Elements of Container Terminal Planning and Design:
*Design and Construction for the Terminal Manager*

Session VI
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Ports America
Theme

• Public-Private Partnerships (PPPs):
  – Are becoming more common as port authorities encounter more financial limitations
  – Result in the terminal operating company getting involved with port facility development
  – Resulting in the terminal manager getting involved with oversight of design and construction
  – This might become YOUR problem

• What will your job entail?
Ports America’s current PPPs

- Oakland: 50 years
  Densification & Automation
- Newark: 30 years
  50 Acre Expansion
- Baltimore: 50 years
  4th Berth
Overview

• Two Approaches
• Design-Bid-Build
• Design-Build
• Design Contracting
• Construction Contracting
• Manager’s Role in Design
• Manager’s Role in Contracting
• Manager’s Role in Construction
Two Approaches to Building Things

Design-Bid-Build
- Owner defines project
- Owner hires designer
- Designer prepares construction docs
- Owner gets permit
- Owner hires contractor
- Contractor builds
- Owner oversees

Design-Build
- Owner defines project
- Owner makes Basis of Design
- Owner hires contractor / engineer combined
- Engineer designs
- Contractor gets permits
- Contractor builds
- Owner oversees
Design-Bid-Build Development

The Designer and the Contractor are separate
The Owner Coordinates Design with Construction
The Contractor builds to the Designer’s Specs
A Traditional Approach
Design-Bid-Build: Project Definition

- Owner defines the project:
  - Location, existing conditions, pre-existing information
  - Description of what is to be built, including sketches
  - Description of the institutional setting
  - Definition of the owner’s project team and project management structure
  - Description of the designer’s scope of work
  - Definition of the terms and conditions of the designer’s services
Design-Bid Build: Designer Selection

• Owner hires the designer
  – Identify qualified designers
  – Issue requests for proposals with the project definition to at least three designers
  – Score the proposals
  – Select a design professional
  – Prepare a service agreement
  – Develop an AFE
  – Prepare a purchase order
  – Execute the agreement
  – Issue a Notice to Proceed (NTP)
DBB – Request for Proposals

• Project Description
  – Background
  – Project Elements
  – Requested Services

• Scope of Work
  – Design Guidelines
  – Service Details

• Proposal Administration
  – Points of Contact
  – Contracting and Cost Basis
  – Timeline
  – Proposal Contents
  – Selection Criteria
# DBB – RFP – Example Timeline

<table>
<thead>
<tr>
<th>Project Step</th>
<th>Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issuance of RFP</td>
<td>0 End</td>
</tr>
<tr>
<td>Proposals Due</td>
<td>2 Start</td>
</tr>
<tr>
<td>Proposals Scored</td>
<td>2 Mid</td>
</tr>
<tr>
<td>Designer Selected and Approved</td>
<td>2 End</td>
</tr>
<tr>
<td>Notice to proceed and contract execution</td>
<td>3 Start</td>
</tr>
<tr>
<td>Preliminary Design Complete</td>
<td>5 End</td>
</tr>
<tr>
<td>Complete Design Complete</td>
<td>7 End</td>
</tr>
<tr>
<td>Permit Submitted</td>
<td>8 Start</td>
</tr>
<tr>
<td>Permit Comments Received (estimate)</td>
<td>10 End</td>
</tr>
<tr>
<td>Final Design Complete</td>
<td>12 End</td>
</tr>
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</table>
### DBB – RFP – Proposal Scoring Matrix

<table>
<thead>
<tr>
<th>Criterion Description</th>
<th>Maximum Points</th>
<th>Criterion Weight</th>
<th>Maximum Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsiveness of the Proposal</td>
<td>10</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>Specific Project-Related Experience</td>
<td>10</td>
<td>6</td>
<td>60</td>
</tr>
<tr>
<td>Management Team Qualifications</td>
<td>10</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>Perceived Team Responsiveness</td>
<td>10</td>
<td>7</td>
<td>70</td>
</tr>
<tr>
<td>Technical Robustness</td>
<td>10</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>Work Plan and Schedule Robustness</td>
<td>10</td>
<td>8</td>
<td>80</td>
</tr>
<tr>
<td>Contract Acceptance</td>
<td>10</td>
<td>7</td>
<td>70</td>
</tr>
<tr>
<td>Overall Cost for Value Offered</td>
<td>10</td>
<td>6</td>
<td>60</td>
</tr>
<tr>
<td><strong>Maximum for Project</strong></td>
<td><strong>520</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Design-Bid-Build: Design Works

• Designer creates construction documents
  – Conceptual design – General outline
  – Preliminary design – Field tests, rough sizing
  – Intermediate design – Components sized
  – Complete design – Details worked out, design complete
  – Final design – Agency comments resolved, permit issued
  – Bid packages

• Plans
• Specifications
• Estimates
Design-Bid-Build Permits

• Owner gets permits (sometimes contractor)
  – Environmental
  – Demolition
  – Grading
  – Construction
  – SWPPP ("swippy")
    • Stormwater pollution prevention plan
  – Hazmat disposal plan, if required

• Health and Safety Plan
Design-Bid-Build: Contractor Selection

• Owner hires contractor
  – Bid Package
  – Request for Bids
  – Requests for Information
  – Addenda
  – Site walk
  – Contractor surveys
  – Bid processing
  – Contractor scoring
  – Contractor selection & negotiation
  – Contract execution
DBB – Contractor Bid Package

• Complete or Final design package
  – If Complete, do Addendum for Final
  – Includes Plans and Specifications, not estimates

• Proposed Contract Terms & Conditions

• Bid Form

• Instructions to Bidder

• Communications Protocol

• Submission Requirements

• Performance Bond Form(s)

• Lien Release Form(s)
Design-Bid-Build: Construction

• Contractor builds
  – Clear and grub
  – Demolition
  – Grading
  – Utilities
  – Paving
  – Electrical / telecomm infrastructure
  – Lights & fire hydrants
  – Buildings
  – Instrumentation
Design-Bid-Build: Oversight

• Owner Oversees Construction
  – Single Point of Contact (!!!): the “Owner’s Representative” or “Resident Engineer”
  – Port authority engineering staff & wharfinger
  – Construction manager
  – As-built documentation
  – Requests for Information
  – Contractor submittals
  – Applications for payment
  – Change Orders
  – Substantial Completion
Design-Build Development

The Designer and the Contractor are unified
The Contractor oversees Design
The Contractor delivers to the “Basis of Design”
Where the Contractor’s Expertise is Valuable
Design-Build: Project Definition

• Owner defines the project:
  – Location, existing conditions, pre-existing information
  – Description of what is to be built, including sketches
  – Description of the institutional setting
  – Definition of the owner’s project team and project management structure
  – Preparation of a **Basis of Design** Document
  – Description of the contractor’s scope of work
  – Definition of the terms and conditions of the contractor’s services
DB: Basis of Design

- The Basis of Design describes what the contractor is to build and the criteria against which the contractor’s designer will create the design
- Layout of finished works
- Known constraints on development
- Performance requirements (loads, durability, design life, etc.)
- Governing codes and specifications
- Pre-existing engineering or other technical information
Design-Build: Contractor Selection

• Owner hires the contractor
  – Identify qualified contractors
  – Issue Requests for Bids with the Basis of Design to at least three contractors
  – Bids to include conceptual design
  – Score the Bids, Interview finalists
  – Select a contracting team
  – Prepare a service agreement
  – Develop an AFE, prepare a purchase order
  – Execute the agreement
  – Issue a Notice to Proceed (NTP)
DB – Request for Bids

• Project Description
  – Background
  – Project Elements
  – Requested Services

• Scope of Work
  – Design Guidelines
  – Basis of Design

• Proposal Administration
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DB – Contractor Bid Package

• Basis of Design
• Proposed Contract Terms & Conditions
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Design-Build
Design Contracting (DBB Approach)

- If possible, have a “Design Standard” that establishes the deliverables expected at each stage of design.
- If possible, develop your own Standard Design Agreement – avoid using the Designer’s “Standard Contract”, as it is not friendly to the Owner.
- The Law surrounding design is rather specialized – engage the help of a knowledgeable lawyer to craft effective agreements.
- Designers are NOT expected to be perfect, and you should not expect them to be.
Design Contracting (DBB Approach)

• As Owner, you have the right to tell the Designer \textit{what} to design

• If you tell the Designer \textit{how} to design something:
  – You increase the possibility of failure
  – You shift the liability for failure to the Owner
  – You undermine your rights as Owner under the law

• Engage the Designer in “value engineering” to balance construction and operating costs, but the Designer has the final word with regard to durability of the design
Construction Contracting

• If possible, develop a Standard Construction Agreement that covers both Design-Bid-Build and Design-Bid situations

• Do NOT use:
  – Contractor-generated agreements
  – Contractor’s association agreements
  – AIA agreements
  – ASCE agreements
  – These all tend to be overly friendly to contractors

• Resist the temptation to make an unbalanced agreement – it will come back to bite you
Construction Contracting

• Consider as a basis the “FIDIC” standards
  – Federation Internationale des Ingenieurs Conseils
  – Based in Switzerland
  – Standards for European and International contracting
  – Available in multiple languages

• “Red Book” for Construction (DBB)
  – PA’s original basis for construction contracting, with added terms for design-build

• “Yellow Book” for Plant and DB
  – PA’s standard for Crane procurement
Construction Contract – Outline

• General Provisions
  – Definitions
  – Interpretation
  – Priority of Documents
  – Law
  – Communications
  – Statutory Obligations

• The Owner
  – Provision of the Site
  – Permits and Licenses
  – Owner’s Instructions
  – Approvals

• Owner’s Representative
  – Authorized Person
  – Owner’s Representative

• The Contractor
  – General Obligations
  – Contractor’s Representative
  – Subcontracting
  – Performance Security
  – As-Build Documents

• Design by Contractor
  – Contractor’s Responsibility
  – Responsibility for Design
Construction Contract - Outline

• Owner’s Liabilities

• Time for Completion
  – Execution of the Works
  – Program
  – Extension of Time
  – Late Completion

• Taking Over
  – Completion
  – Taking-Over Notice

• Remediing Defects
  – Remediing Defects
  – Uncovering and Testing

• Change Orders & Claims
  – Right to Vary
  – Valuations of Change Orders
  – Early Warning
  – Right to Claim
  – CO & Claim Procedure

• Contract Price & Payment
  – Payment for the Works
  – Application for Payment
  – Interim Payments
  – Retention
  – Final Payment
  – Delayed Payment
Construction Contract - Outline

• Default
  – Default by the Contractor
  – Default by the Owner
  – Insolvency
  – Payment upon Termination

• Warranty
  – Materials Warranty
  – Works Warranty

• Risk & Responsibility
  – Contractor’s Care of the Works

• Insurance
  – Extent of Cover
  – Arrangements
  – Failure to Insure

• Resolution of Disputes
  – Mediation
  – Litigation
Construction Contracting – Key Points

• Require documentation for Change Orders, and require PRIOR approval
• Establish a clear chain of communications, and DO NOT DEVIATE FROM IT
• Be clear about “Taking Over” and “Completion”
• Rigidly control subcontracting rights
• Demand a Performance Security
• Demand Lien Releases as a condition of payment
• Pay close attention to your lease
• Be clear about Permits – they are a major pitfall
Manager’s Role in Design

• As manager, you will “own” the resulting finished works, for good or for bad

• The Conceptual Design phase is the time for you to get your needs addressed
  – Do not be shy about pressing the Designer for clarity
  – Get deeply involved in the details at this stage
  – Demand clarity on safety issues
  – Demand clarity on standards used elsewhere

• Review the Design as it progresses through its stages, and do not allow unconscious deviation from the Conceptual Design
Manager’s Role in Contracting

• Read the Contract
• If there is any part you do not understand, get an explanation from counsel – do not assume that unclear parts are clear to others
• Understand and proactively manage the communications protocol
• Instill a solid wariness of the contractor in all of your staff
• Understand Applications for Payment and Change Orders – that’s where the money lives
Manager’s Role in Construction

• Proactively manage the communications protocol
• Control access between your staff and the contractor
• NEVER permit staff to agree to changes without your permission
• NEVER commit to any change orally
• NEVER assume a change is being done for free
• Consult your designer on all changes
• Putting things in writing is a pain, but it’s nothing compared to dealing with a legal dispute