Green Purchasing: Tips and Tools for Buying “Green”

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On Cost, On Schedule, Built for the Next 50 Years

The Pentagon – A Small City

The Pentagon has never undergone a major renovation in the past 60 years!

- 34 acres
- 6.5 million sq. ft.
- 3 Empire State Buildings
- 7,400 windows
- 175 miles of corridors
- 25,000 personnel
- 1,935 calls each day
- Police force
- Metro station
- Fire Station
- Healthcare facilities
- Post Office
- Mini-mall
- Heliport

The Need for Renovation

Major building systems beyond repair, noncompliant with current building codes, hazardous materials present throughout, poor energy efficiency
Challenges

- Diverse Pentagon projects – Renovation and new Construction
- Rebuild from 9/11 tragedy
- Force-Protection: DoD Personnel & Real Property
- Logistical & Organizational Challenges

- How to address these challenges and build green facilities, in a fiscally responsible manner?

Unique Projects require flexible acquisition strategy

- Contract is a Framework
  - Long & Short Term Projects (2 to +10 years)
  - Flexibility
    - Technological improvements
  - Design-Build
  - Performance based criteria/requirements
  - Award Fee
  - Incentive Fee
Sustainability and Environment Integrated Product Team (S&E IPT)

- The S&E IPT was formed to be an "ongoing source of information, guidance and direction for the reasonable integration of sustainable design and construction for all Pentagon Renovation projects."
- Develop guidance for implementation, outline process for integration of sustainable design into every project, and develop metrics to gauge Program and project achievements.

Tenant Activities Group

- Sustainability & Environment IPT

- Long-term Goal: LEED Certification for the entire Pentagon Reservation

Approach to Green Design and Construction Acquisition

**Request For Proposal / Acquisition**

- Performance based contracting
- LEED™ Certification, minimum, is a stated requirement
- Environmentally Preferred Product goals are included
- Sustainability
  - Award Fee factor
  - Source Selection Criteria
- Design-Build delivery method
Green Design & Construction Initiatives

**Design and Construction**

- Sustainable Material / Product Evaluation Process
- LEED™ Supplement
- QA/QC Involvement
- Provide LEED™ and LCCA Training
- Continuous Value Enhancement Process (CVEP)

Implementing Green Building

- Each Wedge is considered a separate project for LEED™ certification purposes:
  - demonstrates progress to management in the near term;
  - team gains recognition as they reach sustainability targets;
  - reaching short-term achievements helps to boost morale and keep team members motivated.
- Monthly Contractor Progress Reports including:
  - progress towards meeting Green goals;
  - status of LEED™-point achievement, e.g., quantities of diverted construction waste;
  - results of on-site Green material/product testing;
  - potential new Green considerations for the project; and
  - study findings; e.g., feasibility of carpet recycling.

Field Guide for Sustainable Construction

Pentagon Renovation and Construction Program Office

The Pennsylvania State University
Why did we develop the Field Guide?
- Little practical field-level guidance on sustainable construction exists
- Minor construction decisions – such as selecting adhesives/sealants – can have major sustainability impacts, on Indoor Air Quality, Maintenance, and Adaptability
- Opportunities exist to enhance sustainability at every project phase
- Create field-level attitude and awareness - the "why" and "how" of sustainability

Target Audience: supervisors, managers, construction workers – requires targeted educational strategy – like on-site safety awareness

Purpose: Provide guidance and education to field-level supervisors, managers and construction workers

Strategy: Manual of sustainable construction practices with examples of good practice; site-specific orientation; stand-alone chapters based on ten categories of Sustainable Construction

Content: Trade-specific issues, mini-case studies, how-to examples, and references

Organization of the Field Guide
Sections
- Summary
- Planning
- General Cond
- Sitework
- Demolition a
- Foundations
- Superstructu
- Exterior Enc
- Roofing
- Interior Cons
- Conveying S
- Mechanical
- Electrical
- Information T
- Equipment
- Finishes

Chapters
1. Procurement
2. Site/ Environment
3. Material Selection
4. Waste Reduction
5. Waste Recycling
6. Energy Use
7. Building and Material Reuse
8. Construction Technologies
9. Indoor Env. Quality
Potential Benefits

- Achieve sustainable goals and attain LEED™ credits
- Develop competencies / achieve profitability goals in the trades
- Open door for improvement suggestions from the field

LEED™ Rating System

<table>
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<th>SITE</th>
<th>WATER</th>
<th>ENERGY</th>
<th>MATERIAL</th>
<th>INDOOR</th>
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<td>5 POINTS</td>
<td>17 POINTS</td>
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Innovation Credits – up to 4 POINTS

- LEED Accredited Professional on Team – 1 POINT

Sustainability Metrics

Materials Evaluation Process

1. Identify the target materials
2. Determine options
3. Complete Sustainable Material Evaluation Matrix for each option
4. Conduct LCCA
5. Complete Sustainable Material Selection Narrative
Why we developed the Green Material/Product Selection Process

- Process is needed for evaluating green materials and products in a consistent manner
- Decisions left up to design-build team
  - D-B team green material/product selection process driven primarily by schedule and first cost
- Performance criteria add complexity:
  - How prescriptive should we be?

Supporting Tools

Design Life Cycle Database
- E-mail
- Intern
- Hex 
- Home repair
- Hotmail
- House repair
- Hyposigas
- House
- ICI
- Hex
- Hyposigas
- Hex
- Home repair
- House repair
- Hotmail

Division Finishes
- Division finishes

[Image of Design Life Cycle Database]
[Image of Division Finishes]
Green Design and Construction at PENREN

• Defines a consistent and coherent set of values and goals for all projects
• Stimulates innovation and design/construction excellence
• Facilitates value-based acquisition process and design-build delivery method
• Facilitates balancing sustainable factors with building Codes, force-protection, schedule, cost, and personnel

Conclusions

• Challenges surrounding the Pentagon Renovation add to complexity
  - Maintaining Military Mission Readiness
  - Schedule Acceleration
  - Funding Limitations
  - Changing Requirements
  - Force-Protection; e.g., Fire, Blast, and CBR
• Green Acquisition presents an opportunity to integrate all of these in an environmentally responsible manner