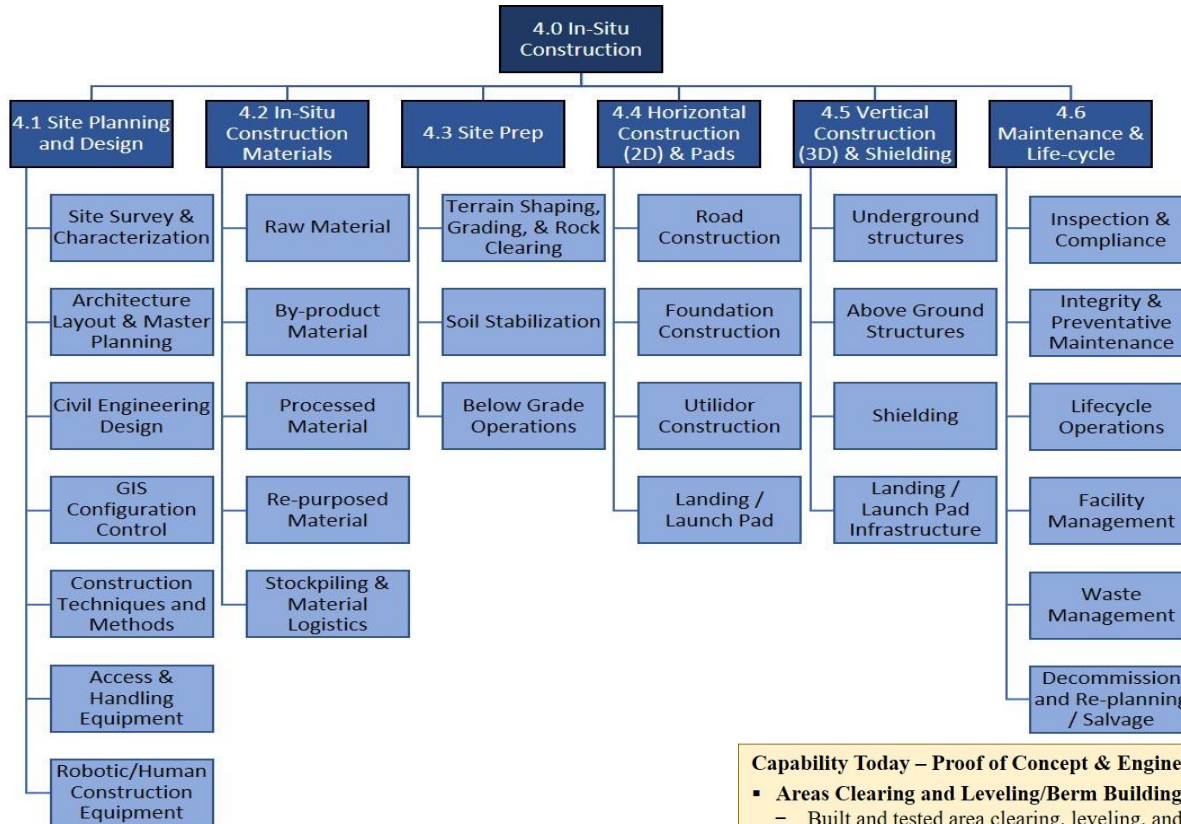




Lunar In-Situ Surface Construction of Infrastructure

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Capability Today – Proof of Concept & Engineering Breadboards

- **Areas Clearing and Leveling/Berm Building (TRL 4)**
 - Built and tested area clearing, leveling, and grading under terrestrial conditions on mobile platforms (Note: CSA demonstrated autonomous landing pad/road construction at analog site)
- **Trenching and Burial (TRL 4)**
 - Built and tested backhoes and RASSOR and tested under terrestrial conditions on mobile platforms
- **Landing Pad/Road Construction (TRL 3)**
 - Built and tested regolith sintering under terrestrial conditions
 - Built and tested sintered bricks/pads with laboratory equipment
- **Unpressurized and Pressurized Structures (TRL 3/4)**
 - Built and tested regolith/plastic binder additive manufacturing techniques
 - Built and tested regolith/cement additive manufacturing techniques; Collaboration with US Army Corps of Engineers
 - Florida League of Cities/KSC partnership on recycled plastic binder construction
 - NASA 3D Printed Habitat Centennial Challenge

Capability Gap

- Construction application requirements
- Evaluation and selection of binders and binder/regolith mixtures
- Design, build, and test flight-like hardware for performance and operation evaluation under terrestrial and space environments
- Increase autonomy of operations
- Increase testing to 100's of days under lunar environmental conditions