AltoMare Level Design Document

A custom level in Halo Infinite

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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 level is to create a 4v4 teams based map that has easy to navigate areas, featuring interior and exterior gameplay in the water ways of a city inspired by Venice. I want to improve my experience in designing for game flow in different areas of maps, and also my experience in creating spaces with engaging and intuitive navigation.

Layout Planning

Level 0 (Water Level)

Level 0 is the lowest floor, and is at sea level. This level will mostly consist of the water ways in the level, and the cement paths the players can traverse on.

Level 1

Level 1 is where the player's bases will be. To reach this level, there are ramps leading up from level 0 at each respective base.

Level 2

Level 2 will contain the bridges players can use to cross the river. They are placed at opposite ends of the map, and have cover within them, but are visible from each other.

Level 3

Level 3 will be the top most layer, containing rooftops that players can reach. Much like the roofs in Alto Mare, these roofs will have plants growing on them, providing some cover. The rooftops can see much of the map.

Map Restrictions

General Restrictions

As a 4v4 oriented level, the size of the map should be similar to existing 4v4 maps, such as *Bazaar*, and *Streets*.

Each side should have equal opportunities for both weapons and equipment, and should be balanced in terms of sightlines, vantage points, and defendable zones.

Roughly 12-18 spawns per team

Death zones and out of bounds areas should be clear to the player

Halo Waypoint Requirements

https://support.halowaypoint.com/hc/en-us/articles/14796740242708-Community-Forge-Map-Requirements

Gameplay Requirements

The map must have the following game modes implemented

- Slayer (Default)
- CTF
- Strongholds
- King of the Hill
- Oddball

Design Plan

Work Plan

The process for this map will likely follow a similar process as my previous map (Water Damage). My goal is to get more playtesting in earlier.

- 1. Initial Planning
- 2. Diagram Layouts
- 3. Initial grey box
- 4. Greybox gameplay play tests
- 5. Art Pass 1
- 6. Visual playtest
- 7. Art pass 2
- 8. Final playtest

Of course, this plan is subject to change, depending on the needs of the design, and availability of play testers.

Map Plan

Inspiration

The main draw of this map will be the Venice-inspired environment. The main inspiration for this map is actually from the Pokemon movie: Pokemon – Heroes, and it's city, Alto Mare, which was inspired by the water ways of Venice.



As seen in the example images, Alto Mare is a city that was built upon a canal. The buildings are very intune with nature, with many roofs covered with greenery. While there is a large main water way that is used for transport, there are many side paths with water flowing through them, both large and small. The buildings are very condensed, but do feature alleyways and tunnels that can be traversed. Overall, Alto Mare is a very beautiful city that really captures the atmosphere of Venice.

Design Planning

The theme of the map is 'summer in the water ways'. The time of the map will be at sunset, with warm lighting coming from the sun, and street lamps around the map. The overall mood should emit a feeling of: 'A beautiful evening in the summer by the city in the sea'

Rough Layout Design

Level 0 is where most engagements will likely take place. The river takes up most of level 0, and needs to be crossed in order to reach the other side of the map. While they aren't in the diagram, I will use some carefully placed props in the river that players could use to traverse to the other end.

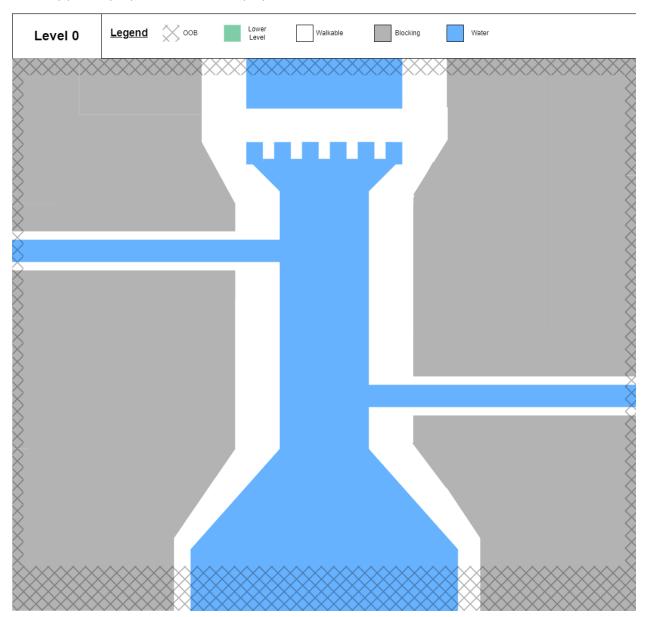


Figure 1 - Level 0's gameplay will mostly take place in the centre of the map. There is a large river that must be crossed in order to reach the other end of the map. The centre of the map is very open

Level 1's gameplay is mostly at the players' bases, as well as the pathways to them. Each base has 2 entrances, and are areas that are pretty open, similar to Halo Infinite's Bazar's team bases.

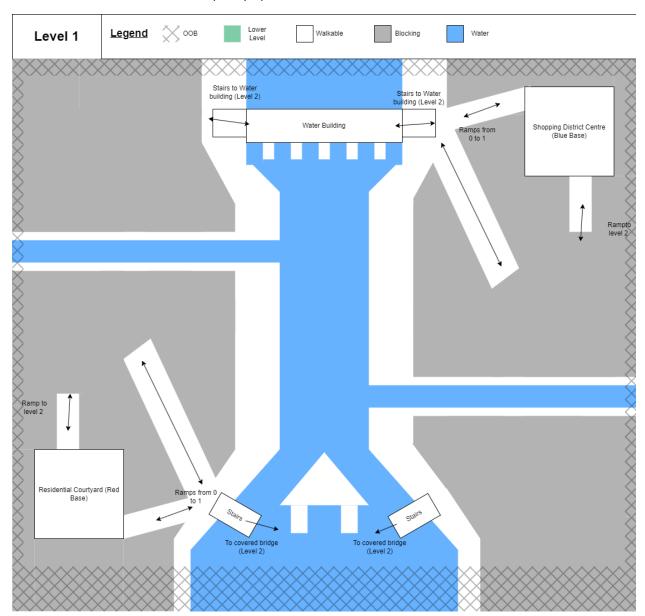


Figure 2 - Level 1 features the team bases, and pathways to upper levels

Level 2 consists of two neutral areas that are somewhat open, as well as the bridges that cross the river. The garden and the clock tower are somewhat open areas that are used as defendable areas for their respective side's base. There is also an enterable building in this level that players can use to quickly reach the center of the map, or use as a shooter den with a view of the map's center. The building has a staircase to reach it's roof on level 3.

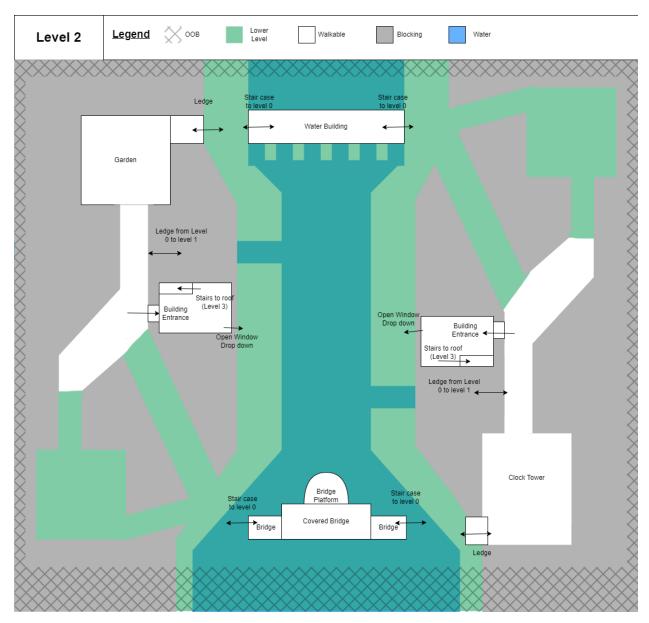


Figure 3 - Level 2 contains defendable areas, bridges to cross the center, and an enterable building.

Level 3 has the roof of the enterable building. This area is the highest area, and has a great view over the central area, as well as the opposite building, and it's rooftop.

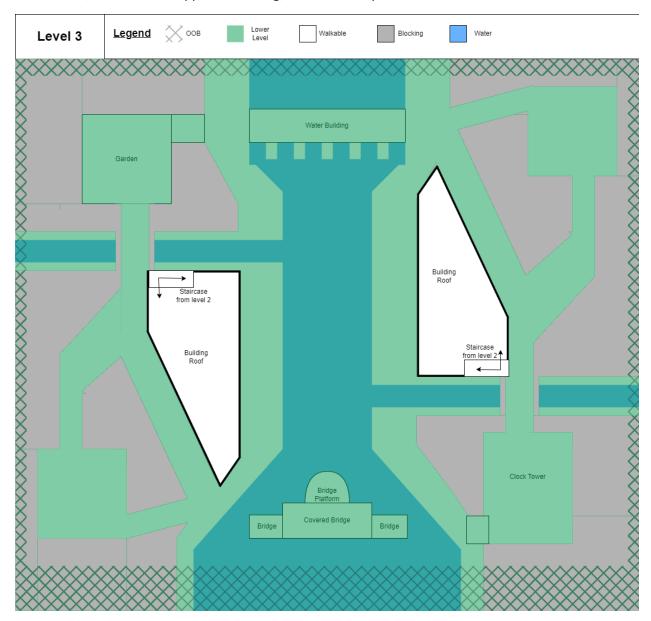
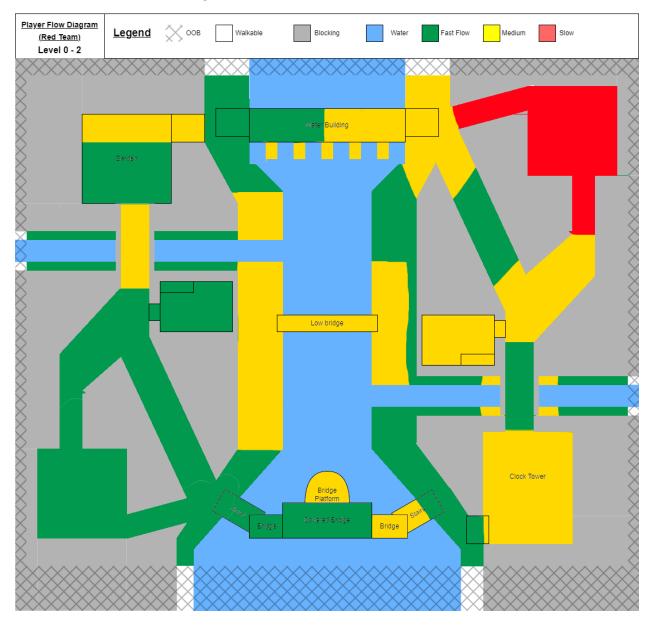


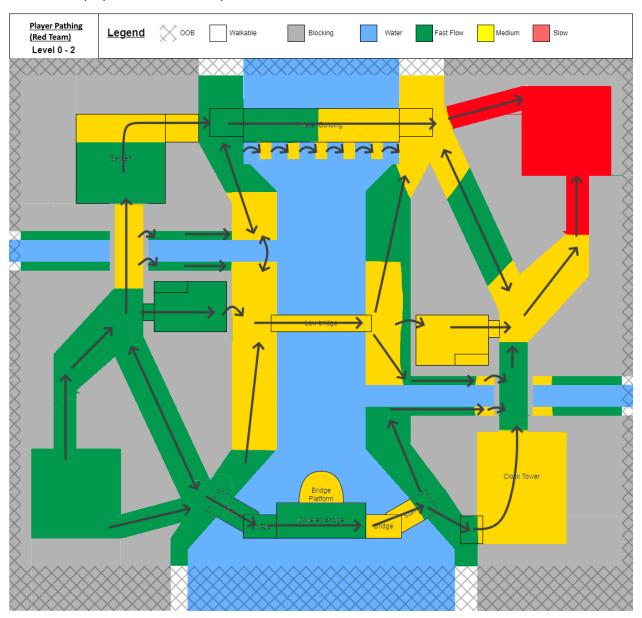
Figure 4 - Level 3 is the rooftops of the enterable buildings, and has a view over the center area, and the opposite rooftop

Player Flow Planning

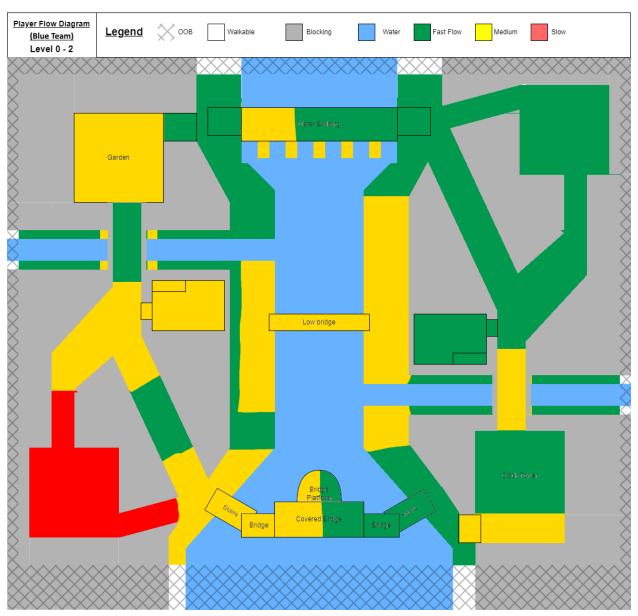
Red Team's flow when travelling to the blue base.



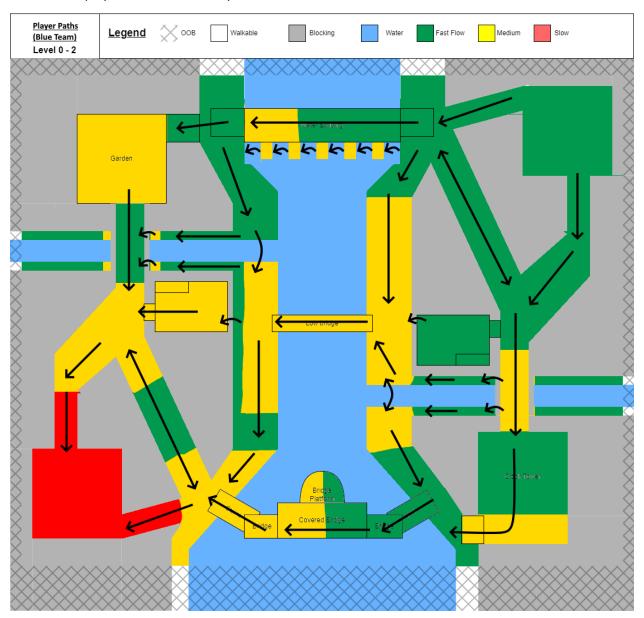
Paths that a player on red team may take to reach the blue base



Blue Team's flow when travelling to the red base



Paths that a player on blue team may take to reach the Red base



Weapon Placements

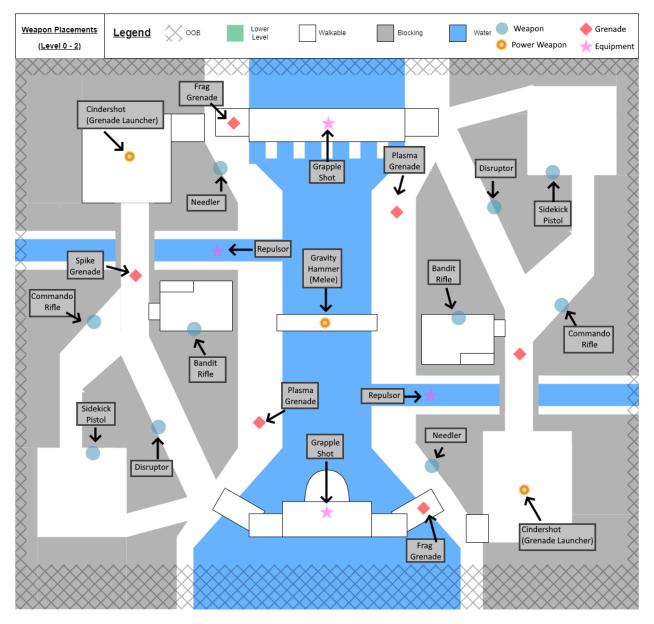


Figure 5 - A plan of where weapons will be placed in the level

In Engine Grey Boxing

After planning a rough design, I started on the in-engine greybox of the level. My goal for this was to get measurements correct, and to see if the level was fun to play in with its current design.

First iteration

I was able to create a greybox of the level as planned, and set it up with the nav mesh to play with the ai. It was immediately clear that I had made the level too large, and it took too long to get anywhere in the map.



Figure 6 - The first iteration of the level

In order to get the flow better, I had to reduce the size of the map, and I faced two options;

- 1. Cut out one of the corner sections, while keeping the metrics of the base and the interior building
- 2. Reduce the size of all spaces, and keep the original design

Before deciding, I loaded the *Plaza* map, and measure the distances between their spaces. One metric I used was the 'time it takes from players to reach the power weapon from spawn', which I counted to about 8 seconds. On my map, it took roughly 12 seconds, meaning that to reach the other team's base it would take a total of 24 seconds, and this was without any combat. From here, I figured out where I had gone wrong, which was scaling everything too large, including the pathways. I then decided to go with option 2, and reduced the size of every space.

Second Iteration

The second greybox iteration has had many of its areas re-measured and reduced. While the overall design looks the same, the playable area is much smaller, and it feels much better to play in.

I also changed the design of the central water way a bit. Originally, the water way on the red side was much wider than the water way on the blue side, and the bridges used to cross those sections were different lengths. This was intended to allow the players to easily differentiate the sides easier, however, the design felt unbalanced to play on, and I reverted to keeping both sides of the water way the same width. To address the issue of side-differentiation, I prototype some different bridge designs and environmental pieces. For the sake of testing the playability of the space however, that is not needed at the moment.



Figure 7 - The second iteration, though it looks the same, it is much smaller

Area Sketches

After having a rough layout of the map, I wanted to focus more on the individual areas of the map, and the geometry within them. While I had a theme in mind for the map, I wasn't too sure on what each area would look like, and felt that building them without a plan wasn't a great idea. So, I decided on creating some rough sketches to plan out what those areas would look like. Since I already had a greybox, I just went around the map, taking screenshots of the areas to use as a template for my sketches. This also gave me a better idea of what metrics I had to work with.

Enterable Building Roof

The roofs are an area that is used as a vantage point overlooking the entire map, and each team has one of these roofs. I wasn't too sure of what the geo for this area should look like, but had a rough idea of what I wanted, which was a garden, with a tree used for cover. So, I quickly sketched out some ideas, using inspiration from existing roof gardens in Venice, and decided to go forward with this design

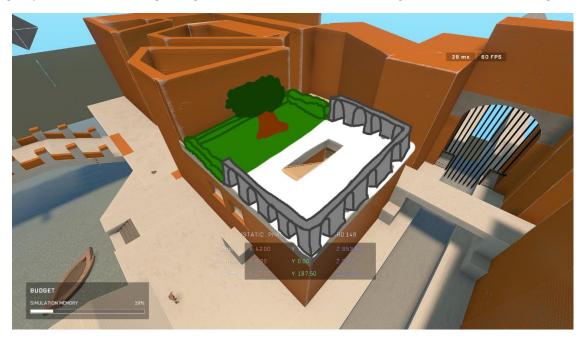


Figure 8 - A quick sketch of a garden space on a rooftop will a wall full of arched entry ways to be used as vantage points

I then went ahead and sculpted this idea in engine. While I was going to stick to the sketch, I determined that there were too many exits available to the players on the roof, which gave the area too much of an advantage. Thus, I decided to close off some of the back section, so player's exits were more predictable.

Team Bases

The team bases are relatively the same in geometry, with the theme of those areas being a bit different. From the greybox design, I added an upper platform to the bases, to give defenders a vantage point within the base, and give some more variety of gameplay in these areas.

For theme, both bases are residential buildings, but blue base features a corridor leading outside of the playable area (the corridor is blocked off) and a store front, whereas red base features more residential objects, such as clothes lines and communal areas.



Figure 9 – A sketched plan of red base



Figure 10 - A sketched plan of blue base

Garden & Bell Tower Area

These areas are opposite of the team bases, and are open areas to be fought within. Both areas, like the bases, are similar in geo, but feature a different theme.

The area on the red side is the Garden area, and features a large tree in the center of the area, and a fountain on the back of the area.

The area on the blue side is the bell tower area (clock tower in initial diagrams), and features a bell tower in the center of the area



Figure 11 - A sketch of the garden area (Red Side)



Figure 12 - A sketch of the bell tower area (Blue Side)

Garden & Bell Tower Exits

From the garden and bell tower, the player can exit into the main water way. The garden exit is placed ontop of a glass greenhouse, whereas the belltower exit is placed ontop of a shop.



Figure 13 - The garden exit ontop of a glass greenhouse building



Figure 14 - The belltower exit ontop of a storefront

Gameplay Planning & Updates

After getting a rough idea of what each area should look like, I started planning for the gameplay flow of each area. This included planning for vantage points, cover, and traversable / climbable areas.

Central Area

Central Bridge

I added some boats to the central canal that can be used as additional pathways to the center power weapon. Since landing in the canal would drown the player, this route to the weapon is more dangerous than just taking the bridge. Additionally, this route provides no cover, adding more to the danger. That said, this route is a little bit faster, if the players are coming from the home base.

I also added some covering structures on each side of the bridge. The cover is large enough to protect a standing Spartan, and can be climbed on to get a higher vantage point. However, since they are in the center of the map with no cover on the top, I predict that the top area will not be used as much.



Figure 15 - The new structure on the red side is a kayak rental building



Figure 16 - The new structure on the blue side is a market stall

Lastly, I added railings to the central bridge. The railing can protect against enemy Spartans on the ground layer, but since the bridge is shorter than the outer bridges, it is unprotected to enemies on those bridges. Additionally, the central bridge is open to fire from the rooftop area on both sides.



Figure 17 - The newly added boats, crates, and railings on the central bridge

Sidewalks

On the sidewalks of each side of the canal, there was no cover currently, except for the few crates I had added by the bridge. I started to add streetlamps to the side walk, which would serve as cover, and would light up the area. After playtesting this update, the area still felt quite open. I added more cover in-between some of the street lights, as well as some further objects on the shoulders of the sidewalks.



Figure 18 - The added streetlamps onto the side walks

Rooftop area

Sightlines

When creating the rooftop area, I discovered an issue that I hadn't planned for on the diagrams. Players on the rooftop had a direct line of fire into the enemy team base, which could lead to spawn trapping. While properly placed spawn points could reduce this possibility, I still didn't like that sightline directly into the base. Thus, I added a large structure to the base entrances that would block the sightline.

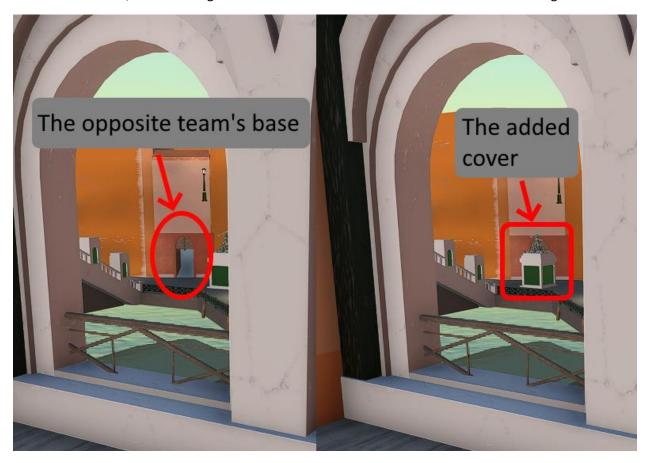


Figure 19 - The sightline from the enterable building into the enemy team's base

I also faced an additional issue where there were too many holes on the rooftop's wall, which led to increased vantage points, but also no cover. This was bad for both teams, as it was harder to predict which hole gunfire was coming from it if was from the rooftop, and it also made the rooftop a very open area with clear sightlines from the other opened building. I solved both issues by closing off some of the holes, further funneling sightlines into a couple of predictable areas while also adding a safe area on the rooftop.

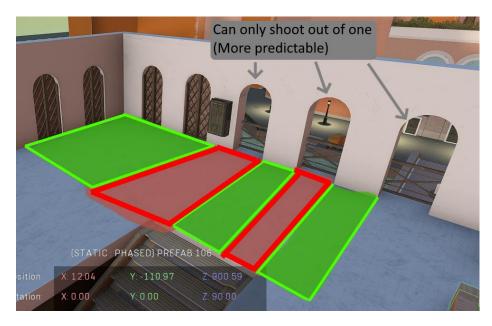


Figure 20 - A diagram of the safe (green) and danger (red) areas on the rooftop.

Entryways

I found that there was currently only one way onto the rooftop, without a grapple hook, which was through the interior staircase. Learning from my previous map, I decided to add an additional pathway through the courtyard. This pathway is a clamber able structure that allows the player to jump onto the rooftop.

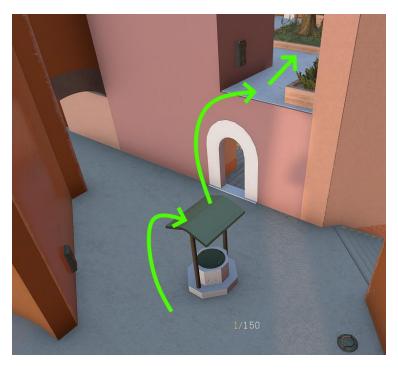


Figure 21 - The newly added well, used to clamber to the rooftop

The entryway with a grapple is an entryway likely used by enemy players. The player would be located ontop of the smaller side canal's bridge, and use the grapple shot on the building to leap over the rooftop wall. While this wasn't originally intended, I found that it was a fun way to reach that area. It also wasn't too advantageous, as non-scoped players would see the player on their radar, and the grappling player, now in the air, wouldn't have too much cover or movement, leaving them open to gunfire.



Figure 22 - The 'grapple entrance' to the roof, if the player enters from one of the corner zones (market or garden)

Weapons

Currently, I had placed a bandit rifle inside the building, and a pulse carbine on the rooftop. While I felt these worked well within the map, I felt that a longer ranged weapon was missing in the sandbox. I added a battle rifle to the starting team's base, but it still felt like there wasn't anything to really fear for ranged weapons. Thus, I added a shock rifle to the back of the rooftop.



Figure 23 - Shock rifle spawn at the water well entrance of the rooftop

Team Bases

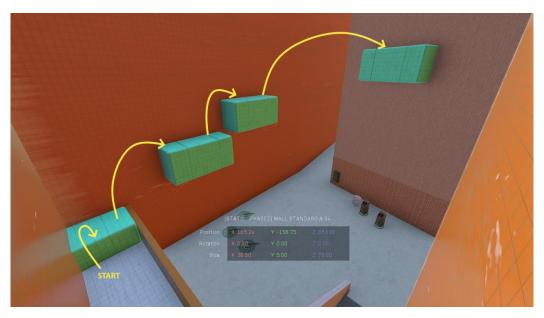
Cover & Platforming

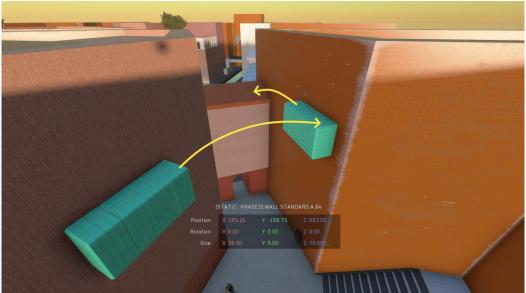
After creating the base's general geometry, I noticed a lack of cover within the base. I then added some pillars underneath the raised platform, and added a streetlamp in the center.



Figure 24 - The added lamp, and arched wall at the team bases

While taking a break, I came across a titanfall 2 video, and thought up the idea of having a clamber-able path that leads out of the base, and leads to a somewhat advantageous vantage point. I pictured the player jumping from balconies to window awings and believed this would be a great idea, and included the geo for this.





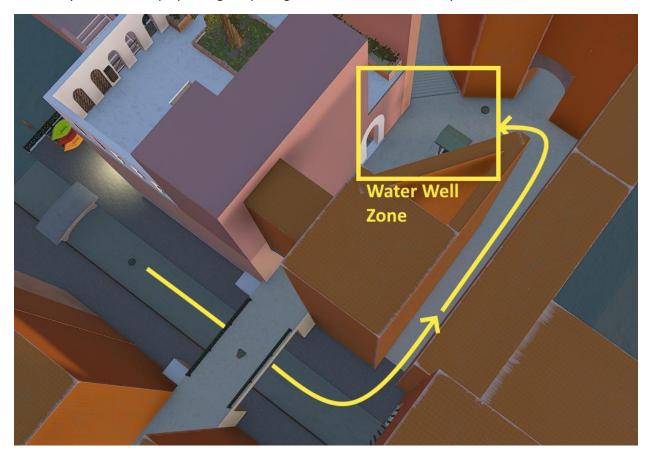
Weapons

I originally only had a sidekick weapon rack in the base. After playtesting, I found myself never going for it, since the extra ammo wasn't as useful as I predicted it would be. So, I switched the side kick for a disruptor, and as a result changed the existing disruptor to a mangler. In addition, I added a battle rifle to the base, as I felt ranged weapons were lacking in the map.

Alley Courtyard (Water Wells)

The courtyard was very open currently, but as mentioned, I added a structure in it to act as a pathway to the rooftop. This, in-turn, also acted as cover in the area.

While I was content with the updated design, I noticed that I left an open area in the back of the small canal. I decided to add some purpose to this area by creating a ramp from that area that leads into the courtyard. I wasn't initially sure on how this would feel, as there would now be 5 unique entryways to the courtyard, but after playtesting the passage, I felt that it worked really well.



Garden Area & Tower Area (Corner Zones)

Cover

For the most part, these areas currently played as I intended them to. I felt that their area was too open however. I added some cover in the area, but still felt that it's sightline into the water well area was too open.

The path connecting the corner zone to the water well area felt too long, and player in the middle of the path would be at a big disadvantage if an enemy player appears in either zone. The enemy player has more cover, as they can hide behind the cover of the walls, while the player on the bridge had no cover.

This was somewhat solved by adding an additional entryway to the courtyard in the small canal, under the bridge, but I also added an arched tunnel on the water well's side of the bridge.

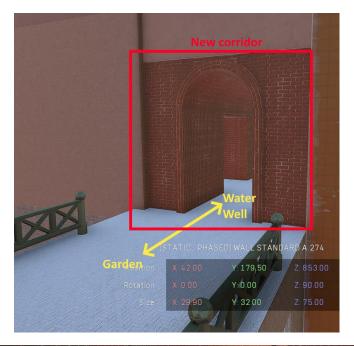




Figure 25 - The corridor has cutouts that the player can hide in while in there

Building Interior

The current building was too open, and sightlines from the other building could easily see into the entrance of this room, effectively blocking off a safe route to the bandit rifle. I solved this by adding partition walls inside the building, creating an additional 'room inside the building, while also acting as cover for the building's entryway.

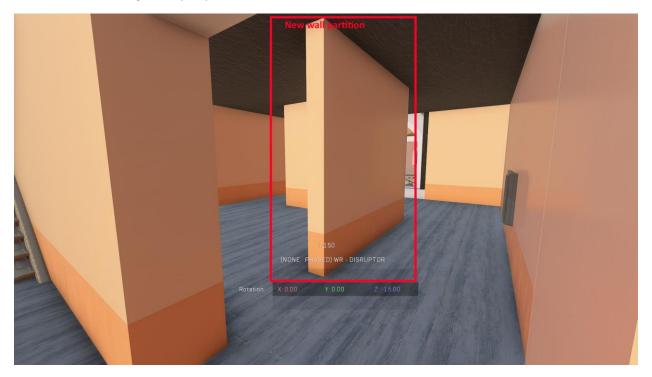


Figure 26 - The new wall partition seen from the entrance of the room

Lighting

After updating the map with gameplay updates, I continued on with the lighting. The mood of the map is 'a summer sunset in Venice', which meant I would need a low angled sun, with a lower lit skylight.

I had already begun placing streetlamps for cover, and had placed spot lights in them, which lit up most of the side walk area.

I then placed some wall hanging streetlamps to be used in the more narrow areas around the map. These areas are the team bases, the water well courtyard, the corner zones, the rooftop, and the small water canal.

For the interior of the building, I placed some roof hanging lamps in the separate rooms.

Path Affordances

One way I used lighting for game flow was in bringing the viewer's attention to a lesser known path in the water well courtyard. Since this entrance is on the outer edge of the map, its likely to be overlooked, and players might just forget about it. I decided to purposely leave much of the outer wall dark, then placing a brightly lit lamp near the center of that pathway, so that it's easier to tell that there is indeed a

pathway there. Additionally, should a player be entering through that pathway, the front of them will be dark, as the lamp behind them casts a shadow, further bringing attention to their presence.



Figure 27 - The back entrance to the water well area. The hidden light draws attention to the entrance

Art Pass & Updated Level Design

After getting the design of the level updated, I started on the art pass of the level. While I had somewhat dressed some areas, much of that set dressing had a gameplay purpose as either cover, or affordances. This art pass was purely aesthetic based.

I started by finding textures and colors for the buildings. Looking at existing references, and going with my own artistic choices, I decided to go with mostly faded out pastel colors for the buildings, with some brick trimming along the bottom.



Figure 28 - Red pastels for the red side



Figure 29 - Blue pastels for the blue side (the red buildings were copied prefabs from the red side that were updated after the screenshot)

For the walkways, I stuck to mostly cobblestone, or ceramic tiles, with a white, grey, and black palette. I found that many streets in Venice used these same colors and textures.





Next was set dressing the buildings with doors, windows, and rooftops. Since buildings were a major part of each playable area, I performed an art pass on each individual area, while placing the building props on their respective areas.



Figure 30 - Building doors and windows were placed into prefabs for quick copy and paste

Budget Issue

After set dressing half of the buildings, I realized I ran into the max budget for playable objects in Forge. Since many of the props I had placed were prefabs created from multiple forge objects, I had quickly ran into the issue of using too many items. As a result, I had to optimize many of the props I had created, and replace the old ones.

After replacing the non-optimized props, I was able to set dress much more of the level, roughly 3/4s, but still didn't have enough budget. As a result, I decided to further optimize some objects that I hadn't altered before, such as the bridges, and foliage / trees. For the most part, I removed all instances of trimming in the level, and for the bridges I had to remove the unique railing style I had originally. While the railing style really added to the bridge, the difference in gameplay was miniscule, and had to be done.

Out of bounds area

Originally, I had intended for a nice view of multiple buildings, and an additional water way on the out of bounds geometry, as I felt that would really add to the feeling of 'a city on water' and 'the city of Venice'. Due to the budget constraints however, I resulted in low detailed houses close to the edge of the map. That said, I feel they still capture a semblance of the initial feeling I was going for, but I would have obviously preferred the original idea.



Playtesting

I was able to schedule a playtest for the map, with the goal of testing the overall flow.

While there were a few visual bugs, and geometry issues, there were a couple of major issues that playtesters pointed out.

- 1. The map overall felt a little too large. It felt like it would be good for 6v6, but was too big for 4v4.
- 2. The pathways across the water canal were too limited, and variety should be added in this area.
- 3. I wasn't capitalizing on the water canal aspect of the map as well as I could've
- 4. There were some empty areas at the end of the map that served no purpose and were too spacious.

While 2-4 were easy fixes, the map being too large was a large change, as much of the design of the map needed to be changed to address this. While I should've been able to determine this earlier on, I likely became too used to the size of the map, and thought that the size was fine, but after having it pointed out, I agreed with the feedback. Thus, I adjusted the map accordingly.

Map Size Reduction

To begin, I removed the outer edges of the map that served no purpose, and were too large, since this was easy. After this, I Had to determine whether I should remove some areas of the map completely, or shrink areas down.

When I was initially testing by myself, I noted down that some passages and hallways felt a little too large to go down, and after performing the multiplayer playtest I determined that these areas were annoying to walk through because of their size, and were still a problem. Thus, I decided to first shrink down these hallways and passages.



Figure 31 - The 'before' size of the small canal alleyway. This area felt too large to go through and felt too open for too long of a time



Figure 32 - The 'after' size of the small canal alleyway. The length of the bridge is noticably smaller, but the overall feel of the area is the same as before.

After shrinking them down, each side of the canal felt like a nice size. Just to reassure myself, I measured some of the existing Halo Infinite 4v4 map's dimensions and compared it to my own, and was satisfied with the results.

Next, I decided to shrink the width of the canal. While having a wider canal felt nice, and more in-line with Venice, it took too long to travel across in-game, and was especially dangerous as it was the wide-open neutral area of the map, with sightlines all pointing to it.



Figure 33 - The 'before' shot of the canal. Notice the middle bridge is present. Also, the length of the white bridge in the back features 6 total arcs.



Figure 34 - The shortened canal. The middle bridge was replaced with a boat. The white bridge in the back was brought towards the center quite a bit, and additionally it now features 4 total arcs rather than 6, showing its reduced length.

A new way across the canal

In total, there were 3 bridges, which had the same gameplay on them. I decided to remove the center bridge, and replace it a boat instead. This helped solve the issue, while also allowing me to capitalize on the theme of venice a little more.



Figure 35 - The boat in the center of the map

I designed it so that the player would have to jump onto the roof of the boat, in order to traverse across it. Since this was the center of the map, there were many opportunities to get onto this boat as well, so there was a better gameplay flow when going towards it.

Additionally, this boat had no cover on the roof, and was wide open. This was the most open area of the map, and adds a new type of area of engagement. Since one of the hills would be located in this area, I added some deck areas to the boat as well, using the control room of the boat as cover. The center hill should be difficult to capture, but not impossible, and having no cover on the boat would make it almost impossible to capture for either team.

Obstacle Height Changes

One thing a tester noted was that many of my jump-areas was at the max jump height, requiring the player to clamber to access them. They suggested to change some of these jumps to be traversable through only jumping without clambering. One reason was because the clamber can reduce the momentum of a player trying to get to cover, and another reason was that this adds variety to the movement on the map.

I agreed with this reasoning, and adjusted much of the obstacles in the canal area to be mid-jump-height. After testing it, this indeed felt much better and increased player flow around the center area.



Figure 36 - One of the obstacle changes. Notice that the roof of this area was dropped down quite a bit, allowing the player to reach it without clambering

Second Playtest Findings

I performed a second playtest to test the final map flow.

For the layout, I was satisfied with how the players were moving around during this playtest, and players were happy that the map was now smaller.

The areas of feedback were revolved around weapon placements, use of affordances, and additional pathing.

Adjusting the center

One piece of feedback was that the center of the map didn't offer too much in terms of gameplay. Players really enjoyed the alleyway combat, but felt that the center of the map was too open to risk going into. Additionally, the gravity hammer wasn't sought after too much, since it spawned in the open.

I decided to add an upper layer to the boat. This now added another layer of verticality in the center area, and also added a point of cover in the center of the map. Additionally, it helped add a safe zone from the building's sightline towards the opposite sidewalk.

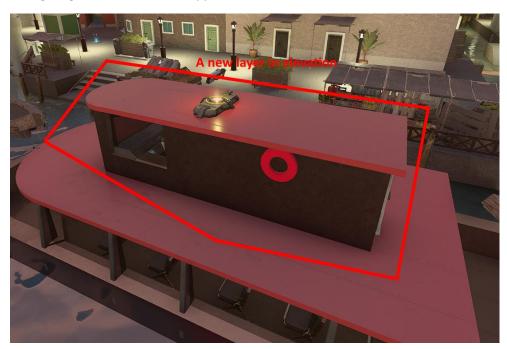


Figure 37 - The new layer of the boat offers a new layer of elevation in the center

I ensured that the roof of this section was reachable by every level, as this is where the power weapon spawned.

Another piece of feedback was that there a path from either bridge to reach the boat. I moved the canoes over a bit, allowing the player to jump onto them, creating a path to the boat from each bridge I also added an additional canoe on each side, to allow for more platforming opportunities to cross the canal

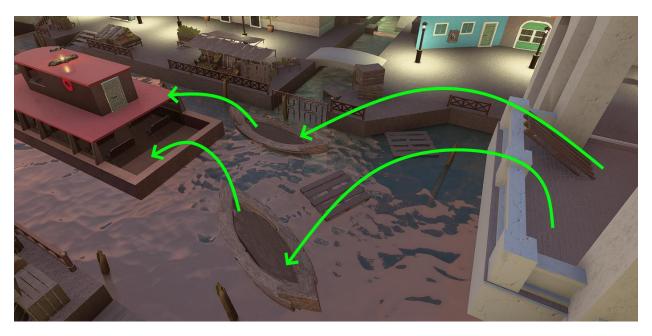


Figure 38 - A diagram of the pathway from the white bridge to the boat

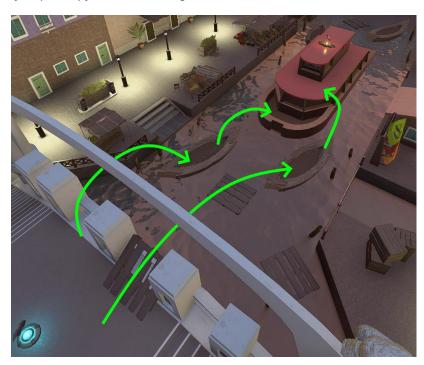


Figure 39 - A diagram of the pathways from the statue bridge to the boat

For the center weapon, I determined that the issue was that the gravity hammer had no immediate playability, when picked up. Since it spawned in the middle of many different sightlines, it was often in sight of ranged enemies, which the hammer couldn't immediately attack. I decided the best course was to change this to a Backdraft Cindershot. This allowed the player to immediately retaliate on atleast some of the foes targeting them, which also still serving the purpose of being very powerful in the close quarters section of the map.

Corner Area Weapons

A major issue was that players felt that map was really revolving around owning the original cindershot spawns, as they were the most powerful weapon for this map. This went against what I was going for, since there would always be 2 on the map, and during playtesting they felt too powerful.

I tried a few different weapons here, including the Hydra variant, Sniper Rifles, and the Heatwave variant, but all of them felt too powerful for this map, either in the ranged section, or the close quarters section.

I settled on the Skewer as the final weapons for these corners. While it was a sniper rifle, it was less powerful, as it had a smaller magazine (1 round) and it's projectile was a physical bullet, rather than a raycast / linetrace. After playtesting with bots, I felt this was the right move.



Figure 40 - Skewers have replaced the old cindershots in the corner zones (garden & market) of the map, as they felt more balanced for this particular map.

Final Map

After some additional small changes and fixes around the map, I was satisfied with the game flow, and aesthetic of the map, and decided that it was finished.

While the name Alto Mare is not original, as it is from the Pokemon Movie; Pokemon Heroes, I couldn't think of a nicer name, and decided to stick with the name.

Updated Map Photos















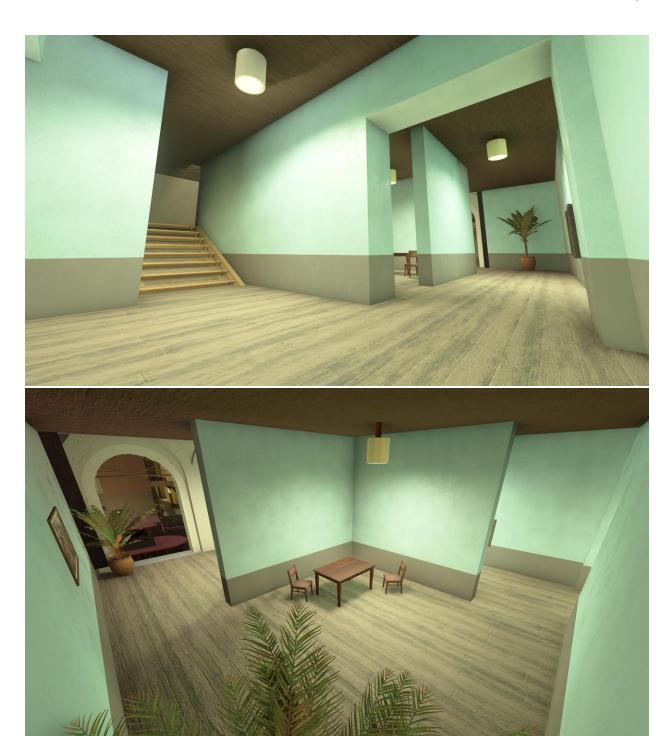












Final Thoughts

I really enjoyed the process of making this map. I feel that my previous experience with my level, Water Damage, really helped me in making this design feel much better in gameplay flow, and level navigation, and overall feel that I've improved as a level designer.

One thing that was a big issue was the map resizing. I should have playtested much earlier, as that would've determined the issue much sooner. I will make sure to try to playtest as early as possible for future maps.