



Fast Track Project Strategies

Pac Rim Bio Summit 2012



ENERGY

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Engineering | Architecture | Design-Build | Surveying | GeoSpatial Solutions



Merrick Overview

- Founded in 1955
- \$125 million annual revenue
 - ENR #104
- Aurora, CO headquarters
- 10 US offices, 5 international offices
- Consistent winner of Engineering Excellence Awards
 - 2011 ACEC National Grand Award
- Annually voted one of Colorado's best companies for which to work



Characteristics of pseudo fast track projects

- Project team is working nights and weekends
- No time for front-end-planning or team alignment
- Steps are being skipped
- Changes are incorporated on the fly without change control to save time
- Unreasonable baseline durations



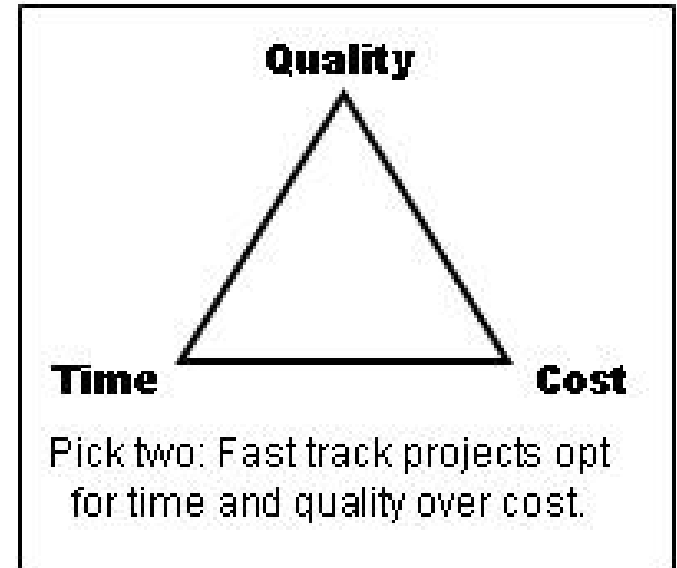
Primary methodology

- Develop normal-track schedule first
- Then, schedule and execute tasks in parallel that would normally be done in series
- Requires availability of additional resources
- Project “crashing” applies additional resources to a particular task.



Proper fast track project attributes

- The project management plan identifies documented strategies for accelerating the project schedule
- Project baseline incorporates these strategies
- Stakeholders have accepted the associated risk and incremental cost
- The project team is informed and aligned around the fast track strategies
- Project performance is measured against the fast track project baseline



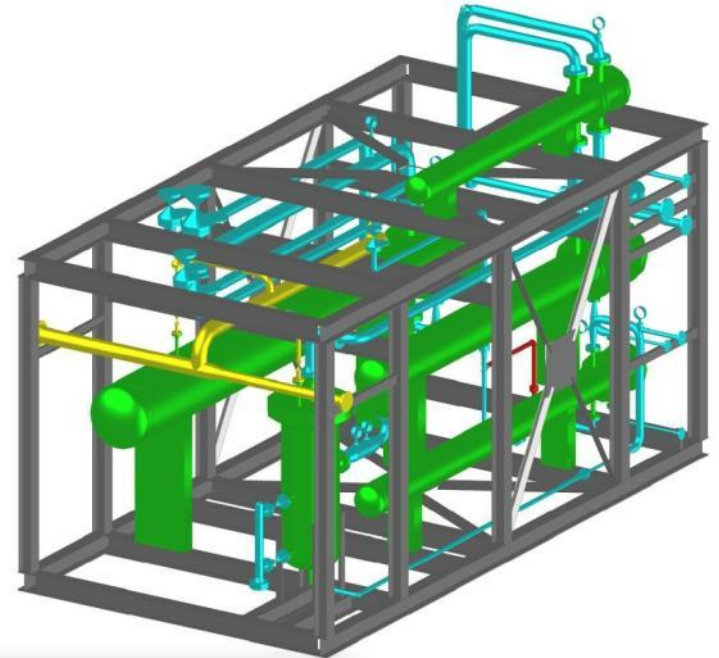
Unique Attributes of Pilot Plants

- Design life is typically < 2 years,
- Achieving throughput is not necessarily critical
- Heat integration is not necessary and can complicate control systems
- Material handling and recycle and waste streams need to be handled as in the commercial plant
- Line sizing is generally not important
- Modular construction supports tolling and relocation
- Availability is less critical than in commercial plants



Fast Track Concepts for Pilot Plants

- Standardize skid packages
- Set minimum line sizes
- Use plastic pipe and Swagelok® tubing systems where possible
- Field route small bore piping
- Place your packaged pilot plant into a tolling facility



Fast Track Concepts for Commercial Plants

- Project Fundamentals
 - Front End Planning, Change Control, Risk Management
- Demand rigorous procurement practices
 - Expediting, Certified information
- Use 3D construction sequencing
- Incorporate constructability reviews in all aspects of the project



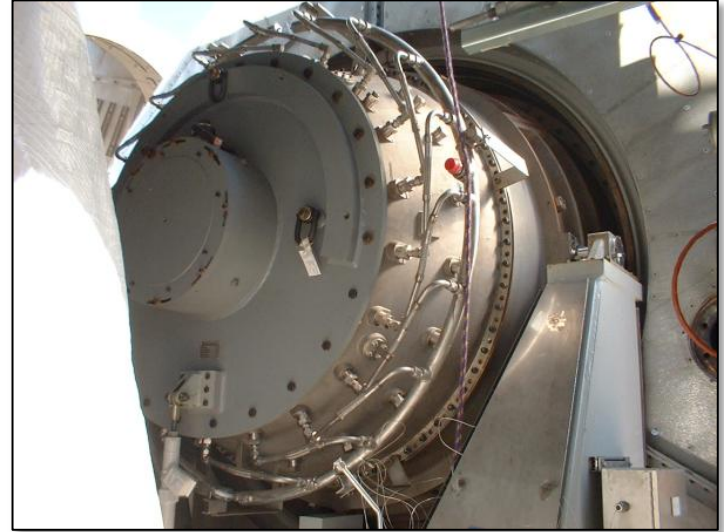
Fast Track Concepts for Commercial Plants

- Pre-order bulk materials
 - Structural steel, reinforcing steel, piping, alloy ingots, and cement
- Incorporate modular construction
- Implement sole source strategies
- Self-perform equipment design if necessary



Statistical Research Into Fast Track Projects

- Construction Industry Institute (CII) commissioned a study of Fast Track Projects
- 31 heavy industrial projects were investigated and analyzed including:
 - Project background information
 - Performance metrics
 - Factors affecting performance
 - Extent of use of CII best practices
 - Challenges in managing design



Statistical Research Into Fast Track Projects

- Overall Project
 - 45% completed over budget; 45% under budget
 - 15 projects finished on schedule; 14 behind schedule
- Engineering Phase
 - 40% exceeded original design costs; 50% were below the budgeted cost
 - 16 projects were on schedule; 12 projects were behind schedule



Statistical Research Into Fast Track Projects

Respondents were asked which “best practices” had the greatest positive impact on their project outcome.

Best Practice	Respondents
Front End Planning	26
Alignment	11
Constructability	10
Partnering	9
Planning for Startup	7
Change Management	7

Conclusions

- Focus on project steps that can be completed in parallel
- Implement Front End Planning principles
- Align project stakeholders around incremental cost and new risk items
- Be deliberate about fast track strategies; document them and achieve alignment
- Address change control in your project management plan and assemble a change control board
- Be rigorous when engaging suppliers; control interfaces if necessary and establish sole source relationships
- Involve your construction manager in all phases of design development including Front-End-Planning

Thank You

Alan Propp, Ph.D., P.E.
Business Development Manager

Merrick & Company
alan.propp@merrick.com

Direct: 303-353-3561

Cell: 720-346-4882