Live Brief

Ethan Moorfield

ART TEST | ENVIRONMENT - REALISTIC

FLIX INTERACTIVE

Design, Model and Texture a Sci-Fi Habitat for an open world game.

Setting: An Alien Planet.

Examples but not limited to; Outer Worlds, Star Wars Outlaws, Avatar etc

- **Style:** Aim to achieve a PBR Realistic Art Style.
  - *This is somewhat subjective, but if the style leans predominantly towards realism in both shape language and material definition that should be appropriate. A Semi-Realistic style shouldn't be an issue. (Cyberpunk, Apex Legends, Jedi Fallen Order etc)*
- **Construction:** Show examples of modular architecture.
  - Construct your habitat in an efficient way which may allow some reuse. Such as modular, walls. Floors or even modular sections depending on what your structure requires.
  - No *Requirement* for an interior.
- **Narrative:** Consider what the habitat is being used for?
  - Does it provide a specific function or is it purely for habitation?
  - Is it actively used, or has it been lost to a hostile environment?
  - What type of people use this space, what effect do they have on the visuals?
- **Presentation:** Explore presentation and Size.
  - Consider options such as dioramas to reduce scope and allow a focus on quality.
- **Lighting & Materials:** Explore Unreal Engine 5's real-time lighting.
  - Realtime lighting allows you to iterate quickly. Use this to your advantage and use lighting to give your environment a mood which lifts the full scene.
  - Demonstrate a variety of PBR surface types such as metals, rocks and organics.

ART TEST | ENVIRONMENT - REALISTIC

FLIX INTERACTIVE

Art Test Deliverables:

- Final completed environment, in the Unreal Engine 5.
  - Create the project using the Third-Person Project Template to allow your scene to be moved around within.
- 5+ High-Resolution Screenshots of your final work showing a variety of perspectives of your completed Environment and a supporting walkthrough video.
  - Screenshots should at least be 1920x1080 Resolution. We would also recommend ensuring screen percentage is set to 100% and you Fullscreen when capturing your screenshots to ensure full quality.
  - A video of walking around your scene using the third person character controller is required. Any additional supporting videos are optional but encouraged to allow you to show your environment in movement.
- A Development Diary within which you will depict creation process.
  - A diary log to document your progress throughout the project's timeline, detailing your chosen workflows and why you have chosen them.

Technical Constraints *(A texture set contains three single textures)*:

- A single 4K texture set for the main structure and supporting structural elements.
  - This is a test in being efficient and using workflows which allow high reuse of textures.
- Four 2K texture sets for the surrounding environment and any supporting assets.
  - These textures are intended to allow you to texture any supporting assets you choose such as set dressing assets, decals, additional tileables or supporting organic props.
- If a landscape is present, another Three 2K texture sets can be used.
  - This is to allow some level of terrain blending if a landscape is present.
- Use a reasonable polycount needed to achieve high quality results and smooth silhouettes.
  - Don't waste polygons, if they aren't providing a function do you really need them?
  - No Nanite, The assets should be game-ready in a broad sense. Nanite is Unreal Exclusive.
  - These are optimised game-assets keep this in consideration.

Visual Inspiration.

Subnautica – Helena E H Hansen

Sci-Fi Outdoor Relight – Salvador Sánchez

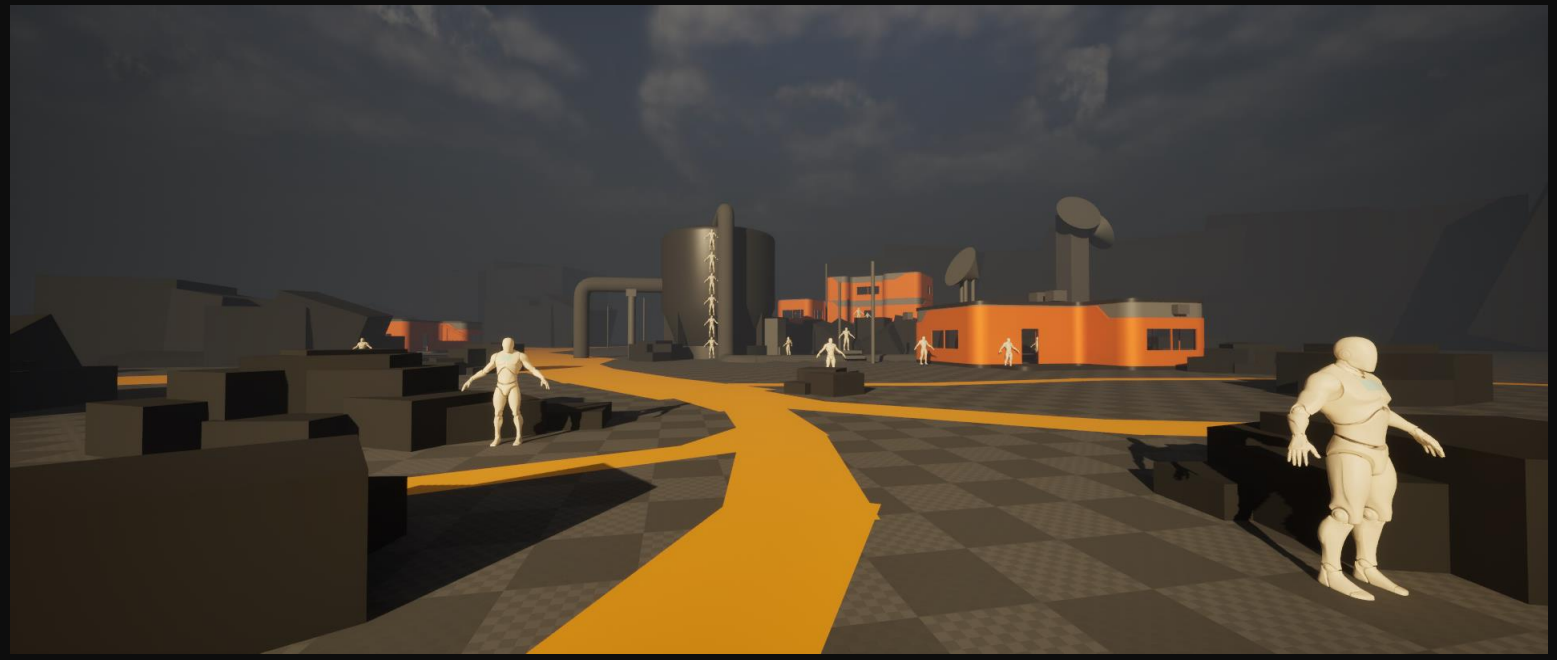
Derelict Garage– Rainer Ricq

These are 2 Bits of art that I really like the look of with the very dark environment s with a nice Bright river that sits in the middle. Which draws the eye to whatever the focal point by the rivers flow direction.

I wanted to merge this with the apex style buildings due to their very Industrial and corporate design and attempt to make it like some temp home for workers who are living on the site.

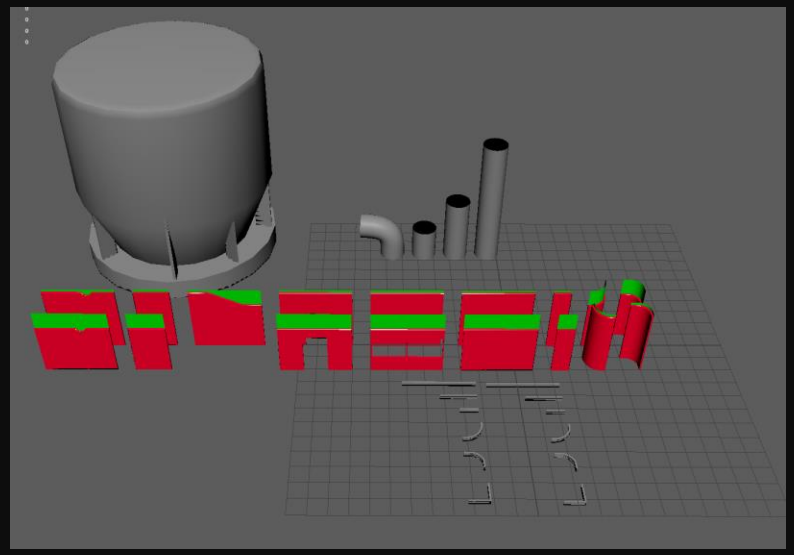
Blockout

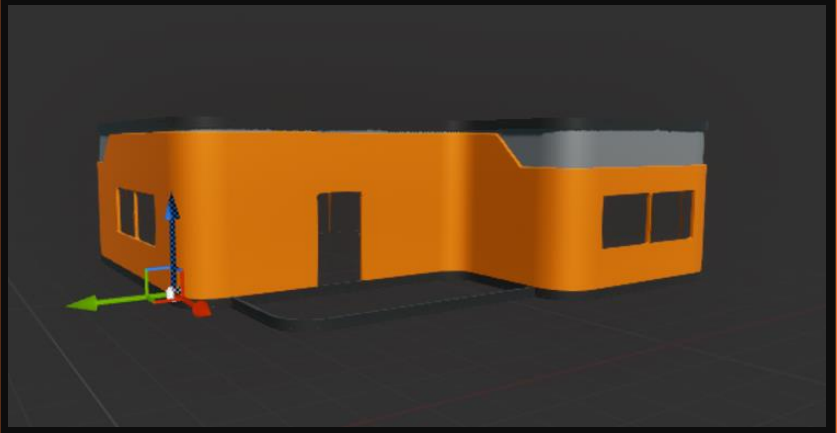
For the blockout I wanted to tell a story of an outpost that needs to be protected and monitored as it’s part of a factory that is pumping up this acid from the river for something like battery's for galactic space travel. The reason for the river is that the motion should help direct vision to the main buildings. I do need to start trying to bring more focous or to maybe change the camera to better emphasize the habitat



Building Parts (blockout)

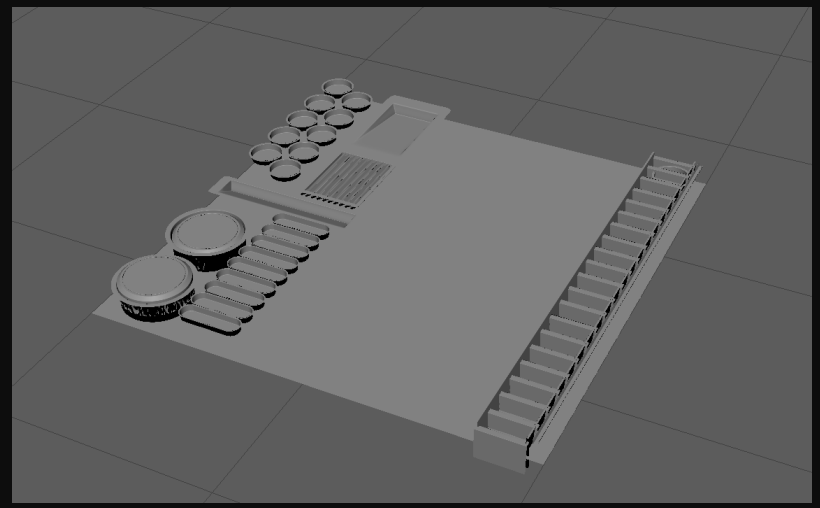
I started off by trying to make a range of parts that matched the look of the Apex buildings specifically the ones on the maps: Worlds Edge and Olympus due to their more rounded designs with the different height wall designs while both looking like livable spaces for workers who have to live on site. As, as I said in my blockout page that the story of this scene is this is where some factory is pumping up some acid and the environment needs to be protected requiring on site personnel. For these components they are mostly 4x4 however I have also created 4x2 and 4x1 to allow for more offset so things don't look as strange such as the door which might want more space. None of these pieces are final but I made a wide range at the start so that I could experiment more with shapes.

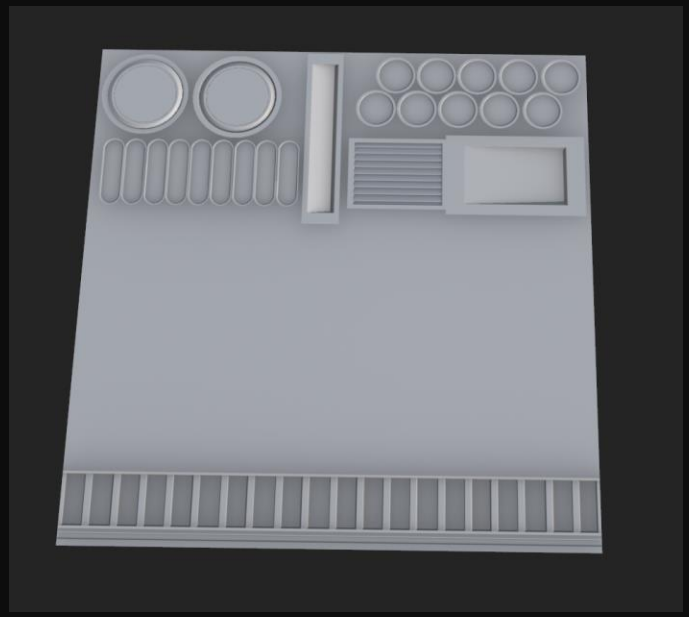




Mesh Decals (test)

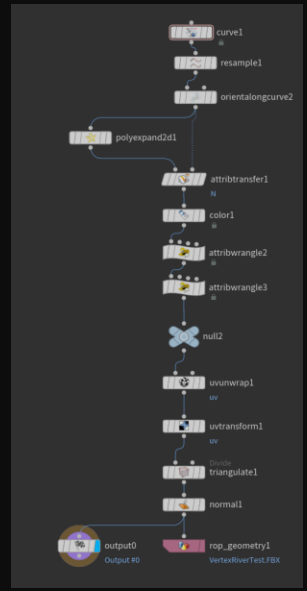
Something I wanted to play with was making Mesh decals that where baked from meshes. In the past I've created text that can be applied to meshes however I've not done it with baked meshes. When baking it in painter there where issues with the AO where it is projecting onto the plane behind. This is an issue that Marmoset fixes so that will become my baker of choice for this project. This layout isnt my final design but more of a test to see what I can get away with on a 1k material as I want to be able to create lots of details but don’t want to go over the 4k limit.





FlowMaps

I thought its worth getting the hard stuff done first such as the river network. I didn’t want to use a panner as there are a lot of issues that can come from the panners when you try changing values on the go especially if you are affecting "time". This is where flowmaps come in. Flow maps are usually a 2D image texture however due to the scale of the asset and to make the shader more optimized I replaced the image texture by using vertex color. As the flowmap input. This meant I had to create a tool that allowed me to create a tangent that I could use to set as a color based on the X and Y direction. The color represents the direction of flow



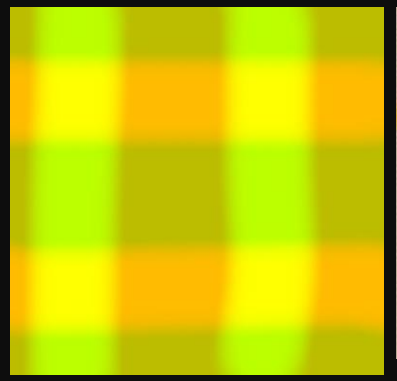
VEXpression

```
1  @Cd.r = (@N.x);
2  @Cd.g = (@N.z);
3  @Cd.b = (@N.y);
4  //This gets the Tangent of
5  //the spline and sets
6  //the colour based on the x,z
7  //value which controls
8  //the driection of flow
9
10
11
```

FlowMaps

The main issue with my current flow map is that the colors that it is creating are very wrong for the flow map as currently the directions will be wrong as pure red or pure green will move in a diagonal. How the flow maps work is the amount of Green value controls how much vertical movement there is and the Red is how much left to right movement there is. For no movement at all the values in Green would be 0.5 and same for the red. If I wanted the river to move right then I would want the Green value to have 0.5 so there is no movement as its being pulled equally up and down and then 1 in the red so its being pulled only in the right direction. As longs as the number is above 0.5 it will move right but just slower and if below 0.5 then it will move left.

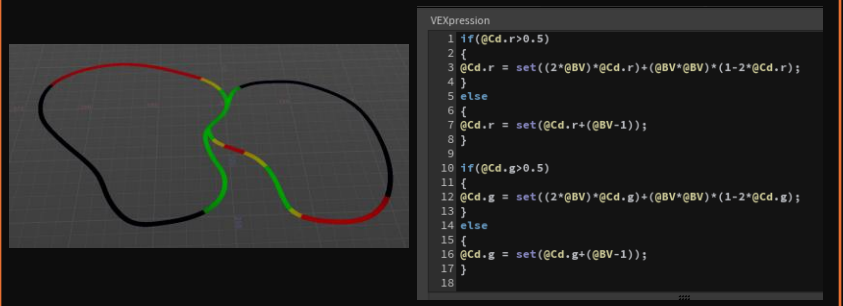
Note: Unreal uses a DirectX TexCoords meaning that it is actually inverted in the red channel



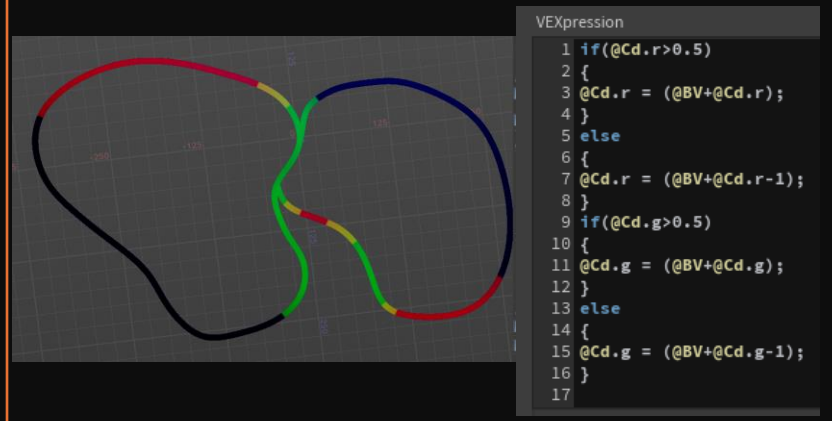
Example of left right up down movement with a flowmap I made in painter

FlowMaps

To fix these issues I was playing around inside of Substance painter painting flowmaps on a plane trying to find which blend mode worked best with adding the values from my existing flow map over the base G=0.5 and R=0.5 Values giving me what I needed. To fix the issue I originally thought that the blend mode type of soft light would work as it effects the base value off of how bright it is and since I'm working from values dark to light in the red and green that it would work so I put together a script to test it out. I then realized that it didn't add the values together so where you would have R=1&G=0 and overlay it over the base of R=0.5&G=0.5 that it would not give me a green value of 0.5 but a stranger number that would give me the wrong flow direction. So I also tried to use the Add linear blend type and found that the vertex color would fall apart.



Note: this equation Was got from this youtube video by: InAfinityForAfinityPhoto
https://www.youtube.com/watch?v=NyXH_JvtVPU&t=43s

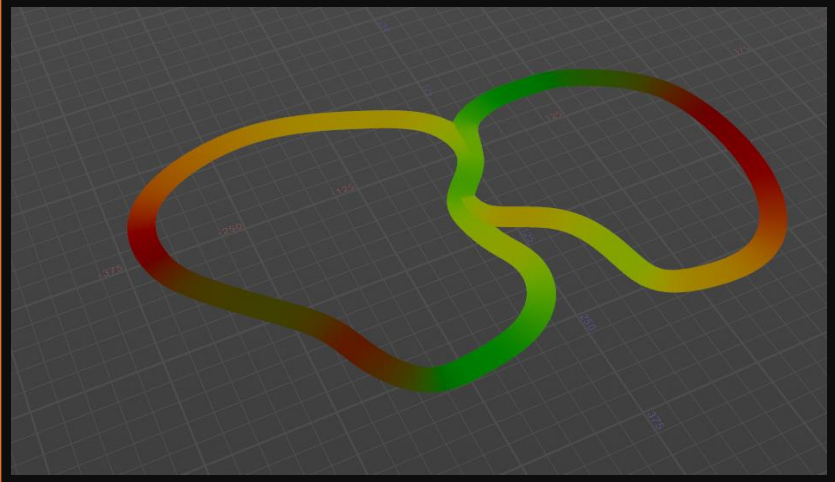


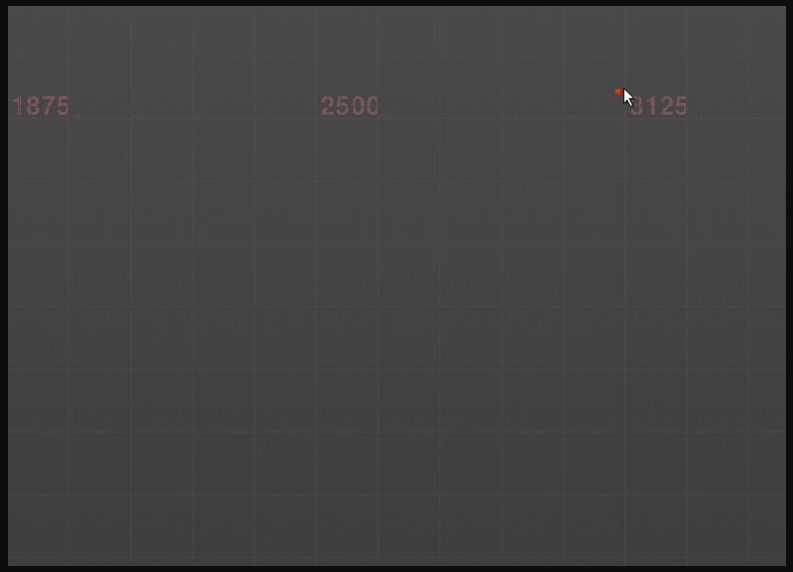
Note: this equation Was got from this youtube video by: InAfinityForAfinityPhoto
https://www.youtube.com/watch?v=NyXH_JvtVPU&t=43s

FlowMaps

What I ended up doing before all the calculations shown before was "normalize" the values as you can only have a color range between 0 to1 yet all my color values where between –1 to 1so I added 1 to the values so now it goes from a value of 0 to 2 and then divided the whole thing by 2 so now I am working between the values of 0-1. What I didn’t realize at the time was that from just doing that I had already fixed my issues and didn’t need to do these extra steps. This is because the values that where at 0 which give me the black are now pushed to the correct 0.5.

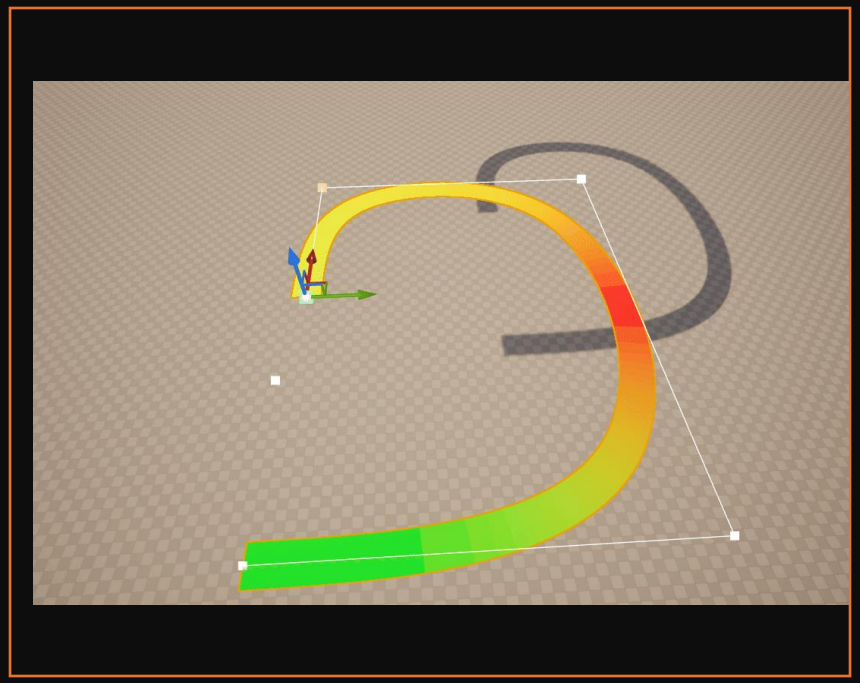
```
@Cd.r = set ((@Cd.r+1)/2);
@Cd.g = set ((@Cd.g+1)/2);
```





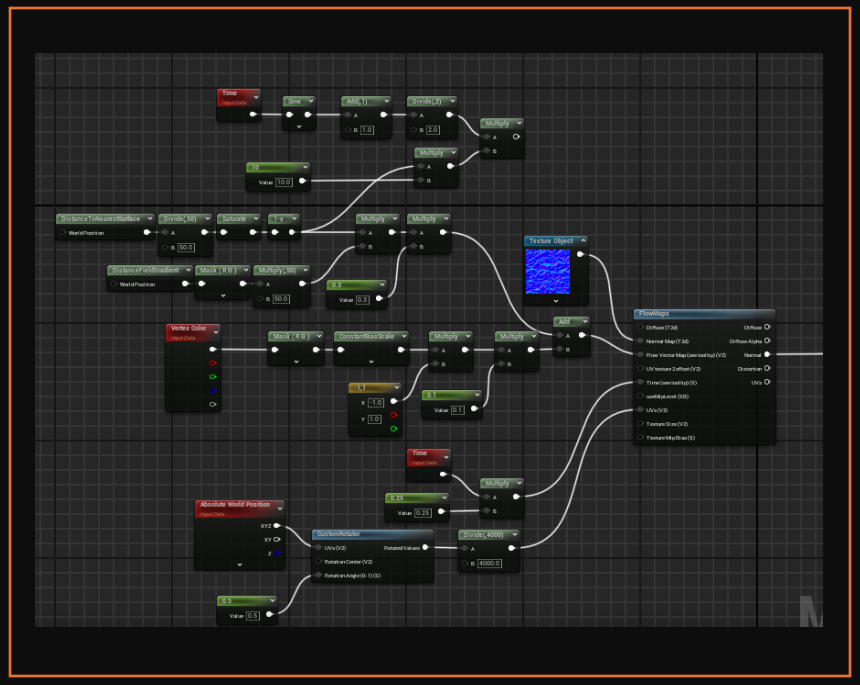
FlowMaps

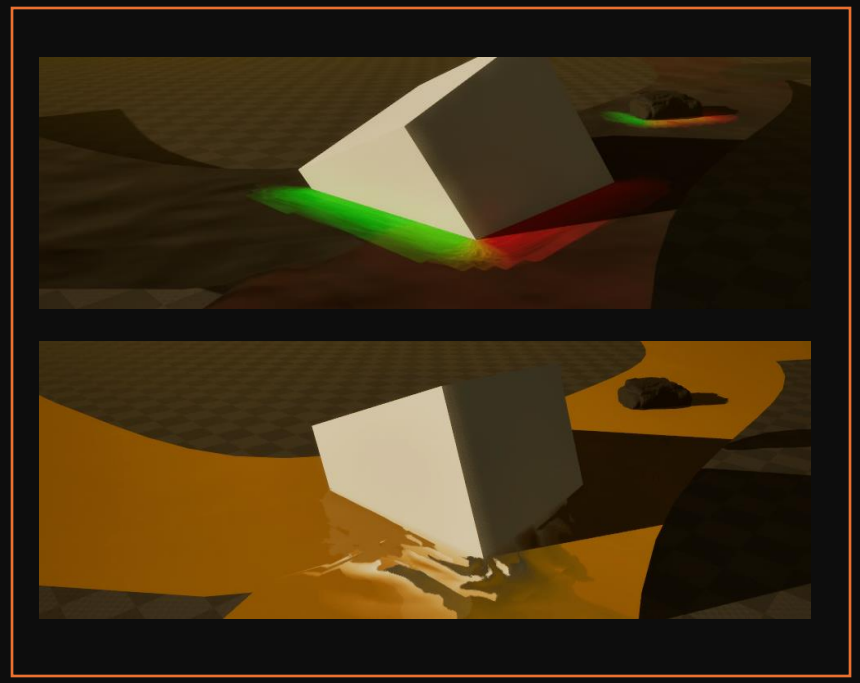
Sadly the issues aren't over. I would periodically check to see if the mesh worked by exporting it out to unreal as it was easier then making a HDA every time. Whenever I made a mesh the flowmap would work however exporting from Houdini to Unreal gives me a really small mesh so to get it to the correct size I have to scale it by 100. It would also be nice to just draw it unreal with a the HDA that is already half way done. The issue now is that the tool doesn’t calculate the flow direction the same as the export does which is strange as it uses the same algorithm to get the result. There are other issues like the blending on harsh blending of rivers which can be fixed by reading the mesh vertex tangent rather then the curve input tangent. For this I will probably just use the Export as it works



FlowMaps

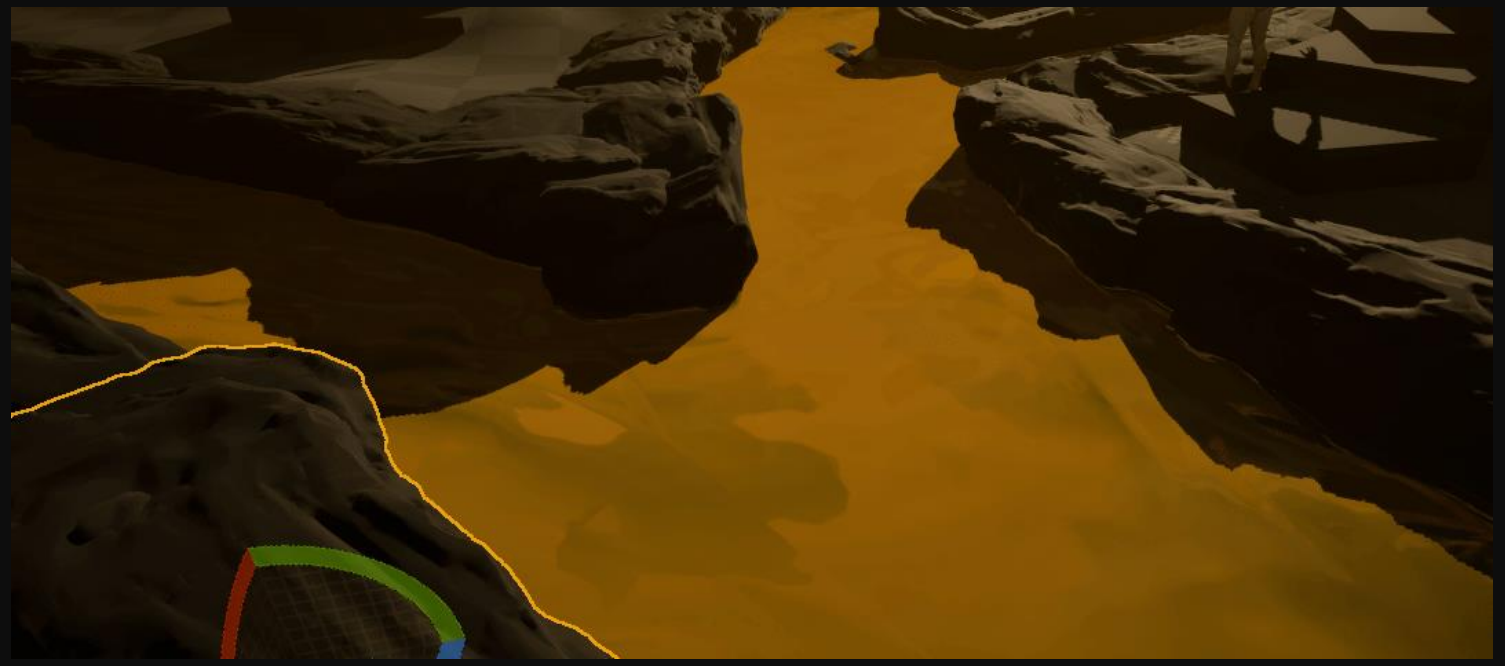
The shader work for the flow map was rarther simple to set up. I used the basic Unreal flow map Material Function as it was faster then me building my own from scratch. The flow map input is the vertex colour of the mesh that goes through a bias scale which changes the direction values from 0 - 1 to –1 – 1 to help make the river look as if its flowing in the environment I used distance fields to warp the direction of the flow map so it moves around in water obstructions





FlowMaps

The river in its current state looks fine not amazing but just fine. The issue is that there arent really any acid rivers that I can pull from that look realistic. The most realistic rivers that have an acidic base are very orange with the only good example of it being yellow was a mining incident in Illinois. I need to start fine tuning the water using the single later water to try get the looks of these examples bellow

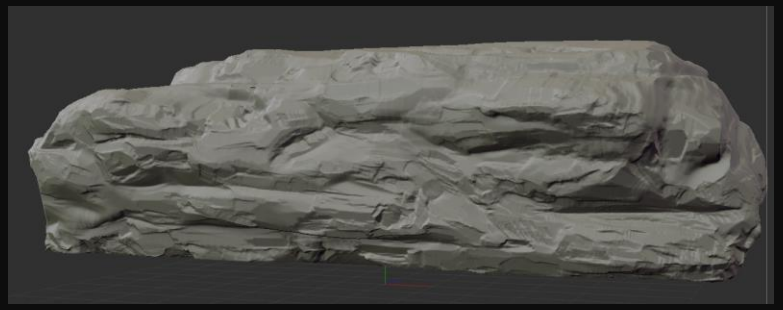


Rocks

I wanted to test some rock designs for the rocks that will line the water edge. There are a few ways I Could have gone about doing this, I could have created a single mesh for each stretch of the river. This would make the rocks seem more as one which is more realistic and would help the flowing look as I could design each section by its flow direction. This would take to long however and as the main point of the art test isn't the environment then its not worth the time. This left my other option being creating a modular kit of rocks that I could bash together. I started off by blocking out what the rocks could look like in unreal to get a scale for the rocks that I would need to make. This left me with rocks that where about 3mx1.5mx2m as a goal to aim for. I might want to go above or below this where needed.

Rocks

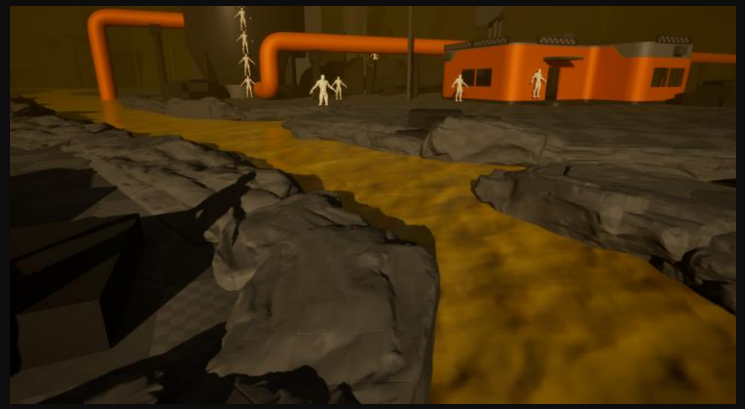
I started off working on the rocks that would line the river as they are the ones likely to cause issues as I need them to blend into the main landscape and to hide the transition between height of the landscape which looks super low resolution. When sculpting the rocks I went in with a mindset that they need to be usable on both sides. This would mean if I did 3 I had 6 different designs to pull from with hopefully different sizes so I can mix and match shapes to break the modularity of the scene. I made 1 short 1 medium and 1 long rock type. This should limit the amount of objects I need to place and will allow me more time to decorate these banks. I will likely have to make the entire environment a rocky wasteland to help with the blending of these rocks however this will be iterated on.



Rocks

I used the first rock I made to line the outside of the acid river to see how it would look and if any changes needed to be made. With some more time spent on the placement and with more variation this will work as long as the RVT blending will also work.

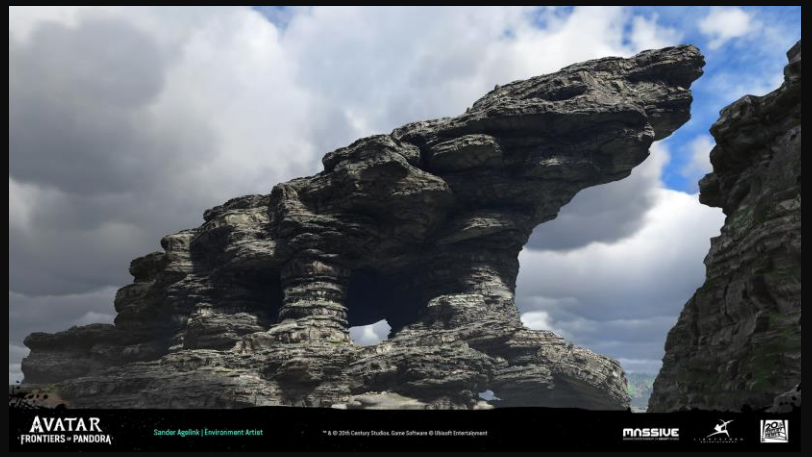
Some changes that might need to be made for these rocks are that there Isn't a lot of acidic hole erosion that you would expect to see due to the high levels of acidic water in the air there would likely be more acidic rainfall rather then what just the water would take away. This would be similar to my references of helldivers that I have at the start



Rocks

I decided to go back and re think how I wanted to go about doing the larger scale rocks as I wanted to go about it in a more interesting and editable way so I could iterate and create more assets in a short amount of time. Ubisoft for their "Mega Rock Structures" tend to use Houdini to model these rocks by layering noise and doing simulations. I also came across this post on art station that gave a good break down on how to create the same rocks that I was wanting to create.

This would take some time to make but would allow me to have more rock types which will help with the iteration and repeating asset problem



Post by: **Sander Agelink**

https://www.artstation.com/artwork/GeQkxQ

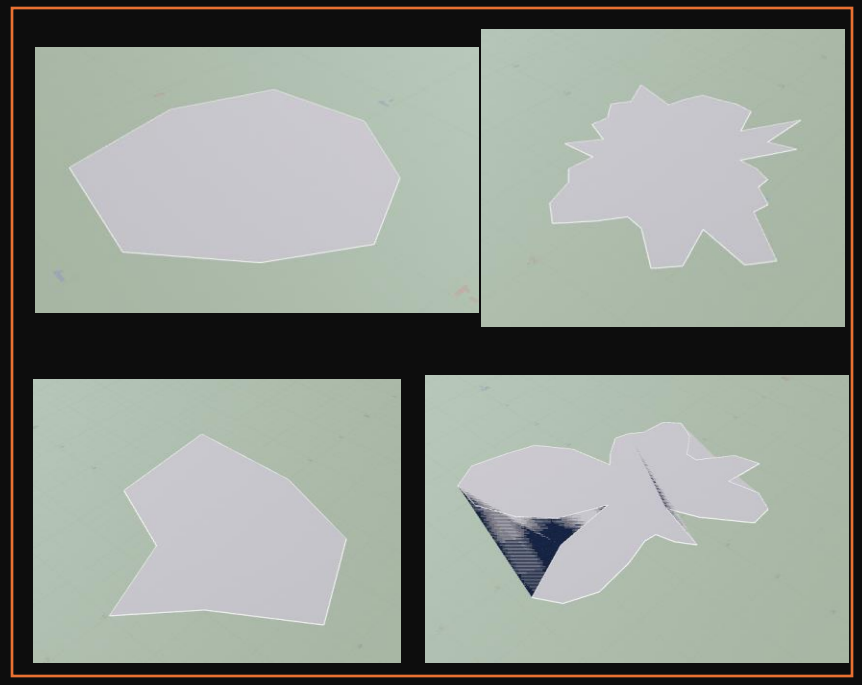
Post by: **RICHARD Damien**

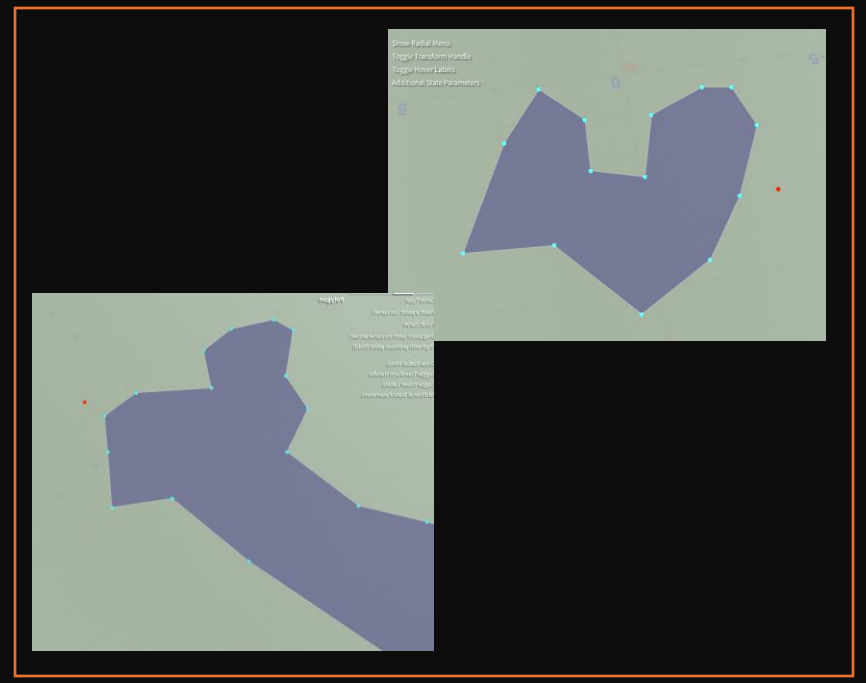
https://www.artstation.com/artwork/2B4Z4A

Rocks

I followed the workflow of the breakdown as an attempt to reverse engineer how it was made while adding settings and changes that would better help my own project.

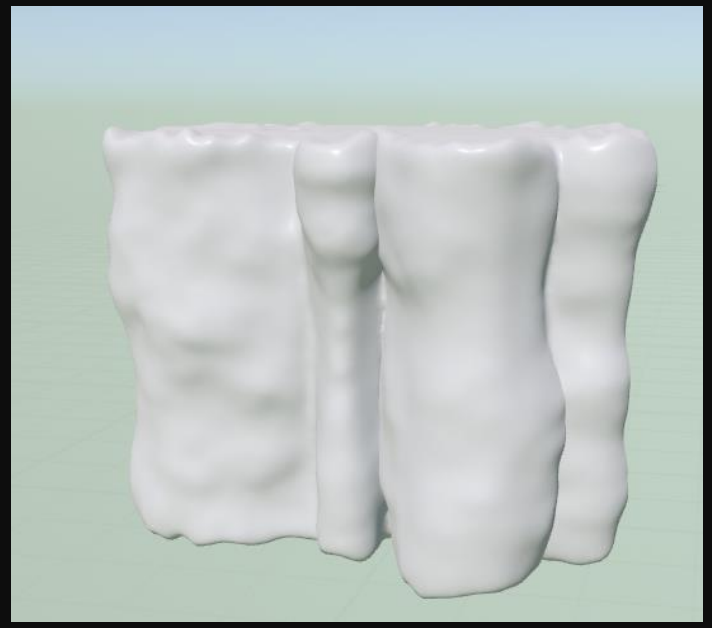
I wanted to split this tool into selectable chunks so I could easily load parts of the rocks workflow at a time. I Started off by making a basic blockout chunk where a lot of the large forms like the shape and the shelfing. To generate the shape I set up 2 systems. System 1 was to use the bottom face of a cylinder and apply some random direction on the X and Z coordinates which then can be re extruded up and have some aspects like tapering added to make the shape look more organic. I also set up a way with more artistic control using splines where you just draw out manually the base of the rock and have the tool do the same as it would with the cylinder.

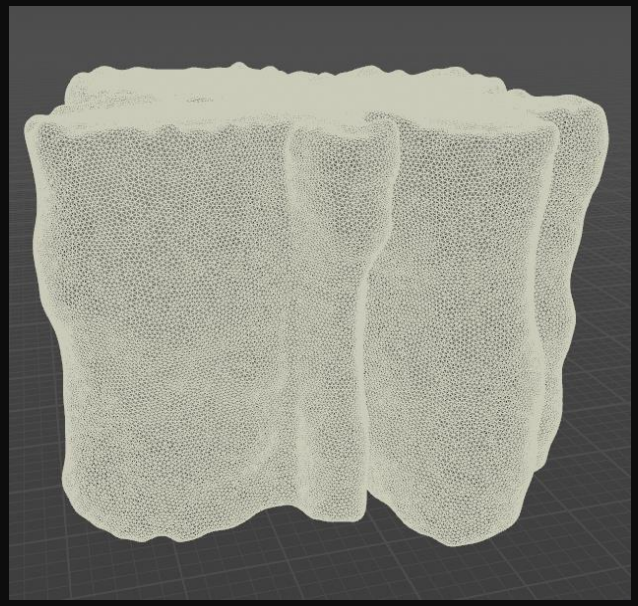




Rocks

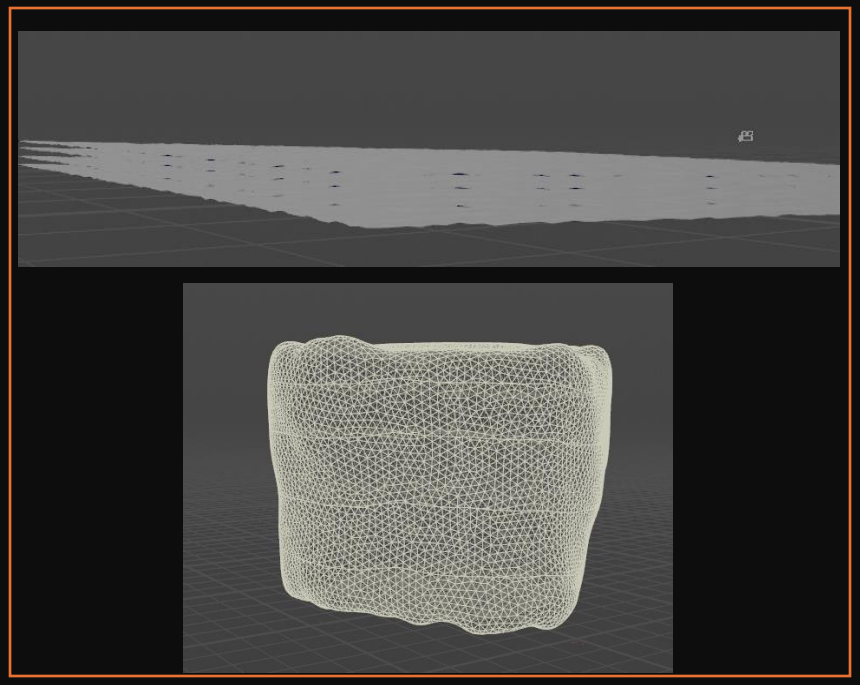
From these 2d shapes that I extruded up I could remesh the rock to give me more points so I could start applying more noise to get some erosion look and to make the shape look more organic. To help with the rock style I avoided applying noise to the top and bottom surfaces to try keep them flat. This will help them fit the same feeling as the shelfs that will be added in next. This could probably have been done with a lower retop count but the smoothing that comes with the higher poly count will help with one of the steps later and this is the final retop of the blockout stage.

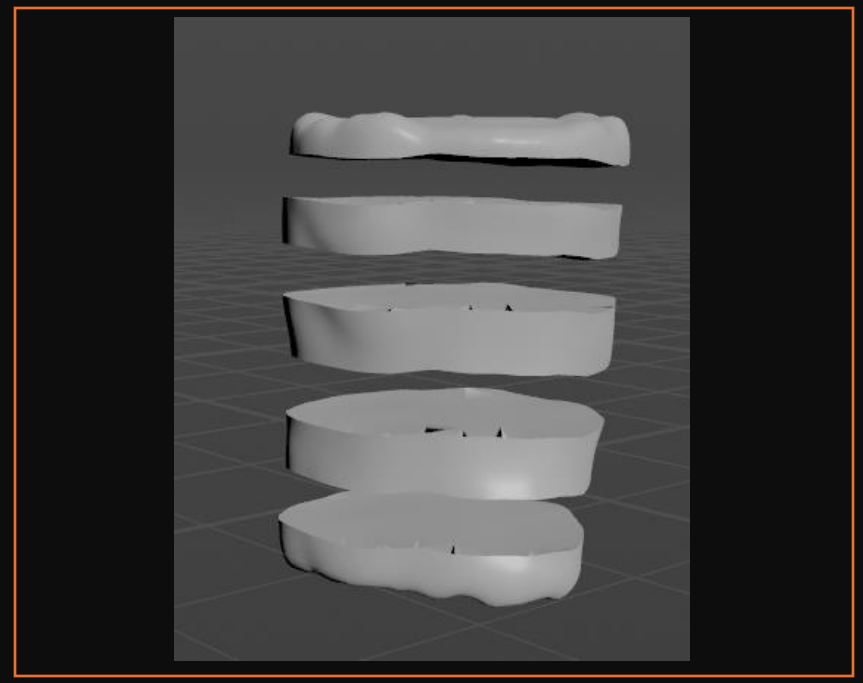




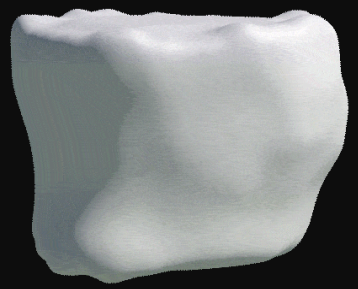
Rocks

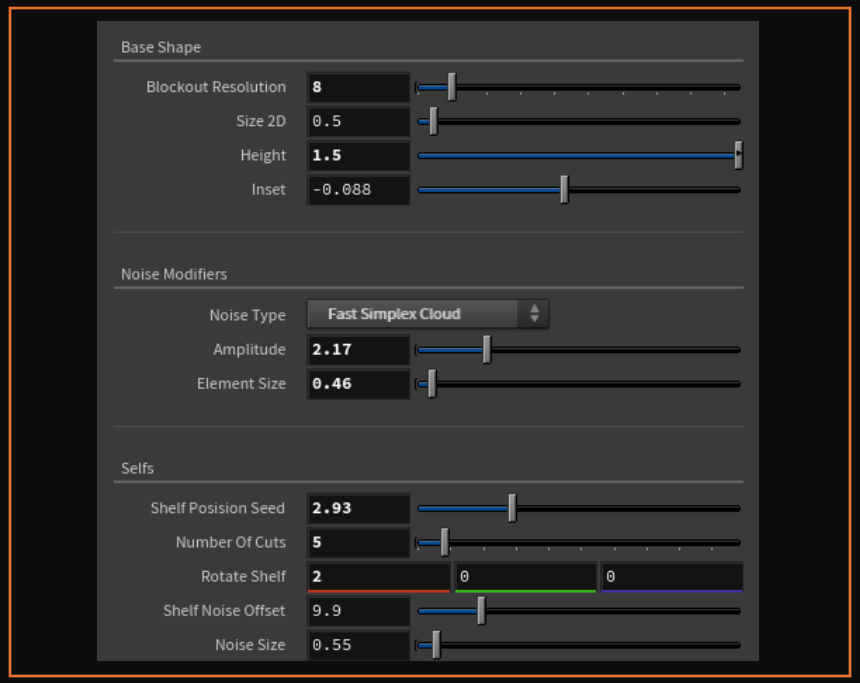
To create the shelfs I got the max and min height of the rock and mapped it to a line which is then resampled to add more points which could be randomized in the Y position which will give bigger and smaller shelfs. To get the shelfs to work on the block out mesh the points that where generated had planes applied to them which had some random displacement and then boolan'd against the blockout mesh. I grouped these as a subtool so that

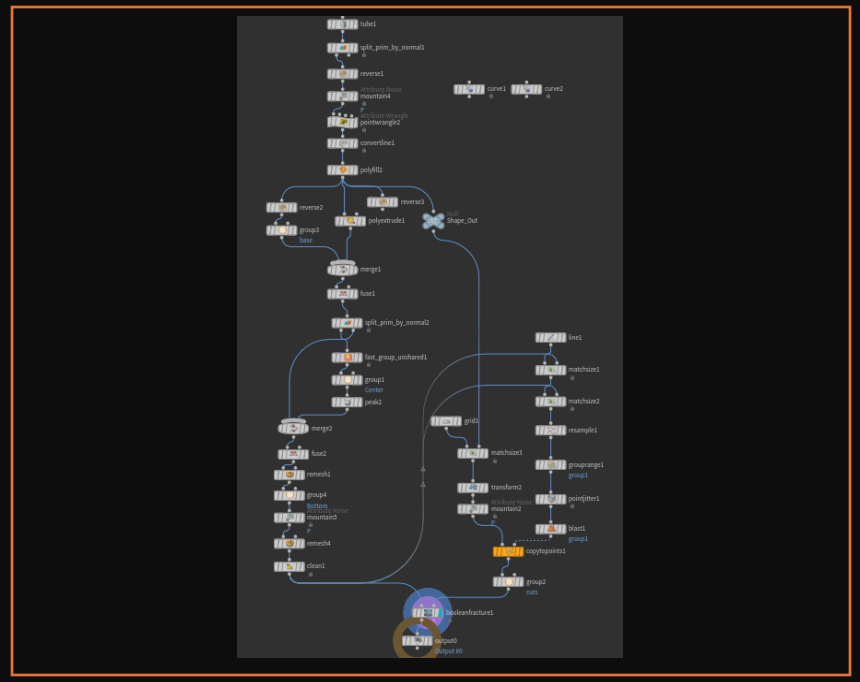




Rocks




Base Shape
Blockout Resolution
8
Size 2D
0.5
Height
1.5
Inset
-0.088
Noise Modifiers
Noise Type
Fast Simplex Cloud
Amplitude
2.17
Element Size
0.46
Selfs
Shelf Posision Seed
2.93
Number Of Cuts
5
Rotate Shelf
2
0
0
Shelf Noise Offset
9.9
Noise Size
0.55

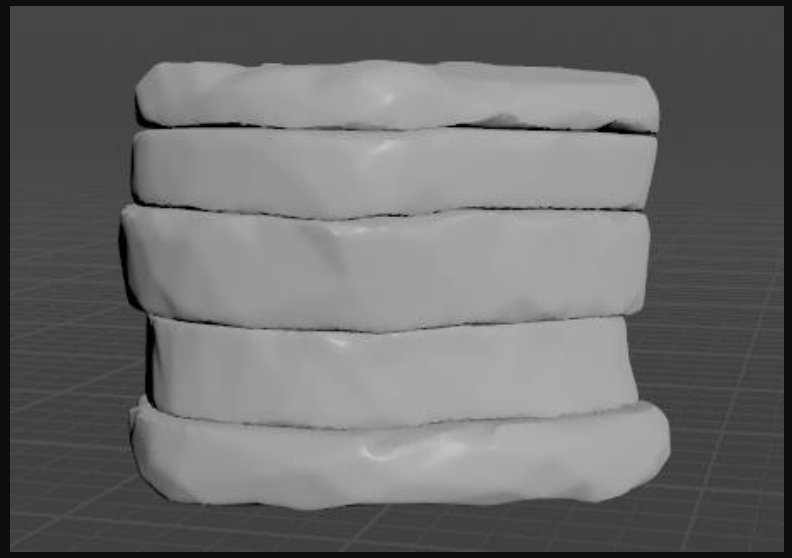


Rocks

Next up was to start making the shelfs look like shelfs To get this working All I needed was some size offsets and some position offsets. To do this I split each shelf and do some smoothing on the corners to help with the normal displacement then used this script I found from "Render Everything"

https://www.youtube.com/watch?v=dRidiaXGYrk&t=940s

This randomly alters the Normal distance based on a seed. between –0.5 and 0.5 in the X and Z position. There where issues with Normals going inside out and this is where the smoothing of the shape the step before comes in. This does come with the issues of it looking less rock like due to the corners being so rounded but this can be fixed later on.



VEXpression

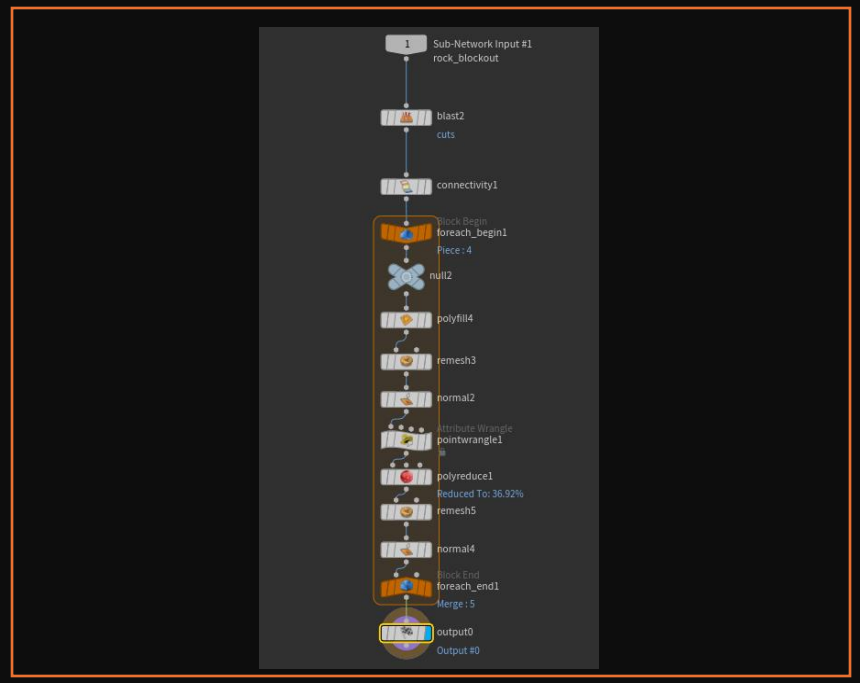
```
1 int class = prim(0,"class",0);
2 float r = random(class + chi("seed"));
3 r = fit01(r, -0.5,0.5);
4 if(r<0.0)
5     @N.y=0;
6 else
7     @N.y *= 0.3;
8
9 @P += @N * r * chf("scalemax");
```

"Render Everything" Code

https://www.youtube.com/watch?v=dRidiaXG
t=940s

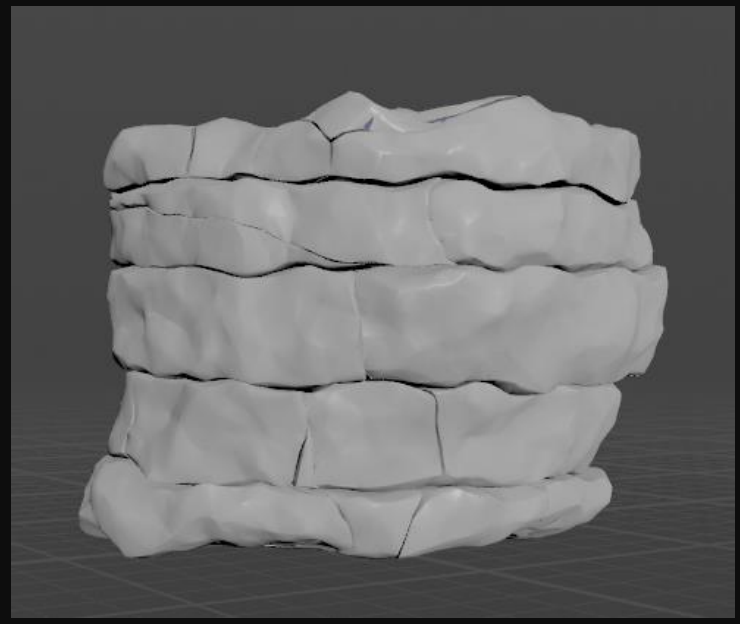
Rocks

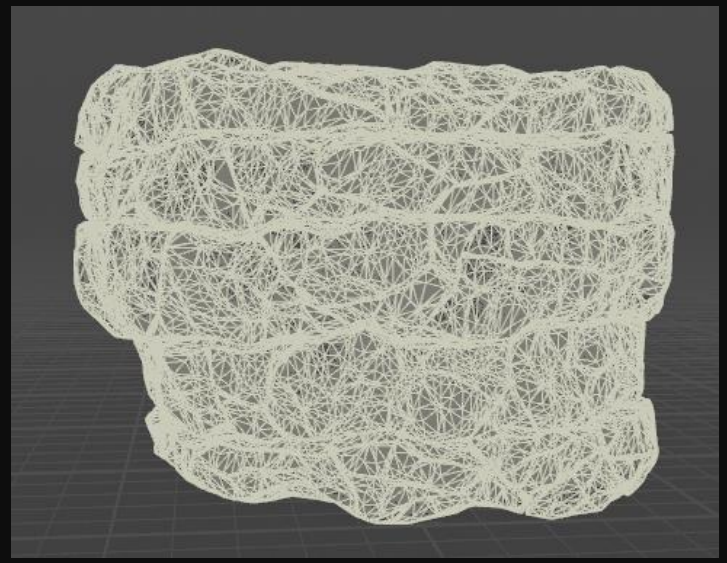

Asset Name and Path
Shelf_Detailing
C:/Users/aweso/Docume...
Shelf Offset Seed
8
Offsert Scale Max
0.106


1
Sub-Network Input #1
rock_blockout
blast2
cuts
connectivity1
Block Begin
foreach_begin1
Piece : 4
null2
polyfill4
remesh3
normal2
Attribute Wrangle
pointwrangle1
polyreduce1
Reduced To: 36.92%
remesh5
normal4
Block End
foreach_end1
Merge : 5
output0
Output #0

Rocks

Now is the time for the cracks and detailing. I started off by fracturing the rock as if its been cracking from natural erosion like freeze thaw where water gets in, freezes, expands and then melts leaving these fractures in the rocks which are emphasized under the weight of the rocks. To help show the weight I took another thing from the artstation breakdown which was to simulate the rock a little bit to get some bending and splitting that is done by the rock itself. There are some issues that need ironing out with how the cracks are generated but these are easy changes that just need some tampering with each rock shape as I make them.





Rocks

For a first Run this did pretty well but there are some obvious changes that need to be made The fractures are all a bit funny looking and rather unrealistic and the corners on those cracks are weird looking in larger forms. With better materials smaller fractures could come out but there is a need for larger forms to be cleaned up. There are steps like mesh optimization that need doing as well as making some RGB masking for AO, dirt and so on. These rocks are very far away from the camera so getting the forms are important and it would be worth throwing them in engine to see how they preform even in an unoptimized state. Its important start making these look less round as well as they tend to find themselves in a circular state which causes them to look the same.

(renders in Houdini)

Rocks

These rocks work really well and help make the environment look more like a canyon that has been eroded away by the river. The gaps between each rock face is probably still a little to close however it works well enough as long as you aren't a geologist. I do fear that the rocks lose out on a lot of their details from the distance other then the super large froms of the shelfs due to the cracks being rather small and the material that is on them being quite dark so the shadows don’t really pop as hard however they are better noticed up close. This cool be fixed with larger crack Froms but that could end up looking more strange.

Rocks

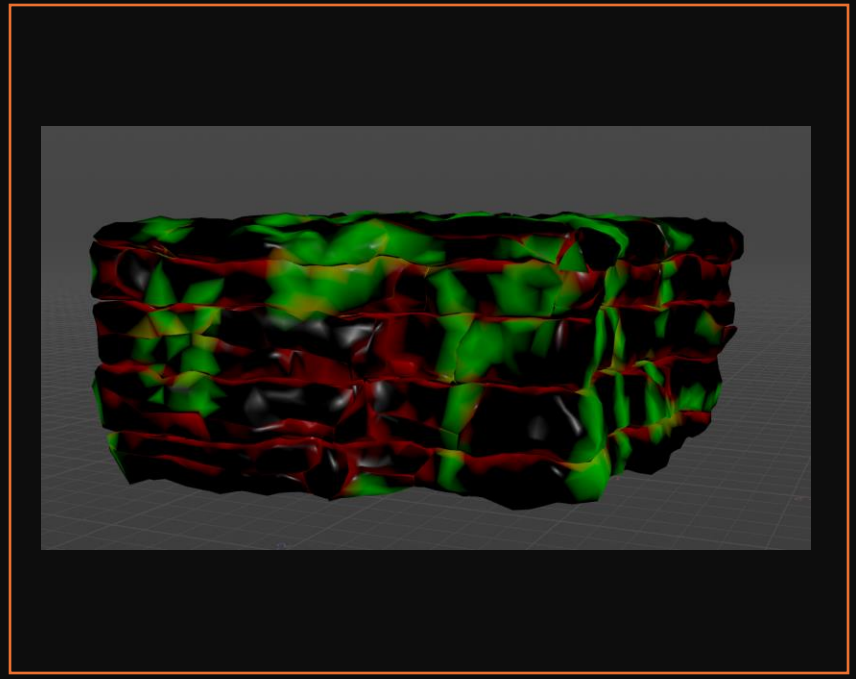
Before

After

The only thing that is lost is the smoothness of the background which didn’t take to much attention however it didn’t feel right for the environment it was meant to be in hence the new rock style. The new design also gives more depth of the environment.

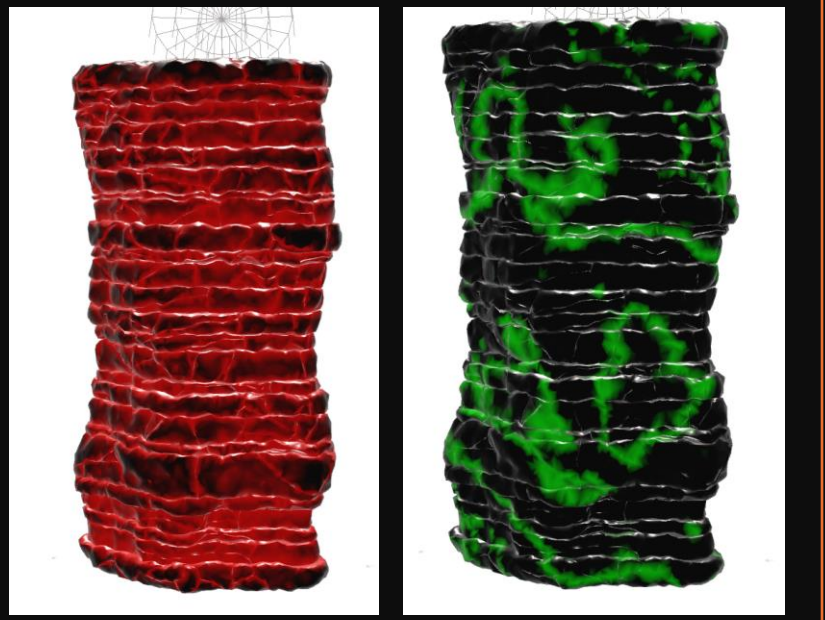
Rocks

The rock that I was testing with where super unoptimized and would need reducing if it was going to be game ready. This was super simple overall. With the fracture there are a lot of inside faces that are never seen so these will be removed as they make up a large bulk of the poly count. This takes the mesh down from close to 1 million (the example is a smaller mesh) down to 30,000-200,000 which I would argue is fine for such large objects. I do have to be careful as I wanted to do an RGB masking layer to help with the fact that I cant unique texture the asset so I would be using vertex information to hold the data that will be used to give more style and help the asset pop with features like AO and iron veins. This means there is more topology needed to help support the information. (effects of Too low topology on the right)



Rocks

The RGB masking was rather simple to set up. I started adding some automatic Ambiant occlusion just incase it needed it in the crevasse to help make them pop as detail as the small cracks can get lost a bit to much. This was just one of the "LABS" tools that's mapped to the "@Cd.r" attribute so that it maps the vertex to be red. As for the Green its meant to represent the iron veins that can appear on rocks which is replicated using an "Attribute noise" node which is mapped to the green channel then has the levels of the noise changed till I get these random veins. As for the blue I wanted to play around with a theme change from an acidic planet to a volcanic one and I wanted to have some glow coming from around the base and these where done by taking the AO and a distance from Houdini's World center and multiplying them together to get this gradient from the ground up.

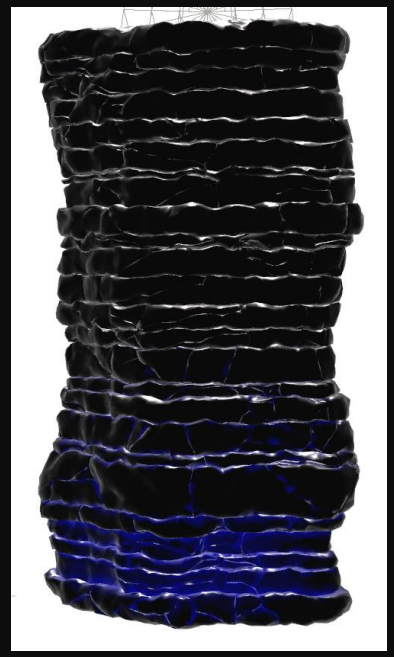


VEXpression

```
@Cd.b = set(@mask - @Lava);
if(@Cd.b < 0)
    @Cd.b = 0;
@Cd.r = set(0);
@Cd.g = set(0);
@BlueChannel = @Cd.b;
```

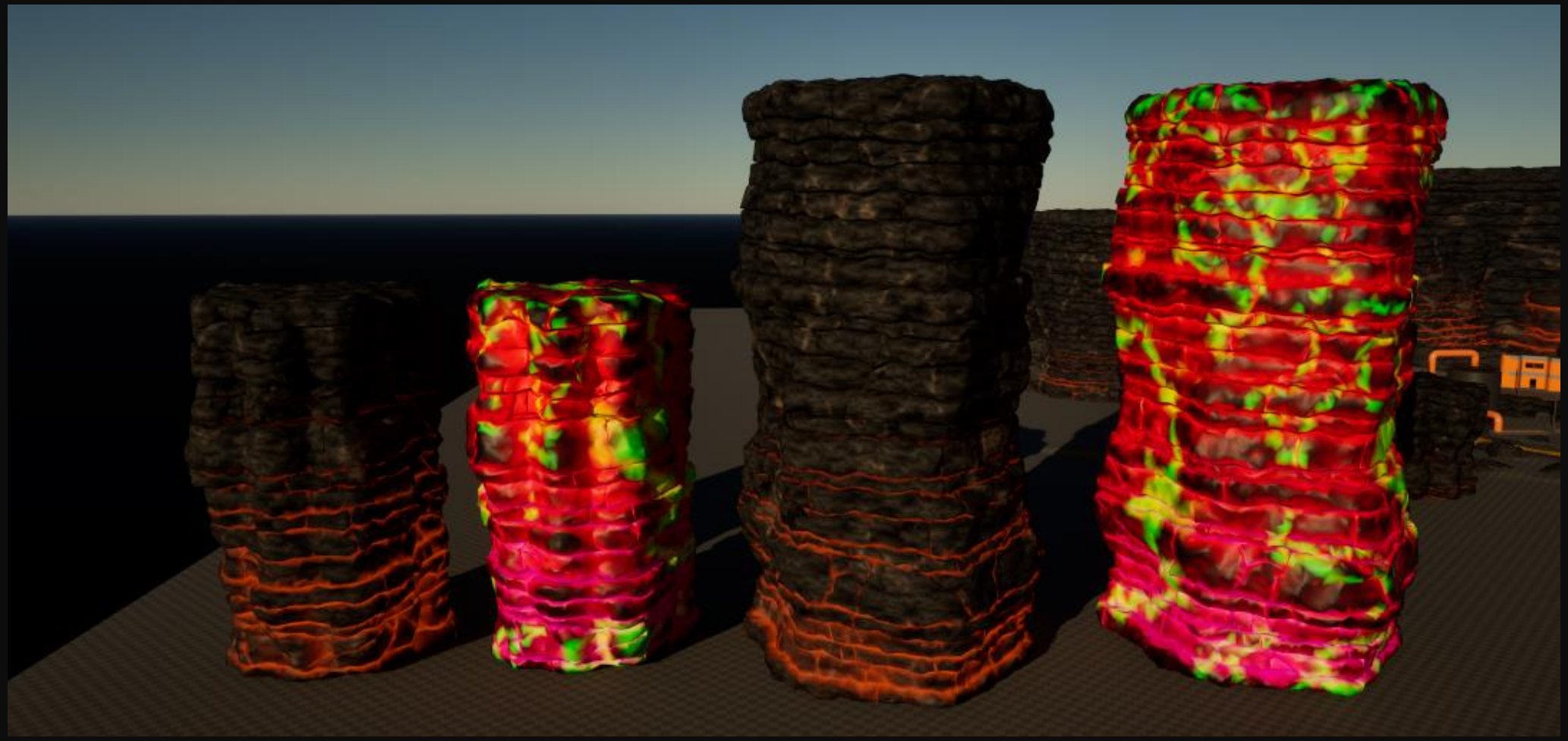
VEXpression

```
@Cd.b = set(@BlueChannel);
```



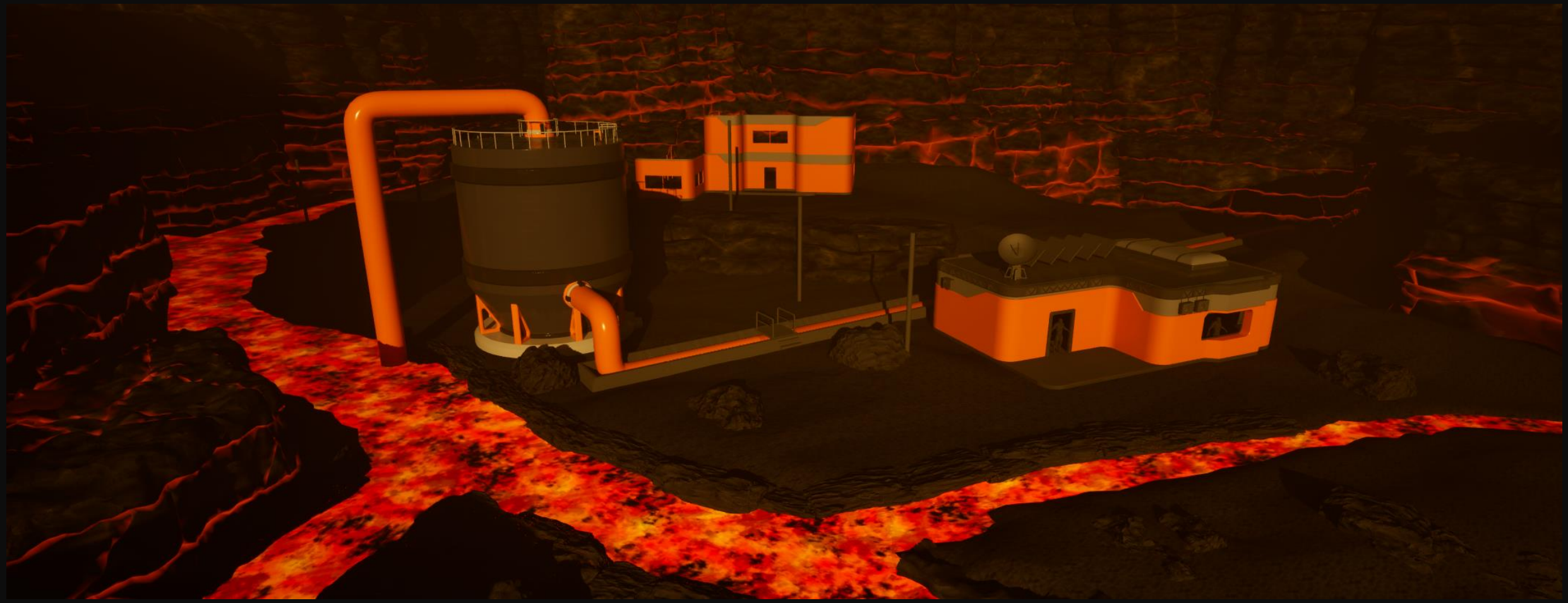
Rocks

The rock material on these rocks are just place holder to get an idea of what its going to look like



Rocks

Rocks



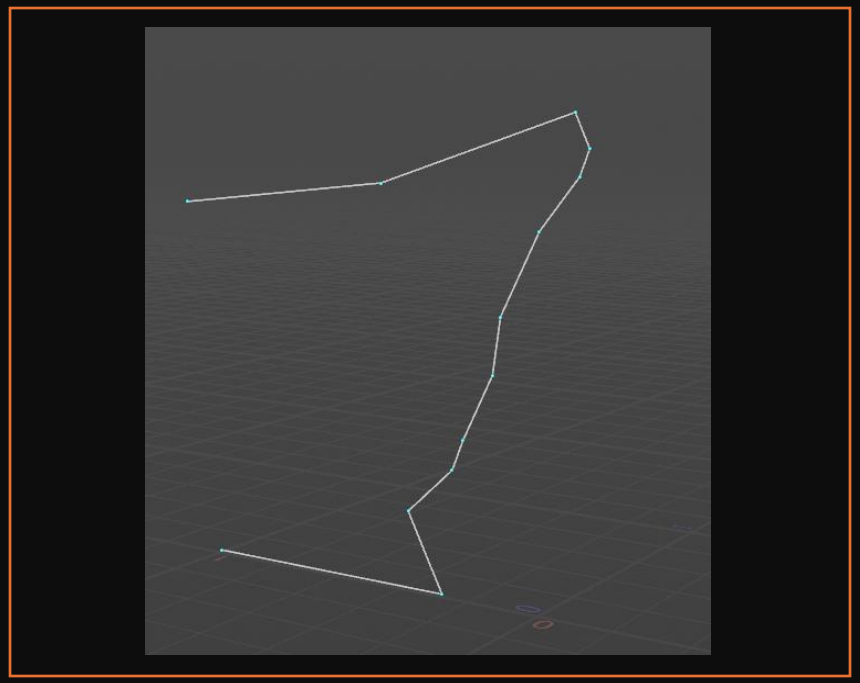
Rocks

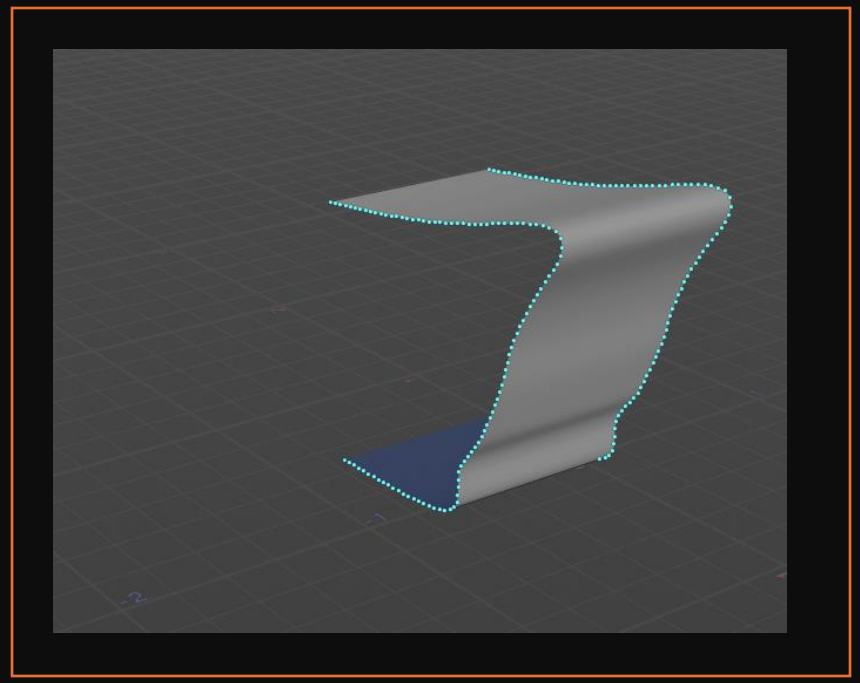
I wasn’t happy with how the rock that lined the river looked when trying to get them to blend into the environment so I started looking into how other companies do this and found a nice modular kit showcase for these landscape rock shapes that I was trying to emulate. This artwork was from an artstation post by "Vincent Dérozier"

https://www.artstation.com/artwork/2Bk68y

Rocks

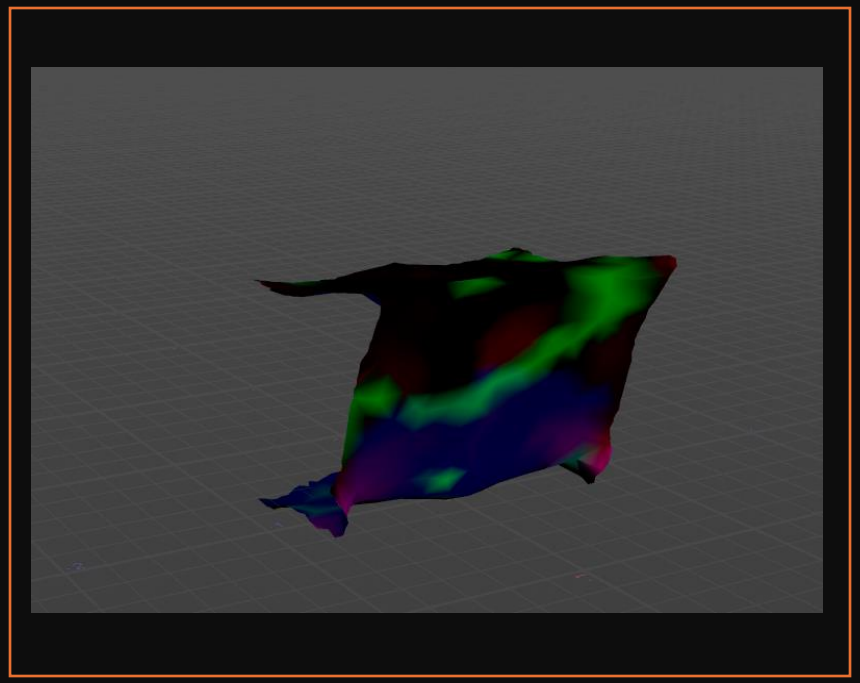
As a surprise to no one at this point I once again solved this issue by altering and simplifying the tool I already made within Houdini. To get the shape I wanted I thought it would be best to work based on the cross section as its more important to get a good base shape to build from rather then worrying about the width yet. This could then be sweeped along with its length then put into consideration.

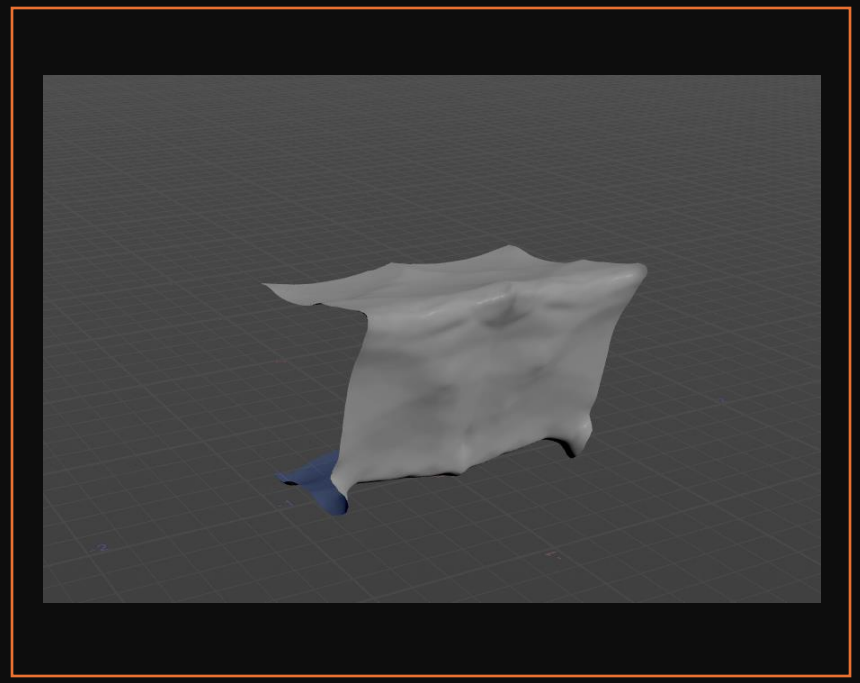




Rocks

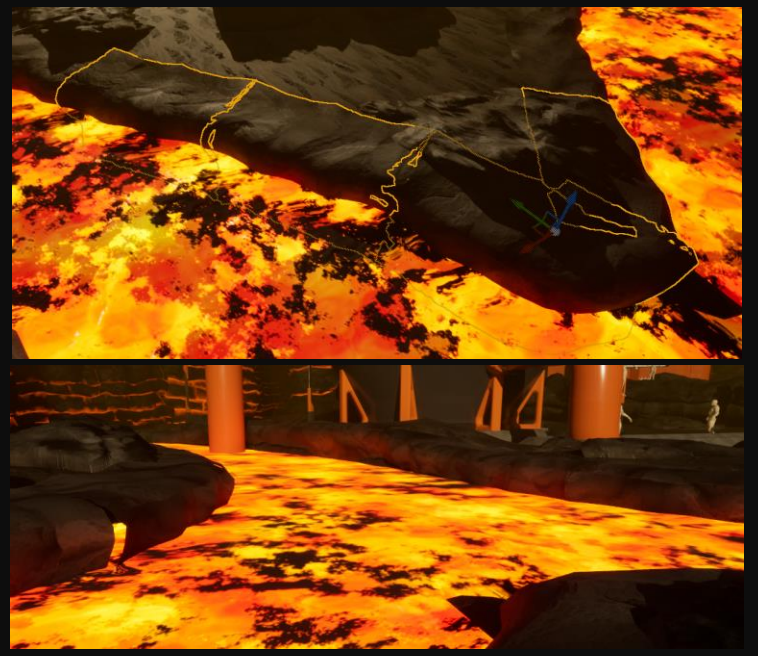
This then went through a similar set up as before but with adjusted setting due to its much smaller size and use. To make sure this all worked it was then mirrored so that both sides would line up better for when being placed into the environment. This could have been done better still in Zbrush however since I basically had the systems set up it was a quick thing to but together and gave me the ability to iterate more. Overall I got a mesh that came out at about 500 polygons which is more then usable and is much more optimized then the "megarocks" I made before





Rocks

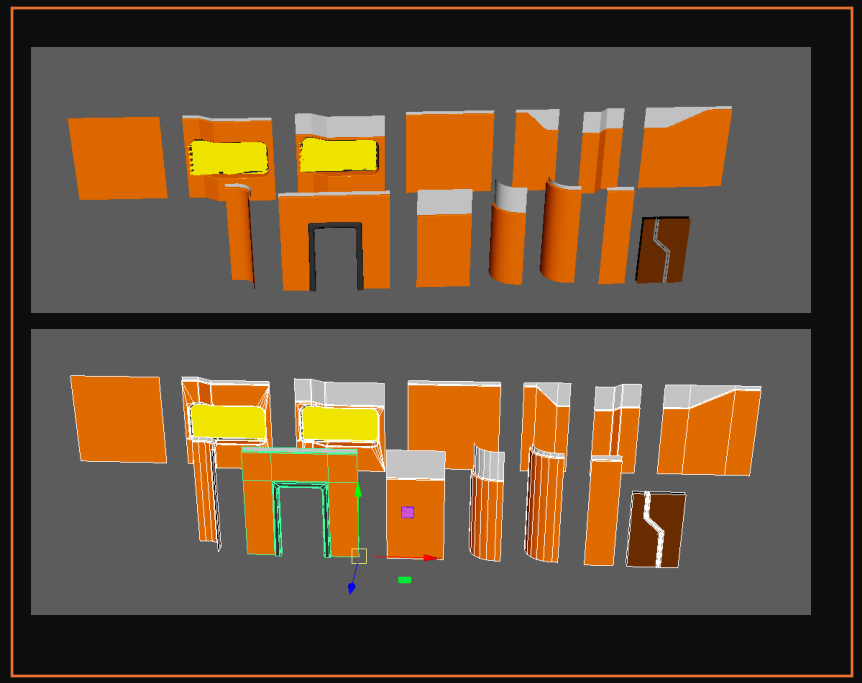
These rocks then where layered next to the river and had some random height changes to help try to match the warping that is visible on the rocks behind that they would follow a similar structure. To help hide some of the visible issues of these not matching exactly if a corner was to tight or to dramatic of a change happened I put a rock over it to help hide it but this does still match as rocks aren't as uniform as they are here.

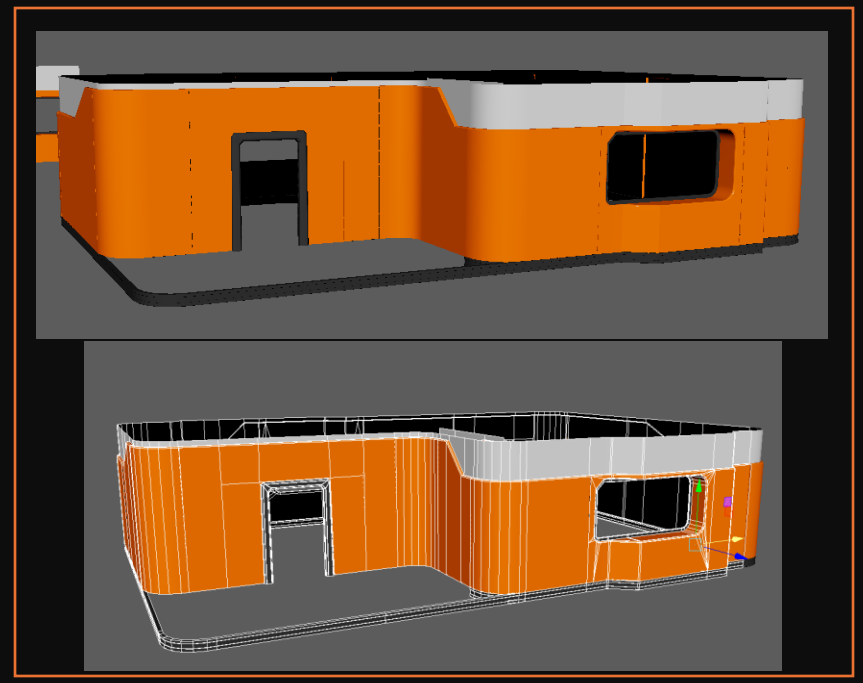


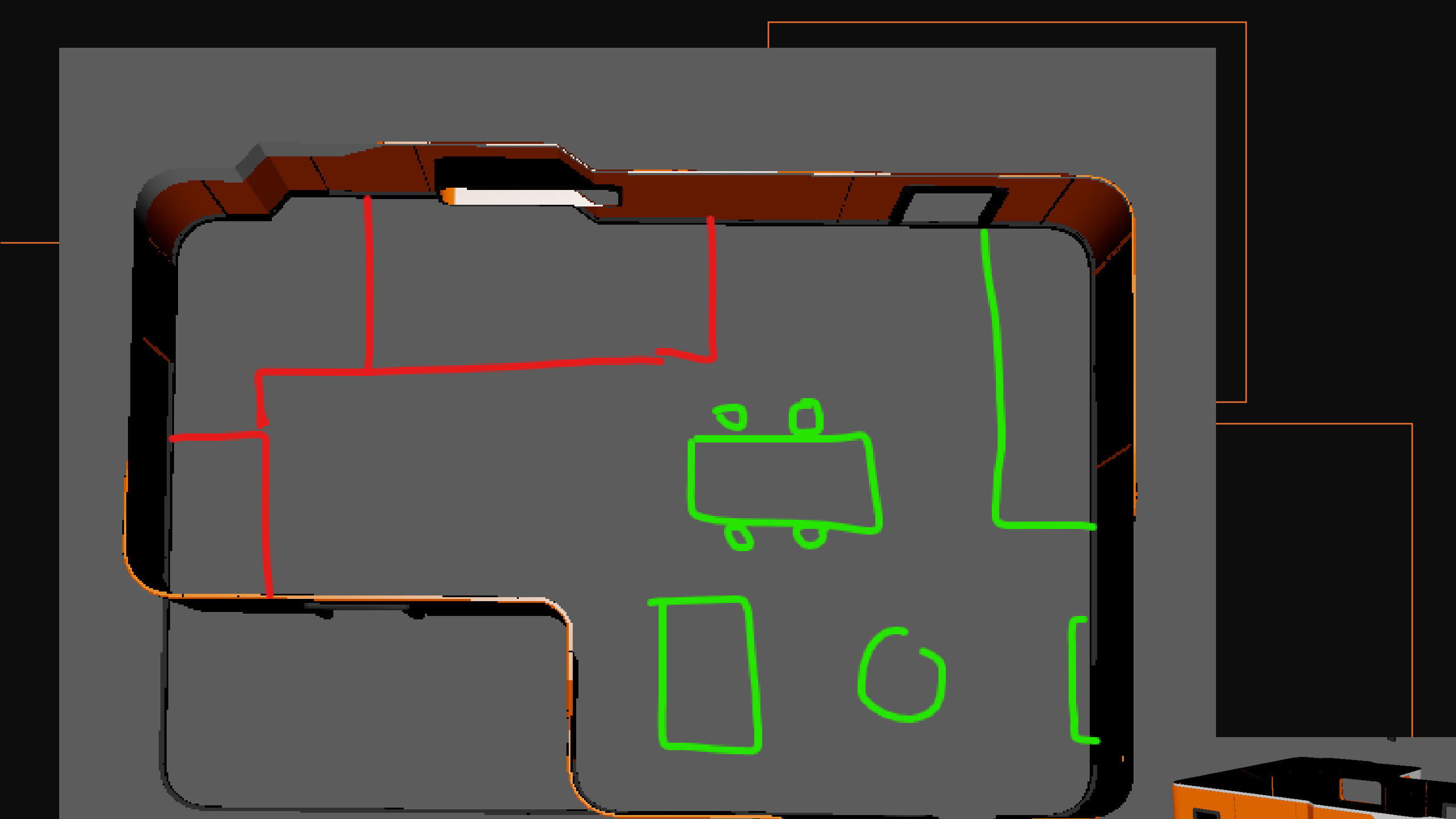
Rocks

Modular Kit

The kit hasn’t changed much since the blockout shown before. I knew sort of what I wanted however the parts like the windows needed to be changed ASAP as they didn’t really look right and I felt like the building lacked a lot of Depth. Apex was my biggest inspiration when it came to how I wanted the habitat to look and their buildings tend to have a lot of these extruded sections that are super angular so I tried to replicate it and I think it does wonders for my depth issue. This also caused the window section to be longer as I needed a piece to get it back to where the modular kit s

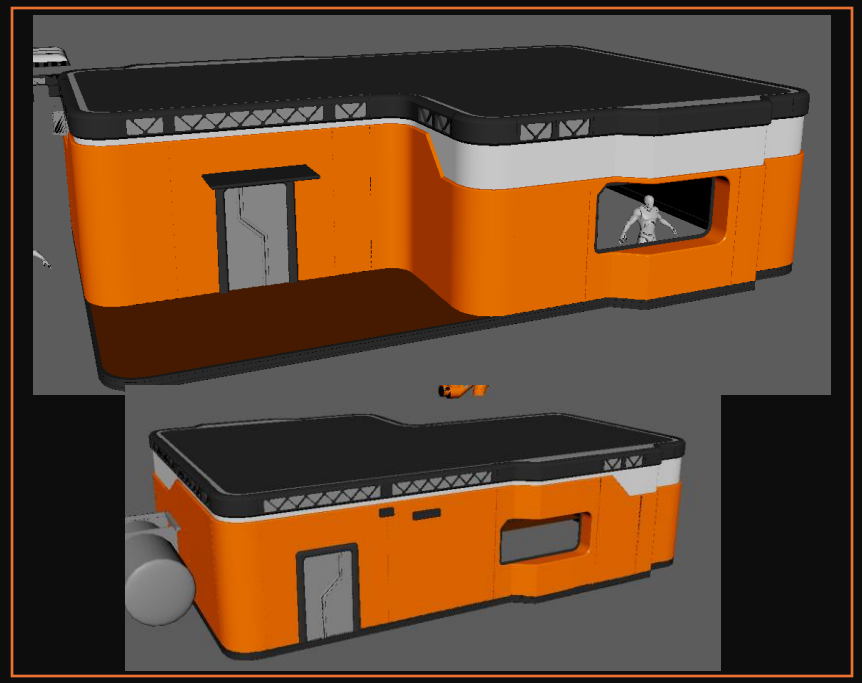


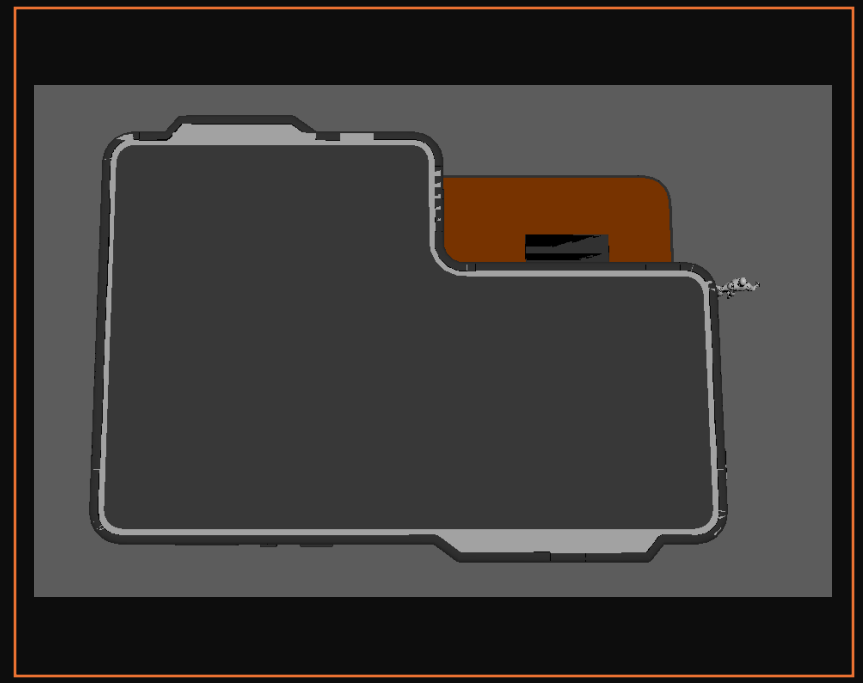




Modular Kit

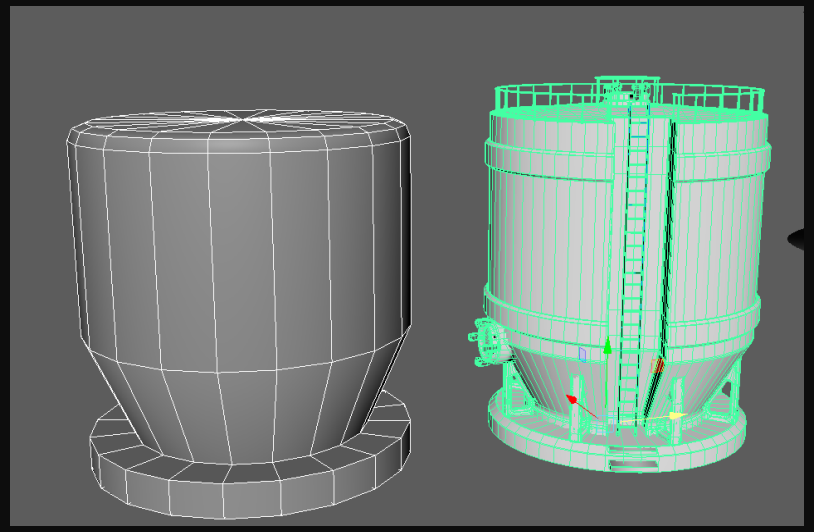
An Area I had the most issues with was the roof as I knew I wanted it to be flat topped however I had no idea how to get it to blend with the rest of the building without it all looking flat as I would like some lip depth somewhere. What I ended on where these pieces that sit on top of the walls that stick out at the front and top giving the lip that I really wanted to get. To make the roof itself not look bland I put a trim around the outside to add more visual interest that I could make some sort of metal or a part of a trim sheet.

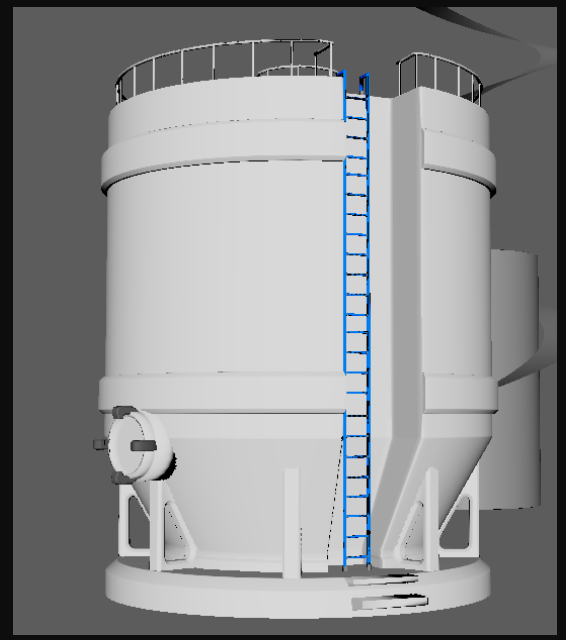




Modular Kit

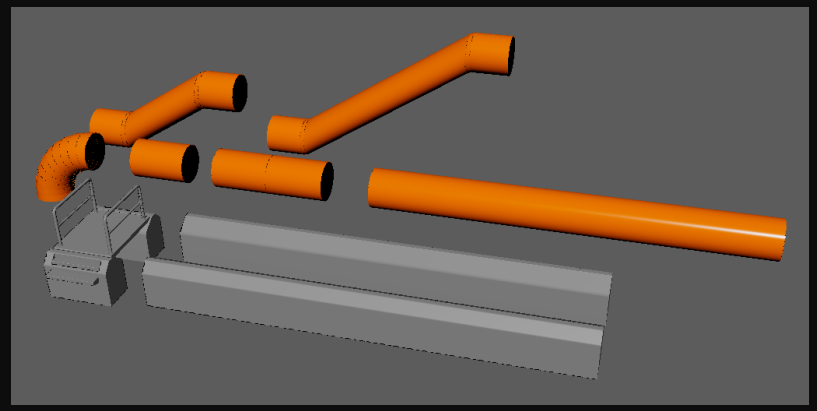
Something that got quite the large overall was the Vat, From the feedback I got I needed to make sure there was access to the top and to change where the inputs and outputs are as there is no reason the Output Pipe is coming out of the top as realistically its harder to pump liquid out the top then at the lowest point. I also played around with the base supports more and kept on with these nice apex angular Shapes with these triangle supports. Although not perfect it is a much better product then what was there before and makes much more since for its use in a realistic setting.

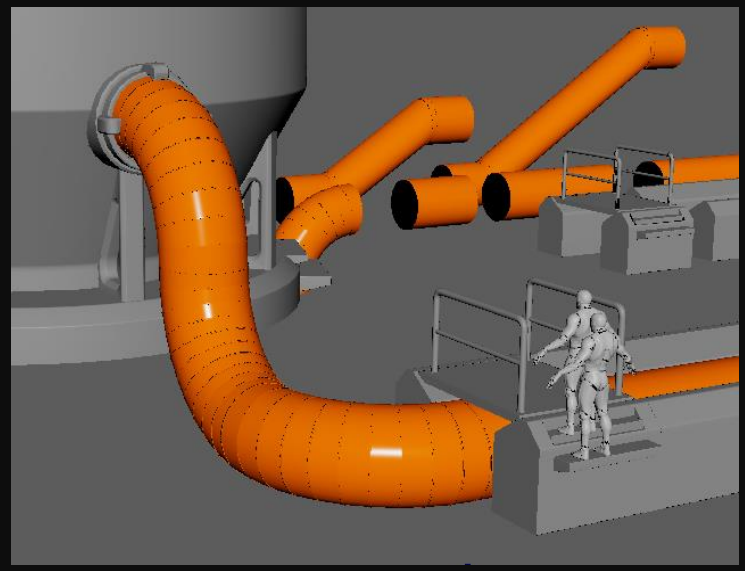




Modular Kit

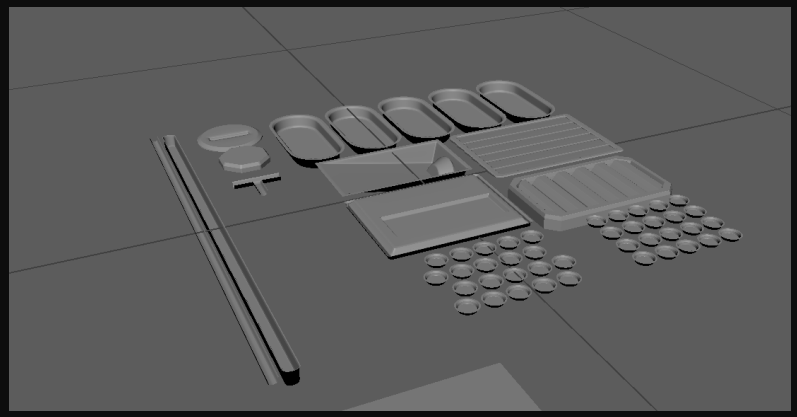
The pipe kit got an expansion too with the new Pipe Shroud that goes on the ground to help with the blending of ground to the pipes that are put semi underground. I created some raised pipes too just incase I could find a use to add more pipes to the scene as pipes are a really good way to add details as you can play around more with depth and shape however these never got a use in the end result due to there being no way to introduce a big nine of pipes in a way that would look right due to the location created.

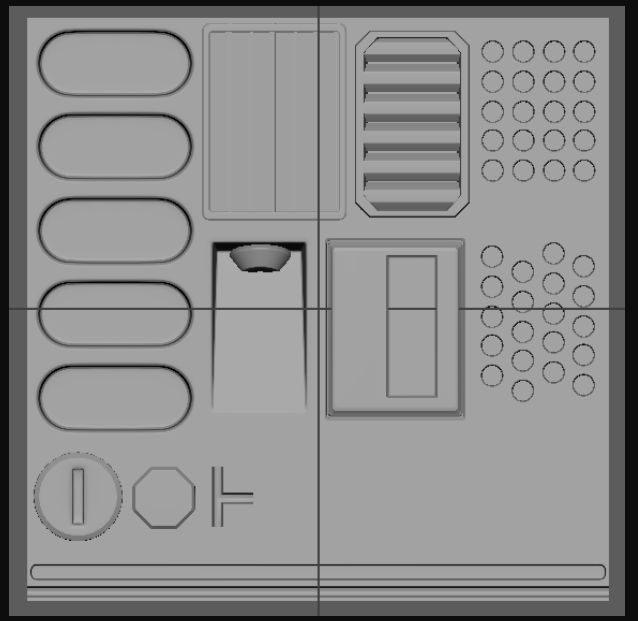




Mesh Decals

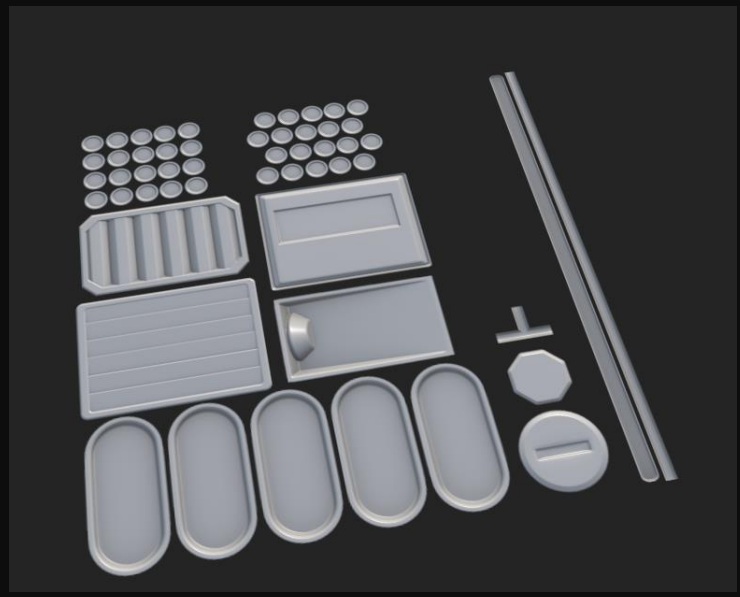
Mesh Decals where something I was thinking about while I was working on the kit as I knew it would be something important to try and get right. I managed to get it down to 2 512 materials that would be made (as I planned to make my modular kit to be 1k per meter giving me 1k materials) so I started to models stuff early and would slowly expand on it as I go. I wanted to have more obvious paneling on my building however having them all be part of the base kit would make it more obviously modular when I would rather place the gaps where I want to break the modular look. There where other just random shapes to help make the scene more interesting with shapes that look sci-fi.

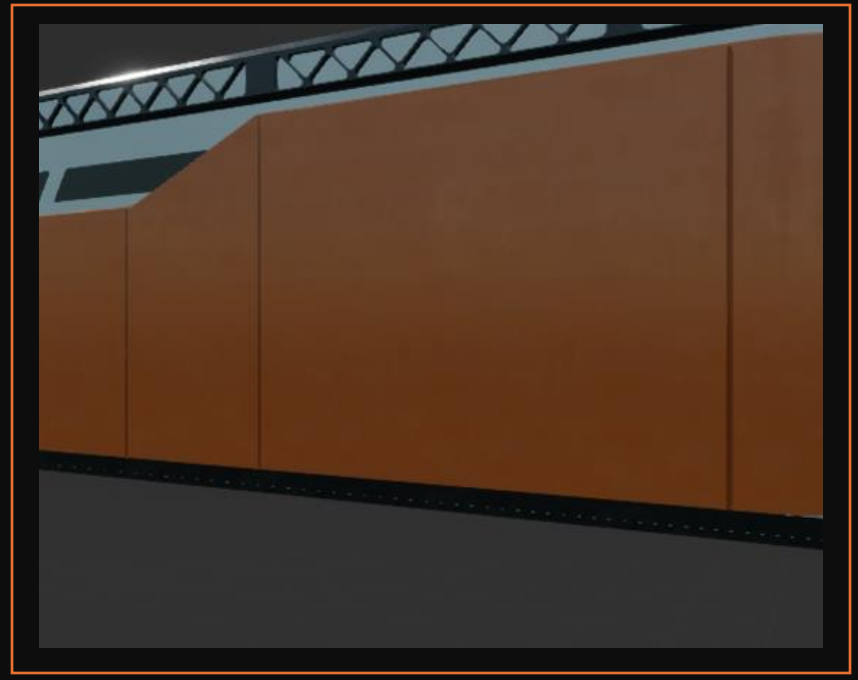




Mesh Decals

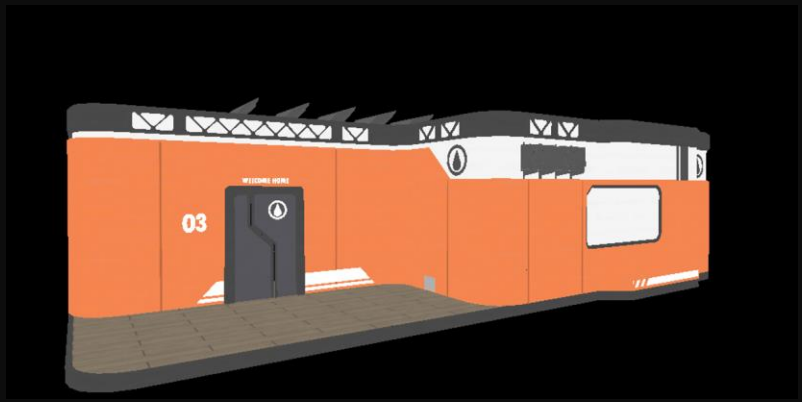
Baking this in painter was much better this time round rather then my test run I did before hand due to me not putting things on top of the plane but more in the plane which fixed a lot of my AO issues I was having. These where just mainly for normal information so they will just be using the base wall material but with the Normals changed to this. These is a lot of wasted space on this texture however I didn't know what to fill the rest of the space with so I had to live with this after making these I realized most of them looked really bad on the modular kit so I didn't use a lot of them in the end.





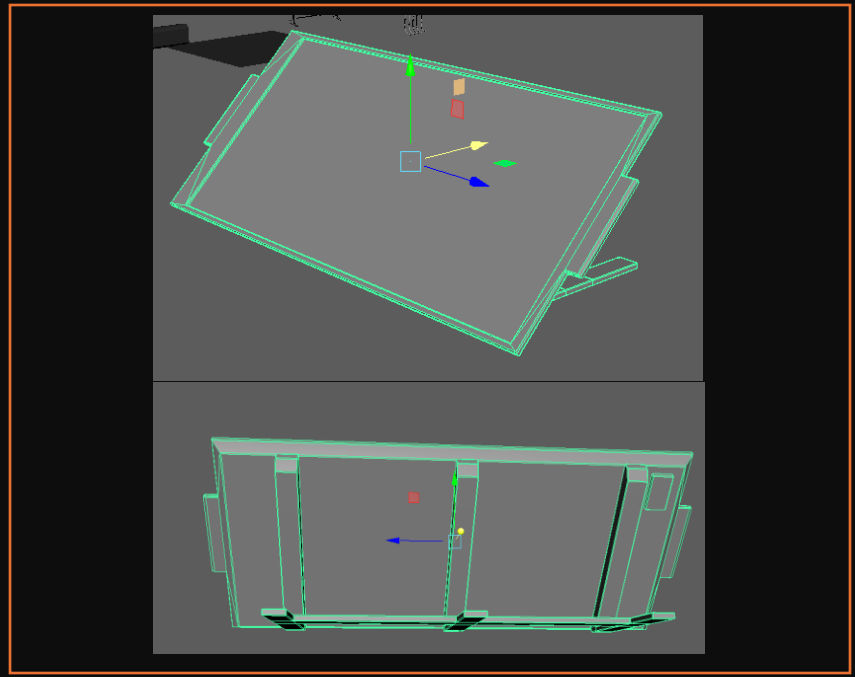
Mesh Decals

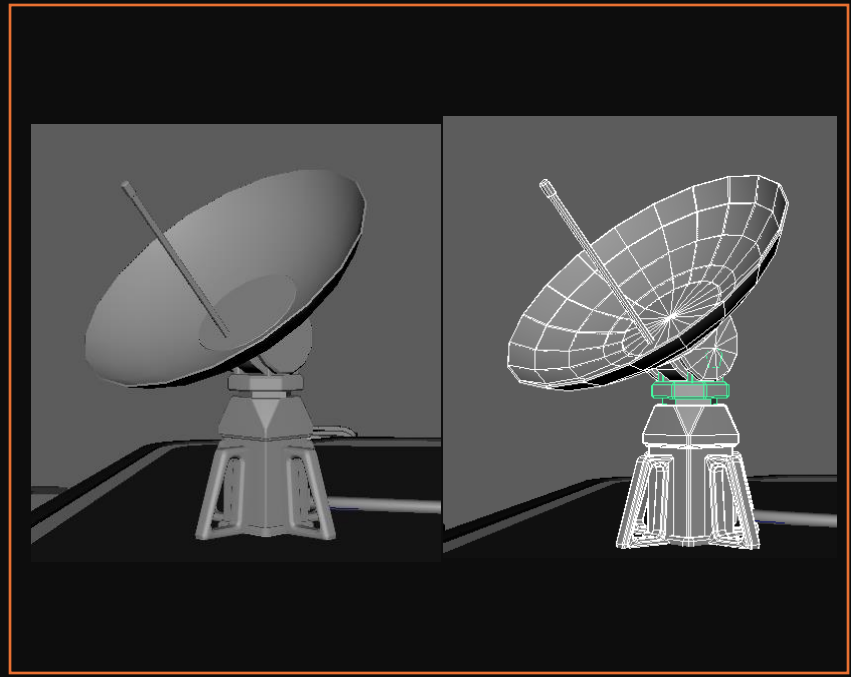
The other decals I made where for stickers that would be going over the painted metals to make them a bit more editable and stylable. This was all done in photoshop. These where just fun things I could scatter in a tone of places if I wanted to and they do a lot to bring character out. There is much less wasted space on these. I tried to stay angular with a lot of the designs to stick with the theme I was already going for and It works really well however feels a little too much like a sports car in some areas with the amount of stripes.



Secondary assets

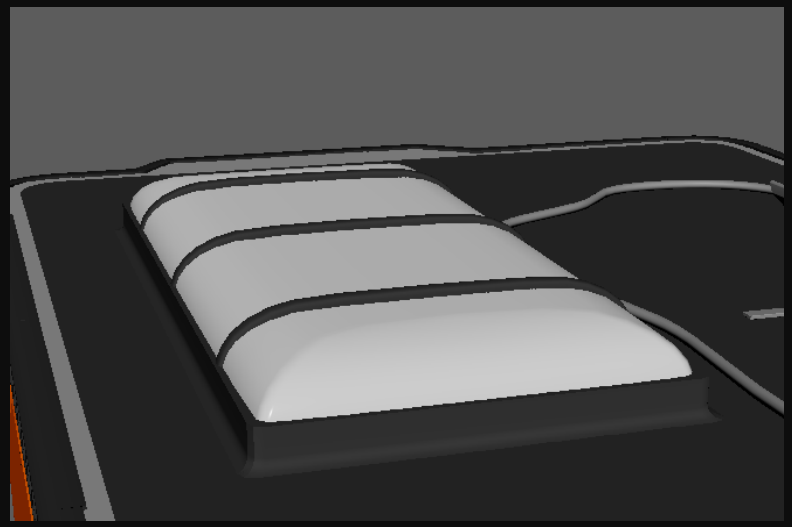
To make the roof less flat I wanted to add some assets to the roof to break up the shape of the overly square building. I had been toying with the idea of solar panels as an idea as they have a cool angle that can be used however it also has the issue of my environment isn't overly sunny so it wouldn’t work as well realistically but I folded anyway and made them I also made a satellite dish however wasn’t overly happy with how it looked so it didn’t make it into the final product. This was mainly down to it being rather stylized in its design

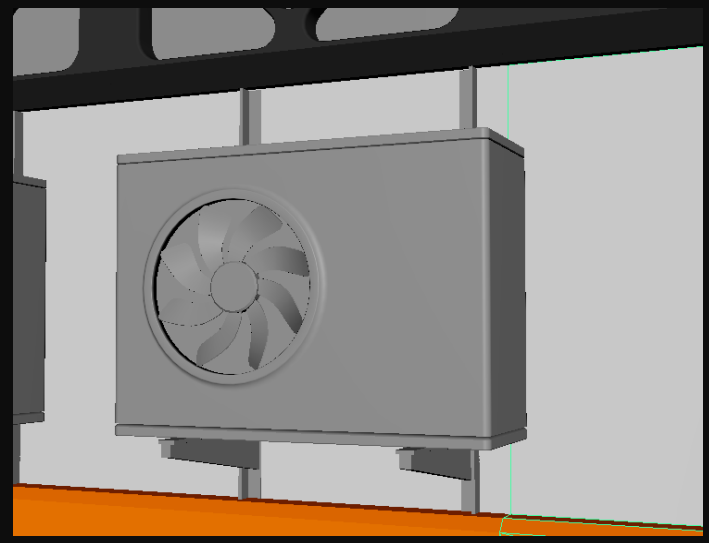




Secondary assets

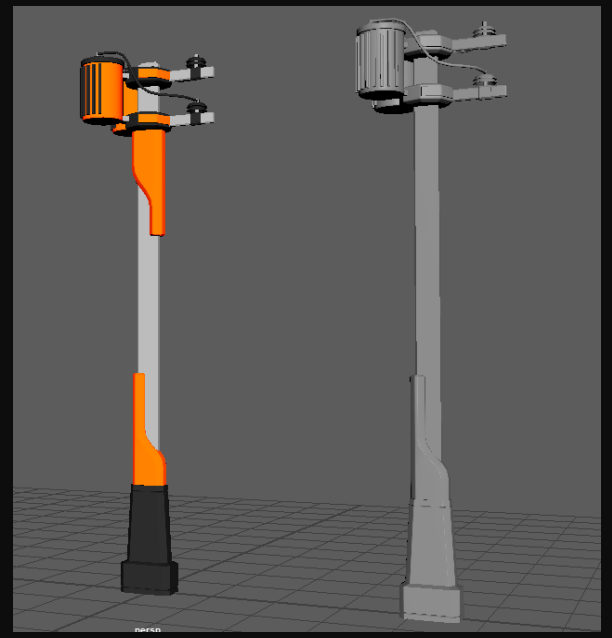
Less as a secondary asset and more an extension to the roof I wanted to have more shapes that extrude up and out and the best thing I thought of was a skylight that would be above the kitchen area that I thought of in my early stage planning. This just fills the space nicely and ads a bit more thought to the building with it potentially saving energy by using more natural light. As the enviroment is now rather hot I thought it would be worth to make these AC units that sit on the side of the building which will add some movement with the fans once inside of unreal





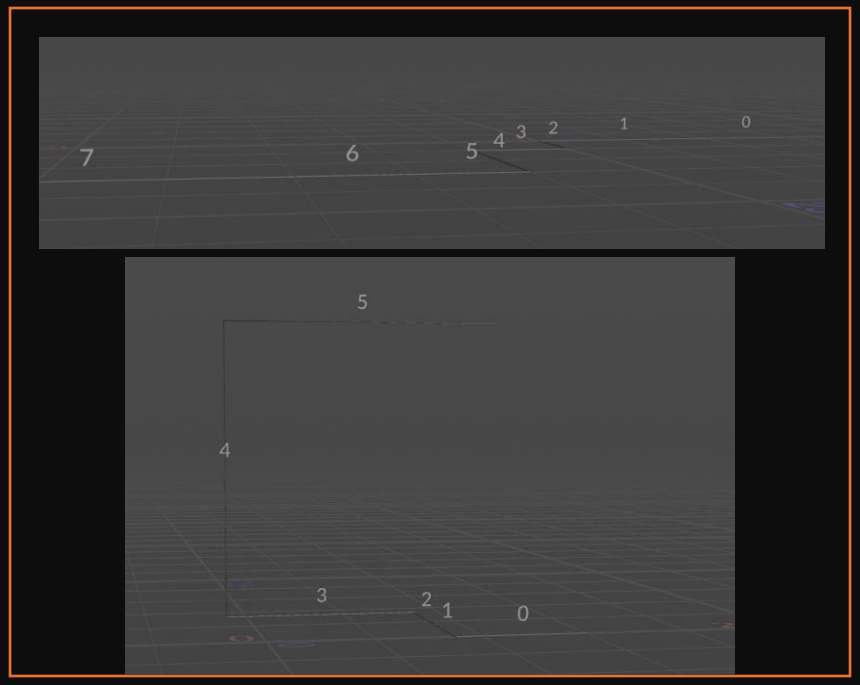
Secondary assets

Another side asset made was this power pole. The design was simple but once again went for a more angular design to match the rest of the environment. This was going to be paired with another system that I was working on in Houdini which failed to work after re-opening for a reason I didn't have time to fix so They had to have the unreal cable tool put on them instead of my custom one.



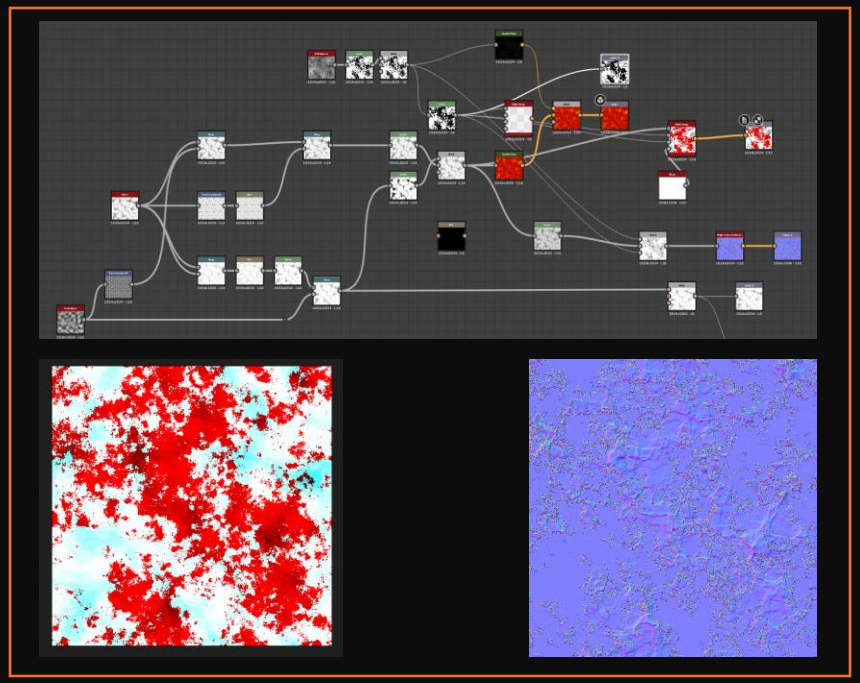
Failed Tool

This was a cable tool that I designed to have a lot more settings for allowing for per segment changes to be made so one part could be super droopy but the next be perfectly flat. This took a spline you could draw in unreal and then simulate the droop of the cable and then finally have the cable mesh be applied to it I set up a system for it so you can toggle on the segment numbers to make it simple to change settings but as said before once I re-opened the file the system wouldn't work no matter what I did which is a shame as this was meant to like the outside of my building to add more cables. The reason for this is just the naming being funny for no reason at all.



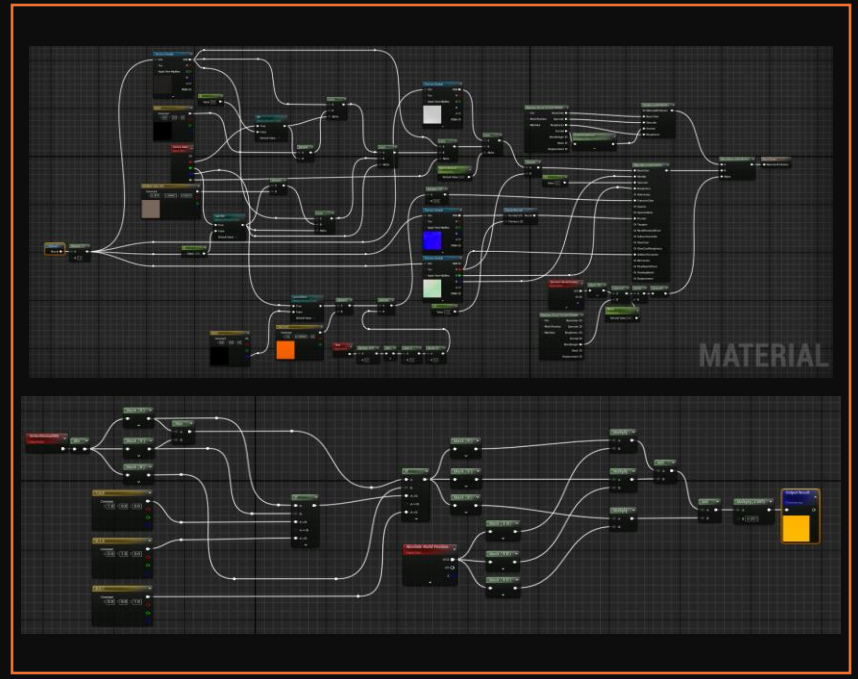
Materials

For the river not much changed from what it was like before. As I changed to a lava river I didn’t need the single layer water and made a texture in designer instead. What I needed to keep in mind was the fact that the flowmap can only take in a normal input and a single other image input so when designing the texture's colors it had to use only 2 points at both ends of the gradient color nodes which was limiting but it would allow me to make a mask which I could use to apply color using vector 3's.



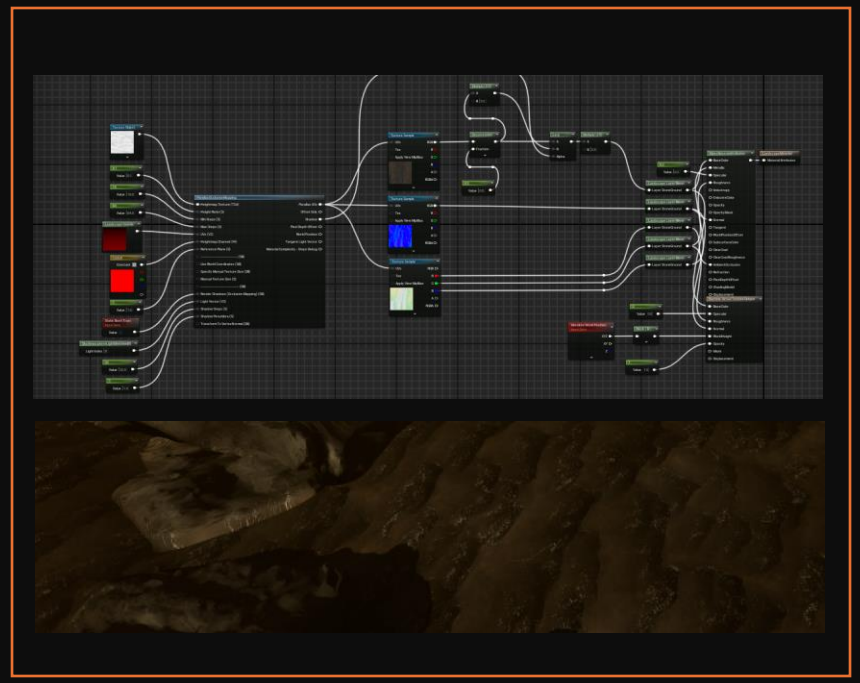
Materials

This is the material for the rocks. The material itself is simple of these already mildly shelfed out rocks but the important part comes in in the shader for it itself. This is because the main rocks that this is for uses RGB masking I take the masks and run them through colors for the "lava" glow, the AO and the "iron veins" then making anything black be the base material. Its super simple setup wise with it being a series of lerps and inputting masks. The other important thing of note is that all the rocks work of Tri-Planar projection. This is so that the rocks blend together well when placed next to each other. Finally the whole material is added up and put through a RVT to help blend more as all the rocks in my scene will use this but with different RGB masks toggled on and off.



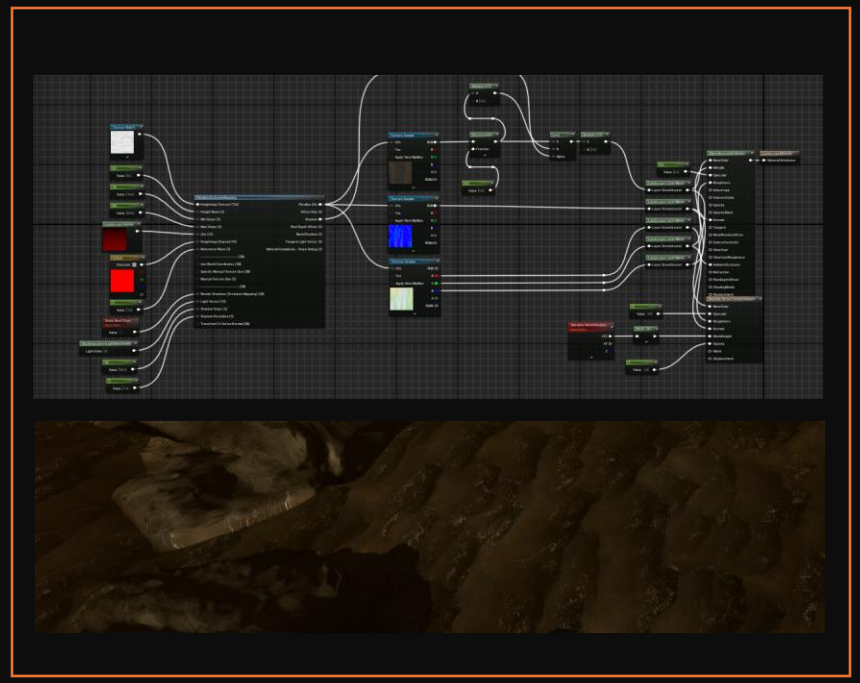
Materials

The landscape material takes the same base rock but adds dirt into the whole thing to add more visual interest but to make it still feel like its all a big rock that you are on. Landscape material is pretty simple with everything being plugged into an RVT. I did set up parallax occlusion mapping for this material to try and add some depth however I don’t think it worked as well as I wanted it too. But a lot of the ground is hid by the 3d rocks I made anyway. Which does a good enough job.



Materials

The landscape material takes the same base rock but adds dirt into the whole thing to add more visual interest but to make it still feel like its all a big rock that you are on. Landscape material is pretty simple with everything being plugged into an RVT. I did set up parallax occlusion mapping for this material to try and add some depth however I don’t think it worked as well as I wanted it too. But a lot of the ground is hid by the 3d rocks I made anyway. Which does a good enough job.



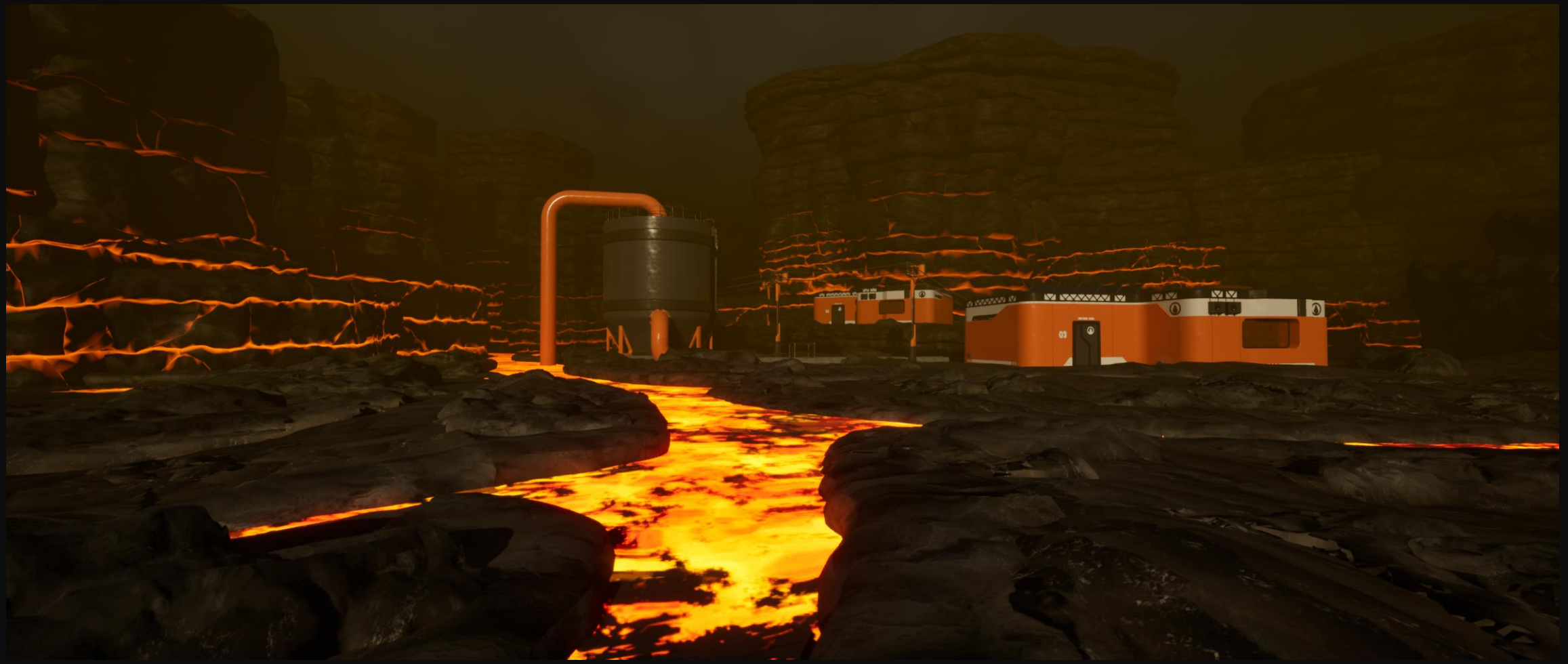
Materials

The painted metal was something I needed to get close to right as its going to be the most re-used with a tint value that controls how the material looks. This was once again another 1k texture and looked pretty simple. When designing the material I had to go back and alter it after the deign change to add more water leaking to try and show off condensation happening from the building trying to cool itself and be habitable in such a hot environment however it didn't work as well but it gives more light reflective values to overall is not a bad addition. There was an attempt to show the metal that was underneath the metal as if the paint was slightly translucent but that ended up only being noticeable in the substance graph.

The Building

I went back and used the same method of using packed level instances to build these "prefabs" for the building which allowed me to work on the grid within the prefab to add all the mesh decals without issues as well as make small changes without needing to rotate and it would allow me to just select the asset in the main scene and I can do what I want to it and there is no issue and I just have to update the level instance if there is any changes made and it all updates no issues. The only downside is I have to work in unlit so I don’t bring in any lights when I drag a new instance in.

Renders



Renders

Renders

Renders

Renders

Renders

Reflection

This project was very obviously miss managed. Overall the scene is really cool and it was worth changing the environment type from what I planned as the acid never looked good.

You can really tell where the focus of my time was from both the work and artbook with that being the tools and environment building as these where areas that I wanted to build on and understand more and it was well worth the time. The tools that I had set up made it so easy to iterate ideas on which you can see with how large of changes where made to the environment and it was all done with ease due to the settings id set up for these tools. These tools weren't without problems however. The Mega rock tool would create meshes that where a little to high poly which would cause issues across the whole project FPS wise and I had to spend a lot of time fine tweaking things to get the project down from 14 million triangles to the about 9 million it still sits at. The river also had its issues with where I spent a week learning how Flowmaps work trying to understand why all my stuff was inverted and flowing wrong when I would import the curve into unreal as a HDA but not a mesh as I wanted to have full editability in engine so I could iterate more and it put me back a fair bit. The most annoying part of all this is the cable tool I spent around week on that would have made detailing with cables so simple all for it to never work after finishing it due to my own poor code and naming. This is something I want to come back to as a tool to fix as it is super powerful and would be worth adding more features to it that I didn’t have time to add for this project.

Reflection

The modular kit is pretty well set up and is super simple to put together due to smart pivot points however its far from perfect. A lot of the kit is very bland and simple modeling wise but there aren't a lot of pieces that feel unique that add to the overall wall sets which could have helped bring out more personality with its points of visual interest that you only see once. The roof was another part that really fell apart as it took me a while to work on getting a thing I was happy with that didn't look bland but even the final outcome was a little to flat and simple due to it not making big enough of a silhouette change. Other parts of the kit like the Pipes where good however and manage to carry some of the visual detailing of the overlapping panels even at the distance that the camera it sat at. My least favorite part about all the kit is the large vat. It is such a flat and boring building but it takes up so much space and brings so little visual interest. This could have done with more mesh information to help bring out a lot of the shapes of the metal however due to my miss management wasn't something I gave myself time for. The Stickers and decals sort of brought back a lot of the visual interest breaking up the overly orange walls with a similar color pallet that could contrast over each color. I say sort of as there is still a lot of blank space that is a little boring that could have been improved by the decals that I just didn't do and should have done such as setting up the ability for the mesh decals to wrap around all the areas such as the corners and the extruded out sections.

Reflection

Materials have always been and continued to be my weakest part of projects. This issue is pretty well shown off in this project. The issues are really shown off in areas such as the Ground material did not translate over well from substance to unreal. And lost a lot of its colors and depth and this is an issue that went on will most my materials even if I work in the "ACEs" Color and more unreal like lighting setup in designer. The main issue is that I leave these things till late and don’t give myself enough time to fully work on and create these materials. I do however give myself enough time to se up a lot of cool shader stuff however such as the flow maps which with the lava material looks super good and its nice watching everything flow however there are limitations that are more to do with the process then my own doing like the flashing in and out of black spots that its super noticeable. The rocks also have some cool set up done with the RGB masking however due to the size and the topology it was hard to not have blurring issues as there are natural blends between points of color and on low poly assets it becomes more noticeable.

Reflection

Overall for this project I don’t think the brief was met as well as I would have liked however the amount of techniques I got to learn use and refine was much more valuable for my interests in industry in more of a tech art line of environment art. I have no dislike for the project itself and would like to come back to it but maybe take building designs from a concept rather then try to make something myself. Most of the scene fell apart due to lack of weathering damage and depth to the habitat due to it taking such a back seat for the whole project. I have been taking notes of what I need to spend my time improving on from doing this project so once all modules are done I can go and improve on these areas and make better work. These areas are mostly material and shader related in ways that allow for more customization as well as looking deeper into more efficient trims which are a thing that is absent from the whole project.


WELCOME HOME
03