

Workscope
January, 2004

Name of Artwork
Boundary Functions

Artist
Scott Snibbe



Estimated Dimensions

Floor space for projection: a square, measuring 4 meters on each side.

Height: approximately 5-9 meters.

Rigging: equipment in the ceiling measuring approximately 2m x 1m x 300cm.

Total volume of space occupied(minimum): 5m x 4m x 4m.

Estimated Weight

Floor: constructed on site, approx. 100 pounds.

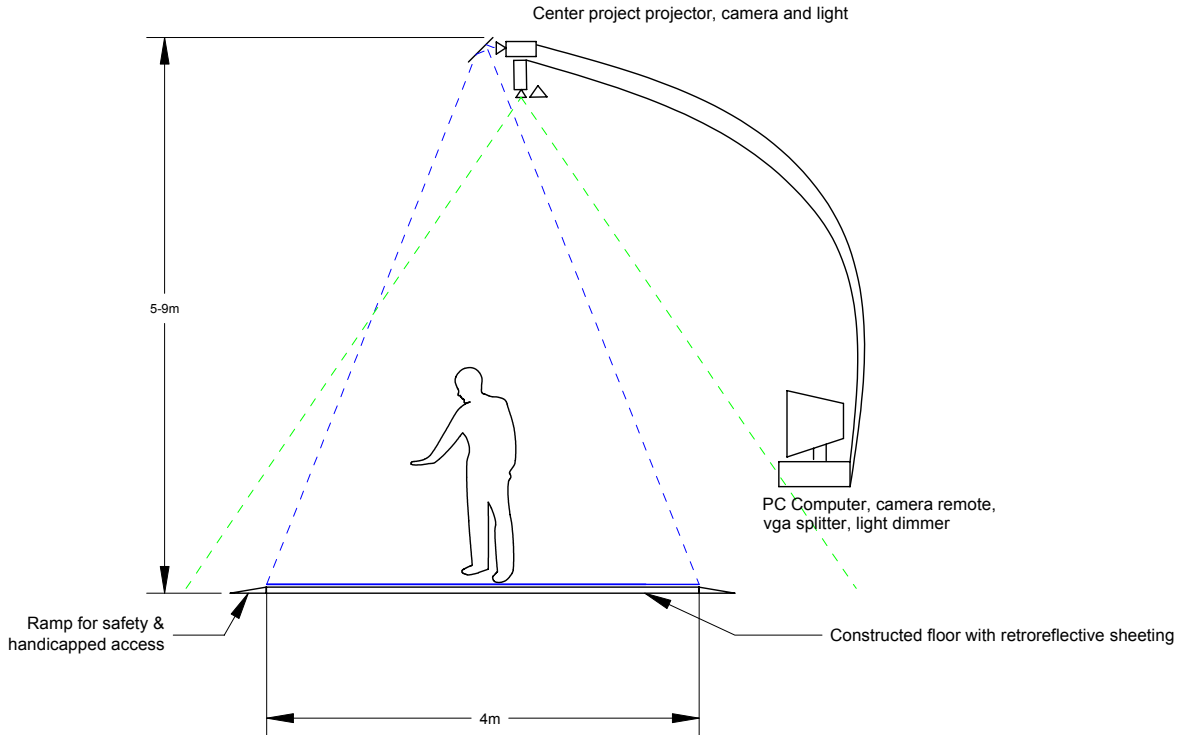
Equipment and rigging: approx. 50 pounds, including rigging materials.

Power Requirements

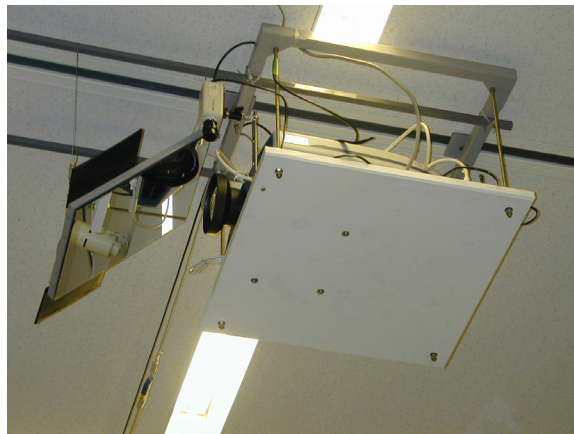
Total power requirements do not exceed 600 Watts.

Installation

Boundary Functions consists of two major components: a collection of equipment mounted approximately 5 meters overhead, and a 4 meter square constructed retro-reflective floor (see illustration below).



The Boundary Functions input/output consists of an overhead video camera and projector. The projector is mounted horizontally and a large mirror (preferably front-surface) is used to reflect the image onto the floor and achieve significant distance for the 12' projection (vertical dimension of projection). A recent projection platform is shown below. Some current projector models can also be mounted vertically and then the front-surface mirror can be eliminated. The camera and projector are connected to a PC with a video digitizing board. The PC processes the video using custom software and generates a digital image, which is projected onto the floor. The image is a Voronoi diagram constructed around the people standing on the floor, demarcating each person's changing personal space.

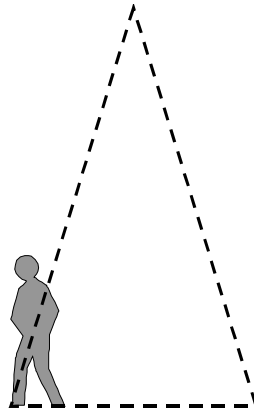


The floor is a retroreflective surface built on-site, its dimensions are approximately 4 meters on each side with a 300cm transition for handicapped access (or dimensions appropriate to local building codes). To obtain maximum contrast, we provide an overhead light source from approximately the same position as the projector, these insure that a large amount of light reflects directly into the overhead camera. A single 20w halogen light connected to a dimming circuit for adjustment works well. This light source is generally unnecessary if the projector and camera are precisely aligned for center-projection.

The installation is site-specific with the largest variable being the choice of projector. This determines the size of the projected image and the size of the floor to construct below. Projector technology changes very quickly, so the best choice is made near the time of installation to insure the highest quality and brightness of the projected image (see attached budget for specific recommended projector & lens). Some projectors require a special lens to obtain a maximum projected width.

Special requirements or considerations

A minimum height for the equipment is 4m, resulting in 3-4m projection. This can become difficult for the user experience, however, since the view volume of the projector intersects people's bodies. For this reason, the installation works best when we can mount the camera and projector 6-9 meters above the floor (see diagram below). Be aware that we typically also lose some height in the mounting process. This distance can sometimes be made up by using a large mirror to gain horizontal distance from the projector.



Boundary Functions can be installed in an open area - that is, it doesn't need to be in an enclosed room by itself. However, the surrounding lighting must be relatively dark and constant, as the installation is tuned for specific lighting conditions. Lighting should remain dim to maintain contrast of the people on the floor for the overhead camera, and to keep the contrast of the projection high. Thus, a space with windows to the exterior won't work, but most enclosed spaces with controlled lighting, however large, are fine. Care should be taken to examine other surrounding exhibits that generate changing lighting conditions (such as video projections) that might affect Boundary Functions.

Floor Construction

The floor can be as simple as a 1/2" sheet of MDF beveled on the edges and foam-taped to the floor, or a more complex framed, raised floor with a long transition ramp (12"). The floor is covered with retroreflective sheeting.

Time & Preparation

All of the physical fixtures and the initial rough alignment of the camera and projector can be prepared before the arrival of the artist. If the staff has no experience applying the retroreflective sheeting, this step can also wait for the arrival of the artist. With all of the fixtures constructed, installation will take one day for the installation and configuration of the software. Please have the PC computer connected to the

Internet to allow the download of drivers and other necessary software. If oversight of fixture construction is required, installation will take 2-3 days, depending on the availability of carpenters, lighting technicians, etc.

Equipment Requirements

<i>Boundary Functions Budget & Equipment</i>		
<i>Purchase prices, October 21, 2003</i>		
<u>ITEM</u>	<u>NOTES</u>	<u>PURCHASE PRICE</u>
Data Projector	Center projection projector 2000 lumens or brighter with lens sufficient to generate 4m vertical height from available ceiling height. E.g. SONY VPL-FX51	\$ 4,000
Video Camera with controllable iris & zoom lens	Camera must be able to turn off all automatic light compensation. Most camcorders will generally work as well as this specific camera: AFZ-220XC 1/4" auto-zoom color camera, 12V DC power supply 500mA PS-02 from polaris.com. The camera lens must be wide enough to see the entire floor below as well as a portion of the surrounding area.	\$ 400
Camera mounting bracket	Panavise 882-06 Dual Option mount 6" from polaris.com, or other available bracket	\$ 50
Camera control cable (OPTIONAL)	custom cable to remotely configure camera if using AFZ-220XC	\$ 50
Light control cable (OPTIONAL)	Necessary to dim light if camera mounted off-axis from projector.	\$ 20
Video cables	Long VGA, or breakout to 4 BNC for projector and camera signals	\$ 100
Front-surface mirror and mount	To reflect projector image down onto floor if projector is mounted horizontally.	\$ 200
Video digitizing adapter	Belkin USB Videobus II, or similar that can capture at 320x240 at 30Hz and has a DirectShow driver	\$ 75
Retroreflective sheeting - 20 square meters	Adhesive microprismatic type, e.g. Avery-Denison T-6200 (\$500), T-1200 (\$200) or other local source. Type depends on duration of installation - T-6200 is more durable.	\$ 500
PC computer or laptop	running Windows 2000 or XP, 1.8Ghz+, 256M RAM+, NOT celeron or athlon, must be Pentium III or Pentium IV. Good OpenGL graphics card such as nVidia GeForce 440MX or better.	\$ 1,500
Monitor	For installation and maintenance of artwork	\$ 500
VGA splitter	To split VGA signal to monitor and projector. E.g. ATEN VS-132, available from KVM.	\$ 75
Materials for floor construction	4m x 4m raised floor with handicapped ramp transition all around, approx 300cm. MDF and wood construction. Temporary installation can be done with ¼" MDF beveled on edges and double-stick taped to floor.	\$ 400
Total materials purchase price		\$ 7,870