OpenRoads Best Practice - Geometry

Presented by:
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Learning Objectives

This best practice session intends to introduce concepts of Openroads Geometry and cover some commonly asked questions on it's use. This session intends to provide something for the novice user through to expert user.

- Reference Lectures Material
  - 2014 / 2015 / 2016 Learn Conferences
    - Best Practice Geometry
  - CivilAccuDraw, MicroStation AccuDraw or Both (Lecture)
  - QuickStart: OpenRoads Technology Geometry (Workshops)
  - Creating and Editing Alignment Geometry (Workshops)
  - Creating Ramp Geometry (Workshops)

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Agenda

- Introduction to Openroads Geometry
- Getting Started with Openroads Geometry
- Whats Changed in Openroads Designer Update 2

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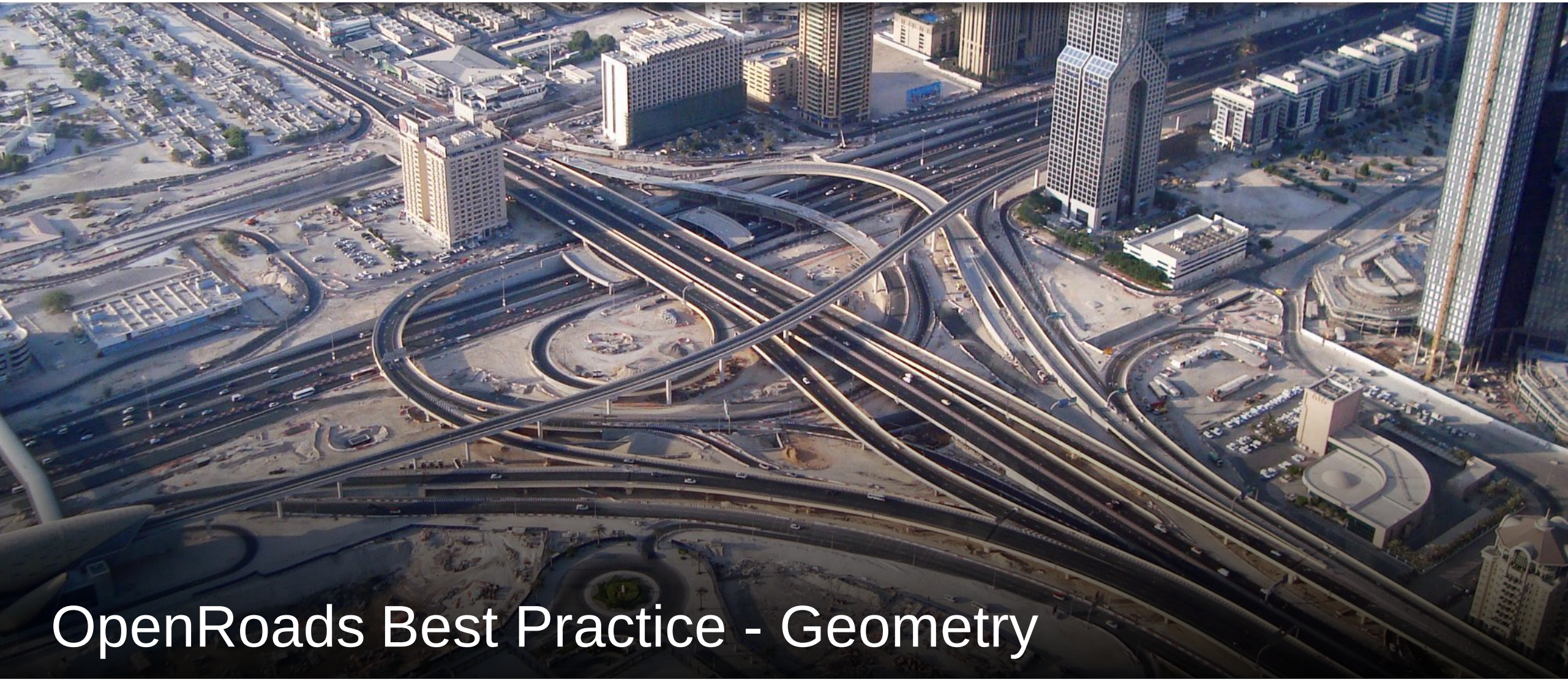

OpenRoads Best Practice - Geometry

Introduction

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Introduction

Key Characteristics of Openroads Geometry

- MicroStation geometry elements with added **intelligence**. Civil tools create geometry with **rules** and **associations** that provide **intelligent updating** – Design Intent
- Interactive / Dynamic user experience
  - Edit handlers, manipulators
  - Context sensitive toolbars
  - In-Place Editing
  - Heads up prompting keeps your focus on your work.
- Supports native civil geometry import :- ALG, GPK and FIL

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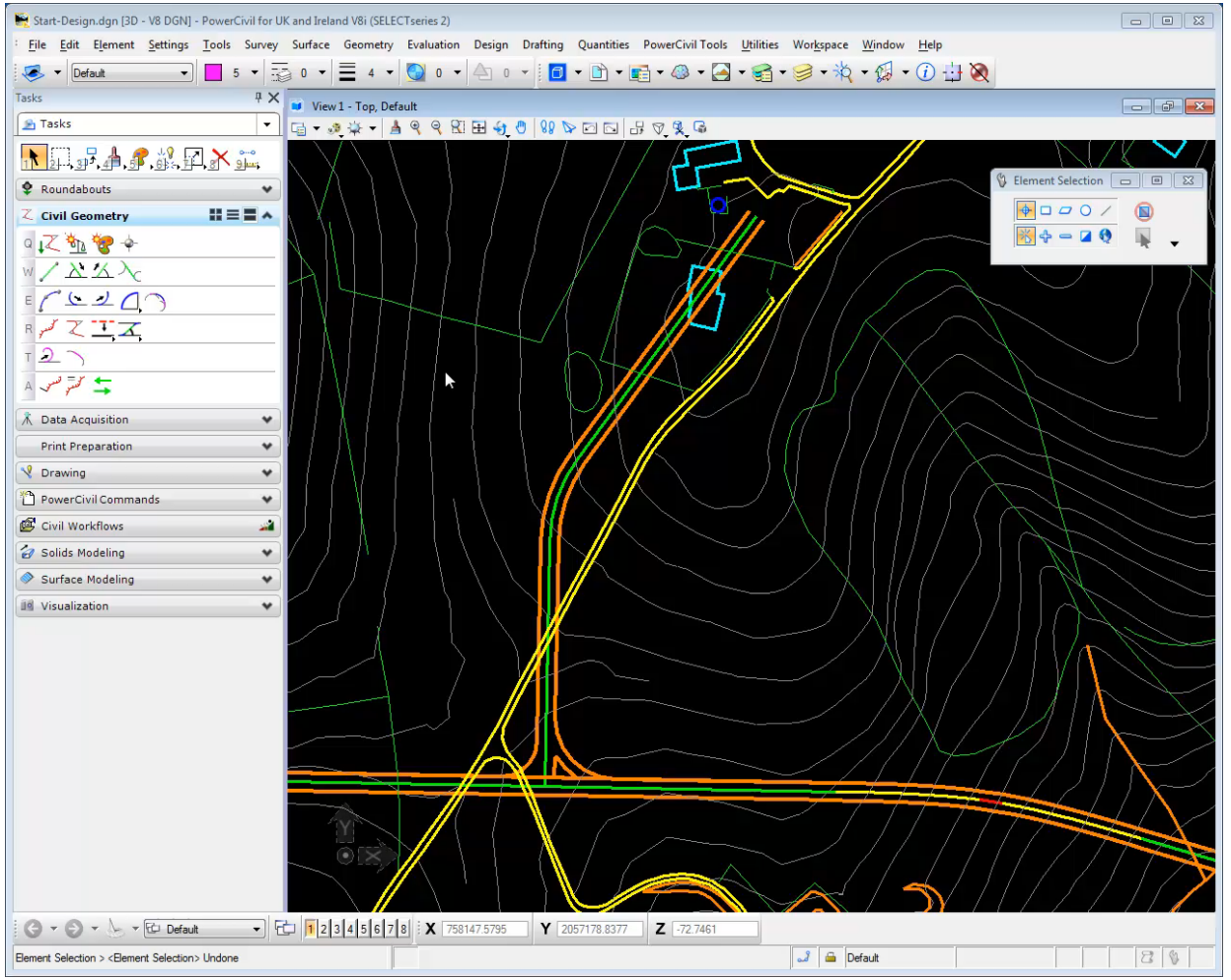
Introduction – SS2

Lets focus on that phrase

*'Civil tools create geometry with **rules** and **associations** that provide **intelligent updating** – Design Intent'*

Originally seen way back in SELECTseries 2 as new Horizontal Geometry capability



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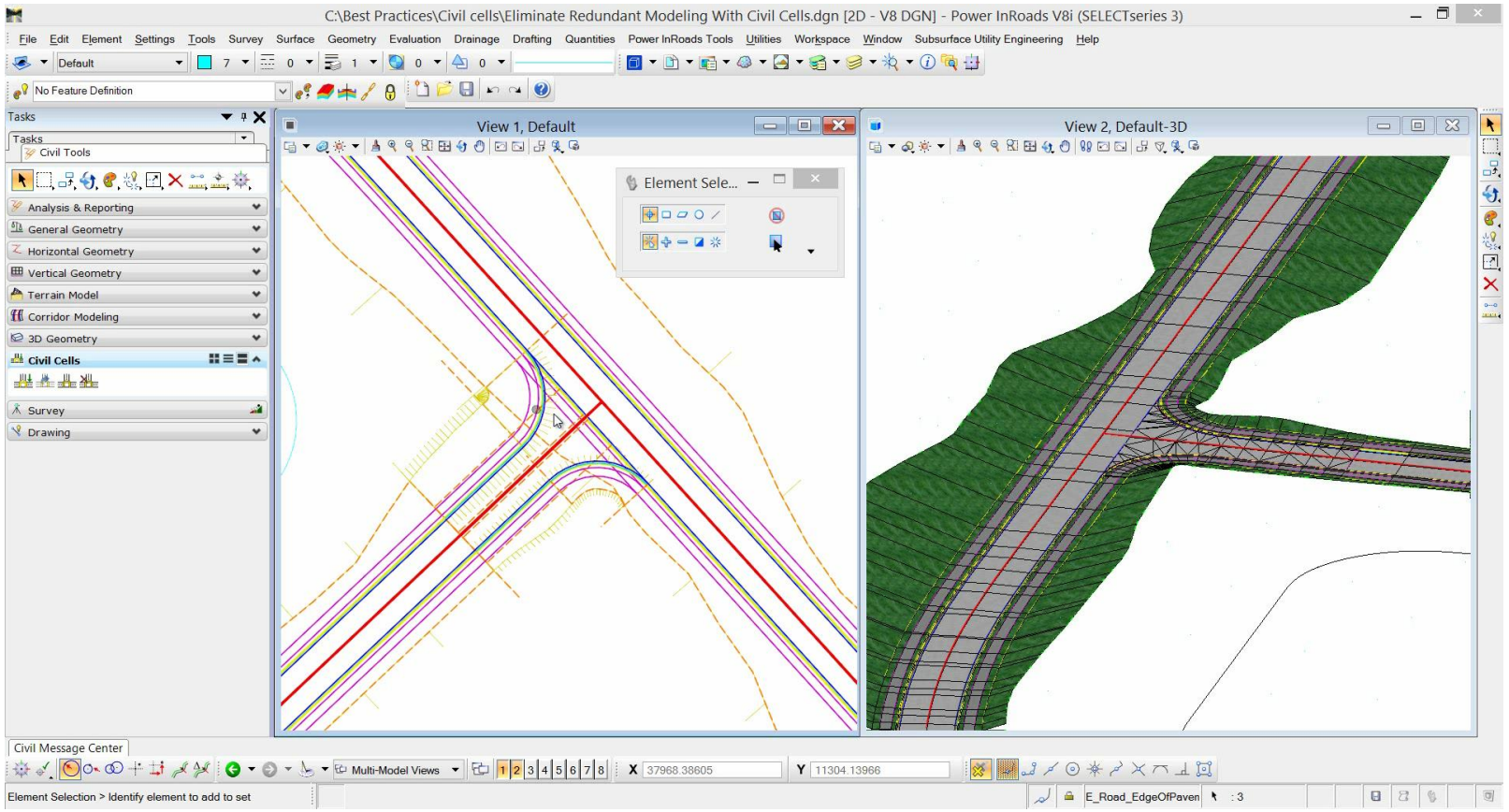
Introduction – SS4

Openroads Civil Geometry facilitates design intent and intelligent updates locally and through# federated files



 # user controlled update

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OpenRoads Designer

Civil Geometry is maturing, we're listing and improving based on your feedback.

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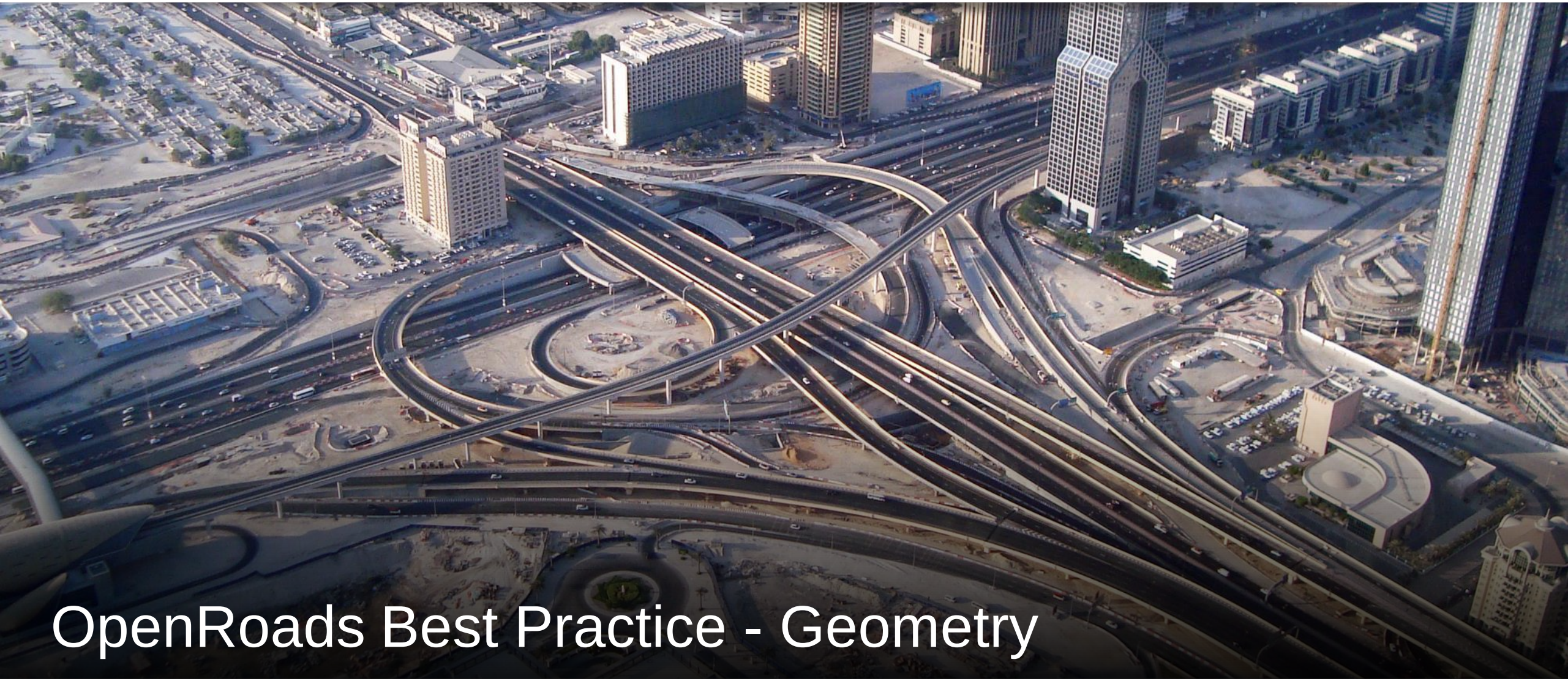

OpenRoads Best Practice - Geometry

Getting Started

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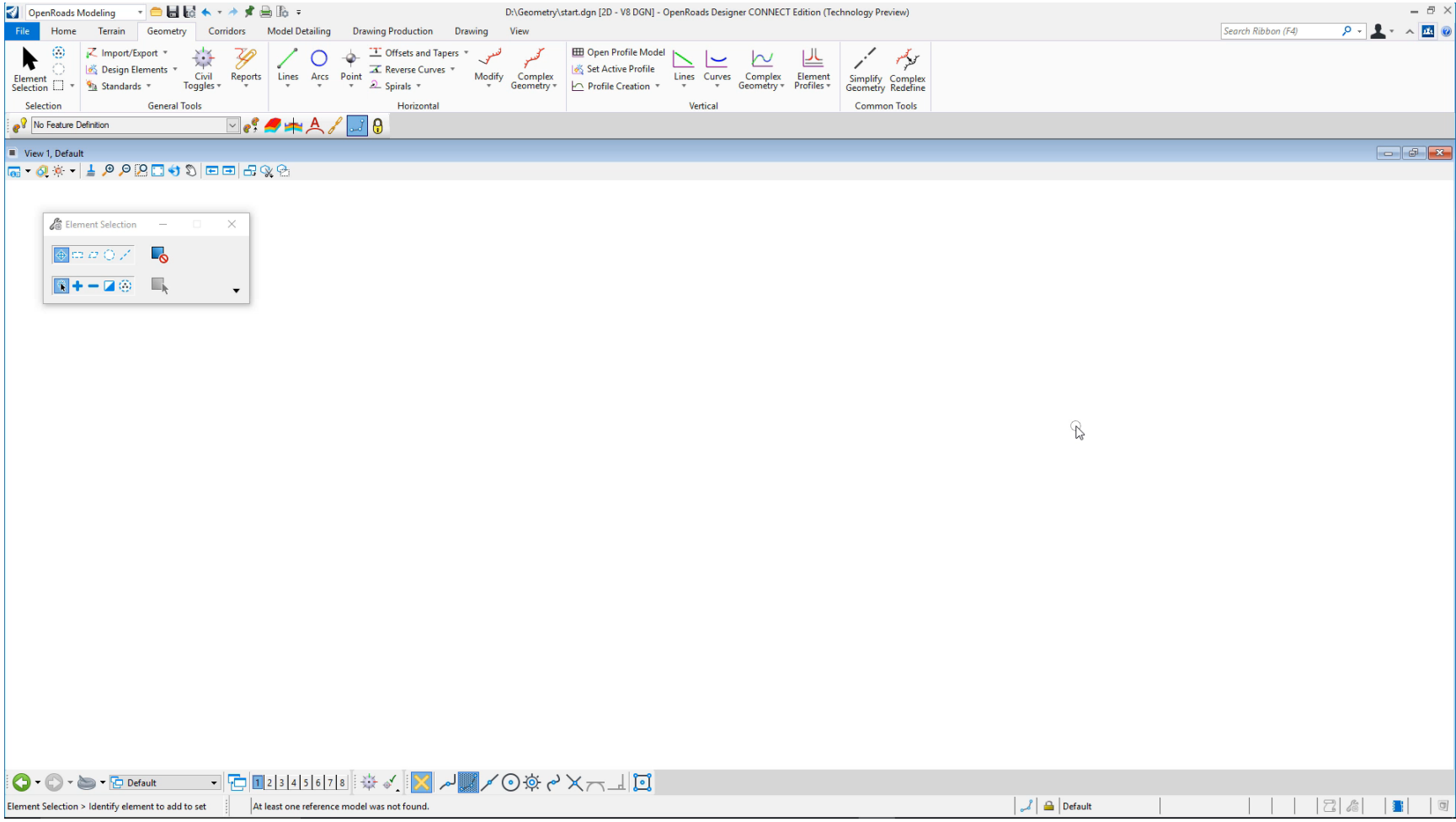
Getting Started

- Connected User
- Personal Portal
- Connect Advisor
  - Communities
  - Learn Server
  - You Tube



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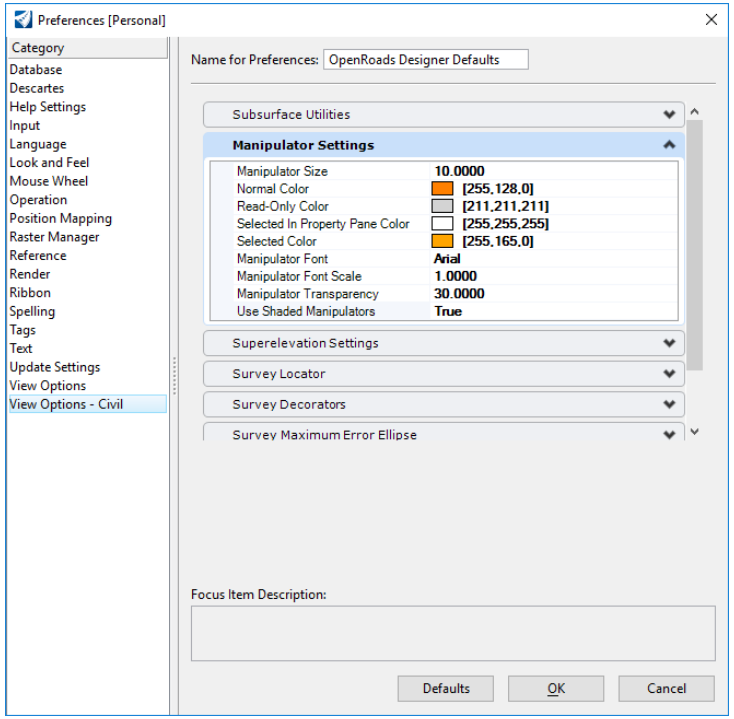
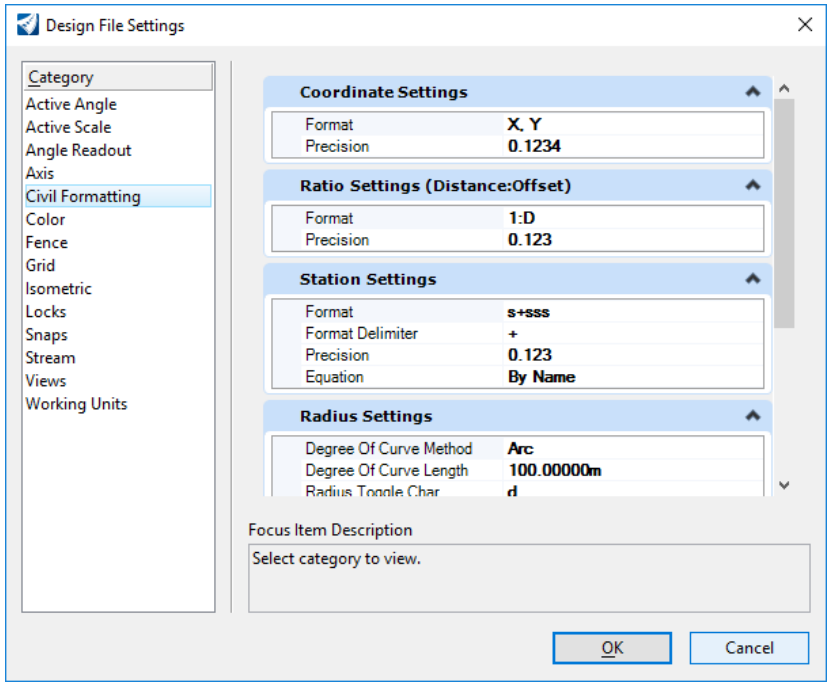
Getting Started – Look and Feel

- ORD Back Stage
- Settings > User > Preferences
  - Look and feel

- Settings > File > Design file settings
  - Units
  - Civil formatting
    - Stationing
    - Radius
    - Profile





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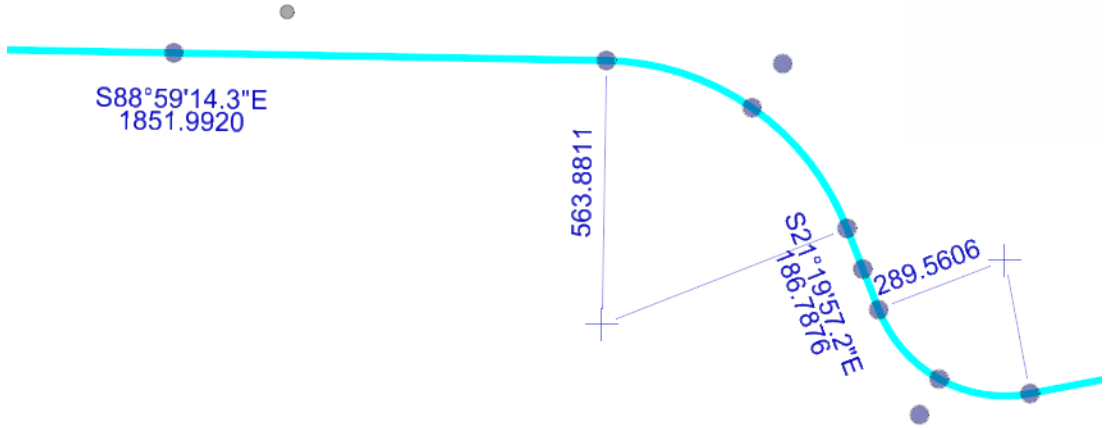
Getting Started – Look and Feel

- Manipulators have to work for you so make them your own personal preferences
  - Change the colour to suit your background
  - Change the size to suit your eyesight and screen

Manipulator Settings

Manipulator Size	10.0000
Normal Color	[255,128,0]
Read-Only Color	[211,211,211]
Selected In Property Pane Color	[255,255,255]
Selected Color	[255,165,0]
Manipulator Font	Arial
Manipulator Font Scale	1.0000
Manipulator Transparency	30.0000
Use Shaded Manipulators	True



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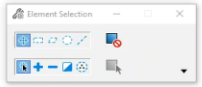
Getting Started – Look and Feel

- Manipulators not available ?
  - Handles turned off
  - Zoomed out or partially off screen
  - Stored in a Reference file
    - Activate / exchange
  - Imported without rules (think read only)



OpenRoads Designer Update 2

- Manipulators enhancements

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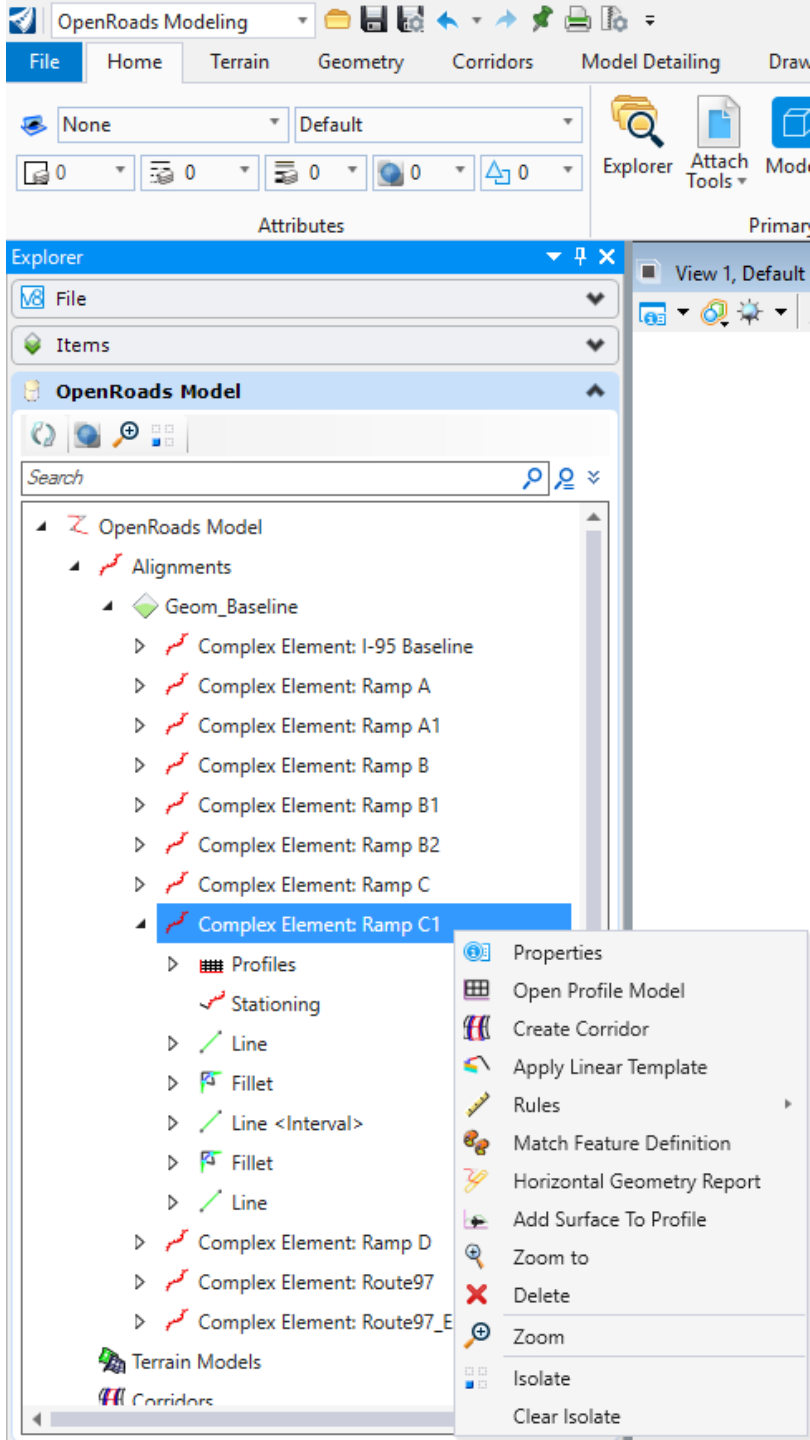
Getting Started – Look and Feel

- Civil Model and Element info
  - Geometry is stored in the following containers
    - OpenRoads Designer
      - Alignments
      - Linear
    - SS4
      - Linear Geometry
  - It's all Geometry
  - Features provide default Geometry naming
  - Sorting by Feature Definition > Element Name
  - Use to navigate / highlight and element within a complex



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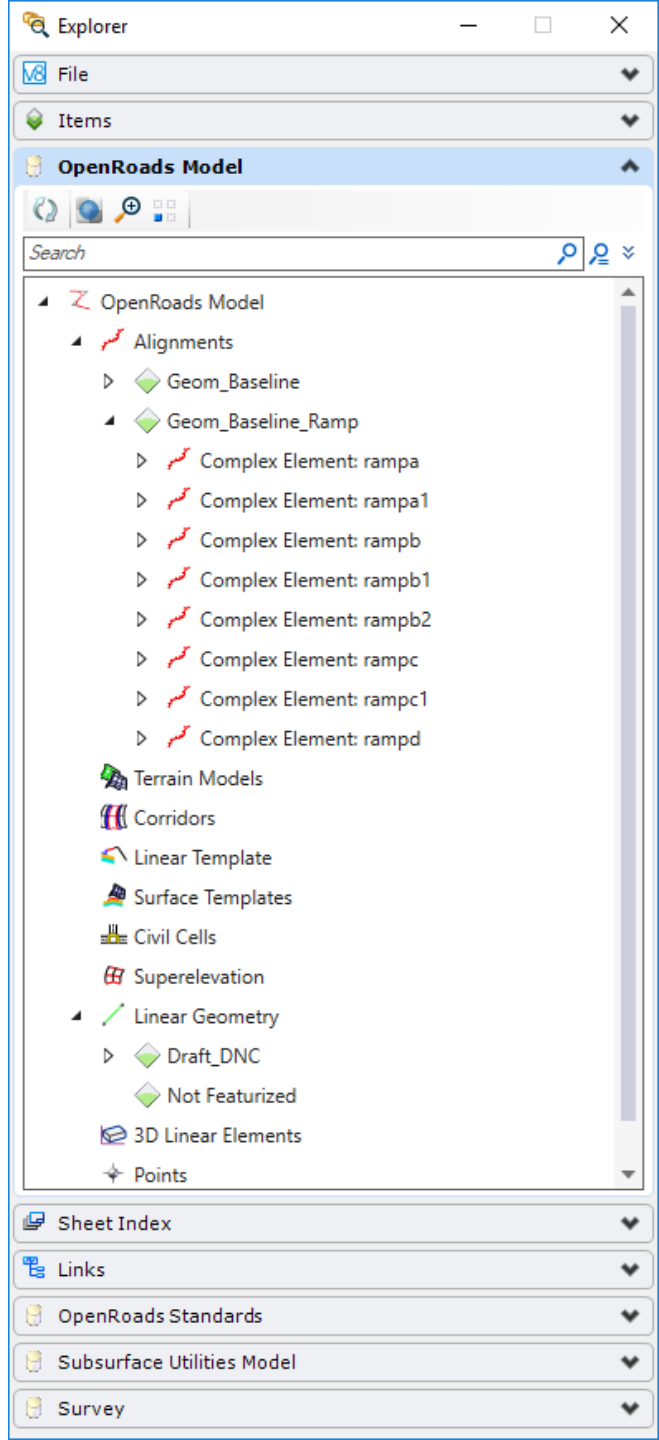
Getting Started – Look and Feel

Project Explorer > Civil Model – Updated for ORD

Provides the container for the Civil Model

- Alignments (new in ORD)
- Linear Elements
- Point Elements
- 3D Linear
- Terrain Models
- Corridors
- Superelevation
- Civil Objects
- Civil Cells
- Reference Models



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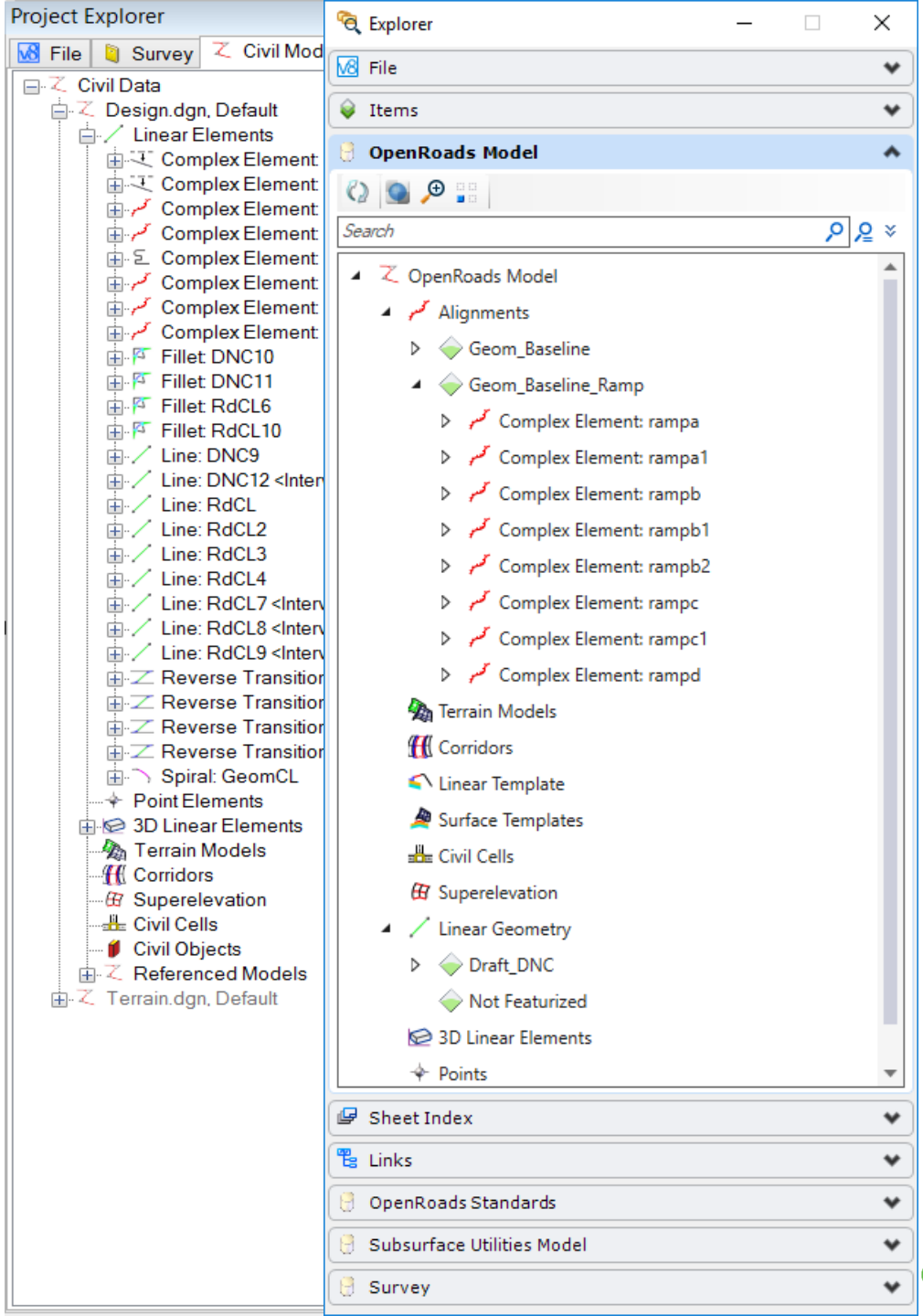
Understanding The Geometry Model

- Project Explorer

New In Openroads Designer

- Alignments
- Sorting based on Feature Definition > Name
- Search



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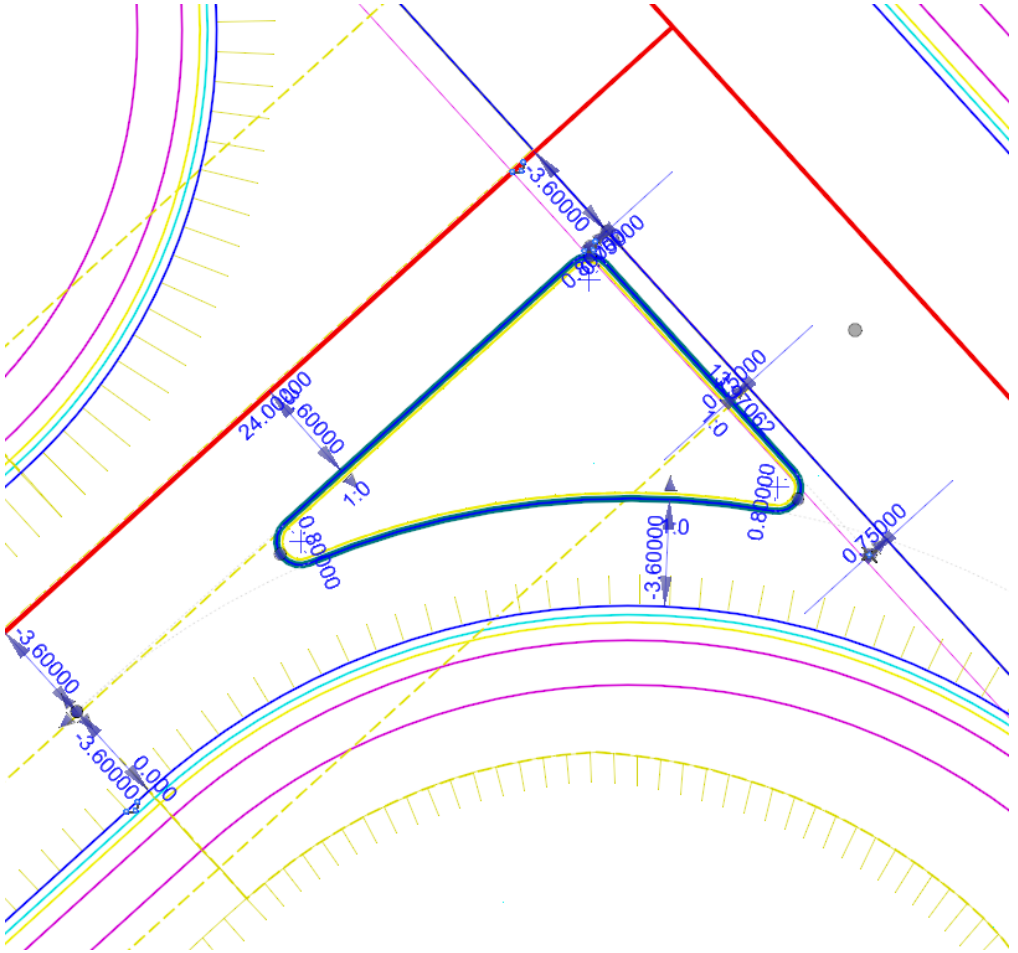
Understanding The Geometry Model - Rules

- Rules
  - Relationship – cause / effect
    - Line / Arc / Spiral from / to
    - Line / Arc between
    - Offset from
    - Slope from
    - Etc
  - Includes
    - Snaps
    - Civil Accudraw
  - Multiple Rule Buckets
    - Geometry
    - Corridor



Without Rules there would be no Design Intent
They underpin EVERYTHING in OpenRoads

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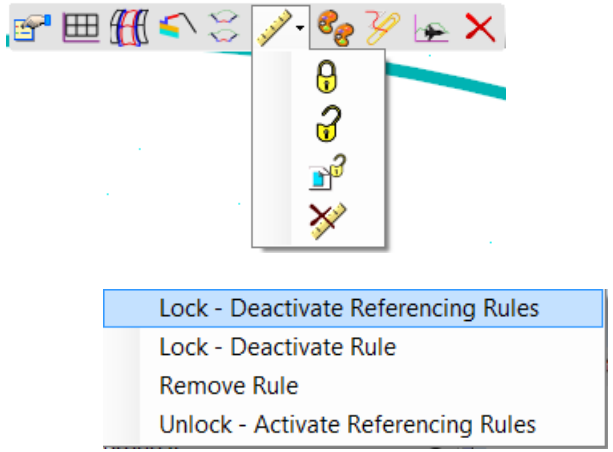
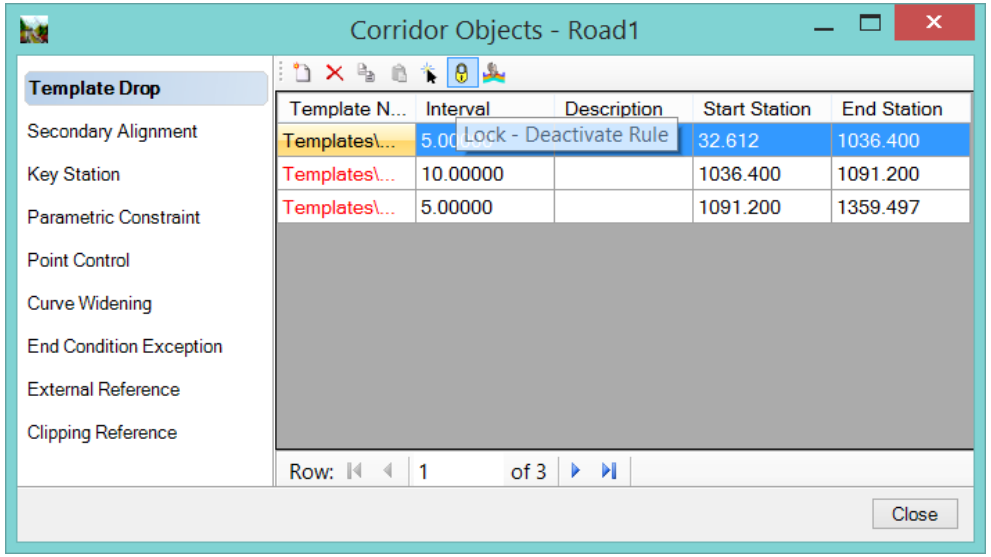
Understanding The Geometry Model - Rules

- Rules
  - Rule Management
    - Lock / Unlock Rule #
      - Can't edit / delete / no manipulators
    - Lock / Unlock Referencing Rules #
      - Children are locked and don't update
    - Remove Rule

  # sometimes a toggle or explicit command





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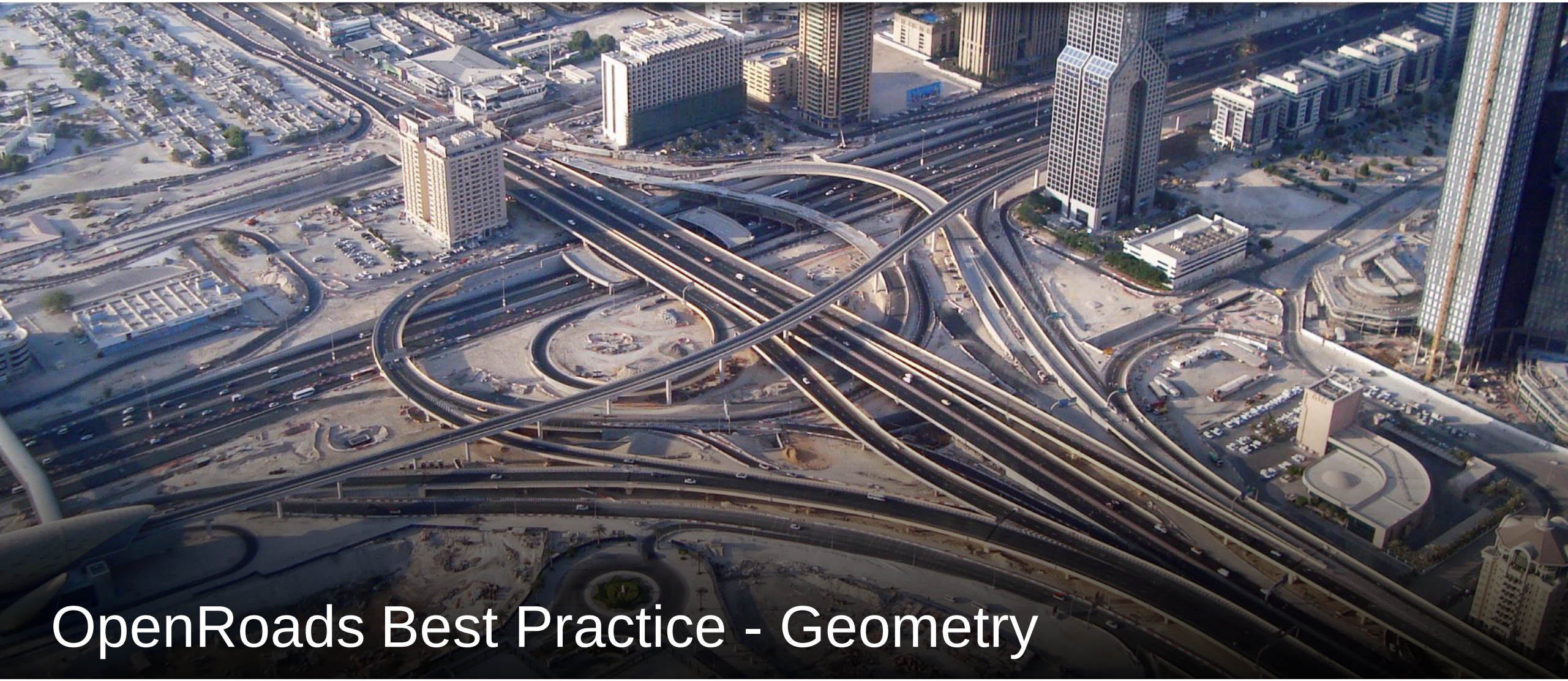

OpenRoads Best Practice - Geometry

Commonly asked Questions

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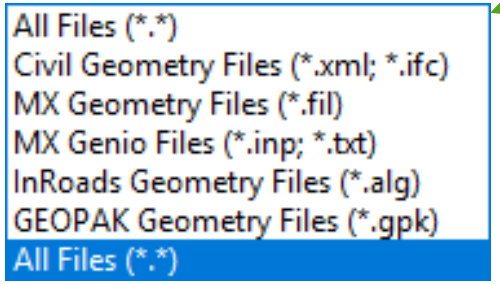
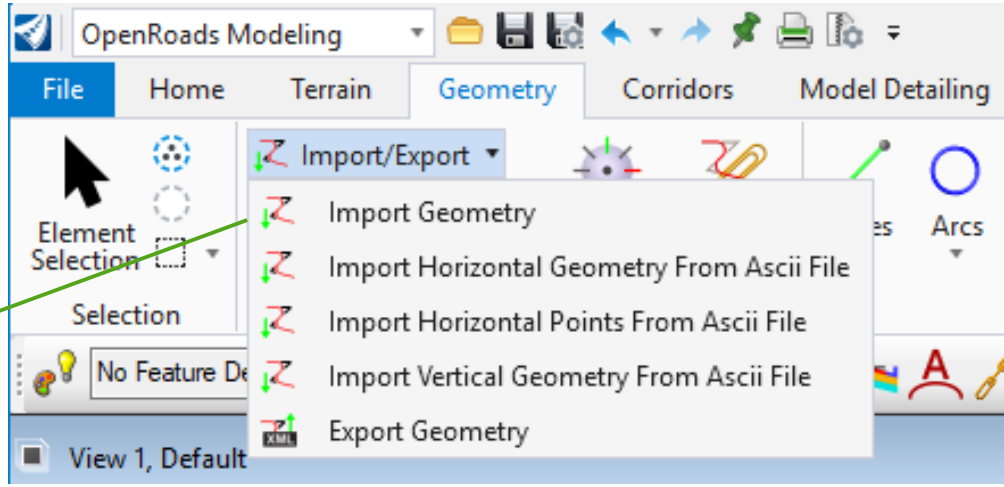
Getting Started – Import / Export Geometry

- Import Geometry – looks to native product formats and third party file types
  - GPK - GEOPAK
  - ALG - InRoads
  - .FIL - MX
  - LandXML
  - ASCii H&V
- New at update 2
  - IFC Alignment
  - Genio
  - Import Horizontal Points from Ascii File





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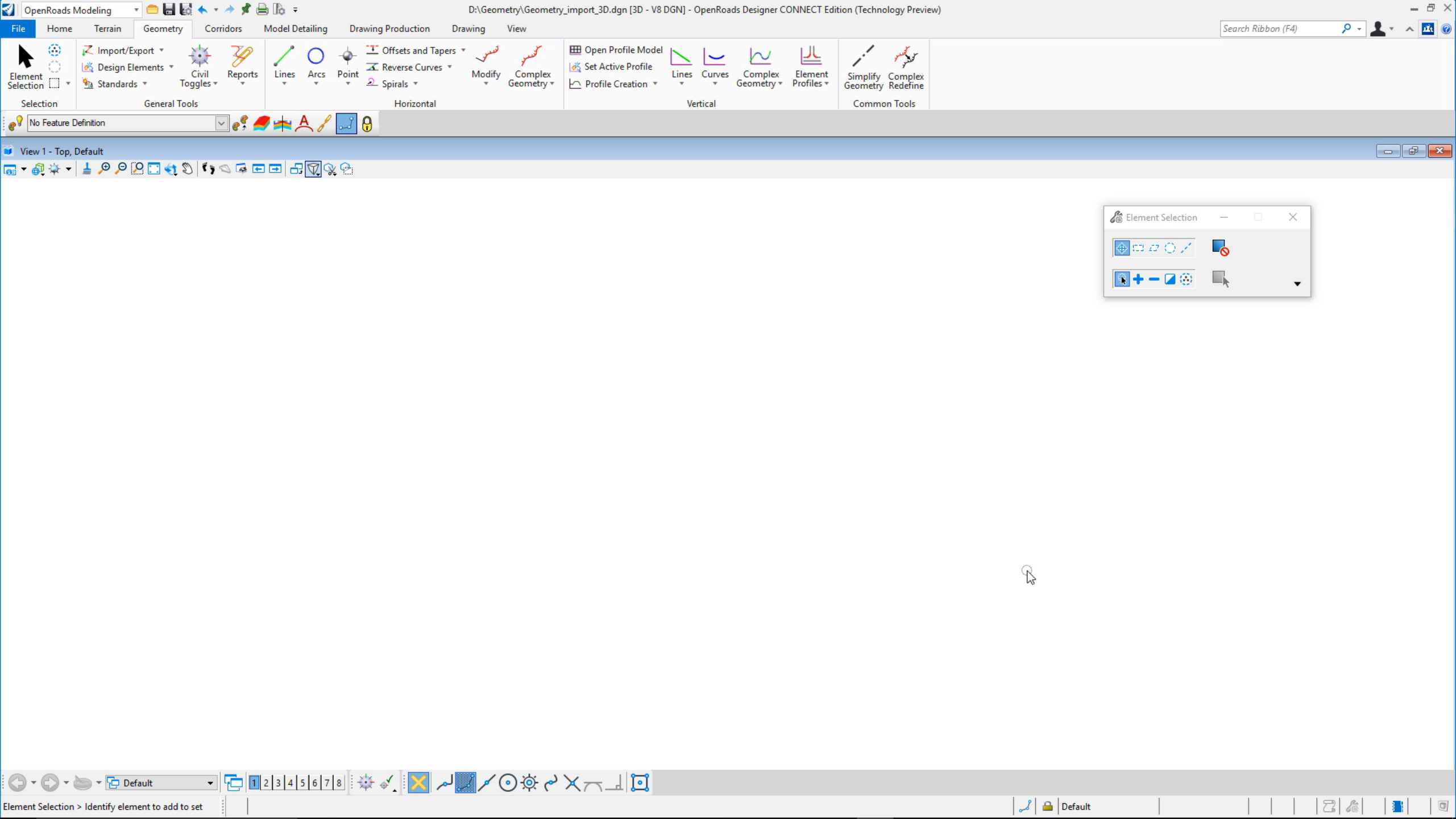
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Reports
General Tools
Lines
Arcs
Point
Offsets and Tapers
Reverse Curves
Spirals
Modify
Complex Geometry
Horizontal
Open Profile Model
Set Active Profile
Profile Creation
Lines
Curves
Complex Geometry
Element Profiles
Vertical
Simplify Geometry
Complex Redefine
Common Tools
No Feature Definition
View 1 - Top, Default
Element Selection
Default
Element Selection > Identify element to add to set
Default

New
Open
Save
Save As
Save Settings
Send Mail
Close
Tools
Settings
Properties
Print
Import
Export
Publish i-model
Help
Exit

Open

Recent Files for Training-Metric

Geometry_import_3D.dgn
D:\Geometry\
Model: Default
Modified: 12/10/2017 09:55:21
Size: 824 KB

Browse

What we just saw – Import Geometry

- Always Use 2-D model
  - Catch it early as it can't be 'unpicked'
  - Less clutter and easier selecting
  - Auto-Managed 3-D model space if working in 2-D. No user interaction required for 3-D model creation once profile is assigned to 2-D alignment.
  - Some geometry commands are not supported in 3-D.

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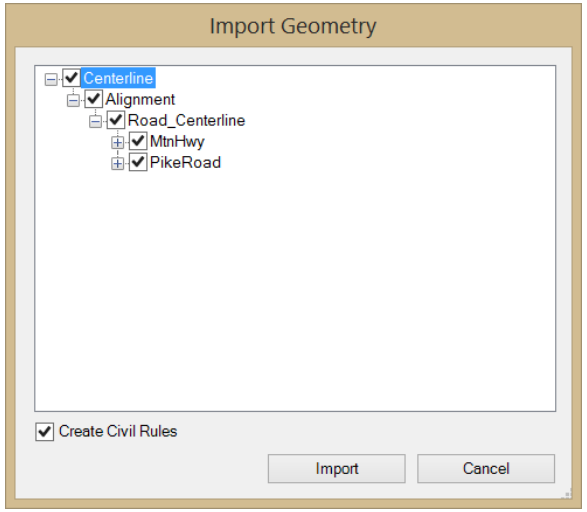
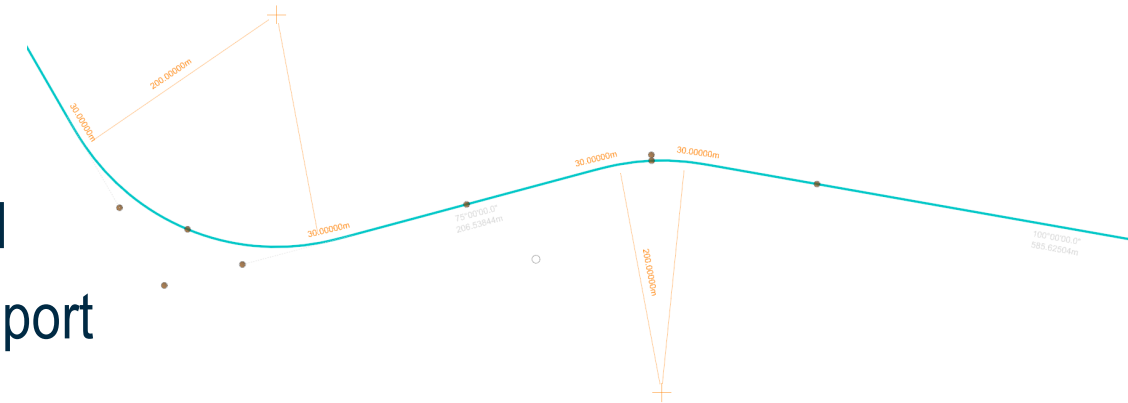
What we just saw– Import Geometry

- Create Civil Rules - What does this mean ?
- Ruled Geometry (improved in ORD)
  - Promotes the Geometry to the DGN
  - Creates dynamically editable civil geometry H&V
- Un-Ruled Geometry
  - Read only Geometry to the DGN
  - Only provides Station controls
  - Vertical can have new profile defined and applied
  - Maintains control to the Native application / re-import





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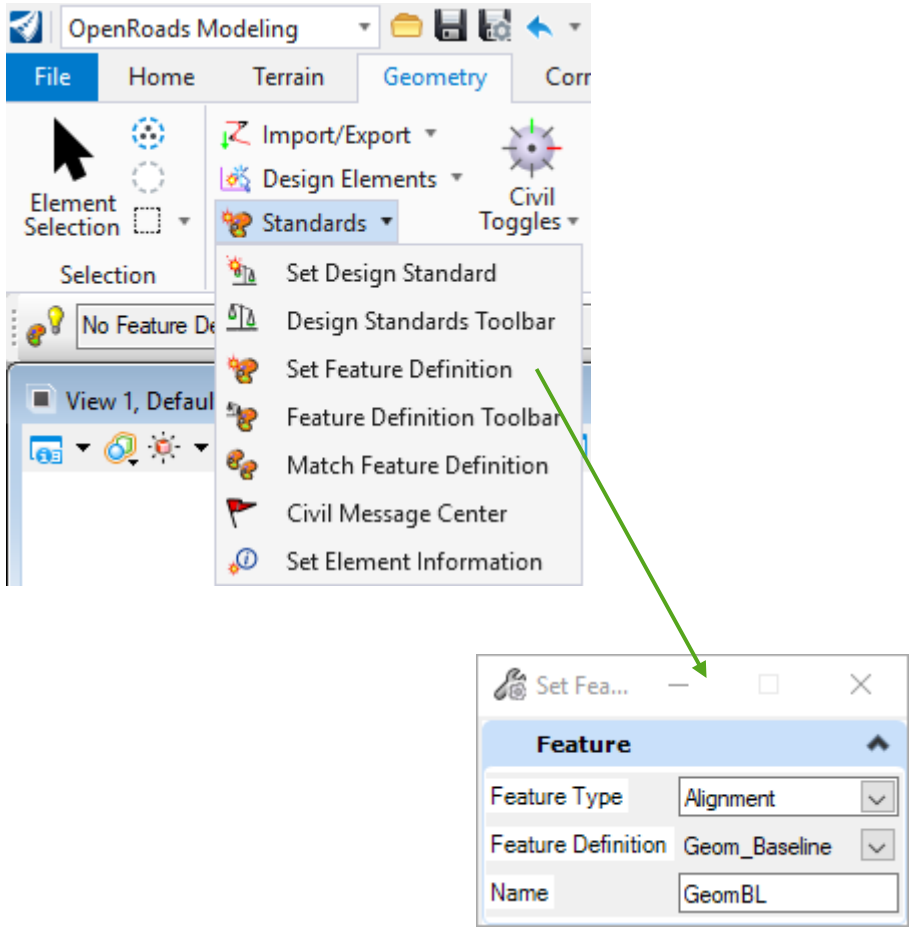
What we just saw– Import Geometry

- Apply feature definition
  - In SS4 we could automatically read from native style
  - In ORD manual assignment is currently required



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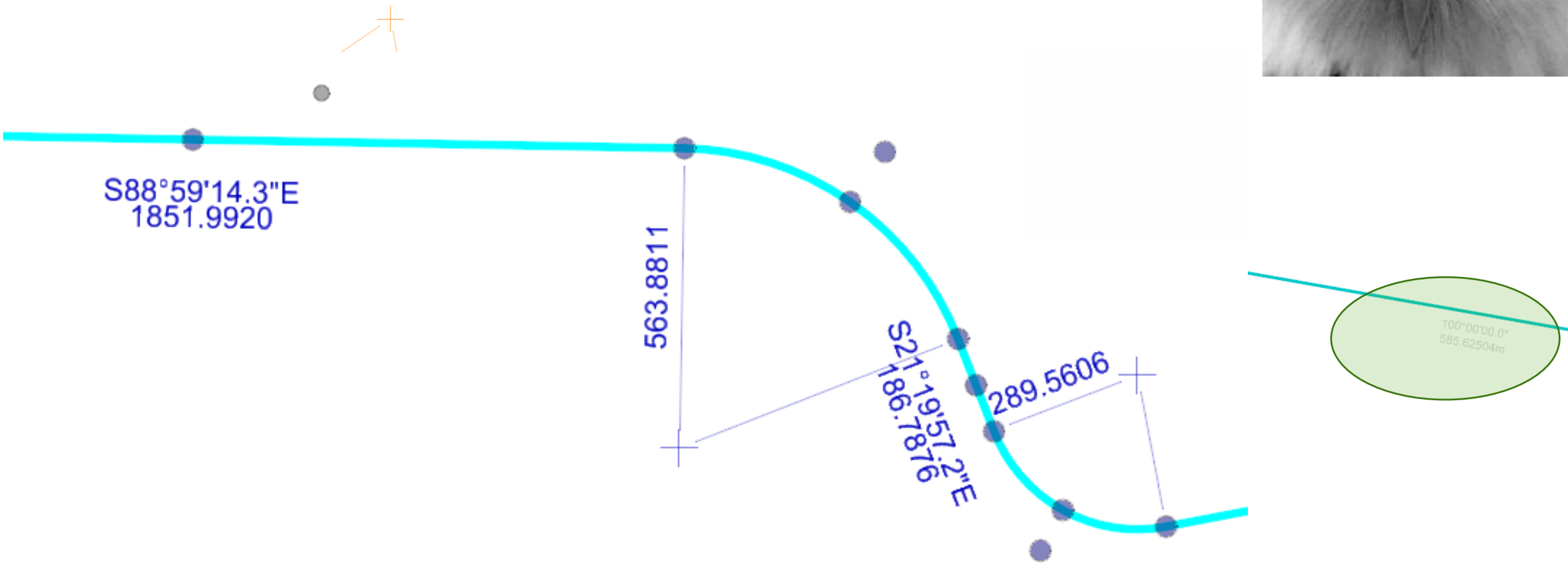
What we just saw– Import Geometry



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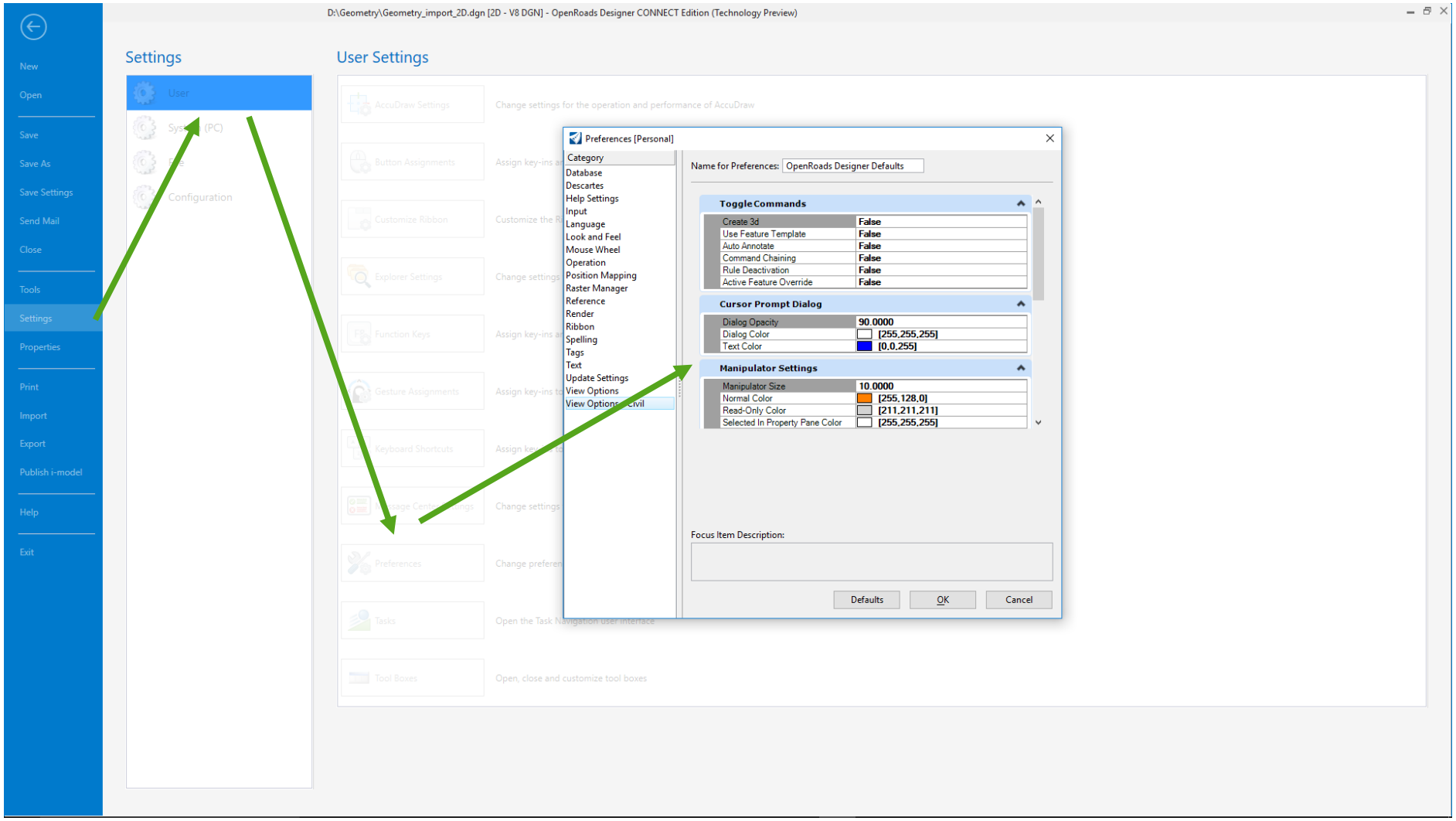
Enhanced Presentation in Update 2



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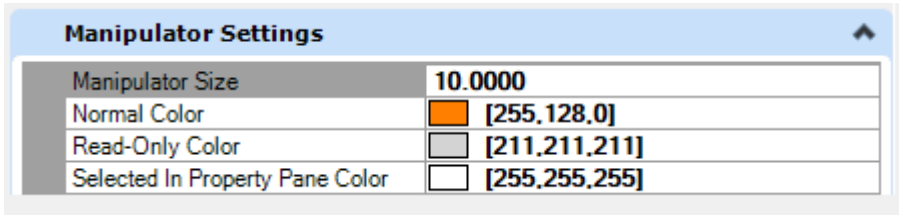
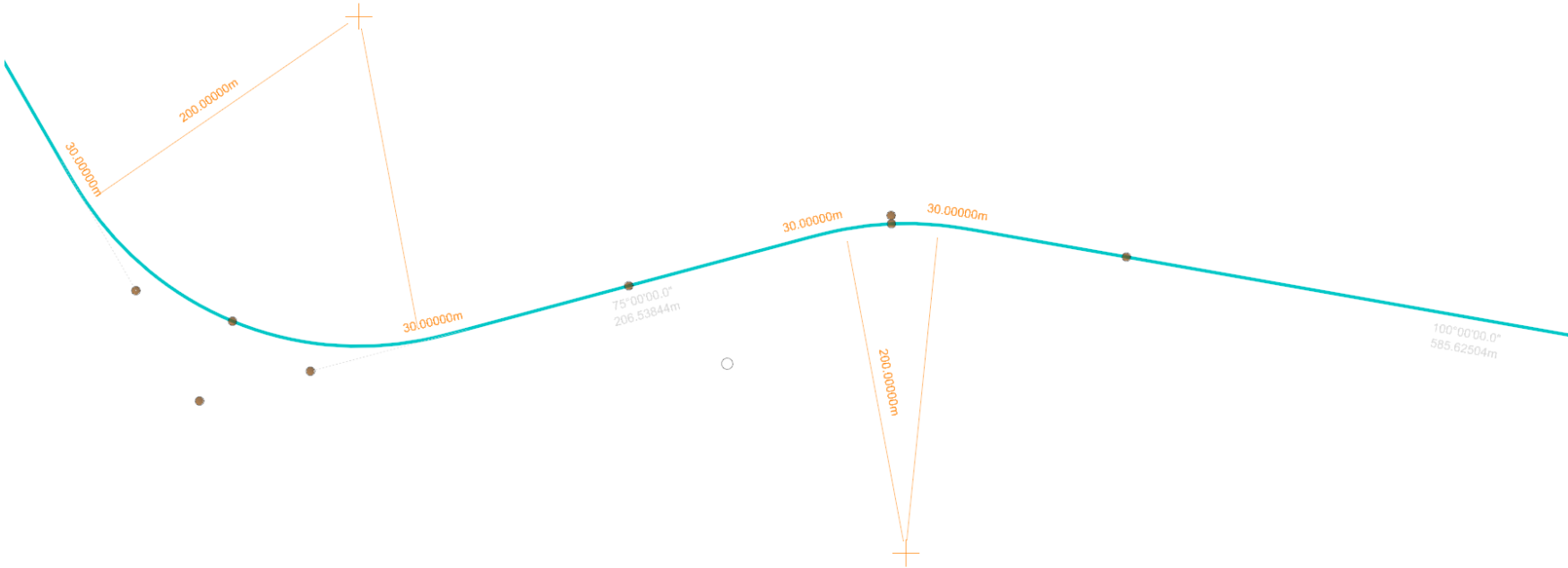
Enhanced Presentation in Update 2

- Read Only
  - Imported without rules
  - Is constrained by other geometry / is an interval





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Geometry Intervals - Some common questions

- what are they ?
- what are the benefit?
- how can they be edited?
- how to remove ?

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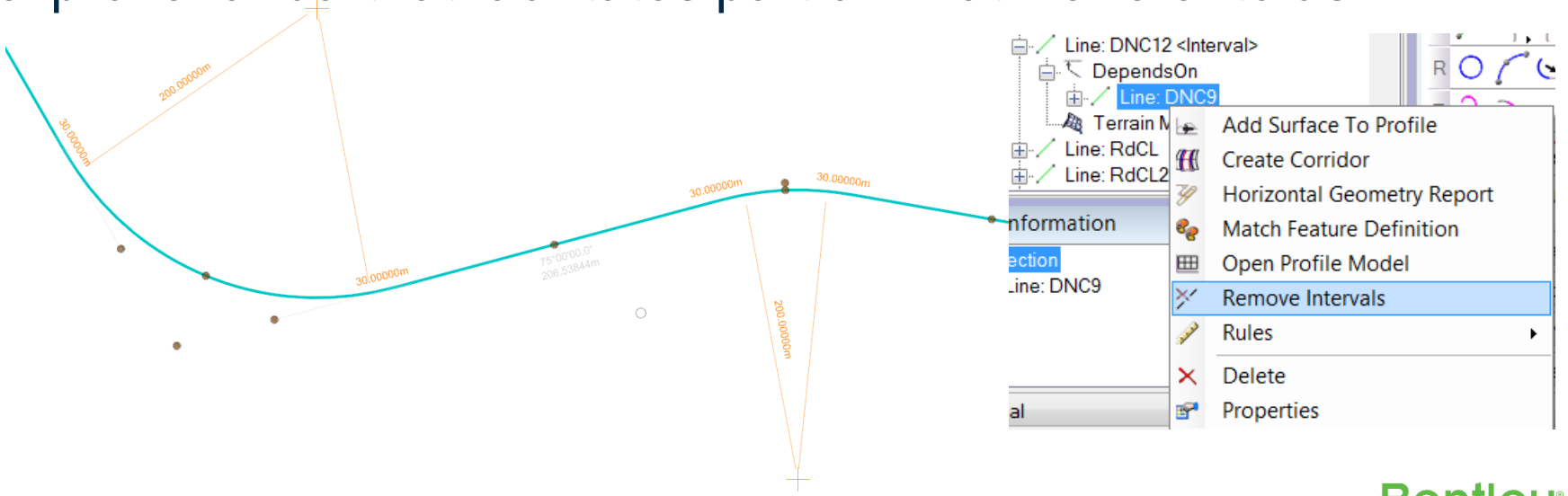
Geometry Intervals - what are they ? What are the benefits

- Intervals are the visible presentation of underlying base geometry
- Intervals have external rules applied to them and so dynamically react to changes
  - Trim / Extend
  - Gaps
- Creates New named Element with rule to the parent with the base (hidden) geometry provides the ‘provenance’ that facilitates part of what we refer to as ‘design intent’



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Geometry Intervals - How can they be edited / removed ?

New options available from Openroads Designer Update 2

- New Interval presentation
  - Intervals are displayed ‘dimmed’ to help identify intervals
  - Prior to update 2 the controlling base element properties were displayed
- New Interval editing
  - How to access the interval
- Simplify Geometry
  - Where there is no dependent rule allows the base elements in a complex to be simplified down to the interval
  - Works for both horizontal and vertical
  - Option to keep base element

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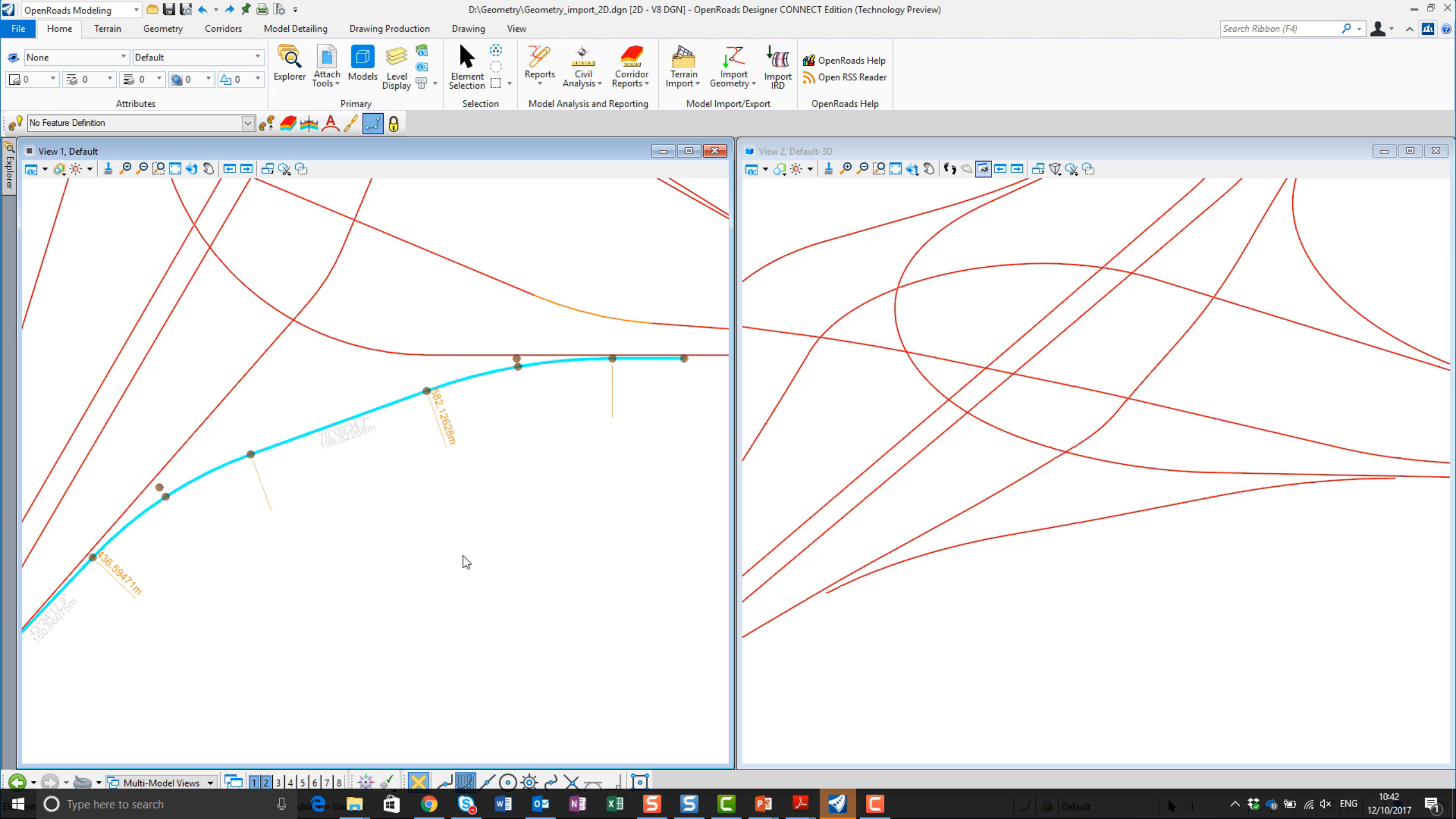
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Model Detailing
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Level Display
Primary
Element Selection
Selection
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Civil Analysis
Corridor Reports
Model Analysis and Reporting
Terrain Import
Import Geometry
Import IRD
Model Import/Export
OpenRoads Help
Open RSS Reader
OpenRoads Help
No Feature Definition
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View 2, Default-3D
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582.12628m
198.82268m
160.86075m
Multi-Model Views
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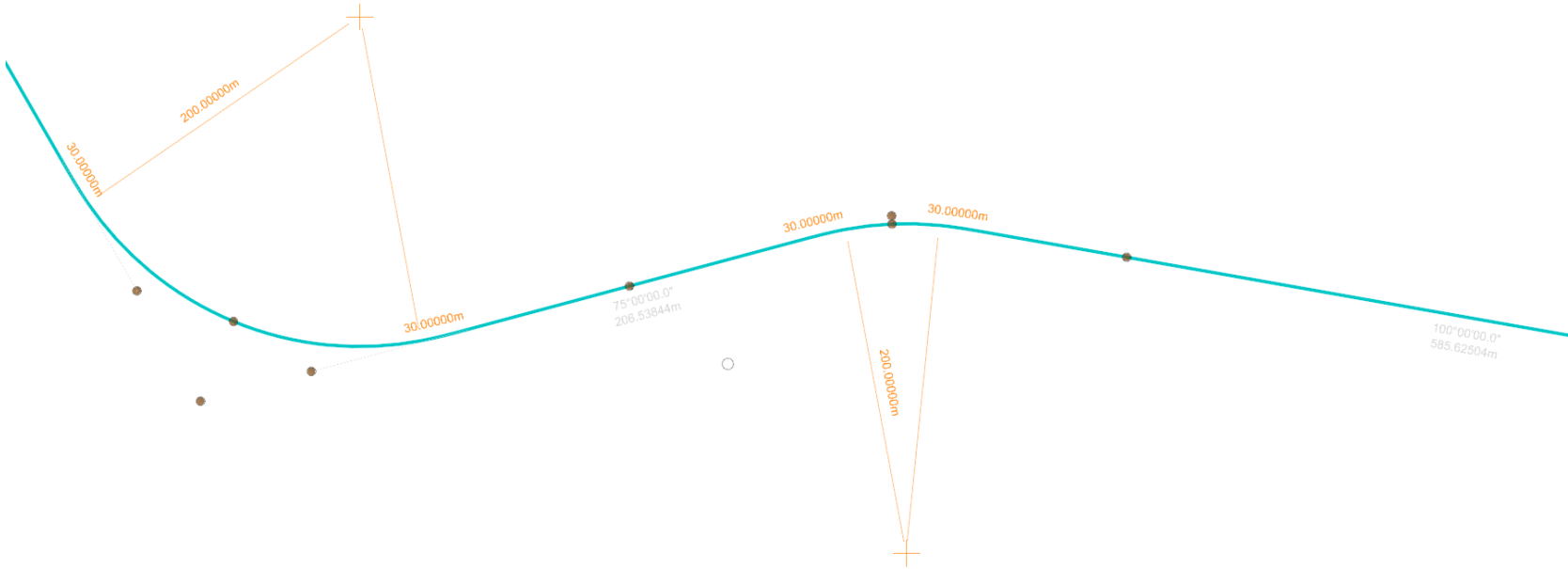
Enhanced Presentation in Update 2

- Interval presentation
  - Correctly reports the ‘visible’ geometry (previously the original / base geometry)
  - Is constrained by other geometry / is an interval



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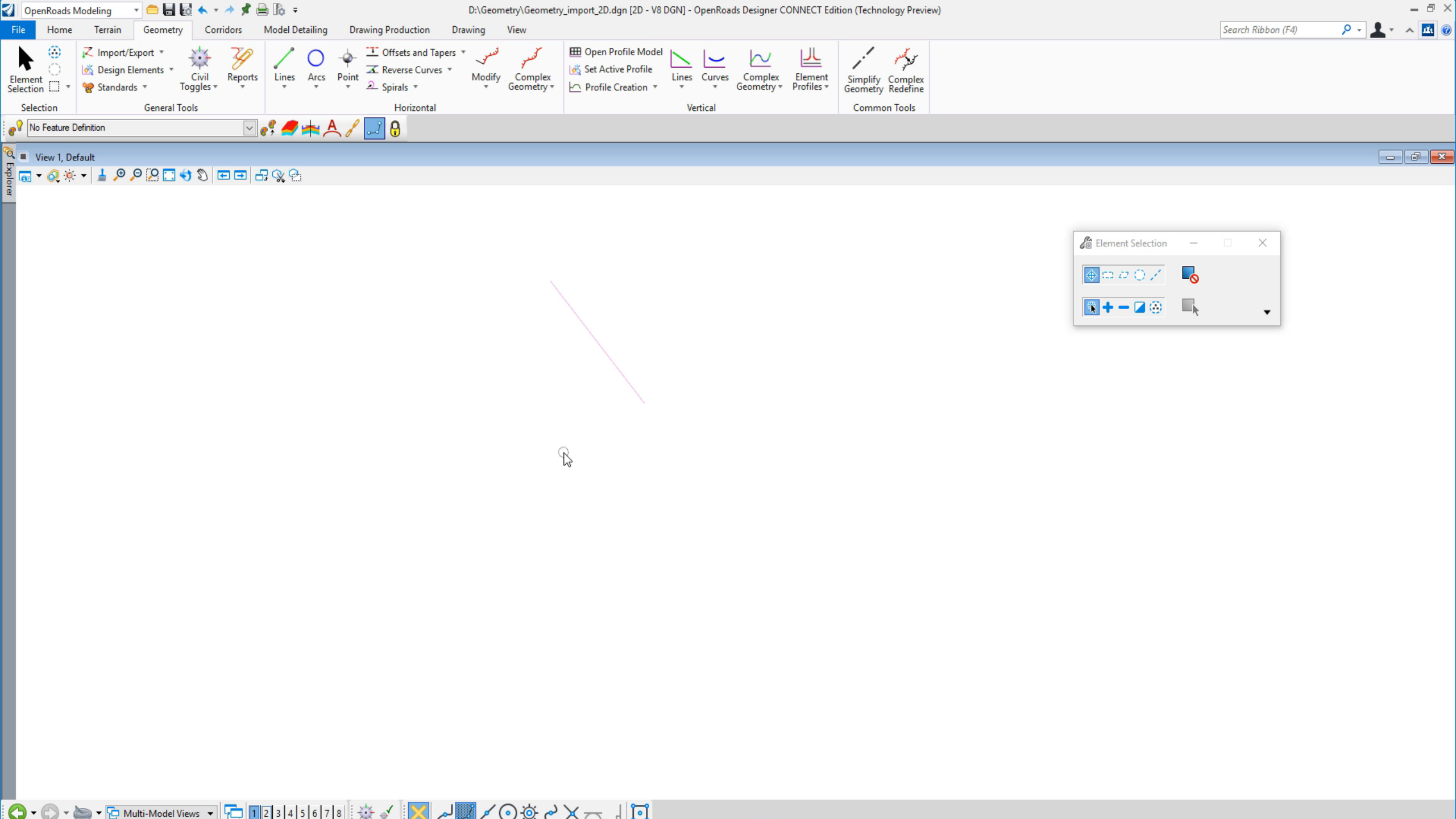
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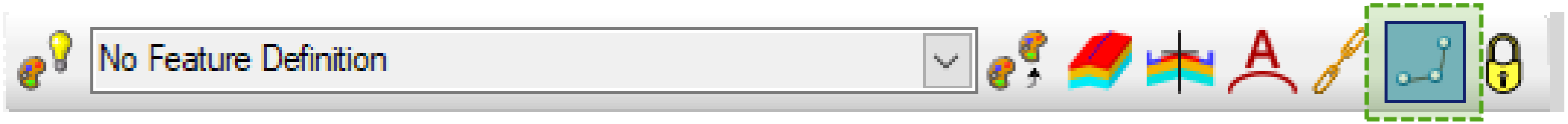
Vertical
Simplify Geometry
Complex Redefine
Common Tools
No Feature Definition
View 1, Default
Explorer
Element Selection
Multi-Model Views

What we just saw – Import Geometry

- Design intent through snaps
- Manipulation of base elements and intervals
- Removal of ‘Snap Rule’ off an element – New in Update 2
- Simplification of geom to ‘visible’ instance – New in Update 2



- Toggle to prevent Snap being preserved as a Rule – New in Update 2

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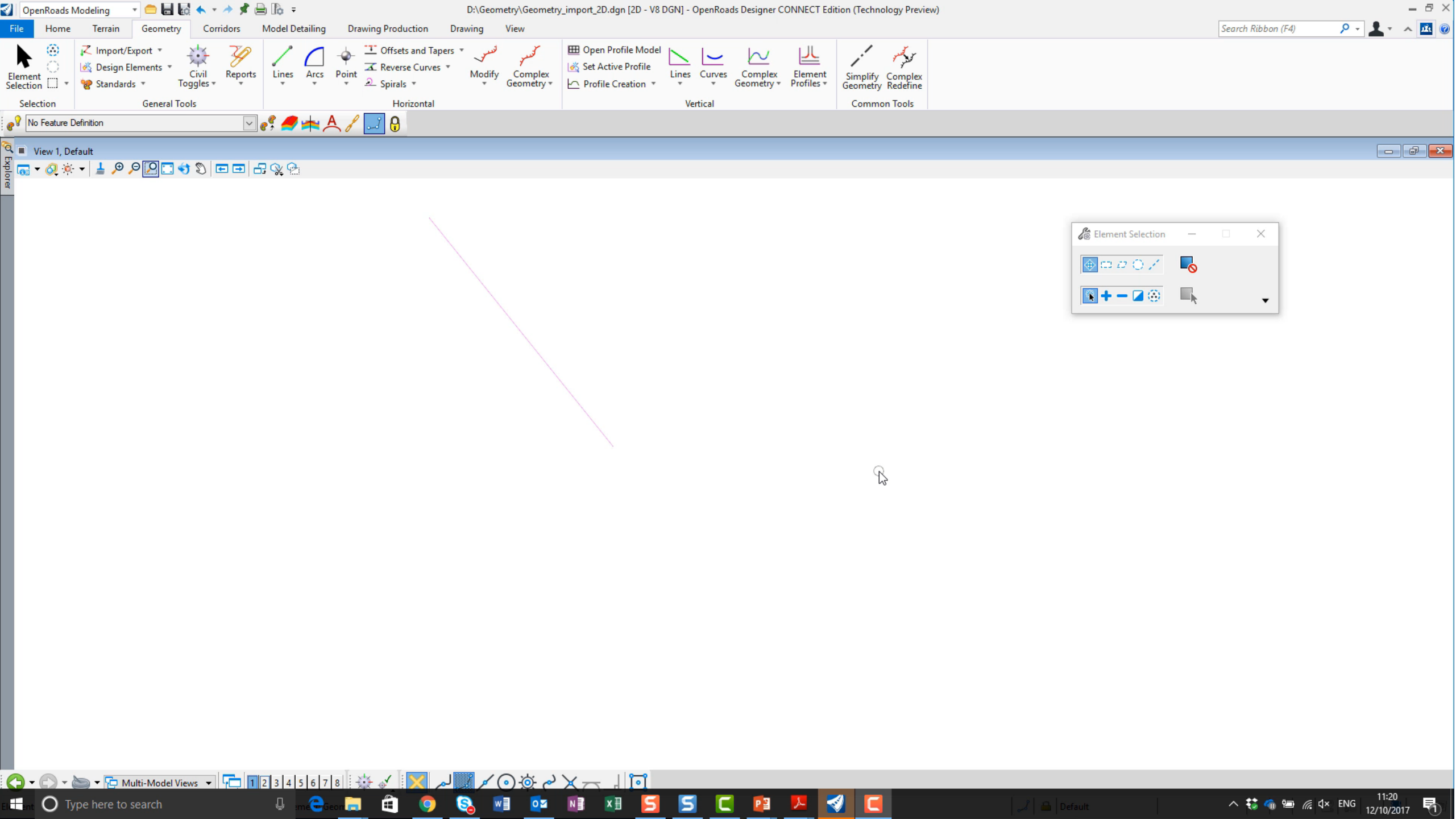
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11:20
12/10/2017

You asked – we listened

Feature Definition drop down list

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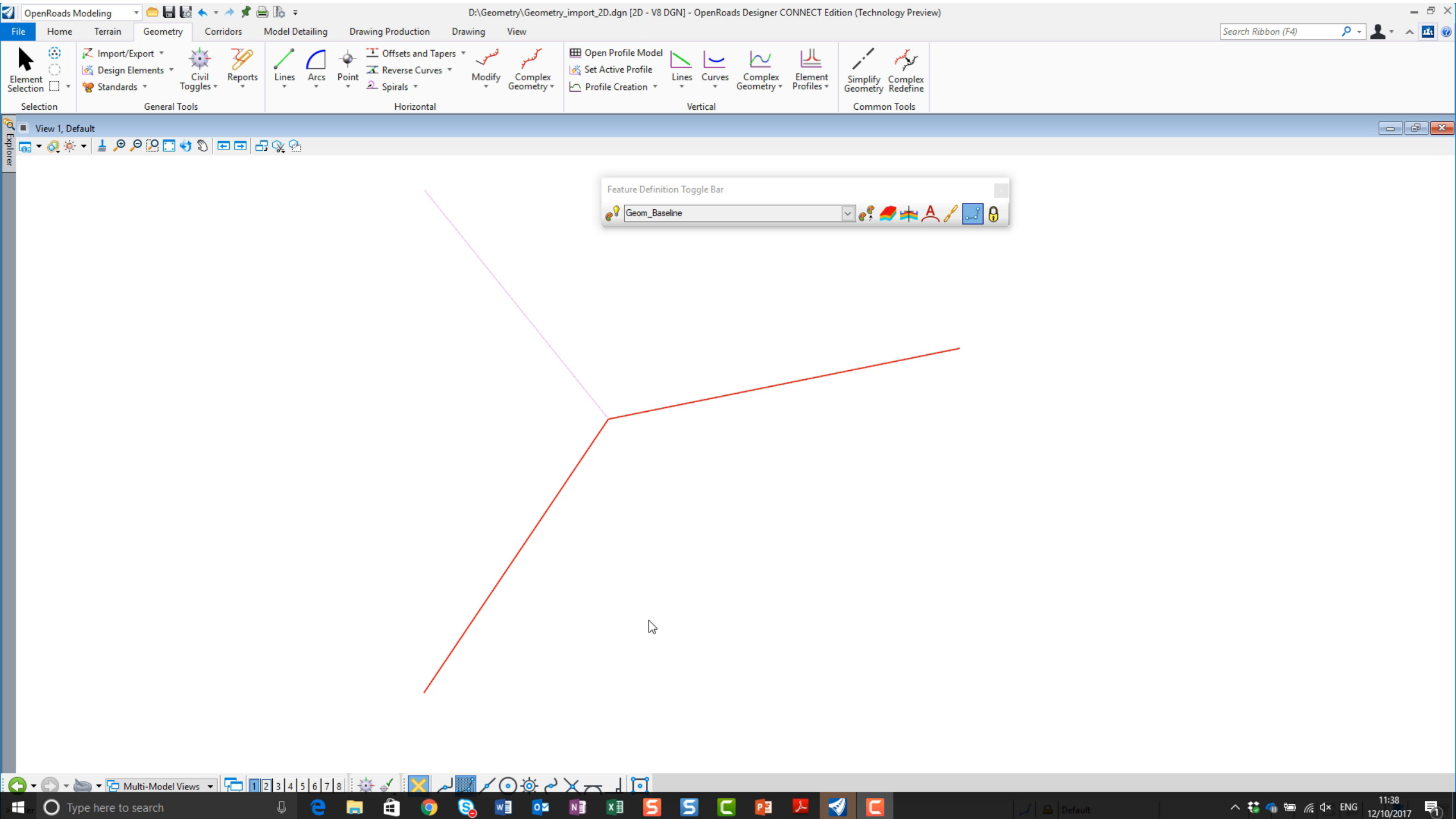
OpenRoads Modeling
D:\Geometry\Geometry_import_2D.dgn [2D - V8 DGN] - OpenRoads Designer CONNECT Edition (Technology Preview)
File
Home
Terrain
Geometry
Corridors
Model Detailing
Drawing Production
Drawing
View
Search Ribbon (F4)
Element Selection
Selection
Import/Export
Design Elements
Standards
Civil Toggles
Reports
General Tools
Lines
Arcs
Point
Offsets and Tapers
Reverse Curves
Spirals
Modify
Complex Geometry
Horizontal
Open Profile Model
Set Active Profile
Profile Creation
Lines
Curves
Complex Geometry
Element Profiles
Vertical
Simplify Geometry
Complex Redefine
Common Tools
View 1, Default
Explorer
Feature Definition Toggle Bar
Geom_Baseline
Multi-Model Views
Type here to search
ENG
11:38
12/10/2017

Complex Geometry editing

- New Geometry Paradigm
  - impact of
  - Rules & relationships
  - Reference files

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Complex Geometry Editing Options

- Legacy edits
  - Export to the tools we know, edit, round trip
- Drop – edit rebuild
  - REMEMBER – Civil Geometry is more than just CAD graphics
  - In the early stages this can be ok but the project develops this can give rise to rule issue and ‘static’ models due to lost refences
- Substitute Geom
  - Allows the corridor to be reassigned to new geom

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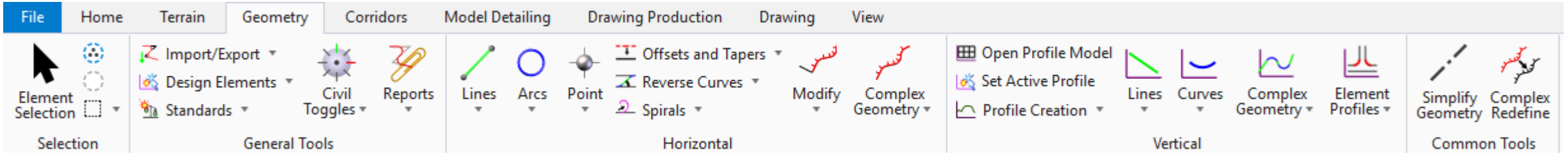
Complex Geometry editing Options – Best Practice

- Complex Redefine (SelectSeries 4 OpenRoads)
  - limited to Horizontal
  - Link maintained for common elements

- OpenRoads Designer Update 2 significant enhancements
  - Extended to work in vertical
  - Elements separated out to allow easy deletion



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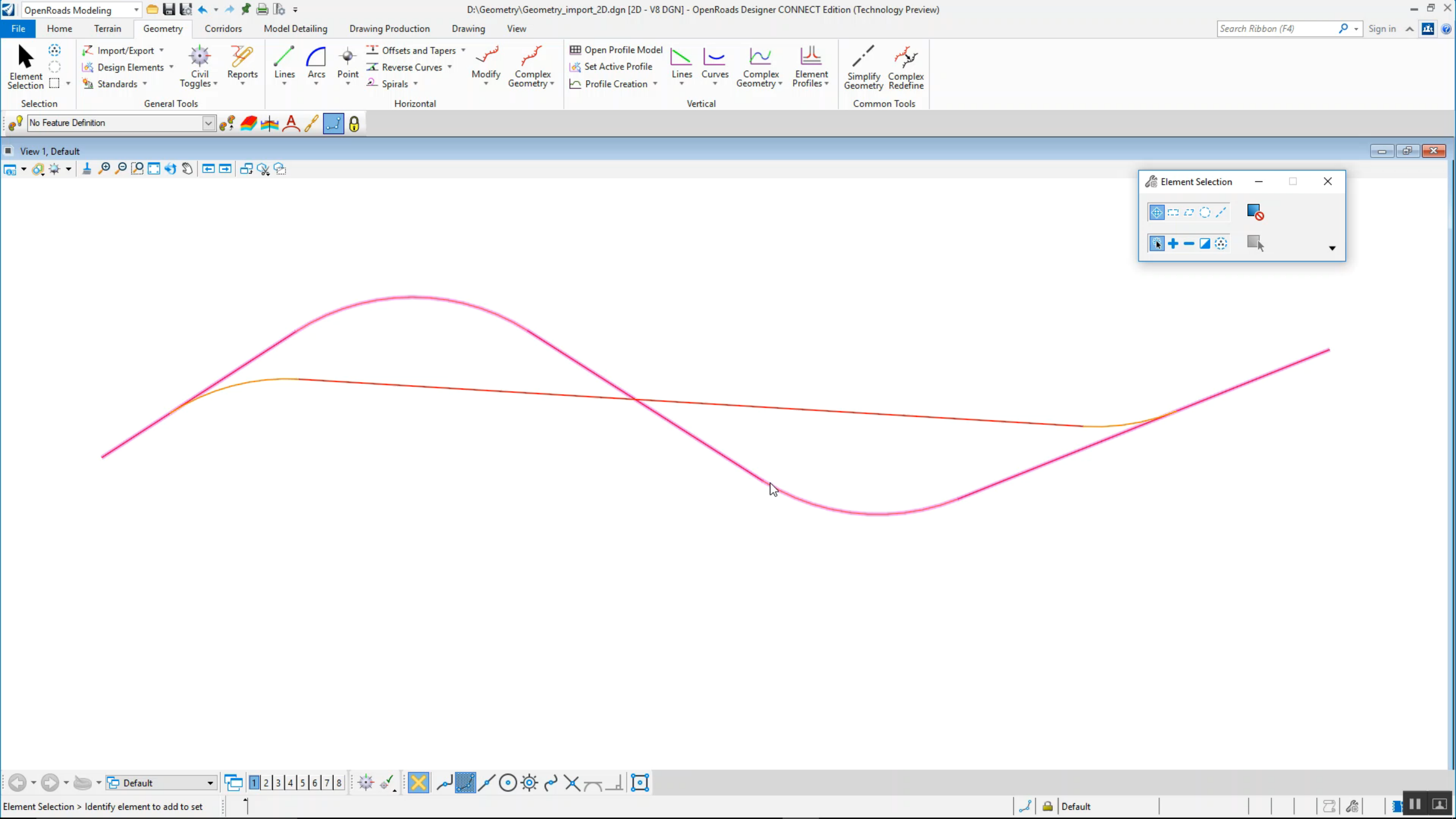
OpenRoads Modeling
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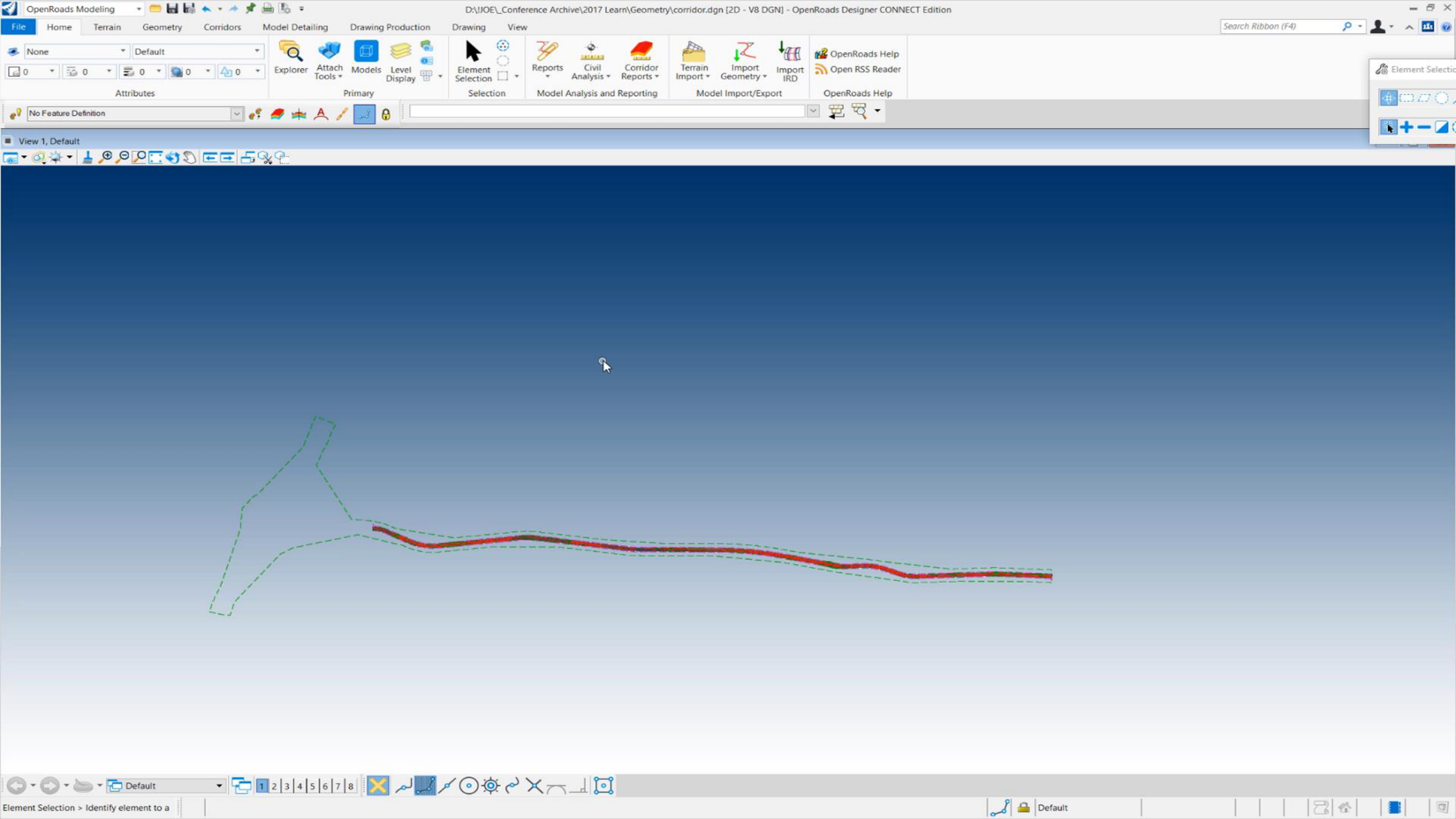
Set Active Profile
Profile Creation
Lines
Curves
Complex Geometry
Element Profiles
Vertical
Simplify Geometry
Complex Redefine
Common Tools
No Feature Definition
View 1, Default
Element Selection
Default
Element Selection > Identify element to add to set
Default


OpenRoads Modeling
D:\!JOE_Conference Archive\2017 Learn\Geometry\corridor.dgn [2D - V8 DGN] - OpenRoads Designer CONNECT Edition
File
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Terrain
Geometry
Corridors
Model Detailing
Drawing Production
Drawing
View
Search Ribbon (F4)
None
Default
Attributes
Explorer
Attach Tools
Models
Level Display
Primary
Element Selection
Selection
Reports
Civil Analysis
Corridor Reports
Model Analysis and Reporting
Terrain Import
Import Geometry
Import IRD
Model Import/Export
OpenRoads Help
Open RSS Reader
OpenRoads Help
No Feature Definition
View 1, Default
Default
Element Selection > Identify element to a
Default

Learning Objectives

This best practice session intends to introduce concepts of Openroads Geometry and cover some commonly asked questions on it's use. This session intends to provide something for the novice user through to expert user.

- Reference Lectures Material
  - 2014 / 2015 / 2016 Learn Conferences
    - Best Practice Geometry
  - CivilAccuDraw, MicroStation AccuDraw or Both (Lecture)
  - QuickStart: OpenRoads Technology Geometry (Workshops)
  - Creating and Editing Alignment Geometry (Workshops)
  - Creating Ramp Geometry (Workshops)

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Advancing Infrastructure

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