The Penrose Triangle

Photo: Andrew Miller
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By Blake Courter and Blake Courtney
Burning Man 2013 Honorarium Recipient
Exhibited at First Night 2014, Boston

The Penrose Triangle is a surprisingly pervasive cultural artifact. Perhaps the simplest way to create a three-dimensional illusion from a simple drawing of straight lines, it has been celebrated in the works of MC Escher, printed on postage stamps, and integrated into popular brands. Those of us who daydreamed during middle school may well have doodled it on the covers of our notebooks, as something in its simplicity confronts our innate ability to visualize shape, causing us to pause and better understand the boundary between what is and is not achievable.

This sculpture reproduces the Penrose triangle illusion as a 17’ tall, curvilinear, illuminated structure that engages viewers to become active participants in the space they inhabit. The shape's symmetry encourages passers-by to stop and discover its secret, often passing on the secret to subsequent onlookers.
Burning Man 2013

Photo: Jim Urquhart/Reuters
Technical Details

Overall:
height: 17’ 4” width: 19’ 2” depth: 8’ 6”
powdercoated steel and channel lighting
overall weight: 3000 lbs
installs in a ∅25’ circle, typically in a day

Structure:
3 cubes and 3 arms bolt together in three modules
Beams are 1.5”, 0.08” and 0.12” wall structural steel
designed to support 40 adults with safety factor of 10
designed to withstand extreme weather and winds

Lights:
contains 2538 individually-addressable LEDs
light show can be interactive or community-programmed
48 bit HDR color for smooth transitions at low intensity
each of the corner cubes embed control and power modules
3 Teensy microcontrollers drive 8 channels each
1 centrally controlled using Beaglebone microcontroller
internet connectivity for interactive applications is possible

Power:
24 VDC internal power and USB control
typically draws 100-200 W, 600W peak
powered by solar, battery, or grid

Base:
suitable above or below ground placement
8” I beam reclaimed from Big Dig (old Chinatown exit 22)
Team

Blake Courter
Design, Engineering, Administration
Member, Redtail Collective (Fort Point Channel)
Participant, Figment Boston 2010-2013

Blake Courtney
Fabrication, Facilities, Logistics, Power
Owner, BC Designs (Somerville)
Board Member, Firefly Art Collective
Board Member, Boston Cyberarts
Participant, Figment Boston 2010-2013

Lighting by Michael Dewberry and Jacob Fenwick

Team members after first installation, August 2013.
Top-to-bottom: Jim Leonard, Michael Dewberry, Dorothy Basset, Blake Courter, Jacob Fenwick, Jesse Campbell.

Blake Courter and Blake Courtney after assembly in pouring rain on Boston Common, December 2013

Photo: Andrew Miller
Photo: Ronny Preciado
Community-Built

Built in Somerville by local artists and community efforts. Funded by a grassroots campaign and the Burning Man organization.

Blake Courtney handles I93 with ease  
Photo: Blake Courter

Michael Dewberry, Jacob Fenwick, and lights  
Photo: Ronny Preciado

Amber Simpson precisely notches a beam  
Photo: Blake Courter

Garage floor with Ronny, Jacob, and crew  
Photo: Ronny Preciado