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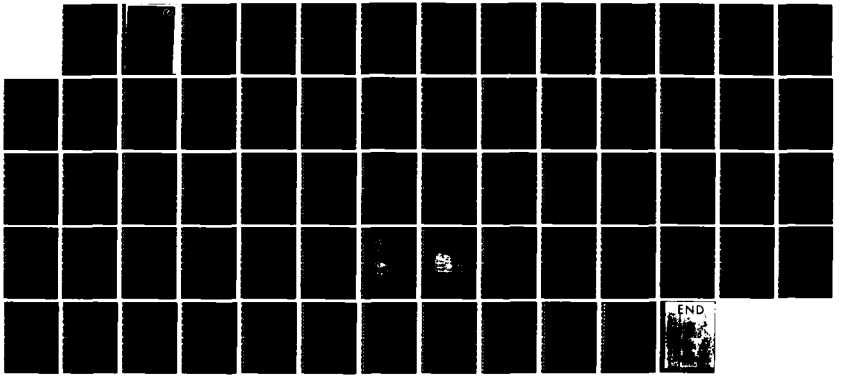

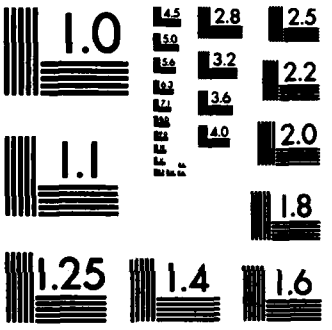

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CLAIMS PROTECTION IN CONSTRUCTION CONTRACTING

BY

CHRISTOPHER SCHANZE

A REPORT PRESENTED TO THE GRADUATE COMMITTEE
OF THE DEPARTMENT OF CIVIL ENGINEERING IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF ENGINEERING

UNIVERSITY OF FLORIDA

FALL 1982

NAVAL POSTGRADUATE SCHOOL, MONTEREY, CA 93940

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CHAPTER ONE

INTRODUCTION

1.1 Statement of Purpose

The purpose of this report is to present an organizational and procedural framework within which the owner of a construction project might find refuge from construction claims. Although directed specifically toward the owner, the material presented herein also applies to the construction contractor seeking compensation for valid claims against an uncooperative owner. This report will illustrate some of the hazards in administering a construction contract with respect to claims and presents a systematic approach to prevent them or to minimize their effects.

1.2 Background on Claims

The last decade has witnessed an appreciable growth in the number of claims pursued by construction contractors against the project owners. While numerous reasons for this upsurge may be hypothesized, it is evident that some of the factors influencing this substantial increase in the number of claims for additional compensation include the increasingly complex environment of modern construction projects, the price structure of the industry as a whole, which precludes the absorption of unanticipated costs by the contractor, and the super-legalistic approach taken by many owners and contractors (11, p. 3).

Regardless of the specific cause (or multiple causes) of such increased activity, the need for "claims consciousness" on the part of the owner is becoming increasingly important. The current popularity

of claims against the unsuspecting and often unprepared project owner necessitates an education as to the rights and actions available to mitigate the effect of a potential claim or to dismiss one altogether. Seminars are offered to enlighten contractors on how to recognize a potential claim, document it and pursue it to settlement. Owners have traditionally remained aloof of the claims environment, even today classifying a resolved claim as either a change order or a victory. This lack of awareness, owed primarily to a lack of understanding, often results in the owner first recognizing the claim situation only after being notified by the contractor.

Perhaps it is this element of surprise that irritates the owner when presented with a claim. The unwary owner reacts to the contractor's claim for additional compensation as though the contractor is trying to steal from him or take unfair advantage of a situation. In fact, many owners feel that once a contract is let and the price determined, all further financial risks or exposure should fall on either the contractor or the designer (11, p. 3).

Although not liked by owners, claims (and change orders) comprise an integral part of the construction process. As with all human endeavors, no set of plans and specifications is perfect. Physical construction of a project often reveals design errors or different conditions requiring field corrections. These discrepancies result in disagreements between the owner and the contractor. Such disagreements may be resolved on the job as a minor field change, may be referred to the designer or the owner as a dispute, or may end up in some formal forum of resolution as a claim. Claims and change orders

are the administrative processes through which such corrections are made. In this light, it becomes apparent that claims should be expected on all projects of any magnitude.

1.3 Scope of Report

While the purpose of this report is to offer owners a means of protection from claims, it is not a shield of invulnerability. It must be realized that the protection afforded by the system described herein is a two edged sword, founded on fact. It will defend an owner well against an invalid claim, but will also serve to undermine any attempt to refuse a truly valid claim. An essential element of protection in a claim situation is to be right.

This report is limited to claims between an owner and the contractor(s) with whom he has chosen to do business. Claims arising from other contractual and non-contractual relationships will be mentioned so as to recognize their potential influence, but will not be discussed in detail. Such relationships include the owner with the Architect/Engineer (A/E), the Construction Manager (CM), subcontractors and the ultimate user of the finished product.

1.4 An Economic Consideration

When involved in a claim, rational thinking often yeilds to emotion in the heat of the moment in hotly contested issues, with many decisions made carelessly. The importance of maintaining a rational and objective point of view in these instances is paramount. What good is it to expend more resources in defending against a claim than the value of compensation sought? Principle has its place, but must be weighed against the consequences. The costs of litigation, including

attorney, filing, consultant and expert witness fees, are enormous, and can comprise a significant portion of any recovery (26, p. 379).

The net effect of the condition described above is that all parties to a claim should consider the total transaction costs when making a decision. In addition to the direct costs being claimed, the costs of pursuing (or defending) a claim must be included, along with the costs of any indirect delays or slowdowns on the instant project, or other more productive activities which might have been pursued. From an economic view, the sage advice to "settle at any cost" appears rather sound.

CHAPTER TWO

THE CONSTRUCTION CLAIM

2.1 Evolution of a Claim

A claim in construction contracting constitutes the last resort in the process of resolving one of the myriad differences which inevitably arise between the parties. There are generally three stages in the resolution of a disagreement; disputes, protests and claims. Each stage represents a progressive level of disagreement, beginning with the relatively minor dispute (7, p. 78).

2.1.1 Disputes

Ideally, disputes are resolved in the field by those individuals who are most familiar with the project. It is at this level that the potential claim has the best chance of being resolved amenably.

2.1.2 Protests

In the event that agreement on a dispute can not be reached with the owner's representative, the contractor will file a written protest to the owner. The owner's role at this stage is to attempt to mediate the disagreement and render a "final" decision (at least as far as the contract is concerned).

2.1.3 Claims

If the contractor dissents with the owner's decision, the disagreement becomes a claim. At this point, the owner has given careful consideration to the circumstances surrounding the contractor's case, and has decided it has no merit. To have denied a valid claim by the contractor for whatever reason will ultimately cost the owner much

more in the long run than a field adjustment, whether that settlement be made by deleting some work scope, material changes, or allowing some alternate method of work. Typically, the longer an owner waits, the more it will cost (9, p. 40).

Major claims often grow from small beginnings, gathering legal "moss" along the trail from disagreement to ultimate resolution, often growing in scope and complexity. By the time a claim has run its course, the contractor's case has grown to voluminous proportions. Unfortunately for the owner, first hand knowledge of the facts is inversely proportional to the level of review within the organization. Compounding this problem is the contractor's presentation of the case, the plethora of detail easily capable of overwhelming those individuals with the least first-hand knowledge of the facts.

2.2 Typical Causes of Claims

The inevitable differences which arise between the parties of a contract can derive from any of a number of origins. A survey of more than 300 relatively recent major disputes concludes that their causes can be largely traced to five sources (9, p. 7):

1. Defective contract documents
2. Poor understanding of true project cost (by owner or contractor)
3. Changed conditions
4. Consumer reaction
5. Personalities involved.

2.2.1 Defective Contract Documents

Three essential requirements of a valid contract are (1) an offer, (2) an acceptance of that offer, and (3) some consideration on behalf of both parties (12, p. 39). The intent of any contract, as interpreted by the courts, is that a "meeting of the minds" of the

contracting parties occur (22, p. 42). Due to the large scale and complex nature of construction, the owner must rely on the contract documents to express his intent regarding the project scope, timetable and methodology. In this light, it is important to be cognizant of probably the single most important construction contracting principle of law; ambiguities in a contract document will be interpreted against the author (22, p. 68). Since a perfect set of contract documents does not exist, the owner might envision the Sword of Damocles poised overhead.

Defects in the contract documents come in two varieties; administrative and technical. Administrative defects refer to such things as omissions of certain general conditions and reference specifications, and clerical errors (typographical errors, spelling, arrangement, etc.). In general, such defects are of relatively minor consequence.

Technical defects refer to the engineering aspect of a contract. Included are impossible specifications of methods or materials, conflicting specifications, lack of adequate details, inaccurate quantities, etc. These defects interfere with the basis upon which a potential contractor arrives at his bid. Assumptions made by the contractor in preparing a bid often differ from the owner's (A/E's) intent, and become a source of dispute as the contractor attempts to put the work in place. "To be significant the design error usually must alter the means, method, environment, duration, or the conditions of the construction process"(9, p. 25).

One common source of such errors, both administrative and technical, is the "cut and paste" approach used in the preparation of many contracts.

Traditionally such contracts were prepared by cutting up old specifications and pasting the relevant portions together and adding some hand written notes. The introduction of word processing equipment has done nothing more than eliminate the scissors and glue. In addition to the obvious source of potential error and misapplication of specifications, such practices often result in specifications which are out of date.

In an attempt to reduce the potential for defective specifications, various agencies have developed form contracts and "boilerplate" provisions (general conditions which are added to all contracts, and interpreted as applicable). Such standard form contracts and provisions have their place, but are generally biased toward the author. As a general rule, owners are advised to avoid using form contracts unless they are intimately familiar with their content. Most owners are not aware of what is contained in form contracts and all too often find out they don't like them until it is too late. Owners and A/Es should sit down and negotiate what is meant by each clause, including any "boilerplate" at the beginning and the end of the design phase (14, p. 78).

Defective contract documents are one major cause of disputes; document errors become the owner's fault when they cost the contractor unbid or unforseeable resources; they become the designer's fault when the errors are gross and inexcusable when judged by his peers in the light of the industry standards. Document errors become liabilities when the user, relying on the design professional's competence, is severely hurt or damaged (9, p. 19).

A final comment regarding defective contract documents, plans in particular: "To a certain degree defective plans are like pornography.

It's hard to define, but you know it when you see it." (14, p. 78). Owners must know the content of their legal "mind."

2.2.2 Poor Understanding of True Project Cost

The failure of a contractor to understand or correctly bid a project is a major source of disputes. In an industry where a 3% profit is considered good, it does not take much of a mistake to cross the fence between profit and loss (9, p. 20). The extremely competitive nature of the construction industry coupled with the short bid preparation time generally allotted on most projects results in estimates on the part of the contractor which may yield a net loss even before the work is begun. Compounding this problem is the overbearing optimism inherent in all contractors that they are somehow charismatic and can overcome the misfortune of an obvious low bid (9, p. 21).

The dilemma described above is not peculiar to the contractor. Owners (or their agents) often undervalue project costs and in negotiated settlements have often forced such conditions upon the contractor. When the true costs are realized, disputes often result as the contractor may feel he was forced to accept the owner's conditions.

The owner might be tempted to take advantage of an obviously low bid in the hopes of getting a real bargain. The owner must notify the low bidder of the suspected error(s) and obtain a certification from the contractor that the bid is in fact accurate. This is a good practice to follow even when an erroneous bid is not suspected, but is essential when one is suspected. The owner who forces a contractor to honor such a low bid is only asking for trouble. The contractor will be forced to cut corners on the job to try and save money,

will perform all work to the minimum acceptable standard, and will be looking for a chance to file a claim at every step of the project. Given the probability of some errors in the contract documents, the contractor stands a pretty good chance of finding something which a good lawyer might be able to convert to cash. A true adversarial relationship will develop, destroying any hope of cultivating the harmonious team effort necessary for the successful completion of large projects. "While everyone knows it is nice to buy at low prices, in construction the price is set before one sees the product, and bargains or obviously too low prices at the bid letting or contract negotiations often disappear on the way to the certificate of occupancy" (9, p. 21).

2.2.3 Changed Conditions

Changed conditions refer to variances from stated or implied physical, environmental, administrative or procedural conditions. Changed conditions may vary from subsurface conditions, access to the job site, retainage of progress payments, to the physical scope of the work included in the contract. Regardless of the nature of the condition, if it affects the contractor's performance it will result in a dispute.

Often the biggest problem in a changed condition dispute is determining whether or not the condition encountered is in fact a changed condition (9, p. 8). Decisions must be based on what a "prudent" contractor would have assumed while preparing a bid for the job; should he have anticipated the condition based on the available information? Should he have anticipated hard rock requiring blasting for removal

based on the soil profiles provided? Is the groundwater level shown on the drawings intended to indicate a maximum level? Should the contractor have anticipated a noise ordinance passed after the contract award which limits his available working hours? The list of potential changed condition scenarios is endless. Suffice to say that they will occur, and must be resolved expediently. The subjective nature of such disputes can often lead to heated debates.

A changed condition can impact an entire project and cause what are referred to as "ripple damages." Ripple damages are the additional costs of performing the unchanged work as a result of the performance of the changed condition (12, p. 119). Examples of ripple damages include increased labor and material costs, additional engineering, interest expense, lost profits, extended overhead, and inefficiencies due to delay (weather) and sequencing. The scope and quantification of ripple damages often comprise a dispute of major proportions (9, p. 8).

2.2.4 Consumer Reaction

Although not within the stated scope of this report, this source of dispute deserves mention. There has been a marked development in the law of warranty and product liability, as applied to construction (21, p. 704). "The idea of total liability arising from the right of users or bystanders to rely on products or services which fall short of acceptable levels of performance is a serious origin of construction disputes (9, p. 8)"

2.2.5 Personalities Involved

"The construction business is a people business (9, p. 8)." The success or failure of many projects hinges on the ability of the

individuals involved to cooperate. For this reason, it has been said that construction is not a science, but an art.

The construction process involves the coordination of a myriad of activities, all being performed by people. The ideal project has these people working in harmonious accord toward the common goal. Invariably, situations arise in which personalities are brought to bear, and ultimately lead to dispute if between the owner's and contractor's personnel. The most common interface yielding such disputes is the inspector - foreman relationship. Arrogant inspectors can be a considerable liability to the owner.

2.3 Other Considerations of Claim Origin

While the origins of claims discussed in preceeding sections are essentially universal, other factors bear on the frequency of claims. Both the type of contract used and the composition of the owner have a considerable effect on the likelihood of claims being filed.

The competitively bid lump sum contract is by far the most conducive type of contract for claims. This form of contract places the owner and the contractor in an adversary position. The contractor's only weapon is the claim, with both offensive and defensive capabilities. Both parties are working for themselves, the contractor trying to minimize project costs and maximize profit, while the owner wants the best quality construction and most quantity that he can get for his money, with as few changes as possible. The best type of contract from the claims protection perspective is the negotiated contract, where both parties are working together toward a common goal from the start. Variations of this include the cost plus fixed fee, the cost plus incentive fee, and the cost plus percentage contracts.

The composition of the owner has a significant effect on the contractors penchant for making claims. If the owner is a governmental agency, the contractor will be more likely to file claims than if the owner were an individual or small private organization. This is due to the lack of personnification of the governmental entity; the contractor doesn't feel he is hurting any one individual when claiming against the government, while he readily understands that claims made against individuals must be paid by those individuals.

Another reason contractors are less inhibited about making claims against the government is that they know it will not affect their chances of obtaining additional work. Governmental contracting procedures are prescribed by statute, with most work being competitively bid and awarded to the lowest bidder. While it is possible to be barred from bidding government work, it is a relatively rare occurrence and requires more than the filing of spurious claims. In private work, the contractor is fully aware that a heated claim situation will more than likely mean he will not get any additional work from that owner.

2.4 Time, A Valuable Commodity

While the origins of claims are diverse in nature, they share one common precept; time is money. "Those involved in a construction problem quickly learn that it is not the hard dollars which are important, rather it is in the time related costs that the huge damages arise to all concerned (9, p. 55)." The specific nature of these costs range from construction inefficiencies (reduced productivity) to extended

overhead costs for the instant project and lost potential profits on other work. Additional costs due to delays are not limited to the contractor. The owner of a project may suffer lost income as a result of delays in the completion of a project, or may be forced to obtain suitable space at considerable expense while the new facility is being completed.

Determining the responsibility for delay is usually difficult, and the courts have often held that delays should be anticipated in a construction endeavor (19, p. 3). This contention has traditionally provided more protection for the owner than the contractor, but the courts have become more inclined to consider owner cuased delays and awards for such damages. The important point to realize in a delay situation is that there is not usually a winner and a loser, but rather two losing situations (19, p. 3).

2.5 Remedies Available

When a dispute has run the gamut to become a genuine claim, there are two avenues for resolution; litigation and arbitration. The applicability of arbitration is dependent on the instant contract, or the mutual consent of both parties. Most government contracts delineate a required path of resolution, generally consisting of an administrative review board. Appeal procedures are detailed and must be exhausted before litigation becomes viable.

Litigation and arbitration each offer distinct advantages and disadvantages which are best explained in detail by competent legal counsel. Briefly, litigation is usually a lengthy procedure which often imposes considerable expense and inconvenience on both the owner

and the contractor. A court action will usually be determined by either a jury trial or a judge, which can often lead to technical difficulties in complex construction cases. Arbitration allows a construction dispute to be judged by professionals within the industry.

Arbitration is the reference of a dispute to one or more impartial persons for final and binding determination, implying a common consent by the parties to have their differences settled. The primary advantages of arbitration are touted as its speed, lower costs, and informal (though ordered) procedures. Although arbitration probably does offer a means to a faster verdict on small matters, there appears to be a concensus among arbitration attorneys that it is not guaranteed to be any faster than formal litigation on major construction claims, and can in many instances extend the final judgment date (22, p. 219). Lower costs are also not guaranteed by arbitration, just reallocated (22, p. 219). There is little question that arbitration proceedings are less formal. Such informality leads to a relaxation of the rules of evidence, which may make it easier to present all of the facts pertinent to a claim.

Perhaps the most compelling property of arbitration is its finality. There is no right of appeal; a decision is final unless both parties agree to reopen the case. It is possibly for this reason that owners are advised not to agree to arbitrate anything involving more than $50,000 or requiring more than a day to settle (14, p. 78). An even more conservative view is to arbitrate only when a claim for less than $5,000 is involved (1, p. 19).

2.6 Settle

The preceeding sections illustrate many of the hazards involved in construction contracting with regard to claims. The main theme is to be alert for problems, resolve them expeditiously, and "avoid litigation at all costs (14, p. 76)." "A bad settlement beats a good lawsuit any day of the year (Appendix I)."

CHAPTER THREE

CLAIMS PROTECTION

3.1 Protection vs. Prevention

Claims protection is an essential element of any complete construction program. The goal of a protection system is to prevent those claims which are in fact preventable, and to mitigate the impact of the inevitable claims. The project owner who expects total insulation rrom claims is fooling himself. "There will always be a need for corrective work to be accomplished in the field; there will always be some difficulties that arise for which the contract documents did not provide a workable procedure; and there will be cases where unforeseen underground conditions may present contractual problems that were unanticipated in the original contract and any extra work required to resolve such conditions should be carefully documented (7, p. 79)."

3.2 A Word on Contracts and Contractors

As mentioned previously in this report, the construction industry is a people business. The ability to deal with other people in a highly technical and stressful environment requires a special knack. All who attempt this venture are not successful, as evidenced by the statistics of an industry which in a recent year accounted for 12% of this country's gross national product, but yet generated 20% of all financial failures and was responsible for 23% of the resulting liabilities (3, p. 22).

With this understanding, the owner should recognize that successful contractors in the construction industry are true professionals.

An owner is well advised to treat the successful bidder accordingly to foster a smooth working relationship. When a contractor is treated as a "crook," or is given cause to believe he is considered as such, the adversarial relationship inherent in the free market enterprise often escalates accordingly.

In principle, a contract is founded on mutual trust. The existence of hidden or trick clauses in a contract undermines this good faith, and erodes the owner-contractor relationship. A good contract requires free communication between the parties to best resolve any difficulties which might arise. Difficulties become claims when communication breaks down. The contractor should be treated as a professional, and a working dialogue must be maintained at all levels of each organization. Thus a claim situation becomes one in which both parties agree to disagree, professionally.

3.3 The Claims Protection Program

Recognizing that claims will occur is the first step toward an effective claims protection program. With this frame of mind the owner's attention must turn toward positive actions which might be taken to strengthen his position in a claim situation. There are essentially two phases of a claims protection program; pre-bid and post-award.

3.3.1 The Pre-bid Phase

The pre-bid phase is a time during which the owner must (or should) provide broad policy decisions to his designers and his staff. Aside from the obvious decisions necessary to establish the scope and aesthetics of a project, the owner must develop contracting strategies. These strategies comprise the two elements of the pre-bid phase of an effective claims protection program.

3.3.1.1 Risk Management

Risk has been defined as "...the variation in the possible outcome that exists in nature in a given situation" (6, p. 171). As applied to construction, risk relates to the probability of occurrence of unknown conditions or events which affect the ultimate completion of a project. Six general categories of risk have been identified by the American Society of Civil Engineers at the Specialty Conference on Construction Risks and Liability Sharing (6, p. 172):

1. Construction-related risks
2. Physical risks (subsurface conditions)
3. Contractual and legal risks
4. Performance risks
5. Economic risks
6. Political and public risks.

A more workable categorization for the owner's part would include only four groupings; physical, capability, economic and political/societal.

The owner must evaluate all of the potential risks posed by the prospective project and devise a strategy for allocating those risks. "In the absence of contractual provisions to the contrary, our legal system already allocates most construction risks between the designer, owner, and contractor. Therefore, when we speak of risk allocation, we really mean risk reallocation, risk spreading, or reaffirmation of the existing allocation of risks..." (6, p. 173). The legal principles used by the court to equitably allocate risk should also be used by the owner to analyze both the risks themselves and the aptness of sharing those risks. These principles are (6, p. 173):

1. Which party can best control the risk?
2. Which party can best foresee the risk?
3. Which party can best bear the risk?
4. Which party most benefits or suffers if the risks materialize?

Appendix II contains a detailed list of the common types of risks and some comments relative to their allocation (or reallocation).

Once the specific risks have been identified and their appropriate allocations determined, a means of reallocating those risks must be agreed upon. There are essentially two options available to the owner regarding risks allocation; he may retain the risk or he may shift it through contractual risk allocation.

Contractual risk allocation can be done in one of two ways; the owner can shift the risk to the construction contractor as a part of their binding instrument, or he can transfer it to a third party, such as an insurance company. Regardless of the vehicle used to transfer risk allocation, it does not mean simply passing the buck to someone else. The owner pays for the reallocation of risk through higher contingency costs in the contractor's bid or through insurance premiums to a third party.

The cost effectiveness of such a method is best summarized by the following; "Although some first costs may seem somewhat higher for the field services portion of the contract, the bottom line generally exhibits an overall lower project cost because of a reduction in claims frequency. Bid prices are similarly less if a contractor is not asked to take the higher risks over which he has little or no control" (7, p. 81). "The primary consideration must be who can best control the risk" (7, p. 81).

3.3.1.2 Contract and Specifications Preparation

Having decided upon the specific risk allocations desired, the owner must execute his decisions. The contract specifications must be appropriately worded to effect a clear reallocation of risk to the successful bidder. In most contracts, these provisions are contained in the contract general provisions.

Owners who have considerable contracting experience (i.e. large corporations, governmental agencies) have developed standard phraseology which is incorporated into every contract, with minor additions or deletions as appropriate for the individual contract. These universal general provisions are often referred to as "boilerplate," and have been tested in court and revised accordingly. The owner who does occassional work would be well advised to consider adopting these standard provisions to suit his needs. Again it must be emphasized, however, to thoroughly understand what the provisions say, and that they express the owner's intent.

While general provisions are usually effective in transferring risk to the contractor, there are mitigations which might affect the enforcibility of such clauses in a court of law. One recent trend in contracting is the inclusion of general disclaimers of liability and other exculpatory language, particularlay with reference to subsurface information provided by the owner for underground construction (6, p. 177). "These restrictions... have been consistently disregarded by the Court of Claims and also by the administrative boards on the basic ground that a

modification or deletion of the standard clause is the proper means for placing the risk on the contractor" (29, p. D-62).

Aside from allocating risk within the contract, the general conditions detail the administrative procedures to be followed for changed conditions, disputes, the rights of the owner, and a host of topics. In a claims protection program, the disputes clause is of paramount importance and must be fully understood by the owner and all of his representatives.

3.3.2 Post-award Phase

After the contract documents have been prepared, the project is let for bid. The owner determines the basis of award (usually the lowest bidder in this country) and selects the successful bidder. Upon award of the project to the selected bidder, the post-award phase of the claims protection program begins.

3.3.2.1 Documentation

The keystone of an effective claims protection program is systematic, careful and thorough documentation. In the legal arena, being right is only the first step of defeating a claim; construction contracts and claims require proof, both to win or to dismiss them (22, p. 239). "The best way to stay out of court is to be prepared for it, and that means full and complete documentation) (22, p. 256).

With full and complete documentation, the probability of reaching an out of court settlement is greatly enhanced. During meetings with the contractor while the disagreement is still a protest or a dispute, factual evidence presented by the owner

which backs up his position will probably dissuade a contractor from pursuing an unfounded claim. At the claim stage, a well organized presentation of the facts at pre-trial meetings with the contractor and his counsel which overwhelms their position will result in the contractor's counsel urging settlement.

The word "document" is defined by The American Heritage Dictionary as "A written or printed paper bearing the original, official or legal form of something, and which can be used to furnish decisive evidence or information." Thus documentation refers to the process of collecting such information. The number and types of documents necessary must be tailored to each project's requirements, but there can never be too much documentation in a claim situation.

The effectiveness of documentation is rooted in the rules of evidence used by the judicial system. Simply stated, "Evidence is used to prove questions of fact" (24, p. 19). The court will require the best possible evidence in a particular litigation, meaning the highest and most original evidence available (24, p. 20). Evidence which is received second hand by the court is known as hearsay evidence, and is usually not admissible for the following reasons:

1. the person whose observation is quoted is not present to be seen by the jury
2. the original testimony was not under oath
3. there was no opportunity for the original testimony to stand the test of cross examination (24, p. 20).

One exception to the hearsay rule with grave importance to the construction industry is business records. To be excepted from

the hearsay rule four conditions must be met:

1. The entries are made in the regular course of business
2. The entries are made contemporaneously with the events recorded
3. The entries are original entries
4. The entries are based upon the personal knowledge of the individual making them (22, p. 258).

This means that such entries are admissible as evidence to prove the truth of the statements contained within them without the presence or testimony of the original author (22, p. 258).

While the positive aspects of documentation in a claims protection program are acknowledged, their negative side must also be considered. Documentation can be a two edged sword in litigation. "In the regular course of business" means complete and accurate records; in the event that a document is found to be missing, or the occurrence of an event is not recorded, this constitutes evidence of the non-occurrence of the event (22, p. 259). Incomplete documentation will become a liability.

The types of documentation necessary for an effective claims protection program are myriad. Figure 1 is a list of the more common documents considered essential to the proper administration of a construction contract. While this list is helpful, it is by no means complete; the specific requirements must be tailored to each contract. To ensure that the proper records are being kept, a checklist is often used. Appendix III is one such checklist used by some organizations within the Department of Navy's Facilities Engineering Command. As a general guide, it is advised to keep everything, throw out nothing, and reduce everything to writing.

TYPES OF DOCUMENTATION

Notice to proceed.
Schedules
Job meetings and conferences.
Oral instructions.
Additional, or revised drawings.
Field orders.
Submittal logs.
Change estimates.
Extra work-costs.
Field Survey computations.
Cost records.
Job diaries/logs.
Photographs.
Inspection reports.
Work in place approvals.
Material certifications.
Change orders.

FIGURE 1. (27, p. 29)

To document "everything" requires the implementation of an effective management system to insure that all transactions are carefully recorded, submittals properly handled and documented, and that all correspondence be in writing, with timely (but not hasty) and appropriate responses. The first step in establishing such a system is to properly orient the staff. A first order of business should be to discuss the specific terms of the contract relating to claims administration. Particular attention should be given to the notice provisions contained in the general conditions. Everyone who might be involved in receiving such notice of claim and especially those who might draft a response must learn to recognize a notice of claim as such. A review of the administrative requirements of the contract should be undertaken, highlighting those provisions which could prove crucial in a claim situation (i.e. differing site conditions, constructive change). The staff should be made claims conscious, but not to the point of paranoia. If the staff is one which has administered numerous other contracts for the same owner, the uniqueness of the instant contract must be emphasized; nothing should be assumed to exist in the contract. The staff as a whole must be intimately familiar with the contract at hand to be able to protect the owner's rights afforded by it.

The second step in establishing the management system is to set up a comprehensive project filing system for all correspondence and documentation which will be generated. The system must be flexible enough to accommodate new material while maintaining adequate structure to insure completeness. A "tickler" system

to record incoming correspondence and alert the owner to overdue replys is particularly helpful.

With the system framework in place, maintaining proper documentation becomes a matter of "filling in the blanks." Almost as important as which documents to record, however, is a matter of tone. The records must not "smell" lawsuit; that is, they should not appear to be written strictly in anticipation of a claim (22, p. 260). Such a perspective weakens the credibility of the documents as factual evidence. Some general rules for the maintenance of project records are (19, p. 178):

"1. Factual accuracy. Written project documents should be factual and to the point. Speculation or unsupported allegations should be avoided. Irresponsible statements for which inadequate justification exists should be avoided.
2. Precision. Letters, memos, and reports should be written with sufficient precision so that a third party reviewing the document without the benefit of substantial factual background will not misconstrue the intent of the documents.
3. Completeness. Every change, correction of a deficiency, explanation or rebuttal of a problem area should be recorded, particularly where the topic of deficiencies or alleged deficiencies has been raised. For instance, punchlists should have a closeout corrective action list, or a sign-off.
4. Impersonality. Unnecessary or unjustified remarks concerning the competence or motives of others should be avoided. All reports and records should be as factual as is possible and should avoid the use of unneccessary adjectives that unduly emphasize or exaggerate the gravity of a problem being described."

Having the proper documentation and being able to find it at will are two different problems. The preceeding paragraphs detail how to document the project, but in the event a claim winds its way to court, retrieval of the pertinent documents often becomes a herculean tasks. "Perhaps in no other kind of legal dispute is the documentation and factual detail involved so voluminous as in construction claims cases" (1, p. 18).

Microcomputers hold considerable promise for construction claims administration in the area of document filing and retireval. Record keeping and retrieval are simplified by allowing a one-time entry of duplicative information with an automatic distribution to all relevant documents, and retrieval with reference to a specific claim or subject. Computer-generated data and graphics can add an additional dimension to claims support, and affords a painless way of running sensitivity analyses with scheduling programs to assess the overall impact of isolated problem areas (12, p. 1).

The convenience of automation in document keeping and retrieval could pose a grave threat to credibility unless safeguards are implemented. If no "hard copy" original exists, it would be all too easy to manipulate electronic documents. Thus automation would make the day to day activities easier, but the original documents must still be kept, or a hard copy of the stored data printed and certified on a routine basis, most probably daily.

3.3.2.2 Project Administration Procedures

How well or how poorly a project owner and his staff handle the day to day goings on of contract administration can have a significant impact on the well being of the contractor. The speed with which progress payments are processed and paid, combined with an arbitrary policy or retainage can have grave consequences on a contractor who is borrowing money at interest rates in excess of 18%. A lack of interest on the part of the owner can lead to fertile fields in which major claims could grow.

Another area of procedural concern is the routing of submittals. All submittals from the contractor should be processed

in a timely and systematic manner so as to preclude the "lost" submittal. A formal flow chart should be developed to prevent any misunderstandings (Figure 2). A detailed log of submittals should be kept to track the status of all submittals, and to flag those which either have not been submitted as required or have not been approved or returned by the designer. This type of attention to procedure is applicable to all communications with the contractor, and can prevent confusion or misunderstanding.

Perhaps the most important administrative procedure is to clearly define the authority of all of the owner's representatives, particularly with regard to making changes in the work. All too often the contractor will claim for additional compensation because the inspector "told me to build it that way." These limits of authority are normally set forth in the contract general conditions, but are often not understood by the contractor's field personnel. Thus, when a well meaning inspector requires additional work from that required by the contract before he will accept it, the contractor performs the work and seeks compensation for this constructive change afterwards often resulting in a claim situation. Ideally, the owner should appoint a single official representative, thereby avoiding many of the risks associated with multiple contacts (7, p. 84).

3.3.2.3 The Inspection System

The reasons for maintaining an inspection force at a project site are to monitor construction quality, time and costs. To accomplish these tasks requires an effective inspection system, founded on proper staffing and organization.

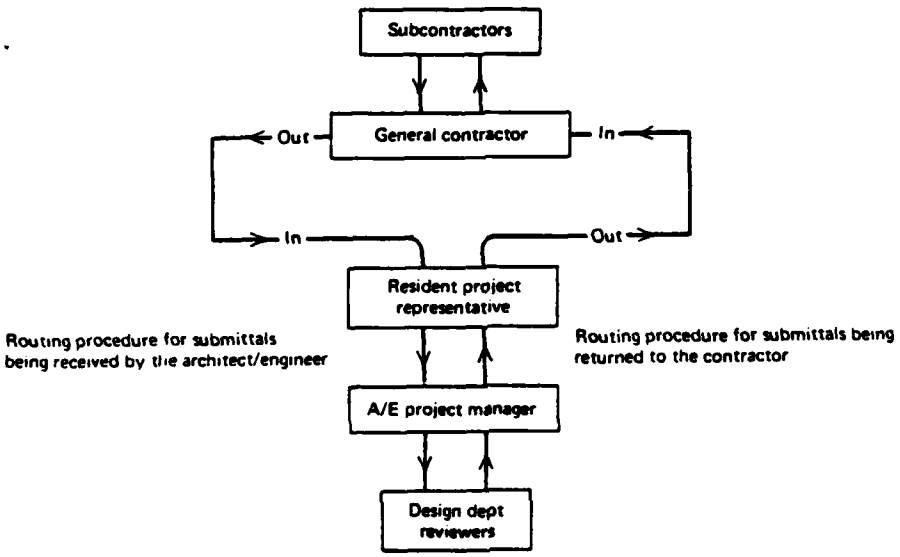


FIGURE 2. ROUTING OF SUBMITTALS (6, p. 39)

There are no hard rules or guidelines to follow in determining what constitutes an adequate level of staffing. Figure 3 is an attempt to fill this knowledge gap by the California State Water Resources Control Board; while intended only for wastewater treatment plant construction, it does serve as an order of magnitude guide for all work. The mix of experience required to properly inspect a project is usually left to the construction manager or the resident project engineer.

The importance of the inspection force cannot be overemphasized. They are the individuals who deal with the contractor on a daily basis. The inspection force includes the resident engineer(s) and clerical staff as well as the inspectors. Office clerks are most helpful in reviewing payrolls, tracking correspondence and logging submittals. The inspector is the individual who has the best chance of actually preventing a claim by making good decisions in the field, tempering his contract interpretations with his field experience. But a poor inspector, or an imperial one, can be the indirect source of many claims. Some contractors feel that a barrage of claims is their only defense against poor inspection (Appendix I).

Proper staffing and direction alone do not make an effective inspection system. "To develop a workable system, an organizational structure must first be developed that will assure that the named objectives can be consistently reached" (7, p. 87). Regardless of the actual organizational structure, it is imperative that all field personnel report to a single authority. One such

Project Size	Inspection Man-yrs./yr.
Less than $1 million per year	1.0
$1 to $5 million per year	2.5
Over $5 million per year	2.5 + 2.0 for each additional $5 million

FIGURE 3. RECOMMENDED STAFFING OF FIELD INSPECTORS FOR WASTEWATER TREATMENT PLANT CONSTRUCTION (7, p. 85)

arrangement is illustrated in Figure 4. This assures some degree of uniformity in policy toward the contractor.

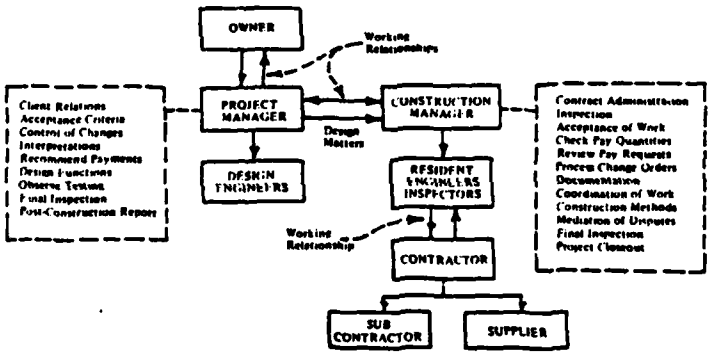


FIGURE 4. ORGANIZATIONAL STRUCTURE FOR POST-AWARD PHASE (7, p. 87)

3.3.3 Guarding Against the "Greedy" Contractor

Although intimated throughout this report, it must be stated that some contractors are claims specialists. That is, they accept a contract award and then look for potential claim areas they feel might be profitable and begin pursuing spurious claims for additional profit. Unfortunately for the owner, by the time this trait is recognized, it is too late to reconsider the contract's award. The owner does have several defense mechanisms at his disposal to use against such an unscrupulous contractor, including selective documentation, administrative procedures, and the filing of counter-claims.

Selective documentation refers to that documentation above and beyond that made in the normal course of business. Specific examples might include additional and detailed photographs of identified problem areas, specialized reports (e.g. pile driving log), or any other type of documentation which selectively monitors certain portions of a project. In certain situations, this may involve the use of a specialist or an outside consultant to augment the existing inspection force, such as in underwater construction, dredging, quarrying, or any field in which the owner may lack expertise.

There are several administrative procedures at the owner's disposal which can be used as a partial defense against such contractors. Most contracts include a retainage figure which the owner (usually at his option) may deduct from periodic progress payments. The owner can use this lever to apply pressure to an aggressive contractor at his own discretion, fully within the contract specifications. Another tactic is to delay the processing of progress payments and submittals up to the maximum time allowed in the contract. Care must be taken

so as not to appear arbitrary in this action, since not all such activities should take the maximum time allowed. Perhaps the ultimate administrative procedure in such instances is the inspector. Rigid enforcement of all contract provisions which could have been more liberally interpreted can make it quite difficult for the contractor.

Once the claims have been filed in court, the owner might consider filing counter-claims, being sure to include (when possible) the contractor's bonding agent, suppliers, subcontractors, and anyone else who might affect the contractor's position. Although quite effective in its own right, the counter-claim relies upon accurate and complete documentation in the event that the issues should ever make it to court. More often than not, a flurry of counter-claims against such a contractor will lead to an out of court settlement in which all charges are dropped.

CHAPTER FOUR

DOCUMENTATION

4.1 Introduction

The importance of a proper documentation system was presented in Chapter Three. This chapter details several of the more important pieces of documentation, and provides some advice on homing in on a potential claim area utilizing the documentation system.

4.2 Specific Types of Documentation

While all forms of documentation are important, there are several which have had more "combat experience" and are thus deserving of special attention in this report. In no way should this be construed as a preference of types of documentation; to be useful, a documentation system must be complete.

4.2.1 The Daily Report

The single most important document for claims review, preparation and proof is the daily report (22, p. 257). Despite the hearsay rule of evidence, the daily report is acceptable on its own merit in a court of law, drawing its legitimacy from the fact that it is made during the regular course of business and not prepared specifically for litigation.

Daily reports should include information regarding the weather, number and types of labor present and the type of work being performed, the equipment on the site and its status (working or down), quantities of work completed, problems encountered and discrepancies noted, and any pertinent comments. It should be filled out by hand, in the field and dated and signed, all in ink, with no erasures. Mistakes should

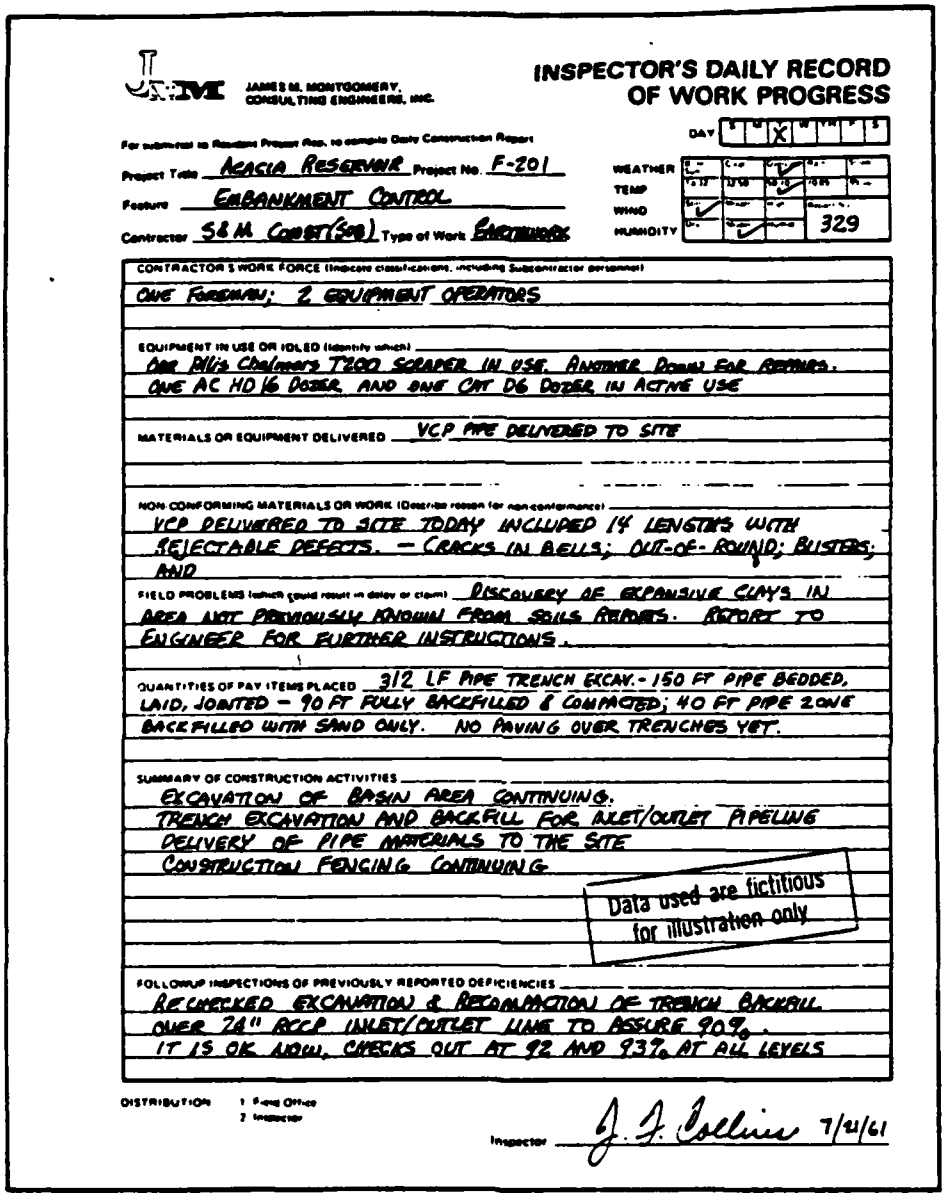
be corrected by drawing a line through them. It is a good practice to forward reports to the home office for safe keeping and to get them out of the hands of the field personnel (21, p. 261). This adds credibility to the authenticity and accuracy of the reports, which above all must be complete and honest. Figure 5 shows a typical daily report.

Another form of the daily report is the Engineer's Log. The same rules apply to it as to the inspector's reports. Special care must be used to keep personal prejudices from entering what might seem to be a personal document, but when subpoenaed can become very embarassing evidence in a courtroom.

4.2.2 Schedules

Generally, all contracts require some type of schedule be submitted to the owner to detail the sequence of the work, and is subject to approval by the owner. This approval should not be given lightly since it indicates an owner's concurrence that the schedule is reasonable and that the work could be completed as indicated. Even more important is that in a delay claim the original approved schedule is taken as the baseline against which delays are computed; a hasty approval of an unrealistic schedule can have serious consequences.

Another consideration is the type of schedule to be used. The most commonly used format is that of the simple bar chart. This format is acceptable for small projects involving few trades. The bar chart displays activities as horizontal bars along a time scale, indicating anticipated start and finish dates and the duration of each. It is due to this simplicity that the bar chart has gained such wide acceptance. These charts can, however, be misleading since they show



JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.

INSPECTOR'S DAILY RECORD OF WORK PROGRESS

DAY: S M T W T F S (X)

Project Title: ACACIA RESERVOIR Project No. F-201

Feature: EMBANKMENT CONTROL

Contractor: S & M CONST(SON) Type of Work: EARTHWORK

WEATHER / TEMP / WIND / HUMIDITY: 329

CONTRACTOR'S WORK FORCE (Indicate classifications, including Subcontractor personnel)

ONE FOREMAN; 2 EQUIPMENT OPERATORS

EQUIPMENT IN USE OR IDLED (Identify which)

ONE Allis Chalmers T200 SCRAPER IN USE. ANOTHER DOWN FOR REPAIRS. ONE AC HD 16 DOZER AND ONE CAT D6 DOZER IN ACTIVE USE

MATERIALS OR EQUIPMENT DELIVERED: VCP PIPE DELIVERED TO SITE

NON-CONFORMING MATERIALS OR WORK (Describe reason for non-conformance)

VCP DELIVERED TO SITE TODAY INCLUDED 14 LENGTHS WITH REJECTABLE DEFECTS. — CRACKS IN BELLS; OUT-OF-ROUND; BLISTERS; AND

FIELD PROBLEMS (which could result in delay or claim): DISCOVERY OF EXPANSIVE CLAYS IN AREA NOT PREVIOUSLY KNOWN FROM SOILS REPORTS. REPORT TO ENGINEER FOR FURTHER INSTRUCTIONS.

QUANTITIES OF PAY ITEMS PLACED: 312 LF PIPE TRENCH EXCAV. - 150 FT PIPE BEDDED, LAID, JOINTED - 90 FT FULLY BACKFILLED & COMPACTED; 40 FT PIPE ZONE BACKFILLED WITH SAND ONLY. NO PAVING OVER TRENCHES YET.

SUMMARY OF CONSTRUCTION ACTIVITIES

EXCAVATION OF BASIN AREA CONTINUING.
TRENCH EXCAVATION AND BACKFILL FOR INLET/OUTLET PIPELINE
DELIVERY OF PIPE MATERIALS TO THE SITE
CONSTRUCTION FENCING CONTINUING

Data used are fictitious for illustration only

FOLLOWUP INSPECTIONS OF PREVIOUSLY REPORTED DEFICIENCIES

RECHECKED EXCAVATION & RECOMPACTION OF TRENCH BACKFILL OVER 24" RCCP INLET/OUTLET LINE TO ASSURE 90%. IT IS OK NOW. CHECKS OUT AT 92 AND 93% AT ALL LEVELS

DISTRIBUTION: 1 Field Office 2 Inspector

Inspector: J. J. Collins 7/21/61

FIGURE 5. A TYPICAL DAILY REPORT (6, P. 50)

only generalized activities within which numerous detailed work elements are performed. This lack of detail fails to show the intermittent manner in which the detailed work elements are performed and thus cannot identify those which are critical to the project's timely completion. To document a delay, or to prove a lack thereof, monitoring of activities on the critical path is essential. Additionally, the courts have denied delay claims based on bar charts noting that "since no interrelationship was shown as between the tasks the chart cannot show what project activities were dependent on the prior performance..." (30, p. 47).

Network scheduling techniques were developed in response to the bar chart's limitations, the best known of which are CPM and PERT. Network techniques delineate individual activities in an interrelated manner with definite performance durations assigned to them. This amounts to a work flow chart which indicates the flow from one activity to another for the full life of the project. Using this method, projected start and finish dates and the "float" or "slack" time can be determined for each activity. This provides more meaningful data than bar charts by showing 1) the logical interrelationship between activities, 2) the earliest start and finish times for each activity which can be scheduled, and 3) the latest start and finish times for each activity which can be scheduled beyond which the total project would be delayed.

Proper use of network techniques requires accurate projections for initial input data and periodic updating to remain effective. It is common to require updated schedules from the contractor on a monthly

basis. At the project's end, the result will be an "as built" schedule which provides a graphic presentation of the problem areas encountered when compared with the original schedule. This is especially useful in establishing the cause of delays and in assigning responsibility for the resultant extra costs.

Despite the inherent advantages to the contractor of using network techniques, most contractors avoid using them. In most instances, network techniques will not be used unless the project is extremely large or complex, or unless required by the owner.

4.2.3 Change Orders

All changes to the contract must be documented. Depending on the size of the change and the policy established by the owner, this documentation can range from a one sheet form completed in longhand and signed by both parties to a formal report and modification to the contract. This includes no cost field changes.

In general the documentation should include three main points: 1) the cause of the change - why is the change being made (differing site condition, owner requested, defective plans and specs, etc.); 2) a detailed description of the change - detailing exactly what is being changed and just as important, what is not being changed, including time for completion; 3) the consideration rendered for the change - document the cost of the change, and the time allowed including the owner's estimate, the contractor's proposal, and the agreed amount.

Changes ultimately become a part of the original contract and are subject to the same conditions. It is essential that a "meeting

of the minds" occur when effecting a change; ambiguities will generally be decided against the owner, since he is the requesting authority in most cases and responsible in all.

4.2.4 Photographs

The statement that a picture is worth a thousand words is especially relevant to construction. A clear photo of defective work accompanied by entries in the daily report is almost irrefutable. Ideally the photograph should be well composed and clearly depicting the condition of concern. Some measure of scale should be provided in the photograph by including an object of nearly universal familiarity against which persons viewing the photograph can compare size. Such objects might include a pen, pencil, key, ruler, hand, foot, truck, or even another person, depending on the photograph. It should be labeled with the date taken, the specific location, and a brief description of the subject. It is good practice to reference photographs to daily reports and in some cases make them a part of the report. Periodic or progress photos can prove invaluable to document the overall progress of the contractor. These are best taken from the same location each time to better illustrate the changes that occur.

Photographs should be made using a good quality 35mm camera, preferably one with interchangeable lenses. Instant print cameras may be used for office files, but should be backed up by 35mm photographs, since there are no negatives possible with instant print film. The use of 35mm cameras assures quality photographs in either slides or prints, and makes for easy reproduction. Recently introduced

accessories afford the option of having the time and date a photograph was taken imprinted on the negative during exposure.

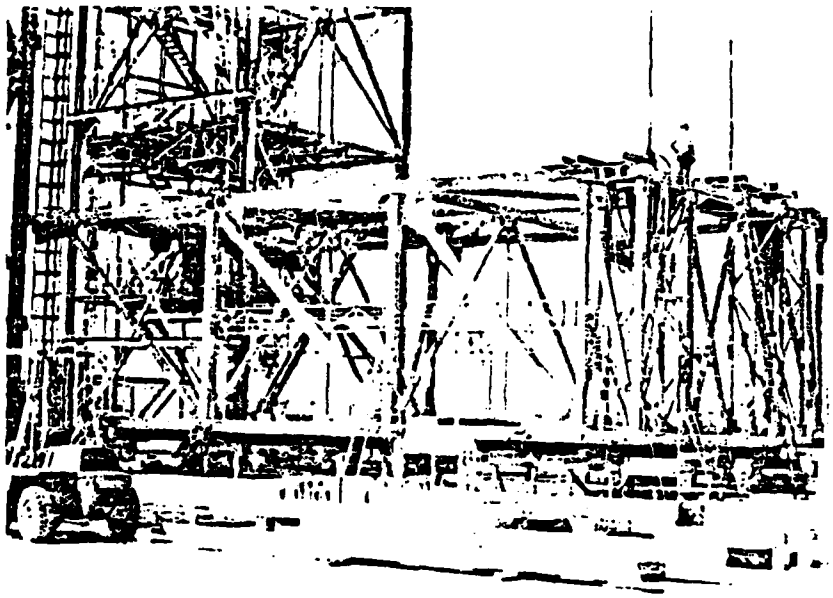
Interchangeable lenses provide for better detail in construction photography. Considering the range of subject matter or perspective desired in photographic documentation, the use of a wide angle lens to permit wide viewing areas from relatively close distances, and a telephoto lens to provide close-up detail of remote or inaccessible subjects. Figure 6 illustrates the versatility of such lenses, with all photographs taken from the same location.

Although not in common use, there are some situations where time-lapse photography might prove most effective in documenting a contractor's lack of progress. This would be best suited to a single activity in a localized area (quarry, a single building). The development of portable videotape recorders makes this medium a prime prospect in construction documentation.

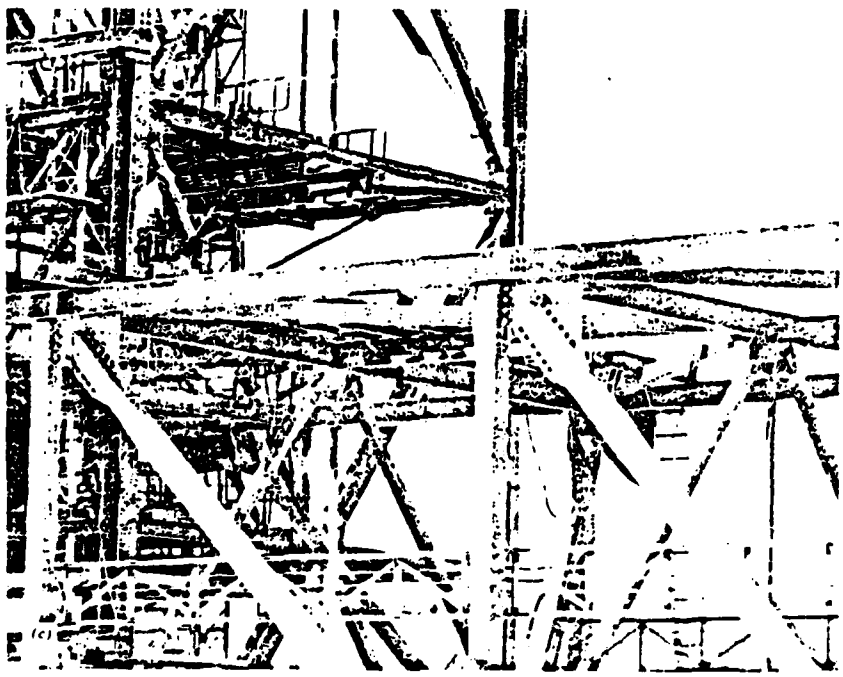
4.3 Field Use of Documentation

While the value of documentation in a claim situation is unlimited, an effective documentation program can be used to predict or warn of potential claim areas. Such a program is akin to taking the pulse of a patient. To "take the pulse" of the project requires the owner (or his representatives) to be alert for the "warning signals" which indicate a potential problem. These are (26, p. 376):

1. Unusual expenditures of funds in excess of estimated amounts
2. Delays in completing the work or milestones
3. Changes in the work sequence (from the schedule)
4. Trends in project correspondence (look for the start of a "paper record").

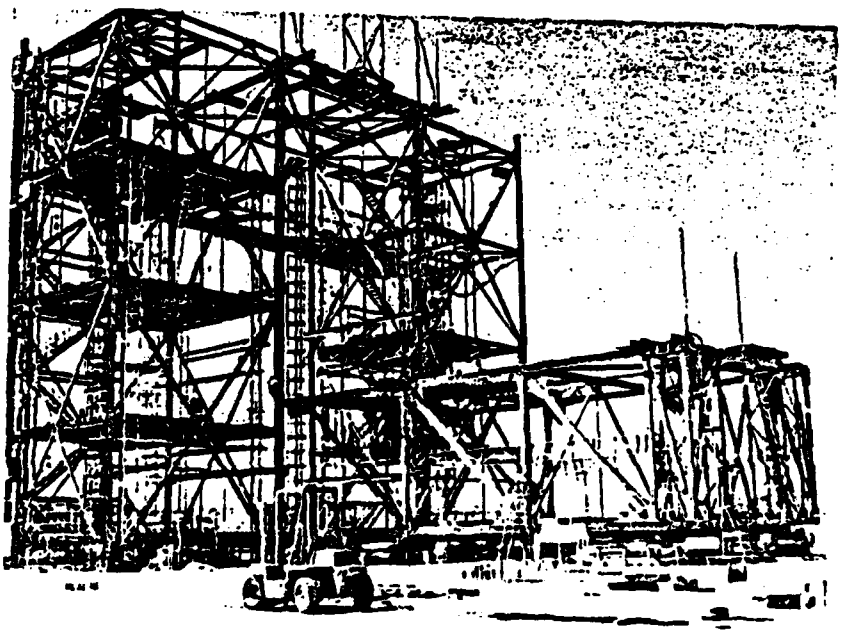


With 50mm lens



With 135mm lens

FIGURE 6. THE SAME SUBJECT PHOTOGRAPHED WITH THREE DIFFERENT LENSES (6, p. 76)



With 35mm lens

FIGURE 6. (CONTINUED)

Seeing these warning signals requires a concerted effort on the owner's part to truly monitor the project, but is well worth it in the long run.

Project documentation should not be collected and stored away for a "rainy day"; it must be used as a management tool. Even after completion of a project, documentation provides a case history of a project which may be analyzed to find sources of error. If this is not done, it becomes impossible to really learn from mistakes.

CHAPTER FIVE

SUMMARY

5.1 The Problem

This report has focused on a wide range of potential hazards for the construction project owner with regard to contractual claims. As the culmination in a sequence of disagreements, the origins of potential claims must be understood to properly prepare a defense against these inevitable plights. The causes of disputes have been traced to five general sources:

1. Defective Contract Documents
2. Poor understanding of true project cost
3. Changed conditions
4. Consumer reaction
5. Peronsalities involved.

While the origins of dispute are diverse, the net effect is nearly constant; it costs the owner in the end. Regardless of the outcome of a claim resolution, the owner is forced to expend resources to prove his position. For this reason, the claim is truly a no win situation for the owner.

5.2 A System of Protection

Protection can be afforded only through an active program of preparation. The protective system described herein is comprised of two phases; the pre-bid and the post-award phases. In both phases, the effectiveness of the system is founded on sound management principles. There is no magic involved, but merely a methodical approach toward good management, with a strong bias toward "claims consciousness." The best protection against a claim is a sound defense; the best defense is to be prepared. Avoid litigation at any cost, but be prepared for it.

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APPENDIX I

INTERVIEWS

INTERVIEWS

Two interviews were made while researching this paper. A brief summary of each follows:

1) I interviewed Mr. Truman H. Setliffe, Regional Vice President of Wagner-Hohns-Inglis, Inc. (WHI) at his Tampa, FL, office on September 21, 1982. Mr. Setliffe began with an excellent presentation of the role his firm plays as consultants to the construction industry. During the course of the interview, I asked and received answers to numerous questions; some of the salient points covered are as follows:

   a) There has been a dramatic growth in the number of claims pursued in the last decade - this is a reflection of the state of economy.

   b) WHI's approach to any claim is to first compile a complete chronological history of a project and work from there.

   c) Most claims involve delays and the subsequent extra costs.

   d) WHI has not found many "unscrupulous contractors"; most claims pursued are valid.

   e) WHI workload is approximately 70% claims and 30% scheduling.

   f) WHI does not litigate any claims, but will act as an independent arbitrator.

   g) CM is not cost effective; owners are paying twice for the same service (implying that the design contract includes construction management responsibilities).

2) I interviewed Mr. Ken Bailey, Vice President in Charge of Operations for Mills and Jones Construction Co. at his Sarasota, FL, office on October 5, 1982. This interview began with Mr. Bailey expressing his philosophies regarding construction claims, frequently interrupted by my questions. Some highlights of the interview are as follows:

   a) From a claims viewpoint, the worst case is government contracting; no individual is damaged, while the contractor must compete for the low bid, creating an adversary relationship.

   b) To minimize claims, owner must 1) have good clear concise plans and specifications, 2) acknowledge that there will be changes and the errors must be corrected, and 3) provide objective and professional inspection.

   c) Frivolous claims are mostly made on government contracts.

d) The dramatic increase in the number of claims is due to the growth of the legal industry, which has found fertile soil in the construction field.

e) "A bad settlement beats a good lawsuit any day of the year."

f) From a wall plaque in the office, "Nothing is more important to a project than meeting the progress schedule."

g) It takes a general contractor to manage construction (or, general contractors make the best construction managers).

h) CM vs GC: CM has owner's best interests at heart, while the GC's decisions are made toward maximizing profit.

i) In general, there are more claims in competetively bid work than in negotiated contracts. This is due to the implied responsibility found in a mutual trust negotiation.

APPENDIX II

TYPES OF RISK AND THEIR ALLOCATION

TYPES OF RISK AND THEIR ALLOCATION
(6, pp. 173-176)

Site Access is obviously an early risk and one that the owner should retain. The contractor lacks the capacity to influence those in control of the site to render it available. However, permit requirements that relate to a contractor's capacity or safety control program can be rightfully assumed by the contractor.

Subsurface conditions of soils, geology, or ground water can be transferred to the contractor, who is in a better position to assess the impact of these conditions on the project cost and time. However, as an essential party of the transfer process, the owner has the responsibility to undertake precontract exploration measures and the designer has the responsibility to design for the conditions expected. The extent that this not feasible should determine the degree to which the owner retains a portion of the risk under an "unforseen conditions" clause.

Weather, except for extremely abnormal conditions, is a risk for the contractor to assume, as its impact on construction methods can be better assessed by the contractor.

Acts of God, such as flood or earthquake are exposures that have no purpose in being transferred beyond the owner, except that the architect/engineer can assume the responsibility for designing to minimize their impact. Fire, however, to the extent that it can be occasioned by the contractor's operations, may be one shared with the owner.

Quantity variations are another form of risk frequently encountered. Within reasonable tolerances, quantities of work can be reasonably estimated and any variances assumed by the contractor for all quantities in excess of, for example, 15 to 25 percent. Where quantities are dependent upon subsurface or other less known conditions, significant variations should be shared only to the extent that exploratory information is available. Quantity changes triggered by late changes in the owner's requirements, however, shoud be at the owner's risk. Some types of variation, such as tunneling overbreak, are contractor controlled and should be borne by the contractor.

Capability-related risks are the result of the different capacity and expertise that each of the parties brings to the construction project. The consequences of failure of any party to measure up to these standards should be borne by the failing party. Unfortunately, this is not always the case. Too often the contractor who has the practical task of building the project carries the burden of the owner's or architect/engineer's failure. This, in turn, renders the contractor's performance task either unfeasible or feasible only at considerable extra cost.

Defective design is a risk usually associated with the architect or engineer. The tremendous expansion of construction has placed great burdens upon the design professions. Maintaining performance standards in the face of this is quite difficult, and occasionally, design or specification defects occur that create construction problems. Unfortunately, it is usually the owner and the contractor who suffer the consequences of such failures instead of the architect/engineer who created the problem in the first place. Design failures or constructibility errors are becoming more and more apparent, and the architect/engineer should bear the true cost of such failures. Often, ill-advised use of performance specifications are provided as an escape from the responsibilities of design where it arises from one of the other listed risks attributable to the owner or architect/engineer. The prime or general contractors are in the best position to assess the capacity of their subcontractors, and therefore it is they who should bear the risk of not assessing the risk properly.

Defective work of construction, to the extent that the problem is not caused by a design defect, should be the contractor's risk.

Accident exposures are inherent to the nature of the work and are best addressed by the contractors and their insurance and safety advisors. Furthermore, the contractors have the most control over site conditions that can increase or decrease accident exposure.

In the viewpoint of some, the recent trend toward "wrap-up" type insurance coverage is a mistake. The safety record on a construction project is so heavily affected by the contractor's methods, site conditions, worker attitudes, and supervisor awareness, that the owner will quite possibly obtain the opposite of what is sought for. Ultimately, the cost of insurance is the cost of the losses plus the cost of administering the compensation for these losses.

Managerial competence is a risk that must be shared by each party, as they each have their own set of managers. It is an ongoing challenge for each organization to assign personnel according to their respective competence levels.

Financial failure is a risk not frequently mentioned, and can happen to any of the parties to a contract. Although infrequent, the order of magnitude of such failure should be considered. It is a shared risk, as the parties need to look at the financial resources of themselves, their partners in joint undertakings, as well as the other parties to the contract.

Inflation is one of the world's realities. Every owner is conscious of its impact on the viability of the project. It is important that the owner retain the true cost. The government experts in finance have so far been unable to predict where the country will be a few years from now, so it is unfair to expect the contractor to do better than the so-called government experts. The contractor's apprehensions will result in higher cost to the owner, or unwarranted optimism will result in the contractor's own demise. A default resulting from such a

failure will result in even greater costs to the owner. The sharing of the escalation risk should therefore be limited to a short span of time, approximately 12 to 18 months, when union agreements usually expire and beyond which is pure speculation.

Economic disasters, as referred to herein, are periodic economic disasters of such magnitude that a contractor could not properly assess either their probability or their cost impact. An example might be OPEC decisions, nationwide strikes, devaluation, tax rate changes and similar large scale incidents. The owner should retain the risk of such disasters.

Funding is obviously a risk beyond the capacity of the contractor to control. Improper source of these funds may occasion delays or create interest costs that are not anticipated and financing problems that to many contractors are driven out of business by delayed compensation for services rendered. This is especially true in the protracted negotiation of changes. All too often the owner plays the cash-flow game to lever dispute negotiations to the owner's advantage. Some large contractors with financial capability may be able to find these delays, with great outlay of interest but, all too often, the smaller contractor cannot even survive.

Labor, materials and equipment involve considerable risks. The availability and productivity of the resources necessary to construct the project are risks that it is proper for the contractor to assume. The expertise of the contractor should allow the assessment of cost and time required to obtain and apply these resources. This is the basic service that the owner is paying for.

Acceleration or suspension of the work is a risk properly retained by the owner, but is all too often pushed onto the contractor in the form of "construction acceleration" or "constructive suspension." An objective appraisal of the facts underlying the istuation and acceptance of responsibility where it belongs is necessary. It is important to realize that this applies to legitimate "acceleration," however, and not to false claims of acceleration as described in Chapter 13 under the heading "Who Owns Float?"

Political and societalis an area of growing importance to any effort at risk allocation. It is an area in which political and social pressures from parties having little interest in a project but having a great impact on such a project greatly influences its outcome. This is an unclear area and deserves much careful thought as to how the risk should be allocated-in some cases it is clear, in others it is vague.

Environmental risks rightfully belong to the owner alone and should be retained by the owner except to the extent that they are influenced by construction methods determined by the contractor, or created by suppliers controlled by the contractor.

Regulations by government in the social area, such as safety and economic opportunity are the rules under which the contractor rightfully must operate. Although there is additional risk in this less known and interpretive area, it is similar to the "work rules" established by union contract or agreements.

Public disorder and war are political catastrophies of such impact that their risk is best retained by the owner, lest it becomes necessary to pay an unusually high price for transferring the risk to another party.

Union strife and all that it entails are risks that are properly taken by the contractor. Unjustified work rules and similar problems are all risks that the contractor must assess and provide for.

APPENDIX III

CONTRACT CHECK LIST

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CONTRACT CHECK LIST

Contract #_____

Title _____

Prime Contractor _____

Contract Award Amount _____

Bid Items Included _____

START OF CONTRACT ITEMS:

	Serial	Date
1. Award Date		
2. Conformed Contract Received		
3. Government Estimate Received		
4. Preconstruction Conference Scheduled		
5. Letter to User on Preconstruction		
6. Preconstruction Held		
7. Letter to Contractor on Precon		
8. Listing of Work to be done by Prime		
9. List of Subs and DD 1566 Received		
10. CQC Plan Submitted *		
11. CQC Conference *		
12. Approval of CQC Plan *		
13. Safety Plan Received		
14. Safety Conference *		
15. Safety Plan Approved		
16. Environmental Plan Received *		
17. Environmental Plan Approved *		

* When specifically required by the contract

18. Construction Schedule Received		_____
19. Construction Schedule Approved	_____	_____
20. Utility Deposit Received		_____
21. Utility Deposit Forwarded		_____
22. Schedule of Prices Received		_____
23. Schedule of Prices Approved	_____	_____
24. Schedule of Prices to NAVFAC	_____	_____
25. Photos at Start of Construction		_____
26. GFM to Contractor *		_____
27. Submittal Plan Received		_____
28. Material and Delivery Plan Received		_____
29. Milestone Chart Prepared		_____
30. _____		
31. _____		
32. _____		
33. _____		
34. _____		
35. _____		
36. _____		
37. _____		
38. _____		

END OF CONTRACT ITEMS:

	Serial	Date
1. Final Inspection Scheduled with Contractor	_____	_____
2. Final Inspection Scheduled with Customer	_____	_____
3. Final Inspection		_____
4. UCD to Contractor	_____	_____
5. UCD to Customer	_____	_____
6. Punch List Completed		_____
7. Close Out Letter to Contractor	_____	_____
8. Warranties Received		_____
9. As-Builts Received		_____
10. As-Builts to 05	_____	_____
11. As-Builts to Customer	_____	_____
12. As-Built Record of Materials Received	_____	_____
13. Shop Drawings Complete		_____
14. O&M Manuals Received		_____
15. Spare Parts Received		_____
16. All Payrolls Received (Verify with 05)		_____
17. Keys Received		_____
18. Keys to Customer	_____	_____
19. Shop Drawings, Submittals, O&M Manuals, As-Built Record of Materials, etc., to Customer	_____	_____
20. Completion Photos Taken		_____
21. Completion Photos to 05	_____	_____
22. Acquisition/Facility Data Forms to 013	_____	_____
23. Evaluation of Construction Contractor to 05	_____	_____

24. Evaluation of A/E to 05 _____ _____

25. Change Orders Complete _____

26. Final Invoice & Contractors Releast to 05 _____ _____

27. Contract Files to 02 _____ _____

28. Receipt of GFM back from Contractor * _____ _____

29. _____

30. _____

31. _____

32. _____

33. _____

34. _____

35. _____

36. _____

37. _____

38. _____


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