Work Access Cost Challenges

Workface Planning for Access

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Presented by: Rick Dunlap
1. Access costs....industry challenge
2. Typical costs...
3. Current culture and approach to access
4. What we’ve done to manage historically, why?
5. Our tools, Intergraph integration
6. Workface planning approach, 2 main components
7. Demonstration
Issue – Access Costs

• Access costs are out of control on most major projects, by the end of it, usually the term snowball effect is a good description.

• Access scope is co-mingled within other disciplines...

• Scaffold providers haven’t helped illustrate or solve the problems...

• Too much focus by owner/EPC on the path of least resistance without really solving the problem, looking for something “Magical”, Epiphany, etc...
  • Focus on the Scaffold Provider productivity/price  
  • Focus on the scaffold system

• The cycle just keeps repeating itself...

Result: If nothing changes, nothing will change...
Scaffold / Access Costs High Level

Plan

- Costs are often 200% of plan
- Scaffold hours are often 30% of a project’s hours
- Slow but pervasive build-up, problem recognition is too late…
- We have to see the rest of the iceberg…before we get there…

Actuals
Scaffold / Access Costs High Level

Current Approach

- Project baseline established using anecdotal or historical ratios (% DFL, etc.)
- Disciplines drive scaffold need but aren’t accountable for its costs
- Multiple scaffolds for same work area, excessive modifications of access
- Access provider is sub-discipline of each distinct discipline, multiple plans....
- Access provider accountable for estimate & plan they didn’t or can’t optimize
- Their lever of Productivity, isn’t enough to overcome...
Focus on Productivity through PM & Control, sound Scaffold Systems

- Robust Project Management & Control capabilities
- Validate our assumptions on scaffold systems quantitatively (Comparison time study, video)
- Validate workforce productivity, time on tools
- Identify and isolate areas of non-tool time effort
- Identify opportunities to reduce waste
- We can now manage what we can see or know…

Challenges

- Historically, we know about half of what we should know…at least that is what the data says…
- Scaffold typically not engaged until the plans are made and work hits the field…
Recent Major Project > $20M (US)

Current/Typical State
(Better than average by the way)

Total Project Scaffold Hours

- 55%
- 20%
- 15%
- 10%

- Intended Scope
- Delays / Stand-By
- Modifications
- Rebuilds

• Data says about half the hours are potentially waste....
• Provider’s craft productivity and system can’t overcome this gap...
• Waste driven by Owner/EPC process
• Provider only has a few levers
  - Craft Labor
  - System
  - PM Approach for their work activity...
• What else can we do to influence our hours doubling essentially?
Understanding What We Know….(Our Work)

Tool Time
Doing the “Work” 30% - 70%

Non-Tool Time
Getting resources to and from the work, ready for the “Work” 70% - 30%
• Real cost impact lies in process, not craft productivity or system, a lot of noise around systems, it’s wishful thinking…
• Labor productivity and systems perform very linearly across North America...(various studies 200k+ scaffolds, comparison videos...much more) – See screenshots
• Educate your teams, stop dodging the real, tougher issue
• Planning & Scheduling integration, execution process, Workface Planning
Workface Planning Approach

- Work Access is a discipline
- Front-end planning and accountability of disciplines for their access needs
- Planning/Scheduling integration of all disciplines, alignment
- Accountability for productivity of the access provider
- Process that controls field access requests, one plan...provider manages the process, optimizes the access provided
Comprehensive, simple (FEED, Plan or Execution)

Inputs
- Scope
- Data Entry

Process and Outputs
- Design
- Estimate
- Plan
- Materials Management
- Report & Package

Integration
- Model Integration

Aluma Systems

Energy & Infrastructure Services
Business Applications

Supporting:

**Capital**
- Strategy support
- FEED support
- Design optimization
- Improved estimate baseline vs. ratios..
- Materials management

**Maintenance**
- Work packages
- Improve time on tools
- Improved crew planning at workface
- Pre-kit materials
- Align with base contract

**Turnaround**
- Work packages
- Planned, Budgeted
- Designs for critical work (towers, etc.)
- Designs for phased work (tower piping, etc.)
- Work packages
Application Overview, How We Do It

**BrandNet - Scaffold Industry’s Most Advanced Software**

**Scaffold Design**
- Supports numerous systems, flexible
- Designs with simple parameter inputs, 2d/3d outputs
- Accommodates any configuration, design/change…deck levels, guardrails, ladders, toe-boards, cages at various heights

**Estimation / Planning / Materials**
- Detailed Material and Labor costing estimates at project and scaffold Level
- Tie designs to budgets, same system (labor and materials)
- Simplistic standalone planning capability or integrate with Primavera
- Integrate with BIMs, strategy, FEED, planning and execution opportunities

**Materials Management**
- Materials management tied to designs, budgets and plans.
- Material forecasting, based on FEED, validated through execution control, time phased…
Application Overview, Core Areas & Set-ups

Core Areas

- Customer (Basic info.)
- Project (CWA’s, WBS, Hierarchy)
- Project Resources (Classifications, Rates, Equip.)
- Defaults for build practices, rate schedules, etc.
- Designs, enter basic data
  - 2D
  - 3D
  - Simple
  - Complex
- Reporting customization, package reports
  - Data
  - Drawings
  - Work Packaging
- Planning
Integrated with Leading Modeling

- Integration modules for leading 3D design and modeling
  - Including Intergraph Custom modules / Plug-ins
  - Various others
- Dedicated project staff
  - Field SME’s
  - Engineering
  - Developers
- Project support
  - Pre-feed strategy
  - FEED
  - Alignment of per discipline access needs
  - Project execution
EPC’s Typical Subcontractor Engagement Timeline

Feasibility  |  Strategy / Constructability
---|---
Concept | Mature
Early | Mature

FEED

Contract | Field
---|---
Strategy | Award
Plan | Work

Late engagement, plans, budgets, processes, set…

La Ceque, Sargent & Lipton provide the tools and capabilities...

Project Areas of Opportunity
Goal / Desired Result

Before
- Project baseline established using anecdotal or historical ratios (% DFL, etc.)
- Disciplines drive scaffold cost but aren’t aligned in its use, accountable for its costs
- Multiple scaffolds for same work area and excessive modifications of work access
- Access provider is sub-discipline of each distinct discipline...multiple plans....
- Access provider accountable for estimate and plan they didn’t or can’t optimize

After
- Establish process to make baseline scope based, material management data
- Work with disciplines to understand their access needs, align needs of all disciplines
- Reduce the number of scaffolds and modifications
- Scaffold is a discipline, manages the process for access request and execution
- Access provider accountable for process management and scaffold productivity
Strategy / Constructability
- Align stakeholders / disciplines
- Optimized designs
- Treat Scaffold as a discipline
- Engage all disciplines

Planning Scope…
- Scope based baseline and target
- Multi-discipline plan, reduce # of scaffolds, modifications

Execution / Const. Mgt.
- Enhanced scaffold productivity, visual packages, material management data
- Improved productivity all disciplines

Plan
- Scaffold is a discipline, 1 plan
- Scope based estimate, optimized
- Eliminate waste
- Control Costs

Reality
- Scaffold is a discipline, 1 plan
- Scope based estimate, optimized
- Eliminate waste
- Control Costs

Goal / Desired Result
Optimization Planning

- Initial Model Review
- Review & Understand Overall Project Strategy
- Determine WBS, Estimate & Plan Details
- Per Discipline Strategy Review
- Model Review to Identify Access Areas
- Document Scopes, aligned with WBS
- Improved Project Baseline, Optimized
- Visual Review & Approval
- Model Integration
- BrandNet Process

Value Creation
Workflow & Personnel

- SME and Client Coordinator drive the process
- Design/Integration can be project or remote located
- Design and placement takes minutes…quantity of personnel required are a function of scale and timing
- Designer and Model Placement as separate or combined function, project specific…

- Coordinator manages project from client perspective along with Brand SME
- Discipline input is periodic to support the alignment and optimization of access
- Helps drive accountability of disciplines for their access needs, improve plan accuracy
Sample – Visual Reviews
Sample – Visual Reviews
Sample – Visual Reviews
Recent Major Project – Current vs. Future State….

Direct benefits, but also other disciplines benefit too…
Access users should be engaged contractually and otherwise to use the process (Alignment)
Access Management Process...typical project

Scope Request by Discipline

BrandNet Process (Design, Estimate, Plan)

Per Discipline Review & Validation

Eliminate Excessive Modifications

Approved

Yes

No

Approved

Yes

No

3 & 1 Week Schedule Validation

Work Package

Assign to Crew

Materials Pre-Kit

Execute

Approved

Min. Duplicates, Align Users

Identify alternate or re-usable access

Process / Review

Work Packages

Materials}

Pre-Kit Execute

Identify alternate or re-usable access

3 & 1 Week Schedule Validation

Approved

Yes

No

Assign to Crew

Materials Pre-Kit

Execute
Work Package Example

Standard Approach, Flexible to Project Need

- **Integrated Model Viewpoints**
  - Supports reviews and approval
  - Supports field execution

- **Scope Sheet**
  - Supporting design, field verifications
  - Approved for Construction…validated…

- **Material Data**
  - Pre-kitting
  - Material forecasting…

- **Drawings**
  - 3D
  - Plan view

- **Estimate Data (not shown)**
  - Hours, Cost, etc.
Live Demonstration
10 minutes
Eliminating Waste, Optimizing Productivity

- Supporting project team at Strategy, Planning and Execution
  - Design optimization
  - Improved baseline
  - Enhanced execution productivity
- Optimizing Scaffold/Access Costs
  - Improved designs aligned with project strategy, avoid scaffolds
  - Minimizing rebuilds or duplicated scaffolds
  - Reducing scaffold modification costs through alignment of access users (disciplines)
- Execution Productivity
  - Visual work packages integrated across all functions (craft, materials, PM, Control)
- Dedicated Brand Net team
  - Dedicated team to leverage process, custom design solution for your project (SME’s, Programming, Estimating, Engineering)
  - Integrated with leading BIM packages
Questions?