

Definition & Purpose of the County Architect/Engineer



California Counties Architects and Engineers Association

DEFINITION AND PURPOSE OF THE COUNTY ARCHITECT/ENGINEER

CCAEA: This paper has been prepared by the California Counties Architects and Engineers Association (CCAEA) which is a statewide organization of County Architects and Engineers. The CCAEA was formed in November 1991 to share information, provide training and discuss common issues for the mutual benefit of its members and their counties. This paper grew out of the group's commonly held need to clarify the role of the County Architect/Engineer and to inform others regarding that role.

Purpose: To promote a better understanding of the role and qualifications of the County Architect/Engineer staff and their value in the delivery of professional, cost effective facility planning, project design and construction services. The paper describes what a County Architect/Engineer does, recommends qualifications for the County Architect/Engineer, and explains the benefits of the in-house professional staff.

Audience: The Paper is directed to the **employers;** County Supervisors, County Administrators, Department/Agency Directors, and **clients;** facility managers, user department/agencies, facility operations and maintenance personnel of the County Architect/Engineer. Because the audience may have varied experience with the subject matter, the paper includes discussion of basic ideas and principles as well as more technical information.

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Executive Summary

The **County Architect/Engineer** (County A/E) is an in-house County employee support service or function with specialized, technically proficient staff providing project management, owner's representation, and sometimes design services for facility planning, design, and construction projects.

Why have a County A/E: County governments have extensive facilities that continue to expand and change over time. To meet these changing facility needs, Counties must plan facilities, construct new buildings, renovate and remodel existing buildings, and install infrastructure. Construction projects are complicated and financially risky. Government projects are particularly complicated and risky because they must follow special regulations, are built with taxpayer funds, often involve highly specialized buildings such as jails and hospitals and must respond to functional needs in a political context. To protect the interests of County government and its constituents, it is imperative that staffs who are knowledgeable and experienced in public sector construction oversee these projects.

The County A/E provides this knowledgeable and experienced project oversight. Having this in-house expertise can:

- control and reduce project cost and time
- minimize County liability through effective project management
- provide better quality projects that meet the need of the users
- assure compliance with building codes and contracting laws
- minimize conflicts and misunderstandings during projects
- improve facility planning
- provide additional facility related services
- maintain records of projects and provide continuity
- develop & maintain on-going maintenance programs
- provide additional facility related services

County A/E services: Counties need a broad spectrum of facility related services including program management, comprehensive planning, design and construction document development, project management and other related services. All of these services can be provided by in-house County A/E staff.

Qualifications: County A/E staff need substantial training, knowledge and experience in public sector design and construction, and should have excellent communication and people skills. If the County A/E provides design services for construction they must be licensed in California. Professional licenses are not required for project management. Specialized County A/E staffs are most effective if they have authority and responsibility for implementing and completing projects and are centralized in the County organization in a position that makes consistent decisions about County wide facility planning.

What is a County Architect/Engineer?

The term **County Architect/Engineer (County A/E)** applies to any organization with specialized staff responsible for implementation and management of county facility construction projects. The term is meant to represent an in-house County function and not necessarily an individual.

Statewide, these organizations take on many forms, are located in different positions of County organization and provide a variety of services. The names of these organizations vary from county to county. They can be known as Architecture and Engineering Divisions, Construction Services, Capital Improvements, Facilities Planning and Development, Building Design, Facilities and Construction Management, or other labels. These divisions are usually under the umbrella of a central County organization or agency such as General Services, Public Works or County Administration.

The traditional role of an architect or engineer is to design and prepare construction documents for building projects. While some County A/Es provide these services, generally they provide services which differ from these traditional roles. And they include many services which are not usually provided by their colleagues in private practice.

Each County may have a different focus and assignment for their A/E but the principle and essential role of the County A/E is that of project manager and owner's representative for the planning, design oversight and construction of County facilities. In-house A/E staff can also provide program management, comprehensive planning, design, and other facility related services.

Why Have a County Architect/Engineer?

County governments have extensive facility needs. Almost every County service requires a facility. Justice needs courts, libraries, offices, and jails. Health Services need hospitals, clinics, labs, daycare facilities, residential treatment facilities, and offices. Social Services needs offices, training rooms, meeting rooms, and interview rooms. Support Services need mechanical plants, utility distribution, communication equipment rooms, shops, and server rooms, etc. There are multiple other facilities that Counties own and operate such as libraries, administration offices parks and recreation facilities.

Facility needs change over time. County functions are dynamic. They are constantly changing to meet changing demands. County populations grow and change demographically. Funding and budgets fluctuate. New services are provided while other services stop. As a result County departments hire new staff, lay off existing staff, add or change equipment, and change the way they do business. Buildings often must change to meet these changing functions. New space is needed, old space must be remodeled, more power must be provided, heating and air conditioning must be expanded. These changes are not necessary to support the intended function, but an

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outdated facility can adversely affect staffing, operations and maintenance costs and impede effectiveness of service delivery.

Even if County functions do not change, buildings undergo change by themselves. Building parts (equipment, roofs and finishes) wear out and must be replaced or repaired to remain functional. Laws that relate to buildings and their use change, resulting in repairs and improvements, such as seismic strengthening, access improvements or hazardous materials abatement. To meet these changing facility needs, Counties must construct new buildings, renovate and remodel existing buildings, and provide infrastructure for their operation.

Construction is complicated and financially risky. Construction projects are unique and one-of-a-kind productions. A construction project is a result of an idea that ends with a physical structure. Such buildings do not have the benefit of being mass produced but must be tested and refined as they are developed. The design process involves many parties. Estimates and bids are developed using the best information available, but the best information is never complete. There are hidden conditions and unexpected events in every project. Budgets are set, and contracts are executed without complete information, and as more information becomes available, more costs are uncovered. The responsibility to pay these costs is the risk of doing construction. Simply put, construction projects are complicated, costly and risky.

Government projects are particularly complicated. While County projects come in all sizes and costs, many County projects are the most expensive construction undertakings of the community. Not only are they often large projects involving many different people and organizations, but they must also meet special requirements:

- Government projects must follow special regulations, codes and state laws for consultant selection, specifying materials and systems, bidding, contracting and procurement.
- With few exceptions, most County projects must be competitively bid and the contractor with the lowest bid is selected for the project. This method of procurement encourages competitive costs but it can also raise conflicts between quality and costs, and can create disagreements between the contractor and owner over what is included in the project.
- The use of taxpayer funds demands that County projects demonstrate close accountability and are often subject to close scrutiny by the public, press and special interest groups.
- Many County projects are relatively unique and complex in the construction industry - jails, juvenile halls, hospitals, courts, crime labs, emergency operation centers, airports, etc.
- Most County facilities are expected to have a useful life that exceeds buildings built in the private sector. Consequently, they are often viewed over time as historically significant community assets that reflect the values and standards of the community in which they reside.

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These conditions make it imperative that a person or group of people knowledgeable and experienced in public sector construction projects oversee the process to protect the interests of County government and its constituents.

The County Architect/Engineer performs an in-house County service and provides knowledgeable and experienced oversight of construction projects.

Construction is a specialized industry with its own laws, language, procedures and processes. Projects normally require the services and involvement of several different groups of people: owner, user, designer, code enforcer, manager and builder. Each of these groups has different interests in the project. The objective of a successfully completed project is common to all, but interests differ in areas of design, cost and profit. Each group needs to be knowledgeable and experienced in the design and construction industry to protect its interests. The owner is no exception. The in-house, specialized County A/E provides the knowledge and experience to protect the owner's interest. This in-house service can also save cost and time, provide continuity of service, establish "institutional memory", help avoid project failures and provide other benefits to the County.

The degree to which the County A/E is beneficial to the County depends on the quality of the organization and the individuals in it. The level of performance relies on how these A/E organizations are structured, how they operate, how they interface with other organizations, how well they are managed, the level of funding allocated to support the County A/E function, and the competence of the individuals who do the work. However, in principle, the County A/E offers the greatest advantage to the County including:

Reduce Project Cost and Time. All projects, public and private, have three basic elements: Process, Product and Cost. The common objective in all projects is to build the best product when it is needed for the least cost. In pursuing this objective, large private companies with many facilities have found that in-house specialization and standardization can reduce the cost and time of the process, and improve the quality and consistency of the product. Public projects have a fourth element - public policy. Public projects must be done within the limits of, and must promote, public policy. Public policies become standards, laws, codes, ordinances and resolutions in order to assure fairness in the process and accountability to the citizens. This adds to the time and cost of the process. Within these project elements, in-house A/E staff can reduce the time and cost of the process by:

- being familiar with County policies and procedures, County facilities and their conditions, and Public Contract Codes, which reduces the learning curve, allows a more efficient use of the system, and expedites the process;
- establishing procedural, design and space standards that are specific to County requirements which can reduce the time and cost to implement projects and provide consistent facilities County wide;
- providing cost effective and consistent administration and quality control of outside consultant contracts, bidding and construction;
- identifying and using alternative project delivery methods which are consistent with County regulations and policy.

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Provide a Better Project. In-house staff lives with their work and develops long term experience with it. They have direct knowledge with ongoing building management and operation. This experience creates a life cycle understanding of the work, which leads to the design of better products and develops a stewardship attitude “whoever builds it should maintain it”. In-house staff also understands owner/user constraints and can put conditions on projects to meet them, such as off hours work and special protection.

Assure Compliance with Building Codes and Contracting Laws. County staff becomes specialized in public sector construction codes and legislation, and they can promote a consistent approach to codes and an ongoing relationship with enforcement agencies.

Minimize Conflicts and Misunderstandings During Projects. In-house construction expertise that is familiar with the County organization, personnel and policies can help span the communications gap between the construction industry and government, and can help avoid conflicts and controversies between the users and the rest of the project team. Central control of projects within the County also promotes communication and consistent resolution of issues. The County A/E function is often the front line of liability prevention for the County.

Improve Facility Planning. Another important function that the County A/E can provide is facility planning. In-house specialists with facility planning experience can be of significant value in the long range planning of facilities, and the initiation and formation of projects. County governments need to translate their operational problems into facility solutions, and package the facility solutions into projects. An in-house planner with design and construction experience and familiarity with the needs, operations and culture of the County organization can provide this translation in an efficient and timely manner. In-house planners are experienced in defining problems, evaluating options and forming visions for the future. These skills are valuable to Counties not only for facility planning but for strategic and operational planning. County needs are constantly changing as their operations grow, reorganize or shrink. Coordination of these changing operational needs with overall facility needs is critical for cost effectiveness. In-house facility planners that have an understanding of the facilities and a long range vision for them can provide this coordination.

Provide Additional Benefits. The County A/E can also provide additional benefits to the County such as space planning, project design, move coordination, hazardous materials management centralized organization of construction documents, maintaining current record documents of ‘as-built’ conditions, and other related services.

What the County Architect/Engineer Does

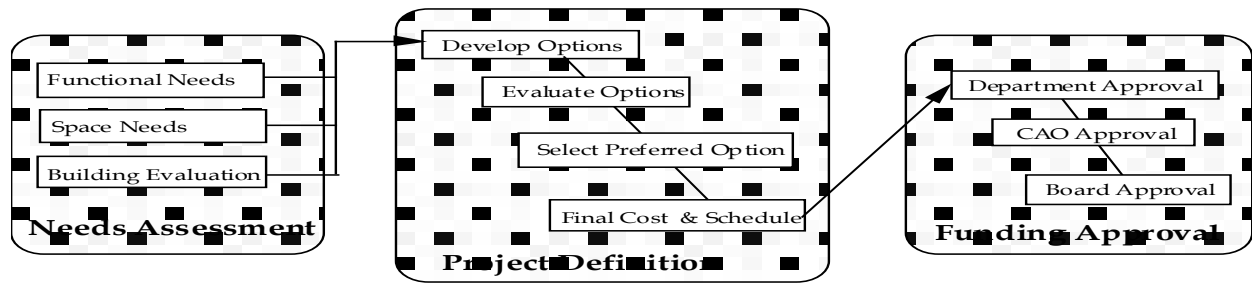
The County A/E can provide a variety of services to the County, but the principal, essential functions are owner representation and project management. To understand the County A/E’s role as owner’s representative and project manager it is first necessary

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to discuss facility projects in general. In the context of this Paper, “project” includes the tasks, services, design, studies, labor, materials and administration necessary to initiate, develop, and complete a construction project at a County facility. The “facility” that is the focus of the County A/E is typically a building and associated site improvements used for County programs and services such as offices, courts, jails, hospitals, and other building types. Roads, bridges, water systems, flood control and major utilities are not typically but can be included. Projects for these facilities involve similar services and activity, but they are usually managed by a different branch of government, using a different set of codes.

Construction Project Tasks. All construction projects involve the same kinds of tasks regardless of their size or cost. For instance, while installation of a new cabinet may be straightforward, construction of a high-rise building requires a needs assessment, planning, feasibility studies, funding, designing, constructing, move-in coordination and project administration. Obviously, these tasks become more complex and extensive the larger and more complicated the project is. These typical tasks can be grouped into two phases – Project Formation and Project Delivery – as shown here.

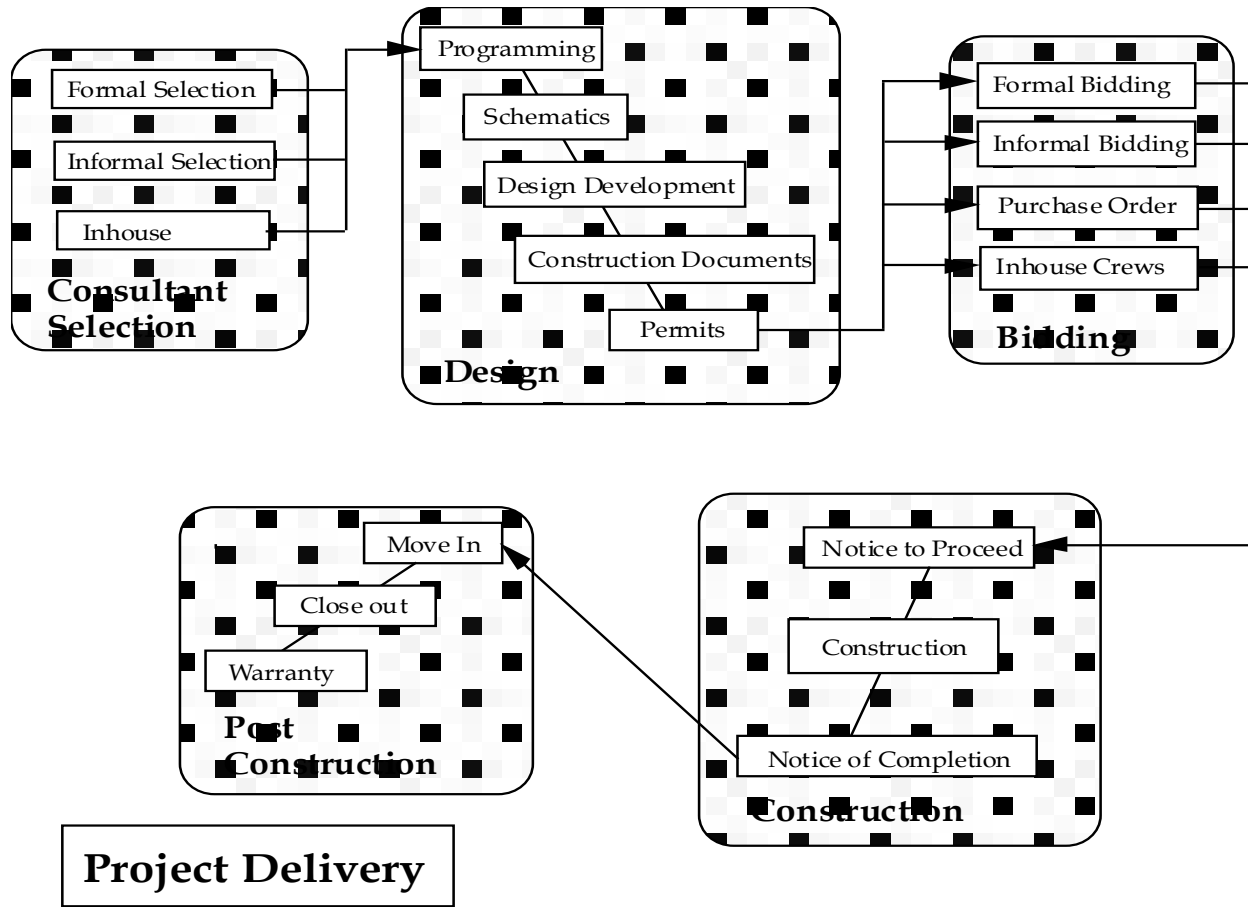
- 1. Project Formation.** This phase of the project defines the problem, determines the solution, packages the project and gets it approved and funded. It involves tasks such as needs assessment, programming, master planning, project definition, conceptual design, cost estimating, budgeting and funding approval. These tasks are usually done in three sub phases:



Project Formation

- 2. Project Delivery.** This phase implements the project that was conceived in Phase 1 and results in the final design and construction of the scope of work. It includes tasks such as design, documentation, permitting, bidding, construction, furniture and equipment procurement, and move-in. The Project Delivery diagram represents the traditional –Design-Bid-Build delivery method. Other delivery methods are possible. An in-house County A/E can help determine if these other methods can save cost or time, and if they are consistent with the County’s regulations and policies.

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Construction Project Roles. Every construction project has several roles that must be filled. If a homeowner installs a new kitchen they probably do not realize that they are acting as the owner, user, designer, manager and builder. Nonetheless, they are playing these roles in order to accomplish tasks necessary for construction. If they have added a contractor to the project, they also become project manager. Larger projects involve more people, but the roles remain pretty much the same.

In large projects, each role is played by a different specialist or group of specialists. Each specialist has a different focus and different responsibility, but their work relies on coordination of the other specialists. While they all share the common goal of a completed project, they have individual professional or financial objectives that sometimes differ and even compete. The success of the project depends on the teamwork of these people. The leadership of this team is provided by the project manager, which is a primary role of the County A/E. The other primary role of the County A/E is to act as the owner's representative.

Owner's Representative. The most fundamental role in any construction project is that of the owner. Obviously, without the owner the project would not exist. The owner has the need for the project and the funds to pay for it. In County projects, the owner is not an individual but several different groups of people. The ultimate owners are the

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County citizens. They delegate their ownership responsibilities to a Board of Supervisors who hire a County Administrator to manage the County's business and funds. The need for the project is determined or requested by a functional department of the County such as the Sheriff or Social Services. These departments are also part of the owner's team. Often the part of the owner's team that provides the funding isn't the same part that defines the needs. In addition to the owner's team, there are many other stakeholders that will be affected by or have involvement with the project. And, of course, the multiple consultants and contractors involved with delivering the project.

With so many people and interests involved in a project, it is practically impossible to accomplish the project without having a single point of contact to act as the owner's representative. An owner's representative is the person that speaks on behalf of the owner during the various phases of a project – planning, design, bidding, and construction. They act as a channel for the owner's direction and oversight to the project team so that the interests of the owner are understood and met. Many in the process can act as the owner's representative including the user, the project manager, the architect, and even the contractor. However, the most effective owner's representative is one who works directly for the owner, has knowledge and understanding of the construction industry as well as the owner's needs. For County projects, the County Architect/Engineer is an ideal position to act as the Owner's Representative.

Project Manager. In a construction project, someone has to estimate the costs, establish the budget, organize the project work plan, schedule the work, hire the consultants and contractors, administer the various contracts, manage the budget and schedule, make sure that rules and codes are observed, keep people informed, coordinate the various tasks and players, get answers and assure the successful completion of the project to meet the needs of the user and the financial requirements of the owner. This is the role of the project manager. The project manager is to the construction project what the director is to an orchestra. Given the complications and risks of County construction projects, it is essential to have strong, specialized and competent project management that understands the County organization and needs, and has experience and training in construction and is knowledgeable of the many laws, codes and rules that apply to construction in the public sector.

Qualifications

General Qualifications. The most effective County A/E staff has general skills that are similar to many other positions. They should be creative thinkers and doers; talkers and listeners and most importantly, good communicators; leaders who can follow and understand that the customer deserves superior service; patient but assertive; visionaries with a firm grasp of reality and what is technically feasible within established time and money constraints. It cannot be overstated how important –people skills are to performing the role of the County A/E. The job involves constant interaction with people - administrators, users, consultants, contractors, lawyers, realtors, insurers and code enforcers. The County A/E must be able to work with many personalities individually

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and in groups. Their success relies on their ability to communicate, understand and lead.

Specialized Qualifications. It is essential that in-house County A/E staff have training and experience in design and construction. They need to understand the technical language, means, methods, techniques and theory of the design and construction industry in order to effectively understand what is going on and adequately protect the interests of the County. This experience can come from several different sources. Architects, engineers, contractors and construction managers are obvious candidates for this kind of work. But other, less obvious candidates have also proven to be effective County A/E staff. It depends on the person, their ability to do the work and act as a County advocate, as well as the role that the County needs or wants filled.

Licenses. Does the County A/E require a professional license? This question has several aspects including some legal implications. State law requires that the practice of architecture and engineering be done by licensed professionals. Generally, this means that the person designing a building or structure for construction have the appropriate California license. However, design is usually a small part of the function that the County A/E performs or oversees. Project management and owner representation are the primary tasks of the County A/E and these services do not require a license. Very effective performance has been provided in these areas by unlicensed individuals.

We have used the term County Architect/Engineer throughout this paper to represent the position providing the in-house services. A professional license is not required to provide many of the in-house services associated with the County Architect/Engineer. If the position has the title of architect or engineer, and/or if the organization provides design services, then a license is required. The CCAEA believes that the in-house services should cover a full range of experience and roles, and that a licensed professional on staff provides a level of experience and training that completes this range and allows the County flexibility that it would not otherwise have.

Summary

In summation, the County A/E can save money and time for the County while minimizing the County's liability, exposure and risk during the planning, design and construction of necessary projects required to deliver County services. The County A/E can lead by being a visionary, planner, creator and practical realist that understands the full range of needs and services provided by the County and responds by producing projects that are optimally designed to support the County's service delivery needs. In this manner, the County A/E not only builds structures, but tangibly contributes to strengthening the community in which the project resides.