

# Construction & Deployment Logistics

## Building Aegis Station in Stages

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### Overview

Aegis Station is a modular world—constructed ring by ring, piece by piece. It doesn't require full completion to begin operations. This approach enables early science, early habitation, and early revenue.

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### Assembly Plan

#### Stage 1: Earth Launch and Orbital Assembly

- Modules launched to **low Earth orbit (LEO)** via heavy-lift vehicles
- Dry components only—no water until lunar orbit
- Segmented ring sections, central hub trusses, and systems bays assembled robotically or by crew
- Rings constructed independently to reduce schedule risk

#### Stage 2: Tug Transfer to Lunar Orbit

- Completed ring modules are moved to **lunar orbit** via electric tugs or hybrid propulsion stages
- Non-rotating hub remains in microgravity throughout
- Each ring is spun up **only after orbital installation**

#### Stage 3: Shielding Operations

- Once in lunar orbit, shielding begins using lunar-sourced water
  - Tankers deliver directly to shield reservoirs embedded in the outer hull
  - Shielding is done **per ring**, enabling operation before full station fill
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### Phased Ring Activation

Each ring is a **self-contained system**:

- Independent pressurization and life support
- Local power and crew quarters

- Dedicated thermal and ECLSS subsystems
- Physical separation ensures fault tolerance and safety

**This means:**

- **Ring A** can be inhabited and operational **before Ring B and C are completed**
  - Early ring can serve as a pilot program, testbed, or limited-function habitat
  - Initial crew (science, construction, systems) supports both habitation and expansion
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## Shielding Timeline and Integration

- Each ring's shielding volume: ~552,000 m<sup>3</sup>
- Fill begins immediately upon orbital arrival
- 30-tanker fleet with 30-ton capacity each
- ~900 tons/day across all rings
- **Full station fill time: ~5 years, but each ring fills in ~1.6 years**

Rings don't need to be 100% shielded to begin operations—lower deck shielding begins first, extending protection upward.

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## Construction Cost Breakdown

Component	Estimated Cost
Launch and dry mass to LEO	~\$300 billion
Tug transfers to lunar orbit	~\$10–30 billion
Lunar water sourcing and fill	~\$250 billion
<b>Total (Phase 1–3)</b>	<b>~\$560 billion</b>

Includes station dry mass (~120,000 tons), shielding mass (~1.65M tons), and all transfer/assembly stages.

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## Why This Works

- Spreading deployment reduces schedule and budget pressure
  - Early activation of Ring A proves out systems and delivers value
  - Risk containment: problems in one ring don't affect the others
  - Modular shielding allows gradual buildup of protection and infrastructure
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## Operational Timeline (Illustrative)

Year	Milestone
1	Launches of dry ring modules begin
2	Assembly of Ring A in LEO complete
3	Ring A moved to lunar orbit
4	Ring A begins shielding, early crew
5	Ring B under assembly in LEO
6	Ring A partially shielded, operational
7–8	Ring B joins Ring A in lunar orbit
10	Ring C arrives; station 100% complete

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This phased model is **flexible, redundant, and resilient**—all core to Aegis Station’s design philosophy.