

Aileron

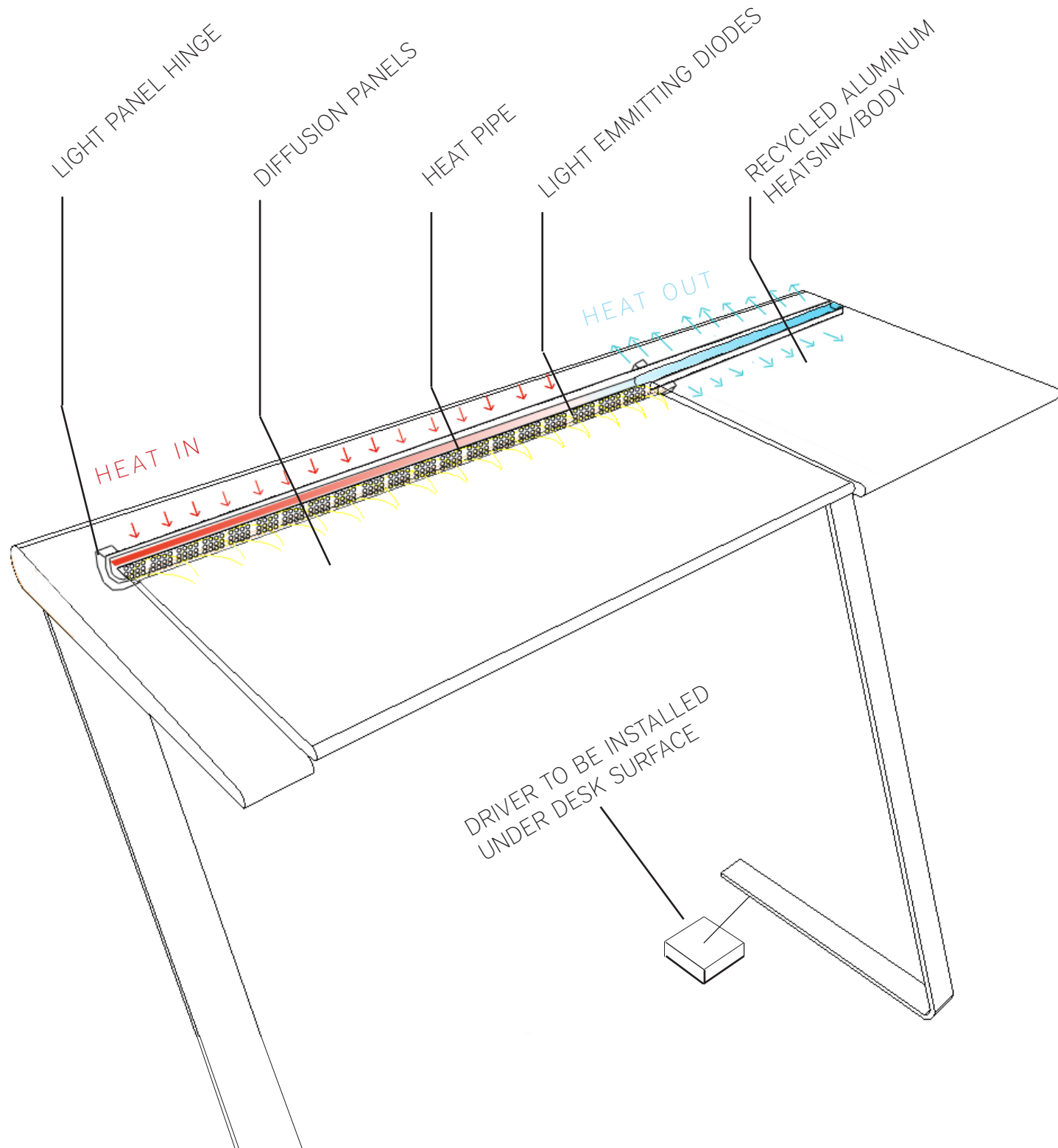
Sustainable & Flexible LED Task Light

Robert Bruce Thompson Annual Student Competition 2012
Design by Bailey Kelliher
Virginia Commonwealth University



AIRLINE TICKET COUNTER APPLICATION

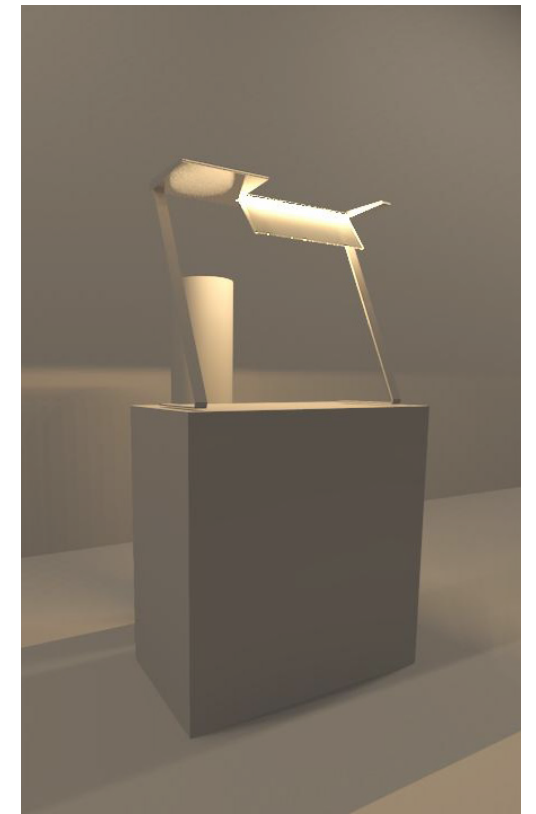
MECHANICAL DIAGRAM



UP POSITION - Light directed mostly on architecture and front of counter; more intimate, diffused light on person behind counter.



MIDDLE POSITION - Greatest light distribution for all aspects; illuminates task, person behind counter and in front of counter, and still allows for ambient light



DOWN POSITION - Light more focused on task; evenly illuminates person behind counter and in front of counter.

What is the *Aileron*?

SLEEK DESIGN

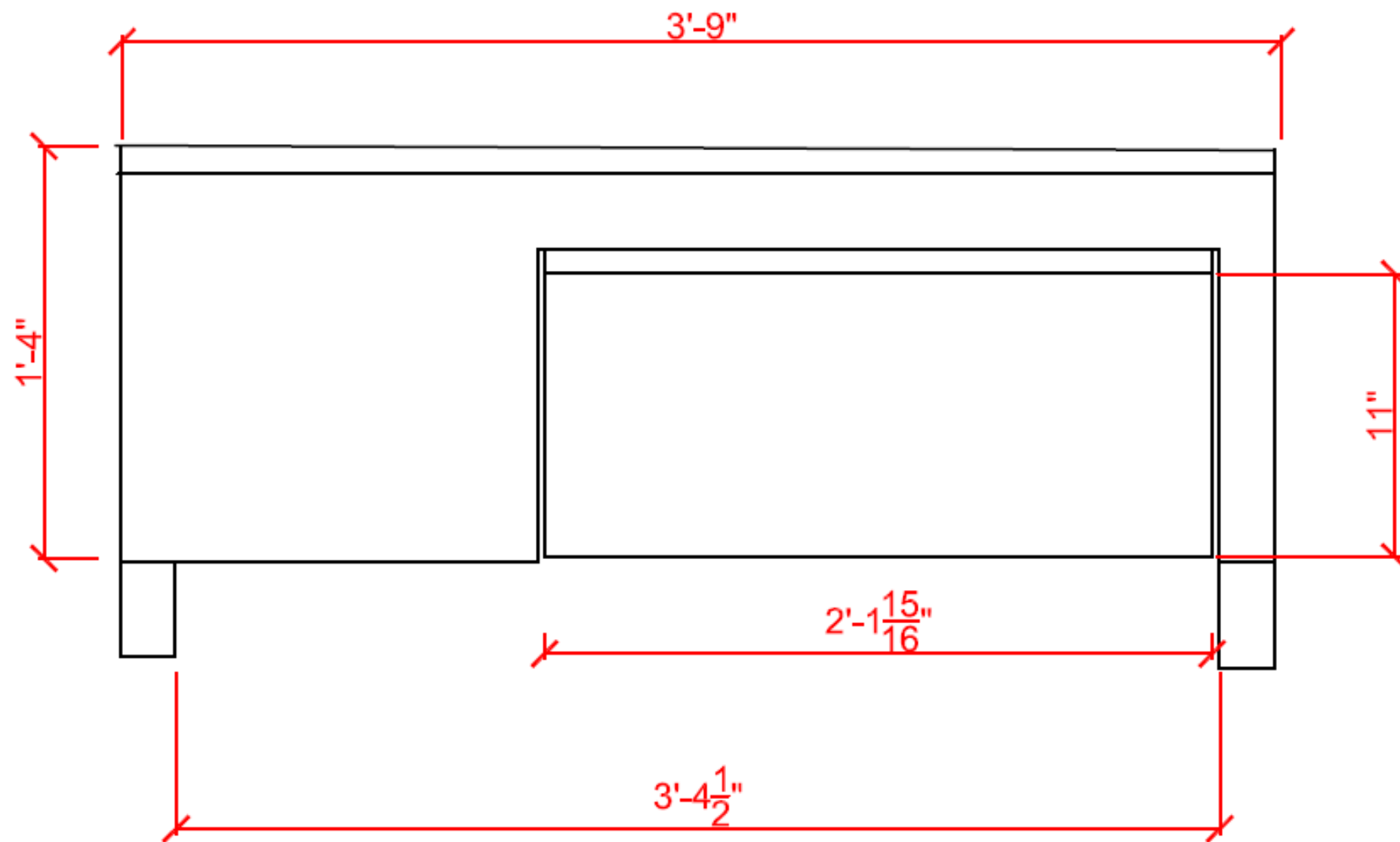
The Aileron is an adjustable LED light designed for the purpose of illuminating an airline ticket counter. The streamlined look of the Aileron was inspired by the panels on wings of airplanes, which are raised and lowered to control the roll of the aircraft. Since the architecture in airports often imitates the sleekness of aircrafts, the Aileron will blend seamlessly into the design of any airport. Although intended for the airport, the Aileron's beautiful design, flexibility, & sustainability make it desirable for many different types of spaces.

ILLUMINATION FLEXIBILITY

The Aileron's light panel consists of LED's between two sheets of optical diffusion acrylic which eliminate glare. This panel can be raised or lowered, (as it rotates around the copper heat pipe within the body), allowing for flexible directional capabilities of the light. This allows for control over the strength of light on the user, the task, and the surrounding architecture.

LOW POWER + HIGH LUMEN OUTPUT + LONG LIFE

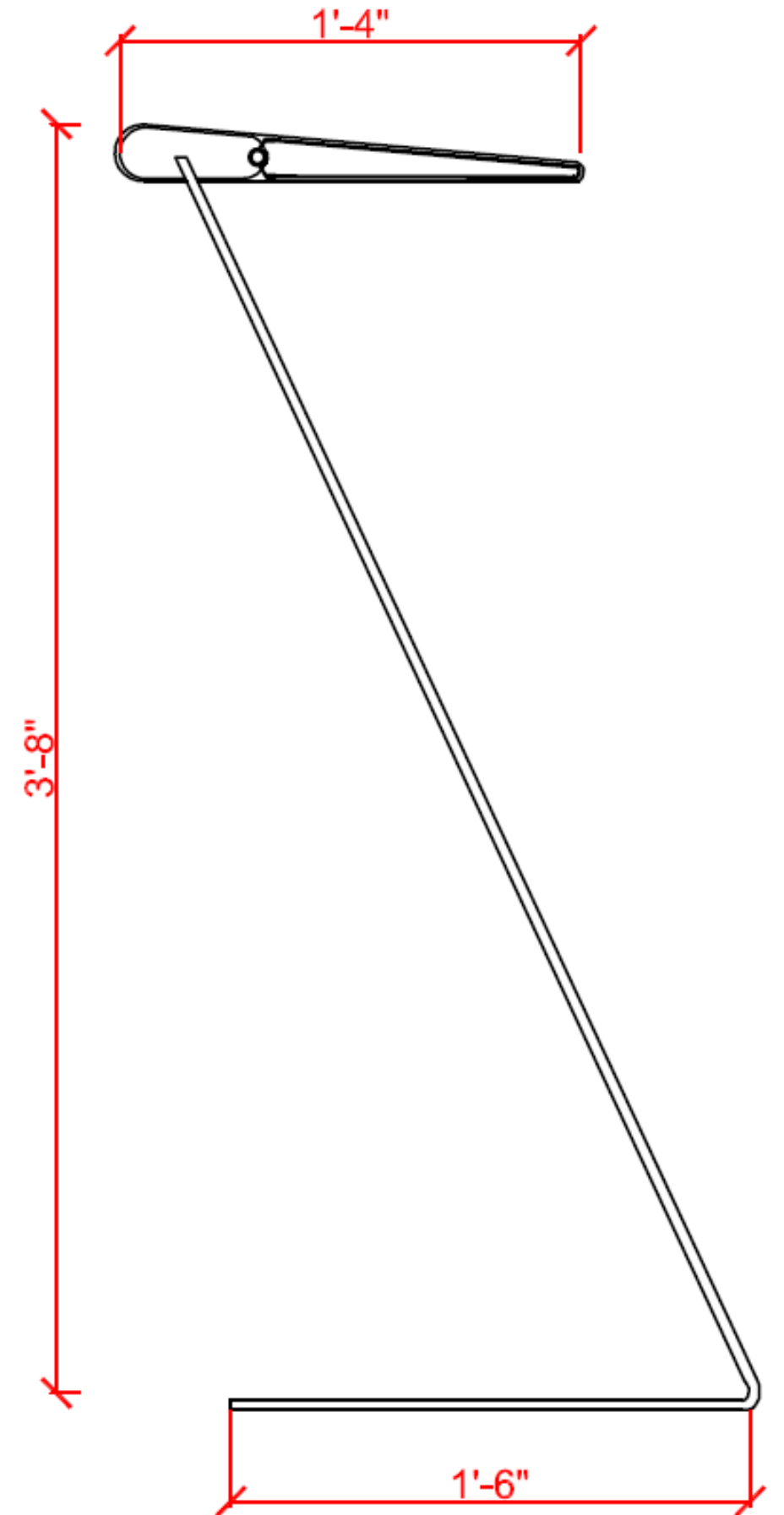
LEDs are more efficient than incandescent lamps in converting electricity into light, but they generate more heat. Excessive temperature reduces the life span, efficiency and color of LEDs. The Aileron solves this issue through a heat pipe. Heat generated at the LED thermal pad evaporates water in the copper pipe, releasing heat into the heat sink, which is then drawn by a capillary action back to the heat source. This conduction cycle uses no external pumps or extra energy to cool the LEDs. The cooler LEDs result in higher light output, at lower power, and a drastically increased life span.



PLAN (NOT TO SCALE)

AILERON TECHNICAL SPECIFICATIONS

LED Power (W)	1/4 W per LED- 60 W Total
Luminous Efficiency (lm/W)	70 lm/W
Color Temp (K)	3000K
Materials	Recycled Aluminum Copper Acrylic Plastic



SECTION (NOT TO SCALE)