)	0	0 0	25 800 000 16
Export (m³)	0	0 0	0 0
Dump (m³)	0	0 0	660 000 0
<u>Template Materials</u>			
Mass Haul (m³ km)	0	0 0	3 720 000 2
<u>Ret. Wall (m²)</u>	0	0 0	372 000 0
<u>Culvert (m)</u>	0	0 0	0 0
<u>Bridge (m)</u>	0	0 0	0 0
<u>Tunnel (m)</u>	0	0 0	105 000 000 66
<u>Footprint Area (m²)</u>	0	0 0	0 0
<u>Linear (m)</u>	14 679	0 0	0 0
<u>Cadastral</u>	0	0 0	0 0
<u>Fixed Cost</u>		0 0	0 0
Construction Cost	90 100 000	0	159 000 000
Traffic Cost		0 0	398
Noise barrier		0 0	0
<b>Total cost</b>	<b>90 100 000</b>		<b>159 000 000</b>

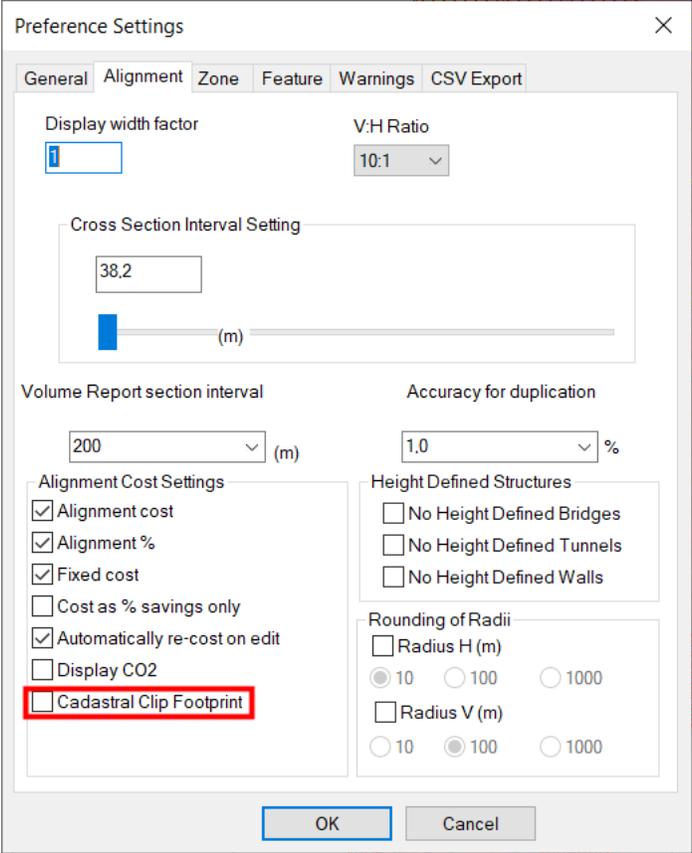
Item

# Review quantities in the Cross Section view



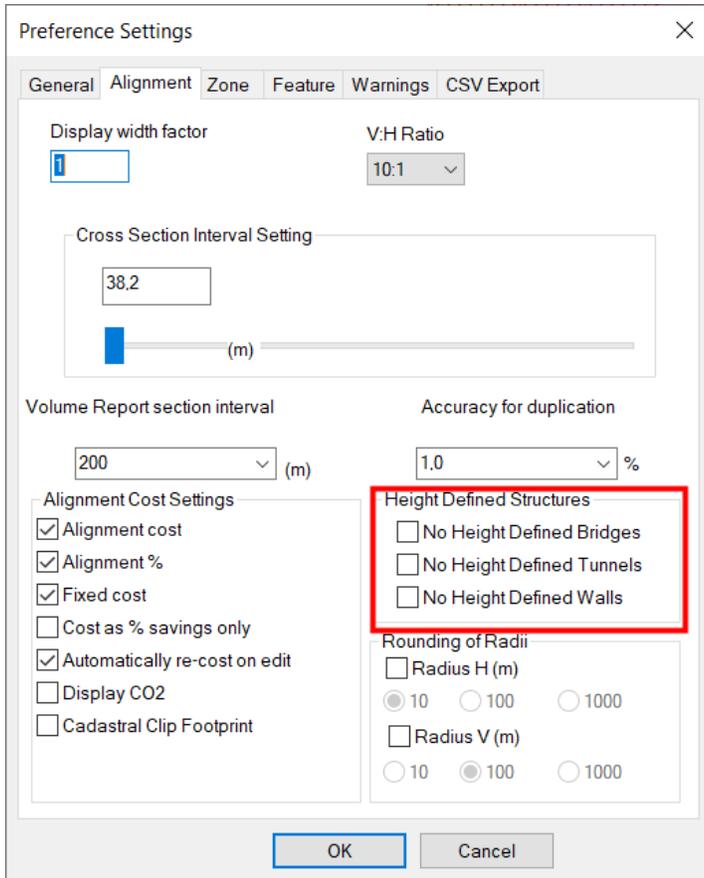
# Cadastral calculated as clip footprint

Quantm can now consider cadastral areas as a clip footprint if it's activated in the preference setting.



# Switch structures on/off

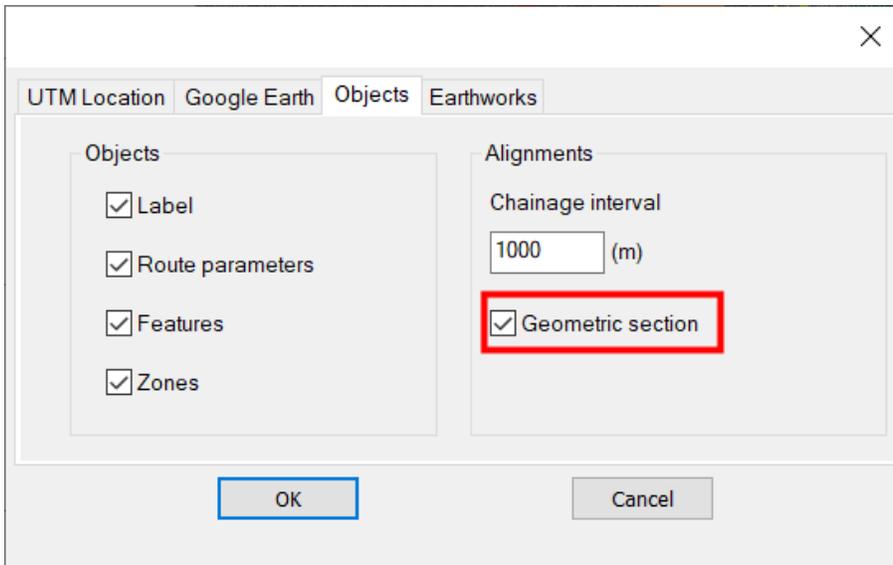
It's now possible to turn off walls, bridges, and/or tunnels.





## Turn off white Geometric string in the Google Earth export

You can now export alignments to Google Earth without including the white geometric line.



## Export Alignment Summary to Excel with numbers

Before the exported Microsoft Excel sheet was general, now it will be numbered. This makes it easier to work with the Excel sheets, because you don't have separations between high numbers.

## Import alignment HintCad, issue with tunnel (China)

Before, Quantm could not generate tunnels with CTR files when importing from HintCAD. It is fixed in this version. If you import alignments with HintCAD files, the tunnels and bridges can be generated correctly with the data in the CTR file.

## Import HintCAD files with different start station (China)

You can now import HintCad files with different start stations.

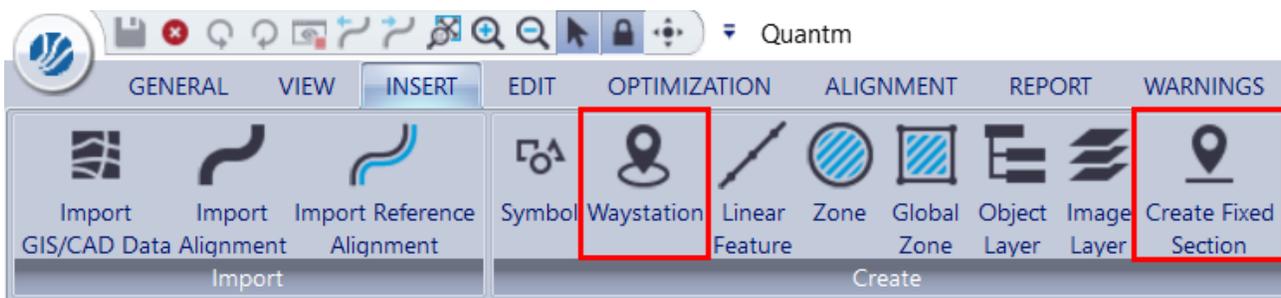
## GIS areas can now have unlimited points

Before, a GIS zone could have 3000 points. If your project exceeded this value, a warning would appear in the data validation. Now you can have as many points as you need.

## Unlimited waystation radius

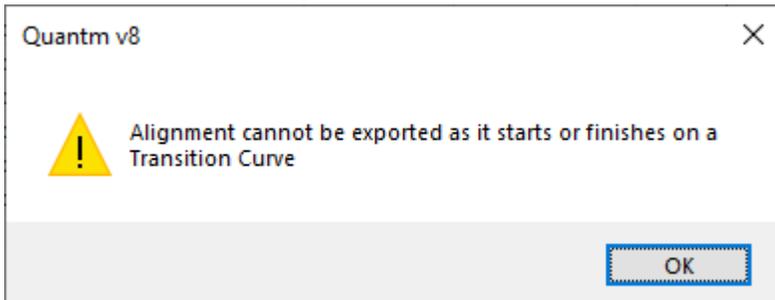
Before, the maximal radius of a waystation was 10.000 m. If this value existed, a warning would show up in the data validation. Now you can have waystations as large as you would like.

## New Icons for “Fixed Section” and “Waypoint”



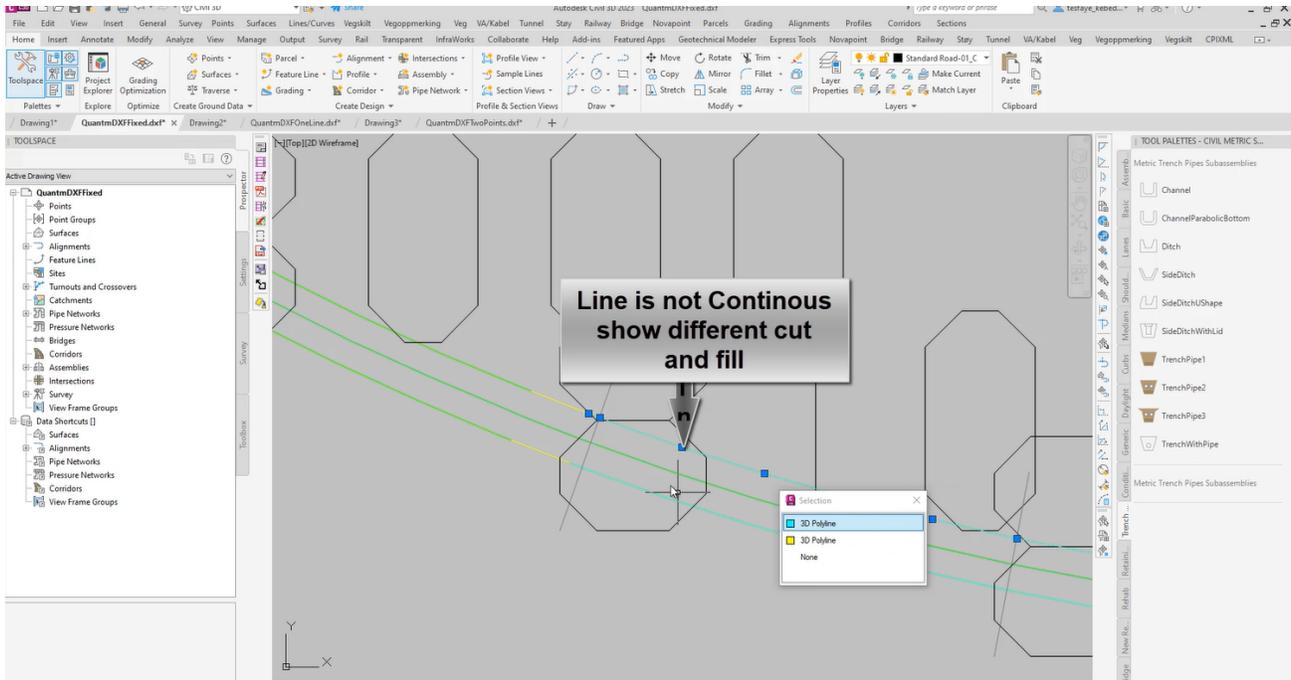
## Crash when trying to cut alignments by start and stop chainage

If you cut an alignment in a transition curve, you will get this warning when you try to export.



## Export dxf/dwg alignments with cut and fill

When exporting the Quantm centerline and footprint, you now have the ability to show whether the footprint is in cut or fill.



## Export Alignment Summary to Excel with numbers

You can now export Microsoft Excel reports of the alignment summary with numbers.

# Reaching Sales, Support, and the Community

For more information, please use these resources:

## Quantm Resource Center

Search for release notes, installation guide, license activation guide, learning guides, and technical articles, and more in the [Quantm Resource Center!](#)

## Quantm Support email

Visit [civil.support@trimble.com](mailto:civil.support@trimble.com).

## Trimble Connected Construction

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