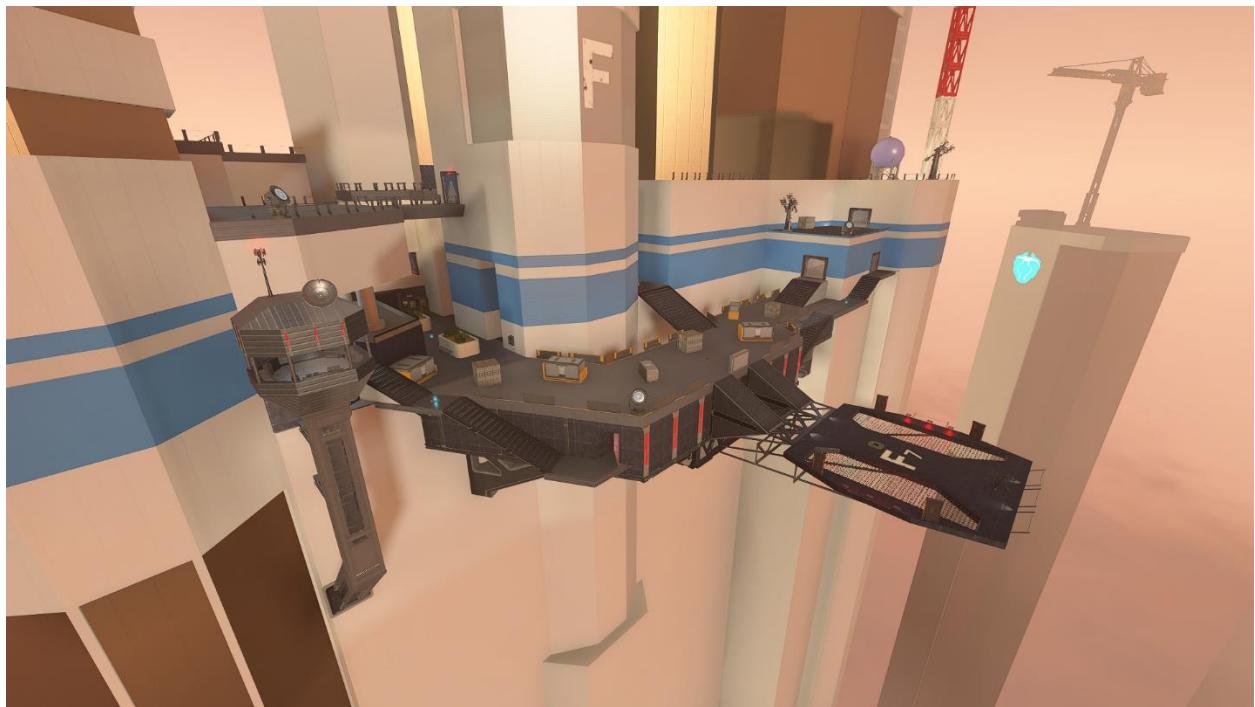


# Drone Zone LDD

A custom level in Halo Infinite

*Tyler Tam*



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## Document Summary

This document is used to track my progress for the level as well as my design process. The sections have been written alongside my progress, which is why some areas may not be present in the final level, as some changes have been made at every step.

## Initial Planning

### Goal

My goal for this map is to create an 4v4 asymmetric multiplayer map, that can support Slayer, One Flag, and Firefight game modes. I want to improve my experience in asymmetric level design, while also exploring some encounter design possibilities.

### Narrative

*"High above the skyline of New Mombasa, the NMPD Customs Office protects its citizens from dangerous and illegal contraband. But, even before the Covenant Invasion of Earth, New Mombasa already had an issue with mindless drones controlling the city..."*

The level takes place in New Mombasa, Earth, before the Covenant Invasion, at an NMPD air traffic control warehouse that performs customs checks on incoming aircrafts.

### References

The level is highly inspired by the Halo 3 ODST level, NMPD HQ, which also takes place at an NMPD building, high in the skies of New Mombasa.

### Halo 3 ODST Reference Images



Figure 1 - Building style & shape reference



Figure 2 - Landing Pad Ref 1



Figure 3 - Landing Pad Ref 2



Figure 4 - Warehouse & Exterior Platform Reference



Figure 5 - Exterior Platform Reference 2



Figure 6 - NMPD Interior Reference



Figure 7 - NMPD Interior Ref 2

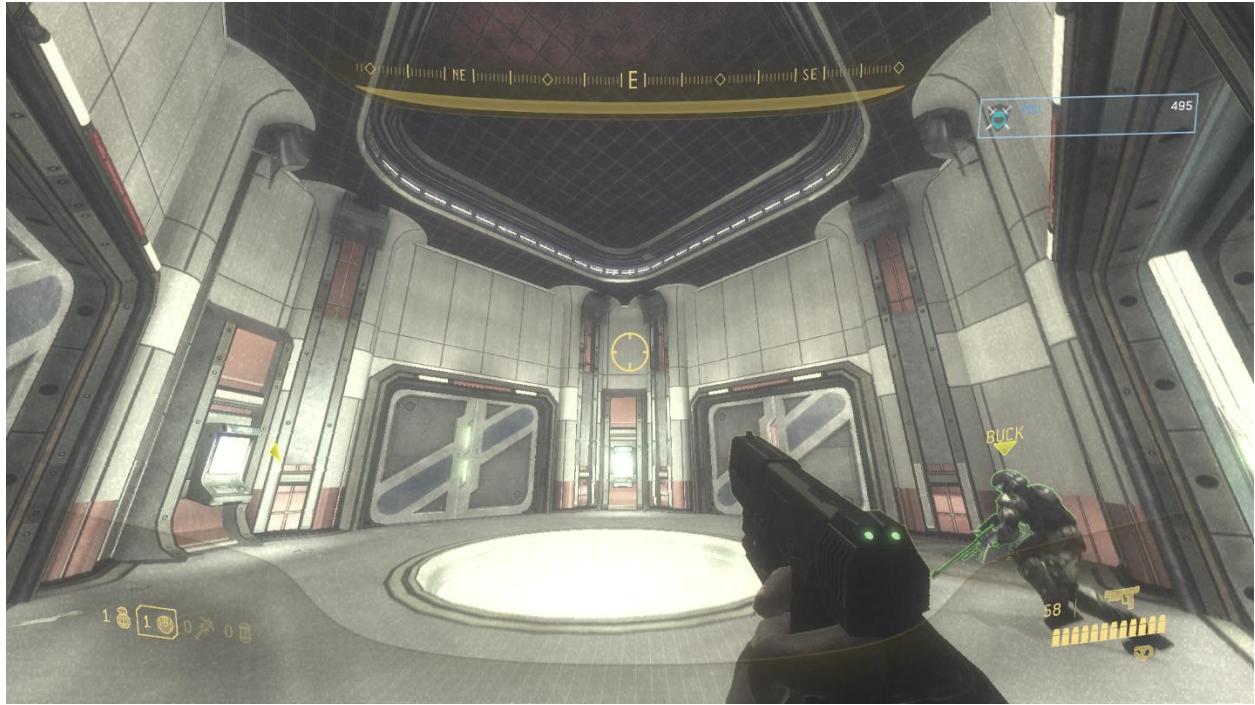


Figure 8 - NMPD Interior Ref 3



Figure 9 - New Mombasa skyline reference

## Initial Diagrams

### Initial Plan

The plan is to have an open courtyard, where most of the fighting will take place, similar to the Halo Infinite map Bazaar. This area will connect to most of the areas around the map, providing many different entryways and exits.

To capture the 'in the sky' feeling that Halo ODST has, I want to have a large bridge that hangs over the edge of the building, possibly also connecting to a landing pad.

As this level is a Customs Inspection Office, there should also be a large warehouse full of packages and containers undergoing inspection.

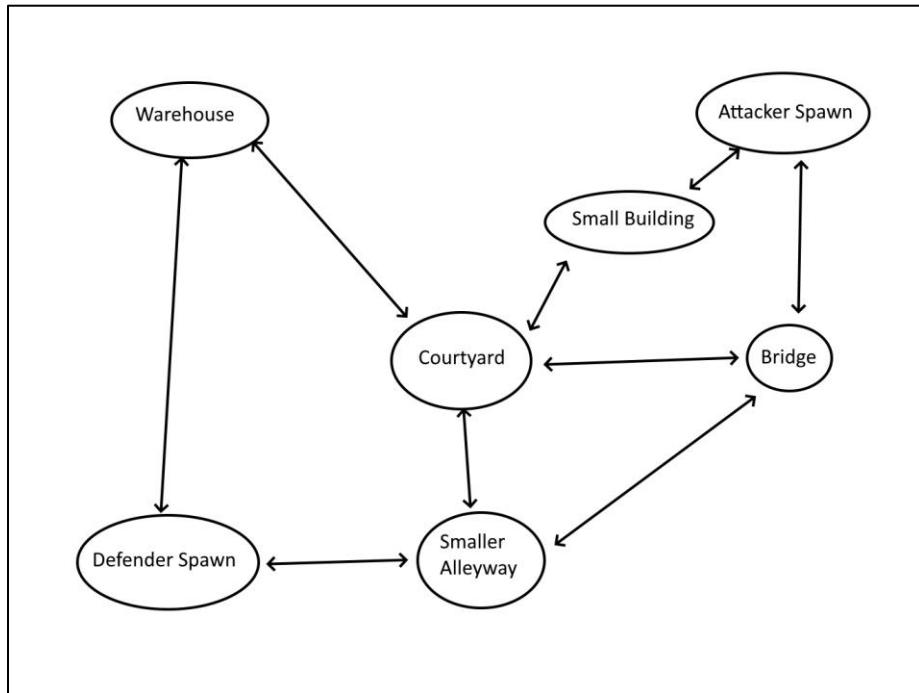
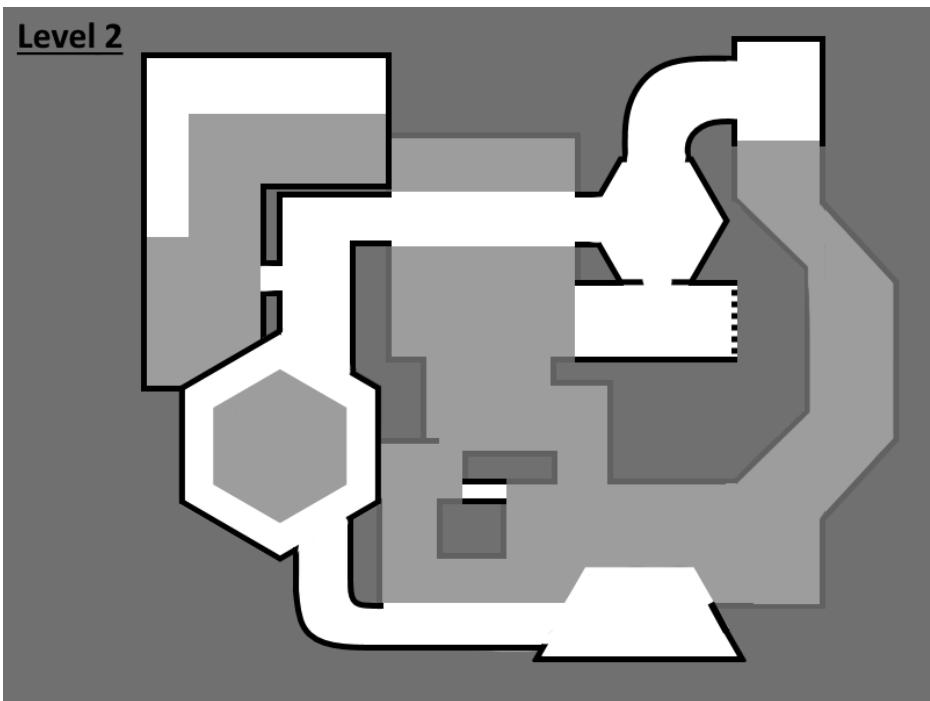
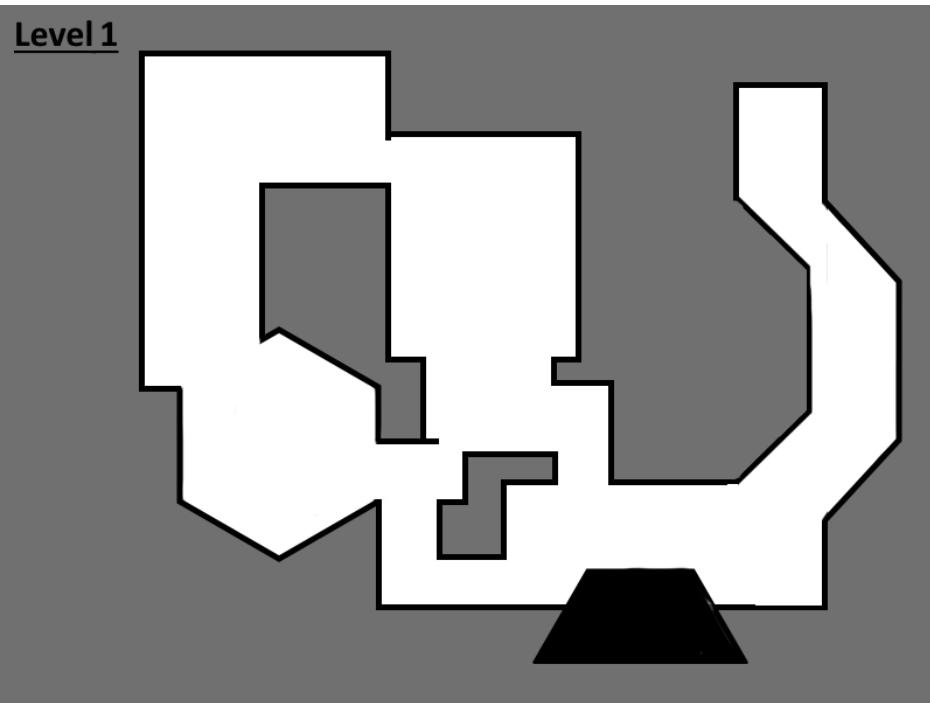
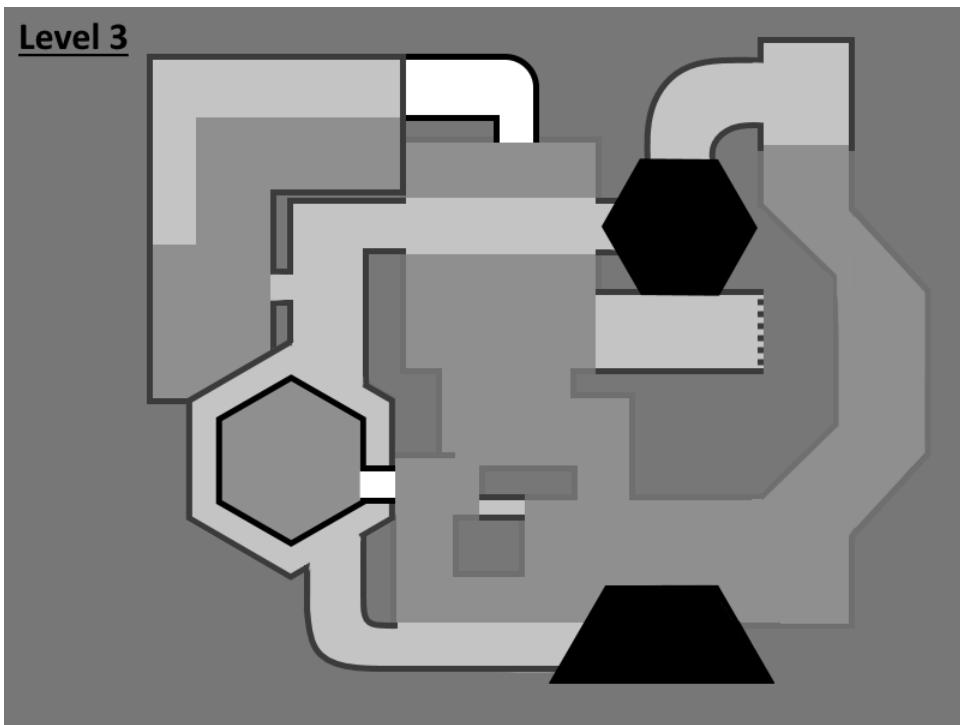


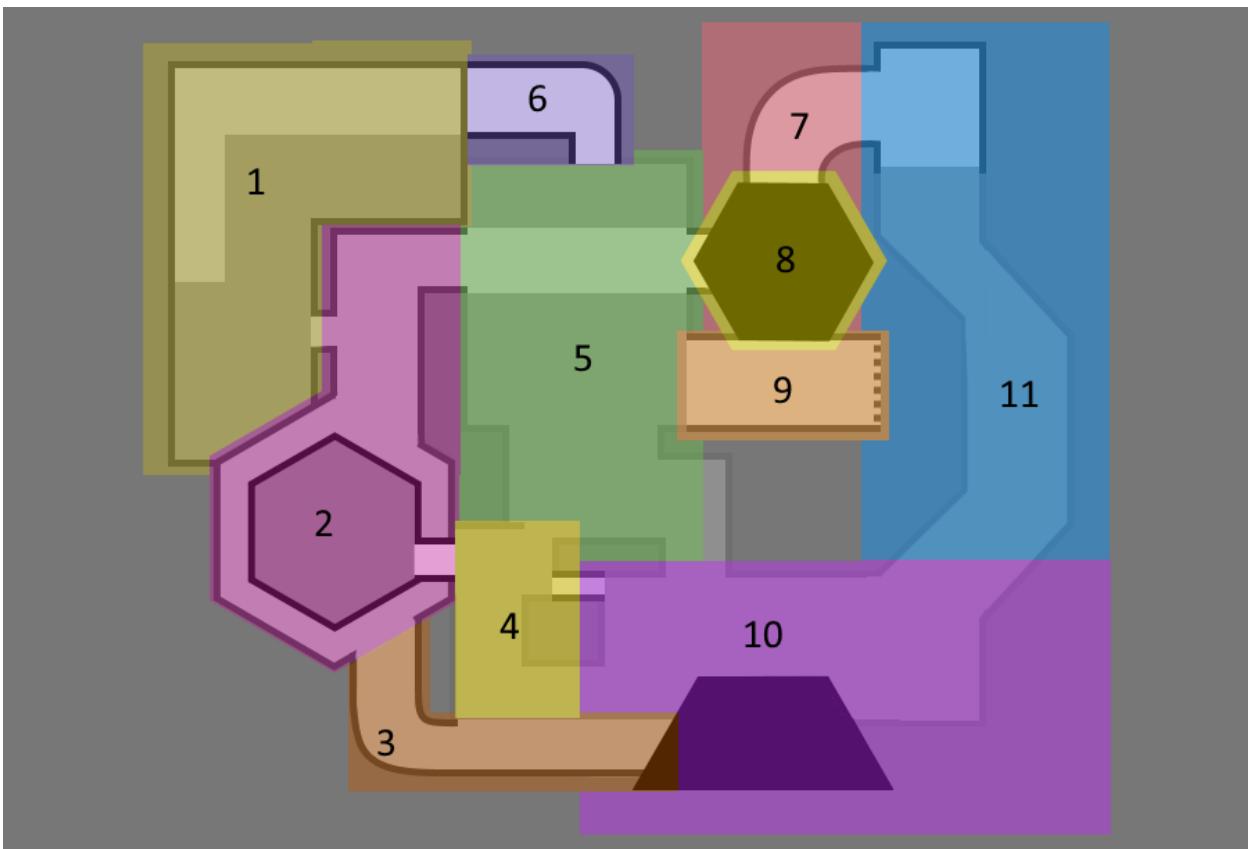
Figure 10 - A rough bubble diagram of the areas and how they connect

## Layout





## Areas



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### Legend

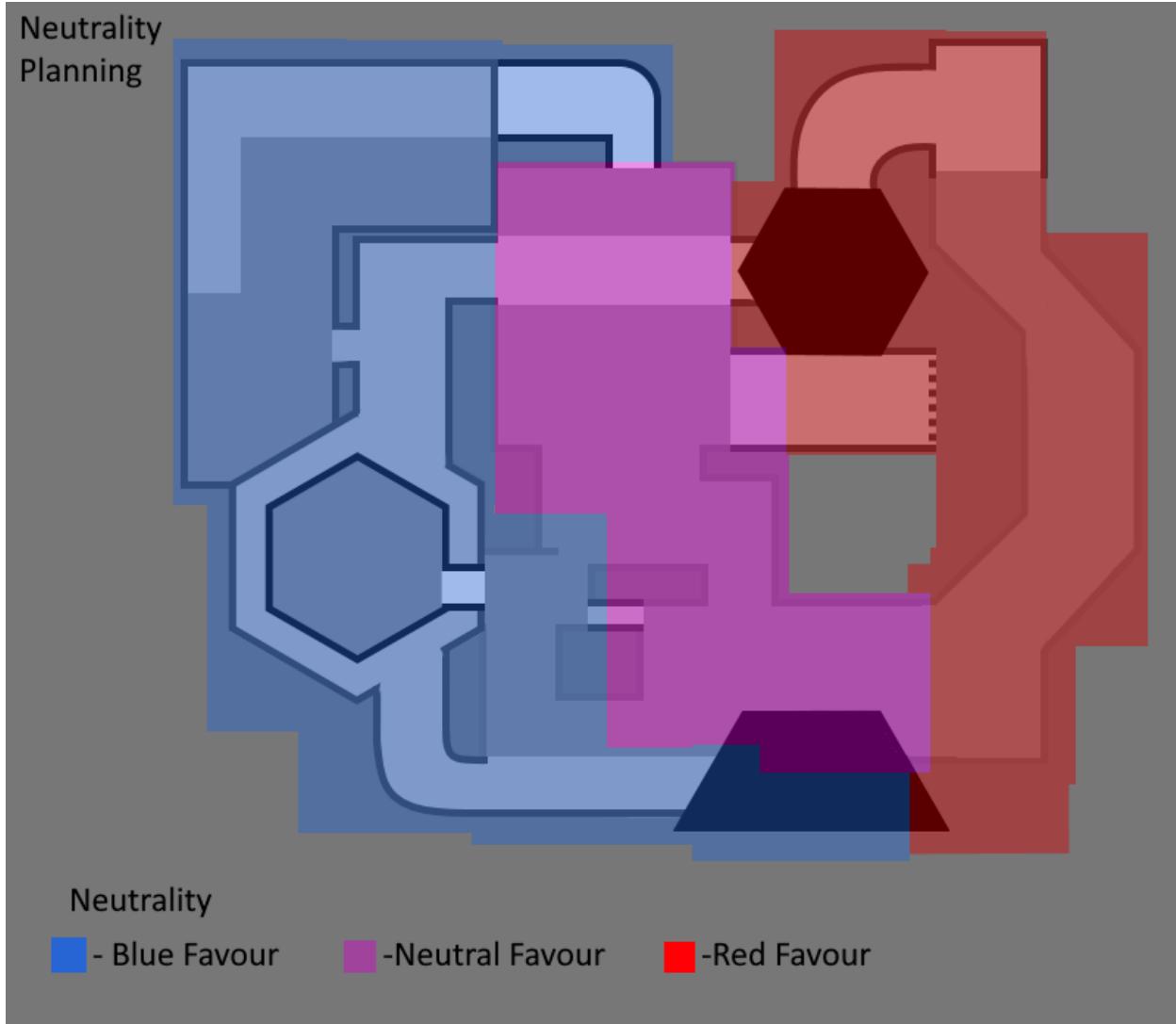
- |                                |                                       |                           |
|--------------------------------|---------------------------------------|---------------------------|
| 1. Processing Floor            | 6. Under construction bridge entrance | 10. Main office courtyard |
| 2. Processing Office           | 7. Path to air control tower          | 11. Landing platform      |
| 3. Path to main office         | 8. Air control tower                  |                           |
| 4. Exterior connecting hallway | 9. Viewing Platform                   |                           |
| 5. Exterior courtyard          |                                       |                           |

### Neutrality Planning

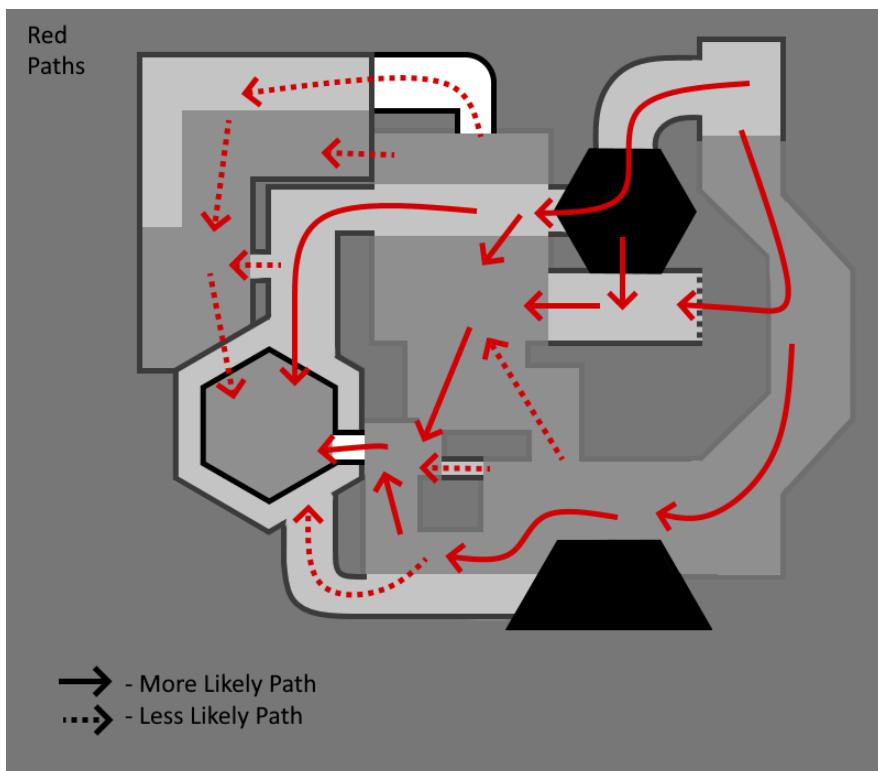
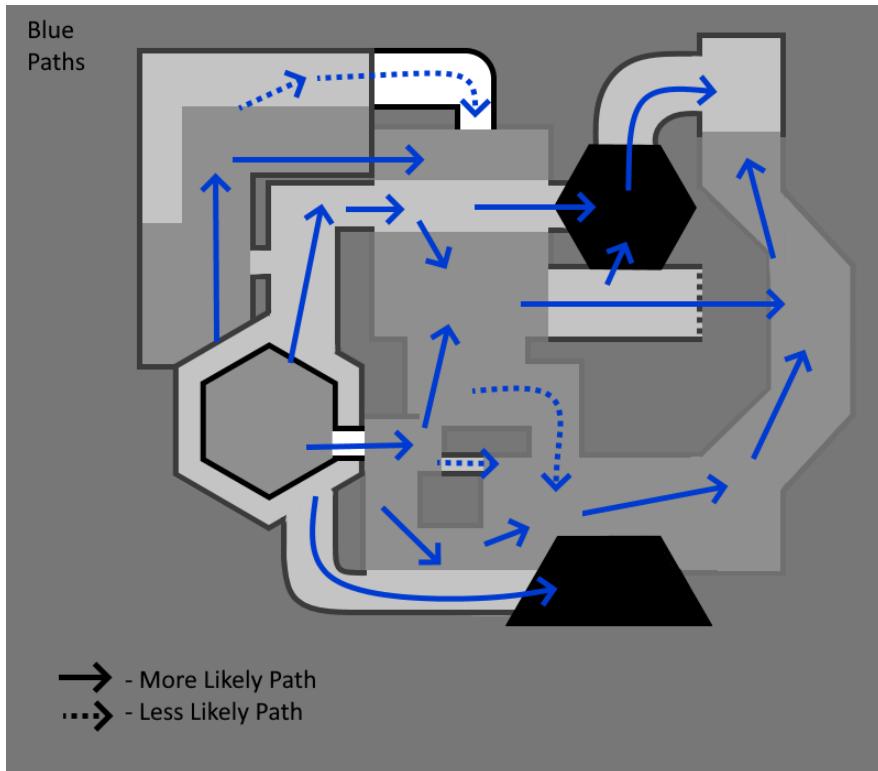
The attackers (red) will mainly have favour over the bridge & landing pad area on the right side of the diagram.

The defenders (blue) will have favour over the warehouse & Office areas on the left side of the diagram.

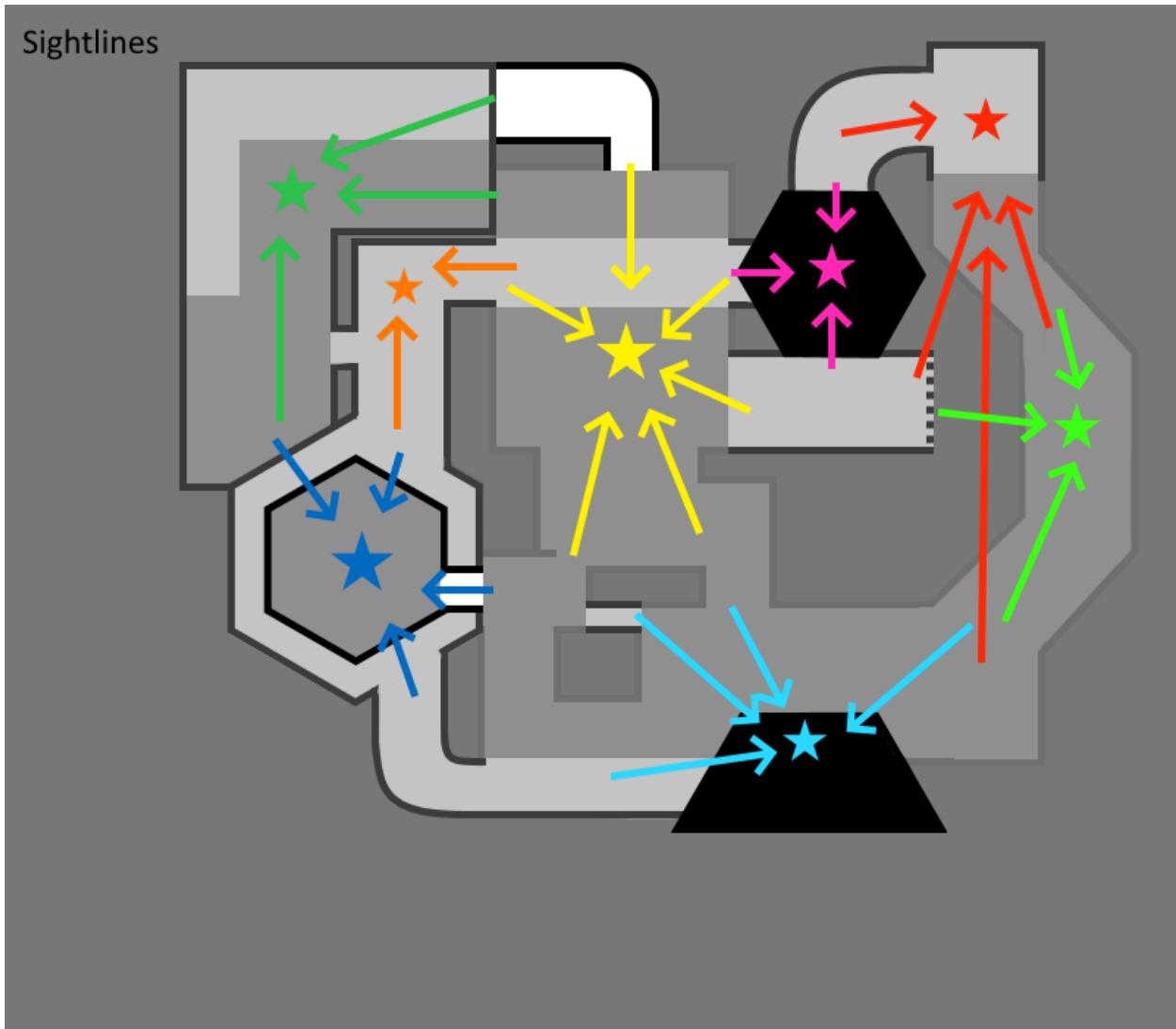
This will be used later to setup team spawns and weapon balance for the one-flag game mode



### Player Paths



## Sightlines



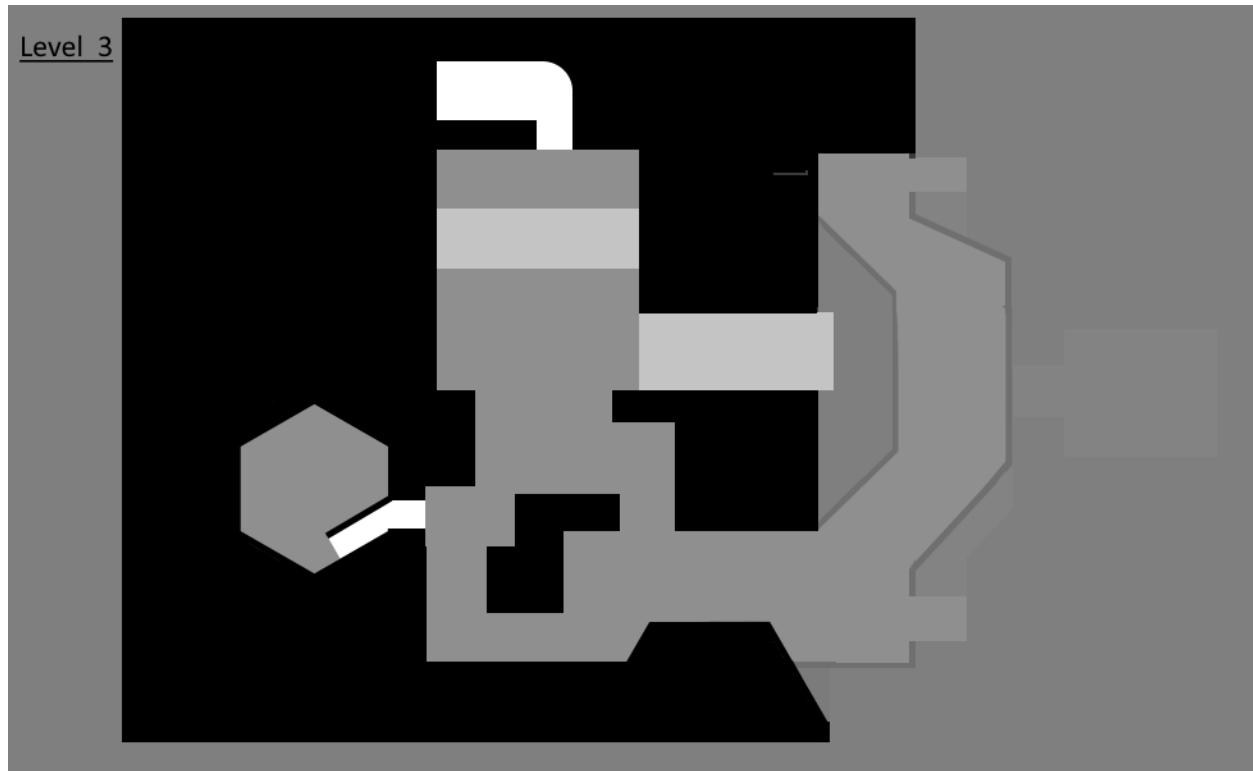
## Greybox

I built a rough greybox of the level in forge to get an idea of how the flow felt. During this, I made some adjustments and additions to the design.

## Updated Design Diagrams







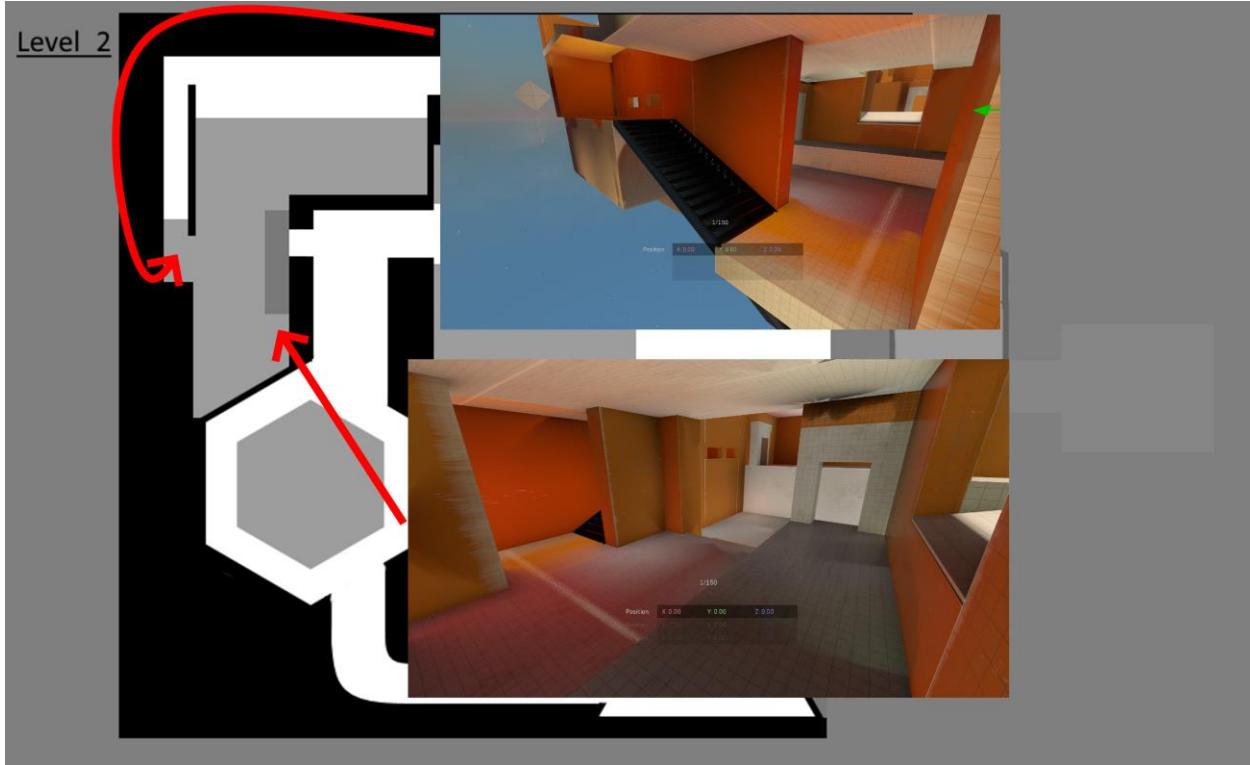
## Greybox Screenshots

At the bridge, I added a lower level underneath the bridge. This layer goes through the entire bridge, connecting to a staircase that leads into the attacking team's building. This provides an alternative route that is safer from sightlines, but also takes a bit longer to traverse.

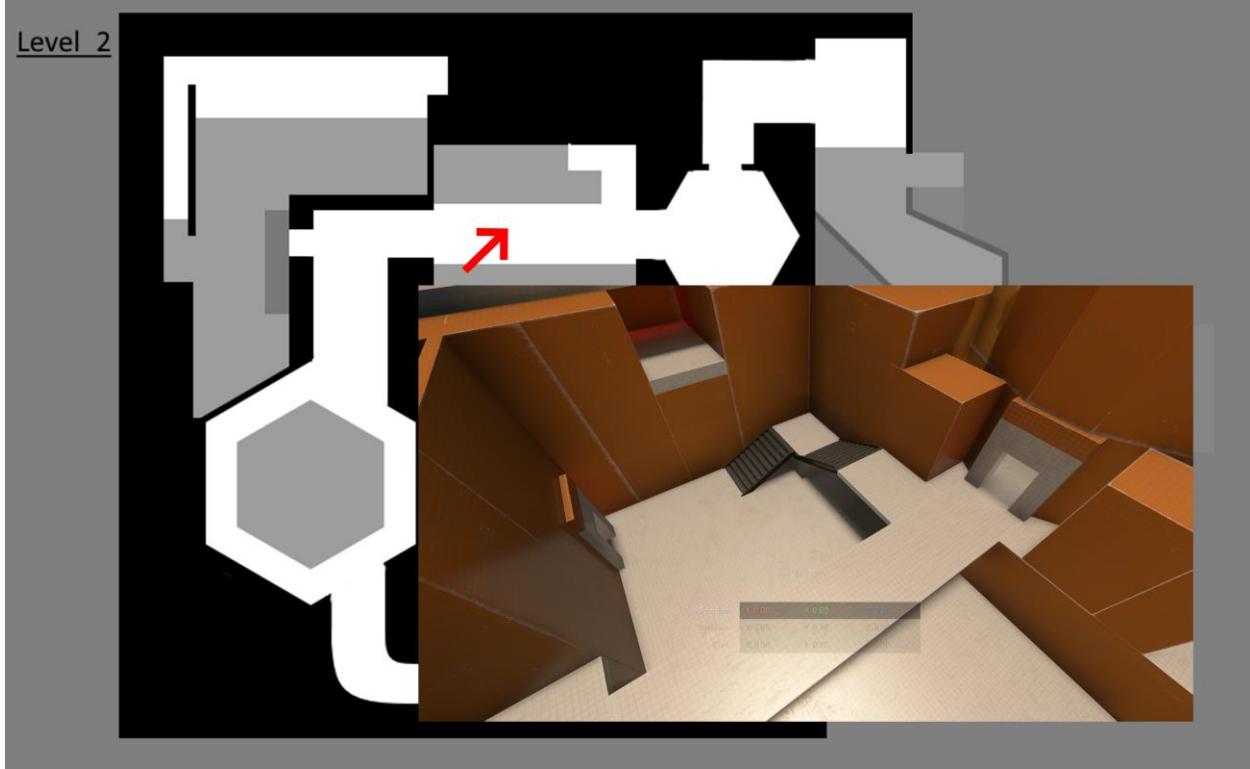
Also on that lower level, I added a landing pad. This landing pad will mostly be used for firefight, as one of the hills that player has to capture.



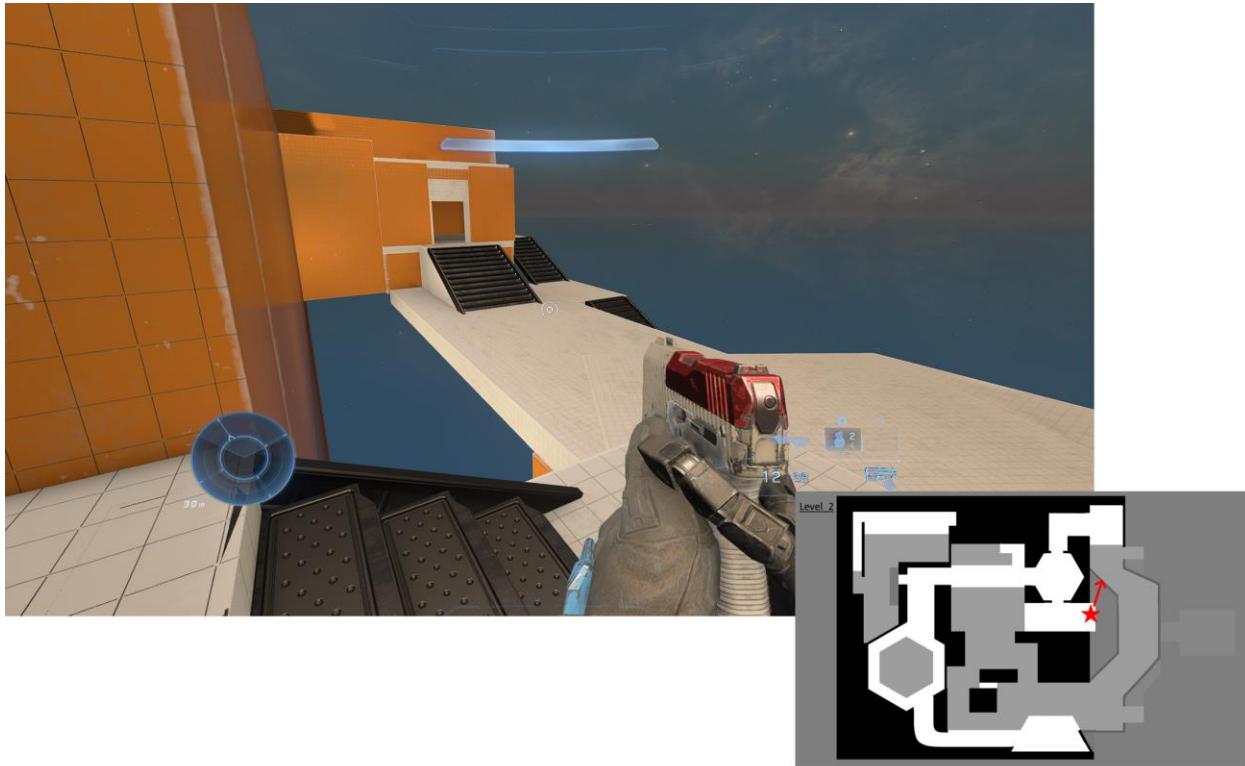
At the warehouse, I moved the staircase behind a wall, while also adding windows to this wall. The wall gives a safe way to reach the upper platform, with the windows giving an opportunity to snipe from. The window area is quite narrow though, so a well placed grenade could defeat opponents in that sniper area.

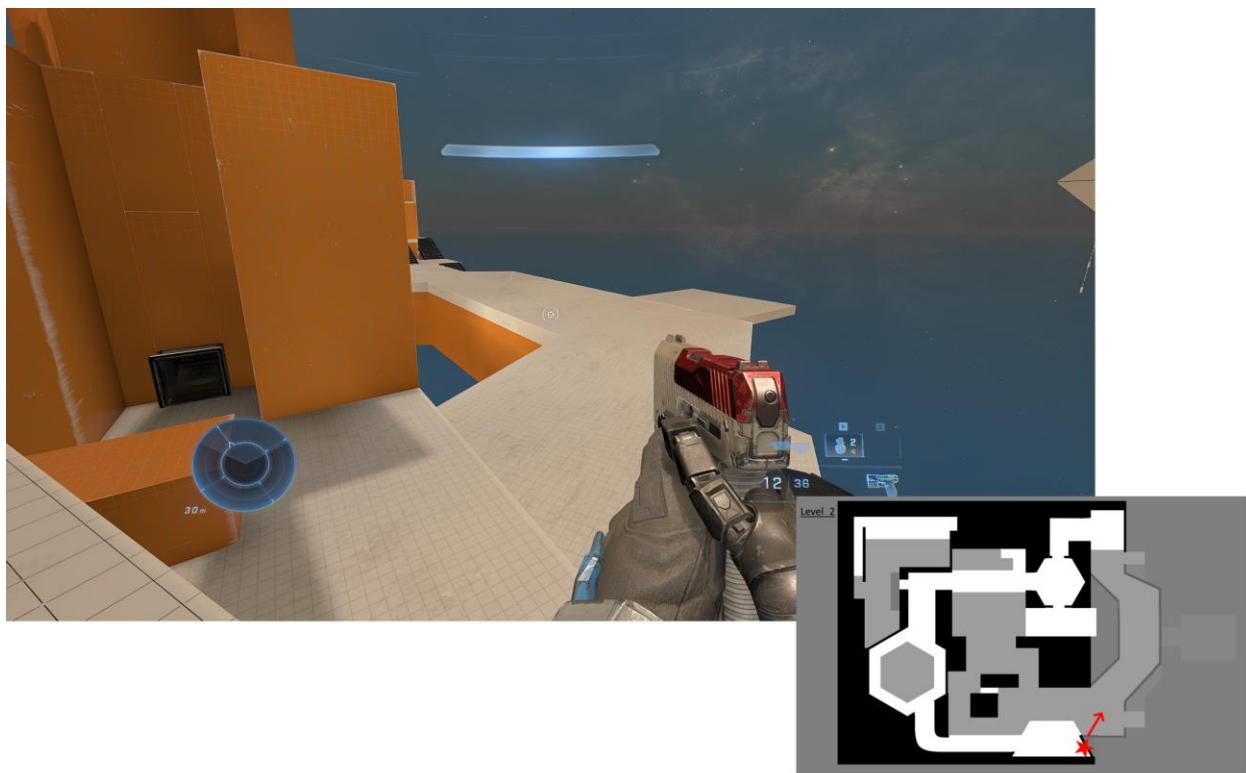


In the courtyard, I added an additional staircase to reach the bridge. This corner originally had no purpose, and reaching the bridge was quite difficult, if coming from the warehouse, so adding the staircase here seemed to solve both issues.



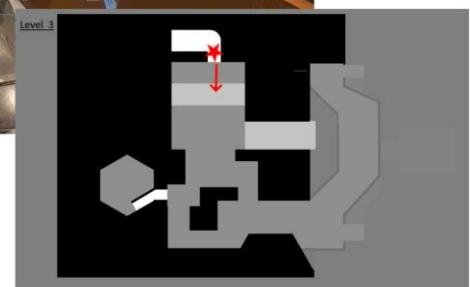
### Greybox Sightlines

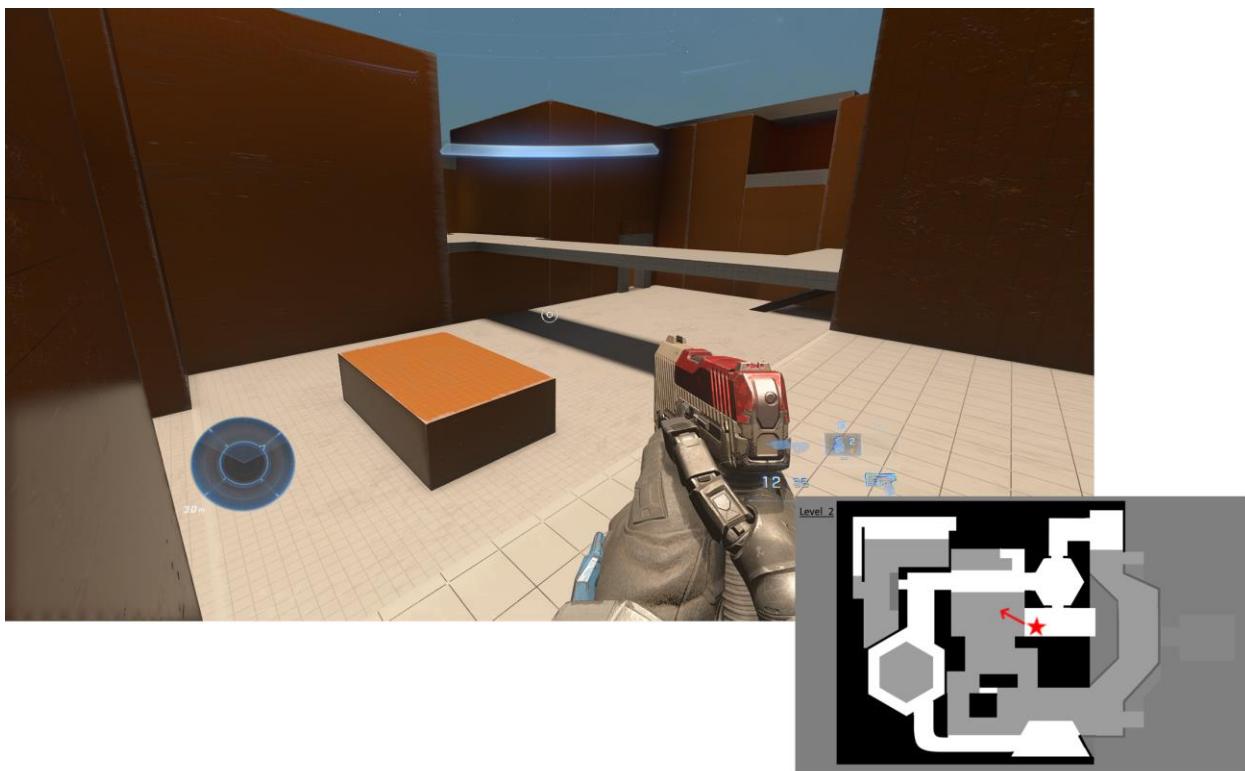
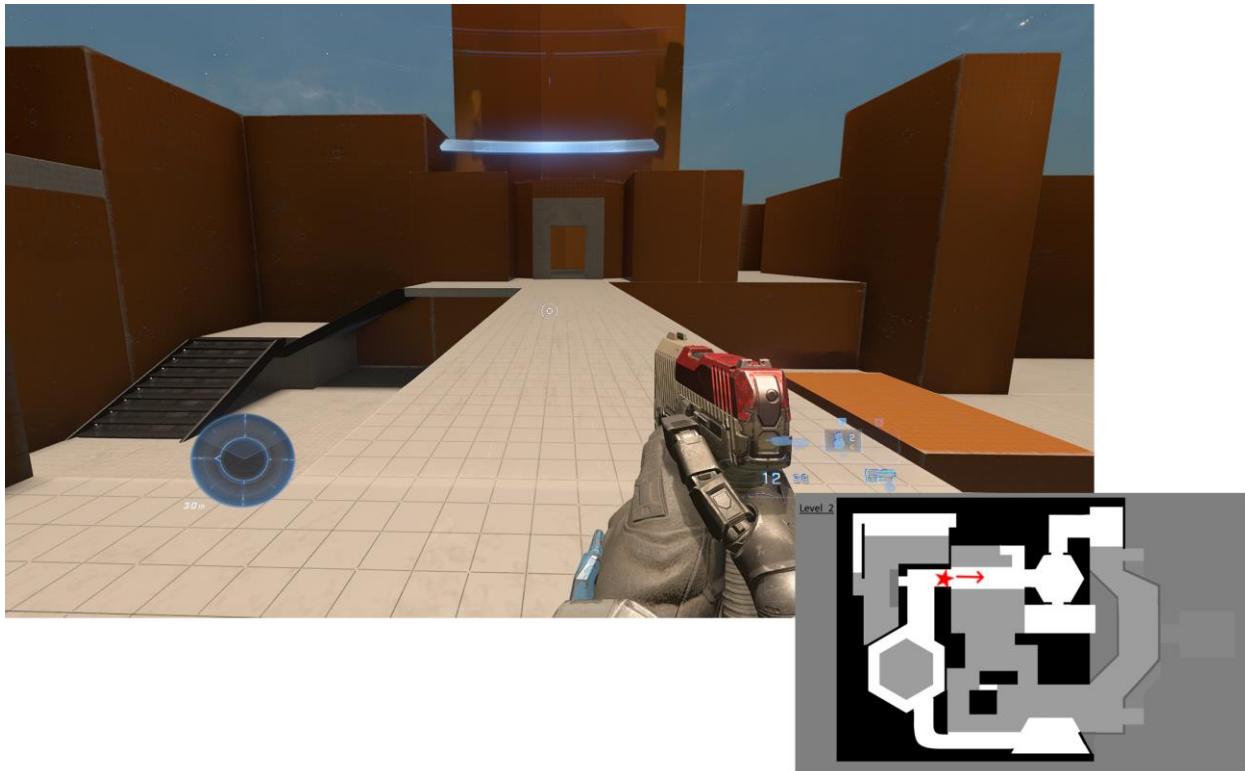












## Prop Pass & Initial Art Pass

After building the initial greybox, & adjusting it based on gameplay testing, I started on an initial art pass, which also included placing cover. I also did some geometry tweaks based on playtest feedback.



*Figure 11 - I placed crates and containers on the bridge to provide some cover from the attacking base*



*Figure 12 - I changed the path from the bridge to the middle to be a bridge instead of a floating platform. The floating platform proved to be a little difficult to use, and switching it to stairs made the flow much smoother*



Figure 13 - On the other side of the bridge, I added an additional staircase to reach the upper platform, as I found this provided smoother movement flow when coming up from under the bridge



Figure 14 - On the opposite side of the upper platform, right outside of the defender's base, I added an additional staircase for smoother movement when coming out of the base



Figure 15 - I added a planter pot inside of the defender's base, to provide a platform to reach the upper levels



Figure 16 - I added cover inside of the warehouse, leading out from the defender's base.



Figure 17 - Between the two warehouse sections, I added a wall, to somewhat block line of sight from the upper platform, when aiming at the defender's base



Figure 18 - I added a staircase leading up to the upper platform in the warehouse, as there was original only one path up to this platform, making it quite cumbersome to reach



Figure 19 - In the courtyard, I added planter boxes, to act as both cover, and platforms to reach the upper levels.

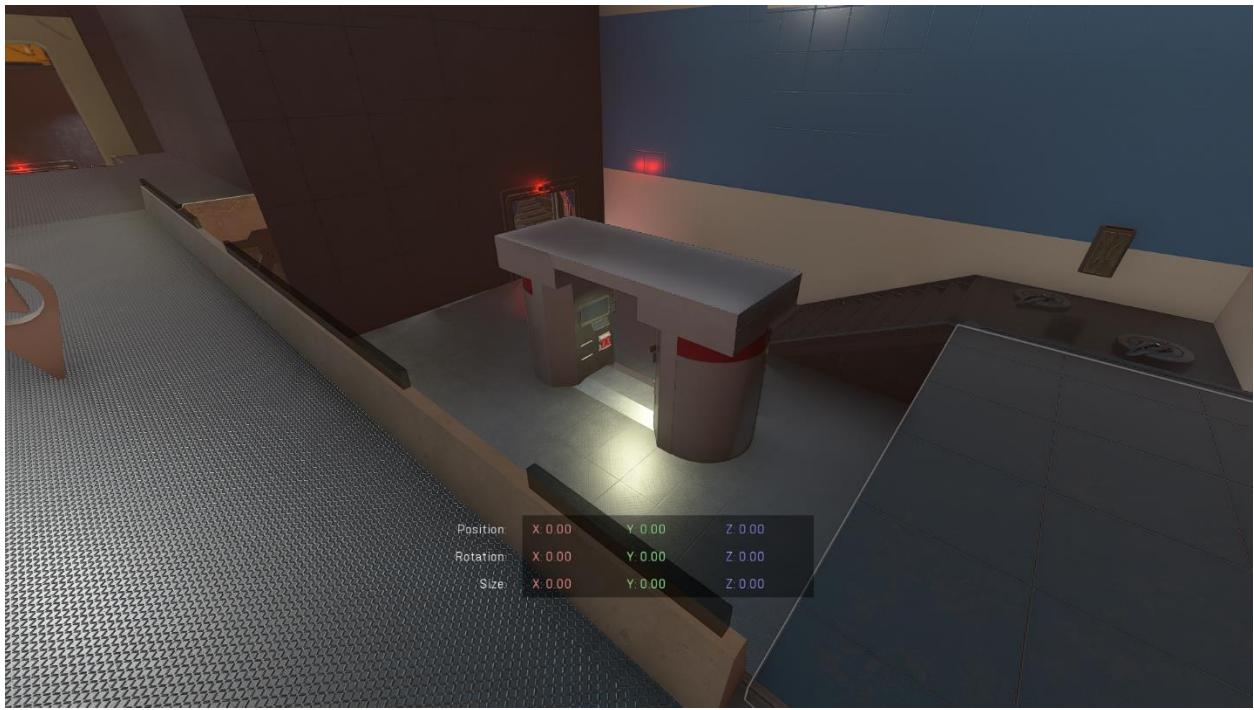


Figure 20 - The exit of the warehouse was originally very open, so I added another object for cover and platforming purposes.



Figure 21 - At the courtyard entrance, I added two objects coming from the walls. This was to add some grappling points the player could utilize, while also limiting line of sight from the Level 3 sniper nest



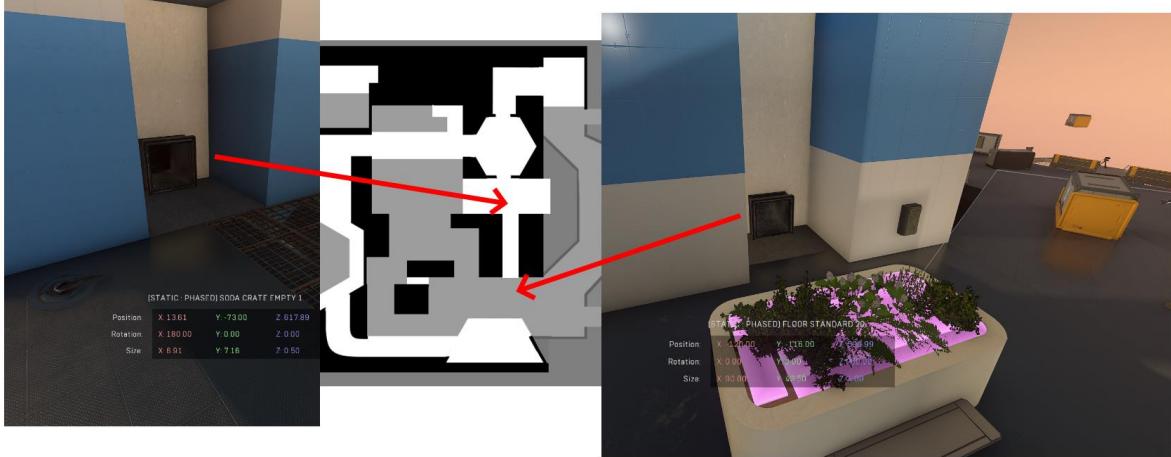
Figure 22 - I also added some objects, for grapple points, by the bridge's upper platform



Figure 23 - I indented the wall, leading from the attacker's base to the bridge, and added a planter box, to provide a more rounded corner, and allow for less predictive positioning

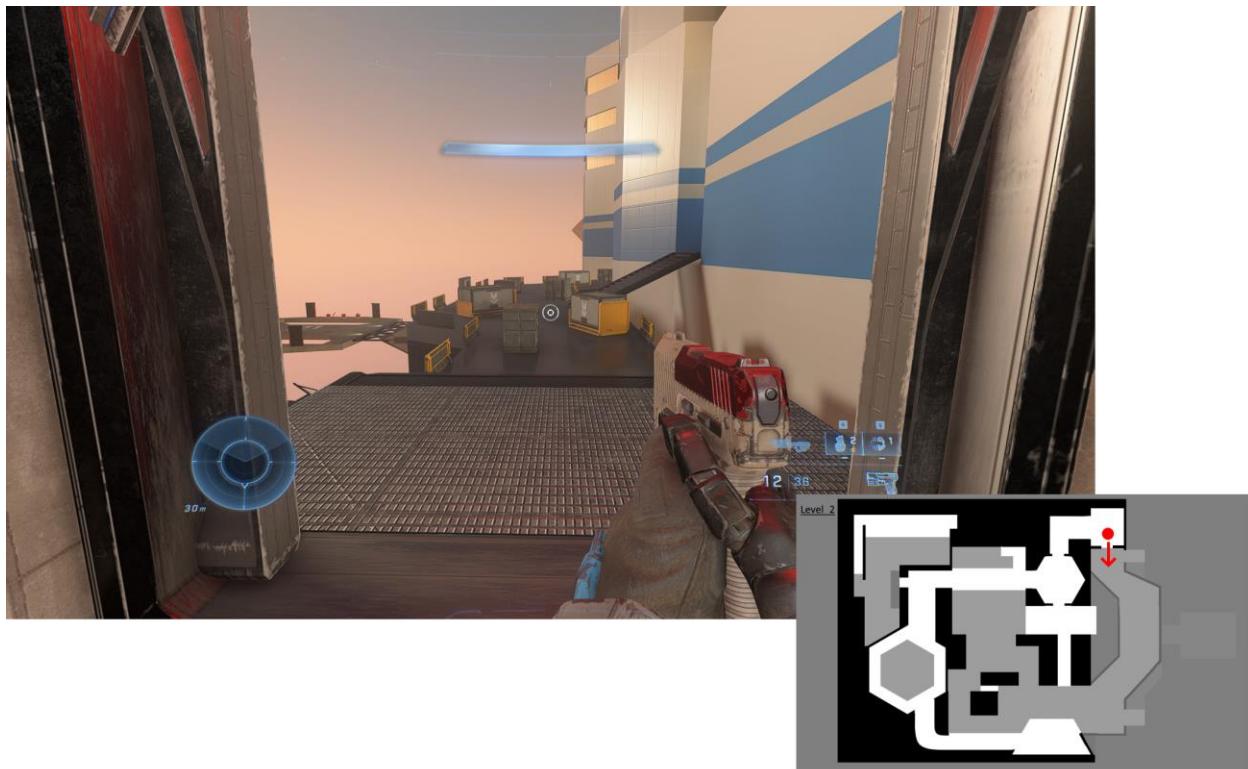


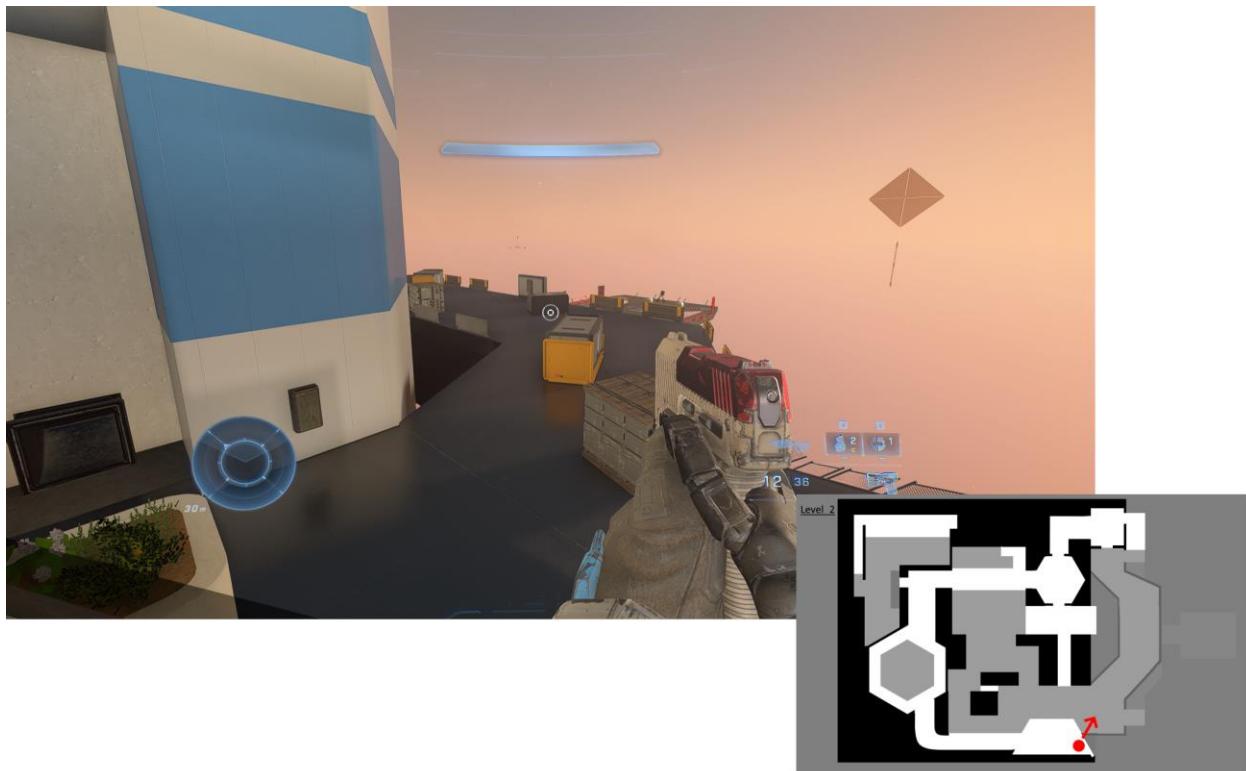
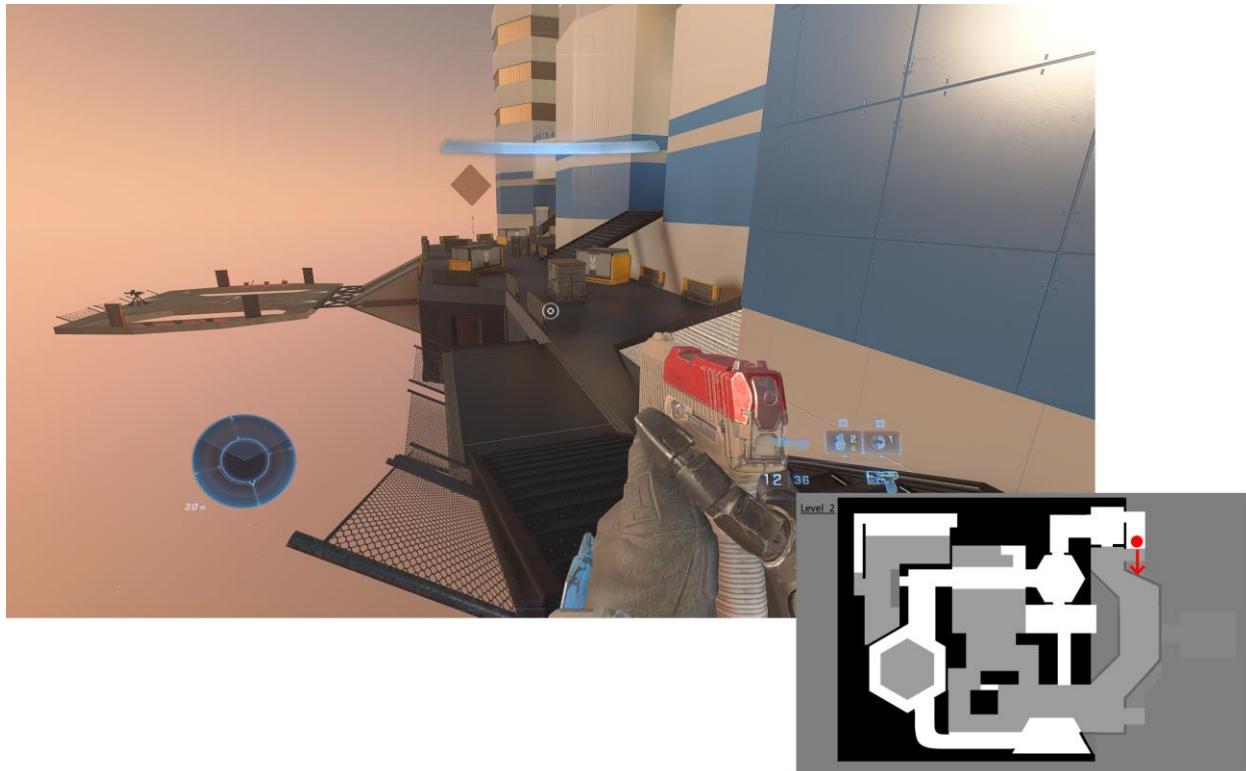
Figure 24 - At the secret jump point, leading into the defender base, I added a planter box to use for reaching the passage. I also added some bending machines that can be used for platforming as well.

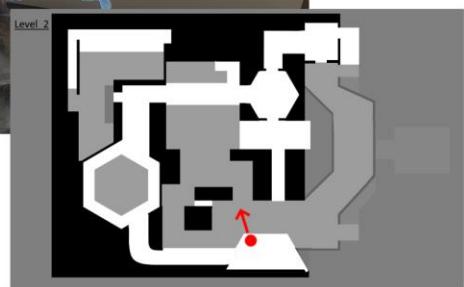


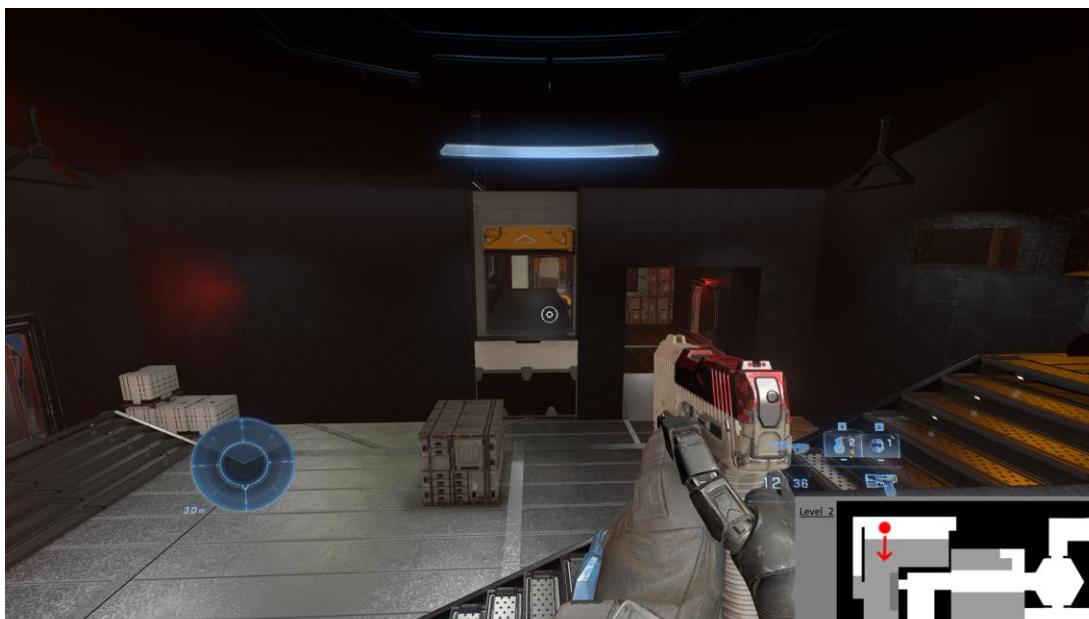
*Figure 25 - I added a secret vent passage that the player can use to traverse between the air control tower and the office courtyard platform as I thought this would increase movement flow*

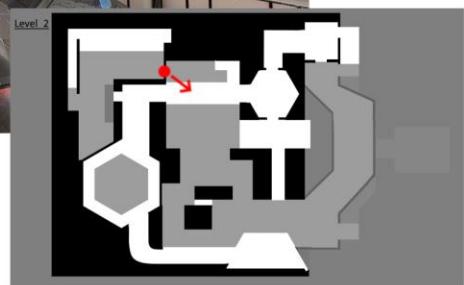
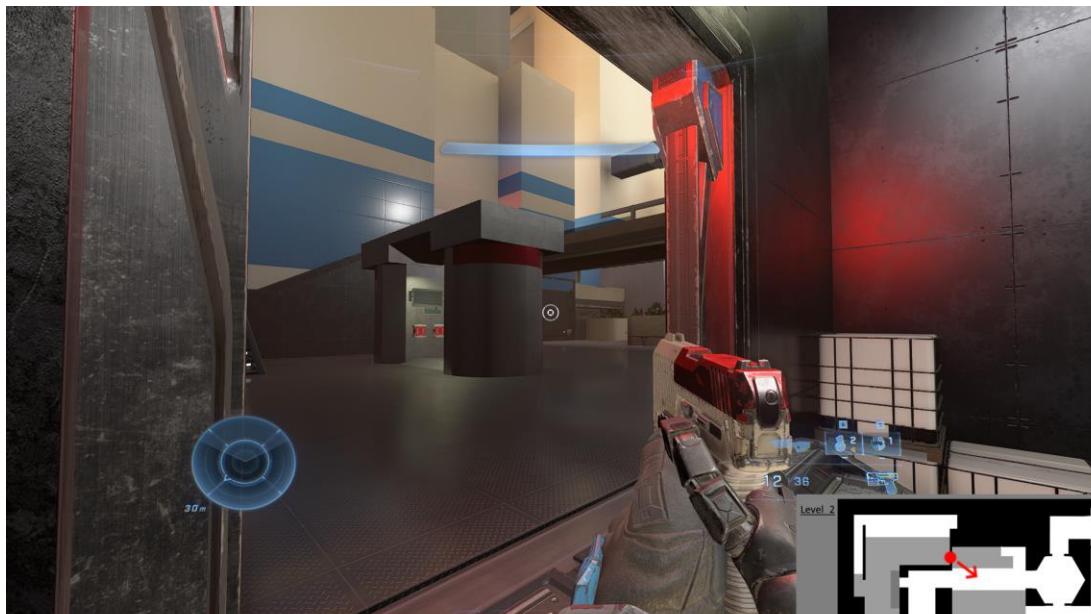
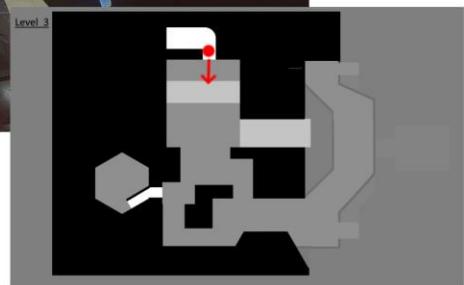
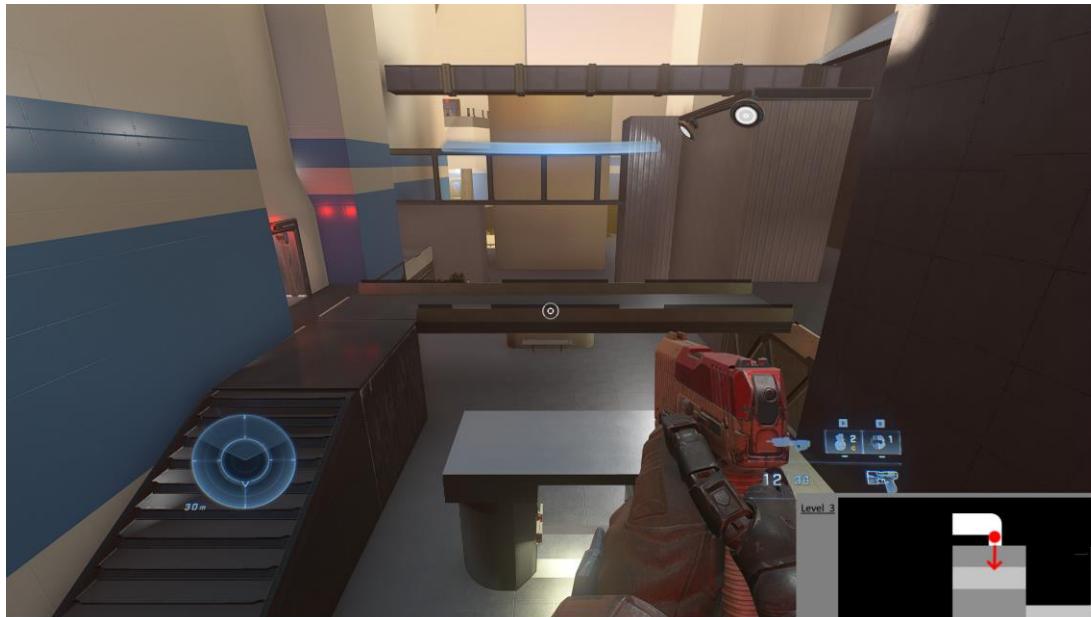
### Updated Sightlines

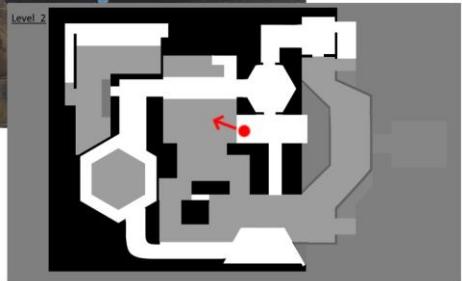
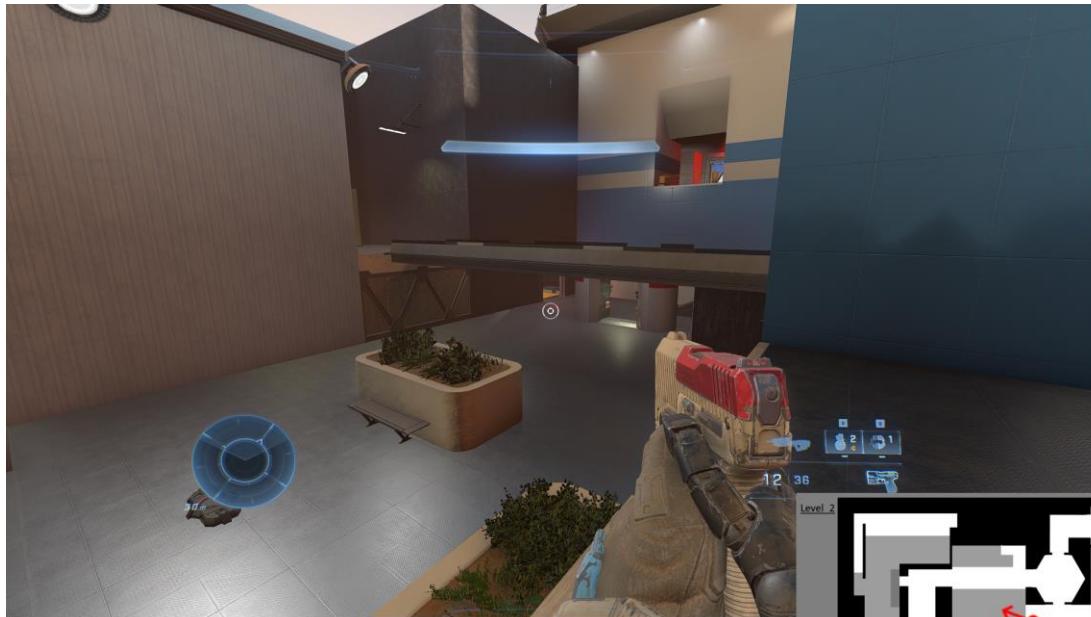










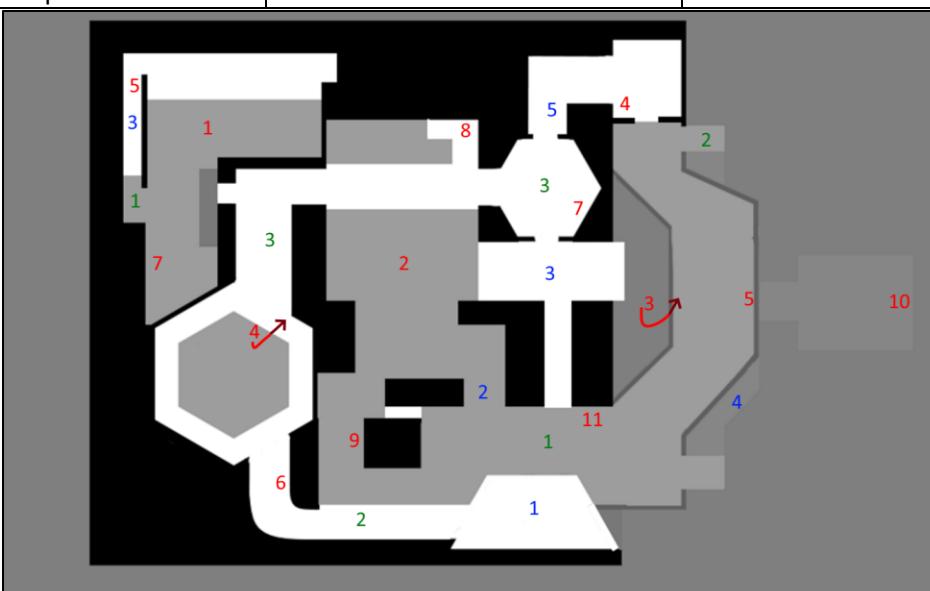


## Weapon Placements

For this map, it was a little more challenging deciding on the weapons, and equipment, that would be on the map, as well as where they should be placed. Since the map was asymmetric, I couldn't just place weapons symmetrically, which made me really think about where and what to place.

My first iteration of weapons and equipment:

Weapons	Equipment	Grenades
<ul style="list-style-type: none"> <li>• 1 Sniper</li> <li>• 1 Gravity Hammer</li> <li>• 1 Shock Rifle</li> <li>• 2 Battle Rifles</li> <li>• 2 Bandit Evos</li> <li>• 1 Pulse Carbine</li> <li>• 2 Needlers</li> <li>• 1 Heatwave</li> <li>• 1 Mangler</li> <li>• 1 Human Turret</li> <li>• 1 Disruptor</li> </ul>	<ul style="list-style-type: none"> <li>• 1 Active Camo</li> <li>• 1 Grapple Shot</li> <li>• 2 Shield Walls</li> <li>• 1 Repulsor</li> <li>• 1 Threat Sensor</li> </ul>	<ul style="list-style-type: none"> <li>• 2 Plasmas</li> <li>• 2 Spikes</li> <li>• 2 Shocks</li> </ul>



1 - Sniper Rifle	1 - Active Camo	1 - Plasma
2 - Gravity Hammer	2 - Grapple Shot	2 - Spike
3 - Shock Rifle	3 - Shield Wall	3 - Shock
4 - Battle Rifle	4 - Repulsor	
5 - Bandit Evo	5 - Threat Sensor	
6 - Pulse Carbine		
7 - Needler		
8 - Heatwave		
9 - Mangler		
10 - Human Turret		
11 - Disruptor		

Figure 26 - Weapon & Equipment initial placements

## Weapon & Equipment Pass 2

After playtesting, I updated the map sandbox based on my findings.

The major one was that the gravity hammer was too powerful in this map, since there are lots of tight corners and close quarters combat. I switched this to a rocket launcher, which felt much nicer, due to the lower ammo count, and lower threat in close quarters.

I also switched the shock rifle to a stalker rifle, as the shock rifle was too powerful for a non-power weapon in this map, and I didn't want to add another power weapon

## Additional Path Update

After some further playtests, I found that there was still room for improvement in the flow. Additionally, during one-flag matches, there was very little time to catch a stolen flag, which felt unfair. I decided to add some additional paths, open up some areas, and add another vantage point.

I also increased the distance to capture the flag, to give some more time for the defenders to return their flag.



*Figure 27 - I created a floor on top of the attacking base, and moved the capture point to here, increasing the distance to capture.*

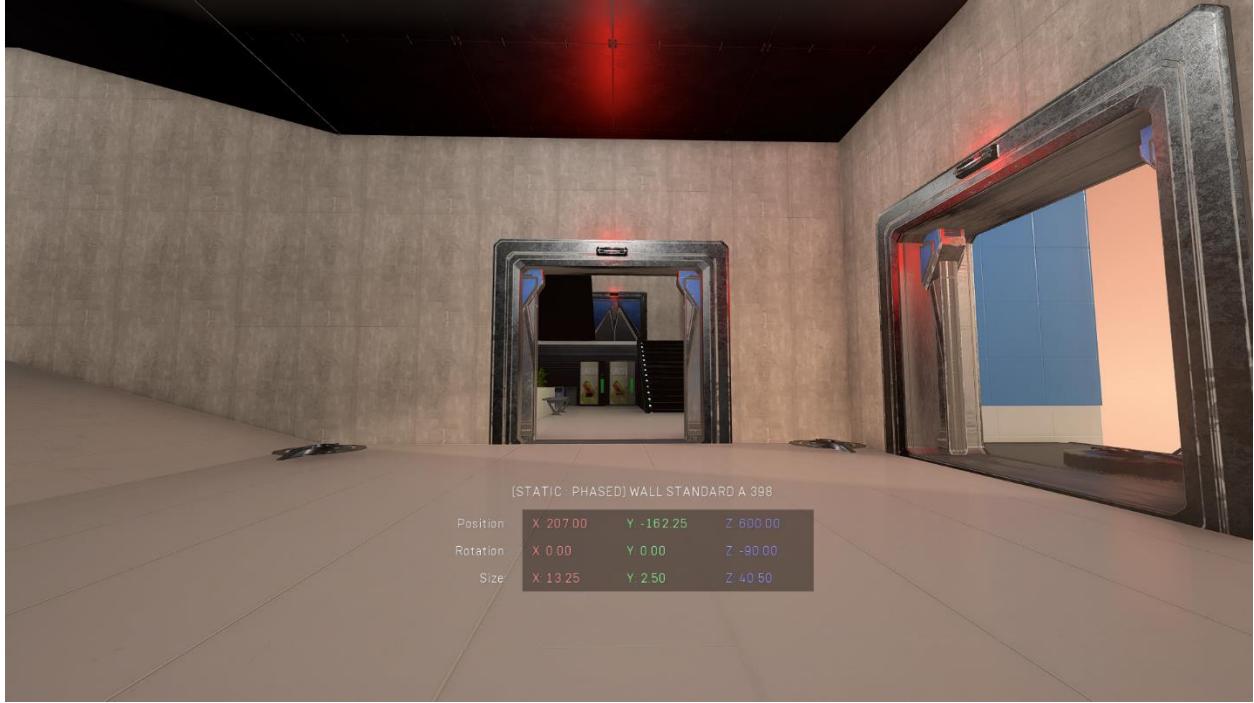


Figure 28 - I added a staircase at the back of the attacking base to reach the roof.



Figure 29 - The staircase room



Figure 30 - Opposite from the attacker's base, I added a sniper nest, that can see both layers of the attacker's base, giving the defenders one last chance at saving their flag. Note: The area inside the nest is small, and provides little cover



Figure 31 - The sightlines from the new sniper nest to the attacker's base



Figure 32 - I added another path, connecting the sniper nest and the attacker's base. Opening up the northern part of the map for movement. This made movement flow much better between the warehouse and the attacker's base

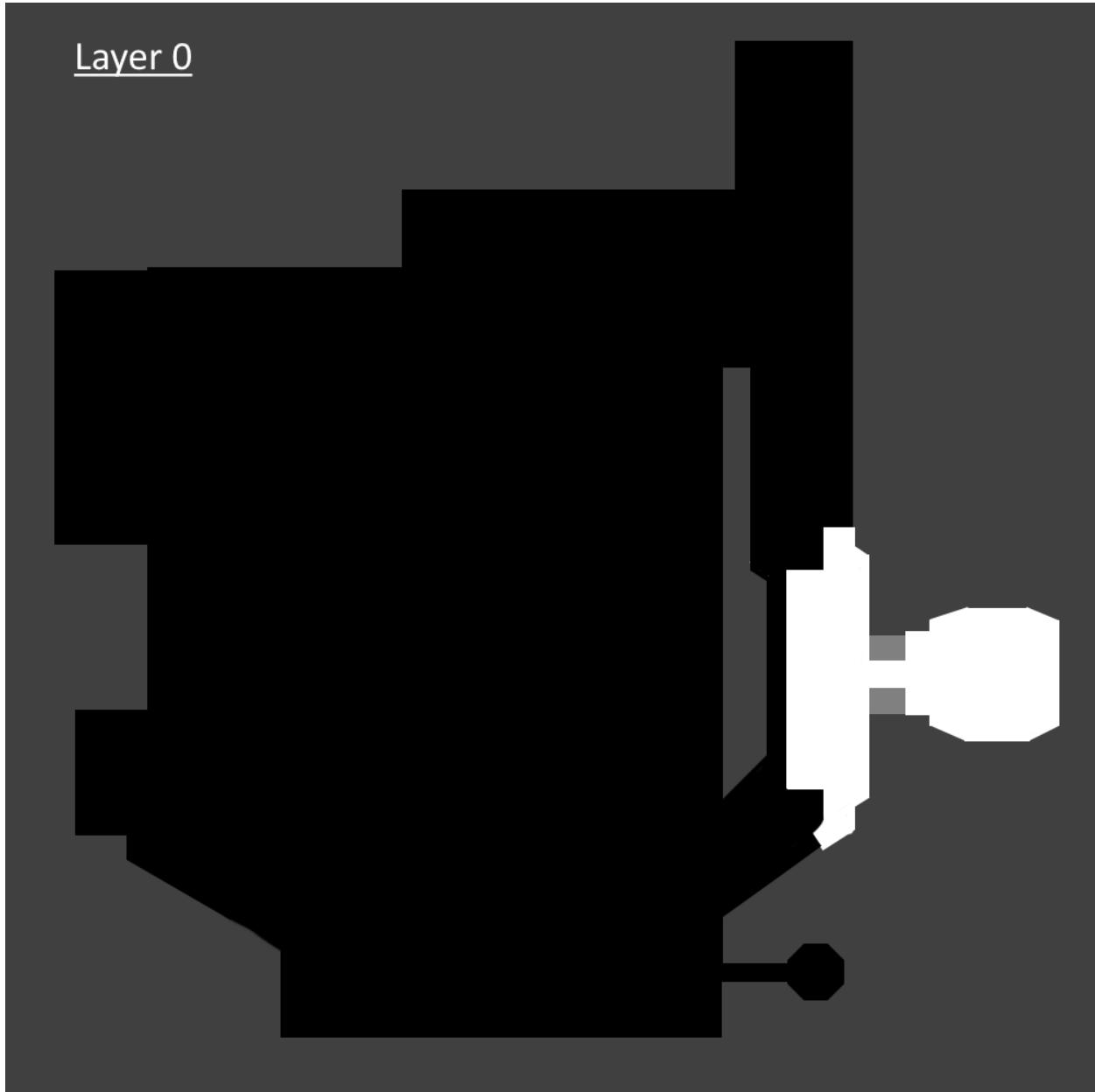


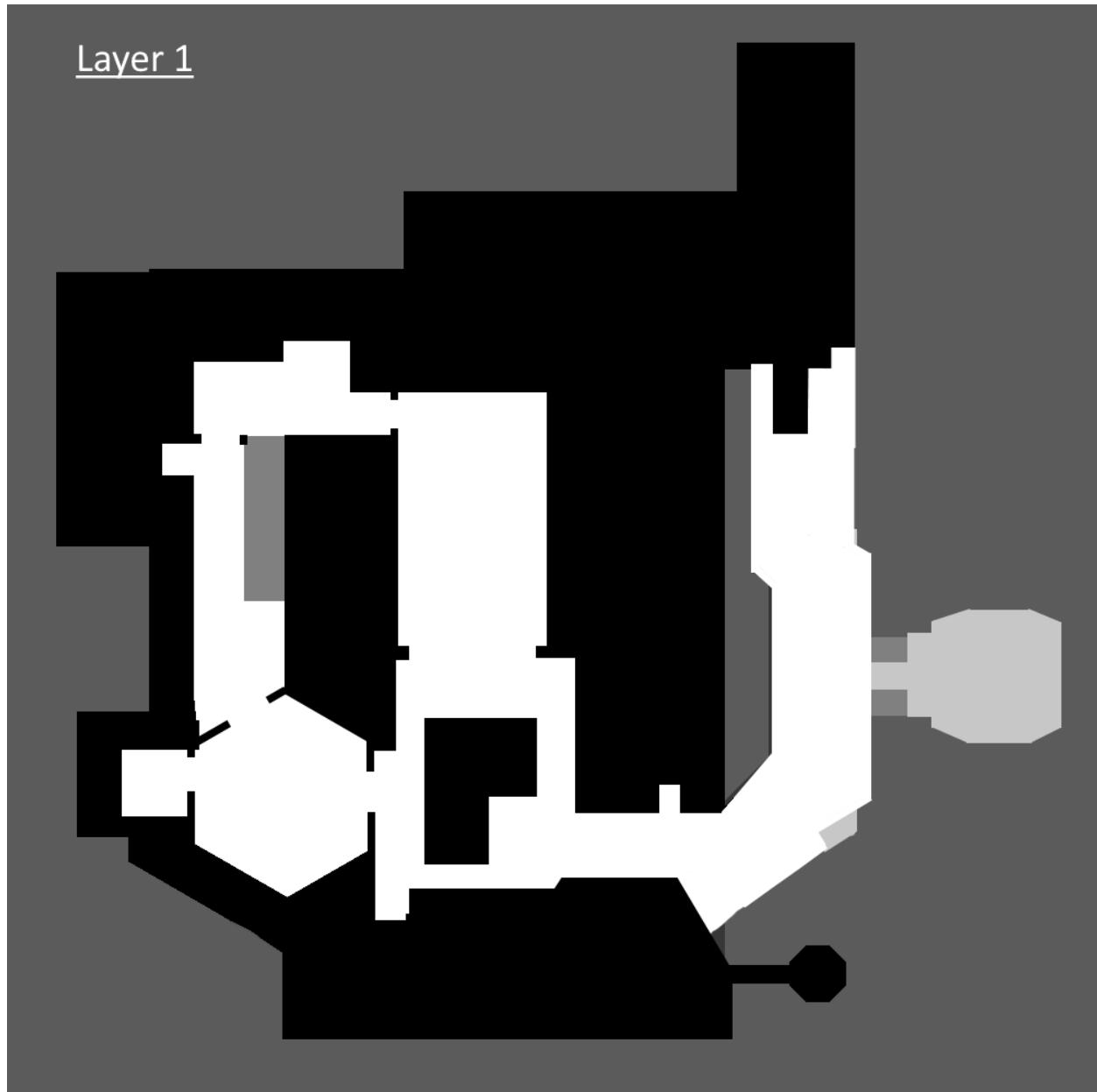
Figure 33 - I removed the flower pot in the defender base, that was used to reach the upper level, as this provided too quick of an escape for the stolen flag. I instead added a room (to the left) that has a staircase leading to the upper level

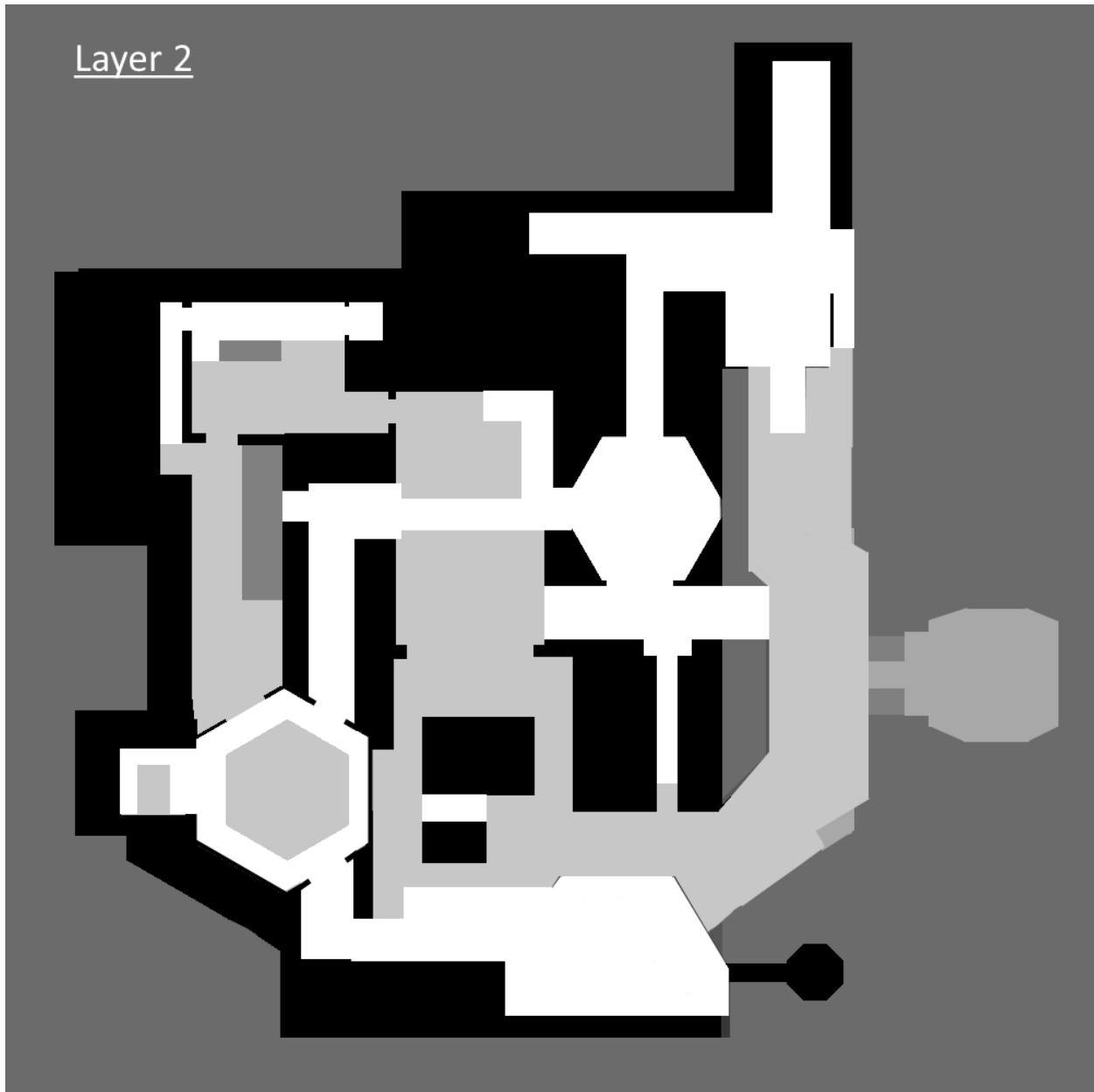


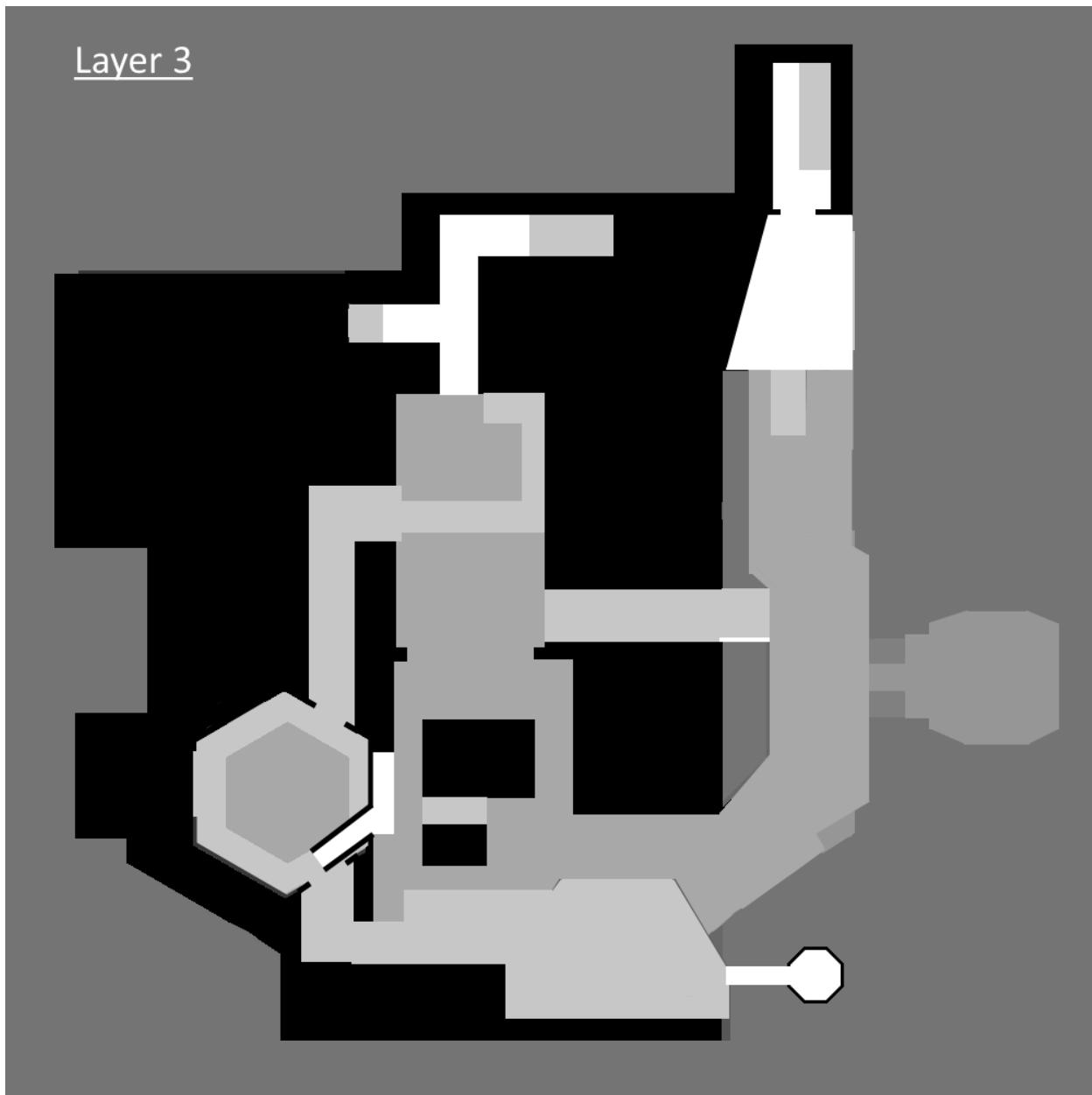
Figure 34 - The defender staircase

Updated Map Diagrams









## Fire Fight AI

### Squad Setups / Configurations

My strategy when setting up the ai for firefight was similar to how I design puzzles. When introducing new enemies, I started off with the easier variants, while only introducing a few of them. As the player defeats more of them, I start to slowly bring in more advanced variants of that enemy, and eventually bring in the most advanced unit of that enemy.

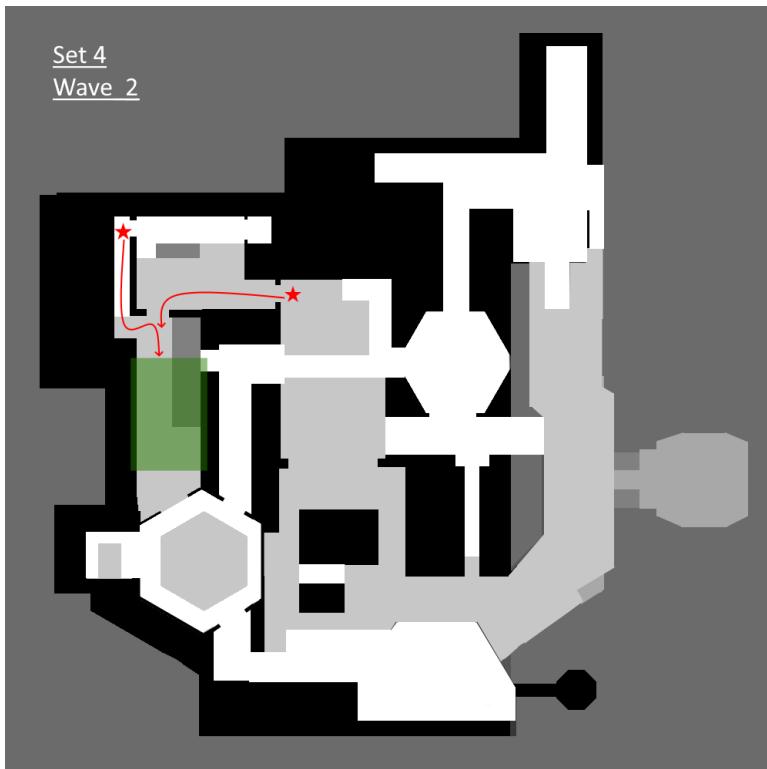
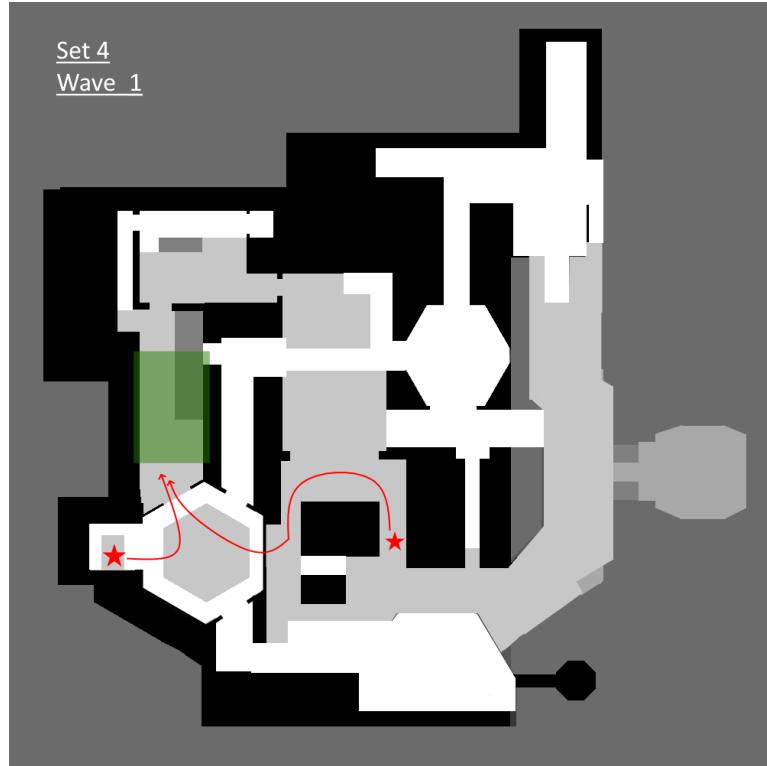
IE. An example of Grunt & Elite Squads upgrading with the sets & waves

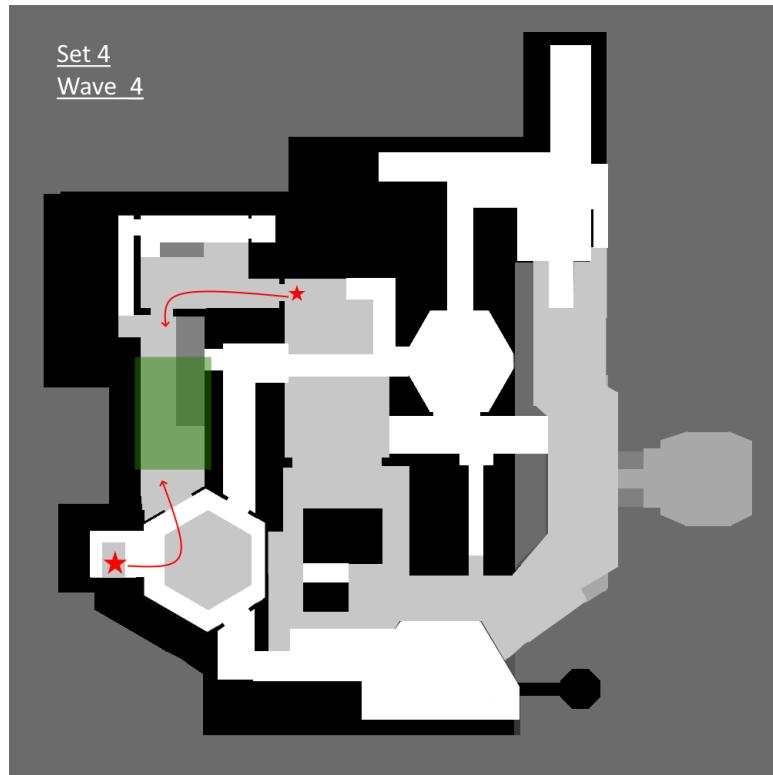
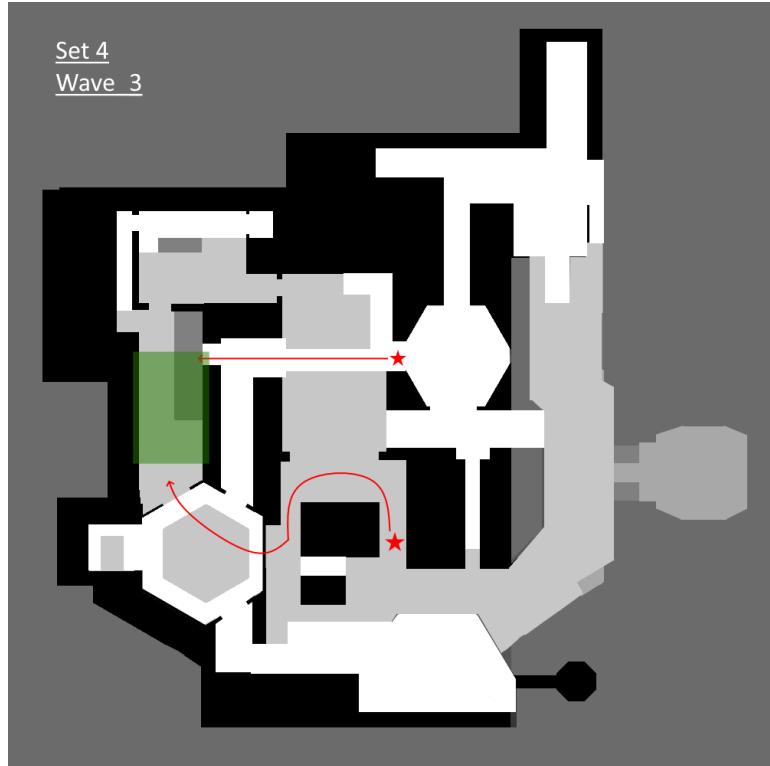
Set 1 - Wave 1	4 Conscript grunts, with 1 Mercenary Elite
Set 1 – Wave 5	2 Assault Grunts, 2 Conscript Grunts, 1 Mercenary Elite
Set 2 – Wave 3	4 Assault Grunts, 1 Mercenary Elite (Also introduce Jackals in a separate squad)
Set 2 – Wave 9	1 Grunt Ultra, 3 Assault Grunts, 1 Enforcer Elite
Set 3 – Wave 5	2 Grunt Ultras , 3 Assault Grunts, 1 Enforcer Elite
Set 4 – Wave 3	3 Grunt Ultras, 2 Assault Grunts, 1 Enforcer Elite
Set 4 – Wave 9	4 Grunt Ultras, 1 Enforcer Elite, 1 Bip Bap / Briglard (Grunt Bosses)
Set 5 – Wave 2	4 Grunt Ultras, 1 Enforcer Elite, 1 Mercenary Elite
...	
...	
Set 9 - Boss	1 Hunter, 2 Grunt Ultras, 2 Assault Grunts, 3 Conscript Grunts

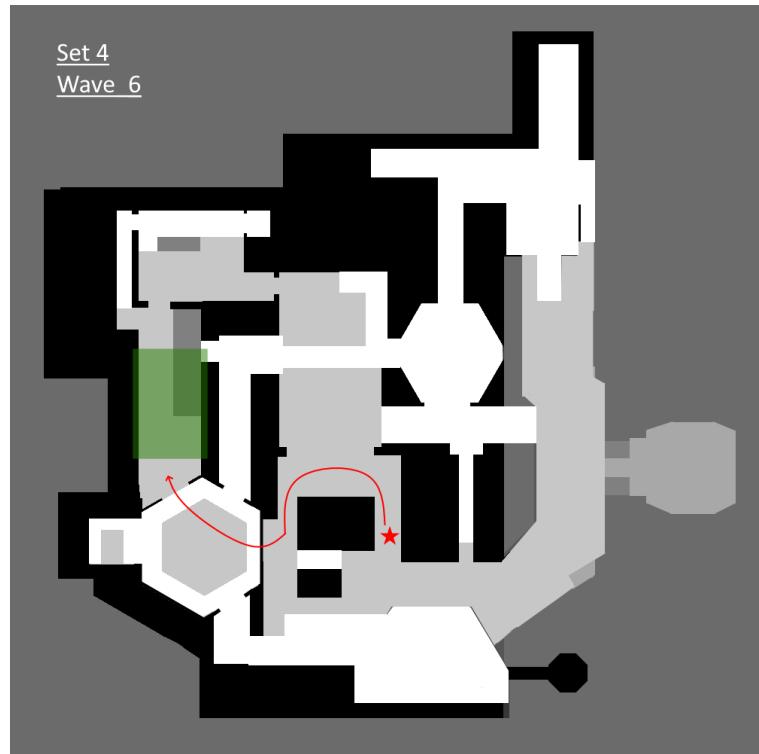
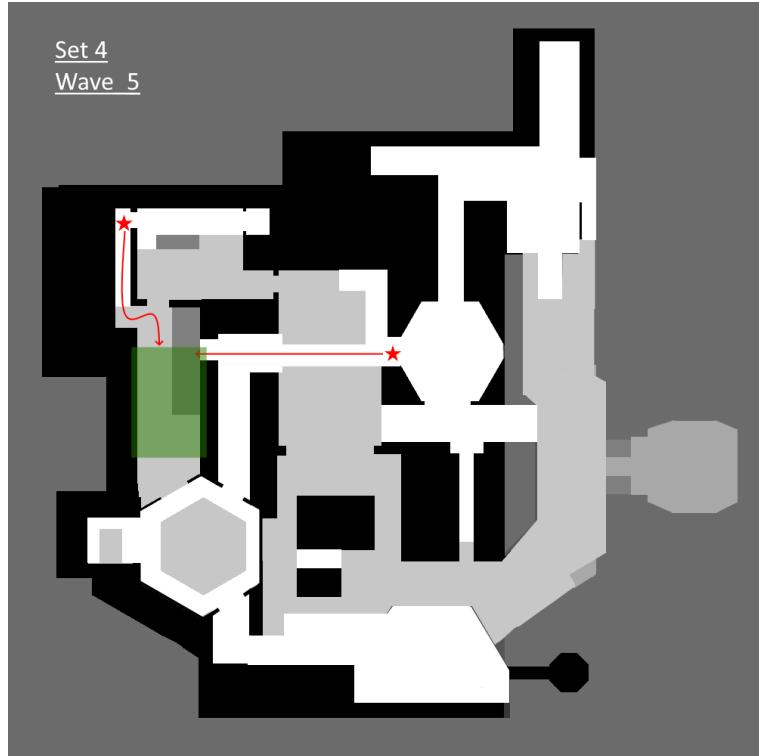
### Squad Placements

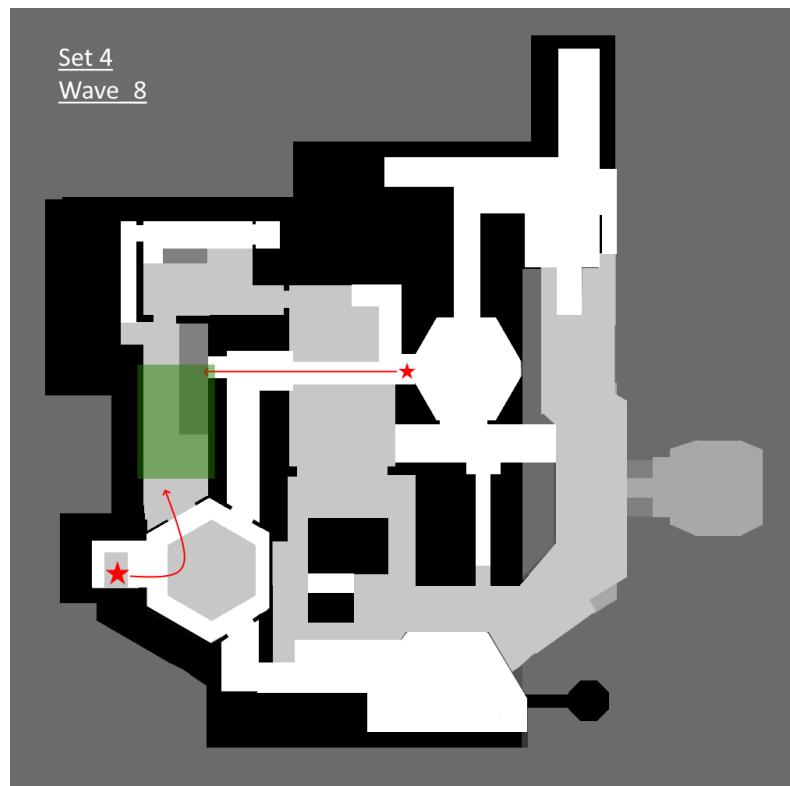
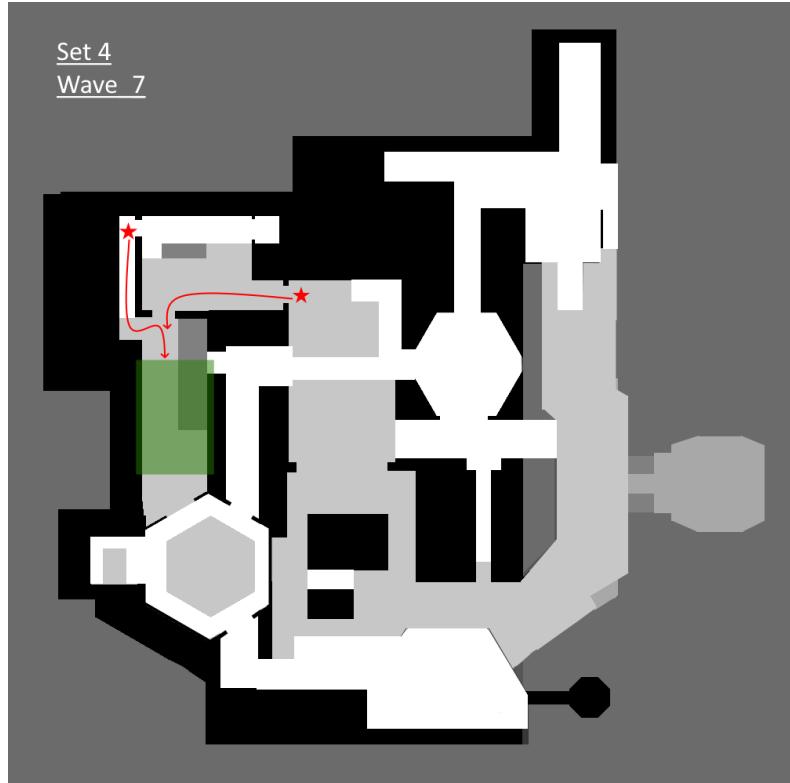
When placing the units' spawn points, I tried to place them in areas that would make sense, making their pathway to the hill a little predictable & defendable by the player(s).

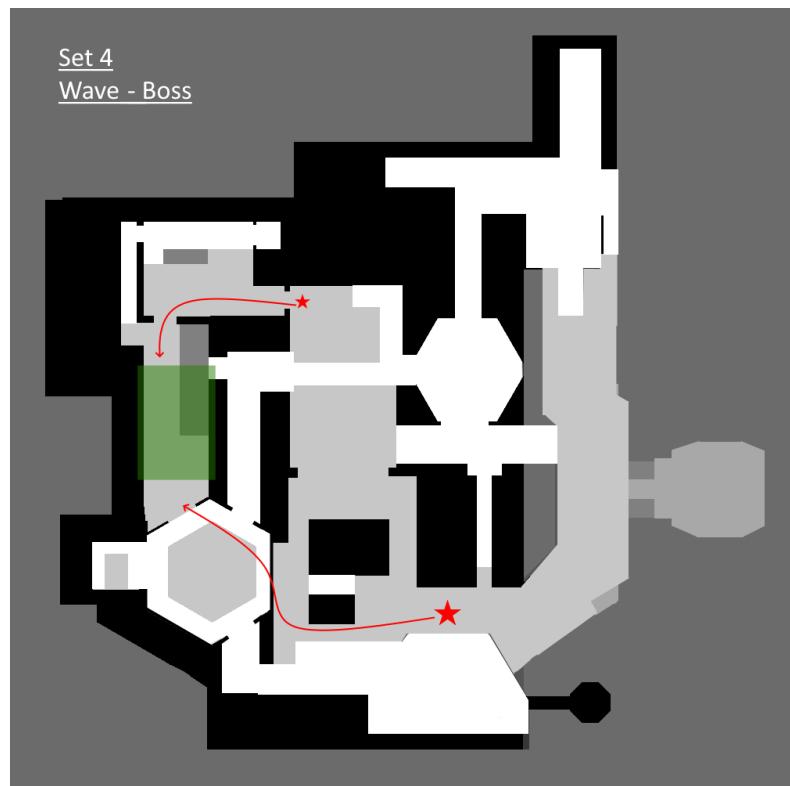
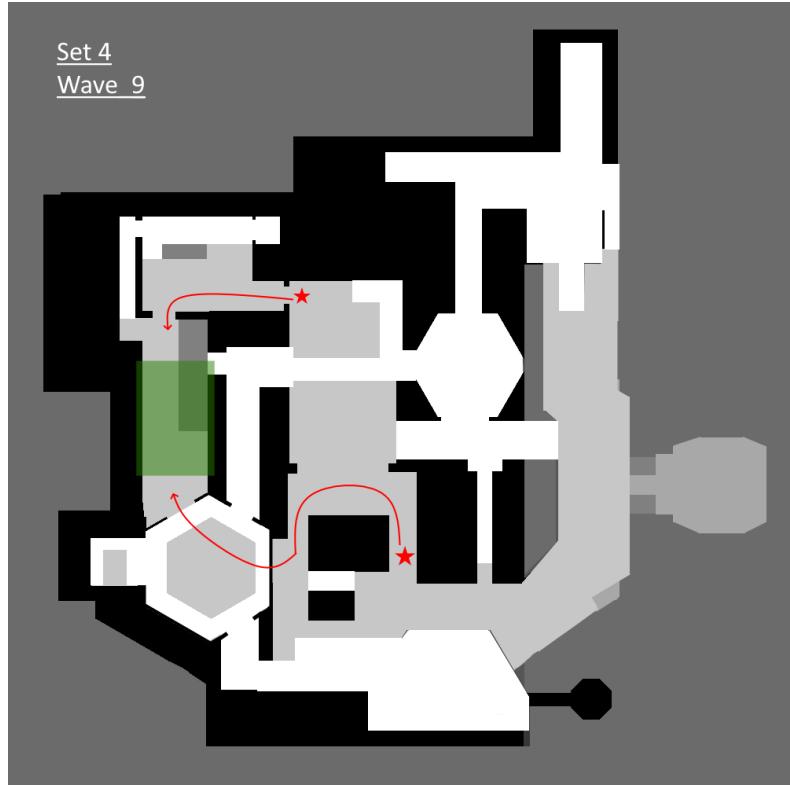
In terms of what order they spawned in, during the waves, I set it up so earlier waves would identify where the enemies could enter from, being careful to avoid flanking in earlier waves. During the later waves of the sets, I would simulate some strategy by the ai, by spawning them in opposite sides to flank players, or by spawning larger groups that overwhelm one point of defense. I tried to keep difficulty in mind when doing this, while trying to avoid a wave that felt unfair.

**Example Set 4 Setup**

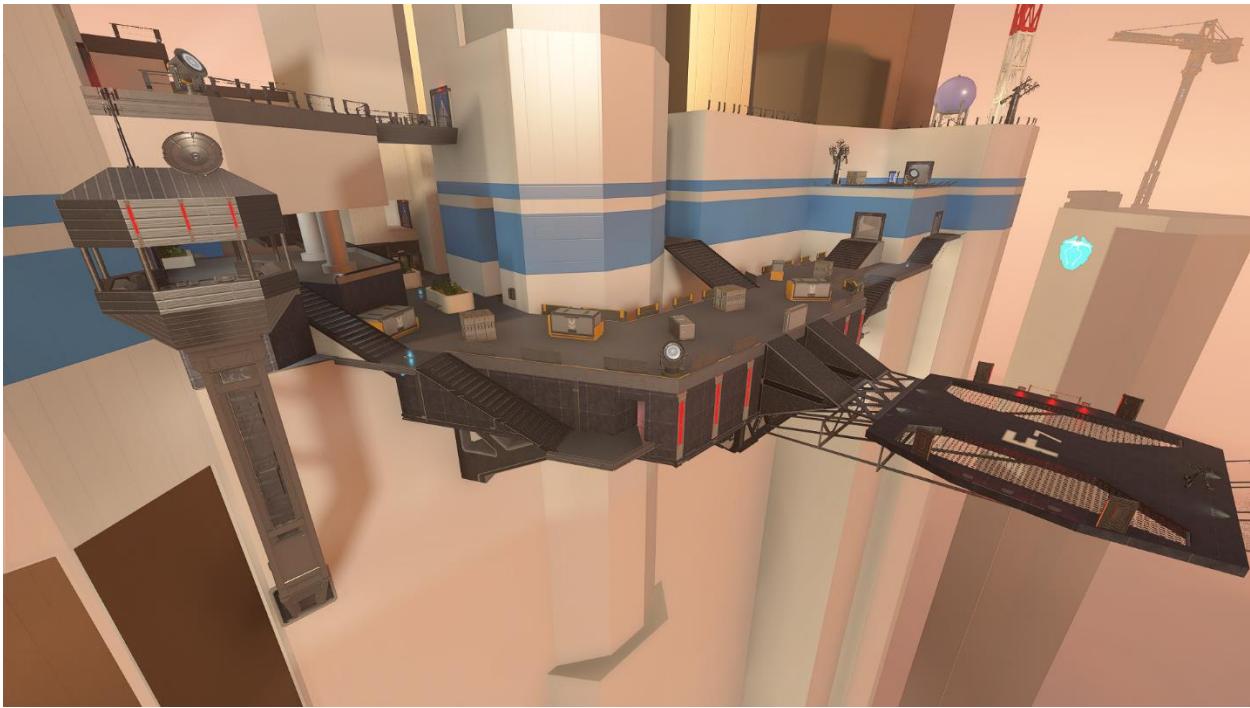








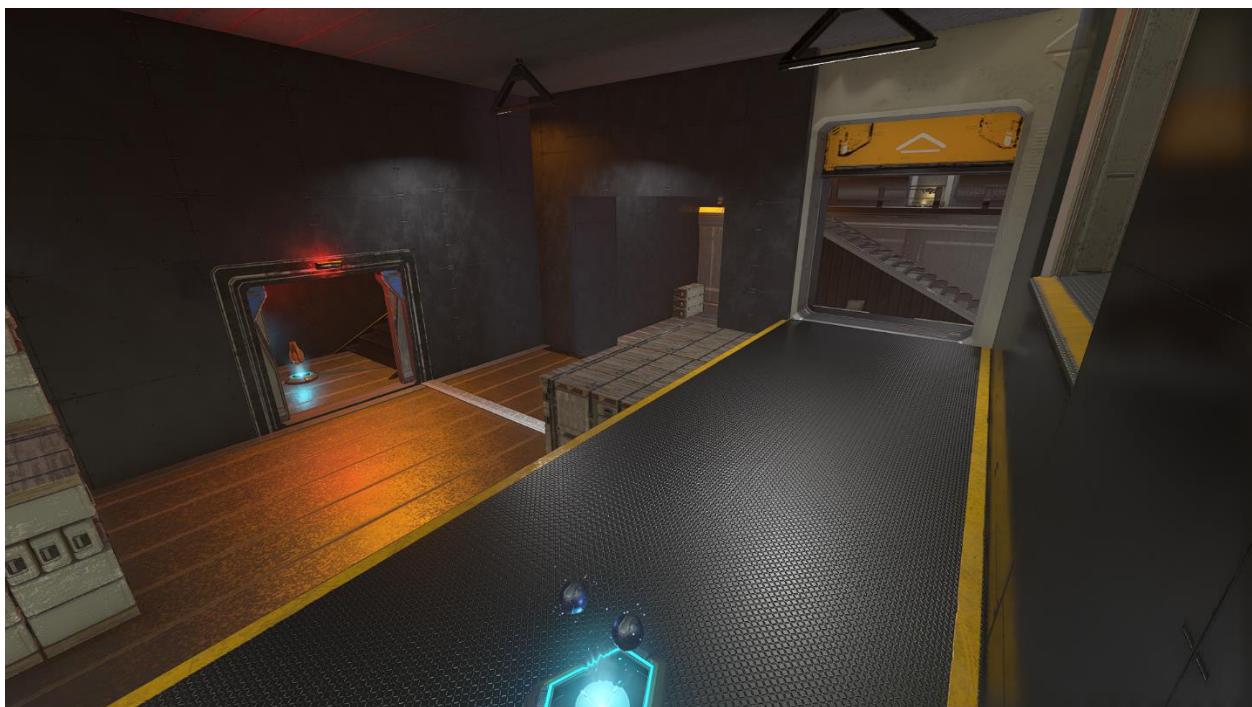
## Final Map Screenshots

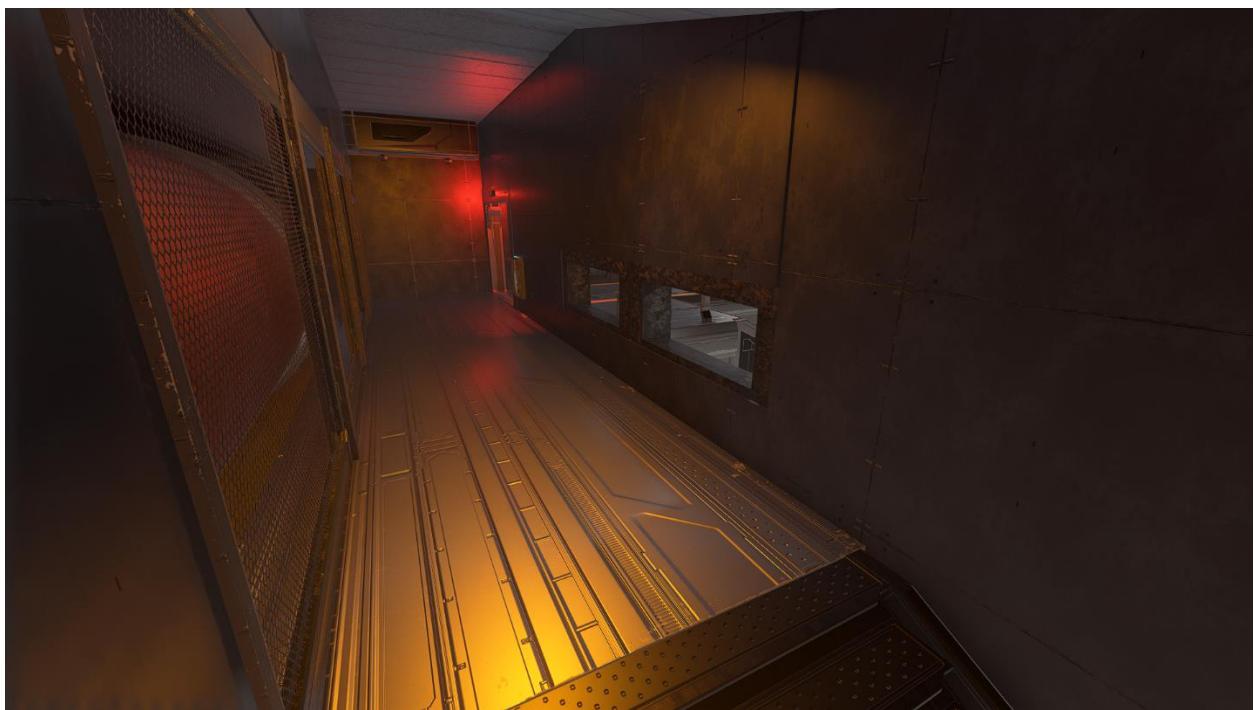
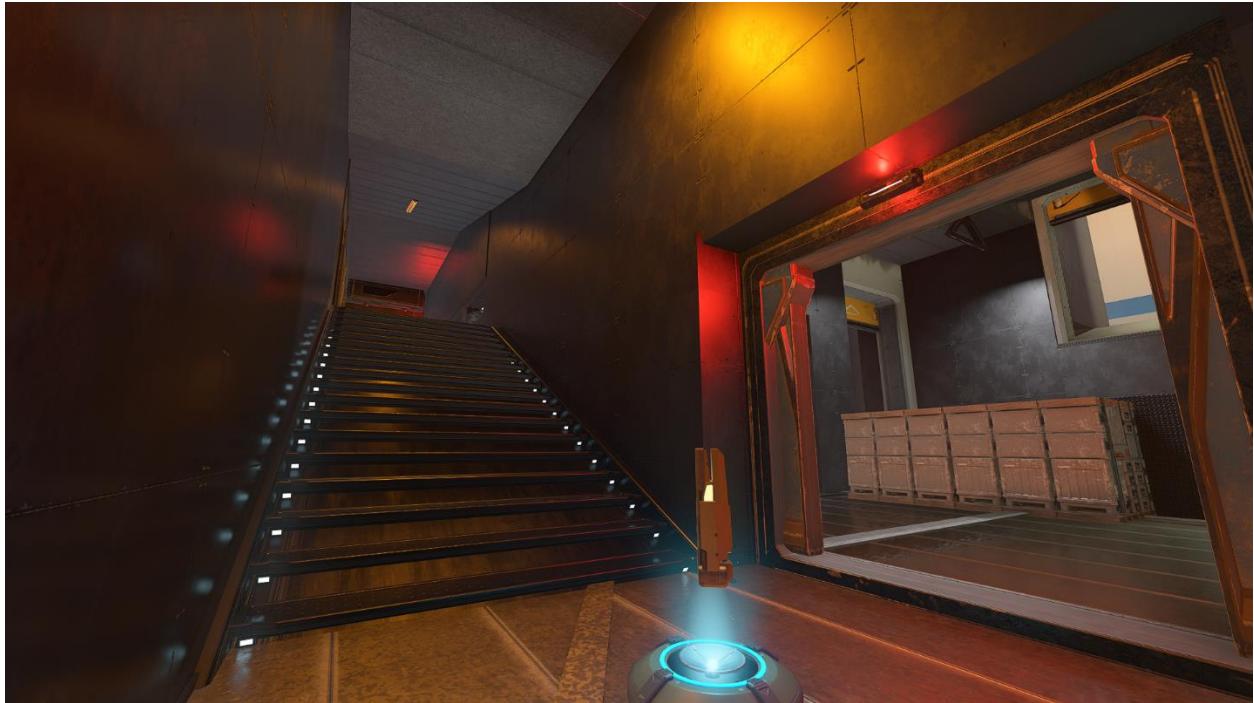


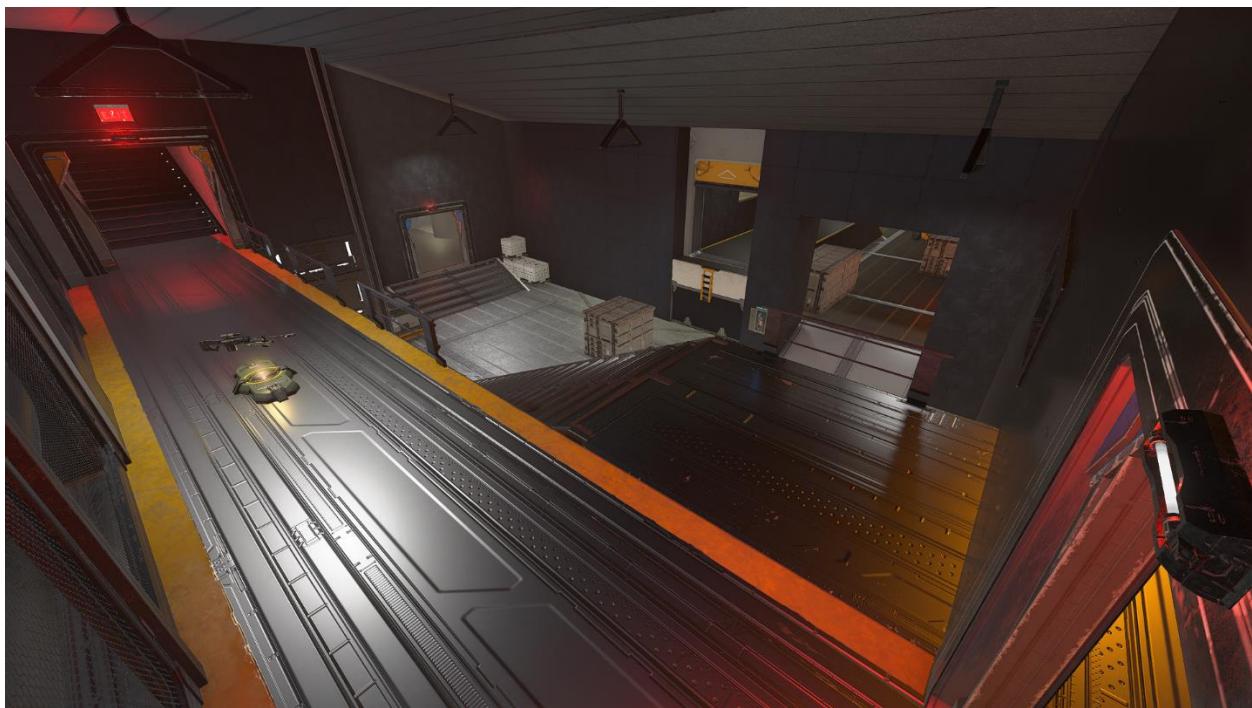




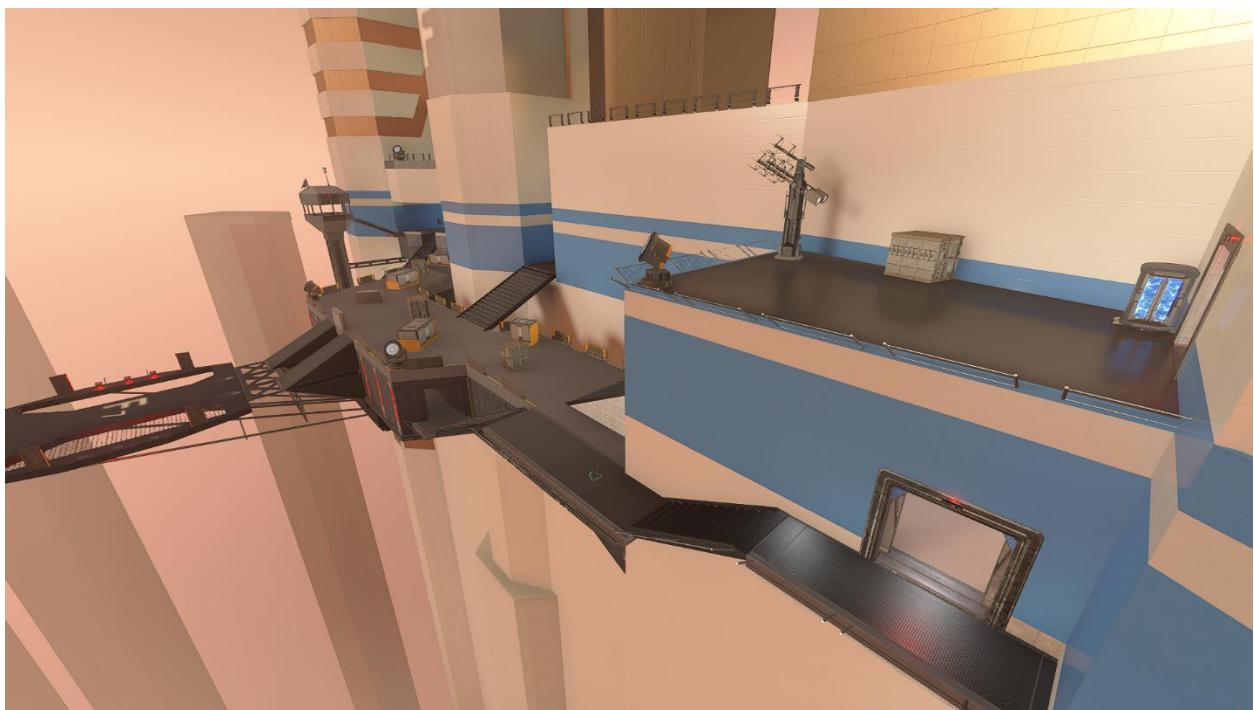














## Final Thoughts

Overall, I really enjoyed designing an asymmetric multiplayer map, while also designing it for AI encounters. While there are certainly areas I could improve in, I'm happy with the way the design turned out, and learned a lot while working on it.