
DISCUSSION QUESTION:

What is the right level of Owner involvement in the Engineering Design Process?

Based on feedback from the EPC forum that was conducted at the 2009 PMI-SAC Professional Development Conference, we have selected the above topic to initiate our EPC Roundtable discussions. The intent of this topic is to address the level of involvement required by owner engineering organizations when engineering is contracted to an Engineering Contractor. For the purposes of this discussion, let's select Basic/FEL 3 level engineering. What many are seeing is that the owner engineering organizations still get involved in doing the engineering rather than providing an oversight role. What is your perspective and what do you believe is the "Best Practice"?

- Involvement depends on project complexity (small vs. large)
 - Owner dictates:
 - Scope
 - Objectives
 - Milestones
 - Deliverables
 - Level of involvement depends on maturity of owner company
 - High involvement in FEL
 - Depends on Contracting Strategy
 - Lump Sum ↓ involvement
 - Reimbursable ↑ involvement
 - Depends on relationship & trust
 - No history – lower trust & more owner involvement during feeling out stage.
 - Driven by Accountability
 - People need to be accountable i.e., over-promise/under deliver
 - Continual flip flopping will never allow you to build relationships
 - Type of contract – scope of work if contractor gets (e.p.) then there will be less acc to const.
 - Type of technology & making sure right up-front inputs are agreed
 - One size does not fit all
 - Dictated by Owner experience
 - Owner's should focus their efforts on where they can influence the outcome
 - Scope definition/schedule
 - Specification/engineering standards
 - Definition of completion and quality
 - Planned review process
 - Stakeholder engagement upfront
 - Owner should take an assessment role throughout the project
 - Owner's rule of engagement need to be clearly defined early on the project and in the engineering contract
 - Defining factors:
 - Owner risk tolerance
 - Drivers: Cost / Scope / Schedule
 - Owner experience (start up vs. well established)
 - Definition of project success (owner vs. eng)
 - If FEED well understood/defined then = ↓ Owner involvement
 - If FEED poorly defined then = ↑ Owner involvement
 - ∴ Variable level of involvement that needs to be defined prior to execution!
- } Dependant on the definition factors

- Owner Assumption – “Repeat Projects” needs less engineering & less involvement
 - the are the boss
- Good upfront definition (frozen DBM) (Fixed PEP) can decrease owner involvement
 - Technical & responsibility
- Involvement Level needs to be well thought out PEP & DBM
- Committed resources from owner critical to success
- Seems to be a ten year owner involvement cycle – how to change?
- Mature organizations build operations into their project teams at the front end to avoid excessive change at the backend.
- Owners tend to define processes which they don't take seriously. Need a culture of accountability to make sure that the stage gates project planning requirements are met instead of ignored for convenience sake.
- Big oil and gas companies don't hire young engineers and send them on a tour of duty anymore. You are now hired as a whole Moffat's engineer and cannot gain field experience.
- Engineering companies are not managing themselves as organizations by mentoring their young people. They are managing themselves as body shops. Response to this: so they can't keep anyone on staff who is not billable, nor can they train their young engineers.

DISCUSSION QUESTION:

Structuring Contracts for Success - Reimbursable vs. Lump Sum - Pros and Cons

Looks like we have exhausted our comments on the Owner Engineering Oversight topic. Related to this issue, is one of appropriate contracting strategies for large scale projects in Alberta. As the world wide construction activity slowed, contractors became more willing to take on EPC Lump Sum contracts which takes some of the execution risks away from owners. However, due to the historical execution issues in Alberta, contractors still seem to be less interested in EPC Lump Sum contracts. Do Alberta Oil Sands owners have the internal experienced resources to self manage large scale projects in a reimbursable mode?

- Lump sum should only be used Post FEL
- FEL must be 100%
- External issues (labor availability) costs must be in Lump Sum \$ (risk transference)
- Owner must “stand back” in Lump Sum. Do not “help”
- Select mature Lump Sum contractors
- Lump Sum contracts require performance incentive \$
- Lump Sum for “specialized” equipment
 - Owner needs to be hands-off
 - All input required on time or schedule and cost are affected
- Lump Sum works better when maturity of project is sufficient and there is a history between owner/contractor
- Reimbursable works when project is in infancy and project scope is not well defined
- Use Reimbursable when there is a lot of overlap in activities
- Reimbursable only works when incentives are tied to deliverables (cost, sched, safety...)
- Lump Sum only works if contractor and owner are in same phase of project (det. Eng, fab, ...)
- Changing economy (market) may determine what type of contract works best
- Not one size fits all
- Contracts need to be tailored to project/environment
- Incentivize the behaviors you want to drive
- Risk management/mitigation needs to be included in selected process
- Procurement departments sometimes not aligned with project objectives and incentives
- In a lump sum project the Owner needs to be able to meet their inputs/obligations

- If Lump Sum
 - Required the “right” project team
 - Required the “right” processes and controls
 - Can drive contractor efficiency and accountability
 - Owner carries less risk because defined scope and cost (if assumption is true)
 - Rates are irrelevant (total cost rules)
- If Reimbursable
 - Requires the “Right” (but different) project team/process & controls
 - Suitable to specific projects
 - Shorter durations
 - For front end definition
 - Studies, project with urgency/emergency (just “git it done”)
 - Where scope is more important than cost or schedule
 - Owner subject to increased risk
 - Rates seem to drive decisions
- Contracting is a form of Risk transfer and the premium that ends to be paid for transferring risk
- More Front End Engineering can make Lump Sum possible
- Decision is dependent on scope definition
- Repeatable projects = good candidate for lump sum
- Risk/Reward on reimbursable contract to encourage EPC to tighten processes
- World Bank projects use a fee-for-service for the FEL phase, and a lump-sum contract for detail design assuming that's sufficient detail is provided at the end of the FEL

DISCUSSION QUESTION:

Construction Labor Availability/Productivity – Lessons Learned during the Boom in Construction

Several years ago we were struggling with construction labor availability and productivity issues in the Alberta region. The issues were generated due to an increased number of mega scale construction projects overlapping and project execution for these projects all happening at the same time. This resulted in a shortage of local labor and, as a recovery solution, labor being brought in from all over the world to support these mega projects. The labor pool was ill prepared for the massive amounts of work that needed to be executed which caused inefficiencies in execution, poor productivity, safety concerns, and huge cost/schedule overruns. What did we learn from this? What are we changing in our planning as project activity begins to rejuvenate?

Observations and Recommended Best Practices from May 6th Meeting

- Lack of proper supervision
- Plan for shortages
 - Travel cards
 - Manage open site
 - Union & non-union/CLAC
 - Foreign workers issues
 - Qualified labor who work safe!
 - Language issues
 - Incentives
- Ensure design is frozen before construction
- During the Boom
 - Went inter-provincial/international to get people (good)
 - Incentives for local workers (bad)

- Boom hiring created some issues
 - Not all new hires worked out
 - Language issues
 - Poaching
- Benefits (cost) to retain employees
- During the Slowdown
 - A lot of workers went home
 - Industry needs to be able to flex
 - i) Put money aside during good times to keep critical mass in place during slow times
 - ii) Put resources on R&D efforts
- Ramp-up
 - Cycle will start again
 - i) Hire/retrain
 - Need to stage construction to minimize boom
 - Shared resources/global outsourcing
 - More effective collaboration between owners/contractors/govt
 - Planning/staging/communicating
 - Public/private ownership of infrastructure (P3)
- Another shortfall for skilled labor is here/approaching
- Need to invest in training/skills development earlier in process
- Mitigation strategies
 - Structure procurement & resources to allow for labor
 - Modularization
 - Standardization in contracts for engagement
- Need for owners to better coordinate demand (e.g. scheduled turnarounds)
- Owner should carry risk money (contingency) to recognize cost of labor shortage
- It is really labor shortage or is it just too high expectations of industry, regulatory burdens (?)
 - Strategize an industry plan vs. a company plan
- Project competition has created the labor shortage!
Reality: Accept the status quo or change it!
- Labor shortages are the result of bad behaviors by the project sponsors
- Owners investment in trades/training/apprenticeships has waned -↓ in succession planning/transition
- in past 20 years a significant transition to independent contractors from the “company man” which has resulted in significant “burdens” on the contractor (which get passed on to the owner as cost) and a conflict in the goals of the exercise (“my company” vs. “the company” or “the project”)
- Construction/Piping – increased use of modularization (but some definition needed upfront)
- Owners – have learned from last boom and will now space projects out
- Government – capital projects should not be done at peaks
- Availability of specialists elsewhere for on demand work (Int’l Expat)
- Proficiency in English is an issue. Solution: Advance Training?
- Partner with community based immigrant societies
- Soft skills training of front line supervision i.e., CM
Business communication skills
- Professional internship programs
- Avoid overextending capabilities/resources