Incorporating MiTS in Navisworks Manage through Civil 3D DWG File

BIM · https://mes100.com/docs/incorporating-mits-in-navisworks-manage-through-civil-3d-dwg-file/

Civil 3D DWG File as the source

Sample C3D File:

The file is obtained by synchronizing the MiTS models with Civil 3D via our **MCIntegrator plugin**. Therefore, the file will contain *native Civil 3D entities* such as surfaces, road corridors, gravity networks, and pressure networks.

It is important to ensure that those entities not only have similar visuals to the Civil 3D, but their actual data is also integrated properly.

There are two methods for opening the Civil 3D DWG file in the Navisworks Manage program- **(1) Direct Append or (2) Using NWC Exporter**.

Method 1: Direct Append of the Civil 3D DWG File

This method **directly links the DWG file to Navisworks**, creating a dynamic NWC file, so that whenever the design is updated in MiTS and resynced to the DWG file, the entities have a "live" update in Navisworks.

However, the accuracy of this method in translating native Civil 3D objects fully depends on the **C3D Object Enabler (plugin for Navisworks)** installed on your machine.

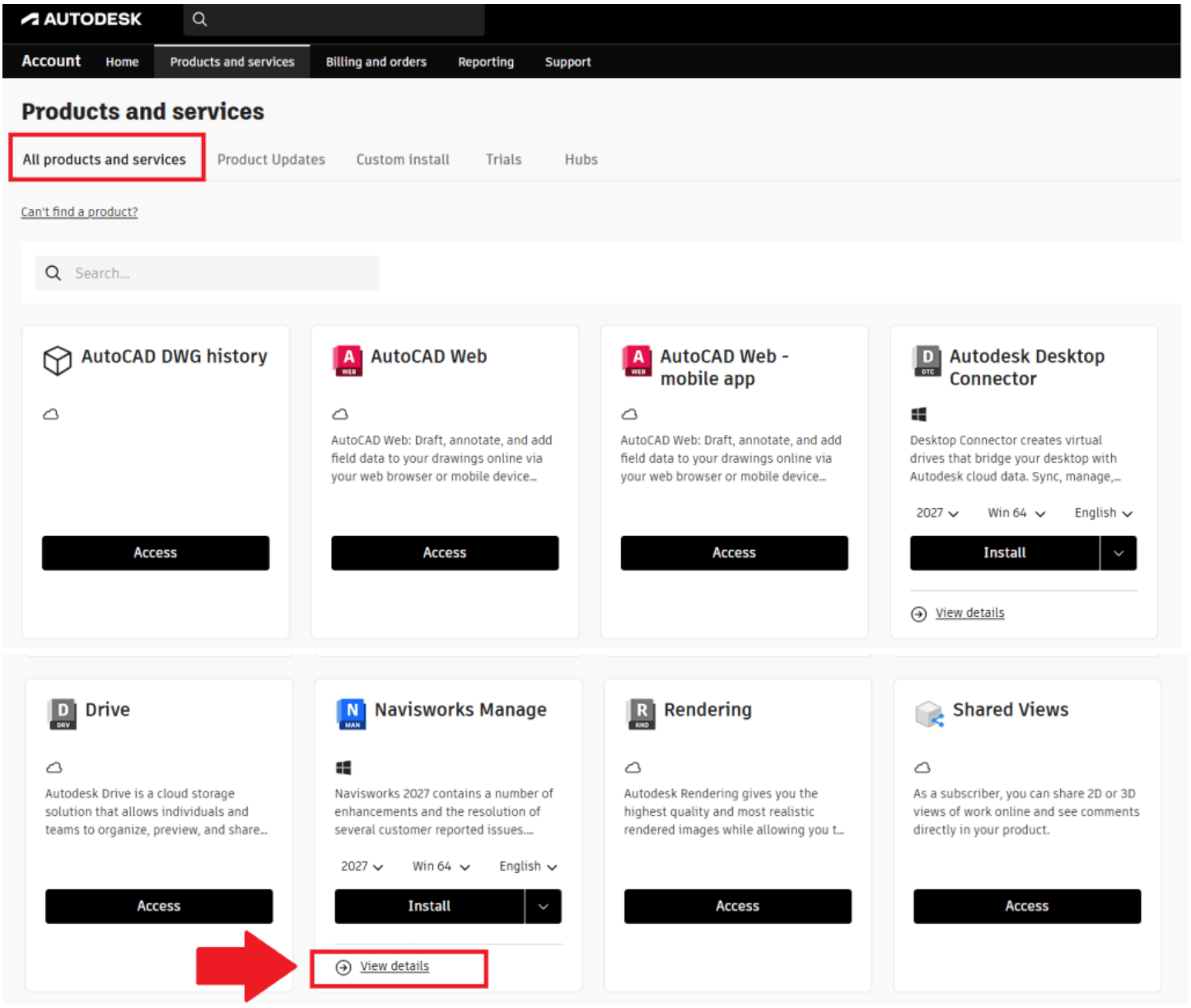
C3D Object Enabler

The C3D Object Enabler plugin installed on your machine should have a **similar version to the Navisworks Manage and Civil 3D used**- for example, if you are using Civil 3D 2026 and

Navisworks Manage 2026, the C3D Object Enabler should be for 2026 as well.

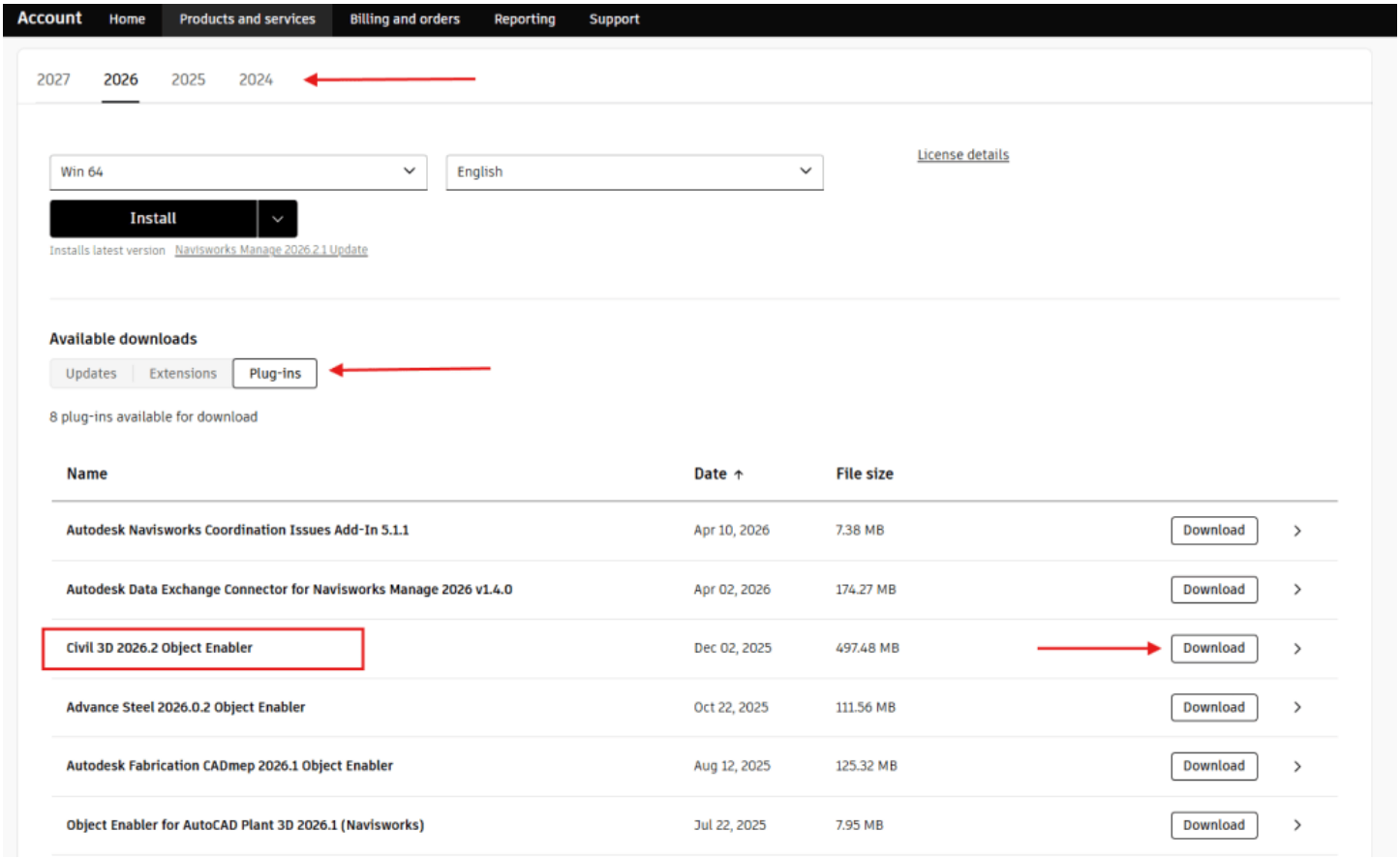
Step 1: Where to get the C3D Object Enabler plugin?

- Go to **manage.autodeks.com** and log in to your account.
- Navigate to **All products and services** > Find the section for **Navisworks Manage** > Click View Details



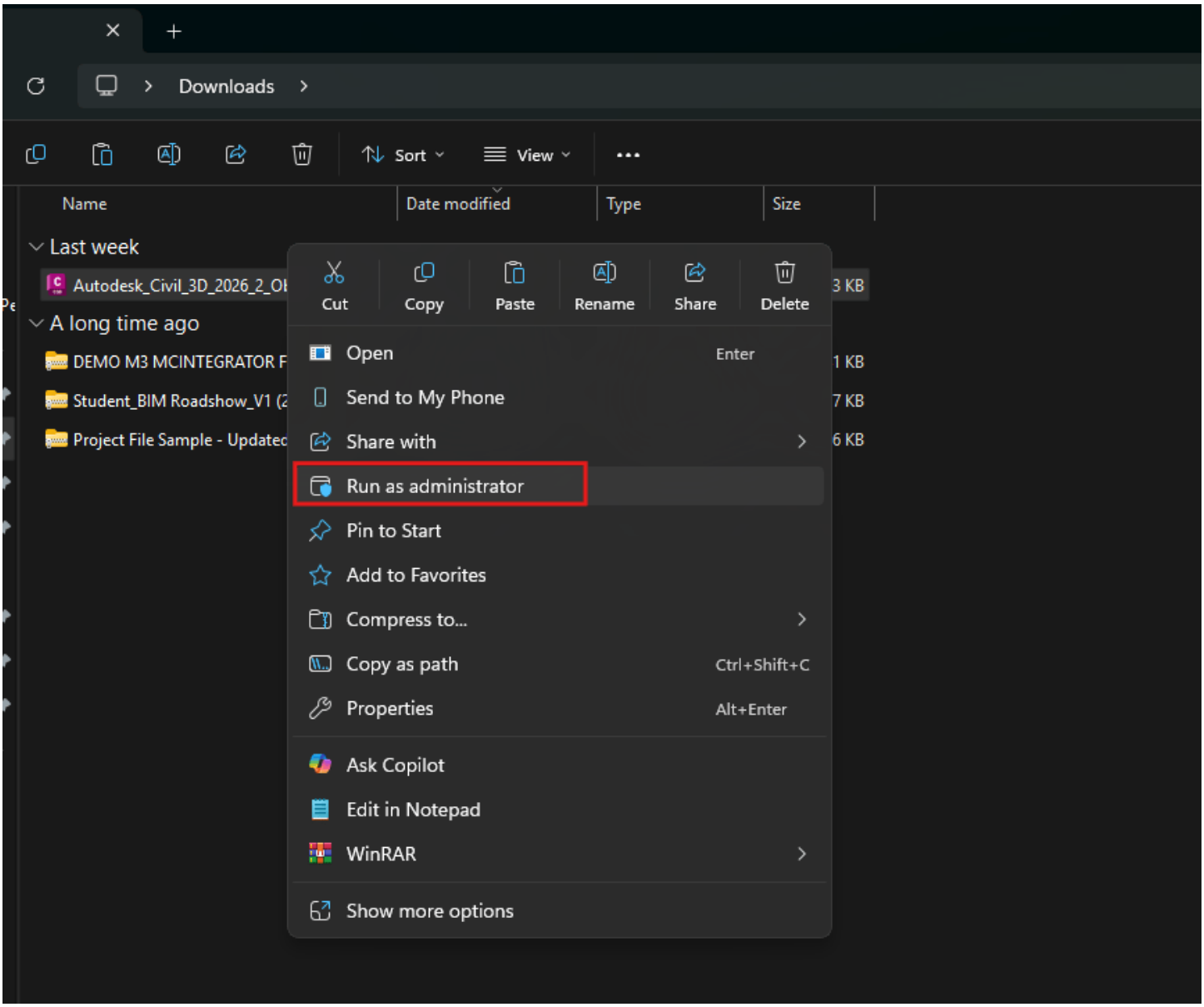
- Select the year > Under the Available downloads section, click on **Plug-ins** > Download the C3D XXXX Object Enabler (The version installed should be similar to your Civil 3D and Navisworks

version)

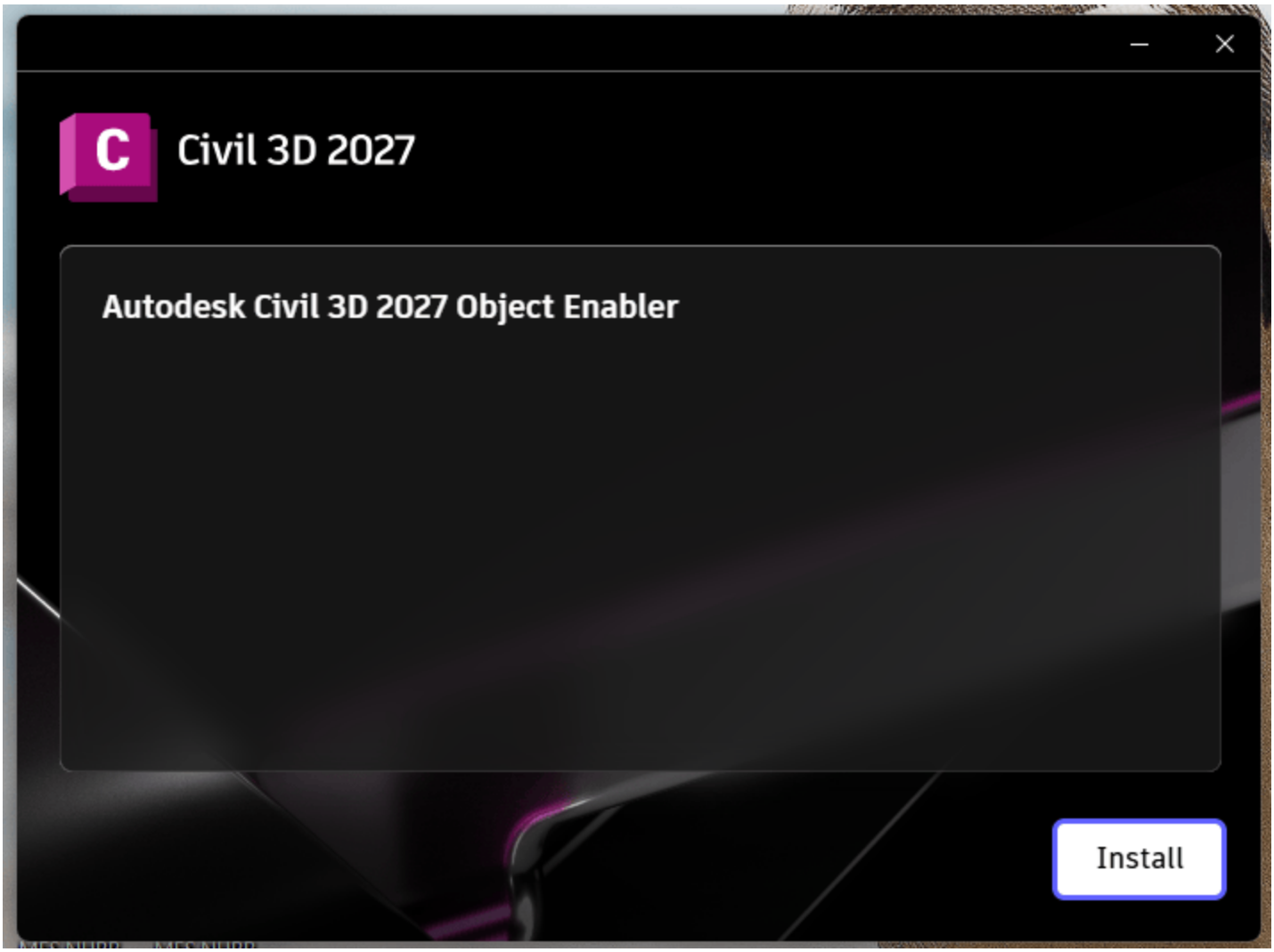


Step 2: Running the C3D Object Enabler plugin

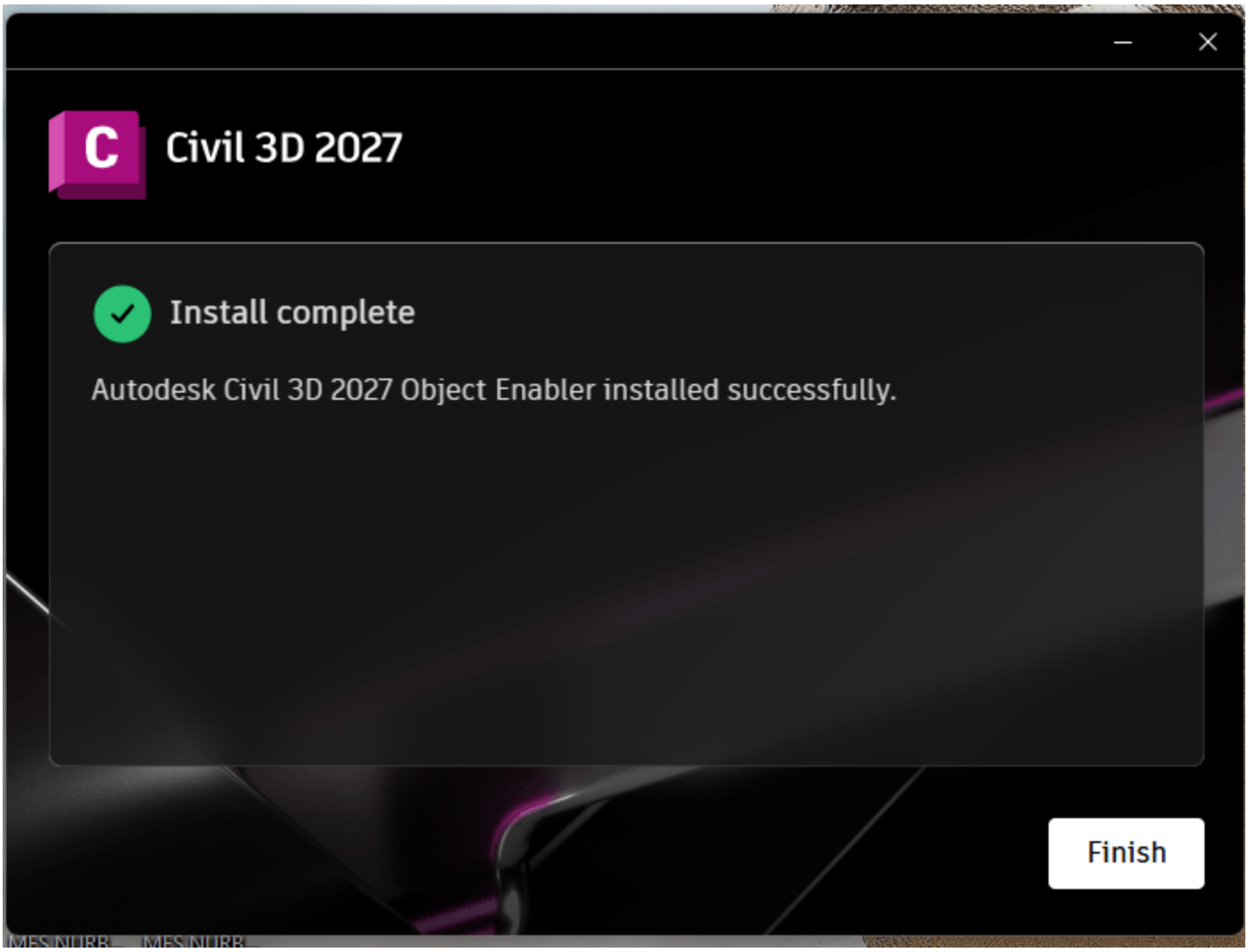
- Select the installer > Right-click > Click on 'Run as Administrator'.



- Click Yes to allow the app to make changes to your device.
- Once Autodesk readies the installation, click **Install**.



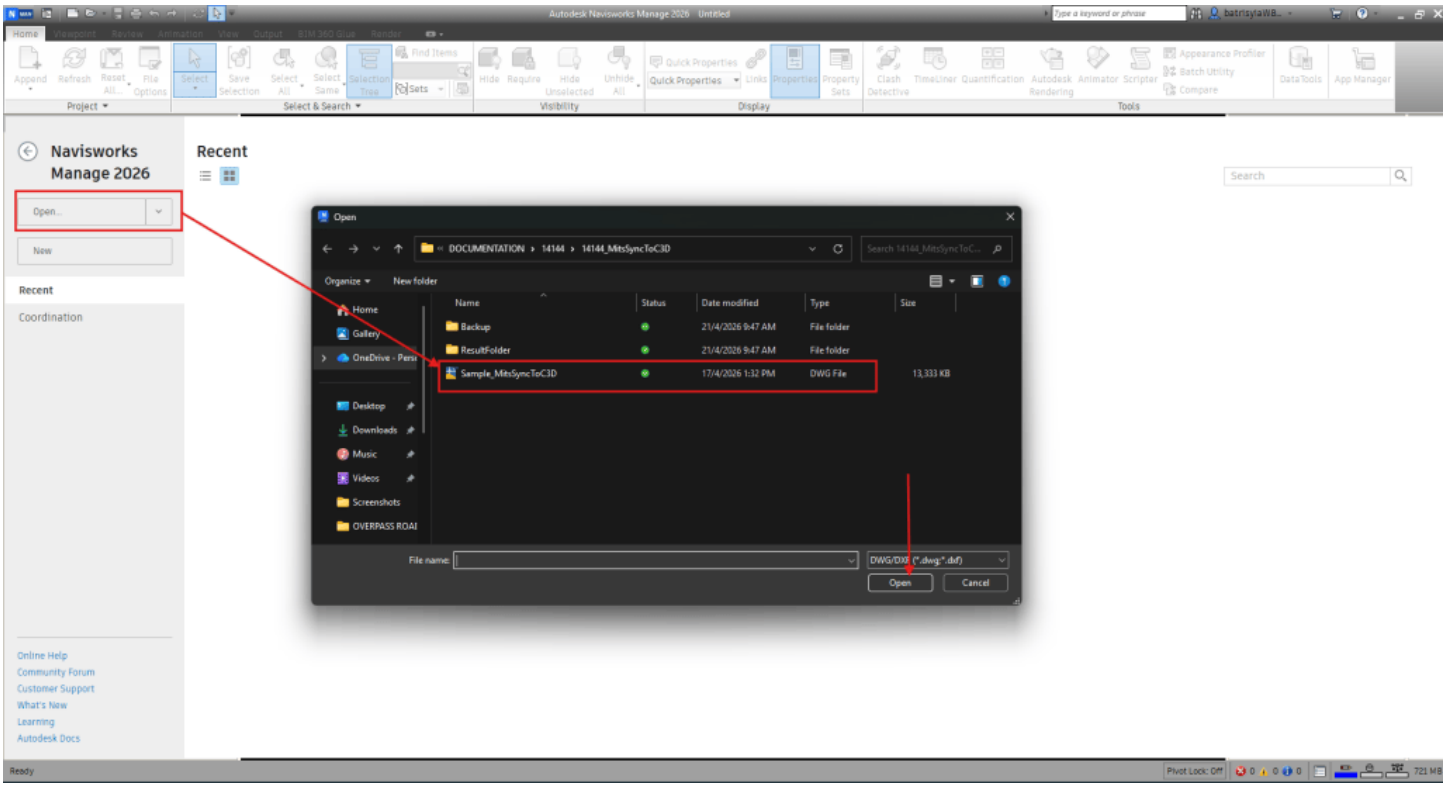
- Once the Object Enabler has been successfully installed, click **Finish**.



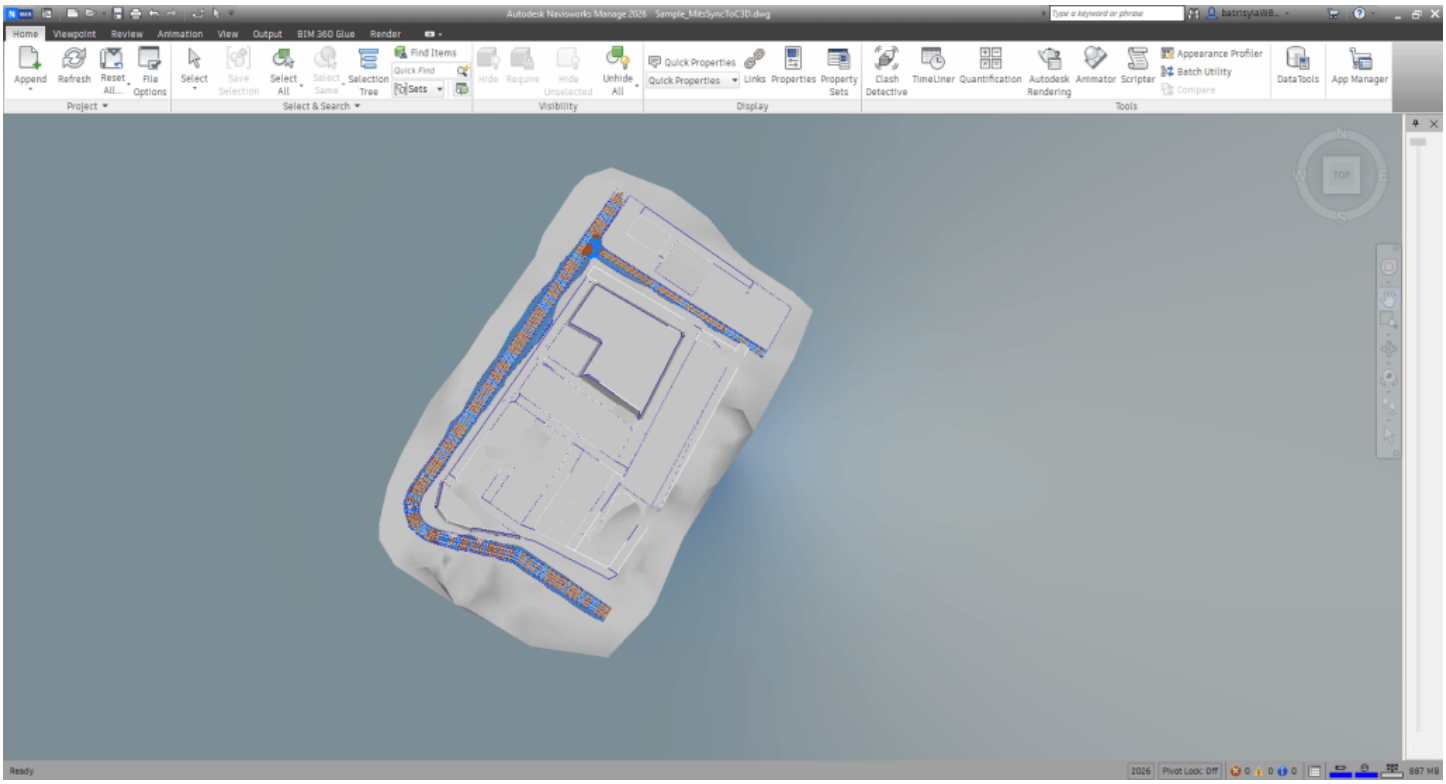
Appending a Civil 3D DWG file in Navisworks

- Once the plugin above has been installed, launch the Navisworks Manage program (In this example, we are using the Navisworks Manage 2026)

- Click the Open button > Browse through and find the Civil 3D DWG file > Select the DWG file > Click Open



- The DWG file will be downloaded into the Navisworks Manage application as shown below.



- Do note that once the DWG file has been successfully appended to the Navisworks Manage application, a NWC file will be automatically created (usually it is located under the same file path as your DWG file).

Method 2: Using the Navisworks NWC Export Utility

This method allows users to export the DWG file to an NWC file directly in the Civil 3D environment with the help of a plugin, **Navisworks NWC Export Utility**.

By using this method, the 3D geometry of the objects will be *visually snapped into the exported NWC file*. Thus, it produces a smaller, optimized NWC file that is openable by any machine with the Navisworks applications, even without the specific object enabler plugin as in **Method 1**.

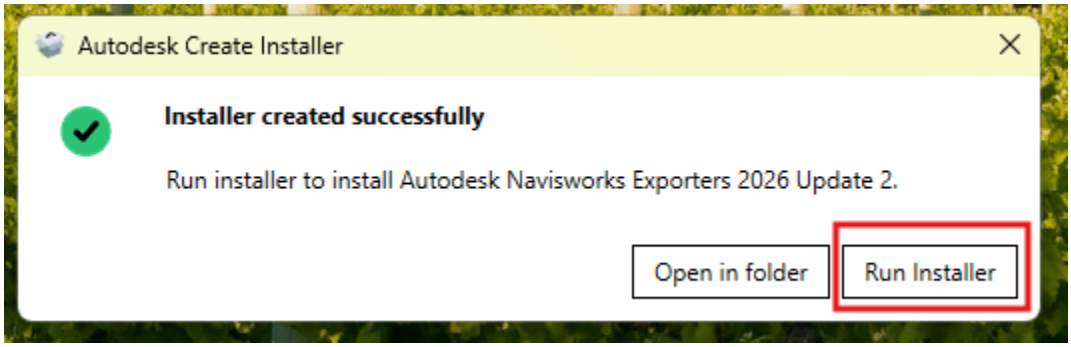
However, the exported NWC file is a **static file**, which is not capable of updating the objects directly following the changes in the source Civil 3D DWG file- it requires users to perform a *manual update by exporting a new NWC file every time the design is modified*.

Installing the Navisworks NWC Export Utility plugin

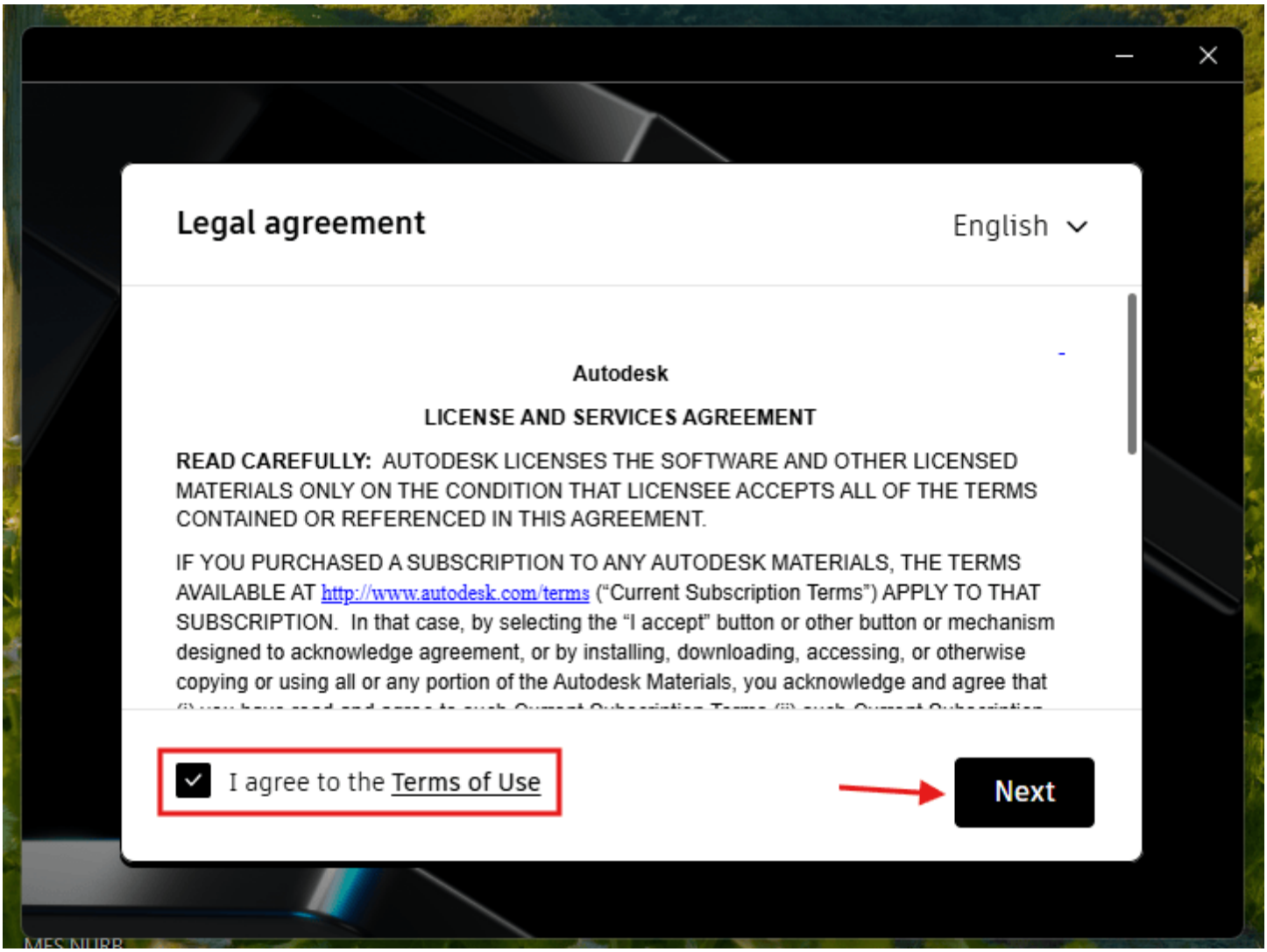
- Navigate to the **Official Autodesk Navisworks NWC Export Utility Page**. Scroll to the Download section and download the application based on your Civil 3D version (i.e., for Civil 3D 2026, download NavisworksExporter2026.exe)

- Once downloaded, select the application and 'Run As Administrator' on your machine.

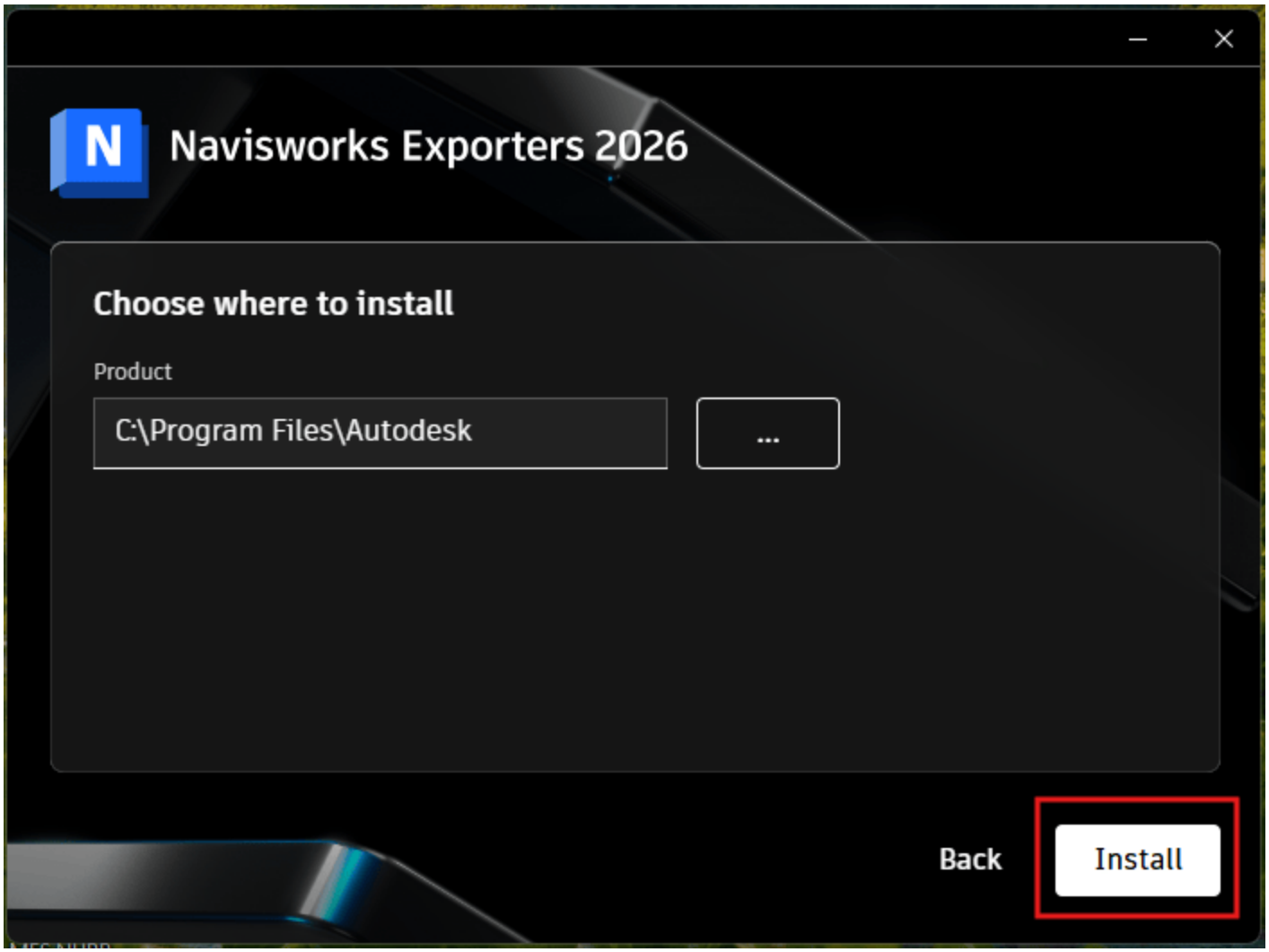
- Autodesk will create the installer for you. Click on 'Run Installer'.



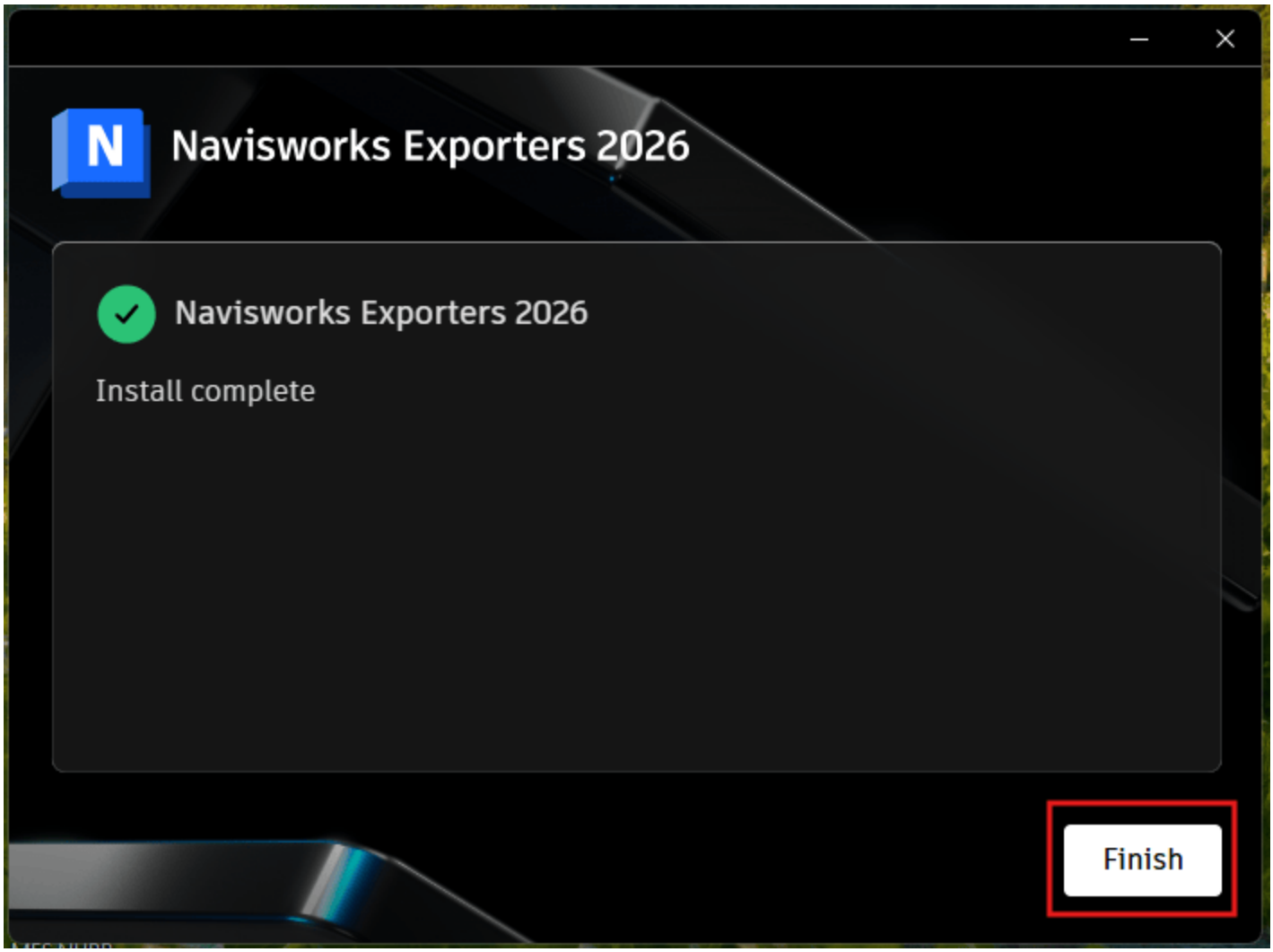
- Check *I agree to the **Terms of Use*** under the Legal Agreement. Click next.



- Click Install.



- Click Finish once the installation has been completed.

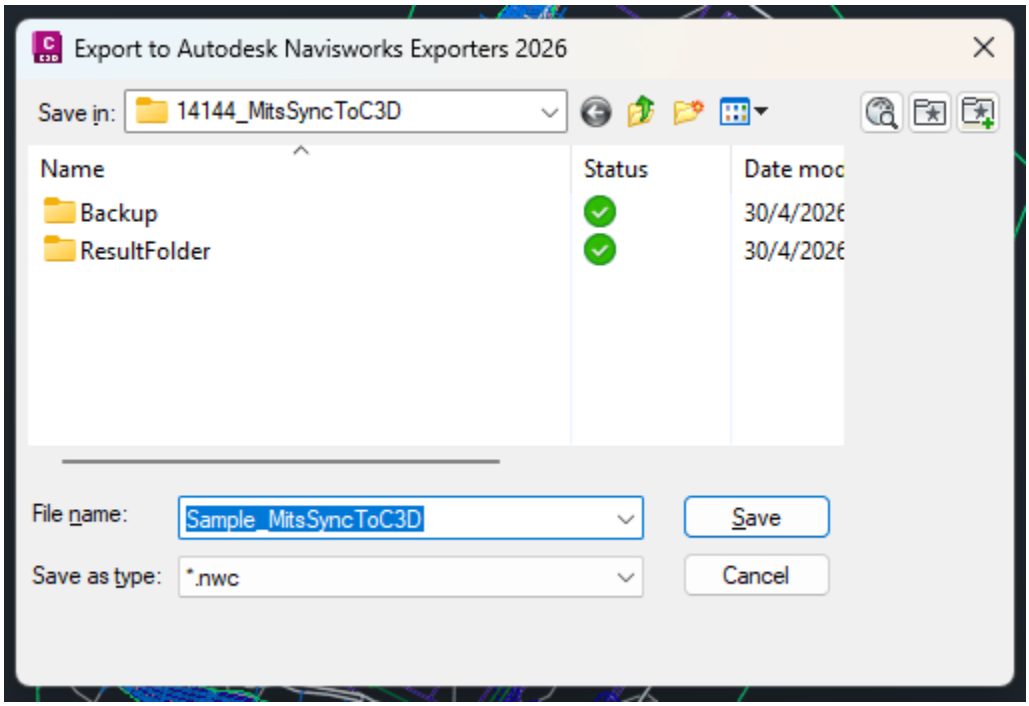


- For the plugin to be available in your Civil 3D environment, relaunch the Civil 3D application.
- Once the plugin is successfully installed, the command NWCOUT should be available in your Civil 3D environment.

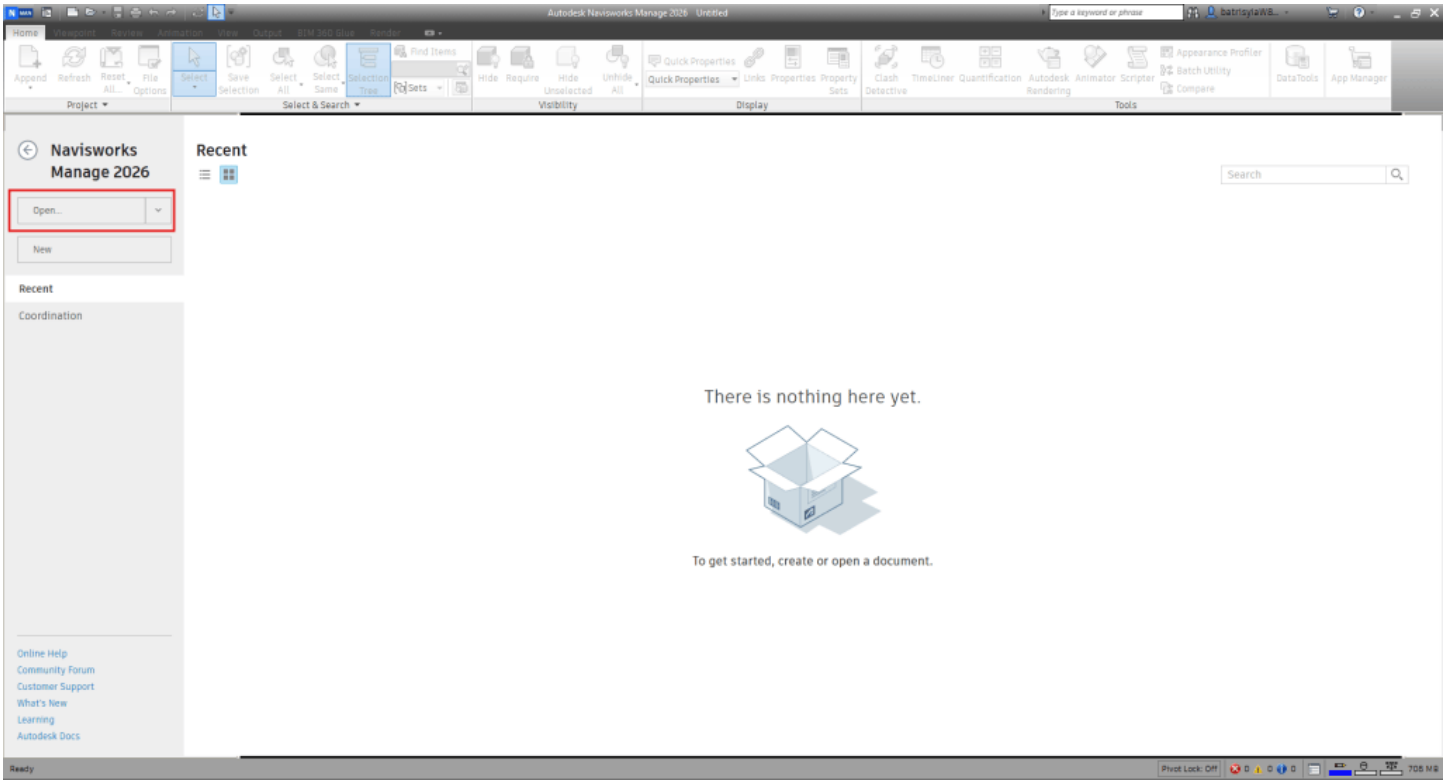


Exporting Civil 3D DWG file to NWC file

- In the source Civil 3D DWG file, type in the command NWCOUT and press Enter.
- Save the NWC file.



- Launch the Navisworks Manage Application. Click the Open button.

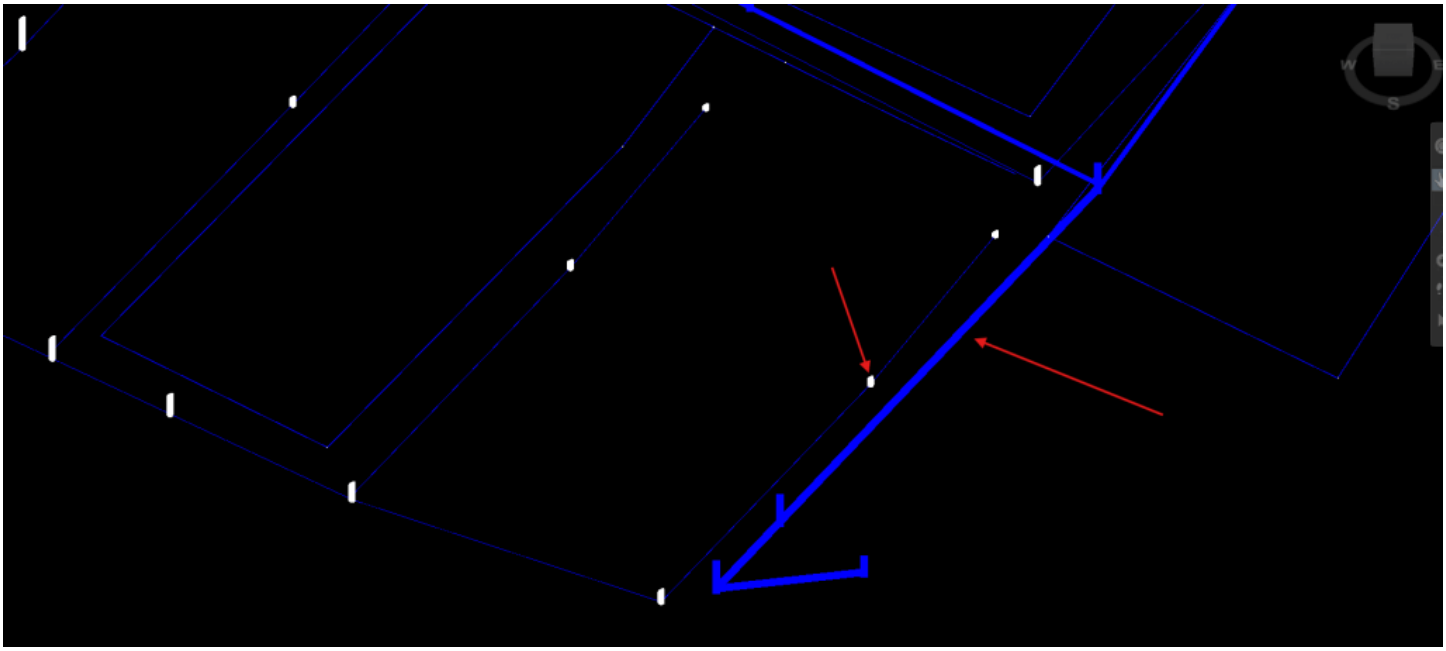


- Select the exported NWC file, typically located on the same file path as the source Civil 3D DWG file. Click the Open button.

How to check if the sync is successful?

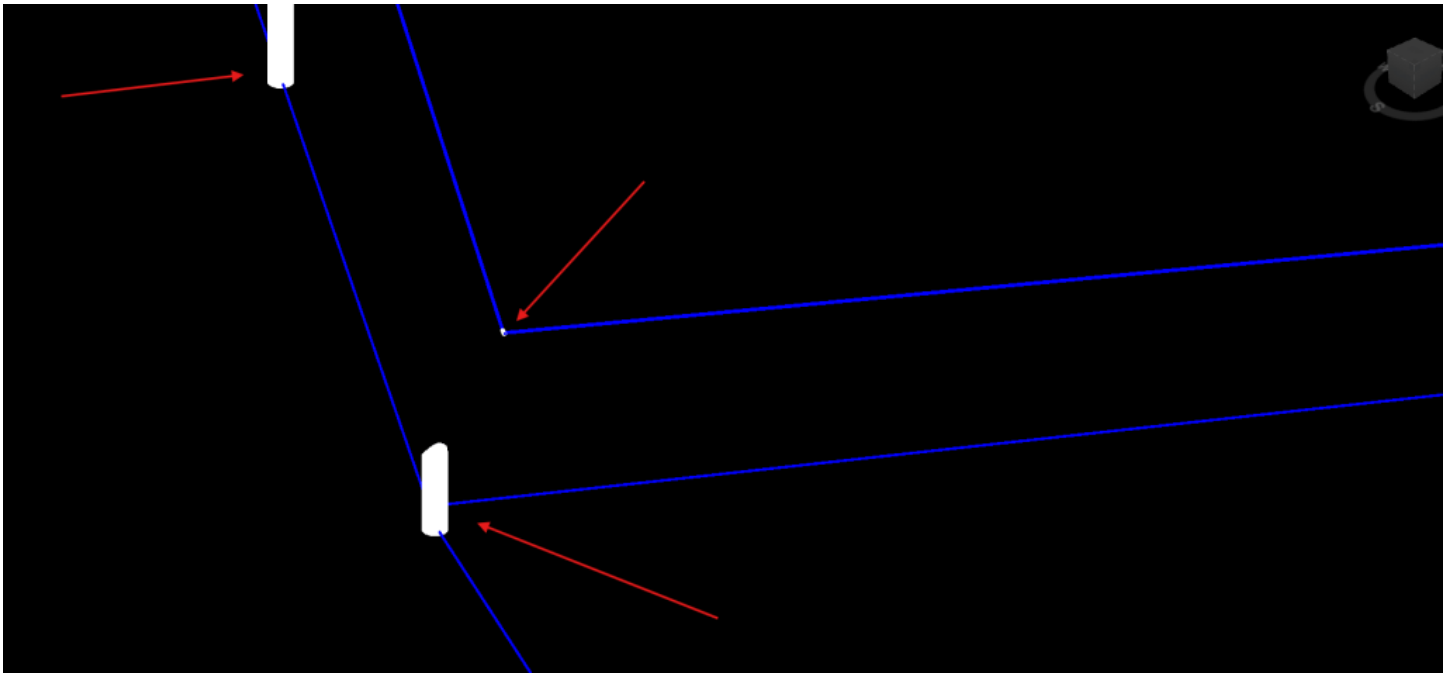
True 3D Geometry

The pipes and structures should not appear as lines or wireframes- they should have physical volumes and thickness as shown in the image below.



Proper connections between pipes and structures

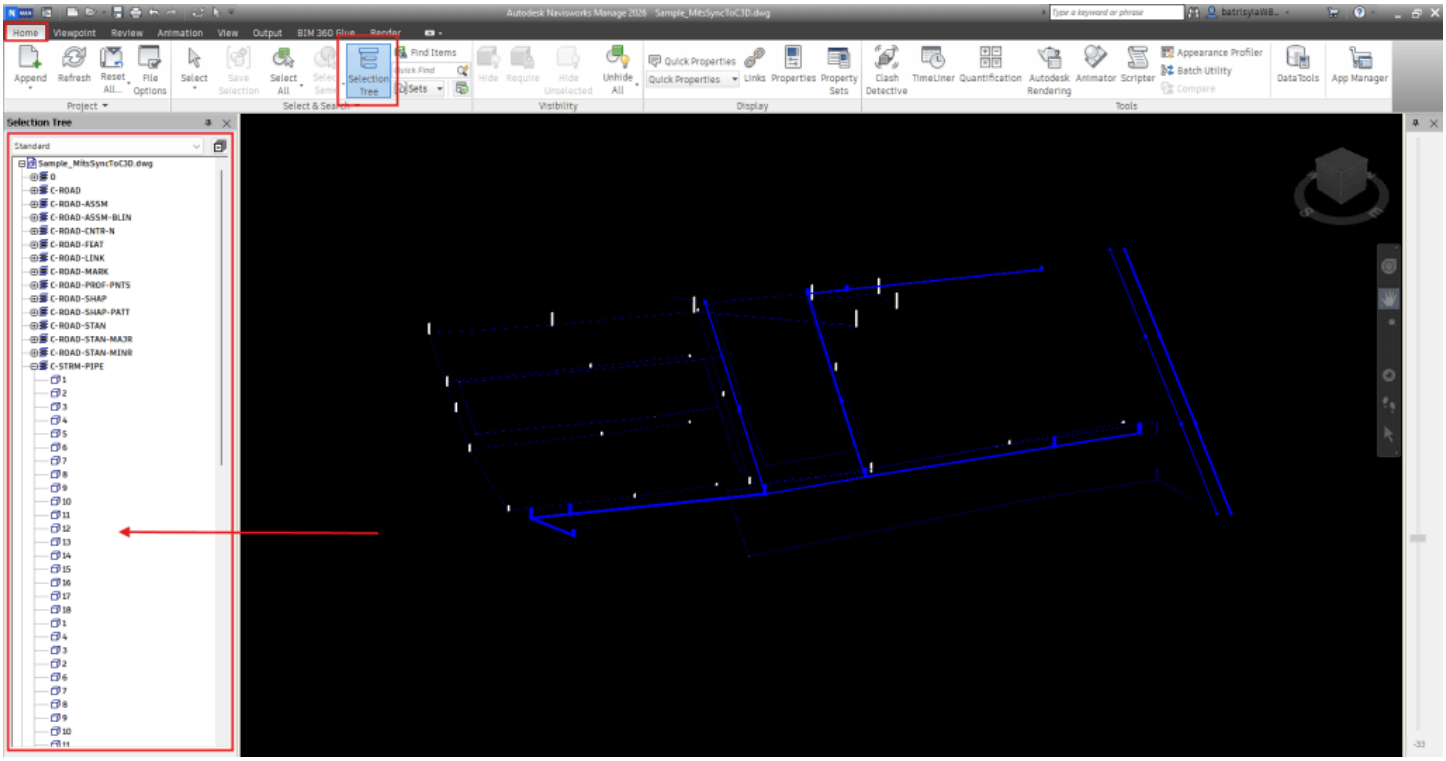
The pipes should be connected properly to the structures, similarly to how they are connected in the C3D DWG file- This is crucial for accurate clash detections in the Navisworks Manage program.



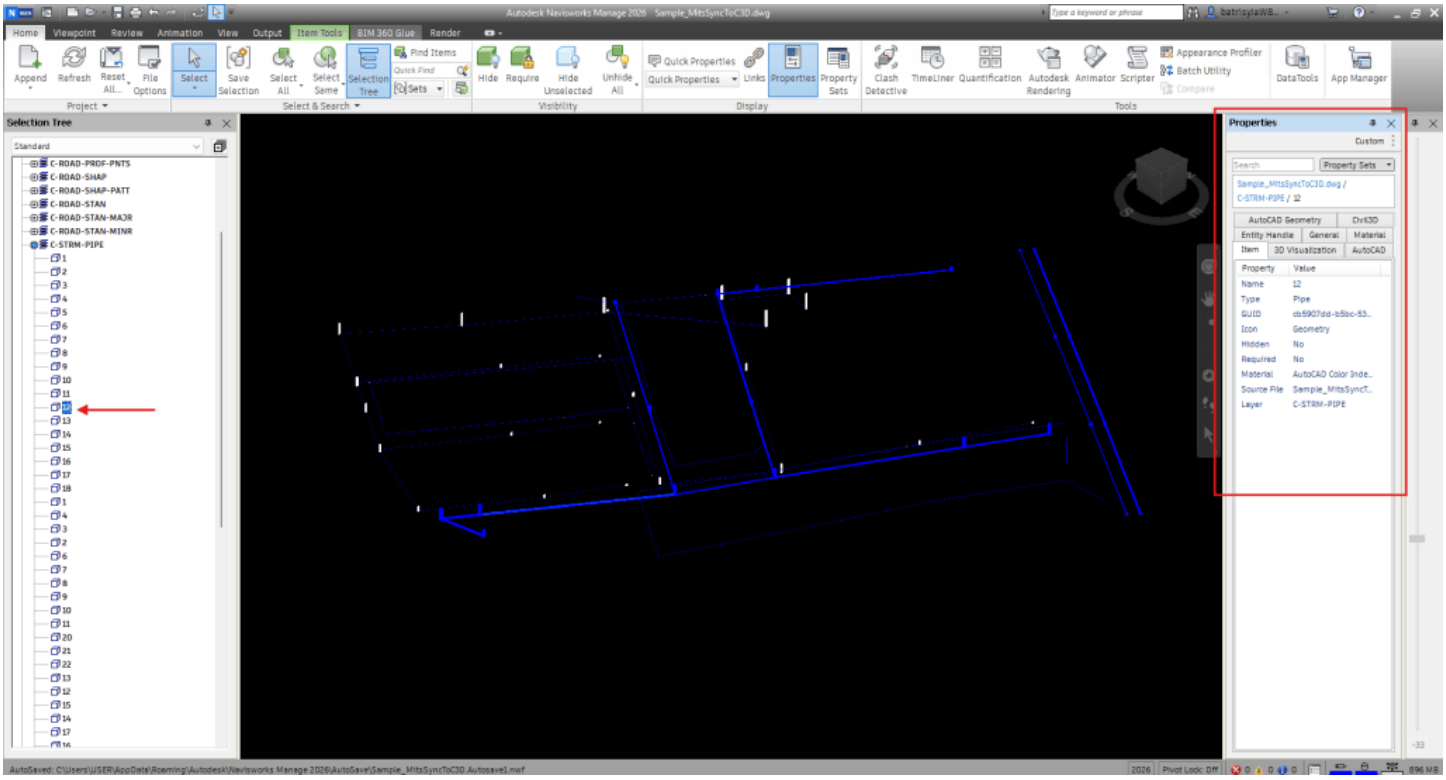
Left-Hand Side Selection Tree

The objects from Civil 3D should be treated as individual engineering components rather than a big, complex block.

Home Tab > Click on Selection Tree



As seen from the image above, the pipes and structures appear under specific layers, similarly to Civil 3D DWG, such as C-STRM-PIPE. They are also numbered individually, which can be selected and focused on to check their properties.



How to update the NWC file following changes in the source Civil 3D DWG file?

Following Method 1:

Since the drawing is actively linked to the source Civil 3D DWG file, changes made to the source can be easily updated by refreshing the NWC file.

Step 1: Resync changes made to the source C3D DWG file

Changes made to the design in MiTS must be updated in the source C3D DWG file.

To do so, users may resync from MiTS to Civil 3D with the MCIntegrator plugin by following the steps below.

- **Road Synchronization Guidelines**
- **Surface & Platform Synchronization Guidelines**

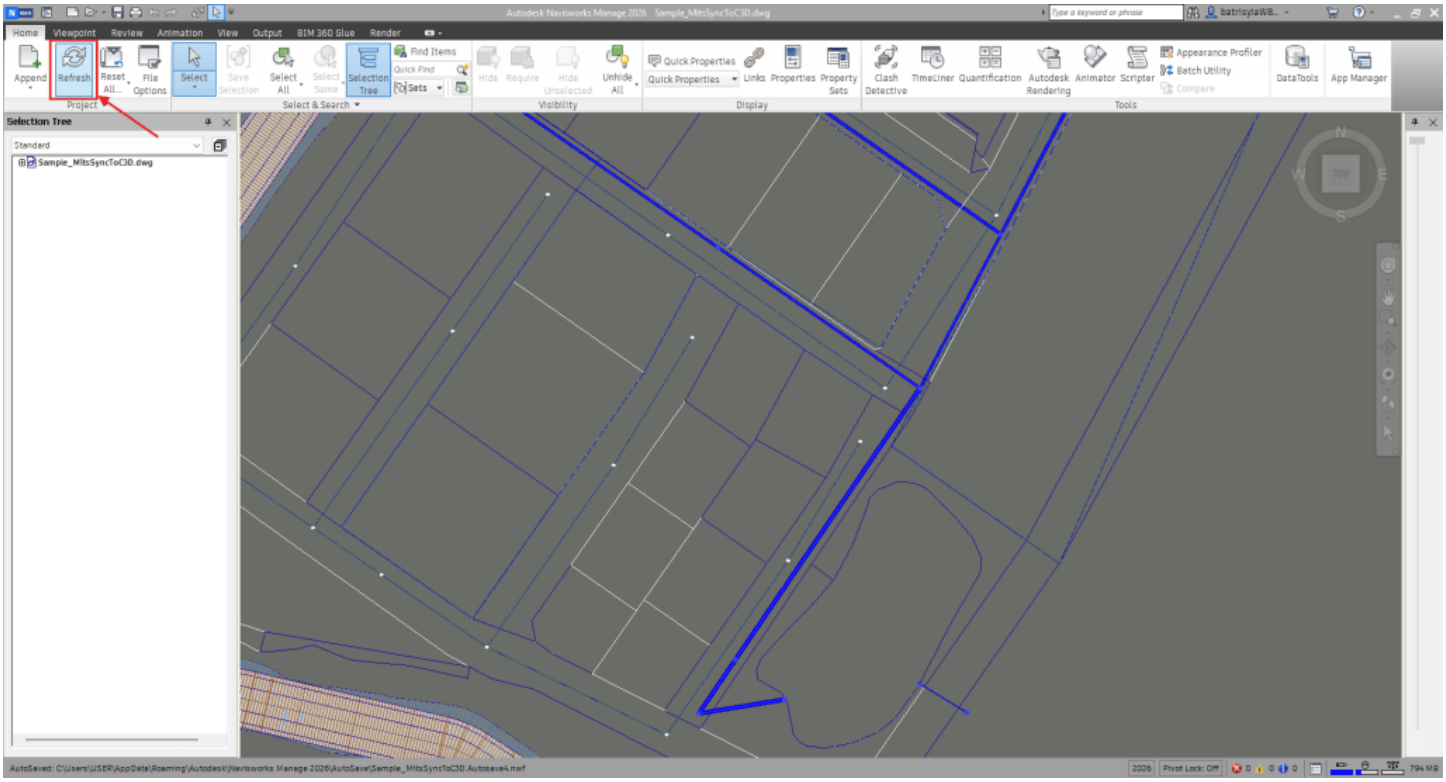
- **Pressure Pipe Network Synchronization Guidelines**
- **Gravity Pipe Network Synchronization Guidelines**

Step 2: Save the source C3D DWG file

Save the changes made to the source C3D DWG file.

Step 3: Update the NWC file

- Navigate to the Navisworks Manage, where the NWC file has been opened.
- Click the **Refresh button** located under the Home Tab.



Embedded media:
https://www.youtube.com/embed/TCmstvM3AnM?version=3&rel=1&showsearch=0&showinfo=1&iv_load_policy=1&fs=1&hl=en-US&autohide=2&wmode=transparent&enablejsapi=1

Following Method 2:

Using the NWCOUT command to export the C3D DWG file to NWC format requires users to manually update the design when changes are made to the source file. Therefore, users will need to export a new NWC file to replicate the updates.

Step 1: Resync changes made to the source C3D DWG file

Changes made to the design in MiTS must be updated in the source C3D DWG file.

To do so, users may resync from MiTS to Civil 3D with the MCIntegrator plugin by following the steps below:

- **Road Synchronization Guidelines**
- **Surface & Platform Synchronization Guidelines**
- **Pressure Pipe Network Synchronization Guidelines**
- **Gravity Pipe Network Synchronization Guidelines**

Step 2: Save the source C3D DWG file

Save the changes made to the source C3D DWG file.

Step 3: Replace the existing NWC file

By following the steps in **exporting the C3D DWG file to NWC format**, replace the existing NWC file or save it under a different name. Recommended to save it under a different name, as in the video.

Step 4: Open the newly exported NWC file in Navisworks Manage.

Once the C3D DWG file has been exported successfully to NWC format, launch the Navisworks application. Open the newly exported NWC file, and the latest design update will be displayed.

Embedded media:
https://www.youtube.com/embed/RsORvCfIRQc?version=3&rel=1&showsearch=0&showinfo=1&iv_load_policy=1&fs=1&hl=en-US&autohide=2&wmode=transparent&enablejsapi=1

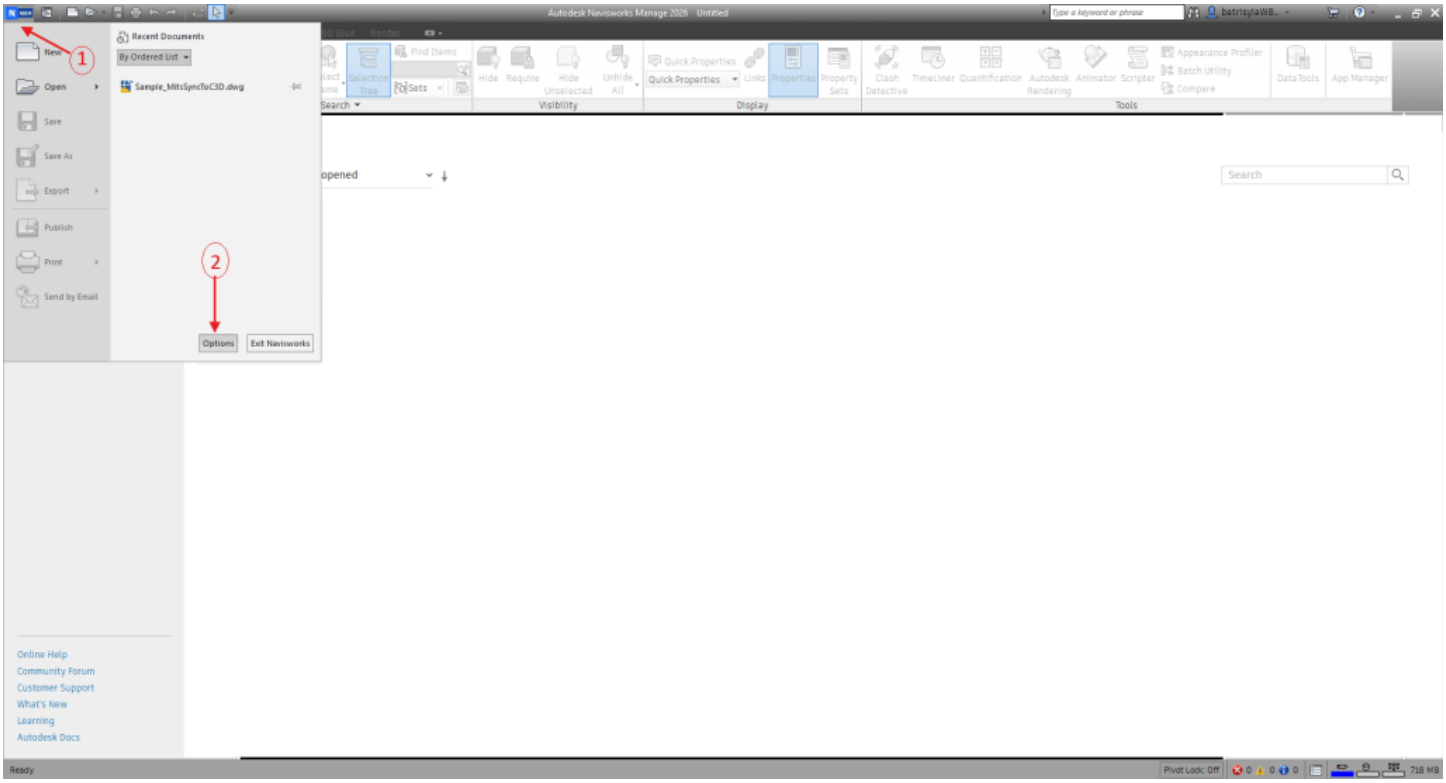
Troubleshooting

What do we do if the pipes and structures appear as wireframes after installing the C3D Object Enabler?

Note: Before applying the steps below, the **older NWC file must first be deleted**. This is to prevent Navisworks from reading the old file instead of rebuilding the model following the new settings.

Step 1: Navisworks File Reader Settings

- Launch the Navisworks Manage application and do not open any DWG or NWC file yet.
- Click on the **Application button** > Click **Options**



- Expand File readers > Expand DWG/DXF > Click on **Convert Object Properties** > Ensure the Civil 3D is checked, as in the image below.

- Click on DWG/DXF > Ensure the **Render Type has been set to Shaded** as well.

- Click OK. Append the C3D DWG file following the **steps here**.

- If the C3D objects still appear as wireframes, you may proceed to the next steps below.

Step 2: Civil 3D Proxy Graphics

By default, the Proxy Graphics in C3D is set to 0. In this case, the software will only save the object's intel and requires a perfect translator (C3D Object Enabler) for Navisworks to read them.

- In the C3D DWG file, type in the **PROXYGRAPHICS** command and set the value to 1. In this case, the software will not only save the intel, but also save a visual snapshot of the complex objects (their 3D shell), so that even without a translator, the objects will still retain their 3D shape.

- Type in the **PROXYSHOW** command and set the value to 1 as well.

- Save the DWG file. Navigate to the auto-created .nwc file in the same folder as the DWG file and ***delete the old NWC file***.

- Append the C3D DWG file following the **steps here** in Navisworks.

Which method should be selected for your integration?

It is recommended to follow **Method 1: Direct Append** when you are *actively designing* the model. This is because the Direct Append method dynamically links the source C3D DWG file to the NWC file, allowing instantaneous updates to your model with a single **Refresh click**.

For **Method 2: Using Navisworks NWC Utility Exporter**, it is more suitable for the final stages involving submissions or file sharing with the external teams of the project. As this method visually snapped the models in the exported NWC file, it does not require the recipients to install specific plugins to open the file. Additionally, this method also maintains the integrity of your design as the NWC file is non-editable and not linked to the source file for changes to be updated easily.

Pros and Cons: Comparing the integration method

	Method 1: Direct Append	**Method 2: Navisworks NWC Utility Exporter**
Data Integrity	Dynamic- Actively links the source DWG file to the NWC file for easy updates	Static- The 3D geometry is not translated, but is more visually snapped (frozen for every export)
File Size	Large as it contains full DWG intels	Smaller and optimized as the 3D geometries are snapped visually in the exported NWC file
Workflow	Once it is linked, it only requires **a single Refresh click** for the models to be updated	Require **manual export using the NWCOUT command in C3D** every time the model changes
Requirements	**C3D Object Enabler** is **a must** for Navisworks to properly translate the 3D objects of C3D	For designers: Require the **Navisworks NWC Utility Exporter** plugin to be installed in C3D for the NWCOUT command to be available For recipients: Only require the Navisworks Manage application
Suitable for	Active Designing phase	Final submission or external sharings

Related



Ngu Soon Hui

I’m the Benevolent Dictator for Life for MiTS Software cum Editor of this website. Read more here.

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