

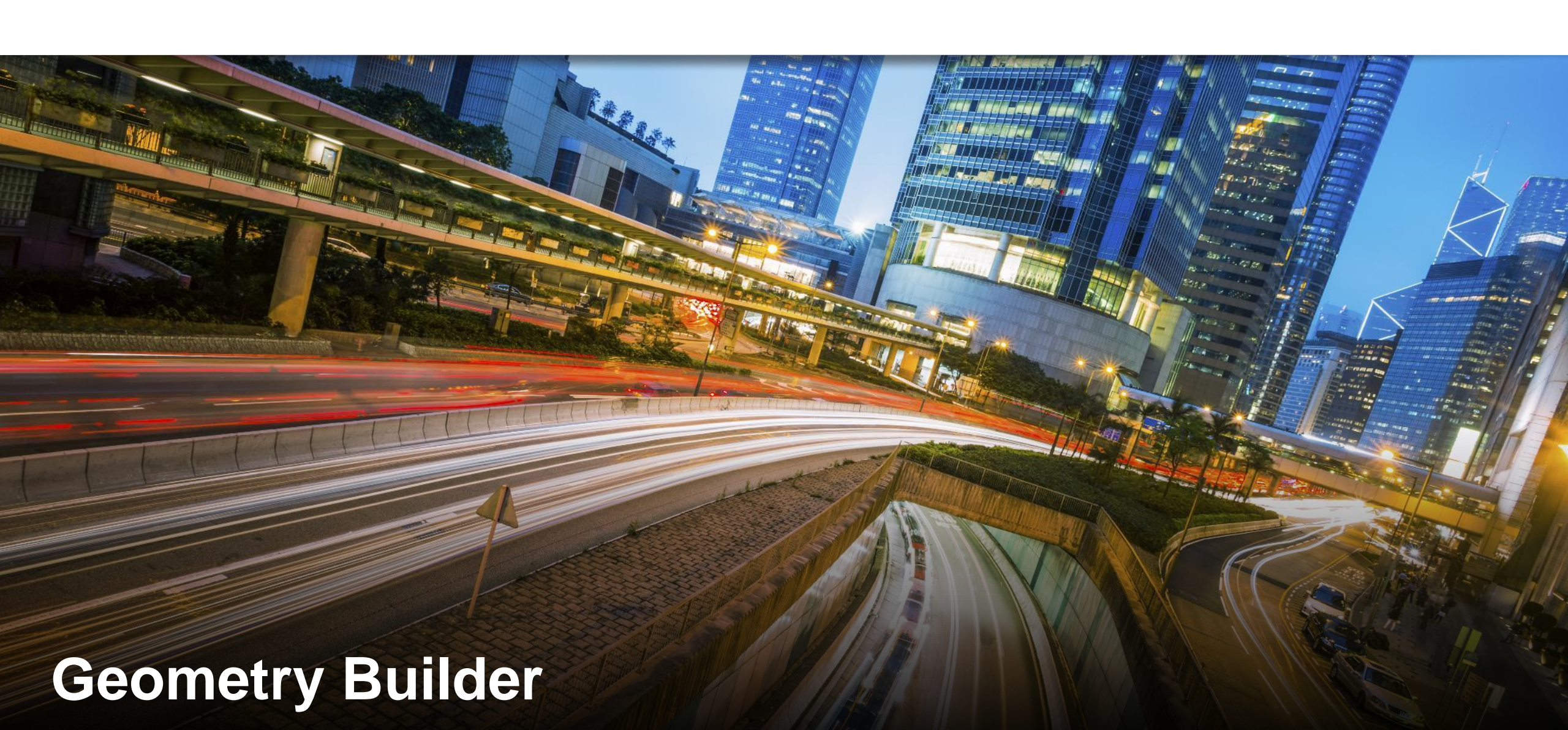
# New Geometry Tools and Enhancements

Robert Nice  
Product Specialist (Rail)

**Bentley**<sup>®</sup>  
Advancing Infrastructure

# Presentation Topics

- What is Geometry Builder
- Entering Centerline Geometry
- Parcel Geometry From Graphics
- What is Geometry Connector
- Geometry
- Regression Geometry



# Geometry Builder

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# Geometry Builder

- Allows quick input of plan data (e.g. centerlines)
- Allows quick input of dead/legal descriptions
- Automatically apply rules
- Closing calls
- Reporting

# Geometry Builder

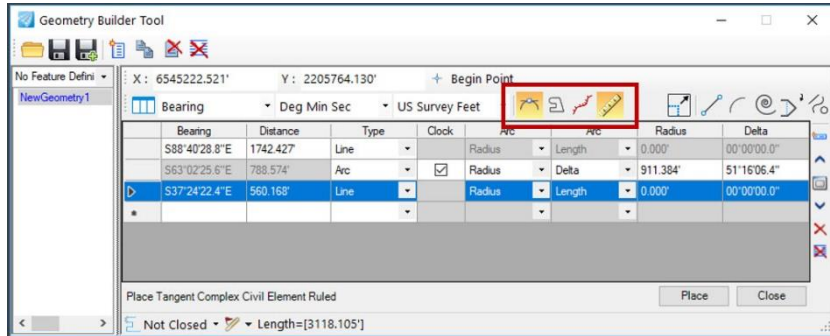
The screenshot shows the Geometry Builder Tool interface. On the left is a tree view with 'Geom\_Baseline' and 'NewGeometry1'. The main area contains a table with columns: Bearing, Distance, Type, Hand, Arc, Arc, Radius, and Length. The table has three rows of data. Below the table is a status bar with 'Place Tangent Complex Civil Element Ruled' and 'Place' and 'Close' buttons. At the bottom, a summary bar shows 'Begin Point', 'No Line', and 'Perimeter=[1500.000]' Area=[239924.424'2(5.508a)] Closure=[N61°21'08"W 1357.008']'. Red arrows point to 'Force Tangent' (a button icon), 'Apply Rules' (a button icon), 'Alignments' (the tree view), and 'Geometry Information' (the summary bar).

Bearing	Distance	Type	Hand	Arc	Arc	Radius	Length
N90°00'00"E	500.000'	Line		Radius	Length	0.000'	0.000'
S61°21'08"E	479.426'	Arc	RT	Radius	Length	500.000'	500.000'
S32°42'15"E	500.000'	Line		Radius	Length	0.000'	0.000'

Place Tangent Complex Civil Element Ruled

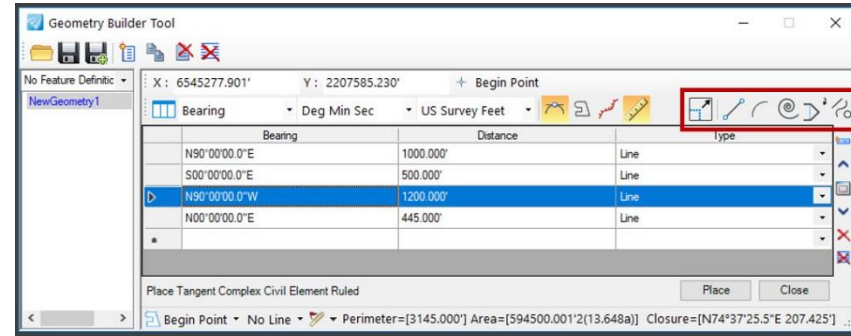
Begin Point No Line Perimeter=[1500.000]' Area=[239924.424'2(5.508a)] Closure=[N61°21'08"W 1357.008']

# Locks

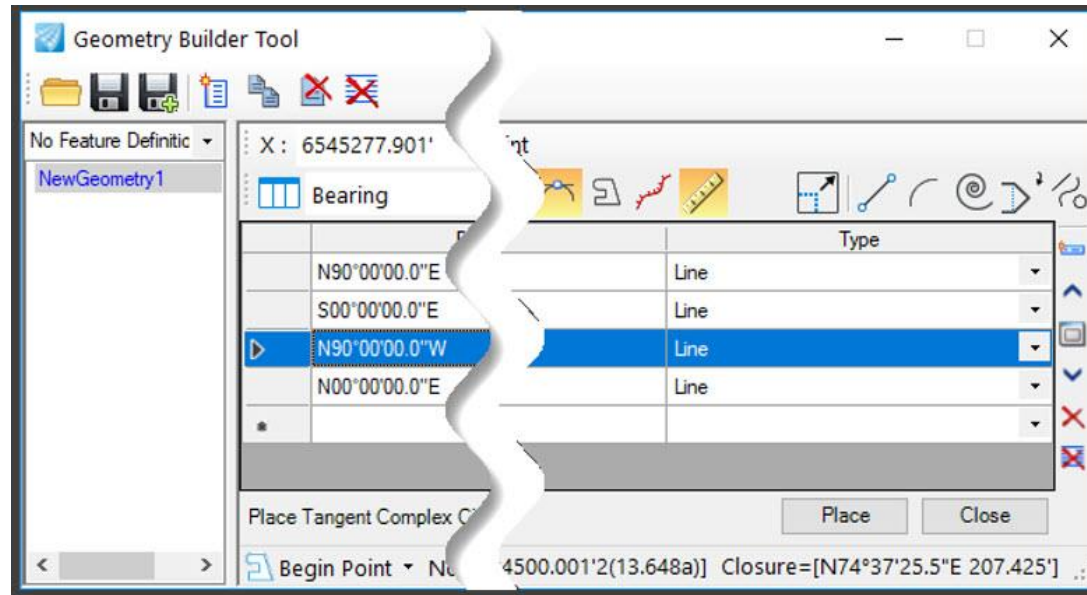


- Tangent Restriction**
  - Toggle between free placement and enforcing elements being tangent
- Simple/Complex Elements**
  - Toggles between creating simple or complex elements
- Create Graphic Elements**
  - Toggles between creating civil elements and graphic elements
- Ruled/Un-Ruled**
  - Toggles between creating ruled and un-ruled civil elements

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- Modify Item**
- Insert Line**
- Insert Arc**
- Insert Spiral**
- Insert Vertex**
- Insert Element**



- Insert New Item**
- Move Up**
- Fit View**
- Move Down**
- Delete**
- Delete All**

# Units

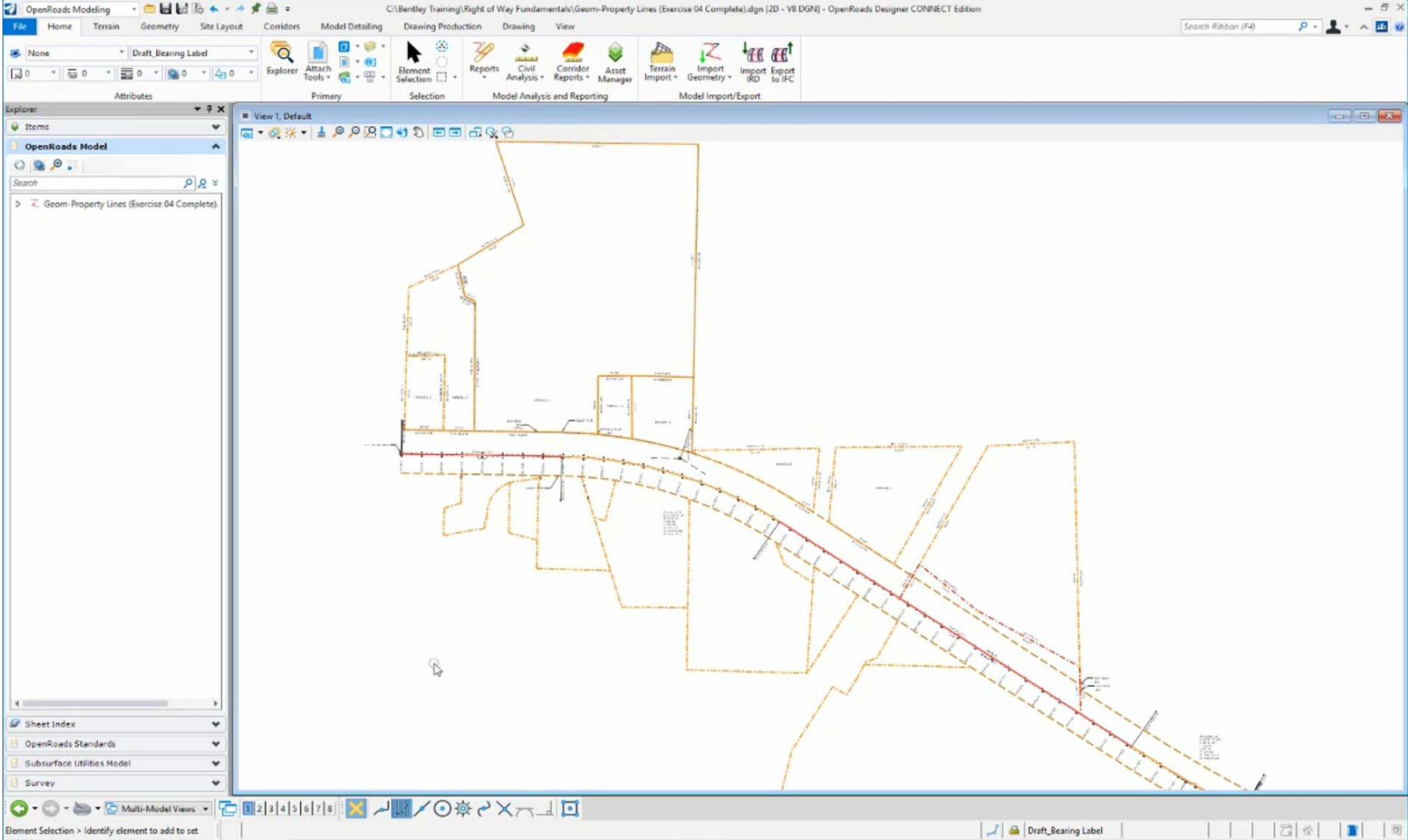
The screenshot shows the Geometry Builder Tool interface. The main window title is "Geometry Builder Tool". The interface includes a toolbar with icons for file operations and geometry construction. The main workspace displays a "Begin Point" at X: 0.000' and Y: 0.000'. A dropdown menu is open, showing various unit options for length and angle. The length units include US Survey Feet, Nautical Mile, Kilometer, Meter, Centimeter, Millimeter, Micrometer, Mile, Yard, Foot, Inch, Mil, MicroInch, US Survey Mile, US Survey Foot, US Survey Tenths, US Survey Inch, Clarke Chains, Gunter Chains, Benoit Chains, Sears Chains, Clarke Links, Gunter Links, Benoit Links, Sears Links, Rods, Perches, Poles, and Roods. The angle units include Bearing, Deg Min Sec, Degrees, Deg Min, Deg Min Sec, Gradian, and Radians. The unit "US Survey Feet" is currently selected. The interface also shows a table with columns for Arc, Radius, and Length, and buttons for "Place" and "Close".

Arc	Arc	Radius	Length
Radius	Length	0.000'	0.000'
Radius	Length	500.000'	500.000'
Radius	Length	0.000'	0.000'

Place Tangent Complex Civil Element Ruled  
Begin Point No Line Perimeter=[1500]

2(5.508a) Closure=[N61°21'08"W 1357.008']

# Geometry Builder - Entering Centerline Data





# Geometry Builder Edit

Geometry Builder Tool - NewGeometry1

X: 1996811.671' Y: 1768454.479' Begin Point

Bearing: Deg Min Sec US Survey Feet

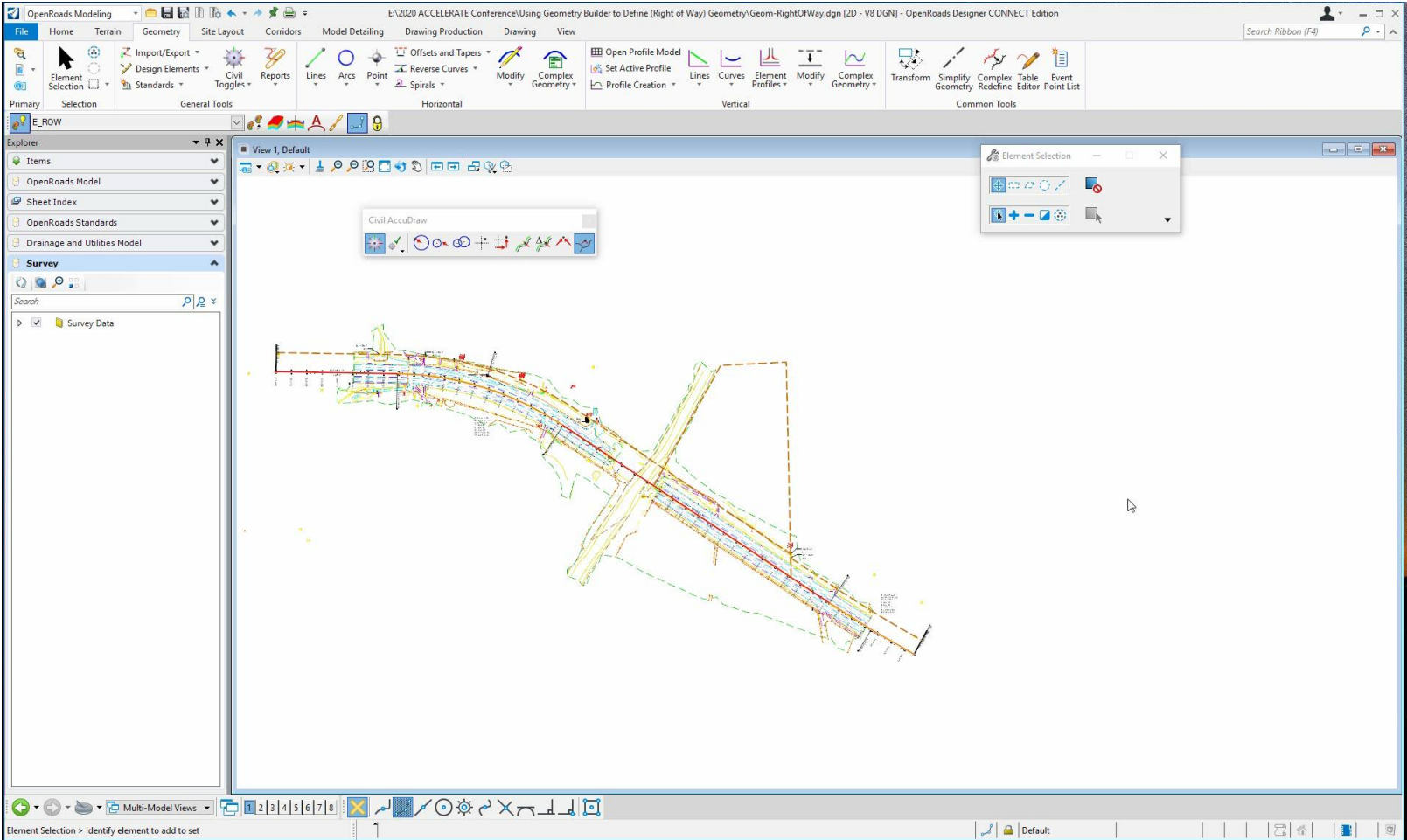
	Bearing	Distance	Type	Hand	Arc	Arc	Radius	Length
▶	N90°00'00"E	500.000'	Line		Radius	Length	0.000'	0.000'
	S61°21'08"E	479.426'	Arc	RT	Radius	Length	500.000'	500.000'
	S32°42'15"E	500.000'	Line		Radius	Length	0.000'	0.000'
*								

Modify Tangent Complex Civil Element Un-Ruled

Select Cancel

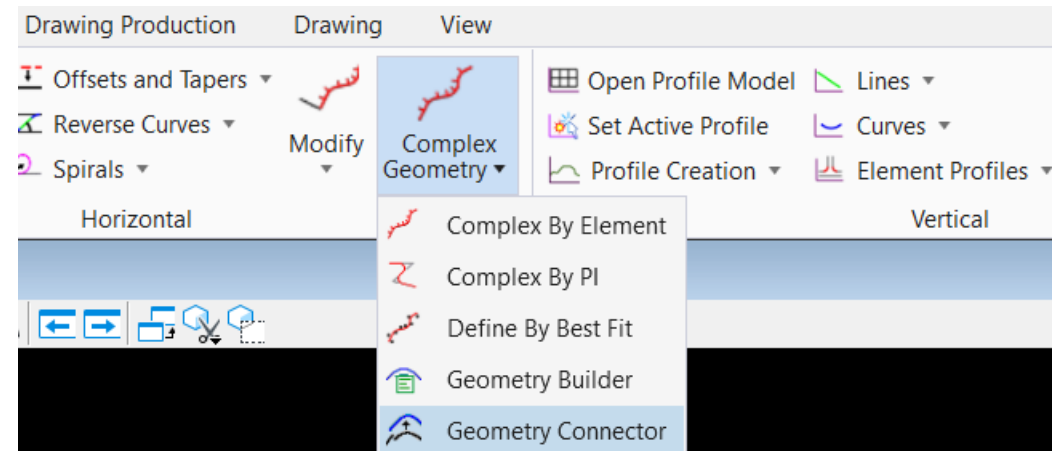
Not Closed Length=[1500.000']

# Creating Parcel 7 From Graphics



# Geometry Connector

- More Advanced Geometry Editing and Creation
- Creates Fixed to Fixed Connection
- Flexible editing table
- User Defined Fixity
- Graphical Geometry Preview
- Solves Solution
- Creates Geometry Output
- Rules can be applied
- Can use on geometry and with Regression Line
- On the fly editing and feedback
- Reports



## Create Elements

Simple

Complex

Ruled Civil

Geometry

## Modify Elements

Modify Item

Insert Line

Insert Arc

Insert Spiral

The screenshot shows the Geometry Connector software interface. The top panel is titled 'Begin Element' and includes a 'Free Length' checkbox and a 'Line Length: 509.44003m Azimuth: 78°49'50.7"' label. Below this is a toolbar with icons for creating elements, highlighted by a red box. The middle section is a data table with columns for Hand, Type, Free, Length, Free, Azimuth, Free, Radius, Spiral, Free, A, Enter Radius, and Exit Radius. The bottom panel is titled 'End Element' and includes a 'Free Length' checkbox, a 'Select Element' button, a 'Replace' checkbox, and 'Compute' and 'Apply' buttons. A second red box highlights a toolbar on the right side of the interface, containing icons for selecting, inserting, moving, and deleting elements.

	Hand	Type	Free	Length	Free	Azimuth	Free	Radius	Spiral	Free	A	Enter Radius	Exit Radius
	LT	Arc	<input checked="" type="checkbox"/>	251.393...		78°49'50...	<input checked="" type="checkbox"/>	136.594...	Cot...		0.00000m	INFm	INFm
		Line	<input checked="" type="checkbox"/>	89.5264...	<input checked="" type="checkbox"/>	333°22'5...		0.00000m	Cot...		0.00000m	INFm	INFm
	RT	Arc	<input checked="" type="checkbox"/>	233.037...		333°22'5...	<input checked="" type="checkbox"/>	136.220...	Cot...		0.00000m	INFm	INFm
	LT	Spiral	<input checked="" type="checkbox"/>	36.7236...		71°23'58...		0.00000m	Cot...	<input type="checkbox"/>	70.7284...	136.220...	INFm
*			<input type="checkbox"/>										

Select Element

Insert New Element

Move Up

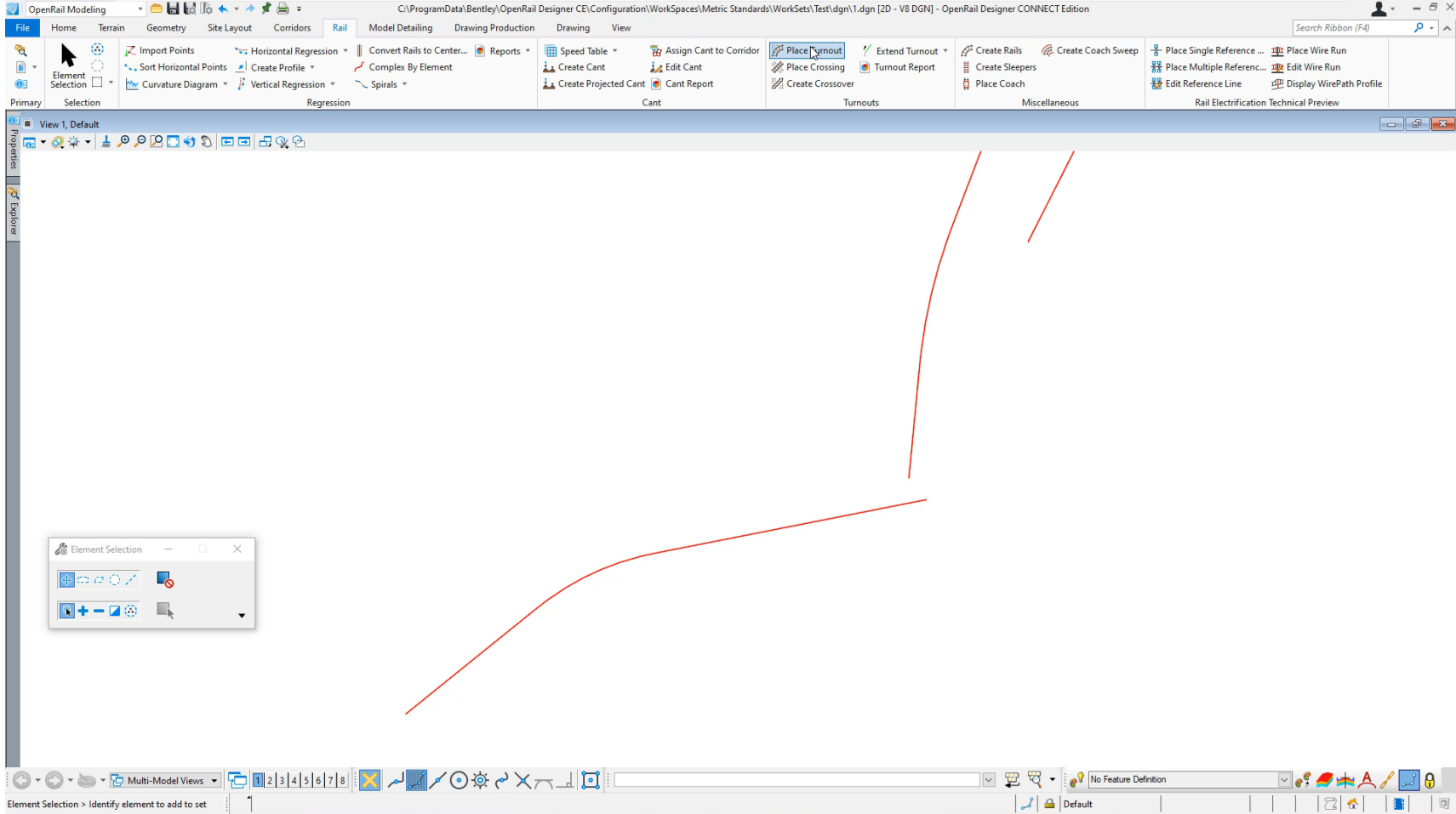
Fit View

Move Down

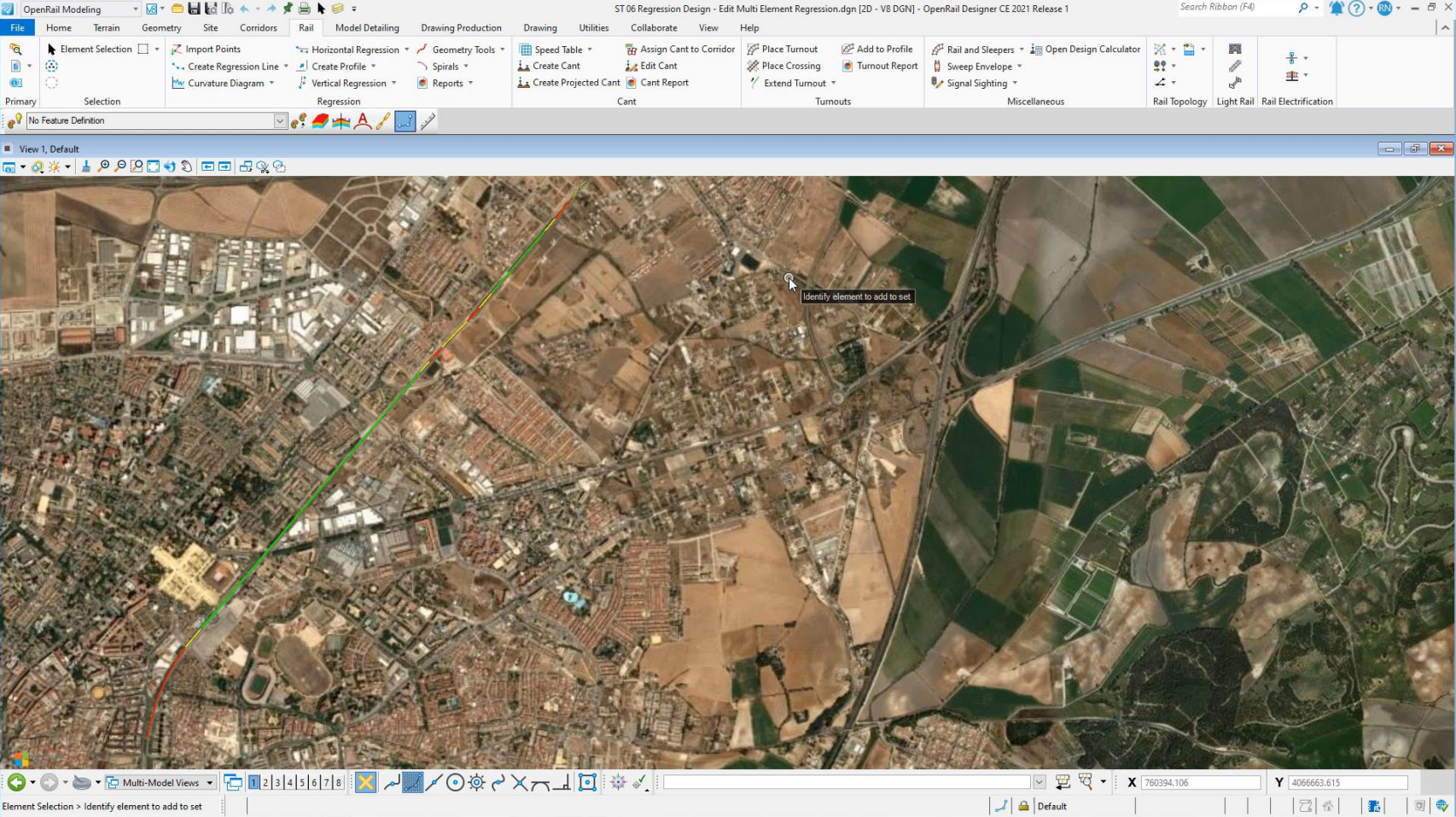
Delete Element

Delete All

# Geometry Connector with Geometry



# Geometry Connector with Regression Line

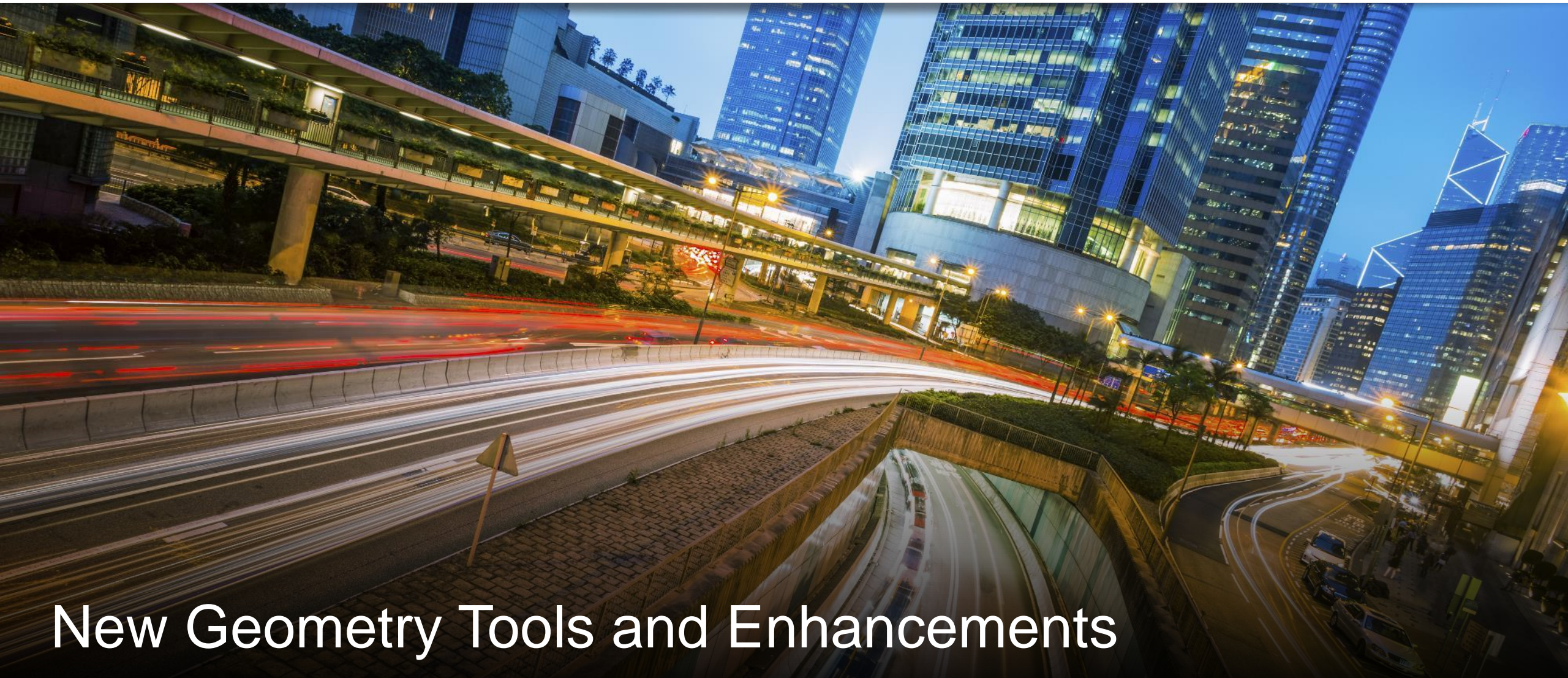


# Summary

- What is Geometry Builder
- Entering Centerline Geometry
- Entering Parcel Geometry
- Parcel Geometry From Graphics
- What is Geometry Connector
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# Questions?





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