



A CRYSTAL BALL - EARLY WARNING SIGNS OF CONSTRUCTION CLAIMS & DISPUTES

A RESEARCH PERSPECTIVE
ISSUED BY THE
NAVIGANT CONSTRUCTION
FORUM™

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CONSTRUCTION FORUM™

Building on the lessons learned in
construction dispute avoidance and resolution.™



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GLOBAL CONSTRUCTION

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NOTICE

Subsequent to the issuance of the three part *Delivering Dispute Free Projects*¹ series people asked, "What are the early warning signs of claims and disputes?" While the question seems very basic, it is a valid question and one we found has not often been addressed in literature. From the perspective of construction claims consultants, who are typically brought on board near the end or even after completion of a project, the early warning signs of a dispute are clear. Of course, looking back on a project at what actually occurred and when, is pure hindsight. And, as the old adage goes, "Hindsight is always 20/20."

However, the people asking the question are more interested in learning about the "early warning signs" – actions or inactions on a project that indicate a claim or dispute is likely building, unless something changes and to mitigate the situation. The Navigant Construction Forum™ decided to research the issue and prepare a report responding to this question.

Navigant's Global Construction Practice has been involved in thousands of construction project disputes around the globe. The Navigant Construction Forum™ asked the professionals from the Global Construction Practice to reflect on the projects they have been involved in and offer observations on early warning signs of potential claims and disputes. This research perspective is a product of their observations.

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1. See [Delivering Dispute Free Projects: Part I - Planning, Design & Bidding](#) (September 2013); [Part II - Construction & Claim Management](#) (March 2014); and [Part III - Alternative Dispute Resolution](#) (June 2014), Navigant Construction Forum™, Boulder, CO.

PURPOSE OF RESEARCH PERSPECTIVE

It is axiomatic that claims and disputes on a project do not simply appear out of nowhere. Experience indicates that when a dispute occurs, there is normally a back story or history of events, decisions, lack of decisions, etc. that can be traced back from a few weeks to several years that gave rise to the dispute. It is typically these past events or decisions that are identified as “early warning signs” of claims and disputes. Typically it is only when claims are filed at the end of a project that attorneys and claims consultants review all project documentation and interview the project team. Often, this hindsight review of events and documents turns up numerous early warning signs. All too often, when these are pointed out to the project team many comment “If only I had recognized that then!” Thus, the Forum concluded that this subject would provide an excellent addendum to the *Delivering Dispute Free Projects* series issued earlier.

As noted earlier, research revealed there is little literature setting forth a detailed list of early warning signs of pending construction claims and disputes. After gathering the collective observations of Navigant’s Global Construction Practice the Forum collated these early warning signs into the typical phases of a project including:

- Bid or Proposal Phase
- Initial Contract Phase
- Construction Phase

This research perspective also identifies which party should watch for which early warning sign and what sort of claim or dispute may arise.

The Forum acknowledges that there may be additional warning signs not listed in this research perspective but believes that the list contained herein includes the most typical early warning signs. If owners and contractors stay alert for these early warning signs, and take appropriate action as soon as the warning sign is spotted, there is a potential that the issue can be resolved through negotiations and a dispute avoided.

INTRODUCTION

Construction projects over the past few decades have become increasingly complex. As a result disputes² have grown in direct relation to the size and complexity of projects. One recent study reported that the value of the average dispute in the United States is approximately \$34.3 million.³ A slightly older survey of claims and disputes determined that in the 2009 – 2011 timeframe there were 65 international contract arbitrations in which at least US\$1 billion was in controversy.⁴ The amounts in controversy ranged from US\$1 billion to US\$20 billion.⁵ The total value of these 65 disputes was US\$174.8 billion with the median value being US\$2.73 billion.

One key to delivering a dispute free project is the early identification of potential claims and disputes. Disputes cannot be avoided by simply drafting and issuing a contract that attempts to shift all risk of delays and costs to the contractor. Contractors and their legal counsel will likely find some way around such contract terms. As the old saying goes, “what one man can invent another man can circumvent”.⁶

Before owners and contractors can deal with a dispute both must recognize that one is in the offing. Experience shows that the parties to a contract are often in a dispute long before they realize it. The Navigant Construction Forum™ believes that the keys to successful dispute resolution are (1) to recognize a potential dispute as it starts and (2) to take appropriate action to resolve whatever the issue is. Waiting, in the hope that the dispute will resolve itself rarely, if ever, succeeds.

2. For the purposes of this research perspective the term “claim” is defined as a request for additional time or money or some other modification to the contract which is in the hands of the owner and contractor representatives and is still in some form of negotiations. The term “disputes”, for the purposes of this research perspective, refers to a claim which has not been resolved via negotiations and has been removed to some form of legal proceedings such as mediation, arbitration or litigation.

3. PwC, *Resolving Capital Project Disputes: Adopting a Business Case Approach*, September 2014.

4. Michael D. Goldhaber, *2011 Arbitration Scorecard*, americanlawyer.com/focuseurope, Summer 2011.

5. The “amount in controversy” represented the sum of both the claims and the counterclaims.

6. *The Illustrated London News*, April 12, 1856.

EARLY WARNING SIGNS - BID & PROPOSAL PHASE

It has been the experience of Navigant's Global Construction Practice practitioners that some early warning signs of claims and disputes are apparent as early as the bidding or proposal (for a design/build ("D/B") or engineer-procure-construction ("EPC") contract) phase of a project. All too often, owners and bidders overlook or ignore these warning signs as they are focused exclusively on awarding the contract or on winning the next project. Such early warning signs during this very early phase of the project are outlined in more detail in the following section.

Causes of Rework

First Time Experience with the Project Delivery Method – If the owner has decided to employ a new project delivery method the chances of claims and disputes increase. Experience shows, and research by the Construction Industry Institute confirms that claims and disputes are likely to increase significantly when an owner decides to use a new or different project delivery method for the first time.⁷ New project delivery methods require owner representatives to change their thinking, their work processes and procedures, etc. For example, if the owner typically contracts for projects using the design-bid-build ("DBB") process and for this new project decides to deliver the project using the D/B or EPC process, the owner's staff has a huge learning curve to overcome. Such shifts in project delivery methods often leads to claims and disputes. Typical claims arising from this type of situation tend to be constructive changes and constructive suspensions of work arising from a lack of understanding of the new method.

- **Recommended Claims and Dispute Avoidance Actions:** In such situations, the owner should invest heavily in educating and training the staff on the new project delivery method. The owner may also want to hire a few key personnel who are experienced in the chosen project delivery method. In the alternative, the owner may want to retain the services of a consulting construction management firm that has experience with D/B or EPC. Employing either, or both, of these recommendations may very well reduce impact damage and delay claims resulting from owner actions or inactions.

Lack of Biddability and Constructability Review – Design professionals are typically experienced with preparing plans, specifications and other related technical documents. However, design professionals are not constructors and may have limited experience being in the field while a project is built. Furthermore, design professionals often have no experience bidding hard dollar work or preparing a proposal in response to an invitation to bid for an EPC project. Additionally, design professionals frequently find themselves in an unenviable position. That is, they are required to perform a quality control check on documents they themselves prepared. Experience shows that it is very difficult to objectively review work we performed ourselves; not because we do not know our business but because, in our minds, as a reviewer we are reviewing what we think we wrote or drew which may not be what was actually written or drawn. Finally, plans and specifications are prepared for the end user (i.e., the contractor) and not the design professional. Contractors review and interpret drawings and specifications differently than design professionals, thus increasing the likelihood of changes, claims and disputes. Directed and constructive change claims are likely to arise from this situation.

- **Recommended Claims and Dispute Avoidance Actions:** To reduce the level of change orders during the construction phase and to decrease the chances of claims and disputes, owners ought to have a biddability and constructability review performed on the contract documents prior to bidding or issuing an invitation to propose for an EPC project. A "biddability review" is a review of the bidding documents by a team of construction experienced and oriented individuals who had nothing to do with the design, in order to determine if there is sufficient information included in the bid package to allow a bidder to prepare and submit an intelligent bid. A "constructability review" is performed by a similar team of construction oriented individuals to determine if there is enough clear, concise information in the bid documents that will allow the contractor to build the project the owner wants. In this regard, the constructability review team is looking for errors, omissions, ambiguous requirements, conflicts, and impossible or impracticable requirements. These two reviews should, if implemented with the proper team(s), go a long way toward decreasing the need for changes during construction and mitigate the potential for constructive change claims and disputes.

7. [Special Publication 23-3 - Disputes Potential Index](#), Disputes Prevention and Resolution Team, Construction Industry Institute, The University of Texas at Austin, February 1995.

Known Internal or External Constraints Not Identified in

Contract Documents – Design professionals generally know a great deal about architecture or engineering but often know little about the details concerning operating facilities. It is not uncommon that when construction is being performed in an operating facility there are operational needs that must be met but which a contractor is unaware because the constraints are not included in the bidding documents. One of the participants in this report related a story of a hospital expansion project that involved constructing a mirror image mid-rise building immediately adjacent to the existing facility. The drawings called for sky bridges from the second through fifth floors. Once the contractor erected the steel and decks were installed on the new building they prepared to install the sky bridges. At that point the owner's representative advised, for the very first time, that work on the sky bridges could only be performed between midnight and 6:00 AM so as not to endanger surgical procedures through potential vibrations to the existing building. While the explanation and reasoning made perfect sense to everyone, there was no mention of this requirement in the contract documents. As a result, the contractor had no budget for the additional night work labor cost, the added work lighting, etc. This situation led to an expensive constructive claim.

- **Recommended Claims and Dispute Avoidance Actions:**

Owners need to think through and identify all potential project constraints such as work hour restrictions or requirements; operational constraints such as the contractor may take only one clarifier off line at a time and must return each clarifier to full service before taking the next unit off line; site access restrictions; construction sequences such as Building 1 must be completed within 270 days after issuance of Notice to Proceed ("NTP"), Building 2 must be completed within 360 days; etc. In the event the design professional is contracted to design a project expanding or modifying an existing operating facility and the owner does not provide a list of constraints, the design professional needs to meet with the owner's staff to learn about constraints that may impact construction and include these constraints clearly in the contract documents. Such action helps avoid delay and impact claims from arising during the performance of the work when the constraints are finally identified to the contractor.

Lack of Operability Review – If the project involves an operating facility (either new, an expansion or a modification) project owners should have an operability review performed on the bidding documents prior to bidding. Similar to the previous reviews discussed, an "operability review" is a review of the bidding documents by a group of senior, experienced operators to ascertain that the facility design incorporates everything needed to successfully operate the constructed facility. As mentioned earlier, design professionals are not operators and thus are at a distinct disadvantage when trying to incorporate operational needs into the project during the design process. The failure to perform such a review is likely to lead to numerous end of the job change orders once the operating staff starts to take possession of the project.

- **Recommended Claims and Dispute Avoidance Actions:**

Owners of operating facilities should assign one or two senior operators to the design review team in order to make certain that the design incorporates all operating and maintenance needs of the project. This action should help avoid late change orders which are all too common toward the end of construction when the operators start commissioning the project and transfer of care, custody and control of the work process is underway. End of the job change orders are inordinately expensive as they almost always involve delay which is exacerbated by the fact that craft labor has been demobilized by the site and must be remobilized to perform such changes. This review is intended to avoid these changes.

Rushed Design – Public works owners often operate under schedules driven by fiscal year constraints, an annual goal of bidding and awarding "x" number of projects per year and other artificial requirements to "put the project out for bid no later than June 30th". Such scheduled bid dates often result in a rushed design. Private owners often push their design professionals to complete design faster in order to convert construction financing to permanent financing; to complete the project design and begin manufacturing sooner in order to meet a time to market deadline; to avoid inflationary costs; etc. Experience teaches that rushed design frequently leads to more change orders as overlooked details during design come to light during construction. Further, rushed design often sacrifices appropriate time allotted for quality control and quality assurance reviews, leaving the design incomplete or full of flaws. This in turn may lead to delay and attendant impacts.

- **Recommended Claims and Dispute Avoidance Actions:**

If the project owner is faced with internal or external time constraints (i.e., court ordered deadlines; contractual timeframes; time to market considerations; etc.) the owner may want to consider alternative project delivery methodologies in order to speed up the design and construction process. If the owner is unable to extend the program schedule, then they should at least alert bidders to the shortened timeframe to help them prepare and submit realistic bids. If internal and external constraints are not project drivers, when an owner reaches a decision to construct a new project they should consult with designers and experienced construction oriented professionals to determine the reasonable amount of time needed to properly design and construct the project. Planning for the project should include the information obtained from this consultation plus a contingency. If necessary, the owner should extend the overall project or program plan for design completion, bidding, contract award and project completion. Owners need to remember the old adage that, "No one ever remembers whether the project was bid on time, but everyone always remembers whether it was completed on time!"

Poor Estimate During Bid Process – Owners should review the cost estimate prepared by the design professionals to determine that it is complete, thorough, realistic and takes into account all known factors concerning the project and its surrounding circumstances. Design professionals undoubtedly do their best to prepare good estimates for bidding purposes. However, as noted previously, they may not have construction experience and tend to look at drawings and specifications differently than potential bidders. Initially, this type of situation is likely to lead to bids coming in higher than the approved budget. Should this happen, the owner may have to revise the approved budget by reallocating project contingency funds and/or management reserve funds. If this action is taken, the funds initially planned for handling changes during the work may well be exhausted before construction even commences. The alternative to this would be for the owner to reject all bids, have the project redesigned and then rebid the work. This, of course, results in additional design and bidding costs as well as delay to the entire project.

- **Recommended Claims and Dispute Avoidance Actions:** If the owner does not have experienced internal resources to review the design professional's project cost estimate they would be well advised to retain such service either from a construction management firm or an estimating consultant. While this action will add to the project costs somewhat, it may more than repay the owner by helping set a realistic estimate of the work prior to bidding.

Bidders Requesting an Extended Project Duration – If, during the bidding period, potential bidders complain that the time of performance of the work is too short and ask that it be extended, owners need to pay close attention. Such situations arise generally when the owner has not performed any pre-bid scheduling or when the project's schedule is driven by some outside force (i.e., a court order, time to market concerns, commercial agreements, etc.). In the latter event, there may be nothing the owner can do to revise the time of performance duration. However, in the former event, the owner may want to take appropriate action to prevent potential delay claims from arising during the performance of the work. Owners should realize that if contractors believe the time of performance is unreasonable they will (1) prepare higher bids based on overtime work, added labor and/or added construction equipment and/or (2) be on constant look out for potential owner caused delays or delays caused by situations for which is owner is contractually liable (i.e., differing site conditions). Some years back, one of the contributors to this research perspective was involved in a project to upgrade a large wastewater treatment facility. Bidders requested that the project duration time be extended during the bidding period. The owner did **not** do so. The contractor who ultimately won the project mobilized to the site and prepared and submitted a baseline schedule. The schedule showed the contractor initiating underground work at a specific location of the plant site. When excavation commenced the contractor encountered uncharted utilities and had to stop work and demobilize from that area of the site to another area. Much to the owner's surprise, the contractor again encountered uncharted utilities and had to remobilize to yet another area where they, again, encountered uncharted utilities. By the time the time extensions for these three differing site condition claims were resolved, the time of performance was substantially extended – even beyond what bidders had initially requested. In hindsight, it would have been less expensive to extend the project duration by bid addendum than it was to negotiate the three claim settlements.

- **Recommended Claims and Dispute Avoidance Actions:**

Owners should prepare, or have prepared for them, a pre-bid schedule that allows the owner and design professional to establish a reasonable time of performance for the work about to be bid. Experience shows that design professionals typically establish the project duration without such pre-bid scheduling because this work is not typically included in their scope of work or their planned cost. If the owner is not experienced with construction of such projects and does not have experienced in-house staff to prepare such a schedule, the owner may want to engage the services of a construction management or a scheduling firm to do this work.

Ineffective Project Controls – Owners about to begin construction of a capital improvement project need to assess the capabilities of their work processes and in-house staff to determine whether they have a robust internal project control system as well as the staff necessary to run the system. In the context of this research perspective a “project control system” includes scheduling, schedule monitoring and the ability to perform and/or analyze schedule delay analyses; cost estimating including the capability to negotiate change order costs and evaluate the proposed cost savings of value engineering proposals; cost management including the tools and ability to assess the contractor’s proposed schedule of values as well as monitor ongoing construction in order to properly assess the contractor’s payment requests or draw requests; cost trending including earned value management if the contract requires costs be monitored in that manner; and the ability to perform manhour analysis in order to perform impact analysis and assess loss of productivity and efficiency claims. The failure to have an effective project controls system and sufficient experienced personnel to run the system is likely to lead to claims or disputes concerning delay, constructive acceleration and impact damages.

- **Recommended Claims and Dispute Avoidance Actions:** If the owner’s self-assessment indicates that they do not have an adequate project controls system in place and/or do not have experienced staff to manage such a system, then the owner needs to either hire staff to put a system in place and manage it or retain the services of a construction management firm to prepare, implement and operate such a system.

Inadequate Change Management Procedure – As the ancient Greek philosopher, Heraclitus said, “There is nothing permanent except change”⁸. This statement still holds true today, especially during the construction of a capital project. Owners often decry change orders on a project as something bad and some owners even start new projects by informing their contractor that “There will be no change orders on this job!” Owners with this attitude miss the point. The Changes clause of a contract is for the benefit of the owner, not the contractor. The Changes clause allows the owner to change their minds, to make changes to the work in progress, to modify the project to fit the owner’s changing needs, etc. Change is inevitable. As a result, the owner prior to beginning a new project needs to review their change management system internally as well as in the contract documents. The change management procedure must provide for timely notices of change; timely submittal of change order submittals; in-depth review of such proposals including both time and cost; etc. Further, the owner needs to examine the experience and capabilities of their project team to see that the team can properly operate the change management system. The failure to implement such a system will likely result in the owner overpaying for needed changes or facing claims and disputes over the time and cost of changes on the project.

- **Recommended Claims and Dispute Avoidance Actions:**

Should the owner’s self-evaluation lead to the conclusion that their change management procedure is inadequate and/or their staff lacks the experience and capability to implement a good change management system, the owner should consider hiring additional experienced staff or retain the services of a construction management firm to create, implement and staff a good change management system. Again, as with some of the previous recommendations, the cost of this recommendation may pale in comparison to the cost of a poorly managed change management procedure.

Bid Amount Substantially Below All Other Bids – Provided that the project is well designed, the time of performance is reasonable, and biddability and constructability reviews have been performed, most projects should have a fairly tight grouping of bids. When bids are opened and the apparent low bidder is substantially below the other bidders, chances are there is something wrong with the bid. All too many owners believe they should snatch up the bid as soon as possible and enjoy the money saved due to the low bid. This approach ignores the fact that if they award the contract on the basis of the very low bid, the owner is buying into a set of unknown problems starting the day the contract is awarded and NTP issued. The contractor in this situation will move onto the project looking for changes, claims and potential disputes.

8. Heraclitus, *On Nature*, 6th Century BCE.

- **Recommended Claims and Dispute Avoidance Actions:** If such a situation arises, it is recommended that the owner follow a procedure similar to that employed by the Federal government, described below:

“After the opening of bids, contracting officers shall examine all bids for mistakes. In cases of apparent mistakes and in cases where the contracting officer has reason to believe that a mistake may have been made, the contracting officer shall request from the bidder a verification of the bid, calling attention to the suspected mistake ... To assure that the bidder will be put on notice of a mistake suspected by the contracting officer, the bidder should be advised as appropriate –

- (i) That its bid is so much lower than the other bids or the Government’s estimate as to indicate a possibility of error;”⁹

If the owner follows this course of action and the low bidder verifies there are no errors in its bid, the owner will likely be protected from claims based on a “mistaken bid”. If the low bidder finds a mistake, they should identify it to the owner and the owner should follow State statutes, local ordinances or internal policies concerning the handling of mistaken bids. The sum and substance of this recommendation is that owners are best served by avoiding contract awards to contractors based on mistaken bids.

Early Warning Signs for Contractors

Onerous Contract Language – When reviewing a set of bid documents contractors should review the General and Supplemental Conditions of the contract as carefully as they examine the drawings and specifications. This review should look for inappropriate risk assignment or exculpatory clauses. For example, contracts declaring that concurrent delay is inexcusable delay; force majeure clauses that exclude a large number of typical force majeure causes; No Damages for Delay clauses; Differing Site Condition clauses that provide contractors may only recover the cost of overcoming the situation, but **not** the delay related to the situation; clauses declaring that the owner owns the float in the schedule; etc.¹⁰ Such clauses may or may not be enforceable in the jurisdiction where the project is located and thus are likely to be the cause of claims and disputes. All sorts of claims may arise including constructive changes, constructive suspensions of work and/or delays.

- **Recommended Claims and Dispute Avoidance Actions:** If the contractor does not have the in house capability to perform this sort of review, they should have a construction litigation attorney from the jurisdiction where the project will be built perform the review. If the contract is very onerous the contractor has two options. First, the contractor may decide not to bid the project on the basis that the risk of bidding may wipe out any potential profit that can be earned on the project. Or, second, if it is risky, but the contractor believes the risk is manageable, they may want to add to their bid contingency.

Apparent Lack of Pre-Bid Scheduling – As part of the contract review during the bidding phase, the contractor’s staff should review the time of performance clause. If the schedule is too short or too long this indicates that the owner did not perform any pre-bid scheduling. Projects based on a schedule that is too long are likely to have increased bid costs as most contractors preparing a bid assume owners have performed pre-bid scheduling and that the time of performance is reasonable. On the other side of the coin, if the project duration is too short but the contractor assumes this time has been reasonably estimated, then the contractor will likely **not** bid the required acceleration costs necessary to complete the work on time. If the contractor does realize that the time is too short, the bids will be significantly higher than necessary.

- **Recommended Claims and Dispute Avoidance Actions:** Despite the fact that bidding construction projects is quite expensive, contractors are well advised to have a team consisting of one of their experienced project managers or superintendents and an experienced construction scheduler to review the drawings and specifications and then prepare a summary plan and construction schedule. In a DBB project the bidder has a complete set of drawings and specifications available for review. In a D/B or EPC project the bidder is more likely to be reviewing the front end engineering documents (“FEED”) or the Bridging Documents. Notwithstanding, the bidder should be in a position to prepare a Class 4 or Class 5 schedule to assess whether the contract’s time of performance is reasonable and achievable without extraordinary cost and efforts by the contractor.¹¹

9. Federal Acquisition Regulations (FAR) 14.407, Mistakes in Bids.

10. James G. Zack, Jr., *Trends in Construction Claims and Disputes*, Navigant Construction Forum™, Boulder, CO, December, 2012

11. See *AACE International Recommended Practice No. 27R-03, Schedule Classification System*, Revised November 12, 2010, which describes the methods for preparing a Class 4 or 5 schedule as “Top down planning using high level milestones and key project events. Semi-detailed.”

No Well Thought Out Disputes Clause – Another indicator of a good potential for disputes is a contract that does **not** have a well thought out Disputes clause. This type of Disputes clause typically calls for project level negotiations which, should they fail to reach resolution, takes the project participants directly to binding arbitration or litigation in a court of competent jurisdiction. A well crafted Dispute clause should probably include a two step negotiation process (with the first step being project level negotiations and the second being executive level negotiations). The clause ought to stipulate one or more alternative dispute resolution (“ADR”) methods such as mediation or a Dispute Resolution Board (“DRB”) **prior to** arbitration or litigation.¹² The lack of a well thought out Disputes clause is an obvious early warning sign of potential disputes, as the contract does **not** provide for more than one opportunity to resolve an issue if it cannot be negotiated on the project site.

- **Recommended Claims and Dispute Avoidance Actions:** If the contractor’s review shows this to be the case, there is little the contractor can do to change the situation. The contractor’s project risk analysis review needs to take this into consideration when deciding whether to bid the project or not.

Poor Definition of Scope of Work – If the contractor’s review of the bidding documents shows that the project’s scope of work is poorly defined, this too is an early warning sign of claims and disputes. Indicators of an inadequate scope of work may include an excessively high number of submittals required; language in the quality control portions of specifications indicating that, “... work must be accomplished to the satisfaction of the engineer or the architect”; the bidding documents do not contain any subsurface conditions report where one typically would be required for a project of this type; the invitation to bid contains wording similar to, “...neither the Owner nor the Architect assumes responsibility for errors or misunderstandings resulting from the use of incomplete information”; or includes language such as, “The work includes any other items necessary to provide a complete, useable building even if not shown or specified in the bid documents.” A poor definition of the project scope of work is likely to result in an abnormally high number of change orders and constructive changes claims as well as the resulting delay and disruption.

- **Recommended Claims and Dispute Avoidance Actions:** If indications such as the above are found the bidder may consider not bidding the project. In the alternative, the bidder may prepare and submit a written list of detailed questions concerning the proposed scope of work to the owner during the bidding process and in accordance with the instructions contained in the invitation to bid. The owner is generally compelled to respond to these questions to all potential bidders and may be required to issue a bid addendum. In either event, the contractor is allowed to rely upon the owner’s response, thus eliminating some potential change orders, claims and disputes during the performance of the work.

Defective Design – Just as owners should perform their own constructability review so should bidders. In the process of analyzing the bidding documents for estimating and pricing purposes, the bidder’s staff must stay alert for indications of defective design including errors, omissions, ambiguities, and impossible or impractical requirements. While there may be some of these items even in the most carefully prepared set of bid documents, if the bidder’s review indicates numerous design deficiencies, this may be an early warning sign of claims and disputes. Claims and disputes arising from defective design include changes and constructive changes as well as suspension of work, delay and impact damages.

- **Recommended Claims and Dispute Avoidance Actions:** If review of the bidding document reveals a large number of design defects, the bidder has but two choices: either the bidder decides not to bid the project or they prepare a written list of design deficiencies found, in the form of questions, and submit this list to the owner seeking responses prior to bidding. If the owner responds then bidders are entitled to rely on their responses. Should the owner take the position “Bid these items as you see them” then the contractor may want to reconsider their earlier decision and not submit a bid.

12. Adam K. Bult, David W. Halligan, Jonathan Pray and James G. Zack, Jr. *Delivering Dispute Free Projects: Part III – Alternative Dispute Resolution*, Navigant Construction Forum™, Boulder, CO, June, 2014.

EARLY WARNING SIGNS – EARLY CONSTRUCTION PHASE

At times, there are no early warning signs during the bidding period. However, once the contract is awarded and the NTP issued early warning signs start popping up. Among them are the following.

Early Warning Signs for Owners

Problems Concerning the Baseline Schedule – Typically contracts call for submittal of a project schedule within a short time after issuance of the project’s NTP (e.g., 30 or 45 days). Most owners believe this is adequate time to prepare a schedule and most contractors attempt to submit their as-planned or baseline schedule within the mandated timeframe. However, some contractors play games with the baseline schedules for a variety of reasons.¹³ Inadequately planned schedules, late schedule submittals, poor level of details, lack of procurement information, etc. are often found within the initial baseline schedule submittals. It is not uncommon to find that the baseline schedule is not accepted or approved by the owner for several months after issuance of the project’s NTP. Should this happen it may lead to disputes over project delays, especially for those events that occurred prior to acceptance of the baseline schedule.

- **Recommended Claims and Dispute Avoidance Actions:** In order to obtain timely submittal of a good baseline schedule, owners may modify their contract documents in the following ways: crafting and including a detailed Scheduling specification in the contract documents; tying mobilization payments to submittal and approval of the baseline schedule; requiring that the contractor’s scheduling effort start at Notice of Award, not NTP; employing a Two Step NTP process; etc.¹⁴

Early Need to Tap into Contingency Fund or Allowances – Typically project owners establish contingency funds or allowances for use by the project team to cover the cost of potential changes. Some owners may also set up a management reserve for each project to have funds available in the event there is a major change to the work. Experience indicates that owners typically rely on past project experience when establishing such funds (e.g., anticipated cost of change orders or delays). These funds are almost always intended to last for the duration of the project. However, on occasion, owners find themselves in a situation where the project is only partially complete but the contingency funds and allowances are nearly exhausted. This is an early warning sign of potential claims and disputes centering on future changes and their impacts.

- **Recommended Claims and Dispute Avoidance Actions:** It is recommended that the owner carefully review the remaining work to determine whether more changes will be needed. If so, then the owner needs to estimate the projected cost to complete the work, including identified changes. At this point, the owner needs to determine whether to terminate the project, complete the necessary redesign and rebid the remaining work or continue to complete the work by change order, after adjusting the project budget and re-establishing the contingency and reserve funds. If this is done proactively, the owner may be able to restatus the project, including the needed changes and complete the work within the revised budget and schedule.

Bid Breakdown Excessively Front End Loaded – On hard dollar bid projects, the normal procedure is to require the contractor to submit a bid breakdown shortly after NTP. This breakdown allocates the contract value across all pay items on the project. One of the owner’s challenges in dealing with a proposed bid breakdown is to determine that the proposed pay items are not unbalanced. Accepting an unbalanced bid breakdown or a cost loaded schedule and making project payments based on either, may lead to a dispute with the contractor’s surety in the event the contractor is defaulted and the owner calls on the surety pursuant to the Performance Bond. It also places the owner at risk should there be changes on work that is carrying excessively high costs. An unbalanced bid breakdown is an early warning sign of claims and disputes especially over the cost of potential future change orders.

- **Recommended Claims and Dispute Avoidance Actions:** Owners and their representatives need to review proposed bid breakdowns very carefully to eliminate unbalanced pay items to the maximum extent possible. Each proposed pay item needs to be reviewed individually in order to avoid such a situation. If some items are determined to be unbalanced, the owner needs to negotiate more balanced items.

13. Amanda Amadon, Emily Federico, Steve Pitaniello and James G. Zack, Jr., [Construction Scheduling Games – Revisited & Updated](#), Navigant Construction Forum™, Boulder, Colorado, 2014.

14. Ibid.

Changes in Major Subcontractors – It is not uncommon, especially on public works projects, that bidders are required to list all or almost all subcontractors in the bid. Almost all contracts that require subcontractor listing also set forth a formal procedure for subcontractor substitutions. Such requirements are intended to prevent potential bid shopping and/or bid peddling. If, after contract award and NTP an owner finds that the contractor is requesting substitution of one or more major subcontractors then this may be an early warning sign of claims and disputes. Experience indicates that substitutions after award frequently stem from contractor/subcontractor disputes over the subcontractor's scope of work or the terms and conditions of the subcontract. In either event, such disputes will disrupt the project and lead to disputes concerning work scope issues and change orders.

- **Recommended Claims and Dispute Avoidance Actions:**

There probably are times when subcontractor substitutions are clearly warranted and entirely justified. However, owners are well advised to make certain that the subcontractor substitution procedure contained in the contract documents is well defined and thorough. In the event that such a substitution is requested, owners need to make certain that both the contractor and the owner themselves follow the contract procedure exactly.

Inability to Ramp Up Planned/Needed Craft Levels – One key to a successful project is labor productivity and labor productivity depends entirely upon the contractor's ability to provide the right number of qualified craft labor to the project. Many Scheduling specifications require that the contractor resource load their baseline or as-planned schedule. Resource loading often is defined to include cost and labor by trade and craft. If the contractor's baseline schedule is labor loaded, the owner has the ability to analyze the labor needed to complete the project on time and track the labor actually on the project site. If the owner reviews a labor loaded baseline schedule and calculates what labor is needed on site over time, the owner can review certified payrolls or obtain site labor data from the contractor or their construction management staff to determine if the contractor has the planned labor on site. If the owner determines that the contractor has **not** ramped up to the needed level of labor, this is an early warning sign of claims and disputes. Claims and disputes concerning delay and lost labor productivity are likely to result.

- **Recommended Claims and Dispute Avoidance Actions:** As soon as an owner determines that the actual labor on site has fallen below the planned level the owner should meet with the contractor and discuss the issue and inquire how the contractor intends to rectify the situation. The owner may also want to calculate the actual labor productivity achieved and extrapolate actual labor productivity into the schedule for the remaining work to determine what project delay is likely. If this is done, then this should be brought to the contractor's attention to demonstrate their potential exposure to liquidated damages.

D/B or EPC Contractor "Going to Field Too Early" – A common issue with D/B or EPC contracts is the need to complete sufficient design work to allow the contractor to move to the field and progress their construction efforts efficiently and effectively. All too often owners fail to understand the value of the contractor waiting until there is enough approved design to allow them work effectively. When owners get impatient with waiting to move to the field, they start complaining to the contractor about the perceived "lack of real progress". If the contractor moves to the field at the owner's request and the owner finds that the contractor is working haphazardly and ineffectively then this may be an early warning sign of claims and disputes. Claims of project delay, lost productivity and attendant impact damages are likely to arise from this type of situation.

- **Recommended Claims and Dispute Avoidance Actions:**

The situation is avoidable if the owner and contractor work together in accordance with the project plan and schedule. If, however, the owner convinces the contractor to move to the field earlier than planned and then observes inefficient work in the field, the owner and the contractor need to meet and discuss the situation and work out a plan to allow the contractor to proceed efficiently or, potentially, suspend the work in the field until the design effort catches up.

Early Warning Signs for Contractors

At Pre-Construction Meeting the Owner Announces "There Will Be No Change Orders on this Project" – For the contractor this is clearly an early warning sign of potential claims and disputes as it is an indicator that the owner has unrealistic expectations concerning design and construction and/or has not read their own contract. The type of claims and disputes likely to grow from this attitude include constructive changes, delays and constructive suspensions of work, disputed differing site condition claims and constructive acceleration.

- **Recommended Claims and Dispute Avoidance Actions:**

Contractors dealing with an owner with this attitude must review their contract very carefully to determine what clauses provide the right of recovery and what the required procedure is. Paying very careful attention to notice requirements is critical as is documentation of all events leading to a request for change order or filing a claim. The communications procedure on the project must also be well documented as the attitude on the part of the owner is unlikely to be swayed by verbal commitments and handshake deals in the field.

Multiple Prime Contractors on Site – Several States (approximately ten) require that all or some contracts be bid as multiple prime contracts. Under this project delivery method, the project is bid in several different packages such as civil and architectural; electrical; plumbing and heating; and ventilating and cooling. Other States allow public works owners to bid multiple prime contracts (California, for example)¹⁵. It is also the authors' experience that some State agencies and municipalities opt to bid work using multiple primes in order to "keep the work local" and some major oil, gas and chemical project owners utilize this project delivery method to complete projects faster and, perhaps, decrease their own risk exposure. Contractors bidding on a multiple prime contract should view this delivery method as an early warning sign of potential claims and disputes. Since there is no privity of contract (contractual relationship) between the independent prime contractors when one prime contractor delays or impacts another, the only option the impacted contractor has is to file a request for change order or a claim against the project owner. Experience indicates that owners in situations such as this frequently resist issuing such change orders on the basis that "We didn't impact you, the electrical prime did!" Such refusal to deal with claims of this nature often lead to larger claims concerning lost productivity and/or constructive acceleration.

- **Recommended Claims and Dispute Avoidance Actions:**

There is **not** a lot a contractor can do to insulate themselves from potential claims or disputes on multiple prime contract projects. Since the situation arises from a well known pre-bid condition, the contractor's opportunity to claim unrevealed superior knowledge on the part of the owner (a classic starting point for many claims) is not available. The contractor's best defense is to insist that all baseline schedules and schedule updates be circulated to all multiple prime contractors and that the owner hold frequent coordination meetings with all prime contractors in an effort to identify potential problems early and come to a coordinated agreement on how to avoid such problems or mitigate them.

Lack of Site Access, Property, Easements or Rights of Way –

Owners should not bid projects until all property, easements and rights of way ("ROW") are acquired and all site access issues clearly resolved. Having said this, the authors' experience is that owners frequently bid a project prior to resolution of site access and other property issues. This is **not** uncommon in Public Private Partnership ("P3") highway projects which are typically bid on a D/B basis prior to the final vertical and horizontal alignment being fully established. Contractors bidding on projects where property acquisition issues are not fully resolved are typically advised of this in the bidding documents. An early warning sign of potential claims and disputes would be if the needed property acquisitions, easements or ROW do not become available in accordance with the property acquisition schedule contained in the bid document. The types of claims and disputes are likely to be delay, suspension of work and/or constructive suspension of work and their attendant impacts.

- **Recommended Claims and Dispute Avoidance Actions:**

Assuming the owner acknowledges in the bid documents that **not** all property acquisition will be completed as of the bid date, the owner should include a property acquisition schedule in the bidding documents. If one is not included, bidders should request such a schedule be added by addendum. If the owner does not provide a schedule bidders may want to rethink their decision to bid this project. If the project is bid, awarded and NTP issued without such a schedule at the pre-construction meeting the contractor should demand this information and advise the owner that a baseline schedule cannot be prepared on a rational basis without this knowledge. Should the owner still refuse, the contractor should prepare their baseline schedule using their internal plan and placing the completion of each property acquisition or easement activities at logical dates in the schedule but do so as milestone dates or complete no later than dates and annotate each such schedule activity as an owner responsibility. Should the owner not make the property or easements available on those dates, written notice of potential delay should be filed on that date to preserve the contractor's right to file a claim at a later point in time.

15. Neal J. Sweeney and Peter C. Brown, Coordination Responsibilities on Multi-Prime Projects, Federal Publications, Inc., Washington, D.C., September 1998.

Lack of Necessary Permits – As with the property issue above, owners should not put projects out for bids until they have received all necessary permits that the owner is obligated to obtain. Some owners, however, acting on the belief that the permits will be issued quickly and wanting work on their project to start sooner, may bid the project without the required permits. It is the authors' experience that when this occurs, owners often do not tell the bidders on the presumption that all permits will be available prior to NTP. It is also the authors' experience that frequently this is not the case. Thus, there is a potential for project delays, suspensions of work and/or constructive acceleration. But, how can contractors learn about this during the bid phase?

- **Recommended Claims and Dispute Avoidance Actions:** As a matter of routine, bidders ought to submit a written question to the project owner prior to the pre-bid conference asking if all owner furnished permits were already in hand. A follow on written question should be, "If the answer is no, when does the owner believe the permits will be issued?" If the response is "no" the permits are not yet issued, refuses to provide a response, or cannot tell bidder when the permits are likely to be issued, then any of these of early warning signs of potential claims and disputes. Such claims as delay, constructive suspension, constructive acceleration and the impacts of these claims are likely. Similar to the lack of site access and property availability discussed above, the contractor would be well advised to obtain information concerning the permits from the owner and include it in the baseline schedule. In the absence of any owner furnished information concerning permit issuance, the contractor should create a baseline schedule and include receiving the permits by dates certain. If the permits are not available by those dates, a written notice of potential delay should be provided to the owner on that day.

Unanticipated Work Hour Restrictions or Limits on Work Areas – If, after contract award and/or NTP the owner advises the contractor of work hour restrictions or limitations on work areas that were not identified in the bidding documents, this is an early warning sign of potential claims and disputes. The most likely claims arising from this situation are constructive changes, delays, suspensions of work, constructive suspensions and constructive acceleration.

- **Recommended Claims and Dispute Avoidance Actions:** As soon as these new work restrictions are identified, the contractor needs to provide written notice of potential delay. The contractor should then analyze their baseline schedule and plan and modify it accordingly to account for these new restrictions. Once this is done, the contractor should be in a position to estimate the project delay, if any, and the impact costs caused by the previously unidentified work restrictions. This analysis must be performed promptly and an appropriate change order request for additional time and/or damages be filed with the owner.

EARLY WARNING SIGNS – CONSTRUCTION PHASE

Early warning signs continue as the project progresses. They are not limited to the early phase of construction. In fact, there are more warning signs as the project progresses but due to the press of other business on the project, owners and contractors frequently do not recognize the warnings when they first occur. For the purposes of this research perspective, the Forum has classified and presents these early warning signs in four categories as follows:

- Scheduling Issues
- Change Issues
- Project Management Issues
- Field Issues

Early Warning Signs for Owners – Scheduling Issues

Contractors Not Submitting Monthly Schedule Updates – Once the project baseline schedule has been approved or accepted, it is typical for the contract to require a routine schedule update on a regular basis (i.e., monthly, quarterly or by milestone). One schedule related early warning sign is when the contractor does not submit routine schedule updates despite clear requirements in the Scheduling specification. This is an early warning sign of potential claims and disputes and it is likely that delay and impact damage claims will arise as a result.

- **Recommended Claims and Dispute Avoidance Actions:** This situation is avoidable if the owner adopts appropriate defenses in the Scheduling specification including making schedule update submittals a pay item on the schedule of values; implementing a Pay Off the Schedule specification; stipulating liquidated damages for late schedule submittals; or crafting a clause allowing the owner to withhold payment for the failure to submit schedule updates. If any of these defenses are included in the Scheduling specification the owner needs to enforce them. If none of these defenses were included in the contract documents, then the owner needs to meet with the contractor to discuss the situation and convince the contractor to submit these updates. The theme of this meeting should be that the project will run more smoothly if the contractor submits the required updates and the owner performs a detailed analysis. The owner may also point out that it is impossible to agree with any time extension requests unless they are based on a current, updated schedule.

Key Milestone Dates Missed But Project Completion Still on Time –

When the project records show that the contractor has missed one or more milestones, or when analysis indicates that a large number of planned activity start dates have not been achieved on time but the project completion date has not moved, this is an early warning sign of claims and disputes. “Scheduling away delay” typically is accomplished by changing durations of remaining activities; deleting activities from the schedule; using leads and lags; using constraints; changing logic, etc. The type of claims arising out of this situation will be delays, impacts and lost productivity.

- **Recommended Claims and Dispute Avoidance Actions:**

Similar to the early warning sign above, this sort of situation can be mitigated by including some or all of the following in the Scheduling specification – require and review carefully a Schedule Change Report with every update; require joint update meetings with the contractor, owner and all major subcontractors; require electronic schedule update submittals; and/or obtain the contractor’s weekly scheduling documents typically provided to trade superintendents. If none of these defenses are in the Scheduling specification, the owner needs to meet with the contractor to discuss the situation and convince the contractor to submit properly updated schedules. The meeting should focus on the need for properly updated schedule submittals. The owner needs to point out that time extension requests cannot be assessed unless they are based on accurately updated schedules.

Schedule Updates that Focus Primarily on Owner Caused Delays and Impacts –

If all schedules updates focus primarily on alleged owner delays and impacts, this is obviously an early warning sign of claims and disputes, especially if this sort of update starts very early in the project. The typical way to accomplish this sort of schedule update is for the contractor to insert new “owner caused delays” in the schedule updates. The type of claims likely to be asserted sometime during the project include delays, constructive suspensions of work, impacts and lost productivity.

- **Recommended Claims and Dispute Avoidance Actions:** One way to mitigate this type of schedule update is to include the following in the scheduling specification – a strict written notice requirement in the Delay clause and a well thought out Time Impact Analysis (“TIA”) requirement in the Scheduling specification. If these are in the contract documents, then owners should enforce them. If not, the owner may want to use their construction management team to create and maintain a Ghost Schedule that more accurately reflects the real status of the project.¹⁶

Need to Rebaseline the Schedule – There are occasions on a project when a schedule may need to be rebaselined. Typically, this becomes necessary when changes or delays have rendered the original project plan meaningless. This type of situation and its causation is generally obvious to both the owner and the contractor. However, if the contractor unilaterally rebaselines their schedule on several occasions, this is an early warning sign of potential claims and disputes. Claims of delay, constructive suspensions of work and other impacts are likely to be raised as justification for rebaselining the schedule.

- **Recommended Claims and Dispute Avoidance Actions:**

A classic way to mitigate this situation is to include a requirement in the Schedule specification that any schedule rebaseline effort must be supported by a Schedule Rebaseline Report which justifies the need for a rebaseline and must be done in a joint review meeting with the owner, the contractor and all major subcontractors and that unilateral rebaselined schedules will not be accepted by the owner. In the absence of such a contract requirement, any time a schedule rebaseline is submitted, the owner should convene a joint review meeting involving the contractor, the owner’s representatives and all major subcontractors. The owner and contractor should discuss the need for a schedule rebaseline and, if not justified, the owner should refuse to accept a rebaselined schedule. As noted above, the owner may also want to have their representatives create and maintain a Ghost Schedule for the owner’s use in the event delay claims are later filed.

Constant Resequencing of Work – Critical Path Method (“CPM”) schedules are dynamic in nature. That is, as the project proceeds it is likely that not everything will go as planned. Some activities will start earlier or later than planned; labor productivity may not come up to the planned level; labor shortages may occur; equipment and material deliveries may be later than planned; weather or differing site condition delays may be encountered; etc. When events such as these arise, the schedule must be adjusted to accommodate such occurrences. Under circumstances such as these, resequencing of work activities may well be justified. However, if every schedule update contains resequencing of work activities without apparent justification, then this should be an early warning sign of claims and disputes. Claims arising from this sort of scheduling generally include delay, constructive suspensions of work, constructive changes and loss of productivity.

16. Scott A. Beisler and James G. Zack, Jr., [Ghost Schedules – What, Why & What’s the Risk?](#), Navigant Construction Forum™, Boulder, CO, March 2015.

- **Recommended Claims and Dispute Avoidance Actions:**

Owners should review every schedule update carefully. Whenever resequencing of a number of activities is encountered the owner needs to meet with the contractor and any affected subcontractors to question the need for resequencing of each activity resequenced. If the answers are logical and justified then there would appear to be no problem accepting such resequencing. On the other hand, if there is no justification, the owner should reject the schedule update. If the contractor refuses to abandon their resequencing efforts, they should document this and consider the possibility of creating and maintaining a Ghost Schedule.

Continual Schedule Slippage and Float Consumption – As noted above, CPM schedules are dynamic and should always be responsive to changes in the project plans and the current schedule update. However, if the owner's update review encounters constant schedule slippage and a continual erosion of float in the schedule, this is an early warning sign of potential delay claims.

- **Recommended Claims and Dispute Avoidance Actions:**

When an owner observes this happening in a schedule, rather than ignoring this trend or refusing to approve or accept the schedule update submittal (which effectively leaves the project with no schedule) the owner could include in the Schedule specification a requirement for a TIA for every identified delay, the owner may be justified in requesting a TIA for each schedule slippage in the update. Additionally, the Schedule specification should contain a Schedule Update Narrative submittal with every update. The specification should outline the contents of this narrative report, one item of which should be an explanation of all schedule slippage including the event causing the slippage (i.e., who or what caused the activity to slip, how that impacted the activity, etc.). If the specification has such a requirement, carefully review the narrative report to see if the slippage is justified. If the Schedule specification has neither requirement, the owner ought to perform a joint schedule update review with the contractor and all major subcontractors to review the update, ask about schedule slippage and justification for the same and deal with the situation at this joint meeting.

Early Warning Signs for Owners – Change Issues

Excessive Number of Notices of Change and/or Delay – Virtually all construction contracts contain written notice requirements in both the Changes and the Delay clauses. The purpose of such notice requirements is to keep the owner apprised of potential problems and allow the owner to get involved in resolving such issues. Contractors submitting such written notices are complying with the terms and conditions of the contract and should not be faulted from doing so. On the other hand if the contractor is constantly filing spurious or questionable notices of change and delay, this is likely an early warning sign of potential claims and disputes.

- **Recommended Claims and Dispute Avoidance Actions:** One contractual defense that may be employed is a requirement in both the Changes and the Delay clauses that requires the contractor to submit a complete change order proposal or claim submittal within a specified number of days after the notice is filed (e.g., 30 calendar days). If such a requirement is included in the contract, the clause should identify what must be included in a "complete change order proposal or claim submittal". In order to make this clause realistic, the clause should include language to the effect that if the delay event or changed work is not completed within this timeframe, the contractor must still file the request for change or claim within the specified time, but may note the submittal is not complete and may file an amended request within 30 calendar days after the event or work is completed. Absent such a requirement, the owner should review each notice promptly and carefully to determine whether the notice is justified or not. If it is justified, the owner should work with the contractor to craft the most cost effective solution to the issue. If it is **not** justified, the owner should respond, advising the contractor that the notice is not warranted and include detailed reasons or justifications as to why not. The owner should continue to track each identified situation carefully to determine potential liability and the eventual outcome.

Change Orders Not Address Time and Impact Costs or Contractor Will Perform Changed Work Only on Time and Material Basis

– Both situations discussed here are common in construction and either one is an early warning sign of future claims and disputes. Many contractors are loathe to provide a complete change order proposal which includes all hard dollar costs, the projected time extension and delay costs and any related impact damages. While they are willing to propose, negotiate and settle the hard dollars costs they either do not know how to estimate time and impact or are unwilling to take on the risk of doing so and signing a change order with no reservation of rights. This type of contractor is likely to only be willing to perform changed work under a change order with a reservation of rights or, if the owner is not willing to allow this, perform changed work on a time and material (“T&M”) or cost reimbursable basis. This latter scenario is tantamount to a complete reservation of rights to hard dollar costs, delay and impact costs. Situations such as this are likely to lead to claims concerning the cost of directed changes, delay and delay impact. Of course, this situation is exacerbated in many instances by an owner who refuses to deal with requested time extensions and/or impact damages. Owners who want to deal with hard dollar costs only open themselves up to such claims every time they take this course of action.

- **Recommended Claims and Dispute Avoidance Actions:** One preventive measure that can be included in the Changes clause is a requirement defining what must be included in all change order proposals – scope of work, hard dollar costs, time extension request and impact costs – all of which must be justified by a complete breakdown of the requested costs and a TIA demonstrating the need for a time extension. Absent such a contractual requirement, the owner and the contractor should first negotiate the scope of the change order work in detail, to make certain both parties are preparing estimates on the same work. The owner may then prepare their own cost estimate including impact damages and their own TIA. Once this is completed, the owner and contractor should meet to compare estimates and TIAs. If agreement cannot be reached through reconciliation of the two estimates and TIAs, the owner should challenge the contractor to “correct” their estimate on a line by line basis and do the same concerning the owner’s TIA. If this is done, rather than the traditional method of “attacking” the contractor’s estimate, it is more likely that the owner and contractor can reach a mutual satisfactory resolution of the scope, time and cost of a change before work proceeds in the field.

Contractor Working on T&M Changes Does Not Submit Daily T&M Records – Should the owner decide to issue T&M change orders, they are at risk for all time, all costs and all impacts as this is an open ended work order.¹⁷ The only way the owner can exercise some degree of control over the time and cost of such changes is to obtain contemporaneous information on the time and cost of the change. When contractors do not submit daily T&M records the owner is at increased risk. This lack of information should serve as an early warning sign of a forthcoming claim or dispute. The nature of this claim would be a claim for disputed change order costs.

- **Recommended Claims and Dispute Avoidance Actions:**
The best defensive measure against this sort of situation is to include clear language in the Changes clause of the contract requiring a contractor to submit daily T&M records for each T&M change separately, at the end of each shift of work, to the owner’s representative. Such a requirement should also mandate the information that must be submitted daily (i.e., labor forces by trade for both the contractor and any subcontractor working on the T&M change, equipment, materials, etc.). Owner representatives must be trained to observe T&M work closely and compare their daily observations to the daily T&M submittals from the contractor. Should the owner’s representative disagree with some portions of the daily T&M submittals, they should mark up the contractor’s submittal in a different color ink and attach a record of their own observations. Such submittals, reviewed and marked up documents and owner’s records should be filed daily and used to reconcile the final cost when the T&M work is completed. If the contract does not contain such a requirement, then the owner should assign one or more inspectors to the T&M work with the direction to record everything concerning the T&M work from start to finish. While this may require the employment of more inspectors on site, it will likely cost far less than not having any contemporaneous documentation of the actual cost of the T&M work.

Excessively High Change Order Cost Proposals and/or Lump Sum Cost Proposals with No Supporting Documentation – Often times contractors, when the opportunity presents itself, will submit one line lump sum proposals in response to an owner’s request for a change order cost proposal. When the owner receives such a proposed lump sum cost, it may significantly exceed the cost the owner anticipated and/or have no supporting documentation which would afford the owner the opportunity

17. While some owners attempt to limit their risk by issuing T&M changes with a Not to Exceed (“NTE”) cost this does not totally resolve the issue as contractors are not required to perform all the changed work for the NTE cost but, rather, they are only required to perform the changed work up to the NTE cost and “drop tools”. Should the owner want to complete the changed work they will be required to change the NTE cost. Thus, the owner is not really protected in this situation.

to analyze the proposed cost. Contractors may do this because they perceive themselves to be in the driver's seat. That is, they may believe the owner needs this change made and feel that they are the only one on site who can perform the changed work. Thus, they may try to coerce the owner into either accepting the proposed cost or issuing a T&M change order. If this happens it is an early warning sign of a pending claim or dispute concerning the cost and impact of a specific change or group of changes.

- **Recommended Claims and Dispute Avoidance Actions:** The most effective tool to prevent this situation from occurring is a clear requirement in the Changes clause that the contractor must submit a breakdown of all elements of the proposed cost separately (i.e., labor, materials, equipment, subcontractor costs [broken down in the same manner], small tools and consumables, etc.). The clause ought to make clear that even though the owner intends to issue lump sum change orders the lump sum value of the changed work will be derived from negotiations based on the individual elements of cost. If such a requirement is **not** contained in the contract then the owner should prepare their own detailed estimate as a counter proposal and challenge the contractor to show the owner's estimate is erroneous, on a line by line basis.

Early Warning Signs for Owners – Project Management Issues

Excessive and Frivolous Requests for Information – Requests for Information (“RFI”) are a typical communication mechanism on most construction projects. An RFI is typically a question raised by a contractor and submitted to the owner and/or design professional concerning some requirement or provision of the drawings or specifications that the contractor is not clear on. However, numerous claims games have been created revolving around the use and abuse of RFIs.¹⁸ Should the owner start to see numerous RFIs that are actually submittals; routine project correspondence; requests for substitutions; responses to notice of non-conformance; RFIs that are easily answered by reviewing the specifications and/or drawings; or RFI's asked more than once, these are early warning signs of pending claims and disputes. Claims arising from RFIs are typically constructive change claims including the attendant delay and impact costs. Having noted this, the authors have observed situations where the design was not complete at the time of bidding and the owner and design professional opted to complete the design through the submittal and RFI process rather than delay awarding the contract. In the event this happens, the number of RFIs are certain to increase radically.

- **Recommended Claims and Dispute Avoidance Actions:** One of the more effective ways to avoid situations such as this, is to incorporate a well thought out RFI clause and system in the contract documents, intentionally designed to control the RFI process.¹⁹ If the contract does **not** have such a clause, the owner's team needs to set up a process similar outlined in the referenced report (i.e., strict review of all documents labelled as an RFI immediately upon receipt; rejection of those documents that are not truly RFIs; and classification and tracking of all documents submitted as an RFI by category; and tracking all justified RFIs to insure prompt response).

Massive Letter Writing Campaign or Change in Style of Contractor's Project Correspondence – The technique is frequently referred to as “papering the job”. It involves flooding the owner with a large number of letters providing notices; complaining of poor design, slow responses to notices, requests for change orders, RFIs, submittals or time extensions; multiple complaints concerning designer or CM performance; etc. The object of this tactic is to put the owner on the defensive from the outset of the project and fill the project files with “documentation: of unresolved issues”. A variant of this tactic may be observed when the contractor's attorneys or claim consultants start writing such letters to the owner. When either of these situations arise they should be taken as early warning signs of pending claims and disputes. Such claims will typically revolve around constructive changes, constructive suspensions of work, delay and the attendant impact of such claims.

- **Recommended Claims and Dispute Avoidance Actions:** If some of the contractor's letters demonstrate entitlement to a change order as a result of an event, the owner should issue such change orders as promptly as possible to demonstrate that the owner complied with the provisions of the contract. As expensive as it sounds, the most effective way to deal with the remaining spurious or questionable correspondence is to make certain each letter is responded to promptly, objectively and professionally. All project correspondence must be logged and tracked to document prompt responses. This course of action will create a more accurate record of what happened on the project, when, who caused each issue, etc. If necessary the owner may need to increase the size of the project staff to achieve this result. However, this additional cost will likely be substantially less than a drawn out dispute.

18. Nigel Hughes, Christopher L. Nutter, Megan Wells and James G. Zack, Jr., *Impact & Control of RFIs on Construction Projects*, Navigant Construction Forum™, Boulder, CO, April 2013.

19. Ibid, see pages 21 – 28 for an example.

Change in Character and Content of Progress Meetings and Meeting Minutes

– Another early warning sign of potential claims and disputes is if there is a radical change in the character or content of routine progress meetings or meeting minutes (if the contractor kept them) or in objections to draft meeting minutes (if the owner kept them). This may be an early warning sign of simmering claims and disputes – even though the contractor may not have provided written notice. When this occurs, it is nearly impossible to predict what sort of claims may be lurking in the background but there is a near certainty some problem(s) is causing the change of attitude.

- **Recommended Claims and Dispute Avoidance Actions:** The challenge for the owner in a situation like this is to get the contractor to open up so the owner can ascertain what the problem(s) are. If this is a Partnered Project then the owner may be able to use the partnering facilitator to learn about the unresolved issues.²⁰ If partnering is not part of the project management process the owner may want to recommend bringing in a turnaround partnering facilitator to initiate a partnering process on the project and improve project communications.²¹ If this is done the owner should be able to determine the underlying unresolved issues. Once the issues are identified, perhaps the owner can work with the contractor to resolve the issues.

Inflated Payment Applications – It is not uncommon on lump sum projects with a negotiated list of pay items to encounter disagreements on monthly payment applications between the owner and the contractor. Typical disagreements tend to center on the contractor's estimate of the percentage of work completed on various pay items. For example, where the contractor may estimate that Pay Item No. 13 is 55% complete, the owner's representatives may assert that it is only 52% complete. This type of dispute is more or less common and can be worked out on the site. However, when the owner starts seeing monthly payment applications or loan draws that are substantially inflated, or that include disputed pay items, this may be an early warning sign of a pending claim or dispute. This may indicate a serious cash flow problem for the contractor. If there are a number of ongoing disputes over ambiguities in the contract where the owner directed the contractor to proceed with the work in accordance with the owner's interpretation this may, in part, explain the contractor's cash flow problems. The type of claim growing out of this situation is likely to be a series of constructive change claims.

- **Recommended Claims and Dispute Avoidance Actions:** If there are a number of ambiguous specification claims on the project, the owner should re-examine their previous determinations to make certain their earlier decisions were correct. If the owner determines some decisions were incorrect, issuance of a change order may help alleviate the cash flow problem. If this is not the case owners ought to confer with their legal counsel to determine if the owner should notify the contractor's surety to get them involved in trying to resolve or mitigate the situation.

Complaints from Subcontractors and Suppliers Concerning Slow or Late Payments

– Similar to the above situation, if the owner starts to receive complaints from subcontractors and/or suppliers about slow or late payments from the contractor, this too is an early warning sign of claims and disputes. Like the above, the typical claim arising from this scenario is one of constructive changes to the work.

- **Recommended Claims and Dispute Avoidance Actions:** The owner should examine their payment process to see that it is not extremely slow thus exacerbating the situation. If it is, the owner needs to quickly modify the payment system appropriately. And, like the above situation, the owner should confer with their legal counsel and consider notifying the contractor's surety.

Attorney or Claim Consultant Attending Project Meetings

– Obviously this is an early warning sign of pending claims and disputes. Owners probably cannot prohibit the contractor from bringing their legal counsel and/or claims consultant to progress meetings. So, the challenge for the owner is to ascertain what are the simmering claims and disputes. The type of claims arising from this situation need to be discovered and addressed as quickly as possible so as to avoid a dispute at the end of the project.

- **Recommended Claims and Dispute Avoidance Actions:** While the owner cannot prevent this action, they should not be intimidated. The owner should still run the progress meeting in the normal fashion, using their standard meeting format. The owner should still focus the discussion on the contractor and the subcontractors are typically included in the meeting and maintain thorough meeting minutes. In the meeting the owner should ascertain what issues are unresolved and work on a plan to resolve these issues.

20. Sue Dyer, *Partner Your Project*, Pendulum Publishing, Livermore, CA, 1997. Ralph J. Stephenson, *Project Partnering for the Design and Construction Industry*, John Wiley & Sons, Inc., New York, 1996.

21. International Partnering Institute, *Collaborative Construction – Lessons Learned for Creating a Culture of Partnership*, Livermore, CA, June, 2008.

Early Warning Signs for Owners – Field Issues

Late Delivery of Materials & Equipment – It is axiomatic that construction cannot proceed effectively or efficiently unless materials and equipment are on site when and as planned. This may even involve delivery to the correct working space on the site. For example, in a high rise office structure having thousands of sheets of drywall on site does not help progress the work if they are stored inside on the first floor when the crews needs several hundred sheets each on the seventeenth and eighteenth floors. If material and equipment delivery is proceeding in this manner and the owner notes idle crews waiting for delivery to their work area, this is an early warning sign of potential claims and disputes. The likely type of claims growing out of this will be delay, constructive suspension of work and/or lost productivity.

- **Recommended Claims and Dispute Avoidance Actions:** One way an owner can track this issue from the outset of the project is to require in the Scheduling specification that all equipment and material procurements activities be included in the baseline schedule and coded in the Work Breakdown Structure (“WBS”) accordingly. If this is done, the owner can isolate the delivery activities using the correct WBS codes and print out a delivery schedule. This delivery schedule can be used by the owner’s representatives in the field to track such deliveries and deliveries should be discussed in the weekly project meetings.²² In the absence such a contract requirement, at each weekly update meeting the owner should ask the contractor to list what activities will be starting over the next two to three week period and then inquire about the necessary material and equipment deliveries required to support this planned effort.

Lower Than Expected Manpower Levels or Contractor Ramps Down Manpower Prior to the End of the Project – Similar to the above, the project cannot be completed on time nor the work proceed efficiently unless the contractor has the appropriate numbers and type of qualified craft labor on site when and as needed. If the owner observes that the anticipate manpower levels have not been met, or notes that the manpower on site is dropping off even though there is a large amount of work remaining to be accomplished, this is an early warning sign of potential claims and disputes. The most likely type of claim arising from this situation is one of productivity loss.

- **Recommended Claims and Dispute Avoidance Actions:** One way to track the labor required to meet the schedule is for the Scheduling specification to require that the baseline schedule be manpower loaded. If this is done the owner can extract a set of histograms by craft for the duration of the project and then observe on a weekly basis whether the contractor and each subcontractor has the required amount of labor on-site to support the schedule. If not, the owner can surface this issue at the weekly project meetings to find out what is happening, why and what can be done about it. Without such a contract requirement, the owner is somewhat at a loss to create predictive histograms, but can still track ongoing productivity of key activities (i.e., activities on the schedule’s critical path and any subcritical paths of 30 calendar days or less) and measure progress of these activities. Using these two metrics the owner can adjust the durations of the remaining key activities’ work to determine whether they will complete on time and achieve the contract completion date. If they will not meet the required date, the owner can address this issue at routine project meetings, showing their calculations and address with the contractor how to remedy this situation.

Turnover in Contractor Project Management Staff – Yet another early warning sign of potential claims and disputes is a turnover in the contractor’s key project management staff during the course of construction and with **no** apparent logical reason. The owner should directly contact the contractor’s executives to determine what is happening and why. There may, however, be a logical reason. For example, the contractor may have been awarded a large new contract and needs to staff it immediately while this project is past its most critical points and can be completed with another project management team.

- **Recommended Claims and Dispute Avoidance Actions:** One effective way to prevent a situation like this is to include in the contract a listing of “contractor key project management personnel” (e.g., project manager, project scheduler, project quality control manager and others as appropriate) with the requirement that no “key personnel” can be removed from the project until substantial completion is achieved without advance written approval of the owner. Lacking such a contractual requirement, the owner should meet with the contractor’s executives to learn why the shift in project management personnel. If the reason revolves around the current staff’s lack of resolving issues, obtaining adequate labor, managing subcontractors, etc. the owner may want to engage in a discussion of how they can assist in resolving such issues.

22. See Amadon, Federico, Pitaniello and Zack, [Construction Scheduling Games – Revised & Updated](#).

Decline in Labor Productivity – Again, like the two indicators above, if labor productivity has dropped off or is declining slightly month after month, this is an early warning sign of potential claims and disputes. Obviously, the type of claim likely to be generated is one of productivity loss.

- **Recommended Claims and Dispute Avoidance Actions:** If the Scheduling specification included manpower loading then baseline productivity can be calculated from this data. If the contract required the use of Earned Value, the planned and actual productivity can be calculated easily. If neither of these techniques was specified, the owner's field representatives ought to observe and make some recording of labor productivity. Such observations should be made after the "learning curve effect" has diminished. Further observations of labor productivity should take place routinely throughout the project and compared to the baseline metrics. If a drop off in labor productivity is observed, the owner should bring this to the attention of the contractor and initiate discussions on why this may be occurring and what can be done to resolve the problem.

Excessive Quality Disputes – It is fairly typical that there will likely be a limited number of quality disputes on any project. All non-conformance reports should be received and reviewed by the owner in order to minimize the amount of rework on the project.²³ Contractor responses typically propose means and methods of resolving the non-conformance issue. If, however, the contractor refuses to provide a proposed fix to the non-conformance report and correct deficiencies, this is an early warning sign of pending claims and disputes. The type of claim most likely to result from this situation is one of constructive changes.

- **Recommended Claims and Dispute Avoidance Actions:** If a situation like this arises the owner needs, in the first instance, to review the non-conformance report in contention to see if it is correct. Assuming it is correct in all respects, the owner needs to meet with the contractor's project manager (and perhaps their executives) to determine the nature of the problem and find a way to get the quality dispute resolved without a claim being filed.

Early Warning Signs for Contractors – Scheduling Issues

Requests for Recovery Schedules – Almost all Scheduling specifications allow the owner to require submittal of a recovery schedule when a schedule update shows a projected late project completion. If, however, the contractor has filed multiple requests for time extensions that the owner has **not** yet responded to but still demands a recovery schedule, this is an early warning sign of pending claims and disputes. The type of claim arising from this situation is most likely to be one of constructive acceleration.

- **Recommended Claims and Dispute Avoidance Actions:** Should this situation arise and assuming the contractor has properly filed notices of delay and time extension requests in accordance with the terms of the contract for each delay event, then the contractor should file a notice of constructive acceleration upon receipt of the owner's request for a recovery schedule. If the owner ignores this notice or responds with a continued demand for a recovery schedule, the contractor should proceed to plan their acceleration efforts, provide the recovery plan to the owner, initiate the recovery efforts (only after the owner approves the recovery plan) and then initiate tracking of all time, costs and impact arising from this effort.

No Responses to Notices of Delay – Typical construction contracts require written notices of delay to be filed with the owner for every event the contractor believes **may** cause a delay and for which they **may** be entitled to a time extension. The purpose of these notices is to keep owners apprised of what is happening on the project and to give the owner the opportunity to get involved with solutions to such problems. However, some owners are loathe to deal with delay claims until the end of the project when the owner can actually see "how much time does the contractor really needs". When notices of delay are filed and **no** response received, this is an early warning sign of potential claims. As with the above warning, the type of potential claim is likely to be a constructive acceleration.

23. Jason M. Dougherty, Nigel Hughes, James G. Zack, Jr., [The Impact of Rework on Construction & Some Practical Remedies](#), Navigant Construction Forum™, Boulder, CO, August 2012.

- **Recommended Claims and Dispute Avoidance Actions:** When a situation such as this arises, the contractor needs to meet with the owner and explain the potential of a constructive acceleration claim. The contractor needs to convince the owner to deal with the notices of delay in a timely manner in order to avoid a later dispute. If this approach is ineffective the contractor should confer with their legal counsel.

Multiple Suspension of Work Directives – Virtually all construction contracts contain a Suspension of Work clause. This clause gives owners the right to direct a work stoppage, of all, or a portion of the work, at any time. Owners are **not** required to justify the issuance of such stop work orders and contractors are required to comply with such orders. It is the author’s experience that stop work orders are **not** common on the typical project. Therefore, if the contractor encounters multiple suspension of work orders on a project this is an early warning sign of potential claims and disputes. The type of claim would likely center on the stop work orders and project delay.

- **Recommended Claims and Dispute Avoidance Actions:** Whenever a stop work order is issued (especially if the order is to “stop all work” on the project) the contractor needs to meet with the owner to discuss how long the suspension is likely to last and whether the owner wants the contractor to remain on “hot standby” or demobilize all resources (labor, equipment and project management staff). Agreement on this aspect of the stop work order is critical in order to establish what damages are owed at the end of the work stoppage.

Late or Incomplete Delivery of Owner Furnished, Contractor Installed Items – Many owners pre-purchase major pieces of equipment for a project to save time and/or cost. Some owners of large programs may even pre-purchase some of the bulk commodities common to several projects on a program (e.g., rail and concrete ties for a large light rail system program). If this is done, the bid documents will reflect the fact that the owner is purchasing certain items of equipment and/or material and will furnish them to the contractor when needed. This is commonly referred to as Owner Furnished, Contractor Installed (“OFICI”) items. When owners employ OFICI they either stipulate delivery dates in the contract documents or provide them to the contractor after contract award. Contractors must include such dates in their project plan and the schedule. Should the OFICI equipment or material **not** be delivered on time, or if the deliveries are incomplete or not as represented by the owner, this is an early warning sign of potential claims and disputes. The type of claims likely to arise include delay and constructive changes.

- **Recommended Claims and Dispute Avoidance Actions:** If a situation such as this arises, the contractor must file written notice of delay and/or change in strict accordance with the terms of the contract. At this point, the contractor should commence tracking all time and cost impacts cause by this situation, separately from base scope time and cost. Ultimately the contractor must perfect and submit an appropriate claim. Should the owner refuse to deal with the claim or unwilling to resolve the claim, contractors should seek advice from their legal counsel.

Early Warning Signs for Contractors – Change Issues

Excessive Number of Changes – Virtually all contracts have a Changes clause providing the owner with the right to make needed changes within the general scope of the work. This clause allows the owner to make changes to the work, as needed. And, virtually all projects have at least a few change orders. However, the contractor may encounter a project with an excessive number of changes. One of the authors was involved in a project that ultimately had 900+ change orders, some of which involved multiple changes. This is an early warning sign of potential claims and disputes. The type of claims likely to arise would be claims for disputed cost of changed work, delay, lost productivity and attendant impact costs.

- **Recommended Claims and Dispute Avoidance Actions:** The contractor must always be alert to changes and the need to file written notice of change in a timely manner. Once the contractor becomes aware of the potential for an excessive number of changes they need to tighten up their change management procedure and system including written notifications, negotiation of the scope of changed work, the ability to prepare and submit timely adequate cost and time estimates, and the ability to negotiate agreements on scope, time and cost. The contractor may need to retain additional project management staff (i.e., estimators, schedulers, document control personnel, etc.) to deal with a large number of changes. If this becomes necessary the contractor would be well advised to provide notice to the owner that additional site staff are being assigned to the project due to the large number of changes and the contractor anticipates that the owner will compensate them for the added staff.

Owner Refusal Negotiate Time or Impact Costs with Change

Orders – Despite the fact that almost all owners say they want to settle all change orders full and final and with no reservation of rights on change orders, all too often owners refuse to deal with delay arising from changes or impact costs such as changes to unchanged work. If an owner takes this approach to change orders, this is a clear warning sign of forthcoming changes and claims. Obviously, the resulting type of claim will involve the cost of changes, time and other cost impacts and perhaps constructive acceleration.

- **Recommended Claims and Dispute Avoidance Actions:** When an owner starts to take this position, the contractor needs to open a discussion of what the downside risk of this approach is. The contractor needs to advise the owner that this position will result in all change orders having a reservation of rights and if this is the case then there will be a major claim at the end of the project for all delay and all impact costs. Should the owner persist in this approach the contractor needs to be vigilant in recording all costs and all time impacts arising from each change order. If the owner refuses to allow reservation of rights language on the face of each change order, the contractor should confer with their legal counsel concerning the viability of including reservation language in the cover letter when returning the change order to the owner. If this technique is not acceptable, the contractor may want to adopt the position that they will not sign any change order and if the owner wants work changed they will have to issue a unilateral change on a T&M basis. Finally, if the owner refuses to deal with the potential delay of each change the contractor should make certain that the time extension section on the face of the change order does **not** state “0 days”. It should be annotated “To Be Determined” or “TBD”.

Disagreements Over “Scope of Work” Items and/or Contract Interpretation Disputes

– This type of disagreement is typically unpredictable at the outset of the project and generally does not manifest itself until a submittal of some sort is provided for review by the contractor. At this point, if the owner’s design professional rejects the submittal or directs a substantial revision, the contractor typically realizes that there is a disconnect between themselves and the owner as to what the contract actually requires. The authors’ experience is that more times than not, the specification governing the submittal has an ambiguity

which was **not** identified until the submittal was provided.

Up to that point both the owner and contractor thought they understood the requirement clearly. Now, they know there is a disagreement concerning what exactly is in the scope of work for this specification section. This is an early warning sign of potential claims and disputes. The type of claim ordinarily arising from this situation is a constructive change claim.

- **Recommended Claims and Dispute Avoidance Actions:** As soon as a submittal is rejected or the contractor is told to substantially revise the submittal to include “x, y and z” the contractor needs to review their submittal to see if they made an error. If this review indicates that the submittal reflected exactly what the contractor thought was required, they need to send a written notice of change to the owner. This is important to preserve the contractor’s rights and to emphasize to the owner and their design professional that the contractor’s objection must be taken seriously. Subsequently, the contractor needs to meet with the owner and their design professional to discuss the different interpretations of the specification in contention. If the owner and design professional insist upon their interpretation of the specification and direct the contractor to proceed accordingly, the contractor must do so or face a potential default interpretation. The contractor must carefully track all time and cost impacts separately from base scope work so that when the disputed work is complete, a properly documented claim can be filed and supported.

Early Warning Signs for Contractors – Project Management Issues

Turn Over in Owner Project Management Staff – If the owner suddenly and without apparent reason replaces their project management staff, this is an early warning sign of potential claims and disputes as it is illogical for an owner to take this action if they are satisfied with what is happening on the project. Unfortunately, the type of claim and dispute likely to arise cannot be predicted and it is up to the contractor to suss out the issue(s) behind this decision.

- **Recommended Claims and Dispute Avoidance Actions:** The most obvious way to find out what caused the change out of project personnel is to meet with the outgoing project team and ask the question “Why is this happening?” This should be done before they depart the project if at all possible. Depending on the information received, the contractor ought to meet with the owner’s executives to ask the same question. Once the real issues are tabled the contractor can, hopefully, work with the owner to resolve the issues without need to resort to claims or disputes.

Payment Problems – If the contractor encounters slow or late payments this is an early warning sign of pending claims and disputes. This may indicate that the owner’s staff is not doing a good job of tracking the progress in the field which, in turn, causes them to dispute the percentages complete claims by the contractor. On the other hand, this may also mean that the owner is running out of funds to complete the work of the project. In either event, this is an early warning sign of claims and disputes. If allowed to go on too long the type of claims likely to result will include delay or constructive suspension of work.

- **Recommended Claims and Dispute Avoidance Actions:** If the slow or late payments stem from disagreements over progress, the contractor needs to meet with the owner’s staff that reviews payment applications to discuss the issue. The owner and the contractor may need to renegotiate and revise the Schedule of Values. If there is no apparent reason for such payment delays, the contractor needs to seek advice from their legal counsel to see what options are open to them (e.g., terminate involvement in the contract if the contract provides for contractor termination; take action under the relevant Prompt Payment Act, if there is one in the State that covers this project, etc.)

Change in Style of Owner’s Project Correspondence – If, during the performance of the work, the owner’s correspondence changes radically, this may indicate that the owner has an attorney or claim consultant writing their letters. If, unlike earlier correspondence, there are constant references to poor contract performance on the part of the contractor, or there are multiple complaints concerning contractor non-compliance with contract requirements, this is obviously an early warning sign of claims and disputes. The type of claim or dispute likely to result will be a Default termination.

- **Recommended Claims and Dispute Avoidance Actions:** The contractor needs to notify their legal counsel and perhaps, their surety of the situation and seek their advice. Additionally, the contractor should convene a meeting with the owner and their staff or construction managers to discuss the situation and determine the underlying issue(s). If issues are clearly revealed then the contractor can work with the owner to resolve the issues and avoid disputes.

Delayed Submittal Reviews and Responses – One of the major changes in the construction industry over the past few decades is the radical increase in the number of shop drawings and submittals that must be provided by the contractor. This change, when combined with the contract requirement that “...materials and/or equipment may not be imported to the site nor work proceed...” until the submittal is approved, means that each submittal has the potential to create a delay to the work and, perhaps, the critical path of the schedule. The authors have noted that to protect the owner, many contracts have a stipulated time for review and response to each submittal (typically 30 calendar days). In some instances, the contract may contain a “submittal metering clause” prohibiting the contractor from submitting more than “x” submittals per week or per month. Given the potential for delay the contractor must monitor the submittal review and response process very carefully. When submittal responses are not as prompt as called out in the contract or as they should be, this is an early warning sign of claims and disputes. The typical claims are likely to be delay or constructive suspension of work.

- **Recommended Claims and Dispute Avoidance Actions:** At the outset of the project, when preparing the baseline schedule, the contractor should consider putting all required submittals in the schedule including either the contract stipulated review time or a “reasonable period of time” for review. If this is done and assuming the contractor utilizes a robust WBS system such that all submittals and submittal review times are coded separately from other activities, the contractor can print out their own “submittal schedule” documenting when each submittal is due to the owner and when the response is scheduled. This provides the contractor with the beginnings of a good tracking system concerning submittals. Some owners may ask the contractor to remove the submittal review times from the schedule but since each review and response may be the source of a delay, contractors may rightfully decline such a request. Contractors must stay alert to submittal responses and each time the scheduled period has lapsed without a response, should submit a written notice of potential delay to the owner and track, in the schedule, the actual response time in order to track the consumption of schedule float.

Owners Correcting Design Deficiencies Through the RFI

Process – The RFI process is used widely in construction as a communications tool. The intended use of an RFI is for the contractor to ask a question of the owner, construction manager and/or design professional concerning some requirement of the contract. The response should **not** be a change to the requirements of the contract, but rather, a clarification. The exception to this statement is when the RFI has identified an issue that requires a change to the work and then the response should indicate that a change order is forthcoming. It is the authors' experience that all too often owners and the representatives attempt to use RFI responses to correct errors or deficiencies in the contract documents without issuing a change order.²⁴ Should the contractor encounter situations such as this, this is a clear early warning sign of potential claims and disputes. The type of claim resulting from this sort of action is a constructive change claim.

- **Recommended Claims and Dispute Avoidance Actions:** Contractors must review each RFI response to determine whether it is simply a clarification or a change to the work. Any time a response appears to cause changed work, written notice to the owner must be filed in strict accordance with requirements of the contract. If the owner persists with their interpretation and directs the contractor to proceed, the contractor should do so under protest, tracking all time and cost impacts separately from base scope work so as to be able to file and document a claim for damages when the changed work is completed.

Design Professional Advises “Coordination of Details Will Be Done through the Shop Drawing Process” – Coordination of trade subcontractors in the field is typically the role of the general contractor. However, coordination of design details between trades (especially mechanical, electrical, plumbing and control systems) should be performed by the design professional and/or construction manager prior to the project being bid. This type of coordination should be included in the drawings such as one line electrical conduit runs; plumbing and HVAC runs; wall penetrations; etc. When a designer advises the contractor that coordination of these details will be accomplished through the submittal process, this is an early warning sign of claims and disputes as it indicates that the project design is not complete. The typical claim growing out of this situation is a constructive change claim.

- **Recommended Claims and Dispute Avoidance Actions:** Given this attitude by the design professional the contractor must review each submittal and/or RFI response thoroughly and cautiously. The review should be oriented at whether the response will cause a change to the work. If it appears to do so, the contractor should provide timely written notice of change to the owner. If the owner directs contractor compliance with the response from the design professional without a change order, the contractor should comply, under protest, carefully documenting all time and cost impacts in order to be able to compile a well documented claim at some later point in time.

Exclusion of Design Professional from Project Meetings – Design professionals should be included all project update meetings as contractors frequently have questions concerning the project design which can be addressed in the meeting by the design team. When the design team is excluded from the project site meetings by the owner, even when design input is needed, this should be taken as an early warning sign of claims and disputes. The types of claims likely to result include constructive changes, delays and/or constructive suspensions of work.

- **Recommended Claims and Dispute Avoidance Actions:** The contractor probably will not be advised why the owner has excluded the design professional from project meetings. And, the reason may not matter. In a situation such as this, a contractor in need of an opportunity to meet with and discuss issues with the design professional, should specifically notify the owner in writing that they need to have the design professional present at the next project meeting to discuss certain issues that require resolution. The written request should briefly identify each issue and the contractor should request that each issue be specifically included in the meeting agenda. If the owner continues to exclude the designer the contractor should pose their inquiries as best they can through the RFI process but each should be accompanied by a written notice of potential delay on the basis that “...the issue could have been resolved at this week’s project meeting rather than awaiting a response to RFI #35.”

Attorney or Claim Consultant Attending Project Meetings – It is quite apparent that having the owner’s legal counsel and/or claims consultant attend routine project meeting is an early warning sign of claims and disputes. What sort of claim is likely to be raised is, however, unknown to the contractor. It is up to the contractor to ascertain this information.

- **Recommended Claims and Dispute Avoidance Actions:** If the contractor has filed several claims, none of which are yet resolved, the owner may have these additional individuals at project meeting to discuss the claims. This is logical and understandable. However, if there are no pending claims from the contractor, then the contractor should ask the owner why they were invited. If the owner fails to provide a reasonable response perhaps the contractor ought to advise the owner that if the owner is going to have their attorney attend all meetings then the contractor will do likewise. Hopefully, at this point, each party will consider the cost of such actions and adopt a more reasonable manner to proceed.

Contractor Told not to “Put Things in Writing” – One of the authors was involved in a project where the owner specifically told the contractor **not** to put things in writing. The owner’s direction included meeting minutes, RFIs and notices of change and/or delay. This project was a gigaproject²⁵ with a huge potential “award fee” based upon completion of the work **under** budget and **earlier** that required. The author, upon arriving at the site, learned that the project was under budget and ahead of schedule. This directive was a mechanism used by the owner to direct extra work (which absorbed the cost and time savings the contractor had achieved to date and inflated the project cost and extended the project time) thus lessening the chances of the contractor achieving the award fee. If a directive like this is provided by the owner, the contractor should recognize this as an early warning sign of potential claims and disputes. Virtually any type of claim may result from this sort of action.

- **Recommended Claims and Dispute Avoidance Actions:** If given such a directive the contractor should request that the directive be put in writing by the owner’s project manager or executive. If the owner fails to do so, the contractor ought to document the directive by writing a letter to the owner repeating the directive; stating the date upon which the directive was given; and asking the owner to confirm the directive in writing. Whether the owner confirms the directive or not, the contractor should keep and distribute meeting minutes, submit written RFIs and document the responses in written form and provide all contractually required notices in writing and as specified in the contract. If the owner continues to object the contractor should remind them of the unchanged contract requirements.

Owner Advises “We’ll Take Care of This at the End of the Job” – Many owners loathe to grant time extensions and/or pay impact costs while the project is in progress. Owners who take this approach generally claim that they want to deal with real, documented damages, not speculative projected damages. What they fail to realize or acknowledge is that impact damages are real and are paid by the contractor on a daily basis so the refusal to deal with impact damages on an ongoing basis harms the contractor’s cash flow. Such owners also fail to understand that contractors need to protect themselves against the potential imposition of liquidated or late completion damages and thus, to protect themselves will accelerate the work. When an owner asserts this position, this is an early warning of potential claims and disputes. The most likely claims growing from this scenario of lost productivity damages and constructive acceleration claims.²⁶

- **Recommended Claims and Dispute Avoidance Actions:** To protect themselves, contractors must adhere to the written notice requirements of the contract at all times and in all situations. As soon as notice is provided to the owner of any event, contractors need to open new job cost accounts in order to accrue all related costs to the event. Likewise, contractors should include a new activity related to the event in the current project schedule. The new schedule activity should be connected to a logical predecessor activity or activities and its end date should be allowed to float free until the event has past. At that point, the schedule activity should be connected to appropriate follow on activities (successors) on the schedule. This process allows the contractor to prepare a schedule delay analysis to determine whether the event impacted the critical path or not. Even if the event did not impact the critical path, this process will track the consumption of float within the schedule such that later delays can be proven.

25. A “gigaproject” is generally defined as any project costing more than US\$1 billion. See Patricia D. Galloway, Kris R. Nielsen and Jack L. Dignum, *Managing Gigaproject: Advise From Those Who’ve Been There, Done That*, ASCE Press, Reston, VA, 2013.

26. James G. Zack, Jr., *Constructive Acceleration – A Global Tour*, Navigant Construction Forum™, Boulder, CO, 2011.

Negative Cost Trends – Contractors must employ a robust cost control system on each project to protect themselves.²⁷ At least monthly, all job cost accounts on the project should be updated. Each account should be trended to see if the costs associated with that account are tracking the estimate, or are overrunning, the planned cost. If the trend for one or more cost accounts is overrunning, the individuals responsible for that account should be queried as to what is causing the potential overrun. Additionally, project controls personnel should prepare an “estimate at complete” for the entire project to ascertain the net effect of all trends. If there are multiple potential negative trends and/or the project’s estimate at complete indicates a potential cost overrun, the contractor needs to take this as an early warning sign of potential claims and disputes. The types of claims growing from this type of situation will be defined by the causes of the negative trends.

- **Recommended Claims and Dispute Avoidance Actions:** The contractor needs to examine each cost account showing a negative trend and determine causation. If the negative trend is being caused by something the contractor, or one of their subcontractors, are responsible for (i.e., bad bid, material cost increases, lower than planned labor productivity, etc.) then the contractor needs to create a plan to reverse the negative trend and execute to this plan. On the other hand, if the negative trend is being caused by something for which the owner is liable, the contractor must prepare and submit timely written notice(s) to the owner and begin preparing a change order proposal or claim submittal.

Lack of Reasonable Evidence Concerning Financial Arrangements – If the contractor is performing work under a FIDIC contract²⁸ and has any concerns about the owner’s ability to finance and pay for the entire project, the contractor has the right to request “...reasonable evidence that financial arrangements have been made and are being maintained which will enable the Employer to pay the Contract Price in accordance with Clause 14 [Contract Price and Payment].”²⁹ The failure to respond to such a request may lead to a suspension of work claims and, potentially, termination of the project by the contractor.

- **Recommended Claims and Dispute Avoidance Actions:** Pursuant to this clause, the owner (employer) has 42 calendar days to provide the requested “reasonable evidence”. The failure of the owner to do so may result in a number of follow on actions. If “...the Employer fails to comply with Sub-Clause 2.4 [Employer’s Financial Arrangements] ... the Contractor may, after giving not less than 21 days’ notice to the Employer, suspend work (or reduce the rate of work) unless and until the Contractor has received ... reasonable evidence...”³⁰ Continuing, “The Contractor shall be entitled to terminate the Contract if: (a) the Contractor does not receive the reasonable evidence within 42 days after giving notice under Sub-Clause 16.1 [Contractor’s Entitlement to Suspend Work] in respect of a failure to comply with Sub-Clause 2.4 [Employer’s Financial Arrangement].”³¹ Thus, there is a clear 105 calendar day process in place to obtain satisfactory evidence the owner has the wherewithal to pay for the project or the contractor may withdraw from the project. During this period, a contractor is well advised to notify and seek guidance from their own legal counsel and, perhaps, their surety.

Owner Unreasonably Withholding Issuance of the Certificate of Substantial Completion – Substantial completion (sometimes referred to as mechanical completion) is that point in the project where work is sufficiently complete such that the owner can begin using the project for its intended purpose.³² Substantial completion is also when liquidated or late completion damages cease, unless the contract specifically states otherwise. Typically, construction contracts require the contractor to file a notice of substantial completion. Upon receipt of such notice, the owner is generally required to inspect the work. If the owner agrees the work is substantially complete, the owner is generally required to notify the contractor in writing to this effect. This written notice of often referred to as a certificate of substantial completion. If the owner is unreasonably withholding issuance of the certificate of substantial completion (i.e., for no stated reasons at all or for very flimsy reasons) then this is an early warning sign of potential claims and disputes. The type of claims growing out of this situation will generally revolve around constructive changes and project delay. The type of disputes likely to arise will revolve around a substantial punchlist including items the contractor does **not** believe are in the scope of work.

27. Construction Management Association of America, *Cost Management Procedures*, 2001 Edition, McLean, VA.

28. Federation Internationale de Ingenieurs-Conseils (“FIDIC”) contract.

29. Sub-Clause 2.4, Employers Financial Arrangements, FIDIC Conditions of Contract for Construction for Building and Engineering Works Designed by The Employer, 1998 Edition.

30. Sub-Clause 16.1, Contractor’s Entitlement to Suspend Work, FIDIC Conditions of Contract.

31. Sub-Clause 16.2, Termination by Contractor, FIDIC Conditions of Contract.

32. That is, unless the contract documents provide a more specific or detailed definition.

- **Recommended Claims and Dispute Avoidance Actions:** In order to avoid such last minute project disruption, a contractor should start working with the owner staff sometime prior to substantial completion to have them perform preliminary substantial completion inspections on a floor by floor or system by system basis. If this can be arranged and punchlists provided after each preliminary inspection, legitimately incomplete work can be completed before the final inspection. This will help avoid major project delay and disruption. In any event, whenever the owner provides the contractor with a punchlist, it must be carefully examined to determine that all allegedly “incomplete work” items are truly within the scope of work. If some are not, the contractor should provide prompt written notice of change. Should the owner demand the contractor complete the disputed work items, the contractor should perform with work under written protest, keep track of all time and cost impacts, and file a claim when the disputed work is complete.

Receipt of Cure Notice or Default Notice from Owner – Should the owner send a cure notice or show cause notice to the contractor (either of which is a precursor to a default termination) this is a clear warning sign of a large dispute in the making. The claim and dispute is likely to be one of wrongful termination.

- **Recommended Claims and Dispute Avoidance Actions:** Upon receipt of a cure notice the contractor should immediately confer with their legal counsel and seek their advice. Depending upon their advice, the contractor may also need to provide notice to their surety. The contractor needs to examine the claimed contract breaches to determine whether they actually breached the contract. Additionally, each alleged breach should be examined to determine whether the owner caused, in whole or in part, the alleged breach. If it is determined that the owner is at least partially responsible, the owner may not have clean hands and thus may not be able to terminate the contractor for default. The results of all such internal examinations must be provided to and discussed with legal counsel. The contractor at this point, should place themselves in the hands of their legal counsel, following their advice carefully so as to minimize the damage from this type of claim.

Early Warning Signs for Contractors – Field Issues

Multiple “Holds” on Drawings or Work –

Contractors tend to assume that once they are in the field performing work, the design effort is complete. It is the authors’ experience that this is not always true. For example, one of the authors was involved with the construction of a courthouse in the Midwest. The work was speeding toward an on time, in budget completion with a minimum of change orders. A few weeks before project completion – when interior finishes were nearing completion – the chief judge toured the building and ended up putting a hold on some 15% of the rooms in the project. These were all rooms for use by defendants and their attorneys during trials. The complaint relayed to the contractor by the contracting officer was that the judge was “extremely upset” that the interior finishes in these spaces were equivalent to the finishes in spaces used by prosecutors and judges. He found this unacceptable even though the interior finish schedules had been approved more than two year previously and were unchanged. Should something like this happen on a project, this is an early warning sign of pending claims and potential disputes. The typical claims are likely to be change and delay claims.

- **Recommended Claims and Dispute Avoidance Actions:** As soon as a hold notice³³ is provided the contractor must provide a written notice of potential delay. Again, and as noted previously, the contractor needs to open new job cost accounts to accrue the cost damages growing from this action and add a new schedule activity (or more than one if necessary) to track the potential delay and/or the consumption of float within the schedule. Once the holds are released, the contractor should complete the documentation, prepare and submit a claims for cost and/or time, as appropriate.

Lack of Responses to RFIs – As noted earlier an RFI is a communications vehicle whereby the contractor asks a question and receives a response. Assuming these are legitimate RFIs³⁴ concerning a portion of the contractor’s work, at least on the portion of the project where the question arose, the work is probably stopped or at least slowed down. The longer it takes for the owner or their representatives to respond, the greater the likelihood of a delay or constructive suspension of work claim. Thus, the failure to respond to RFIs should be considered an early warning sign of claims and dispute. Constructive suspensions of work and delay claims are likely to arise.

33. A “hold notice” under some contracts is similar to a directed Suspension of Work on many projects but is typically not accompanied by all the paperwork that accompanies suspension orders.

34. Nigel Hughes, Christopher L. Nutter, Megan Wells and James G. Zack, Jr., [Impact & Control of RFIs on Construction Projects](#).

- **Recommended Claims and Dispute Avoidance Actions:** If the contract stipulates a turnaround time for RFI responses then on the day this time has expired the contractor should provide written notice of potential delay. If no such time is contained in the contract and the owner and contractor did not negotiate a turnaround time for RFIs at the outset of the project or during an early partnering meeting, the contractor should provide written notice of potential delay after a reasonable period of time for a response has expired.³⁵ A new project cost account code should be opened to capture the impact costs (such as demobilizing crew(s) from this area of work to another and remobilizing them back to this area once the response is received). And, a new schedule activity should be included in the current schedule starting the date the RFI was submitted and continuing to the date when the response is received. When all is said and done, these actions will serve as the basis of the damages in the claim to the owner.

Owner Refusal to Acknowledge Differing Site Conditions – Most construction contracts contain a Differing Site Condition (“DSC”) clause³⁶ under which the owner assumes liability for latent site conditions in order to reduce contractor contingencies at the time of bidding. All such clauses require a written notice of DSC as soon as a materially different condition is encountered and direct the contractor to cease work in the area of the alleged DSC until the owner has the opportunity to investigate. Most such clauses require the owner investigate “promptly”. Once the owner makes their investigation it is not at all uncommon for the owner to simply advise the contractor to go back to work. That is, a standard DSC clause does **not** require the owner to tell the contractor whether they believe the condition is, or is not, a DSC before directing them to return to work. In most such cases, the contractor will work their way through the condition at their own expense. Obviously, to perfect a DSC claim the contractor will, among other things, have to document the time and cost damages resulting from the DSC. Thus, careful tracking of time and cost is mandatory. However, most owners will likely advise the contractor within a reasonable period of time whether they believe the condition is, or is not, a DSC. If the owner remains silent for some period of time on their decision concerning the alleged DSC, this is an early warning sign of claims and a potential dispute. Such a situation will likely drive up the cost of the DSC claim and may also lead to delay claims.

- **Recommended Claims and Dispute Avoidance Actions:** If this situation occurs, the contractor should formally write to the owner seeking their final decision on the DSC either under the Disputes clause or the DSC clause. If no decision is still forthcoming and the contractor is working on a contract that has established either a Dispute Resolution Board (“DRB”) or a Dispute Adjudication Board (“DAB”) the contractor can take the issue to the Board and obtain a decision. Alternatively, if the contract embodies a Project Neutral, Individual Decision Maker or an Early Neutral Evaluation process the contractor can seek their input on the issue.³⁷

Unreasonable Disapproval of Contractor’s Ordinary and Customary Means and Methods – Many owners employ “standard specifications” for their projects changing them only occasionally. Many contractors bid to the same owners time after time. As such, contractors who have executed several projects for the same owner using the same specifications, gain a right of reliance concerning the specifications. When a contractor has a submittal rejected even though it is based on the contractor’s ordinary and customary means and methods used on previous projects, this should be considered as an early warning sign of claims and a potential dispute. The type of claims likely to result would be a constructive change claim.

- **Recommended Claims and Dispute Avoidance Actions:** If the submittal is rejected, or the contractor is directed to make substantial changes to the submittal in accordance with review comments, the contractor should review the response carefully. If it looks like they are being directed to make a change then a written notice of change should be filed with the owner. This notice should be followed up with a meeting where the contractor provides documentation that what they proposed on this project is exactly what they did on several previous projects, using the same specification. Unless there is some special need for modified means and methods, the owner should approve the contractor’s submittal. If there is a special need requiring changed means and methods, the contractor and owner can negotiate a change order using the contractor’s base bid for this piece of work as the basis or floor for the damages.

35. Research into the management of the RFI process indicates that 10 working days should be a reasonable amount of time to respond to most RFIs. Ibid, [Impact & Control of RFIs on Construction Projects](#).

36. Sometimes referred to a Changed Conditions or Unforeseeable Physical Conditions.

37. Bult, Halligan, Pray and Zack, [Delivering Dispute Free Projects: Part III – Alternative Dispute Resolution](#).

Overinspection or Changes to Inspection Criteria after Contract

Award – Most technical specifications are based on building codes or on recognized and published industry practices. And, many technical specifications contain detailed inspection criteria so the contractor understands the standard their work will have to meet in order to get paid. However, at times the owner's inspection team may decide to use a different inspection technique or procedure **after** the project is awarded. For example, the welding specification may state that certain type of weld will be inspected using the Magnetic Particle technique and, after award of the contract, decide to use Ultrasonic testing in its place. Ultrasonic testing is more sophisticated and likely to find much smaller welding flaws, thus negatively impacting welding productivity.³⁸ Such a situation is likely to result in constructive change, loss of productivity and delay claims.

- **Recommended Claims and Dispute Avoidance Actions:**

Should the owner make a change to inspection standards after contract award the contractor, upon becoming aware of this, should file a written notice of change with the owner. Subsequently, the contractor should closely monitor the productivity of the activities impacted by the change in inspection techniques. If a drop in productivity is observed, the contractor needs to document the loss of productivity probably using the classic Measured Mile technique.³⁹ Once the issue is past, this data can be used to prepare and submit a claim for lost productivity and, perhaps, delay.

Excessive Quantity Variations – If the contractor is working on a unit price contract and the units vary excessively, this is an early warning sign of claims and a potential dispute. This will lead to change claims and perhaps even a DSC claim.

Recommended Claims and Dispute Avoidance Actions: Once the quantities start to vary, although generally not specifically required to do so, the contractor ought to give notice of change to the owner citing both the Changes clause and the Quantity Variation clause. The contractor should document their as bid quantities and track and document actual quantities. The contractor should also carefully review the Quantity Variation clause to determine at what point (typically expressed as a percentage of the as bid quantities) they may claim a quantity variation and how such a variation can be calculated. If the quantities vary because the contractor encounters an “entirely different job”⁴⁰ or there is an unforeseen need for an unusual construction methodology ⁴¹ then the DSC clause **may** be employed in lieu of the Quantity Variation clause. If it can be demonstrated that the owner's estimate was negligently performed⁴² or if owner issued change orders substantially increase the estimated quantities⁴³ again, the DSC clause may override the Quantity Variation clause when it comes to pricing such variations. And, material variations on owner provided quantity estimates may become a Type 1 DSC if they resulted from a differing site condition.⁴⁴

38. Charles Hayes, *The ABC's of Nondestructive Weld Examination*, NDTnet, Vol. 3, No. 6, June 1998

39. Recommended Practice No. 25R-03, Estimating Lost Labor Productivity in Construction Claims, AACE International, Morgantown, WV, April, 2004.

40. Brezina Construction, Inc., ENG BCA No. 3215, 75-1 B.C.A. ¶10,989.

41. Dunbar & Sullivan Dredging Co., ENG BCA No. 8265, 73-2 B.C.A. ¶12,285.

42. John Murphy Construction Co., AGBCA No. 418, 79-1 B.C.A. ¶13,836.

43. Leavell & Co., ENG BCA 3492, 75-2 B.C.A. ¶11,596.

44. *United Contractors v. United States*, 177 Ct. Cl. 151, 368 F.2d 585 (1966).

CONCLUSION

This research perspective highlights a large number of early warning signs concerning potential claims and disputes. This is not an exhaustive list, certainly, but the reports lists many of the most common early warning signs. Having said this the Forum wants to reiterate a point made earlier in this research perspective. That is, the real key to dispute avoidance is (1) early recognition of potential claims and (2) prompt action on the part of both the owner and the contractor to identify the issue and work together to craft an acceptable resolution based upon the terms and conditions of the contract. If both parties focus on achieving project success rather than positioning, then the likelihood of delivering a project on time and in budget substantially increases.

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