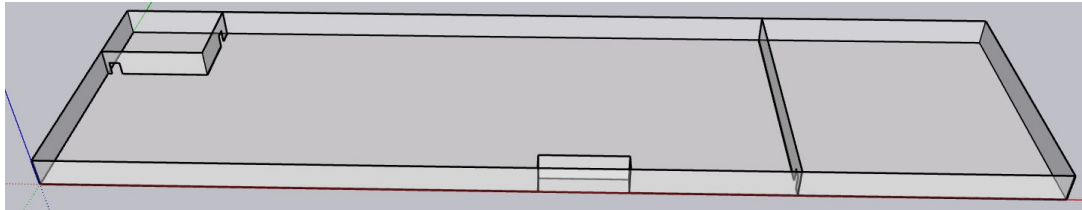# SketchUp Model Creation

I.   Creating Base

1.   Create building walls
     a.   Draw shapes and use "Push/Pull" tool ( ) to make them 3D
          i.   Tip: you can lock to an axis while editing/drawing using the arrow keys
          ii.   Tip: you can type in length in inches while editing/drawing to create exact dimensions
          iii.   Tip: you can edit opacity and in the Materials tab

2.   Create the base level unit (pallet) in Sketchup
     a.   Once your pallet is created, select all parts of it and right click > Component
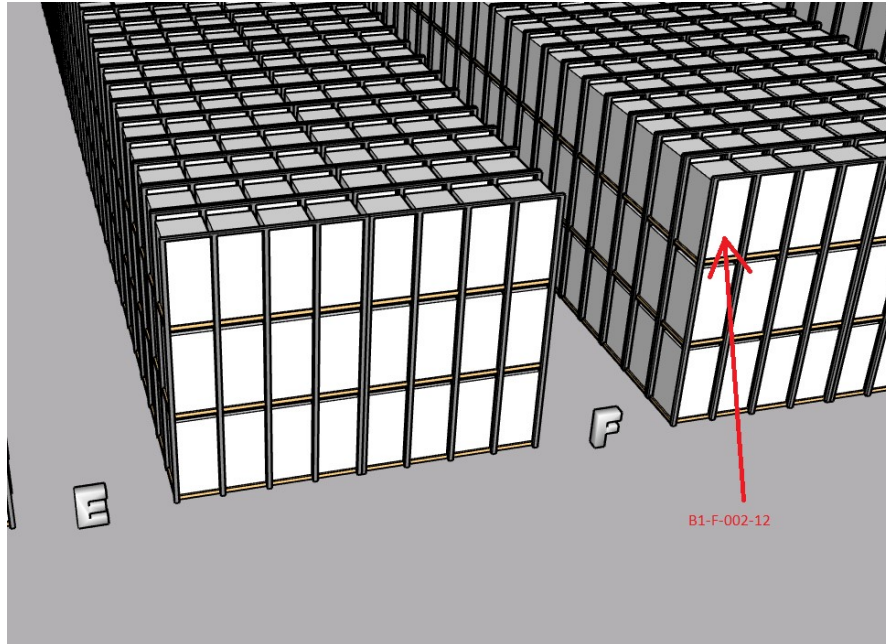   b.   Name your Component and ensure "Replace" option is selected
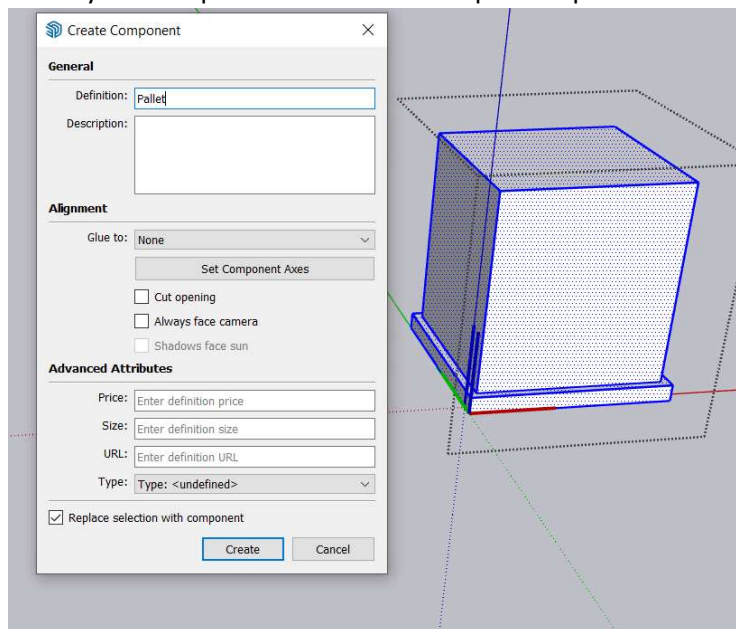
3.   If applicable, create any fixed racking and Aisle markers
     a.   After creating one instance of fixed rack, highlight it and make it a component so it can be easily copied and pasted later
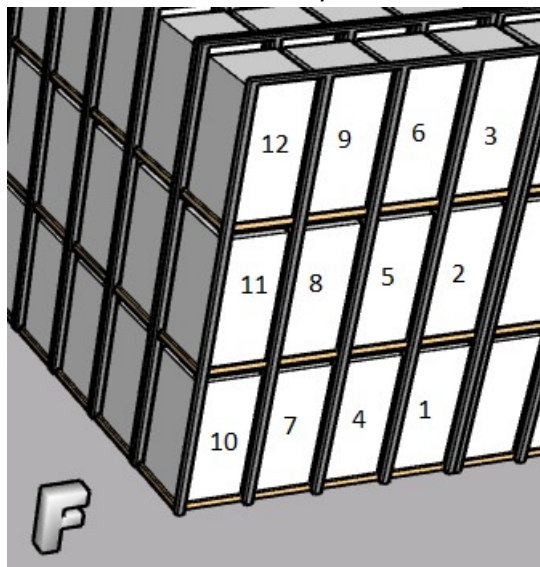
II.   Hierarchal System

In this example, each pallet will be labeled using a hierarchal grouping system to identify building, aisle, bin, and pallet number. For example, B1-F-002-12 refers to Building 1, aisle F, location 002, pallet 12.

B1-F-002-12

4. Place your pallet component in your fixed rack (if applicable) and move them (✛) to a designated storage bin

5. Copy and paste the pallet component to fill the bin based on storage method
   a. Select what you want to copy
   b. Click Move
   c. Press Ctrl
   d. Drag to create copy (can use axis locking and specific inches to move as noted above)

6. Number each pallet "Instance" in order that it is filled
   a. Instance field in "Entity Info" tab

7. Select all pallets in the bin and make component to group them as 1 full bin
    a. Be sure not to select any fixed racking

8. Select your full bin component (and fixed racking if applicable) and copy paste to fill the aisle

9. Name each full bin component (excluding fixed rack) for that aisle with an instance matching the WMS bin number (e.g. 001 for bin B1-F-001)
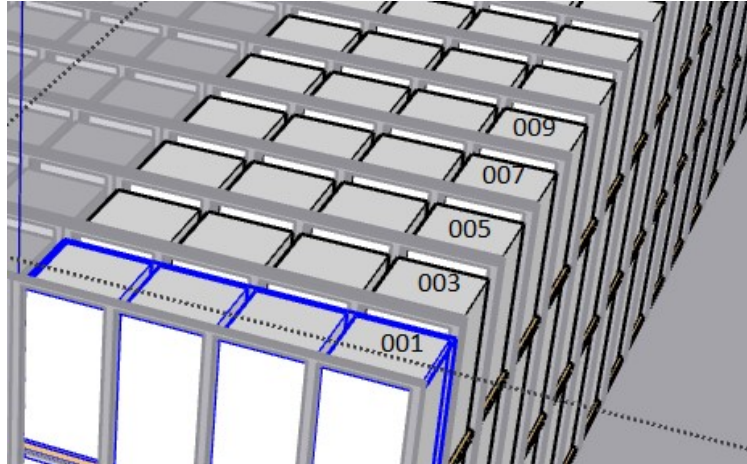
10. Repeat bin creation, copy paste, and instance naming until all locations are created and location instances defined
    a. Tip: when you edit anything in a component, it will update everywhere that component exists in the model, so you may need to create multiple unique versions of your full bin component to account for different location depth, fill sequence, etc.

11. Select all bins (excluding fixed rack) that belong to the same aisle and make component
    a. Name aisle component with an instance matching the WMS aisle (e.g. F for bin B1-F-002)
    b. Repeat for all aisles
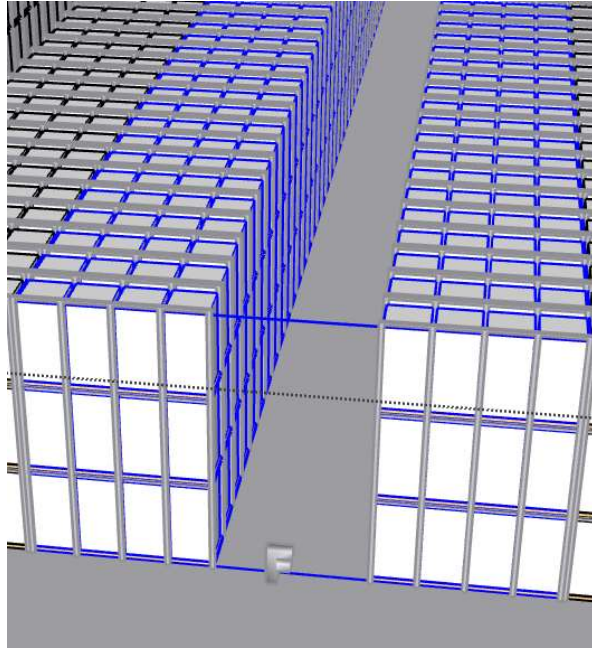
12. Select all aisles that belong to the same building and make component
    a. Name building component with an instance matching the WMS building (e.g. B1 for bin B1-F-002)

13. Continue to group components and name based on location naming convention

14. Export model in .3DBI format
    a. Use "KG-dev – 3DBI" extension for SketchUp (license required)
    b. Change ID Provider field to "Instance Name"
    c. Ensure Concatenate is selected
    d. Input Separator (or leave blank) so the concatenated instance names match the WMS bin names exactly

15. Open Power BI and import .3DBI model using the 3DBI visual