



*The completed architectural model consisted of 12 assembled SLS parts. Key pieces could be removed to expose internal areas.*



*One of the individual components of the ATST model shown above.*

## Architectural Model Used for Observatory Design

### Advanced Technology Solar Telescope Passes Preliminary Design Review Utilizing SLS Scale Models

The Advanced Technology Solar Telescope (ATST) project was initiated to study the mechanisms for solar activity beyond the capability of current telescopes. The project successfully passed a four-day preliminary design review in November 2006, representing a major milestone in moving the project forward. To clearly identify and communicate critical design issues to the review panel, the ATST team required 1/75th scale models of the proposed project.

Solid Concepts Inc. was chosen to produce those models directly from digital CAD renderings provided by the ATST team. A total of 12 parts were produced to create a single larger version of the model with key pieces that could be removed to expose internal areas. The different versions provided unique views of the overall design through various cutaways, and provided stand-alone models of specific key components.

Working with a Project Engineer from Solid Concepts, ATST team members approved important design modifications to the models. Components such as railings and stairs could not be sized down to a full 1/75th scale without risking the possibility of breaking, and had to be strengthened. An important benefit of working with a Project Engineer is utilizing their experience and expertise to identify issues before they become a problem.

One of the key benefits of Rapid Prototyping is the identification of design changes early in the process prior to significant investments taking place. In the case of the ATST, the Preliminary Design Review team made a number of helpful suggestions regarding elements of the design, and the project members immediately went to work implementing the recommendations.

Ultimately, the ATST Project Team hopes to see the completed telescope placed at the Maui Space Surveillance Complex atop Haleakala, Maui, Hawaii.



Renderings of the proposed ATST facility at the primary Mees site on Haleakala, Maui, Hawaii. The project successfully passed a four-day preliminary design review in November 2006.

### **ATST Project**

The ATST Project is funded by the National Science Foundation (NSF) through the National Solar Observatory, which is operated under a cooperative agreement between the Association of Universities for Research in Astronomy, Inc. (AURA) and the NSF. Learn more about the ATST Project at <http://atst.nso.edu>.

### **Solid Concepts Inc.**

Solid Concepts Inc. is a supplier of rapid prototyping, direct digital manufacturing, tooling and production molding services. Capabilities in PolyJet, SLA, SLS, QuantumCast™ cast urethanes, CNC and FRP prototypes and short run production parts. Tooling and Molding expertise to bring your project through to completion. ISO 9001 and AS9100 certified.



An SLS model showing the cutaway view of the internal structure found inside the ATST building. The telescope assembly will be mounted on the top platform. A rotating lab is located inside the pier and can be seen directly underneath the telescope mount.