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Volume 1, Issue 1

FAÇADE DECISION MAKING GUIDE CONT.

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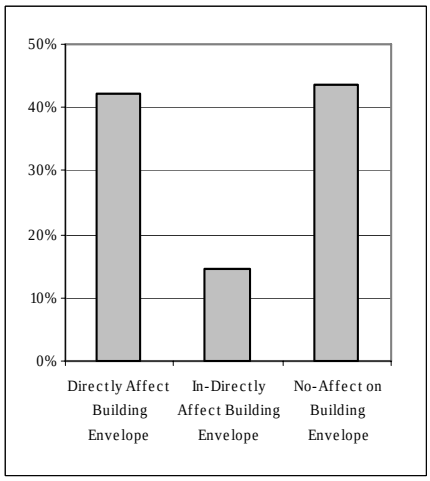
Misc. Building Info

- Sustainable LEED projects add less than 0.1% to the project cost.
- Buildings in the U.S. account for 65% of the electricity consumption.
- Commercial buildings also account for 30% of the greenhouse gas emissions.

BUILDING ENVELOPE DESIGN HAS LARGE IMPACT ON LEED CERTIFIED PROJECTS

Green buildings are no longer a new idea and are quickly becoming the trend in the slowly changing industry of building construction. Even though the essence of LEED (Leadership in Energy and Environmental Design) rating systems are understood more universally throughout construction disciplines than a decade ago, the integration of design, engineering, and construction of systems to be "greener" needs to be more streamlined. Running parallel with the sustainable buildings trend is the design of more complex building facades. The new building envelope systems combine aesthetically pleasing mixtures of materials and finishes with high-tech functionality. To properly design and build a LEED certified project, one must efficiently manage the design and construction of these skin systems. Design considerations include issues such as recycled and locally available materials, thermal comfort, day-lighting requirements, and even green roof systems. LEED credits capture the importance of envelope systems as the design and construction are related to 57% of the LEED criteria. Credits which directly affect the envelope design are categorized as related to design, construction, and use. In-directly affecting the envelope relates to project regulations, waste management systems, or workers and material utilized for temporary construction issues.



LEED Credits Affect on Building Envelope

LEED PREMIUM COSTS ASSOCIATED WITH BUILDING ENVELOPE DESIGN?

So how much does this new trend cost? In 2005, GSA released a study outlining cost premiums for pursuit of LEED credits. This study is especially beneficial for owners or designers who are new to the green building industry. New facilities can be erected to a budget without cost premiums; however, there are credits which require additional funds to implement. GSA: LEED Cost Study outlines the premium costs associated for commercial projects. Building envelope selection is critical in order to ensure the project is completed within the owners budget. Façade selection can equate to an additional $150,000 to $250,000 in project cost in areas such as material, labor, and project management.

Façade Decision Making Guide

Project Timeline	Issue	Envelope & LEED Implications
Conceptual Design		
Owner & Architect	Building Orientation	Numerous areas of glazing facing west will have large solar heating loads
	Footprint	% of floor area within 15' of perimeter promotes healthy environment and credits towards GGHC
	Mix Use Area	Combine green and garden roof types for healthy envrionment and LEED credits
Building System Design		
Owner, Architect, Engineers	Design Iterations	Promote iterations so other systems utilize curtain wall advantages (mechanical and day light)
	Material Selection	Skin materials designated by local conditions and re-used materials
	Energy Savings	Incorporate energy consumption analyses to ensure premium costs are recovered over time
Complete Construction Documents		
Owner, Architect, Eng.,CM	Value Engineering	Ask each bidding CM for value engineering ideas, save money and healthier building
	Budget	Consult GSA: Cost Study for determining if credits require premium costs
Pre-Construction		
Architect, Eng., CM, Subcontractors	Subcontractor Selection	Regionally manufactured and readily available materials key to control cost and schedule
	Value Engineering Implimentation	Implement value adding ideas for building envelope, credit points for innovation in design
	System Interfaces	Coordinate shop drawings of different skin systems at interfaces of the systems
Construction		
CM, Subcontractors	Waste Management	Recycle envelope materials which are cheap and easy to recycle
	Indoor Air Quality Mgmt Plan	Early finish of building enclosure minimizes possible contamination of indoor air quality
Project Closeout		
Owner, Architect, Eng., CM Subcontractors	LEED Accredite Professional	Ensures proper verification and paperwork process
	Verification of Energy Efficiency	Engage in process to guarantee energy savings for owner, worth an additional LEED credit

Issues relating to the design and construction of envelope systems are outlined in the first dotted region in relation to the phase the project is in. LEED and skin implications of these issues are discussed in the second region.

The Façade Decision Making Guide was developed utilizing the Green Guide for Health Care, GSA: LEED Cost Study, and the LEED-NC V2.2. The views and implications expressed in this guideline are for educational purposes and do not represent the views and opinions of Pennsylvania State University and/or The Department of Architectural Engineering. The Façade Decision Making Guide is for educational use only.

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