

The Dark Mod: “The Canal” Level Design Doc

Overview:

Intent: My previous level for *The Dark Mod* was structured around creating an intro area to serve as a surrogate “tutorial” before opening up into a more conventional *Thief* map. While I think it was somewhat successful, the layout was stilted in order to accommodate an isolated, linear area at the beginning. Additionally, the map was completely devoid of items like water arrows, restricting the amount of system-driven gameplay expected with a *Thief* map. A number of aspects also highlight the level’s artificiality, including all corners snapping to 90 degree angles, and some macro-orientation in the basement that was completely incidental, and not carried through consistently with the upper levels.

The intent of this level is to better accommodate the use of multiple tools, such as water arrows and rope arrows, to allow for more open-ended solutions and paths, while providing a mid-game or late-game experience one would expect in a *Thief* game. In addition, this level should hopefully use some techniques I’ve learned since making my previous *Dark Mod* map, including macro-orientation, and lighting to enhance reads.

Goal: The player will need to board the ship containing the artifact, retrieve it, then exit the ship before it’s able to move into the ocean. The player can stop the canal mechanism in a building where the canal mechanisms are stored, but this will cause guards to more actively patrol the target ships.

Length: The ticking clock of the ship moving through the canal locks should make the player feel like they’re being “rushed”, but the amount of time it takes should be reasonable. Based on research on the Panama Canal, having the “rushed” time take 30 minutes is realistic. Buying more time by jamming the controls should relax the whole play session to take 45 minutes to an hour.

Difficulty: The surrounding structures of the canal will provide larger areas for the player to move around and along to accomplish the first sub-goal of boarding the ship, with additional side-areas for warehouses, storage, and operation of the canal’s machinery. Once on the ship, however, the space will become restrictive and tight, complimenting pacing as it moves towards the “climax” of the level’s narrative.

Because of this, on a scale from 0 to 100 (impossible to fail and impossible to succeed, respectively), the areas outside the ships should be about a 50 in difficulty, with the ship deck and interiors escalating to about a 65 or 70.

Setting and Narrative: Approached by a merchant from a large trading company, Garrett the player is tasked with stealing an artifact from a ship owned by a rival trader. The ship’s route, however, is to go out to sea and travel along the coast, making catching it near-impossible.

Fortunately Garrett the player still has time to intercept it at a shipping canal right at the mouth of the ocean, where it will need to go through a set of locks to reach sea level.

This mission takes place at the shipping canal at night, with the boat moving in real-time through two locks connecting the canal to the ocean. The player will need to steal the artifact from the hull of the ship; if the boat reaches the end of the canal and moves into the ocean, the player will fail the mission. The player can also sabotage the controls in a building on the shore to stop the ships indefinitely, but that may cause a great deal of agitation and suspicion with the dock workers and the crews of the ships.

All ships are normally required to go through the canal during normal working hours, so that an independent customs inspector can tally what's in the cargo. However, the trader who owns this particular ship can't have the artifact entrusted to the captain to be seen. As a result, the trader has cut a deal with those that run the canal, allowing the ship to pass through the dead of night. Informed that they must be on assignment around midnight, a small contingent of (disgruntled) workers are present in the complex.

Walkthrough:

PLEASE NOTE: *Because this is a level in the style of Thief, there are many potential permutations of paths that the player can take. As such, making an exhaustive walkthrough of all path combinations in all directions would be near impossible. Below is one walkthrough which attempts to cover as much ground in the level as possible.*

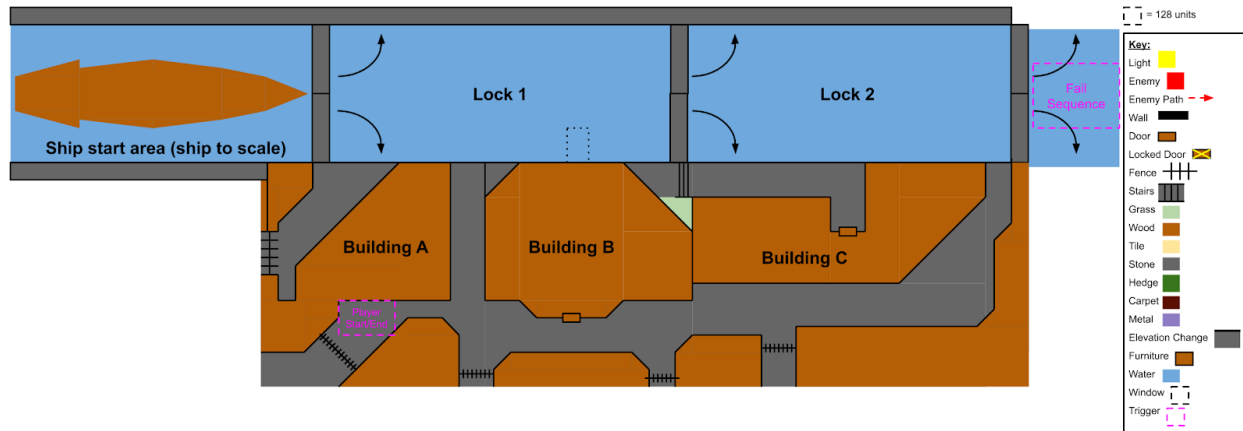


Fig. 1: A diagram of the level area as a whole. Full size can be viewed [here](#).

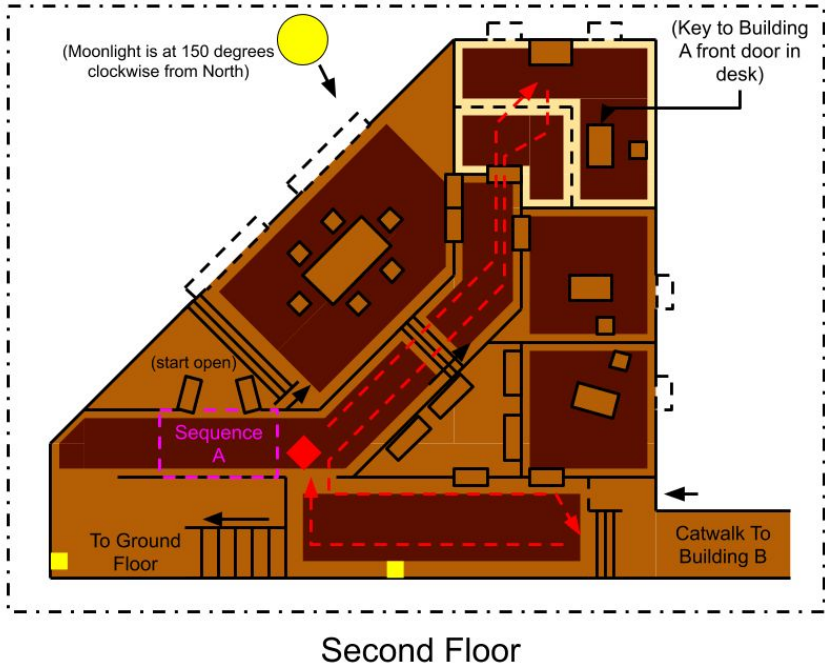
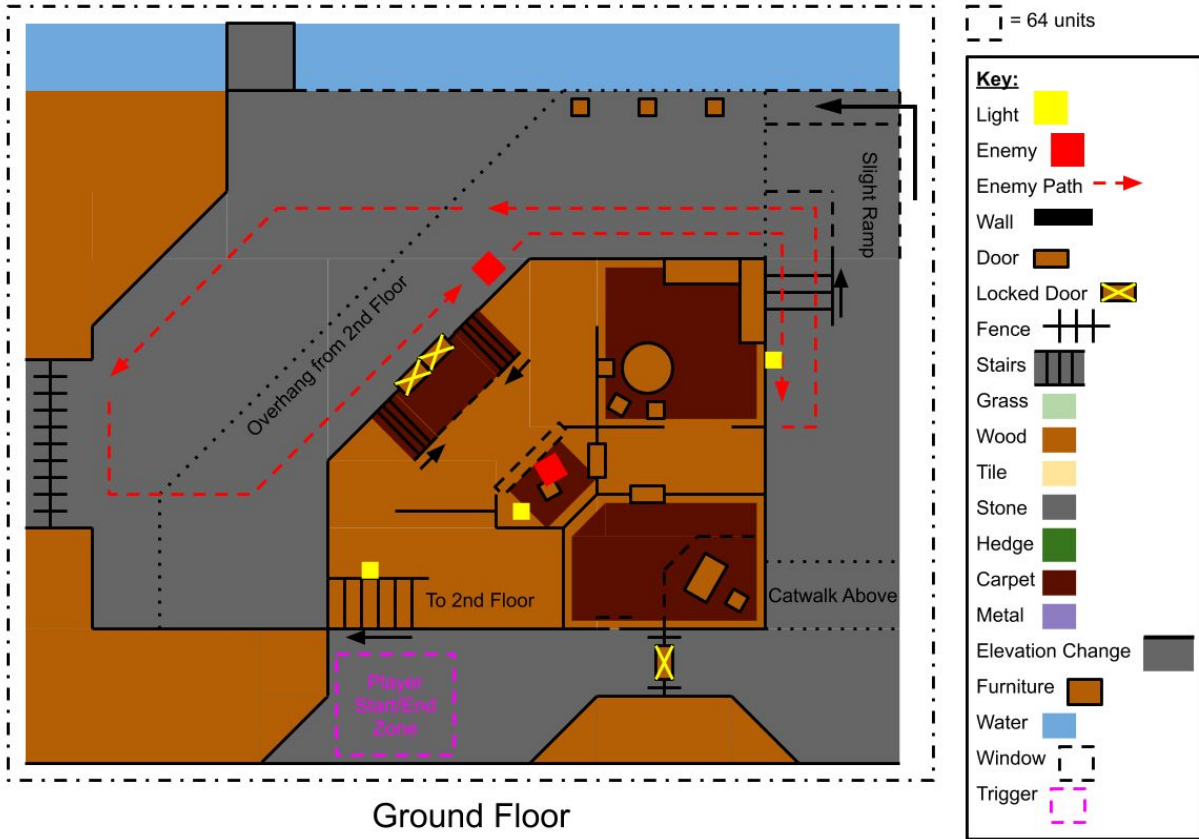
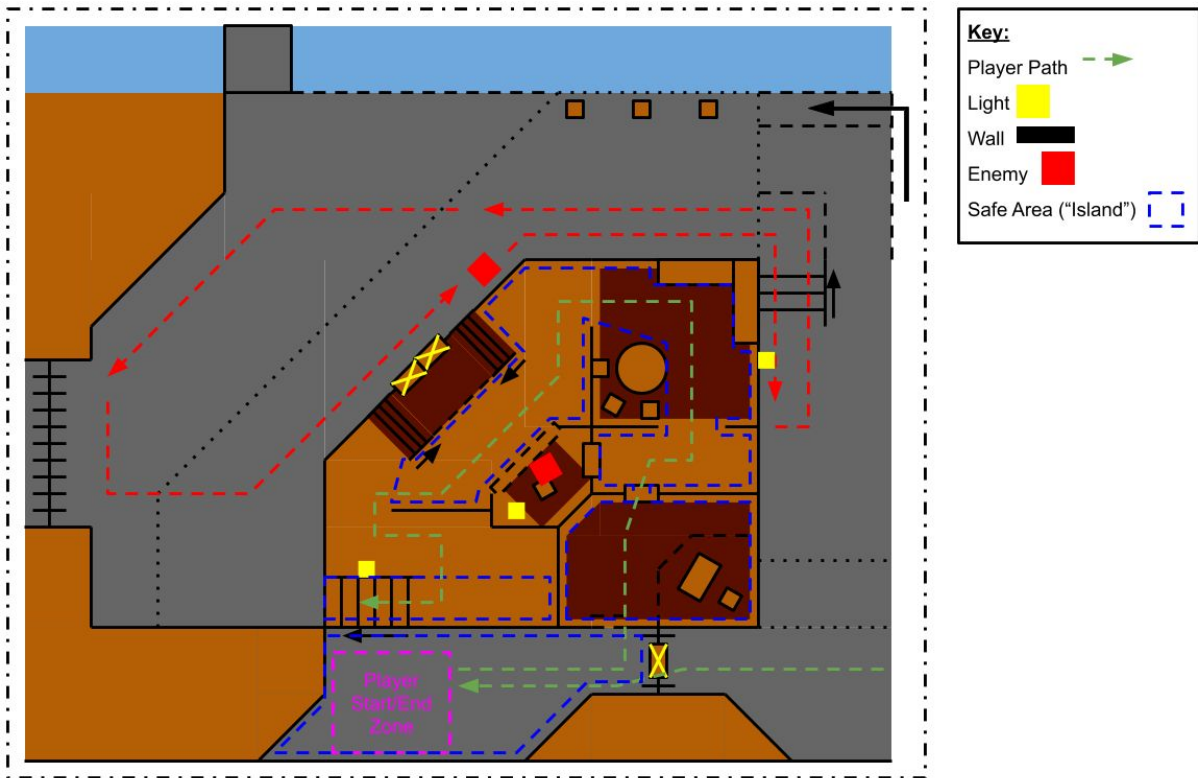
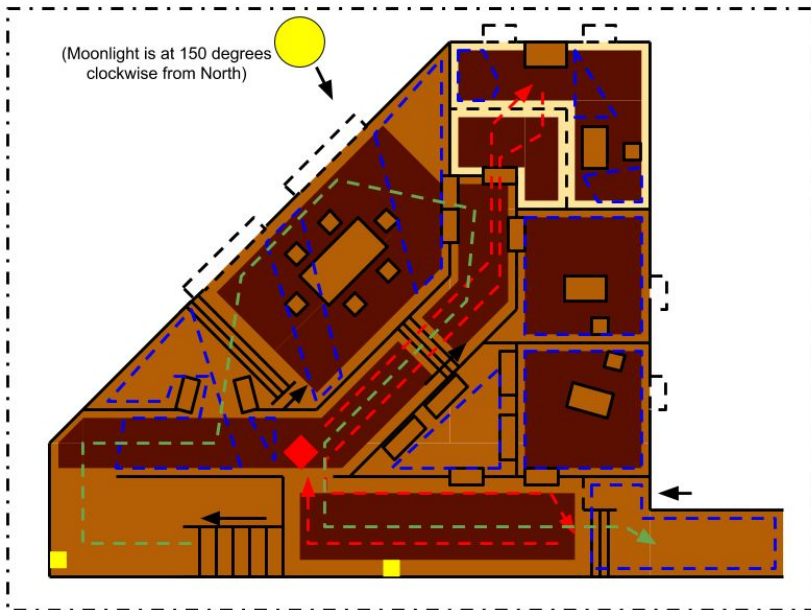


Fig. 2a: Layout of Building A. Full size can be viewed [here](#).



Ground Floor



Second Floor

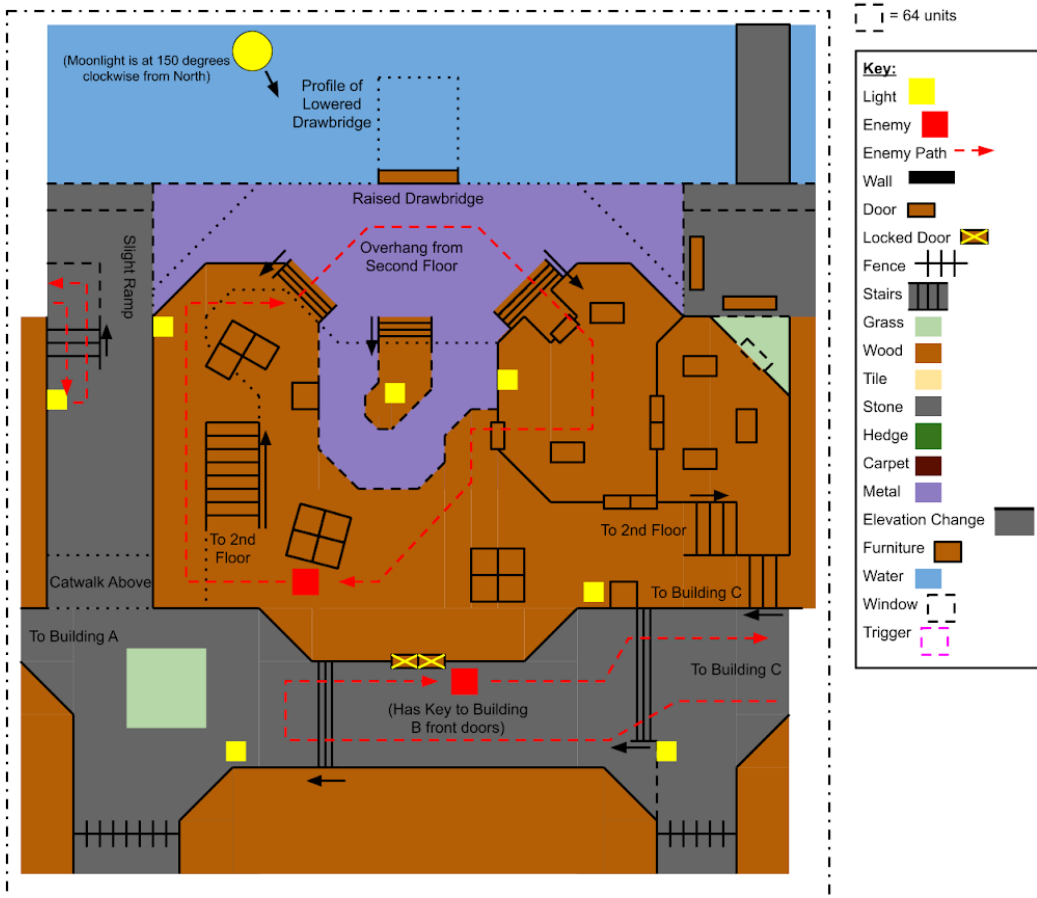
Fig. 2b: Layout of Building A with example player path and safe areas. Note that safe areas are unlit, do not have an enemy patrolling through them, and are not on "noisy" surfaces (tile, metal, and water). Full size can be found [here](#).

Ascent through Building A: The player starts in an alley on the back side of Building A. Ahead of them is a gate that leads to the back street that goes behind Buildings B and C, but it's locked. Right next to it is a window left open; climbing through, the player finds themselves in an office. Across the way is a door which leads to a small hallway. In the hall to the left is a door leading to a reception desk, where a guard is stationed; across and slightly to the right is a doorway to a kitchen area.

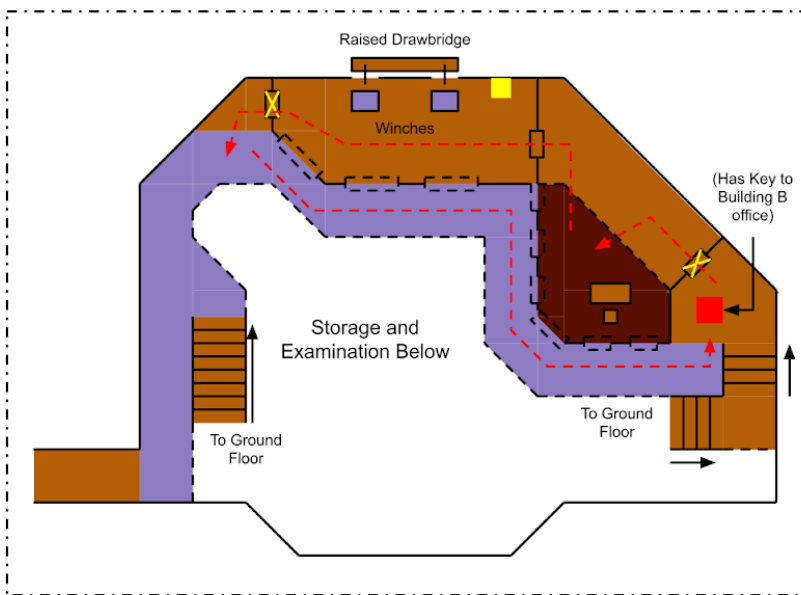
Going through and turning left the player sees the lobby of the building, with the front doors locked. A light shines through the window of the reception desk where the first guard is sitting, illuminating the slightly raised entry. Because of its angle, however, the area closest to the window's base is still in shadow. Using this, the player can sneak by the guard into the hallway on the other side. Turning left, then right, the player sees the stairs leading up to the second floor.

Going up, then right around a U-turn, the player sees a guard right in front of them facing the other way. Moonlight shining through an open double-door on the left draws the player into the meeting room through there. On entering there, the player should see the first lock's entry gates open and the ship start to move, signifying the start of the "timer" of the canal. Progressing to the other side of the meeting room, the guard, who has started patrolling along the hallway on this floor, should be visible.

Circumventing him, the player should be able to move down the hall back to the area where the guard was loitering before. Going through the other hall there and taking a left, the player can move down the hall right to the catwalk that connects to Building B.

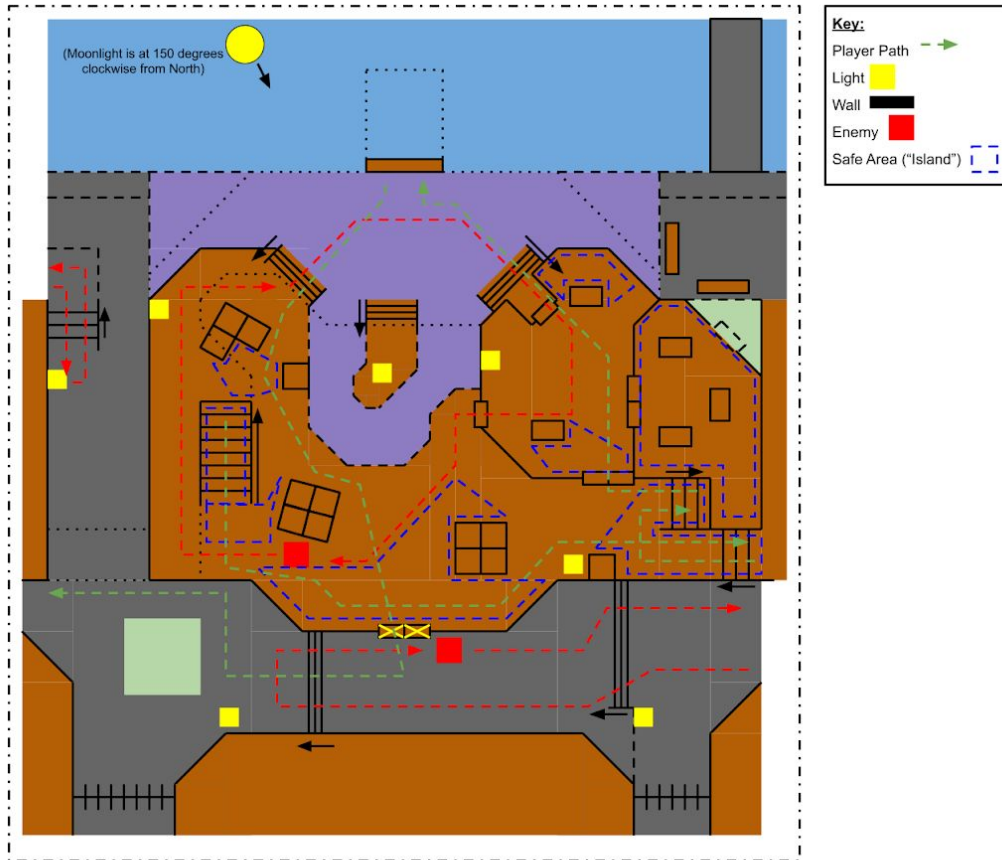


Ground Floor

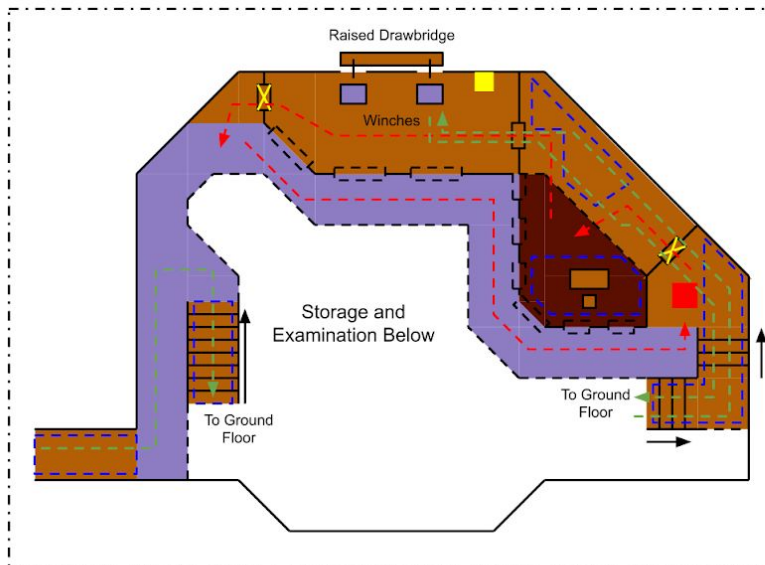


Second Floor

Fig. 3a: Layout of Building B. Full size can be viewed [here](#).



Ground Floor



Second Floor

Fig. 3b: Layout of Building B with example player path and safe areas. Note that safe areas are unlit, do not have an enemy patrolling through them, and are not on “noisy” surfaces (tile, metal, and water). Full size can be found [here](#).

First pass through Building B: The player comes out onto a metal walkway that frames the perimeter of the second floor of Building B. Taking a left, the player may see a guard patrolling around the other half of this floor. Staying quiet and possibly deploying a moss arrow, the player takes the next right to go down the stairs to the ground floor.

Potentially waiting for another guard to pass on its patrol, the player crosses over to the foyer of Building B. With the front doors being locked, the player progresses further along the building, taking a slight left then a slight right into a hall heading towards Building C.

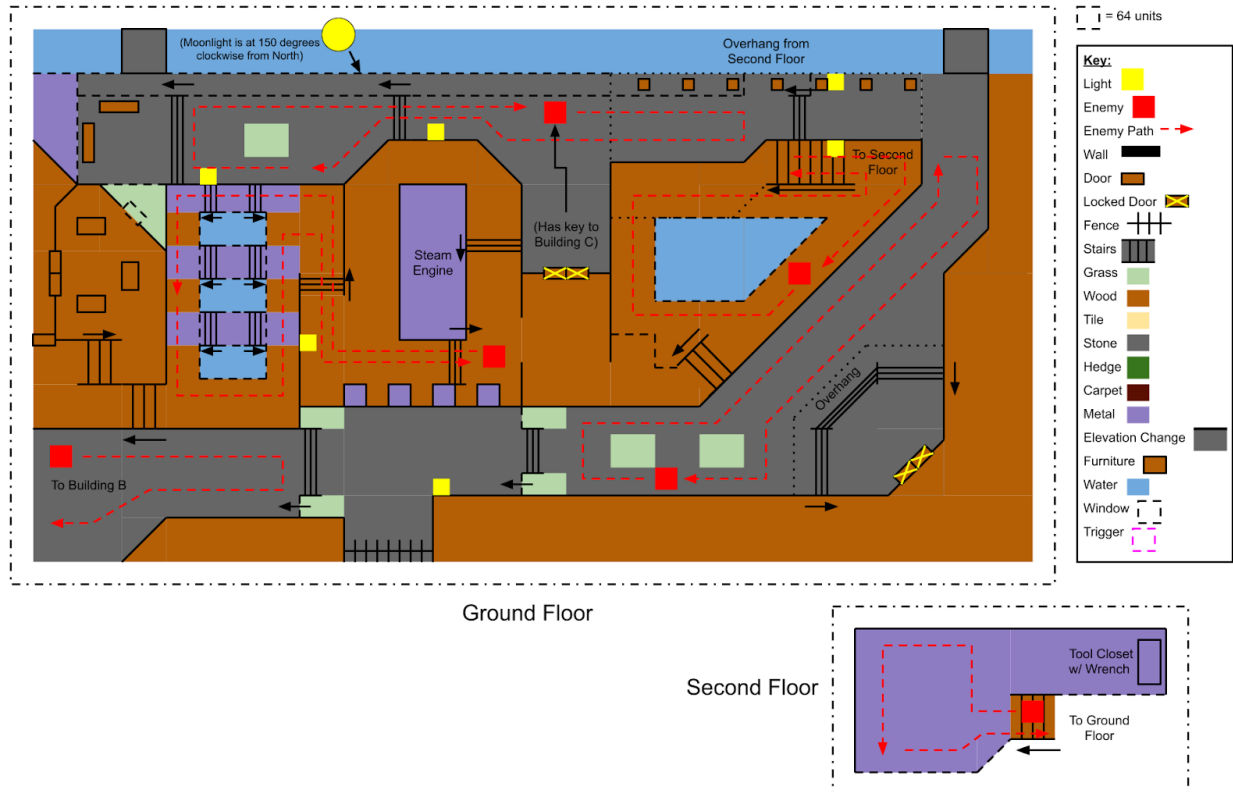


Fig. 4a: Layout of Building C. Layout can be found [here](#).

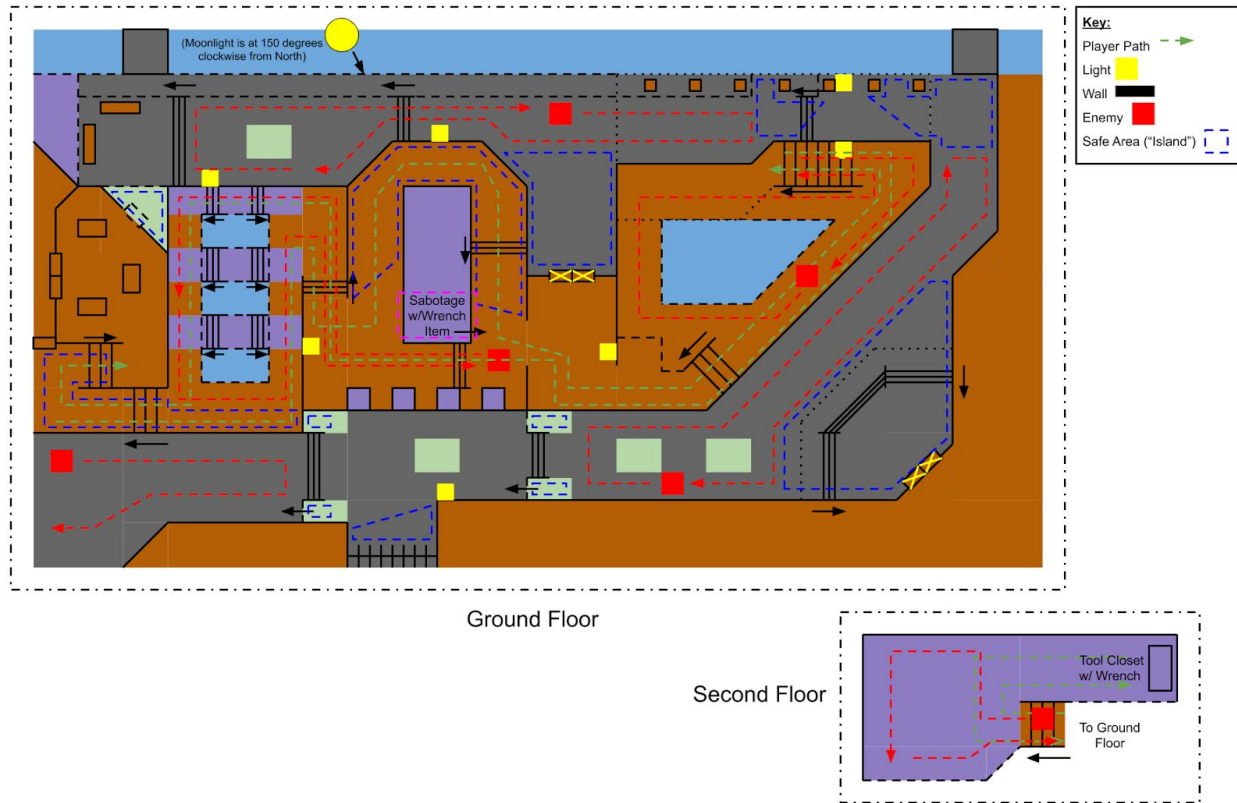


Fig. 4b: Layout of Building C with example player path and safe areas. Note that safe areas are unlit, do not have an enemy patrolling through them, and are not on “noisy” surfaces (tile, metal, and water). Full size can be found [here](#).

Entering, disabling, and exiting Building C: Going down the stairs, the player sees the room open up to their left. A vat of water is visible, with metal walkways providing connections between the two sides. A guard may be patrolling along here, so the player will need to be careful when moving across the metal surfaces.

Following along the farther wall, a U-turn to their right brings the player into a room with the pump powering the canal system. Across the room to their left is a doorway leading to the entry of Building C, but the patrol path of the guard here covers this area; the player can slip around the other side of the steam engine by taking a U-turn left.

Passing through the entry, the player enters a door slightly to the right to enter the other vat room. A bit to the left, the stairs to the tool storage area are visible. A guard is patrolling both floors, so the player will need to stick to the left wall, jumping over the railing in the raised entry, and slip up the stairs while the guard is facing away. Once at the top of the stairs, they can take a U-turn to the right, where a tool closet is visible. Opening it, the player sees a wrench that they can take as an item, after which they double-back down the stairs.

Once back on the first floor, the player navigates through the lobby back over to the room where they passed the steam engine. Waiting for the guard to not be present in the room, the player goes up to the front of the machine and uses the wrench on it to jam it into the gears,

shutting down the canal system and leaving the ship stranded. From here, the player can retrace their steps back to Building B in order to board the ship.

Boarding the ship through Building B: Once back in the hall connecting Buildings B and C, the player can take a U-turn right to take the stairs up to the office area. The guard the player had to avoid when entering from Building A is patrolling around here, possessing the key to the office and the winch room. Hanging out and picking his pocket for the key, the player then enters through the office, and continues through to enter the winch room. Activating both winches lowers the drawbridge, giving the player an easier way to board the main deck of the ship.

Turning around and making their way back down the stairs, the player takes a right to go through the ground-level offices. Hiding behind a desk if a guard happens to be passing through, the player then moves to the other end and exits through a door onto the loading dock, then proceeds carefully across the metal surface onto the drawbridge to board the boat.

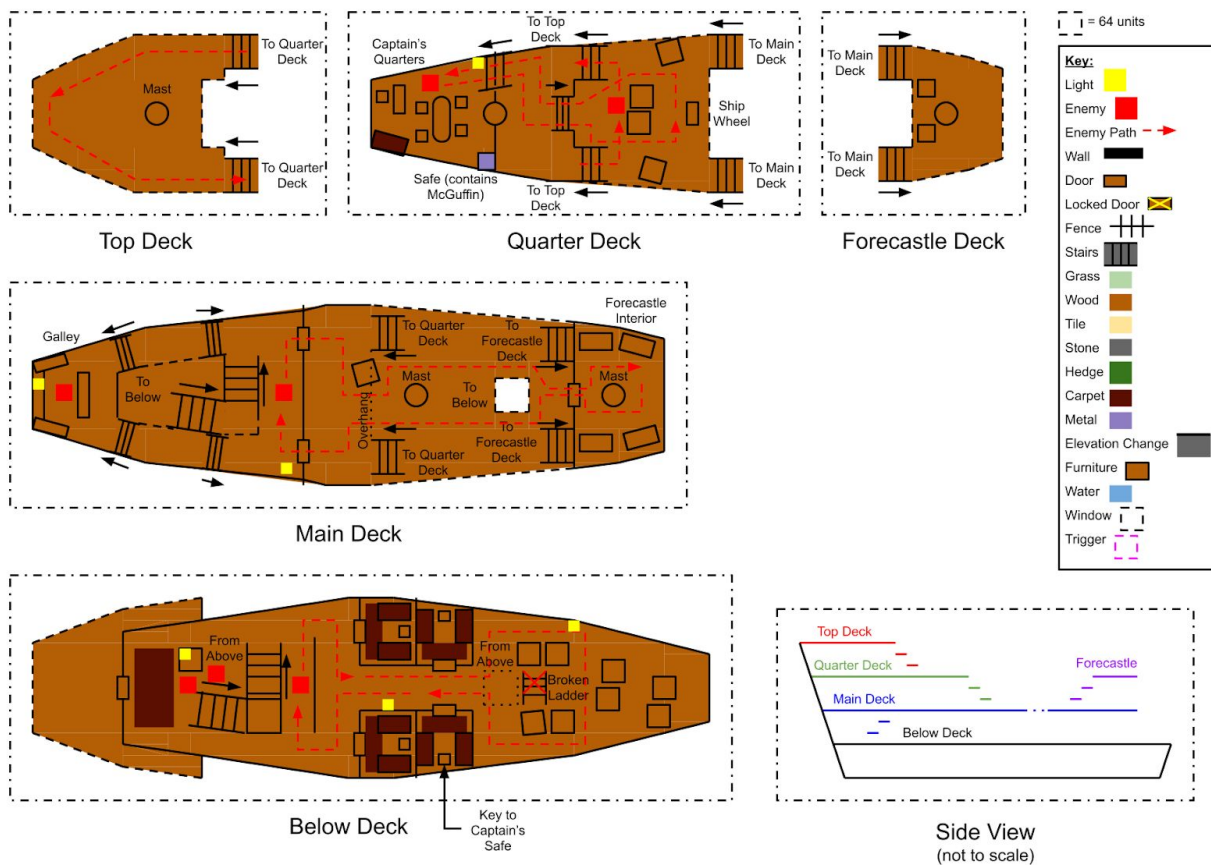


Fig. 5a: Layout of the ship. Full size can be found [here](#).

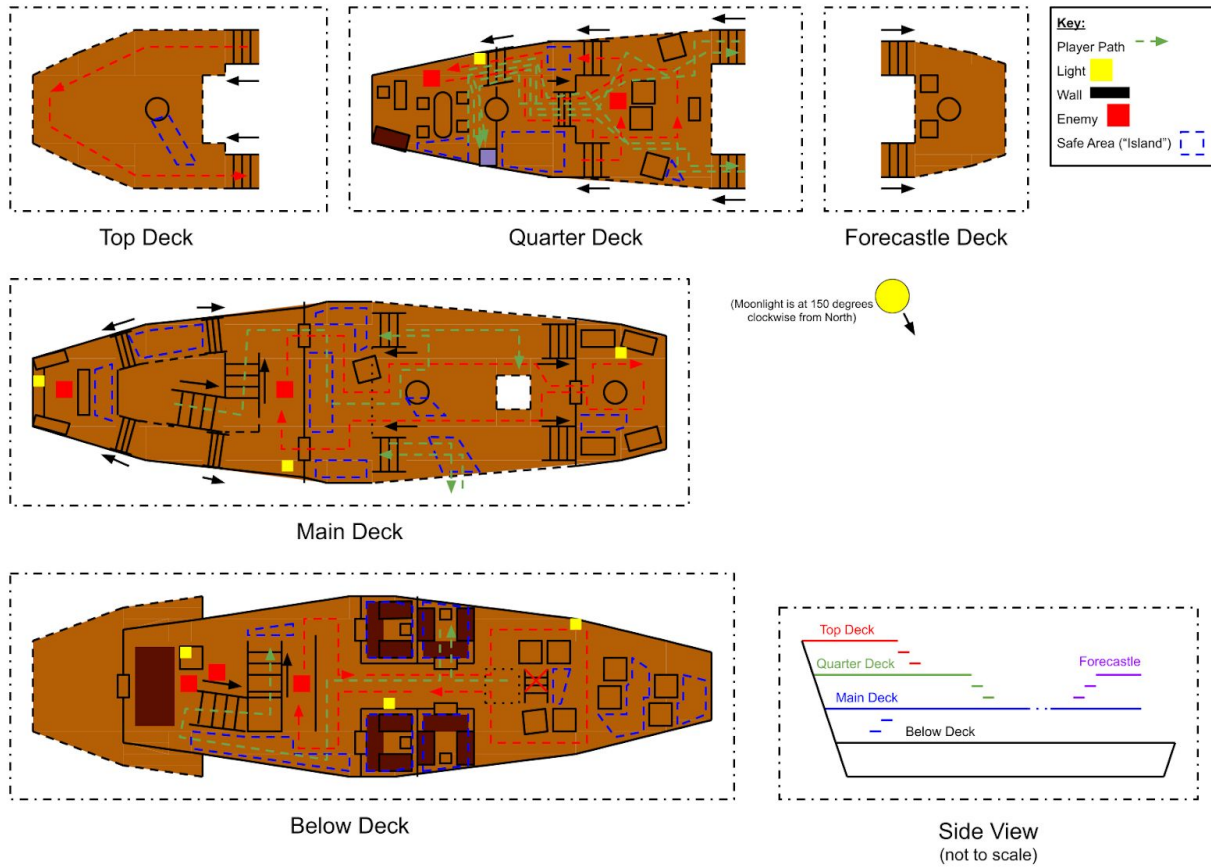


Fig. 5b: Layout of the ship with **example player path and **safe areas**. Note that safe areas are unlit, do not have an enemy patrolling through them, and are not on “noisy” surfaces (tile, metal, and water). Full size can be found [here](#).**

Within the Ship: Boarding onto the starboard side of the main deck, the player is covered by the shadow of the main mast. Waiting for a guard to pass by, the player takes the stairs to their left up to the quarter deck. Behind a crate there, the player can wait for a crew member and the captain to pass before slipping left then right around some crates before entering the awning of the captain’s quarter entry. A couple of areas to the side are available for cover if the player needs to circumvent the captain coming in or out.

Turning right then left at the entry brings the player into the Captain’s Quarters. To the left, the player sees the safe they need to retrieve the doohickey from, but it’s locked. A note nearby hints at the captain hiding the key in the rooms of one of their crew members below deck. Heading back out, the player heads down the stairs on the port side this time to the main deck, then drops into the hatch there below deck.

Waiting for the guard to not be patrolling down the narrow hallway, the player searches through the rooms there, the key being located in the first room to the right. Waiting for the guard to pass, the player moves along the hall and turns left, then right. Moving along there, the player takes a U-turn to the right in order to start climbing the stairs, slipping by a couple of card-playing crew members there.

At the top of the stairs, the player takes a right, exiting onto the exterior of the main deck. Taking another right, then left, the player swerves around the main mast to take a U-turn left up the port-side stairs. Slipping back into the Captain’s Quarters, the player uses the key in order to open the safe and steal the goal. Exiting, the player heads back down the starboard side stairs and exits the ship the way they entered.

Exiting the Scene: Sneaking to the right, the player slips between a couple groupings of crates. Waiting for the guard to be in the offices on the other side, the player moves alongside the stairs then passes by another group of crates, crossing the entry area to get next to the doors. Picking the lock, the doors open up to the street. A guard is patrolling this area, but if the player can pick his pocket they’ll obtain a key to the gate to the right of the Building B entry. Sneaking along there and opening it, the player ends up back in the alley where they started the mission, the level completing as they enter.

Asset List:

Gameplay Logic:

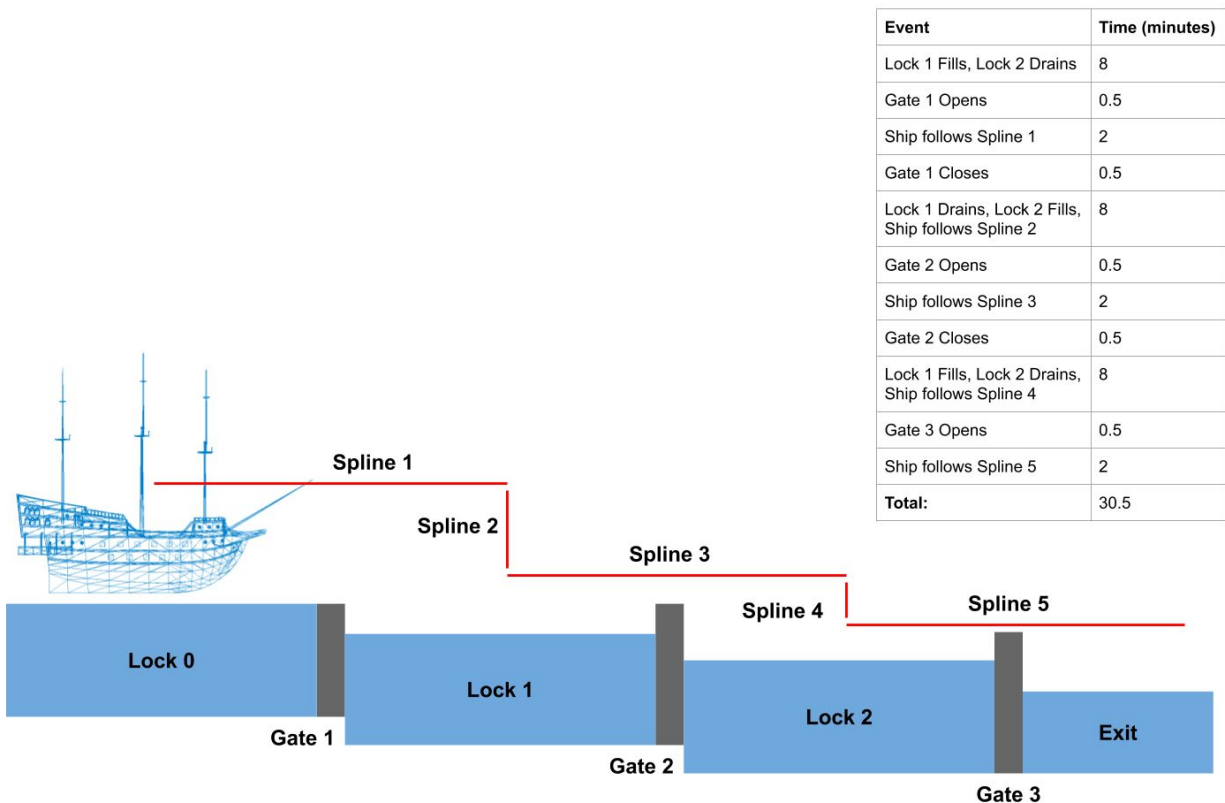


Fig. 6: The layout of the canal and splines, with a table for the approximate timing of events

- Objectives:

- Find a way to get on the ship
- Find and obtain the McGuffin
- Get off the ship with the McGuffin before it goes through the canal
- Return to where you started the mission
- Don't let the ship get through the canal with the McGuffin on it
- **Special Items:**
 - Wrench item that can be added to player's inventory

Sequences:

- *Sequence A* (fired by touching Sequence A trigger on Building A second floor):
 - Lock 1 starts to fill and Lock 2 starts to drain. This is when the "timer" of the ship starts. Guard on the second floor of Building A starts to patrol.
- *Sabotage w/Wrench Item Sequence* (fired by using wrench item on gears in front of steam engine in Building C):
 - Stops the canal sequence, and the "timer" of the level. Gears which should be rotating in front of steam engine should stop, with wrench model visible. Completes the "Don't let the ship get through the canal with the McGuffin on it" objective
- *McGuffin Obtained Sequence* (fired by obtaining the McGuffin on the ship):
 - Completes the "Find and obtain the McGuffin" objective
- *Fail Sequence* (fired by the McGuffin or the player touching the Fail Sequence trigger):
 - Player fails the mission
- *End Mission Sequence* (fired by touching Player Start/End Zone after completing "Find and obtain the McGuffin" objective):
 - Player succeeds the mission

Text:

- *Ladder Note* (found on ladder on ship):
 - Builder-damned ladder's broken again! Use the stairs near the galley.
- *Note to First Mate* (found in Captain's Quarters):
 - For First Mate Cromley in the event that the Captain is deceased, indisposed, or otherwise unable to complete the current mission: the contents of the safe in my quarters is meant solely for the eyes of its intended recipient as outlined by our client. Stay the course to our destination. Once docked, retrieve the key from under the mattress in Caldwell's bunk, hand it to our recipient, and allow him to retrieve the contents from the safe unattended. After he leaves the ship, you may make arrangements for my remains.

Art:

- *Gear shader*

- Highlight shader to indicate that gears can be interacted with

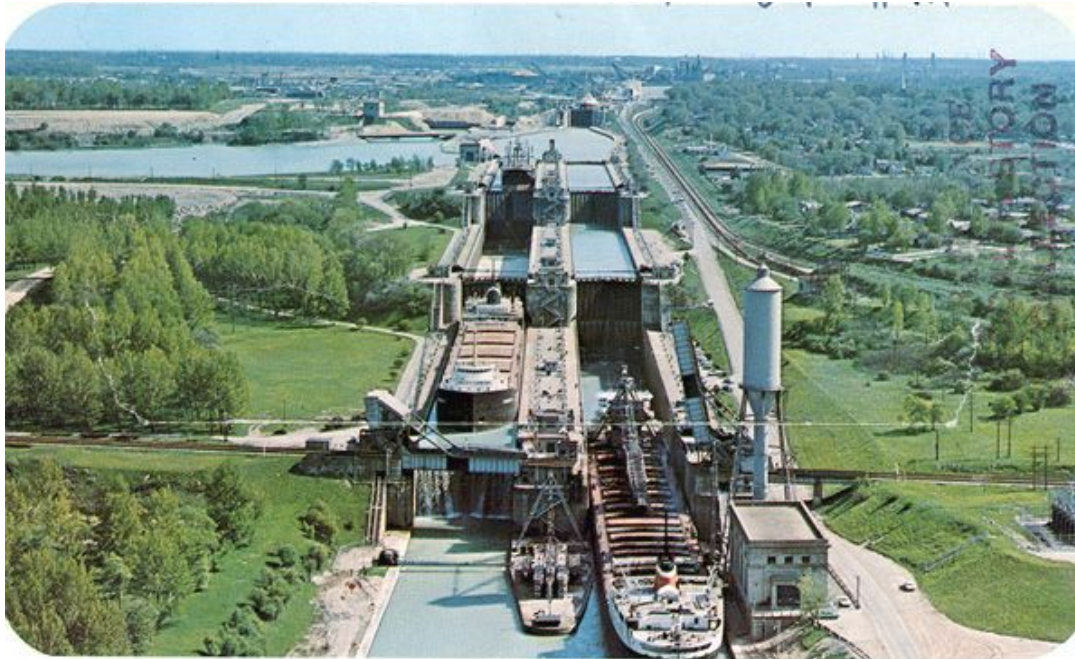
Reference Images:



Fig. 7: A shot of two ships going through the Panama Canal. Note the structures on either side, as well as the buildings on the strip in the middle



Fig. 8: A close-up of the elevation changes in the Panama canal.



Locks 4, 5, 6 and 7 at Thorold

Fig. 9: A shot of the Welland canal in Ontario. Very similar structure to Panama.

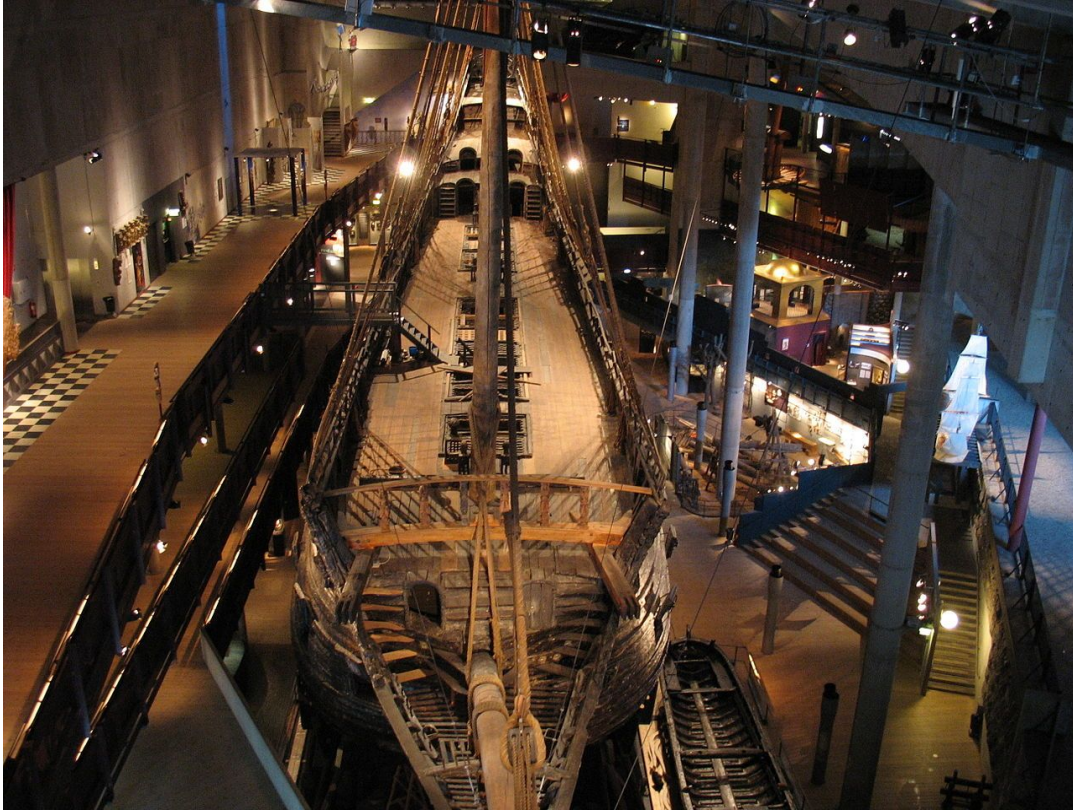


Fig. 10: The bow of the Vasa, a restored Swedish galleon



Fig. 11: Below-deck on the Vasa



Fig. 12: A captain's quarters area on a more recently built ship



Fig. 13: A more historical-looking captain's quarters. Likely a recreation.

Narrative Considerations:

Who is operating the gates between each lock?

Who is moving the ship forward?

Research:

A lock in the Panama Canal takes 8 minutes to fill up with water; with a level involving a 3-lock structure, that would involve 24 minutes of water filling. Thus, a half-hour duration without the player disabling the controls is feasible. Water is pumped from tubes at the bottom of each lock between locks to change water level.

In the Panama Canal, locomotive vehicles on either side of the lock are tethered to the ship, and move along with it to ensure the ship remains centered. Would this serve as a good side-objective to stop the ship from moving?

The ship model provided as an asset in *The Dark Mod* seems most analogous to a galleon, a ship type invented in the mid-1600s. Most were used for trade, though could be fitted for war. They typically include a quarter deck, raised behind the main deck, where the ship's wheel is located; a poop deck, further raised behind the quarter deck, that serves as the roof of the captain's quarters; and sometimes a forecastle, a raised deck in front of the main deck, under which a number of senior officers can be housed.

Technical Risks:

A moving ship is possible in *The Dark Mod*, though keeping the interior with it will be a huge challenge; this will require a large number of objects to have the *bind* spawnarg attached to the ship, and it is unknown if there's a maximum amount that can be present on one object, or if a hierarchy of bindings (a is bound to b, which is bound to c) is possible. One large mesh for the whole interior of the ship may be modeled to simplify and reduce this, but I'd prefer not to do that, especially since I'm unfamiliar with importing meshes into idTech4. Also I'm pretty shit at texturing.

Tests have been done to ensure that patrol nodes for AI can be bound to moving platforms and if AI will be able to reorient their steering to account for this; both are true.

A preliminary test has also been done to make sure that water volumes can move in order to simulate the water draining and flooding within the canal's locks. While a basic *moveto* function in scripting cannot move a water volume, the *setWorldOrigin* function can. The only problem is that *moveTo* can do this over time, while *setWorldOrigin* does it in one frame, with the water "snapping" to its destination instantly. This can be gotten around by calling *setWorldOrigin* every frame and having it change its target vector3 slightly until the destination is hit.

Performance is also a concern. In order to fit the ship model provided, the space of the lock needs to be very large; the initial idea for the level was to have two ships passing each other through two canals side by side, going through three locks like the Panama canal has. However, this has been reduced to one ship going through two locks. The original idea for the map also included areas on both sides of the canal for exploration, but this has been reduced to keeping the play area on one side.

In order for the ship to move with its interior geometry it cannot be worldspawn geo, meaning it will not cull any areas that are not visible when the player is inside of it. As such, within the ship may be the least performant area of the map. Any hacks that are present to get this area running more smoothly should be considered. If this cannot be accomplished, then the ship may just have to be made static, with the canal movement abandoned entirely. This is a last resort, 'cuz, y'know, it's *lame*.

Feedback:

Paper Maps:

Carl: Think of multiple and interesting ways to get on the ship, possibly one involving swimming. Make moving through the buildings necessary.

Postmortem:

To be written after.