

Revit and Dynamo For Landscape Architecture

AR20475

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Class summary

This class will demonstrate how you can use Revit software for landscape architecture with some assistance from Dynamo extension. Attendees will get an overview of how to use Revit software features such as families to provide typical symbols in plan while providing opportunities for visualization, scheduling to provide quantities, and tagging to annotate consistent information. Going beyond the basics, we'll use Dynamo extension to show advanced techniques to streamline the design process. This session features Revit and Dynamo Studio. AIA Approved

Key learning objectives

At the end of this class, you will be able to:

- Learn how to use Revit for landscape architecture
- Learn how to utilize Dynamo to improve your typical Revit workflow
- Understand how a BIM database can streamline landscape-architecture design documentation
- Become comfortable using Revit

About the Presenter

William Carney

BIM Director at BSA LifeStructures



- Firm leader in adoption and implementation of design technology
- Not a Landscape Architect
- Early adopter of Revit 2004
- 10 years of Professional Architectural experience on a wide range of project types
- Committee member for the St. Louis Revit User Group
- Site moderator for the LinkedIn Group Revit Users
- Live St. Louis area with his wife Liz, son Hank, and Greyhound Helen

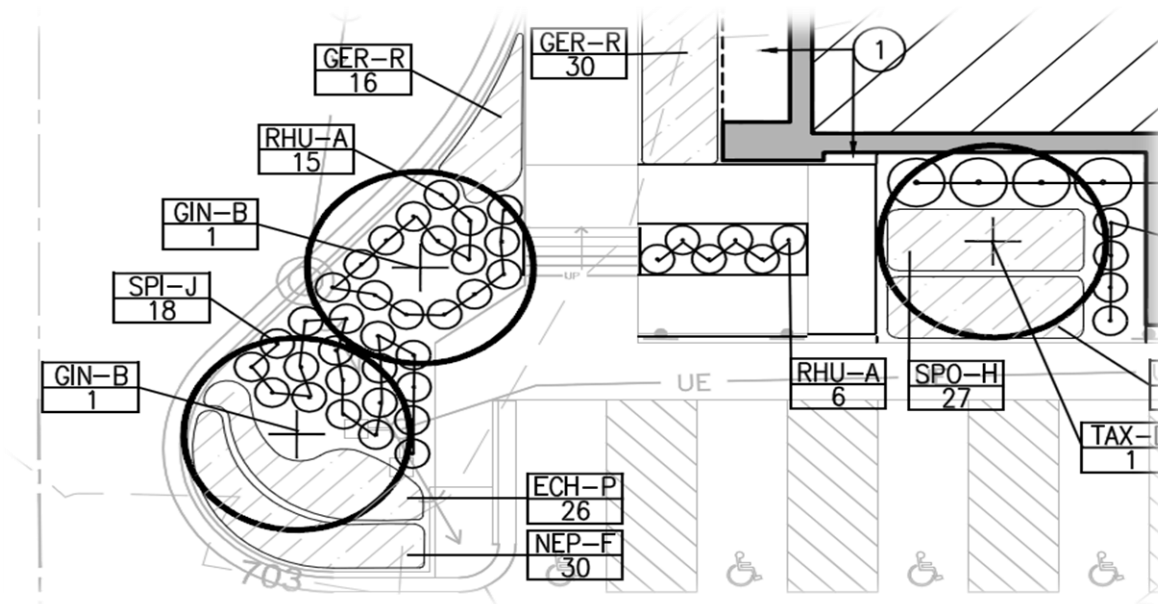


Why am I presenting on this?

Sketchup Visuals



CAD Documents



Photoshop Site

How Can Revit Benefit A Landscape Architect?

- The Database
- Families
- Visibility Graphics



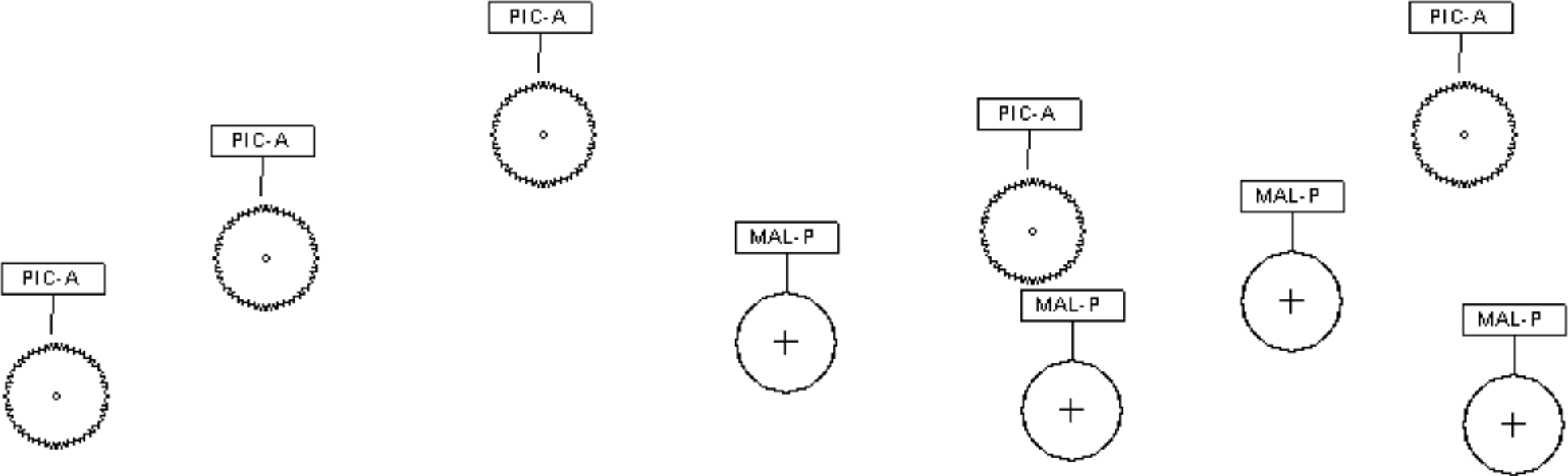
The Database



The Database

Provides one source of truth for information.

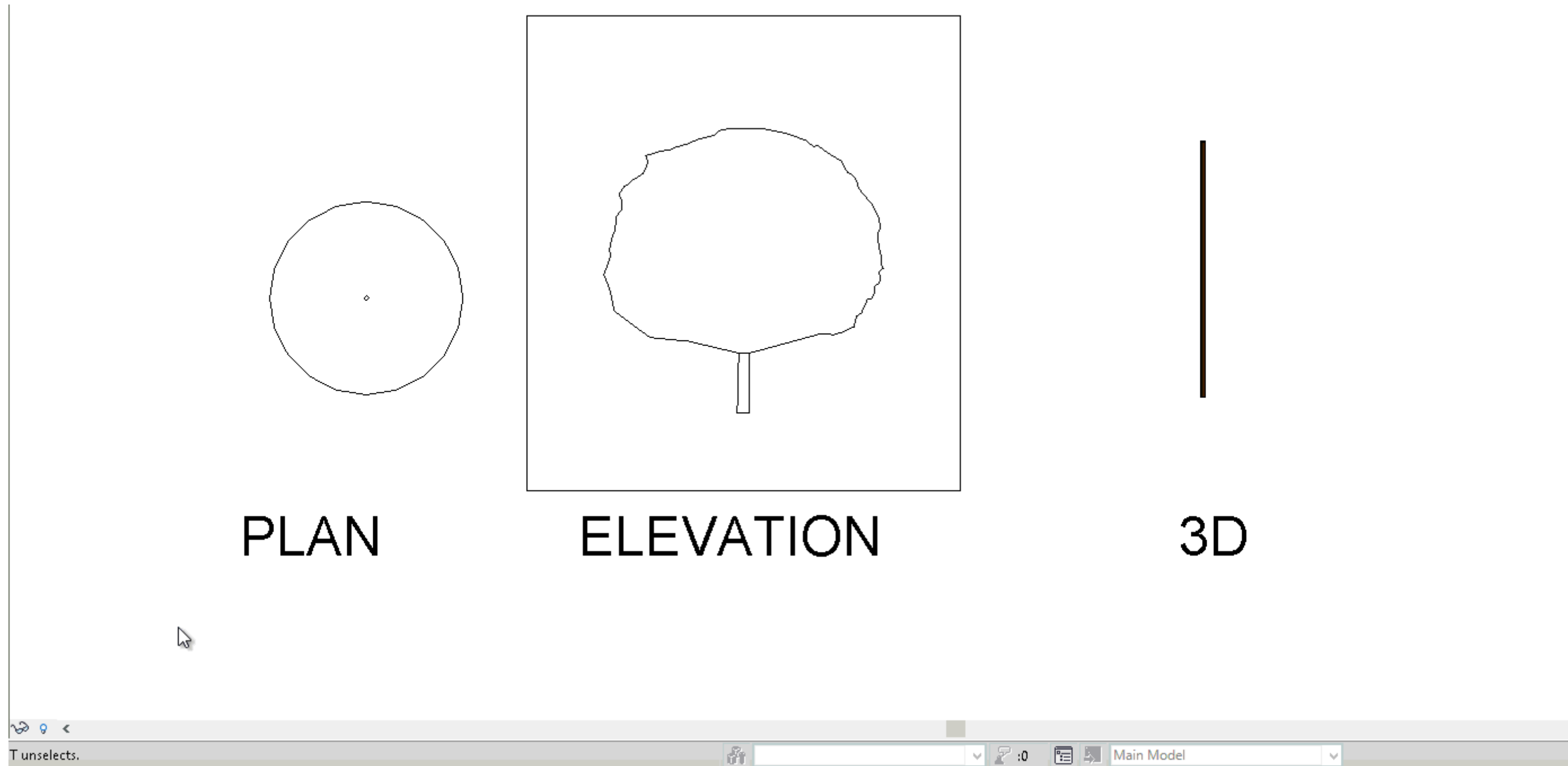
- Quantity
- Cost
- Data



PLANT LIST				
MARK	BOTANICAL NAME	COMMON NAME	COUNT	Cost
MAL-P	MALUS 'PRAIRIFIRE'	PRAIRIFIRE CRABAPPLE	4	\$1000.00
PIC-A	PICEA ABIES	NORWAY SPRUCE	5	\$1500.00
Grand total: 9				\$2500.00

Families

A group of elements with a common set of properties called parameters...



Visibility Graphics



Object Styles

Model Objects | Annotation Objects | Analytical Model Objects | Imported Objects

Filter list: <show all>

Category	Line Weight		Line Color	Line Pattern	Material
	Projection	Cut			
Air Terminals	5		Black	Solid	
Cable Tray Fittings	1		Black	Solid	
Cable Trays	1		Black	Solid	

Visibility/Graphic Overrides for Floor Plan: OVERALL LANDSCAPE PLAN Fall Colors

Model Categories | Annotation Categories | Analytical Model Categories | Imported Categories | Filters | Worksets | Revit Links | Design Options

☒ Show model categories in this view

Filter list: <show all>

Visibility	Projection/Surface			Cut	Half-tone
	Lines	Patterns	Transparen...		
☒ Air Terminals					
☒ Areas					
☒ Cable Tray Fittings					
☒ Cable Trays					
☐ Casework					
☐ Ceilings					
☒ Columns					
☒ Communication De...					
☒ Conduit Fittings					
☒ Conduits					
☒ Curtain Panels					
☒ Curtain Systems					
☒ Curtain Wall Mullions					
☒ Data Devices					
☒ Detail Items					

View-Specific Element Graphics

☒ Visible ☐ Half-tone

Projection Lines

Surface Patterns

Surface Transparency

Reset OK Cancel Apply

Visibility/Graphic Overrides for Floor Plan: OVERALL LANDSCAPE PLAN Fall Colors

Model Categories | Annotation Categories | Analytical Model Categories | Imported Categories | Filters | Worksets | Revit Links | Design Options

Visibility	Projection/Surface			Cut		Half-tone
	Lines	Patterns	Transparen...	Lines	Patterns	
☒						☐

Line Style:

<By Category>

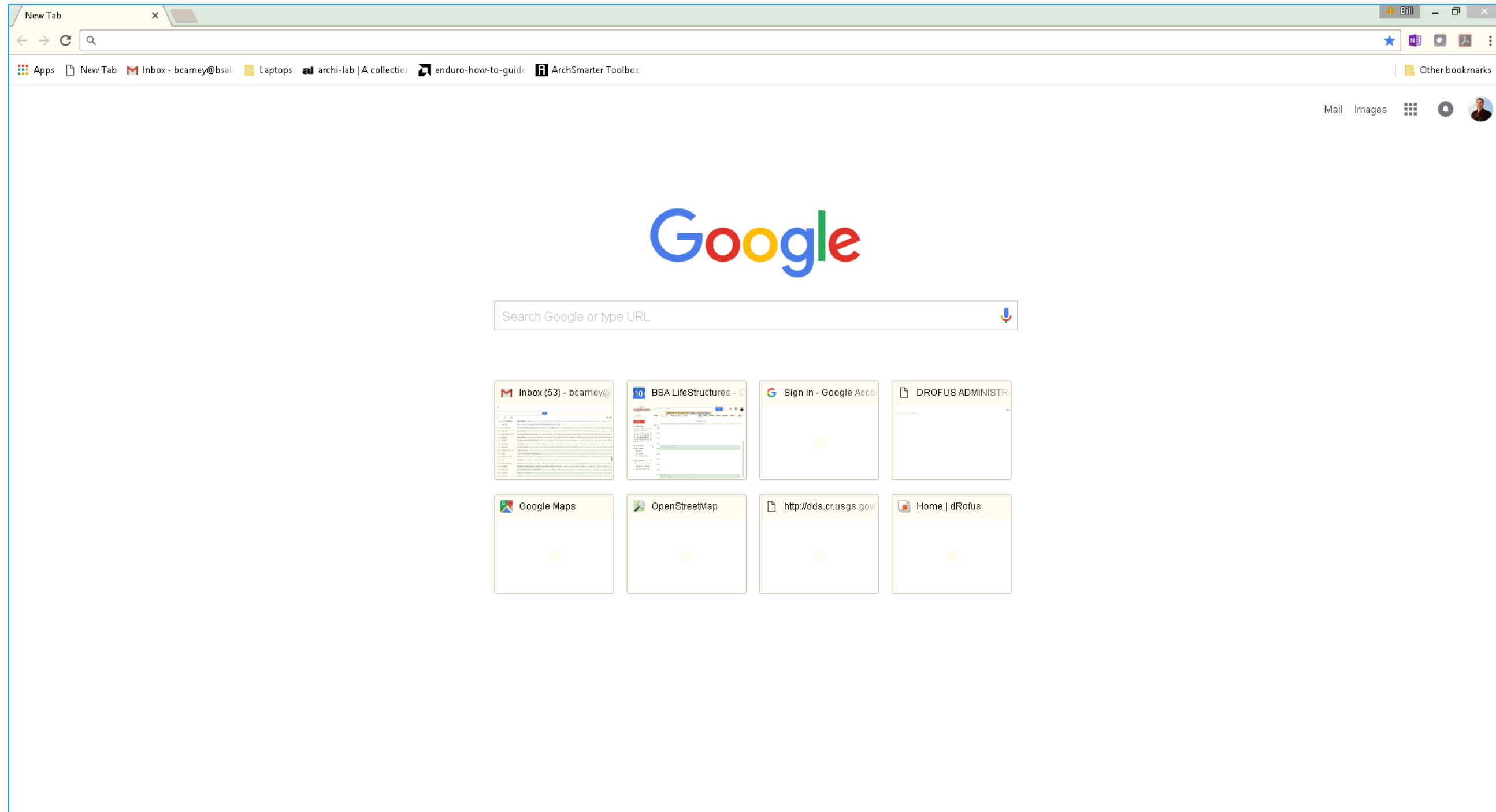
Line Style



How can Dynamo Help a Landscape Architect?

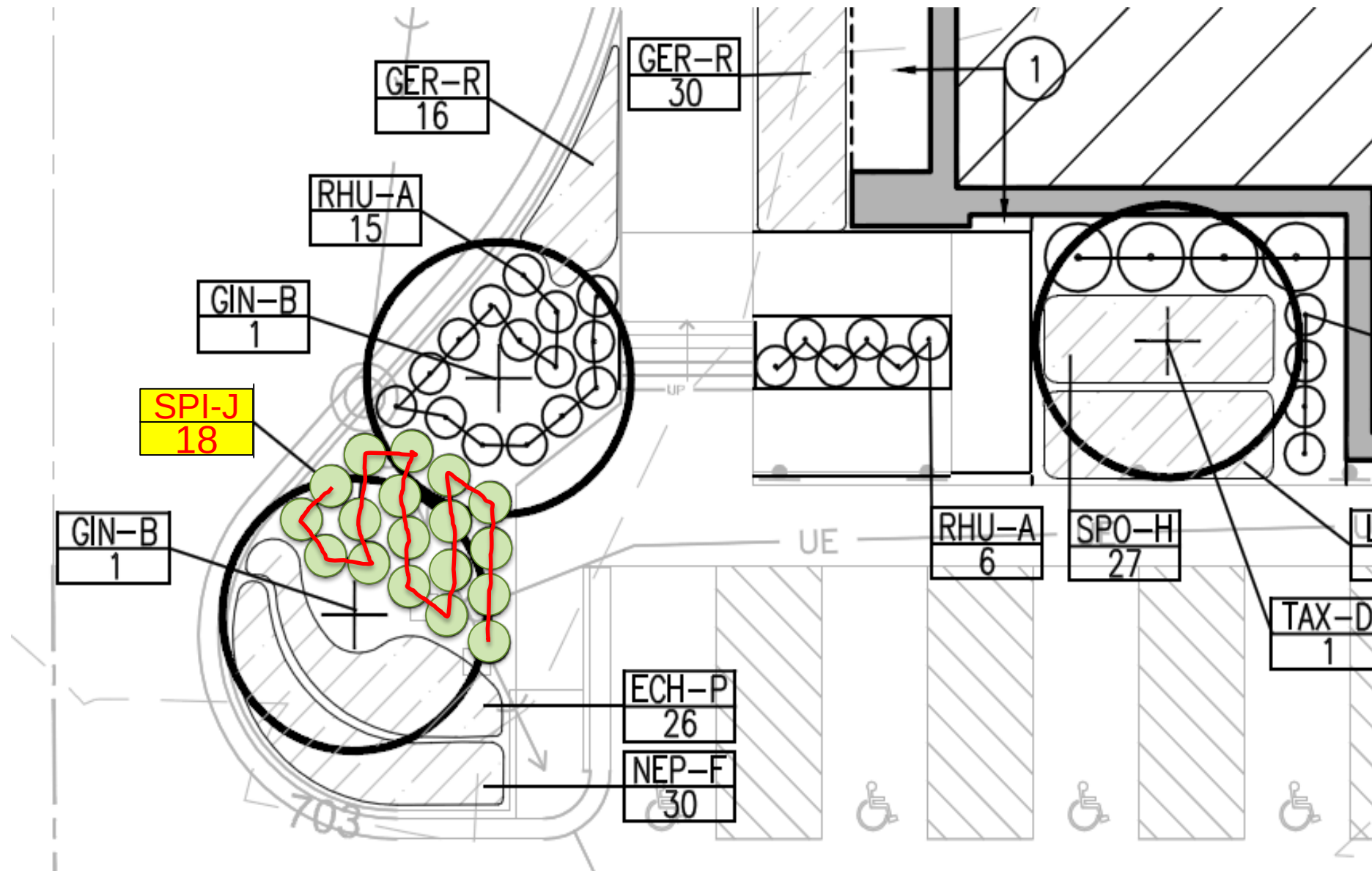
- Connect to external information
- Perform tedious tasks
- Perform actions based on calculations

Connect to external information

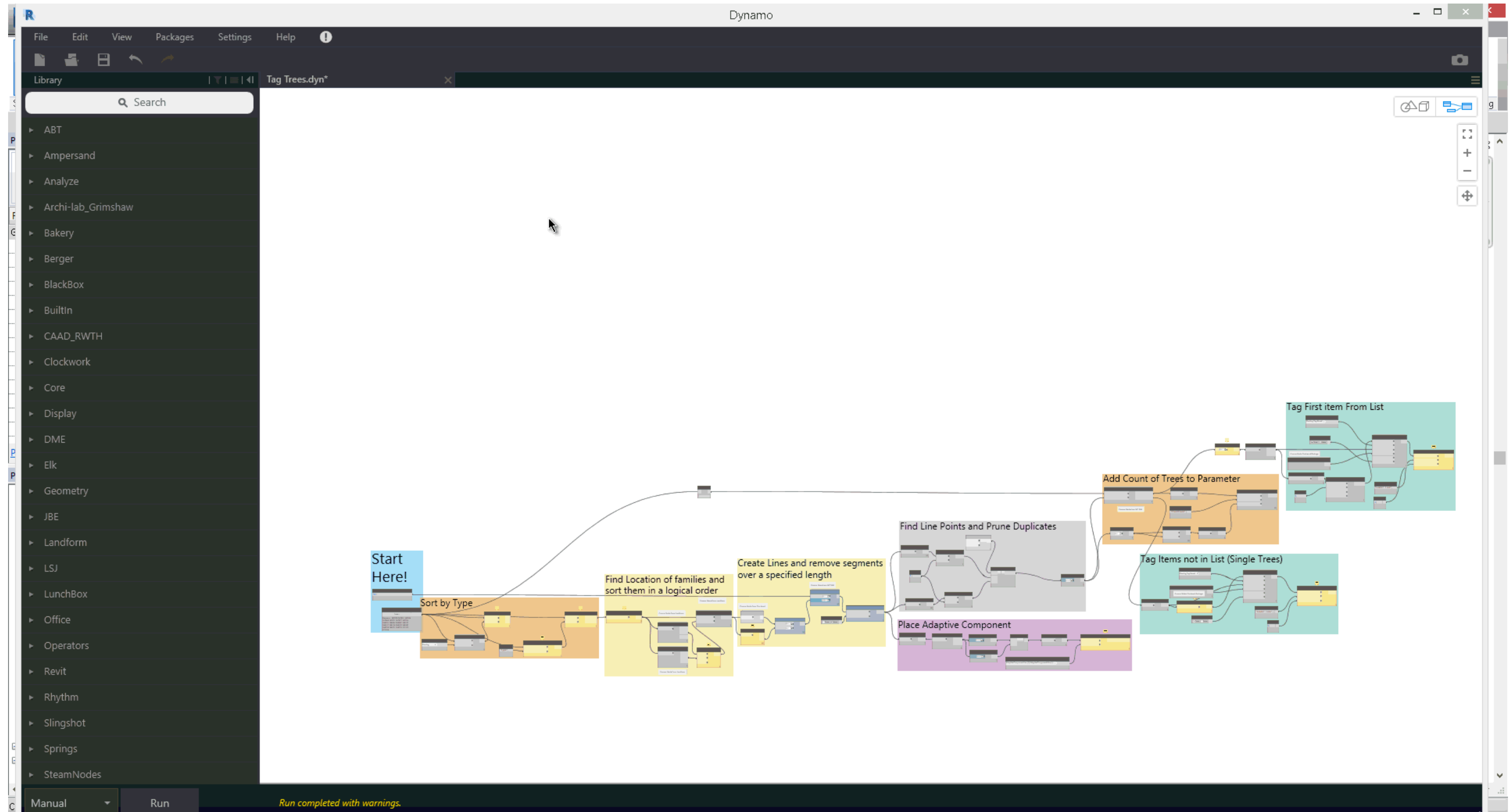


For more info go to: <http://www.hksinc.com/hksline/2015/10/26/elk-mapping-plugin/>

Perform tedious tasks



Perform tedious tasks



Perform Actions Based On Calculations

INTERIOR PARKING LOT: 15 SQ FEET GREEN
SPACE PER PARKING STALL X 81 SPACES

REQ. SQ FT. 1,215

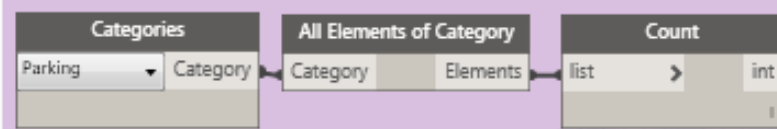
ACTUAL SQ FT 3,598

1 TREE PER EVERY 20 SPOTS

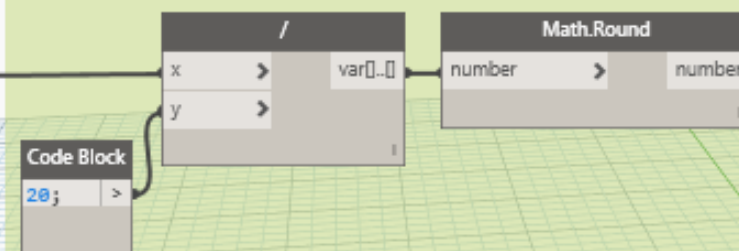
REQ. TREES 5

ACTUAL TREES 12

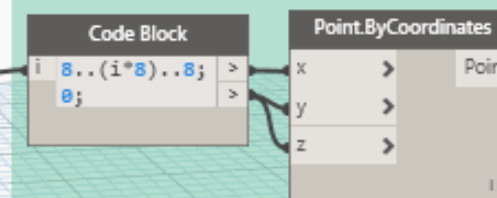
Get Parking Count



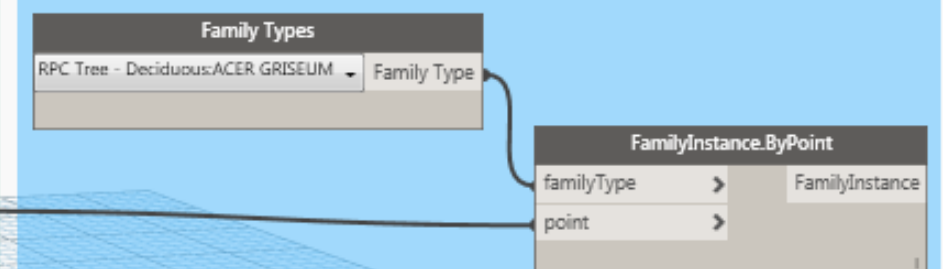
Get Required Number of Trees



Create a list of points based on number of families



Place Family at points



Topography

Determine the best method for your project

- Identify What is required as a deliverable
- Review the site conditions
- Determine the flow of information
- Pick the easiest method that fits your criteria

Help guide your decision

What Are Required Deliverables

- 1) Realistic Site / Exact Topography
- 2) Construction Documents & Imagery
- 3) No Requirement

What is the Site Like

- i. Relatively Flat
- ii. Sloped
- iii. Varied

What Do We Have

- A. 2D CAD
- B. 3D CAD/Civil 3D
- C. Pictures
- D. Nothing

Who is updating site information

- a) Me
- b) Civil
- c) No Site Changes

Possible Solutions

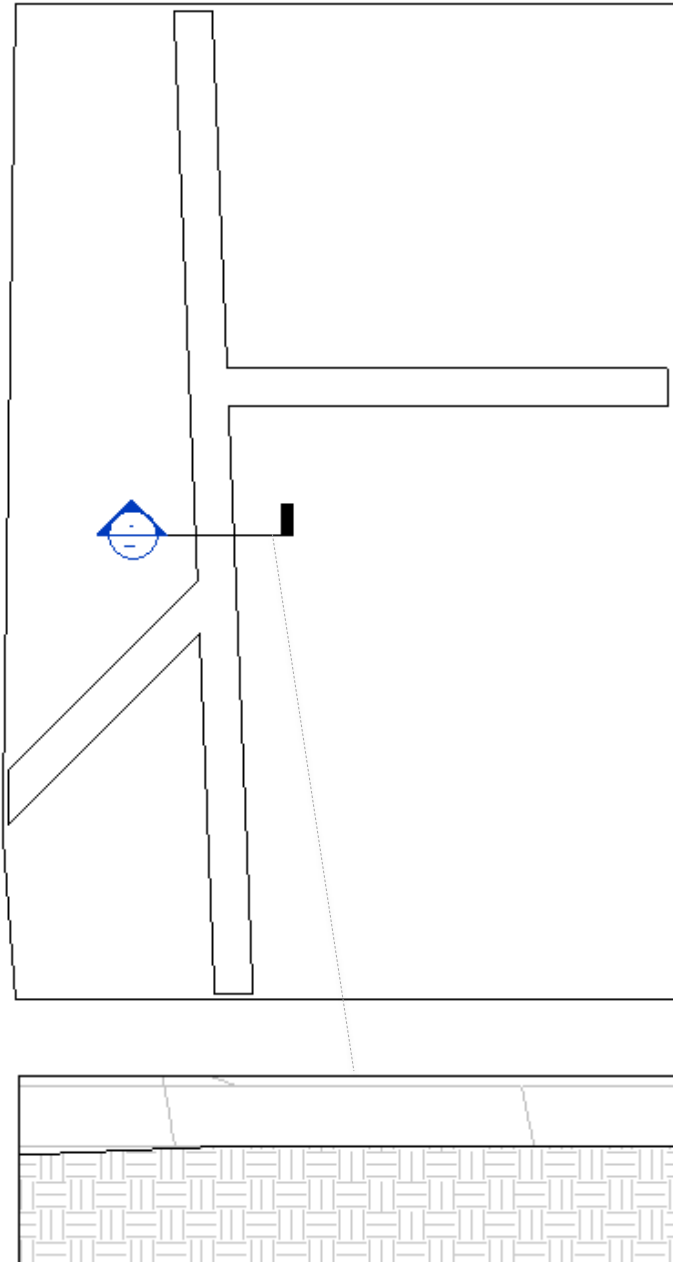
Flat Site	Sloped Site
• Floor slabs with offsets for thickness • Flat topography with sub regions	• Topography with sub regions • Floor slabs over topography

Hardscape

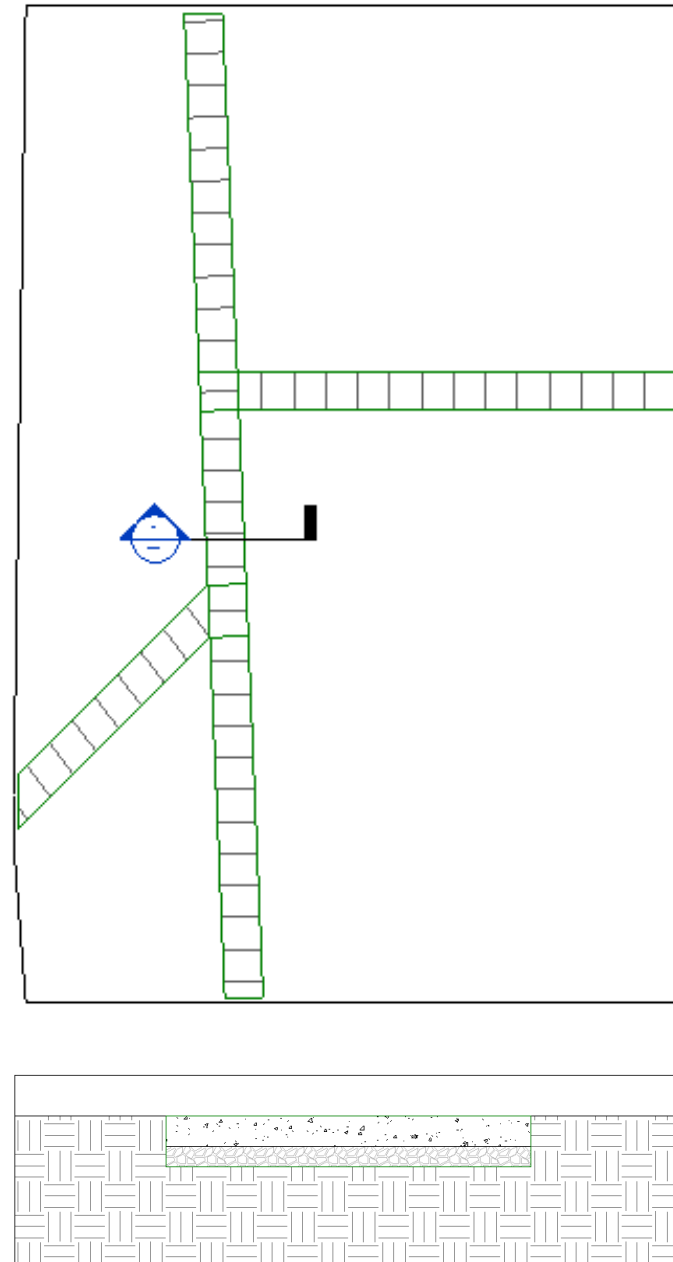
- Strategies
- Materials
- Curbs

Hardscape Strategies

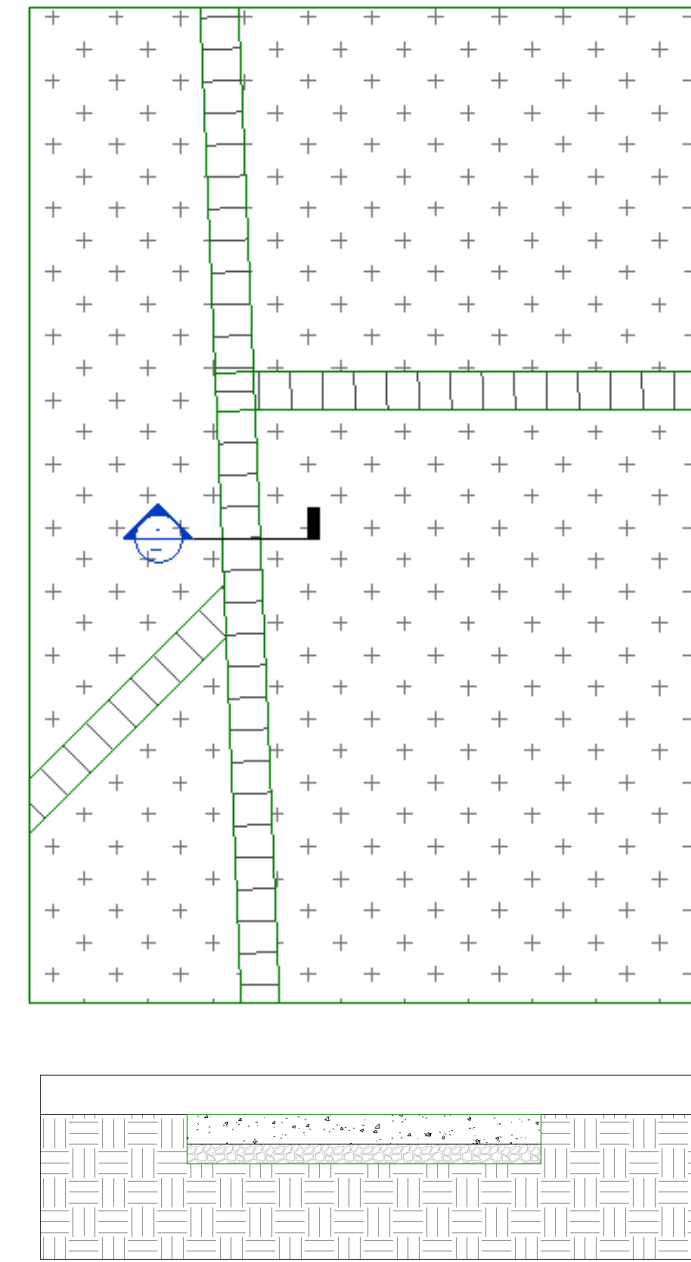
Topography



Topography & Floors

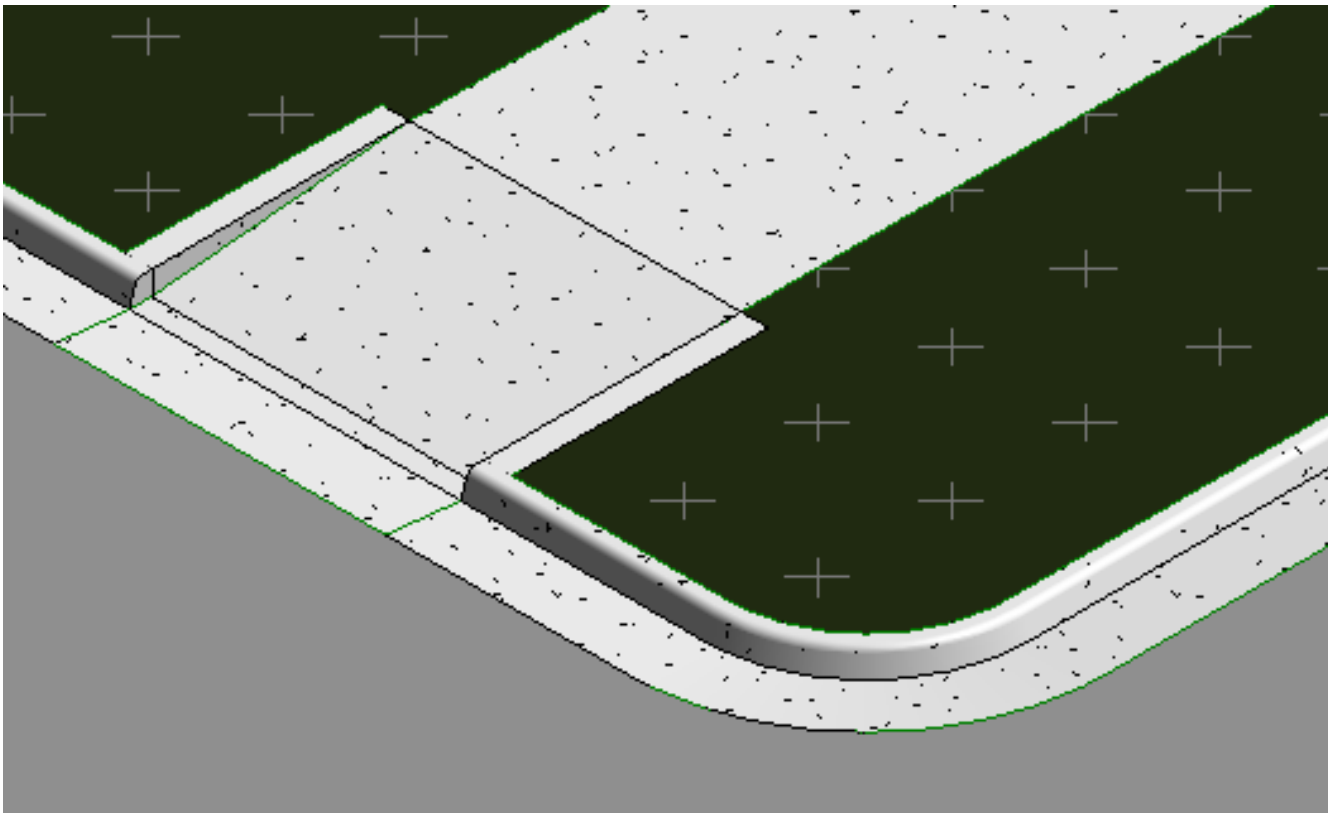


Floors

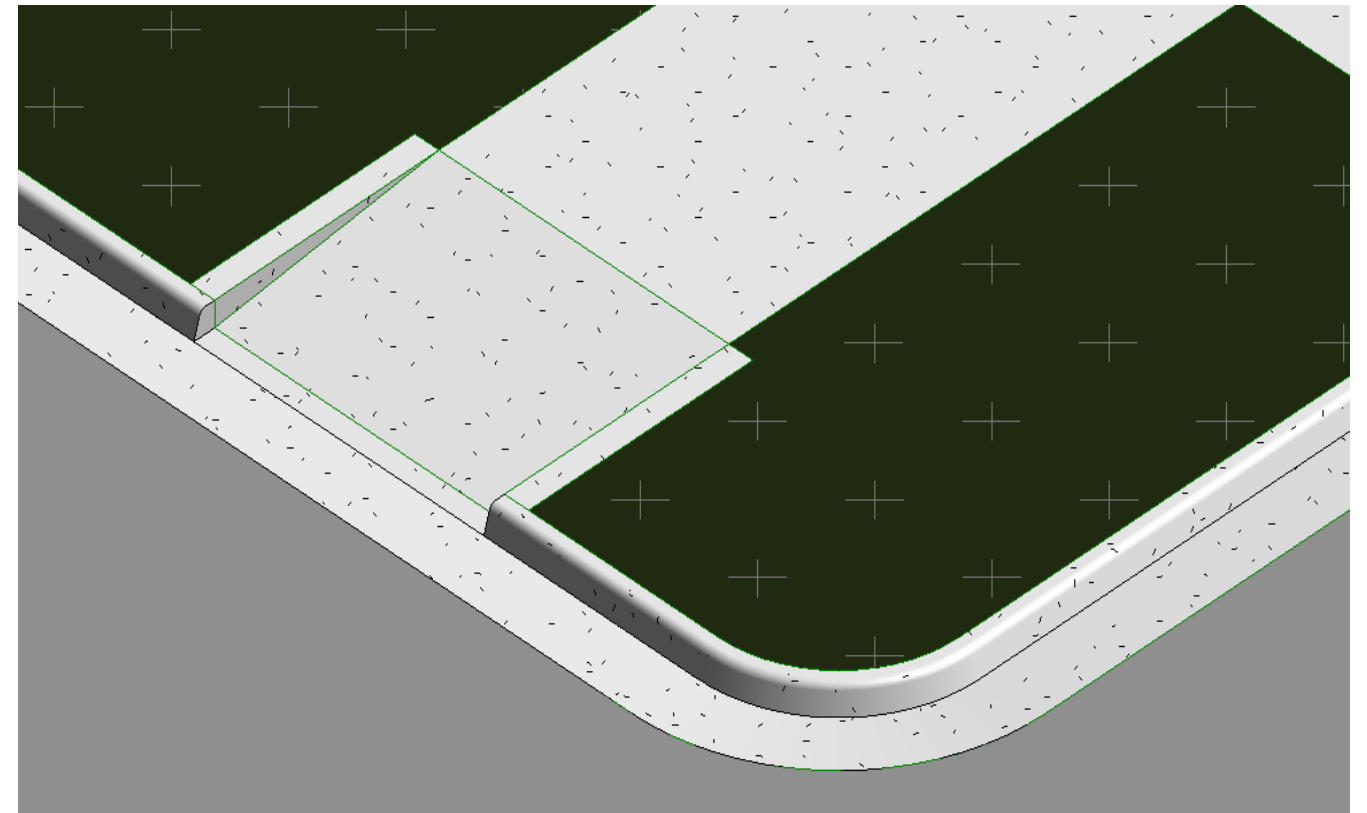


Modeling Curbs

- Slab Edges
- Curb Cuts
- Shape Editing Tools

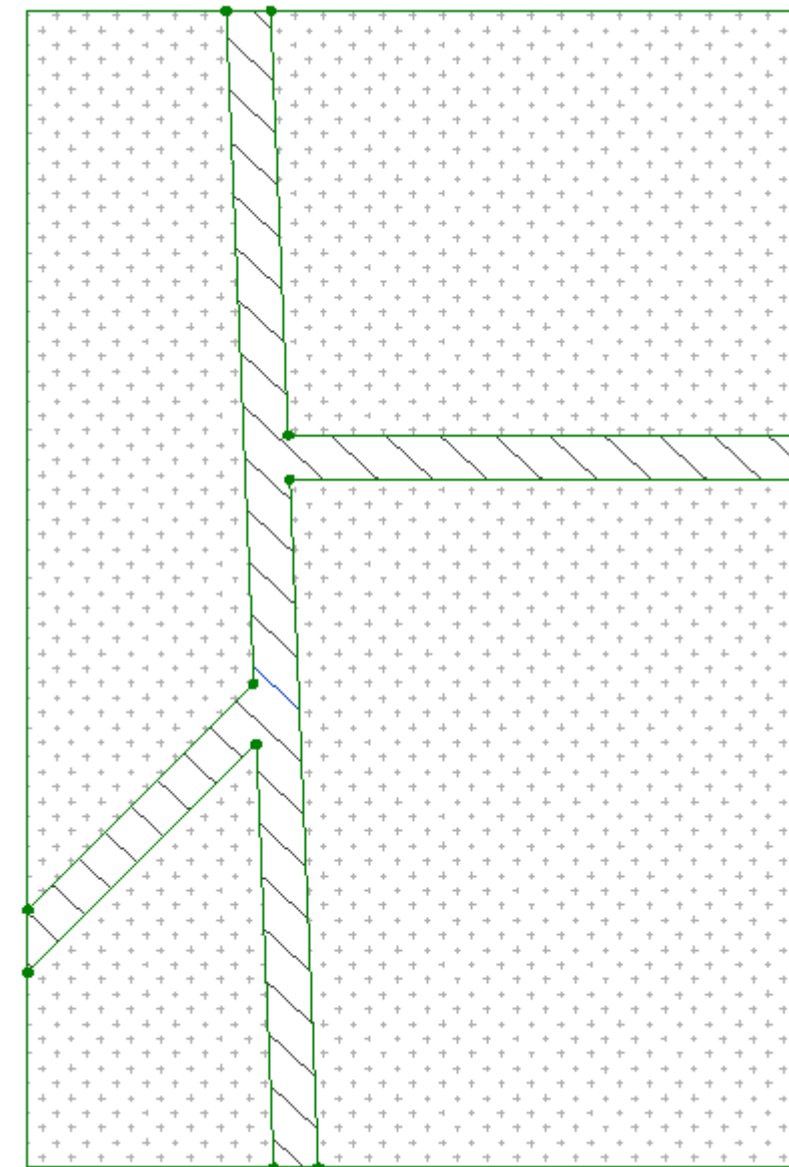
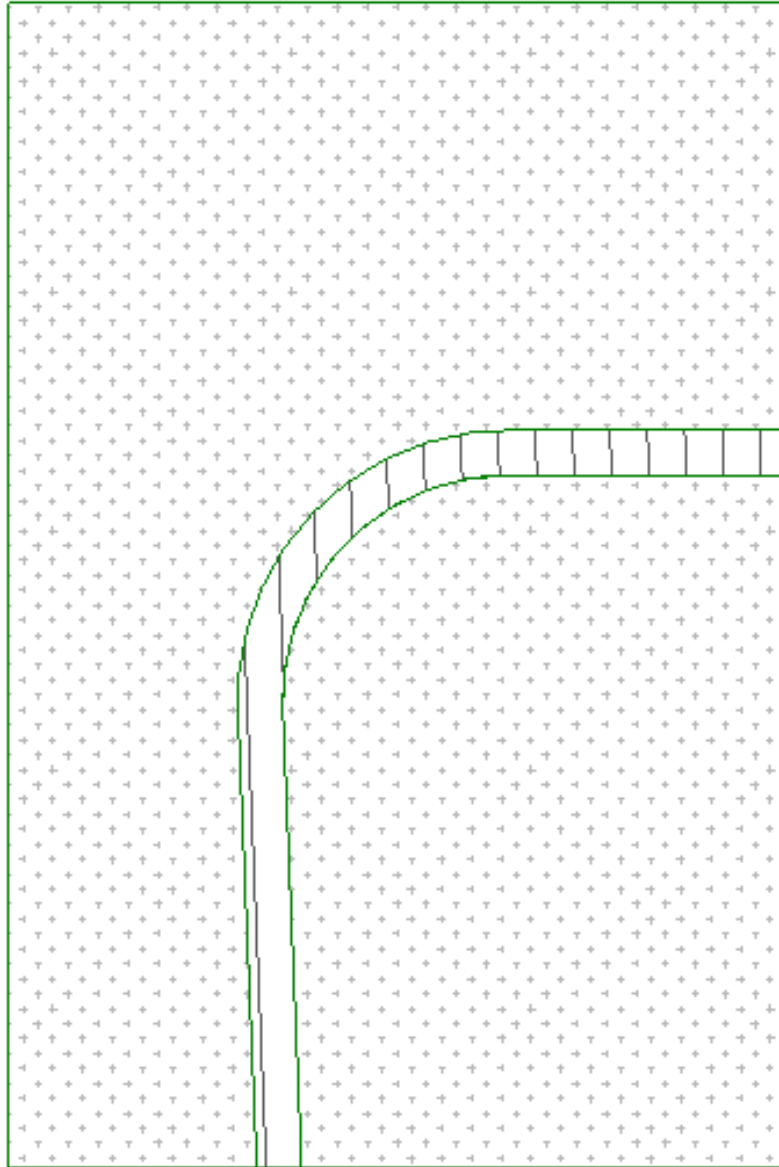


Shape Editing Tools



Surface Hosted Family

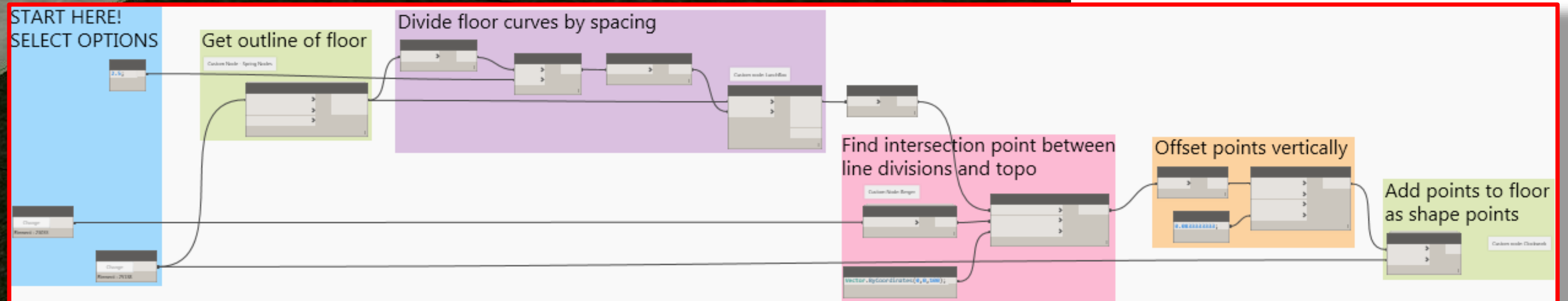
Surface Patterns



Hardscape Enhanced with Dynamo

Sloping Railing
Following Floor

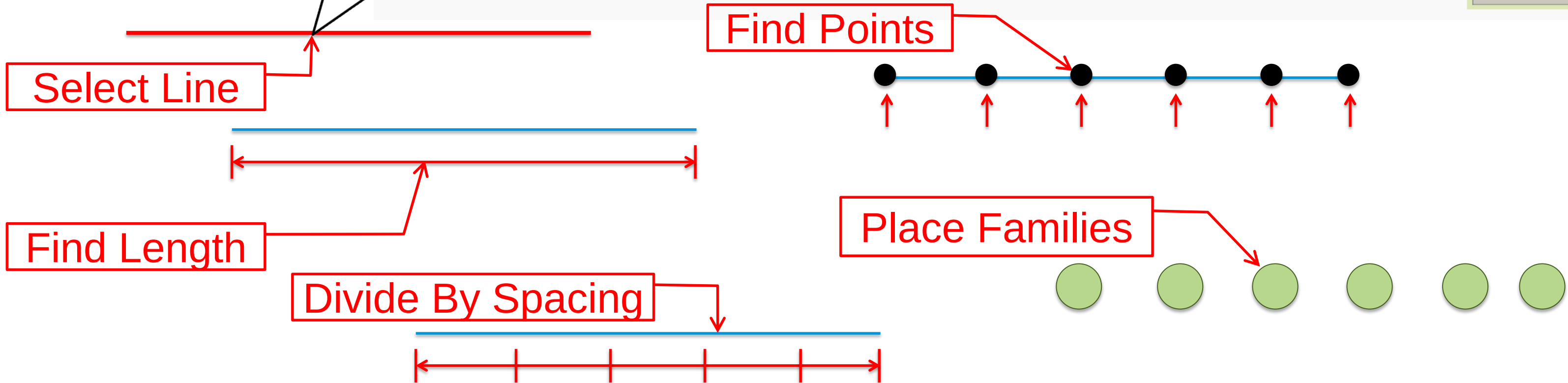
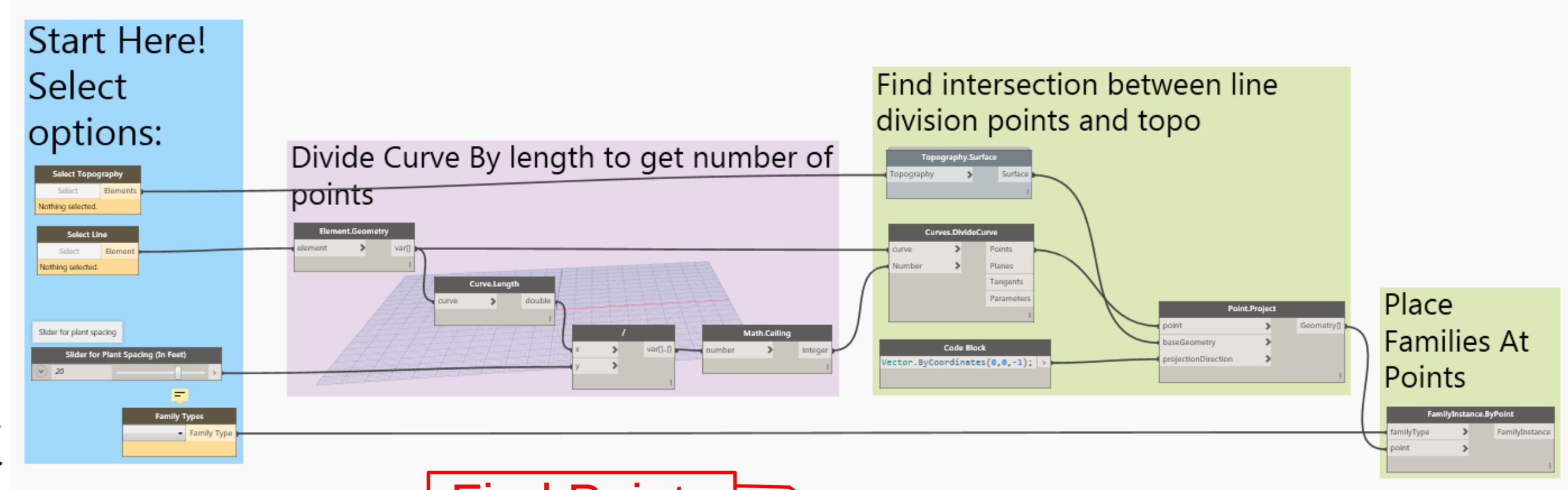
Sloping Floor
Following Site



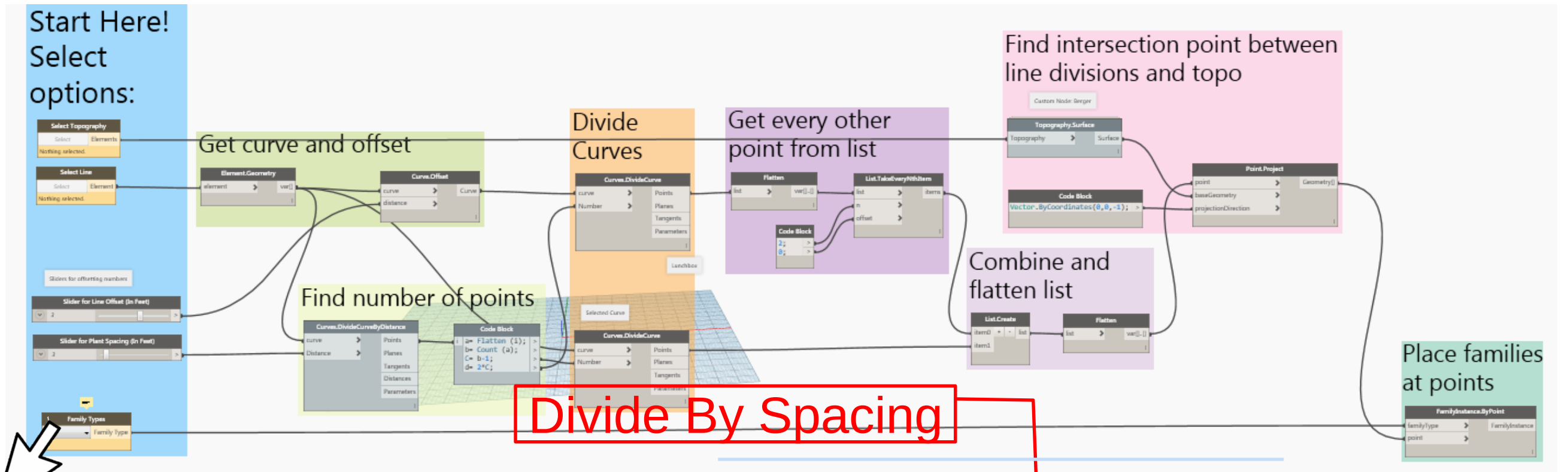
Placing Families By Lines

- Single Line
- Offset
- Placing Patterns On A Line

Placing Families in a line



Offset Lines



Select Line

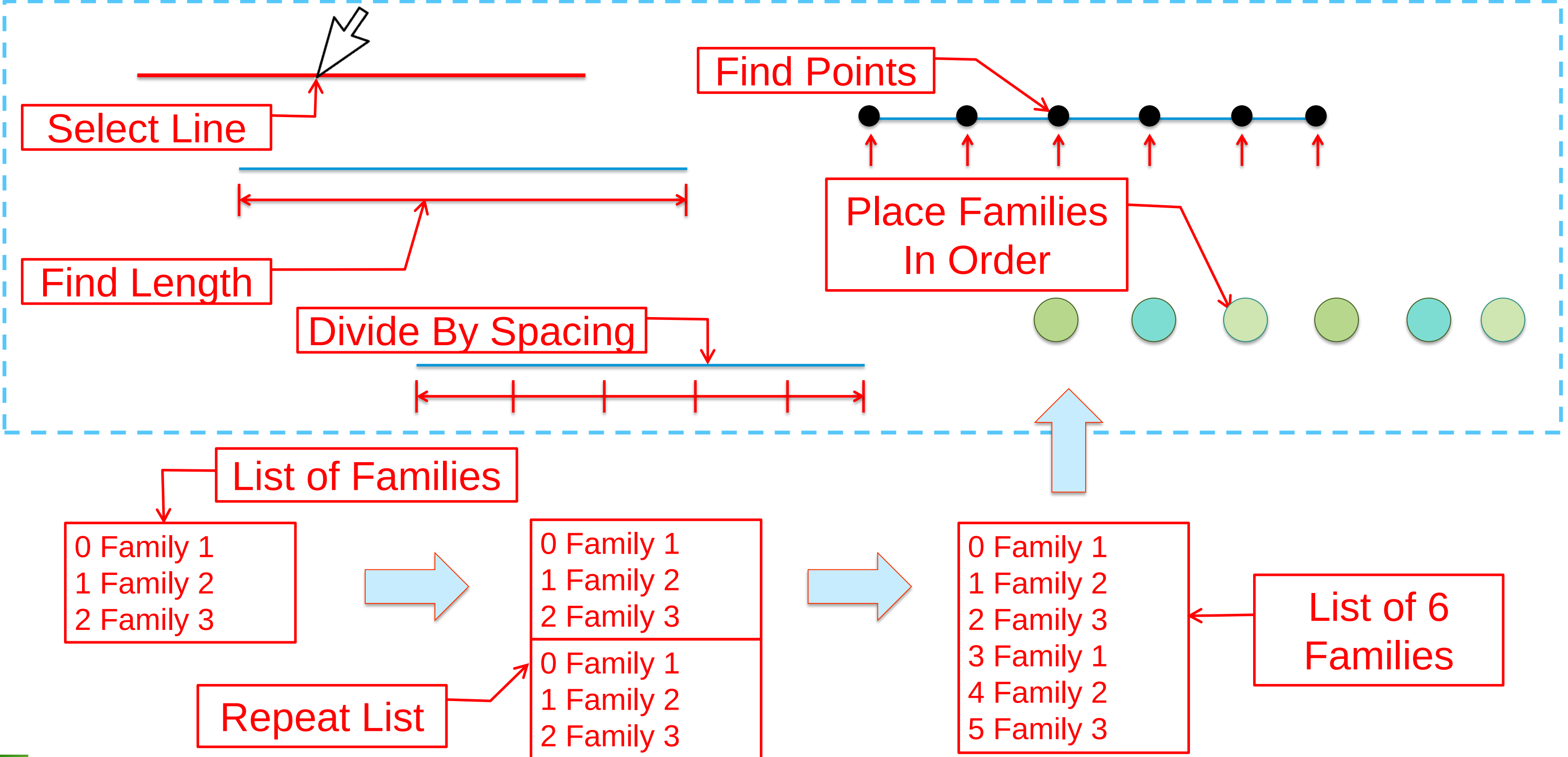
Offset Line

Find Length

Find Points

Place Families

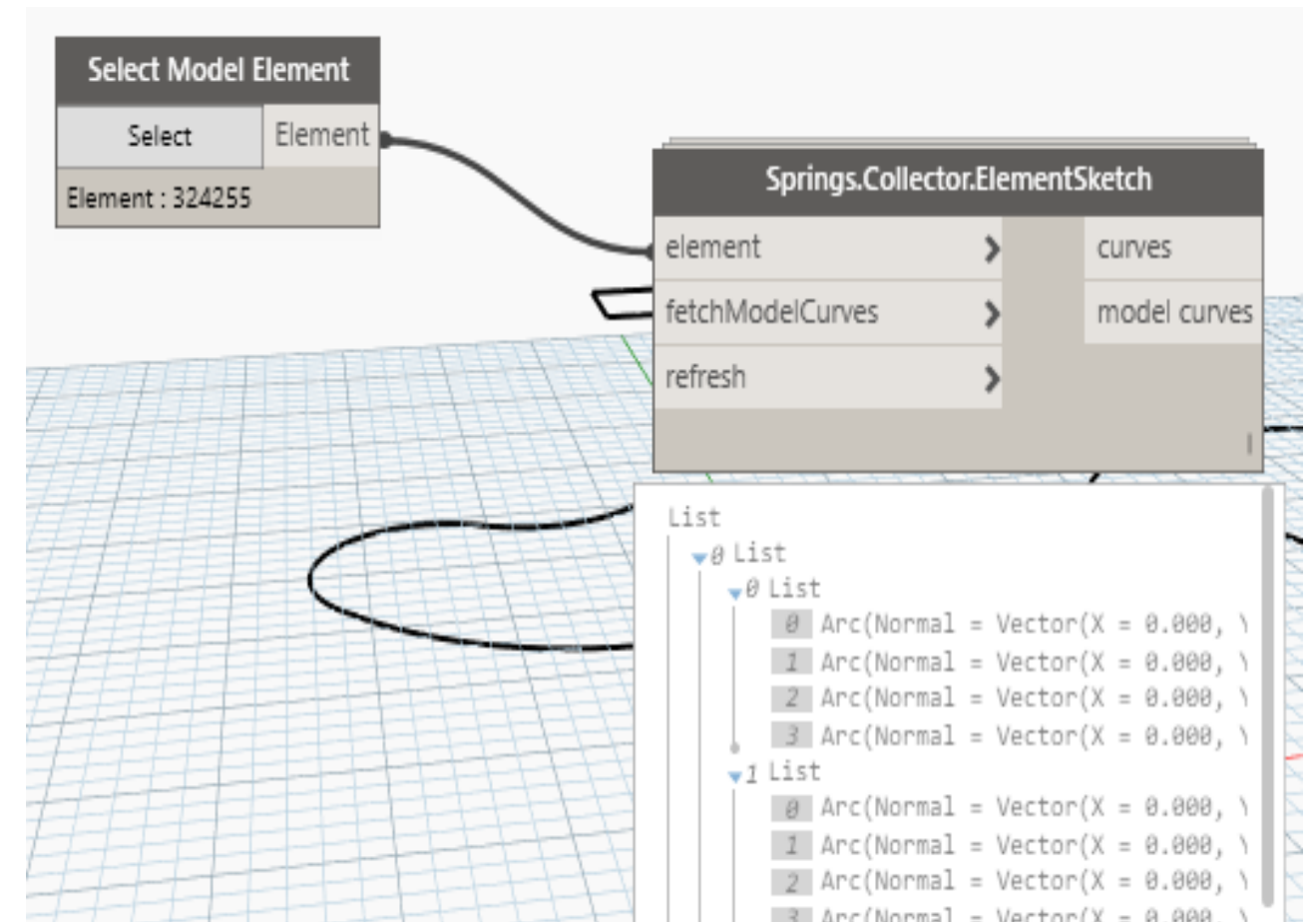
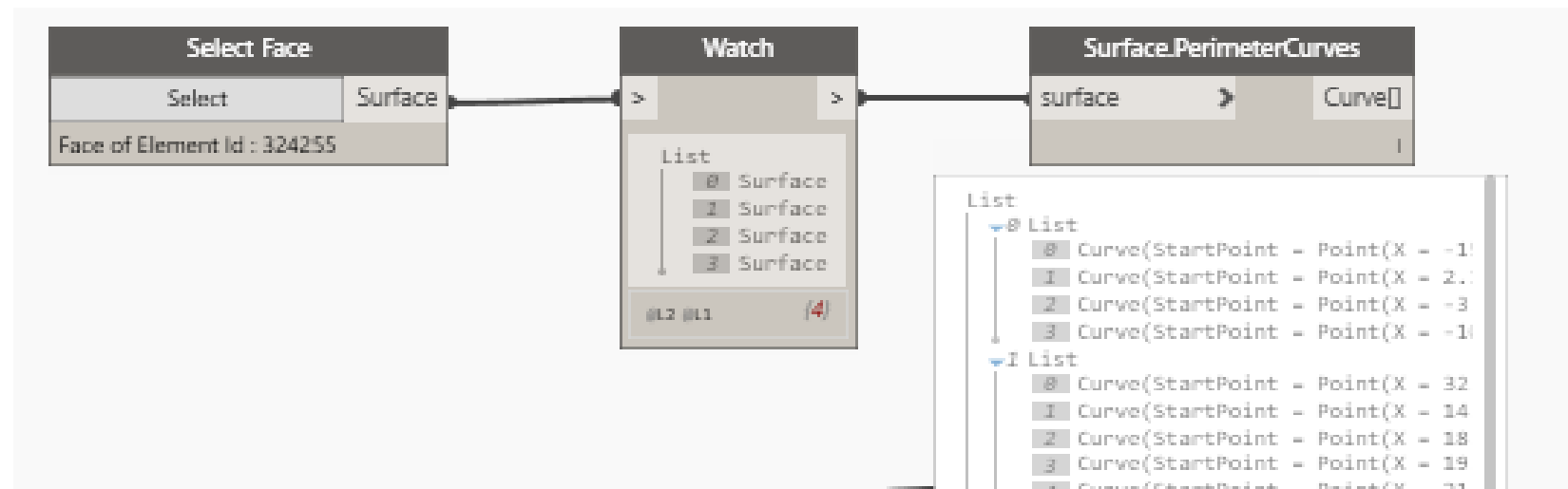
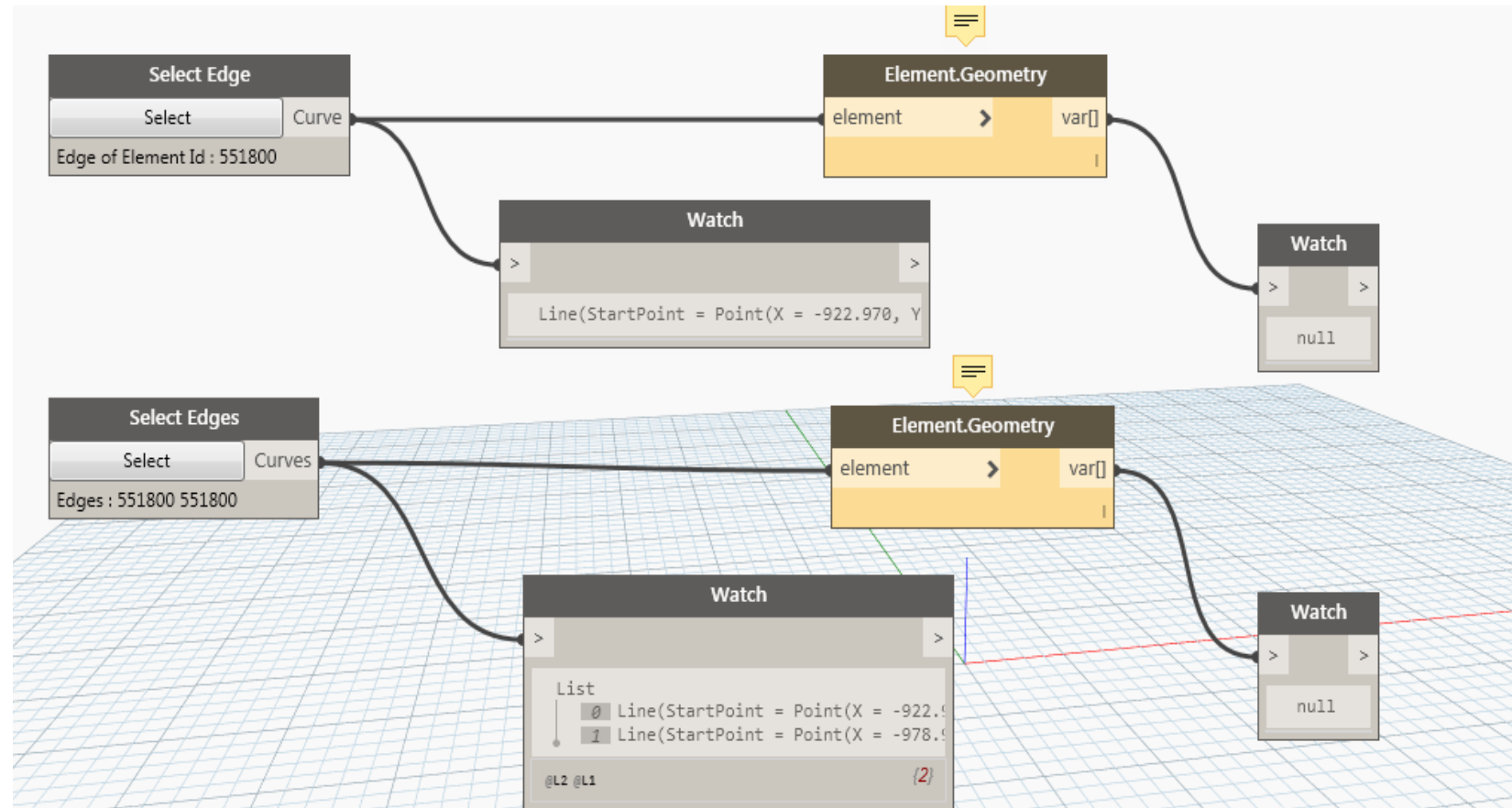
Placing Patterns On A Line



Collecting Lines From Geometry

- Select Edges
- Collect Sketches
- Select Faces

Collecting Lines From Geometry



Placing Families in Regions

Get Overall Length & Width

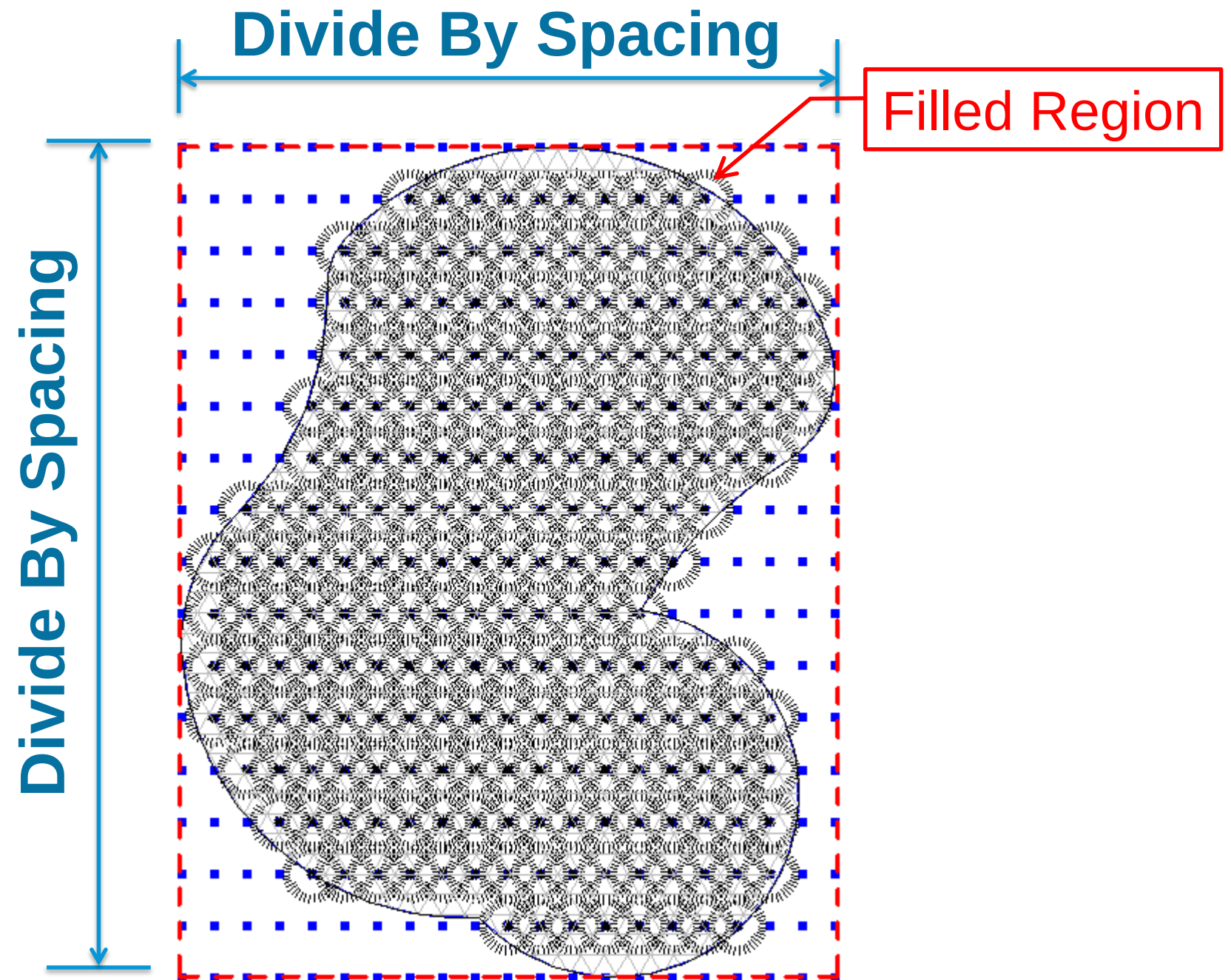
BoundingBox.ByGeometry		
geom	>	BoundingBox

Find Intersection Between Points and Region

Geometry.DoesIntersect		
geometry	>	bool
other	>	
\		

Place Families at Points

FamilyInstance.ByPoint		
familyType	>	FamilyInstance
point	>	



Planter Beds

Get Curves

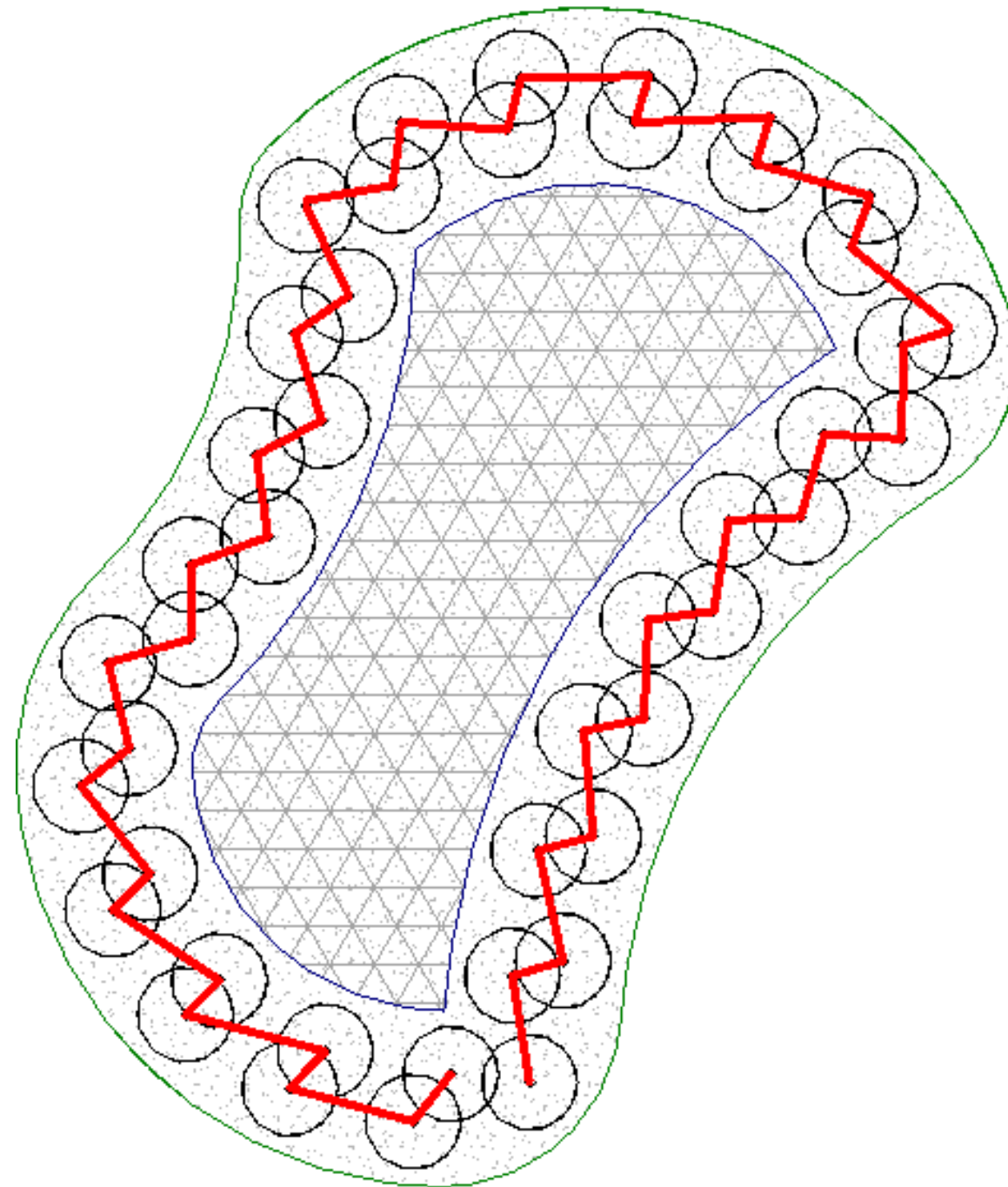
Springs.Collector.ElementSketch		
element	>	curves
fetchModelCurves	>	model curves
refresh	>	

Offset Curves

Curve.Offset		
curve	>	Curve
distance	>	

Annotate From Family Points

AdaptiveComponent.ByPoints		
points	>	AdaptiveComponent[..]
familyType	>	

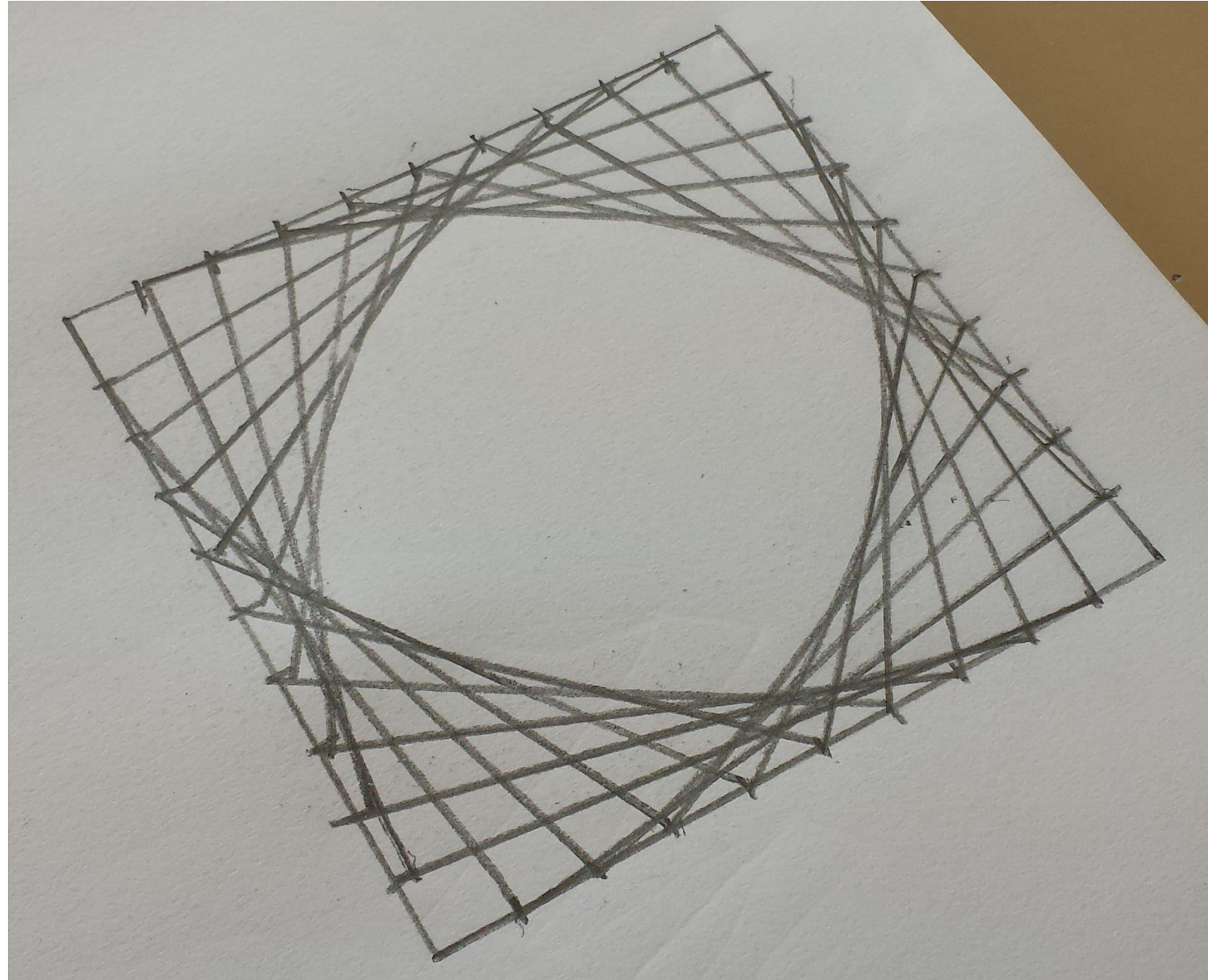


Rows of
Plants

Annotation
Line

Non-Linear
Path

Advanced Patterning



Parabolic Line Diagrams...

0 Line 1

- 0 **1**
- 1 **2**
- 2 **3**
- 3 **4**
- 4 **5**
- 5 **6**

1 Line 2

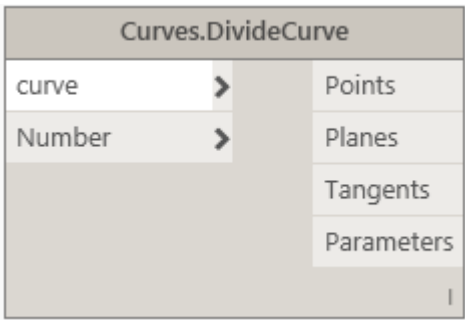
- 0 **a**
- 1 **b**
- 2 **c**
- 3 **d**
- 4 **e**

2 Line 3

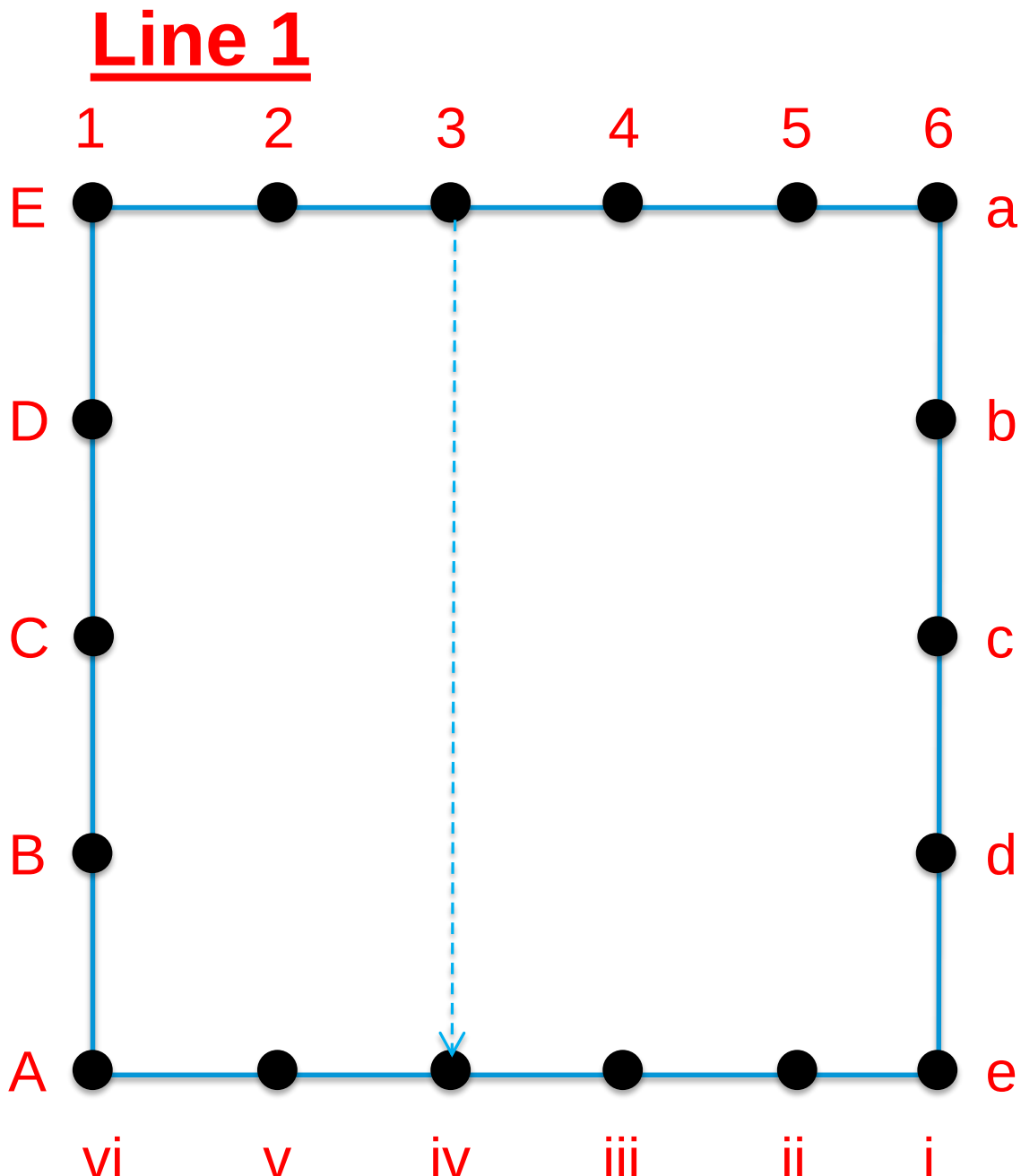
- 0 **i**
- 1 **ii**
- 2 **iii**
- 3 **iv**
- 4 **v**
- 5 **vi**

3 Line 4

- 0 **A**
- 1 **B**
- 2 **C**
- 3 **D**
- 4 **E**



Line 4



Line 3

Line 2



Parabolic Line Diagrams...

0 Line 1

0

1

2

3

4

5

1

2

3

4

5

6

2 Line 3

0

1

2

3

4

5

vi

v

iv

iii

ii

i

List.Reverse

list

>

list

I

Line.ByStartPointEndPoint

startPoint

>

Line

endPoint

>

I

0 List of Lines

0

1

2

3

4

5

Line A

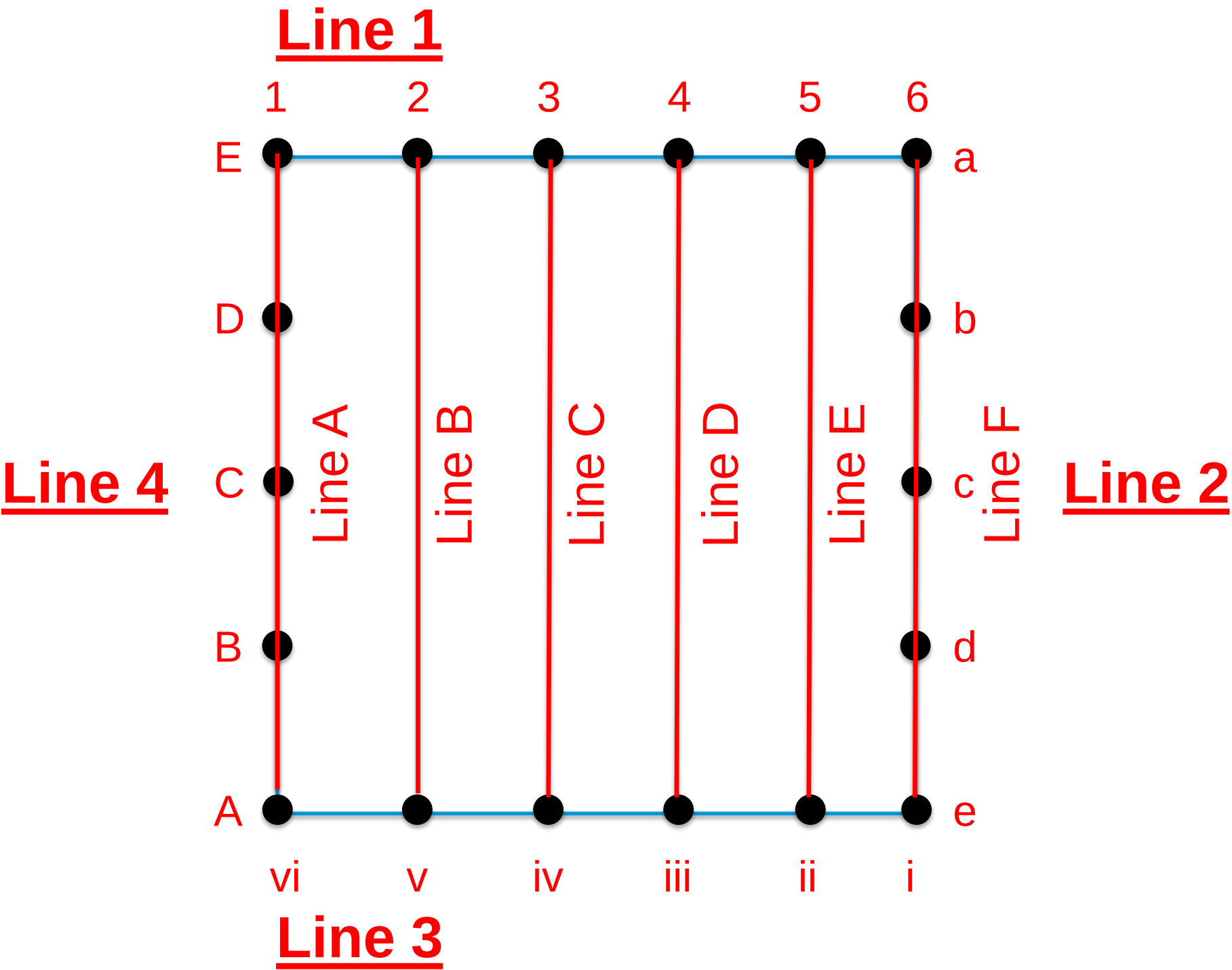
Line B

Line C

Line D

Line E

Line F



Parabolic Line Diagrams...

0 Lines 1 & 2 Drop First

0	2
1	3
2	4
3	5
4	6
5	b
6	c
7	d

0 Lines 4 & 3
Reverse
Drop First

0	D
1	C
2	B
3	A
4	v
5	iv
6	iii
7	ii

List.DropItems	
list	➤
amount	➤

List.Reverse	
list	list

Line 4

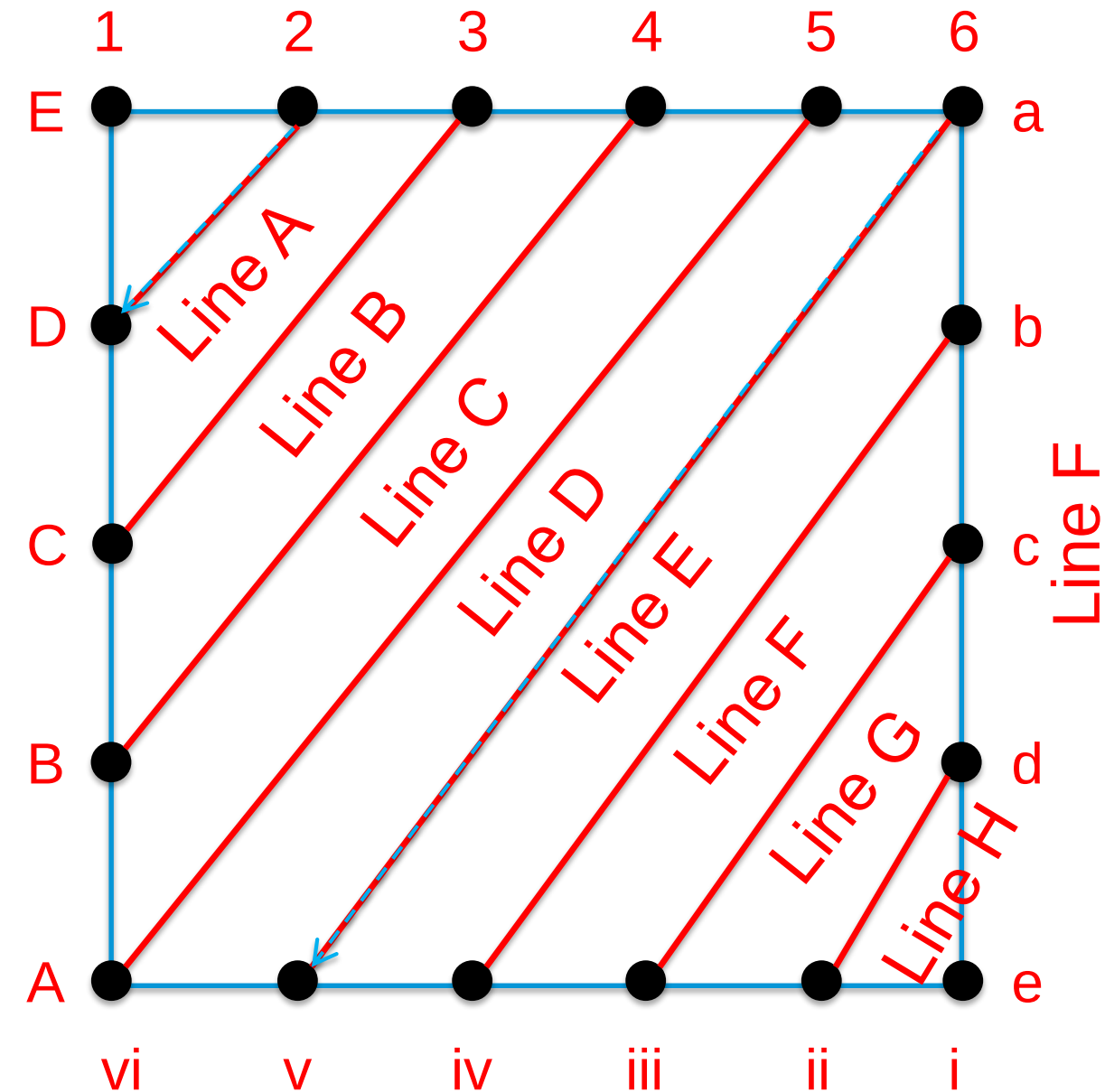
List.DropItems	
list	>
amount	>

List.Join			
list0	>	+	- list1
list1	>		

0 List of Lines

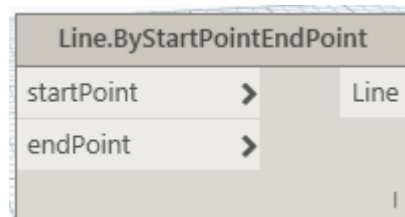
0 Line A
1 Line B
2 Line C
3 Line D
4 Line E
5 Line F

Line 1



Line 2

Line 3



Final Thoughts

- Start Small
 - Convert Plant List to Families
- Link CAD Details
- Create Schedules
- Start Flat



Questions?

Thank you for attending!

- Please fill out your Speaker Survey
- Download the handout.
- Workspaces are included



