IMPROVING FUTURE CONSTRUCTION PROJECT QUALITY THROUGH ANALYSIS OF COMPLETED CONTRACT DOCUMENTATION

By
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Submitted in Partial Fulfillment of the Requirements for a Master of Science in Civil Engineering from the University of Washington Summer 1992
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ACKNOWLEDGMENTS

The author wishes to express sincere appreciation to Mr. Marv Danielson, Deputy Resident Officer in Charge of Construction at Naval Air Station Whidbey Island and Professor Charles T. Jahren of the Department of Civil Engineering, University of Washington. Mr. Danielson's cooperation in providing access to contract records and coordinating quality ratings was excellent. He demonstrated genuine interest in the research, actively participated in its review and served as a committee member. Professor Jahren, serving as the project committee chair, provided cogent guidance and support throughout the research process, ensuring correct and timely completion. Special thanks also to Professor Fred L. Mannering for serving as a member on the committee.
CHAPTER 1 - INTRODUCTION

In my past experience as a construction contract administrator for the Navy, I administered many types and sizes of projects and noticed that a few projects resulted in either very satisfied or very dissatisfied customers, while most received no comment. Now, with quality issues in the forefront of society, I wish to answer the following question: Can future facilities be improved by studying the contract documentation of completed projects that were considered to be high or low quality? Of course the definition of quality encompasses different things to different people. For this research project, quality was judged by a committee of nine facility engineers, the people responsible for planning and upkeep of the completed construction projects, based on how well the facility meets the required function and its durability or maintainability.

The contract documentation will vary somewhat between organizations and will inevitably be more extensive for public projects. For most organizations, contract documentation follows a standard format progressing from pre-award through close-out files and includes such things as constructibility reviews, bid results, correspondence, changes, daily inspection reports, submittals, A/E visits and disputes.

The objective of this research was to develop and test a method that could aid in troubleshooting an organization's construction administration process to uncover recurring problems that should be eliminated; or solutions that should be institutionalized to improve the quality of future projects. The parameters used to select the contracts to be analyzed can be customized to meet the particular
circumstances of the organization under study. This paper will discuss the methodology and results of such a case study for the Naval Air Station, Whidbey Island located near Oak Harbor, Washington.
2.1 IMPORTANCE OF QUALITY - It is well known that quality is playing an ever increasing role in the United States as higher quality goods and services from foreign markets produce keen competition for U. S. businesses. This has in turn put pressure on the Federal Government to improve the quality, timeliness and efficiency of services it provides. In 1988 President Reagan issued Executive Order 12637 which "...established a government wide program to improve quality" (Carr & Littman 1990). This program, known as Total Quality Management (TQM), is actively being pursued in the 10 largest executive branch agencies, including the Department of Defense. The Chief of Naval Operations, in a message to the fleet dated 01 September 1989, has mandated that TQM become a top priority of Navy leadership.

In the book *Excellence in Government, Total Quality Management in the 1990's* (Carr & Littman 1990), TQM is said to be a set of principles, tools and procedures that provide guidance in the practical affairs of running an organization. Coopers & Lybrand, a well known management consultant firm that has done extensive work for the federal government, defines TQM as:

Involving everyone in an organization in controlling and continuously improving how work is done, in order to meet customer expectations of quality.

Government organizations that use TQM agree that it is fundamentally different from traditional management. Some of these differences are summarized in Figure 1 (Carr & Littman 1990).
<table>
<thead>
<tr>
<th>Traditional Management</th>
<th>Total Quality Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needs of users of products and services defined by specialists</td>
<td>Customer focus, where users of products and services define what they want</td>
</tr>
<tr>
<td>Errors and waste tolerated if they do not exceed set standards</td>
<td>No tolerance for errors, waste, and work that does not add value to products and services</td>
</tr>
<tr>
<td>Products and services inspected for problems, then &quot;fixed&quot;</td>
<td>Prevention of problems</td>
</tr>
<tr>
<td>Many decisions governed by assumptions and gut feelings</td>
<td>Fact-based decisions using hard data and scientific procedures</td>
</tr>
<tr>
<td>Short-term planning based around budget cycle</td>
<td>Long-term planning based on improving mission performance</td>
</tr>
<tr>
<td>Product or service designed sequentially by isolated departments</td>
<td>Simultaneous design of total product or service life cycle by teams from many functions</td>
</tr>
<tr>
<td>Control and improvement by individual managers and specialists</td>
<td>Teamwork among managers, specialists, employees, vendors, customers and partner agencies</td>
</tr>
<tr>
<td>Improvements focused on one-time breakthroughs such as computers or automation</td>
<td>Continuous improvement of every aspect of how work is done</td>
</tr>
<tr>
<td>Vertical structure and centralization based on control</td>
<td>Horizontal and decentralized structure based on maximizing value added to products and services</td>
</tr>
<tr>
<td>Short-term contracts awarded based on price</td>
<td>Vendor partnership of long-term buyer/seller obligations based on quality and continuous improvement</td>
</tr>
</tbody>
</table>

Figure 1: Differing Management Principles
Unfortunately, TQM has been slow trickling down to field activities where specific guidance is lacking and management freedom has not been fully exploited. As an example, top managers at Signetics, Inc. found that quality improvement was going nowhere until specific goals were laid out for each division. Once this was done quality improvements came rapidly. Top leadership must set the proper tone and support for TQM to be successful, but actual quality improvements must come from the bottom-up (Harwood & Pieters 1990).

Quality is critical to the Navy construction program for many reasons. New construction funding has always been minimal, usually making up less than 1% of the Navy's annual budget. The operating forces demand and deserve high quality shore facilities. And finally, we must live with and maintain what we build for decades. Projects must be well thought out, carefully designed and quality constructed. The American Society of Civil Engineers' (ASCE) manual Quality in the Constructed Project (1990) elaborates on that theme establishing basic guidelines that, if followed, may not eliminate poor quality projects but will certainly increase the likelihood of high quality projects. Basic principles outlined by the ASCE include:

- An active owner that makes its objectives and expectations clear
- Selection of the proper design professionals for the particular project
- Development of a project team which includes the owner, designer and constructor
- Continuous and effective coordination and communication between parties
- Assigning clear responsibilities and assumption of risk
- Fee structures based on scope of duties and risk assumed
- Studying various alternatives and project impacts up front
- Proper management organizations for the design and construction phases
- The use of appropriate contractual methods

The federal government is currently constrained from fully utilizing the
ASCE guidelines in that the construction contractor is not known until the design
is complete and bids are received and therefore unable to integrate valuable
construction expertise into the design. Further, contractors cannot be prequalified
to bid projects unless the work is of a highly specialized nature, which is not the
case with the majority of projects. It is possible however, to improve team
building with the customer, designer and Navy construction managers. An
independent consultant can also perform a value engineering analysis if justified.

A study by Nam and Tatum (1992) showed that there are non-contractual
methods of construction project integration that could be useful on federal
projects. These methods can have mixed results or only produce subtle changes,
but nonetheless should be pursued as they definitely represent sound business
practice. These methods include proactive owner involvement and leadership,
establishment of long-term business relationships between organizations,
employing integration champions in technical, business and executive areas and
increased professionalism of participants. The roots of quality begin with good
teamwork and communications, proper matching of skills to tasks and personal
integrity and pride.

I firmly believe in Proposition No. 1 in the paper by Kline (1990) that states
TQM is best carried out in a more participative management atmosphere and that
professional people are Theory Y (McGregor 1960) individuals who want responsibility and bottom-up practices to motivate them and promote creativity.

2.2 PREVIOUS RESEARCH - The literature extensively covers methods and success stories for quality improvement in the manufacturing industry which in a broad sense can apply also to the construction industry. Seven widely accepted tools for quality improvement include the use of flow charts to outline the process to be analyzed (Burr 1990), cause-and-effect diagrams to analyze relationships and obtain more information about processes and their output (Sarazen 1990), control charts to provide a statistical means to control process variation (Shalmin 1990), histograms as a graphical method to more easily see data trends (Juran Institute 1989), check sheets to gather data in an organized and useful manner (Juran Institute 1989), Pareto charts, named after the Pareto Principle (more commonly known as the 80/20 rule), which identifies what causes are responsible for most of the problems (Burr 1990) and finally scatter diagrams for analyzing the relationship between two variables (Burr 1990).

Nothing was found directly relating to contract file review for the purpose of quality improvement. The Navy regularly audits contract files for the purpose of determining compliance with statutes, regulations and directives which can actually hinder motivations to seek quality improvements, i.e. too much emphasis on documentation rather than the process and the desired final result. An audit by the Department of Defense Inspector General (1984) found generally inadequate inspection of construction projects and insufficient use of value engineering. While these post construction audits often contain useful information, by TQM
standards this is too late in the process to be correcting problems. We should be gathering such information and looking for ways to improve the process in order to produce designs that meet customer and regulatory requirements, and are easily built and inspected with properly trained constructors and inspectors.
CHAPTER 3 - RESEARCH METHODOLOGY

3.1 OBJECTIVE - To see if a structured review of completed project contract documentation could be beneficial to troubleshooting quality problems and improving future project quality.

3.2 SUMMARY - The method consists of the following steps:
- Establish where or for whom quality improvement is desired
- Decide who will rate existing quality conditions
- Select appropriate list size of completed projects ensuring files are accessible
- Have selected personnel rate projects on the list
- Develop a comprehensive and objective checklist to use for file reviews
- Review files and collect data on checklists
- Analyze data for indicators or trends responsible for high or low quality

3.3 PROCESS - The first step is to determine where the quality improvement is desired and who can best judge the quality of completed projects. My primary focus was on improving quality in the eyes of the facility owner with secondary emphasis on the construction managers ratings. In the case study, facility owners (the customer) were represented by a nine member panel of Public Works Department engineers and one facility manager from the Family Housing Department. Construction managers were employed by the Resident Officer in Charge of Construction (ROICCC). The ROICCC is but one part of the Naval
Facilities Engineering Command whose mission is to support the operating forces with quality facilities built on time and within budget. Naval Air Station, Whidbey Island was chosen for this case study, with the customer rating completed project quality either high, medium, or low. Mr. Marv Danielson, the Deputy ROICC at Naval Air Station, Whidbey Island, in consultation with his staff, similarly rated the contracts for quality with regard to ease of administration. It is important to note that this process is very flexible and can be tailored to meet the goals of any organization or department within an organization whether public or private.

Next comes the determination of sample size. The Navy keeps completed contract records for seven years. The files are kept at the ROICC for one to two years and are then sent to the assigned Federal Records Archive Center for the balance of time. Naval Air Station, Whidbey Island was selected as the case study site for this research based on its reasonable travel distance from my home and the close proximity of the Federal Archive Center in Seattle. The Deputy ROICC compiled a list of completed projects going back three years. This resulted in a total of 50 contracts, of which 33 were rated high or low quality by the customer, (Public Works or the Housing Dept.) and/or the ROICC (Appendix A). This was a sufficient number of contracts for analysis and memories of the projects were fresh enough to accomplish meaningful quality ratings.

While the project listing was being prepared, the review checklist was developed (Appendix B). It was keyed to the file format used by ROICC Whidbey and designed to pull as much practical data as feasible. Measurements were made
as objectively as possible by quantifying data rather than using terms such as "frequent" or "rarely".

Once the review checklist was completed, the author reviewed only those contracts rated high or low quality by the customer or the ROICC, filling out blank checklists for each. This took from 1 1/2 to 6 hours each depending on the size of the contract. Twenty five contract files were located at the ROICC Whidbey office and the remaining eight at the Federal Archive Center. The data was then analyzed to find commonalities that could be linked to the high or low quality ratings.
CHAPTER 4 - ANALYSIS

4.1 QUALITY DISTRIBUTION - A total of 50 completed projects were rated for quality by the customers and the ROI/CC, as outlined in section 3.2. Out of these, 17 (34%) were rated high quality by the customer while only 7 (14%) were rated low quality. Of the remaining 26 projects rated medium by the customer, eight were rated high and one was rated low by the ROI/CC. Table 1 shows the breakdown of customer rated projects by type in the high and low quality categories. While it is encouraging to see the high quality projects outnumber the low by a two-to-one margin, there is room for significant improvement in the percentage of high quality projects.

Table 1. - Project Breakdown (Customer Rated)

<table>
<thead>
<tr>
<th></th>
<th>Repairs</th>
<th>Modifications</th>
<th>New Construction</th>
<th>Totals</th>
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</thead>
<tbody>
<tr>
<td><strong>High Quality Projects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>7</td>
<td>4</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>Percent of Projects</td>
<td>47%</td>
<td>18%</td>
<td>35%</td>
<td>10%</td>
</tr>
<tr>
<td>Total Value ($1,000)</td>
<td>$1,184</td>
<td>$651</td>
<td>$29,233</td>
<td>$31,068</td>
</tr>
<tr>
<td>Percent of Value</td>
<td>4%</td>
<td>2%</td>
<td>94%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Low Quality Projects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Percent of Projects</td>
<td>57%</td>
<td>29%</td>
<td>14%</td>
<td>100%</td>
</tr>
<tr>
<td>Total Value ($1,000)</td>
<td>$1,716</td>
<td>$100</td>
<td>$4,253</td>
<td>$6,078</td>
</tr>
<tr>
<td>Percent of Value</td>
<td>28%</td>
<td>2%</td>
<td>70%</td>
<td>100%</td>
</tr>
</tbody>
</table>
New construction made up a larger portion of the high quality jobs. Factors attributable to this include more freedom for the design professional and less opportunity for conflicts due to unforeseen site conditions. Also new construction contracts are usually larger jobs that attract better organized and more qualified contractors. The design-build method was used very successfully to construct one project, a new commissary store. This method shifts responsibility for design errors and constructibility to the contractor - an incentive for quality design. The contractor was selected by a committee using a point system based on price and the technical adequacy of his proposal. Because this project was not funded by congressional appropriations, the owner was allowed to have a restricted bidders list.

The low quality jobs by contrast were mainly repair and modification work. These jobs, besides being more difficult to design because of built in constraints and hidden problems, are also harder to construct due to usually having to work around facility operations, equipment and personnel. The following sections will elaborate on differences found between low and high quality projects in relevant project files.

4.2 CHANGE ORDERS - Change order types and frequencies are an indication of the project design quality. This includes the adequacy of customer input as to what is required, the design firms field investigation and the technical adequacy of the plans and specifications. The data found in the change order files is consistent with the customer quality ratings. Figure 2 shows that design errors were the most frequent cause of changes, with low quality projects having a 50% higher
occurrence rate. In addition, the comments in the A/E files indicated that the scope of the errors were generally much smaller on the high quality projects.

![Bar chart showing changes in high and low quality projects](chart.png)

**Figure 2:** Change Orders by Type

Changes for unforeseen conditions were not significantly different although from comments it was noted that the ones associated with high quality projects were not due to poor site investigation while the ones associated with low quality projects were. Customer requested changes were actually higher for the high quality jobs. Most of these changes occurred on two large and complex projects - the hospital addition and the new C-9 Maintenance Hangar. Although TQM principles would correctly call this poor planning, the customer apparently did not consider that in selecting their quality ratings. The other changes relate little to customer quality, but rather deal with the contractor/ROICC interface which will be addressed later. The higher cost of changes stemming from deficient design of
the low quality projects is indicated by the much higher average change order rate per project (Figure 3) as compared to the high quality projects. The scope of design errors on the low quality projects was also generally larger in relation to project size.

4.3 CORRESPONDENCE - Project quality issues are generally reflected in the correspondence file. Problems with the design or workmanship are usually well documented. This analysis indicates that high quality projects generated substantially less correspondence dealing with problems and clarifications with the plans and specifications (Figure 4). Better design and the contractor's willingness/ability to interpret the plans and specifications are both likely reasons for this finding. There was twice the volume of routine correspondence on the high quality projects compared with the low quality projects. This can be
attributed to the same two projects that generated numerous customer change orders - the hospital addition and the new C-9 Maintenance Hangar.

![Correspondence Breakdown](image)

**Figure 4:** Correspondence Breakdown

Both of these projects had contractors with numerous ideas for alternative materials or methods, relayed through correspondence. Many were approved by the Navy. Three of the low quality projects had adversarial overtones in the correspondence, i.e. "I'm putting you on notice that...," which usually occurred when the contractors were alleging faulty plans or specifications in hopes of receiving additional compensation. When the ROICC repeatedly asked for justification supporting the contractors position, the issues were dropped. For the most part though, all projects had a professional and cooperative tone in the correspondence.
4.4 ARCHITECT/ENGINEER VISITS - The type and magnitude of discrepancies noted during these visits can further indicate quality problems related to the contractors performance. The government separately funds field visits during construction, if required. All the new construction projects and a few repair projects with some unique features had A/E field visits. The number of discrepancies noted per visit was relatively consistent between the high and low quality projects, but the type of discrepancies varied from mostly cosmetic, i.e. paint touch-up, on the high quality jobs to failing to meet specifications, i.e. missing ventilation components or ponding on concrete slabs, on the low quality projects. There were about 25% more field visits per $100,000 of construction for the low quality projects, however there was not a clear correlation between the number of field visits and project quality. The main project responsible for the increase was the Flight Simulator Bldg. Addition (Contract 86-0171), which was plagued by a poor design and an uncooperative contractor.

4.5 PAYMENTS AND PAYROLLS - It was thought that payment deductions and late payroll submissions might occur more often in the low quality projects due to poor workmanship and management. In this case study, the processing of payments and compliance with payroll submission requirements does not appear to be a factor in customer satisfaction. Rather it is a matter of the contractor/ROICC working relationship. The trends in Figure 5 suggest that better communication in the field between ROICC inspectors and the project superintendent on satisfactory work in place and stored material inventories, before invoice submission, would reduce the frequency of deductions by the ROICC and improve ROICC/contractor
relations. The higher rate of invoice disagreement on the high quality projects can be attributed to the larger size of invoices that were associated with the much larger projects.

![Diagram showing ROICC Deductions and On-Time Payrolls]

Figure 5: Payment/Payroll Statistics

Good communication and a method of mutually tracking completed work then becomes even more critical on larger projects. Submitting payrolls on time seems to be equally troublesome although on the low quality projects the prime contractor is usually the one with late payrolls whereas on high quality projects, which again were larger, the subcontractors were generally the problem.

4.6 SCHEDULES - Early project completion may be linked to higher quality by an efficient contractor who meets specifications the first time and/or a quality design with few errors or customer additions. Only two projects had late completions (Figure 6). There is normally ample time given to complete the work
and time extensions are granted for justified delays. Bar charts or lists were used on all but three projects which were multi-million dollar new construction projects using CPM. It can be seen from the data that 41% of the high quality projects finished early while none of the low quality projects did so. This appeared to be the result of organized and efficient contractors familiar with Navy contract requirements, that were in most cases working with well prepared plans and specifications.

Figure 6. - Project Completions

4.7 DAILY REPORTS - Daily reports filled out by the contractor and reviewed by the government inspector are the first place quality or other problems should be documented. Unfortunately, there is a general lack of documentation by government inspectors on the daily reports. Although Figure 7 shows low quality projects had higher rates of non-conformance or instruction by the inspector, the number of instances noted was low in relation to the poor workmanship noted
elsewhere in the files. There are several factors that could be influencing this. According to the Deputy ROICC and from the authors personal experience, most inspectors generally do not like to write and they rarely do detailed inspections for conformance to the specifications, American Society for Testing & Materials.

![Graph showing average percent of reports](image)

**Figure 7. Problems Noted on Daily Reports to Inspector**

methods, American National Safety Institute guidelines, or other such publications. Further, they are not usually experienced in all the trades they are called upon to inspect. A final cause, one I've observed personally, is where higher authority issued guidance discouraging wording on the daily reports such as "electrical outlets have been installed in accordance with project specifications". This is because of the legal ramifications that could be experienced if the outlets later failed and the inspector missed something. Therefore the inspectors nearly always write "no comment" or "work appears adequate" at the bottom of the daily reports.
4.8 QUALITY ASSURANCE - Checklists were developed as part of a Quality Assurance Plan to improve project quality. These are required on most projects, but were rarely done and the ones that had been done were incomplete with no follow-up. Quality is no doubt a concern of the ROICC, but this particular method was apparently not perceived as a valuable tool to improve quality, but rather just another paperwork burden.

4.9 COMPLIANCE NOTICES - Compliance notices can relate to the contractor's commitment to quality in that they show 1) the contractor failed to meet specifications and 2) repeated attempts by the ROICC to get the problem fixed have failed. Four projects reached the point requiring formal notices (30 total) to correct outstanding deficiencies (Figure 8). Three were high quality projects, one of which was responsible for 12 notices and was rated low by the ROICC for quality of contract administration. The one low quality project received 16 notices. This appears to be a sporadic problem in this study and no overall correlation to customer quality can be drawn. Apparently some contractors choose to delay correcting deficiencies until it is convenient for them, rather than the ROICC.

4.10 DISPUTES - Disputes were related mostly to the ROICC's quality rating for ease of contract administration rather than the quality of the finished product. There were four disputes out of six million dollars of low quality work and eight disputes out of 31 million dollars of high quality work (Figure 8). The much higher rate for the low quality projects is a logical result of more ambiguous plans.
and specifications and less cooperative contractors. All things considered, disputes occur a small percentage of the time and all were settled at the disputes review board or contracting officer level.

![Figure 8. - Compliance Notices & Disputes](image)

4.11 SUBMITTALS - Submittal rejection rates measure how well the contractor reads and complies with material specifications and can indicate the degree to which quality is considered. Figure 9 demonstrates that contractors associated with low quality projects had nearly five times the rejection rate as those associated with the high quality projects. This suggests that these contractors and their subcontractors place a low priority on contract compliance.

4.12 CONTRACT CLOSE-OUT - The close-out file contains items such as final inspection punchlists and who attended, warranty information, receipt of as-built and operations manuals and other administrative documents.
Because of several variables such as timing and the personnel involved, no correlation to quality could be drawn from this information. Final punchlist length was a function of contractor thoroughness, contract time remaining and whether the government inspector performed pre-final inspections to reduce the final inspection punchlist. About half of the contractors on the high and low quality projects waited longer than 60 days to submit their final invoice and release of claims. There could be numerous reasons for this and no speculations were made.

4.13 ROICC QUALITY RATINGS - As mentioned previously, the ROICC ratings were primarily used to aid in forming conclusions on why the customer rated a project either high or low quality. The data makes it clear that although error-free contract documents are desirable, the ROICC can still consider it a high quality project if the designer is responsive in clarifying ambiguities and correcting errors. The contractors attitude is also a key factor in that problems raised were
not in and of themselves a sign of poor quality to contract administrators. The validity of the problems and the cooperation in coming to a win-win solution is where the quality distinction comes in. In this study the five projects the ROICC rated low quality either had a designer that was slow providing solutions to field problems, a contractor willfully being difficult in presenting problems while not attempting to find solutions, or a contractor unfamiliar with government contract documentation requirements and unwilling to learn how to deal with them.

4.14 **PROBLEM AREA SUMMARY** - The low quality projects were near evenly split with each experiencing poor design, poor workmanship or both (Table 2). The poorly designed projects included lack of site investigation by the designer, poor coordination between disciplines involved in preparing the plans and specifications, and poor communication of customer requirements and expectations.

<table>
<thead>
<tr>
<th>Project Number</th>
<th>00-1812</th>
<th>00-1825</th>
<th>00-1817</th>
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<th>89-1175</th>
<th>88-8141</th>
<th>86-0171</th>
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<td>Poor Design</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Poor Workmanship</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Poor Contractor Relations</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor Contract Administration</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>ROICC Rating</td>
<td>Med</td>
<td>Med</td>
<td>Med</td>
<td>Med</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

Of the four projects with poor workmanship documented by architects and inspectors, three contractors appeared to be uncooperative and concerned mainly with financial matters. This is based on the correspondence files which showed
repeated failures by contractors to correct problems identified by the ROICC and numerous requests for additional compensation for allegedly faulty plans that were eventually abandoned due to lack of justification. The low ratings by the ROICC coincide with this, as can be seen by the poor working relationship with the contractor and the adversarial correspondence tone. One small purchase contract for $15,000, which lacked provisions requiring bonding, progress schedules or daily reports to the inspector, was awarded to a contractor who used it as a "fill in" job and had little concern for the project. The one project shown with poor contract administration had a series of problems: 1) the contractor did not appear to be fully qualified for fire alarm work based on numerous failed operational tests; 2) the government's contract administrator was an inspector who was fully not qualified for the position; and 3) a design with poor field investigation as documented on the designer's performance evaluation.
CHAPTER 5 - CONCLUSIONS

5.1 METHODOLOGY - This method of analyzing historical data proved useful for troubleshooting government construction project quality. The results identify and substantiate broad problem areas, thus meeting the objectives of the project. If more detailed analysis was required, interviews could be held with project participants to pinpoint specific circumstances surrounding particular problems. This method is based on the principle of learning from past mistakes and is supported by TQM experts (Carr & Littman) as a tool for improving quality. Any organization that has a complete paperwork trail, documenting their product or service from inception to delivery, could use this method to improve their performance. Manufacturing industries have been the traditional users of methods similar to this in the recent past and service organizations are just now looking to embrace TQM to improve quality and efficiency (Culp & Smith). An important element of this method is basing the analysis on the customer for whom quality is to be improved.

5.2 QUALITY IMPROVEMENTS - The two broad areas that require improvement to bring about consistently higher quality for the customer include more thorough project planning and design to meet customer needs and better incentives to promote more contractor responsibility for quality control. These are not new concepts, but the research shows that both are equally required for a high quality result. The new ASCE guidelines for quality in the constructed project
(1990) support these concepts wholeheartedly. Specific findings supporting this include:

- Half the low quality projects had high change order rates related to design errors or unforeseen conditions
- Correspondence files for low quality projects contained twice the documentation related to problems with design or workmanship as did the high quality projects
- Architect site visits on the low quality projects revealed more serious workmanship defects and non-conforming work
- Daily reports indicated four times the rate of non-conformance to plans and specifications on the low quality projects
- Contractors on low quality projects had submittal rejection rates five times that of contractors on high quality projects

5.3 SUMMARY - Collected data from completed contract files consistently demonstrated that:

- The methodology was successful in identifying broad problem areas responsible for poor quality

- In this case study, poor design from both lack of customer input and technical adequacy, along with poor contractor workmanship and attitude were equally responsible for poor quality projects
CHAPTER 6 - RECOMMENDATIONS

6.1 QUALITY IMPROVEMENTS - If quality improvements are to be realized on more projects, changes must be made to ensure the processes by which we procure design and construction services consistently includes quality as a top concern. It will likely take fundamental shifts in management practices and regulatory processes. Specifically, steps must be taken to ensure sufficient lead time is given to establish customer requirements, conduct a comprehensive site investigation, and thoroughly design and coordinate plans and specifications. End of the year rushes and haphazard reduction of project scope to meet fiscal constraints must be avoided.

Contractors must be selected using some form of qualification criteria in addition to the lowest price. Research by Whitehurst (1991) came to the same conclusion. Contractors stated that they desire to do quality work, but federal competitive bidding regulations often counter that goal by forcing them to cut corners to win bids or not bid at all. Several recommendations follow with the intent of improving the two problem areas identified as responsible for poor quality:

a. Select the proper design team with proven experience on the type of project being undertaken
b. Include a sufficient design fee for site investigation and do not use as-
built alone to determine existing conditions for critical utility locations or
areas where new construction meets existing

c. Take time to understand customer requirements and expectations for
the project. Use consultants to help customers who are not sure what they
require

d. If the project scope exceeds budget, get with the customer to explain
trade-offs and reduce scope instead of quality

e. Package similar small projects into one larger project to attract more
and better qualified contractors

f. Seek regulatory change to the Federal Acquisition Regulations to allow
bidding on a combination of price and contractor qualifications.

g. Allow more use of design-build contracts as was done on the
Commissary project in this study (section 4.1).

h. Incorporate the method of contract review in this research as a continual
process for quality improvement troubleshooting and progress monitoring.
The many success stories in the literature claim that quality does not come at a high price. The savings from doing things right the first time more than pay for effort to achieve it. The benefits to the Navy or other public agencies include happier and more productive customers, lower facility operations and maintenance costs and in some cases lower initial construction costs.

6.2 FUTURE RESEARCH - Similar research could be done, concentrating on the design process, to hone in on obstacles impeding quality designs. Another area to explore would be the development of a contractor qualification criteria to use in competitive bidding that would weed out the poor performers in a fair and equitable way. Finally, reputable designers and contractors should be surveyed to determine what methods they use to ensure quality on private sector projects for knowledgeable clients. These methods may then be incorporated in public work where feasible.
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Whitehurst, Donald E., Identifying Problems Encountered When Contracting with the Naval Facilities Engineering Command, Unpublished Report, University of Washington, Department of Civil Engineering, Autumn 1991
<table>
<thead>
<tr>
<th>Contract Number</th>
<th>Contract Title</th>
<th>Contractor</th>
<th>Quality</th>
<th>Rating</th>
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<tbody>
<tr>
<td>90-4869</td>
<td>Install Smoke Detectors, BEQ</td>
<td>C A.E. &amp; Associate.</td>
<td>MED</td>
<td>HIGH</td>
</tr>
<tr>
<td>90-4868</td>
<td>Install Smoke Detectors, BOQ</td>
<td>C A.E. &amp; Associates</td>
<td>MED</td>
<td>HIGH</td>
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<tr>
<td>90-4842</td>
<td>Fire Alarm System Repairs</td>
<td>S &amp; S SecuritySystems, Inc</td>
<td>LOW</td>
<td>MED</td>
</tr>
<tr>
<td>90-4838</td>
<td>Paint Exterior Housing Units</td>
<td>EVCO National, Inc</td>
<td>HIGH</td>
<td>HIGH</td>
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<tr>
<td>90-4825</td>
<td>Repairs to Hotwell</td>
<td>J P. Francis &amp; Associates</td>
<td>LOW</td>
<td>MED</td>
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<tr>
<td>90-4820</td>
<td>Plumbing Repairs, Building 385</td>
<td>Pacific North Industries</td>
<td>HIGH</td>
<td>MED</td>
</tr>
<tr>
<td>90-4817</td>
<td>TSSA Installation, Building 126</td>
<td>Tri-West Contractors, Inc</td>
<td>LOW</td>
<td>MED</td>
</tr>
<tr>
<td>90-4814</td>
<td>Modifications to Overhead Cranes</td>
<td>HECO Pacific Manufacturing, Inc</td>
<td>HIGH</td>
<td>MED</td>
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<tr>
<td>90-4809</td>
<td>Repair Utility Tunnel Hangar 6</td>
<td>Tachon, Inc - Sublett J. V.</td>
<td>MED</td>
<td>MED</td>
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<tr>
<td>90-0059</td>
<td>Reroof Victory Homes</td>
<td>Gilnett Construction Co.</td>
<td>MED</td>
<td>MED</td>
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<tr>
<td>89-5707</td>
<td>Modifications to Building 135</td>
<td>American Geometrics</td>
<td>LOW</td>
<td>MED</td>
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<tr>
<td>89-5614</td>
<td>Modifications to Power Distribution System</td>
<td>Novak &amp; Associates</td>
<td>MED</td>
<td>MED</td>
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<tr>
<td>89-1175</td>
<td>Repairs to Building 13</td>
<td>Triax Pacific, Inc.</td>
<td>LOW</td>
<td>LOW</td>
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<tr>
<td>89-1172</td>
<td>ATSS Local Area Network Expansion</td>
<td>REP-SAC Corporation</td>
<td>MED</td>
<td>MED</td>
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Appendix A
<table>
<thead>
<tr>
<th>Contract Number</th>
<th>Contract Title</th>
<th>Contractor</th>
<th>Quality Customer</th>
<th>Rating ROICC</th>
</tr>
</thead>
<tbody>
<tr>
<td>89-1167</td>
<td>Upgrade Hangar Bay Lighting</td>
<td>Triad Electrical Contractors, Inc.</td>
<td>MED</td>
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<td>89-1147</td>
<td>Electrical Repairs to Fuel Tanks</td>
<td>Intermountain Electric, Inc</td>
<td>MED</td>
<td>MED</td>
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<tr>
<td>89-1139</td>
<td>Install Surge Valves, Building 198</td>
<td>Novak &amp; Associates</td>
<td>MED</td>
<td>MED</td>
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<tr>
<td>89-1132</td>
<td>Repairs to Steam Condensate System</td>
<td>J P. Francis &amp; Associates</td>
<td>MED</td>
<td>HIGH</td>
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<tr>
<td>89-1130</td>
<td>Repairs to Mess Hall Steam System</td>
<td>J P. Francis &amp; Associates</td>
<td>MED</td>
<td>HIGH</td>
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<tr>
<td>89-D026</td>
<td>Modifications to Sewage Treatment Plant</td>
<td>Quantum Construction, Inc</td>
<td>HIGH</td>
<td>HIGH</td>
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<tr>
<td>89-D021</td>
<td>Repairs and Improvements to BEQ 11</td>
<td>P &amp; L General Contractors, Inc</td>
<td>MED</td>
<td>HIGH</td>
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<tr>
<td>89-D020</td>
<td>Repairs and Improvements to BEQ 8</td>
<td>P &amp; L General Contractors, Inc</td>
<td>MED</td>
<td>HIGH</td>
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<tr>
<td>88-9992</td>
<td>Repairs to Fire Damaged Units</td>
<td>Chicago Construction Corporation</td>
<td>MED</td>
<td>MED</td>
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<tr>
<td>88-8148</td>
<td>Replacement of Air Compressor #2</td>
<td>Glantz Supply, Inc.</td>
<td>MED</td>
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<tr>
<td>88-8841</td>
<td>Replace High Risk PCB Transformers</td>
<td>Webb Electric Company of Florida, Inc.</td>
<td>LOW</td>
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<tr>
<td>88-8137</td>
<td>Install Smoke Detectors, BEQ</td>
<td>Pro Alarm Co., Inc.</td>
<td>MED</td>
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<tr>
<td>88-8135</td>
<td>Fuel Tank Cleaning and Storage Pad</td>
<td>Diamaco, Inc.</td>
<td>MED</td>
<td>LOW</td>
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<tr>
<td>88-8134</td>
<td>Repair Floor Hangar 7</td>
<td>Floorpro, Inc.</td>
<td>HIGH</td>
<td>MED</td>
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<tr>
<td>Contract Number</td>
<td>Contract Title</td>
<td>Contractor</td>
<td>Quality Customer</td>
<td>Rating ROICC</td>
</tr>
<tr>
<td>-----------------</td>
<td>----------------------------------------------------------</td>
<td>-------------------------------------</td>
<td>------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>88-8133</td>
<td>Paint Hangar Bay Interior, Hangar 7</td>
<td>Diamaco, Inc.</td>
<td>HIGH</td>
<td>MED</td>
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<tr>
<td>88-8125</td>
<td>Replace Lighting System, Bldg 369</td>
<td>Mountain States Mechanical, Inc.</td>
<td>HIGH</td>
<td>MED</td>
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<tr>
<td>88-5728</td>
<td>Provide Walks, Curbs, Pkg. at Victory Homes</td>
<td>Kreig Construction, Inc.</td>
<td>MED</td>
<td>MED</td>
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<tr>
<td>88-5727</td>
<td>Install Dishwashers in all Capehart Housing</td>
<td>Covote Corporation</td>
<td>HIGH</td>
<td>HIGH</td>
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<tr>
<td>88-5725</td>
<td>LP-2 Antenna Repairs</td>
<td>Orion Utility Construction, Inc</td>
<td>MED</td>
<td>MED</td>
</tr>
<tr>
<td>88-5717</td>
<td>Weatherization of Building 410 &amp; 2642</td>
<td>American Construction &amp; Energy, Inc.</td>
<td>HIGH</td>
<td>MED</td>
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<tr>
<td>88-5716</td>
<td>Weatherization of Building 386, 2544, &amp; 2681</td>
<td>Solar Dynamics</td>
<td>MED</td>
<td>MED</td>
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<tr>
<td>88-5690</td>
<td>Aircraft Parking Apron (MCON P-071)</td>
<td>D. A. Zuluaga Construction, Inc</td>
<td>HIGH</td>
<td>HIGH</td>
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<tr>
<td>88-5695</td>
<td>Repairs to Building 117, Indoor Playing</td>
<td>P&amp;L General Contractors</td>
<td>MED</td>
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<tr>
<td>88-4839</td>
<td>Paint Exterior Housing Units &amp; Carports</td>
<td>Yun's Painting Co.</td>
<td>HIGH</td>
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<tr>
<td>88-4372</td>
<td>71 OPQ (Civil)</td>
<td>D. A. Zuluaga Construction, Inc</td>
<td>MED</td>
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<tr>
<td>88-3373</td>
<td>Replace OCTV at NAVAIRESES</td>
<td>S&amp;S Security Systems, Inc.</td>
<td>MED</td>
<td>MED</td>
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<tr>
<td>87-7645</td>
<td>Build Commissary</td>
<td>Eldred &amp; Essex Construction Co.</td>
<td>HIGH</td>
<td>HIGH</td>
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<tr>
<td>87-7569</td>
<td>Location Navy Exchange</td>
<td>Eberharter &amp; Giant, Inc.</td>
<td>HIGH</td>
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## COMPLETED CONTRACT LISTING

<table>
<thead>
<tr>
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<th>Contractor</th>
<th>Quality</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>87-7567</td>
<td>Enlisted Club Addition at NAVAires</td>
<td>P&amp;L General Contractors, Inc.</td>
<td>HIGH</td>
<td>HIGH</td>
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<tr>
<td>87-6637</td>
<td>Repairs to Building 117</td>
<td>The Westec Co</td>
<td>HIGH</td>
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<tr>
<td>86-0332</td>
<td>Repairs and Improvements to 11 Farmhouses</td>
<td>P&amp;L General Contractors</td>
<td>MED</td>
<td>HIGH</td>
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<tr>
<td>86-0180</td>
<td>Aircraft Maintenance Hangar (Hangar 12)</td>
<td>The Eberharter Construction Group</td>
<td>MED</td>
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<tr>
<td>86-0171</td>
<td>Flight Simulator &amp; System Training Bldg. Addition</td>
<td>Lugo Construction, Inc</td>
<td>LOW</td>
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<tr>
<td>85-5828</td>
<td>Wholehouse Improvements to 71 OPQ</td>
<td>Intermex, Ltd</td>
<td>MED</td>
<td>MED</td>
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<tr>
<td>84-5064</td>
<td>C9 Aircraft Maint. Hangar &amp; Air Passenger Terminal</td>
<td>Davis Constructors &amp; Engineers</td>
<td>HIGH</td>
<td>LOW</td>
</tr>
<tr>
<td>84-4258</td>
<td>Hospital Addition &amp; Alterations</td>
<td>Pease &amp; Sons, Inc</td>
<td>HIGH</td>
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</tr>
</tbody>
</table>

Appendix A
CONTRACT FILE CHECKLIST

Contract No / Title 90-4869, Install Smoke Detectors BLQ
Contractor C.A.E. & Assoc Designer Bouillon, Christofferson, Schairer
AROICC LT Zulick CA Inspector Terry Armstrong
Quality Rating ROICC High PWD Med

A. Pre-award
   Contract Type SBA Set Aside Negotiated
   No of Bids 0 Low High
   Gov't Estimate 98K No of Amendments 2
   Constructibility Review Yes X No

B. Contract
   Award Amount 194K Bid Position

C. Changes
   Number of Changes 2 Rate 26.9%
   Type Customer Requested Unforeseen Conditions Admin
     Delays Design Error or Omission Other
     Field Changes 2

D. Correspondence
   Tone Cooperative X Adversarial
   Type Routine 4 Clarifications Warnings Problems 1

E. Architect/Engineer
   Field Visits 0 Discrepancies Noted

F. Payments
   Disagreement on amounts 0 out of 2 invoices
   Paid on time All Price Schedule is Field Measurable Yes

G. Payrolls
   Submitted on Time 0 out of 2 Wage Violations None

H. Schedule
   Type Bar Chart Completed On Time

I. Daily Reports
   Frequency of Non-conformance 0 out of 66 Reports Rate 0%
   Tone Cooperative X Adversarial
   Instructions to Contractor 2 out of 66 Reports Rate 3%

Appendix B
J Quality Control
   QA Checklist Reports 2  Discrepancies Noted  Administrative items
      and improperly marked conduit

K Compliance Notices
   Number 0  Description

L Disputes
   Number 0  Description

M Submittals
   Number rejected 1  Rate 5%

N Closeout
   Final Inspection Punchlist Length 4 items
   Customer Present at Final Inspection  Yes
   Release of Claims Received  Yes, timely

O Other
   Time of year performed  Jun - Nov 91
   Special constraints  Work hours  Access  Phasing
   Type of Surety  Corporate Bond  X  Individual  Other  

P Comments
   Change order number 1 issued to complete work on another contract for $2 6K.
   Correspondence focused on whether ceiling material contained asbestos. Conduit was
   rerouted to avoid possible asbestos. Daily reports misnumbered - only 66 vice 178. KTR
   rated "outstanding" on ROICC evaluation  A/E rated "above average" or ROICC
   evaluation

Appendix B
CONTRACT FILE CHECKLIST

Contract No. / Title: 90-4868, BOQ Smoke Detectors, Bldg. 2527
Contractor: CAE & Associates, Designer: Bouillon, Christoferson, Schairer
AROICCA/CA: I. Zulick, Inspector: Terry Armstrong
Quality Rating: ROICCA High, PWD Med

A. Pre-award
   Contract Type: SBA Set Aside-Negotiated
   No. of Bids: N/A
   Gov't Estimate: 52K, No. of Amendments: 2
   Constructibility Review: Yes, X, No

B. Contract
   Award Amount: 47K, Bid Position

C. Changes
   Number of Changes: 1, Rate: 2%
   Type: Customer Requested 1, Unforeseen Conditions ___ Admin ___
         Delays ___ Design Error or Omission ___ Other ___
   Field Changes: 0

D. Correspondence
   Tone: Cooperative X, Adversarial
   Type: Routine 1, Clarifications, Warnings, Problems ___

E. Architect/Engineer
   Field Visits: 0, Discrepancies Noted

F. Payments
   Disagreement on amounts: 0 out of 3 invoices
   Paid on time: All, Price Schedule is Field Measurable: Yes

G. Payrolls
   Submitted on Time: 3 out of 3 invoices, Wage Violations: None

H. Schedule
   Type: Bar Chart, Completed 2 weeks early

I. Daily Reports
   Frequency of Non-conformance: 0 out of 22 Reports, Rate: 0%
   Tone: Cooperative X, Adversarial
   Instructions to Contractor: 0 out of 22 Reports, Rate: 0%

Appendix B
J Quality Control
   QA Checklist Reports  2  Discrepancies Noted  Missing documentation

K Compliance Notices
   Number 0  Description

L Disputes
   Number 0  Description

M Submittals
   Number rejected 2  Rate 10%

N Closeout
   Final Inspection Punchlist Length 3 items
   Customer Present at Final Inspection  Yes
   Release of Claims Received  Yes, timely

O Other
   Time of year performed  June - November 1991
   Special constraints  Work hours  Access  Phasing
   Type of Surety  Corporate Bond  X  Individual  Other

P Comments
   Daily Reports misnumbered  - only 22 vice 166  - Contractor rated "outstanding" by ROICC
   A/E rated "above average" by ROICC
CONTRACT FILE CHECKLIST

Contract No / Title 90-4842, Fire Alarm System Repairs
Contractor S & S Security Systems Designer Bouillon, Christoforson & Schairer
AROICC LTJG Zulick CA R Martin Inspector R Martin/Terry Armstrong
Quality Rating ROICC Med PWD Low

A. Pre-award

- Contract Type 11P
- No of Bids 4 Low 44.8K High 81.4K
- Gov't Estimate 45K No of Amendments 0
- Constructibility Review Yes X No

B. Contract

- Award Amount 44.8K Bid Position Low

C. Changes

- Number of Changes 2 Rate 19%
- Type Customer Requested Unforeseen Conditions Admin X
- Delays Design Error or Omission 1 Other
- Field Changes 0

D. Correspondence

- Tone Cooperative X Adversarial
- Type Routine 2 Clarifications Warnings Problems

E. Architect/Engineer

- Field Visits 0 Discrepancies Noted

F. Payments

- Disagreement on amounts 1 out of 3 invoices
- Paid on time All Price Schedule is Field Measurable Yes

G. Payrolls

- Submitted on Time 1 out of 3 invoices Wage Violations No interviews, documented

H. Schedule

- Type None Completed On-Time

I. Daily Reports

- Frequency of Non-conformance 1 out of 60 Reports Rate 1.6%
- Tone Cooperative X Adversarial

Appendix B
Instructions to Contractor: 1 out of 60 Reports  Rate 1.6%

J Quality Control
QA Checklist Reports 0  Discrepancies Noted  None

K Compliance Notices
Number 0  Description

L Disputes
Number 0  Description

M Submittals
Number rejected 1  Rate N/A - See Comments

N Closeout
Final Inspection Punchlist Length  None
Customer Present at Final Inspection  Yes
Release of Claims Received  Yes, timely

O Other
Time of year performed  Fall/Winter
Special constraints  Work hours  Access  Phasing  
Type of Surety  Corporate Bond  Individual  Other  

P Comments
Public Works rated A/F unsatisfactory on field investigation for design. No contractor safety plan or accident prevention plan. Only 22 of 60 daily reports signed by ROICC inspector. Done sloppy and incomplete. No contractor quality control plan. Submittal file incomplete. A/E had contract for 3 site visits but none were documented. Test reports sloppy and incomplete. Payrolls sloppy and do not match daily reports. Only 5 of 27 payrolls certified as required.

Appendix B
CONTRACT FILE CHECKLIST

Contract No / Title  90-4838, Exterior Painting Officer Housing
Contractor   EVCO National Designer Stafford Architects
AROICC LTJG Barton CA D J Powell Inspector R C Hoover
Quality Rating   ROICC High Housing High

A. Pre-award
   Contract Type 11P
   No of Bids 10 Low 173.6K High 398.3K
   Gov't Estimate 400.2K No of Amendments 0
   Constructibility Review Yes X No

B. Contract
   Award Amount 173.6K Bid Position Low

C. Changes
   Number of Changes 3 Rate 2%
   Type Customer Requested 1 Unforeseen 1 Conditions 1 Admin 1
   Delays Design Error or Omission Other
   Field Changes 0

D. Correspondence
   Tone Cooperative X Adversarial
   Type Routine 3 Clarifications 4 Warnings Problems

E. Architect/Engineer
   Field Visits 1 Discrepancies Noted 0

F. Payments
   Disagreement on amounts 0 out of 4 invoices
   Paid on time All Price Schedule is Field Measurable Yes

G. Payrolls
   Submitted on Time All 4 out of 4 invoices Wage Violations 0

H. Schedule
   Type Bar Chart Completed On-time

I. Daily Reports
   Frequency of Non-conformance 7 out of 146 Reports Rate 5%
   Tone Cooperative X Adversarial
   Instructions to Contractor 31 out of 146 Reports Rate 21%
J. Quality Control
   QA Checklist Reports  1  Discrepancies Noted  1 - no contractor deficiency log
K. Compliance Notices
   Number 0  Description
L. Disputes
   Number 0  Description
M. Submittals
   Number rejected 0  Rate
N. Closeout
   Final Inspection Punchlist Length 56 handwritten pages
   Customer Present at Final Inspection  Yes
   Release of Claims Received  Yes, timely
O. Other
   Time of year performed Summer/Fall
   Special constraints Work hours Access Phasing
   Type of Surety Corporate Bond X Individual Other
P. Comments
   Commanding Officer not happy with initial paint job on his house. Inspector
couldn't get superintendent to pre-inspect work before walk-through to reduce punchlist
items. Nice complete submittal log
CONTRACT FILE CHECKLIST

Contract No / Title: 90-1825, Repairs to Hotwell, Building 3384
Contractor: J. P. Francis & Associates
Designer: Boullon, Christofferson & Schairer
AROICC: LT Zulick, CA R C Hoover
Inspector: Ron Martin/Terry Armstrong
Quality Rating: ROICC Med PWD Low

A. Pre-award
   Contract Type: FIP
   No. of Bids Low 811K High 1139K
   Gov't Estimate 588K No. of Amendments 0
   Constructibility Review: Yes X No

B. Contract
   Award Amount 811K Bid Position Low
   Changes
   Number of Changes: 4 Rate 17%
   Type: Customer Requested 1 Unforeseen Conditions 1 Admin 1
   Delays: Design Error or Omission 2 Other 0
   Field Changes: 2

C. Correspondence
   Tone: Cooperative X Adversarial
   Type: Routine 6 Clarifications 2 Warnings 2 Problems 2

D. Architect/Engineer
   Field Visits: 1 Discrepancies Noted: 0

E. Payments
   Disagreement on amounts: 4 out of 7 invoices
   Paid on time: All Price Schedule is field Measurable Yes

F. Payrolls
   Submitted on time: out of invoices Wage Violations

G. Schedule
   Type: Bar Chart Completed On Time

H. Daily Reports
   Frequency of Non-conformance: 1 out of 48 Reports Rate 2%
   Tone: Cooperative X Adversarial
   Instructions to Contractor: 7 out of 48 Reports Rate 15%

Appendix B
J Quality Control

QA Checklist Reports 3 Discrepancies Noted Missing electrical submittal, no test lab report on site

K Compliance Notices

Number 0 Description

L Disputes

Number 0 Description

M Submittals

Number rejected 3 of 16 Rate 19%

N Closeout

Final Inspection Punchlist Length 3 items
Customer Present at Final Inspection Yes
Release of Claims Received Yes, timely

O Other

Time of year performed November 1990 - August 1991
Special constraints Work hours Access Phasing
Type of Surety Corporate Bond Individual Other ___

P Comments

Correspondence problem included contractor's unjustified request for time extension and rejected submittals for schedule of prices, progress schedule and safety plan.

A/E rated poorly by public works. Only 1 of 3 required A/E site visits documented.
CONTRACT FILE CHECKLIST

Contract No / Title: 90-4820, Plumbing & Sanitation Repairs, Bldg. 385
Contractor: Pacific North Industries
Designer: The Tsang Partnership, Inc.
AROICC: CA R K Loken
Inspector: Terry Armstrong
Quality Rating: ROICC Med PWD High

A. Pre-award
   Contract Type: FFP
   No of Bids: 2 Low 62K High 83K
   Gov't Estimate: 60K No of Amendments: 0
   Constructibility Review: Yes X No

B. Contract
   Award Amount: 62K Bid Position: Low

C. Changes
   Number of Changes: 2 Rate: 1%
   Type: Customer Requested  Unforeseen Conditions  Admin 1
         Delays  Design Error or Omission 1  Other X
   Field Changes: 1

D. Correspondence
   Tone: Cooperative X Adversarial
   Type: Route 3 Clarifications  Warnings Problems

E. Architect/Engineer
   Field Visits: 0 Discrepancies Noted

F. Payments
   Disagreement on amounts: 0 out of 4 invoices
   Paid on time: All Price Schedule is Field Measurable: Yes

G. Payrolls
   Submitted on Time: 2 out of 4 invoices Wage Violations: None

H. Schedule
   Type: Bar Chart Completed On-Time

I. Daily Reports
   Frequency of Non-conformance: 0 out of 67 Reports Rate: 0%
   Tone: Cooperative X Adversarial
   Instructions to Contractor: 0 out of 67 Reports Rate: 0%

Appendix B
J. Quality Control
   QA Checklist Reports 0 Discrepancies Noted

K. Compliance Notices
   Number 0 Description

L. Disputes
   Number 0 Description

M. Submittals
   Number rejected 2 Rate 5%

N. Closeout
   Final Inspection Punchlist Length 37 items
   Customer Present at Final Inspection  Yes
   Release of Claims Received  Yes

O. Other
   Time of year performed November 1990 - March 1991
   Special constraints Work hours Access Phasing
   Type of Surety Corporate Bond X Individual Other...

P. Comments
   Public Works rated A/F "above average" for good quality design services
   ROICC rated A/F "average"
CONTRACT FILE CHECKLIST

Contract No / Title 90-4817, TSSA Installation
Contractor Tri-West Contractors Designer Tsang Partnership, Inc.
AROICCA/CA DJ Powell Inspector R C Hoover
Quality Rating ROICC Med PWD Low

A. Pre-award
   Contract Type FIP
   No of Bids 2 Low 94K High 100K
   Gov't Estimate 61K No of Amendments 0
   Constructibility Review Yes  No

B. Contract
   Award Amount 94K Bid Position Low

C. Changes
   Number of Changes 2 Rate 0%
   Type Customer Requested Unforeseen Conditions Admin 1
   Delays 1 Design Error or Omission Other 2
   Field Changes 4

D. Correspondence
   Tone Cooperative  Adversarial
   Type Routine 7 Clarifications Warnings  Problems 1

E. Architect/Engineer
   Field Visits 0 Discrepancies Noted

F. Payments
   Disagreement on amounts 2 out of 6 invoices
   Paid on time All Price Schedule is Field Measurable Yes

G. Payrolls
   Submitted on Time 6 out of 6 invoices Wage Violations None

H. Schedule
   Type Bar Chart Completed On-Time

I. Daily Reports
   Frequency of Non-conformance 0 out of 21 Reports Rate 0%
   Tone Cooperative  Adversarial
   Instructions to Contractor 1 out of 21 Reports Rate 5%

Appendix B
J Quality Control
QA Checklist Reports 1 Discrepancies Noted None

K Compliance Notices
Number 0 Description

L Disputes
Number 0 Description

M Submittals
Number rejected 0 Rate

N Closeout
Final Inspection Punchlist Length 17 items
Customer Present at Final Inspection Yes
Release of Claims Received Yes, 3 1/2 months later

O Other
Time of year performed December 1990 - March 1991
Special constraints Work hours Access Phasing ...
Type of Surety Corporate Bond X Individual Other ...

P Comments
A/F received "excellent" evaluation by Public Works and "above average" by ROICC Nice complete submittal log
CONTRACT FILE CHECKLIST

Contract No / Title: 90-4814, Modification to Overhead Cranes, AIME
Contractor: HECO Pacific Manufacturing, Inc. Designer: Bangor Public Works
AROICC/CA: LT Zulick Inspector: Ron Martin
Quality Rating: ROICC Med PWD High

A. Pre-award
  Contract Type: IFB converted to RFP, LFP
  No. of Bids: 1 Low 175K High
  Gov't Estimate: 93K No of Amendments: 3
  Constructibility Review: Yes X No

B. Contract
  Award Amount: 73K Bid Position: Negotiated

C. Changes
  Number of Changes: 4 Rate: 2.5%
  Type: Customer Requested Unforeseen Conditions: Admin
  Delays: Design Error or Omission Other: 2
  Field Changes: 0

D. Correspondence
  Tone: Cooperative X Adversarial
  Type: Routine 4 Clarifications 3 Warnings Problems: 4

E. Architect/Engineer
  Field Visits: 0 Discrepancies Noted

F. Payments
  Disagreement on amounts: 0 out of 1 invoices
  Paid on time: All Price Schedule is Field Measurable: N/A

G. Payrolls
  Submitted on Time: 1 out of 1 invoices Wage Violations: None

H. Schedule
  Type: Bar Chart Completed: 1 week later

I. Daily Reports
  Frequency of Non-conformance: 0 out of 0 Reports Rate: 0%
  Tone: Cooperative Adversarial
  Instructions to Contractor: 0 out of 0 Reports Rate: 0%

Appendix B
J  Quality Control
    QA Checklist Reports  1 Discrepancies Noted  None
K  Compliance Notices
    Number  0 Description
L  Disputes
    Number  0 Description
M  Submittals
    Number rejected  1 Rate  8%
N  Closeout
    Final Inspection Punchlist Length  0
    Customer Present at Final Inspection  Yes
    Release of Claims Received  Yes, timely
O  Other
    Time of year performed  March - May 1991
    Special constraints  Work hours  Access  Phasing
    Type of Surety  Corporate Bond  X  Individual  Other
P  Comments
    Only 1 bid received, scope reduced to one crane vs four during negotiation with
    the contractor  Contractor removed crane to California to rehab then returned and
    reinstalled
**CONTRACT FILE CHECKLIST**

Contract No / Title: 89-5707, Modifications to Building 135
Contractor: American Geometrics, Designer: In-House
AROICC/CA: LT Van De Voorde, Inspector: Ron Martin
Quality Rating: ROICC Med, PWD: Low

### A. Pre-award
- Contract Type: CFP Small Purchase
- No. of Bids: 3
- Gov't Estimate: 19K
- No. of Amendments: 0
- Constructability Review: Yes

### B. Contract
- Award Amount: 15K
- Bid Position: Low

### C. Changes
- Number of Changes: 1
- Rate: 15%
- Type: Customer Requested
- Unforeseen Conditions: Admin
- Delays: Design Error or Omission
- Field Changes: 0

### D. Correspondence
- Tone: Cooperative
- Type: Routine
- Clarifications: Warnings
- Problems:

### E. Architect/Engineer
- Field Visits: 0
- Discrepancies Noted:

### F. Payments
- Disagreement on amounts: 0
- Paid on time: All
- Price Schedule is Field Measurable: Yes

### G. Payrolls
- Submitted on Time: 4 out of 4 invoices
- Wage Violations: 0

### H. Schedule
- Type: Bar Chart
- Completed: 6 weeks early

### I. Daily Reports
- Frequency of Non-conformance: 0 out of 0
- Rate: 
- Tone: Cooperative
- Adversarial
- Instructions to Contractor: 0 out of 0
- Reports: Rate:

Appendix B
J. Quality Control
   - QA Checklist Reports: 0 Discrepancies Noted

K. Compliance Notices
   - Number: 0 Description

L. Disputes
   - Number: 0 Description

M. Submittals
   - Number rejected: 2 Rate: 50%

N. Closeout
   - Final Inspection Punchlist Length: None
   - Customer Present at Final Inspection: Yes
   - Release of Claims Received: Yes, 7 months later

O. Other
   - Time of year performed: October 1989 - March 1990
   - Special constraints:
     - Work hours: Access Phasing
     - Type of Surety: Corporate Bond Individual Other: Not required

P. Comments
   - Contractor's progress on job was slow. Poor workmanship noted on floor covering and cove base.
   - No quality control plan required. No daily reports required.
CONTRACT FILE CHECKLIST

Contract No / Title: 89-1175, Repairs to Building 13
Contractor: Triax Pacific, Inc  Designer: Tsang Partnership
AROICC/CA: ENS Cook Inspector: David Wright, ENS Cook, Terry Armstrong
Quality Rating: ROICC: Low, PWD: Low

A. Pre-award
   Contract Type: FFP
   No. of Bids: 5 Low: 1370K High: 4784K
   Gov't Estimate: 1348K No. of Amendments: 2
   Constructibility Review: Yes X No

B. Contract
   Award Amount: 1370K Bid Position: Low

C. Changes
   Number of Changes: 9 Rate: 18%
   Type: Customer Requested: 2 Unforeseen Conditions: 4 Admin: 3
   Delays: Design Error or Omission: Other: ___
   Field Changes: 13

D. Correspondence
   Tone: Cooperative Adversarial X (By Triax)
   Type: Routine: 9 Clarifications: 33 Warnings: Problems ___

E. Architect/ Engineer
   Field Visits: 6 Discrepancies Noted: Approximately 10 per visit

F. Payments
   Disagreement on amounts: 1 out of 13 invoices
   Paid on time: All Price Schedule is Field Measurable: Yes

G. Payrolls
   Submitted on Time: 12 out of 13 invoices Wage Violations: 0

H. Schedule
   Type: Bar Chart Completed On Time

I. Daily Reports
   Frequency of Non-conformance: 4 out of 278 Reports Rate: 1.4%
   Tone: Cooperative X Adversarial
   Instructions to Contractor: 1 out of 278 Reports Rate: .4%

Appendix B
J. Quality Control
   QA Checklist Reports 0 Discrepancies Noted

K. Compliance Notices
   Number 0 Description

L. Disputes
   Number 1 Description Adjustment of $218K for erroneous bid from roofing subcontractor, denied

M. Submittals
   Number resubmitted 12 Rate 25%

N. Closeout
   Final Inspection Punchlist Length 23 items
   Customer Present at Final Inspection Yes
   Release of Claims Received Yes, timely

O. Other
   Time of year performed January - October 1990, June - July 1991 for exterior painting
   Special constraints Work hours Access Phasing
   Type of Surety Corporate Bond X Individual Other

P. Comments
   A/E site visits revealed poor workmanship and items not to specifications
   Correspondence had 43 handwritten pages on pre-final punchlist, numerous letters from contractor claiming delays due to differing site conditions, only about 25% were valid
   Late Daily Reports to Inspector Contractor fined for illegal disposal of asbestos and prefiltcr on personal monitoring device to falsify readings

Appendix B
CONTRACT FILE CHECKLIST

Contract No / Title 89-1132, Repairs to Steam Condensate System
Contractor J.P. Francis & Associates Designer Van Gulick/Oliver
AROICC Lt Van De Voorde CA D J Powell Inspector D. J. Powell
Quality Rating ROICC High PWD Med

A. Pre-award
   Contract Type 11P
   No. of Bids 7 Low 938K High 1781K
   Gov't Estimate 1361K No. of Amendments 1
   Constructibility Review Yes X No

B. Contract
   Award Amount 938K Bid Position Low

C. Changes
   Number of Changes 8 Rate 26%
   Type Customer Requested 1 Unforeseen Conditions 3 Admin 1
   Delays 1 Design Error or Omission 2 Other ___
   Field Changes 2

D. Correspondence
   Tone Cooperative X Adversarial
   Type Routine 5 Clarifications 3 Warnings Problems ___

E. Architect/Engineer
   Field Visits 10 Discrepancies Noted None

F. Payments
   Disagreement on amounts 0 out of 15 invoices (2 were math errors)
   Paid on time All Price Schedule is Field Measurable Yes

G. Payrolls
   Submitted on Time 13 out of 15 invoices Wage Violations None

H. Schedule
   Type Bar Chart Completed On-Time

I. Daily Reports
   Frequency of Non-conformance 0 out of 480 Reports Rate 0%
   Tone Cooperative X Adversarial
   Instructions to Contractor 0 out of 480 Reports Rate 0%

Appendix B
J Quality Control

QA Checklist Reports  21 Discrepancies Noted  No welders certification; felt wrap on piping was needed

K Compliance Notices

Number 0 Description

L. Disputes

Number 0 Description

M Submittals

Number rejected 10 Rate 17%

N. Closeout

Final Inspection Punchlist Length 37 items
Customer Present at Final Inspection  Yes
Release of Claims Received  Yes, timely

O. Other

Time of year performed April 1990 - May 1991
Special constraints Work hours Access Phasing
Type of Surety Corporate Bond Individual Other

P. Comments

Almost no correspondence between ROICC and Contractor. Most correspondence was between ROICC and station coordinating and advertising work to be done. A/E rated above average on evaluation. Superintendent on the ball per daily reports. Lots of progress photos taken by Contract Administrator. Customer requested change order of $198K accounted for high change order rate. Nice complete submittal log
CONTRACT FILE CHECKLIST

Contract No / Title: 89-1130, Repairs to Mess Hall Steam System
Contractor: J. P. Francis & Associates Design: Bouillon, Christoferson, Schairer
AROICCA/CA: D. J. Powell Inspector: Terry Armstrong
Quality Rating: ROICC High PWD Med

A. Pre-award
   Contract Type: FFP
   No. of Bids Low: 2K High 540K
   Gov’t Estimate: 272K No of Amendments: 2
   Constructibility Review: Yes, No

B. Contract
   Award Amount: 250K Bid Position: Low

C. Changes
   Number of Changes: 2 Rate: 3/6%
   Type: Customer Requested 1 Unforeseen Conditions Admin: 1
   Delays: Design Error or Omission Other
   Field Changes: 1

D. Correspondence
   Tone: Cooperative X Adversarial
   Type: Routine 2 Clarifications 3 Warnings Problems

E. Architect/Engineer
   Field Visits: 2 Discrepancies Noted: None

F. Payments
   Disagreement on amounts: 0 out of 6 invoices
   Paid on time: 5 of 6 Price Schedule vs Field Measurable: Yes

G. Payrolls
   Submitted on time: 6 out of 6 invoices Wage Violations: 0

H. Schedule
   Type: Bar Chart Completed: 4 months early

I. Daily Reports
   Frequency of Non-conformance: 0 out of 121 Reports Rate: 0%
   Tone: Cooperative X Adversarial
   Instructions to Contractor: 0 out of 121 Reports Rate: 0%

Appendix B
J Quality Control
   QA Checklist Reports 1 Discrepancies Noted None
K Compliance Notices
   Number 0 Description
L Disputes
   Number 0 Description
M Submittals
   Number rejected 0 Rate
N Closeout
   Final Inspection Punchlist Length 3 items
   Customer Present at Final Inspection Yes
   Release of Claims Received Yes, timely
O Other
   Time of year performed September 1989 - January 1990
   Special constraints Work hours Access Phasing
   Type of Surety Corporate Bond X Individual Other
P Comments
   Lack of maintenance work by Public Works impaired contractor's ability to
efficiently perform his work, i.e., leaky steam pipes to be insulated and corroded steam
traps. Presence of asbestos prevented Public Works from completing repairs. Contract
scope should have included leak repairs and pipe-fitting replacement.
CONTRACT FILE CHECKLIST

Contract No / Title 89-D020, Ault Field Sewage Plant Modifications
Contractor Quantum Construction, Inc  Designer Reid Middleton, Inc.
AROICC LF Zulick CA R K Loken Inspector Terry Armstrong
Quality Rating ROICC High PWD High

A. Pre-award
   Contract Type IPP
   No of Bids 6 Low 149K High 290K
   Gov't Estimate 248K No of Amendments 1
   Constructibility Review Yes X No

B. Contract
   Award Amount 149K Bid Position Low

C. Changes
   Number of Changes 2 Rate % 0
   Type Requested Customer Unforeseen Conditions ___ Admin ___
      Delays ___ Design Error or Omission Other ___
      Field Changes 2

D. Correspondence
   Tone Cooperative X Adversarial
   Type Routine 2 Clarifications 9 Warnings Problems ___

E. Architect/Engineer
   Field Visits 1 Discrepancies Noted

F. Payments
   Disagreement on amounts ___ out of 5 invoices
   Paid on time ___ All Price Schedule is Field Measurable ___

G. Payrolls
   Submitted on Time ___ out of 5 invoices Wage Violations ___ None

H. Schedule
   Type Bar Chart Completed On-Time

I. Daily Reports
   Frequency of Non-conformance ___ out of 33 Reports Rate ___%
   Tone Cooperative X Adversarial
   Instructions to Contractor ___ out of 33 Reports Rate ___%

Appendix B
J Quality Control

QA Checklist Reports 0 Discrepancies Noted

K Compliance Notices

Number 0 Description

L Disputes

Number 0 Description

M Submittals

Number rejected 0 Rate

N Closeout

Final Inspection Punchlist Length 3 items
Customer Present at Final Inspection Yes
Release of Claims Received Yes, timely

O Other

Time of year performed March - May 1991
Special constraints Work hours Access Phasing
Type of Surety Corporate Bond X Individual Other

P Comments

Very little correspondence, mainly required letters and some minor clarifications on justified delays from weather and suppliers. A/E evaluations were "average" and "below average" for ROICC and Public Works respectively. ROICC said project was delayed due to A/E dealing directly with material supplier. Public Works disliked A/E switching project managers three times and giving project a low priority.
CONTRACT FILE CHECKLIST

Contract No / Title: 89-D021, Repairs & Improvements to BEQ 11
Contractor: P&L General Contractors, Inc. Designer: Gabbert, Browelett, Peterson
AROICC: LJG Barton CA D J Powell Inspector: D J Powell
Quality Rating: ROICC High PWD Med

A. Pre-award
   Contract Type: FP
   No of Bids: 10 Low 455K High 610K
   Gov't Estimate: 602K No of Amendments: 5
   Constructibility Review: Yes N No

B. Contract
   Award Amount: 455K Bid Position: Low

C. Changes
   Number of Changes: 7 Rate: 23%
   Type: Customer Requested: 1 Enforced Conditions: 3 Admin: 2
   Delays: Design Error or Omission: 1 Other: ___
   Field Changes: 5

D. Correspondence
   Tone: Cooperative X Adversarial
   Type: Routine: 8 Clarifications: 2 Warnings: Problems: 5

E. Architect/Engineer
   Field Visits: 11 Discrepancies Noted: None

F. Payments
   Disagreement on amounts: 1 out of 13 invoices
   Paid on time: All Price Schedule is Field Measurable: Yes

G. Payrolls
   Submitted on time: 9 out of 13 invoices Wage Violations: 1

H. Schedule
   Type: Bar Chart: Completed: 2 months early

I. Daily Reports
   Frequency of Non-conformance: 0 out of 304 Reports Rate: 0%
   Tone: Cooperative X Adversarial
   Instructions to Contractor: 0 out of 104 Reports Rate: 0%

Appendix B
J Quality Control
   QA Checklist Reports  0 Discrepancies Noted

K Compliance Notices
   Number 0 Description

L Disputes
   Number 0 Description

M Submittals
   Number rejected 8 Rate 7%

N Closeout
   Final Inspection Punchlist Length
   Customer Present at Final Inspection  Yes
   Release of Claims Received  Yes, 8 months later

O Other
   Time of year performed  July 1990 - April 1991
   Special constraints  Work hours  Access  Phasing
   Type of Surety  Corporate Bond  X Individual  Other

P Comments
   Customer requested change for $88K accounted for high change order rate.
   Correspondence dealt with concerns over roof system meeting specifications and
   manufacturer's warranty requirements. Roof flashing was blown loose in wind storm; and
   problems with payrolls. A/E evaluation "above average" rating by ROICC. Daily Reports
   thorough. Contract Administrator took many progress photos. Nice complete submittal
   log
CONTRACT FILE CHECKLIST

Contract No / Title 89-D020, Repairs & Improvements to BEQ 8
Contractor P&L General Contractor, Inc  Designer Gabbert, Browelett, Peterson
AROICC CA D J Powell Inspector D J Powell, Terry Armstrong (in beginning) and Dave Wright (sometimes)
Quality Rating ROICC High PWD Med

A. Pre-award
   Contract Type HFP
   No of Bids 10 Low 497K High 611K
   Gov't Estimate 638K No of Amendments 5
   Constructibility Review Yes X No

B. Contract
   Award Amount 499 Bid Position 2nd low

C. Changes
   Number of Changes 4 Rate 3%
   Type Customer Requested Unforeseen Conditions 2 Admin 1 Delays Design Error or Omission 1 Other
   Field Changes 4

D. Correspondence
   Tone Cooperative X Adversarial
   Type Routine 8 Clarifications 2 Warnings Problems 4

E. Architect/Engineer
   Field Visits 11 Discrepancies Noted None

F. Payments
   Disagreement on amounts 1 out of 13 invoices
   Paid on time All Price Schedule is Field Measurable Yes

G. Payrolls
   Submitted on Time 9 out of 13 invoices Wage Violations None

H. Schedule
   Type Bar Chart Completed 3 weeks early

I. Daily Reports
   Frequency of Non-conformance 0 out of 342 Reports Rate 0%
   Tone Cooperative X Adversarial

Appendix B
Instructions to Contractor 0 out of 342 Reports Rate 0%

J. Quality Control
   QA Checklist Reports 2 Discrepancies Noted None

K. Compliance Notices
   Number 0 Description

L. Disputes
   Number 0 Description

M. Submittals
   Number rejected 0 Rate 8%

N. Closeout
   Final Inspection Punchlist Length 8 items
   Customer Present at Final Inspection Yes
   Release of Claims Received Yes, timely

O. Other
   Time of year performed July 1990 - April 1991
   Special constraints Work hours Access Phasing
   Type of Surety Corporate Bond X Individual Other

P. Comments
   A/V evaluation "above average" by ROICC Correspondence same as for 89-D021 - roof and labor payroll problems Thorough daily reports, lots of project photos.
   Nice complete submittal log
CONTRACT FILE CHECKLIST

Contract No / Title: 88-8141, Replace High Risk PCB Transformers
Contractor: Webb Electric Co
Designer: Public Works
AROICC: LT Van De Voorde
CA: R K Loken
Inspector: Ron Martin
Quality Rating: ROICC Low
PWD: Low

A. Pre-award
   Contract Type: IFP
   No of Bids: 5 Low 220 3K High 357 9K
   Gov't Estimate: 400 1K
   No of Amendments: 0
   Constructibility Review: Yes X No

B. Contract
   Award Amount: 220 3K
   Bid Position: Low

C. Changes
   Number of Changes: 7
   Rate 9%
   Type Customer Requested
   Unforeseen Conditions: 1 Admin 2
   Delays: Design Error or Omission: 3 Other: Claim 1
   Field Changes: 3

D. Correspondence
   Tone Cooperative Adversarial: X
   Type: Routine 8 Clarifications 6 Warnings 13 Problems

E. Architect/Engineer
   Field Visits: N/A Discrepancies Noted

F. Payments
   Disagreement on amounts: 3 out of 8 invoices
   Paid on time: All Price Schedule is Field Measurable: Yes

G. Payrolls
   Submitted on Time: 7 out of 8 invoices Wage Violations: None

H. Schedule
   Type: Bar Chart Completed On-Time

I. Daily Reports
   Frequency of Non-conformance: 4 out of 62 Reports Rate 1.6%
   Tone Cooperative Adversarial: X
   Instructions to Contractor: 7 out of 62 Reports Rate 11%

Appendix B
J. Quality Control

QA Checklist Reports 4 Discrepancies Noted Contractor inspection plan documentation

K. Compliance Notices

Number 0 Description

L. Disputes

Number 2 Description Additional electrical work, Unforeseen conditions and government delays

M. Submittals

Number rejected 1 Rate

N. Closeout

Final Inspection Punchlist Length 3 items concerning patching grass
Customer Present at Final Inspection Yes
Release of Claims Received Conditional based on unresolved Claim #2

O. Other

Time of year performed February - April 1991
Special constraints Work hours X Access Phasing
Type of Surety Corporate Bond Individual Other

P. Comments

Designed in-house Numerous correspondence on unforeseen conditions and government delays asserted by Contractor Documented poor communication between Superintendent James Webb and ROCO Inspector Ron Martin. Final inspection was 31 May, yet daily reports stopped on 9 April. Close coordination required for outages necessary to remove and/or replace transformers. Length of outages was specified in the contract. Outages did not go smoothly, rescheduled numerous times. Appears Contractor did not review contract well and was not organized. Asserted many unsubstantiated claims for additional money and time. Contractor's superintendent felt inspector was telling him how to do his job while inspector felt superintendent was unwilling to share his reasoning for his actions.

Appendix B
CONTRACT FILE CHECKLIST

Contract No. / Title: 88-8135, Fuel Tank Cleaning & Storage Pad
Contractor: Diamaco, Inc.  Designer: Reid Middleton, Inc.
AROICC/CA: Ron Martin  Inspector: Ron Martin
Quality Rating: ROICC Low PWD Med

A. Pre-award
   Contract Type: HHP
   No. of Bids: 3  Low: 81K High: 98K
   Gov't Estimate: 88K  No. of Amendments: 1
   Constructibility Review: Yes X No

B. Contract
   Award Amount: 81K  Bid Position: Low

C. Changes
   Number of Changes: 2  Rate: 9%
   Type: Customer Requested Unforeseen Conditions Admin Delays Design Error or Omission 1 Other
   Field Changes: 0

D. Correspondence
   Tone: Cooperative X Adversarial
   Type: Routine 2 Clarifications Warnings 3 Problems

E. Architect/Engineer
   Field Visits: 3 Discrepancies Noted 0 (design problems discussed)

F. Payments
   Disagreement on amounts: 2 out of 5 invoices
   Paid on time All Price Schedule is Field Measurable Yes

G. Payrolls
   Submitted on time: 4 out of 5 invoices Wage Violations: None

H. Schedule
   Type: Bar Chart  Completed On-Time

I. Daily Reports
   Frequency of Non-conformance: 0 out of 23 Reports Rate: 0%
   Tone: Cooperative X Adversarial
   Instructions to Contractor: 2 out of 23 Reports Rate: 9%

Appendix B
J Quality Control

QA Checklist Reports: 0 Discrepancies Noted

K Compliance Notices

Number: 0 Description

L Disputes

Number: 0 Description

M Submittals

Number rejected: 5 Rate: 30%

N Closeout

Final Inspection Punchlist Length: 8 items
Customer Present at Final Inspection: Yes
Release of Claims Received: Yes, 4 months later

O Other

Time of year performed: July - December 1990
Special constraints:
  Work hours: Access: Phasing:___
Type of Surety: Corporate Bond: X Individual: Other:___

P Comments

Daily Reports not submitted until after job completed. Contractor progressed slowly, neglecting administrative matters
Contract No / Title: 88-2134, Repair Floor Hangar 7
Contractor: Floorpro, Inc. Designer: Tsang Architects
AROICC/CA: ENS Cook Inspector: Rick Ragan
Quality Rating: ROICC Med PWD High

A. Pre-award
   Contract Type: TIP
   No of Bids: 8 Low: 23K High: 82K
   Gov't Estimate: 72K No of Amendments: 1
   Constructibility Review: Yes No: X

B. Contract
   Award Amount: 23K Bid Position: Low

C. Changes
   Number of Changes: 0 Rate: 0%
   Type: Customer Requested Unforeseen Conditions Admin
   Delays: Design Error or Omission: Other:
   Field Changes: 0

D. Correspondence
   Tone: Cooperative X Adversarial
   Type: Routine 7 Clarifications Warnings Problems:

E. Architect/Engineer
   Field Visits: 0 Discrepancies Noted

F. Payments
   Disagreement on Amounts: 0 out of 1 invoices
   Paid on Time: All Price Schedule is Field Measurable: Yes

G. Payrolls
   Submitted on Time: 1 out of 1 invoices Wage Violations: 0

H. Schedule
   Type: None Completed On time

I. Daily Reports
   Frequency of Non-conformance: 0 out of 0 Reports Rate %
   Tone: Cooperative X Adversarial
   Instructions to Contractor: 0 out of 0 Reports Rate %

Appendix B
J **Quality Control**

QA Checklist Reports  0  Discrepancies Noted

K **Compliance Notices**

Number  0  Description

L **Disputes**

Number  0  Description

M **Submittals**

Number rejected  0  Rate

N **Closeout**

Final Inspection Punchlist Length: None
Customer Present at Final Inspection: Yes
Release of Claims Received: Yes, timely

O **Other**

Time of year performed: September  October 1989
Special constraints: Work hours
Access  Phasing
Type of Surety: Corporate Bond
Individual  Other  Not required

P **Comments**
CONTRACT FILE CHECKLIST

Contract No / Title 88-8133, Paint Hangar Bay 7 Interior
Contractor Diamaco, Inc  Designer Tsang Architects
AROICC/CA ENS Cook Inspector Rick Ragan
Quality Rating  ROICC  Med  PWD  High

A. Pre-award
  Contract Type 111P
  No of Bids 24  Low 39K High 326K
  Gov't Estimate 112K  No of Amendments 0
  Constructibility Review Yes  X  No

B. Contract
  Award Amount 75K  Bid Position 3rd low

C. Changes
  Number of Changes 0  Rate 0%
  Type Customer Requested  Unforseen Conditions  Admin
  Delays Design Error or Omission  Other
  Field Changes 1

D. Correspondence
  Tone Cooperative  X  Adversarial
  Type Routine 1 Clariifications 1 Warnings  Problems

E. Architect / Engineer
  Field Visits 0  Discrepancies Noted

F. Payments
  Disagreement on amounts 0 out of 5 invoices
  Paid on time  All Price Schedule is Field Measurable  Yes

G. Payrolls
  Submitted on Time 5 out of 5 invoices  Wage Violations 0

H. Schedule
  Type Bar Chart  Completed 6 weeks early

I. Daily Reports
  Frequency of Non-conformance 0 out of 53 Reports Rate 0%
  Tone Cooperative  X  Adversarial
  Instructions to Contractor 0 out of 53 Reports Rate 0%

Appendix B
J. **Quality Control**
   - QA Checklist Reports: Discrepancies Noted

K. **Compliance Notices**
   - Number: 0, Description:

L. **Disputes**
   - Number: 0, Description:

M. **Submittals**
   - Number rejected: 0, Rate:

N. **Closeout**
   - Final Inspection Punchlist Length: 5 items,
   - Customer Present at Final Inspection: Yes
   - Release of Claims Received: Yes, timely

O. **Other**
   - Time of year performed: April - May 1989
   - Special constraints: Work hours, Access, Phasing
   - Type of Surety: Corporate Bond X, Individual, Other

P. **Comments**
CONTRACT FILE CHECKLIST

Contract No / Title 88-8125, Replace Lighting System Building 369
Contractor Mountain States Mechanical Designer: Blunt, Hamm & Urquhart Engineers
AROICC/CA LT Sweet - Inspector: Jim Quinn
Quality Rating: ROICC Med PWD High

A. Pre-award
   Contract Type ITP
   No of Bids 11 Low 45K High 70K
   Gov't Estimate 76K No of Amendments 2
   Constructibility Review Yes X No

B. Contract
   Award Amount 45K Bid Position Low

C. Changes
   Number of Changes 1 Rate 0%
   Type Customer Requested Unforeseen Conditions Admin
     Delays 1 Design Error or Omission Other
     Field Changes 2

D. Correspondence
   Tone: Cooperative X Adversarial
   Type: Routine 8 Clarifications Warnings Problems 2

E. Architect/Engineer
   Field Visits 0 Discrepancies Noted

F. Payments
   Disagreement on amounts 0 out of 2 invoices
   Paid on time All Price Schedule is Field Measurable Yes

G. Payrolls
   Submitted on Time 2 out of 2 invoices Wage Violations 0

H. Schedule
   Type: Bar Chart Completed On Time

I. Daily Reports
   Frequency of Non-conformance 0 out of 10 Reports Rate 0%
   Tone: Cooperative X Adversarial
   Instructions to Contractor 0 out of 10 Reports Rate 0%

Appendix B
J Quality Control
   QA Checklist Reports  0  Discrepancies Noted
K Compliance Notices
   Number  0  Description
L Disputes
   Number  0  Description
M Submittals
   Number rejected  0  Rate
N Closeout
   Final Inspection Punchlist Length  6 items
   Customer Present at Final Inspection: Yes
   Release of Claims Received: Yes, timely
O Other
   Time of year performed: March 1989
   Special constraints: Work hours  Access  Phasing
   Type of Surety: Corporate Bond  X Individual  Other
P Comments
   Problems discussed in correspondence file included slow progress and overhead
   fighting not meeting specifications
CONTRACT FILE CHECKLIST

Contract No / Title: 88-5727, Install Dishwashers, Capehart
Contractor: Coyote Corp, Designer: Decker/Fukui
AROICC/CA: ENS Barton, Inspector: David Wright
Quality Rating: ROICC High Housing, High

A. Pre-award
   Contract Type: IFP
   No. of Bids: 14 Low 429K High 988K
   Gov't Estimate: 677K No. of Amendments: 3
   Constructibility Review: Yes X No

B. Contract
   Award Amount: 429K Bid Position: Low

C. Changes
   Number of Changes: 2 Rate: 2%
   Type: Customer Requested Unforeseen Conditions Admin Other
   Delays Design Error or Omission
   Field Changes: 2

D. Correspondence
   Tone: Cooperative Adversarial
   Type: Routine Clarifications Warnings Problems

E. Architect/Engineer
   Field Visits: 0 Discrepancies Noted

F. Payments
   Disagreement on amounts: 0 out of 8 invoices
   Paid on time: All Price Schedule is Field Measurable Yes

G. Payrolls
   Submitted on Time: 8 out of 8 invoices Wage Violations: None

H. Schedule
   Type: List Completed: 5 weeks early

I. Daily Reports
   Frequency of Non-conformance: 0 out of 153 Reports Rate: 0%
   Tone: Cooperative X Adversarial
   Instructions to Contractor: 1 out of 153 Reports Rate: 7%

Appendix B
J. Quality Control
   QA Checklist Reports 1 Discrepancies Noted None
K. Compliance Notices
   Number 0 Description
L. Disputes
   Number 0 Description
M. Submittals
   Number rejected 0 Rate
N. Closeout
   Final Inspection Punchlist Length No documentation
   Customer Present at Final Inspection Yes
   Release of Claims Received Yes, timely
O. Other
   Time of year performed December 1990 - May 1991
   Special constraints Work hours Access Phasing
   Type of Surety Corporate Bond X Individual Other
P. Comments
   A/E rated "above average" by ROICC - very expedient on submittals and answers
to verbal inquiries Contractor recommended for Certificate of Commendation
CONTRACT FILE CHECKLIST

Contract No / Title 88-5717, Weatherization of Building 410 & 2642
Contractor American Construction & Energy Designer Gabbert, Broweleit, & Peterson
AROICC CA D J Powell Inspector Terry Armstrong
Quality Rating ROICC Med PWD High

A. Pre-award
   Contract Type TIP
   No of Bids 2 Low 62K High 89K
   Gov't Estimate 159K No of Amendments 1
   Constructibility Review Yes X No

B. Contract
   Award Amount 62K Bid Position Low

C. Changes
   Number of Changes 2 Rate 19%
   Type Customer Requested Unforeseen Conditions Admin
   Delays Design Error or Omission Other 2
   Field Changes 2

D. Correspondence
   Tone Cooperative X Adversarial
   Type Routine 2 Clarifications 4 Warnings Problems

E. Architect/Engineer
   Field Visits 1 Discrepancies Noted 0

F. Payments
   Disagreement on amounts 1 out of 4 invoices
   Paid on time All Price Schedule is Field Measurable Yes

G. Payroll
   Submitted on Time 4 out of 4 invoices Wage Violations 0

H. Schedule
   Type Bar Chart Completed 2 weeks early

I. Daily Reports
   Frequency of Non-conformance 0 out of 24 Reports Rate 0%
   Tone Cooperative X Adversarial
   Instructions to Contractor 1 out of 24 Reports Rate 04%

Appendix B
J  **Quality Control**

QA Checklist Reports  0  Discrepancies Noted

K. **Compliance Notices**

Number  0  Description

L. **Disputes**

Number  0  Description

M. **Submittals**

Number rejected  1  Rate  14%

N. **Closeout**

Final Inspection Punchlist Length  4 items
Customer Present at Final Inspection  Yes
Release of Claims Received  Yes, timely

O. **Other**

Time of year performed  December 1988 - February 1989
Special constraints  Work hours  Access  Phasing
Type of Surety  Corporate Bond  X  Individual  Other

P. **Comments**

Substituted type of hangar door seals because of easier installation plus added door seals in various places  A/E was rushed to do design  Reason for changes was a criteria change  Contractor was bad about communicating his work plans to the inspector in advance

Appendix B
CONTRACT FILE CHECKLIST

Contract No / Title 88-5690 Aircraft Parking Apron
Contractor D A Zulagna, Inc Designer Seiffert & Forbes
AROICC LT Van De Vonde CA D J Powell Inspector Ron Martin
Quality Rating ROICC High PWD High

A. Pre-award
Contract Type SBA Set-Aside, LPP Negotiated
No of Bids None
Gov't Estimate 1944 No of Amendments 3
Constructibility Review Yes

B. Contract
Award Amount Bid Position 2243K

C. Changes
Number of Changes 8 Rate 2.7%
Type Customer Requested 3 Unforeseen Conditions 3 Admin 1
Delays 0 Design Error or Omission 1 Other 0
Field Changes 8

D. Correspondence
Tone Cooperative X Adversarial
Type Routine 6 Clarifications 17 Warnings 0 Problems 1

E. Architect/ Engineer
Field Visits 11 Discrepancies Noted 10-15 minor items during each visit

F. Payments
Disagreement on amounts 2 out of 9 invoices
Paid on time All Price Schedule is Field Measurable Yes

G. Payrolls
Submitted on Time 9 out of 9 invoices Wage Violations 0

H. Schedule
Type Bar Chart Completed On Time

I. Daily Reports
Frequency of Non-conformance 3 out of 240 Reports Rate 1.3%
Tone Cooperative X Adversarial
Instructions to Contractor 8 out of 240 Reports Rate 3.3%

Appendix B
J Quality Control
QA Checklist Reports 0 Discrepancies Noted 0

K Compliance Notices
Number 0 Description

L Disputes
Number 1 Description Piping bid did not meet specs, denied

M Submittals
Number rejected 0 Rate

N Closeout
Final Inspection Punchlist Length 3 items
Customer Present at Final Inspection Yes
Release of Claims Received Yes, 6 months later

O Other
Time of year performed Mar 89 - Nov 1989
Special constraints Work hours Access Phasing
Type of Surety Corporate Bond X Individual Other

P Comments
Daily reports thorough and typewritten

Appendix B
CONTRACT FILE CHECKLIST

Contract No / Title 88-4839, Paint Exterior Housing Units
Contractor Yuns Painting Co  Designer Stafford Architects
AROICC CA R K Loken Inspector Ron Martin
Quality Rating ROICC High Housing High

A. Pre-award
   Contract Type FFP
   No of Bids 3 Low 289K High 4974K
   Gov't Estimate 518K No of Amendments 0
   Constructibility Review Yes X No

B. Contract
   Award Amount 289K Bid Position Low

C. Changes
   Number of Changes 6 Rate 100%
   Type Customer Requested 1 Unforeseen Conditions 1 Admin 2
     Delays 1 Design Error or Omission 1 Other
     Field Changes 1

D. Correspondence
   Tone Cooperative X Adversarial
   Type Routine 2 Clarifications 3 Warnings Problems

E. Architect/Engineer
   Field Visits 0 Discrepancies Noted

F. Payments
   Disagreement on amounts 2 out of 10 invoices
   Paid on time All Price Schedule is Field Measurable Yes

G. Payrolls
   Submitted on Time 10 out of 10 invoices Wage Violations None noted

H. Schedule
   Type Bar Completed 3 weeks early

I. Daily Reports
   Frequency of Non-Conformance 1 out of 148 Reports Rate 7%
   Tone Cooperative X Adversarial
   Instructions to Contractor 6 out of 148 Reports Rate 4%

Appendix B
Quality Control

QA Checklist Reports  0  Discrepancies Noted  None Noted

K. Compliance Notices

Number 0  Description

L. Disputes

Number 0  Description

M. Submittals

Number rejected 4  Rate See Comment

N. Closeout

Final Inspection Punchlist Length 1 Item
Customer Present at Final Inspection  Yes
Release of Claims Received  Yes, timely

O. Other

Time of year performed  Jan-Sep 90
Special constraints  Work hours  Access  Phasing
Type of Surety  Corporate Bond  X Individual  Other

P. Comments

No safety plan on file  Overspray on a few cars  Submittal file incomplete; only 1,2,4,10,11 present  KTR rated satisfactory on evaluation  Work seemed as good as contract 90-4838, except job may not have been as visible since it wasn't officer housing. High change order rate due to adding additional houses to contract.

Appendix B
CONTRACT FILE CHECKLIST

Contract No. / Title _88-4372, 71 OPQ (Civil)
Contractor: D. A. Zuluaga Construction Designer: Tonkin/Koch Architects
AROICC/CA D. J. Powell Inspector: Jim Quinn
Quality Rating: ROICC High Housing Med

A. Pre-award

Contract Type: FIP
No of Bids: 6 Low 205K High 233K
Gov't Estimate: 183K No of Amendments: 2
Constructibility Review: Yes X No

B. Contract

Award Amount: 205K Bid Position: Low

C. Changes

Number of Changes: 5 Rate: 16%
Type: Customer Requested: 3 Unforeseen Conditions: 3 Admin: ___
Design Error or Omission: 1 Other: ___
Field Changes: 0

D. Correspondence

Type: Cooperative X Adversarial
Routine 4 Clarifications: 4 Warnings: ___ Problems: ___

E. Architect/Engineer

Field Visits: 2 Discrepancies Noted: None

F. Payments

Disagreement on amounts: 1 out of 8 invoices
Paid on time: All Price Schedule is Field Measurable: Yes

G. Payrolls

Submitted on Time: 8 out of 8 invoices Wage Violations: None

H. Schedule

Type: Bar Chart Completed: On Time

I. Daily Reports

Frequency of Non-conformance: 0 out of 220 Reports Rate: 0%
Type: Cooperative X Adversarial
Instructions to Contractor: 5 out of 220 Reports Rate: 2.3%

Appendix B
J Quality Control
   QA Checklist Reports  0 Discrepancies Noted
K Compliance Notices
   Number 0 Description
L Disputes
   Number 0 Description
M Submittals
   Number rejected 1 Rate 7%
N Closeout
   Final Inspection Punchlist Length 14 items
   Customer Present at Final Inspection Yes
   Release of Claims Received Yes, 6 months later
O Other
   Time of year performed November 1988 - June 1989
   Special constraints Work hours Access Phasing ___
   Type of Surety Corporate Bond X Individual ___ Other ___
P Comments
   Civilian off-base housing Rehab of curbs, sidewalks and lighting.
CONTRACT FILE CHECKLIST

Contract No / Title  87-7645, Build Commissary
Contractor  Eldred & Essex  Designer  ARA Architects
AROIC/C/CA, ENS Cook  Inspector  Jim Quinn, ENS Cook
Quality Rating  ROICC High  PWD High

A. Pre-award
   Contract Type  Design Build, FFP
   No. of Bids  N/A Low High
   Gov't Estimate  N/A No. of Amendments
   Constructibility Review  Yes No

B. Contract
   Award Amount  $632K  Bid Position  N/A

C. Changes
   Number of Changes  11  Rate  1%
   Type  Customer Requested  6  Unforeseen Conditions  1  Admin  4
   Delays  Design Error or Omission  Other
   Field Changes  4

D. Correspondence
   Tone  Cooperative  Adversarial
   Type  Routine  8  Clarifications  Warnings  Problems

E. Architect/Engineer
   Field Visits  N/A  Discrepancies Noted

F. Payments
   Disagreement on amounts  5 out of 15 invoices
   Paid on time  All  Price Schedule is Field Measurable  Yes

G. Payrolls
   Submitted on Time  11 out of 15 invoices  Wage Violations

H. Schedule
   Type  Bar Chart  Completed  1 month early

I. Daily Reports
   Frequency of Non-conformance  7 out of 353 Reports  Rate  2%
   Tone  Cooperative  X  Adversarial
   Instructions to Contractor  9 out of 353 Reports  Rate  2.6%

Appendix B
J Quality Control
   QA Checklist Reports  0  Discrepancies Noted
K Compliance Notices
   Number  0  Description
L Disputes
   Number  0  Description
M Submittals
   Number rejected  0  Rate
N Closeout
   Final Inspection Punchlist Length  9 items
   Customer Present at Final Inspection  Yes
   Release of Claims Received  Yes, 3 months later
O Other
   Time of year performed  June 1989 - June 1990
   Special constraints  Work hours  Access  Phasing
      Type of Surety  Corporate Bond  X  Individual  Other
P Comments
   CQC job  All but 2 of Daily Reports to Inspector problems were safety related.

Appendix B
CONTRACT FILE CHECKLIST

Contract No / Title 87-7569, Location Navy Exchange
Contractor Eberhaster & Gaunt, Inc. Designer Jan H. Kaier
AROICC/CA LT Van De Voorde/ LTJG Zulick Inspector Lloyd Reiman/David Wright
Quality Rating ROICC High PWD High

A. Pre-award
   Contract Type FFP, Restricted Bidders List
   No of Bids 6 Low 1914K High 2115K
   Gov't Estimate 1700K No of Amendments 3
   Constructibility Review Yes X No

B. Contract
   Award Amount 1914K Bid Position Low

C. Changes
   Number of Changes 21 Rate 4%
   Type Customer Requested 7 Unforeseen Conditions 1 Admin 5
   Delays 1 Design Error or Omission 6 Other 2
   Credit for deficient flooring and adjustment for less piles driven
   Field Changes 7

D. Correspondence
   Tone Cooperative X Adversarial
   Type Routine 12 Clarifications 49 Warnings ___ Problems 11

E. Architect/Engineer
   Field Visits 10 Discrepancies Noted 95 (combination of A/E & ROICC input)

F. Payments
   Disagreement on amounts 8 out of 15 invoices
   Paid on time All Price Schedule is Field Measurable Yes

G. Payrolls
   Submitted on Time 9 out of 15 invoices Wage Violations None

H. Schedule
   Type Bar Chart Completed 3 months early

I. Daily Reports
   Frequency of Non-conformance 2 out of 252 Reports Rate 8%

Appendix B
Tone Cooperative  X Adversarial
Instructions to Contractor  11 out of 252 Reports  Rate  4.4%

J Quality Control
QA Checklist Reports  21  Discrepancies Noted  11 - soil compaction, roof
damage, administrative items

K Compliance Notices
Number  1  Description  Foreign fasteners for gypboard

L Disputes
Number  1  Description  Additional temperature controls for ventilation
for #2, denied

M Submittals
Number rejected  3  Rate  4%

N Closeout
Final Inspection Punchlist Length  95 items
Customer Present at Final Inspection  Yes
Release of Claims Received  Yes, 1 year late

O Other
Time of year performed  February 1990 - January 1991
Special constraints  Work hours  Access  Phasing ___
Type of Surety  Corporate Bond  X  Individual  Other ___

P Comments
A/E evaluation “above average” by ROICC - responsive during construction and
clear design except for a few mechanical problems  Difficulty getting punch list completed
in a timely manner

Appendix B
CONTRACT FILE CHECKLIST

Contract No / Title 87-7567, Enlisted Club Addition at Navaires
Contractor: P&L General Contractor Designer: Johnson Braund Design Group
AROCC: LT Van De Voorde, CA R K Loken Inspector: Terry Armstrong
Quality Rating: ROCC: High PWD: High

A. Pre-award
   Contract Type: HFP. Restricted Bidders List
   No of Bids: 2 Low 1685K High 2083K
   Gov't Estimate: 1468K No of Amendments: 2
   Constructibility Review: Yes No

B. Contract
   Award Amount: 1685K Bid Position: Low

C. Changes
   Number of Changes: 29 Rate: 36%
   Type: Customer Requested 6, Unforeseen Conditions 3, Admin: 3
   Delays 1, Design Error or Omission: 14, Other: 2, Phasing
   change and structural engineer on site for beam removal
   Field Changes: 4

D. Correspondence
   Tone: Cooperative X Adversarial
   Type: Routine 12 Clarifications 5 Warnings 0, Problems: 1

E. Architect/ Engineer
   Field Visits: 11 Discrepancies Noted: 27 minor items

F. Payments
   Disagreement on amounts 6 out of 16 invoices
   Paid on time: All Price Schedule is Field Measurable: Yes

G. Payrolls
   Submitted on Time: 13 out of 16 invoices Wage Violations: 3

H. Schedule
   Type: Bar Chart Completed On Time

I. Daily Reports
   Frequency of Non-conformance: 1 out of 381 Reports Rate: 0.3%
   Tone: Cooperative X Adversarial

Appendix B
Instructions to Contractor: 2 out of 381 Reports. Rate: 5%

J Quality Control
- QA Checklist Reports: 4 Discrepancies Noted: 8 - documentation, safety violations, roof and piping details

K Compliance Notices
- Number: 1 Description: Ponding on sidewalk

L Disputes
- Number: 0 Description:

M Submittals
- Number rejected: 2 Rate: 3%

N Closeout
- Final Inspection Punchlist Length:
- Customer Present at Final Inspection: 43 items, Phases A, B & C
- Release of Claims Received: Yes, ten months later

O Other
- Time of year performed: Nov 89 - Nov 90
  - Special constraints: Work hours, Access, Phasing
  - Type of Surety: Corporate Bond (X), Individual, Other

P Comments
- Very little correspondence for a job of the size: 13 letters to P&L, of which only one was a problem (non-compliance notice)
CONTRACT FILE CHECKLIST

Contract No / Title: 87-0637, Repairs to Building 117
Contractor: The Westec Co  Designer: Stafford Architects
AROICC/CA ENS Baton Inspector: George Pate, ENS Baton, Ron Martin
Quality Rating: ROICC Med PWD High

A. Pre-award
   Contract Type: IFP
   No. of Bids: 5 Low 454K High 1030K
   Gov't Estimate: 502K No. of Amendments: 3
   Constructibility Review: Yes x No

B. Contract
   Award Amount: 454K Bid Position: Low

C. Changes
   Number of Changes: 11 Rate: 1%
   Type: Customer Requested: 2 Unforeseen Conditions: ___ Admin: 4
   Delays: Design Error or Omission: 3 Other: ___
   Field Changes: 3

D. Correspondence
   Tone: Cooperative x Adversarial
   Type: Routine: 7 Clarifications: 25 Warnings: ___ Problems: 2

E. Architect/Engineer
   Field Visits: 4 Discrepancies Noted: problem with air-handling unit,
   lighting and finish on gym floor

F. Payments
   Disagreement on amounts: 8 out of 13 invoices
   Paid on time: All Price Schedule is Field Measurable: Yes

G. Payrolls
   Submitted on Time: 9 out of 13 invoices Wage Violations: ___None

H. Schedule
   Type: Bar Chart Completed On Time

I. Daily Reports
   Frequency of Non-conformance: 0 out of 311 Reports Rate: __0%
   Tone: Cooperative x Adversarial

Appendix B
Instructions to Contractor 9 out of 311 Reports Rate 3%

J Quality Control
QA Checklist Reports 0 Discrepancies Noted

K Compliance Notices
Number 0 Description

L Disputes
Number 1 Description

M Submittals
Number rejected 7 Rate No Submittal Log

N Closeout
Final Inspection Punchlist Length 24 items
Customer Present at Final Inspection Yes
Release of Claims Received Yes, 7 months later

O Other
Time of year performed September 1989 - September 1990
Special constraints Work hours Access Phasing ___
Type of Surety Corporate Bond X Individual Other ___

P Comments

Appendix B
# CONTRACT FILE CHECKLIST

Contract No / Title: 86-0332, Wholesite Repairs & Improvements to 11 Farmhouses
Contractor: P & L Agl. General Contractor
Designer: Tonkin/Koch Architects
AROICC/CA: ENS Barton Inspector: Rick Ragen/ENS Barton
Quality Rating: ROICC High Housing Med

## A. Pre-award
- Contract Type: FFP
- No. of Bids: 3 (Low 682K, High 1129K)
- Gov't Estimate: 600K
- No. of Amendments: 1
- Constructibility Review: Yes X No

## B. Contract
- Award Amount: 682K
- Bid Position: Low

## C. Changes
- Number of Changes: 25
- Rate: 6.5%
- Type: Customer Requested 4, Unforeseen Conditions 11, Admin 4, Delays 4, Design Error or Omission 6, Other ___
- Field Changes: 3

## D. Correspondence
- Tone: Cooperative X, Adversarial
- Type: Routine X, Clarifications Warnings ___ Problems ___

## E. Architect/Engineer
- Field Visits: 4
- Discrepancies Noted: 40 items, all minor in nature

## F. Payments
- Disagreement on amounts: 0 out of 15 invoices
- Paid on time: All Price Schedule is Field Measurable: Yes

## G. Payrolls
- Submitted on Time: 15 out of 15 invoices
- Wage Violations: 0

## H. Schedule
- Type: Bar Chart, Completed: 9 weeks early

## I. Daily Reports
- Frequency of Non-conformance: 0 out of 356 Reports, Rate: 0%
- Tone: Cooperative X, Adversarial
- Instructions to Contractor: 0 out of 356 Reports, Rate: 0%

Appendix B
J Quality Control

QA Checklist Reports 1 Discrepancies Noted Better documentation on daily reports to Inspector

K. Compliance Notices

Number 0 Description

L. Disputes

Number 0 Description

M. Submittals

Number rejected 2 Rate No Submittal Log

N. Closeout

Final Inspection Punchlist Length Approximately 10 times at each quarters Customer Present at Final Inspection Yes Release of Claims Received Yes, 4 months later

O. Other

Time of year performed January 1990 - January 1991 Special constraints Work hours Access Phasing X Type of Surety Corporate Bond X Individual Other

P. Comments

Each set of quarters had its own start and finish dates

Appendix B
CONTRACT FILE CHECKLIST

Contract No / Title: 86-0171, Flight Simulator & System Training Building Addition
Contractor: Lugo Construction
Designer: WJA Architects & Planners
ARICC: CA I O Lenda, Inspector: George Pate
Quality Rating: ROICC Low, PWD Low

A. Pre-award
   Contract Type: FFP
   No of Bids: 6
   Low: 4253K High: 5490K
   Gov't Estimate: 3800K
   No of Amendments: 5
   Constructibility Review: Yes / No

B. Contract
   Award Amount: 4253K
   Bid Position: Low

C. Changes
   Number of Changes: 37
   Rate: 8%
   Type: Customer Requested: 3, Unforeseen Conditions: 3, Admin: 4
   Delays: 1, Design Error or Omission: 23, Other: 3
   Field Changes: 3

D. Correspondence
   Tone: Cooperative / Adversarial: X
   Type: Routine: 14, Clarifications: 167, Warnings: __, Problems: 29

E. Architect/Engineer
   Field Visits: 24
   Discrepancies Noted: 1001

F. Payments
   Disagreement on amounts: 6 out of 24 invoices
   Paid on time: Price Schedule is Field Measurable: Yes

G. Payrolls
   Submitted on Time: 18 out of 24 invoices
   Wage Violations: __

H. Schedule
   Type: CPM
   Completed: On time

I. Daily Reports
   Frequency of Non-conformance: 93 out of 442 Reports
   Rate: 21%
   Tone: Cooperative / Adversarial: X
   Instructions to Contractor: 22 out of 442 Reports
   Rate: 5%

Appendix B
J Quality Control
   QA Checklist Reports  0, Discrepancies Noted
K Compliance Notices
   Number 16 Description Faulty compaction, concrete work, steelwork, misc.
L Disputes
   Number 1 Description Requirement for Specialized Inspection Personnel
M Submittals
   Number rejected 3 Rate 4%
N Closeout
   Final Inspection Punchlist Length 106 items
   Customer Present at Final Inspection Yes
   Release of Claims Received Yes, 2 years later
O Other
   Time of year performed October 1988 - December 1989
   Special constraints Work hours Access Phasing ___
   Type of Surety Corporate Bond Individual X Other ___
P Comments
   "Other" changes included a claim payment, adjustment for indefinite quantity
   portion of contract for extra piping and a value engineering proposal. 38 CQC meetings
   held. Daily report stated superintendent took offense to gov't inspector inspecting
   masonry block for rebar claiming the inspector did not trust the contractor's CQC
   representative

Appendix B
CONTRACT FILE CHECKLIST

Contract No / Title. 84-5061, C-9 Aircraft Maintenance Hangar
Contractor: Davis Constructors & Engineers, Designer: Wurtz, Wisecarver & Pruett
AROICC/CA LT Van De Voorde, Inspector: Jim Quinn, Bernard Gresham, Bob Hoover
Quality Rating: ROICC Low, PWD High

A. Pre-award
   Contract Type FFP
   No of Bids 7 Low 5247K High 6081K
   Gov't Estimate 5740K No of Amendments 1
   Constructibility Review Yes X No

B. Contract
   Award Amount 5247K Bid Position Low

C. Changes
   Number of Changes 46 Rate 23%
   Type: Customer Requested 9 Unforseen Conditions 19 Admin 3
   Delays Design Error or Omission 14 Other 1
   Field Changes 95

D. Correspondence
   Tone: Cooperative X Adversarial
   Type: Routine 116 Clarifications 175 Warnings ___ Problems 19

E. Architect/Engineer
   Field Visits File Missing Discrepancies Noted ___

F. Payments
   Disagreement on amounts 19 out of 30 invoices
   Paid on time All Price Schedule is Field Measurable Yes

G. Payrolls
   Submitted on Time 30 out of 30 invoices Wage Violations X

H. Schedule
   Type CPM Completed 2 weeks early

I. Daily Reports
   Frequency of Non-conformance 22 out of 702 Reports Rate 3%
   Tone Cooperative X Adversarial
   Instructions to Contractor: 63 out of 702 Reports Rate 9%

Appendix B
J  Quality Control
  QA Checklist Reports  CQC Job Discrepancies Noted  None
K  Compliance Notices
  Number _12_  Description  Various, only log found, no details
L  Disputes
  Number _4_  Description  Unforeseen conditions, all were settled before
  becoming claims
M  Submittals
  Number rejected _42_  Rate  9%
N  Closeout
  Final Inspection Punchlist Length  143 items
  Customer Present at Final Inspection  Yes
  Release of Claims Received  Yes, 6 months later
O  Other
  Time of year performed  May 1987 - May 1989
  Special constraints  Work hours  Access  _  Phasing  ___
  Type of Surety  Corporate Bond  X  Individual  ___  Other  ___
P  Comments
  Contractor quality was good, but he worked the ROICC staff hard with many
  variances and requests for equitable adjustment of which a dozen or so were unjustified.
**CONTRACT FILE CHECKLIST**

Contract No. / Title: 84-1258, Hospital Addition & Alterations
Contractor: Pease & Sons, Designer: Decker/Fukui
AROICC/CA LT: Spangler/ LT: Van De Voorde
Inspector: Bob Hoover, Rick Ragan, Bernard Gresham

Quality Rating: ROICC High / PWD High

A. Pre-award
   - Contract Type: 14P
   - No of Bids: 11 Low 13,512 High 14,700
   - Gov't Estimate: 13,963
   - No of Amendments: 3
   - Constructibility Review: Yes / X / No

B. Contract
   - Award Amount: 13,512
   - Bid Position: 2nd Low

C. Changes
   - Number of Changes: 142
   - Rate: 7.7%
   - Type: Customer Requested 64
   - Unforeseen Conditions 12
   - Admin 1
   - Delays Design 1
   - Error or Omission 62
   - Other 1
   - Claim 1
   - Field Changes: 85

D. Correspondence
   - Tone: Cooperative X / Adversarial
   - Type: Routine 241 / Clarifications 368 / Warnings __ / Problems 87

E. Architect/Engineer
   - Field Visits: 61
   - Discrepancies Noted: Various, most minor

F. Payments
   - Disagreement on amounts: 20 out of 40 invoices
   - Paid on time: All
   - Price Schedule is Field Measurable: Yes

G. Payrolls
   - Submitted on Time: 7 out of 40 invoices
   - Wage Violations: __

H. Schedule
   - Type: CPM
   - Completed: __
   - On time: __

I. Daily Reports
   - Frequency of Non-conformance: 6 out of 1163 Reports
   - Rate: __%
   - Tone: Cooperative X / Adversarial __

Appendix B
Instructions to Contractor: 46 out of 1463 Reports. Rate: 4%

J  **Quality Control**
   QA Checklist Reports: 0 (CQC) Discrepancies Noted

K  **Compliance Notices**
   Number: 0 Description:  

L  **Disputes**
   Number: 1 Description: Extra CQC Personnel settled by DRB

M  **Submittals**
   Number rejected: 325 Rate: 19%

N  **Closeout**
   Final Inspection Punchlist Length: 2300 items
   Customer Present at Final Inspection: Yes
   Release of Claims Received: Yes, 6 months later

O  **Other**
   Time of Year performed: April 1988 - June 1994
   Special constraints: Work hours Access Phasing
   Type of Surety: Corporate Bond X Individual Other

P  **Comments**

Appendix B
Glossary Of Terms

A/E - Architect/Engineer; design firm hired to prepare project construction plans, specifications and cost estimates

AROICC - Assistant Resident Officer in Charge of Construction; Naval Officer contract administrator

CA - Contract Administrator; civilian

CQC - Contractor Quality Control; Contractor approves submittals and inspects own work. Specified system on contracts over $500,000.

FFP - Firm Fixed Price construction contract (usually sealed bid)

ROICC - Resident Officer in Charge of Construction; Navy organization responsible for review and administration of construction contracts for naval installations.

SBA - Small Business Administration; represents disadvantaged and women owned business concerns on selected government construction contracts.