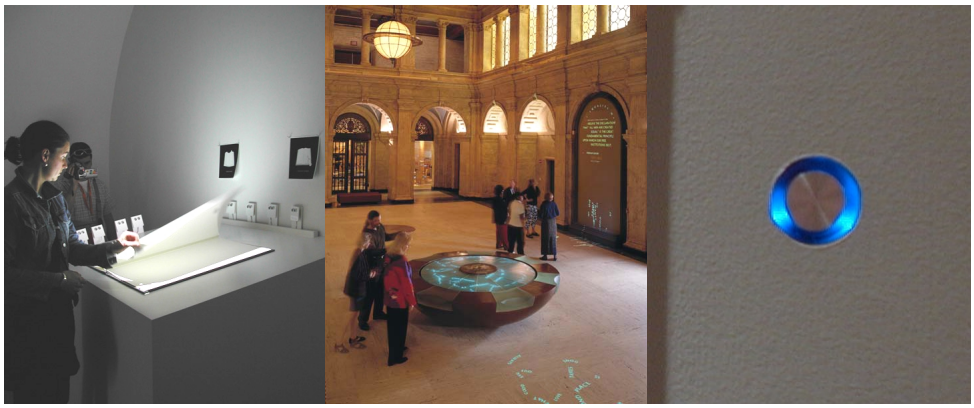
Sloan A. Kulper

Work at Small



Design Firm, Inc.

SLOAN A. KULPER + SLOAN2@MIT.EDU + 617.262.5090 + 253 COMMONWEALTH AVENUE, BOSTON, MA 02116

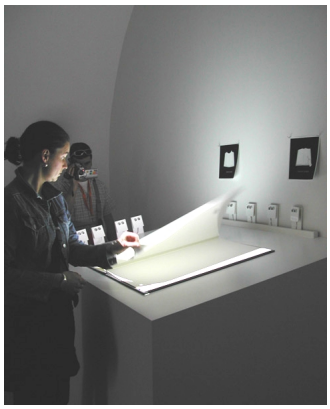
These documents describe projects for which I led electronic hardware design and fabrication while I was employed at Small Design Firm, Inc, an aptly-named multidisplinary design firm located in Cambridge, MA, under the principal direction of its founder, David Small.

These projects focus on realizing the inherent power of technological expertise integrated with well-developed aesthetic sense and critique, as it pertains to the creative display and manipulation of information. All designs are original.

Photographs are from : http://davidsmall.com

Small

The Illuminated Manuscript of David Small

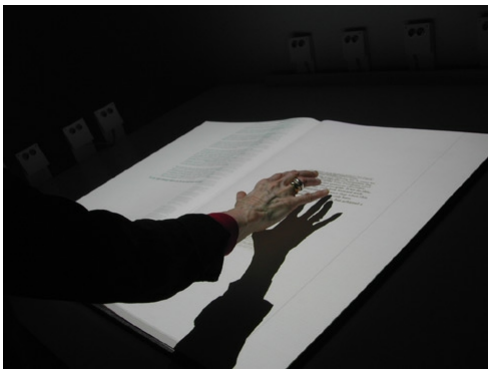


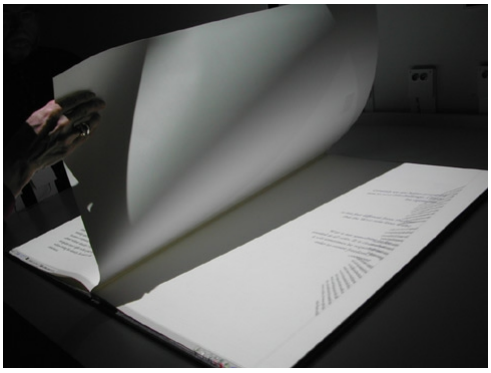
Sensor hardware / microcontroller sofware design for interactive installation. Words projected onto the blank pages of an oversized book react to the hand movements of readers.

On display at Documenta_11, Kassel, Germany
May — September 2002.

I.

photographs

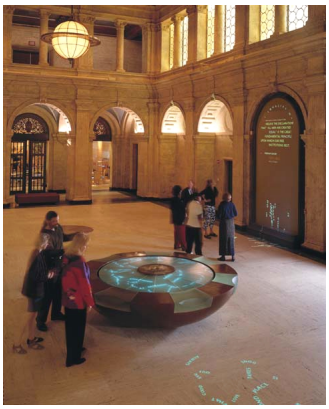




I.

photographs

Interactive Fountain at the Mary Baker Eddy Library



1. *photographs*

2. *mechanical drawings*

3. *printed circuit boards*

Sensor module and printed circuit board design / fabrication for a permanent interactive installation. 32 infrared distance sensors wired to custom PCB's pass signals to a computer in control of text projected on the surface of the fountain.
As persons approach the installation, words projected on the fountain are pulled towards their locations.

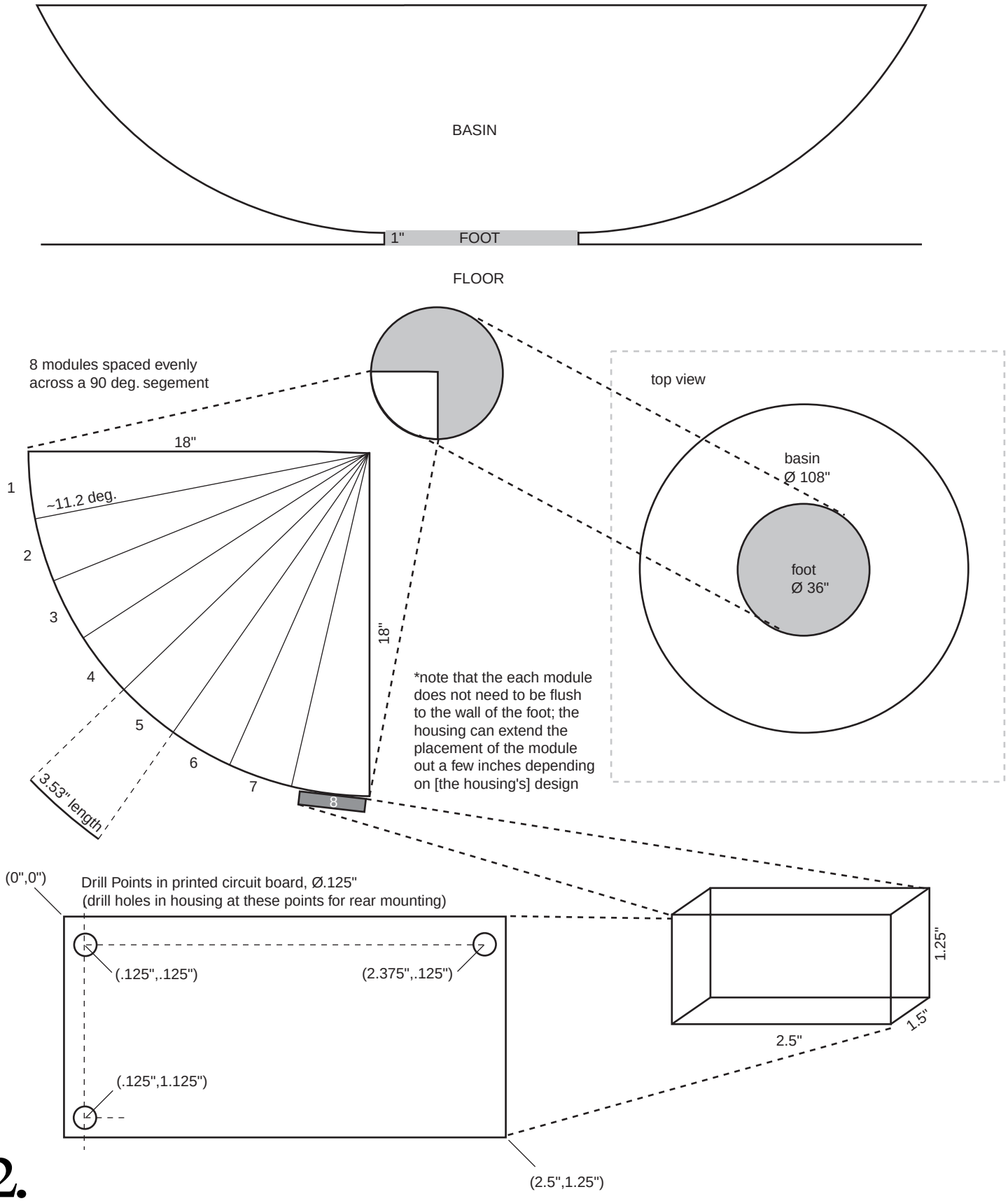
Permanent installation at MBEL, Boston, MA
September 2002 — Present.

I.

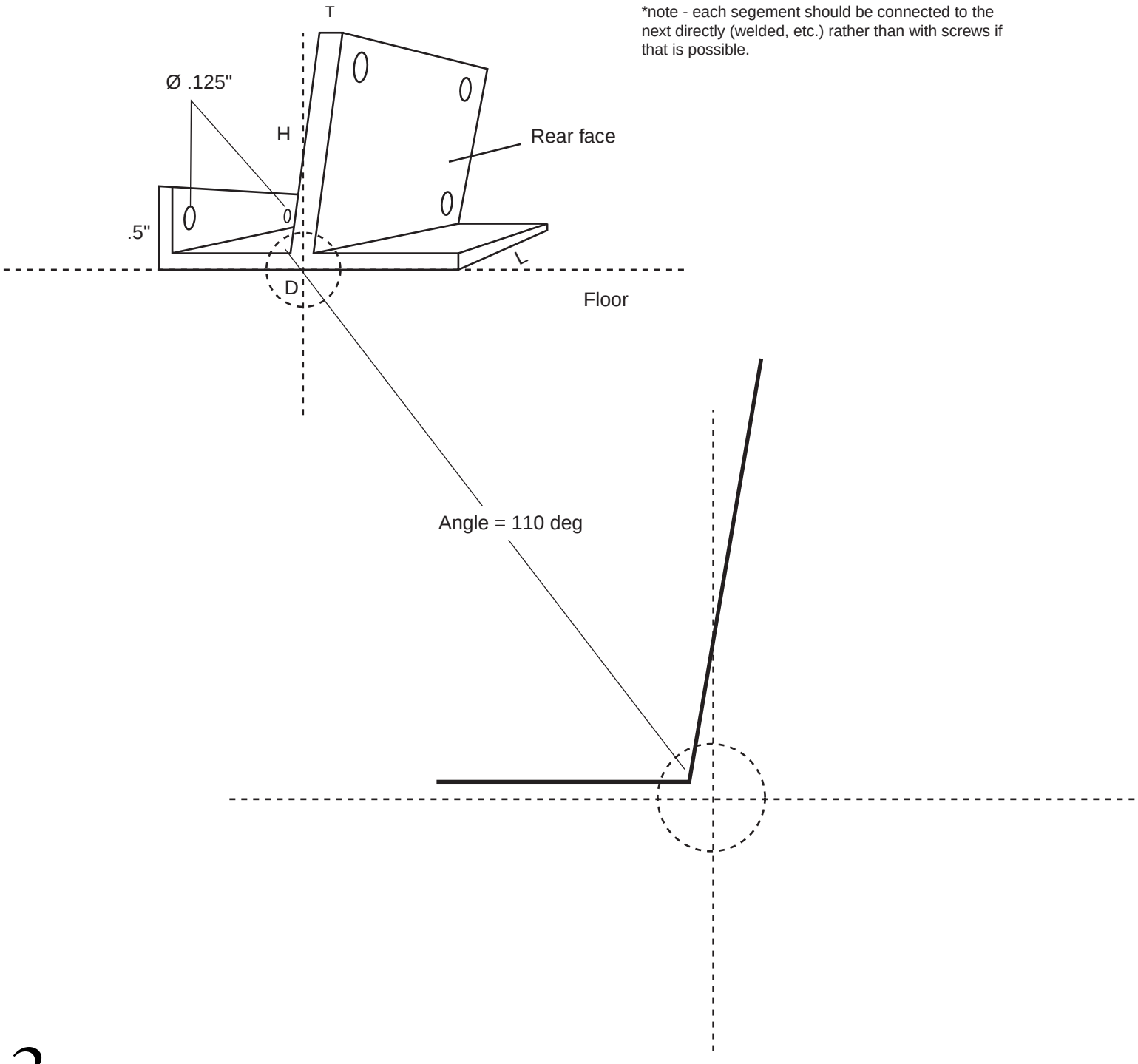
photographs

SMALL DESIGN FIRM, INC.

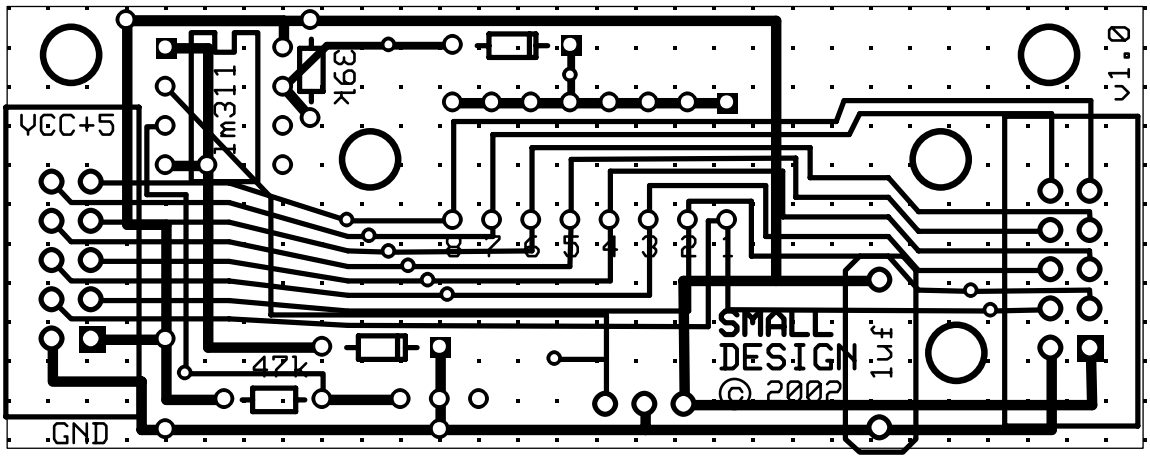
mechanical drawing sketch for *hall of ideas* sensor array housing
2/26/2002 sloan kulper



Cross-section sketch of one segment of housing:
1.5" high, ~3.5" long, ~.25" thick, 3.0" deep

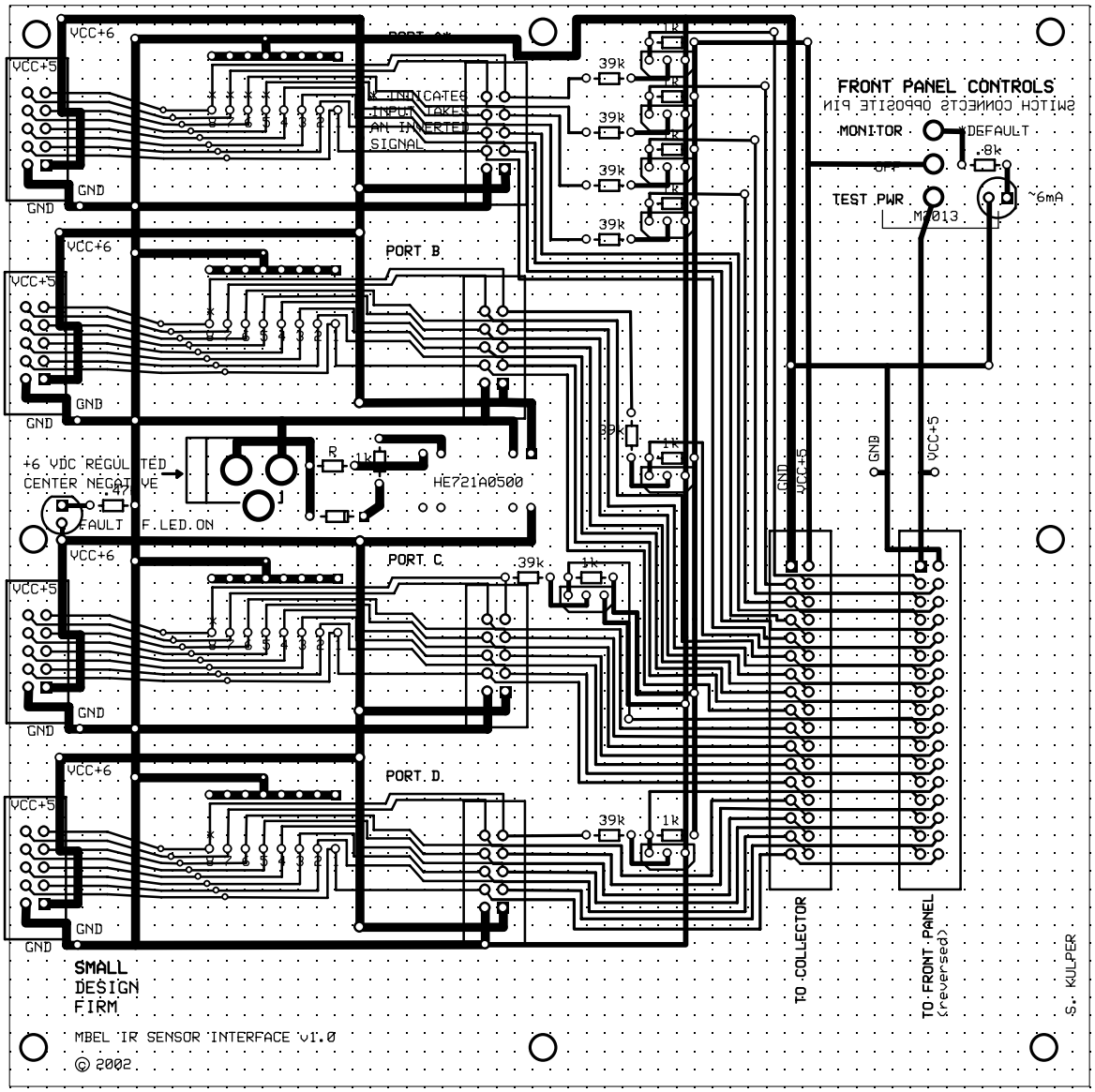


*note - each segement should be connected to the next directly (welded, etc.) rather than with screws if that is possible.



Circuit board for infrared sensor module. Filters sensor data through a simple, adjustable A-D (comparator) circuit, and passes it to one of 8 channels on the data bus, selectable via an 8-DIP mounted behind the sensor.

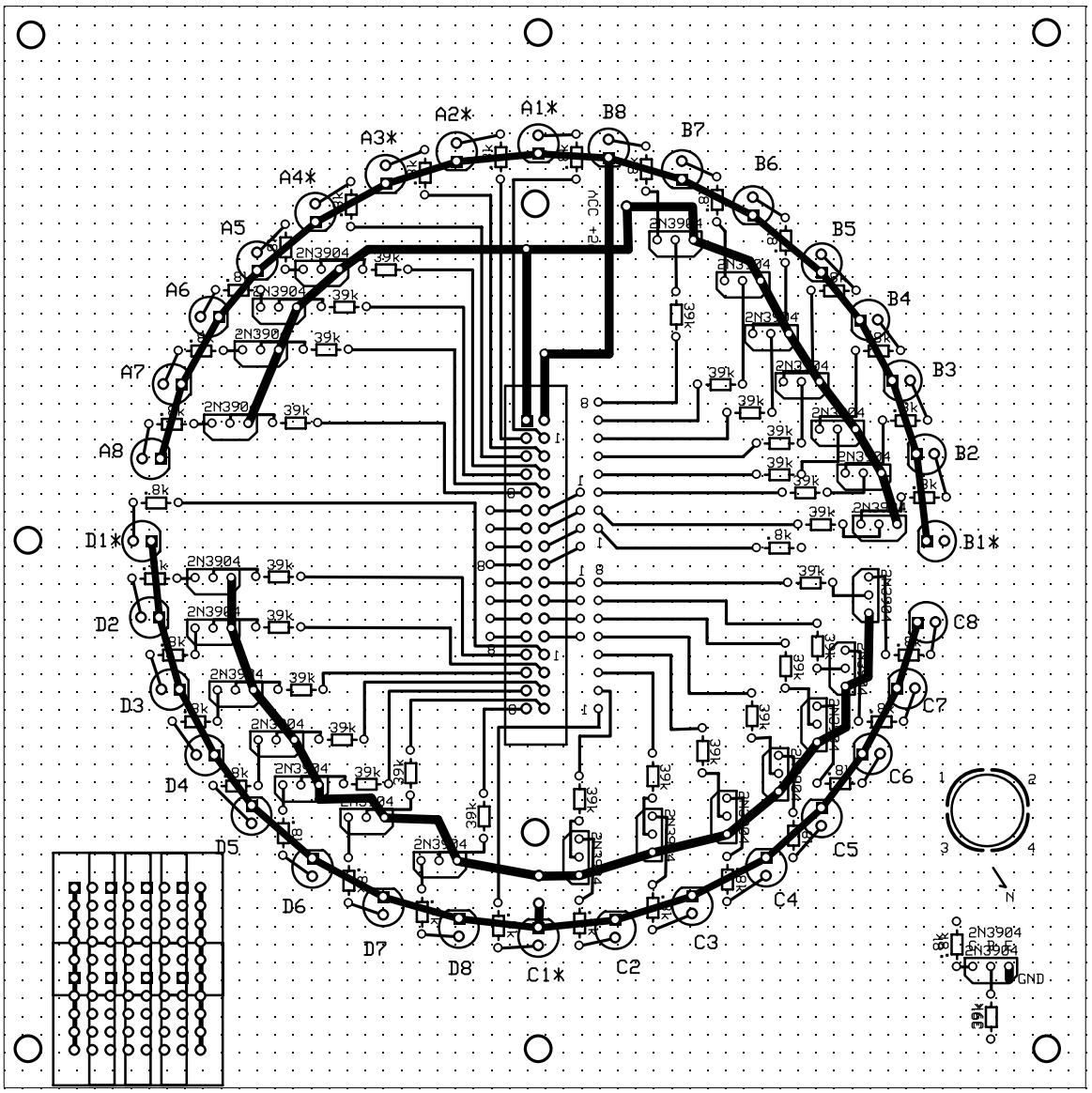
* *see slides for image of fully-populated board*



Bus circuit board for the collection of data from, and distribution of power to, the 32 sensor modules described on the previous page.

* *see slides for image of printed circuit board*

3.
printed circuit boards



Printed circuit board for LED-indicator panel which monitors the activity of the 32 sensors through a ribbon to data collection board, described on the previous page.

* *see slides for image of printed circuit board*

Interactive Museum Exhibit

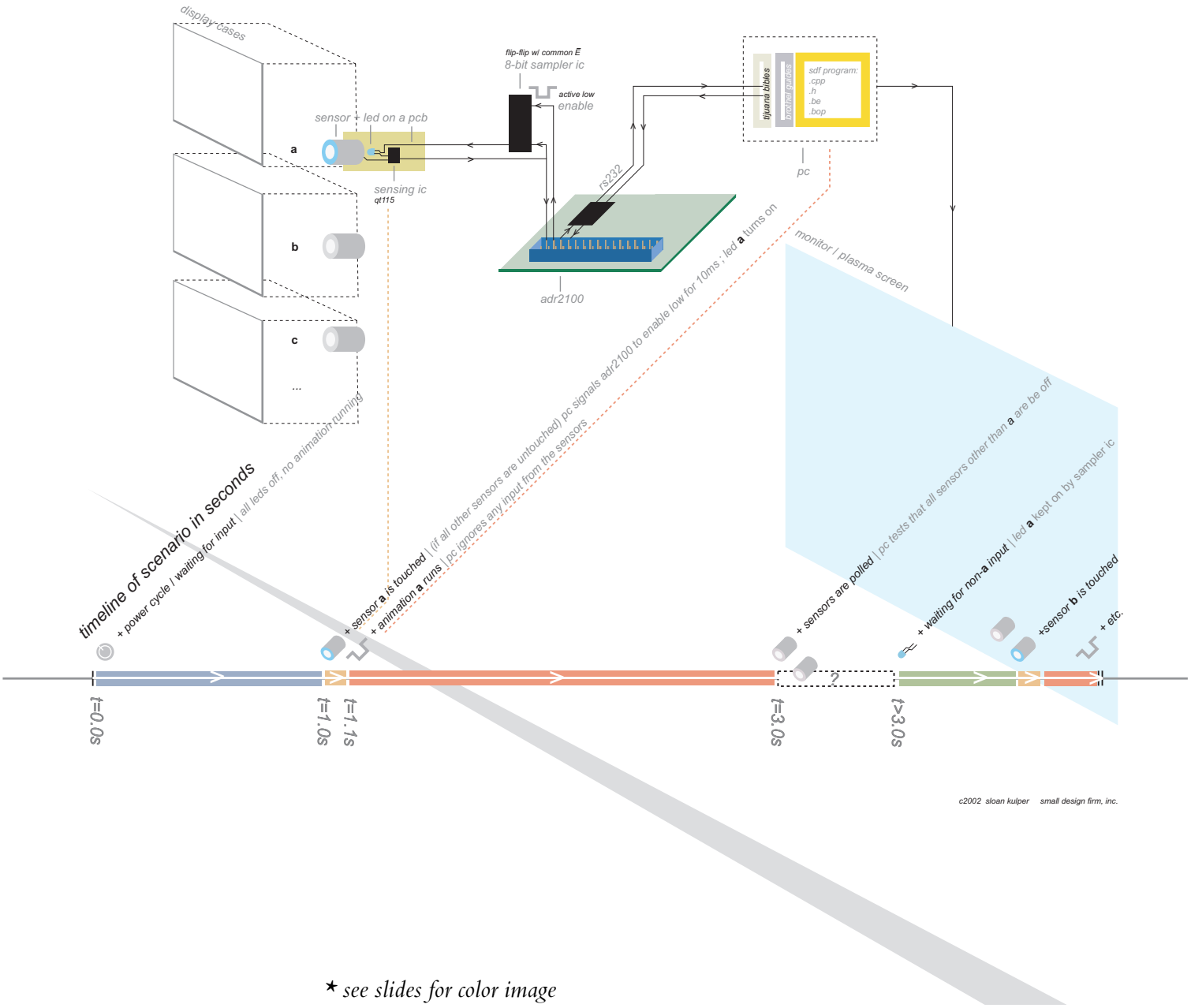
Capacitive switch and printed circuit board design / fabrication for interactive museum exhibit [collaboration with John Rothenberg]. Touch-sensitive controls for an interactive map of New York City and information displayed on wall-mounted computer monitors.

Permanent installation at MoS, New York, NY
September 2002 — Present.

1.
timeline of operation

2.
mechanical drawing

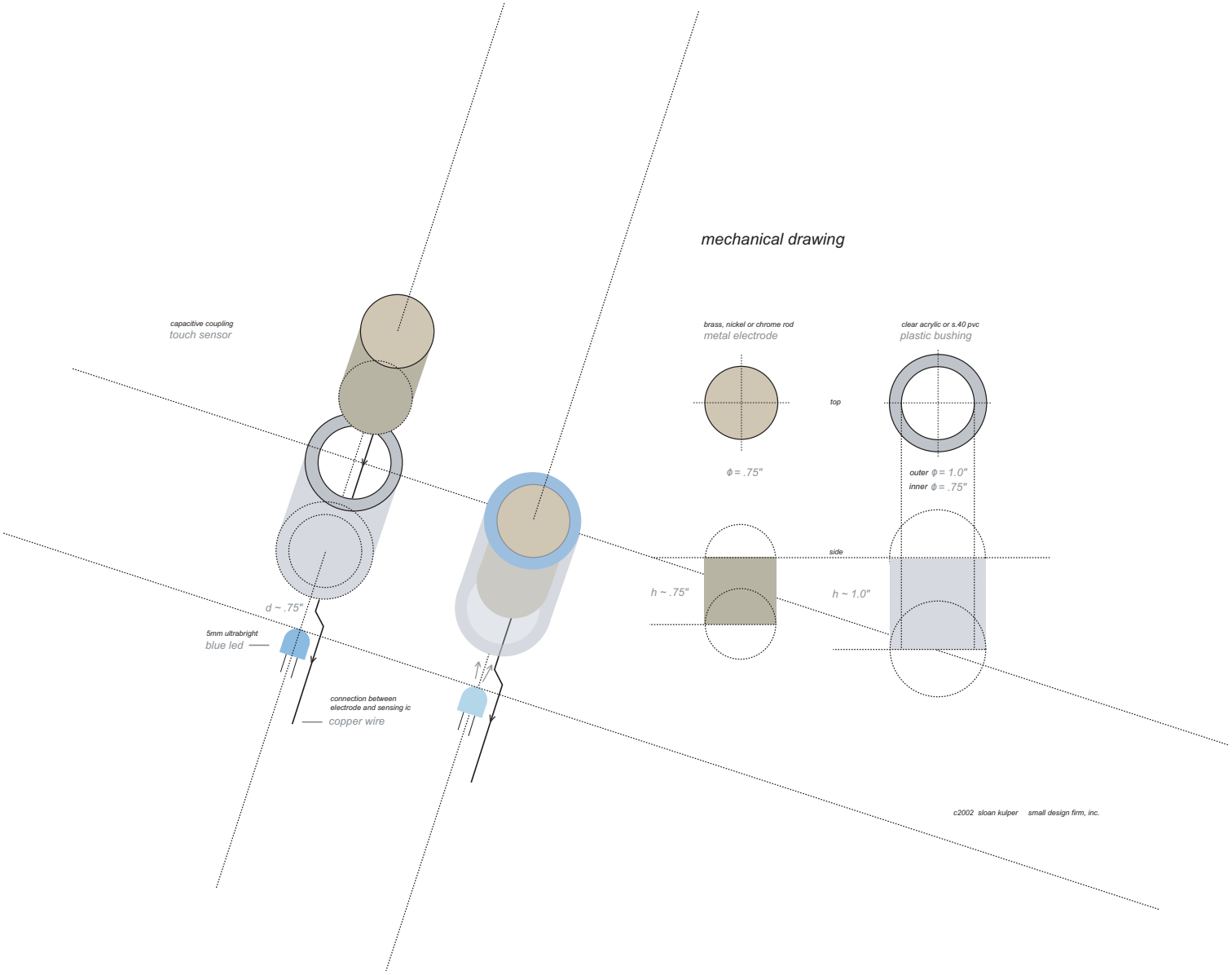
3.
printed circuit boards



★ *see slides for color image*

I.

timeline of operation



Solidcore design of (non-mechanical) capacitive -coupling switches with LED indicator.

★ *see slides for color image*

2.
mechanical drawing

CONNECTION DIAGRAM 7/31/2002

pwm B signal bg-control-board-7b.pcb

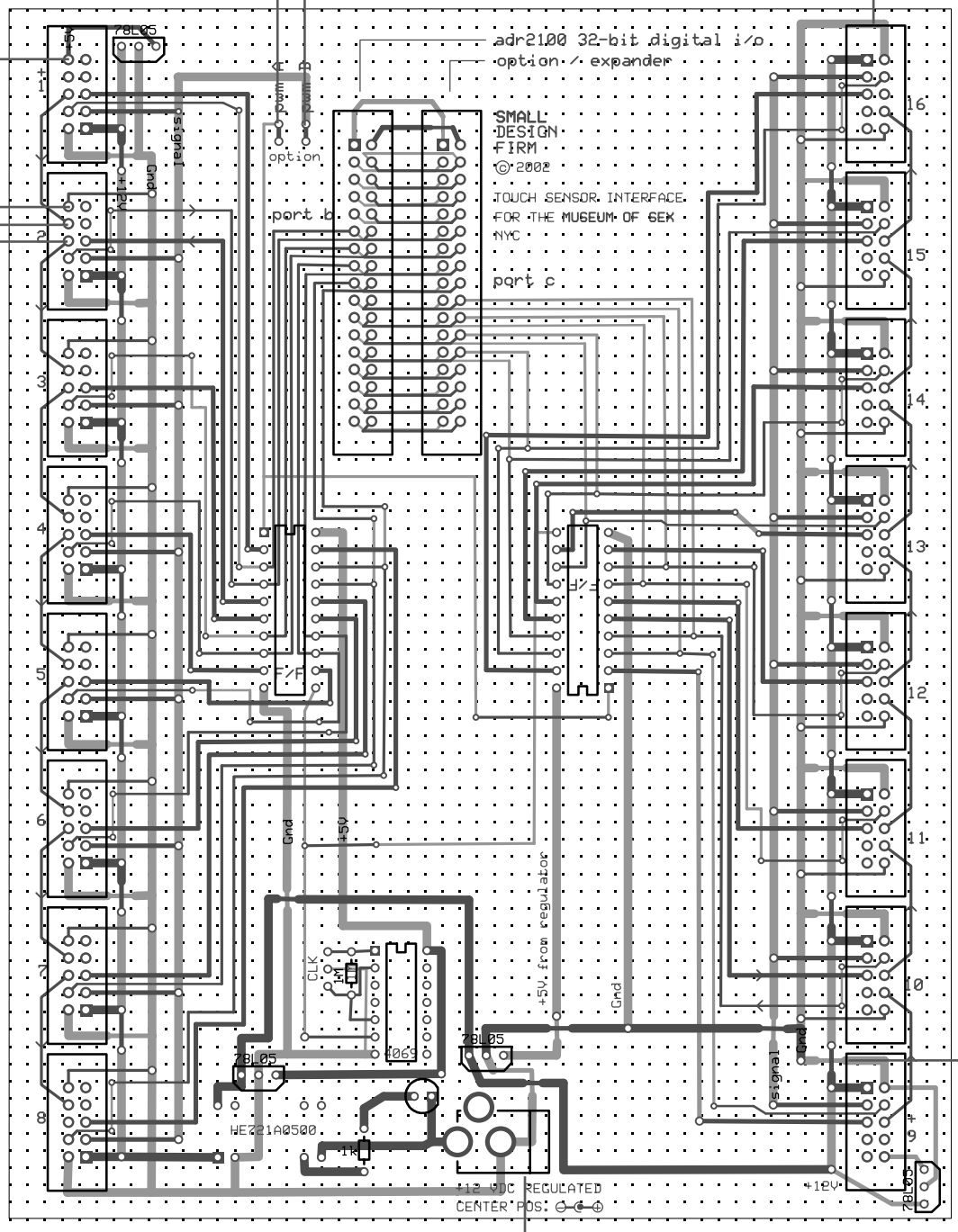
pwm A signal
connected directly to pwm A
on the adr2100
(controls the common
enable pins for the flip flops)

pwm B signal
connected through a 20mA
current limiting device to pwm B
on the adr2100
(sends an oscillating pulse to
leds that are "on")

General Note
orientaion of sockets
9-16 is flipped

master / slave
connected to either +5V
(master) or Gnd (slave)
for daisy-chaining

sync in
sync out
connected to either +5V
(master) or Gnd (slave)
for daisy-chaining

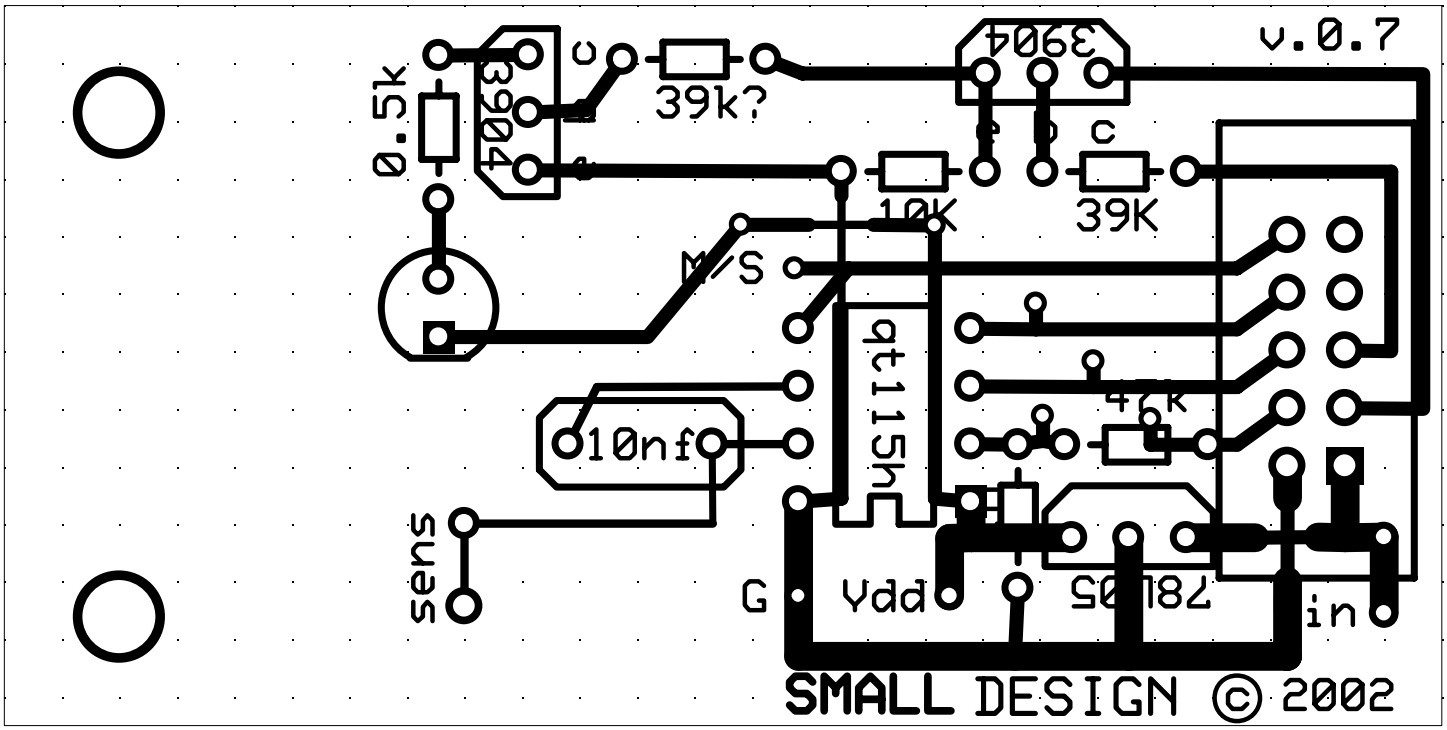


General Note
power and ground traces are
smaller at points where
they cross on opposite sides
of the board to reduce
unneccessary capacitance

+12VDC Supply
the more regulated the better,
though since we're not expecting
a precise12V level anywhere on
either board, but rather running
everything off of local regulators,
this should be able to safely dip
to any value above 7V.

3.

printed circuit boards



Printed circuit board design for rear wall-mounted capacitive-coupling switches.

2002 Small Design Firm, Inc.
2003 Sloan Kulper

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