Revit and Dynamo For Landscape Architecture
AR20475

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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

<table>
<thead>
<tr>
<th>MARK</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>COUNT</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAL-P</td>
<td>MALUS 'PRAIRIFIRE'</td>
<td>PRAIRIFIRE CRABAPPLE</td>
<td>4</td>
<td>$1000.00</td>
</tr>
<tr>
<td>PIC-A</td>
<td>PICEA ABIES</td>
<td>NORWAY SPRUCE</td>
<td>5</td>
<td>$1500.00</td>
</tr>
<tr>
<td></td>
<td><strong>Grand total:</strong> 9</td>
<td></td>
<td></td>
<td><strong>$2500.00</strong></td>
</tr>
</tbody>
</table>
Families
A group of elements with a common set of properties called parameters...
Visibility Graphics
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
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

<table>
<thead>
<tr>
<th>Flat Site</th>
<th>Sloped Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Floor slabs with offsets for thickness</td>
<td>• Topography with sub regions</td>
</tr>
<tr>
<td>• Flat topography with sub regions</td>
<td>• Floor slabs over topography</td>
</tr>
</tbody>
</table>
Hardscape

- Strategies
- Materials
- Curbs
Hardscape Strategies

Topography

Topography & Floors

Floors
Modeling Curbs

- Slab Edges
- Curb Cuts
- Shape Editing Tools
Surface Patterns
Hardscape Enhanced with Dynamo

- Sloping Railing Following Floor
- Sloping Floor Following Site

Flowchart:

- Get outline of floor
- Divide floor curves by spacing
- Find intersection point between line divisions and topo
- Offset points vertically
- Add points to floor as shape points
Placing Families By Lines

- Single Line
- Offset
- Placing Patterns On A Line
Placing Families in a line

Select Line
Find Length
Divide By Spacing
Find Points
Place Families

Start Here!
Select options:
- Select Line
- Find Length
- Divide By Spacing

Divide Curve By length to get number of points
Find Points
Place Families At Points

Find intersection between line division points and topo
Offset Lines

Select Line

Offset Line

Find Length

Place Families

Divide By Spacing

Find Points

Find number of points

Divide Curves

Get every other point from list

Find intersection point between line divisions and topo

Combine and flatten list

Place families at points

Get curve and offset

Start Here!
Select options:
Placing Patterns On A Line

1. Select Line
2. Find Length
3. Divide By Spacing
4. Find Points
5. Place Families In Order
6. List of Families
   - 0 Family 1
   - 1 Family 2
   - 2 Family 3
7. Repeat List
   - 0 Family 1
   - 1 Family 2
   - 2 Family 3
8. List of 6 Families
   - 0 Family 1
   - 1 Family 2
   - 2 Family 3
   - 3 Family 1
   - 4 Family 2
   - 5 Family 3
Collecting Lines From Geometry

- Select Edges
- Collect Sketches
- Select Faces
Collecting Lines From Geometry
Placing Families in Regions

Get Overall Length & Width

Find Intersection Between Points and Region

Place Families at Points

BoundingBox.ByGeometry

Geometry.DoesIntersect

FamilyInstance.ByPoint
Planter Beds

Get Curves

Offset Curves

Annotate From Family Points

Rows of Plants

Annotation Line

Non-Linear Path
Advanced Patterning
Parabolic Line Diagrams...

Line 1
0 1 2 3 4 5 6

Line 2
0 a b c d e

Line 3
0 i ii iii iv v vi

Line 4
0 A B C D E
Parabolic Line Diagrams...

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

0 Line 1
0 1
1 2
2 3
3 4
4 5
5 6

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

List.Reverse
list

Line 1
1 E
2 D
3 C
4 B
5 A
6 a

Line 2
1 b
2 c
3 d
4 e

Line 3
1 vi
2 v
3 iv
4 iii
5 ii
6 i

Line 4
1 Line A
2 Line B
3 Line C
4 Line D
5 Line E
6 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

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

List.Dropltems
list  list
amount  

List.Reverse
list  list

List.Dropltems
list  list
amount  

List.Join
list0  list
list1  

Line 1
1 2 3 4 5 6

Line 2
A  B  C  D  E

Line 3
vi  v  iv  iii  ii  i

Line 4
A  B  C  D  E

Line 5
a  b  c  d  e
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
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