

DESIGNING FOR MAINTAINABILITY



442 Designing for Maintainability

PRESENTED BY
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COURSE DESCRIPTION

#442 Designing for Maintainability

Aesthetics and maintenance both play an integral role in facility design.

We will evaluate facilities and look at designs that work and others that do not. As part of the design team you will become an integral part of the team and become a “DESIGNER”.

Learning Objectives

1. Discuss procedures to assure campuses achieve the best value from investment in new or renovated facilities.
2. Discuss how to understand balance between aesthetics and durability
3. Discuss the evaluation of facility designs based on life cycle costs
4. Discuss what questions to ask during design process to create an overall better product

COLLEGE

Planning & Management

CONSTRUCTION • FACILITIES • PURCHASING • TECHNOLOGY

JANUARY 2000

A Peter Li Education Group Publication

RESIDENCE HALLS: All the Comforts of Home

Surviving the New Decade —
Changes That Must Be Made

Designing Facilities
for Easy Maintenance

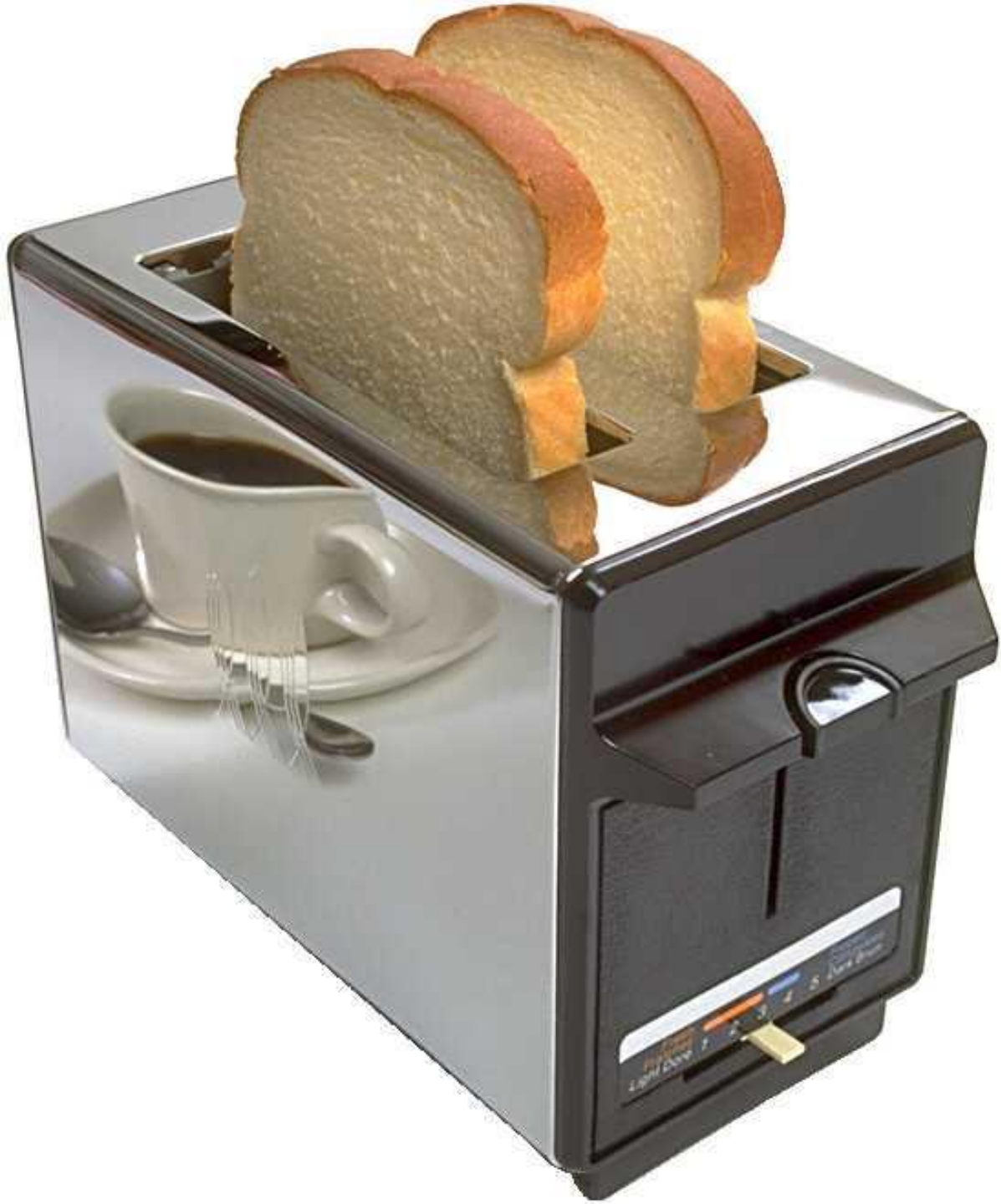
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Franklin & Marshall College
Lancaster, PA





MAINTENANCE:

1. The act of maintaining; the state of being maintained.
2. The upkeep of property and equipment.



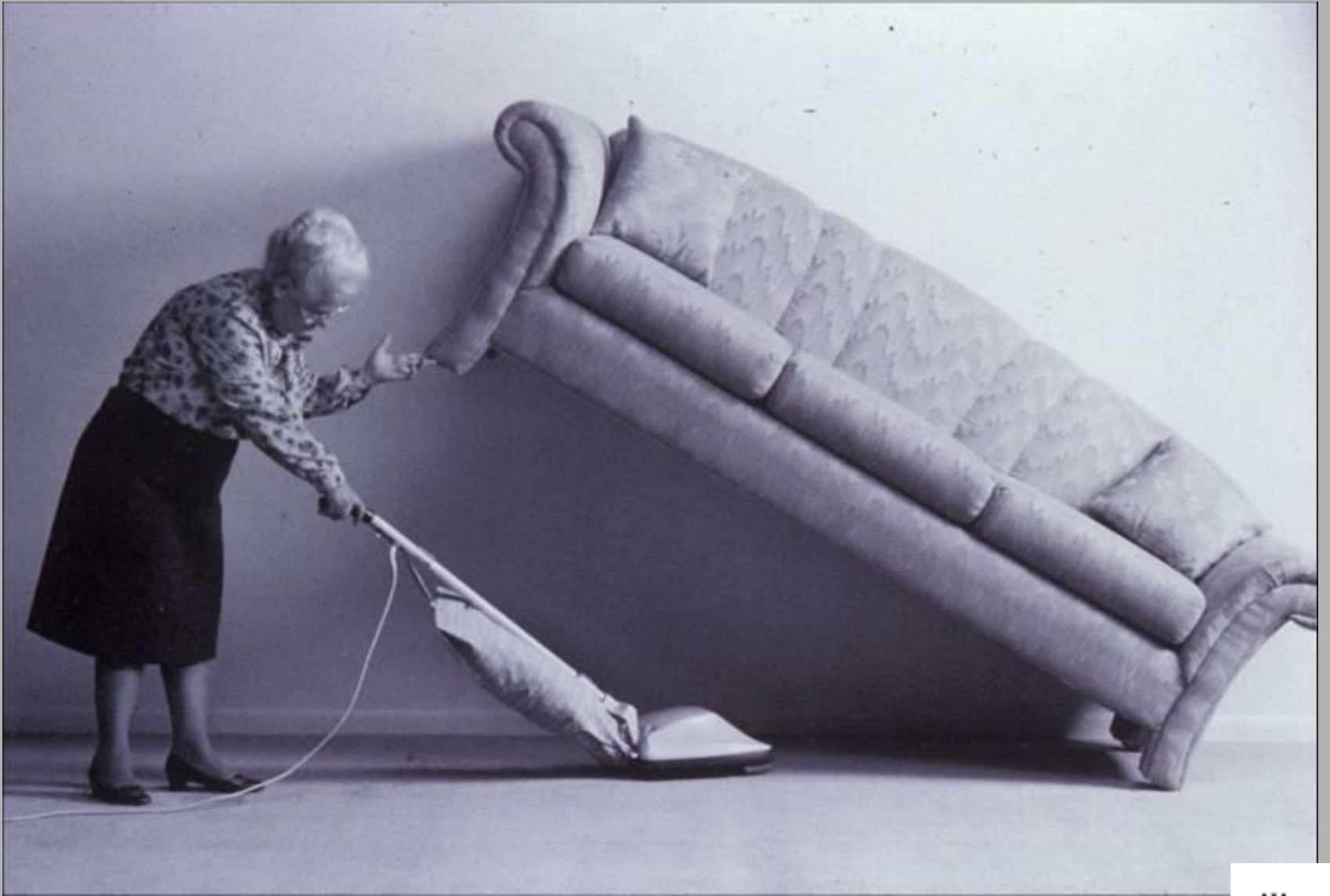
DESIGN:

1. To create, fashion, execute, or construct according to plan.

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DO BECOME PART OF THE DESIGN TEAM

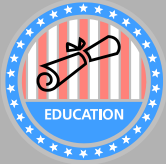






PHYSICAL PLANT MISSION STATEMENT

- **Our Mission is to support and serve the mission of Goshen College.**
- **To provide a pleasant and safe environment that is conducive to learning in a Christian community by maintaining college buildings, grounds, and equipment through the professional and disciplined management of physical, financial, and human resources.**
- **To respond to the needs of students, faculty, and staff through excellence in support services.**
- **To support student employees by modeling positive work ethics and providing real-life work experience as part of their education.**
- **To accomplish these goals together through cooperation, support, and respect.**



PHYSICAL PLANT MISSIN' STATEMENT

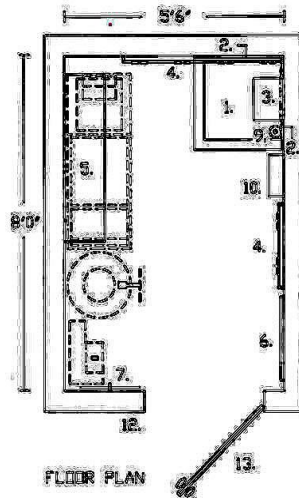
- **Our Mission is to support and serve the mission of our college and the prestigious architectural firm they have retained for design services.**
- **To respond to the needs of the architect, realizing that the building may win numerous design awards.**
- **To exert our creativity in trying to understand how to clean so many different building materials in hard to reach locations.**
- **To work diligently towards the key project milestone date: The day the architectural photographer shows up to take pictures!**
- **To try hard to believe that the design of this campus building will finally transform the way college students behave once and for all.**

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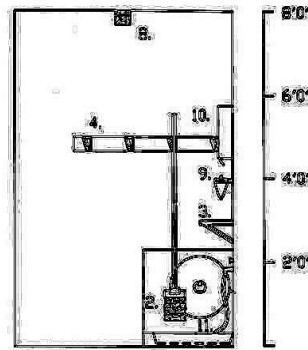
DO BECOME PART OF THE DESIGN TEAM

ESTABLISH A MAINTENANCE/ OPERATION PROGRAM

CUSTODIAL CLOSET
GENERAL SPECIFICATIONS



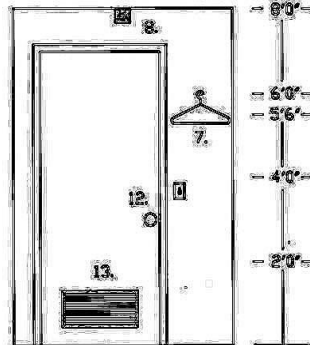
FLOOR PLAN



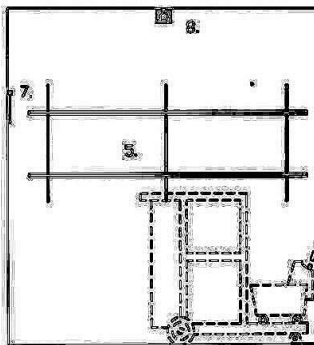
NORTH WALL ELEVATION

- 3. MIXING SHELF
- 4. GEARPRESS "GRIPIT" TOOL HOLDER
- 5. ADJUSTABLE SHELVES - 12"W X 84"L
- 6. PEG BOARD w/ TOOL HOOKS
- 7. COAT HOOK
- 8. WIRE PROTECTOR FOR LIGHT BULB
- 9. SOAP DISPENSER
- 10. PAPER TOWEL DISPENSER
- 11. HOSE - 35" LONG
- 12. INDIVIDUALLY KEYED LOCK
- 13. VENTED DOOR

- 1. FLOOR MOUNTED SINK
- 2. BACKSPLASH TO 24" ABOVE SINK



SOUTH WALL ELEVATION



WEST WALL ELEVATION



07-28-74
R/K

ROESEL, KENT & ASSOCIATES

JC-STD

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DO BECOME PART OF THE DESIGN TEAM

ESTABLISH A MAINTENANCE/ OPERATION PROGRAM

ELECT THE RIGHT PRODUCTS

SELECTING THE RIGHT PRODUCT

1. DURABILITY

Will it handle the day-to-day abuse & vandalism of your students?

2. LONGEVITY

How long will it last?
Examine life-cycle costs

3. SAFETY

Is the product safe for the environment?
Does it have sharp edges, breakable ends, etc?

4. FIRE-RESISTANT

Will it burn? If so, what precautions can be taken to make it more fire-resistant?

5. CODE

Does it relate to any federal, state, or local codes?

6. A.D.A. COMPLIANCE

Is it universally accessible?

7. APPLICATION

Is it the right product for your specific application?

8. INSTALLATION

Are there special installation requirements?
Who will install it?

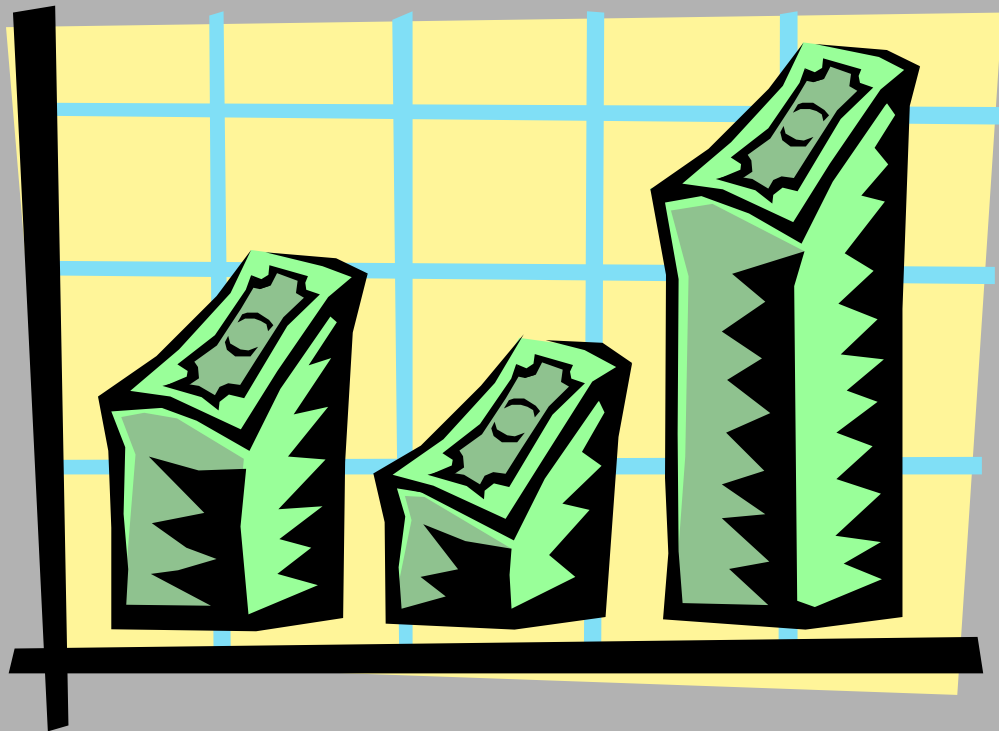
9. WARRANTY

What is covered?
Is service available locally?

10. HISTORY

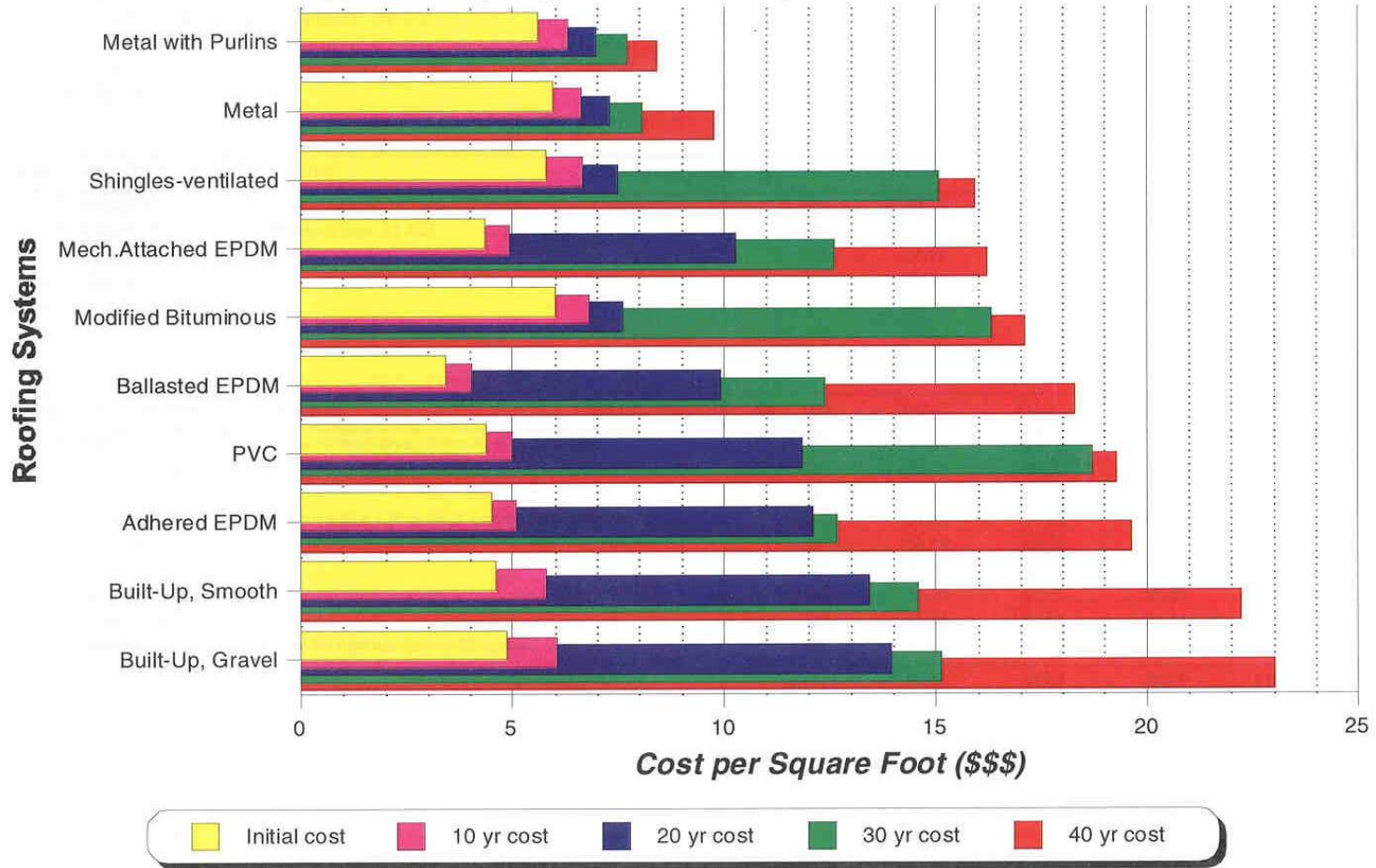
How has the product performed in this type of application in the past?

LIFE CYCLE COST ANALYSIS



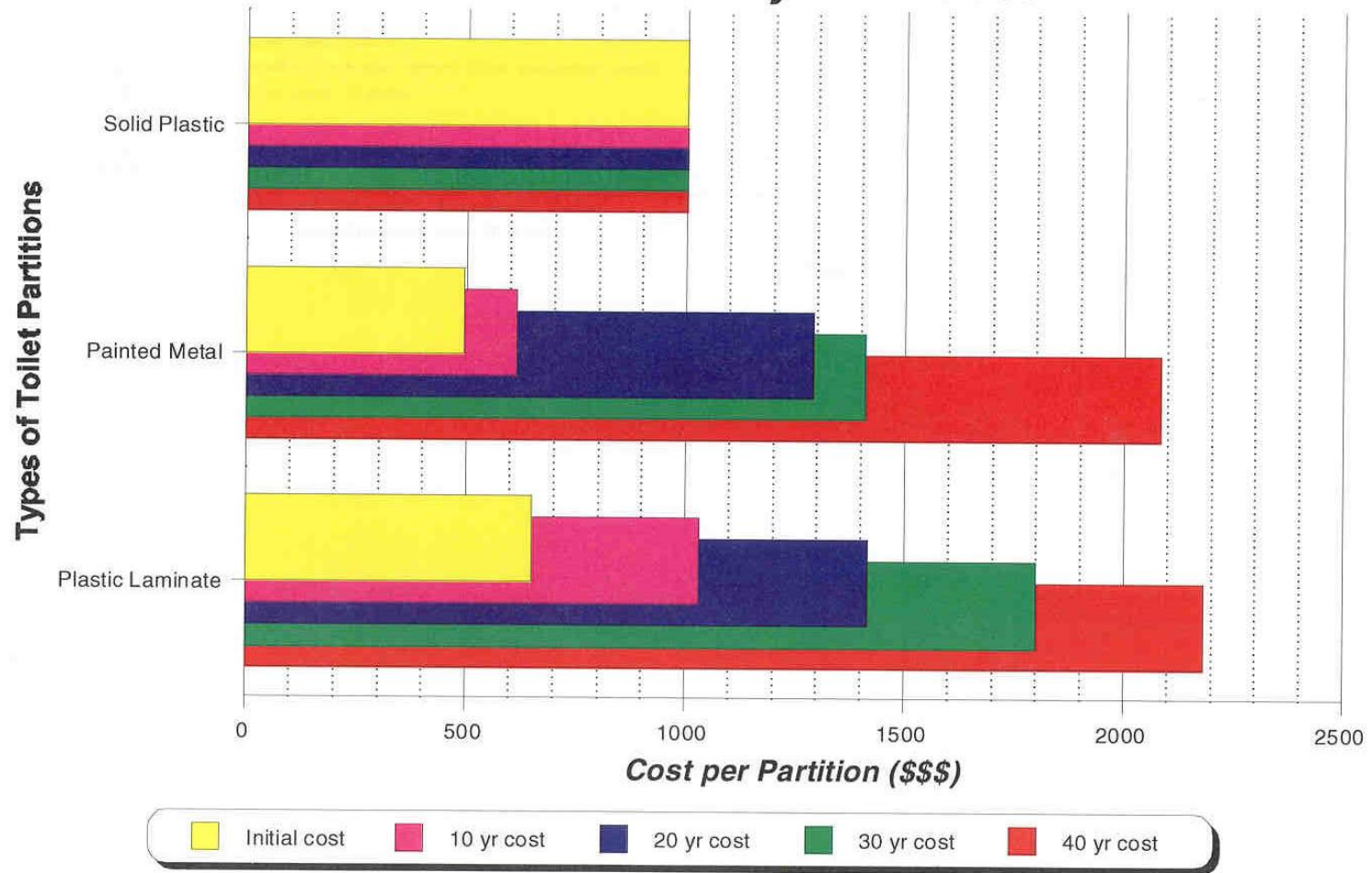
Life-Cycle Value Analysis

Roofing Systems - By Final Cost



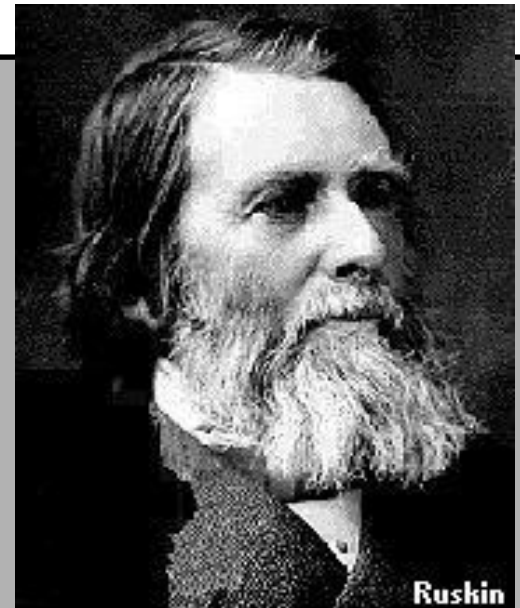
Life-Cycle Value Analysis

Toilet Partitions - By Final Cost



“It is unwise to pay too much, but it is worse to pay too little. When you pay too much, you lose a little money - that is all. When you pay too little you sometimes lose everything because the thing you bought was incapable of doing the thing it was bought to do.”

-John Ruskin (1819-1900)



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ELECT THE RIGHT PRODUCTS

INSTITUTE POST OCCUPANCY EVALUATIONS

CSI FORMAT

1. General Requirements

2. Site Work

3. Concrete
4. Masonry

5. Metals
6. Wood and Plastics

7. Thermal and Moisture Protection

8. Doors and Windows

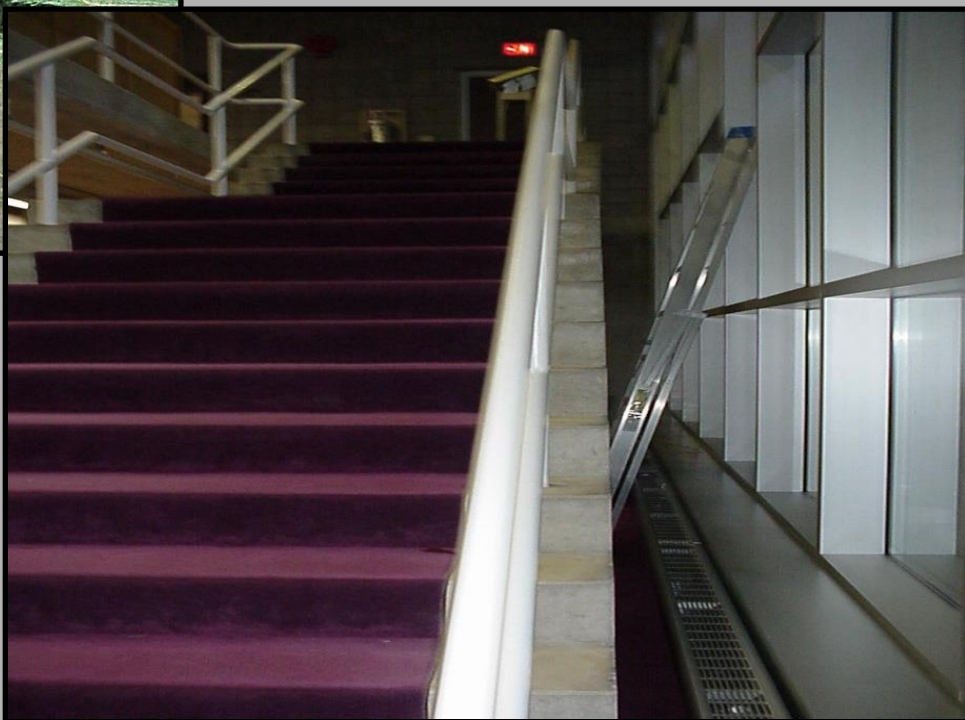
9. Finishes
10. Specialties

11. Equipment
12. Furnishings

13. Special Construction
14. Conveying Systems

15. Mechanical

16. Electrical



1. GENERAL



2. SITE WORK



2. SITE WORK



2. SITE WORK



2. SITE WORK



2. SITE WORK



2. SITE WORK



2. SITE WORK



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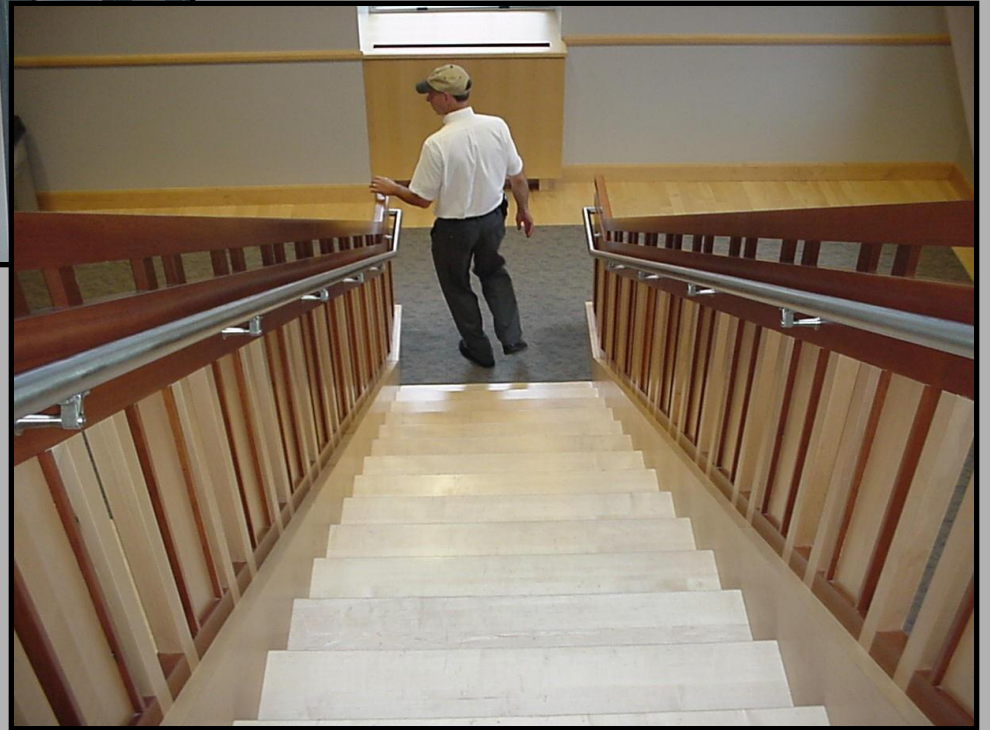
2. SITE WORK



2. SITE WORK



2. SITE WORK



5/6. METALS/ WOODS AND PLASTICS



7. THERMAL & MOISTURE PROTECTION



7. THERMAL & MOISTURE PROTECTION



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Why it is So Easy to Hate Architects



Why it is so Easy to Hate Architects

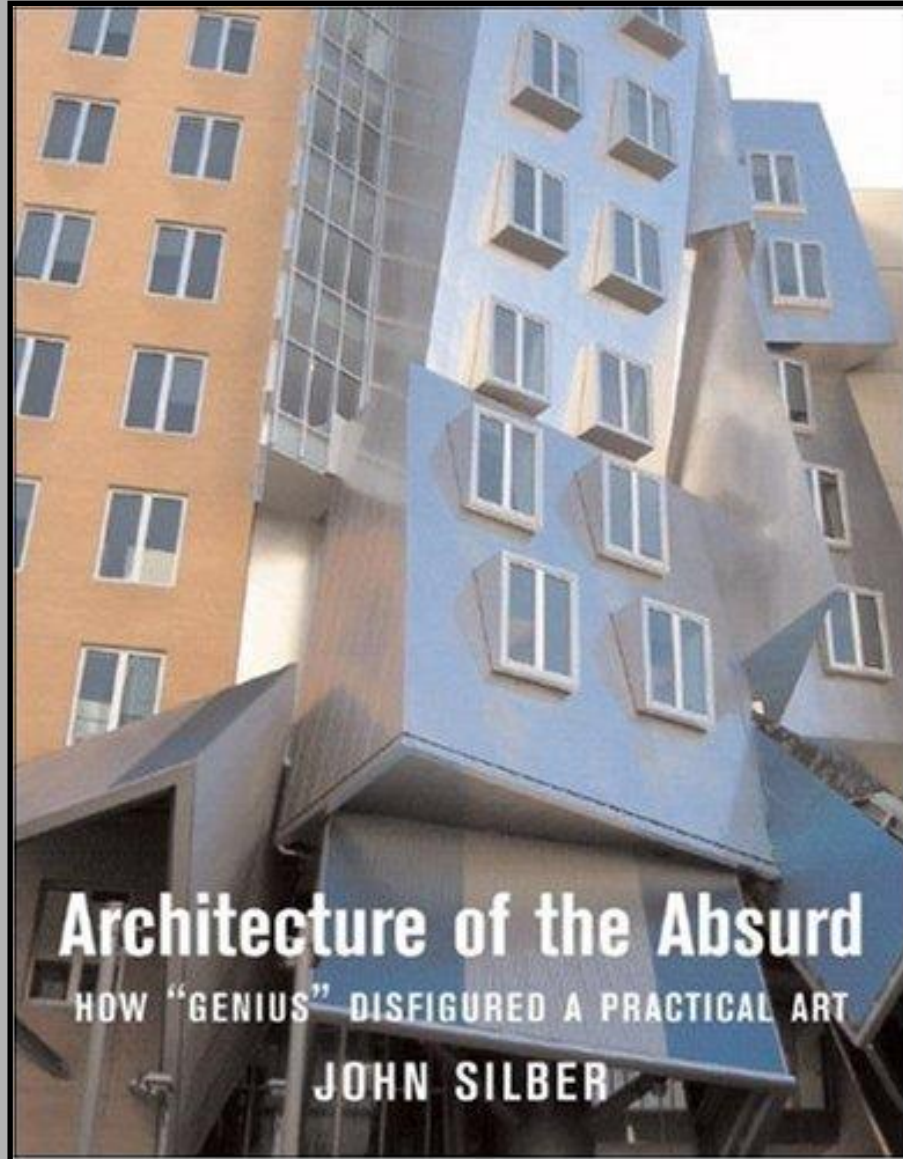
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Architecture of the Absurd

HOW "GENIUS" DISFIGURED A PRACTICAL ART

JOHN SILBER









8. DOORS AND WINDOWS



7. THERMAL & MOISTURE PROTECTION



7. THERMAL AND MOISTURE PROTECTION



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8. DOORS AND WINDOWS



8. DOORS AND WINDOWS



8. DOORS AND WINDOWS



9/10. FINISHES/SPECIALTIES



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9/10. FINISHES/SPECIALTIES



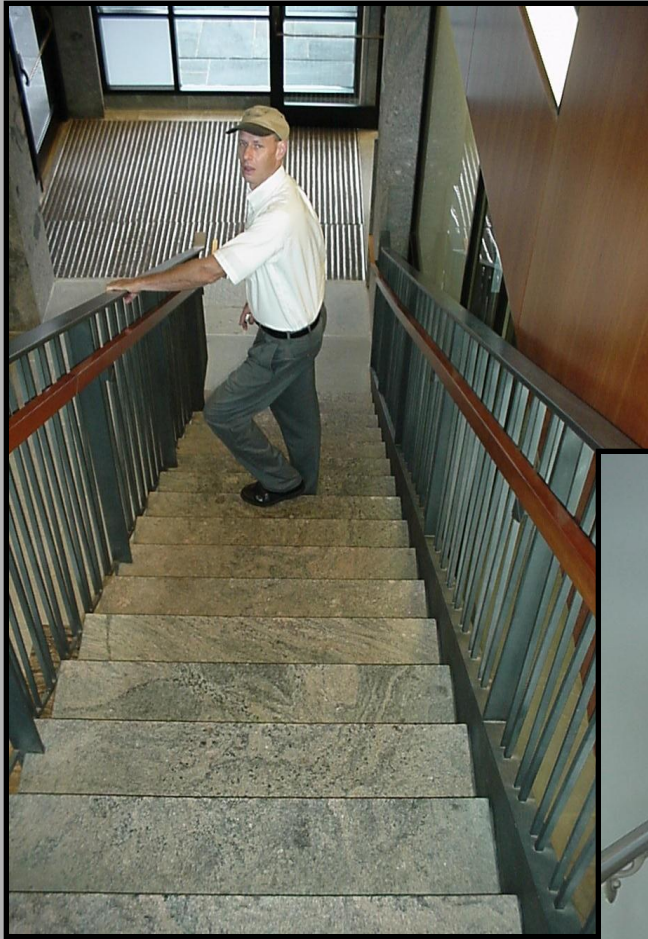
9/10. FINISHES/SPECIALTIES



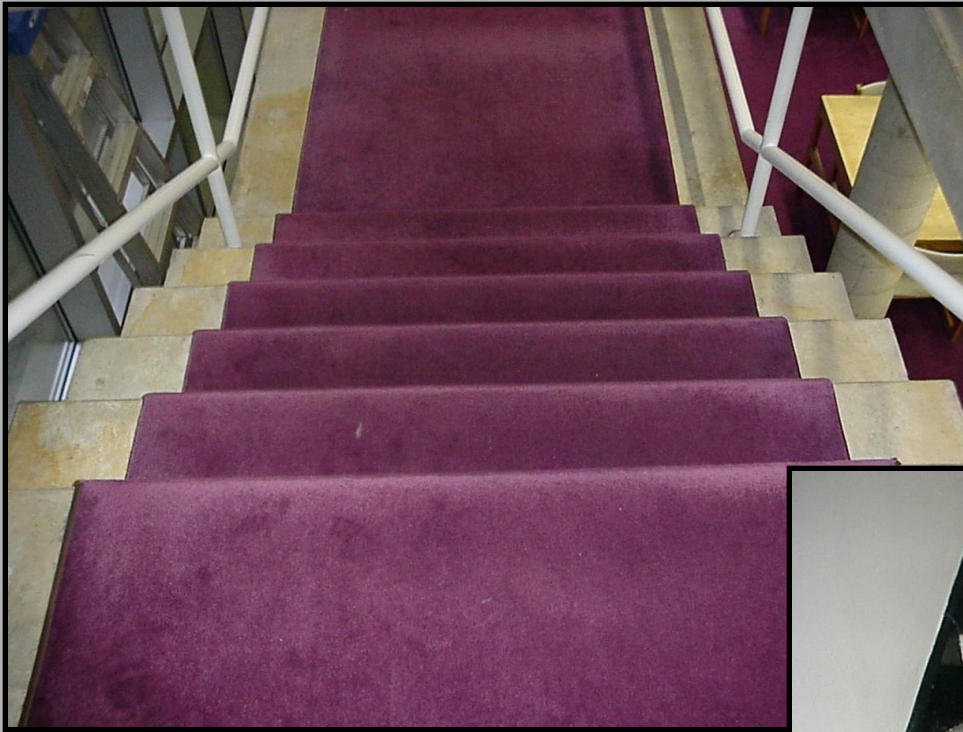
Selecting Colors







9/10. FINISHES/SPECIALTIES



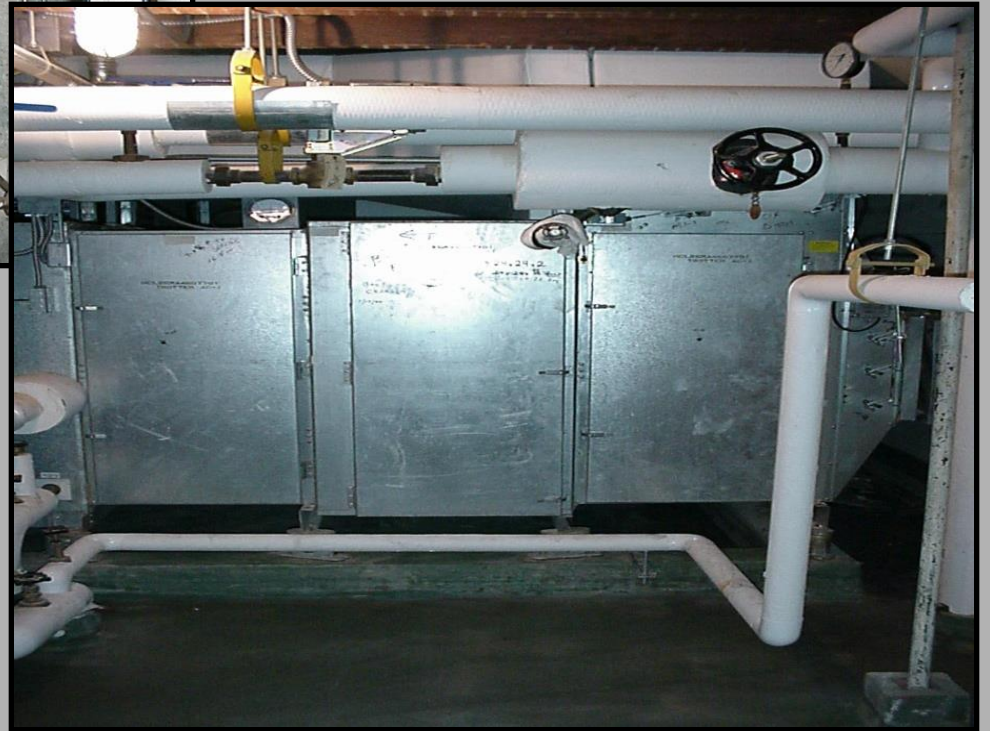
9/10. FINISHES/SPECIALTIES



11/12. EQUIPMENT/FURNISHINGS



15. MECHANICAL



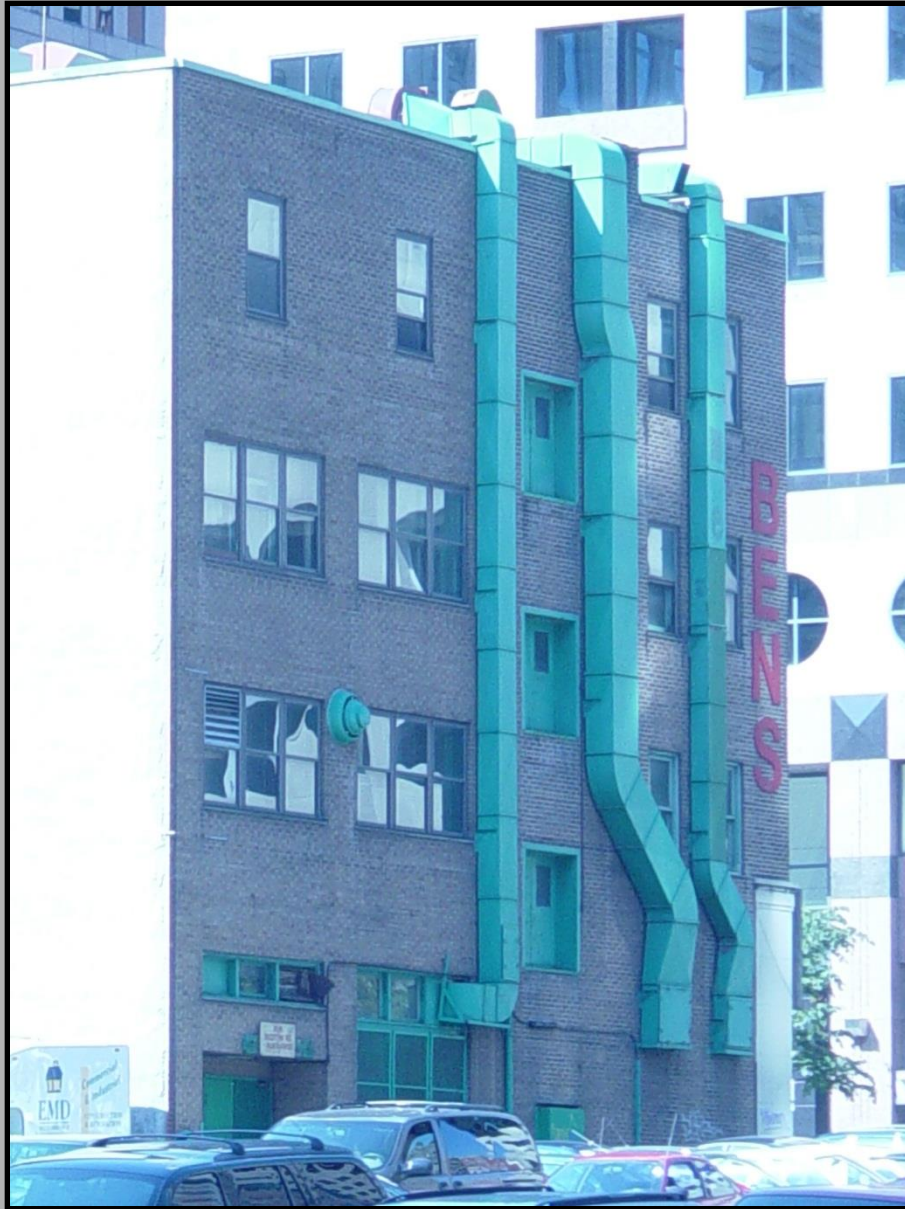
15. MECHANICAL



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15. MECHANICAL



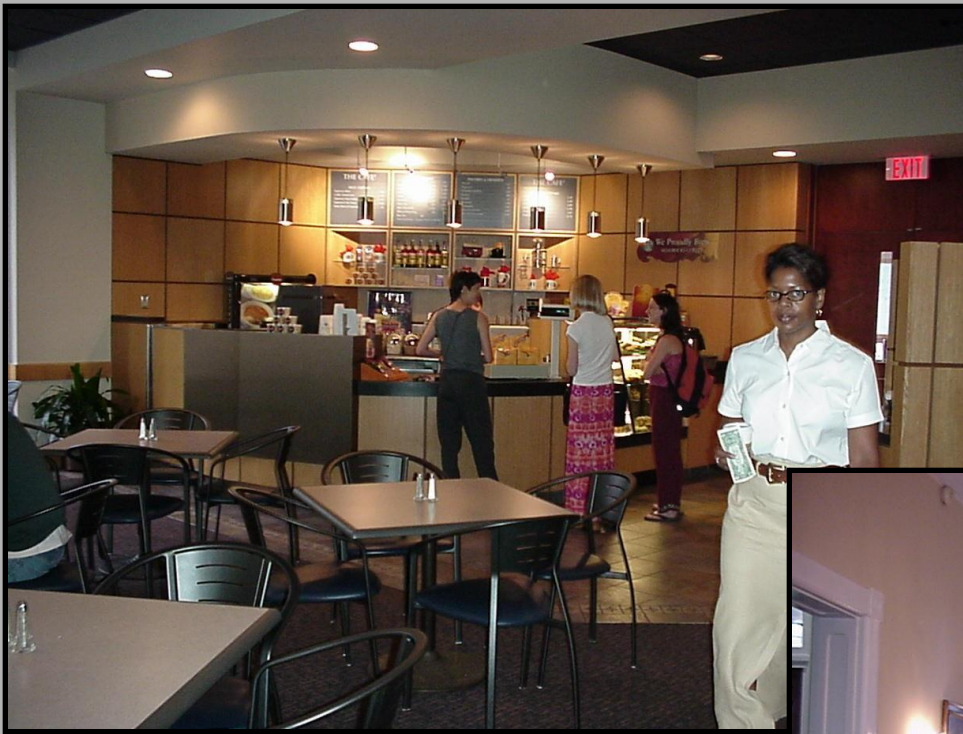
17. MECHANICAL



16. ELECTRICAL



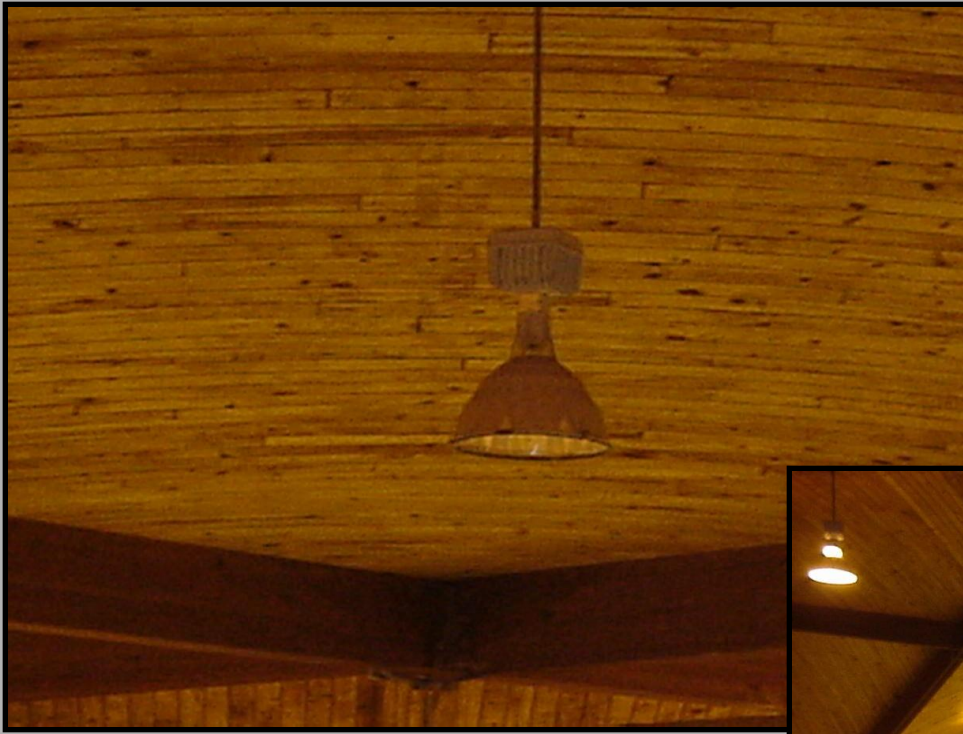
16. ELECTRICAL



16. ELECTRICAL



16. ELECTRICAL



16. ELECTRICAL



16. ELECTRICAL

D

DO NOT BECOME PART OF THE DESIGN TEAM

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ESTABLISH A SPECIFIC MAINTENANCE/ OPERATION PROGRAM

S

SELECT THE RIGHT PRODUCTS

I

INSTITUTE POST OCCUPANCY EVALUATIONS

G

GREEN YOUR BUILDING
(Get environmentally sensitive)

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GREEN



PHILIP MERRILL ENVIRONMENTAL CENTER





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DO NOT BECOME PART OF THE DESIGN TEAM

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INSTITUTE POST OCCUPANCY EVALUATIONS

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GREEN YOUR BUILDING
(Get environmentally sensitive)

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NEVER COMPROMISE ON IMPORTANT ISSUES

E

R

WHEN MAINTENANCE

RULES ...

... AT ALL COST!!











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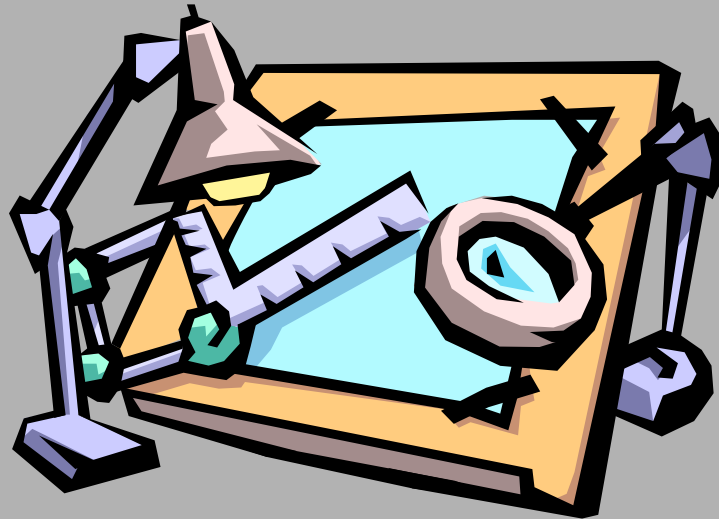
NEVER COMPROMISE ON IMPORTANT ISSUES

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ENLIST THE HELP OF OTHERS

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**WHEN DESIGN
RULES ...
... AT ALL COST!!**







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GREEN YOUR BUILDING
(Get environmentally sensitive)

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NEVER COMPROMISE ON IMPORTANT ISSUES

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ENLIST THE HELP OF OTHERS

R

REMEMBER EVERYTHING !

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**This concludes The American
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