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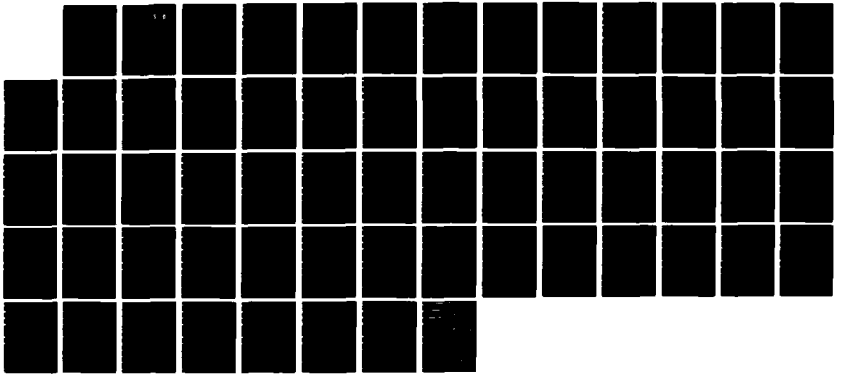

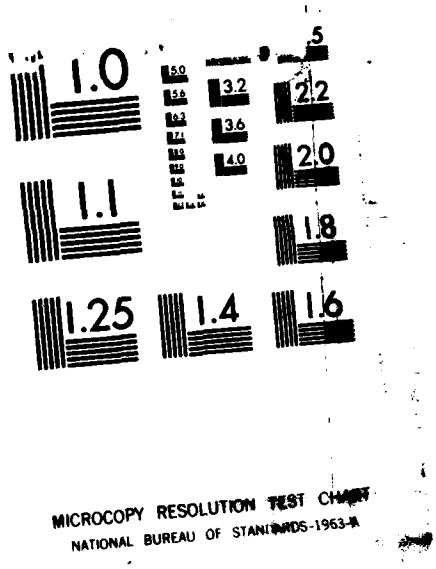

CONSTRUCTION DELAY: THE OWNER'S PERSPECTIVE

Major report submitted to fulfill the requirements
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CONSTRUCTION DELAY: THE OWNER'S PERSPECTIVE

1. INTRODUCTION

The purpose of this paper is to:

a. give facility owners an understanding of the causes, characteristics, and consequences of construction delay, and

b. offer advice to owners on how to minimize delay and how to minimize delay damages assessed against them.

Delays to construction projects have become so prevalent that some consider them a way of life (32). Delay costs are one of the most significant factors in construction claims (36). The economy of the 1970's and 1980's, with its high interest rates, on and off again inflation, and keen competition, has made it difficult for contractors to make a profit (10). This encourages the increased use of delay claims as a way to recoup losses (10).

The facility owner, as a key participant in the construction process, must understand the causes, characteristics, and consequences of delay. Such knowledge will protect him from financial losses and will also enable him to use his position to minimize delays. Many construction disputes are caused by a fundamental ignorance of each party's rights and responsibilities (6). Such disputes can be minimized if both parties understand their roles. An

owner who is less knowledgeable than the contractor about each party's rights and responsibilities places himself at a disadvantage when cases go before "equally naive juries and judges (5)."

The adversary relations which are so prevalent in the construction industry are incongruent with the goals of the industry (6). Contractors and owners are becoming educated in the art of winning contract disputes. Unfortunately, this diminishes the emphasis on working together toward the common goal of "fast, efficient, sound, and economical construction (6)." While this paper seeks to educate owners for their own protection, its overriding emphasis is the importance of working together with the contractor to minimize construction delays.

This paper is organized to first give the owner an understanding of delay and then to provide specific recommendations for his use in minimizing delay and delay damages. Section 2 addresses the causes and types of delay. Section 3 addresses the preparation, analysis and proof of delay claims. Section 4 explains the methods available to settle delay claims. Section 5, which also serves as a conclusion, provides recommendations for minimizing damages and for minimizing or preventing delay. In keeping with the emphasis on cooperation, the term claim should not be automatically assumed to refer to the hostile litigated dispute with which it is often associated. It should

instead be taken to mean any request submitted by the contractor for reimbursement of additional costs incurred. Some such claims may escalate into the courtroom, but many are settled by direct negotiations between the owner and contractor.

To clarify another point, references to the "owner" and "contractor" in this paper can normally be taken to literally mean "owners and their representatives" and "contractors and their representatives."

2. TYPES AND CAUSES OF DELAY

2.1 EXCUSABILITY AND COMPENSABILITY

Construction delays are categorized as either "excusable" or "nonexcusable." Excusable delays are those for which the contractor is entitled to a time extension. They include all delays not caused by the contractor and are beyond his control. Nonexcusable delays are those caused by the contractor and within his control. The contractor is not entitled to time extensions for nonexcusable delays (4, 16, 32).

Excusable delays are further divided into those that are compensable to the contractor and those that are not. Excusable/compensable delays are, in most cases, the fault of the owner. They are caused by such acts and omissions as failure to provide access to the site, late delivery of owner-furnished material or equipment, and delayed approval of shop drawings. Excusable/noncompensable delays are those for which neither the owner or the contractor are at fault. Examples include delays caused by unusually severe weather, strikes, acts of God, the public enemy, or sovereign authority. The contractor is entitled to a time extension, but no monetary compensation, for such delays (4, 16, 32).

Nonexcusable delays are noncompensable to the contractor, however, the owner may be entitled to compensation from the contractor for such delays. Causes of nonexcusable

delays include insufficient workforce, low productivity and poor workmanship. The most common way for the owner to collect compensation is to assess liquidated damages. Damages are discussed further in section III of this paper. Table 2-1 shows the various causes of delay categorized by type (16, 29, 32).

Excusable/ Compensable	Excusable/ Noncompensable	Nonexcusable
lack of coordination	adverse weather	poor workmanship
owner-furnished material not available	strikes	subcontractor delays
delays in shop drawing or change order approval	acts of God	failure to mobilize
changed site conditions	floods	financial problems
delayed response to requests for decisions	sovereign authority	failure to coordinate
inadequate information	embargoes	failure to obtain materials or equipment
failure to provide access	public enemy	poor scheduling
defective plans and specifications	fires	inadequate supervision
stop work orders	epidemics	failure to man the project
		bid shopping

Table 2-1: Types of Delay and Their Typical Causes (16,29)

2.2 CLASSIC, CONCURRENT AND SERIAL DELAY

In addition to the type of delay, one must consider the sequence in which delays occur in relation to one another. The three basic sequences are classic, concurrent, and serial delay (29). Classic delay is simply when one item or occurrence independently imposes a delay on the performance of contract work. If a delay is classic, it can simply be analyzed as discussed previously to determine if it is excusable and compensable.

Concurrent delays are two or more delays occurring at the same time. One may occur completely within the time-frame of the other, or they may overlap. Analyzing concurrent delays is difficult and warrants the use of a critical path method (CPM) or other modern scheduling technique. Such techniques can assist in determining which delays are actually responsible for delaying the final contract completion date. Three questions to ask when sorting out concurrent delays are (32):

1. Which delays affect the critical path?
2. Could work have been accomplished during the delay?
3. What is the classification of each individual delay in terms of excusability and compensability?

If none of the delays affected the critical path, then they did not delay the final contract completion date. The analysis can end at this point with no time extension or

monetary compensation due to either party.

If one delay affected the critical path and the other did not, the delay affecting the critical path takes precedence since it is the only one that actually prolonged final completion of the project. That delay can then be analyzed as in question three above to determine what compensation and time extensions are warranted.

For illustration of another situation, consider a case where two delays occur simultaneously and delay project completion. Each delay on its own would have prolonged project completion. Therefore, in answer to question one, they both affect the critical path. Question two can then be approached as follows:

a. Would work prevented by the first delay have been prevented by the second delay anyway? For instance, assume that the owner did not deliver owner-furnished material on time, but there was a strike that would have prevented its installation anyway. If so, the contractor would be entitled to a time extension for the strike but no compensation for delay due to the late delivery.

b. Could other work have been done during the period to minimize the delay? This basically collapses to an analysis of the actual impact of the delays. In other words, other activities could possibly have continued

and minimized delay to the total project.

Once these issues have been considered, the items should be categorized as discussed in question three. Table 2-2 shows the entitlements resulting from different combinations of delay types. Note that the only case in which the contractor is entitled to both a time extension and monetary compensation for delay damages is when both delays are excusable and compensable. The only case in which the contractor receives nothing is when both delays are nonexcusable. All other cases warrant a time extension but nothing more.

TYPES OF DELAY IN COMBINATION			ENTITLEMENTS
excusable/ compensable	and	excusable/ compensable	-time extension and monetary compensation to contractor
excusable/ compensable	and	excusable/ noncompensable	-time extension only
excusable/ compensable	and	nonexcusable	-time extension only
excusable/ noncompensable	and	excusable/ noncompensable	-time extension only
excusable/ noncompensable	and	nonexcusable	-time extension only
nonexcusable	and	nonexcusable	-monetary compensation to owner

Table 2-2: Entitlements for Various Combinations of Concurrent Delays (4, 16, 32)

Table 2-2 is challengeable in that the granting of a time extension for a combination of an excusable and a nonexcusable delay is not considered justified by everyone. Some owners feel that if a contractor would not have been able to perform an activity because of his nonexcusable delay, then a simultaneous excusable delay had no real impact and therefore does not justify a time extension (32).

This discussion of concurrent delays appears logical and easily put into practice. In reality, if the owner and contractor are responsible for delays and take their dispute to court, the court will often disallow both claims because the issue is too complicated to unravel. Evidence distinctly separating the two delays and their costs is essential. If the court cannot allocate the costs with confidence that such allocation is equitable, dismissal is a common outcome (29).

Serial delay implies a linkage of delays (29). One delay may amplify an earlier delay. For instance, an owner may fail to deliver owner-furnished material on time, thus delaying its use by the contractor. This delay may then drift into a strike, whereupon the material finally arrives but now cannot be installed until after the strike. The owner may be held liable for the delay costs all the way through the end of the strike. In this example, the strike amplified the previous delay. If it were not for the strike, the owner would only be liable for damages up to the

delivery of materials. If the strike occurred independently, it would have been noncompensable, but the serial linkage of these two delays makes the entire period compensable.

3. THE CLAIM

3.1 ANALYSIS AND PROOF

Construction delay claims are difficult to analyze and prove. Successful pursuit of and defense against delay claims requires dedicated expertise and effort. The causes of delay are often concurrent, overlapping or serially linked. They can delay a myriad of activities and their actual impact on final project completion time can be difficult to determine. To successfully analyze a case, one must allocate the delay in final project completion time to its many potential causes. While the references cited in this research address various facets of delay claim analysis, this paper seeks to provide a concise discussion of the basic steps required. In the aggregate, the references consulted lead to a conclusion that the analysis of a delay case can be divided into the following four basic steps:

1. Prove that the alleged cause of delay actually occurred.
2. Show the effect of the cause or causes.
3. Determine who was responsible for the delay.
4. Determine and justify the amount of time and monetary compensation due for delay damages.

3.1.1 PROVING THAT THE CAUSE OCCURRED

The first step a claimant must take is to prove that an event actually happened. Such events are often difficult to

isolate since many large delays are an accumulation of smaller effects that were seemingly minor or negligible when they occurred (35).

Documentation is the key to proving the occurrence of an alleged delay-causing event. Both contractor and owner should have reliable record keeping systems. As soon as a possible cause of delay has occurred, a record of that event and its future development should be established and preserved (15). The occurrence should be immediately communicated to the other party to foster a clear understanding of the situation (35). Documentation useful in pursuing of refuting delay claims includes (12, 16):

- bid documents
- boring logs
- drawings (as planned and as built)
- shop drawing logs
- specifications
- general and special conditions
- schedules (as planned and as built)
- addenda
- change order files
- instructions and directives
- inspection diaries
- job diaries
- contractor's logs

- correspondence files
- check registers
- purchase orders
- shipping and delivery slips
- time cards
- memoranda
- site photographs
- testing results
- estimates
- cost records
- daily reports
- minutes of meetings
- progress payment files

Witnesses are also valuable. Such witnesses include (16):

- owner's project personnel
- contractor's personnel
- subcontractor personnel
- inspectors
- suppliers
- testing lab personnel
- consultants (expert witnesses)

Records and witnesses provide substantive evidence that an event occurred.

To proceed further, one must establish whether the event identified is a valid cause of delay under the terms

of the contract. In proving excusable/compensable delay, the contractor must show that the owner had an obligation under the contract and did not adhere to it (35). In proving excusable/noncompensable delay, the contractor must show that the cause occurred and that it met the contractual criteria for excusable delay. Claims for delays due to adverse weather fall into this category. Most contracts, including the federal government's, require proof that the weather was abnormally severe. Such proof may consist of a comparison of the weather for the period in question to the average weather for corresponding periods over the previous ten years (32, 35, 37).

3.1.2 SHOWING THE EFFECTS

Step two requires the establishment of a cause-effect relationship (29). It is not enough to simply identify an event that could delay a project. One must prove that the event actually did delay the project and also prove the length of delay. Modern scheduling techniques such as CPM are invaluable for this purpose. Contracts typically require contractors to prepare a schedule and update it monthly (15). Some allow any reasonable form of schedule while others require CPM. CPM is the most frequently used systematic technique for proving delay claims on large projects (36). Time-impact analysis using CPM schedules is a process useful in identifying the actual impact of each

individual delay (12). Updating the schedule periodically as well as when a potential delay situation arises is essential (15,16). This practice gives all parties a clear understanding of the delay situation. Copies of old schedules should be retained for reference.

CPM provides an impressive combination of powerful logical analysis and graphical display (36). However, to be accepted and useful, the schedule and its analysis must:

- be reasonable and feasible (12),
- be supported by substantive evidence (12,36),
- have any adjustments made with exactness and accuracy (12), and
- reflect the construction sequence, not a sequence driven by progress payments or other administrative influences (36).

Presentation of delay claims can be facilitated by the use of three schedules (36):

- as-planned
- as-built
- as-adjusted (shows how the schedule would have been were it not for owner caused delays)

By comparing these three schedules, the analyst can determine the magnitude of delay attributable to the owner.

CPM analysis is often complicated, especially on large projects. The use of qualified scheduling consultants is often recommended (12,36). In fact, courts have required

that a CPM scheduling expert testify in support of the CPM analysis being presented (36). In courtroom proceedings, a complete, detailed presentation of the CPM analysis is often detrimental and burdensome due to its complexity. Such instances warrant presentation of a condensed form of the analysis. Scheduling experts are useful in such condensations.

Concurrent delays are ideal for CPM analysis. In such delays, the delay to the critical path rules. Assume adverse weather, an excusable/noncompensable delay, delayed a critical path item. Also assume that a concurrent owner-caused delay, which is excusable/compensable, impacted a non-critical path item but not to the extent that this impact used all float and overflowed onto the critical path. The delay in final project completion was therefore caused by the adverse weather and is considered excusable/noncompensable.

Establishment of the cause-effect relationship also involves proving that the cause actually physically effected a work item. Returning to the adverse weather example, proving that adverse weather occurred and that the work in question was on the critical path is not enough. The claimant must actually prove that the adverse weather prevented accomplishment of the work. This involves showing that the work was scheduled to take place during the period in which the adverse weather prevailed, and that the weather

could physically interfere with the work. For example, it is improper to say that excess rain during the second month of the project prevented painting when the painting was scheduled to be done during the tenth month of the project. Also, it is improper to assert that this excess rain prevented all painting since it probably had little or no direct effect on interior painting.

3.1.3 DETERMINING RESPONSIBILITY

After establishing a cause-effect relationship, the claimant must show who was responsible for the delay. There are four possible cases of responsibility (29).:

1. The owner or his representative (including architect/engineer) is responsible.
2. The contractor or his representative is responsible.
3. No party is responsible.
4. Both parties share responsibility.

The contract language is the basis for determining responsibility. Many contracts specify instances in which the contractor will not be held responsible for delay. Some of these instances are the owner's responsibility while others are the fault of neither party. When both parties are responsible for causes that contribute to a delay, they will often be considered offsetting by the courts and monetary damage claims will be dismissed. This is not the case when a clear distinction can be made between the portions of

delay caused by each party. Some contracts contain a "no damage for delay" clause. This clause attempts to shield the owner from damage claims for any delay whatsoever, no matter who is at fault. It only allows time extensions. The clause's power is limited however. It has been considered nonbinding in cases of active owner interference with the contractor's progress (29).

Most contracts also require the contractor to notify the owner that a potential delay situation has arisen. Such notice is normally required within a specified time period, say 10 or 20 days, of the beginning of a delay. Failure to give notice can disqualify a delay claim. It can, however, be overcome. For instance, if the owner is aware of the delays a contractor is experiencing or if out-of-scope change orders are issued, formal written notice may not be considered necessary (29).

The fact that the contractor himself did not cause a delay does not necessarily excuse him. For example, the owner can hold him responsible for nonexcusable delays caused by the contractor's suppliers (35). This is reasonable since the owner should not have to compensate the contractor for inexcusable inefficiencies in the contractor's material procurement process. However, some supplier delays, such as those caused by sole-source specifications, are excusable and compensable to the contractor. While a delay caused by a strike is excusable, one caused by an

overall labor shortage may not be (35). The contractor is responsible for providing labor, and a general, continuing shortage of labor should be accounted for in his plans. These are just a few specific cases of interest drawn from specific court findings. It should be remembered that different courts view cases differently and that each case and each contract is unique. Therefore, it is best to refer to the contract when determining responsibility for delay.

3.1.4 ESTIMATING COMPENSATION

3.1.4.1 ENTITLEMENTS

Compensation for delay consists of time extensions to the contract and monetary compensation for damages. This paper will refer to monetary compensation for damages simply as "damages." Excusable delays entitle the contractor to time extensions, and in compensables cases, damages. If excusable causes of delay occur, but the contractor is still required to complete work within the originally specified time limits, the contractor may recover the costs necessary to accelerate work to complete on time. These costs are called acceleration costs.

Nonexcusable delays entitle the owner to collect damages from the contractor. A liquidated damages clause, if included in the contract, enables the owner to collect a daily amount of damages specified in the clause. If there is no liquidated damages clause, the owner may recover his

actual damages due to delay. The inclusion of a liquidated damages clause normally limits the damages an owner may collect to the amount specified, even if his actual damages are greater (29). Owner damages may include (32):

- extra rental costs of space required because the new facility is not complete,
- extra maintenance and utility costs for old, inefficient buildings the owner must use until the new building is complete,
- interest on capital,
- extended contract administration costs, and
- lost revenue.

3.1.4.2 TIME EXTENSIONS

The magnitude of time extensions warranted for excusable delays can be determined be CPM or other schedule analyses as discussed previously. Thus, determining the schedule impact of and responsibility for an adverse occurrence substantially completes the task of determining the justified length of time extensions.

Time extensions ease the contractor's financial burden in two ways (35):

1. They allow him to finish the work at a normal pace without incurring acceleration costs.
2. They allow work to proceed beyond the original contract completion date without liquidated damages being assessed.

In this author's experience, most contractors have been more

concerned with obtaining a time extension for excusable delays than with pursuing claims for damages due to delay. They have normally sought to avoid the financial hardships imposed by liquidated damages assessments. They have also sought to maintain the good reputation of a contractor who finishes on time. This observation must be qualified since it may be a function of the small to medium size of the contracts and contractors observed. It could also reflect that most delays encountered were noncompensable. Nevertheless, the observation is offered as evidence of the substantial importance contractors place on time extensions.

3.1.4.3 DAMAGES

Actual damages due to delay may include items such as (16,32):

- main office overhead,
- field office overhead,
- labor costs,
- lost productivity,
- insurance and bonding,
- materials,
- equipment,
- interest, and
- profit (in some cases).

Actual damages can be classified as either direct or consequential damages (29). Direct damages are those which

are naturally expected to arise from a breach of contract. Such items are normally compensable. The above items are normally considered direct damages. Consequential damages, although a result of the delay, are not direct costs due to it. They include such items as lost bonding capacity, limited work loads due to limited working capital, and losses due to failure to accept additional work. Such items are special circumstances which are not usually predictable. These delays are noncompensable unless the special circumstances were contemplated by both parties when the contract was signed (29).

The decision of which method to use to calculate damages is extremely important (33). Unsupported costs, faulty logic, failure to demonstrate a cause-effect relationship, speculation, and generalization can all cause a damage estimate to be modified or rejected by the reviewing authority.

The Eichleay formula has been widely used since 1961 to compute additional main office overhead expenses allocable to delayed contracts (26). This method fell into disfavor with several courts between 1978 and 1983 and has been the subject of ongoing debate ever since (17, 18, 24, 26, 27, 33, 39) Use of the Eichleay formula has been criticized for "failing to prove causation between delays and damages" and "failing to relate overhead damages to actual costs (17)." Critics want claimants to prove that a delay either actually increased total company home office overhead expenses or

that it limited other work and therefore reduced the base to which overhead could be allocated. These situations basically increase the overhead rate for the delayed contract (39).

The Eichleay formula calculates overhead damages as follows (26,33):

1. (contract billings/total billings for contract period) X (total company overhead for contract period) = overhead allocable to contract

2. (overhead allocable to contract)/(days of performance) = daily contract overhead

3. (daily contract overhead) X (no. of days of delay) = amount claimed

Several alternatives have been proposed since the courts began rejecting this formula (24). The Comparative Absorption Rate (CAR) method calculates the amount claimed as follows:

I (potential total overhead)/(potential total billings) = reasonable overhead ratio

II (reasonable overhead ratio) X (actual total billings) = reasonable total overhead

III. (actual total overhead) - (reasonable total overhead) = overhead claim

The Burden Fluctuation Method (BFM) calculates costs as follows:

1. (total billings) - (contract billings) = other billings
2. (actual total overhead)/(actual total billings) = actual overhead rate
3. (potential total overhead)/(potential total billings) = potential overhead rate
4. (actual overhead rate) - (potential overhead rate) = burden fluctuation
5. (burden fluctuation) X (other billings) = overhead claim

These methods were proposed by McDonald (24) as more accurate and acceptable than Eichleay. However, Melton (26,27) asserts that these alternatives are neither better or more convincing. Melton states that CAR and BFM were supported with simple, limited examples of small contracts with small, constant home office overhead. Even in these examples, the differences between claims calculated using Eichleay, BFM and CAR were not substantial. Melton proceeds to illustrate, using an actual case, that for large contractors on large contracts, the Eichleay formula produces a much more reasonable claim than BFM or CAR. BFM and CAR, in this case, "...produce results that would be an embarrassment at trial (27)."

The Eichleay formula was reinstated as an acceptable basis by the U.S. Court of Appeals in 1984 (26). This has dampened some of the criticism of Eichleay, but the debate continues. Melton proposes a "common sense" approach to the problem. Although he seems to favor Eichleay, he allows that each method has its strengths and weaknesses and that none are foolproof. He acknowledges that there are instances where BFM and CAR may be a better alternative than Eichleay. However, his main point is that the choice of a formula is only part of presenting a claim. He recommends that "...the contractor...rely on common sense and experience to present a claim that bears a reasonable relationship to the length of delay, the type and amount of overhead, and other contract activity (27)."

Although overhead is normally the most controversial and ambiguous part of a delay claim, care must also be taken in estimating the other components of damages.

Field overhead is not included in the previous discussion of main office overhead and the Eichleay formula. The Eichleay formula and its alternatives normally do not apply to field office overhead. Included in field office overhead are continuing items such as superintendants, project managers and engineers, mechanics, security, site trailers and buildings, and temporary utilities. These items can be quantified as a daily rate or they can be estimated on a percentage basis consistent with historical records (32).

In claiming for additional labor costs, the contractor must show the difference between the actual cost and what the cost would have been had there been no delay. New union agreements may be useful in proving wage increases (32).

Claims for labor inefficiency or lost productivity are difficult to estimate. They should not be based on the pre-bid estimate of labor costs (33). Courts have judged these estimates to be "subjective" and contributory to "unrealistic" claims. They have recommended the following method (33).:

(actual labor costs) - (payment for labor costs)

= (amount claimed)

Actual labor costs represent a well supported figure showing the actual cost of labor required to do the work. Payment for labor costs corresponds to the labor cost had there been no delay (33).

Additional costs of insurance and bonding can be easily proven using billings. Increased material costs must be supported by evidence of supplier price increases or material shortages that could have been avoided had work not been delayed. Additional costs of rental equipment can be substantiated by paid invoices. Additional costs of owned equipment are much more difficult to quantify. The standard

rental value for a similar piece of equipment is sometimes accepted. Other methods consider factors such as initial cost, age, useful life, operating hours, and maintenance and repair costs in estimating the equipment ownership expense. The Associated General Contractors and several equipment manufacturers have authored and support such methods.

Interest expenses on the amount of the basic claim are often allowed at a preset rate. Rates vary between jurisdictions and are normally well below the market rate. The date at which interest begins to accrue also varies. The federal government allows recovery of interest based on a rate set every six months by the Department of the Treasury. Interest on federal contracts begins to accrue on the date the claim is formally presented to the contracting officer and certified as valid by the contractor.

Profit on delay claims is normally not allowed for delays under the suspension of work clause, which applies when the owner suspends work. However, it can be allowed if the owner did not clearly suspend work and the delay is considered a change pursuant to the changes clause of the contract (32).

A reliable schedule managed with high visibility is instrumental in providing clear determination of damages. Although time extensions are only justifiable for delays to the overall project, or critical path, damages can be

awarded for delays to both critical and noncritical path items. Award of damages for delay of noncritical path activities is contingent upon proof of increased costs incurred by such delay.

Cases exist where delay damages have been awarded to the contractor even though he finished contract work prior to the completion date. Damages were awarded because the owner interfered with work and thereby prevented the contractor from finishing even earlier than he did. Hence, damages can be awarded although the delay did not delay the final completion date and even when work was completed early (35).

The contract language has significant impact on the process used to seek damages. One extreme is the suspension of work clause. This clause, which is found in federal contracts, allows claim submission to the government ("owner") and details the means of resolution under the contract. Such clauses result in many claims being settled quickly and directly between the owner and contractor without court intervention. The other extreme is the "no damage for delay" clause which, as discussed previously, exempts the owner from paying delay damages. This clause makes no provisions for claim settlement within the contract and may leave the contractor no alternative but to sue the owner for breach of contract (35).

4. METHODS OF SETTLEMENT

4.1 AVAILABLE METHODS

The basic methods available to resolve delay claims are negotiation, mediation, arbitration, administrative tribunals, and litigation. Most contracts do not allow all of these options. For instance, federal government contracts typically allow for negotiation, administrative resolution, and litigation, but not mediation or arbitration. Other contracts may allow for negotiation, mediation, arbitration and litigation, but make no provisions for resolution through administrative channels.

4.2 NEGOTIATION

Successful negotiation is the quickest, cheapest, least formal, least adversary and most flexible way to settle a claim (16). Although many owners have specific negotiation guidelines for their contracting officers to follow, negotiation basically involves the two parties reaching an agreement and settling the dispute by themselves.

The negotiation process typically begins when the contractor notifies the owner of a potential claim. The owner may then choose either to ignore this notification or to request that the contractor submit an estimate, often called a change order proposal. If the owner ignores the notice or refutes the contractor's reasoning, the contractor may still

submit a claim. At this point, the owner will review the claim more carefully, possibly compare it with his own estimate, and arrange a meeting with the contractor to negotiate an equitable settlement. At the negotiation meetings, the cases are discussed more thoroughly, the claim is adjusted as agreed, and an equitable settlement is hopefully reached. The negotiated price change and time extension are then formalized as a contract modification.

The above situation, of course, describes a successful negotiation. Some factors that affect the probability of success include (16):

1. the size and complexity of the dispute,
2. the attitudes of the negotiators,
3. the use of third party negotiating assistance and technical expertise,
4. the extent to which the contract addresses contended issues, and
5. the amount of preparation prior to negotiations.

Failure to reach agreement through negotiation leads to more costly and time-consuming arenas.

4.3 MEDIATION

Mediation is a process in which an impartial third party assists the owner and contractor in successfully negotiating their dispute. The process, which is widely used in settling labor disputes, is fairly new to the construction industry. It is, however, becoming an attractive

alternative to more formal options such as litigation. The National Construction Industry Arbitration Committee (NCIAC) of the American Arbitration Association (AAA) has adopted rules for proper mediation of construction disputes (28). It also trained and formed a panel of expert mediators in 1980 (28). Mediation is an attractive option for parties who still wish to reach a mutual agreement although they have failed to do so without outside assistance. It provides the an objective third party who is an expert in the construction field. It is cost and time efficient relative to other options and does not preclude the use of more formal alternatives if mediation fails (28).

The mediator's role is summarized as follows (28):

- The mediator:

  1. "is neutral and helps the disputing parties reach agreement,
  2. will not dictate the terms of an agreement,
  3. may evaluate issues and positions after hearing the arguments of both sides but will not advocate the position of either side,
  4. holds joint and separate sessions as deemed appropriate and may adjourn or cancel meetings,
  5. will not reveal either side's position to the other without consent, and
  6. will consult with any and all of the parties to facilitate agreement, including the principals, selected negotiators, attorneys, and others."

Both parties must agree to submit the dispute to mediation and must approve of the mediator selected. The

proceedings are confidential and there is no record kept. To preserve this privacy, the contents of mediation proceedings may not prejudice the position of either party in subsequent arbitration or litigation and are therefore normally inadmissible as evidence in such proceedings (14,16).

Mediation is considered most effective in resolving "hot disputes (14)." Such disputes have not matured to the point where the parties have hardened their positions and invested significant time and expense in claim preparation.

Along with mediation's advantages come costs that are not found in independent negotiation. The AAA collects an administrative fee of $200 per party. Mediators must also be compensated at a daily rate agreeable to the parties (14).

4.4 ARBITRATION

Arbitration is a "quasi-legal" (32) process in which independent, third party professionals hear both sides of a dispute and then determine a fair settlement. The arbitrator's decision is either binding or non-binding depending on the type of arbitration agreed to by the disputants. The two primary types are therefore called "binding" and "non-binding" arbitration. Either party may choose not to adhere to the outcome of non-binding arbitration and may take the dispute to court. Unlike mediation, arbitration proceedings are admissible evidence in subsequent court

hearings. Non-binding arbitration is becoming increasingly less common in the United States. The results of binding arbitration are final and can rarely be appealed. Courts are supporting this feature through an increased tendency to consider the arbitrator's decision valid and final (16).

Arbitration is most often conducted under the auspices of the American Arbitration Association (AAA). The AAA administers the entire arbitration process, thus relieving the disputants of a considerable administrative burden. Parties may, however, arbitrate outside the auspices of AAA by choosing arbitrators on their own or naming a person in the contract to act as arbitrator if needed. This paper will focus on AAA arbitration since it is the most common form (7, 15).

The AAA serves the construction industry through its National Construction Industry Arbitration Committee (NCIAC). The NCIAC is comprised of representatives from the AAA, the American Society of Civil Engineers, the American Institute of Architects, American Subcontractors' Association, Associated General Contractors, National Society of Professional Engineers, Consulting Engineers Council, and the Council of Mechanical Specialty Contracting Industries, Inc. In 1966, the NCIAC developed the Construction Industry Arbitration Rules and formed a separate Construction Panel which administers and, with the NCIAC, alters and updates these rules as appropriate (7).

The number of construction disputes arbitrated under the auspices of the AAA has increased dramatically since the Construction Industry Arbitration Rules were developed. Table 4-1 shows the number of disputes arbitrated under the AAA in 1967, 1972, 1977 and 1982 (7, 14). In the fifteen years covered by the table, the number of disputes arbitrated increased over 500%. Although this could be partially a function of an increasingly claim-oriented industry, this author feels it shows a trend toward increased use of arbitration in lieu of other options, particularly litigation. As of 1983, it was estimated that over 50% of all construction contracts in the United States contained clauses calling for arbitration of disputes (15, 32).

Table 4-2 shows the percentage of arbitrated claims falling into specific dollar ranges. This provides an understanding of the magnitude of individual claims resolved by arbitration. Between 13% and 20% of the claims arbitrated each year had no amount disclosed. These were removed from the analysis so that the percentages shown are percentages of the total number of claims for which dollar amounts were disclosed.

Note that a large majority of the claims arbitrated were for under $50,000. This coincides with the AAA practice of assigning only one arbitrator to claims less than $50,000 and three arbitrators to claims greater than $50,000 (7, 14).

Year	No. of Disputes	% Increase	% Increase Over Base Year
1967	504		
1972	1,113	221%	221%
1977	1,789	161	355
1982	2,683	150	532

Table 4-1: Number of Disputes Arbitrated by AAA for Selected Years at 5 Year Intervals (7,14)

Claim Amount	1967	1972	1977	1982
< $10,000	62.7%	49.4%	41.4%	30.5%
$10,000-$50,000	28.5	32.6	35.6	38.3
$50,000-$100,000	4.2	8.6	9.7	12.2
$100,000-$500,000	3.4	7.3	10.3	14.0
$500,000-$1,000,000	1.0	1.5	1.7	3.0
>$1,000,000	0.2	0.6	1.3	2.0
Total	100.0	100 0	100.0	100.0

Table 4-2: Percentage Breakdown by Year of Number of Claims in Each Cost Range (7,14)

Since both parties must agree to enter into arbitration, it is prudent to facilitate this agreement by including an arbitration clause in the contract. The clause should specify which kinds of disputes will be submitted to arbitration, what procedures will be followed, and should refer to the rules of AAA or some other organization which sponsors arbitration rules (32). Under AAA rules, an aggrieved party may initiate arbitration proceedings by completing a standard AAA form, addressing the arbitration clause, the relief sought, and giving a brief description of the dispute. The other party may review this statement for a specified number of days and then respond, asserting a counterclaim if desired.

Arbitrators are then chosen. The AAA Construction Panel contains more than 22,000 arbitrators (14). They include professionals from all segments of the construction industry and attorneys specializing in related fields such as real estate, corporate law, and general trial practice. To preserve impartiality, arbitrators must disclose any relationships or dealings that may create a suspicion of bias (14). The AAA procedures for selecting arbitrators also foster this impartiality. The AAA first provides a list of potential arbitrators to each party. The parties are given seven days to cross of any names they object to and return the lists. The AAA than contacts the arbitrators mutually agreeable to both parties to see if they are avail-

able. If they are available, they are assigned to arbitrate the dispute. One arbitrator is assigned to arbitrate claims under $50,000, while a panel of three is assigned to larger claims. The contract, however, may specify its own requirements, such as three arbitrators for any dispute. If the first list does not produce the required number of arbitrators, a second list is sent. If the second list fails, a third list is sometimes sent. Normally, however, the AAA will administratively select the arbitrators at this point. Each party is then given the opportunity to object to the selections (7,15).

The arbitrator chairs the arbitration hearings. The hearings are structured somewhat similar to courtroom proceedings. Both parties may be represented by legal counsel if they so desire. However, arbitrators are not bound by strict rules of evidence and other typical courtroom restrictions. They may accept any evidence they deem pertinent (7). They have control of the proceedings and can also refuse to accept evidence they consider impertinent.

Upon completion of the hearings, both parties may submit written briefs if requested by the arbitrator (7,15). AAA rules then call for arbitrators to make their decision within thirty days. However, decisions are normally rendered within thirty to ninety days of the conclusion of hearings (15).

The cost of arbitration includes an AAA fee, arbitrators' fees and expenses, and any other costs associated with the hearings themselves. The AAA administrative fee is a minimum of $150 and increases on a sliding scale based on the amount claimed. This fee is charged to the initiating party but may be reallocated by the arbitrators as part of the final award (1). Arbitrators have all of their actual expenses paid in full and are compensated for their services at rates normally between $200/day and $400/day (1). Arbitrator expenses and compensation costs may also be apportioned between the parties as the arbitrators choose (1). Hearing costs may include the cost of a hearing record, which is normally paid by the party requesting that a record be kept. They also may include the cost of lawyers, witnesses and other necessary expenses (15).

Arbitration has many advantages. It is considered by many to be faster and cheaper than litigation (5,16). Experts from the construction industry act as judges and are selected by the disputants (5,16,32). Settlements are based on impartial consideration of the facts. There is less chance of a "punitive" award often found in litigation settlements where the jury seeks a "villain (5,32)." Arbitration proceedings are private, unlike courtroom proceedings (32). Finally, the arbitrator, being a participant in the construction industry, has a vested interest in the equitable resolution of the dispute (32).

Arbitration also has its disadvantages. One may legitimately question whether arbitration really is faster and cheaper than litigation. The first delay in arbitration is the arbitrator selection process (7,15,16). This process typically takes three to four months (15). The hearing process is also a source of delay. Arbitrators only serve in this capacity on a part-time basis. They are normally full-time construction industry professionals. Therefore, hearings must fit into their busy schedules. Matching the schedules of arbitrators, disputing parties, witnesses, and lawyers to arrange several hearings on different dates can create a very disjointed schedule and add considerable length to the arbitration process (1,7,15,16,32). Such disjointed schedules increase expenses and disrupt efficiency (1). In litigation, to the contrary, hearings are held on consecutive days until the case is complete (1).

Arbitration can be surprisingly expensive (1,15). The cost of arbitrators and a court recorder alone can exceed $2000/day (15). The cost of legal counsel may be greater in litigation, but the judge is provided at the taxpayers' expenses (1).

Another disadvantage of arbitration is the lack of a "discovery" of "disclosure" period before the hearings (1,7,32). Such periods, common in litigation, allow each party to become familiar with the other's position before the trial begins. This eliminates uncertainty and surprise

and increases the efficiency of court proceedings. In arbitration, many disclosures are made during the hearings and serve to prolong them (32).

Some consider the lack of precise procedural rules in arbitration a disadvantage (1,16). The arbitrators may allow or reject any evidence, testimony or lines of questioning as they choose. This removes a certain degree of legal protection offered by formal litigation (32).

The arbitrator's written award is normally quite terse and contains little or no detailed explanation, cost breakdown, factual findings or legal conclusions (1,16). Subsequent review is therefore extremely difficult (16).

Finally, appeal of the results of binding arbitration is virtually impossible (1,5,32). Parties entering into binding arbitration must be prepared to accept the arbitrators' decision as final.

4.5 ADMINISTRATIVE TRIBUNALS

Many public organizations, most notably the federal government, have procedures for resolving disputes within their own hierarchy. These procedures provide an arena in which disputes not successfully negotiated at the field level can be settled before erupting into court battles.

The U.S. Navy's construction claims procedures (34) are an example of such administrative methods. The contractor

begins the process by submitting his claim to the Navy's field agent, the Resident Officer in Charge of Construction (ROICC). The ROICC reviews the claim and may elect to negotiate a change order or forward the claim to his superior, either the Engineering Field Division (EFD) or the Officer in Charge of Construction (OICC). If the EFD or OICC considers the request warranted, it will order the ROICC to negotiate a change order. If not, it will forward a denial and explanation to the contractor (34).

The contractor may then choose to submit the claim for a decision by the Navy's Contracting Officer, the Commander of the Naval Facilities Engineering Command (NAVFAC) in Washington, D.C.. The Contracting Officer's decision is based entirely on the written submissions of the contractor and the EFD or OICC unless the contractor requests a hearing before the NAVFAC Contract Award and Review Board. This board consists of professional military and civilian personnel who normally have no knowledge of the content of the dispute prior to the hearing. The hearing begins with the contractor presenting his case. The Board members may interject with questions during the contractor's presentation. When the contractor is finished, the EFD or OICC explains why they think the contractor's claim should should be denied. Rebuttals of specific points are then heard and the Board asks for clarification of any issues it feels are still uncertain. The Board will then adjourn to consider

the claim and will reconvene to announce its decision (34).

The Board may decide to award the total requested amount, a portion thereof, or nothing at all. If the contractor is not satisfied with the Board's decision, he may appeal to the Armed Services Board of Contract Appeals (ASBCA). An adverse decision by the ASBCA may be appealed to the U.S. Court of Claims. The contractor may also choose to bypass the ASBCA and appeal directly to the Court of Claims (34).

4.6 LITIGATION

Formal litigation is the final remaining avenue of dispute resolution to be discussed. This process involves the traditional courtroom proceedings with which most people are familiar.

Advantages of litigation include its strictly defined procedural rules and the finality of the judge's decision (16). Although the judge's decision is considered final, it can however be appealed to higher courts. This is also considered an advantage to some since it allows correction of unfair decisions.

The disadvantages of litigation are numerous. It fosters an adversary relationship which may cause additional problems on the present and future projects (6, 16). Settlements are often not based exclusively on the facts. Per-

sonalities and ability to pay are factors. A large, wealthy owner may be forced to pay a substantial sum because of his financial ability to do so (16). The judges and jury are not experts on construction and may know very little about it (16). The strict procedural rules thought to be an advantage to some are considered by others to be sources of inefficiency (16). Finally, litigation is costly and time consuming (16).

5. CONCLUSION: WHAT CAN THE OWNER DO?

5.1 THE OWNER'S ROLE

The owner's role in a construction contract exposes him to the risk of paying significant additional costs due to delays. Fortunately, he is in a position to prevent delays and contribute to the efficient completion of a project. The prudent owner must be skillful at defending himself against delay claims and minimizing damages assessed against him. However, the best way to minimize delay claims is to minimize delays.

This section of this paper first gives owners guidance for successful defense against delay claims. It then provides suggestions to assist owners in using their position to minimize or prevent construction delays.

5.2 DEFENSE AGAINST DELAY CLAIMS

A prudent owner will take positive measures to better position himself for successful defense against delay claims. Such measures will enable him to minimize delay damages assessed against him. As stated before, the best way to minimize delay damages is to prevent delay. This section, however, prepares the owner for situations where delay cannot be avoided Delay prevention is addressed in the next section of this paper.

The owner can follow procedures before delays have occurred to improve his position once they do occur. Such procedures should be standard, continuing practice on all projects. He can also follow several simple guidelines after delays have occurred to improve his defense against claims.

The following recommendations are offered to assist owners in minimizing delay damages:

1. Know the contract (2, 3, 4, 6, 32).

   As a key participant in the construction process, the owner must know the rules. Knowledge of the rules is incomplete without a thorough understanding of the contents of the contract. The owner must understand his responsibilities as well as the contractor's. He must also know each party's rights under construction law (5, 6). The owner must not adopt a laissez faire attitude toward contract preparation. He must prepare it with the unique aspects of the project in mind an avoid excessive reliance on standard contracts or combinations thereof. The owner should ensure that his contract has provisions fully address the issue of delay (22).

2. Maintain accurate documentation (10, 12, 29, 31, 32)

   The owner must have evidence to support his position.

Such evidence is most often found in the project records. Faithful documentation throughout the course of the project will pay off with a clear record of the project history. The owner's record must be factually accurate, precise, complete and impersonal (29). One form of documentation whose use in analyzing delay is often overlooked is photographic records (23). All parties should agree to the use of photographic records as evidence. The use of systematic photographic documentation can be specified in the contract. The perception of partiality can be avoided by the use of an independent objective photographer (23).

3. Emphasize progress schedules (8, 12, 15, 16).

The owner must require that a progress schedule be prepared before construction begins. The schedule should be reviewed and updated periodically and whenever a delay occurs. Both parties should participate in the review process and the schedule should be given high visibility. This author feels that the contractor should be responsible for preparing and revising the schedule and that the owner should review and approve or disapprove all schedules. However, the owner must be careful when approving schedules. He must ensure that his reviewer is qualified and takes such reviews seriously. Owners risk being assessed heavy delay damages as a result of careless review and approval

(25,31). One possible case is when the owner happily approves the initial schedule because it shows the contractor finishing well in advance of the completion date. The contractor may then be delayed by the owner and not meet the original schedule but still meet the contract completion date. He may then shock the owner by submitting, and winning, a delay claim even though he finished "on time (25)."

4. Negotiate skillfully (10).

The following measures are components of wise and skillful negotiation:

a. The negotiation process should make each party's position clear and cause the other party to seriously question the validity of his arguments and his probability of success in litigation (10).

b. Top management must be willing to become involved in negotiations when necessary (10).

c. Negotiate each item as it arises rather than waiting for items to accrue and be negotiated collectively. Collective negotiations at the end of construction tend to favor the contractor (10).

d. If a claim is global in nature, do not negotiate each item separately. The owner usually benefits in this case by negotiating an overall settlement (10).

e Do not bring lawyers into negotiations unless the contractor does. If the contractor's lawyer is present, do not proceed without your lawyer (10).

f. Keep detailed minutes (12).

g. Keep damage estimates realistic and force the contractor to do so. Absurd numbers cause absurd adamancy (15) and only hamper the progress of negotiations.

5. Settle claims as early as possible (6, 10, 20, 22, 35).

The owner should work with the contractor to achieve early settlement. This avoids the accumulation of additional related costs, and the possibility that disputes will drag into expensive litigation. It also fosters good working relations and avoids bitter feuds which may fuel other claims. The following suggestions will facilitate prompt dispute resolution:

a. Respond promptly and politely to claims and inquiries from the contractor (3, 22, 35).

b. Be responsive to changes on the project. Recognize changes immediately and communicate with the contractor about them (3, 35).

c. Provide for a speedy resolution process in the contract (6).

d. Involve top management in negotiations when necessary (10).

e. Settle and pay for owner-caused delays immediately (15).

f. Require the contractor to provide prompt notice of delays.

g. Require the contractor to submit written requests for time extensions with supporting arguments (12, 20).

On some large projects, it may be helpful to appoint a single person to manage the claims process. This technique was used successfully during construction of the Metropolitan Atlanta Rapid Transit Authority (MARTA) System (22).

6. Do not deny valid requests for time extensions (25).

This is one of the most common causes of claims (25).

7. Consider all costs (3).

The owner must review all areas of the contractor's claim and challenge any areas that are questionable. Indirect costs should be scrutinized closely and taken seriously (16). As part of the settlement, the owner should obtain a waiver protecting him against subsequent claims pertaining to the issue being settled (16).

8. Do not rely on exculpatory clauses (13,32,38).

Exculpatory clauses, such as the "no damage for delay" clause often do not provide the protection expected. They can also place significant risk on the contractor which may be reflected in his bid prices and vigorous pursuit of claims (13).

9. Strive for quality presentations (16,32).

The manner in which a case is presented has substantial impact on the reviewer's decision. Quality presentations are especially important in litigation. They should be complete, concise, and stylish (16,32).

5.3 MINIMIZING DELAYS

This section provides suggestions to assist the owner in minimizing delays to his projects. The suggestions are as follows:

1. Avoid adversary relationships (6, 10, 22).

   Such relationships only hamper progress and efficiency. The owner should be attentive to and seek to correct the causes of poor relations. Personality conflicts should be addressed and resolved (22). The parties should meet early to define roles and set a cooperative tempo for the job (8). Such meetings may be more effective when held before the preconstruction conference (8). Roles should be reiterated during the preconstruction conference even if they are spelled out in the contract (8).

2. Communicate (20, 30).

   The owner must maintain open communication with the contractor. He must use various types of communication, formal and informal, to keep abreast of daily progress (31).

3. Use skilled contract administrators and field personnel (3, 10, 22, 25).

   These personnel should be highly qualified and must

know the contract thoroughly (20, 22, 32). They should ensure that the owner's responsibilities are not overlooked (10, 11, 16, 22, 37). The owner should consider delegating change order authority to his on-site contract administrator (22).

4. Have adequate design personnel readily available to issue minor changes quickly. (22).

   This will minimize delays incurred while awaiting specifics on changes.

5. Make decisions promptly.

6. Disclose all relevant facts through the plans and specifications (13).

   The owner should invest in extensive preconstruction research to ascertain all information which may affect the costs of performance. Such information includes the location of existing utilities and the characteristics of subsurface material. Existing utilities should be shown accurately on the plans. Subsurface information provided to bidders should include:

   a. identification of subsurface materials and contours,

   b. orientation of foliations or seams in rocks,

   c. identification of material in seams,

   d qualities of soil and rock,

e. water conditions (level and flow), and

f. permeability of soils.

7. Avoid ambiguous contract documents (25).

The owner should ensure that all contract documents are prepared carefully. He should avoid blindly using standard specifications or cut-and-paste combinations thereof. Specifications should include definitive clauses addressing changes, delays, and differing site conditions (10). These clauses should detail rules and procedures to be followed when adverse situations arise.

8. Conduct a thorough review of designs before bids are solicited (31).

The owner should review all contract documents carefully to ensure that they are complete and include all work which he wants done. He should ensure that designs are also reviewed for technical completeness and accuracy. This will avoid future delays due to change orders.

9. Emphasize progress schedules (8, 12, 16).

The owner should require preparation and periodic review and updating of progress schedules. In addition to physical construction work items, schedules should clearly show interfaces necessary for timely contract

completion (12). Such interfaces include owner-furnished materials and equipment, contractor procurement, shop drawing submittals, permits, reviews, and approvals. The requirements should be specified in the contract (12). This author believes that the type of schedule required should be of a level of sophistication corresponding that of the project. On small projects, it may suffice to allow any reasonable type of schedule, but on large or complex projects, a modern scheduling technique, such as CPM, should be specifically required by name. If bar charts are not adequate, the contract should not be worded loosely enough to allow them. Finally, the schedule should be given high visibility and referred to routinely (12).

10. Establish and follow detailed shop drawing review and approval procedures (22).

This process should be painstakingly managed to ensure quality reviews and prevent delays in the review process. All shop drawings received should be logged and tracked until they are returned to the contractor. Also, the owner should know what shop drawings the contractor is required to submit and inform him if drawings are delinquent.

11. Obtain sufficient architect/engineer services during construction.

12. Avoid use of techniques such as fast-tracking, staged construction, multiple contracts, and reduction of preconstruction engineering efforts such as subsurface investigations (2, 10).

    Such techniques, while often used with the intent of saving time, can generate delays and other problems for the owner and contractors.

13. Avoid the use of unnecessary regulations and requirements (21).

    Such regulations, often associated with federal contracts, serve little useful purpose and prolong the construction process.

The owner will benefit by putting these recommendations into practice. He should also review past delay problems on his projects and search for any trends or recurring causes of delay. Such review will enable him to evaluate himself and correct any factors that are contributing to delay.

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