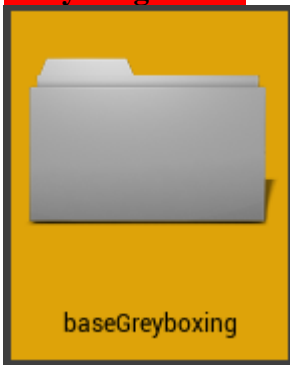


After get sketch approval, we are able to start the GREY BOXING process, as a level designer for sure you already know about this process. It's the process to put the sketch in 3D, testing proportions, volumes, flows and compositions, we do that "simulating" the props with only basic shapes/forms and a grid material.

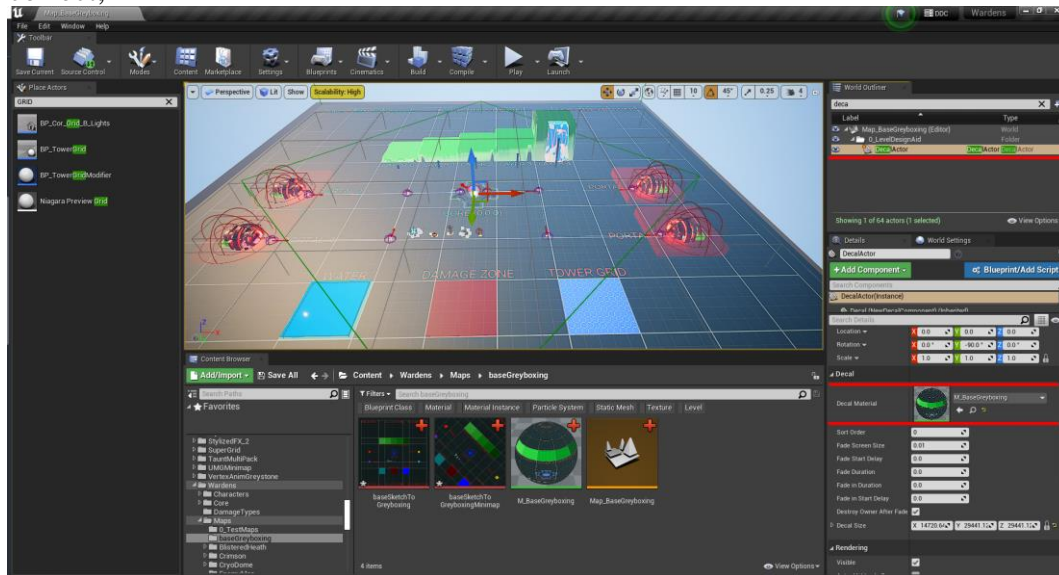
Grey boxing Workflow

→ The very first thing you will do is create a new folder and copy everything inside the folder called (BaseGreyboxing) Content/Wardens/Maps/baseGreyboxing, after **rename everything inside.**



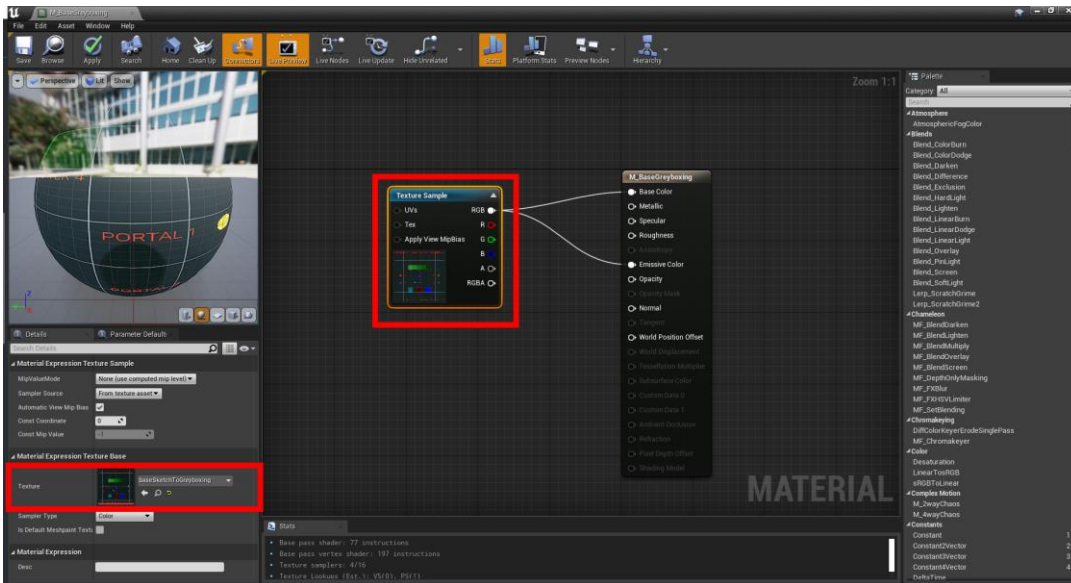
→ When you are inside the level you will need to check if the grid is matching with the value we defined. (50.000)

→ To do this step you will need to select "Decal Actor" and check if the material is correct;



→ After that open the material, in this case "M_baseGreyboxing" (**but in your case the name should be other!**)

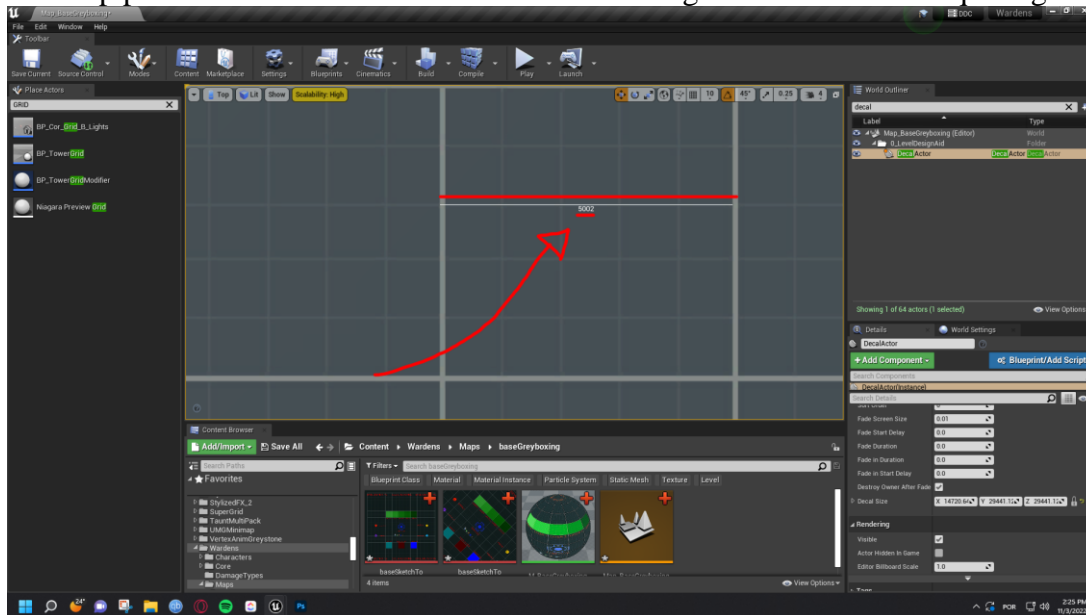
→ Check if the bitmap defined in texture is the same you was working in sketch, if don't, change.



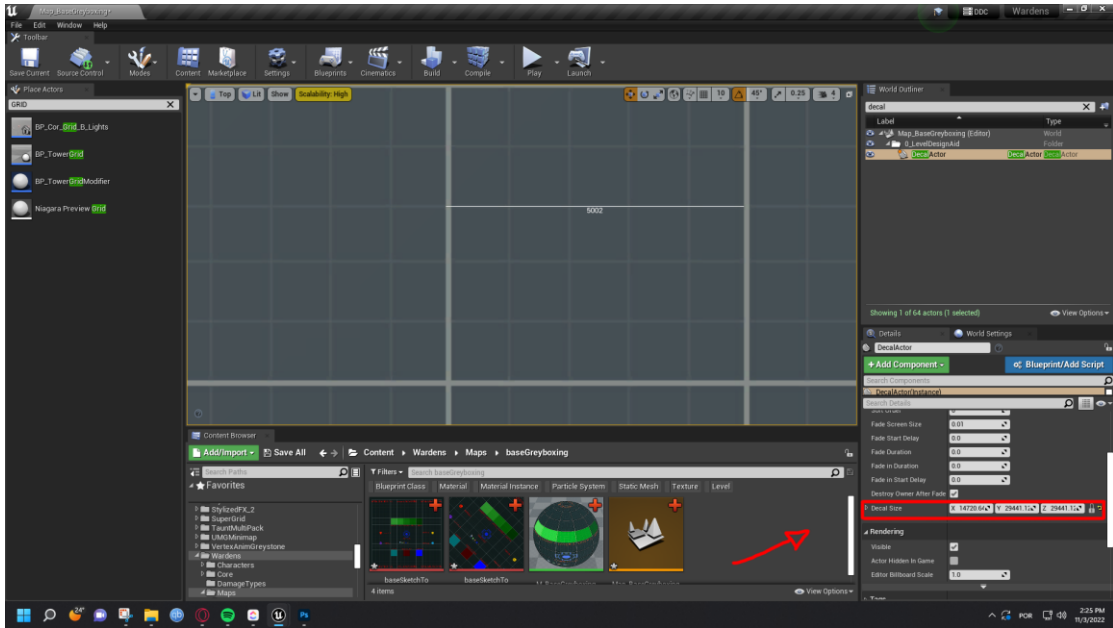
After checked the decal actor material you will need to check the grid value:

→ To do this step you will need to change the to "TOP VIEW", after that

→ Keep pressed the middle button of mouse and drag until reach end of square grid



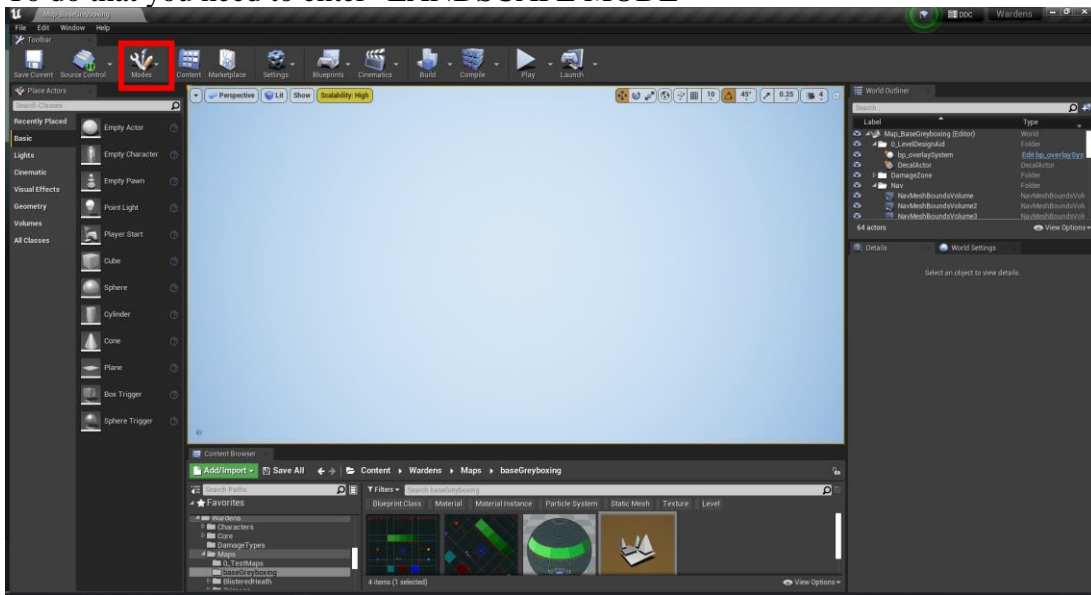
→ The value must be 50.000, if it aren't, you'll need to re-scale "DECAL SIZE" until match the value.

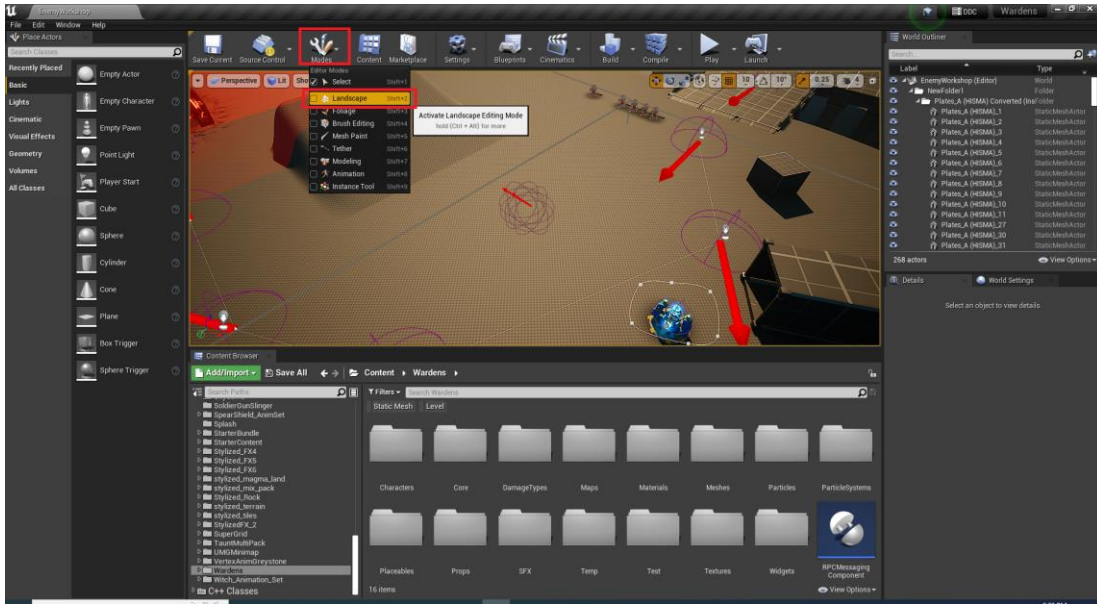


When the value is correct you are good to proceed using the landscape tool to create the height layers defined early.

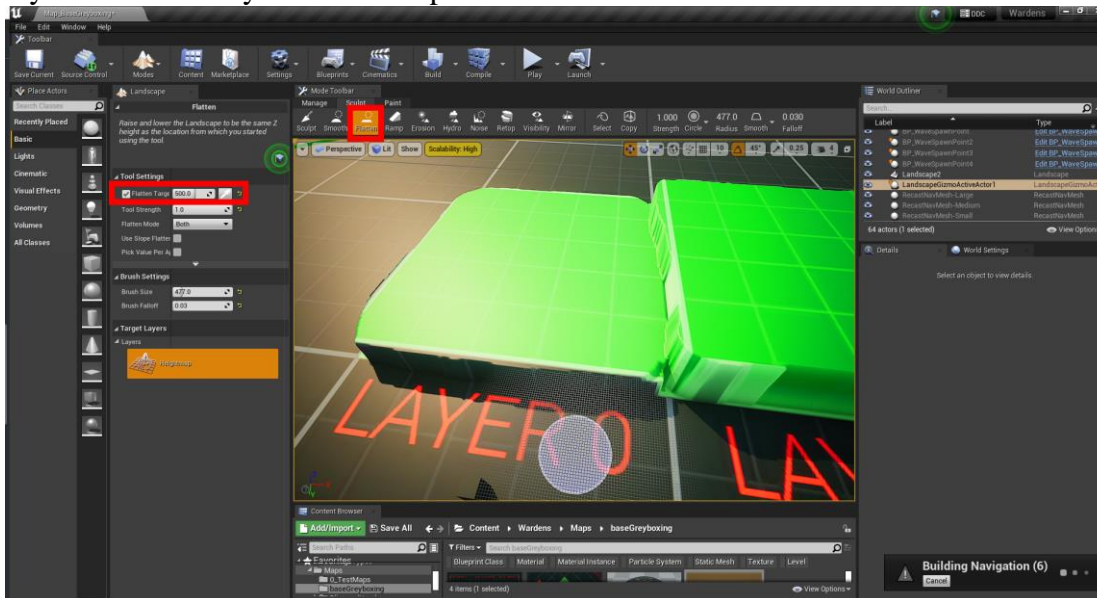
Landscape

To do that you need to enter "LANDSCAPE MODE"

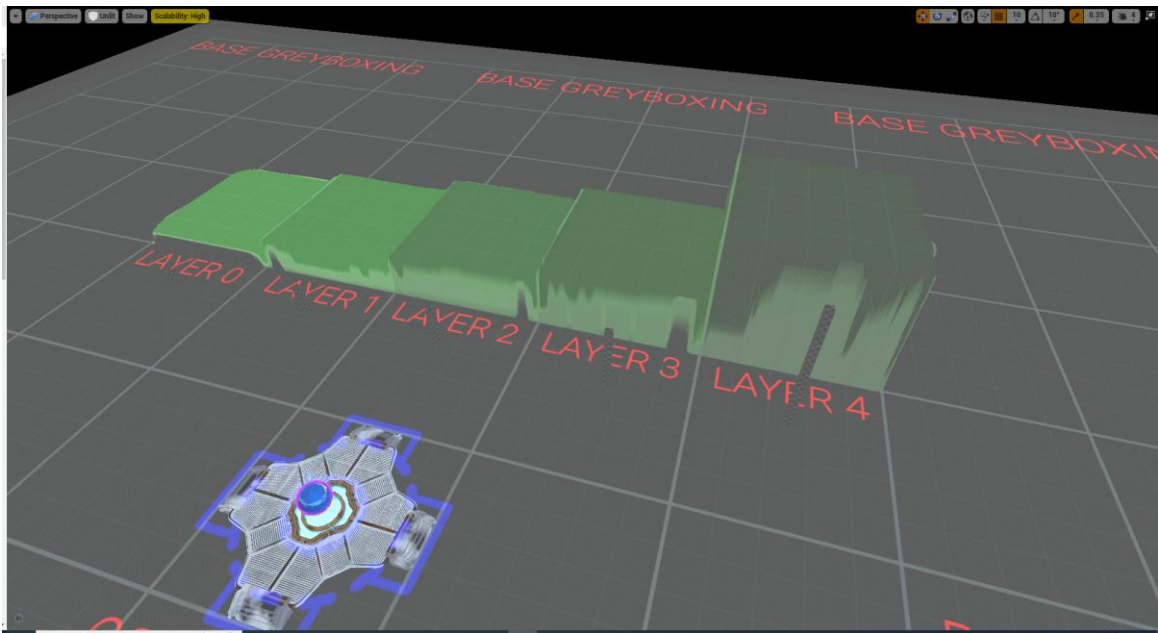




Sculp → Flatten → Set the Flatten target check box to on → Set the value conform the layer → 500 for layer 0 for example.



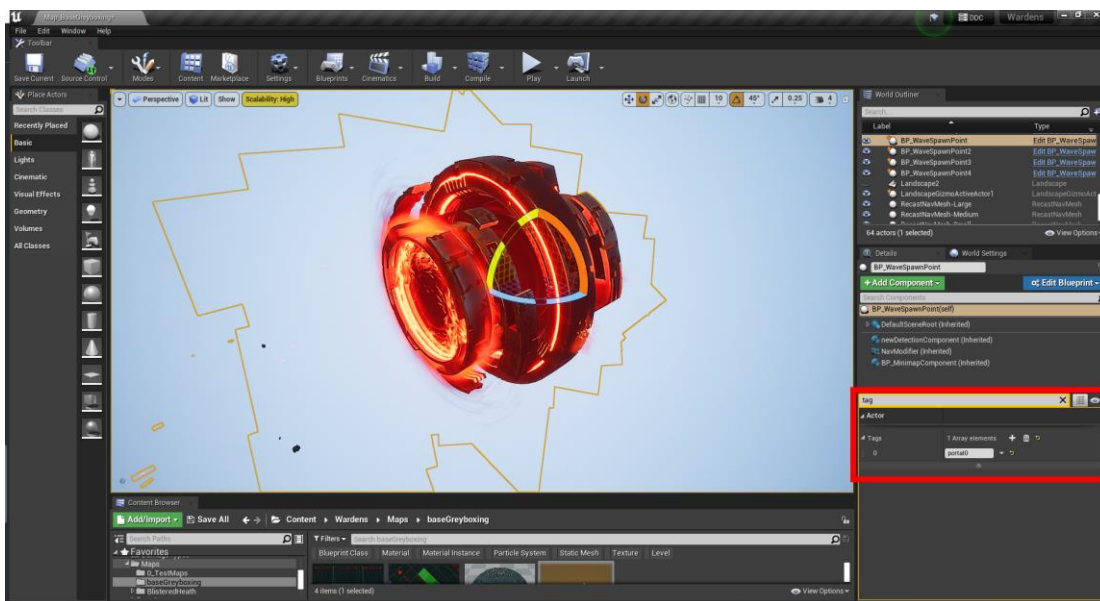
Ps: Inside the Map_BaseGreyboxing you'll see some layers with the height already set, you can utilize if you want.



Portals

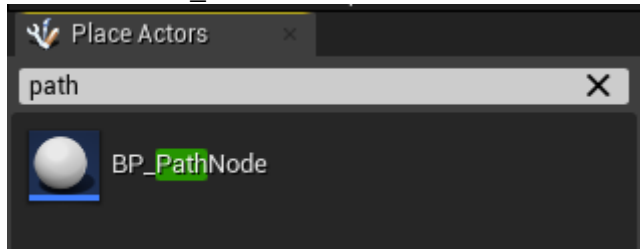
To place Portals you'll need to search for "Bp_waveSpawnPoint", put on map and after add the following tag for each one:

- Portal 1 = portal0
- Portal 2 = portal1
- Portal 3 = portal2
- Portal 4 = portal3
- Portal 5 = portal4
- Portal 6 = portal5

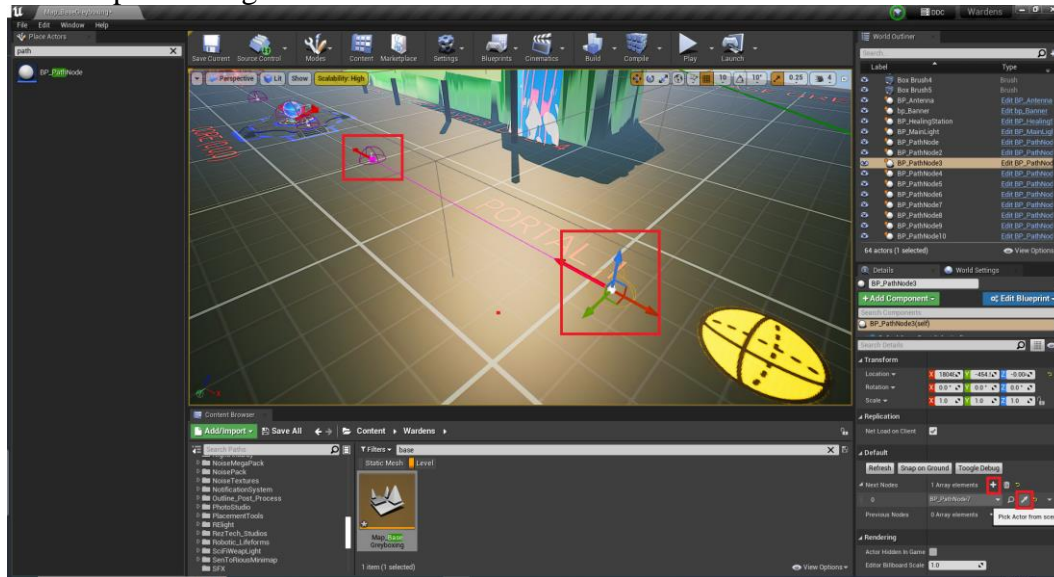


Path Nodes

After set the tag on portals you'll need to set the path that enemies will follow, for that we use the BP_PathNode.



Drop the first one near the portal and duplicate them along the entire path, after that, link the paths using "Pick Actor from scene".



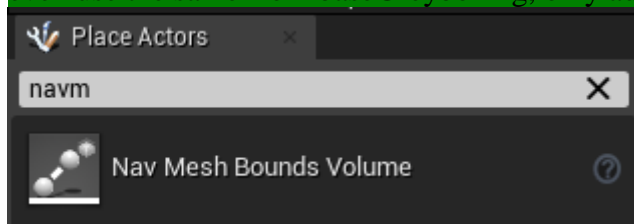
To see if you're doing right, click on Refresh and the arrows will be drawn indicating the direction.

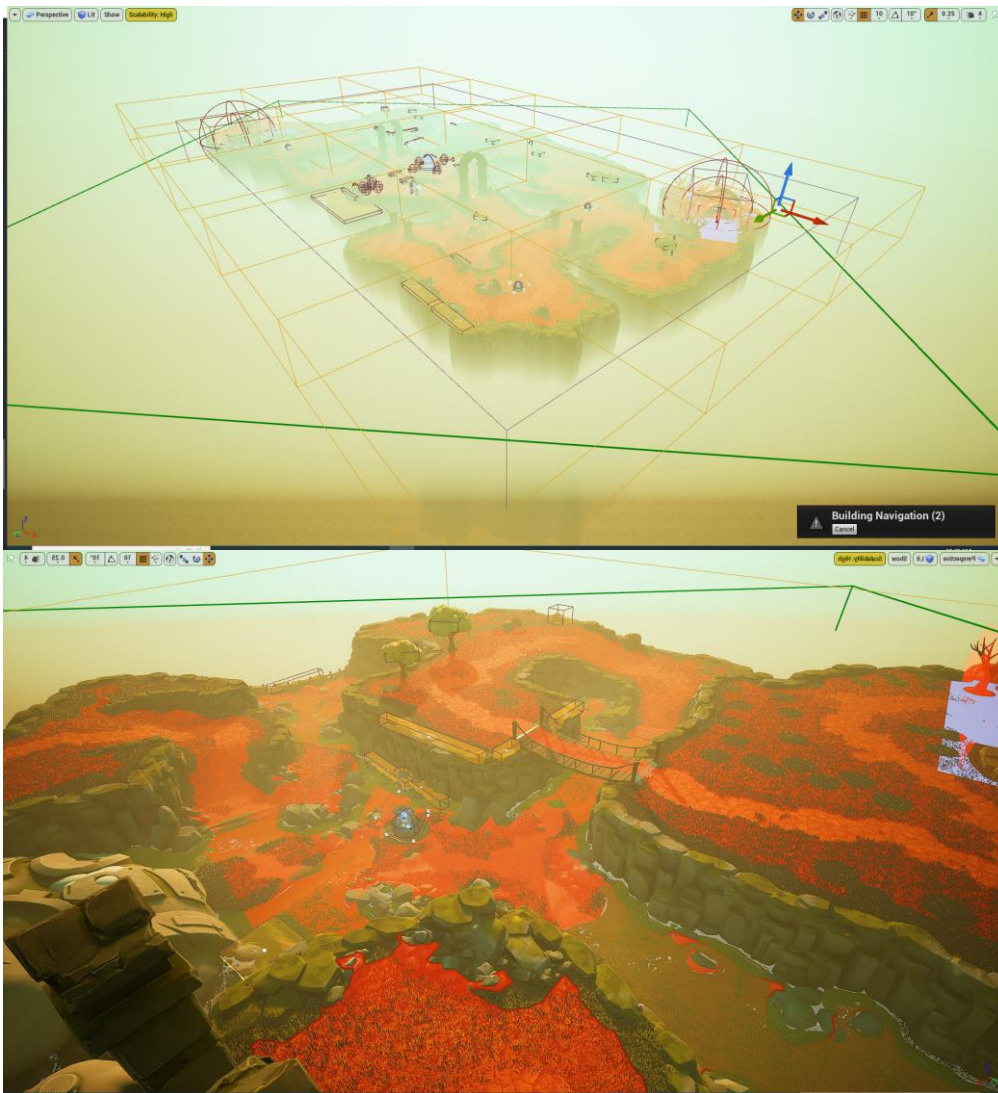
PS: Pay attention if the BP_PathNode is touching the ground, if don't, the enemies will not finding the PathNode and consequently won't walk in the paths.

NavMesh

To put NavMesh in map you will need to drop "NavMeshBoundsVolume" and set the bounds. We prefer to divide the bounds in some squares.

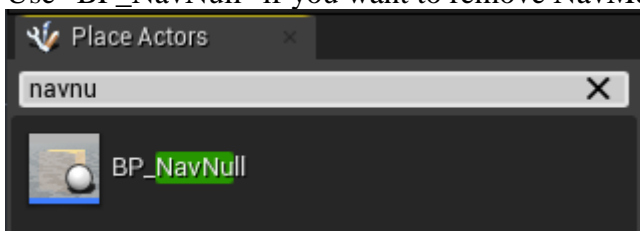
Off course you can just copy and paste the NavBoundsVolume from others maps, or even use the same from baseGreyboxing, only adjusting the bounds.





The enemies can walk only in landscapes/props that have NavMesh, to see the NavMesh on map press "P".

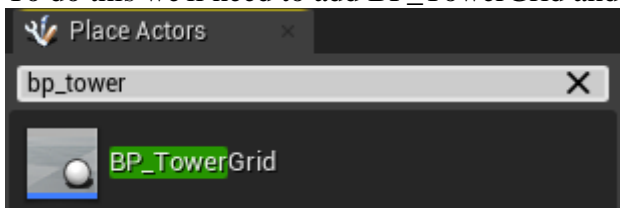
Use "BP_NavNull" if you want to remove NavMesh.



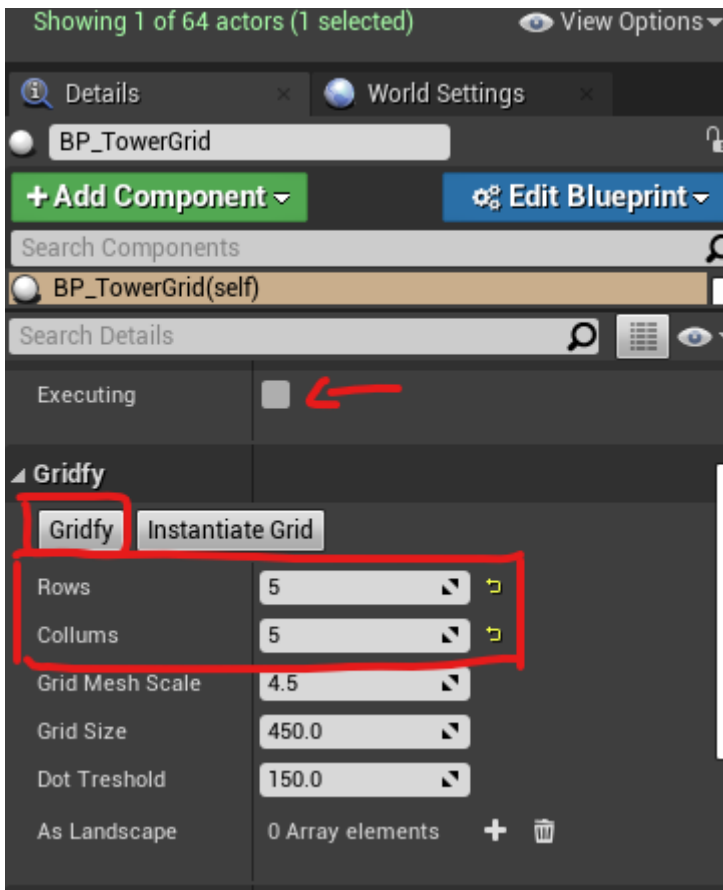


Tower Grid

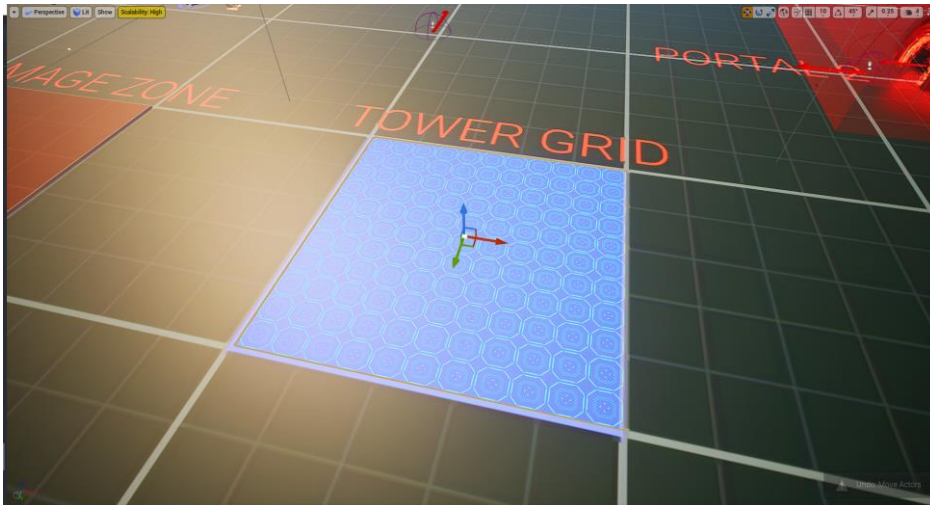
Also, in this process we need to put the tower grid to allow Player put towers. To do this we'll need to add BP_TowerGrid and follow the next steps



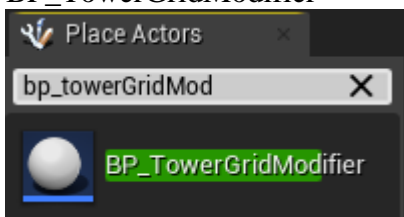
1. Define the quantity of Rows and Collums;
2. Click on Gridfy;
3. Wait until the check box "Executing" is clear;
4. Click on Instantiate Grid



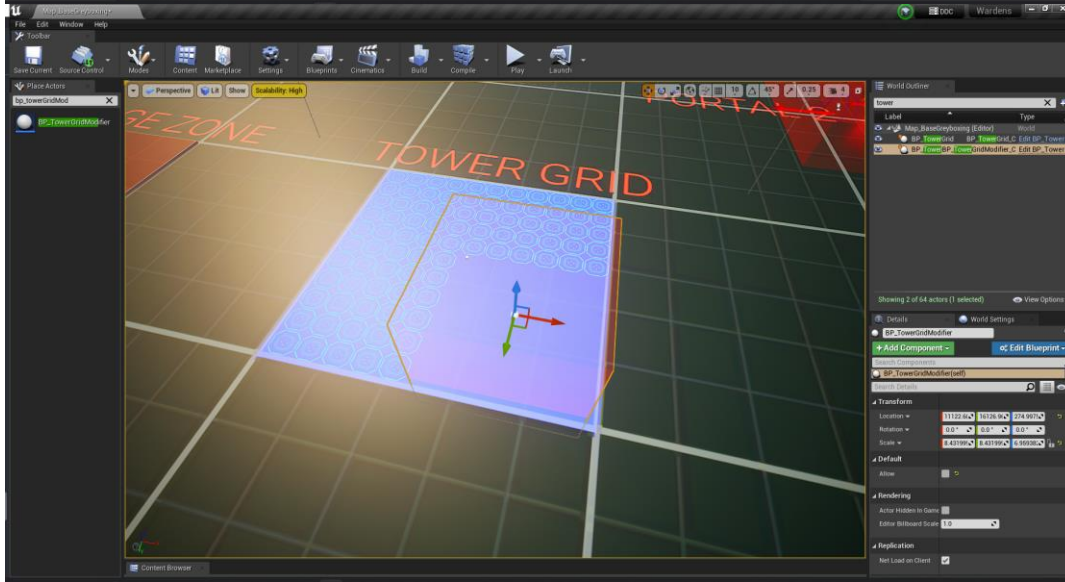
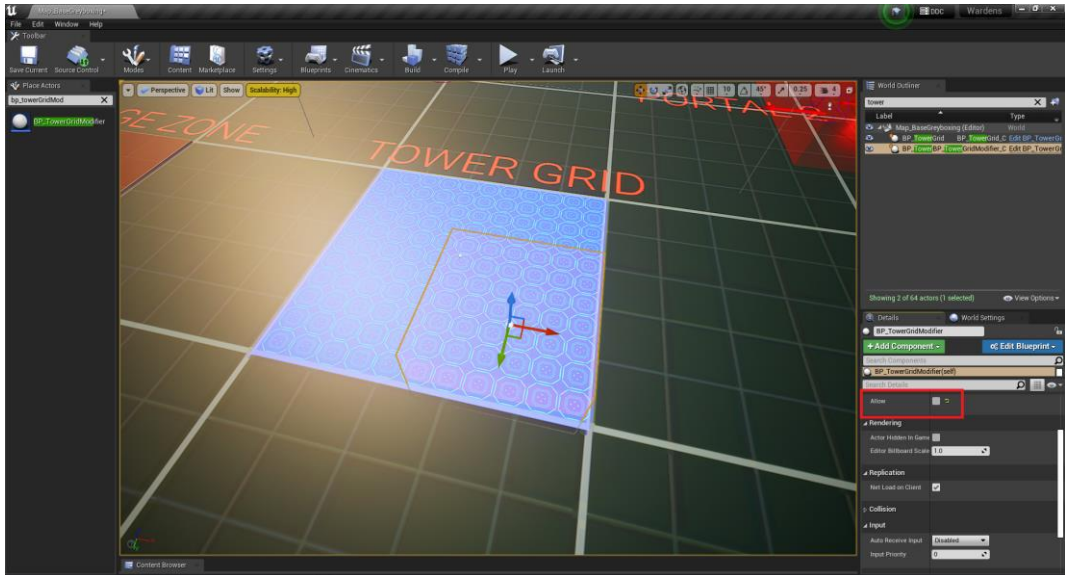
The result:



If we don't want to allow player put towers in a specific area we use the: BP_TowerGridModifier



We use Scale on X, Y and Z to define the area of modification, and after we back to BP_TowerGrid and repeat the process to generate the grid again



Minimap

To do this step it's important to check if the sketch is rotated 45° clockwise

Normal:



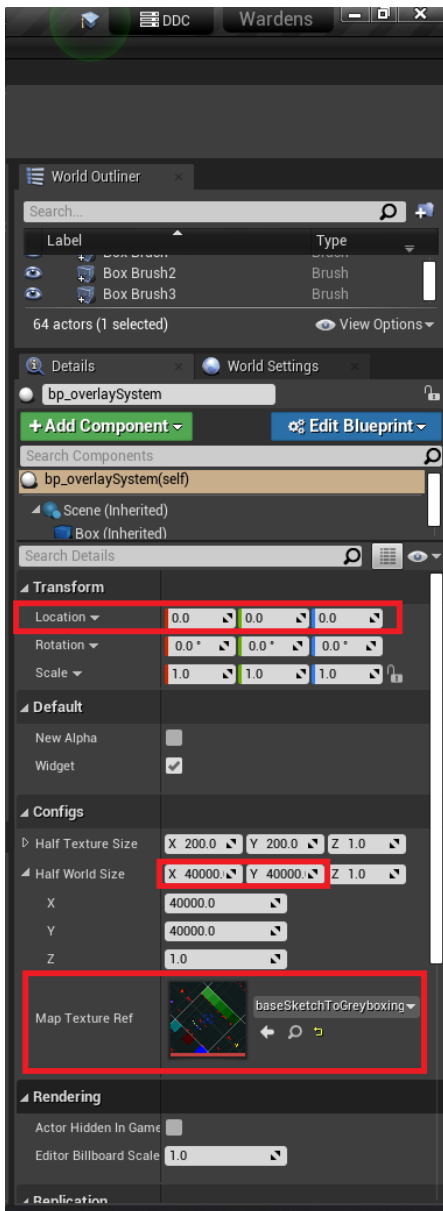
45°:



With the bp_overlaySystem selected:

1. Check if the bp is on 0,0,0;
2. Check if the texture 45° rotated is on MapTextureRef;
3. Change the X and Y of Half World Size to match the map size

- (You'll have to put some value and try to see if it's working)



You will have to put the value and try to see if it's working....

Grey boxing Rules

- **Grey box/Props:** The majority of the props should be placed in a orthographic degrees (With some exceptions when we want to break some flow, normally with small props, foliage, etc...)
 - Angles: 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315° and 360° degrees.
- **Heights:** We want to have only 3 different layers of height (Not counting the ground/river/lave) and in some maps when strictly necessary we can use 4 layer, normally this layer 4 is used not in a gameplay space but used to define the bounds of the gameplay (Waterfalls, mountains, etc...)
 - Layer 0: 500 (CM, UE units)
 - Layer 1: 1000 (CM, UE units)
 - Layer 2: 1500 (CM, UE units)
 - Layer 3: 2000/3000 (CM, UE units)