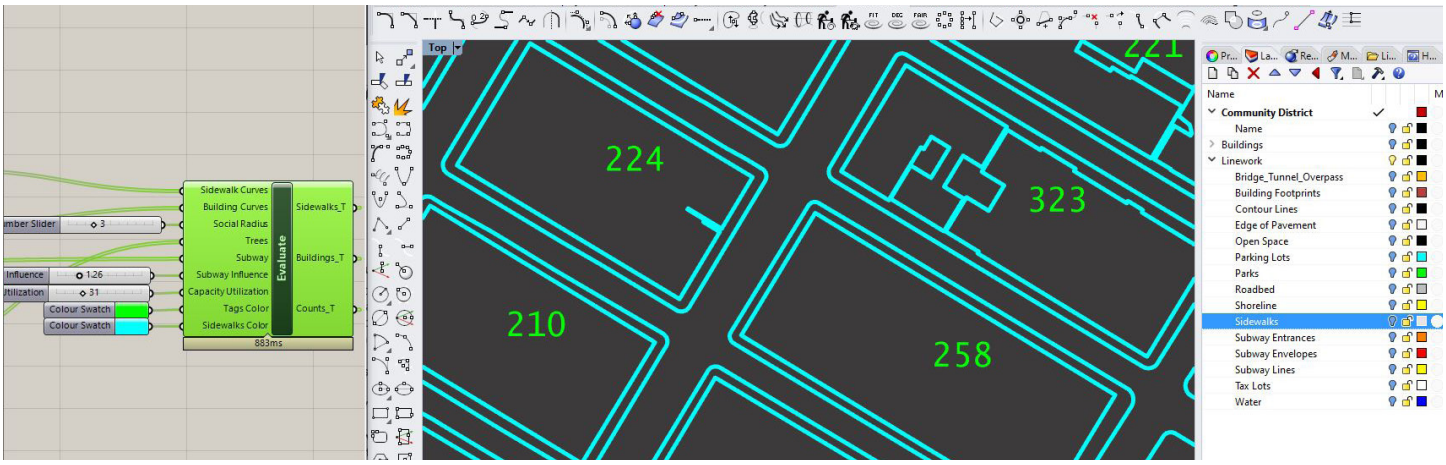
SIDEWALK SOCIAL DISTANCING



Research questions:

Evaluating the potential population of sidewalks in an urban contexts - such as NYC - involves numerous factor in which some of them can be unpredictable. This plugin provides a close estimation of population numbers - per sidewalk instance - based on certain requirements that may exist in the region of interest. Those parameters currently include:

Trees:
DBH - Diameter at Breast Height - based area is considered in the calculation of the population capacity

Subway entrances:
Creates a population multiplier opportunity for sidewalks that have them

Building footprints:
Used to calculate capacity for ROW (Right Of Way) sidewalk instances

Desired social distancing radius:
Evaluate more strict/relaxed social distancing criteria

Region of interest
Limit the scope of the evaluation for reduced processing time in Rhino

The introduction of the above parameters is driven by the need to output a numerical value that offers a comparison criteria between different sidewalk instances under different conditions. Those numerical values are visualized and drawn onto their parent sidewalks in the viewport.

Upcoming development of this plugin will address visualization of potential movement patterns of pedestrians along sidewalks based on additional factors that could include:

- Trees locations
- Corners / Pedestrian crossings
- Sidewalk width

The plugin development is currently based off of the NYC Rhino 3D model. Additionally it offers optional use of the NYC Trees Census data set.

Workflow

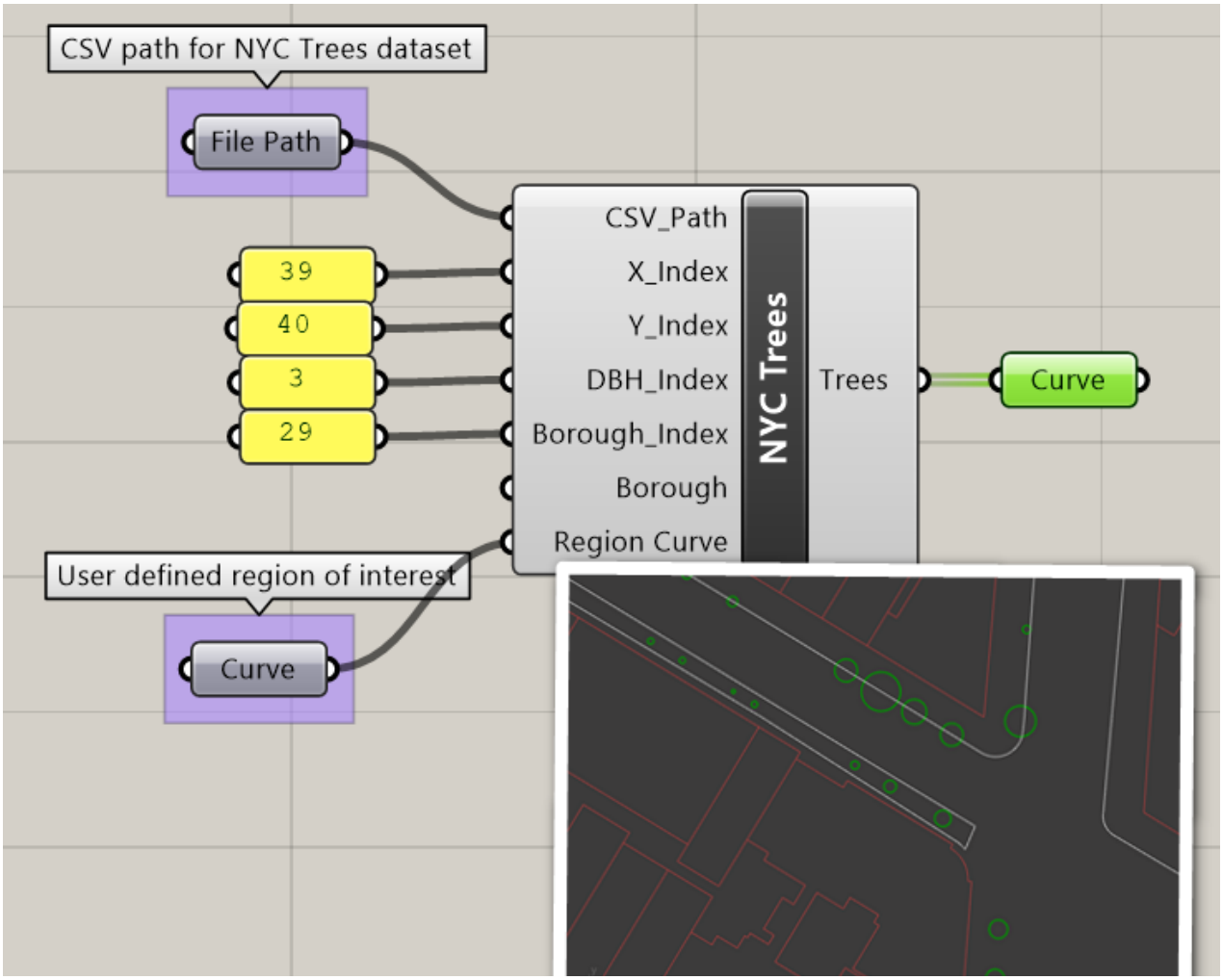
The current workflow for the plugin includes the following steps:

1. Ensure your model units are set to feet (for data alignment)
1. Reference the *region of interest* as a closed curve
2. Clean and prepare sidewalks/buildings curves using the Prepare Sidewalks component
4. Reference the *subway entry* points as closed curves (Optional)
3. Load the tree data set using the NYC Tree component (Optional)
4. Evaluate using the Evaluate component!

Components

1. NYC Trees

The Trees component takes care of parsing the CSV data provided. Users only need to specify the location of the file, and the corresponding data columns for X, Y, DBH, and Borough. Trees will be loaded only for the specified NYC borough to reduce processing time needed.

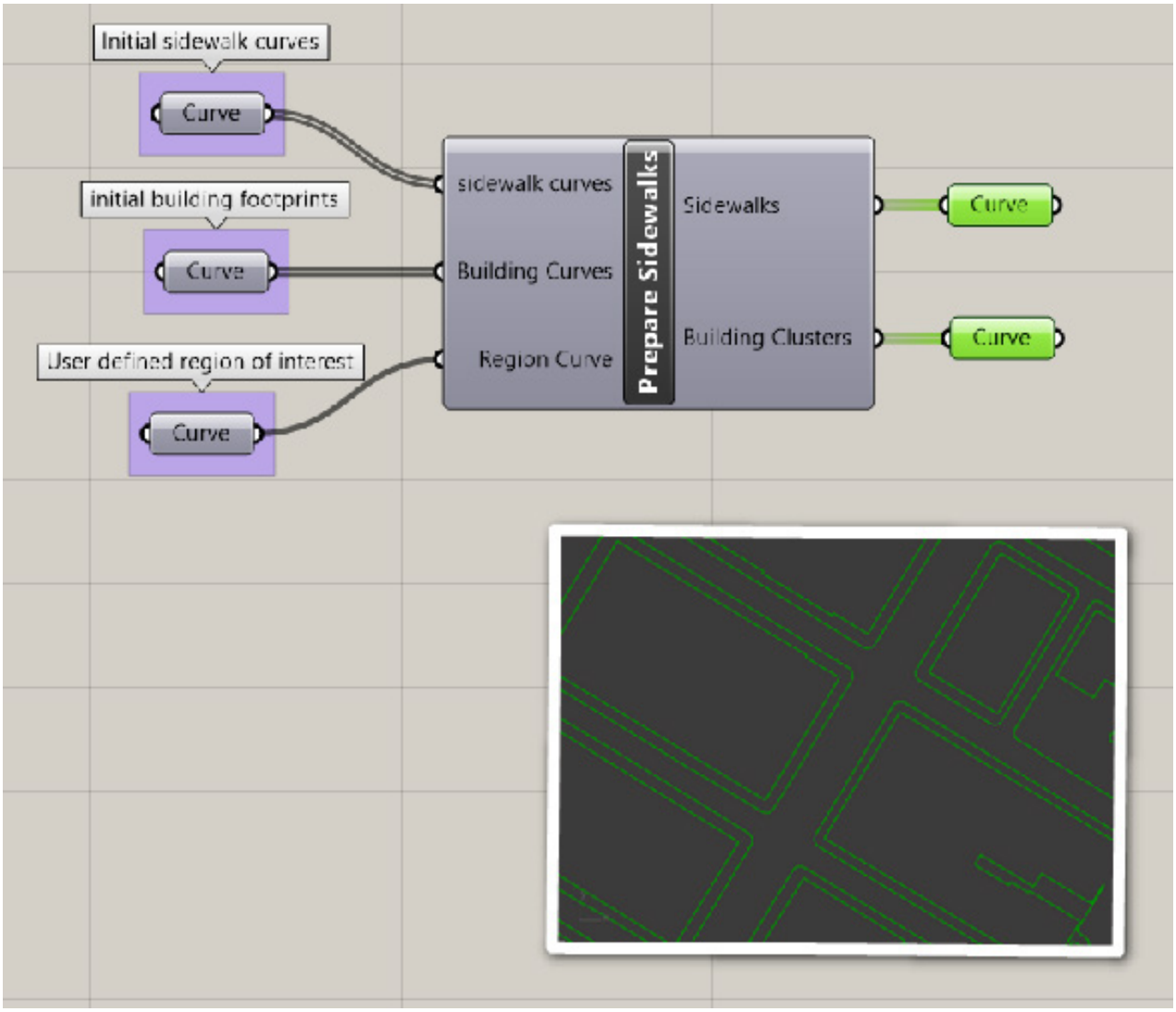


2. Prepare Sidewalks

The Prep Sidewalks component will do the following:

- Check if curves are closed
- Check if curves are planar
- Exclude buildings outside the specified region
- Boolean union building footprints
- Boolean union nested sidewalk instances (this might need to be revised)

If users are confident their input sidewalk/building curves satisfy the above requirements, they can feel free to skip this step.



1. Evaluate

The Evaluate component takes in all prepared parameters in addition to coloration, capacity utilization, and subway influence which are variable for users to quickly iterate through.

This component currently outputs three trees with equal branch count representing:

- Sidewalks data tree
- Building data tree (Items null if no buildings)
- Counts data tree

Evaluate component will draw a preview of the sidewalk outlines in the Rhino viewport in addition to displaying the population values for each instance using user defined colors.