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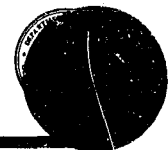
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Jail Construction in California

by Norma Phillips Lammers and Mark O. Morris

This *Bulletin* focuses on the State of California's program to fund construction of county jails. The crowded conditions and deterioration of facilities that gave rise to the California program are jail problems shared nationwide. Lessons learned in California about jail planning, design, and construction have nationwide applicability.

California assists its county jails

Tax restrictions such as Proposition 13 have made it very difficult in California

for local jurisdictions to fund major capital improvements. When faced with a growing crisis in the jails, the State stepped in to help, stimulated by reports from county officials and the Board of Corrections on increasing problems.

The California Board of Corrections promulgates nonmandatory jail standards, inspects local jails, and reports to the legislature on conditions in local corrections. In its 1980 report, the Board cited the following statewide trends and findings:

- Forty percent of the jails were crowded. (By 1988, this had increased to 69 percent.)

- A shortfall of 9,000 local jail beds, statewide, by 1986 could be forecast from even the most conservative population projections. (In actuality, the shortfall grew to 11,000 beds, despite construction of 6,000 beds between 1980 and 1986.)

- Half the counties were involved in litigation or operating under court orders and consent decrees.

- One-third of the facilities were more than 40 years old and dilapidated, outmoded, or both.

- More than one-fifth of the jails had court-ordered population caps.

From the Director

Federal and State prison population has risen 115 percent since 1980 to a current total of 700,000. Local jail populations now total nearly 400,000. These increases have outstripped available corrections capacity. And the probation and parole population has swelled to 2.7 million, creating unmanageable caseloads in many jurisdictions.

Today, prison and jail capacity is severely lacking in many States and localities. Federal, State, and local authorities are searching for practical, cost-oriented information on more efficient methods to increase corrections capacity.

The *Construction Information Exchange* of the National Institute of Justice responds to that need. The Exchange provides easy access to the latest concepts and techniques for planning, financing, and constructing new prisons and jails. State and local officials can tap into this valuable network and obtain the right information in a readily understandable form through the *Construction Information Exchange Data Base*, the *National Directory of Corrections Construction*, and *Construction Bulletins*.

The *Construction Information Exchange Data Base* is an up-to-date information resource on more than 260 jails and prisons built since 1978. The data base, which is regularly updated, offers detailed information on each facility, from construction costs and financing methods to staffing levels and operational costs.

The *National Directory of Corrections Construction* is a resource document providing the same wealth of information on facilities in hardbound form. The Directory includes floorplans for typical housing units for most facilities and lists the administrators, sheriffs, architects, and other professionals who have recently completed a prison or jail project.

Construction Bulletins are case studies of critical corrections issues and selected construction projects that demonstrate new building techniques and report time and costs savings.

This *Construction Bulletin* reviews a California program to provide much-needed jail construction, a need that exists throughout the country.

In California, jail construction is a county-State partnership. The State Board of Corrections provides nonmandatory jail standards and strong financial support for county jail building initiatives. During the 1980's, California State government disbursed more than a billion

dollars to counties, many of which had been ordered by courts or fire marshals to close jail facilities.

This *Bulletin* shows how the State-county partnership experiment has provided the State with a wide variety of cost-saving methods that have enabled California counties to replace old, dilapidated structures and significantly ease, if not solve, crowding problems.

There is a growing consensus that the ability to adapt specialized building technologies from one context to another is the key to building corrections facilities that wisely use a jurisdiction's dollars to accommodate expanding inmate populations.

Through NIJ's *Construction Information Exchange*, State and local officials can profit from innovative construction approaches that incorporate techniques from widely different technical fields. By building on the experience of others, they are in a much better position to build well-designed jail and prison facilities that will reliably serve the unique needs of their jurisdictions in the long term.

Charles B. DeWitt
Director-Designate
National Institute of Justice

The litigation, deterioration, and crowding all continued to grow at an alarming pace—and so did construction costs. In response, four legislatures, two governors, and the general public demonstrated a remarkable consensus in striving to alleviate the problems with State-provided funds.

General obligation bond measures were authorized by majority votes in statewide general elections. A special committee of State executives, convened by the State Treasurer, manages marketing and sale of the bonds; the Board of Corrections administers disbursement of the funds to counties.

The County Jail Capital Expenditure Fund in California is, technically, a series of funds (figure A), totaling nearly \$1.5 billion, raised at the State level to support

Figure A

Funds for jail construction

Year	Amount	Measure
1980	\$ 40 million	legislation
1982	280 million	voter initiative
1984	250 million	voter initiative
1986	475 million	voter initiative
1988	410 million	voter initiative
Total	\$1.455 billion	

county jail construction. The fund began with a pilot-State funding project for \$40 million in 1980. This was followed by four consecutive general obligation bond measures—\$280 million in 1982, \$250 million in 1984, \$475 million in 1986, and \$410 million in 1988.

Allocation policies

If there was agreement on the need for State assistance, there was predictable disagreement on how that money should be allocated among California's 58 counties. In both the pilot project and the initial bond measure, the Board of Corrections was directed to base fund distribution on individual county needs and past efforts by the counties to solve their own problems.

An Advisory Committee assisted the Board in developing a set of weighted criteria for ranking county proposals (figure B). Although there was some disagreement about these rules, they were generally seen as reasonable.

The Board then received applications for over \$600 million in projects. With only \$280 million to allocate, the Board adopted a policy of fully funding the top-ranked counties, rather than diluting the impact by giving something to everyone. (This same policy was adopted by the State of Washington in distributing its bond funds.) An exception was made for counties whose requests were under \$1 million: \$25 million was set aside for their requests.

Counties slated for substantial awards wholeheartedly endorsed this policy, but counties that were left out naturally regarded it as extremely ill-considered. The California legislature responded in 1984 to the protests of unfunded counties with an additional bond measure for \$250 million in order to fund nearly all requests. Funds from the two most recent bond measures, 1986 and 1988, are allocated based on identified needs.

Planning requirements

Board of Corrections policy also encouraged counties to determine their own jail construction priorities and the number and type of beds needed. The Board required counties to complete a thorough needs assessment and planning process to support proposed projects.

County criminal justice committees were set up to examine and reexamine jail mission statements, local incarceration practices, alternative programs to jail, and jail population projections. While some local officials thought these requirements burdensome, the projects

eventually proposed were generally well-grounded. In several cases, the final projects represented jail designs and jail administration philosophies significantly different from those originally anticipate

Beds added

In all, the \$570 million in funding raised from 1980 to 1984 will result in construction of about 14,400 jail beds in California. Nearly 3,000 will replace existing facilities—many of which were under court or fire marshal orders to close. Table 1 (pp. 3-7) summarizes the projects counties have defined using these State funds.

The counties have not yet completed planning for the additional projects undertaken with the latest funding allocations of \$885 million. Initial estimates are that the 1986 funding will result in another 10,500 new beds and 3,600 beds replaced. No estimates are available yet regarding the 1988 bond measure.

In addition to beds funded by the State, counties have constructed over 10,000 beds with local funds over the past few years.

Crowding continues

Jail populations in California are increasing more rapidly than the additional bed space. Jail populations doubled in the decade from 1976 to 1985, and the rate of increase has shown no sign of slowing in the last 4 years.

Figure B

Board of Corrections criteria for ranking funding requests for 1982 bond proceeds

A. Degree of Need

1. **Crowding: 102 points** (with subtotals for present and future crowding as represented by numbers and percentages).
2. **Facility Problems: 125 points** (including fire and life safety 40 points, dilapidation 50 points, and other problems).

B. County Efforts To Solve Jail Problems

1. **Alternatives to Incarceration: 67 points** (with subtotals for specific programs and for "system performance" measures such as incarceration rates).
2. **Other Past Efforts: 50 points** (included past capital expenditures compliance with minimum jail standards, quality of planning, and readiness to proceed).

In 1984, there were roughly 9,000 more prisoners than "rated" beds (i.e., allowable jail capacities given California Minimum Jail Standards). By 1988, the disparity had grown to about 20,000 more inmates than beds.

Despite the addition of about 30,000 beds between 1984 and 1990 (figure C), the most optimistic estimates are that in 1990, there will be at least 72,000 inmates in local jails—still at least 7,700 more than the beds available. Projections are that jail populations could grow to nearly 98,000 by 1995 if current trends continue.

Design alternatives

As a result of the funding program, California is developing considerable experience with all varieties of jail construction. New projects range in size from Los Angeles County's multi-facility program for over 5,000 beds and Alameda County's 2,000-bed facility to small additions to existing jails in Calaveras, Tuolumne, and other counties.

The facilities under construction cover the entire range of facility types. Several counties—for example, Sacramento, Riverside, and Santa Clara—are building high-rise, high-security facilities in urban settings. Other projects—in Alameda, Los Angeles, and Kern Counties, for example—have "campus" configurations: low-rise with component structures of various security levels spread out over less constrained sites.

While most of the new facilities are free-standing, several counties are adding capacity to existing facilities. San Diego and Plumas Counties are examples of this approach to a large and a small jail.

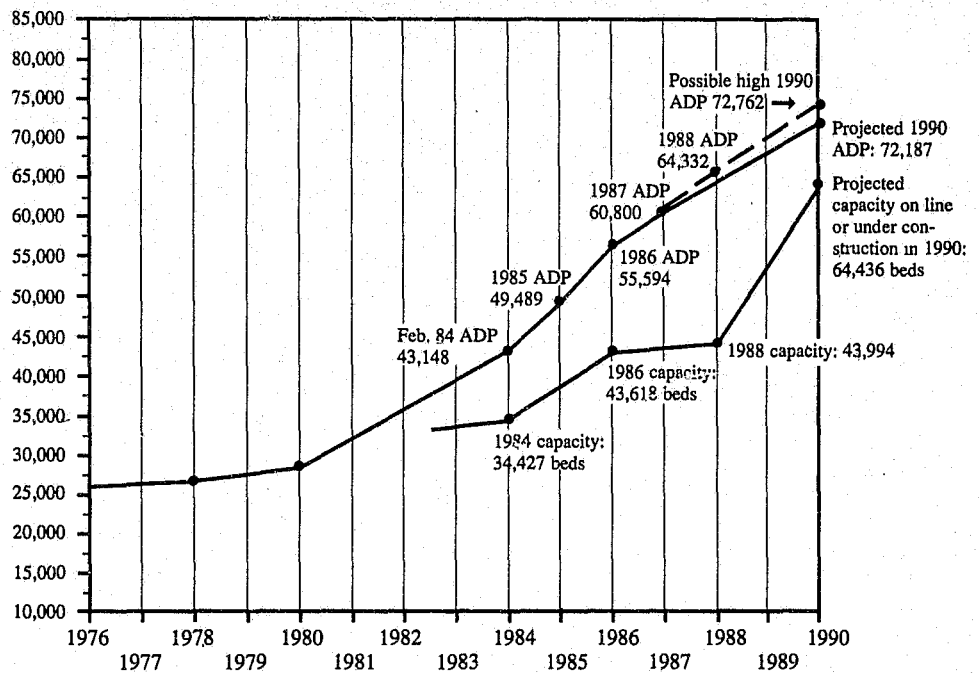
New approaches

Almost all the new jails incorporate progressive design concepts. Housing modules are arranged around central officer stations; a high ratio of cells are for single occupancy. Particularly in facilities for sentenced prisoners, counties are developing various strategies to provide manageable living units and some degree of individual privacy without the high cost of single cells.

In Los Angeles, for example, dormitory areas are subdivided by partial partitions. In Contra Costa County's new sentenced facility, inmates will be

Figure C

Jail population trends in California 1976 through estimated 1990



Sources: Board of Corrections surveys of county jail populations, 1982-1987; and Board of Corrections inspection reports, 1976-1986

Table 1

County jail construction projects in California (1980, 1982, and 1984 funding)

County	Description	1988 ADP ^a	% ADP exceeded rated capacity
Alameda	a) Renovation work b) New facility expanded by 435 beds—to replace old 1,533-bed facility	2,871	24%
Alpine ^b		0	
Butte	96-bed work furlough facility	303	10
Calaveras	Minimum-security housing and renovation	50	
Contra Costa	New 576-bed medium/minimum facility	1,296	88
Del Norte	Construct exercise yard	68	6
El Dorado	New facility to add 114 beds and replace 78	207	58

continued

^a The average daily population data are from annual jail profile summaries submitted by the counties to the Board.

^b Alpine and Sierra Counties have no jail facilities. They contract with other counties to hold prisoners.

provided individual rooms; however, in hope of reducing costs, toilets and showers will be centralized.

The California experience also encompasses a wide variety of construction techniques. In addition to traditional poured-in-place concrete construction, counties are using tilt-up and precast concrete techniques. Santa Clara County's new Hall of Justice is a high-rise facility using precast concrete walls and floors on the upper levels. Glenn County is using prefabricated perforated cell fronts. San Francisco County constructed dormitory-style housing units designed to be converted at a later date to single cells.

Construction costs

Given project variations, costs also vary. Among recently constructed jails in California, typical construction costs ranged from \$6,400 to \$81,851 per bed. The lower figure was for a dormitory constructed in a rural area with support services (kitchen, laundry) already on the site. The higher cost was for an urban, full-service, high-security facility, with an adjoining intake-and-release facility serving the entire county. The average cost for the 36 new jails built in California from 1985 to 1989 is \$51,362 in 1990 dollars.

Figure D (page 8) lists contextual factors that can be expected to influence overall project costs. Figure E (page 10) represents the typical construction elements for a 100-bed housing unit and identifies the typical percentage each element contributes to the total cost of that unit.

The California Board of Corrections is now developing a variety of resources that summarize and build on this new experience in jail design, construction, and project management. The following sections of this report detail some of the main lessons so far.

The lessons to be learned

A jail construction project is complex and perplexing. In California counties, as in most jurisdictions, corrections, public works, and county executive officials typically build a jail for the first time in their careers. Following are some techniques that are basic to managing jail construction projects despite inexperience:

Table 1 (continued)
County jail construction projects in California (1980, 1982, and 1984 funding)

County	Description	1988 ADP ^a	% ADP exceeded rated capacity
Fresno	Add 424 beds to main jail	1,670	62%
Glenn	Replace existing jail (61 beds) and add 1 bed	53	
Humboldt	Purchase city jail and renovate to add 22 beds	203	5
Imperial		337	
Inyo	Replace existing jail	67	46
Kern	New 672-bed maximum/medium security jail	2,260	11
Kings	New 128-bed minimum security facility	359	7
Lake	New jail; 72 additional beds; 72 replacement beds	123	71
Lassen ^c		56	37
Los Angeles	a) Renovations to various facilities, to expand housing capacity by 512 beds		
	b) New 2,100-bed male sentenced facility; new female sentenced 512-bed facility	21,867	72
Madera	Replace existing 192-bed main jail	259	8
Marin	Remodel and upgrade existing main jail; replace 7 beds	273	4
Mariposa	Renovate support areas and replace worn fixtures	24	26
Mendocino	Replace 38-bed pretrial facility; add 42 beds	199	38
Merced	New adult correctional facility; adding 163 beds and replacing 90 beds	475	76
Modoc		17	21
Mono	30 new beds	15	
Monterey	Renovations to strengthen security and safety and remodeling and new construction to add 108 beds	930	57

continued

^a The average daily population data are from annual jail profile summaries submitted by the counties to the Board.

^c Lassen County has not yet determined its project.

• **Planning.** The best way to control costs is through *early* and careful planning. The later in the process a decision or policy is changed, the more expensive it will be. Funds spent on planning and project management are wise investments.

• **Site visits.** Visits to other recently completed facilities are invaluable; design and construction concepts can be seen and insights gained in conversation with the officials involved in the project.

• **Consultants.** Responsible jurisdictions should carefully consider consultants — corrections architects, food planners, computer technicians, construction managers, security electronics specialists, and others—to help county staff achieve cost-effective results. Dollars spent up front on consultant services can mean dollars saved down the line in cost-effective design, construction, and operations. Public officials, though, must maintain involvement and control in the project and provide clear parameters and expectations for the consultants.

• **Continuity.** Elected officials and executives often change during jail projects, but key county project staff—from corrections, fiscal, and public works departments—should remain with the project from start to finish in order to maintain accountability for the results.

Although every project will be to some degree unique, table 2 provides rough estimates of time and expenses to expect at various stages of facility development. These estimates encompass most—although not all—of the California projects' experience.

Planning and design issues

Staffing costs. A few California counties completed construction of new jails, which then remained unopened because the counties could not afford the staffing required. One jail sat empty for over a year.

California's experience is that new jails have more staff-intensive inmate-to-staff ratios than the old jails they replace. In the new jails, ratios tend to run at three to five inmates per custody staff member, while comparable figures for old jails center around ratios of from five to one through eight to one. There are several reasons: a) a reluctance to *understaff* the new jails; b) changing inmate profiles,

Table 1 (continued)

County jail construction projects in California (1980, 1982, and 1984 funding)

County	Description	1988 ADP ^a	% ADP exceeded rated capacity
Napa	45-bed annex to existing jail	145	37%
Nevada	a) Renovation to provide program and safety cell space and replace 4 beds b) Remodel county building for minimum custody/work furlough. Add 40 beds and replace 8 beds	104	
Orange	New intake and release center and remodel existing jail for increase of 384 beds	4,049	26
Placer	a) New main jail and remodeling and expansion of minimum-security facility; add 40 beds and replace 20 beds b) Remodel Tahoe facility to correct deficiencies. Add 15 beds and replace 5 beds	259	79
Plumas	Add 20 new beds and remodel existing jail to correct deficiencies	28	
Riverside	New 476-bed pretrial jail in Riverside, including 40 medical beds	1,629	48
Sacramento	a) Renovate and convert existing barracks to medium-security housing. Added 100 beds b) Replace pretrial facility, 734 additional beds; 454 replacement beds	2,397	49
San Benito	Remodel to provide better female housing, 2 additional beds	79	172
San Bernardino	New regional pretrial facility adding 764 beds and replacing 36	2,261	64
San Diego	a) Renovate camp facilities facing closure by State Fire Marshal b) Expand Vista facility by 296 beds	4,490	99

continued

^a The average daily population data are from annual jail profile summaries submitted by the counties to the Board.

with more serious offenders and more management problems; and, c) "new generation" design features.

Apparent increases in staffing requirements center in the housing areas of new jails. New designs often reduce staff escort requirements, because services (food, exercise, and in some cases visitation) are brought to housing areas, rather than moving inmates to the services. However, new generation concepts in inmate housing areas are designed to increase the amount of interaction with and supervision of inmates by staff.

To achieve this, some designs make officers in housing areas responsible for relatively small numbers of inmates (between 48 and 60). Recently, architects have sought to accommodate designs to increase the scope of supervision, especially on night shifts. One key characteristic of new generation design is to place housing units with common dayroom and dining areas around central staff posts, which must be manned for the facility to work as intended. New generation design also emphasizes single-cell housing. Geometry limits the number of single cells that can be accommodated around a common area without making it excessively large.

Recent jail design emphasizes the risks associated with understaffing. Using glass in place of bars, for example, changes the requirements for auditory surveillance. Despite electronic surveillance, the need for officers' presence is emphasized.

These recent concepts enhance safety and security in the jails. With reduced inmate movement and enhanced staff presence, crowding can be more safely accommodated. Older jails tend to employ fewer officers, and newer jails usually attempt to remove the risk of understaffing.

Staffing costs emphasize the importance of careful architectural programming, with detailed attention to staffing issues. The challenge to public officials and architects increasingly will be to find ways to preserve new generation design goals and still achieve efficient staffing plans.

Reevaluation of design concepts. Cost and other considerations are stimulating reevaluation of certain new generation design features.

Single-occupancy cells make jails ideal to manage, especially in high-security

Table 1 (continued)
County jail construction projects in California
(1980, 1982, and 1984 funding)

County	Description	1988 ADP ^a	% ADP exceeded rated capacity
San Francisco	New 300-bed low-security unit	1,697	16%
San Joaquin	New 124-bed minimum-security sentenced prototype unit.	1,162	46
San Luis Obispo	Renovate to correct fire, life safety, and dilapidation problems	381	27
San Mateo	Renovate main jail to correct fire and life safety. New 208-bed minimum-security facility.	1,104	65
Santa Barbara	Expand main jail to add 68 maximum-security pretrial beds	798	30
Santa Clara	New 637-bed highrise pretrial detention facility, and new 192-bed unit at sentenced facility.	3,314	10
Santa Cruz	a) Second phase of new main jail construction. 20 additional beds and 118 replacement beds		
	b) Construct minimum-security work-furlough facility for women. 11 additional beds; 14 replacement beds	574	39
Shasta	New main jail. 198 additional beds; 41 replacement beds	387	5
Sierra ^b	Purchase space in Nevada County facility	0	
Siskiyou	Replace existing 83-year-old jail with new single-cell facility; 31 new beds and 35 replacement beds	93	40
Solano	Construct new main jail, 255 additional beds and 111 replacement beds	498	27
Sonoma	Construct new 88-bed medium/maximum facility for males	691	23
Stanislaus	40-bed expansion of main jail; correction of facility deficiencies	841	17

continued

^a The average daily population data are from annual jail profile summaries submitted by the counties to the Board.

^b Alpine and Sierra Counties have no jail facilities. They contract with other counties to hold prisoners.

housing. Single cells allow greater control of the facility, more flexibility in inmate management, and more safety for staff and inmates. However, corrections officials in California are reexamining this ideal and asking what number or proportion of single cells is necessary and affordable.

Initial construction costs for single-cell housing are clearly higher than for multiple occupancy—although there is still considerable disagreement about exactly how much more expensive. Moreover, construction cost savings from multiple occupancy need to be balanced against other potential expenses, such as the costs of additional staff and of additional litigation if there are safety problems.

Some counties have concluded that double-celling—or at least designing cells large enough to allow double occupancy—is a reasonable compromise in high-security space. A Board of Corrections analysis also concluded that double-celling is at least preferable to rooms with three or more inmates—as long as adequate provisions exist to ensure safety and as long as sufficient support space (dayroom, dining, etc.) is included.

A second group of concerns arises when a jail has so few inmates—50, perhaps—that modular units are difficult to design efficiently. If each inmate classification includes only a small number, how can each have its own dayroom and dining space? When separating the housing units is not feasible, one solution is to design the common spaces for sharing between classification units, but handle prisoner separation problems procedurally. Separate access to the common area can be scheduled for each unit—down to individual cells, if necessary.

Cost-controlling designs

Architectural design inevitably affects later construction costs. California counties are learning several tactics for controlling construction costs during design.

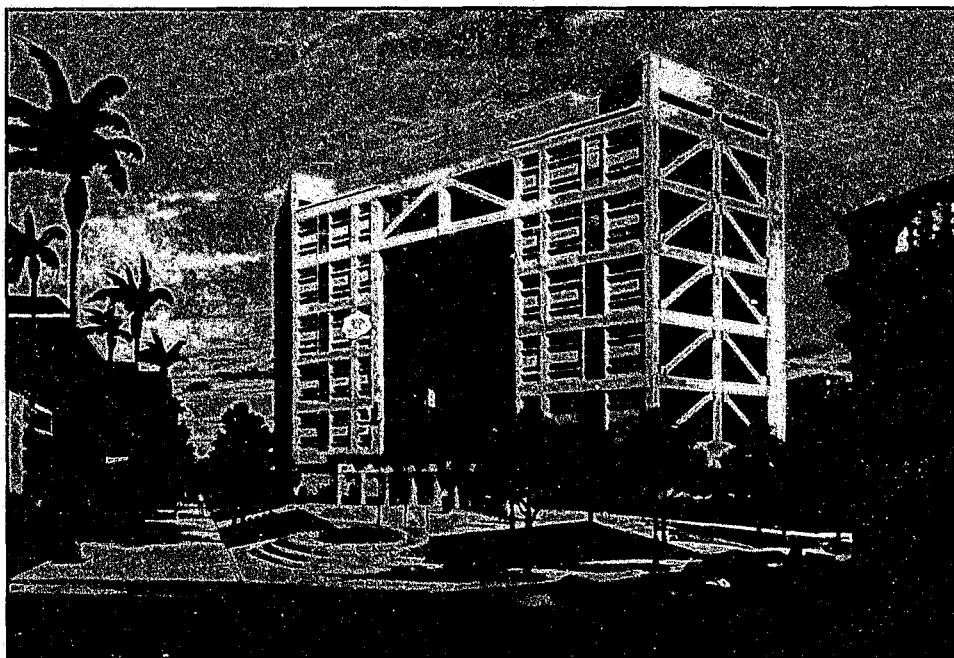
Project management. A construction or project management consultant is advisable as early as the prearchitectural programming phase. The Board of Corrections counts costs for these services as county “match” for State funding grants. A consultant experienced in jail construction can work with

Table 1 (continued)

County jail construction projects in California (1980, 1982, and 1984 funding)

County	Description	1988 ADP ^a	% ADP exceeded rated capacity
Sutter	Construction of minimum-security housing; 56 additional beds	180	35%
Tehama		115	40
Trinity		38	171
Tulare	New 384-bed facility for male and female inmates	1,037	8
Tuolumne	Expand jail to correct separation problems; addition of medical/mental health detox unit; 12 additional beds	96	45
Ventura	Construct new 216-bed main jail annex	1,537	60
Yolo	New main jail; 110 additional and 50 replacement beds	239	21
Yuba	Remodel to add 4 beds and correct facility deficiencies	131	

^a The average daily population data are from annual jail profile summaries submitted by the counties to the Board.



Riverside County's 476-bed jail is in a prominent downtown location. The seven-story facility uses precast exterior panels and is connected to the old jail and the courts by tunnels. (Designed by Brown & Rawdon and Hope Consulting Group.)

architects and county staff to help spot potentially costly design features.

Technical specialists. Counties should also require that technical specialists in high tech areas (such as security electronics and computerization) and in high-cost services (such as food and medical services) participate in the design activities. Specialists provide guidance in esoteric and rapidly changing technologies and help avoid costly oversights in space programming and specifications for equipment.

In Los Angeles County, for example, security electronics consultants helped the County develop a more effective and economical security program than had originally been planned.

Design simplification. Design must be responsive to a number of different and often contradictory criteria: efficient use of space, appearance, operational style, and various building codes or standards, such as requirements for natural lighting. Many of these criteria press design toward solutions that require significant construction costs. For example, insets in the facility perimeter can add esthetic interest and increase the surface available to allow natural lighting, but they also increase the complexity and cost.

Costs can be held down by striving for standardized dimensions in building materials, fixtures, etc. In a couple of California projects, high construction bids forced counties to redesign the facility. Simplifying and standardizing dimensions resulted in multimillion dollar cost reductions.

Hardware and equipment. In addition, careful attention to the uses and operations of the facility can result in cost savings. For example, glazing, doors, and even exterior walls in low-security areas can be designed to less costly specifications than in high-security areas. Careful review of security requirements may demonstrate that less expensive hardware and fixtures are appropriate. In several instances, swinging doors have been selected over motor-driven sliding gates, and porcelain fixtures were installed instead of stainless steel units.

Predesigned jails

Most experienced architects bring to the client county predesign assumptions based on the facilities they have designed and improved through several reiterations. A few firms go further and market

prototype facilities that are already fully designed.

The advantages of a prototype design are twofold: the time required for design can be shortened and previous experience with the design helps to work out "bugs." The disadvantage is that the prototype may be ill-suited for a particular county's needs. In California, each county operates its facilities in its own style. In a few cases where a prototype design did not match the operating style, costly retrofitting, staff increases, or both resulted. Partly from this experience, the Board of Corrections has resisted occasional pressures to design and impose a standard facility for funded counties.

However, the State prison system expansion does rely on extensive replication of a prototype facility. The prison system is more consistent in operating procedures, so the prototype approach has fewer risks.

Almost all the new county facilities are being developed using traditional procedures in which the architect works with the county to develop a design tailored to that county's needs. In two cases—a facility for sentenced prisoners in Orange County and new pretrial housing in Kern County—predesigned prototypes were adapted to local requirements. (The Orange County prototype is described in the *NIJ Construction Bulletin*, "California Tests New Construction Concepts" [NCJ 101593].)

The experience in Kern and Orange Counties demonstrates that adequate time must be allotted for site adaptation. The design for the Kern County facility, for example, was developed in other States;

when used in California, some redesign was necessary to meet California earthquake codes and local jail operational needs.

Jail construction issues

Construction management. The California Board of Corrections strongly recommends that counties employ construction or project management services during construction. As noted above, it is advisable to provide for such assistance as early as the design phase. Even county public works officials are seldom experienced in scheduling projects as complex as a new-generation, full-service, high-security jail. Qualified construction managers bring valuable experience in cost controls, value engineering, management of change orders, and assistance in claims litigation.

In public contracts, the presumption that the low bidder will be selected can lead to many revisions after the contract is awarded. Construction managers can assist in developing project specifications that will minimize later costs for changes and claims.

In the current corrections construction boom, obtaining corrections equipment such as security hardware is difficult. There are delays, especially for smaller projects, in the delivery of orders from established vendors, and a multitude of new and relatively untested manufacturers are entering the corrections market. Construction management is a great help in procurement and quality control tasks.

Technological change. Partially because counties typically build new jails only once a generation, there is a temptation

Figure D
Factors influencing construction costs

Costs	
Higher	Lower
<p>(Site removed from population centers)</p> <ul style="list-style-type: none"> • High rise • Urban site • Structurally complex • High security • Single cell • Full-service facility • Utilities not available at site • Limited availability of labor • Smaller number of beds 	<p>(Site adjacent to major cities)</p> <ul style="list-style-type: none"> • Low rise or campus style • Rural site • Simple structure • Low security • Dormitory • Food, laundry, power, etc., already on site • Utilities available • Labor force available • Large facility; economies of scale

Table 2

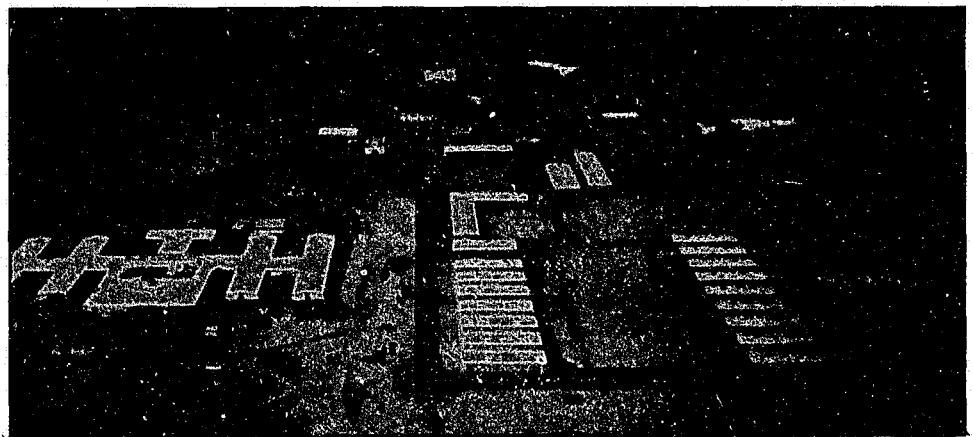
Stages of facility development process: Summary of California projects

	Needs assessments	Design	Construction	Transition	Occupancy
Time range	3-9 months	9-18 months	12-48 months	9-15 months (during construction)	30+ years
Consultants	Planners Statisticians	Architects/ Engineers Construction/or Project Manager Specialists ...Food services ...Computers	Contractor Construction Mgr. (A/E)		
Approximate cost[s] (for \$10 million new facility)	\$50,000-150,000 for consultants (depending on the scope of study and quality of in-house planning)	\$700,000 (A/E fees approx. 7%, plus/minus .5%)	\$10 million for construction and up to \$400,000 (4%) for construction mgt.	\$150,000-650,000 for transition planning team (although costs can be considerably higher)	\$100 million or higher
Costs as an approximate percent of total life-cycle cost estimated at minimum of \$111.2 million	.09% for planners	0.6% for A/E	9.0% for construction; up to 0.4% for construction mgt.	0.4%	89.9% or higher

to include the latest technological innovations.

California's experience underlines the need for caution in selecting equipment—especially security electronics and fire safety systems. "Tried and true" technologies are often the best in these areas. One rule of thumb: specify equipment, materials, and products that have been used in jails for at least 5 years and seek vendors who have worked in the correctional facilities industry for at least 10 years.

At a minimum, counties should carefully define their needs and thoroughly review prior applications of a product, its reliability, and its maintenance history. The multitude of vendors and the pace of technological change also place a premium on clear warranties and carefully drawn service and repair contracts. In addition, agencies should require that vendors provide training in the operation and maintenance of equipment.



The Mira Loma Jail in Los Angeles was designed to house sentenced female adult inmates in minimum-security, barrack-style housing. The buildings are of a single-story campus configuration on a 25-acre site. A total of 32 inmates are housed in each of 16 barracks.

New construction technologies. Several new California jails include some precast concrete components. High-security prefabricated steel modular units, although not really "new" jail construction technology, have been built in a few

counties in an effort to get the facility up more quickly than with conventional construction.

In California, these new construction technologies have reduced construction

time. However, direct construction costs have not generally been lower than traditional methods.

Use of new construction techniques is a further justification for construction management assistance. The new techniques raise issues of quality control in offsite fabrication and coordination of contractors.

Patching new jails onto old. In some counties, fiscal problems at the county level resulted in county projects that were tailored to limited funding levels. These counties sometimes initiated patchwork projects in which new design housing was grafted onto an existing but inadequate facility. The result: a larger, but still dysfunctional, jail.

Even if initial construction costs are difficult to meet, a new jail may be the wisest course in the long run. Ill-conceived "patchwork" projects may create high operating costs that will plague the jurisdiction for the life of the facility.

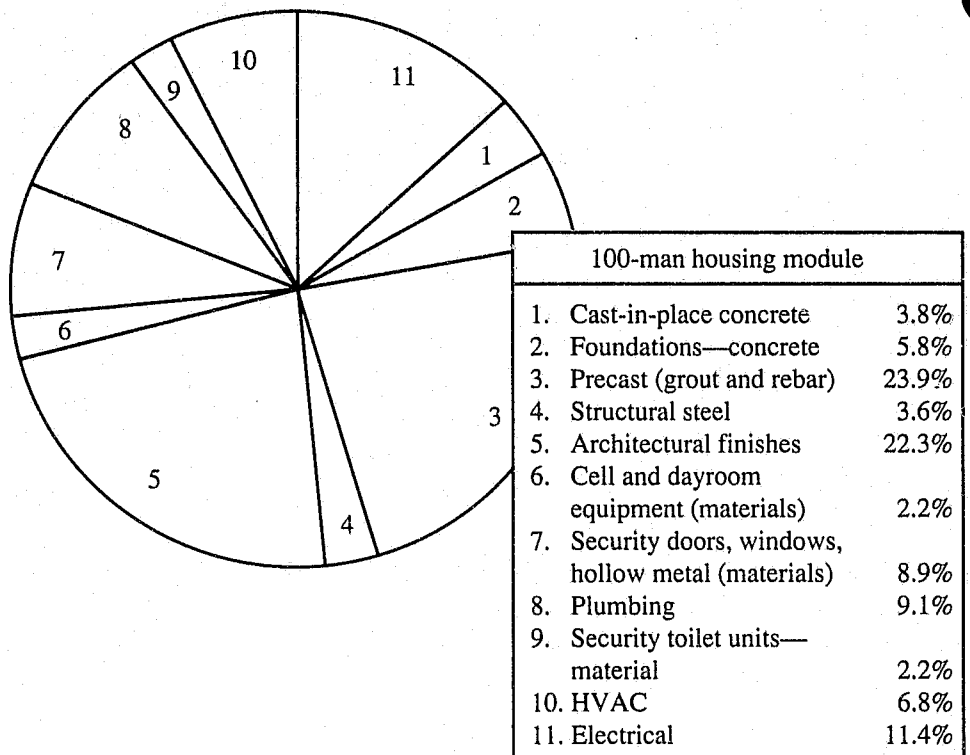
Transition issues

In California as elsewhere, there are occasional horror stories associated with the opening of new jails—locking devices that do not work properly, escapes, etc. One lesson is obvious: careful planning of the transition is essential.

Begin early. Transition activities include writing the policies and procedures for the new facility. This is a time-consuming process. The new jail will be a different operation from previous facilities, and old policies and procedures will probably have to be revised extensively. Formal transition planning should be adequately funded and begin at least a year prior to the scheduled opening of the new facility. As in other planning tasks, the least costly strategy is to devote enough resources to anticipate and solve problems *before* they occur, rather than trying to "fix" things after the fact.

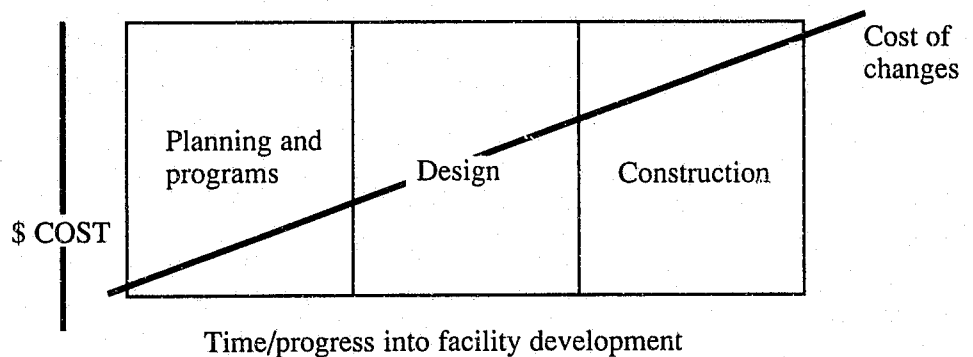
Assign responsibility. Core transition planning staff should not have other competing responsibilities such as running the old jail or managing the construction project. Although liaison with ongoing construction and jail operation is useful, there should be a clearly identified transition project team to ensure that transition preparations are handled.

Figure E
Construction cost breakdown



From *Jail Construction Cost Management Handbook*, prepared for the Board of Corrections by Kitchell CEM

Figure F
The increasing cost of changes in a jail project



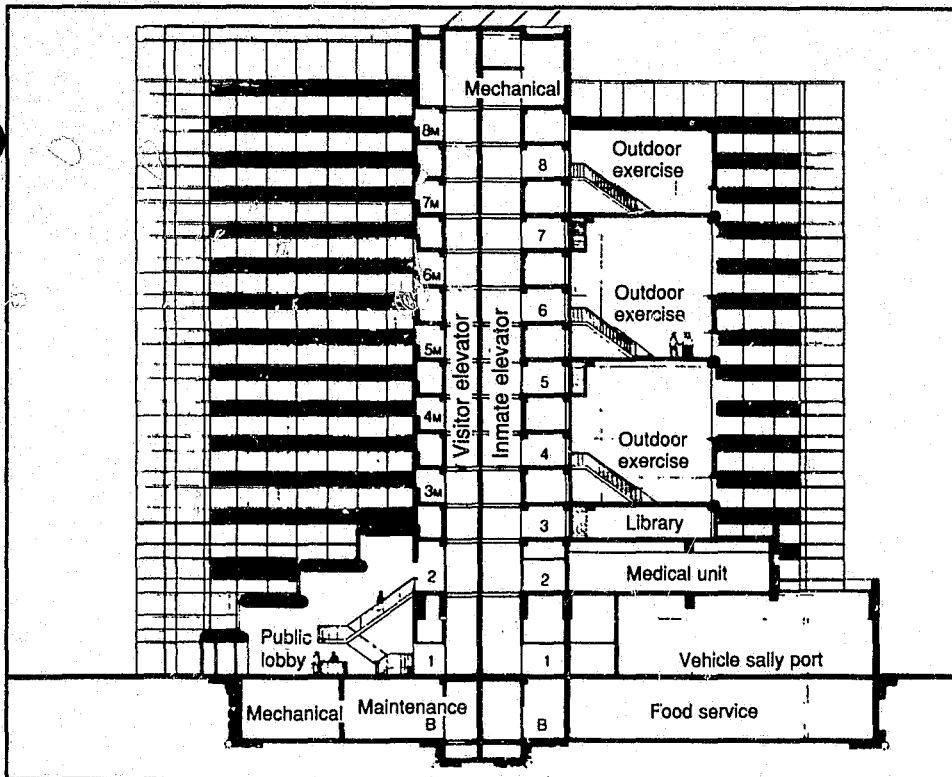
Ideally, the person who will command the new facility should be named early enough to direct the transition effort.

California's results

Has the California County Jail Capital Expenditure Fund been a successful

experiment in financing jail construction? In several respects, the answer is yes.

- A number of old, dilapidated jails have been replaced and closed.
- A working partnership between State and local correctional officials has been strengthened.



The goal in Sacramento County's nine-story pretrial facility was to make each floor self-contained—including indoor and outdoor recreation. (Designed by Hellmuth, Obata, and Kassabaum; and Nacht and Lewis.)

- A large number of new jail beds have been built, easing, if not solving, jail crowding problems.
- Significant amounts of data—and a large number of lessons learned “the hard way”—on jail construction projects have been compiled.

In several respects, however, the success of the California experiment must be qualified.

- Crowding continues—making it clear that construction of new beds will not be the sole solution to crowding problems. Incarceration practices must still be questioned and examined, and population management plans must, at least, be designed to keep jail populations at manageable and safe levels, pending construction.
- In conjunction with the massive corrections construction efforts going on throughout the country, the California jail construction program has stretched thin the private sector resources—architects, planners, construction managers, contractors, installers, manufacturers. As a result, there are many inexperienced vendors now providing services and products. Careful contract specifications, reference checks, and quality control systems are absolutely necessary.

Resources available

The National Institute of Justice and the National Institute of Corrections both provide a wide array of valuable resources for jurisdictions planning new correctional facilities. California counties have drawn heavily on these resources.

In addition to the Federal resources, the California Board of Corrections is developing data, handbooks, and training aids covering the entire facility development process, to assist counties in planning their projects. These are summarized in figure H (see last page).

Information from California's funding legislation and regulations developed by

the Board of Corrections is available from NIJ's *Construction Information Exchange* and also from the National Institute of Corrections. In addition, handbooks and information are available on:

- Conducting needs assessments.
- Jail planning and design.
- Construction costs and cost control measures.
- Planning jail food services.
- Computer systems for jails.
- Health services in the jails.
- Alternatives to incarceration.
- Managing crowded jails.
- Transition to new jails.

For more information:

Specific questions on the California experience can be directed to:

Norma Phillips Lammers
Executive Officer
California Board of Corrections
600 Bercut Drive
Sacramento, CA 95814
916-445-5073

About the authors

Norma Lammers has been Executive Officer of the California Board of Corrections for 11 years. During that time, she has managed the development of the jail construction program and creation of a statewide correctional officer training system.

Mark Morris was project director for the County Jail Capital Expenditure Fund from 1980 through 1986. Following passage of Proposition 52, the 1986 funding measure, he returned to private consulting, emphasizing jail project management and planning, staffing, studies, and transition planning.

Figure G

Keys to successful jail projects

- Travel to other sites and projects
- Seek continuity in key project staff
- Hire experts; check individuals' credentials as well as firms'
- Invest in planning—from needs assessments through transitions to the new jail
- Remember—operating costs will be more than 10 times construction costs, so keep operating cost considerations at the forefront

Figure H

Board of Corrections jail planning aids publications available

Stages of process

Resource	Needs assessment	Master plan/arch. prog.	Design	Construction	Transition	Operation
Corrections Planning Handbook	●	●				
Minimum Jail Standards: Regulations and Guidelines			●			●
"Jail Overcrowding" Management Handbook	●					●
"Housing Pretrial Inmates"						
"More for Le\$\$": Jail Construction Cost Management Handbook		●	●	●		
Medical and Mental Health Services Handbook	●	●				●
"A Jail Manager's Guide to Understanding the Automation Process"					●	●
Managing a Jail Food Services Program		●	●		●	●
Transitions Handbook*					●	

* Under development

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The Assistant Attorney General, Office of Justice Programs, coordinates the activities of the following program Offices and Bureaus: National Institute of Justice, Bureau of Justice Statistics, Bureau of Justice Assistance, Office of Juvenile Justice and Delinquency Prevention, and Office for Victims of Crime.

Where to turn for more help . . .

The *Construction Information Exchange* has more information on this and other projects. The *Construction Information Exchange* is a Federal initiative that provides information on construction methods and costs for jails and prisons built since 1978. Through the *Exchange*, those planning to build or expand facilities are put in touch with officials in other jurisdictions who have successfully used efficient building techniques.

Publications include these *Bulletins* and the *National Directory of Corrections Construction*, covering building methods and costs for more than 250 prisons and jails. For more information, or to submit information for inclusion in the *Exchange*, contact:

Construction Information
 Exchange/NCJRS
 Box 6000
 Rockville, MD 20850
Telephone: 800-851-3420
or 301-251-5500

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