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# PROGRAM ADMINISTRATION and COST PLANNING

## COURTHOUSE REORGANIZATION & RENOVATION PROGRAM



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The Courthouse Reorganization and Renovation Program assumes full responsibility for the views and findings contained in this series of monographs. The series does not necessarily represent the views of participating organizations, including those which follow: The Law Enforcement Assistance Administration and the National Institute of Law Enforcement and Criminal Justice, U.S. Department of Justice; The Rockefeller Brothers Fund; The Municipal Services Administration of the City of New York; The Port of New York Authority; The Appellate Divisions, First and Second Judicial Departments, and the New York County courts.

**U.S. DEPARTMENT OF JUSTICE**  
**Law Enforcement Assistance Administration**  
**National Institute of Law Enforcement and Criminal Justice**

# PROGRAM ADMINISTRATION & COST PLANNING

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## PROGRAM BACKGROUND

The Courthouse Reorganization and Renovation Program, sponsored by the Appellate Divisions, First and Second Judicial Departments, State of New York, was conceived early in 1970 to develop alternative solutions for critical space and manpower requirements through the year 2000 for structures within and related to the urban court complex of New York City's Foley Square. The Program, serving beyond Foley Square as a demonstration project with nationwide implications, has resulted in imaginative, low-cost, space use concepts designed to improve the efficiency of court administration. It is hoped, that continuing facility improvements based on these concepts will bring the administration of justice closer to its ideal.

The Program was funded to the end of March, 1972, by the U.S. Department of Justice through the Law Enforcement Assistance Administration (LEAA). Additional project support has been provided by the Rockefeller Brothers Fund and by the Municipal Services Administration of the City of New York. The Appellate Divisions and the various courts under their jurisdiction provided necessary grantee contributions. The Port of New York Authority has contributed substantially to manpower planning studies. A supplementary LEAA grant made to the project in April, 1971, has funded a courthouse security study. Under terms of the original grant, the program staff is preparing a handbook on courthouse planning, reorganization and renovation for national distribution to administrators, architects and planners at the conclusion of the project. The handbook, containing information gathered from more than thirty states, will report findings of both the space management and security studies.

Dr. Michael Wong, Director of the Courthouse Reorganization and Renovation Program, is known widely for his contributions to courthouse and law-enforcement facilities planning, design and renovation.

Dr. Wong was Associate Director of the Court Facilities Study at the University of Michigan, 1968-1970. Undertaken to establish minimum standards for court facilities, this study was sponsored by the American Bar Association and the American Institute of Architects.

A registered architect from Australia, Dr. Wong holds a Ph.D. in Architectural Science and degrees in Architecture and Urban Planning.

This series of monographs has been prepared primarily for court administrators involved in facility design and renovation projects. It is felt, however, that architects, engineers and others expecting to embark on such an undertaking will benefit from much of the information contained in the series. Included in the monograph are the following topics:

- Space Management Concepts and Applications
- Space Management Methodology
- Space Standards and Guidelines
- Manpower Projection and Planning
- A Systems Approach to Courthouse Security
- Space Management and Courthouse Security
- A Comprehensive Information Communication System
- Program Administration and Cost Planning

General editor for the series is Peter Inserra of the program staff.

Comment and criticism on the content and format of the monographs is welcome and will assist the program staff in data updating before preparing the final draft of the handbook. Letters should be directed to Dr. Michael Wong, Director, Courthouse Reorganization and Renovation Program, Suite 922, 111 Centre Street, New York, New York 10013.

## PROGRAM ADMINISTRATION

### PRE-PROPOSAL ACTIVITIES

The conceptualization of a facility planning program generally originates with the court administrator, in collaboration with judges and court personnel, or from a consultant familiar with the local court system and its problems. Conceptualization of a program is derived invariably from problems and is therefore solution-oriented. In courts throughout the country, court administrators more and more are realizing that fully adequate facilities are essential to achieve optimum operation and personnel output. In most cases, these administrators are thoroughly familiar with local problems, enabling them to conceive the scope of work required for a program proposal. In some cases, particularly in large metropolitan centers, problem urgency and magnitude may be so acute and unmanageable as to suggest that consultants experienced in facility and operation management be engaged to assist in defining problems and the scope of work necessary for an appropriate program proposal. Consultants knowledgeable in a specific field may conceive imaginative solutions, the implementation of which may solve many system problems. In such cases, the consultant would conceive ideas for incorporation in a preliminary proposal which he then would discuss with the administrator, facility committee members and others associated in significant ways with the proposed project. Generally, it is preferable when the proposal is initiated by the administrator or the courts rather than by a consultant. First, the court would be operating from a stronger base knowing it originated its own program and second, less time would need be taken for proposal approval and funding, as court officials could proceed directly to funding agencies; experience has shown that considerable time is consumed when a consultant must "convince" the court of the worth of his ideas before the court submits a proposal.

## PRELIMINARY PROPOSAL

Program conceptualization generally is followed by a preliminary proposal outlining goals and objectives of the program, scope and impact of the work, proposed methodology and research procedures, time and staff needed and a preliminary budget estimate on a yearly or phase basis for the entire program. The preliminary proposal, either a brief description or an outline, generally is distributed among involved personnel and consultants for comment and criticism. Meetings are held to discuss the proposal, specifically its scope and staffing recommendations.

When it is obvious that a project will require consultants, a request for submitting proposals can be sent to a selected group of consultants. Consultants of repute are known within the field; otherwise, professional organizations such as the Law Enforcement Assistance Administration of the Department of Justice, the American Bar Association and the American Institute of Architects should be able to suggest consultants active in the courthouse and law-enforcement areas. This request for proposals would contain an outline description of problems to be resolved and a set time period within which the consultant would submit a proposal containing his approach toward resolving these problems. The consultant's proposals then would be evaluated by the court administrator, chief judge and court facility committee, after which one or more consultants would be selected to conduct the program.

In a field with only a very limited number of consultants, one whose work is already known to the courts can be asked to submit a proposal which, after proper review procedure, would be submitted to funding agencies as a funding application. In such cases, closer initial collaboration between court personnel and this consultant is essential. \*

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\* For further discussion on selecting consultants, see companion monograph, "Space Management Concepts and Applications".

A major problem at the preliminary proposal stage is establishing a proper working relationship between the courts and the consultant. If the court contemplates hiring an individual consultant who would then assemble a project team specifically for that one project, the type of contract and the method of disbursement of program funds could have a great impact in the operation and outcome of the program. Governmental agencies, including courts and law enforcement departments, invariably are bogged down in bureaucratic procedure. If a program budget and disbursement of funds is to be controlled by the court budget officer, all bills, regardless of the amount, will have to be processed through him. A delay of payment to small creditors can result in credit refusal, delay in program progress and generally poor relationships among program staff and creditors. Regardless of whether the consultant hired is an individual or a large consulting firm, the program should be given to the consultant on a lump sum or cost-plus contractual basis, so that the consultant will have the flexibility necessary to hire personnel, pay creditors when necessary and plan for the entire program expenditure with available funds. Regular financial statements could be submitted to the court and to the funding agencies, if requested.

Another advantage in giving full operational and budgeting responsibilities to the consultant is to relieve the usually over-burdened budget officer in the court. Budget problems of programs usually are lower on his priority, as compared to the direct budgeting problems of the courts.

#### MEETING WITH FUNDING AGENCY PERSONNEL

If the response from a funding agency is favorable to a project proposal, meetings would be arranged between funding agency personnel and the court personnel and the consultant (if available) to clarify any problems that may have arisen since submission, and to work toward the formal submission of a full proposal. Questions could range from the scope of the work and program impact to staffing and budget planning.

If the funding involves federal grants, then matching money (varying from 25% to 50% of project cost) from local sources would have to be committed before federal grants were awarded.

Program staffing takes on its full significance at this stage, having been considered only in outline during the preliminary proposal stage. If the consultant has already been selected, even on a tentative basis, it would be beneficial for him to be involved in program staffing discussions with funding agency personnel. In the operation of a facility planning program, staff requirements at each stage of the program -- research programming, planning, design, costing and presentation -- could be quite different, and all positions requested in the proposal should not be full-time for the duration of the program. For example, during the research and programming stages, interviewers, manpower planners and researchers are necessary. During the planning and design stages, designers and planners are more important and during the presentation and production stages, draftsmen, illustrators, model builders and secretarial personnel become essential (although secretarial help will be needed, if only part time, throughout a project.) Funding agency staff, knowing the number of full- and part-time personnel and length of time to be employed, will have a firm basis on which to report to their superiors that grants would be expended optimally to produce the best possible results.

While perhaps not essential for every project, it would nevertheless be wise to explore provision for funds to pay fees of commercial personnel agencies during the personnel selection process and for the cost of advertising available positions in local newspapers. In cities and locations where staffing is not a major problem, or where other employment benefits such as climate and staff amenities may attract competent personnel from other parts of the country, the amount of money for this purpose need not be substantial. On the other hand, in areas where newspaper advertising is not sufficient to recruit competent personnel, adequate money must be provided to for professional personnel agencies fees.



## LOCAL MATCHING FUNDS REQUIRED

The type and level of matching funds varies with the kind of project. Research and planning grants usually require a 25% match, generally known as a "soft match," whereas grants for construction and renovation may require a 50% "hard match." "Soft match" funds need not be cash but might be rental cost of office space, equipment cost or personnel time. "Hard match" funding is defined as cash provided by local agencies. Matching requirements vary with each funding agency, depending to the priority and emphasis that the agency places on research, planning and construction projects. Generally, it is easier to obtain research and planning over construction grants because most agencies are geared toward helping local agencies to find ways of solving their problems. Once solutions are proposed, funding agencies expect local agencies to implement them, at least in major part.

For research and planning grants, courts at several levels can provide various services as grantee contributions. For example, one court may contribute adequate office space to the program, while another may provide required furniture and equipment. A third may provide reproduction services, while a fourth may assist by providing printing and book-or report-binding services. The courts may also allocate in-house personnel to assist in developing aspects of the program that may not be so familiar to the consultants.

## LONG-TERM CONSIDERATIONS

Many large cities are spending vast sums of money on consultants to assist the courts in finding solutions to their facility problems. While each city usually has a public works department or its equivalent, the personnel of these departments generally are not trained in space management concepts, and such work is let to consultants on a contractual basis. It is inevitable that the use of different consultants for various projects in the same field will lead to excessive duplication of effort. It is equally true that consulting

firms jealously guard their project data lest competitors gain unfair advantage by sharing information of previous projects. One essential step to be taken by any large city is to establish a method of centralized coordination and control of data and information developed by consultants on various projects in the same field. In this way, existing information can be distributed to consultants involved in further projects. At the very least, extensive duplication of effort can be minimized.

With this consideration in mind, it seems important that consultants should be required, as part of their consulting services, to train, in a structured setting, in-house personnel of the courts and city agencies involved in court-related projects. Consultants, by instilling basic principles of facility planning, can help assure the implementation of their recommendations even long after their work has been completed and they have left the project. This would result in significant cost savings to the city and to the courts, and would be a more appropriate way of spending public funds.

## OFFICE ORGANIZATION

### A. SPACE

Office organization involves three major components: space, equipment and personnel. A facility project consisting of architects, engineers, planners, lawyers, sociologists and psychologists would require a drafting office, a general office, private offices, secretarial office, model construction space, reception area and storage spaces. Space rental is costly and funding agencies usually require, where possible, that local agencies supply the space needed for the program. In downtown areas of major cities, annual rental of air-conditioned office space in a good location ranges from \$10 to \$15 per square foot. Arrangement of offices and spaces and the partitioning or landscaping of such space is time-consuming, especially when city

agencies are responsible for the letting of such contracts to local contractors. Union disputes and worker strikes in related trades could delay the provision of adequate working facilities for many months. Consequently, the planning of spaces for the program office should commence as soon as the funding of the proposal has been approved and the courts have assigned the necessary space for the program. Experience has shown that the program director has to spend considerable time during the initial stages of the program working with local agency personnel responsible for partitioning and landscaping of office spaces.

Office space partitioning and landscaping is expedited when good working relationships are established with the local agencies responsible for the eventual implementation of program recommendations. Developing such relationships is, in fact, one of the most important functions of a facility planning program. In major cities, good working relationships should be cultivated at least with the public works department (the General Services Administration for federal buildings), the city planning department and the budget department. In fact, if program recommendations are to be implemented at all, the consultant would in effect become a liaison officer between the courts and these local agencies. In most cases, the courts, not versed in space management principles, can only request assistance from the agencies to provide adequate facilities. However, agency personnel need to know the substance of projects and their priority before proceeding on an implementation program. Experience has revealed situations where even simple communication does not exist between the courts and the local agencies responsible for the provision of adequate judicial facilities.

#### B. FURNITURE AND EQUIPMENT

In a facility planning project, furniture and equipment could be a major budget item if not provided by the courts as a grantee contribution. Beyond supplying general office furniture, such as desks, chairs, conference tables, filing cabinets and bookshelves, the program office

requires special furniture such as drafting tables and drafting equipment, high stools, model construction surfaces and equipment, reproduction equipment for printing plans and reproducing documents, a special "composing" typewriter for presentation documents, and possibly a punch and spiral binder for interim and final reports. (Slip binders are not effective, experience has shown.) Usually such furniture and equipment has to be specially ordered, sometimes taking several months for delivery. Consequently, furniture and equipment should be ordered as soon as possible after the approval of the grant, and should be one of the top priority responsibilities for the consultant.

In the request for funding, consideration should be given to the availability of equipment such as document reproduction, book-binding and other machines necessary to the operation of the program office. While it may seem feasible in the initial stages of the program to accept the hospitality of the courts for the use of this equipment, the on-going work of the program has to be geared to machine availability in the courts. A large reproduction job could not be delayed if it were to coincide with courts' machine use. Should conflict in the use of shared equipment be anticipated it might be more expedient to rent such equipment for the program. As such items are costly, adequate funds should be requested in the funding proposal for this purpose.

#### C. PERSONNEL

One of the major problems in program staffing is recruiting professional personnel with previous experience in judicial facility planning. Architectural and planning research, being a relatively new field, there are no more than a handful of persons with appropriate experience in the United States. Typically, the only way of staffing a competent team of professional people is to train them. Consequently, a major part of the initial stages of the program subsequent to the hiring of staff is taken up by on-site training. As there is generally very little time provided in the program time schedule for staff training, the

director must be vitally involved with staff at various stages of the program to familiarize them with space planning approaches and techniques. In large projects which can be divided into major and minor sub-projects, it would be helpful for the program director and his newly acquired staff to work on one of the sub-projects so as to establish approaches and techniques. Subsequently, with modifications of the pilot project, the staff could work in teams to complete the other sub-projects simultaneously.

In facility planning programs involving renovation of existing buildings, one of the major difficulties is in obtaining original building architectural and engineering drawings and documents. Again, close collaboration between program and city agency personnel would expedite this task. Such drawings and documents most often exist and can be obtained from various departments, including public works, city planning, the archives (for old buildings) and the real estate department. This task can become tedious and sometimes time-consuming, and should also be one of the priority tasks in a program.

#### WORKING RELATIONSHIPS WITH COURT DEPARTMENTAL PERSONNEL

Before beginning research and data compilation in each department of the courts studied, it is essential to establish proper working relationships with the personnel in each department. The most expedient technique is to request the presiding judge of the courts, or his administrative director, to inform all department heads of the existence of program and need for cooperation by all departments, and to request that each department head assign a liaison officer from the department to work closely with the program staff. The liaison officer should be a staff member who is acutely familiar with the operations, personnel, space and equipment of the department, and who can speak on behalf of the department. In instances where only the department head can fill this role, he should consent to serve as the liaison officer, or appoint more than one person to work with program staff. The liaison officer refers program staff to the appropriate person in each division

or unit within the department, and serves as a control source of information.

The caliber of the liaison officer can not be underestimated for a facility program which aims at maximum recommendation implementation. A major reason for the failure of the courts or governmental agencies to implement recommendations contained in facility planning reports is that the recommendations lack user approval. Another reason for failure of implementation is a lack of communication and collaboration between program staff and user departmental staff which often results in erroneous assumptions and unrealistic projections. In most cities, agencies responsible for implementation of facility recommendations cannot proceed with work until securing written approval signed by the heads of departments for which the proposals were made.

Still a third reason for the close collaboration of program staff and the liaison officer is that the liaison officer, knowledgeable in the operations, space and personnel of his department, can readily supply information, and even space requirements or standards, which would otherwise require repeated effort on the part of the consultant to gather or develop.

#### WORKING RELATIONSHIP WITH RESPONSIBLE COURT

Collaboration between the program staff, especially the program director, and the court or department responsible for monitoring the program is essential for several reasons.

First, in a court facility program the full support of the highest court involved, as well as the other related courts studied, is essential for the program to be effective and for the recommendations emanating from the program to be implemented. Because the program staff serves as a consultant team to the court, all recommendations should be made to the court, the presiding judge of which (or his administrative director) makes requests to city agency heads for implementation. Without the full support of the court, such requests would not be made and recommendations could not be implemented.

Second, the court has a readily available resource -- the legal profession -- which the program staff can tap when necessary. In making manpower projections and in interpreting Supreme Court decisions, for instance, this source would be helpful. To arrive at realistic manpower projections for the court, the manpower planners have to establish parameters and assumptions, and approximate dates that such assumptions may occur. The persons who best could provide such information are those in the courts and in the legislature. The interpretation of legal decisions may have a significant impact on the use of space -- a requirement of more or less jury deliberation space, for example -- and the courts could provide such assistance to the program staff.

Third, it is essential that the program staff be directly responsible to the presiding justice or to the administrative director responsible for the operation and supervision of the courts being studied. This rule must be observed if more than one court is involved. To be responsible to a lower court would create another obstacle to recommendation implementation. To be responsible to more than one person would lead to conflicting decisions which also would impede implementation.

#### WORKING RELATIONSHIP WITH FUNDING AGENCY

The proper working relationship between the program and the funding agency should be through the court to which the program is responsible. However, with the agreement of the court, the program director should establish a working relationships with a top-level person in the funding agency for expediting routine and preliminary matters. While all formal correspondence relating to funding and policies would be channeled through the court, many funding agencies prefer to collaborate on an operational level directly with the program director. Agencies are interested in the progress of the program which the program director normally can provide more readily. This relationship would be more pronounced when the consultant is responsible for other programs funded by the same agency or if he is also serving as a consultant to the agency.

Both the court and the funding agency should receive regular progress reports from the program director, the reports being formally forwarded to the funding agencies through the court. For facility programs, progress reports should be submitted at the completion of each phase of work rather than on a strict time interval. Beyond a simple statement describing work completed and in progress, the report should be accompanied by work reports containing all relevant information and preliminary recommendations for adequate review and evaluation at the end of each phase of the program. By this means, comment and criticism can be made regularly and approaches and techniques can be modified or corrected before proceeding with subsequent phases. Such work reports, however, should have only a limited circulation among interested personnel in the courts and funding agencies.

#### PROMOTING A PROGRAM\*

The extent to which program recommendations are implemented depends primarily on their merit and feasibility. But, even the most obviously needed recommendations have to be promoted, often vigorously, by the program director or by other members of his staff. Promoting or "selling" a program is a continuous process beginning when the program begins and going beyond recommendations to full implementation. In a judicial facility planning program this process may involve sequentially a number of consultants and local government agencies: the space management consultant who is responsible for the programming and planning, architectural and engineering consultants who are responsible for the design, construction and supervision of the implementation of the facility, and landscaping, acoustical, lighting and interior decorating consultants who are responsible for environmental aspects of the facility. From the government agencies' side, departments involved in the process are the city planning, public works, transportation and the city building department. A facility planning program is in many ways more significant than subsequent documentation and construction. It is in the early stage that the decision-making process and programming for present



and future needs is accomplished. The programming and planning process, described in detail in a companion monograph,\* should be implementation oriented. Recommendations resulting from the process should be based on an in-depth study, realistic assumptions and practical planning.

One of the most difficult problems of the implementation process is developing an appropriate approach toward deriving feasible solutions convincingly, so that basic ideas are clearly retained by the persons responsible for implementation.

The approach used by the Courthouse Reorganization and Renovation Program rests on a basic assumption: that modernizing existing court buildings with rehabilitation "potential" is less costly than erection of new court facilities, and that this approach should result in substantial construction cost savings to the city. This assumption is especially appropriate in its application to court buildings in downtown metropolitan centers strapped by acute land shortage and high construction costs. If projection of needs for the courts and their many and diverse departments in existing court buildings continues to substantiate this assumption, as has the Courthouse Reorganization and Renovation Program, then the possibility is increased of recommendations of this kind being implemented.

Feasible solutions developed from realistic and practical assumptions have to be presented by the most convincing techniques, or the time and effort spent in developing these solutions will be wasted. Presentation of recommendations in a facility project takes many forms: charts, plans, drawings, tables, scaled models, photographs, slides, renderings, films and graphics. The presentation has to be geared to the audience for which it is intended. For example, some judges and court personnel are not familiar with architectural and engineering plans, and even if they were, they generally find a great difficulty interpreting them. Experience has shown that scaled architectural models are the most effective method of presenting ideas and planning

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\* "Space Management Methodology."

concepts to people who are not familiar with plans. Photographs, graphics and slides used in a presentation complement scaled models.

A model for a multi-story building is perhaps most useful when constructed by floors, with all partitions shown to illustrate the proposed use of spaces in three dimensions. Floor space on the model occupied by a particular color code is selected arbitrarily for that department. By this means, the overall space assigned to any department can be quickly and clearly depicted.

The most convenient scale for this kind of model work is 16 ft. to 1 in. Tables, charts and graphics accompanying presentation of the model should be simple and clearly depicted for ease of comprehension. Slides and films are most helpful when used for short periods of time to illustrate examples of facilities elsewhere or a sequential flow of cases, persons, documents and the like through a system.

The number of presentations varies with the number of agencies and committees involved with a particular project. The minimum number of formal presentations should be four: the first to the court to which the program is directly responsible, (in the case of the Courthouse Reorganization and Renovation Program, it is the Appellate Divisions of the First and Second Judicial Departments); the second to the funding agency (for example, the Law Enforcement Assistance Administration of the U.S. Department of Justice); the third to the users of the facility (for example, the various departments of the Criminal Court and of the Criminal Division of the Supreme Court); and the fourth to city and other local agencies responsible for the implementation of program recommendations (for example, the Bureau of the Budget and the Department of Public Works). If a program involves a complex of buildings, this presentation process may have to be repeated several times.

Experience has shown that prior to making a presentation, it is beneficial to prepare a brief statement summarizing the program approach, methodology and recommendations, as well as a reduced-size copy of charts and graphics to be used and a set of floor plans of buildings for which recommendations are being made. These materials

distributed to those at a presentation will assure that details of originals at the front of the room are seen by all. It is preferable to have these documents forwarded in advance for review by those who expect to attend a presentation. Of course, during the process of working with the liaison officer and with other personnel in each department of a court, many recommendations would have been discussed. The major reason for the presentation is to obtain general overall approval of recommendations from user departments of an entire building or complex of buildings, and to rectify conflicts or discrepancies in spatial relationships among the various departments. It is essential that heads and representatives of all users' departments attend the presentation so that all are equally well-informed. Should any department not be represented, resolutions or agreements reached by the other departments should be forwarded to the head of the absentee department to obtain his approval. If at all possible, signatures should be obtained from heads of all departments under a general statement of approval so that concepts and plans can be forwarded to the department of public works or equivalent agency for detailed documentation and contract letting.

The first and second presentations to the responsible court and funding agencies are important from the standpoint of information communications and public relations. Acceptance of the approach, concept and recommendations should be obtained before the third and fourth presentations to facility users and city agencies. The court responsible for monitoring the program is interested in improved efficiency in the use of court and court-related spaces in their buildings; the funding agencies are interested in program progress and whether their funds are being spent in the best possible way in achieving their objectives. The fourth presentation to the city agencies is especially important because the program director and the court have to convince these agencies -- have to "sell" the idea -- that the renovation of existing buildings at a fraction of the cost of new building construction is feasible and that the program has demonstrated beyond doubt the truth of this assumption.

## COST PLANNING

Two kinds of cost planning characterize a facility program: 1) program cost planning and 2) implementation cost planning of program recommendations. Program cost planning consists of time and cost estimates for completing the program, broken into major phases. Cost planning for the implementation of program recommendations involves estimates for demolition, renovation and construction, and the phasing of the project to minimize disruption to court operations at minimum cost.

## PROGRAM COST PLANNING

A facility program can be divided into the following major functions, and approximate percentage of total program effort:

<u>Functions</u>	<u>Approximate Weighted Percentage of Total Project Effort</u>
Program Orientation	1
Background Research	3
Program Planning	8
Data Compilation & Organization	15
Analysis & Evaluation	25
Planning & Recommendations	15
Cost Analysis	2
Documentation & Presentation	20
Travel	2
Conferences & Meetings	2
Administrative & Editorial	7
	<hr/>
	100 %

The above list and percentages are based on experience of the Court-house Reorganization and Renovation Program, and on previous programs conducted by the program staff. The low percentage accorded to program

orientation in the breakdown would be greater if the consultant's experience is limited or his access curtailed to extensive court information, data and reports. Consequently, a minimum amount of time was spent on the background research phase of the program. The major functions of data compilation and organization, through documentation and presentation, account for approximately 75% of program effort. Of the remaining efforts, it should be stated that program planning, administrative and editorial are continuous functions throughout the program. Secretarial efforts were not considered for the above list.

The preceding percentages of total project effort have not been based solely on actual time spent for each function, but on a weighted measurement of effort. Initially, a priority list of activities was made for each function, and the significance of each activity within each function; the function within the program then was evaluated. For example, the analysis and evaluation function is considered more significant than program orientation, the level of significance based on the extent objectives are accomplished by the related functions. Another factor considered in assigning weight to effort is the level of program personnel involved in the performance of each activity or function, the weight of higher level personnel performing the appropriate function being higher in value than that of lower level personnel.

In a program proposal, a budget estimate consists of several major categories: salaries, consulting services, equipment, operation and travel. One of the most serious problems in program staffing can be shortage of funds for salaries that attract appropriate level personnel. Some knowledge of local employment conditions, including current salary levels for open program positions and the availability of the specific manpower, should be gained prior to requesting funds for salaries. Another important itemization is one made for funds adequate to cover fringe benefits such as hospitalization, insurance and sick leave.

In many facility projects, the nature and volume of work does not warrant hiring full-time, high-level personnel. In such cases, an estimate is necessary of the part-time consultants required and the approximate amount of time needed to complete the work in their special fields. Generally, consultants are hired on a lump sum or a per diem basis, and the appropriate agreements between the program director and consultants should be made when possible before submitting the budget request. If such agreements cannot be made, an estimate on a per diem basis should be incorporated in the request.

A clear idea of the amount and type of equipment needed for program operation should be crystallized before the request is made. Special equipment usually is very costly to buy or rent; after budget approval, it will be extremely difficult to request additional funds to purchase or buy equipment. Equipment such as IBM composer (typewriter), mag-card and mag-tape equipment, a Xerox reproduction unit, report binding machines, electric calculators and typewriters should be written into the proposal. Maintenance and servicing usually is included in equipment rentals but when purchasing equipment outright, additional funds should be made available for such costs.

In most judicial facility programs, office space can be provided by the court as part of its grantee contribution. Generally, the funding agency would require that other listed operational costs be covered also by the court. When the court has a central supply in close proximity to the program office, such an arrangement creates no significant problems. Terms, however, should be clearly stated in writing to confirm the court's contribution.

A not-to-be-overlooked operational item is petty cash for minor operational and travel expenses, supplied by either the court or funding agency. Without a petty cash fund the program director usually has to supply personal funds, then be resigned to a long wait for reimbursement.

The travel funds request depends largely on the type of program and its impact, and the need for compiling research data from other

cities. For example, if a program has national significance and the program team is responsible for producing a handbook for broad distribution, the need may arise for the program director or his representative to travel widely to gather data. On the other hand, if the program has impact only on the local scene, the need for a having travel expenses would be minimal. If a program functions under a national committee of members from various states, then adequate travel and per diem funds should be provided for central meetings and conferences. If consultants are located away from the city or state of program origin, funds should be adequate to cover travelling to meet with program staff.

As emphasized earlier, responsibility and disbursement of funds should remain with the program director and his budget officer (if any). But the director must have the right to flexibility in the use of funds to pay bills, fees and other expenses without great delays, thereby maintaining a good credit rating and equitable working relationships with consultants. To do otherwise can imperil the program operation and staff effectiveness.

Within reasonable administrative and budget control, the program director should be permitted the flexibility of reallocating funds without tedious and time wasting processing procedures, although every effort should be made at the pre-proposal stage to predict program budget requirements; unforeseen needs after operation begins may require significant revisions in the approved budget. Transfer of funds from one category to another should be made as simple as possible, avoiding waiting period for approval of such changes.

#### **COST PLANNING FOR IMPLEMENTATION OF PROGRAM RECOMMENDATIONS**

Having developed and evaluated the feasibility of program recommendations relating to solving facility problems in a court building or complex, the next essential step is to plan the implementation of recommendations. To accomplish this, considerations should be given to

constraints such as availability of implementation funds, maximum disruptions which can be tolerated by the courts during renovation and construction, and the availability of the space for renovation. Whatever the constraints, they necessitate the implementation of recommendations by phases. In a facility renovation program, the process normally consists of relocating personnel or records to another location, then renovating the vacated space when funds become available. It must be stressed that renovation work should not be carried out piecemeal. The renovation of any section of a court building should be an integral part of a comprehensive master plan for that building and, possibly, for a court complex.

A major obstacle in renovation work is the disruption of court operations during working hours. Noise and dust problems can be most annoying to the trial proceedings in adjoining courtrooms. At least one case is known where a judge became so annoyed that he threatened to issue a court order to prevent a contractor from proceeding with the work during a trial in progress. As a result, some work had to be completed after regular hours at much higher labor overtime costs that sent a number of contractors bankrupt. With the financial crisis existing in our large metropolitan centers today, renovation projects should be phased and scheduled to minimize disruptions to court operation.

Another disruption to court operation results from relocating departments occupying spaces to be renovated. If an entire multi-story court building is to be renovated, it is obvious that, unless adequate space can be provided for the relocation of occupants, the renovation project will have to be implemented in phases. The phases of such a project would have to be carefully scheduled so as to minimize disruptions to essential court functions.

Where long-term planning projections are involved -- say for 30 years -- renovation work may involve more than one building. Phasing a project of that magnitude would be even more critical, as the work would have to be geared to the availability of buildings. For example, if a building adjoining a courthouse does not become available at the time the court needs additional space for expansion, interim means for providing space will have to be devised.



## PRIORITY OF RECOMMENDATION IMPLEMENTATION

With pressing financial conditions confronting principal cities today, major construction and renovation projects must be implemented according to a priority determined by the court responsible for the supervision of the lower courts, and by consultants (if available). One of the major functions of the consultant is to bridge the gap between the court and city agencies responsible for recommendation implementation. The consultant should determine, through his research and analysis techniques, project phasing and priority according to urgency of need related to other departments and project cost.

Project priority should be discussed with the presiding justice and/or administrative director after consultants' presentations to the user departments and city agencies. After agreement has been reached with the court, a priority projects list with preliminary cost estimates calculated by the consultant should be forwarded to the public works department and budget bureau or related departments for incorporation in the annual city capital budget.

In some metropolitan areas such as New York City, the costs of construction and renovation of public buildings are appropriated as capital construction budget lines by the budget bureau. A fiscal year generally runs July 1 to June 30, but the budget for one year usually is finalized before the end of the previous calendar year. There usually are general internal construction funds within the public works department for minor renovation projects and for the operation and maintenance of city buildings.

Providing adequate court facilities is in most states the responsibility of local counties, each governed by a board of supervisors or county commission. Most large construction projects are funded through bond issues which meet the approval of registered voters in the local community. If a bond issue for construction is voted down by the community, the project usually is dropped or shelved until a subsequent election. Obviously, such a system of funding court

facilities can result in an uneven distribution of adequate facilities -- the case more often than not. Counties which may not need a new facility may have the resources for construction by virtue of passing a bond issue, whereas counties badly in need of major facilities improvements cannot implement a project because a bond issue has been defeated. When state governments have assumed responsibility for providing adequate judicial facilities throughout their borders, in Hawaii and Alaska, for instance, facilities are better distributed and construction and architecture is of overall high quality. It has also been found that fewer court buildings are needed when facilities are consolidated, located in fewer but more strategically located places according to a comprehensive master plan. With such obvious advantages, the trend in the future would seem to be that more state governments will take over the responsibility of providing adequate court facilities, thus eliminating the unnecessary multitude of trial courts indiscriminately scattered over a state.

#### BUDGET PLANNING

For major city-funded construction projects it is essential to plan a budget at least five years ahead of required facility completion date. A year will be needed to develop a project from conception to a level of established spatial needs. If the programming and planning phase is suggested by a funding agency, then additional time will be required initially to develop, prepare and submit a proposal for funding approval. After the court and related agencies approve a project, the proposal is submitted to the public works department and to the budget bureau or equivalent agencies for review, budget approval and appropriation. This process may consume another year. Next, an architectural firm is hired to develop plans and all necessary documents for submission to the building department for approval. Functional and spatial changes in the court system may delay the completion of preliminary schemes, final detailed plans and working drawings and specifications. For large projects, this phase will take at least another year. This typical project has taken more than three years from conception to the approval of final plans. Construction of foundation,

steelwork and superstructure will easily require another two years.

## BUILDING CONSTRUCTION COST ESTIMATES

Having arrived at alternative schemes in a facility planning program, feasibility evaluation represents the next step in the planning process. In renovation projects, feasibility studies are made on the structure, building services and equipment, and on cost comparisons.

Cost estimates can be either preliminary cost estimates based generally on unit cost of square foot gross or net, or detailed cost estimates based on accurate estimates of labor, material, fringe benefits and overtime costs.

In new construction, preliminary cost estimates, if carefully applied, can yield reasonably realistic results. In complex renovation of existing buildings, preliminary cost estimates can not be so accurate because of complexities which may be encountered in the demolition, construction and finishing of piecemeal work. For this reason, most contractors will add to their estimates a high contingency sum -- 15% to 25% -- depending upon the complexity of renovation work. Most cost estimates do not include architectural and engineering fees (4% for new projects over \$15,000,000 to 12.5% for projects under \$100,000, with an additional 2% to 3.5% for renovation projects)<sup>1</sup>, movable furniture and furnishings, overtime charges, interest, taxes and legal fees.

One of the major problems in cost estimating for courthouse renovation programs is significant cost increases which can be expected from overtime work. Overtime work in court renovation projects, experience has shown, is less efficient and less productive than during regular working hours, and that project cost can increase significantly from overtime wages at 1.5 to 2 times the normal wage for workers and supervisors.

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1. "Building Construction Cost Data 1971," Robert Snow Means Company, Inc., pp. 157.

To minimize disruptions to court operations, temporary or permanent quarters should be provided to house the displaced personnel and records while renovation work is being done. In renovation projects where noise is a major factor, temporary masonry walls may have to be constructed to insulate the space being renovated so that operations in the adjoining spaces are not unduly disrupted. In the design of new buildings, consideration should be given to the flexibility of space planning and utilization so that future expansion and renovation work in the completed building can be accommodated with minimum effort and cost.

There are many factors which influence cost estimating: type of building, nature of construction, site and program restrictions, project size, service or utility availability, delay factors, and other factors such as building code restrictions, tight money market and construction labor practices.

#### TYPES OF BUILDINGS

Specialized buildings requiring specially designed spaces generally are more costly than commercial office buildings with repetitive open office floors. Traditional court buildings were designed with large, two-story spaces for courtrooms and jury assembly spaces, usually impressively constructed and ornately decorated. At one time, most courthouses also served as the meeting place for the local community. Because of the symbolic significance of the courthouse, it was generally one of the most impressive structures in the community. This tradition of large courtrooms has persisted until very recently when it was shown that the courtroom size for general trials and hearings need not be more than 1,200 to 1,500 sq. ft. With a trend toward smaller courtrooms, space can approach more closely that of high-ceiling office buildings -- and can obtain a similar degree of planning flexibility. However, the symbolic function of the courthouse as a structure in which justice is administered will continue to require special spatial treatment, maintaining a higher unit cost than for office building construction. In New York City, unit construction cost for court buildings is between \$60 and \$75 per sq. ft. gross based on 1971 unit cost data. For other

cities the unit construction cost (including labor costs) can be adjusted by means of the city cost indexes shown in Table 1.<sup>2</sup>

#### NATURE OF CONSTRUCTION

In new construction detailed site investigation and design control of the project eliminates most unknown factors commonly associated with renovation projects, and the contingency sum is generally 5% of total project cost. In renovation projects, cost estimates usually contain a contingency sum varying from 15% to 25% to account for unknown field conditions. (Standardization of contract drawings and the use of outdated original contract drawings can lead to serious cost differentials.) Contractors frequently are confronted with field conditions which obstruct and delay the completion of contract work. The most expedient on-site solution is generally used to complete the construction work, with results that vary from approved contract drawings. Existing building and structural restrictions in plumbing, air-conditioning, ventilating, electrical and duct work may differ in actual installation from that provided on contract documents. For reasons such as this, a contractor will add a great enough contingency sum to insure against serious losses, the amount varying with the complexity and concealed portion of a renovation project. The experienced contractor usually visits the project site, evaluates field conditions and develops a cost estimate based on previous experience with similar construction projects. At the same time, he will assess the existing staging area and facilities for materials and equipment storage that will be required during construction. All other conditions being equal, bids received from experienced contractors retain a lower contingency factor.

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2. op. cit., p. 154.

**TABLE 1**  
**CITY COST INDICES**

Average 1970 Construction Cost and Labor Indices						Historical Average	
City	Labor	Total	City	Labor	Total	Year	Index
Akron, Oh.	105	104	Milwaukee, Wi.	103	107	1970	100
Albany, N.Y.	96	98	Minneapolis, Mn.	101	99	1969	93
Albuquerque, N.M.	85	95	Mobile, Al.	93	91	1968	85
Amarillo, Tx.	77	84	Montreal, Cn.	79	88	1967	80
Anchorage, Ak.	130	145	Nashville, Tn.	79	84	1966	78
Atlanta, Ga.	87	94	Newark, N.J.	120	108	1965	74
Baltimore, Md.	93	95	New Haven, Ct.	103	101	1964	72
Baton Rouge, La.	85	89	New Orleans, La.	88	95	1963	70
Birmingham, Al.	78	85	New York, N.Y.	132	117	1962	69
Boston, Ma.	105	103	Norfolk, Va.	72	79	1961	67
Bridgeport, Ct.	104	101	Oklahoma City, Ok.	83	87	1960	66
Buffalo, N.Y.	105	107	Omaha, Nb.	90	93	1959	65
Burlington, Vt.	88	90	Peoria, Ill.	98	99	1958	63
Charlotte, N.C.	70	76	Philadelphia, Pa.	106	101	1957	61
Chattanooga, Tn.	80	85	Phoenix, Az.	99	96	1956	58
Chicago, Ill.	108	103	Pittsburgh, Pa.	111	105	1955	55
Cincinnati, Oh.	110	104	Portland, Me.	81	88	1954	54
Cleveland, Oh.	121	111	Portland, Or.	101	102	1953	53
Columbus, Oh.	107	99	Providence, R.I.	98	98	1952	51
Dallas, Tx.	85	89	Richmond, Va.	74	81	1951	49
Dayton, Oh.	103	104	Rochester, N.Y.	108	105	1950	46
Denver, Co.	95	92	Rockford, Ill.	104	102	1949	44
Des Moines, Ia.	92	96	Sacramento, Ca.	116	110	1948	44
Detroit, Mi.	119	110	St. Louis, Mo.	109	103	1947	40
Duluth, Mn.	101	99	Salt Lake City, Ut.	91	95	1946	33
Edmonton, Cn.	80	85	San Antonio, Tx.	82	83	1945	28
El Paso, Tx.	75	83	San Diego, Ca.	110	106	1944	27
Erie, Pa.	102	100	San Francisco, Ca.	123	109	1943	27
Evansville, In.	93	94	Savannah, Ga.	72	79	1942	26
Fort Worth, Tx.	85	94	Scranton, Pa.	93	94	1941	24
Fresno, Ca.	110	108	Seattle, Wa.	103	99	1940	22
Gary, In.	100	101	Shreveport, La.	81	89	1939	22
Grand Rapids, Mi.	104	99	South Bend, In.	97	97	1938	22
Harrisburg, Pa.	89	92	Spokane, Wa.	100	101	1937	22
Hartford, Ct.	105	102	Springfield, Ma.	98	96	1936	19
Honolulu, Hi.	97	107	Syracuse, N.Y.	104	102	1935	19
Houston, Tx.	90	91	Tampa, Fl.	80	87	1934	19
Indianapolis, In.	98	98	Toledo, Oh.	107	106	1933	17
Jackson, Ms.	74	77	Topeka, Ks.	88	92	1932	16
Jacksonville, Fl.	78	81	Toronto, Cn.	90	92	1931	19
Kansas City, Mo.	95	93	Trenton, N.J.	114	103	1930	21
Knoxville, Tn.	80	83	Tucson, Az.	97	94	1929	22
Las Vegas, Nv.	113	106	Tulsa, Ok.	83	88	1928	22
Little Rock, Ar.	75	81	Vancouver, Cn.	90	93	1927	23
Los Angeles, Ca.	111	101	Washington, D.C.	98	94	1926	22
Louisville, Ky.	93	94	Wichita, Ks.	85	89	1925	22
Madison, Wi.	96	97	Winnipeg, Cn.	65	84	1924	22
Manchester, N.H.	88	91	Worcester, Ma.	105	100	1923	22
Memphis, Tn.	82	83	Yonkers, N.Y.	118	107	1922	19
Miami, Fl.	101	99	Youngstown, Oh.	108	105	1921	21

From Building Construction Cost Data, 1971 published by R. S. Means Company, Inc.

**NOTE:** Cost indices of this kind should be adjusted to specific construction and labor costs

#### SITE AND PROGRAM RESTRICTIONS

The availability of the entire job site for uninterrupted construction work can significantly influence the construction cost estimate for a facility project. Piecemeal construction and renovation can easily increase cost by 15% to 25%, due primarily to an increase in labor cost when a project that could be completed as a whole is broken into several sub-projects completed sequentially. In renovation projects, this situation may occur when the occupants of one space have to be relocated to an adjoining renovated space while the vacated space is renovated.

Noise and dust suppression requirements add materially to the base costs. The ease of loading and unloading of materials and the removal of waste material from the site can significantly influence cost estimates. In major downtown urban sites, for example, narrow streets and limited site area can create serious problems for materials delivery and removal. Such activities even may be restricted to off-peak traffic hours.

#### PROJECT SIZE

Project scope has a direct bearing on unit costs. Equipment unit costs on large projects are generally lower than those on small buildings. Delivery of construction equipment is a one-time charge; therefore, frequent repetitive use of the same equipment would materially reduce unit time charges. Construction and renovation of large open floor spaces or of modular spaces on the same floor would also effectively reduce unit costs. Small spaces of varying sizes, shapes and dimensions to be constructed on different floors in a renovation project would tend to increase unit costs. Dry construction and shop prefabricated component parts -- modular construction -- for a large project would cost less per unit than wet on-site construction. The higher cost of materials often will be offset by the savings in erection time and handling costs. An increase in space use flexibility by means of movable partitions and office landscaping techniques can result in long-term cost savings.

#### UTILITY AND OTHER SERVICES AVAILABILITY

Availability of services and utilities in sufficient capacity on the project site will materially reduce unit costs. For example, a central refrigeration plant strategically located within a court complex would eliminate the need for individual compressors in each building, resulting in significantly lower air-conditioning costs. Services and equipment in existing buildings generally are used at near maximum capacity, and renovation and expansion of facilities within the existing structure may result in the need for new or improved services at high cost. When buildings have excess capacity, the availability of these services would tend to reduce total project costs. In the planning of existing spaces in a renovation project, the creation of internal spaces requiring major air-conditioning and ventilation work and the location of toilet facilities requiring plumbing services away from existing plumbing ducts should be avoided if construction costs are to be minimized.

#### DELAY FACTORS IN CONSTRUCTION AND RENOVATION

Project delays can be the result of many factors, including inclement weather conditions, poor project management, lack of proper project scheduling and delayed payment schedules. In the bidding process, cold weather in the winter months causes difficult working conditions, resulting in work reduction, and bids generally are higher unless the contractor is willing to lower his profits to obtain projects in order to maintain his crew of workmen over periods of manpower shortage. Bids also tend to be high in seasons of high construction activity; when contractors are over-extended, bidding tends to be more competitive. Bids taken during low building activity tend to be on the low side.

Construction project scheduling is an essential tool for limiting construction costs within the contract cost. The Critical Path Method (C.P.M.) and similar systems are frequently used by contractors for the scheduling of projects. The shorter the construction time, the higher his profit margin and the more likely is he to complete the



project within bid. Lack of proper scheduling, on the other hand, can produce drastic delays that could bankrupt the contractor.

Delay in payment by owner can also materially affect project unit cost. Knowledge that payments may be made six to eight months after the submission of payment requisition can stimulate the contractor to make major adjustments in his bid -- directly reflected in the high unit costs for some government-financed construction projects. Delayed working drawings and document approvals also can hobble construction.

#### OTHER FACTORS

Strict construction restrictions, especially in major cities where building, health and fire regulations are stringently enforced, may increase project costs. Building costs tend to be high in cities when there is construction manpower shortage and where competition of available manpower is keen. Strong construction trade unions in large cities can rapidly force up construction labor costs. Construction costs in New York City in 1970 increased by 17%, and it is estimated that the annual cost increase in the future will be at least 15%.

Unit construction costs are published in several available textbooks. Such costs should be used discriminately. Generally, unit costs include the contractor's overhead and profit, but not architectural and engineering fees, movable furniture and equipment and overtime wage increase.

Unit construction costs for court buildings in this country can vary between \$30 and \$100 per sq. ft. net space. Random selection of unit costs does not provide optimum building cost. For the court administrator and planner to evaluate the optimum unit construction costs on which to base cost estimates, a basis of evaluation has been established, as follows.

## METHODOLOGY FOR COST ANALYSIS AND COMPARISON

The following is a brief outline of how to conduct research in building costs and how to relate costs to building performance and user convenience, comfort and work output. This method, its application and its significance, was developed for office buildings,<sup>2</sup> but can be applied equally well to the analyses of court buildings.

### 1. ESTABLISH AREA AND VOLUME RELATIONSHIPS

To develop realistic unit costs, the net (rentable) and gross area and volume of buildings of similar type have to be carefully compiled and organized into their separate categories: high-ceiling spaces such as courtrooms and large jury assembly rooms, low-ceiling spaces such as judges' chambers and conference rooms, office spaces such as departmental offices, detention facilities, clerical offices, storage and public spaces, and so on. Overall unit construction cost for total space is, by itself, a very inaccurate basis for cost estimating. Unit cost breakdown into various types of spaces provides a more realistic approach.

A questionnaire or table should be used to compile information on a selected number of court buildings: single-story, multi-story, metropolitan, medium-size and rural. Areas and volumes should be obtained by types of spaces, by department, by floor and by building. Public circulation, storage, building equipment, and building services and systems spaces should be analyzed separately. Analysis can be conducted to establish percentages of each type of space to total net and total gross space of each floor and of each building. Percentages also can be established between net and gross area and volume, between courtroom and ancillary spaces, and between public, private and secured spaces. Even more significant information standards can be developed to relate the number of ancillary spaces to each courtroom or hearing

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2. Michael Wong, "Significance of Cost, Performance and Comfort Relationships in Office Buildings," Doctoral Thesis, Vol. 1, University of Sydney, Australia, 1965.

room. By using the building and zoning code, relationships between the net and gross building area and the site area can be established.

## 2. COMPILE AND ANALYZE COST DATA

Cost data can be compiled by means of a questionnaire in which a comprehensive list of total, unit, capital, operation, maintenance, contingency and depreciation costs are obtained. For court buildings, the same structures previously selected for the area and volume analysis should be investigated and surveyed so that costs can be related to areas and volumes to obtain unit costs. If buildings are scattered over the state or country, construction costs in each locality can be quite different. For comparative purposes, the cost figures for each court building would have to be adjusted by means of local cost indices. The indices can be categorized into material, labor, fringe benefits and total costs. For purposes of accuracy, all building costs should be separated into these categories, and the indices applied for the adjustment of each. In many cases, however, only total cost of each trade or even of the entire building is available to the researcher. In such cases, the only adjustment that can be made is in applying the total building cost index (Table 1).

To complicate matters further, court buildings in each locality usually have been erected at different times. To compare the cost of the building, the cost figures would have to be adjusted by applying the historical cost index for the locality. For example, the basic cost index for a locality in 1970 is 100. In 1950 the cost index was 50. This means that the cost index has doubled in 20 years. The overall cost of a court building erected in 1950 should then be adjusted to the equivalent cost in 1970 for comparative purposes. In addition to such adjustments other factors, such as labor market and material shortage, may influence the adjustment differently so that in some cases, a compromise index has to be developed for each local trade. The degree of accuracy of cost adjustment will depend on the way adjusted cost figures are to be used.

Operation and maintenance costs usually are difficult to compile and evaluate. First, owners of buildings, including court buildings, are reluctant to divulge annual operation and maintenance costs for personal or political reasons. Second, the building engineer may not wish to expose to public view the inadequacy of building systems and equipment for which he is responsible. Third, even when such information is available, each building owner compiles the information according to his own bookkeeping method and a comparison of similar buildings with dissimilar operational and maintenance cost information is very difficult. It usually is time-consuming to delineate annual costs in various categories: air conditioning, heating, ventilation, electrical, vertical transportation, security alarm systems, personnel and so on. This is primarily because power costs of most systems overlap and are combined in one total cost. In general, the annual operation and maintenance cost of office and institutional buildings (if they are maintained at an acceptable level) is approximately 5% to 10% of building capital cost.

Depreciation of buildings generally is spread over a period of 50 years; building equipment usually depreciates over a period of 20 years.

### 3. MEASURE BUILDING PERFORMANCE

Performance levels established for a building and its services are an important basis for classifying the building and developing cost-performance relationships. Performance levels can be established through analysis of the degree to which a building satisfies the function or functions for which it is designed and constructed. To facilitate this analysis, a building has to be categorized into major and minor components including structure, finishes, H.V.A.C., electrical, lighting, vertical transportation, plumbing and drainage, fire protection and acoustics. Performance levels of each component are based on systems,

materials, costs, finishes, age, environmental conditions and occupant responses. Such information can be compiled by means of questionnaires and field research. The most useful assessment of performance level is through personal observation of building components in operation. Measurements can be recorded for waiting intervals of vertical transportation systems, lighting intensity and color, effective temperature measurements for H.V.A.C. systems and acoustical sound levels. Information compiled through interviews, measurements and observations are subsequently analyzed and synthesized to arrive at performance standards for the building. The same technique can be applied to a selected number of court buildings, and a comparative analysis can be made among them to develop a system of performance levels.

#### 4. ASSESS CONVENIENCE, COMFORT AND WORK OUTPUT OF BUILDING OCCUPANTS

While it is relatively simple to establish cost-performance relationships, a third component in establishing the cost-performance-comfort relationship is much more difficult to evaluate.

The only known method of measuring convenience and comfort is through an evaluation of objective responses from building occupants. Convenience and comfort can be analysed through environmental, building service and psychological components. Environmental components consist of sensations of warmth, moisture, "stiffness," light and noise, and so on. Subjective responses then can be related to the physical measurements of environmental conditions. Service components include subjective responses on the performance of a building service such as air conditioning, heating, ventilation, elevator service, artificial lighting, furniture and equipment, toilet facilities and staff amenities. Psychological components include factors such as location of a building in relation to home, to transportation terminals, and to shopping centers, as well as working relationships with colleagues, the health and psychological condition of the person concerned and the effect of family and personal problems. In the study of human

beings working in a controlled environment, other variables such as age, sex, height, weight, period of residence, occupation and activities prior to interview all contribute to the overall assessment of convenience and comfort. Changes in season also should be considered as building environmental conditions; subjective responses of occupants can vary significantly between the summer and winter months.

Physical measurements of environmental conditions and work output can be recorded on equipment and on work sheets. Questionnaires can be devised to record subjective responses. A weighted scale with values 0 to 5 or 0 to 7 can be devised so that subjective responses can be quantified into weighted units. By applying this weighted scale to each variable, all subjective responses can be qualified. All weighted units assigned to a person can be added to arrive at a combined measurement of convenience and comfort. A range of weighted units therefore can be assigned to each point on the scale. For example, the average point 4 of the 7-point scale may have a range of 80-90 units for male occupants and 85 to 100 for females.

##### 5. ESTABLISH COST-PERFORMANCE-COMFORT RELATIONSHIPS

Cost-performance-comfort relationships can provide a very useful means of cost control. If findings show that up to a certain point in unit construction cost there is a corresponding increase in performance and comfort and convenience, and beyond that point that there is a rapid reduction or no increase in those two components, then the unit cost at that point may be the optimum that the courts and city agencies should adopt in the design and construction of court buildings. If this technique is applied to different parts of the country, unit construction cost can vary considerably and the cost index of various cities, states or regions will have to be used.

Having established optimum unit construction costs for cost estimating, the administrator and planner can evaluate the accuracy of preliminary cost estimates.

Another cost factor to be emphasized is the basis for assessing fair rental value of judicial facilities when the responsibility for such facilities is transferred from one level of government to another, for instance, when a state provides rents to municipalities. The following section describes such a basis.

### ASSESSING FAIR RENTAL VALUE FOR JUDICIAL FACILITIES

There is a trend in the United States toward the management and financing of court facilities by the state rather than by separate local counties, the traditional way. Two states, Hawaii and Alaska, now operate like this and several others are in the process of transferring administrative control of courts and court facilities to the state level, among them, Colorado and Maine.

A major problem in a state's taking over county facilities is the assessment of fair rental value for the facilities used by the courts. Traditionally, the courtrooms in county courthouses are far too large and ancillary facilities are far from adequate. To assess a fair rental value based on square footage alone is not appropriate. Standard sizes for courtrooms and ancillary facilities have to be established before a fair rental can be assessed. Furthermore, in courthouses with more than one courtroom, the spaces should be divided into courtroom-related and shared spaces. For example, a law library, grand jury facilities and attorneys' lounge are shared spaces and their sizes are not directly related to the number of courtrooms. In fact, a small increase in the number of courtrooms (say, from one to three) would not normally have any significant impact on such spaces. Consequently, a list of recommended areas for court and court-related spaces has been established to enable a fair rental value to be assessed for the addition of each courtroom with adequate ancillary facilities. Such facility standards may vary slightly among states or cities, and the following table should be used only as a guide (Table 2).

**TABLE 2**  
**JUDICIAL FACILITIES AND RECOMMENDED AREA FOR EACH COURTROOM**

Facilities	No.	Area of Spaces for First Courtroom	No.	Area of Spaces for Each Addi- tional Courtroom
<b>COURTROOM-RELATED</b>				
Courtroom	1	1200-1500	1	1200-1500
Chamber	1	300	1	300
Secretary's Office	1	150	1	150
Law Assistant's Office	1	120	1	120
Jury Deliberation Room	1	350	1	350
Conference Room	2	150	1	80
Clerk's Office	total	800	add	140
Prisoner Holding Facilities *	2	150	1	120
Court Reporters' Office	1	100	1	100
Witness Room	1	100	1	100
County Attorney's Office *	total	500	add	360
Probation Office *	total	200	1	120
Departmental Office	1	120	1	120
<b>SHARED</b>				
Grand Jury Facilities		600		
Library		1200		
Attorneys' Lounge		150		
<hr/>				
Net Area (Sq. Ft.)		6190-6490		3260-3560
Gross Area (Sq. Ft. Add 50% Net Area)		9285-9735		4890-5340
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\* only in criminal and family courts





**END**