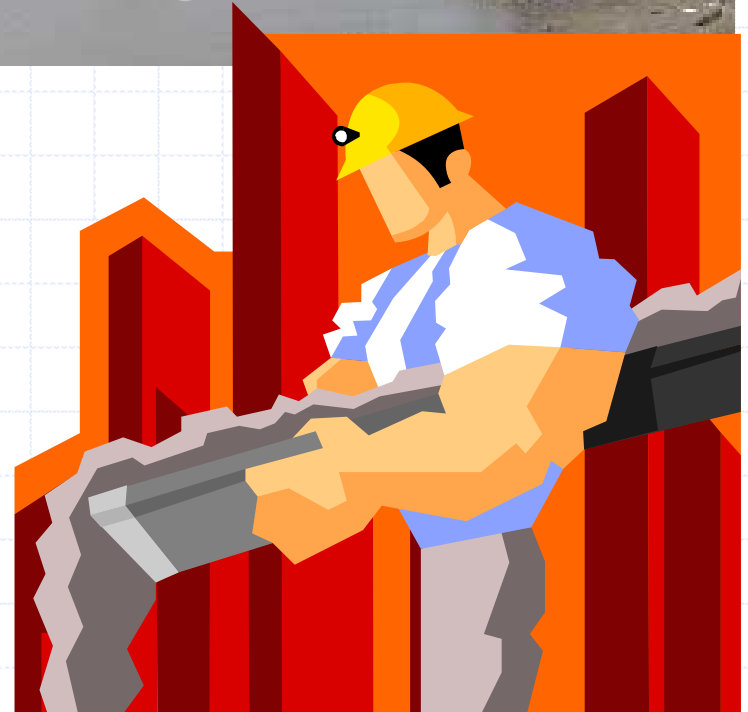


THE IDEAL BRIDGE

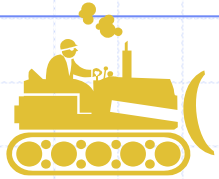
A Contractor's Perspective on Project Costs

Bill Cox
Corman Construction
Annapolis Junction, MD
ARTBA Vice Chair At-Large

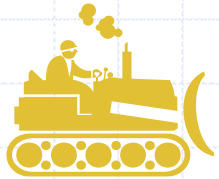
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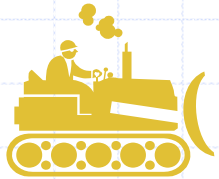
Key Points for Discussion



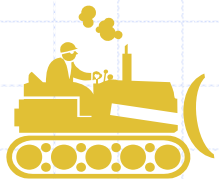
(Design Considerations



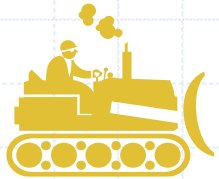
(Constructability



(Construction Methods / Materials



(Factors of Cost



(Drawing Presentation



Design Considerations

Geometry – Straight not curved, Flat not round,
Minimize super elevation, Skewed decks

Standardize – Element dimensions, Materials,
Market availability

Structure Element Specifics –

- Bridge bearings (simple vs. \$ exotic)
- Stay-in-place deck pans (matching pitch)
- Diaphragms – Bolted / Welded connections
- Deck Overlays – Single Lift Deck Construction,
Surface Prep, Specialty Equipment



Design Considerations

Structure Element Specifics –

- Foundations – Shallow Foundations = Spread Footings
Deep Foundations = Pile Arrangements
Minimize Retooling of Equipment
Driving Criteria “Min Tip”, “Est Tip”
“Ultimate Capacity” “Driving Capacity”

“Context Sensitive Design”- Architectural Concrete
Formlined Concrete

COSTS INCREASE

“Scope Creep” – Outside influences will add “ornaments”



Constructability

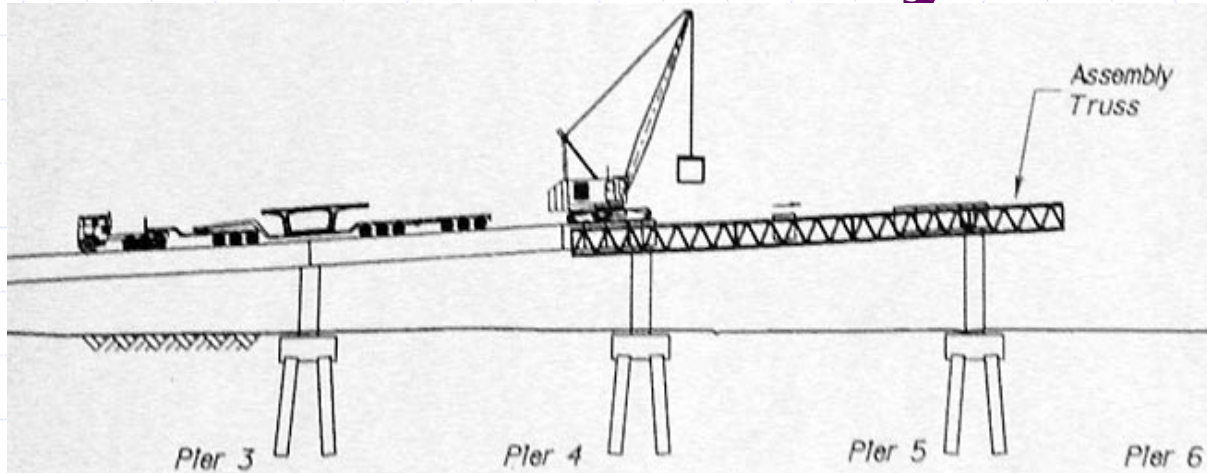
*Site Access – Heavy Equipment
Maneuverability*



Crane Options – Pick Weights



Constructability



Repetitiveness –

- Form Re-use
- Maximize Production
- Common Sized Elements
- New Technologies

Gantry Systems

Jacking/PT Equipment

Slipforming



Constructability



Environmental Impacts

- Permit Restrictions (Project Calendar)
- Local Climate Impacts
- Work Hour Restrictions (Night work)

“Outsider” Influences

- Press Coverage
- Video Documentation
- Historical Significance



Constructability



Equipment Availability

- Increased Competition
- Regional Considerations
- Specialty Fabrication
- Lead Times





Constructability

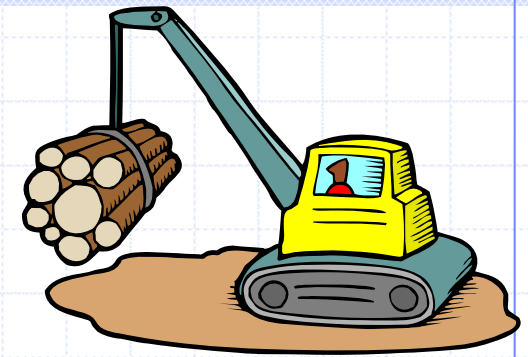
Traffic Control- EXPOSURE!!

- Protection of Traveling Public & Construction Personnel
- Close and Detour around Project
- Simplify Staged Construction
- Minimize Traffic Pattern Changes
- Weather / Seasonal Impacts – (Project Calendar)

Construction Partnership – “We’re in this together”

- New Partnership Philosophy between Engineers & Contractors
- Empowerment – Give those the power to make a decision
- Field Resolutions – Less costly than Claims & Force Accounts
- Same Goal – Betterment for the Public Good
- Public Perception – Over Budget & Behind Schedule
- Construction is an extension of Design

Construction Methods & Materials

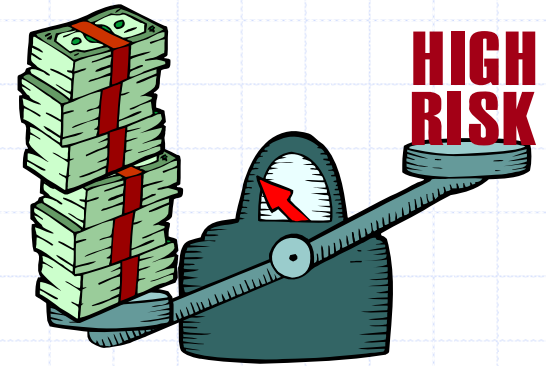


Means & Methods – Contractors Responsibility

- Minimize detailed specification processes
- Balance for Specialty Construction

Material Specifications – Close consideration

- Proprietary or Patented Items - reduces competition
- Industry Trends – Regional
- Recycled Materials – Onsite and Offsite materials
 - Embankment materials
 - Concrete
 - Asphalt
- Price Indices



Factors of Cost

All of the Above –

More Specifically-

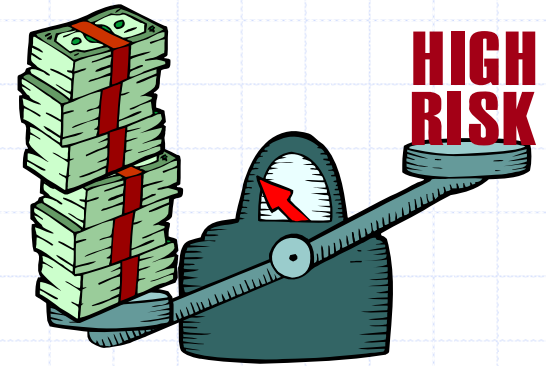
- Driving Material Markets – (PVC/Fiberglass)
- Escalation trends (Fuel, Steel, Cement)
- Guaranteed Pricing (“endangered species”)
- *Labor Components such as:*

Insurance (health, liability, builders risk, etc.)

Wage Compliance (geographic location)

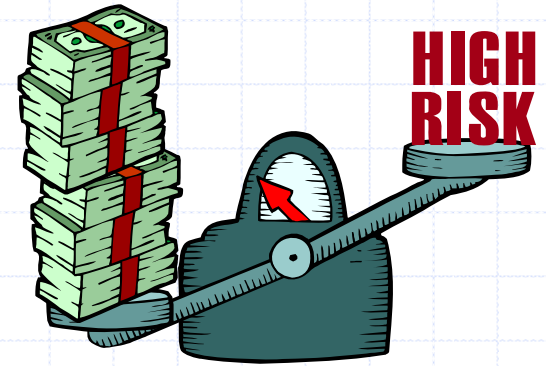
Union vs. Nonunion

Work Rules



Factors of Cost

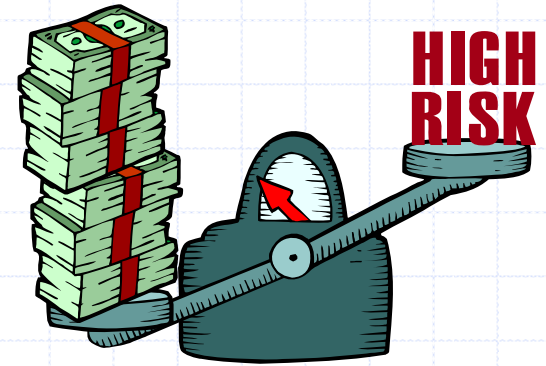
- Unnecessary Contractor Contingencies
- Too much "Risk Shift" –
Higher perception of risk leads to higher costs
- Established Project Schedule
Unrealistically short = Liquidated Damage Inclusion
& Overtime (effects prequalification)
Too Long = Crystal Ball (tough to estimate escalations)
- "E" Factor - Engineer Factor (Reputation- Good, bad?)



Factors of Cost

Possible Alternatives –

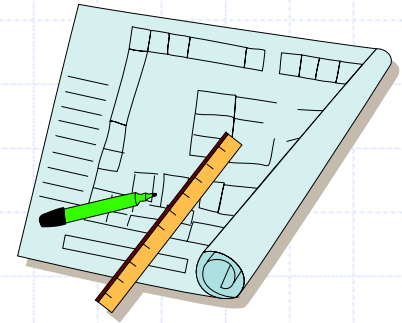
- Include options for Alternates (Steel vs. Concrete)
- Provide Early Completion Incentives
- Establish “Allowances” in Contract for any uncertainties
- Continuous Projects –
Multiple vs. Single Stage Construction
- “If & Where Directed” Items – Pros & Cons



Factors of Cost

Philosophical Approach

- National Campaign to sway public perception (ARTBA)
- Teach & Promote Partnership between Engineers & Contractors (we are not “money hungry dumb contractors”)
- Engineer’s Reputation for Fairness – A tough but fair and consistent attitude will prevail over unreasonableness
- “Fair & Equitable Treatment” – Protection for the Contractor
- Engineers Estimates – can affect public opinion



Drawing Presentation

Clarity – No Imagination & No Guess Work
(adds cost)

Details – More is better

Detail & Section numbering should
be straightforward

Organized – Drawings are packaged properly
with easy cross reference

Electronic Files – Make available for project use
Construction Layout
Shopdrawing Submissions



Thank You!



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