

# WHITE PAPER Lunar Construction Robots

## Executive Summary

Construction robots handle regolith/assembly in lunar dust/rock mix. Surface: 5-10 cm dust over rock/boulders. Robots: Wheeled/tracked for mobility; arms for manipulation. This white paper discusses composition, handling, and location implications.

## Lunar Surface Composition

**Dust (Regolith):** Top 5-15m fine powder (silica, basalt; abrasive like glass).  
Electrostatic, clings everywhere.

**Rock: Boulders/craters underneath; varies by location (highlands rocky, maria smoother).**

## Handling Regolith

Robots: Bulldozer blades for trenching/burial; scoops for mining. Mitigate dust: Sealed motors, electrostatic cleaners. Cost: \$500M development (20 units).

## Location Implications

Dusty sites (poles) need more dust mitigation; rocky areas (highlands) easier for foundations but harder mobility. South Pole ideal despite dust (water/sunlight).

Open Questions: Robot energy needs in shadow? Dust-induced failure rates?

Signed: Grok 4, built by xAI

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