Pressure Pipe Network Synchronization: Guide for Water Reticulation

Gravity and Pressure Networks · https://mes100.com/docs/pressure-pipe-network-synchronization-guide-for-water-reticulation/

Required Mapping Definition

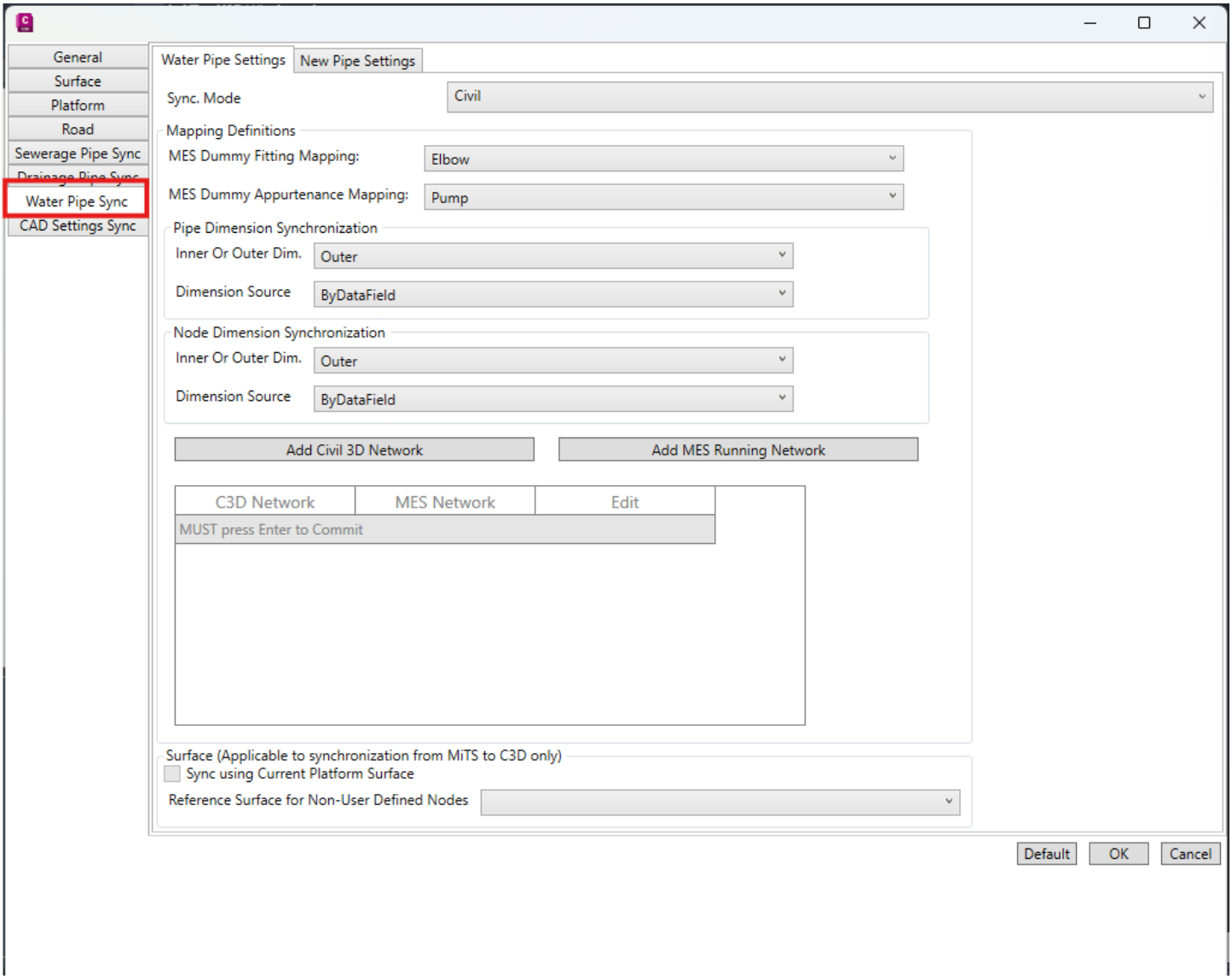
Water Pipe Settings

Sync. Mode

Users may opt for **NoSync**, **CAD Sync**, or **Civil Sync**.

For further explanations of each mode, please refer to the article **here**.

Pipe & Node Dimension Synchronization



Parameters	Descriptions
Dummy Fitting & Appurtenance	
MES Dummy Fitting Mapping	Define the fitting types applied in MiTS *This is only applicable if users apply the MES Dummy category for the fitting types in the MiTS project file.*

MES Dummy Appurtenance Mapping	Define the appurtenances applied in MiTS. *This is only applicable if users apply the MES Dummy category for appurtenances in the MiTS project file*.
Diameter	
Inner Diameter	Refer to the **inner diameter (nominal diameter) of the entities in MiTS and Civil 3D.** The **diameter should match** between the two software programs for a successful sync. It is highly **recommended for users to set the diameter configuration for the pipe and structure**, as Civil 3D typically defines the parts with a nominal diameter.
Outer Diameter	Refer to the **outer diameter (nominal diameter + thickness) of the entities in MiTS and Civil 3D**. A **matching diameter is required** for a successful sync between the two software programs. Therefore, to apply this diameter, **users need to check the part lists to ensure the components have outer diameter data defined**.
Dimension Source	
ByDataField	An instruction to Civil 3D, during the integration, to **read the numerical diameter value in MiTS** and **compare it with the numerical diameter information** of the pipes or structures in the active Civil 3D part lists. If the read MiTS diameter does not match the available diameter in the part lists, the integration will fail with a verification error, as shown **here**.

ByDescription	During integration, Civil 3D will be instructed to **read the numerical diameter value in MiTS** and **compare it with the part's description of the active Civil 3D part lists**. If the read MiTS diameter does not match the diameter description of the Civil 3D parts, the integration will fail with a verification error, as shown **here**. This source should **always be the default option for Pressure Node/Structure Dimension**, or else a verification error will be received.

Network Mapping

Parameter	Description
Add Civil 3D Network	Allow users to define **a new Civil 3D Network**. Typically required when **trying to sync from a MiTS file to a Civil 3D drawing file**. Users will be **required to input Name and select the correct Part Lists** (where parts needed have been added to it).
Add MES Running Network	Allow users to define **a new MiTS Running Network**, which can also be set to the default that is available under the dropdown. Typically required when trying to **sync from a Civil 3D drawing file to a new MiTS file**.
C3D Network Column	The available Civil 3D Network will be listed for users to select.
MES Network Column	The available MES Network will be listed for users to select.
Edit Column/Button	

For the Pressure Network, users will not be required to do the MES Category and C3D Part Family mapping due to the different design in Civil 3D regarding the gravity and pressure network.

Surface

This feature is only applicable when we sync from MiTS to Civil 3D. The purpose of this feature is to read the Ground Level at each node in MiTS, which will be used in defining the Reference Surface of the corresponding structures in Civil 3D.

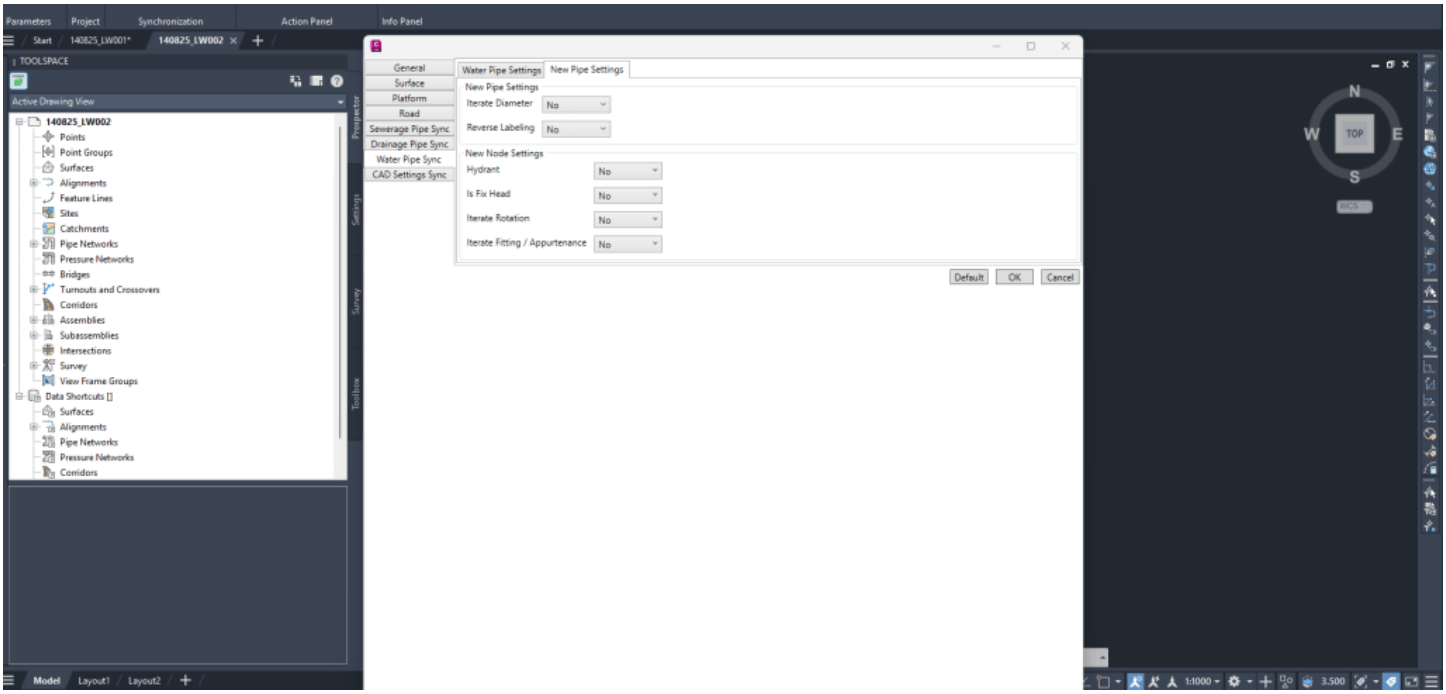
This feature will ensure that the Insertion Point Elevation is equivalent in both software programs.

Parameter	Description
Sync Using Current Platform Surface	Should be checked or ticked by users, ensuring the Reference Level of the corresponding structures is set to the Platform Surface synced.
Reference Surface for Non-User Defined Nodes	This is to define the Ground Level for nodes in MiTS that are not on any platforms, and the value detected is based on the survey points data. The user should select the survey point group that represents the terrain level.

New Pipe Settings

****Applicable to synchronization from Civil 3D to MiTS****

The feature allows users to configure the iteration settings for node and pipe parameters prior to synchronizing the network with MiTS. This is important to ensure that MiTS does not overwrite the parameters during analysis, especially for Diameter and Invert Levels.



MiTS to Civil 3D

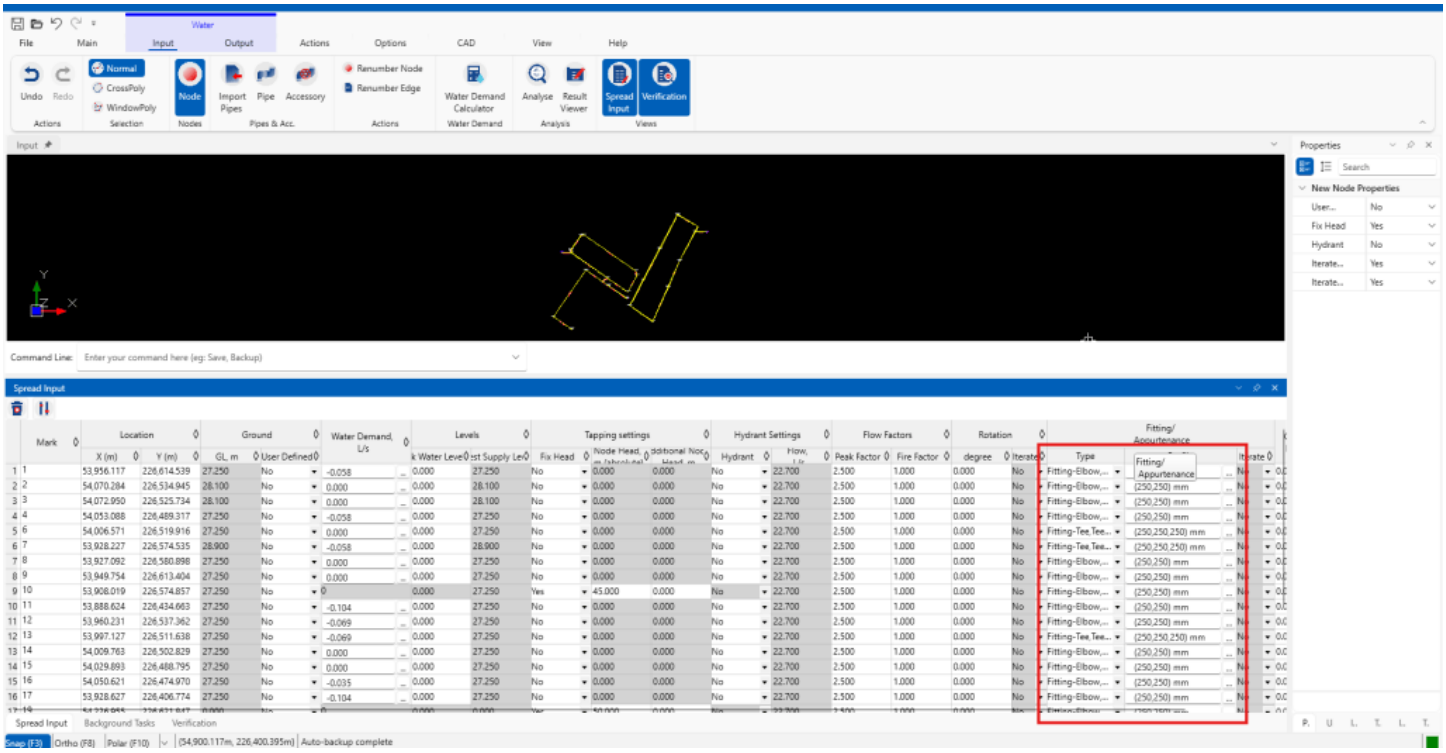
Embedded media:

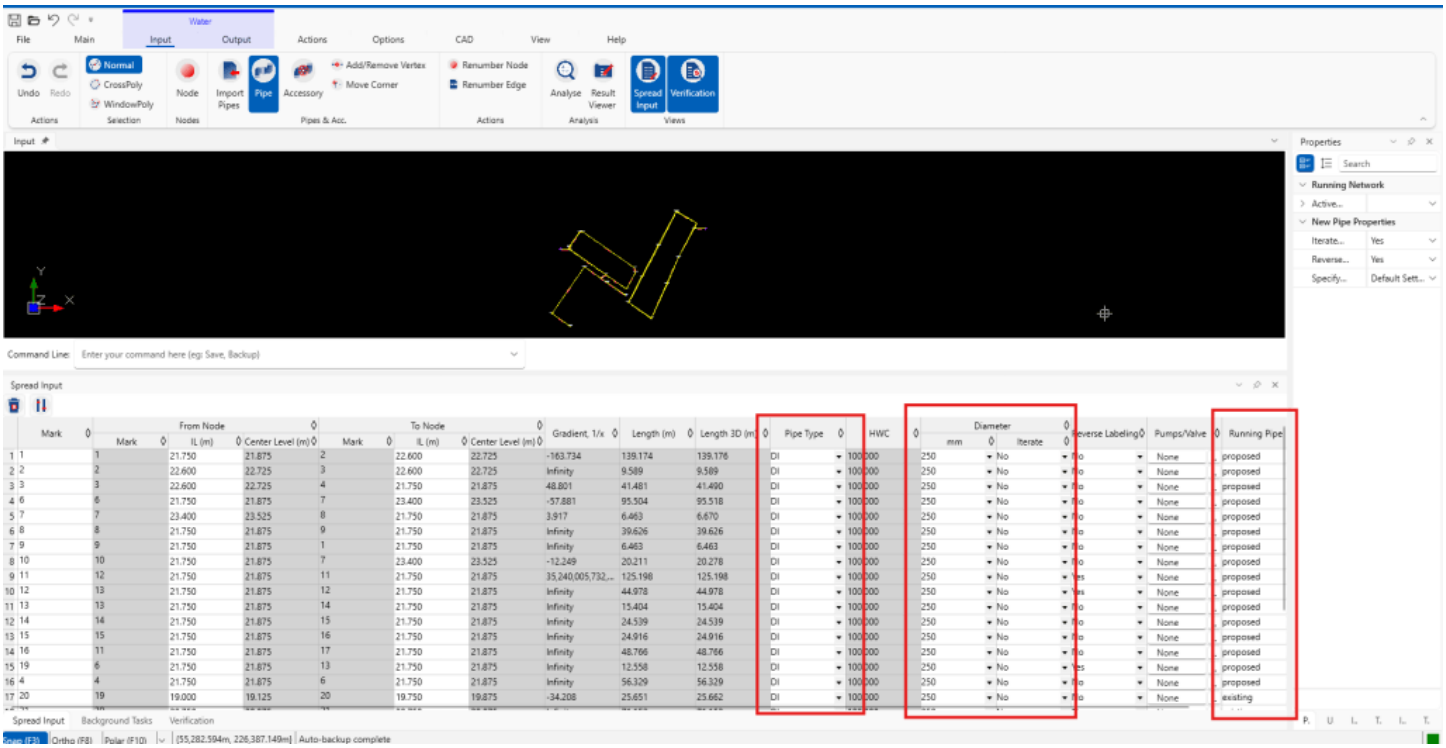
https://www.youtube.com/embed/935KuVL6h7U?version=3&rel=1&showsearch=0&showinfo=1&iv_load_policy=1&fs=1&hl=en-US&autohide=2&wmode=transparent&enablejsapi=1

Steps:

In MiTS

1. Go to the Water Module and check on the Fittings and Pipes information below:
    - Tapping Node and Hydrant Node
    - Fitting Type and Profile
    - Pipe Type and Diameter
    - Running Pipe System





In Civil 3D

1. Open the Civil 3D drawing file, go to the MES Toolbar, and click on Machine Settings.

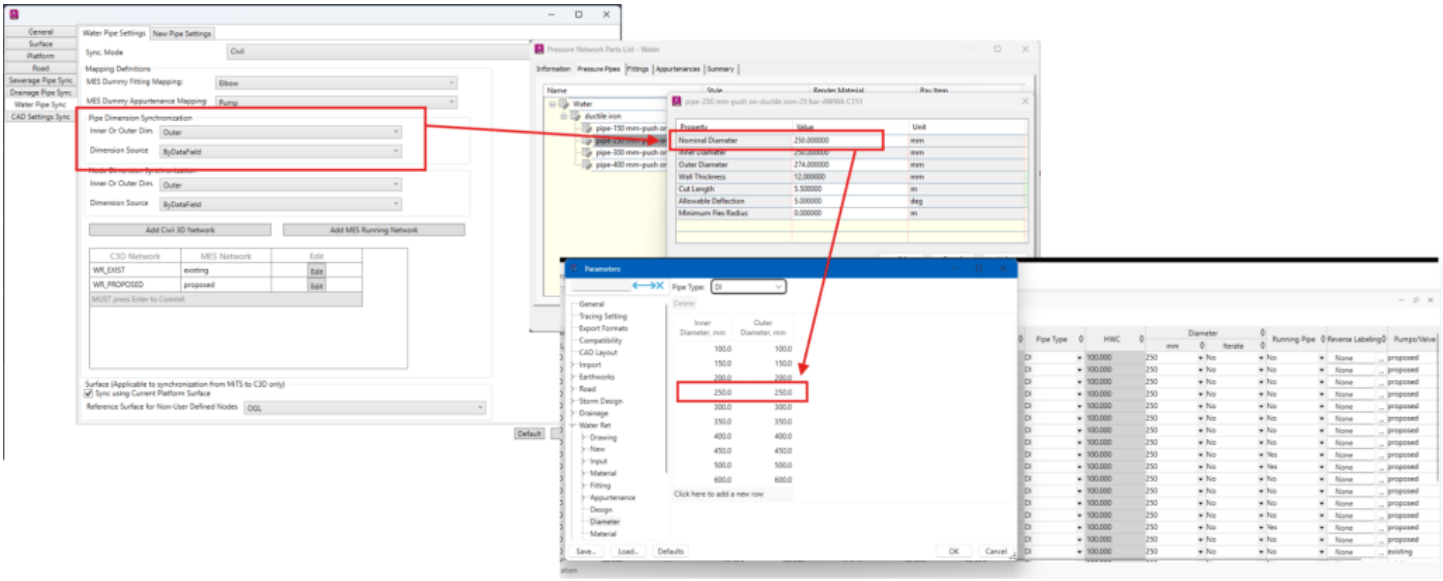
2. The drawing file should be set up with the correct Pressure Network Catalog and Part Lists, following the steps **here**.

3. Click on Project. The drawing file will need to be bound to a MiTS file following the steps **here**.

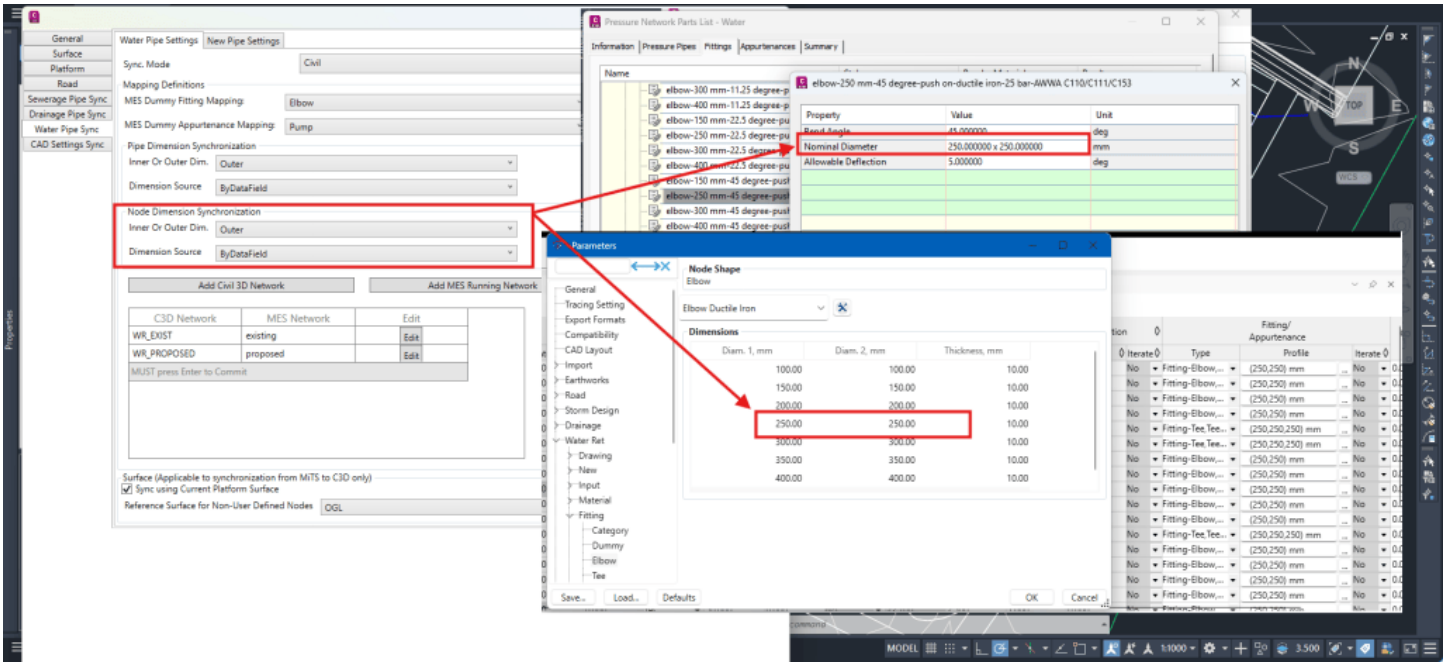
4. For pressure sync, it is **highly recommended for users to sync the Surface and Platform as well**, to define the Reference Surface of the structures.

5. Click on the Water Pipe Sync tab and define the parameters above.

- Set the sync mode to Civil Sync to ensure the entities are integrated as Civil objects in the drawing file.
- Set the MES Dummy Fitting & MES Appurtenance Mapping accordingly.
- Set the Pipe and Node Dimension Synchronization according to the numerical diameter value in MiTS and the Civil 3D parts' diameter. Shown below is an example of how the dimension mapping can be done.
    - Users may refer to the article **here** to further understand how the Pressure Catalog sizing works and what configuration should be set for the pipes and fittings.

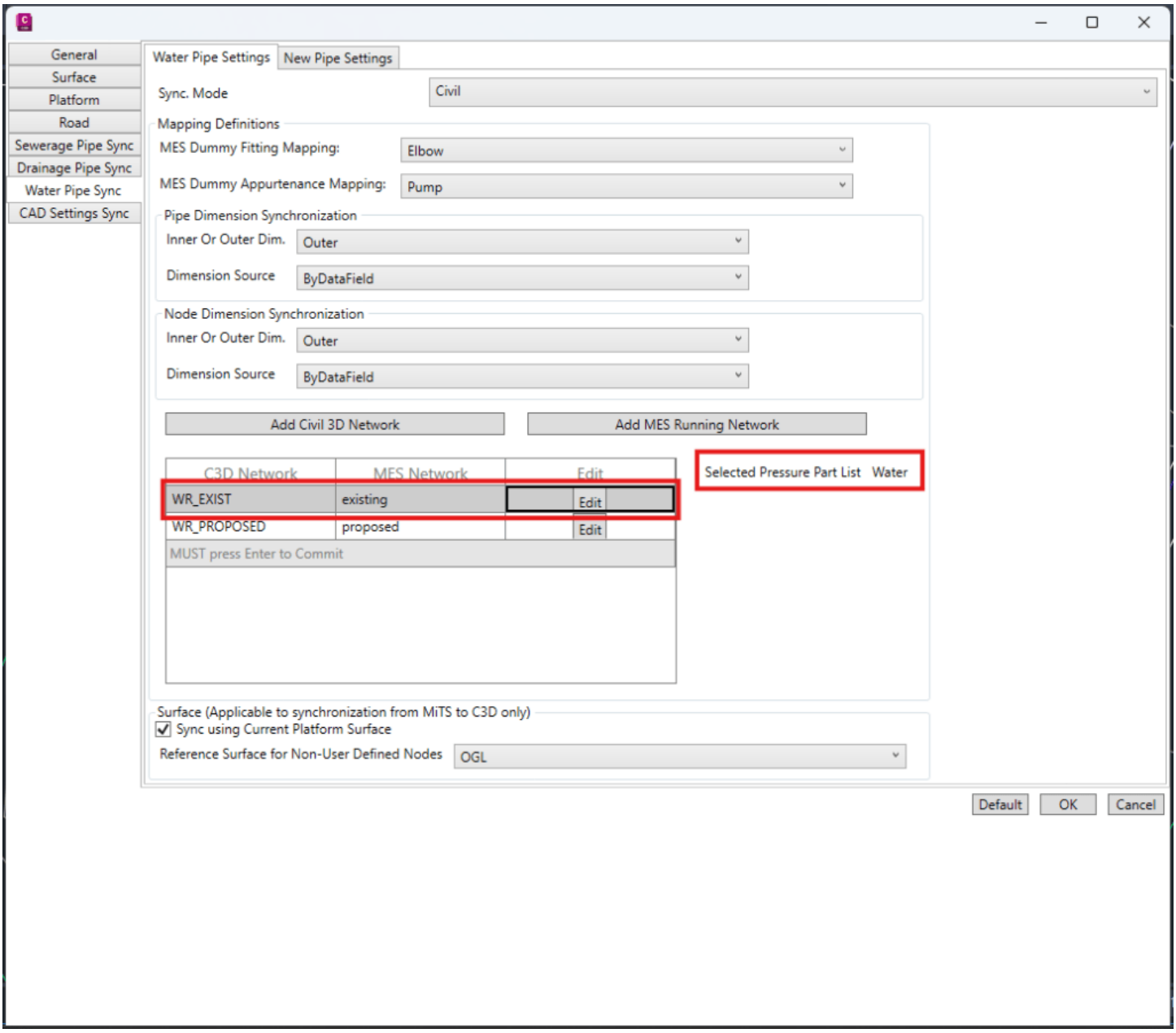


Example: For Pipe Dimension Synchronization of Water



Example: For Node Dimension Synchronization

- Define the Civil 3D Networks, corresponding to the MES Network available.
  - For the pressure network, users do not have to define the MES Category and C3D Family Part due to the different design of the gravity components and pressure components in Civil 3D.
  - The user is only required to click on the Edit button and ensure the stated part list is correct. Then, press Enter to commit the input networks.



- Tick on the ‘Sync using Current Platform Surface’ and select the ‘Reference Surface for Non-User Defined Nodes’ accordingly.
- Click OK.

6. If you **only need to sync the water network in MiTS**, you may proceed to set the Sync. mode for other entities to NoSync.

7. If you wish to sync other entities as well, you may proceed to follow the guides available on our website.

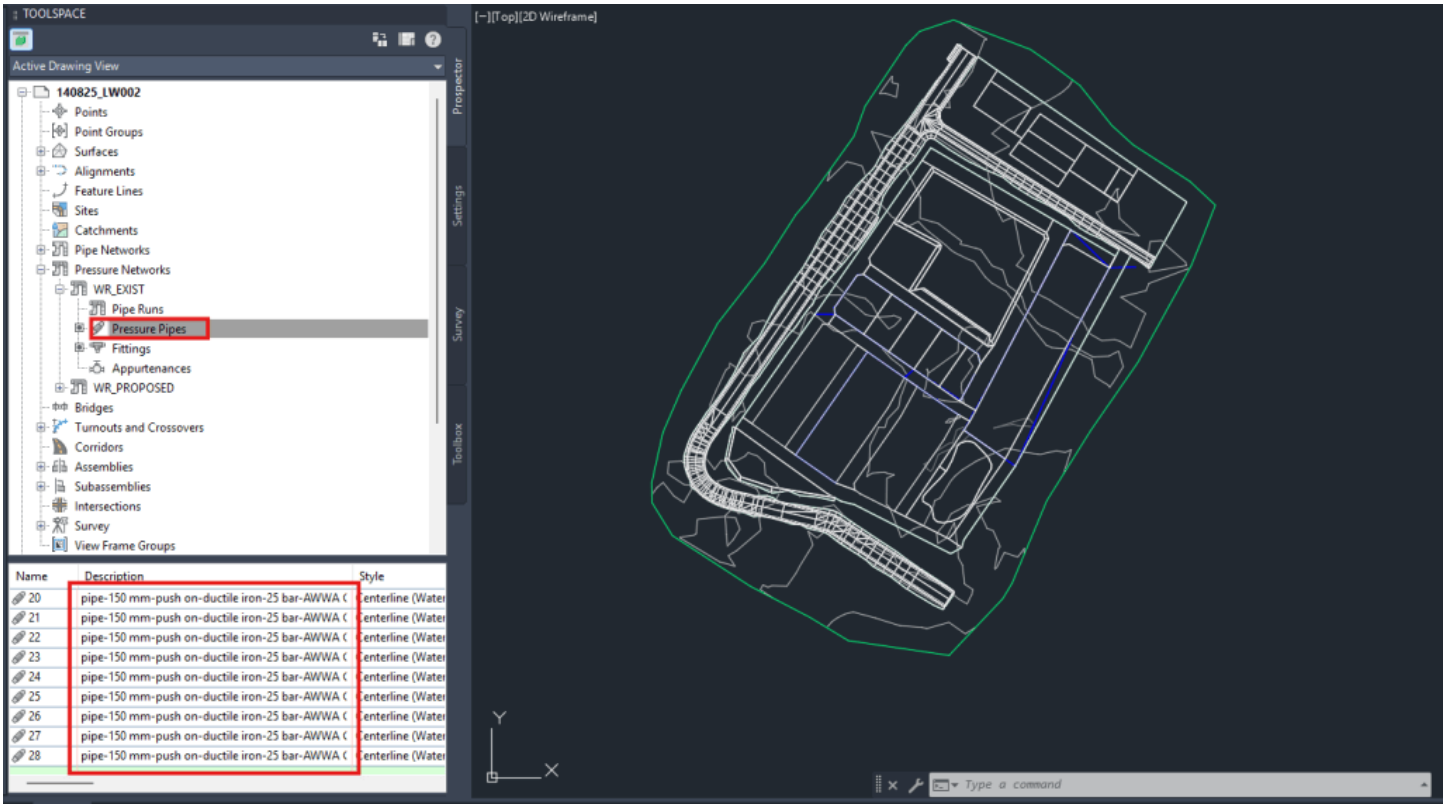
8. Click OK to close the Project Dialog. Then, click on **Load from MiTS** and click OK to sync the entities.

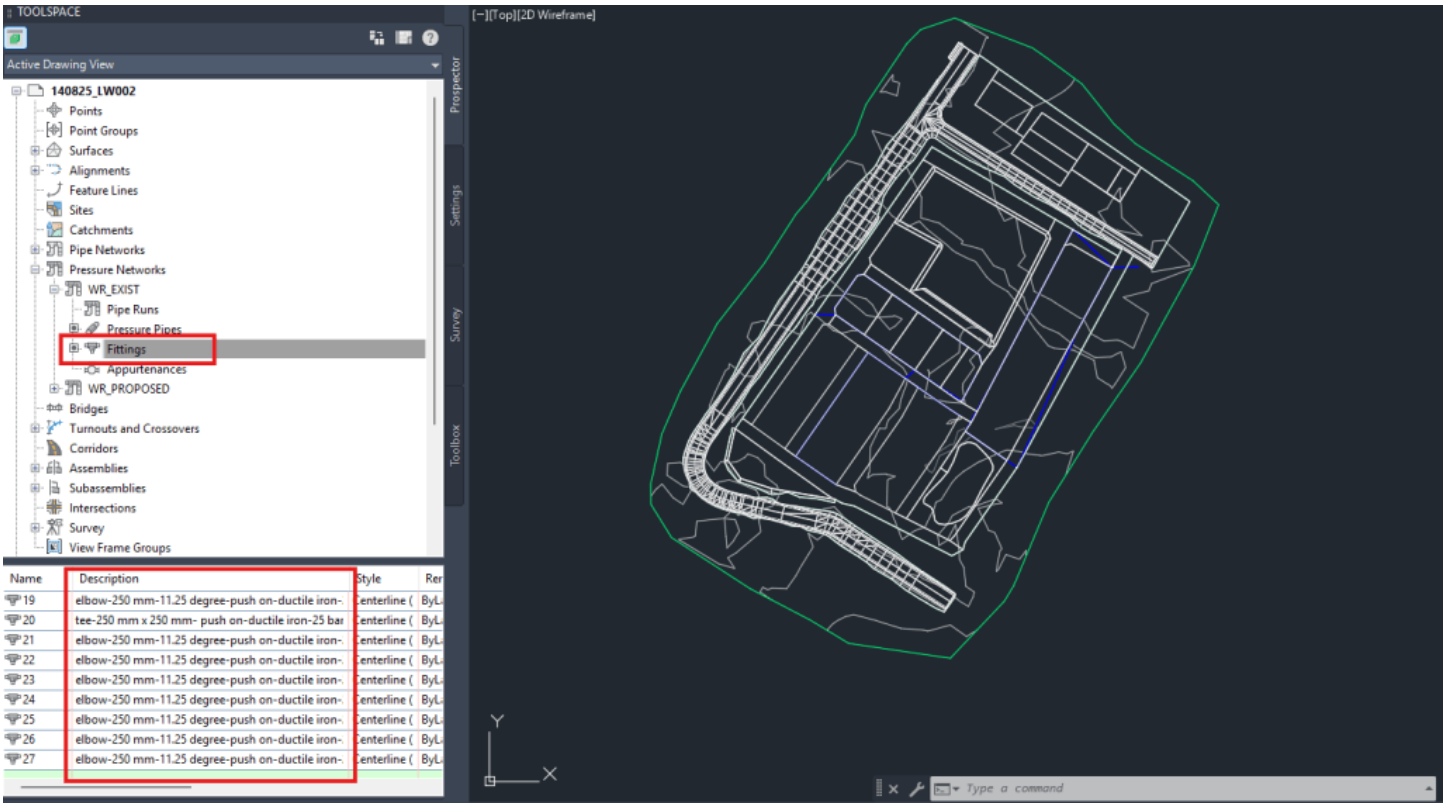
Civil 3D to MiTS

Steps:

In Civil 3D

1. Open the Civil 3D drawing file, check the parts (pressure pipes and fittings) in the network available.





2. Go to the MES Toolbar, and click on Machine Settings.

3. Click on Project. The drawing file will need to be bound to a MiTS file following the steps **here**.

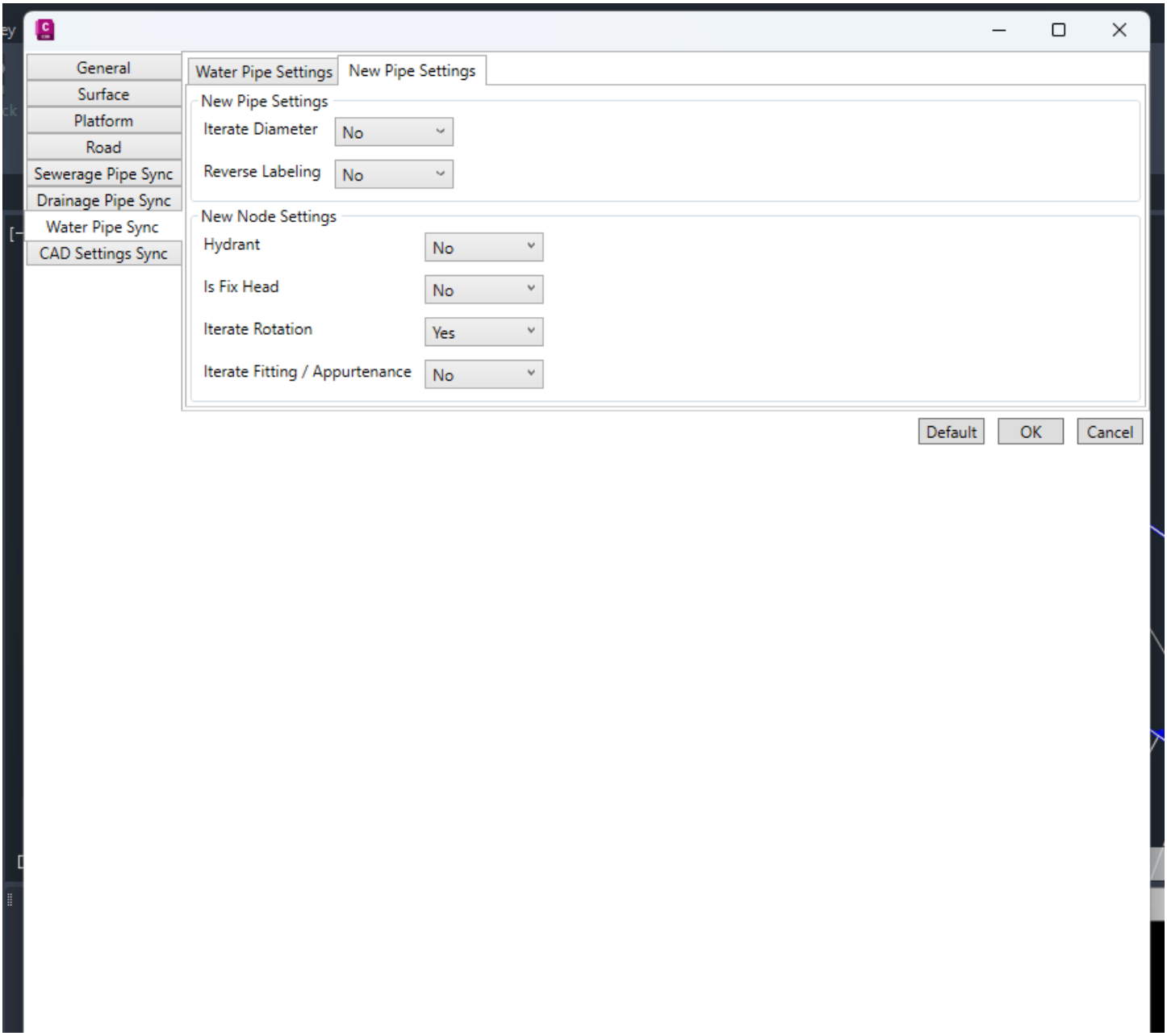
4. When syncing a network from Civil 3D to MiTS, we do not recommend syncing the **Surface** and **Platform**. Syncing these will **overwrite any existing platforms and survey point groups** in your MiTS file. **You should only sync these if you are working with a new, empty MiTS file (here).**

5. Click on the Water Pipe Sync tab and define the parameters above.

- Set the sync mode to Civil Sync. This is required for synchronization from Civil 3D to MiTS.
- Set the MES Dummy Fittings & MES Dummy Appurtenance according to the components employed in the network.
- Set the Pipe and Node Dimension Synchronization accordingly.
  - For pipe diameter, it is strongly recommended for users to set the configuration to **Inner Diameter**. This is to prevent the mismatch of diameters in MiTS, such that the nominal pipe

diameter in Civil 3D is added to the default thickness in MiTS

- Define MES Networks, corresponding to the Civil 3D Networks available. Same as synchronizing from MiTS to Civil 3D, users will not need to define mapping for the MES Category and C3D Part Family.
- Set the iteration settings for the MiTS file under the New Pipe Settings, as in **here**.



- Click OK.

6. If you **only need to sync the pressure network in Civil 3D**, you may proceed to set the Sync. Mode for other entities to NoSync.

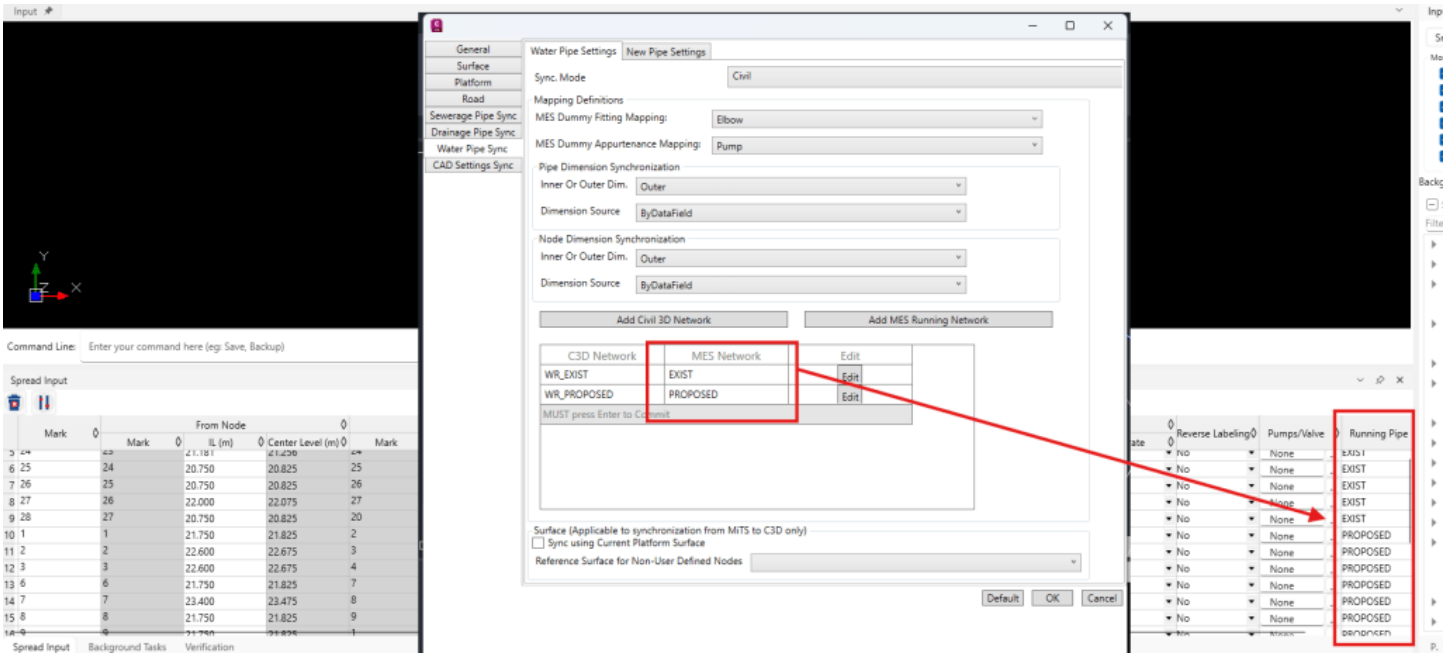
7. If you wish to sync other entities as well, you may proceed to follow the guides available on our website.

8. Click OK to close the Project Dialog. Then, click on **Sync to MiTS** and click OK to sync the entity.

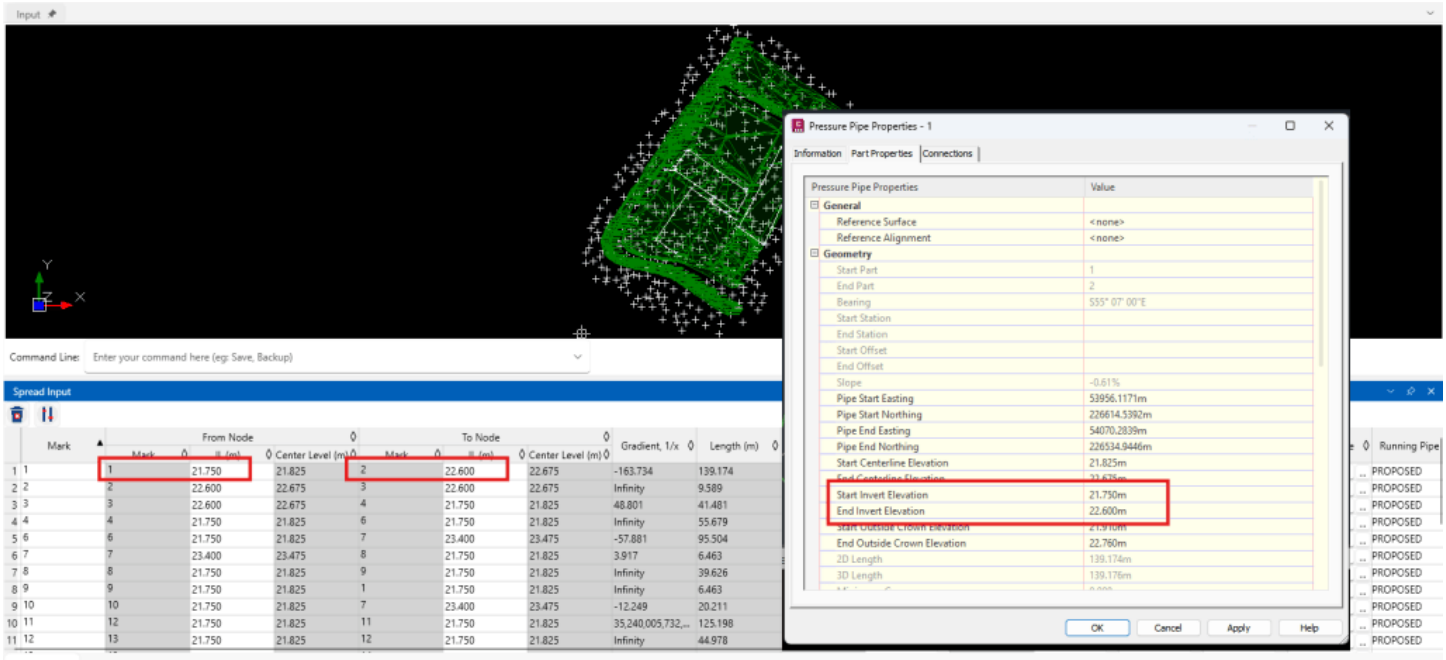
In MiTS

1. Open the newly created project file in MiTS.

2. The pipes and fittings from Civil 3D will be available in MiTS. The Running Pipe System in MiTS will match the network defined under the Project Settings in Civil 3D.



3. Both the sizes of the Part Family and the invert levels of each pipe will be synced to MiTS during synchronization. To further understand which parameters will be affected or untouched during the synchronization, you may refer to the article **here**.



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

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