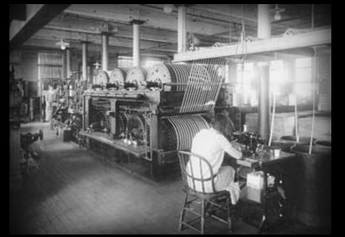
• INTRODUCTION • BUILDING OVERVIEW • ELECTRICAL DEPTH • ARCHITECTURAL BREADTH • LIGHTING SPACE 1 • LIGHTING SPACE 2 • LIGHTING SPACE 3 • LIGHTING SPACE 4 • ACCOUSTICAL BREADTH • CONCLUSION •

# The Web Shop



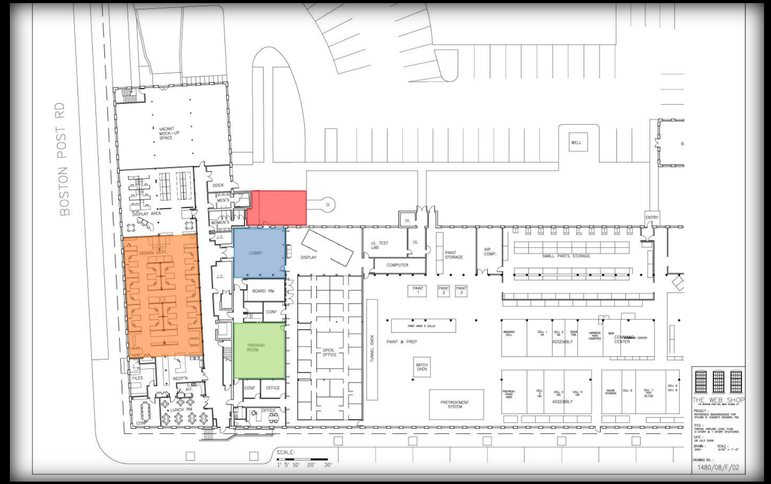
## ABOUT THE BUILDING

Built in 1903
100,000 Square Feet
Italianate Industrial Style

## BUILDING FEATURES

Saw-tooth Skylights
Wood Ceiling Trusses
Large  Manufacturing Space


Orange Ave
Gilbert St
1
Front Ave
Front Ave
Orange Ave
50 feet

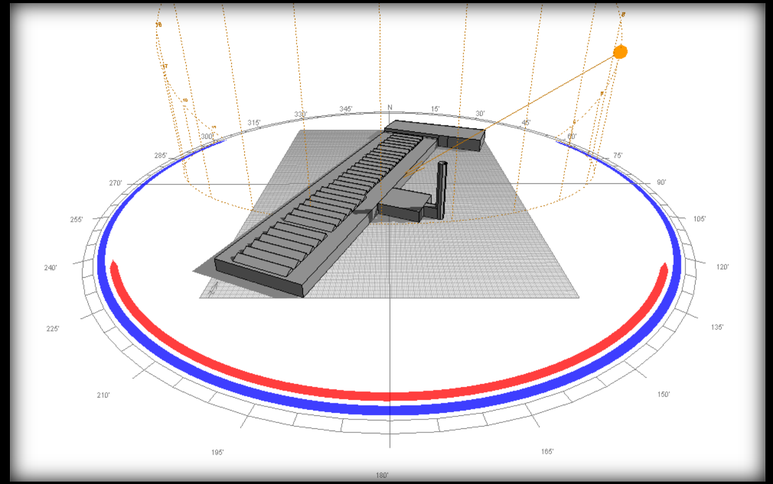



## INTERIOR SPACES

Main Entrance
Main Lobby
Open Office
Conference Room

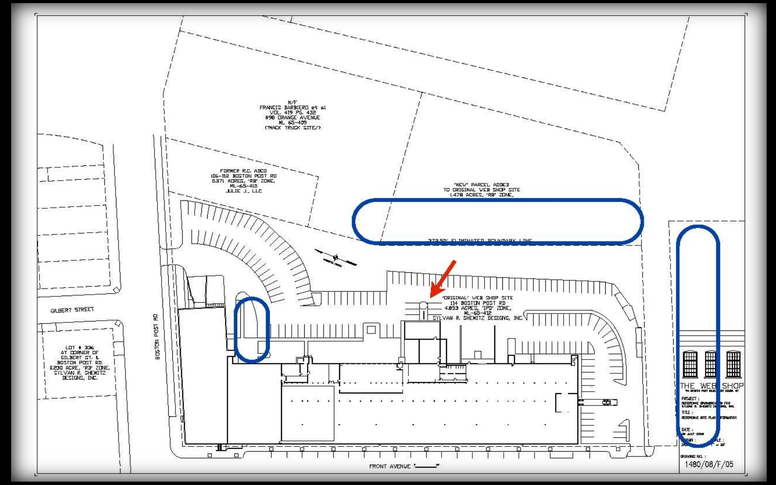
## WHY PHOTOVOLTAICS?

Most efficient form of renewable energy
The sun gives 350,000,000 terawatts of radiation per year
The global energy consumption in 2004 was 130,000 terawatt hours



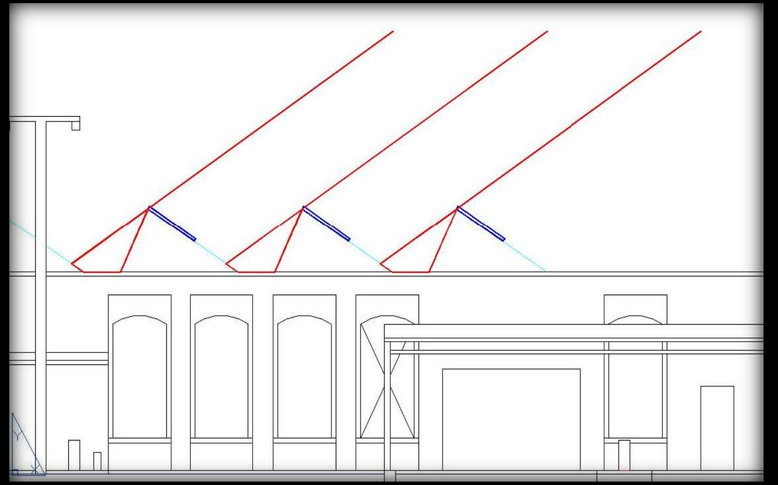
## DESIGN FEATURES

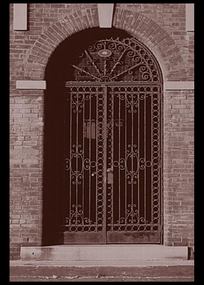
Enphase Microinverters
Sharp Commercial Series Panels
20% payback over the lifetime of the system

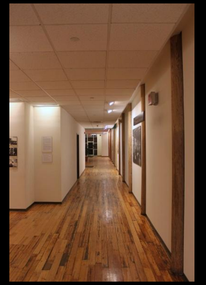



## SHADOWING

Surrounding Trees
Cooling Tower
Self Shadowing

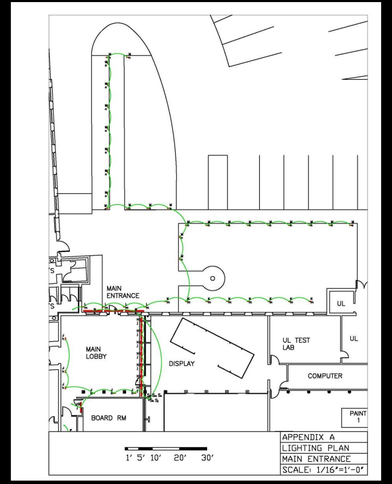






## POWER DENSITY

1182 W: Allowed
1142 W: Achieved

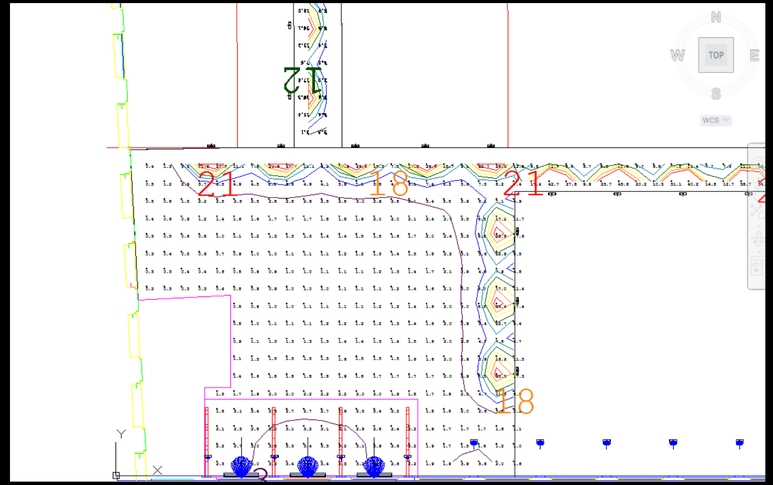



## ILLUMINANCES

Target: 5fc
Design: 6.3fc

## POWER DENSITY

1182 W: Allowed
1142 W: Achieved

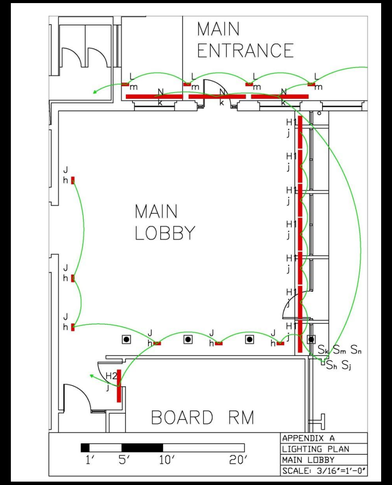



## ILLUMINANCES

Target: 5fc
Design: 6.3fc

## POWER DENSITY

1265 W: Allowed
1020 W: Achieved




## ILLUMINANCES

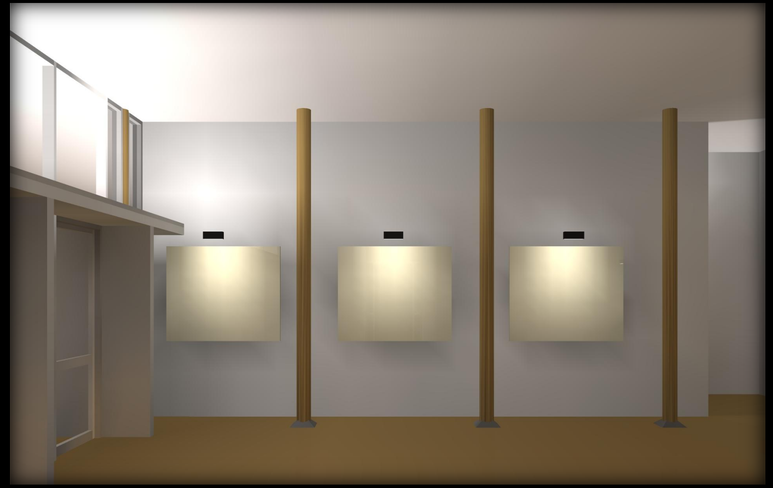
Target: 10fc
Design: 23fc

## POWER DENSITY

1265 W: Allowed
1020 W: Achieved

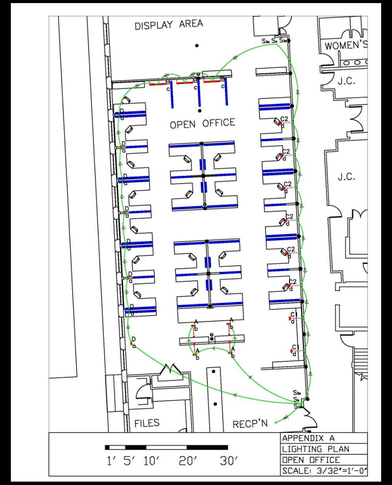

## ILLUMINANCES

Target: 10fc
Design: 23fc



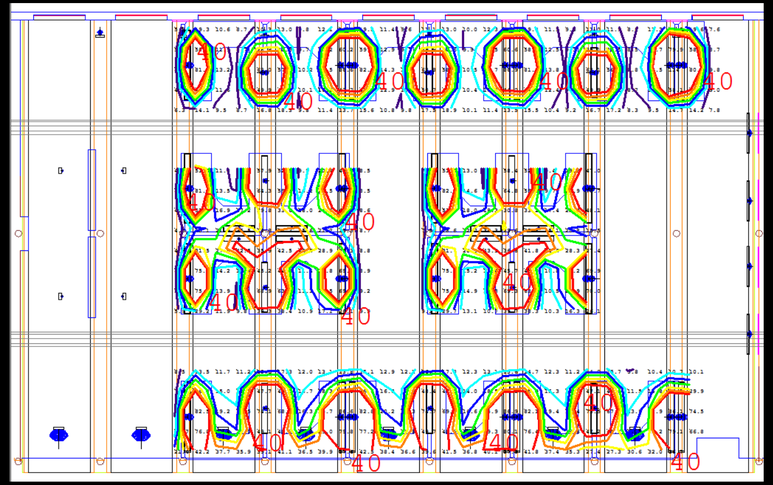
## POWER DENSITY

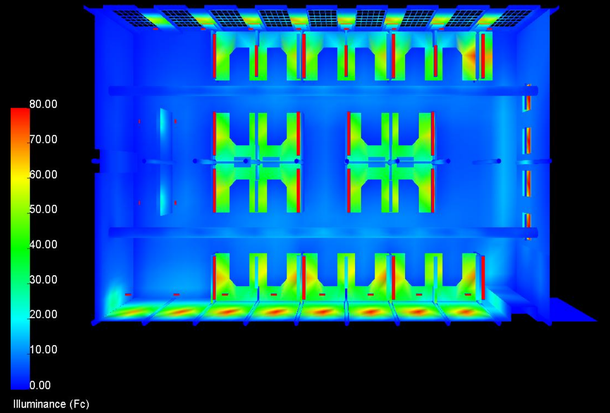
3400 W: Allowed
8580 W: Existing
3478 W: Achieved

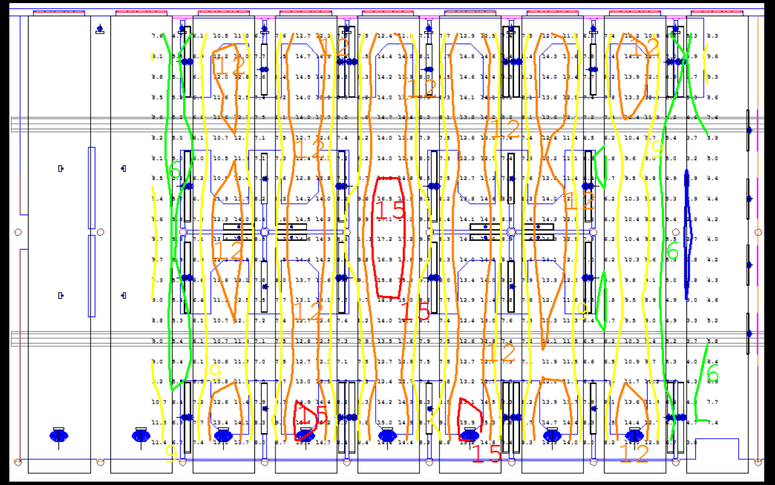


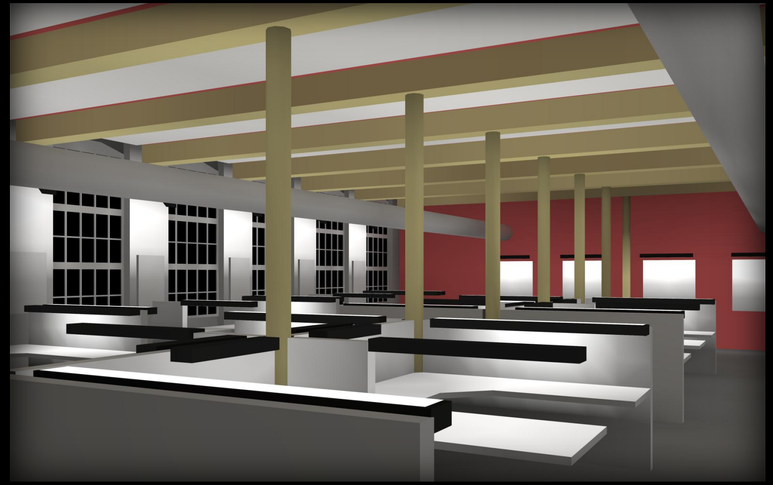

## ILLUMINANCES

Target: 30fc
Design: 29.3fc



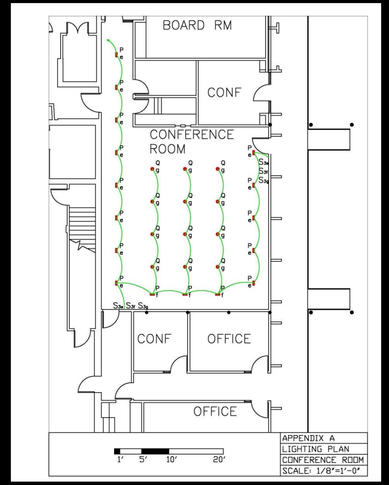

80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Illuminance (Fc)





## POWER DENSITY

2969 W: Allowed
2800 W: Achieved




## ILLUMINANCES

Target: 30fc
Max Avg: 40fc

**Calculating the T60 Time:**

$T_{60} = 0.161V / -S_T \ln(1 - \bar{\alpha})$

$T_{60} = 0.161(14846) / -4455 \ln(1 - \bar{\alpha})$

| Frequency (Hz) | 125 | 250 | 500 | 1000 | 2000 | 4000 |
|---|---|---|---|---|---|---|
| **ᾱ Per Octave Band** | **0.181** | **0.225** | **0.293** | **0.367** | **0.382** | **0.389** |
| $T_{60}$ | 2.69 | 2.1 | 1.55 | 1.17 | 1.11 | 1.09 |

| | Frequency (Hz) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 125 | 250 | 500 | 1000 | 2000 | 4000 | |
| **Description** | **Sabine Abrorptivity α** | | | | | | **Area (Sq Ft)** |
| Carpeted Floor | 0.08 | 0.25 | 0.55 | 0.7 | 0.7 | 0.75 | 1142 |
| Suspended Acoustic Tile | 0.4 | 0.5 | 0.6 | 0.75 | 0.7 | 0.6 | 622 |
| Plaster Ceiling | 0.07 | 0.17 | 0.4 | 0.55 | 0.65 | 0.65 | 520 |
| Gypsum on Studs | 0.3 | 0.1 | 0.05 | 0.04 | 0.07 | 0.09 | 1338 |
| Painted Brick | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 | 0.05 | 689 |
| Wood Door | 0.15 | 0.11 | 0.1 | 0.07 | 0.06 | 0.07 | 144 |
| **ᾱ Per Octave Band** | **0.181** | **0.225** | **0.293** | **0.367** | **0.382** | **0.389** | |

## LIGHTING

Light Levels
Power Density
Overall Aesthetics

## ELECTRICAL

Depths
Results
Issues Along The Way