V8*i* Civil Update

Derricke Gray

GEOPAK Product Manager

Bentley
Sustaining Infrastructure

GEOPAK V8*i*

Posted ***11/18/2008***

Certified With:

MicroStation 08.11.05.17

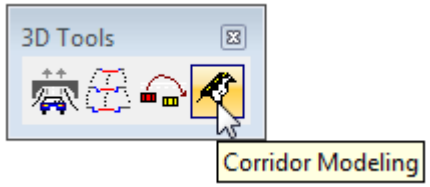
ProjectWise 08.11.05.16

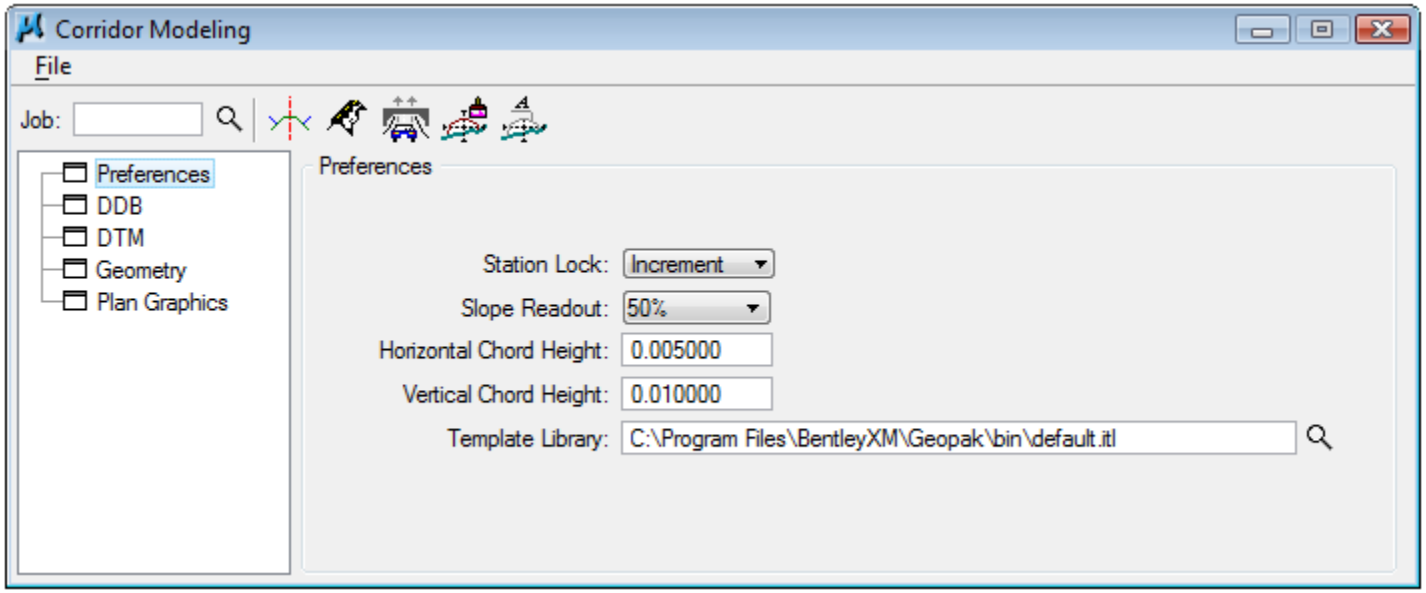
Operating System: Windows XP, Vista

Corridor Modeling

Corridor Modeling Application

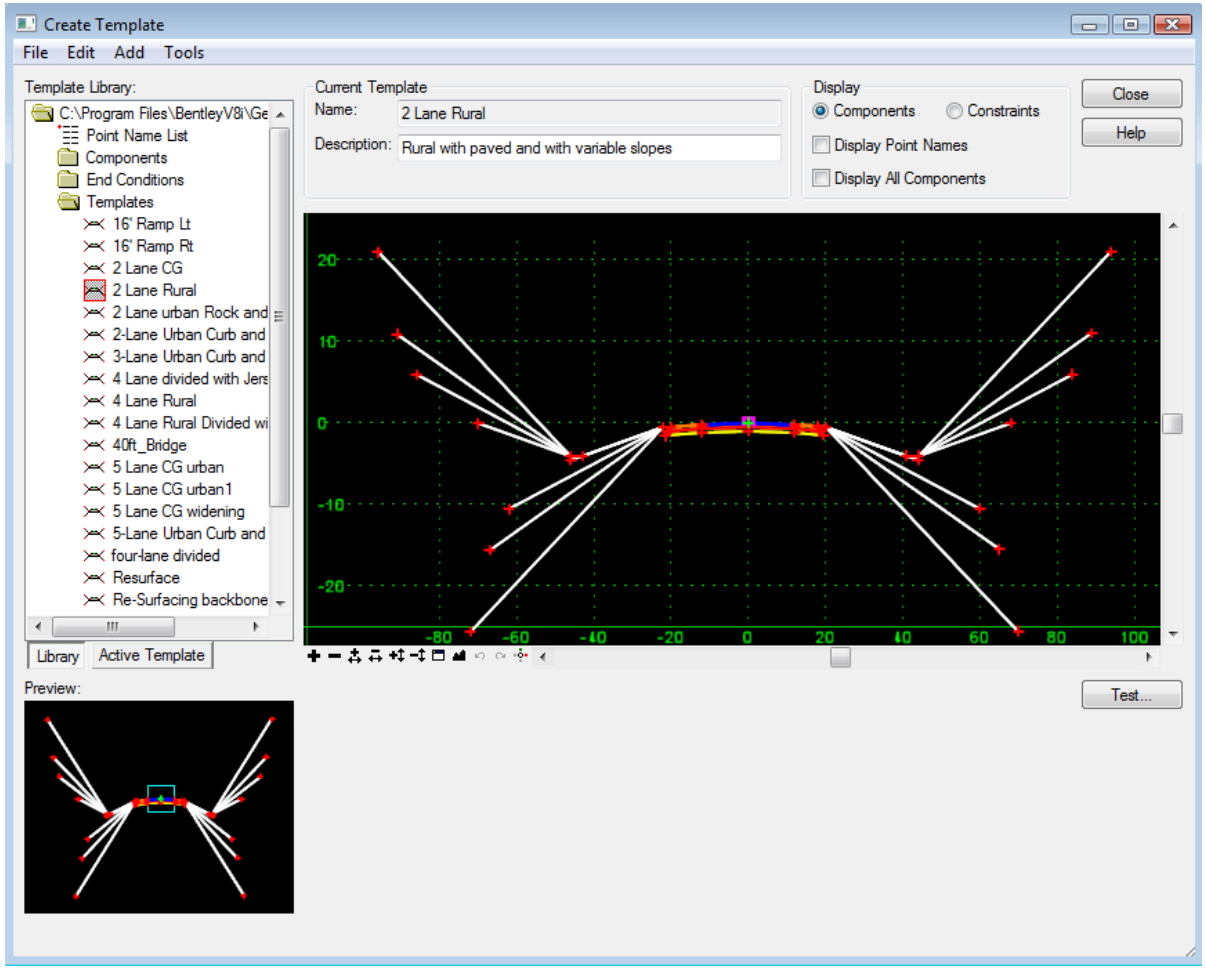
Applications > Road > 3D Tools > Corridor Modeling





Corridor Modeling

Create Template



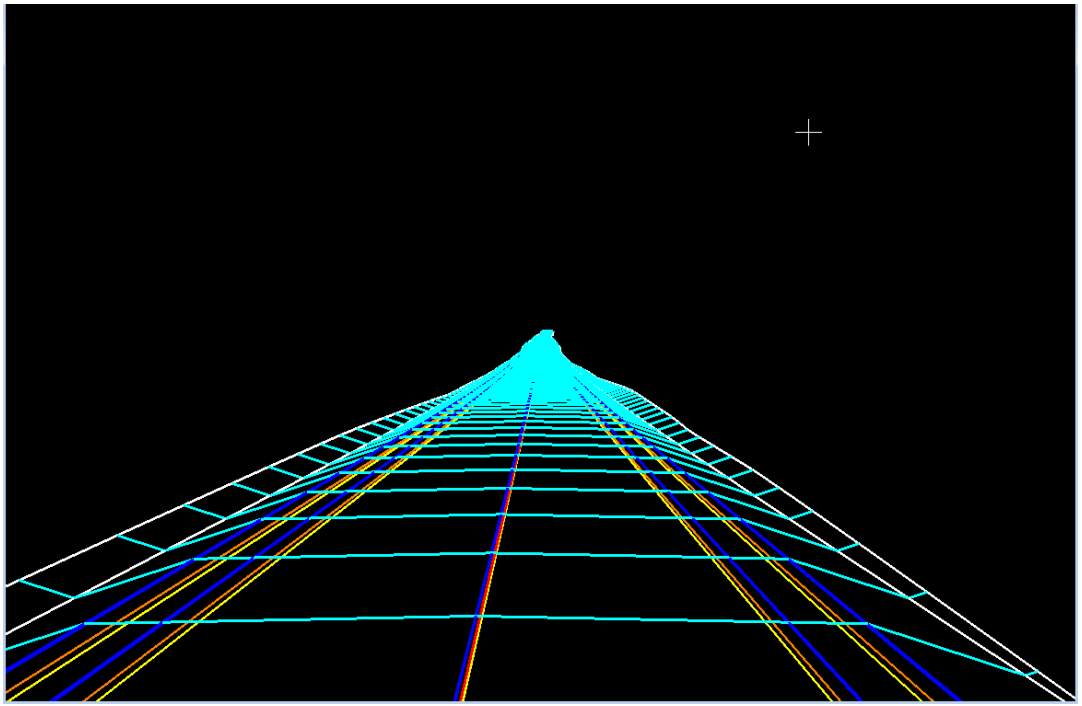
Corridor Modeling

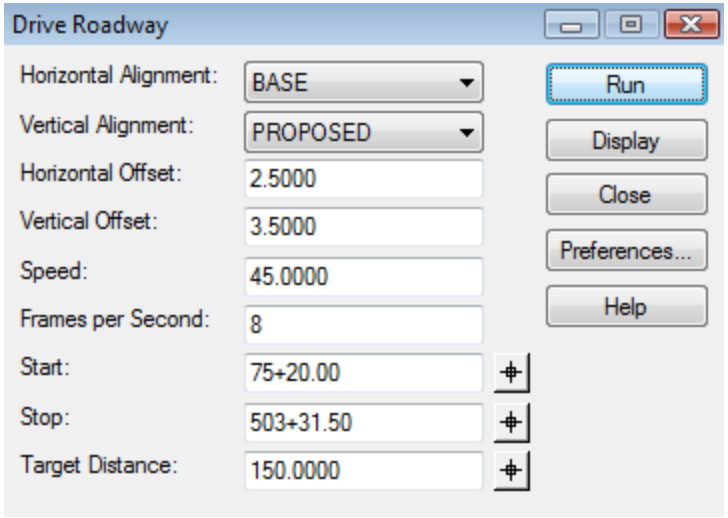
Roadway Designer

NEW Applications

Drive Roadway

This application allows us to ‘drive’ down our model using a specified camera location and speed.

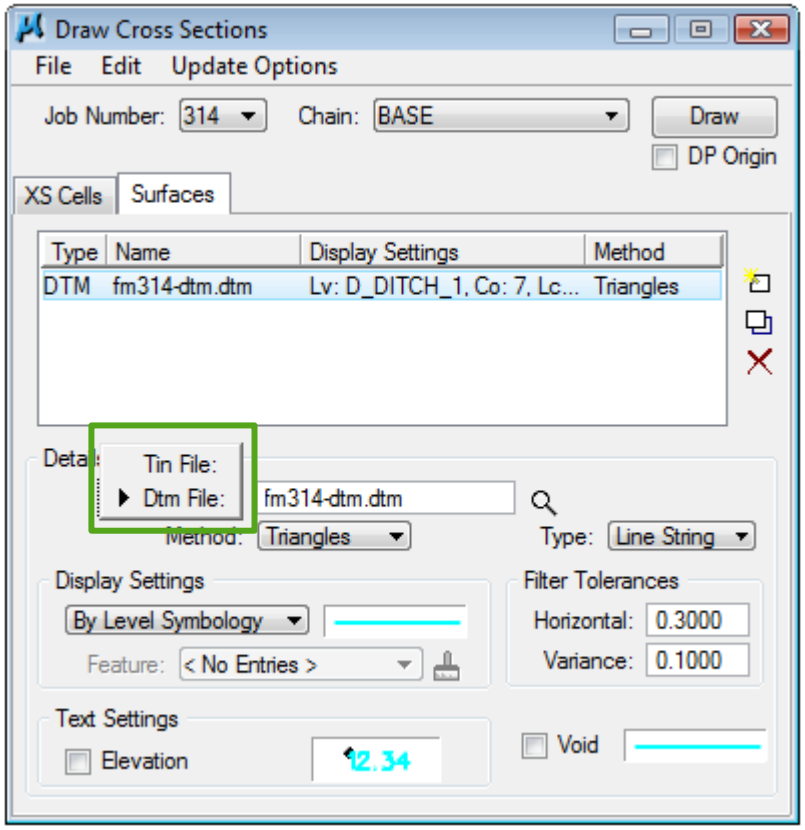




Bentley

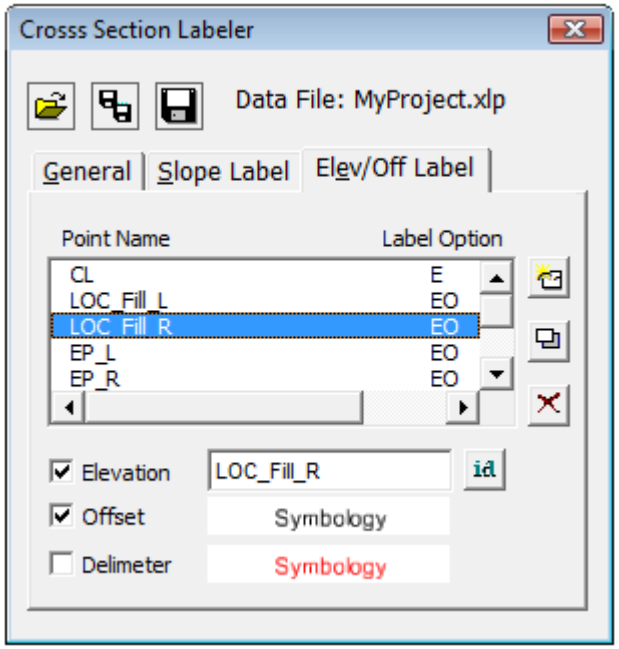
Corridor Modeling

Draw Cross Sections Enhancements



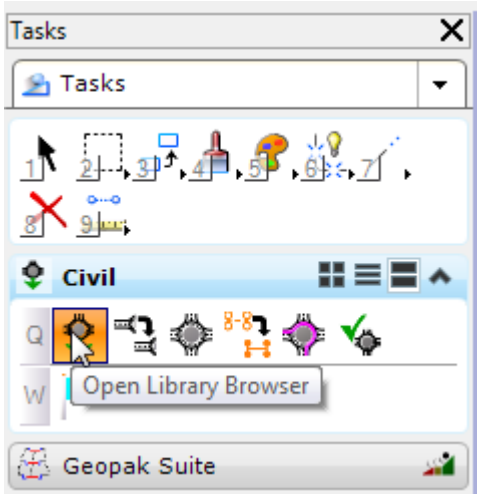
Corridor Modeling

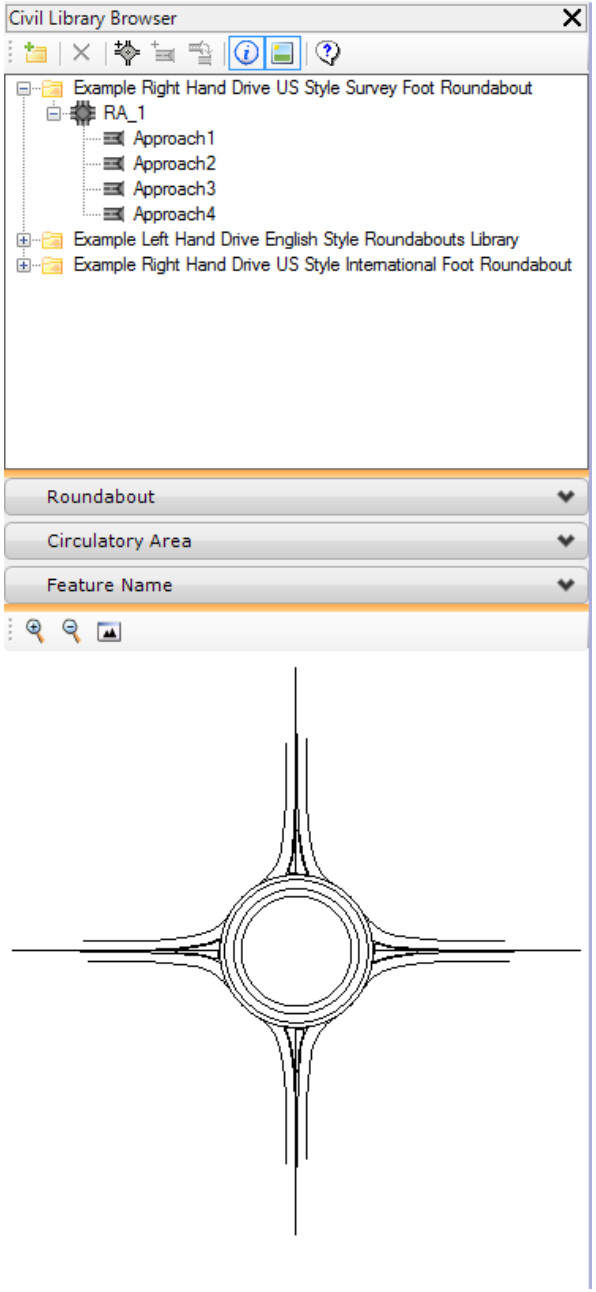
Cross Section Labeler

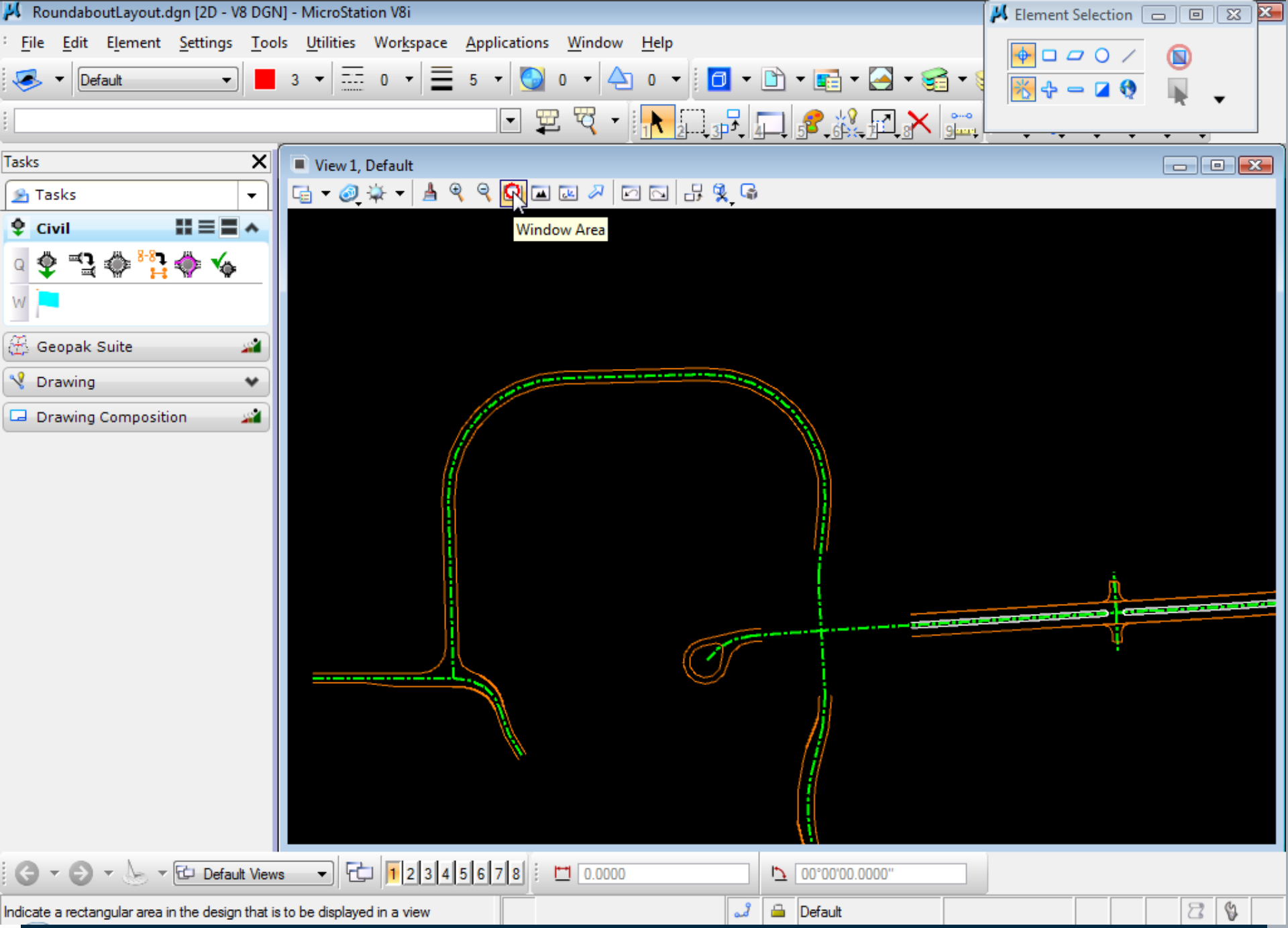


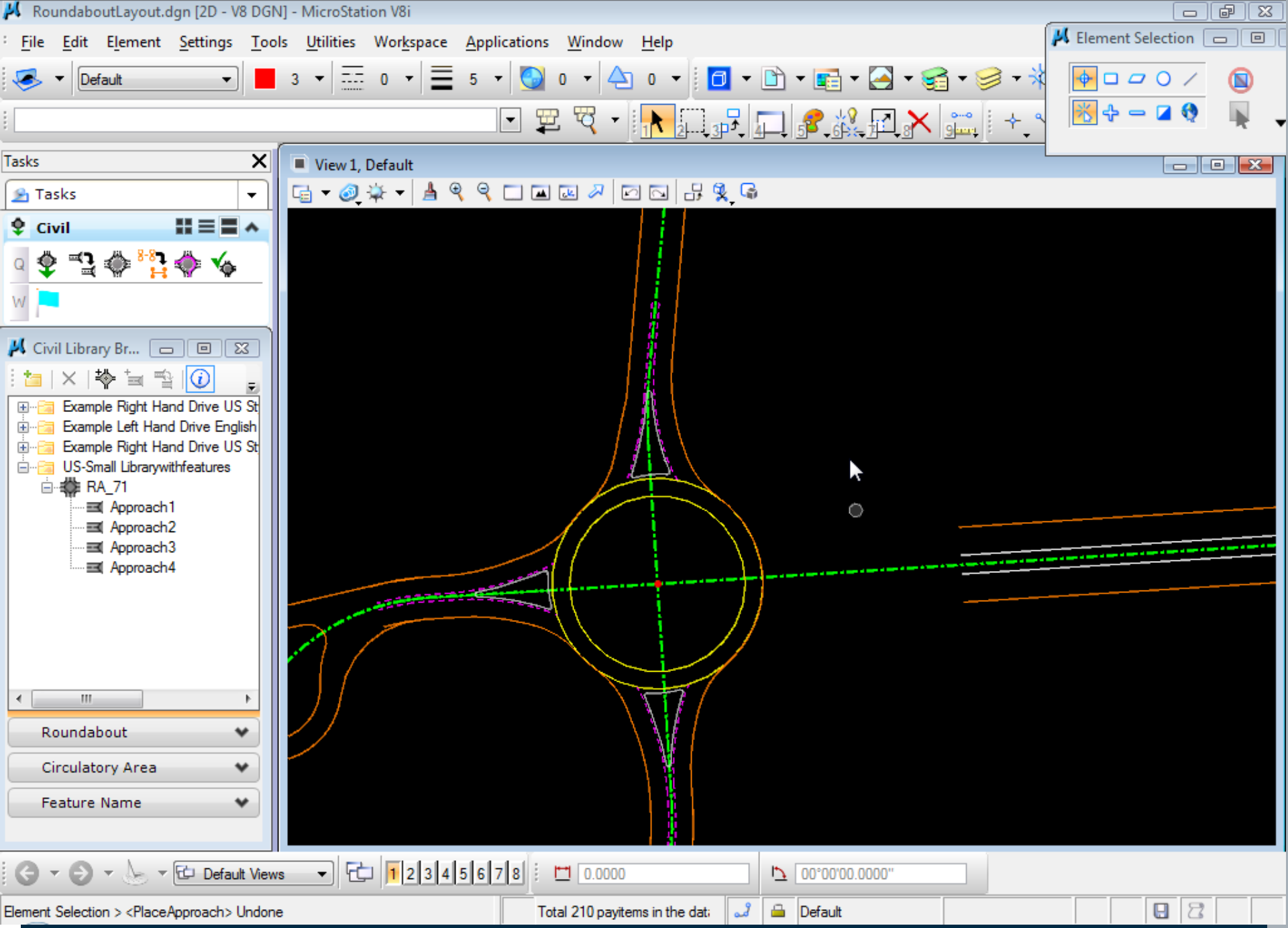
GEOPAK V8i

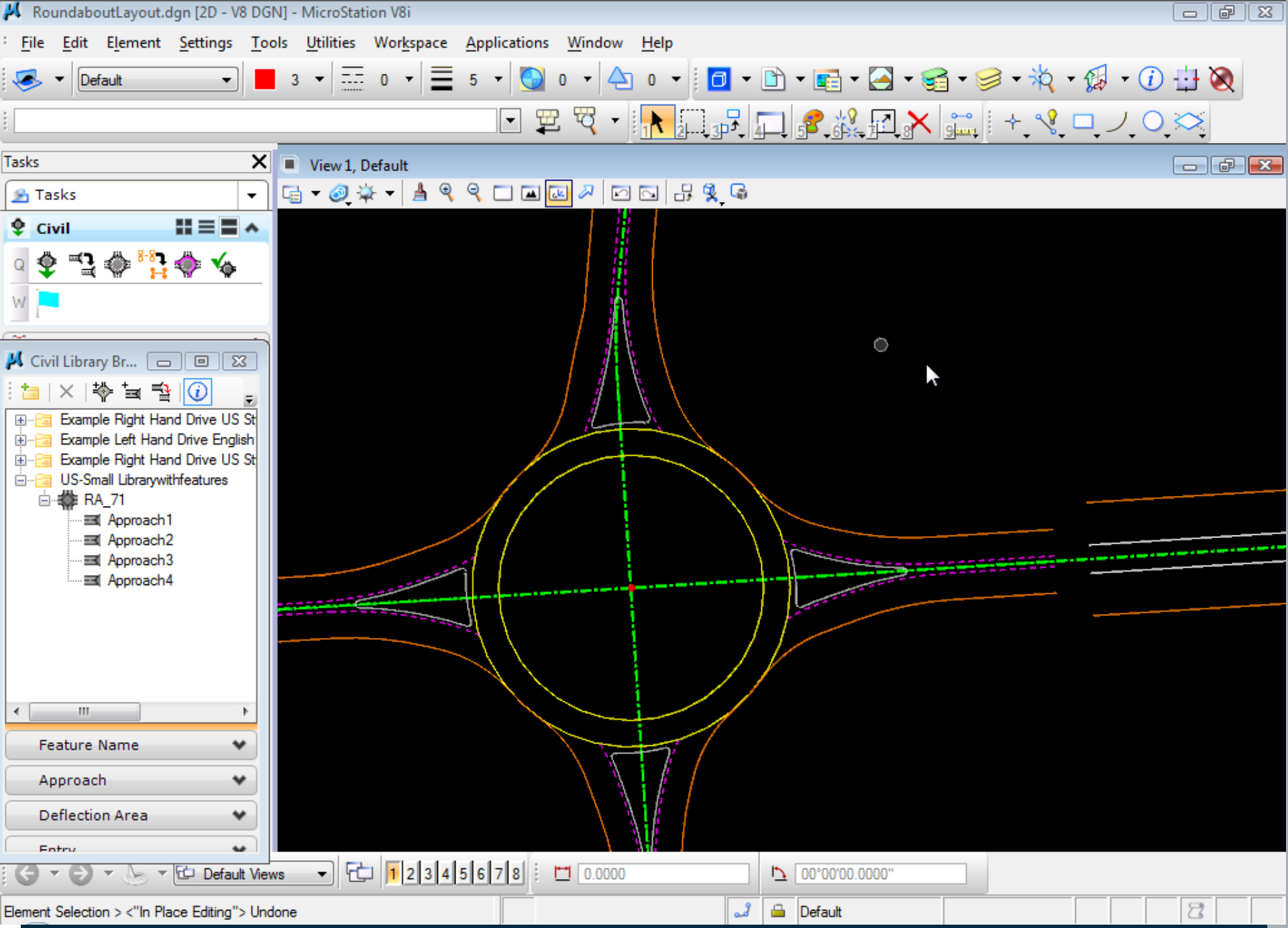
Roundabouts

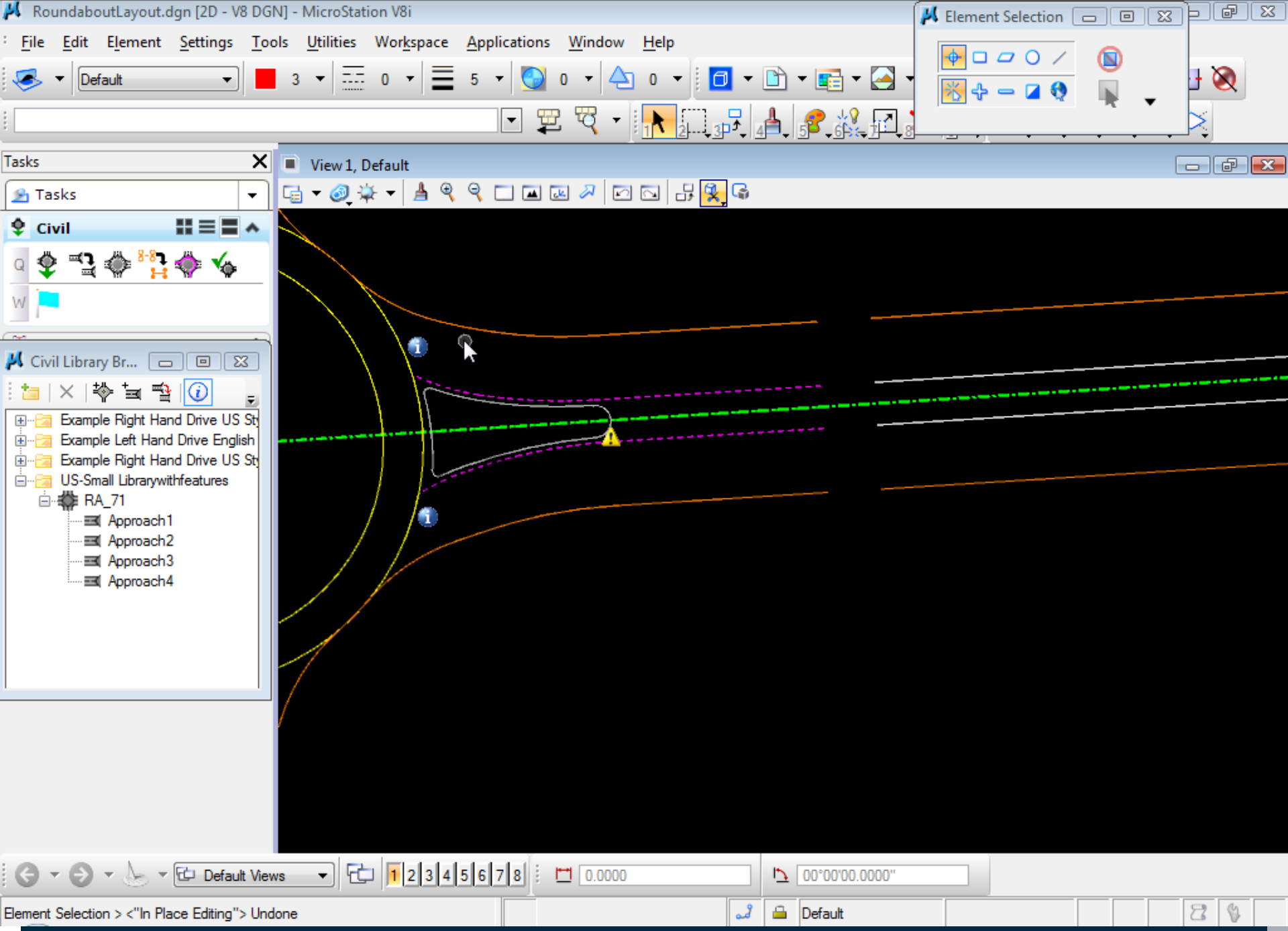





RoundaboutLayout.dgn [2D - V8 DGN] - MicroStation V8i
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Element Selection
Tasks
Civil
Geopak Suite
Drawing
Drawing Composition
View 1, Default
Window Area
Default Views
Indicate a rectangular area in the design that is to be displayed in a view
Default


RoundaboutLayout.dgn [2D - V8 DGN] - MicroStation V8i
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Element Selection
Tasks
Civil
Civil Library Br...
Example Right Hand Drive US St
Example Left Hand Drive English
Example Right Hand Drive US St
US-Small Librarywithfeatures
RA_71
Approach1
Approach2
Approach3
Approach4
Roundabout
Circulatory Area
Feature Name
View 1, Default
Default Views
Element Selection > <PlaceApproach> Undone
Total 210 payitems in the dat
Default

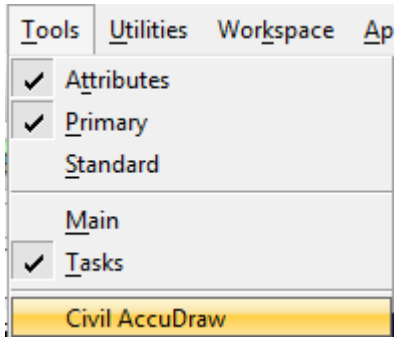

RoundaboutLayout.dgn [2D - V8 DGN] - MicroStation V8i
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Default
Tasks
Civil
Civil Library Br...
Example Right Hand Drive US St
Example Left Hand Drive English
Example Right Hand Drive US St
US-Small Librarywithfeatures
RA_71
Approach1
Approach2
Approach3
Approach4
Feature Name
Approach
Deflection Area
View 1, Default
Default Views
0.0000
00°00'00.0000"
Element Selection > <"In Place Editing"> Undone
Default


RoundaboutLayout.dgn [2D - V8 DGN] - MicroStation V8i
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Element Selection
Tasks
Civil
Civil Library Br...
Example Right Hand Drive US Sty
Example Left Hand Drive English
Example Right Hand Drive US Sty
US-Small Librarywithfeatures
RA_71
Approach1
Approach2
Approach3
Approach4
View 1, Default
Default Views
0.0000
00°00'00.0000"
Element Selection > <"In Place Editing"> Undone
Default

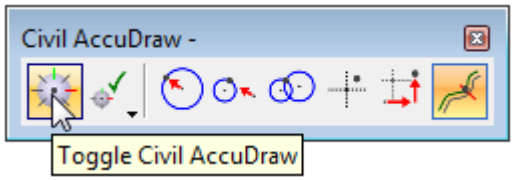
GEOPAK V8i

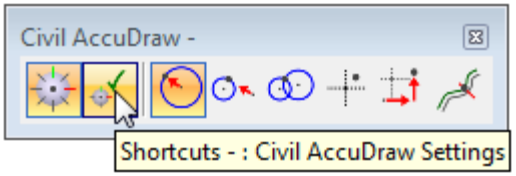
Civil AccuDraw

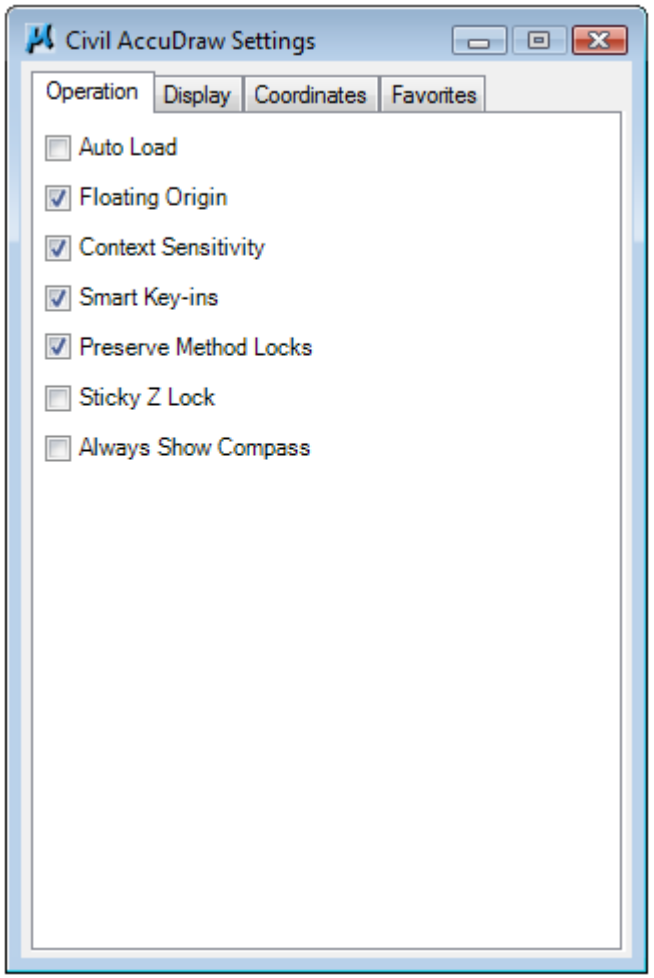
Tools > AccuDraw



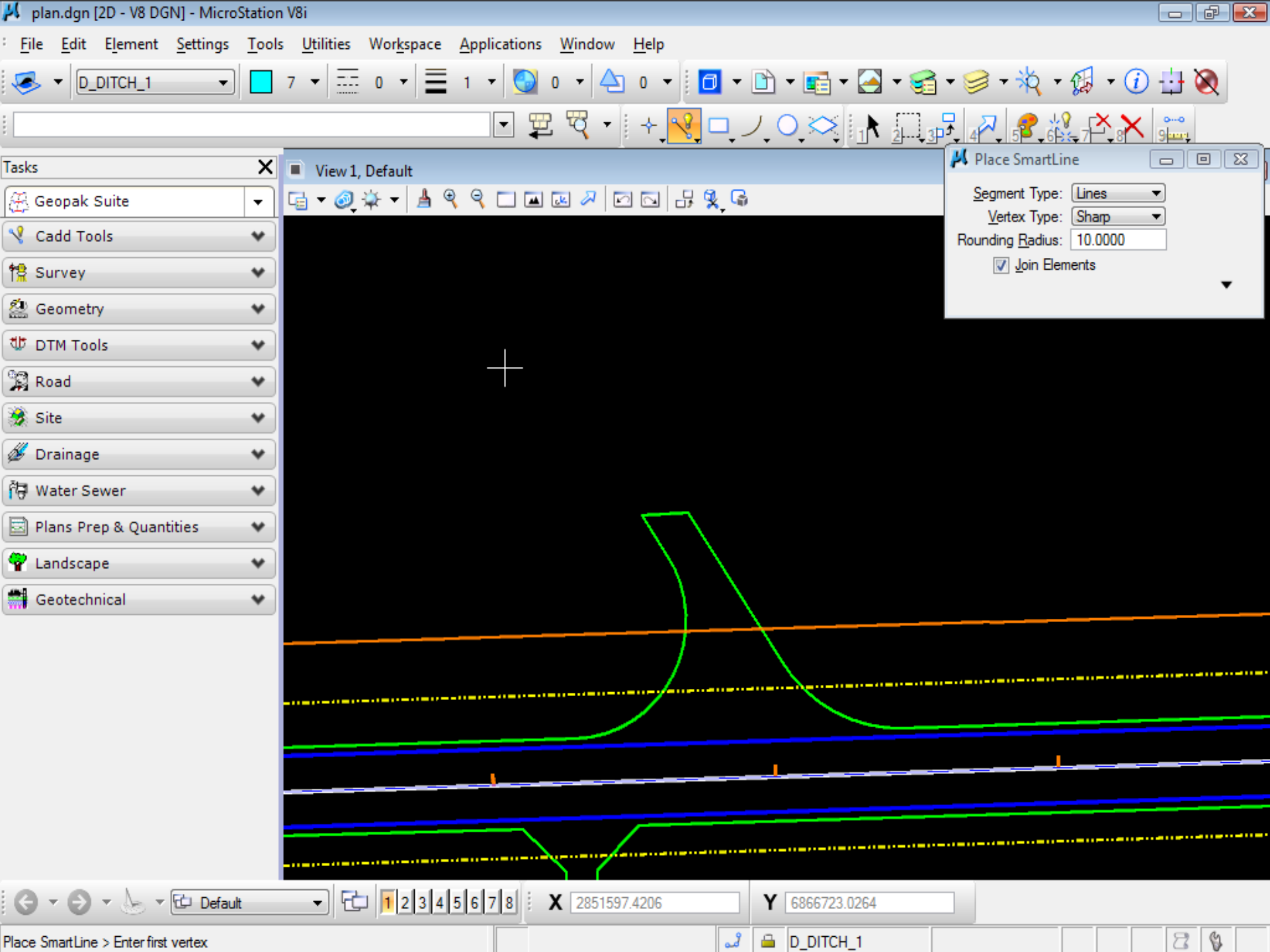
Note: OFF by default







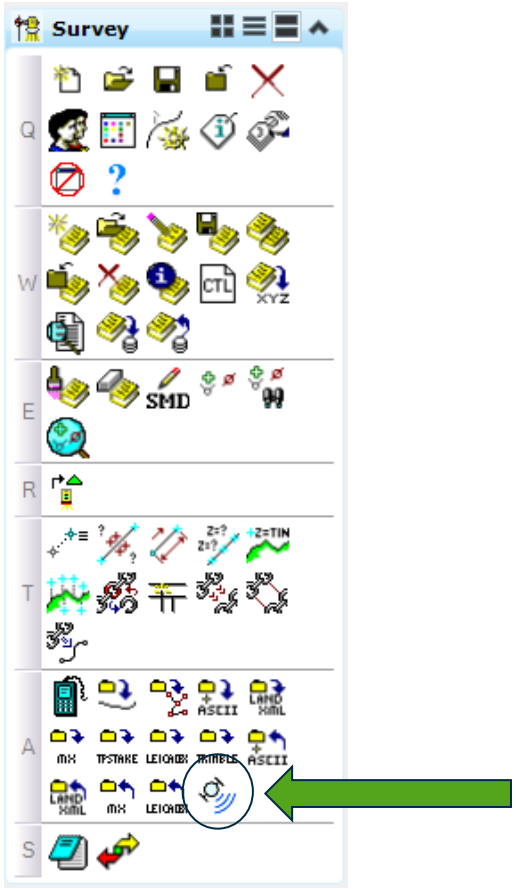
Bentley

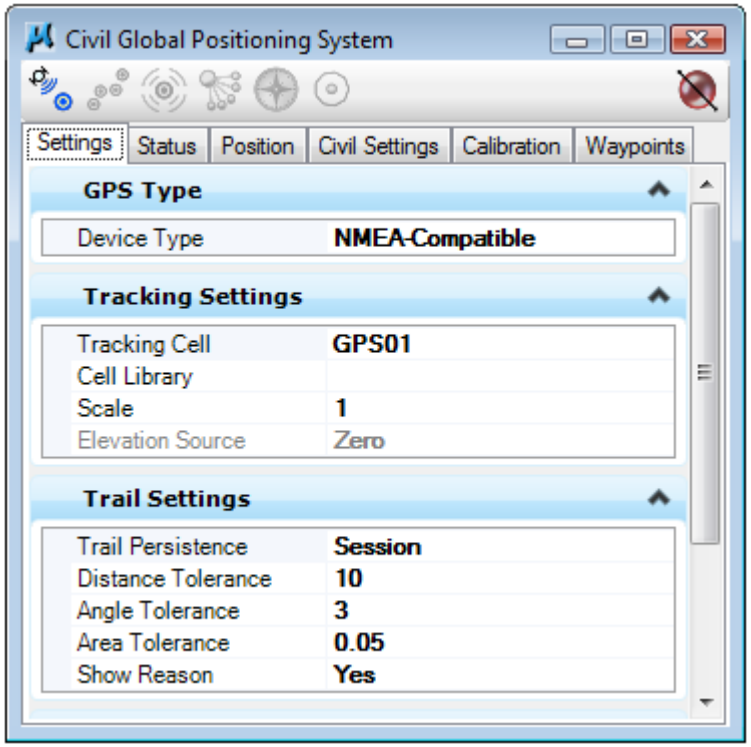

plan.dgn [2D - V8 DGN] - MicroStation V8i
File Edit Element Settings Tools Utilities Workspace Applications Window Help
D_DITCH_1
Tasks
Geopak Suite
Cadd Tools
Survey
Geometry
DTM Tools
Road
Site
Drainage
Water Sewer
Plans Prep & Quantities
Landscape
Geotechnical
View 1, Default
Place SmartLine
Segment Type: Lines
Vertex Type: Sharp
Rounding Radius: 10.0000
Join Elements
Default
X 2851597.4206
Y 6866723.0264
Place SmartLine > Enter first vertex
D_DITCH_1

GEOPAK V8i

Civil GPS

MicroStation Tools > Geographic > Global Positioning System (GPS)

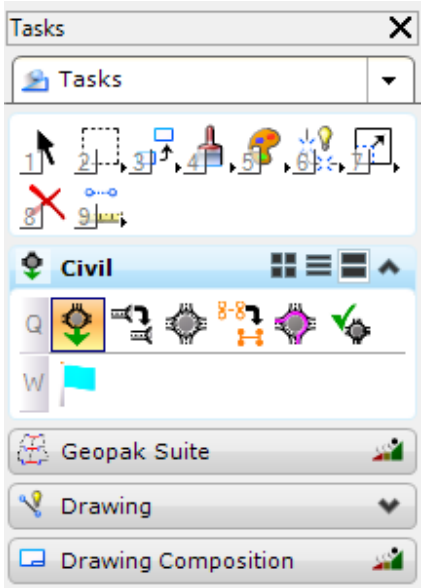


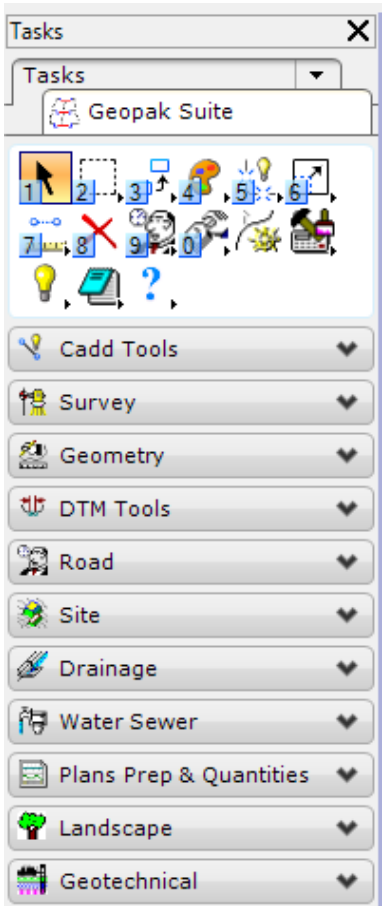


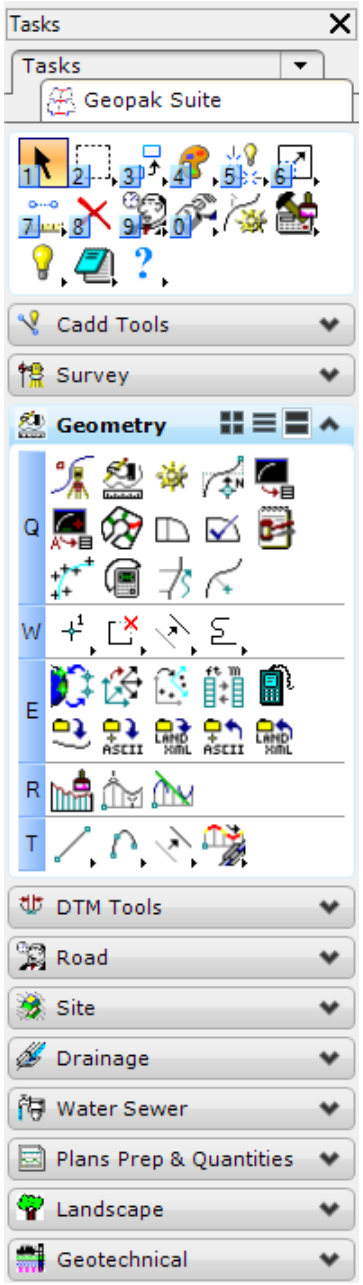
Bentley

GEOPAK V8i

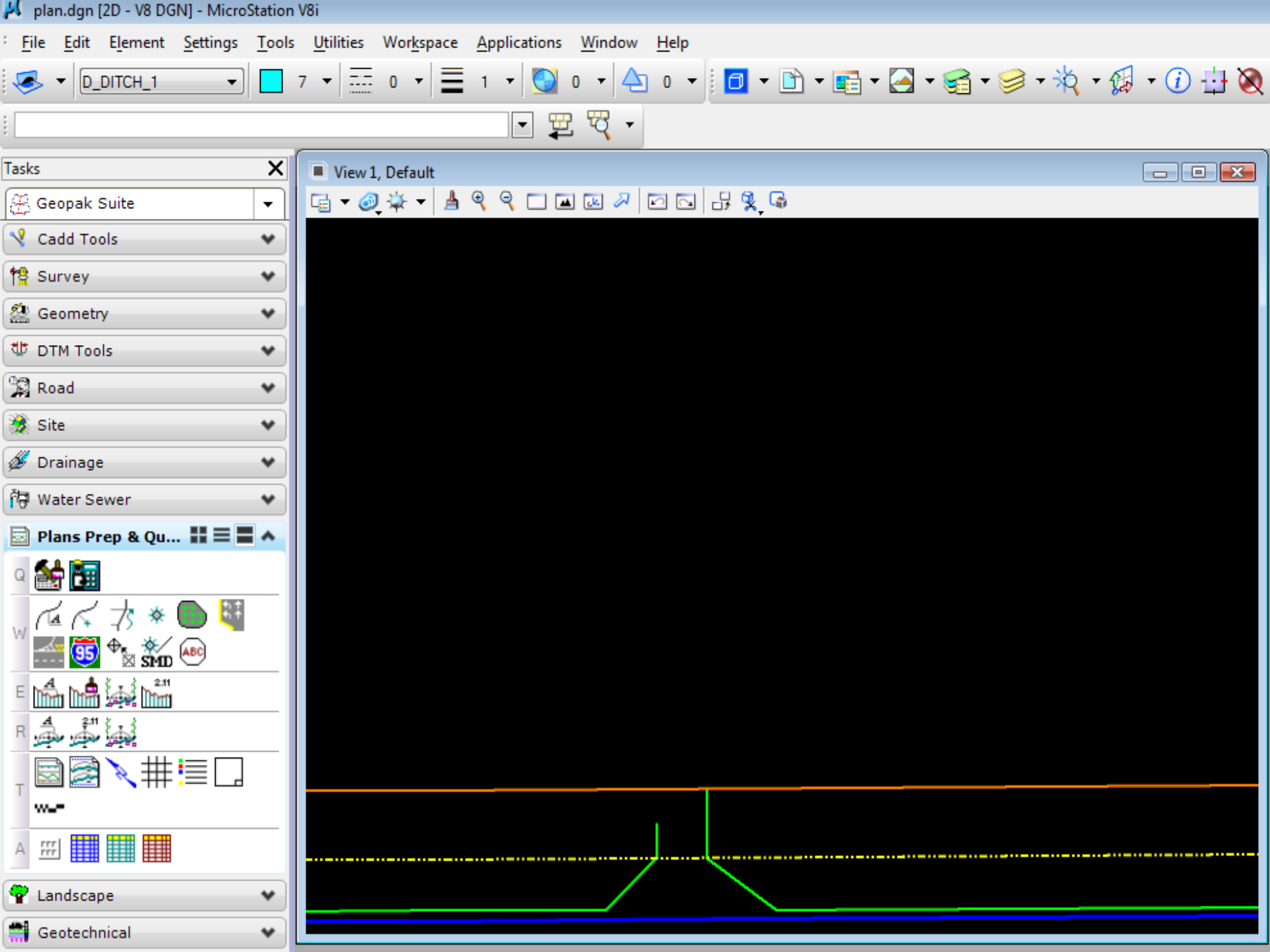
Added Task Navigation tools.







Bentley

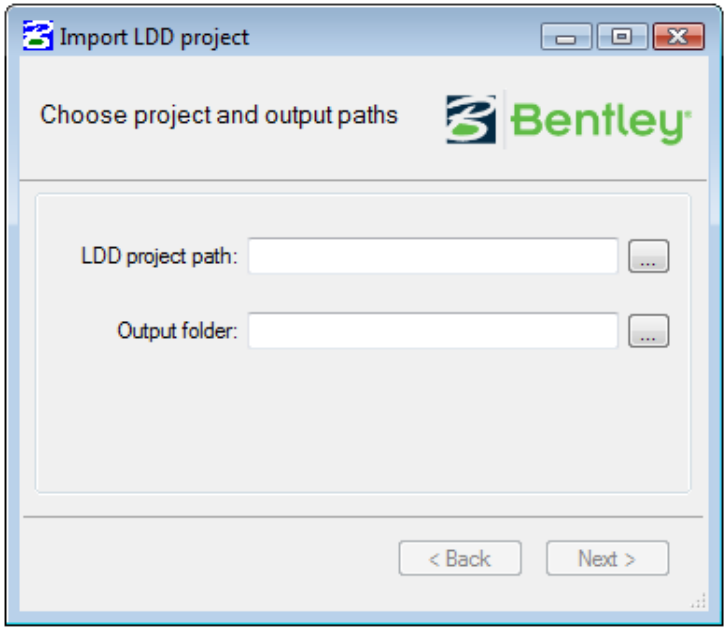

plan.dgn [2D - V8 DGN] - MicroStation V8i
File Edit Element Settings Tools Utilities Workspace Applications Window Help
D_DITCH_1
Tasks
Geopak Suite
Cadd Tools
Survey
Geometry
DTM Tools
Road
Site
Drainage
Water Sewer
Plans Prep & Qu...
Landscape
Geotechnical
View 1, Default

GEOPAK V8i

LDD Import

This is a standalone program (UILauncher.exe) that is accessed from the GEOPAK bin\LDD folder.

This application translates a Land Desktop project into a LandXML file that can be imported into GEOPAK.

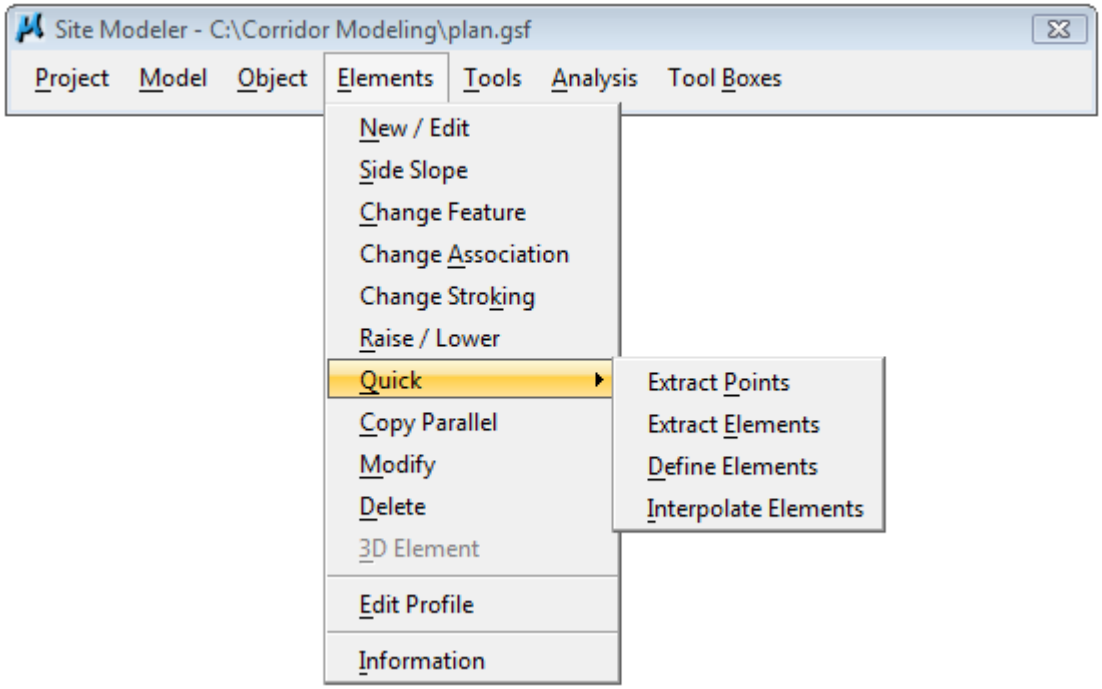


Bentley

GEOPAK V8i

Site

Added a series of Quick Extract tools to Modeler to allow the user to extract graphical information from a CAD drawing to create Site elements and build Objects.

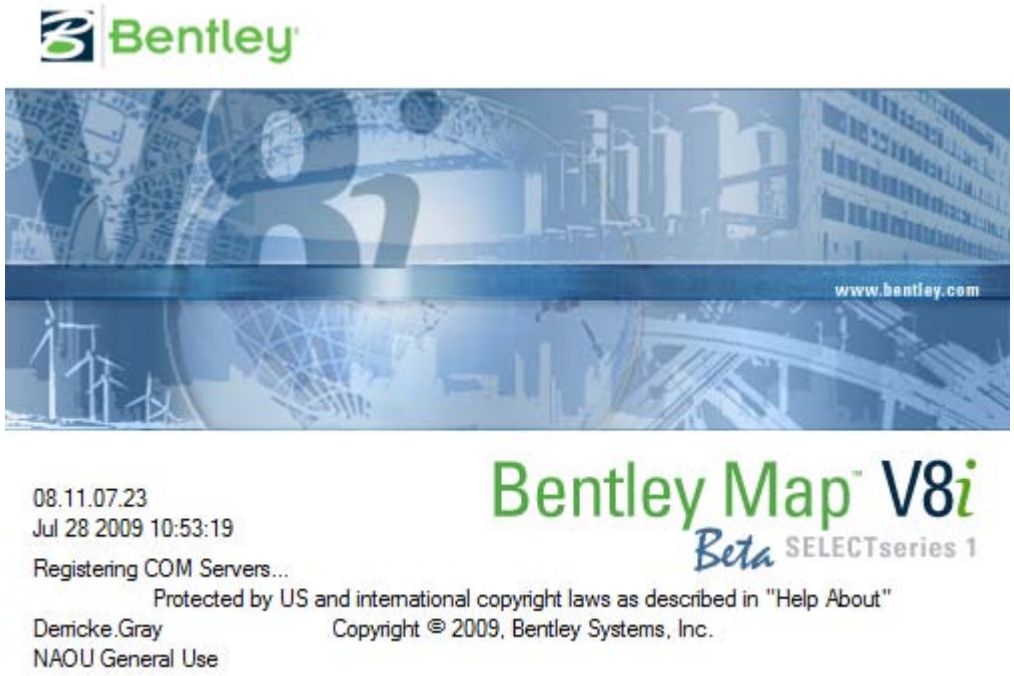


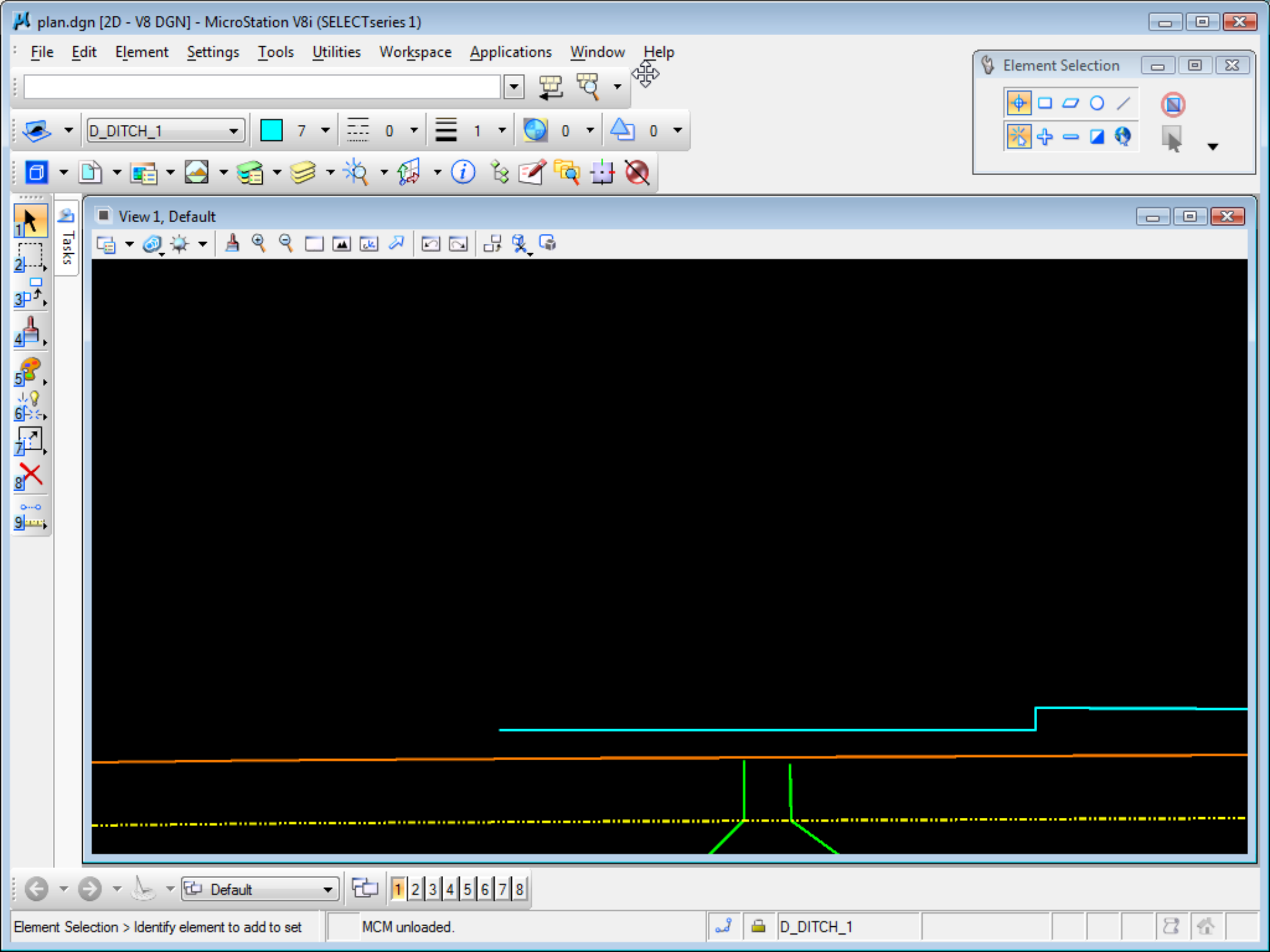
What's Next?

- **GEOPAK V8*i* (SELECTseries 1)**
- **08.11.07.xx**

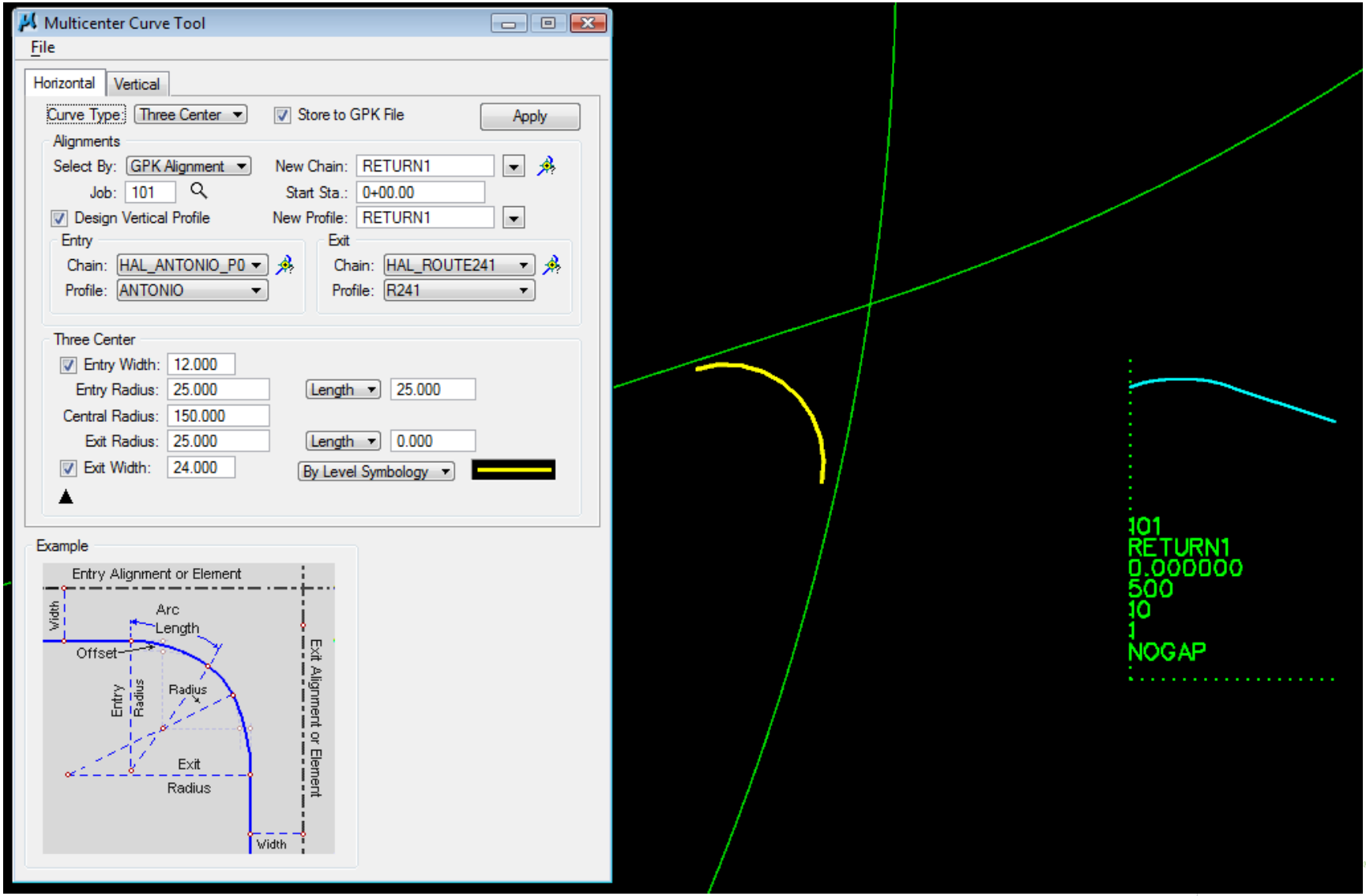
Bentley MAP

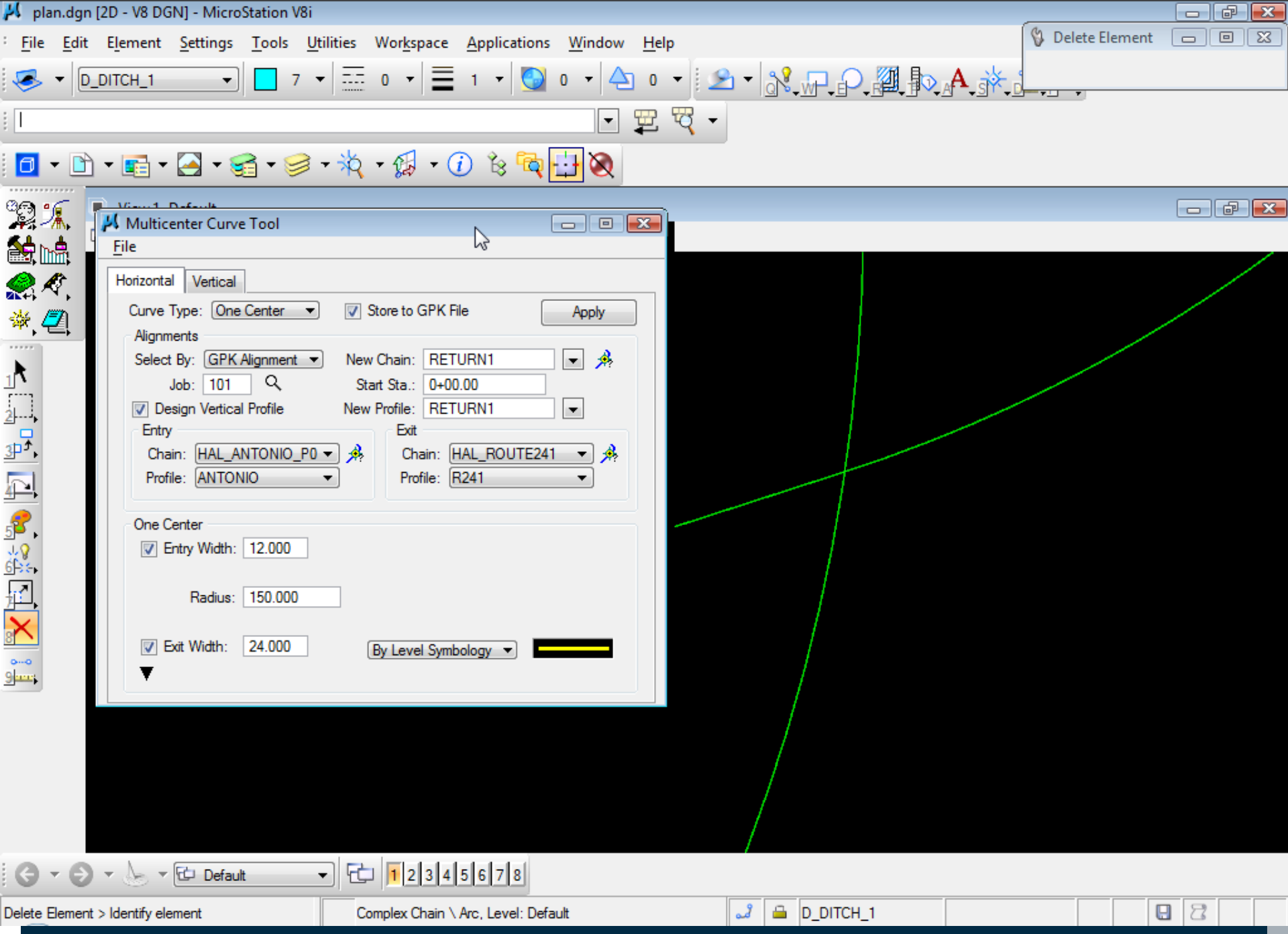
- Bentley MAP is now included with the GEOPAK Suite install.




plan.dgn [2D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Element Selection
D_DITCH_1
7
0
1
0
0
View 1, Default
Tasks
Default
1 2 3 4 5 6 7 8
Element Selection > Identify element to add to set
MCM unloaded.
D_DITCH_1

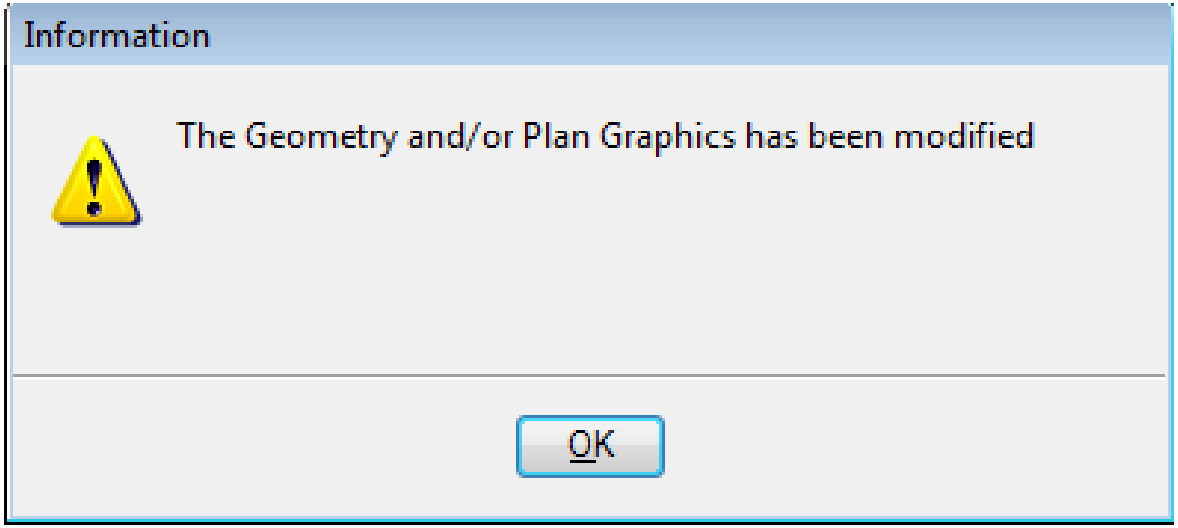
Multicenter Curve Tool

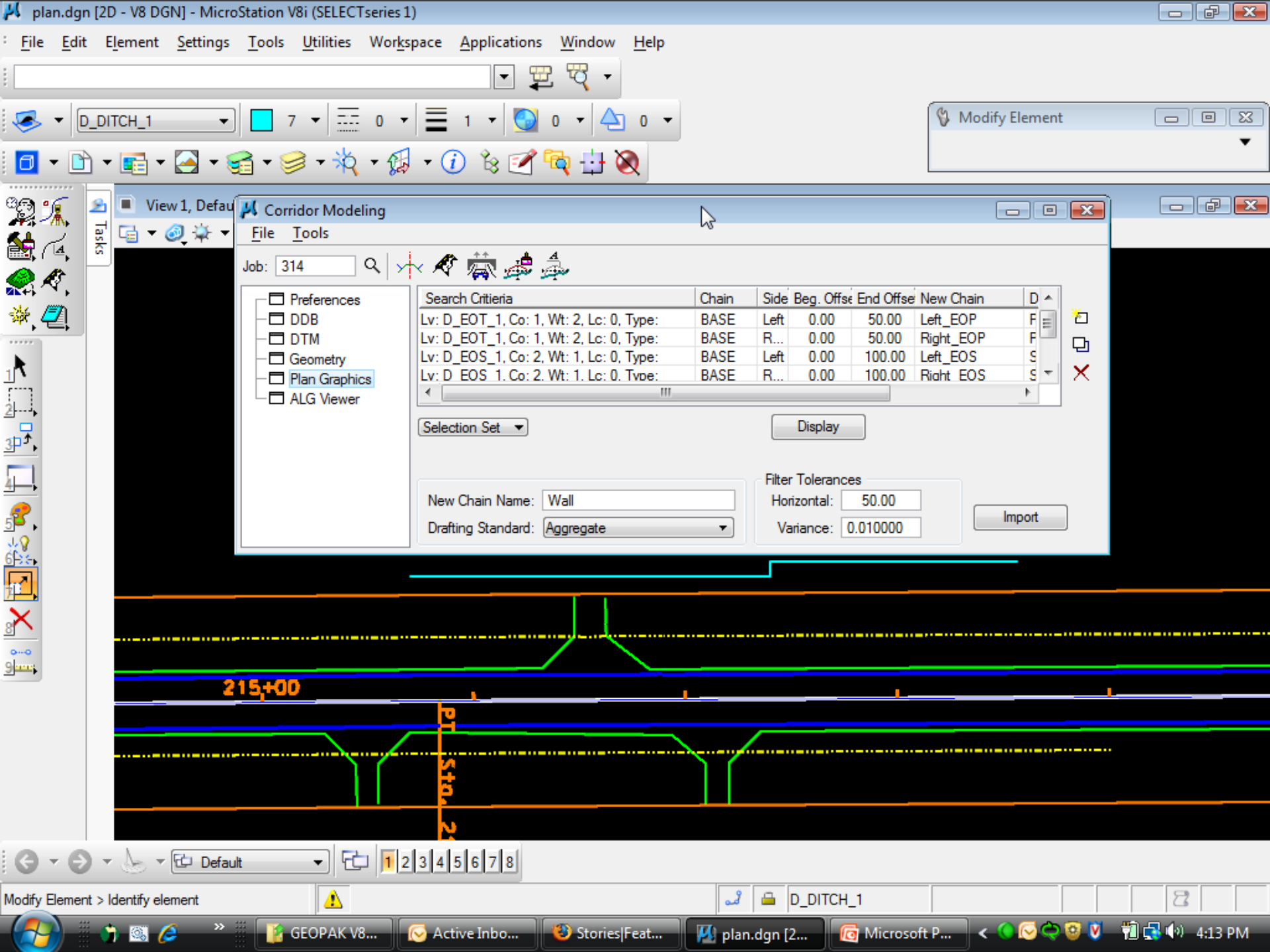



plan.dgn [2D - V8 DGN] - MicroStation V8i
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Delete Element
D_DITCH_1
Multicenter Curve Tool
File
Horizontal
Vertical
Curve Type: One Center
Store to GPK File
Apply
Alignments
Select By: GPK Alignment
New Chain: RETURN1
Job: 101
Start Sta.: 0+00.00
Design Vertical Profile
New Profile: RETURN1
Entry
Chain: HAL_ANTONIO_P0
Profile: ANTONIO
Exit
Chain: HAL_ROUTE241
Profile: R241
One Center
Entry Width: 12.000
Radius: 150.000
Exit Width: 24.000
By Level Symbology
Default
1 2 3 4 5 6 7 8
Delete Element > Identify element
Complex Chain \ Arc, Level: Default
D_DITCH_1

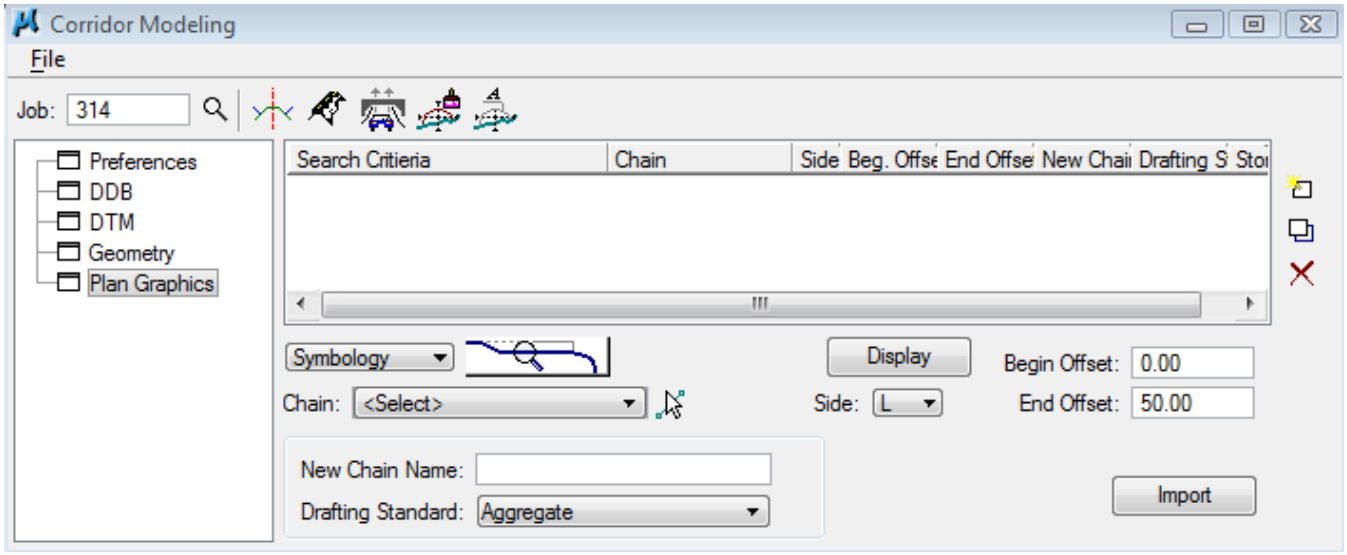
Smart Update Prompt

- Upon opening the CM application, the alignments and profiles in the GPK as well as the plan graphics elements will be checked against those residing in the ALG. If changes have been made then the following prompt will be issued:

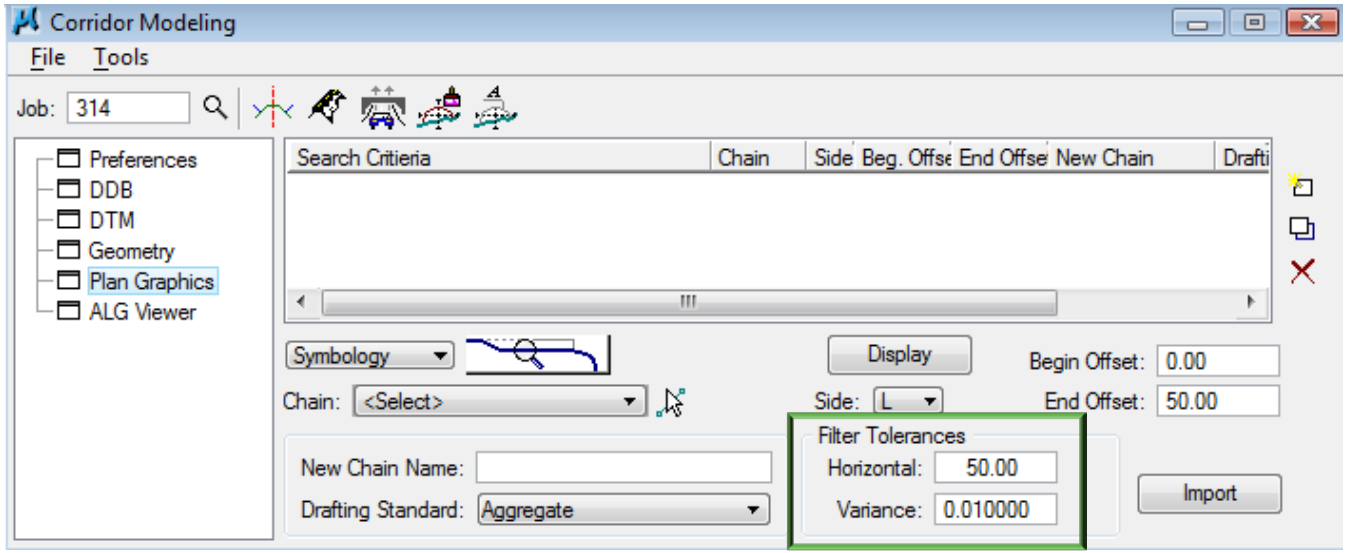



plan.dgn [2D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
D_DITCH_1
Modify Element
View 1, Defau
Tasks
Corridor Modeling
File Tools
Job: 314
Preferences
DDB
DTM
Geometry
Plan Graphics
ALG Viewer
Search Criteria
Chain
Side
Beg. Offse
End Offse
New Chain
Lv: D_EOT_1, Co: 1, Wt: 2, Lc: 0, Type:
BASE
Left
0.00
50.00
Left_EOP
Lv: D_EOT_1, Co: 1, Wt: 2, Lc: 0, Type:
BASE
R...
0.00
50.00
Right_EOP
Lv: D_EOS_1, Co: 2, Wt: 1, Lc: 0, Type:
BASE
Left
0.00
100.00
Left_EOS
Selection Set
Display
New Chain Name: Wall
Drafting Standard: Aggregate
Filter Tolerances
Horizontal: 50.00
Variance: 0.010000
Import
215+00
Default
Modify Element > Identify element
D_DITCH_1
GEOPAK V8...
Active Inbo...
Stories|Feat...
plan.dgn [2...
Microsoft P...
4:13 PM

Plan Graphics > Filter Tolerances



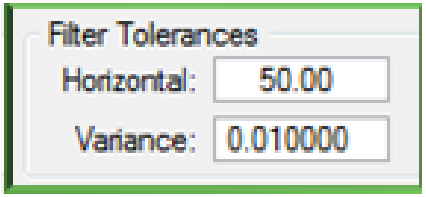
XM

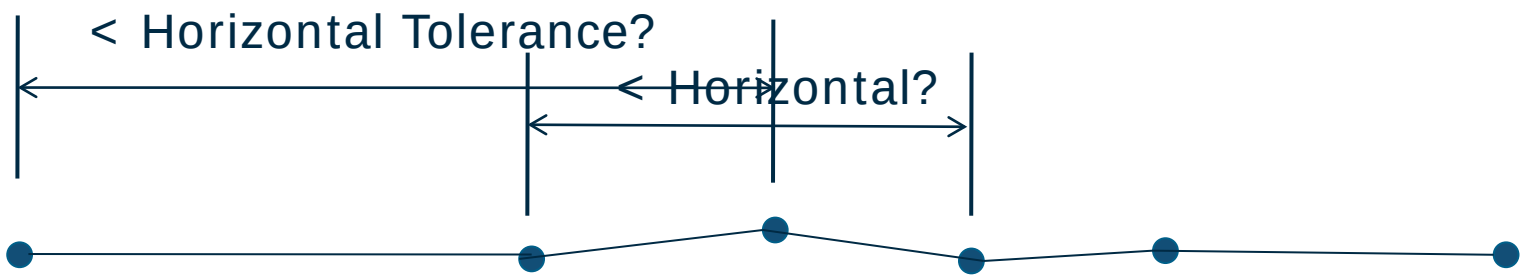


V8*i*

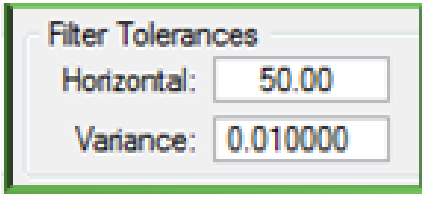
Bentley

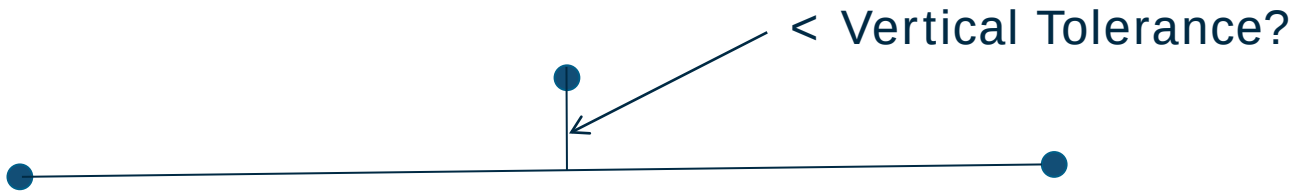
Horizontal Filter Tolerance





Vertical Filter Tolerance

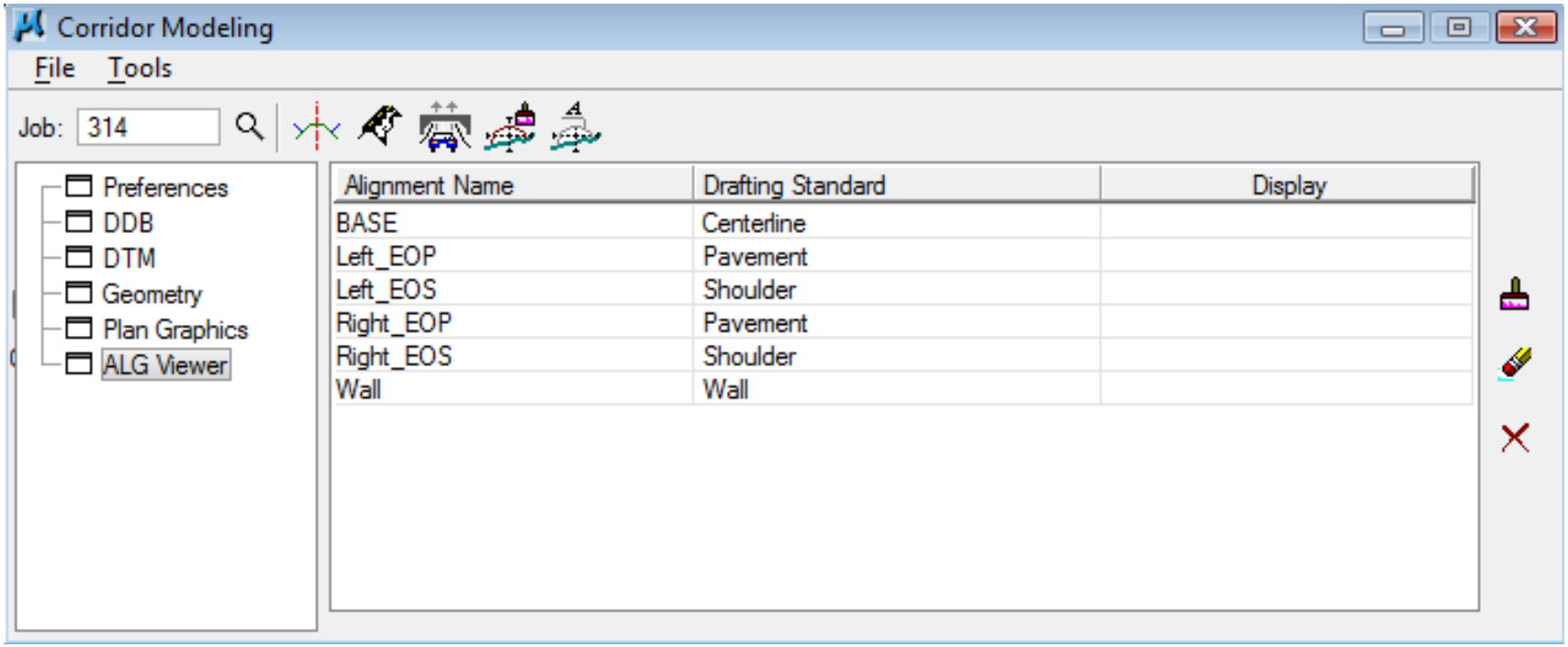


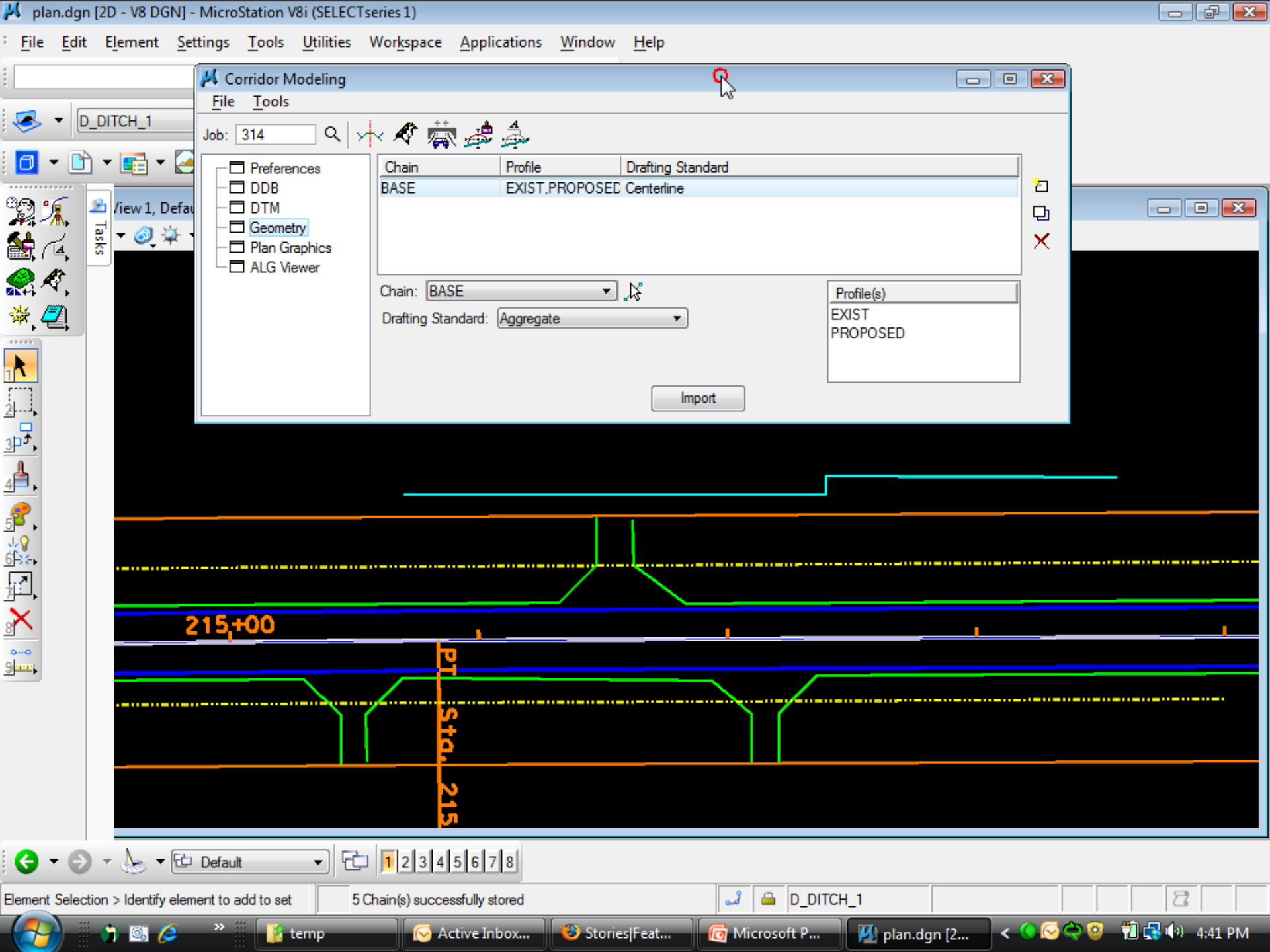


No – then leave the point in
Yes – then remove the point

ALG Viewer

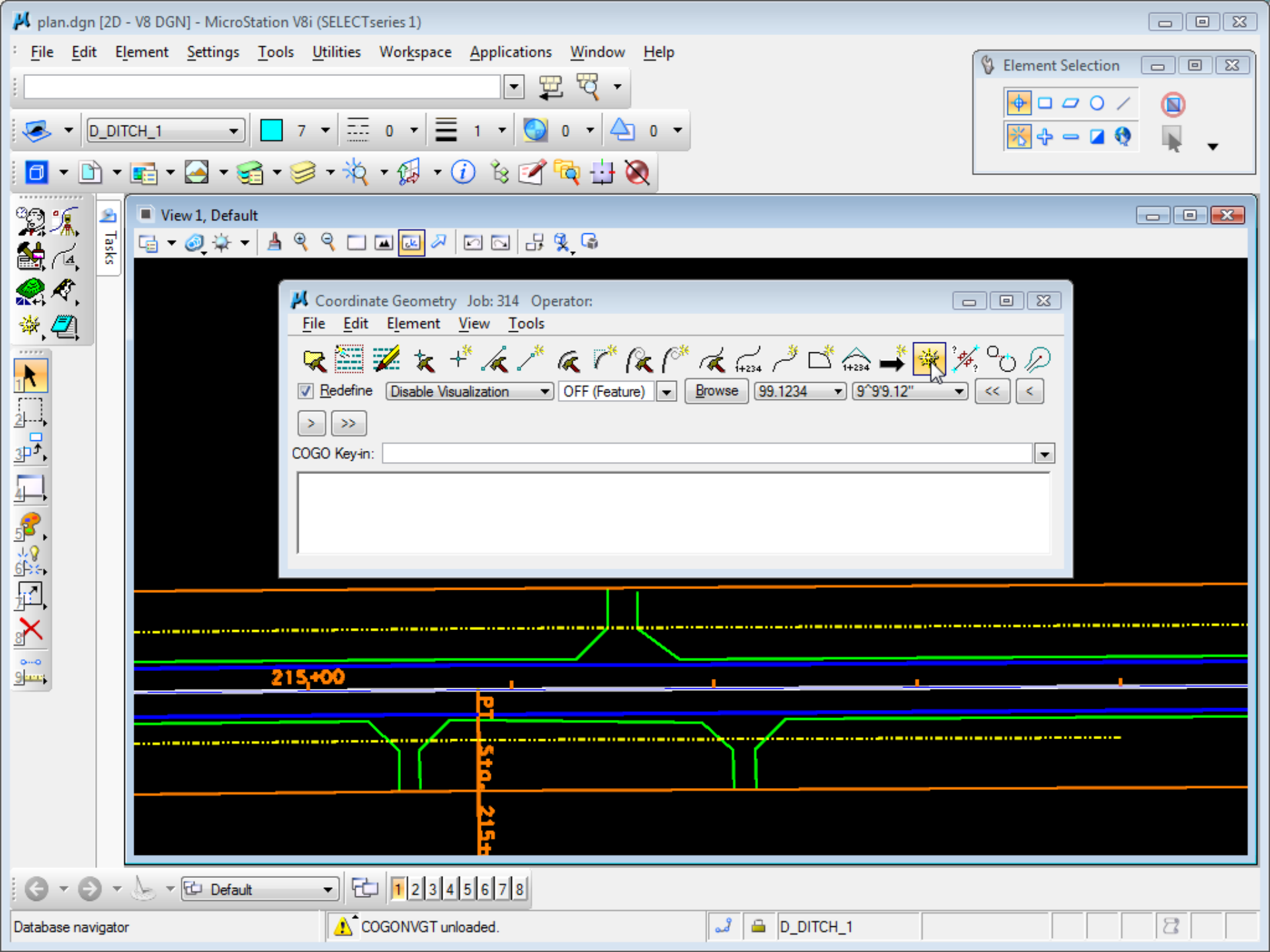
- Allows the user to *Visualize* and *Delete* alignments from the ALG database.




plan.dgn [2D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Corridor Modeling
File Tools
Job: 314
Preferences
DDB
DTM
Geometry
Plan Graphics
ALG Viewer
Chain Profile Drafting Standard
BASE EXIST,PROPOSED Centerline
Chain: BASE
Drafting Standard: Aggregate
Profile(s)
EXIST
PROPOSED
Import
215+00
PT Sta. 215
Default
Element Selection > Identify element to add to set
5 Chain(s) successfully stored
D_DITCH_1
temp
Active Inbox...
Stories|Feat...
Microsoft P...
plan.dgn [2...
4:41 PM

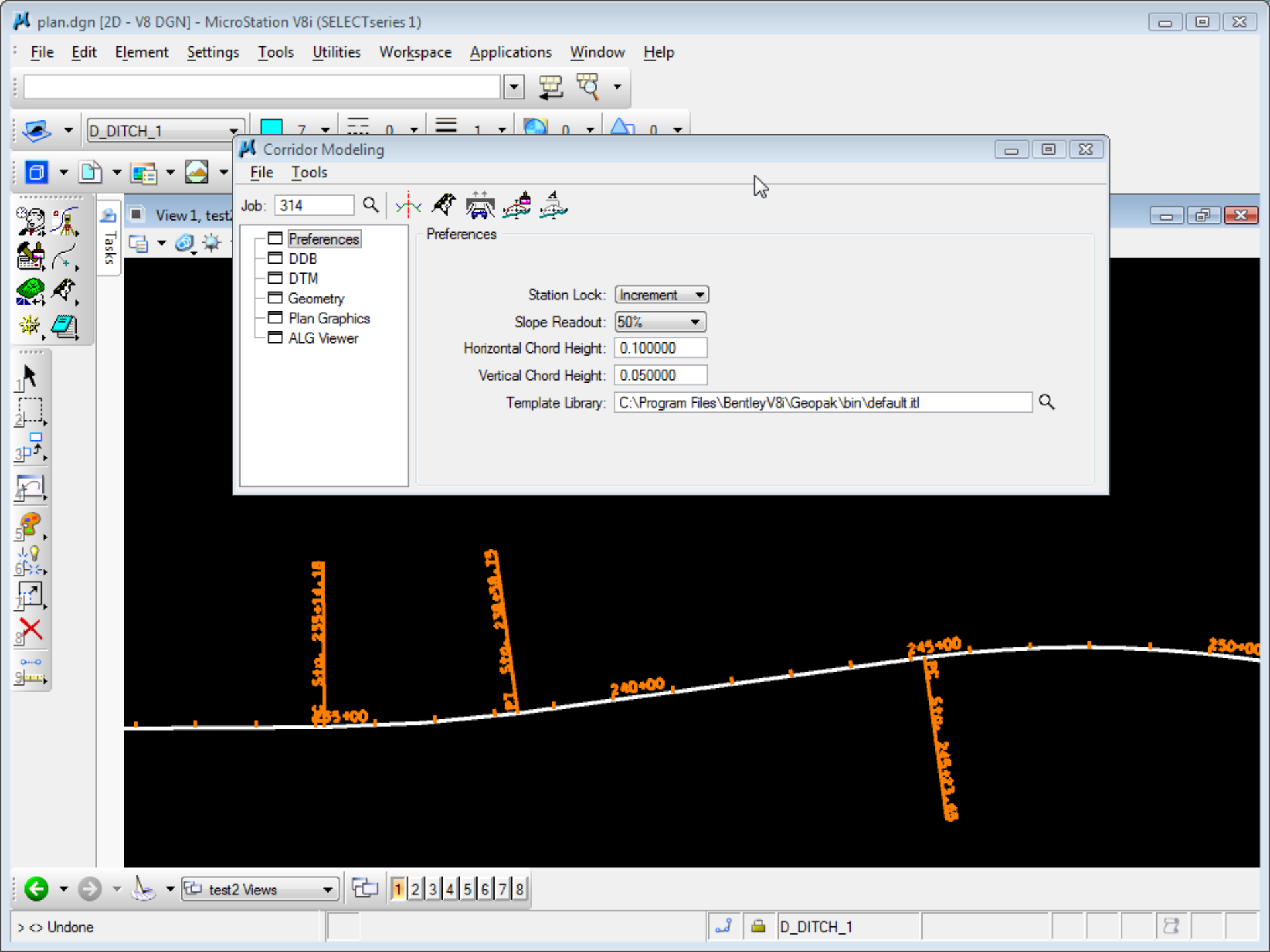
Corridor Modeling > Export Profile

- Allows the exporting of profiles created in Roadway Designer to be exported back to the GPK for review, printing and modification.


plan.dgn [2D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Element Selection
D_DITCH_1
View 1, Default
Tasks
Coordinate Geometry Job: 314 Operator:
File Edit Element View Tools
Redefine
Disable Visualization
OFF (Feature)
Browse
99.1234
9^9'9.12"
COGO Key-in:
215+00
PI Sta 215+
Default
Database navigator
COGONVGT unloaded.
D_DITCH_1

Draw Roadway from Template

- Draws the 2D roadway graphics from a specified template.


plan.dgn [2D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
D_DITCH_1
Corridor Modeling
File Tools
Job: 314
Preferences
DDB
DTM
Geometry
Plan Graphics
ALG Viewer
Station Lock: Increment
Slope Readout: 50%
Horizontal Chord Height: 0.100000
Vertical Chord Height: 0.050000
Template Library: C:\Program Files\BentleyV8i\Geopak\bin\default.itl
View 1, test
Tasks
235+00
240+00
245+00
250+00
test2 Views
1 2 3 4 5 6 7 8
> <> Undone
D_DITCH_1

TIN <-> DTM Conversions

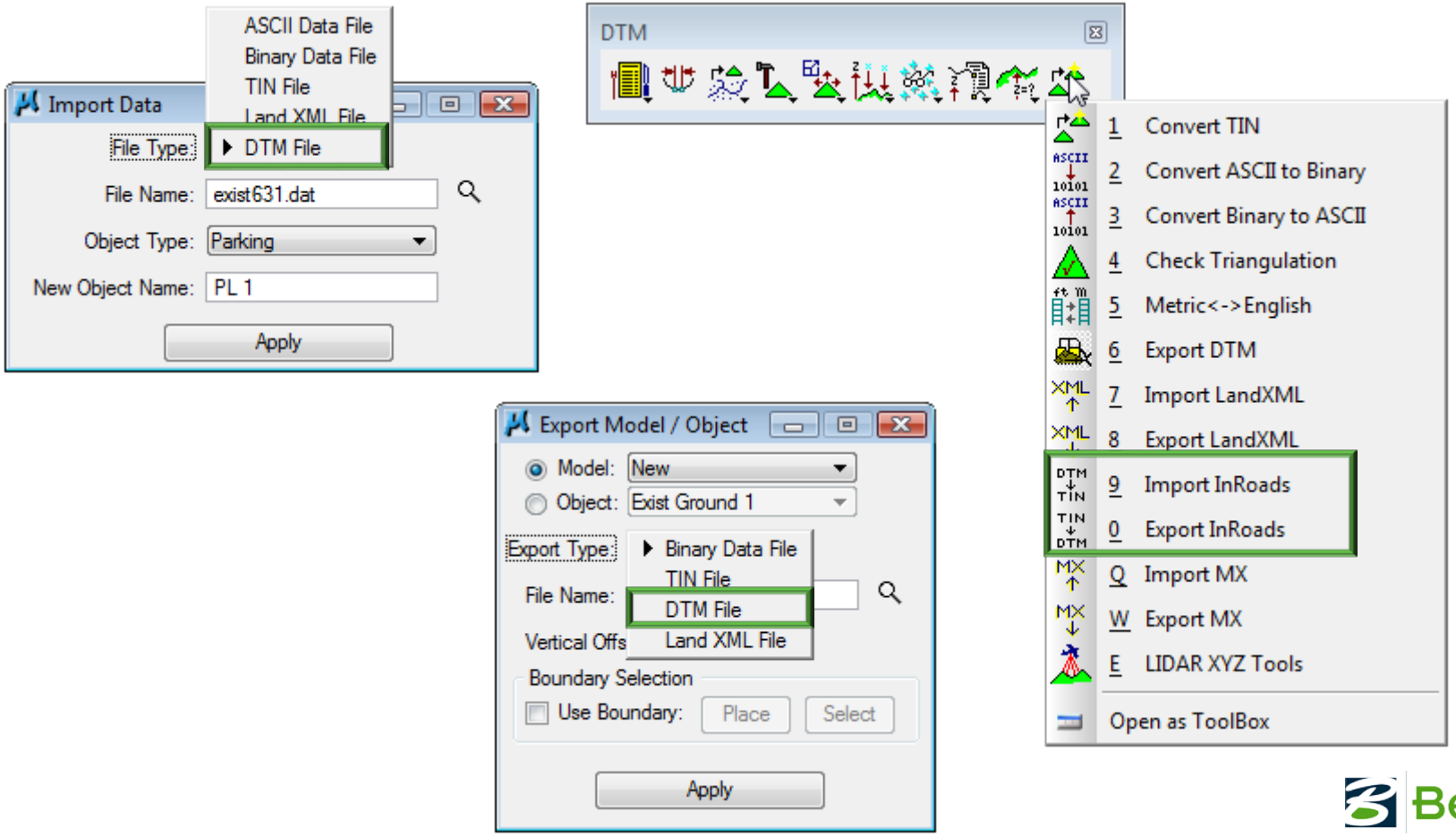
- In previous versions, this conversion was done via the use of XML. However, this has been replaced with an API (program) that does an internal conversion.

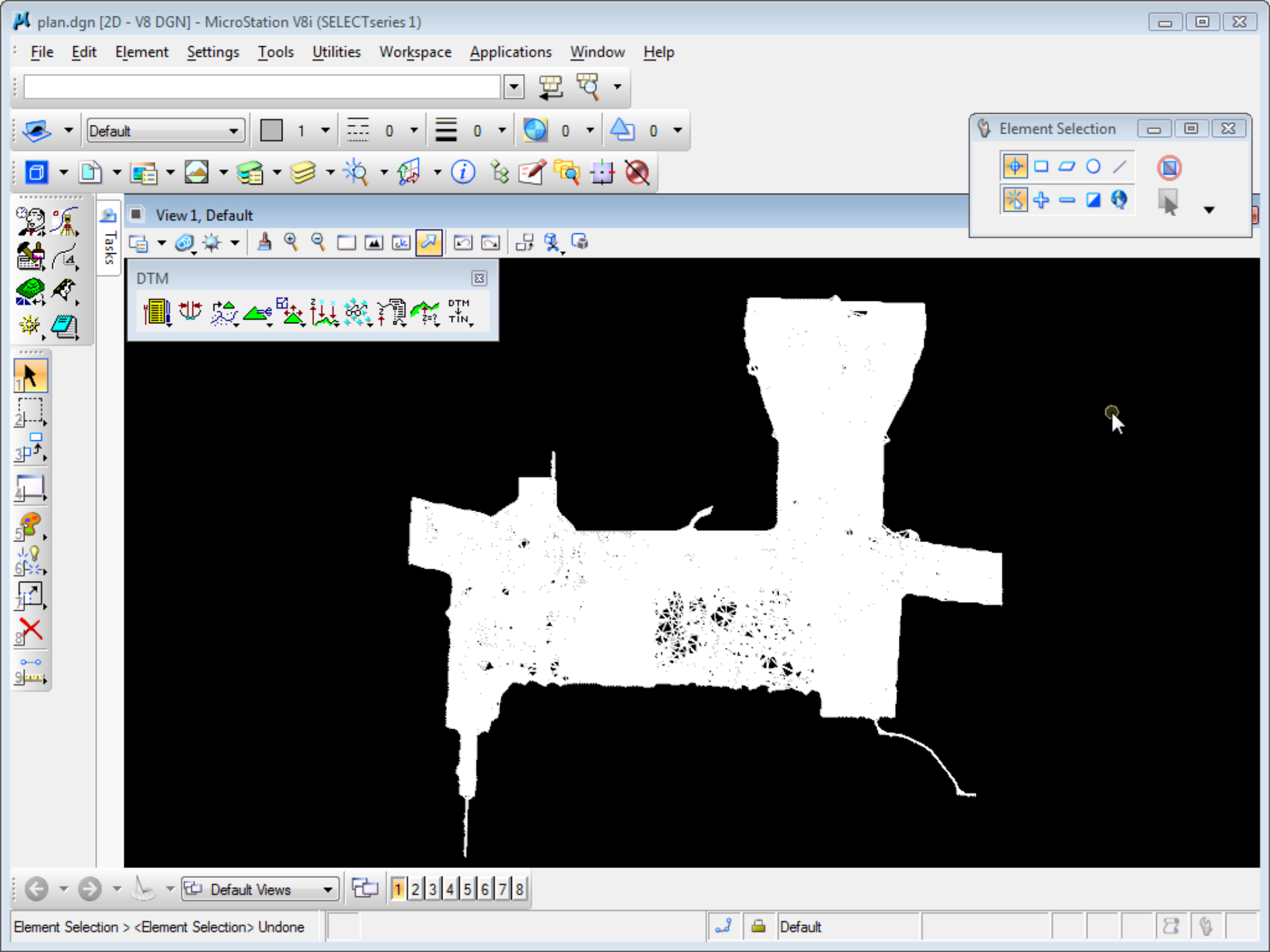
  This greatly increases both the speed of conversion and the accuracy.

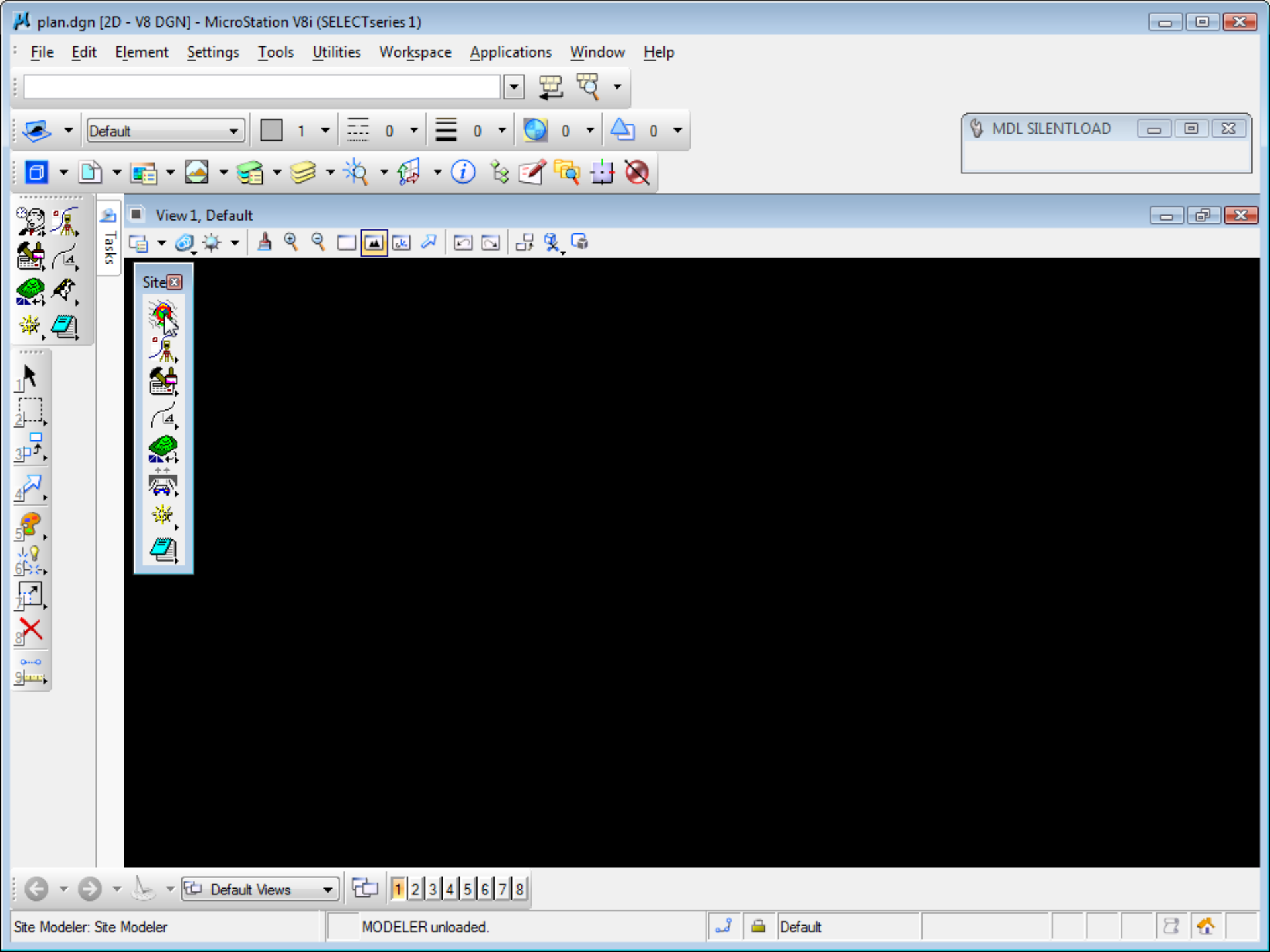
  For example, a 60mb TIN will convert to a DTM in about 30 seconds.

Import/Export InRoads DTM

- Added the ability to both import and export an InRoads DTM.




plan.dgn [2D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Default
Element Selection
View 1, Default
DTM
Tasks
Default Views
1 2 3 4 5 6 7 8
Element Selection > <Element Selection> Undone
Default

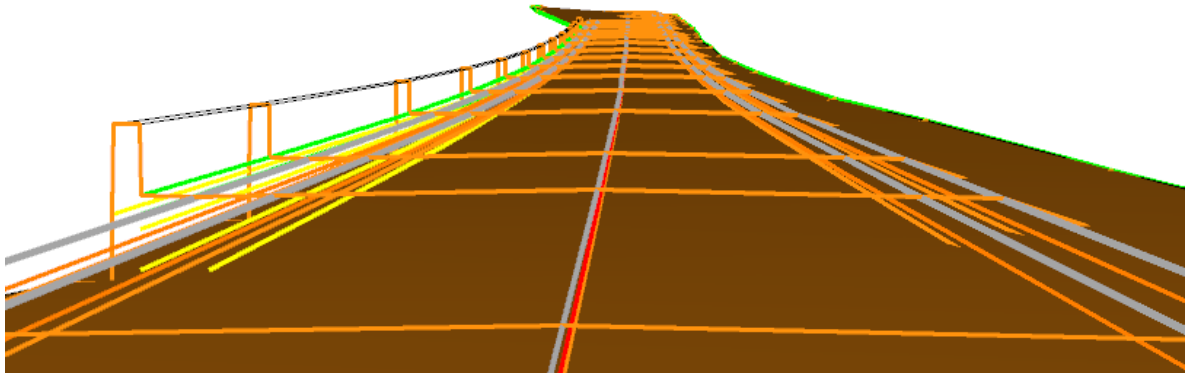

plan.dgn [2D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Default
MDL SILENTLOAD
Tasks
View 1, Default
Site
Default Views
1 2 3 4 5 6 7 8
Site Modeler: Site Modeler
MODELER unloaded.
Default

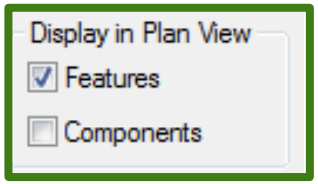
Create Surface > Components

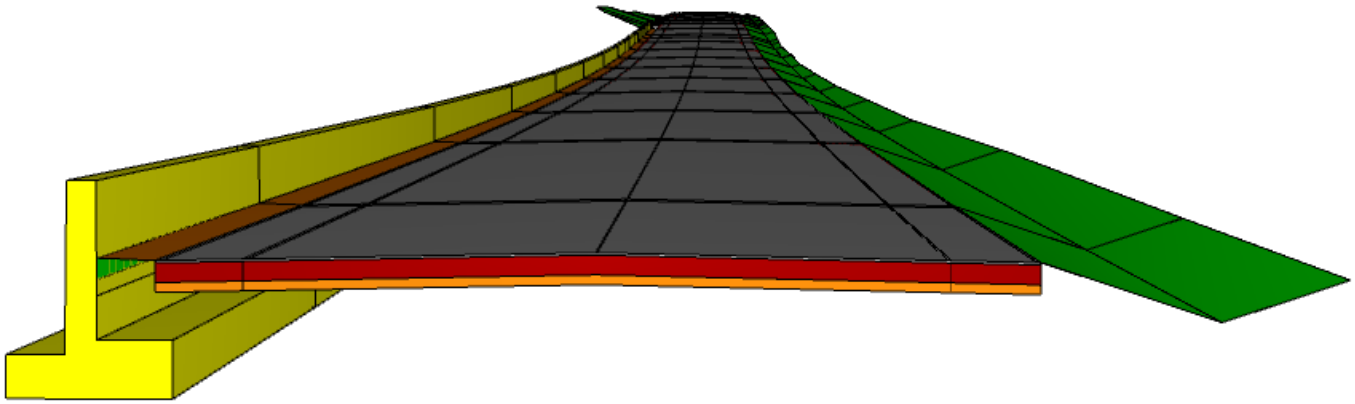
- In V8*i* (SELECTseries 1), we added the ability to draw the proposed surface as ‘Components’ as well as Features.

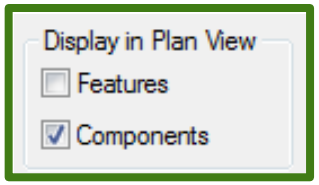
  Components allow for much better detail and rendering capabilities.

Create Surface > Components

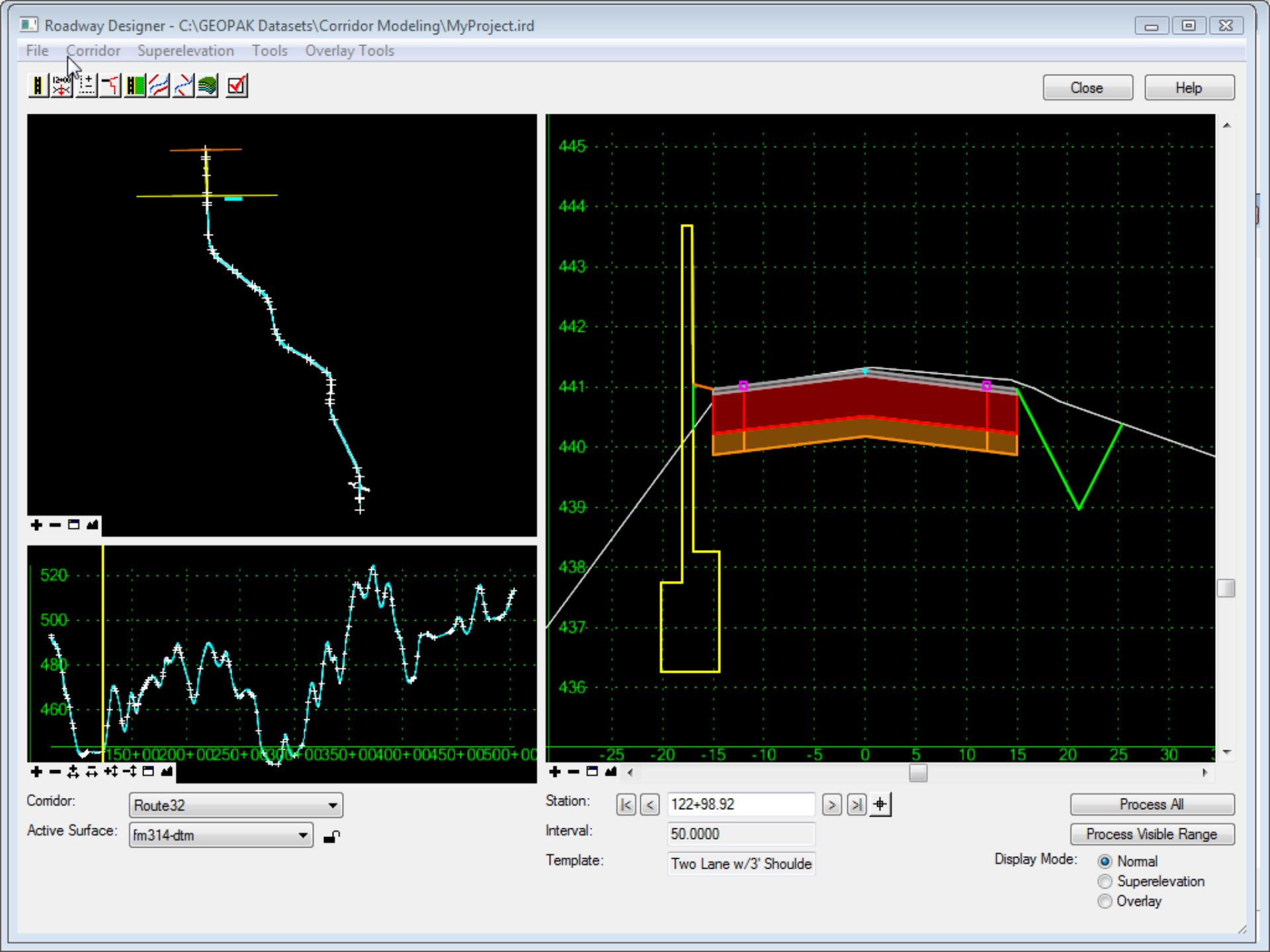








Bentley

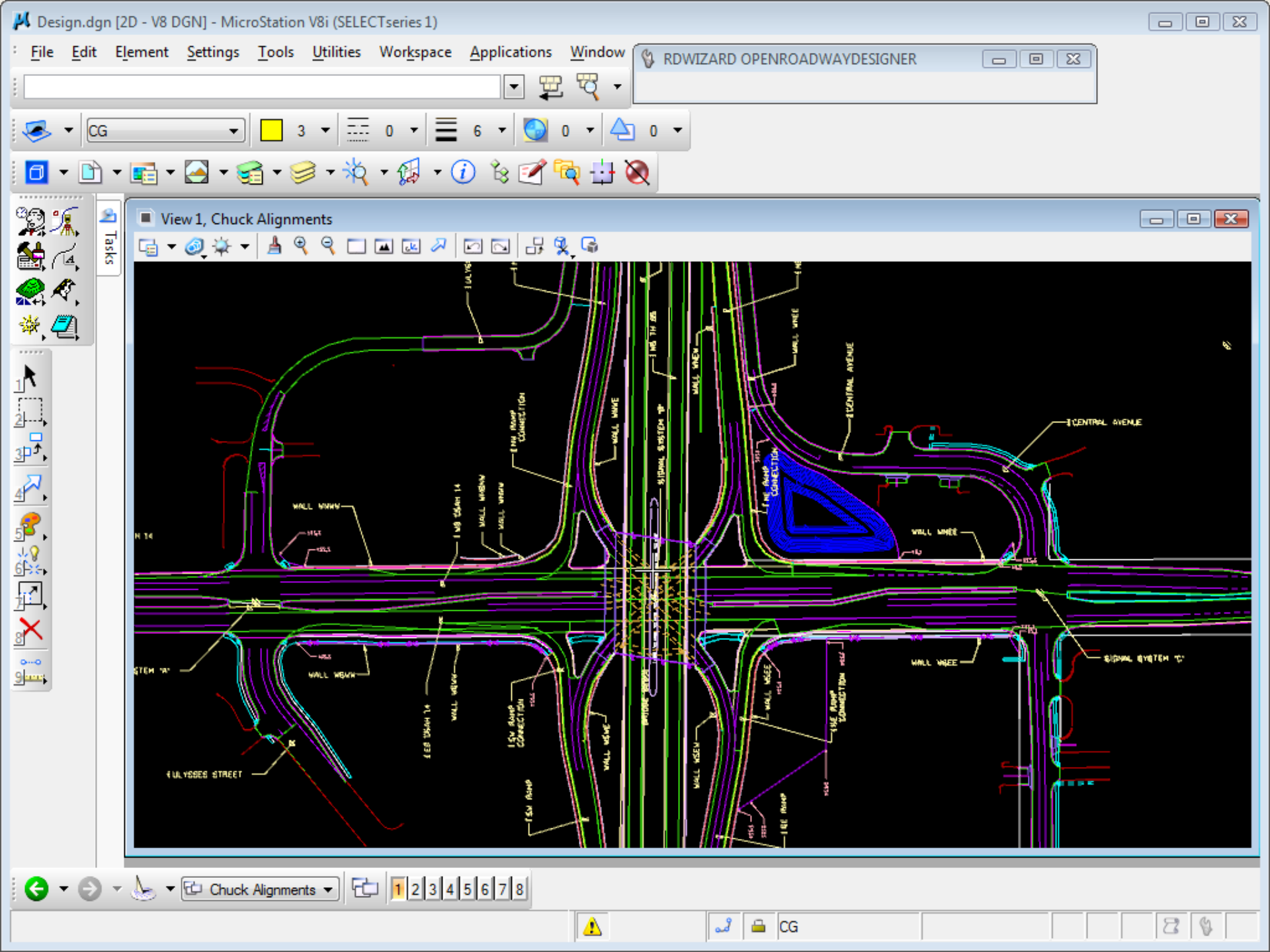

Roadway Designer - C:\GEOPAK Datasets\Corridor Modeling\MyProject.ird
File
Corridor
Superelevation
Tools
Overlay Tools
Close
Help
445
444
443
442
441
440
439
438
437
436
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
520
500
480
460
Corridor:
Route32
Active Surface:
fm314-dtm
Station:
122+98.92
Interval:
50.0000
Template:
Two Lane w/3' Shoulde
Process All
Process Visible Range
Display Mode:
Normal
Superelevation
Overlay

Create Surface (TIN)

- In previous versions of Roadway Designer, we would create an associated XML file along with the DTM surface file. Now, we go ahead and create the associated TIN file along with the DTM surface.

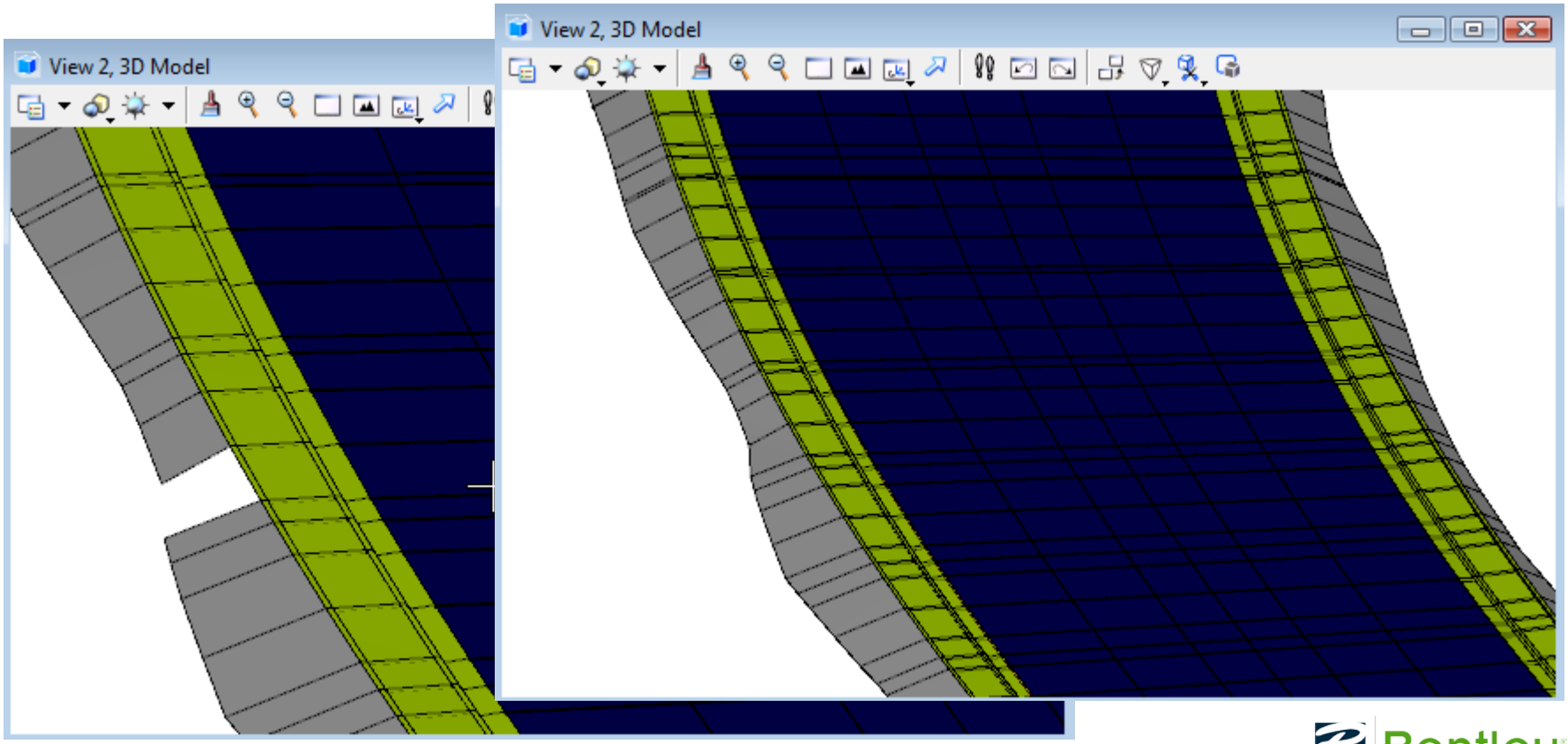
Corridor Symbology

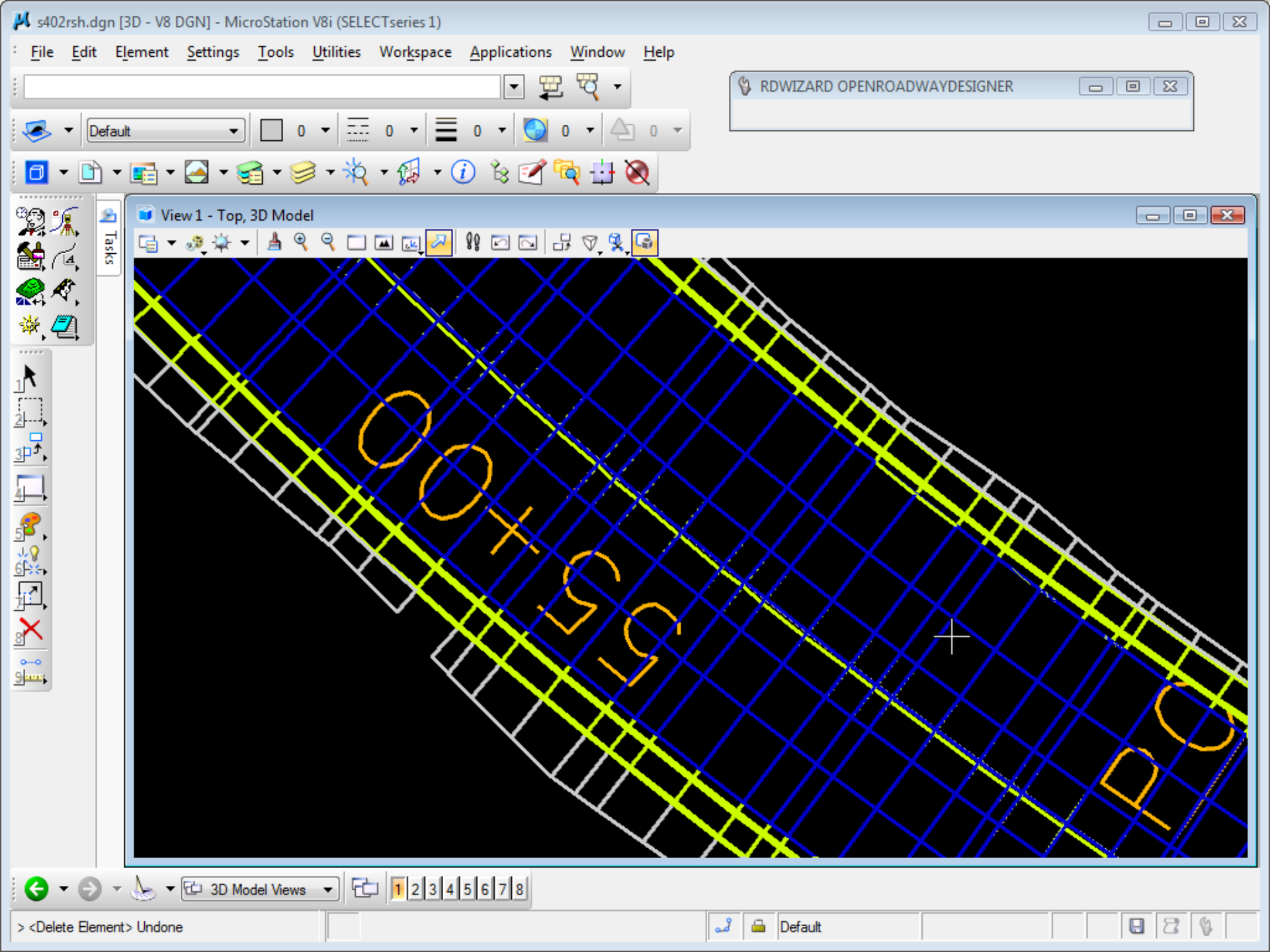
- When designing a project with multiple corridors, the user can now assign a different *style* (symbology) to each corridor for display purposes. This is especially helpful when using the Target Aliasing functionality within Roadway Designer.


Design.dgn [2D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File
Edit
Element
Settings
Tools
Utilities
Workspace
Applications
Window
RDWIZARD OPENROADWAYDESIGNER
CG
Tasks
View 1, Chuck Alignments
CENTRAL AVENUE
ULYSSES STREET
Chuck Alignments
CG

Component Name Overrides

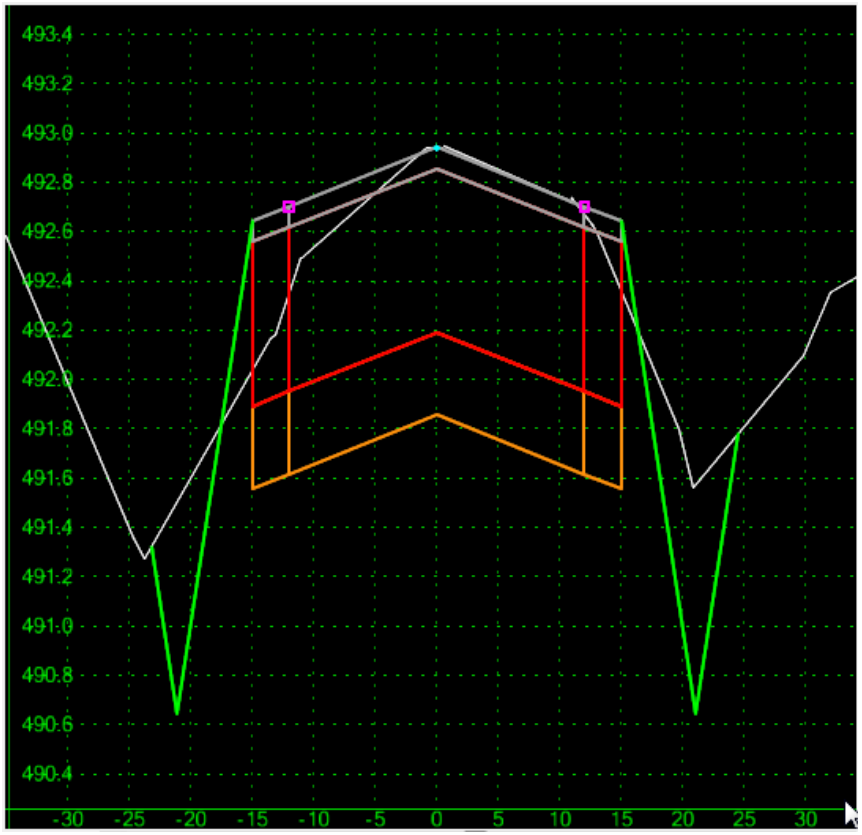
- When creating surfaces, this new functionality enables the surface to close the ‘gaps’ between components with different names.

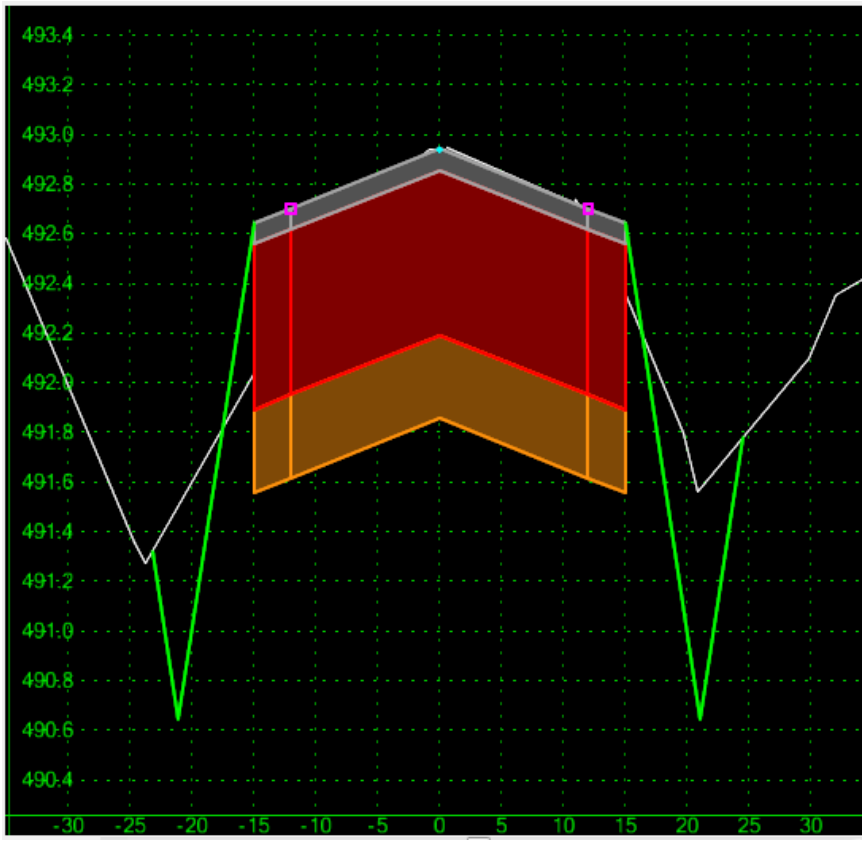


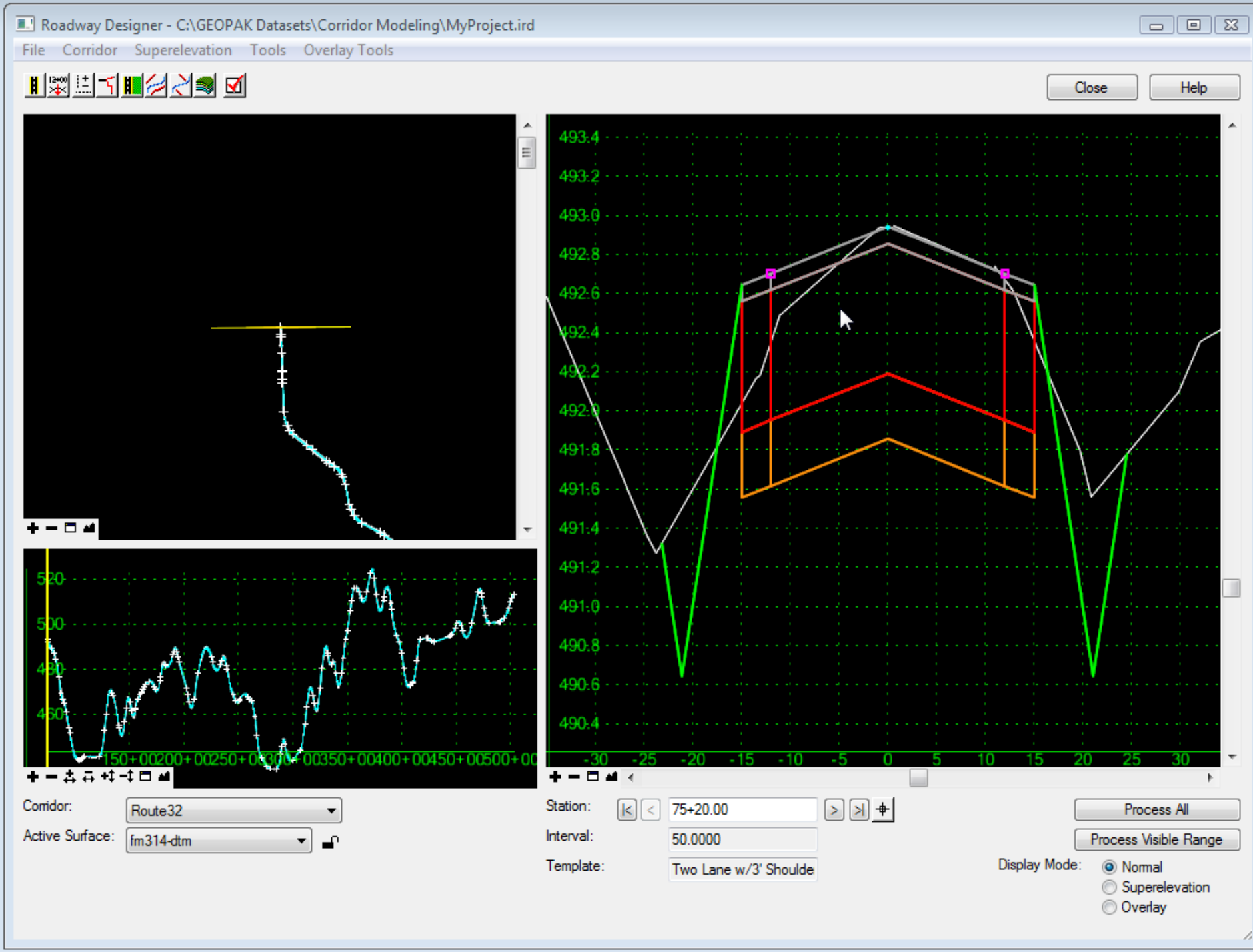

s402rsh.dgn [3D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
RDWIZARD OPENROADWAYDESIGNER
Default
View 1 - Top, 3D Model
Tasks
3D Model Views
1 2 3 4 5 6 7 8
> <Delete Element> Undone
Default

Added ‘Fill’ attribute to XIN

- Added a new option in the XIN file to enable the ability to ‘fill’ closed components in Roadway Designer.

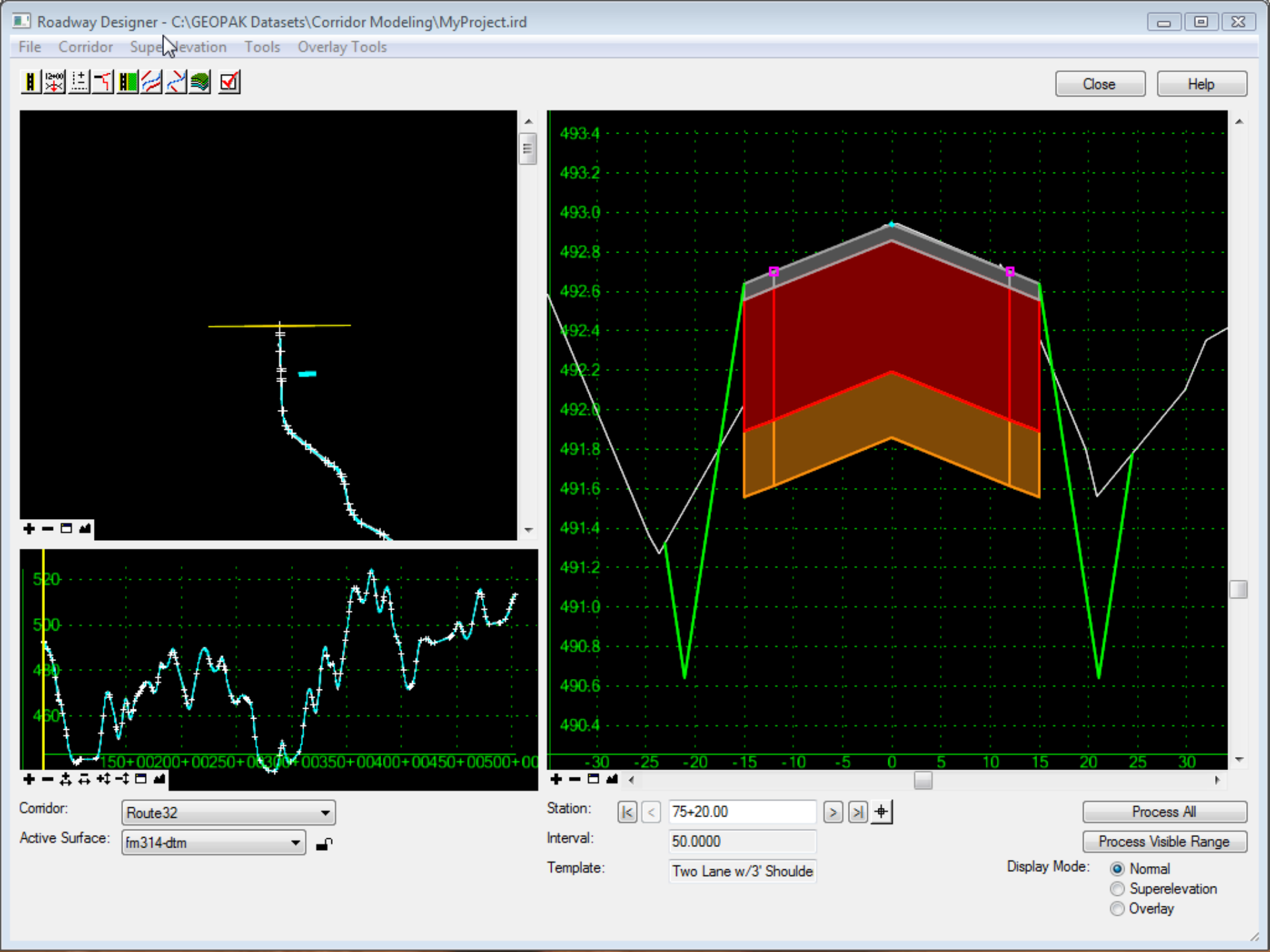





Roadway Designer - C:\GEOPAK Datasets\Corridor Modeling\MyProject.ird
File
Corridor
Superelevation
Tools
Overlay Tools
Close
Help
493.4
493.2
493.0
492.8
492.6
492.4
492.2
492.0
491.8
491.6
491.4
491.2
491.0
490.8
490.6
490.4
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
520
500
480
460
150+00
200+00
250+00
300+00
350+00
400+00
450+00
500+00
Corridor:
Route32
Active Surface:
fm314-dtm
Station:
75+20.00
Interval:
50.0000
Template:
Two Lane w/3' Shoulde
Process All
Process Visible Range
Display Mode:
Normal
Superelevation
Overlay

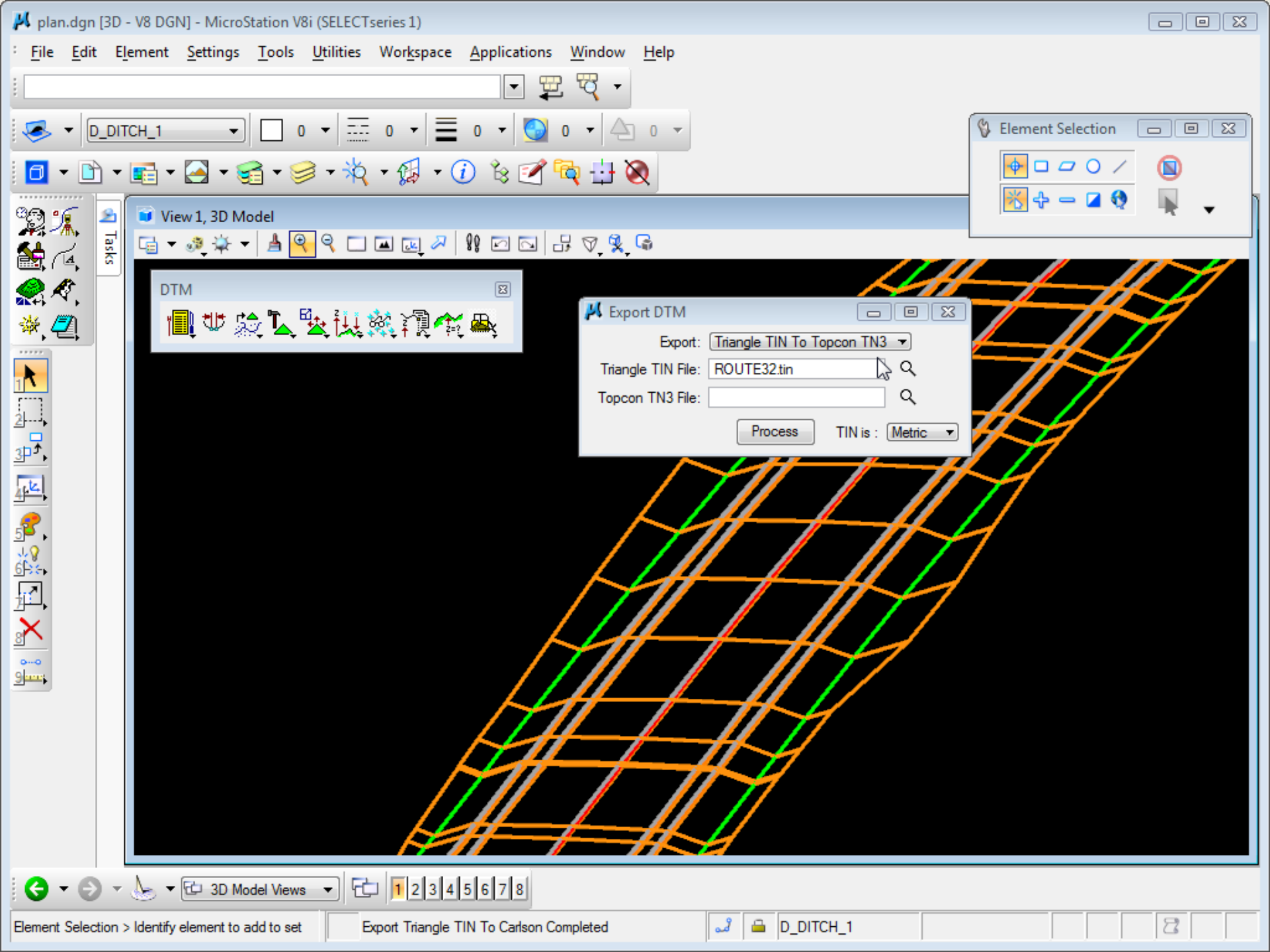
XML Report Browser

- Added reporting capabilities to Roadway Designer.


Roadway Designer - C:\GEOPAK Datasets\Corridor Modeling\MyProject.ird
File
Corridor
Super Elevation
Tools
Overlay Tools
Close
Help
493.4
493.2
493.0
492.8
492.6
492.4
492.2
492.0
491.8
491.6
491.4
491.2
491.0
490.8
490.6
490.4
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
520
500
480
460
150+00
200+00
250+00
300+00
350+00
400+00
450+00
500+00
Corridor:
Route32
Active Surface:
fm314-dtm
Station:
75+20.00
Interval:
50.0000
Template:
Two Lane w/3' Shoulde
Process All
Process Visible Range
Display Mode:
Normal
Superelevation
Overlay

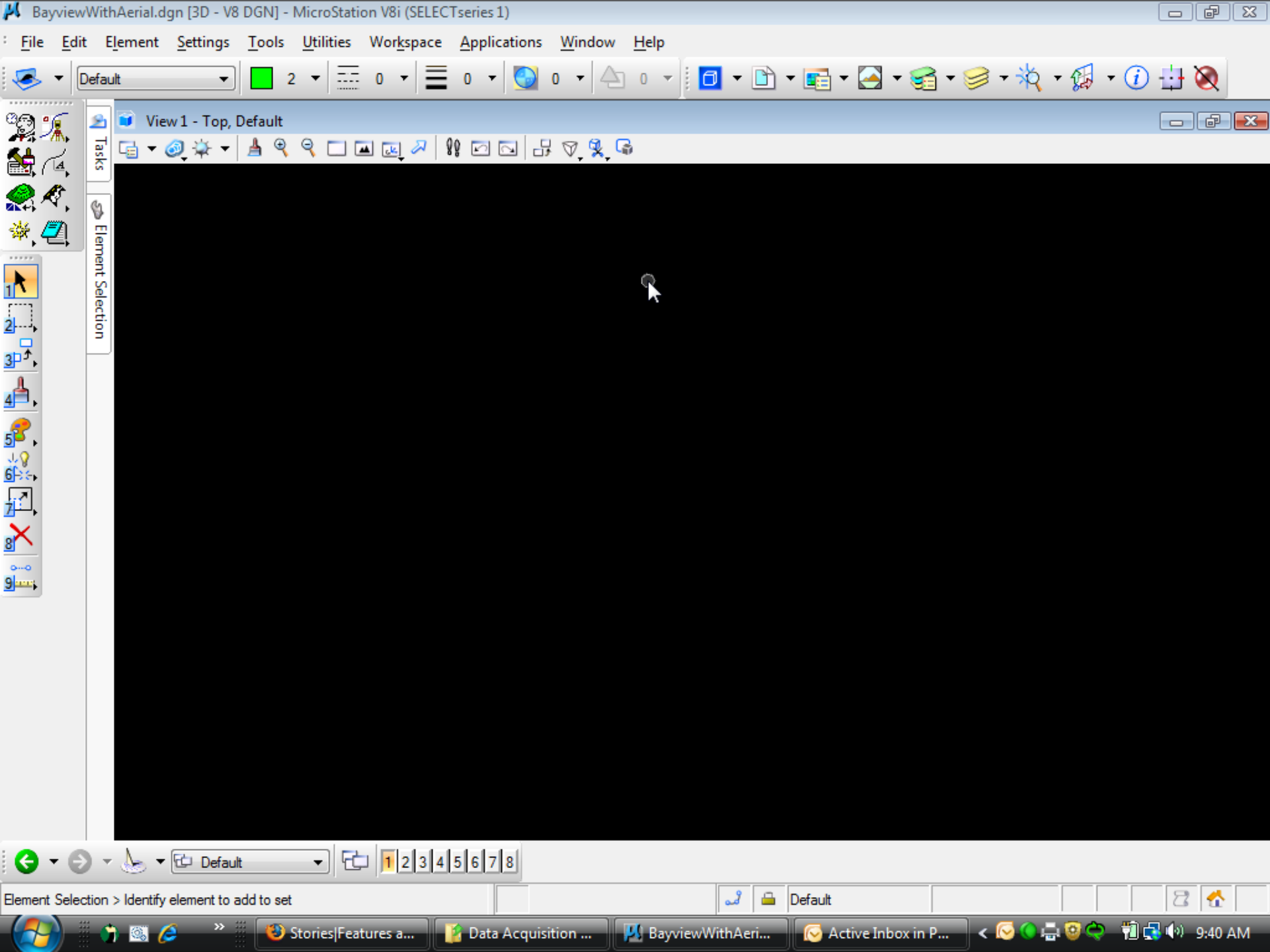
Export TIN to Carlson

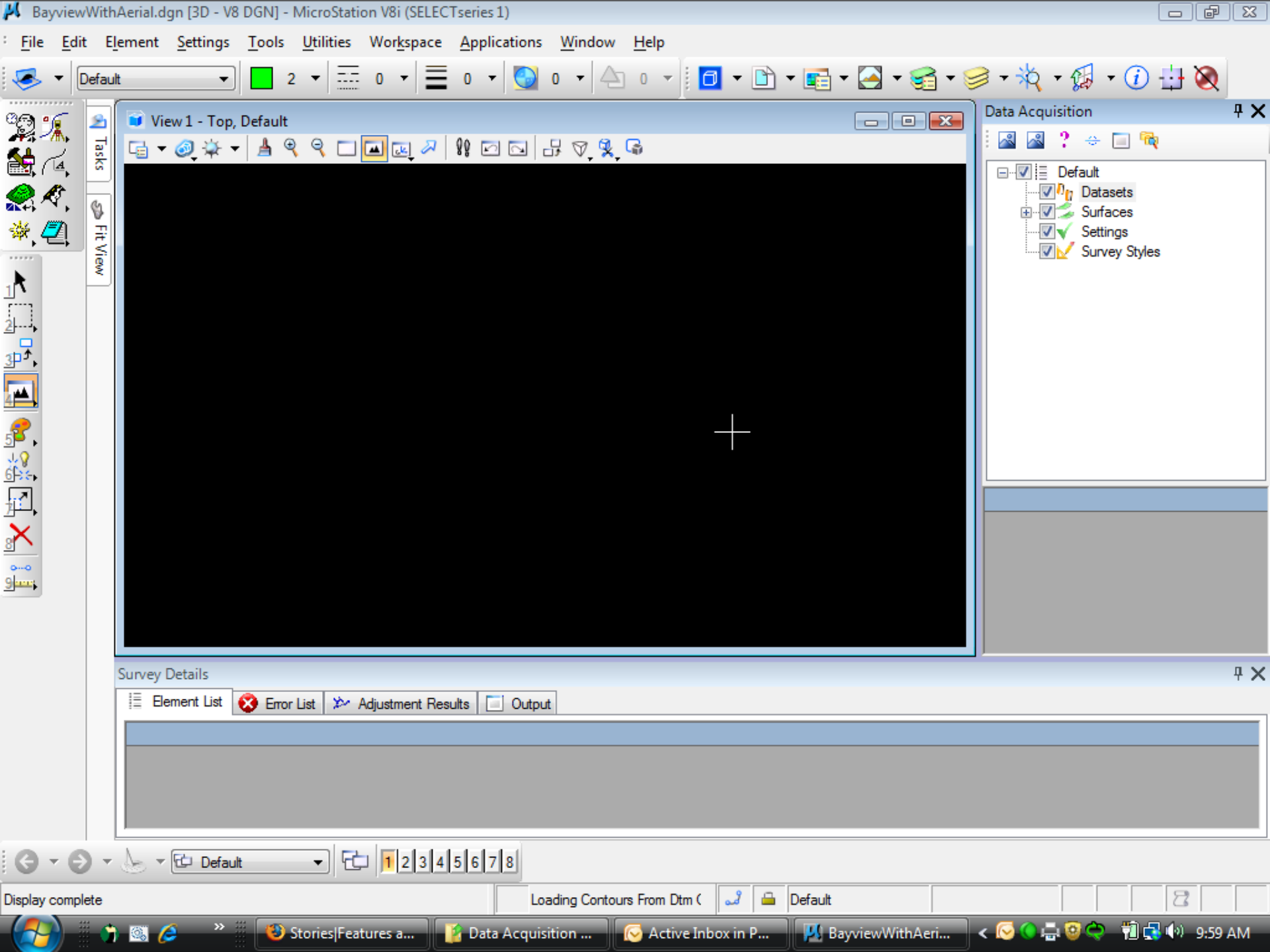
- Under the DTM Tools > Export DTM application we have added the ability to export the TIN to a Carlson format.


plan.dgn [3D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
D_DITCH_1
Element Selection
View 1, 3D Model
DTM
Export DTM
Export: Triangle TIN To Topcon TN3
Triangle TIN File: ROUTE32.tin
Topcon TN3 File:
Process
TIN is : Metric
Tasks
3D Model Views
1 2 3 4 5 6 7 8
Element Selection > Identify element to add to set
Export Triangle TIN To Carlson Completed
D_DITCH_1

Data Acquisition

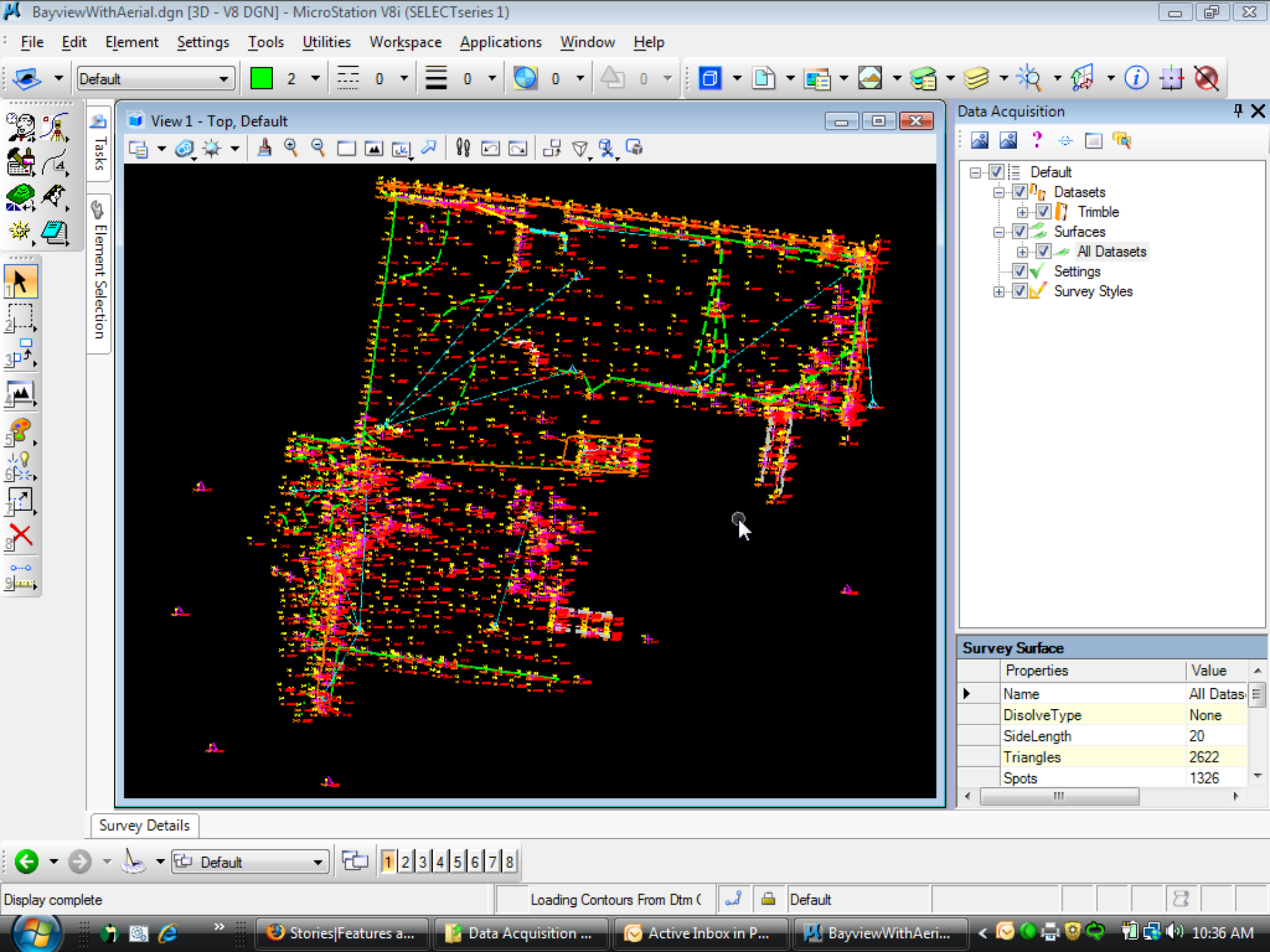
- Data Acquisition is a new set of tools that allows the user to acquire their data from multiple disparate sources. They can then combine this data seamlessly to create geometry and surface artifacts.


BayviewWithAerial.dgn [3D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Default
View 1 - Top, Default
Tasks
Element Selection
Default
1 2 3 4 5 6 7 8
Element Selection > Identify element to add to set
Default
Stories|Features a...
Data Acquisition ...
BayviewWithAeri...
Active Inbox in P...
9:40 AM


BayviewWithAerial.dgn [3D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Default
View 1 - Top, Default
Tasks
Fit View
Data Acquisition
Default
Datasets
Surfaces
Settings
Survey Styles
Survey Details
Element List
Error List
Adjustment Results
Output
Default
1 2 3 4 5 6 7 8
Display complete
Loading Contours From Dtm (
Default
Stories|Features a...
Data Acquisition ...
Active Inbox in P...
BayviewWithAeri...
9:59 AM

Survey formats:

GEOPAK OUT intermediate format
GEOPAK OBS intermediate format
InRoads FWD intermediate format
MX WRW intermediate format
LandXML 1.2
Field Genius
Trimble DC
Leitz/Sokkia SDR2, SDR33 & SDR33-14
Tripod Data Systems TDS 48, 95 & FS2
Geodimeter 122, 126, 400, 500 & 600
SMI versions 5, 6 & 7
Topcon FC1, FC2, FC4, FC5, CR2, Propac, FC48-95 % FC5-725
Leica Data Pro, Digital Level, RTA-GSI, GEOComp
Wildsoft GIF 2 & GIF 10
Nikon DR1, DR2, 48 & 302
South African TachiBook
CG-Field and CG-Field plus
Pentax DC1 & DC1Z
Zeiss Rec200 and Rec 500
CO OP
Hayes
Kern
AASHTO SDMS


BayviewWithAerial.dgn [3D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Default
View 1 - Top, Default
Tasks
Element Selection
Data Acquisition
Default
Datasets
Trimble
Surfaces
All Datasets
Settings
Survey Styles
Survey Surface
Properties
Value
Name
All Datas
DisolveType
None
SideLength
20
Triangles
2622
Spots
1326
Survey Details
Default
1 2 3 4 5 6 7 8
Display complete
Loading Contours From Dtm (
Default
Stories|Features a...
Data Acquisition ...
Active Inbox in P...
BayviewWithAeri...
10:36 AM

Digital Elevation Model (DEM) formats:

DTED
Erdas IMG
SPOT Dimap
USGS DEM ASCII
USGS STDS DEM

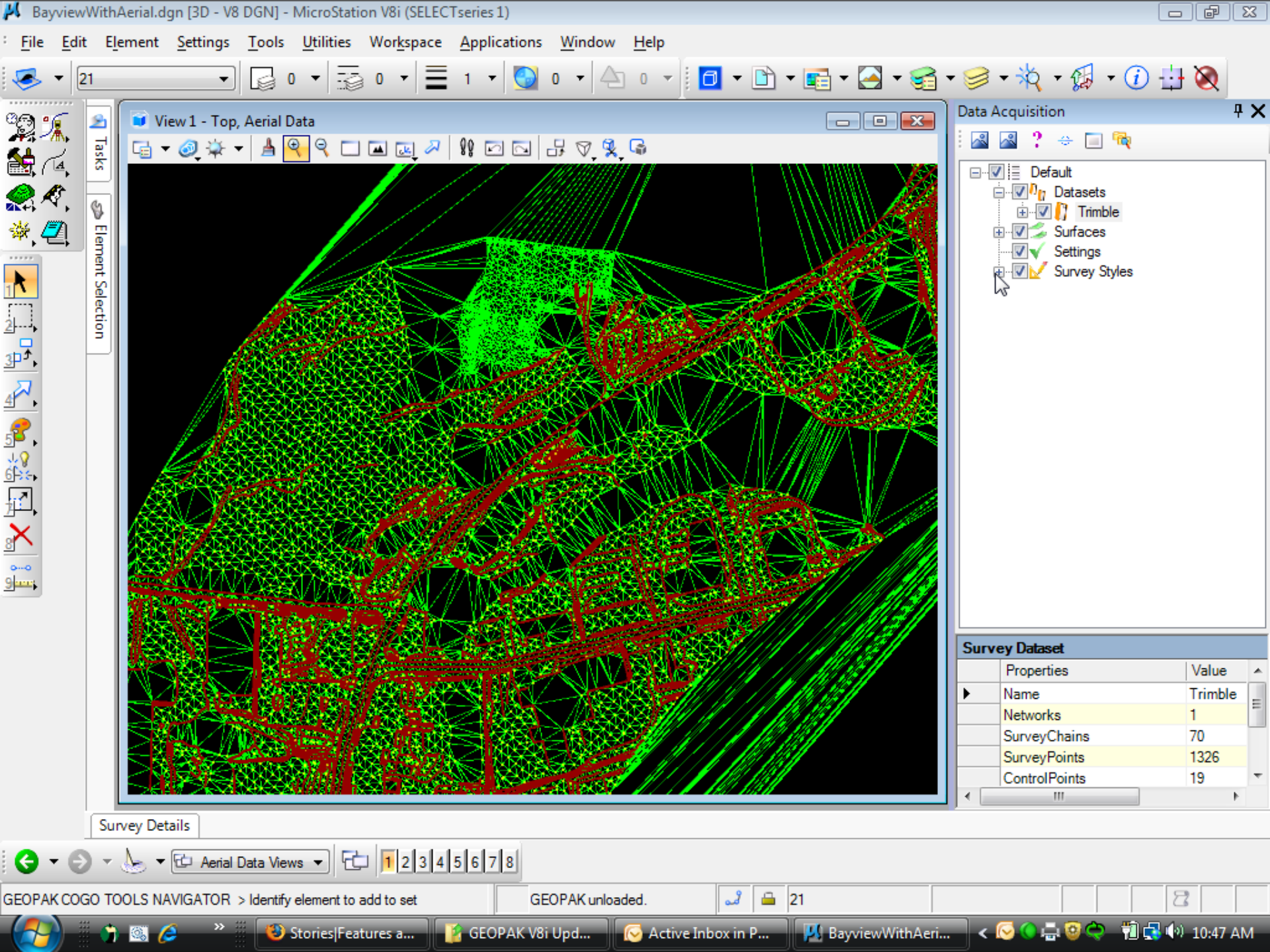
Terrain Model formats:

Geopak TIN
Inroads DTM
MX FIL
LandXML 1.2
Extract 3D graphics

LIDAR
XYZ (ascii)
LAS (binary raw lidar files)

3rd Party formats:

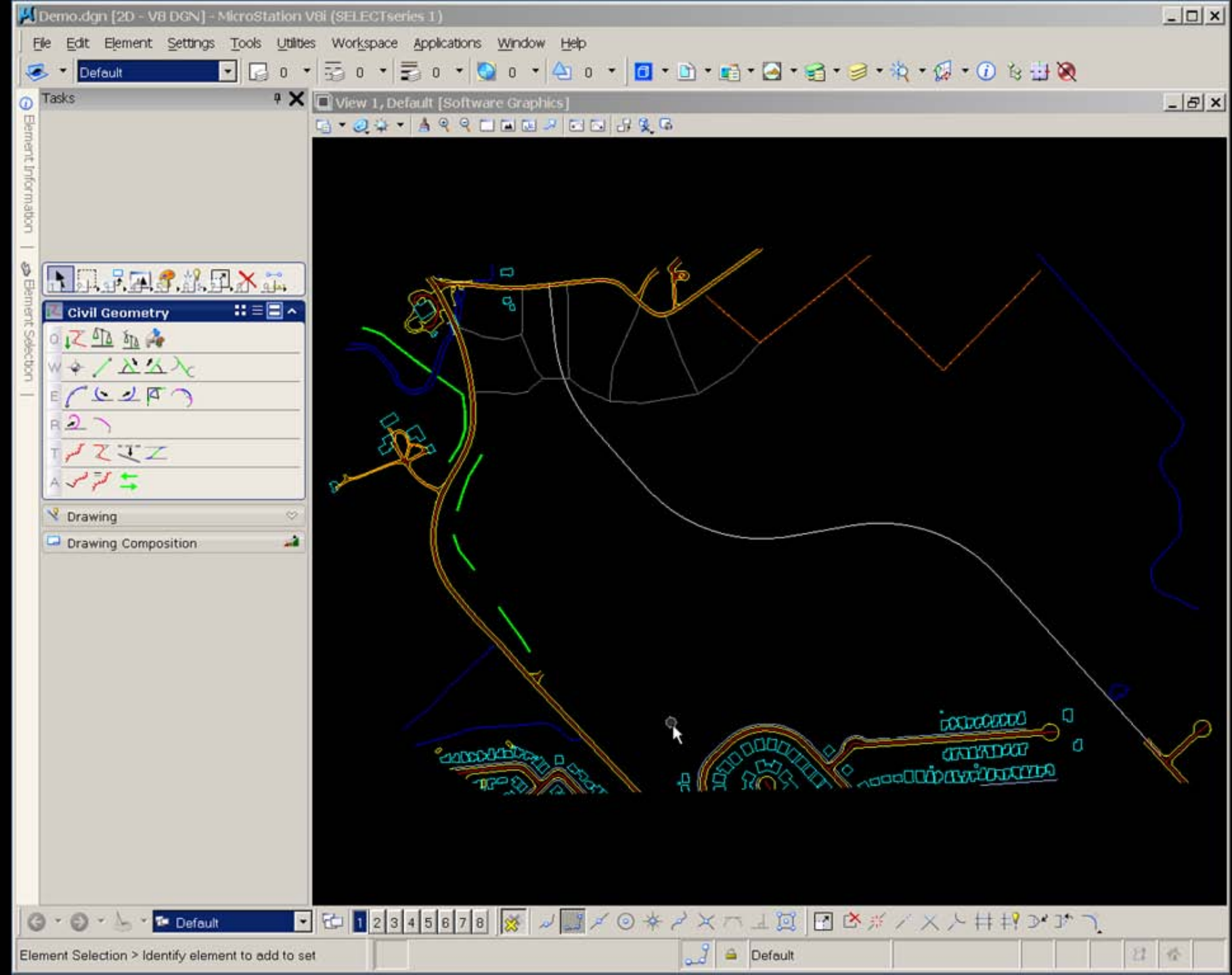
Land Desktop LDD
Caice PT4

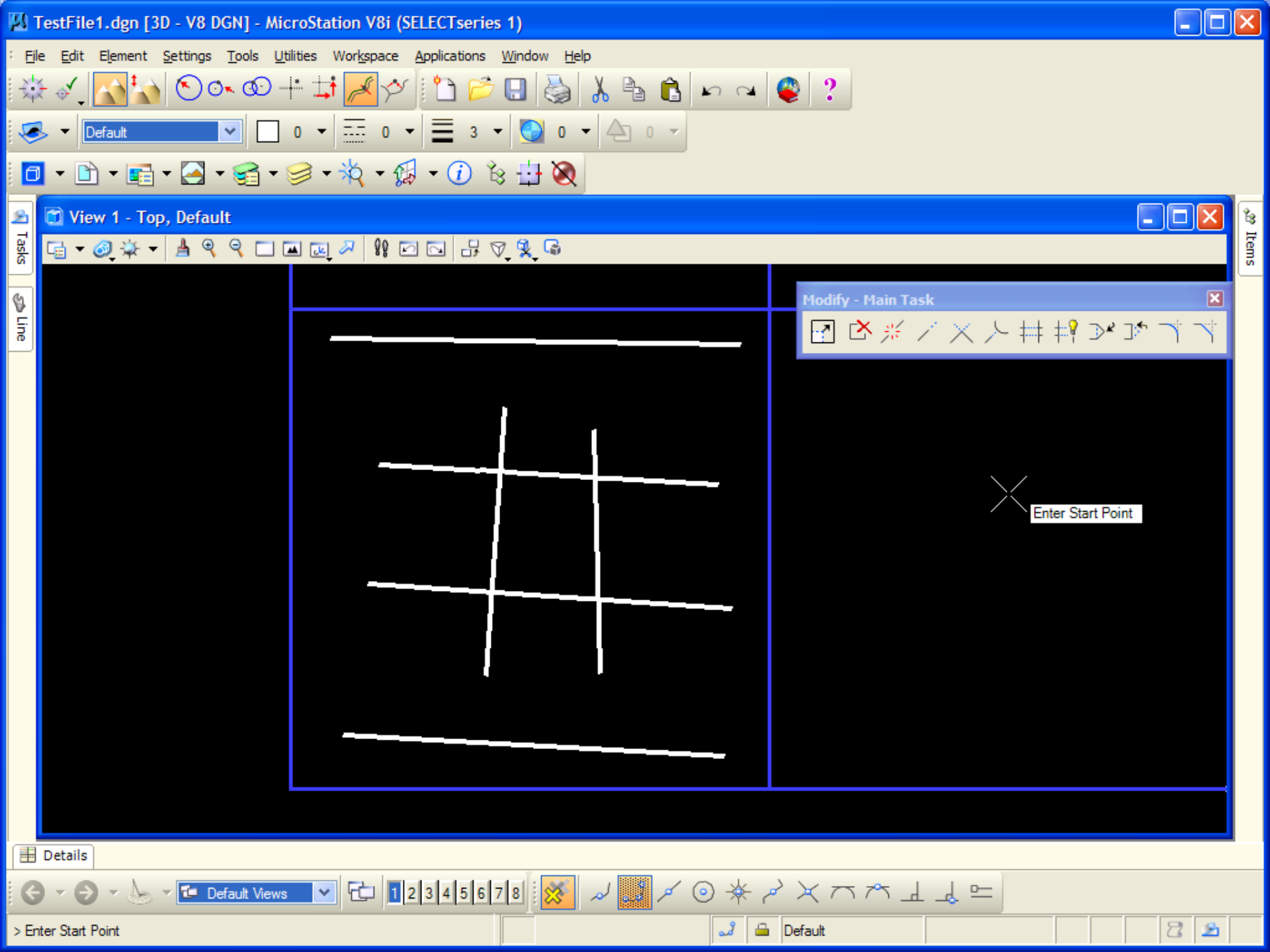

BayviewWithAerial.dgn [3D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
View 1 - Top, Aerial Data
Tasks
Element Selection
Data Acquisition
Default
Datasets
Trimble
Surfaces
Settings
Survey Styles
Survey Dataset
Properties
Value
Name
Trimble
Networks
1
SurveyChains
70
SurveyPoints
1326
ControlPoints
19
Survey Details
Aerial Data Views
GEOPAK COGO TOOLS NAVIGATOR > Identify element to add to set
GEOPAK unloaded.
Stories|Features a...
GEOPAK V8i Upd...
Active Inbox in P...
BayviewWithAeri...
10:47 AM

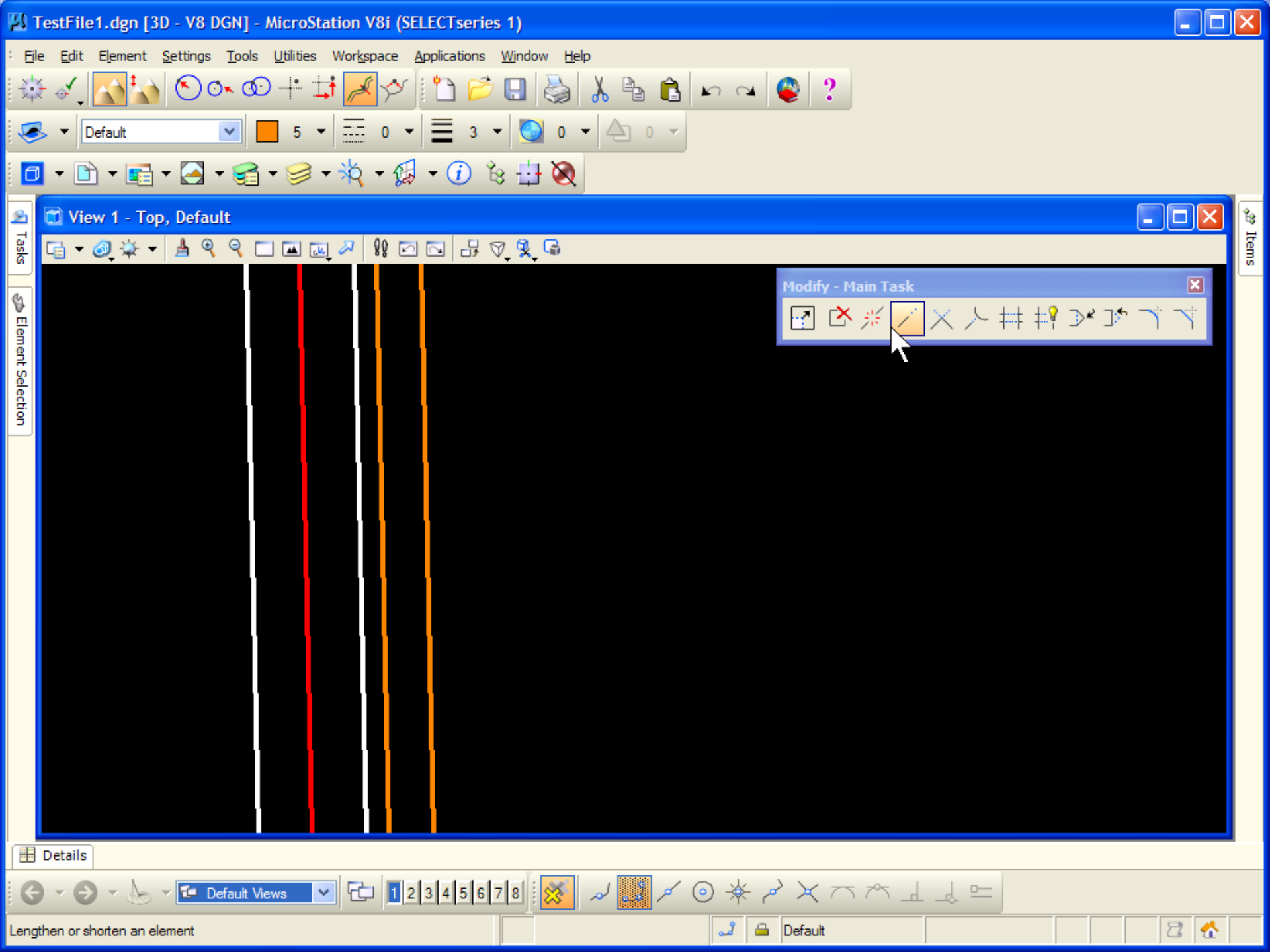
Geometry

New Geometry tools that lead into the next generation of Civil applications.

- Runs in MicroStation – not on it
- Uses native feature tables (e.g. DDB)
- Geometry is rules based
- Geometry elements are tied together by way of relationships.
- Interface is dynamic and heads up.

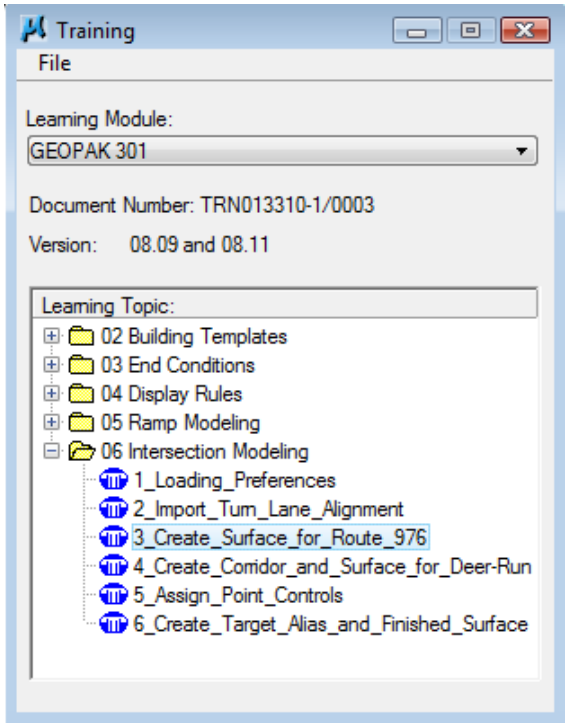

Demo.dgn [2D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Default
Tasks
View 1, Default [Software Graphics]
Element Information
Element Selection
Civil Geometry
Drawing
Drawing Composition
Default
Element Selection > Identify element to add to set
Default

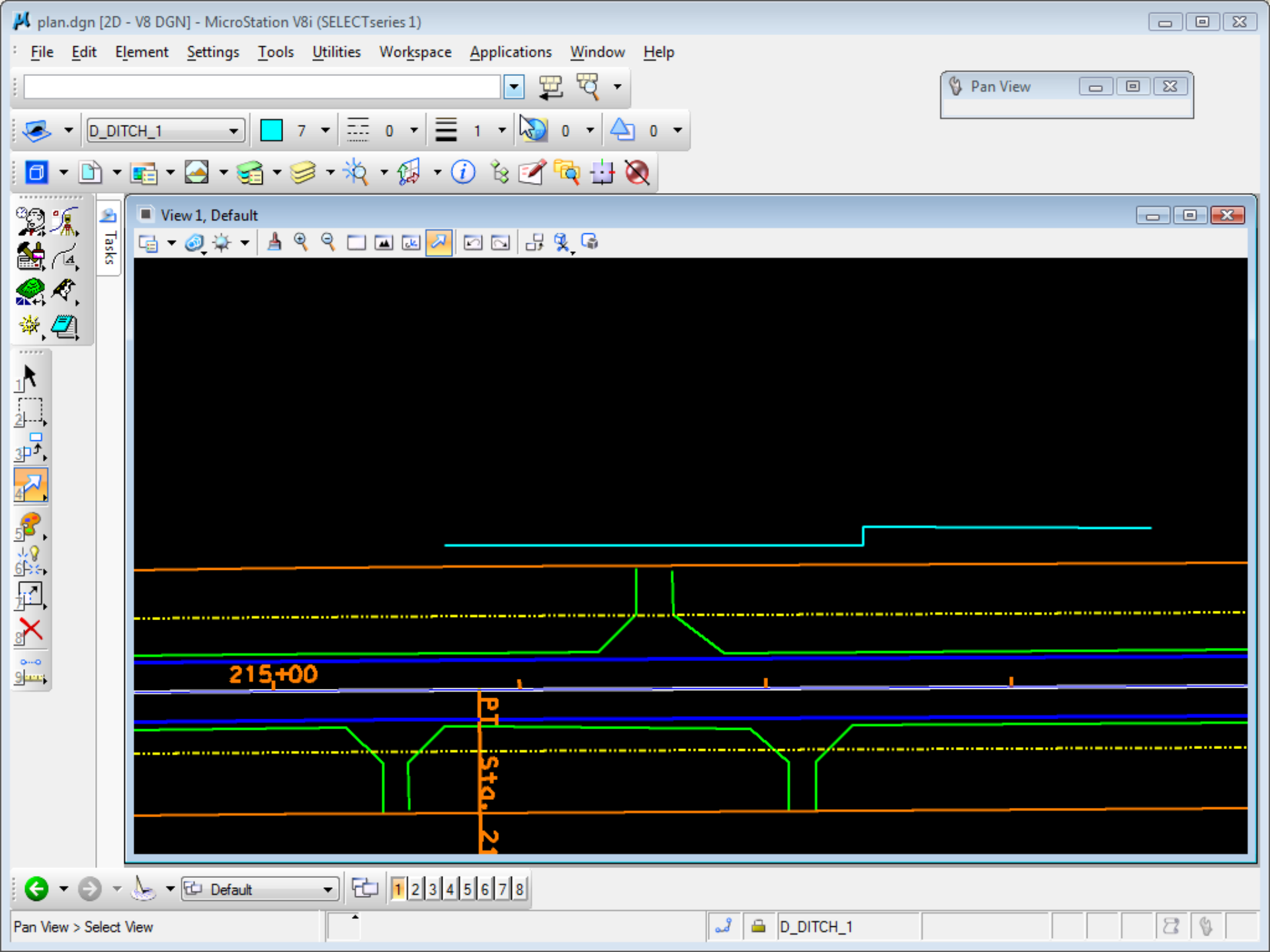

TestFile1.dgn [3D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Default
View 1 - Top, Default
Modify - Main Task
Enter Start Point
Tasks
Line
Items
Details
Default Views
1 2 3 4 5 6 7 8
> Enter Start Point
Default


TestFile1.dgn [3D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Default
5
0
3
0
View 1 - Top, Default
Modify - Main Task
Tasks
Element Selection
Items
Details
Default Views
1 2 3 4 5 6 7 8
Lengthen or shorten an element
Default

Training Link

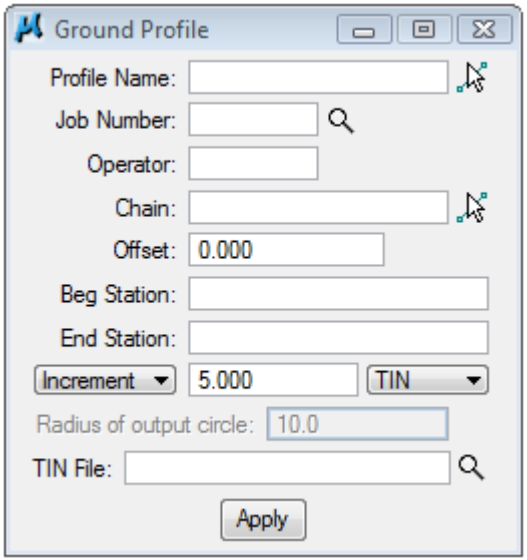
- Added a new ‘Training’ link to the Applications menu. Whenever a Bentley Institute class is installed on a machine, this link will automatically give the user access to the training videos delivered with the class.

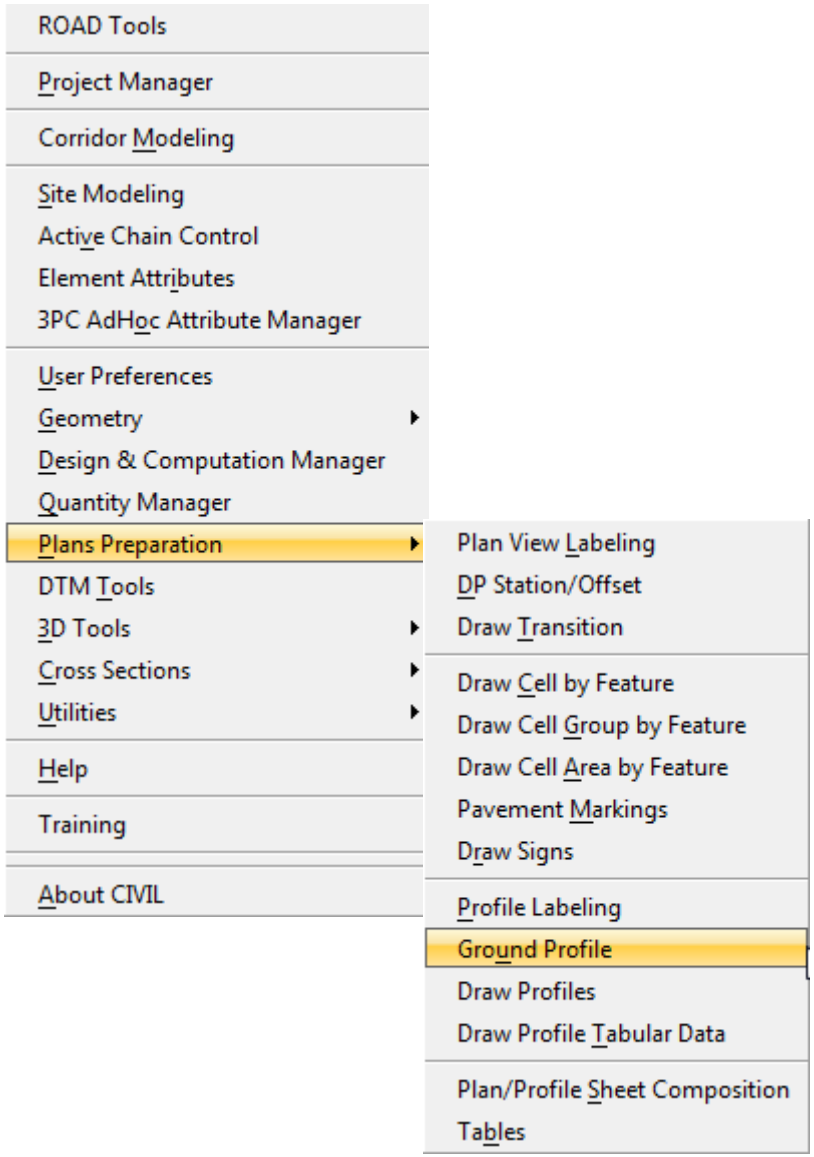



plan.dgn [2D - V8 DGN] - MicroStation V8i (SELECTseries 1)
File Edit Element Settings Tools Utilities Workspace Applications Window Help
Pan View
D_DITCH_1
View 1, Default
Tasks
215+00
PT Sta. 21
Default
1 2 3 4 5 6 7 8
Pan View > Select View
D_DITCH_1

Ground Profiles

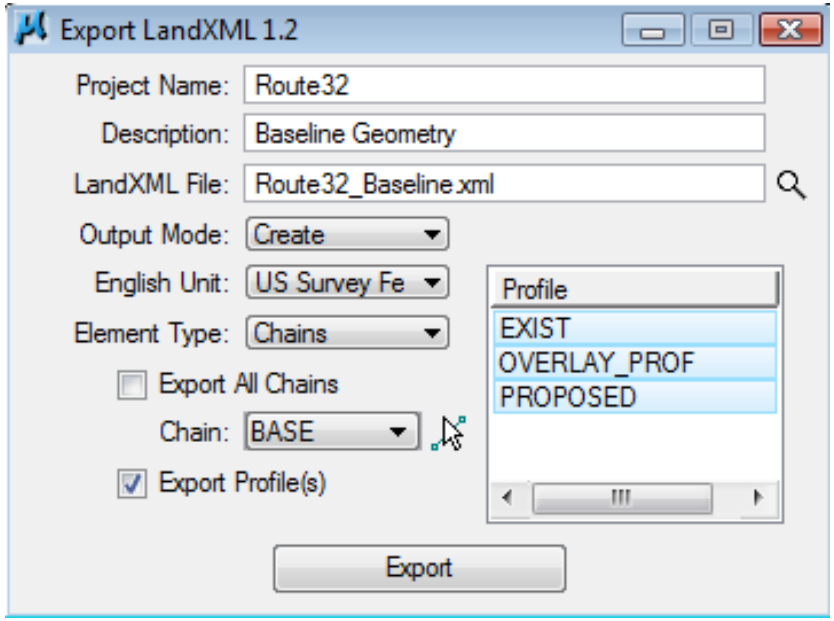
- Added the ‘old’ Ground Profiles application back to the menus.





LandXML 1.2

- Update LandXML import and export to support version 1.2.



THANK YOU!

Bentley

V8*i* Civil Update

Derricke Gray

GEOPAK Product Manager

Bentley
Sustaining Infrastructure