USDA

United States Department of Agriculture

Natural Resources Conservation Service

AutoCAD Civil 3D 2022

Exporting DEM file in ArcGIS Pro and creating as a surface in Civil 3D

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Topics covered:

- ArcGIS Pro settings (SharePoint link)
- Downloading LiDAR file (SharePoint link)
- Downloading and installing NRCS Engineering Tools toolbox (SharePoint link)
- Clipping DEM
- Exporting clipped DEM file as a .tif file
- Importing .tif file as a surface in Civil 3D 2022

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ArcGIS Pro Settings

Prior to the training, please be sure that you have completed the directions "Getting Started with ArcGIS Pro"

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Downloading LiDAR file

You will need to download the following file located on Maryland's SharePoint site: **NRCS_Bare_Earth_DEM_Layer_Files.zip** **Unzip the file** to any location. (I downloaded the file into the following location: c:/GIS_Tools) You will need to remember this location when clipping the dem file.

Cecil, Dorchester, Harford, Queen Anne's, Somerset, Wicomico and Worcester Counties have an option to download the .zip file for your County. Unzip the file to any location. (I downloaded the file into the following location: c:/GIS_Tools) **These are large files and will take some time to download!**

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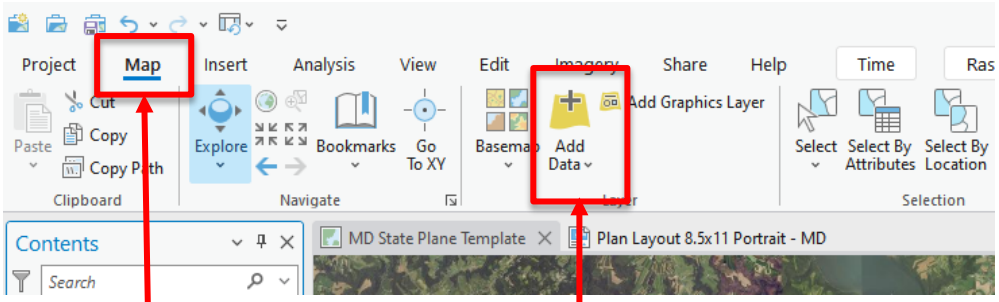
Adding dem file into ArcGIS Pro

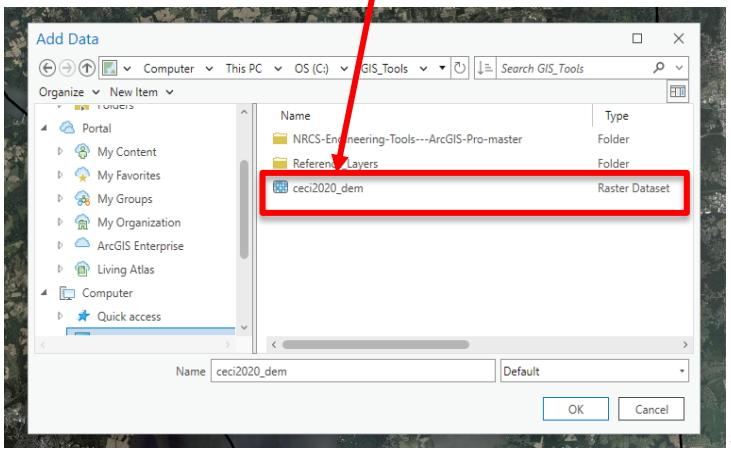
Once the dem file has been unzipped into the folder of your choice, you will then have to **add that dem file into ArcGIS Pro**.



1 Map tab

2 Select "**Add Data**"

3 Navigate to the location where you saved the file and select the raster dataset. Your file will then be added to the map. **This is a large file and will take some time to process!**



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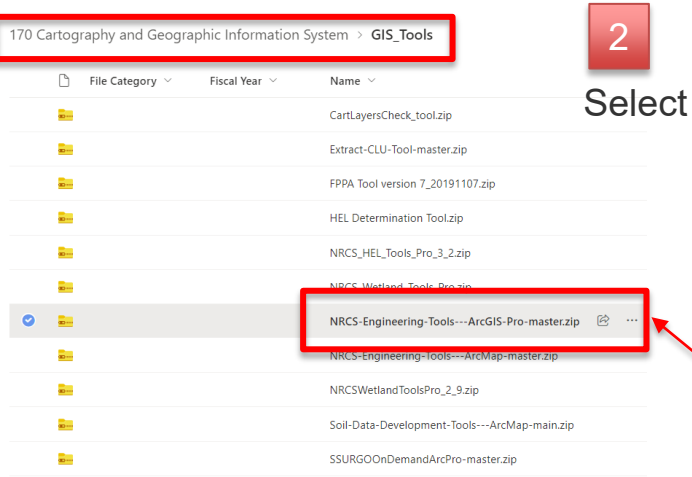
Downloading and installing NRCS Engineering Tools toolbox

Download and unzip the following file from Maryland's SharePoint site: **NRCS-Engineering-Tools---ArcGIS-Pro-master**

Unzip the file to any location. (I downloaded the file into the following location: c:/GIS_Tools) You will need to remember this location when you add the toolbox.

File path on Maryland's SharePoint site

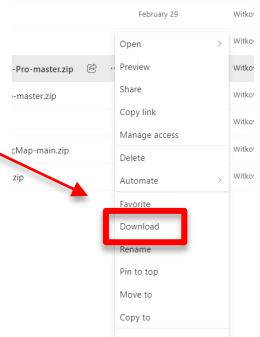


1

Click on the ··· and select **"Download"**

2

Select **"Download"**



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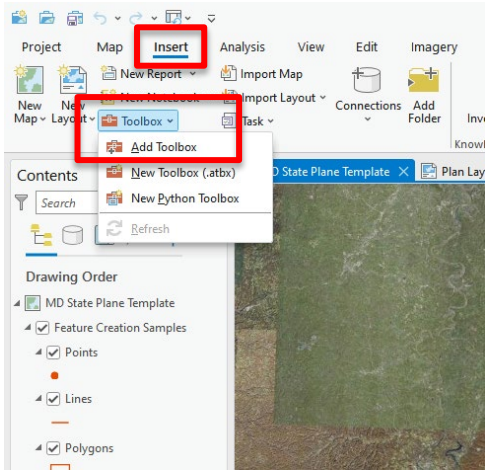
Downloading and installing NRCS Engineering Tools toolbox

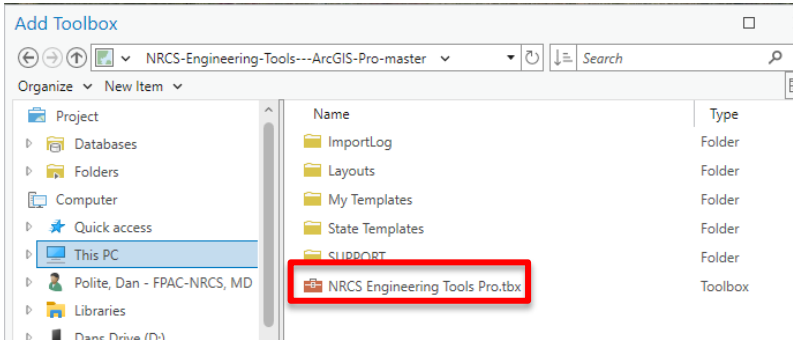
With ArcGIS Pro open, locate the **“Insert” tab** on the ribbon and then locate the “**Toolbox**” icon and select **“Add Toolbox”** in the dropdown. Navigate to the folder where you saved the folder and select the

“NRCS Engineering Tools Pro.tbx” file.

1



2



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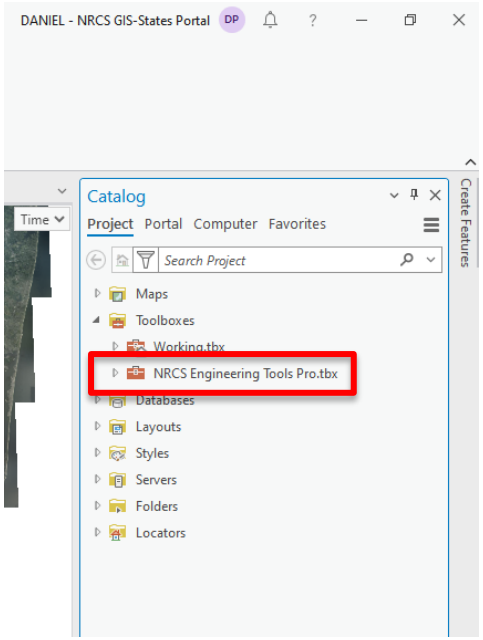
Downloading and installing NRCS Engineering Tools toolbox

In the **Catalog Pane**, you should now see the **NRCS Engineering Tools Pro** located under **Toolboxes**



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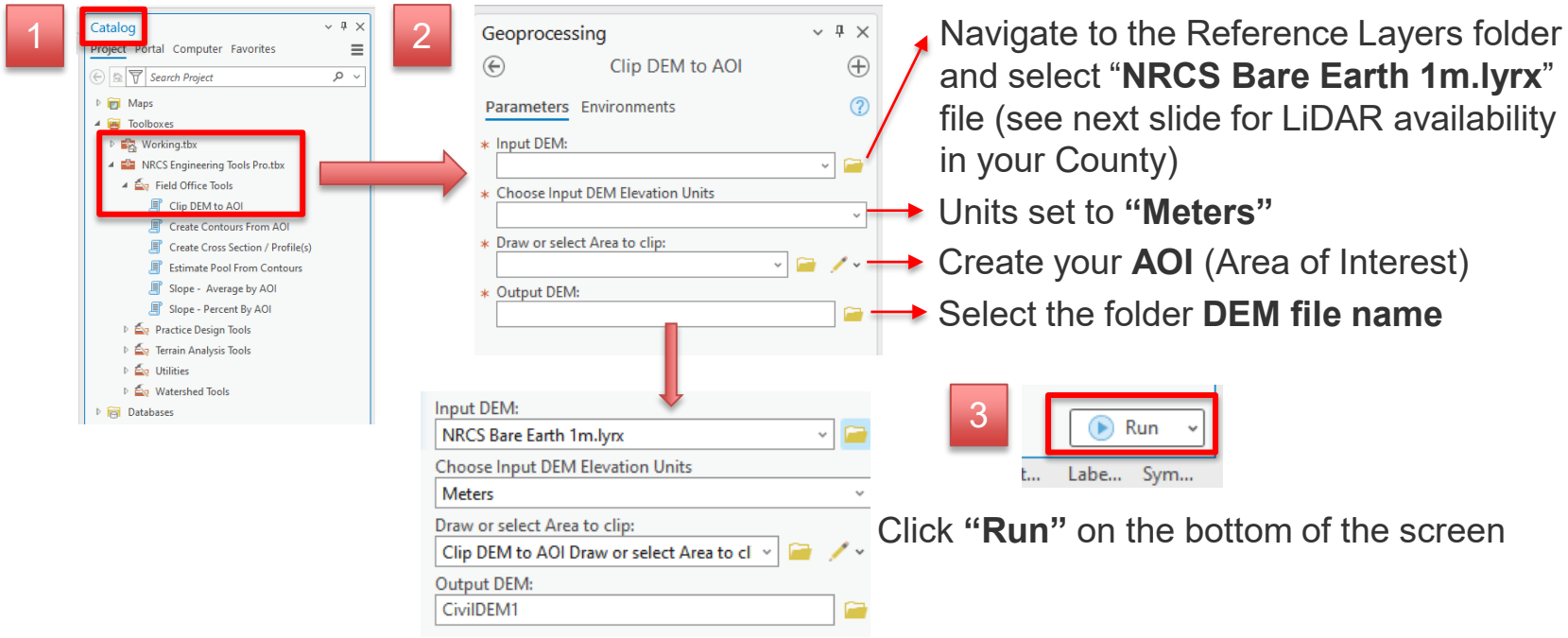
Clipping DEM

With ArcGIS Pro open, open the **Catalog window pane**, expand the **NRCS Engineering Tools Pro** tool box, expand the **"Field Office Tools"** and select **"Clip DEM to AOI."**



Navigate to the Reference Layers folder and select "**NRCS Bare Earth 1m.lyrx**" file (see next slide for LiDAR availability in your County)

Units set to **"Meters"**

Create your **AOI** (Area of Interest)

Select the folder **DEM file name**

Click **"Run"** on the bottom of the screen

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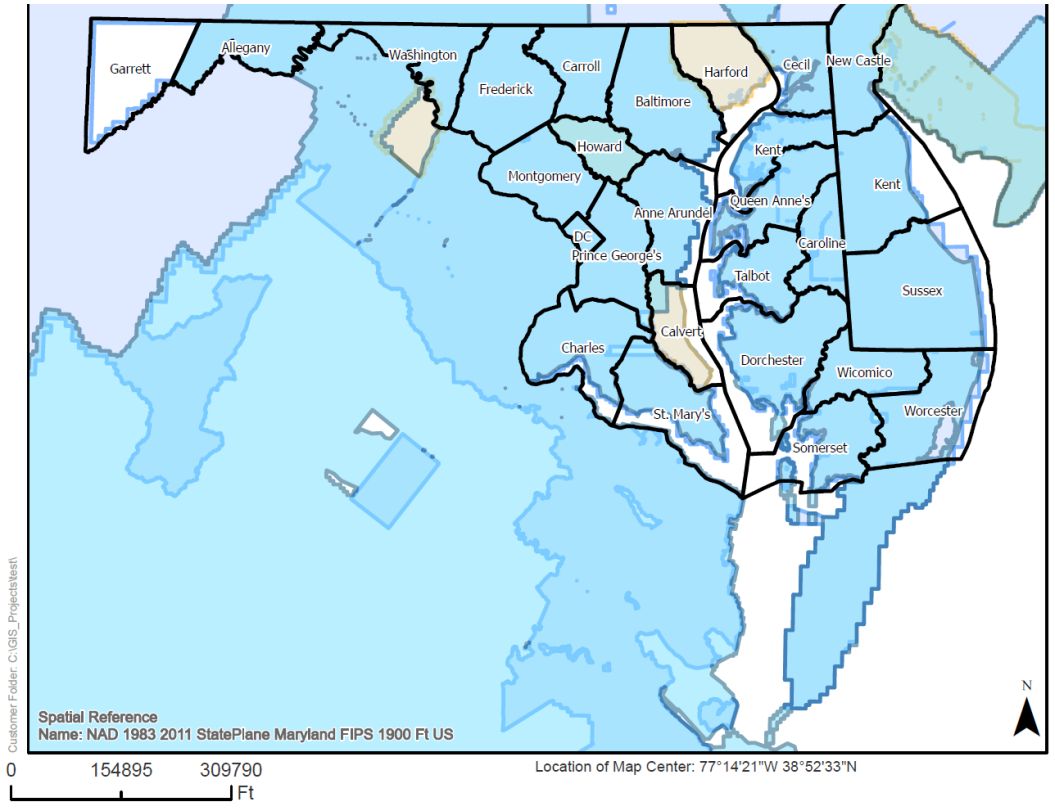
Clipping DEM

Map showing which LiDAR is available in your County



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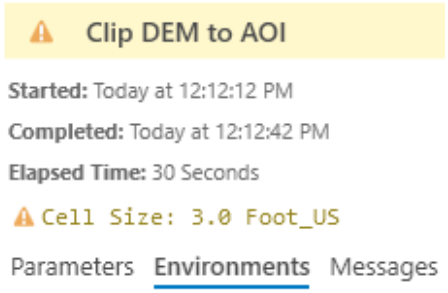
Clipping DEM

If you get an **error message** as shown below, it's okay. This warns you that the cell size of 3.0ft is not the same size as the conversion factor of 3.28084 Foot_US.



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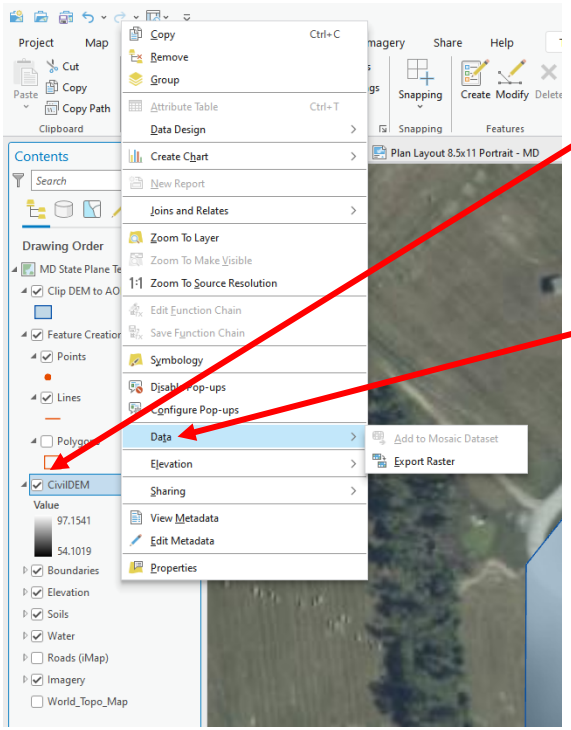
Exporting DEM file as a .tif file

Once you have completed the DEM clip, you will **export the DEM clip as a .tif file** to be uploaded into Civil 3D as a new surface.



1

Right click on the clipped dem in the Contents Pane

2

Select>**Data**

3

Select>**Export Raster**

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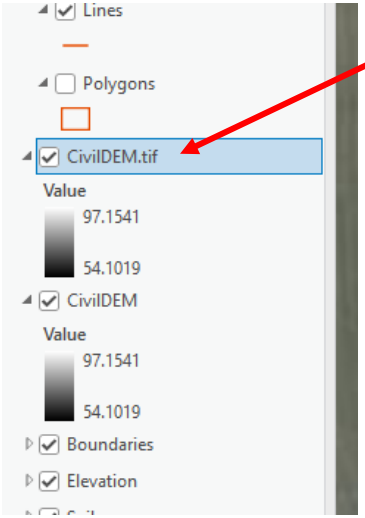
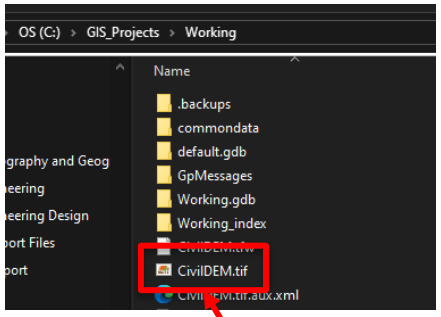
Exporting DEM file as a .tif file

You will notice that the .tif file will be shown in **Contents pane**, you can **delete this** as it was saved in the folder you selected.



You can delete this from your project



.tif file shown in the folder

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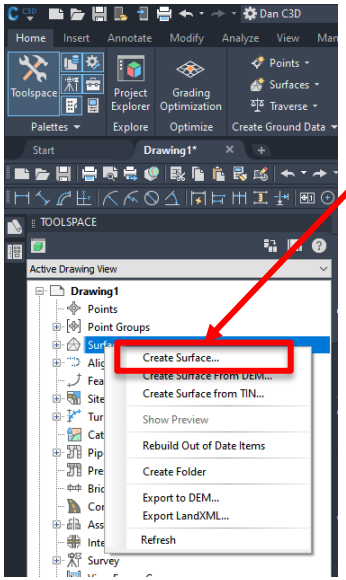
Importing .tif file as a new surface in Civil 3D 2022

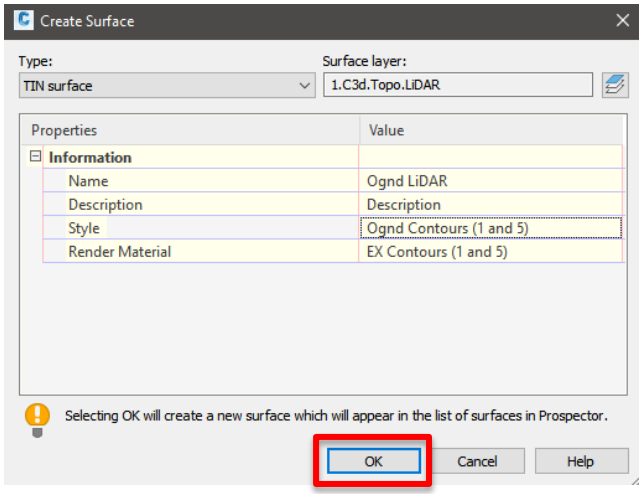
Open Civil 3D 2022>Open **Model Space**>On the Prospector Tab>**Select Create Surface**



1

Select>**Create Surface…**

2 See window below



3 Click OK when all the information has been filled out

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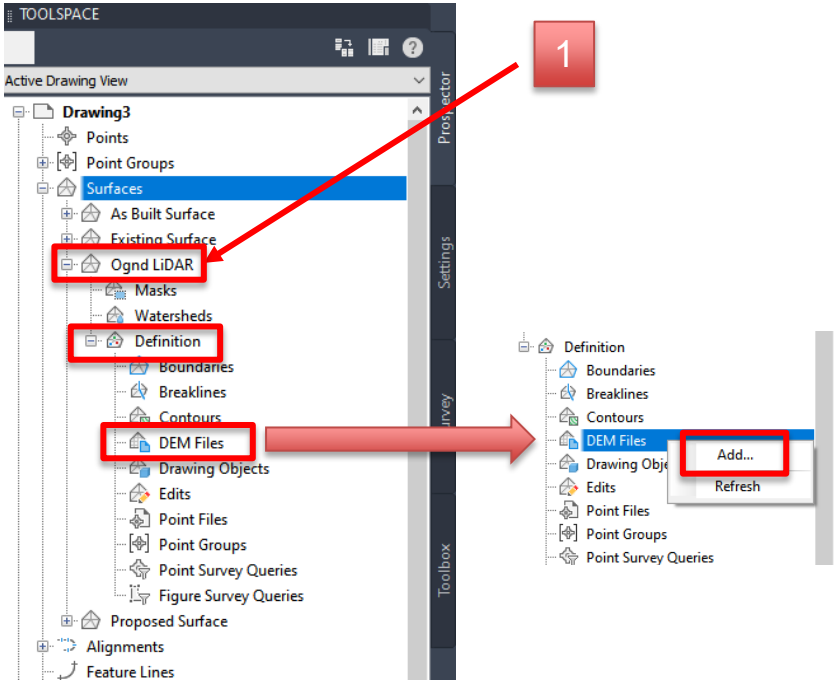
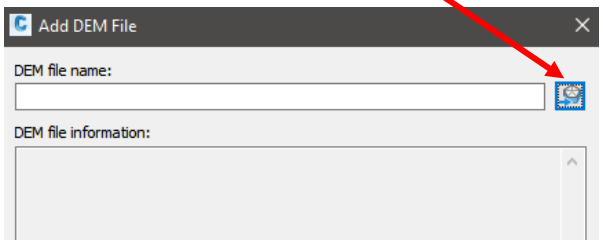
Importing .tif file as a new surface in Civil 3D 2022

On the Prospector Tab>**Expand the surface you created**>Expand **Definition**>Right click on **DEM Files**>Select **Add…**



2 **Click on**  **icon and then locate the .tif file** you saved



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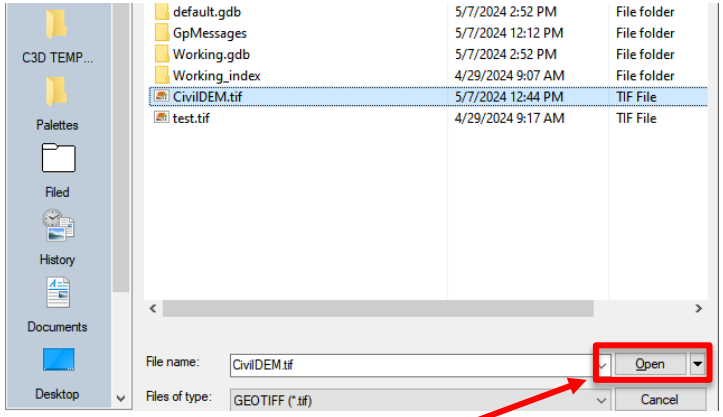
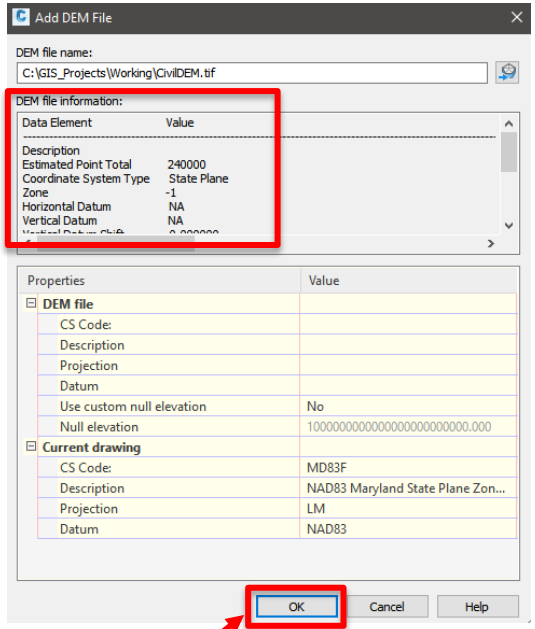
Importing .tif file as a new surface in Civil 3D 2022

Once you select your file, Click **Open**



1 Select your file and Click **Open**



2 Verify that DEM is in State Plane, Click **OK**

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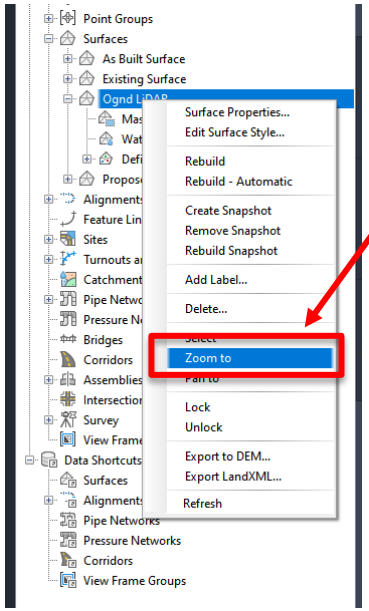
Importing .tif file as a new surface in Civil 3D 2022

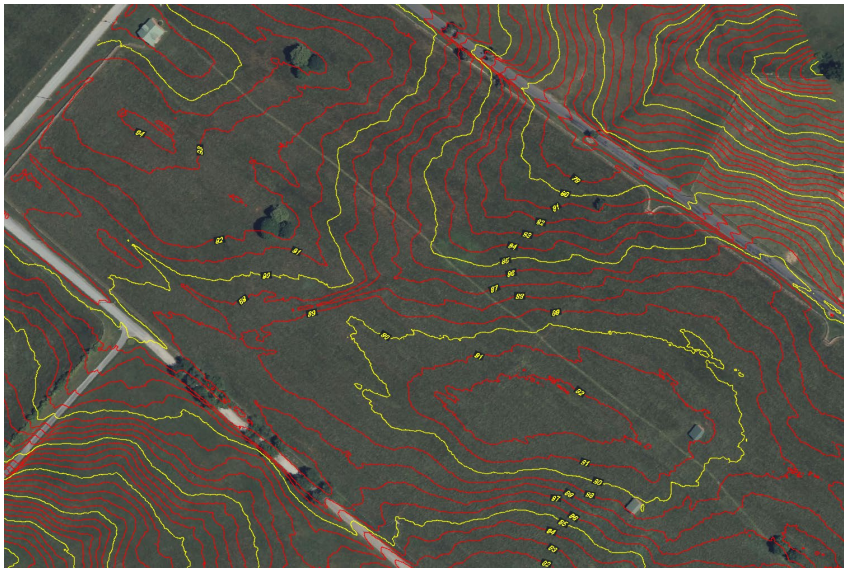
Once you added the DEM file into the surface>Expand **Surfaces tab>Right click on the surface you just created**>Select **Zoom to**



1

Select>**Zoom to**

2 Completed surface



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Questions?