Learning Objectives

1. Gain insight into what building enclosure design and performance objectives are currently being pursued by the GSA.
2. Review the approach to 4 ARRA highrise enclosure remediation projects and understand what factors influenced the design decisions.
3. Discuss GSA’s use of enclosure commissioning.
4. Review 2 ways GSA is attempting to obtain lead metrics to drive toward on time, on budget, safely and correctly.
Federal Agencies With Real Property Authority

15 Agencies have property holding authority, totaling 3.4-billion-sf

- GSA
- U.S. Department of Defense (military bases)
- U.S. Department of Veterans Affairs (VA)
- Architect of the Capitol (AOC)
- U.S. Department of Transportation (DOT)
- NASA
- U.S. Department of Interior
Who is GSA?

- 1949
- Public Buildings Service
- Federal Acquisition Service
PBS Portfolio

- 8600 Buildings
- + 353 million sf
- 49% owned 51% leased
- + 1 million Federal workers housed
“The policy shall be to provide… facilities in an architectural style and form which is distinguished and which will reflect the dignity, enterprise, vigor, and stability of the American National Government. Major emphasis should be placed on the choice of designs that embody the finest contemporary American architectural thought.”
Design Excellence Program was established in 1994 in accordance with GSA’s Strategic Plan “to be the best”
Meeting EISA Fossil Fuel Reduction Goals

<table>
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<th>Year</th>
<th>kBtu/SF</th>
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<tr>
<td>2003</td>
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</tr>
<tr>
<td>2008</td>
<td>100</td>
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<td>2025</td>
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<td>2030</td>
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Graph showing the reduction of fossil fuels over time.
Chronological Distribution of GSA Buildings

- **EARLY HISTORY** (1810-1940): 23%
- **WAR YEARS** (1941-1949): 10%
- **MODERN ERA** (1950-1979): 34%
- **CONTEMPORARY** (1980-1993): 12%
- **DESIGN EXCELLENCE** (1994-PRESENT): 18%
Portland, OR – Modernization

ARRA funded Modernization

1974 - 18 Story Office Building
77 – 83 Existing EGWW building (437,777 sf)

34 – 36 +/- 15% Renovated EGWW target range

Portland Energy Performance Goal

- **94**
  - NATIONAL AVERAGE FACILITY
  - CHESAPEAKE BAY FOUNDATION MARYLAND 30,600 SF
  - NREL (WITH DATA CENTER) COLORADO 218,000 SF
  - SCHLITZ AUDUBON NATURE CENTER WISCONSIN 39,000 SF
  - ALDO LEOPOLD LEGACY CENTER WISCONSIN 11,900 SF
Cleveland, OH – Non-Ventilated Double Facade
The varying frit percentages have the effect of reducing the solar irradiation allowed through the fritted window compared to a clear glass window.

60% frit at the top of the window pane allows much less solar irradiation than the 3% frit at the bottom of the window pane.
Houston, TX – Building Overclad
Denver, CO – Façade Replacement

Temporary demising wall

Existing Facade
Denver – ARRA completed project
Enclosure Commissioning  (a short story)

Hot Rubberized Asphalt Roof
- Structural Lightweight over vented deck
- 2 pours 2nd pour for slope
- Both used curing agent
- Curing agent not recommended by MFG
- Protection not embedded in hot rubber
“People do what you inspect not what you expect”

Anson Dorrance, Head Coach Women’s Soccer
University of North Carolina

You can not inspect quality into a project it must be designed in
Commissioning

What Commissioning must become

Value Quadrant

DEFECTS

RISK

Current practice of commissioning
Durability – Don’t be afraid
Is the Complexity Needed?
“no glazed system that is presently available can come close to the level of performance delivered by a simple and relatively inexpensive opaque wall system”

– Dr. John Straube, University of Waterloo
Material Usage

SME COMMENT 686

Shadowbox Heat Transfer

Color Legend

86.3°F  90.5°F  94.7°F  98.9°F  103.1°F  107.3°F  111.5°F

Detail 4 1
T (Exterior): 32°F with SHGC
T (Interior): 72°F
Exterior Wind: 10 mph
Interior Air/Enthalpy

Sill of Occupied Space

Shadowbox Section at Plenum Level

Insulated Glass
Airspace
Panel
Insulation
Material Usage

• Underestimating the complexity of glass
• Pushing boundaries
• Misunderstanding of the fabrication process
Change how we use buildings
P 100 - Building Enclosure Changes 2010 version
Air Barrier Requirements =
ASHRAE 90.1 2010 plus

GSA Air tightness Requirements - Qualitative Design Checklist

Guide Specification for Air Barrier Quality Assurance and Testing

Inspection/quality Assurance/testing Requirements
Hygrothermal Design

- ASHRAE 160 "Criteria for Moisture Control Design Analysis in Buildings" is an acceptable basis of design
2010 P100 Downloadable Version

U.S. General Services Administration

WHAT GSA OFFERS
DOING BUSINESS WITH GSA
LEARN MORE
BLOG

2010 P100 Downloadable Version

Document | Type | Size
---|---|---
2010 P-100 Full Version | Adobe PDF | 15.5 MB

Last Reviewed: 12/22/2011

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Also of Interest: Whitehouse.gov, Recovery.gov, Data.gov, USA.gov, Suggested Government Sites

2010 P100 Downloadable Version
**Coming Soon a New Performance Based P-100 with Multiple Tiers**

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<tr>
<th>Attribute</th>
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<th>P+</th>
<th>P++</th>
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<tr>
<td>Roof (Replacement)</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
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<td>No</td>
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<tr>
<td>Fenestration (years to frame replacement / IGU-gaskets and seals replacement)</td>
<td>30/15</td>
<td>40/20</td>
<td>50/25</td>
<td>75/25</td>
<td>ASTM E736</td>
<td>Yes</td>
<td>No</td>
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</tbody>
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Advanced Metering
what we mean by expertise: that experts need help, and that progress depends on experts having the humility to concede that they need help. – “Malcolm Gladwell”
Total OSHA Recordable Injury Rate (TRIR)

source: CII study looking at impact of owner involvement

Figure 4. Type of facility owner and safety performance (excludes shutdown projects)
Construction Safety

(i) **Solicitation Submittal Requirements**: The Government desires to do business with only those firms that excel in safety performance. This factor exists to emphasize the importance of safety in and around all construction sites and at the base where construction work is being performed. This factor consists of two subfactors that: (1) will evaluate specific aspects of the offerors construction safety program; and (2) will evaluate the offeror’s safety performance history by contacting references, including but not limited to clients, insurance agencies and subcontractors.

For purposes of this evaluation, **Subfactor A** is less important than **Subfactor B**.

**Subfactor A**: Safety Program. The offeror shall provide information that demonstrates a corporate commitment to construction safety by addressing the following:

**Subfactor B**: Safety Performance History. Provide the number of lost time accidents for the most recent 100,000 man-hours of construction. This information is required for the prime contractor and all subcontractors that worked on the past contracts. Your response shall address each of the following:
“Do the right thing”

How we do things is a Manager’s decision

Why we do things is an Executive decision
Thank You

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Office of Design and Construction PBS
U.S. General Services Administration

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