DIVISION 1 OF THE FORUM:

DEVOTED TO IMPROVING DISPUTE AVOIDANCE AND RESOLUTION

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A View from the Field: Project Execution/Contracting Strategies Large and Complex Industrial Projects

By George T. McLaughlin, PMP

This article represents George T. McLaughlin's "View from the Field" formed throughout the course of his 30+ year career in the industrial marketplace.[1] His article is broken into four parts. Part 1, below, describes the evolution of the delivery systems in large and complex industrial projects.[2] The remaining sections, which we will publish in our next three newsletters, will discuss the legal implications (Part 2), impact on claims, disputes, and resolutions (Part 3), and prevention and corrective processes (Part 4).

Part 1 of 4 – Framing the Issue

When the earth's tectonic plates shift, unless there is a resulting earthquake, it goes unnoticed. The movement is not perceptible. Nevertheless, major changes are occurring. In large and complex projects, with three to five (or longer) year schedules, industry shifts may not be perceptible. Nevertheless, major changes and related impacts may be in progress. Trends and changes in project execution and contracting strategies are similar. These trends, however gradual and unnoticed on a daily or monthly basis, cause major impacts on existing and future projects. While industry experts cite or drive these changes, the impact on the field may be delayed or go unrecognized by many, if not all stakeholders.

The business motivations driving the trends discussed below are varied and complex. Perhaps, the central theme is risk tolerance or management. The large worldwide prime contractors (typically Engineer Procure Construct) migrated toward limiting major risks by limiting scope of work, insisting on reimbursable cost (as opposed to fixed price) commercial terms, or both. Owners chose to limit or compartmentalize risks by breaking scope of work into smaller packages and seeking fixed price on these smaller packages. Construction Contractors retained a willingness to work on fixed price commercial terms; but, increased their tendency toward claims and disputes processes in order to manage their risks. Collectively, we see a myriad of fixed price scope of work packages being pieced together to form a complete project. Formerly, this mosaic of work scopes was under one Prime Contract.

Background

Definitions

The following simplified definitions will be used throughout this article:

- **Project Execution Strategy** (excluding: Business Case, Financing, Technology, etc.): The owner's overall approach to planning and executing the project, including the work. A major component of the execution strategy is the contracting strategy.
- **Contracting Strategy**: Approach to obtaining the goods and services from the marketplace.
- **Owner**: The organization that will make the capital investment and operate the facility once it is completed.
- **Prime Contractor**: The most central contractor with the largest stake within the Contracting Strategy.
- **Construction Contractors**: The lesser contractors, contracted to Prime Contractor(s) or Owner.
- **Stakeholders**: The parties that have a substantial interest or investment in the project.

In mid-1900s, many Owners used a Contracting Strategy of awarding major prime contracts (Engineer, Procure, Construct or Turnkey) on a fixed price/lump sum or reimbursable cost basis. This sort of contract limited the interfaces and liabilities to the Owner. Further, it provided an integrated project delivery approach wherein economies of time (shorter duration of the project) could be achieved. In late 1900s and early 2000s, many of the larger contractors (potential Prime Contractors) sought delivery methods that would reduce their liabilities and risk. Consequently, reimbursable cost prime contracts became more prevalent. While this tendency swings with economic conditions and the contractor workload; the overall trend for prime contracts is limited liability, reduced scope of work, and reimbursable cost commercial structures.

Similarly, there has been an evolution regarding the labor component of the construction work. In the mid-1900's, Prime Contractors were willing to direct hire some or all of the field labor. In the context of a reimbursable cost contract, the risk of the labor component is borne partially by the Owner.

Another evolution is that of a Prime Contractor's willingness to accept fixed price Engineer, Procure and Construct (EPC) contract. While such arrangements may still be available in weak (limited capital project work) economies, many Prime Contractors are unwilling to perform EPC work under fixed price arrangements. Reduced scope arrangements, such as Engineering and Procurement (EP) contracts, are still available in a fixed price format.

The overall philosophy concerning the formation of the contracting packages has evolved. The US system evolved based on performance, scope of work, plan and schedule origins. See Keith Pickavance, Guide to Good Practice in the Management of Time in Complex Projects (2011 Chichester: John Wiley & Sons, Ltd.). The UK system evolved based on quantities (Bill of Quantities or BOQ). Today, the two concepts have partially merged. Consequently, Execution Strategies and Contracting Strategies have hybrid philosophies.

Scholarly Influences and Trends

There have been many Influences on the current philosophies used for Execution Strategy and Contracting Strategies on large and complex projects.

These influential organizations or persons include: Independent Project Analysis (IPA); Construction Industry Institute (CII); Project Management Institute (PMI); Association for Advancement of Cost Engineers (AACE) International; Harold Kerzner, PhD (Kerzner); Keith Pickavance; and James O'Brien (O'Brien and Plotnick). The IPA, founded by Edward Merrow, is "a global research and consulting company devoted exclusively to the understanding of capital projects and capital project delivery organizations in the petroleum, chemicals, minerals, pharmaceutical, and power industries." Edward Merrow, *Industrial Megaprojects*, (2011 Hoboken: John Wiley & Sons, Inc.) This book contains important and influential insight about industry trends and practices as well as emerging strategies. In sum, Mr. Morrow's fine work and the influence of IPA are key factors that currently drive Execution Strategy and Contracting Strategy.

Owners' and Contractors' Cultural Changes

While Owners and Contractors work closely over a prolonged basis, they are fundamentally different. One such difference is risk tolerance. Owners expect Contractors to take risks that could be catastrophic, given the balance sheet of a typical major contractor. Another difference is the mindset of the employees. Owner employees think in terms of an operational asset. Contractor personnel think in terms of plan, schedule, and cost performance of the overall work and contract. Contractor personnel do not make the transition to Owner organizations with ease. Likewise, to a lesser extent, Owner personnel do not make the transition to Contractor organizations. This observation is quickly evident when an Owner takes on the role of Construction Manager.

Generally, the following perspectives are relevant to each major organization discussed in this paper.

- **Owners** look to achieve project objectives (as defined by the Owner) at lowest risk profile that market will offer. Since 2008, the market for large and complex capital projects has decreased (except for unique areas such as Alberta, Western Australia and China). Market downturns lead to shedding of permanent staff and loss of capabilities. Thus, the ability to manage project execution and construction is diminished with the loss of personnel. When the market begins to increase, Owners need additional resources but often are reluctant to add permanent staff. Consequently, Owners use contract hires or outsourcing for key functions. While individually competent, cohesiveness and ways of working are casualties of hiring contract employees. Should the Execution Strategy or Contracting Strategy require substantial Owner involvement, capabilities and expertise problems will occur.

- **Prime Contractors**, particularly in publicly-held companies, seek to minimize risk even though it results in reduced margins. Many rely on reimbursable cost contracts and the driving force is revenues or billings. Similar to the practice of law or consulting, business management is focused on billable staff. In market downturns, Prime Contractors tend to shed more experienced staff that require higher billing rates. In market upturns these firms attempt to rehire but at lower costs or outsource back office tasks (in locations such as India and Poland).

- **Construction Contractors** solicit work in a competitive market often without regard to an attendant increase in risk profile. It is not uncommon for a Construction Contractor's risk profile on a project to be higher than their balance sheet may support or that prudence would otherwise dictate. In market downturns, these contractors downsize or take contracts at very low prices. In market upturns, they tend to upsize with need for management, supervision and direct labor. In robust markets, quality direct labor is difficult to find, particularly in remote geographical areas.

Evolution of disputes and their resolution

In the early days (1950s through 1970s) claims and litigation were rare and self-destructive for the Contractors. Owners that were in the marketplace on an ongoing basis had a heavy advantage because there was a sincere concern that the business relationship with an Owner would end if a dispute occurred. Since then, loyalties have been replaced by a willingness to confront and an appetite for engaging in disputes. Management has shifted toward a more "legal focused" perspective.

Marketplace / Field Dynamics

Baseline

In project management, it is a fundamental practice that performance is measured against a baseline plan. Variances are recognized and managed pursuant to previously planned options or revisions to the plan. For the purpose of this discussion, the baseline is Lump Sum Engineering, Procurement and Construction (LS EPC) or Reimbursable Cost Engineering, Procurement and Construction (RC EPC).

Figure 1 Baseline below provides a graphical picture or presentation of these strategies.

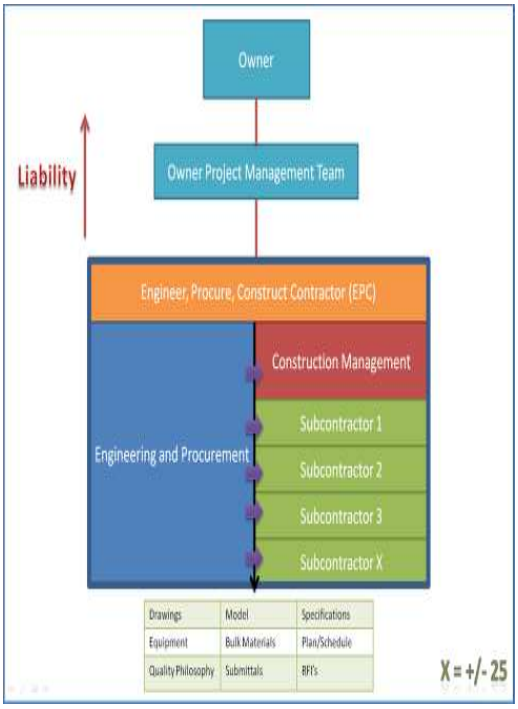

Figure 1: Baseline

This baseline strategy involves two parties, the Owner and the Prime Contractor. Liability is simple with the Owner exchanging compensation for work performed by the Prime Contractor to convert a business concept into an operational facility. The work is planned and managed by the Prime Contractor. Interfaces are almost exclusively internal to the Prime Contractor's organization or under its umbrella of responsibility. From engineering to construction, information and deliverables flow from within the Prime Contractor's organization. The Owner's involvement is limited. In essence, the Owner is paying the Prime Contractor to take major risks as specified or implied by the contract, applicable law, industry practices, and other means.

Evidence of this strategy and can be seen in the marketplace. A few example promotions or projects include the BakerBotts services promotion,Technip and Yamal LNG Project, Technip contract in Saudi Arabia, and the Siemens' Panda Temple II Power Project.

Execution Strategy Variances

As discussed in the background above, marketplace and scholarly forces have impacted this traditional baseline strategy. These influences have been evolving over the past several decades (not a long time when one considers that megaprojects can have durations of 5-10 years). This influence has changed business processes, project delivery processes, work flow processes, strategies and many other aspects of capital project work. In his book, *Industrial Megaprojects*, Mr. Merrow makes it clear that so-called "Mixed Strategy" for execution and contracting is now favored. This generally means:

- Engineering and Procurement using Reimbursable Cost (RC) or Lump Sum (LS) commercial structure
- Construction using multiple, separate contracts (i.e. Construction Contractors)
- Construction management by the owner or agent
- Owner managerial role through the project management team

This mixed strategy is a material departure from the longtime contracting strategy using reimbursable cost or lump sum Engineer Procure and Construct contracts. This change leads to more interfaces (relative to Owner) and a greater risk profile to the Owner. In reality, Mr. Merrow's "mixed strategies" are a series of possible arrangements. A general graphical or pictorial depiction of Mr. Merrow's "mixed strategies" is presented in Figure 2, Strategy Variations.

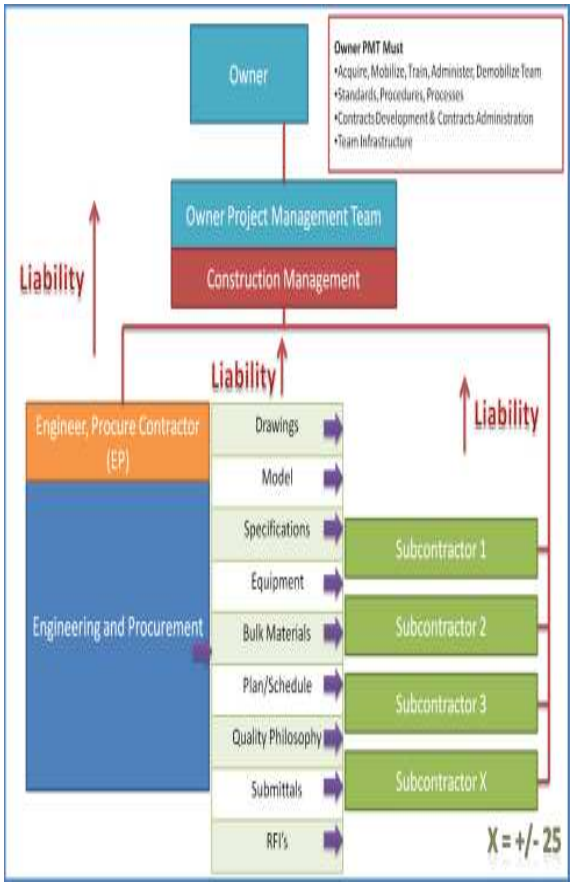

Figure 2: Strategy Variations

Under this mixed strategy, work has been separated into smaller, more limited scopes. The roles and responsibilities have become similarly limited. Liabilities, once simple, are more fractured and heavily focused on the Owner organization. The role of the Owner is greatly expanded. The EP Contractor's role (Prime Contractor) and liability profile is limited. The role of the Construction Contractors (potentially numbering 25+ on a large and complex project) may remain unchanged. The contractual arrangement, management and liability are now focused on the Owner in its capacity as the Construction Manager.

While interface deliverables and activities may not have changed materially, these deliverables are now supplied by the Prime EP Contractor. Likely, the Construction Contractors/Subcontractors have no contractual relationship with the Prime Contractor and, in turn, this Prime Contractor may have no motivation or benefit from working efficiently and effectively with the Construction Contractors/Subcontractors.

Under this mixed model, the Owner has become the focus of liabilities and responsibilities. Further, the risk structure is quite different. This may be a new role for Owners, who typically are not prepared or adequately resourced to deal with this new challenge. Owners sometimes react by hiring a Construction Management firm or they decide to add staff and resources within their own Project Management Team. Both strategies have merits, detractions and risks.

The following projects are representative of this "mixed contracting strategy": Foster Wheeler and Reliance Industries; Aker Solutions; Alstom contract on Yanbu 3 Project; and KBR contract on Yanbu Export Refinery Project.

As the industry departs from EPC contracts, there are intended and unintended consequences including the increase of the Owner's risk profile, the increased complexity and numerous interfaces, decrease in the Prime contractor's risk profile (except Lump Sum Contracts), and significant expansion of the Construction Contractor's risk profile. These consequences create new roles for the Owners, Prime Contractors, and Construction Contractors.

Owners. Owners are much more involved in the project which is directly correlated to an increase in liability. Owners need to adapt to their new role by devoting resources to the following:

- Hire sophisticated personnel to manage the additional requirements. Since 2008, the levels of experience and sophistication within Owner institutions have atrophied. Owners need to hire staff (number and skill -sets) to cover the greatly increased contracting role assumed under the mixed strategies approach.
- The Owner must develop, refine, detail, and adopt protocols, work flow processes, and ways of working in its new role. Planning must become more sophisticated and detailed to respond to the dramatically increased numbers of transactions, interactions, reporting events and other due diligence required under the mixed strategy method.

EP Prime Contractors (previously EPC). Prime Contractors have largely adopted their new role of reduced scope and risk. Under reimbursable cost contracts, the incentive is to bill for services, not necessarily performance-based or motivated to optimize construction. Under lump sum contracting, the incentive is to minimize own costs, scope and risk, and optimize the engineering and procurement. Claims are less challenging and more easily defended by the Prime Contractor.

Construction Managers (previously EPC). Construction Managers (CM) are often independent contractors. They are paid a fee for their services. Risk is shared between the CM and Owner through the Construction Management agreement.

Construction Management by Owner Project Management Team (PMT) (previously EPC). This organizational relationship results in major increases of responsibilities and liability to the Owner acting as a PMT. The staff requirements (number and skill-sets) are greatly increased (over and above the Owner requirements discussed previously).

Construction Contractors. The Construction Contractors must work through multiple risks and interfaces under the mixed strategy approach.

- Interfaces have increased in number and complexity. Owner PMT interfaces are more problematic since there is a learning curve, inexperienced staff, new ways of working and other processes.
- Since supplying only labor and construction support equipment, the risk is increased significantly, margins are decreased and overruns can be of high impact (reduced margin for error).
- There is a significant risk if the deliverables from EP Prime Contractor are poorly defined, planned, scheduled, incomplete, not optimized for construction, or have other issues. Problematic issues can arise when the responsibility to construct is separated from the responsibility to design and supply. The issues include issuance of provided equipment, bulk materials (piping, valves, fittings, cables, steel, reinforcing bar, instruments, and many more), engineering deliverables (drawings, specifications, model, lists and many more), planning and scheduling files and updates, and design completion definition (field run vs. designed by engineer).

New Interface Challenges

As can be seen from Figure 2 Strategy Variations, the number of interfaces that are external to individual Stakeholders has increased dramatically.

The interfaces between EP Prime Contractor and the Owner (and Owner Project Management Team) typically include: liabilities for performance; approvals of major documents and decisions; deliverables (in essence, all EP deliverables); Requests for Information (RFIs); as well as schedule dates, milestones, and updates.

The interfaces between EP Prime Contractor and the Construction Contractors are extensive and potentially problematic. Under the baseline, these interfaces were internal to the Prime Contractor. Now, they are all external and come with an extensive amount of attendant management requirements and risks. The deliverables from the EP Prime Contractor to the Construction Contractors number in the thousands and include: bulk materials (e.g. pipe, fittings, cable, instruments, steel); equipment (e.g. mechanical, electrical); engineering deliverables (e.g. drawings, specifications, lists); Requests for Information (RFIs); delivery schedules; design completion (e.g. finalize and punch lists) and others.

The interfaces between CM and the Owner may require upgraded definition. They include the CM agreement, invoicing, reviews, and approvals.

The interfaces between Construction Contractor and the PMT / CM typically include contract documentation, insurance, detailed planning/scheduling, project meetings and reporting regarding status of deliverables (supply, delivery, compliance, and storage of equipment, bulk materials), and RFIs.

The interfaces between Construction Contractor to Construction Support Contractors (through the Owner or Construction Manager) typically include scaffolding, temporary utilities, heavy lifts or picks, and local transportation.

Hence, the number and complexity of external interfaces have increased dramatically. Further, the roles of the parties have changed such that new roles are unfamiliar and potentially not adequately resourced. Issues and complications are both obvious and subtle.

Issues and Implications

Good or bad, these complicated strategies (Execution and Contracting) have emerged in the planning and execution of large and complex projects. The implications of the mixed approach strategies go beyond the greater number of interfaces and increased Owner liabilities discussed above. Other issues include:

Asset Performance. An Owner ultimately cares about the proper performance of the plant, facility and associated work. Under EPC and Turnkey strategies, performance guarantees could be obtained from the Prime Contractors. These parties were in a position to assume and manage this risk. Under the multi-interface strategies, such performance guarantees are difficult (if not impossible) to obtain and enforce. Further, liability becomes so diffused that resolutions may be convoluted and protracted.

Scope of Work. From a management perspective, timing of design deliverables (relative to contracting decisions), design changes or variations (errors and omissions, scope growth, field changes) and many other issues become problematic. Every interface has a risk associated with scope of work definition. The challenge of completeness now resides with the Owner.

Time Management (or schedule perspective). The parties/stakeholders take on new roles, responsibilities and risks. Some complexities include:

- Project duration (time to complete the overall project) and delay to individual parties/stakeholders are decoupled and the cause and effect is problematic.
- EP critical path may not be overall project critical path.
- EP critical path may not be individual Construction Contractors' critical path.
- Delays and critical path analyses become complex and difficult to identify liability, cause and effect.
- Time issues present themselves later in the project duration (later in time and degree/percent of completion).

Cost and Progress Management. With multiple parties, stakeholders, contractors and more, the collection, status, control and management of costs and progress are highly complex. Again, the risk resides with the Owner.

Completion Management. With multiple parties, the sequence and timing of commissioning and startup is challenging. Further, the responsibility must be assigned to one of the parties or yet another specialty contractor. Competence in this process is a constant and pervasive problem throughout the industries.

Conclusions

Having presented and discussed all the foregoing, a logical question is "So what?" As a construction attorney or other professional having an interest in construction issues, "Why should I care?" Or, perhaps you are asking, why not just go to a more commercial / architectural project delivery process?

Relative to the issue of commercial / architectural delivery process, the industries discussed herein are quite different in managerial process, ways of working, work flow and project delivery. The evolved strategies result from the absolute need to shorten project time durations and maximize the return on investment by getting the projects operational.

These market-place dynamics have a potential for heavily impact on Owners and Construction Contractors. These impacts include, ways of working, resource requirements, risks and liabilities.

Liabilities abound – each interface has at least two stakeholders or parties and several-to-many interactions. Parties must learn their new role and skill-sets. With many interfaces, the dispute potential is increased. It is a numbers game as well as a managerial challenge.

Owners, Construction Contractors and other parties require major assistance with these challenges. Construction attorneys may wish to view these challenges as services extensions that should be offered to their engineering and construction clients. In-house counsel may consider these potential issues in connection with the modification of the contract documents, ways of working, willingness to assume risks, and other considerations.

In Part 2, we will attempt to characterize and outline some of these challenges and related complications. Recognizing that the perspective will be that of a non-attorney practitioner, we will present the emerging issues and dilemmas from the eyes of the project participant; but, focused on issues that may have implications for transaction or litigation attorneys.

Endnotes:

1. George T. McLaughlin approached us about writing a series of articles about his observations and experiences concerning the evolution of project delivery systems on large industrial projects and the impact those changes have had on the number of disputes and resolution of the same. We gladly accepted his offer. Since the early 1980's, Mr. McLaughlin has worked worldwide in this industrial marketplace. He serves Owners, Prime Contractors, and Subcontractors. Mr. McLaughlin was president and COO of a $35 million engineering and construction (mechanical, controls and electrical) contractor for five years. For the most part, Mr. McLaughlin's work is performed on-location where the relevant work is being performed hence the title "view from the field." Mr. McLaughlin is a principal of McLaughlin & McLaughlin out of Austin, Texas. In this role, he provides program and project management services as well as litigation support services. His contact information can be accessed at his website (www.mclaughlinandmclaughlin.com) and blog (http://projectprofessionals.org/)

2. Oil and gas, process, power, chemical, pharmaceutical

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A View from the Field: Project Execution/Contracting Strategies Large and Complex Industrial Projects

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This article presents George T. McLaughlin's "View from the Field" formed throughout the course of his 30+ year career in the industrial marketplace. His article is broken into four parts. Part 1, published in *The Dispute Resolver* in April 2013, describes the evolution of the delivery systems in large and complex industrial projects (oil and gas, process, power, chemical and pharmaceutical). This Part 2 frames the issues facing the engineering and construction industry and lawyers that service those groups. The remaining sections, which we will publish in our next two newsletters, will discuss the impact on claims, disputes, and resolutions (Part 3), and prevention and corrective processes (Part 4).

Part 2 of 4: Definition of the Issues with Legal Implications

As discussed in Part 1, the strategy for planning and executing large and complex projects is undergoing major changes. From the discussion of emerging trends, this Part 2 outlines the practical issues that arise when the changed strategies are implemented. For the construction attorney seeking to represent clients in this evolving landscape, it is important to anticipate both the issues facing each of the stakeholders. Table 1 provides a relationship mapping between the issues and the key stakeholders.

Topic / Issue	Stakeholder					
	Owner	PMT / CM	Prime – EP	Construction Contractor	Construction Support	Completion
1. Asset Performance	XX	XX	XX	XX		XX
2. Completion Management	XX	XX				XX
3. Contracting Strategy Plan	XX	XX	XX			
4. Deliverable Quality, Completeness, and Timing	XX	XX	XX	XX		XX
5. Free Issue Equipment & Material	XX	XX	XX	XX		
6. Interface Challenges	XX	XX	XX	XX	XX	XX
7. Multi-Contract Strategy	XX	XX				
8. Owner Project Management Teams	XX	XX				
9. Scope of Work	XX	XX	XX	XX	XX	XX
10. Time Management / Schedule	XX	XX	XX	XX		XX

Table 1: Stakeholder to Issue Relevance

1. Asset Performance

An Owner ultimately cares about the proper performance of its plant and facilities. Under Engineer, Procure, Construct (EPC) strategies, performance guarantees are generally obtainable from Prime Contractors because they are in a position to assume and manage risk. Under the multi-interface strategies, responsibilities and resulting liabilities become so diffused that performance guarantees are difficult (if not impossible) to obtain and enforce.

2. Completion Management

With multiple parties and interfaces, the sequence and timing of commissioning and startup is challenging. Lack of competence in this process is a constant and pervasive problem throughout the industries. By default, completion responsibility tends to fall upon the Owner. If in-house services are limited, an Owner should consider hiring a contractor that specializes in startup and commissioning. There are some skilled contractors and firms in the marketplace that specialize in this challenging phase of a project.

Regardless of execution (Owner or contractor), the related responsibilities and risks reside with the Owner. Of course, problems that prevent or delay completion must be promptly resolved. Problem resolution actions and related responsibilities may be difficult to identify. This dilemma conflicts with the compulsion to achieve an operating plant in a timely manner. Often, the financial demands associated with operating a plant understudy prevails and the work is performed without clarification of responsibility thereby absolutely increasing the risk of disputes and budget overruns.

3. Contracting Strategy Plan

It is imperative that the parties define, review and accept the contracting strategy for the entire project before the contracts are drafted and executed. The contract documents need to reflect the integrated thinking and conform to the established baseline. Contract administration or management needs realistic approaches to address changes to scope and time. Good contract management and administration is increasingly important (Kerzner). With the many interfaces and the sequential nature of the contracting, preceding contracts need to be administered on a timely basis. Otherwise, the basis for subsequent or successor contracts is not stable. Deferring resolution until years later will present problems for the owners, construction mangers and all successor contractors / parties (Reed Smith).

4. Deliverables Quality, Completeness, and Timing

Deliverables (e.g. technical documents, materials, equipment, lists, and models) must be defined in terms of quantities, timing and quality. The quality of the deliverables can impact the labor and related work necessary for the Construction Contractor in fabrication and erection work. Since these deliverables are typically the output of a predecessor contractor and defined by the related contract, the precision with which they are defined can have a large impact on the successor contractor.

For example, consider a project where a prime contractor was to receive owner-furnished / free-issue equipment that was complex and required factory-acceptance testing. The equipment was to be shipped to the site in many assembled modules. When the prime contractor received the shipments, they contained numerous unassembled parts and pieces that required modifications in order to assemble the entire equipment train. The mistakes with this owner-furnished equipment deliverable in every instance impacted erection time and cost. They invited a slurry of claims for the Owner and the Owner's vendor (who will likely disclaim commercial responsibility) to handle. Unlike a mixed project-delivery system, had it been an EPC contract, the contractor would be liable and centrally responsible to mitigate the damages.

The timing of deliverables must be carefully defined. The timing of the successor contractor's receipt of deliverables influences the successor contractor's ability to perform effectively and efficiently. The sequence of these deliverables further exacerbates this influence. Equipment and materials that are delivered earlier than scheduled can be just as disruptive as late deliveries. If deliverable timing is not planned, workforce planning and construction-support equipment (e.g. cranes, lifting equipment and installation equipment) can be disrupted, with costly impacts.

5. Free-Issue Equipment and Material

Consider the potential complexities created by "mixed contracting strategies" (Scenario A) versus an EPC delivery method (Scenario B) through the following hypothetical. Suppose a heavy wall vessel that had been fabricated in Europe is dropped during offloading in the United States.

To make things more complex, the vessel delivery to the final location requires a facility shutdown that was on the critical path. Finally, commissioning and startup issues centered on the vessel emerge. Under Scenario B (EPC method), the liabilities resulting from this event would be fully within the scope of the EPC contract. The contractor is responsible and it would bear the risk and cost. Under Scenario A, there would separate contracts (e.g. heavy lift, marine transport, fabrication, mechanical erection, and piping) between the Owner and the associated contractors. The Owner is the common denominator and will have to build consensus among the numerous stakeholders to get the different contractors/vendors to perform. Claims will most certainly pop up from various parties.

6. Interface Challenges

The number and complexity of the interfaces have increased dramatically. These interfaces are at Owner-Prime Contractor (Engineer and Procurement), Owner-Construction Manager (if any), Owner-Construction Contractors, Construction Contractors-Prime Contractor, Construction Contractors-Construction Support Contractors and possibly others (Downey). (See Part 1, Figure 2). Owner approvals, inspections, reviews and other actions will number in the thousands. The potential for managerial system breakdowns, delays and gaps is enormous.

7. Multi-Contract Strategy

As the contracting strategy transitions from a single EPC contract to multiple contracts for various phases of the project, risks that once resided in one contract with one contractor are now scattered amongst many and risk is assumed heavily by the Owner. Major risks include additional costs, schedule expansions (delays), technical, performance, and many others. These risks must be allocated and shared within the parties on a realistic and predictable basis. Interface risks will likely reside with the Owner. Equipment risks will likely reside with the supplier or vendor. The suite of contract documents may include as many as 10 or more major contracts or procurement documents. There is a need for integration and consistency of the key provisions such that these contracts function together.

8. Owner Project Management Teams (PMT)

Owner project executives have been identified as a major variable in the success of large and complex projects (Merrow). With new strategies, the matter has a potential for a more direct impact on major stakeholders.

Owner PMT staffing requirements are more extensive and skill sets are more demanding to manage or interface (quality, quantity, complicated) (Cabano). Newly hired personnel (or limited/ temporary contract personnel or individual contracted resources) often lack skills to manage interfaces. Further, since these are Owner teams, the processes, procedures and ways of working may not be in place or already implemented. Owner standards, specifications, quality baselines and other technical documentation become increasingly important. Unfortunately, planning and scheduling/ programming protocols and expertise are often inadequate (Downey).

9. Scope of Work

The project scope of work is developed, elaborated and detailed in a progressive manner. The scope for successor contractors and contracts is a deliverable from a predecessor contractor (or internal from the Owner).

The basis of the contract scope definition may be unstable (changing, incomplete). Changes will be the basis for claims for additional compensation and time if not resolved on a contemporaneous basis.

Under the EPC strategies, the concept of "scope wrap" (a controlling contract provision that makes the Contractor responsible of all scope necessary to complete the work) is routine. With the "mixed contracting strategy," this becomes increasingly complex, if not impractical. Quantity variances have highly significant impacts on multiple parties. Liabilities can be more difficult to determine and resolve. Effective techniques for scope-of-work management are needed.

10. Time Management / Schedule

The parties/stakeholders take on new roles, responsibilities and risks (Downey). The project duration and delay to individual parties/stakeholders are decoupled and the cause and effect is difficult to isolate. The collection, status, controls, and management of progress is highly complex. Different parties use different and incompatible standards. Successor organizations need reasonably accurate progress data from predecessor parties for planning and management of their work. Resolution of typical issues, such as force majeure, is more complex. A force majeure delay to the EP may (or may not) impact some or all of the Construction Contractors. Again, the risk with a mixed contracting strategy resides with the Owner.

The EP contractor's critical path may not be individual Construction Contractors' critical path. Time management issues present themselves later (time and degree/percent of completion) in the overall project.

Conclusions

The Law of "Untended Consequences" is alive and well. This foregone discussion has identified some of the issues. The challenge is to determine how legal professionals can be proactive or react thoughtfully.

The impacts of these contracting dynamics heavily fall upon the backs of the Owners and Construction Contractors (subcontractors).

Owners and Construction Contractors need major assistance with these challenges. Construction attorneys should view these challenges as services extensions that they can offer to the engineering and construction marketplace. It is in all parties' best interests to minimize confrontation and resolve disputes effectively, timely, and fairly.

In the next Part 3, we will discuss impacts on claims, disputes and resolutions.

Endnotes:

Since the early 1980's, Mr. McLaughlin has worked worldwide in this industrial marketplace. He serves Owners, Prime Contractors, and Subcontractors. Mr. McLaughlin was president and COO of a $35 million engineering and construction (mechanical, controls and electrical) contractor for five years. For the most part, Mr. McLaughlin's work is performed on-location where the relevant work is being performed hence the title "view from the field." Mr. McLaughlin is a principal of McLaughlin & McLaughlin out of Austin, Texas. In this role, he provides program and project management services as well as litigation support services. His contact information can be accessed at his website (www.mclaughlinandmclaughlin.com) and blog (http://projectprofessionals.org/).

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THE DISPUTE RESOLVER

The Membership Newsletter
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A View from the Field: Project Execution/Contracting Strategies Large and Complex Industrial Projects

This article presents George T. McLaughlin's "View from the Field" formed throughout the course of his 30+ year career in the industrial marketplace.1 His article is broken into four parts. Part 1, published in April 2013, describes the evolution of the delivery systems in large and complex industrial projects (oil and gas, process, power, chemical and pharmaceutical). Part 2, published in May 2013, framed the issues facing the engineering and construction industry and lawyers that service those groups. This Part 3 highlights some impacts relative to engineering and construction claims and disputes. The remaining section (Part 4), which we will publish in our next newsletter, will discuss preventive and corrective processes.

Part 3 of 4 – Impact on Claims, Disputes, and Resolutions

Major changes in large and complex project execution strategies are creating new issues as these strategies are implemented; including with claims and disputes. For ease of discussion, the claims and disputes are organized in four groups (and discussed in order of frequency of occurrence). First, scope of work disputes represent the largest (around 75-90%). Following scope, are claims focused on delay (about 5-10%), acceleration (less than 10%), disruption/productivity (about 5%) and terms & conditions (about 5%).

Table 1 provides a relationship mapping (Red Amber Green of RAG format) between the issues (see Part 2) and the dispute/claim types (this Part 3).

1Since the early 1980's, Mr. McLaughlin has worked worldwide in this industrial marketplace. He serves Owners, Prime Contractors, and Subcontractors. During the past 10 years, Mr. McLaughlin has been Project Manager on three major projects ($85-330 million USD) and Program Manager on two major programs ($300+ million USD). Mr. McLaughlin was president and COO of a $35 million engineering and construction (mechanical, controls and electrical) contractor for five years. For the most part, Mr. McLaughlin's work is performed on-location where the relevant work is being performed hence the title "view from the field." Mr. McLaughlin is a principal of McLaughlin & McLaughlin out of Austin, Texas. In this role, he provides program and project management services as well as litigation support services. His contact information can be accessed at his website (www.mclaughlinand mclaughlin.com) and blog (http://projectprofessionals.org/).

Topic / Issue	Dispute / Claim Type				
	A. Scope of Work	B. Delay	C. Acceleration	D. Disruption / Productivity	E. Terms & Conditions
1. Asset Performance	🔴	🟡	🟢	🟢	🔴
2. Completion Management	🟡	🔴	🔴	🟡	🟡
3. Contracting Strategy Plan	🔴	🔴	🟡	🟡	🟡
4. Deliverable Quality, Completeness, and Timing	🟡	🟡	🟢	🔴	🟡
5. Free Issue Equipment & Material	🟡	🔴	🟡	🔴	🟡
6. Interface Challenges	🔴	🔴	🟡	🔴	🟡
7. Multi-Contract Strategy	🟡	🟡	🟢	🟡	🟡
8. Owner Project Management Teams	🟡	🟡	🟡	🟡	🔴
9. Scope of Work	🔴	🟡	🟡	🟡	🟡
10. Time Management / Schedule	🟢	🔴	🟡	🟡	🟢

Table 1: Claim to Topic / Issue Relationship

🔴 = direct, 🟡 = indirect, 🟢 = none

A. Scope of Work

In my experience, approximately 75 to 90% of all engineering and construction claims and disputes arise from issues related to scope of work. Often the issue relates to gaps or omissions in the scope of work definition. Under the "mixed contracting strategy," there is an increased risk of scope of work gaps given the greater number of interfaces and parties. At each interface and contract, scope of work is most commonly defined by the work of predecessor contractors.

- Performance requirements defined by owner business case or concept designer.
- Front End Engineering Design ("FEED") scope defined by owner or process design deliverable and/or concept design deliverable.
- Engineering and Procurement (EP) contract defined by FEED deliverable.
- Vendor scope of work defined by EP contractor.
- Construction contractor scope of work defined by EP contractor, vendor deliverables, owner input, and other sources.
- Construction support contractor scope of work defined by EP contractor deliverables and/or owner sources.
- Completion contractor scope of work defined by FEED contractor, EP contractor, construction contractors and/or owner (project and/or operations).

At each interface, there may be issues with the scope definition such as being incomplete, excessive, untimely, etc. Hence, the deliverables (from the predecessor contractor) must be carefully defined.

For example, consider a situation where the engineering and procurement contractor (**EP**) is under a lump sum contract with the Owner (**O**). The mechanical erection contractor (**ME**) (under a lump sum contract with **O**) will receive equipment (free issue) from the **EP** vendor (**V**). Several pieces of major equipment are delivered in pieces, requiring major field assembly. The **EP** contract is silent on the precise delivery schedule. The mechanical erection contract is vague regarding the equipment assembly status at delivery. Finally, field assembly reveals serious manufacturing flaws that have to be corrected in the field. Resolution of difficulties and defining remedies and damages regarding each party (**EP, ME, V, O**) presents major scope of work issues.

Authoritative information regarding scope of work issues and case citations can be found in the following references (see Works Cited): (MCAA), (Bramble and Callahan), (Callahan), (Brams and Lerner).

B. Delay

Delay (longer duration or later completion of the work) has been a mainstay of claims, disputes and litigation on construction projects for decades. Analysis of and resolution of delay claims require great skill and (most often) expense. With increased interfaces and changing roles, it is a complex process to identify liability by correlating cause and effect. Since stakeholders may or may not have a shared critical path for their scope of work on a project, cause and effect becomes difficult to assign to individual parties.

The As-Planned Schedule is a basis for most delay claims and analyses. Under the emerging execution and contracting strategies, the overall project As-Planned Schedule can only be produced by the owner. The progress or schedule updates may originate with the contractors; however, the overall updated schedule is likely a responsibility of the owner. If so, establishing entitlement to time extensions and/or damages (compensation for prolongation) becomes a difficult and complex issue.

Consider a civil construction contractor (**C**) under a fixed unit price contract directly with the owner (**O**). Foundation design (e.g. drawings) and bulk materials (e.g. reinforcing steel) are being purchased and supplied (free issue) by the engineering and procurement (**EP**) contractor also under contract to the owner (**O**). Only one or two foundations are on the project critical path. How does the owner deal with schedule and time management regarding the civil, engineering and procurement, mechanical erection (needs the foundation and the equipment) (**C, EP, ME, O**) schedule issues, including delays?

Further, since delay damages and remedies tend to be "indirects" (Leslie O'Neal-Coble), direct labor cost overruns may not be recoverable through a delay claim. Many contracts bar such claims stating that time extensions are the only remedy. Direct labor cost overruns tend to be the major risk to Construction Contractors.

Authoritative information regarding delay issues and case citations can be found in references (see Works Cited) as follows: (McGeehin, Benes and Patrick J. Greene) (Bramble and Callahan) (Wickwire, Driscoll and Hurlbolt), (Pickavance), (Law).

C. Acceleration

Acceleration generally refers to attempts to achieve the same scope of work in a shorter period of time than originally planned. Alternatively, acceleration refers to an effort to achieve a greater quantity of work in the same planned period. Techniques include extending work hours (existing labor), adding labor (same scope), shift work, resequencing of work tasks or scope in parallel rather than sequentially, and other means. If one considers that base contract plan as the most efficient approach to the work, acceleration generally results in less efficiency. Additional costs are incurred.

Consider a situation (as above in A. Scope of Work) where the engineering and procurement (**EP**) is under a lump sum contract with the owner (**O**). The mechanical erection contractor (**ME**) (under a lump sum contract with the owner) will receive equipment (free issue) from the **EP** vendor (**V**). Several pieces of major equipment are delivered in pieces, requiring major field assembly. The EP contract is silent on the delivery schedule of the equipment. The mechanical erection contract is vague regarding the equipment assembly status at delivery. Since this major equipment is on the project critical path, the owner directs the mechanical contractor to accelerate by using scheduled and prolonged overtime. Remedies regarding each contractor and the owner (**EP, ME, V, O**) present major cost-of-mitigation (acceleration) issues.

Authoritative information regarding acceleration and case citations can be found in the following references (see Works Cited): (Law), (MCAA), (Schwartzkopf, Calculating Lost Labor Productivity in Construction Claims: Second Edition), (Pickavance), (Department of the Army), (Ibbs).

D. Disruption/Productivity

Since Construction Contractors are (likely) at risk for negative labor productivity variances (labor overruns), disruption (as opposed to delay) events represent a major risk. Further, disruption damages tend to be "directs" (in this case, largely direct labor) rather than "indirects" (Leslie O'Neal-Coble).

Recovery of disruption/productivity damages is difficult. Since construction contractors (and engineering contractors) need to manage this risk, contracts with resolution methods will be needed.

Consider a situation where an electrical contractor (**E**) is under a lump sum contract with the owner (**O**). **E** requires the use of scaffolding for installation and erection work. Scaffolding is being supplied (free issue) by a construction support contractor (**CS**) under a time and materials contract with the owner (**O**). The electrical contractor (**E**) is constantly being redirected in its work areas by the owner (**O**) (mitigating delays by another contractor (piping - **P**), who is on the critical path). The scaffolding contractor (**CS**) requires three-day notice to reposition scaffolding. The electrical contractor's productivity and rate of progress is less than bid. Claims and disputes may be appropriate for some or all parties (**E**, **CS**, **P**, and **O**).

Now consider the above situation (**E** and **CS**) coupled with the complexity that the "other subcontractor – piping (**P**)" is on the critical path due to design changes by the **EP** contactor. Consider whether these design changes (along with other issues) create a "cumulative impact" into the mix of potential claims. Which party(ies) is (are) responsible for this cumulative impact situation (**EP**, **E**, **P**, **CS**, **O**)?

Authoritative information and case citations regarding disruption can be found in the following references (see Works Cited): (Schwartzkopf and McNamara, Calculating Construction Damages), (MCAA), (Schwartzkopf, Calculating Lost Labor Productivity in Construction Claims: Second Edition), (Pickavance), (Ibbs), (Bramble and Callahan).

E. Terms & Conditions

Performance of the plant or asset that is produced by the capital investment is the ultimate objective of the owner. Historically, a performance guaranty is one method that has been used to deal with this objective. With emerging execution strategies, performance responsibilities become diffused rendering performance guarantees without disputes nearly impossible to obtain.

Consider a situation where the completion contractor (**CC**) (reimbursable cost contract) is attempting to complete commissioning and testing of the plant. **CC** is under contact to the owner (**O**). The required testing is at full capacity for 120 hours (five days) at an online (service) factor of 98%. The online factor is not being achieved due to one piece of mechanical equipment tripping and going off line. This equipment was supplied (free issue) by the **EP** (lump sum contract) (vendor **V**), field assembled and erected by the mechanical erection (**ME**) contractor (lump sum contract) and commissioned by the vendor (**V**) that supplied the equipment. Consider the transaction implications as well as potential claims, disputes and remedies for each party/stakeholder in the situation (**EP**, **V**, **CC**, **ME**, **O**, others).

Conclusions

Under Turnkey or EPC contracts and execution, the owner's role was less complex, although arguably more expensive before claims and disputes. This arrangement is depicted in Figure 1, Part 1.

Under the evolving "mixed strategies," the owner has assumed a greater role and its duties are more complicated. This arrangement is depicted in Figure 2, Part 1.

Since the potential for claims and disputes has increased enormously, there is a greater need for assistance from experienced construction attorneys (both transaction and dispute/litigation specialists) and/or in-house attorneys. Effective counsel will also guide the stakeholders through the complex proof of remedies and damages. A useful resource is Construction Damages and Remedies, published by the ABA (McGeehin, Benes and Patrick J. Greene).

As execution and contracting strategies are formulated, the overall project scope of work process must be defined in relation to the individual contract packages (individual scope of work). The anticipated form of contract(s) must be consistent with this process and the contractor organizations must be willing to adopt their contracting practices to minimize the scope gap inherent with the mixed strategies.

Disruption / productivity issues will continue to be prominent in the disputes and claims mix. Construction Contractors need methods and ways of working to manage major risk. This management includes: contractual protection, methods of recognition and process for recovery of impacts/damages that are the responsibilities of others. Skills in the claim or dispute resolution process must be upgraded and enhanced. Both Owners and Construction Contractors may need these upgrades and enhancements.

Part 4 of this series will consider some preventive/proactive and corrective/retrospective processes.

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This article presents George T. McLaughlin's "View from the Field" formed throughout the course of his 30+ year career in the industrial marketplace. [1] Part 1, below, describes the evolution of the delivery systems in large and complex industrial projects.

Parts 1-3 appeared in the April, May, and June 2013 issues of The Dispute Resolver. Part 1 described the significant, game-changing evolution of the delivery systems in large and complex industrial projects. [2] Part 2 addressed the legal implications and Part 3 discussed the impacts on claims, disputes, and resolutions. Here, Part 4 covers the preventative and corrective processes and services that construction attorneys, such as the membership of Division 1, can and should provide to the marketplace to address the major changes facing the industrial projects.

Part 4 of 4: Preventive and Corrective Processes and Services

To assist stakeholders/clients (whether Owner Companies, Owner Project Management Teams (PMTs), Construction Contractors, or Completion Contractors) in implementing preventative and corrective measures, one must focus on specific dynamics to predict the most probable needs. See Figure 1, Claims to Topic / Issue Relationship, in Part 3 which identifies the trends resulting from the emerging execution strategies. The interrelated and integrated relationships add much complexity to claims and disputes, including overlap in quantum. The added complexity requires integrated strategies for management of the issues. Below, Figure A, Claim Types and Interrelationships, depicts the common overlaps when viewed from a quantum or pricing perspective.

1 Since the early 1980's, Mr. McLaughlin has worked worldwide in this industrial marketplace. He serves Owners, Prime Contractors, and Subcontractors. During the past 10 years, Mr. McLaughlin has been Project Manager on three major projects ($85-330 million USD) and Program Manager on two major programs ($300+ million USD). Mr. McLaughlin was president and COO of a $35 million engineering and construction (mechanical, controls and electrical) contractor for five years. For the most part, Mr. McLaughlin's work is performed on-location where the relevant work is being performed hence the title "view from the field." Mr. McLaughlin is a principal of McLaughlin & McLaughlin out of Austin, Texas. In this role, he provides program and project management services as well as litigation support services. His contact information can be accessed at his website (www.mclaughlinand mclaughlin.com) and blog (http://projectprofessionals.org/).

2 Oil and gas, process, power, chemical, pharmaceutical.

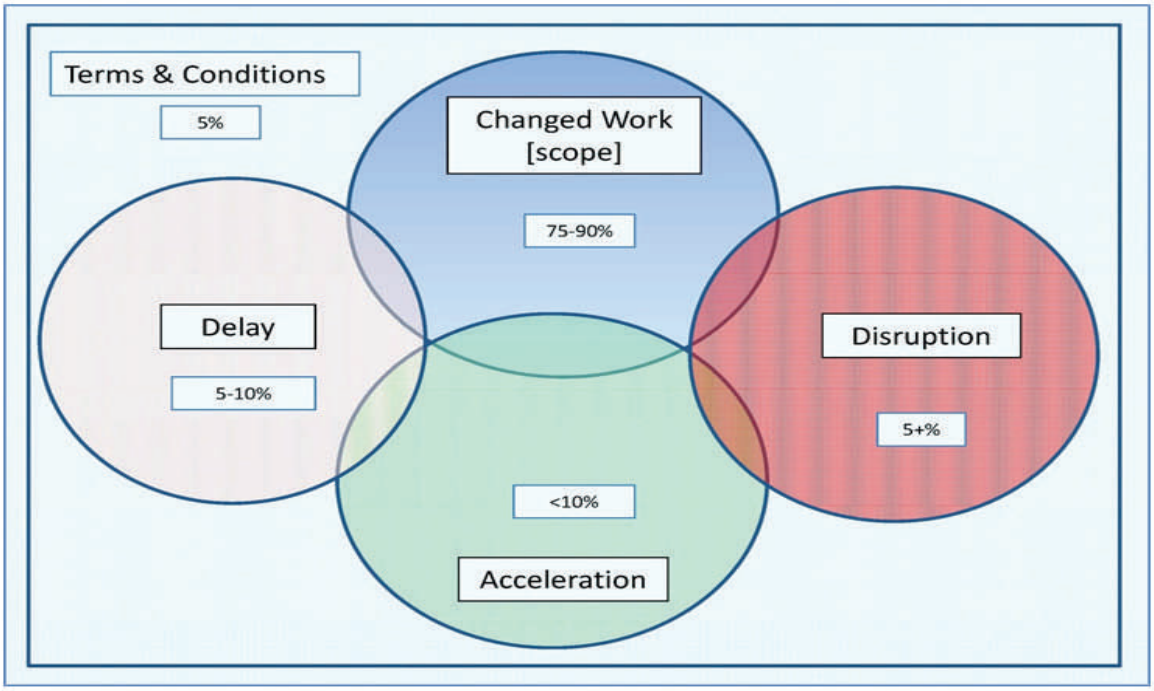

Figure A – Claim Types and Interrelationships

Consider the following qualitative assessments of the claim categories depicted in *Figure A*:

Scope / Changed Work – Scope of Work issues will continue in importance, with increased occurrence and complexity. Since scope definition is cumulative and developed by others, establishing contractual responsibility will be tricky. There will be a premium on the procedures implemented for the Management of Change.

Delay – This will continue in importance but with greater complexity. Delay will not be viewed with the same old arguments over which methodology is best or (presence or absence of) concurrent delay. Rather, complicated analyses with multiple stakeholders and multiple schedules will demand greater sophistication. This degree of sophistication is not readily available in the marketplace. (Joyce) (Ness)

Acceleration – Relevance of acceleration claims will continue, but with lesser importance on projects managed by an Owner PMT. With an Owner PMT Project, claims will be likely be for directed acceleration rather than constructive.

Disruption or Productivity – This occurrence of this category of claims may expand greatly and become commonplace on many projects. Particularly acute are projects in geographic areas where field labor is in limited supply and expensive ($/MH). Such areas include the U.S. Gulf Coast; Alberta, Canada; Western Australia and other hot spots. Division 1 members may wish to alert their offices in these locations, if they have one.

Terms and Conditions – There is an increased potential for project execution performance issues resulting from the evolved execution strategies and multiple interfaces. A recent study by two ConocoPhillips subject matter experts highlights this challenge (Whiteside and Rogers). These issues are costly, time consuming, and can destroy planned investment financial performance.

New and revised ways-of-working are needed. The legal input and overlay is significant. These (legal services and expertise) can be grouped as (1) Preventive/Proactive and (2) Corrective/ Retrospective.

1. Preventive/Proactive Tools and Services

Owners and Construction Contractors have a current and intensifying need from construction attorneys (litigator input is highly desirable) to assist them in putting in place ways of working and obtaining tools necessary to address the challenges of the evolving marketplace. The following should be considered as preventative tools and services counsel can recommend to his or her clients:

Claims Management Planning and Plans. Project planning is recognized as a highly important part in the overall project management process (Institute). With these trends, greater attention and upgraded skills will be needed in planning the management of the likely or plausible claims profile and environment that will be present. Project Management Teams (PMTs) will need thorough planning for the specific claims that will be encountered along with processes for resolution. Significant legal advice will be required in the preparation and implementation of a Claim Management Plan (CMP). Logically, this plan would be part of the Project Management Plan (Institute).

Management of Change. Increased number of stakeholders, interfaces and other complexities will intensify the need to have an efficient and effective process for dealing with a myriad of changes. These requirements will include scope (additions and deletions), time, and many others. The essential elements will be the enhanced efficiency and timeliness. Since issues have a "ripple effect" relative to successor parties, the PMTs will need to sort of "pay-as-you-go." (Steel, Hayley; Riddeck, Laura; Ceeney, Richard A.; Rowan, Vincent; Freeman, Lynne)

Scope of Work Process Audit. With scope-of-work being the most prominent and frequent source of claims and disputes, special attention is required. While largely not a legal function, a thorough audit must be performed to ensure the development and continuity of scope for the various contracts throughout the execution of the project. This process will guide the contracts team regarding needs and types of contracts that may be viable. Further, it will define and confirm the deliverables for predecessor contracts. Legal review for completeness and planning is appropriate.

Time Management Process Audit. Like the scope of work process audit, an audit of the time (schedule) management is needed. With the emerging and more complex execution strategies, the Owner PMT will have substantial (and potentially unfamiliar) responsibilities for time and schedule management. Again, not necessarily a legal function, it will impact contract formation, management and administration. Further, this will morph into disputes and claims related to time (delay, acceleration and disruption).

Interface Audit. As with scope of work and time, the many interfaces (created by the emerging strategies) present structural and managerial challenges. Stakeholders must complete a competent and thorough audit of all events, deliverables, information and other project details that transit across the interfaces. Legal assessment is appropriate and prudent.

Document Management. No, this is not the same old useless "keep good records" advice. With analysis and direction from the legal advisor, the PMTs for all key stakeholders need to have a focused plan to integrate document management with the related contract and the Claims Management Plan. Specific types of documents that are important must be kept and chronicled in a manner that supports efficient legal and PMT review and actions. But, the PMT (with advice from counsel) needs to know the precise subjects so that the files can be assembled in a contemporaneous manner. Timely use of these files is essential.

Configuration Management. This must be a contemporaneous obligation of the Owner's PMT. The legal advisor should ensure this is planned and executed.

Technology. This is not a matter of developing new technology. Technology abounds and often is well beyond the capabilities of the users. Much of the project technology is simply "a solution looking for problem." Define the managerial challenge (e.g. Claims Management Plan) and then specify the existing technology that will be used to implement the solution to the challenge.

2. Corrective/Retrospective Services

Expect changes in the content of disputes and claims – increased disruption, complicated delay, free-issue equipment and materials impacts, and performance / completion issues will emerge.

Strategies - Claims will become increasingly complex and interrelated (not single issue). This requires expertise in understanding the full comprehensive nature of the entire project and all influences on the performance of individual contracts and work. Clearly, legal thinking and considerations will be required.

Scope of Work – The number of claims increase significantly. Multiple interfaces lead to scope gaps, holes, errors, omissions, timing and other problems (such as impact).

Delay – As stated previously, this is not the "same old stuff" (Joyce) (Ness). Sophistication in analyses and presentation will eclipse simplistic technical analyses (currently commonplace). The analytical expertise must be matched to the project complexities. Owners will share more of the responsibilities since they (Owner PMT) will need to perform overall project planning and scheduling.

Disruption – As cited earlier, disruption claims and disputes will increase dramatically. This trend will be fueled by issues such as free-issue equipment and materials, gaps in scope, timing of deliverables, non-critical path delays, Earned Value Management approaches and other complications. The strategy and expertise must be consistent with the problems.

Multiple parties – Determination of responsible parties along with cause and effect will be complicated.

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Conclusions

Major changes in strategies for large and complex project execution are creating new issues as well as opportunities for law firms. The project world or "Field" needs dynamic legal support and help. Perhaps your firm could take an advantageous position by proactively expanding or refining its practice areas. Timely positioning is rather like the surfer that positions his/her surf board in front of the tsunami. Is that a good place for your practice? Positioning your law firm's practice could permit the firm to ride this trend by focusing on unique business adjustments. The evolving and emerging execution strategies represent opportunities for the forward-thinking legal practice. As the potential for claims and disputes increases, the need for professional and experienced legal work expands materially. This is true for both transaction and dispute/litigation specialists. Additionally, in-house counsel should consider and/or reconsider their approach to both transaction and dispute processes.

- Focus on Target Markets – Owners, Owners PMT's and Construction Contractors (in difficult labor markets) and Completion Contractors are all potential target markets.
- Focus on Preventive Services – These are more difficult to "sell" as they are underappreciated until problems arise (Ness). Litigators bring unique skills to this market.
- Focus on Claim Types – Scope of Work, Disruption, Time Management (complex) and Interface Management are all targets. Disruption / Productivity issues have and will become more prominent in the disputes and claims mix. Construction Contractors require skills and methods of working to manage this major risk. This management includes: contractual protection, methods of recognition and process for recovery of impacts/damages that are or begin as the responsibilities of others. Skills in the claim or dispute resolution process must be upgraded and enhanced.

Professional services are often promoted by use of examples. Typical advice is - Tell a story as part of your marketing and promotion plan (Menaker). Should your story to be "we are on the leading edge" or "me too?" Since competence and creditability will not be achieved instantaneously by merely asserting so, it is important to begin now to focus on developing these skills.

In summary, the trends and evolutions in project execution and contracting strategy represent major evolutionary opportunities for law firms in the engineering and construction industry. From a business perspective, your firm may wish to become a leader in this process. Achieving this leadership position will require adjustments to skill-sets and ways-of-working. If this market is attractive, the time to act is now.

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