

# Federal Probation

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105787-105799

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MARCH 1987

105799

# Federal Probation

A JOURNAL OF CORRECTIONAL PHILOSOPHY AND PRACTICE

Published by the Administrative Office of the United States Courts

VOLUME LI

MARCH 1987

NUMBER 1

## This Issue in Brief

**Community Service: A Review of the Basic Issues.**—Triggered by the Federal Comprehensive Crime Control Act of 1984, the evolution of community service as a formal condition of probation has caused judges and probation officers to pay increased attention to the requirements of community service programs. Authors Robert M. Carter, Jack Cocks, and Daniel Glaser state that as various options are considered, basic issues must be identified, related to a system of judicial and correctional philosophy, and implemented in an atmosphere in which citizens have ambiguous feelings about community service as a sentencing option. In this article, the authors attempt to identify the basic issues and to place them in a frame of reference for practitioners.

**The Alcoholic, the Probation Officer, and AA: A Viable Team Approach to Supervision.**—Probation officers are encountering increasing numbers of problem drinkers and alcoholics on their caseloads. Most officers are not specifically trained to work with the alcoholic, and author Edward M. Read advances a practical treatment model for use in the probation supervision setting. The author stresses the necessity for an important re-education process which includes full acceptance of the disease model of alcoholism and an accompanying renunciation of several damaging myths still all too prevalent. Several techniques of counteracting the alcoholic denial system are discussed, and the author highlights the appropriate use of Alcoholics Anonymous in the supervision process.

**The Perceptions and Attitudes of Judges and Attorneys Toward Intensive Probation Supervision.**—In recent years the spectrum of criminal justice sanctions has widened to accommodate an intermediate sentencing alternative known as intensive probation supervision (IPS). In his study of the perceptions and attitudes of court personnel toward IPS in Cook County, Illinois, author Arthur J. Lurigio found that, overall, judges and public defenders viewed IPS favorably, whereas state's attorneys were essentially unwilling

to accept IPS as a viable option to prison. According to the author, the success of IPS programs often hinges on developing effective strategies to promote the program so that it appeals to the various elements in the criminal justice system.

**The Role of Defense Counsel at Sentencing.**—This article establishes the duties and obligations of defense

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# Building Prisons: Pre-Manufactured, Prefabricated, and Prototype

BY DALE K. SECHREST, NICK PAPPAS, AND SHELLEY J. PRICE\*

**R**ECENT DRAMATIC increases in jail and prison populations and the pressure for longer sentences have resulted in crowding, the deterioration of overused and aging structures, and a building boom in correctional construction. Most states are in the process of constructing new prisons or renovating old ones. The search for ways to handle these overwhelming prison populations with speed and economy has led to increased interest in modular or prefabricated construction of jails and prisons. One indicator of the increased interest in such units is reflected by advertisements describing modular units in publications such as *Corrections Today*, the official publication of the American Correctional Association, and in the series of publications emanating from the National Institute of Justice and the National Institute of Corrections.<sup>1</sup> In *Corrections Today*, for example, the March-April issues of 1979 and 1981 had no modular construction advertisements; by April of 1983 there were nine ads totaling 7.75 pages. This advertising was consistent with the rise in prison populations over that period and concerns about new space. Since that time, paid advertising for modular and pre-manufactured components in *Corrections Today* has dropped to about four pages per issue. However, editions for February 1983 and the April issues for 1984, 1985, and 1986 have been devoted to correctional architecture, with two to three articles per issue on modular designs.

Out of concern for possible problems related to the increased need for prison and jail construction, a study of planning, design, and construction of new facilities was conducted in 1983 by the Commission on Accreditation for Corrections; it was funded by the National Institute of Justice. The study included information on

facility design and construction obtained through a mail/telephone survey completed by individuals responsible for new facility construction in 15 states. Project staff toured new facilities in three states and interviewed project managers, representatives of state projects, project architects, contractors, and facility operations staff.<sup>2</sup> During the study it became clear that modular construction and the use of prototype designs were becoming increasingly important to correctional administrators, many of whom had begun to look for quick remedies for the problems of overcrowded facilities.

## Unsubstantiated Claims

The authors are concerned about an apparent willingness to accept entrepreneurial promotions of modular, pre-manufactured, or prefabricated products for use in correctional facility construction without evidence to support their successful long-term use or their utility in meeting correctional demands. Claims of reduced construction time, lower costs, and materials durability introduce uncertainty into planning and may encourage planners to suspend judgment based on experience and factual data to place their faith in vendor's claims. In fact, most of the construction techniques and designs seen as "new technology" in corrections are not new. They have been used in general architecture and construction by the private sector for years. The repetitive construction used in modular design and prototypes has been used by the home building industry for mobile homes, as have precast and prefabricated units. Although the "new technology" is not new, its application is new in the design and construction of prisons and jails. It is also necessary and may be appropriate in specific situations using the proper precautions.

The adoption of concepts or techniques from the pri-

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Data for this article were derived, in part, from a report prepared for the National Institute of Justice, U.S. Department of Justice, by the Commission on Accreditation for Corrections under subcontract J-LEAA-011-81. The authors wish to thank Tom Albrecht and Charles DeWitt of the National Institute of Justice for their review of drafts. Points of view and opinions stated are those of the authors and do not necessarily represent the official policies of the U. S. Department of Justice or the Commission on Accreditation for Corrections.

<sup>1</sup> Cf. NIJ Construction Bulletins by Charles B. DeWitt: "Florida Sets Example with Use of Concrete Modules" (March 1986); "New Construction Methods for Correctional Facilities" (March 1986); and "California Tests New Construction Concepts" (June 1986). The NIC publication is by Stephen A. Carter, Lowell Nordquist, and Polly Reno, *Evaluation of Pre-Manufactured Housing for Correctional Purposes* (Columbia, South Carolina: Carter-Goble Associates, Inc., February 1984).

<sup>2</sup> Cf. Dale K. Sechrest and Shelley J. Price, *Correctional Facility Design and Construction Management*. Washington, D.C.: U.S. Government Printing Office, pp. 99-100; Dale K. Sechrest and Shelley J. Price, "Planning and Decisionmaking in Correctional Facility Construction," *Federal Probation*, December 1985, pp. 38-48; Shelley J. Price and Dale K. Sechrest, "Continuity in Design and Operation," *Corrections Today*, April 1986, pp. 56-58.

vate sector requires careful examination to determine their relevance to correctional practice. Certainly corrections can benefit, but only if these innovations are adapted to correctional needs. To do so, professionals must not be misled by entrepreneurial claims of monetary savings or fail to recognize the special problems imposed by their responsibility to the community and to the staff and inmates of these facilities. Contrary to claims, some types of construction may not be less expensive or better than conventional construction, particularly when life cycle and operating costs are examined. Allen Patrick noted these concerns in a discussion of the profit motive and the possible lowering of building standards by using untested methods, indicating that "time will have to be the jury" in knowing how cost-effective these units will be.<sup>3</sup> Concerns about innovations in meeting jail and prison space requirements resulted in the collection of additional information relevant to the evaluation of modular construction and the use of prototype designs in correctional facility construction.

### *Modular and Pre-Designed Facilities*

Financial constraints have always had a significant effect on major capital improvements in prison and jail construction. However, correctional planners now have choices other than traditional construction. Recent trends have provided options that include innovative supervision models, inmate management strategies, and design philosophies, including various resultant design configurations and choices in construction techniques. These new concepts and technologies, with their related terminologies, are often confusing and seductive, promising speedy and less costly additions of needed space, energy savings, and sometimes decreased staffing and improved security.

The interchangeable use of terminology, such as podular design, modular design, modular construction, prefabricated, pre-manufactured, factory built, and relocatable construction, have complicated the planning process.<sup>4</sup> Due to problems of terminology, it is necessary to define terms before discussing these types of construction.

### *Modular Construction*

In conventional construction all labor is done on the facility site. Conventional construction of walls, floors, and roofs is usually done using either concrete block or poured in place concrete. Modular construction using

pre-manufactured units occurs off-site at a manufacturing plant, a feature which may have labor union implications for the contracting agency. *The major confusion in terminology is between pre-manufactured and prefabricated construction*, which are similar in some ways. The types of modular construction are described as follows.

*Prefabricated Component Construction.* Several types of "modular" construction have been used in the private home construction sector. The most common is prefabricated construction, or the building of standardized, predesigned, and partially assembled sections of a home that are delivered to the site and assembled on a prepared foundation. The term has been used increasingly in corrections to refer to either sections of housing or entire units that are built at the factory and trucked to the site for final assembly. It also refers to precast concrete cells that are poured on- or off-site and set in place on foundations built using traditional construction methods.<sup>5</sup> This process is fully described by DeWitt, especially as it lends itself to shorter construction time using "fast track" methods.<sup>6</sup> For purposes of clarifying the term, it is recommended modular be used only in reference to construction which has been partially assembled or prefabricated at the factory and finally assembled at the site on a foundation. This type of construction should not be confused with factory built units that use wood, steel, or wood sheathed with steel; this construction is defined below as pre-manufactured units.

*Precast Concrete.* Precast concrete construction is the type of concrete components, or slabs, used in prefabrication. These standardized precast concrete units, sometimes entire cells, are poured off-site under controlled conditions and assembled at the building site. The forms, which can be used repetitively, provide the appropriate spaces for windows, doors, and plumbing or wiring passages. Precast concrete is also called "prestressed." As described by Rosenberg, it is

reinforced with high tensile steel pretensioned before the concrete is cast. After placement, the concrete cures and bonds to the steel. Tension is then released, creating stresses directly opposed to those to which the precast component will be subjected under load.<sup>7</sup>

DeWitt has described the construction of housing units from prefabricated or precast concrete components, also describing the "tilt up" method of casting the concrete on site.<sup>8</sup>

<sup>3</sup> Allen Patrick, "Profit Motive vs. Quality," *Corrections Today*, April 1986, p. 68.

<sup>4</sup> Cf. Pamela Kellman, "County Jails: Who are the Experts?" *Corrections Today*, April 1983, pp. 32-24; W. Andrew Lindelow, "Model Prisons the Modular Way," *Corrections Today*, April 1983, pp. 20, 130.

<sup>5</sup> J. Oliver Stein and H. Paul Bigler, "Roanoke City Jail," *PCI Journal*, March-April 1981, pp. 110-111.

<sup>6</sup> DeWitt, "Florida Sets Example . . ." op. cit., note 1.

<sup>7</sup> Fromy Rosenberg, "Precast Concrete Construction Cuts Labor Costs," *Corrections Today*, April 1984, pp. 94, 100.

<sup>8</sup> DeWitt, "California Tests New Construction Methods," op. cit., pp. 5, 10.

*Pre-Manufactured Units.* As differentiated from the prefabricated component construction described by DeWitt, the pre-manufactured correctional facility, or factory built unit, was the primary focus of the Carter-Goble report. It was defined as follows:

...pre-manufactured correctional facilities consist of pre-manufactured modular units which have building components, such as walls, floors, and roof systems, that are pre-assembled and delivered as a unit to the site. As such, each unit has its own structural integrity [to] permit shipment to the site. One or more of the modular units may be jointed, connected, or grouped together to make a pre-manufactured correctional facility. [A] unit would be shipped to the site complete with windows, plumbing fixtures, doors, light fixtures, etc.<sup>9</sup>

This type of construction has its counterpart in the double-wide mobile home, which is often referenced as the prototype pre-manufactured unit. Like its private sector counterpart, it is constructed or assembled in the factory and trucked to the site ready to use. It is a pre-assembled, prefabricated unit, but it more likely to be made of wood, steel, or wood sheathed in steel. Another distinguishing feature is the degree to which the unit is finished at the factory. The pre-manufactured unit is a structure, with cell fixtures installed at the factory (toilet, sink, door, locks) and ready for hook-up. The prefabricated component process usually provides for installation of cell fixtures on site. The Carter-Goble report describes several types of pre-manufactured facilities. They are variously referred to as "steel boxes," said to be relocatable and "off-the-shelf" buildings because they are pre-designed. Correctional personnel who have used earlier versions made of wood or wood sheathed in steel or tin have questioned their structural integrity. While this type of construction is used in housing units, it is commonly seen in guardhouses, offices, corridors, and in other support areas.<sup>10</sup> Maximum security "steel boxes," of more recent origin, are likely to be more durable; however, they will be much more expensive. Variations in construction may include a mix of pre-manufactured and prefabricated living units and support areas, depending on planned use.

*Pre-Engineered Designs.* The danger in pre-manufactured or prefabricated construction is the use of pre-engineered designs. The design of these units is developed by the vendor based on a fixed concept of program needs, security, traffic, administrative requirements, and staffing patterns. Prefabricated units allow some latitude for the purchaser to make changes. Basically, however, the design is sold "as-is," and any modifications come at a cost to purchasers, who should

be aware of possible additional costs of this type. Usually the design is developed in standardized blocks, which can be arranged in various configurations. Changes within the building blocks are not encouraged unless they coincide with the standardized sizes already available. Modifications outside of the measurements of these building blocks may have an effect on the profit margin of the manufacturer, since there will need to be changes in the production process. The purchaser can expect to pay these costs.

*Podular Designs.* Podular design is an inmate management concept that places inmates in housing units of a manageable size around a common area. The living unit may or may not contain a secure control booth from which a correctional officer can observe inmate activity, depending on the type of supervision used.<sup>11</sup> In either case, the living unit can be constructed using either traditional or prefabricated methods. Pre-manufactured units tend to limit the use of podular supervision due to their linear designs.

### *Critical Issues in Innovation*

*Costs.* Given the market potential for new facilities, it is not surprising that products have been developed to meet new needs, particularly prefabricated and factory built modules. For any jurisdiction in which the jail or prison is seriously over capacity, with severe budget constraints, the possibility of a relatively cheap and quick solution to overpopulation and fiscal problems can be attractive. Some reports are available on the actual cost of pre-manufactured (or factory built) units. The biggest problem appears to be with the validity of these reports, which are often used to substantiate vendors' claims. In a published article, Brodeur cited the following costs for two pre-manufactured facilities:

Costs for site-built maximum security beds vary between \$23,000 and \$60,000 per bed. The cost per maximum security bed for modular installations in Washoe County, Nevada, has been about \$16,000. A 120-bed maximum security modular jail now being built for Santa Clara County, California, worked out to \$16,250 per bed. The two facilities, which were built by different contractors, are multiple-occupancy cell block buildings.<sup>12</sup>

The Carter-Goble report placed the cost per bed of the Washoe County Detention Facility (Reno, Nevada) at \$22,917 and Santa Clara County (Elmwood Jail Facility) at \$17,361.<sup>13</sup> Both estimates are higher than those reported by Brodeur. Brodeur does not report

<sup>9</sup>Carter et al., p. 2.

<sup>10</sup>Cf. Jack Buckley, "Pre-Engineered Alternative," *Corrections Today*, April 1965, p. 136.

<sup>11</sup>William "Ray" Nelson, "New Generation Jails," *Corrections Today*, April 1983, p. 112; Nelson discusses direct supervision that requires no control room as opposed to "podular indirect" and traditional remote supervision.

<sup>12</sup>John Brodeur, "The Modular Detention Building," *Corrections Today*, December 1982, p. 40.

<sup>13</sup>Carter et al., p. 20.



a specific time to completion but refers to builders' claims that they can halve the time of conventional construction. Carter-Goble reported a three-fold improvement, with an average time for design and construction of 13.9 months for pre-manufactured and 38.7 months for conventional facilities.<sup>14</sup>

Confusion persists regarding the costs quoted for pre-manufactured facilities. For the Garfield County Jail medium security expansion unit in Glenwood Springs, Colorado, the Carter-Goble report indicated a 20-bed facility at a cost of \$19,500 each—total cost \$390,000; the NIJ *Directory* indicated 16 beds at a cost of \$18,312 each—total cost: \$293,000; building only: \$256,000.<sup>15</sup> The costs quoted in the Carter-Goble report appear to represent an additional \$97,000 that was added to the \$293,000 cost of the jail to remodel the old jail facility. County records did not discriminate with respect to total project costs.<sup>16</sup> Cost comparisons between conventional, prefabricated or precast, and pre-manufactured construction can be deceptive, therefore, if they are not well researched. Also, these comparisons often provide no equivalence in the square footage reported between various types of construction. The Carter-Goble report has provided a comparison of 16 pre-manufactured and 16 conventional facilities, based on size and security level. They examined the total facility, including support space, program space, and space within the housing unit itself. They found pre-manufactured facilities offered about 150 percent less square footage per inmate with a total cost per square foot of about 30 percent higher than the surveyed conventional facilities. However, cost per bed was 90 percent higher for conventional facilities.<sup>17</sup> This apparent contradiction was due to the fact that conventional construction includes support space. As facilities get larger, however, conventional construction costs per bed go down and pre-manufactured costs go up due to the need to add support space. In a comparison of pre-manufactured and conventional facility costs using a "weighted bedspace cost average," the Carter-Goble report states that:

... assuming comparable space per inmate in conventional facilities... the average bedspace cost would be \$50,012 for pre-manufactured as compared to \$40,397 for conventionally constructed facilities. Conversely, the average cost per bedspace for conventionally constructed facilities providing comparable space per inmate as currently provided by the pre-manufactured facilities, would average \$16,279, while the current average cost for a pre-manufactured facility is \$20,825.<sup>18</sup>

This conclusion was supported by a letter from the Florida Department of Corrections Facility Services Administration that indicated over 24 percent greater cost (\$305,000) for low bid modular versus conventional construction for a 112-bed medium-minimum security facility,<sup>19</sup> which is exactly the difference noted by Carter-Goble (23.8 percent). No construction time savings were promised in the bidding. Further, the Florida analysis stated that, "The use of steel modular units was considered less desirable because of concern over the long term expected maintenance problems and the fact that most of the labor and construction materials would be acquired out of state."<sup>20</sup> More favorable comparisons have been made between conventional construction and prefabricated construction using concrete components. For the Pinellas County medium security jail, DeWitt reported completion in 10 months in 1985 at a "cost of approximately \$14,516 per inmate, or about \$29,032 per [92 square foot] two-person cell."<sup>21</sup> For a 1983 maximum security (single cell) addition the Pinellas facility used conventional construction, and Carter-Goble reported a per bed cost of \$20,408. DeWitt quoted a price of \$16,435 per cell for the maximum security (63 square foot single cell) construction at Raiford that used techniques developed in Pinellas County.<sup>22</sup> Cost comparisons are reasonable between the maximum units in Pinellas County and at Raiford because both were living unit additions not requiring support areas.

Assuming comparable security levels, a fair comparison of construction costs can be made only if the cost per square foot for particular kinds of space and the total gross square feet per inmate are compared, with housing being the most expensive space. In a facility with 300 to 380 gross square feet per inmate, housing accounts for less than 200 square feet. A facility that does not provide adequate support or program space and uses housing space for these purposes will be less expensive on a "per bed" basis, but it is not likely to be a complete facility without the additional expense of support and program space.<sup>23</sup> Additional considerations for pre-manufactured units must also include costs for land, site development, foundations, and fitting to electrical, plumbing, and other services.

*Time to Construction.* Time is critical when crowding is a problem and when court suits are providing the motivation for new construction. According to Carter et al., pre-manufactured units have a distinct time advantage:

<sup>14</sup>Carter et al., p. 38.

<sup>15</sup>Carter et al., p. 20; Charles B. DeWitt, *National Directory of Corrections Construction, First Edition*, National Institute of Justice, 1986, p. 87.

<sup>16</sup>Conversation with Charles B. DeWitt, National Institute of Justice, September 1986.

<sup>17</sup>Carter et al., p. 34.

<sup>18</sup>Carter et al., p. 37, Table 9.

<sup>19</sup>Carter et al., p. 55.

<sup>20</sup>*Ibid.* [emphasis added].

<sup>21</sup>DeWitt, "Florida Sets Example with Use of Concrete Modules," *op. cit.*, p. 2.

<sup>22</sup>*Op. cit.*, p. 6.

<sup>23</sup>Carter et al., p. 35.

The survey of pre-manufactured and conventionally constructed correctional facilities shows that if time to occupancy is a major factor, then pre-manufactured facilities can provide bed space approximately three times faster ... [also] if pre-manufactured facilities were required to provide the same amount of square footage as conventional, the cost would be substantially higher than the averages most often quoted by manufacturers' representatives.<sup>24</sup>

Prefabricated component construction using concrete units also appears to be faster than conventional construction at no greater cost. This method is essentially a "fast track" system of construction. Whether pre-manufactured or prefabricated component construction is used, the need for speed must not override full consideration of operational and life cycle costs.

*Staffing.* Some vendors claim staff savings with the use of pre-manufactured units and predesigned facilities, but there is no information available regarding savings or excessive costs, and staffing figures are not yet available. When pre-engineered designs or units predetermine a particular design configuration, the level of staff is dictated by the design, and the purchaser will have little control over staff costs. Carter et al. reported problems of staffing and supervision:

... because of the differences in site and configuration of modules, there is generally less supervision or observation of inmates in pre-manufactured housing units than in conventionally constructed housing units ... Generally the design of pre-manufactured modules limits the officer's sight lines in terms of the number of cell doors or inmates that may be observed from a given position ... there is generally less supervision or observation in pre-manufactured housing units than in conventionally constructed housing units.<sup>25</sup>

Staff members in Pinellas County had input into the design of the facility built with prefabricated component construction. They expressed satisfaction with its design, the quality of construction, and the flexibility built into it.<sup>26</sup> However, in a comparison of prefabricated component construction with conventional methods, DeWitt indicated a possible loss of flexibility in design.<sup>27</sup>

Planners and facility officials need to consider staffing carefully before any commitment to pre-manufactured or prefabricated construction that may predetermine staffing levels. Staffing needs in excess of conventional designs must be evaluated carefully, with particular attention to long-term operational costs and liability issues. The possibility always exists that an increase in staff may be necessary, and this additional expense can easily eliminate any potential short-term savings. For example, Joyce and Bosse have provided an analysis of pre-engineered design in which

they compared dormitory and cell designs. The minimum security dormitory design had a higher staff ratio and a higher rate of disciplinary problems; the high/medium security cell design (an X-style configuration) provided greater inmate control at lower staffing levels and reduced operational costs significantly. They reported that over a 9-year period the "operational cost difference" between the two designs would recover construction costs for the cell design.<sup>28</sup>

*Facility Life Expectancy.* Vendors often claim a life expectancy of 20 years for pre-manufactured structures. Respondents experienced with wood and wood sheathed in steel or tin said they did not expect more than 5 years habitable use. The 20-year claim by vendors often included the provision that these facilities be adequately maintained. Steel relocatable units will surely last longer, but their longevity may suffer due to water damage (rust). Hard use, typical of correctional housing, and problems of adequate maintenance may compromise the lifespan of these units, although most have not been in use long enough to predict their durability. Prefabricated component designs that use pre-stressed concrete are of more recent origin, and their long-term performance is not known in comparison to conventional construction.

### Issues in Prototype Design

Recommendation 55 of the Attorney General's Task Force on Violent Crime asked that the National Institute of Corrections "develop models for maximum, medium, and minimum security facilities of 750 and 500 (or fewer) beds, from which states would choose the appropriate model(s) for construction."<sup>29</sup> Prototype, or model, facilities are pre-designed prisons or jails which have been developed incorporating the state of the art. Theoretically, the design has been developed with the participation of persons expert in their field and who have taken into account all the factors necessary to the design of an ideal facility. The final product should be a model that can be duplicated, effectively provide the level of desired security and supervision, have the appropriate program and support space, and provide a standard level of staffing.

The use of prototype design can reduce the time and costs associated with the planning and design phases preceding facility construction. Prototype use, however, suggests that there is a model that can be replicated in all climactic conditions, adapted to any terrain or soil condition, and meet correctional program needs

<sup>24</sup>Carter et al., op. cit., p. 38.

<sup>25</sup>Ibid., p. 32.

<sup>26</sup>Lt. Mark Fitzgibbons, conversation July 29, 1986.

<sup>27</sup>DeWitt, "Florida Sets Example ...," p. 5.

<sup>28</sup>Nola Joyce and Daniel Bosse, "Design Comparisons—Choosing an Option To Meet Demands," *Corrections Today*, April 1986, p. 78.

<sup>29</sup>U. S. Department of Justice, Attorney General's Task Force on Violent Crime (Final Report, August 17, 1981), p. 75.

and philosophies. Selection of a prototype design requires an awareness of assumptions built into the model. Careful consideration must be given to features related to correctional philosophies, design features suitable to regional and geographic conditions, and other factors, such as the composition of the inmate population between jurisdictions, increasing crime rates, changing incarceration rates, sentencing practices, release policies, and the use of alternative sanctions.

### *Use of Untested Designs*

Any design which is based on an analysis of needs and the development of an architectural program cannot be tested until the facility is built and occupied. The prototype may claim an advantage in that the design has been rigorously reviewed before construction. If one facility has been built, it can serve as a test of the model and provide an opportunity to find problems and correct them. At the time of the study, one vendor of a prototype design had one facility almost completed, and six others were in the early stages of construction. Design problems will not become known until the first facility is occupied, and unless the vendor conducts a post-occupancy evaluation, the errors in the design will be repeated. A common problem found in the study was *the repetition of mistakes in the prototype design due to lack of evaluation of the original*. One-fourth of the states surveyed had recently completed construction of several facilities concurrently using an untested design. In one state, except for some changes made that were deemed absolutely necessary by the architect, major design errors were replicated in new construction. In another state, four prototype facilities were constructed that are today inadequate to meet original or current needs. Time must be taken between construction of facilities, especially prototypes, to allow testing of the design.

The current trend in prototypes underscores the need for research and evaluation of correctional design and construction. Research is needed to test specific design features such as cells and their fixtures for resistance to vandalism, the placement and internal arrangements of electronic equipment in control centers, and the effectiveness of the podular arrangement. Post-occupancy evaluations must be conducted to determine the effectiveness of the design in meeting the needs specified in the architectural program. Construction costs, staff savings, and other claims by vendors need to be evaluated so that some clear and definite figures are available to planners. As McGough points out:

We are still short of hard research in prison design. For every very positive article of why pink paint has a calming effect, there are also dozens of built environment subjects that have not been researched at all. In the absence of research, architects and plan-

ners have made their own judgments. For instance, the triangular housing units, which architects seem to be working to death, have become today's counterpart to the 19th century Auburn cell house.<sup>30</sup>

In the final analysis there is no guarantee of success with or without a prototype. There is no ideal design, and there are no absolute answers in planning. There is a need for careful review of all variables which must be coordinated in institutional planning. The planning process must be applied with equal rigor to the selection of a prototype as to the development of any other design. This responsibility cannot be left to the vendor, the architect, or an agency too far removed from corrections. A prototype should be selected only when it meets the requirements of the system. When jurisdictions are considering the development and use of prototype facilities, the first facility constructed should be evaluated before beginning construction of another.

### *Avoiding Problems*

To assist in the evaluation and selection of pre-manufactured or prefabricated component facilities, especially where prototype designs are used, the following are critical.

These facilities must be:

- evaluated to determine the actual savings in dollars and time in relation to meeting the needs of the user.
- evaluated considering the same factors addressed in planning and programming for facilities built using conventional construction methods.
- evaluated considering square footage for the total facility, inclusive of support space, as is done in conventional construction.
- in compliance with applicable local and state codes, including zoning, fire, health, and environmental requirements.

Pre-manufactured housing units should be seen as temporary structures or as support facilities. Their primary use should be for short-term detention in the community or as temporary additions to existing long-term facilities.

### *Summary and Conclusions*

Correctional planners and practitioners do not suffer from a lack of desire to do good planning for new construction or for the renovation of existing facilities. However, the use of pre-designed, relocatable facilities and prototype designs should be secondary to good planning and design. Sound planning should place these elements in perspective in relation to the needs of a

<sup>30</sup>John W. McGough, "Prison Design and Construction or Why Do Prisons Cost So Much." *Corrections Today*, February 1982, p. 47.



particular agency. Planning should include a clear definition of goals, improved communication among planners, correctional administrators, and architects, and continuity of oversight throughout the planning, design, and construction process.

*New Evaluation Tools.* Of greatest importance is the need to evaluate what has been done and build on experience rather than repeat past errors. Post occupancy evaluations should be done regularly for all types of new prison and jail construction, especially modular construction or prototype designs. These evaluations may show unanticipated problems in such areas as traffic flow, lines of sight for observation and supervision, placement of equipment and controls, functioning of security equipment, and the like. A central source for such information has been created within the National Institute of Justice. A Construction Information Exchange, a National Directory of Corrections Construction, and a Construction Bulletin series have been initiated.<sup>31</sup> Information on construction will be available from agencies, with the goal of more efficient construction to meet the demands of crowding.<sup>32</sup> The Construction Information Exchange is also conducting post-occupancy evaluations using a mail questionnaire.<sup>33</sup> Comparisons of experience with other jurisdictions will be made based on these reports.

Even with this commendable effort, some questions remain. It is not clear whether the survey will allow a uniform and comprehensive evaluation of all new construction. That is, will *all* construction since 1978 be reported? Ideally, such a survey should be done on-site by an outside team of professionals. For example, it is unclear how a self-report mail questionnaire can evaluate design in relation to staffing levels, supervision needs, or sight lines in a way that will allow future improvements. It is unclear how siting problems can be adequately evaluated. Efficiency is only one of many

considerations in evaluating construction; the effectiveness of the facility in meeting its goals, including quality of life considerations, will be difficult to evaluate without on-site observation. Living and working conditions must be addressed, both for inmates and staff. Concern with the quality of construction is also critical, i.e., long-term use factors. Finally, national correctional standards, with their implications for legal liability, must be considered in all new construction. Can these new designs meet professional and legal standards?

*On-Site Evaluation.* A national program of on-site post-occupancy evaluation should be created to include consideration of all types of construction, emphasizing long-term utility based on cost, time to occupancy, durability, the quality of materials, hardware, and components, and other features of use. Equally important areas for examination are staffing requirements (number and type), working conditions, inmate living conditions, security (lines of sight, zones), flexibility (adaptation to new security levels), energy consumption, and such unique features as the ease of relocation of modular units. Even a sampling of the facilities evaluated through the Correctional Information Exchange would be adequate. National data can provide in-depth information to correctional planners, architects, vendors, and others involved in the construction of correctional facilities. Without a national program of one-site post-occupancy evaluation, the problems cited for pre-manufactured construction and prototype designs will not be adequately addressed. Corrections administrators, planners, and architects will continue to run the risk of continuing to build without comprehensive and uniform evaluations of existing facilities. While steps are being taken to improve these evaluations, for an effort of this scope and importance, more needs to be done.<sup>34</sup>

<sup>31</sup> DeWitt, *New Construction Methods for Correctional Facilities*, op. cit., p. 1.

<sup>32</sup> *Ibid.*

<sup>33</sup> Construction Information Exchange, *Facility Survey* [c. 1986].

<sup>34</sup> Cf. Dale K. Sechrest and Shelley J. Price, *Correctional Facility Design and Construction Management*. Washington, D.C.: Government Printing Office, pp. 99-100.