

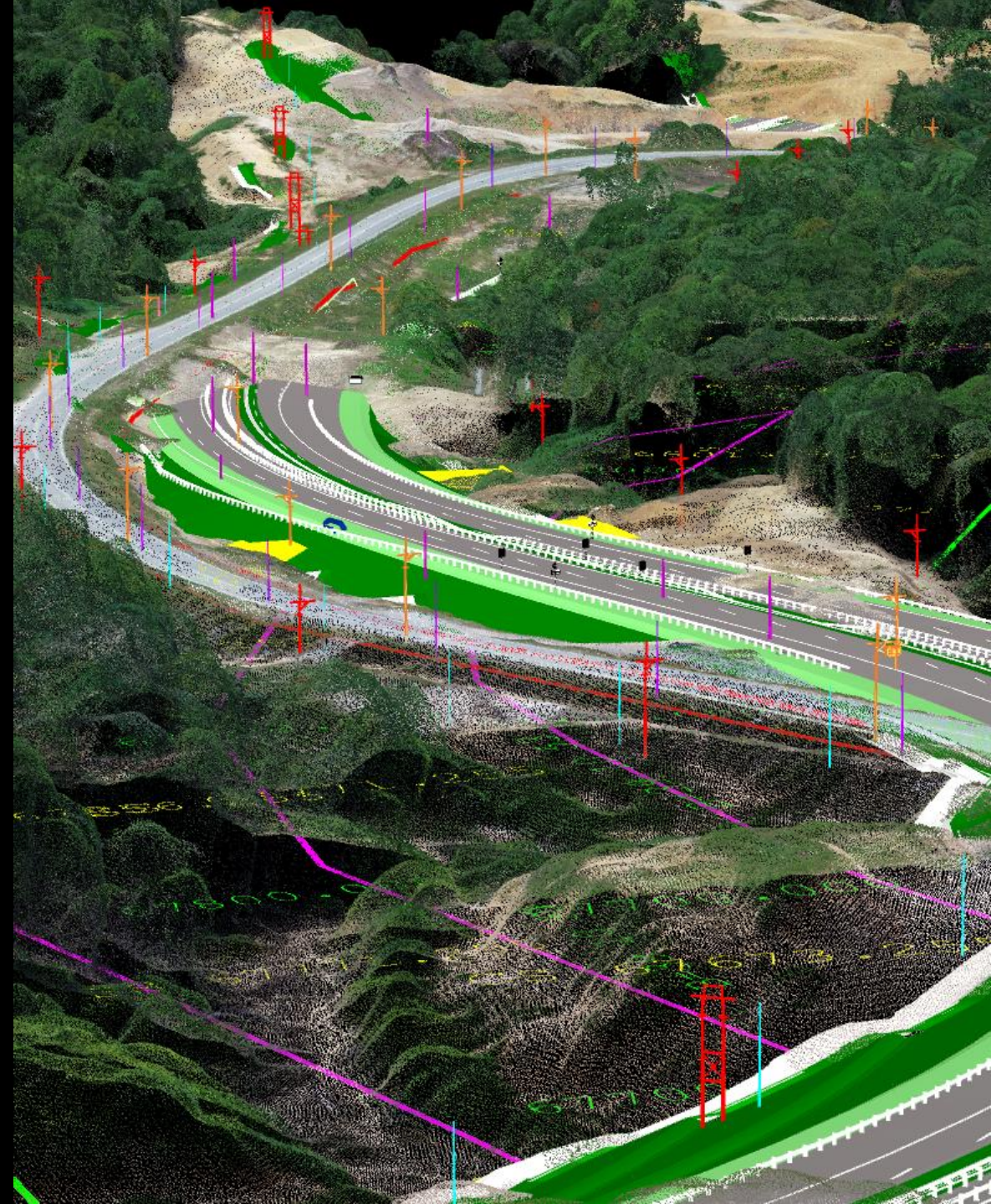


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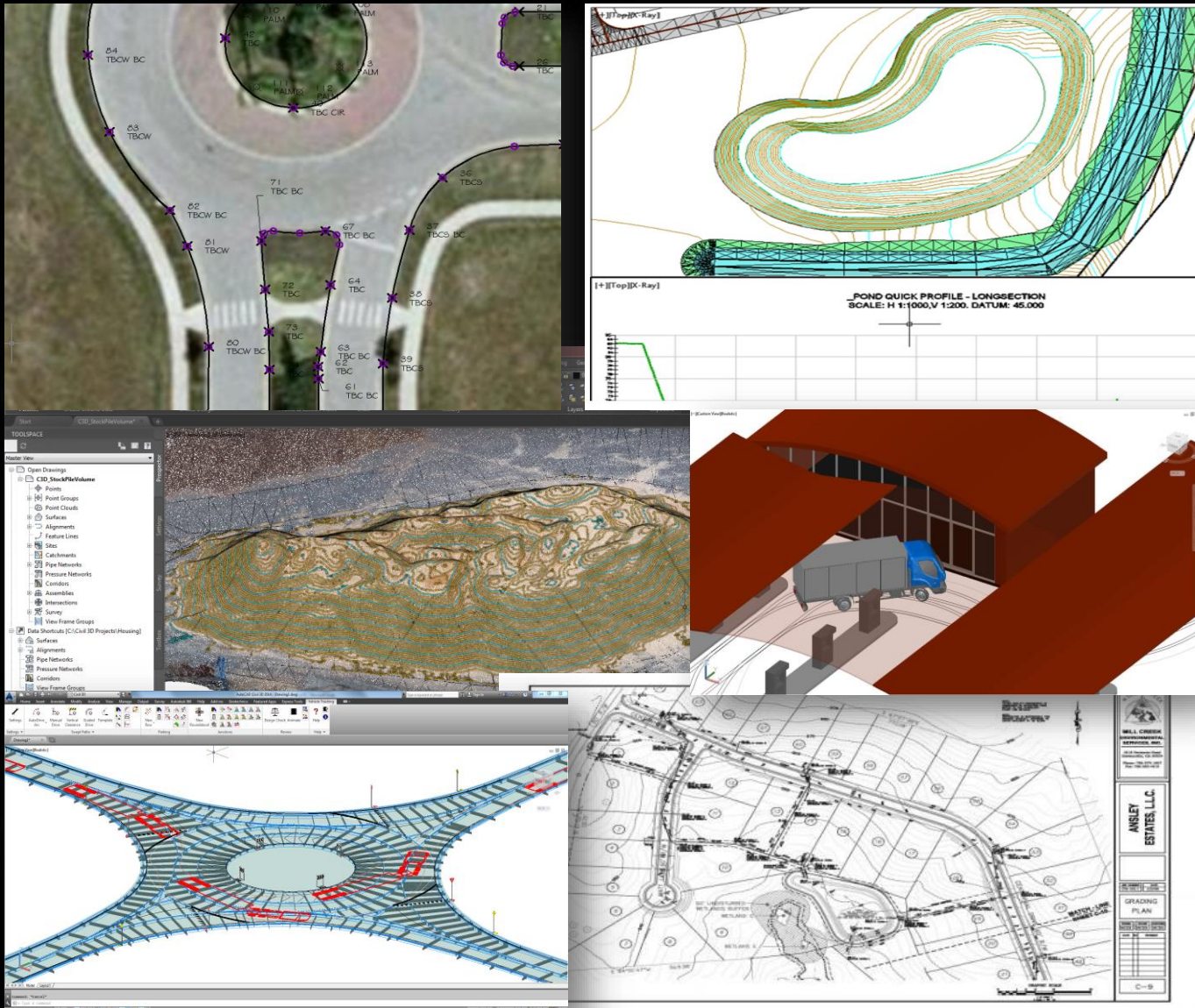
Autodesk® Civil3D® Beginner and Intermediate Workshop



Adil Kurniawan
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Senior Manager (BIM/GIS/VDC) | Infrastructure Specialist



Civil Infrastructure Design and Documentations Software



- ✓ Supports BIM with integrated features to improve drafting, design, and construction documentation
- ✓ Connected with Autodesk InfraWorks to ensure
- ✓ Collaborate with BIM Collaborate to streamline deliverables coordination, visualize changes
- ✓ Works with ArcGIS data directly in your Civil 3D design model
- ✓ Optimize road geometry and Normative roundabouts Implementation
- ✓ Perform a real-time analysis and Car parks creation

CONNECTED BIM for INFRASTRUCTURE

DESIGN



CONCEPT
PLAN
DETAILED



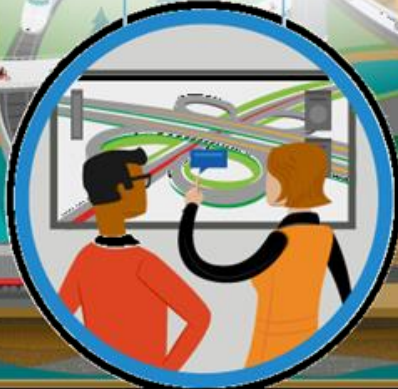
SIMULATE
CONSTRUCT



BUILD



MAINTAIN
MANAGE



OPERATE

BIM REQUIREMENT

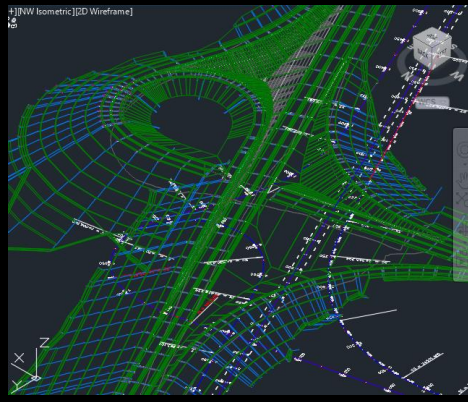
LOD 100 - 200

Preliminary Model



LOD 300

Detailed Design Model



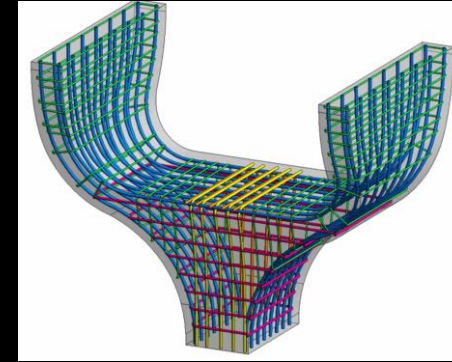
LOD 350

Construction Model



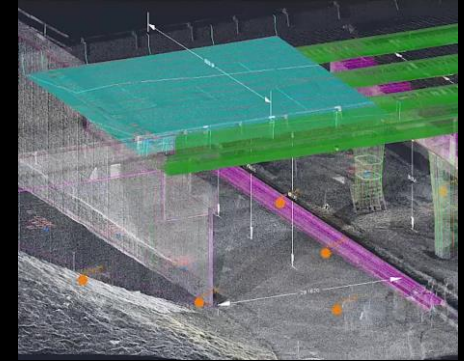
LOD 400

**Fabrication Model*



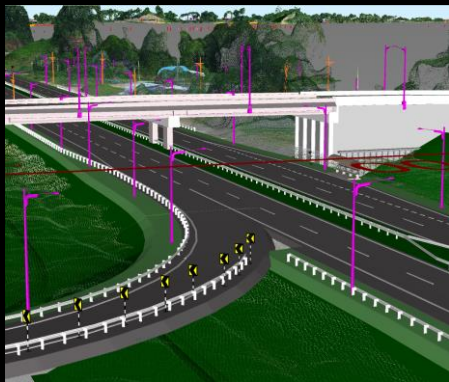
LOD 500

As-Built Model



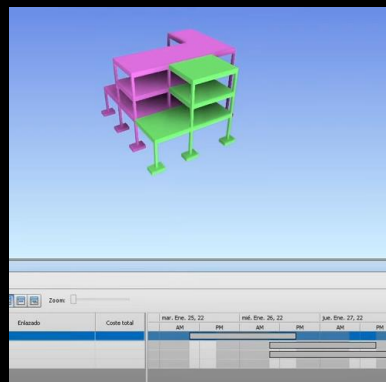
3D

BIM Model



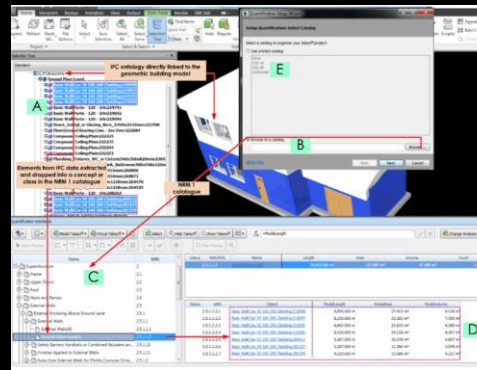
4D

Scheduling & Sequencing



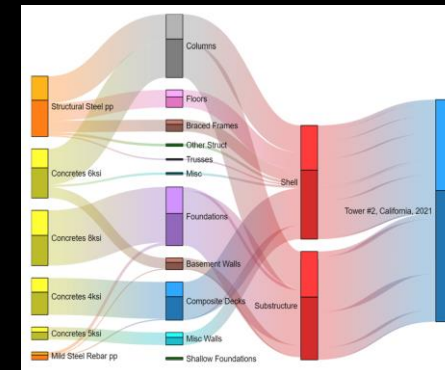
5D

QTO & Costing



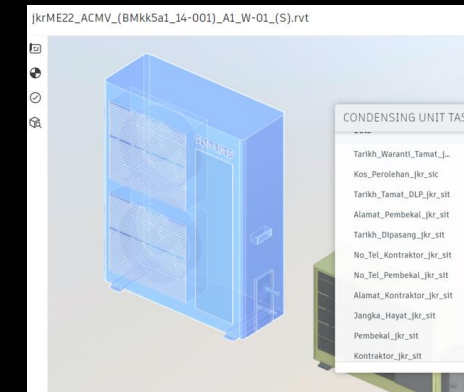
6D

Analysis & Sustainability

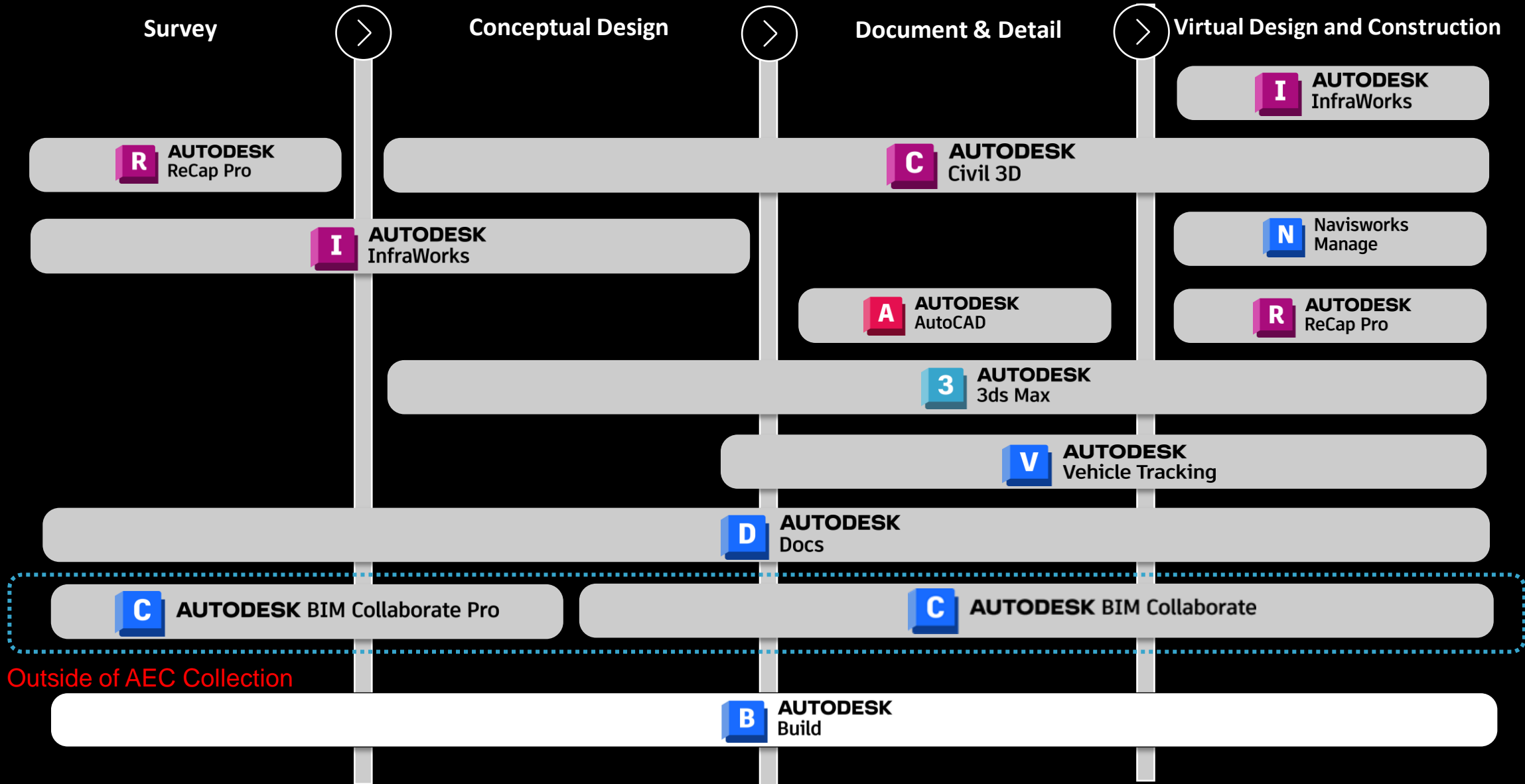


7D

Asset Management



AEC Collection - Connected Workflows - Infrastructure





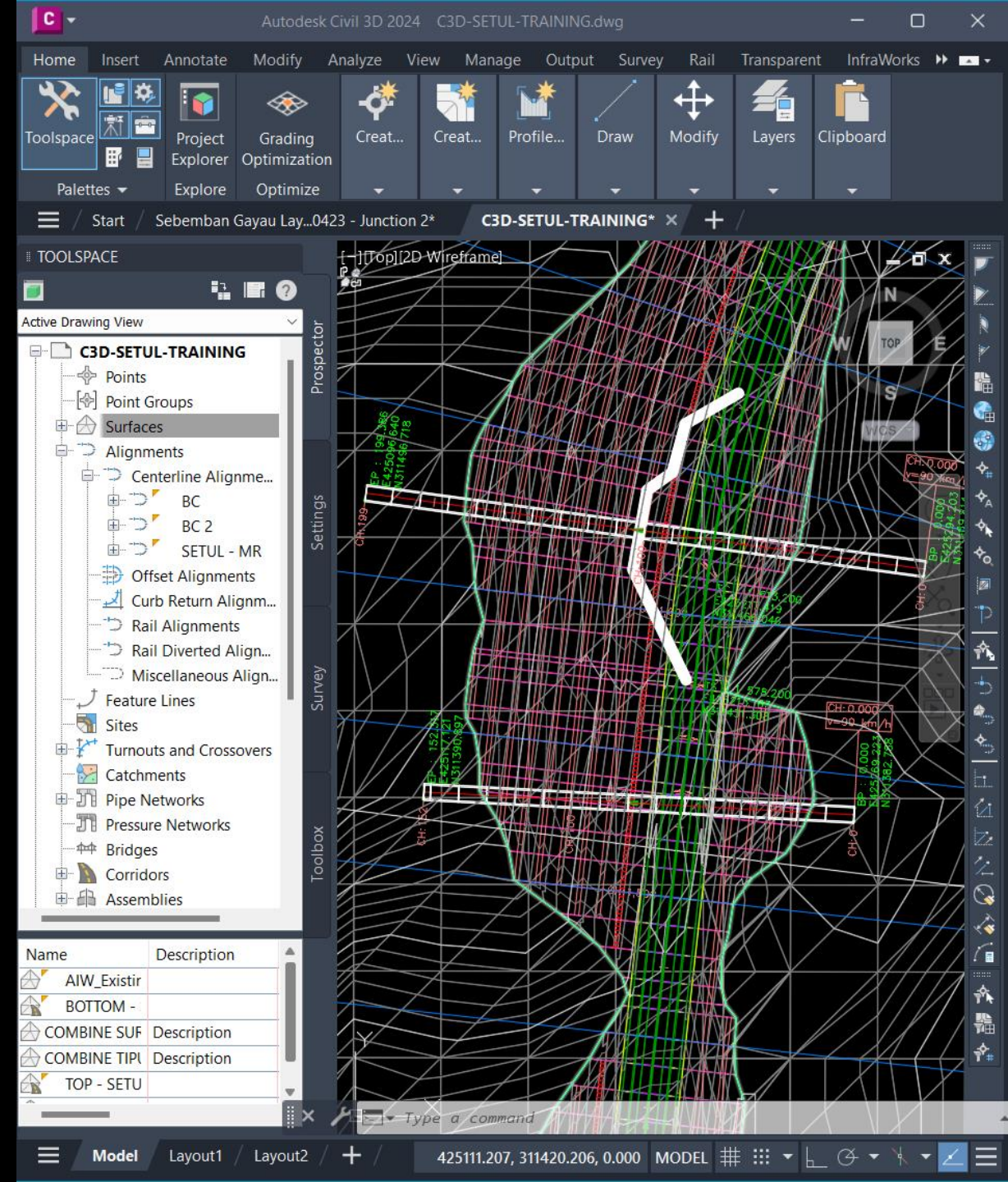
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BEGINNER COURSE

1. Introduction
2. Points
3. Surfaces
4. Alignments Design
5. Superelevation Design
6. Profile Design
7. Assembly Design
8. Corridor Design
9. Sample Lines
10. Volume Calculation
11. Cross-Section

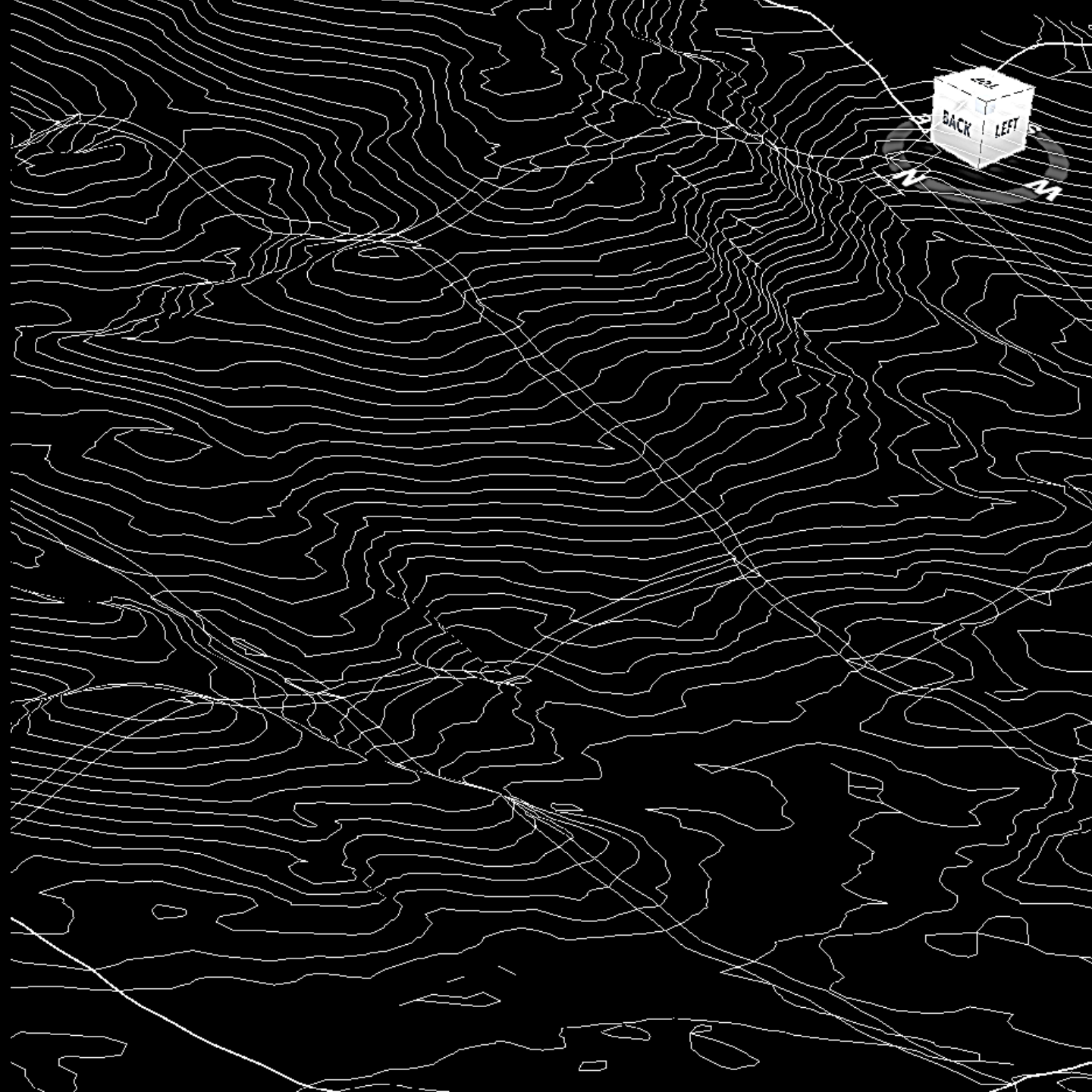
INTRODUCTION

- Understanding the Ribbon & UI
- Navigating and Using Basic Functionality
- Understanding the Toolspace
- Understanding Levels & Styles
- Changing Display of an object using styles



SURFACES

- Creating Surfaces
- Refining and Editing Surfaces
- Surface Styling and Analysis
- Comparing Surfaces
- Labelling the Surface
- Calculating Volume





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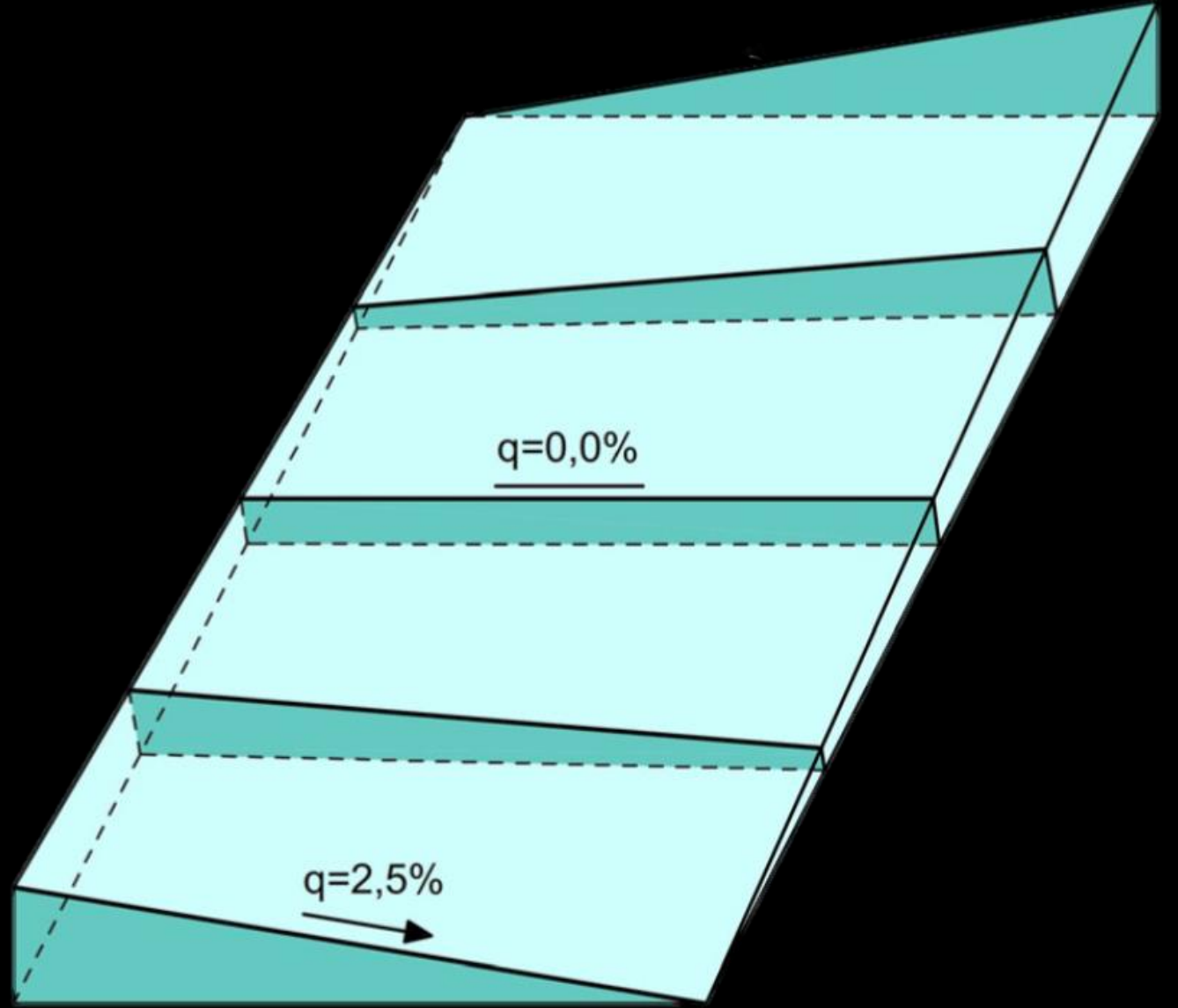
ALIGNMENT DESIGN

- Creating Horizontal Alignment
- Editing Horizontal Alignment
- Alignment Labelling: Control Plan
- Alignment Labelling: Fixed Interval Coordinates



SUPERELEVATION DESIGN

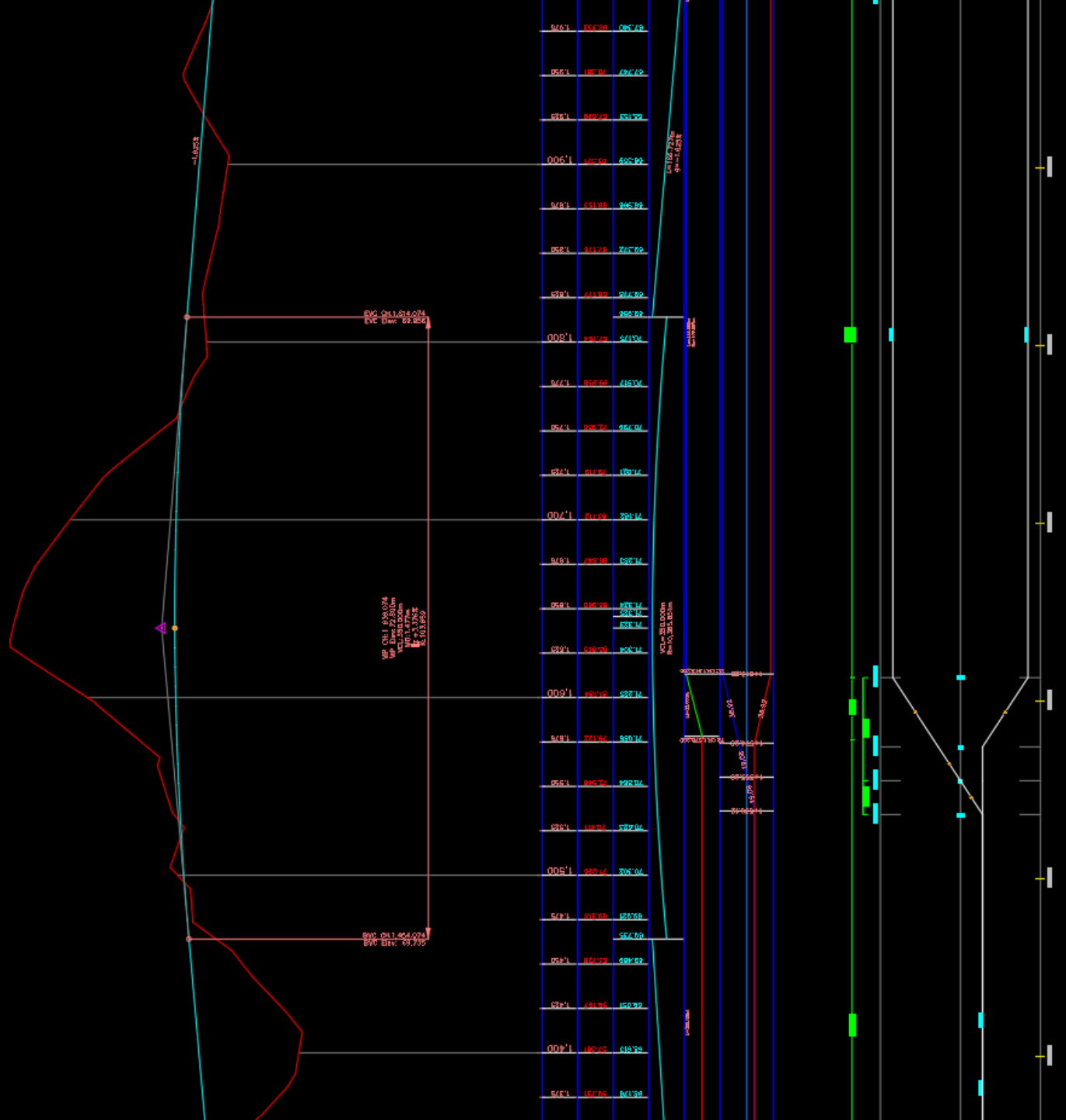
- Creating Superelevation





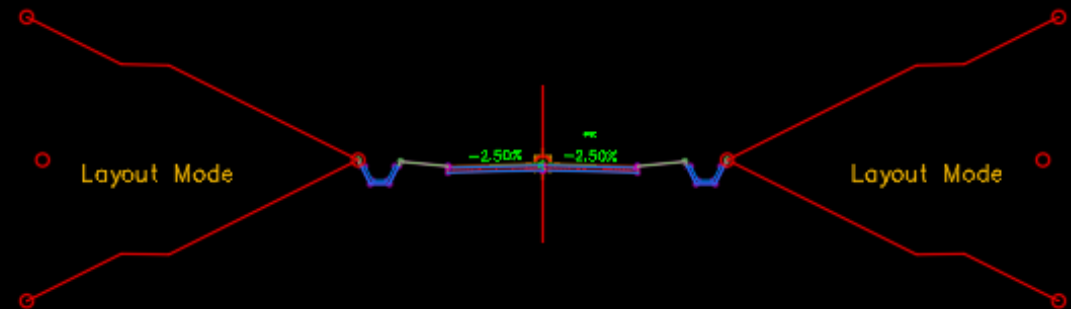
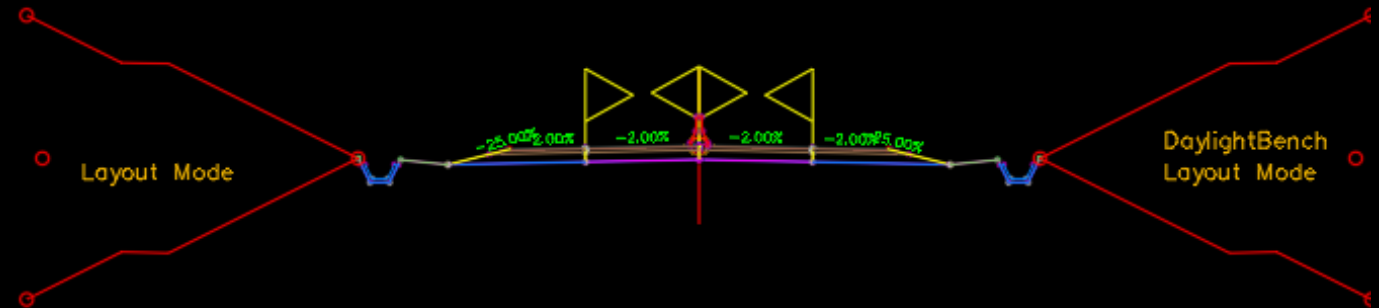
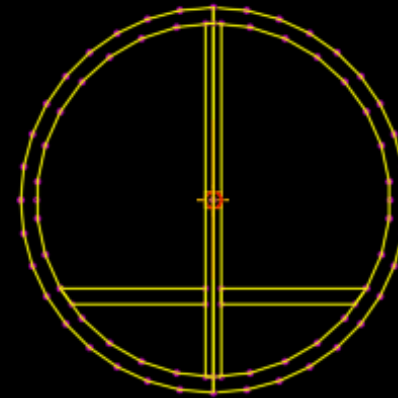
PROFILE DESIGN

- Creating Profile
- Generating Proposed Profile
- Editing Proposed Profile



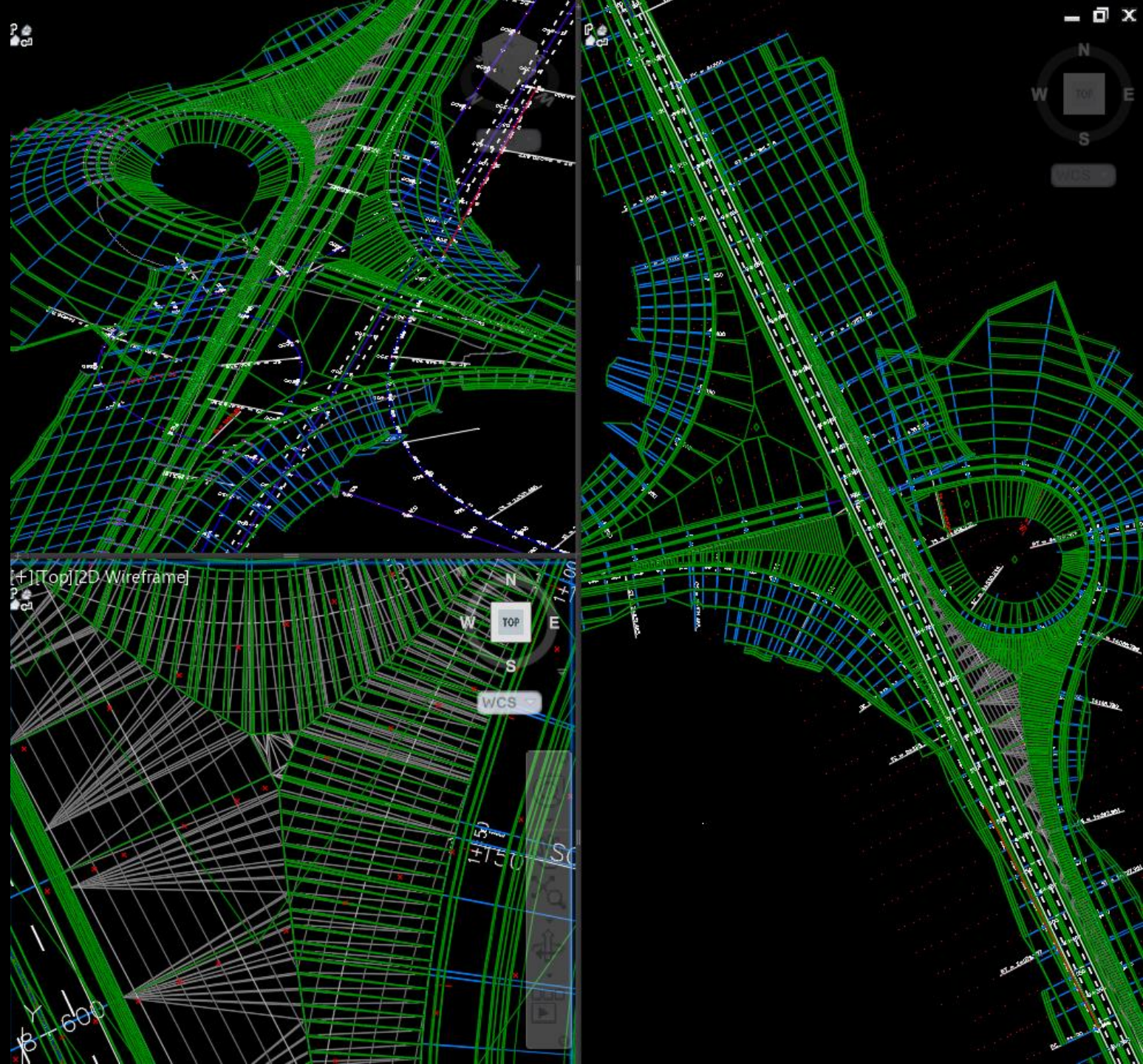
ASSEMBLY DESIGN

- Creating Assembly
- Creating Subassembly
- Modifying Subassembly



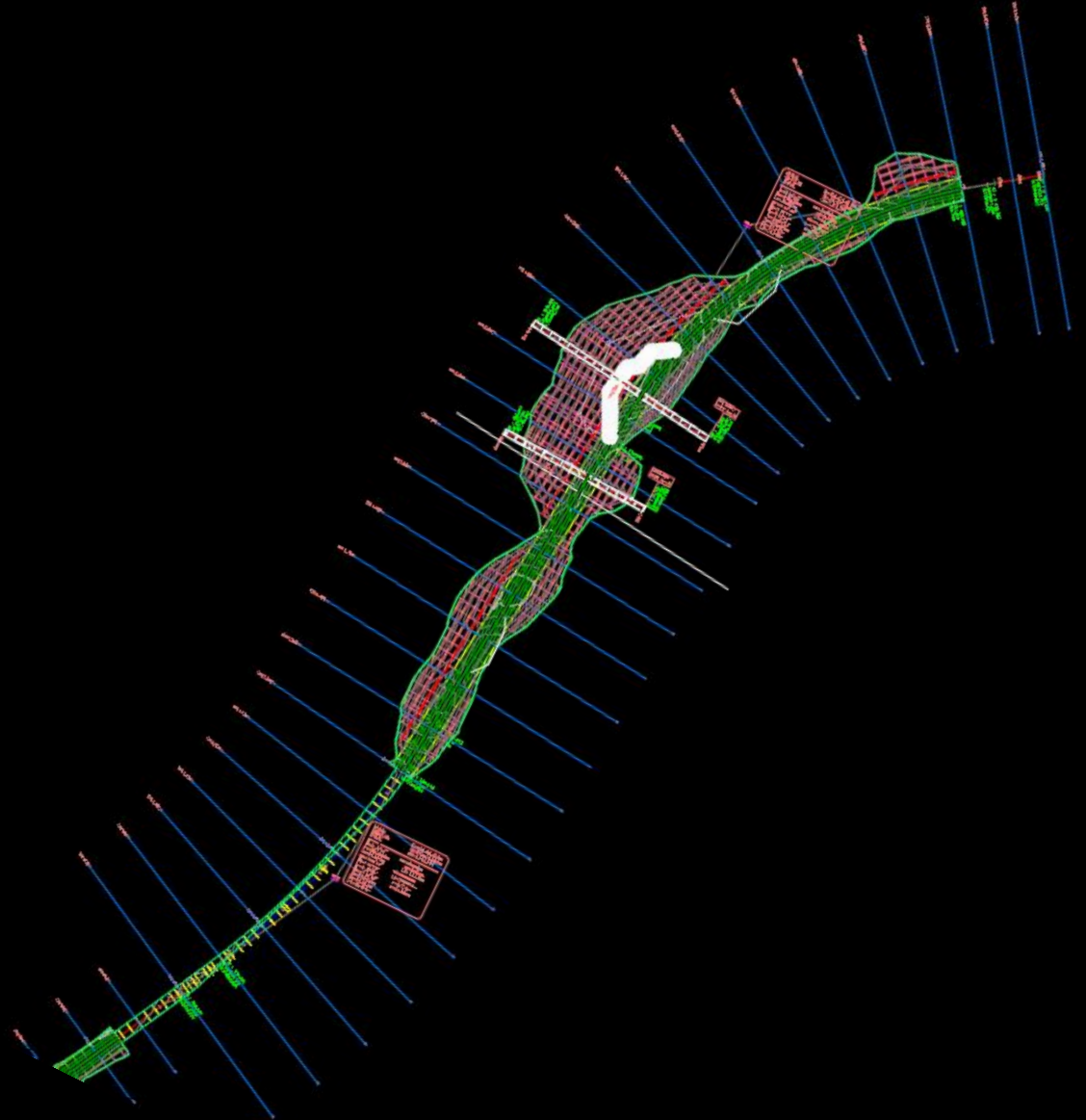
CORRIDOR DESIGN

- Creating Corridor
- Split Region
- Modifying Frequency
- Extract to Solid



SAMPLE LINES

- Creating Sample Lines





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VOLUME CALCULATION

- Cross Section Method
- TIN Volume Surface Method

Total Volume Table							
Station	Fill Area (m ²)	Cut Area (m ²)	Fill Volume (m ³)	Cut Volume (m ³)	Cumulative Fill Vol (m ³)	Cumulative Cut Vol (m ³)	Cum. Net Vol. (m ³)
0+000.00	0.00	13.62	0.00	0.00	0.00	0.00	0.00
0+050.00	0.00	35.97	0.00	1239.75	0.00	1239.75	1239.75
0+100.00	0.00	11.42	0.00	1184.85	0.00	2424.60	2424.60
0+150.00	0.60	7.93	15.08	483.80	15.08	2908.40	2893.32
0+200.00	22.27	0.00	571.80	198.28	586.87	3106.68	2519.81
0+250.00	0.00	55.60	556.72	1389.97	1143.59	4496.65	3353.05
0+300.00	0.00	242.66	0.00	7456.58	1143.59	11953.23	10809.64
0+350.00	0.00	449.16	0.00	17295.51	1143.59	29248.75	28105.15
0+400.00	0.00	306.09	0.00	18881.05	1143.59	48129.80	46986.20
0+450.00	0.00	231.11	0.00	13424.58	1143.59	61554.38	60410.79
0+500.00	0.00	226.25	0.00	11407.56	1143.59	72961.94	71818.35
0+550.00	0.00	106.03	0.00	8307.03	1143.59	81268.97	80125.38
0+600.00	0.00	28.70	0.00	3368.19	1143.59	84637.17	83493.57
0+650.00	0.00	21.96	0.00	1266.50	1143.59	85903.68	84760.07
0+700.00	0.00	84.30	0.00	2656.44	1143.59	88560.11	87416.51
0+750.00	0.00	46.66	0.00	3274.06	1143.59	91834.16	90690.57
0+800.00	0.00	31.19	0.00	1946.34	1143.59	93780.50	92636.91
0+850.00	0.00	18.78	0.00	1249.33	1143.59	95029.82	93886.23
0+900.00	0.00	58.37	0.00	1928.87	1143.59	96958.79	95815.20
0+950.00	0.00	87.53	0.00	3644.87	1143.59	100603.66	99460.07

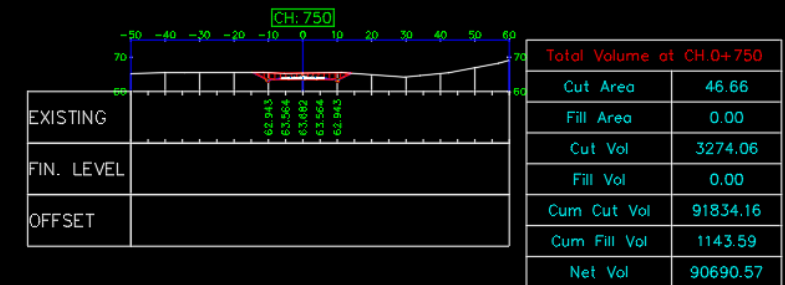
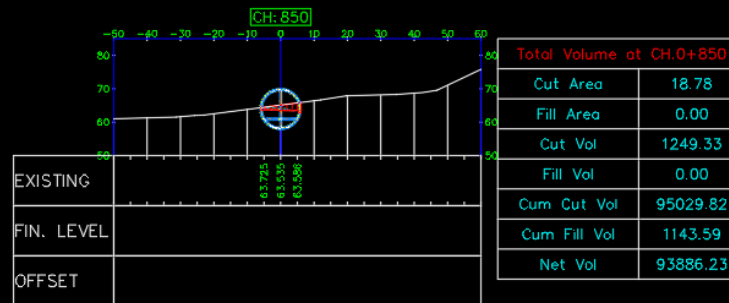
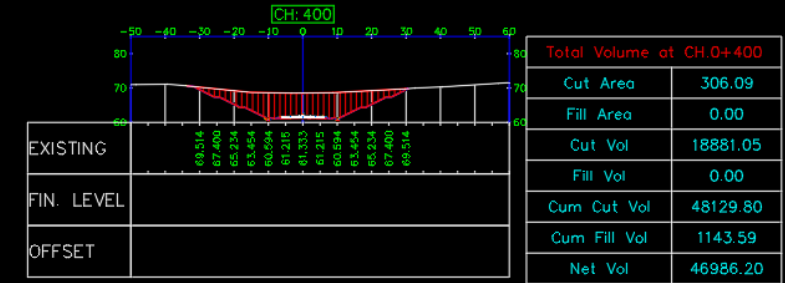
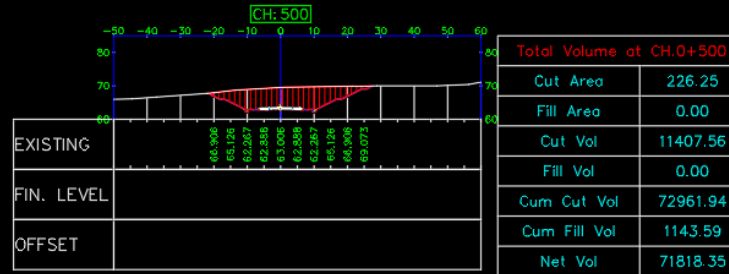
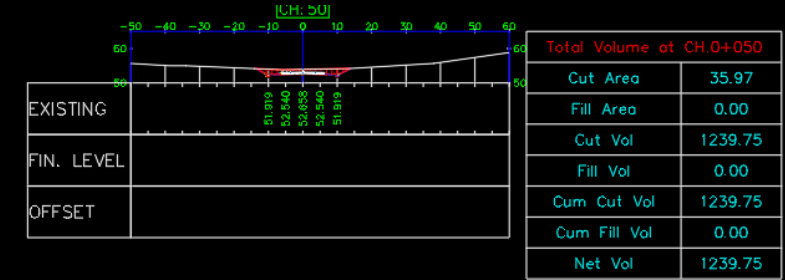
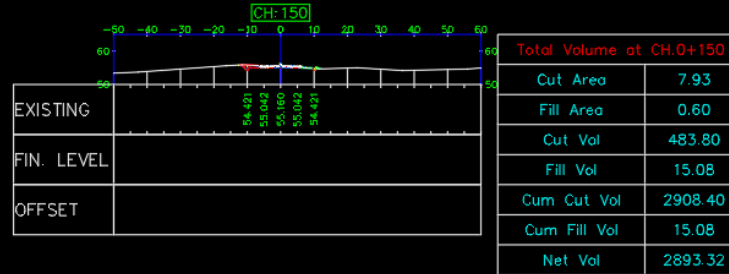
Total Volume Table							
Station	Fill Area (m ²)	Cut Area (m ²)	Fill Volume (m ³)	Cut Volume (m ³)	Cumulative Fill Vol (m ³)	Cumulative Cut Vol (m ³)	Cum. Net Vol. (m ³)
1+000.00	0.00	30.39	0.00	2937.48	1143.59	103541.14	102397.55
1+050.00	0.00	8.47	0.00	965.78	1143.59	104506.92	103363.33
1+100.00	0.00	9.23	0.00	439.96	1143.59	104946.89	103803.29
1+150.00	0.00	26.97	0.00	902.38	1143.59	105849.27	104705.67
1+200.00	0.01	28.04	0.21	1369.79	1143.81	107219.05	106075.25
1+250.00	290.89	0.00	7247.21	698.55	8391.02	107917.60	99526.58
1+300.00	233.56	0.00	13111.27	0.00	21502.29	107917.60	86415.31
1+350.00	159.04	0.00	9814.89	0.00	31317.18	107917.60	76600.42
1+400.00	502.64	0.00	16541.83	0.00	47859.01	107917.60	60058.59
1+450.00	172.16	0.00	16869.84	0.00	64728.86	107917.60	43188.74
1+500.00	17.34	186.79	4737.47	4669.77	69488.32	112587.37	43121.05
1+550.00	102.53	457.92	2996.80	16117.88	72463.13	128705.25	56242.13
1+600.00	0.00	874.55	2563.24	33311.86	75026.37	162017.11	86990.74
1+650.00	0.00	1365.78	0.00	58410.40	75026.37	220427.51	145401.14
1+700.00	0.00	673.14	0.00	52826.95	75026.37	273254.46	198228.09
1+750.00	0.00	99.50	0.00	19785.49	75026.37	293019.95	217993.58
1+800.00	38.24	0.26	950.51	2535.85	75976.88	295555.79	219578.91
1+850.00	47.08	0.47	2114.58	18.48	78091.46	295574.28	217482.82
1+900.00	63.66	0.04	2742.41	12.94	80833.87	295587.22	214753.35
1+950.00	0.00	150.40	1578.34	3863.75	82412.21	299450.97	217038.76

Total Volume Table							
Station	Fill Area (m ²)	Cut Area (m ²)	Fill Volume (m ³)	Cut Volume (m ³)	Cumulative Fill Vol (m ³)	Cumulative Cut Vol (m ³)	Cum. Net Vol. (m ³)
2+000.00	0.08	29.58	1.90	4616.71	82414.11	304067.68	221653.57
2+050.00	0.00	0.00	1.93	743.98	82416.04	304811.67	222395.63
2+079.29	0.00	0.00	0.00	0.00	82416.04	304811.67	222395.63



CROSS SECTION

- Creating Multiple Cross Section





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INTERMEDIATE COURSE

1. Introduction
2. Geometry
3. Auxiliary
4. Workflow
5. Properties, Attribute, Parametric Settings
6. Codes
7. Data Import

INTRODUCTION

- Understanding the Ribbon & UI
- Navigating and Using Basic Functionality
- Understanding the Toolbox
- Understanding the Flowchart
- Understanding the Properties
- Understanding the basic settings

Subassembly > Flowchart > FILL

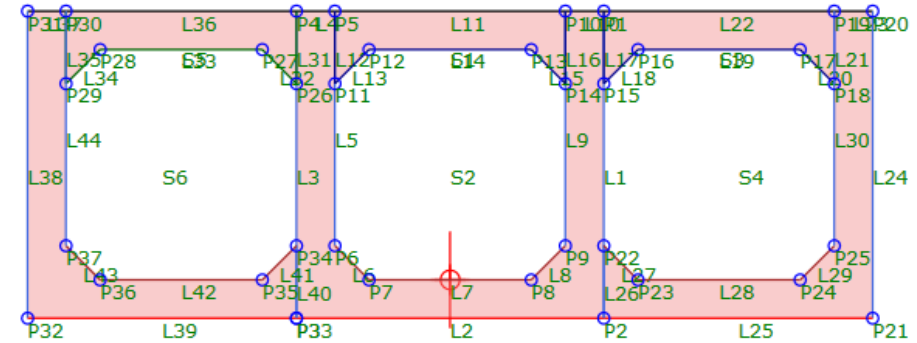
The screenshot displays the Autodesk Civil 3D interface. The main window shows a flowchart titled 'Subassembly > Flowchart > FILL'. The flowchart consists of two identical vertical paths. Each path starts with a 'PARAMETER' box (containing 'Double-click to view'), followed by a yellow diamond 'Decision' box. The top path's 'True' branch leads to a 'TOE DRAIN 2' box, and its 'False' branch leads to a 'BENCH DRAIN 2' box. The bottom path's 'True' branch leads to another 'TOE DRAIN 2' box, and its 'False' branch leads to another 'BENCH DRAIN 2' box. Below the flowchart, the 'Properties' window is open, showing the 'System.Activities.Statements.FlowDecision' settings. The 'Condition' is set to 'AP15.DistanceToSurfac...', 'FalseLabel' is 'False', and 'TrueLabel' is 'True'. On the right side, a 3D model of a drainage structure is visible, featuring various points (P1-P10, P45-P51, P49-P51), lines (L1-L9), and surfaces (S1). Below the 3D model, there are checkboxes for 'Codes' and 'Fit to Screen'. At the bottom right, an 'Input/Output Par...' window is partially visible, showing a table of parameters.

Name	Type
Side	Side
BNCH_OF2	Double
SB_OF2_X	Double
P_DIA	Double
SB_HGT	Double
SB_WDH	Double
SB_OF2_Y	Double
BNCH_OF2	Double
BNCH_THK	Double

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GEOMETRY

- Creating Point
- Creating Link
- Creating Shape



Codes Comments

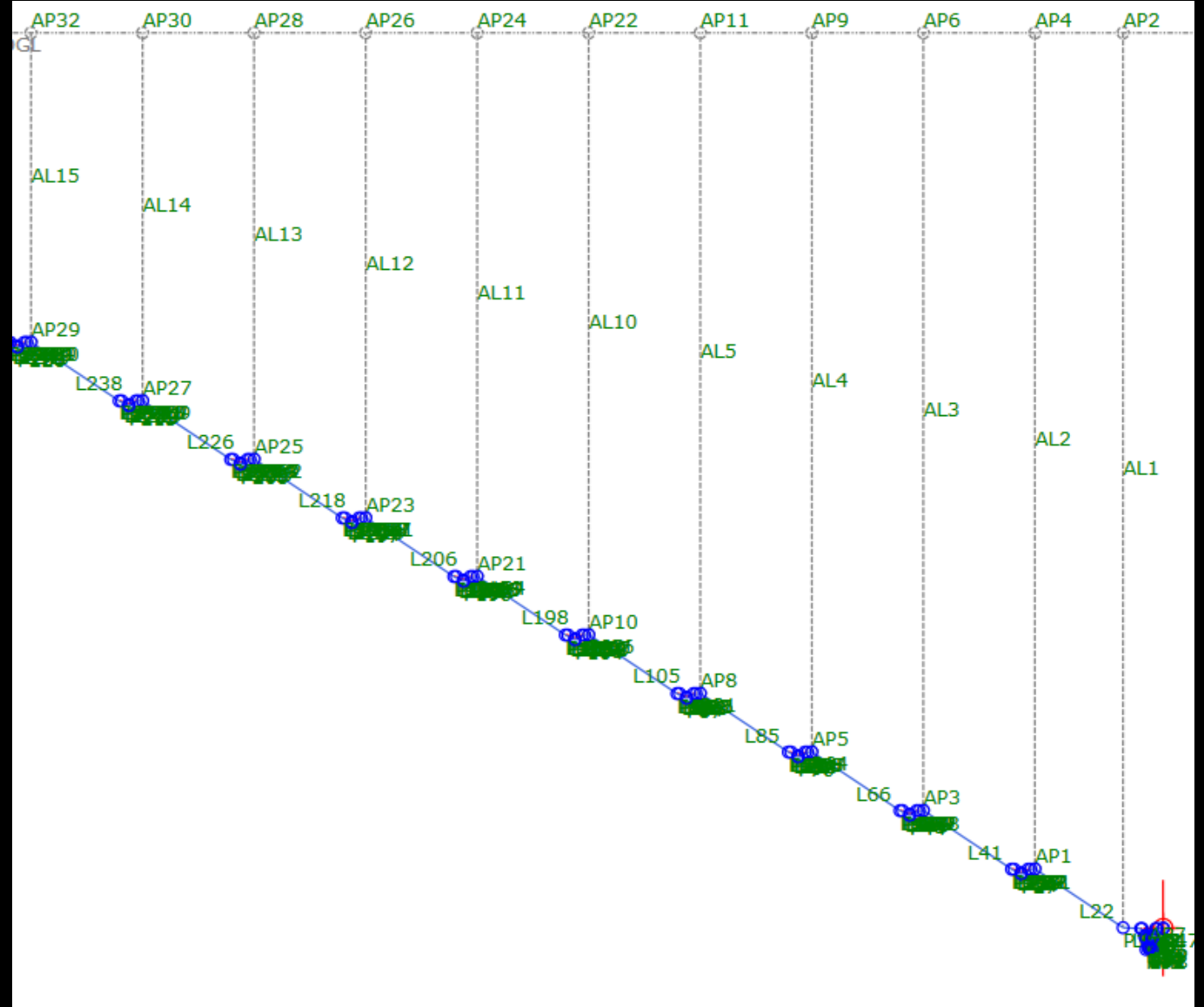
Fit to Screen

Input/Output Parameters

Name	Type	Direction	Default Value	DisplayName	Descripti
Side	Side	Input	Left		
Y	Double	Input	0.4	(Y) Chamfer	
S	Double	Input	2.7	(S) Width	
X	Double	Input	0.4	(X) Chamfer	
L1	Double	Input	4.5		
D1	Double	Input	1.275		
D	Double	Input	3.45		
W	Double	Input	0.45	(W) Side Thicknes:	
T	Double	Input	0.45	(T) Top & Down TI	

AUXILIARY

- Creating auxiliary point
- Creating auxiliary link
- Creating auxiliary mark



PROPERTIES, ATTRIBUTE, PARAMETRIC SETTINGS

- Understanding file naming in Packet Settings
- Creating & understanding parametric design by using Input/Output Parameters
- Creating & understanding Target Parameters
- Creating & understanding Superelevation

Preview geometries in Roadway mode

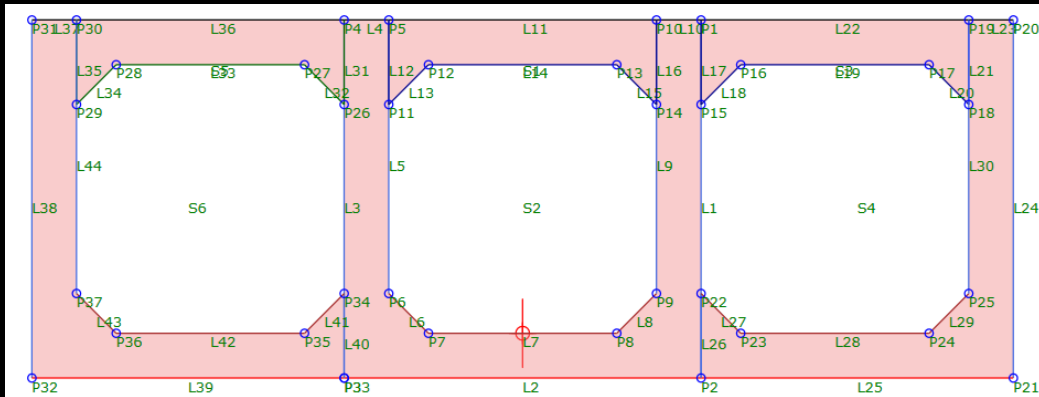
Codes Comments Fit to Screen

Name	Type	Direction	Default Value	DisplayName
Side	Side	Input	Left	
DL_GRD_SL1	Grade	Input	5.00%	Daylight 1st Slope
OFS_RD	Double	Input	0.28	Offset Roadside
OFS_RD_1	Double	Input	0.34	Offset Roadside 1
RD_GRD_1	Grade	Input	200.00%	Roadside Drain G
OL_RD_1	Double	Input	0.5135	Overlap Daylight
RD_WDH_T	Double	Input	0.6	Road Side Width
RD_HGT	Double	Input	0.68	Road Side Height
RD_WDH_B	Double	Input	0.72	Road Side Width
DR_WDH_T	Double	Input	0.5	Drainage Width
RD_THK	Double	Input	0.12	Road Side Thickn

Create parameter

CODES

- Basic understanding about CodeSet Style
- Creating Point codes
- Creating Link codes
- Creating Shape codes





DATA IMPORT

- Importing .PKT file into Autodesk® Civil 3D



THANK YOU

Adil Kurniawan

adil@bimageconsulting.com