GAME DESIGN & LEVEL SPECIFICATION DOCUMENT (GDD)

Still Life

First-Person Environmental Puzzle & Companion Gating Design Specification

Author / Role	Kevin (Lefi) Shan: Solo Game & Level Designer, Programmer	**Engine & Stack**	Unity 6 (URP), C#, Custom HLSL Kuwahara/Ink Shaders
Production Scope	Solo Prototype · USC CTIN (Situated Role: The Dreamer)	**Facility Scope**	200m Linear Facility (5 Rooms + 3 Hallways) · 4-Phase Weight Locks



Figure 1.1: Room 2 Three-Story Menagerie Archive where animated book flocks flutter past rigid animal vaults.

Executive Summary & Level Design Intent

Still Life is a first-person puzzle game set inside a monochromatic gallery and foundry where the roles of living creatures and household objects are swapped. Motionless living animals stand completely still and silent on pedestals, leading players to use them as pressure-plate counterweights, gap bridges, and mechanical wedges. Meanwhile, a desk lamp shivers in the dark, flees when startled, and warms up when comforted.

The level progression is built around habit formation and subversion. Across Rooms 1 to 3, every lock-and-key puzzle trains the player to treat animals strictly as physical weights while protecting the lamp. In Room 4, an industrial shredder blocks the exit and asks for one inanimate object. When the shredder rejects the dog as a living organism, the player realizes the mute animals were alive all along and the lamp is the only object the sensors will accept.

1. Core Level Design Pillars & Companion Gating Loop

Section 1.1 to 1.3

1.1 Role Reversal of Props & Companion

Although alive, the animals have zero idle animation and zero audio, leading players to treat them purely as multi-use puzzle props (weights, bridges, and wedges). Conversely, the desk lamp hops behind the player, lights dark corridors, and powers exit sockets, anchoring the player's emotional focus.

1.2 Dual-Agent Soft & Hard Gating

Every room exit is a hard gate requiring both the player and the desk lamp. Environmental hazards (territorial chest mimics and cold air vents) act as soft gates that let the player pass but stop the lamp, forcing the player to route weights to clear the companion's path.

1.3 Habit Formation & Climax Subversion

Instead of delivering its twist through cutscenes or text, the facility uses 30 minutes of repetitive puzzle solving to build an automatic habit. Room 4 strips away all loose props so the player's own conditioned action triggers the moral reversal.

Figure 1.2: Facility Pacing, Gating & Mechanic Progression Graph (Rooms 1 to 5) Alternating Single-Mechanic Onboarding Corridors with Multi-Story Puzzle Hubs



2. Animal & Companion Weight Specification Catalog

Table 2.1: 5 kg Increments vs. 1.4 kg Blueprint Clue

Catalog ID	Prop / Entity	Weight	Level Design Role	Puzzle Function Across Rooms 1 to 5
SPEC-01	**Chicken**	5 kg	Fine Weight Unit	Pairs with Cat (10 kg) to reach 15 kg plate thresholds in Room 2 and Room 3.
SPEC-02	**Cat**	10 kg	Light Counterweight	Powers the Hallway 1 Spotlight Stand (10 kg) and combines with Chicken for 15 kg locks.
SPEC-03	**Penguin**	15 kg	Single-Prop 15 kg Key	Unlocks the 2F Dog Vault (15 kg), 1F SE Elevator (15 kg), and 15 kg Spotlight Plates.
SPEC-04	**Dog**	25 kg	Mid Weight & Climax Prop	Opens 25 kg gates in Rooms 2 and 3; rejected by Room 4 shredder before waking in Room 5.
SPEC-05	**Deer**	40 kg	Phase 3 Vault Key	Unlocked in Room 2 NW Vault; holds the 40 kg 3F Spotlight Plate for the exit sequence.
FIG. 02	**Giraffe (Blueprint #2)**	60 kg	4.2m Bridge & Counterweight	Tips horizontally across 4.2m floor gaps on 2F and 3F as a bridge, or weighs 60 kg on plates.
FIG. 03	**Tiger (Blueprint #3)**	80 kg	Lift Weight & Gear Wedge	Powers the 80 kg 2F-to-3F Elevator in Room 2 and jams the mid-tier crusher gears in Room 3.
FIG. 01	**Horse (Blueprint #1)**	100 kg	Corridor Blocker & Wedge	Rises in Room 1 to corner the fleeing lamp, and jams the upper flywheel in Room 3.
FIG. 04	**Desk Lamp (Blueprint #4)**	1.4 kg	**Companion & Climax Key**	**Lights dark areas and powers exit sockets; blueprint note clues that sensors read it as an object.**

3. Master Facility Layout (Z = -12m to +188m) & Room 1 Onboarding Flow

5 Exhibition Rooms & 3 Threshold Hallways

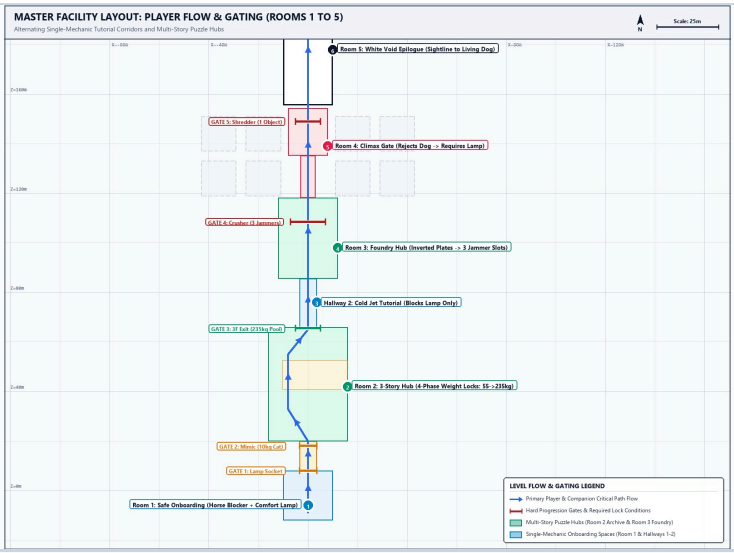


Figure 3.1: Master Facility Flow & Gating Map (Rooms 1 to 5): Orthographic layout showing the primary player and companion critical path (blue arrows) and the 5 hard progression gates.

3.1 Pacing via Corridors and Multi-Story Hubs

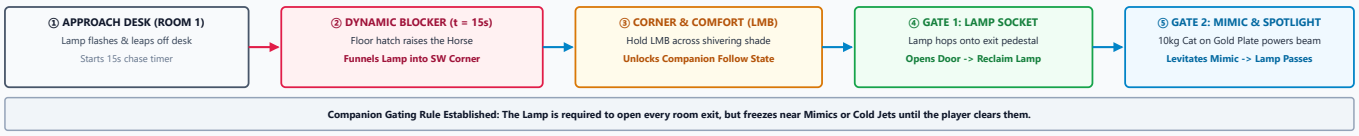
The 200m linear spine alternates between compact onboarding corridors that teach a single mechanic in isolation and multi-story hubs that combine those mechanics vertically:

- **Room 1 & Hallway 1 (Z = -12m to +20m):** Teaches companion comforting, exit lamp sockets, and spotlight beams that pin chest mimics.
- **Room 2 Archive Hub (Z = +20m to +66m):** Three-story puzzle hub (1F, 2F, 3F) with 7 animal vaults and a 4-phase weight lock sequence.
- **Hallway 2 & Room 3 Foundry (Z = +66m to +118m):** Introduces cold air jets in Hallway 2, then inverts plate rules in Room 3 to jam the central crusher.
- **Hallway 3, Room 4 & Room 5 (Z = +118m to +188m):** Narrows into an isolated catwalk bottleneck before the shredder gate and white epilogue.

3.2 Dynamic Choke Point in Room 1 Onboarding

When the player approaches the desk in Room 1, the startled lamp flashes brightly and hops onto the floor. In early playtests, players chased the lamp in circles around the room. To solve this spatially without UI prompts, a floor hatch opens after 15 seconds and raises the Horse across the main lane, funneling the lamp into the SW corner where the player can easily corner and comfort it.

Figure 3.2: Room 1 & Hallway 1 Spatial Flow, Dynamic Choke Point & Onboarding Gates Converting an Open Chase into a Corner Choke Point, Companion Socket Gate & Spotlight Tutorial



3.3 Visual Indicator Lines, Shader Contrast & Static Mesh Optimization

Table 3.1: Readability & Rendering Systems

System / Shader Module	Target Level Element	Level Design Readability & Technical Purpose
`ConduitDirectionalPulse.shader`	Floor & Wall Indicator Lines	Connects every pressure plate to its target device using 3 distinct colors: Cyan (doors/lifts), Gold (spotlight stands), and Green (crusher jammers).
`AnimalInkShader.shader`	Animal Counterweights	Triplanar ink cross-hatching and flat matte shading with zero idle animation, making motionless living animals read like static puzzle weights.
`LivingApplianceCreature.shader`	Desk Lamp & Chest Mimics	Hand-drawn outline boil, cold shivering in dark zones, and warm subsurface glow when comforted by the player.
`Room4AvantGardeInfiniteBuilder`	Room 4 Repeating Grid	Merges hundreds of surrounding repeating gallery cells into 6 static UInt32 meshes (~6 draw calls) to maintain 200+ FPS.



Figure 3.3: Room 1 Dynamic Blocker: The Horse rises from the center floor hatch to block the loop and corner the fleeing lamp.

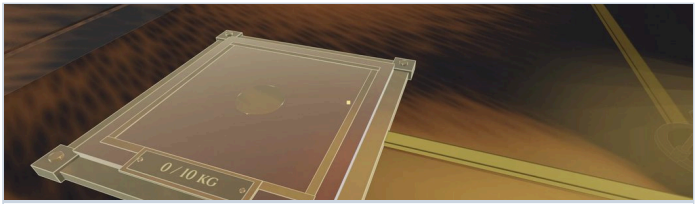


Figure 3.4: Hallway 1 Spotlight Gate: Placing the 10 kg Cat on the gold plate powers the spotlight beam, levitating the chest mimic.

4.1 Room 2: Three-Story Archive: 4-Phase Weight-Lock Progression (55 -> 115 -> 195 -> 235 kg)

`1F Courtyard, 2F Mezzanine & 3F Penthouse (0 kg Surplus Slack)`

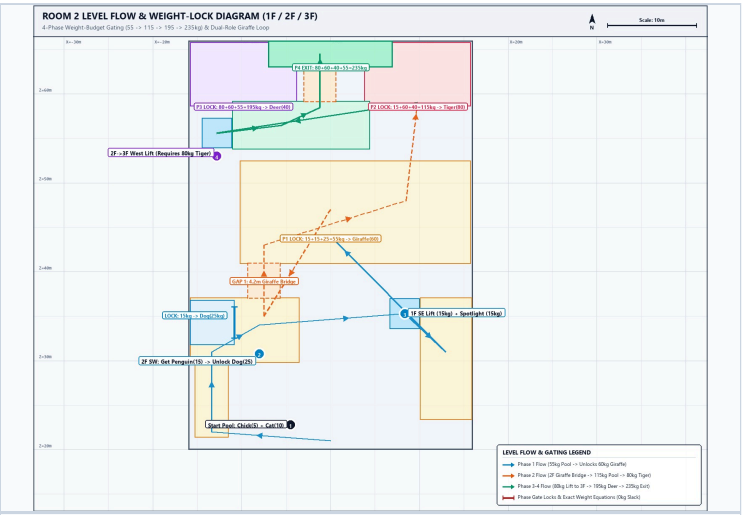


Figure 4.1: Room 2 Flow & Weight-Lock Floorplan (1F / 2F / 3F): Showing Phase 1 to 4 traversal loops, the 2F and 3F 4.2m Giraffe bridge gaps, and exact weight-lock equations.

Preventing Sequence Breaks: 100% Weight-Pool Allocation

In multi-prop weight puzzles, unlocking heavier weights often creates leftover mass that lets players skip earlier locks. Room 2 prevents this by requiring 100% of the currently unlocked weight pool at the end of every phase (55 kg -> 115 kg -> 195 kg -> 235 kg). Because spare mass is always 0 kg, players must constantly reclaim and re-route every animal across all three floors.

Multi-Use Prop: The 60 kg Giraffe Bridge & Counterweight

Unlocked at the end of Phase 1, the 60 kg Giraffe serves two distinct spatial roles: its elongated neck can be tipped across the 4.2m chasms on 2F and 3F as a walkable bridge, or reclaimed after flipping a bypass switch to serve as a 60 kg counterweight on vault plates.

Why Phase 3 (40 kg Deer) Cannot Be Skipped

Opening the 3F Exit simultaneously requires holding the 2F-to-3F Lift (80 kg Tiger), bridging the 3F gap (60 kg Giraffe), pinning the 3F Mimic (40 kg plate), and holding the 3F Exit Gate (55 kg). Without unlocking the 40 kg Deer in Phase 3, the player has 195 kg against a 235 kg lock requirement.

Figure 4.2: Room 2 Lock-and-Key Puzzle Dependency Chart & Weight-Math Graph (0 kg Slack Across 4 Phases) Every Unlocked Animal [KEY] Feeds Directly Into the Next Phase Simultaneous [LOCK] Threshold



4.1.2 Four-Phase Weight Allocation Table & In-Game Execution

`Table 4.1 & Figures 4.3 to 4.5`

Phase	Unlocked Pool	Simultaneous Active Locks (100% Pool Utilization)	Surplus & Unlock
Phase 1	`55 kg` (5+10+15+25)	`-15 kg` 1F Spotlight (5+10) + `-15 kg` SE Lift (15) + `-25 kg` 2F SE Gate (25) = **`55 / 55 kg`**	`0 kg` -> **+60 kg Giraffe**
Phase 2	`115 kg` (55 + 60)	Bridge 2F gap -> Flip switch -> Reclaim Giraffe: `-15 kg` 2F Beam + `-60 kg` NE Outer + `-40 kg` NE Inner = **`115 / 115 kg`**	`0 kg` -> **+80 kg Tiger**
Phase 3	`195 kg` (115 + 80)	`-80 kg` 2F->3F Lift (Tiger) + `-60 kg` 3F Outer Gate (Giraffe) + `-55 kg` 1F NW Inner Gate = **`195 / 195 kg`**	`0 kg` -> **+40 kg Deer**
Phase 4	**`235 kg` (All 7)**	`-80 kg` 2F->3F Lift + `-60 kg` 3F Chasm Bridge + `-40 kg` 3F Spotlight + `-55 kg` 3F Exit Gate = **`235 / 235 kg`**	`0 kg` -> **Exit Open**



Figure 4.3: 3-Story Atrium: Sightlines across 1F vaults and 2F/3F balconies.



Figure 4.4: Carrying 60 kg Giraffe: Routing the Giraffe past the 1F spotlight beam.



Figure 4.5: 4.2m Giraffe Bridge: Tipping the Giraffe across the 2F chasm gap.

4.2 Hallway 2 & Room 3: Cold Air Soft Gates, Inverted Vent Plates & 3-Branch Crusher Lock

`Rule Inversion & 3-Spoke Hub Jamming`

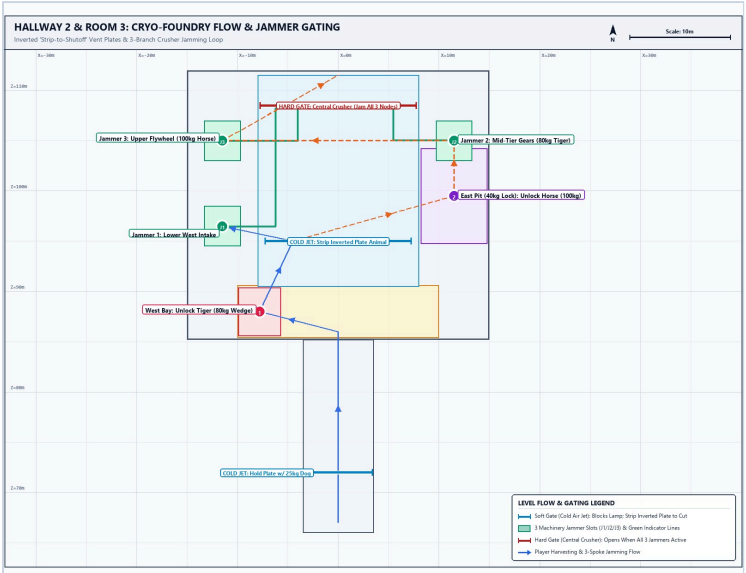


Figure 4.6: Hallway 2 & Room 3 Flow & Jammer Gating Map: Showing Cold Air Jet soft gates, Inverted Vent Plates, the 3 Jammer Slots (J1, J2, J3), and green indicator lines to the Central Crusher.

Hallway 2 Onboarding: Companion-Only Cold Air Gates

Hallway 2 introduces cold air vents that blow freezing streams across the corridor. While the player can walk straight through the air stream unharmed, the desk lamp shivers and stops at the edge of the jet. To escort the lamp across, the player must hold down the shutoff plate with the 25 kg Dog.

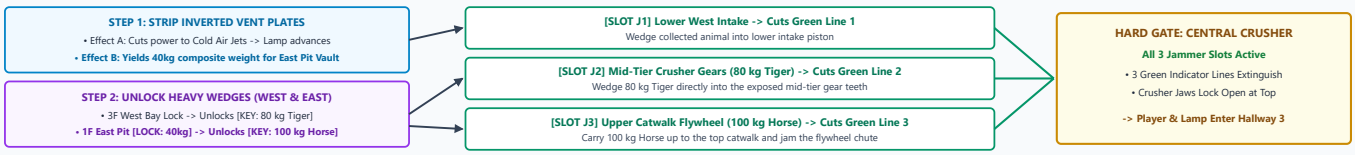
Subverting Plate Habits: Inverted "Strip-to-Shutoff" Plates

In Rooms 1 and 2, placing weight on a plate always opened a path. Room 3 flips this expectation: pre-placed animals sit on inverted power plates that actively supply power to the room's freezing jets. Picking an animal up off its plate simultaneously shuts off the cold air jet blocking the lamp and adds that animal to your inventory for the crusher puzzle.

3-Branch Central Crusher Gate & Jammer Slots

The exit to Room 4 is blocked by a central mechanical crusher fed by three green floor indicator lines. Rather than holding plates, players permanently jam three sub-mechanisms using harvested animals: (J1) Lower West Intake, (J2) Mid-Tier Crusher Gears (jammed with the 80 kg Tiger), and (J3) Upper Flywheel (jammed with the 100 kg Horse).

Figure 4.7: Room 3 Lock-and-Key Dependency Chart (Inverted Vent Plates -> 3 Jammer Slots -> Crusher Gate) Coupling Companion Hazard Removal with Heavy Prop Harvesting Across 3 Elevation Tiers



4.2.3 In-Game Execution: Cold Air Vents, Central Crusher, Tiger Gear Jam & Horse Flywheel Lock

`Figures 4.8 to 4.11`



Figure 4.8: Hallway 2 Cold Vent: Holding the shutoff plate so the lamp can cross.

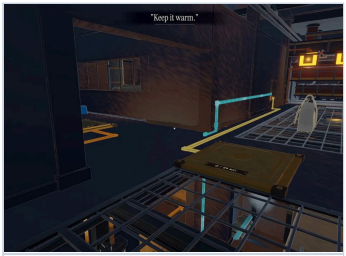


Figure 4.9: Central Crusher Gate: Fed by 3 green floor indicator lines.



Figure 4.10: Jammer Slot 2 (Tiger): Wedging the 80 kg Tiger into the gears.



Figure 4.11: Jammer Slot 3 (Horse): Locking the upper flywheel cuts the last line.

4.3 Room 4 & 5: The Shredder Gate Habit Subversion & Room 5 Sightline Payoff

`Zero-Prop Bottleneck, Sensor Rejection & Finale Sightline`

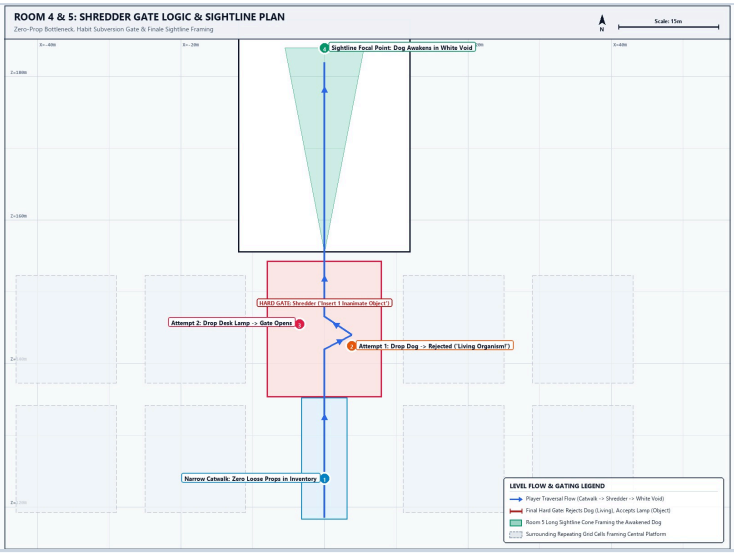


Figure 4.12: Room 4 Shredder Gate & Room 5 Sightline Plan: Showing the narrow catwalk bottleneck, the shredder rejection/acceptance loop, and the long sightline cone to the awakened dog.

Subverting Player Conditioning at the Shredder Gate

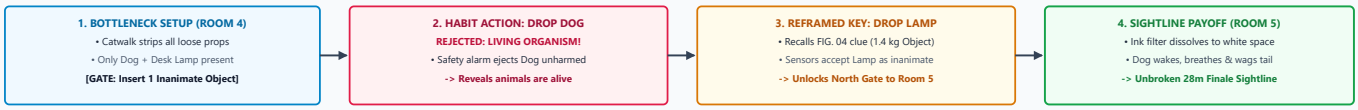
Before entering Room 4, Loading Screen #4 displays blueprint FIG. 04 (DESK LAMP, 1.4 KG): "It shivers in the dark and leans into your hand like something alive, but to the gallery's sensors it is still just an object." In Room 4, a narrow catwalk with zero loose props leads to an industrial shredder blocking the exit with the prompt: INSERT 1 INANIMATE OBJECT TO PROCEED. Beside it sits the dog.

Conditioned by three rooms of jamming animals into machinery, players immediately drop the dog into the chute. Instead of crushing it, the shredder blares "SAFETY MECHANISM ACTIVATED: LIVING ORGANISM DETECTED!" and ejects the dog unharmed. Because the room contains zero other props, the player must confront the rule they ignored: the mute animals were alive all along, and the desk lamp is the only inanimate object in the room.

Room 5: Visual Filter Dissolve & Long Sightline Payoff

Dropping the desk lamp into the shredder opens the north gate into Room 5. Stepping across the threshold smoothly fades out the heavy ink cross-hatching shader into an unobstructed pure white space, framing a long central sightline to Z = +184m where the dog wakes up, breathes, perks its ears, and wags its tail.

Figure 4.13: Room 4 Shredder Gate Decision Tree & Habit Subversion Flow How Spatial Bottlenecking + Blueprint Foreshadowing Force an Unscripted Realization



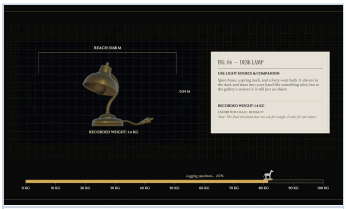


Figure 4.14: FIG. 04 Blueprint Clue: "To the sensors it is just an object."

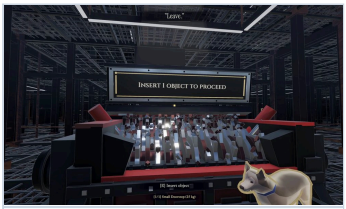


Figure 4.15: Dog Rejected: "LIVING ORGANISM DETECTED!"

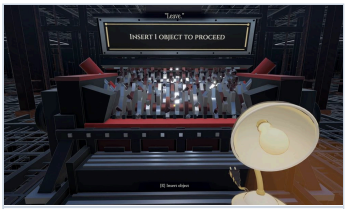


Figure 4.16: Lamp Accepted: Holding the lamp at the shredder chute.



Figure 4.17: Room 5 Sightline: The dog wakes and wags its tail.

5. Level Design Retrospective & Key Takeaways

`Post-Mortem Synthesis`

5.1 Habit Subversion Over Text Exposition

Room 4's reversal lands because the game never lectures the player in text. Thirty minutes of weighing, bridging, and jamming animals builds a reliable habit, so when the shredder rejects the dog as a living organism, the player's own reflex delivers the twist.

5.2 Zero-Surplus Weight Math Prevents Skips

Requiring 100% of the unlocked weight pool at each phase of Room 2 (55 -> 115 -> 195 -> 235 kg) ensured that unlocking heavier animals never made lighter ones obsolete; every prop had to be reclaimed and re-routed across all three floors.

5.3 Color-Coded Floor Indicator Lines

Routing orthogonal floor and wall indicator lines by circuit type (Cyan for doors/lifts, Gold for spotlights, Green for crusher jammers) allowed players to read multi-floor lock-and-key dependencies at a glance without HUD markers.