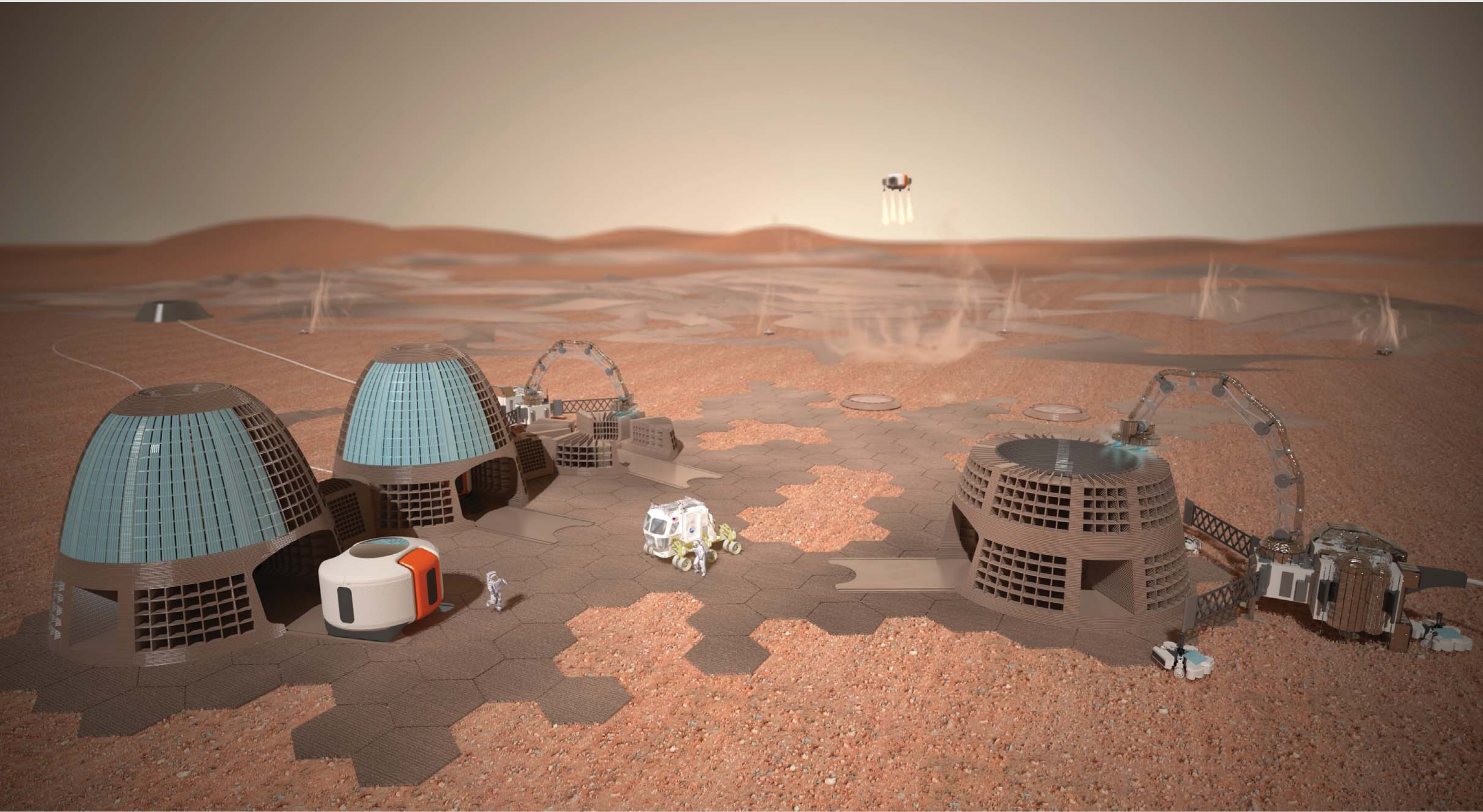


Ancile-Hab: The Shield of Mars

“Ancile” [an-sahy-lee] - Roman - A Shield given by Mars to the Mortals - the Palladium of Rome.



Site Selection: Exploration Area of the Opportunity Rover

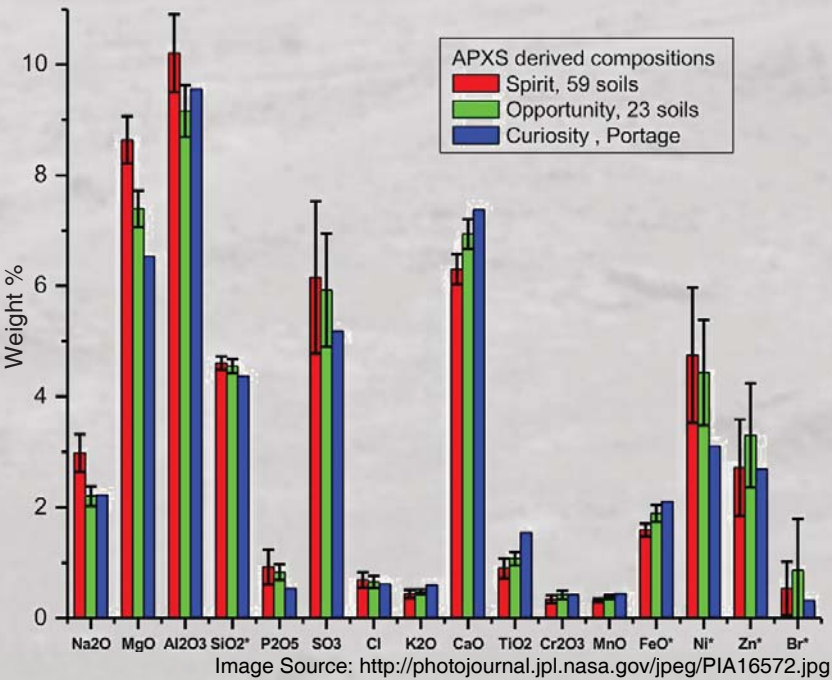
- Near Scientific Sites of Interest
- Vast and Plentiful Dune Fields
- A Stable, Solid, and Flat Volcanic Plain
- Abundant and Easy to Access Resources
- A Pre-Explored Area with Detailed Analysis

Regolith composition, material properties, and power restrictions pushed the 3DP’s design to maintain the initial processing Standard Operating Temperature (SOT) just above 1,600 °C to melt both SiO2 and FeO in preparation for printing and more intensive material processing and refining. The silicate, being good in compression, will be fused together and work as a “concrete substitute” using leftover materials as it’s aggregate. The iron, being good in tension, will be used as a “rebar substitute” and form strong tension straps.

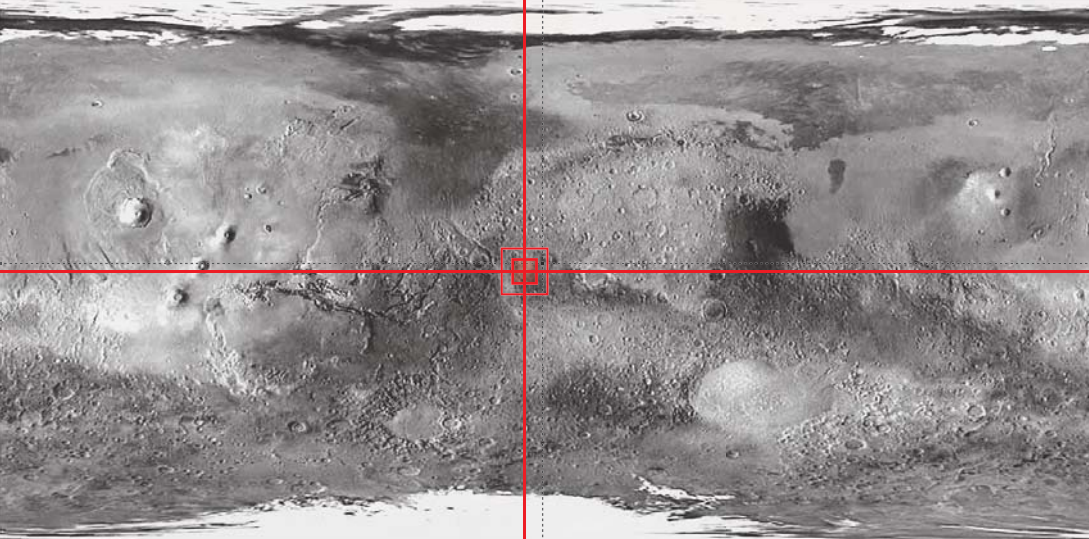
Material Opportunities:

Compound	Density g/cm³	Mars %	Melting Point °C	Boiling Point °C
Al2O3	3.95	9	2,072	2,977
MgO	3.58	7	2,852	3,600
CaO	3.35	7	2,572	2,850
SO3	1.92	6	16.9	45
SiO2	2.65	5	1,600	2,230
Ni	8.908	4	1,455	2,730
Zn	7.14	3	419.53	907
Na2O	2.27	2	1,132	1,950
FeO	5.745	2	1,377	3,414
TiO2	4.23	1	1,843	2,972

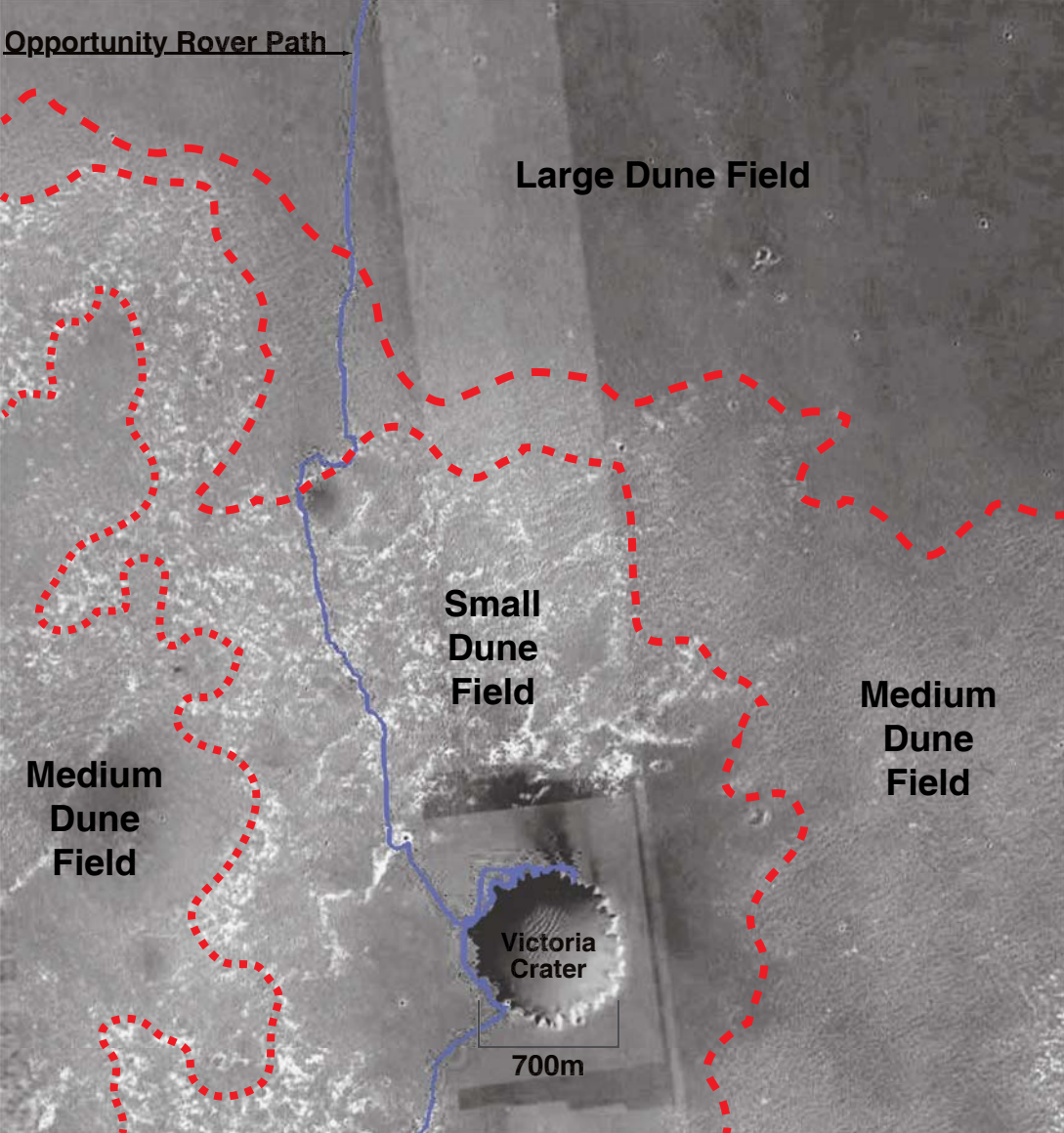
Compounds of interest for the two primary building materials
Compounds that will boil off at 3DP’s SOT and can be vented or saved
Compounds that will melt at 3DP’s SOT and can be saved for later printing
Compounds that will remain as aggregate within fused silicate



Site Location: 01°55’ S 5°30’ W



Site Overview: Dune Fields & Explored Path



Site Imagery: Dune Quantity Increase on Volcanic Plain

