



PROJECT DOCUMENTATION: SUPPORTING YOUR POSITION

DISPUTE RESOLUTION



ABSTRACT.

The resolution of a dispute on a project can be dependent upon the available documentation that each party has to either support its request for compensation and time or to refute that request. Yet frequently, the parties lack the proper documentation to clearly establish entitlement, causation of impacts, and cost and time quantification. Contractors, subcontractors, and owners typically fail to collect and retain the necessary data and documentation that would help the parties reach an agreement on the disputes. On many projects, the parties have very different perspectives and fail to understand the other side's position and opinion. The right documentation can help both parties agree on facts, the actual impacts, and the cause(s) of those impacts, hopefully helping the parties resolve the dispute before it becomes a formal claim. Collecting proper documentation starts during contract negotiations and continues throughout the life of the project. This paper provides recommendations on what types of data and documentation owners and contractors should collect and how it can be used in addressing these disputes.

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INTRODUCTION.

Construction claims “are a fact of life” [1]. In many cases, project disputes can be drawn out, expensive, and potentially unsuccessful for all parties involved, including owners, designers, contractors, subcontractors, and vendors [2]. If arbitration or litigation is involved, the cost and commitment of resources can be exorbitant. Timely dispute resolution is appealing to construction parties in helping to limit these costs and impacts on the business. In many cases, the resolution of a dispute on a construction project is in part dependent on the documentation available to each party to support its request for compensation or to refute that request [2] [3]. Well-prepared documentation can often support the resolution of disputes before the dispute becomes a formal claim [2]. Additionally, a lack of contemporaneously prepared documentation can “raise a flag when rebutting a claim if the contractor encountered changed work or delays, recognized the resulting impacts, but did not track or in some way document the impacts” [3].

In fact, parties often fail to prepare and preserve key documentation that would help resolve disputes in a timely manner. It can be difficult for parties to know what types of documentation are most helpful in dispute resolution, and oftentimes, key documentation is identified after the project is completed and a claim arises [3]. Additionally, preparing or preserving accurate, effective project documentation, particularly at the beginning of the project, requires significant attention to detail that may be missing from construction parties in an effort to focus on progressing the project [2]. While most dispute resolution experts agree that the lack of documentation impacts the successful resolution of claims, the practice of diligent documentation preparation is not a consistent practice in the construction industry [3].

This paper presents a guide of recommended documentation most useful in supporting claims for owners and contractors. Construction claims are varied and arise across all industries; therefore, the types of documentation identified in this paper should not be considered an exhaustive list. Instead, the types of documentation suggested should be considered a starting point and should be supplemented with other documentation based on project-specific contractual requirements and needs.

ADDITIONAL BENEFITS OF STRONG DOCUMENTATION.

While this paper is written from the perspective of timely resolution of disputes, it is important to note that preparing and maintaining the documentation described in this paper should be part of a strong document control system that addresses all types of documents and communication on a project. Document management should be used “as an effective management tool to enhance [the] overall productivity and performance” of the project [2]. For example, pre-contract and baseline project documentation can provide a reference point as this documentation outlines the original



plans and agreements between the parties. Periodic measurements of actual performance against the baseline plan can help all parties identify performance issues early in the project and facilitate improvements to project management, construction practices, supervision of trades, and other components of a construction project. The ability to reference documentation over the life of the project facilitates communication and collaboration between parties. Strong documentation can also minimize the impact of staff turnover as new team members have this information to reference. The project documentation discussed in this paper should be considered part of a comprehensive system for managing documents on the project.

DOCUMENTATION CATEGORIES.

This paper addresses three primary categories of documentation prepared during construction projects (recognizing

that some items may fall into multiple categories):



Essential documentation: Documentation required to support both the management and construction of the project. This documentation is typically prepared by both owners and contractors as a natural consequence of the project and is often required by contract specifications. (Examples: bids, contracts, design documents, project schedules and updates, and daily field reports)



Event documentation: Documentation created to record meetings, events, and discussions on the project. Event documentation may be prepared by either or both owners and contractors and may be required by contract specifications. (Examples: Owner-Architect-Contractor (“OAC”) meeting minutes, email confirmations of discussions, notice of impacts, notice of non-conformance, and owner directions)



Data documentation: Documentation that compiles and summarizes data on the project relevant to performance. Data documentation is prepared primarily by contractors and may be required by contract specifications. (Examples: actual manpower, material quantities installed per period, earned value measurements, project schedules and updates, charts, and graphs)

The effective creation and management of all three documentation types is important as different types of documentation support the preparation of construction claims in different ways. Essential documentation can help the parties understand the overall scope of the project, the responsibilities of each party, the original execution plan, the actual sequence of activities, and the events that impacted construction. Event documentation can help the parties identify key discussions and decisions that occurred during the project and the results of those discussions and decisions. Data documentation helps parties dig deeper into the project details and performance to determine the impacts of specific events. Generally, in evaluating disputes, “entitlement” will be based on the essential documentation, “causation” will be based on event documentation, and “quantification” will be based on data documentation.

The following sections list specific types of documentation most useful in supporting construction claims. All documentation listed can be classified as either essential documentation, event documentation, data documentation, or a combination of multiple document categories. Collecting the appropriate documentation begins with pre-contract preparations and continues through contract negotiations and development, contract execution and construction, and the resolution of construction issues and impacts^[1].

PRE-CONTRACT AND CONTRACT DOCUMENTATION

Pre-contract documentation refers to documentation prepared prior to finalization of the contract. There may be several iterations of the same pre-contract documentation as the contractor and owner engage in ongoing discussions and document the results of those discussions. This documentation can provide insights into all parties’ original intentions and requests on and for the project^[4]. The final agreement between the parties is then recorded in the signed contract. The pre-contract and contract documentation discussed below includes:

- ✓ Request For Proposal Documentation
- ✓ Proposal Documentation
- ✓ Contract Negotiation Documentation
- ✓ Contract Documentation.

REQUEST FOR PROPOSAL DOCUMENTATION

Request For Proposal (“RFP”), also known as “Request for Bids,” documentation, prepared by the owner or the owner’s representative, includes both the original RFP and any supporting documentation issued to potential

bidders. The RFP and its supporting documentation may include the project scope, instructions to bidders, plans and specifications, preliminary milestone dates, and owner-specified requirements ^[2]. The RFP and its supporting documentation can provide information regarding the owner's intentions and requirements that are not included in the contract. In some cases, contracts are vague and the RFP and supporting documentation can help to provide more detailed information to the contractor of what should be included or excluded from the proposal. Additionally, the RFP often includes "Question & Answer" documents that may provide clarifications to specific aspects of the RFP and resulting contract.

The RFP and supporting documentation can be used to determine the original intent of the specific contract provisions and requirements when the contract does not provide sufficient detail. It may also provide details as to what the owner will or will not provide during the project which may directly relate to some disputes.

PROPOSAL DOCUMENTATION

Proposal documentation, prepared by the contractor, includes both the contractor's original proposal and any supporting documentation. The contractor's proposal and support may include pre-bid site investigation records, clarifications of the owner's RFP, the contractor's plan for project construction, quantity take-offs and estimate worksheets, labor and equipment schedules, preliminary milestone schedules, material and vendor quotes, subcontractor bids, and the contractor's proposed price for performing the work ^[2]. The proposal and its supporting documentation can provide insights into the contractor's original plan for executing the work.

Oftentimes, dispute resolution discussions arise regarding alleged errors and omissions made by the contractor during the proposal process. Contract provisions can be vague, and it can be difficult for the owner and contractor to agree on the exact requirements of construction outlined in the contract. The contractor's proposal can be helpful in determining the contractor's original intent for construction when the contract does not provide sufficient detail. The proposal can help determine if a specific construction component is an error or omission, or if the component was not originally considered to be required by the contractor.

CONTRACT NEGOTIATION DOCUMENTATION

Contract preparations typically include contract negotiations and the resolution of a variety of issues identified by the owner and the contractor. Contract negotiation documentation, prepared by both the owner and the contractor during the contract preparations, should include all discussions between the two parties regarding the meaning and intent of specific contract provisions, the resolution of any issues or disagreements related to the contract, and generally any discussion of substance between the two parties as it relates to contract preparations.

When contract provisions and requirements are subject to interpretation, documentation from the negotiations can help clarify how parties interpreted those terms when the contract was finalized. Additionally, the parties may make agreements or trade-offs during the negotiation phase that are not fully documented in the contract documents. Documentation of the negotiations can provide a fuller description of the agreement between the parties on how the project will be executed. Courts have recognized this type of documentation in various cases when it helps clarify the intent or agreement between parties even when not formally part of the contract.

CONTRACT DOCUMENTATION

Although the final executed contract is typically accessible when needed, it can be filed away and rarely referenced. In addition, contracts typically reference a multitude of supporting documents that form part of the contractual agreement. While the core contract document is often available, many of the referenced documents are not properly kept and accessible. Inability to reference these documents when needed can cause confusion and misunderstandings between

the parties on responsibilities and requirements. All the referenced contract documents should be retained and available to owners and contractors, especially when issues and disputes arise between the parties.

BASELINE DOCUMENTATION

Baseline documentation refers to documentation prepared in conjunction with the contract at the start of the project. Select baseline documentation may become part of the executed contract, while other baseline documentation may not. This documentation sets forth the baseline plan that both the owner and contractor agree will be used to execute the project. Therefore, this documentation can be used as a comparison point for project status while the project is ongoing. Additionally, the amount of detail included in the baseline documentation can impact the parties' ability to recover damages when claims arise, and parties are encouraged to include sufficient but concise detail in the baseline documentation^[3]. All assumptions made when preparing the baseline documentation should be included^[4]. The baseline documentation discussed below includes:



Approved Baseline Schedule

Original Manpower Plans by Period

Baseline Cost Breakdown

APPROVED BASELINE SCHEDULES

A detailed baseline schedule, prepared by the contractor in both native and PDF form, is essential to the successful completion of any construction project^[5]. The baseline schedule should be detailed enough for the owner to understand all components of the contractor's construction plan and flexible enough to address impacts that occur during the project. The baseline schedule should conform to all contractual requirements, including requirements regarding milestones, float, lags, activity durations, and the like. Additionally, the contractor is encouraged to prepare and preserve documentation, typically called a Schedule Basis, which contains all inputs and assumptions for developing the baseline schedule.

A key component of many dispute resolution discussions is the apportionment of project delay. The apportionment of project delay can impact the owner's ability to assess liquidated damages or lost profits claims against the contractor and can impact the contractor's ability to request compensation for extended general conditions and home office overhead costs from the owner. In almost every dispute that deals with project delays, the question asked is "what was the original plan?" This question can be best answered with the baseline schedule. The contractor's baseline schedule is vitally important for (1) presenting the baseline plan for completing the project and (2) use as a basis for comparison against the subsequent project schedule updates and any project delays and impacts. The baseline schedule must be prepared properly to ensure the appropriate apportionment of project delay and resulting claimed costs.

ORIGINAL MANPOWER PLANS BY PERIOD

The contractor should prepare original manpower plans per project phase for both subcontractor trades and for the contractor's indirect staff. Manpower plans can be presented via tables, charts, or graphics but should at the very minimum list the number of manhours expected per week.

Oftentimes, dispute resolution discussions arise regarding the contractor's planned versus actual resources and

productivity. Specifically, disputes emerge over whether the contractor adequately manned the project. The manpower plan is an important component in evaluating that issue. A detailed original manpower plan shows the amount of effort the contractor expected to expend per period and can be used to help assess planned productivity rates, which is needed to help quantify productivity variances.

BASELINE COST BREAKDOWN

Many contract documents include a schedule of values and provide insight into the planned cost of construction for each scope of work on the project. In addition to the schedule of values, the contractor should prepare a baseline cost basis document detailing the material, equipment, and direct labor required for construction and the indirect support for the project staff, detailing the sources and assumptions used to develop the cost baseline. The material cost detail should include material quantities, cost, and the expected installation hours. The equipment cost detail should include equipment types, cost, and expected duration of equipment usage. The direct labor cost detail should include a list of expected manhours and costs by subcontractor or trade. The indirect cost detail should include a breakdown of temporary facilities, staff, and the like, including durations and period costs. This detailed cost breakdown information should be included regardless of the contract structure. In the event the contractor is unable to prepare a detailed cost breakdown, the contractor should prepare documentation that justifies the contract price.

At times, construction projects will experience cost overruns on many different scopes of work. These overruns are often discussed during dispute resolution. When cost overruns occur on a project and are the subject of disputes, it is important for the parties to be able to determine what specific components of these scopes of work experienced a cost overrun. The contractor's baseline cost breakdown can be compared to the actual costs incurred on the project and can help the parties isolate primary areas of cost overrun. By isolating the primary areas of cost overrun on the project, the parties can engage in informed, directed discussions regarding responsibility for the overrun and avoid becoming bogged down by the sheer number of cost categories on the project.

CONTRACT EXECUTION DOCUMENTATION

Contract execution documentation refers to any documentation after the contract is executed through the contract close-out. This documentation includes items (1) the contractor is contractually obligated to produce, (2) related to the contractor's planning and management of the work, and (3) for measurement of the contractor's performance against the baseline plan or contract. Sometimes, the contract execution documentation can fall into multiple categories depending on the contract. The contract execution documentation records what happened on the project throughout the contract, which can be compared to the planned construction performance. Deviations from the planned construction performance often provide the basis for construction claims. Additionally, contract execution documentation can be used to document issues and impacts arising on the project that may be discussed during dispute resolution. The contract execution documentation discussed below includes:

Compliance Documentation

Activity and Communication Documentation

Performance Data Documentation

COMPLIANCE DOCUMENTATION

Most contracts require documentation of various items be developed and issued by the contractor on a regular basis to demonstrate contract compliance, document work performed, inform the owner of activity and issues, support progress payments, and manage scope development. Both owners and contractors should retain this documentation

over the life of the project to help manage the contract and address disputes when they arise.

Compliance documentation typically includes:

- ✓ Submittal documents and submittal logs – Submittal documents and submittals logs include documentation of what the contractor intends to install, when documents were submitted, when documents were approved, comments made by the owner or reviewer, and related information. This documentation can be used to determine (1) if the contractor is complying with the contract, (2) if the owner adjusted the scope through the submittal review process, and (3) if submittals were submitted and approved timely or in accordance with the contract.
- ✓ Project schedule updates (native and PDF form) – Project schedule updates document work completed to date and forecast the plan to complete the balance of work. The updates should include a narrative describing any significant events that occurred during the previous update changes in the schedule activities and logic, and variances in the milestone forecasts. Project schedule updates, when compared to the project baseline schedule, allow the contractor to compare the planned and actual project performances and can help determine what scopes or area of work delayed the project [5]. Delays that are explicit in the project schedule updates can help the parties more quickly resolve disputes; instead of discussing whether or not the specific delays occurred, the parties can focus on determining the causes and apportionment of the delay.
- ✓ Payment applications – Payment applications may document actual costs, percent complete, and work performed, depending on the contract basis for progress payments. This documentation should include all relevant backup to substantiate the requested payment amount. Any owner disputed or rejected amounts should also be documented with the approved payment applications. In some situations, the payment applications can be used to help substantiate actual work performed and approved for each period and to measure overall progress and progress by trade.
- ✓ Change order requests, proposals, and logs – Change order proposals should include documentation of all change orders requested by the owner, including those that may have been indirectly requested through other means such as RFI responses or submittal reviews, and all back-up information to substantiate the cost and schedule adjustments included in the proposal. This documentation can be used to trace the evolution of changes and overall scope on the project. It also serves as back-up to the executed change orders on the project. The logs can help assess the status of open changes throughout the life of the project and document how long it takes each change to go through the process of proposal, review, and resolution.
- ✓ Executed change orders and executed change order logs – Executed change orders are useful in dispute resolution discussions because it helps the parties “memorialize and explain agreed-upon modifications to the contract” [3] [5]. Change order requests and proposals can be compared to the executed project change orders to determine the total cost and scope of the change estimated by the contractor to the total cost and scope approved and executed by the owner.
- ✓ Inspection reports – Inspection reports help document when work was complete and inspected for conformance to the contract requirements. Inspection reports identify unacceptable work and may describe the quality issues. These reports can be used to assess quality issues and status of work.

ACTIVITY AND COMMUNICATION DOCUMENTATION

Throughout the execution of work, both owner and contractor should document activities, events, and

communications that occur on the project. Both parties should prepare daily reports, project correspondence, meeting minutes, and documentation of issues, actions, verbal or written instructions, and agreements as appropriate. Contractors should also prepare weekly and monthly reports. As with compliance documents, both parties may be contractually obligated to produce these types of documents [1]. However, activity and communication documents are very important during dispute resolution discussions and should be prepared by the contractor and/or the owner regardless of the contract specifications.

Activity and communication documentation includes:

✓ Daily reports - Daily reports typically document a significant amount of data about each day's activities, including weather, workers on site by contractor, subcontractor or trade, equipment on site, activities being worked on, problems or delays on site, constraints, material deliveries, instructions or directions issued, and visitors [1] [6]. Daily reports can be an important part of the evidence presented in dispute resolutions because ultimately, daily reports present the as-built conditions of the project [6]. Specifically, daily reports can be used in claims for "labor and equipment use, labor and equipment relocations, out-of-sequence work, disruption, change order time verification, and project delays of all types" [6]. However, the production of daily reports is often viewed as unimportant to supervisors and project management and daily reports are often prepared without adequate detail [6]. Daily reports should be "readable, concise.. [and] should include all significant activities that occur on the daily shift" and should be prepared by the same employee or group of employees over the course of the project [6]. Additionally, "all key project personnel, such as foreman, project engineers, and project managers should...maintain personal daily logs...to facilitate this effort" [1].

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✓ Weekly and monthly progress reports – Weekly and monthly reports, prepared by the contractor, are typically high-level overviews of progress on the project. These reports identify work performed, outline planned work for the coming period, and highlight issues currently impacting the project. The information included in weekly and monthly reports is often used by the contractor and owner to demonstrate whether an issue impacted a specific scope of work or delayed the project. These reports also often include cost and progress data that can be used to assess performance and schedule variations.

✓ Project correspondence, including letters, emails, and transmittals - All project correspondence should be retained to help document the formal communication that occurred between the parties. Project correspondence is often used to help record the timeline of events, commitments, and directions given over the course of the project.

✓ Meeting minutes - The contractor is often tasked with keeping meeting minutes for regular meetings with the owner, designer, and subcontractors over the course of the project. All parties included in these meetings should retain a copy of the minutes and provide comments on additions or corrections as needed to provide a complete record of the meeting. If the contractor is not willing to incorporate all comments, owners may want to keep their own meeting minutes as well. Meeting minutes are often used during dispute resolution to demonstrate issues, direction, and commitments by parties.

- ✓ Project photographs and videotapes - Project photos and videotapes can be very helpful in dispute resolution discussions as they can help to document as-built progress and are often “the best evidence of defective work or problem conditions that are cured or covered up and cannot be viewed later” [1]. Too often on construction projects contractors or owners identify defective or incomplete work only for the evidence to be erased once a claims situation arises. Project photos and videos memorialize defective or incomplete work, provide a clear image of the issue, and “help in documenting the exact factual situation” [5]. Information included with project photos and videos should include date taken, conditions depicted including references to broader project delays or issues, anyone present, and the photographer [1].
- ✓ Documentation of issues, actions, verbal, or written instructions from owner to contractor, from contractor to subcontractor, and agreements between parties – Events that occur on a project or verbal communication that is important to the management of the project are often not documented. Both owners and contractors should take the time to document these events or communications and share them with the other party. Documentation of events should include a record of what occurred and the perceived impact of the event. Verbal communication documentation should include the substance of the communication between the parties and a confirmation that both parties agree as to what was communicated. This documentation can be used to resolve disagreements that arise during dispute resolution discussions.
- ✓ Requests For Information (“RFIs”) and RFI logs – RFIs and the responses to RFIs are often used to analyze design issues and developments. RFI logs can be used to analyze timely submissions and response times, which may be a factor impacting the contractor’s performance.

PERFORMANCE DATA DOCUMENTATION

The contractor often collects performance data to help assess how the work is progressing and if the contractor is performing at, above, or below the plan in each area or discipline. In some cases, the contractor is contractually obligated to produce this type of information [1]. Performance data documentation helps contractors manage the work and can help identify performance issues early, allowing the contractor to timely address impacts and issues. Performance data documentation is also important during dispute resolution discussions and should be prepared regardless of the contract requirements. For example, the actual cost expended per period can be compared to the baseline plan cost tracking per period and can help the parties determine in what phase(s) the project experienced a cost overrun. By determining when the cost overrun occurred, the parties may be better able to discern (1) why the cost overrun occurred and (2) which party was responsible for the cost overrun.

Performance data documentation includes:

- ✓ Actual manhours expended per trade per period – The actual manpower data should include a breakdown of manhours by trade class (journeyman, apprentice, etc.) and by area or type of work (3rd floor, mechanical room, hanging conduit, pulling wire, etc.) where possible. This detail is critical to assessing event impacts in areas or by phase of work. The actual manhours expended by period can be documented in either a separate manhour log or be included in daily reports or payment applications.
- ✓ Quantity tracking per trade per period – The actual quantities installed per trade or subcontractor per period is a strong measure of actual work performed. This data should include a breakdown of quantities by area where possible. When compared by period, quantities installed combined with actual manhours can indicate actual productivity by trade or subcontractor in an area or by type of work. The quantity tracking per trade by period can be documented in either a separate quantity tracking log or be included in daily reports or payment applications.

- ✓ An Earned Value (“EV”) system or similar tool for measuring progress – Most contractors should implement an earned value measurement system on projects whenever possible. While it does require some effort to implement and maintain, the value derived can be greater because the contractor is able to better analyze and demonstrate performance. An EV system establishes a planned performance baseline utilizing the planned material quantities and associated manhours. The actual manhours and quantities installed are then compared against the plan to provide a detailed measure of progress and productivity that can be rolled up to an overall measure of project progress and performance.
- ✓ Actual cost tracking per period – Tracking actual costs per period, along with the details associated with those costs can be used to analyze changes in labor, material, and equipment rates that may be due to escalation, delays, or other events that impacted project costs. Labor rate changes, costs for premium work, material pricing, indirect facility costs per period, and other information can be derived from this data. The detailed, actual cost tracking per period is a key input to calculating costs for changes, delays, and other impacts.

ISSUE FOLDERS

Another recommended documentation practice is to create a folder for each issue that arises during the project. Both owners and contractors should maintain issue folders to help consolidate documentation related to issues that may become part of a dispute. Issue folders should be created when an issue is first identified and should include copies of any documentation, including but not limited to correspondence, meeting minutes, and field work reports that provide information related to that specific project issue. Therefore, when it is time for the owner and contractor to discuss the issue, both parties will have all the relevant information already collected. Collecting documentation in this manner can help bring a timely resolution to disputes as both parties will be able to quickly reference all communication and other information pertaining to the issue.

CONCLUSION

Establishing a comprehensive collection of documentation on the project as a part of a greater document control system is critical to helping all parties address and resolve any disputes in a timely manner and hopefully avoid formal claims. The responsibility for collecting this documentation does not just fall to the owner’s or contractor’s project manager but to everyone associated with the project, including those involved in the initial work to issue the RFP and prepare proposals to the individuals responsible for closing out the contract after the work is complete. The lack of proper documentation is often a key contributor to disputes on projects and can significantly prolong the time required to resolve the dispute. Adequate project documentation can help (1) resolve entitlement to compensation for a particular issue, (2) determine the causes of impacts on performance during project execution, and (3) quantify the actual impacts associated with the issues. While it does require effort to properly document the project, and some of that documentation may never be needed, the effort will be more than offset by improved management of the project and improved resolution of disputes that arise during the project.

REFERENCES

- [1] N. J. Sweeney, T. J. Kelleher, Jr., P. E. Beck and R. F. Hafer, Smith, Curie, & Hancock's Common Sense Construction Law, John Wiley & Sons, Inc., New York, NY, 1997.
- [2] J. J. Yanoviak, "Document Management For Construction Claims Prevention," AACE Transactions, H.6, AACE International, Morgantown, WV, 1989.
- [3] T. R. Overman, S. J. Smith, M. T. Kamprath and J. Cohen, "Proving Up Claims - The Proof Is In The Paper: Record Keeping For Effective Construction Claims," Under Construction, American Bar Association, Chicago, IL, 2013.
- [4] F. D. Clark, Applied Cost Engineering Third Edition, Marcel Dekker, New York, NY, 1997.
- [5] M. Stokes, Construction Law In Contractor's Language Second Edition, McGraw-Hill, New York, NY, 1990.
- [6] D. A. Pogorilich, "The Daily Report As A Job Management Tool," Cost Engineering, vol. 34, pp. 23-25, AACE International, Morgantown, WV, 1992.



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