Stringlines for Leica Stake Out

It is easiest to create the multiple stringlines needed for staking out using a Leica instrument from the Complex Elements (2D) in the delivered Corridor. But if the Corridor is out of date (there were updates to the terrain only) the complex elements can be generated from a few 3D Linear Elements in the delivered Terrain.

This document explains how a Construction Surveyor can export both corridor features (generated during corridor modeling from points on a template) and terrain features (when necessary) to LandXML geometry.

For a successful export to LandXML geometry, ensure that you are always selecting a Complex Element. Selecting a 3D Linear Element for export results in an empty output file. This is the reason why there are also steps below to show you how to generate Complex Elements from terrain features if modifications have been made to a terrain.

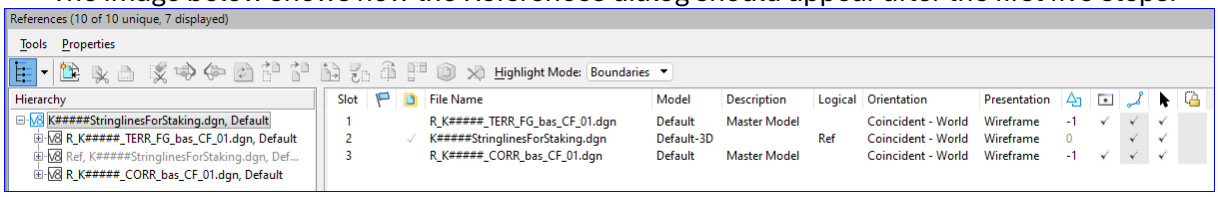
Design Deliverables: Stored in 1_Design\6_Civil_Data

Designers should deliver a Corridor Base Container File (R_K#####_CORR_bas_CF_##.dgn) and a Finish Grade Terrain Base Container File (R_K#####_TERR_FG_bas_CF_##.dgn) in the 6_Civil_Data folder. Construction Surveyors will attach these container files with live nesting and a depth of 1.

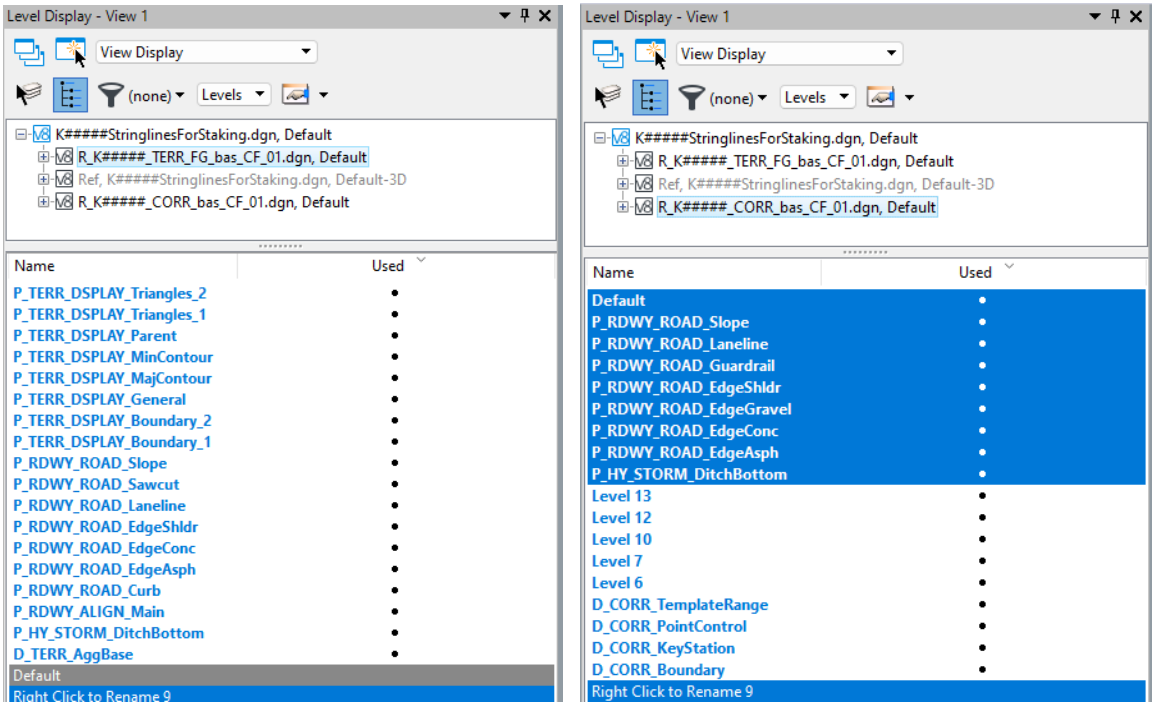
CORRIDOR: Use OpenRoads Designer or OpenSite Designer to create a LandXML file of multiple stringlines to upload for staking out

1. Create a new DGN file from a 2D seed in the Construction folders (work in the Default model only).
2. Attach a reference to the delivered TERRAIN container file (live nesting, depth=1).
3. Set As Active Terrain Model to create the Default-3D managed model in your active file.
4. Toggle off the display of the self-reference to the Default-3D model (it will interfere with your ability to easily select 2D elements).
5. Attach a reference to the delivered CORRIDOR container file (live nesting, depth=1).

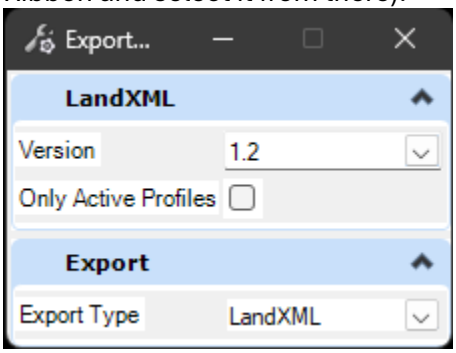
   The image below shows how the References dialog should appear after the first five steps.



6. Use the Level Display dialog to toggle off the display of all levels from the terrain container file (left image below – TERR container hierarchy is rolled up), and the Design and Numbered (D_ and Level #) levels from the corridor (right image below - CORR hierarchy is rolled up) to see only the corridor Complex Elements in View 1.

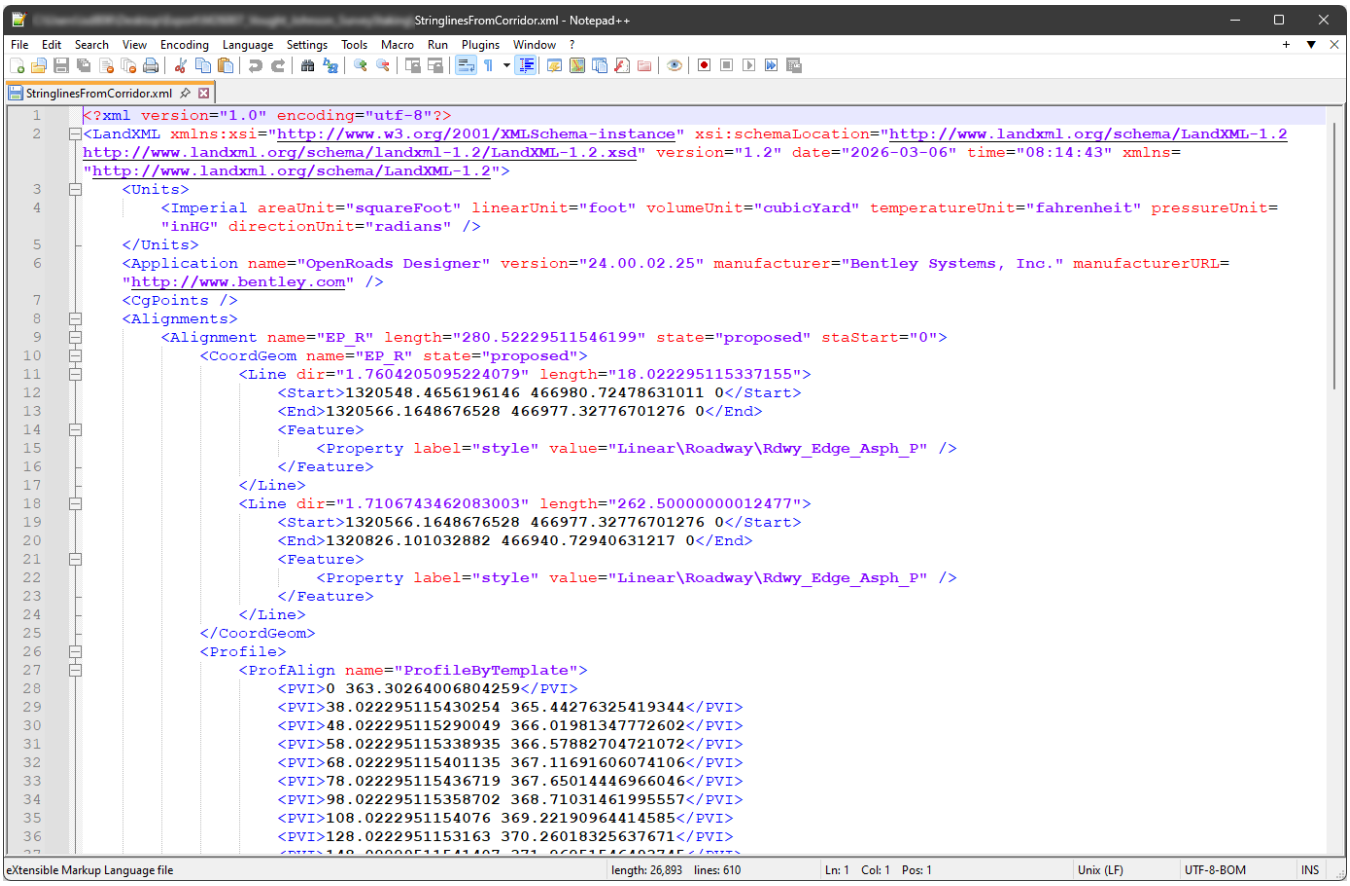


7. **Select** all the displayed graphics. (Drag your mouse in the Element Selection mode around all graphics; this might include points and lines that aren't complex elements, and that's okay).
8. Use the command **Export Geometry** (It is probably easiest to type "export" into the Search Ribbon and select it from there).



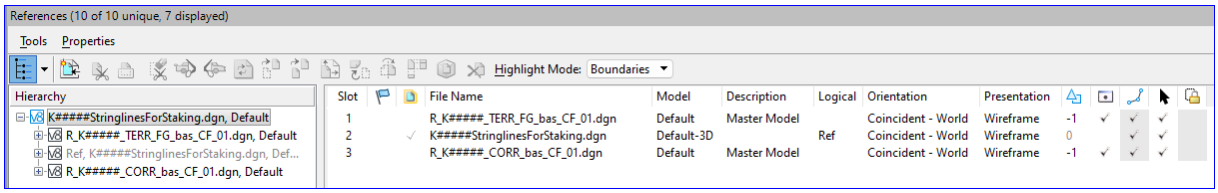
9. Left click in View 1 to accept the heads-up prompts:
    a. Export Type: LandXML
    b. The selected elements
    c. LandXML Version (doesn't matter which one)
    d. Only Active Profiles: **No** (this will export all profiles, even if they aren't the active one, which is a good setting)
10. When the Export to LandXML dialog opens - navigate to a folder and save the data with a name like "StringlinesFromCorridor.xml" (in PW, use the 0_Temp folder and No Wizard).

Only Complex Elements will be exported, so no worries about having selected stray lines or points. You can open “StringlinesFromCorridor.xml” with NotePad++ to view the alignments.

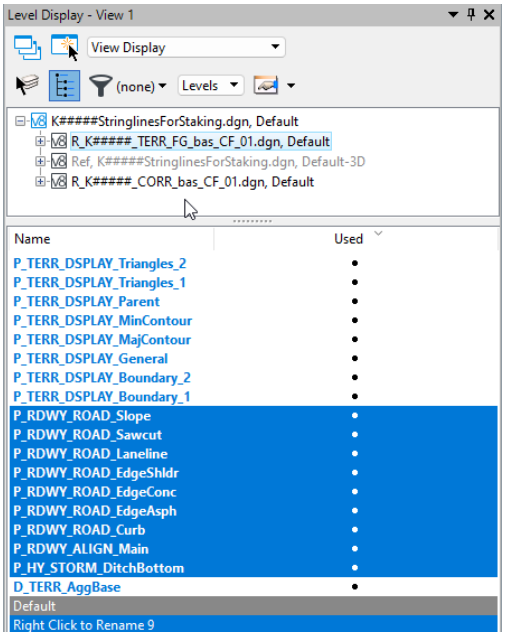


TERRAIN: Use OpenRoads Designer or OpenSite Designer to create a LandXML file of just a few stringlines to upload for staking out

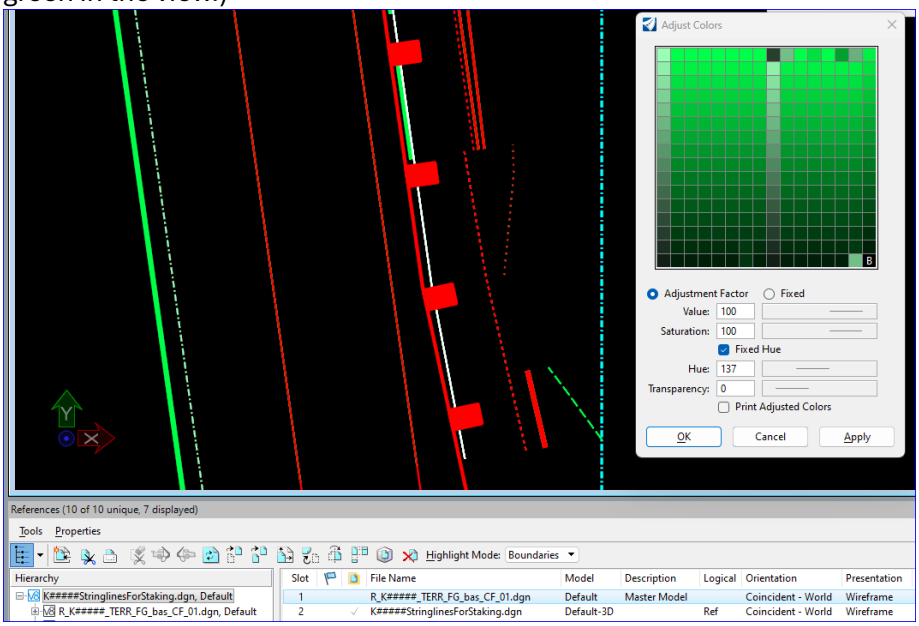
Use the same file set up for the CORRIDOR process (steps 1-5 above); you can also just use the same DGN file!



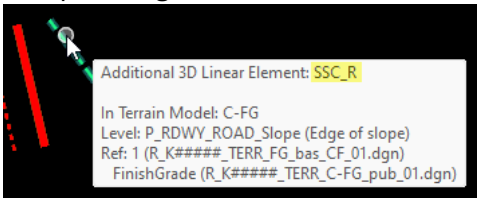
6. Use the Level Display dialog to toggle on the display of P_RDWY_ROAD_ levels from the terrain container file (image below) to see the features coming from the terrain.



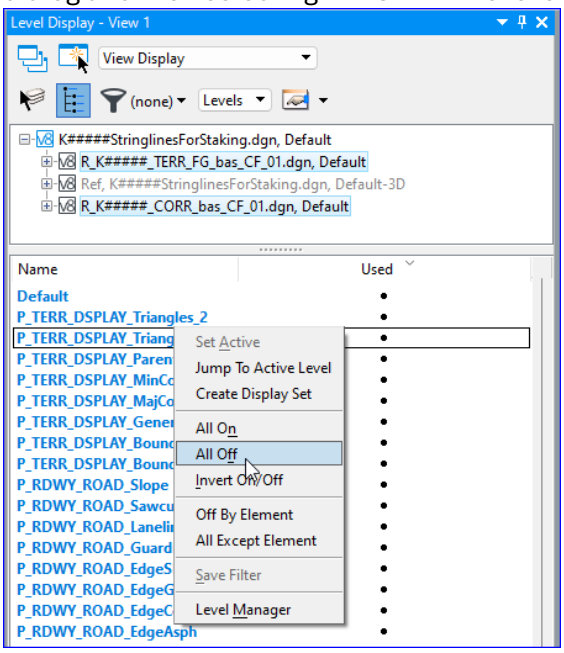
7. Identify which features have been modified in the TERRAIN, but not in the CORRIDOR (I like to use References>Adjust Colors... on the terrain reference, toggle on "Fixed Hue" and slide the Hue to a green. Now anything that was modified in the terrain visually sticks out as green in the view.)



8. With the Element Selection tool, hover your mouse cursor over a modified feature from the terrain and note the name(s). The pop-up banner identifies it as "Additional 3D Linear Element: feature name" (see yellow highlight in image below). 3D Linear Elements cannot be exported to LandXML using the Export Geometry command. The next steps will explain how to create a 2D Complex Element (with a profile) in the active DGN that can be exported for uploading to a Leica instrument.



9. Use the command **Plan By 3D Element** (It's probably easiest to type "plan" into the Search Ribbon and select it from there, but it is on the Model Detailing tab in the 3D Tools>3D Elements group).
10. In the Tool Settings dialog, select the appropriate Feature Definition for the first feature that was modified in the terrain and give it a name – this is the name the feature will have in the exported data. (For example, the Additional 3D Linear Element is named SSC_R, so I used Feature Definition>Linear>Roadway>Rdwy_SlopeLn_Cut and entered SSC_R for the name and pressed the <Enter> key.)
11. Left click on an element from the terrain reference that identifies as "Additional 3D Linear Element".
12. Run through steps 10 and 11 until you have created Complex Elements for all the features that were modified or added to the published terrain.
13. Turn off the display of all used levels coming from all references (but not in the active file) by highlighting the two rolled up container files in the reference hierarchy of the Level Display dialog and then selecting "All Off" in the level display control box.



14. **Select** all the active graphics.
15. Use the command **Export Geometry**.
16. Left click in View 1 to accept the heads-up prompts:
    a. Export Type: LandXML
    b. The selected elements
    c. LandXML Version (doesn't matter which one)
    d. Only Active Profiles: **No** (this will export all profiles, even if they aren't the active one, which is a good setting)
17. When the Export to LandXML dialog opens - navigate to a folder and save the data with a name like "StringlinesFromTerrain.xml" (in PW, use the 0_Temp folder and No Wizard).

Note: "StringlinesFrom*Corridor*.xml" may have features that should be superseded by the features in "StringlinesFrom*Terrain*.xml".

These are text files that can be edited using NotePad++ to remove outdated features or to merge the contents into one LandXML for uploading.