Constructibility Review

- Implementing the Process
- Construction Cost Savings

Bill Hawkins

Regional Construction Services Manager

CH2M HILL

Bill Hawkins

- Construction Industry - 33 years
- Construction Manager - 27 years
- CH2M HILL – 20 years
- Regional Construction Services Manager – 10 years
- Public Infrastructure and Industrial Projects
  - Water Treatment Conveyance and Storage
  - Wastewater Treatment and Collection
  - Roads and Bridges
  - Petro-Chemical Plants and Pipelines
  - Commercial Buildings

Definition of Constructibility

- Constructibility is the optimum use of construction knowledge and experience in planning, design, procurement, and field operations to achieve overall project objectives.
  - Construction Industry Institute

Critical Needs For A Successful Constructibility Program

- Organizational Commitment
- A clear process for implementing constructibility
- A core of qualified and experienced staff to apply constructibility
- A system for monitoring and measuring process implementation

The Constructibility Process:

- Constructibility Planning
  - Structuring the entire project development process to maximize the effectiveness of constructibility involvement from the very beginning of the project
- Constructibility Reviews
  - Formal reviews focused on identifying opportunities for reducing costs during construction by making adjustments during the design prior to construction

Constructibility Planning

- Identifying measures for enhancing the efficiency of the construction phase by a review process implemented in concert with and during the design.

Constructibility Planning Steps

- Design Team Commitment Needed
- Begin Early in the Schematic Design
- Initial Constructibility Planner Actions
  - Evaluate the Site
  - Evaluate Construction Conditions
  - Evaluate Early Design Concepts
- Coordinate with the Design Team

Early Constructibility Planning Provides A Cost Advantage

- Constructibility Planning and Review early in the project has a significant cost advantage in that measures for enhancing the constructibility of the design are applied as the design is being developed and design rework is generally avoided.

Constructibility Reviews

- Constructibility Reviews of the design produced are typically a combination of :
  - Constructibility – identifying potential constructibility problems in the design
  - Biddability – evaluation of how accurately contractors will be able to bid the project
  - Quality Management – identifying potential constructibility problems in the construction documents

Constructibility Reviews

- A Qualified Reviewer Should:
  - Be engaged early in the planning and design process.
  - Evaluate the site and the performance conditions.
  - Review the design documents for potential problems and constructibility issues as well as potential opportunities for improving the constructibility of the design.

Setting up the Constructibility Process

- Commitment to Constructibility Planning
- Select Constructibility Planner
- Develop Work Plan/Budget
- Identify/Engage Stakeholders
- Identify/Engage Team Members
- Chartering/Team Alignment

Performing the Constructibility Process

- Review Design Concepts
- Review Constructibility Guidelines for Design Teams
- Review Performance and Site Conditions
- Screen Lessons Learned/Other Background Material
- Provide Constructibility Input
- Identify Constructibility Measures
- Review Constructibility Measures with the Design Team
- Document Disposition of Constructibility Measures
- Conduct Final Review

Completing the Constructibility Process

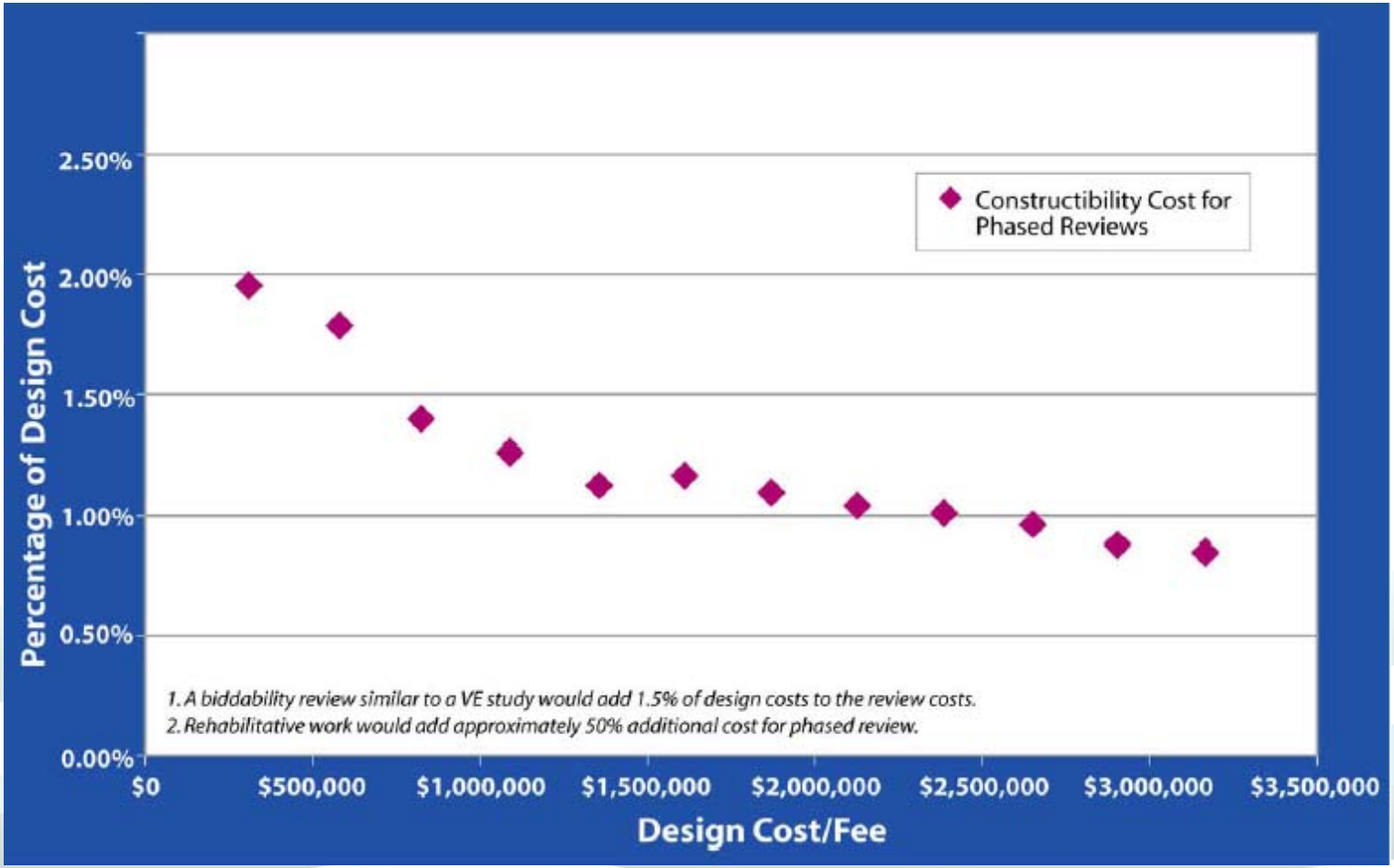
- Obtain Feedback from Project Team
- Identify Savings/Benefits
- Update Constructibility Guidelines
- Update Technical Feedback
- Update Lessons Learned
- Close-out of Constructibility Process

Costs and Benefits to Implement a Constructibility Program

- Costs - The cost of applying a constructibility review varies with project size and complexity
- Benefits – Both the private and public sectors of industry recognize the importance of a constructibility review as an integrated part of the design process

Constructibility Review Costs

Typical costs for constructibility review



Constructibility Review Benefits

- Reduced change orders and claims
- Improved phasing of project schedules
- Improved procurement strategies that affect bonding, storage, handling, insurance, etc.
- Fewer errors and omissions

Constructibility Review Benefits – Continued

- Simplified construction
- Reduced risk for the contractor
- Reduced risk of project time extensions
- Easily administered construction, thereby reducing the number of personnel required to perform field construction management services

Constructibility Review Cost Savings

- A study by RediCheck showed performing constructibility reviews can result in a reduction in construction changes of 2% and a benefit/cost ratio of 10:1

- The Los Angeles School District found Constructability reviews resulted in a construction savings of 2% to 5% and a benefit/cost ratio of 10:1

- A study of 4 projects by The University of Wisconsin documented Construction savings between 0.5% and 10.7% and found return on Constructibility Review again to a benefit/cost ratio of 10:1

Constructibility Review - Summary

- Not long ago, constructibility was viewed as a practice used only after designs were complete and then only when the design budget had a few dollars available.

- Design professionals are now realizing the benefits, not only to their clients but what the designers themselves can realize through the implementation of a well planned and executed constructability process.

Constructibility Review

- Questions