

Preventive Conservation for Cultural Properties in Historic Buildings: Practical Environmental Control and Lighting at the Shelburne Museum

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M U S E U M

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Shelburne Museum





General
Store



Shaker
Shed







Dutton House



Class 1: Open Structures



Covered Bridge



Locomotive 220

Class 2: Sheathed Post and Beam Structures



Horseshoe Barn

Class 3: Framed Wood or Uninsulated Masonry Structures



Prentis House

Class 4: Tight Wooden or Heavy Masonry Structures



Dorset House

Class 5: New-built Insulated Structures, Vapor Barriers



Pleissner Gallery

Class 6: Double-wall Construction, Storage Vaults



Museum Library



Roof Gutters



Storm Drains



Dust Control

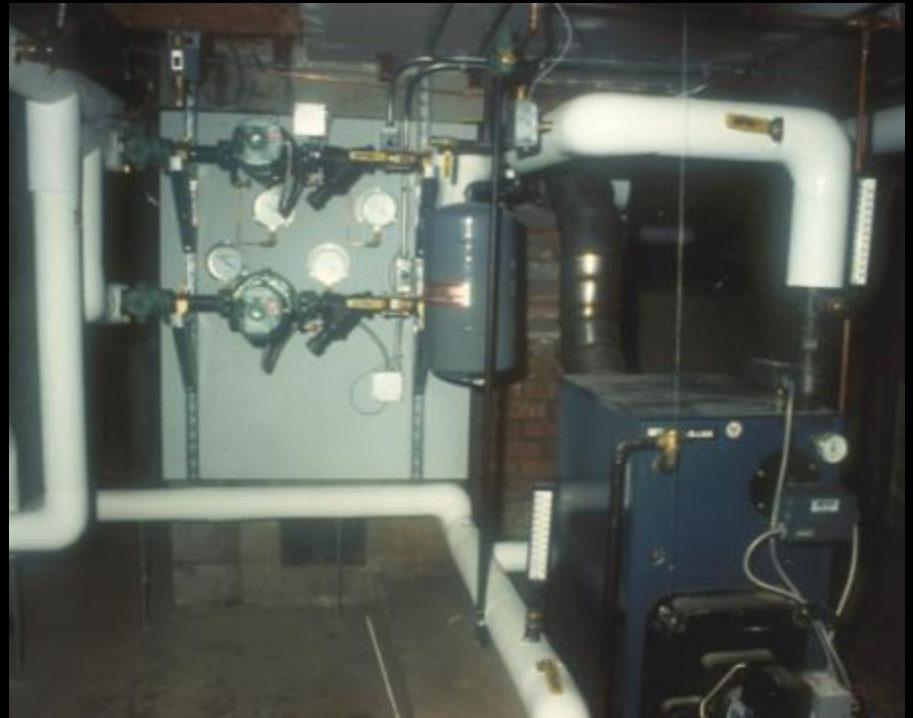


Insulation

Conservation Ventilation (humidistatically controlled)



Conservation Heating (humidistatically controlled)





Prentis House

Modified Use of Conventional HVAC Systems



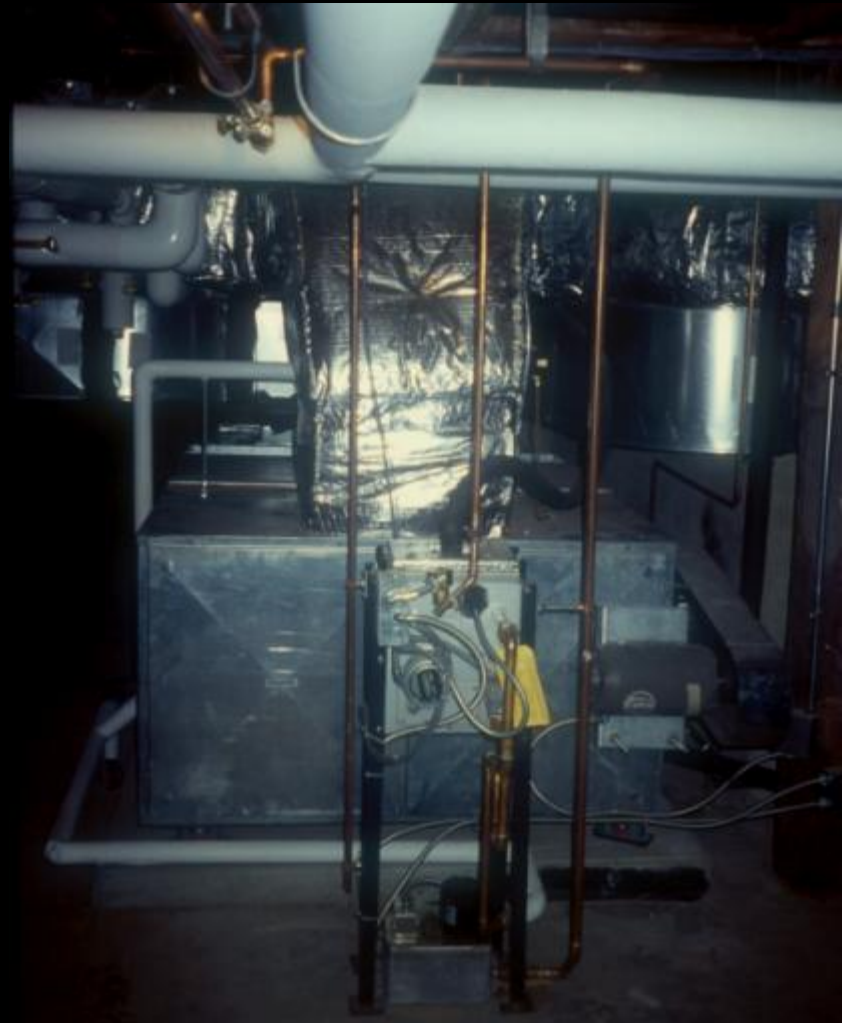
Hat and Fragrance Unit



Conventional HVAC System with Low-Level Humidification



Stagecoach Inn

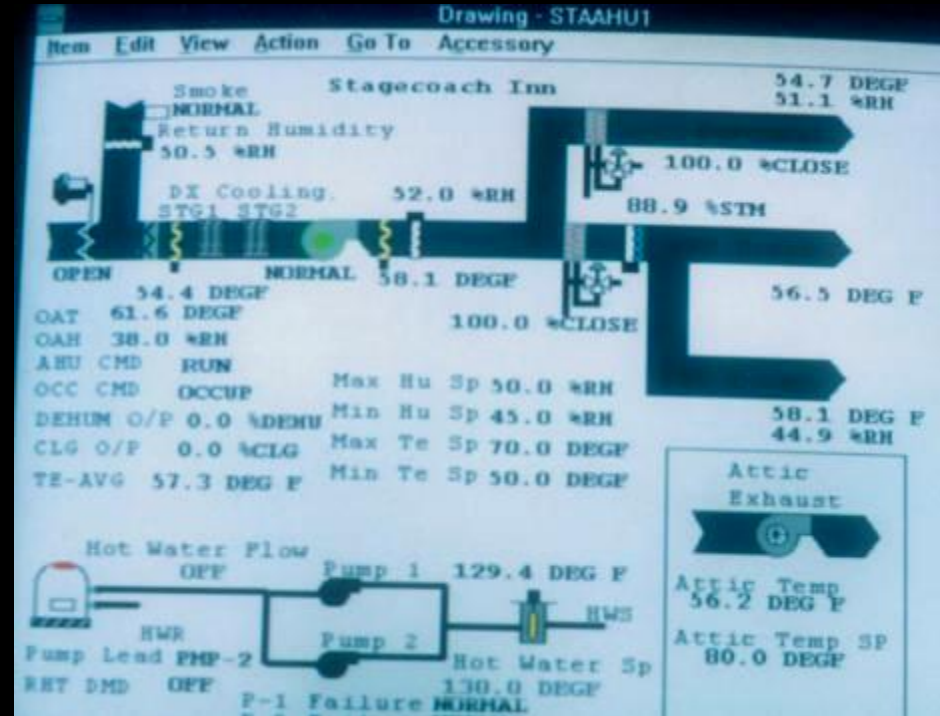


$OT > 32^{\circ}F = 45\%RH$

$32^{\circ}F > OT > 20^{\circ}F = 40\%RH$

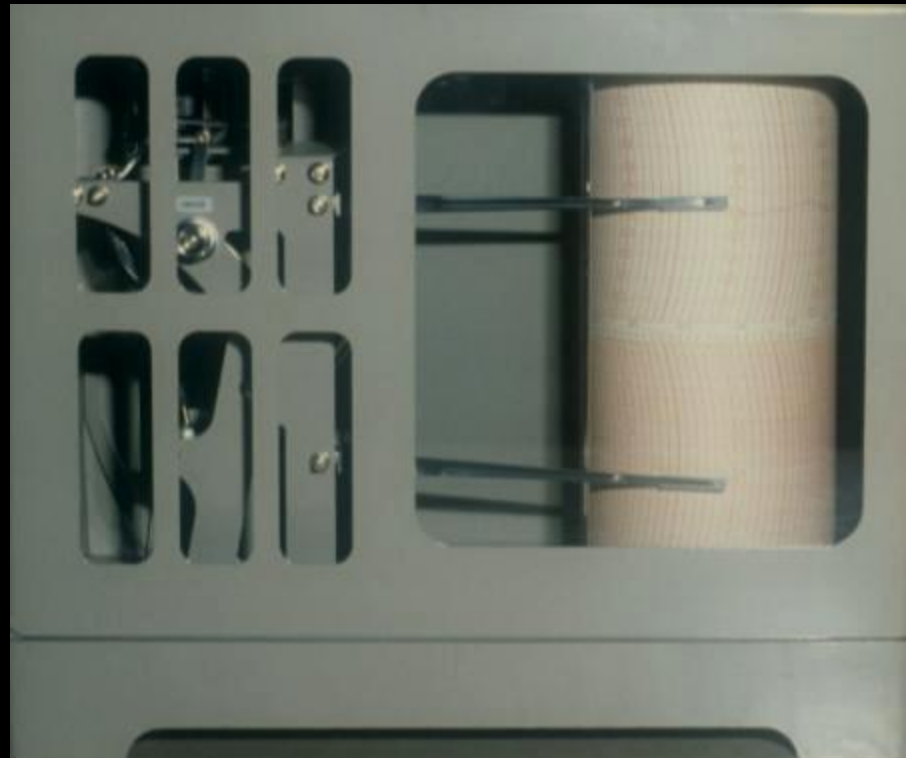
$OT < 10^{\circ}F = 35\%RH$







Vaisala RH Sensor



Practical Environmental Control for Newer Buildings



Collections Preservation Building









Conservation Heating with DX Cooling



Decorative Arts Storage

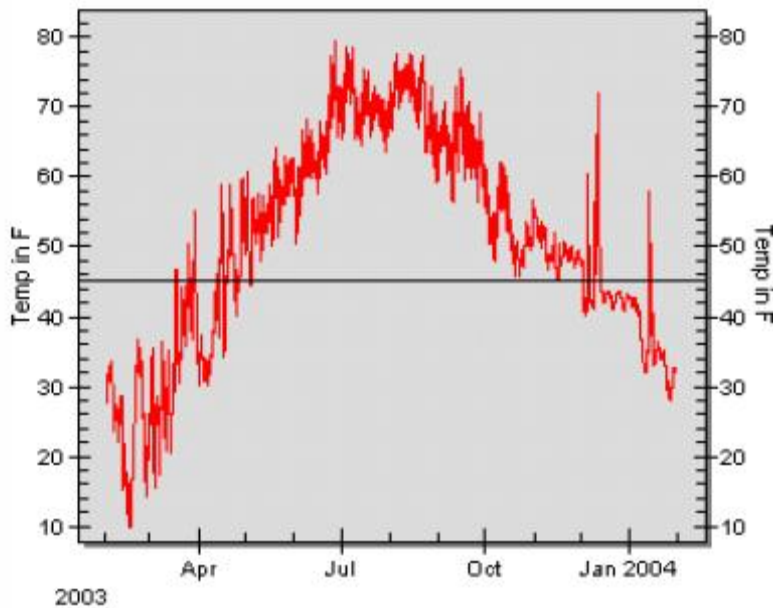






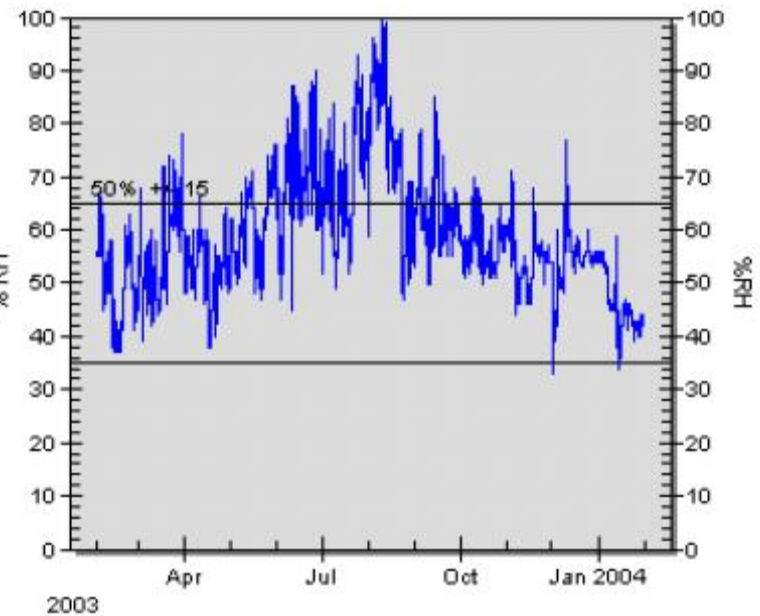
Decorative Arts Storage T and RH 2003

Temperature



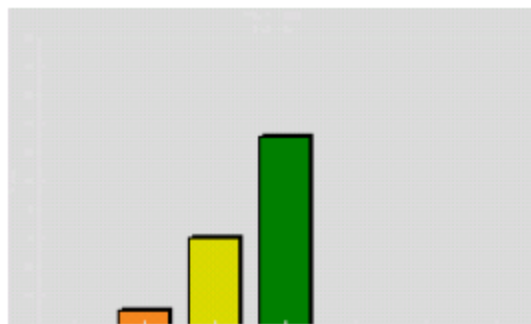
Temp Performance Target : 65 F +/- 20F

Relative Humidity

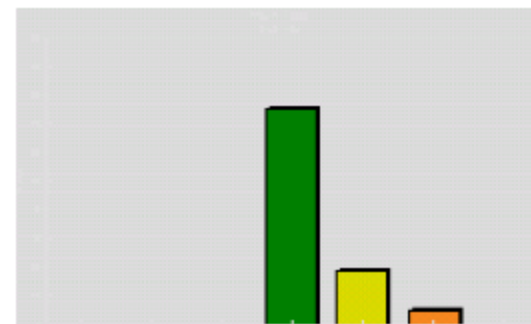


RH Performance Target: 50% RH +/- 15%

Actual Temp vs Target

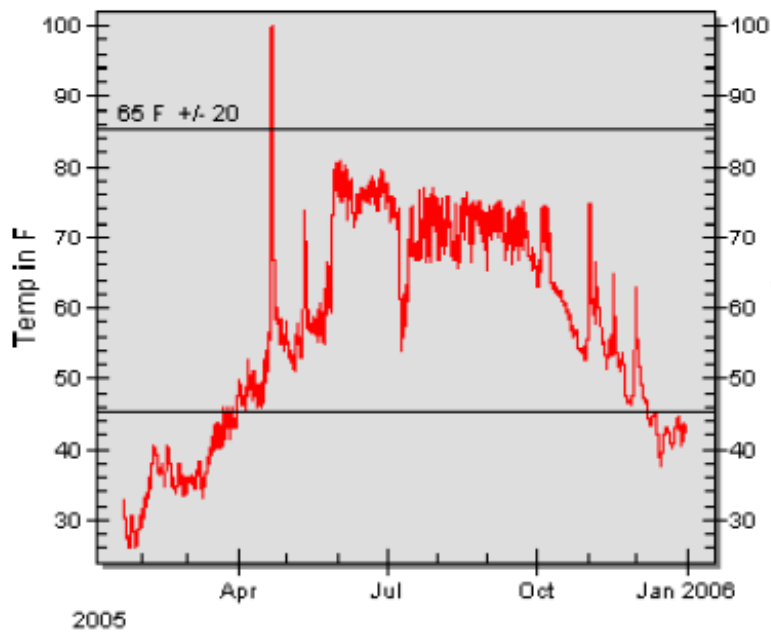


Actual RH vs Target



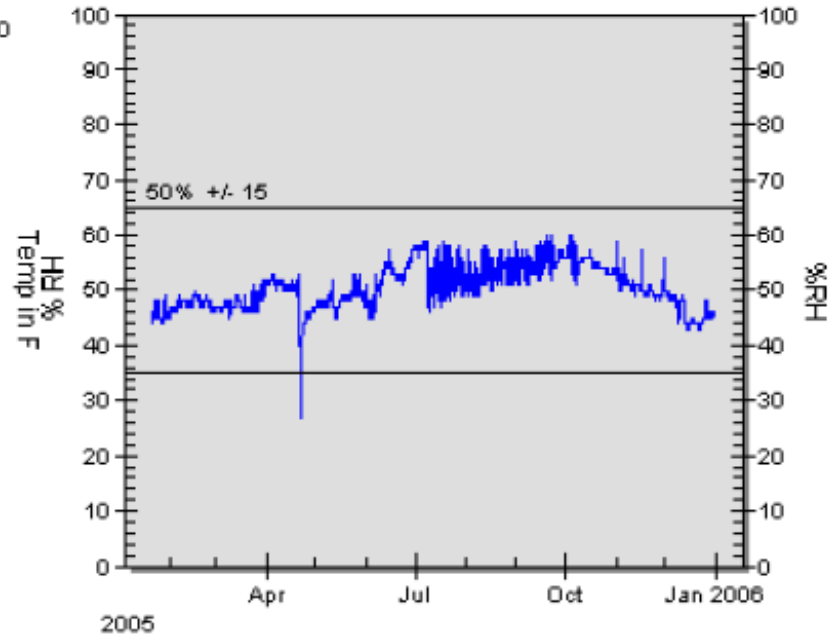
Decorative Arts Storage T and RH 2005

Temperature



Temp Performance Target : 65 F +/- 20F

Relative Humidity

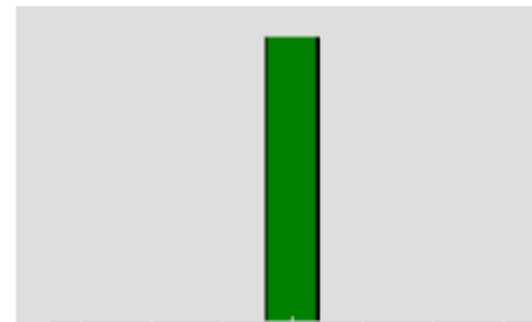


RH Performance Target: 50% RH +/- 15%

Actual Temp vs Target



Actual RH vs Target





Circus Building



Carousel Goat with Mold on Leather

Mr. Slim[®] Split-ductless Systems

Redefining Comfort

R410A
INVERTER



M-Series Indoor Unit



Wireless
M-Series Remote



M-Series Outdoor Unit











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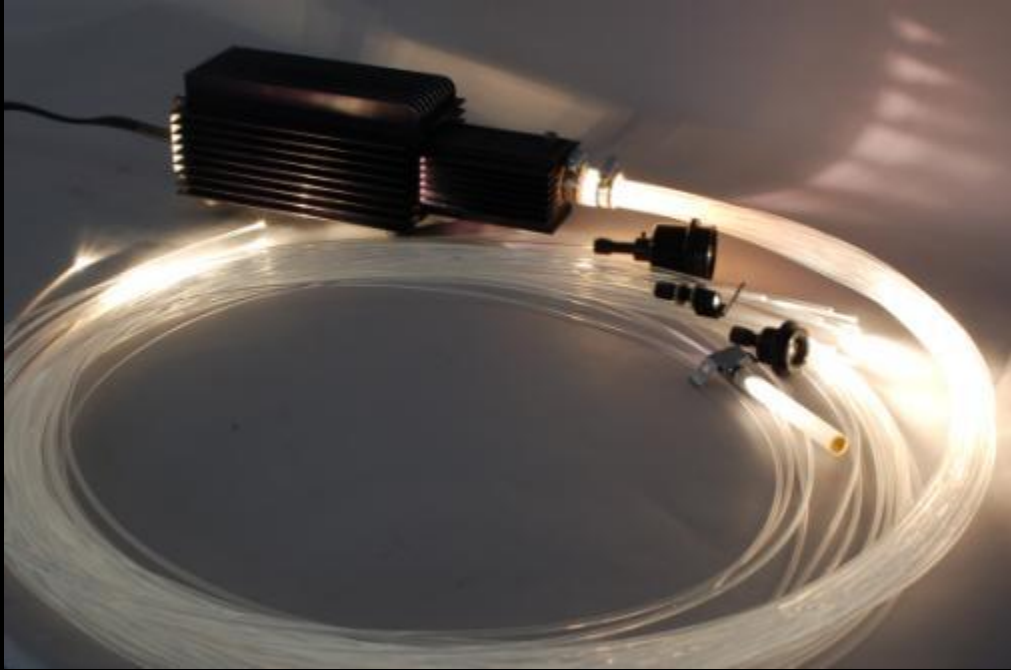


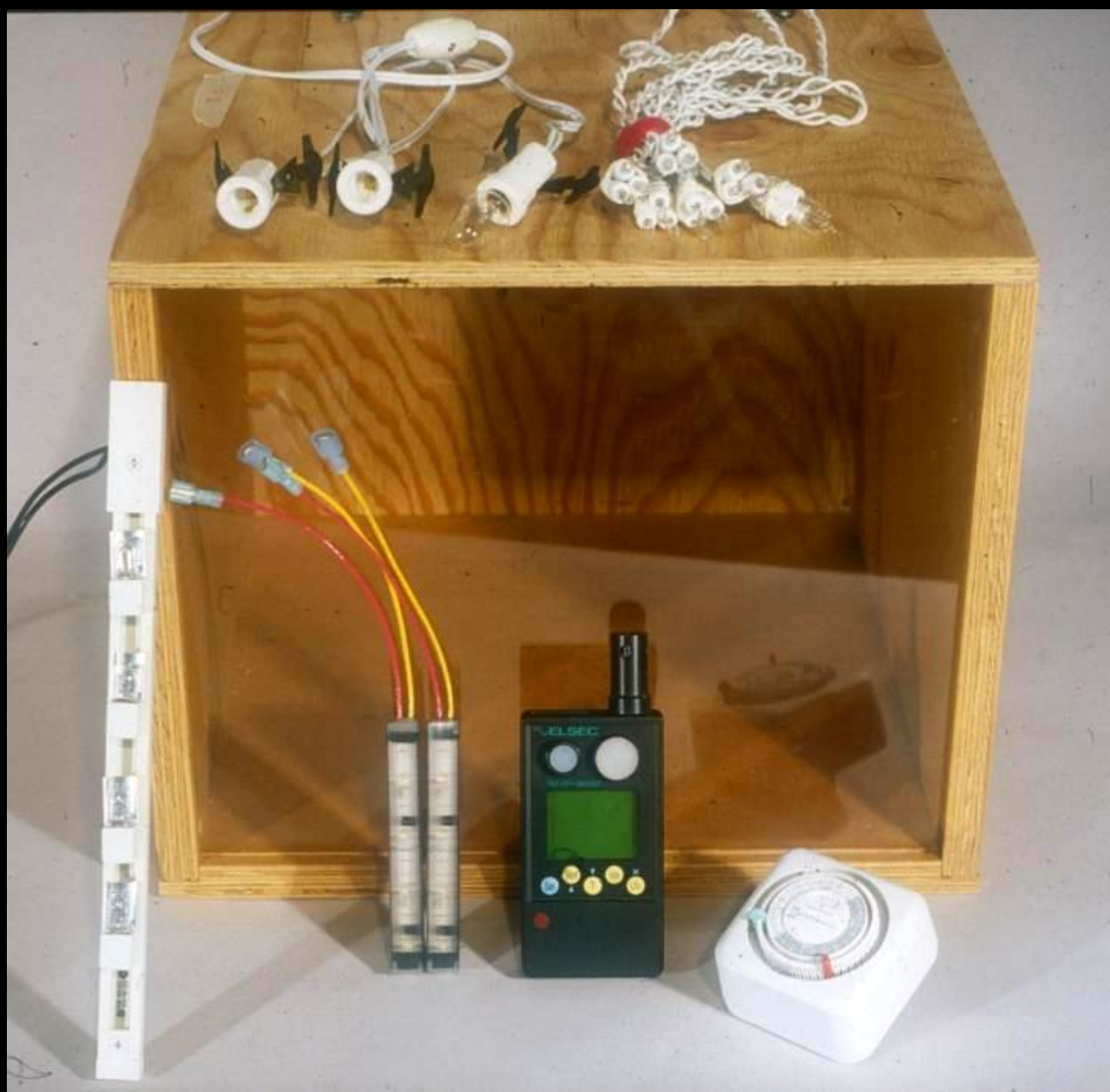






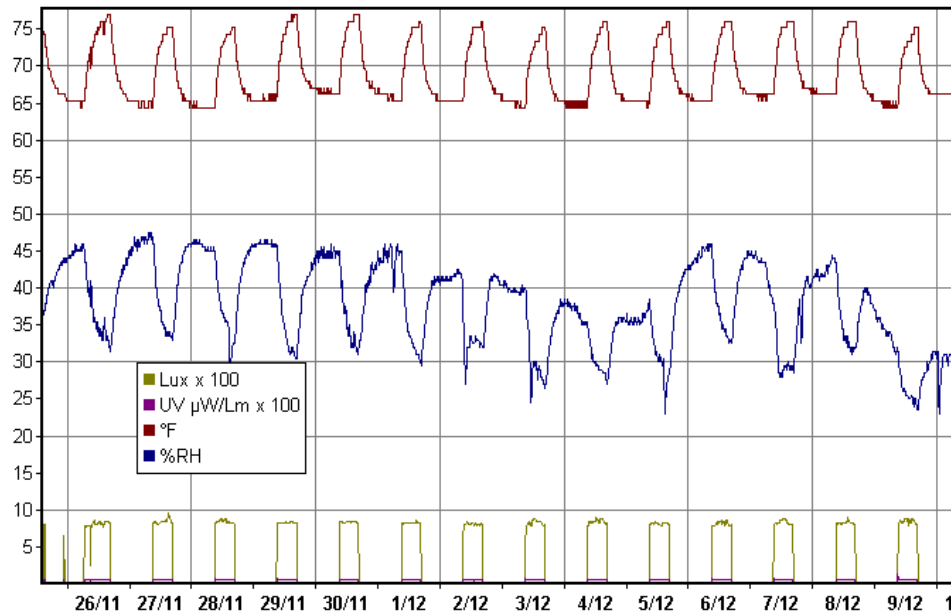






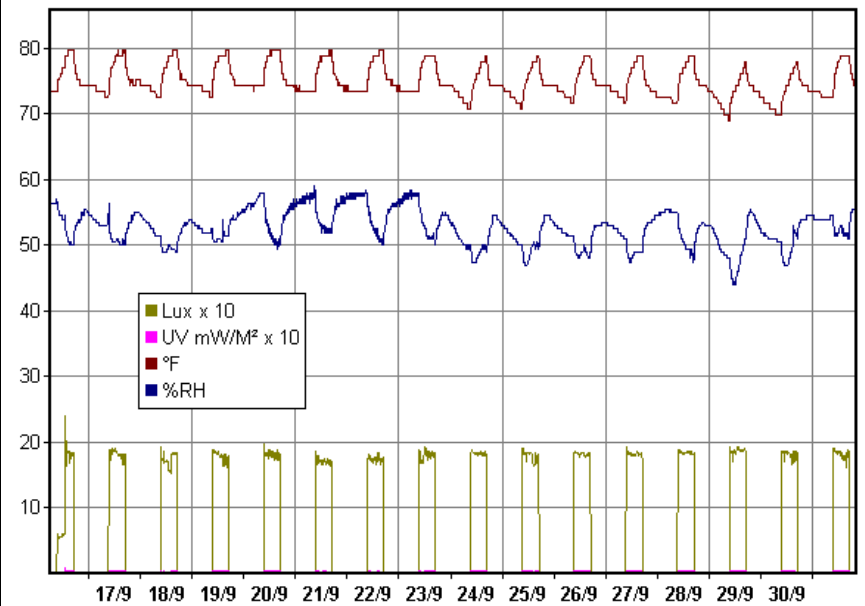
Fluorescent – Lux X 100

Variety Unit - Inside Doll Cases - One 4' Fluorescent 11/26 - 12/11/02



Xenon – Lux X 10

Variety Unit - Inside Doll Cases - Xenon Lights - 9/13 - 10/2/02



Xenon Miniature Track Lights



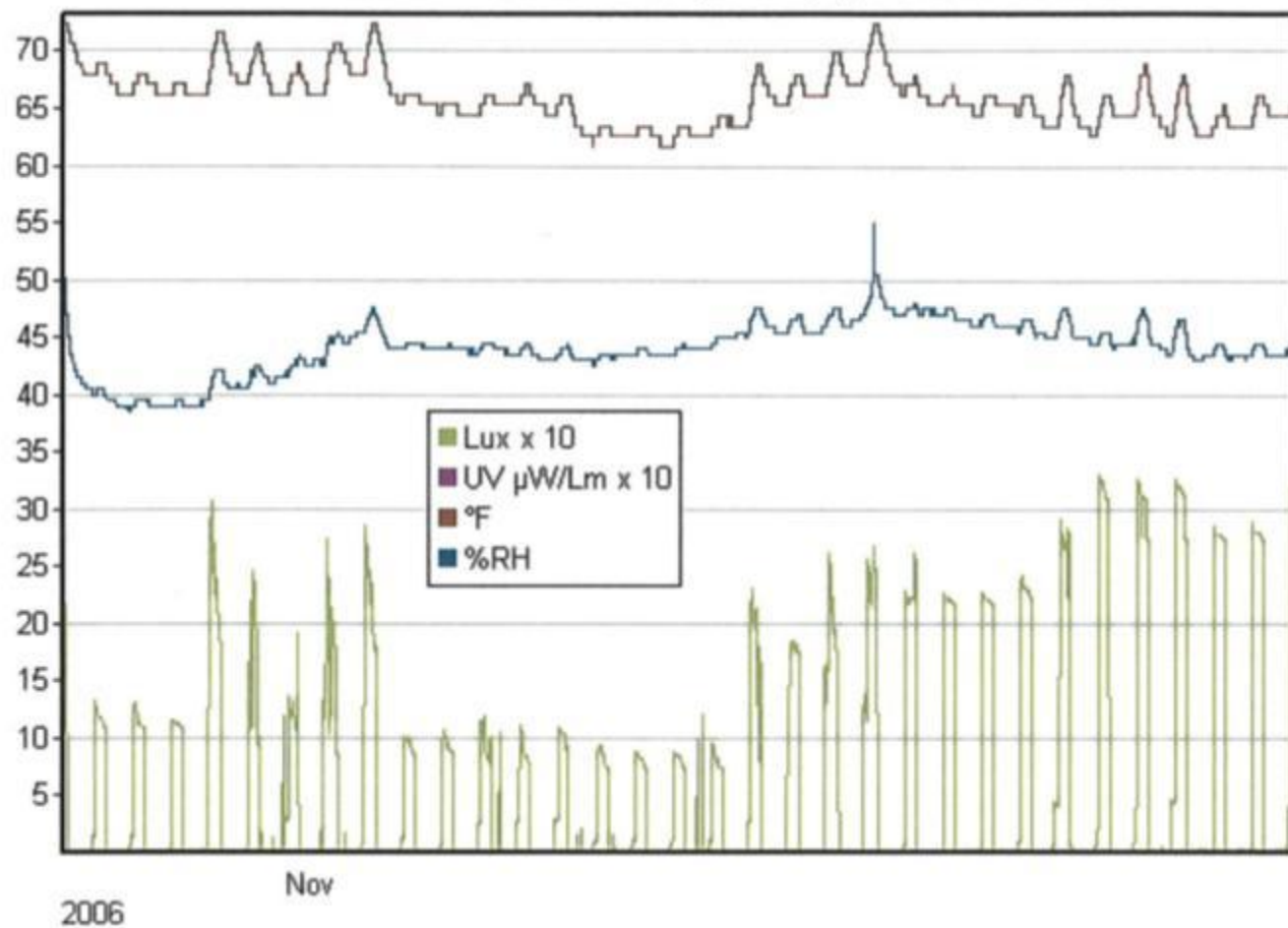
RGB LED Lights



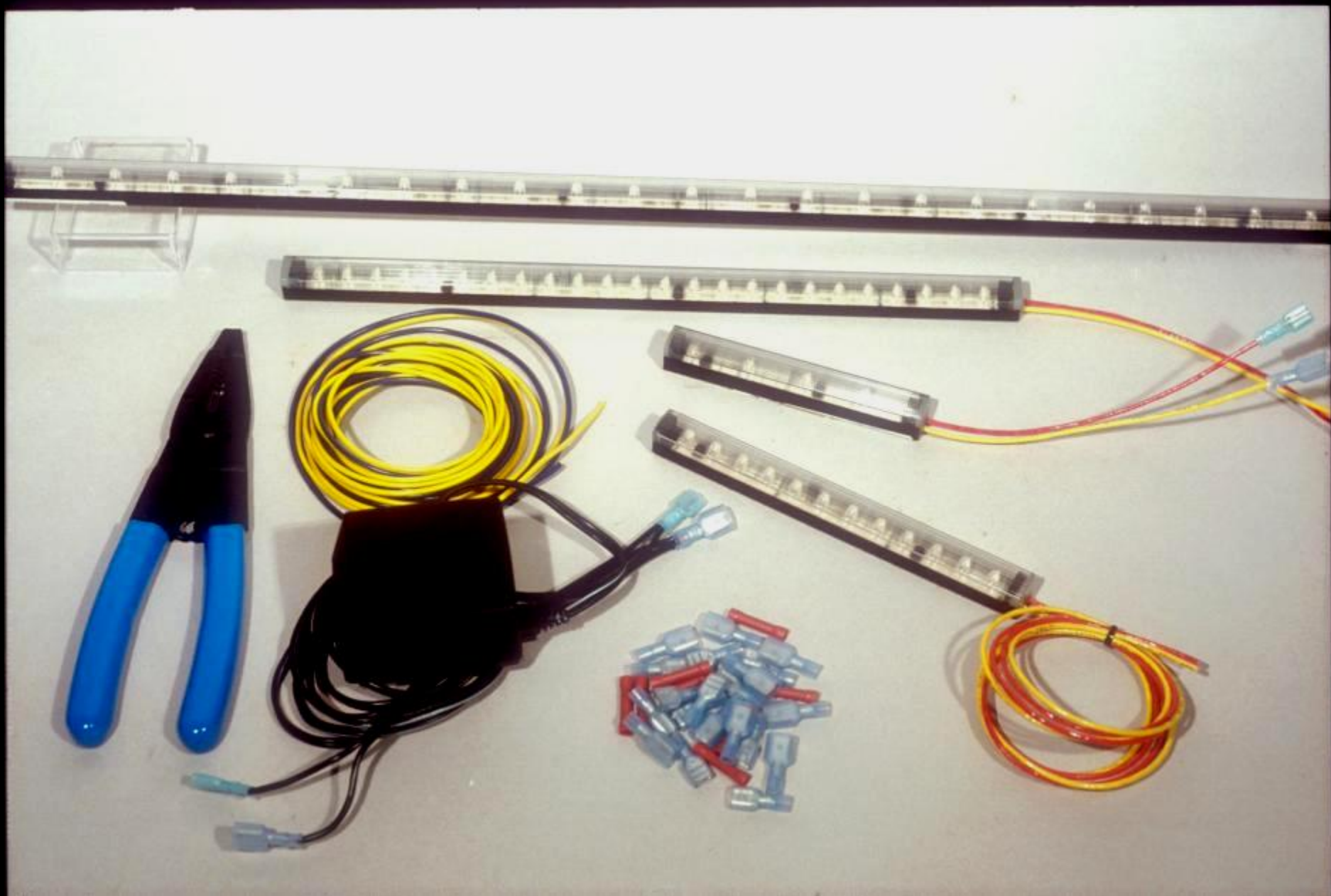




RIA Dimmed 11/06 to 12/06 (31 Days) Period: 10 mins

















← 50 Lux

280 Lux →



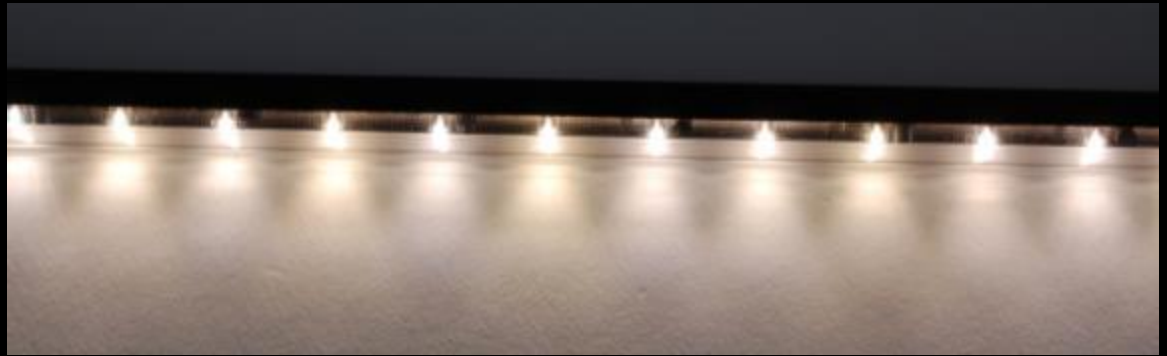
No Filter on Window

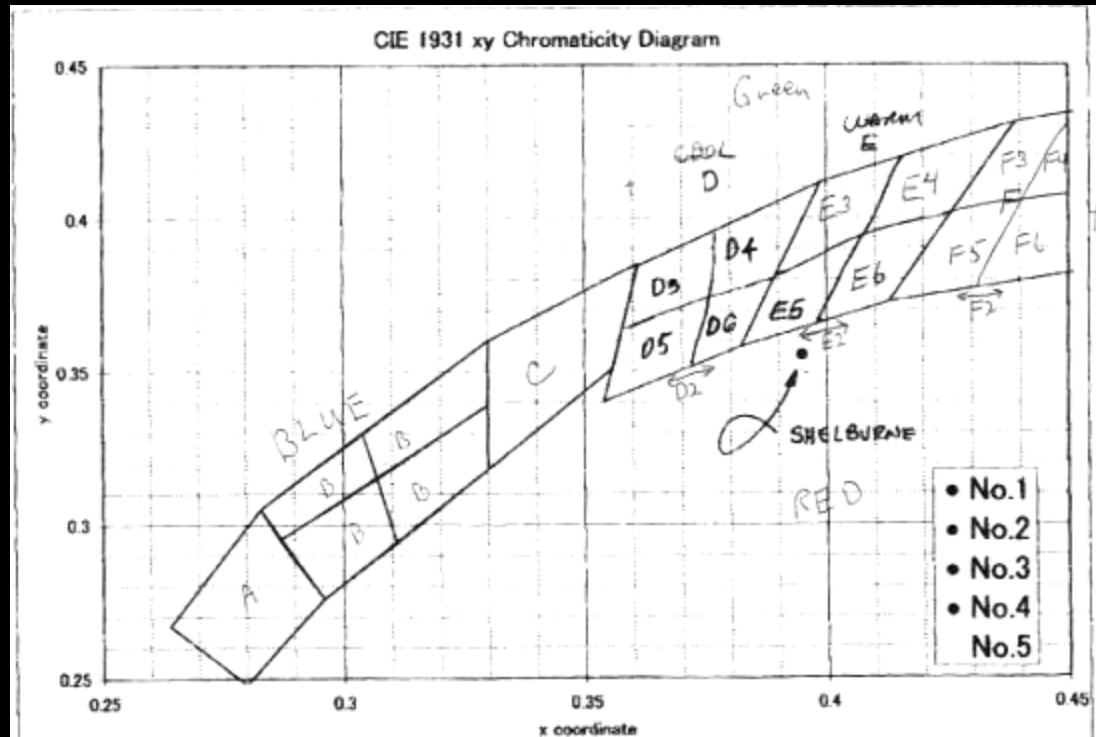
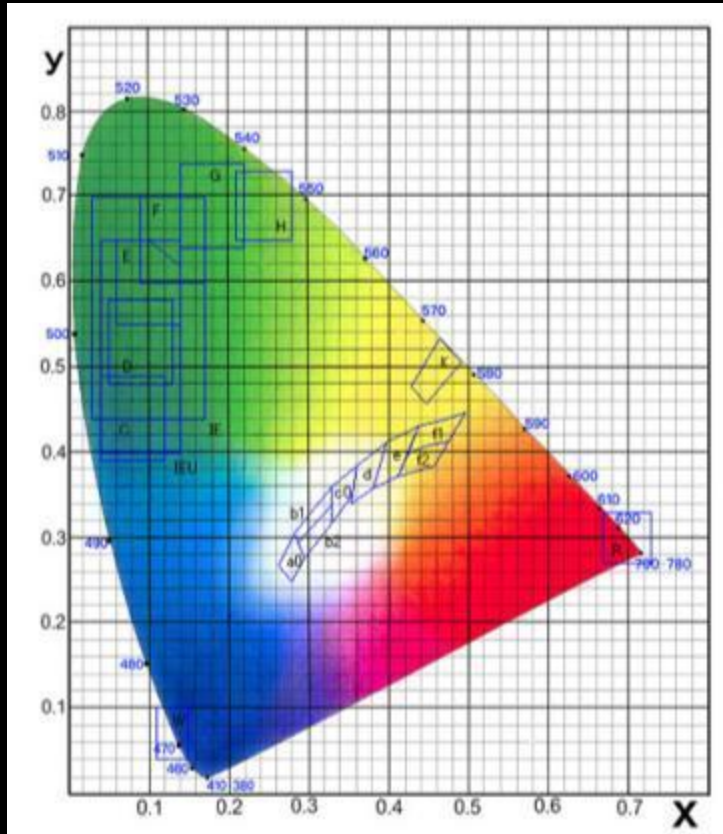
**Bronze Tinted Plexiglas on Window
95% of Natural Light Blocked**





Bright LEDs - Inconsistent Color





LIA Alternating Nichia E2 and F2 LEDs





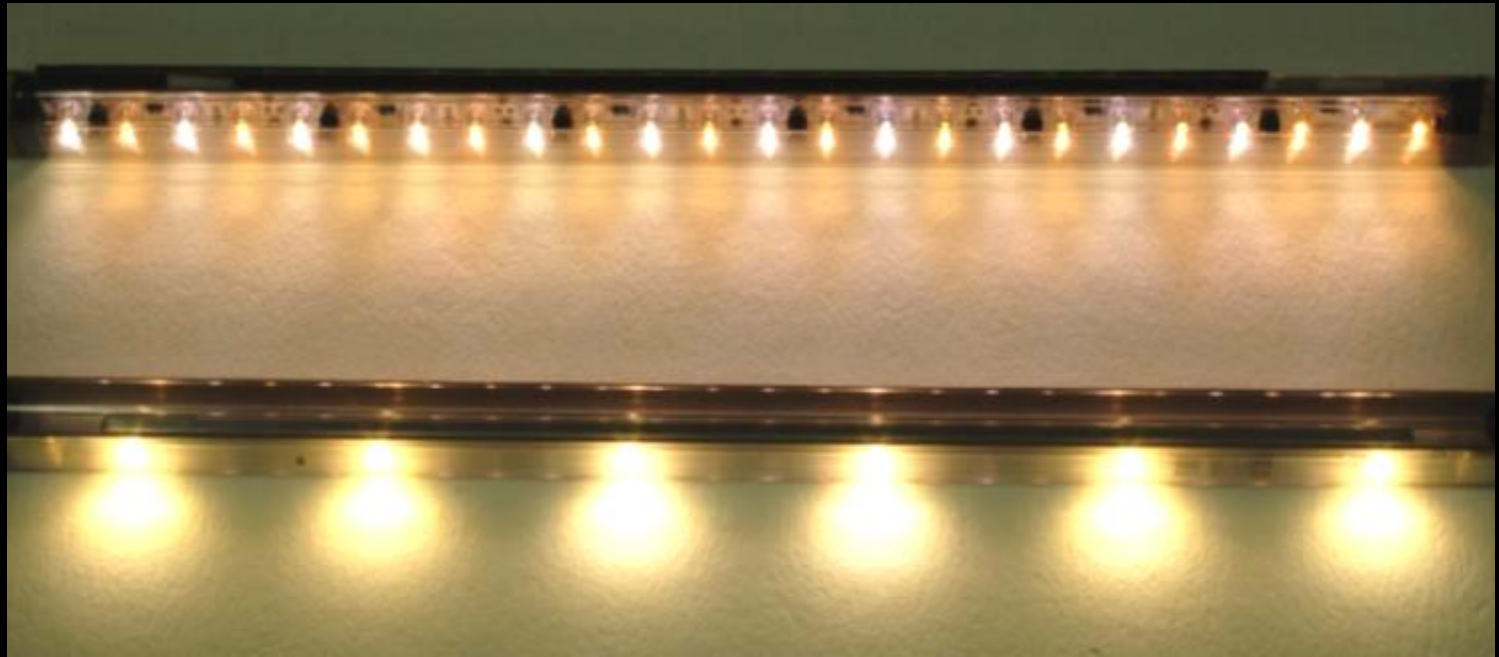
BISQUE POUPEES (LADY DOLLS)
from France
(1870-1880)



TRACHE DOLLS
and the United States
1840-1860



LIA



RIA





Lessons Learned developing LED case lights

High quality LEDs are now available for in-case lighting

Work with a reputable, interested, and willing manufacturer

New technology is riskier than tested systems

Be prepared to make adaptations and changes

Definitive answers are not always available

Warrantees are essential

Lighting mock-ups using artifacts are essential

Purchase bright LEDs and use dimmers to reduce light and heat

Minimize natural light entering exhibit spaces

Involve everyone with a stake in the outcome



Miniature Millinery Shop

Old Tungsten Lighting



New LED Lighting

