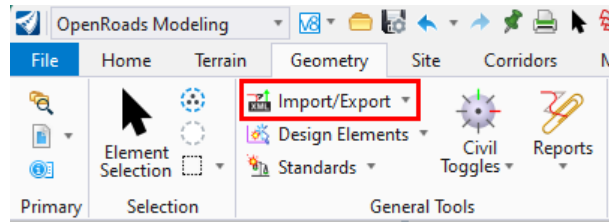


# Geometry Export and Import using LandXML

OpenX technology provides the ability to export and import alignments to LandXML using **Geometry>General Tools>Import/Export>Export Geometry** or **Import Geometry**. Geometry points can also be imported and exported to LandXML.

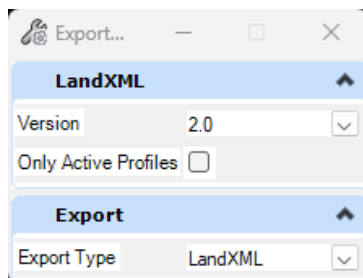


Proposed alignments are delivered to the Construction phase in the Alignments LandXML format. The LandXML deliverables are stored in the 1\_Milestone\7\_3D\_Design folder in ProjectWise.

## Geometry Export to Geometry LandXML

Follow the recommended steps below to create an alignment LandXML file that contains selected horizontal alignments and/or geometry points. Child vertical alignments (known as profiles) will also be exported, with the option to limit the profile export to only the active profile.

1. In a DGN file that contains an alignment or geometry points, or has a geometry file attached as a reference, make a selection set of alignments and geometry points to export in the 2D plan view.
2. Choose **OpenRoads Modeling> Geometry>General Tools>Import/Export>Export Geometry**.
3. On the **Export to File** tool settings dialog, choose whether to limit the exported profiles to only the active profiles. **Set the Export Type to “LandXML”**.



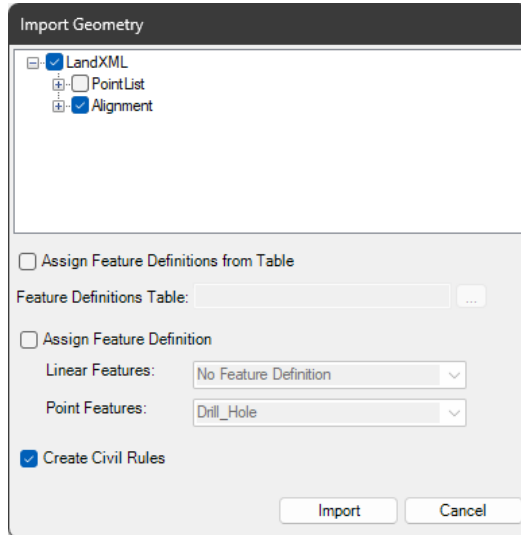
4. Click in the file 4 times to accept the parameters and open the **Export to LandXML** dialog.
  - a. For ProjectWise on the Select a Wizard dialog, use **No Wizard** and **[Select] 0\_Temp** as the folder to create a document that you will move and rename later; click **[Save]**, then **[Check In]** when prompted. Move the document to 1\_Milestone\7\_3D\_Design and rename using the ODOT Naming Tool.
  - b. To create the LandXML file on your local computer, choose **[Cancel]**. Then, navigate to a folder, enter a File name, then select **[Save]** to create the LandXML (.xml) file.

## Import Alignments and Geometry Points from LandXML

Follow the recommended steps below to create civil graphics of alignments and geometry points by importing geometry from a LandXML file that contains CgPoints (COGO points, otherwise known as COordinate GeOmetry points) and Alignments.

## Import Alignments Using Feature Definitions in LandXML File

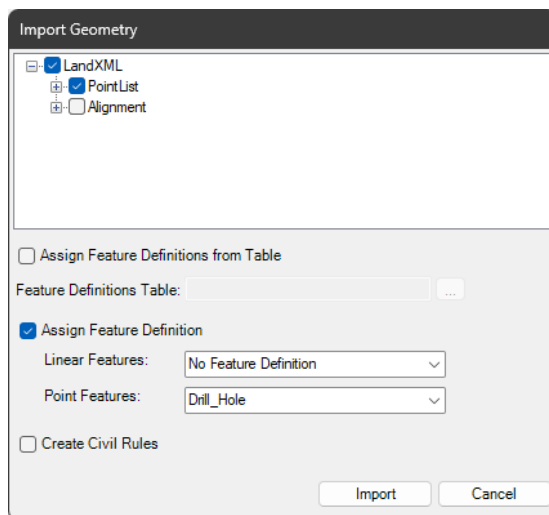
1. **Create a new DGN from a 2D seed** in the 3\_Construction\Construction\_Engineering folder named, CE\_K#####\_GEOM\_##.dgn.
2. Select **OpenSite Modeling> Geometry>General Tools>Import/Export>Import Geometry**.
3. Select an XML file for import.
4. On the Import Geometry dialog, check the box next to **Alignment** to import all horizontals and all profiles in the file. Check the box to **Create Civil Rules** and click **[Import]**.



5. Use Fit View to see the alignments.

## Import Points from LandXML File, Assign Feature Definition

1. **Working in the same 2D DGN,**
2. Select **OpenSite Modeling> Geometry>General Tools>Import/Export>Import Geometry**.
3. Select an XML file for import.
4. On the Import Geometry dialog, check the box next to **PointList** to import all points in the file. Check the box to **Assign Feature Definition** and select a feature definition for the Point Features. Click **[Import]**.



5. Use Fit View to see the points.

# File Formats for Digital Data Exchange

The ODOT “Construction Surveying Manual for Contractors” sets the preferred format for exchanging data between ODOT and contractors as LandXML for alignments, coordinates, and digital terrain models or surfaces. The LandXML format is probably the easiest way to transfer data between many civil design and survey programs. Some automated machine guidance systems take input directly in the LandXML format. LandXML separates the data into blocks where specific information is delivered in a particular order that is widely known.

LandXML files may be opened in any text editor – Notepad++ is recommended.

## What is Inside an Alignment LandXML File?

An alignment LandXML file has two major blocks of data. If points were exported, there will be a <CgPoints> block that includes the civil points location and properties. If alignments were exported, there will be an <Alignments> block, with a paragraph for each named alignment including the element properties for drawing and stationing the alignment and the feature “style” that was used. The profile information is also included, indented below the parent horizontal.

The image below shows an example of two drill hole locations (COGO points) exported along with two alignments, L and M. A yellow rectangle highlights the <CgPoints> data block. A purple rectangle highlights the parent horizontal alignment for the L-line, expanded to see the assignment of the feature definition CL\_Main. A green rectangle highlights the profile for the L-line, showing the elements that make up the vertical alignment.

```
7 <CgPoints>
8   <CgPoint name="DH#1" desc="Proposed Drill Hole" code="Drill_Hole">124179.75709453126 4
9   </CgPoint>
10  <CgPoint name="DH#2" desc="Proposed Drill Hole" code="Drill_Hole">124079.25596826174 4
11  </CgPoint>
12 </CgPoints>
13 <Alignments>
14   <Alignment name="M" length="2611.4037674490182" state="proposed" staStart="0">
15     <CoordGeom name="M" state="proposed">
16       <Profile>
17         <ProfAlign name="CL_Minor">
18         </ProfAlign>
19       </Profile>
20     </Alignment>
21     <Alignment name="L" length="2694.2120552163383" state="proposed" staStart="0">
22       <CoordGeom name="L" state="proposed">
23         <Line dir="4.8030212201135285" length="1010.0130731872338">
24         </Line>
25         <Spiral spiType="clothoid" length="250.00000000000003" rot="ccw" radiusStart="
26         <Start>124025.63455920403 402394.11719660583 0</Start>
27         <PI>123859.10527381895 402409.25158039731 0</PI>
28         <End>123780.08940954944 402437.25862619368 0</End>
29         <Feature>
30           <Property label="style" value="Alignment\CL_Main" />
31         </Feature>
32         </Spiral>
33         <Curve crvType="arc" rot="ccw" radius="500.00000000000006" length="244.1650133
34         <Spiral spiType="clothoid" length="250.00000000000003" rot="ccw" radiusStart="
35         <Line dir="5.7913512468587509" length="940.03396865661671">
36         </Line>
37       </CoordGeom>
38       <Profile>
39         <ProfAlign name="L Vert">
40           <PVI>86.851025368678108 480.90190726337306</PVI>
41           <CircCurve length="400.05031145939404" radius="14951.86135766935">1633.409
42           <PVI>2359.5619445335005 501.37653555563065</PVI>
43           <Feature code="ProfAlign">
44             <Property label="style" value="Alignment\CL_Main" />
45           </Feature>
46         </ProfAlign>
47       </Profile>
48     </Alignment>
49   </Alignments>
```