

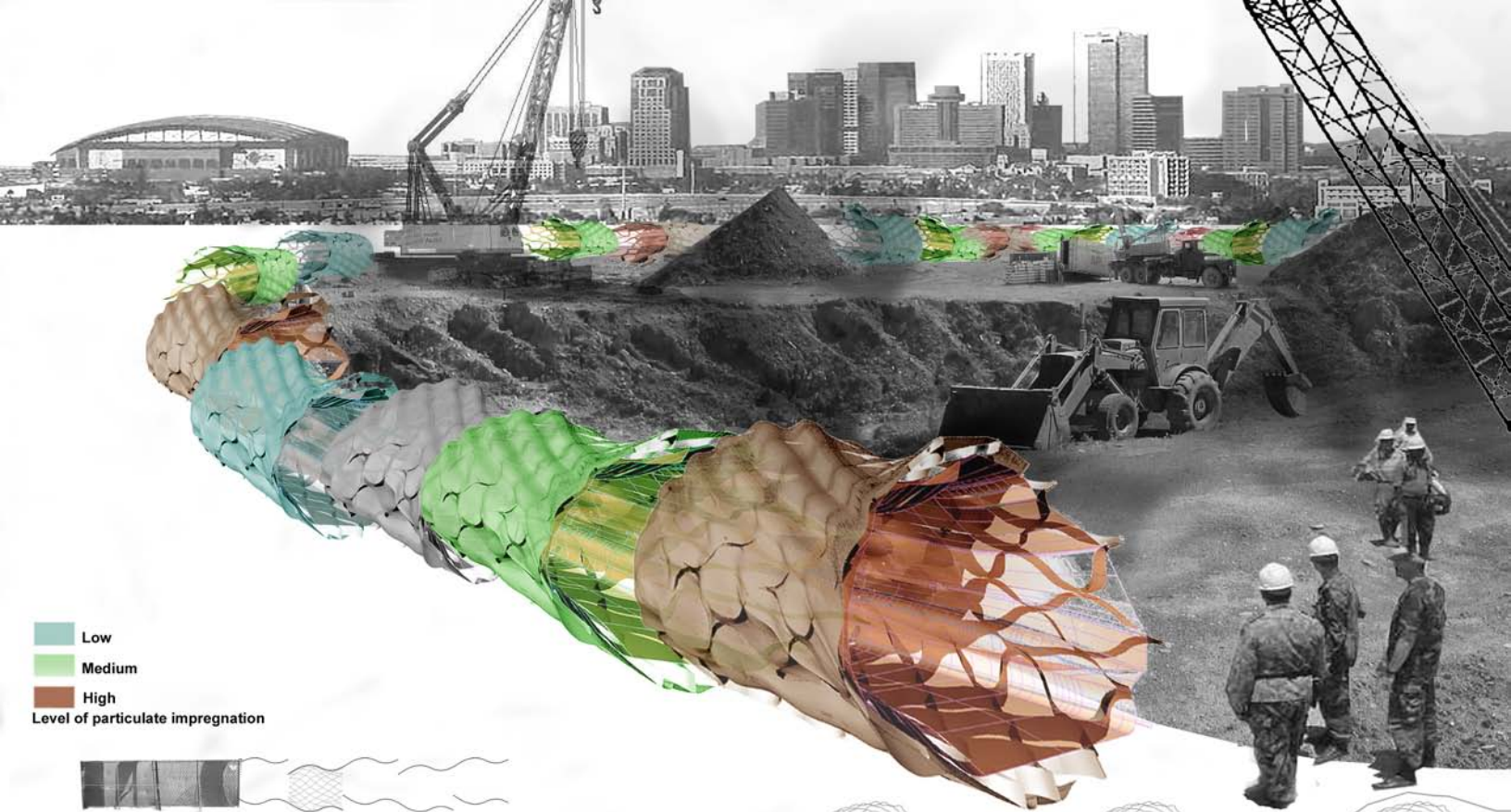


"The natural desert isn't the problem, but when people break the desert's crust, problems arise"

supervisor, Air Quality Department, Maricopa County

EARTH WEAR FOR CONSTRUCTION WORKERS

LYCEUM COMPETITION 2005 ID 92



Low
Medium
High
Level of particulate impregnation



Phoenix is one of the most affected cities by particulate pollution. Once preferred for the dry air which cured respiratory problems, today's disturbed desert is a cause of asthma, bronchitis and heart disease. The project proposes a rethinking of the construction site fence as a collector of dust and particles. The earth wear is a module which can be used for enclosure and storage space by construction workers. Its outer layers made of geotextiles attract particles and at the end of the construction process, they become part of the landscape.

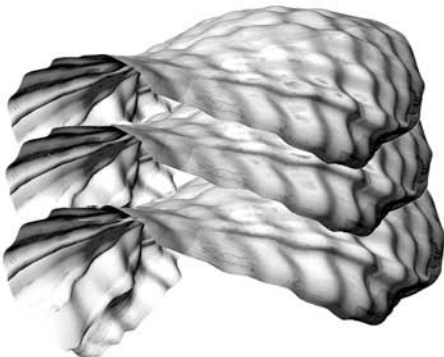


CONSTRUCTION SITE

OUTER LAYERS - ENVIRONMENT

GEOTEXTILES EMBEDDED WITH PHOTOVOLTAIC CELLS

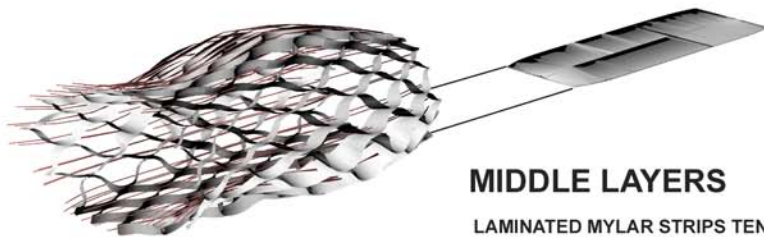
The photovoltaic cells work as negative ion generators. Similar to air cleaners, they produce negative charges that attach to dust particles and attract them. Over time, the geotextiles become incrustated with earth and acquire structural qualities. At the end of construction, they become a device for stabilizing landscape around the new construction.



— PREFILTER FOR LARGE PARTICLES

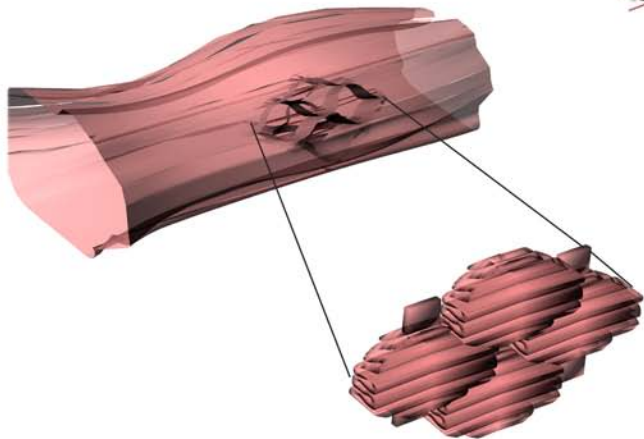
— MEDIUM PARTICLES FILTER

— FINE PARTICLES FILTER



MIDDLE LAYERS

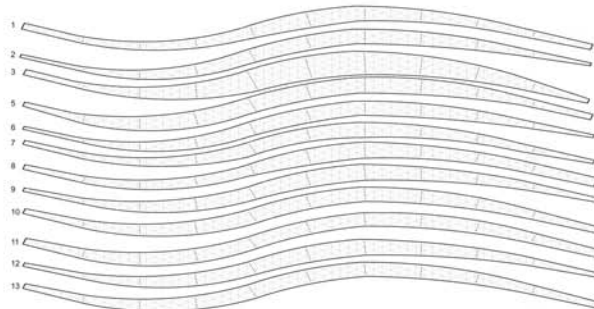
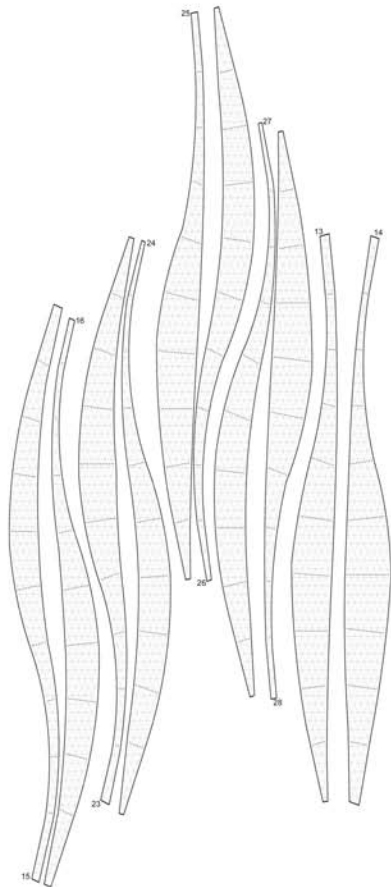
LAMINATED MYLAR STRIPS TENSIONED WITH FIBERS



INNER LAYER - BODY

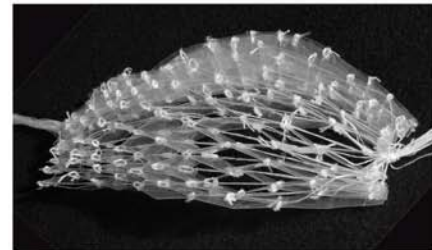
TRANSLUCENT FELT WOVEN WITH FIBER OPTICS

The felt can be unfolded to create storage space and furniture inside the space. Once the outer layers become impregnated with particles, the interior space becomes darker. Therefore, fiber optics are woven into the felt in order to create light. Their color changes according to the level of darkness (the level of dust impregnation of the outer layers).

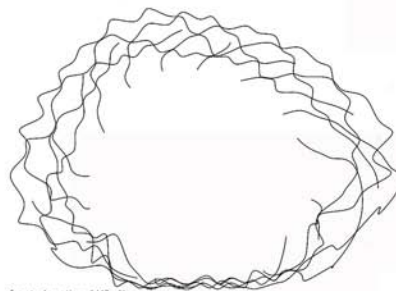


cut sheet scale: 3/16"=1"

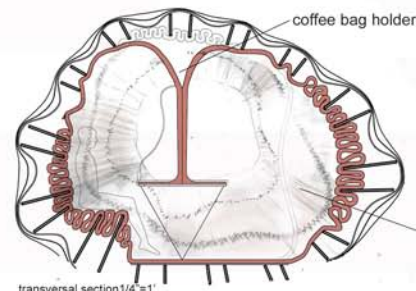
Thin sheets of mylar are laminated together with Kevlar reinforcement and Aramid thread and cut on the CNC router to obtain 1" thick strips of film.



3d technology of laminating mylar for sails



front elevation 1/4"=1"

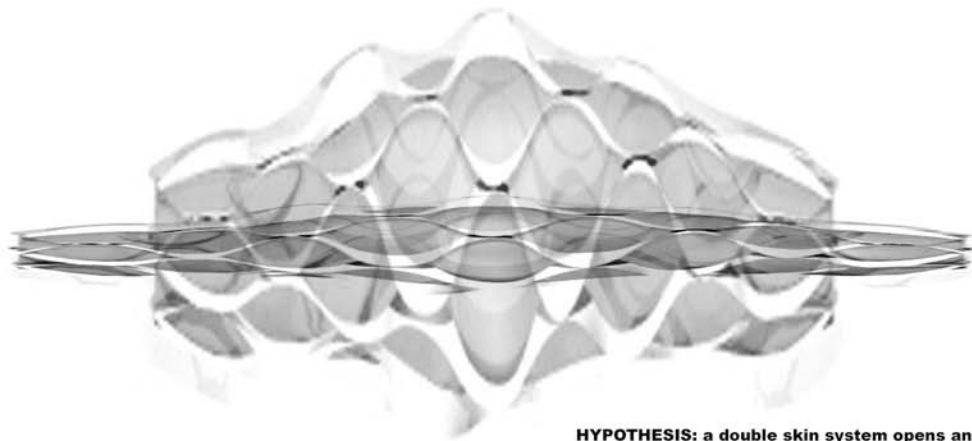


transversal section 1/4"=1"

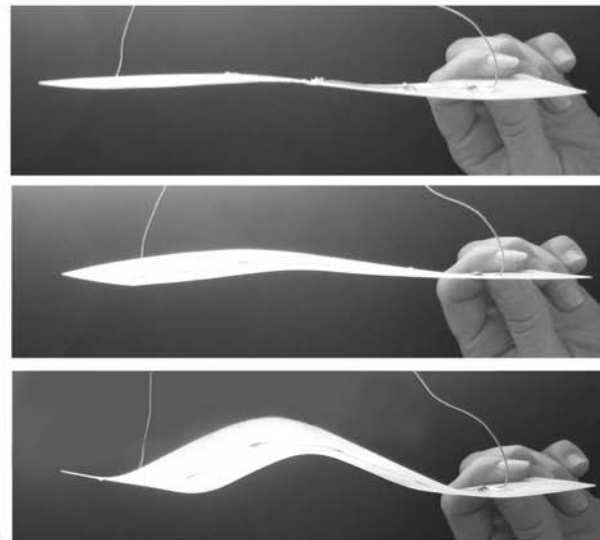
coffee bag holder

built in storage space

FABRICATION



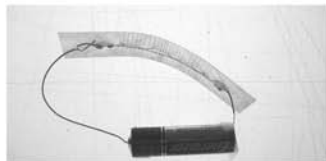
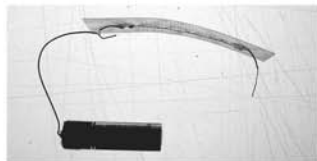
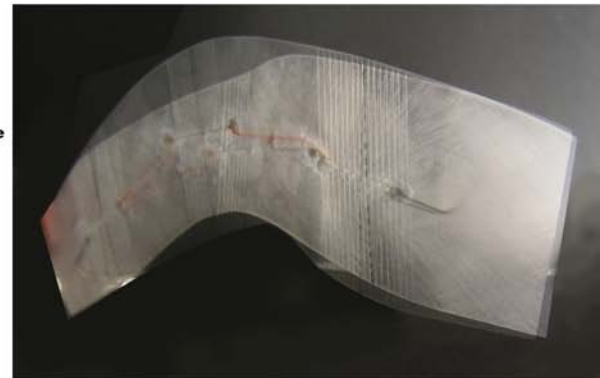
HYPOTHESIS: a double skin system opens and closes in response to temperature changes: it opens when the temperature in the surrounding environment increases in order to collect solar energy and closes when the temperature decreases



Experiments are focused on creating a mechanism that uses nitinol shrinkage to activate the opening and closing of the ribs.

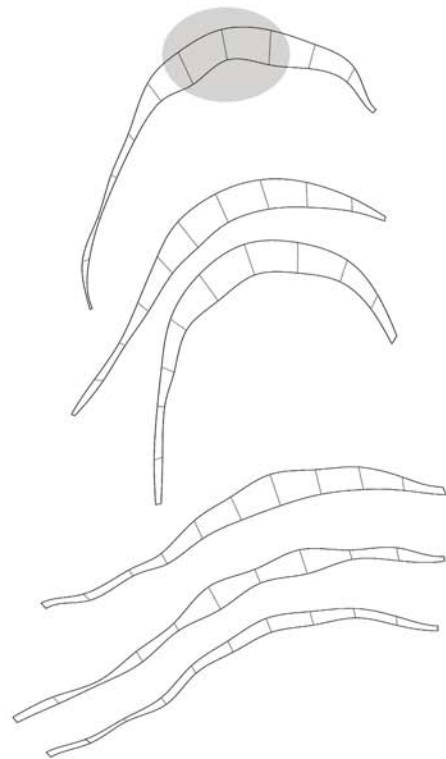
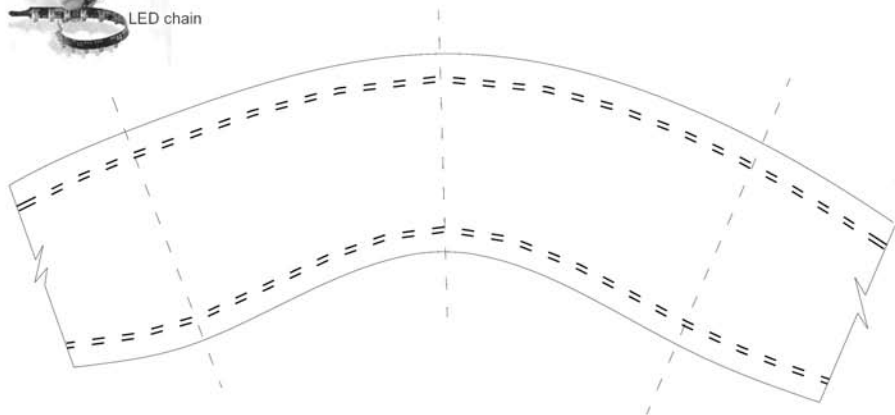
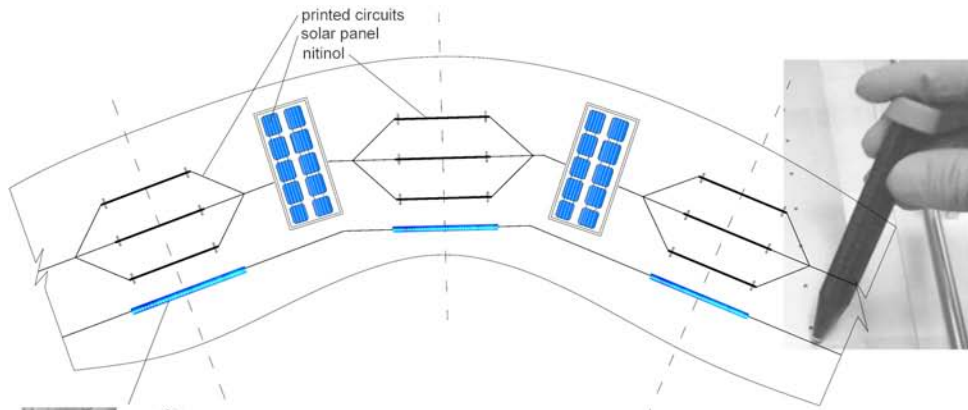
Mobility : opening and closing using electrical or solar power

Motility : slight adjustment based on temperature changes in the environment which activate the nitinol



MOBILITY

MOTILITY



COLLECTION AND FLOW OF ENERGY

