GEOPAK V8i Edition

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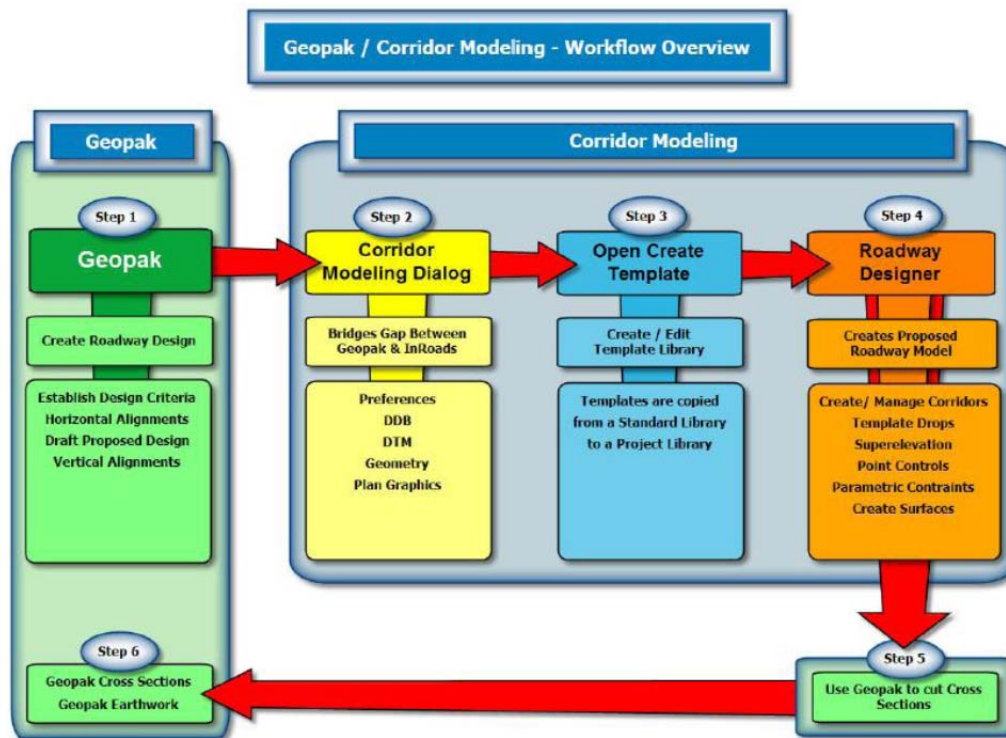
3.1 – <u>Corridor Modeler / Roadway Designer Manual</u>

The Corridor Modeling tool is a front end application that allows you to set up project specific preferences. Symbology features, horizontal/vertical geometry information, and the existing ground surface are imported using this tool. Roadway Designer, which is the core modeling tool, utilizes these definitions when creating a roadway design model. The preferences and imported information can then be saved in a Roadway Designer preference (.rdp) file.

Corridor Modeling does not replace the Project Manager workflow. It does provide additional design tools.

Refer to the Corridor Modeler / Roadway Designer Manual at
http://flh.fhwa.dot.gov/resources/cadd/rd/

The manual provides detailed descriptions of the settings, tools and requirements of the software. Step by step instructions based on EFLHD processes are provided in **Workflows** for each task.

Roadway Designer Manual: 1 - Corridor Modeling

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3.2 - Exporting the 3D Model .tin to LandXML

The output from Roadway Designer is a 3D model, visualized in a 3D Microstation .dgn file and a proposed surface .tin file. The .tin file will need to be converted to a format that can be read by survey and construction equipment in the field.
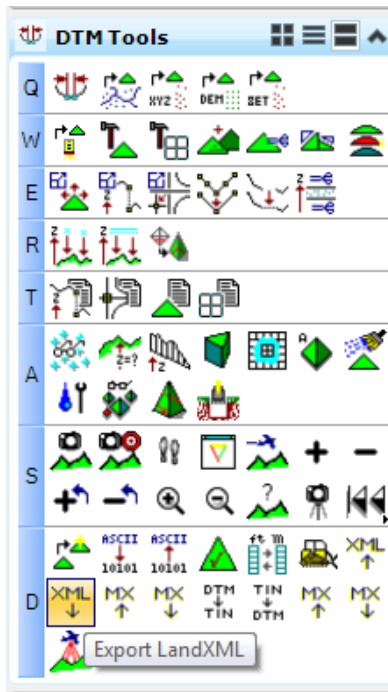
Good practice: Make sure you are in the correct directory and the Project Manager window is open and set to the correct GPK Job #.
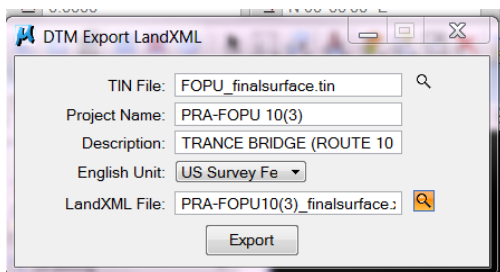
After creating the 3D .tin in Roadway Designer, next you will need to export the .tin to LandXML.

In the **Task** menu, go to **Civil Workflows > DTM Tools**.

Select **Export LandXML.**

The **DTM Export Land XML** dialog box will appear:

For "**TIN File**", navigate to the folder where the proposed surface .tin is stored.

Fill in the **Project Name** and **Description.**

   ** It is a good practice to use the ROUTE NAME for the Project Description**

Under **English Unit**, select **US Survey Feet.**

** It is a good practice to confirm the Working Units before making the selection. The Survey office can help you determine if needed **
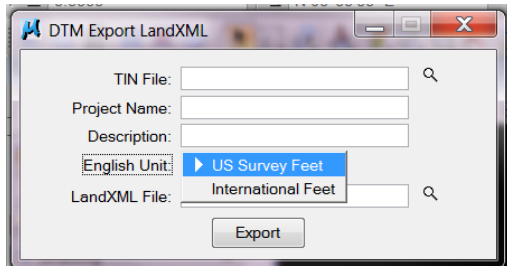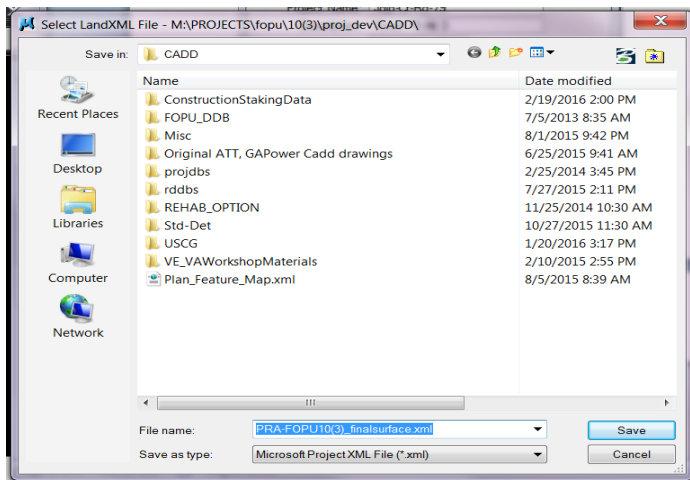
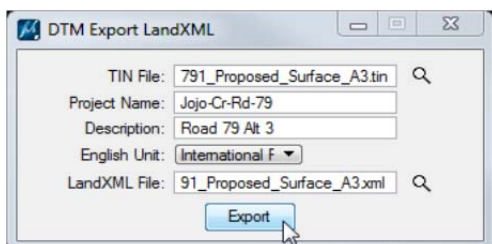Next, under **LandXML File**, navigate to the destination directory. Type in the desired XML file name.

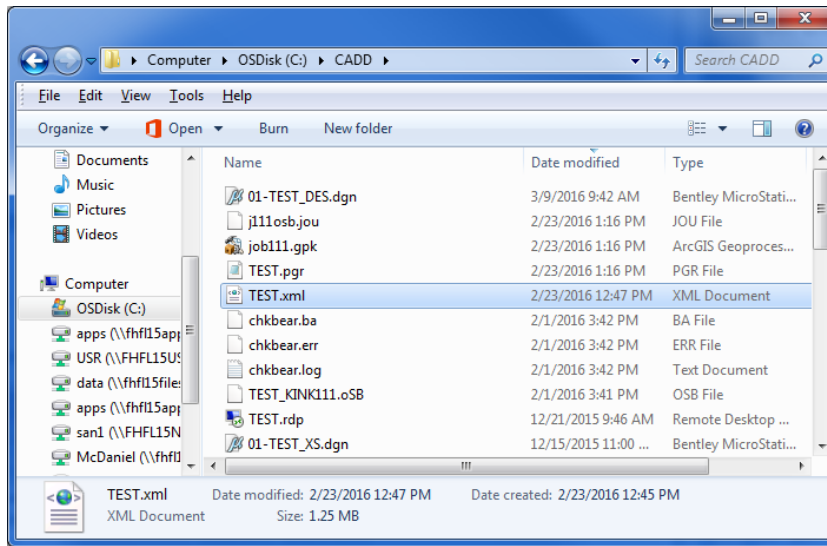** It is a good practice to make the CADD folder the destination directory **
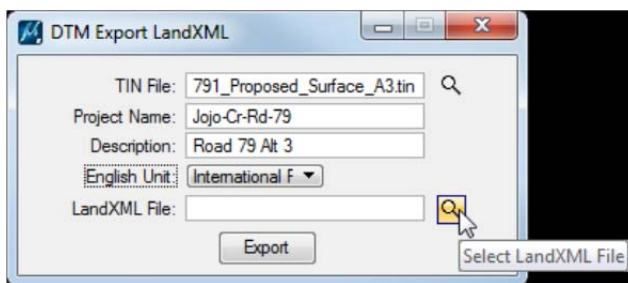
Verify the destination directory and select **Save.**

Select **Export.**

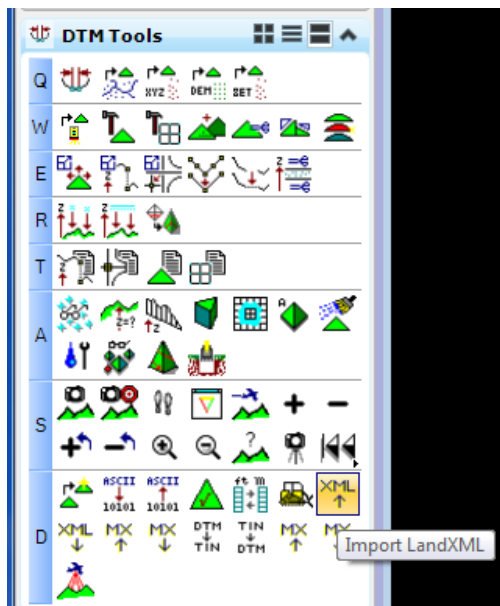Verify that the LandXML file was created in the destination directory:

3.3 - Check the LandXML file

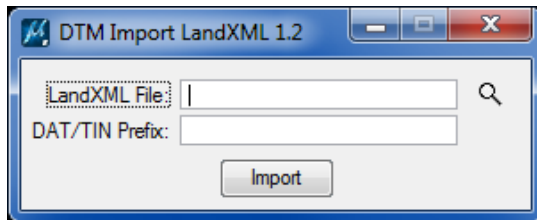It is important to verify the accuracy of the XML file.

To check the XML accuracy, you will import the LandXML and convert it back to a .tin file.

Go to **Civil Workflows > DTM Tools**.

Select **Import LandXML.**

The **DTM Import LandXML** dialog box will appear:

Navigate and Load the recently created LandXML (.xml) file.

You may need to include the entire directory path and the xml file in this field.

In the **DAT/TIN Prefix** field, fill in a name for the converted .tin you will use to verify the accuracy. This will create a .dat and .tin file in your destination directory.

**You may need to include the entire directory path and the xml file in this field.**
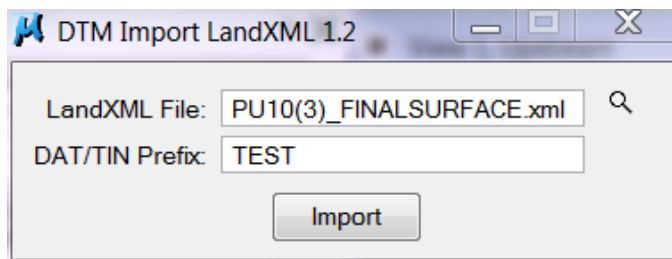
Now you will COMPARE the proposed surface .tin you generated out of Roadway Designer to the proposed surface .tin you converted from the LandXML file.
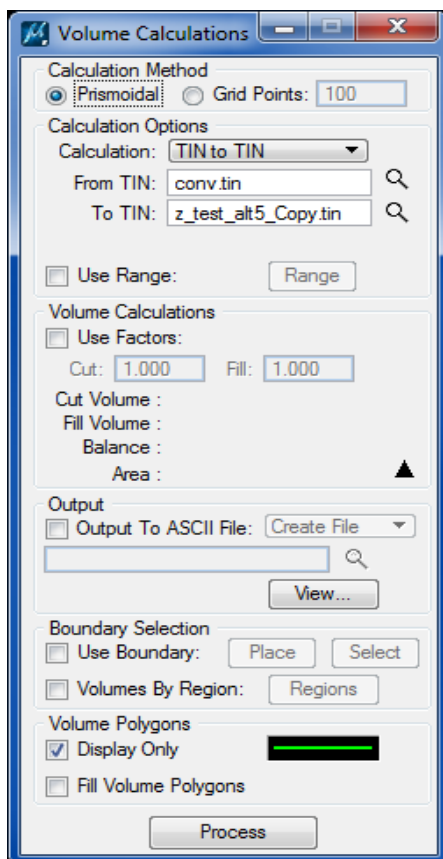
This is to ensure that the data found in LandXML file matches the proposed surface data found in the Roadway Designer .tin. It is important the XML data we provide to Construction and the Contractor matches the intended design found in our proposed surface .tin.

Go to **Civil Workflows > DTM Tools.**

Select **Volumes.**
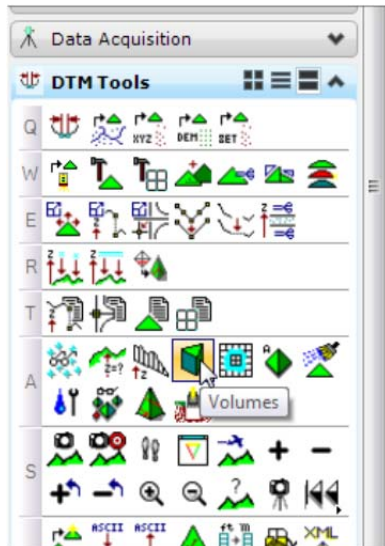
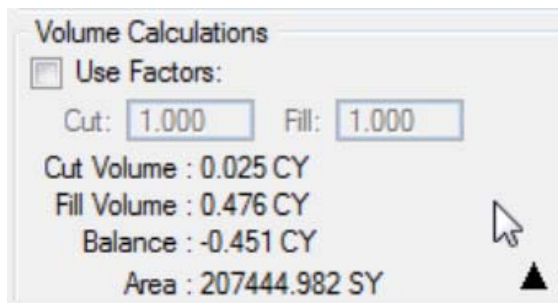The **Volume Calculations** dialog will appear:

Navigate and Load the two .tin files (the proposed surface .tin from Roadway Designer and the XML generated .tin) for comparison.

An optional ascii file can be created.

Hit **Process.**

In the Value Calculations area of the dialog box, you will see the volume difference between the two .tins.

** The example shows a difference of 0.451 cubic yards over 43 acres. This is a VERY small difference and is allowable. You may find 0.00 CY difference between your two .tins.

You have now verified that your LandXML file is consistent with the proposed surface model and proposed surface .tin from Roadway Designer.
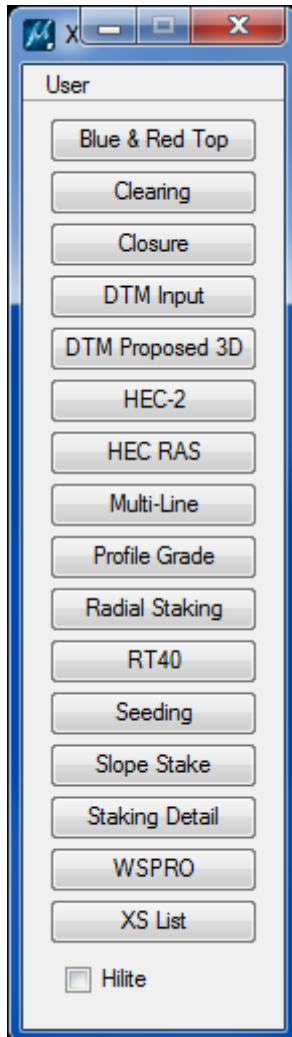
3.4 - Construction Deliverables

It is a project team decision whether 3D data will be delivered to our Construction office with the final PS&E package. This should be discussed early in the design process to determine what workflows a designer will follow.

Automated Machine Guided (AMG) construction using 3D technology has not been 100% implemented in the construction industry. Some construction contractors may not be using the technology.

With that in mind, on projects that used 3D design tools, produced a 3D model and determined that 3D data will be delivered, we will deliver **BOTH** conventional staking data and 3D data.

1) Conventional staking data includes many of the Geopak Cross Section Reports that have been available; Red Top Report, Blue Top Report, Slope Stake Report, Staking Detail Report, etc.

User

Blue & Red Top
Clearing
Closure
DTM Input
DTM Proposed 3D
HEC-2
HEC RAS
Multi-Line
Profile Grade
Radial Staking
RT40
Seeding
Slope Stake
Staking Detail
WSPRO
XS List

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2) 3D Data will include the 3D dgn file where your model is visualized and the proposed surface LandXML file described above.

These and other deliverables are outlined on the **Construction Staking and Design Information** transmittal form (QBS EFL-FM-HWY-05(01).

Provide what is needed for your project's requirements. Contact your HDM if you have questions on what needs to be delivered to the Construction office.