

# USM Project Construction Costs: Challenges and Solutions

USM Office of Capital Planning  
USM Office of Procurement  
UMCP Project Service Center  
UMB Project Service Center

**Board of Regents Finance Committee**  
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## Presentation In Two Parts:



- 1. What drives the cost of USM projects?**
- 2. What solutions can help reduce those costs?**



## 1. What drives the cost of USM projects?

- **General cost implications inherent in all Maryland higher education projects**
- **Market-driven impacts on costs**

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## What drives the cost of USM projects?

### General: **Regulatory**

- USM Policies and State Statutes and Regulations
- Board of Public Works
- Buy American Steel
- Prevailing Wage
- Minority Business Enterprise requirements
- Cash Flow Requirements
- Bonds and Insurance
- Green Building Certification
- Maryland MDE and DNR Requirements
- Local Jurisdictions
- Light Pollution, trespass and efficiency standards
- Historic Preservation
- Public Art

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## What drives the cost of USM projects?

### General: **Logistics**

- 24 hours/day schedules
- Timing around academic calendars
- Need for continuous operation
- Limits to parking and staging—particularly in urban areas



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## What drives the cost of USM projects?

### General: **Scope**

- Demolition and abatement costs
- Central Utility Plant upgrades
- New utility connections
- Extensive site work outside the project limits
- Phasing or enabling work
- Public safety issues, lighting, security, etc.
- Higher levels of system reliability and redundancy



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## What drives the cost of USM projects?

### General: **Comparability**

- Higher Ed projects lack good comparable examples in private sector
  - (e.g., Research facilities, teaching laboratories)
- Valid per SF cost comparisons difficult
- Examples:
  - Tenant fit-out (developer building) not included in per SF costs
  - Standards of construction
    - Highly efficient, flexible configurations
    - Structurally to 100 years (with multiple renovations over time)

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## What drives the cost of USM projects?

### Market: **Materials Costs**

- Materials costs up to 40% of budget
- Costs fluctuate based on events, market
- Possible factors affecting market (examples)
  - Tariffs (and talk of tariffs)
  - Hurricane rebuilding (US and Caribbean)
  - Midwest flooding
  - California fires
  - Oil prices (plastics, transport)
  - Recent bidding resulted in 20-30% increase in metals
  - Drywall and lumber costs are higher



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## What drives the cost of USM projects?

### Market: Labor Costs

- **Market Capacity is the biggest driver affecting project costs**
- 60-70% of project costs related to labor
- Trade workers in regional market peaked in 2006 at 195K, now at 163K (same as 2001)
- Market Capacity in DC is \$26.6B (5<sup>th</sup> largest in the US; Balt \$8.3B)
- 80% of the construction firms expect to have difficulty filling positions in the next 12-14 months
- Contractors/subcontractors can be selective
  - Many choose to avoid “risky” projects
  - Or they build-in higher costs to account for those risks
- High demand + low supply = higher wages—particularly MEP

[Construction Managers Association of America, January 2020]

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## What drives the cost of USM projects?

### Market: Labor Costs

- Increases on our projects have ranged from 17% to 37% over original cost estimates because subcontractors can “pick and choose”
  - Example: UMES Pharmacy—Two of four mechanical bidders dropped out when State announced Bay Bridge repairs
- Major Regional/DC development, also VA, Arlington and Dulles Airport; and Purple Line
  - Example: One data center utilized 1,300 workers daily
- Lowest unemployment in construction in over a decade
  - Example (UMCP): Builder could only field 30 of 60 carpenters needed
  - Example (UMB): Where weather delays could be mitigated with two shifts, worker shortages prohibited it
- Many large subcontractors in critical specialties have closed

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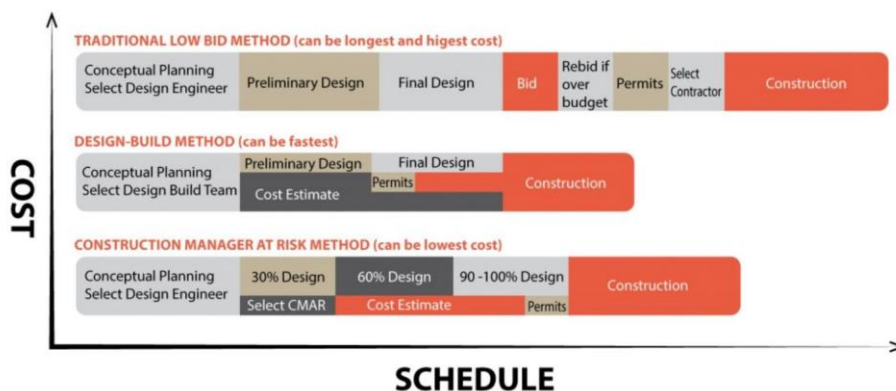
## 2. What solutions can help reduce costs?

- Effective project delivery
- Innovative technology
- Focused goals & processes
- Improved data sharing

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## What solutions can help reduce costs?

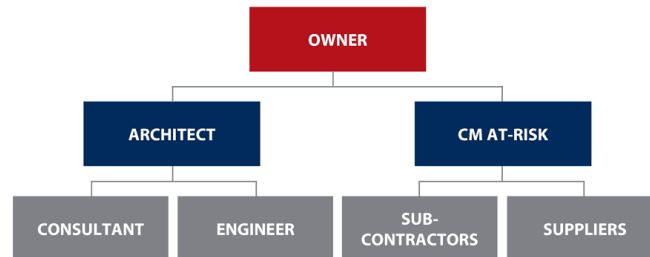
- **Selecting the most effective project delivery method**



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## Selecting most effective project delivery methods

### CONSTRUCTION MANAGER AT-RISK



Construction Manager is engaged during pre-construction activities.

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## The advantages of “CMAR”

- A "best value" method that allows for owner control
- Best of both worlds: fixed price and cost-plus contractors
  - If trade bid comes in low, we benefit
  - if trade bid comes in high, the CM is at risk
- High degree of cost control (two estimators)
- More forgiving of unforeseen conditions
- CMAR paid with fee, not motivated to generate change orders; and a good CM can typically save costs equal to their fee
- Project duration can be shorter because the actual construction can begin before the entire design has been completed
- Design fees are kept to a minimum
- Quality is stressed over lowest price
  - Option to seek the best over the cheapest if in best interest of owner
- CM method lends itself to other benefits (e.g., fast tracking)

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## What solutions can help reduce costs?

- **Adopting creative construction techniques where they add value**



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## Advantages of Modular Construction

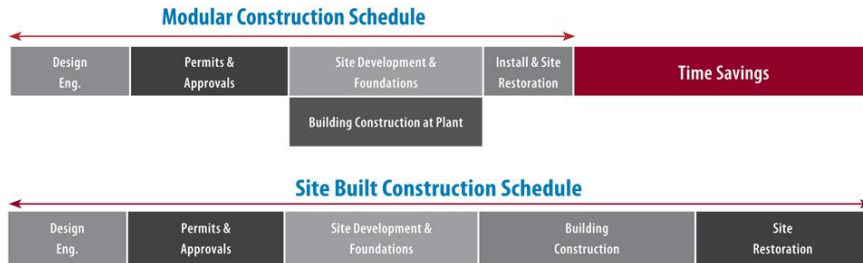
- Speed of build
- Off-site construction
- Elimination of Weather Delays
- Minimal impact on business/operations
- Eco-friendly materials
- Cost-effective
- Flexibility
- Less Material Waste
- Strength
- Air Quality
- Safety



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## Modular construction timeline



### UMBC “Pilot Project”

- Permanent Modular Construction
- Tight timeframe for campus (August 2021 operation)
- Anticipate cost savings as well
- Will monitor and report progress/results

## What solutions can help reduce costs?

- **Focused goals & processes**

The collage features several key documents:
 

- MARYLAND BUDGET HIGHLIGHTS**: A cover page with the state flag.
- State Capital Development Program (SCDP)**: A document detailing the program's goals and funding.
- State General Obligation (GO) Bonds**: A document discussing bond financing for infrastructure.
- Site Maps**: Various campus maps showing building footprints and green spaces.
- Planning Charts**: Tables and diagrams showing project timelines and resource allocation.

## What solutions can help reduce costs?

- Improved data sharing & coordination



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## Conclusions & Discussion

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