

Project Costs & Investments

Institute for Facilities Management

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Core Description

401 Project Costs & Investments APPAU201909H

Facilities management professionals are constantly challenged on the cost of construction and improvements. This session reveals the reasons behind the high cost of higher education construction by breaking this issue down into its component parts. The session also explores how capital projects are typically funded and the challenges with making total-cost-of-ownership based project decisions.

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Learning Objectives

1. Learn the reasons for higher education construction costs.
2. Learn how capital projects are funded.
3. Learn the challenges with total cost of ownership based projects.
4. Discuss the challenges of construction and improvements.

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Why does it cost so much??

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High Compared to What?

Frame of reference

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High Compared to What?

Compared to residential construction

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High Compared to What?

Compared to commercial construction

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Comparisons Are Not Valid

- **Residential** – Designed and built for light traffic and medium life, high importance placed on aesthetics
- **Commercial** – Designed and built for medium traffic and short life, high importance placed on function
- **Institutional** – Designed and built for heavy traffic and long life, high importance placed on aesthetics and function

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Bottom Line...

Costs for campus projects rank among the highest in the market...

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Bottom Line...

Costs for campus projects rank among the highest in the market...

...and would we want it any other way?

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Bottom Line...

These higher costs are by and large a reflection of sound total-cost-of-ownership decisions being made.

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Total-Cost-of-Ownership

What do we mean by total-cost-of-ownership?

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Total-Cost-of-Ownership

What do we mean by total-cost-of-ownership?

TOC = Total Project Cost (D+C+F) +
Operating Costs + Capital Renewal or
Deferred Maintenance + Decommissioning

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Cost vs. Investment

Higher capital investments can lower the total-cost-of-ownership.

Many incremental investments we make in a capital project yield attractive savings.

Therefore a higher project investment may be in the best interest of the institution's bottom line.

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Why the High Cost?

How do you fit these marbles into this jar without increasing the size of the jar, reducing the number of marbles, or breaking the marbles.



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Why the High Cost?

- Sense of Place
- Codes, Regulations & Standards
- Complexity
- Institutional and Statutory Requirements
- Time Pressures
- Maintainability, Sustainability & Longevity

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● Sense of Place

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Institutional Vision

Our institutions choose to build above the baseline

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Institutional Vision

The physical environment creates the visual and tangible image of our institutions

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Institutional Vision

In short, the facilities we construct reflect the vision and aspirations of the institution

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Image Comes at a Price

Institutions are competing for national and international recognition

Noel-Levitz and Carnegie Foundation studies reveal the impact the physical environment has on prospective students

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Marketing

As students increasingly select colleges based on what they can see, colleges will spend more money on that which can be seen.

Rigor in the classroom and intellect in the faculty cannot easily be seen – certainly not as easily as a fitness center or a three story granite fireplace.

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Architectural Character

Building designs make statements

Both exteriors and interiors

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Quality is in the Details

- Prominent entrances
- Hidden downspouts
- Buried utilities
- Screened trash receptacles
- Underground/screened cooling towers
- Discrete service access
- Site amenities/Art
- Extensive and intensive landscaping

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Preservation of Land

- Importance of green space
- Optimizing building footprints
- Cost of building upward

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Quality Comes at a Price

We are not just building structures...
...we are creating a "sense of place"

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Codes, Regulations & Standards

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Gathering Places

Large assemblies drive our facilities into a higher level of life safety design

Code requires rated corridors, stair towers, fireproofing, fire alarm systems, sprinklers and smoke evacuation systems

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Legislative Mandates

Federal, state and local regulations add cost burdens to our facilities

- Asbestos abatement
- Hazardous waste removal
- Storm water runoff
- Air quality control
- Dust, noise & vibration controls

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Universal Design

Universities facilities must not only be compliant with ADA, but are increasingly expected to go well beyond the minimum requirements.

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HVAC Standards

Labs are intensive energy consumers

Classroom and assemblies are also intensive

Ventilation requirements drive up the size and cost of mechanical systems.

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● Complexity

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Complex Facilities

Sophisticated research facilities
High occupancy and specialized venues
Intensive technological environments

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Complex Mechanical Systems

Designed for extreme conditions
Hottest and coldest temperatures
Humidity extremes
Strictest controls
Highest occupancy
Fault detection
Measurement and verification

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Structural Loading

Heavy floor loadings
Column-free spans

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Access & Security

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Mixed Use Facilities

Combine classrooms, laboratories, meeting rooms and offices under one roof

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● Institutional & Statutory Requirements

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Statutory Requirements

Procurement Statutes
Prevailing Wages
Project Labor Agreements
MBE/DBE/TSB Programs
Insurance
Bonding

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Institutional Constraints

“Protected environment” of the campus

Minimize campus disruptions

Restricted building sites

Limited access & staging space

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Challenging Logistics

Restricted construction traffic

Complex phasing schemes

And...

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Additional Requirements

- Noise restrictions
- Fencing and protection
- No Parking
- No Smoking
- Litter-free, weed-free work site
- Full time supervision
- Elevated safety expectations

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Time Pressures

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Time Constraints

- Immovable completion dates
- Compressed construction windows

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Maintainability, Sustainability & Longevity

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Stewardship

Designing for low life cycle cost requires higher initial investments:

- Energy efficiency
- Maintainability
- Long life
- Adaptability

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Adaptability

Overbuilt utilities and utilities pathways necessary for flexibility and growth

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Adaptability

Increased floor to ceiling heights lower future renovations costs

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Durability

Campus facilities subjected to frequent cycles of use

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Durability

Durability important component of doors, hardware, carpeting, restrooms, furniture, etc.

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Durability

Much of our deferred maintenance backlog is due to short-sighted life cycle decisions

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Reliability

Reliable electrical and mechanical systems are essential to our institutional missions

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Reliability

Higher cost for providing emergency power, redundancy, generators, UPS systems, and centralized utility systems

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Sustainability

Higher education is “LEED”ing sustainable design efforts

- Managing construction waste
- Renewable-sourced building products
- Porous pavements
- Green roofs
- Gray water systems
- Other

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A Postscript

What About Renovations?

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Renovations

Often modifying existing conditions is more expensive than starting new

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Renovations

Buildings built just a generation ago may not have the infrastructure for today's renovations

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Renovations

Investments in renovations must often be made to correct the "sins of the past"

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Renovations

Renovations magnify the perception of high cost because they commonly fall in the realm of personal expenditures... thus heightening the "sticker shock" experience

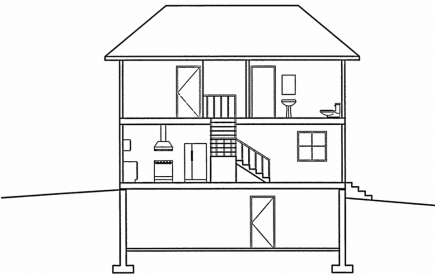
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Renovations

Inevitably, comparing institutional renovation costs to residential housing investments...

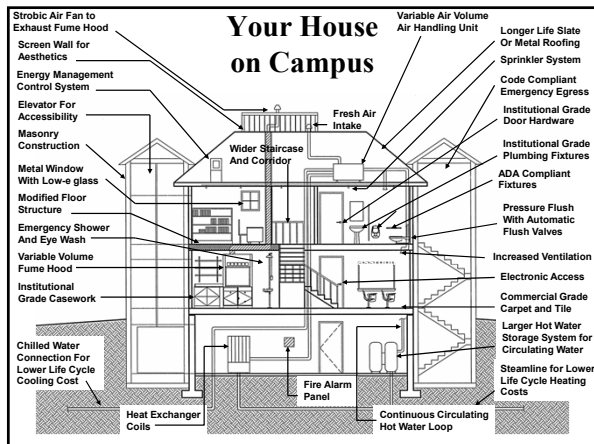
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Your House



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Your House on Campus



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Why the High Cost?

Why the high cost?



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Why the High Cost?

Why the high cost?

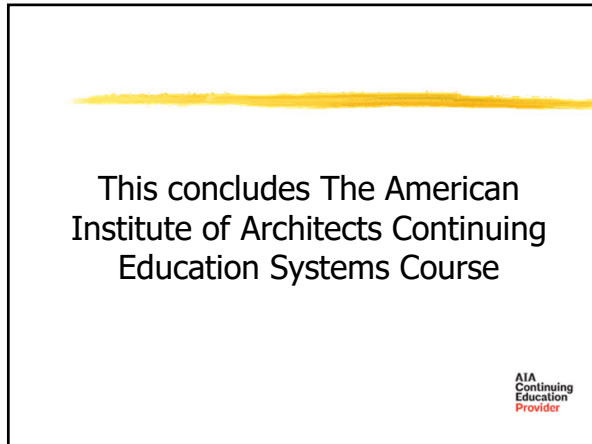
- Sense of Place
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In Summary...

- Stewardship demands a long term view of project investment decisions
- Investments are made with total-cost-of-ownership as our compass
- Excellence is in the details - thousands of cost additive details
- Construction costs mirror institutional values, demands and aspirations

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